

CATALOG & TECHNICAL GUIDE – INCH



TURNING



SOLUTIONS & SUPPORT

By choosing Seco, you get more than just a comprehensive portfolio of advanced metal-cutting solutions and expert services. You get a partnership based on trust, respect and communication and a team that is always ready to help you gain the competitive advantage.

Globally headquartered in Fagersta, Sweden and present in more than 50 countries, Seco develops cutting tools, processes and services for high productivity and profitability. Our team of over 5,000 dedicated employees maintains partnerships around the world to identify and overcome the challenges faced by today's manufacturers.

Our broad selection of milling, turning, holmaking and toolholding solutions include over 30,000 standard products, custom items for special applications and a team of metal-cutting experts who help customers identify and implement cost-effective solutions.

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Technical Guide

Turning Toolholders

Turning Inserts

MDT

Mini Shaft

Threading

Grooving and Cut-off

Railway Wheel Machining

Seco-Capto™

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Turning Toolholders

Turning Inserts

MDT

Mini Shaft

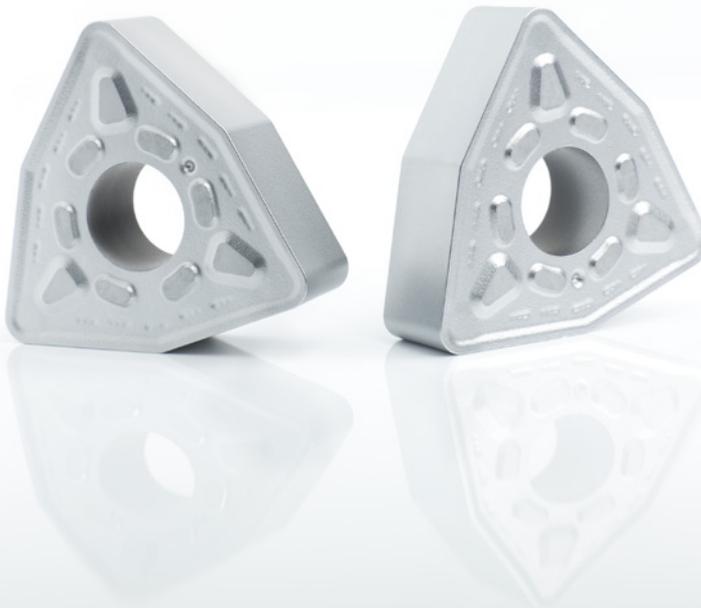
Threading

Grooving and Cut-off

Railway Wheel Machining

Seco-Capto™

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External toolholders



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1. Insert clamping system

D	P	M	S	C	T
Top clamp using center hole	Pin lock assembly (NL/PL toolholders)	Multiple lock assembly (Pin and clamp lock) (M-Type toolholders)	Screw lock	Clamp lock assembly	Tapered stem (Tee-lock)

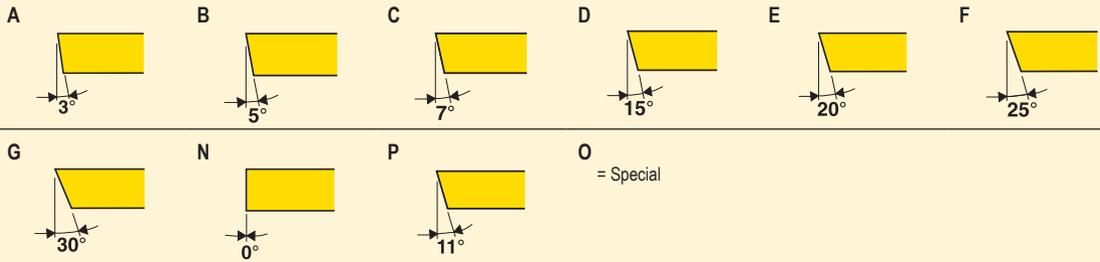
2. Insert shape

C 	D 	R 	S 	T 	V 	W
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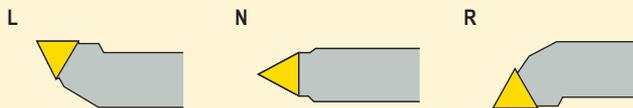
3. Tool type

- | | |
|---|---|
| <ul style="list-style-type: none"> A = Straight shank with 0° side cutting edge angle B = Straight shank with 15° side cutting edge angle C = Shank with 0° end cutting edge angle D = Straight shank with 45° side cutting edge angle E = Straight shank with 30° side cutting edge angle F = Offset shank with 0° end cutting edge angle G = Offset shank with 0° side cutting edge angle J = Offset shank with -3° side cutting edge angle K = Offset with 15° end cutting edge angle L = Offset shank with -5° end or side cutting edge | <ul style="list-style-type: none"> M = Straight shank with 50° side cutting edge angle O* = Offset shank with centrally located round insert P = Straight shank with 27.5° side cutting edge angle Q = Offset shank with -17.5° cutting edge angle R = Offset shank with 15° side cutting edge angle S = Offset shank with 45° side cutting edge angle T* = Offset shank with -30° side or end cutting edge angle V = Straight shank with 17.5° side cutting edge angle W = Offset shank with 10° side cutting edge angle * = Seco standard |
|---|---|

4. Insert side clearance angle



5. Cutting direction (hand of tool)



6. Pocket style

S = Single wall pocket construction.
 Full pocket construction when letter position is vacant.

7. Toolholder shank size

For square shanks, the number represents the number of sixteenths of width and height. For rectangular shanks, the first digit represents the number of eighths of width and the second digit represents the number of quarters of height.

8. Insert size I.C.

Number of eighths of I.C.

9. Qualified surface & length

- A** = Qualified back and end. 4" long
- B** = Qualified back and end. 4.5" long
- C** = Qualified back and end. 5" long
- D** = Qualified back and end. 6" long
- E** = Qualified back and end. 7" long
- F** = Qualified back and end. 8" long
- J** = Qualified back and end. 3.5" long
- M** = Qualified front and end. 4" long
- N** = Qualified front and end. 4.5" long
- P** = Qualified front and end. 5" long
- R** = Qualified front and end. 6" long
- S** = Qualified front and end. 7" long
- T** = Qualified front and end. 8" long

10. Internal designation

JET = Jetstream Tooling®
JETL = Jetstream Tooling® with P-lever clamp

JETB = Jetstream Tooling® with inlet on backend of shank
JETLB = Jetstream Tooling® with P-lever clamp and inlet on back end of shank

-PL = Plunging

Internal toolholders



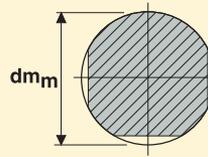
S	16		-	M	W	L	N	R	-	3
1	2	3		4	5	6	7	8		9

1. Toolholder type

- A = Steel with coolant passage
- C = Carbide
- E = Solid carbide with brazed* cutting head and coolant passage
- H = Heavy metal
- J = Heavy metal with coolant hole
- S = Solid steel

*Brazed or equivalent

2. Shank diameter



Indicates bar diameter in sixteenths of an inch.

Stepped bar shows smallest diameter first.

3. Tool length

- | | | | |
|----------|-----------|---------|--------------------|
| F = 3" | L = 5.5" | R = 8" | W = 18" |
| G = 3.5" | M = 6" | S = 10" | Y = 20" |
| H = 4" | N = 6.5" | T = 12" | X = Special Length |
| J = 4.5" | P = 6.75" | U = 14" | |
| K = 5" | Q = 7" | V = 16" | |

4. Insert clamping system

P	M	S	C
Pin lock assembly (NL/PL toolholders)	Multiple lock assembly (Pin and clamp lock) (M-Type toolholders)	Screw lock	Clamp lock assembly (PC toolholders)

5. Insert shape

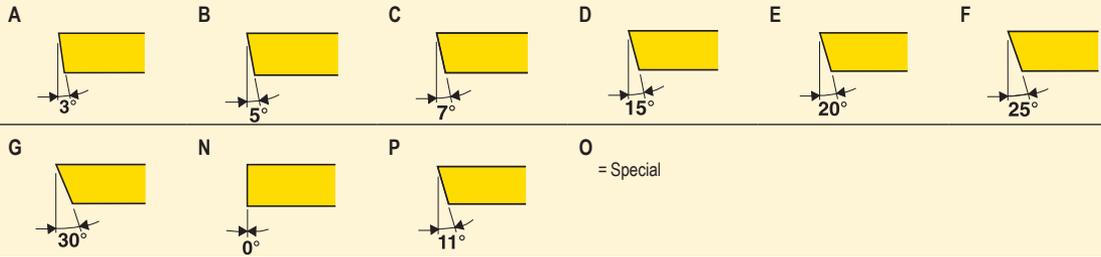
C	D	R	S	T	V	W

6. Tool type

U = Offset shank with negative 3° (93°) end or side cutting edge angle
F = Offset shank with 0° (90°) end cutting edge angle
G = Offset shank side/end cutting (round insert)
K = Offset shank with 15° (75°) end cutting edge angle

L = Offset shank with negative 5° (95°) end or side cutting edge angle
Q = Offset shank with negative 17.5° (107.5°) cutting edge angle
P = Offset shank with 27.5° side and end cutting edge angle

7. Insert side clearance angle



8. Cutting direction (hand of bar)



9. Insert size I.C.

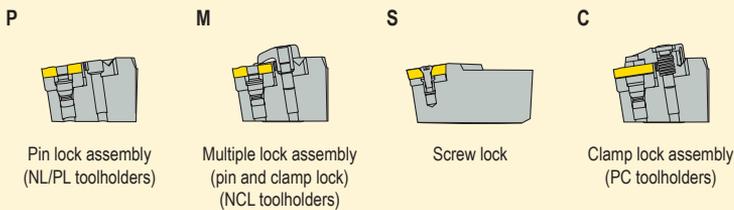
Number of eighths of I.C.

Cartridge Identification System

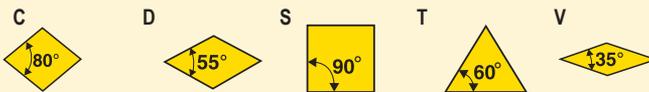


M	C	L	N	R	- 16	C	A	- 12
1	2	3	4	5	6	7	8	9

1. Insert clamping system



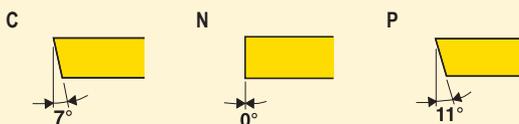
2. Insert shape



3. Tool type

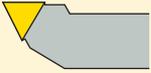
F = Offset shank with 0° end cutting edge angle	S = Offset shank with 45° side cutting edge angle
G = Offset shank with 0° side cutting edge angle	T* = Offset shank with -30° side or end cutting edge angle
K = Offset shank with 15° end cutting angle	X* = Offset shank with 27.5° side or end cutting edge angle
L = Offset shank with -5° and/or side cutting edge angle	Y = 5° end cutting edge angle
R = Offset shank with 15° side cutting edge angle	* = Seco standard

4. Insert side clearance angle

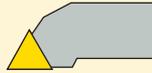


5. Cutting direction (hand of tool)

L



R



6. Cartridge cutting height

A Type = Length of cutting edge in millimeters

W, X & Z Type = Height in thousandths of an inch rounded (2) places

7. Tool symbol

C = Indicates cartridge

8. Cartridge Type

A = Metric cartridge/metric components-metric hex wrench

W = Metric cartridge/metric components-Inch hex wrench

X = 90° mount cartridge

Z = Mini-cartridge

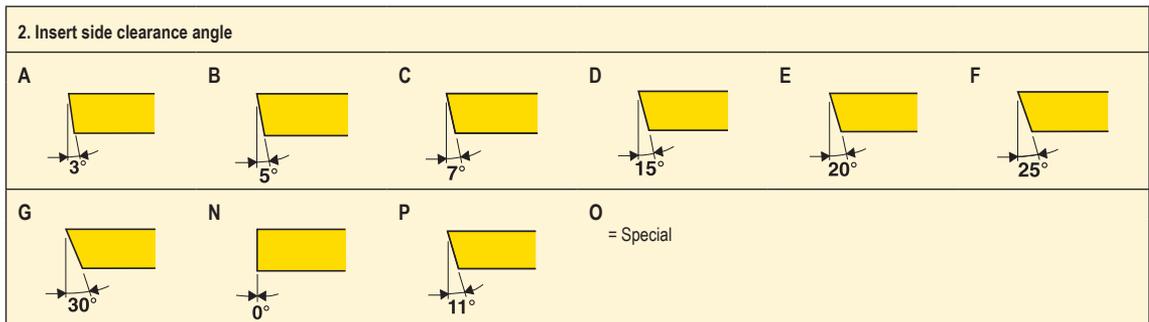
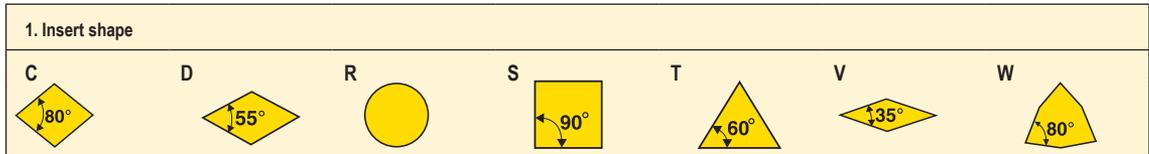
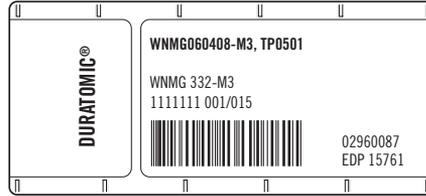
9. Insert size

A Type = Length of cutting edge in millimeters

W, X & Z Type = Insert I.C. in eighths of an inch

..JET = Jetstream Tooling®

A.N.S.I. Insert Identification System



3. Tolerances

Insert I.C.	Thickness
A = ± 0.001	± 0.001
C = ± 0.001	± 0.001
E = ± 0.001	± 0.001
G = ± 0.001	± 0.005
M = ± 0.002*	± 0.005
± 0.004*	± 0.005
U = ± 0.003*	± 0.005
± 0.010*	± 0.005

*Tolerance is determined by size of insert (I.C)

4. Insert type

<p>A = With hole, no chipbreaker B = With hole and one counter sink E = Smaller than 1/4" I.C. without hole G = With hole and chipbreaker on both faces H = With hole, counter sink and chipgroove M = With hole and chipbreaker on one face only</p>	<p>P* = 10° positive-land with hole and chipbreaker R = Without hole, chipbreaker on one face only T = C-Lock hole with chipbreaker on one face only U = Negative insert with hole and chip-breaker on both faces for toolholders with pin lock only W = C-Lock hole, no chipbreaker</p>
--	---

*Non ANSI Standard

5. Size

For equal sided inserts I.C. in 1/8 ths of an inch	Rectangle and parallelogram inserts require two digits:
1/8 = 1 1/2 = 4	1st Digit - Number of 1/8ths in width
5/32 = 1.2 5/8 = 5	2nd Digit - Number of 1/4ths in length
3/16 = 1.5 3/4 = 6	
7/32 = 1.8 7/8 = 7	
1/4 = 2 1 = 8	
5/16 = 2.5 1 1/4 = 10	
3/8 = 3	

6. Thickness

Number of 1/32nds on inserts less than 1/4" I.C.
Number of 1/16ths on inserts 1/4" I.C. and over.

7. Nose radius

0.0	=	Sharp to 1/512
0	=	Sharp to 1/256
0.5	=	1/128
1	=	1/64
2	=	1/32
3	=	3/64
4	=	1/16
6	=	3/32
8	=	1/8

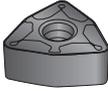
8. Cutting edge condition

F = Sharp cutting edges
E = Honed cutting edges
T = Chamfered cutting edges
S = Chamfered and honed cutting edges
K = Double chamfered cutting edges
P = Double chamfered and rounded cutting edges.

9. Manufacturer's option

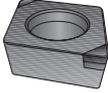
e.g. chipbreaker designation
F = Finishing
M = Medium
R = Roughing
1 = For low feed rates and easy conditions
9 = For high feed rates and rough conditions

Insert/Metric series, Extract from ISO 1832-2004



W	N	M	G	06	04	08		M3
1	2	3	4	5	6	7	8	9

Insert/Metric series, Extract from ISO 1832-2004



C	C	M	W	09	T3	08	S	-		-	L1	-		B
1	2	3	4	5	6	7	8	9	10	11	12	13		

1. Insert shape

A 	B 	C 	D 	E 	H 	K 	L
M 	O 	P 	R 	S 	T 	V 	W

2. Insert side clearance angle

A 	B 	C 	D 	E 	F
G 	N 	P 	O = Special		

3. Tolerances														
Tolerance class	Tolerance +/- mm		For d, dimension mm											
			3.175*	3.969	4.064	4.760	6.350	9.525	12.700	15.875	19.050	25.400	31.750	38.100
A	0.025	0.025	•			•	•	•	•	•	•	•	•	•
C	0.025	0.025	•	•	•	•	•	•	•	•	•	•	•	•
E	0.025	0.025	•			•	•	•	•	•	•	•	•	•
F	0.025	0.013	•			•	•	•	•	•	•	•	•	•
G	0.130	0.025	•			•	•	•	•	•	•	•	•	•
H	0.025	0.013	•			•	•	•	•	•	•	•	•	•
J	0.025	0.050	•			•	•	•						
	0.025	0.080							•					
	0.025	0.100								•				
	0.025	0.130									•			
K	0.025	0.150									•			
	0.025	0.050	•			•	•	•						
	0.025	0.080							•					
	0.025	0.100								•	•			
M	0.025	0.130										•		
	0.025	0.150											•	•
	0.130	0.050	•			•	•	•						
	0.130	0.080							•					
U	0.130	0.100												
	0.130	0.130												
	0.130	0.130												
	0.130	0.180												
	0.130	0.250										•	•	•

* Not ISO

4. Hole configuration and/or chipbreaker						
A	B	G	M	N	R	
T	U	W	X			
			= Special			

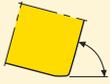
5. Cutting edge length							
A, B, K	C, D, E, M, V	H, O, P	L	R	S	T	W

6. Thickness						
			01 = 1.59 mm	T3 = 3.97 mm	07 = 7.94 mm	
			T1 = 1.98 mm	04 = 4.76 mm	08 = 8.00 mm	
			02 = 2.38 mm	05 = 5.56 mm	09 = 9.52 mm	
			03 = 3.18 mm	06 = 6.35 mm		

7. Corner configuration

1st letter

A = 45°
D = 60°
E = 75°
F = 85°
P = 90°
Z = Special



2nd letter

A = 45°
B = 5°
C = 7°
D = 15°
E = 20°
F = 25°
G = 30°
N = 0°
P = 11°
Z = Special



nose radius



M0 = round inserts (metric version)

005 = 0.05 mm
01 = 0.1 mm
02 = 0.2 mm
04 = 0.4 mm
08 = 0.8 mm
12 = 1.2 mm
etc

8. Cutting edge condition

F



E



T



S



W

= High feed inserts

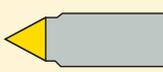
Not mandatory information

9. Cutting direction

L



N



R



Not mandatory information

10. Internal designation

e.g. chipbreaker designation
F = Finishing
M = Medium
R = Roughing

e.g. edge designation
e.g. 01020 = 0.1 mm x 20°

Not mandatory information

11. Manufacturers option

Tip sizes:

L0

L1

L2

LF = full-face insert (sintered layer)

Not mandatory information

12. Internal designation

Turning
e.g. chipbreaker designation
F = Finishing
M = Medium
R = Roughing
WZ = Wiper (PCBN)
etc

Not mandatory information

13. No. of tips

B = 2

C = 3

D = 4

U = 4 (double sided)

V = 6 (double sided)

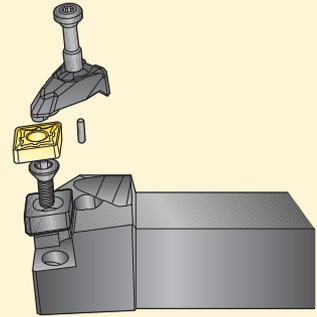
Not mandatory information

D Toolholder

First choice for general purpose machining, external

- For negative basic shape inserts with hole
- Robust, stable clamping system

The insert is locked in position by a clamp that presses the insert into and down onto the fixed insert seat



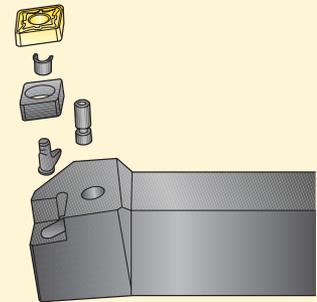
P Toolholder for Jetstream Tooling®

A complement to the D Toolholder, external

- For negative inserts with hole

In the illustration when the clamping screw is tightened the toggle lever secures the insert in the insert seat

In the alternative design the clamping screw acts upon the wedge that fix the insert towards the center pin

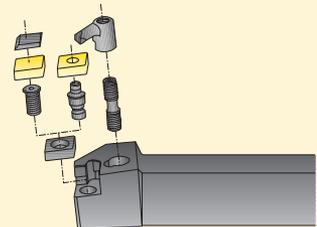


M External Toolholders

- A multiple-clamp and lock pin design for NC/CNC machines
- Maximum insert locking power with industry-standard NL lock pin mechanism

Two different assembly options:

1. For negative basic shape inserts with hole
2. For conventional precision-ground or utility-ground solid inserts with chipbreaker plates

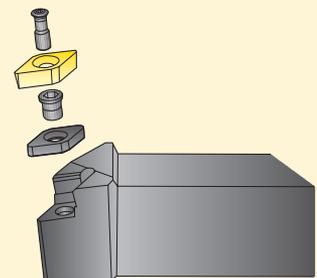


S Toolholder

For external and internal turning with positive inserts (C-lock)

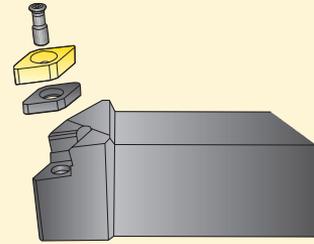
- For positive basic shape inserts with center hole
- Qualified holders that conform to ISO-ANSI standards and utilize Torx Plus®* holding screws
- Shank sizes ranging from 3/8 to 1-1/2 inch
- For inserts with 7° clearance angles and advanced chip groove geometries

*Torx Plus® is a registered trademark of CamCar Division of Textron, Inc.



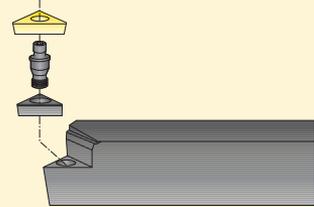
P External Negative Toolholders (PL)

- For negative inserts with hole
- Negative-rake lock pin style
- Simple to set up and index



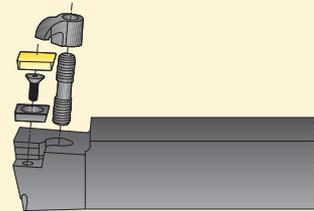
P External Positive Toolholders (PL)

- Positive-rake lock pin style
- Simple to set up and index
- For positive-rake inserts with chip grooves



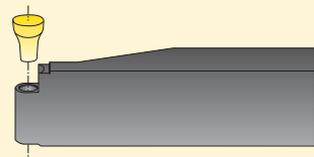
C External Toolholders (PC)

- Qualified holders with positive clamping
- Designed for precision- and utility-ground, positive-rake inserts and chipbreakers
- Ideal for positive-rake applications on materials such as high-temperature alloys, aluminum and soft steels, and low horse- power applications



T External Toolholders (T-Lock)

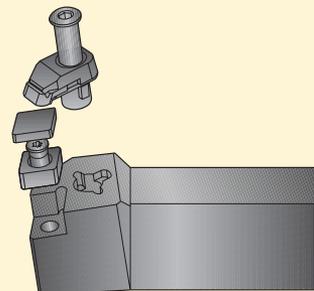
- Well-suited for high-temperature alloy profiling
- Unrestricted chip flow
- Simple field modifications possible with Style O
- Simple retention system
- Requires no spare sparts



C Toolholder

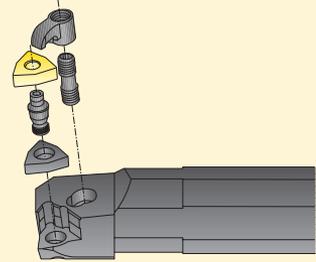
Designed mainly for Seco PCBN inserts without hole

The insert is locked in position by a clamp, which is equipped with a carbide plate



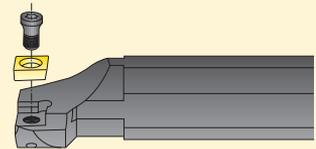
M Internal Boring Bars

- Proven lock pin for negative rake geometry inserts
- Ideal for unground, negative rake inserts or precision ground inserts with a chipbreaker plate



S Internal Boring Bars (C-Lock)

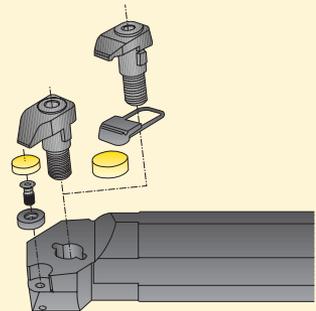
- For bores as small as 0.180 inch
- Available with steel or carbide shanks, ranging in diameter size from 3/16 to 1 inch
- Designed to ISO-ANSI standards
- Uses Torx Plus® insert holding screws



Torx Plus® is a registered trademark of CamCar Division of Textron, Inc.

C Internal Boring Bars (PCBN)

- Designed principally for Secomax PCBN inserts without a center hole
- Also used with other Secomax negative and positive inserts without a center hole and chipbreaker, or with a separate mechanical chipbreaker
- Insert is held down with clamp
- For rougher machining, clamp is equipped with a carbide pressure plate that reduces clamp wear and distributes the clamping force onto the insert surface



Maximum depth of cut capability

The maximum cutting depth that can be used depends on a number of factors, including machine power, stability, workpiece material, insert shape and size, nose radius, chipbreaker, grade and setting angle. Start with the insert size to get an indication and proceed with the recommendations for the chosen chipbreaker. This will give a suitable maximum cutting depth. The minimum cutting depth should not be less than the nose radius.

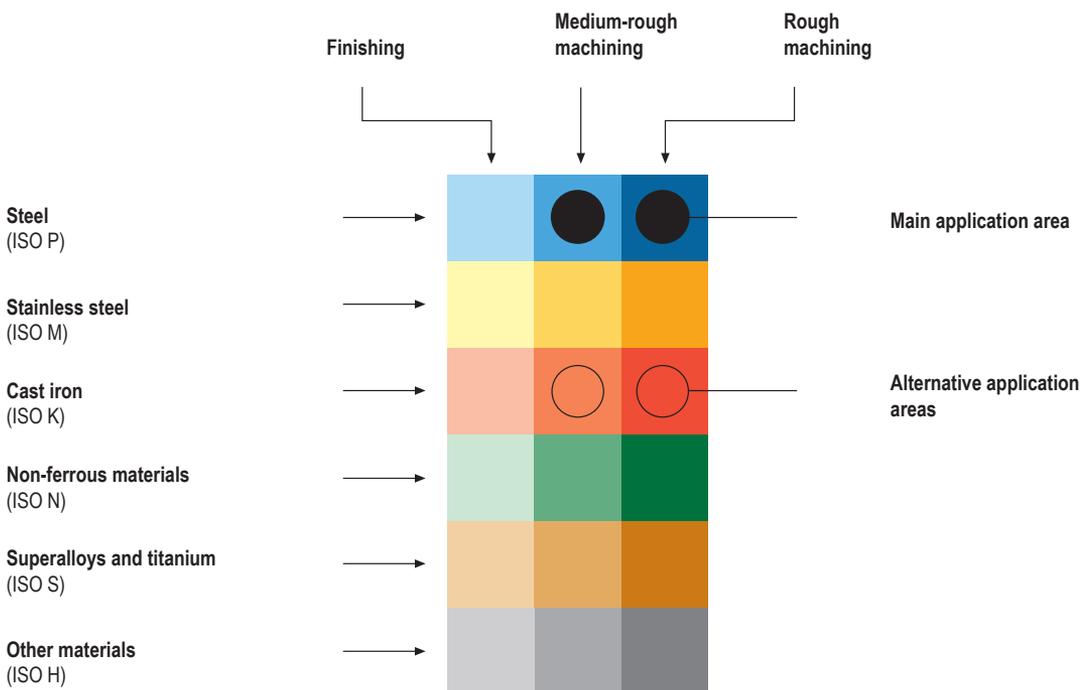
Insert shape	Insert I.C.	Maximum depth of cut a_p (in)					
		0.100	0.200	0.300	0.400	0.500	0.600
C	0.250	█					
	0.375	█	█				
	0.500	█	█	█			
	0.625	█	█	█	█		
	0.750	█	█	█	█	█	
	1.000	█	█	█	█	█	█
D	0.250	█					
	0.375	█	█				
	0.500	█	█	█			
	0.625	█	█	█	█		
R	0.1875	█					
	0.236	█	█				
	0.315	█	█				
	0.393	█	█	█			
	0.472	█	█	█	█		
	0.625	█	█	█	█		
	0.630	█	█	█	█		
	0.750	█	█	█	█	█	
	0.787	█	█	█	█	█	
	1.000	█	█	█	█	█	█
1.260	█	█	█	█	█	█	
S	0.250	█					
	0.375	█	█				
	0.500	█	█	█			
	0.625	█	█	█	█		
	0.750	█	█	█	█	█	
	1.000	█	█	█	█	█	
	1.250	█	█	█	█	█	█
	1.500	█	█	█	█	█	█
T	0.219	█					
	0.250	█	█				
	0.375	█	█	█			
	0.500	█	█	█	█		
	0.625	█	█	█	█	█	
	0.750	█	█	█	█	█	
V	0.250	█					
	0.312	█	█				
	0.375	█	█	█			
	0.500	█	█	█	█		
W	0.375	█	█				
	0.500	█	█	█			

The insert type and size are often determined by the toolholder choice.
The code on the insert must correspond to the code on the toolholder.



Secolor is a system for presenting the application area for a specific insert. It is based on a matrix with eighteen squares symbolizing different workpiece materials and different machining conditions. The geometry of the insert i.e. the basic shape and the chipbreaker, together with the carbide grade forms the application area that the insert is meant for.

Black dots in the matrix indicate the main application areas for the inserts and circles indicate alternative areas.

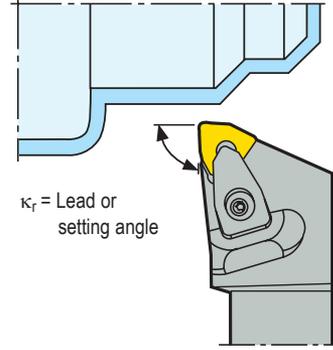


Cutting speed v_c (sf/min)

In this section a recommended cutting speed is indicated under specified conditions and a selected SMG (ver.2)

Use the tables beginning on page 770 to classify the workpiece material into a SMG.

In order to increase the accuracy towards the actual cutting conditions and requirements of the applications the recommendation is to use My Pages – Suggest on www.secotools.com



κ_r (κ_r) = cutting edge angle (°) (from holder)

rep (r_c) = nose radius (inch)

a_p = depth of cut (inch)

f = feed rate (inch/rev)

SMG = Seco Material Group

Universal insert: CCMT32.51-MF2

Tool life = 15 min

a_p = 0.040 inch

rep = 0.016 inch

κ_r = 95°

SMG	TP1501			TP2501			TP3500			CP500		
	f (in/rev)			f (in/rev)			f (in/rev)			f (in/rev)		
	0.006	0.008	0.010	0.006	0.008	0.010	0.006	0.008	0.010	0.006	0.008	0.010
P1	2675	2450	2275	2225	2075	1950	2000	1800	1650	960	870	810
P2	2600	2400	2225	1850	1900	1900	1950	1750	1600	930	850	790
P3	1750	1750	1700	1900	1950	1950	1375	1225	1125	800	730	680
P4	1975	1825	1675	1650	1525	1450	1475	1325	1225	710	640	600
P5	1475	1475	1425	1350	1400	1375	1150	1025	940	670	610	570
P6	2100	1950	1800	1750	1650	1550	1575	1425	1300	760	690	640
P7	1550	1550	1500	1225	1325	1350	1225	1100	990	710	650	600
P8	1475	1475	1425	1350	1400	1375	1150	1025	940	670	610	570
P11	1500	1500	1475	1375	1450	1425	1200	1075	960	690	630	590

Universal insert: CCMT32.51-MF2

Tool life = 15 min

a_p = 0.040 inch

rep = 0.016 inch

κ_r = 95°

SMG	TP1030			TP1020		
	f (in/rev)			f (in/rev)		
	0.004	0.008	0.012	0.004	0.008	0.012
P1	1825	1450	1175	1150	760	550
P2	1775	1400	1150	1125	740	540
P3	1525	1200	990	960	640	465
P4	1350	1075	870	840	560	410
P5	1275	1025	830	810	530	390
P6	1425	1150	930	900	600	440
P7	1350	1075	880	850	570	415
P8	1275	1025	830	810	530	390
P11	1325	1050	860	830	550	400

Universal insert: CNMG432-M3

Tool life = 15 min

$a_p = 0.100$ inch

rep = 0.031 inch

$\kappa_r = 95^\circ$

SMG	TP0501			TP1501			TP2501			TP3500			TP200		
	f (in/rev)			f (in/rev)			f (in/rev)			f (in/rev)			f (in/rev)		
	0.008	0.012	0.016	0.008	0.012	0.016	0.008	0.012	0.016	0.008	0.012	0.016	0.008	0.012	0.016
P1	2550	2250	1975	2275	1925	1650	1925	1675	1475	1650	1325	1100	1100	940	830
P2	2475	2200	1925	2200	1875	1625	1825	1675	1500	1600	1275	1075	1075	910	810
P3	2050	1925	1675	1650	1475	1300	1875	1725	1525	1125	890	720	920	790	700
P4	1875	1675	1475	1675	1400	1225	1425	1225	1075	1225	970	810	810	690	620
P5	1725	1600	1400	1375	1250	1100	1325	1225	1075	940	740	610	770	660	590
P6	2025	1775	1575	1800	1525	1325	1525	1325	1150	1300	1050	860	870	740	660
P7	1825	1700	1500	1450	1325	1150	1275	1250	1125	1000	790	650	820	700	620
P8	1725	1600	1400	1375	1250	1100	1325	1225	1075	940	740	610	770	660	590
P11	1775	1650	1450	1425	1275	1125	1375	1250	1100	970	770	630	800	680	610

Universal insert: CNMG644-MR7

Tool life = 15 min

$a_p = 0.240$ inch

rep = 0.062 inch

$\kappa_r = 95^\circ$

SMG	TP0501			TP1501			TP2501			TP3500			TP40		
	f (in/rev)			f (in/rev)			f (in/rev)			f (in/rev)			f (in/rev)		
	0.016	0.022	0.028	0.016	0.022	0.028	0.016	0.022	0.028	0.016	0.022	0.028	0.016	0.022	0.028
P1	1900	1550	1300	1600	1300	1100	1425	1175	1025	1025	790	630	760	610	510
P2	1850	1500	1250	1550	1275	1075	1425	1150	910	1000	770	610	740	590	495
P3	1600	1225	930	1250	1000	820	1450	1150	920	680	520	410	640	510	425
P4	1400	1150	950	1175	970	820	1050	870	750	760	580	465	560	450	375
P5	1350	1025	780	1050	840	690	1025	800	630	570	435	345	530	430	360
P6	1500	1225	1025	1250	1025	880	1125	940	810	820	620	495	600	480	400
P7	1425	1075	830	1100	890	730	1100	900	730	610	460	365	570	455	380
P8	1350	1025	780	1050	840	690	1025	800	630	570	435	345	530	430	360
P11	1375	1050	810	1075	860	710	1050	820	650	590	445	355	550	440	370

Universal insert: CNMG432-MF2

Tool life = 15 min

$a_p = 0.060$ inch

rep = 0.031 inch

$\kappa_r = 95^\circ$

SMG	TH1000			TH1500		
	f (in/rev)			f (in/rev)		
	0.004	0.010	0.016	0.004	0.010	0.016
H3	300	225	175	410	270	195
H5	560	415	325	760	500	365
H7	300	225	175	410	270	195
H8	560	415	325	760	500	365
H11	710	530	415	970	630	460
H12	1075	800	630	—	—	—
H21	560	415	325	—	—	—

Universal insert: CCMT32.52-MF2

Tool life = 10 min

$a_p = 0.40$ inch

rep = 0.031 inch

$\kappa_r = 95^\circ$

SMG	TM4000			CP500			TP3500		
	f (in/rev)			f (in/rev)			f (in/rev)		
	0.004	0.008	0.012	0.004	0.008	0.012	0.004	0.008	0.012
M1	1275	1100	950	1400	1075	820	1350	1200	980
M2	1025	880	760	1150	880	660	1100	970	800
M3	780	670	580	870	670	500	830	740	610
M4	590	500	435	650	500	380	620	560	455
M5	490	420	365	540	420	315	520	465	380

Universal insert: CNMG432-MF4 Tool life = 10 min $a_p = 0.080$ inch rep = 0.031 inch $\kappa_r = 95^\circ$

SMG	TM2000			TM4000			CP500			TP2501		
	f (in/rev)			f (in/rev)			f (in/rev)			f (in/rev)		
	0.008	0.012	0.016	0.008	0.012	0.016	0.008	0.012	0.016	0.008	0.012	0.016
M1	1100	970	880	1050	890	780	980	690	510	1650	1275	990
M2	890	780	710	850	720	630	790	560	410	1325	1025	800
M3	680	600	540	650	550	475	600	425	315	1025	790	610
M4	510	450	405	485	410	360	455	320	235	760	590	460
M5	425	375	335	405	345	300	380	265	195	630	495	380

Universal insert: CCMT32.52-M5 Tool life = 15 min $a_p = 0.040$ inch rep = 0.031 inch $\kappa_r = 95^\circ$

SMG	TK1001			TK2001			TP0501		
	f (in/rev)			f (in/rev)			f (in/rev)		
	0.008	0.012	0.016	0.008	0.012	0.016	0.008	0.012	0.016
K1	1975	1825	1700	1825	1650	1525	1300	1175	1075
K2	1525	1425	1350	1525	1400	1325	1125	1000	930
K3	1275	1200	1150	1275	1200	1125	960	850	780
K4	1225	1150	1100	1225	1125	1075	920	820	750
K5	730	680	650	730	680	640	550	485	445
K6	1225	1125	1050	1125	1000	930	810	720	660
K7	930	870	830	930	870	820	700	620	570

Universal insert: CNMG433-MR7 Tool life = 15 min $a_p = 0.120$ inch rep = 0.047 inch $\kappa_r = 95^\circ$

SMG	TK1001			TK2001			TP0501		
	f (in/rev)			f (in/rev)			f (in/rev)		
	0.008	0.014	0.020	0.008	0.014	0.020	0.008	0.014	0.020
K1	1825	1575	1450	1650	1375	1225	1175	970	850
K2	1400	1275	1175	1400	1250	1150	1025	840	740
K3	1200	1075	1000	1175	1050	970	860	710	620
K4	1125	1025	950	1125	1000	930	820	680	600
K5	680	610	570	670	600	550	490	405	355
K6	1125	980	890	1025	860	750	730	600	520
K7	870	780	730	860	770	710	630	520	455

Universal insert: CCGT21.51F-AL Tool life = 15 min $a_p = 0.040$ inch rep = 0.016 inch $\kappa_r = 95^\circ$

SMG	KX		
	f (in/rev)		
	0.004	0.006	0.008
N1	2000	1775	1600
N2	1600	1425	1300
N3	1075	950	870
N11	1225	1100	990

Universal insert: CCMT32.51-F1 Tool life = 10 min $a_p = 0.040$ inch rep = 0.016 inch $\kappa_r = 95^\circ$

SMG	TS2000			CP200			CP500		
	f (in/rev)			f (in/rev)			f (in/rev)		
	0.003	0.006	0.008	0.003	0.006	0.008	0.003	0.006	0.008
S1	300	220	190	160	130	120	140	115	105
S2	240	180	150	130	105	95	120	100	90
S3	210	155	130	110	90	85	105	85	75
S11	435	320	270	230	190	170	—	—	—
S12	335	245	210	180	145	130	—	—	—
S13	260	190	160	140	110	100	—	—	—

Universal insert: CNMG432-MF1

Tool life = 10 min

$a_p = 0.060$ inch

rep = 0.031 inch

$\kappa_r = 95^\circ$

SMG	TS2000			CP200			890			CP500		
	f (in/rev)			f (in/rev)			f (in/rev)			f (in/rev)		
	0.004	0.008	0.012	0.004	0.008	0.012	0.004	0.008	0.012	0.004	0.008	0.012
S1	265	185	140	145	115	100	130	105	90	125	100	85
S2	215	150	115	115	95	80	105	85	75	110	85	75
S3	185	130	100	100	80	70	90	75	65	95	75	65
S11	380	265	205	210	165	145	190	155	135	—	—	—
S12	295	205	155	160	130	110	145	120	100	—	—	—
S13	230	160	120	125	100	85	115	90	80	—	—	—

Universal insert: CNMG432-MR4

Tool life = 10 min

$a_p = 0.120$ inch

rep = 0.031 inch

$\kappa_r = 95^\circ$

SMG	TS2500			883		
	f (in/rev)			f (in/rev)		
	0.008	0.012	0.018	0.008	0.012	0.018
S1	150	110	80	80	70	60
S2	120	90	65	65	55	47
S3	105	75	55	55	48	40
S11	215	160	115	115	100	85
S12	165	120	85	90	75	65
S13	125	95	70	70	60	50

Note: In order to increase the accuracy towards the actual cutting conditions and requirements of the applications the recommendation is to use My Pages – Suggest on www.secotools.com

SMG version 2 – Introduction

Seco Material Groups version 2 (SMG v2) is the foundation for a new and accurate way of organizing work materials and choosing the correct speed, feed rate and depth of cut for any work material and any Seco tool. In addition to using a greater number of work material groups compared to our previous system, SMG v2 also incorporates a reference material or standard for each group. The machinability of all other materials within that group can be compared to the standard, allowing for adjustments to the cutting data, accounting for the unique characteristics of each material.

The use of SMG v2 is illustrated below.

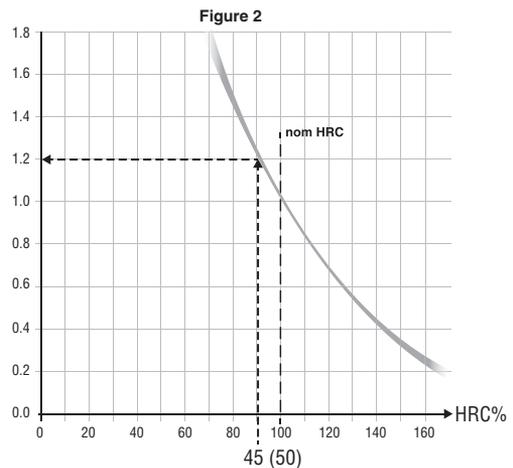
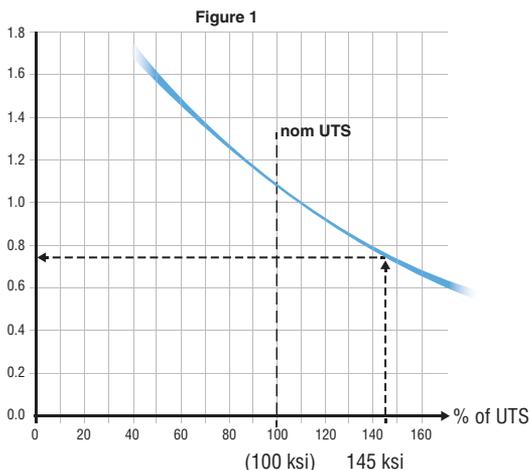
As shown below in Table I, the reference material for work material group P4 is 1045, for P5 it is 4140 steel and for H5 it is 4140 hardened to 50 HRC. 4140 steel is available in a wide variety of hardness and tensile strengths. As to be expected the machinability will vary with these properties.

SMG	Description	Properties	Reference	SMG	Description	Properties	Reference
P4	Low alloy general structural steels, 0.25% < C < 0.67%wt	75 < UTS < 175	1045 UTS = 95 ksi	H5	Quenched & Tempered steels	38 < HRC < 56	4140 50 HRC
	Low alloy Quench & Temper steels						
P5	Structural steels, 0.25% < C < 0.67%wt Quench & Temper steels	80 < UTS < 175	4140 UTS = 100 ksi				

Table II below gives some examples of 4140 in different conditions.

SMG	EN	W.-Nr	AFNOR	BS	UNI	JIS	AISI / ASTM	GOST	Condition	UTS (ksi)	HRC _{nom}
P5	42 CrMo 4	1.1201	42 CD 4	708 M 40	42 CrMo 4	SCM 440 (H)	4142, 4140	38HM	Annealed	100	
	42 CrMo 4	1.1201	42 CD 4	708 M 40	42 CrMo 4	SCM 440 (H)	4142, 4140	38HM	Quenched & Tempered	145	
H5	42 CrMo 4	1.1201	42 CD 4	708 M 40	42 CrMo 4	SCM 440 (H)	4142, 4140	38HM	Quenched & Tempered		45
	42 CrMo 4	1.1201	42 CD 4	708 M 40	42 CrMo 4	SCM 440 (H)	4142, 4140	38HM	Quenched & Tempered		50

The graphs indicate how the speed recommendation for a specific material can be adjusted to account for the different properties of the steel. As an example, consider 4140 with a tensile strength (UTS) of 145 ksi. The standard material for SMG P5 is 4140 steel with a tensile strength of 100 ksi. Since the material of interest is 45% stronger, the cutting speed will have to be reduced. Following the black arrows in Figure 1, it can be seen that a speed 75% of that recommended for 4140 at 100 ksi should be used. So if a cutting speed of 900 sf/min is suggested for a tool of interest when machining 4140 at 100 ksi, a speed of 675 sf/min (900 X 0.75) should be used if the 4140 has a tensile strength of 145 ksi.



If the 4140 is quenched and tempered to a hardness of 45 HRC, an accurate cutting speed can be obtained by using Figure 2. The standard material for SMG H5 is 4140 heat treated to a hardness of 50 HRC. Logically, a softer material, in this case 45 HRC, can be machined at a higher speed. Since the hardness, 45 HRC, is 90% that of the standard material, the graph shows a speed 120% that of the standard could be used. If a speed of 200 sfpm is recommended when machining 4140 at 50 HRC, a speed of 240 sf/min (200 X 1.2) could be used if the 4140 is only 45 HRC.

Note that when using PCBN tools use cutting data recommendations beginning on page 71.

For further workpiece material details please see page 770 and suggested cutting data on applicable pages.

For more convenient cutting data handling we recommend applicable tools in My Pages – Suggest on www.secotools.com

Extract from Workpiece materials classification beginning on page 770.

UTS = Ultimate tensile strength

Steels, ferritic and martensitic stainless steels

SMG	Description	Properties	Reference
P1	Free-cutting steels	50 < UTS < 125	1213 UTS = 55 ksi
P2	Low alloy ferritic steels, C < 0.25%wt Low alloy weldable general structural steels	45 < UTS < 85	A284 GRC UTS = 60 ksi
P3	Ferritic & ferritic/pearlitic steels, C < 0.25%wt Weldable general structural steels Case hardening steels	60 < UTS < 90	5115 UTS = 80 ksi
P4	Low alloy general structural steels, 0.25% < C < 0.67%wt Low alloy Quench & Temper steels	75 < UTS < 175	1045 UTS = 95 ksi
P5	Structural steels, 0.25% < C < 0.67%wt Quench & Temper steels	80 < UTS < 175	4140 UTS = 100ksi
P6	Low alloy through hardening steels, C > 0.67%wt Low alloy spring and bearing steels	75 < UTS < 175	1095 UTS = 85 ksi
P7	Through hardening steels, C > 0.67%wt Spring and bearing steels	85 < UTS < 175	52100 UTS = 95 ksi
P8	Tool steels High Speed Steels (HSS)	85 < UTS < 175	H13 UTS = 100 ksi
P11	Ferritic & martensitic stainless steels	60 < UTS < 175	420 UTS = 95 ksi

Hard materials

SMG	Description	Properties	Reference
H3	Case hardened steels	58 < HRC < 62	5115 60 HRC
H5	Quenched & Tempered steels	38 < HRC < 56	4140 50 HRC
H7	Quenched & Tempered steels Bearing steels	56 < HRC < 64	52100 60 HRC
H8	Tool steels High Speed Steels	38 < HRC < 64	H13 50 HRC
H11	Martensitic stainless steels	38 < HRC < 50	420 45 HRC
H12	Precipitation hardened stainless steels	33 < HRC < 50	17-4PH 35 HRC
H21	Manganese steels	23 < HRC < 64	Hadfield, High manganese steel 50 HRC
H31	White cast irons	50 < HRC < 64	A532 ID, White cast iron 55 HRC

Chipbreakers

Chipbreaker application areas

The chipbreakers are designed to give the insert proper edge geometry for different application areas. Chipbreaker designations describe the application area as follows:

Letters: F = Finishing
M = Medium turning
R = Roughing

Digits: 1 = Low edge strength
9 = High edge strength

The colors in the chart indicates the ISO material group the chipbreakers are adaptable for.

ISO material group use



Stainless steel
(ISO M)



Steel
(ISO P)
Stainless steel
(ISO M)

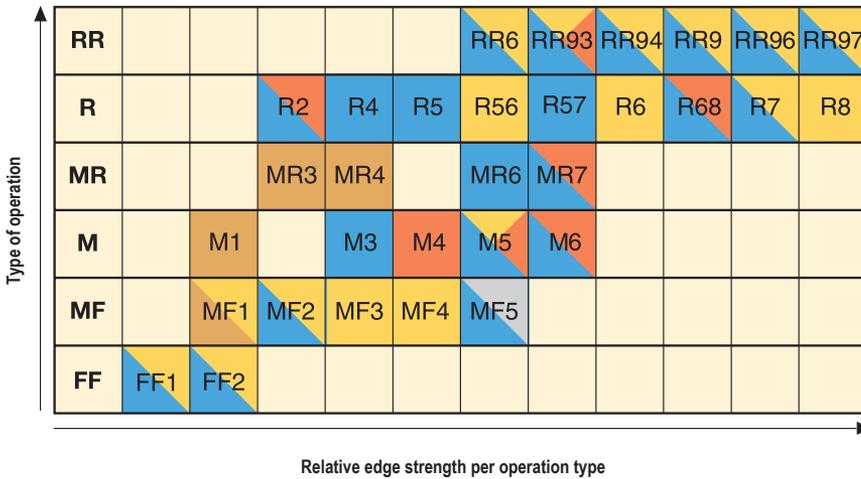


Steel
(ISO P)
Cast iron
(ISO K)

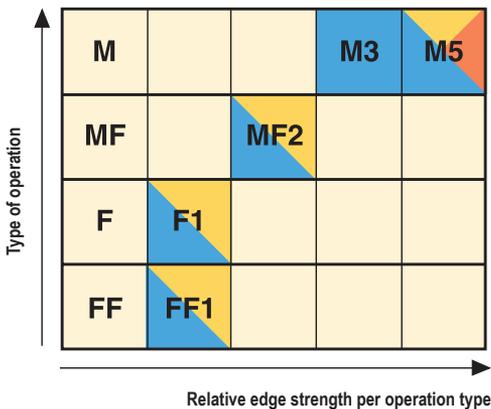


Steel
(ISO P)
Stainless steel
(ISO M)
Cast iron
(ISO K)

Chipbreaker chart for negative basic shape inserts



Chipbreaker chart for positive basic shape inserts

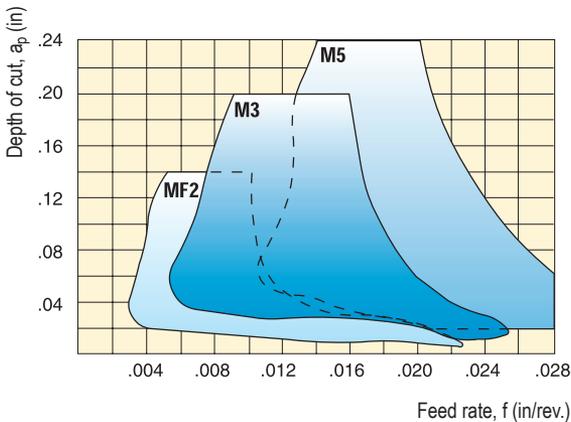


<p>-MF2</p>	<p>WNMG0804..</p>	<p>For finishing</p>
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<p>-M3</p>	<p>WNMG43.</p>	<p>For general machining</p>
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<p>-M5</p>	<p>WNMG43.</p>	<p>For roughing</p>
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Complete program is shown on the following pages.



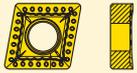
Chipbreaker program, negative basic shape inserts

	<p>-FF1</p>	<p>Chipbreaker for negative inserts. Used to achieve a very fine finish when turning slender steel and stainless steel components. Machining range: $f = 0.003\text{--}0.012$ in/rev, $a_p = 0.008\text{--}0.120$ inch.</p>
	<p>-FF2</p>	<p>Chipbreaker for negative inserts. Intended for fine-finishing and semi-finishing steels and stainless steels. The positive, tight chip groove offers light cutting action combined with superior chip forming. Machining range: $f = 0.003\text{--}0.012$ in/rev, $a_p = 0.008\text{--}0.060$ inch.</p>
	<p>-MF1</p>	<p>Chipbreaker intended for stainless steel, superalloys and titanium alloys. Type ..GG insert has a sharp, precision ground edge. Type ..MG insert has a lightly honed cutting edge for increased strength. MF1 is intended for use in semi-finishing and finishing. Machining range: $f = 0.003\text{--}0.012$ inch/rev, $a_p = 0.008\text{--}0.140$ inch.</p>
	<p>-MF2</p>	<p>First choice for finishing with negative inserts. Suitable for chip control at depths of cut down to 0.010 inch, provided that the feed rate is in excess of 0.010 in/rev. Good capacity for medium roughing. Machining range: $f = 0.004\text{--}0.016$ in/rev, $a_p = 0.008\text{--}0.120$ inch.</p>
	<p>-MF3</p>	<p>Chipbreaker with positive cutting rake angle intended for moderately difficult stainless steel. The MF3 is also intended for light roughing in relatively soft, "tacky" steel and difficult to machine stainless steel if the depth of cut is limited. MF3 can also be used for finishing cast iron. Machining range: $f = 0.008\text{--}0.016$ in/rev, $a_p = 0.040\text{--}0.160$ inch.</p>
	<p>-MF4</p>	<p>Chipbreaker intended for medium to medium-finishing stainless steel, very open and highly positive geometry. Machining range: $f = 0.006\text{--}0.020$ in/rev, $a_p = 0.020\text{--}0.160$ inch.</p>
	<p>-MF5</p>	<p>Chipbreaker intended for medium finishing steel and stainless steel at high feeds. Very easy cutting and open geometry. Machining range: $f = 0.008\text{--}0.032$ in/rev, $a_p = 0.008\text{--}0.100$ inch.</p>
	<p>-M1</p>	<p>Chipbreaker intended for superalloys and titanium alloys. It has a positive cutting rake angle which is slightly honed to increase the edge strength. Also available with a perfectly sharp edge (type ..GG insert). The M1 is intended for light roughing and for semi-finishing. Machining range: $f = 0.008\text{--}0.016$ in/rev, $a_p = 0.60\text{--}0.200$ inch.</p>

Chipbreaker program, negative basic shape inserts

	<p>-M3</p>	<p>First choice for medium-rough machining. The most versatile Seco chipbreaker. In most cases, it is the only chipbreaker needed. Offers the best useful life and best chipbreaking in a wide range of cutting data and workpiece materials. Suitable for precision forged and cast workpieces (NNS or Near Net Shape workpieces) regarding both chip control and edge strength. Machining range: $f = 0.006-0.020$ in/rev, $a_p = 0.020-0.200$ inch.</p>
	<p>-M4</p>	<p>Chipbreaker intended for cast iron. Positive rake angle with a narrow T-land gives low cutting forces. First choice for cast iron machining at high speeds. Machining range: $f = 0.004-0.028$ in/rev, $a_p = 0.008-0.028$ inch.</p>
	<p>-M5</p>	<p>The choice for roughing by means of double-sided inserts. Intended for demanding operations at high feed rates in steel, stainless steel and cast iron. Combines high edge strength with comparatively low cutting forces. Machining range: $f = 0.012-0.028$ in/rev, $a_p = 0.060-0.280$ inch.</p>
	<p>-M6</p>	<p>Strong double-sided chipbreaker, intended for semi-roughing and roughing of steel. A well-balanced design combining excellent chip control and relatively low cutting forces which provides reliable cutting action in both continuous and interrupted cuts. Also well suited for machining ferritic and martensitic stainless steels. Machining range: $f = 0.008-0.031$ in/rev, $a_p = 0.040-0.275$ inch</p>
	<p>-MR3</p>	<p>Chipbreaker with a positive cutting rake angle that reduces cutting forces and gives a very high edge strength. Intended for medium-roughing and roughing superalloys, titanium alloys and hardened steel. Machining range: $f = 0.008-0.024$ in/rev, $a_p = 0.060-0.280$ inch.</p>
	<p>-MR4</p>	<p>The MR4 has a negative T-land, which gives extremely high edge strength. The chipbreaker is intended for more difficult machining applications on superalloys and titanium alloys, such as intermittent cuts and machining parts with raw surface. Machining range: $f = 0.006-0.020$ in/rev, $a_p = 0.060-0.280$ inch.</p>
	<p>-MR6</p>	<p>Chipbreaker for medium and medium roughing steel. Very easy cutting and open geometry. Double and single-sided. Machining range: $f = 0.010-0.032$ in/rev, $a_p = 0.035-0.200$ inch.</p>
	<p>-MR7</p>	<p>The strongest chipbreaker for double-sided inserts. The MR7 is suitable for high feed rates and depths of cut that normally require a single-sided insert. The chipbreaker has a wide negative T land, which gives high edge strength. Machining range: $f = 0.014-0.035$ in/rev, $a_p = 0.060-0.280$ inch.</p>

Chipbreaker program, negative basic shape inserts

	<p>-R4</p>	<p>Chipbreaker for single-sided inserts. It has a positive cutting edge which gives low cutting forces. Machining range: $f = 0.008\text{--}0.024$ in/rev, $a_p = 0.080\text{--}0.400$ inch.</p>
	<p>-R5</p>	<p>Chipbreaker for single-sided inserts. Recommended for medium-roughing steel. Machining range: $f = 0.012\text{--}0.040$ in/rev, $a_p = 0.080\text{--}0.475$ inch.</p>
	<p>-56 -R56</p>	<p>Chipbreaker with easy-cutting geometry for single-sided inserts. Intended for stainless steel machining applications. Machining range: $f = 0.016\text{--}0.032$ in/rev, $a_p = 0.080\text{--}0.470$ inch.</p>
	<p>-57 -R57</p>	<p>Chipbreaker for single-sided roughing inserts. Recommended for roughing operations on steel at high feed rates and high depth of cut. Machining range: $f = 0.018\text{--}0.042$ in/rev, $a_p = 0.080\text{--}0.470$ inch.</p>
	<p>-R6</p>	<p>Chipbreaker for single-sided inserts. Recommended for medium-roughing stainless steel. Machining range: $f = 0.010\text{--}0.028$ in/rev, $a_p = 0.080\text{--}0.400$ inch.</p>
	<p>-R68</p>	<p>Chipbreaker for single sided insert. Recommended for heavy-roughing steel. Machining range: $f = 0.016\text{--}0.055$ in/rev, $a_p = 0.160\text{--}0.550$ inch.</p>
	<p>-R7</p>	<p>A strong but easy-cutting chipbreaker for single sided inserts. The R7 is well suited for intermittent machining of both stainless and ordinary carbon steel. Machining range: $f = 0.016\text{--}0.063$ in/rev, $a_p = 0.120\text{--}0.700$ inch.</p>
	<p>-R8</p>	<p>A very strong chipbreaker for single-sided inserts. The R8 is intended for high feed rates when machining castings and forgings of austenitic stainless steel. Machining range: $f = 0.014\text{--}0.032$ in/rev, $a_p = 0.080\text{--}0.470$ inch.</p>

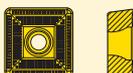
Chipbreaker program, negative basic shape inserts

	<p>-RR6</p>	<p>A very easy-cutting chipbreaker for single-sided inserts. Recommended for roughing stainless steel and steel. Machining range: $f = 0.012\text{--}0.040$ in/rev, $a_p = 0.080\text{--}0.470$ inch.</p>
	<p>-RR9</p>	<p>Extremely strong chipbreaker for single-sided negative inserts, for use at high feed rates. Suitable for difficult castings and forgings and for austenitic stainless steel. Machining range: $f = 0.020\text{--}0.047$ in/rev, $a_p = 0.100\text{--}0.590$ inch.</p>
	<p>-RR93</p>	<p>Heavy roughing chipbreaker for negative single-sided inserts for very high parameters for all materials. Machining range: $f = 0.050\text{--}0.100$ in/rev, $a_p = 0.400\text{--}1.180$ inch.</p>
	<p>-RR96</p>	<p>Heavy roughing chipbreaker for negative single-sided inserts for high parameters and chip control for all materials. Machining range for LNMX50: $f = 0.060\text{--}0.100$ in/rev, $a_p = 0.470\text{--}1.415$ inch.</p>
	<p>-RR97</p>	<p>Heavy roughing chipbreaker for negative single-sided inserts for soft materials. Machining range for LNMX50: $f = 0.060\text{--}0.100$ in/rev, $a_p = 0.390\text{--}1.415$ inch.</p>
	<p>-UX</p>	<p>Chipbreaker for negative inserts. Positive cutting rake with sharp edge. Low cutting force. Suitable for slim components. Machining range: $f = 0.008\text{--}0.016$ in/rev, $a_p = 0.040\text{--}0.240$ inch.</p>

Chipbreaker program, positive basic shape inserts

	<p>-AL</p>	<p>Chipbreaker for positive inserts. Intended for machining aluminum alloys. The highly polished rake face and the very large rake angle ensure extremely light cutting action. Machining range: $f = 0.006\text{--}0.024$ in/rev, $a_p = 0.020\text{--}0.160$ inch.</p>
	<p>-FF1</p>	<p>Chipbreaker for positive inserts. Used to achieve a very fine finish when turning slender steel and stainless steel components. Machining range: $f = 0.002\text{--}0.012$ in/rev, $a_p = 0.008\text{--}0.080$ inch.</p>
	<p>-F1</p>	<p>Chipbreaker for positive inserts. Positive geometry with sharp cutting edge gives easy-cutting properties. Suitable for high feed rates at fine depths of cut in precision forgings and castings. Machining range: $f = 0.004\text{--}0.020$ in/rev, $a_p = 0.008\text{--}0.120$ in. Machining in bar automatics, for instance: $f = 0.003\text{--}0.010$ in/rev, $a_p = 0.040\text{--}0.120$ inch.</p>
	<p>-F2</p>	<p>A reliable semi-finishing to medium roughing chipbreaker ensuring safe chip flow. Suitable for medium cuts in steel and stainless steels application including boring. Machining range: $f = 0.005\text{--}0.024$ in/rev, $a_p = 0.008\text{--}0.160$ inch.</p>
	<p>-MF2</p>	<p>A versatile finishing to semi-finishing chipbreaker with light-cutting action for positive inserts. Suitable for a wide range of cuts in steel and stainless steel finishing applications including boring. Machining range: $f = 0.003\text{--}0.020$ in/rev, $a_p = 0.006\text{--}0.120$ inch.</p>
	<p>-M3</p>	<p>A reliable semi-finishing to medium roughing chipbreaker ensuring safe chip flow. Suitable for medium cuts in steel and stainless steels application including boring. Machining range: $f = 0.005\text{--}0.024$ in/rev, $a_p = 0.008\text{--}0.160$ inch.</p>
	<p>-M5</p>	<p>A highly reliable chipbreaker for positive inserts. Intended for medium-rough and rough machining of steels, stainless steels and cast iron. Combines high edge strength with comparatively low cutting forces. Safe action in interruptions and rough skin on parts also including boring. Machining range: $f = 0.006\text{--}0.024$ in/rev, $a_p = 0.040\text{--}0.200$ inch</p>
	<p>-R2</p>	<p>Chipbreaker for large inserts intended for finishing of railway wheels. Machining range: $f = 0.012\text{--}0.032$ in/rev, $a_p = 0.040\text{--}0.200$ inch.</p>

Chipbreaker program, positive basic shape inserts

	<p>-RR94</p>	<p>Chipbreaker for large inserts intended for roughing of railway wheels. Machining range: $f = 0.024\text{--}0.060$ in/rev, $a_p = 0.120\text{--}0.400$ inch.</p>
	<p>-RR96</p>	<p>Chipbreaker for large inserts intended for machining of steel with high depth of cut and large feed rates. Machining range: $f = 0.024\text{--}0.085$ in/rev, $a_p = 0.120\text{--}0.945$ inch.</p>
	<p>-RR97</p>	<p>Chipbreaker for large inserts intended for machining of steel with high depth of cut and large feed rates. The –RR97 geometry is stronger than the –RR96. Machining range: $f = 0.032\text{--}0.085$ in/rev, $a_p = 0.120\text{--}0.945$ inch.</p>
	<p>-UX</p>	<p>Chipbreaker for positive inserts. Smooth and easy chip flow on finishing and medium roughing in steel and stainless steel. Well suited for slim components. Machining range: $f = 0.002\text{--}0.016$ in/rev, $a_p = 0.020\text{--}0.160$ inch.</p>

Insert grades

The Seco range consists of coated (CVD and PVD), uncoated, and cermet grades.

The designation of the grades indicates a ranking regarding their wear resistance and toughness behavior.

All the grades are also classified according to ISO (P, M, K, N, S, H).

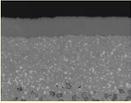
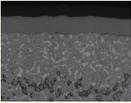
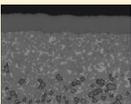
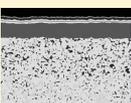
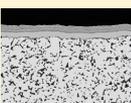
The black areas in the chart indicate an insert's main ISO application groups and the white areas indicate other supplementary application groups.



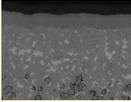
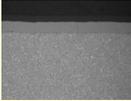
Indicative ISO classification of the grades

Grades	Steel					Stainless steel				Cast iron				Non-ferrous metals				Superalloys and titanium				Hard materials						
	P					M				K				N				S				H						
	P01	P10	P20	P30	P40	P50	M01	M10	M20	M30	M40	K01	K10	K20	K30	K40	N01	N10	N20	N30	S01	S10	S20	S30	H01	H10	H20	H30
CVD	TP0501	Black	Black	Black	Black	Black	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White
	TP1501	Black	Black	Black	Black	Black	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White
	TP2501	Black	Black	Black	Black	Black	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White
	TP3500	Black	Black	Black	Black	Black	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White
	TP200	Black	Black	Black	Black	Black	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White
	TP40	Black	Black	Black	Black	Black	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White
	TM2000	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
	TM4000	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
	TK1001	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
	TK2001	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
PVD	TH1500	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
	TS2000	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
	TS2500	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
	TH1000	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
	CP200	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
Cermet	CP500	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
	CP600	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
	TP1030	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
Uncoated	TP1020	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
	890	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
	HX	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
	KX	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
	883	White	White	White	White	White	Black	Black	Black	Black	Black	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White

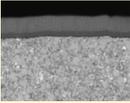
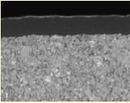
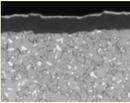
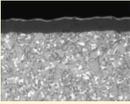
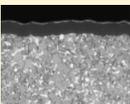
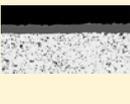
CVD coated grades

<p>TP0501</p> 		<p>Duratomic® technology coated grade featuring Seco Edge Intelligence. A grade with an extremely high degree of heat and wear resistance for many steel applications such as in alloy steels and especially capable under dry conditions, but also applicable for demanding applications in cast irons.</p> <p>Ti(C,N) + Al₂O₃ + Cr</p>
<p>TP1501</p> 		<p>Duratomic® technology coated grade featuring Seco Edge Intelligence. Highly heat and wear resistant grade extremely well suited for productive general turning of steels and a useful backup in other material groups.</p> <p>Ti(C,N) + Al₂O₃ + Cr</p>
<p>TP2501</p> 		<p>Duratomic® technology coated grade featuring Seco Edge Intelligence. Designed with high wear resistance and edge strength applicable in a wide range of turning applications in steels and many stainless steels and cast irons.</p> <p>Ti(C,N) + Al₂O₃ + Cr</p>
<p>TP3500</p> 		<p>Duratomic® technology coated grade. Enhanced edge toughness, still with the characteristic high wear resistance intended for versatile performance in turning applications in steels and stainless steels especially including interrupted cuts.</p> <p>Ti(C,N) + Al₂O₃</p>
<p>TP200</p> 		<p>Universal grade for high versatile performance over a wide range of application in steels, stainless steels and cast irons.</p> <p>Ti(C,N) + Al₂O₃ + TiN</p>
<p>TP40</p> 		<p>Universal grade for a extremely secure performance in the most demanding application from steels, stainless steels to superalloys especially in castings and forgings.</p> <p>TiC/Ti(C,N) + TiN</p>
<p>TH1500</p> 		<p>Duratomic® technology coated grade. An extremely hard super micrograin grade intended for machining partly hardened steels and provides an alternative for cast iron finishing.</p> <p>Ti(C,N) + Al₂O₃</p>
<p>TM2000</p> 		<p>Duratomic® technology coated grade. Highly resistant and optimized grade for stainless steel machining with capability in softer steels.</p> <p>Ti(C,N) + Al₂O₃</p>

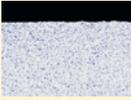
CVD coated grades

<p>TM4000</p> 		<p>Duratonic® technology coated grade. A highly capable stainless steel grade with combinations of high resistance and superior edge toughness making it versatile with high performance also in many steels.</p> <p>Ti(C,N) + Al₂O₃</p>
<p>TK1001</p> 		<p>Duratonic® technology coated grade. A extremely wear resistant optimized grade choice for machining of grey cast iron and easier ductile cast irons.</p> <p>Ti(C,N) + Al₂O₃</p>
<p>TK2001</p> 		<p>Duratonic® technology coated grade. A highly wear resistant grade for cast irons in general as well as in steels. The grade is particularly capable in machining of ductile (nodular) cast irons also in more demanding setups and interrupted cuts.</p> <p>Ti(C,N) + Al₂O₃</p>

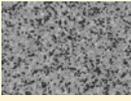
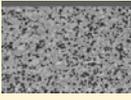
PVD coated grades

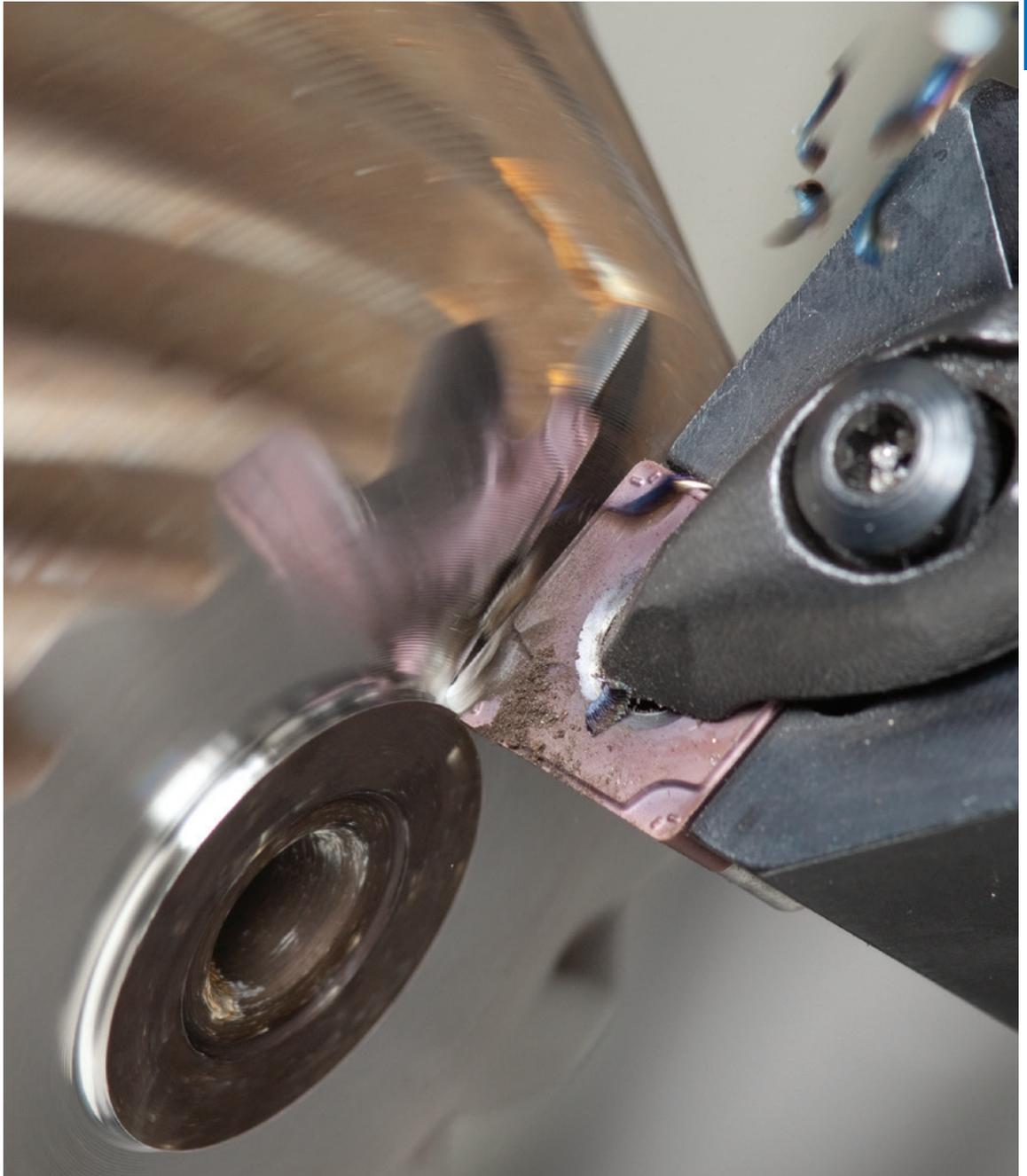
<p>TH1000</p> 		<p>Very hard supermicrograin grade intended for partly hardened steel components and generally workpiece materials such as superalloys. Due to remarkable edge toughness it also provides high performance in interrupted cuts and hard-surface removal.</p> <p>Ti-Al-Si-N nanolaminate coating</p>
<p>TS2000</p> 		<p>Hard micrograin wear resistant grade intended for finishing in superalloys and titanium and in many in stainless steels.</p> <p>(Ti,Al)N + TiN</p>
<p>TS2500</p> 		<p>Relatively hard micrograin grade for machining of superalloys and titanium in roughing applications. Due to its design, it's also applicable in a wide range of materials such as stainless steels.</p> <p>(Ti,Al)N + TiN</p>
<p>CP200</p> 		<p>Hard micrograin grade principally intended for finishing in superalloys and titanium. Also works well in stainless steels.</p> <p>(Ti, Al) N + TiN</p>
<p>CP500</p> 		<p>Tough micrograin grade intended for finishing to medium-roughing of stainless steels but with wide applicability. For example: in steels and aluminum alloys. Especially suitable in intermittent cuts.</p> <p>(Ti,Al)N + TiN</p>
<p>CP600</p> 		<p>Very tough micrograin grade intended for stainless steels and steels applications, but generally applicable when ever high edge toughness required e.g. more difficult interrupted cuts.</p> <p>(Ti,Al)N + TiN</p>

Uncoated

<p>HX</p> 		<p>Universal uncoated grade intended for machining cast iron and hardened steels. Useful also in non-ferrous materials.</p>
<p>KX</p> 		<p>Optimized micrograin grade intended for machining aluminum and other non-ferrous materials.</p>
<p>883</p> 		<p>Relatively hard and still tough uncoated micrograin grade for machining titanium in roughing applications. Also suitable for superalloys.</p>
<p>890</p> 		<p>High hardness uncoated micrograin grade maintaining good toughness. Intended for superalloys and titanium. Can also be applied in other materials.</p>

Cermet

<p>TP1020</p> 		<p>High wear resistance cermet grade for highest surface finish with predictability, first of all in steels and stainless steels.</p>
<p>TP1030</p> 		<p>Coated highly wear resistant cermet grade for high surface finish and productivity requirements. Mainly used in steels and stainless steels.</p> <p>Ti-Al-Si-N nanolaminate coating.</p>

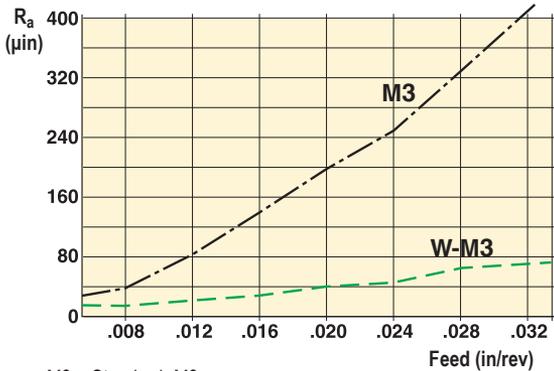


High Feed inserts – Introduction

The Seco High Feed inserts offer:

- Excellent surface finish at high feed rates.
- Superior surface finish at normal feed rates.

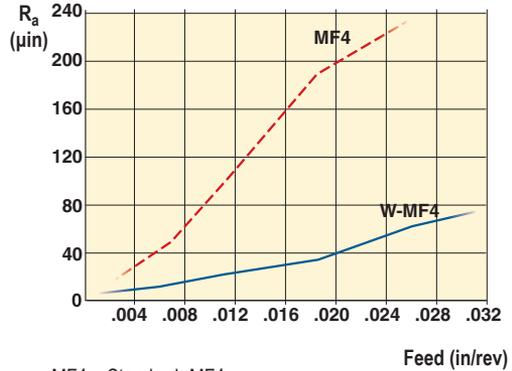
The use of Seco High Feed Wiper inserts often eliminates the need for finishing operations (including grinding).



M3 = Standard -M3
W-M3 = Wiper -M3

The diagram shows the superior surface finish in steel achieved with a Seco High Feed W-M3 wiper insert compared to a conventional insert.

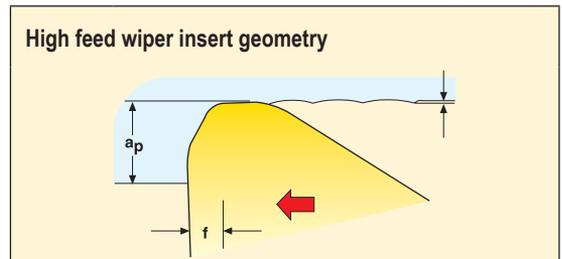
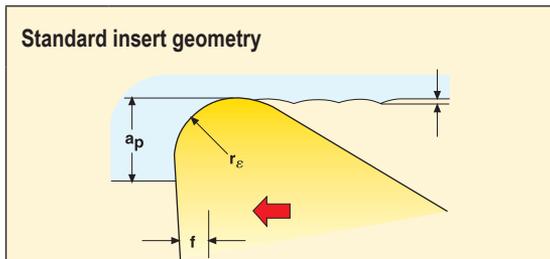
CNMG432W-M3, TP2500, $\kappa = 95^\circ$, $a_p = 0.040$ inch, cutting speed adjusted for feed, workpiece material: (steel) SMG 4.



MF4 = Standard -MF4
W-MF4 = Wiper -MF4

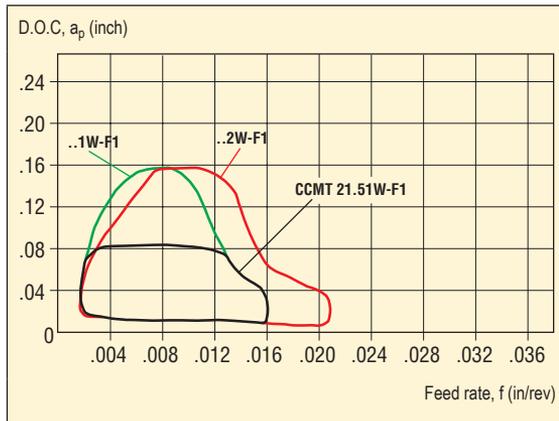
When applying a Seco High Feed W-MF4 wiper insert in stainless steel the diagram shows the superior surface finish achieved compared to a conventional insert.

CNMG432W-MF4, TM4000 $\kappa = 95^\circ$, $a_p = 0.040$ inch, cutting speed tool life adjusted for feed in SMG 9 (stainless steel).

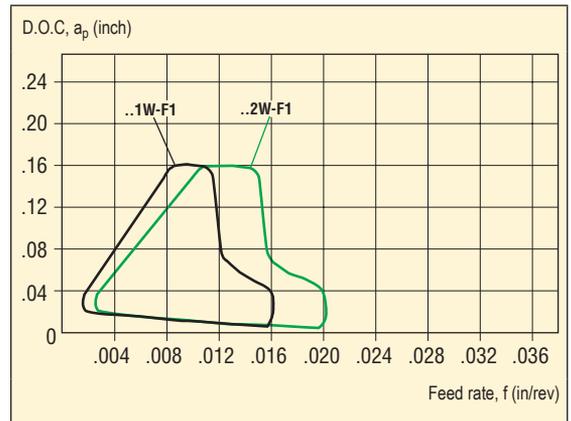


Chipbreaking range

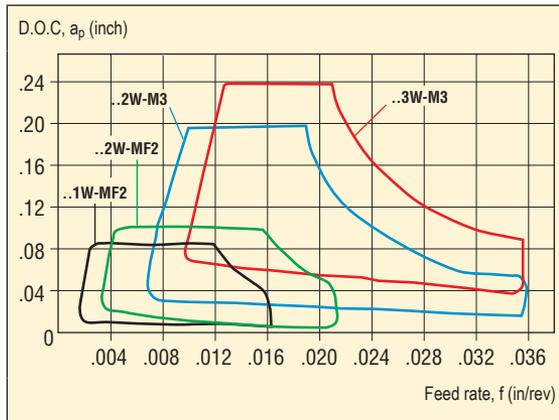
Positive inserts, C and W



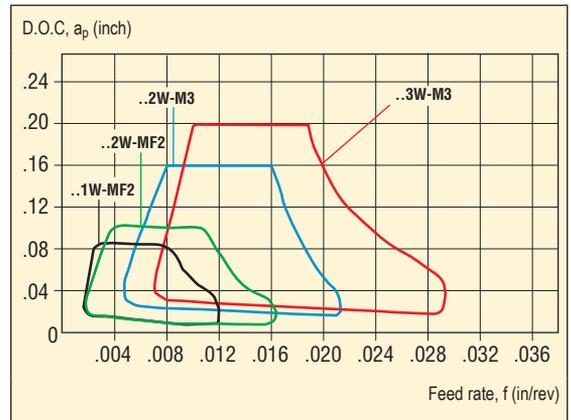
Positive inserts, D and T



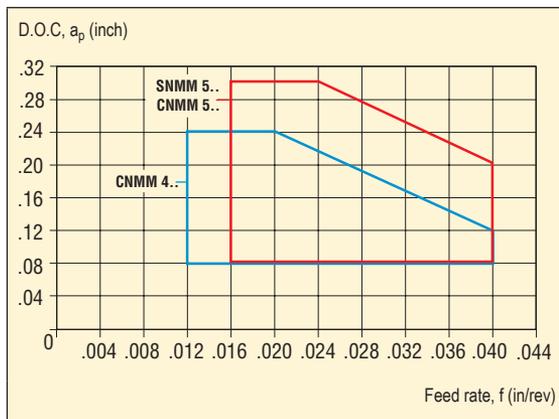
Negative inserts, C and W



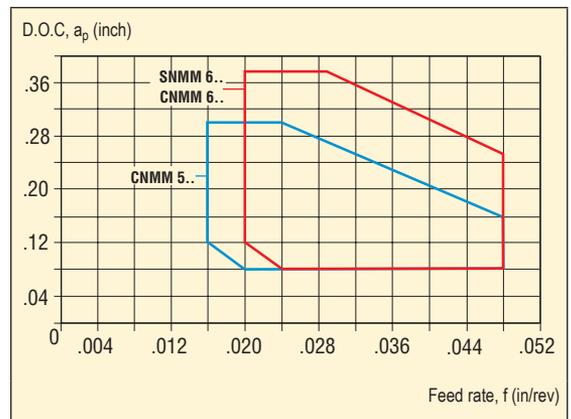
Negative inserts, D and T



Negative inserts, C and S Chipbreaker W-R4

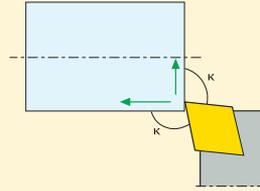


Negative inserts, C and S Chipbreaker W-R7

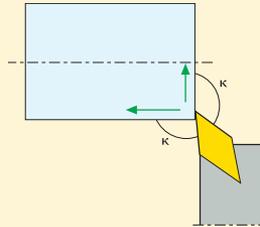


Operation guidelines

- The favorable surface finish results are lost if the cutting edge angle diverges from 95° (C-and W-style inserts)
- Max diversion allowed: $\pm 2^\circ$
- Back-turning is NOT recommended



- The favorable surface finish results are lost if the cutting edge angle diverges from 93° (D-and T-style inserts)
- Max diversion allowed: $\pm 2^\circ$
- Back-turning is NOT recommended



C-style High Feed inserts

On C-style High Feed inserts, except for PCBN inserts, the wiper geometry is also located on the 100° corner.

Chipbreaker W-R4 and W-R7

When using W-R4 or W-R7 chipbreaker use a toolholder with M-type clamping.

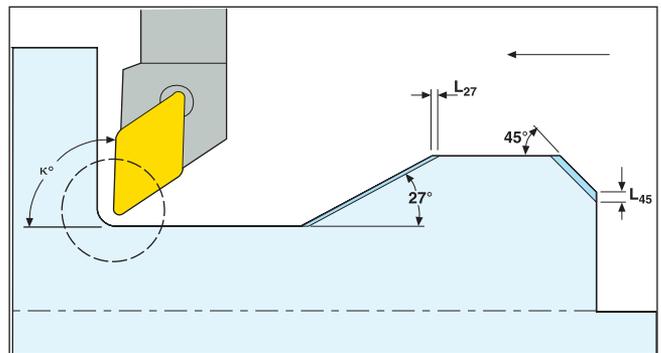
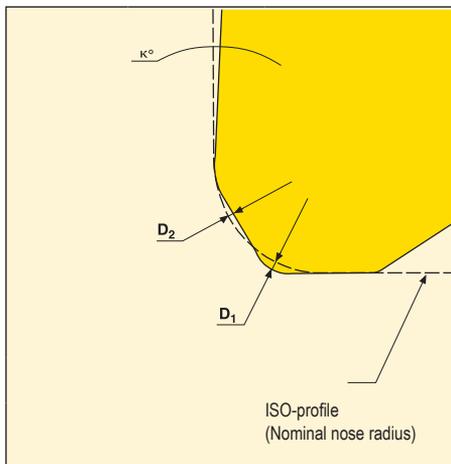
S-style High Feed inserts

S-style High Feed insert to be used in a toolholder with 75° setting angle. The favorable surface finish results are lost if the cutting edge angle diverges from 75° Max diversion allowed: $\pm 2^\circ$

Copying with D- and T-style Wiper inserts

Since D- and T-style High Feed inserts not are designed within ISO-tolerances, an adjustment in the tool offset must be made.

A deviation from the nominal nose radius shape will always occur (D_1 , D_2) when going towards a corner.



When copying with a D- or T-style High Feed insert, an adjustment must be made for dimensional deviations.

The High Feed geometry on a D-and T-style insert does not provide an exact corner radius.

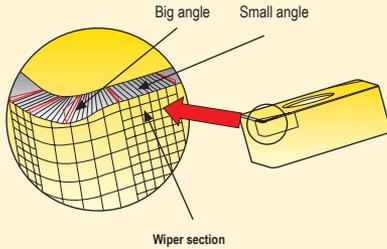
The Helix™ wiper technology

Our unique, patented Helix™ wiper concept is designed for optimization in finish machining. It has a wiper on both sides of the corner radii (as the standard) but the protection chamfer is twisted from negative to positive or from positive to negative depending on the application.

It is available in grades CBN010 and CBN060K. The following considerations apply when selecting the appropriate geometry:

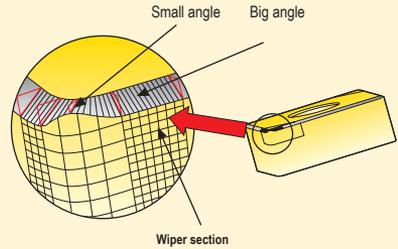
Positive Wiper, WZP

- Reducing vibrations in weak set-ups
- Lower radial cutting forces
- Used where standard wiper cannot be used



Negative Wiper, WZN

- Longer tool life
- Reducing vibrations in stable set-ups
- Increasing compressive stresses



Chipbreaker program, high feed wiper inserts

	W-F1	<p>A versatile chipbreaker for positive inserts. For finishing steel, stainless steel and cast iron, giving good surface finish. Suitable for high feed rates at small depths of cut. Indicative machining range: $f = 0.002-0.020$ in/rev, $a_p = 0.010-0.120$ inch.</p>
	W-F2	<p>Chipbreaker for high feed finishing and medium-roughing steel and cast iron. Ensures safe and well directed chip flow and good surface finish. Machining range: $f = 0.008-0.026$ in/rev, $a_p = 0.020-0.160$ inch.</p>
	W-FF2	<p>Chipbreaker for high feed finishing steel and stainless steel. Wide chip control range in finishing and generates a superior surface quality. Machining range: $f = 0.004-0.020$ in/rev, $a_p = 0.008-0.060$ inch.</p>
	W-MF2	<p>First choice for finishing with both positive and negative inserts. Chipbreaker suitable for finishing machining steel, stainless steel and cast iron at high feed rates, giving good surface finish. Machining range: $f = 0.002-0.024$ in/rev, $a_p = 0.020-0.160$ inch.</p>
	W-MF4	<p>Easy cutting action chipbreaker for high feed machining stainless steel. Provides good surface finish in finishing operations and High Feed Wiper productivity in medium-roughing machining. Machining range: $f = 0.002-0.035$ in/rev, $a_p = 0.008 - 0.240$ inch</p>
	W-MF5	<p>Chipbreaker intended for medium finishing steel at high feed. The geometry is very open and highly positive and equipped with wiper radius. Machining range: $f = 0.008-0.032$ in/rev, $a_p = 0.008-0.105$ inch.</p>
	W-M3	<p>Versatile chipbreaker for high feed finishing and medium-roughing steel, stainless steel and cast iron. Operates in a wide application area. Gives a good surface finish even at high feeds. Machining range: $f = 0.008-0.035$ in/rev, $a_p = 0.020-0.240$ inch.</p>
	W-M6	<p>Strong double-sided chipbreaker, intended for high-feed semi-roughing and roughing steel. A well-balanced design combining excellent chip control and relatively low cutting forces which provides reliable cutting action in both continuous as well as interrupted cuts. Machining range: $f = 0.012-0.040$ in/rev, $a_p = 0.040-0.275$ inch</p>

Chipbreaker program, high feed wiper inserts

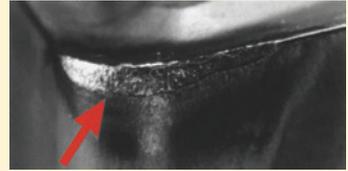
	<p>W-R4</p>	<p>Chipbreaker for single sided inserts intended for high feed medium-roughing and roughing of steel, stainless steel and cast iron. Gives a good surface finish even at high feeds. Low cutting forces. Machining range: $f = 0.012\text{-}0.040$ inch/rev, $a_p = 0.080\text{-}0.295$ inch.</p>
	<p>W-R7</p>	<p>A strong easy cutting chipbreaker for single sided inserts. Intended for the highest feeds when medium-roughing and roughing of steel, stainless steel and cast iron. Gives a good surface finish even at the higher feeds. Machining range: $f = 0.016\text{-}0.048$ in/rev, $a_p = 0.080\text{-}0.375$ inch.</p>
	<p>-WZ -WZN -WZP</p>	<p>Wiper geometries on PCBN inserts. Available in various insert styles in solid or brazed format. Developed for machining pearlitic grey cast iron and hardened steel. Gives a high quality surface finish at high feeds.</p>

1. Normal flank wear

Normal Flank Wear, since it is predictable and consistent, is the most desirable wear condition. Rapid flank wear looks the same, but happens much quicker than the target 15 minutes of time in cut.

Cause

Abrasive wear. Hard microscopic particles or work-hardened material in the workpiece cut into the insert, wearing away the cutting edge.



What to look for

- Relatively uniform abrasion along the cutting edge
- Occasionally, metal from the workpiece that is smeared over the cutting edge can exaggerate the apparent size of the wear scar

When to expect it

- In all materials, an insert will fail due to normal wear if it doesn't fail from something else first

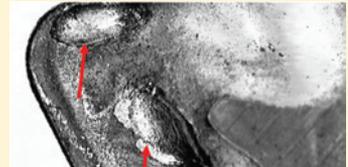
Corrective actions (to rapid flank wear)

- Select a harder, more wear resistant grade
- Apply coolant correctly
- Reduce the cutting speed (RPM or SFPM)

2. Cratering

Cause

A combination of diffusion, decomposition and abrasive wear causes cratering. The heat from workpiece chips promotes decomposition of the tungsten carbide grains in the cutting tool, wearing a 'crater' on the top of the insert. The crater will eventually grow large enough to cause the insert flank to chip or deform.



What to look for

- Craters or pits on top of inserts
- Chipbreaking may improve after cratering starts

When to expect it

- When machining iron (especially steel) or titanium-based alloys

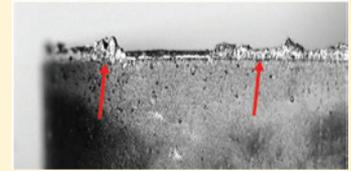
Corrective actions

- Use a coated grade
 - Coatings containing relatively thick layers of aluminum oxide are best
 - TiAlN is the most crater resistant PVD coating
- Apply coolant
- Use a freer cutting geometry to reduce heat
- Reduce the cutting speed (RPM or SFPM)
- Reduce feed rate
- Increasing the lead angle will have a small, but positive, effect

3. Built-up edge

Cause

Material adhesion. BUE is a result of the workpiece material being pressure welded to the cutting edge. This occurs when there is chemical affinity, high pressure, and sufficient temperature in the cutting zone. Eventually, the built up edge breaks off and often takes a piece of the cutting edge with it, leading to chippage and rapid flank wear.



What to look for

- Shiny material on the top or flank of the insert edge
- Erratic changes in part size or surface finish

When to expect it

- When machining gummy materials
- At low speeds
- When machining high temp alloys and stainless steel
- Threading operations
- Drilling
- When machining non-ferrous materials

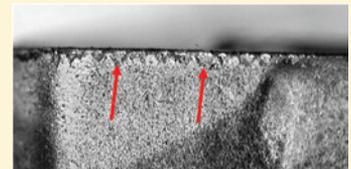
Corrective actions

- Increase the cutting speed (RPM or SFPM)
- Any coating, but especially a nitride coating, will reduce built-up edge
- Select an insert with a sharper, freer cutting edge geometry
- Apply coolant correctly, increasing the concentration usually helps
- Use an insert with a smoother (polished) surface

4. Chipping

Cause

Mechanical instability. Chipping of the insert edge is often a result of vibrations in the workpiece or spindle. Hard inclusions in the surface of the material being cut and interrupted cuts result in local stress concentrations that can cause chipping.



What to look for

- Chippings along the edge of the insert

When to expect it

- Non-rigid set-ups (bad bearings, worn spindles, etc.)
- Interrupted cuts
- Deflection in the tool or tool holder. Often seen in long drills or long boring bars
- Hard spots in work material
- Powdered Metal (PM) materials

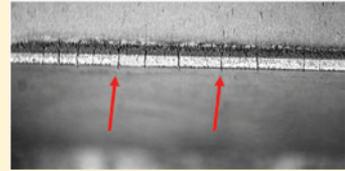
Corrective actions

- Ensure proper (rigid) machine tool setup
- Minimize deflection
- Select a stronger cutting edge geometry
- Select a tougher insert grade
- Reduce the feed rate (especially at the entrance or exit of the cut)
- See also corrective actions for built-up edge as built-up edge is a frequent cause of chipping

5. Thermal mechanical failure

Cause

A combination of thermal cycling (changing the temperature of the insert very rapidly), thermal load (temperature differences between warm and cold zones), and mechanical shock causes thermal mechanical failure. Stress cracks form along the insert edge, eventually causing sections of carbide to pull out and appear to be chipping. This is the most common failure mode encountered in milling applications.



What to look for

- Multiple cracks perpendicular to cutting edge
- Need to identify before chipping occurs

When to expect it

- Milling
- Facing operations when a large number of parts are machined
- Operations with intermittent coolant flow

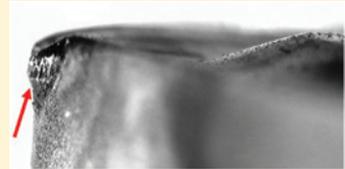
Corrective Actions

- Apply coolant correctly or remove completely
- Select a tougher insert grade (higher cobalt content)
- Reduce the cutting speed (RPM or SFPM)
- Reduce the feed rate

6. Edge deformation

Cause

Thermal overloading. Excessive heat causes the carbide binder (cobalt) to soften. It could come in combination with mechanical overloading where the pressure of the insert against the workpiece all in all making an insert edge deform partly or fully, eventually breaking off or leading to irregular flank wear.



What to look for

- Deformation at the cutting edge
- The dimensions of the workpiece may not be as expected

When to expect it

- High heat operations
- High speed
- Hard steels or work-hardened surfaces
- High temperature alloys
- High feed rates

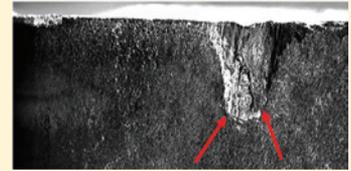
Corrective actions

- Apply coolant correctly
- Use a harder, more wear resistant grade with a lower binder (cobalt) content
- Using a freer cutting insert geometry will have a small but positive effect
- Reduce the cutting speed (RPM or SFPM)
- Reduce the feed rate
- Select an insert with a larger nose radius

7. Notching

Cause

Hard or abrasive surfaces on the workpiece. Notching is caused when the surface of the workpiece is harder or more abrasive than the material deeper in the cut, e.g. surface hardening from previous cuts, forged or cast surfaces, or surface scale. This causes the insert to wear more rapidly at the depth of cut line. Local Stress Concentration can also lead to notching. As a result of the compressive stress along the cutting edge – and lack of the same behind the cutting edge – the insert is particularly stressed at the depth of cut line.



What to look for

- Notching or chipping at the depth of cut area on the insert

When to expect it

- Machining materials with surface scale or oxidation
- Machining work hardened materials
- Machining cast or irregular surfaces
- (see also Built Up Edge)

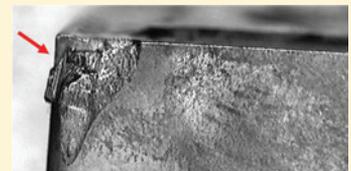
Corrective actions

- Vary the depth of cut when using multiple passes
- Use taper machining techniques when possible
- Use a tool with a larger lead angle
- Increase cutting speed if machining a high temp alloy
 - NOTE: This will generate more flank wear
- Use a chipbreaker designed for high feed rates
- Carefully increase the hone in the DOC area
- Select a tougher insert grade
- Reduce the feed rate

8. Mechanical fracture

Cause

Mechanical overload. The mechanical load is so great that the insert breaks, often during the first moments of a cut. Excessive wear of any type can cause mechanical fracture.



What to look for

- Fracture of insert, large segments of the insert gone

When to expect it

- Any operation, but especially those involving severe impact such as an interrupted cut

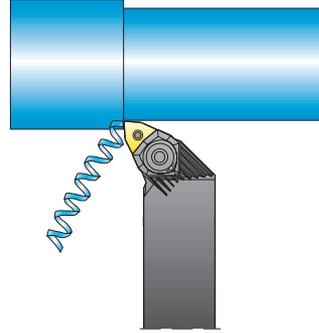
Corrective actions

- Correct for all other failure mechanisms besides normal flank wear
- Verify set-up rigidity
- Select a tougher insert grade (higher content of cobalt)
- Select a thicker insert
- Select an insert with a tougher cutting edge
- Select an insert with a chipbreaker geometry designed for higher feed rates
- Reduce the depth of cut
- Reduce the feed rate
- Check the workpiece for hard inclusions or difficult entry

Chipbreaking problems

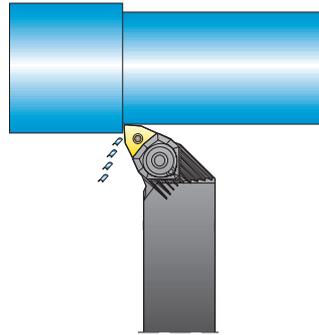
Too long chips

- Step 1. Increase the feed rate.
- Step 2. Use the chart on page 34 to select a more suitable chipbreaker. Take one to the left or below the one being used.

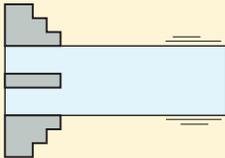


Too hard chipbreaking

- Step 1. Reduce the feed rate.
- Step 2. Use the chart on page 34 to select a more suitable chipbreaker. Take one to the right or above the one being used.

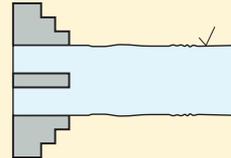


Vibrations



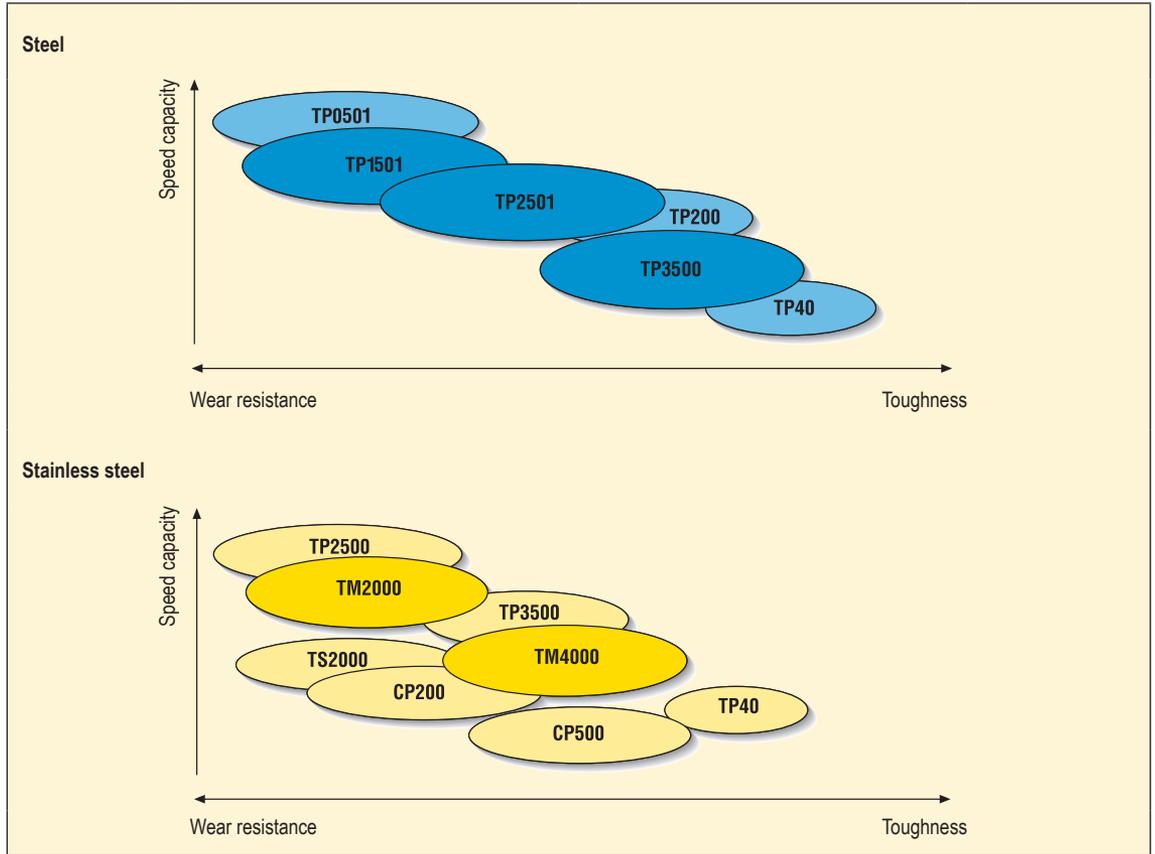
- Improve the stability of the tool and workpiece
- Change the cutting speed
- Increase the feed rate
- Reduce the depth of cut
- Select a more easy-cutting chipbreaker
- Select a smaller nose radius

Poor surface finish

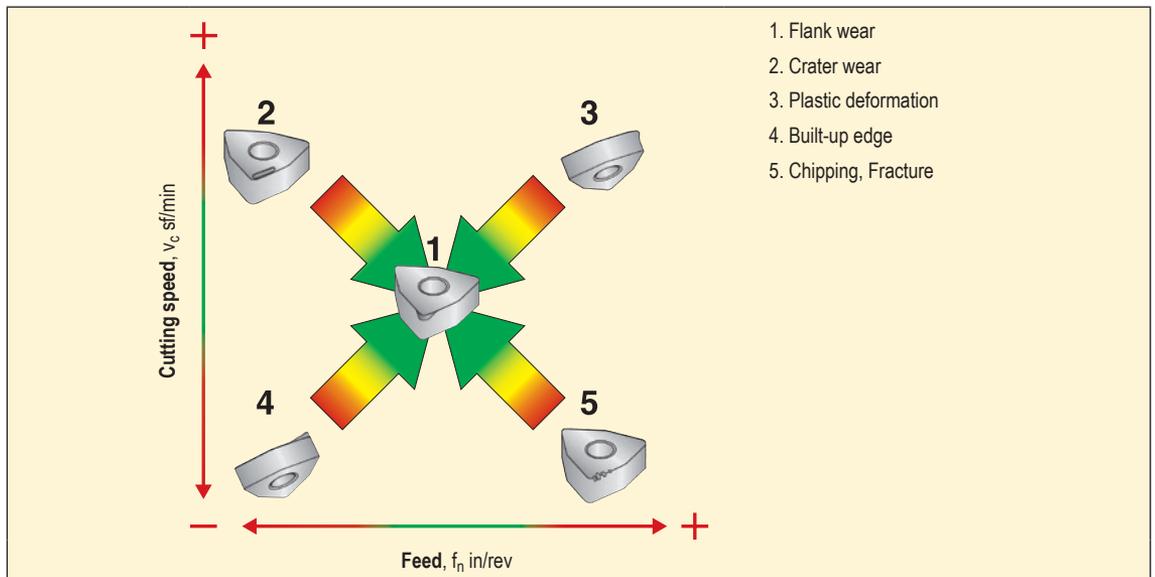


- Reduce the feed rate
- Increase the cutting speed
- Use a coolant
- Improve the stability of the tool and workpiece
- Select a more easy-cutting chipbreaker
- Increase the nose radius

Optimization – Grades



Optimization – Wear



Introduction

Polycrystalline Cubic Boron Nitride (PCBN) is a material which is sintered at extremely high pressure and high temperature into a wear-resistant material with properties close to those of diamond. Due to the hot hardness, oxidation resistance and fracture toughness of the material, inserts made of PCBN have excellent edge strength and long tool life in machining operations on hard ferrous materials and pearlitic grey cast iron.

Secomax™ PCBN inserts are suitable for machining:

- Hardened steel (including hard-facing alloys)
- Pearlitic grey cast iron
- Chilled and white cast iron
- Manganese steel
- Cemented carbide
- Valve seat materials
- Powder Metallurgy (PM) alloys
- Nickel-based superalloys e.g. Inconel 718

For more information including a comprehensive guide to understanding and applying PCBN successfully, please ask your sales representative for the Secomax™ PCBN, Technical Guide.

Selection of insert types

Solid insert



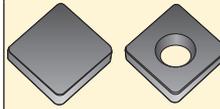
According to the geometry, two sides can be used.

Grades:
CBN060K, CBN010,
CBN170, CBN200,
CBN300, CBN300P,
CBN400C, CBN500, CBN600



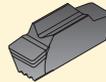
Toolholder styles:
D, P, C and M

Sintered layer insert -LF

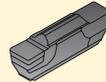


CBN layer sintered on carbide. One side is usable.

Grades:
CBN010, CBN060K
CBN150, CBN160C, CBN200
Toolholder styles: S, C and M



MDT
Grades:
CBN010, CBN170, CBN200
Toolholder styles: C (MDT)



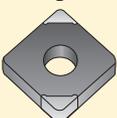
Brazed tip -L1 (single and double sided) and -L2



CBN brazed onto standard carbide inserts.

Grades:
CBN010, CBN060K, CBN150,
CBN160C, CBN170, CBN200

Toolholder styles:
D, P, S and M



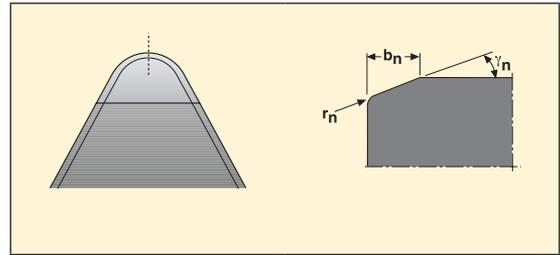
Geometry recommendations

Strong cutting edge geometries are always preferred.

- Negative cutting geometry
- Chamfered cutting edge
- Big nose radius

Sharp positive cutting edge geometry can be advantageous when:

- Finishing of small hardened bores without interruptions
- Finishing of unstable components without interruptions
- Finishing of pearlitic grey cast iron



b_n = Chamfer width
 γ_n = Chamfer angle
 r_n = Hone radius

Edge preparation

E	=	Honed
E25	=	Extra honed, intended for Nickel-based superalloys
S	=	Chamfered and honed
S25	=	Chamfered and extra honed intended for PM material
WZ	=	High Feed (Wiper) geometry
WZP	=	High Feed (Wiper) geometry Positive
WZN	=	High Feed (Wiper) geometry Negative

Chamfer size and angle

Solid CBN inserts

CBN060K	=	0.006 in x 25°
CBN010	=	0.004 in x 20°
CBN200	=	0.008 in x 20°
CBN300	=	0.008 in x 20°
CBN400C	=	0.008 in x 20°
CBN500	=	0.008 in x 20°
S-00420	=	0.004 in x 20°
S-00820	=	0.008 in x 20°
S-01515	=	0.015 in x 15°
S-06015	=	0.060 in x 20°
X	=	Custom

Design

LF	=	Complete top layer
B	=	Brazed tips (single sided), Insert geometry C, D and V
C	=	Brazed tips (single sided), Insert geometry T and W
D	=	Brazed tips (single sided), Insert geometry S
U	=	Brazed tips (double sided), Insert geometry C, D and V
V	=	Brazed tips (double sided), Insert geometry T and W

Brazed CBN inserts CBN010

L1	=	0.004 in x 20°
L2	=	0.008 in x 20°
LF	=	0.004 in x 20°
LF-MDT	=	0.004 in x 25°

Brazed CBN inserts CBN200

L0	=	0.004 in x 20°
L1	=	0.008 in x 20° (L1-WZ = .004 in x 20°)
L2	=	0.008 in x 20°
LF	=	0.008 in x 20°
LF-MDT	=	0.004 in x 25°

CBN150

L0	=	0.006 in x 25° (positive C-lock inserts, .004 in x 20°)
L1	=	0.006 in x 25°
LF	=	0.006 in x 25°

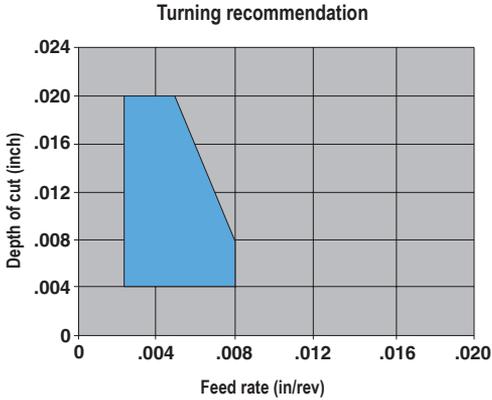
CBN160C, CBN060K

L1	=	0.006 in x 25°
LF	=	0.006 in x 25°

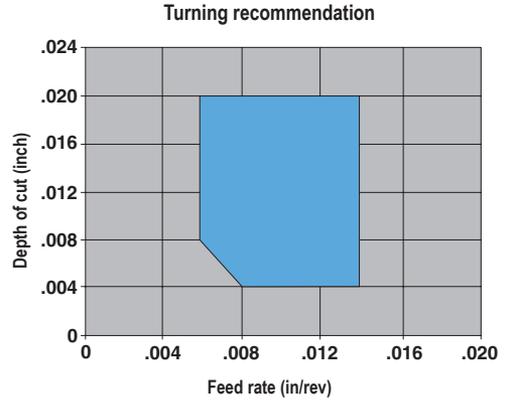
PCBN Chipbreaker inserts

The laser machined chipbreaker comes in two different styles, one for low feed and one for high feed applications. The non-wiper Secomax™ chipbreaker insert makes it possible to have a good chip control when low feed rates are used. The Secomax™ wiper chipbreaker insert provides improved chip control when using high feed rates.

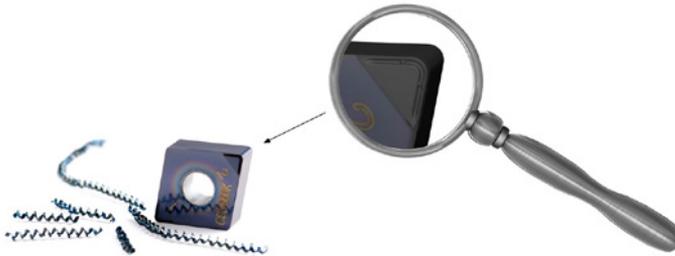
Secomax™ PCBN, non-wiper chipbreaker inserts



Secomax™ PCBN, wiper chipbreaker inserts



Laser machining provides several benefits over conventional production technologies such as grinding. Laser technology meets the highest requirements regarding dimensional accuracy, geometrical precision and surface quality for the machining of complex, three-dimensional geometries. These advantages and possibilities have led to a complex formed chipbreaker with “bumps” that would have been impossible to produce with any other production technology.

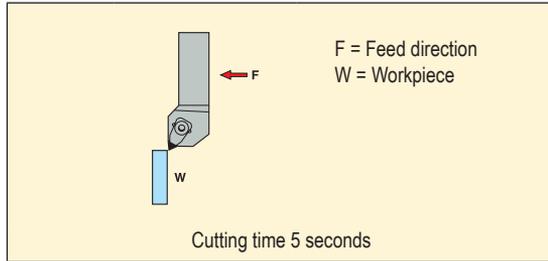


Plunge Turning

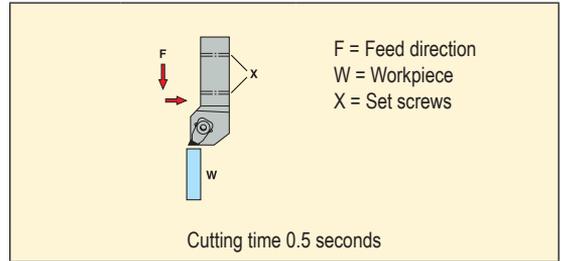
The vast majority of heat treated components in the metalworking industry are machined to their final geometrical form after hardening. Seco has developed a method in hard turning, the Seco patented Plunge Turning.

Using the Plunge Turning method gives two great advantages compared to conventional hard turning, reduction in cutting time (up to 90%) and improved surface integrity.

Conventional Turning



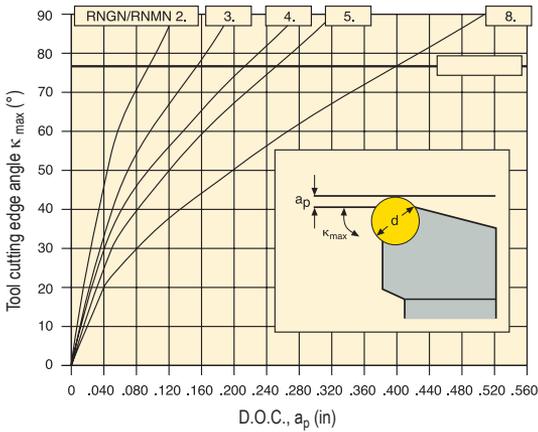
Plunge Turning



General cutting data recommendation for Plunge Turning is $v_c = 660-1300$ sf/min and $f = .0016$ in/rev. To avoid the cutting edge profile affecting surface finish, complete the operation with a small axial movement.

In addition to the introduction of the Plunge Turning method there are also some standard toolholders. These toolholders have set screws which give the possibility to adjust the toolholder to an exact setting angle. The toolholders have a designation ending with – PL, and are available for inserts in sizes T..2 and T..3.

Maximum depth of cut recommendations

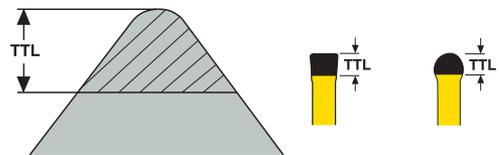


The tool cutting edge angle is limited to 75° resulting in maximum depth of cut (a_p).

Max. D.O.C. a_p (in)	Number of usable cutting edges/side at 80% utilization		
	R...2	R...3	R...4
0.004	20	24	–
0.006	16	20	23
0.008	14	17	20
0.010	12	15	18
0.012	11	14	16
0.016	10	12	14
0.020	8	10	12
0.030	7	8	10
0.040	6	7	9
0.050	5	7	8
0.060	5	6	7
0.070	4	5	6
0.080	4	5	6
0.100	3	4	5
0.120	3	4	5
0.140	–	4	4
0.160	–	3	4
0.180	–	–	4
0.200	–	–	3

Type	Grade	Max. D.O.C. a_p (inch)
L1	CBN060K	0.020
	CBN160C	0.020
	CBN170	0.020
	CBN010	0.020
	CBN150	0.020
	CBN200	0.040
L2	CBN010	0.020
LF	CBN160C	0.020
	CBN010	0.020
	CBN150	0.020
	CBN200	30% of cutting edge length
Solid	CBN10	0.020
	CBN200	30% of cutting edge length
	CBN300	30% of cutting edge length
	CBN400C	30% of cutting edge length
	CBN500	30% of cutting edge length
	CBN600	30% of cutting edge length

MDT			
Type	Grade	Max. D.O.C. a_p (inch)	
	-LF	CBN010	0.020
	-LF	CBN200	0.060
	M0-LF	CBN010 CBN200	4 x D



True tip length (TTL) in inch per nose radius (rep) and tip type

Insert shape	Nose angle	rep = .016 in			rep = .031 in			rep = .047 in	
		L0	L1	L2	L0	L1	L2	L0	L1
C/W	80°	.055	.106	–	.047	.094	–	.039	.087
D	55°	.083	.118	–	.063	.102	–	.043	.083
S	90°	–	–	–	.035	.087	–	–	–
T	60°	.067	.102	–	.051	.087	–	.035	.071
V	35°	.106	–	.185	.067	–	.150	–	–

MDT size	..LF	..M0-LF
LC..13..	.087	.094
LC..1304..	.087	.094

MDT size	..LF	..M0-LF
LC..1603..	.098	.098
LC..1604..	.098	.122
LC..1605..	.110	.122
LC..1606..	.126	.146

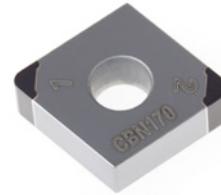
The Secomax™ PCBN range of grades consists of both coated and uncoated grades. The application areas for the Secomax™ grades are shown below. The black areas in the chart indicate a grade's main ISO application groups and the white areas indicate other supplementary application groups.

Uncoated grades:

- CBN010
- CBN150
- CBN170
- CBN200
- CBN300
- CBN500
- CBN600

PVD coated grades:

- CBN060K
- CBN160C
- CBN300P
- CBN400C



	P					M					K					N				S				H			
	P01 P10 P20 P30 P40 P50	M01 M10 M20 M30 M40	K01 K10 K20 K30 K40	N01 N10 N20 N30	S01 S10 S20 S30	H01 H10 H20 H30																					
CBN010																											
CBN150																											
CBN170																											
CBN200																											
CBN300																											
CBN500																											
CBN600																											
CBN060K																											
CBN160C																											
CBN300P																											
CBN400C																											

Optional parts for "M" style holders to accept solid inserts (without hole)

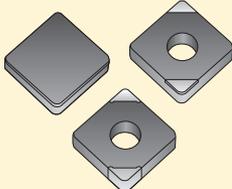
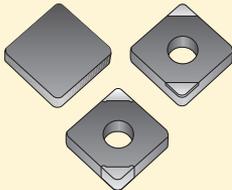
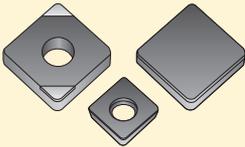
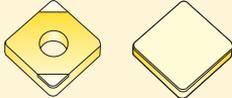
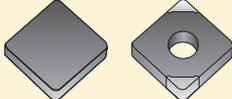
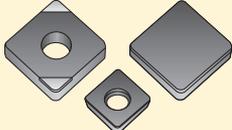
Insert	Anvil	Anvil screw	Long reach clamp	Optional parts pack
CN** 42*	CSN442	S-46	CL-22	CN42-22
CN** 43*	Existing	S-46	CL-22	CN43-22
DN** 32*	DSSN333	S-34	CL-22	DN32-22
DN** 33*	Existing	S-34	CL-22	DN33-22
RN** 42*	IRSN44	S-46	CL-12	RN42-12
RN** 43*	Existing	S-46	CL-12	RN43-12
SN** 32*	Existing	S-34	CL-7	SN32-7
SN** 42*	ISSN443	S-46	CL-12	SN42-12
SN** 43*	Existing	S-46	CL-12	SN43-12
TN** 32*	ITSN333	S-34	CL-22	TN32-22
TN** 33*	Existing	S-34	CL-22	TN33-22

Use insert nomenclature in above chart to determine parts required.

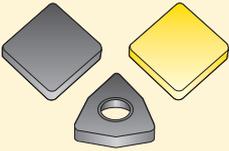
Instruction for toolholder modification - Remove and discard lock pin, replace anvil if required and secure with anvil screw. Remove and discard clamp and replace with new long reach clamp.

Note - The clamp screw should be flush with the top of the new clamp at the final clamping position with the insert in place.

Grades

<p>CBN010</p> 	<p>Format: Solid, full-face brazed layer and brazed tips (single and double sided).</p> <p>Composition: 50% cBN content grade with an average grain size of 2 µm and a TiC ceramic binder.</p> <p>Uncoated</p>
<p>CBN060K</p> 	<p>Format: Solid, full-face brazed layer and brazed tips (single and double sided).</p> <p>Composition: 60% cBN content grade with an average grain size of 1-2 µm and a TiCN ceramic binder.</p> <p>Coating: (Ti, Si, Al)N coating</p>
<p>CBN150</p> 	<p>Format: Full-face brazed layer and brazed tips (single sided).</p> <p>Composition: 45% cBN content grade with an average grain size of < 1 µm and a TiCN ceramic binder.</p> <p>Uncoated</p>
<p>CBN160C</p> 	<p>Format: Full-face brazed layer and brazed tips (single sided).</p> <p>Composition: 65% cBN content grade with an average grain size of < 1 µm and a TiCN ceramic binder.</p> <p>Coating: (Ti, Si)N coating</p>
<p>CBN170</p> 	<p>Format: Full-face brazed layer and brazed tips (double sided).</p> <p>Composition: 65% cBN content grade with an average grain size of 2 µm and a TiCN+SiCw ceramic binder.</p> <p>Uncoated</p>
<p>CBN200 (Tipped and Full-face)</p> 	<p>Format: Full-face brazed layer and brazed tips (single sided).</p> <p>Composition: 85% cBN content grade with an average grain size of 2 µm and a Co-W-Al ceramic binder.</p> <p>Uncoated</p>

Grades

<p>CBN200 (Solid)</p> 	<p>Format: Solid.</p> <p>Composition: 90% cBN content grade with an average grain size of 3-6 μm and a Al ceramic binder.</p> <p>Uncoated</p>
<p>CBN300, CBN300P</p> 	<p>Format: Solid.</p> <p>Composition: 90% cBN content grade with an average grain size of 22 μm and a Al ceramic binder.</p> <p>Coating: CBN300: Uncoated CBN300P: (Ti, Al)N coating</p>
<p>CBN400C</p> 	<p>Format: Solid.</p> <p>Composition: 90% cBN content grade with an average grain size of 3-6 μm and a Al ceramic binder.</p> <p>Coating: (Ti, Si)N coating</p>
<p>CBN500</p> 	<p>Format: Solid.</p> <p>Composition: 90% cBN content grade with an average grain size of 15 μm and a AlN ceramic binder.</p> <p>Uncoated</p>
<p>CBN600</p> 	<p>Format: Solid.</p> <p>Composition: 90% cBN content grade with multi modal grain size and AlN ceramic binding.</p> <p>Uncoated</p>

Cast Irons

SMG	Properties	Reference	Recommendations
K1	Grey cast irons (GCI)	A48 35 B	First choice in dry machining: CBN300. Universal option: CBN600. First choice when coolant is used: CBN200. First choice for finish machining: CBN400C. Adjust the depth of cut to get under the casting skin and blow holes.
K2	Compacted graphite irons (CGI)	Grade 400-15	First choice for finish machining: CBN060K. First choice for rough machining: CBN300. Adjust the depth of cut to get under the casting skin and blow holes.
K4	Nodular cast irons (SGI)	80-55-06	First choice for finish machining: CBN010.
K5	Austempered ductile irons (ADI)	1050/700/7	First choice for finish machining: CBN010.

Superalloys and Titanium

SMG	Properties	Reference	Recommendations
S1	Iron based superalloys	Discalloy	First choice for finish machining: CBN010 with E25 edge preparation. Use coolant.
S2	Cobalt based superalloys	Stellite 21	First choice for finish machining: CBN010 with E25 edge preparation. Use coolant.
S3	Nickel based superalloys	Inconel 718	PCBN tools can be used on Inconel 718 with following properties. Solution annealed + age hardened Direct age hardened Hardness 32 – 44 Hrc First choice for finish machining: CBN170. Use coolant.

Hard Materials

SMG	Properties	Reference	Recommendations
H3	Case hardened steels	5115 60 HRC	<p>Dry machining is preferable. Coolant can be used. The chips should be fully annealed and brittle. First choice for finish machining: CH0550. Universal grade for finish machining: CBN010. For high surface finish requirements, use CH0550.</p> <p>In interrupted machining: Moderate interruptions, use CBN060K/CBN010. Aggressive interruptions, use CH2540/CH3515/CBN150. Reduce the feed rate. Machine without coolant. If possible, chamfer any sharp edges of the workpiece before machining.</p>
H5	Quenched & Tempered steels	4140 50 HRC	<p>Dry machining is preferable. Coolant can be used. The chips should be fully annealed and brittle. First choice for finish machining: CBN060K. Universal grade for finish machining: CBN010. For high surface finish requirements, use CH0550.</p> <p>In interrupted machining: Moderate interruptions, use CBN060K/CBN010. Aggressive interruptions, use CH2540/CH3515/CBN150. Reduce the feed rate. Machine without coolant. If possible, chamfer any sharp edges of the workpiece before machining.</p>
H7	Quenched & Tempered steels Bearing steels	52100 60 HRC	<p>Dry machining is preferable. Coolant can be used. The chips should be fully annealed and brittle. First choice for finish machining: CBN060K. Universal grade for finish machining: CBN010. For rough machining, use CBN200/CBN300. For high surface finish requirements, use CH0550.</p> <p>In interrupted machining: Moderate interruptions, use CBN060K/CBN010. Aggressive interruptions, use CH2540/CH3515/CBN150. Reduce the feed rate. Machine without coolant. If possible, chamfer any sharp edges of the workpiece before machining.</p>
H8	Tool steels High Speed Steels	H13 50 HRC	<p>First choice for finish machining: CBN010. First choice for rough machining: CBN200. Interrupted machining of high speed steels can not be done.</p>
H11	Martensitic stainless steels	420 45 HRC	<p>First choice for finish machining: CBN010. First choice for rough machining: CBN300.</p> <p>In interrupted machining: Moderate interruptions, use CBN010. Aggressive interruptions, use CH2540/CH3515/CBN150.</p>
H21	Manganese steels	Hadfield, High Manganese steel 50 HRC	<p>First choice CBN300. When a tougher grade is needed use CBN500. Use chamfered inserts. Use stable toolholder and rigid clamping of the workpiece. Machine without coolant. Chamfer workpiece edges first.</p>
H31	White cast irons	A532 Class I Type D, White cast iron 55 HRC	<p>Use CBN300 or when centerlock inserts are used CBN200. When a tougher grade is needed use CBN500. Universal option: CBN600. Adjust the depth of cut to get under the casting skin and blow holes. Dry machining is preferable.</p>

Other Difficult Materials

SMG	Properties	Reference	Recommendations
PM1	Low alloy PM materials	F-0008 Fe-0.7C	<p>PCBN tools can be used on PM parts as soft as 25 HRC. The critical parameter is particle hardness, when the particle hardness exceeds 50 HRC, PCBN is useful, no matter what the bulk hardness is.</p> <p>First choice CBN200. For rough machining CBN300 is an alternative. Use chamfered inserts, S25 edge preparation. Do not use coolant for interrupted cut.</p>
PM2	Medium alloy PM materials	FLC-4608 Fe2Cu1.8Ni0.5Mo0.2Mn0.8C	<p>PCBN tools can be used on PM parts as soft as 25 HRC. The critical parameter is particle hardness, when the particle hardness exceeds 50 HRC, PCBN is useful, no matter what the bulk hardness is.</p> <p>First choice CBN200. For rough machining CBN300 is an alternative. Use chamfered inserts, S25 edge preparation. Do not use coolant for interrupted cut.</p>
PM3	High alloy PM materials Exhaust valve seat materials		<p>First choice CBN150. Second choice CBN010. Use positive inserts. Use chamfered and honed edges for longer tool life. Use honed edges when tight tolerances are required. Machining can be carried out either with or without coolant.</p>
HF1	Hard facing alloys Welded or plasma deposited iron based alloys		<p>Cr-based alloys – Hardness <60 HRC. Co-based alloys – Hardness >35 HRC. Ni-based alloys – Hardness >35 HRC. Fe-based alloys – Hardness >35 HRC.</p> <p>First choice for finish machining: CBN010. First choice for rough machining: CBN500, or when centerlock inserts are used: CBN200. Use round inserts if possible. Use chamfered inserts. Adjust the depth of cut to get under the welding skin and blow holes. Dry machining is preferable. Remove any weld spatter before machining.</p>
HF2	Hard facing alloys Welded or plasma deposited cobalt and nickel based alloys		<p>Cr-based alloys – Hardness <60 HRC. Co-based alloys – Hardness >35 HRC. Ni-based alloys – Hardness >35 HRC. Fe-based alloys – Hardness >35 HRC.</p> <p>First choice for finish machining: CBN010. First choice for rough machining: CBN500, or when centerlock inserts are used: CBN200. Use round inserts if possible. Use chamfered inserts. Adjust the depth of cut to get under the welding skin and blow holes. Dry machining is preferable. Remove any weld spatter before machining.</p>
CC1	Sintered tungsten carbide	G50	<p>Sintered tungsten carbide with a Co content >17%.</p> <p>Basic conditions: Use CBN300. When a tougher grade is needed use CBN500. Use round inserts. Use chamfered inserts. Machining with coolant is preferable. Chamfer the workpiece at entry and exit.</p>

PCBN, Roughing a_p 0.020 – 0.120 inch

SMG	CBN200		CBN300		CBN400C		CBN500	
	v_c	f	v_c	f	v_c	f	v_c	f
K1	1650 — 3275	0.0080 — 0.030	1650 — 4925	0.0080 — 0.032	1975 — 3925	0.0080 — 0.032	—	—
K2	330 — 1225	0.0040 — 0.015	330 — 1150	0.0032 — 0.014	—	—	425 — 1075	0.0050 — 0.015
K5	330 — 1475	0.0040 — 0.010	—	—	—	—	—	—
H7	230 — 490	0.0032 — 0.011	295 — 660	0.0032 — 0.011	—	—	295 — 590	0.0048 — 0.012
H8	165 — 490	0.0012 — 0.0085	165 — 490	0.0020 — 0.0090	—	—	—	—
H11	—	—	330 — 660	0.0024 — 0.0095	—	—	230 — 590	0.0040 — 0.010
H21	460 — 690	0.0080 — 0.024	520 — 820	0.0080 — 0.024	—	—	425 — 750	0.0080 — 0.024
H31	165 — 330	0.0080 — 0.032	—	—	—	—	100 — 425	0.0065 — 0.028
PM1	330 — 660	0.0028 — 0.0085	330 — 720	0.0028 — 0.0085	—	—	—	—
PM2	330 — 660	0.0028 — 0.0085	—	—	—	—	—	—
HF1	330 — 490	0.0040 — 0.012	—	—	—	—	330 — 660	0.0040 — 0.011
HF2	560 — 820	0.0040 — 0.012	—	—	—	—	560 — 890	0.0040 — 0.011
CC1	—	—	65 — 130	0.0016 — 0.0080	—	—	65 — 115	0.0020 — 0.010

PCBN, Finishing $a_p < 0.020$ inch

SMG	CBN010		CBN060K		CBN150		CBN160C		CBN170	
	v_c	f	v_c	f	v_c	f	v_c	f	v_c	f
K1	—	—	—	—	—	—	—	—	—	—
K2	—	—	490 — 1150	0.0020 — 0.0085	395 — 920	0.0016 — 0.0085	395 — 980	0.0024 — 0.0095	—	—
K4	520 — 920	0.0020 — 0.0080	—	—	590 — 980	0.0020 — 0.0075	—	—	—	—
K5	260 — 1975	0.0020 — 0.0080	—	—	—	—	260 — 1650	0.0020 — 0.0085	—	—
S1	560 — 1150	0.0040 — 0.010	—	—	—	—	—	—	—	—
S2	560 — 1150	0.0020 — 0.0080	—	—	—	—	—	—	—	—
S3	560 — 1150	0.0040 — 0.010	—	—	—	—	—	—	560 — 1150	0.00040 — 0.011
H3	260 — 750	0.0012 — 0.010	330 — 790	0.0012 — 0.011	245 — 590	0.0012 — 0.0080	330 — 660	0.0012 — 0.0095	—	—
H5	260 — 710	0.0012 — 0.010	295 — 720	0.0012 — 0.011	230 — 520	0.0012 — 0.0080	295 — 590	0.0012 — 0.0095	—	—
H7	330 — 720	0.0024 — 0.0070	330 — 750	0.0024 — 0.0080	330 — 560	0.0020 — 0.0065	330 — 620	0.0028 — 0.0085	—	—
H8	295 — 660	0.00040 — 0.0075	295 — 720	0.00040 — 0.0080	230 — 490	0.00080 — 0.0060	230 — 590	0.00080 — 0.0065	—	—
H11	330 — 720	0.0012 — 0.0065	330 — 750	0.0012 — 0.0070	195 — 520	0.0012 — 0.0065	260 — 590	0.0016 — 0.0070	—	—
H21	—	—	—	—	—	—	—	—	—	—
H31	—	—	—	—	—	—	—	—	—	—
PM1	—	—	—	—	—	—	360 — 820	0.0020 — 0.010	—	—
PM2	—	—	—	—	260 — 660	0.0020 — 0.010	295 — 660	0.0020 — 0.010	—	—
PM3	260 — 560	0.0020 — 0.0080	—	—	260 — 560	0.0020 — 0.0080	260 — 560	0.0020 — 0.0080	—	—
HF1	165 — 490	0.00080 — 0.0065	—	—	165 — 395	0.00080 — 0.0065	165 — 490	0.00080 — 0.0070	—	—
HF2	195 — 620	0.00040 — 0.0070	—	—	195 — 620	0.00080 — 0.0065	330 — 660	0.00080 — 0.0065	—	—
CC1	—	—	—	—	—	—	—	—	—	—

SMG	CBN200		CBN300		CBN400C		CBN500	
	v_c	f	v_c	f	v_c	f	v_c	f
K1	1650 — 4275	0.0040 — 0.020	1650 — 5575	0.0040 — 0.024	1975 — 5900	0.0040 — 0.024	—	—
K2	—	—	—	—	—	—	—	—
K4	—	—	—	—	—	—	—	—
K5	—	—	—	—	—	—	—	—
S1	—	—	—	—	—	—	—	—
S2	—	—	—	—	—	—	—	—
S3	—	—	—	—	—	—	—	—
H3	—	—	—	—	—	—	—	—
H5	—	—	—	—	—	—	—	—
H7	—	—	—	—	—	—	—	—
H8	—	—	—	—	—	—	—	—
H11	—	—	—	—	—	—	—	—
H21	490 — 750	0.0040 — 0.024	560 — 820	0.0040 — 0.024	—	—	490 — 750	0.0040 — 0.024
H31	165 — 395	0.0060 — 0.018	—	—	—	—	130 — 490	0.0048 — 0.018
PM1	425 — 980	0.0020 — 0.010	—	—	—	—	—	—
PM2	395 — 820	0.0020 — 0.0080	—	—	—	—	—	—
PM3	330 — 660	0.0020 — 0.0060	—	—	—	—	—	—
HF1	—	—	—	—	—	—	—	—
HF2	—	—	—	—	—	—	—	—
CC1	—	—	65 — 130	0.0016 — 0.0060	—	—	—	—

PCBN, Plunging

SMG	CBN010		CBN060K		CBN150		CBN160C	
	v_c	f	v_c	f	v_c	f	v_c	f
K1	—	—	—	—	—	—	—	—
K2	—	—	490 — 1150	0.0020 — 0.0085	395 — 920	0.0016 — 0.0085	395 — 980	0.0024 — 0.0095
K4	520 — 920	0.0020 — 0.0080	—	—	590 — 980	0.0020 — 0.0075	—	—
K5	260 — 1975	0.0020 — 0.0080	—	—	—	—	260 — 1650	0.0020 — 0.0085
S1	560 — 1150	0.0040 — 0.010	—	—	—	—	—	—
S2	560 — 1150	0.0020 — 0.0080	—	—	—	—	—	—
S3	560 — 1150	0.0040 — 0.010	—	—	—	—	—	—
H3	—	—	—	—	—	—	—	—
H5	—	—	—	—	—	—	—	—
H7	—	—	—	—	—	—	—	—
H8	—	—	—	—	—	—	—	—
H11	—	—	330 — 750	0.0012 — 0.0070	195 — 520	0.0012 — 0.0065	260 — 590	0.0016 — 0.0070
H21	—	—	—	—	—	—	—	—
H31	—	—	—	—	—	—	—	—
PM1	—	—	—	—	—	—	360 — 820	0.0020 — 0.010
PM2	—	—	—	—	—	—	—	—
PM3	—	—	—	—	—	—	—	—
HF1	165 — 490	0.00080 — 0.0065	—	—	165 — 395	0.00080 — 0.0065	165 — 490	0.00080 — 0.0070
HF2	195 — 620	0.00040 — 0.0070	—	—	195 — 620	0.00080 — 0.0065	330 — 660	0.00080 — 0.0065
CC1	—	—	—	—	—	—	—	—

SMG	CBN200		CBN300		CBN400C		CBN500	
	v_c	f	v_c	f	v_c	f	v_c	f
K1	—	—	—	—	—	—	—	—
K2	—	—	—	—	—	—	—	—
K4	—	—	—	—	—	—	—	—
K5	—	—	—	—	—	—	—	—
S1	—	—	—	—	—	—	—	—
S2	—	—	—	—	—	—	—	—
S3	—	—	—	—	—	—	—	—
H3	—	—	—	—	—	—	—	—
H5	—	—	—	—	—	—	—	—
H7	—	—	—	—	—	—	—	—
H8	—	—	—	—	—	—	—	—
H11	—	—	—	—	—	—	—	—
H21	—	—	—	—	—	—	—	—
H31	—	—	—	—	—	—	—	—
PM1	—	—	—	—	—	—	—	—
PM2	—	—	—	—	—	—	—	—
PM3	—	—	—	—	—	—	—	—
HF1	—	—	—	—	—	—	—	—
HF2	—	—	—	—	—	—	—	—
CC1	—	—	65 — 130	0.0016 — 0.0060	—	—	—	—

SMG = Seco Material Group

v_c = sf/min

f = in/rev

All cutting data are start values

PCBN, Grooving

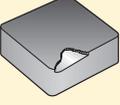
SMG	CBN010		CBN170		CBN200	
	v_c	f	v_c	f	v_c	f
K1	—	—	—	—	1650 — 3925	0.0036 — 0.0070
K2	660 — 1300	0.00080 — 0.0040	—	—	—	—
K4	330 — 980	0.0012 — 0.0028	—	—	—	—
S1	490 — 980	0.0020 — 0.0060	—	—	—	—
S2	490 — 980	0.0020 — 0.0060	—	—	130 — 195	0.00080 — 0.0040
S3	490 — 980	0.0020 — 0.0060	490 — 1150	0.0020 — 0.0080	—	—
H3	330 — 920	0.00040 — 0.0028	—	—	—	—
H5	295 — 820	0.00040 — 0.0028	—	—	—	—
H7	295 — 820	0.00080 — 0.0028	—	—	—	—
H8	260 — 980	0.00080 — 0.0028	—	—	260 — 425	0.00080 — 0.0028
H11	395 — 720	0.00080 — 0.0024	—	—	—	—
H21	—	—	—	—	330 — 660	0.00040 — 0.0032
H31	—	—	—	—	165 — 330	0.0012 — 0.0040

SMG = Seco Material Group

v_c = sf/min

f = in/rev

All cutting data are start values

Problem	Cause	Suggested action(s)
Flank wear 	Not correct edge temperature	<ul style="list-style-type: none"> • Increase cutting speed • Increase feed rate • Increase depth of cut • Check cutting tool center height • Check the ferrite content
Crater wear 	Not correct edge temperature	<ul style="list-style-type: none"> • Decrease cutting speed • Decrease feed rate • Reduce chamfer angle • Use E edge preparation • Use coated insert • Use coolant (only in continuous cut)
Notch wear 	Not correct edge temperature Too high cutting forces	<ul style="list-style-type: none"> • Increase cutting speed • Decrease feed rate • Increase insert approach angle (preferably round inserts) • Vary the depth of cut • Use inserts with chamfered cutting edges
Edge chipping 	Too high cutting forces	<ul style="list-style-type: none"> • Use inserts with chamfered cutting edges • Increase system rigidity • For interrupted cuts, chamfer the tool entry/exit slots and holes • Vary the cutting speed to eliminate vibrations
Edge flaking (continuous cut) 	Too high cutting forces	<ul style="list-style-type: none"> • Increase cutting speed • Reduce feed rate • Use chamfered and honed cutting edges • Check cutting tool center height • Reduce insert approach angle
Edge flaking (interrupted cut) 	Too high cutting forces	<ul style="list-style-type: none"> • Do not use coolant • Use chamfered and honed cutting edges • Reduce feed rate • Increase cutting speed • Check cutting tool center height • Reduce insert approach angle
Edge breakage 	Too high cutting forces	<ul style="list-style-type: none"> • Reduce depth of cut • Reduce cutting speed • Increase nose radius • Use chamfered and honed inserts • Check cutting tool center height
Insert breakage 	Too high cutting forces	<ul style="list-style-type: none"> • Check insert seating • Check insert shim and insert clamp • Check cutting tool center height

Introduction

Polycrystalline Diamond (PCD) is produced by sintering together carefully selected particles of diamond under conditions of high temperature and high pressure. PCD cutting tools combine the hardness, abrasion resistance and thermal conductivity of diamond with the toughness of tungsten carbide.

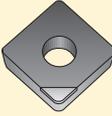
Secomax™ PCD inserts are suitable for machining non-ferrous metals and alloys, e.g.:

- Aluminum
- Copper
- Brass
- Bronze

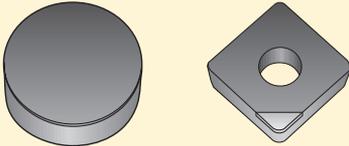
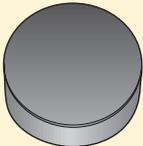
It can also be used for other materials, e.g.:

- Composites (MMC, ...)
- Reinforced plastics
- Graphite
- Cemented/tungsten carbide
- Ceramics
- Titanium alloys

Selection of insert types

<p>Sintered layer -LF</p>  <p>PCD sintered on carbide. All cutting edges on one side are usable.</p> <p>Grade: PCD30</p> <p>Toolholder style: C</p>	<p>Brazed tip -L1</p>  <p>PCD brazed on to standard carbide inserts.</p> <p>Grades: PCD20, PCD30</p> <p>Toolholder styles: D, P, M and C</p>
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Grades

<p>PCD20</p> 	<p>Format: Full-face brazed layer and brazed tips (single sided).</p> <p>Composition: Grade with an average grain size of 10 µm and a Co binder.</p> <p>Coating: No coating</p>
<p>PCD30</p> 	<p>Format: Full-face brazed layer (single sided).</p> <p>Composition: Grade with an average grain size of 25 µm and a Co binder.</p> <p>Coating: No coating</p>

Non Ferrous Metals

SMG	Properties	Reference	Recommendations
N1	Aluminum alloys, Si < 9%	7075-T6	First choice for finish and rough machining: PCD20.
N2	Aluminum alloys, 9% < Si < 16%	413.2 Si = 12%	First choice for finish and rough machining: PCD20.
N3	Aluminum alloys, Si >16%	AISI17Cu5	First choice for finish and rough machining: PCD30.
N11	Copper alloys	UNS C38500	First choice for finish and rough machining: PCD20.

Other Difficult Materials

SMG	Properties	Reference	Recommendations
CC1	Sintered tungsten carbide	G50	Sintered tungsten carbide with a Co content >17%. Second choice for finish machining: PCD30.

Plastics and Composites

SMG	Properties	Reference	Recommendations
TS1	Thermosetting polymers	Urea formaldehyde (UF)	First choice for finish and rough machining: PCD20.
TS2	Thermosetting Carbon fiber composites	T300 T700 T800 HTA-S IMA - Epoxy (M21)...	First choice for finish and rough machining: PCD20.
TS3	Thermosetting Glass fiber composites	Epoxy - HX..(42..)/E glass (7781...)...	First choice for finish and rough machining: PCD20.
TP1	Thermoplastic polymers	Polycarbonate (PC)	First choice for finish and rough machining: PCD20.
TP2	Thermoplastic Carbon fiber composites	PPS/PEEK - T300..	First choice for finish and rough machining: PCD20.
TP3	Thermoplastic Glass fiber composites	PPS/PEEK - E glass or A glass...	First choice for finish and rough machining: PCD20.

Graphites

SMG	Properties	Reference	Recommendations
GR1	Graphite	R 8500	First choice for finish- and rough machining: PCD20.

PCD, Roughing a_p 0.020 – 0.120 inch

SMG	PCD20		PCD30	
	v_c	f	v_c	f
N1	1975 — 11475	0.0020 — 0.012	—	—
N2	1475 — 8200	0.0020 — 0.0080	—	—
N3	980 — 3275	0.0020 — 0.0040	980 — 3275	0.0040 — 0.016
N11	1975 — 3925	0.0040 — 0.020	1975 — 3925	0.0040 — 0.020
TS1	330 — 4925	0.0040 — 0.016	—	—
TS2	1300 — 2625	0.0040 — 0.0080	—	—
TS3	330 — 2625	0.0020 — 0.0080	—	—
TP1	330 — 4925	0.0040 — 0.016	—	—
TP2	1300 — 2625	0.0040 — 0.0080	—	—
TP3	330 — 2625	0.0020 — 0.0080	—	—
GR1	330 — 4925	0.0040 — 0.0080	—	—

PCD, Finishing $a_p < 0.020$ inch

SMG	PCD20		PCD30	
	v_c	f	v_c	f
N1	1975 — 11475	0.0020 — 0.012	—	—
N2	1475 — 8200	0.0020 — 0.0080	—	—
N3	980 — 3275	0.0020 — 0.0040	980 — 3275	0.0040 — 0.016
N11	1975 — 3925	0.0040 — 0.020	1975 — 3925	0.0040 — 0.020
CC1	—	—	33 — 65	0.0016 — 0.0060
TS1	330 — 4925	0.0040 — 0.016	—	—
TS2	1300 — 2625	0.0040 — 0.0080	—	—
TS3	330 — 2625	0.0020 — 0.0080	—	—
TP1	330 — 4925	0.0040 — 0.016	—	—
TP2	1300 — 2625	0.0040 — 0.0080	—	—
TP3	330 — 2625	0.0020 — 0.0080	—	—
GR1	330 — 4925	0.0040 — 0.0080	—	—

SMG = Seco Material Group

v_c = sf/min

f = in/tooth

a_p = inch

All cutting data are start values

Problem	Cause	Suggested action(s)
Flank wear 	Wrong grade Presence of Fe/Ni/Co	<ul style="list-style-type: none"> • Change to coarser PCD grade • Check material composition • Reduce cutting speed • Use coolant
Built-up edge 	Not correct edge temperature Wrong grade	<ul style="list-style-type: none"> • Decrease or increase cutting speed • Choose a sharper insert • Change to a finer grade
Edge chipping 	Poor rigidity Wrong grade Incorrect cutting data High run-out	<ul style="list-style-type: none"> • Minimize vibrations • Change to a tougher grade • Change cutting data • Check set-up
Poor surface finish	Wrong grade Too high cutting data Incorrect wiper position	<ul style="list-style-type: none"> • Change to a finer PCD grade • Reduce cutting speed and feed rate • Check wiper position
Flaking of workpiece	To high depth of cut	<ul style="list-style-type: none"> • Decrease depth of cut • Add entry chamfer on component

Introduction

Secomax ceramics include a range of products developed to meet the manufacturing industries ever increasing demands on productivity and product performance.

The inserts are die-pressed and sintered by a HIP process using very fine and pure raw materials with fine microstructure to reach excellent material properties. All surfaces are then ground ensuring a product with superior dimensions and tolerances.

This comes together in a product with outstanding features:

- high thermal shock resistance
- optimized fracture toughness
- excellent wear resistance
- high product quality

Application areas

Heat resistant superalloys (HRSA) include a broad range of nickel, iron and cobalt based alloys developed specifically for applications demanding exceptional mechanical and chemical properties at elevated temperatures.

Seco ceramic inserts are intended for rough machining of nickel based heat resistant superalloys. The most common nickel based superalloy is Inconel 718, which is a precipitation hardenable nickel chromium alloy containing significant amounts of iron, niobium and molybdenum along with lesser amounts of aluminum and titanium.

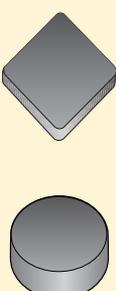
Other common nickel based superalloy names are:

- Hastalloy
- Haynes (Waspaloy)
- MAR
- Nimonic
- Rene
- Udimet

Selection of insert types

Ceramic inserts are only available in solid format.

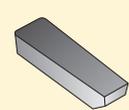
Solid insert



According to the geometry, two sides can be used.

Grade:
CS100

Solid insert



According to the geometry, one edge can be used.

Grade:
CW100

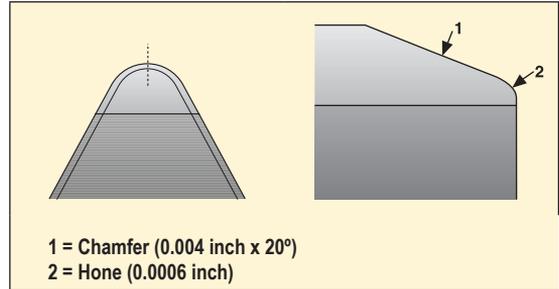
Geometry recommendations

Strong cutting edge geometries are always preferred.

- Negative cutting geometry
- Chamfered cutting edge
- Large nose radius

Edge preparation, chamfer size and angle

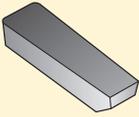
- E = Hone only
- S = Chamfered and honed
- T = Chamfered no hone



ISO classification

	P					M				K				N				S				H						
	P01	P10	P20	P30	P40	P50	M01	M10	M20	M30	M40	K01	K10	K20	K30	K40	N01	N10	N20	N30	S01	S10	S20	S30	H01	H10	H20	H30
CS100																												
CW100																												

Grades

<p>CS100</p> 	<p>Format: Solid</p> <p>Composition: Sialon (Si, Al, O, N) ceramic grade</p> <p>Uncoated</p>
<p>CW100</p> 	<p>Format: Solid</p> <p>Composition: Aluminum oxide (Al₂O₃) + SiC-whisker reinforced ceramic grade</p> <p>Uncoated</p>

Superalloys

SMG	Properties	Reference	Recommendations
S1	Iron based superalloys	Discalloy	First choice for rough machining: CS100 First choice for grooving: CW100 Use coolant
S2	Cobalt based superalloys	Stellite 21	First choice for rough machining: CS100 First choice for grooving: CW100 Use coolant
S3	Nickel based superalloys	Inconel 718	First choice for rough machining: CS100 First choice for grooving: CW100 Use coolant

Ceramics, Roughing a_p 0.020 – 0.120 inch

SMG	CS100	
	v_c	f
S1	490 — 820	0.0040 — 0.016
S2	490 — 980	0.0040 — 0.016
S3	490 — 980	0.0040 — 0.016

Ceramic, Grooving

SMG	CW100	
	v_c	f
S1	490 — 980	0.0020 — 0.010
S2	490 — 980	0.0020 — 0.010
S3	490 — 980	0.0020 — 0.010

SMG = Seco Material Group

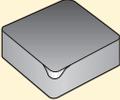
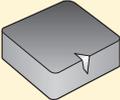
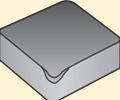
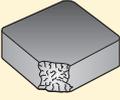
v_c = sf/min

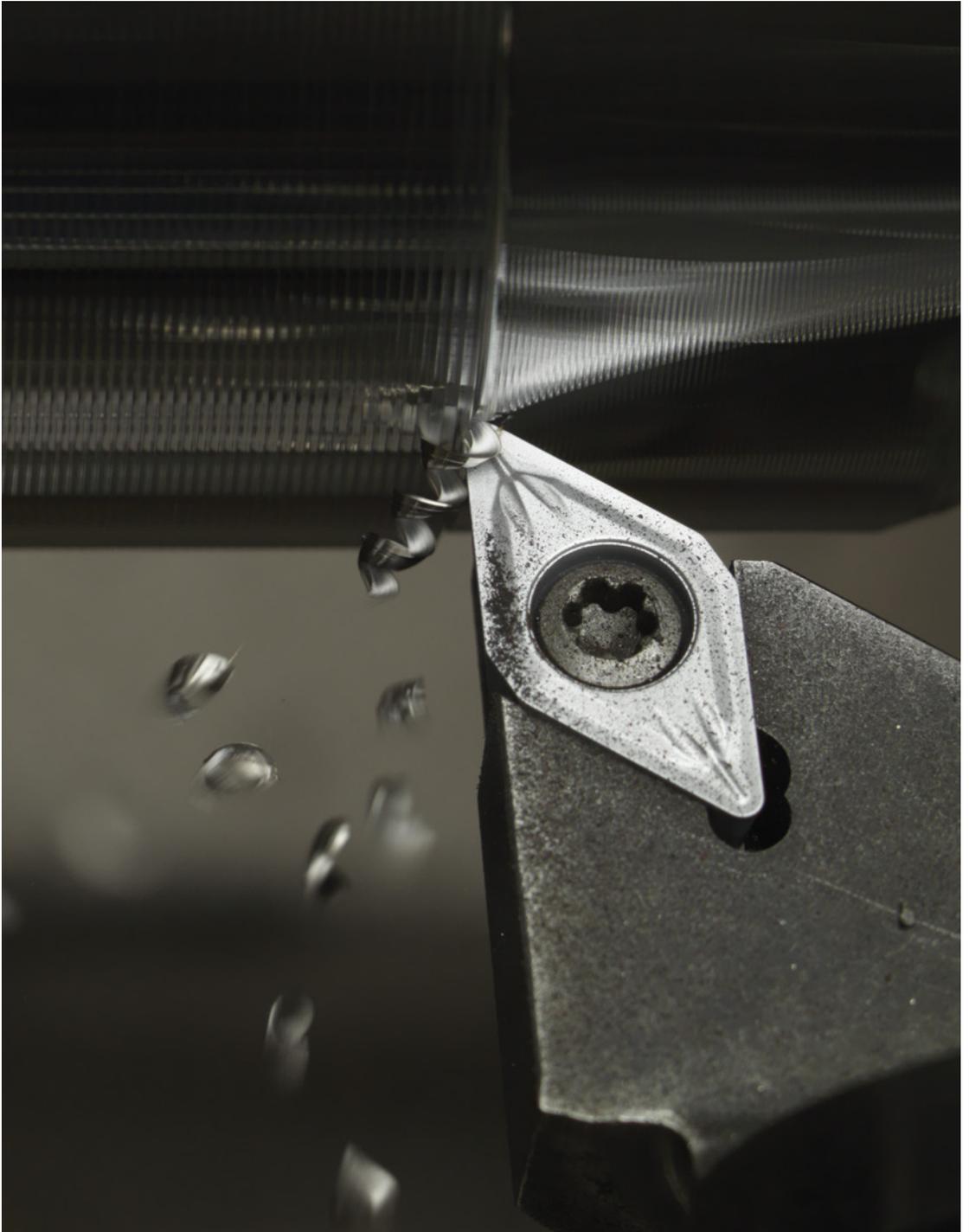
f = in/rev

a_p = inch

All cutting data are start values

Troubleshooting

Problem	Cause	Suggested action(s)
Flank wear 	Excessive feed rate and cutting speed	<ul style="list-style-type: none"> • Reduce cutting speed • Use larger corner radius • Use high wear-resistant grade
Crater wear 	Excessive feed rate and cutting speed	<ul style="list-style-type: none"> • Reduce cutting speed • Use smaller lead angle • Check edge geometry
Thermal cracking 	Severe cycle of heating & cooling during cutting Excessive feed rate and cutting speed	<ul style="list-style-type: none"> • Change to dry machining • Reduce cutting speed • Reduce feed rate
Notch wear 	Excessive feed rate and cutting depth	<ul style="list-style-type: none"> • Reduce cutting depth • Reduce feed rate • Increase coolant supply
Edge flaking 	Excessive feed rate Separation of BUE Weak cutting edge	<ul style="list-style-type: none"> • Check edge geometry • Increase stability of the system • Use larger lead angle
Plastic deformation 	Excessive feed rate and cutting speed	<ul style="list-style-type: none"> • Reduce cutting speed • Reduce feed rate • Reduce cutting depth
Built-up edge 	High affinity with workpiece Low cutting speed	<ul style="list-style-type: none"> • Increase cutting speed • Increase feed rate • Use larger rake angle
Breakage 	Excessive feed rate and cutting depth	<ul style="list-style-type: none"> • Reduce feed rate • Reduce cutting depth • Increase stability of the system



Torque key range

For most Seco milling products, torque keys with fixed torque values are available in combinations of key grips and torque values for insert locking. Using a Torque key will ensure the correct tightening force when mounting an insert. The torque value is given on page 85 for each screw.

Torque keys are calibrated according to ISO 6789.

Code key: T00-15P35

- T00 = Torque screwdriver type for Torx Plus blade
- T00T = Torque T-handle type for Torx Plus blade
- H00 = Torque screwdriver for hexagonal blade
- H00T = Torque T-handle type for hexagonal blade

- 15P = Torx Plus size
- 35 = Torque value 3.5 Nm

Torque key*	Replaceable blade	Hexagonal size	Torque in/lbs	Torque value
		1.3 mm	4 in/lbs	0.5 Nm
H00-1505	H00-1.5	1.5 mm	4 in/lbs	0.5 Nm
H00-1509	H00-1.5	1.5 mm	7 in/lbs	0.9 Nm
H00-2009	H00-2.0	2.0 mm	7 in/lbs	0.9 Nm
H00-2016	H00-2.0	2.0 mm	14 in/lbs	1.6 Nm
H00-2020	H00-2.0	2.0 mm	17 in/lbs	2.0 Nm
H00-2512	H00-2.5	2.5 mm	10 in/lbs	1.2 Nm
H00-2530	H00-2.5	2.5 mm	26 in/lbs	3.0 Nm
H00-2535	H00-2.5	2.5 mm	30 in/lbs	3.5 Nm
H00-3020	H00-3.0	3.0 mm	17 in/lbs	2.0 Nm
H00-4030	H00-4.0	4.0 mm	26 in/lbs	3.0 Nm

*Including blade

Blades are not interchangeable between screwdriver type and T-handle type. Torx Plus® is a registered trade mark belonging to Camcar-Textron (USA)

Torque key*	Replaceable blade	Hexagonal size	Torque in/lbs	Torque value
		3 mm	44 in/lbs	5.0 Nm
H00T-4050	H00T-4.0	4 mm	44 in/lbs	5.0 Nm
H00T-4060	H00T-4.0	4 mm	53 in/lbs	6.0 Nm
H00T-5080	H00T-5.0	5 mm	70 in/lbs	8.0 Nm
H00T-60100	H00T-6.0	6 mm	88 in/lbs	10.0 Nm

*Including blade

Torque key*	Replaceable blade	Torque Plus size	Torque in/lbs	Torque value
		T06P	4 in/lbs	0.5 Nm
T00-07P05	T00-07P	T07P	4 in/lbs	0.5 Nm
T00-07P09	T00-07P	T07P	7 in/lbs	0.9 Nm
T00-08P12	T00-08P	T08P	10 in/lbs	1.2 Nm
T00-09P09	T00-09P	T09P	7 in/lbs	0.9 Nm
T00-09P12	T00-09P	T09P	10 in/lbs	1.2 Nm
T00-09P20	T00-09P	T09P	17 in/lbs	2.0 Nm
T00-10P20	T00-10P	T10P	17 in/lbs	2.0 Nm
T00-10P30	T00-10P	T10P	26 in/lbs	3.0 Nm
T00-15P20	T00-15P	T15P	17 in/lbs	2.0 Nm
T00-15P30	T00-15P	T15P	26 in/lbs	3.0 Nm
T00-15P35	T00-15P	T15P	30 in/lbs	3.5 Nm
T00-15P50	T00-15P	T15P	44 in/lbs	5.0 Nm
T00-20P35	T00-20P	T20P	30 in/lbs	3.5 Nm
T00-20P50	T00-20P	T20P	44 in/lbs	5.0 Nm

*Including blade

Torque key*	Replaceable blade	Torque Plus size	Torque in/lbs	Torque value
		T15P	44 in/lbs	5.0 Nm
T00T-20P50	T00T-20P	T20P	44 in/lbs	5.0 Nm
T00T-20P60	T00T-20P	T20P	53 in/lbs	6.0 Nm
T00T-20P80	T00T-20P	T20P	70 in/lbs	8.0 Nm
T00T-25P50	T00T-25P	T25P	44 in/lbs	5.0 Nm
T00T-25P60	T00T-25P	T25P	53 in/lbs	6.0 Nm
T00T-25P80	T00T-25P	T25P	70 in/lbs	8.0 Nm
T00T-30P80	T00T-30P	T30P	70 in/lbs	8.0 Nm

*Including blade

Torque value for clamping screws

Torque value for each screw is shown below

Screw designation	Torque in/lbs	Torque Nm	Torque key
110.26-655	89	10.0	-
117.26-655	35	4.0	-
117.26-657	27	3.0	H00-2530
170.26-655	53	6.0	H00T-4060
C02205-T07P	8	0.9	T00-07P09
C02505-T07P	8	0.9	T00-07P09
C02506-T07P	8	0.9	T00-07P09
C03007-T09P	18	2.0	T00-09P20
C03508-T15P	27	3.0	T00-15P30
C03509-T15P	27	3.0	T00-15P30
C03510-T15P	27	3.0	T00-15P30
C03511-T09P	27	3.0	-
C03512-T15P	27	3.0	T00-15P30
C04008-T15P	31	3.5	T00-15P35
C04010-T15P	31	3.5	T00-15P35
C04011-T15P	31	3.5	T00-15P35
C04014-T15P	31	3.5	T00-15P35
C04512-T15P	44	5.0	T00-15P50
C04518-T15P	44	5.0	T00-15P50
C05010-T20P	44	5.0	T00-20P50
C05012-T15P	44	5.0	T00-15P50
C05013-T20P	44	5.0	T00-20P50
C05018-T20P	44	5.0	T00-20P50
C11804-T06P	4	0.5	T00-06P05
C46017-T20P	53	6.0	T00T-20P60
C82204-T06P	4	0.5	T00-06P05
CC05	8	0.9	H00-1509
CC08P-V13	18	2.0	T00-09P20
CC09P-D11	18	2.0	T00-09P20
CC12P-S12	31	3.5	T00-15P35
CC14	53	6.0	H00T-4060
CC16	89	10.0	-
CC17P	89	10.0	-
CC17P-06	89	10.0	-
CC17P-09	89	10.0	-
CC20P	89	10.0	-
CC20P-V13	89	10.0	-
CD09-S09	18	2.0	T00-09P20
CD12-S12	31	3.5	T00-15P35
CD16-C16	44	5.0	T00-20P50
CD19-S19	44	5.0	T00-20P50
CD19-V16	44	5.0	T00-20P50
CSC8015-T20P	44	5.0	T00-20P50
CSC1015-T20P	44	5.0	T00-20P50
CSP16-T15P	18	2.0	T00-15P20
CSP22-T25P	27	3.0	T00-15P30
CSP27-T25P	53	6.0	T00T-25P60

For the Seco range of torque keys, please see page 84.

Screw designation	Torque in/lbs	Torque Nm	Torque key
L84017-T09P	18	2.0	T00-09P20
L85011-T15P	44	5.0	T00-15P50
L85012-T15P	44	5.0	T00-15P50
L85017-T09P	18	2.0	T00-09P20
L85020-T15P	35	4.0	-
L86015-T20P	53	6.0	-
L86025-T20P	58	6.5	-
LD1035-T25P	53	6.0	T00T-25P60
LD5020-T09P	18	2.0	T00-09P20
LD6020-T15P	27	3.0	T00-15P30
LD6021-T09P	18	2.0	T00-09P20
LD6024-T20P	18	2.0	-
LD6025-T15P	27	3.0	T00-15P30
LD6026-T09P	18	2.0	T00-09P20
LD8025-T25P	53	6.0	T00T-25P60
LD8030-T25P	53	6.0	T00T-25P60
LS0512	22	2.5	-
LS0613	27	3.0	H00-2530
LS0616	27	3.0	H00-2530
LS0818	35	4.0	-
LS0822	35	4.0	-
MC6S4X14	31	3.5	-
MC6S4X18	31	3.5	-
MC6S5X14	44	5.0	H00T-4050
MC6S5X18	44	5.0	H00T-4050
MN0909L-T09P	18	2.0	T00-09P20
MN1215L-T15P	27	3.0	T00-15P30
MN1215R-T15P	27	3.0	T00-15P30
MN1215S-T15P	27	3.0	T00-15P30
MN1215T-T15P	27	3.0	T00-15P30
MN1515-T15P	27	3.0	T00-15P30
MN1515SL-T15P	27	3.0	T00-15P30
MN1520-T20P	53	6.0	T00T-20P60
MN1920-T20P	53	6.0	T00T-20P60
MN1925-T25P	44	5.0	T00T-25P50
MN2525-T25P	53	6.0	T00T-25P60
PL1403-T09P	22	2.5	T00-09P20
TCEI0409	31	3.5	-
TCEI0509	53	6.0	H00T-4060
TCEI0513	53	6.0	H00T-4060
TCEI0609	71	8.0	H00T-5080
TCEI0613	71	8.0	H00T-5080
TCEI0614	71	8.0	H00T-5080
TCEI0620	71	8.0	H00T-5080
TCEI0815	89	10.0	H00T-60100
TCEI0825	89	10.0	H00T-60100
TCEI1020	133	15.0	-
WS1620-T20P	31	3.5	T00-20P35
WS1920-T20P	31	3.5	T00-20P35
WS2325-T25P	44	5.0	T00T-25P50

Jetstream Tooling® – Introduction

Seco Jetstream Tooling is a revolutionary method of delivering coolant precisely to the cutting zone.

It works by delivering a concentrated high pressure jet of coolant at high velocity straight to the optimum position close to the cutting edge.

The jet lifts the chips away from rake face, improving chip control and tool life enabling increased cutting data.

It is proven to show improvement in nearly all material groups and with a wide choice of coolant pressures.

Seco Jetstream Tooling Duo holders, yet another innovation introduced to market, feature both a rake face and flank face jet, that can provide even better chip control and significantly longer tool life. Note the addition of roughing inducer option see page 87.

The standard range of Jetstream Tooling is based on ISO toolholders. It can be mounted and used on a large selection of machines.

Coolant can either be supplied to the toolholder externally through a coolant hose which is attached to one of the inlet positions of the toolholder or internally in the case of Seco-Capto holders.

Hoses are available, allowing the coolant supply to be connected to almost any position on the turret or tool block.

Seco Jetstream Tooling consists of holders for external turning, both square shanks and Seco-Capto backends.

Products are available for turning with positive and negative inserts, as well as MDT.

Maximum coolant pressure recommended for use with standard shank type Jetstream Tooling is 4000 psi (275 bar).

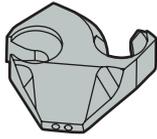
For Seco-Capto toolholders the maximum pressure is 1000 psi (70 bar). Here the limitation is the clamping units.

Technical information

For designation of Jetstream Tooling holders please refer to code key pages.

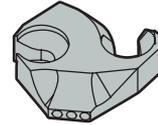


Finishing inducer (Included in delivery)



The mounted Jetstream Tooling® Finishing Inducer gives a universally applicable coolant jet, which provides a well positioned coolant wedge for finishing to medium-roughing applications.

Roughing inducer (Ordered separately)



As accessories, Jetstream Tooling® Roughing Inducers available for easy exchange, providing a more boosted coolant wedge for clearer roughing applications or for cases demanding more space for chip flow.

Changing the insert

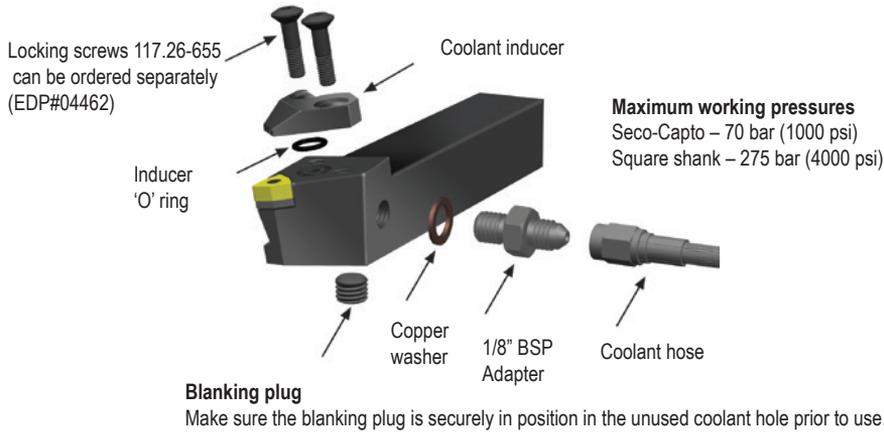
Simply loosen both locking screws, and rotate the inducer clear of the insert. Check the conditions of the tool, screws and O-ring and exchange regularly. Change or index the insert in the standard way before rotating the inducer back into position (make sure the inducer O-ring is still in place) and re-tighten the insert locking screw before locking the inducer.



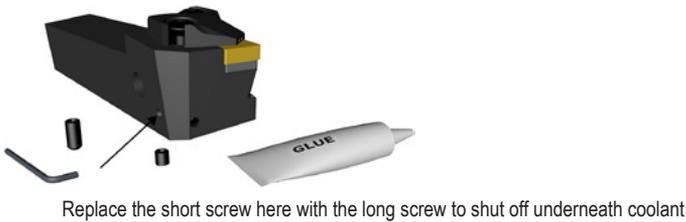
Assembly instructions

For personal safety, Jetstream Tooling® should only be used with the machine door in a fully closed position in accordance with general machine safety procedures. Please ensure that the coolant hose is located correctly and fully tightened with all seals in position. The unused coolant hole should have a blanking plug fitted. Please note the maximum safe working pressures shown below.

The maximum torque for tightening the inducer locking screw 117.26-655 is 88 in/lbs (10 Nm).

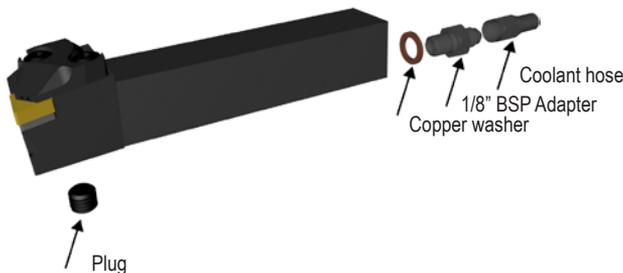


In the rare case you need to shut off the Duo outlet underneath the insert, first remove the short screw in the side of the toolholder. Then mount the long plugging screw P6SS4X8 (EDP#91623) using suitable glue to seal the thread (e.g. Loctite® 270). Plugging the underneath outlet has to be considered permanent and irreversible.



Alternative coolant inlet

The range of toolholders ...B offers one coolant inlet underneath and one in the back of the shank.



For Accessories, see page 89.

Hoses, Part No. ordering code includes spare parts

Connection type	Part No.	Length (mm)
Straight fitting 	JET-HOSE150SS	150
	JET-HOSE200SS	200
	JET-HOSE250SS	250
	JET-HOSE300SS	300
Banjo fitting 	JET-HOSE150BS	150
	JET-HOSE200BS	200
	JET-HOSE250BS	250
	JET-HOSE300BS	300
Banjo-to-Banjo fitting 	JET-HOSE150BB	150
	JET-HOSE200BB	200
	JET-HOSE250BB	250
	JET-HOSE300BB	300

All hoses are pressure rated to a maximum of 275 bar (3990 psi)
Please check availability in current price and stock-list

Spare Parts, Parts included in delivery

Part No.		...SS	...BS	...BB
JET-CFP1/8BSP		■	■	■
JET-CBP15		■	■	■
JET-AD1/8BSP		■	■	
JET-ADM10		■		
JET-BBM10			■	■
JET-BB1/8BSP			■	■
JET-C1/4-1/8BSP			■	■
JET-P1/8-5mm		■	■	■
JET-WM10*		■	■	■
JET-ORING10X1**		■	■	■

When ordered separately pack of 2, except *Pack of 20.

** Not suitable for use in inducer. Inducer O-rings are shown on product pages. These O-rings are for use with JET-CFP1/8BSP and JET-CBP15.

For assembly instructions, see page 88

Introduction

Seco offers a range of small diameter boring bars to machine holes as small as 0.183 inch diameter. Inserts are available in C and T shape.

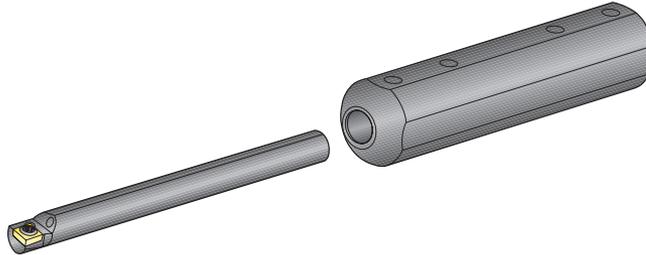
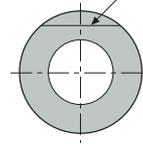
The toolholders are available in steel and have the possibility for internal through coolant.

Set-up information

When positioned in the machine the insert will sit slightly above center line. This is a design feature of the tool that compensates for the deflection and improves the machining operation.

When setting the tool in the machine be sure to position it with the flat parallel and in the same plane as the bed of the machine.

Position flat parallel
with machine bed



Introduction

Turning – Railway wheels

The product range consists of:

- Inserts for machining of new wheels
- Inserts for railway wheel re-turning (RWRT)
- Cassettes for railway wheel re-turning (RWRT)

Railway machining inserts and cassettes can be found on pages 585-589.

Machining of new wheels

RCMX-R2, -RR94, -RR97



Strong geometries for machining at high feed rates.

Feed recommendation: 0.024-0.60 in/rev
D.O.C. recommendation: $a_p < 0.600$ inch

SNMM-R7

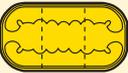


For roughing operations at high feed rates and large depth of cut.

Feed recommendation: 0.024-0.048 in/rev
D.O.C. recommendation: $a_p < 0.600$ inch

Inserts for railway wheel re-turning (RWRT)

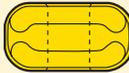
LNMX-MF



For re-machining at small depth of cut. (Normally used when machining with an under floor lathe).

Feed recommendation: 0.016-0.040 in/rev
D.O.C. recommendation: $a_p < 0.400$ inch

LNMX-MR

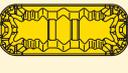


Basic choice for re-machining.

Feed recommendation: 0.024-0.080 in/rev
D.O.C. recommendation: $a_p < 0.600$ inch

New inserts and geometries for railway wheel re-turning (RWRT)

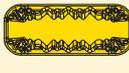
LNMX19-R2



R2 – for less worn out, soft wheels for best chip control.

Feed recommendation: 0.016-0.042 in/rev
D.O.C. recommendation: $a_p = 0.080-0.200$ inch

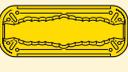
LNMX-RR94



RR94 – for the moderately damaged wheels.

D.O.C. and feed recommendation:
LNMX19, $a_p = 0.080-0.200$ inch; $f = 0.018-0.055$ in/rev
LNMX30, $a_p = 0.080-0.400$ inch; $f = 0.022-0.070$ in/rev

LNMX-RR97



RR97 – for the highly damaged wheels at high parameters.

D.O.C. and feed recommendation:
LNMX30, $a_p = 0.080-0.480$ inch; $f = 0.030-0.70$ in/rev

SNMX-R2



SNMX-R2 inserts can be economically used for less skidded or first time re-turned wheels.

D.O.C. and feed recommendation:
SNMX6710, $a_p = 0.080-0.200$ inch; $f = 0.030-0.070$ in/rev

Cassettes for railway wheel re-turning RWRT

Standard products

CT-PLANR/L (R/L175.32)



Pin clamped cassettes for LNMX19 and LNMX30

Right-hand version shown

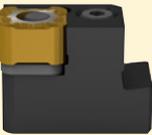
CT-PLFNR/L (R/L177.32-3219-19)



Pin clamped cassettes for LNMX19 and LNMX30

Right-hand version shown

CT-PSANR/L



Lever clamped cassettes for SNMX1911

Right-hand version shown

The cassettes are equipped with carbide shims for insert support and cassette protection.

The toolholders for these cassettes are machine specific. The combination cassettes are also machine specific. Some of them are offered as specials.



Universal insert: LNMX191940-RR94 Tool life = 60 min $a_p = 0.310$ inch Holder: CT-PLANL3223-19

SMG	TP0500			TP2500			TP200		
	f (in/rev)			f (in/rev)			f (in/rev)		
	0.024	0.035	0.047	0.024	0.035	0.047	0.024	0.035	0.047
P4	560	365	250	435	320	245	375	310	265

Universal insert: LNMX401432-RR93 Tool life = 60 min $a_p = 0.200$ inch Holder: PLBNR6060V40-A (Metric)

SMG	TP0500			TP2500			TP200		
	f (in/rev)			f (in/rev)			f (in/rev)		
	0.024	0.039	0.059	0.024	0.039	0.059	0.024	0.039	0.059
P8	590	345	205	450	305	210	375	295	240

Universal insert: RCMX320900-R2 Tool life = 60 min $a_p = 0.160$ inch Holder: PRDCN5050T32 (Metric)

SMG	TP0500			TP2500			TP200		
	f (in/rev)			f (in/rev)			f (in/rev)		
	0.020	0.039	0.059	0.020	0.039	0.059	0.020	0.039	0.059
P4	810	420	250	590	355	250	460	335	270

Universal insert: RCMX250700-RR97 Tool life = 60 min $a_p = 0.240$ inch Holder: PRDCN4040S25 (Metric)

SMG	TP0500			TP2500			TP200			TP40		
	f (in/rev)			f (in/rev)			f (in/rev)			f (in/rev)		
	0.024	0.039	0.059	0.024	0.039	0.059	0.024	0.039	0.059	0.024	0.039	0.059
P4	630	370	210	485	325	225	405	320	255	310	200	135

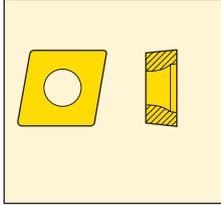
Universal insert: SNMM856-R7 Tool life = 60 min $a_p = 0.100$ inch Holder: PSBNR4040S25 (Metric)

SMG	TP0500			TP2500			TP200		
	f (in/rev)			f (in/rev)			f (in/rev)		
	0.024	0.039	0.059	0.024	0.039	0.059	0.024	0.039	0.059
P4	790	510	330	580	405	300	445	360	300

Nomenclature and formulae

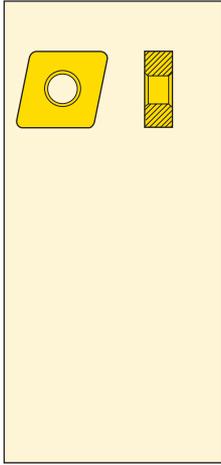
<p>RPM</p>	$n = 3.82 \times \frac{v_c}{D}$	<p>(rev/min)</p>	<p>a_p = Depth of cut</p>	<p>(inch)</p>
<p>Cutting speed</p>	$v_c = .262 \times D \times n$	<p>(sf/min)</p>	<p>D_c = Workpiece diameter</p>	<p>(inch)</p>
<p>Metal removal rate</p>	$Q = 12 \times a_p \times f \times v_c$	<p>(in³/min)</p>	<p>E = Efficiency of spindle drive</p>	
<p>Feed rate</p>	$f_m = f \times n$	<p>(in/min)</p>	<p>f = Feed rate</p>	<p>(in/rev)</p>
<p>Cutting time</p>	$t = \frac{L}{f_m}$	<p>(min)</p>	<p>f_m = Feed rate</p>	<p>(in/min)</p>
<p>Horsepower required at spindle</p>	$HP_s = Q \times P$	<p>(hp)</p>	<p>h = Chip thickness</p>	<p>(inch)</p>
<p>Horsepower required at motor</p>	$HP_m = \frac{Q \times P}{E}$	<p>(hp)</p>	<p>HP_m = Horsepower at motor</p>	<p>(hp)</p>
<p>Torque at spindle</p>	$T_s = \frac{63,030 \text{ HP}_s}{n}$	<p>(in/lbs)</p>	<p>HP_s = Horsepower at spindle</p>	<p>(hp)</p>
<p>Profile depth</p>	$R_{max} = \frac{f^2 \times 1,000,000}{8 \times \text{rep}}$	<p>(μin)</p>	<p>L = Length of cut</p>	<p>(inch)</p>
<p>Surface finish</p>	$R_a = (1/y)^2 \text{ where:}$ $y = \frac{0.001 \times \sqrt{21.6 \times r}}{f}$	<p>(μin)</p>	<p>n = RPM</p>	<p>(rev/min)</p>
			<p>P = Unit power factor per cubic inch per minute (for P values see page 46)</p>	<p>(hp)</p>
			<p>Q = Metal removal rate</p>	<p>(in³/min)</p>
			<p>R_a = Surface finish (arithmetic average deviation)</p>	<p>(μin)</p>
			<p>rep = Nose radius</p>	<p>(inch)</p>
			<p>r_{max} = Profile depth</p>	<p>(μin)</p>
			<p>t = Cutting time</p>	<p>(min)</p>
			<p>T_s = Torque at spindle</p>	<p>(in/lbs)</p>
			<p>v_c = Cutting speed</p>	<p>(sf/min)</p>

Inserts CC..



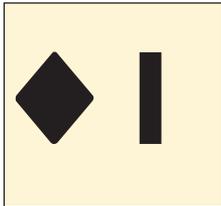
SCLCR/L...JET 95° Page 112	SCLCR/L 95° Page 155	SCGCR/L 90° Page 154	SCRCR/L 75° Page 157	SCMCN 50° Page 156
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Inserts CN..



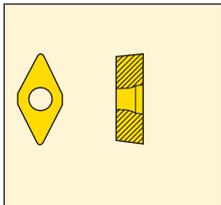
PCLNR/L...JETL 95° Page 106	DCLNR/L 95° Page 118	MCLNR/L 95° Page 119	PCLNR/L (metric) 95° Page 120	DCKNR/L 75° Page 116	MCKNR/L 75° Page 117
MCRNR/L 75° Page 122	MCMNN 40° Page 121				

Inserts CN.N



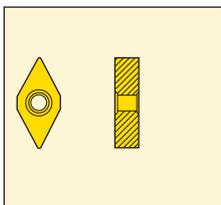
CCLNR/L 95° Page 170

Inserts DC..



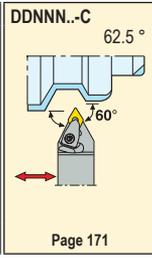
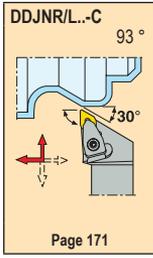
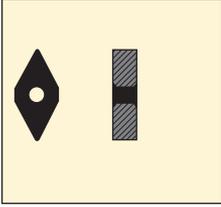
SDJCR/L...JET 93° Page 113	SDJCR/L 93° Page 158	SDPCN 62.5° Page 159
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Inserts DN..

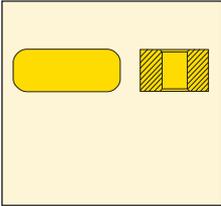


PDJNR/L...JETL 93° Page 107	DDJNR/L 93° Page 123	MDJNR/L 93° Page 124	DDQNR/L 107.5° Page 126	DDPNN 62.5° Page 125
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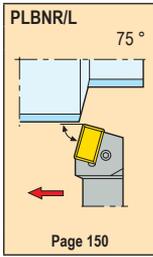
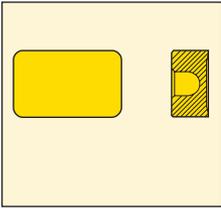
Inserts DN.A



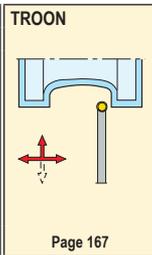
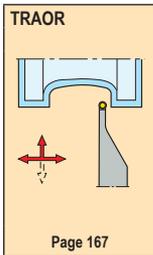
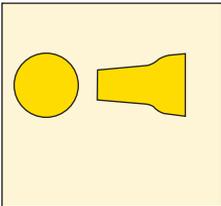
Inserts LNMX19..



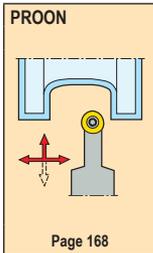
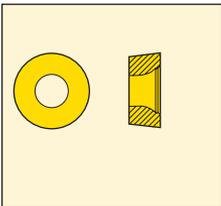
Inserts LN..40/50



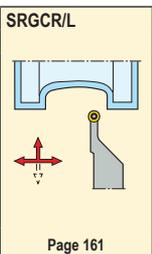
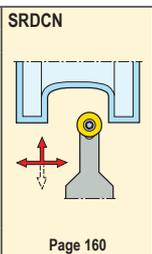
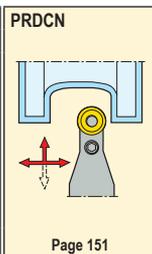
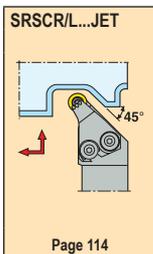
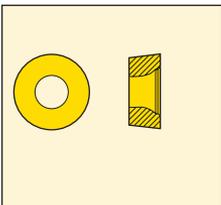
Inserts RCG.



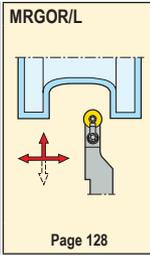
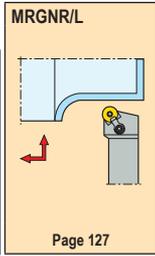
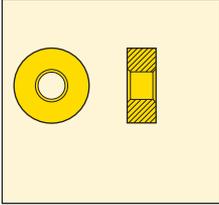
Inserts RCMM



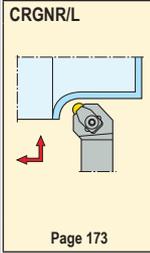
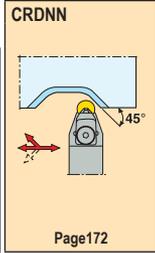
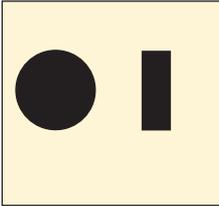
Inserts RC..



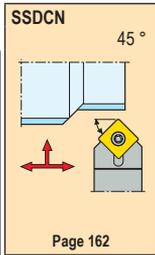
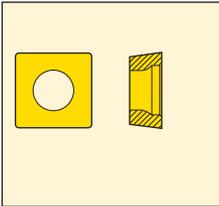
Inserts RN..



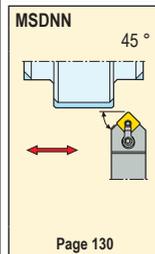
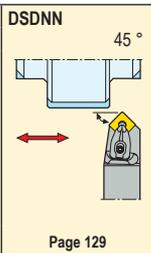
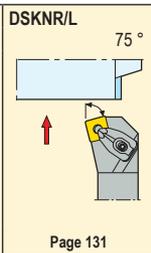
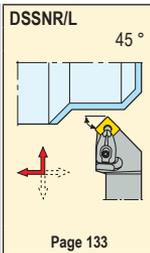
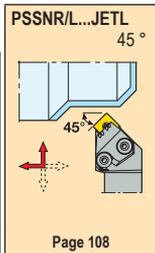
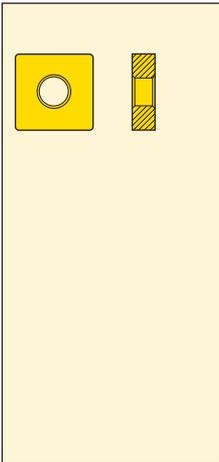
Inserts RN.N



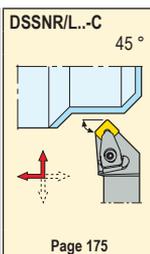
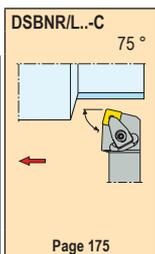
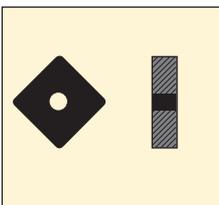
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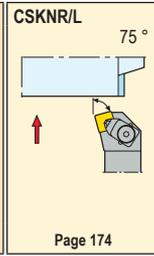
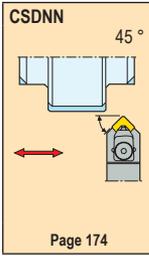
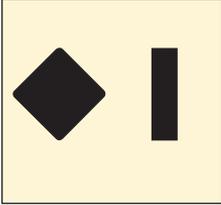
Inserts SN..



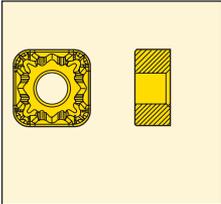
Inserts SN.A



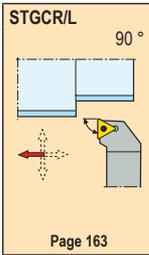
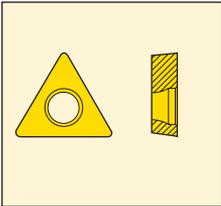
Inserts SN.N



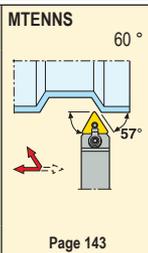
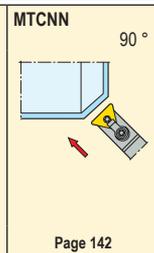
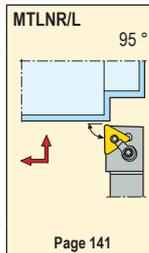
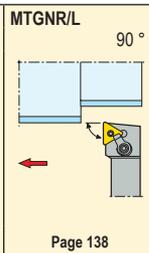
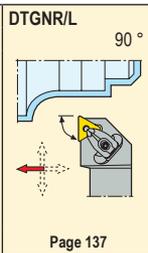
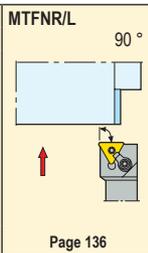
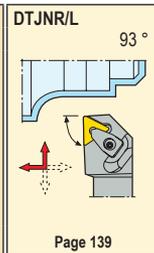
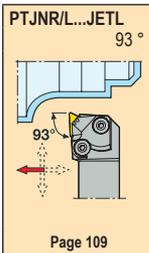
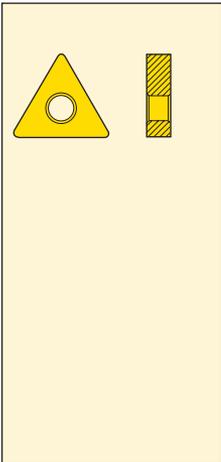
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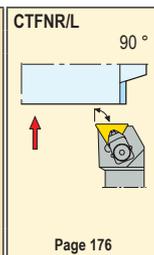
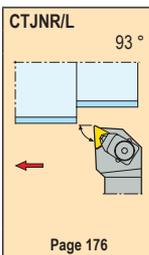
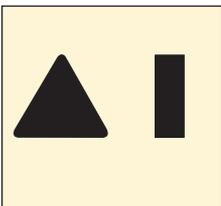
Inserts TC..



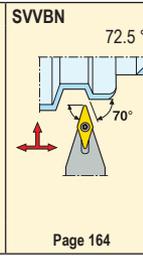
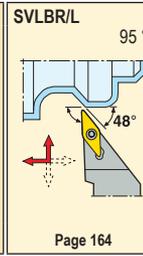
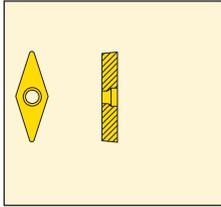
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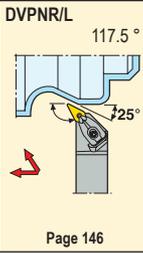
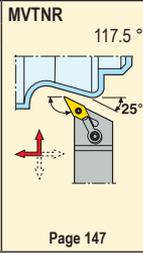
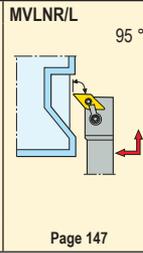
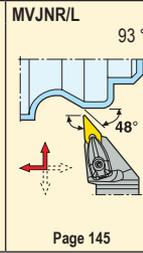
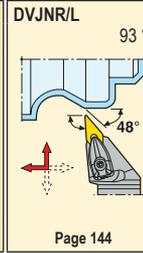
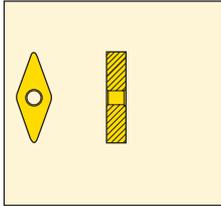
Inserts TN.N



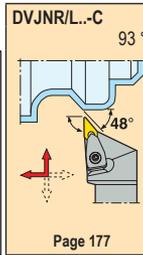
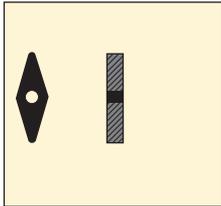
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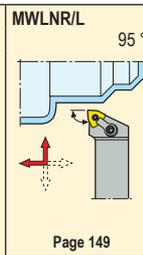
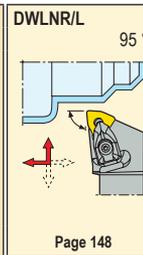
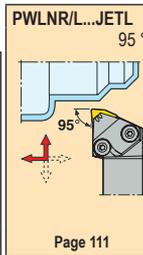
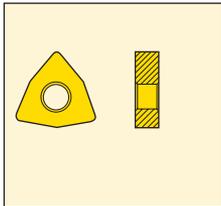
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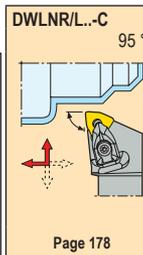
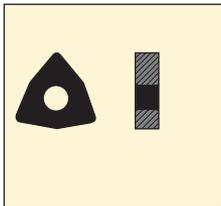
Inserts VN.A



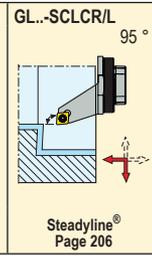
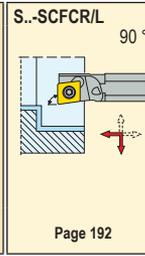
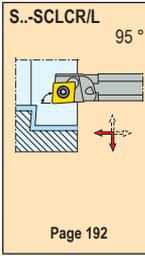
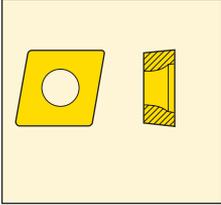
Inserts WN..



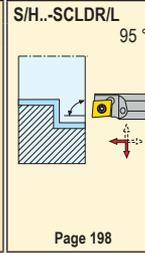
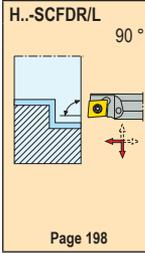
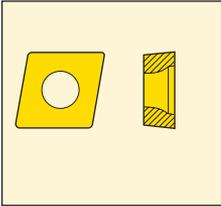
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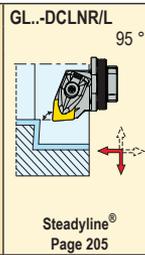
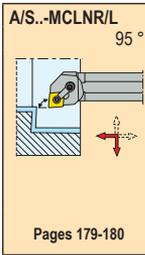
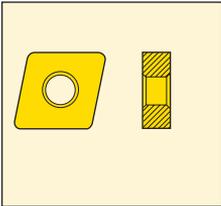
Inserts CC..



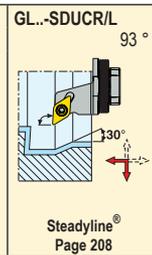
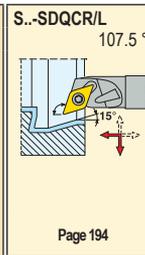
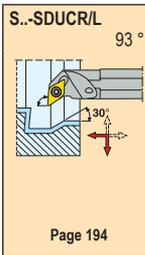
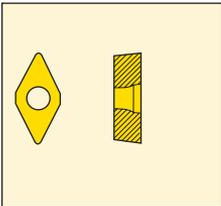
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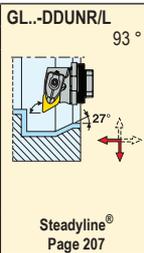
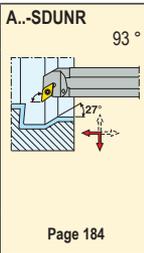
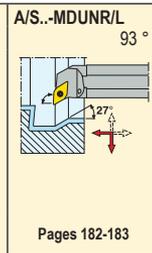
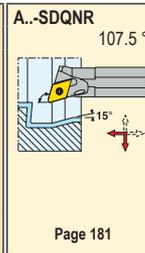
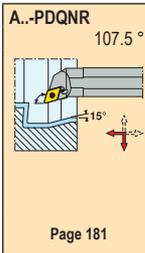
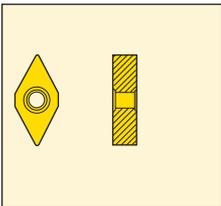
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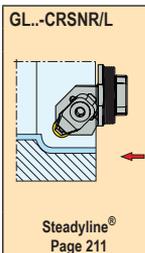
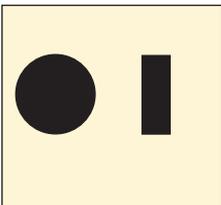
Inserts DC..



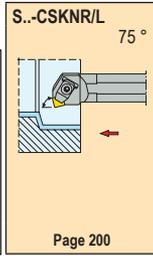
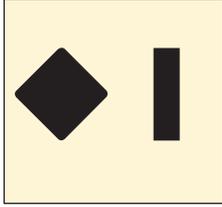
Inserts DN..



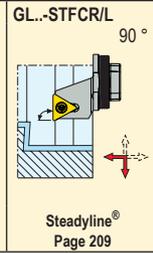
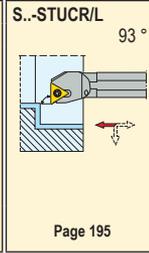
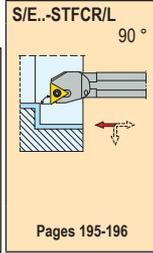
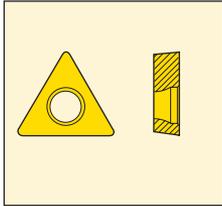
Inserts RN.N



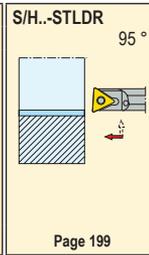
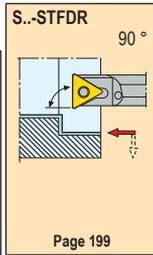
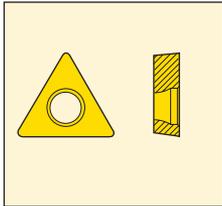
Inserts SN.N



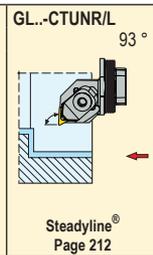
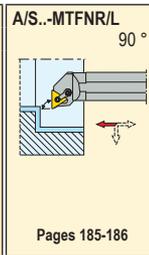
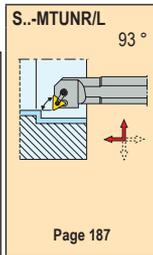
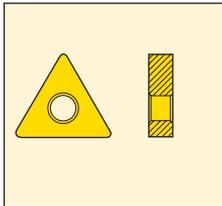
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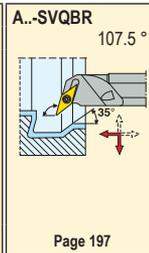
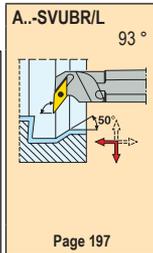
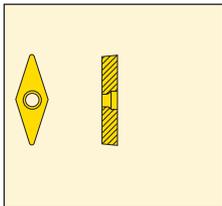
Inserts TD..



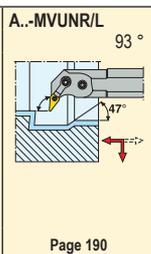
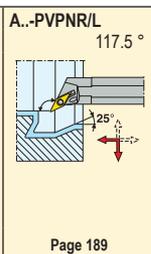
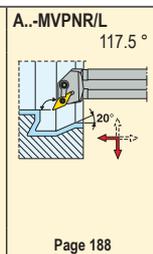
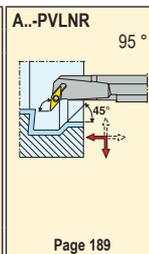
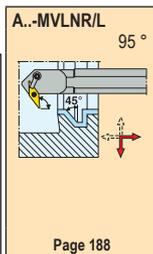
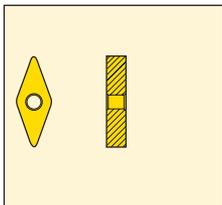
Inserts TN..



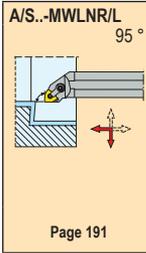
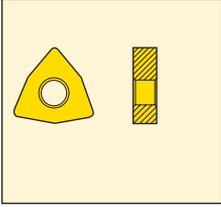
Inserts VB..



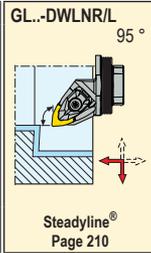
Inserts VN..



Inserts WN..

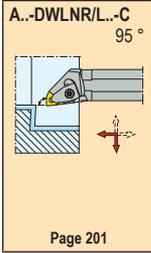
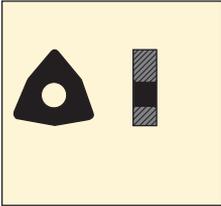


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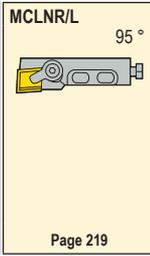
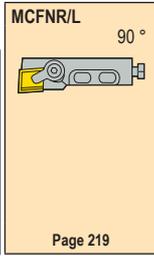
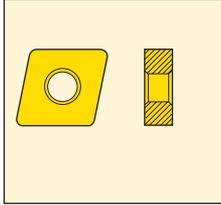
Steadyline®
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Inserts WN.A

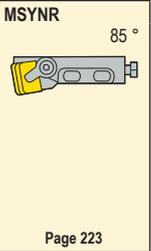
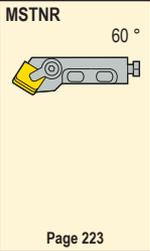
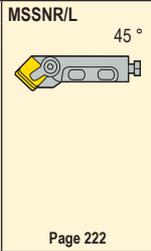
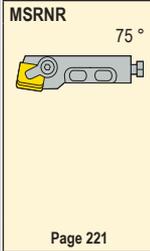
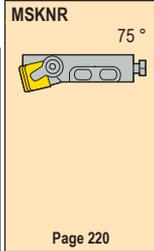
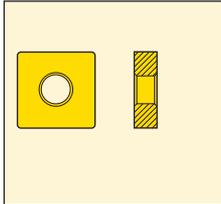


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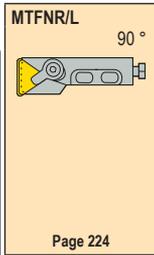
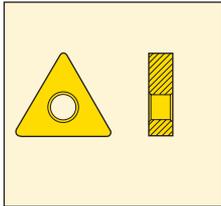
Inserts CN..



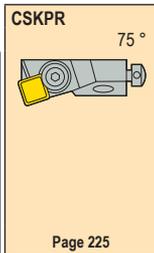
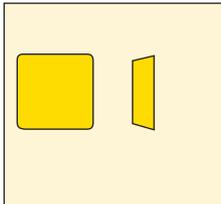
Inserts SN..



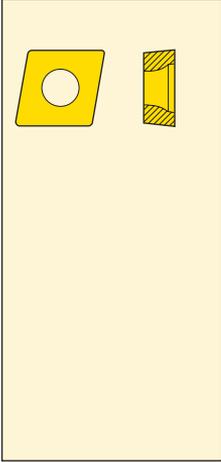
Inserts TN..



Inserts SP..



Inserts CC..



SCFCR/L 90°

Page 226

SCLCR/L 95°

Page 226

SCGCR/L 90°

Page 227

SCRCR/L 75°

Page 228

SCTCR/L 60°

Page 228

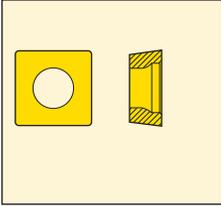
SCWCR/L 60°

Page 226

SCSCR/L 45°

Page 227

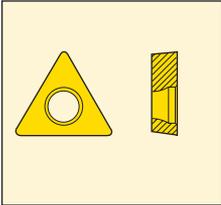
Inserts SC..



SSKCR/L 75°

Page 229

Inserts TC..



STFCR/L 90°

Page 230

STGCR/L 90°

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STRCR/L 75°

Page 231

STTCR/L 60°

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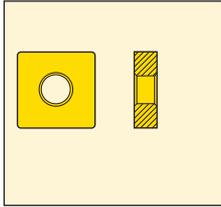
STWCR/L 60°

Page 230

STSCR/L 45°

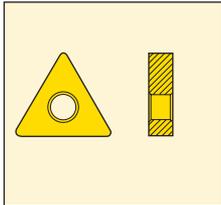
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Inserts SN..



MSKNR 15° Page 232	MSSNR 45° Page 232	MSTNR 30° Page 233	MSYNR 5° Page 233
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Inserts TN..



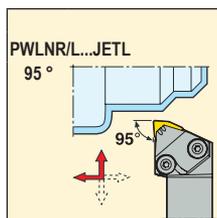
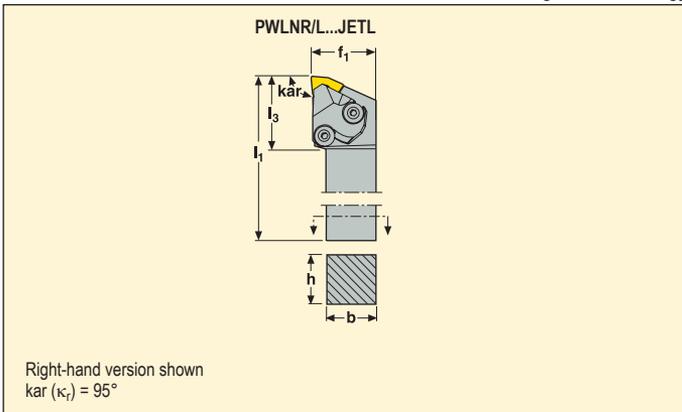
MTFNR 90° Page 234

Toolholders for inserts WNGA, WNMA, WNMG and WNMM

Jetstream Tooling Duo technology



- For insert program, see pages 296-299, 326-327
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 12-13



I.C.	EDP No.	Part No.	Dimensions in inch					γ_0°	λ_s°	lbs	
			h	b	l ₁	f ₁	l ₃				
3/8	19842	PWLN R -12-3BJETL	0.75	0.75	4.50	1.06	1.50	-6	-6	1.1	WN..33.
	19884	-16-3DJETL	1.00	1.00	6.00	1.26	1.50	-6	-6	2.0	WN..33.
	19836	PWLN L -12-3BJETL	0.75	0.75	4.50	1.06	1.50	-6	-6	1.1	WN..33.
	19877	-16-3DJETL	1.00	1.00	6.00	1.26	1.50	-6	-6	2.0	WN..33.
1/2	19885	PWLN R -12-4BJETL	0.75	0.75	4.50	1.06	1.42	-6	-6	1.1	WN..43.
	19831	-16-4DJETL	1.00	1.00	6.00	1.26	1.42	-6	-6	1.8	WN..43.
	19902	-20-4DJETL	1.25	1.25	6.00	1.50	1.46	-6	-6	2.9	WN..43.
	19897	PWLN L -12-4BJETL	0.75	0.75	4.50	1.06	1.42	-6	-6	1.1	WN..43.
	19830	-16-4DJETL	1.00	1.00	6.00	1.26	1.42	-6	-6	1.8	WN..43.
	19922	-20-4DJETL	1.25	1.25	6.00	1.50	1.46	-6	-6	2.9	WN..43.

Spare Parts, Parts included in delivery

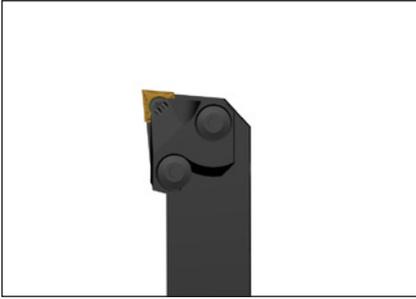
Accessories*

Toolholder/ Insert dimension	Anvil	Lever	Anvil pin	Punch	Screw	Key	Finishing inducer	Screw	Key	O-ring	Roughing inducer
PWLN R-06	PWN323	PP3612	RP5152	MP0912	LS0616	2.5SMS795	CILW08RA-F	117.26-655	3SMS795	ORING-8X1.5	CILW08RA-R
PWLN L-06	PWN323	PP3612	RP5152	MP0912	LS0616	2.5SMS795	CILW08LA-F	117.26-655	3SMS795	ORING-8X1.5	CILW08LA-R
PWLN R-08	PWN423	PP4713	RP6757	MP0912	LS0818	3SMS795	CILW08RA-F	117.26-655	3SMS795	ORING-8X1.5	CILW08RA-R
PWLN L-08	PWN423	PP4713	RP6757	MP0912	LS0818	3SMS795	CILW08LA-F	117.26-655	3SMS795	ORING-8X1.5	CILW08LA-R

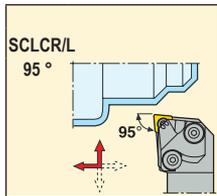
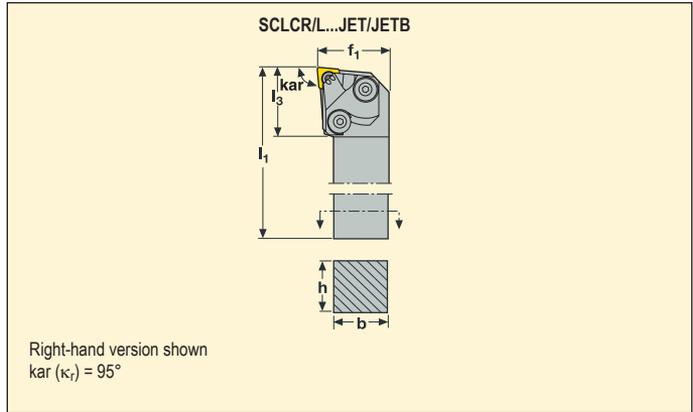
Please check availability in current price and stock-list
For more information on Jetstream Tooling® and accessories, please see pages 86-89

*To be ordered separately

Toolholders for inserts CCGT, CCGW, CCMT and CCMW



- For insert program, see pages 236, 238-240, 300, 328
- γ_0 = Rake angle, λ_s = Inclination angle
- For holder code key, see pages 12-13



I.C.	EDP No.	Part No.	Dimensions in inch					γ_0	λ_s	lbs	
			h	b	l_1	f_1	l_3				
3/8	37848	SCLCR -12-3JET	0.75	0.75	4.5	1.09	1.2	0	0	1.01	CC.32.5.
	37852	-16-3JET	1.00	1.00	6.0	1.27	1.2	0	0	1.94	CC.32.5.
	37856	-20-3JET	1.25	1.25	6.0	1.50	1.2	0	0	2.78	CC.32.5.
	37849	SCLCL -12-3JET	0.75	0.75	4.5	1.09	1.2	0	0	1.01	CC.32.5.
	37853	-16-3JET	1.00	1.00	6.0	1.27	1.2	0	0	1.94	CC.32.5.
	37857	-20-3JET	1.25	1.25	6.0	1.50	1.2	0	0	2.78	CC.32.5.
1/2	37850	SCLCR -12-4JET	0.75	0.75	4.5	1.09	1.2	0	0	1.04	CC.43.
	37854	-16-4JET	1.00	1.00	6.0	1.27	1.2	0	0	1.81	CC.43.
	37858	-20-4JET	1.25	1.25	6.0	1.50	1.2	0	0	2.87	CC.43.
	37851	SCLCL -12-4JET	0.75	0.75	4.5	1.09	1.2	0	0	1.04	CC.43.
	37855	-16-4JET	1.00	1.00	6.0	1.27	1.2	0	0	1.81	CC.43.
	37859	-20-4JET	1.25	1.25	6.0	1.50	1.2	0	0	2.87	CC.43.

Spare Parts, Parts included in delivery

Accessories*

For size	Inducer kit	Inducer screw	Insert/inducer key	Insert screw	Insert shim	O-ring	Plug	Shim screw	Shim key
..R-3JET	JET-CIKC12RA-KIT	117.26-655	3SMS795/T15P	C04008-T15P	–	ORING-8X1.5	JET-P1/8-5MM	–	–
..L-3JET	JET-CIKC12LA-KIT	117.26-655	3SMS795/T15P	C04008-T15P	–	ORING-8X1.5	JET-P1/8-5MM	–	–
..12R-4JET	JET-CIKC12RA-KIT	117.26-655	3SMS795/T15P	C05012-T15P	123.19-621	ORING-8X1.5	JET-P1/8-5MM	CA5008	5SMS795
..16R-4JET	JET-CIKC12RB-KIT	117.26-655	3SMS795/T15P	C05012-T15P	123.19-621	ORING-8X1.5	JET-P1/8-5MM	CA5008	5SMS795
..20R-4JET	JET-CIKC12RB-KIT	117.26-655	3SMS795/T15P	C05012-T15P	123.19-621	ORING-8X1.5	JET-P1/8-5MM	CA5008	5SMS795
..12L-4JET	JET-CIKC12LA-KIT	117.26-655	3SMS795/T15P	C05012-T15P	123.19-621	ORING-8X1.5	JET-P1/8-5MM	CA5008	5SMS795
..16L-4JET	JET-CIKC12LB-KIT	117.26-655	3SMS795/T15P	C05012-T15P	123.19-621	ORING-8X1.5	JET-P1/8-5MM	CA5008	5SMS795
..20L-4JET	JET-CIKC12LB-KIT	117.26-655	3SMS795/T15P	C05012-T15P	123.19-621	ORING-8X1.5	JET-P1/8-5MM	CA5008	5SMS795

Please check availability in current price and stock-list

*To be ordered separately

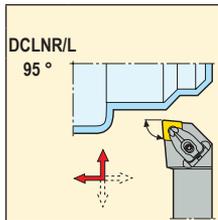
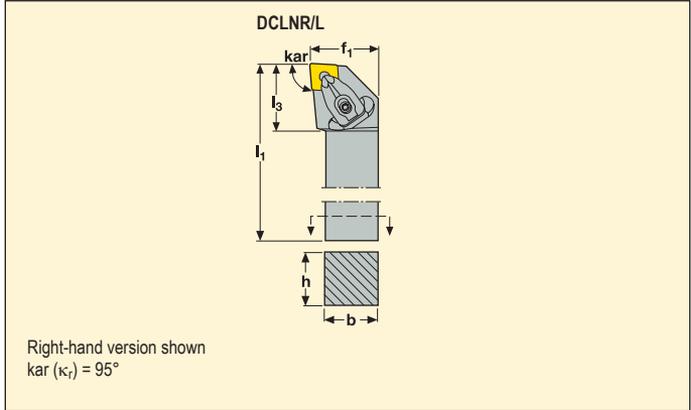
For more information on Jetstream Tooling® and accessories, please see pages 86-89

Toolholders for inserts CNGA, CNGP, CNMA, CNMG, CNMM and CNMP

D style first choice



- For insert program, see pages 241-248, 301
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 12-13



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_o°	λ_s°	lbs		
			h	b	f ₁	l ₁	l ₃					
1/2	31003	DCLNR	-12-4B	0.75	0.75	1.00	4.5	1.30	-6	-6	0.9	CN..43.
	32303		-16-4D	1.00	1.00	1.25	6.0	1.30	-6	-6	2.0	CN..43.
	34513		-20-4D	1.25	1.25	1.50	6.0	1.30	-6	-6	2.9	CN..43.
	31060		-24-4D	1.50	1.50	2.00	6.0	1.30	-6	-6	4.2	CN..43.
	31061	DCLNL	-12-4B	0.75	0.75	1.00	4.5	1.30	-6	-6	0.9	CN..43.
	32304		-16-4D	1.00	1.00	1.25	6.0	1.30	-6	-6	2.0	CN..43.
	31064		-20-4D	1.25	1.25	1.50	6.0	1.30	-6	-6	2.9	CN..43.
31065		-24-4D	1.50	1.50	2.00	6.0	1.30	-6	-6	4.2	CN..43.	
5/8	31066	DCLNR	-16-5D	1.00	1.00	1.25	6.0	1.65	-6	-6	2.0	CN..54.
	31067		-20-5D	1.25	1.25	1.50	6.0	1.57	-6	-6	2.9	CN..54.
	31069	DCLNL	-16-5D	1.00	1.00	1.25	6.0	1.65	-6	-6	2.0	CN..54.
	31070		-20-5D	1.25	1.25	1.50	6.0	1.57	-6	-6	2.9	CN..54.
3/4	31074	DCLNR	-20-6D	1.25	1.25	1.50	6.0	1.34	-6	-6	2.9	CN..64.
	31075		-24-6D	1.50	1.50	2.00	6.0	1.65	-6	-6	4.0	CN..64.
	31077	DCLNL	-20-6D	1.25	1.25	1.50	6.0	1.34	-6	-6	2.9	CN..64.
	31078		-24-6D	1.50	1.50	2.00	6.0	1.65	-6	-6	4.0	CN..64.

Spare Parts, Parts included in delivery

Accessories*

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
...4	FP2012	L85021-T15P	CD12-S	DCN444	T15P-7	C04008-T15P	S6912	CD12-S12
...5	FP2012	L86026-T20P	CD16-S	DCN544	T20P-7L	C05010-T20P	S7010	CD16-S16
...6	FP2012	L86026-T20P	CD19-S	DCN634	T20P-7L	C05010-T20P	S7010	CD19-S19

Please check availability in current price and stock-list

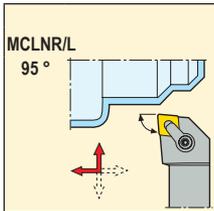
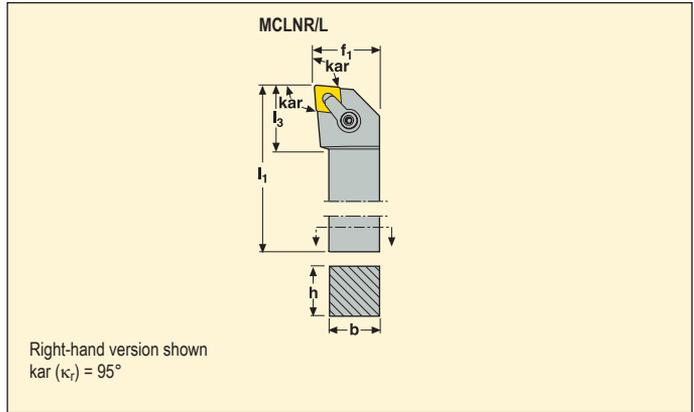
*Ordered separately

Turning – Toolholders, external

Toolholders for inserts CNGA, CNGN, CNGP, CNMA, CNMG, CNMM and CNMP



- For insert program, see pages 241-248, 301
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 12-13



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_0°	λ_s°	lbs	
			h	b	f ₁	I ₁	I ₃				
1/2	12658	MCLNR -16-4C	1.00	1.00	1.25	6.0	1.20	-6	-6	1.5	CN..43.
	12678	-24-4D	1.50	1.50	2.00	6.0	1.20	-6	-6	4.0	CN..43.
	12657	MCLNL -12-4B	0.75	0.75	1.00	4.5	1.20	-6	-6	0.9	CN..43.
5/8	13013	MCLNR -16-5D	1.00	1.00	1.25	6.0	1.20	-6	-6	1.8	CN..54.
	12673	-20-5D	1.25	1.25	1.50	6.0	1.37	-6	-6	2.9	CN..54.
	13002	MCLNL -16-5D	1.00	1.00	1.25	6.0	1.20	-6	-6	1.8	CN..54.
	12674	-20-5D	1.25	1.25	1.50	6.0	1.37	-6	-6	2.9	CN..54.
3/4	12668	MCLNR -16-6D	1.00	1.00	1.25	6.0	1.20	-6	-6	2.0	CN..64.
	12676	-20-6D	1.25	1.25	1.50	6.0	1.46	-6	-6	2.9	CN..64.
	12669	MCLNL -16-6D	1.00	1.00	1.25	6.0	1.20	-6	-6	2.0	CN..64.
	12677	-20-6D	1.25	1.25	1.50	6.0	1.46	-6	-6	2.9	CN..64.
	13003	-24-6E	1.50	1.50	2.00	7.0	1.49	-6	-6	4.9	CN..64.
1	13016	MCLNR -24-8E	1.50	1.50	2.00	7.0	1.49	-6	-6	5.1	CN..86.
	13004	MCLNL -24-8E	1.50	1.50	2.00	7.0	1.49	-6	-6	5.1	CN..86.

Spare Parts, Parts included in delivery

Accessories*

For size	Cantilever clamp	Clamp screw	Insert pin	Insert shim	Shim screw
...4	CL-20	XNS-48	NL-46	CSN-433	S-46
...5	CL-12	XNS-510	NL-58	CSN-533	S-58
...6	CL-12	XNS-510	NL-68	CSN-633	S-68
...8	CL-24	XNS610	NL-810	CSN-846	S-810

Please check availability in current price and stock-list

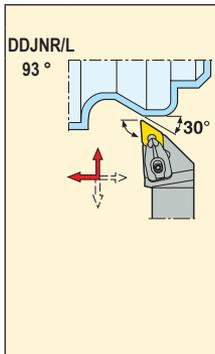
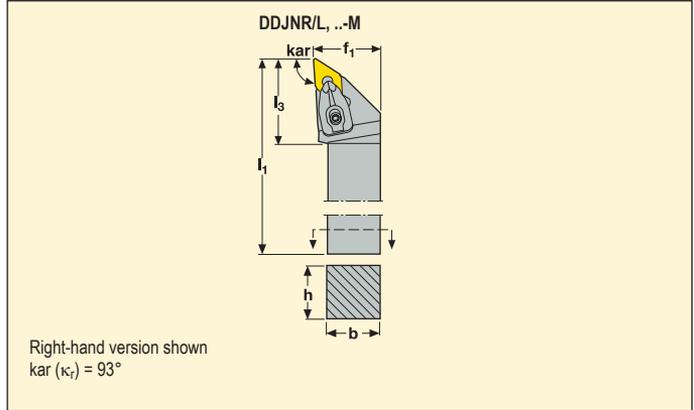
*Ordered separately

Toolholders for inserts DNGA, DNGM, DNGP, DNMA, DNMG, DNMP, DNMU and DNMX

D style first choice



- For insert program, see pages 253-259, 304-305
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 12-13



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_0°	λ_s°	lbs	
			h	b	f ₁	l ₁	l ₃				
3/8	31094	DDJNR -10-3A	0.62	0.62	0.87	4.0	1.18	-6	-6	0.7	DN..33
	31095	-12-3B	0.75	0.75	1.00	4.5	1.18	-6	-6	0.9	DN..33
	31097	-16-3D	1.00	1.00	1.25	6.0	1.18	-6	-6	1.8	DN..33
	31099	DDJNL -10-3A	0.62	0.62	0.88	4.0	1.18	-6	-6	0.7	DN..33
	31100	-12-3B	0.75	0.75	1.00	4.5	1.18	-6	-6	0.9	DN..33
	31102	-16-3D	1.00	1.00	1.25	6.0	1.18	-6	-6	1.8	DN..33
1/2	31104	DDJNR -12-4B	0.75	0.75	1.00	4.5	1.65	-6	-6	0.9	DN..43
	32307	-16-4D-M	1.00	1.00	1.25	6.0	1.65	-6	-6	1.8	DN..43
	31107	-20-4D	1.25	1.25	1.50	6.0	1.65	-6	-6	2.4	DN..43
	31109	DDJNL -12-4B	0.75	0.75	1.00	4.5	1.65	-6	-6	0.9	DN..43
	32308	-16-4D-M	1.00	1.00	1.25	6.0	1.65	-6	-6	1.8	DN..43
	31114	-20-4D	1.25	1.25	1.50	6.0	1.65	-6	-6	2.4	DN..43

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
..-3	FP1508	L84017-T09P	CD09-S	DDN322.5	T09P-2	C03007-T09P	S5608	CD09-S09
..-4	FP2012	L85021-T15P	CD12-S	DDN444	T15P-7	C04008-T15P	S6912	CD12-S12

Accessories*

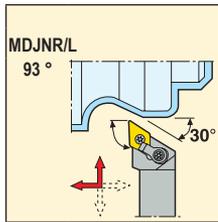
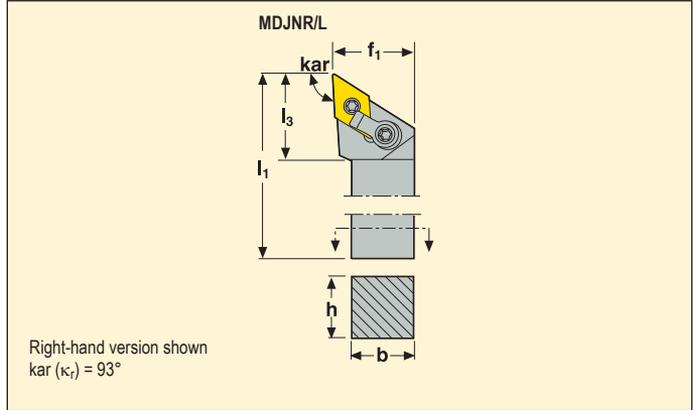
Please check availability in current price and stock-list

*Ordered separately
*Insert shim DDN434 for insert DN..44. ordered separately

Toolholders for inserts DNGA, DNGM, DNGP, DNMA, DNMG, DNMP, DNMU and DNMX



- For insert program, see pages 253-259, 304-305
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 12-13



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_0°	λ_s°	lbs	
			h	b	f ₁	l ₁	l ₃				
3/8	56405	MDJNR -10-3A	0.250	0.620	0.88	4.0	1.19	-4	-9	0.7	DN..33.
	56408	-12-3B	0.750	0.750	1.00	4.5	1.19	-6	-6	0.9	DN..33.
	56412	-16-3D	1.000	1.000	1.25	6.0	1.19	-6	-6	1.8	DN..33.
	56406	MDJNL -10-3A	0.625	0.625	0.88	4.0	1.19	-4	-9	0.7	DN..33.
	56409	-12-3B	0.750	0.750	1.00	4.5	1.19	-6	-6	0.9	DN..33.
	56413	-16-3D	1.000	1.000	1.25	6.0	1.19	-6	-6	1.8	DN..33.
1/2	12703	MDJNR -20-4D	1.250	1.250	1.50	6.0	1.24	-6	-6	2.6	DN..43.
	12708	-24-4D	1.500	1.500	2.00	6.0	1.50	-6	-6	3.7	DN..43.
	13043	MDJNL -12-4B	0.750	0.750	1.00	4.5	1.36	-6	-6	0.9	DN..43.
	12704	-20-4D	1.250	1.250	1.50	6.0	1.24	-6	-6	2.6	DN..43.
	12709	-24-4D	1.500	1.500	2.00	6.0	1.50	-6	-6	3.7	DN..43.

Spare Parts, Parts included in delivery

For size	Cantilever clamp	Clamp screw	Insert pin	Insert shim
...3				
...4	CL-20	XNS-48	NL-46	DSN-433

Accessories*

Insert shim	Shim screw
–	–
DSN-423	S-46

Please check availability in current price and stock-list

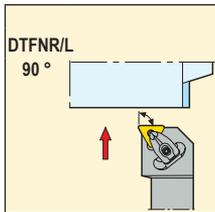
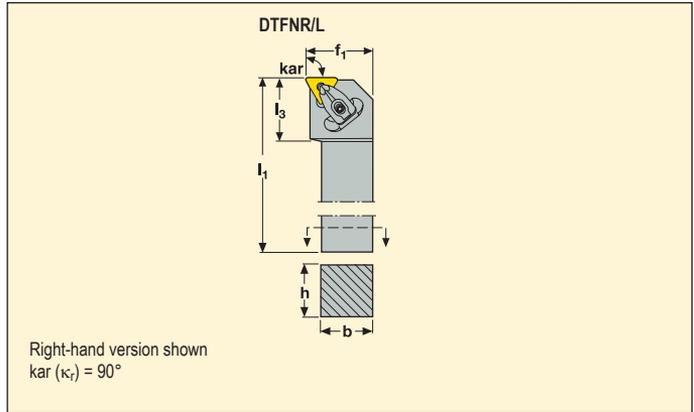
*Ordered separately.

Toolholders for inserts TNGA, TNMA, TNMG, TNMM and TNMP

D style first choice



- For insert program, see pages 282-286, 317
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 12-13



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_0°	λ_s°	lbs	
			h	b	f ₁	l ₁	l ₃				
3/8	31338	DTFNR -12-3B	0.75	0.75	1.00	4.5	1.18	-6	-6	0.7	TN..33
	83457	-16-3D	1.00	1.00	1.25	6.0	1.18	-6	-6	1.8	TN..33
	31340	DTFNL -12-3B	0.75	0.75	1.00	4.5	1.18	-6	-6	0.7	TN..33
	83455	-16-3D	1.00	1.00	1.25	6.0	1.18	-6	-6	1.8	TN..33
1/2	31342	DTFNR -16-4D	1.00	1.00	1.25	6.0	1.38	-6	-6	1.8	TN..43
	31343	-20-4D	1.25	1.25	1.50	6.0	1.38	-6	-6	2.6	TN..43
	31344	DTFNL -16-4D	1.00	1.00	1.25	6.0	1.38	-6	-6	1.8	TN..43
	31345	-20-4D	1.25	1.25	1.50	6.0	1.38	-6	-6	2.6	TN..43

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring
..-3	FP1508	L84017-T09P	CD09-S	DTN344	T09P-2	C03007-T09P	S5608
..-4	FP2012	L85021-T15P	CD12-S	DTN444	T15P-7	C04008-T15P	S6912

Accessories*

Clamp kit
CD09-S09
CD12-S12

Please check availability in current price and stock-list

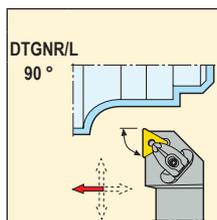
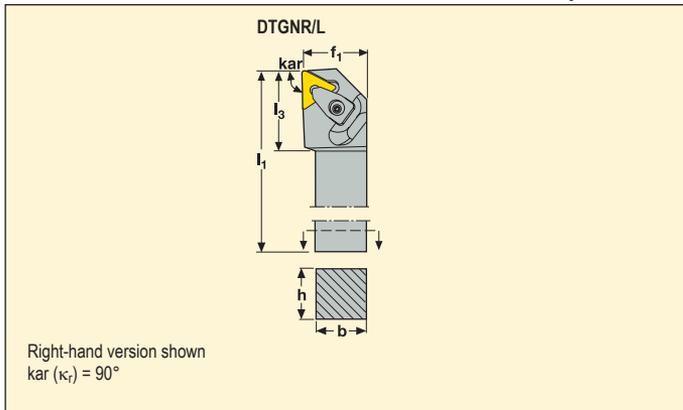
*Ordered separately.

Toolholders for inserts TNGA, TNMA, TNMG, TNMM and TNMP

D style first choice



- For insert program, see pages 282-286, 317
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 12-13



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_0°	λ_s°	lbs	
			h	b	f ₁	l ₁	l ₃				
3/8	31181	DTGNR -12-3B	0.75	0.75	1.00	4.5	1.18	-6	-6	0.9	TN..33
	31182	-16-3D	1.00	1.00	1.25	6.0	1.18	-6	-6	1.8	TN..33
	31183	DTGNL -12-3B	0.75	0.75	1.00	4.5	1.18	-6	-6	0.9	TN..33
	31184	-16-3D	1.00	1.00	1.25	6.0	1.18	-5	-6	1.8	TN..33
1/2	31185	DTGNR -16-4D	1.00	1.00	1.25	6.0	1.38	-6	-6	2.0	TN..43
	31186	-20-4D	1.25	1.25	1.50	6.0	1.38	-6	-6	2.9	TN..43
	31187	DTGNL -16-4D	1.00	1.00	1.25	6.0	1.38	-5	-6	2.0	TN..43
	31188	-20-4D	1.25	1.25	1.50	6.0	1.38	-6	-6	2.9	TN..43

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
...3	FP1508	L84017-T09P	CD09-S	DTN322.5	T09P-2	C03007-T09P	S5608	CD09-S09
...3	FP1508	L84017-T09P	CD09-S	DTN344	T09P-2	C03007-T09P	S5608	CD12-S12
...4	FP2012	L85021-T15P	CD12-S	DTN444	T15P-7	C04008-T15P	S6912	

Accessories*

Please check availability in current price and stock-list

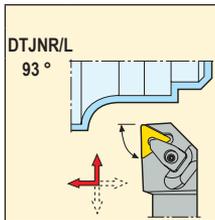
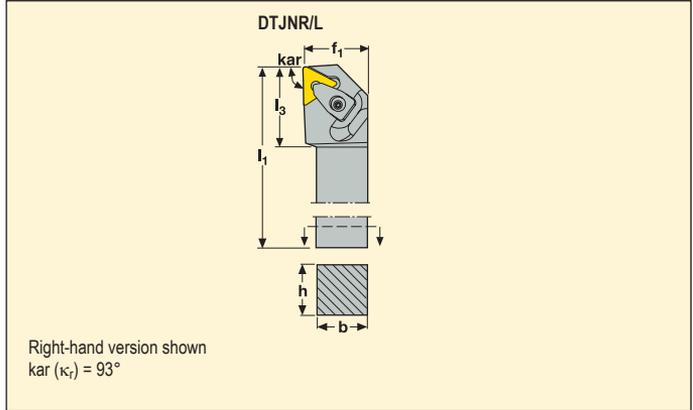
*Ordered separately.

Toolholders for inserts TNGA, TNMA, TNMG, TNMM, TNMP and TNMX

D style first choice



- For insert program, see pages 282-287, 317
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 12-13



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_0°	λ_s°	lbs	
			h	b	f ₁	l ₁	l ₃				
3/8	31193	DTJNR -12-3B	0.75	0.75	1.00	4.5	1.18	-6	-6	0.9	TN..33
	31194	-16-3D	1.00	1.00	1.25	6.0	1.18	-6	-6	2.0	TN..33
	31195	DTJNL -12-3B	0.75	0.75	1.00	4.5	1.18	-6	-6	0.9	TN..33
	31196	-16-3D	1.00	1.00	1.25	6.0	1.18	-6	-6	2.0	TN..33
1/2	31197	DTJNR -16-4D	1.00	1.00	1.25	6.0	1.38	-6	-6	2.0	TN..43
	31198	-20-4D	1.25	1.25	1.50	6.0	1.38	-6	-6	2.9	TN..43
	31199	DTJNL -16-4D	1.00	1.00	1.25	6.0	1.38	-6	-6	2.0	TN..43
	31200	-20-4D	1.25	1.25	1.50	6.0	1.38	-6	-6	2.9	TN..43

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
..-3	FP1508	L84017-T09P	CD09-S	DTN322.5	T09P-2	C03007-T09P	S5608	CD09-S09
..-4	FP2012	L85021-T15P	CD12-S	DTN444	T15P-7	C04008-T15P	S6912	CD12-S12

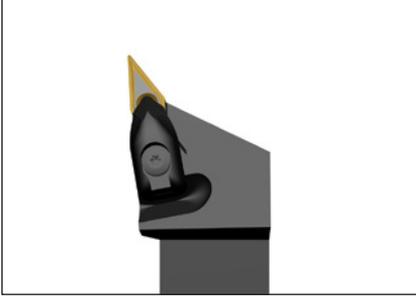
Accessories*

Please check availability in current price and stock-list

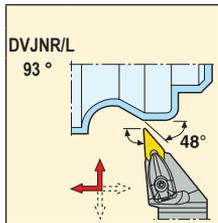
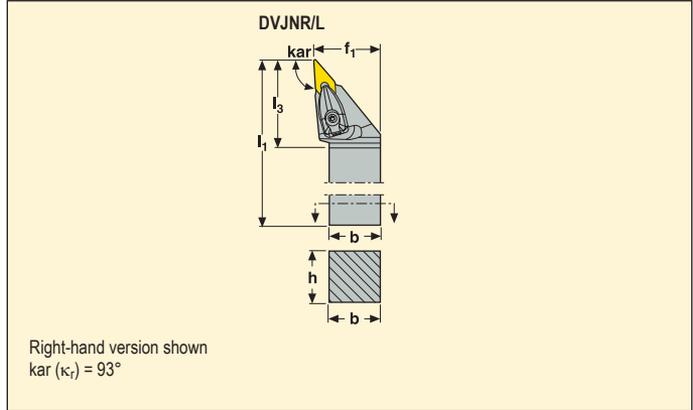
*Ordered separately.

Toolholders for inserts VNGA, VNGM, VNGP, VNMA, VNMG, VNMP and VNMU

D style first choice



- For insert program, see pages 292-294, 324-325
- γ_0 = Rake angle, λ_s = Inclination angle
- For holder code key, see pages 12-13



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_0	λ_s	lbs		
			h	b	f ₁	l ₁	l ₃					
5/16	81719	DVJNR	-12-2.5B	0.75	0.75	1.00	4.5	1.46	-5	-14	0.9	VN..2.53
	81721		-16-2.5C	1.00	1.00	1.25	5.0	1.46	-5	-14	1.5	VN..2.53.
	81720	DVJNL	-12-2.5B	0.75	0.75	1.00	4.5	1.46	-5	-14	0.9	VN..2.53.
	81722		-16-2.5C	1.00	1.00	1.25	5.0	1.46	-5	-14	1.5	VN..2.53.
3/8	81713	DVJNR	-12-3B	0.75	0.75	1.00	4.5	1.77	-5	-14	0.9	VN..33.
	81715		-16-3C	1.00	1.00	1.25	5.0	1.77	-5	-14	1.3	VN..33.
	81717		-20-3D	1.25	1.25	1.50	6.0	1.65	-5	-14	2.6	VN..33.
	81714	DVJNL	-12-3B	0.75	0.75	1.00	4.5	1.77	-5	-14	0.9	VN..33.
	81716		-16-3C	1.00	1.00	1.25	5.0	1.77	-5	-14	1.3	VN..33.
	81718		-20-3D	1.25	1.25	1.50	6.0	1.65	-5	-14	2.6	VN..33.

Spare Parts, Parts included in delivery

Accessories*

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
...2.5	FP1508	L84017-T09P	CD08-S	PVN2.522	T09P-2	CS5008-T09P	S5608	CD08-V13
...3	FP2012	L85021-T15P	CD19-S-V16	DVN322.5	T15P-7	C03508-T15P	S6912	CD19-V16

Please check availability in current price and stock-list

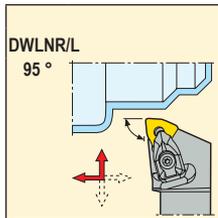
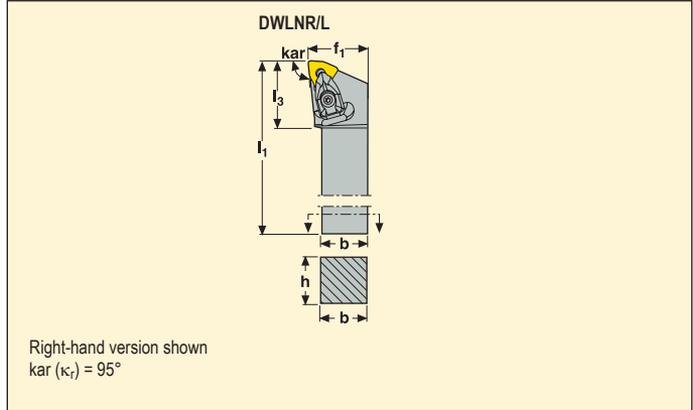
*Ordered separately.

Toolholders for inserts WNGA, WNGP, WNMA, WNMG, WNMM and WNMP

D style first choice



- For insert program, see pages 295-299, 326-327
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 12-13



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_0°	λ_s°	lbs	
			h	b	f ₁	l ₁	l ₃				
3/8	83464	DWLNR -10-3B	0.625	0.625	0.875	4.5	1.18	-6	-6	0.7	WN..33.
	31213	-12-3B	0.750	0.750	1.000	4.5	1.26	-6	-6	0.9	WN..33.
	31215	-16-3D	1.000	1.000	1.250	6.0	1.26	-6	-6	2.0	WN..33.
	31216	-20-3D	1.250	1.250	1.500	6.0	1.26	-6	-6	2.9	WN..33.
	83463	DWLNL -10-3B	0.625	0.625	0.875	4.5	1.18	-6	-6	0.7	WN..33.
	31217	-12-3B	0.750	0.750	1.000	4.5	1.26	-6	-6	0.9	WN..33.
	31219	-16-3D	1.000	1.000	1.250	6.0	1.26	-6	-6	2.0	WN..33.
	31220	-20-3D	1.250	1.250	1.500	6.0	1.26	-6	-6	2.9	WN..33.
1/2	31221	DWLNR -12-4B	0.750	0.750	1.000	4.5	1.38	-6	-6	0.9	WN..43.
	32305	-16-4D	1.000	1.000	1.250	6.0	1.38	-6	-6	2.0	WN..43.
	31225	-20-4D	1.250	1.250	1.500	6.0	1.38	-6	-6	2.9	WN..43.
	31226	DWLNL -12-4B	0.750	0.750	1.000	4.5	1.38	-6	-6	0.9	WN..43.
	32306	-16-4D	1.000	1.000	1.250	6.0	1.38	-6	-6	2.0	WN..43.
		31229	-20-4D	1.250	1.250	1.500	6.0	1.38	-6	-6	2.9

Spare Parts, Parts included in delivery

Accessories*

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
...3	FP1508	L84017-T09P	CD09-S	DWN322.5	T09P-2	C03007-T09P	S5608	CD09-S09
...4	FP2012	L85021-T15P	CD12-S	DWN434	T15P-7	C04008-T15P	S6912	CD12-S12

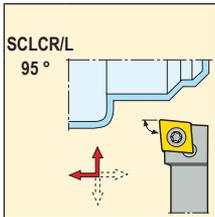
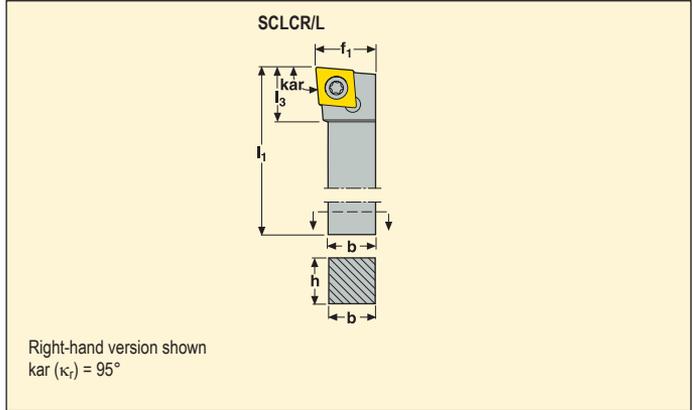
Please check availability in current price and stock-list

*Ordered separately.
Insert shim DWN424 for insert WN..44. to be ordered separately.

Toolholders for inserts CCGT, CCGW, CCMT and CCMW



- For insert program, see pages 236, 238-240, 300, 328
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 12-13



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_0°	λ_s°	lbs	
			h	b	f_1	l_1	l_3				
1/4	71951	SCLCR -6-2	0.375	0.375	0.500	2.5	0.48	0	0	0.2	CC..21.5.
	71943	SCLCL -6-2	0.375	0.375	0.500	2.5	0.48	0	0	0.2	CC..21.5.
3/8	71949	SCLCR -8-3	0.500	0.500	0.625	3.5	0.67	0	0	0.4	CC..32.5.
	71955	-10-3	0.625	0.625	0.750	4.0	0.69	0	0	0.7	CC..32.5.
	13336	-12-3	0.750	0.750	1.000	4.5	0.69	0	0	0.9	CC..32.5.
	73924	-16-3	1.000	1.000	1.252	6.0	0.67	0	0	2.0	CC..32.5.
	71945	SCLCL -8-3	0.500	0.500	0.625	3.5	0.67	0	0	0.4	CC..32.5.
	71931	-10-3	0.625	0.625	0.750	4.0	0.69	0	0	0.7	CC..32.5.
	13337	-12-3	0.750	0.750	1.000	4.5	0.69	0	0	0.9	CC..32.5.
1/2	73925	-16-3	1.000	1.000	1.250	6.0	0.67	0	0	2.0	CC..32.5.
	43250	SCLCR -16-4	1.000	1.000	1.250	5.0	0.79	0	0	1.8	CC..43.
	43248	SCLCL -16-4	1.000	1.000	1.250	5.0	0.79	0	0	1.8	CC..43.

Spare Parts, Parts included in delivery

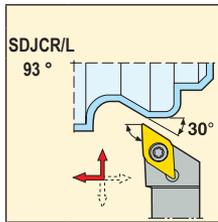
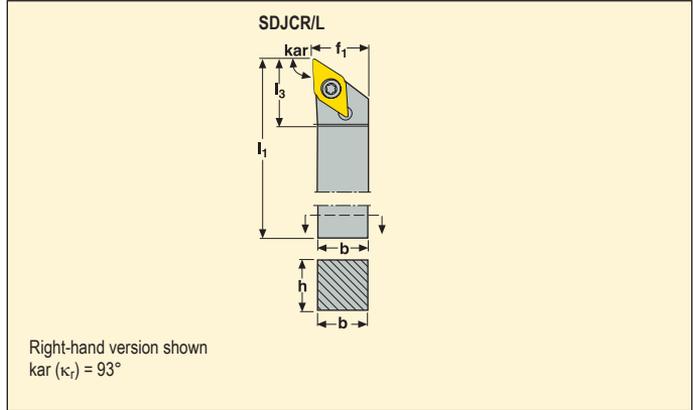
For size	Insert key	Insert screw	Insert shim	Shim screw
...-2	T07P-2	C02506-T07P	-	-
...-3	T15P-2	C04008-T15P	-	-
...-4	T15P-2	C05012-T15P	123.19-621	CA5008

Please check availability in current price and stock-list

Toolholders for inserts DCGT, DCGW, DGMT, DCMW and DCMX



- For insert program, see pages 250-253, 303, 329
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 12-13



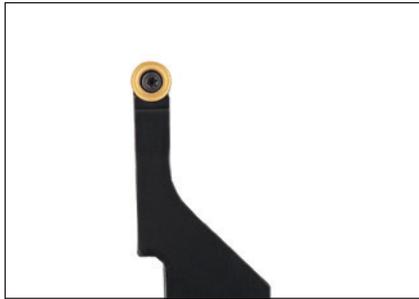
Insert I.C. inch	EDP No.	Part No.	Dimensions in inch						γ_0°	λ_s°	lbs	
			h	b	f ₁	l ₁	l ₃					
1/4	71938	SDJCR -6-2	0.375	0.375	0.500	2.5	0.68	0	0	0.2	DC..21.5	
	13341	-8-2	0.500	0.500	0.625	3.5	0.68	0	0	0.4	DC..21.5	
	71941	SDJCL -6-2	0.375	0.375	0.500	2.5	0.68	0	0	0.2	DC..21.5	
	13342	-8-2	0.500	0.500	0.625	3.5	0.68	0	0	0.4	DC..21.5	
3/8	71952	SDJCR -8-3	0.500	0.500	0.625	3.5	1.00	0	0	0.4	DC..32.5	
	71948	-10-3	0.625	0.625	0.750	4.0	1.00	0	0	0.6	DC..32.5	
	43256	-12-3	0.750	0.750	1.000	4.5	1.00	0	0	0.7	DC..32.5	
	73937	-16-3	1.000	1.000	1.250	6.0	0.98	0	0	1.4	DC..32.5	
	71939	SDJCL -8-3	0.500	0.500	0.625	3.5	1.00	0	0	0.4	DC..32.5	
	71947	-10-3	0.625	0.625	0.750	4.0	1.00	0	0	0.6	DC..32.5	
	43252	-12-3	0.750	0.750	1.000	4.5	1.00	0	0	0.7	DC..32.5	
	73938	-16-3	1.000	1.000	1.250	6.0	0.98	0	0	1.4	DC..32.5	

Spare Parts, Parts included in delivery

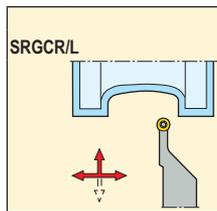
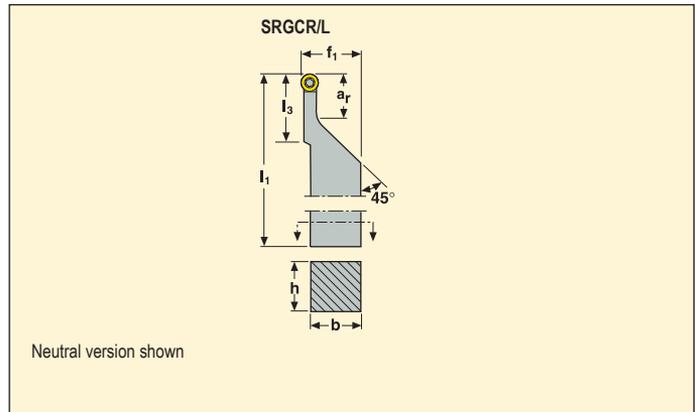
For size	Insert key	Insert screw
...-2	T07P-2	C02506-T07P
...-3	T15P-2	C04008-T15P

Please check availability in current price and stock-list

Toolholders for inserts RCMT



- For insert program, see page 264
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 12-13



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_0°	λ_s°	lbs	
			h	b	f_1	l_1	l_3				
1/4	13346	SRGCR -12-2	0.75	0.75	1.00	4.5	1.48	0	0	1.5	RCMT22
	13351	-16-2	1.00	1.00	1.25	6.0	1.48	0	0	1.5	RCMT22
	13352	SRGCL -16-2	1.00	1.00	1.25	6.0	1.48	0	0	1.5	RCMT22
	13357	-20-2	1.25	1.25	1.50	6.0	1.48	0	0	2.0	RCMT22
3/8	13348	SRGCR -12-3	0.75	0.75	1.00	4.5	1.73	0	0	0.9	RCMT32.5
	13353	-16-3	1.00	1.00	1.25	6.0	1.73	0	0	1.5	RCMT32.5
	13358	-20-3	1.25	1.25	1.50	6.0	1.73	0	0	2.2	RCMT32.5
	13349	SRGCL -12-3	0.75	0.75	1.00	4.5	1.73	0	0	0.9	RCMT32.5
	13354	-16-3	1.00	1.00	1.25	6.0	1.73	0	0	1.5	RCMT32.5
	13359	-20-3	1.25	1.25	1.50	6.0	1.73	0	0	2.2	RCMT32.5
1/2	13361	SRGCR -20-4	1.25	1.25	1.50	6.0	1.72	0	0	2.4	RCMT43
	13362	SRGCL -20-4	1.25	1.25	1.50	6.0	1.72	0	0	2.4	RCMT43

Spare Parts, Parts included in delivery

For size	Insert key	Insert screw	Insert shim	Shim screw
...-2	T07P-2	C02506-T07P	-	-
...-3	TX-3.5	TS-35	RS-32C	SLS-35
...-4	T15P-2	C04011-T15P	RS-43C	SLS-40

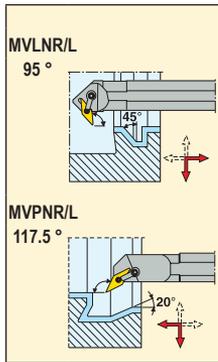
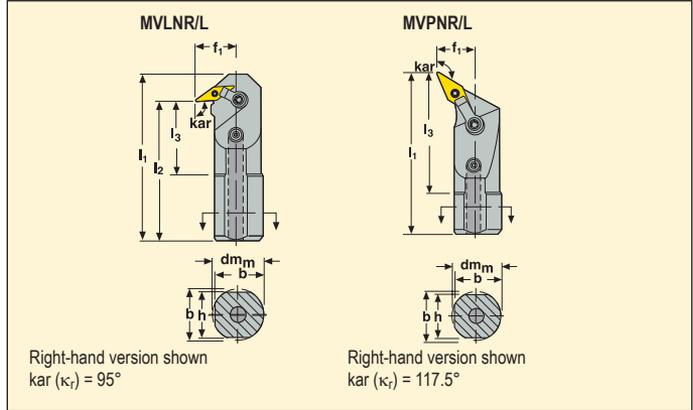
Please check availability in current price and stock-list

Toolholders for inserts VNGA, VNGM, VNGP, VNMA, VNMG, VNMN and VNMP

With coolant port



- For insert program, see pages 292-294, 324-325
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 14-15



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch								γ_o°	λ_s°	lbs	
			dm_m	b	h	l_1	l_3	f_1	D_{m1}					
3/8	41118	A24-MVLNR-3	1.50	1.42	1.34	14.0	2.62	1.13	2.25	-5	-12	6.8	VN..33.	
	41119	A24-MVLNL-3	1.50	1.42	1.34	14.0	2.62	1.13	2.25	-5	-12	6.8	VN..33.	
1/2	41122	A32-MVLNR-4	2.00	1.94	1.88	16.0	3.25	1.50	3.00	-5	-12	11.7	VN..43.	
	41123	A32-MVLNL-4	2.00	1.94	1.88	16.0	3.25	1.50	3.00	-5	-12	11.7	VN..43.	
3/8	41126	A20-MVPCR-3	1.25	1.20	1.14	14.0	3.00	0.88	1.75	-5	-12	4.4	VN..33.	
	41127	A20-MVPL-3	1.25	1.20	1.14	14.0	3.00	0.88	1.75	-5	-12	4.4	VN..33.	
	41128	A32-MVPCR-3	2.00	1.94	1.88	16.0	3.36	1.25	2.50	-5	-12	12.8	VN..33.	
	41129	A32-MVPL-3	2.00	1.94	1.88	16.0	3.36	1.25	2.50	-5	-12	12.8	VN..33.	

Spare Parts, Parts included in delivery

For size	Cantilever clamp	Clamp screw	Coolant port	Insert pin	Insert shim	Shim screw
Style L...-3	CL-20	XNS-47	CP-0800	NL-34L	IVSN-324	S-34
Style L...-4	CL-12	XNS-510	CP-0800	NL-46	IVSN-433	S-46
Style P/...-3	CL-30	XNS58	CP-0800	NL-34L	IVSN-324	S-34

Accessories*

Please check availability in current price and stock-list

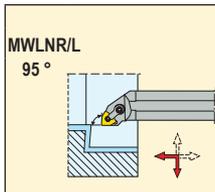
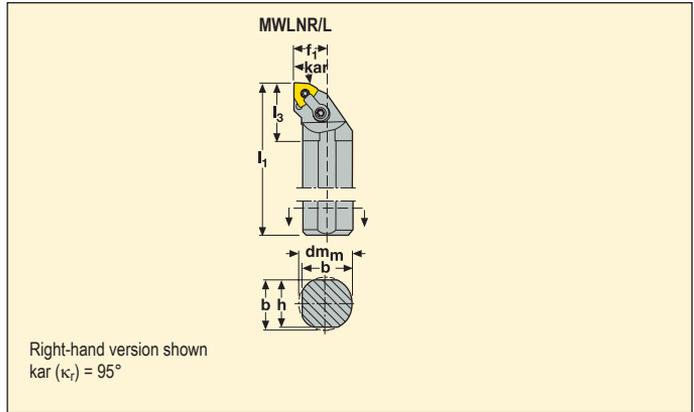
*To be ordered separately

Toolholders for inserts WNGA, WNGP, WNMA, WNMG, WNMM and WNMP

(A32 has coolant port)



- For insert program, see pages 295-299, 326-327
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 14-15



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch								γ_0°	λ_s°	lbs	
			d_m	b	h	l_1	l_3	f_1	D_{m1}					
3/8	51589	S12-MWLNR-3	0.75	0.73	0.71	10.0	1.75	0.50	0.93	-5	-14	1.3	WN..33.	
	51592	S12-MWLNL-3	0.75	0.73	0.71	10.0	1.75	0.50	0.93	-5	-14	1.3	WN..33.	
	51590	S16-MWLNR-3	1.00	0.87	0.85	12.0	0.91	0.64	1.20	-5	-14	3.1	WN..33.	
	51593	S16-MWLNL-3	1.00	0.87	0.85	12.0	0.91	0.64	1.20	-5	-14	3.1	WN..33.	
	51591	S20-MWLNR-3	1.25	1.14	1.12	14.0	1.17	0.76	1.47	-5	-14	4.6	WN..33.	
	51595	S20-MWLNL-3	1.25	1.14	1.12	14.0	1.17	0.76	1.47	-5	-14	4.6	WN..33.	
1/2	43225	S16-MWLNR-4	1.00	0.87	0.85	12.0	0.90	0.64	1.28	-5	-14	2.4	WN..43.	
	43222	S16-MWLNL-4	1.00	0.87	0.85	12.0	0.90	0.64	1.28	-5	-14	2.4	WN..43.	
	43226	S20-MWLNR-4	1.25	1.14	1.12	14.0	1.17	0.76	1.47	-5	-14	4.6	WN..43.	
	43223	S20-MWLNL-4	1.25	1.14	1.12	14.0	1.17	0.76	1.47	-5	-14	4.6	WN..43.	
	43227	S24-MWLNR-4	1.50	1.34	1.32	14.0	1.19	0.89	1.78	-5	-13	6.6	WN..43.	
	43224	S24-MWLNL-4	1.50	1.34	1.32	14.0	1.19	0.89	1.78	-5	-13	6.6	WN..43.	
	14792	A32-MWLNR-4	2.00	1.94	1.88	16.0	2.23	1.28	2.56	-5	-12	13.4	WN..43.	
	14793	A32-MWLNL-4	2.00	1.94	1.88	16.0	2.23	1.28	2.56	-5	-12	13.4	WN..43.	

Spare Parts, Parts included in delivery

Accessories*

For size	Cantilever clamp	Clamp screw	Coolant port	Insert pin	Insert shim	Insert pin	Insert shim
12/16-3	CL-6	XNS-36	–	NL-33L	–	–	–
20-3	CL-6	XNS-36	–	NL-34L	IWSN-323	–	–
16-4	XNS-47	CL-20	–	NL-44	–	–	–
20/24-4	CL-20	XNS-47	–	NL-46	IWSN-433	NL-46L	IWSN-423
A32-4	CL-20	XNS-47	CP-0800	NL-46	IWSN-433	NL-46L	IWSN-423

Please check availability in current price and stock-list

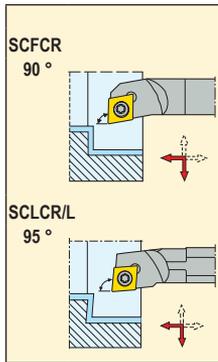
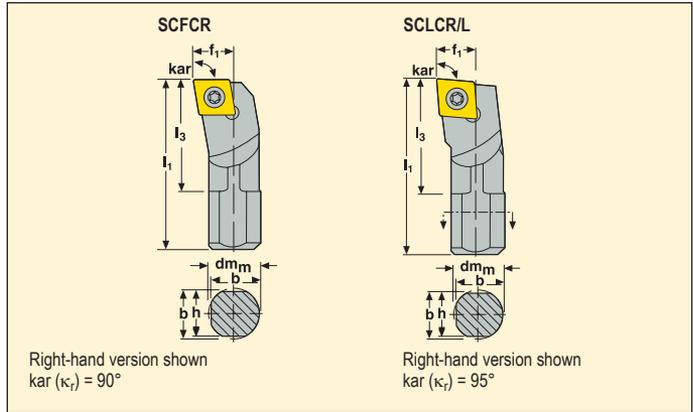
*To be ordered separately

Turning – Toolholders, internal

Toolholders for inserts CCGT, CCGW, CCMT and CCMW



- For insert program, see pages 236, 238-240, 300, 328
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 14-15



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch								γ_o°	λ_s°	lbs	
			dm _m	b	h	l ₁	l ₃	f ₁	D _{m1}					
1/4	43496	S06-SCFCR-2	0.375	0.37	0.37	6.0	1.40	0.25	0.51	0	-11	0.44	CC..21.5.	
3/8	43497	S08-SCFCR-3	0.500	0.47	0.43	8.0	0.98	0.31	0.62	0	-11	0.66	CC..32.5.	
1/4	43272	S06-SCLCR-2	0.375	0.35	0.31	6.0	1.02	0.25	0.50	0	-11	0.44	CC..21.5.	
	43266	S06-SCLCL-2	0.375	0.35	0.31	6.0	1.02	0.25	0.50	0	-11	0.44	CC..21.5.	
	43274	S08-SCLCR-2	0.500	0.47	0.43	8.0	1.55	0.31	0.62	0	-9	0.66	CC..21.5.	
	43267	S08-SCLCL-2	0.500	0.47	0.43	8.0	0.98	0.31	0.62	0	-9	0.66	CC..21.5.	
	43268	S10-SCLCR-2	0.625	0.59	0.53	10.0	1.25	0.41	0.81	0	-7	1.10	CC..21.5.	
	43263	S10-SCLCL-2	0.625	0.59	0.53	10.0	1.25	0.41	0.81	0	-7	1.10	CC..21.5.	
3/8	43304	S08-SCLCR-3	0.500	0.47	0.43	8.0	1.55	0.31	0.62	0	-11	0.66	CC..32.5.	
	43303	S08-SCLCL-3	0.500	0.47	0.43	8.0	0.98	0.31	0.62	0	-11	0.66	CC..32.5.	
	43302	S10-SCLCR-3	0.625	0.59	0.53	10.0	1.25	0.41	0.81	0	-7	0.88	CC..32.5.	
	43301	S10-SCLCL-3	0.625	0.59	0.53	10.0	1.25	0.41	0.81	0	-7	0.88	CC..32.5.	
	43269	S12-SCLCR-3	0.750	0.71	0.73	10.0	1.75	0.50	1.00	0	-10	1.32	CC..32.5.	
	43264	S12-SCLCL-3	0.750	0.71	0.73	10.0	1.75	0.50	1.00	0	-10	1.32	CC..32.5.	
	43270	S16-SCLCR-3	1.000	0.96	0.90	12.0	1.75	0.62	1.25	0	-5	2.43	CC..32.5.	
	43265	S16-SCLCL-3	1.000	0.96	0.90	12.0	1.75	0.62	1.25	0	-5	2.43	CC..32.5.	

Spare Parts, Parts included in delivery

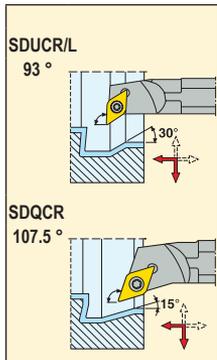
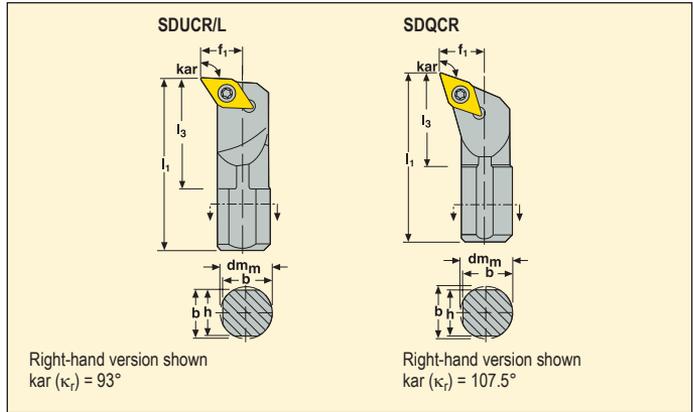
For size	Insert screw	Insert key
...2	C02506-T07P	T07P-2
...3	C04008-T15P	T15P-2

Please check availability in current price and stock-list

Toolholders for inserts DCGT, DCGW, DCMT and DCMW



- For insert program, see pages 250-252, 303, 329
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 14-15



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch								γ_0°	λ_s°	lbs	
			d_{m1}	b	h	l_1	l_3	f_1	D_{m1}					
1/4	43282	S08-SDUCR-2	0.500	0.47	0.43	8.0	1.17	0.44	0.78	0	-5	0.7	DC..21.5.	
	43279	S10-SDUCR-2	0.625	0.59	0.53	10.0	1.25	0.50	0.84	0	-5	0.9	DC..21.5.	
	43275	S10-SDUCL-2	0.625	0.59	0.53	10.0	1.25	0.50	0.84	0	-5	0.9	DC..21.5.	
3/8	43280	S12-SDUCR-3	0.750	0.71	0.65	10.0	1.75	0.56	0.85	0	-6	1.3	DC..32.5.	
	43276	S12-SDUCL-3	0.750	0.71	0.65	10.0	1.75	0.56	1.13	0	-6	1.3	DC..32.5.	
	43281	S16-SDUCR-3	1.000	0.96	0.90	12.0	1.91	0.75	1.50	0	-4	2.4	DC..32.5.	
	43277	S16-SDUCL-3	1.000	0.96	0.90	12.0	1.91	0.75	1.50	0	-4	2.4	DC..32.5.	
1/4	73944	S08-SDQCR-2	0.500	0.43	0.39	8.0	1.17	0.44	0.78	0	-11	0.7	DC..21.5.	
	73945	S10-SDQCR-2	0.625	0.59	0.53	10.0	1.25	0.50	0.84	0	-5	1.1	DC..21.5.	
3/8	73949	S12-SDQCR-3	0.750	0.71	0.67	10.0	1.75	0.56	1.12	0	-6	1.5	DC..32.5.	
	73951	S16-SDQCR-3	1.000	0.86	0.82	12.0	1.91	0.75	1.50	0	-4	2.6	DC..32.5.	

Spare Parts, Parts included in delivery

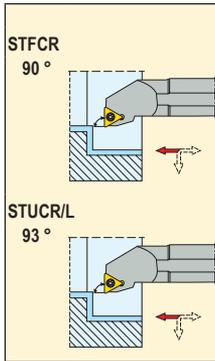
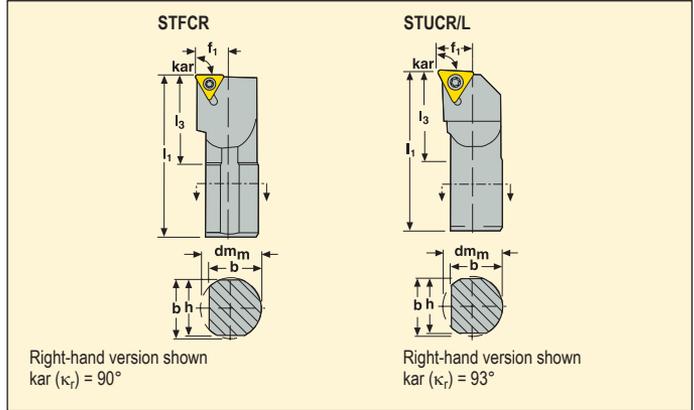
For size	Insert key	Insert screw
...-2	T07P-2	C02506-T07P
...-3	T15P-2	C04008-T15P

Please check availability in current price and stock-list

Toolholders for inserts TCMT and TCMW



- For insert program, see pages 279, 330
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 14-15



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch								γ_0°	λ_s°	lbs	
			dm_m	b	h	l_1	l_3	f_1	D_{m1}					
1/4	43288	S06-STFCR-2	0.375	0.35	0.31	6.0	1.40	0.25	0.50	0	-11	0.44	TC..21.5.	
	43289	S08-STFCR-2	0.500	0.50	0.43	8.0	1.55	0.31	0.62	0	-9	0.66	TC..21.5.	
	43286	S10-STFCR-2	0.625	0.59	0.59	10.0	1.25	0.41	0.81	0	-7	1.10	TC..21.5.	
	43287	S12-STFCR-2	0.750	0.71	0.65	10.0	1.75	0.50	1.00	0	-6	1.54	TC..21.5.	
	73980	S06-STUCR-2	0.375	0.31	0.28	6.0	1.40	0.25	0.50	0	-11	0.44	TC..21.5.	
	76567	S08-STUCR-2	0.500	0.43	0.39	8.0	1.55	0.31	0.62	0	-9	0.66	TC..21.5.	
	73981	S08-STUCR-2	0.500	0.43	0.39	8.0	1.55	0.31	0.62	0	-9	0.66	TC..21.5.	
	76568	S10-STUCR-2	0.625	0.59	0.59	10.0	1.25	0.41	0.81	0	-7	1.10	TC..21.5.	
73982	S10-STUCR-2	0.625	0.59	0.59	10.0	1.25	0.41	0.81	0	-7	1.10	TC..21.5.		
3/8	76569	S12-STUCL-3	0.750	0.71	0.65	10.0	1.75	0.50	1.00	0	-10	1.32	TC..32.5.	
	76564	S12-STUCR-3	0.750	0.71	0.65	10.0	1.75	0.50	1.00	0	-10	1.32	TC..32.5.	
	76565	S16-STUCR-3	1.000	0.86	0.79	12.0	1.91	0.64	1.28	0	-4	2.43	TC..32.5.	

Spare Parts, Parts included in delivery

For size	Insert key	Insert screw
...-2	T07P-2	C02506-T07P
...-3	T15P-2	C04008-T15P

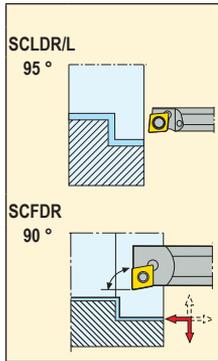
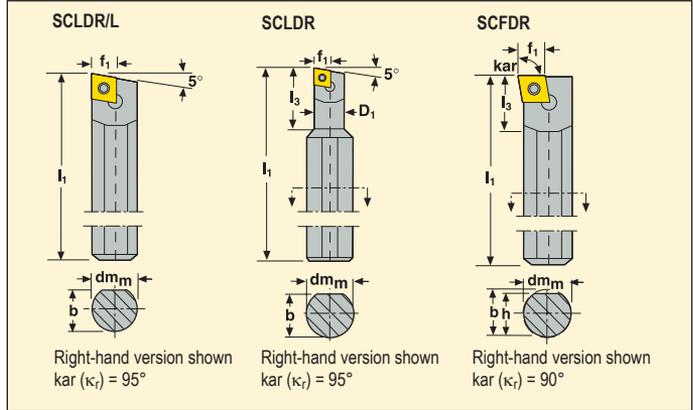
Please check availability in current price and stock-list

*To be ordered separately

Toolholders for inserts CDCB



- For insert program, see pages 241
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 14-15



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch									γ_o°	λ_s°	lbs	
			dm_m	D_1	h	b	l_1	l_3	f_1	D_{m1}					
5/32	57644	S03-SCLDR-1.2	0.187	0.14	0.18	0.19	2.5	0.53	0.10	0.180	0	-17	0.22	CDCB1.21.2.	
	57645	S03-SCLDL-1.2	0.187	0.14	0.18	0.19	2.5	0.53	0.10	0.180	0	-17	0.22	CDCB1.21.2.	
	57646	S04-SCLDR-1.2	0.250	–	0.23	0.25	3.0	0.39	0.14	0.265	0	-12	0.22	CDCB1.21.2.	
	57647	S04-SCLDL-1.2	0.250	–	0.23	0.25	3.0	0.52	0.14	0.265	0	-12	0.22	CDCB1.21.2.	
	57648	H03-SCLDR-1.2	0.187	–	0.18	0.19	4.0	0.39	0.11	0.204	0	-17	0.22	CDCB1.21.2.	
	57649	S0306-SCLDR-1.2	0.375	0.14	0.36	0.37	2.5	0.52	0.10	0.183	0	-12	0.22	CDCB1.21.2.	
	57650	S0406-SCLDR-1.2	0.375	0.25	0.36	0.36	2.5	1.25	0.15	0.277	0	-12	0.22	CDCB1.21.2.	
	57651	H0308-SCLDR-1.2	0.500	0.19	0.48	0.50	4.0	1.12	0.12	0.212	0	-17	0.44	CDCB1.21.2.	
	57654	H03-SCFDR-1.2	0.187	–	0.19	0.18	4.0	0.39	0.11	0.205	0	-17	0.22	CDCB1.21.2.	

Bar descriptions that begin with H denotes heavy metal construction.

Spare Parts, Parts included in delivery

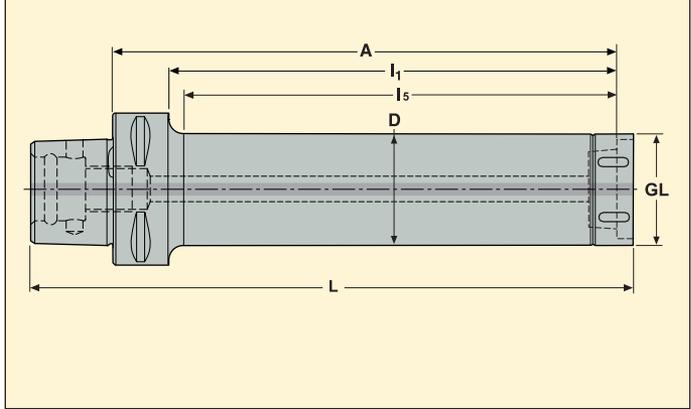
For size	Insert key	Insert screw
H..	T06-2	CS115
S0306-SCLDR	T06-2	CS110
S03-SCLDR/L	T06-2	CS110
S0406-SCLDR	T06-2	CS115
S04-SCLDR/L	T06-2	CS115

Please check availability in current price and stock-list

Turning – Steadylite[®], vibration damping holders for GL heads **SECO**

Steadylite vibration damping holders with GL connection

Seco-Capto™/ISO 26623-1



- With dynamic damping, ready to use
- With through coolant
- For GL heads program, see pages 205-218

Seco-Capto™ shank size	GL connection size	EDP No.	Part No.	Dimensions in inch					Max. RPM*	Balancing	lbs
				A	D	L	I ₁	I ₅			
C4	GL32	75331	C4-D32-160-GL32	6.30	1.26	7.45	5.51	5.39	4000	2	2.6
	GL32	75332	C4-D32-224-GL32	8.82	1.26	9.97	8.03	7.91	4000	2	3.7
	GL32	75333	C4-D32-288-GL32	11.34	1.26	12.50	10.55	10.43	4000	2	4.6
C5	GL32	75334	C5-D32-160-GL32	6.30	1.26	7.70	5.51	5.35	4000	2	3.1
	GL32	75335	C5-D32-224-GL32	8.82	1.26	10.22	8.03	7.87	4000	2	4.0
	GL32	75336	C5-D32-288-GL32	11.34	1.26	12.74	10.55	10.39	4000	2	4.9
	GL40	75337	C5-D40-208-GL40	8.19	1.57	9.63	7.40	7.24	3500	2	5.5
	GL40	75338	C5-D40-288-GL40	11.34	1.57	12.77	10.55	10.39	3500	2	7.3
	GL40	75339	C5-D40-368-GL40	14.49	1.57	15.93	13.70	13.54	3500	2	9.5
C6	GL32	75340	C6-D32-160-GL32	6.30	1.26	8.01	5.31	5.08	4000	2	4.0
	GL32	75341	C6-D32-224-GL32	8.82	1.26	10.52	7.83	7.60	4000	2	4.9
	GL32	75342	C6-D32-288-GL32	11.34	1.26	13.05	10.35	10.12	4000	2	5.7
	GL40	75343	C6-D40-208-GL40	8.19	1.57	9.94	7.20	6.97	3500	2	6.4
	GL40	75344	C6-D40-288-GL40	11.34	1.57	13.08	10.35	10.12	3500	2	8.2
	GL40	75345	C6-D40-368-GL40	14.49	1.57	16.24	13.50	13.27	3500	2	10.1
	GL50	75346	C6-D50-268-GL50	10.55	1.97	12.34	9.57	9.37	2500	2	11.0
	GL50	75347	C6-D50-368-GL50	14.49	1.97	16.28	13.50	13.31	2500	2	14.6
	GL50	75348	C6-D50-468-GL50	18.43	1.97	20.22	17.44	17.24	2500	2	18.7

* Max. RPM only when used in rotating boring

Spare Parts, Parts included in delivery **Accessories***

For nut of GL bore size	Locking key	For nut of GL bore size	Replaceable end	Torque key
GL32	SL32	GL32	SL00-32	SL00-32.250
GL40	SL40	GL40	SL00-40	SL00-40.350
GL50	SL50	GL50	SL00-50	SL00-50.550

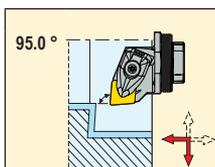
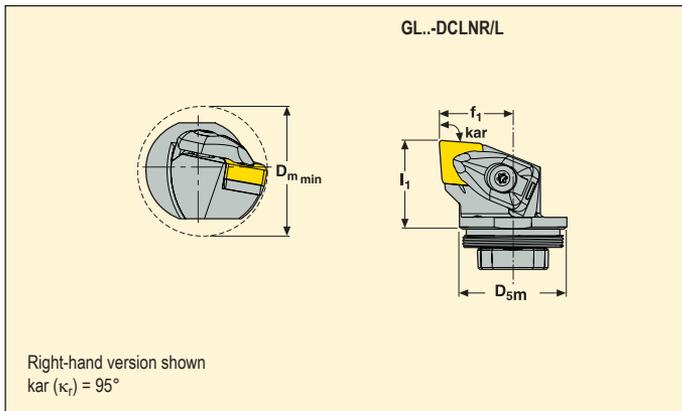
Please check availability in current price and stock-list

*Ordered separately

Toolholders for inserts CNGP, CNMA, CNMG and CNMM



- For insert program, see pages 241-248
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages
- For damping holders program, see pages 202-204



Size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch			γ_o°	λ_s°	lbs	
				D _m min	f ₁	l ₁				
GL32	1/2	10667	GL32-DCLNR-22032-12	1.57	0.87	1.26	-6	-10	0.44	CN..43.
		10668	GL32-DCLNL-22032-12	1.57	0.87	1.26	-6	-10	0.44	CN..43.
GL40	1/2	10582	GL40-DCLNR-27032-12	1.97	1.06	1.26	-6	-10	0.44	CN..43.
		10585	GL40-DCLNL-27032-12	1.97	1.06	1.26	-6	-10	0.44	CN..43.
GL50	1/2	10639	GL50-DCLNR-32032-12	2.36	1.26	1.26	-6	-8	0.66	CN..43.
		10641	GL50-DCLNL-32032-12	2.36	1.26	1.26	-6	-8	0.66	CN..43.
	5/8	10904	GL50-DCLNR-32037-16	2.36	1.26	1.46	-5	-14	0.88	CN..54.
		10905	GL50-DCLNL-32037-16	2.36	1.26	1.46	-5	-14	0.88	CN..54.
	3/4	10908	GL50-DCLNR-32040-19	2.36	1.26	1.57	-5	-14	0.88	CN..64.
		10909	GL50-DCLNL-32040-19	2.36	1.26	1.57	-5	-14	0.88	CN..64.

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
..-12	FP2012	L85021-T15P	CD12-S	DCO120310	T15P-7	C04008-T15P	S6912	CD12-S12
..-16	FP2012	L86026-T20P	CD16-S	DCN544	T20P-7L	C05010-T20P	S7010	CD16-S16
..-19	FP2012	L86026-T20P	CD19-S	DCN634	T20P-7L	C05010-T20P	S7010	CD19-S19

Accessories*

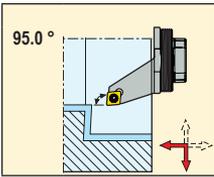
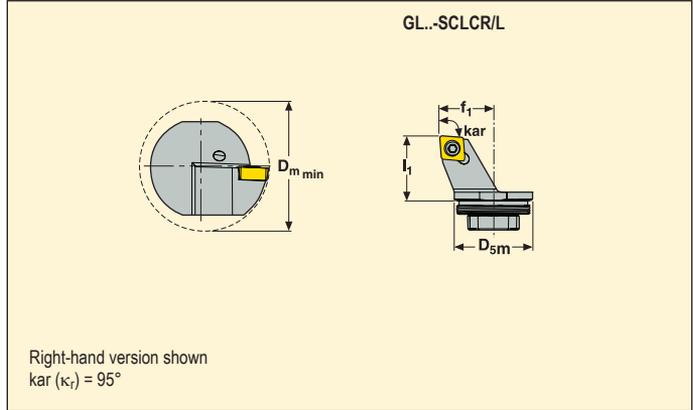
Please check availability in current price and stock-list

*Ordered separately

Toolholders for inserts CCGT, CCGX and CCMT



- For insert program, see pages 236-240
- γ_o = Rake angle, λ_s = Inclination angle
- For holder code key, see pages
- For damping holders program, see pages 202-204



Size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch			γ_o	λ_s	lbs	
				D _m min	f ₁	l ₁				
GL32	1/4	10676	GL32-SCLCR-22032-06	1.57	0.87	1.26	0	-2	0.22	CC..21.5.
		10698	GL32-SCLCL-22032-06	1.57	0.87	1.26	0	-2	0.22	CC..21.5.
	3/8	10589	GL32-SCLCR-22032-09	1.57	0.87	1.26	0	-2	0.22	CC..32.5.
		10591	GL32-SCLCL-22032-09	1.57	0.87	1.26	0	-2	0.22	CC..32.5.
	1/2	10701	GL32-SCLCR-22032-12	1.57	0.87	1.26	0	-8	0.22	CC..43.
		10706	GL32-SCLCL-22032-12	1.57	0.87	1.26	0	-8	0.22	CC..43.
GL40	1/4	10898	GL40-SCLCR-27032-06	1.97	1.06	1.26	0	-2	0.44	CC..21.5.
		10899	GL40-SCLCL-27032-06	1.97	1.06	1.26	0	-2	0.44	CC..21.5.
	3/8	10632	GL40-SCLCR-27032-09	1.97	1.06	1.26	0	-2	0.44	CC..32.5.
		10638	GL40-SCLCL-27032-09	1.97	1.06	1.26	0	-2	0.44	CC..32.5.
	1/2	10754	GL40-SCLCR-27032-12	1.97	1.06	1.26	0	-8	0.44	CC..43.
		10757	GL40-SCLCL-27032-12	1.97	1.06	1.26	0	-8	0.44	CC..43.
GL50	1/4	10917	GL50-SCLCR-32032-06	2.36	1.26	1.26	0	-2	0.66	CC..21.5.
		10918	GL50-SCLCL-32032-06	2.36	1.26	1.26	0	-2	0.66	CC..21.5.
	3/8	10642	GL50-SCLCR-32032-09	2.36	1.26	1.26	0	-2	0.66	CC..32.5.
		10657	GL50-SCLCL-32032-09	2.36	1.26	1.26	0	-2	0.66	CC..32.5.
	1/2	10801	GL50-SCLCR-32032-12	2.36	1.26	1.26	0	-5	0.66	CC..43.
		10802	GL50-SCLCL-32032-12	2.36	1.26	1.26	0	-5	0.66	CC..43.

Spare Parts, Parts included in delivery

For size	Insert key	Insert screw	Insert shim	Shim screw	Shim key
...06	T07P-2	C02506-T07P	-	-	-
...09	T15P-2	C04008-T15P	-	-	-
...12	T15P-2	C05012-T15P	123.19-621	CA5008	5SMS795

Accessories*

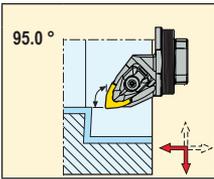
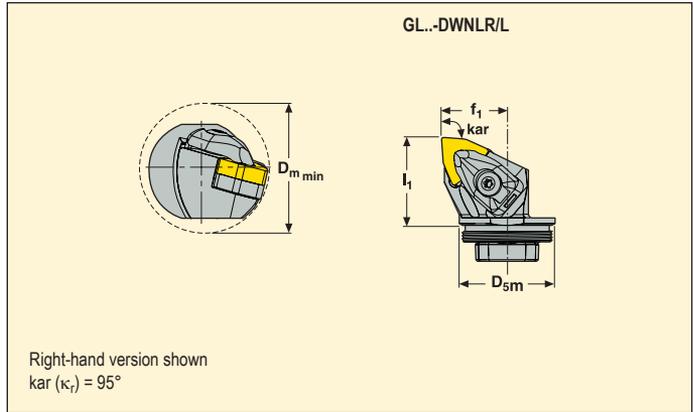
Please check availability in current price and stock-list

*Ordered separately

Toolholders for inserts WNGP, WNMA, WNMG and WNMM



- For insert program, see pages 296-299, 327
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages
- For damping holders program, see pages 202-204



Size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch			γ_o°	λ_s°	lbs	
				D _m min	f ₁	l ₁				
GL32	3/8	10870	GL32-DWLNR-22032-06	1.57	0.87	1.26	-5	-12	0.44	WN..33.
		10873	GL32-DWLNL-22032-06	1.57	0.87	1.26	-5	-12	0.44	WN..33.
	1/2	10874	GL32-DWLNR-22035-08	1.57	0.87	1.38	-5	-14	0.44	WN..43.
		10884	GL32-DWLNL-22035-08	1.57	0.87	1.38	-5	-14	0.44	WN..43.
GL40	3/8	10891	GL40-DWLNR-27032-06	1.97	1.06	1.26	-5	-12	0.44	WN..33.
		10892	GL40-DWLNL-27032-06	1.97	1.06	1.26	-5	-12	0.44	WN..33.
	1/2	10895	GL40-DWLNR-27037-08	1.97	1.06	1.46	-5	-12	0.44	WN..43.
		10897	GL40-DWLNL-27037-08	1.97	1.06	1.46	-5	-12	0.44	WN..43.
GL50	3/8	10910	GL50-DWLNR-32032-06	2.36	1.26	1.26	-5	-12	0.66	WN..33.
		10911	GL50-DWLNL-32032-06	2.36	1.26	1.26	-5	-12	0.66	WN..33.
	1/2	10913	GL50-DWLNR-32038-08	2.36	1.26	1.50	-5	-12	0.66	WN..43.
		10915	GL50-DWLNL-32038-08	2.36	1.26	1.50	-5	-12	0.66	WN..43.

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
..06	FP1508	L84017-T09P	CD09-S	DWN322.5	T09P-2	C03007-T09P	S5608	CD09-S09
..08	FP2012	L85021-T15P	CD12-S	DWN434	T15P-7	C04008-T15P	S6912	CD12-S12

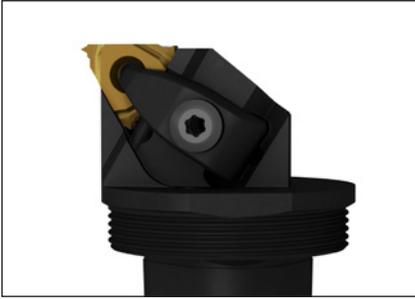
Accessories*

Please check availability in current price and stock-list

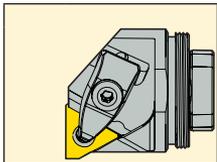
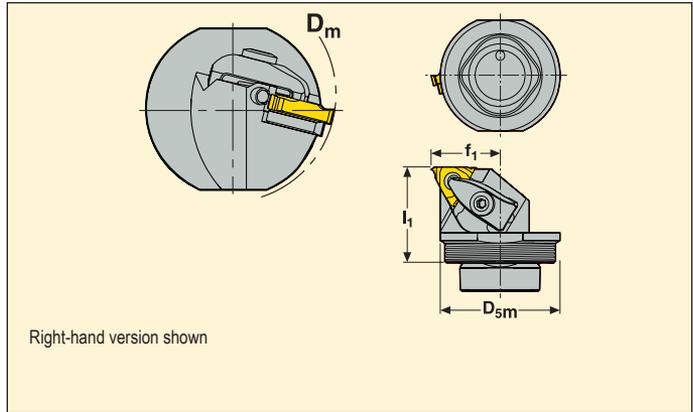
*Ordered separately

Toolholders for S - inserts

Snap-Tap®



- Inserts, please see threading section beginning on page 495
- For damping holders program, see pages 202-204



EDP No.	Part No.	Dimensions in inch				lbs	
		D _{5m}	l ₁	f ₁	D _m		
10670	GL32- CNR-20032-16AHD	1.26	1.26	0.78	1.42	0.44	16NR..
10671	CNL-20032-16AHD	1.26	1.26	0.78	1.42	0.44	16NL..
10900	GL40- CNR-24032-16AHD	1.57	1.26	0.94	1.97	0.66	16NR..
10901	CNL-24032-16AHD	1.57	1.26	0.94	1.97	0.66	16NL..
10921	GL50- CNR-29032-16AHD	1.97	1.26	1.14	2.48	0.88	16NR..
10922	CNL-29032-16AHD	1.97	1.26	1.14	2.48	0.88	16NL..
10672	GL32- CNR-22032-22AHD	1.26	1.26	0.84	1.50	0.44	22NR..
10673	CNL-22032-22AHD	1.26	1.26	0.84	1.50	0.44	22NL..
10902	GL40- CNR-26032-22AHD	1.57	1.26	1.02	1.97	0.66	22NR..
10903	CNL-26032-22AHD	1.57	1.26	1.02	1.97	0.66	22NL..
10924	GL50- CNR-31032-22AHD	1.97	1.26	1.22	2.48	0.88	22NR..
10925	CNL-31032-22AHD	1.97	1.26	1.22	2.48	0.88	22NL..
10782	GL40- CNR-27037-27AHD	1.57	1.46	1.06	1.97	0.66	27NR..
10669	GL50- CNR-32037-27AHD	1.97	1.46	1.26	2.48	0.88	27NR..

Spare Parts, Parts included in delivery

For size	Clamp key	Clamp screw	Floating wedge clamp	Cantilever clamp	Insert shim (S)	Shim/clamp key	Shim key	Shim screw	Spring
..-16	T15P-2	L85020-T15P	CHD16		GX16-1	–	T09P-2	CS3507-T09P	S6912
..-22	T15P-2	–	–	CSP22HD-T15P	NX22-1	–	T15P-2	CS4009-T15P	–
..-27	–	L86025-T20P	CHD27		VX27-1	T20P-7L	T15P-2	C05012-T15P	S7616

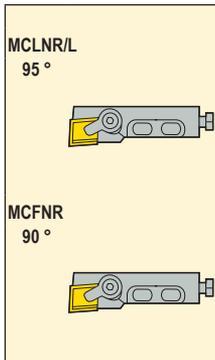
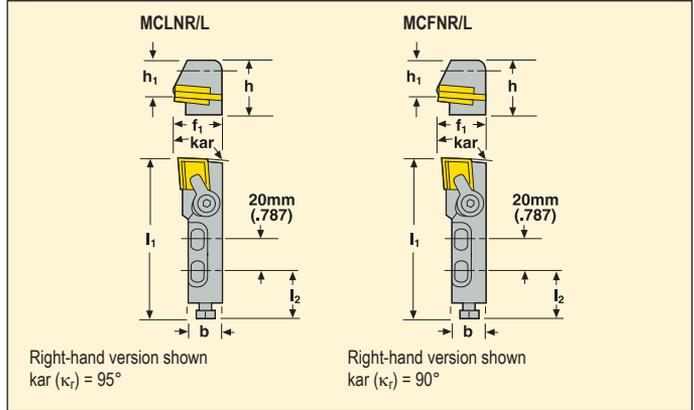
Please check availability in current price and stock-list

Cartridges for inserts CNGA, CNGN, CNGP, CNMA, CNMG, CNMM, CNMN and CNMP

Angular Mount ~ M-Type



- For insert program, see pages 241-248, 301-302, 332
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 16-17
- For cartridge mounting information see page 235



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch								γ_0°	λ_s°	lbs	
			h	b	l_1	l_2	f_1	h_1	D_m min					
1/2	41850	MCLNR -12CA-12	0.787	0.551	2.165	0.787	0.787	0.472	1.969	-5	-10	0.22	CN..43.	
	54313	MCLNL -12CA-12	0.787	0.551	2.165	0.787	0.787	0.472	1.969	-5	-10	0.22	CN..43.	
	41851	MCLNR -16CA-12	0.984	0.709	2.480	0.984	0.984	0.630	2.362	-5	-10	0.44	CN..43.	
	54314	MCLNL -16CA-12	0.984	0.709	2.480	0.984	0.984	0.630	2.362	-5	-10	0.44	CN..43.	
	41852	MCLNR -20CA-12	1.181	0.710	2.756	1.181	0.984	0.870	2.756	-5	-10	0.66	CN..43.	
3/4	41853	MCLNR -25CA-19	1.378	0.945	3.937	1.181	1.260	0.984	3.937	-6	-9	1.10	CN..64.	
1/2	24039	MCFNR -12CA-12	0.791	0.551	2.165	0.787	0.787	0.472	1.969	-5	-10	0.22	CN..43.	
	24042	MCFNR -16CA-12	0.984	0.709	2.480	0.984	0.984	0.630	2.362	-5	-10	0.44	CN..43.	

Spare Parts, Parts included in delivery

For size	Cantilever clamp	Clamp screw	Insert pin	Insert shim	Setting screw (axial)	Setting screw (radial)	Shim screw
12CA-12	CLM-17	XNSM-0515	NLM-43	-	EASM-0510F	SASM-0412	-
16CA-12	CLM-17	XNSM-0515	NLM-46S	CSN-433	EASM-0610F	SASM-0516	S-46MS
20CA-12	CLM-6	XNSM-0515	NLM-46	CSN-433	EASM-0610F	SASM-0516	S-46M
25CA-19	CLM-12	XNSM-0825	NLM-68	CSN-633	EASM-0816F	SASM-0820	S-68M

Accessories*

Please check availability in current price and stock-list

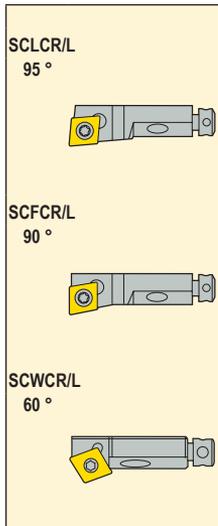
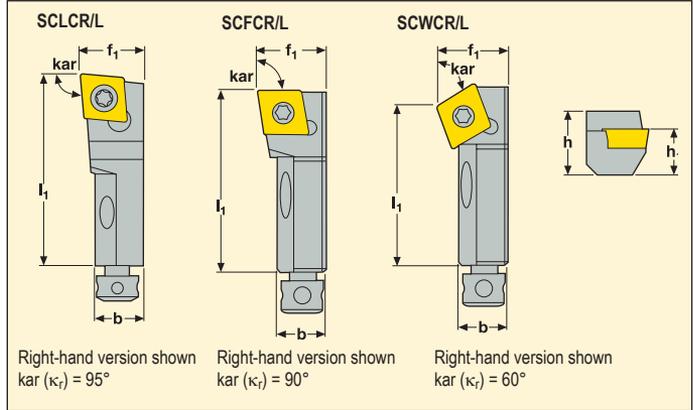
*Ordered separately

Cartridges for inserts CCGT, CCGW, CCGX, CCMT and CCMW

Angular Mount ~ C-lock type



- For insert program, see pages 236-240, 328
- γ_o = Rake angle, λ_s = Inclination angle
- For holder code key, see pages 16-17
- For cartridge mounting information see page 235



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch							γ_o	λ_s	lbs	
			h	b	l_1	h_1	f_1	D_m min					
3/8	51490	SLCR-10CA-09	0.591	0.433	1.654	0.394	0.551	1.575	0	0	0.22	CC..32.5	
	09143	SCLCL10CA-09	0.591	0.433	1.654	0.394	0.551	1.575	0	0	0.22	CC..32.5	
1/2	13239	SLCR-12CA-12	0.787	0.630	1.850	0.472	0.787	1.969	0	0	0.22	CC..43.	
	06498	SCLCL-12CA-12	0.787	0.630	1.850	0.472	0.787	1.969	0	0	0.22	CC..43.	
1/4	29427	SCFCR-08CA-06	0.433	0.276	1.024	0.315	0.394	0.984	0	0	0.22	CC..21.5.	
	08880	SCFCL-08CA-06	0.433	0.276	1.024	0.315	0.394	0.984	0	0	0.22	CC..21.5.	
3/8	43109	SCFCR-10CA-09	0.591	0.433	1.654	0.394	0.551	1.575	0	0	0.22	CC..32.5.	
	43133	SCFCL-10CA-09	0.591	0.433	1.654	0.394	0.551	1.575	0	0	0.22	CC..32.5.	
1/2	48845	SCFCR12CA-12	0.787	0.630	1.850	0.472	0.787	1.969	0	0	0.22	CC..43.	
	43143	SCFCL-12CA-12	0.787	0.630	1.850	0.472	0.787	1.969	0	0	0.22	CC..43.	
1/4	08678	SCWCR08CA-06	0.433	0.276	0.866	0.315	0.394	0.984	0	0	0.22	CC..21.5.	
	08682	SCWCL-08CA-06	0.433	0.276	0.866	0.315	0.394	0.984	0	0	0.22	CC..21.5.	
3/8	08694	SCWCR-10CA-09	0.591	0.433	1.417	0.394	0.551	1.575	0	0	0.22	CC..32.5.	
	08698	SCWCL-10CA-09	0.591	0.433	1.417	0.394	0.551	1.575	0	0	0.22	CC..32.5.	
1/2	08721	SCWCR-12CA-12	0.787	0.630	1.535	0.472	0.787	1.969	0	0	0.22	CC..43.	
	08722	SCWCL-12CA-12	0.787	0.630	1.535	0.472	0.787	1.969	0	0	0.22	CC..43.	

Spare Parts, Parts included in delivery

For size	Insert key	Insert screw	Fastening screw	Setting screw (axial)	Setting screw (radial)
08CA-06	T07P-2	C02505-T07P	179.17-698-T09P	179.17-683	179.17-684
10CA-09	T15P-2	C04008-T15P	179.17-697-T25P	179.17-680	179.17-686
12CA-12	T20P-7	C05010-T20P	179.17-697-T25P	179.17-680	179.17-687

Accessories*

Locking key	Setting key
T09P-2	1.5SMS795
T25P-7	2SMS795
T25P-7	2SMS795

Please check availability in current price and stock-list

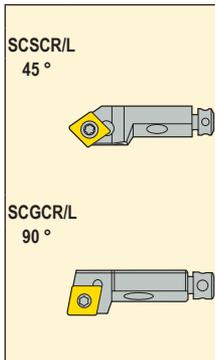
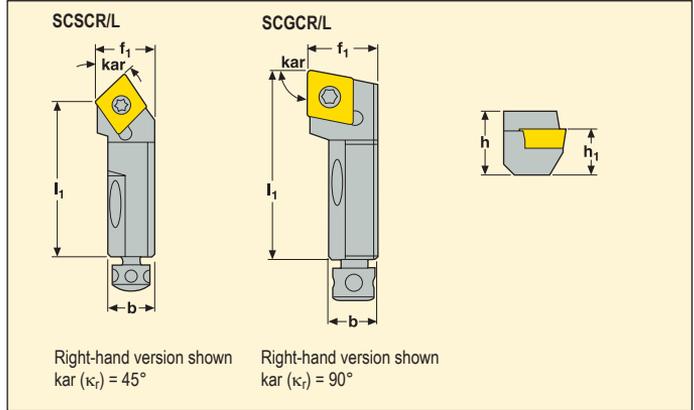
*Ordered separately

Cartridges for inserts CCGT, CCGW, CCMT and CCMW

Angular Mount ~ C-lock type



- For insert program, see pages 236, 238-240, 328
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 16-17
- For cartridge mounting information see page 235



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch						γ_0°	λ_s°	lbs	Insert
			h	b	l_1	h_1	f_1	D_m min				
1/4	08677	SCSCR-08CA-06	0.433	0.276	0.866	0.315	0.394	0.984	0	0	0.22	CC..21.5.
	08877	SCSCL08CA-06	0.433	0.276	0.866	0.315	0.394	0.984	0	0	0.22	CC..21.5.
3/8	11683	SCSCR-10CA-09	0.591	0.433	1.417	0.394	0.551	1.575	0	0	0.22	CC..32.5.
	08687	SCSCL-10CA-09	0.591	0.433	1.417	0.394	0.551	1.575	0	0	0.22	CC..32.5.
1/2	54298	SCSCR-12CA-12	0.787	0.630	1.535	0.472	0.787	1.969	0	0	0.22	CC..43.
	08704	SCSCL-12CA-12	0.787	0.630	1.535	0.472	0.787	1.969	0	0	0.22	CC..43.
1/4	09129	SCGCR08CA-06	0.433	0.276	1.024	0.315	0.394	0.984	0	0	0.22	CC..21.5.
	08883	SCGL-08CA-06	0.433	0.276	1.024	0.315	0.394	0.984	0	0	0.22	CC..21.5.
3/8	09131	SCGCR10CA-09	0.591	0.433	1.654	0.394	0.551	1.575	0	0	0.22	CC..32.5.
	08683	SCGL10CA-09	0.591	0.433	1.654	0.394	0.551	1.575	0	0	0.22	CC..32.5.
1/2	11096	SCGCR-12CA-12	0.787	0.630	1.850	0.472	0.787	1.969	0	0	0.22	CC..43.
	45802	SCGL-12CA-12	0.787	0.630	1.850	0.472	0.787	1.969	0	0	0.22	CC..43.

Spare Parts, Parts included in delivery

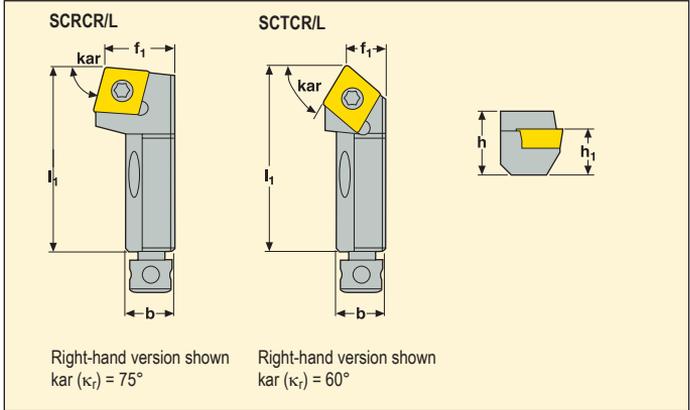
For size	Insert key	Insert screw	Fastening screw	Setting screw (axial)	Setting screw (radial)	Locking key	Setting key
08CA-06	T07P-2	C02505-T07P	179.17-698-T09P	179.17-683	179.17-684	T09P-2	1.5SMS795
10CA-09	T15P-2	C04008-T15P	179.17-697-T25P	179.17-680	179.17-686	T25P-7	2SMS795
12CA-12	T20P-7	C05010-T20P	179.17-697-T25P	179.17-680	179.17-687	T25P-7	2SMS795

Please check availability in current price and stock-list

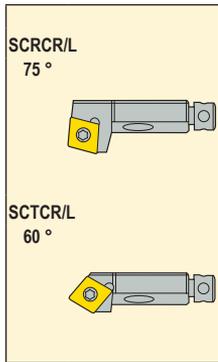
*Ordered separately

Cartridges for inserts CCGT, CCGW, CCMT and CCMW

Angular Mount ~ C-lock type



- For insert program, see pages 236, 238-240, 328
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 16-17
- For cartridge mounting information see page 235



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch						γ_o°	λ_s°	lbs	
			h	b	l_1	h_1	f_1	D_m min				
1/4	08899	SCRCR08CA-06	0.433	0.276	1.024	0.315	0.394	0.984	0	0	0.22	CC..21.5
	08900	SCRCL-08CA-06	0.433	0.276	1.024	0.315	0.394	0.984	0	0	0.22	CC..21.5
3/8	08684	SCRCR-10CA-09	0.591	0.433	1.654	0.394	0.551	1.575	0	0	0.22	CC..32.5
	08685	SCRCL-10CA-09	0.591	0.433	1.654	0.394	0.551	1.575	0	0	0.22	CC..32.5
1/2	08701	SCRCR-12CA-12	0.787	0.630	1.850	0.472	0.787	1.969	0	0	0.22	CC..43
	08702	SCRCL-12CA-12	0.787	0.630	1.850	0.472	0.787	1.969	0	0	0.22	CC..43
1/4	08891	SCTCR-08CA-06	0.433	0.276	1.024	0.315	0.236	0.984	0	0	0.22	CC..21.5
	08991	SCTCL-08CA-06	0.433	0.276	1.024	0.315	0.236	0.984	0	0	0.22	CC..21.5
3/8	34258	SCTCR-10CA-09	0.591	0.433	1.654	0.394	0.354	1.575	0	0	0.22	CC..32.5
	08689	SCTCL-10CA-09	0.591	0.433	1.654	0.394	0.354	1.575	0	0	0.22	CC..32.5
1/2	08705	SCTCR-12CA-12	0.787	0.630	1.850	0.472	0.512	1.969	0	0	0.22	CC..43
	08720	SCTCL-12CA-12	0.787	0.630	1.850	0.472	0.512	1.969	0	0	0.22	CC..43

Spare Parts, Parts included in delivery

For size	Insert key	Insert screw	Fastening screw	Setting screw (axial)	Setting screw (radial)
08CA-06	T07P-2	C02505-T07P	179.17-698-T09P	179.17-683	179.17-684
10CA-09	T15P-2	C04008-T15P	179.17-697-T25P	179.17-680	179.17-686
12CA-12	T20P-7	C05010-T20P	179.17-697-T25P	179.17-680	179.17-687

Accessories*

Locking key	Setting key
T09P-2	1.5SMS795
T25P-7	2SMS795
T25P-7	2SMS795

Please check availability in current price and stock-list

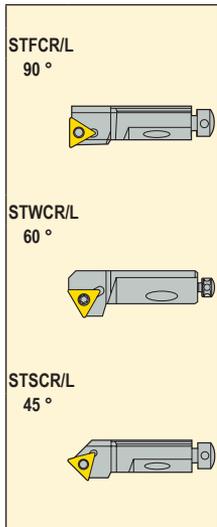
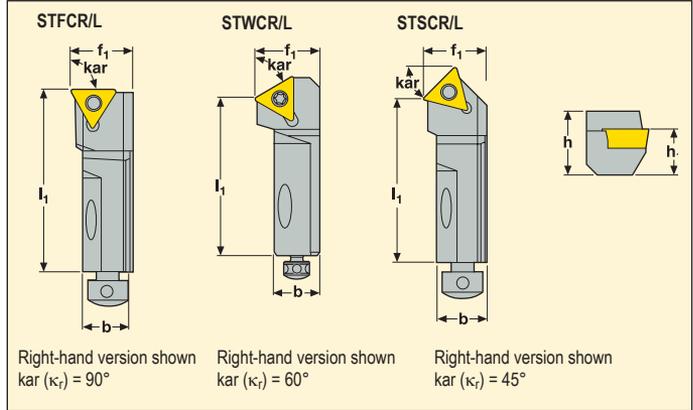
*Ordered separately

Cartridges for inserts TCGT, TCGW, TCMT and TCMW

Angular Mount ~ C-lock type



- For insert program, see pages 277, 279, 316, 330
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 16-17
- For cartridge mounting information see page 235



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch						γ_o°	λ_s°	lbs	TC..
			h	b	l_1	h_1	f_1	D_m min				
1/4	09706	STFCR-10CA-11	0.591	0.433	1.654	0.394	0.551	1.575	0	0	0.22	TC..21.5
	09710	STFCL-10CA-11	0.591	0.433	1.654	0.394	0.551	1.575	0	0	0.22	TC..21.5
	09166	STFCR-12CA-11	0.787	0.630	1.850	0.472	0.787	1.969	0	0	0.22	TC..21.5
3/8	09184	STFCR-16CA-16	0.984	0.787	2.165	0.630	0.984	2.362	-2	0	0.44	TC..32.5
	09187	STFCL-16CA-16	0.984	0.787	2.165	0.630	0.984	2.362	-2	0	0.44	TC..32.5
	08753	STWCR-16CA-16	0.984	0.787	1.772	0.630	0.984	2.362	0	0	0.44	TC..32.5
	08754	STWCL-16CA-16	0.984	0.787	1.772	0.630	0.984	2.362	0	0	0.44	TC..32.5
1/4	09707	STSCR-10CA-11	0.591	0.433	1.417	0.394	0.551	1.575	0	0	0.22	TC..21.5
	15088	STSCL-10CA-11	0.591	0.433	1.417	0.394	0.551	1.575	0	0	0.22	TC..21.5
3/8	09171	STSCR-12CA-16	0.787	0.630	1.535	0.472	0.787	1.969	0	0	0.22	TC..32.5
	09169	STSCL-12CA-16	0.787	0.630	1.535	0.472	0.787	1.969	0	0	0.22	TC..32.5
	09192	STSCR-16CA-16	0.984	0.787	1.772	0.630	0.984	2.362	-6	0	0.44	TC..32.5
	09193	STSCL-16CA-16	0.984	0.787	1.772	0.630	0.984	2.362	-6	0	0.44	TC..32.5

Spare Parts, Parts included in delivery

For size	Insert key	Insert screw	Insert shim	Fastening screw	Setting screw (axial)	Setting screw (radial)	Shim screw
10CA-11	T07P-2	C02506-T07P	-	179.17-696-T25P	179.17-680	179.17-686	-
12CA-11	T07P-2	C02506-T07P	-	179.17-697-T25P	179.17-680	179.17-687	-
12CA-16	T15P-2	C03509-T15P	-	179.17-697-T25P	179.17-680	179.17-687	-
16CA-16	T15P-2	C03509-T15P	STN323	179.17-693	179.17-680	179.17-685	CA3510

Accessories*

Locking key	Setting key	Shim key
T25P-7	2SMS795	-
T25P-7	2SMS795	-
T25P-7	2SMS795	-
5SMS795	2.5SMS795	9/64SMS875

Please check availability in current price and stock-list

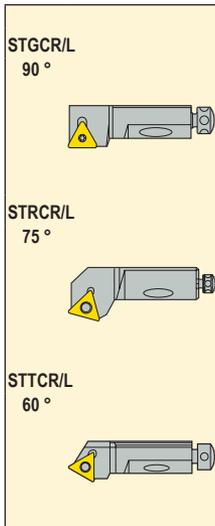
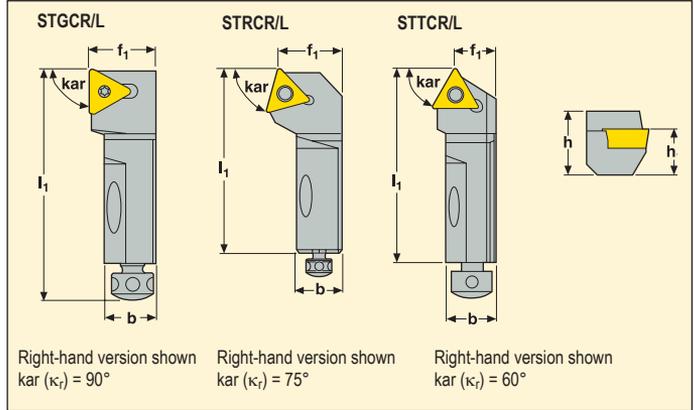
*Ordered separately

Cartridges for inserts TCGT, TCGW, TCMT and TCMW

Angular Mount ~ C-lock type



- For insert program, see pages 277, 279, 316, 330
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 16-17
- For cartridge mounting information see page 235



Insert I.C. inch	EDP No.	Part No.	Dimensions in inch							γ_o°	λ_s°	lbs	TC..
			h	b	l_1	h_1	f_1	D_m min					
1/4	15087	STGCR-10CA-11	0.591	0.433	1.654	0.394	0.551	1.575	0	0	0.22	TC..21.5.	
3/8	09175	STGCR-12CA-16	0.787	0.630	1.850	0.472	0.787	1.969	0	0	0.22	TC..32.5.	
	09174	STGCL-12CA-16	0.787	0.630	1.850	0.472	0.787	1.969	0	0	0.22	TC..32.5.	
	09196	STGCR-16CA-16	0.984	0.787	2.165	0.630	0.984	1.969	-5	0	0.44	TC..32.5.	
	09197	STGCL-16CA-16	0.984	0.787	2.165	0.630	0.984	1.969	-5	0	0.44	TC..32.5.	
1/2	36182	STGCL-16CA-22	0.787	0.689	2.165	0.630	0.984	2.756	0	0	0.44	TC..43.	
3/8	08747	STRCR-16CA-16	0.984	0.787	2.165	0.630	0.984	2.362	-5	0	0.44	TC..32.5.	
	08750	STRCL-16CA-16	0.984	0.787	2.165	0.630	0.984	2.362	-5	0	0.44	TC..32.5.	
1/2	33525	STRCL-16CA-22	0.787	0.689	2.165	0.630	0.984	2.756	0	0	0.44	TC..43.	
1/4	09708	STTCR-10CA-11	0.591	0.433	1.654	0.394	0.354	1.575	0	0	0.22	TC..21.5.	
	09711	STTCL-10CA-11	0.591	0.433	1.654	0.394	0.354	1.575	0	0	0.22	TC..21.5.	
3/8	09172	STTCR-12CA-16	0.787	0.630	1.850	0.472	0.512	1.969	0	0	0.22	TC..32.5.	
	09173	STTCL-12CA-16	0.787	0.630	1.850	0.472	0.512	1.969	0	0	0.22	TC..32.5.	
	09195	STTCR-16CA-16	0.984	0.787	2.165	0.630	0.591	2.362	-4	0	0.44	TC..32.5.	
	09194	STTCL-16CA-16	0.984	0.787	2.165	0.630	0.591	2.362	-4	0	0.44	TC..32.5.	

Spare Parts, Parts included in delivery

For size	Insert key	Insert screw	Insert shim	Fastening screw	Setting screw (axial)	Setting screw (radial)	Shim screw
10CA-11	T07P-2	C02506-T07P	-	179.17-696-T25P	179.17-680	179.17-686	-
12CA-16	T15P-2	C03509-T15P	-	179.17-697-T25P	179.17-680	179.17-687	-
16CA-16	T15P-2	C03509-T15P	STN323	179.17693	179.17-680	179.17-685	CA3510
16CA-22	T15P-2	C05012-T15P	-	179.17-693	179.17-680	179.17-690-T15P	-

Accessories*

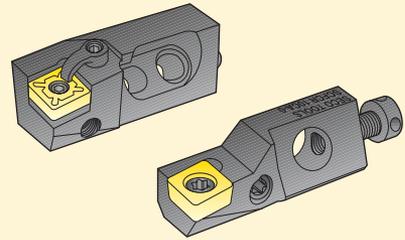
Locking key	Setting key	Shim key
T25P-7	2SMS795	-
T25P-7	2SMS795	-
5SMS795	2.5SMS795	9/64SMS875
5SMS795	2SMS795	-

Please check availability in current price and stock-list

*Ordered separately

Angular Mount Cartridges

- Conform to ISO-ANSI standards
- Accomodate positive and negative rakes
- Use standard, interchangeable Seco seats and chipbreakers
- Fit any cat-head, boring bar or tool block
- now using ISO-ANSI cartridges
- Allow axial and radial adjustment
- Instant metric/inch conversion with simple substitution of components

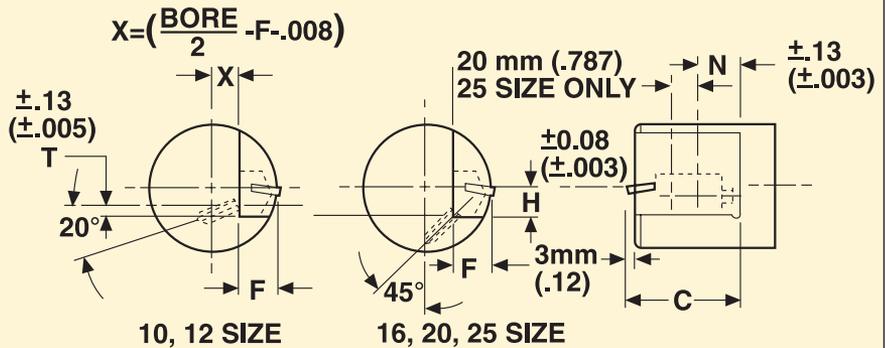


90° Mount Cartridges

- Provide close-tolerance machining with radial and axial adjustments of M and PC types



Mounting Information:
ISO-ANSI
Angular Mount Cartridges



Cartridge Size		C	F	H	T	N	Hold Down Screw	
Metric Std.	Inch Std.						Metric Std.	Inch Std.
10	39	50 mm (1.968)	14 mm (.551)	10 mm (.394)	5 mm (.196)	20 mm (.787)	M6 (Low Hd.)	1/4 (Low Hd.)
12	47	55 mm (2.165)	20 mm (.787)	12 mm (.472)	6 mm (.236)	20 mm (.787)	M6	1/4
16	63	63 mm (2.480)	24 mm (.945)	16 mm (.630)	-	25 mm (.984)	M8	5/16
20	79	70 mm (2.756)	25 mm (.984)	20 mm (.787)	-	30 mm (1.181)	M8	5/16
25	98	100 mm (3.937)	32 mm (1.260)	25 mm (.984)	-	30 mm (1.181)	M10 (2)	3/8 (2)

Cartridge Reference Guide

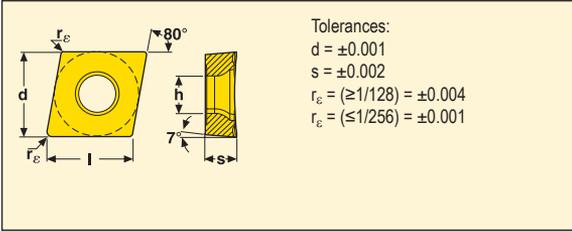
Cartridges are stocked with metric parts as standard.
Components with inch drives are available as optional spare parts.
See substitution charts below.

Lock Pins	
Metric (standard)	Inch (optional)
NLM-23	NLC-23
NLM-33	NLC-33
NLM-34L	NLC-34L
NLM-43	NLC-43
NLM-46S	NLC-46S
NLM-54	NLC-54
NLM-58	NLC-58
NLM-68	NLC-68

Clamp Screws	
Metric (standard)	Inch (optional)
XNSM-0515	XNSC-0515
XNSM-0620	XNSC-0620
XNSM-0825	XNSC-0825

Rad. Adj. Screws	
Metric (standard)	Inch (optional)
SASM-0406	SASC-0406
SASM-0412	SASC-0412
SASM-0516	SASC-0516
SASM-0620	SASC-0620
SASM-0820	SASC-0820

CCGT



Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_{ϵ}
21.5	1/4	3/32	0.256	0.110	1/512-1/64
32.5	3/8	5/32	0.382	0.173	1/256-1/32
43	1/2	3/16	0.508	0.217	1/64-1/32



Inserts	Part No.	Grades (EDP No.)		
		Coated	Uncoated	Cermet
		CP500	KX	TP1020
CCGT-AL	CCGT 21.50.5F-AL		15622	
	21.51F-AL		15710	
	CCGT 32.50.5F-AL		06793	
	32.51F-AL		15731	
	32.52F-AL		15754	
	CCGT 431F-AL		15778	
	432F-AL		15790	
CCGT-F1	CCGT 21.50.0-F1	06790		
	21.50-F1	06791		
	21.51-F1			66770
	CCGT 32.50-F1	06792		
	32.51-F1			66788
CCGT-MF2	CCGT 21.50-MF2	66769		
	21.51-MF2	66771		
	CCGT 32.51-MF2	66789		
CCGT-UX	CCGT 21.51R-UX	07557		
	21.51L-UX	07556		
	CCGT 32.51R-UX	07559		
	32.51L-UX	07558		
	CCGT 432R-UX	52189		
	432L-UX	52193		

Please check availability in current price and stock-list.

*Right-hand version shown

CCMT

Tolerances:
 $d = \pm 0.002$
 $d = \pm 0.003$
 $s = \pm 0.002$
 $s = \pm 0.005$
 $r_\epsilon = \pm 0.004$

Size:
 21.5-32.5
 43
 21.5-32.5
 43

Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_ϵ
21.5	1/4	3/32	0.256	0.114	1/128-1/32
32.5	3/8	5/32	0.382	0.177	1/128-1/32
43	1/2	3/16	0.508	0.220	1/64-3/64

CCMT-FF1

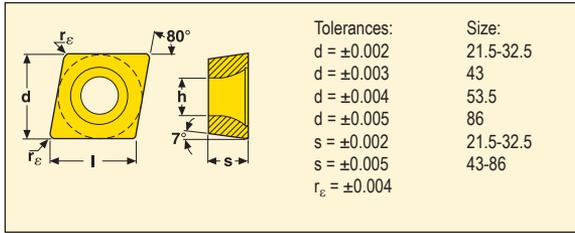
-F1

W-F1

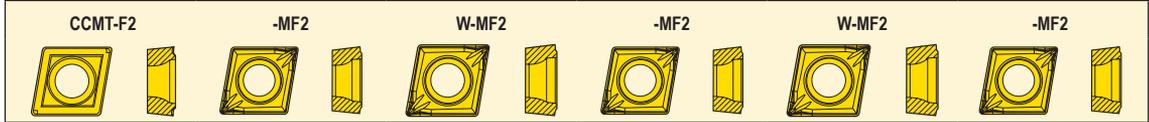
Inserts	Part No.	Grades (EDP No.)															
		Coated													Cermet		
		TP1501	TP2501	TP3500	TP200	TP40	TH1000	TH1500	TM2000	TM4000	TK2001	TS2000	CP200	CP500	CP600	TP1020	TP1030
CCMT-FF1	CCMT 21.50.5-FF1		19361														
	21.51-FF1		19404														
	CCMT 32.51-FF1		19486														
CCMT-F1	CCMT 21.50.5-F1	15858	15859	50444		08497			31365		38464	06756	96853		66790	66772	
	21.51-F1	19554	19555	50448	66010	08505	18950	18940	31509	31411	69564	38941	06671	96854	92028	66795	66797
	21.52-F1		19588	50451		08507				31413				77895		68475	
	CCMT 32.50.5-F1	19369	19474	50453		08509				31416				96856		66810	66811
	32.51-F1	19405	19594	50454	77212	08510	63959	63961	31513	31417	69568	38942	06757	96857	92030	66816	66817
	32.52-F1	19550	19599	50456	65997	08518	63960	63962	31515	31419	69571	38945	06758	96858			66826
	CCMT 431-F1		19482	50458								38946	06759				
	432-F1		19551	50463							69574	38948	06760				
	433-F1		19367														
	CCMT...W-F1	CCMT 21.51W-F1		19338													66805
CCMT 32.51W-F1		19225	19161													66825	
32.52W-F1		19223	19306													66834	66835
CCMT 431W-F1			18965														
432W-F1			18975														

Please check availability in current price and stock-list.

CCMT



Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_c
21.5	1/4	3/32	0.256	0.114	1/128-1/32
32.5	3/8	5/32	0.382	0.177	1/128-3/64
321	3/8	1/8	0.382	0.177	1/64
43	1/2	3/16	0.508	0.220	1/64-3/64
53.5	5/8	7/32	0.634	0.220	1/32-3/64
86	1	3/8	1.016	0.343	3/32



Inserts	Part No.	Grades (EDP No.)														
		Coated											Uncoated	Cermet		
		TP0501	TP1501	TP2501	TP3500	TP200	TP40	TM2000	TM4000	TS2000	CP200	CP500	CP600	HX	TP1020	TP1030
CCMT-F2	CCMT 21.50.5-F2				50445	68122	18885		31410					11802		
	21.51-F2				50450	68123	18652		31412					11732		
	21.52-F2				50452	68124	18654		31414					11757		
	CCMT 321-F2													11834		
	CCMT 32.50.5-F2					68125								11987		
	32.51-F2				50455	68126	18656		31418	38944	07544			11753		
	32.52-F2				50457	68127	18668	31516	31420					11755		
	32.53-F2															
	CCMT 431-F2				50462	82328								16297		
	432-F2				50464	82329	19531	31517	31421					16182		
	433-F2				50465											
	CCMT 53.52-F2					18067			31422							
	53.53-F2					18082			31423							
	CCMT 866-F2					69610										
CCMT-MF2	CCMT 21.50.5-MF2			14244	66794							66791		66792	66793	
	21.51-MF2	14934	14937	14245	66804			66799			66798	92029		66800	66801	
	21.52-MF2	14938	14939	14247	66809						66807					
CCMT...W-MF2	CCMT 21.51W-MF2			14246							85469					
CCMT-MF2	CCMT 32.50.5-MF2			14248	66815						66812			66813		
	32.51-MF2		14943	14249	66824			66819			66818	92031		66820	66821	
	32.52-MF2	14951	14952	14251	66833			66828			66827				66829	
CCMT...W-MF2	CCMT 32.51W-MF2		14944	14250							85470					
	32.52W-MF2		14953	14252				85472			85471					
CCMT-MF2	CCMT 432-MF2		14957	14253	66838											

Please check availability in current price and stock-list.

CCMT

Tolerances:
 $d = \pm 0.002$
 $d = \pm 0.003$
 $d = \pm 0.004$
 $s = \pm 0.002$
 $s = \pm 0.005$
 $r_E = \pm 0.004$

Size:
 21.5-32.5
 43
 53.5
 21.5-32.5
 43-53.5

Size	Dimensions in inch				
	d (I.C.)	s	l	h	r _E
21.5	1/4	3/32	0.256	0.114	1/128-1/32
32.5	3/8	5/32	0.382	0.177	1/128-3/64
43	1/2	3/16	0.508	0.220	1/64-3/64
53.5	5/8	7/32	0.634	0.220	1/32-1/16

CCMT-M3

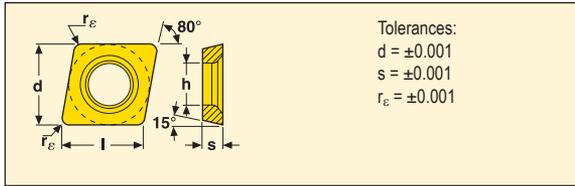
W-M3

-M5

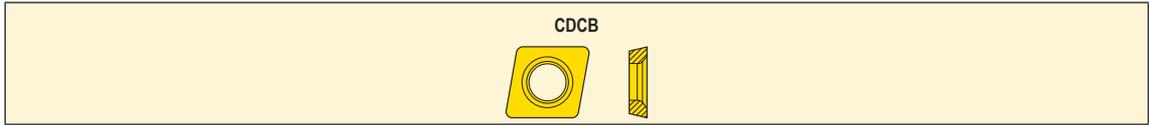
Inserts	Part No.	Grades (EDP No.)							
		Coated							
		TP0501	TP1501	TP2501	TP3500	TP40	TK1001	TK2001	
CCMT-M3	CCMT 21.50.5-M3		19356	19397					
	21.51-M3		19523	19559			69565	69566	
	21.52-M3			19463				69567	
	CCMT 32.50.5-M3		19359	19371					
	CCMT 32.51-M3			19358					
	CCMT 32.51-M3		19541	20359			69569	69570	
	32.52-M3		19613	19616			69572	69573	
	32.53-M3		19366	19372					
	CCMT 431-M3		19392	19516					70176
	432-M3		19552	19617			69575	69576	
	433-M3		19398	19408			69577	69578	
	CCMT 53.52-M3			19632					70177
	53.53-M3								70178
	CCMT...W-M3	CCMT 32.52W-M3		19353					
CCMT-M5	CCMT 32.51-M5		14940	14941	14271		74953		74809
	32.52-M5		14945	14947	14272	74948	74954	74791	74810
	CCMT 432-M5		14954	14955	14274	74949	74955	74793	74812
	433-M5		14960	14962	14275				74813
	CCMT 53.53-M5				14276				
	53.54-M5				14277				

Please check availability in current price and stock-list.

CDCB

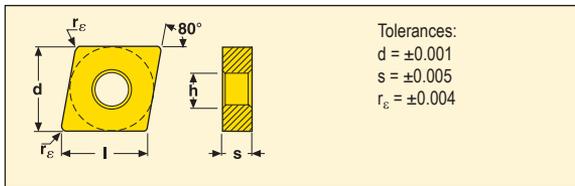


Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
1.21	5/32	0.038	0.159	0.080	1/512-1/64



Inserts	Part No.	Grades (EDP No.)		
		Coated		Uncoated
		TS2500	CP500	883
CDCB	CDCB 1.21.20		62589	62591
	1.21.20.5	30263	98795	54263
	1.21.21	81535	98796	54268

CNGP



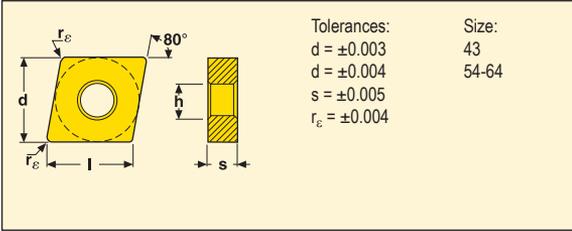
Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
43	1/2	3/16	0.508	0.203	1/256-1/32



Inserts	Part No.	Grades (EDP No.)					
		Coated				Uncoated	
		TS2000	TS2500	CP200	CP500	883	890
CNGP-MF1	CNGP 430-MF1	38962		72175			81639
	430.5-MF1	38963		72177	96859		50190
	431-MF1	38964		72184	96861		50191
	432-MF1	38965		72230	96862		50192
CNGP-M1	CNGP 430.5-M1		39036				48718
	431F-M1						48719
	432F-M1						48720

Please check availability in current price and stock-list.

CNMA, CNMG and CNMP



Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
43	1/2	3/16	0.508	0.203	1/128-1/16
54	5/8	1/4	0.634	0.250	1/32-1/16
64	3/4	1/4	0.760	0.312	3/64-1/16

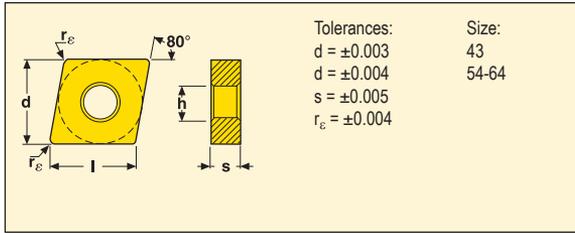


Inserts	Part No.	Grades (EDP No.)																	
		Coated													Uncoated		Cermet		
		TP0501	TP1501	TP2501	TP3500	TP200	TH1000	TH1500	TW2000	TM4000	TK1001	TK2001	TS2000	CP200	CP500	883	890	TP1020	TP1030
CNMA	CNMA 431										69579								
	432									69580	69581								
	433									69582	69583								
	433F														45531				
	434										69584								
	CNMA 542									70179	70180								
	543									69585	69586								
	544									69587	70181								
	CNMA 643										69588	70182							
	643F														00280				
644										69590	70183								
CNMG -FF1	CNMG 431-FF1			17593															
CNMG -FF2	CNMG 430.5-FF2			15587										74981				70346	
	431-FF2			15588	74984									74986				74985	
	432-FF2	15591	15718	14293	74989													74990	
CNMG ...W-FF2	CNMG 431W-FF2			15589														75029	
	432W-FF2		15592	14294														75031	
CNMP -MF1	CNMP 431-MF1							63794	31518	31424			38966	45365	96863		50197		
	432-MF1							63796	31521	31427			38967	54151	96864		50198		
CNMG ...W-MF1	CNMG 431W-MF1														15508				
	432W-MF1														85489				
	433W-MF1														85473				
CNMG -MF2	CNMG 431-MF2	15009		15051	49973	68344											66839	66840	
	432-MF2	15021	15022	15061	49979	68347	63797	63818				70184					66842	66843	
	433-MF2	15722	15723	15063		68350	63798	63820											

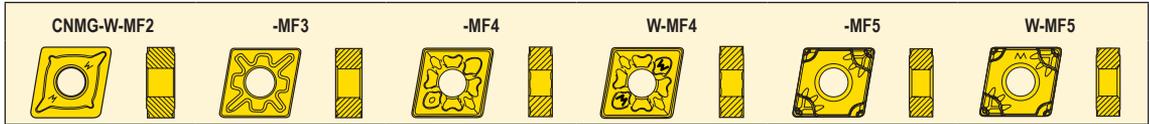
Please check availability in current price and stock-list.

Turning – Inserts

CNMG



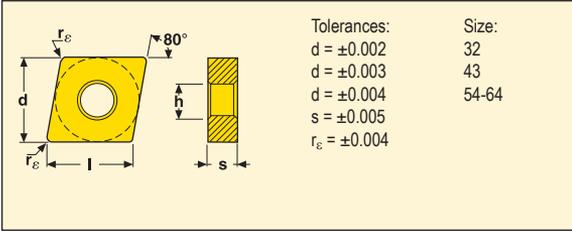
Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
43	1/2	3/16	0.508	0.203	1/64-1/16
54	5/8	1/4	0.634	0.250	1/32-3/64
64	3/4	1/4	0.760	0.312	1/32-3/64



Inserts	Part No.	Grades (EDP No.)																
		Coated														Uncoated	Cermet	
		TP0501	TP1501	TP2501	TP3500	TP200	TP40	TH1000	TH1500	TM2000	TM4000	TK1001	TK2001	TS2000	TS2500	CP500	883	TP1020
CNMG ...W-MF2	CNMG 431W-MF2		15672	15673														66841
	432W-MF2	15674	15675	15676								69601						66844
	433W-MF2	15677																
CNMG -MF3	CNMG 431-MF3				49978					76865								
	432-MF3				49998	24328	30598			76868		69597						
	CNMG 433-MF3				50019		30600											
CNMG -MF4	CNMG 431-MF4								31519	31425			38998	39075	32582			
	432-MF4				18500	50000			31522	31428			39006	39077	32583			
	433-MF4				16493				31524	31430			39007	39078				
	434-MF4								31525	31431								
	CNMG 542-MF4								31526	31432								
	543-MF4								31528	31434								
CNMG 643-MF4									31530	31437								
CNMG ...W-MF4	CNMG 431W-MF4									15506					85474			
	432W-MF4								85477	85478								
	433W-MF4								85479	85480								
CNMG -MF5	CNMG 432-MF5	18488	18559	18562	49980			63800	63822				39023	39090				
	433-MF5	15981	15983	15987	50020			63801	63823				39024	39091				
	434-MF5		16062	16064														
CNMG ...W-MF5	CNMG 432W-MF5		16713	16747				29651	29661			70185						

Please check availability in current price and stock-list.

CNMG and CNMP



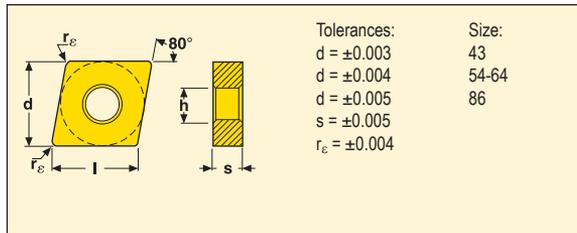
Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
32	3/8	1/8	0.382	0.150	1/64-1/32
43	1/2	3/16	0.508	0.203	1/64-1/16
54	5/8	1/4	0.634	0.250	1/32-1/16
64	3/4	1/4	0.760	0.312	1/32-1/16



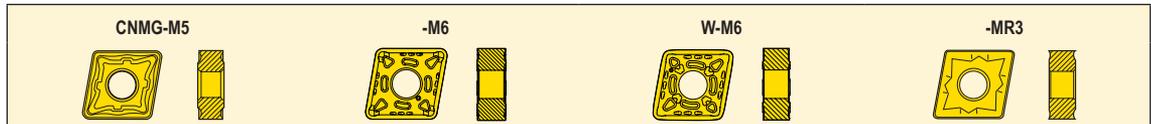
Inserts	Part No.	Grades (EDP No.)											
		Coated										Uncoated	
		TP0501	TP1501	TP2501	TP3500	TP200	TP40	TH1500	TK1001	TK2001	TS2000	TS2500	883
CNMP-M1	CNMP 431-M1										39037		41450
	432-M1											39038	40564
	433-M1												44671
	CNMP 542-M1												41454
	543-M1												41458
	CNMP 642-M1												
643-M1													40568
CNMG-M3	CNMG 321-M3			17489									
	322-M3			17577									
	CNMG 431-M3			15328	49977	68353	18469						
	432-M3	15330	15332	15333	49981	37351	18096		69592				
	CNMG 432-M3(O)						18470						
	CNMG 433-M3	15335	15338	15339	50003	66067	18471						
	434-M3		15724	15728									
	CNMG 542-M3		15340	15341	50063								
	543-M3	15342	15345	15346	50071								
	544-M3												
	CNMG 642-M3		15954	15955	50260								
	643-M3		15348	15349	50263								
644-M3		15956	15353	50273									
CNMG...W-M3	CNMG 432W-M3	15556	15557	15559					69600				
	433W-M3	15560	15561	15562					69611				
CNMG-M4	CNMG 432-M4							69593	69594				
	433-M4							69602	69603				

Please check availability in current price and stock-list.

CNMG



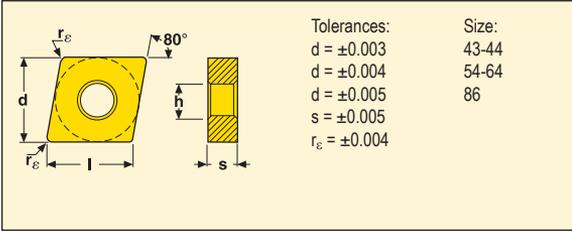
Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
43	1/2	3/16	0.508	0.203	1/64-1/16
54	5/8	1/4	0.634	0.250	1/32-3/32
64	3/4	1/4	0.760	0.312	1/32-1/16



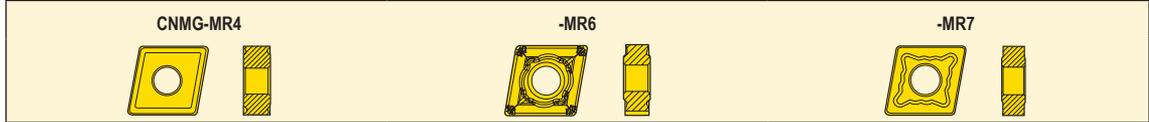
Inserts	Part No.	Grades (EDP No.)																		
		Coated														Uncoated				
		TP0501	TP1501	TP2501	TP3500	TP200	TP40	TH1000	TM2000	TM4000	TK1001	TK2001	TS2000	CP200	CP500	883	890			
CNMG-M5	CNMG 431-M5			16492	49820												69591			
	432-M5	16095	16096	16097	49997	23678	23680	18143	31520	31426	69595						69596			
	433-M5	16098	16099	16104	50004	23682	23684	18149	31523	31429	69604						69605			
	434-M5		16105	16106	50050			38282												
	CNMG 542-M5		16107	16108	50069													69614		
	543-M5	16494	16495	16496	50072	27194	27196		31527	31433								69615		
	544-M5	16109	16110	16113	50080	38246	38250			31436								69617		
	CNMG 642-M5		16114	16116	50261			38254												
	643-M5		16500	16502	50264	38256	38259											70188		
	644-M5			16503	50274	38261	38264			31438								70189		
	CNMG-M6	CNMG 432-M6	15104	15108	15109	81086												81823		
		433-M6	15120	15122	15125	76197												81824		
434-M6			15128	15129																
CNMG 543-M6		15130	15131	15132	76198													81828		
544-M6		15134	15136	15137														81829		
546-M6			15142	15143																
CNMG 643-M6		48951	48961	48973																
644-M6		48974	48975	49007																
646-M6		49009	49010	49018																
CNMG...W-M6		CNMG 432W-M6			15117															
		433W-M6		15126	15127															
		CNMG 543W-M6			15133															
	544W-M6		15138	15139																
CNMG-MR3	CNMG 432-MR3																38968	72233	96865	50193
	433-MR3																38969	72235	96866	50195

Please check availability in current price and stock-list.

CNMG



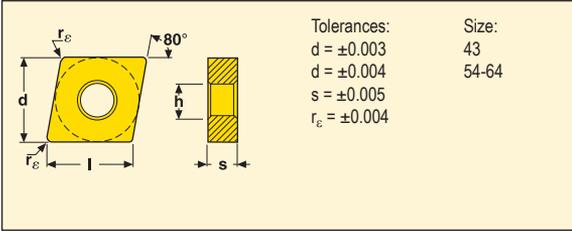
Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
43	1/2	3/16	0.508	0.203	1/64-1/16
44	1/2	1/4	0.508	0.203	3/64
54	5/8	1/4	0.634	0.250	1/32-3/32
64	3/4	1/4	0.760	0.312	1/32-3/32
86	1	3/8	1.016	0.359	3/32



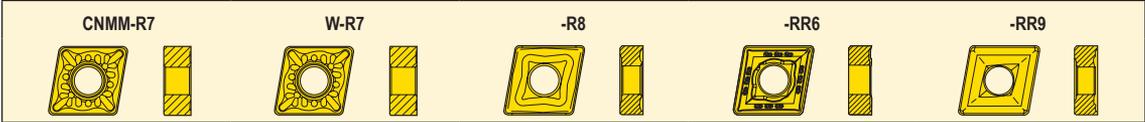
Inserts	Part No.	Grades (EDP No.)											
		Coated										Uncoated	
		TP0501	TP1501	TP2501	TP3500	TP200	TP40	TM4000	TK1001	TK2001	TS2500	883	
CNMG-MR4	CNMG 431-MR4											41713	
	432-MR4										39039	00305	
	433-MR4										39040	41716	
	434-MR4										39041	41376	
	CNMG 542-MR4										39042	40714	
	543-MR4										39043	41718	
	CNMG 643-MR4										39044	00375	
	644-MR4											47161	
	CNMG 866-MR4				50557								
	CNMG-MR6	CNMG 432-MR6		18220	18163	50001							
433-MR6			16034	16054	50018								
434-MR6					50057								
CNMG 443-MR6					50060								
CNMG 543-MR6				16069	50073								
544-MR6					50082								
CNMG 643-MR6					50267								
CNMG-MR7		CNMG 432-MR7		15976	15977	50002		17309	35164	69598	69599		
	433-MR7	16057	16059	16060	50021		17603	35166	69606	69609			
	434-MR7		16065	16068	50058		03549		69612	70186			
	CNMG 542-MR7				50062								
	543-MR7	16071	16072	16073	50070		78217	35167	70187	69616			
	544-MR7	16074	16075	16076	50074		78305	35168		69618			
	546-MR7		16077							81549			
	CNMG 642-MR7				50262		17604						
	643-MR7	16078	16081	16083	50270	79794	17606	35169		69621			
	644-MR7	16086	16523	16529	50279		19712	35170		69622			
	646-MR7		16088	16089									
	CNMG 866-MR7		18569	18769	50558	79798							

Please check availability in current price and stock-list.

CNMM



Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
43	1/2	3/16	0.508	0.203	1/32-3/64
54	5/8	1/4	0.634	0.250	3/64-3/32
64	3/4	1/4	0.760	0.312	3/64-3/32



Inserts	Part No.	Grades (EDP No.)						
		Coated						
		TP0501	TP1501	TP2501	TP3500	TP200	TP40	TM4000
CNMM-R7	CNMM 543-R7				50099			
	544-R7	17136		17137	50102			
	546-R7	17440						
	CNMM 643-R7			17165	50288			
	644-R7		17181	17334	50293	69392		
	646-R7	17192		17447	50306			
CNMM...W-R7	CNMM 644W-R7		16669	16693				
	646W-R7	16657	16658	16766				
CNMM-R8	CNMM 433-R8						19571	
	CNMM 644-R8				50295			
CNMM-RR6	CNMM 432-RR6				50560			
	433-RR6				50564			
	CNMM 543-RR6			17270				32501
	544-RR6		17323	17155				32502
	CNMM 643-RR6			17172				32503
	644-RR6			17350	50300			32504
646-RR6	17206		17437	50307			32500	
CNMM-RR9	CNMM 644-RR9						19220	

Please check availability in current price and stock-list.

DCGT

Tolerances:
 $d = \pm 0.001$
 $s = \pm 0.002$
 $r_e (\geq 1/128) = \pm 0.004$
 $r_e (\leq 1/256) = \pm 0.001$

Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
21.5	1/4	3/32	0.307	0.110	1/512-1/64
32.5	3/8	5/32	0.457	0.177	1/256-1/32
431	1/2	3/16	0.610	0.220	1/64

DCGT-AL

-F1

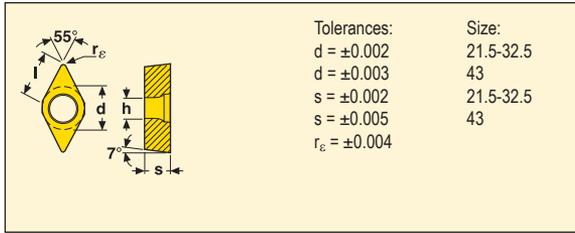
-MF2

-M3

Inserts	Part No.	Grades (EDP No.)			
		Coated	Uncoated		Cermet
		CP500	HX	KX	TP1020
DCGT-AL	DCGT 21.50.0F-AL			52989	
	21.50F-AL			52986	
	21.50.5F-AL			07603	
	21.51F-AL			15835	
	DCGT 32.50.5F-AL			06798	
	32.51F-AL			15848	
	32.52F-AL			07606	
DCGT-F1	DCGT 21.50.0-F1	06794			
	21.50-F1	06795			
	DCGT 32.50-F1	06797			
	32.51-F1				66845
DCGT-MF2	DCGT 32.51-MF2	66941			
DCGT-M3	DCGT 21.50.5-M3		49306		
	21.51-M3		49310		
	DCGT 32.50.5-M3		49321		
	32.51-M3		49332		
	32.52-M3		49337		
	DCGT 431-M3		49351		

Please check availability in current price and stock-list.

DCMT



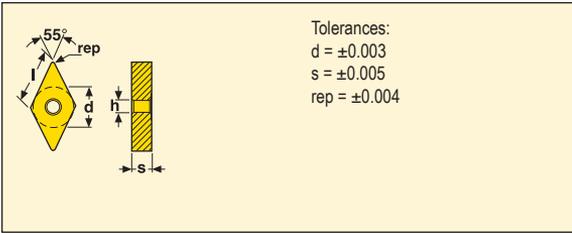
Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
21.5	1/4	3/32	0.307	0.114	1/128-1/32
32.5	3/8	5/32	0.457	0.177	1/128-3/64
43	1/2	3/16	0.610	0.220	1/64-3/64



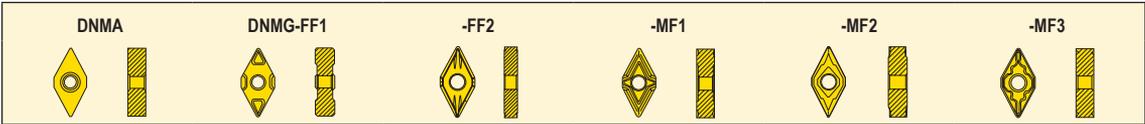
Inserts	Part No.	Grades (EDP No.)																			
		Coated													Uncoated	Cermet					
		TP0501	TP1501	TP2501	TP3500	TP200	TP40	TH1000	TH1500	TM2000	TM4000	TK1001	TK2001	TS2000	CP200	CP500	CP600	HX	TP1020	TP1030	
DCMT -FF1	DCMT 32.50.5-FF1			19684																	
	32.51-FF1			19955																	
	32.52-FF1			19957																	
DCMT -F1	DCMT 21.50.5-F1			19787	50466								38949	06761	96867						
	21.51-F1		19919	19974	50470		08519			31531	31440		38950	06762	96868					66847	
	21.52-F1		19789		50472										06796					66852	
	DCMT 32.50.5-F1			19971	50474										96869					66854 66855	
	32.51-F1	15860	19983	20179	50482	65688	08520	18209	18217	31534	31443	70190	69626	38951	06763	96871	92053			66859 66860	
	32.52-F1	15862	20182	20220	50485	03991		21656			39787	70192	69629	38953	06764	96872					66867 66868
32.53-F1		19920	19939																		
DCMT -F2	DCMT 21.50.5-F2							19279			31439									11800	
	21.51-F2				50471	68129	18672			31532	31441									11759	
	21.52-F2				50473		18658			31533	31442									11761	
	DCMT 32.50.5-F2																			16111	
	32.51-F2				50483	68132	18660			31535	31444		38952	21094						11734	
	32.52-F2				50486	68133	18662			31536	31446									11763	
	DCMT 431-F2				49822	68135															16289
	432-F2				50488	68136	05403														16257
	433-F2				50489																
DCMT -MF2	DCMT 21.50.5-MF2														66942					66846	
	21.51-MF2		14963	14255	66851										66943	92038				66848	
	21.52-MF2				66853																
	DCMT 32.50.5-MF2		14964	14256											66944	92052				66856 66857	
	32.51-MF2	14966	14970	14257	66866						66861				66945	92058				66862 66863	
	32.52-MF2	14976	14977	14258	66874						66869				66946	92055				66870 66871	
32.53-MF2			14259																		

Please check availability in current price and stock-list.

DNMA, DNMG and DNMP



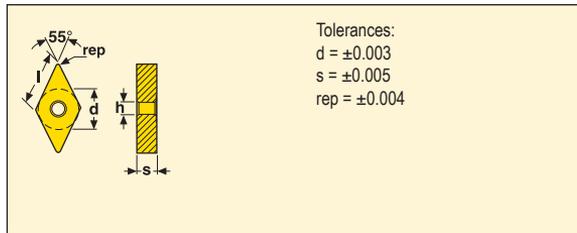
Size	Dimensions in inch				
	d (I.C.)	s	l	d ₁	rep
43	1/2	3/16	0.610	0.203	1/64-3/64
44	1/2	1/4	0.610	0.203	1/64-1/16



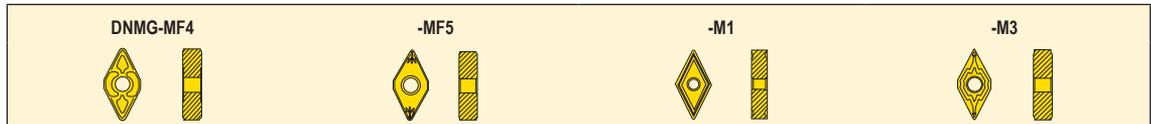
Inserts	Part No.	Grades (EDP No.)																	
		Coated														Uncoated	Cermet		
		TP0501	TP1501	TP2501	TP3500	TP200	TH1000	TH1500	TM2000	TM4000	TK1001	TK2001	TS2000	CP200	CP500	890	TP1020	TP1030	
DNMA	DNMA 432																		
	DNMA 442									69632	69633								
	443									69634	70194								
	444									69635	70195								
DNMG-FF1	DNMG 441-FF1																		66879
DNMG-FF2	DNMG 431-FF2		15593	15594															74993
	432-FF2	15599	15600	14296															74996
	DNMG 441-FF2		15605	15606	75001										75006				75003
	442-FF2	15611	15612	14297	75009														75010
DNMP-MF1	DNMP 431-MF1							71457					38972	72240			69656		
	432-MF1							03141					38973	72242			81225		
	DNMP 441-MF1							63802	31541	31453			38976	72251	96874	69658			75003
	442-MF1							63803	31543	31455			38977	50965	96875	37186			75010
DNMG-MF2	DNMG 431-MF2	15023	15028	15064	50340														
	432-MF2	15029	15031	15065	50348		71278						69639						
	433-MF2			15066															
	DNMG 441-MF2		15729	15067	50355	69692												66880	66881
	442-MF2	15732	15733	15068	50361	69695	63804	63824										66882	66883
	443-MF2	15736	15737	15069		69698	63805	63825					69650						
DNMG-MF3	DNMG 431-MF3				50344														
	432-MF3				50349	35484													
	DNMG 441-MF3				50356														
	442-MF3				50362								69648						

Please check availability in current price and stock-list.

DNMG and DNMP



Size	Dimensions in inch				
	d (I.C.)	s	l	d ₁	rep
43	1/2	3/16	0.610	0.203	1/64-1/16
44	1/2	1/4	0.610	0.203	1/64-1/16

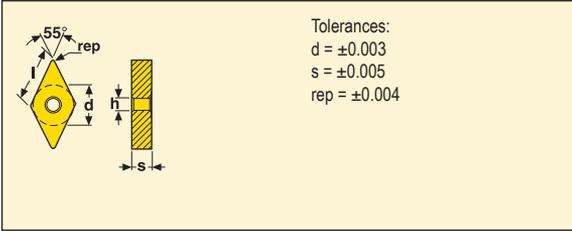


Inserts	Part No.	Grades (EDP No.)																
		Coated														Uncoated		
		TP0501	TP1501	TP2501	TP3500	TP200	TP40	TH1000	TH1500	TM2000	TM4000	TK1001	TK2001	TS2000	TS2500	883		
DNMG-MF4	DNMG 431-MF4																	
	432-MF4									37665	31452			39016	39086			
	433-MF4													39017	39087			
	DNMG 441-MF4									31542	31454							
	442-MF4			18104						31544	31456			39018	39088			
	443-MF4									31545	31457			39019	39089			
DNMG-MF5	DNMG 432-MF5		18100	18251				71283	71292					39029	39097			
	433-MF5		18025	18235										39030	39098			
	DNMG 442-MF5	18222	18225	18238				63806	63826			70198		39031	39099			
	443-MF5	18046	18230	18164				63807	63827					39032	39100			
	444-MF5			18181														
DNMP-M1	DNMP 431-M1																41468	
	432-M1																40571	
	433-M1																40575	
DNMG-M3	DNMG 431-M3		15406	15407	50330									81545				
	432-M3	15411	15417	15419	50346	69177								70196				
	433-M3	15427	15445	15450	50350									69644				
	DNMG 441-M3		15454	15455	50353	37343	18568							69645				
	442-M3	15458	15461	15463	50357	37345	18479							69646				
	443-M3	15464	15734	15466	50365		18480							70199				
	444-M3		15738	15475														

Please check availability in current price and stock-list.

Turning – Inserts

DNMG



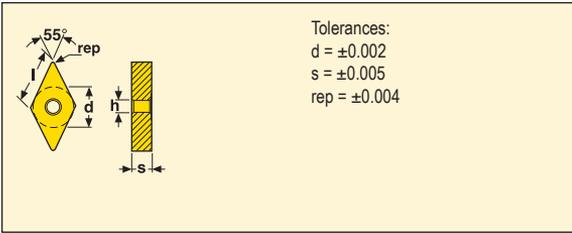
Size	Dimensions in inch				
	d (I.C.)	s	l	d ₁	rep
43	1/2	3/16	0.610	0.203	1/64-3/64
44	1/2	1/4	0.610	0.203	1/64-1/16
54	5/8	1/4	0.763	0.250	1/32-3/64



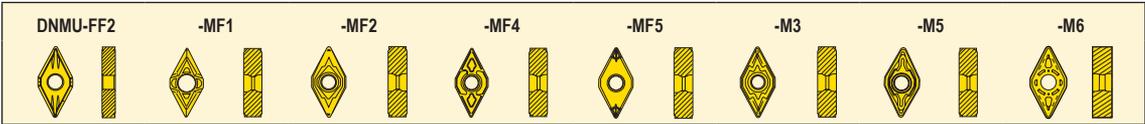
Inserts	Part No.	Grades (EDP No.)																
		Coated														Uncoated		
		TP0501	TP1501	TP2501	TP3500	TP200	TP40	TM2000	TM4000	TK1001	TK2001	TS2000	TS2500	CP200	CP500	883	890	
DNMG-M5	DNMG 431-M5				50332													
	432-M5	16223	16237	16238	50347		42649			69636								
	433-M5		16595	16596	50351		42756											
	DNMG 441-M5			16251	50354													
	442-M5	16258	16266	16267	50360	39727		56225	44008	70197	69647							
	443-M5	16604	16605	16606	50366	39732		56233		81546	69649							
	444-M5	16607	16608	16610	50372													
	DNMG 542-M5					59820												
	DNMG-M6	DNMG 432-M6		15180	15182													
433-M6			15183	15184	81822													
434-M6				15188														
DNMG 442-M6			15189	15190							81830							
443-M6		15191	15192	15204	76205						81831							
444-M6			15206	15211														
DNMG-MR3	DNMG 432-MR3											38974		72250	03124		73005	
	433-MR3											38975		76036				
	DNMG 442-MR3												38978		72256	98001		37187
	443-MR3														98002			30813
DNMG-MR4	DNMG 432-MR4													39045			40684	
	433-MR4																47167	
	DNMG 543-MR4																00820	
DNMG-MR6	DNMG 442-MR6				50364													
DNMG-MR7	DNMG 442-MR7			16597				17608										
	443-MR7	16408	16412		50368						69654							

Please check availability in current price and stock-list.

DNMU



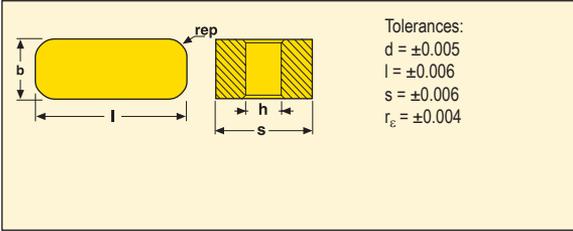
Size	Dimensions in inch				
	d (I.C.)	s	l	d ₁	rep
33	3/8	3/16	0.457	0.150	1/128-3/64



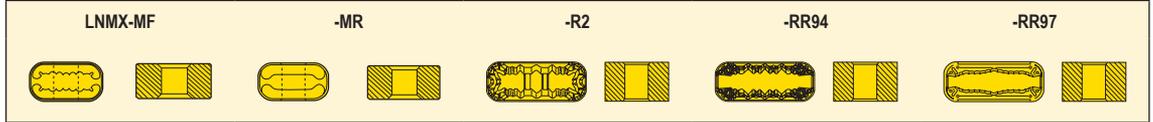
Inserts	Part No.	Grades (EDP No.)													
		Coated													Cermet
		TP0501	TP1501	TP2501	TP3500	TP200	TH1000	TH1500	TM2000	TM4000	TK1001	TK2001	CP500	TP1030	
DNMU-FF2	DNMU 331-FF2		15619	14298			92069							75035	75034
	332-FF2	15620	15621	14299	75038		92100							75040	75039
DNMU-MF1	DNMU 331-MF1									39815	39816			43360	
	332-MF1									39823	39824				
DNMU-MF2	DNMU 331-MF2	15033	15034	15070	50310	43862	92101						70200		66884
	332-MF2	15741	15743	15071	50320	43871	92102						69663		66885
	333-MF2			15072					52201						
DNMU-MF4	DNMU 331-MF4									39818	39819				
	332-MF4									39826	39827				
DNMU-MF5	DNMU 331-MF5			18182											
	332-MF5			18231											
	333-MF5			18114											
DNMU-M3	DNMU 330.5-M3		15479	15483											
	331-M3		15739	15485	50309	43358	18895	18954					69657		
	332-M3	15496	15500	15504	50319	52208	18900	18945					69660		
	333-M3	15509	15510										69664		
DNMU-M5	DNMU 332-M5		16277											69662	
	333-M5		16280											70201	
DNMU-M6	DNMU 332-M6		49028	49037											
	333-M6		49063	49070											

Please check availability in current price and stock-list.

LNMX



Size	Dimensions in inch				
	d (I.C.)	l	s	d ₁	r _ε
1919	0.394	0.750	0.750	0.250	1/64
3019	0.472	1.181	0.750	0.250	1/64



Inserts	Part No.	Grades (EDP No.)				
		Coated				
		TP0501	TP1501	TP2501	TP200	TK2001
LNMX-MF	LNMX 191940-MF		18889	18828		69666
	LNMX 301940-MF		18850	18873		69668
LNMX-MR	LNMX 191940-MR		18829	18846		69667
	LNMX 301940-MR		18852	18854		
LNMX-R2	LNMX 191940-R2	18848	18872		75619	
	LNMX 301940-R2	18855	18856		75634	
LNMX-RR94	LNMX 191940-RR94	18849	18894		75622	03959
	LNMX 301940-RR94	18875	18857		75637	03972
LNMX-RR97	LNMX 301940-RR97	18859	18860		75625	

Please check availability in current price and stock-list.

RCMT

Tolerances:
 D = ±0.002
 D = ±0.003
 D = ±0.004
 s = ±0.002
 s = ±0.005

Size:
 06, 08, 10
 12
 16
 06, 08, 10
 12, 16

Size	Dimensions in inch		
	D	s	h
22	0.250	1/8	0.110
32.5	0.375	5/32	0.154
43	0.500	3/16	0.173
0602	0.236	3/32	0.114
0803	0.315	1/8	0.138
10T3	0.394	5/32	0.177
1204	0.472	3/16	0.177
1606	0.630	1/4	0.220

RCMT-F1

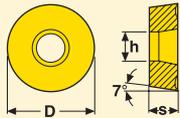
-F2

-M3

Inserts	Part No.	Grades (EDP No.)													
		Coated												Uncoated	
		TP0501	TP1501	TP2501	TP3500	TP200	TP40	TH1000	TK1001	TK2001	TS2000	CP200	CP500	HX	883
RCMT-F1	RCMT 22-F1 (O)					96281									48219
	RCMT 32.5-F1											04668			28704
	RCMT 32.5-F1 (O)					96282									
	RCMT 43-F1											04669			
	RCMT 43-F1 (O)					96283									
	RCMT 0602M0-F1			15863								98008			
	RCMT 0803M0-F1			15864				29608				98012			
	RCMT 10T3M0-F1			15865	50515			92066				98302			
	RCMT 1204M0-F1		15866	15867	50517			92067		69678		99703			
	RCMT 1606M0-F1	15868	15869	15870											
	RCMT-F2	RCMT 0602M0-F2					68139					38954			16153
RCMT 0803M0-F2					58989	68141					38956	16249		16151	
RCMT 10T3M0-F2					50516	68143	34254				39020			16149	
RCMT 1204M0-F2					50519	68145	34255				39021			16259	
RCMT 1606M0-F2					50521		93911							93929	
RCMT-M3		RCMT 0602M0-M3			15906										
	RCMT 0803M0-M3		15907	15908						69672					
	RCMT 10T3M0-M3		15909	15911						69675					
	RCMT 1204M0-M3		15912	15913				29560	69679	69682					
	RCMT 1606M0-M3	15914	15915	15916											

Please check availability in current price and stock-list.

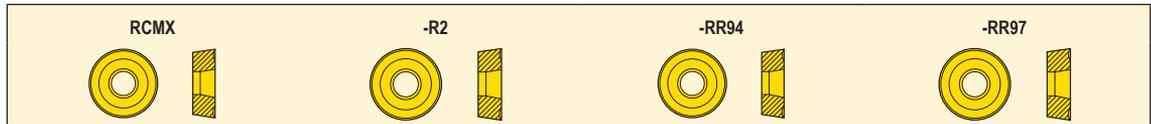
RCMX



Tolerances:
 D = ±0.003
 D = ±0.004
 s = ±0.002
 s = ±0.005

Size:
 10, 12, 16, 20
 25, 32
 10
 12 - 32

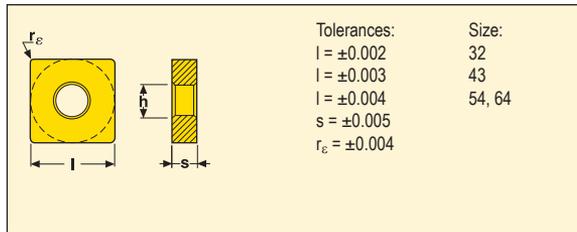
Size	Dimensions in inch		
	D	s	h
100300	0.394	1/8	0.142
120400	0.472	3/16	0.165
200600	0.787	1/4	0.256
250700	0.984	5/16	0.283
320900	1.260	3/8	0.374



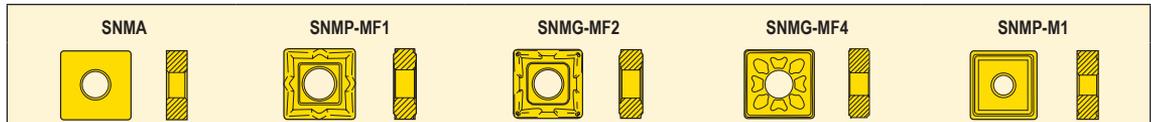
Inserts	Part No.	Grades (EDP No.)							
		Coated							
		TP0501	TP1501	TP2501	TP3500	TP200	TH1500	TK1001	TK2001
RCMX	RCMX 100300				50522				
	RCMX 120400				50523				
	RCMX 200600				49849	35989			69685
	RCMX 250700				50553	35987		70202	69688
	RCMX 320900				50554	35986			69700
	RCMX-R2	RCMX 200600-R2	20309		20310				
RCMX 250700-R2		20333		20334					
RCMX 320900-R2		20321		20325					
RCMX-RR94	RCMX 120400-RR94			20318					
	RCMX 160600-RR94		20313	20315					
	RCMX 250700-RR94	20349	20345	20341			92064		75408
	RCMX 200600-RR94	20316	20317	20314					
	RCMX 320900-RR94	20347	20340	20336			92063		03961
RCMX-RR97	RCMX 200600-RR97	20311		20312					
	RCMX 250700-RR97	20342		20335					
	RCMX 320900-RR97	20328		20330					

Please check availability in current price and stock-list.

SNMA, SNMG and SNMP



Size	Dimensions in inch			
	l (I.C.)	s	h	r_e
32	3/8	1/8	0.150	1/64-1/32
43	1/2	3/16	0.203	1/32-1/16
54	5/8	1/4	0.250	3/64
64	3/4	1/4	0.312	3/64-1/16



Inserts	Part No.	Grades (EDP No.)															
		Coated											Uncoated		Cermet		
		TP1501	TP2501	TP3500	TP200	TH1000	TM2000	TM4000	TK1001	TK2001	TS2000	CP200	CP500	883	890	TP1030	
SNMA	SNMA 322								69714								
	SNMA 432								69722	70204							
	433								69723								
	434								69727								
	SNMA 543								69730	70205							
	SNMA 643								69731								
	644								69732	70206							
SNMP-MF1	SNMP 432-MF1						31550	31462				38979	54152	99808		37179	
	433-MF1											38981	72275	92607		37183	
SNMG-MF2	SNMG 321-MF2		18499														
	322-MF2		18258														
	SNMG 432-MF2	15744	15073	50111	69710	29228										66894	
	433-MF2	15035	15074			29559										66895	
SNMG-MF4	SNMG 432-MF4						31551	31463									
	433-MF4						31553	31466									
SNMP-M1	SNMP 432-M1															40583	
	SNMP 543-M1															40588	
	SNMP 644-M1															40593	

Please check availability in current price and stock-list.

SNMG

Tolerances:
 $I = \pm 0.002$
 $I = \pm 0.003$
 $I = \pm 0.004$
 $s = \pm 0.005$
 $r_e = \pm 0.004$

Size:
 32
 43
 54-64

Size	Dimensions in inch			
	I (I.C.)	s	h	r_e
32	3/8	1/8	0.150	1/32
43	1/2	3/16	0.203	1/64-1/16
54	5/8	1/4	0.250	1/32-1/16
64	3/4	1/4	0.312	3/64-3/32



Inserts	Part No.	Grades (EDP No.)															
		Coated													Uncoated		
		TP0501	TP1501	TP2501	TP3500	TP200	TP40	TH1000	TM2000	TM4000	TK1001	TK2001	TS2000	CP200	CP500	890	
SNMG-M3	SNMG 431-M3			15529	50106												
	432-M3		15530	15531	50107	69719	18473				81543						
	433-M3		15533	15534	50113	69624	18474										
	434-M3		15535	15536													
	SNMG 543-M3		15537	15538													
	SNMG 643-M3			15539	50375												
	644-M3			15540													
SNMG-M5	SNMG 322-M5			18259	50105												
	SNMG 432-M5			16611	50109	38284	38288	29577	31549	31461	81547	69733					
	433-M5		16299	16303	50114	38294	29580	31552	31464		70207						
	434-M5		16304	16312	50117												
	SNMG 542-M5			16316													
	543-M5		16320	16345	50377	38046			43673								
	544-M5	16346	16360	16368	50384	38051											
	SNMG 643-M5			16612	50387	38091		31554	31467		69735						
	644-M5	16407	16614	16622	50390	38097			31468								
SNMG-M6	SNMG 433-M6		15297	15307													
	SNMG 543-M6		15312	15313													
	544-M6	15314	15316	15319													
	SNMG 643-M6	49073	49080	49109													
	644-M6	49126	49143	49147													
	646-M6	49155	49156	49158													
	SNMG 432-M6		15272	15280													
SNMG-MR3	SNMG 432-MR3											38980	72273	99812	37181		
	433-MR3											38982	72277	98982			
	SNMG 644-MR3												72279	98983	66247		

Please check availability in current price and stock-list.

SNMG, SNMM

Tolerances:
 $l = \pm 0.003$
 $l = \pm 0.004$
 $l = \pm 0.005$
 $s = \pm 0.005$
 $r_c = \pm 0.004$

Size:
 43-44
 54-64
 86

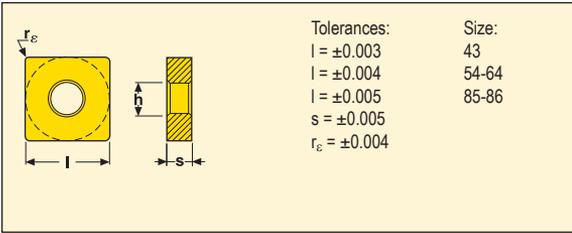
Size	Dimensions in inch			
	l (I.C.)	s	h	r_c
43	1/2	3/16	0.203	1/32-1/16
44	1/2	1/4	0.203	3/64
54	5/8	1/4	0.250	3/64-3/32
64	3/4	1/4	0.312	3/64-3/32
86	1	3/8	0.359	3/32



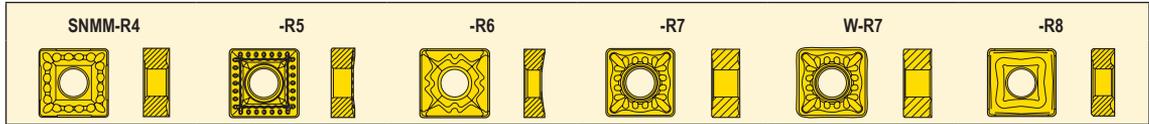
Inserts	Part No.	Grades (EDP No.)										
		Coated										Uncoated
		TP0501	TP1501	TP2501	TP3500	TP200	TP40	TM4000	TK2001	TS2500	883	
SNMG-MR4	SNMG 432-MR4										39053	03195
	433-MR4										39054	03215
	434-MR4										39055	03240
	SNMG 543-MR4										39056	03275
	SNMG 643-MR4										39057	03325
	644-MR4											03345
	SNMG 866-MR4											03385
SNMG-MR6	SNMG 443-MR6				50376							
	SNMG 543-MR6			18210								
SNMG-MR7	SNMG 432-MR7		16414	16420	50112		17610	35171				
	433-MR7			16446	50116		17612	35172	69734			
	434-MR7			16470								
	SNMG 543-MR7			16475	50380		05616		70209			
	544-MR7			16476			04228		70210			
	SNMG 643-MR7			16489	50388		17613	35173				
	644-MR7	16490	16636	16637	50391		17614	35174				
	646-MR7			16491								
	SNMG 866-MR7	18617		18827	49853	79808						
	SNMM-MR6	SNMM 546-MR6				50399						

Please check availability in current price and stock-list.

SNMM



Size	Dimensions in inch			
	l (I.C.)	s	h	r_ϵ
43	1/2	3/16	0.203	1/32-3/64
54	5/8	1/4	0.250	3/64-3/32
64	3/4	1/4	0.312	3/64-3/32
85	1	5/16	0.359	3/32
86	1	3/8	0.359	3/32



Inserts	Part No.	Grades (EDP No.)					
		Coated					
		TP0501	TP1501	TP2501	TP3500	TP200	TP40
SNMM-R4	SNMM 432-R4				50392		
	433-R4			16775	50393		
	SNMM 543-R4			18475	50398		
	544-R4	18271		18507			
	SNMM 643-R4			16792	50400		
	644-R4	16770	16784	16793	50408	79825	04245
	646-R4	16771		16790	50414		
SNMM-R5	SNMM 644-R5			17207			
	646-R5			17215			
SNMM-R6	SNMM 432-R6						17416
	SNMM 643-R6				50401		04259
	644-R6				50409		
SNMM-R7	SNMM 546-R7			17340			
	SNMM 643-R7			17286			
	644-R7			17421	50410	38895	
	646-R7	17235		17346	50415	69401	
	SNMM 856-R7	18627		18813	50569	69412	
	SNMM 866-R7	18634		18821	50572	69415	
SNMM...W-R7	SNMM 644W-R7			16694			
	646W-R7			16663			
SNMM-R8	SNMM 433-R8						17422
	SNMM 644-R8				50411		04282

Please check availability in current price and stock-list.

SNMM

Tolerances:
 $l = \pm 0.003$
 $l = \pm 0.004$
 $l = \pm 0.005$
 $s = \pm 0.005$
 $r_c = \pm 0.004$

Size:
 43
 64
 85-86

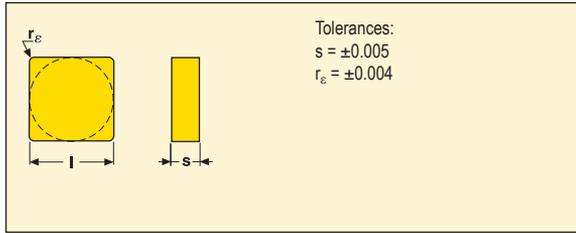
Size	Dimensions in inch			
	l (I.C.)	s	h	r_c
43	1/2	3/16	0.203	1/32
64	3/4	1/4	0.312	3/64-3/32
85	1	5/16	0.359	3/32
86	1	3/8	0.359	3/32



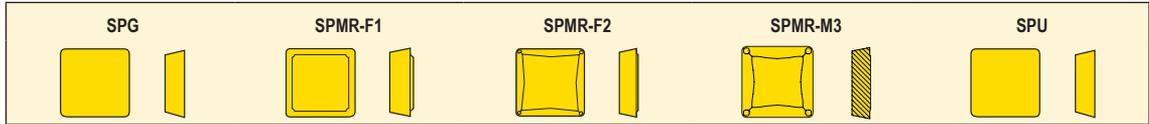
Inserts	Part No.	Grades (EDP No.)					
		Coated					
		TP0501	TP2501	TP3500	TP200	TP40	TM4000
SNMM-R56	SNMM 856-R56		18567				
SNMM-R57	SNMM 644-R57		17291				
	646-R57	17229					
	SNMM 856-R57		18621				
SNMM-R68	SNMM 866-R68	18629	18633				
SNMM-RR6	SNMM 432-RR6						54124
	SNMM 643-RR6			50405			
	644-RR6		17213	50412			32507
	646-RR6		17315				
	SNMM 856-RR6		18676	50570			
SNMM-RR9	SNMM 644-RR9					19266	
	SNMM 856-RR9			50571		19502	
SNMM-56	SNMM 644-56			50407			
	SNMM 856-56			50565			
SNMM-57	SNMM 644-57				36029		
	646-57			50413			
	SNMM 856-57			50567	35990		

Please check availability in current price and stock-list.

SPG, SPMR and SPU



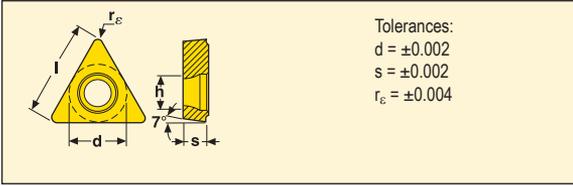
Size	Dimensions in inch		
	l (I.C.)	s	r_c
32	3/8	1/8	1/64-1/32
42	1/2	1/8	1/64-1/16
43	1/2	3/16	1/64-3/64
53	5/8	3/16	3/64
63	3/4	3/16	3/64-1/16



Inserts	Part No.	Grades				
		Coated			Uncoated	
		TP2501	TP40	CP200	HX	883
SPG	SPG 321F					47649
	SPG 422F			64907		03860
	423F					03930
SPMR-F1	SPMR 321-F1	18283				
	322-F1	18481				
	SPMR 421-F1	18484				
	422-F1	17626				
	423-F1	18448				
SPMR-F2	SPMR 422-F2		26087			
	423-F2		26090			
SPMR-M3	SPMR 422-M3	17735				
SPU	SPU 322				10679	
	SPU 421	17900			42886	
	422	17997			10681	
	SPU 533					
	SPU 633	17870				
	634T	17835				

Please check availability in current price and stock-list.

TCMX



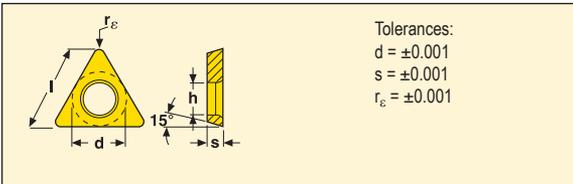
Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
32.5	3/8	5/32	0.650	0.177	1/32

TCMX...W-F1



Inserts	Part No.	Grades (EDP No.)	
		Coated	
		TP1501	TP2501
TCMX...W-F1	TCMX 32.52W-F1	15902	15903

TDAB



Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
1.21	0.160	0.047	0.268	0.093	1/512-1/64

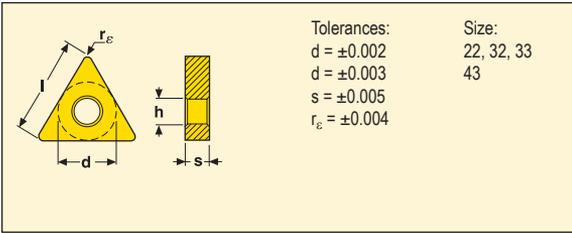
TDAB



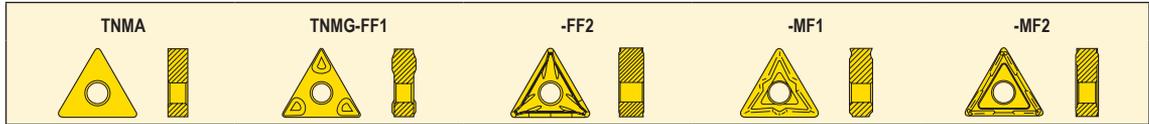
Inserts	Part No.	Grades (EDP No.)	
		Coated	Uncoated
		CP500	883
TDAB	TDAB 1.21.50.5	98798	54282
		98799	54288
		62587	62590

Please check availability in current price and stock-list.

TNMA, TNMG and TNMP



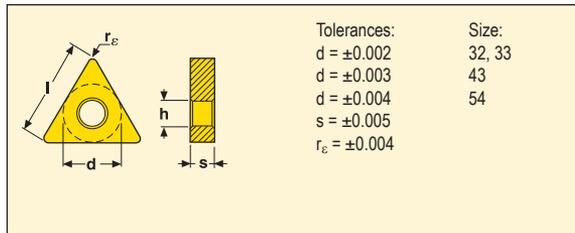
Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
22	1/4	1/8	0.433	0.089	1/64-1/32
32	3/8	1/8	0.650	0.150	1/64-1/16
33	3/8	3/16	0.650	0.150	1/64-1/16
43	1/2	3/16	0.866	0.203	1/64-1/16



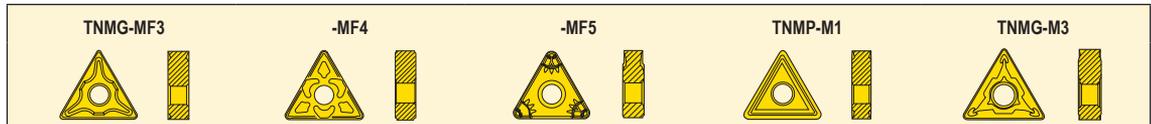
Inserts	Part No.	Grades (EDP No.)																	
		Coated												Uncoated		Cermet			
		TP0501	TP1501	TP2501	TP3500	TP200	TH1000	TM2000	TM4000	TK1001	TK2001	TS2000	CP200	CP500	883	890	TP1020	TP1030	
TNMA	TNMA 222F															07100			
	TNMA 322F															07130			
	TNMA 331									70211									
	332									69774	69783								
	333									69785	69823								
	334									69827									
	TNMA 432									69829									
	433									69831	69832								
	434									70212	69833								
TNMG-FF1	TNMG 331-FF1																	66904	
	332-FF1		17572	17574															
TNMG-FF2	TNMG 331-FF2		15623	15658	75013								75015					75014	
	332-FF2		15749	15659	75016													75017	
TNMP-MF1	TNMP 331-MF1							31561	31478			38983	17769						
	332-MF1							31564	31481			38984	72284	91359		37189			
	333-MF1											38985	72288	91388					
TNMG-MF2	TNMG 221-MF2			15746															
	TNMG 331-MF2			15748	15076	50123	69737										66905	66906	
	332-MF2	15037	15038	15077	50131	69740	29562									66907	66908		
	333-MF2			15755	15078		29667												
	TNMG 431-MF2				15079														
	432-MF2			15041	15080														

Please check availability in current price and stock-list.

TNMG and TNMP



Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
32	3/8	1/8	0.650	0.150	1/64-3/64
33	3/8	3/16	0.650	0.150	1/64-3/64
43	1/2	3/16	0.866	0.203	1/64-1/16
54	5/8	1/4	1.083	0.250	3/64



Inserts	Part No.	Grades (EDP No.)														
		Coated														Uncoated
		TP0501	TP1501	TP2501	TP3500	TP200	TP40	TH1000	TH1500	TM2000	TM4000	TK2001	TS2000	TS2500	CP500	883
TNMG-MF3	TNMG 322-MF3				50119											
	TNMG 331-MF3				50127											
	TNMG 332-MF3				50134	35509	30602									
	TNMG 431-MF3				50151											
	TNMG 432-MF3				50152											
TNMG-MF4	TNMG 331-MF4									31562	31479					
	TNMG 332-MF4				50135					31565	31482	39011	39081	32584		
	TNMG 333-MF4									31566	31483	39012	39083			
	TNMG 432-MF4									31567	31484					
	TNMG 433-MF4									31568	31485					
TNMG-MF5	TNMG 331-MF5							18162	18204							
	TNMG 332-MF5		18240	18253				18159	18205			39027	39095			
	TNMG 333-MF5		18211	18136								39028	39096			
TNMP-M1	TNMP 321-M1															40595
	TNMP 322-M1															40597
	TNMP 332-M1															41505
	TNMP 432-M1												39063			40604
	TNMP 433-M1															41511
TNMP 434-M1															41514	
TNMG-M2	TNMG 544-M2					96235										
TNMG-M3	TNMG 331-M3		15747	15541	50121	69746	18476					70213				
	TNMG 332-M3	15750	15751	15546	50128	69749	18456									
	TNMG 333-M3		15752	15548	50136		18478									
	TNMG 432-M3		15757	15549	50153	69764										
	TNMG 433-M3		15550	15553	50183											
	TNMG 543-M3			18792	50575	69630										

Please check availability in current price and stock-list.

TNMG

Tolerances:
 $d = \pm 0.002$
 $d = \pm 0.003$
 $d = \pm 0.004$
 $s = \pm 0.005$
 $r_e = \pm 0.004$

Size:
 22, 32, 33
 43
 54, 66

Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
22	1/4	1/8	0.433	0.089	1/64-1/32
32	3/8	1/8	0.650	0.150	1/64-1/16
33	3/8	3/16	0.650	0.150	1/32-3/64
43	1/2	3/16	0.866	0.203	1/64-1/8
54	5/8	1/4	1.083	0.250	1/32-1/8
66	3/4	3/8	1.299	0.312	3/32

TNMG-MR4

-MR6

Inserts	Part No.	Grades (EDP No.)	
		Coated	Uncoated
		TS2500	883
TNMG-MR4	TNMG 221-MR4		07320
	222-MR4		07335
	TNMG 321-MR4		07350
	322-MR4		07370
	324-MR4		07410
	TNMG 332-MR4	39060	07440
	TNMG 431-MR4		07475
	432-MR4	39064	07495
	433-MR4	39065	07520
	434-MR4	39066	07545
	436-MR4		07585
	438-MR4	39067	07605
	TNMG 542-MR4	39068	07625
	543-MR4		07645
	544-MR4		07670
	548-MR4		07690
TNMG 666-MR4		07710	
TNMG-MR6	TNMG 332-MR6		
	333-MR6		
	TNMG 432-MR6		
	433-MR6		

Please check availability in current price and stock-list.

TNMG and TNMM

Tolerances:
 $d = \pm 0.002$
 $d = \pm 0.003$
 $d = \pm 0.004$
 $s = \pm 0.005$
 $r_{\epsilon} = \pm 0.004$

Size:
 33
 43
 54, 66

Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_{ϵ}
33	3/8	3/16	0.650	0.150	1/64-3/64
43	1/2	3/16	0.866	0.203	1/32-1/16
54	5/8	1/4	1.083	0.250	3/64-1/16
66	3/4	3/8	1.299	0.312	3/32

TNMG-MR7

-UX*

TNMM-R4

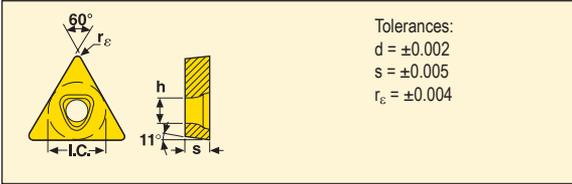
-R6

Inserts	Part No.	Grades (EDP No.)					
		Coated					
		TP1501	TP2501	TP3500	TP200	TP40	TS2500
TNMG-MR7	TNMG 332-MR7			50133		05401	
	333-MR7	16646		50140			
	TNMG 432-MR7			50164		17472	
	433-MR7			50172		17379	
	TNMG 543-MR7		18684	50577			
	544-MR7		18825	50579	79816		
TNMG-UX	TNMG 331R-UX		17602				39059
	331L-UX		17592				39058
	332R-UX		17594				39062
	332L-UX		17591				39061
TNMM-R4	TNMM 332-R4		16795	50222			
	333-R4		18493				
	TNMM 432-R4		16796	50223			
	433-R4	16791	16794	50233	69078		
	434-R4	16800	16789	50235	69079		
TNMM-R6	TNMM 331-R6			50210			
	332-R6					17435	
	TNMM 432-R6					17443	
	434-R6			50236			

Please check availability in current price and stock-list.

*Right-hand version shown

TPMM



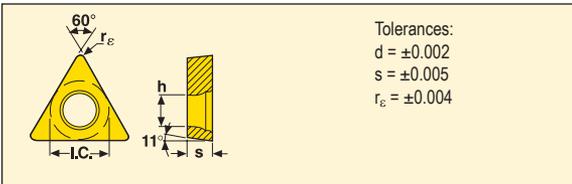
Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
2.52	5/16	1/8	0.512	0.105	1/64-1/32
32	3/8	1/8	0.650	0.165	1/64-1/16
43	1/2	3/16	0.866	0.203	1/64-3/64

TPMM-46



Inserts	Part No.	Grades (EDP No.)	
		Coated	
		TP200	CP500
		883	
TPMM-46	TPMM 2.521-46	09085	
	2.522-46	09105	
	TPMM 321-46	09125	
	322-46	09150	
	323-46	09170	
	324-46	09190	
	TPMM 431-46	09205	
	432-46	09225	
	433-46	09245	

TPMT



Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
21.5	1/4	3/32	0.433	0.114	1/64-1/32
32.5	3/8	5/32	0.650	0.114	1/32

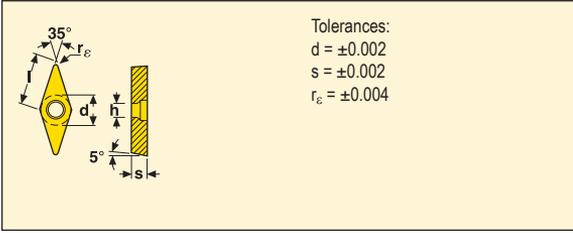
TPMT-F1



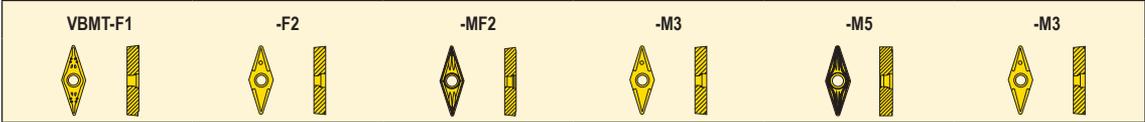
Inserts	Part No.	Grades (EDP No.)	
		Coated	
		TP200	CP500
TPMT-F1	TPMT 21.51-F1	02665	04670
	21.52-F1		04672
	TPMT 32.52-F1	02671	

Please check availability in current price and stock-list.

VBMT



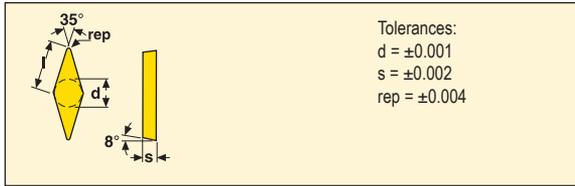
Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_{ϵ}
21.5	1/4	3/32	0.433	0.114	1/128-1/32
22	1/4	1/8	0.433	0.114	1/128-1/32
33	3/8	3/16	0.630	0.177	1/128-3/64



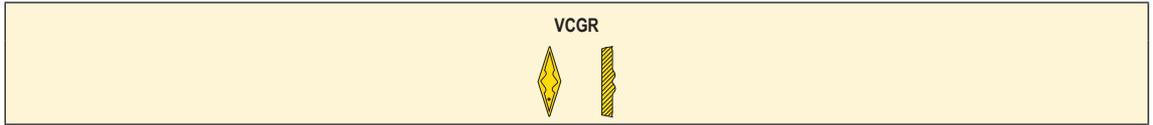
Inserts	Part No.	Grades (EDP No.)																		
		Coated															Uncoated	Cermet		
		TP0501	TP1501	TP2501	TP3500	TP200	TP40	TH1000	TH1500	TW2000	TM4000	TK1001	TK2001	TS2000	CP200	CP500	CP600	HX	TP1020	TP1030
VBMT -F1	VBMT 21.50.5-F1			19861	50490										92488					66909
	21.51-F1			19972	50491	65699									96708				66911	66912
	21.52-F1			19970											00166					
	VBMT 220.5-F1			19672	54122										39635					
	221-F1			19952	54123										39638					
	222-F1			19673											39641					
	VBMT 330.5-F1			19953	50493										06804					
	331-F1		19973	20223	50494	91156		18218		43669				38959	06780	00169			66916	66917
	332-F1		20227	20235	50497	69661		18219		43670			81548	38960	13927	00175			66924	66925
	333-F1		20126	19862	50499															
VBMT -F2	VBMT 331-F2				50495	68151	03926		31569	31491							16087			
	332-F2				50496	68152	19545		31570	31492			38961	07564			16024			
	333-F2				50501	05658			31493											
	VBMT 21.50.5-MF2														66952	92056		66910		
21.51-MF2		14980	14267											66953	92057		66913			
VBMT -MF2	VBMT 330.5-MF2				66915										66964					
	331-MF2	14981	14983	14268	66923				66918						66954			66919	66920	
	332-MF2	14988	14989	14269	66931				66926						66955			66927	66928	
	333-MF2	14993	14994	14270																
	VBMT 331-M3		20290	20300								69851	70215							
332-M3	20287	20295	20308									69933								
VBMT -M5	VBMT 332-M5	14985	14986	14291	74952	74960			74921		74819									
	VBMT 333-M3		20267	20297																

Please check availability in current price and stock-list.

VCGR

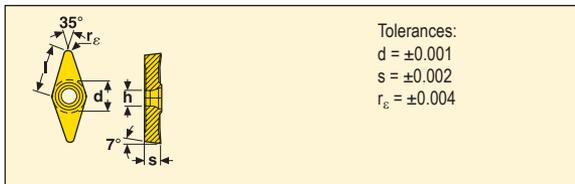


Size	Dimensions in inch			
	d (I.C.)	s	l	rep
33	3/8	3/16	0.654	1/64-1/32



Inserts	Part No.	Grades (EDP No.)	
		Coated	Uncoated
		CP200	890
VCGR	VCGR 331	72293	50181
	332	72296	50182

VCGT



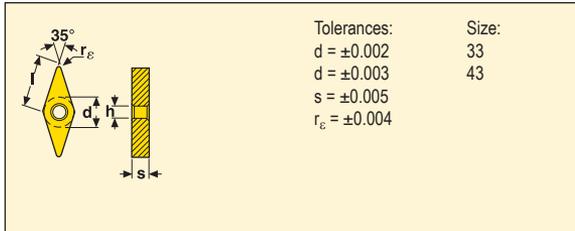
Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_{ϵ}
22	1/4	1/8	0.437	0.110	1/128-1/64
33	3/8	3/16	0.654	0.173	1/128-3/64



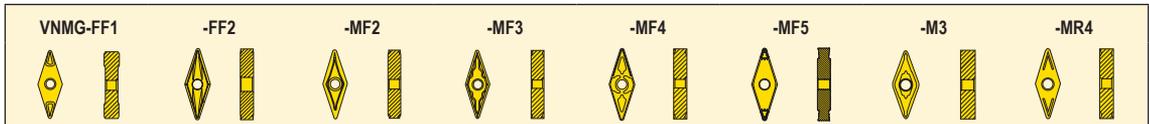
Inserts	Part No.	Grades (EDP No.)	
		Uncoated	
		XX	
VCGT-AL	VCGT 220.5F-AL	01549	
	221F-AL	15920	
	VCGT 330.5F-AL	06805	
	331F-AL	15937	
	332F-AL	15958	
	333F-AL	15965	

Please check availability in current price and stock-list.

VNMG



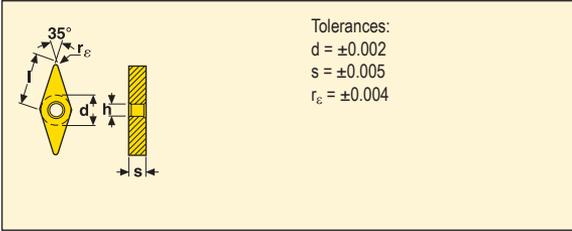
Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
33	3/8	3/16	0.630	0.150	1/128-3/64
43	1/2	3/16	0.866	0.203	1/64-1/16



Inserts	Part No.	Grades (EDP No.)														
		Coated													Uncoated	Cermet
		TP0501	TP1501	TP2501	TP3500	TP200	TH1000	TM2000	TM4000	TK2001	TS2000	TS2500	CP500	883	TP1030	
VNMG-FF1	VNMG 331-FF1		17571													
VNMG-FF2	VNMG 330.5-FF2		15669	14302									75022		75020	
	331-FF2		15670	14303									75044		75043	
	332-FF2		15671	14304											75048	
VNMG-MF2	VNMG 331-MF2			15046	15090											
	332-MF2		15048	15049	15092											
	333-MF2			15050	15100											
VNMG-MF3	VNMG 331-MF3					50437										
	332-MF3					50440										
	VNMG 432-MF3-203							92746								
VNMG-MF4	VNMG 331-MF4							31571	31494		39013	39084				
	332-MF4							31572	31496		39014	39085				
VNMG-MF5	VNMG 332-MF5							71602								
VNMG-M3	VNMG 331-M3			15511	15512	50438	92230						76115			
	332-M3		15514	15770	15515	50439	92233						69903			
VNMG-MR4	VNMG 332-MR4												39073		09615	
	333-MR4												39074		09635	
	VNMG 431-MR4														09655	
	432-MR4														09670	
	433-MR4														09690	
	434-MR4														09692	
	432-MR4-203														63607	
	433-MR4-203														02681	

Please check availability in current price and stock-list.

VNMP and VNMU



Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_ϵ
2.53	5/16	3/16	0.512	0.150	1/64-1/32
33	3/8	3/16	0.630	0.150	1/64-1/32



Inserts	Part No.	Grades (EDP No.)					
		Coated					Uncoated
		TP0501	TP1501	TP2501	TP3500	TS2000	883
VNMP-M1	VNMP 331-M1						41523
	332-M1						40622
VNMU-MF2	VNMU 2.531-MF2		47501	47502			
	2.532-MF2		47504	47505			
VNMU-M3	VNMU 2.531-M3		15516	15520	50441		
	2.532-M3	15522	15524	15526	50442	52214	
VNMU-M6	VNMU 2.532-M6		49180	49181			

Please check availability in current price and stock-list.

WCMT

Tolerances:
 $d = \pm 0.002$
 $s = \pm 0.002$
 $r_e = \pm 0.004$

Size	Dimensions in inch				
	d (I.C.)	s	l	h	r_e
32.52	3/8	5/32	0.257	0.177	1/32
32.52W	3/8	5/32	0.260	0.177	1/32

WCMT-F1

W-F1

Inserts	Part No.	Grades (EDP No.)	
		Coated	
		TP2501	CP500
WCMT-F1	WCMT 32.52-F1	19956	78550
WCMT...W-F1	WCMT 32.52W-F1	18970	91648

WNGP

Tolerances:
 $d = \pm 0.001$
 $s = \pm 0.005$
 $rep = \pm 0.004$

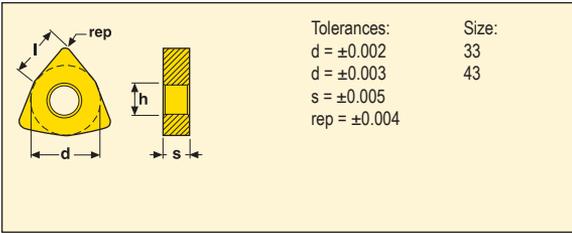
Size	Dimensions in inch				
	d (I.C.)	s	l	d_1	rep
33	3/8	3/16	0.260	0.150	1/128
43	1/2	3/16	0.343	0.203	1/256-1/32

WNGP-MF1

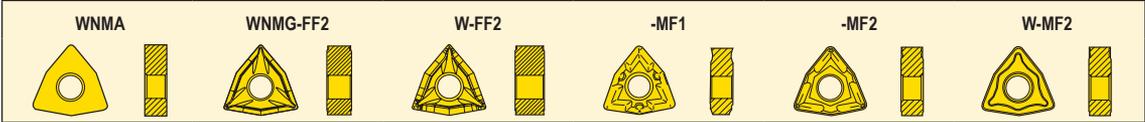
Inserts	Part No.	Grades (EDP No.)			
		Coated			Uncoated
		TS2000	CP200	CP500	890
WNGP-MF1	WNGP 330.5-MF1	38990	72302	00177	82013
	WNGP 430-MF1	57325			
	430.5-MF1	57326			
	431-MF1	57327			
	432-MF1	57328			

Please check availability in current price and stock-list.

WNMA, WNMG and WNMP



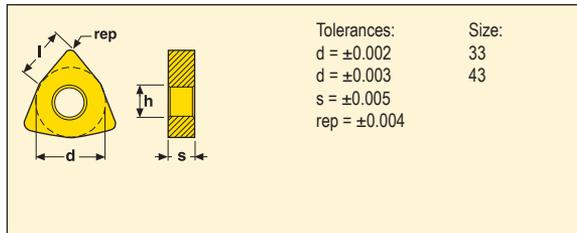
Size	Dimensions in inch				
	d (I.C.)	s	l	d ₁	rep
33	3/8	3/16	0.260	0.150	1/64-3/64
43	1/2	3/16	0.343	0.203	1/64-1/16



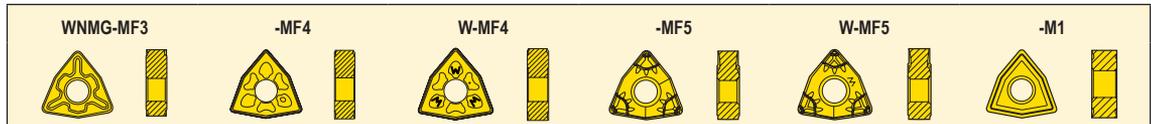
Inserts	Part No.	Grades (EDP No.)																
		Coated													Uncoated		Cermet	
		TP1501	TP2501	TP3500	TP200	TH1000	TH1500	TM2000	TM4000	TK1001	TK2001	TS2000	CP200	CP500	890	TP1020	TP1030	
WNMA	WNMA 332									69853	69854							
	333										69855							
	WNMA 432									69857	69858							
	433									69859	69861							
	434									69862	70216							
WNMG -FF2	WNMG 331-FF2	15660	15661	75025										75027		75026		
	332-FF2	15664	15665													75051		
	WNMG 431-FF2	15667	14300															
	432-FF2	15668	14301															
WNMG ...W-FF2	WNMG 331W-FF2		15662													75057		
	332W-FF2		15666													75059		
WNMP -MF1	WNMP 331-MF1							31573	31497			38991	72308	00212	37194			
	332-MF1							31579	31499			38992	72312	00218	37195			
	333-MF1													00221				
	WNMP 431-MF1					63808		31585	31502			38996	54165					
	432-MF1					63809		31588	31505			38997	54166					
WNMG -MF2	WNMG 331-MF2	15760	15082	50417	37321											66934	66935	
	332-MF2	15043	15083	50420	37323	29668											66937	
	333-MF2		15084															
	WNMG 431-MF2	15765	15085															
	432-MF2	15044	15089		37366	63810	63828											
	433-MF2	15045				63811	63829											
WNMG ...W-MF2	WNMG 331W-MF2	15703	15704														66936	
	332W-MF2	15706	15708														66938	
	WNMG 431W-MF2		15709															
	432W-MF2	15712	15716															

Please check availability in current price and stock-list.

WNMG and WNMP



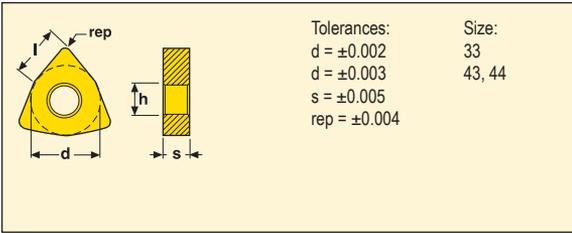
Size	Dimensions in inch				
	d (I.C.)	s	l	d ₁	rep
33	3/8	3/16	0.260	0.150	1/64-3/64
43	1/2	3/16	0.343	0.203	1/64-1/16



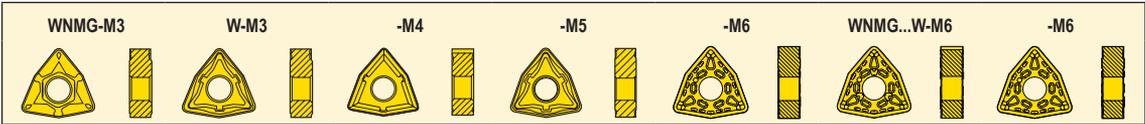
Inserts	Part No.	Grades (EDP No.)													
		Coated													Uncoated
		TP0501	TP1501	TP2501	TP3500	TP40	TH1000	TH1500	TM2000	TM4000	TK2001	TS2000	TS2500	CP500	883
WNMG-MF3	WNMG 332-MF3				50421										
	WNMG 431-MF3					78309									
	WNMG 432-MF3				50238	78314			76869	69873					
WNMG-MF4	WNMG 331-MF4							31577	31498						
	WNMG 332-MF4			18191				31581	31500				32580		
	WNMG 333-MF4							31583	31501						
	WNMG 431-MF4							31586	31503						
	WNMG 432-MF4			18232	50240			31589	31506		39008	39079	32581		
	WNMG 433-MF4			18203				31591	31508		39009	39080			
WNMG...W-MF4	WNMG 332W-MF4							85481	85482						
	WNMG 432W-MF4							85483	85484						
	WNMG 433W-MF4								15507						
WNMG-MF5	WNMG 331-MF5			18140											
	WNMG 332-MF5			18256	50422										
	WNMG 333-MF5			18212	18087										
	WNMG 432-MF5	18144	18239	18257	50241		63816	63830			39025	39092			
	WNMG 433-MF5	18207	18161	18234	50250		63817	63831			39026	39093			
	WNMG 434-MF5			18250											
WNMG...W-MF5	WNMG 332W-MF5			16683	16696										
	WNMG 432W-MF5			16687	16688										
WNMP-M1	WNMP 431-M1														54167
	WNMP 432-M1														54173
	WNMP 433-M1														54174

Please check availability in current price and stock-list.

WNMG



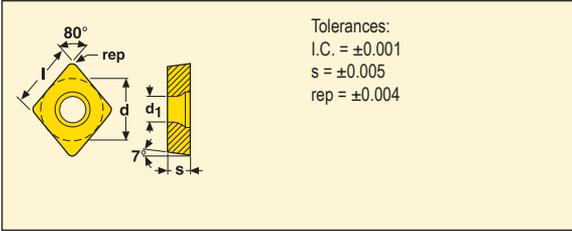
Size	Dimensions in inch				
	d (I.C.)	s	l	d ₁	rep
33	3/8	3/16	0.260	0.150	1/128-3/64
43	1/2	3/16	0.343	0.203	1/64-1/16
44	1/2	1/4	0.343	0.203	1/32-1/16



Inserts	Part No.	Grades (EDP No.)												
		Coated												
		TP0501	TP1501	TP2501	TP3500	TP200	TP40	TH1000	TH1500	TW2000	TM4000	TK1001	TK2001	
WNMG-M3	WNMG 330.5-M3			15373										
	331-M3		15759	15374	50416	37315								
	332-M3	15761	15763	15376	50418	37317	08868					69863		
	333-M3	15378	15382	15386	50423	26334								
	WNMG 431-M3		15764	15395	50237	37360							69868	
	432-M3	15766	15767	15397	50242	37354	02196						69869	
	433-M3	15768	15769	15402	50247								69878	
	434-M3			15403										
WNMG...W-M3	WNMG 332W-M3		15574	15575									69866	
	333W-M3		15576	15577										
	WNMG 432W-M3	15578	15580	15582									69877	
	433W-M3	15584	15585	15586									69899	
WNMG-M4	WNMG 432-M4												69870	
	433-M4												69879	
WNMG-M5	WNMG 332-M5	16546	16550	16555	50419	39741						69864	69865	
	333-M5	16120		16124	50425								69867	
	WNMG 432-M5	16560	16567	16589	50243	23686	23688		18151	31587	31504	69871	69872	
	433-M5	16590	16591	16592	50248	23690	23692	18153	18158	31590	31507	69880	69881	
	434-M5	16185	16189	16205	50255								69900	
	WNMG 442-M5				50426									
	443-M5		16207	16210	50428									
	444-M5		16216	16221	50434									
WNMG-M6	WNMG 432-M6	15145	15149	15151	76199								81832	
	433-M6	15156	15158	15159	76200								81833	
	434-M6	15164	15165	15172										
WNMG...W-M6	WNMG 432W-M6		15152	15155										
	433W-M6		15160	15163										
WNMG-M6	WNMG 443-M6	15173	15175	15177										
	444-M6		15178											

Please check availability in current price and stock-list.

CCGW



Size	Dimensions in inch				
	d (I.C.)	s	l	d ₁	rep
21.5	1/4	3/32	0.256	0.114	1/128-1/32
32.5	3/8	5/32	0.382	0.177	1/64-1/32
43	1/2	3/16	0.508	0.220	1/64-1/32

CCGW...B



CCGW...LF

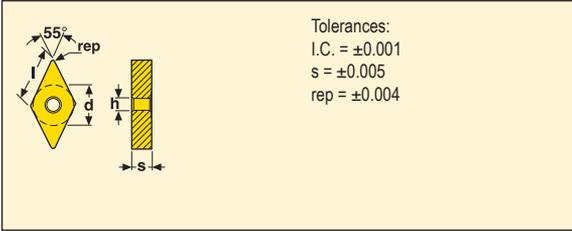


Inserts	Part No.	Grades (EDP No.)					Toolholders	
		Uncoated			Coated		External	Internal
		CBN010	CBN150	CBN200	CBN060K	CBN160C		
CCGW	CCGW 21.51E-L1-B	76110		44142	68933		SCFCR/L..2 SCGCR/L..2 SCLCR/L..2 SCMCN..2	...SCFCR/L..2 ...SCLCR/L..2
	21.52E-L1-B			44144				
	21.51S-00420-L1-B	09042						
	21.51S-00625-L1-B				62791			
	21.52S-00625-L1-B					33334		
	21.52S-00820-L1-B			44146				
	CCGW 21.50.5S-00420-LF			20902				
	21.51S-00420-LF	94733		20903				
	21.52S-00420-LF			20904				
	CCGW 21.52S-L1-WZP-B				81786		SCLCR/L..2	...SCLCR/L..2
	CCGW 32.51E-L1-B	76113		44147	68934		SCFCR/L..3 SCGCR/L..3 SCLCR/L..3 SCMCN..3	...SCFCR/L..3 ...SCLCR/L..3
	32.52E-L1-B	11278		44148	68936			
	32.51S-00420-L1-B	09048				54025		
	32.52S-00420-L1-B	76114	44163					
	32.52S-00625-L1-B				62790	33335		
	32.52S-00820-L1-B			44149				
	32.51S25-00820-L1-B			41234				
	32.52S25-00820-L1-B			41235				
	CCGW 32.51S-00420-LF	94734		20906				
	32.52S-00420-LF			20907				
	CCGW 32.51E-L1-WZ-B	91558					SCLCR/L..3	...SCLCR/L..3
	32.51S-00420-L1-WZ-B	81768						
	32.51S-00625-L1-WZ-B				68935			
	32.52S-00625-L1-WZ-B				68937			
	32.51S-L1-WZP-B				81790			
	32.52S-L1-WZP-B				81787			
	CCGW 431S-00420-L1-B	11279					SCLCR/L..4	...SCLCR/L..4
	432S-00420-L1-B	78910						
	432S-00820-L1-B			06586				

Please check availability in current price and stock-list.

Tip sizes, see page 64
 Edge preparation, see page 61

DNGA



Size	Dimensions in inch				
	d (I.C.)	s	l	d ₁	rep
43	1/2	3/16	0.591	0.203	1/64-3/64
44	1/2	1/4	0.591	0.203	1/64-3/64

DNGA...-B



DNGA...-U

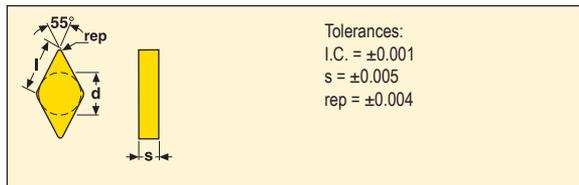


Inserts	Part No.	Grades (EDP No.)						Toolholders		
		Uncoated				Coated		External	Internal	
		CBN010	CBN150	CBN170	CBN200	CBN060K	CBN160C			
DNGA	DNGA 431S-00420-L1-B	78912						MDJNR/L..4 MDPNN..4 MDQNR/L..4	..-MDUNR/L..4	
	DNGA 432S-00420-L1-B	09064								
	DNGA 432S-00625-L1-B		44177			54030	33343			
	DNGA 432S-00820-L1-B				06600					
	DNGA 433S-00625-L1-B						33344			
	DNGA 432S25-00820-L1-B				41240					
	DNGA 432S-00625-L1-U					62798				
	DNGA 441S-00420-L1-B	76131						MDJNR/L..4* MDPNN..4* MDQNR/L..4*	..-MDUNR/L..4*	
	DNGA 442S-00420-L1-B	09065								
	DNGA 442S-00625-L1-B		44178			54031	33345			
	DNGA 442S-00820-L1-B				06604					
	DNGA 443S-00420-L1-B	78913								
	DNGA 443S-00625-L1-B						33346			
	DNGA 442E25-L1-U			63020						
	DNGA 441S-00625-L1-U					68939				
	DNGA 442S-00625-L1-U					62799				
	DNGA 443S-00625-L1-U					62800				
	DNGA 442S-00420-L1-WZ-93-B	76132						MDJNR/L..4*		

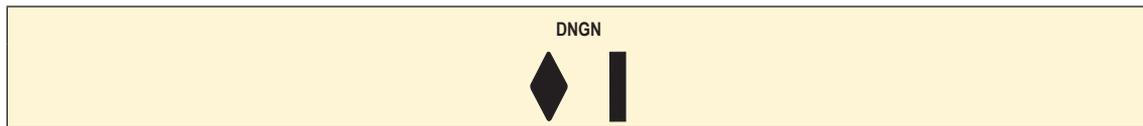
Please check availability in current price and stock-list.
 *Anvil DSN 423 for insert DN..44., to be ordered separately.

Tip sizes, see page 64
 Edge preparation, see page 61

DNGN

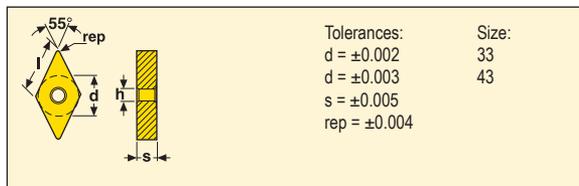


Size	Dimensions in inch			
	d (I.C.)	s	l	rep
32	3/8	1/8	0.457	1/32-3/64

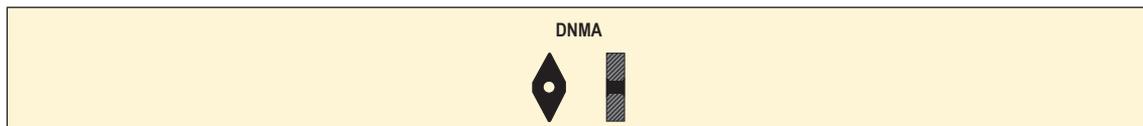


Inserts	Part No.	Grades (EDP No.)		Toolholders	
		Uncoated		External	Internal
		CBN010	CBN170		
DNGN	DNGN 322E25		63021	-	-
	322S-00420	81770			
	323S-00420	78914			

DNMA



Size	Dimensions in inch				
	d (I.C.)	s	l	d ₁	rep
33	3/8	3/16	0.457	0.150	1/32-1/16
43	1/2	3/16	0.591	0.203	1/16

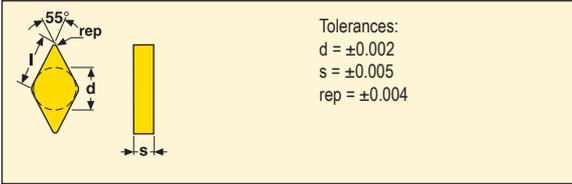


Inserts	Part No.	Grades (EDP No.)		Toolholders	
		Uncoated		External	Internal
		CBN300			
DNMA	DNMA 332S	03227		MDJNR/L..3 MDPNN..3 MDQNR/L..3	..-MDUNR/L-3
	334S	03229			
	DNMA 434S	03234		MDJNR/L..4 MDPNN..4 MDQNR/L..4	..-MDUNR/L-4

Please check availability in current price and stock-list.

Tip sizes, see page 64
Edge preparation, see page 61

DNMN



Size	Dimensions in inch			
	d (I.C.)	s	l	rep
32	3/8	1/8	0.457	1/31-3/64

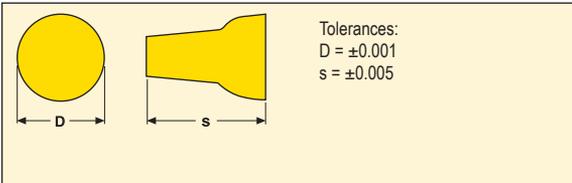
DNMN



Inserts	Part No.	Grades (EDP No.)	Toolholders	
		Uncoated	External	Internal
		CBN300		
DNMN	322S	97847	MDJNR/L...3*	..-MDUNR/L-3*
	323S	97849	MDPNN...3*	
			MDQNR/L...3*	

*For optional spare parts see page 65

RCGS



Size	Dimensions in inch	
	D	s
2S	1/4	23/64

RCGS



Inserts	Part No.	Grades (EDP No.)	Toolholders	
		Uncoated	External	Internal
		CBN010		
RCGS	2S-00820-LF	11277	TRAOR/L...-2 TRGOR/L...-2 TROON...-2	-

Please check availability in current price and stock-list.

Tip sizes, see page 64
 Edge preparation, see page 61

RNGN

Tolerances:
I.C. = ±0.001
s = ±0.005

Size	Dimensions in inch	
	D (I.C.)	s
22	1/4	1/8
32	3/8	1/8
42	1/2	1/8

RNGN

Inserts	Part No.	Grades (EDP No.)				Toolholders	
		Uncoated		Coated		External	Internal
		CBN010	CBN100	CBN170	CBN060K		
RNGN	RNGN 22E	11281	51288			CRDNN..2 CRGNR/L..2	..-CRGNR/L..2
	22S-00420	09066					
	22S-00625				54032		
	RNGN 32E25			63027		CRDNN..3 CRGNR/L..3	..-CRGNR/L..3
	32S-00420	81775					
	32S-00625				54033	MRGNR/L..3	
	RNGN 42S-00420	11283	51302			CRDNN..4 CRGNR/L..4 MRGNR/L..4* MRGOR/L..4*	..-CRGNR/L..4

Please check availability in current price and stock-list.

Edge preparation, see page 61
*For optional spare parts see page 65

RNGN-LF

Tolerances:
D = ±0.0001
s = ±0.005

Size	Dimensions in inch	
	D	s
22	1/4	1/8
32	3/8	1/8
43	1/2	3/16

RNGN-LF



Inserts	Part No.	Grades (EDP No.)				Toolholders	
		Uncoated		Coated		External	Internal
		CBN010	CBN150	CBN200	CBN160C		
RNGN-LF	RNGN 22S-00625-LF		21110		33347	CRDNN..2	..-CRGNR/L-2
	22S-00820-LF			06606		CRGNR/L..2	
	RNGN 32S-00625-LF		55122		33348	CRDNN..3	..-CRGNR/L-3
	32S-00820-LF	94741		06607		CRGNR/L..3	MRGNR/L..3
	RNGN 43S-00820-LF			12646		CRDNN..4**	..-CRGNR/L-4**
						CRGNR/L..4**	
						MRGNR/L..4*	
						MRGOR/L..4*	

Please check availability in current price and stock-list.
*For optional spare parts see page 65.

Tip sizes, see page 64
Edge preparation, see page 61

**Shim 117.10-621 for insert RNGN43.., to be ordered separately

SCGW

Tolerances:
 $l = \pm 0.001$
 $s = \pm 0.005$
 $rep = \pm 0.004$

Size	Dimensions in inch			
	l	s	d ₁	rep
21	1/4	3/32	0.114	1/32
32	3/8	5/32	0.177	1/64-1/32

SCGW



Inserts	Part No.	Grades (EDP No.)	Toolholders	
		Uncoated	External	Internal
		CBN200		
SCGW	SCGW 21.52S-00420-LF	20919	-	-
	SCGW 32.51S-00420-LF	20921		
	32.52S-00420-LF	21448		

SCMN

Tolerances:
 $l = \pm 0.002$
 $s = \pm 0.005$
 $rep = \pm 0.004$

Size	Dimensions in inch		
	l	s	rep
332	3/8	3/16	1/32

SCMN

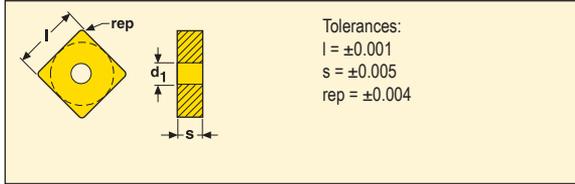


Inserts	Part No.	Grades (EDP No.)	Toolholders	
		Uncoated	External	Internal
		CBN300		
SCMN	SCMN 332S-WZ-85	18396	-	-

Please check availability in current price and stock-list.

Tip sizes, see page 64
 Edge preparation, see page 61

SNGA

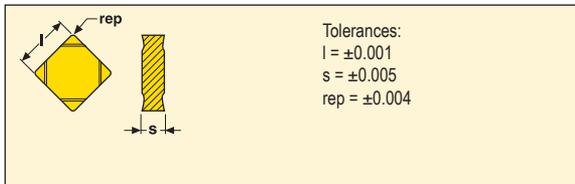


Size	Dimensions in inch			
	l	s	d ₁	rep
432	1/2	3/16	0.203	1/32

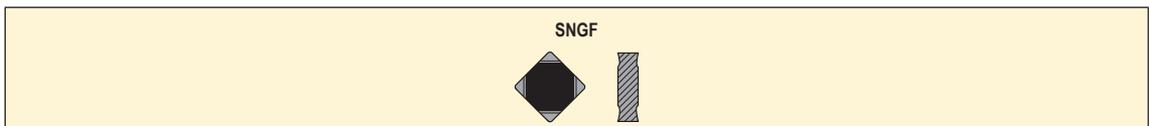


Inserts	Part No.	Grades (EDP No.)		Toolholders	
		Uncoated		External	Internal
		CBN200			
SNGA	SNGA 432S-00820-L1-D	06636		CSKNR/L..4 MSDNN..4 MSRNR/L..4 MSSNR/L..4	...-CSKNR-4 ...-MSKNR/L-4

SNGF



Size	Dimensions in inch		
	l	s	rep
32	3/8	1/8	1/32-3/64

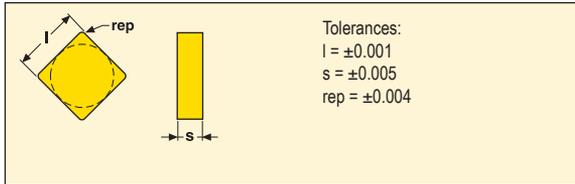


Inserts	Part No.	Grades (EDP No.)		Toolholders	
		Coated		External	Internal
		CBN400C			
SNGF	SNGF 322E	29366		-	-
	323E	29367			

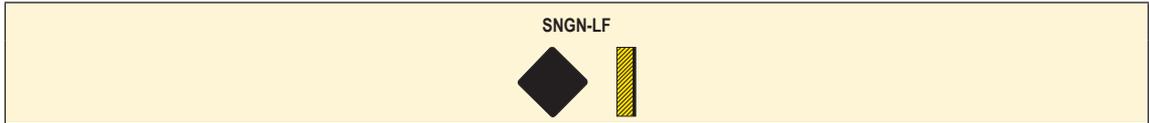
Please check availability in current price and stock-list.

Tip sizes, see page 64
 Edge preparation, see page 61

SNGN-LF



Size	Dimensions in inch		
	l	s	rep
432	1/2	3/16	1/32

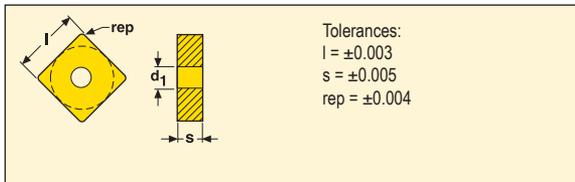


Inserts	Part No.	Grades (EDP No.)		Toolholders	
		Uncoated		External	Internal
		CBN200			
SNGN-LF	SNGN 432S-00820-LF	06637		CSDNN..4** CSKNR/L..4** MSDNN..4* MSRNR/L..4* MSSNR/L..4*	..CSKNR/.4** ..MSKNR/L..4*

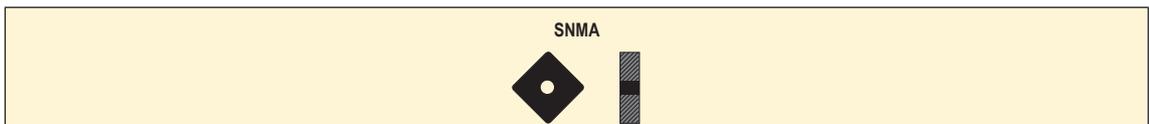
*Optional spare parts see page 65.

**Alternate anvil 174.10-621 for SNMN43 to be ordered separately.

SNMA



Size	Dimensions in inch			
	l	s	d ₁	rep
434	1/2	3/16	0.203	1/16

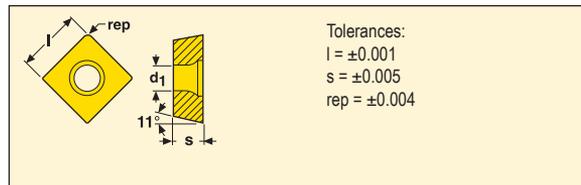


Inserts	Part No.	Grades (EDP No.)		Toolholders	
		Uncoated		External	Internal
		CBN300			
SNMA	SNMA 434S	03255		MSSNR/L..4 MSRNR/L..4 MSDNN..4 CSKNR/L..4	..MSKNR/L-4 ..CSKNR-4

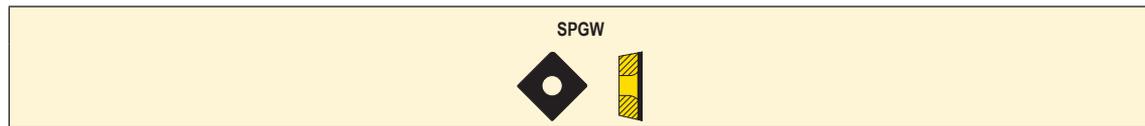
Please check availability in current price and stock-list.

Tip sizes, see page 64
 Edge preparation, see page 61

SPGW

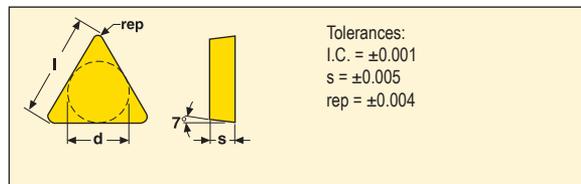


Size	Dimensions in inch			
	l	s	d ₁	rep
1.82	7/32	1/8	0.102	1/128

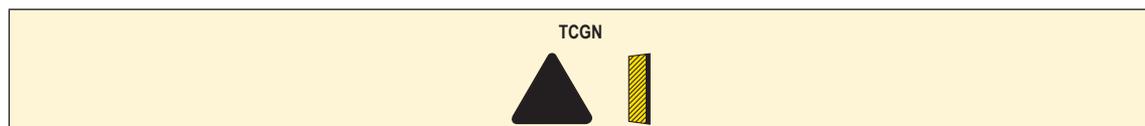


Inserts	Part No.	Grades (EDP No.)	Toolholders	
		Uncoated	External	Internal
		CBN200		
SPGW	SPGW 1.820.5S-00420-LF	20922	-	-

TCGN



Size	Dimensions in inch			
	d (I.C.)	s	l	rep
1.2	12/77	1/16	0.217	1/64

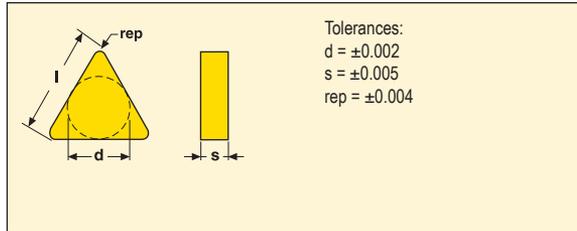


Inserts	Part No.	Grades (EDP No.)	Toolholders	
		Uncoated	External	Internal
		CBN010		
TCGN	TCGN 1.211E-LF	77160	CTLCR/L..1.2 CTLNR/L..1.2	-

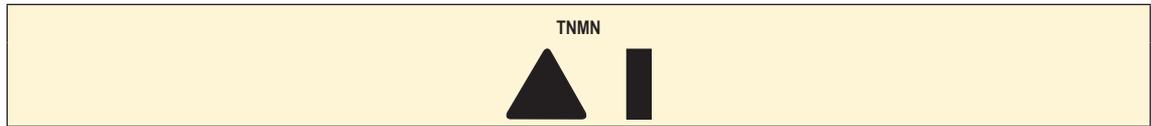
Please check availability in current price and stock-list.

Tip sizes, see page 64
 Edge preparation, see page 61

TNMN



Size	Dimensions in inch			
	d (I.C.)	s	l	rep
22	1/4	1/8	0.433	1/64-3/64
33	3/8	3/16	0.650	3/64



Inserts	Part No.	Grades (EDP No.)		Toolholders	
		Uncoated	Coated	External	Internal
		CBN300	CBN300P		
TNMN	TNMN 222E	97871		CTFNR/L..2 CTJNR/L..2 MTFNR/L..2 MTGNR/L..2	-
	223E	97873			
	TNMN 221S	97870			
	222S	97872	14875		
	223S	97874	14876		
	TNMN 333S	95560		MTCNN..3* MTGNR/L..3* MTFNR/L..3*	..-MTFNR/L-3* ..-MTUNR/L-3*

Please check availability in current price and stock-list.

Tip sizes, see page 64
 Edge preparation, see page 61
 *For optional spare parts see page 65

WNGA

Tolerances:
 I.C. = ±0.001
 s = ±0.005
 rep = ±0.004

Size	Dimensions in inch				
	d (I.C.)	s	l	d ₁	rep
33	3/8	3/16	0.260	0.150	1/32
43	1/2	3/16	0.343	0.203	1/32-3/64

WNGA

WNGA...C

WNGA...V

Inserts	Part No.	Grades (EDP No.)				Toolholders	
		Uncoated		Coated		External	Internal
		CBN010	CBN200	CBN060K	CBN160C		
WNGA	WNGA 332S-00625-WZ			68945		MWLN/L..3	...MWLN/L..3
	WNGA 332S-00820-L1-C		06650				
	332S25-00820-L1-C		41243				
	WNGA 432S-00420-L1-C	79039				MWLN/L..4	...MWLN/L..4
	432S-00625-L1-C				33360		
	WNGA 432S-00625-L1-V			62802			
	433S-00625-L1-V			62803			
	WNGA 432S-00420-L1-WZ-C	79040					
	432S-00625-L1-WZ-C				33361		
	WNGA 432S-00625-L1WZV			71597			
	433S-00625-L1-WZ-V			68946			

Please check availability in current price and stock-list.

Tip sizes, see page 64
 Edge preparation, see page 61

CCMW

Tolerances:
 $d = \pm 0.002$
 $d = \pm 0.003$
 $s = \pm 0.005$
 $rep = \pm 0.002$

Size:
 21.5, 32.5
 43

Size	Dimensions in inch				
	d (I.C.)	s	l	d ₁	rep
21.5	1/4	3/32	0.256	0.114	1/128-1/32
32.5	3/8	5/32	0.382	0.177	1/128-1/32
43	1/2	3/16	0.508	0.220	1/64-1/32

CCMW

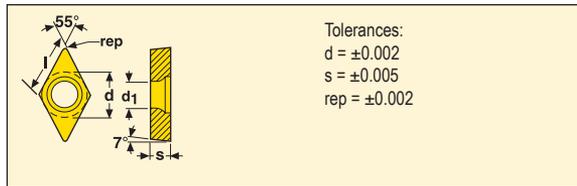


Inserts	Part No.	Grades (EDP No.)		Toolholders	
		PCD20	PCD30	External	Internal
CCMW	CCMW 21.50.5F-L1	89760		SCFCR/L..2	..-SCFCR/L 2
	21.51F-L1	05684	30767	SCGCR/L..2	..-SCLCR/L 2
	21.52F-L1	05685		SCLCR/L..2	SCMCN..2
	CCMW 21.52F-L1-WZ	30769		SCLCR/L..2	..-SCLCR/L 2
	CCMW 32.50.5F-L1	89769		SCFCR/L..3	..-SCFCR/L 3
	32.51F-L1	05686		SCGCR/L..3	..-SCLCR/L 3
	32.52F-L1	34757		SCLCR/L..3	SCMCN..3
	CCMW 32.51F-L1-WZ	30762		SCLCR/L..3	..-SCLCR/L 3
	CCMW 431F-L1	89761		-	-
	432F-L1	89762			

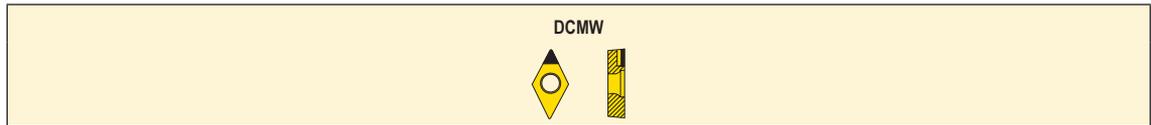
Please check availability in current price and stock-list.

Tip sizes, see page 64
 Edge preparation, see page 61

DCMW

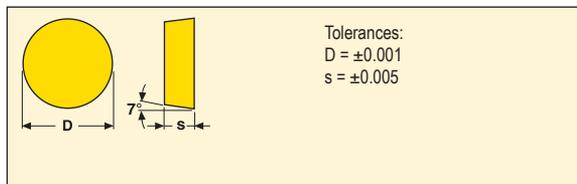


Size	Dimensions in inch				
	d (I.C.)	s	l	d ₁	rep
21.5	1/4	3/32	0.307	0.114	1/128-1/64
32.5	3/8	5/32	0.457	0.177	1/128-1/64

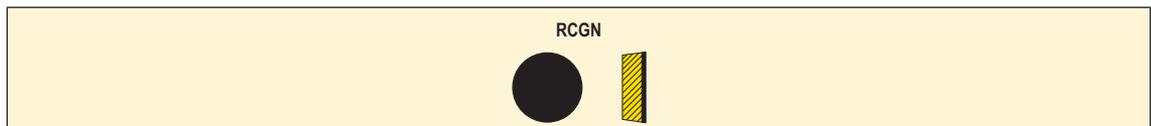


Inserts	Part No.	Grades (EDP No.)	Toolholders	
		PCD20	External	Internal
DCMW	DCMW 21.50.5F-L1	89763	SDJCR/L..2	..SDQCR/L 2
	21.51F-L1	05687	SDPCN..2	..SDUCR/L 2
	DCMW 32.50.5F-L1	89764	SDJCR/L..3	..SDQCR/L 3
	32.51F-L1	05688	SDPCN..3	..SDUCR/L 3

RCGN



Size	Dimensions in inch	
	D	s
32	3/8	1/8

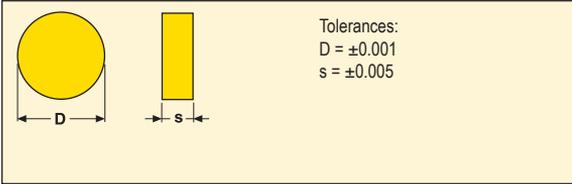


Inserts	Part No.	Grades (EDP No.)	Toolholders	
		PCD20	External	Internal
RCGN	RCGN 32F-LF	89765	-	-

Please check availability in current price and stock-list.

Tip sizes, see page 64
 Edge preparation, see page 61

RNGN



Size	Dimensions in inch	
	D	s
22	1/4	1/8
32	3/8	1/8
42	1/2	1/8

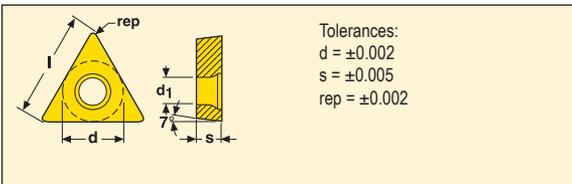
RNGN



Inserts	Part No.	Grades (EDP No.)			Toolholders	
		PCD20	PCD30	PCD30M	External	Internal
RNGN	RNGN 22F-LF			32741	CRDNN..2 CRGNR/L..2	..-CRGNR/L 2
	RNGN 32F-LF	89767	30768		CRDNN..3 CRGNR/L..3 MRGNR/L..3	..-CRGNR/L 3
	RNGN 42F-LF	89768			CRDNN..4 CRGNR/L..4 MRGNR/L..4*	..-CRGNR/L 4

*See page 65 for optional spare parts.

TCMW



Size	Dimensions in inch				
	d (I.C.)	s	l	d ₁	rep
1.81.51	7/32	3/32	0.354	0.098	1/64
21.51	1/4	3/32	0.433	0.114	1/64
32.51	3/8	5/32	0.650	0.177	1/64

TCMW

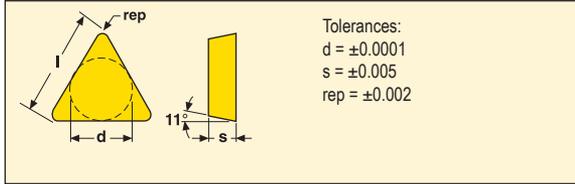


Inserts	Part No.	Grades (EDP No.)	Toolholders	
		PCD20	External	Internal
TCMW	TCMW 1.81.51F-L1	89756	-	-
	TCMW 21.51F-L1	05689	STDCR/L..2 STFCR/L..2 STGCR/L..2	E..STFCR/L 2 E..STUCR/L 2
	TCMW 32.51F-L1	05690	STDCR/L..3 STFCR/L..3 STGCR/L..3	E..STFCR/L 3 E..STUCR/L 3

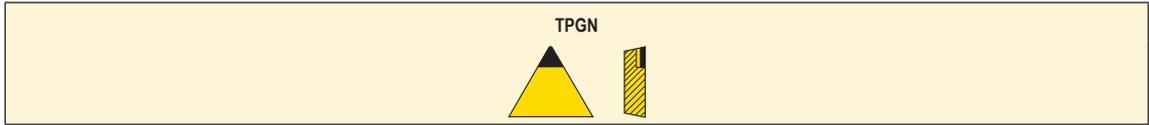
Please check availability in current price and stock-list.

Tip sizes, see page 64
Edge preparation, see page 61

TPGN

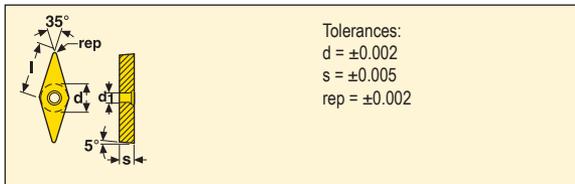


Size	Dimensions in inch			
	d (I.C.)	s	l	rep
22	1/4	1/8	0.433	1/32
32	3/8	1/8	0.650	1/128-1/32

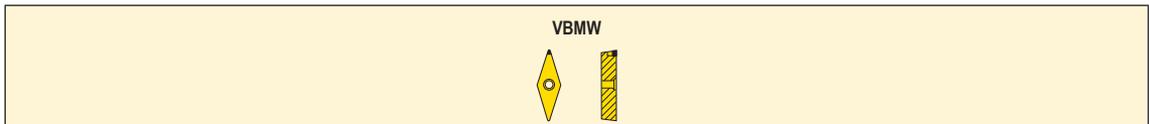


Inserts	Part No.	Grades (EDP No.)	Toolholders	
		PCD20	External	Internal
TPGN	TPGN 222F-L1	05678	-	-
	TPGN 320.5F-L1	89770	CTCPR/L...3	A.-CTFPR/L...3
	321F-L1	05680	CTCPN...3	
	322F-L1	05682	CTTFPR/L...3	
				CTGPR/L...3
			CTRPR/L...3	

VBMW



Size	Dimensions in inch				
	d (I.C.)	s	l	d ₁	rep
33	3/8	3/16	0.630	0.177	1/128-1/64

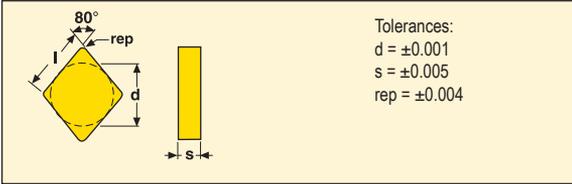


Inserts	Part No.	Grades (EDP No.)	Toolholders	
		PCD20	External	Internal
VBWM	VBWM 330.5F-L1	89758	SVLBR/L...3	-
	331F-L1	89759	SVVBN...3	

Please check availability in current price and stock-list.

Tip sizes, see page 64
 Edge preparation, see page 61

CNGN



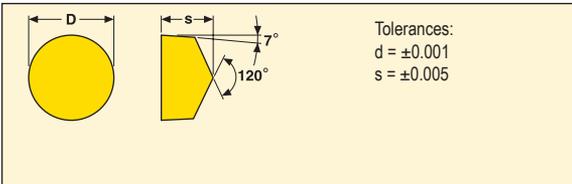
Size	Dimensions in inch			
	d (I.C.)	l	s	rep
432	0.500	0.508	0.187	1/32
452	0.500	0.508	0.313	1/32-3/64
453	0.500	0.508	0.313	1/32-3/64

CNGN



Inserts	Part No.	Grades (EDP No.)	Toolholders	
		Uncoated	External	Internal
CNGN		CS100		
	CNGN 432S-00420	09092	CCBNR/L..12 CCLNR/L..12	..-MCLNR/L.12 (without pin)
	CNGN 452S-00420	09093	CCBNR/L..12C	***
	453S-00420	09094	CCLNR/L..12C	

RCGX



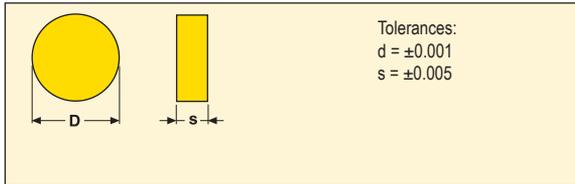
Size	Dimensions in inch	
	d (I.C.)	s
24	0.250	0.250
35	0.375	0.313
45	0.500	0.313

RCGX

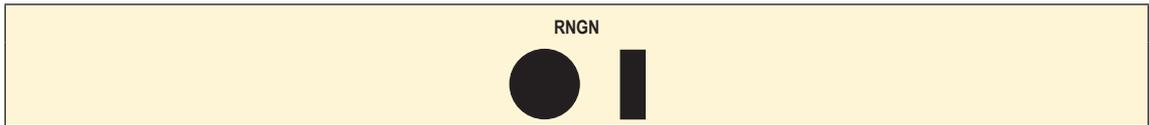


Inserts	Part No.	Grades (EDP No.)	Toolholders	
		Uncoated	External	Internal
RCGX		CS100		
	RCGX 24S-00420	09095	CRDCN..06C	***
	24T-00420	05571		
	RCGX 35S-00420	09098	CRDCR/L..09C	
	35T-00420	05629	CRDCN..09C	
	RCGX 45S-00420	09099	CRDCR/L..12C	
	45T-00420	05589	CRDCN..12C	

RNGN

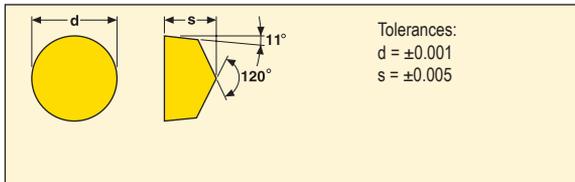


Size	Dimensions in inch	
	d (I.C.)	s
43	0.500	0.187
45	0.500	0.313

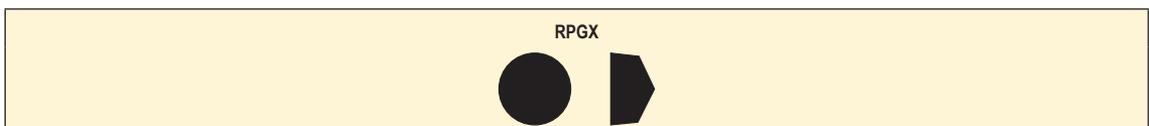


Inserts	Part No.	Grades (EDP No.)	Toolholders	
		Uncoated	External	Internal
RNGN		CS100		
	RNGN 43S-00420	09103	CRSNR/L..12 CRDNN..12	***
	RNGN 45S-00420	09104	CRSNR/L..12C CRDNN..12C	

RPGX



Size	Dimensions in inch	
	d (I.C.)	s
35	0.375	0.313
45	0.500	0.313



Inserts	Part No.	Grades (EDP No.)	Toolholders	
		Uncoated	External	Internal
RPGX		CS100		
	RPGX 35S-00420	09106	CRDCR/L..09C CRDCN..09C	***
	35T-00420	05590		
	RPGX 45S-00420	09107	CRDCR/L..12C CRDCN..12C	
	45T-00420	05591		

Please check availability in current price and stock-list.

*** For information, contact your local Seco office

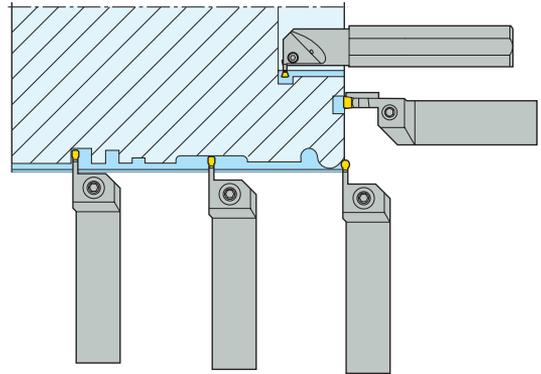
General information

The Seco MDT (Multi Directional Turning) system consists of holders and inserts for external radial, external axial and internal machining.

The system can be used for:

- Turning
- Profiling
- Grooving
- Cut-off
- Threading

Suitable applications are turning of parts with many different diameters, complicated profiles and grooves. For complex parts of this type several standard and special tools can be replaced by one Seco MDT tool. Savings can be achieved through fewer tool changes and reduced tool stock.



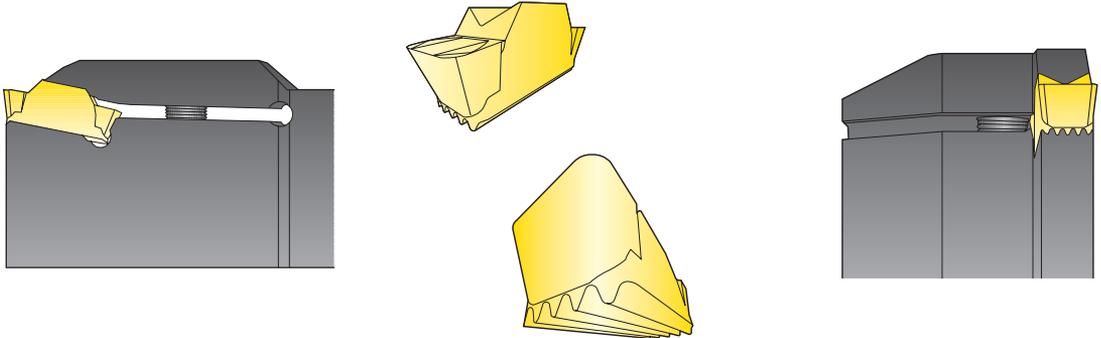
Seco MDT has a unique insert clamping method – Secoloc™.

A combination of V-shaped top clamp and serrated contact surfaces between the underside of the insert and the toolholder offers superb stability.

The relatively long insert also increases the stability.

The excellent stability gives a number of benefits

- Improved process safety
- Increased metal removal capacity/productivity
- Improved surface finish
- Reduced vibration risk
- Good repeatability (± 0.001 inch)



Seco Jetstream Tooling®

Seco Jetstream Tooling® holders feature a rake face coolant jet, that may provide even better chip control and significantly longer tool life. For more information on Jetstream Tooling® and accessories, please see pages 86-89.



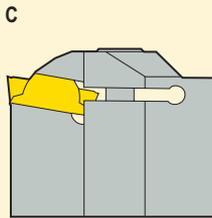
External toolholders



C	F	Z	R	100	2802	D	RB	JET
1	2	3	4	5	6	7	11	12

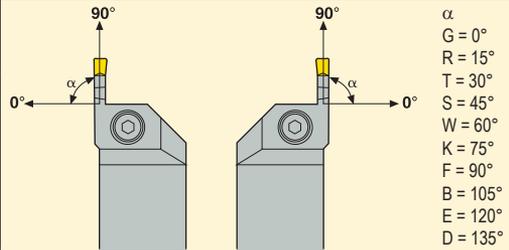
C	F	I	R	100	04	D	R	4.00	2.75
1	2	3	4	5	6	7	8	9	10

1. Insert clamping

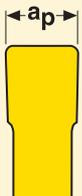


Clamp

2. Toolholder setting angle

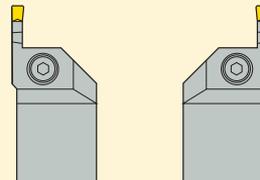


3. Maximum grooving/turning depth



$E = 1.0 \times a_p$	$M = 5.0 \times a_p$
$F = 1.5 \times a_p$	$N = 5.5 \times a_p$
$G = 2.0 \times a_p$	$O = 6.0 \times a_p$
$H = 2.5 \times a_p$	$P = 6.25 \times a_p$
$I = 3.0 \times a_p$	$S = 8.0 \times a_p$
$J = 3.5 \times a_p$	$T = 8.5 \times a_p$
$K = 4.0 \times a_p$	$Z = 12.5 \times a_p$
$L = 4.5 \times a_p$	
	X = Special

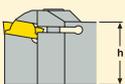
4. Version



R

L

5. Shank height and width



050 = 0.50"
063 = 0.625"
075 = 0.75"



100 = 1.00"
125 = 1.25"
150 = 1.50"

6. Seat size



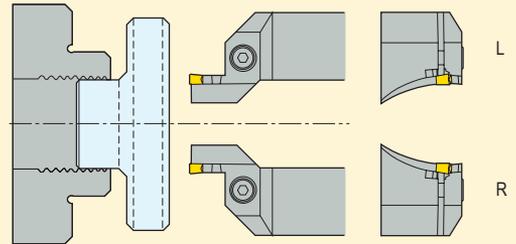
1303 = 2.4 mm
1304 = 3.4 mm
1603 = 2.3 mm (0.125")
1604 = 3.1 mm
1605 = 4.1 mm (0.187")
1606 = 5.1 mm (0.250")
1902 = 1.6 mm
2802 = 1.6 mm
3008 = 6.8 mm
etc

7. Tool length



A = 4.0" D = 6.0"
 B = 4.5" E = 7.0"
 C = 5.0"

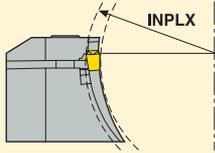
8. Tang curvature direction



Additional information for axial machining

9. Maximum diameter

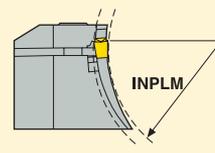
4.00 = 4.00 in (D_1)



Additional information for axial machining

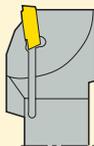
10. Minimum diameter

2.75 = 2.75 in (D_2)



Additional information for axial machining

11. Holder modification



RB = Reinforced blade for specified diameter

12. Cooling system

JET = Jetstream Tooling®

Internal toolholders and GL heads



A	24	C	G	G	R	04
1	2	3	4	5	6	7

1. Toolholder type

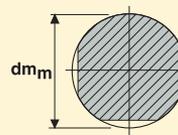
A = Steel with coolant passage

S = Solid steel

E = Solid carbide with brazed* cutting head and coolant passage

*Brazed or equivalent

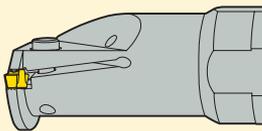
2. Shank diameter



10 = 0.625"
 12 = 0.75"
 16 = 1.00"
 20 = 1.25"
 24 = 1.50"

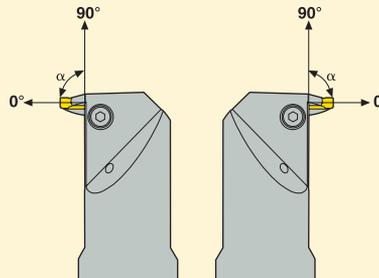
3. Insert clamping

C



Clamp

4. Toolholder setting angle



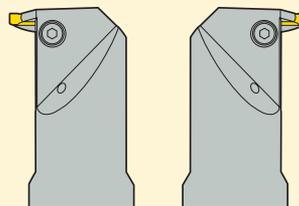
α
 G = 0°
 R = 15°
 T = 30°
 S = 45°
 W = 60°
 K = 75°
 F = 90°
 B = 105°
 E = 120°
 D = 135°

5. Maximum grooving/turning depth



E = 1.0 x a_p L = 4.5 x a_p
 F = 1.5 x a_p M = 5.0 x a_p
 G = 2.0 x a_p N = 5.5 x a_p
 H = 2.5 x a_p O = 6.0 x a_p
 I = 3.0 x a_p S = 8.0 x a_p
 J = 3.5 x a_p T = 8.5 x a_p
 K = 4.0 x a_p Z = 12.5 x a_p
 X = Special

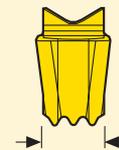
6. Version



R

L

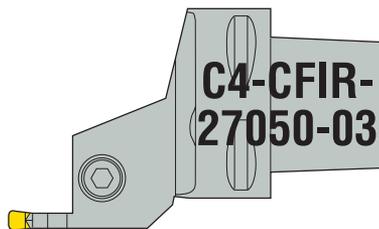
7. Seat size



Seat size

1303 = 2.4 mm
 1304 = 3.4 mm
 1603 = 2.3 mm
 1604 = 3.1 mm
 1605 = 4.1 mm
 1606 = 5.1 mm
 1902 = 1.6 mm
 2802 = 1.6 mm

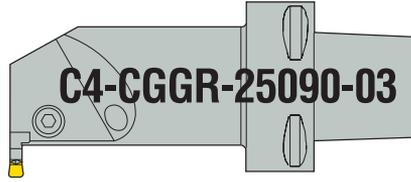
External toolholders



C4	-	C	F	I	R	-	27	050	-	03
1		2	3	4	5		6	7		8

<p>1. Seco-Capto™ size</p> <p>C3 = 32 mm C4 = 40 mm C5 = 50 mm C6 = 63 mm</p> <p>D_{sm}</p>	<p>2. Insert clamping</p> <p>C</p> <p>Clamp</p>	<p>3. Toolholder setting angle</p> <p>90°</p> <p>0°</p> <p>α</p> <p>α</p> <p>90°</p> <p>0°</p> <p>α</p> <p>α</p> <p>G = 0° R = 15° T = 30° S = 45° W = 60° K = 75° F = 90° B = 105° E = 120° D = 135°</p>
<p>4. Maximum grooving/turning depth</p> <p>a_p</p> <p>E = 1.0 x a_p F = 1.5 x a_p G = 2.0 x a_p H = 2.5 x a_p I = 3.0 x a_p J = 3.5 x a_p K = 4.0 x a_p</p> <p>L = 4.5 x a_p M = 5.0 x a_p N = 5.5 x a_p O = 6.0 x a_p S = 8.0 x a_p T = 8.5 x a_p Z = 12.5 x a_p</p> <p>X = Special</p>	<p>5. Version</p> <p>R</p> <p>L</p>	
<p>6. f_1-dimension</p> <p>f_1</p> <p>27 = 27 mm 35 = 35 mm 45 = 45 mm etc</p>	<p>7. l_1-dimension</p> <p>l_1</p> <p>050 = 50 mm 060 = 60 mm 065 = 65 mm etc</p>	<p>8. Seat size</p> <p>Seat size</p> <p>03 = 2.3 mm 04 = 3.1 mm 05 = 4.1 mm 06 = 5.1 mm 08 = 6.8 mm 2802 = 1.6 mm etc</p>

Internal toolholders



C4	-	C	G	G	R	-	25	090	-	03
1		2	3	4	5		6	7		8

1. Seco-Capto™ size

D_{5m}
Steadyliner®

C3 = 32 mm
C4 = 40 mm
C5 = 50 mm
C6 = 63 mm

GL32 = 32 mm
GL40 = 40 mm
GL50 = 50 mm

2. Insert clamping

C

3. Toolholder setting angle

α

- G = 0°
- R = 15°
- T = 30°
- S = 45°
- W = 60°
- K = 75°
- F = 90°
- B = 105°
- E = 120°
- D = 135°

4. Maximum grooving/turning depth

a_p

E = 1.0 x a_p	L = 4.5 x a_p
F = 1.5 x a_p	M = 5.0 x a_p
G = 2.0 x a_p	N = 5.5 x a_p
H = 2.5 x a_p	O = 6.0 x a_p
I = 3.0 x a_p	S = 8.0 x a_p
J = 3.5 x a_p	T = 8.5 x a_p
K = 4.0 x a_p	Z = 12.5 x a_p

X = Special

5. Version

R L

6. f_1 -dimension

f_1

12 = 12 mm
16 = 16 mm
20 = 20 mm
etc

7. l_1 -dimension

l_1

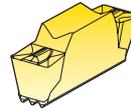
065 = 65 mm
075 = 75 mm
080 = 80 mm
etc

8. Seat size

Seat size

1303 = 2.4 mm
1304 = 3.4 mm
03, 1603 = 2.3 mm
04, 1604 = 3.1 mm
05, 1605 = 4.1 mm
06, 1606 = 5.1 mm
1902 = 1.6 mm
etc

Inch inserts



L	C	M	F	16	05	05	A	187	MT
1	2	3	4	5	6	7	8	9	10

1. Shape

L

Rectangular

2. Front clearance angle

$C = 7^\circ$

3. Tolerances

Tolerance class	Tolerance \pm inch				For insert width, a_p inch		
	a_p	d	rep	l	0.125	0.1875	0.250
M	0.002	0.002	0.002	0.003	•	•	•

4. Insert type

R		Single ended with chipbreaker	N		Single ended without chipbreaker
F		Double ended with chipbreaker	A		Double ended without chipbreaker

7. Corner radius



M0,00	= round	-A/G55	= thread profile
01	= 0.1 mm (0.004")	-A/G60	= thread profile
02	= 0.2 mm (0.008")	etc	
04	= 0.4 mm (0.016")		
08	= 0.8 mm (0.031")		

8. Inch size

A = Inch size

9. Insert width

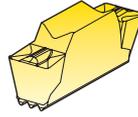


125	= 0.125"
187	= 0.1875"
250	= 0.250"

10. Insert type code (for further information, please see pages 350-351)

FT	= Chipbreaker for fine turning	FG	= For lock rings
FTR/L	= Right or left hand version with a specified setting angle, for parting-off	DY	= For dynamic O-rings
MT	= Chipbreaker for medium turning	ST	= For static O-rings
MG	= Chipbreaker for medium grooving	D76	= For thread undercuts
MC	= Chipbreaker for medium cut-off	R	= For radius
MCR/L	= Right or left hand version with a specified setting angle, for parting-off	A55/A60	= For threading
GG	= Chipbreaker for medium grooving	G55/G60	ISO
GS	= Chipbreaker for fine grooving		
MP	= Chipbreaker for medium profiling		
RP	= Chipbreaker for fine and medium profiling		

Metric inserts



L	C	M	F	16	03	00	- 0318		- MP
1	2	3	4	5	6	7	8	9	10

1. Shape

L

Rectangular

2. Front clearance angle

$C = 7^\circ$

3. Tolerances

Tol.-class	Tolerance \pm mm				For insert width, a_p mm					
	a_p	d	rep	l	2	3	4	5	6	8
G	0.025	0.025	0.025	0.040		•	•	•	•	•
M	0.050	0.050	0.050	0.080	•	•	•	•	•	•

4. Insert type

R		Single ended with chipbreaker	N		Single ended without chipbreaker
F		Double ended with chipbreaker	A		Double ended without chipbreaker

5. Insert gauge length



6. Insert gauge width



Seat size

7. Corner radius



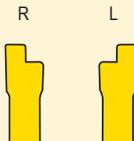
M0,00	= round	-A/G55	= thread profile
01	= 0.1 mm	-A/G60	= thread profile
02	= 0.2 mm	etc	
04	= 0.4 mm		
08	= 0.8 mm		

8. Insert width



0200	= 2.0 mm
0300	= 3.0 mm
0400	= 4.0 mm
0500	= 5.0 mm
	etc

9. Version

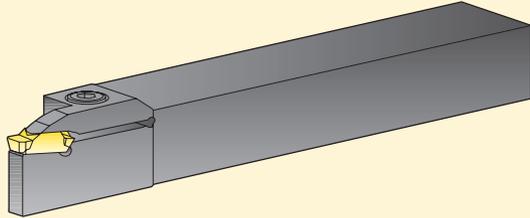
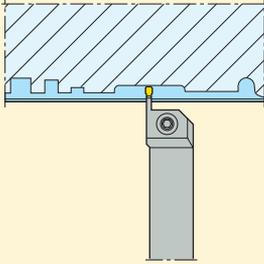


10. Insert type code (for further information, please see pages 350-351)

FT	= Chipbreaker for fine turning	FG	= For lock rings
FTR/L	= Right or left hand version with a specified setting angle, for parting-off	DY	= For dynamic O-rings
MT	= Chipbreaker for medium turning	ST	= For static O-rings
MG	= Chipbreaker for medium grooving	D76	= For thread undercuts
MC	= Chipbreaker for medium cut-off	R	= For radius
MCR/L	= Right or left hand version with a specified setting angle, for parting-off	A55/A60	= For threading
GG	= Chipbreaker for medium grooving	G55/G60	
GS	= Chipbreaker for fine grooving	ISO	
MP	= Chipbreaker for medium profiling		
RP	= Chipbreaker for fine and medium profiling		

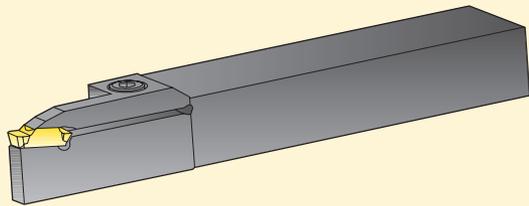
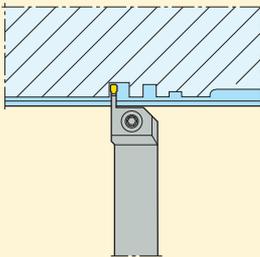
CFIR/L – Basic choice

- For external turning, profiling and grooving
- Maximum working depth 3 x the insert width (can be limited by double ended inserts)
- Size 16 – For general machining
- Size 30 – For heavy machining



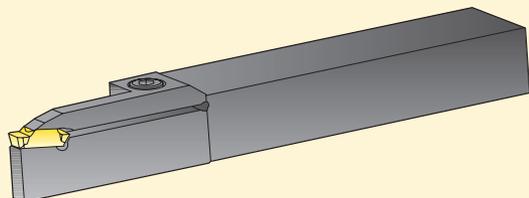
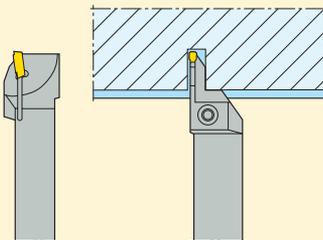
CFMR/L – Long reach

- For external turning, profiling and grooving
- Maximum working depth 5 x the insert width
- Single ended inserts should be used (CFMR/L, CFSR/L)
- Size 16 – For general machining
- Size 28 – For general machining
- Size 30 – For heavy machining



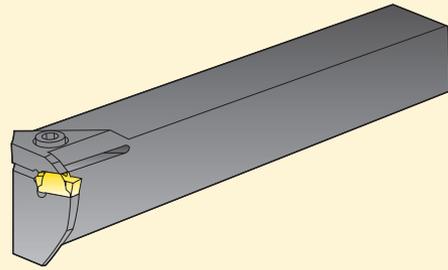
CFOR/L, CFPR/L, CFSR/L, CFTR/L, CFZR/L – Extra long reach, 6 x insert width up to 12.5 x insert width

- For grooving and cut-off
- Single ended inserts should be used (CFOR/L, CFPR/L, CFTR/L)
- Size 16 – For general machining
- Size 19 – For small part machining
- Size 28 – For general machining

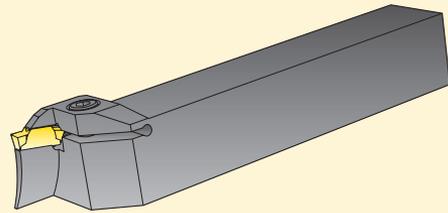
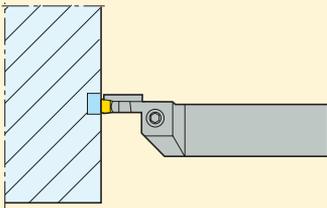


CGIR/L, CFIR/L, CFOR/L – Axial machining

- For axial turning, profiling and grooving
- Maximum working depth 3-6 x the insert width (can be limited by double ended inserts).
- These toolholders demand that the first cut must be made between two specified diameters (see code key)
- Size 16 – For general machining
- Size 30 – For heavy machining



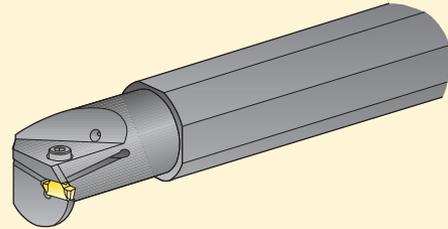
CGIR



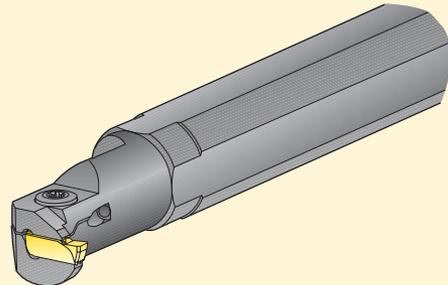
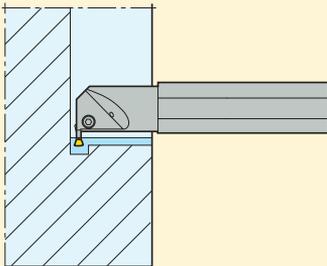
CFIL

CG.IR/L – Internal machining

- For internal turning, profiling and grooving
- Maximum working depth 1–3.5 x the insert width for size 13
- Maximum working depth 3 x the insert width for size 16
- Maximum working depth 2.5–3.5 x the insert width for size 19
- For through coolant supply
- Size 13 – For machining in small bore sizes
- Size 16 – For general machining
- Size 19 – For machining in small bore size



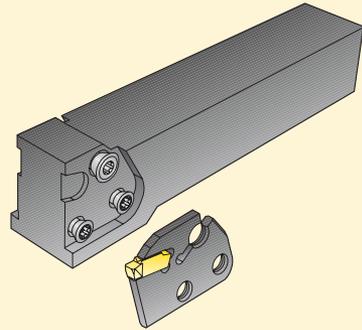
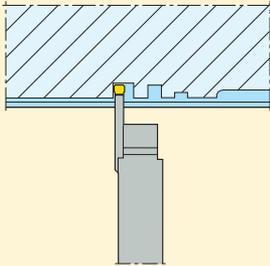
MDT16



MDT13

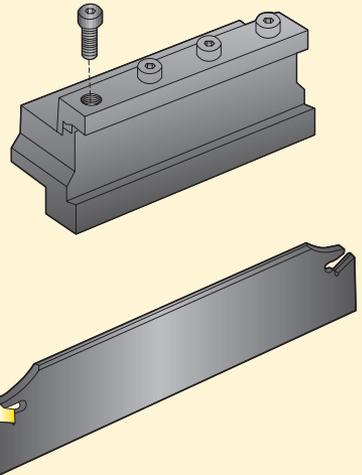
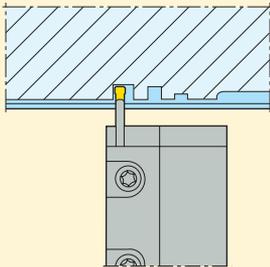
Single ended blades

- Holder with both right and left hand blade mounting available
- Size 16 – For general machining



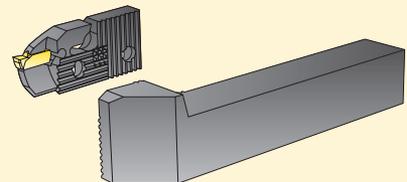
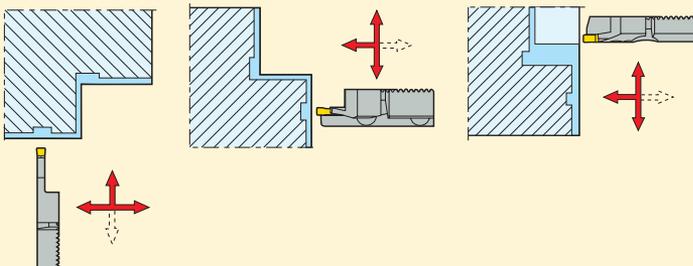
Double ended blades

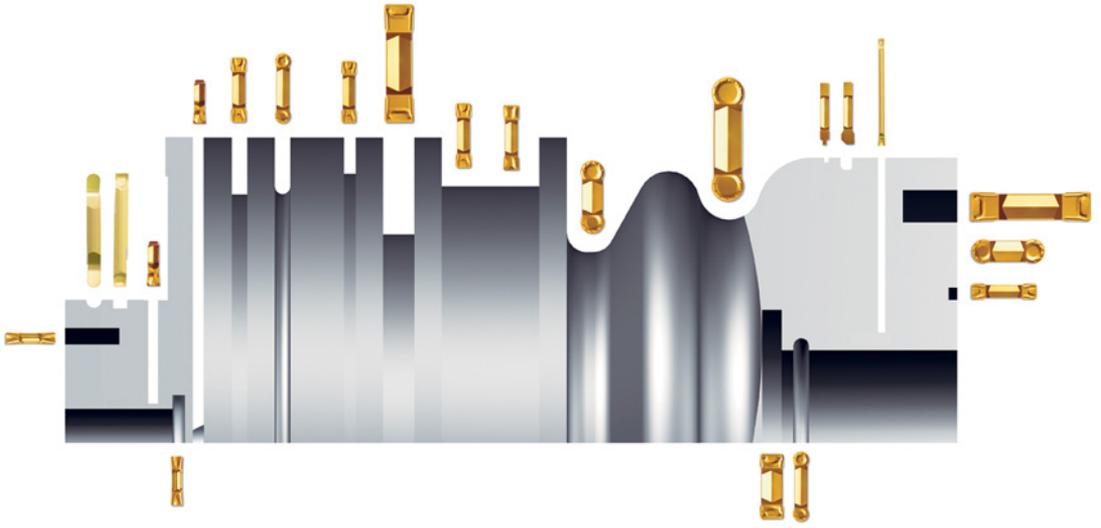
- To be used in standard 150.10 toolblocks
- Size 16 – For cut-off



Modular holders, axial/radial

- For axial/radial turning, profiling and grooving
- Maximum working depth up to 6 x the insert width
- Axial toolholders demand that the first cut must be made between two specified diameters (see code key)
- Size 13 – For axial/radial machining at small diameters
- Size 16 – For axial/radial machining





LCMF – Basic choice

- Double ended
- Economy (cutting edges at both ends)
- Size 13 – For machining in small bore sizes and axial machining at small diameters
- Size 16 – For general machining
- Size 19 – For small part machining
- Size 28 – For general machining
- Size 30 – For heavy machining

MDT13

MDT16
MDT30

MDT19
MDT28

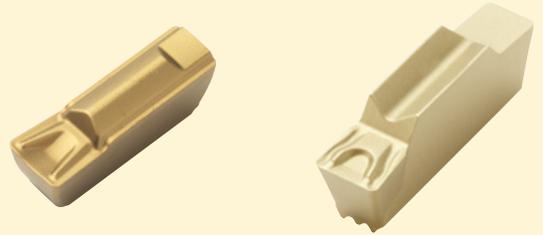


LCMR

- Single ended
- Flexibility
- Reach (full length clearance)
- Size 13 – For machining in small bore sizes and axial machining at small diameters
- Size 16 – For general machining
- Size 30 – For heavy machining

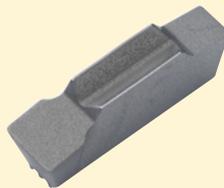
MDT13

MDT16
MDT30



LCG.

- Special applications
- Standard and (customer specified) custom made profiles
- Double or single ended
- With or without chipbreaker
- Closer tolerance
- Size 13 – For machining in small bore sizes and axial machining at small diameters
- Size 16 – For general machining
- Size 30 – For heavy machining



FT (Fine Turning)

- For fine turning
- For deep grooving



FT 19 and 28 (Fine Turning)

- For fine turning
- For cut-off
- For deep grooving



MT (Medium Turning)

- For medium turning
- For shallow grooving



MG (Medium Grooving)

- For medium turning
- For deep grooving
- For cut-off



MC (Medium Cut-off)

- For cutting-off tubes and small diameter workpieces
- For fine turning
- Reduces vibration risk
- For deep grooving



GG (Grooving Ground)

- Ground chipgroove
- For medium grooving, complement to FT for precision grooves



GS (Grooving Sharp)

- Sharp edge
- For fine grooving in non-ferrous materials/superalloys
- Precision grooves



A55/A60, G55/G60, ISO

- For threading applications



Note! The helix angle should not exceed $\lambda + 2^\circ$.

MP (Medium Profiling)

- For medium profiling
- For medium turning
- For medium grooving
- Good accessibility

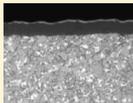
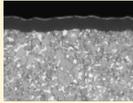
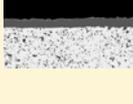
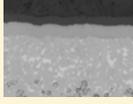
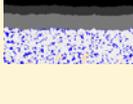


RP (Round Profiling)

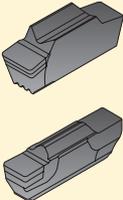
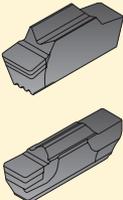
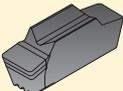
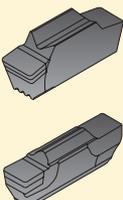
- For fine and medium profiling, turning and grooving
- Sharp periphery ground edges
- For superalloys, titanium alloys and non-ferrous materials



Grades

	<p>CP200</p>	<p>PVD-coated, hard micrograin grade with great wear resistance, intended for grooving, cut-off and profiling superalloys, titanium alloys and hardened steels. A more wear resistant alternative to grade 890.</p> <p>(Ti,Al)N + TiN</p>
	<p>CP500</p>	<p>Tough versatile PVD-coated micrograin grade intended for grooving in a variety of workpiece materials. Universal choice.</p> <p>(Ti,Al)N + TiN</p>
	<p>CP600</p>	<p>Very tough PVD-coated fine-grain grade intended for deep grooving and cut-off at low to moderate cutting speeds. Well-suited in deep grooving and in interrupted cuts. Tougher alternative to CP500.</p> <p>(Ti,Al)N + TiN</p>
	<p>TGK1500</p>	<p>Wear-resistant, hard Duratomic® CVD-coated grade intended for grooving and profiling grey cast iron and nodular cast iron.</p> <p>Ti(C,N) + Al₂O₃</p>
	<p>TGP25</p>	<p>A wear-resistant Duratomic® CVD-coated grade intended for grooving, turning and profiling steels at high cutting speeds.</p> <p>Ti(C,N) + Al₂O₃</p>
	<p>883</p>	<p>Uncoated, hard grade intended for grooving, cut-off and profiling superalloys, titanium alloys, hardened steels and non-ferrous materials.</p>
	<p>890</p>	<p>Uncoated, very hard micrograin grade intended for grooving and profiling superalloys, titanium alloys, hardened steels and non-ferrous materials. More wear resistant alternative to grade 883.</p>

Grades, PCBN

<p>CBN010</p> 	<p>Single-ended inserts with brazed tip, intended for hardened steels and Ni-based superalloys.</p> <p>Composition: 50% cBN content grade with an average grain size of 2 μm and a TiC ceramic binder.</p> <p>Coating: No coating.</p>
<p>CBN10</p> 	<p>Single-ended inserts with brazed tip, intended for hardened steels.</p> <p>Composition: 50% cBN content grade with an average grain size of 2 μm and a TiC ceramic binder.</p> <p>Coating: No coating.</p>
<p>CBN170</p> 	<p>Single-ended inserts with brazed tip, intended for Ni-based superalloys.</p> <p>Composition: 65% cBN content grade with an average grain size of 2 μm and a TiCN+SiCw ceramic binder.</p> <p>Coating: No coating.</p>
<p>CBN200</p> 	<p>Single-ended inserts with brazed tip, intended for perlitic cast iron and hardened steels.</p> <p>Composition: 90% cBN content grade with an average grain size of 3-6 μm and a Al ceramic binder.</p> <p>Coating: No coating.</p>

For information regarding CBN grades for MDT, please see page 354.

Grades

The chart below shows application areas for grades available in the MDT system.

The black areas in the chart indicate a grade's main ISO application groups and the white areas indicate other supplementary application groups.

ISO classification of the grades

Grades	P					M					K				N				S				H					
	P01	P10	P20	P30	P40	P50	M01	M10	M20	M30	M40	K01	K10	K20	K30	K40	N01	N10	N20	N30	S01	S10	S20	S30	H01	H10	H20	H30
TGP25																												
TGK1500																												
CP200																												
CP500																												
CP600																												
890																												
883																												
CBN010																												
CBN10																												
CBN170																												
CBN200																												

MDT – Secolor

To center

Easy conditions Difficult conditions

FT CP500	MC CP600
FT CP500	MC CP600
MT TGK1500	MT TGP25
MT 883	MT CP500
MT 883	MT CP500
S-LF CBN 10 CBN010	S-LF CBN200

Easy conditions: pre-machined surface, shallow grooves etc.
Difficult conditions: raw surface, deep grooves etc.

Tube

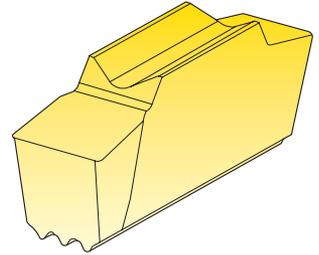
Easy conditions Difficult conditions

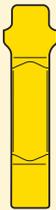
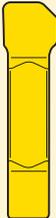
MT TGP25	MT TGP25
MT TGP25	MT TGP25
MT TGK1500	MT TGP25
MT 883	MT CP500
MT 883	MT CP500
S-LF CBN 10 CBN010	S-LF CBN200

Inserts for special grooves

Standard program

- Double-ended LCGA (MDT13)
- Single-ended LCGN (MDT16)



<p>FG – For locking rings</p> 	<p>DY – For dynamic O-rings</p> 	<p>ST – For static O-rings</p> 
<p>R – For full radius grooving</p> 	<p>D76 – For thread undercuts</p> 	

Remember to check the toolholder clearance before using these inserts.

Special applications

- Tailor-made inserts
- LCG.

Special inserts can easily be produced in the styles below.

They are made from blanks, single or double ended, with or without chipbreaker.

(Available as Custom Design at your local Seco website or contact your Seco representative for a special order form to define the required insert.)

<p>Style A</p> <p>Standard or special widths with corner radii</p>	<p>Style B</p> <p>Standard or special widths with corner and crest radii</p>	
<p>Style C</p> <p>Standard or special widths with full radius</p>	<p>Style D</p> <p>Standard or special widths with front angle and corner radii</p>	<p>Style E</p> <p>Special widths with front angle and corner radii</p>
<p>Style F</p> <p>Special widths with double front angles and corner radii</p>	<p>Style G</p> <p>Special widths with double front angles and corner radii</p>	<p>Style J</p> <p>Special widths with radii and chamfers</p>
<p>Style K</p> <p>Special widths with radii, chamfers and angles</p>		

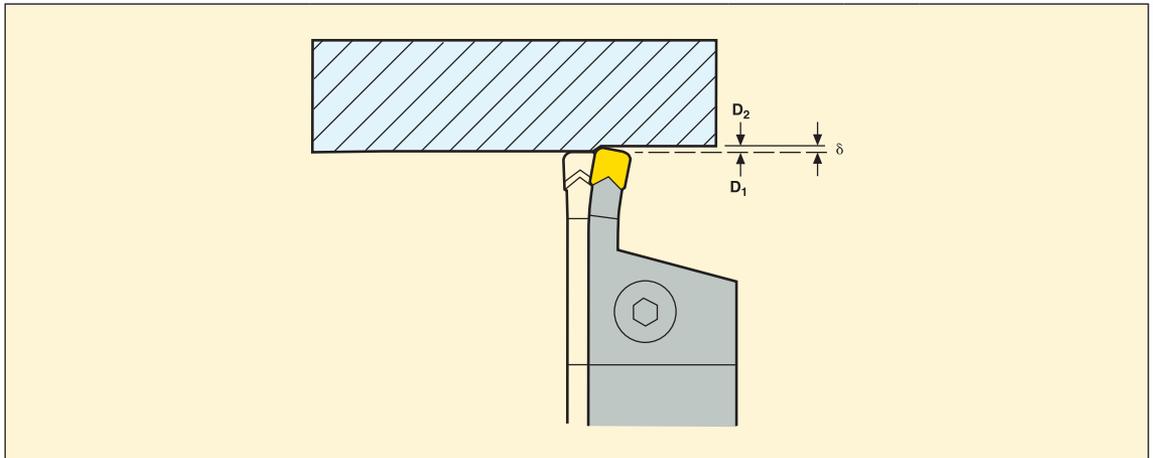
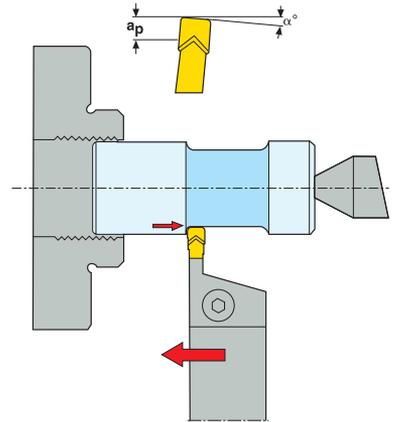
Remember to check the toolholder clearance before using these inserts.

Principles

During turning the axial forces deflect the tool generating a necessary trailing edge clearance angle.

This angle depends on

- Feed
- Depth of cut
- Tool overhang
- Insert width
- Cutting speed
- Workpiece material



The deflection arising during turning causes a minor change of the actual tool length. This influences the received diameter on the workpiece. The exact amount can be figured by running a test piece. First make a groove and then a turning operation to the same diameter with the selected cutting data. Compare the two different diameters and use the formula to calculate a compensation measure.

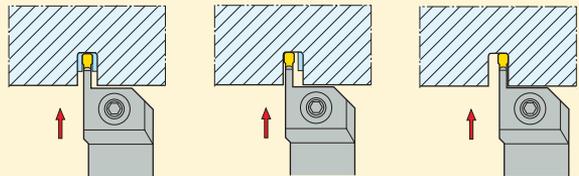
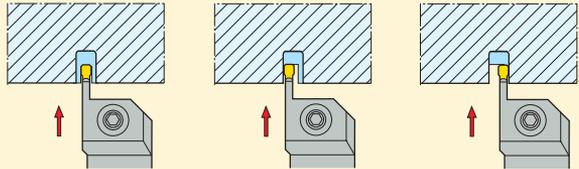
$$\delta = \frac{D_1 - D_2}{2}$$

Technical tips

Use the following technical tips for a favorable cutting process considering chipbreaking, cutting forces and tool life.

Machining a deep groove

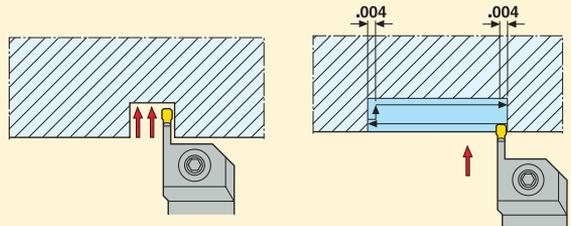
- Make a central groove to half of the total depth.
- Make infeeds at both sides to the same depth.
- Machine a central groove to full depth.
- Make infeeds at both sides to the full depth.
- Always outfeed, do not rapid traverse.



Roughing a recess

If the depth is larger than the width

- Use successive infeeds to required diameter.
- Increment a distance of the insert width – 2 x the insert corner radius to get a flat bottom surface.
- Always outfeed, do not use rapid traverse.

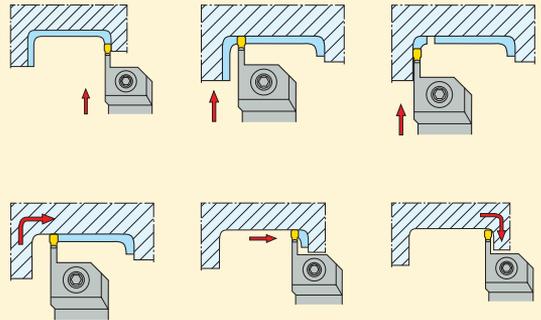


If the width is larger than the depth.

- Start with an infeed at one end.
- Use successive alternating turning with infeeds at the end.
- Release the tool deflection after turning before infeeding (reverse feed and reposition the insert before infeed – 0.004 inch).

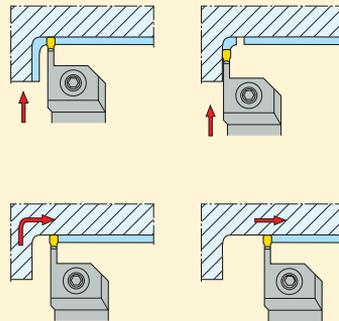
Finishing a recess with corner radius or chamfer

- Machine the face down to the end point of the radius or chamfer.
- Make a groove to the required depth at the end point of the radius or chamfer.
- Machine down to the end point of the radius or chamfer.
- Machine the radius or chamfer.
- Machine the diameter until the end point of the radius or chamfer is reached (remember to compensate for the deflection).
- Machine the radius or chamfer.



Machining a large corner radius or chamfer

- Make a groove to the required depth at the end point of the radius or chamfer.
- Machine the face down to the end point of the radius or chamfer.
- Machine the radius or chamfer.
- Continue with turning starting from the groove (remember to compensate for the deflection).

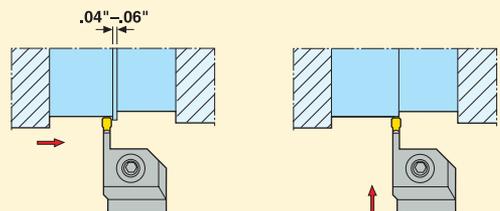


Eliminating a hanging ring

Turning towards the end of a component or towards a recess sometimes produces a hanging ring.

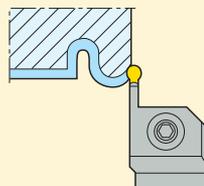
To avoid this

- Stop the turning operation 0.04–0.06" before the end of the component or the recess.
- Plunge down to the turned diameter.



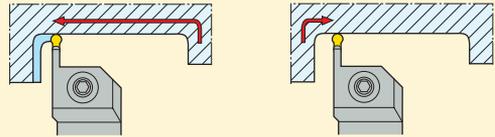
Profiling with round inserts

- The cutting depth should be maximum 0.4 x the insert diameter.
- There is no requirement to generate a trailing edge clearance angle as the geometry will provide that.



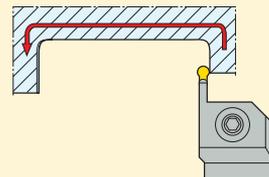
Roughing a recess with round inserts

- Machine the face down to the end point of the radius or chamfer.
- Track around the radius.
- Turn to the end point of the radius or chamfer on the other side.
- Machine down the other side and track around the radius or chamfer.

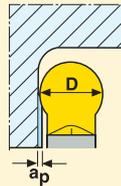


Finishing a recess with round inserts

- Make the cut in one continuous movement.
- Notice the maximum cutting depth allowed during outfeeding (see table).

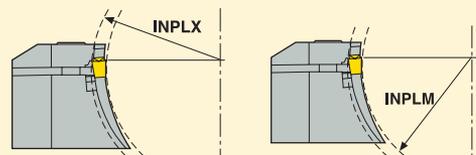
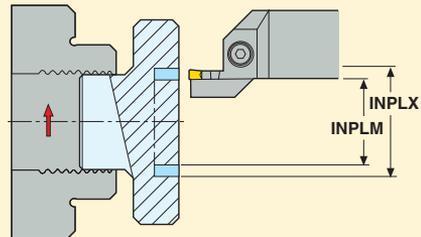


D mm (inch)	a_p inch
2	0.005
3 (0.125)	0.006
4	0.008
5 (0.187)	0.009
6 (0.250)	0.010
8, 10	0.016



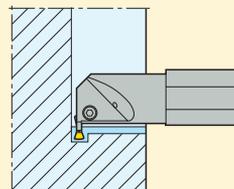
Axial machining

- In axial grooving operations the tool must be adapted to the radius of the groove.
- The toolholder code tells the maximum and minimum diameters that can be handled (see code key).
- The diameter measured on the outside of the blade (D_1) determines the largest diameter of initial plunge.
- The diameter measured on the inside of the blade (D_2) determines the smallest diameter of initial plunge.
- This applies to the initial groove only. Changing to turning means no general restrictions besides collision risk if machining towards center.



Internal machining

- Generally the same technique as for external machining should be used.
- In blind holes problems can occur with chip evacuation. To avoid that start with making a groove at the inner wall and turn towards the outside.



Modular holders, calculation of dimensions after mounting

Example, left hand version (L):

- Blade holder GL (alternative Seco-Capto GL).

- Blade type V21-C.R130.L..

$$l_1 = l_1 \text{ holder} + f_1 \text{ blade}$$

$$f_1 = f_1 \text{ holder} + l_1 \text{ blade}$$

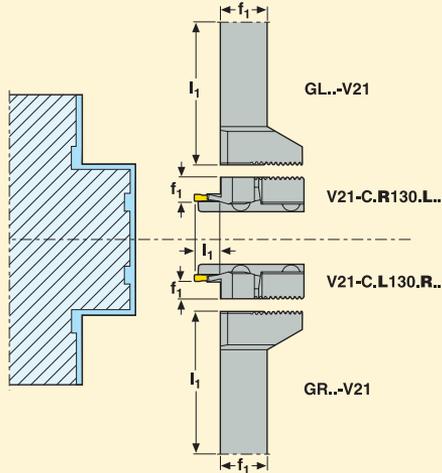
Example, right hand version (R):

- Blade holder GR (alternative Seco-Capto GR).

- Blade type V21-C.L130.R..

$$l_1 = l_1 \text{ holder} + f_1 \text{ blade}$$

$$f_1 = f_1 \text{ holder} + l_1 \text{ blade}$$



Example, right hand version (R):

- Blade holder FR (alternative Seco-Capto FR).

- Blade type V21-C.R130.L..

$$l_1 = l_1 \text{ holder} + l_1 \text{ blade}$$

$$f_1 = f_1 \text{ holder} + f_1 \text{ blade}$$

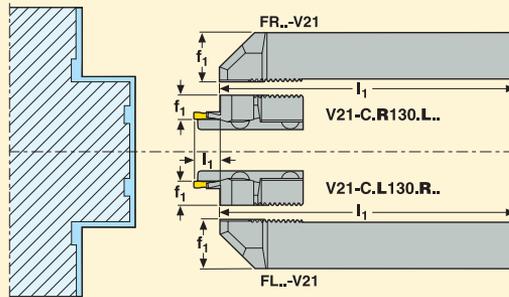
Example, left hand version (L):

- Blade holder FL (alternative Seco-Capto FL).

- Blade type V21-C.L130.R..

$$l_1 = l_1 \text{ holder} + l_1 \text{ blade}$$

$$f_1 = f_1 \text{ holder} + f_1 \text{ blade}$$



Modular holders, calculation of dimensions after mounting

Example, left hand version (L):

- Blade holder FL (alternative Seco-Capto FL).

- Blade type V21-C.L130.L..

$$l_1 = l_1 \text{ holder} + l_1 \text{ blade}$$

$$f_1 = f_1 \text{ holder} + f_1 \text{ blade}$$

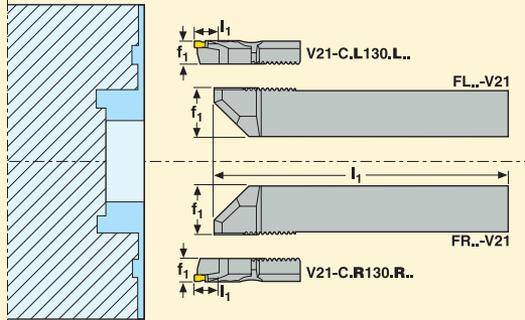
Example, right hand version (R):

- Blade holder FR (alternative Seco-Capto FR).

- Blade type V21-C.R130.R..

$$l_1 = l_1 \text{ holder} + l_1 \text{ blade}$$

$$f_1 = f_1 \text{ holder} + f_1 \text{ blade}$$



Example, left hand version (L):

- Blade holder A..FL (alternative Seco-Capto A..FL).

- Blade type V21-C.L130.L..

$$l_1 = l_1 \text{ holder} + l_1 \text{ blade}$$

$$f_1 = f_1 \text{ holder} + f_1 \text{ blade}$$

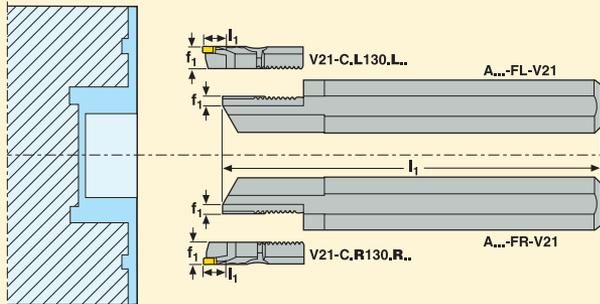
Example, right hand version (R):

- Blade holder A..FR (alternative Seco-Capto A..FR).

- Blade type V21-C.R130.R..

$$l_1 = l_1 \text{ holder} + l_1 \text{ blade}$$

$$f_1 = f_1 \text{ holder} + f_1 \text{ blade}$$



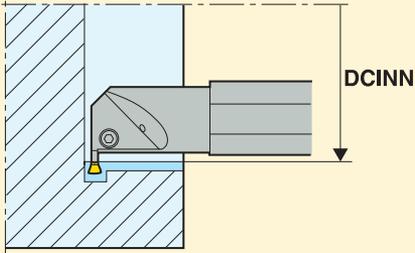
Bars A16-F... can enter a minimum diameter DCINN ≥ 1.00 inch.

Bars A20-F... can enter a minimum diameter DCINN ≥ 1.25 inch.

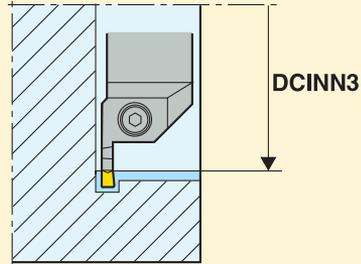


Dimensions relevant for toolholder use

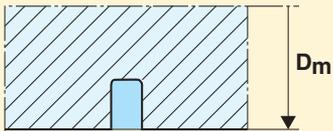
DCINN
(D_m min)



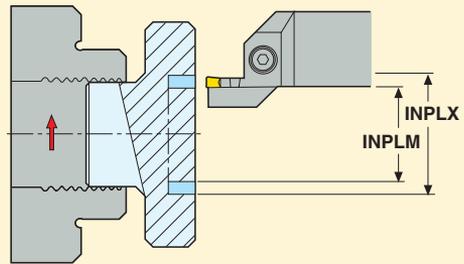
DCINN3
(D_{m2})



D_m
(D_{max})

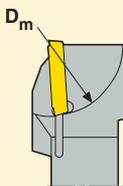


INPLM/INPLX

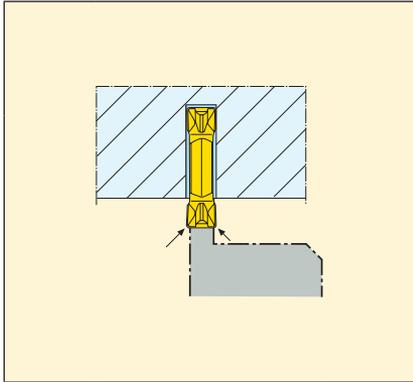


INPLM = Initial plunge minimum
INPLX = Initial plunge maximum

D_m
..RB



Working depths



These working depths can be limited when using double ended inserts because of their design.

L...13 = a_r max 0.433 inch

L...16 = a_r max 0.551 inch

L...19 = a_r max 0.629 inch

L...28 = a_r max 1.023 inch

L...30 = a_r max 1.102 inch

Torque values for clamping screws

Screw	in/lbs	Nm
L85011-T15P	44	5.0
L85012-T15P	44	5.0
L86015-T20P	53	6.0
MC6S4..	35	4.0
MC6S5..	53	6.0
TCEI04..	31	3.5
TCEI05..	53	6.0
TCEI06..	71	8.0
TCEI08..	89	10.0
TCEI10..	133	15.0

Torque keys, please see page 84.

General recommendations

- Use medium to high feeds for general grooving.
- Use medium to low feeds for precision grooving.
- Always use reverse feed instead of rapid traverse out of grooves.
- Do not use too low cutting depths and feed rates for finishing and semi-finishing turning operations.
- The appropriate deflection must be achieved. Minimum cutting depths and feed rates are shown in the table below.
- When profiling with round inserts do not use cutting depths over 0.4 x the insert diameter.
- Lower the cutting data when using holders with reach $a_r \geq 5 \times a_p$ because the extra length makes them deflect more.
- Maximum overhang with CGGR/L holders should be 3 x the tool diameter.

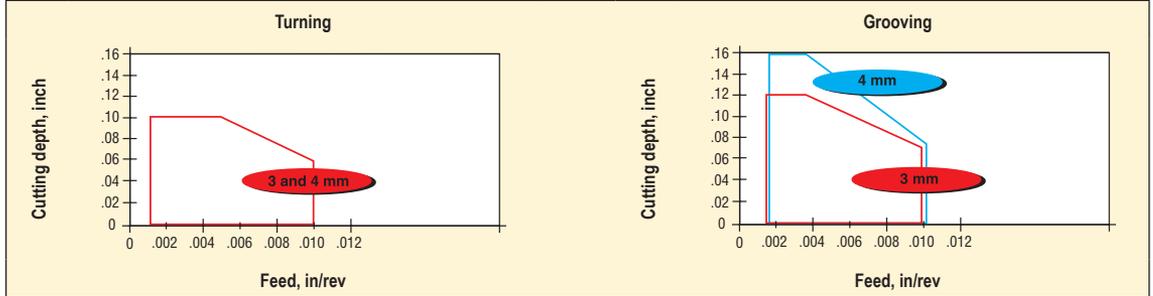
Minimum cutting depth (a_p) and feed rate (f)

Insert	Min a_p (inch)	Min f (in/rev)	Insert	Min a_p (inch)	Min f (in/rev)
2-FT	0.006	0.002	5-FT	0.020	0.004
3-FT	0.012	0.002	5-MT	0.020	0.007
3-MT	0.012	0.004	5-MG	0.020	0.004
3-MG	0.020	0.002	5-MC	0.020	0.002
3-MC	0.020	0.002	6-FT	0.024	0.004
4-FT	0.016	0.003	6-MT	0.024	0.008
4-MT	0.016	0.006	6-MG	0.024	0.004
4-MG	0.020	0.004	6-MC	0.020	0.004
4-MC	0.020	0.002	8-FT	0.028	0.010

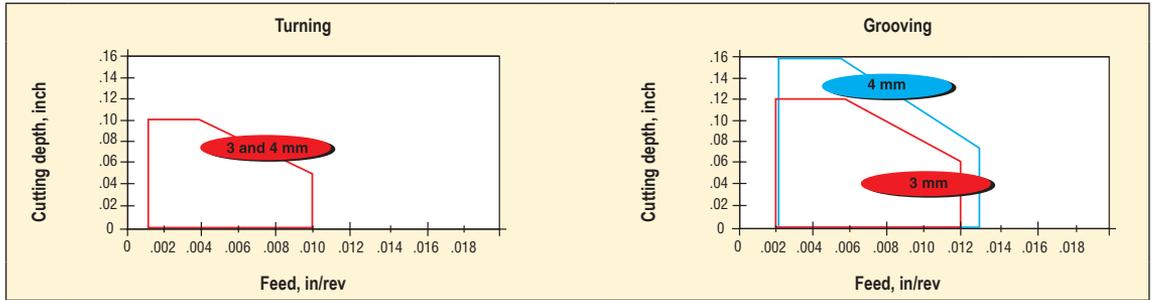
MDT 13 – Cutting depth and feed rate recommendations

Recommended cutting depths and feed rates for the different insert geometries are found in the charts below.

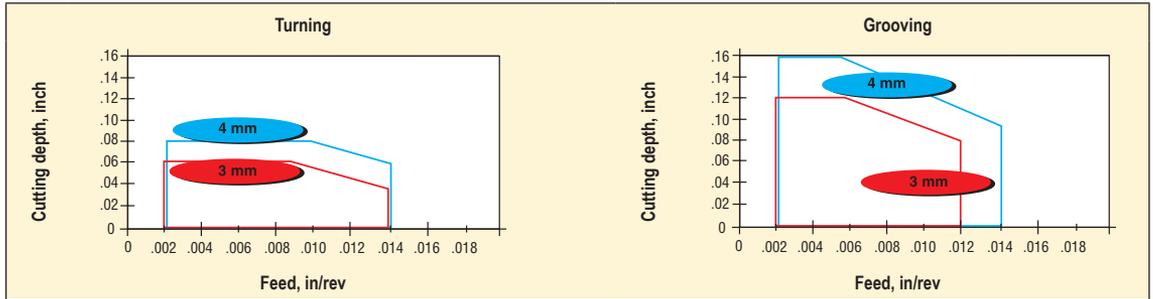
Geometry -FT



Geometry -MC



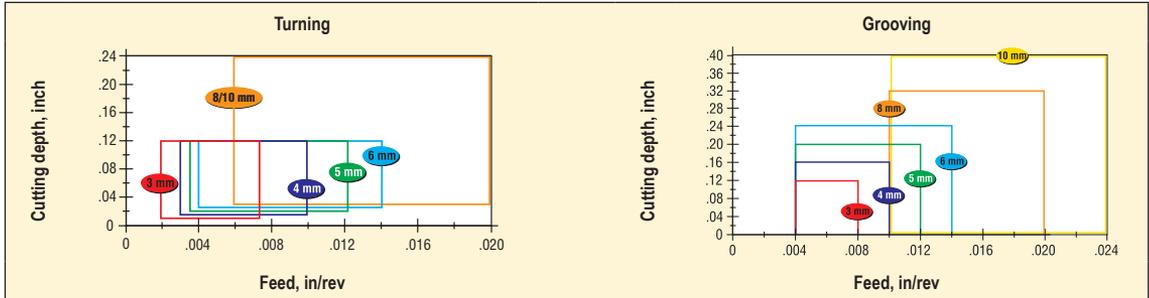
Geometry -MP



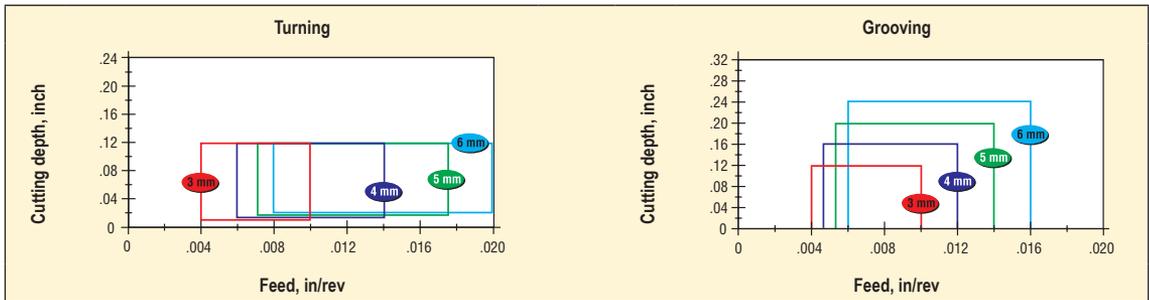
MDT 16 and 30 – Cutting depth and feed rate recommendations

Recommended cutting depths and feed rates for the different insert geometries are found in the charts below.

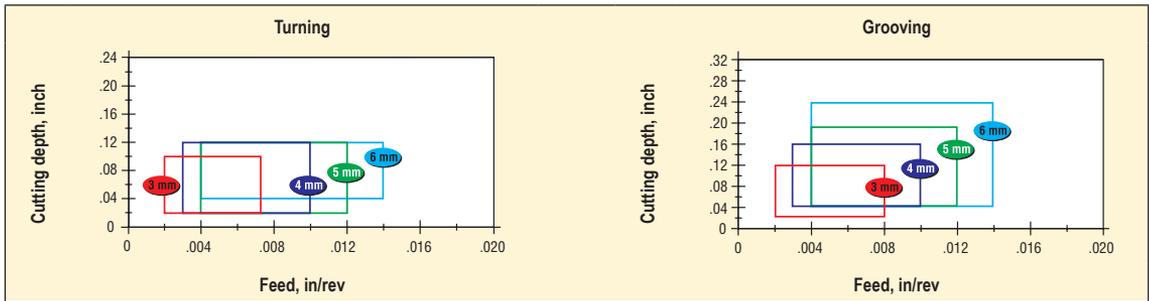
Geometry -FT



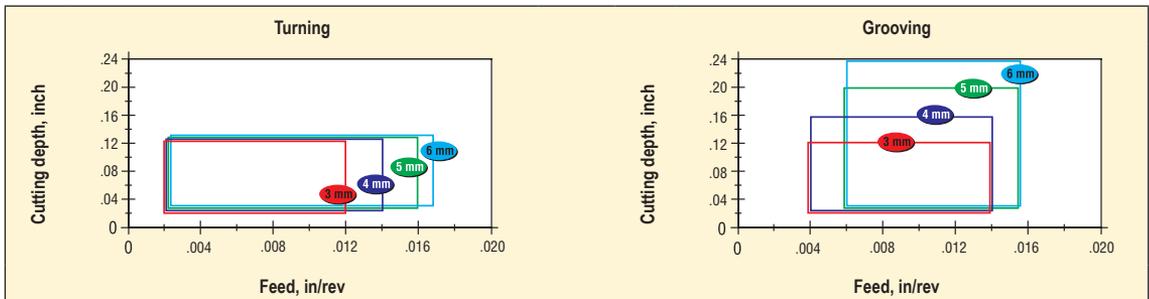
Geometry -MT



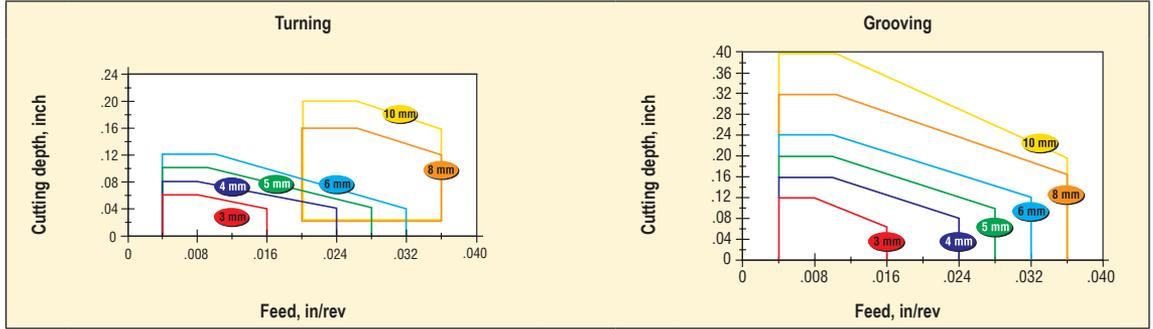
Geometry -MG



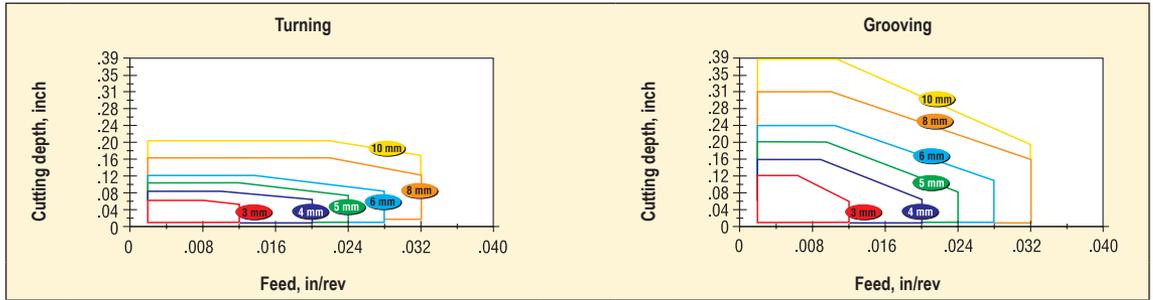
Geometry -MC



Geometry -MP



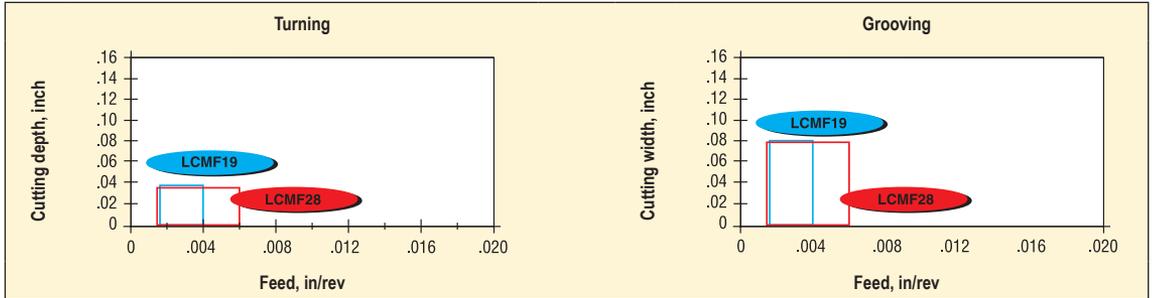
LCGF..-RP



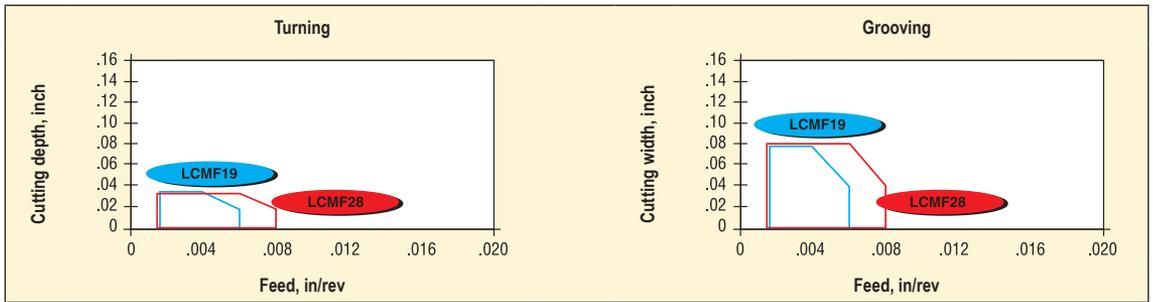
MDT 19 and 28 – Cutting depth and feed rate recommendations

Recommended cutting depths and feed rates for the different insert geometries are found in the charts below.

LCMF.-FT



LCMF.-MP



Cutting speed, v_c (sf/min)

In this section a recommended cutting speed is indicated under specified conditions.

Use the tables beginning on page 770 to classify the workpiece material into a SMG.

The cutting data tables provide a recommendation of chipbreaker and a start value for feed rate (f) and cutting speed (v_c).

The cutting data tables are based on grooving with full cutting width (a_p).

The recommended cutting speeds in the tables are calculated for 15 minutes tool life with use of external flood coolant.

In order to increase the accuracy towards the actual cutting conditions and requirements of the applications the recommendation is to use My Pages – Suggest on www.secotools.com

v_c = cutting speed (sf/min)

a_p = insert width (mm)

f = feed rate (in/rev)

CP500

SMG		$a_p = 2$		$a_p = 3$		$a_p = 4$		$a_p = 5-6$		$a_p = 8-10$	
		f	v_c	f	v_c	f	v_c	f	v_c	f	v_c
P1	-FT CP500	0.0034	780	0.0065	610	0.0075	570	0.010	495	0.014	425
P2	-FT CP500	0.0034	760	0.0065	600	0.0075	550	0.010	485	0.014	415
P3	-FT CP500	0.0034	650	0.0060	530	0.0070	485	0.0095	430	0.013	365
P4	-FT CP500	0.0032	580	0.0060	460	0.0070	430	0.0095	380	0.013	320
P5	-FT CP500	0.0032	560	0.0055	450	0.0070	410	0.0095	360	0.013	305
P6	-FT CP500	0.0032	620	0.0055	510	0.0065	470	0.0095	405	0.013	355
P7	-FT CP500	0.0032	590	0.0055	480	0.0065	440	0.0095	380	0.013	335
P8	-FT CP500	0.0034	550	0.0060	440	0.0070	410	0.0095	360	0.013	305
P11	-FT CP500	0.0032	570	0.0055	465	0.0065	430	0.0095	370	0.013	325
M1	-FT CP500	0.0034	870	0.0065	650	0.0075	560	0.010	405	0.014	265
M2	-FT CP500	0.0032	710	0.0055	570	0.0070	475	0.0095	355	0.013	230
M3	-FT CP500	0.0026	540	0.0048	470	0.0055	425	0.0075	335	0.010	240
M4	-FT CP500	0.0022	395	0.0040	380	0.0048	345	0.0065	275	0.0095	195
M5	-FT CP500	0.0022	330	0.0040	315	0.0048	290	0.0065	230	0.0095	165
K1	-FT CP500	0.0034	700	0.0065	540	0.0075	500	0.010	440	0.014	380
K2	-FT CP500	0.0032	620	0.0055	475	0.0070	415	0.0095	350	0.013	275
K3	-FT CP500	0.0032	520	0.0055	400	0.0070	350	0.0095	295	0.013	235
K4	-FT CP500	0.0032	500	0.0055	385	0.0070	335	0.0095	280	0.013	225
K5	-FT CP500	0.0028	310	0.0050	235	0.0065	210	0.0085	175	0.012	145
K6	-FT CP500	0.0032	440	0.0055	350	0.0070	315	0.0095	280	0.013	240
K7	-FT CP500	0.0028	395	0.0050	300	0.0065	270	0.0085	225	0.012	185
N11	-FT CP500	0.0044	465	0.0080	365	0.0095	335	0.013	285	0.018	245
S1	-FT CP500	0.0022	95	0.0040	80	0.0048	75	0.0065	65	0.0095	55
S2	-FT CP500	0.0022	80	0.0040	70	0.0048	65	0.0065	55	0.0095	48
S3	-FT CP500	0.0020	70	0.0038	60	0.0044	55	0.0060	50	0.0085	43

SMG = Seco Material Group

v_c = sf/min

f = in/rev

a_p = mm

All cutting data are start values

TPG25

SMG		ap = 3		ap = 4		ap = 5		ap = 6		ap = 8-10	
		f	v _c	f	v _c	f	v _c	f	v _c	f	v _c
P1	-FT TGP25	0.0065	1250	0.0075	1125	0.0095	980	0.010	930	0.014	740
P2	-FT TGP25	0.0065	1225	0.0075	1100	0.0095	950	0.010	900	0.014	720
P3	-FT TGP25	0.0060	880	0.0070	810	0.0085	740	0.0095	710	0.013	600
P4	-FT TGP25	0.0060	950	0.0070	860	0.0085	760	0.0095	720	0.013	570
P5	-FT TGP25	0.0055	760	0.0070	680	0.0085	620	0.0095	600	0.013	510
P6	-FT TGP25	0.0055	1050	0.0065	950	0.0085	810	0.0095	770	0.013	630
P7	-FT TGP25	0.0055	800	0.0065	740	0.0085	660	0.0095	630	0.013	550
P8	-FT TGP25	0.0060	740	0.0070	680	0.0085	620	0.0095	600	0.013	510
P11	-FT TGP25	0.0055	780	0.0065	720	0.0085	640	0.0095	620	0.013	540
M1	-MC TGP25	0.0065	940	0.0075	870	0.0095	730	0.010	680	0.014	470
M2	-MC TGP25	0.0055	790	0.0070	720	0.0085	630	0.0095	590	0.013	405
M3	-MC TGP25	0.0048	610	0.0055	600	0.0065	550	0.0075	520	0.010	405
M4	-MC TGP25	0.0040	460	0.0048	460	0.0060	435	0.0065	415	0.0095	325
K1	-MT TGP25	0.0070	850	0.0085	760	0.010	680	0.011	650	0.015	520
K2	-MT TGP25	0.0065	570	0.0075	540	0.0095	490	0.010	475	0.013	415
K3	-MT TGP25	0.0065	485	0.0075	455	0.0095	415	0.010	400	0.013	355
K4	-MT TGP25	0.0065	465	0.0075	435	0.0095	400	0.010	385	0.013	335
K5	-MT TGP25	0.0060	280	0.0070	265	0.0080	255	0.0085	245	0.012	210
K6	-MT TGP25	0.0065	550	0.0075	500	0.0095	440	0.010	420	0.013	345
K7	-MT TGP25	0.0060	360	0.0070	340	0.0080	325	0.0085	310	0.012	270

CP600

SMG		ap = 3		ap = 4		ap = 5		ap = 6	
		f	v _c	f	v _c	f	v _c	f	v _c
P1	-MC CP600	0.010	510	0.011	455	0.012	440	0.012	435
P2	-MC CP600	0.010	495	0.011	445	0.012	425	0.013	410
P3	-MC CP600	0.0095	435	0.011	380	0.011	375	0.012	365
P4	-MC CP600	0.0095	385	0.010	345	0.011	330	0.011	330
P5	-MC CP600	0.0095	370	0.010	330	0.011	315	0.011	315
P6	-MC CP600	0.0095	415	0.010	370	0.011	355	0.011	355
P7	-MC CP600	0.0095	390	0.010	350	0.011	335	0.011	335
P8	-MC CP600	0.0095	370	0.011	320	0.011	315	0.012	305
P11	-MC CP600	0.0095	380	0.010	340	0.011	325	0.011	325
M1	-MC CP600	0.010	475	0.011	365	0.012	330	0.013	300
M2	-MC CP600	0.0095	410	0.010	320	0.011	285	0.011	280
M3	-MC CP600	0.0075	370	0.0080	310	0.0085	275	0.0085	275
M4	-MC CP600	0.0065	305	0.0070	250	0.0075	235	0.0080	225
M5	-MC CP600	0.0065	255	0.0070	210	0.0075	195	0.0080	185
K1	-MC CP600	0.010	445	0.011	400	0.012	385	0.013	375
K2	-MC CP600	0.0095	370	0.010	315	0.011	300	0.011	295
K3	-MC CP600	0.0095	310	0.010	270	0.011	255	0.011	250
K4	-MC CP600	0.0095	295	0.010	255	0.011	240	0.011	240
K5	-MC CP600	0.0085	185	0.0095	160	0.0095	155	0.010	150
K6	-MC CP600	0.0095	285	0.010	255	0.011	245	0.011	245
K7	-MC CP600	0.0085	235	0.0095	205	0.0095	200	0.010	190
N11	-MC CP600	0.013	305	0.014	265	0.015	255	0.016	245
S1	-MC CP600	0.0065	65	0.0070	60	0.0075	55	0.0080	55
S2	-MC CP600	0.0065	55	0.0070	50	0.0075	50	0.0080	49
S3	-MC CP600	0.0060	50	0.0065	45	0.0070	44	0.0070	44

SMG = Seco Material Group

v_c = sf/min

f = in/rev

a_p = mm

All cutting data are start values

CP600

SMG		ap = 2	
		f	v _c
P1	-FT CP600	0.0034	690
P2	-FT CP600	0.0036	660
P3	-FT CP600	0.0034	580
P4	-FT CP600	0.0032	520
P5	-FT CP600	0.0032	495
P6	-FT CP600	0.0032	560
P7	-FT CP600	0.0032	520
P8	-FT CP600	0.0034	485
P11	-FT CP600	0.0032	510
M1	-FT CP600	0.0036	780
M2	-FT CP600	0.0032	650
M3	-FT CP600	0.0026	500
M4	-FT CP600	0.0022	375
M5	-FT CP600	0.0022	315
K1	-FT CP600	0.0036	610
K2	-FT CP600	0.0032	550
K3	-FT CP600	0.0032	460
K4	-FT CP600	0.0032	440
K5	-FT CP600	0.0028	275
K6	-FT CP600	0.0032	390
K7	-FT CP600	0.0028	350
N11	-FT CP600	0.0044	410
S1	-FT CP600	0.0022	85
S2	-FT CP600	0.0022	75
S3	-FT CP600	0.0022	65

TGK1500

SMG		ap = 2		ap = 3		ap = 4		ap = 5		ap = 6-8	
		f	v _c	f	v _c	f	v _c	f	v _c	f	v _c
K1	-MT, -FT TGK1500	0.0040	960	0.0070	750	0.0085	670	0.010	600	0.012	550
K2	-MT, -FT TGK1500	0.0038	590	0.0065	510	0.0080	470	0.0095	435	0.011	405
K3	-MT, -FT TGK1500	0.0038	500	0.0065	430	0.0080	395	0.0095	370	0.011	345
K4	-MT, -FT TGK1500	0.0038	475	0.0065	410	0.0080	380	0.0095	350	0.011	330
K5	-MT, -FT TGK1500	0.0034	290	0.0060	250	0.0075	230	0.0085	215	0.0095	210
K6	-MT, -FT TGK1500	0.0038	600	0.0065	485	0.0080	430	0.0095	390	0.011	350
K7	-MT, -FT TGK1500	0.0034	370	0.0060	320	0.0075	295	0.0085	275	0.0095	265

883, 890

SMG		ap = 3		ap = 4		ap = 5		ap = 6		ap = 8-10	
		f	v _c	f	v _c	f	v _c	f	v _c	f	v _c
K1	-MT 883, 890	0.0075	310	0.0085	290	0.010	265	0.011	255	0.015	220
K2	-MT 883, 890	0.0065	280	0.0080	260	0.0095	240	0.010	230	0.013	200
K3	-MT 883, 890	0.0065	235	0.0080	220	0.0095	200	0.010	195	0.013	170
K4	-MT 883, 890	0.0065	225	0.0080	210	0.0095	195	0.010	185	0.013	160
K5	-MT 883, 890	0.0060	140	0.0070	130	0.0080	125	0.0085	120	0.012	100
K6	-MT 883, 890	0.0065	200	0.0080	185	0.0095	170	0.010	165	0.013	145
K7	-MT 883, 890	0.0060	180	0.0070	165	0.0080	155	0.0085	150	0.012	130
N1	-MT 883, 890	0.0095	900	0.011	830	0.013	770	0.014	730	0.019	620
N2	-MT 883, 890	0.0095	730	0.011	670	0.013	620	0.014	590	0.019	500
N3	-MT 883, 890	0.0095	485	0.011	445	0.013	415	0.014	390	0.019	335
N11	-MT 883, 890	0.0095	550	0.011	510	0.013	475	0.014	450	0.019	385
S1	-MT 883, 890	0.0048	65	0.0055	60	0.0065	55	0.0070	55	0.0095	46
S2	-MT 883, 890	0.0048	50	0.0055	47	0.0065	45	0.0070	43	0.0095	37
S3	-MT 883, 890	0.0044	45	0.0050	42	0.0060	39	0.0065	37	0.0085	33
S11	-MT 883, 890	0.0050	90	0.0065	80	0.0075	75	0.0080	75	0.011	65
S12	-MT 883, 890	0.0050	70	0.0065	65	0.0075	60	0.0080	55	0.011	48
S13	-MT 883, 890	0.0048	55	0.0055	50	0.0065	48	0.0070	46	0.0095	40
H5	-MT 883, 890	0.0044	110	0.0050	100	0.0065	95	0.0065	90	0.0095	80

CP200

SMG		ap = 3		ap = 4		ap = 5		ap = 6		ap = 8	
		f	v _c	f	v _c	f	v _c	f	v _c	f	v _c
M1	-FT CP200	0.0065	690	0.0075	590	0.0095	470	0.010	425	0.014	270
M2	-FT CP200	0.0055	600	0.0070	500	0.0085	410	0.0095	375	0.013	255
M3	-FT CP200	0.0048	490	0.0055	450	0.0065	390	0.0075	355	0.010	250
M4	-FT CP200	0.0040	390	0.0048	365	0.0060	320	0.0065	290	0.0085	225
M5	-FT CP200	0.0040	325	0.0048	305	0.0060	265	0.0065	240	0.0085	185
S1	-FT CP200	0.0040	90	0.0048	85	0.0060	80	0.0065	75	0.0085	65
S2	-FT CP200	0.0040	75	0.0048	70	0.0060	65	0.0065	60	0.0085	55
S3	-FT CP200	0.0038	65	0.0044	60	0.0055	55	0.0060	55	0.0080	48
S11	-FT CP200	0.0048	125	0.0055	115	0.0065	105	0.0075	105	0.010	90
S12	-FT CP200	0.0048	95	0.0055	90	0.0065	85	0.0075	80	0.010	70
S13	-FT CP200	0.0040	80	0.0048	75	0.0060	65	0.0065	65	0.0085	55

SMG = Seco Material Group

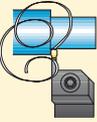
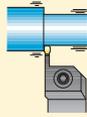
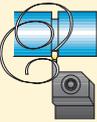
v_c = sf/min

f = in/rev

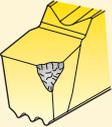
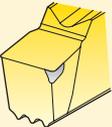
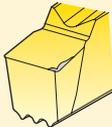
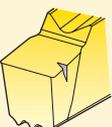
a_p = mm

All cutting data are start values

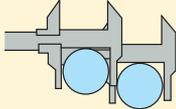
Machining problems

<p>Chipbreaking problems/ turning</p> 	<ul style="list-style-type: none"> • Increase feed rate or cutting depth • Use narrower insert with smaller radius 	<p>Vibrations</p> 	<ul style="list-style-type: none"> • Change the cutting speed • Increase the feed rate • Reduce the cutting depth • Improve the stability of the tool and workpiece • Select an insert with smaller radius
<p>Chipbreaking problems/ grooving</p> 	<ul style="list-style-type: none"> • Reduce the cutting speed • Increase the feed rate • Use interrupted feed 		

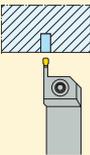
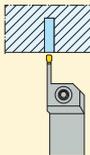
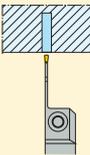
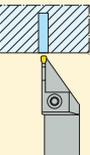
Tool life problems

<p>Breakage</p> 	<ul style="list-style-type: none"> • Reduce the feed rate • Reduce the cutting depth • Select a tougher grade • Select an insert with larger radius 	<p>Plastic deformation</p> 	<ul style="list-style-type: none"> • Reduce the cutting speed • Reduce the feed rate • Use coolant • Select a more wear resistant grade • Select an insert with larger radius
<p>Rapid flank wear</p> 	<ul style="list-style-type: none"> • Reduce the cutting speed • Select a more wear resistant grade 	<p>Built-up edge</p> 	<ul style="list-style-type: none"> • Increase the cutting speed • Increase the feed rate • Do not use coolant
<p>Rapid crater wear</p> 	<ul style="list-style-type: none"> • Reduce the cutting speed • Reduce the feed rate • Use coolant • Select a more wear resistant grade 	<p>Chip hammering</p> 	<ul style="list-style-type: none"> • Change the feed rate • Change the cutting depth
<p>Chipping</p> 	<ul style="list-style-type: none"> • Increase the cutting speed • Reduce the feed rate • Select a tougher grade 	<p>Comb cracks</p> 	<ul style="list-style-type: none"> • Reduce the cutting speed • Reduce the feed rate • Use abundant coolant flow or no coolant at all
<p>Notch wear</p> 	<ul style="list-style-type: none"> • Reduce the cutting speed • Reduce the feed rate 		

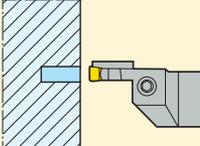
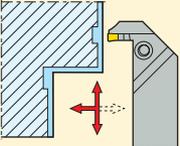
Workpiece out of tolerance

<p>Poor surface finish</p> 	<ul style="list-style-type: none"> • Reduce the feed rate • Increase the cutting speed • Reduce the cutting depth • Use coolant • Improve the stability of the tool and workpiece 	<p>Inaccurate square facing</p> 	<ul style="list-style-type: none"> • Final facing should be made as radial machining from outside to center
<p>Diameter out of tolerance</p> 	<ul style="list-style-type: none"> • Check the tool length compensation measure • Reduce the cutting speed • Select a more wear resistant grade 	<p>Repeatability problems</p> 	<ul style="list-style-type: none"> • Keep machining conditions constant • Check the insert wear
<p>Diameter variation</p> 	<ul style="list-style-type: none"> • After grooving the tool must be retracted in accordance with the compensation measurement before proceeding with turning • Keep machining conditions constant during turning operation 		

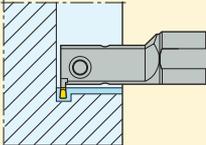
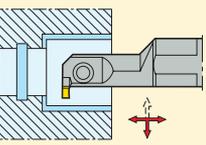
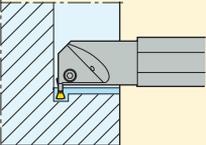
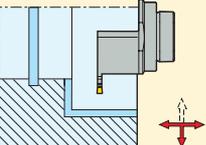
External

<p>CFIR/L CIIR/L (Swiss style)</p>  <p>3 x insert width</p> <p>Pages 386-387, 392</p>	<p>CFRMR/L</p>  <p>5 x insert width</p> <p>Pages 388-389</p>	<p>CFSR/L, CFZR/L</p>  <p>CFSF/L 8 x insert width CFZR/L 12.5 x insert width</p> <p>Pages 383-384, 390</p>	<p>CFOR/L, CFPR/L, CFSR/L, CFTR/L, CFZR/L...RB</p>  <p>CFOR/L 6 x insert width CFPR/L 6.5 x insert width CFSR/L 8 x insert width CFTR/L 8.5 x insert width CFZR/L 12.5 x insert width</p> <p>Pages 385, 391</p>
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External axial machining

<p>CFIR/L</p>  <p>3 x insert width</p> <p>Pages 402-404</p>	<p>CGIR/L</p>  <p>3 x insert width</p> <p>Pages 405-406</p>	<p>MDT AXIAL GROOVING SELECTION CALCULATOR</p>  <p>This software guides you in finding the suitable tool for your axial grooving application. The application is free and available at http://www.secotools.com/customerzoneus</p>	
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Internal

<p>A...CGHR/L, CGJR/L</p>  <p>CGHR/L 2.5 x insert width CGJR/L 3.5 x insert width</p> <p>Page 407</p>	<p>A...CGER/L, CGFR/L, CGHR/L, CGJR/L</p>  <p>CGER/L 1 x insert width CGFR/L 1.5 x insert width CGHR/L 2.5 x insert width CGJR/L 3.5 x insert width</p> <p>Page 408</p>	<p>A...CGFR/L, CGGR/L, CGIR/L</p>  <p>CGFR/L 1.5 x insert width CGGR/L 2 x insert width CGIR/L 3 x insert width</p> <p>Pages 409-410</p>	<p>GL...CG.R/L</p>  <p>CGJR/L 3.5 x insert width CGIR/L 3 x insert width CGHR/L 2.5 x insert width</p> <p>Steadyline®</p> <p>Pages 213-215</p>	
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Holders for modular blades

Blades, modular

<p>External</p> <p>GR/L (0°) FR/L (90°) SR/L (45°)</p> <p>Page 411</p>	<p>Internal</p> <p>A...-FR/L</p> <p>Page 412</p>	<p>CIR/L, CMR/L</p> <p>Page 413</p>	<p>CHR/L, CIR/L, CJR/L, CKR/L, CMR/L, COR/L</p> <p>Pages 414-415</p> <p>CHR/L, CIR/L, CJR/L, CKR/L, CMR/L, COR/L</p> <p>Pages 416-417</p>
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Holder and Blade

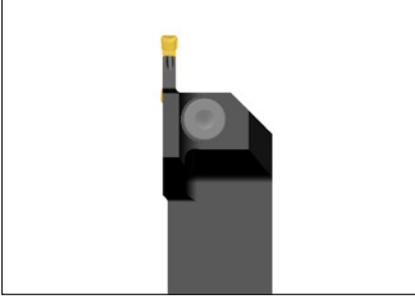
<p>SFN/CF.N</p> <p>MDT blade and holder</p> <p>Page 418</p>	<p>CF.N (150.10)</p> <p>MDT blade for 150.10 system</p> <p>Page 419</p>	
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Jetstream Tooling®

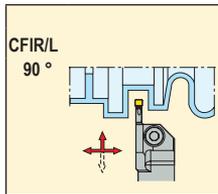
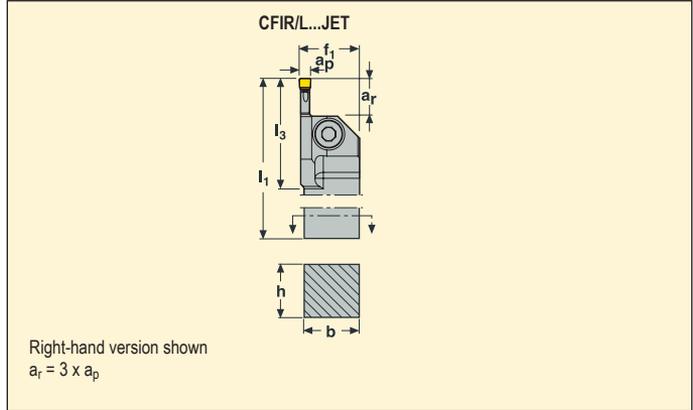
<p>CFSR/L...RB-JET CFZR/L...RB-JET</p> <p>CFSR/L 8 x insert width CFZR/L 12.5 x insert width</p> <p>Pages 382-383</p>	<p>CFIR/L...JET CFMR/L...JET</p> <p>CFIR/L 3 x insert width CFMR/L 5 x insert width</p> <p>Pages 378-380</p>	<p>CFIR/L...JET</p> <p>CFIR/L 3 x insert width</p> <p>Pages 393-395</p>	<p>CFOR/L...JET CFOL/R...JET</p> <p>CFOR/L 6 x insert width</p> <p>Pages 396-398</p>	<p>CFOR/R...JET CFOL/L...JET</p> <p>CFOR/L 6 x insert width</p> <p>Pages 399-401</p>
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Toolholders for inserts LCGF, LCGN, LCMF and LCMR

3, 4, 5 mm width



• For insert program, see pages 425-438, 440-441



EDP No.	Part No.	Dimensions in inch							lbs	Seat size	
		h	b	l ₁	f ₁	l ₃	a _r **				
3	37822	CFIR 07503BJET	0.75	0.75	4.5	0.81	1.30	0.35	0.9	3	LC..1603
	37830	10003DJET	1.00	1.00	6.0	1.06	1.30	0.35	1.8	3	LC..1603
	37838	12503DJET	1.25	1.25	6.0	1.31	1.30	0.35	2.6	3	LC..1603
	37823	CFIL 07503BJET	0.75	0.75	4.5	0.81	1.30	0.35	0.9	3	LC..1603
	37831	10003DJET	1.00	1.00	6.0	1.06	1.30	0.35	1.8	3	LC..1603
	37839	12503DJET	1.25	1.25	6.0	1.31	1.30	0.35	2.6	3	LC..1603
4	37824	CFIR 07504BJET	0.75	0.75	4.5	0.81	1.54	0.47	1.1	4	LC..1604
	37832	10004DJET	1.00	1.00	6.0	1.06	1.54	0.47	1.3	4	LC..1604
	37840	12504DJET	1.25	1.25	6.0	1.31	1.54	0.47	2.6	4	LC..1604
	37825	CFIL 07504BJET	0.75	0.75	4.5	0.81	1.54	0.47	1.1	4	LC..1604
	37833	10004DJET	1.00	1.00	6.0	1.06	1.54	0.47	1.3	4	LC..1604
	37841	12504DJET	1.25	1.25	6.0	1.31	1.54	0.47	2.6	4	LC..1604
5	37826	CFIR 07505BJET	0.75	0.75	4.5	0.81	1.57	0.59	1.1	5	LC..1605
	37834	10005DJET	1.00	1.00	6.0	1.06	1.57	0.59	1.8	5	LC..1605
	37842	12505DJET	1.25	1.25	6.0	1.31	1.57	0.59	2.6	5	LC..1605
	37827	CFIL 07505BJET	0.75	0.75	4.5	0.81	1.57	0.59	1.1	5	LC..1605
	37835	10005DJET	1.00	1.00	6.0	1.06	1.57	0.59	1.8	5	LC..1605
	37843	12505DJET	1.25	1.25	6.0	1.31	1.57	0.59	2.6	5	LC..1605

**Max depth of cut for LCGF/LCMF16.. = 0.551 inch

Spare Parts, Parts included in delivery

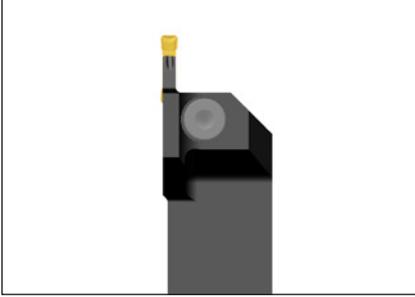
For holder	Clamp key	Clamp screw	Plug	Torque value in/lbs
..03	4SMS795	TCEI0513	JET-P1/8-5MM	53
..04	5SMS795	TCEI0613	JET-P1/8-5MM	71
..05	5SMS795	TCEI0613	JET-P1/8-5MM	71

Please check availability in current price and stock-list

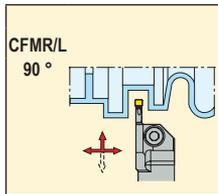
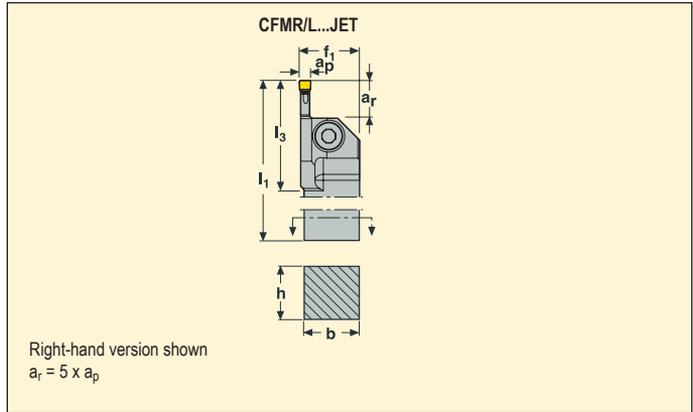
For more information on Jetstream Tooling® and accessories, please see pages 86-89

Toolholders for inserts LCGF, LCGN, LCMF and LCMR

3, 4, 5, 6 mm width



• For insert program, see pages 425-438, 440-441



	EDP No.	Part No.	Dimensions in inch							lbs	Seat size	
			h	b	l ₁	f ₁	l ₃	a _r **				
3	62476	CFMR 07503BJET	0.75	0.75	4.5	0.80	1.57	0.59	0.9	3	LC..1603	
	62477	10003DJET	1.00	1.00	6.0	1.04	1.57	0.59	1.5	3	LC..1603	
	62478	12503DJET	1.25	1.25	6.0	1.30	1.73	0.59	2.2	3	LC..1603	
	62479	CFML 07503BJET	0.75	0.75	4.5	0.80	1.57	0.59	0.9	3	LC..1603	
	62480	10003DJET	1.00	1.00	6.0	1.04	1.57	0.59	1.5	3	LC..1603	
	62481	12503DJET	1.25	1.25	6.0	1.30	1.73	0.59	2.2	3	LC..1603	
4	62482	CFMR 07504BJET	0.75	0.75	4.5	0.80	1.73	0.79	0.9	4	LC..1604	
	62483	10004DJET	1.00	1.00	6.0	1.04	1.73	0.79	1.8	4	LC..1604	
	62484	12504DJET	1.25	1.25	6.0	1.30	1.73	0.79	2.0	4	LC..1604	
	62493	CFML 07504BJET	0.75	0.75	4.5	0.80	1.73	0.79	0.9	4	LC..1604	
	62494	10004DJET	1.00	1.00	6.0	1.04	1.73	0.79	1.8	4	LC..1604	
	62495	12504DJET	1.25	1.25	6.0	1.30	1.73	0.79	2.0	4	LC..1604	
5	62496	CFMR 10005DJET	1.00	1.00	6.0	1.25	1.97	0.98	1.3	5	LC..1605	
	62497	12505DJET	1.25	1.25	6.0	1.30	2.17	0.98	2.0	5	LC..1605	
	62498	CFML 10005DJET	1.00	1.00	6.0	1.25	1.97	0.98	1.3	5	LC..1605	
	62499	12505DJET	1.25	1.25	6.0	1.30	2.17	0.98	2.0	5	LC..1605	
6	62500	CFMR 10006DJET	1.00	1.00	6.0	1.04	2.60	1.18	1.3	6	LC..1606	
	62501	12506DJET	1.25	1.25	6.0	1.30	2.60	1.18	2.0	6	LC..1606	
	62502	CFML 10006DJET	1.00	1.00	6.0	1.04	2.60	1.18	1.3	6	LC..1606	
	62503	12506DJET	1.25	1.25	6.0	1.30	2.60	1.18	2.0	6	LC..1606	

**Max depth of cut for LCGF/LCMF16.. = 0.551 inch

Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Plug	Torque value in/lbs
..03	4SMS795	TCEI0513	JET-P1/8-5MM	53
..04	5SMS795	TCEI0613	JET-P1/8-5MM	71
..05	5SMS795	TCEI0613	JET-P1/8-5MM	71
..06	6SMS795	TCEI0815	JET-P1/8-5MM	89

Please check availability in current price and stock-list

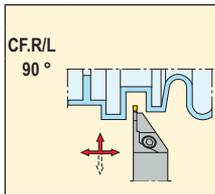
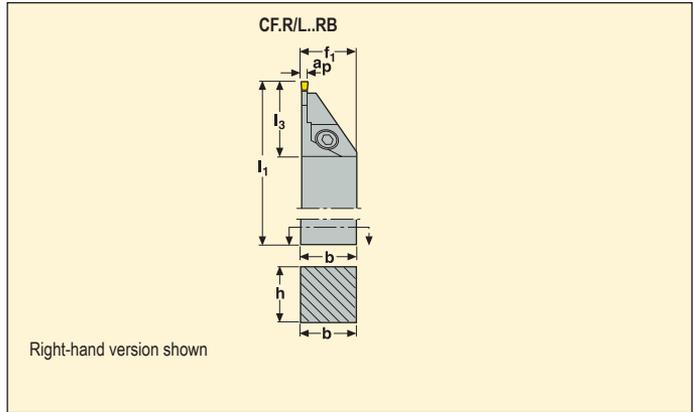
For more information on Jetstream Tooling® and accessories, please see pages 86-89

Swiss style toolholders for inserts LCMF

2 mm inserts



• For insert program, see page 420



	EDP No.	Part No.	Dimensions in inch							lbs	Seat size	
			h	b	l ₁	f ₁	l ₃	D _m *				
2	65684	CFOR 0501902CRB	0.500	0.500	5.0	0.500	0.87	1.00	0.44	2	LC..1902..	
	65691	0631902CRB	0.625	0.625	5.0	0.625	0.87	1.00	0.66	2	LC..1902..	
	65690	CFOL 0501902CRB	0.500	0.500	5.0	0.500	0.87	1.00	0.44	2	LC..1902..	
	65692	0631902CRB	0.625	0.625	5.0	0.625	0.87	1.00	0.66	2	LC..1902..	
2	65693	CFSR 0501902CRB	0.500	0.500	5.0	0.500	0.98	1.30	0.44	2	LC..1902..	
	65702	0631902CRB	0.625	0.625	5.0	0.625	0.98	1.30	0.66	2	LC..1902..	
	65694	CFSL 0501902CRB	0.500	0.500	5.0	0.500	0.98	1.30	0.44	2	LC..1902..	
	65705	0631902CRB	0.625	0.625	5.0	0.625	0.98	1.30	0.66	2	LC..1902..	

*Due to the design, grooving depth is limited, see page 364.

Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
CF.R/L	T15P-7S	L85012-T15P	44

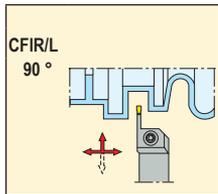
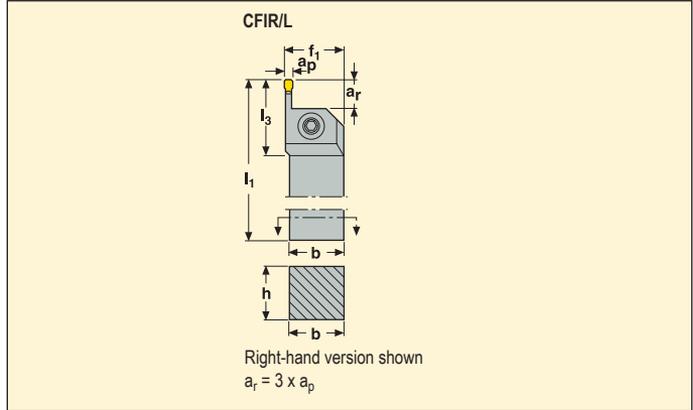
Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR

Standard reach holders



• For insert program, see pages 425-438, 440-441



EDP No.	Part No.	Dimensions in inch								lbs	Seat size	
		h	b	l ₁	f ₁	l ₃	a _r	DCINN3*				
3	02795	CFIR 06303B	0.625	0.625	4.5	0.875	1.14	0.35	–	0.7	3	LC..1603..
	87626	07503B	0.750	0.750	4.5	1.000	1.14	0.35	–	1.3	3	LC..1603..
	87628	10003D	1.000	1.000	6.0	1.250	1.14	0.35	7.68	1.8	3	LC..1603..
	02809	12503D	1.250	1.250	6.0	1.500	1.14	0.35	7.68	2.9	3	LC..1603..
	02800	CFIL 06303B	0.625	0.625	4.5	0.875	1.14	0.35	–	0.7	3	LC..1603..
	87627	07503B	0.750	0.750	4.5	1.000	1.14	0.35	–	1.3	3	LC..1603..
	87629	10003D	1.000	1.000	6.0	1.250	1.14	0.35	7.68	1.8	3	LC..1603..
02811	12503D	1.250	1.250	6.0	1.500	1.14	0.35	7.68	2.9	3	LC..1603..	
4	87630	CFIR 07504B	0.750	0.750	4.5	1.000	1.22	0.47	–	0.9	4	LC..1604..
	87632	10004D	1.000	1.000	6.0	1.250	1.22	0.47	7.68	1.8	4	LC..1604..
	02813	12504D	1.250	1.250	6.0	1.500	1.22	0.47	7.68	2.9	4	LC..1604..
	87631	CFIL 07504B	0.750	0.750	4.5	1.000	1.22	0.47	–	0.9	4	LC..1604..
	87633	10004D	1.000	1.000	6.0	1.250	1.22	0.47	7.68	1.8	4	LC..1604..
	02817	12504D	1.250	1.250	6.0	1.500	1.22	0.47	7.68	2.9	4	LC..1604..

*DCINN3 – minimum bore diameter for internal application, see page 364.

Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
..03	4SMS795	TCEI0513	53
..04	5SMS795	TCEI0613	71

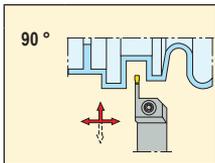
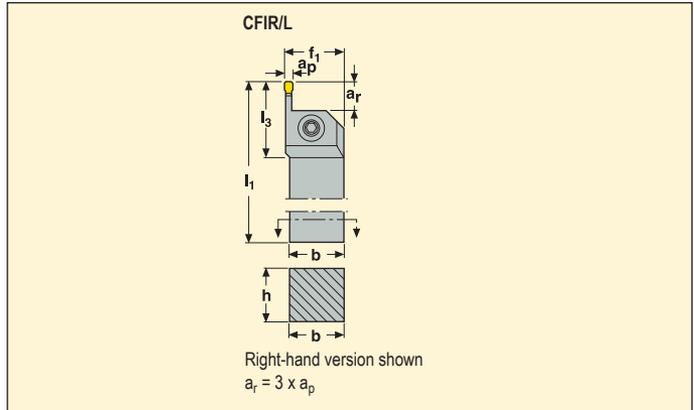
Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR

Standard reach holders



• For insert program, see pages 425-436, 440-441



	EDP No.	Part No.	Dimensions in inch							lbs	Seat size	
			h	b	l ₁	f ₁	l ₃	a _r	DCINN3*			
5	89897	CFIR 07505B	0.750	0.750	4.5	1.000	1.42	0.59	–	0.9	5	LC..1605..
	90975	10005D	1.000	1.000	6.0	1.250	1.30	0.59	7.68	1.8	5	LC..1605..
	02821	12505D	1.250	1.250	6.0	1.500	1.61	0.59	7.68	2.9	5	LC..1605..
	89896	CFIL 07505B	0.750	0.750	4.5	1.000	1.42	0.59	–	0.9	5	LC..1605..
	90974	10005D	1.000	1.000	6.0	1.250	1.30	0.59	7.68	1.8	5	LC..1605..
	02822	12505D	1.250	1.250	6.0	1.500	1.61	0.59	7.68	2.9	5	LC..1605..
6	87634	CFIR 10006D	1.000	1.000	6.0	1.250	1.61	0.71	7.68	1.8	6	LC..1606..
	87636	12506D	1.250	1.250	6.0	1.500	1.61	0.71	7.68	2.6	6	LC..1606..
	87635	CFIL 10006D	1.000	1.000	6.0	1.250	1.61	0.71	7.68	1.8	6	LC..1606..
	87637	12506D	1.250	1.250	6.0	1.500	1.61	0.71	7.68	2.6	6	LC..1606..
8	57717	CFIR 10008D	1.000	1.000	6.0	1.250	2.17	1.00	7.68	1.8	8	LC..3008..
	57719	12508E	1.250	1.250	7.0	1.500	2.17	0.94	7.68	2.9	8	LC..3008..
	57718	CFIL 10008D	1.000	1.000	6.0	1.250	2.17	1.00	7.68	1.8	8	LC..3008..
	57720	12508E	1.250	1.250	7.0	1.500	2.17	0.94	7.68	2.9	8	LC..3008..

*DCINN3 – minimum bore diameter for internal application, see page 364.

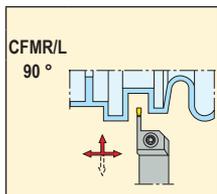
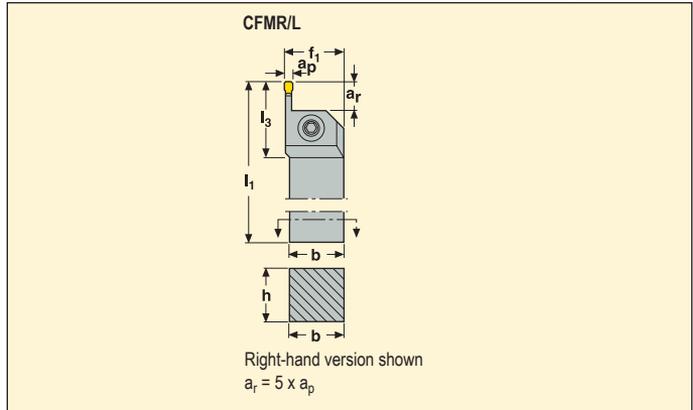
Spare Parts, Parts included in delivery

For holder	Clamp screw 	Clamp key 	Torque value in/lbs
..05	TCEI0613	5SMS795	71
..06	TCEI0815	6SMS795	89
..08	TCEI1020	6SMS795	133

Please check availability in current price and stock-list



• For insert program, see pages 425-438, 440-441



EDP No.	Part No.	Dimensions in inch							lbs	Seat size	Image	
		h	b	l ₁	f ₁	l ₃	a _r **	DCINN3*				
3	02849	CFMR 07503B	0.75	0.75	4.5	1.00	1.34	0.59	–	0.9	3	LC..1603..
	96174	10003D	1.00	1.00	6.0	1.25	1.38	0.59	7.68	1.5	3	LC..1603..
	02852	12503D	1.25	1.25	6.0	1.50	1.38	0.59	7.68	2.2	3	LC..1603..
	59805	15003E	1.50	1.50	7.0	2.00	1.61	0.59	7.68	3.7	3	LC..1603..
	02850	CFML 07503B	0.75	0.75	4.5	1.00	1.34	0.59	–	0.9	3	LC..1603..
	96175	10003D	1.00	1.00	6.0	1.25	1.38	0.59	7.68	1.5	3	LC..1603..
	02863	12503D	1.25	1.25	6.0	1.50	1.38	0.59	7.68	2.2	3	LC..1603..
59806	15003E	1.50	1.50	7.0	2.00	1.61	0.59	7.68	3.7	3	LC..1603..	
4	02918	CFMR 07504B	0.75	0.75	4.5	1.00	1.57	0.79	–	0.9	4	LC..1604..
	96176	10004D	1.00	1.00	6.0	1.25	1.61	0.79	7.68	1.5	4	LC..1604..
	02920	12504D	1.25	1.25	6.0	1.50	1.61	0.79	7.68	2.2	4	LC..1604..
	59807	15004E	1.50	1.50	7.0	2.00	1.97	0.79	7.68	3.7	4	LC..1604..
	02919	CFML 07504B	0.75	0.75	4.5	1.00	1.57	0.79	–	0.9	4	LC..1604..
	96177	10004D	1.00	1.00	6.0	1.25	1.61	0.79	7.68	1.5	4	LC..1604..
	02922	12504D	1.25	1.25	6.0	1.50	1.61	0.79	7.68	2.2	4	LC..1604..
59808	15004E	1.50	1.50	7.0	2.00	1.97	0.79	7.68	3.7	4	LC..1604..	

*DCINN3 – minimum bore diameter for internal application, see page 364.

**Max depth of cut for LCGF/LCMF16.. = 0.550 inch

Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
..03	4SMS795	TCEI0513	53
..04	5SMS795	TCEI0613	71

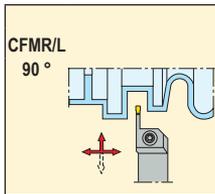
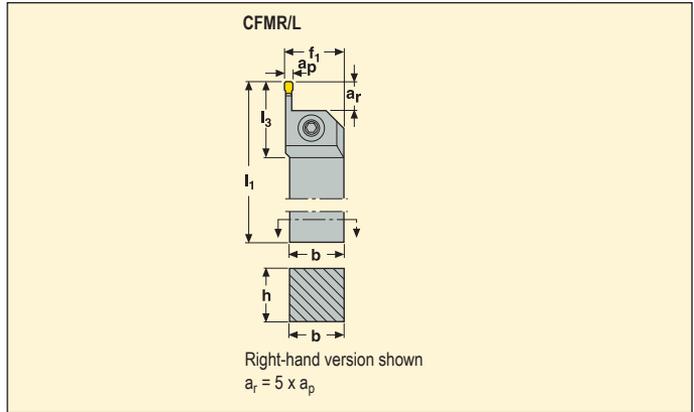
Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR

Long reach holders



• For insert program, see page 425-436, 440-441



	EDP No.	Part No.	Dimensions in inch								lbs	Seat size	
			h	b	l ₁	f ₁	l ₃	a _r **	DCINN3*				
5	96178	CFMR 10005D	1.00	1.00	6.0	1.25	2.01	0.98	7.68	1.5	5	LC..1605..	
	02923	12505D	1.25	1.25	6.0	1.50	1.97	0.98	7.68	2.4	5	LC..1605..	
	59809	15005E	1.50	1.50	7.0	2.00	2.24	0.98	7.68	3.7	5	LC..1605..	
	96179	CFML 10005D	1.00	1.00	6.0	1.25	2.01	0.98	7.68	1.5	5	LC..1605..	
	02924	12505D	1.25	1.25	6.0	1.50	1.97	0.98	7.68	2.4	5	LC..1605..	
	59810	15005E	1.50	1.50	7.0	2.00	2.24	0.98	7.68	3.7	5	LC..1605..	
6	96180	CFMR 10006D	1.00	1.00	6.0	1.25	2.36	1.18	7.68	1.5	6	LC..1606..	
	02970	12506D	1.25	1.25	6.0	1.50	2.36	1.18	7.68	2.4	6	LC..1606..	
	59811	15006E	1.50	1.50	7.0	2.00	2.60	1.18	7.68	4.0	6	LC..1606..	
	96181	CFML 10006D	1.00	1.00	6.0	1.25	2.36	1.18	7.68	1.5	6	LC..1606..	
	02972	12506D	1.25	1.25	6.0	1.50	2.36	1.18	7.68	2.4	6	LC..1606..	
	59812	15006E	1.50	1.50	7.0	2.00	2.60	1.18	7.68	4.0	6	LC..1606..	
8	59847	CFMR 10008D	1.00	1.00	6.0	1.25	2.80	1.57	7.68	1.8	8	LC..3008..	
	59849	12508E	1.25	1.25	7.0	1.50	2.80	1.57	7.68	2.4	8	LC..3008..	
	59813	15008E	1.50	1.50	7.0	2.00	2.80	1.57	7.68	3.7	8	LC..3008..	
	59848	CFML 10008D	1.00	1.00	6.0	1.25	2.80	1.57	7.68	1.8	8	LC..3008..	
	59850	12508E	1.25	1.25	7.0	1.50	2.80	1.57	7.68	2.4	8	LC..3008..	
	59814	15008E	1.50	1.50	7.0	2.00	2.80	1.57	7.68	3.7	8	LC..3008..	

*DCINN3 – minimum bore diameter for internal application, see page 364.

**Max depth of cut for LCMF16.. = 0.550 in, LCMF30.. = 1.100 in.

Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
..05	5SMS795	TCEI0613	71
..06	6SMS795	TCEI0815	89
..08	6SMS795	TCEI1020	133

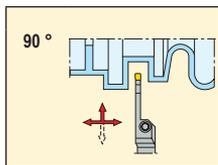
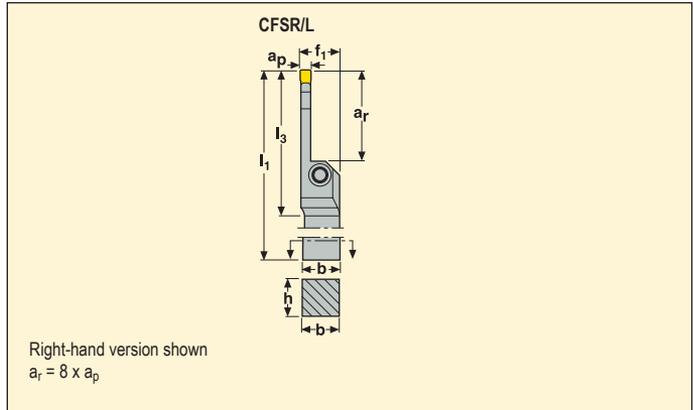
Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR

Long reach holders



• For insert program, see pages 425-438, 440-441



	EDP No.	Part No.	Dimensions in inch							lbs	Seat size	
			h	b	l ₁	f ₁	l ₃	a _r **	DCINN3*			
3	56994	CFSR 10003D	1.00	1.00	6.0	1.25	1.81	0.94	7.68	1.8	3	LC..1603..
	57003	12503D	1.25	1.25	6.0	1.50	1.81	0.94	7.68	2.2	3	LC..1603..
	56990	CFSL 10003D	1.00	1.00	6.0	1.25	1.81	0.94	7.68	2.4	3	LC..1603..
	56999	12503D	1.25	1.25	6.0	1.50	1.81	0.94	7.68	2.4	3	LC..1603..
4	56995	CFSR 10004E	1.00	1.00	7.0	1.25	2.17	1.26	7.68	2.4	4	LC..1604..
	57004	12504E	1.25	1.25	7.0	1.50	2.17	1.26	7.68	2.9	4	LC..1604..
	56991	CFSL 10004E	1.00	1.00	7.0	1.25	2.17	1.26	7.68	2.0	4	LC..1604..
	57000	12504E	1.25	1.25	7.0	1.50	2.17	1.26	7.68	2.9	4	LC..1604..
5	56996	CFSR 10005E	1.00	1.00	7.0	1.25	2.60	1.57	7.68	2.0	5	LC..1605..
	57005	12505E	1.25	1.25	7.0	1.50	2.60	1.57	7.68	2.4	5	LC..1605..
	56992	CFSL 10005E	1.00	1.00	7.0	1.25	2.60	1.57	7.68	2.0	5	LC..1605..
	57001	12505E	1.25	1.25	7.0	1.50	2.60	1.57	7.68	2.9	5	LC..1605..
6	56997	CFSR 10006F	1.00	1.00	8.0	1.25	3.19	1.89	7.68	2.0	6	LC..1606..
	57006	12506F	1.25	1.25	8.0	1.50	3.19	1.89	7.68	2.9	6	LC..1606..
	56993	CFSL 10006F	1.00	1.00	8.0	1.25	3.19	1.89	7.68	2.0	6	LC..1606..
	57002	12506F	1.25	1.25	8.0	1.50	3.19	1.89	7.68	2.9	6	LC..1606..
8	57008	CFSR 12508F	1.25	1.25	8.0	1.50	4.09	2.52	7.68	2.4	8	LC..3008..
	57007	CFSL 12508F	1.25	1.25	8.0	1.50	4.09	2.52	7.68	3.1	8	LC..3008..

*DCINN3 – minimum bore diameter for internal application, see page 364.

**Max depth of cut for LCGF/LCMF16..= 0.550 inch, LCGF/LCMF30..= 1.100 inch

Spare Parts, Parts included in delivery

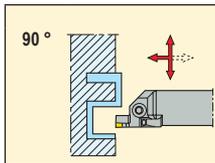
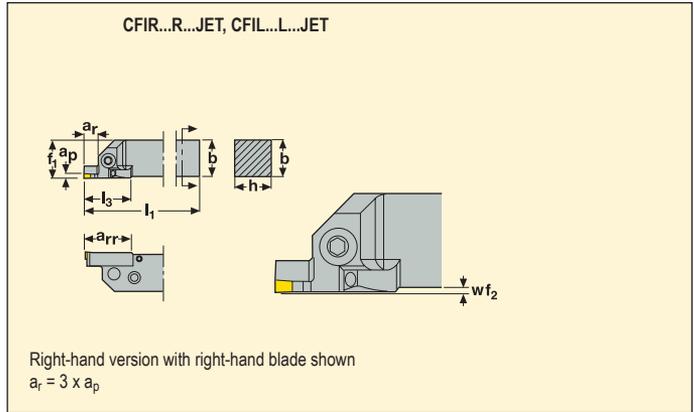
For holder	Clamp key	Clamp screw	Torque value in/lbs
..03	4SMS795	TCEI0513	53
..04	5SMS795	TCEI0613	71
..05	5SMS795	TCEI0613	71
..06	6SMS795	TCEI0815	89
..08	6SMS795	TCEI1020	133

Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 425-438, 440-441

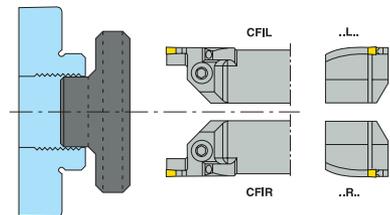


EDP No.	Part No.	Dimensions in inch											lbs		
		INPLM	INPLX	h	b	l ₁	f ₁	wf ₂	l ₃	a _r	a _{rr}				
3	62080	CFIR	10003D-R3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	0.06	1.30	0.35	1.30	1.5	LC..1603..
	57118		10003D-R4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	0.06	1.30	0.35	1.30	1.5	LC..1603..
	57120		10003D-R5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	0.06	1.30	0.35	1.30	1.5	LC..1603..
	57121		10003D-R6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	0.06	1.30	0.35	1.30	1.5	LC..1603..
	62072	CFIL	10003D-L3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	0.06	1.30	0.35	1.30	1.5	LC..1603..
	57099		10003D-L4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	0.06	1.30	0.35	1.30	1.5	LC..1603..
	57100		10003D-L5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	0.06	1.30	0.35	1.30	1.5	LC..1603..
4	57101		10003D-L6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	0.06	1.30	0.35	1.30	1.5	LC..1603..
	62081	CFIR	10004D-R3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	0.06	1.42	0.47	1.42	1.5	LC..1604..
	57122		10004D-R4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	0.06	1.42	0.47	1.42	1.5	LC..1604..
	57123		10004D-R5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	0.06	1.42	0.47	1.42	1.5	LC..1604..
	57124		10004D-R6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	0.06	1.42	0.47	1.42	1.5	LC..1604..
	57125		10004D-R9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	0.06	1.42	0.47	1.42	1.5	LC..1604..
	62074	CFIL	10004D-L3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	0.06	1.42	0.47	1.42	1.5	LC..1604..
	57102		10004D-L4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	0.06	1.42	0.47	1.42	1.5	LC..1604..
	57103		10004D-L5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	0.06	1.42	0.47	1.42	1.5	LC..1604..
	57104		10004D-L6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	0.06	1.42	0.47	1.42	1.5	LC..1604..
57105		10004D-L9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	0.06	1.42	0.47	1.42	1.5	LC..1604..	

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Plug	Torque value in/lbs
CFIR/L...-03	4SMS795	TCEI0513	JET-P1/8-5MM	53
CFIR/L...-04	5SMS795	TCEI0613	JET-P1/8-5MM	71



MDT AXIAL GROOVING SELECTION CALCULATOR

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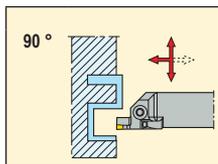
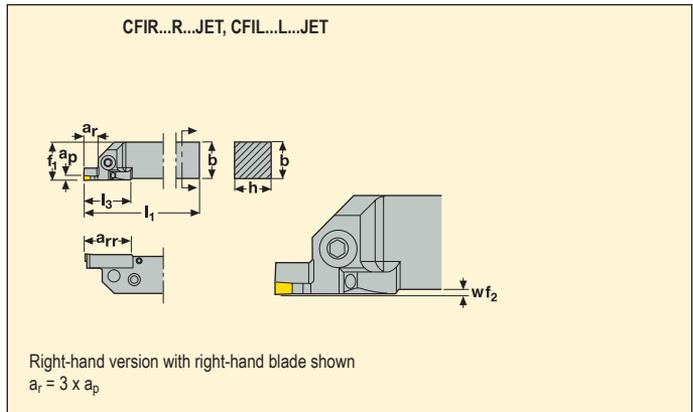
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For more information on Jetstream Tooling® and accessories, please see pages 86-89

Toolholders for inserts LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 425-436, 440-441



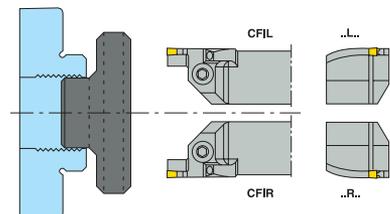
EDP No.	Part No.	Dimensions in inch											lbs	
		INPLM	INPLX	h	b	l ₁	f ₁	wf ₂	l ₃	a _r **	a _{rr}			
5	62090	CFIR 10005D-R3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	0.06	1.57	0.59	1.57	1.8	LC..1605..
	57126	10005D-R4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	0.06	1.57	0.59	1.57	1.8	LC..1605..
	57127	10005D-R5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	0.06	1.57	0.59	1.57	1.8	LC..1605..
	57128	10005D-R6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	0.06	1.57	0.59	1.57	1.8	LC..1605..
	57129	10005D-R9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	0.06	1.57	0.59	1.57	1.8	LC..1605..
	62076	CFIL 10005D-L3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	0.06	1.57	0.59	1.57	1.8	LC..1605..
	57106	10005D-L4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	0.06	1.57	0.59	1.57	1.8	LC..1605..
	57107	10005D-L5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	0.06	1.57	0.59	1.57	1.8	LC..1605..
	57108	10005D-L6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	0.06	1.57	0.59	1.57	1.8	LC..1605..
	57109	10005D-L9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	0.06	1.57	0.59	1.57	1.8	LC..1605..
6	62091	CFIR 10006D-R3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	0.06	1.81	0.71	1.81	1.8	LC..1606..
	57130	10006D-R4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	0.06	1.81	0.71	1.81	1.8	LC..1606..
	57131	10006D-R5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	0.06	1.81	0.71	1.81	1.8	LC..1606..
	57132	10006D-R6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	0.06	1.81	0.71	1.81	1.8	LC..1606..
	57134	10006D-R9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	0.06	1.81	0.71	1.81	1.8	LC..1606..
	62079	CFIL 10006D-L3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	0.06	1.81	0.71	1.81	1.8	LC..1606..
	57110	10006D-L4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	0.06	1.81	0.71	1.81	1.8	LC..1606..
	57111	10006D-L5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	0.06	1.81	0.71	1.81	1.8	LC..1606..
	57112	10006D-L6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	0.06	1.81	0.71	1.81	1.8	LC..1606..
	57113	10006D-L9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	0.06	1.81	0.71	1.81	1.8	LC..1606..

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

**Max depth of cut for LCGF/LCMF16.. = 0.551 inch

Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Plug	Torque value in/lbs
CFIR/L...-05	5SMS795	TCEI0613	JET-P1/8-5MM	71
CFIR/L...-06	6SMS795	TCEI0815	JET-P1/8-5MM	89



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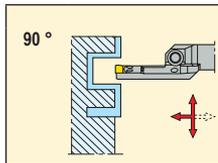
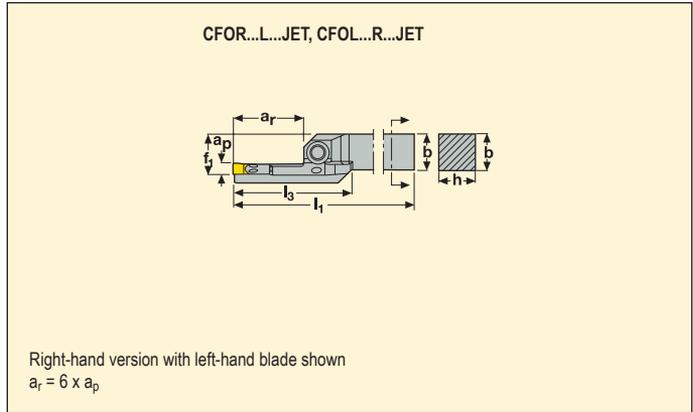
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Toolholders for inserts LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 425-438, 440-441



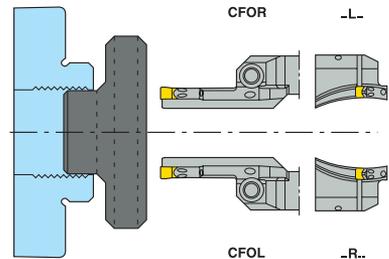
EDP No.	Part No.	Dimensions in inch										lbs	Insert
		INPLM	INPLX	h	b	l ₁	f ₁	l ₃	a _r **				
3	62062	CFOR 10003D-L3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	1.69	0.75	1.8	LC..1603..	
	57027	10003D-L4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	1.69	0.75	1.8	LC..1603..	
	57028	10003D-L5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	1.69	0.75	1.8	LC..1603..	
	57029	10003D-L6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	1.69	0.75	1.8	LC..1603..	
	56985	10003D-L9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	1.69	0.75	1.8	LC..1603..	
	56986	10003D-L19.78.00-JET	7.87	19.69	1.0	1.0	6.0	1.04	1.69	0.75	1.8	LC..1603..	
	62052	CFOL 10003D-R3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	1.69	0.75	1.8	LC..1603..	
	56277	10003D-R4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	1.69	0.75	1.8	LC..1603..	
	57009	10003D-R5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	1.69	0.75	1.8	LC..1603..	
	57010	10003D-R6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	1.69	0.75	1.8	LC..1603..	
	56955	10003D-R9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	1.69	0.75	1.8	LC..1603..	
	56981	10003D-R19.78.00-JET	7.87	19.69	1.0	1.0	6.0	1.04	1.69	0.75	1.8	LC..1603..	
4	62064	CFOR 10004D-L3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	2.01	0.94	1.8	LC..1604..	
	57030	10004D-L4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	2.01	0.94	1.8	LC..1604..	
	57031	10004D-L5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	2.01	0.94	1.8	LC..1604..	
	57033	10004D-L6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	2.01	0.94	1.8	LC..1604..	
	57034	10004D-L9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	2.01	0.94	1.8	LC..1604..	
	56987	10004D-L19.78.00-JET	7.87	19.69	1.0	1.0	6.0	1.04	2.01	0.94	1.8	LC..1604..	
	62055	CFOL 10004D-R3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	2.01	0.94	1.8	LC..1604..	
	57011	10004D-R4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	2.01	0.94	1.8	LC..1604..	
	57012	10004D-R5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	2.01	0.94	1.8	LC..1604..	
	57013	10004D-R6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	2.01	0.94	1.8	LC..1604..	
	57014	10004D-R9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	2.01	0.94	1.8	LC..1604..	
	56982	10004D-R19.78.00-JET	7.87	19.69	1.0	1.0	6.0	1.04	2.01	0.94	1.8	LC..1604..	

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

**Max depth of cut for LCGF/LCMF16.. = 0.551 inch

Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Plug	Torque value in/lbs
CFOR/L...-03	4SMS795	TCEI0513	JET-P1/8-5MM	53
CFOR/L...-04	5SMS795	TCEI0613	JET-P1/8-5MM	71



MDT AXIAL GROOVING SELECTION CALCULATOR

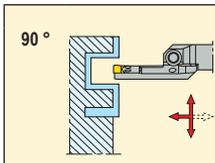
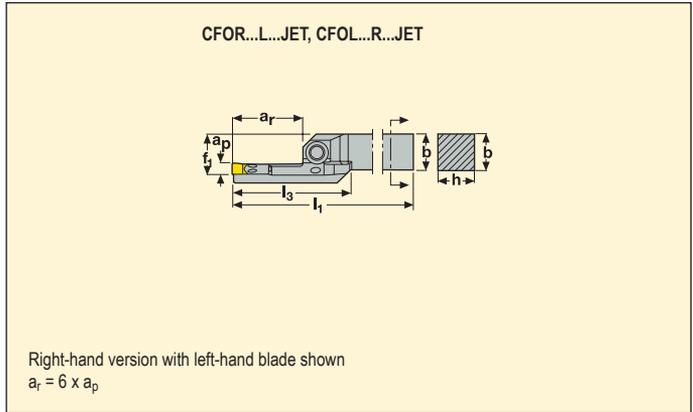
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Toolholders for inserts LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 425-436, 440-441



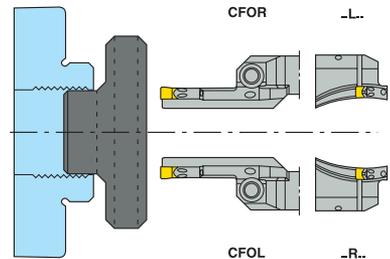
EDP No.	Part No.	Dimensions in inch										lbs	
		INPLM	INPLX	h	b	l ₁	f ₁	l ₃	a _r **				
5	62070	CFOR 10005D-L3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	2.30	1.12	1.8	LC..1605..	
	57035	10005D-L4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	2.30	1.12	1.8	LC..1605..	
	57036	10005D-L5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	2.30	1.12	1.8	LC..1605..	
	57037	10005D-L6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	2.30	1.12	1.8	LC..1605..	
	57038	10005D-L9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	2.30	1.12	1.8	LC..1605..	
	56988	10005D-L19.78.00-JET	7.87	19.69	1.0	1.0	6.0	1.04	2.30	1.12	1.8	LC..1605..	
	62057	CFOL 10005D-R3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	2.30	1.12	1.8	LC..1605..	
	57015	10005D-R4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	2.30	1.12	1.8	LC..1605..	
	57016	10005D-R5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	2.30	1.12	1.8	LC..1605..	
	57017	10005D-R6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	2.30	1.12	1.8	LC..1605..	
	57018	10005D-R9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	2.30	1.12	1.8	LC..1605..	
	56983	10005D-R19.78.00-JET	7.87	19.69	1.0	1.0	6.0	1.04	2.30	1.12	1.8	LC..1605..	
6	62071	CFOR 10006D-L3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	2.81	1.50	1.8	LC..1606..	
	57039	10006D-L4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	2.81	1.50	1.8	LC..1606..	
	57040	10006D-L5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	2.81	1.50	1.8	LC..1606..	
	57041	10006D-L6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	2.81	1.50	1.8	LC..1606..	
	57042	10006D-L9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	2.81	1.50	1.8	LC..1606..	
	56989	10006D-L19.78.00-JET	7.87	19.69	1.0	1.0	6.0	1.04	2.81	1.50	1.8	LC..1606..	
	62060	CFOL 10006D-R3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	2.81	1.50	1.8	LC..1606..	
	57019	10006D-R4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	2.81	1.50	1.8	LC..1606..	
	57020	10006D-R5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	2.81	1.50	1.8	LC..1606..	
	57021	10006D-R6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	2.81	1.50	1.8	LC..1606..	
	57022	10006D-R9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	2.81	1.50	1.8	LC..1606..	
	56984	10006D-R19.78.00-JET	7.87	19.69	1.0	1.0	6.0	1.04	2.81	1.50	1.8	LC..1606..	

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

**Max depth of cut for LCGF/LCMF16.. = 0.551 inch

Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Plug	Torque value in/lbs
CFOR/L..-05	5SMS795	TCEI0613	JET-P1/8-5MM	71
CFOR/L..-06	6SMS795	TCEI0815	JET-P1/8-5MM	89



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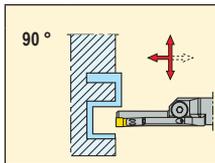
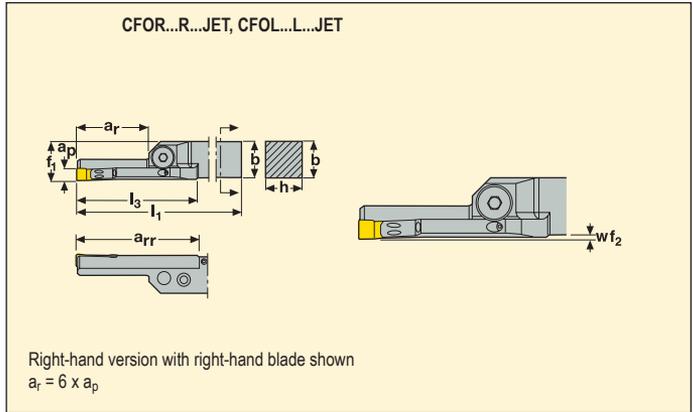
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Toolholders for inserts LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 425-438, 440-441

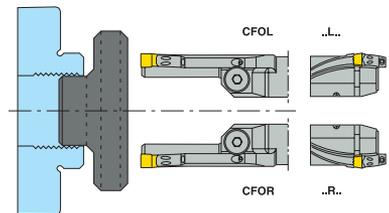


EDP No.	Part No.	Dimensions in inch											lbs	Image
		INPLM	INPLX	h	b	l ₁	f ₁	wf ₂	l ₃	a _r	a _{rr}			
3	62101	CFOR 10003D-R3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	0.06	1.69	0.71	1.69	1.8	LC..1603..
	57071	10003D-R4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	0.06	1.69	0.71	1.69	1.8	LC..1603..
	57072	10003D-R5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	0.06	1.69	0.71	1.69	1.8	LC..1603..
	57073	10003D-R6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	0.06	1.69	0.71	1.69	1.8	LC..1603..
	57074	10003D-R9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	0.06	1.69	0.71	1.69	1.8	LC..1603..
	57075	10003D-R19.78.00-JET	7.87	19.69	1.0	1.0	6.0	1.04	0.06	1.69	0.71	1.69	1.8	LC..1603..
	62094	CFOL 10003D-L3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	0.06	1.69	0.71	1.69	1.8	LC..1603..
	57047	10003D-L4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	0.06	1.69	0.71	1.69	1.8	LC..1603..
	57048	10003D-L5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	0.06	1.69	0.71	1.69	1.8	LC..1603..
	57049	10003D-L6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	0.06	1.69	0.71	1.69	1.8	LC..1603..
	57050	10003D-L9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	0.06	1.69	0.71	1.69	1.8	LC..1603..
57051	10003D-L19.78.00-JET	7.87	19.69	1.0	1.0	6.0	1.04	0.06	1.69	0.71	1.69	1.8	LC..1603..	
4	62102	CFOR 10004D-R3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	0.06	2.01	0.94	2.01	1.8	LC..1604..
	57076	10004D-R4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	0.06	2.01	0.94	2.01	1.8	LC..1604..
	57077	10004D-R5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	0.06	2.01	0.94	2.01	1.8	LC..1604..
	57078	10004D-R6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	0.06	2.01	0.94	2.01	1.8	LC..1604..
	57079	10004D-R9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	0.06	2.01	0.94	2.01	1.8	LC..1604..
	57080	10004D-R19.78.00-JET	7.87	19.69	1.0	1.0	6.0	1.04	0.06	2.01	0.94	2.01	1.8	LC..1604..
	62095	CFOL 10004D-L3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	0.06	2.01	0.94	2.01	1.8	LC..1604..
	57052	10004D-L4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	0.06	2.01	0.94	2.01	1.8	LC..1604..
	57053	10004D-L5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	0.06	2.01	0.94	2.01	1.8	LC..1604..
	57054	10004D-L6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	0.06	2.01	0.94	2.01	1.8	LC..1604..
	57055	10004D-L9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	0.06	2.01	0.94	2.01	1.8	LC..1604..
57056	10004D-L19.78.00-JET	7.87	19.69	1.0	1.0	6.0	1.04	0.06	2.01	0.94	2.01	1.8	LC..1604..	

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Plug	Torque value in/lbs
CFOR/L...-03	4SMS795	TCEI0513	JET-P1/8-5MM	53
CFOR/L...-04	5SMS795	TCEI0613	JET-P1/8-5MM	71



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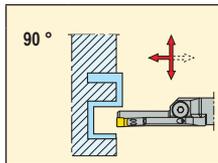
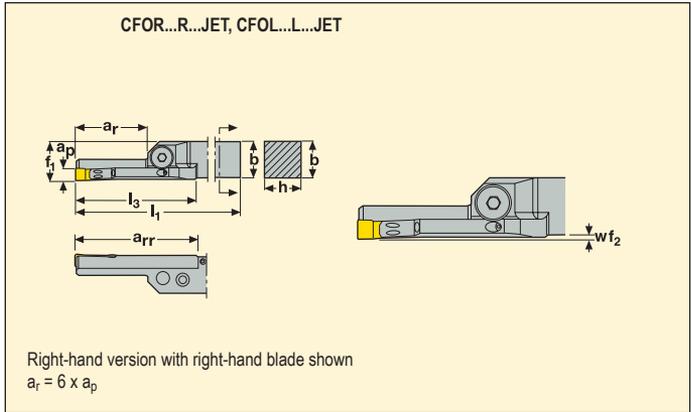
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Toolholders for inserts LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 425-436, 440-441

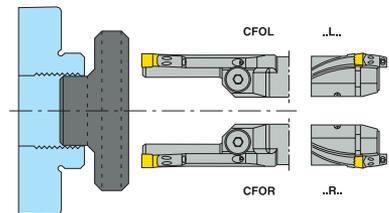


EDP No.	Part No.	Dimensions in inch											lbs		
		INPLM	INPLX	h	b	l ₁	f ₁	wf ₂	l ₃	a _r	a _{rr}				
5	62105	CFOR 10005D-R3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	0.06	2.28	1.18	2.28	1.8	LC..1605..	
	57081	10005D-R4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	0.06	2.28	1.18	2.28	1.8	LC..1605..	
	57082	10005D-R5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	0.06	2.28	1.18	2.28	1.8	LC..1605..	
	57087	10005D-R6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	0.06	2.28	1.18	2.28	1.8	LC..1605..	
	57088	10005D-R9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	0.06	2.28	1.18	2.28	1.8	LC..1605..	
	57089	10005D-R19.78.00-JET	7.87	19.69	1.0	1.0	6.0	1.04	0.06	2.28	1.18	2.28	1.8	LC..1605..	
	62098	CFOL 10005D-L3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	0.06	2.28	1.18	2.28	1.8	LC..1605..	
	57057	10005D-L4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	0.06	2.28	1.18	2.28	1.8	LC..1605..	
	57058	10005D-L5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	0.06	2.28	1.18	2.28	1.8	LC..1605..	
	57059	10005D-L6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	0.06	2.28	1.18	2.28	1.8	LC..1605..	
	57060	10005D-L9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	0.06	2.28	1.18	2.28	1.8	LC..1605..	
	57061	10005D-L19.78.00-JET	7.87	19.69	1.0	1.0	6.0	1.04	0.06	2.28	1.18	2.28	1.8	LC..1605..	
	6	62107	CFOR 10006D-R3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	0.06	2.76	1.42	2.76	1.8	LC..1606..
		57090	10006D-R4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	0.06	2.76	1.42	2.76	1.8	LC..1606..
57091		10006D-R5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	0.06	2.76	1.42	2.76	1.8	LC..1606..	
57092		10006D-R6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	0.06	2.76	1.42	2.76	1.8	LC..1606..	
57093		10006D-R9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	0.06	2.76	1.42	2.76	1.8	LC..1606..	
57094		10006D-R19.78.00-JET	7.87	19.69	1.0	1.0	6.0	1.04	0.06	2.76	1.42	2.76	1.8	LC..1606..	
62100		CFOL 10006D-L3.102.17-JET	2.17	3.15	1.0	1.0	6.0	1.04	0.06	2.76	1.42	2.76	1.8	LC..1606..	
57062		10006D-L4.002.75-JET	2.76	3.94	1.0	1.0	6.0	1.04	0.06	2.76	1.42	2.76	1.8	LC..1606..	
57063		10006D-L5.003.50-JET	3.54	5.12	1.0	1.0	6.0	1.04	0.06	2.76	1.42	2.76	1.8	LC..1606..	
57064		10006D-L6.704.30-JET	4.33	6.69	1.0	1.0	6.0	1.04	0.06	2.76	1.42	2.76	1.8	LC..1606..	
57065	10006D-L9.005.50-JET	5.51	9.06	1.0	1.0	6.0	1.04	0.06	2.76	1.42	2.76	1.8	LC..1606..		
57066	10006D-L19.78.00-JET	7.87	19.69	1.0	1.0	6.0	1.04	0.06	2.76	1.42	2.76	1.8	LC..1606..		

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Plug	Torque value in/lbs
CFOR/L...-05	5SMS795	TCEI0613	JET-P1/8-5MM	71
CFOR/L...-06	6SMS795	TCEI0815	JET-P1/8-5MM	88



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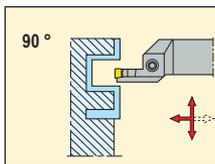
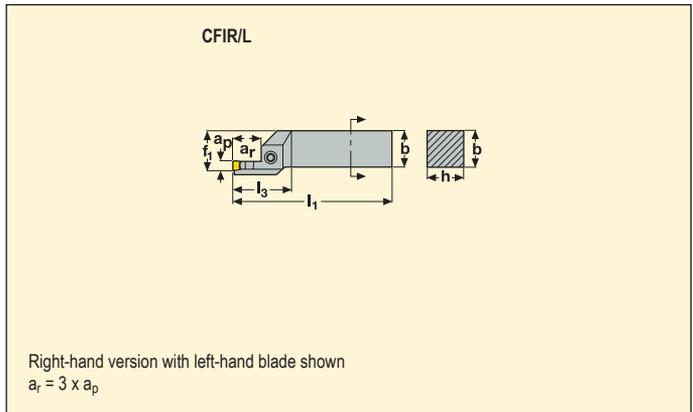
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Toolholders for inserts LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 425-436, 440-441

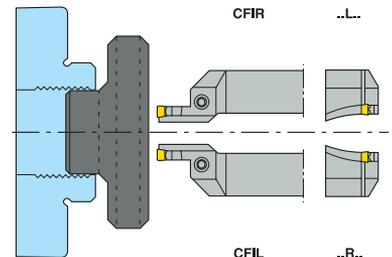


EDP No.	Part No.	Dimensions in inch										lbs	Seat size	Image
		INPLM	INPLX	h	b	f ₁	l ₁	l ₃	a _r					
5	57796	CFIR10005D-L4.002.75	2.76	3.94	1.00	1.00	1.25	6.0	1.42	0.59	1.8	5	LC..1605..	
	02828	CFIR10005D-L5.003.50	3.54	5.00	1.00	1.00	1.25	6.0	1.42	0.59	1.8	5	LC..1605..	
	02835	CFIR10005D-L6.704.30	4.33	6.69	1.00	1.00	1.25	6.0	1.42	0.59	1.8	5	LC..1605..	
	02838	CFIR10005D-L9.005.50	5.51	8.98	1.00	1.00	1.25	6.0	1.42	0.59	1.8	5	LC..1605..	
	57797	CFIL10005D-R4.002.75	2.76	3.94	1.00	1.00	1.25	6.0	1.42	0.59	1.8	5	LC..1605..	
	02831	CFIL10005D-R5.003.50	3.54	5.00	1.00	1.00	1.25	6.0	1.42	0.59	1.8	5	LC..1605..	
	02836	CFIL10005D-R6.704.30	4.33	6.69	1.00	1.00	1.25	6.0	1.42	0.59	1.8	5	LC..1605..	
02839	CFIL10005D-R9.005.50	5.51	8.98	1.00	1.00	1.25	6.0	1.42	0.59	1.8	5	LC..1605..		
6	59845	CFIR10006D-L4.002.75	2.76	3.94	1.00	1.00	1.25	6.0	1.69	0.71	1.8	6	LC..1606..	
	87795	CFIR10006D-L5.003.50	3.54	5.00	1.00	1.00	1.25	6.0	1.69	0.71	1.8	6	LC..1606..	
	87799	CFIR10006D-L6.704.30	4.33	6.69	1.00	1.00	1.25	6.0	1.69	0.71	1.8	6	LC..1606..	
	92656	CFIR10006D-L9.005.50	5.51	8.98	1.00	1.00	1.25	6.0	1.69	0.71	1.8	6	LC..1606..	
	59846	CFIL10006D-R4.002.75	2.76	3.94	1.00	1.00	1.25	6.0	1.69	0.71	1.8	6	LC..1606..	
	87796	CFIL10006D-R5.003.50	3.54	5.00	1.00	1.00	1.25	6.0	1.69	0.71	1.8	6	LC..1606..	
	92653	CFIL10006D-R6.704.30	4.33	6.69	1.00	1.00	1.25	6.0	1.69	0.71	1.8	6	LC..1606..	
92657	CFIL10006D-R9.005.50	5.51	8.98	1.00	1.00	1.25	6.0	1.69	0.71	1.8	6	LC..1606..		

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
..05	5SMS795	TCEI0613	71
..06	6SMS795	TCEI0815	89



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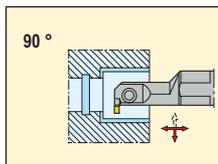
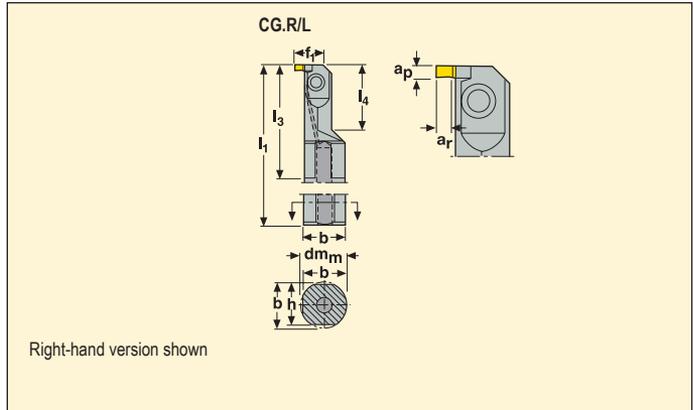
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Toolholders for inserts LCGA, LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 421-424, 439-439



	EDP No.	Part No.	Dimensions in inch										lbs	Seat size	
			dm _m	h	b	l ₁	l ₃	l ₄	f ₁	a _r	DCINN ⁺				
3	61858	A10-CGER1303	0.62	0.59	0.61	7.0	1.62	0.98	0.40	0.12	0.63	0.7	3	LC..1303..	
	61859	A10-CGEL1303	0.62	0.59	0.61	7.0	1.62	0.98	0.40	0.12	0.63	0.7	3	LC..1303..	
3	61863	A12-CGFR1303	0.75	0.67	0.71	8.0	2.01	1.18	0.57	0.22	0.79	0.9	3	LC..1303..	
	61865	A12-CGFL1303	0.75	0.67	0.71	8.0	2.01	1.18	0.57	0.22	0.79	0.9	3	LC..1303..	
3	61868	A16-CGHR1303	1.00	0.92	0.96	10.0	2.60	1.57	0.75	0.29	0.99	1.5	3	LC..1303..	
	61869	A16-CGHL1303	1.00	0.92	0.96	10.0	2.60	1.57	0.75	0.29	0.99	1.5	3	LC..1303..	
3	61870	A20-CGJR1303	1.25	1.17	1.21	12.0	3.09	1.97	1.00	0.41	1.26	3.5	3	LC..1303..	
	61871	A20-CGJL1303	1.25	1.17	1.21	12.0	3.09	1.97	1.00	0.41	1.26	3.5	3	LC..1303..	
4	61866	A12-CGFR1304	0.75	0.67	0.71	8.0	2.01	1.18	0.57	0.22	0.79	1.1	4	LC..1304..	
	61867	A12-CGFL1304	0.75	0.67	0.71	8.0	2.01	1.18	0.57	0.22	0.79	1.1	4	LC..1304..	
4	55598	A16-CGFR1304	1.00	0.92	0.96	10.0	2.60	1.57	0.75	0.29	0.99	1.8	4	LC..1304..	
	55604	A16-CGFL1304	1.00	0.92	0.96	10.0	2.60	1.57	0.75	0.29	0.99	1.8	4	LC..1304..	
4	61873	A20-CGHR1304	1.25	1.17	1.21	12.0	3.09	1.97	1.00	0.41	1.26	3.5	4	LC..1304..	
	61875	A20-CGHL1304	1.25	1.17	1.21	12.0	3.09	1.97	1.00	0.41	1.26	3.5	4	LC..1304..	

*DCINN – minimum bore diameter, see page 364.

Spare Parts, Parts included in delivery

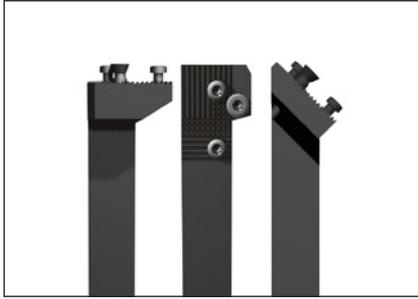
For holder	Clamp key 	Clamp screw 	Torque value in/lbs
A10-..	T15P-7	L85011-T15P	44
A12-..	T15P-7	L85011-T15P	44
A16-..	T15P-7	L85011-T15P	44
A20-..	T15P-7	L85011-T15P	44

Accessories, to be ordered separately

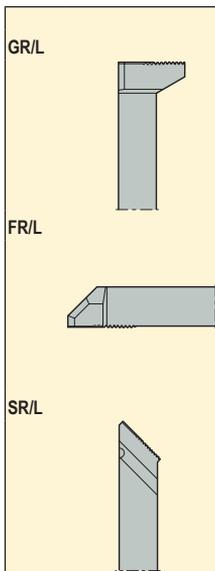
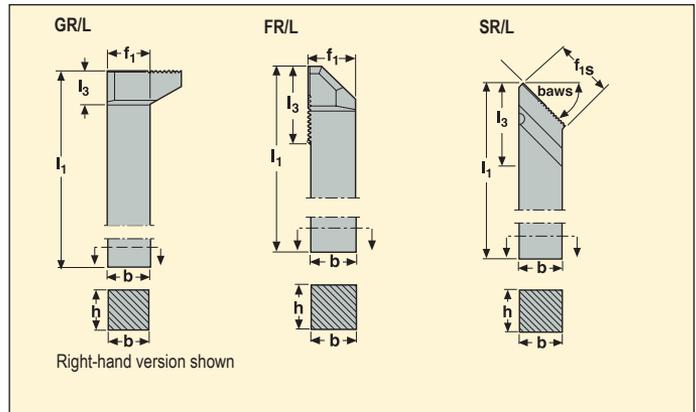
For holder	Coolant adapter
A10-..	SEAL16
A12-..	SEAL20
A16-..	SEAL25
A20-..	SEAL32

Please check availability in current price and stock-list

External toolholders



- For blade program, see pages 413-417
- How to assemble, see pages 361-363



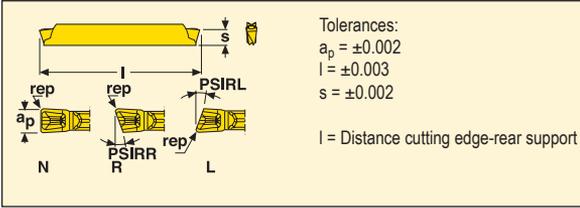
EDP No.	Part No.	Dimensions in inch						baws°	lbs
		h	b	f ₁	f _{1s}	l ₁	l ₃		
51869	GR075B-V21	0.75	0.75	0.75	–	4.5	0.63	0	0.9
51907	GR100D-V21	1.00	1.00	1.00	–	6.0	0.63	0	2.0
51927	GR125D-V21	1.25	1.25	1.25	–	6.0	0.63	0	2.6
51879	GL075B-V21	0.75	0.75	0.75	–	4.5	0.63	0	0.9
51909	GL100D-V21	1.00	1.00	1.00	–	6.0	0.63	0	2.0
52403	GL125D-V21	1.25	1.25	1.25	–	6.0	0.63	0	2.6
52447	FR100D-V21	1.00	1.00	1.04	–	6.0	1.33	90	1.5
52454	FL100D-V21	1.00	1.00	1.04	–	6.0	1.33	90	1.5
56024	SR075B-V21	0.75	0.75	–	1.65	4.5	1.65	45	0.9
56025	SR100D-V21	1.00	1.00	–	2.00	6.0	2.00	45	1.8
56026	SR125D-V21	1.25	1.25	–	2.36	6.0	2.36	45	2.6
56010	SL075B-V21	0.75	0.75	–	1.65	4.5	1.65	45	0.9
56011	SL100D-V21	1.00	1.00	–	2.00	6.0	2.00	45	1.8
56017	SL125D-V21	1.25	1.25	–	2.36	6.0	2.36	45	2.6

Spare Parts, Parts included in delivery

For holder	Key	Mounting screw	Insert locking screw	Insert locking screw torque value in/lbs
..-V21	T20P-7L	F85015-T20P	C46017-T20P	53

Please check availability in current price and stock-list

LCMF

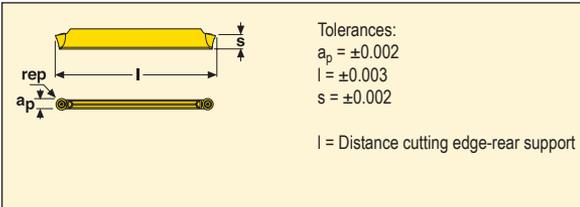


Size	Dimensions in inch			
	a_p	l	s	rep
1902	0.079	0.728	0.112	0.008
2802	0.079	1.102	0.112	0.008



Inserts	Part No.	PSIRR°	PSIRL°	Grades (EDP No.)		
				Coated		
				CP500	CP600	TGH1050
LCMF-FT	LCMF 190202-0200-FT	-	-	65807	65791	
	190202-0200-FTR6	6	-		65797	
	190202-0200-FTL6	-	6		65793	
LCMF-FT	LCMF 280202-0200-FT	-	-	65815	65800	78310
	280202-0200-FTR6	6	-		65802	
	280202-0200-FTL6	-	6		65801	

LCMF



Size	Dimensions in inch			
	a_p	l	s	rep
1902	0.079	0.728	0.112	0.039
2802	0.079	1.102	0.112	0.039



Inserts	Part No.	Grades (EDP No.)	
		Coated	
		CP500	TGK1500
LCMF-MP	LCMF 1902M0-0200-MP	65814	77573
	LCMF 2802M0-0200-MP	65816	77574

Please check availability in current price and stock-list.

LCGA

Tolerances:
 $a_p = \pm 0.0001$
 $l = \pm 0.0001$
 $s = \pm 0.002$

l = Distance cutting edge-rear support

Size	Dimensions in inch						
	a_p	l	s	RETR	RETL	rep	a_r
-0115	0.045	0.486	0.157	0.012	0.012	-	0.055
-0135	0.053	0.486	0.157	0.012	0.012	-	0.063
-0165	0.065	0.486	0.157	0.012	0.012	0.004	0.075
-0190	0.075	0.486	0.157	0.012	0.012	0.004	0.085
-0215	0.085	0.486	0.157	0.012	0.012	0.006	0.094
-0265	0.104	0.486	0.157	0.008	0.008	0.008	0.114
01-0300	0.118	0.486	0.157	-	-	0.004	-
02-0300	0.118	0.486	0.157	-	-	0.008	-
-0400	0.157	0.486	0.157	-	-	0.008	-

LCGA-FG

Standard
 ** =
 DIN 471
 DIN 472
 SMS 1581
 SMS 1582

Inserts	For circlip	Part No.	Note	Standard	Grades (EDP No.)	
					Coated	
					CP500	
LCGA-FG	1.00	LCGA 130300-0115-FG	*	**	34019	
	1.20	130300-0135-FG	*	**	34025	
	1.50	130301-0165-FG	*	**	34026	
	1.75	130301-0190-FG	*	**	34027	
	2.00	130301-0215-FG	*	**	34028	
	2.50	130302-0265-FG		**	34029	
	-	130301-0300-FG		**	06806	
	-	130302-0300-FG		**	38467	
	-	LCGA 130402-0400-FG		**	38468	
	-					

Please check availability in current price and stock-list.

*Toolholders have to be modified

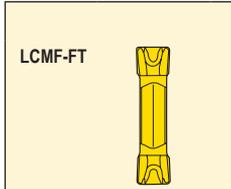
LCMF

Tolerances:
 $a_p = \pm 0.002$
 $l = \pm 0.003$
 $s = \pm 0.002$
 $s = \pm 0.003$

Size:
 16
 30

l = Distance cutting edge-rear support

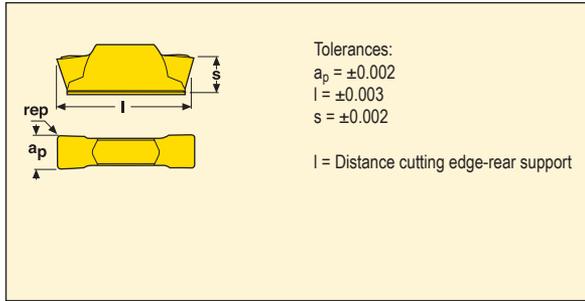
Size	Inch version	Dimensions in inch			
		a_p	l	s	rep
1603		0.118	0.626	0.177	0.008-0.016
1604		0.157	0.626	0.177	0.008-0.031
1605		0.197	0.626	0.177	0.016-0.031
1605		0.118	0.626	0.177	0.016-0.031
1606		0.236	0.626	0.177	0.016-0.039
3008-08		0.315	1.144	0.219	0.016-0.047
3008-10		0.394	1.150	0.219	0.031-0.047
1603	■	0.125	0.626	0.177	0.008
1605	■	0.187	0.626	0.177	0.020
1606	■	0.250	0.626	0.177	0.020



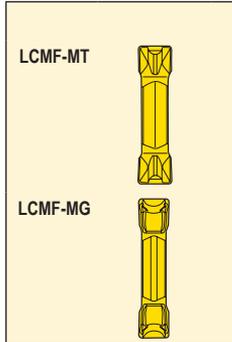
Inserts	Part No.	Grades (EDP No.)						
		Coated					Uncoated	
		CP200	CP500	TGH1050	TGK1500	TGP25	883	890
LCMF-FT mm-version	LCMF 160302-0300-FT	33224	91088			39920		
	160304-0300-FT		16829	78276		39913		
	LCMF 160402-0400-FT		16478			40700		
	160404-0400-FT	33228	16728	78298		39906		
	160408-0400-FT		91089			39922		
	LCMF 160504-0500-FT	33229	96701	78299		40698		
	160508-0500-FT		91249			40706		
	LCMF 160604-0600-FT		91351			40705		
	160608-0600-FT	33234	16818			40702		34660
	160610-0600-FT		16827			40731		
	LCMF 300804-0800-FT		16664			40721	51355	
	300808-0800-FT		16138		77561	40697	05632	
	300808-1000-FT		88034			40739		
	300812-0800-FT		16342		77686	39925	06923	
	300812-1000-FT		88037				65666	
LCMF-FT inch-version	LCMF 160302-0318-FT	32944	17905					
	LCMF 160505-0476-FT	33230	18338					
	LCMF 160605-0635-FT	33233	71644					

Please check availability in current price and stock-list.

LCMF



Size	Inch version	Dimensions in inch			
		a_p	l	s	rep
1603		0.118	0.626	0.177	0.008-0.016
1604		0.157	0.626	0.177	0.016-0.031
1605		0.197	0.626	0.177	0.016-0.031
1606		0.236	0.626	0.177	0.016-0.039
1603	■	0.125	0.626	0.177	0.008
1605	■	0.187	0.626	0.177	0.020
1606	■	0.250	0.626	0.177	0.020



Inserts	Part No.	Grades (EDP No.)			
		Coated			Uncoated
		CP500	TGK1500	TGP25	883
LCMF-MT mm-version	LCMF 160302-0300-MT	91355		39924	
	160304-0300-MT	16834	77654	39914	35181
	LCMF 160404-0400-MT	16729	77617	39907	
	160408-0400-MT	91241	77652	39926	35182
	LCMF 160504-0500-MT	77897	77633	39916	
	160508-0500-MT	91263	77676	39921	45720
	LCMF 160604-0600-MT	72762	77677	40699	
	160608-0600-MT	16822	77636	39918	35186
	160610-0600-MT	71648		40703	
	LCMF-MT inch-version	LCMF 160302-A125-MT	18263		
	LCMF 160505-A187-MT	18388			
	LCMF 160605-A250-MT	71645			61816
LCMF-MG	LCMF 160304-0300-MG	77896		40713	
	LCMF 160404-0400-MG	72764		40708	
	LCMF 160504-0500-MG	86117		40710	
	LCMF 160608-0600-MG	86118		40712	

Please check availability in current price and stock-list.

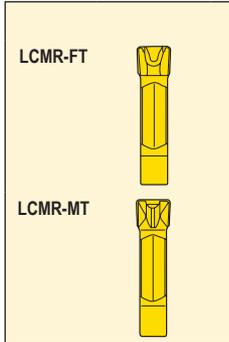
LCMR

Tolerances:
 $a_p = \pm 0.002$
 $l = \pm 0.003$
 $s = \pm 0.002$
 $s = \pm 0.003$

Size:
 16
 30

l = Distance cutting edge-rear support

Size	Dimensions in inch			
	a_p	l	s	rep
1603	0.118	0.626	0.177	0.016
1604	0.157	0.626	0.177	0.008-0.031
1605	0.197	0.626	0.177	0.016-0.031
1606	0.236	0.626	0.177	0.031
3008-08	0.315	1.144	0.219	0.031-0.047
3008-10	0.394	1.150	0.219	0.031-0.047



Inserts	Part No.	Grades (EDP No.)			
		Coated			Uncoated
		CP200	CP500	TGP25	883
LCMR-FT	LCMR 160304-0300-FT	33238	16841	40734	
	LCMR 160402-0400-FT		16479		
	LCMR 160404-0400-FT	33239	16756	40729	
	LCMR 160504-0500-FT	33240	91061	40717	
	LCMR 160608-0600-FT	33242	16824	40720	
	LCMR 300808-0800-FT		16401	51120	34658
	LCMR 300808-1000-FT		88038		
	LCMR 300812-0800-FT		16402		
	LCMR 300812-1000-FT		88924		
	LCMR 300812-1000-FT				
LCMR-MT	LCMR 160304-0300-MT		17237	40725	34651
	LCMR 160404-0400-MT		16806	40711	
	LCMR 160408-0400-MT				45653
	LCMR 160504-0500-MT		91069	40716	
	LCMR 160508-0500-MT				51353
	LCMR 160608-0600-MT		16825	39927	34655

Please check availability in current price and stock-list.

LCGN – Partial profile 55°

Tolerances:
 $l = \pm 0.0001$
 $rep = \pm 0.0001$

Size	Dimensions in inch		
	l	s	rep
-A55	0.654	0.177	0.003
-G55	0.654	0.177	0.007

LCGN...-55

Inserts	Pitch mm	TPI	Part No.	Grades (EDP No.)	
				Coated	
				CP500	
LCGN...-55	0.50-1.50	48-16	LCGN 1603-A55	34045	
	1.75-3.00	14-8	1603-G55	34046	

LCGN – Partial profile 60°

Tolerances:
 $l = \pm 0.0001$
 $rep = \pm 0.0001$

Size	Dimensions in inch		
	l	s	rep
-A60	0.654	0.177	0.003
-G60	0.654	0.177	0.007

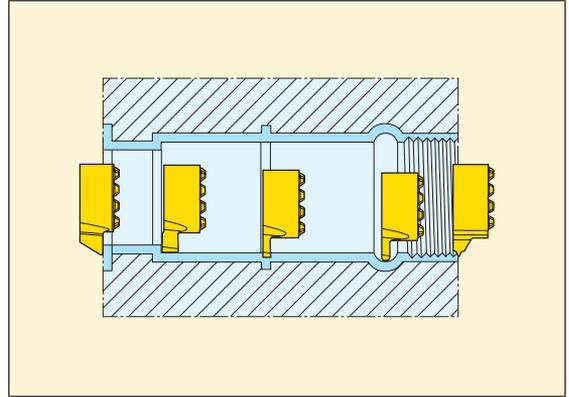
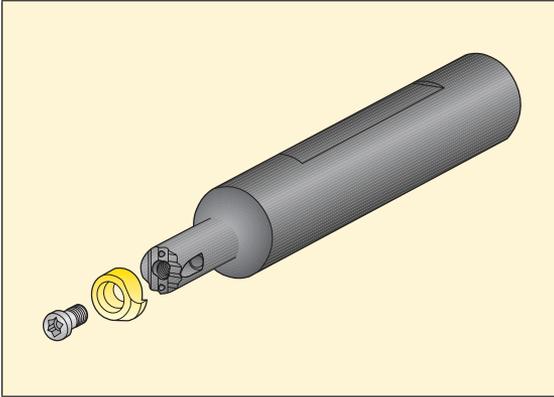
LCGN...-60

Inserts	Pitch mm	TPI	Part No.	Grades (EDP No.)	
				Coated	
				CP500	
LCGN...-60	0.50-1.50	48-16	LCGN 1603-A60	34042	
	1.75-3.00	14-8	1603-G60	34044	

Please check availability in current price and stock-list.

General information

Seco Mini-Shaft consists of holders and inserts for internal turning, grooving, precision grooving, profiling, backfacing and threading. To be used in holes as small as $\varnothing 0.315$ inch (Mini Shaft 08) or $\varnothing 0.433$ inch (Mini Shaft 11).



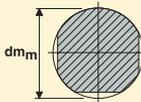
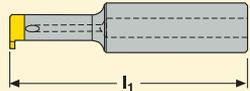
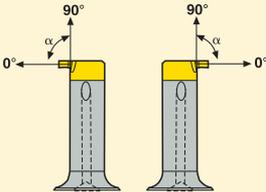
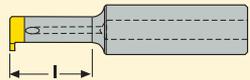
Seco Mini-Shaft features a new type of joint, with a double serration, which makes the connection both stable and secure. It also gives very good repeatability (± 0.0008 inch).

All toolholders are used for both R and L -handed inserts, and have through coolant possibility.

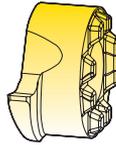
Toolholders



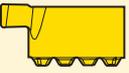
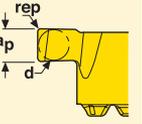
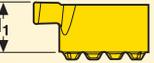
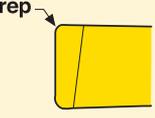
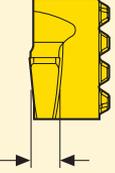
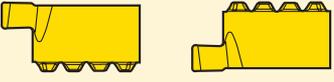
A	10	G	-	S	G	X	N	08	-	078	-	R
1	2	3		4	5	6	7	8		9		10

<p>1. Toolholder type</p> <p>A = Steel with coolant passage E = Solid carbide with brazed cutting head and coolant passage</p>	<p>2. Shank diameter</p>  <p>dm_m</p> <p>04 = 0.250 inch 05 = 0.312 inch 10 = 0.625 inch</p>	<p>3. Tool length</p>  <p>l_1</p> <p>G = 3.58 inch H = 3.98 inch</p>
<p>4. Insert clamping</p> <p>S = Screw</p>	<p>5. Toolholder setting angle</p>  <p>90° 0° α</p> <p>G = 0° F = 90°</p>	<p>6. Max grooving/turning depth</p> <p>X = Special</p>
<p>7. Version</p> <p>N = Neutral version</p>	<p>8. Insert size</p>  <p>DCINN</p> <p>08 = Insert size</p>	<p>9. Extension length</p>  <p>l</p> <p>078 = 0.730 inch 098 = 0.890 inch</p>
<p>10. Internal designation</p> <p>R = Round shank with no flats</p>		

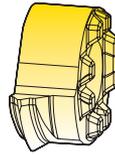
Turning and grooving inserts



L	C	E	X	08	04	02	- 0150	R	- FG
1	2	3	4	5	6	7	8	9	10

<p>1. Shape</p>  <p>L = Insert shape</p>	<p>2. Front clearance angle</p>  <p>C = 7°</p>											
<p>3. Tolerances</p>  <table border="1"> <thead> <tr> <th rowspan="2">Tolerance class</th> <th colspan="3">Tolerance ± inch</th> </tr> <tr> <th>ap</th> <th>d</th> <th>rep</th> </tr> </thead> <tbody> <tr> <td>E</td> <td>0.001</td> <td>0.001</td> <td>0.001</td> </tr> </tbody> </table>	Tolerance class	Tolerance ± inch			ap	d	rep	E	0.001	0.001	0.001	<p>4. Inserts type</p> <p>X = Special</p>
Tolerance class		Tolerance ± inch										
	ap	d	rep									
E	0.001	0.001	0.001									
<p>5. Insert size</p>  <p>DCINN</p>	<p>6. Thickness</p>  <p>I₁</p> <p>04 = 0.155 in 05 = 0.191 in</p>	<p>7. Corner radius</p>  <p>rep</p>										
<p>8. Insert width</p>  <p>0075 = 0.029 in 0080 = 0.031 in 0090 = 0.035 in etc.</p>	<p>9. Version</p>  <p>R L</p>	<p>10. Inserts type code</p> <p>FG = For locking R = Full radius etc</p>										

Threading inserts



L	C	E	X	11	05	-	1.5	ISO	R
1	2	3	4	5	6		7	8	9

1. Shape

L = Insert shape

2. Front clearance angle

C = 7°

3. Tolerances

	Tolerance class	Tolerance ± inch		
		ap	d	rep
E	0.001	0.001	0.001	

4. Inserts type

X = Special

5. Insert size

DCINN

6. Thickness

t₁

04 = 0.155 in
05 = 0.191 in

7. Pitch

Full profile: (mm)	1.0	1.5	2.0	2.5	3.0
	A = 0.50 - 0.75	48-36 TPI			
Part profile: (mm)	AG = 0.75 - 1.25	36-20 TPI			
	G = 1.25 - 1.75	20-16 TPI			
Full profile: (TPI)	14	16	19	20	24

etc

8. Insert width

Thread =

- 60 = V profile 60°
- ISO = ISO, metric
- W = Whitworth, BSW
- TR = Trapezoidal, DIN 103
- UN = Am. UN
- NPT = Am. NPT

9. Version

R L

Cutting speed, v_c (sf/min)

In this section a recommended cutting speed is indicated under specified conditions.

Use the tables beginning on page 770 to classify the workpiece material into a SMG.

The cutting data tables provide a start value for feed rate (f) and cutting speed (v_c) for the selected cutting width (a_p).

The cutting data tables are based on grooving with full cutting width.

The recommended cutting speeds in the tables are calculated for 15 minutes tool life with use of external flood coolant.

In order to increase the accuracy towards the actual cutting conditions and requirements of the applications the recommendation is to use My Pages – Suggest on www.secotools.com

v_c = cutting speed (sf/min)

a_p = insert width (inch)

f = feed rate (in/rev)

SMG = Seco Material Group

SMG		$a_p = 0.028-0.118$	
		f	v_c
P1	CP500	0.00085	500
P2	CP500	0.00085	485
P3	CP500	0.00080	425
P4	CP500	0.00080	370
P5	CP500	0.00080	355
P6	CP500	0.00080	400
P7	CP500	0.00080	375
P8	CP500	0.00080	355
P11	CP500	0.00080	365
M1	CP500	0.00085	290
M2	CP500	0.00080	215
M3	CP500	0.00065	135
M4	CP500	0.00055	90
M5	CP500	0.00055	75
K1	CP500	0.00085	530
K2	CP500	0.00080	435
K3	CP500	0.00080	365
K4	CP500	0.00080	350
K5	CP500	0.00070	210
K6	CP500	0.00080	340
K7	CP500	0.00070	270
N11	CP500	0.0011	310
S1	CP500	0.00055	60
S2	CP500	0.00055	50
S3	CP500	0.00050	43



Collet chucks

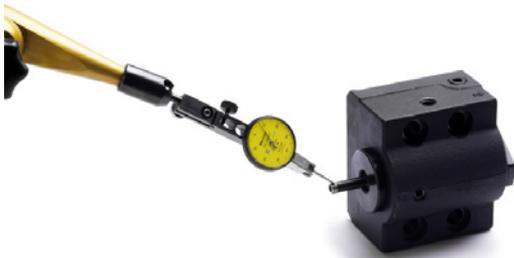
Fully cylindrical shanks (-R) can also be mounted in collet chucks.

- Use collets or reduction sleeves for hydraulic chucks
- Round shanks combined with collets can prevent vibrations
- Shanks with flats may not be used in collets – as there is a risk of damaging the collet



Set-up device for cylindrical shanks

To obtain an accurate centering of the cutting edge use a set-up device.



Accessories

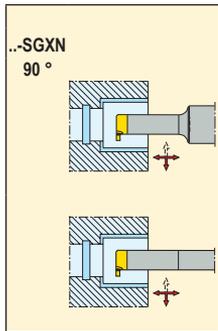
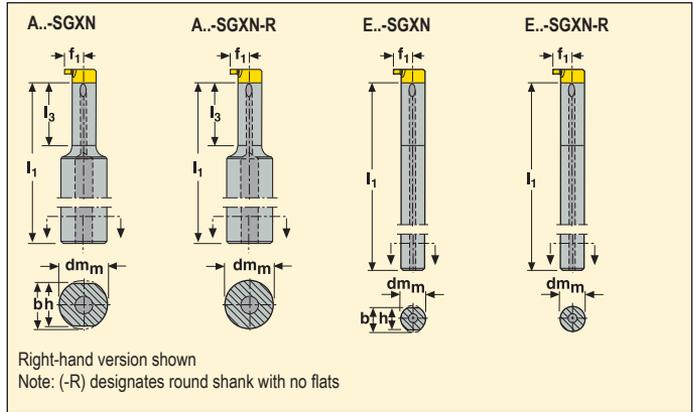
Setting gauge	Part No.	EDP No.
	LCEX 0804-N	81904
	1105-N	57405

Stock standard please check availability in current price and stock-list

Toolholders for inserts LCEX



- For insert program, see pages 449-456
- E04 and E05, carbide shanks



EDP No.	Part No.	Dimensions in inch									lbs	Insert
		dm	h	b	l ₁	f ₁	l ₃	DCINN				
8	19604	A10G-SGXN08-078	0.625	0.586	0.605	3.41	0.188	0.650	0.315	0.21	LCEX08..	
	03174	A10G-SGXN08-078-R	0.625	-	-	3.41	0.188	0.650	0.315	0.21	LCEX08..	
11	19607	A10H-SGXN11-098	0.625	0.586	0.605	3.78	0.264	0.827	0.433	0.26	LCEX11..	
	03178	A10H-SGXN11-098-R	0.625	-	-	3.78	0.264	0.827	0.433	0.35	LCEX11..	
8	19606	E04G-SGXN08	0.250	0.217	0.233	3.41	0.189	-	0.315	0.07	LCEX08..	
	24787	E04G-SGXN08-R	0.250	-	-	3.41	0.189	-	0.315	0.11	LCEX08..	
11	19608	E05H-SGXN11	0.312	0.287	0.300	3.78	0.264	-	0.433	0.12	LCEX11..	
	24788	E05H-SGXN11-R	0.312	-	-	3.78	0.264	-	0.433	0.14	LCEX11..	

Spare Parts, Parts included in delivery

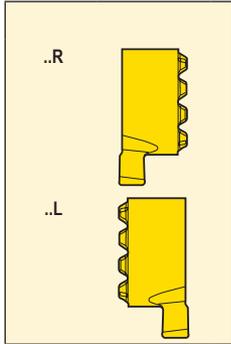
For holder	Insert key	Insert screw
A10G-..	T08P-2	C02506-T08P
A10H-..	T10P-2	C03509-T10P
E04G-..	T08P-2	C02506-T08P
E05H-..	T10P-2	C03509-T10P

Please check availability in current price and stock-list

Turning

Tolerances:
 $a_p = \pm 0.0008$
 $f_1 = \pm 0.0004$
 $l_1 = \pm 0.0008$
 $rep = \pm 0.0008$

Size	Dimensions in inch	
	l_2	f_1
0804	0.306	0.188
1105	0.421	0.264

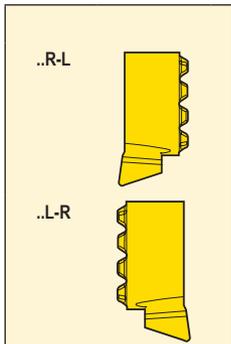


Inserts	Dimensions in inch				Part No.	Grades (EDP No.)	
	a_p	a_r	l_1	rep		Coated	
						CP500	
LCEX	0.079	0.067	0.130	0.004	LCEX 080401-0200R	21051	
	0.079	0.067	0.130	0.004	080401-0200L	21042	
	0.059	0.067	0.130	0.008	LCEX 080402-0150R	00143	
	0.059	0.067	0.130	0.008	080402-0150L	03887	
	0.079	0.102	0.157	0.004	LCEX 110501-0200R	21043	
	0.079	0.102	0.157	0.004	110501-0200L	21044	
	0.059	0.102	0.157	0.008	LCEX 110502-0150R	00185	
	0.059	0.102	0.157	0.008	110502-0150L	00187	

Profiling

Tolerances:
 $f_1 = \pm 0.0004$
 $l_1 = \pm 0.0008$
 $rep = \pm 0.0008$

Size	Dimensions in inch	
	l_2	f_1
0804	0.306	0.188
1105	0.421	0.264



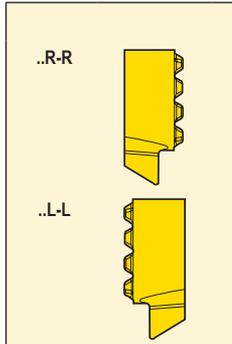
Inserts	Dimensions in inch				Part No.	Grades (EDP No.)	
	l_1	rep	PSIRR°	PSIRL°		Coated	
						CP500	
LCEX	0.140	0.008	18	0	LCEX 080402-0250R-L18	03888	
	0.140	0.008	0	18	080402-0250L-R18	00146	
	0.136	0.008	47	0	LCEX 080402-0250R-L47	00148	
	0.136	0.008	0	47	080402-0250L-R47	00149	
	0.167	0.008	18	0	LCEX 110502-0270R-L18	00188	
	0.167	0.008	0	18	110502-0270L-R18	00189	
	0.163	0.008	47	0	LCEX 110502-0250R-L47	00190	
	0.163	0.008	0	47	110502-0250L-R47	00191	

Please check availability in current price and stock-list

Back facing

Tolerances:
 $f_1 = \pm 0.0004$
 $l_1 = \pm 0.0008$
 $rep = \pm 0.0008$

Size	Dimensions in inch	
	l_2	f_1
0804	0.306	0.188
1105	0.421	0.264

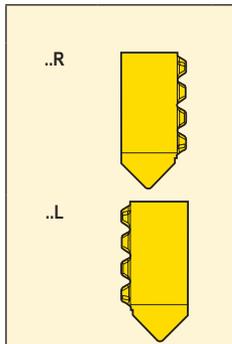


Inserts	Dimensions in inch				Part No.	Grades (EDP No.)	
	l_1	rep	PSIRR°	PSIRL°		Coated	
						CP500	
LCEX	0.030	0.008	0	30	LCEX 080402-0250R-R30	00150	
	0.030	0.008	30	0		080402-0250L-L30	00151
	0.049	0.008	0	30	LCEX 110502-0270R-R30	00192	
	0.049	0.008	30	0		110502-0270L-L30	00193

Chamfering

Tolerances:
 $f_1 = \pm 0.0004$
 $l_1 = \pm 0.002$
 $rep = \pm 0.0008$

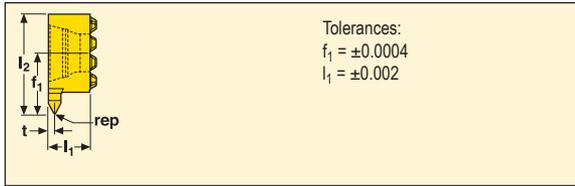
Size	Dimensions in inch	
	l_2	f_1
0804	0.306	0.188
1105	0.421	0.264



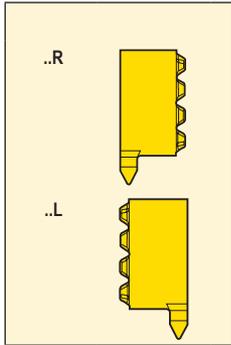
Inserts	Dimensions in inch				Part No.	Grades (EDP No.)	
	l_1	rep	PSIRR°	PSIRL°		Coated	
						CP500	
LCEX	0.067	0.008	45	45	LCEX 080402-0310R-N45	00152	
	0.067	0.008	45	45		080402-0310L-N45	00153
	0.087	0.008	45	45	LCEX 110502-0350R-N45	00194	
	0.087	0.008	45	45		110502-0350L-N45	00195

Please check availability in current price and stock-list

Threading – Partial Profile 60°

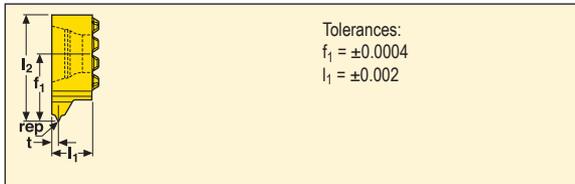


Size	Dimensions in inch		
	f_1	l_1	l_2
0804	0.188	0.130	0.306
1105	0.264	0.157	0.421

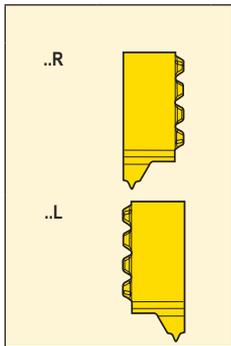


Inserts	Pitch		Dimensions in mm		Part No.	Grades (EDP No.)	
	mm	TPI	t	rep		Coated	CP500
LCEX	0.50-0.75	48-36	0.019	0.001	LCEX 0804-A60R		00176
	0.50-0.75	48-36	0.019	0.001	0804-A60L		00178
	0.75-1.25	36-20	0.029	0.003	0804-AG60R		00179
	0.75-1.25	36-20	0.029	0.003	0804-AG60L		00180
	1.25-1.75	20-16	0.039	0.005	0804-G60R		00181
	1.25-1.75	20-16	0.039	0.005	0804-G60L		00182
LCEX	0.50-0.75	48-36	0.019	0.001	LCEX 1105-A60R		00230
	0.50-0.75	48-36	0.019	0.001	1105-A60L		00068
	0.75-1.25	36-20	0.029	0.003	1105-AG60R		00098
	0.75-1.25	36-20	0.029	0.003	1105-AG60L		00231
	1.25-1.75	20-16	0.039	0.005	1105-G60R		00232
	1.25-1.75	20-16	0.039	0.005	1105-G60L		00233

Threading – ISO Metric



Size	Dimensions in inch		
	f_1	l_1	l_2
1105	0.264	0.157	0.421



Inserts	Pitch		Dimensions in inch		Part No.	Grades (EDP No.)	
	mm	TPI	t	rep		Coated	CP500
LCEX	1.00	–	0.024	0.003	LCEX 1105-1.0ISOR		00238
	1.00	–	0.024	0.003	1105-1.0ISOL		00240
	1.50	–	0.031	0.005	1105-1.5ISOR		00245
	1.50	–	0.031	0.005	1105-1.5ISOL		00246
	2.00	–	0.043	0.007	1105-2.0ISOR		00247
	2.00	–	0.043	0.007	1105-2.0ISOL		00248
	2.50	–	0.053	0.007	1105-2.5ISOR		18791
	2.50	–	0.053	0.007	1105-2.5ISOL		18793
	3.00	–	0.063	0.008	1105-3.0ISOR		19556
	3.00	–	0.063	0.008	1105-3.0ISOL		19558

Please check availability in current price and stock-list

Toolholders



C	E	R		150	6	-	16	Q	-	HD
1	2	3	4	5	6		7	8		9

1. Insert clamping

S

Screw

C

Clamp

2. External/Internal

E = External
N = Internal

3. Cutting direction

L

R

X = Special

4. Shank definition

00 = Boring bars
= Square shanks

5. Square shank height/width and bar diameter

For square shank tools height and width in inches.
For boring bars bar diameter in inches.

075 = 0.75
100 = 1.00
125 = 1.25
etc.

6. Tool length

3 = 3 inches
4 = 4 inches
5 = 5 inches
6 = 6 inches

7. Cutting edge length

If the cutting edge length consists of only one digit, the designation should start with a 0.

Example:

Cutting edge length = 16.5 mm (0.650")
Symbol = 16
Cutting edge length = 9.525 mm (0.375")
Symbol = 09

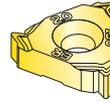
8. Other information

A = Steel with coolant passage
Q = Qualified
CQ = For mounting upside down

9. Other information

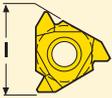
HD = Heavy duty

Inserts



16	E	R	1.5	ISO	-	A1
1	2	3	4	5		6

1. Cutting edge length



If the cutting edge length consists of only one digit, the designation should start with a 0.

Example:

Cutting edge length	= 16.5 mm (0.650")
Symbol	= 16
Cutting edge length	= 9.525 mm (0.375")
Symbol	= 09

2. External/Internal

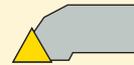
E = External
N = Internal

3. Cutting direction

L



R



X = Special

4. Pitch

Full profile mm: (mm)	0.50	1.25	3.00	6.00	
	0.70	1.50	4.00	8.00	
	0.75	1.75	4.50	10.0	
	0.80	2.00	5.00	12.0	
	1.00	2.50	5.50	14.0	
Full profile: (TPI)	48	18	11	6.0	2.5
	40	16	10	5.0	2.0
	32	14	9	4.5	
	24	13	8	4.0	
	20	12	7	3.0	
Part profile:	A	= 0.50-1.50 mm		48-16 TPI	
	AG	= 0.50-3.00 mm		48-8 TPI	
	G	= 1.75-3.00 mm		14-8 TPI	
	N	= 3.50-5.00 mm		7-5 TPI	
	K	= 5.50-10.00 mm		4.5-2.5 TPI	

5. Thread

Thread =

60	= V profile, 60°
55	= V profile, 55°
ISO	= ISO, Metric
UN	= Am. UN
UNJ	= Am. Aerospace
MJ	= Metr. Aerospace
W	= Whitworth, BSW
BSPT	= Whitworth, Taper
NPT	= Am. NPT
NPTF	= Am. NPTF (Dryseal)
RD	= Round, DIN405
TR	= Trapezoidal, DIN103
ACME	= Am. ACME-G
STACME	= Am. Stub-ACME
API 384	= API V 038R 1:4
API 386	= API V 038R 1:6
API 404	= API V 040 1:4
API 504	= API V 050 1:4
API 506	= API V 050 1:6
API RD	= API Round Casing
BUT 2.5	= Buttress, 1°47'
BUT 2.6	= Buttress, 2°23'
VAM	= VAM Vallourec

6. Number of teeth per cutting edge/Type of chipbreaker

2M = 2 teeth	A = Universal
3M = 3 teeth	A1 = Chipbreaker designation
TT = TWIN THREADER	A2 = Chipbreaker designation

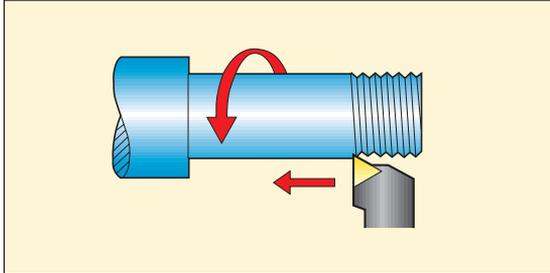
Threading Wizard™

In order to simplify the selection of tools and cutting parameters Seco introduced the Threading Wizard software, which eliminates complicated programming and calculations. The Wizard selects the optimum holder and insert, identifies the best operating parameters and then downloads the information to the CNC machine. The infeed series generated are based on a good control of the OD/ID tolerance for the selected profile. The insert nose radius is relatively small and can be damaged if it is overloaded. The Wizard is free and downloadable at <http://www.secotools.com/customerzoneus>

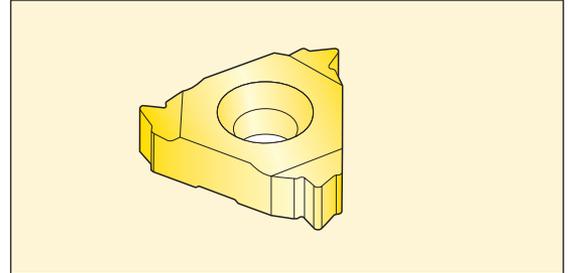
If not using the Wizard, use the selection process below to choose a suitable tool, insert, cutting data and production method.



1. Selection of production method, page 460



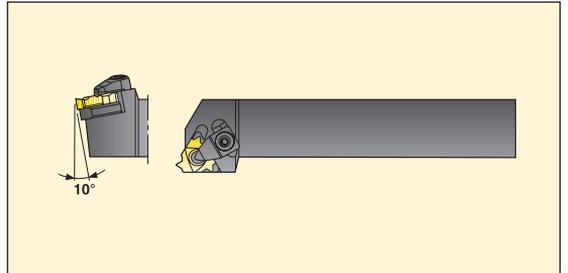
2. Selection of insert type, page 461



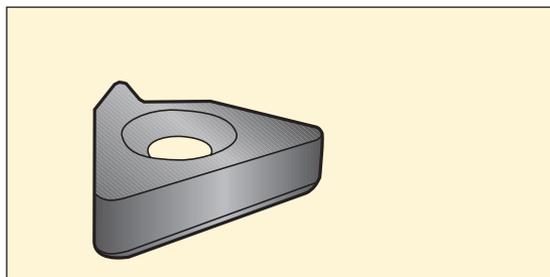
3. Selection of grade, pages 462-463

	ISO											
	P				M				K			
	P01 P10	P20 P30	P40 P50	M10	M20 M30	M40	K01	K10 K20	K30	K40		
CP200	○	○	○	○	○	○	○	○	○	○		
CP300	○	○	○	○	○	○	○	○	○	○		
CP500	○	○	○	○	○	○	○	○	○	○		
HIS												

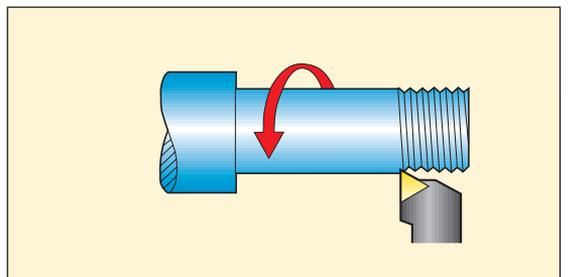
4. Selection of toolholder, page 464



5. Selection of insert shim (anvil), page 465-466



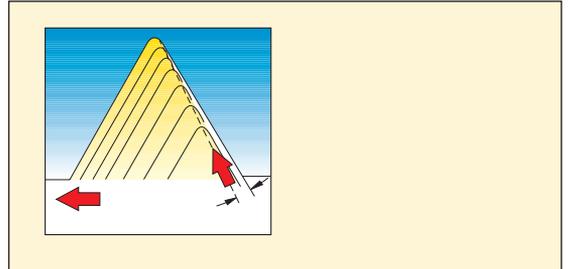
6. Selection of cutting speed, page 467



7. Selection of number of passes and infeed depths, page 468-472

Lead (mm)	0.8	1.5	2.0	4.0	4.5	5.5	3.0	2.5	2.0	1.75	1.5	1.25	1.0	0.75	0.50
Sp. (mm)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Passes	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
2	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
3	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
4	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
5	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
6	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
7	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
8	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
9	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
10	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
11	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007
12	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
13	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
14	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
15	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
16	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
17	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

8. Selection of infeed method, page 473



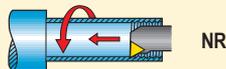
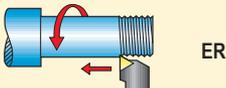
The choice of production method is influenced by e.g.

- Workpiece
- External or internal thread
- Right or left hand thread
- Machine
- Right or left hand tool

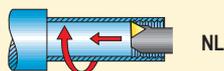
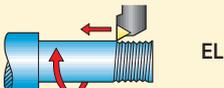
Threading towards the chuck

- Benefit:**
- Best stability
 - Originally fitted insert shims can be used for most operations
- Note:**
- Chip build-up may occur during internal threading, particularly if there is little space between the threading bar and bore of the hole

Right-hand thread – Right-hand tool



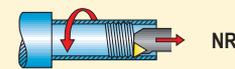
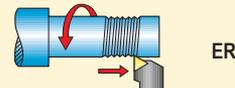
Left-hand thread – Left-hand tool



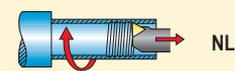
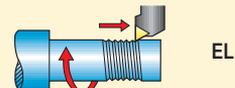
Threading away from the chuck*

- Benefit:**
- Chip flow is correctly directed during internal threading
- Note:**
- Secure clamping of the insert and mounting of the toolholder are necessary
- Internal threading:**
- Use only CNR/L toolholders

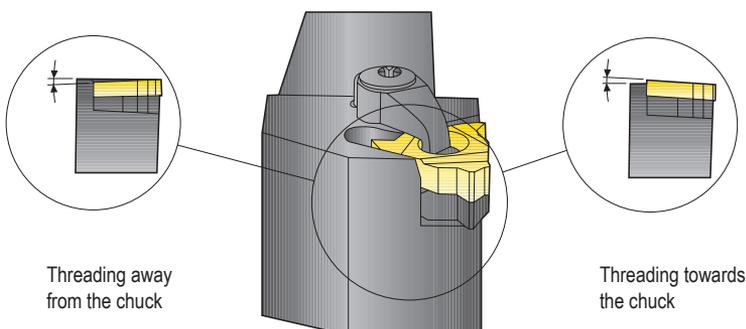
Left-hand thread – Right-hand tool



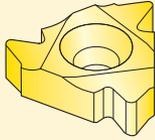
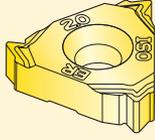
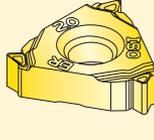
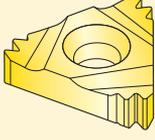
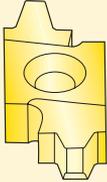
Right-hand thread – Left-hand tool



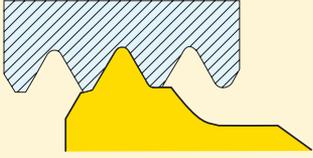
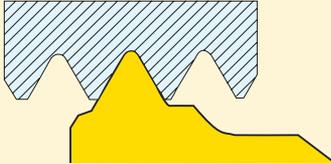
*Notice that the insert shim must be exchanged when threading away from the chuck.



For single tooth inserts choose a full profile or partial profile design

<p>Single-tooth insert (Type S) A or Original</p>  <p>First choice, can be used for applications in a variety of materials. Low cutting forces.</p>	<p>Single-tooth insert (Type S) A1 chipbreaker</p>  <p>First choice for general applications in steel.</p>	<p>Single-tooth insert (Type S) A2 chipbreaker</p>  <p>First choice for general applications in stainless steel.</p>
<p>Multi-tooth insert (Type M)</p>  <p>First choice for mass production, since fewer passes are necessary. Only for radial infeed. 2M = 2 teeth version 3M = 3 teeth version</p>	<p>Multi-tooth insert (TWIN THREADER, TT)</p>  <p>Lower cutting forces than M type. Shorter undercut length than M type. Only for radial infeed. Use insert shim for 2M.</p>	<p>K insert (Type K)</p>  <p>First choice for large/coarse threads.</p>

For single tooth inserts choose a full profile or partial profile design

<p>Full profile</p>  <p>By topping the thread, the workpiece need not be pre-machined to the exact diameter and may be a little oversized. The threading operation is simplified since only one tool is needed for the entire thread (no subsequent deburring is needed).</p>	<p>Partial profile</p>  <p>Covers a wide range of thread pitches, which simplifies stock-keeping. Requires a correct workpiece diameter prior to threading. The nose radius of the insert is sized to suit the smallest profile within the pitch range of the insert.</p>
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Nomenclature and formulae

Revolutions per minute

$$n = \frac{3.82 \times v_c}{D} \quad (\text{rev/min})$$

Cutting speed

$$v_c = 0.262 \times D \times n \quad (\text{ft/min})$$

Slide velocity

$$S_v = n \times P_h \quad (\text{in/min})$$

Lead

$$P_h = P \times \text{number of starts} \quad (\text{inches})$$

Helix angle

$$\lambda = \arctan \frac{P_h}{D_2 \times \pi} \quad (^\circ)$$

Conversion of pitch to TPI

$$P = \frac{1}{\text{TPI}} \quad (\text{inches})$$

n = RPM (rev/min)

D = Workpiece diameter (inches)

v_c = Cutting speed (ft/min)

S_v = Slide velocity (feed rate) (in/min)

P_h = Lead (inches)

P = Pitch (inches)

D_2 = Pitch diameter (mean diameter) (inches)

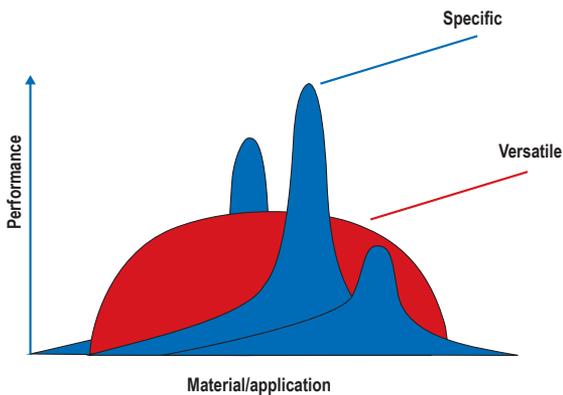
λ = Helix angle (°)

TPI = Number of threads per inch

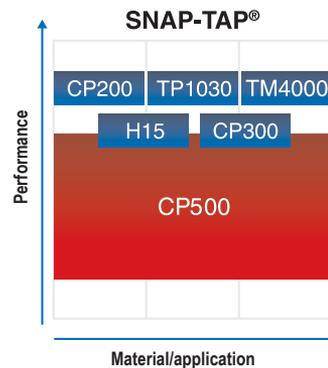
Threading – Insert grades

Thread turning – Insert grades

Product strategy



Grade assortment Snap-Tap®



Continuous research and development of better materials, coatings and optimal geometries help fulfil customers requirements. Our product strategy is to provide the market with versatile first choice tools and specific optimized solutions for threading.

Grades

The black areas in the chart indicate a grade's main ISO application groups and the white areas indicate other supplementary application groups.

	P					M				K				N				S				H						
	P01	P10	P20	P30	P40	P50	M01	M10	M20	M30	M40	K01	K10	K20	K30	K40	N01	N10	N20	N30	S01	S10	S20	S30	H01	H10	H20	H30
CP200																												
CP300																												
CP500																												
TP1030																												
H15																												
TM4000																												

PVD coated grades

	CP200	First choice for high-strength steel, martensitic stainless steel, cast iron with low hardness, superalloys and titanium alloys. First choice for high cutting speeds. Hard micrograin with sharp edge, highly resistant to plastic deformation. (Ti,Al)N + TiN
	CP300	Wear-resistant grade which is principally intended for high cutting speeds. Optimizing grade in steel and stainless steel. (Ti,Al)N + TiN
	CP500	Very tough, universal micrograin grade for all types of threading in most materials. Excellent for stainless steel and difficult operations. (Ti,Al)N + TiN
	TP1030	PVD-coated Cermet with very high wear resistance. Primarily intended for high surface finish and productivity requirements with predictability in steel and stainless steel. TiAlSiN nanolaminated coating.

CVD coated grades

	TM4000	Thread turning insert in optimizing grade TM4000. Excellent wear resistance with superior edge toughness intended for high cutting speed in steel. Also suitable in difficult stainless steel. CVD coating Ti(C,N) + Al ₂ O ₃ DURATOMIC®
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Uncoated grades

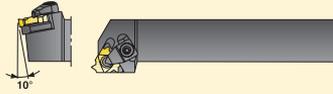
	H15	First choice for machining normal to hard cast iron. Also suitable for hard steel with a hardness in excess of 350 HB. Micrograin with excellent wear-resistance and sharp edge.
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Use the guidelines below to choose a suitable toolholder type.

External threading

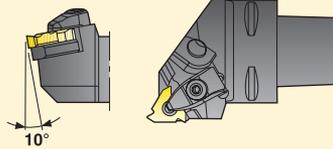
Basic choice
Type C (clamp)

CER/L



Insert size
16, 20, 22, 26, 27
With insert shim

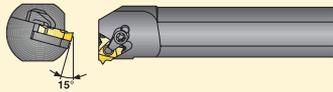
Cx-CER/L



Internal threading

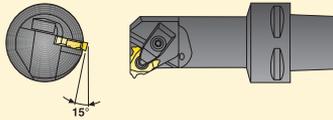
Basic choice
Type C (clamp)

CNR/L



Insert size
16, 20, 22, 26, 27
With insert shim

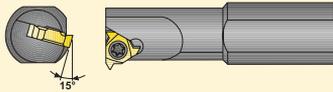
Cx-CNR/L



N.B. On 27 mm inserts this angle is 10°

For small holes
Type-S (screw)

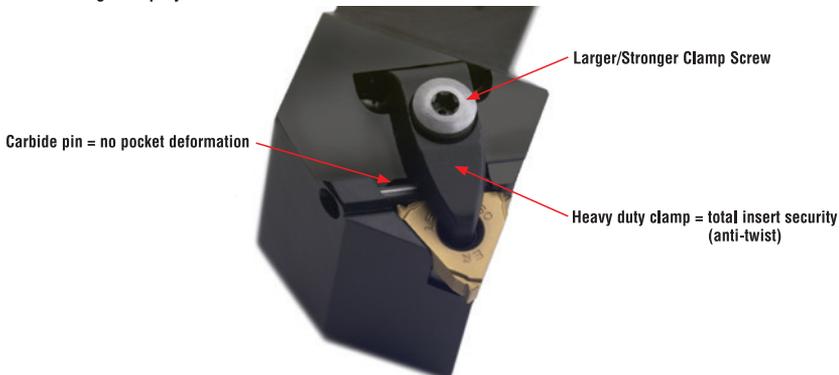
SNR/L



Insert sizes
09,11,16, 22

(No insert shim. To be used only when
threading towards the chuck)

HD Threading Clamp System

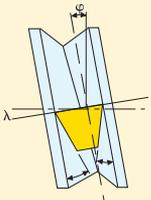


Originally fitted insert shims

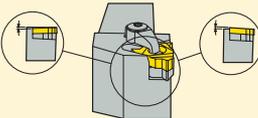
The table below shows the originally fitted insert shims. These insert shims are suitable for most operations when threading towards the chuck.

Toolholder		Clamp		Screw
		 External and internal threading		 Internal threading
Insert type		Single-tooth insert (Type S)	Single-tooth insert (Type K)	Single-tooth insert (Type S)
Insert shim				No insert shim ($\lambda=2^\circ$)
Insert size	16	GX 16-1		
	20		KX 20-2	
	22	NX22-1		
	26		KX26-2	
	27	VX27-1		

To receive the correct shape on the thread and uniform wear on the insert the cutting edge helix angle (λ) should be equal to the thread lead angle (ψ).



The helix angle can be selected from +5 to -2 by changing the insert shim. The same insert shims are used for both right and left hand holders. The center height remains constant.



SNR/L toolholders have no exchangeable insert shim and can therefore only be used for threading towards the chuck. The table below shows the available insert shim range.

Insert shim range

Toolholder		Clamp			
		 External and internal threading			
Insert type		Multi-tooth insert (Type M)	Single-tooth insert (Type S)		Single-tooth insert (Type K)
Insert shim					
		Threading towards the chuck	Threading towards the chuck	Threading away from the chuck	Threading towards the chuck Threading away from the chuck
Insert size	16	MX16-1	GX16-0, -1, -2, -3, -4	GX16-0 -99 -98	
	20				KX20-0, -1, -2, -3, -4, -5 KX20-0 -99
	22	MX22-1	NX22-0, -1, -2, -3, -4	NX22-0 -99 -98	
	26				KX26-0, -1, -2, -3, -4, -5 KX26-0 -99
	27	MX27-1	VX27-0, -1, -2, -3, -4	VX27-0 -99 -98	

The helix angle (λ) can also be calculated. See page 462 for formulae.

Cutting speed

Use the SMG tables to classify the workpiece material.
Use the table below to choose cutting speed.

SMG	v _c					
	CP200	CP300	CP500	TP1030	H15	TM4000
P1	—	900	675	675	—	1165
P2	—	885	655	655	—	1130
P3	—	755	560	560	—	970
P4	—	675	490	490	—	855
P5	—	640	475	475	—	820
P6	—	720	540	540	—	920
P7	—	675	510	510	—	870
P8	—	640	475	475	—	820
P11	—	655	490	490	—	835
M1	490	—	445	445	330	360
M2	395	—	360	360	260	295
M3	295	—	280	280	195	230
M4	230	—	215	215	—	165
M5	180	—	165	165	—	140
K1	425	—	395	395	345	—
K2	360	—	345	345	310	—
K3	310	—	295	295	260	—
K4	295	—	280	280	245	—
K5	180	—	165	165	—	—
K6	260	—	245	245	—	—
K7	230	—	215	215	—	—
N1	—	—	—	—	835	—
N2	—	—	—	—	540	—
N3	—	—	—	—	360	—
N11	—	—	—	—	490	—
S1	65	—	65	—	—	—
S2	50	—	50	—	—	—
S3	50	—	50	—	—	—
S11	150	—	130	—	—	—
S12	115	—	100	—	—	—
S13	90	—	75	—	—	—

Cutting speeds (v_c) in the table are recommendations for a start value.

Due to machine, material and setup condition it is advisable to optimize cutting data.

Recommended ranges to use for each grade is CP200, CP300, CP500 and H15 +/-15%
TP1030 +15/-30%

SMG=Seco Material Group

v_c = Cutting speed (sf/min)

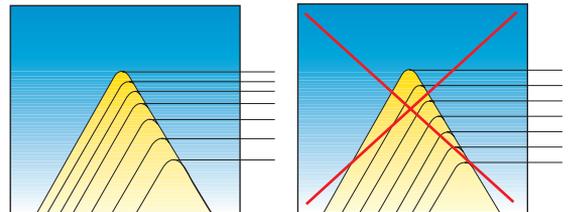
Note that there is a fixed relationship between rotational speed and feed rate in threading.

Check that the chosen cutting speed does not result in a too high feed speed.

Number of passes and infeed depths

A thread cannot be made in one cut because of the relatively brittle cutting edge. The total cutting depth must be divided into several passes. Those passes should all have similar cutting forces (equal chip areas), see figures.

Use the tables on page 468-472 to find recommendations for number of passes and infeed depths. The tables give basic recommendations and are applicable on all geometries - Original, A, A1 and A2.



- The infeed series given is based on a good control of the OD/ID tolerances for the selected profile.
- If insert fracture should occur, the number of passes should be increased.
- The infeed depth should not be less than 0.002 in/pass.
- On stainless steel, the infeed depth per pass should be greater than 0.003 inch.
- The recommendations can also be used for part-profile inserts. The number of passes should then, in most cases, be increased.
- The threading insert nose radius is relatively small and can easily be damaged if it is overloaded.

Seco Threading Wizard™

In order to simplify the selection of tools and cutting parameters Seco introduced the Threading Wizard software, which eliminates complicated programming and calculations. The Wizard selects the optimum holder and insert, identifies the best operating parameters and then downloads the information to the CNC machine. The infeed series generated are based on a good control of the OD/ID tolerance for the selected profile. The insert nose radius is relatively small and can be damaged if it is overloaded. Threading Wizard is free and downloadable at:

www.secotools.com

Number of passes and infeed depths

External ISO-metric threads

Ph	6.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.75	1.5	1.25	1.0	0.80	0.75	0.50
a_p	0.150	0.139	0.126	0.113	0.100	0.088	0.076	0.063	0.049	0.044	0.037	0.032	0.026	0.020	0.019	0.013
1	0.018	0.017	0.016	0.015	0.013	0.013	0.011	0.011	0.009	0.009	0.009	0.008	0.007	0.007	0.006	0.004
2	0.017	0.016	0.015	0.013	0.013	0.012	0.010	0.009	0.009	0.008	0.008	0.007	0.006	0.006	0.006	0.004
3	0.014	0.013	0.013	0.011	0.010	0.010	0.008	0.008	0.007	0.007	0.007	0.006	0.005	0.005	0.004	0.003
4	0.012	0.011	0.011	0.009	0.009	0.008	0.007	0.007	0.006	0.006	0.006	0.004	0.004	0.003	0.003	0.002
5	0.011	0.010	0.009	0.009	0.008	0.007	0.006	0.006	0.006	0.005	0.005	0.004	0.003	–	–	–
6	0.010	0.009	0.009	0.009	0.007	0.007	0.006	0.006	0.005	0.004	0.003	0.003	–	–	–	–
7	0.009	0.008	0.009	0.008	0.007	0.006	0.006	0.005	0.004	0.004	–	–	–	–	–	–
8	0.009	0.008	0.008	0.007	0.006	0.006	0.005	0.004	0.003	0.003	–	–	–	–	–	–
9	0.009	0.007	0.007	0.007	0.006	0.006	0.005	0.004	–	–	–	–	–	–	–	–
10	0.007	0.007	0.007	0.006	0.005	0.005	0.004	0.003	–	–	–	–	–	–	–	–
11	0.007	0.007	0.006	0.006	0.005	0.004	0.004	–	–	–	–	–	–	–	–	–
12	0.006	0.006	0.006	0.005	0.005	0.003	0.003	–	–	–	–	–	–	–	–	–
13	0.006	0.006	0.005	0.005	0.004	–	–	–	–	–	–	–	–	–	–	–
14	0.005	0.005	0.004	0.004	0.003	–	–	–	–	–	–	–	–	–	–	–
15	0.005	0.005	–	–	–	–	–	–	–	–	–	–	–	–	–	–
16	0.004	0.004	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Internal ISO-metric threads

Ph	6.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.75	1.5	1.25	1.0	0.80	0.75	0.50
a_p	0.139	0.128	0.117	0.104	0.092	0.081	0.070	0.058	0.046	0.041	0.033	0.030	0.024	0.019	0.018	0.012
1	0.018	0.017	0.017	0.015	0.013	0.013	0.011	0.010	0.009	0.009	0.008	0.007	0.007	0.007	0.006	0.004
2	0.017	0.016	0.016	0.013	0.012	0.012	0.010	0.010	0.008	0.008	0.007	0.007	0.006	0.006	0.005	0.003
3	0.014	0.013	0.013	0.011	0.009	0.009	0.008	0.007	0.007	0.006	0.006	0.006	0.004	0.004	0.004	0.003
4	0.012	0.010	0.010	0.009	0.008	0.007	0.006	0.006	0.005	0.005	0.004	0.004	0.004	0.003	–	–
5	0.010	0.009	0.009	0.008	0.007	0.007	0.006	0.005	0.005	0.004	0.004	0.003	0.003	–	–	–
6	0.009	0.008	0.008	0.007	0.006	0.006	0.005	0.005	0.004	0.004	0.003	0.003	–	–	–	–
7	0.008	0.007	0.007	0.006	0.006	0.006	0.005	0.004	0.004	0.003	–	–	–	–	–	–
8	0.007	0.007	0.006	0.006	0.005	0.005	0.004	0.004	0.003	0.003	–	–	–	–	–	–
9	0.007	0.006	0.006	0.006	0.005	0.005	0.004	0.004	–	–	–	–	–	–	–	–
10	0.006	0.006	0.006	0.005	0.005	0.004	0.004	0.003	–	–	–	–	–	–	–	–
11	0.006	0.006	0.006	0.005	0.004	0.004	0.004	–	–	–	–	–	–	–	–	–
12	0.006	0.006	0.006	0.005	0.004	0.003	0.003	–	–	–	–	–	–	–	–	–
13	0.006	0.005	0.005	0.004	0.004	–	–	–	–	–	–	–	–	–	–	–
14	0.005	0.005	0.004	0.004	0.003	–	–	–	–	–	–	–	–	–	–	–
15	0.005	0.005	–	–	–	–	–	–	–	–	–	–	–	–	–	–
16	0.004	0.004	–	–	–	–	–	–	–	–	–	–	–	–	–	–

External/Internal Whitworth threads

TPI	4.0	4.5	5	6	7	8	9	10	11	12	14	16	18	19	20	26	28
a_p	0.169	0.150	0.135	0.114	0.098	0.085	0.076	0.069	0.062	0.057	0.047	0.044	0.040	0.038	0.036	0.028	0.027
1	0.019	0.018	0.018	0.015	0.015	0.013	0.012	0.011	0.011	0.011	0.009	0.009	0.009	0.009	0.008	0.007	0.007
2	0.018	0.017	0.017	0.014	0.014	0.012	0.011	0.011	0.010	0.010	0.009	0.009	0.009	0.009	0.008	0.007	0.007
3	0.015	0.015	0.015	0.012	0.011	0.009	0.009	0.009	0.009	0.009	0.007	0.007	0.007	0.007	0.007	0.006	0.006
4	0.014	0.013	0.013	0.010	0.010	0.008	0.008	0.007	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.005	0.005
5	0.013	0.011	0.011	0.009	0.009	0.007	0.007	0.006	0.006	0.006	0.005	0.005	0.005	0.005	0.004	0.003	0.003
6	0.012	0.010	0.010	0.008	0.007	0.007	0.006	0.006	0.006	0.006	0.004	0.004	0.003	0.003	0.003	–	–
7	0.011	0.009	0.009	0.007	0.007	0.006	0.006	0.006	0.005	0.005	0.004	0.003	–	–	–	–	–
8	0.011	0.009	0.008	0.007	0.006	0.006	0.005	0.005	0.005	0.003	0.003	–	–	–	–	–	–
9	0.009	0.008	0.007	0.006	0.006	0.005	0.005	0.005	0.003	–	–	–	–	–	–	–	–
10	0.009	0.007	0.007	0.006	0.006	0.005	0.005	0.003	–	–	–	–	–	–	–	–	–
11	0.008	0.007	0.007	0.006	0.005	0.005	0.003	–	–	–	–	–	–	–	–	–	–
12	0.007	0.006	0.006	0.006	0.003	0.003	–	–	–	–	–	–	–	–	–	–	–
13	0.007	0.006	0.005	0.005	–	–	–	–	–	–	–	–	–	–	–	–	–
14	0.006	0.006	0.004	0.004	–	–	–	–	–	–	–	–	–	–	–	–	–
15	0.005	0.005	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
16	0.004	0.004	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Ph = Pitch (mm)

TPI = Threads per inch

a_p = Total infeed depth (inch)

Recommendations are for steel with a hardness < 300 HB

Number of passes and infeed depths

External UN threads

TPI	4.0	4.5	5	6	7	8	9	10	11	12	13	14	16	18	20	24	28	32
a_p	0.160	0.143	0.130	0.107	0.092	0.082	0.072	0.065	0.060	0.055	0.051	0.047	0.041	0.037	0.033	0.028	0.024	0.021
1	0.019	0.018	0.017	0.014	0.014	0.012	0.011	0.011	0.011	0.011	0.010	0.009	0.009	0.009	0.008	0.007	0.007	0.007
2	0.017	0.016	0.016	0.013	0.013	0.011	0.010	0.010	0.010	0.010	0.009	0.009	0.008	0.008	0.007	0.007	0.006	0.006
3	0.016	0.015	0.014	0.011	0.010	0.010	0.008	0.008	0.008	0.008	0.007	0.007	0.006	0.006	0.006	0.006	0.004	0.005
4	0.014	0.012	0.012	0.009	0.009	0.008	0.008	0.007	0.007	0.007	0.007	0.006	0.006	0.006	0.005	0.005	0.004	0.003
5	0.013	0.010	0.010	0.009	0.008	0.007	0.007	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.004	0.003	0.003	–
6	0.011	0.009	0.009	0.008	0.007	0.006	0.006	0.006	0.006	0.005	0.005	0.004	0.004	0.003	0.003	–	–	–
7	0.010	0.008	0.008	0.007	0.007	0.006	0.006	0.006	0.005	0.005	0.004	0.004	0.003	–	–	–	–	–
8	0.009	0.008	0.007	0.006	0.006	0.005	0.005	0.005	0.004	0.003	0.003	0.003	–	–	–	–	–	–
9	0.009	0.007	0.007	0.006	0.006	0.005	0.005	0.004	0.003	–	–	–	–	–	–	–	–	–
10	0.008	0.007	0.007	0.006	0.005	0.005	0.004	0.003	–	–	–	–	–	–	–	–	–	–
11	0.007	0.006	0.007	0.005	0.004	0.004	0.003	–	–	–	–	–	–	–	–	–	–	–
12	0.007	0.006	0.006	0.005	0.003	0.003	–	–	–	–	–	–	–	–	–	–	–	–
13	0.006	0.006	0.005	0.004	–	–	–	–	–	–	–	–	–	–	–	–	–	–
14	0.006	0.006	0.004	0.004	–	–	–	–	–	–	–	–	–	–	–	–	–	–
15	0.005	0.005	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
16	0.004	0.004	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Internal UN threads

TPI	4	4.5	5	6	7	8	9	10	11	12	13	14	16	18	20	24	28	32
a_p	0.147	0.131	0.118	0.097	0.084	0.074	0.065	0.059	0.054	0.049	0.045	0.042	0.037	0.033	0.030	0.025	0.022	0.019
1	0.017	0.016	0.017	0.014	0.013	0.012	0.011	0.011	0.011	0.011	0.010	0.009	0.009	0.009	0.008	0.007	0.007	0.007
2	0.016	0.015	0.015	0.013	0.013	0.011	0.010	0.010	0.009	0.009	0.008	0.007	0.007	0.007	0.006	0.006	0.006	0.006
3	0.015	0.013	0.013	0.010	0.009	0.009	0.007	0.007	0.007	0.007	0.006	0.006	0.006	0.006	0.005	0.005	0.004	0.004
4	0.013	0.011	0.011	0.008	0.008	0.007	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.005	0.004	0.004	0.003	0.003
5	0.011	0.009	0.009	0.007	0.007	0.006	0.006	0.005	0.005	0.005	0.005	0.004	0.004	0.004	0.004	0.003	0.003	–
6	0.009	0.008	0.008	0.006	0.006	0.005	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.003	0.003	–	–	–
7	0.009	0.007	0.007	0.006	0.006	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.003	–	–	–	–	–
8	0.008	0.007	0.007	0.006	0.005	0.004	0.004	0.004	0.004	0.003	0.003	0.003	–	–	–	–	–	–
9	0.008	0.007	0.006	0.005	0.005	0.004	0.004	0.004	0.003	–	–	–	–	–	–	–	–	–
10	0.007	0.006	0.006	0.005	0.005	0.004	0.004	0.003	–	–	–	–	–	–	–	–	–	–
11	0.007	0.006	0.006	0.005	0.004	0.004	0.003	–	–	–	–	–	–	–	–	–	–	–
12	0.006	0.006	0.006	0.004	0.003	0.003	–	–	–	–	–	–	–	–	–	–	–	–
13	0.006	0.006	0.005	0.004	–	–	–	–	–	–	–	–	–	–	–	–	–	–
14	0.006	0.005	0.004	0.004	–	–	–	–	–	–	–	–	–	–	–	–	–	–
15	0.005	0.005	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
16	0.004	0.004	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

External multi-tooth inserts

Type	ISO Metric						UN						Whitworth		NPT		
	3M	2M	3M	2M	3M	2M	2M	3M	2M	3M	2M	2M		2M	3M	2M	
Ph (mm)	1.0	1.5	1.5	2.0	2.0	3.0	–	–	–	–	–	–	–	–	–	–	–
TPI	–	–	–	–	–	–	16	16	12	12	8	11	–	11.5	11.5	8	–
a_p (inch)	0.026	0.037	0.037	0.049	0.049	0.076	0.041	0.041	0.055	0.055	0.082	0.062	–	0.069	0.069	0.100	–
Pass 1 (inch)	0.014	0.017	0.022	0.022	0.030	0.026	0.019	0.025	0.025	0.033	0.028	0.029	–	0.023	0.032	0.035	–
2	0.011	0.012	0.015	0.016	0.020	0.021	0.013	0.016	0.017	0.022	0.022	0.020	–	0.020	0.022	0.025	–
3	–	0.008	–	0.011	–	0.017	0.009	–	0.012	–	0.018	0.014	–	0.015	0.015	0.022	–
4	–	–	–	–	–	0.013	–	–	–	–	0.014	–	–	0.012	–	0.018	–

Internal multi-tooth inserts

Type	ISO Metric						UN						Whitworth		NPT		
	3M	2M	3M	2M	3M	2M	2M	3M	2M	3M	2M	2M		2M	3M	2M	
Ph (mm)	1.0	1.5	1.5	2.0	2.0	3.0	–	–	–	–	–	–	–	–	–	–	–
TPI	–	–	–	–	–	–	16	16	12	12	8	11	–	11.5	11.5	8	–
a_p (inch)	0.024	0.033	0.033	0.046	0.046	0.070	0.037	0.037	0.049	0.049	0.074	0.062	–	0.069	0.069	0.100	–
Pass 1 (inch)	0.013	0.015	0.020	0.020	0.028	0.022	0.017	0.022	0.022	0.030	0.023	0.029	–	0.023	0.032	0.035	–
2	0.011	0.011	0.013	0.015	0.019	0.019	0.012	0.015	0.016	0.020	0.020	0.020	–	0.020	0.022	0.025	–
3	–	0.008	–	0.011	–	0.017	0.008	–	0.011	–	0.017	0.014	–	0.015	0.015	0.022	–
4	–	–	–	–	–	0.013	–	–	–	–	0.014	–	–	0.012	–	0.018	–

Number of passes and infeed depths

External/Internal NPT threads

TPI	8	11.5	14	18	27
a_p	0.100	0.069	0.057	0.044	0.030
1	0.011	0.010	0.009	0.009	0.007
2	0.010	0.009	0.009	0.007	0.006
3	0.009	0.007	0.007	0.006	0.005
4	0.007	0.006	0.006	0.006	0.004
5	0.007	0.006	0.006	0.005	0.004
6	0.007	0.006	0.005	0.005	0.003
7	0.007	0.006	0.005	0.004	–
8	0.007	0.005	0.004	0.003	–
9	0.006	0.005	0.004	–	–
10	0.006	0.004	0.003	–	–
11	0.006	0.004	–	–	–
12	0.005	0.003	–	–	–
13	0.005	–	–	–	–
14	0.004	–	–	–	–
15	0.003	–	–	–	–

External Round DIN 405

TPI	4	6	8	10
a_p	0.135	0.088	0.068	0.055
1	0.017	0.013	0.011	0.010
2	0.016	0.011	0.010	0.010
3	0.013	0.010	0.008	0.009
4	0.013	0.009	0.007	0.008
5	0.011	0.008	0.007	0.006
6	0.010	0.007	0.006	0.005
7	0.009	0.006	0.006	0.004
8	0.009	0.006	0.005	0.003
9	0.008	0.006	0.004	–
10	0.007	0.005	0.003	–
11	0.007	0.004	–	–
12	0.006	0.003	–	–
13	0.005	–	–	–
14	0.004	–	–	–

Internal Round DIN 405

TPI	4	6	8	10
a_p	0.141	0.096	0.065	0.059
1	0.018	0.015	0.010	0.011
2	0.017	0.013	0.009	0.010
3	0.016	0.012	0.008	0.010
4	0.014	0.010	0.007	0.009
5	0.012	0.008	0.007	0.007
6	0.010	0.007	0.006	0.005
7	0.009	0.007	0.006	0.004
8	0.009	0.006	0.005	0.003
9	0.008	0.006	0.004	–
10	0.007	0.005	0.003	–
11	0.007	0.004	–	–
12	0.006	0.003	–	–
13	0.005	–	–	–
14	0.004	–	–	–

TPI = Threads per Inch

a_p = Total infeed depth (inch)

Recommendations are for steel with a hardness < 300 HB

Number of passes and infeed depths

External ACME

TPI	2	3	4	5	6	8	10	12	14	16
a_p	0.265	0.18	0.138	0.112	0.095	0.074	0.063	0.050	0.041	0.039
1	0.028	0.019	0.013	0.012	0.011	0.010	0.010	0.009	0.008	0.009
2	0.026	0.018	0.012	0.011	0.011	0.010	0.009	0.009	0.008	0.009
3	0.023	0.016	0.011	0.010	0.010	0.009	0.009	0.007	0.007	0.007
4	0.022	0.015	0.011	0.01	0.009	0.007	0.007	0.007	0.006	0.006
5	0.019	0.013	0.010	0.009	0.008	0.006	0.006	0.005	0.005	0.005
6	0.017	0.011	0.010	0.008	0.007	0.005	0.005	0.005	0.004	0.003
7	0.015	0.011	0.009	0.007	0.006	0.005	0.005	0.004	0.003	–
8	0.013	0.009	0.008	0.007	0.006	0.005	0.004	0.004	–	–
9	0.013	0.009	0.008	0.007	0.006	0.005	0.004	–	–	–
10	0.011	0.009	0.007	0.006	0.006	0.004	0.004	–	–	–
11	0.011	0.008	0.007	0.006	0.006	0.004	–	–	–	–
12	0.01	0.007	0.006	0.006	0.005	0.004	–	–	–	–
13	0.009	0.007	0.006	0.005	0.004	–	–	–	–	–
14	0.009	0.007	0.006	0.004	–	–	–	–	–	–
15	0.008	0.006	0.006	0.004	–	–	–	–	–	–
16	0.007	0.005	0.004	–	–	–	–	–	–	–
17	0.007	0.005	0.004	–	–	–	–	–	–	–
18	0.006	0.005	–	–	–	–	–	–	–	–
19	0.006	–	–	–	–	–	–	–	–	–
20	0.005	–	–	–	–	–	–	–	–	–

Internal ACME

TPI	2	3	4	5	6	8	10	12	14	16
a_p	0.265	0.182	0.142	0.114	0.098	0.078	0.065	0.049	0.042	0.040
1	0.028	0.020	0.013	0.012	0.012	0.011	0.010	0.009	0.009	0.009
2	0.026	0.018	0.012	0.012	0.011	0.011	0.010	0.009	0.008	0.009
3	0.023	0.016	0.012	0.011	0.011	0.009	0.009	0.007	0.007	0.008
4	0.022	0.015	0.011	0.010	0.009	0.007	0.007	0.006	0.006	0.006
5	0.019	0.013	0.011	0.009	0.008	0.006	0.006	0.005	0.005	0.005
6	0.017	0.011	0.010	0.008	0.007	0.006	0.006	0.005	0.004	0.003
7	0.015	0.011	0.009	0.007	0.007	0.005	0.005	0.004	0.003	–
8	0.013	0.009	0.008	0.007	0.006	0.005	0.004	0.004	–	–
9	0.013	0.009	0.008	0.007	0.006	0.005	0.004	–	–	–
10	0.011	0.009	0.007	0.006	0.006	0.005	0.004	–	–	–
11	0.011	0.008	0.007	0.006	0.006	0.004	–	–	–	–
12	0.010	0.007	0.006	0.006	0.005	0.004	–	–	–	–
13	0.009	0.007	0.006	0.005	0.004	–	–	–	–	–
14	0.009	0.007	0.006	0.004	–	–	–	–	–	–
15	0.008	0.006	0.006	0.004	–	–	–	–	–	–
16	0.007	0.006	0.005	–	–	–	–	–	–	–
17	0.007	0.005	0.005	–	–	–	–	–	–	–
18	0.006	0.005	–	–	–	–	–	–	–	–
19	0.006	–	–	–	–	–	–	–	–	–
20	0.005	–	–	–	–	–	–	–	–	–

TPI = Threads per Inch

a_p = Total infeed depth (inch)

Recommendations are for steel with a hardness < 300 HB

Number of passes and infeed depths, multi-tooth insert TWIN THREADER, TT

External 60° threads

Ph	2.0	1.5	1.0
a_p (inch)	0.049	0.037	0.026
Pass 1 (inch)	0.010	0.009	0.009
2	0.014	0.012	0.010
3	0.010	0.009	0.007
4	0.008	0.007	–
5	0.007	–	–

Internal 60° threads

Ph	2.0	1.5	1.0
a_p (inch)	0.046	0.033	0.024
Pass 1 (inch)	0.009	0.008	0.007
2	0.013	0.011	0.009
3	0.009	0.008	0.007
4	0.007	0.007	–
5	0.007	–	–

External and internal Whitworth and BSPT threads

TPI	11	14
a_p (inch)	0.062	0.047
Pass 1 (inch)	0.010	0.009
2	0.015	0.014
3	0.011	0.009
4	0.010	0.008
5	0.009	0.007
6	0.008	–

External UN threads

TPI	12	16
a_p (inch)	0.055	0.041
Pass 1 (inch)	0.011	0.010
2	0.015	0.014
3	0.011	0.010
4	0.010	0.007
5	0.008	–

Internal UN threads

TPI	12	16
a_p (inch)	0.049	0.037
Pass 1 (inch)	0.009	0.008
2	0.014	0.013
3	0.010	0.009
4	0.009	0.007
5	0.007	–

Ph = Pitch (mm)

TPI = Threads per inch

a_p = Total infeed depth (inch)

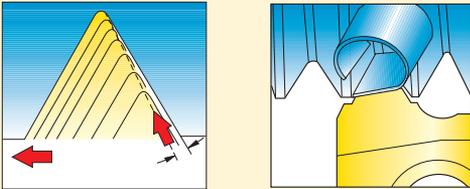
Recommendations are for steel with a hardness < 300 HB

Infeed method

The choice of infeed method is most important for long chipping materials to ensure good chip control.

Modified flank infeed

For CNC machines and conventional machines



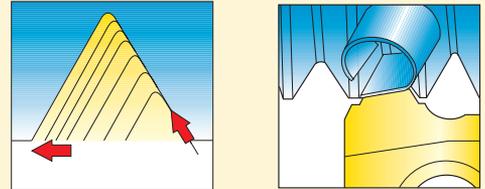
First choice for CNC machines

The infeed angle should be 2.5–5% less than the flank angle

- Good chip control (important for internal threading)
- Good surface finish on thread
- Long tool life

Flank infeed

For CNC machines and conventional machines

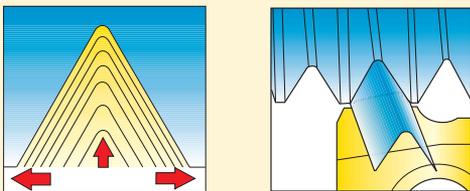


Choose flank infeed when modified flank infeed cannot be used

- Good chip control
- Can result in bad surface on thread
- Not suitable for work hardening materials

Radial infeed

For conventional machines and multi-tooth inserts



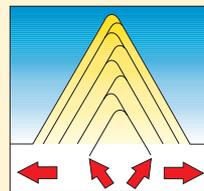
Multitooth inserts demand radial infeed

First choice for work hardening materials

- Difficult to control the chip
- High cutting forces

Alternate flank infeed

For CNC machines



First choice for large coarse threads

- Long tool life
- Chipbreaking problems can arise

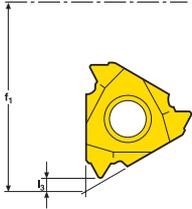
It is often necessary to cut internal threads which are too small to be made with a standard toolholder.

Several standard internal toolholders can be modified by a simple reworking so that threads can be cut in approximately 30% smaller bores.

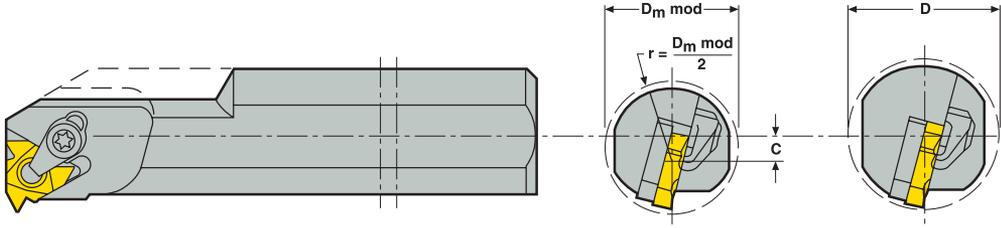
This modification work can be made on an lathe with a four-jaw chuck. In the dimension table $D_m \text{ min}^*$ at pages 'Toolholders Internal' you will find the dimensions required for the alteration.

On demand, these internal toolholders can also be supplied as special design.

For some holders it is possible to work inside smaller bores than indicated by the $D_m \text{ mod}$ dimension, here it is necessary "to back off" the bottom corner of the insert (possibly also the insert shim).



f_1 and l_3 dimensions can be found on the pages for internal toolholders (pages 489-493) and threading inserts (pages 494-526).



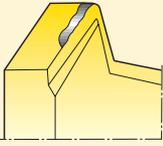
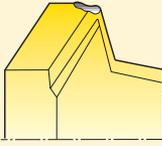
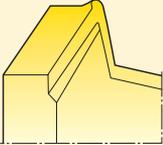
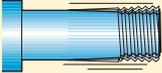
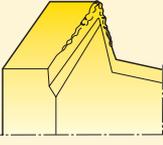
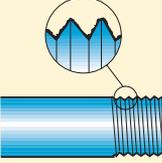
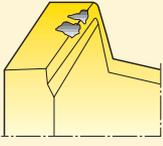
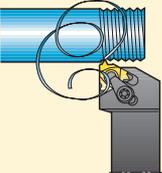
$$C = f_1 - l_3 + r - D_m \text{ mod}$$

C = Center-point displacement when modifying the tool.

D = Minimum bore diameter of standard tool.

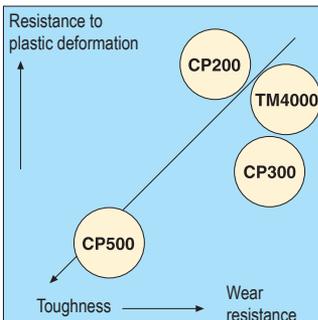
$D_m \text{ mod}$ = Minimum bore diameter with a modified tool.

Troubleshooting

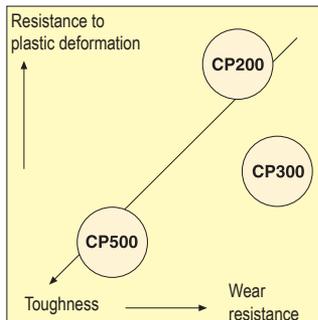
<p>Rapid flank wear</p> <ul style="list-style-type: none"> • Reduce the cutting speed • Increase the infeed per pass • Use modified flank infeed • Check that the correct insert shim has been selected • Select a more wear-resistant grade 	<p>Insert fracture</p> <ul style="list-style-type: none"> • Increase the number of passes • Check the workpiece mounting • Check the center height of the cutting edge • Check for built-up edge • Select a tougher grade 
<p>Plastic deformation</p> <ul style="list-style-type: none"> • Select a grade with better resistance to plastic deformation • Reduce the cutting speed • Increase the number of passes • Increase the coolant supply • Check that the workpiece diameter is correct prior to cutting the thread 	<p>Vibrations</p> <ul style="list-style-type: none"> • Change the cutting speed • Reduce the overhang and use the most stable toolholder • Check the center height of the cutting edge • Check that the workpiece diameter is correct 
<p>Build-up edge</p> <ul style="list-style-type: none"> • Increase the cutting speed • Do not use coolant 	<p>Poor finish</p> <ul style="list-style-type: none"> • Increase the cutting speed • Check that the correct insert shim has been selected • Use modified flank infeed or radial infeed 
<p>Edge chipping</p> <ul style="list-style-type: none"> • Check the workpiece mounting • Check the cutting speed • Use modified flank infeed • Select a tougher grade 	<p>Poor chip control</p> <ul style="list-style-type: none"> • Reduce the number of passes • Increase the cutting speed • Use modified flank infeed • Increase the coolant supply 

Optimization

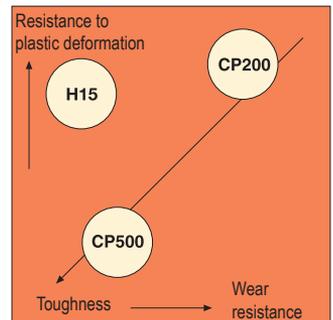
ISO-P (steel)



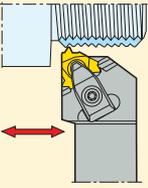
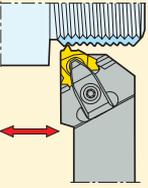
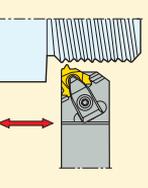
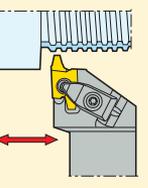
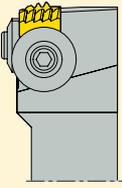
ISO-M (stainless steel)



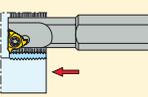
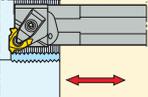
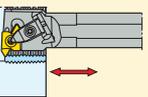
ISO-K (cast iron)



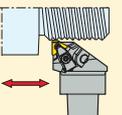
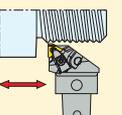
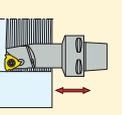
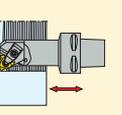
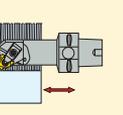
External toolholders

<p>CER/L...Q-S CER/L...QHD</p>  <p>Pages 483-484</p>	<p>CER...CQHD</p>  <p>Page 485</p>	<p>CER..Q-S Swiss style</p>  <p>Page 486</p>	<p>CER/L...QHD (K-Style inserts)</p>  <p>Page 487</p>	<p>CER-M</p>  <p>Page 488</p>
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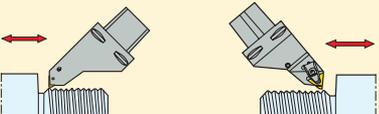
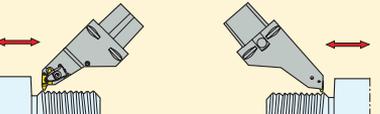
Internal toolholders

<p>SNR/L SNR...A</p>  <p>Page 489</p>	<p>CNR/L...AHD CNR/L...APIHD</p>  <p>Pages 490-492</p>	<p>CNR/L...AHD (K-Style inserts)</p>  <p>Page 493</p>	<p>GL...CNR/L Steadyline®</p>  <p>Page 216</p>	
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Seco-Capto™

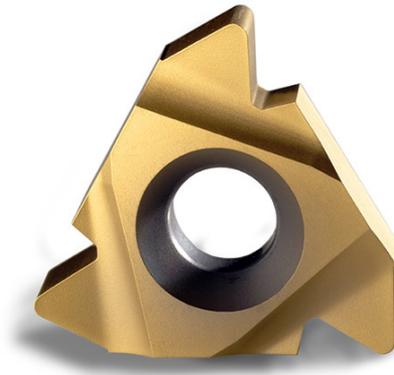
<p>CER/L...HD Ext.</p>  <p>Page 719</p>	<p>CER/L...CHD Ext.</p>  <p>Page 720</p>	<p>SNR Int.</p>  <p>Page 721</p>	<p>CNR/L...HD Int.</p>  <p>Page 721-722</p>	<p>CNR/L...CHD Int.</p>  <p>Pages 723-724</p>
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Seco-Capto™ for MTM

<p>CER...HD (S style inserts)</p>  <p>Page 733</p>	<p>CEL...HD (K style inserts)</p>  <p>Page 734</p>
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Partial profile inserts	55° V profile Pages 496-497	60° V profile Pages 494-495			
Full profile inserts	ISO metric Pages 503-506	UN Pages 498-501			
Reusable threaded joints					
Full profile inserts	UNJ Page 502	MJ Page 502	UNJ and MJ, internal use Standard internal UN and ISO M threading inserts can be used for internal UNJ and MJ. The correct turned diameter must be reached before the threading operation.		
Full profile inserts	Whitworth, BSW Pages 514-515	BSPT Page 519	NPT Pages 507-508	NPTF Page 509	Round-DIN405 Page 518
Permanent threaded joints for pipe mountings and couplings					
Partial profile (semi topping) inserts	TR-DIN103 Pages 516-517	ACME Pages 510-511	Stub-ACME Pages 512-513	American Buttress Page 524	
Motion-transmitting threads					
Full profile inserts	API Page 520	API RD Page 521	VAM-API-Buttress 2.5 Page 522	API-Buttress 2.6 Page 523	
Threads for the oil and gas industry					
Full profile inserts	Hughes Flush Pages 525-526	Hughes H90 Pages 525-526	Hughes Slimline H90 Pages 525-526	P.A.C Pages 525-526	Chasers API/Gost Page 527
Threads for the oil and gas industry					

Seco Snap-Tap®



1. Metallurgical control of substrate

- Check of substrate regarding Hc, MM and porosity
- Measured according to SPM
- Values stored in a database

4. Dimensional control after grinding

- Profile and radius
- Measured according to SPM

7. Final Inspection

- Visual Inspection
- Sampling in accordance to AQL

2. Dimensional check after sintering

- Measuring of IC and thickness
- Measured according to SPM
- Values stored in a database

5. Edge measuring

- Edge radius checked during honing
- Measured according to SPM
- Values stored in a database

8. Production management system

- SGS (SPM1) - Control specifications
- LS - Production instructions
- Seco Act - System for preventive and corrective actions
- Approved to ISO 9001 and 14001 standard

3. Dimensional control after bottom grinding

- Thickness and cutting edge height
- Flatness
- Measured according to SPM

6. Measuring of coating

- Coating, check of thickness and adhesion
- Measured according to SPM
- Values stored in a database

9. Abbreviations

- LS - Local management Systems - contains local process descriptions, routines, procedures and instructions
- SGS - Seco Global Standards - consists of instructions common for all Seco companies
- SPM - Seco Production Manual - Part of SGS is a collection of instructions and documents with the purpose to guide and maintain the quality level of Seco products
- AQL - Accepted Quality Level (Mil-std)
- MM - Content of Tungsten in binder
- Hc - Coercivity, describing grainsize

Seco Chasers



1. Metallurgical control of substrate

- Check of substrate regarding Hc, MM and porosity
- Measured according to SPM
- Values stored in a database

4. Dimensional control after grinding

- Profile and radius
- Measured according to SPM

7. Height classification

- Optical measuring of height
- Graphic presentation of values
- Sorted and labelled with height classification

10. Overlay drawings

- Printer for overlays is calibrated with glass scale monthly
- Scaled master printout is saved according to SPM

2. Dimensional control after top and bottom grinding

- Thickness
- Roughness Ra
- Flatness
- Measured according to SPM

5. Edge measuring

- Edge radius checked during honing
- Measured according to SPM
- Values stored in a database

8. Final inspection

- Edge inspection 100%
- Profile check with tolerance drawing, sampling in accordance to AQL

11. Production management System

- SGS (SPM1) - Control specifications
- LS - Production instructions
- Seco Act - System for preventive and corrective actions
- Approved to ISO 9001 and 14001 standard

3. Measuring after periphery Grinding

- Optical measuring
- Data stored in a database

6. Measuring of coating

- Coating (PVD), check of thickness and adhesion
- Measured according to SPM
- Values stored in a database

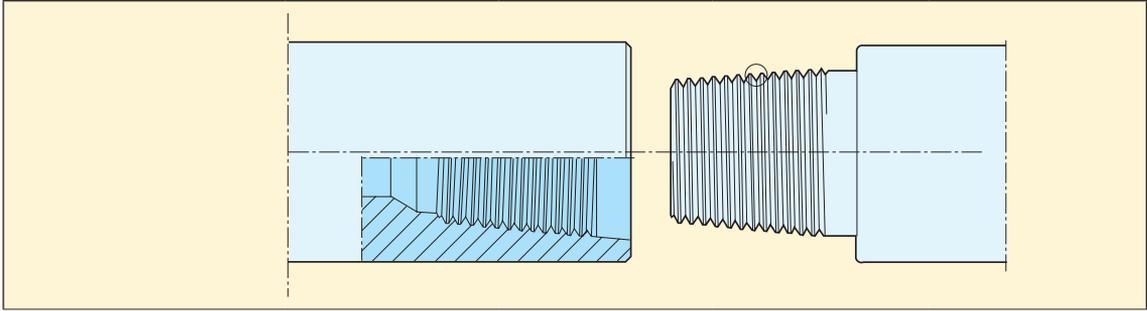
9. Traceability

- Finished products from each order saved for future reference
- Saved 5 years from production date
- Finished product has full traceability

12. Abbreviations

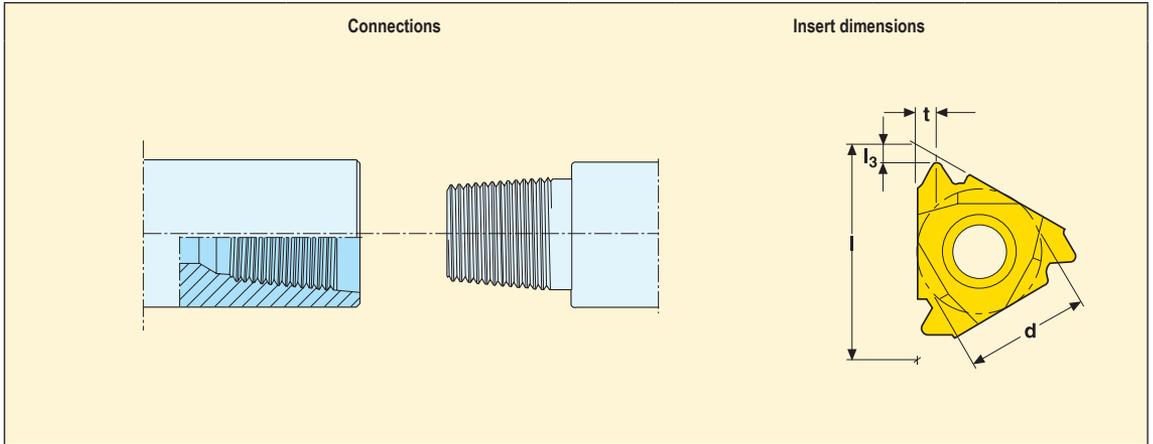
- LS - Local management Systems - contains local process descriptions, routines, procedures and instructions
- SGS - Seco Global Standards - consists of instructions common for all Seco companies
- SPM - Seco Production Manual - Part of SGS is a collection of instructions and documents with the purpose to guide and maintain the quality level of Seco products
- AQL - Accepted Quality Level (Mil-std)
- MM - Content of Tungsten in binder
- Hc - Coercivity, describing grainsize

Rotary drilling connections



Connections	Pitch TPI	TPF	API code	Snap-Tap code
API Number				
NC10 - NC16	6.0	1.5	V055	6API558
NC23 - NC50	4.0	2.0	V038R	4API386
NC56 - NC77	4.0	3.0	V038R	4API384
API Regular				
1 - 1 1/2 REG	6.0	1.5	V055	6API558
2 3/8 REG - 4 1/2 REG	5.0	3.0	V040	5API404
5 1/2 REG - 7 5/8 REG, 8 5/8 REG	4.0	3.0	V050	4API504
6 5/8 REG	4.0	2.0	V050	4API506
Internal Flush				
2 3/8 IF - 6 5/8 IF	4.0	2.0	V038R	4API386
Full Hole				
3 1/2 FH, 4 1/2 FH	5.0	3.0	V040	5API404
4 FH	4.0	2.0	V038R	4API386
5 1/2 FH, 6 5/8 FH	4.0	2.0	V050	4API506
Hughes External Flush				
2 3/8, 2 7/8	6.0	2.0	–	6HEF
3 1/2, 4 1/2	4.0	2.0	V038R	4API386
Hughes Xtra Hole				
2 7/8 - 5	4.0	2.0	V038R	4API386
Hughes Slim Hole				
2 3/8 - 4 1/2	4.0	2.0	V038R	4API386
Hughes Double Streamline				
3 1/2 - 5 1/2	4.0	2.0	V038R	4API386
Hughes H90				
3 1/2 - 6 5/8	3.5	2.0	90V050	3.5H906
7 - 8 5/8	3.5	3.0	90V050	3.5H904
Hughes Slimline H90				
2 3/8 - 3 1/2	3.0	1.25	90V050	3H90
Hughes ACME Regular				
2 3/8 - 6 5/8	4.0	3.373	–	4HACME
Hughes ACME Streamline				
2 3/8 - 5 1/2	4.0	3.373	–	4HACME
P.A.C.				
2 3/8 PAC - 3 1/2 PAC	4.0	1.5	V076	4PAC
Macaroni				
MT, AMT, AMMT	6.0	1.5	V055	6API558

Rotary drilling connections



Connections				Dimensions in inch			
Snap-Tap code	API code	Pitch TPI	TPF	l	d (I.C.)	t	l ₃
6API558	V055	6.0	1.5	0.866	0.500	0.098	0.079
5API404	V040	5.0	3.0	0.866	0.500	0.098	0.079
5API404	V040	5.0	3.0	1.083	0.625	0.126	0.087
4API386	V038R	4.0	2.0	0.866	0.500	0.098	0.075
4API386	V038R	4.0	2.0	1.083	0.625	0.126	0.087
4API384	V038R	4.0	3.0	1.083	0.625	0.126	0.087
4API506	V050	4.0	2.0	1.083	0.625	0.126	0.087
4API504	V050	4.0	3.0	1.083	0.625	0.126	0.087
6HEF	–	6.0	2.0	0.866	0.500	0.098	0.079
4PAC	V076	4.0	1.5	1.083	0.625	0.126	0.087
3.5H906	90V050	3.5	2.0	1.083	0.625	0.126	0.087
3.5H904	90V050	3.5	3.0	1.083	0.625	0.126	0.087
3H90	90V050	3.0	1.25	1.083	0.625	0.126	0.087
4HACME	–	4.0	3.373	1.083	0.625	0.126	0.087

Thread profile

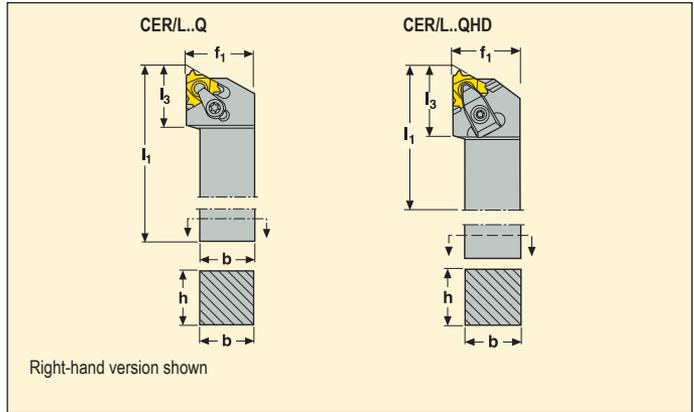
Profile	TPI	TPF	Dimensions in inch				API code	Snap-Tap code
			R/F _r	F _c	r ₁	r ₂		
	5.0	3.0	0.020	0.040	0.015	–	V040	5API404
	4.0	2.0	0.038	0.065	0.015	–	V038R	4API386
	4.0	3.0	0.038	0.065	0.015	–	V038R	4API384
	4.0	2.0	0.025	0.050	0.015	–	V050	4API506
	4.0	3.0	0.025	0.050	0.015	–	V050	4API504
	6.0	1.5	0.047	0.055	0.015	0.015	V055	6API558
	6.0	2.0	0.022	0.032	0.015	0.015	–	6HEF
	4.0	1.5	0.067	0.076	0.015	0.015	V076	4PAC
	3.5	2.0	0.034	0.050	0.015	0.030	90V050	3,5H906
	3.5	3.0	0.034	0.050	0.015	0.030	90V050	3,5H904
	3.0	1.25	0.068	0.084	0.015	0.030	90V050	3H90
	4.0	3.373	0.089	0.094	0.031	0.031	–	4HACME

Toolholders for S-inserts

Snap-Tap®



- For inserts, please see threading insert section beginning on page 494



Application	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					lbs	Insert
				h	b	f ₁	l ₁	l ₃		
	3/8	72538	CER 03753-16Q	0.375	0.375	0.375	3.0	0.90	0.44	16ER...
		72524	0504-16Q	0.500	0.500	0.625	4.0	0.90	0.44	16ER...
		72466	CEL 0504-16Q	0.500	0.500	0.625	4.0	0.90	0.44	16ER...
		72498	CER 06254-16Q	0.625	0.625	0.750	4.0	0.90	0.66	16ER...
		72544	CEL 06254-16Q	0.625	0.625	0.750	4.0	0.90	0.66	16EL...
		21684	CER 0755-16QHD	0.750	0.750	1.000	5.0	0.90	0.88	16ER...
		20657	1006-16QHD	1.000	1.000	1.250	6.0	1.10	1.98	16ER...
		20687	CEL 1006-16QHD	1.000	1.000	1.250	6.0	1.10	1.98	16EL...
		20659	CER 1256-16QHD	1.250	1.250	1.500	6.0	1.18	3.09	16ER...
		20688	CEL 1256-16QHD	1.250	1.250	1.500	6.0	1.10	3.09	16EL...
20661	CER 1506-16QHD	1.500	1.500	1.750	6.0	1.10	3.97	16ER...		

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Insert shim (S)	Insert shim (M)*	Shim screw/Key*		Cantilever clamp/ Locking key		Floating wedge clamp	Clamp screw	Spring	Locking key
...-16Q	GX16-1	MX16-1	CS3507-T09P	T09P-2	CSP16-T15P	T15P-2	–	–	–	–
...-16QHD	GX16-1	MX16-1	CS3507-T09P	T09P-2	–	–	CHD16	L85020-T15P	S6912	T15P-7

Please check availability in current price and stock-list

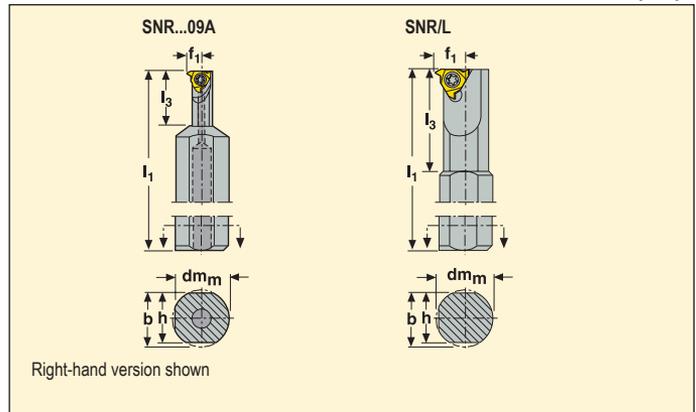
*To be ordered separately
Insert shim (M) for multi tooth insert

Toolholders for S-inserts

Snap-Tap®



• For inserts, please see threading insert section beginning on page 495



Application	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch									lbs	
				dm _m	h	b	l ₁	l ₃	f ₁	D _m min	D _m min*			
	7/32	86856	SNR 00075055-09A	0.750	0.69	0.71	5.5	0.75	0.201	0.40	0.40	0.66	09NR..	
	1/4	72380	SNR 00037540-11	0.375	0.34	0.35	4.0	–	0.285	0.50	0.40	0.22	11NR..	
		72403	SNL 00037540-11	0.375	0.34	0.35	4.0	–	0.285	0.50	0.45	0.22	11NL..	
		72332	SNR 0005055-11	0.500	0.44	0.47	5.5	1.25	0.315	0.60	–	0.66	11NR..	
		72405	SNL 0005055-11	0.500	0.44	0.47	5.5	1.25	0.315	0.60	0.50	0.66	11NL..	
	3/8	72374	SNR 00062560-16	0.625	0.57	0.59	6.0	1.50	0.406	0.75	–	0.66	16NR..	
		72407	SNL 00062560-16	0.625	0.57	0.59	6.0	1.50	0.406	0.75	0.62	0.66	16NL..	
	1/2	72314	SNR 0007570-22	0.750	0.69	0.71	7.0	2.00	0.492	0.90	–	1.10	22NR..	
		72411	SNL 0007570-22	0.750	0.69	0.71	7.0	2.00	0.492	0.90	0.85	1.10	22NL..	
	1/4	72376	SNR 00037560-11-H	0.375	0.34	0.35	6.0	0.39	0.285	0.45	0.40	0.44	11NR..	
	3/8	72330	SNR 00062580-16-H	0.625	0.57	0.59	8.0	1.50	0.406	0.75	–	1.54	16NR..	
	1/2	72370	SNR 00075010-22-H	0.750	0.69	0.71	10.0	2.00	0.492	0.90	–	2.65	22NR..	

*D_m min. can be modified to accommodate a smaller bore size. Please see page 474

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Locking screw/ Key		Coolant adapter*
...09A	C02205-T07P	T07P-2	SEAL20 (20mm)
...11	C02506-T07P	T07P-2	–
...16	C03508-T15P	T15P-2	–
...22	C04011-T15P	T15P-2	–

Please check availability in current price and stock-list

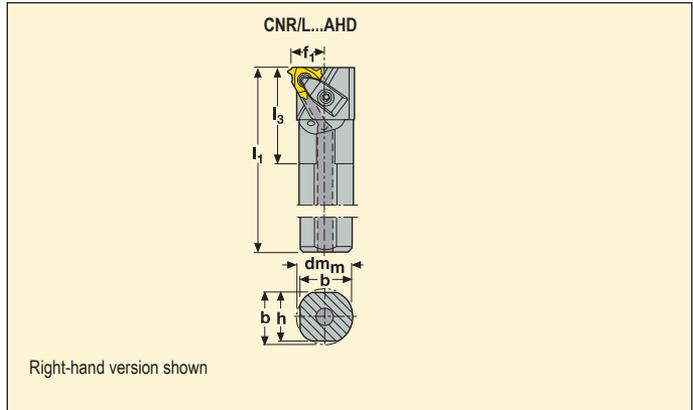
*To be ordered separately

Toolholders for S-inserts

Snap-Tap®



- For inserts, please see threading insert section beginning on page 495



Application	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch								lbs	
				dm _m	h	b	l ₁	l ₃	f ₁	D _m min	D _m min*		
	3/8	30821	CNR 000757-16AHD	0.75	0.65	0.71	6.7	1.18	0.52	0.95	0.80	0.9	16NR..
		30893	001008-16AHD	1.00	0.90	0.96	7.9	2.13	0.65	1.15	1.00	1.5	16NR..
		30897	0012510-16AHD	1.25	1.15	1.21	9.8	1.81	0.78	1.40	1.20	3.1	16NR..
		30899	0015012-16AHD	1.50	1.34	1.43	11.8	1.81	0.90	1.70	1.50	5.1	16NR..
		30904	0017514-16AHD	1.75	1.59	1.68	13.8	2.17	1.03	2.00	1.80	8.2	16NR..
		30906	0020014-16AHD	2.00	1.84	1.93	13.8	2.24	1.15	2.20	2.00	10.8	16NR..
		30907	CNL 000757-16AHD	0.75	0.65	0.71	6.7	1.18	0.52	0.95	0.80	0.9	16NL..
		30908	001008-16AHD	1.00	0.90	0.96	7.9	2.13	0.65	1.15	1.00	1.5	16NL..
		30909	0012510-16AHD	1.25	1.15	1.21	9.8	1.81	0.78	1.40	1.20	3.1	16NL..
		30910	0015012-16AHD	1.50	1.34	1.43	11.8	1.81	0.90	1.70	1.50	5.1	16NL..
		30913	0017514-16AHD	1.75	1.59	1.68	13.8	2.17	1.03	2.00	1.80	8.2	16NL..
		30917	0020014-16AHD	2.00	1.84	1.93	13.8	2.24	1.15	2.20	2.00	10.8	16NL..

*D_m min, can be modified to accommodate a smaller bore size. Please see page 474

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Insert shim (S)	Insert shim (M)*	Shim screw/Key*		Floating wedge clamp	Clamp screw	Spring	Locking key
00075/0100...16AHD	GX16-1	MX16-1	CS3507-T09P	T09P-2	CSP16HD-T15P	–	–	T15P-2
00125/00150...16AHD	GX16-1	MX16-1	CS3507-T09P	T09P-2	CHD16	L85020-T15P	S6912	T15P-2
00175/00200...16AHD	GX16-1	MX16-1	CS3507-T09P	T09P-2	CHD16	L85020-T15P	S6912	T15P-2

Please check availability in current price and stock-list

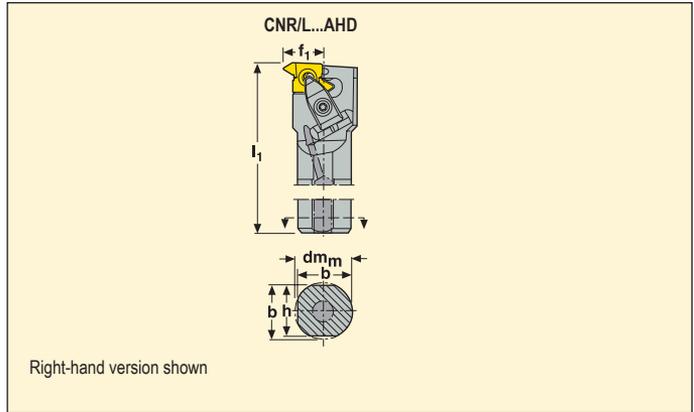
*To be ordered separately

Toolholders for K-inserts

Snap-Tap®



- For inserts, please see threading insert section beginning on page 495



Application	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch								lbs	
				dm _m	h	b	l ₁	l ₃	f ₁	D _m min	D _m min*		
	1/2	30964	CNR 001008-20AHD	1.00	0.90	0.96	8.0	1.97	0.70	1.40	–	1.5	20..
		30965	0012510-20AHD	1.25	1.15	1.21	10.0	2.17	0.94	1.70	1.40	3.3	20..
		30967	0015012-20AHD	1.50	1.34	1.43	12.0	2.17	1.06	2.00	1.60	5.5	20..
		30968	CNL 001008-20AHD	1.00	0.90	0.96	8.0	1.97	0.70	1.40	–	1.5	20..
		30969	0012510-20AHD	1.25	1.15	1.21	10.0	2.17	0.94	1.70	1.40	3.3	20..
	30970	0015012-20AHD	1.50	1.34	1.43	12.0	2.17	1.06	2.00	1.60	5.5	20..	
	5/8	30973	CNR 0012510-26AHD	1.25	1.15	1.21	10.0	2.32	1.06	2.00	1.60	3.1	26..
		30974	0015012-26AHD	1.50	1.34	1.43	12.0	2.32	1.18	2.10	2.10	5.5	26..
		30975	0017514-26AHD	1.75	1.59	1.68	14.0	2.28	1.31	2.30	1.80	8.8	26..
		30976	0020014-26AHD	2.00	1.84	1.93	14.0	2.28	1.43	2.50	2.00	11.5	26..
30977		0025016-26AHD	2.50	2.34	2.43	16.0	2.28	1.68	3.00	2.50	20.7	26..	
30987		CNL 0012510-26AHD	1.25	1.15	1.21	10.0	2.32	1.06	2.00	1.60	3.1	26..	
30867		0015012-26AHD	1.50	1.34	1.43	12.0	2.32	1.18	2.10	2.10	5.5	26..	
30868		0017514-26AHD	1.75	1.59	1.68	14.0	2.28	1.31	2.30	1.80	8.8	26..	
30870	0025016-26AHD	2.50	2.34	2.43	16.0	2.28	1.68	3.00	2.50	20.7	26..		

*D_m min. can be modified to accommodate a smaller bore size. Please see page 474

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Insert shim (K)	Shim screw/Key*	Floating wedge clamp	Clamp screw	Spring	Locking key	
..20AHD							
..26AHD	KX 20-2	CS4009-T15P	T15P-2	CHD22	L86025-T20P	S7616	T20P-7L
	KX 26-2	C05012-T15P	T15P-2	CHD27	L86025-T20P	S7616	T20P-7L

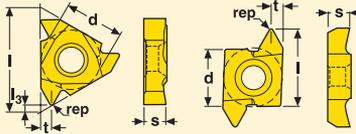
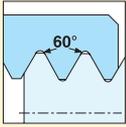
Please check availability in current price and stock-list

*To be ordered separately

Threading – Inserts

Partial Profile 60° – Internal Threading

Snap-Tap®



For toolholders,
see pages 489-493

Size	Dimensions in inch		
	d (I.C.)	l	s
09	7/32	0.378	0.094
11	1/4	0.433	0.118
16	3/8	0.650	0.137
22	1/2	0.866	0.185
26	5/8	1.024	0.310

09NR/11Nx/16Nx/22Nx

11NR/16NR..A

11NR/16NR..A1

11NR/16NR..A2

26ER/26NR..

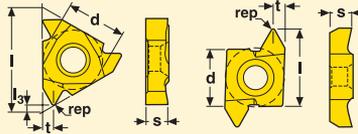
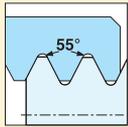


Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)					Insert Part No. Left	Grades (EDP No.)	
TPI	mm	t	l ₃	rep		Coated			Uncoated			Coated	
						CP200	CP500	TM4000	TP1030	H15		CP500	TM4000
48-16	0.50-1.50	0.031	0.028	0.003	09NR A60		39473	35055					
48-16	0.50-1.50	0.031	0.028	0.003	11NR A60	76228	46164	35056	82952	27705	11NL A60	45736	
48-16	0.50-1.50	0.031	0.028	0.003	16NR A60		64777	35104		27529	16NL A60	50328	35867
48-8	0.50-3.00	0.059	0.043	0.003	AG60	76262	64785	13557	82953	27528	AG60	50333	
14-8	1.75-3.00	0.059	0.043	0.005	G60	76266	64794	35107		27530	G60	50336	
7-5	3.50-5.00	0.098	0.071	0.010	22NR N60	76331	73109	35132		27707	22NL N60	72723	
48-16	0.50-1.50	0.031	0.028	0.003	11NR A60-A		17245						
48-8	0.50-3.00	0.059	0.043	0.003	16NR AG60-A		17251						
14-8	1.75-3.00	0.059	0.047	0.005	G60-A		17252						
48-16	0.50-1.50	0.031	0.028	0.003	11NR A60-A1		46171						
48-8	0.50-3.00	0.059	0.043	0.003	16NR AG60-A1		64786						
14-8	1.75-3.00	0.059	0.047	0.005	G60-A1		64795						
48-16	0.50-1.50	0.031	0.028	0.003	11NR A60-A2		77959						
48-8	0.50-3.00	0.059	0.043	0.003	16NR AG60-A2		78016						
14-8	1.75-3.00	0.059	0.047	0.005	G60-A2		78017						
4.5-2.5	5.50-10.00	0.197	-	0.016	26NR K60		73164	22629			26ER K60	73129	22498

Please check availability in current price and stock-list.

Partial Profile 55° – Internal Threading

Snap-Tap®



For toolholders,
see pages 489-493

Size	Dimensions in inch		
	d (I.C.)	l	s
09	7/32	0.378	0.094
11	1/4	0.433	0.118
16	3/8	0.650	0.137
22	1/2	0.866	0.185
26	5/8	1.024	0.310

09NR/11Nx/16Nx/22Nx..

16NR..A

16NR..A1

16NR..A2

26ER/26NR..

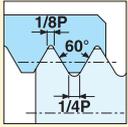


Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)				Insert Part No. Left	Grades (EDP No.)
TPI	mm	t	l ₃	rep		Coated		Uncoated			Coated
						CP200	CP500	TMA000	H15		
						CP500					
48-16	0.50-1.50	0.031	0.028	0.003	09NR A55	23822	35046				
48-16	0.50-1.50	0.031	0.024	0.003	11NR A55	46162	35051	27720	11NL A55	45723	
48-16	0.50-1.50	0.031	0.024	0.003	16NR A55	64758		27549	16NL A55	50327	
48-8	0.50-3.00	0.059	0.043	0.003	AG55	76261	64782	35054	27550	AG55	50329
14-8	1.75-3.00	0.059	0.043	0.008	G55	76263	64788		27551	G55	50334
7-5	3.50-5.00	0.098	0.071	0.016	22NR N55		73091		27752	22NL N55	72714
48-8	0.50-3.00	0.059	0.043	0.003	16NR AG55-A		17243				
14-8	1.75-3.00	0.059	0.043	0.008	G55-A		17244				
48-8	0.50-3.00	0.059	0.043	0.003	16NR AG55-A1		64783				
14-8	1.75-3.00	0.059	0.043	0.008	G55-A1		64789				
48-8	0.50-3.00	0.059	0.043	0.003	16NR AG55-A2		78013				
14-8	1.75-3.00	0.059	0.043	0.008	G55-A2		78015				
4.5-2.5	5.50-10.00	0.197	-	0.028	26NR K55		73146			26ER K55	73128

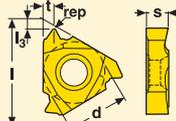
Please check availability in current price and stock-list.

UN – External Threading

Snap-Tap®



For toolholders,
see pages 483-486



ANSI B1.1 - 1983
3A

Size	Dimensions in inch		
	d (I.C.)	l	s
16	3/8	0.650	0.137
22	1/2	0.866	0.185
27	5/8	1.063	0.242

16Ex/22Ex/27ER



16ER..A



16ER..A1



16ER..A2

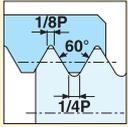


Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)					Insert Part No. Left	Grades (EDP No.)
TPI	mm	t	l ₃	rep		Coated			Uncoated			CP500
						CP200	CP500	TM4000	TP1030	H15		
40	-	0.020	0.047	0.003	16ER 40UN		77861					
32	-	0.031	0.031	0.004	32UN		49951	34908		27558	16EL 32UN	46763
28	-	0.031	0.031	0.004	28UN		49939	34910		27559	28UN	46744
24	-	0.031	0.031	0.005	24UN		49935	34932		27560	24UN	46743
20	-	0.031	0.031	0.006	20UN		49908	13520	82982	27561	20UN	46738
18	-	0.031	0.047	0.007	18UN		49864	34934	82983	27562	18UN	46702
16	-	0.031	0.047	0.009	16UN	76237	49845	34936	82984	27563	16UN	46335
14	-	0.059	0.047	0.009	14UN	76235	49833	34938	82985	27564	14UN	46332
13	-	0.059	0.047	0.009	13UN		49818					
12	-	0.059	0.047	0.010	12UN	76234	49803	13522	82986	27565	16EL 12UN	46324
11	-	0.059	0.047	0.011	11UN		49791			27566	11UN	46298
10	-	0.059	0.047	0.013	10UN		49762	34952	82987	27567	10UN	46265
9	-	0.059	0.047	0.013	9UN		50055			27568	9UN	47537
8	-	0.059	0.047	0.015	8UN	76242	49967	34954	82988	27569	8UN	46765
7	-	0.098	0.071	0.019	22ER 7UN		68204			27744	22EL 7UN	64859
6	-	0.098	0.079	0.020	6UN		68007			27745	6UN	64857
5	-	0.098	0.071	0.024	5UN		67911				5UN	64834
4	-	0.126	0.087	0.031	27ER 4UN		75018					
20	-	0.031	0.031	0.006	16ER 20UN-A		17301					
18	-	0.031	0.031	0.007	18UN-A		17303					
16	-	0.031	0.031	0.009	16UN-A		17305					
14	-	0.059	0.047	0.009	14UN-A		17308					
12	-	0.059	0.047	0.011	12UN-A		17381					
8	-	0.059	0.047	0.017	8UN-A		17386					
20	-	0.031	0.031	0.006	16ER 20UN-A1		49915					
18	-	0.031	0.031	0.007	18UN-A1		49867					
16	-	0.031	0.031	0.009	16UN-A1		49854					
14	-	0.059	0.047	0.009	14UN-A1		49834					
12	-	0.059	0.047	0.011	12UN-A1		49806					
8	-	0.059	0.047	0.017	8UN-A1		49968					
20	-	0.031	0.031	0.006	16ER 20UN-A2		77925					
18	-	0.031	0.031	0.007	18UN-A2		77922					
16	-	0.031	0.031	0.009	16UN-A2		77917					
14	-	0.059	0.047	0.009	14UN-A2		77915					
12	-	0.059	0.047	0.011	12UN-A2		77914					
8	-	0.059	0.047	0.017	8UN-A2		77791					

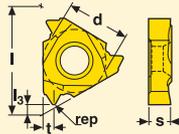
Please check availability in current price and stock-list.

UN – Internal Threading

Snap-Tap®



For toolholders,
see pages 489-492



ANSI B1.1 - 1983
3B

Size	Dimensions in inch		
	d (I.C.)	l	s
09	7/32	0.378	0.094
11	1/4	0.433	0.118
16	3/8	0.650	0.137
22	1/2	0.866	0.185
27	5/8	1.063	0.242

09NR/11Nx/16Nx/22Nx/27NR

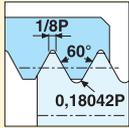


Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)					Insert Part No. Left	Grades (EDP No.)	
TPI	mm	t	l ₃	rep		Coated			Uncoated			Coated	
						CP200	CP500	TIM4000	TP1030	H15			CP500
20	–	0.031	0.028	0.004	09NR 20UN		23503	35341					
18	–	0.031	0.028	0.004	18UN		20503						
13	–	0.035	0.028	0.006	13UN		15584						
32	–	0.031	0.031	0.002	11NR 32UN		46151			27729			
28	–	0.031	0.031	0.002	28UN		46139			27730			
24	–	0.031	0.031	0.003	24UN		46056			27731	11NL 24UN	45714	
20	–	0.031	0.031	0.004	20UN		46044	35344		27732	20UN	45663	
18	–	0.031	0.031	0.004	18UN		45933	35345		27733	18UN	45651	
16	–	0.031	0.031	0.005	16UN		45894	35430		27734	16UN	45642	
14	–	0.035	0.031	0.006	14UN		45834			27735	14UN	45631	
40	–	0.020	0.047	0.002	16NR 40UN		77849						
32	–	0.031	0.031	0.002	32UN		05008	64733		27570	16NL 32UN	50318	
28	–	0.031	0.031	0.002	28UN		05035	64726			28UN	50311	
24	–	0.031	0.031	0.003	24UN		05040	64721		51720	24UN	77893	
20	–	0.031	0.031	0.004	20UN		05045	64715	35436	82963	51721	20UN	50303
18	–	0.031	0.031	0.004	18UN		05067	64507	35649	82964	51723	18UN	50297
16	–	0.031	0.031	0.005	16UN		76255	64433	35674	82965	51724	16UN	50294
14	–	0.059	0.047	0.006	14UN		76253	64425		82966	51725	14UN	50289
13	–	0.059	0.047	0.006	13UN			64416					
12	–	0.059	0.047	0.006	12UN		76252	64406	35681	82967	27580	16NL 12UN	50278
11	–	0.059	0.047	0.006	11UN			64397			27583	11UN	50276
10	–	0.059	0.047	0.007	10UN		05068	50449	35682	82968	51726	10UN	50268
9	–	0.059	0.047	0.007	9UN			77882					
8	–	0.059	0.047	0.010	8UN		76260	64744	35683	82969	27586	16NL 8UN	50322
7	–	0.094	0.079	0.010	22NR 7UN			73085				22NL 7UN	72705
6	–	0.098	0.087	0.012	6UN			73076			27758	6UN	72681
5	–	0.098	0.071	0.014	5UN			72797			27759		
4	–	0.126	0.087	0.018	27NR 4UN			77869					

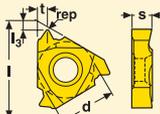
Please check availability in current price and stock-list.

UNJ – External threading (For internal threading see note*)

Snap-Tap®



For toolholders,
see pages 483-486



BS4084 - 1996
MIL-SPECS - 8879A
3A

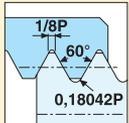
Size	Dimensions in inch		
	d (I.C.)	l	s
16	3/8	0.650	0.137

16ER..UNJ

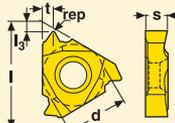


Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)				Insert Part No. Left	Grades (EDP No.)	
TPI	mm	t	l ₃	rep		Coated			Uncoated		Coated	
						CP200	CP500	TM4000	H15		CP200	CP500
32	-	0.031	0.031	0.004	16ER 32UNJ		49956					
28	-	0.031	0.031	0.006	28UNJ	04959	49941					
24	-	0.031	0.031	0.006	24UNJ	04966	49937					
20	-	0.031	0.031	0.008	20UNJ	04971	49917	34955	27596			
18	-	0.031	0.047	0.009	18UNJ	04972	49868	34959				
16	-	0.031	0.047	0.011	16UNJ	04978	49856	34963	27598			
14	-	0.059	0.047	0.012	14UNJ	04980	77857					
12	-	0.059	0.047	0.013	12UNJ		49808	34966	27601	16EL 12UNJ	04984	77863
8	-	0.059	0.047	0.018	8UNJ	04982	50005					

MJ – External Threading (For internal threading see note*)



For toolholders,
see pages 483-486



ISO5855 - 1983
4h/6h

Size	Dimensions in inch		
	d (I.C.)	l	s
16	3/8	0.650	0.137

16ER..MJ



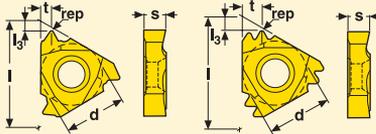
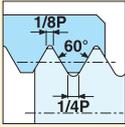
Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)			Insert Part No. Left	Grades (EDP No.)
TPI	mm	t	l ₃	rep		Coated		Uncoated		Coated
						CP200	CP500	H15		CP200
-	1.0	0.031	0.031	0.006	16ER 1.0MJ	04990	49678	27587	16EL 1.0MJ	04999
-	1.5	0.031	0.031	0.010	1.5MJ	04997	49731	27588	1.5MJ	05004
-	2.0	0.059	0.047	0.013	2.0MJ	04998				

Please check availability in current price and stock-list.

*UNJ and MJ internal use. Standard internal UN and ISO M threading inserts can be used for internal UNJ and MJ. The correct diameter "d" must be reached before commencing the threading operation.

ISO Metric – External Threading

Snap-Tap®



For toolholders,
see pages 483-486

ISO965/1 - 1980
3h/4h

Size	Dimensions in inch		
	d (I.C.)	l	s
16	3/8	0.650	0.137
22	1/2	0.866	0.185
27	5/8	1.063	0.242

16Ex/22Ex/27ER



16ER..A



16ER..A1



16ER..A2

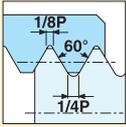


Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)					Insert Part No. Left	Grades (EDP No.)	
TPI	mm	t	l ₃	rep		Coated			Uncoated			Coated	
						CP200	CP500	TM4000	TP1030	HI5		CP500	TM4000
-	0.50	0.031	0.031	0.002	16ER 0.5ISO		49547	34896		27552	16EL 0.5ISO	46176	
-	0.75	0.031	0.031	0.004	0.75ISO		49553	34898		27553	0.75ISO	46206	
-	0.80	0.024	0.031	0.004	0.8ISO		19761				0.8ISO	06845	
-	1.00	0.031	0.031	0.006	1.0ISO	76229	49554	13504	82975	27522	1.0ISO	46211	
-	1.25	0.031	0.031	0.007	1.25ISO	76230	49679	13507	82976	27537	1.25ISO	46214	
-	1.50	0.031	0.031	0.009	1.5ISO	76231	49692	13509	82992	27523	1.5ISO	46239	
-	1.75	0.059	0.047	0.010	1.75ISO	76232	49739	34902	82978	27538	1.75ISO	46261	
-	2.00	0.059	0.047	0.011	2.0ISO	76239	49891	13517	82979	27526	2.0ISO	46718	
-	2.50	0.059	0.047	0.013	2.5ISO	76240	49904	34903	82980	27539	2.5ISO	46733	
-	3.00	0.059	0.047	0.017	3.0ISO	76241	49946	13547	82981	27527	3.0ISO	46746	
-													
-	3.50	0.098	0.071	0.019	22ER 3.5ISO	76271	65402			27739	22EL 3.5ISO	64826	
-	4.00	0.098	0.071	0.021	4.0ISO	76276	65403	34905		27741	4.0ISO	64827	
-	4.50	0.098	0.071	0.023	4.5ISO		67208			27742	4.5ISO	64829	
-	5.00	0.098	0.071	0.026	5.0ISO	76291	67302			27743	5.0ISO	64831	
-													
-	5.50	0.126	0.087	0.028	27ER 5.5ISO		75903						
-	6.00	0.126	0.087	0.031	6.0ISO		77031	22534					
-													
-	1.00	0.031	0.031	0.006	16ER 1.0ISO-A		17253						
-	1.25	0.031	0.031	0.007	1.25ISO-A		17254						
-	1.50	0.031	0.031	0.009	1.5ISO-A		17255						
-	1.75	0.059	0.047	0.010	1.75ISO-A		17256						
-	2.00	0.059	0.047	0.011	2.0ISO-A		17257						
-	2.50	0.059	0.047	0.013	2.5ISO-A		17258						
-	3.00	0.059	0.047	0.017	3.0ISO-A		17261						
-													
-	1.00	0.031	0.031	0.006	16ER 1.0ISO-A1		49674						
-	1.25	0.031	0.031	0.007	1.25ISO-A1		49689						
-	1.50	0.031	0.031	0.009	1.5ISO-A1		49728						
-	1.75	0.059	0.047	0.010	1.75ISO-A1		49744						
-	2.00	0.059	0.047	0.011	2.0ISO-A1		49893						
-	2.50	0.059	0.047	0.013	2.5ISO-A1		49906						
-	3.00	0.059	0.047	0.017	3.0ISO-A1		49947						
-													
-	1.00	0.031	0.031	0.006	16ER 1.0ISO-A2		77781						
-	1.25	0.031	0.031	0.007	1.25ISO-A2		77782						
-	1.50	0.031	0.031	0.009	1.5ISO-A2		77783						
-	1.75	0.059	0.047	0.010	1.75ISO-A2		77784						
-	2.00	0.059	0.047	0.011	2.0ISO-A2		77785						
-	2.50	0.059	0.047	0.013	2.5ISO-A2		77788						
-	3.00	0.059	0.047	0.017	3.0ISO-A2		77789						

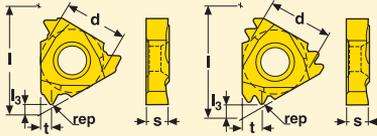
Please check availability in current price and stock-list.

ISO Metric – Internal Threading

Snap-Tap®



For toolholders, see pages 489-492



ISO965/1 - 1980
4h

Size	Dimensions in inch		
	d (I.C.)	l	s
09	7/32	0.378	0.094
11	1/4	0.433	0.118
16	3/8	0.650	0.137
22	1/2	0.866	0.185
27	5/8	1.063	0.242

09NR/11Nx/16Nx/22Nx/27NR

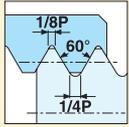


Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)					Insert Part No. Left	Grades (EDP No.)		
TPI	mm	t	l ₃	rep		Coated			Uncoated			Coated		
						CP200	CP500	TM4000	TP1030	H15		CP200	CP500	TM4000
-	0.50	0.024	0.028	0.002	09NR 0.5ISO		06842							
-	0.80	0.024	0.028	0.003	0.8ISO		06843							
-	1.00	0.031	0.028	0.003	1.0ISO		04107	35143						
-	1.25	0.031	0.028	0.004	1.25ISO		06844	35175						
-	1.50	0.031	0.028	0.005	1.5ISO		04118	35176						
-	1.75	0.031	0.028	0.005	1.75ISO		06987							
-	2.00	0.035	0.028	0.007	2.0ISO		20505							
-	0.50	0.031	0.031	0.001	11NR 0.5ISO		45739			27721	11NL 0.5ISO		40114	
-	0.75	0.031	0.031	0.002	0.75ISO		45756			27722	0.75ISO		40118	
-	1.00	0.031	0.031	0.003	1.0ISO	76223	45774	35188	82954	27723	1.0ISO	05076	50254	
-	1.25	0.031	0.031	0.004	1.25ISO		45776			27724	1.25ISO		50256	
-	1.50	0.031	0.031	0.005	1.5ISO	76224	45794	35191	82955	27726	1.5ISO		50258	35875
-	1.75	0.031	0.031	0.005	1.75ISO		45823			27727				
-	2.00	0.035	0.031	0.007	2.0ISO	76227	45996	35192	82956	27728				
-	0.50	0.031	0.031	0.001	16NR 0.5ISO		50338			27554	16NL 0.5ISO		50239	
-	0.75	0.031	0.031	0.002	0.75ISO		50339			27555	0.75ISO		50253	
-	1.00	0.031	0.031	0.003	1.0ISO	76248	50342	13548	82957	27531	1.0ISO	05076	50254	
-	1.25	0.031	0.031	0.004	1.25ISO	05075	50359			27556	1.25ISO		50256	
-	1.50	0.031	0.031	0.005	1.5ISO	76249	50402	13550	82958	27532	1.5ISO	05077	50258	35875
-	1.75	0.059	0.047	0.005	1.75ISO		50435		82959	27557	1.75ISO		50266	
-	2.00	0.059	0.047	0.007	2.0ISO	76257	64704	13554	82960	27535	2.0ISO		50299	35876
-	2.50	0.059	0.047	0.007	2.5ISO	76258	26587	35207	82961	27540	2.5ISO		50302	
-	3.00	0.059	0.047	0.008	3.0ISO	76259	64728	13555	82962	27536	3.0ISO		50316	
-	3.50	0.091	0.075	0.010	22NR 3.5ISO	76315	72773			27753	22NL 3.5ISO		68404	
-	4.00	0.098	0.079	0.011	4.0ISO	76317	72774	35212		27754	4.0ISO		68407	
-	4.50	0.098	0.083	0.013	4.5ISO		72786			27755	4.5ISO		70208	
-	5.00	0.098	0.071	0.014	5.0ISO	76322	72789			27756	5.0ISO		71614	
-	5.50	0.126	0.087	0.015	27NR 5.5ISO		78291							
-	6.00	0.126	0.087	0.017	6.0ISO		78301	22844						

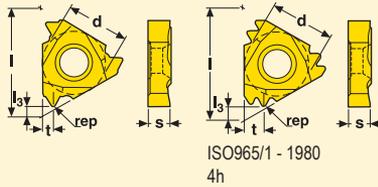
Please check availability in current price and stock-list.

ISO Metric – Internal Threading

Snap-Tap®



For toolholders,
see pages 489-492



ISO965/1 - 1980
4h

Size	Dimensions in inch		
	d (I.C.)	l	s
11	1/4	0.433	0.118
16	3/8	0.650	0.137
22	1/2	0.866	0.185
27	5/8	1.063	0.242



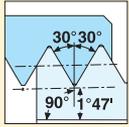
Pitch	Dimensions in inch				Insert Part No. Right	Grades (EDP No.)
	TPI	mm	t	l ₃		
						Coated
						CP500
–	1.00	0.031	0.031	0.003	11NR 1.0ISO-A	17264
–	1.50	0.031	0.031	0.005	1.5ISO-A	17265
–	2.00	0.035	0.031	0.007	2.0ISO-A	17266
–	1.00	0.031	0.031	0.004	16NR 1.0ISO-A	17267
–	1.50	0.031	0.031	0.005	1.5ISO-A	17269
–	2.00	0.059	0.047	0.006	2.0ISO-A	17294
–	2.50	0.059	0.047	0.007	2.5ISO-A	17296
–	3.00	0.059	0.047	0.008	3.0ISO-A	17300
–	1.00	0.031	0.031	0.003	11NR 1.0ISO-A1	96767
–	1.50	0.031	0.031	0.005	1.5ISO-A1	45801
–	2.00	0.035	0.031	0.007	2.0ISO-A1	45997
–	1.00	0.031	0.031	0.004	16NR 1.0ISO-A1	50345
–	1.50	0.031	0.031	0.005	1.5ISO-A1	50404
–	2.00	0.059	0.047	0.006	2.0ISO-A1	64707
–	2.50	0.059	0.047	0.007	2.5ISO-A1	26588
–	3.00	0.059	0.047	0.008	3.0ISO-A1	64729
–	1.00	0.031	0.031	0.003	11NR 1.0ISO-A2	77946
–	1.50	0.031	0.031	0.005	1.5ISO-A2	77949
–	2.00	0.035	0.031	0.007	2.0ISO-A2	77951
–	1.00	0.031	0.031	0.004	16NR 1.0ISO-A2	77960
–	1.50	0.031	0.031	0.005	1.5ISO-A2	77963
–	2.00	0.059	0.047	0.006	2.0ISO-A2	77965
–	2.50	0.059	0.047	0.007	2.5ISO-A2	77966
–	3.00	0.059	0.047	0.008	3.0ISO-A2	77968
–	1.00	0.047	0.051	0.004	16NR 1.0ISO-TT	82867
–	1.50	0.071	0.051	0.005	1.5ISO-TT	83155
–	2.00	0.094	0.063	0.007	2.0ISO-TT	83938
–	1.00	0.094	0.059	0.003	16NR 1.0ISO3M	50343
–	1.50	0.083	0.055	0.005	1.5ISO2M	50403
–	1.50	0.142	0.091	0.005	22NR 1.5ISO3M	72726
–	2.00	0.114	0.079	0.007	2.0ISO2M	72758
–	2.00	0.189	0.118	0.007	2.0ISO3M	72763
–	3.00	0.169	0.110	0.008	27NR 3.0ISO2M	78177

Please check availability in current price and stock-list.

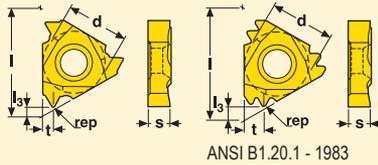
Note: TT, 2M & 3M represents multiple tooth insert.

NPT – Internal Threading

Snap-Tap®



For toolholders,
see pages 489-492



Size	Dimensions in inch		
	d (I.C.)	l	s
09	7/32	0.378	0.094
11	1/4	0.433	0.118
16	3/8	0.650	0.137
22	1/2	0.866	0.185

09NR/11NR/16Nx



16NR..A1



16NR..A2



22NR..M



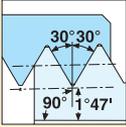
Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)			Insert Part No. Left	Grades (EDP No.)
TPI	mm	t	l ₃	rep		Coated		Uncoated		CP500
						CP500	TIM4000	H15		
						Coated				
27	-	0.031	0.028	0.002	09NR 27NPT	85615				
18	-	0.031	0.028	0.002	18NPT	77860	35691			
18	-	0.031	0.028	0.002	11NR 18NPT	77859	35692			
14	-	0.039	0.028	0.003	14NPT	45833	35699			
14	-	0.059	0.043	0.003	16NR 14NPT	64422	13561	27638	16NL 14NPT	50287
11.5	-	0.059	0.043	0.004	11.5NPT	50693	35728	27639	11.5NPT	50271
8	-	0.063	0.043	0.004	8NPT	64738	35761	27640	8NPT	50321
11.5	-	0.059	0.043	0.004	16NR 11.5NPT-A1	50694				
14	-	0.059	0.043	0.003	16NR 14NPT-A2	77975				
11.5	-	0.059	0.043	0.004	11.5NPT-A2	77974				
8	-	0.063	0.043	0.005	8NPT-A2	77969				
11.5	-	0.130	0.083	0.002	22NR 11.5NPT2M	77843				

Please check availability in current price and stock-list.

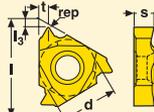
Note: 2M represents multiple tooth insert.

NPTF- External Threading

Snap-Tap®



For toolholders,
see pages 483-486



ANSI B1.4 - 1976
ANSI B1.20.3 - 1976

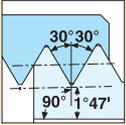
Size	Dimensions in inch		
	d (I.C.)	l	s
16	3/8	0.650	0.137

16ER..

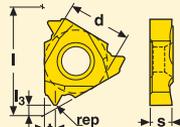


Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)	
TPI	mm	t	l ₃	rep		Coated	CP500
27	–	0.031	0.028	0.002	16ER 27NPTF	77885	
18	–	0.031	0.028	0.002	18NPTF	77866	
14	–	0.059	0.043	0.002	14NPTF	49827	
11.5	–	0.059	0.043	0.002	11.5NPTF	49779	

NPTF- Internal Threading



For toolholders,
see pages 489-492



ANSI B1.4 - 1976
ANSI B1.20.3 - 1976

Size	Dimensions in inch		
	d (I.C.)	l	s
11	1/4	0.433	0.118
16	3/8	0.650	0.137

11NR/16Nx

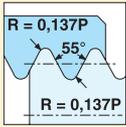


Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)		Insert Part No. Left	Grades (EDP No.)	
TPI	mm	t	l ₃	rep		Coated	CP500		Coated	CP500
18	–	0.031	0.028	0.002	11NR 18NPTF	77883				
14	–	0.059	0.043	0.002	16NR 14NPTF	64423				
11.5	–	0.059	0.043	0.002	11.5NPTF	50698		16NL 11.5NPTF	50272	

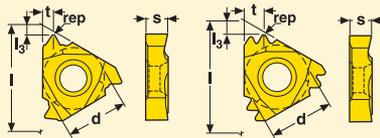
Please check availability in current price and stock-list.

Whitworth, BSW – External Threading

Snap-Tap®



For toolholders,
see pages 483-486



BS84 -1956
ISO228 -1982
BS2779 -1973

Size	Dimensions in inch		
	d (I.C.)	l	s
16	3/8	0.650	0.137
22	1/2	0.866	0.185

16Ex/22Ex



16ER..A



16ER..A1



16ER..A2



16ER..TT



22ER..M



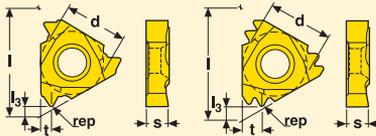
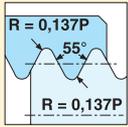
Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)					Insert Part No. Left	Grades (EDP No.)
TPI	mm	t	l ₃	rep		Coated			Uncoated			CP500
						CP200	CP500	TM4000	TP1030	H15		
28	–	0.031	0.031	0.004	16ER 28W		49942	34968		27602	16EL 28W	46745
20	–	0.031	0.031	0.006	20W		49918	34969		27604	20W	46739
19	–	0.031	0.031	0.006	19W	76238	49871	34970	82989	27541	19W	46703
18	–	0.031	0.031	0.006	18W		49869					
16	–	0.031	0.031	0.008	16W		49857			27607	16EL 16W	46515
14	–	0.059	0.047	0.009	14W	76236	49841	13523	82990	27525	14W	46333
12	–	0.059	0.047	0.009	12W		49816			27608	12W	46325
11	–	0.059	0.047	0.012	11W	76233	49792	13524	82991	27524	11W	46313
10	–	0.059	0.047	0.011	10W		49764			27609	10W	46284
9	–	0.059	0.047	0.012	9W		50056				9W	47809
8	–	0.059	0.047	0.017	8W		50048			27612	8W	47211
7	–	0.098	0.071	0.017	22ER 7W		68206			27747	22EL 7W	64861
6	–	0.098	0.071	0.020	6W		68008			27748	6W	64858
5	–	0.098	0.067	0.025	5W		68001			27749	5W	64835
19	–	0.031	0.031	0.006	16ER 19W-A		17387					
14	–	0.059	0.047	0.009	14W-A		17390					
11	–	0.059	0.047	0.012	11W-A		17393					
19	–	0.031	0.031	0.006	16ER 19W-A1		49882					
14	–	0.059	0.047	0.009	14W-A1		49842					
11	–	0.059	0.047	0.012	11W-A1		49793					
19	–	0.031	0.031	0.006	16ER 19W-A2		77937					
14	–	0.059	0.047	0.009	14W-A2		77936					
11	–	0.059	0.047	0.012	11W-A2		77933					
14	–	0.087	0.059	0.009	16ER 14W-TT		82431					
11	–	0.110	0.071	0.012	11W-TT		82375					
11	–	0.138	0.091	0.012	22ER 11W2M		64938					

Please check availability in current price and stock-list.

Note: TT & 2M represents multiple tooth insert.

Whitworth, BSW – Internal Threading

Snap-Tap®



For toolholders,
see pages 489-492

BS84 - 1956
ISO228 - 1982
BS2779 - 1973

Size	Dimensions in inch		
	d (I.C.)	l	s
09	7/32	0.378	0.094
11	1/4	0.433	0.118
16	3/8	0.650	0.137
22	1/2	0.866	0.185

09NR/11Nx/16Nx/22Nx



11NR/16NR..A



11NR/16NR..A1



11NR/16NR..A2



16NR..TT



22NR..M

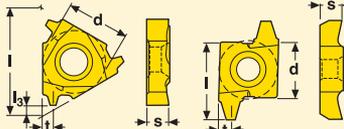
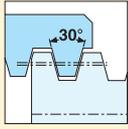


Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)					Insert Part No. Left	Grades (EDP No.)
TPI	mm	t	l ₃	rep		Coated			Uncoated			CP500
						CP200	CP500	TM4000	TP1030	H15		
14	-	0.035	0.028	0.009	09NR 14W		20502					
19	-	0.031	0.028	0.006	19W		17102					
19	-	0.031	0.031	0.006	11NR 19W	76226	45948	35684	82970	27736	11NL 19W	45652
14	-	0.035	0.028	0.009	14W	76225	45867		82971	27737	14W	45632
28	-	0.031	0.031	0.004	16NR 28W		64727				16NL 28W	50313
20	-	0.031	0.031	0.006	20W		64718			27615	20W	50308
19	-	0.031	0.031	0.006	19W	76256	64702			27616	19W	50298
16	-	0.031	0.031	0.008	16W		64502			27618	16W	50296
14	-	0.059	0.047	0.009	14W	76254	64428	13559		27534	14W	50291
12	-	0.059	0.047	0.009	12W		64413			27619	12W	50281
11	-	0.059	0.047	0.012	11W	76713	64398	13560	82972	27533	11W	50277
10	-	0.059	0.047	0.011	10W	76250	50657			27621	10W	50269
9	-	0.059	0.047	0.012	9W		64756			27622	9W	50324
8	-	0.059	0.047	0.017	8W		64748			27623	8W	50323
7	-	0.098	0.071	0.017	22NR 7W		73087				22NL 7W	72706
6	-	0.098	0.071	0.020	6W		73083			27761	6W	72687
5	-	0.098	0.067	0.025	5W		72798			27762	5W	72292
19	-	0.031	0.031	0.006	11NR 19W-A		17395					
14	-	0.035	0.028	0.009	14W-A		17402					
14	-	0.043	0.047	0.009	16NR 14W-A		17405					
11	-	0.059	0.047	0.012	11W-A		17406					
19	-	0.031	0.031	0.006	11NR 19W-A1		45963					
14	-	0.035	0.028	0.009	14W-A1		45888					
14	-	0.043	0.047	0.009	16NR 14W-A1		64429					
11	-	0.059	0.047	0.012	11W-A1		64399					
19	-	0.031	0.031	0.006	11NR 19W-A2		77957					
14	-	0.035	0.028	0.009	14W-A2		77953					
14	-	0.043	0.047	0.009	16NR 14W-A2		78005					
11	-	0.059	0.047	0.012	11W-A2		77990					
14	-	0.087	0.059	0.009	16NR 14W-TT		85851					
11	-	0.110	0.071	0.012	11W-TT		83945					
11	-	0.138	0.091	0.012	22NR 11W2M		72736					

Please check availability in current price and stock-list.

TR-DIN103 – Internal Threading

Snap-Tap®



For toolholders,
see pages 489-493

DIN103 - 1977
ISO2901/3 - 1977
7H

Size	Dimensions in inch		
	d	l	s
16	3/8	0.650	0.137
20	1/2	0.787	0.248
22	1/2	0.866	0.185
26	5/8	1.024	0.310
27	5/8	1.063	0.242

16Nx/22Nx/27NR



20NR/26NR

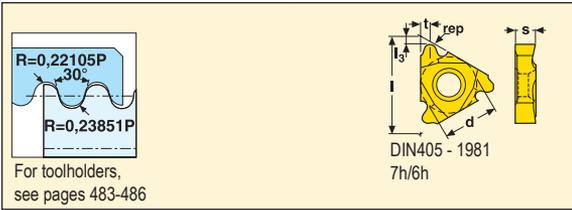


Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)			Insert Part No. Left	Grades (EDP No.)
TPI	mm	t	l ₃	rep		Coated		Uncoated		Coated
						CP500	TMA000	H15		
-	1.5	0.031	0.035	-	16NR 1.5TR	50427		27654	16NL 1.5TR	50265
-	2.0	0.059	0.051	-	2.0TR	26586		27655	2.0TR	50301
-	3.0	0.063	0.051	-	3.0TR	64732	35767		3.0TR	50317
-	4.0	0.098	0.079	-	22NR 4.0TR	72782	35768		22NL 4.0TR	68408
-	5.0	0.091	0.079	-	5.0TR	72791	35773		5.0TR	71627
-	6.0	0.126	0.098	-	27NR 6.0TR	78742				
-	7.0	0.126	-	-	20NR 7.0TR	64823				
-	8.0	0.126	-	-	8.0TR	64825				
-	9.0	0.197	-	-	26NR 9.0TR	73138				
-	10.0	0.197	-	-	10.0TR	73132	22537			
-	12.0	0.197	-	-	12.0TR	73133	22538			
-	14.0	0.201	-	-	14.0TR	73137	22539			

Please check availability in current price and stock-list.

Round-DIN405 – External Threading

Snap-Tap®



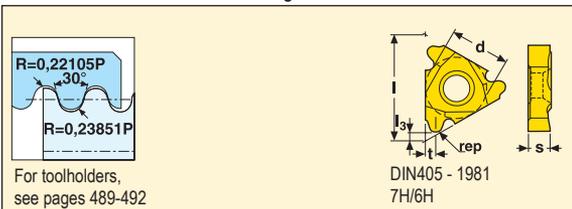
Size	Dimensions in inch		
	d (I.C.)	l	s
16	3/8	0.650	0.137
22	1/2	0.866	0.185
27	5/8	1.063	0.242

16ER/22Ex/27ER



Pitch		Dimensions in inch			Grades (EDP No.)			Grades (EDP No.)	
TPI	mm	t	l ₃	rep	Insert Part No. Right	Coated		Insert Part No. Left	Coated
						CP500	TM4000		CP500
10	–	0.059	0.051	0.023	16ER 10RD	49761			
8	–	0.059	0.051	0.029	8RD	49966			
6	–	0.071	0.051	0.038	6RD	49957	34979		
6	–	0.098	0.079	0.038	22ER 6RD	68004		22EL 6RD	64837
4	–	0.126	0.087	0.057	27ER 4RD	74902			

Round-DIN405 – Internal Threading



Size	Dimensions in inch		
	d (I.C.)	l	s
16	3/8	0.650	0.137
22	1/2	0.866	0.185
27	5/8	1.063	0.242

16NR/22Nx/27NR

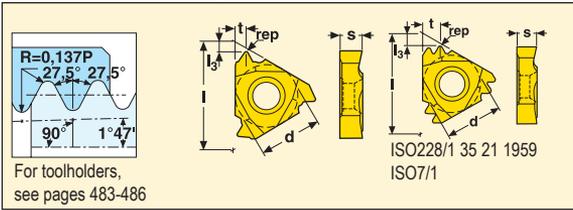


Pitch		Dimensions in inch			Grades (EDP No.)			Grades (EDP No.)	
TPI	mm	t	l ₃	rep	Insert Part No. Right	Coated		Insert Part No. Left	Coated
						CP500	TM4000		CP500
10	–	0.059	0.051	0.020	16NR 10RD	50447			
8	–	0.059	0.051	0.027	8RD	64742			
6	–	0.071	0.051	0.034	6RD	64735	35762		
6	–	0.098	0.079	0.034	22NR 6RD	72913		22NL 6RD	72666
4	–	0.126	0.087	0.052	27NR 4RD	78285			

Please check availability in current price and stock-list.

BSPT – External Threading

Snap-Tap®

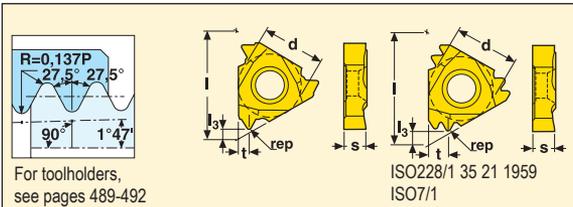


Size	Dimensions in inch		
	d (I.C.)	l	s
16	3/8	0.650	0.137



Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)			Insert Part No. Left	Grades (EDP No.)
TPI	mm	t	l ₃	rep		Coated		Uncoated		CP500
						CP500	TM4000	H15		
14	-	0.059	0.047	0.009	16ER 14BSPT	49819		27624	16EL 14BSPT	46326
11	-	0.059	0.047	0.012	11BSPT	49782	34971	27625	11BSPT	46294
14	-	0.087	0.059	0.009	16ER 14BSPT-TT	82863				
11	-	0.110	0.071	0.012	11BSPT-TT	82623				

BSPT – Internal Threading



Size	Dimensions in inch		
	d (I.C.)	l	s
09	7/32	0.378	0.094
16	3/8	0.650	0.137



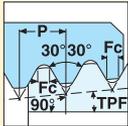
Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)			Insert Part No. Left	Grades (EDP No.)
TPI	mm	t	l ₃	rep		Coated		Uncoated		CP500
						CP500	TM4000	H15		
19	-	0.031	0.031	0.006	09NR 19BSPT	00057				
14	-	0.059	0.047	0.009	16NR 14BSPT	64417		27626	16NL 14BSPT	50282
11	-	0.059	0.047	0.012	11BSPT	50727	35685	27627	11BSPT	50275
14	-	0.087	0.059	0.009	16NR 14BSPT-TT	86105				
11	-	0.110	0.071	0.012	11BSPT-TT	85963				

Please check availability in current price and stock-list.

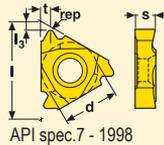
Note: TT represents multiple tooth insert.

API – External Threading

Snap-Tap®



For toolholders,
see pages 483-486



API spec.7 - 1998

Size	Dimensions in inch		
	d (I.C.)	l	s
22	1/2	0.866	0.185
27	5/8	1.063	0.242

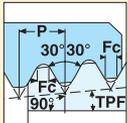
22ER/27ER



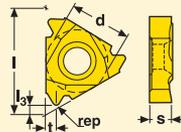
Pitch	Dimensions in inch		API Code	Taper TPF	rep	fc	Part No.	Grades (EDP No.)		
								Coated		
								CP200	CP500	TM4000
TPI	t	l ₃								
5	0.098	0.079	V040	3	0.020	0.040	22ER 5API404		67402	35015
4	0.100	0.077	V038R	2	0.038	0.065	4API386		67301	35023
5	0.126	0.087	V040	3	0.020	0.040	27ER 5API404		77872	22533
4	0.126	0.087	V038R	3	0.038	0.065	4API384	44723	74102	
4	0.126	0.087	V038R	2	0.038	0.065	4API386	44763	74203	35029
4	0.126	0.087	V050	3	0.025	0.050	4API504	44724	74702	22511
4	0.126	0.087	V050	2	0.025	0.050	4API506	44764	74901	35032

For oilfield connection part numbers see pages 480-482

API – Internal Threading



For toolholders,
see pages 489-492



API spec.7 - 1998

Size	Dimensions in inch		
	d (I.C.)	l	s
22	1/2	0.866	0.185
27	5/8	1.063	0.242

22NR/27NR



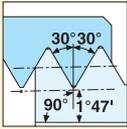
Pitch	Dimensions in inch		API Code	Taper TPF	rep	fc	Part No.	Grades			
								Coated			Uncoated
								CP200	CP500	TM4000	H15
TPI	t	l ₃									
5	0.098	0.079	V040	3	0.020	0.040	22NR 5API404		72793	35839	
4	0.098	0.075	V038R	2	0.038	0.065	4API386		72788	35854	27763
5	0.126	0.087	V040	3	0.020	0.040	27NR 5API404			22843	
4	0.126	0.087	V038R	3	0.038	0.065	4API384	44725	78179		
4	0.126	0.087	V038R	2	0.038	0.065	4API386	44765	78181	35855	
4	0.126	0.087	V050	3	0.025	0.050	4API504	44726	78187	22748	
4	0.126	0.087	V050	2	0.025	0.050	4API506	44766	78228	35860	

Please check availability in current price and stock-list.

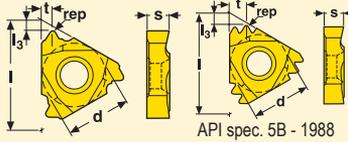
For oilfield connection part numbers see pages 480-482

APIRD– External Threading

Snap-Tap®



For toolholders, see pages 483-486



API spec. 5B - 1988

Size	Dimensions in inch		
	d (I.C.)	l	s
16	3/8	0.650	0.137
22	1/2	0.866	0.185
27	5/8	1.063	0.242

16ER

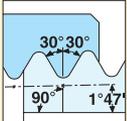


22ER/27ER

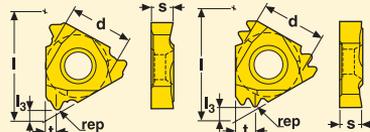


Pitch	Dimensions in inch			Part No.	Grades (EDP No.)	
	TPI	t	l ₃		rep	Coated
					CP500	TM4000
10	0.059	0.059	0.015	16ER 10APIRD	49748	
8	0.059	0.059	0.018	8APIRD	49959	35034
10	0.146	0.094	0.015	22ER 10APIRD2M	64902	
8	0.177	0.114	0.018	27ER 8APIRD2M		22535

APIRD– Internal Threading



For toolholders, see pages 489-492



API spec. 5B - 1988

Size	Dimensions in inch		
	d (I.C.)	l	s
16	3/8	0.650	0.137
27	5/8	1.063	0.242

16NR



27NR



Pitch	Dimensions in inch			Insert Part No. Right	Grades (EDP No.)		
	TPI	mm	t		l ₃	rep	Coated
						CP500	TM4000
10	–	0.059	0.059	0.015	16NR 10APIRD	50446	
8	–	0.059	0.059	0.018	8APIRD	64737	35861
8	–	0.177	0.114	0.018	27NR 8APIRD2M		22848

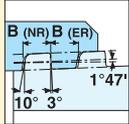
Please check availability in current price and stock-list.

Note: 2M represents multiple tooth insert.

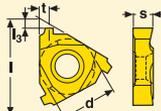
API-BUTTRESS 2.5 – External Threading

Snap-Tap®

Crest and root are parallel to taper



For toolholders,
see pages 483-486



Vallourec ST-D453.02
API spec. 5B - 1988

Size	Dimensions in inch		
	d (I.C.)	l	s
22	1/2	0.866	0.185

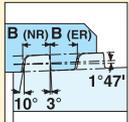
22ER



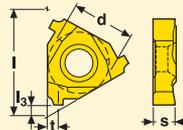
Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)	
TPI	mm	t	l ₃	rep		Coated	CP500
6	–	0.098	0.087	–	22ER 6VAM		68203
5	–	0.098	0.087	–	5BUT2.5		67403

API-BUTTRESS 2.5 – Internal Threading

Crest and root are parallel to taper



For toolholders,
see pages 489-492



Vallourec ST-D453.02
API spec. 5B - 1988

Size	Dimensions in inch		
	d (I.C.)	l	s
22	1/2	0.866	0.185

22NR



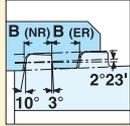
Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)	
TPI	mm	t	l ₃	rep		Coated	CP500
5	–	0.083	0.079	–	22NR 5BUT2.5		72794
5	–	0.079	0.079	–	5VAM		72799
6	–	0.079	0.079	–	6VAM		73084

Please check availability in current price and stock-list.

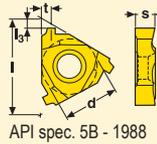
API-BUTTRESS 2.6 – External Threading

Snap-Tap®

Crest and root are parallel to axis



For toolholders,
see pages 483-486



Size	Dimensions in inch		
	d (I.C.)	l	s
22	1/2	0.866	0.185

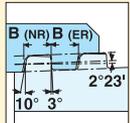
22ER



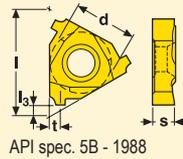
Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)
TPI	mm	t	l ₃	rep		Coated
						CP500
5	–	0.098	0.087	–	22ER 5BUT2.6	67901

API-BUTTRESS 2.6 – Internal Threading

Crest and root are parallel to axis



For toolholders,
see pages 489-492



Size	Dimensions in inch		
	d (I.C.)	l	s
22	1/2	0.866	0.185

22NR



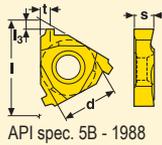
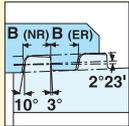
Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)
TPI	mm	t	l ₃	rep		Coated
						CP500
5	–	0.083	0.079	–	22NR 5BUT2.6	77978

Please check availability in current price and stock-list.

AMERICAN BUTTRESS – External Threading

Snap-Tap®

Crest and root are parallel to axis



API spec. 5B - 1988

For toolholders,
see pages 483-486

Size	Dimensions in inch		
	d (I.C.)	l	s
16	3/8	0.650	0.137

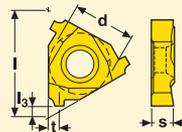
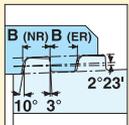
16ER



Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)
TPI	mm	t	l ₃	rep		Coated
						CP500
12	–	0.051	0.079	0.005	16ER 12ASB45/7	77862
16	–	0.051	0.079	0.003	16ASB45/7	77845

AMERICAN BUTTRESS – Internal Threading

Crest and root are parallel to axis



API spec. 5B - 1988

For toolholders,
see pages 489-492

Size	Dimensions in inch		
	d (I.C.)	l	s
16	3/8	0.650	0.137

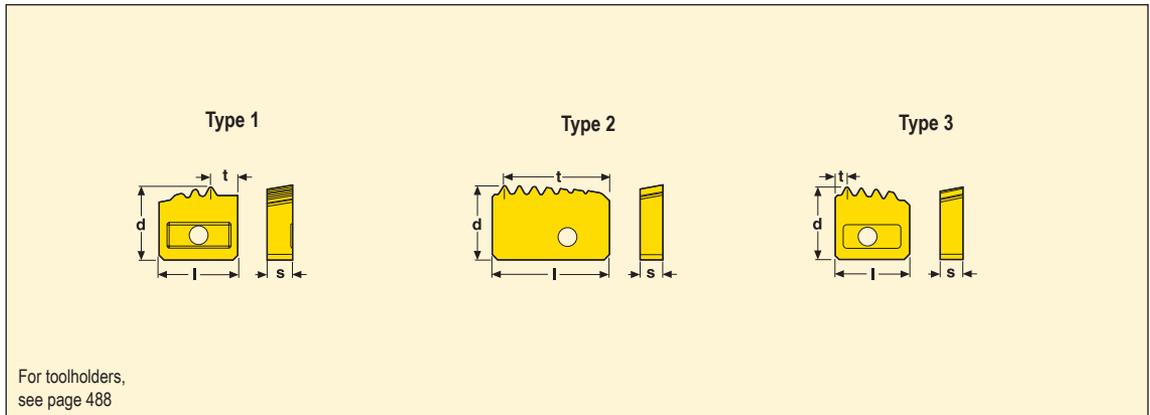
16NR



Pitch		Dimensions in inch			Insert Part No. Right	Grades (EDP No.)
TPI	mm	t	l ₃	rep		Coated
						CP500
12	–	0.051	0.079	0.005	16NR 12ASB45/7	77856

Please check availability in current price and stock-list.

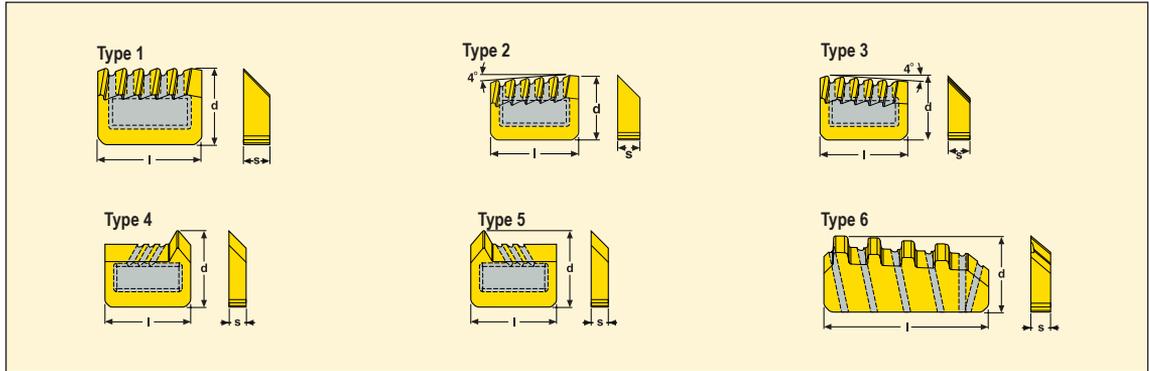
Chasers



For toolholders,
see page 488

Pitch	Int./Ext.	Type	Dimensions in inch				No. of teeth	Part No.	Thread Form Product	Grades CP250T
			l	d	s	t				
8	Internal	3	0.625	0.625	0.187	0.098	4	8- 1128	API RD 8TPI INT,	29931
8	External	1	0.625	0.625	0.187	0.220	3	1116	API RD CAS 8TPI EXT,	29933
8	External	1	0.630	0.576	0.205	0.303	3	2115-1	API RD 8TPI CAS 3/4 TPF 1PMC	20000
8	External	1	0.630	0.585	0.205	0.261	3	2115-2	API RD 8TPI CAS 3/4 TPF 2PMC	20001
8	External	1	0.630	0.591	0.205	0.220	3	2115-3	API RD 8TPI CAS 3/4 TPF 3PMC	20002
8	External	1	0.787	0.625	0.187	0.401	3	4133-1	API RD 8TPI EXT CASING 1	30879
8	External	1	0.787	0.625	0.187	0.339	3	4133-2	API RD 8TPI EXT CASING 2	30880
8	External	1	0.630	0.576	0.205	0.303	3	8- 2118-1	API RD 8TPI TUB 3/4 TPF 1PMC	20003
8	External	1	0.630	0.585	0.205	0.261	3	2118-2	API RD 8TPI TUB 3/4 TPF 2PMC	20004
8	External	1	0.630	0.591	0.205	0.220	3	2118-3	API RD 8TPI TUB 3/4 TPF 3PMC	20005
8	External	1	0.625	0.625	0.187	0.220	3	1117	API RD TUBING 8TPI EXT,	29936
8	External	1	0.625	0.612	0.187	0.236	3	1132-1	API RD 8TPI TUBING EXT 1	30877
8	External	1	0.625	0.624	0.187	0.173	3	1132-2	API RD 8TPI TUBING EXT 2	30878
8	Internal	3	0.984	0.625	0.197	0.098	7	5111	API RD 8TPI INT	19996
8	Internal	2	0.984	0.625	0.197	0.886	7	5114	API RD 8TPI INTPULLING	19999
10	External	1	0.625	0.596	0.187	0.223	3	10- 1133-1	API RD 10TPI TUB EXT 1	30872
10	External	1	0.625	0.625	0.187	0.173	3	1133-2	API RD 10TPI TUB EXT 2	30873
10	Internal	3	0.625	0.625	0.187	0.197	4	1120	API RD 10TPI TUB INT	30871
5	External	1	0.625	0.625	0.187	0.083	3	5- 1102	API BUTT 5TPI 1/16 EXT	19987
5	Internal	2	0.625	0.625	0.187	0.527	3	1134	API BUTT 5TPI CAS 1/16 INTPUL	42870
5	Internal	3	0.625	0.625	0.187	0.098	3	1113	API BUTTRESS 5TPI 1/16 INT,	30691
5	External	1	0.669	0.574	0.187	0.219	3	3105-1	API BUTTRESS 5TPI 1/16 EXT 1	19988
5	External	1	0.669	0.584	0.187	0.152	3	3105-2	API BUTTRESS 5TPI 1/16 EXT 2	19989
5	External	1	0.669	0.590	0.187	0.085	3	3105-3	API BUTTRESS 5TPI 1/16 EXT 3	19990
5	External	1	0.787	0.618	0.187	0.191	3	4131-1	API BUTTRESS 1/16 5TPI EXT 1	30874
5	External	1	0.787	0.625	0.187	0.091	4	4131-2	API BUTTRESS 1/16 5TPI EXT 2	30875
5	External	1	0.787	0.617	0.187	0.190	3	4135-1	API BUTTRESS 5TPI 1/12 EXT 1	74010
5	External	1	0.787	0.625	0.187	0.090	4	4135-2	API BUTTRESS 5TPI 1/12 EXT 2	74016
5	Internal	3	0.984	0.625	0.197	0.077	5	5112-C	API BUTTRESS 5TPI 1/16 INT	71583
5	Internal	3	0.984	0.625	0.197	0.098	5	5108	API BUTTRESS 5TPI 1/16 INT	19993
5	Internal	2	0.984	0.625	0.197	0.886	5	5110	API BUTT 5TPI 1/16 INTPULLING	19995
5	External	1	0.984	0.625	0.197	0.079	5	5101	API BUTTRESS 5TPI 1/16 EXT	19985
5	Internal	3	0.625	0.625	0.187	0.098	3	5- 1703	GOSTOTTM5TPIINT,	35884
5	Internal	2	0.625	0.625	0.187	0.527	3	1705	GOSTOTTM5TPIINT,PULLING	42900
5	External	1	0.625	0.625	0.187	0.083	3	1706	GOSTOTTM5TPIEXT,	63971
5	External	1	0.984	0.625	0.197	0.079	5	5704	GOSTOTTM5TPIEXT,	35887
5	External	1	0.787	0.618	0.187	0.191	3	4701-1	GOSTOTTM5TPIEXT,1	35885
5	External	1	0.787	0.625	0.187	0.091	4	4701-2	GOSTOTTM5TPIEXT,2	35886

Chipformers



Type	EDP No.	Part No.	Dimensions in inch		
			l	d	s
1	43328	C-1001	0.618	0.453	0.156
2	53122	C-1001-4	0.618	0.453	0.156
3	53121	C-1001-96	0.618	0.453	0.156
2	55257	C-1002-4	0.618	0.453	0.156
3	55258	C-1002-96	0.618	0.453	0.156
2	55255	C-1004-4	0.618	0.453	0.156
3	57791	C-1004-96	0.618	0.453	0.156
2	45497	C-1005-4	0.618	0.453	0.156
3	53115	C-1005-96	0.618	0.453	0.156
2	53128	C-1006-4	0.618	0.453	0.156
1	64020	C-1009	0.618	0.453	0.156
3	57860	C-1009-96	0.618	0.453	0.156
1	64023	C-1010	0.618	0.453	0.156
2	45500	C-1010-4	0.618	0.453	0.156
3	64022	C-1010-96	0.618	0.453	0.156
3	51067	C-1013-96	0.618	0.453	0.156
1	64021	C-1018	0.618	0.453	0.156
3	55254	C-1018-96	0.618	0.453	0.156
3	51068	C-1021-96	0.618	0.453	0.156
4	64016	C-1022	0.618	0.453	0.125
5	64017	C-1023	0.618	0.453	0.125
4	64018	C-1024	0.618	0.453	0.156
5	64019	C-1025	0.618	0.453	0.156
4	11200	C-1032	0.618	0.453	0.125
5	11202	C-1033	0.618	0.453	0.125
4	11218	C-1034	0.618	0.453	0.125
5	11219	C-1035	0.618	0.453	0.125
3	45505	C-1601-96	0.618	0.492	0.156
2	55256	C-1604-4	0.618	0.492	0.156
2	74142	C-4001-4	0.780	0.453	0.156
2	64024	C-4003-4	0.776	0.453	0.156
2	17582	C-5001-4	0.976	0.453	0.156
2	55435	C-5002-4	0.976	0.453	0.156
3	45504	C-5002-96	0.976	0.453	0.156
1	64014	C-5003	0.976	0.453	0.156
2	64025	C-5003-4	0.976	0.453	0.156
3	64015	C-5003-96	0.976	0.453	0.156
1	68225	C-5005	0.976	0.453	0.118
1	68226	C-5006	0.976	0.453	0.118
6	03514	C-5705-G	0.976	0.512	0.118
6	10999	C-5803-4	0.976	0.531	0.156
6	03516	C-5805-G	0.976	0.531	0.118
6	71464	C-5905-G	0.976	0.551	0.118

Toolholders



C	E	R		- 100 -	6 -	14	Q
1	2	3	4	5	6	7	8

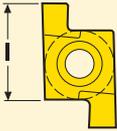
<p>1. Insert clamping</p> <p>C</p> <p>Clamp</p>	<p>2. External/Internal</p> <p>E = External N = Internal EA = External axial</p>	<p>3. Version</p> <p>L</p> <p>R</p> <p>X = Special</p>
<p>4. Shank definition</p> <p>00 = Boring bars = Square shank</p>	<p>5. Shank width/diameter</p> <p>For boring bars diameter in inches. For square shanks height in inches. 075 = 0.750" 100 = 1.000" etc.</p>	<p>6. Tool length</p> <p>3 = 3.0" 4 = 4.0" 5 = 5.0" etc.</p>
<p>7. Cutting edge length</p> <p>If the cutting edge length consists of only one digit, the designation should start with a 0.</p> <p>Example: Cutting edge length = 9.525 mm (0.375") Symbol = 09</p>	<p>8. Internal designation</p> <p>HD = Heavy Duty Q = Qualified</p>	

Inserts



14	E	R	.125	FG
1	2	3	4	5

1. Cutting edge length



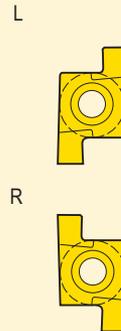
If the cutting edge length consists of only one digit, the designation should start with a 0.

Example:
Cutting edge length = 9.525 mm (0.375")
Symbol = 09

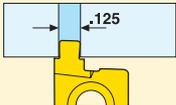
2. External/Internal

E = External
N = Internal
EA = External axial

3. Version



4. Groove width

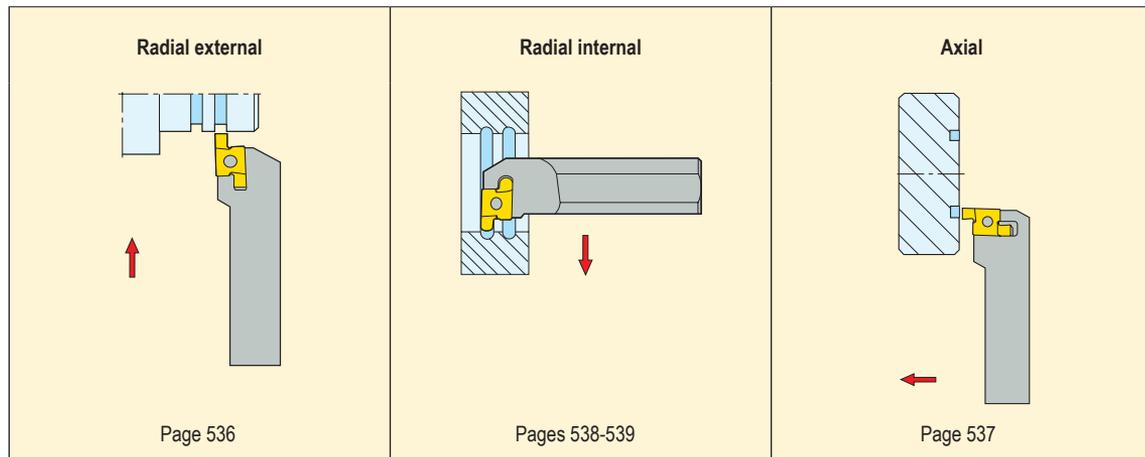


Example:
.125 = .125 inch

5. Standard groove

Standard grooves =
FG = Radial groove ($a_p \times 1$)
FD = Radial deep groove ($a_p \times 2$)
D76 = Thread undercut
R = Round
ST = O-ring, static
DY = O-ring, dynamic
AX = O-ring, axial
FA = Axial groove ($a_p \times 1$)

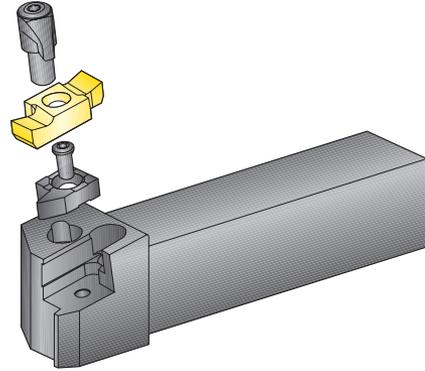
Grooving – Precision grooves, depth/width ratio 1:1 (2:1)



Toolholders

The toolholder system is based on the Snap Tap threading system. The toolholders have replaceable shims designed to protect the insert seat.

The system is intended for radial external and internal grooving and for axial grooving. The system enables axial grooves from 16 mm outside diameter and internal radial grooves down to 13 mm diameter to be turned.

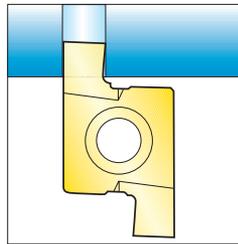


Inserts

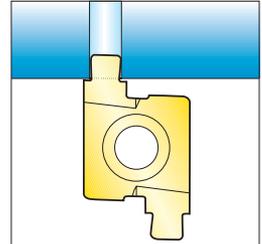
The range of grooving inserts includes inserts for most groove profiles, such as circlip profiles, O-ring profiles, thread undercut and radius grooves. The range of grooving inserts can be used for grooves with a depth/width ratio of up to 1:1.

Inserts with designation FD can be used for grooves with a depth/width ratio of up to 2:1.

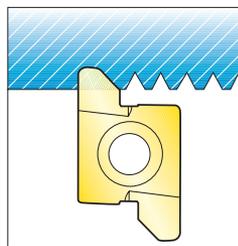
Lockring



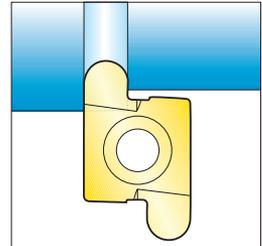
O-ring



Thread undercut



Radius



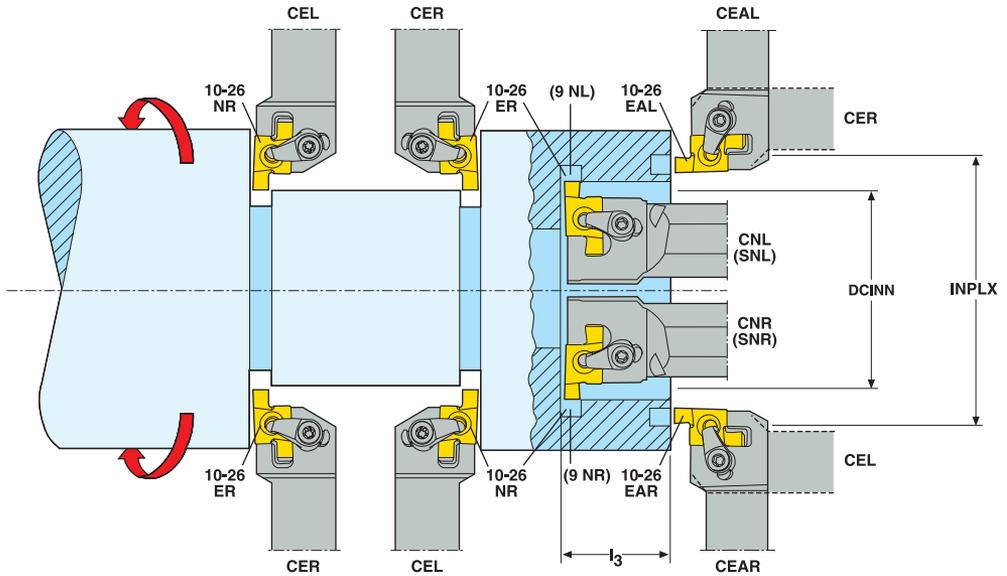
Grades

Grades	P					M					K				N				S				H					
	P01	P10	P20	P30	P40	P50	M01	M10	M20	M30	M40	K01	K10	K20	K30	K40	N01	N10	N20	N30	S01	S10	S20	S30	H01	H10	H20	H30
CP500																												

CP500

Tough versatile PVD-coated micrograin grade intended for grooving in a variety of workpiece materials. Universal choice.

Ordering specification for custom made K-inserts



Internal grooving:

When considering operation NR and NL illustrated above (holder CNR and CNL), always state the diameter of the hole as well as the axial position of the groove = l_3 . In the case of small hole diameters, however, use holder SNR and SNL with insert 9NR and 9NL respectively.

Axial grooving:

With operation type EAR and EAL (holder CEAR and CEAL) the outer dimension of the groove (INPLX) must be stated.

Set-up machining recommendations

Set-up

- The mounting should be stable.
- The tool should be securely clamped and the overhang should be as small as possible.
- The center height should never deviate by more than ± 0.004 inch from the workpiece center.

Internal grooving

- Decisive factors for ensuring vibration-free machining are the relationship between the toolholder overhang and its diameter, and the width of the grooving insert.
- In unfavorable circumstances, the cutting speed and feed rate should be reduced below the recommended values.

Grooving of radius grooves and grooves with trapezoidal cross-section

- In this type of grooving, different forms of chip problems often occur. The feed rate should therefore be reduced to obtain thin chips and avoid chip build-up and insert fracture.

Formulae for cutting data calculation are found in page 94.

Special inserts for precision grooves

- Ground to specification using the insert blanks shown.
- Blanks available for grade CP30 and CP500.
- Please contact your local representative for price and delivery.

Tolerances for different groove profiles:

Tolerances (inch)				
a_r	a_p	rep	r	v°
± 0.001	± 0.001	± 0.0012	± 0.0012	$\pm 15'$

Inserts	l (mm)	Dimensions in inch			Shim	Inserts	
		d	a_p	a_r	Standard KX		
	9.0	0.250	0.106	0.102	–	9NR/NL	
		9.0	0.250	0.106	0.102	KX10	10ER/NR 10EAR/EAL
		12.0	0.250	0.106	0.208	KX12	12ER/NR 12EAR/EAL
		14.0	0.375	0.165	0.173	KX14	14ER/NR 14EAR/EAL
		20.0	0.500	0.248	0.287	KX20	20ER/NR 20EAR/EAL
26.0	0.625	0.394	0.398	KX26	26ER/NR 26EAR/EAL		

Cutting speed, v_c (sf/min)

In this section a recommended cutting speed is indicated under specified conditions.

Use the tables beginning on page 770 to classify the workpiece material into a SMG

The cutting data tables provide a start value for feed rate (f) and cutting speed (v_c) for the selected cutting width (a_p).

The cutting data tables are based on grooving with full cutting width.

The recommended cutting speeds in the tables are calculated for 15 minutes tool life with use of external flood coolant.

In order to increase the accuracy towards the actual cutting conditions and requirements of the applications the recommendation is to use My Pages – Suggest on www.secotools.com

v_c = cutting speed (sf/min)

a_p = insert width (inch)

f = feed rate (in/rev)

SMG = Seco Material Group

CP30

SMG		ap = 0.020-0.079		ap = 0.079-0.157		ap = 0.157-0.236		ap = 0.236-0.315		ap = 0.315-0.394	
		f	v_c	f	v_c	f	v_c	f	v_c	f	v_c
P1	CP30	0.0038	630	0.0060	540	0.0065	510	0.0080	480	0.0085	460
P2	CP30	0.0040	600	0.0065	510	0.0065	495	0.0080	465	0.0085	450
P3	CP30	0.0038	530	0.0060	450	0.0065	430	0.0075	410	0.0080	400
P4	CP30	0.0036	470	0.0055	405	0.0065	385	0.0075	360	0.0080	355
P5	CP30	0.0036	450	0.0055	385	0.0065	370	0.0070	350	0.0080	335
P6	CP30	0.0036	510	0.0055	435	0.0065	415	0.0070	395	0.0080	380
P7	CP30	0.0036	475	0.0055	410	0.0065	390	0.0070	375	0.0080	355
P8	CP30	0.0038	445	0.0060	375	0.0065	360	0.0075	345	0.0080	335
P11	CP30	0.0036	465	0.0055	400	0.0065	380	0.0070	360	0.0080	345
M1	CP30	0.0040	700	0.0065	520	0.0065	495	0.0080	425	0.0085	385
M2	CP30	0.0036	590	0.0055	465	0.0065	420	0.0070	380	0.0080	345
M3	CP30	0.0028	485	0.0044	410	0.0050	370	0.0060	335	0.0065	320
M4	CP30	0.0026	365	0.0040	325	0.0044	310	0.0050	280	0.0055	265
M5	CP30	0.0026	305	0.0040	270	0.0044	255	0.0050	235	0.0055	220

CP500

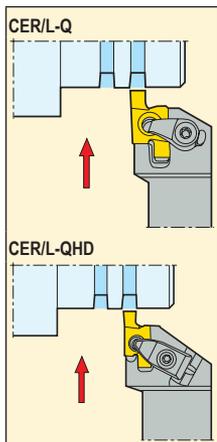
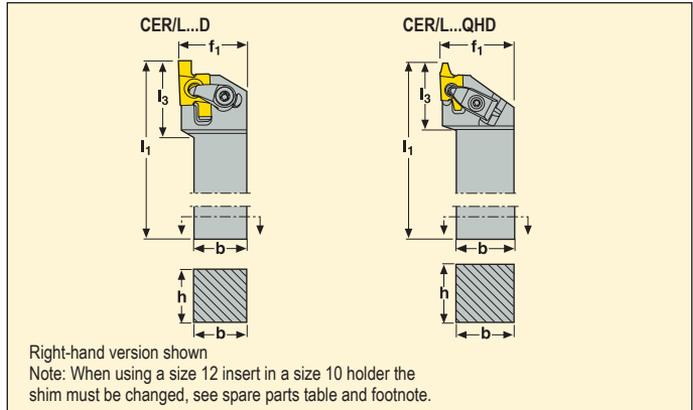
SMG		ap = 0.020-0.079		ap = 0.079-0.157		0.157-0.236		0.236-0.315		0.315-0.394	
		f	v_c	f	v_c	f	v_c	f	v_c	f	v_c
P1	CP500	0.0038	480	0.0060	410	0.0065	390	0.0080	365	0.0085	350
P2	CP500	0.0040	460	0.0065	390	0.0065	380	0.0080	355	0.0085	345
P3	CP500	0.0038	405	0.0060	345	0.0065	330	0.0075	315	0.0080	305
P4	CP500	0.0036	360	0.0055	310	0.0065	295	0.0075	275	0.0080	270
P5	CP500	0.0036	345	0.0055	295	0.0065	280	0.0070	270	0.0080	260
P6	CP500	0.0036	385	0.0055	335	0.0065	315	0.0070	300	0.0080	290
P7	CP500	0.0036	365	0.0055	315	0.0065	300	0.0070	285	0.0080	275
P8	CP500	0.0038	340	0.0060	290	0.0065	275	0.0075	265	0.0080	260
P11	CP500	0.0036	355	0.0055	305	0.0065	290	0.0070	275	0.0080	265
M1	CP500	0.0040	540	0.0065	395	0.0065	380	0.0080	325	0.0085	295
M2	CP500	0.0036	455	0.0055	355	0.0065	320	0.0070	290	0.0080	265
M3	CP500	0.0028	370	0.0044	315	0.0050	285	0.0060	255	0.0065	245
M4	CP500	0.0026	280	0.0040	250	0.0044	235	0.0050	215	0.0055	205
M5	CP500	0.0026	235	0.0040	205	0.0044	195	0.0050	180	0.0055	170
K1	CP500	0.0040	420	0.0065	350	0.0065	345	0.0080	320	0.0085	310
K2	CP500	0.0036	370	0.0055	305	0.0065	285	0.0070	265	0.0080	250
K3	CP500	0.0036	315	0.0055	260	0.0065	240	0.0070	225	0.0080	215
K4	CP500	0.0036	300	0.0055	245	0.0065	230	0.0070	215	0.0080	205
K5	CP500	0.0032	190	0.0050	150	0.0055	145	0.0065	135	0.0070	130
K6	CP500	0.0036	270	0.0055	230	0.0065	215	0.0070	205	0.0080	200
K7	CP500	0.0032	240	0.0050	195	0.0055	185	0.0065	175	0.0070	165
N11	CP500	0.0050	280	0.0080	235	0.0085	225	0.010	210	0.011	205
S1	CP500	0.0026	60	0.0040	50	0.0044	50	0.0050	47	0.0055	46
S2	CP500	0.0026	50	0.0040	45	0.0044	44	0.0050	41	0.0055	40
S3	CP500	0.0024	45	0.0036	40	0.0040	39	0.0048	37	0.0050	36

Toolholders for Precision Grooves

Snap-Tap



• For insert program, see pages 540-548



I.C.	EDP No.	Part No.	Dimensions in inch					lbs	
			h	b	l ₁	f ₁	l ₃		
1/4	72566	CER 0504-10Q	0.50	0.50	4.00	0.62	0.90	0.44	10../12..
	72564	0755-10Q	0.75	0.75	5.00	1.00	0.90	1.10	10../12..
	72600	1006-10Q	1.00	1.00	6.00	1.25	0.90	1.98	10../12..
	72559	CEL 0755-10Q	0.75	0.75	5.00	1.00	0.90	1.10	10../12..
	72596	1006-10Q	1.00	1.00	6.00	1.25	0.90	1.98	10../12..
3/8	72634	CER 1006-14Q	1.00	1.00	6.00	1.25	1.10	1.76	14..
	72628	CEL 1006-14Q	1.00	1.00	6.00	1.25	1.10	1.98	14..
1/2	12845	CER 1006-20QHD	1.00	1.00	6.00	1.25	1.30	1.98	20..
	13443	1256-20QHD	1.25	1.25	6.00	1.50	1.42	2.87	20..
	13399	CEL 1006-20QHD	1.00	1.00	6.00	1.25	1.30	1.98	20..
	13473	1256-20QHD	1.25	1.25	6.00	1.50	1.30	2.87	20..
5/8	13476	CER 1006-26QHD	1.00	1.00	6.00	1.25	1.80	2.20	26..
	13478	1256-26QHD	1.25	1.25	6.00	1.50	1.80	3.09	26..
	13480	1506-26QHD	1.50	1.50	6.00	1.75	1.80	3.97	26..
	13477	CEL 1006-26QHD	1.00	1.00	6.00	1.25	1.80	2.20	26..

Spare Parts, Parts included in delivery

Accessories*

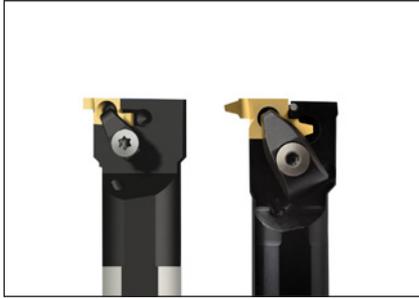
For holder	Shim for insert type (K)	Shim screw	Clamp set	Clamp	Clamp screw	Clamp key	Spring	Shim key
..-10QHD	KX10-2**	CS2507-T07P	CSP16-T15P	–	–	T15P-2	–	T07P-2
..-14QHD	KX14-2	CS3507-T09P	CSP16-T15P	–	–	T15P-2	–	T09P-2
..-20QHD	KX20-2	CS4009-T15P	–	CHD22	L86025-T20P	T20P-7	S7616	T15P-2
..-26QHD	KX26-2	C05012-T15P	–	CHD27	L86025-T20P	T20P-7	S7616	T15P-2

Please check availability in current price and stock-list

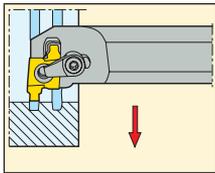
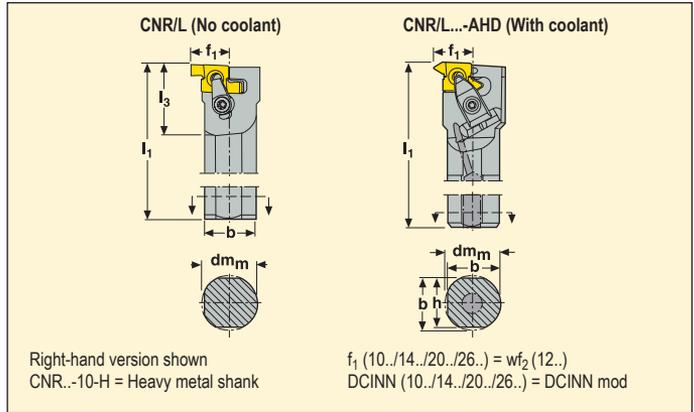
*To be ordered separately
**Shim KX12-2 for insert 12.., to be ordered separately

Toolholders for Precision Grooves

Snap-Tap



- For insert program, see pages 540-548
- When using a size 12 insert in a size 10 holder the shim must be changed, see spare parts table and footnote



I.C.	EDP No.	Part No.	Dimensions in inch										lbs	
			dm _m	h	b	l ₁	f ₁	wf ₂ 12..	l ₃	DCINN*	DCINN* mod			
1/4	72573	CNR 000757-10	0.75	0.69	0.71	7.0	0.49	0.61	1.48	0.95	0.95	1.10	10../12..	
	72569	001008-10	1.00	0.92	0.96	8.0	0.62	0.74	2.50	1.20	1.00	1.76	10../12..	
	72563	0012510-10	1.25	1.15	1.21	10.0	0.75	0.87	1.77	1.50	1.25	3.31	10../12..	
	72592	0015012-10	1.50	1.34	1.43	12.0	0.86	0.98	1.77	1.80	1.60	5.73	10../12..	
	72624	CNL 000757-10	0.75	0.65	0.71	7.0	0.49	0.61	1.48	0.95	0.95	0.88	10../12..	
	72610	001008-10	1.00	0.90	0.96	8.0	0.62	0.74	1.56	1.20	1.00	1.76	10../12..	
	72583	CNR 00075010-10-H	0.75	0.69	0.73	10.0	0.49	–	1.48	0.95	0.95	2.65	10../12..	
3/8	72571	000757-14	0.75	0.69	0.71	7.0	0.57	–	1.69	1.05	1.05	0.88	14..	
	72567	001008-14	1.00	0.92	0.96	8.0	0.70	–	1.73	1.30	1.05	1.98	14..	
	72582	CNL 001008-14	1.00	1.00	0.96	8.0	0.70	–	–	1.18	1.05	1.76	14..	
1/2	30964	CNR 001008-20AHD	1.00	0.90	0.96	8.0	0.70	–	1.97	1.40	–	1.54	20..	
	30965	0012510-20AHD	1.25	1.15	1.21	10.0	0.94	–	2.17	1.70	1.40	3.31	20..	
	30967	0015012-20AHD	1.50	1.34	1.43	12.0	1.06	–	2.17	2.00	1.60	5.51	20..	
	30968	CNL 001008-20AHD	1.00	0.90	0.96	8.0	0.70	–	1.97	1.40	–	1.54	20..	
	30969	0012510-20AHD	1.25	1.15	1.21	10.0	0.94	–	2.17	1.70	1.40	3.31	20..	
	30970	0015012-20AHD	1.50	1.34	1.43	12.0	1.06	–	2.17	2.00	1.60	5.51	20..	
	5/8	30973	CNR 0012510-26AHD	1.25	1.15	1.21	10.0	1.06	–	2.32	2.00	1.60	3.09	26..
30974		0015012-26AHD	1.50	1.34	1.43	12.0	1.18	–	2.32	2.10	2.10	5.51	26..	
30975		0017514-26AHD	1.75	1.59	1.68	14.0	1.31	–	2.28	2.30	1.80	8.82	26..	
30976		0020014-26AHD	2.00	1.84	1.93	14.0	1.43	–	2.28	2.50	2.00	11.46	26..	
30977		0025016-26AHD	2.50	2.34	2.43	16.0	1.68	–	2.28	3.00	2.50	20.72	26..	
30987		CNL 0012510-26AHD	1.25	1.15	1.21	10.0	1.06	–	2.32	2.00	1.60	3.09	26..	
30867		0015012-26AHD	1.50	1.34	1.43	12.0	1.18	–	2.32	2.10	2.10	5.51	26..	
30868		0017514-26AHD	1.75	1.59	1.68	14.0	1.31	–	2.28	2.30	1.80	8.82	26..	
30870		0025016-26AHD	2.50	2.34	2.43	16.0	1.68	–	2.28	3.00	2.50	20.72	26..	

*DCINN – minimum bore diameter, see page 533

*Holder can be modified to accommodate smaller bore sizes, see page 474

Spare Parts, Parts included in delivery

Accessories*

For holder	Cantilever clamp	Clamp key	Clamp kit	Clamp screw	Insert shim (K)	Shim screw	Spring	Insert shim	Shim key
...									
...-10	–	T15P-2	CSP16-T15P	–	KX10-2	CS2507-T07P	–	KX12-2	T07P-2
...-14	–	T15P-2	CSP16-T15P	–	KX14-2	CS3507-T09P	–	–	T09P-2
...-20	CHD22	T20P-7	–	L86025-T20P	KX20-2	CS4009-T15P	S7616	–	T15P-2
...-26	CHD27	T20P-7	–	L86025-T20P	KX26-2	C05012-T15P	S7616	–	T15P-2

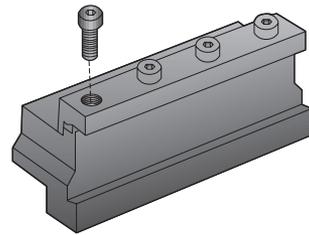
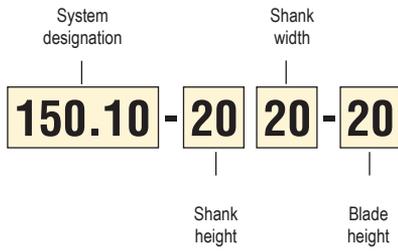
Please check availability in current price and stock-list

*To be ordered separately

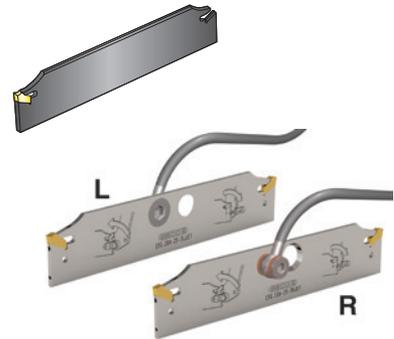
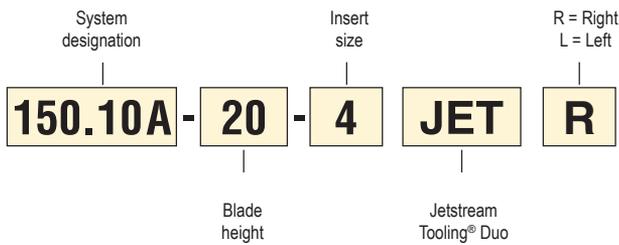
**Shim KX12-2 for insert 12..., ordered separately

Cut-off

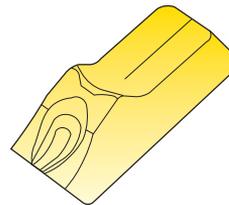
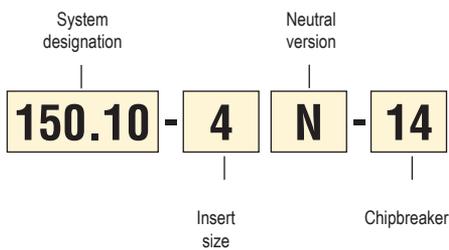
Toolholders



Blades

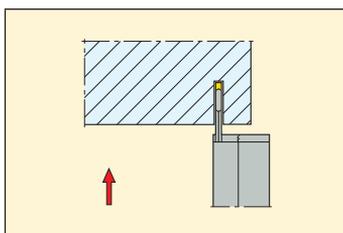


Inserts



For more information on Jetstream Tooling® and accessories, please see pages 86-89

Cut-off, up to Ø5.6 inch



General

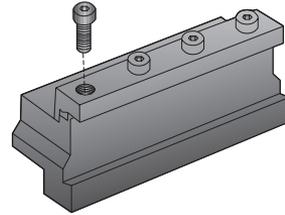
- Use the highest blade possible (size 25) for maximum stability.
- Use the shortest overhang possible for maximum stability and low risk of vibrations.
- Make sure that the tool is at 90° to the center-line of the component to ensure part quality and good tool life.
- Ideally, cut-off is run with a sub-spindle or part-catcher. In this case the cutting edge will be protected by having the second spindle or a fixture picking up the workpiece.
- Cut-off without sub-spindle requires the feed rate to be reduced as the tool approaches center (by up to 75% about 0.080 inch before the component center – depending on workpiece diameter). May also be applied on tubes to reduce burr.
- A well-aimed and sufficient flow of coolant, ideally through the blades 150.10JET, will give long tool life and good surface finish.
- Smaller inserts reduce the material waste and thus reduce material cost. On the other hand wider inserts allow higher feed rates, which increases productivity. The optimum depends on the customer preference and priority.

Seco Jetstream Tooling® Duo holders, yet another innovation introduced to market, feature both a rake face and flank face jet that can provide even better chip control and significantly longer tool life.



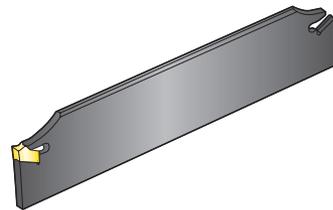
Toolholders

The Seco 150.10A Cut-off system consists of a high speed steel blade which holds the insert and a holder which retains the blade. This provides maximum stability, while the hot strength of the high speed steel ensures that the insert will be securely retained even when the blade is hot.



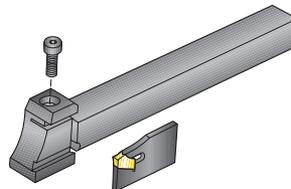
Type 150.10..-20/25 basic holder

Intended for long, reversible high speed steel blades with a depth of cut of up to 5.6 inch on diameter. The two-part toolholder facilitates clamping in machines with front clamping. The same holder is suitable for both right-hand and left-hand versions, since the blade can be positioned to the required length in either direction.



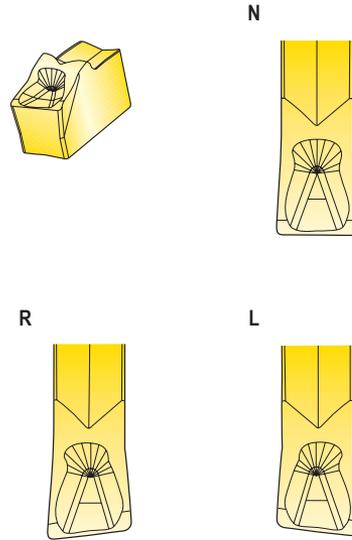
Type 150.10..-15 blade holder

Intended for short high speed steel blades for cutting depths up to 1.5 inch on diameter. The high speed steel blade ensures excellent stability and, due to the compact design, is suitable for machines with limited space, such as automatic lathes.



Inserts N-/ R- /L-

- Inserts in neutral version N are first choice since they normally achieve increased tool life, better chip control, high surface quality and allow higher cutting data compared to the handed (R-/L-) version.
- The R-/L-inserts have a setting angle of 6° in order to eliminate burrs and minimize the cut-off pip left on the workpiece. To reduce pip size with N-inserts, use the smallest width possible. The correct center height is another major factor to avoid pips (control to ±0.004 inch).
- When using R-/L-inserts, the feed rate should be reduced by approximately 30%.
- Convex or concave surfaces will be avoided, when using right or left hand inserts, by reducing the feed rate.



Chipbreakers

-12



- First choice for steel at low feed rates
- 24° positive cutting rake angle.
- Excellent chipbreaking

-14



- First choice for stainless steel.
- First choice for steel at medium-high feed rates
- 15° positive cutting rake angle with sharp edge

-16



- First choice for steel and cast iron in difficult conditions and/or high feed rates
- 20° positive cutting rake angle
- Strong protection chamfer

Recommended feed rates

Insert width a_p (mm)	Chip-breaker	Radial infeed, f (in/rev)					
		Type N insert			Type R/L insert		
		Recommended initial value	Recommended limit value		Recommended initial value	Recommended limit value	
			min	– max		min	– max
1.40	-12	–	–	–	–	–	–
	-14	0.0020	0.0016	0.0047	–	–	–
	-16	0.0024	0.0016	0.0047	–	–	–
2.0	-12	–	–	–	–	–	–
	-14	0.0028	0.0020	0.0055	–	–	–
	-16	0.0031	0.0020	0.0059	–	–	–
2.25	-12	–	–	–	–	–	–
	-14	0.0035	0.0020	0.0063	–	–	–
	-16	0.0039	0.0020	0.0079	–	–	–
2.5	-12	0.0035	0.0020	0.0071	0.0024	0.0016	0.0051
	-14	0.0039	0.0028	0.0079	0.0028	0.0020	0.0055
	-16	0.0051	0.0039	0.0094	0.0035	0.0028	0.0067
3.0	-12	0.0039	0.0020	0.0079	0.0028	0.0016	0.0055
	-14	0.0051	0.0031	0.0094	0.0035	0.0024	0.0067
	-16	0.0071	0.0047	0.0110	0.0051	0.0031	0.0079
4.0	-12	0.0051	0.0028	0.0087	0.0035	0.0020	0.0059
	-14	0.0059	0.0035	0.0102	0.0043	0.0024	0.0071
	-16	0.0079	0.0055	0.0126	0.0055	0.0039	0.0087
5.0	-12	0.0059	0.0031	0.0102	0.0043	0.0024	0.0071
	-14	0.0071	0.0039	0.0134	0.0051	0.0028	0.0094
	-16	0.0091	0.0063	0.0157	0.0063	0.0043	0.0110
6.0	-12	0.0067	0.0039	0.0118	0.0047	0.0028	0.0083
	-14	0.0079	0.0055	0.0150	0.0055	0.0039	0.0106
	-16	0.0098	0.0071	0.0165	0.0071	0.0051	0.0114

Grades

The chart below shows application areas for grades available in the Cut-off system 150.10. The black areas in the chart indicate a grade's main ISO application groups and the white areas indicate other supplementary application groups.

ISO classification of the grades

Grades	Steel					Stainless steel				Cast iron				Non-ferrous metals				Superalloys and titanium				Hard materials						
	P					M				K				N				S				H						
	P01	P10	P20	P30	P40	P50	M01	M10	M20	M30	M40	K01	K10	K20	K30	K40	N01	N10	N20	N30	S01	S10	S20	S30	H01	H10	H20	H30
TGP35			●						○					○														
TGP45		●	●	●	●				○					○														
T25M		●	●	●	●				○					○														
T350M			●	●	●				○												●	●	●	●				
CP500			●	●	●				○					○							●	●	●	●				
CP600			○	○	○				○					○	○						○	○	○	○				
HX									○			○	○	○	○						○	○	○	○				

TGP35

Wear-resistant **Duratomic**® CVD-coated grade intended for cut-off of steel and cast iron at high cutting speeds.

TGP45

Wear-resistant **Duratomic**® CVD-coated grade intended for cut-off of steel and stainless steel at moderate to high cutting speeds.

T25M

Tough versatile CVD-coated grade intended for cut-off of steel, stainless steel and cast iron at moderate cutting speeds.

T350M

Tough versatile CVD-coated grade intended for cut-off in a variety of workpiece materials at moderate cutting speeds.

CP500

Tough, versatile PVD-coated micrograin grade intended for cut-off of steel, stainless steel, superalloys and titanium at low to moderate cutting speeds. First choice in stainless steel. Provides more wear resistance compared to CP600.

CP600

Very tough PVD-coated fine-grain grade intended for parting-off of steel, stainless steel, superalloys and titanium at low cutting speeds. Well-suited in interrupted cuts. Universal choice.

HX

Uncoated wear resistant hard grade intended for cut-off of hardened steels, superalloys, titanium alloys and non-ferrous materials.

Cut-off – Secolor

To center

Easy conditions Difficult conditions

12 CP500	16 CP600
14 CP500	16 CP600
12 TGP35	16 T25M
14 CP500	16 CP600
16 HX	14 CP600
16 HX	16 T350M

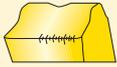
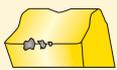
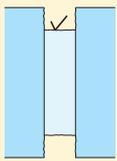
Easy conditions: pre-machined surface, small diameter, thin walls etc.
Difficult conditions: raw surface, large diameter, thick walls etc.

Tube

Easy conditions Difficult conditions

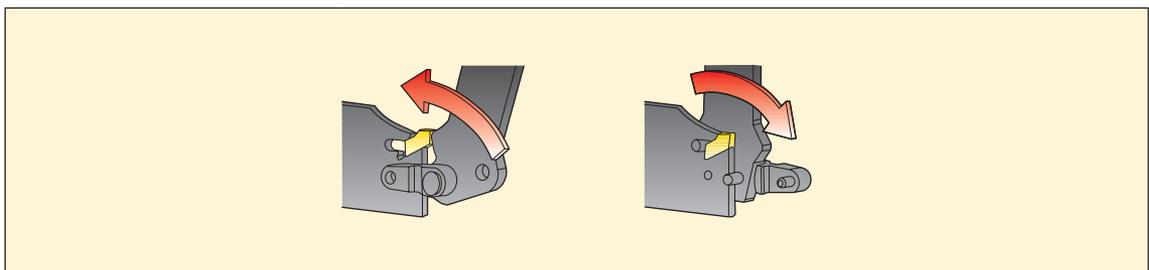
16 TGP45	16 CP600
14 CP500	16 CP600
12 TGP35	16 TGP45
14 CP500	16 CP600
16 HX	16 CP600
16 HX	16 T350M

Troubleshooting

<p>Flank wear</p> 	<ul style="list-style-type: none"> • Reduce the cutting speed • Select a more wear resistant grade 	<p>Insert fracture</p> 	<ul style="list-style-type: none"> • Reduce the feed rate • Select a tougher grade • Select a stronger chipbreaker
<p>Crater wear</p> 	<ul style="list-style-type: none"> • Use a coolant • Select a more wear resistant grade • Reduce the cutting speed • Reduce the feed rate 	<p>Comb cracks</p> 	<ul style="list-style-type: none"> • Reduce the cutting speed • Reduce the feed rate • Ensure that the coolant flow is adequate and constant. If not, shut off the coolant
<p>Plastic deformation</p> 	<ul style="list-style-type: none"> • Use a coolant • Select a more wear resistant grade • Reduce the cutting speed • Reduce the feed rate 	<p>Built-up edge</p> 	<ul style="list-style-type: none"> • Increase the cutting speed • Increase the feed rate • Do not use coolant
<p>Edge chipping</p> 	<ul style="list-style-type: none"> • Select a tougher grade • Check the workpiece mounting • Check the cutting speed 	<p>Poor finish</p> 	<ul style="list-style-type: none"> • Reduce the feed rate • Increase the cutting speed • Use a coolant • Improve the stability • Check the alignment of the tool

Change of insert

Inserts are changed with the aid of key 150.10A-150.



Cutting speed, v_c (sf/min)

In this section a recommended cutting speed is indicated under specified conditions.

Use the tables beginning on page 770 to classify the workpiece material into a SMG.

The cutting data tables provide a recommendation of chipbreaker and a start value for feed rate (f) and cutting speed (v_c) for selected cutting width (a_p).

The recommended cutting speeds in the tables are calculated for 15 minutes tool life with use of external flood coolant.

In order to increase the accuracy towards the actual cutting conditions and requirements of the applications the recommendation is to use My Pages – Suggest on www.secotools.com

v_c = cutting speed (sf/min)

a_p = insert width (mm)

f = feed rate (in/rev)

SMG = Seco Material Group

TGP35

SMG		ap = 2.5		ap = 3		ap = 4		ap = 5-6	
		f	v_c	f	v_c	f	v_c	f	v_c
P1	-16 TGP35	0.0055	1025	0.0075	870	0.0085	780	0.011	620
P2	-16 TGP35	0.0055	1000	0.0080	820	0.0085	760	0.011	600
P3	-16 TGP35	0.0055	860	0.0075	730	0.0085	650	0.010	550
P4	-16 TGP35	0.0050	770	0.0070	660	0.0080	610	0.010	490
P5	-16 TGP35	0.0050	740	0.0070	630	0.0080	580	0.010	465
P6	-16 TGP35	0.0050	830	0.0070	710	0.0080	660	0.010	520
P7	-16 TGP35	0.0050	780	0.0070	670	0.0080	620	0.010	495
P8	-16 TGP35	0.0055	720	0.0075	610	0.0085	550	0.010	465
P11	-16 TGP35	0.0050	760	0.0070	650	0.0080	600	0.010	480
M1	-14 TGP35	0.0040	590	0.0050	520	0.0060	475	0.0075	395
M2	-14 TGP35	0.0036	490	0.0048	440	0.0050	420	0.0070	330
M3	-14 TGP35	0.0030	385	0.0038	365	0.0044	345	0.0055	300
M4	-14 TGP35	0.0026	295	0.0032	285	0.0038	275	0.0048	245
M5	-14 TGP35	0.0026	245	0.0032	240	0.0038	230	0.0048	205

TGP45

SMG		ap = 1.4		ap = 2.0-2.5		ap = 3		ap = 4		ap = 5-6	
		f	v_c	f	v_c	f	v_c	f	v_c	f	v_c
P1	-16 TGP45	0.0032	980	0.0048	950	0.0075	770	0.0085	690	0.011	550
P2	-16 TGP45	0.0032	960	0.0050	910	0.0080	720	0.0085	670	0.011	530
P3	-16 TGP45	0.0030	820	0.0048	800	0.0075	640	0.0085	580	0.010	490
P4	-16 TGP45	0.0030	720	0.0048	700	0.0070	580	0.0080	540	0.010	430
P5	-16 TGP45	0.0030	690	0.0044	680	0.0070	560	0.0080	520	0.010	415
P6	-16 TGP45	0.0028	760	0.0044	770	0.0070	630	0.0080	580	0.010	465
P7	-16 TGP45	0.0028	720	0.0044	720	0.0070	590	0.0080	550	0.010	435
P8	-16 TGP45	0.0030	690	0.0048	670	0.0075	540	0.0085	485	0.010	415
P11	-16 TGP45	0.0028	700	0.0044	700	0.0070	570	0.0080	530	0.010	425
M1	-14 TGP45	0.0030	560	0.0038	530	0.0050	465	0.0060	420	0.0075	350
M2	-14 TGP45	0.0026	455	0.0034	445	0.0048	390	0.0050	370	0.0070	295
M3	-14 TGP45	0.0022	340	0.0028	345	0.0038	325	0.0044	305	0.0055	265
M4	-14 TGP45	0.0018	245	0.0024	260	0.0032	255	0.0038	240	0.0048	220
M5	-14 TGP45	0.0018	205	0.0024	215	0.0032	210	0.0038	200	0.0048	180

SMG = Seco Material Group

v_c = sf/min

f = in/rev

a_p = mm

All cutting data are start values

T25M

SMG		ap = 2.25-2.5		ap = 3		ap = 4		ap = 5-6	
		f	v _c	f	v _c	f	v _c	f	v _c
P1	-16 T25M	0.0055	820	0.0075	690	0.0085	620	0.011	495
P2	-16 T25M	0.0055	800	0.0080	650	0.0085	600	0.011	480
P3	-16 T25M	0.0055	690	0.0075	580	0.0085	520	0.010	445
P4	-16 T25M	0.0050	620	0.0070	530	0.0080	490	0.010	390
P5	-16 T25M	0.0050	590	0.0070	500	0.0080	465	0.010	375
P6	-16 T25M	0.0050	660	0.0070	570	0.0080	520	0.010	420
P7	-16 T25M	0.0050	630	0.0070	530	0.0080	495	0.010	395
P8	-16 T25M	0.0055	580	0.0075	490	0.0085	435	0.010	375
P11	-16 T25M	0.0050	610	0.0070	520	0.0080	480	0.010	385
M1	-14 T25M	0.0040	475	0.0050	420	0.0060	380	0.0075	315
M2	-14 T25M	0.0036	395	0.0048	350	0.0050	335	0.0070	265
M3	-14 T25M	0.0030	310	0.0038	295	0.0044	275	0.0055	240
M4	-14 T25M	0.0026	235	0.0032	230	0.0038	220	0.0048	195
M5	-14 T25M	0.0026	195	0.0032	190	0.0038	180	0.0048	165

T350M

SMG		ap = 2.0-2.25		ap = 2.5		ap = 3		ap = 4	
		f	v _c	f	v _c	f	v _c	f	v _c
P1	-16 T350M	0.0048	800	0.0055	760	0.0075	640	0.0085	580
P2	-16 T350M	0.0050	760	0.0055	740	0.0080	610	0.0085	560
P3	-16 T350M	0.0048	670	0.0055	640	0.0075	540	0.0085	485
P4	-16 T350M	0.0048	590	0.0050	570	0.0070	490	0.0080	455
P5	-16 T350M	0.0044	570	0.0050	550	0.0070	470	0.0080	435
P6	-16 T350M	0.0044	640	0.0050	620	0.0070	530	0.0080	485
P7	-16 T350M	0.0044	610	0.0050	580	0.0070	495	0.0080	460
P8	-16 T350M	0.0048	560	0.0055	540	0.0075	455	0.0085	405
P11	-16 T350M	0.0044	590	0.0050	560	0.0070	480	0.0080	445
M1	-14 T350M	0.0038	450	0.0040	440	0.0050	390	0.0060	355
M2	-14 T350M	0.0034	370	0.0036	365	0.0048	325	0.0050	310
M3	-14 T350M	0.0028	290	0.0030	290	0.0038	270	0.0044	255
M4	-14 T350M	0.0024	215	0.0026	220	0.0032	215	0.0038	205
M5	-14 T350M	0.0024	180	0.0026	180	0.0032	175	0.0038	170

SMG = Seco Material Group

v_c = sf/min

f = in/rev

a_p = mm

All cutting data are start values

CP500

SMG		ap = 1.4		ap = 2.0-2.5		ap = 3		ap = 4		ap = 5-6	
		f	v _c	f	v _c	f	v _c	f	v _c	f	v _c
P1	-16 CP500	0.0032	670	0.0048	590	0.0075	495	0.0085	465	0.011	415
P2	-16 CP500	0.0032	660	0.0050	560	0.0080	470	0.0085	450	0.011	405
P3	-16 CP500	0.0030	570	0.0048	495	0.0075	415	0.0085	390	0.010	360
P4	-16 CP500	0.0030	510	0.0048	435	0.0070	370	0.0080	355	0.010	315
P5	-16 CP500	0.0030	485	0.0044	425	0.0070	355	0.0080	340	0.010	300
P6	-16 CP500	0.0028	550	0.0044	480	0.0070	400	0.0080	380	0.010	340
P7	-16 CP500	0.0028	520	0.0044	450	0.0070	375	0.0080	360	0.010	320
P8	-16 CP500	0.0030	485	0.0048	415	0.0075	350	0.0085	325	0.010	300
P11	-16 CP500	0.0028	510	0.0044	440	0.0070	365	0.0080	350	0.010	310
M1	-14 CP500	0.0030	780	0.0038	730	0.0050	630	0.0060	570	0.0075	470
M2	-14 CP500	0.0026	630	0.0034	610	0.0048	530	0.0050	510	0.0070	395
M3	-14 CP500	0.0022	475	0.0028	480	0.0038	445	0.0044	420	0.0055	365
M4	-14 CP500	0.0018	345	0.0024	360	0.0032	350	0.0038	335	0.0048	300
M5	-14 CP500	0.0018	290	0.0024	300	0.0032	290	0.0038	275	0.0048	250
K1	-16 CP500	0.0032	620	0.0050	530	0.0080	460	0.0085	445	0.011	405
K2	-16 CP500	0.0030	530	0.0044	465	0.0070	370	0.0080	350	0.010	300
K3	-16 CP500	0.0030	450	0.0044	395	0.0070	315	0.0080	295	0.010	255
K4	-16 CP500	0.0030	430	0.0044	375	0.0070	300	0.0080	285	0.010	245
K5	-16 CP500	0.0026	265	0.0040	230	0.0065	190	0.0070	175	0.0085	160
K6	-16 CP500	0.0030	390	0.0044	345	0.0070	295	0.0080	280	0.010	255
K7	-16 CP500	0.0026	340	0.0040	295	0.0065	240	0.0070	225	0.0085	205
N11	-14 CP500	0.0038	410	0.0048	380	0.0065	335	0.0075	315	0.0095	285
S1	-14 CP500	0.0018	85	0.0024	80	0.0032	70	0.0038	70	0.0048	65
S2	-14 CP500	0.0018	75	0.0024	70	0.0032	65	0.0038	60	0.0048	55
S3	-14 CP500	0.0017	65	0.0022	60	0.0030	55	0.0034	55	0.0048	47

CP600

SMG		ap = 1.4		ap = 2.0-2.5		ap = 3		ap = 4		ap = 5-6	
		f	v _c	f	v _c	f	v _c	f	v _c	f	v _c
M1	-14 CP600	0.0030	790	0.0038	730	0.0050	600	0.0065	500	0.0075	420
M2	-14 CP600	0.0026	650	0.0034	610	0.0048	510	0.0060	425	0.0070	360
M3	-14 CP600	0.0022	500	0.0028	490	0.0038	440	0.0048	385	0.0055	340
M4	-14 CP600	0.0018	370	0.0024	375	0.0034	345	0.0040	320	0.0048	285
M5	-14 CP600	0.0018	305	0.0024	310	0.0034	290	0.0040	265	0.0048	235

SMG = Seco Material Group

v_c = sf/min

f = in/rev

a_p = mm

All cutting data are start values

HX

SMG		ap = 1.4		ap = 2.0-2.5		ap = 3		ap = 4		ap = 5-6	
		f	v _c	f	v _c	f	v _c	f	v _c	f	v _c
M1	-14 HX	0.0030	455	0.0038	420	0.0050	375	0.0060	355	0.0075	320
M2	-14 HX	0.0026	380	0.0034	350	0.0048	310	0.0050	300	0.0070	265
M3	-14 HX	0.0022	300	0.0028	280	0.0038	255	0.0044	240	0.0055	220
M4	-14 HX	0.0018	235	0.0024	220	0.0032	200	0.0038	190	0.0048	175
M5	-14 HX	0.0018	195	0.0024	180	0.0032	165	0.0038	160	0.0048	145
K1	-16 HX	0.0032	450	0.0050	385	0.0080	325	0.0085	310	0.011	280
K2	-16 HX	0.0030	400	0.0044	350	0.0070	295	0.0080	280	0.010	250
K3	-16 HX	0.0030	335	0.0044	300	0.0070	250	0.0080	235	0.010	210
K4	-16 HX	0.0030	320	0.0044	285	0.0070	235	0.0080	225	0.010	200
K5	-16 HX	0.0026	200	0.0040	175	0.0065	145	0.0070	140	0.0085	130
K6	-16 HX	0.0030	285	0.0044	250	0.0070	210	0.0080	200	0.010	180
K7	-16 HX	0.0026	255	0.0040	225	0.0065	190	0.0070	180	0.0085	165
N1	-14 HX	0.0038	1350	0.0048	1250	0.0065	1100	0.0075	1025	0.0095	930
N2	-14 HX	0.0038	1100	0.0048	1000	0.0065	890	0.0075	840	0.0095	750
N3	-14 HX	0.0038	730	0.0048	670	0.0065	600	0.0075	560	0.0095	500
N11	-14 HX	0.0038	830	0.0048	760	0.0065	680	0.0075	640	0.0095	580
S1	-14 HX	0.0018	90	0.0024	85	0.0032	75	0.0038	70	0.0048	65
S2	-14 HX	0.0018	70	0.0024	65	0.0032	60	0.0038	60	0.0048	55
S3	-14 HX	0.0017	65	0.0022	60	0.0030	55	0.0034	50	0.0048	46
S11	-14 HX	0.0022	125	0.0028	115	0.0038	105	0.0044	100	0.0055	90
S12	-14 HX	0.0022	95	0.0028	90	0.0038	80	0.0044	75	0.0055	70
S13	-14 HX	0.0018	75	0.0024	70	0.0032	65	0.0038	60	0.0048	60
H5	-16 HX	0.0020	150	0.0032	130	0.0048	115	0.0055	105	0.0065	100

SMG = Seco Material Group

v_c = sf/min

f = in/rev

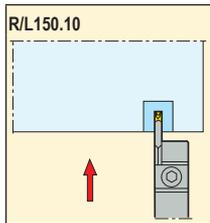
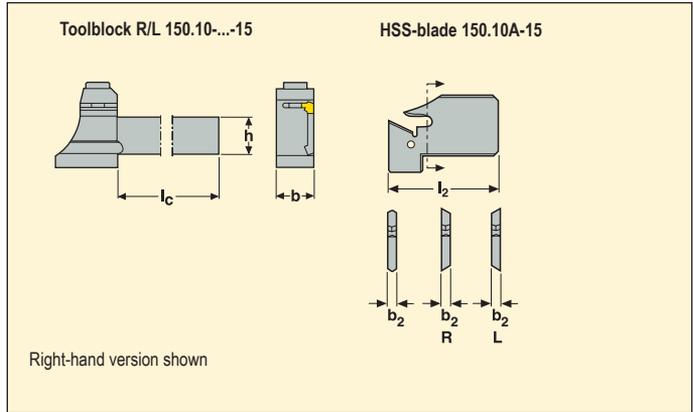
a_p = mm

All cutting data are start values

Toolblock R/L150.10-..15 and HSS-blade 150.10A-15 for Cut-off



• For insert program, see pages 563-564



EDP No.	Part No.	Dimensions in inch						D _m max	lbs	
		h	b	l _c	l ₂	b ₂				
47748	R150.10 -0375-15	0.375	0.375	3.228	–	–	–	0.44	–	
47749	-0500-15	0.500	0.500	3.228	–	–	–	0.66	–	
48456	-0625-15	0.625	0.625	3.228	–	–	–	0.88	–	
48457	-0750-15	0.750	0.750	3.228	–	–	–	0.98	–	
48458	-1000-15	1.000	1.000	4.724	–	–	–	1.54	–	
48462	L150.10 -0625-15	0.625	0.625	3.228	–	–	–	0.88	–	
48463	-0750-15	0.750	0.750	3.228	–	–	–	0.98	–	
48464	-1000-15	1.000	1.000	4.724	–	–	–	1.54	–	
33038	150.10A -15-1.4	–	–	–	1.299	0.047	1.50	0.22	150.10-1.4..	
33039	-15-2	–	–	–	1.299	0.071	1.50	0.22	150.10-2..	
33040	-15-2.5	–	–	–	1.299	0.079	1.50	0.22	150.10-2.5..	
33041	-15-3	–	–	–	1.299	0.094	1.50	0.22	150.10-3..	
33058	R150.10A -15-4	–	–	–	1.299	0.134	1.50	0.22	150.10-4..	
33056	L150.10A -15-4	–	–	–	1.299	0.134	1.50	0.22	150.10-4..	

Spare Parts, Parts included in delivery

For holder	Locking screw
R/L150.10-...-15	–
R/L150.10-...-15	UC6S1/4UNFX1SHCS
150.10A-...-15	–
R/L150.10A-...-15	–

Accessory*

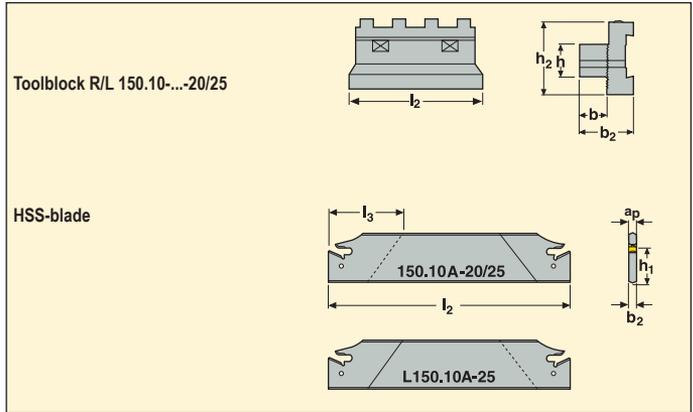
Key
150.10A-150
–
–
–
–
–
–
–
–

Please check availability in current price and stock-list

Toolblock R/L 150.10-..20/25 and HSS-blade 150.10A-20/25 for Cut-off



• For insert program, see pages 563-564



EDP No.	Part No.	Dimensions in inch								lbs	
		h	b	h ₁	h ₂	l ₂	b ₂	D _m max	l ₃		
71869	150.10 -10-20	0.625	0.625	–	1.62	3.50	1.41	–	–	1.54	–
71882	-12-20	0.750	0.750	–	1.62	3.50	1.53	–	–	1.76	–
78182	-16-20	1.000	1.000	–	1.62	3.50	1.78	–	–	2.87	–
71885	-16-25	1.000	1.000	–	1.62	4.50	1.78	–	–	3.09	–
71876	-20-25	1.250	1.250	–	1.62	4.50	2.03	–	–	3.97	–
33042	150.10A -20-1.4	–	–	0.84	–	4.72	0.05	1.38	0.94	0.22	150.10-1.4..
33043	-20-2	–	–	0.84	–	4.72	0.07	1.38	0.94	0.22	150.10-2..
33044	-20-2.5	–	–	0.84	–	4.72	0.08	1.38	0.94	0.22	150.10-2.5..
33045	-20-3	–	–	0.84	–	4.72	0.09	3.54	–	0.22	150.10-3..
33046	-20-4	–	–	0.84	–	4.72	0.13	3.94	–	0.22	150.10-4..
33047	-20-5	–	–	0.84	–	4.72	0.17	4.72	–	0.22	150.10-5..
33048	-20-6	–	–	0.84	–	4.72	0.22	4.72	–	0.44	150.10-6..
33049	150.10A -25-1.4	–	–	0.98	–	5.91	0.05	1.38	0.94	0.22	150.10-1.4..
33050	-25-2	–	–	0.98	–	5.91	0.07	1.38	0.94	0.22	150.10-2..
33051	-25-2.5	–	–	0.98	–	5.91	0.08	1.38	0.94	0.22	150.10-2.5..
33052	-25-3	–	–	0.98	–	5.91	0.09	4.72	–	0.22	150.10-3..
33053	-25-4	–	–	0.98	–	5.91	0.13	5.51	–	0.44	150.10-4..
33054	-25-5	–	–	0.98	–	5.91	0.17	6.30	–	0.44	150.10-5..
33055	-25-6	–	–	0.98	–	5.91	0.22	6.30	–	0.44	150.10-6..
33057	L150.10A -25-1.4	–	–	0.98	–	5.91	0.05	1.38	0.94	0.22	150.10-1.4..

Spare Parts, Parts included in delivery

For holder	Clamp	Locking screw	Spring
...20	150.10-600	SC-460	150.10-620
...25	150.10-601	SC-460	150.10-620

Accessories*

Key
150.10A-150
150.10A-150

Please check availability in current price and stock-list

*Ordered separately

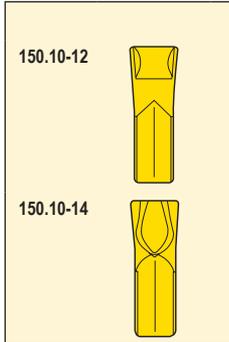
Inserts – Cut-off, 150.10...-12 and 150.10...-14

Tolerances:
 $a_p = \pm 0.002$
 $a_p = \pm 0.003$

Size:
 1.4-2.5
 3-6

Toolholder range, see pages 560-562

Size	Dimensions in inch		
	a_p	l_2	rep
1.4	0.055	0.354	0.006
2.0	0.079	0.354	0.006
2.25	0.089	0.354	0.006
2.5	0.098	0.354	0.007
3	0.122	0.354	0.007
4	0.161	0.354	0.009
5	0.201	0.354	0.010
6	0.250	0.354	0.012



Inserts	Part No.	PSIRR°	PSIRL°	Grades (EDP No.)							
				Coated						Uncoated	
				T25M	T350M	CP500	CP600	TGP35	TGP45	HX	
150.10-12	150.10 -2.5N-12	-	-	01967	18157	65083	06809	57890	42434		
	-2.5R6-12	6	-	24840			06810				
	-2.5L6-12	-	6	05313			06811				
	150.10 -3N-12	-	-	01398	16957	65071	48838	57886	42482		
	-3R6-12	6	-	24843			06818				
	-3L6-12	-	6	24841			06819				
	150.10 -4N-12	-	-	05308	18160	65113	48839	57889	42533		
	-4R6-12	6	-	05307							
	-4L6-12	-	6	05305							
	150.10 -5N-12	-	-	05316				57897			
	150.10 -6N-12	-	-	33982				57898			
	150.10-14	150.10 -1.4N-14	-	-			65081	07536			55446
150.10 -2.0N-14		-	-		18175	65075	07532		42421	55447	
-2.25N-14		-	-		18177	65082	04334		42426	55448	
-2.5N-14		-	-	01968	18166	65077	48841		42439	55449	
-2.5R6-14		6	-	28775			06812		42461		
-2.5L6-14		-	6	28774			06813				
150.10 -3N-14		-	-	01216	16960	65111	48846	57893	42515	55450	
-3R6-14		6	-	05311		65080	06838		42530		
-3L6-14		-	6	24842			06839		42467		
150.10 -4N-14		-	-	05310	16967	65073	48847	57891	42546	55451	
-4R6-14		6	-	05314							
-4L6-14		-	6	05315							
150.10 -5N-14		-	-	05319			65086	48848			
150.10 -6N-14		-	-	33983			65085	48851			

Subject to change refer to current price- and stock-list

General information

The Seco X4 system (multi edge solution) comprises toolholders and inserts for external radial machining.

The system can be used for:

- Grooving
- Cut-off

Seco X4 comes in combination with the unique Jetstream Tooling® Duo. A high pressure cooling system which provides directed coolant supply to the cutting edge by two streams: the first to the rake surface and the second to the clearance surface.



The X4 system provides several features:

- Four cutting edges
- Ability to pass free along a shoulder down to the center
- Easy double access clamping system
- Easy indexing without total extraction of the screw
- Integrity safe in case of edge failure. The inserts can still be used with three broken passive edges.
- Good repeatability (± 0.001 inch)

Jetstream Tooling® Duo – improves chip control and tool life of cutting edge



Set-up machining recommendations

The mounting should be stable.

The tool should be securely clamped and the overhang should be as small as possible.

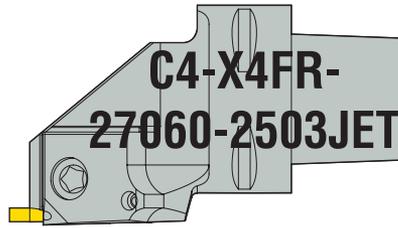
The center height should never deviate by more than ± 0.004 inch from the workpiece center.

Cut-off

An insert with a neutral edge (N) normally results in a longer useful life of the insert.

The useful life of the insert can be increased by reducing the feed rate or stopping the feed entirely before breakthrough.

Formulae for cutting data calculation can be found in on page 94.



C4	- X4	F	R	27	060	- 25	03	JET
1	2	3	4	5	6	7	8	9

<p>1. Seco-Capto size</p> <p>D_{sm}</p>	<p>2. Tool system</p> <p>X4</p>	<p>3. Toolholder setting angle</p> <p>F = 90° G = 0°</p>
<p>4. Version</p> <p>R = Right-hand version L = Left-hand version</p>	<p>5. Dimension f_1</p> <p>f_1</p>	<p>6. Dimension l_1</p> <p>l_1</p>
<p>7. Insert length</p> <p>l_2</p> <p>25 = 25 mm</p>	<p>8. Seat size</p> <p>03 = 3.1 mm</p>	<p>9. Cooling system</p> <p>JET = Jetstream Tooling®</p>

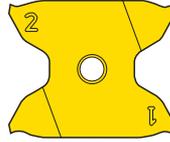
Inch holders



X4	F	R	100	25	03	D	JET
1	2	3	4	5	6	7	8

1. Tool system	2. Toolholder setting angle	3. Version
X4	<p>F = 90° G = 0°</p>	<p>R = Right-hand version L = Left-hand version</p>
4. Shank height x width (inch)	5. Tool length	
<p>063 = 0.625 075 = 0.750 100 = 1.000</p>	<p>25 = 25 mm</p>	
6. Seat size	7. Tool length	8. Cooling system
<p>03 = 3.1 mm</p>	<p>D = 6.0 inch</p>	JET = Jetstream Tooling®

Inch inserts



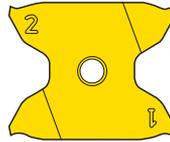
X4	G	K	25	03	009	A	0031	RN	-	MC
1	2	3	4	5	6	7	8	9		10

1. Tool system	2. Tolerances	3. Insert type								
X4	 Tolerance \pm inch <table border="1"> <thead> <tr> <th>Tol. class</th> <th>a_p</th> <th>r_{ϵ}</th> <th>l</th> </tr> </thead> <tbody> <tr> <td>G</td> <td>0.001</td> <td>0.001</td> <td>0.001</td> </tr> </tbody> </table>	Tol. class	a_p	r_{ϵ}	l	G	0.001	0.001	0.001	 K = four edges with chipbreaker H = four edges without chipbreaker
Tol. class	a_p	r_{ϵ}	l							
G	0.001	0.001	0.001							

4. Insert length	5. Seat size	6. Corner radius	7. Inch size
 25 = 25 mm	 03 = 3.1 mm	 009 = 0.0035 inch 019 = 0.0075 inch	A = Inch size

8. Insert width	9. Version	10. Chipbreaker
 0031 = 0.031 inch 0072 = 0.072 inch 0047 = 0.047 inch 0094 = 0.094 inch 0062 = 0.062 inch		MC = Chipbreaker for medium Cut-off and Grooving

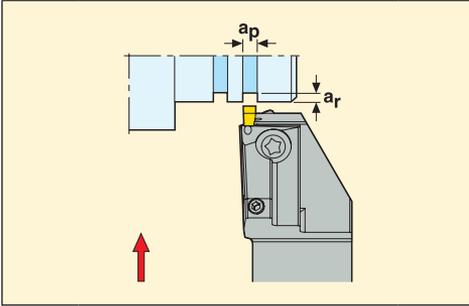
Metric inserts



X4	G	K	25	03	010	- 0150	RR15	- MC
1	2	3	4	5	6	7	8	9

1. Tool system	2. Tolerances	3. Insert type								
X4	<p>Tolerance ± mm</p> <table border="1"> <tr> <td>Tol. class</td> <td>a_p</td> <td>r_ϵ</td> <td>l</td> </tr> <tr> <td>G</td> <td>0.025</td> <td>0.03</td> <td>0.025</td> </tr> </table>	Tol. class	a_p	r_ϵ	l	G	0.025	0.03	0.025	<p>K = four edges with chipbreaker H = four edges without chipbreaker</p>
Tol. class	a_p	r_ϵ	l							
G	0.025	0.03	0.025							
4. Insert length	5. Seat size	6. Corner radius								
<p>25 = 25 mm</p>	<p>03 = 3.1 mm</p>	<p>005 = 0.05 mm 010 = 0.10 mm 015 = 0.15 mm</p>								
7. Insert width	8. Version	9. Chipbreaker								
<p>0050 = 0.5 mm 0300 = 3 mm</p>		<p>MC = Chipbreaker for medium Cut-off and Grooving</p>								

Grooving

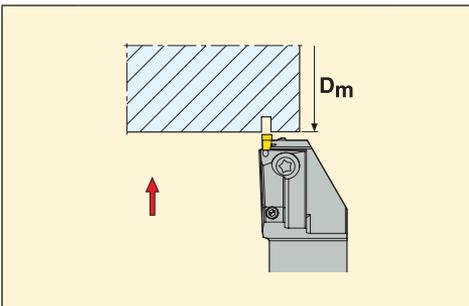


Maximum cutting depth a_r is limited relative to workpiece diameter to avoid contact between workpiece and toolholder.

Grooving – Cutting depth a_r

Cutting edge width a_p , mm (inch)	Workpiece diameter, \varnothing inch									
	0-5.12	5.12-5.51	5.51-6.30	6.30-7.09	7.09-7.87	7.87-9.84	9.84-11.81	11.81-15.75	15.75-19.68	19.68-39.37
0.5 (0.031)	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102
1.0 (0.047)	0.169	0.169	0.169	0.169	0.169	0.169	0.169	0.169	0.169	0.157
1.5 (0.062)	0.256	0.252	0.240	0.232	0.217	0.197	0.197	0.177	0.177	0.157
2.0 (0.072)	0.256	0.252	0.240	0.232	0.217	0.197	0.197	0.177	0.177	0.157
2.5 (0.098)	0.256	0.252	0.240	0.232	0.217	0.197	0.197	0.177	0.177	0.157
3.0 (0.118)	0.256	0.252	0.240	0.232	0.217	0.197	0.197	0.177	0.177	0.157

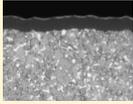
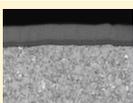
Cut-off



Cut-off – Maximum workpiece diameter, \varnothing

Cutting edge width a_p , mm (inch)	Workpiece diameter, \varnothing inch
0.5 (0.031)	0.205
1.0 (0.047)	0.339
1.5 (0.062)	0.512
2.0 (0.072)	0.512
2.5 (0.098)	0.512
3.0 (0.118)	0.512

Coated grades

	CP500	Tough PVD-coated micrograin grade intended for grooving, profiling and parting-off at moderate cutting speeds. Provides more wear resistance compared to CP600. (Ti,Al)N + TiN
	CP600	Very tough PVD-coated fine-grain grade, universal choice intended for grooving and parting-off at low to moderate cutting speeds. Well-suited in stainless steel and in interrupted cuts. Tougher alternative to CP500. (Ti,Al)N + TiN
	TGH1050	Very hard supermicrograin grade intended for partly hardened steel components as well as generally work-piece materials such as superalloys and cast-iron and due to remarkable edge toughness it also provides high performance in interrupted cuts and hard-surface removal. Ti-Al-Si-N nanolaminate coating

Grades, PCBN

CBN200 	Inserts with brazed tips, intended for hardened steels and pearlitic cast iron. Composition: 90% cBN content grade with an average grain size of 3-6 µm and a Al ceramic binder. Coating: No coating.
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Grades

The application area for each grade is shown in the chart below.

The black areas in the chart indicate a grade's main ISO application groups and the white areas indicate other supplementary application groups.

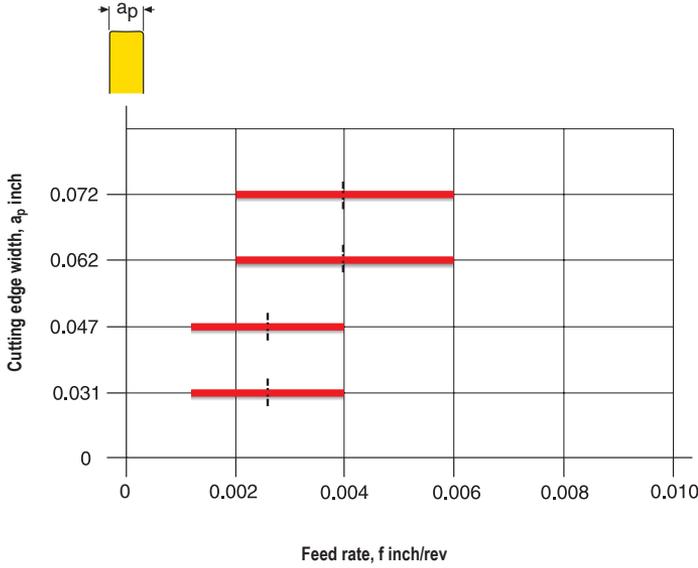
	P					M					K					N				S				H			
	P01	P10	P20	P30	P40	P50	M01	M10	M20	M30	M40	K01	K10	K20	K30	K40	N01	N10	N20	N30	S01	S10	S20	S30	H01	H10	H20
CP500				●	●	●				●	●				●				●	●	●	●					●
CP600				●	●	●				●	●				●				●	●	●	●					●
TGH1050															●												●
CBN200															●												●

Feed rate recommendations for each cutting edge width

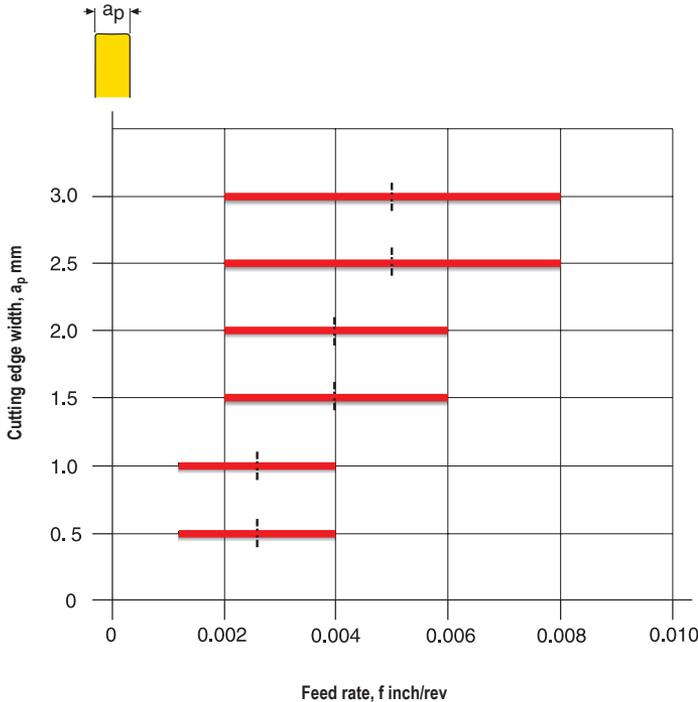
Dotted line indicates start value.

The feed rate recommendations in this diagram are valid for neutral inserts. For angled inserts, R/L, generally a reduction with 30% of the values are recommended.

Inch



Metric



Cutting speed, v_c (sf/min)

In this section a recommended cutting speed is indicated under specified conditions.

Use the tables beginning on page 770 to classify the workpiece material into a SMG.

The cutting data tables provide a recommendation of chipbreaker and a start value for feed rate (f) and cutting speed (v_c).

The cutting data tables are based on grooving with full cutting width (a_p).

The recommended cutting speeds in the tables are calculated for 15 minutes tool life with use of external flood coolant.

In order to increase the accuracy towards the actual cutting conditions and requirements of the applications the recommendation is to use My Pages – Suggest on www.secotools.com

v_c = cutting speed (sf/min)

a_p = insert width (mm)

f = feed rate (in/rev)

CP500

SMG		$a_p = 0.5-1.0$		$a_p = 1.5-2.0$		$a_p = 2.5-3.0$	
		f	v_c	f	v_c	f	v_c
P1	-MC CP500	0.0030	600	0.0048	500	0.0060	460
P2	-MC CP500	0.0030	580	0.0048	490	0.0060	450
P3	-MC CP500	0.0030	500	0.0044	435	0.0055	395
P4	-MC CP500	0.0028	450	0.0044	380	0.0055	350
P5	-MC CP500	0.0028	430	0.0044	365	0.0055	330
P6	-MC CP500	0.0028	480	0.0044	410	0.0050	380
P7	-MC CP500	0.0028	455	0.0044	385	0.0050	360
P8	-MC CP500	0.0030	420	0.0044	365	0.0055	330
P11	-MC CP500	0.0028	440	0.0044	375	0.0050	350
M1	-MC CP500	0.0030	670	0.0048	570	0.0060	495
M2	-MC CP500	0.0028	540	0.0044	480	0.0055	415
M3	-MC CP500	0.0022	405	0.0034	400	0.0044	360
M4	-MC CP500	0.0020	300	0.0030	305	0.0038	285
M5	-MC CP500	0.0020	250	0.0030	255	0.0038	240
K1	-MC CP500	0.0030	560	0.0048	470	0.0060	430
K2	-MC CP500	0.0028	475	0.0044	395	0.0055	355
K3	-MC CP500	0.0028	400	0.0044	335	0.0055	300
K4	-MC CP500	0.0028	385	0.0044	320	0.0055	285
K5	-MC CP500	0.0026	235	0.0040	200	0.0048	180
K6	-MC CP500	0.0028	350	0.0044	295	0.0055	270
K7	-MC CP500	0.0026	300	0.0040	255	0.0048	235
N11	-MC CP500	0.0040	355	0.0060	300	0.0075	270
S1	-MC CP500	0.0020	70	0.0030	65	0.0038	60
S2	-MC CP500	0.0020	65	0.0030	55	0.0038	50
S3	-MC CP500	0.0018	55	0.0028	48	0.0036	45

CP600

SMG		ap = 0.5-1.0		ap = 1.5-2.0		ap = 2.5-3.0	
		f	v _c	f	v _c	f	v _c
P1	-MC CP600	0.0030	560	0.0048	475	0.0060	430
P2	-MC CP600	0.0030	550	0.0048	460	0.0060	420
P3	-MC CP600	0.0030	470	0.0044	405	0.0055	370
P4	-MC CP600	0.0028	420	0.0044	360	0.0055	325
P5	-MC CP600	0.0028	405	0.0044	340	0.0055	310
P6	-MC CP600	0.0028	450	0.0044	385	0.0050	360
P7	-MC CP600	0.0028	425	0.0044	365	0.0050	340
P8	-MC CP600	0.0030	395	0.0044	340	0.0055	310
P11	-MC CP600	0.0028	415	0.0044	350	0.0050	330
M1	-MC CP600	0.0030	630	0.0048	540	0.0060	465
M2	-MC CP600	0.0028	510	0.0044	450	0.0055	390
M3	-MC CP600	0.0022	380	0.0034	375	0.0044	340
M4	-MC CP600	0.0020	280	0.0030	285	0.0038	270
M5	-MC CP600	0.0020	235	0.0030	240	0.0038	225
K1	-MC CP600	0.0030	520	0.0048	440	0.0060	405
K2	-MC CP600	0.0028	445	0.0044	375	0.0055	335
K3	-MC CP600	0.0028	380	0.0044	315	0.0055	280
K4	-MC CP600	0.0028	360	0.0044	300	0.0055	270
K5	-MC CP600	0.0026	220	0.0040	185	0.0048	170
K6	-MC CP600	0.0028	325	0.0044	280	0.0055	255
K7	-MC CP600	0.0026	280	0.0040	235	0.0048	220
N11	-MC CP600	0.0040	335	0.0060	280	0.0075	255
S1	-MC CP600	0.0020	70	0.0030	60	0.0038	55
S2	-MC CP600	0.0020	60	0.0030	50	0.0038	48
S3	-MC CP600	0.0018	50	0.0028	45	0.0036	42

SMG = Seco Material Group

v_c = sf/min

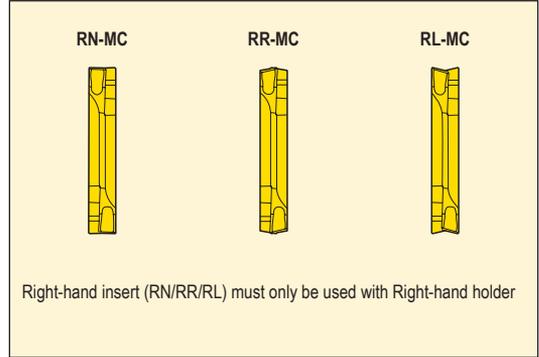
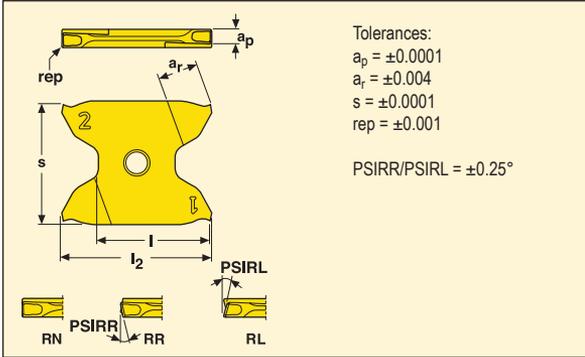
f = in/rev

a_p = mm

All cutting data are start values

X4GK

Metric right handed inserts



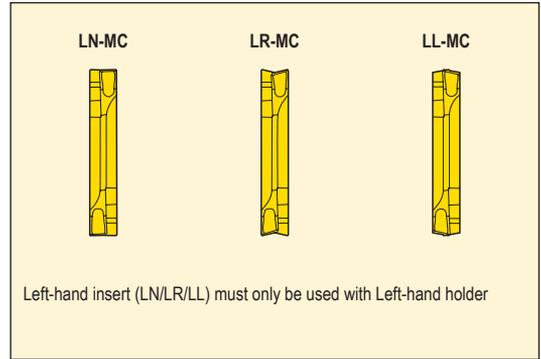
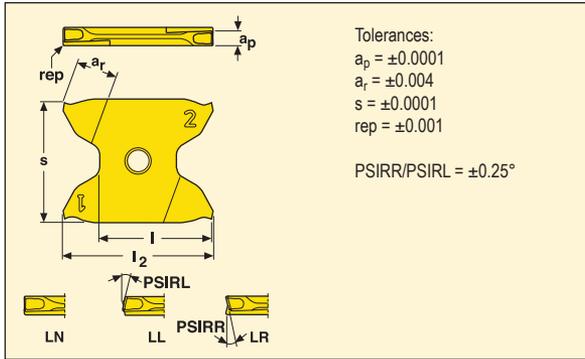
Inserts	Part No.	PSIRR°	PSIRL°	Dimensions in inch						Grades (EDP No.)		
				a_p	a_r^*	l	l_2	s	rep	Coated		
										CP500	CP600	TGH1050
X4GK..RN-MC	X4GK 2503005-0050RN-MC	0	0	0.020	0.102	0.748	1.002	0.803	0.002		16235	43140
	2503005-0100RN-MC	0	0	0.039	0.169	0.748	1.002	0.803	0.002		16236	43142
	2503010-0150RN-MC	0	0	0.059	0.256	0.748	1.002	0.803	0.004	16233	16240	43164
	2503010-0200RN-MC	0	0	0.079	0.256	0.748	1.002	0.803	0.004	16234	16244	43228
	2503015-0250RN-MC	0	0	0.098	0.256	0.748	1.001	0.803	0.006	16215	16219	43261
	2503015-0300RN-MC	0	0	0.118	0.256	0.748	1.001	0.803	0.006	08716	15959	43316
	2503020-0150RN-MC	0	0	0.059	0.256	0.748	1.002	0.803	0.008	42861		
	2503020-0200RN-MC	0	0	0.079	0.256	0.748	1.002	0.803	0.008	42884		
	2503030-0250RN-MC	0	0	0.098	0.256	0.748	1.001	0.803	0.012	43014		
	2503030-0300RN-MC	0	0	0.118	0.256	0.748	1.001	0.803	0.012	43017		
X4GK..RR-MC	X4GK 2503005-0100RR15-MC	15	0	0.039	0.169	0.748	1.000	0.802	0.002		16252	
	2503005-0150RR15-MC	15	0	0.059	0.256	0.748	0.999	0.801	0.002	46321		
	2503010-0150RR15-MC	15	0	0.059	0.256	0.748	0.999	0.801	0.004	16058	16048	
	2503010-0200RR15-MC	15	0	0.079	0.256	0.748	0.998	0.800	0.004		16255	
	2503015-0250RR15-MC	15	0	0.098	0.256	0.744	0.997	0.799	0.006		16226	
	2503015-0300RR06-MC	6	0	0.118	0.256	0.744	0.996	0.798	0.006		16229	
X4GK..RL-MC	X4GK 2503005-0100RL15-MC	0	15	0.039	0.169	0.748	1.002	0.803	0.002		16256	
	2503010-0150RL15-MC	0	15	0.059	0.256	0.748	1.001	0.803	0.004	16061	16056	
	2503010-0200RL15-MC	0	15	0.079	0.256	0.748	1.001	0.803	0.004		16262	
	2503015-0250RL15-MC	0	15	0.098	0.256	0.748	1.001	0.803	0.006		16230	
	2503015-0300RL06-MC	0	6	0.118	0.256	0.748	1.001	0.803	0.006		16231	

Please check availability in current price and stock list

* Maximum cutting depth a_r is limited relative to workpiece diameter to avoid contact between workpiece and toolholder, see guide pages.

X4GK

Metric left handed inserts



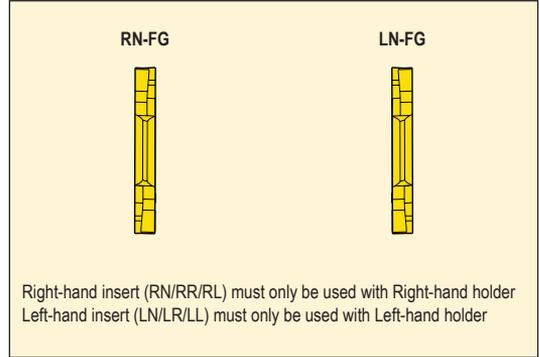
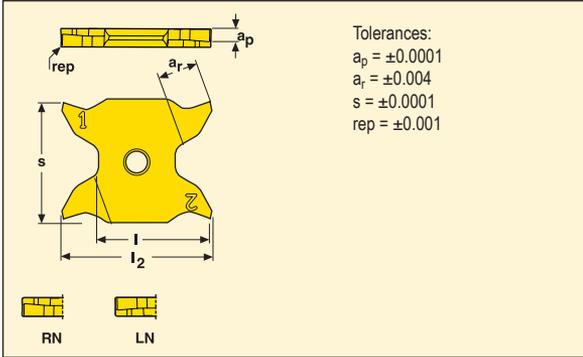
Inserts	Part No.	PSIRR°	PSIRL°	Dimensions in inch						Grades (EDP No.)		
				a_p	a_r^*	l	l_2	s	rep	Coated		
										CP500	CP600	TGH1050
X4GK..LN-MC	X4GK 2503005-0050LN-MC	0	0	0.020	0.102	0.748	1.002	0.803	0.002		16288	43141
	2503005-0100LN-MC	0	0	0.039	0.169	0.748	1.002	0.803	0.002		16293	43154
	2503010-0150LN-MC	0	0	0.059	0.256	0.748	1.002	0.803	0.004	16279	16302	43188
	2503010-0200LN-MC	0	0	0.079	0.256	0.748	1.002	0.803	0.004	16287	16306	43254
	2503015-0250LN-MC	0	0	0.098	0.256	0.748	1.001	0.803	0.006	16270	16271	43273
	2503015-0300LN-MC	0	0	0.118	0.256	0.748	1.001	0.803	0.006	15991	16002	43319
	2503020-0150LN-MC	0	0	0.059	0.256	0.748	1.002	0.803	0.008	42864		
	2503020-0200LN-MC	0	0	0.079	0.256	0.748	1.002	0.803	0.008	43012		
	2503030-0250LN-MC	0	0	0.098	0.256	0.748	1.001	0.803	0.012	43015		
2503030-0300LN-MC	0	0	0.118	0.256	0.748	1.001	0.803	0.012	43069			
X4GK..LR-MC	X4GK 2503005-0100LR15-MC	15	0	0.039	0.169	0.748	1.002	0.803	0.002		16308	
	2503010-0150LR15-MC	15	0	0.059	0.256	0.748	1.001	0.803	0.004	16118	16070	
	2503010-0200LR15-MC	15	0	0.079	0.256	0.748	1.001	0.803	0.004		16309	
	2503015-0250LR15-MC	15	0	0.098	0.256	0.748	1.001	0.803	0.006		16273	
	2503015-0300LR06-MC	6	0	0.118	0.256	0.748	1.001	0.803	0.006		16274	
X4GK..LL-MC	X4GK 2503005-0100LL15-MC	0	15	0.039	0.169	0.748	1.000	0.802	0.002		16321	
	2503005-0150LL15-MC	0	15	0.059	0.256	0.748	0.999	0.801	0.002	43078		
	2503010-0150LL15-MC	0	15	0.059	0.256	0.748	0.999	0.801	0.004	16117	16084	
	2503010-0200LL15-MC	0	15	0.079	0.256	0.748	0.998	0.800	0.004		16325	
	2503015-0250LL15-MC	0	15	0.098	0.256	0.744	0.997	0.799	0.006		16275	
	2503015-0300LL06-MC	0	6	0.118	0.256	0.744	0.996	0.798	0.006		16276	

Please check availability in current price and stock list

* Maximum cutting depth a_r is limited relative to workpiece diameter to avoid contact between workpiece and toolholder, see guide pages.

X4GK

Metric right and left handed inserts

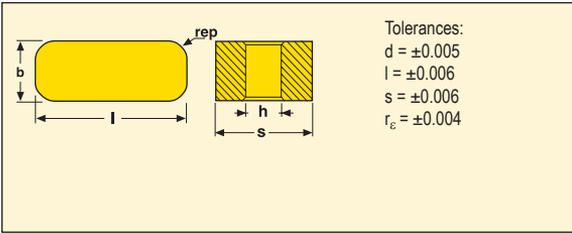


Inserts	Part No.	Dimensions in inch						Grades (EDP No.)	
		a_p	a_r^*	l	l_2	s	rep	Coated	
								CP500	TGH1050
X4GK..RN-FG for circlip	X4GK 2503010-0115RN-FG	0.045	0.157	0.748	1.002	0.803	0.004	91783	
	2503010-0135RN-FG	0.053	0.157	0.748	1.002	0.803	0.004	91784	
	2503010-0165RN-FG	0.065	0.236	0.748	1.002	0.803	0.004	91791	
	2503010-0190RN-FG	0.075	0.236	0.748	1.002	0.803	0.004	91792	
	2503015-0215RN-FG	0.085	0.236	0.748	1.001	0.803	0.006	91793	
	2503015-0265RN-FG	0.104	0.236	0.748	1.001	0.803	0.006	91795	
X4GK..RN-FG	X4GK 2503005-0050RN-FG	0.020	0.102	0.748	1.002	0.803	0.002		43323
	2503005-0100RN-FG	0.039	0.169	0.748	1.002	0.803	0.002		43362
	2503010-0150RN-FG	0.059	0.256	0.748	1.002	0.803	0.004		43369
	2503010-0200RN-FG	0.079	0.256	0.748	1.002	0.803	0.004		43379
	2503015-0250RN-FG	0.098	0.256	0.748	1.002	0.803	0.006		43387
	2503015-0300RN-FG	0.118	0.256	0.748	1.002	0.803	0.006		43389
X4GK..LN-FG for circlip	X4GK 2503010-0115LN-FG	0.045	0.157	0.748	1.002	0.803	0.004	91796	
	2503010-0135LN-FG	0.053	0.236	0.748	1.002	0.803	0.004	91811	
	2503010-0165LN-FG	0.065	0.236	0.748	1.002	0.803	0.004	91819	
	2503010-0190LN-FG	0.075	0.236	0.748	1.002	0.803	0.004	91825	
	2503015-0215LN-FG	0.085	0.236	0.748	1.001	0.803	0.006	91830	
	2503015-0265LN-FG	0.104	0.236	0.748	1.001	0.803	0.006	91835	
X4GK..RN-FG	X4GK 2503005-0050LN-FG	0.020	0.102	0.748	1.002	0.803	0.002		43327
	2503005-0100LN-FG	0.039	0.169	0.748	1.002	0.803	0.002		43367
	2503010-0150LN-FG	0.059	0.256	0.748	1.002	0.803	0.004		43375
	2503010-0200LN-FG	0.079	0.256	0.748	1.002	0.803	0.004		43380
	2503015-0250LN-FG	0.098	0.256	0.748	1.002	0.803	0.006		43388
	2503015-0300LN-FG	0.118	0.256	0.748	1.002	0.803	0.006		43394

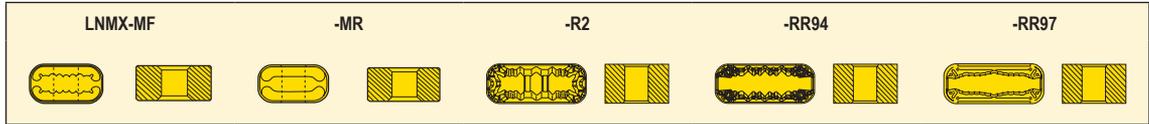
Please check availability in current price and stock list

* Maximum cutting depth a_p is limited relative to workpiece diameter to avoid contact between workpiece and toolholder, see guide pages.

LNMX



Size	Dimensions in inch				
	d (I.C.)	l	s	d ₁	r _ε
1919	0.394	0.750	0.750	0.250	1/64
3019	0.472	1.181	0.750	0.250	1/64



Inserts	Part No.	Grades (EDP No.)				
		Coated				
		TP0501	TP1501	TP2501	TP200	TK2001
LNMX-MF	LNMX 191940-MF		18889	18828		69666
	LNMX 301940-MF		18850	18873		69668
LNMX-MR	LNMX 191940-MR		18829	18846		69667
	LNMX 301940-MR		18852	18854		
LNMX-R2	LNMX 191940-R2	18848	18872		75619	
	LNMX 301940-R2	18855	18856		75634	
LNMX-RR94	LNMX 191940-RR94	18849	18894		75622	03959
	LNMX 301940-RR94	18875	18857		75637	03972
LNMX-RR97	LNMX 301940-RR97	18859	18860		75625	

Please check availability in current price and stock-list.



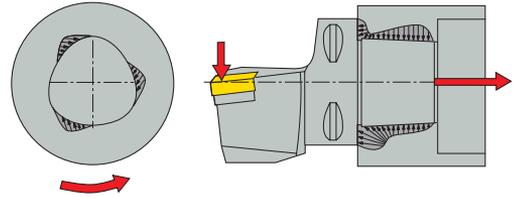
Introduction

Seco-Capto is a quick-change modular tooling system for quick set-up and replacement of the cutting edge.

Advantages

- Quick tool change, increases the available productive time.
- Flexible, same toolholder can be used in different machines which reduces the tool stock.
- Modular, building of tools with extension adapters reduces the tool stock.
- Rigid, no reduction of cutting data.
- Accurate, tapered polygon coupling produces a strong, self-centering joint with repeatability within ± 0.00008 inch.

All toolholders have through holes for coolant.



Clamping units

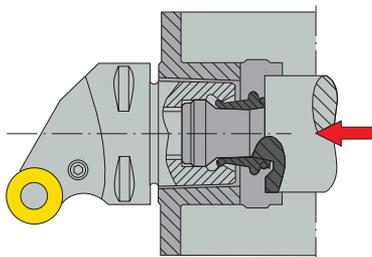
The manual clamping units are available in different versions;

- VDI shaft, straight or angled.
- Shank type to use with external toolholders.
- Cylindrical type to use with internal toolholders.
- Versions for special applications.

The unit is locked with a drawbar or screw from the back.

Clamping units, please see pages 752-762.

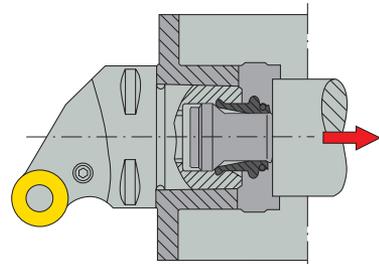
Unclamped position



Clamping segments

When the drawbar is pushed forward the diameter of the clamping segments decreases and the clamping segments are loosened from the cutting unit. The drawbar also pushes the cutting unit out from the joint.

Clamped position



When the drawbar is pulled back, the diameter of the clamping segments expands and the cutting unit is pulled into position.

External toolholders



C4	-	P	W	L	N	R	-	27	050	-	06	-	
1		2	3	4	5	6		7	8		9		10

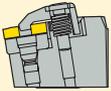
1. Seco-Capto™ size



C3 = 32 mm
 C4 = 40 mm
 C5 = 50 mm
 C6 = 63 mm
 C8 = 80 mm

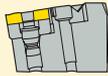
2. Insert clamping

D



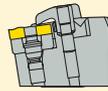
Clamp/inserts with center hole

P



Pin/Wedge or Lever

M



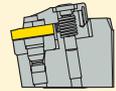
Pin/Clamp

S



Screw

C



Clamp

3. Insert shape

C



D



R



S



T



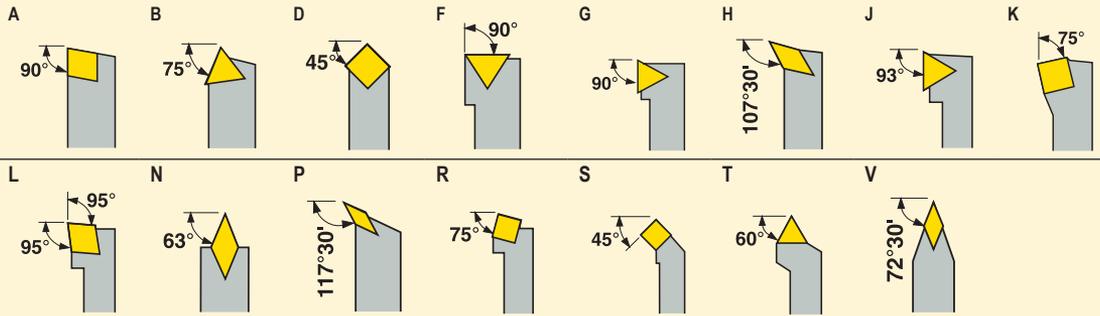
V



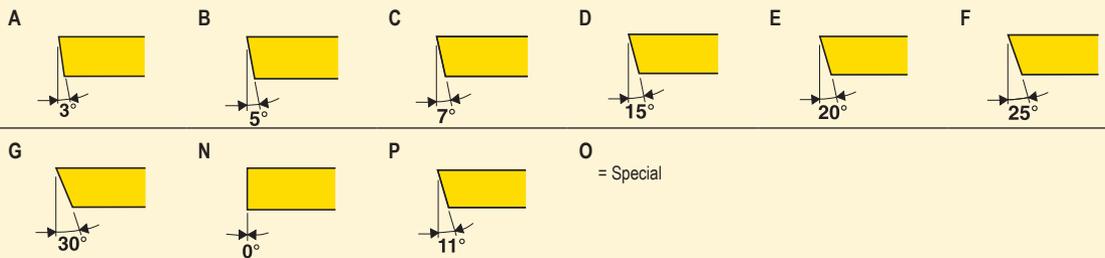
W



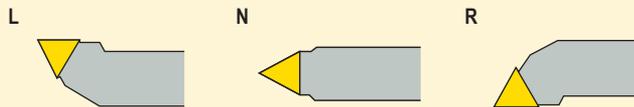
4. Tool type



5. Insert side clearance angle



6. Cutting direction

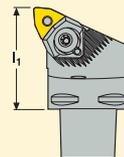


7. f₁- dimension



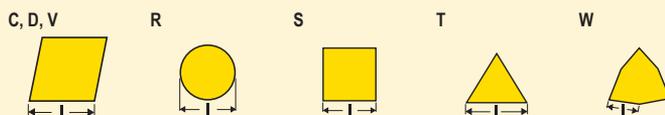
22 = 22 mm
 27 = 27 mm
 35 = 35 mm
 45 = 45 mm
 etc.

8. l₁- dimension



040 = 40 mm
 042 = 42 mm
 044 = 44 mm
 050 = 50 mm
 060 = 60 mm
 etc.

9. Cutting edge length

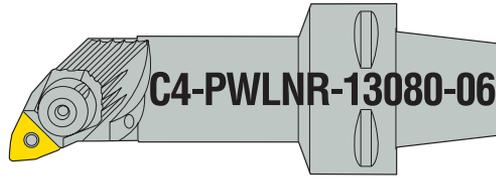


10. Internal designation

JET = Jetstream Tooling®
JETL = Jetstream Tooling® with P-lever clamp

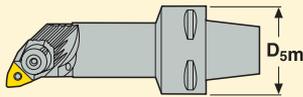
JETB = Jetstream Tooling® with inlet on backend of shank
JETLB = Jetstream Tooling® with P-lever clamp and inlet on backend of shank

Internal toolholders and GL heads

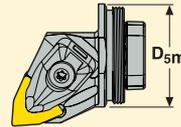


C4	-	P	W	L	N	R	-	13	080	-	06	-	
1		2	3	4	5	6		7	8		9		10

1. Seco-Capto size™



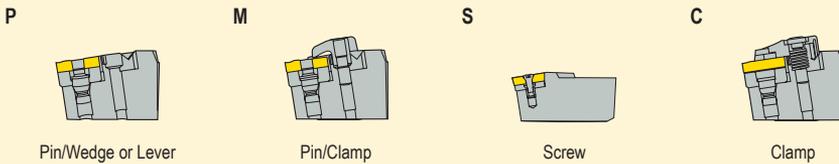
C3 = 32 mm
 C4 = 40 mm
 C5 = 50 mm
 C6 = 63 mm
 C8 = 80 mm



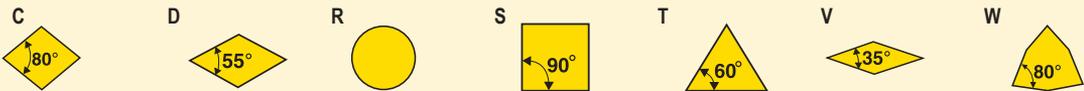
GL32 = 32 mm
 GL40 = 40 mm
 GL50 = 50 mm

Steadyline®

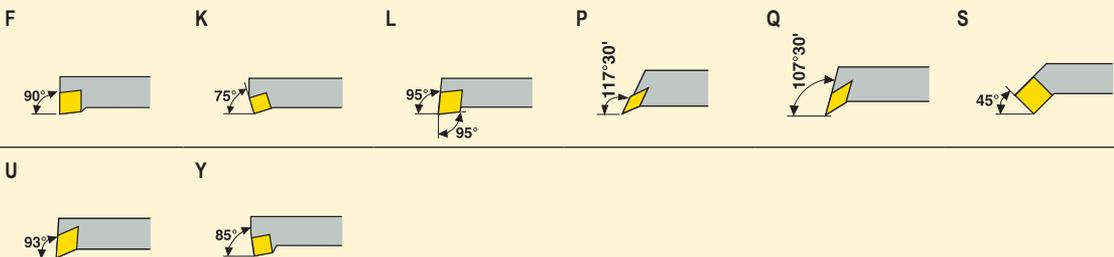
2. Insert clamping



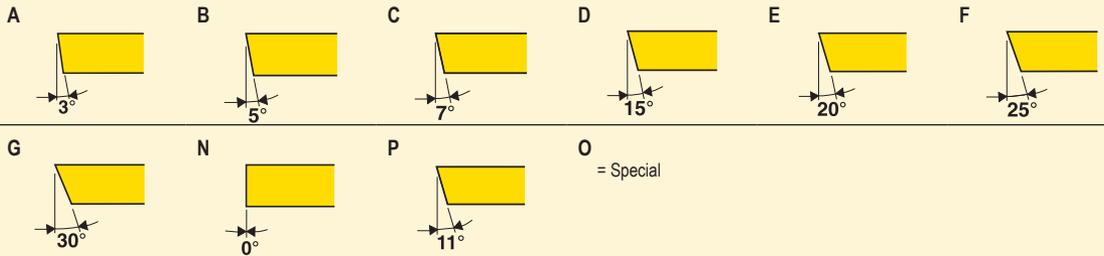
3. Insert shape



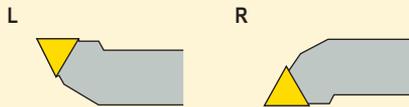
4. Tool type



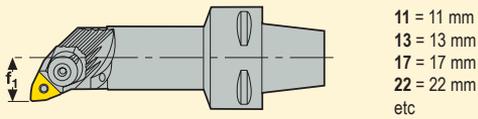
5. Insert side clearance angle



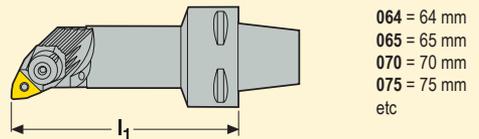
6. Cutting direction (hand of tool)



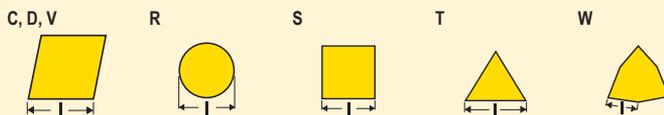
7. f_1 - dimension



8. l_1 - dimension



9. Cutting edge length

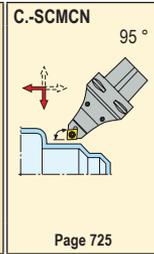
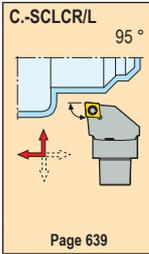
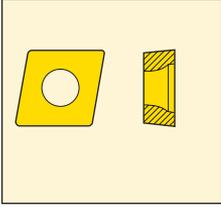


10. Internal designation

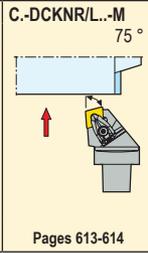
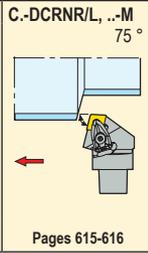
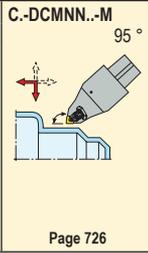
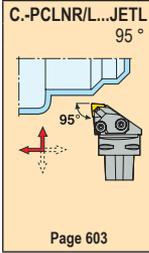
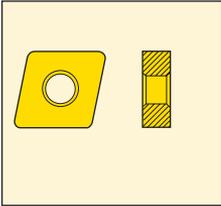


For Seco-Capto™ Steadyline® vibration damping holders see page 204

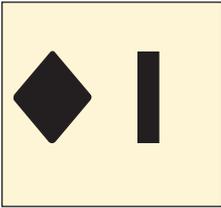
Inserts CC..



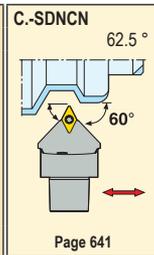
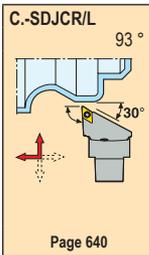
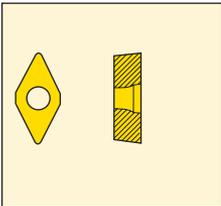
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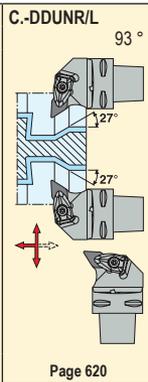
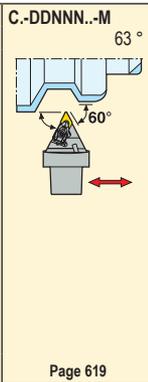
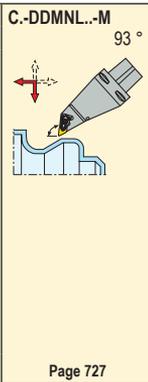
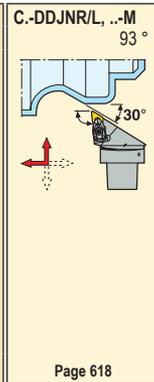
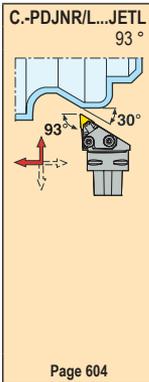
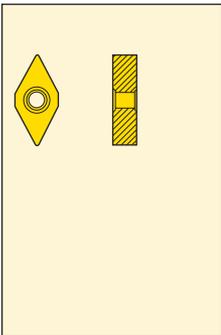
Inserts CN.N



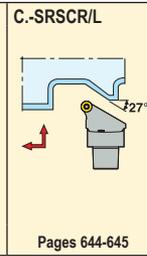
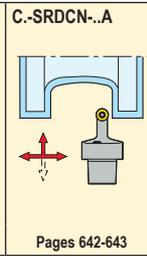
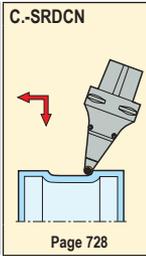
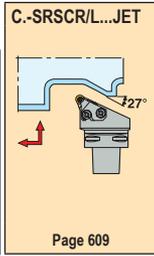
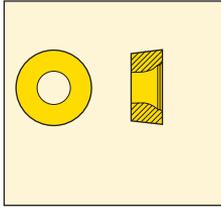
Inserts DC..



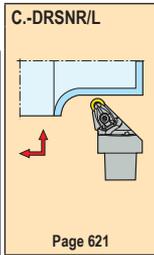
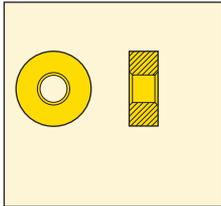
Inserts DN..



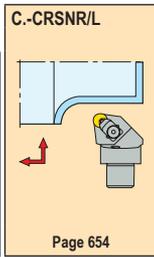
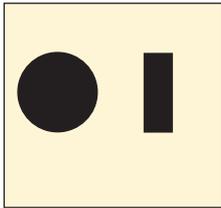
Inserts RC..



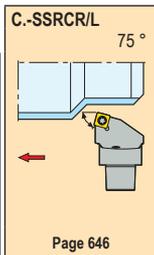
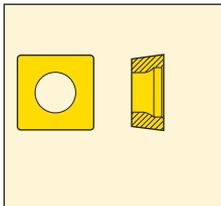
Inserts RN..



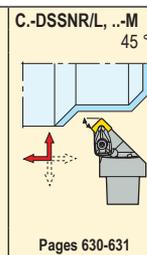
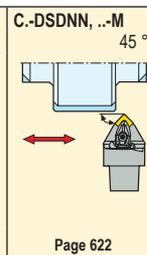
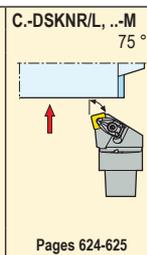
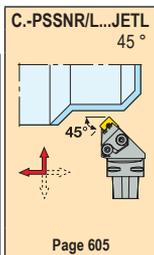
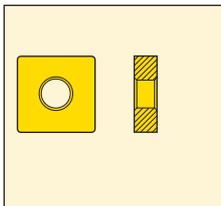
Inserts RN.N



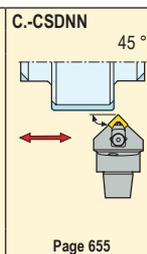
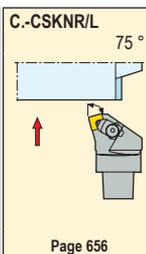
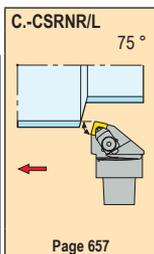
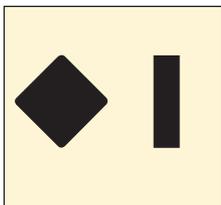
Inserts SC..



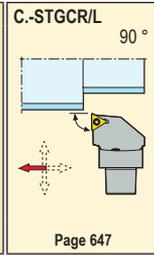
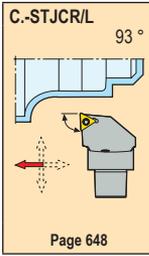
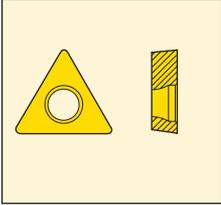
Inserts SN..



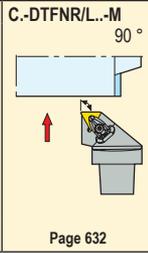
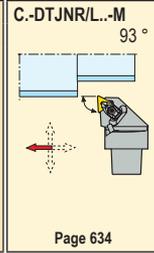
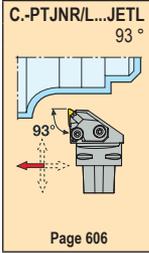
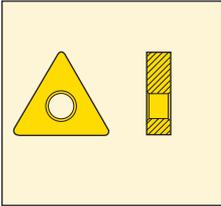
Inserts SN.N



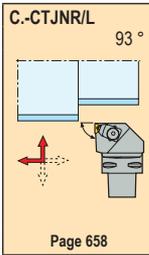
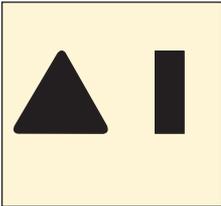
Inserts TC..



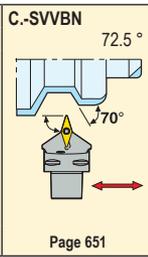
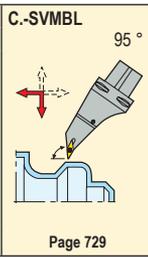
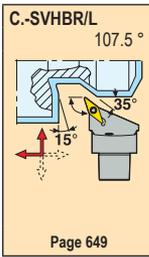
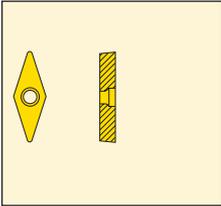
Inserts TN..



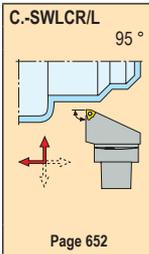
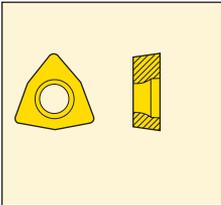
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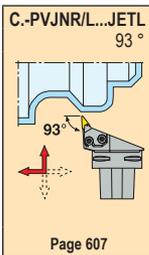
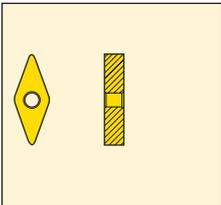
Inserts VB../VC..



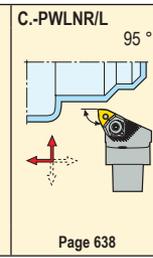
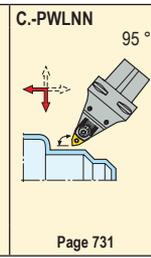
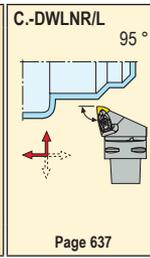
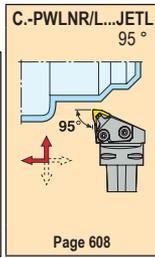
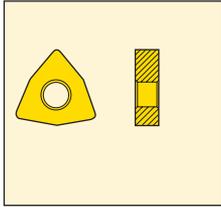
Inserts WC..



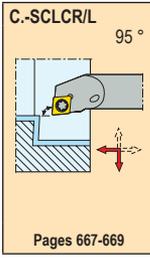
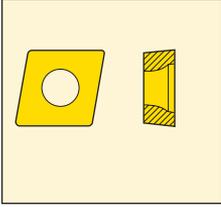
Inserts VN..



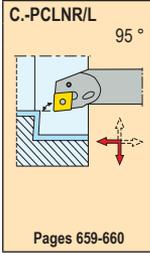
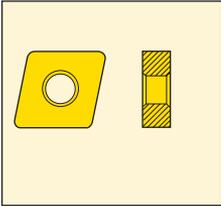
Inserts WN..



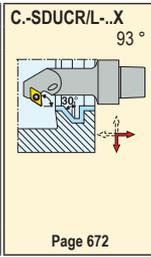
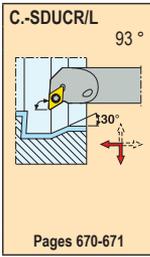
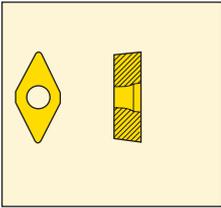
Inserts CC..



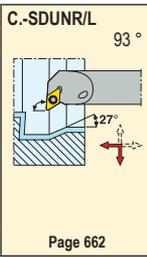
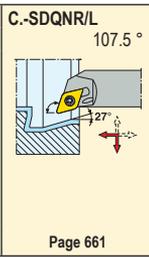
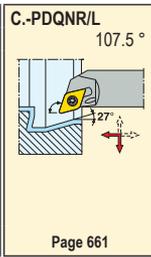
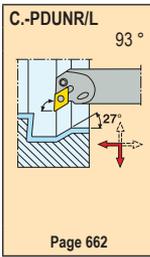
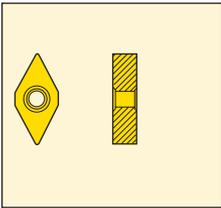
Inserts CN..



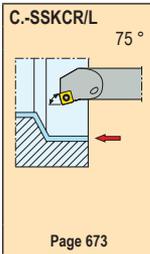
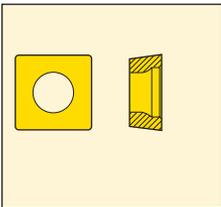
Inserts DC..



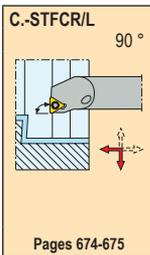
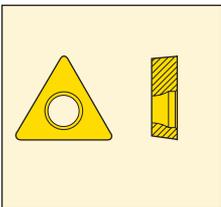
Inserts DN..



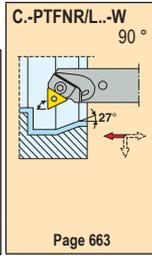
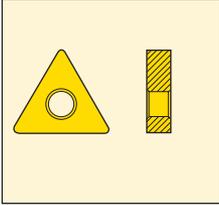
Inserts SC..



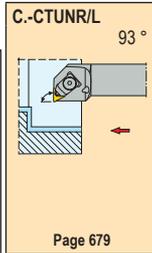
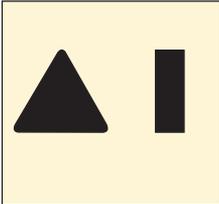
Inserts TC..



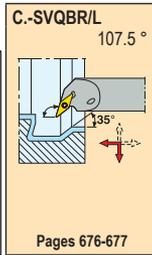
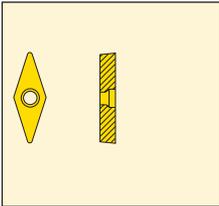
Inserts TN..



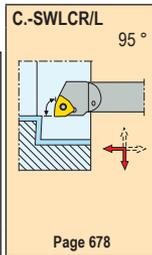
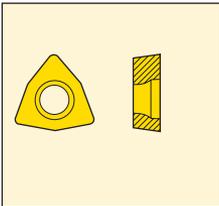
Inserts TN.N



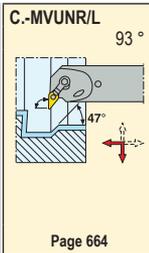
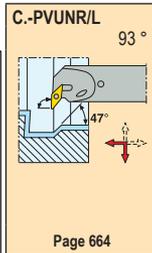
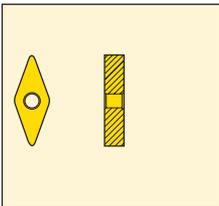
Inserts VB../VC..



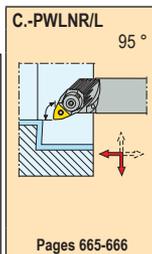
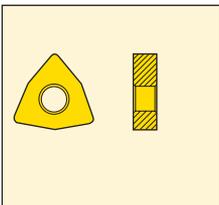
Inserts WC..



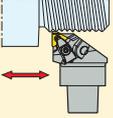
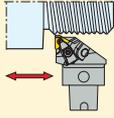
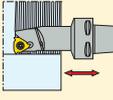
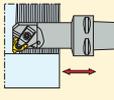
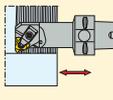
Inserts VN..



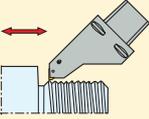
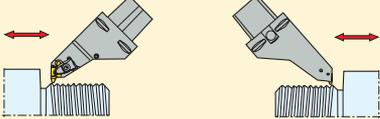
Inserts WN..



Seco-Capto™

<p>CER/L...HD Ext.</p>  <p>page 719</p>	<p>CER/L-..CHD Ext.</p>  <p>page 720</p>	<p>SNR Int.</p>  <p>page 721</p>	<p>CNR/L-..HD Int.</p>  <p>pages 721-722</p>	<p>CNR/L-..CHD Int.</p>  <p>pages 723-724</p>
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Seco-Capto™ for MTM

<p>CER...HD (S style inserts)</p>  <p>page 733</p>	<p>CEL...HD (K style inserts)</p>  <p>page 734</p>
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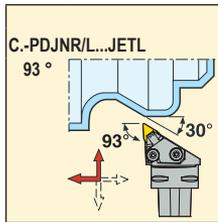
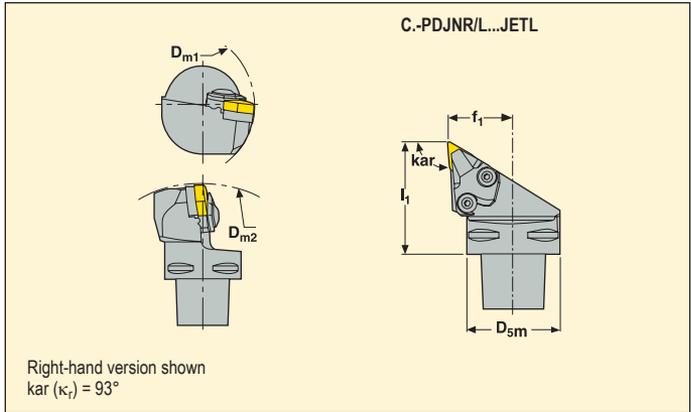


For Seco-Capto™ Steadylite® vibration damping holders see page 204

Toolholders for inserts DNGA, DNGP, DNMA, DNMG, DNMM and DNMX



- For insert program, see pages 253-257, 259, 304-305
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	I.C.	EDP No.	Part No.	Dimensions in inch					γ_o°	λ_s°	lbs	
				D_{sm}	f_1	l_1	D_{m1}	D_{m2}				
C4	1/2	85792	C4-PDJNR -27055-15-04JETL	1.57	1.06	2.17	2.95	6.50	-6	-6	1.1	DN..43.
		85793	C4-PDJNL -27055-15-04JETL	1.57	1.06	2.17	2.95	6.50	-6	-6	1.1	DN..43.
C5	1/2	85795	C5-PDJNR -35060-15-04JETL	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	DN..43.
		85797	C5-PDJNL -35060-15-04JETL	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	DN..43.
C6	1/2	85794	C6-PDJNR -45065-15-04JETL	2.44	1.77	2.56	4.76	6.50	-6	-6	2.6	DN..43.
		85796	C6-PDJNL -45065-15-04JETL	2.44	1.77	2.56	4.76	6.50	-6	-6	2.6	DN..43.
C4	1/2	19018	C4-PDJNR -27055-15JETL	1.57	1.06	2.17	2.95	6.50	-6	-6	1.1	DN..44.
		19244	C4-PDJNL -27055-15JETL	1.57	1.06	2.17	2.95	6.50	-6	-6	1.1	DN..44.
C5	1/2	19014	C5-PDJNR -35060-15JETL	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	DN..44.
		19261	C5-PDJNL -35060-15JETL	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	DN..44.
C6	1/2	19262	C6-PDJNR -45065-15JETL	2.44	1.77	2.56	4.76	6.50	-6	-6	2.6	DN..44.
		19011	C6-PDJNL -45065-15JETL	2.44	1.77	2.56	4.76	6.50	-6	-6	2.6	DN..44.

Spare Parts, Parts included in delivery

Accessories*

Toolholder/ Insert dimension	Anvil	Lever	Anvil pin	Punch	Screw	Key	Finishing inducer	Screw	O-ring	Roughing inducer
C.-PDJNR-15-04	PDN432	PP4716	RP6757	MP0912	LS0822	3SMS795	CILD15RA-F	117.26-655	ORING-8X1.5	CILD15RA-R
C.-PDJNL-15-04	PDN432	PP4716	RP6757	MP0912	LS0822	3SMS795	CILD15LA-F	117.26-655	ORING-8X1.5	CILD15LA-R
C.-PDJNR-15	PDN422	PP4716	RP6757	MP0912	LS0822	3SMS795	CILD15RA-F	117.26-655	ORING-8X1.5	CILD15RA-R
C.-PDJNL-15	PDN422	PP4716	RP6757	MP0912	LS0822	3SMS795	CILD15LA-F	117.26-655	ORING-8X1.5	CILD15LA-R

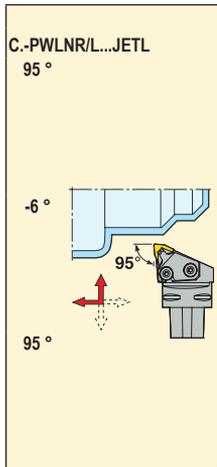
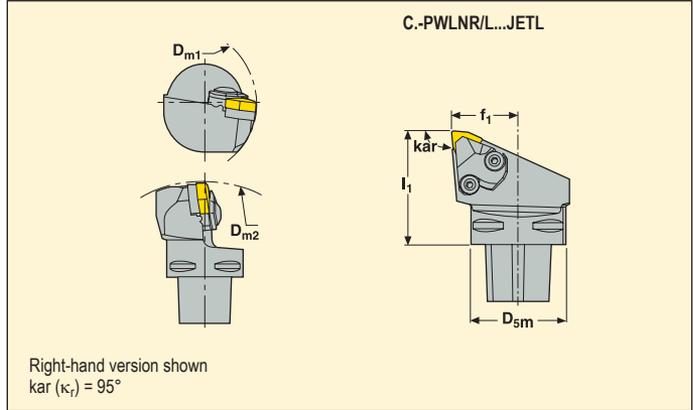
Please check availability in current price and stock-list

*To be ordered separately

Toolholders for inserts WNGA, WNMA, WNMG and WNMM



- For insert program, see pages 296-299, 326-327
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	I.C.	EDP No.	Part No.	Dimensions in inch					γ_o°	λ_s°	lbs	
				D _{sm}	f ₁	l ₁	D _{m1}	D _{m2}				
C4	3/8	19025	C4-PWLNR -27050-06JETL	1.57	1.06	1.97	2.95	6.50	-6	-6	1.1	WN..33.
		19021	C4-PWLNL -27050-06JETL	1.57	1.06	1.97	2.95	6.50	-6	-6	1.1	WN..33.
	1/2	19007	C4-PWLNR -27050-08JETL	1.57	1.06	1.97	2.95	6.50	-6	-6	0.9	WN..43.
		19029	C4-PWLNL -27050-08JETL	1.57	1.06	1.97	2.95	6.50	-6	-6	0.9	WN..43.
C5	3/8	19019	C5-PWLNR -35060-06JETL	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	WN..33.
		19020	C5-PWLNL -35060-06JETL	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	WN..33.
	1/2	19096	C5-PWLNR -35060-08JETL	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	WN..43.
		19207	C5-PWLNL -35060-08JETL	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	WN..43.
C6	1/2	19240	C6-PWLNR -45065-08JETL	2.48	1.77	2.56	4.76	6.50	-6	-6	2.9	WN..43.
		19012	C6-PWLNL -45065-08JETL	2.48	1.77	2.56	4.76	6.50	-6	-6	2.9	WN..43.

Spare Parts, Parts included in delivery

Accessories*

Toolholder/ Insert dimension	Anvil	Lever	Anvil pin	Punch	Screw	Key	Finishing inducer	Screw	Key	O-ring	Roughing inducer
C.-PWLNR-06	PWN323	PP3612	RP5152	MP0912	LS0616	2.5SMS795	CILW08RA-F	117.26-655	3SMS795	ORING-8X1.5	CILW08RA-R
C.-PWLNL-06	PWN323	PP3612	RP5152	MP0912	LS0616	2.5SMS795	CILW08LA-F	117.26-655	3SMS795	ORING-8X1.5	CILW08LA-R
C.-PWLNR-08	PWN423	PP4713	RP6757	MP0912	LS0818	3SMS795	CILW08RA-F	117.26-655	3SMS795	ORING-8X1.5	CILW08RA-R
C.-PWLNL-08	PWN423	PP4713	RP6757	MP0912	LS0818	3SMS795	CILW08LA-F	117.26-655	3SMS795	ORING-8X1.5	CILW08LA-R

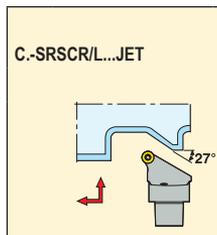
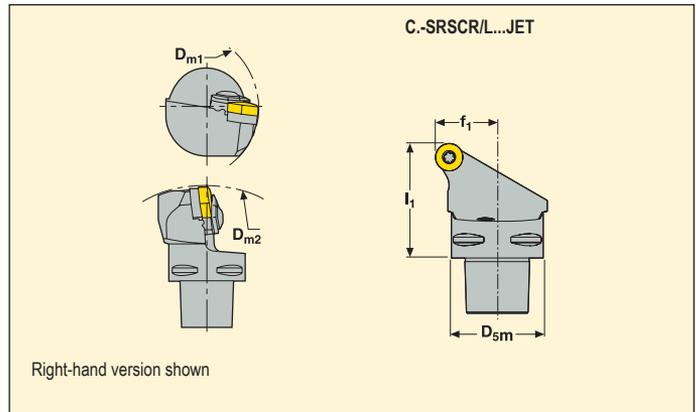
Please check availability in current price and stock-list

*To be ordered separately

Toolholders for inserts RCMT



- For insert program, see page 264
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	I.C.	EDP No.	Part No.	Dimensions in inch					γ_0°	λ_s°	lbs	
				D _{5m}	f ₁	l ₁	D _{m1}	D _{m2}				
C4	.393	37108	C4-SRSCR -27050-10JET	1.57	1.06	1.97	2.95	6.50	0	0	0.9	RCMT10T3..
		37109	C4-SRSC L -27050-10JET	1.57	1.06	1.97	2.95	6.50	0	0	0.9	RCMT10T3..
	.472	37110	C4-SRSCR -27050-12JET	1.57	1.06	1.97	2.95	6.50	0	0	0.9	RCMT1204..
		37112	C4-SRSC L -27050-12JET	1.57	1.06	1.97	2.95	6.50	0	0	0.9	RCMT1204..
C5	.393	37117	C5-SRSCR -35060-10JET	1.97	1.38	2.36	3.74	6.50	0	0	1.8	RCMT10T3..
		37118	C5-SRSC L -35060-10JET	1.97	1.38	2.36	3.74	6.50	0	0	1.8	RCMT10T3..
	.472	37120	C5-SRSCR -35060-12JET	1.97	1.38	2.36	3.74	6.50	0	0	1.8	RCMT1204..
		37121	C5-SRSC L -35060-12JET	1.97	1.38	2.36	3.74	6.50	0	0	1.8	RCMT1204..
C6	.393	37123	C6-SRSCR -45065-10JET	2.48	1.77	2.56	4.76	6.50	0	0	2.6	RCMT10T3..
		37124	C6-SRSC L -45065-10JET	2.48	1.77	2.56	4.76	6.50	0	0	2.6	RCMT10T3..
	.472	37125	C6-SRSCR -45065-12JET	2.48	1.77	2.56	4.76	6.50	0	0	2.6	RCMT1204..
		37126	C6-SRSC L -45065-12JET	2.48	1.77	2.56	4.76	6.50	0	0	2.6	RCMT1204..

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Anvil	Anvil screw/ Key*	Locking screw/ Key	Inducer kit		Screw**	Key	O-ring (pack of 20)	
				R	L				
SRSCR...10	111.19-620	CA3510 9/64"	C03510-T15P	T15P-2	JET-CIKR00RB-KIT	-	117.26-655	3SMS795	ORING-6.07x1.78
SRSC L...10	111.19-620	CA3510 9/64"	C03510-T15P	T15P-2	-	JET-CIKR00LB-KIT	117.26-655	3SMS795	ORING-6.07x1.78
SRSCR...12	111.19-621	CA3510 9/64"	C03510-T15P	T15P-2	JET-CIKR00RB-KIT	-	117.26-655	3SMS795	ORING-6.07x1.78
SRSC L...12	111.19-621	CA3510 9/64"	C03510-T15P	T15P-2	-	JET-CIKR00LB-KIT	117.26-655	3SMS795	ORING-6.07x1.78

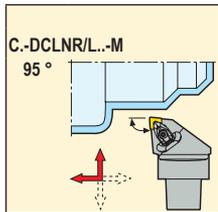
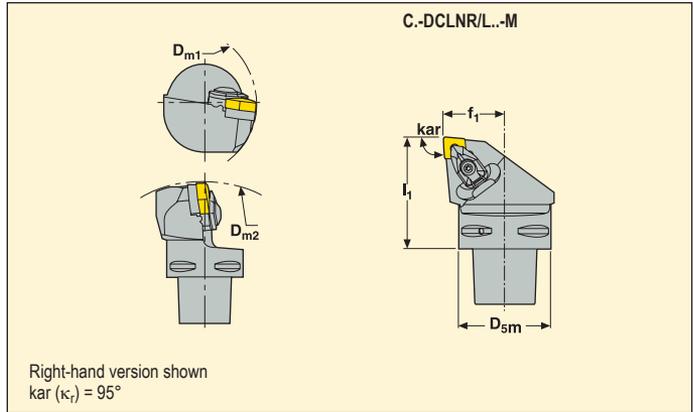
Please check availability in current price and stock-list

*To be ordered separately
**Included in "Inducer kit"

Toolholders for inserts CNGA, CNGP, CNMA, CNMG and CNMM



- For insert program, see pages 241-248, 301
- γ_o = Rake angle, λ_s = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_o	λ_s	lbs	
				D _{5m}	f ₁	l ₁	D _{m1}	D _{m2}				
C4	3/8	33743	C4-DCLNR -27050-09-M	1.57	1.06	1.97	2.36	5.51	-6	-6	1.1	CN..32.
		33744	C4-DCLNL -27050-09-M	1.57	1.06	1.97	2.36	5.51	-6	-6	1.1	CN..32.
	1/2	33745	C4-DCLNR -27050-12-M	1.57	1.06	1.97	4.33	5.51	-6	-6	0.9	CN..43.
		33746	C4-DCLNL -27050-12-M	1.57	1.06	1.97	4.33	5.51	-6	-6	0.9	CN..43.
	5/8	33747	C4-DCLNR -27055-16-M	1.57	1.06	2.17	4.92	6.10	-6	-6	1.1	CN..54.
		33748	C4-DCLNL -27055-16-M	1.57	1.06	2.17	4.92	6.10	-6	-6	1.1	CN..54.
C5	1/2	33751	C5-DCLNR -35060-12-M	1.97	1.38	2.36	4.33	6.50	-6	-6	1.8	CN..43.
		33752	C5-DCLNL -35060-12-M	1.97	1.38	2.36	4.33	6.50	-6	-6	1.8	CN..43.
	5/8	33753	C5-DCLNR -35060-16-M	1.97	1.38	2.36	4.92	6.50	-6	-6	1.8	CN..54.
		33754	C5-DCLNL -35060-16-M	1.97	1.38	2.36	4.92	6.50	-6	-6	1.8	CN..54.
	3/4	33755	C5-DCLNR -35060-19-M	1.97	1.38	2.36	3.15	6.50	-6	-6	1.8	CN..64.
		33756	C5-DCLNL -35060-19-M	1.97	1.38	2.36	3.15	6.50	-6	-6	1.8	CN..64.

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
-09	FP1508	L84017-T09P	CD09-S	DCN322.5	T09P-2	C03007-T09P	S5608	CD09-S09
-12	FP2012	L85021-T15P	CD12-S	DCN444	T15P-2	C04008-T15P	S6912	CD12-S12
-16	FP2012	L86026-T20P	CD16-S	DCN544	T20P-7L	C05010-T20P	S7010	CD16-S16
-19	FP2012	L86026-T20P	CD19-S	DCN634	T20P-7L	C05010-T20P	S7010	CD19-S19

Accessories*

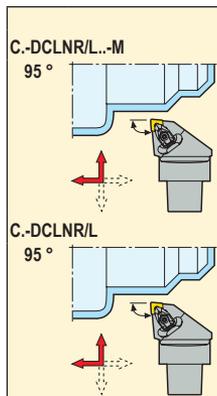
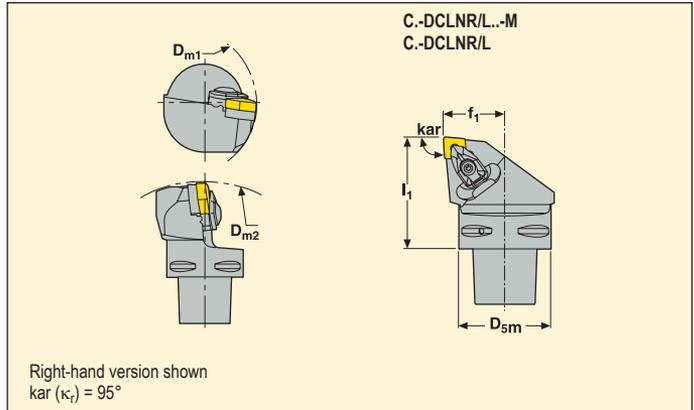
Please check availability in current price and stock-list

*To be ordered separately
Shim DCN434 for insert CN..44., to be ordered separately

Toolholders for inserts CNGA, CNGP, CNMA, CNMG and CNMM



- For insert program, see pages 241-248, 301
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_0°	λ_s°	lbs	
				D _{5m}	f ₁	I ₁	D _{m1}	D _{m2}				
C6	1/2	33757	C6-DCLNR -45065-12-M	2.48	1.77	2.56	4.33	7.48	-6	-6	2.9	CN..43.
		33758	C6-DCLNL -45065-12-M	2.48	1.77	2.56	4.33	7.48	-6	-6	2.9	CN..43.
	5/8	33760	C6-DCLNR -45065-16-M	2.48	1.77	2.56	4.92	7.48	-6	-6	2.9	CN..54.
		33761	C6-DCLNL -45065-16-M	2.48	1.77	2.56	4.92	7.48	-6	-6	2.9	CN..54.
	3/4	33762	C6-DCLNR -45065-19-M	2.48	1.77	2.56	3.19	7.48	-6	-6	2.9	CN..64.
		33763	C6-DCLNL -45065-19-M	2.48	1.77	2.56	3.19	7.48	-6	-6	2.9	CN..64.
C8	5/8	26184	C8-DCLNR -55080-16	3.15	2.17	3.15	4.92	5.91	-6	-6	5.5	CN..54.
		26183	C8-DCLNL -55080-16	3.15	2.17	3.15	4.92	5.91	-6	-6	5.5	CN..54.
	3/4	43472	C8-DCLNR -55080-19	3.15	2.17	3.15	3.94	9.84	-6	-6	5.5	CN..64.
		43476	C8-DCLNL -55080-19	3.15	2.17	3.15	3.94	9.84	-6	-6	5.5	CN..64.
	1	43478	C8-DCLNR -55080-25	3.15	2.17	3.15	5.91	9.84	-6	-6	5.7	CN..86.
		39378	C8-DCLNL -55080-25	3.15	2.17	3.15	5.91	9.84	-6	-6	5.7	CN..86.

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Clamp set	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
C6-12	FP2012	L85021-T15P	-	CD12-S	DCN444	T15P-2	C04008-T15P	S6912	CD12-S12
C6-16	FP2012	L86026-T20P	-	CD16-S	DCN544	T20P-7L	C05010-T20P	S7010	CD16-S16
C6-19	FP2012	L86026-T20P	-	CD19-S	DCN634	T20P-7L	C05010-T20P	S7010	CD19-S19
C8-16	FP2012	L86026-T20P	-	CD16-S	DCN544	T20P-7L	C05010-T20P	S7010	CD16-S16
C8-19	FP2012	L86026-T20P	-	CD19-S	DCN634	T20P-7L	C05010-T20P	S7010	CD19-S19
C8-25	-	-	CD25-S25	-	DCN836	T25P-7	C06012-T25P	-	CD25-S25

Accessories*

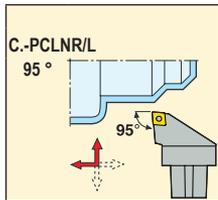
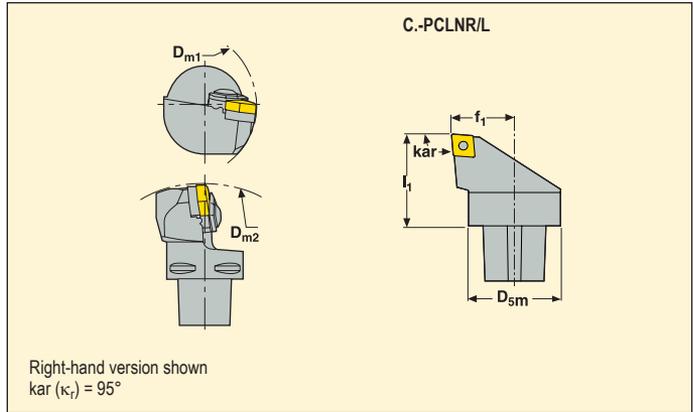
Please check availability in current price and stock-list

*To be ordered separately
Shim DCN434 for insert CN..44., to be ordered separately

Toolholders for inserts CNGA, CNGP, CNMA, CNMG, CNMM and CNMP



- For insert program, see pages 241-248
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_o°	λ_s°	lbs	
				D _{sm}	f ₁	l ₁	D _{m1}	D _{m2}				
C5	5/8	91685	C5-PCLNR -35060-16	1.97	1.38	2.36	3.94	5.91	-6	-6	1.8	CN..54.
		91673	C5-PCLNL -35060-16	1.97	1.38	2.36	3.94	5.91	-6	-6	1.8	CN..54.
C6	5/8	91695	C6-PCLNR -45065-16	2.48	1.77	2.56	4.72	7.87	-6	-6	3.3	CN..54.
		91694	C6-PCLNL -45065-16	2.48	1.77	2.56	4.72	7.87	-6	-6	3.3	CN..54.
	3/4	91693	C6-PCLNR -45065-19	2.48	1.77	2.56	4.72	7.87	-6	-6	3.3	CN..64.
		91692	C6-PCLNL -45065-19	2.48	1.77	2.56	4.72	7.87	-6	-6	3.3	CN..64.
C8	3/4	35342	C8-PCLNR -55080-19	3.15	2.17	3.15	4.72	8.66	-6	-6	6.6	CN..64.
		35343	C8-PCLNL -55080-19	3.15	2.17	3.15	4.72	8.66	-6	-6	6.6	CN..64.
C10	1	91676	C10-PCLNR-68110-25	3.94	2.68	4.33	9.45	15.75	-6	-6	11.7	CN..86.
		91675	C10-PCLNL-68110-25	3.94	2.68	4.33	9.45	15.75	-6	-6	11.7	CN..86.

Spare Parts, Parts included in delivery

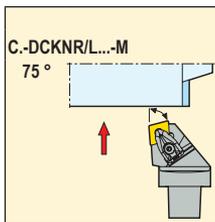
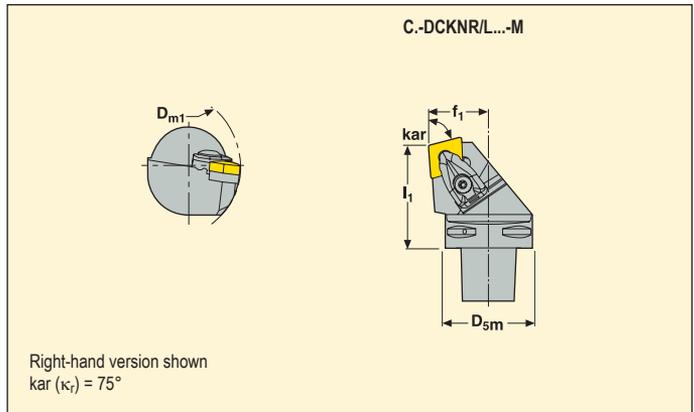
For holder	Insert lever	Insert shim	Lever key	Lever screw	Punch	Shim pin
..-16	PP6017	PCN160412	3SMS795	LS0820	MP1519	RP8286
..-19	PP7521	PCN190416	4SMS795	LS1027	MP1519	RP9811
..-25	PP1325	PCN250620	5SMS795	LS1236	MP25	RP1312

Please check availability in current price and stock-list

Toolholders for inserts CNGA, CNGP, CNMA, CNMG and CNMM



- For insert program, see pages 241-248
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch				γ_0°	λ_s°	lbs	
				D _{5m}	f ₁	I ₁	D _m				
C4	3/8	33784	C4-DCKNR -27050-09-M	1.57	1.06	1.97	2.95	-6	-6	1.1	CN..32.
		33785	C4-DCKNL -27050-09-M	1.57	1.06	1.97	2.95	-6	-6	1.1	CN..32.
	1/2	33786	C4-DCKNR -27050-12-M	1.57	1.06	1.97	4.33	-6	-6	1.1	CN..43.
		33787	C4-DCKNL -27050-12-M	1.57	1.06	1.97	4.33	-6	-6	1.1	CN..43.
	5/8	33788	C4-DCKNR -27050-16-M	1.57	1.06	1.97	4.92	-6	-6	1.1	CN..54.
		33789	C4-DCKNL -27050-16-M	1.57	1.06	1.97	4.92	-6	-6	1.1	CN..54.
C5	1/2	33792	C5-DCKNR -35060-12-M	1.97	1.38	2.36	4.33	-6	-6	2.0	CN..43.
		33793	C5-DCKNL -35060-12-M	1.97	1.38	2.36	4.33	-6	-6	2.0	CN..43.
	5/8	33794	C5-DCKNR -35060-16-M	1.97	1.38	2.36	4.92	-6	-6	2.0	CN..54.
		33795	C5-DCKNL -35060-16-M	1.97	1.38	2.36	4.92	-6	-6	2.0	CN..54.
	3/4	33796	C5-DCKNR -35060-19-M	1.97	1.38	2.36	3.74	-6	-6	1.8	CN..54.
		33797	C5-DCKNL -35060-19-M	1.97	1.38	2.36	3.74	-6	-6	1.8	CN..64.

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
-09	FP1508	L84017-T09P	CD09-S	DCN 322.5	T09P-2	C03007-T09P	S5608	CD09-S09
-12	FP2012	L85021-T15P	CD12-S	DCN 444**	T15P-2	C04008-T15P	S6912	CD12-S12
-16	FP2012	L86026-T20P	CD16-S	DCN 544	T20P-7L	C05010-T20P	S7010	CD16-S16
-19	FP2012	L86026-T20P	CD19-S	DCN 634	T20P-7L	C05010-T20P	S7010	CD19-S19

Accessories*

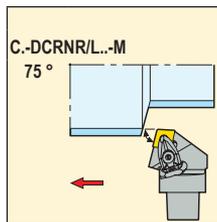
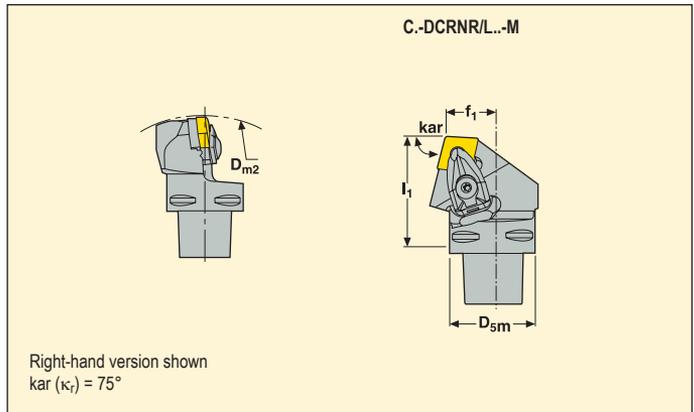
Please check availability in current price and stock-list

*To be ordered separately
**Shim DCN434 for insert CN..44., to be ordered separately

Toolholders for inserts CNGA, CNGP, CNMA, CNMG and CNMM



- For insert program, see pages 241-248
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch				γ_0°	λ_s°	lbs	
				D _{sm}	f ₁	I ₁	D _{m2}				
C4	1/2	33766	C4-DCRNR -22050-12-M	1.57	0.87	1.97	5.51	-6	-6	0.9	CN..43.
		33767	C4-DCRNL -22050-12-M	1.57	0.87	1.97	5.51	-6	-6	0.9	CN..43.
	5/8	33768	C4-DCRNR -22055-16-M	1.57	0.87	2.17	6.50	-6	-6	1.1	CN..54.
		33769	C4-DCRNL -22055-16-M	1.57	0.87	2.17	6.50	-6	-6	1.1	CN..54.
C5	1/2	33772	C5-DCRNR -27060-12-M	1.97	1.06	2.36	6.50	-6	-6	1.8	CN..43.
		33773	C5-DCRNL -27060-12-M	1.97	1.06	2.36	6.50	-6	-6	1.8	CN..43.
	5/8	33774	C5-DCRNR -27060-16-M	1.97	1.06	2.36	6.50	-6	-6	1.8	CN..54.
		33775	C5-DCRNL -27060-16-M	1.97	1.06	2.36	6.50	-6	-6	1.8	CN..54.
	3/4	33776	C5-DCRNR -27060-19-M	1.97	1.06	2.36	6.50	-6	-6	2.0	CN..64.
		33777	C5-DCRNL -27060-19-M	1.97	1.06	2.36	6.50	-6	-6	2.0	CN..64.

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
-12	FP2012	L85021-T15P	CD12-S	DCN 444**	T15P-2	C04008-T15P	S6912	CD12-S12
-16	FP2012	L86026-T20P	CD16-S	DCN 544	T20P-7L	C05010-T20P	S7010	CD16-S16
-19	FP2012	L86026-T20P	CD19-S	DCN 634	T20P-7L	C05010-T20P	S7010	CD19-S19

Accessories*

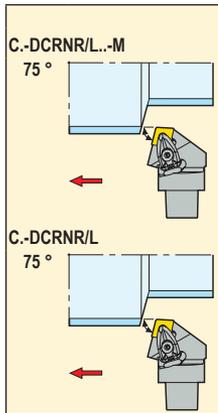
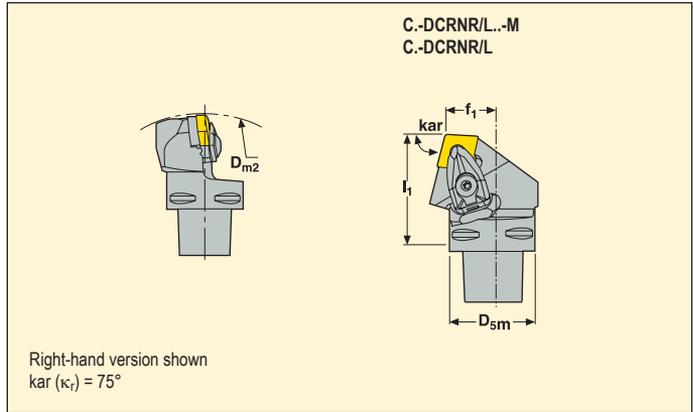
Please check availability in current price and stock-list

*To be ordered separately
**Shim DCN434 for insert CN..44., to be ordered separately

Toolholders for inserts CNGA, CNGP, CNMA, CNMG and CNMM



- For insert program, see pages 241-248
- γ_o = Rake angle, λ_s = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch				γ_o	λ_s	lbs	
				D _{5m}	f ₁	l ₁	D _{m2}				
C6	1/2	33778	C6-DCRNR -35065-12-M	2.48	1.38	2.56	7.48	-6	-6	2.6	CN..43.
		33779	C6-DCRNL -35065-12-M	2.48	1.38	2.56	7.48	-6	-6	2.6	CN..43.
	5/8	33780	C6-DCRNR -35065-16-M	2.48	1.38	2.56	7.48	-6	-6	2.9	CN..54.
		33781	C6-DCRNL -35065-16-M	2.48	1.38	2.56	7.48	-6	-6	2.9	CN..54.
	3/4	33782	C6-DCRNR -35065-19-M	2.48	1.38	2.56	7.48	-6	-6	2.9	CN..64.
		33783	C6-DCRNL -35065-19-M	2.48	1.38	2.56	7.48	-6	-6	2.9	CN..64.
C8	5/8	43485	C8-DCRNR -55080-16	3.15	2.17	3.15	9.84	-6	-6	5.7	CN..54.
		43486	C8-DCRNL -55080-16	3.15	2.17	3.15	9.84	-6	-6	5.7	CN..54.
	3/4	43487	C8-DCRNR -55080-19	3.15	2.17	3.15	9.84	-6	-6	5.7	CN..64.
		43488	C8-DCRNL -55080-19	3.15	2.17	3.15	9.84	-6	-6	5.7	CN..64.

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
-12	FP2012	L85021-T15P	CD12-S	DCN 444**	T15P-2	C04008-T15P	S6912	CD12-S12
-16	FP2012	L86026-T20P	CD16-S	DCN 544	T20P-7L	C05010-T20P	S7010	CD16-S16
-19	FP2012	L86026-T20P	CD19-S	DCN 634	T20P-7L	C05010-T20P	S7010	CD19-S19

Accessories*

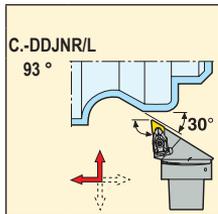
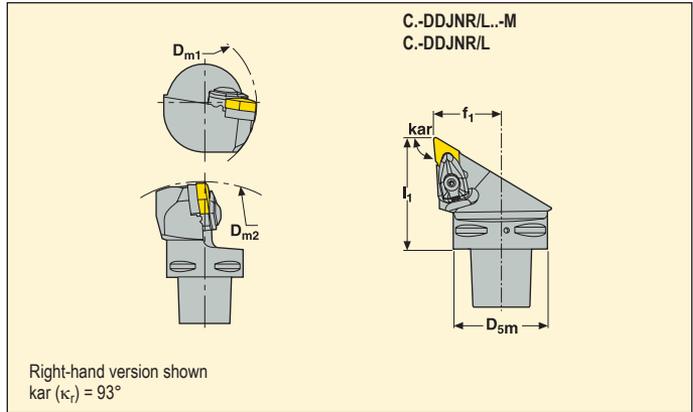
Please check availability in current price and stock-list

*To be ordered separately
**Shim DCN434 for insert CN..44., to be ordered separately

Toolholders for inserts DNGA, DNGM, DNGP, DNMA, DNMG, DNMM and DNMX



- For insert program, see pages 253-259, 304-305
- γ_o = Rake angle, λ_s = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_o	λ_s	lbs	
				D_{sm}	f_1	l_1	D_{m1}	D_{m2}				
C4	3/8	33805	C4-DDJNR -27050-11-M	1.57	1.06	1.97	2.36	5.51	-6	-7	0.9	DN..33.
		33806	C4-DDJNL -27050-11-M	1.57	1.06	1.97	2.36	5.51	-6	-7	0.9	DN..33.
	1/2	33811	C4-DDJNR -27055-15-M	1.57	1.06	2.17	4.33	5.71	-6	-7	0.9	DN..43.
		33812	C4-DDJNL -27055-15-M	1.57	1.06	2.17	4.33	5.71	-6	-7	0.9	DN..43.
C5	3/8	33807	C5-DDJNR -35060-11-M	1.97	1.38	2.36	2.56	6.50	-6	-7	1.5	DN..33.
		33808	C5-DDJNL -35060-11-M	1.97	1.38	2.36	2.56	6.50	-6	-7	1.5	DN..33.
	1/2	33813	C5-DDJNR -35060-15-M	1.97	1.38	2.36	4.33	6.50	-6	-7	1.5	DN..43.
		33814	C5-DDJNL -35060-15-M	1.97	1.38	2.36	4.33	6.50	-6	-7	1.5	DN..43.
C6	3/8	33809	C6-DDJNR -45065-11-M	2.48	1.77	2.56	3.19	7.48	-6	-7	2.4	DN..33.
		33810	C6-DDJNL -45065-11-M	2.48	1.77	2.56	3.19	7.48	-6	-7	2.4	DN..33.
	1/2	33815	C6-DDJNR -45065-15-M	2.48	1.77	2.56	4.33	7.48	-6	-7	2.4	DN..43.
		33816	C6-DDJNL -45065-15-M	2.48	1.77	2.56	4.33	7.48	-6	-7	2.4	DN..43.
C8	1/2	26275	C8-DDJNR -55080-15	3.15	2.17	3.15	4.33	9.84	-6	-7	4.9	DN..43.
		26276	C8-DDJNL -55080-15	3.15	2.17	3.15	4.33	9.84	-6	-7	4.9	DN..43.

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
-11	FP1508	L84017-T09P	CD09-S	DSN 323	T09P-2	C03007-T09P	S5608	CD09-S09
-15	FP2012	L85021-T15P	CD12-S	DDN 444**	T15P-2	C04008-T15P	S6912	CD12-S12

Accessories*

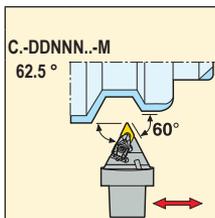
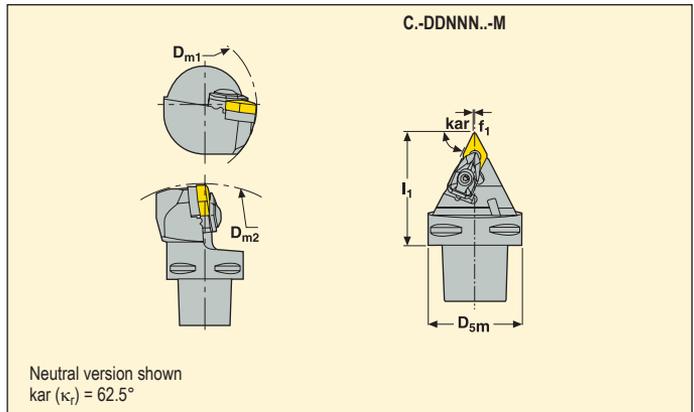
Please check availability in current price and stock-list

*To be ordered separately
**Shim DDN434 for insert DN..44., to be ordered separately

Toolholders for inserts DNGA, DNGM, DNGP, DNMA, DNMG and DNMM



- For insert program, see pages 253-258, 304-305
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_0°	λ_s°	lbs	
				D _{5m}	f ₁	I ₁	D _{m1}	D _{m2}				
C4	3/8	33823	C4-DDNNN -00050-11-M	1.57	0.02	1.97	5.51	5.51	-5	-9	0.9	DN..33.
	1/2	33826	C4-DDNNN -00055-15-M	1.57	0.02	2.17	5.71	5.71	-5	-9	0.9	DN..43.
C5	3/8	33824	C5-DDNNN -00060-11-M	1.97	0.02	2.36	6.50	6.50	-5	-9	1.3	DN..33.
	1/2	33829	C5-DDNNN -00060-15-M	1.97	0.02	2.36	6.50	6.50	-5	-9	1.3	DN..43.
C6	3/8	33825	C6-DDNNN -00065-11-M	2.48	0.02	2.56	6.50	7.48	-5	-9	2.2	DN..33.
	1/2	33830	C6-DDNNN -00065-15-M	2.48	0.02	2.56	7.48	7.48	-5	-9	2.2	DN..43.

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
-11	FP1508	L84017-T09P	CD09-S	DSN 323	T09P-2	C03007-T09P	S5608	CD09-S09
-15	FP2012	L85021-T15P	CD12-S	DDN 444**	T15P-2	C04008-T15P	S6912	CD12-S12

Accessories*

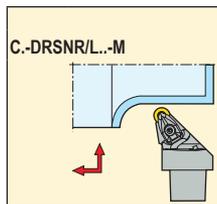
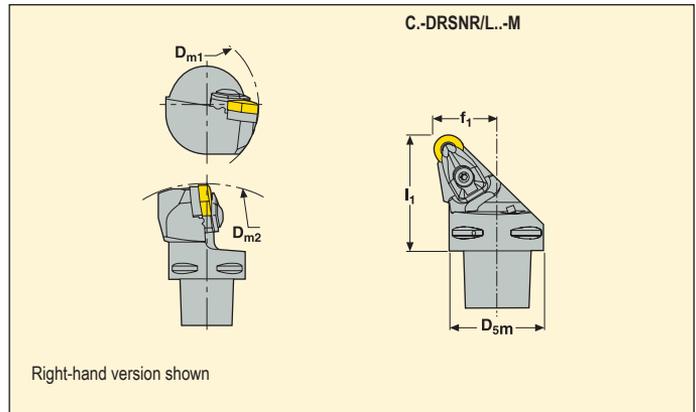
Please check availability in current price and stock-list

*To be ordered separately
**Shim DDN434 for insert DN..44., to be ordered separately

Toolholders for inserts RNMA and RNMG



- For insert program, see pages 266
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_o°	λ_s°	lbs	
				D _{5m}	f ₁	l ₁	D _{m1}	D _{m2}				
C4	1/2	33834	C4-DRSNR -27050-12-M	1.57	1.06	1.97	4.33	5.51	-6	-6	0.9	RNM.43
		33835	C4-DRSNL -27050-12-M	1.57	1.06	1.97	4.33	5.51	-6	-6	0.9	RNM.43
C5	1/2	33836	C5-DRSNR -35060-12-M	1.97	1.38	2.36	4.33	6.50	-6	-6	1.5	RNM.43
		33837	C5-DRSNL -35060-12-M	1.97	1.38	2.36	4.33	6.50	-6	-6	1.5	RNM.43
	3/4	33838	C5-DRSNR -35060-19-M	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	RNM.64
		33839	C5-DRSNL -35060-19-M	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	RNM.64
C6	1/2	33840	C6-DRSNR -45065-12-M	2.48	1.77	2.56	4.33	7.48	-6	-6	2.0	RNM.43
		33841	C6-DRSNL -45065-12-M	2.48	1.77	2.56	4.33	7.48	-6	-6	2.0	RNM.43
	3/4	33842	C6-DRSNR -45065-19-M	2.48	1.77	2.56	4.76	6.50	-6	-6	2.9	RNM.64
		33843	C6-DRSNL -45065-19-M	2.48	1.77	2.56	4.76	6.50	-6	-6	2.9	RNM.64

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
-12	FP2012	L85021-T15P	CD12-S	DRN44	T15P-2	C04008-T15P	S6912	CD12-S12
-19	FP2012	L86026-T20P	CD19-S	DRN64	T20P-7L	C05010-T20P	S7010	CD19-S19

Accessories*

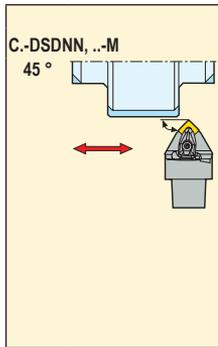
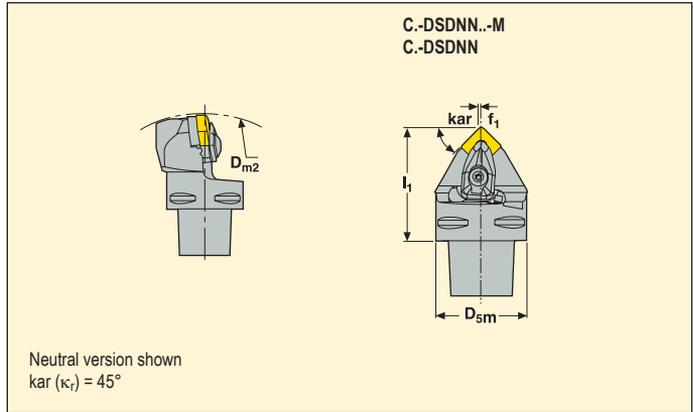
Please check availability in current price and stock-list

*To be ordered separately

Toolholders for inserts SNGA, SNMA, SNMG, SNMM and SNMP



- For insert program, see pages 269-273, 311, 313
- γ_o = Rake angle, λ_s = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch				γ_o	λ_s	lbs	
				D_{sm}	f_1	l_1	D_{m2}				
C4	3/8	33953	C4-DSDNN -00050-09-M	1.57	0.01	1.97	6.50	-6	-6	1.1	SN..32.
	1/2	33954	C4-DSDNN -00050-12-M	1.57	0.01	1.97	5.51	-6	-6	1.1	SN..43.
	5/8	33956	C4-DSDNN -00055-15-M	1.57	0.02	2.17	6.50	-6	-6	1.3	SN..54.
C5	1/2	33958	C5-DSDNN -00060-12-M	1.97	0.01	2.36	6.50	-6	-6	2.0	SN..43.
	5/8	33959	C5-DSDNN -00060-15-M	1.97	0.02	2.36	6.50	-6	-6	2.0	SN..54.
	3/4	33960	C5-DSDNN -00065-19-M	1.97	0.02	2.56	6.69	-6	-6	2.0	SN..64.
C6	1/2	33961	C6-DSDNN -00065-12-M	2.48	0.01	2.56	7.48	-6	-6	2.6	SN..43.
	5/8	33962	C6-DSDNN -00065-15-M	2.48	0.02	2.56	7.48	-6	-6	2.6	SN..54.
	3/4	33963	C6-DSDNN -00070-19-M	2.48	0.02	2.76	7.68	-6	-6	3.3	SN..64.
C8	1	43451	C8-DSDNN -00080-25-09	3.15	0.02	3.15	9.84	-5	-9	5.1	SN..86.

Spare Parts, Parts included in delivery

For size	Clamp kit	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
..09	–	FP1508	L84017-T09P	CD09-S	DSN322.5	T09P-2	C03007-T09P	S5608	CD09-S09
..12	–	FP2012	L85021-T15P	CD12-S	DSN444	T15P-2	C04008-T15P	S6912	CD12-S12
..15	–	FP2012	L86026-T20P	CD16-S	DSN546	T20P-7L	C05010-T20P	S7010	CD16-S16
..19	–	FP2012	L86026-T20P	CD19-S	DSN646	T20P-7L	C05010-T20P	S7010	CD19-S19
..25-09	CD25-S25	–	–	–	DSN836	T25P-7	C06012-T25P	–	–

Accessories*

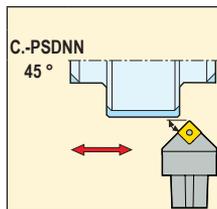
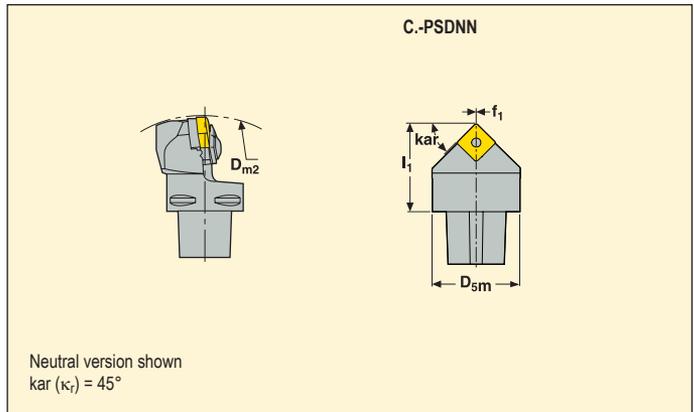
Please check availability in current price and stock-list

*To be ordered separately
 Shim DSN434 for insert SN..44., to be ordered separately
 Shim DSN846 for insert SN..85., to be ordered separately

Toolholders for inserts SNGA, SNMA, SNMG, SNMM and SNMP



- For insert program, see pages 269-273, 311, 313
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch				γ_o°	λ_s°	lbs	
				D _{5m}	f ₁	l ₁	D _{m2}				
C5	3/4	91674	C5-PSDNN -00060-19	1.97	0.02	2.36	5.12	-6	-6	1.8	SN..64.
	3/4	91686	C6-PSDNN -00065-19	2.48	0.02	2.56	5.51	-6	-6	2.9	SN..64.
C8	1	35369	C8-PSDNN -00080-25	3.15	0.02	3.15	7.87	-6	-6	4.9	SN..85.
C10	1	91677	C10-PSDNN-00110-25	3.94	0.04	4.33	7.87	-6	-6	10.8	SN..85.

Spare Parts, Parts included in delivery

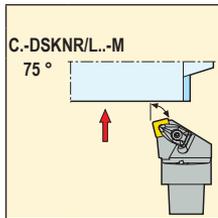
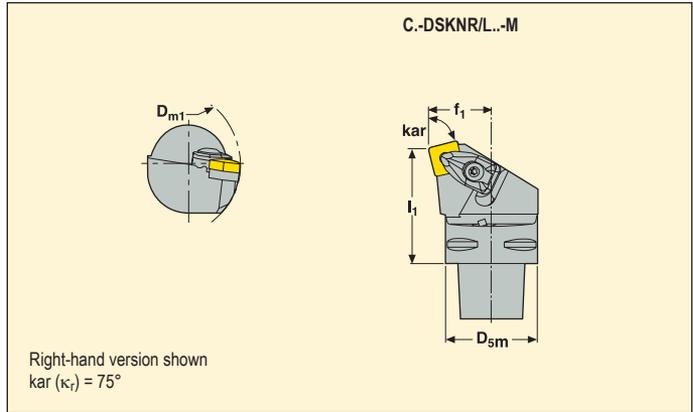
For holder	Insert lever	Insert shim	Lever key	Lever screw	Punch	Shim pin
...19	PP7521	PSN190412	4SMS795	LS1027	MP1519	RP9811
...25	PP1325	PSN250624	5SMS795	LS1236	MP25	RP1312

Please check availability in current price and stock-list

Toolholders for inserts SNGA, SNMA, SNMG, SNMM and SNMP



- For insert program, see pages 269-273, 311, 313
- γ_o = Rake angle, λ_s = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch				γ_o	λ_s	lbs	
				D _{5m}	f ₁	l ₁	D _{m1}				
C4	3/8	33964	C4-DSKNR -27050-09-M	1.57	1.06	1.97	2.95	-6	-6	1.1	SN..32.
		33966	C4-DSKNL -27050-09-M	1.57	1.06	1.97	2.95	-6	-6	1.1	SN..32.
	1/2	33967	C4-DSKNR -27050-12-M	1.57	1.06	1.97	4.33	-6	-6	1.1	SN..43.
		33968	C4-DSKNL -27050-12-M	1.57	1.06	1.97	4.33	-6	-6	1.1	SN..43.
	5/8	33969	C4-DSKNR -27050-15-M	1.57	1.06	1.97	2.95	-6	-6	1.1	SN..54.
		33970	C4-DSKNL -27050-15-M	1.57	1.06	1.97	2.95	-6	-6	1.1	SN..54.
C5	1/2	33973	C5-DSKNR -35060-12-M	1.97	1.38	2.36	4.33	-6	-6	1.8	SN..43.
		33974	C5-DSKNL -35060-12-M	1.97	1.38	2.36	4.33	-6	-6	1.8	SN..43.
	5/8	33975	C5-DSKNR -35060-15-M	1.97	1.38	2.36	4.92	-6	-6	2.0	SN..54.
		33976	C5-DSKNL -35060-15-M	1.97	1.38	2.36	4.92	-6	-6	2.0	SN..54.
	3/4	33980	C5-DSKNR -35060-19-M	1.97	1.38	2.36	4.92	-6	-6	2.0	SN..64.
		33986	C5-DSKNL -35060-19-M	1.97	1.38	2.36	4.92	-6	-6	2.0	SN..64.

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
-09	FP1508	L84017-T09P	CD09-S	DSN322.5	T09P-2	C03007-T09P	S5608	CD09-S09
-12	FP2012	L85021-T15P	CD12-S	DSN444**	T15P-2	C04008-T15P	S6912	CD12-S12
-15	FP2012	L86026-T20P	CD16-S	DSN546	T20P-7L	C05010-T20P	S7010	CD16-S16
-19	FP2012	L86026-T20P	CD19-S	DSN646	T20P-7L	C05010-T20P	S7010	CD19-S19

Accessories*

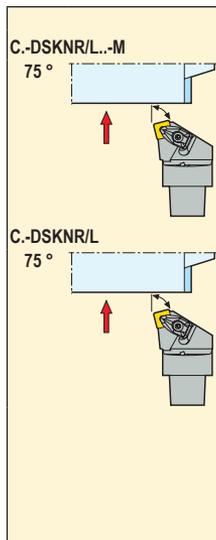
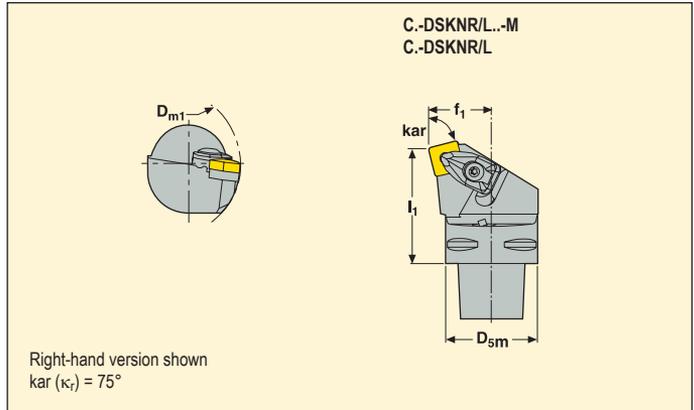
Please check availability in current price and stock-list

*To be ordered separately
**Shim DSN434 for insert SN..44., to be ordered separately

Toolholders for inserts SNGA, SNMA, SNMG, SNMM and SNMP



- For insert program, see pages 269-273, 311, 313
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch				γ_o°	λ_s°	lbs	
				D _{sm}	f ₁	l ₁	D _{m1}				
C6	1/2	33987	C6-DSKNR -45065-12-M	2.48	1.77	2.56	4.33	-6	-6	3.3	SN..42.
		33988	C6-DSKNL -45065-12-M	2.48	1.77	2.56	4.33	-6	-6	3.3	SN..42.
	5/8	33989	C6-DSKNR -45065-15-M	2.48	1.77	2.56	4.92	-6	-6	3.3	SN..54.
		33991	C6-DSKNL -45065-15-M	2.48	1.77	2.56	4.92	-6	-6	3.3	SN..54.
	3/4	33998	C6-DSKNR -45065-19-M	2.48	1.77	2.56	4.92	-6	-6	3.3	SN..64
		34000	C6-DSKNL -45065-19-M	2.48	1.77	2.56	4.92	-6	-6	3.3	SN..64
C8	3/4	43510	C8-DSKNR -55080-19	3.15	2.17	3.15	4.92	-6	-6	5.7	SN..64
		43511	C8-DSKNL -55080-19	3.15	2.17	3.15	4.92	-6	-6	5.7	SN..64
	1	43456	C8-DSKNR -55080-25-09	3.15	2.17	3.15	4.92	-6	-6	6.2	SN..86.
		43460	C8-DSKNL -55080-25-09	3.15	2.17	3.15	4.92	-6	-6	6.2	SN..86.

Spare Parts, Parts included in delivery

For size	Clamp kit	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
-12	–	FP2012	L85021-T15P	CD12-S	DSN 444*	T15P-2	C04008-T15P	S6912	CD12-S12
-15	–	FP2012	L86026-T20P	CD16-S	DSN 546	T20P-7L	C05010-T20P	S7010	CD16-S16
-19	–	FP2012	L86026-T20P	CD19-S	DSN 646	T20P-7L	C05010-T20P	S7010	CD19-S19
-25	CD25-S25	–	–	–	DSN 836***	T25P-7	C06012-T25P	–	–

Accessories*

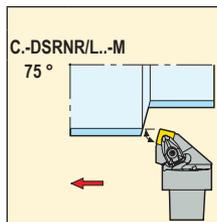
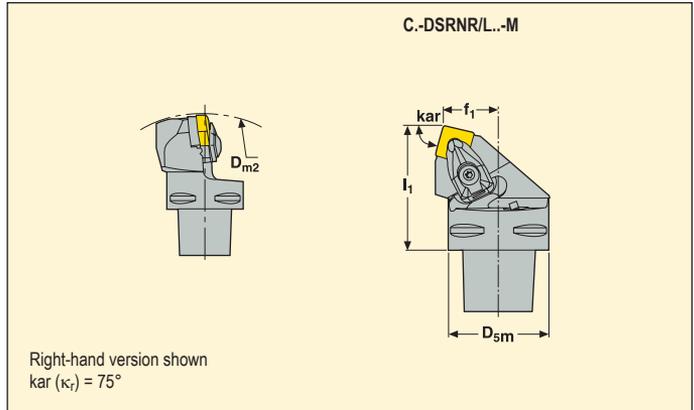
Please check availability in current price and stock-list

*To be ordered separately
**Shim DSN434 for insert SN..44., to be ordered separately
***Shim DSN846 for insert SN..85., to be ordered separately

Toolholders for inserts SNGA, SNMA, SNMG, SNMM and SNMP



- For insert program, see pages 269-273, 311
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch				γ_0°	λ_s°	lbs	
				D _{sm}	f ₁	l ₁	D _{m2}				
C4	3/8	33844	C4-DSRNR -22050-09-M	1.57	0.87	1.97	6.50	-6	-6	1.1	SN..32.
		33845	C4-DSRNL -22050-09-M	1.57	0.87	1.97	6.50	-6	-6	1.1	SN..32.
	1/2	33846	C4-DSRNR -22050-12-M	1.57	0.87	1.97	5.51	-6	-6	0.9	SN..43.
		33848	C4-DSRNL -22050-12-M	1.57	0.87	1.97	5.51	-6	-6	0.9	SN..43.
	5/8	33849	C4-DSRNR -22055-15-M	1.57	0.87	2.17	6.50	-6	-6	1.1	SN..54.
		33850	C4-DSRNL -22055-15-M	1.57	0.87	2.17	6.50	-6	-6	1.1	SN..54.
C5	1/2	33911	C5-DSRNR -27060-12-M	1.97	1.06	2.36	6.50	-6	-6	1.5	SN..43.
		33912	C5-DSRNL -27060-12-M	1.97	1.06	2.36	6.50	-6	-6	1.5	SN..43.
	5/8	33913	C5-DSRNR -27060-15-M	1.97	1.06	2.36	6.50	-6	-6	2.0	SN..54.
		33914	C5-DSRNL -27060-15-M	1.97	1.06	2.36	6.50	-6	-6	2.0	SN..54.
	3/4	33915	C5-DSRNR -27060-19-M	1.97	1.06	2.36	6.50	-6	-6	2.0	SN..64.
		33916	C5-DSRNL -27060-19-M	1.97	1.06	2.36	6.50	-6	-6	2.0	SN..64.

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
-09	FP1508	L84017-T09P	CD09-S	DSN322.5	T09P-2	C03007-T09P	S5608	CD09-S09
-12	FP2012	L85021-T15P	CD12-S	DSN444**	T15P-2	C04008-T15P	S6912	CD12-S12
-15	FP2012	L86026-T20P	CD16-S	DSN546	T20P-7L	C05010-T20P	S7010	CD16-S16
-19	FP2012	L86026-T20P	CD19-S	DSN646	T20P-7L	C05010-T20P	S7010	CD19-S19

Accessories*

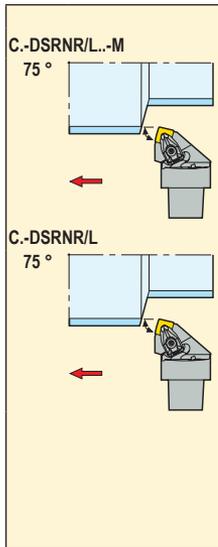
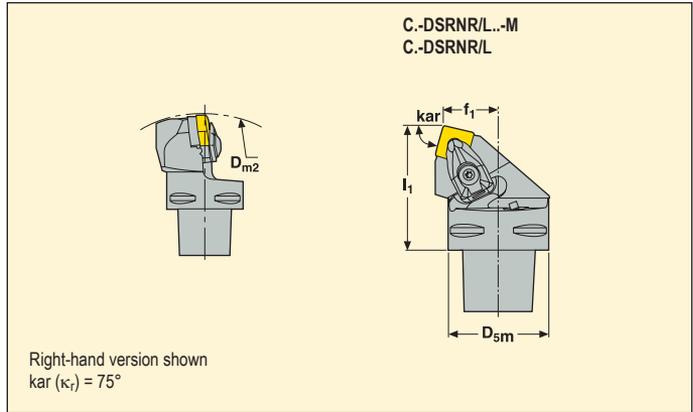
Please check availability in current price and stock-list

*To be ordered separately
**Shim DSN434 for insert SN..44., to be ordered separately

Toolholders for inserts SNGA, SNMA, SNMG, SNMM and SNMP



- For insert program, see pages 269-273, 311, 313
- γ_o = Rake angle, λ_s = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch				γ_o	λ_s	lbs	
				D _{5m}	f ₁	l ₁	D _{m2}				
C6	1/2	33917	C6-DSRNR -35065-12-M	2.48	1.38	2.56	7.48	-6	-6	2.6	SN..43.
		33918	C6-DSRNL -35065-12-M	2.48	1.38	2.56	7.48	-6	-6	2.6	SN..43.
	5/8	33919	C6-DSRNR -35065-15-M	2.48	1.38	2.56	7.48	-6	-6	2.6	SN..54.
		33920	C6-DSRNL -35065-15-M	2.48	1.38	2.56	7.48	-6	-6	2.6	SN..54.
	3/4	33921	C6-DSRNR -35065-19-M	2.48	1.38	2.56	7.48	-6	-6	2.6	SN..64.
		33922	C6-DSRNL -35065-19-M	2.48	1.38	2.56	7.48	-6	-6	2.6	SN..64.
C8	3/4	39384	C8-DSRNR -45080-19	3.15	1.77	3.15	9.84	-6	-6	5.3	SN..64.
		39385	C8-DSRNL -45080-19	3.15	1.77	3.15	9.84	-6	-6	5.3	SN..64.
	1	43447	C8-DSRNR -45080-25-09	3.15	1.77	3.15	9.84	-6	-6	5.5	SN..86.
		43448	C8-DSRNL -45080-25-09	3.15	1.77	3.15	9.84	-6	-6	5.5	SN..86.

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
..-12	FP2012	L85021-T15P	CD12-S	DSN444**	T15P-2	C04008-T15P	S6912	CD12-S12
..-15	FP2012	L86026-T20P	CD16-S	DSN546	T20P-7L	C05010-T20P	S7010	CD16-S16
..-19	FP2012	L86026-T20P	CD19-S	DSN646	T20P-7L	C05010-T20P	S7010	CD19-S19
C8-19	FP2012	L86026-T20P	CD19-S	DSN646	T20P-7	C05010-T20P	S7010	CD19-S19
C8-25-09	-	-	-	DSN836***	T25P-7	C06012-T25P	-	CD25-S25

Accessories*

Please check availability in current price and stock-list

*To be ordered separately

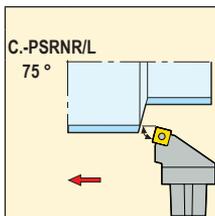
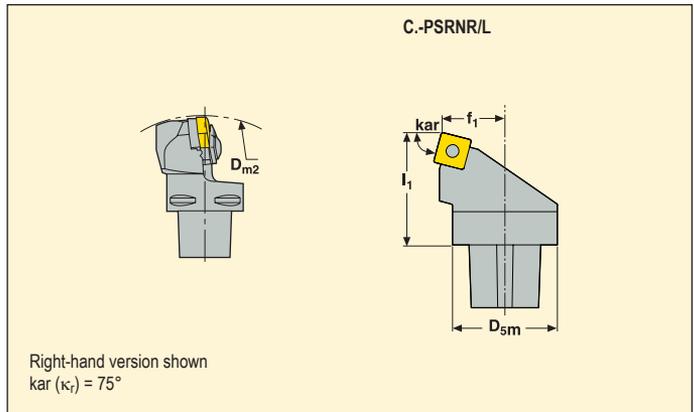
**Shim DSN434 for insert SN..44., to be ordered separately

***Shim DSN846 for insert SN..85., to be ordered separately

Toolholders for inserts SNGA, SNMA, SNMG, SNMM and SNMP



- For insert program, see pages 269-273, 311
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch				γ_0°	λ_s°	lbs	
				D _{5m}	f ₁	l ₁	D _{m2}				
C5	3/4	29615	C5-PSRNR -27060-19	1.97	1.06	2.36	5.12	-6	-6	2.0	SN..64.
		29616	C5-PSRNL -27060-19	1.97	1.06	2.36	5.12	-6	-6	2.0	SN..64.
C6	3/4	91683	C6-PSRNR -35065-19	2.48	1.38	2.56	6.30	-6	-6	3.1	SN..64.
		91682	C6-PSRNL -35065-19	2.48	1.38	2.56	6.30	-6	-6	3.1	SN..64.
C8	3/4	35361	C8-PSRNR -45080-19	3.15	1.77	3.15	7.87	-6	-6	7.5	SN..64.
		35363	C8-PSRNL -45080-19	3.15	1.77	3.15	7.87	-6	-6	7.5	SN..64.
	1	91691	C8-PSRNR -45080-25	3.15	1.77	3.15	8.66	-6	-6	7.5	SN..85.
		91684	C8-PSRNL -45080-25	3.15	1.77	3.15	8.66	-6	-6	7.5	SN..85.
C10	1	91679	C10-PSRNR-58110-25	3.94	2.28	4.33	12.60	-6	-6	11.7	SN..85.
		91678	C10-PSRNL-58110-25	3.94	2.28	4.33	12.60	-6	-6	11.7	SN..85.

Spare Parts, Parts included in delivery

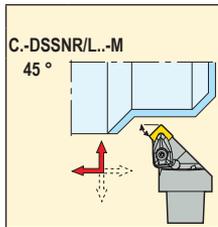
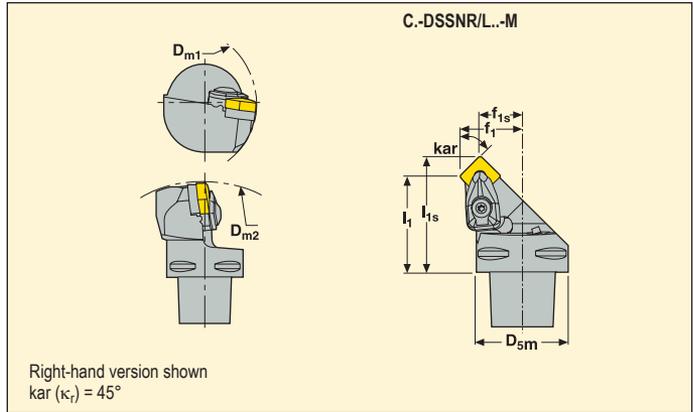
For holder	Insert lever	Insert shim	Lever key	Lever screw	Punch	Shim pin
...-19	PP7521	PSN190412	4SMS795	LS1027	MP1519	RP9811
C8-...-25	PP1325	PSN250624	5SMS795	LS1236	MP25	RP1312
C10-...-25	PP1325	PSN250624	5SMS795	LS1236	MP25	RP1312

Please check availability in current price and stock-list

Toolholders for inserts SNGA, SNMA, SNMG, SNMM and SNMP



- For insert program, see pages 269-273, 311, 313
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch								γ_o°	λ_s°	lbs	
				D _{5m}	f ₁	f _{1s}	l ₁	l _{1s}	D _{m1}	D _{m2}					
C4	3/8	33923	C4-DSSNR -27044-09-M	1.57	1.06	0.82	1.73	1.97	2.95	6.50	-8	0	0.9	SN..32.	
		33924	C4-DSSNL -27044-09-M	1.57	1.06	0.82	1.73	1.97	2.95	6.50	-8	0	0.9	SN..32.	
	1/2	33926	C4-DSSNR -27042-12-M	1.57	1.06	0.74	1.65	1.98	4.33	5.51	-8	0	0.9	SN..43.	
		33929	C4-DSSNL -27042-12-M	1.57	1.06	0.74	1.65	1.98	4.33	5.51	-8	0	0.9	SN..43.	
	5/8	33930	C4-DSSNR -27045-15-M	1.57	1.06	0.66	1.77	2.17	4.92	5.71	-8	0	1.1	SN..54.	
		33932	C4-DSSNL -27045-15-M	1.57	1.06	0.66	1.77	2.17	4.92	5.71	-8	0	1.1	SN..54.	
C5	1/2	33940	C5-DSSNR -35052-12-M	1.97	1.38	1.05	2.05	2.37	4.33	6.50	-8	0	1.5	SN..43.	
		33941	C5-DSSNL -35052-12-M	1.97	1.38	1.05	2.05	2.37	4.33	6.50	-8	0	1.5	SN..43.	
	5/8	33942	C5-DSSNR -35050-15-M	1.97	1.38	0.98	1.97	2.37	4.92	6.50	-8	0	1.3	SN..54.	
		33943	C5-DSSNL -35050-15-M	1.97	1.38	0.98	1.97	2.37	4.92	6.50	-8	0	1.3	SN..54.	
	3/4	33944	C5-DSSNR -35048-19-M	1.97	1.38	0.89	1.89	2.38	4.92	6.50	-8	0	2.0	SN..64.	
		33945	C5-DSSNL -35048-19-M	1.97	1.38	0.89	1.89	2.38	4.92	6.50	-8	0	2.0	SN..64.	

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
-09	FP1508	L84017-T09P	CD09-S	DSN322.5	T09P-2	C03007-T09P	S5608	CD09-S09
-12	FP2012	L85021-T15P	CD12-S	DSN444**	T15P-2	C04008-T15P	S6912	CD12-S12
-15	FP2012	L86026-T20P	CD16-S	DSN546	T20P-7L	C05010-T20P	S7010	CD16-S16
-19	FP2012	L86026-T20P	CD19-S	DSN646	T20P-7L	C05010-T20P	S7010	CD19-S19

Accessories*

Please check availability in current price and stock-list

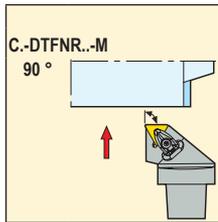
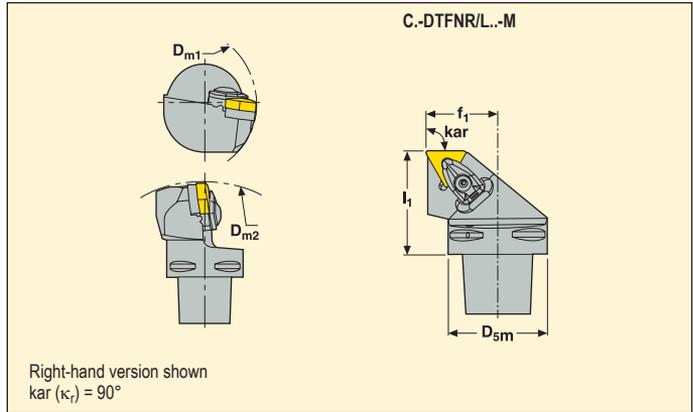
*To be ordered separately

**Shim DSN120416 for insert SN..1206.., to be ordered separately

Toolholders for inserts TNGA, TNMA, TNMG, TNMN and TNMP



- For insert program, see pages 282-286, 317
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_o°	λ_s°	lbs	
				D _{5m}	f ₁	l ₁	D _{m1}	D _{m2}				
C4	3/8	34043	C4-DTFNR -27050-16-M	1.57	1.06	1.97	4.33	5.51	-6	-6	0.9	TN..33.
		34047	C4-DTFNL -27050-16-M	1.57	1.06	1.97	4.33	5.51	-6	-6	0.9	TN..33.
	1/2	34048	C4-DTFNR -27050-22-M	1.57	1.06	1.97	4.33	5.51	-6	-6	1.1	TN..43.
		34049	C4-DTFNL -27050-22-M	1.57	1.06	1.97	4.33	5.51	-6	-6	1.1	TN..43.
C5	3/8	34050	C5-DTFNR -35060-16-M	1.97	1.38	2.36	4.33	6.50	-6	-6	1.8	TN..33.
		34051	C5-DTFNL -35060-16-M	1.97	1.38	2.36	4.33	6.50	-6	-6	1.8	TN..33.
	1/2	34052	C5-DTFNR -35060-22-M	1.97	1.38	2.36	4.33	6.50	-6	-6	2.0	TN..43.
		34053	C5-DTFNL -35060-22-M	1.97	1.38	2.36	4.33	6.50	-6	-6	2.0	TN..43.
C6	3/8	34054	C6-DTFNR -45065-16-M	2.48	1.77	2.56	4.33	7.48	-6	-6	3.3	TN..33.
		34055	C6-DTFNL -45065-16-M	2.48	1.77	2.56	4.33	7.48	-6	-6	3.3	TN..33.
	1/2	34056	C6-DTFNR -45065-22-M	2.48	1.77	2.56	4.33	7.48	-6	-6	2.9	TN..43.
		34057	C6-DTFNL -45065-22-M	2.48	1.77	2.56	4.33	7.48	-6	-6	2.9	TN..43.
	5/8	34058	C6-DTFNR -45065-27-M	2.48	1.77	2.56	4.76	6.50	-6	-6	3.1	TN..54.
		34060	C6-DTFNL -45065-27-M	2.48	1.77	2.56	4.76	6.50	-6	-6	3.1	TN..54.

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
-16	FP1508	L84017-T09P	CD09-S	DTN 322.5	T09P-2	C03007-T09P	S5608	CD09-S09
-22	FP2012	L85021-T15P	CD12-S	DTN 444	T15P-2	C04008-T15P	S6912	CD12-S12
-27	FP2012	L86026-T20P	CD16-S	DTN 534	T20P-7L	C05010-T20P	S7010	CD16-S16

Accessories*

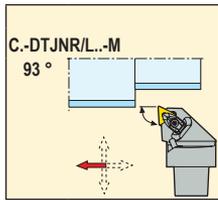
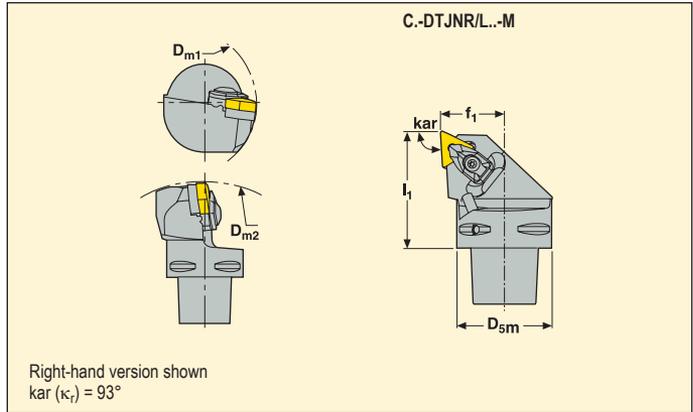
Please check availability in current price and stock-list

*To be ordered separately

Toolholders for inserts TNGA, TNMA, TNMG, TNMN, TNMP and TNMX



- For insert program, see pages 282-287, 317
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_o°	λ_s°	lbs	
				D _{5m}	f ₁	l ₁	D _{m1}	D _{m2}				
C4	3/8	34003	C4-DTJNR -27050-16-M	1.57	1.06	1.97	4.33	5.51	-6	-6	0.9	TN..33.
		34004	C4-DTJNL -27050-16-M	1.57	1.06	1.97	4.33	5.51	-6	-6	0.9	TN..33.
	1/2	34005	C4-DTJNR -27050-22-M	1.57	1.06	1.97	4.33	5.51	-6	-6	1.1	TN..43.
		34006	C4-DTJNL -27050-22-M	1.57	1.06	1.97	4.33	5.51	-6	-6	1.1	TN..43.
C5	3/8	34007	C5-DTJNR -35060-16-M	1.97	1.38	2.36	4.33	6.50	-6	-6	1.8	TN..33.
		34010	C5-DTJNL -35060-16-M	1.97	1.38	2.36	4.33	6.50	-6	-6	1.8	TN..33.
	1/2	34011	C5-DTJNR -35060-22-M	1.97	1.38	2.36	4.33	6.50	-6	-6	1.8	TN..43.
		34012	C5-DTJNL -35060-22-M	1.97	1.38	2.36	4.33	6.50	-6	-6	1.8	TN..43.
C6	3/8	34013	C6-DTJNR -45065-16-M	2.48	1.77	2.56	4.33	7.48	-6	-6	2.9	TN..33.
		34014	C6-DTJNL -45065-16-M	2.48	1.77	2.56	4.33	7.48	-6	-6	2.9	TN..33.
	1/2	34015	C6-DTJNR -45065-22-M	2.48	1.77	2.56	4.33	7.48	-6	-6	2.9	TN..43.
		34016	C6-DTJNL -45065-22-M	2.48	1.77	2.56	4.33	7.48	-6	-6	2.9	TN..43.

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring	Clamp kit
-16	FP1508	L84017-T09P	CD09-S	DTN 322.5	T09P-2	C03007-T09P	S5608	CD09-S09
-22	FP2012	L85021-T15P	CD12-S	DTN 444	T15P-2	C04008-T15P	S6912	CD12-S12

Accessories*

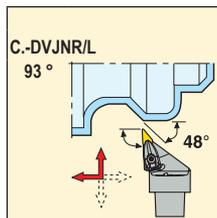
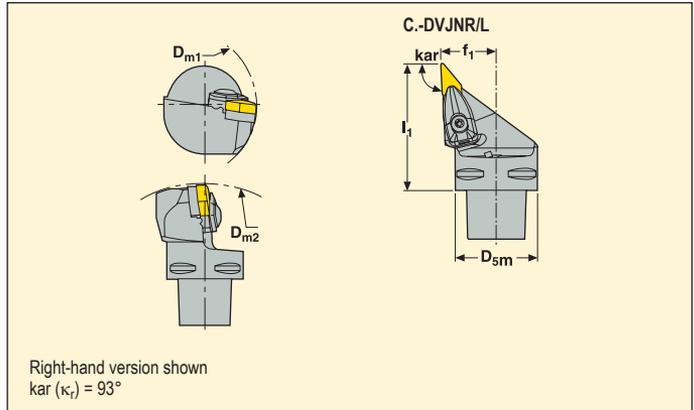
Please check availability in current price and stock-list

*To be ordered separately

Toolholders for inserts VNGA, VNGP, VNGM, VNMA, VNMP and VNMG



- For insert program, see pages 292-294, 324-325
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_0°	λ_s°	lbs	
				D _{5m}	f ₁	l ₁	D _{m1}	D _{m2}				
C4	5/16	34061	C4-DVJNR -27055-13	1.57	1.06	2.17	2.36	5.98	-4	-13	1.1	VN..2.53.
		34062	C4-DVJNL -27055-13	1.57	1.06	2.17	2.36	5.98	-4	-13	1.1	VN..2.53.
	3/8	34065	C4-DVJNR -27062-16	1.57	1.06	2.44	2.56	5.98	-4	-13	0.9	VN..33.
		34066	C4-DVJNL -27062-16	1.57	1.06	2.44	2.56	5.98	-4	-13	0.9	VN..33.
C5	5/16	34063	C5-DVJNR -35060-13	1.97	1.38	2.36	2.56	6.69	-4	-13	2.0	VN..2.53.
		34064	C5-DVJNL -35060-13	1.97	1.38	2.36	2.56	6.69	-4	-13	2.0	VN..2.53.
	3/8	34067	C5-DVJNR -35065-16	1.97	1.38	2.56	2.56	6.69	-4	-13	1.5	VN..33.
		34068	C5-DVJNL -35065-16	1.97	1.38	2.56	2.56	6.69	-4	-13	1.5	VN..33.
C6	3/8	34069	C6-DVJNR -45065-16	2.48	1.77	2.56	3.19	7.48	-4	-13	2.4	VN..33.
		34070	C6-DVJNL -45065-16	2.48	1.77	2.56	3.19	7.48	-4	-13	2.4	VN..33.

Spare Parts

For	Anvil	Anvil screw	Clamp set	Clamp**	Clamp screw**	Pin**	Spring**	Key
-13	PVN 2.522	CS5008-T09P	CD08-V13	CD08-S	L84017-T09P	FP1508	S5608	T09P-2
-16	DVN 322.5	C03508-T15P	CD19-V16	CD19-S-V16	L85021-T15P	FP2012	S6912	T15P-2

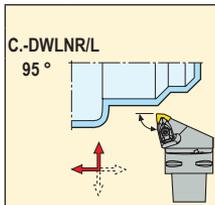
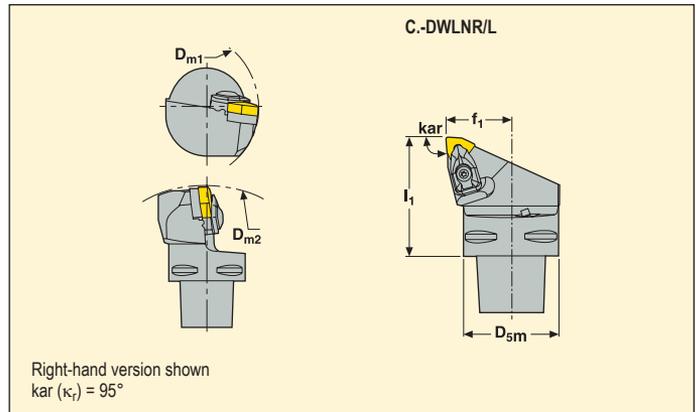
Please check availability in current price and stock-list

**Part of Clamp set

Toolholders for inserts WNGP, WNMA, WNMG, WNMP and WNMM



- For insert program, see pages 295-299, 326-327
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_0°	λ_s°	lbs	
				D _{5m}	f ₁	l ₁	D _{m1}	D _{m2}				
C4	3/8	34071	C4-DWLNRL -27050-06	1.57	1.06	1.97	2.36	5.51	-6	-6	0.9	WN..33.
		34072	C4-DWLNRL -27050-06	1.57	1.06	1.97	2.36	5.51	-6	-6	0.9	WN..33.
	1/2	34079	C4-DWLNRL -27050-08	1.57	1.06	1.97	4.33	5.51	-6	-6	0.9	WN..43.
		34080	C4-DWLNRL -27050-08	1.57	1.06	1.97	4.33	5.51	-6	-6	0.9	WN..43.
C5	3/8	34082	C5-DWLNRL -35060-06	1.97	1.38	2.36	2.56	6.50	-6	-6	1.1	WN..33.
		34084	C5-DWLNRL -35060-06	1.97	1.38	2.36	2.56	6.50	-6	-6	1.1	WN..33.
	1/2	34086	C5-DWLNRL -35060-08	1.97	1.38	2.36	4.33	6.50	-6	-6	1.5	WN..43.
		34087	C5-DWLNRL -35060-08	1.97	1.38	2.36	4.33	6.50	-6	-6	1.5	WN..43.
C6	3/8	34088	C6-DWLNRL -45065-06	2.48	1.77	2.56	3.19	7.48	-6	-6	2.9	WN..33.
		34089	C6-DWLNRL -45065-06	2.48	1.77	2.56	3.19	7.48	-6	-6	2.9	WN..33.
	1/2	34090	C6-DWLNRL -45065-08	2.48	1.77	2.56	4.33	7.48	-6	-6	2.9	WN..43.
		34091	C6-DWLNRL -45065-08	2.48	1.77	2.56	4.33	7.48	-6	-6	2.9	WN..43.

Spare Parts, Parts included in delivery

For size	Clamp pin	Clamp screw	Floating wedge clamp	Insert shim	Shim/clamp key	Shim screw	Spring
..-06	FP1508	L84017-T09P	CD09-S	DWN322.5	T09P-2	C03007-T09P	S5608
..-08	FP2012	L85021-T15P	CD12-S	DWN434	T15P-2	C04008-T15P	S6912

Accessories*

Clamp kit	Insert shim
CD09-S09	–
CD12-S12	DWN424

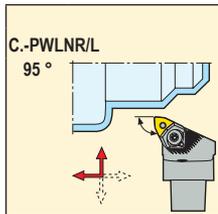
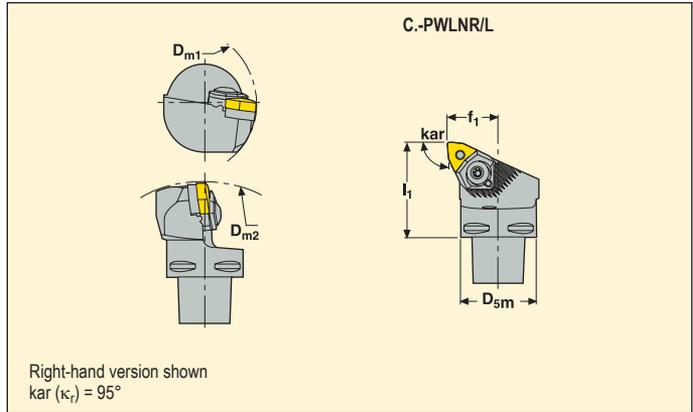
Please check availability in current price and stock-list

*Ordered separately
Insert shim WAI423 for insert WN..44. ordered separately

Toolholders for inserts WNGA, WNGP, WNMA, WNMG, WNPP and WNMM



- For insert program, see pages 295-299, 326-327
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_o°	λ_s°	lbs	
				D _{5m}	f ₁	l ₁	D _{m1}	D _{m2}				
C4	3/8	57218	C4-PWLNR -27050-06	1.57	1.06	1.97	2.95	6.50	-6	-6	0.9	WN..33.
		92036	C4-PWLNL -27050-06	1.57	1.06	1.97	2.95	6.50	-6	-6	0.9	WN..33.
	1/2	69455	C4-PWLNL -27050-08	1.57	1.06	1.97	2.95	6.50	-6	-6	0.9	WN..43.
		92037	C4-PWLNR -27050-08	1.57	1.06	1.97	2.95	6.50	-6	-6	0.9	WN..43.
C5	3/8	92039	C5-PWLNR -35060-06	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	WN..33.
		89504	C5-PWLNL -35060-06	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	WN..33.
	1/2	75111	C5-PWLNR -35060-08	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	WN..43.
		75112	C5-PWLNL -35060-08	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	WN..43.
C6	1/2	12511	C6-PWLNR -45065-08	2.48	1.77	2.56	4.76	6.50	-6	-6	2.9	WN..43.
		12512	C6-PWLNL -45065-08	2.48	1.77	2.56	4.76	6.50	-6	-6	2.9	WN..43.

Spare Parts, Parts included in delivery

For size	Insert shim	Setting screw	Shim pin	Wedge clamp	Wedge key	Wedge screw	Shim key
..06	WAE323**	L82511-T07P	PP2109-T09P	WNW06HD	T20P-7	WS1920-T20P	T09P-2
..08	WAE433***	L82511-T07P	PP2015-1-T15P	WNW08HD	T25P-7	WS2325-T25P	T15P-2

Accessories*

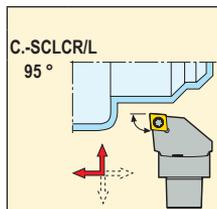
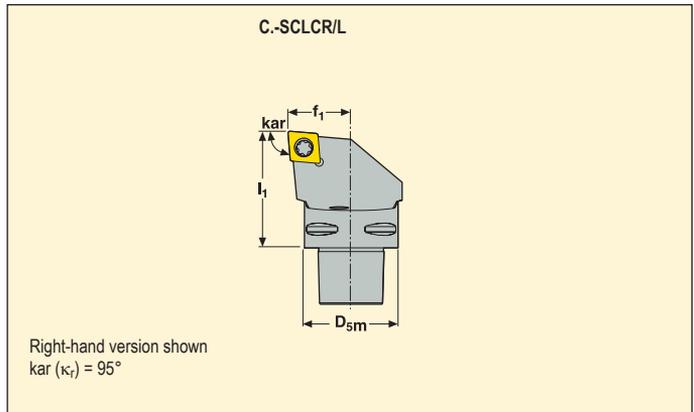
Please check availability in current price and stock-list

*Ordered separately
 **Shim WAI423 for insert WN..44. ordered separately
 ***Wedge WNW08 for insert WNMM43. ordered separately

Toolholders for inserts CCGT, CCGW, CCMT and CCMW



- For insert program, see pages 236, 238-240, 300, 328
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch			γ_0°	λ_s°	lbs	
				D _{sm}	f ₁	I ₁				
C3	3/8	94076	C3-SCLCR -22040-09	1.26	0.87	1.57	0	0	0.7	CC..32.5.
		94065	C3-SCLCL -22040-09	1.26	0.87	1.57	0	0	0.7	CC..32.5.
	1/2	94077	C3-SCLCR -22040-12	1.26	0.87	1.57	0	0	0.7	CC..43.
		94067	C3-SCLCL -22040-12	1.26	0.87	1.57	0	0	0.7	CC..43.
C4	3/8	83466	C4-SCLCR -27050-09	1.57	1.06	1.97	0	0	1.1	CC..32.5.
		69013	C4-SCLCL -27050-09	1.57	1.06	1.97	0	0	1.1	CC..32.5.
	1/2	94168	C4-SCLCR -27050-12	1.57	1.06	1.97	0	0	1.1	CC..43.
		94163	C4-SCLCL -27050-12	1.57	1.06	1.97	0	0	1.1	CC..43.
C5	3/8	94277	C5-SCLCR -35060-09	1.97	1.38	2.36	0	0	1.8	CC..32.5.
		94261	C5-SCLCL -35060-09	1.97	1.38	2.36	0	0	1.8	CC..32.5.
	1/2	94278	C5-SCLCR -35060-12	1.97	1.38	2.36	0	0	1.5	CC..43.
		94265	C5-SCLCL -35060-12	1.97	1.38	2.36	0	0	1.5	CC..43.
C6	3/8	94312	C6-SCLCR -45065-09	2.48	1.77	2.56	0	0	3.1	CC..32.5.
		94310	C6-SCLCL -45065-09	2.48	1.77	2.56	0	0	3.1	CC..32.5.
	1/2	94313	C6-SCLCR -45065-12	2.48	1.77	2.56	0	0	3.1	CC..43.
		94311	C6-SCLCL -45065-12	2.48	1.77	2.56	0	0	3.1	CC..43.

Spare Parts, Parts included in delivery

For size	Insert key	Insert screw	Insert shim	Shim screw
-09	T15P-2	C03512-T15P	SCN322	CA3507
-12	T15P-2	C04014-T15P	SCN42.52	CA4010

Accessories*

Shim key
9/64SMS875
4SMS795

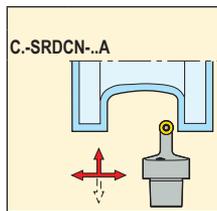
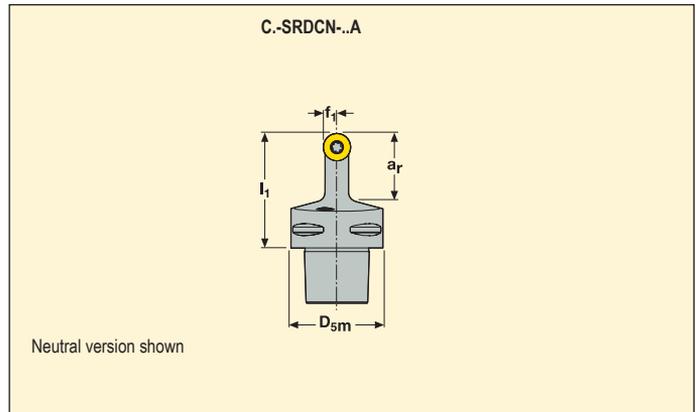
Please check availability in current price and stock-list

*Ordered separately

Toolholders for inserts RCMT



- For insert program, see pages 264
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch				γ_0°	λ_s°	lbs	
				D _{5m}	f ₁	l ₁	a _r				
C5	0.236	94341	C5-SRDCN -00060-06A	1.97	0.12	2.36	0.47	0	0	1.5	RCMT0602..
	0.315	94342	C5-SRDCN -00060-08A	1.97	0.16	2.36	0.63	0	0	1.5	RCMT0803..
	0.393	94229	C5-SRDCN -00060-10A	1.97	0.20	2.36	0.98	0	0	1.8	RCMT10T3..
	0.472	94344	C5-SRDCN -00060-12A	1.97	0.24	2.36	1.10	0	0	1.3	RCMT1204..
	0.630	94345	C5-SRDCN -00060-16A	1.97	0.31	2.36	1.38	0	0	1.3	RCMT1606..
	C6	0.393	94314	C6-SRDCN -00065-10A	2.48	0.20	2.56	0.98	0	0	2.4
0.472		94315	C6-SRDCN -00065-12A	2.48	0.24	2.56	1.10	0	0	2.2	RCMT1204..
0.630		59781	C6-SRDCN -00065-16A	2.48	0.31	2.56	1.38	0	0	3.0	RCMT1606..

Spare Parts, Parts included in delivery

For size	Insert key	Insert screw	Insert shim	Shim screw
-06	T07P-2	C02506-T07P	–	–
-08	T09P-2	C03007-T09P	–	–
-10	T15P-2	C03510-T15P	111.19-620	CA3507
-12	T15P-2	C03512-T15P	111.19-621	CA3507
-16	T20P-7	C05013-T20P	SRN53	CA5010

Accessories*

Shim key
–
–
9/64SMS875
9/64SMS875
5SMS795

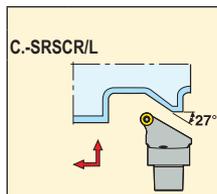
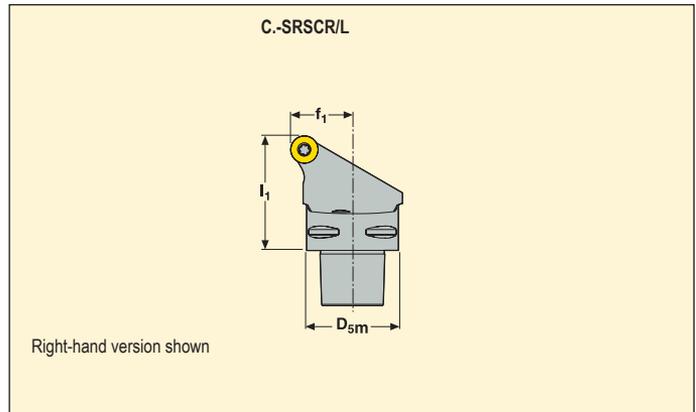
Please check availability in current price and stock-list

*Ordered separately

Toolholders for inserts RCMT



- For insert program, see pages 264
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch			γ_0°	λ_s°	lbs	
				D _{5m}	f ₁	l ₁				
C5	0.236	94353	C5-SRSCR -35060-06	1.97	1.38	2.36	0	0	1.5	RCMT0602..
		94347	C5-SRSCCL -35060-06	1.97	1.38	2.36	0	0	1.5	RCMT0602..
	0.315	94354	C5-SRSCR -35060-08	1.97	1.38	2.36	0	0	1.5	RCMT0803..
		94348	C5-SRSCCL -35060-08	1.97	1.38	2.36	0	0	1.5	RCMT0803..
	0.393	94355	C5-SRSCR -35060-10	1.97	1.38	2.36	0	0	1.5	RCMT10T3..
		94349	C5-SRSCCL -35060-10	1.97	1.38	2.36	0	0	1.5	RCMT10T3..
	0.472	94356	C5-SRSCR -35060-12	1.97	1.38	2.36	0	0	1.8	RCMT1204..
		94350	C5-SRSCCL -35060-12	1.97	1.38	2.36	0	0	1.8	RCMT1204..
0.630	94351	C5-SRSCCL -35060-16	1.97	1.38	2.36	0	0	1.8	RCMT1606..	
	94357	C5-SRSCR -35060-16	1.97	1.38	2.36	0	0	1.8	RCMT1606..	
C6	0.393	94323	C6-SRSCR -45065-10	2.48	1.77	2.56	0	0	2.6	RCMT10T3..
		59783	C6-SRSCCL -45065-10	2.48	1.77	2.56	0	0	2.6	RCMT10T3..
	0.472	94324	C6-SRSCR -45065-12	2.48	1.77	2.56	0	0	2.6	RCMT1204..
		94320	C6-SRSCCL -45065-12	2.48	1.77	2.56	0	0	2.6	RCMT1204..
	0.630	94325	C6-SRSCR -45065-16	2.48	1.77	2.56	0	0	2.6	RCMT1606..
		59784	C6-SRSCCL -45065-16	2.48	1.77	2.56	0	0	2.6	RCMT1606..

Spare Parts, Parts included in delivery

For size	Insert key	Insert screw	Insert shim	Shim screw
-06	T07P-2	C02506-T07P	-	-
-08	T09P-2	C03007-T09P	-	-
-10	T15P-2	C03510-T15P	111.19-620	CA3507
-12	T15P-2	C03512-T15P	111.19-621	CA3507
-16	T20P-7	C05013-T20P	SRN53	CA5010

Accessories*

Shim key
-
-
9/64SMS875
9/64SMS875
5SMS795

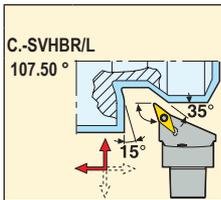
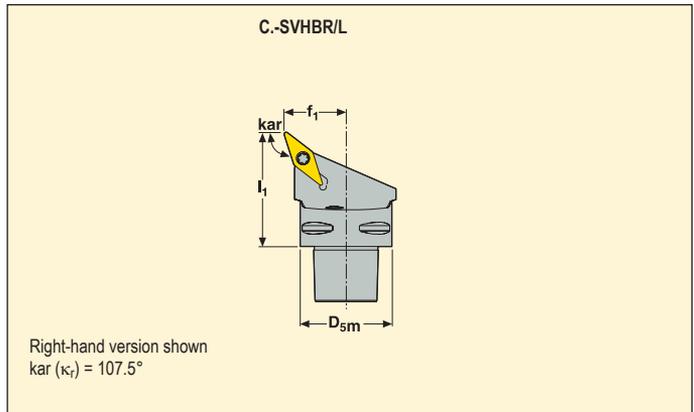
Please check availability in current price and stock-list

*Ordered separately

Toolholders for inserts VBGT, VBGW, VBMT and VCGT



- For insert program, see pages 289-291, 323
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch			γ_o°	λ_s°	lbs	
				D _{5m}	f ₁	I ₁				
C3	1/4	94143	C3-SVHBR -22040-11	1.26	0.87	1.57	0	0	0.44	VB..21.5.
		94142	C3-SVHBL -22040-11	1.26	0.87	1.57	0	0	0.44	VB..21.5.
C4	1/4	94226	C4-SVHBR -27050-11	1.57	1.06	1.97	0	0	0.88	VB..21.5.
		94224	C4-SVHBL -27050-11	1.57	1.06	1.97	0	0	0.88	VB..21.5.
	3/8	65644	C4-SVHBR -27050-16	1.57	1.06	1.97	0	0	0.88	VB../VC..33.
		94225	C4-SVHBL -27050-16	1.57	1.06	1.97	0	0	0.88	VB../VC..33.
C5	1/4	94385	C5-SVHBR -35060-11	1.97	1.38	2.36	0	0	1.54	VB..21.5.
		94383	C5-SVHBL -35060-11	1.97	1.38	2.36	0	0	1.54	VB..21.5.
	3/8	94386	C5-SVHBR -35060-16	1.97	1.38	2.36	0	0	1.54	VB../VC..33.
		94384	C5-SVHBL -35060-16	1.97	1.38	2.36	0	0	1.54	VB../VC..33.
C6	3/8	94330	C6-SVHBR -45065-16	2.48	1.77	2.56	0	0	2.65	VB../VC..33.
		94329	C6-SVHBL -45065-16	2.48	1.77	2.56	0	0	2.65	VB../VC..33.

Spare Parts, Parts included in delivery

For size	Insert key	Insert screw	Insert shim	Shim screw
-11	T07P-2	C02506-T07P	–	–
-16	T15P-2	C03512-T15P	171.19-620	CA3507

Accessories*

Shim key
–
9/64SMS875

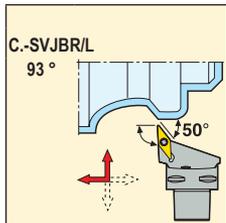
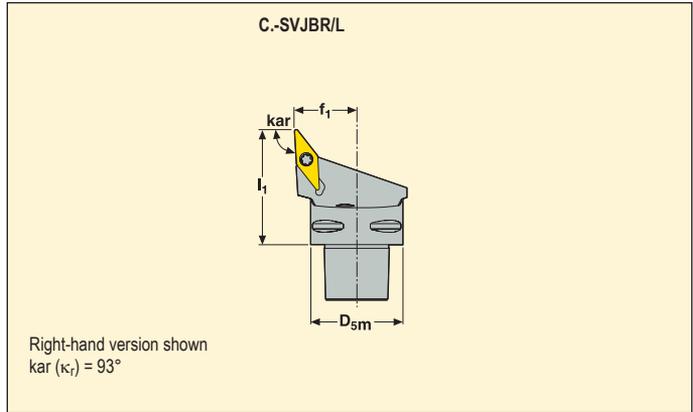
Please check availability in current price and stock-list

*Ordered separately

Toolholders for inserts VBGT, VBGW, VBMT and VCGT



- For insert program, see pages 289-291, 323
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch			γ_o°	λ_s°	lbs	
				D _{sm}	f ₁	l ₁				
C3	1/4	94146	C3-SVJBR -22040-11	1.26	0.87	1.57	0	0	0.44	VB..21.5.
		94145	C3-SVJBL -22040-11	1.26	0.87	1.57	0	0	0.44	VB..21.5.
C4	1/4	94230	C4-SVJBR -27050-11	1.57	1.06	1.97	0	0	0.88	VB..21.5.
		94227	C4-SVJBL -27050-11	1.57	1.06	1.97	0	0	0.88	VB..21.5.
	3/8	69318	C4-SVJBR -27050-16	1.57	1.06	1.97	0	0	0.88	VB../VC..33.
		68368	C4-SVJBL -27050-16	1.57	1.06	1.97	0	0	0.88	VB../VC..33.
C5	1/4	94389	C5-SVJBR -35060-11	1.97	1.38	2.36	0	0	1.54	VB..21.5.
		94387	C5-SVJBL -35060-11	1.97	1.38	2.36	0	0	1.54	VB..21.5.
	3/8	29329	C5-SVJBR -35060-16	1.97	1.38	2.36	0	0	1.54	VB../VC..33.
		94388	C5-SVJBL -35060-16	1.97	1.38	2.36	0	0	1.54	VB../VC..33.
C6	3/8	94332	C6-SVJBR -45065-16	2.48	1.77	2.56	0	0	2.43	VB../VC..33.
		94331	C6-SVJBL -45065-16	2.48	1.77	2.56	0	0	2.43	VB../VC..33.

Spare Parts, Parts included in delivery

For size	Insert key	Insert screw	Insert shim	Shim screw	Shim key
-11	T07P-2	C02506-T07P	-	-	-
-16	T15P-2	C03512-T15P	171.19-620	CA3507	9/64SMS875

Accessories*

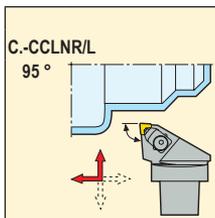
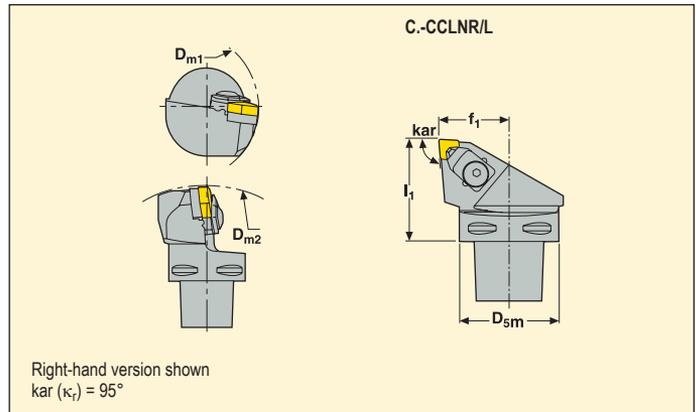
Please check availability in current price and stock-list

*Ordered separately

Toolholders for PCBN inserts CNGN and CNMN



- For insert program, see pages 302, 332
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_0°	λ_s°	lbs	
				D _{5m}	f ₁	l ₁	D _{m1}	D _{m2}				
C4	3/8	42706	C4-CCLNR -27050-09	1.57	1.06	1.97	2.95	6.50	-6	-6	1.1	CN.N32.
		42704	C4-CCLNL -27050-09	1.57	1.06	1.97	2.95	6.50	-6	-6	1.1	CN.N32.
	1/2	42743	C4-CCLNR -27050-12	1.57	1.06	1.97	2.95	6.50	-6	-6	1.1	CN.N43.
		42707	C4-CCLNL -27050-12	1.57	1.06	1.97	2.95	6.50	-6	-6	1.1	CN.N43.
C5	3/8	42745	C5-CCLNR -35060-09	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	CN.N32.
		42744	C5-CCLNL -35060-09	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	CN.N32.
	1/2	42747	C5-CCLNR -35060-12	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	CN.N43.
		42746	C5-CCLNL -35060-12	1.97	1.38	2.36	3.74	6.50	-6	-6	1.8	CN.N43.
C6	1/2	42752	C6-CCLNR -45065-12	2.48	1.77	2.56	4.76	6.50	-6	-6	2.9	CN.N43.
		42750	C6-CCLNL -45065-12	2.48	1.77	2.56	4.76	6.50	-6	-6	2.9	CN.N43.

Spare Parts, Parts included in delivery

For size	Cantilever clamp	Clamp key	Insert shim	Pressure plate	Shim screw	Shim key
-09	CC17P-09	4SMS795	CCN090412	P1311-09	174.10-652-T07P	T07P-2
-12	CC17P	4SMS795	CCN120312	P1311	F94009-T09P	T09P-2

Accessories*

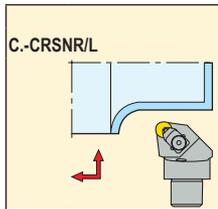
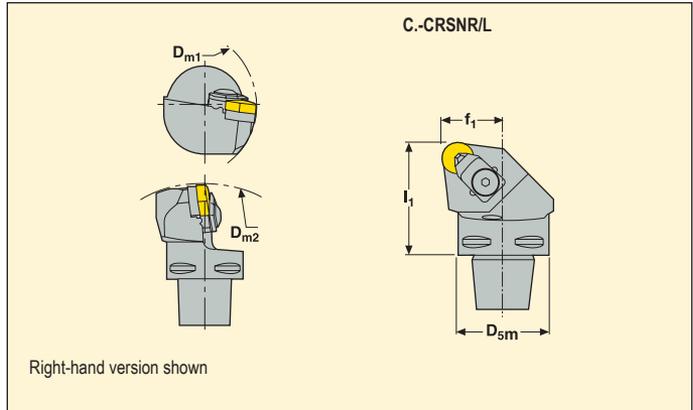
Please check availability in current price and stock-list

*Ordered separately

Toolholders for PCBN inserts RNGN and RNMN



- For insert program, see pages 307, 309, 330, 333
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch					γ_o°	λ_s°	lbs	
				D _{5m}	f ₁	l ₁	D _{m1}	D _{m2}				
C4	3/8	42755	C4-CRSNR -27050-09	1.57	1.06	1.97	2.95	6.50	0	-8	1.1	RN.N32.
		42754	C4-CRSNL -27050-09	1.57	1.06	1.97	2.95	6.50	0	-8	1.1	RN.N32.
	1/2	42758	C4-CRSNR -27050-12	1.57	1.06	1.97	2.95	6.50	0	-8	1.1	RN.N43.
		42757	C4-CRSNL -27050-12	1.57	1.06	1.97	2.95	6.50	0	-8	1.1	RN.N43.
C5	3/8	42762	C5-CRSNR -35060-09	1.97	1.38	2.36	3.74	6.50	0	-8	1.8	RN.N32.
		42761	C5-CRSNL -35060-09	1.97	1.38	2.36	3.74	6.50	0	-8	1.8	RN.N32.
	1/2	42764	C5-CRSNR -35060-12	1.97	1.38	2.36	3.74	6.50	0	-8	1.8	RN.N43.
		42763	C5-CRSNL -35060-12	1.97	1.38	2.36	3.74	6.50	0	-8	1.8	RN.N43.
C6	3/8	42766	C6-CRSNR -45065-09	2.48	1.77	2.56	4.76	6.50	0	-8	2.9	RN.N32.
		42765	C6-CRSNL -45065-09	2.48	1.77	2.56	4.76	6.50	0	-8	2.9	RN.N32.
	1/2	42768	C6-CRSNR -45065-12	2.48	1.77	2.56	4.76	6.50	0	-8	2.9	RN.N43.
		42767	C6-CRSNL -45065-12	2.48	1.77	2.56	4.76	6.50	0	-8	2.9	RN.N43.

Spare Parts, Parts included in delivery

For size	Cantilever clamp	Clamp key	Insert shim	Pressure plate	Shim screw	Shim key
-09	CC17P-09	4SMS795	117.10-620	P1311-09	174.10-652-T07P	T07P-2
-12	CC17P	4SMS795	117.10-622	P1311	F94009-T09P	T09P-2

Accessories*

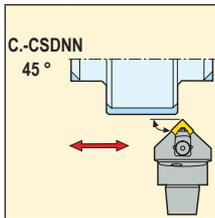
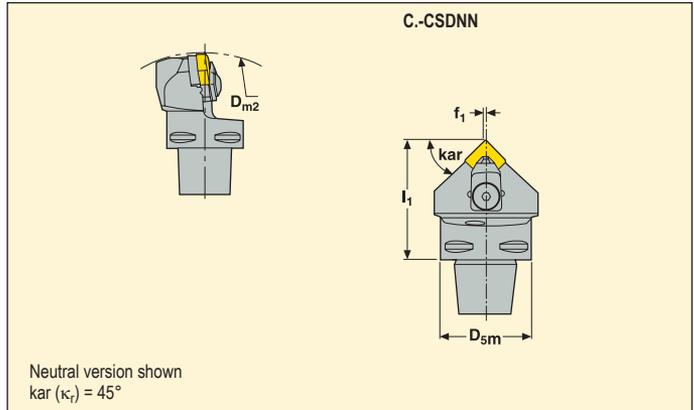
Please check availability in current price and stock-list

*Ordered separately
Shim 117.10-621 for insert RN.43., ordered separately

Toolholders for PCBN inserts SNGA, SNGF, SNGN and SNMN



- For insert program, see pages 311-314
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch				γ_0°	λ_s°	lbs	
				D _{5m}	f ₁	l ₁	D _{m2}				
C4	3/8	42769	C4-CSDNN -00050-09	1.57	0.01	1.97	6.50	-6	-6	0.9	SN..32.
	1/2	42771	C4-CSDNN -00050-12	1.57	0.01	1.97	6.50	-6	-6	0.9	SN..43.
C5	3/8	42772	C5-CSDNN -00060-09	1.97	0.01	2.36	6.50	-6	-6	1.5	SN..32.
	1/2	42773	C5-CSDNN -00060-12	1.97	0.01	2.36	6.50	-6	-6	1.5	SN..43.
C6	1/2	42774	C6-CSDNN -00065-12	2.48	0.01	2.56	6.50	-6	-6	2.6	SN..43.

Spare Parts, Parts included in delivery

For size	Cantilever clamp	Clamp key	Insert shim	Pressure plate	Shim screw	Shim key
-09	CC17P-09	4SMS795	CSN090412	P1311-09	174.10-652-T07P	T07P-2
-12	CC20P	4SMS795	174.10-621	P1311	F94009-T09P	T09P-2

Accessories*

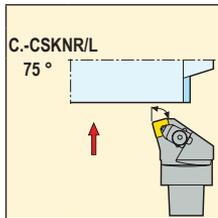
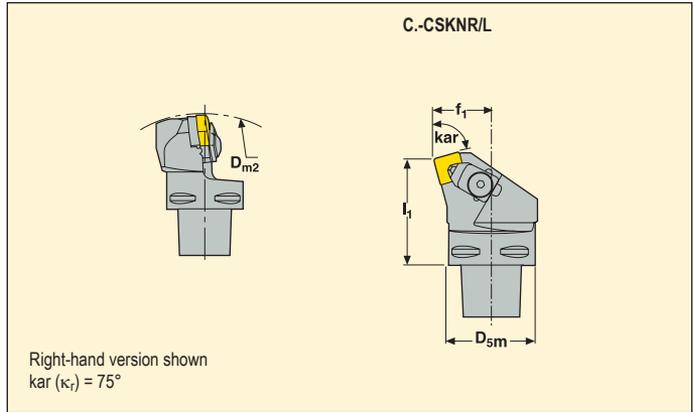
Please check availability in current price and stock-list

*Ordered separately
Shim 174.10-622 for insert SN.N42., ordered separately

Toolholders for PCBN inserts SNGF, SNGN and SNMN



- For insert program, see pages 311-314
- γ_o = Rake angle, λ_s = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch				γ_o°	λ_s°	lbs	
				D_{sm}	f_1	l_1	D_{m2}				
C4	3/8	42776	C4-CSKNR -27050-09	1.57	1.06	1.97	2.95	-6	-6	1.1	SN..32.
		42775	C4-CSKNL -27050-09	1.57	1.06	1.97	2.95	-6	-6	1.1	SN..32.
	1/2	42778	C4-CSKNR -27050-12	1.57	1.06	1.97	2.95	-6	-6	1.1	SN..43.
		42777	C4-CSKNL -27050-12	1.57	1.06	1.97	2.95	-6	-6	1.1	SN..43.
C5	3/8	42781	C5-CSKNR -35060-09	1.97	1.38	2.36	3.74	-6	-6	1.8	SN..32.
		42780	C5-CSKNL -35060-09	1.97	1.38	2.36	3.74	-6	-6	1.8	SN..32.
	1/2	42783	C5-CSKNR -35060-12	1.97	1.38	2.36	3.74	-6	-6	2.0	SN..43.
		42782	C5-CSKNL -35060-12	1.97	1.38	2.36	3.74	-6	-6	2.0	SN..43.
C6	1/2	42786	C6-CSKNR -45065-12	2.48	1.77	2.56	4.76	-6	-6	3.3	SN..43.
		42785	C6-CSKNL -45065-12	2.48	1.77	2.56	4.76	-6	-6	3.3	SN..43.

Spare Parts, Parts included in delivery

For size	Cantilever clamp	Clamp key	Insert shim	Pressure plate	Shim screw	Shim key
-09	CC17P-09	4SMS795	CSN090412	P1311-09	174.10-652-T07P	T07P-2
-12	CC20P	4SMS795	174.10-621	P1311	F94009-T09P	T09P-2

Accessories*

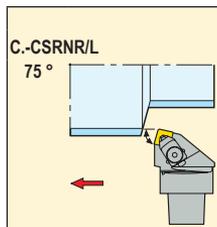
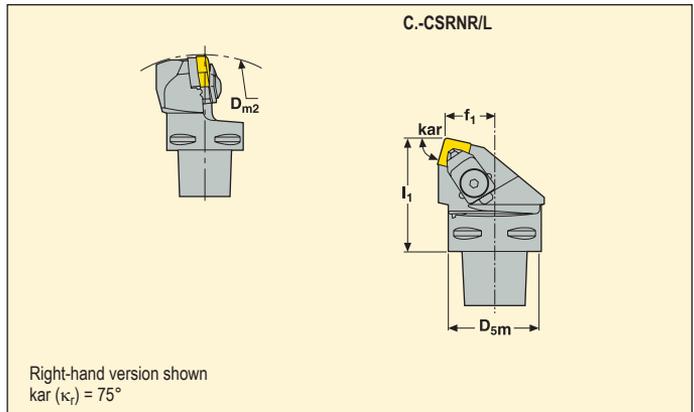
Please check availability in current price and stock-list

*Ordered separately
Shim 174.10-622 for insert SN.N42., ordered separately

Toolholders for PCBN inserts SNGF, SNGN and SNMN



- For insert program, see pages 311-314
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 592-593



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch				γ_0°	λ_s°	lbs	
				D_{sm}	f_1	I_1	D_{m2}				
C4	3/8	42788	C4-CSRNR -22050-09	1.57	0.87	1.97	6.50	-6	-6	0.9	SN..32.
		42787	C4-CSRNL -22050-09	1.57	0.87	1.97	6.50	-6	-6	0.9	SN..32.
	1/2	42790	C4-CSRNR -22050-12	1.57	0.87	1.97	6.50	-6	-6	1.1	SN..43.
		42789	C4-CSRNL -22050-12	1.57	0.87	1.97	6.50	-6	-6	1.1	SN..43.
C5	3/8	42792	C5-CSRNR -27060-09	1.97	1.06	2.36	6.50	-6	-6	1.8	SN..32.
		51528	C5-CSRNL -27060-09	1.97	1.06	2.36	6.50	-6	-6	1.8	SN..32.
	1/2	42794	C5-CSRNR -27060-12	1.97	1.06	2.36	6.50	-6	-6	1.8	SN..43.
		42793	C5-CSRNL -27060-12	1.97	1.06	2.36	6.50	-6	-6	1.8	SN..43.
C6	1/2	42796	C6-CSRNR -35065-12	2.48	1.38	2.56	6.50	-6	-6	3.1	SN..43.
		42795	C6-CSRNL -35065-12	2.48	1.38	2.56	6.50	-6	-6	3.1	SN..43.

Spare Parts, Parts included in delivery

For size	Cantilever clamp	Clamp key	Insert shim	Pressure plate	Shim screw	Shim key
-09	CC17P-09	4SMS795	CSN090412	P1311-09	174.10-652-T07P	T07P-2
-12	CC20P	4SMS795	174.10-621	P1311	F94009-T09P	T09P-2

Accessories*

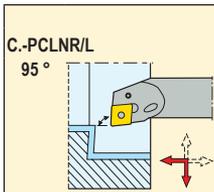
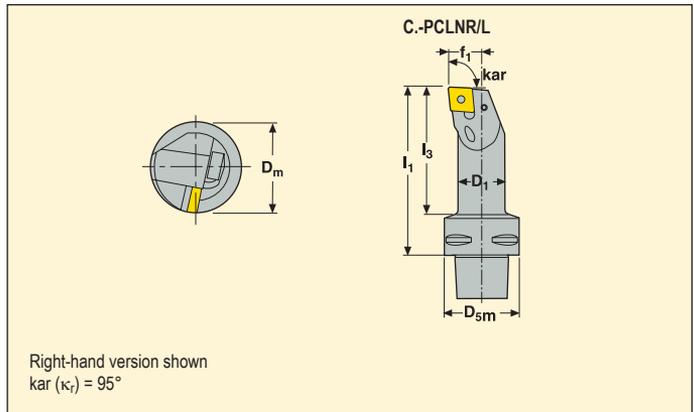
Please check availability in current price and stock-list

*Ordered separately
Shim 174.10 for insert SN.N42., ordered separately

Toolholders for inserts CNGP, CNMA, CNMG and CNMM



- For insert program, see pages 241-248, 301
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 594-595



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch							γ_o°	λ_s°	lbs	
				D ₁	D _{5m}	f ₁	l ₁	l ₃	D _m min					
C4	1/2	42921	C4-PCLNR -17090-12	0.98	1.57	0.67	3.54	2.72	1.26	-6	-11	1.1	CN..43.	
		37256	-22110-12	1.26	1.57	0.87	4.33	3.50	1.57	-6	-11	1.8	CN..43.	
		42959	-27080-12	1.57	1.57	1.06	3.15	2.36	1.97	-6	-10	1.5	CN..43.	
		42926	-27120-12	1.57	1.57	1.06	4.72	3.94	1.97	-6	-11	2.4	CN..43.	
		34524	C4-PCLNL -17090-12	0.98	1.57	0.67	3.54	2.72	1.26	-6	-11	1.1	CN..43.	
		37255	-22110-12	1.26	1.57	0.87	4.33	3.50	1.57	-6	-11	1.8	CN..43.	
		34665	-27080-12	1.57	1.57	1.06	3.15	2.36	1.97	-6	-10	1.5	CN..43.	
		42925	-27120-12	1.57	1.57	1.06	4.72	3.94	1.97	-6	-11	2.4	CN..43.	
C5	1/2	39221	C5-PCLNR -17090-12	0.98	1.97	0.67	3.54	2.64	1.26	-6	-11	1.5	CN..43.	
		42927	-22110-12	1.26	1.97	0.87	4.33	3.46	1.57	-6	-11	2.2	CN..43.	
		42932	-35100-12	1.97	1.97	1.38	3.94	3.19	1.97	-6	-7	3.1	CN..43.	
		42930	-27140-12	1.57	1.97	1.06	5.51	4.69	1.97	-6	-10	3.3	CN..43.	
		42938	C5-PCLNL -17090-12	0.98	1.97	0.67	3.54	2.64	1.26	-6	-11	1.5	CN..43.	
		42950	-22110-12	1.26	1.97	0.87	4.33	3.46	1.57	-6	-11	2.2	CN..43.	
		42952	-27140-12	1.57	1.97	1.06	5.51	4.69	1.97	-6	-10	3.1	CN..43.	
		42956	-35100-12	1.97	1.97	1.38	3.94	3.19	1.97	-6	-7	3.3	CN..43.	
	5/8	42957	C5-PCLNR -35150-16	1.97	1.97	1.38	5.91	5.16	2.48	-6	-11	4.6	CN..54.	
		42958	C5-PCLNL -35150-16	1.97	1.97	1.38	5.91	5.16	2.48	-6	-11	4.6	CN..54.	

Spare Parts, Parts included in delivery

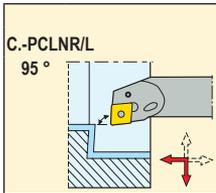
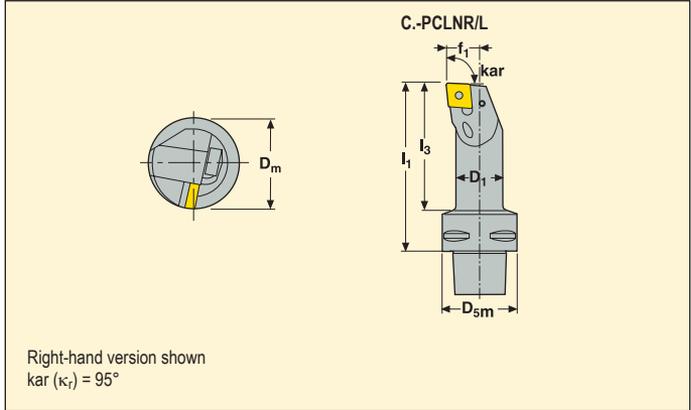
For size	Insert lever	Insert shim	Lever key	Lever screw	Punch	Shim pin
17090-12	PP4613	–	2.5SMS795	LS0613	–	–
-12	PP4713	PCN120308	3SMS795	LS0818	MP0912	RP6757
-16	PP7818	PCN160408	3SMS795	LS0820	MP0912	RP8286

Please check availability in current price and stock-list

Toolholders for inserts CNGP, CNMA, CNMG and CNMM



- For insert program, see pages 241-248, 301
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 594-595



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch								γ_0°	λ_s°	lbs	
				D ₁	D _{sm}	f ₁	l ₁	l ₃	D _m min						
C6	1/2	42960	C6-PCLNR -17100-12	0.98	2.48	0.67	3.94	2.91	1.26	-6	-11	2.4	CN..43.		
		42962	C6-PCLNR -22110-12	1.26	2.48	0.87	4.33	3.31	1.57	-6	-11	2.9	CN..43.		
		42971	C6-PCLNL -17100-12	0.98	2.48	0.67	3.94	2.91	1.26	-6	-11	2.4	CN..43.		
		42972	C6-PCLNL -22110-12	1.26	2.48	0.87	4.33	3.31	1.57	-6	-11	2.9	CN..43.		
	5/8	30110	C6-PCLNR -27140-16	1.57	2.48	1.06	5.51	4.53	1.97	-6	-11	4.0	CN..54.		
		30111	C6-PCLNR -35175-16	1.97	2.48	1.38	6.89	5.98	2.48	-6	-11	6.2	CN..54.		
		42982	C6-PCLNL -27140-16	1.57	2.48	1.06	5.51	4.53	1.97	-6	-11	4.0	CN..54.		
		42993	C6-PCLNL -35175-16	1.97	2.48	1.38	6.89	5.98	2.48	-6	-11	6.2	CN..54.		

Spare Parts, Parts included in delivery

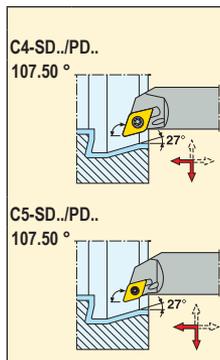
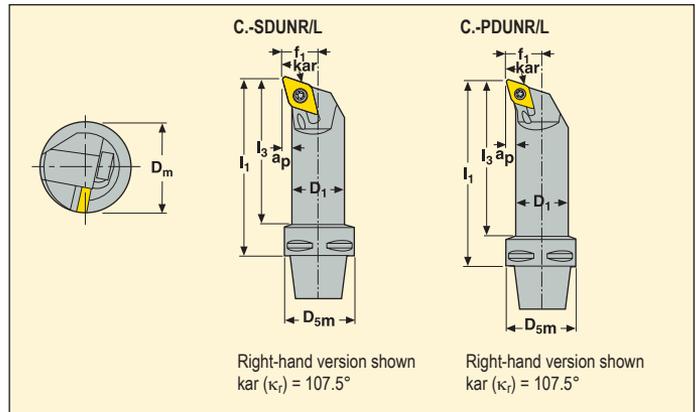
For size	Insert lever	Insert shim	Lever key	Lever screw	Punch	Shim pin
-17100-12	PP4613	-	2.5SMS795	LS0613	-	-
-22110-12	PP4713	PCN120308	3SMS795	LS0818	MP0912	RP6757
-16	PP7818	PCN160408	3SMS795	LS0820	MP0912	RP8286

Please check availability in current price and stock-list

Toolholders for inserts DNMA, DNMU and DNMX



- For insert program, see pages 258-259, 305
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 594-595



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch							γ_0°	λ_s°	lbs	
				D ₁	D _{5m}	f ₁	I ₁	I ₃	a _p	D _m min				
C4	3/8	72404	C4-SDQNR -11065-11	0.63	1.57	0.43	2.56	1.61	0.10	0.79	-5	-17	0.9	DNMU33.
		72447	-13080-11	0.79	1.57	0.51	3.15	2.20	0.10	0.98	-5	-17	0.9	DNMU33.
		72441	C4-SDQNL -11065-11	0.63	1.57	0.43	2.56	1.61	0.10	0.79	-5	-17	0.9	DNMU33.
		72454	-13080-11	0.79	1.57	0.51	3.15	2.20	0.10	0.98	-5	-17	0.9	DNMU33.
	3/8	72502	C4-PDQNR -17090-11	0.98	1.57	0.67	3.54	2.68	0.16	1.26	-5	-16	1.1	DN..33.
		72510	-22110-11	1.26	1.57	0.87	4.33	3.50	0.20	1.57	-5	-14	1.5	DN..33.
		72506	C4-PDQNL -17090-11	0.98	1.57	0.67	3.54	2.68	0.16	1.26	-5	-16	1.1	DN..33.
		72512	-22110-11	1.26	1.57	0.87	4.33	3.50	0.20	1.57	-5	-14	1.5	DN..33.
C5	3/8	72455	C5-SDQNR -13080-11	0.79	1.97	0.51	3.15	2.20	0.10	0.98	-5	-18	1.3	DNMU33.
		72462	C5-SDQNL -13080-11	0.79	1.97	0.51	3.15	2.20	0.10	0.98	-5	-18	1.3	DNMU33.
	3/8	72526	C5-PDQNR -17090-11	0.98	1.97	0.67	3.54	2.64	0.16	1.26	-5	-16	1.5	DN..33.
		72546	-22110-11	1.26	1.97	0.87	4.33	3.50	0.20	1.57	-5	-14	2.0	DN..33.
		72530	C5-PDQNL -17090-11	0.98	1.97	0.67	3.54	2.64	0.16	1.26	-5	-16	1.5	DN..33.
		72557	-22110-11	1.26	1.97	0.87	4.33	3.50	0.20	1.57	-5	-14	2.0	DN..33.

Spare Parts, Parts included in delivery

For size	Insert key	Insert pin	Insert screw	Insert shim	Shim screw
-11...-11	T09P-2	-	C03511-T09P	-	-
-13...-11	T09P-2	-	C03511-T09P	DAI313	CA3507
-17/22...-11	T09P-2	PL1403-T09P	-	DSN323	-

Accessories*

Shim key
-
9/64SMS875
-

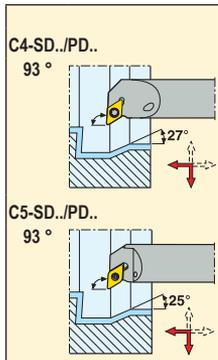
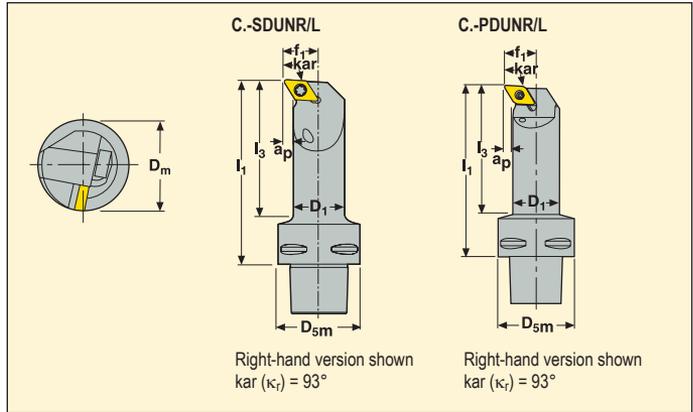
Please check availability in current price and stock-list

*Ordered separately

Toolholders for inserts DNMA, DNMU and DNMX



- For insert program, see pages 258-259, 305
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 594-595



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch								γ_o°	λ_s°	lbs	
				D ₁	D _{sm}	f ₁	l ₁	l ₃	a _p	D _m min					
C4	3/8	72369	C4-SDUNR -11065-11	0.63	1.57	0.43	2.56	1.61	0.10	0.79	-5	-17	0.7	DNMU/DNMX33.	
		92041	-13080-11	0.79	1.57	0.51	3.15	2.20	0.10	0.98	-5	-14	0.9	DNMU/DNMX33.	
		72396	C4-SDUNL -11065-11	0.63	1.57	0.43	2.56	1.61	0.10	0.79	-5	-17	0.7	DNMU/DNMX33.	
		92040	-13080-11	0.79	1.57	0.51	3.15	2.20	0.10	0.98	-5	-14	0.9	DNMU/DNMX33.	
	3/8	92043	C4-PDUNR -17090-11	0.98	1.57	0.67	3.54	2.68	0.16	1.26	-5	-13	1.1	DN..33.	
		92045	-22110-11	1.26	1.57	0.87	4.33	3.50	0.20	1.57	-5	-11	1.5	DN..33.	
		92042	C4-PDUNL -17090-11	0.98	1.57	0.67	3.54	2.68	0.16	1.26	-5	-13	1.1	DN..33.	
		92044	-22110-11	1.26	1.57	0.87	4.33	3.50	0.20	1.57	-5	-11	1.5	DN..33.	
C5	3/8	92047	C5-SDUNR -13080-11	0.79	1.97	0.51	3.15	2.20	0.10	0.98	-5	-14	1.3	DNMU/DNMX33.	
		92046	C5-SDUNL -13080-11	0.79	1.97	0.51	3.15	2.20	0.10	0.98	-5	-14	1.3	DNMU/DNMX33.	
	3/8	92049	C5-PDUNR -17090-11	0.98	1.97	0.67	3.54	2.64	0.16	1.26	-5	-13	1.5	DN..33.	
		92051	-22110-11	1.26	1.97	0.87	4.33	3.50	0.20	1.57	-5	-11	2.0	DN..33.	
		92048	C5-PDUNL -17090-11	0.98	1.97	0.67	3.54	2.64	0.16	1.26	-5	-13	1.5	DN..33.	
		92050	-22110-11	1.26	1.97	0.87	4.33	3.50	0.20	1.57	-5	-11	2.0	DN..33.	

Spare Parts, Parts included in delivery

For size	Insert key	Insert pin	Insert screw	Insert shim	Shim screw	Shim key
-11...-11	T09P-2	-	C03511-T09P	-	-	-
-13...-11	T09P-2	-	C03511-T09P	DAI313	CA3507	9/64SMS875
-17/22...-11	T09P-2	PL1403-T09P	-	DSN323	-	-

Accessories*

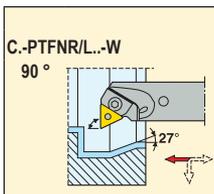
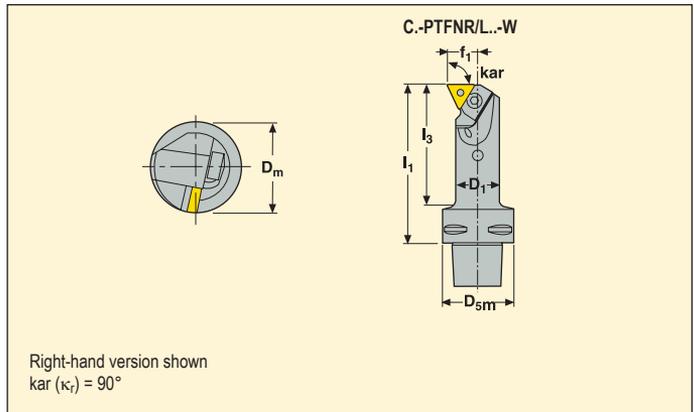
Please check availability in current price and stock-list

*Ordered separately

Toolholders for inserts TNGA, TNMA, TNMG, TNMM, TNMN and TNMP



- For insert program, see pages 282-286, 317
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 594-595



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch							γ_o°	λ_s°	lbs	
				D ₁	D _{5m}	f ₁	I ₁	I ₃	D _m min					
C4	3/8	34673	C4-PTFNR -17090-16-W	0.98	1.57	0.67	3.54	2.72	1.26	-6	-13	1.1	TN..33.	
		34675	-27120-16-W	1.57	1.57	1.06	4.72	3.94	1.97	-6	-11	2.4	TN..33.	
		34670	C4-PTFNL -17090-16-W	0.98	1.57	0.67	3.54	2.72	1.26	-6	-13	1.1	TN..33.	
		34672	-27120-16-W	1.57	1.57	1.06	4.72	3.94	1.97	-6	-11	2.4	TN..33.	
C5	3/8	34694	C5-PTFNR -22110-16-W	1.26	1.57	0.87	4.33	3.46	1.57	-6	-12	2.0	TN..33.	
		34695	-27140-16-W	1.57	1.57	1.06	5.51	4.69	1.97	-6	-11	3.3	TN..33.	
		34698	C5-PTFNL -22110-16-W	1.26	1.57	0.87	4.33	3.46	1.57	-6	-12	2.0	TN..33.	
		34699	-27140-16-W	1.57	1.57	1.06	5.51	4.69	1.97	-6	-11	3.3	TN..33.	
C6	3/8	34712	C6-PTFNR -22110-16-W	1.26	2.48	0.87	4.33	3.31	1.57	-6	-12	2.9	TN..33.	
		34713	-27140-16-W	1.57	2.48	1.06	5.51	4.53	1.97	-6	-11	4.0	TN..33.	
		34716	C6-PTFNL -22110-16-W	1.26	2.48	0.87	4.33	3.31	1.57	-6	-12	2.9	TN..33.	
		34717	-27140-16-W	1.57	2.48	1.06	5.51	4.53	1.97	-6	-11	4.0	TN..33.	
	1/2	26014	C6-PTFNR -35175-22-W	1.97	2.48	1.38	6.89	5.98	2.48	-6	-10	6.2	TN..43.	
		34718	C6-PTFNL -27140-22-W	1.57	2.48	1.06	5.51	4.53	1.97	-6	-11	4.0	TN..43.	
		34719	-35175-22-W	1.97	2.48	1.38	6.89	5.98	2.48	-6	-10	6.2	TN..43.	

Spare Parts, Parts included in delivery

For size	Insert shim	Setting screw	Shim pin	Wedge clamp	Wedge key	Shim key
-17...-16	-	F83060-T09P	PL1003	CP16-H31	3SMS795	T09P-2
-22/27...-16	PTN160308	F83060-T09P	PL1203	CP16-H3	3SMS795	T09P-2
-22	PTN220410	F84060-T15P	PL1405	CP22-H4	4SMS795	T09P-2

Accessories*

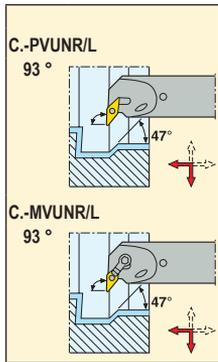
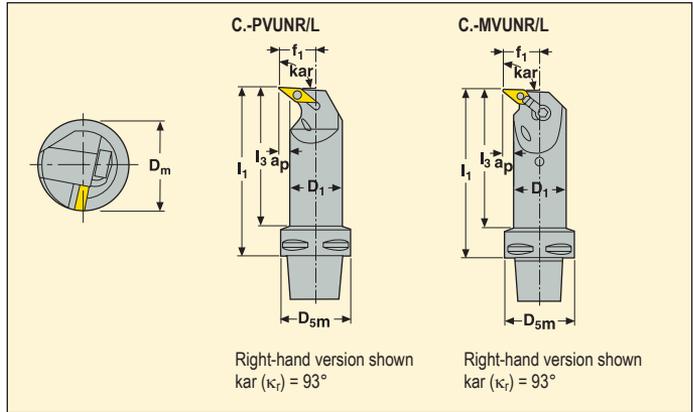
Please check availability in current price and stock-list

*Ordered separately

Toolholders for inserts VNGA, VNGM, VNGP, VNMA, VNMG, VNMP and VNMU



- For insert program, see pages 292-294, 324-325
- γ_o = Rake angle, λ_s = Inclination angle
- For holder code key, see pages 594-595



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch									γ_o	λ_s	lbs	
				D ₁	D _{5m}	f ₁	l ₁	l ₃	a _p	D _m min						
C4	5/16	71983	C4-PVUNR -17090-13	0.98	1.57	0.67	3.54	2.68	0.16	1.26	-5	-14	1.1	VN..21.53.		
		72605	-22110-13	1.26	1.57	0.87	4.33	3.54	0.20	1.57	-5	-12	1.5	VN..21.53.		
		71980	C4-PVUNL -17090-13	0.98	1.57	0.67	3.54	2.68	0.16	1.26	-5	-14	1.1	VN..21.53.		
		92068	-22110-13	1.26	1.57	0.87	4.33	3.54	0.20	1.57	-5	-12	1.5	VN..21.53.		
	3/8	72631	C4-MVUNR -22110-16	1.26	1.57	0.87	4.33	3.54	0.20	1.57	-5	-12	1.5	VN..33.		
		71985	-27120-16	1.57	1.57	1.06	4.72	3.94	0.24	1.97	-5	-10	2.4	VN..33.		
		72638	C4-MVUNL -22110-16	1.26	1.57	0.87	4.33	3.54	0.20	1.57	-5	-12	1.5	VN..33.		
		71981	-27120-16	1.57	1.57	1.06	4.72	3.94	0.24	1.97	-5	-10	2.4	VN..33.		
	5/16	92071	C5-PVUNR -22110-13	1.26	1.97	0.87	4.33	3.50	0.20	1.57	-5	-12	2.0	VN..21.53.		
		92070	C5-PVUNL -22110-13	1.26	1.97	0.87	4.33	3.50	0.20	1.57	-5	-12	2.0	VN..21.53.		
	3/8	71991	C5-MVUNR -22110-16	1.26	1.97	0.87	4.33	3.50	0.20	1.57	-5	-12	2.0	VN..33.		
		72664	-27140-16	1.57	1.97	1.06	5.51	4.69	0.24	1.97	-5	-10	3.1	VN..33.		
		71989	C5-MVUNL -22110-16	1.26	1.97	0.87	4.33	3.50	0.20	1.57	-5	-12	2.0	VN..33.		
		72679	-27140-16	1.57	1.97	1.06	5.51	4.69	0.24	1.97	-5	-10	3.1	VN..33.		
	C6	3/8	72035	C6-MVUNR -22120-16	1.26	2.48	0.87	4.72	3.46	0.20	1.57	-5	-12	2.9	VN..33.	
			72036	-27145-16	1.57	2.48	1.06	5.71	4.72	0.24	1.97	-5	-10	4.0	VN..33.	
72033			C6-MVUNL -22120-16	1.26	2.48	0.87	4.72	3.46	0.20	1.57	-5	-12	2.9	VN..33.		
72034			-27145-16	1.57	2.48	1.06	5.71	4.72	0.24	1.97	-5	-10	4.0	VN..33.		

Spare Parts, Parts included in delivery

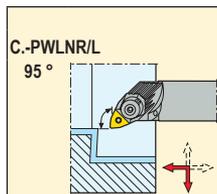
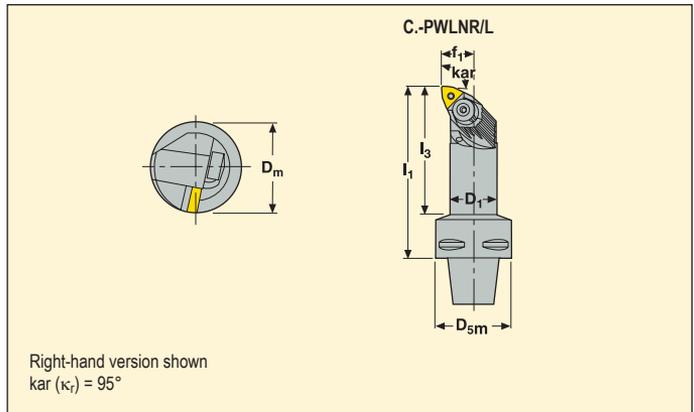
For size	Cantilever clamp	Clamp screw	Insert key	Insert pin	Insert shim	Shim/clamp key	Shim pin
-13	-	-	T09P-2	PL1403-T09P	PVN2.522	-	-
-16	MC20	LD6021-T09P	-	-	VSN324	T09P-2	MN0909L-T09P

Please check availability in current price and stock-list

Toolholders for inserts WNGA, WNGP, WNMA, WNMG, WNMM and WNMP



- For insert program, see pages 295-299, 327
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 594-595



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch							γ_0°	λ_s°	lbs	
				D ₁	D _{5m}	f ₁	I ₁	I ₃	D _m min					
C4	3/8	12937	C4-PWLNLR -13080-06	0.79	1.57	0.51	3.15	2.24	0.98	-5	-11	0.9	WN..33.	
		92073	-17090-06	0.98	1.57	0.67	3.54	2.68	1.26	-5	-12	1.1	WN..33.	
		92075	-22110-06	1.26	1.57	0.87	4.33	3.50	1.57	-5	-12	1.5	WN..33.	
		12922	C4-PWLNLR -13080-06	0.79	1.57	0.51	3.15	2.24	0.98	-5	-11	0.9	WN..33.	
		92072	-17090-06	0.98	1.57	0.67	3.54	2.68	1.26	-5	-12	1.1	WN..33.	
		92074	-22110-06	1.26	1.57	0.87	4.33	3.50	1.57	-5	-12	1.5	WN..33.	
1/2		92077	C4-PWLNLR -22110-08	1.26	1.57	0.87	4.33	3.50	1.57	-5	-11	1.5	WN..43.	
		71982	-27120-08	1.57	1.57	1.06	4.72	3.94	1.97	-5	-8	2.2	WN..43.	
		92076	C4-PWLNLR -22110-08	1.26	1.57	0.87	4.33	3.50	1.57	-5	-11	1.5	WN..43.	
		71979	-27120-08	1.57	1.57	1.06	4.72	3.94	1.97	-5	-8	2.2	WN..43.	

Spare Parts, Parts included in delivery

Accessories*

For size	Insert shim	Setting screw	Shim pin	Wedge clamp	Wedge key	Wedge screw	Shim key
-13/17...-06	WAI313	L82511-T07P	PP1209-T09P	WNW06HD	T20P-7	WS1920-T20P	T09P-2
-22...-06	WAE323	L82511-T07P	PP1409-T09P	WNW06HD	T20P-7	WS1920-T20P	T09P-2
-08	WAI423	L82511-T07P	PP1415-T15P	WNW08HD	T25P-7	WS2325-T25P	T15P-2

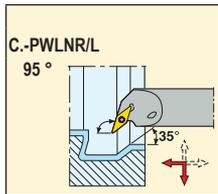
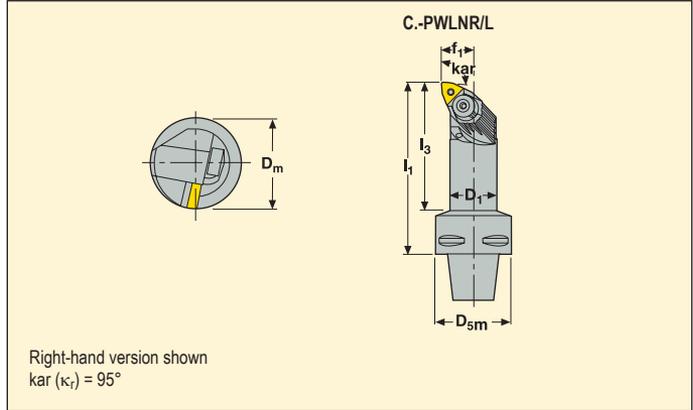
Please check availability in current price and stock-list

*Ordered separately

Toolholders for inserts WNGA, WNGP, WNMA, WNMG, WNMM and WNMP



- For insert program, see pages 295-299, 327
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 594-595



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch							γ_o°	λ_s°	lbs	
				D ₁	D _{5m}	f ₁	l ₁	l ₃	D _m min					
C5	3/8	71986	C5-PWLNL -13080-06	0.79	1.97	0.51	3.15	2.20	0.98	-5	-11	1.3	WN..33.	
		92078	-17090-06	0.98	1.97	0.67	3.54	2.64	1.26	-5	-12	1.5	WN..33.	
		94584	-22110-06	1.26	1.97	0.87	4.33	3.46	1.57	-5	-12	2.0	WN..33.	
	1/2	92080	C5-PWLNL -22110-08	1.26	1.97	0.87	4.33	3.46	1.57	-5	-11	2.0	WN..43.	
		94495	-27140-08	1.57	1.97	1.06	5.51	4.69	1.97	-5	-11	3.1	WN..43.	
	3/8	72015	C5-PWLNLR -13080-06	0.79	1.97	0.51	3.15	2.20	0.98	-5	-11	1.3	WN..33.	
		92079	-17090-06	0.98	1.97	0.67	3.54	2.64	1.26	-5	-12	1.5	WN..33.	
		94583	-22110-06	1.26	1.97	0.87	4.33	3.46	1.57	-5	-12	2.0	WN..33.	
	1/2	92081	C5-PWLNLR -22110-08	1.26	1.97	0.87	4.33	3.46	1.57	-5	-11	2.0	WN..43.	
		94494	-27140-08	1.57	1.97	1.06	5.51	4.69	1.97	-5	-11	3.1	WN..43.	
	C6	1/2	45763	C6-PWLNL -27140-08	1.57	2.48	1.06	5.51	4.53	1.97	-5	-8	3.7	WN..43.
			72038	-35175-08	1.97	2.48	1.38	6.89	5.98	2.48	-5	10	5.7	WN..43.
72040			C6-PWLNLR -27140-08	1.57	2.48	1.06	5.51	4.53	1.97	-5	-8	3.7	WN..43.	
72047			-35175-08	1.97	2.48	1.38	6.89	5.98	2.48	-5	-10	5.7	WN..43.	

Spare Parts, Parts included in delivery

For size	Insert shim	Setting screw	Shim pin	Wedge clamp	Wedge key	Wedge screw
-1...-06	WAI313	L82511-T07P	PP1209-T09P	WNW06HD	T20P-7	WS1920-T20P
-2...-06	WAE323	L82511-T07P	PP1409-T09P	WNW06HD	T20P-7	WS1920-T20P
-08	WAI423	L82511-T07P	PP1415-T15P	WNW08HD	T25P-7	WS2325-T25P

Accessories*

Shim key
T09P-2
T09P-2
T15P-2

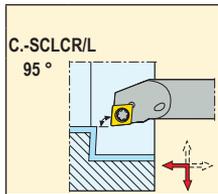
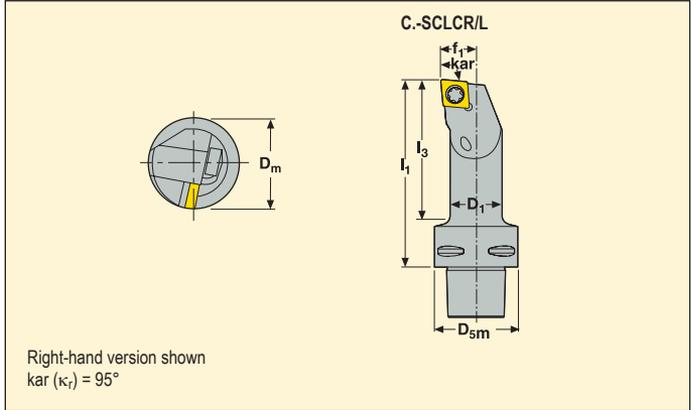
Please check availability in current price and stock-list

*Ordered separately

Toolholders for inserts CCGT, CCGW, CCMT and CCMW



- For insert program, see pages 236, 238-240, 300, 328
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 594-595



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch							γ_0°	λ_s°	lbs	
				D ₁	D _{5m}	f ₁	l ₁	l ₃	D _m min					
C4	3/8	84494	C4-SCLCR -11070-09	0.63	1.57	0.43	2.76	1.85	0.79	0	-12	0.9	CC..32.5	
		84495	-13080-09	0.79	1.57	0.51	3.15	2.24	0.98	0	-8	0.9	CC..32.5	
		69012	-17090-09	0.98	1.57	0.67	3.54	2.68	1.26	0	-6	1.1	CC..32.5	
		94169	-27080-09	1.57	1.57	1.06	3.15	2.36	1.97	0	-6	1.8	CC..32.5	
		65645	C4-SCLCL -11070-09	0.63	1.57	0.43	2.76	1.85	0.79	0	-12	0.9	CC..32.5	
		84496	-13080-09	0.79	1.57	0.51	3.15	2.24	0.98	0	-8	0.9	CC..32.5	
		94160	-17090-09	0.98	1.57	0.67	3.54	2.68	1.26	0	-6	1.1	CC..32.5	
	94164	-27080-09	1.57	1.57	1.06	3.15	2.36	1.97	0	-6	1.8	CC..32.5		
	1/2	94166	C4-SCLCR -17090-12	0.98	1.57	0.67	3.54	2.68	1.26	0	-6	1.1	CC..43	
		94167	-22110-12	1.26	1.57	0.87	4.33	3.50	1.57	0	-10	1.8	CC..43	
		94170	-27080-12	1.57	1.57	1.06	3.15	2.36	1.97	0	-8	1.5	CC..43	
		94161	C4-SCLCL -17090-12	0.98	1.57	0.67	3.54	2.68	1.26	0	-6	1.1	CC..43	
		94162	-22110-12	1.26	1.57	0.87	4.33	3.50	1.57	0	-10	1.8	CC..43	
		94165	-27080-12	1.57	1.57	1.06	3.15	2.36	1.97	0	-8	1.5	CC..43	

Spare Parts, Parts included in delivery

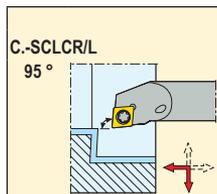
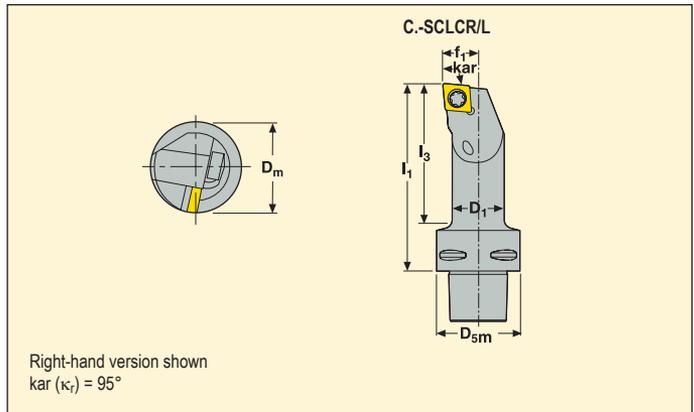
For size	Insert key	Insert screw	Insert shim	Shim screw
11070-09	T15P-2	C03508-T15P	-	-
13080-09	T15P-2	C03508-T15P	-	-
17090-09	T15P-2	C03510-T15P	-	-
17090-12	T15P-2	C04010-T15P	-	-
22110-12	T15P-2	C04014-T15P	SCN42.52	CA4010
27080-09	T15P-2	C03512-T15P	SCN322	CA3507
27080-12	T15P-2	C04014-T15P	SCN42.52	CA4010

Please check availability in current price and stock-list

Toolholders for inserts CCGT, CCGW, CCMT and CCMW



- For insert program, see pages 236, 238-240, 300, 328
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 594-595



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch								γ_o°	λ_s°	lbs	
				D ₁	D _{5m}	f ₁	I ₁	I ₃	D _m min						
C5	3/8	94268	C5-SCLCR -11070-09	0.63	1.97	0.43	2.76	1.81	0.79	0	-12	1.1	CC..32.5.		
		94270	-13080-09	0.79	1.97	0.51	3.15	2.20	0.98	0	-8	1.3	CC..32.5.		
		94271	-17090-09	0.98	1.97	0.67	3.54	2.64	1.26	0	-6	1.5	CC..32.5.		
		94279	-35100-09	1.97	1.97	1.38	3.94	3.15	1.97	0	-4	3.1	CC..32.5.		
		94249	C5-SCLCL -11070-09	0.63	1.97	0.43	2.76	1.81	0.79	0	-12	1.1	CC..32.5.		
		94253	-13080-09	0.79	1.97	0.51	3.15	2.20	0.98	0	-8	1.3	CC..32.5.		
		94255	-17090-09	0.98	1.97	0.67	3.54	2.64	1.26	0	-6	1.5	CC..32.5.		
	94266	-35100-09	1.97	1.97	1.38	3.94	3.15	1.97	0	-4	3.1	CC..32.5.			
	1/2	94273	C5-SCLCR -17090-12	0.98	1.97	0.67	3.54	2.64	1.26	0	-6	1.5	CC..43.		
		94274	-22110-12	1.26	1.97	0.87	4.33	3.46	1.57	0	-10	2.0	CC..43.		
		94275	-27140-12	1.57	1.97	1.06	5.51	4.69	1.97	0	-8	3.3	CC..43.		
		94280	-35100-12	1.97	1.97	1.38	3.94	3.15	1.97	0	-6	3.1	CC..43.		
		94256	C5-SCLCL -17090-12	0.98	1.97	0.67	3.54	2.64	1.26	0	-6	1.5	CC..43.		
		94257	-22110-12	1.26	1.97	0.87	4.33	3.46	1.57	0	-10	2.0	CC..43.		
			-27140-12	1.57	1.97	1.06	5.51	4.69	1.97	0	-8	3.3	CC..43.		

Spare Parts, Parts included in delivery

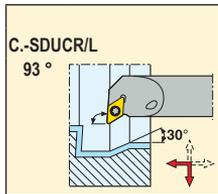
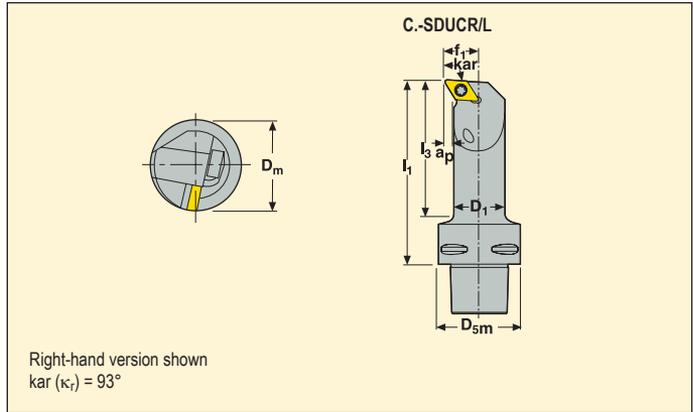
For size	Insert key	Insert screw	Insert shim	Shim screw
11070-09	T15P-2	C03508-T15P	-	-
13080-09	T15P-2	C03508-T15P	-	-
17090-09	T15P-2	C03510-T15P	-	-
17090-12	T15P-2	C04014-T15P	SCN42.52	CA4010
22110-12	T15P-2	C04014-T15P	SCN42.52	CA4010
27140-12	T15P-2	C04014-T15P	SCN42.52	CA4010
35100-09	T15P-2	C03512-T15P	SCN322	CA3507
35100-12	T15P-2	C04014-T15P	SCN42.52	CA4010

Please check availability in current price and stock-list

Toolholders for inserts DCGT, DCGW, DCMT, DCMW and DCMX



- For insert program, see pages 250-253, 303, 329
- γ_o = Rake angle, λ_s = Inclination angle
- For holder code key, see pages 594-595



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch								γ_o	λ_s	lbs	
				D ₁	D _{5m}	f ₁	l ₁	l ₃	a _p	D _m min					
C3	1/4	94092	C3-SDUCR -11065-07	0.63	1.26	0.43	2.56	1.89	0.10	0.79	0	-8	0.44	DC..21.5.	
		94084	C3-SDUCL -11065-07	0.63	1.26	0.43	2.56	1.89	0.10	0.79	0	-8	0.44	DC..21.5.	
	3/8	94095	C3-SDUCR -13075-11	0.79	1.26	0.51	2.95	2.32	0.10	0.98	0	-8	0.66	DC..32.5.	
		94099	-17090-11	0.98	1.26	0.67	3.54	2.91	0.16	1.26	0	-6	0.88	DC..32.5.	
		94101	-22096-11	1.26	1.26	0.87	3.78	3.23	0.20	1.57	0	-6	1.32	DC..32.5.	
		94086	C3-SDUCL -13075-11	0.79	1.26	0.51	2.95	2.32	0.10	0.98	0	-8	0.66	DC..32.5.	
		94088	-17090-11	0.98	1.26	0.67	3.54	2.91	0.16	1.26	0	-6	0.88	DC..32.5.	
		94091	-22096-11	1.26	1.26	0.87	3.78	3.23	0.20	1.57	0	-6	1.32	DC..32.5.	
		C4	1/4	94180	C4-SDUCR -11070-07	0.63	1.57	0.43	2.76	1.85	0.10	0.79	0	-8	0.88
94173	C4-SDUCL -11070-07			0.63	1.57	0.43	2.76	1.85	0.10	0.79	0	-8	0.88	DC..21.5.	
3/8	65648		C4-SDUCR -13080-11	0.79	1.57	0.51	3.15	2.24	0.10	0.98	0	-8	0.88	DC..32.5.	
	94182		-17090-11	0.98	1.57	0.67	3.54	2.68	0.16	1.26	0	-6	1.10	DC..32.5.	
	94184		-22110-11	1.26	1.57	0.87	4.33	3.50	0.20	1.57	0	-6	1.76	DC..32.5.	
	94185		-27080-11	1.57	1.57	1.06	3.15	2.36	0.24	1.97	0	-6	1.54	DC..32.5.	
	68289		C4-SDUCL -13080-11	0.79	1.57	0.51	3.15	2.24	0.10	0.98	0	-8	0.88	DC..32.5.	
	94176		-17090-11	0.98	1.57	0.67	3.54	2.68	0.16	1.26	0	-6	1.10	DC..32.5.	
	94178		-22110-11	1.26	1.57	0.87	4.33	3.50	0.20	1.57	0	-6	1.76	DC..32.5.	
	94179		-27080-11	1.57	1.57	1.06	3.15	2.36	0.24	1.97	0	-6	1.54	DC..32.5.	

Spare Parts, Parts included in delivery

For size	Insert key	Insert screw	Insert shim	Shim screw
-07	T07P-2	C02506-T07P	-	-
-13...-11	T15P-2	C03508-T15P	-	-
-17...-11	T15P-2	C03510-T15P	-	-
-2...-11	T15P-2	C03512-T15P	126.19-620	CA3507

Accessories*

Shim key
-
-
-
9/64SMS875

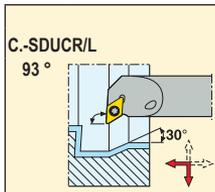
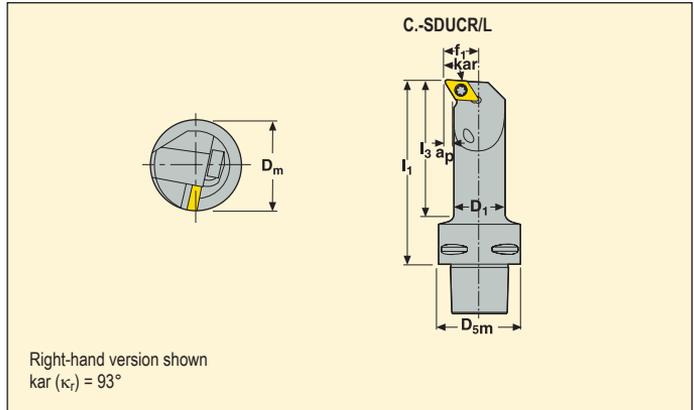
Please check availability in current price and stock-list

*Ordered separately

Toolholders for inserts DCGT, DCGW, DCMT, DCMW and DCMX



- For insert program, see pages 250-253, 303, 329
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 594-595



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch								γ_0°	λ_s°	lbs	
				D ₁	D _{5m}	f ₁	l ₁	l ₃	a _p	D _m min					
C5	1/4	94291	C5-SDUCR -11070-07	0.63	1.97	0.43	2.76	1.81	0.10	0.79	0	-8	1.1	DC..21.5.	
		94284	C5-SDUCL -11070-07	0.63	1.97	0.43	2.76	1.81	0.10	0.79	0	-8	1.1	DC..21.5.	
	3/8	94293	C5-SDUCR -13080-11	0.79	1.97	0.51	3.15	2.20	0.10	0.98	0	-8	1.3	DC..32.5.	
		94295	-17090-11	0.98	1.97	0.67	3.54	2.64	0.16	1.26	0	-6	1.5	DC..32.5.	
		94297	-22110-11	1.26	1.97	0.87	4.33	3.46	0.20	1.57	0	-6	2.0	DC..32.5.	
		94298	-35100-11	1.97	1.97	1.38	3.94	3.15	0.24	2.48	0	-4	3.1	DC..32.5.	
		94285	C5-SDUCL -13080-11	0.79	1.97	0.51	3.15	2.20	0.10	0.98	0	-8	1.3	DC..32.5.	
		94287	-17090-11	0.98	1.97	0.67	3.54	2.64	0.16	1.26	0	-6	1.5	DC..32.5.	
		94290	-35100-11	1.97	1.97	1.38	3.94	3.15	0.24	2.48	0	-4	3.1	DC..32.5.	

Spare Parts, Parts included in delivery

For size	Insert screw	Insert shim	Shim screw	Insert key
-07	C02506-T07P	-	-	T07P-2
-13....11	C03508-T15P	-	-	T15P-2
-17....11	C03510-T15P	-	-	T15P-2
-22/35....11	C03512-T15P	126.19-620	CA3507	T15P-2

Accessories*

Shim key
-
-
-
9/64SMS875

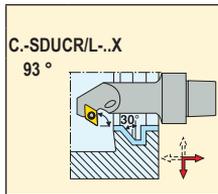
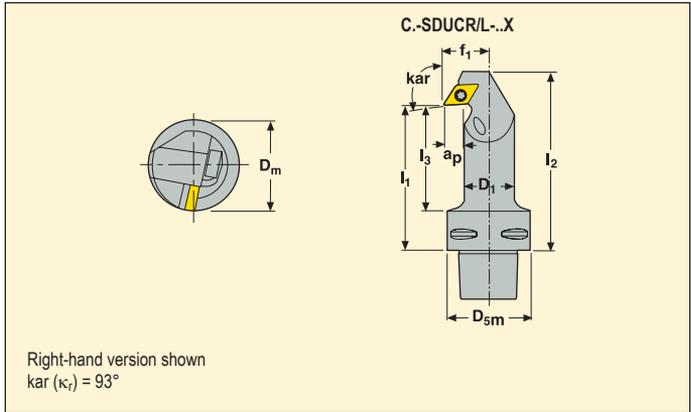
Please check availability in current price and stock-list

*Ordered separately

Toolholders for inserts DCGT, DCGW, DCMT and DCMW



- For insert program, see pages 250-252, 303, 329
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 594-595



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch								γ_o°	λ_s°	lbs	
				D ₁	D _{5m}	f ₁	l ₁	l ₃	l ₂	a _p	D _m min				
C4	1/4	89627	C4-SDUCR -13070-07X	0.63	1.57	0.51	2.76	1.85	3.19	0.16	0.87	0	-6	0.9	DC..21.5.
		94181	-15080-07X	0.79	1.57	0.59	3.15	2.24	3.62	0.16	1.06	0	-3	0.9	DC..21.5.
		94183	-18090-07X	0.98	1.57	0.71	3.54	2.68	4.02	0.18	1.26	0	-3	1.1	DC..21.5.
		94174	C4-SDUCL -13070-07X	0.63	1.57	0.51	2.76	1.85	3.19	0.16	0.87	0	-6	0.9	DC..21.5.
		94175	-15080-07X	0.79	1.57	0.59	3.15	2.24	3.62	0.16	1.06	0	-3	0.9	DC..21.5.
		94177	-18090-07X	0.98	1.57	0.71	3.54	2.68	4.02	0.18	1.26	0	-3	1.1	DC..21.5.
C5	1/4	94294	C5-SDUCR -15080-07X	0.79	1.97	0.59	3.15	2.20	3.62	0.16	1.06	0	-3	1.3	DC..21.5.
		94296	-18090-07X	0.98	1.97	0.71	3.54	2.64	4.02	0.18	1.26	0	-3	1.5	DC..21.5.
		94286	C5-SDUCL -15080-07X	0.79	1.97	0.59	3.15	2.20	3.62	0.16	1.06	0	-3	1.3	DC..21.5.
		94288	-18090-07X	0.98	1.97	0.71	3.54	2.64	4.02	0.18	1.26	0	-3	1.5	DC..21.5.

Spare Parts, Parts included in delivery

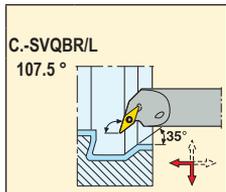
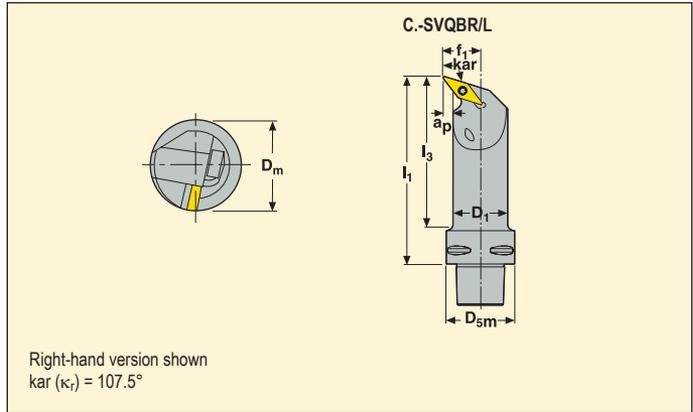
For size	Insert key	Insert screw
-07X	T07P-2	C02506-T07P

Please check availability in current price and stock-list

Toolholders for inserts VBGT, VBGW, VBMT, VBW and VCGT



- For insert program, see pages 289-291, 323, 331
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 594-595



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch							γ_o°	λ_s°	lbs		
				D ₁	D _{5m}	f ₁	l ₁	l ₃	a _p	D _m min					
C3	1/4	94153	C3-SVQBR -13070-11	0.63	1.26	0.51	2.76	2.09	0.16	0.87	0	-7	0.44	VB..21.5.	
		94154	-15080-11	0.79	1.26	0.59	3.15	2.52	0.16	1.06	0	-5	0.66	VB..21.5.	
		94147	C3-SVQBL -13070-11	0.63	1.26	0.51	2.76	2.09	0.16	0.87	0	-7	0.44	VB..21.5.	
		94149	-15080-11	0.79	1.26	0.59	3.15	2.52	0.16	1.06	0	-5	0.66	VB..21.5.	
C4	1/4	94239	C4-SVQBR -13070-11	0.63	1.57	0.51	2.76	1.85	0.16	0.98	0	-7	0.66	VB..21.5.	
		94241	-15080-11	0.79	1.57	0.59	3.15	2.28	0.16	1.06	0	-5	0.88	VB..21.5.	
		94231	C4-SVQBL -13070-11	0.63	1.57	0.51	2.76	1.85	0.16	0.98	0	-7	0.66	VB..21.5.	
		94232	-15080-11	0.79	1.57	0.59	3.15	2.28	0.16	1.06	0	-5	0.88	VB..21.5.	
	3/8		94245	C4-SVQBR -22110-16	1.26	1.57	0.87	4.33	3.50	0.20	1.57	0	-8	1.54	VB../VC..33.
			94246	-27080-16	1.57	1.57	1.06	3.15	2.36	0.20	1.97	0	-8	1.54	VB../VC..33.
			94247	-27120-16	1.57	1.57	1.06	4.72	3.94	0.24	1.97	0	-8	2.43	VB../VC..33.
			94233	C4-SVQBL -18090-16	0.98	1.57	0.71	3.54	2.68	0.18	1.30	0	-6	1.10	VB../VC..33.
			94235	-22110-16	1.26	1.57	0.87	4.33	3.50	0.20	1.57	0	-8	1.54	VB../VC..33.
			94237	-27080-16	1.57	1.57	1.06	3.15	2.36	0.20	1.97	0	-8	1.54	VB../VC..33.
			94238	-27120-16	1.57	1.57	1.06	4.72	3.94	0.24	1.97	0	-8	2.43	VB../VC..33.

Spare Parts, Parts included in delivery

For size	Insert key	Insert screw	Insert shim	Shim screw
-11	T07P-2	C02506-T07P	-	-
-18...-16	T15P-2	C03510-T15P	-	-
-22/27...-16	T15P-2	C03512-T15P	171.19-620	CA3507

Accessories*

Shim key
-
-
9/64SMS875

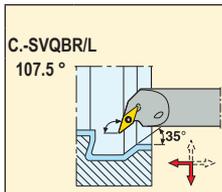
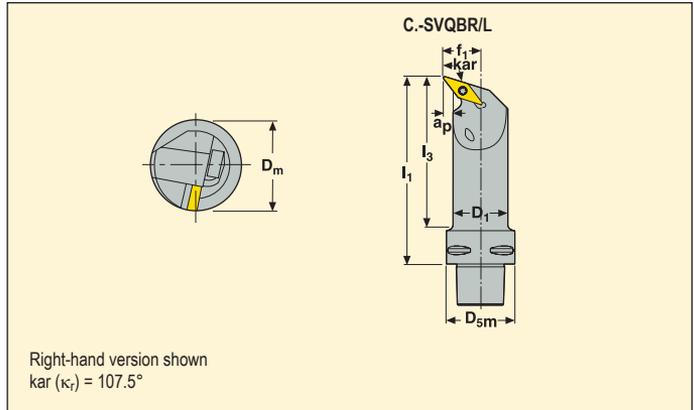
Please check availability in current price and stock-list

*Ordered separately

Toolholders for inserts VBGT, VBGW, VBMT, VBWM and VCGT



- For insert program, see pages 289-291, 323, 331
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 594-595



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch								γ_o°	λ_s°	lbs	
				D ₁	D _{5m}	f ₁	l ₁	l ₃	a _p	D _m min					
C5	1/4	94301	C5-SVQBR -15080-11	0.79	1.97	0.59	3.15	2.24	0.16	1.06	0	-5	1.1	VB..21.5.	
		94390	C5-SVQBL -15080-11	0.79	1.97	0.59	3.15	2.24	0.16	1.06	0	-5	1.1	VB..21.5.	
	3/8	94302	C5-SVQBR -18090-16	0.98	1.97	0.71	3.54	2.64	0.18	1.30	0	-6	1.5	VB..VC..33.	
		94303	-22110-16	1.26	1.97	0.87	4.33	3.46	0.20	1.57	0	-8	2.0	VB..VC..33.	
		94305	-27140-16	1.57	1.97	1.06	5.51	4.69	0.24	1.97	0	-8	3.1	VB..VC..33.	
		94307	-35100-16	1.97	1.97	1.38	3.94	3.15	0.35	2.48	0	-7	2.9	VB..VC..33.	
		94308	-35150-16	1.97	1.97	1.38	5.91	5.12	0.35	2.48	0	-7	4.2	VB..VC..33.	
		94671	C5-SVQBL -18090-16	0.98	1.97	0.71	3.54	2.64	0.18	1.30	0	-6	1.5	VB..VC..33.	
		94672	-22110-16	1.26	1.97	0.87	4.33	3.46	0.20	1.57	0	-8	2.0	VB..VC..33.	
		94674	-35100-16	1.97	1.97	1.38	3.94	3.15	0.35	2.48	0	-7	2.9	VB..VC..33.	
94299	-35150-16	1.97	1.97	1.38	5.91	5.12	0.35	2.48	0	-7	4.2	VB..VC..33.			
C6	3/8	94336	C6-SVQBR -22120-16	1.26	2.48	0.87	4.72	3.70	0.20	1.57	0	-8	2.9	VB..VC..33.	
		94337	-27145-16	1.57	2.48	1.06	5.71	4.72	0.24	1.97	0	-8	4.2	VB..VC..33.	
		94338	-35175-16	1.97	2.48	1.38	6.89	5.98	0.35	2.48	0	-8	6.0	VB..VC..33.	
		94333	C6-SVQBL -22120-16	1.26	2.48	0.87	4.72	3.70	0.20	1.57	0	-8	2.9	VB..VC..33.	
		94334	-27145-16	1.57	2.48	1.06	5.71	4.72	0.24	1.97	0	-8	4.2	VB..VC..33.	
		94335	-35175-16	1.97	2.48	1.38	6.89	5.98	0.35	2.48	0	-8	6.0	VB..VC..33.	

Spare Parts, Parts included in delivery

For size	Insert key	Insert screw	Insert shim	Shim screw
-1...-16	T15P-2	C03510-T15P	-	-
-11	T07P-2	C02506-T07P	-	-
-2/3...-16	T15P-2	C03512-T15P	171.19-620	CA3507

Accessories*

Shim key
-
-
9/64SMS875

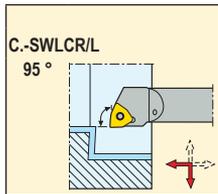
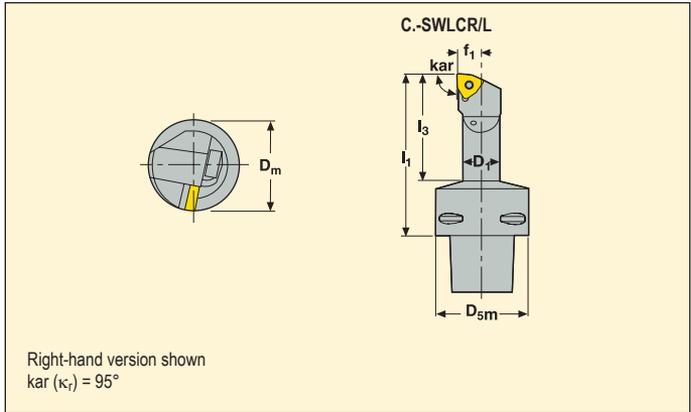
Please check availability in current price and stock-list

*Ordered separately

Toolholders for inserts WCMT



- For insert program, see pages 295
- γ_0° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 594-595



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch							γ_0°	λ_s°	lbs		
				D ₁	D _{5m}	f ₁	l ₁	l ₃	D _m min						
C4	3/8	42901	C4-SWLCR -11070-06	0.63	1.57	0.43	2.76	1.85	0.79	0	-5	0.9	WCMT32.5.		
		42916	-13080-06	0.79	1.57	0.51	3.15	2.24	0.98	0	-5	1.1	WCMT32.5.		
		42902	C4-SWLCR -11070-06	0.63	1.57	0.43	2.76	1.85	0.79	0	-5	0.9	WCMT32.5.		
		42917	-13080-06	0.79	1.57	0.51	3.15	2.24	0.98	0	-5	1.1	WCMT32.5.		
C5	3/8	42903	C5-SWLCR -11070-06	0.63	1.97	0.43	2.76	1.81	0.79	0	-5	1.1	WCMT32.5.		
		42918	-13080-06	0.79	1.97	0.51	3.15	2.20	0.98	0	-5	2.0	WCMT32.5.		
		42905	C5-SWLCR -11070-06	0.63	1.97	0.43	2.76	1.81	0.79	0	-5	1.1	WCMT32.5.		
		42919	-13080-06	0.79	1.97	0.51	3.15	2.20	0.98	0	-5	2.0	WCMT32.5.		

Spare Parts, Parts included in delivery

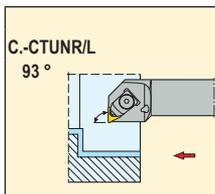
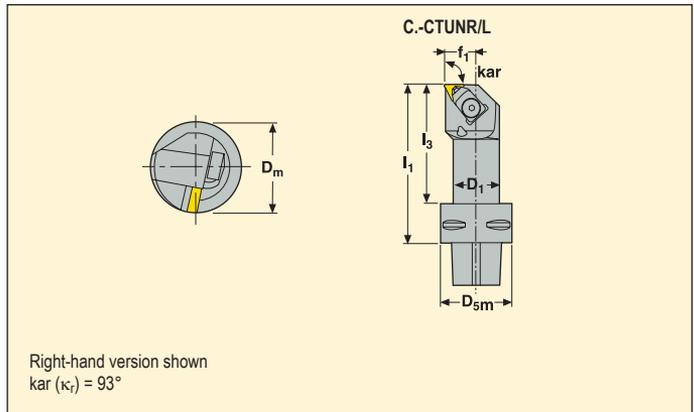
For size	Insert key	Insert screw
C4-	T15P-2	C03510-T15P
C5-	T15P-2	C03508-T15P

Please check availability in current price and stock-list

Toolholders for PCBN inserts TNGN, TNGX and TNMN



- For insert program, see pages 318-321
- γ_o° = Rake angle, λ_s° = Inclination angle
- For holder code key, see pages 594-595



Capto size	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch							γ_o°	λ_s°	lbs	
				D ₁	D _{5m}	f ₁	l ₁	l ₃	D _m min					
C4	1/4	35769	C4-CTUNR -17090-11	0.98	1.57	0.67	3.54	2.68	1.26	-6	-12	1.3	TN..22.	
		35770	-22110-11	1.26	1.57	0.87	4.33	3.46	1.57	-6	-12	1.8	TN..22.	
		35771	C4-CTUNL -17090-11	0.98	1.57	0.67	3.54	2.68	1.26	-6	-12	1.3	TN..22.	
		35772	-22110-11	1.26	1.57	0.87	4.33	3.46	1.57	-6	-12	1.8	TN..22.	
C5	1/4	35835	C5-CTUNR -17090-11	0.98	1.97	0.67	3.54	2.64	1.26	-6	-12	2.2	TN..22.	
		35774	-22110-11	1.26	1.97	0.87	4.33	3.50	1.57	-6	-12	2.2	TN..22.	
		37557	C5-CTUNL -17090-11	0.98	1.97	0.67	3.54	2.64	1.26	-6	-12	2.2	TN..22.	
		35777	-22110-11	1.26	1.97	0.87	4.33	3.50	1.57	-6	-12	2.2	TN..22.	
C6	1/4	35781	C6-CTUNR -22110-11	1.26	2.48	0.87	4.33	3.50	1.57	-6	-12	2.9	TN..22.	
		35783	C6-CTUNL -22110-11	1.26	2.48	0.87	4.33	3.50	1.57	-6	-12	2.9	TN..22.	

Spare Parts, Parts included in delivery

For size	Cantilever clamp	Clamp key	Insert shim	Shim screw
-11	CC14	4SMS795	CTN110308	CS2507-T07P

Accessories*

Shim key
T07P-2

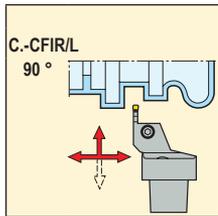
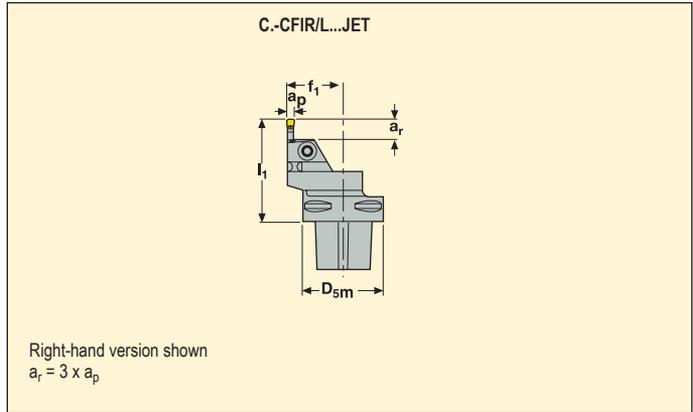
Please check availability in current price and stock-list

*Ordered separately

Toolholders for inserts LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 425-438, 440-441



Capto size	EDP No.	Part No.	Dimensions in inch					lbs	Seat size	Insert	
			D _{5m}	f ₁	l ₁	a _r **	DCINN3*				
C4	3	37995	C4-CFIR-27060-03JET	1.57	1.06	2.36	0.35	7.68	0.94	3	LC..1603..
		37992	C4-CFIL-27060-03JET	1.57	1.06	2.36	0.35	7.68	0.94	3	LC..1603..
	4	37996	C4-CFIR-27060-04JET	1.57	1.06	2.36	0.47	7.68	0.91	4	LC..1604..
		37993	C4-CFIL-27060-04JET	1.57	1.06	2.36	0.47	7.68	0.91	4	LC..1604..
	5	37997	C4-CFIR-27065-05JET	1.57	1.06	2.56	0.59	7.68	0.95	5	LC..1605..
		37994	C4-CFIL-27065-05JET	1.57	1.06	2.56	0.59	7.68	0.95	5	LC..1605..
C5	3	38002	C5-CFIR-35060-03JET	1.97	1.38	2.36	0.35	7.68	1.46	3	LC..1603..
		37998	C5-CFIL-35060-03JET	1.97	1.38	2.36	0.35	7.68	1.46	3	LC..1603..
	4	38003	C5-CFIR-35065-04JET	1.97	1.38	2.56	0.47	7.68	1.48	4	LC..1604..
		37999	C5-CFIL-35065-04JET	1.97	1.38	2.56	0.47	7.68	1.48	4	LC..1604..
	5	38004	C5-CFIR-35065-05JET	1.97	1.38	2.56	0.59	7.68	1.39	5	LC..1605..
		38000	C5-CFIL-35065-05JET	1.97	1.38	2.56	0.59	7.68	1.39	5	LC..1605..
	6	38005	C5-CFIR-35075-06JET	1.97	1.38	2.95	0.71	7.68	1.75	6	LC..1606..
		38001	C5-CFIL-35075-06JET	1.97	1.38	2.95	0.71	7.68	1.75	6	LC..1606..

*DCINN3 – minimum bore diameter for internal application, see page 364.

**Max depth of cut for LCGF/LCMF16 = 0.551 inch

Spare Parts, Parts included in delivery

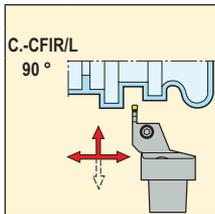
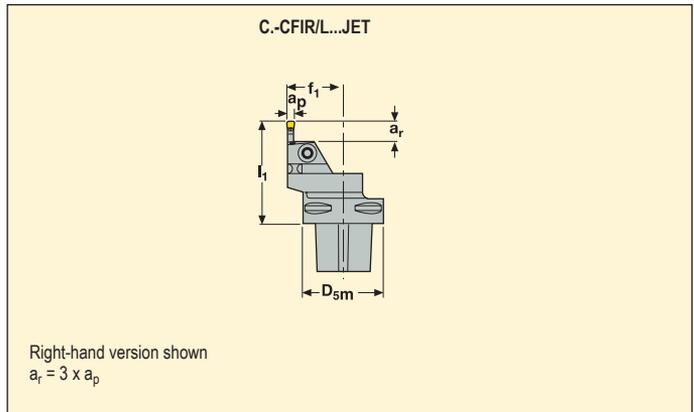
For holder	Clamp key	Clamp screw	Torque value in/lbs
CFIR/L...-03	4SMS795	TCEI0513	53
CFIR/L...-04	5SMS795	TCEI0613	71
CFIR/L...-05	5SMS795	TCEI0613	71
CFIR/L...-06	6SMS795	TCEI0815	88

Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 425-438, 440-441



Capto size		EDP No.	Part No.	Dimensions in inch						Seat size	
				D _{5m}	f ₁	l ₁	a _r **	DCINN3*			
C6	3	38016	C6-CFIR-45065-03JET	2.48	1.77	2.56	0.35	7.68	2.43	3	LC..1603..
		38011	C6-CFIL-45065-03JET	2.48	1.77	2.56	0.35	7.68	2.43	3	LC..1603..
4	4	38017	C6-CFIR-45065-04JET	2.48	1.77	2.56	0.47	7.68	2.26	4	LC..1604..
		38012	C6-CFIL-45065-04JET	2.48	1.77	2.56	0.47	7.68	2.26	4	LC..1604..
5	5	38018	C6-CFIR-45070-05JET	2.48	1.77	2.76	0.59	7.68	2.41	5	LC..1605..
		38013	C6-CFIL-45070-05JET	2.48	1.77	2.76	0.59	7.68	2.41	5	LC..1605..
6	6	38019	C6-CFIR-45075-06JET	2.48	1.77	2.95	0.71	7.68	2.51	6	LC..1606..
		38014	C6-CFIL-45075-06JET	2.48	1.77	2.95	0.71	7.68	2.51	6	LC..1606..
8	8	38020	C6-CFIR-45085-08JET	2.48	1.77	3.35	0.94	7.68	2.87	8	LC..3008..
		38015	C6-CFIL-45085-08JET	2.48	1.77	3.35	0.94	7.68	2.87	8	LC..3008..

*DCINN3 – minimum bore diameter for internal application, see page 364.

**Max depth of cut for LCGF/LCMF16 = 0.551 inch

Spare Parts, Parts included in delivery

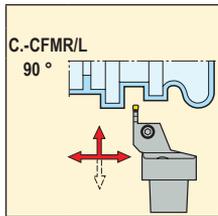
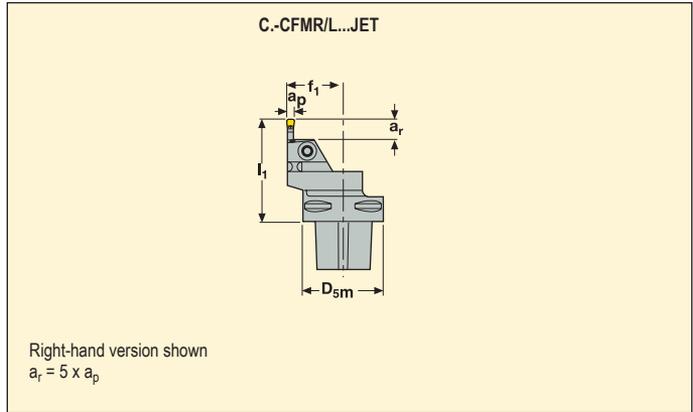
For holder	Clamp key	Clamp screw	Torque value in/lbs
CFIR/L...-03	4SMS795	TCEI0513	53
CFIR/L...-04	5SMS795	TCEI0613	71
CFIR/L...-05	5SMS795	TCEI0613	71
CFIR/L...-06	6SMS795	TCEI0815	88
CFIR/L...-08	6SMS795	TCEI1020	133

Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 425-438, 440-441



Capto size	EDP No.	Part No.	Dimensions in inch					lbs	Seat size	Insert	
			D _{sm}	f ₁	l ₁	a _r **	DCINN3*				
C4	3	56655	C4-CFMR-27070-03JET	1.57	1.06	2.76	0.59	7.68	1.04	3	LC..1603..
		56802	C4-CFML-27070-03JET	1.57	1.06	2.76	0.59	7.68	1.04	3	LC..1603..
	4	56672	C4-CFMR-27070-04JET	1.57	1.06	2.76	0.79	7.68	0.97	4	LC..1604..
		56803	C4-CFML-27070-04JET	1.57	1.06	2.76	0.79	7.68	0.97	4	LC..1604..
C5	3	56701	C5-CFMR-35070-03JET	1.97	1.38	2.76	0.59	7.68	1.53	3	LC..1603..
		56804	C5-CFML-35070-03JET	1.97	1.38	2.76	0.59	7.68	1.53	3	LC..1603..
	4	56702	C5-CFMR-35075-04JET	1.97	1.38	2.95	0.79	7.68	1.52	4	LC..1604..
		56805	C5-CFML-35075-04JET	1.97	1.38	2.95	0.79	7.68	1.52	4	LC..1604..
	5	56703	C5-CFMR-35075-05JET	1.97	1.38	2.95	0.98	7.68	1.45	5	LC..1605..
		56806	C5-CFML-35075-05JET	1.97	1.38	2.95	0.98	7.68	1.45	5	LC..1605..
	6	56704	C5-CFMR-35085-06JET	1.97	1.38	3.35	1.18	7.68	1.73	6	LC..1606..
		56904	C5-CFML-35085-06JET	1.97	1.38	3.35	1.18	7.68	1.73	6	LC..1606..

*DCINN3 – minimum bore diameter for internal application, see page 364.

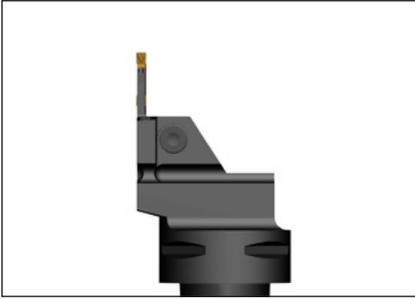
**Max depth of cut for LCGF/LCMF16 = 0.551 inch

Spare Parts, Parts included in delivery

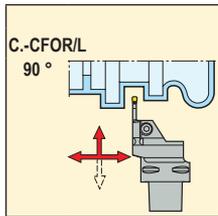
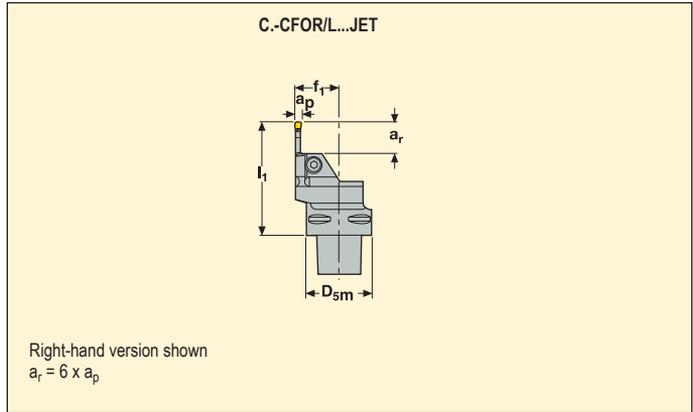
For holder	Clamp key	Clamp screw	Torque value in/lbs
CFMR/L...-03	4SMS795	TCEI0513	53
CFMR/L...-04	5SMS795	TCEI0613	71
CFMR/L...-05	5SMS795	TCEI0613	71
CFMR/L...-06	6SMS795	TCEI0815	88

Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 425-438, 440-441



Capto size	EDP No.	Part No.	Dimensions in inch					lbs	Seat size	Image	
			D _{sm}	f ₁	l ₁	a _r **	DCINN3*				
C4	3	59334	C4-CFOR-27070-03-JET	1.57	1.06	2.76	0.71	7.68	0.97	3	LC..1603..
		59199	C4-CFOL-27070-03-JET	1.57	1.06	2.76	0.71	7.68	0.97	3	LC..1603..
	4	59335	C4-CFOR-27080-04-JET	1.57	1.06	3.15	0.94	7.68	1.08	4	LC..1604..
		59332	C4-CFOL-27080-04-JET	1.57	1.06	3.15	0.94	7.68	1.08	4	LC..1604..
	5	59336	C4-CFOR-27085-05-JET	1.57	1.06	3.35	1.18	7.68	1.06	5	LC..1605..
		59333	C4-CFOL-27085-05-JET	1.57	1.06	3.35	1.18	7.68	1.06	5	LC..1605..
C5	3	59341	C5-CFOR-35070-03-JET	1.97	1.38	2.76	0.71	7.68	1.54	6	LC..1603..
		59337	C5-CFOL-35070-03-JET	1.97	1.38	2.76	0.71	7.68	1.54	6	LC..1603..
	4	59342	C5-CFOR-35080-04-JET	1.97	1.38	3.15	0.94	7.68	1.57	4	LC..1604..
		59338	C5-CFOL-35080-04-JET	1.97	1.38	3.15	0.94	7.68	1.57	4	LC..1604..
	5	59343	C5-CFOR-35085-05-JET	1.97	1.38	3.35	1.18	7.68	1.57	5	LC..1605..
		59339	C5-CFOL-35085-05-JET	1.97	1.38	3.35	1.18	7.68	1.57	5	LC..1605..
	6	59344	C5-CFOR-35100-06-JET	1.97	1.38	3.94	1.42	7.68	2.04	6	LC..1606..
		59340	C5-CFOL-35100-06-JET	1.97	1.38	3.94	1.42	7.68	2.04	6	LC..1606..

*DCINN3 – minimum bore diameter for internal application, see page 364.

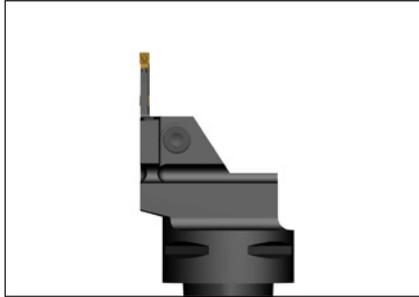
**Max depth of cut for LCGF/LCMF16 = 0.551 inch

Spare Parts, Parts included in delivery

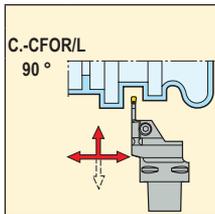
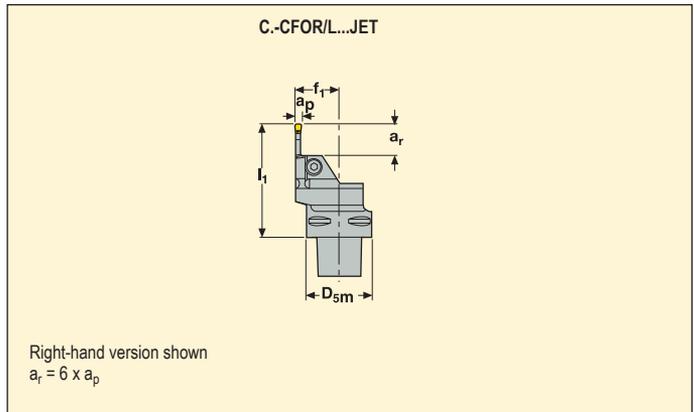
For holder	Clamp key	Clamp screw	Torque value in/lbs
CFOR/L...-03	4SMS795	TCEI0513	53
CFOR/L...-04	5SMS795	TCEI0613	71
CFOR/L...-05	5SMS795	TCEI0613	71
CFOR/L...-06	6SMS795	TCEI0815	88

Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 425-438, 440-441



Capto size	EDP No.	Part No.	Dimensions in inch					lbs	Seat size	Image
			D _{5m}	f ₁	l ₁	a _r **	DCINN3*			
C6	59350	C6-CFOR-45075-03-JET	2.48	1.77	2.95	0.71	7.68	2.47	3	LC..1603..
	59345	C6-CFOL-45075-03-JET	2.48	1.77	2.95	0.71	7.68	2.47	3	LC..1603..
4	59351	C6-CFOR-45080-04-JET	2.48	1.77	3.15	0.94	7.68	2.47	4	LC..1604..
	59346	C6-CFOL-45080-04-JET	2.48	1.77	3.15	0.94	7.68	2.47	4	LC..1604..
5	59352	C6-CFOR-45090-05-JET	2.48	1.77	3.54	1.18	7.68	2.59	5	LC..1605..
	59347	C6-CFOL-45090-05-JET	2.48	1.77	3.54	1.18	7.68	2.59	5	LC..1605..
6	59353	C6-CFOR-45100-06-JET	2.48	1.77	3.94	1.42	7.68	2.77	6	LC..1606..
	59348	C6-CFOL-45100-06-JET	2.48	1.77	3.94	1.42	7.68	2.77	6	LC..1606..
8	59354	C6-CFOR-45115-08-JET	2.48	1.77	4.53	1.89	7.68	3.02	8	LC..3008..
	59349	C6-CFOL-45115-08-JET	2.48	1.77	4.53	1.89	7.68	3.02	8	LC..3008..

*DCINN3 – minimum bore diameter for internal application, see page 364.

**Max depth of cut for LCGF/LCMF16 = 0.551 inch, LCGF/LCMF30.. = 1.102 inch

Spare Parts, Parts included in delivery

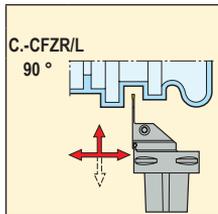
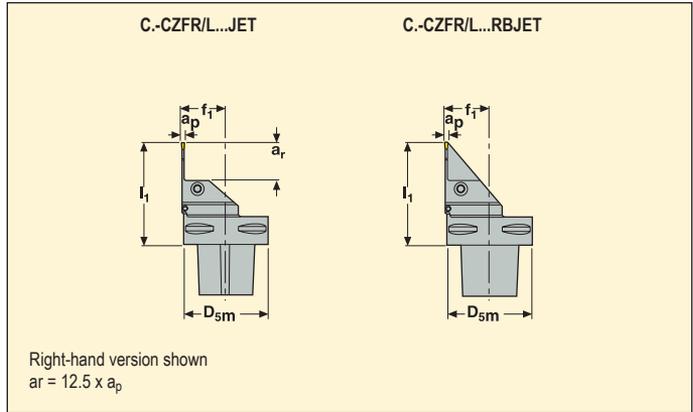
For holder	Clamp key	Clamp screw	Torque value in/lbs
CFOR/L...03	4SMS795	TCEI0513	53
CFOR/L...04	5SMS795	TCEI0613	71
CFOR/L...05	5SMS795	TCEI0613	71
CFOR/L...06	6SMS795	TCEI0815	88
CFOR/L...08	6SMS795	TCEI1020	133

Please check availability in current price and stock-list

Toolholders for inserts LCMF



• For insert program, see pages 420



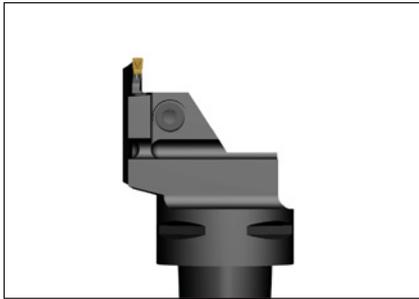
Capto size	EDP No.	Part No.	Dimensions in inch					lbs	Seat size		
			D _{5m}	f ₁	l ₁	a _r	D _m *				
C4	2	65731	C4-CFZR-22075-2802JET	1.575	0.866	2.953	1.024	–	1.10	2	LC..2802..
		65737	C4-CFZL-22075-2802JET	1.575	0.866	2.953	1.024	–	1.10	2	LC..2802..
C5	2	65732	C5-CFZR-27075-2802JET	1.969	1.063	2.953	1.024	–	1.54	2	LC..2802..
		65738	C5-CFZL-27075-2802JET	1.969	1.063	2.953	1.024	–	1.54	2	LC..2802..
C6	2	65733	C6-CFZR-33075-2802JET	2.480	1.299	2.953	1.024	–	2.20	2	LC..2802..
		65739	C6-CFZL-33075-2802JET	2.480	1.299	2.953	1.024	–	2.20	2	LC..2802..
C4	2	65734	C4-CFZR-22075-2802RBJET	1.575	0.866	2.953	–	2.047	1.32	2	LC..2802..
		65740	C4-CFZL-22075-2802RBJET	1.575	0.866	2.953	–	2.047	1.32	2	LC..2802..
C5	2	65735	C5-CFZR-27075-2802RBJET	1.969	1.063	2.953	–	2.047	1.54	2	LC..2802..
		65741	C5-CFZL-27075-2802RBJET	1.969	1.063	2.953	–	2.047	1.54	2	LC..2802..
C6	2	65736	C6-CFZR-33075-2802RBJET	2.480	1.299	2.953	–	2.047	2.43	2	LC..2802..
		65742	C6-CFZL-33075-2802RBJET	2.480	1.299	2.953	–	2.047	2.43	2	LC..2802..

*Due to the design, grooving depth is limited, see page 364.

Spare Parts, Parts included in delivery

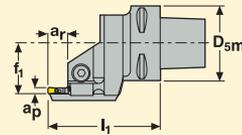
For holder	Clamp key	Clamp screw	Torque value in/lbs
CFZR/L...-02	4SMS795	TCEI0513	53

Please check availability in current price and stock-list

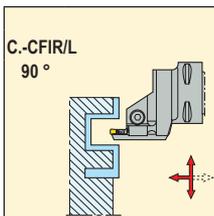


- For insert program, see pages 425-438, 440-441
- MDT axial grooving selection calculator guides you in finding the suitable tool for your axial grooving application. The application is free and available at <http://www.secotools.com/customerzoneus>

CFIR...L...JET, CFIL...R...JET



Right-hand version with left-hand blade shown
 $a_r = 3 \times a_p$



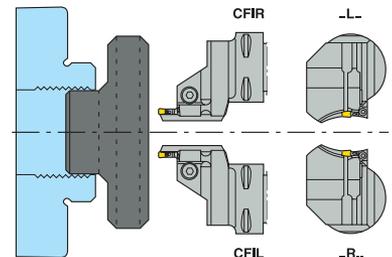
Capto size	EDP No.	Part No.	Dimensions in inch							lbs	Seat size	Image	
			INPLM	INPLX	D _{sm}	f ₁	l ₁	a _r *					
C4	3	59368	C4-CFIR	-27060-03L080055-JET	2.17	3.15	1.57	1.06	2.36	0.35	1.1	3	LC..1603..
		59369		-27060-03L100070-JET	2.76	3.94	1.57	1.06	2.36	0.35	1.1	3	LC..1603..
		59370		-27060-03L130090-JET	3.54	5.12	1.57	1.06	2.36	0.35	1.1	3	LC..1603..
		59371		-27060-03L170110-JET	4.33	6.69	1.57	1.06	2.36	0.35	0.9	3	LC..1603..
		59209	C4-CFIL	-27060-03R080055-JET	2.17	3.15	1.57	1.06	2.36	0.35	1.1	3	LC..1603..
		59355		-27060-03R100070-JET	2.76	3.94	1.57	1.06	2.36	0.35	1.1	3	LC..1603..
		59356		-27060-03R130090-JET	3.54	5.12	1.57	1.06	2.36	0.35	1.1	3	LC..1603..
		59357		-27060-03R170110-JET	4.33	6.69	1.57	1.06	2.36	0.35	0.9	3	LC..1603..
		C4	4	59372	C4-CFIR	-27065-04L080055-JET	2.17	3.15	1.57	1.06	2.56	0.47	1.1
59373				-27065-04L100070-JET	2.76	3.94	1.57	1.06	2.56	0.47	0.9	4	LC..1604..
59374				-27065-04L130090-JET	3.54	5.12	1.57	1.06	2.56	0.47	0.9	4	LC..1604..
59375				-27065-04L170110-JET	4.33	6.69	1.57	1.06	2.56	0.47	0.9	4	LC..1604..
59376				-27065-04L230140-JET	5.51	9.06	1.57	1.06	2.56	0.47	1.1	4	LC..1604..
59358	C4-CFIL			-27065-04R080055-JET	2.17	3.15	1.57	1.06	2.56	0.47	1.1	4	LC..1604..
59359				-27065-04R100070-JET	2.76	3.94	1.57	1.06	2.56	0.47	0.9	4	LC..1604..
59360				-27065-04R130090-JET	3.54	5.12	1.57	1.06	2.56	0.47	0.9	4	LC..1604..
59361				-27065-04R170110-JET	4.33	6.69	1.57	1.06	2.56	0.47	0.9	4	LC..1604..
59362		-27065-04R230140-JET	5.51	9.06	1.57	1.06	2.56	0.47	1.1	4	LC..1604..		

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

*Max depth of cut for LCGF/LCMF16.. = 0.551 inch

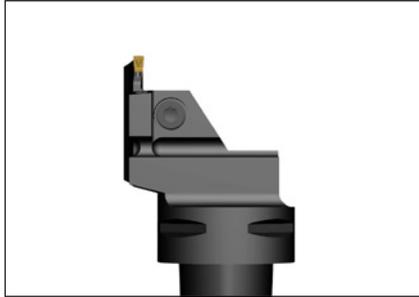
Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
CFIR/L...-03	4SMS795	TCEI0513	53
CFIR/L...-04	5SMS795	TCEI0613	71



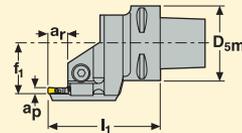
Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR

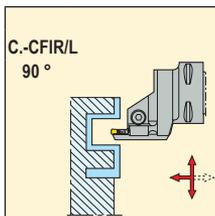


- For insert program, see pages 425-438, 440-441
- MDT axial grooving selection calculator guides you in finding the suitable tool for your axial grooving application. The application is free and available at <http://www.secotools.com/customerzoneus>

CFIR...L...JET, CFIL...R...JET



Right-hand version with left-hand blade shown
 $a_r = 3 \times a_p$



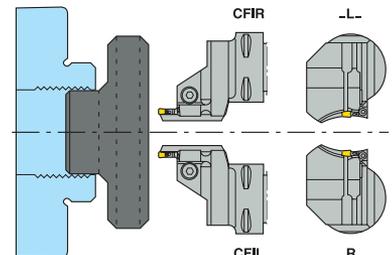
Capto size	EDP No.	Part No.	Dimensions in inch							lbs	Seat size	Insert	
			INPLM	INPLX	D _{sm}	f ₁	l ₁	a _r *					
C5	3	59723	C5-CFIR	-35060-03L080055-JET	2.17	3.15	1.97	1.38	2.36	0.35	1.5	3	LC..1603..
		59724		-35060-03L100070-JET	2.76	3.94	1.97	1.38	2.36	0.35	1.3	3	LC..1603..
		59725		-35060-03L130090-JET	3.54	5.12	1.97	1.38	2.36	0.35	1.5	3	LC..1603..
		59726		-35060-03L170110-JET	4.33	6.69	1.97	1.38	2.36	0.35	1.3	3	LC..1603..
		59382	C5-CFIL	-35060-03R080055-JET	2.17	3.15	1.97	1.38	2.36	0.35	1.5	3	LC..1603..
		59383		-35060-03R100070-JET	2.76	3.94	1.97	1.38	2.36	0.35	1.3	3	LC..1603..
		59384		-35060-03R130090-JET	3.54	5.12	1.97	1.38	2.36	0.35	1.5	3	LC..1603..
		59385		-35060-03R170110-JET	4.33	6.69	1.97	1.38	2.36	0.35	1.3	3	LC..1603..
		C5	4	59727	C5-CFIR	-35065-04L080055-JET	2.17	3.15	1.97	1.38	2.56	0.47	1.5
59728				-35065-04L100070-JET	2.76	3.94	1.97	1.38	2.56	0.47	1.3	4	LC..1604..
59729				-35065-04L130090-JET	3.54	5.12	1.97	1.38	2.56	0.47	1.5	4	LC..1604..
59734				-35065-04L170110-JET	4.33	6.69	1.97	1.38	2.56	0.47	1.5	4	LC..1604..
59735				-35065-04L230140-JET	5.51	9.06	1.97	1.38	2.56	0.47	1.5	4	LC..1604..
59386	C5-CFIL			-35065-04R080055-JET	2.17	3.15	1.97	1.38	2.56	0.47	1.5	4	LC..1604..
59387				-35065-04R100070-JET	2.76	3.94	1.97	1.38	2.56	0.47	1.3	4	LC..1604..
59388				-35065-04R130090-JET	3.54	5.12	1.97	1.38	2.56	0.47	1.5	4	LC..1604..
59389				-35065-04R170110-JET	4.33	6.69	1.97	1.38	2.56	0.47	1.5	4	LC..1604..
		59390		-35065-04R230140-JET	5.51	9.06	1.97	1.38	2.56	0.47	1.5	4	LC..1604..

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

*Max depth of cut for LCGF/LCMF16.. = 0.

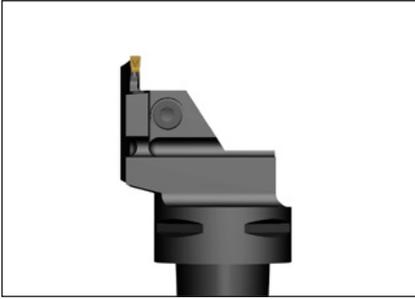
Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
CFIR/L...-03	4SMS795	TCEI0513	53
CFIR/L...-04	5SMS795	TCEI0613	71



Please check availability in current price and stock-list

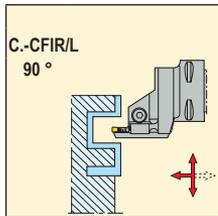
Toolholders for inserts LCGF, LCGN, LCMF and LCMR



- For insert program, see pages 425-436, 440-441
- MDT axial grooving selection calculator guides you in finding the suitable tool for your axial grooving application. The application is free and available at <http://www.secotools.com/customerzoneus>

CFIR...L...JET, CFIL...R...JET

Right-hand version with left-hand blade shown
 $a_r = 3 \times a_p$



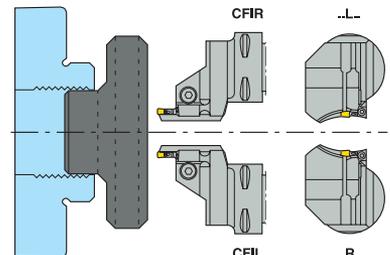
Capto size	EDP No.	Part No.	Dimensions in inch							lbs	Seat size	Insert			
			INPLM	INPLX	D _{5m}	f ₁	l ₁	a _r *							
C5	5	59736	C5-CFIR	-35065-05L080055-JET	2.17	3.15	1.97	1.38	2.56	0.59	1.5	5	LC..1605..		
		59737		-35065-05L100070-JET	2.76	3.94	1.97	1.38	2.56	0.59	1.5	5	LC..1605..		
		59738		-35065-05L130090-JET	3.54	5.12	1.97	1.38	2.56	0.59	1.3	5	LC..1605..		
		59739		-35065-05L170110-JET	4.33	6.69	1.97	1.38	2.56	0.59	1.3	5	LC..1605..		
		59740		-35065-05L230140-JET	5.51	9.06	1.97	1.38	2.56	0.59	1.5	5	LC..1605..		
		59391	C5-CFIL	-35065-05R080055-JET	2.17	3.15	1.97	1.38	2.56	0.59	1.5	5	LC..1605..		
		59392		-35065-05R100070-JET	2.76	3.94	1.97	1.38	2.56	0.59	1.5	5	LC..1605..		
		59709		-35065-05R130090-JET	3.54	5.12	1.97	1.38	2.56	0.59	1.3	5	LC..1605..		
		59710		-35065-05R170110-JET	4.33	6.69	1.97	1.38	2.56	0.59	1.3	5	LC..1605..		
		59717		-35065-05R230140-JET	5.51	9.06	1.97	1.38	2.56	0.59	1.5	5	LC..1605..		
		6	6	59741	C5-CFIR	-35075-06L080055-JET	2.17	3.15	1.97	1.38	2.95	0.71	1.8	6	LC..1606..
				59742		-35075-06L100070-JET	2.76	3.94	1.97	1.38	2.95	0.71	1.3	6	LC..1606..
				59743		-35075-06L130090-JET	3.54	5.12	1.97	1.38	2.95	0.71	1.8	6	LC..1606..
				59744		-35075-06L170110-JET	4.33	6.69	1.97	1.38	2.95	0.71	1.3	6	LC..1606..
59745				-35075-06L230140-JET	5.51	9.06	1.97	1.38	2.95	0.71	1.8	6	LC..1606..		
59718	C5-CFIL			-35075-06R080055-JET	2.17	3.15	1.97	1.38	2.95	0.71	1.8	6	LC..1606..		
59719				-35075-06R100070-JET	2.76	3.94	1.97	1.38	2.95	0.71	1.3	6	LC..1606..		
59720				-35075-06R130090-JET	3.54	5.12	1.97	1.38	2.95	0.71	1.8	6	LC..1606..		
59721				-35075-06R170110-JET	4.33	6.69	1.97	1.38	2.95	0.71	1.3	6	LC..1606..		
59722				-35075-06R230140-JET	5.51	9.06	1.97	1.38	2.95	0.71	1.8	6	LC..1606..		

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

*Max depth of cut for LCGF/LCMF16.. = 0.551 inch

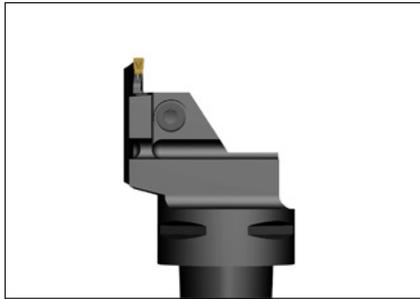
Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
CFIR/L...-05	5SMS795	TCEI0613	71
CFIR/L...-06	6SMS795	TCEI0815	88



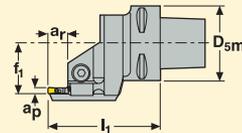
Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR

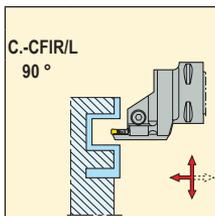


- For insert program, see pages 425-438, 440-441
- MDT axial grooving selection calculator guides you in finding the suitable tool for your axial grooving application. The application is free and available at <http://www.secotools.com/customerzoneus>

CFIR...L...JET, CFIL...R...JET



Right-hand version with left-hand blade shown
 $a_r = 3 \times a_p$



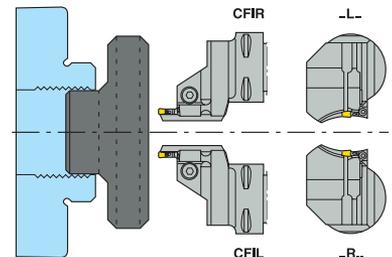
Capto size	EDP No.	Part No.	Dimensions in inch							lbs	Seat size	Insert			
			INPLM	INPLX	D _{sm}	f ₁	l ₁	a _r *							
C6	3	60107	C6-CFIR	-45065-03L080055-JET	2.17	3.15	2.48	1.77	2.56	0.35	2.4	3	LC..1603..		
		60108		-45065-03L100070-JET	2.76	3.94	2.48	1.77	2.56	0.35	2.4	3	LC..1603..		
		60109		-45065-03L130090-JET	3.54	5.12	2.48	1.77	2.56	0.35	2.4	3	LC..1603..		
		60115		-45065-03L170110-JET	4.33	6.69	2.48	1.77	2.56	0.35	2.4	3	LC..1603..		
		59747	C6-CFIL	-45065-03R080055-JET	2.17	3.15	2.48	1.77	2.56	0.35	2.4	3	LC..1603..		
		59748		-45065-03R100070-JET	2.76	3.94	2.48	1.77	2.56	0.35	2.4	3	LC..1603..		
		59819		-45065-03R130090-JET	3.54	5.12	2.48	1.77	2.56	0.35	2.4	3	LC..1603..		
		59840		-45065-03R170110-JET	4.33	6.69	2.48	1.77	2.56	0.35	2.4	3	LC..1603..		
		4	4	60125	C6-CFIR	-45065-04L080055-JET	2.17	3.15	2.48	1.77	2.56	0.47	2.4	4	LC..1604..
				60130		-45065-04L100070-JET	2.76	3.94	2.48	1.77	2.56	0.47	2.4	4	LC..1604..
60134				-45065-04L130090-JET	3.54	1.18	2.48	1.77	2.56	0.47	2.4	4	LC..1604..		
60136				-45065-04L170110-JET	4.33	6.69	2.48	1.77	2.56	0.47	2.4	4	LC..1604..		
60138				-45065-04L230140-JET	5.51	9.06	2.48	1.77	2.56	0.47	2.4	4	LC..1604..		
59958	C6-CFIL			-45065-04R080055-JET	2.17	3.15	2.48	1.77	2.56	0.47	2.4	4	LC..1604..		
60001				-45065-04R100070-JET	2.76	3.94	2.48	1.77	2.56	0.47	2.4	4	LC..1604..		
60002				-45065-04R130090-JET	3.54	5.12	2.48	1.77	2.56	0.47	2.4	4	LC..1604..		
60003				-45065-04R170110-JET	4.33	6.69	2.48	1.77	2.56	0.47	2.4	4	LC..1604..		
60004				-45065-04R230140-JET	5.51	9.06	2.48	1.77	2.56	0.47	2.4	4	LC..1604..		

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

*Max depth of cut for LCGF/LCMF16.. = 0.551 inch

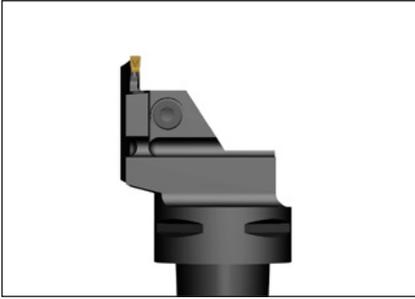
Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
CFIR/L...-03	4SMS795	TCEI0513	53
CFIR/L...-04	5SMS795	TCEI0613	71



Please check availability in current price and stock-list

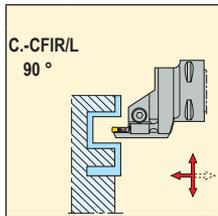
Toolholders for inserts LCGF, LCGN, LCMF and LCMR



- For insert program, see pages 425-436, 440-441
- MDT axial grooving selection calculator guides you in finding the suitable tool for your axial grooving application. The application is free and available at <http://www.secotools.com/customerzoneus>

CFIR...L...JET, CFIL...R...JET

Right-hand version with left-hand blade shown
 $a_r = 3 \times a_p$



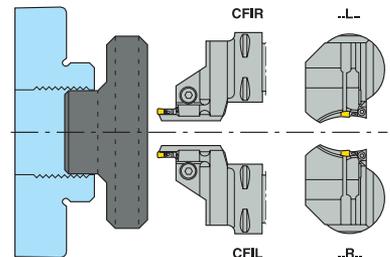
Capto size	EDP No.	Part No.	Dimensions in inch							lbs	Seat size	Insert			
			INPLM	INPLX	D _{sm}	f ₁	l ₁	a _r *							
C6	5	60140	C6-CFIR	-45070-05L080055-JET	2.17	3.15	2.48	1.77	2.76	0.59	2.4	5	LC..1605..		
		60144		-45070-05L100070-JET	2.76	3.94	2.48	1.77	2.76	0.59	2.4	5	LC..1605..		
		60146		-45070-05L130090-JET	3.54	5.12	2.48	1.77	2.76	0.59	2.4	5	LC..1605..		
		60152		-45070-05L170110-JET	4.33	6.69	2.48	1.77	2.76	0.59	2.4	5	LC..1605..		
		60156		-45070-05L230140-JET	5.51	9.06	2.48	1.77	2.76	0.59	2.4	5	LC..1605..		
		60005	C6-CFIL	-45070-05R080055-JET	2.17	3.15	2.48	1.77	2.76	0.59	2.4	5	LC..1605..		
		60006		-45070-05R100070-JET	2.76	3.94	2.48	1.77	2.76	0.59	2.4	5	LC..1605..		
		60007		-45070-05R130090-JET	3.54	5.12	2.48	1.77	2.76	0.59	2.4	5	LC..1605..		
		60008		-45070-05R170110-JET	4.33	6.69	2.48	1.77	2.76	0.59	2.4	5	LC..1605..		
		60031		-45070-05R230140-JET	5.51	9.06	2.48	1.77	2.76	0.59	2.4	5	LC..1605..		
		6	6	60170	C6-CFIR	-45075-06L080055-JET	2.17	3.15	2.48	1.77	2.95	0.71	2.4	6	LC..1606..
				60188		-45075-06L100070-JET	2.76	3.94	2.48	1.77	2.95	0.71	2.4	6	LC..1606..
				60189		-45075-06L130090-JET	3.54	5.12	2.48	1.77	2.95	0.71	2.4	6	LC..1606..
				60190		-45075-06L170110-JET	4.33	6.69	2.48	1.77	2.95	0.71	2.4	6	LC..1606..
60191				-45075-06L230140-JET	5.51	9.06	2.48	1.77	2.95	0.71	2.4	6	LC..1606..		
60079	C6-CFIL			-45075-06R080055-JET	2.17	3.15	2.48	1.77	2.95	0.71	2.4	6	LC..1606..		
60080				-45075-06R100070-JET	2.76	3.94	2.48	1.77	2.95	0.71	2.4	6	LC..1606..		
60081				-45075-06R130090-JET	3.54	5.12	2.48	1.77	2.95	0.71	2.4	6	LC..1606..		
60082				-45075-06R170110-JET	4.33	6.69	2.48	1.77	2.95	0.71	2.4	6	LC..1606..		
60101				-45075-06R230140-JET	5.51	9.06	2.48	1.77	2.95	0.71	2.4	6	LC..1606..		

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

*Max depth of cut for LCGF/LCMF16.. = 0.551 inch

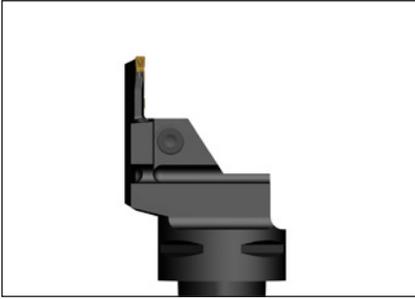
Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
CFIR/L...-05	5SMS795	TCEI0613	71
CFIR/L...-06	6SMS795	TCEI0815	88



Please check availability in current price and stock-list

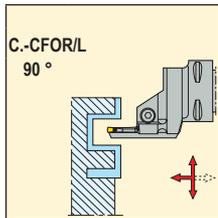
Toolholders for inserts LCGF, LCGN, LCMF and LCMR



- For insert program, see pages 425-438, 440-441
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CFOR...L...JET, CFOL...R...JET

Right-hand version with left-hand blade shown
 $a_r = 6 \times a_p$



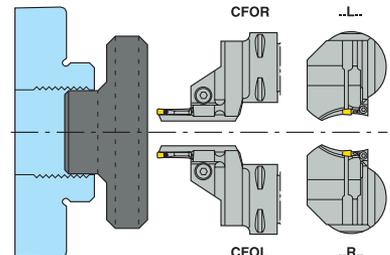
Capto size	EDP No.	Part No.	Dimensions in inch						lbs	Seat size	Insert size			
			INPLM	INPLX	D _{sm}	f ₁	l ₁	a _r *						
C4	3	60280	C4-CFOR -27070-03L080055-JET	2.17	3.15	1.57	1.06	2.76	0.71	1.1	3	LC..1603..		
		60285	-27070-03L100070-JET	2.76	3.94	1.57	1.06	2.76	0.71	1.1	3	LC..1603..		
		60288	-27070-03L130090-JET	3.54	5.12	1.57	1.06	2.76	0.71	1.1	3	LC..1603..		
		60290	-27070-03L170110-JET	4.33	6.69	1.57	1.06	2.76	0.71	1.1	3	LC..1603..		
		60293	-27070-03L230140-JET	5.51	9.06	1.57	1.06	2.76	0.71	1.1	3	LC..1603..		
		60301	-27070-03L500200-JET	7.87	19.69	1.57	1.06	2.76	0.71	1.1	3	LC..1603..		
		60224	C4-CFOL -27070-03R080055-JET	2.17	3.15	1.57	1.06	2.76	0.71	1.1	3	LC..1603..		
		60226	-27070-03R100070-JET	2.76	3.94	1.57	1.06	2.76	0.71	1.1	3	LC..1603..		
		60228	-27070-03R130090-JET	3.54	5.12	1.57	1.06	2.76	0.71	1.1	3	LC..1603..		
		60236	-27070-03R170110-JET	4.33	6.69	1.57	1.06	2.76	0.71	1.1	3	LC..1603..		
		60251	-27070-03R230140-JET	5.51	9.06	1.57	1.06	2.76	0.71	1.1	3	LC..1603..		
		60252	-27070-03R500200-JET	7.87	19.69	1.57	1.06	2.76	0.71	1.1	3	LC..1603..		
		C4	4	60302	C4-CFOR -27080-04L080055-JET	2.17	3.15	1.57	1.06	3.15	0.94	1.1	4	LC..1604..
				60312	-27080-04L100070-JET	2.76	3.94	1.57	1.06	3.15	0.94	1.1	4	LC..1604..
60315	-27080-04L130090-JET			3.54	5.12	1.57	1.06	3.15	0.94	1.1	4	LC..1604..		
60316	-27080-04L170110-JET			4.33	6.69	1.57	1.06	3.15	0.94	1.1	4	LC..1604..		
60317	-27080-04L230140-JET			5.51	9.06	1.57	1.06	3.15	0.94	1.1	4	LC..1604..		
60347	-27080-04L500200-JET			7.87	19.69	1.57	1.06	3.15	0.94	1.1	4	LC..1604..		
59119	C4-CFOL -27080-04R080055-JET			2.17	3.15	1.57	1.06	3.15	0.94	1.1	4	LC..1604..		
59120	-27080-04R100070-JET			2.76	3.94	1.57	1.06	3.15	0.94	1.1	4	LC..1604..		
59121	-27080-04R130090-JET			3.54	5.12	1.57	1.06	3.15	0.94	1.1	4	LC..1604..		
59122	-27080-04R170110-JET			4.33	6.69	1.57	1.06	3.15	0.94	1.1	4	LC..1604..		
59123	-27080-04R230140-JET			5.51	9.06	1.57	1.06	3.15	0.94	1.1	4	LC..1604..		
59124	-27080-04R500200-JET			7.87	19.69	1.57	1.06	3.15	0.94	1.1	4	LC..1604..		

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

*Max depth of cut for LCGF/LCMF16.. = 0.551 inch

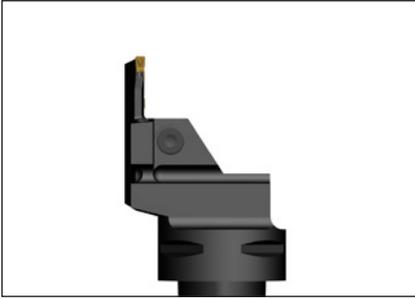
Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
CFOR/L...-03	4SMS795	TCEI0513	53
CFOR/L...-04	5SMS795	TCEI0613	71



Please check availability in current price and stock-list

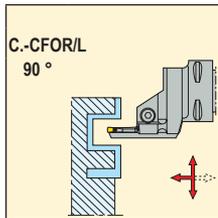
Toolholders for inserts LCGF, LCGN, LCMF and LCMR



- For insert program, see pages 425-438, 440-441
- MDT axial grooving selection calculator guides you in finding the suitable tool for your axial grooving application. The application is free and available at <http://www.secotools.com/customerzoneus>

CFOR...L...JET, CFOL...R...JET

Right-hand version with left-hand blade shown
 $a_r = 6 \times a_p$



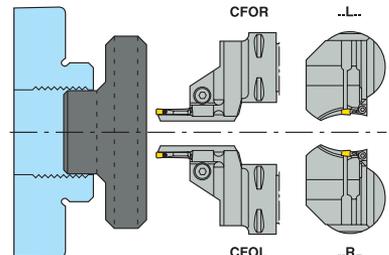
Capto size	EDP No.	Part No.	Dimensions in inch						lbs	Seat size	Insert	
			INPLM	INPLX	D _{sm}	f ₁	l ₁	a _r *				
C5	3	60575	C5-CFOR -35070-03L080055-JET	2.17	3.15	1.97	1.38	2.76	0.71	1.5	3	LC..1603..
		60577	-35070-03L100070-JET	2.76	3.94	1.97	1.38	2.76	0.71	1.5	3	LC..1603..
		60579	-35070-03L130090-JET	3.54	5.12	1.97	1.38	2.76	0.71	1.5	3	LC..1603..
		60581	-35070-03L170110-JET	4.33	6.69	1.97	1.38	2.76	0.71	1.5	3	LC..1603..
		60586	-35070-03L230140-JET	5.51	9.06	1.97	1.38	2.76	0.71	1.5	3	LC..1603..
		60588	-35070-03L500200-JET	7.87	19.69	1.97	1.38	2.76	0.71	1.5	3	LC..1603..
	4	60436	C5-CFOL -35070-03R080055-JET	2.17	3.15	1.97	1.38	2.76	0.71	1.5	3	LC..1603..
		60440	-35070-03R100070-JET	2.76	3.94	1.97	1.38	2.76	0.71	1.5	3	LC..1603..
		60450	-35070-03R130090-JET	3.54	5.12	1.97	1.38	2.76	0.71	1.5	3	LC..1603..
		60458	-35070-03R170110-JET	4.33	6.69	1.97	1.38	2.76	0.71	1.5	3	LC..1603..
		60461	-35070-03R230140-JET	5.51	9.06	1.97	1.38	2.76	0.71	1.5	3	LC..1603..
		60464	-35070-03R500200-JET	7.87	19.69	1.97	1.38	2.76	0.71	1.5	3	LC..1603..
		60590	C5-CFOR -35080-04L080055-JET	2.17	3.15	1.97	1.38	3.15	0.94	1.8	4	LC..1604..
		60648	-35080-04L100070-JET	2.76	3.94	1.97	1.38	3.15	0.94	1.8	4	LC..1604..
60655	-35080-04L130090-JET	3.54	5.12	1.97	1.38	3.15	0.94	1.8	4	LC..1604..		
60657	-35080-04L170110-JET	4.33	6.69	1.97	1.38	3.15	0.94	1.8	4	LC..1604..		
60659	-35080-04L230140-JET	5.51	9.06	1.97	1.38	3.15	0.94	1.8	4	LC..1604..		
60661	-35080-04L500200-JET	7.87	19.69	1.97	1.38	3.15	0.94	1.8	4	LC..1604..		
4	60502	C5-CFOL -35080-04R080055-JET	2.17	3.15	1.97	1.38	3.15	0.94	1.8	4	LC..1604..	
	60510	-35080-04R100070-JET	2.76	3.94	1.97	1.38	3.15	0.94	1.8	4	LC..1604..	
	60524	-35080-04R130090-JET	3.54	5.12	1.97	1.38	3.15	0.94	1.8	4	LC..1604..	
	60526	-35080-04R170110-JET	4.33	6.69	1.97	1.38	3.15	0.94	1.8	4	LC..1604..	
	60528	-35080-04R230140-JET	5.51	9.06	1.97	1.38	3.15	0.94	1.8	4	LC..1604..	
	60538	-35080-04R500200-JET	7.87	19.69	1.97	1.38	3.15	0.94	1.8	4	LC..1604..	

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

*Max depth of cut for LCGF/LCMF16.. = 0.551 inch

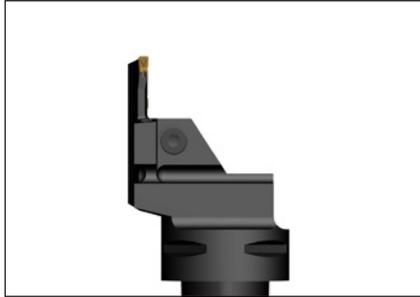
Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
CFOR/L...-03	4SMS795	TCEI0513	53
CFOR/L...-04	5SMS795	TCEI0613	71



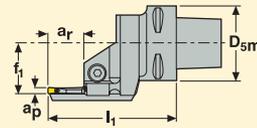
Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR

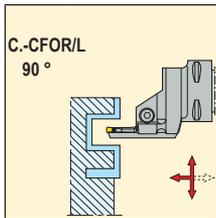


- For insert program, see pages 425-436, 440-441
- MDT axial grooving selection calculator guides you in finding the suitable tool for your axial grooving application. The application is free and available at <http://www.secotools.com/customerzoneus>

CFOR...L...JET, CFOL...R...JET



Right-hand version with left-hand blade shown
 $a_r = 6 \times a_p$



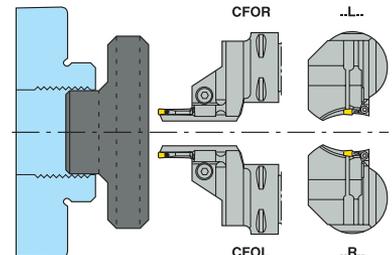
Capto size	EDP No.	Part No.	Dimensions in inch						lbs	Seat size	Insert		
			INPLM	INPLX	D _{5m}	f ₁	l ₁	a _r *					
5	5	60669 C5-CFOR -35085-05L080055-JET	2.17	3.15	1.97	1.38	3.35	1.18	1.8	5	LC..1605..		
		60671 -35085-05L100070-JET	2.76	3.94	1.97	1.38	3.35	1.18	1.8	5	LC..1605..		
		60673 -35085-05L130090-JET	3.54	5.12	1.97	1.38	3.35	1.18	1.8	5	LC..1605..		
		60675 -35085-05L170110-JET	4.33	6.69	1.97	1.38	3.35	1.18	1.8	5	LC..1605..		
		60691 -35085-05L230140-JET	5.51	9.06	1.97	1.38	3.35	1.18	1.8	5	LC..1605..		
		60705 -35085-05L500200-JET	7.87	19.69	1.97	1.38	3.35	1.18	1.8	5	LC..1605..		
		60550 C5-CFOL -35085-05R080055-JET	2.17	3.15	1.97	1.38	3.35	1.18	1.8	5	LC..1605..		
		60551 -35085-05R100070-JET	2.76	3.94	1.97	1.38	3.35	1.18	1.8	5	LC..1605..		
		60561 -35085-05R130090-JET	3.54	5.12	1.97	1.38	3.35	1.18	1.8	5	LC..1605..		
		60563 -35085-05R170110-JET	4.33	6.69	1.97	1.38	3.35	1.18	1.8	5	LC..1605..		
		60565 -35085-05R230140-JET	5.51	9.06	1.97	1.38	3.35	1.18	1.8	5	LC..1605..		
		60567 -35085-05R500200-JET	7.87	19.69	1.97	1.38	3.35	1.18	1.8	5	LC..1605..		
		6	6	60707 C5-CFOR -35100-06L080055-JET	2.17	3.15	1.97	1.38	3.94	1.42	2.2	6	LC..1606..
				60721 -35100-06L100070-JET	2.76	3.94	1.97	1.38	3.94	1.42	2.2	6	LC..1606..
60723 -35100-06L130090-JET	3.54			5.12	1.97	1.38	3.94	1.42	2.2	6	LC..1606..		
60724 -35100-06L170110-JET	4.33			6.69	1.97	1.38	3.94	1.42	2.2	6	LC..1606..		
60726 -35100-06L230140-JET	5.51			9.06	1.97	1.38	3.94	1.42	2.2	6	LC..1606..		
60728 -35100-06L500200-JET	7.87			19.69	1.97	1.38	3.94	1.42	2.2	6	LC..1606..		
60568 C5-CFOL -35100-06R080055-JET	2.17			3.15	1.97	1.38	3.94	1.42	2.2	6	LC..1606..		
60569 -35100-06R100070-JET	2.76			3.94	1.97	1.38	3.94	1.42	2.2	6	LC..1606..		
60570 -35100-06R130090-JET	3.54			5.12	1.97	1.38	3.94	1.42	2.2	6	LC..1606..		
60571 -35100-06R170110-JET	4.33			6.69	1.97	1.38	3.94	1.42	2.2	6	LC..1606..		
60572 -35100-06R230140-JET	5.51			9.06	1.97	1.38	3.94	1.42	2.2	6	LC..1606..		
60573 -35100-06R500200-JET	7.87	19.69	1.97	1.38	3.94	1.42	2.2	6	LC..1606..				

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

*Max depth of cut for LCGF/LCMF16.. = 0.551 inch

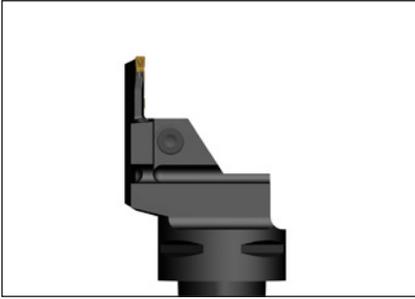
Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
CFOR/L..-05	5SMS795	TCEI0613	71
CFOR/L..-06	6SMS795	TCEI0815	88



Please check availability in current price and stock-list

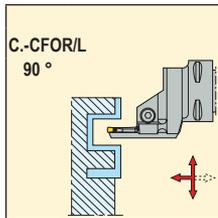
Toolholders for inserts LCGF, LCGN, LCMF and LCMR



- For insert program, see pages 425-438, 440-441
- MDT axial grooving selection calculator guides you in finding the suitable tool for your axial grooving application. The application is free and available at <http://www.secotools.com/customerzoneus>

CFOR...L...JET, CFOL...R...JET

Right-hand version with left-hand blade shown
 $a_r = 6 \times a_p$



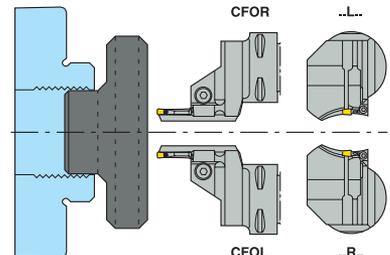
Capto size	EDP No.	Part No.	Dimensions in inch						lbs	Seat size	Insert	
			INPLM	INPLX	D _{sm}	f ₁	l ₁	a _r *				
C6	3	60787	C6-CFOR-45075-03L080055-JET	2.17	3.15	2.48	1.77	2.95	0.71	2.4	3	LC..1603..
		60788	-45075-03L100070-JET	2.76	3.94	2.48	1.77	2.95	0.71	2.4	3	LC..1603..
		60789	-45075-03L130090-JET	3.54	5.12	2.48	1.77	2.95	0.71	2.4	3	LC..1603..
		60790	-45075-03L170110-JET	4.33	6.69	2.48	1.77	2.95	0.71	2.4	3	LC..1603..
		60791	-45075-03L230140-JET	5.51	9.06	2.48	1.77	2.95	0.71	2.4	3	LC..1603..
		60792	-45075-03L500200-JET	7.87	19.69	2.48	1.77	2.95	0.71	2.4	3	LC..1603..
	4	60730	C6-CFOL-45075-03R080055-JET	2.17	3.15	2.48	1.77	2.95	0.71	2.4	3	LC..1603..
		60732	-45075-03R100070-JET	2.76	3.94	2.48	1.77	2.95	0.71	2.4	3	LC..1603..
		60733	-45075-03R130090-JET	3.54	5.12	2.48	1.77	2.95	0.71	2.4	3	LC..1603..
		60734	-45075-03R170110-JET	4.33	6.69	2.48	1.77	2.95	0.71	2.4	3	LC..1603..
		60738	-45075-03R230140-JET	5.51	9.06	2.48	1.77	2.95	0.71	2.4	3	LC..1603..
		60739	-45075-03R500200-JET	7.87	19.69	2.48	1.77	2.95	0.71	2.4	3	LC..1603..
		60793	C6-CFOR-45080-04L080055-JET	2.17	3.15	2.48	1.77	3.15	0.94	2.6	4	LC..1604..
		60797	-45080-04L100070-JET	2.76	3.94	2.48	1.77	3.15	0.94	2.6	4	LC..1604..
4	60799	-45080-04L130090-JET	3.54	5.12	2.48	1.77	3.15	0.94	2.6	4	LC..1604..	
	60801	-45080-04L170110-JET	4.33	6.69	2.48	1.77	3.15	0.94	2.6	4	LC..1604..	
	60802	-45080-04L230140-JET	5.51	9.06	2.48	1.77	3.15	0.94	2.6	4	LC..1604..	
	60803	-45080-04L500200-JET	7.87	19.69	2.48	1.77	3.15	0.94	2.6	4	LC..1604..	
	60743	C6-CFOL-45080-04R080055-JET	2.17	3.15	2.48	1.77	3.15	0.94	2.6	4	LC..1604..	
	60750	-45080-04R100070-JET	2.76	3.94	2.48	1.77	3.15	0.94	2.6	4	LC..1604..	
	60751	-45080-04R130090-JET	3.54	5.12	2.48	1.77	3.15	0.94	2.6	4	LC..1604..	
	60752	-45080-04R170110-JET	4.33	6.69	2.48	1.77	3.15	0.94	2.6	4	LC..1604..	
60754	-45080-04R230140-JET	5.51	9.06	2.48	1.77	3.15	0.94	2.6	4	LC..1604..		
60755	-45080-04R500200-JET	7.87	19.69	2.48	1.77	3.15	0.94	2.6	4	LC..1604..		

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

*Max depth of cut for LCGF/LCMF16.. = 0.551 inch

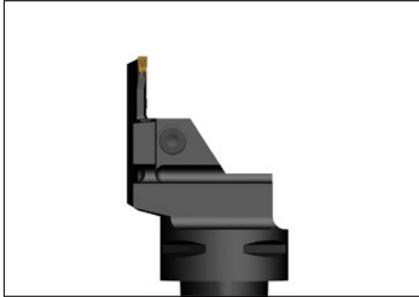
Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
CFOR/L...-03	4SMS795	TCEI0513	53
CFOR/L...-04	5SMS795	TCEI0613	71



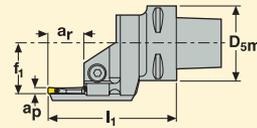
Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR

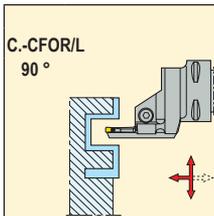


- For insert program, see pages 425-436, 440-441
- MDT axial grooving selection calculator guides you in finding the suitable tool for your axial grooving application. The application is free and available at <http://www.secotools.com/customerzoneus>

CFOR...L...JET, CFOL...R...JET



Right-hand version with left-hand blade shown
 $a_r = 6 \times a_p$



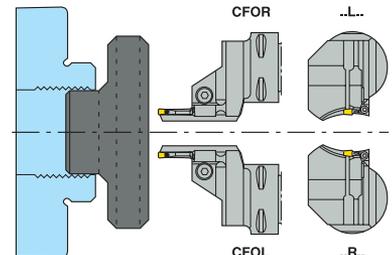
Capto size	EDP No.	Part No.	Dimensions in inch						lbs	Seat size	Insert				
			INPLM	INPLX	D _{5m}	f ₁	l ₁	a _r *							
C6	5	60804	C6-CFOR	-45090-05L080055-JET	2.17	3.15	2.48	1.77	3.54	1.18	2.6	5	LC..1605..		
		60805		-45090-05L100070-JET	2.76	3.94	2.48	1.77	3.54	1.18	2.6	5	LC..1605..		
		60806		-45090-05L130090-JET	3.54	5.12	2.48	1.77	3.54	1.18	2.6	5	LC..1605..		
		60810		-45090-05L170110-JET	4.33	6.69	2.48	1.77	3.54	1.18	2.6	5	LC..1605..		
		60817		-45090-05L230140-JET	5.51	9.06	2.48	1.77	3.54	1.18	2.6	5	LC..1605..		
		60823		-45090-05L500200-JET	7.87	19.69	2.48	1.77	3.54	1.18	2.6	5	LC..1605..		
	6	5	60756	C6-CFOR	-45090-05R080055-JET	2.17	3.15	2.48	1.77	3.54	1.18	2.6	5	LC..1605..	
			60758		-45090-05R100070-JET	2.76	3.94	2.48	1.77	3.54	1.18	2.6	5	LC..1605..	
		60760		-45090-05R130090-JET	3.54	5.12	2.48	1.77	3.54	1.18	2.6	5	LC..1605..		
		60762		-45090-05R170110-JET	4.33	6.69	2.48	1.77	3.54	1.18	2.6	5	LC..1605..		
		60767		-45090-05R230140-JET	5.51	9.06	2.48	1.77	3.54	1.18	2.6	5	LC..1605..		
		60769		-45090-05R500200-JET	7.87	19.69	2.48	1.77	3.54	1.18	2.6	5	LC..1605..		
		6	5	60824	C6-CFOR	-45100-06L080055-JET	2.17	3.15	2.48	1.77	3.94	1.42	3.1	6	LC..1606..
				60825		-45100-06L100070-JET	2.76	3.94	2.48	1.77	3.94	1.42	3.1	6	LC..1606..
60826			-45100-06L130090-JET	3.54	5.12	2.48	1.77	3.94	1.42	3.1	6	LC..1606..			
60827			-45100-06L170110-JET	4.33	6.69	2.48	1.77	3.94	1.42	3.1	6	LC..1606..			
60828			-45100-06L230140-JET	5.51	9.06	2.48	1.77	3.94	1.42	3.1	6	LC..1606..			
60829			-45100-06L500200-JET	7.87	19.69	2.48	1.77	3.94	1.42	3.1	6	LC..1606..			
6	5		60770	C6-CFOL	-45100-06R080055-JET	2.17	3.15	2.48	1.77	3.94	1.42	3.1	6	LC..1606..	
			60771		-45100-06R100070-JET	2.76	3.94	2.48	1.77	3.94	1.42	3.1	6	LC..1606..	
	60773		-45100-06R130090-JET	3.54	5.12	2.48	1.77	3.94	1.42	3.1	6	LC..1606..			
	60774		-45100-06R170110-JET	4.33	6.69	2.48	1.77	3.94	1.42	3.1	6	LC..1606..			
	60775		-45100-06R230140-JET	5.51	9.06	2.48	1.77	3.94	1.42	3.1	6	LC..1606..			
	60777		-45100-06R500200-JET	7.87	19.69	2.48	1.77	3.94	1.42	3.1	6	LC..1606..			

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

*Max depth of cut for LCGF/LCMF16.. = 0.551 inch

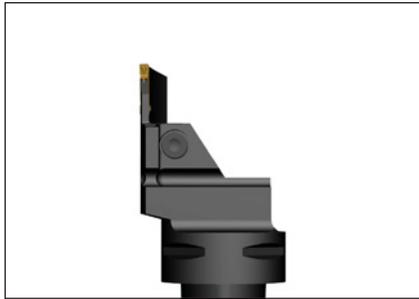
Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
CFOR/L...05	5SMS795	TCEI0613	71
CFOR/L...06	6SMS795	TCEI0815	88



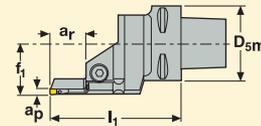
Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR

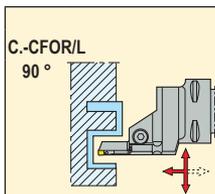


- For insert program, see pages 425-438, 440-441
- MDT axial grooving selection calculator guides you in finding the suitable tool for your axial grooving application. The application is free and available at <http://www.secotools.com/customerzoneus>

CFOR...R...JET, CFOL...L...JET



Right-hand version with right-hand blade shown
 $a_r = 6 \times a_p$



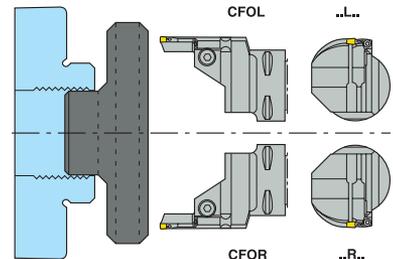
Capto size	EDP No.	Part No.	Dimensions in inch						lbs	Seat size	Insert
			INPLM	INPLX	D _{sm}	f ₁	l ₁	a _r *			
C4	3	60872 C4-CFOR -27070-03R080055-JET	2.17	3.15	1.57	1.06	2.76	0.71	1.1	3	LC..1603..
		60874 -27070-03R100070-JET	2.76	3.94	1.57	1.06	2.76	0.71	1.1	3	LC..1603..
		60875 -27070-03R130090-JET	3.54	5.12	1.57	1.06	2.76	0.71	1.1	3	LC..1603..
		60876 -27070-03R170110-JET	4.33	6.69	1.57	1.06	2.76	0.71	1.1	3	LC..1603..
		60877 -27070-03R230140-JET	5.51	9.06	1.57	1.06	2.76	0.71	1.1	3	LC..1603..
		60879 -27070-03R500200-JET	7.87	19.69	1.57	1.06	2.76	0.71	1.1	3	LC..1603..
		60844 C4-CFOL -27070-03L080055-JET	2.17	3.15	1.57	1.06	2.76	0.71	1.1	3	LC..1603..
	60845 -27070-03L100070-JET	2.76	3.94	1.57	1.06	2.76	0.71	1.1	3	LC..1603..	
	60849 -27070-03L130090-JET	3.54	5.12	1.57	1.06	2.76	0.71	1.1	3	LC..1603..	
	60850 -27070-03L170110-JET	4.33	6.69	1.57	1.06	2.76	0.71	1.1	3	LC..1603..	
	60853 -27070-03L230140-JET	5.51	9.06	1.57	1.06	2.76	0.71	1.1	3	LC..1603..	
	60855 -27070-03L500200-JET	7.87	19.69	1.57	1.06	2.76	0.71	1.1	3	LC..1603..	
	4	60880 C4-CFOR -27080-04R080055-JET	2.17	3.15	1.57	1.06	3.15	0.94	1.8	4	LC..1604..
		60888 -27080-04R100070-JET	2.76	3.94	1.57	1.06	3.15	0.94	1.8	4	LC..1604..
60890 -27080-04R130090-JET		3.54	5.12	1.57	1.06	3.15	0.94	1.8	4	LC..1604..	
60891 -27080-04R170110-JET		4.33	6.69	1.57	1.06	3.15	0.94	1.8	4	LC..1604..	
60892 -27080-04R230140-JET		5.51	9.06	1.57	1.06	3.15	0.94	1.8	4	LC..1604..	
60893 -27080-04R500200-JET		7.87	19.69	1.57	1.06	3.15	0.94	1.8	4	LC..1604..	
60856 C4-CFOL -27080-04L080055-JET		2.17	3.15	1.57	1.06	3.15	0.94	1.8	4	LC..1604..	
60857 -27080-04L100070-JET		2.76	3.94	1.57	1.06	3.15	0.94	1.8	4	LC..1604..	
60858 -27080-04L130090-JET		3.54	5.12	1.57	1.06	3.15	0.94	1.8	4	LC..1604..	
60859 -27080-04L170110-JET		4.33	6.69	1.57	1.06	3.15	0.94	1.8	4	LC..1604..	
60860 -27080-04L230140-JET	5.51	9.06	1.57	1.06	3.15	0.94	1.8	4	LC..1604..		
60861 -27080-04L500200-JET	7.87	19.69	1.57	1.06	3.15	0.94	1.8	4	LC..1604..		

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

*Max depth of cut for LCGF/LCMF16.. = 0.551 inch

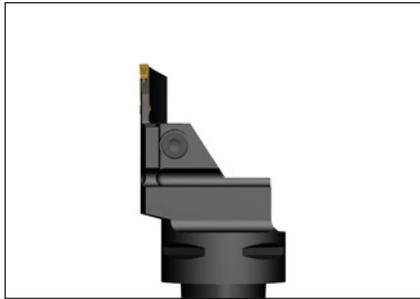
Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
CFOR/L..-03	4SMS795	TCEI0513	53
CFOR/L..-04	5SMS795	TCEI0613	71



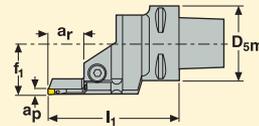
Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR

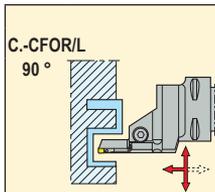


- For insert program, see pages 425-438, 440-441
- MDT axial grooving selection calculator guides you in finding the suitable tool for your axial grooving application. The application is free and available at <http://www.secotools.com/customerzoneus>

CFOR...R...JET, CFOL...L...JET



Right-hand version with right-hand blade shown
 $a_r = 6 \times a_p$



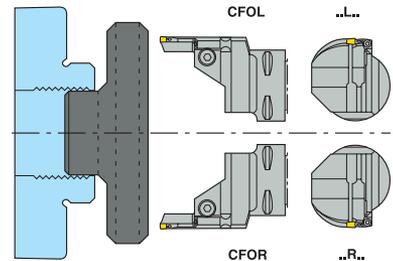
Capto size	EDP No.	Part No.	Dimensions in inch							lbs	Seat size	Insert
			INPLM	INPLX	D _{5m}	f ₁	l ₁	a _r *				
C5	3	61080 C5-CFOR-35070-03R080055-JET	2.17	3.15	1.97	1.38	2.76	0.71	1.5	3	LC..1603..	
		61103 -35070-03R100070-JET	2.76	3.94	1.97	1.38	2.76	0.71	1.5	3	LC..1603..	
		61106 -35070-03R130090-JET	3.54	5.12	1.97	1.38	2.76	0.71	1.5	3	LC..1603..	
		61113 -35070-03R170110-JET	4.33	6.69	1.97	1.38	2.76	0.71	1.5	3	LC..1603..	
		61126 -35070-03R230140-JET	5.51	9.06	1.97	1.38	2.76	0.71	1.5	3	LC..1603..	
		61127 -35070-03R500200-JET	7.87	19.69	1.97	1.38	2.76	0.71	1.5	3	LC..1603..	
	4	60908 C5-CFOL-35070-03L080055-JET	2.17	3.15	1.97	1.38	2.76	0.71	1.5	3	LC..1603..	
		60912 -35070-03L100070-JET	2.76	3.94	1.97	1.38	2.76	0.71	1.5	3	LC..1603..	
		60913 -35070-03L130090-JET	3.54	5.12	1.97	1.38	2.76	0.71	1.5	3	LC..1603..	
		60914 -35070-03L170110-JET	4.33	6.69	1.97	1.38	2.76	0.71	1.5	3	LC..1603..	
		60915 -35070-03L230140-JET	5.51	9.06	1.97	1.38	2.76	0.71	1.5	3	LC..1603..	
		60929 -35070-03L500200-JET	7.87	19.69	1.97	1.38	2.76	0.71	1.5	3	LC..1603..	
		61129 C5-CFOR-35080-04R080055-JET	2.17	3.15	1.97	1.38	3.15	0.94	1.5	4	LC..1604..	
		61131 -35080-04R100070-JET	2.76	3.94	1.97	1.38	3.15	0.94	1.5	4	LC..1604..	
61137 -35080-04R130090-JET	3.54	5.12	1.97	1.38	3.15	0.94	1.5	4	LC..1604..			
61151 -35080-04R170110-JET	4.33	6.69	1.97	1.38	3.15	0.94	1.5	4	LC..1604..			
61160 -35080-04R230140-JET	5.51	9.06	1.97	1.38	3.15	0.94	1.5	4	LC..1604..			
61162 -35080-04R500200-JET	7.87	19.69	1.97	1.38	3.15	0.94	1.5	4	LC..1604..			
4	60930 C5-CFOL-35080-04L080055-JET	2.17	3.15	1.97	1.38	3.15	0.94	1.5	4	LC..1604..		
	60932 -35080-04L100070-JET	2.76	3.94	1.97	1.38	3.15	0.94	1.5	4	LC..1604..		
	61000 -35080-04L130090-JET	3.54	5.12	1.97	1.38	3.15	0.94	1.5	4	LC..1604..		
	61001 -35080-04L170110-JET	4.33	6.69	1.97	1.38	3.15	0.94	1.5	4	LC..1604..		
	61002 -35080-04L230140-JET	5.51	9.06	1.97	1.38	3.15	0.94	1.5	4	LC..1604..		
	61003 -35080-04L500200-JET	7.87	19.69	1.97	1.38	3.15	0.94	1.5	4	LC..1604..		

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

*Max depth of cut for LCGF/LCMF16.. = 0.551

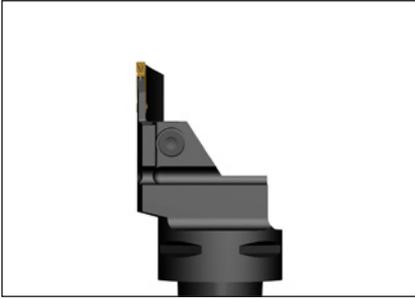
Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
CFOR/L..-03	4SMS795	TCEI0513	53
CFOR/L..-04	5SMS795	TCEI0613	71



Please check availability in current price and stock-list

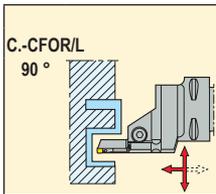
Toolholders for inserts LCGF, LCGN, LCMF and LCMR



- For insert program, see pages 425-436, 440-441
- MDT axial grooving selection calculator guides you in finding the suitable tool for your axial grooving application. The application is free and available at <http://www.secotools.com/customerzoneus>

CFOR...R...JET, CFOL...L...JET

Right-hand version with right-hand blade shown
 $a_r = 6 \times a_p$



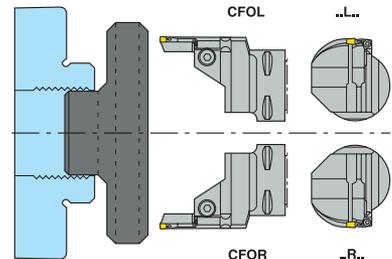
Capto size	EDP No.	Part No.	Dimensions in inch						lbs	Seat size	Insert		
			INPLM	INPLX	D _{5m}	f ₁	l ₁	a _r *					
C5	5	61163	C5-CFOR -35085-05R080055-JET	2.17	3.15	1.97	1.38	3.35	1.18	1.5	5	LC..1605..	
		61164	-35085-05R100070-JET	2.76	3.94	1.97	1.38	3.35	1.18	1.5	5	LC..1605..	
		61165	-35085-05R130090-JET	3.54	5.12	1.97	1.38	3.35	1.18	1.5	5	LC..1605..	
		61167	-35085-05R170110-JET	4.33	6.69	1.97	1.38	3.35	1.18	1.5	5	LC..1605..	
		61169	-35085-05R230140-JET	5.51	9.06	1.97	1.38	3.35	1.18	1.5	5	LC..1605..	
		61171	-35085-05R500200-JET	7.87	19.69	1.97	1.38	3.35	1.18	1.5	5	LC..1605..	
	61007	C5-CFOL -35085-05L080055-JET	2.17	3.15	1.97	1.38	3.35	1.18	1.5	5	LC..1605..		
	61009	-35085-05L100070-JET	2.76	3.94	1.97	1.38	3.35	1.18	1.5	5	LC..1605..		
	61015	-35085-05L130090-JET	3.54	5.12	1.97	1.38	3.35	1.18	1.5	5	LC..1605..		
	61029	-35085-05L170110-JET	4.33	6.69	1.97	1.38	3.35	1.18	1.5	5	LC..1605..		
	61044	-35085-05L230140-JET	5.51	9.06	1.97	1.38	3.35	1.18	1.5	5	LC..1605..		
	61050	-35085-05L500200-JET	7.87	19.69	1.97	1.38	3.35	1.18	1.5	5	LC..1605..		
	C6	6	61173	C5-CFOR -35100-06R080055-JET	2.17	3.15	1.97	1.38	3.94	1.42	2.0	6	LC..1606..
			61174	-35100-06R100070-JET	2.76	3.94	1.97	1.38	3.94	1.42	2.0	6	LC..1606..
61175			-35100-06R130090-JET	3.54	5.12	1.97	1.38	3.94	1.42	2.0	6	LC..1606..	
61177			-35100-06R170110-JET	4.33	6.69	1.97	1.38	3.94	1.42	2.0	6	LC..1606..	
61179			-35100-06R230140-JET	5.51	9.06	1.97	1.38	3.94	1.42	2.0	6	LC..1606..	
61181			-35100-06R500200-JET	7.87	19.69	1.97	1.38	3.94	1.42	2.0	6	LC..1606..	
61052		C5-CFOL -35100-06L080055-JET	1.97	3.15	1.97	1.38	3.94	1.42	2.0	6	LC..1606..		
61054		-35100-06L100070-JET	2.76	3.94	1.97	1.38	3.94	1.42	2.0	6	LC..1606..		
61056		-35100-06L130090-JET	3.54	5.12	1.97	1.38	3.94	1.42	2.0	6	LC..1606..		
61070		-35100-06L170110-JET	4.33	6.69	1.97	1.38	3.94	1.42	2.0	6	LC..1606..		
61072		-35100-06L230140-JET	5.51	9.06	1.97	1.38	3.94	1.42	2.0	6	LC..1606..		
61074		-35100-06L500200-JET	7.87	19.69	1.97	1.38	3.94	1.42	2.0	6	LC..1606..		

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

*Max depth of cut for LCGF/LCMF16.. = 0.551 inch

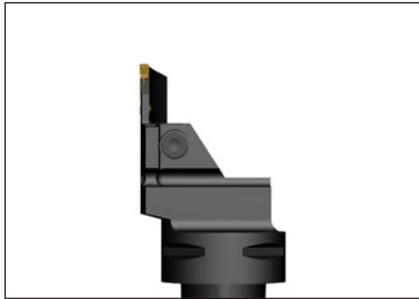
Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
CFOR/L...-05	5SMS795	TCEI0613	71
CFOR/L...-06	6SMS795	TCEI0815	88



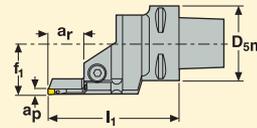
Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR

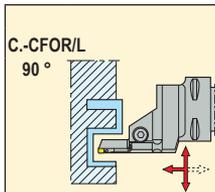


- For insert program, see pages 425-438, 440-441
- MDT axial grooving selection calculator guides you in finding the suitable tool for your axial grooving application. The application is free and available at <http://www.secotools.com/customerzoneus>

CFOR...R...JET, CFOL...L...JET



Right-hand version with right-hand blade shown
 $a_r = 6 \times a_p$



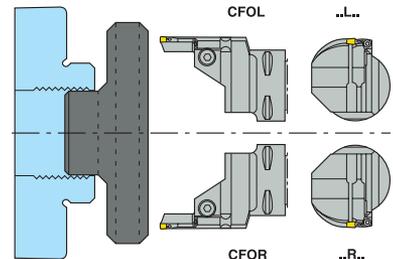
Capto size	EDP No.	Part No.	Dimensions in inch						lbs	Seat size	Insert		
			INPLM	INPLX	D _{5m}	f ₁	l ₁	a _r *					
C6	3	61448	C6-CFOR	-45075-03R080055-JET	2.17	3.15	2.48	1.77	2.95	0.71	2.4	3	LC..1603..
		61466	-45075-03R100070-JET	2.76	3.94	2.48	1.77	2.95	0.71	2.4	3	LC..1603..	
		61480	-45075-03R130090-JET	3.54	5.12	2.48	1.77	2.95	0.71	2.4	3	LC..1603..	
		61486	-45075-03R170110-JET	4.33	6.69	2.48	1.77	2.95	0.71	2.4	3	LC..1603..	
		61492	-45075-03R230140-JET	5.51	9.06	2.48	1.77	2.95	0.71	2.4	3	LC..1603..	
		61516	-45075-03R500200-JET	7.87	19.69	2.48	1.77	2.95	0.71	2.4	3	LC..1603..	
	4	61182	C6-CFOL	-45075-03L080055-JET	2.17	3.15	2.48	1.77	2.95	0.71	2.4	3	LC..1603..
		61185	-45075-03L100070-JET	2.76	3.94	2.48	1.77	2.95	0.71	2.4	3	LC..1603..	
		61186	-45075-03L130090-JET	3.54	5.12	2.48	1.77	2.95	0.71	2.4	3	LC..1603..	
		61189	-45075-03L170110-JET	4.33	6.69	2.48	1.77	2.95	0.71	2.4	3	LC..1603..	
		61191	-45075-03L230140-JET	5.51	9.06	2.48	1.77	2.95	0.71	2.4	3	LC..1603..	
		61195	-45075-03L500200-JET	7.87	19.69	2.48	1.77	2.95	0.71	2.4	3	LC..1603..	
C6	4	61528	C6-CFOR	-45080-04R080055-JET	2.17	3.15	2.48	1.77	3.15	0.94	2.4	4	LC..1604..
		61571	-45080-04R100070-JET	2.76	3.94	2.48	1.77	3.15	0.94	2.4	4	LC..1604..	
		61582	-45080-04R130090-JET	3.54	5.12	2.48	1.77	3.15	0.94	2.4	4	LC..1604..	
		61736	-45080-04R170110-JET	4.33	6.69	2.48	1.77	3.15	0.94	2.4	4	LC..1604..	
		61737	-45080-04R230140-JET	5.51	9.06	2.48	1.77	3.15	0.94	2.4	4	LC..1604..	
		61738	-45080-04R500200-JET	7.87	19.69	2.48	1.77	3.15	0.94	2.4	4	LC..1604..	
		61196	C6-CFOL	-45080-04L080055-JET	2.17	3.15	2.48	1.77	3.15	0.94	2.4	4	LC..1604..
		61197	-45080-04L100070-JET	2.76	3.94	2.48	1.77	3.15	0.94	2.4	4	LC..1604..	
		61209	-45080-04L130090-JET	3.54	5.12	2.48	1.77	3.15	0.94	2.4	4	LC..1604..	
		61213	-45080-04L170110-JET	4.33	6.69	2.48	1.77	3.15	0.94	2.4	4	LC..1604..	
61215	-45080-04L230140-JET	5.51	9.06	2.48	1.77	3.15	0.94	2.4	4	LC..1604..			
61217	-45080-04L500200-JET	7.87	19.69	2.48	1.77	3.15	0.94	2.4	4	LC..1604..			

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

*Max depth of cut for LCGF/LCMF16.. = 0.551 inch

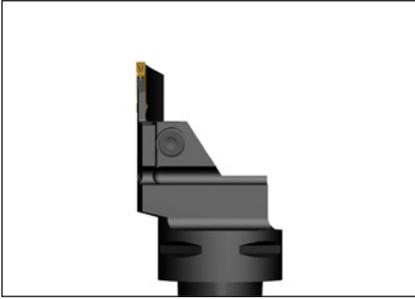
Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
CFOR/L..-03	4SMS795	TCEI0513	53
CFOR/L..-04	5SMS795	TCEI0613	71



Please check availability in current price and stock-list

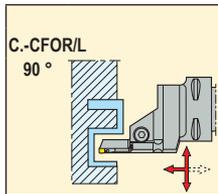
Toolholders for inserts LCGF, LCGN, LCMF and LCMR



- For insert program, see pages 426-436, 440-441
- MDT axial grooving selection calculator guides you in finding the suitable tool for your axial grooving application. The application is free and available at <http://www.secotools.com/customerzoneus>

CFOR...R...JET, CFOL...L...JET

Right-hand version with right-hand blade shown
 $a_r = 6 \times a_p$



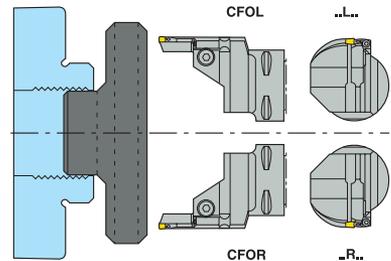
Capto size	EDP No.	Part No.	Dimensions in inch						lbs	Seat size	Insert	
			INPLM	INPLX	D _{5m}	f ₁	l ₁	a _r *				
C6	5	61739	C6-CFOR-45090-05R080055-JET	2.17	3.15	2.48	1.77	3.54	1.18	2.6	5	LC..1605..
		61741	-45090-05R100070-JET	2.76	3.94	2.48	1.77	3.54	1.18	2.6	5	LC..1605..
		61742	-45090-05R130090-JET	3.54	5.12	2.48	1.77	3.54	1.18	2.6	5	LC..1605..
		61880	-45090-05R170110-JET	4.33	6.69	2.48	1.77	3.54	1.18	2.6	5	LC..1605..
		61888	-45090-05R230140-JET	5.51	9.06	2.48	1.77	3.54	1.18	2.6	5	LC..1605..
		61889	-45090-05R500200-JET	7.87	19.69	2.48	1.77	3.54	1.18	2.6	5	LC..1605..
	6	61220	C6-CFOL-45090-05L080055-JET	2.17	3.15	2.48	1.77	3.54	1.18	2.6	5	LC..1605..
		61222	-45090-05L100070-JET	2.76	3.94	2.48	1.77	3.54	1.18	2.6	5	LC..1605..
		61255	-45090-05L130090-JET	3.54	5.12	2.48	1.77	3.54	1.18	2.6	5	LC..1605..
		61263	-45090-05L170110-JET	4.33	6.69	2.48	1.77	3.54	1.18	2.6	5	LC..1605..
		61327	-45090-05L230140-JET	5.51	9.06	2.48	1.77	3.54	1.18	2.6	5	LC..1605..
		61329	-45090-05L500200-JET	7.87	19.69	2.48	1.77	3.54	1.18	2.6	5	LC..1605..
		61891	C6-CFOR-45100-06R080055-JET	2.17	3.15	2.48	1.77	3.94	1.42	3.1	6	LC..1606..
		61892	-45100-06R100070-JET	2.76	3.94	2.48	1.77	3.94	1.42	3.1	6	LC..1606..
61893	-45100-06R130090-JET	3.54	5.12	2.48	1.77	3.94	1.42	3.1	6	LC..1606..		
61895	-45100-06R170110-JET	4.33	6.69	2.48	1.77	3.94	1.42	3.1	6	LC..1606..		
61897	-45100-06R230140-JET	5.51	9.06	2.48	1.77	3.94	1.42	3.1	6	LC..1606..		
61899	-45100-06R500200-JET	7.87	19.69	2.48	1.77	3.94	1.42	3.1	6	LC..1606..		
6	61331	C6-CFOL-45100-06L080055-JET	2.17	3.15	2.48	1.77	3.94	1.42	3.1	6	LC..1606..	
	61349	-45100-06L100070-JET	2.76	3.94	2.48	1.77	3.94	1.42	3.1	6	LC..1606..	
	61353	-45100-06L130090-JET	3.54	5.12	2.48	1.77	3.94	1.42	3.1	6	LC..1606..	
	61371	-45100-06L170110-JET	4.33	6.69	2.48	1.77	3.94	1.42	3.1	6	LC..1606..	
	61373	-45100-06L230140-JET	5.51	9.06	2.48	1.77	3.94	1.42	3.1	6	LC..1606..	
	61408	-45100-06L500200-JET	7.87	19.69	2.48	1.77	3.94	1.42	3.1	6	LC..1606..	

Initial plunge (INPLM/INPLX) relates to face groove diameter, see page 364.

*Max depth of cut for LCGF/LCMF16.. = 0.551 inch

Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
CFOR/L...-05	5SMS795	TCEI0613	71
CFOR/L...-06	6SMS795	TCEI0815	88

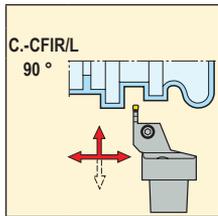
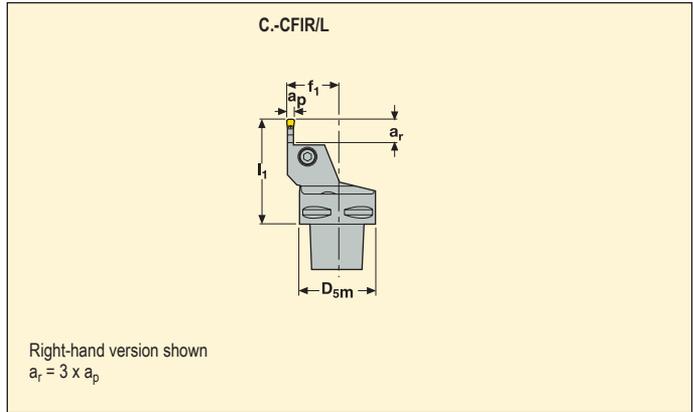


Please check availability in current price and stock-list

Toolholders for inserts LCGN, LCMF and LCMR



• For insert program, see pages 425-430, 433-438, 440-441



Capto size	EDP No.	Part No.	Dimensions in inch					lbs	Seat size	Image	
			D _{5m}	f ₁	l ₁	a _r **	DCINN3*				
C4	3	91707	C4-CFIR-27055-03	1.57	1.06	2.17	0.35	7.68	0.9	3	LC..1603..
		91706	C4-CFIL-27055-03	1.57	1.06	2.17	0.35	7.68	0.9	3	LC..1603..
	4	91709	C4-CFIR-27055-04	1.57	1.06	2.17	0.47	7.68	0.9	4	LC..1604..
		91708	C4-CFIL-27055-04	1.57	1.06	2.17	0.47	7.68	0.9	4	LC..1604..
	5	91711	C4-CFIR-27055-05	1.57	1.06	2.17	0.59	7.68	0.9	5	LC..1605..
		91710	C4-CFIL-27055-05	1.57	1.06	2.17	0.59	7.68	0.9	5	LC..1605..
C5	3	91713	C5-CFIR-35060-03	1.97	1.38	2.36	0.35	7.68	1.3	3	LC..1603..
		91712	C5-CFIL-35060-03	1.97	1.38	2.36	0.35	7.68	1.3	3	LC..1603..
	4	91715	C5-CFIR-35060-04	1.97	1.38	2.36	0.47	7.68	1.3	4	LC..1604..
		91714	C5-CFIL-35060-04	1.97	1.38	2.36	0.47	7.68	1.3	4	LC..1604..
	5	92112	C5-CFIR-35060-05	1.97	1.38	2.36	0.59	7.68	1.3	5	LC..1605..
		92111	C5-CFIL-35060-05	1.97	1.38	2.36	0.59	7.68	1.3	5	LC..1605..
	6	07137	C5-CFIR-35065-06	1.97	1.38	2.56	0.71	7.68	1.5	6	LC..1606..
		00836	C5-CFIL-35065-06	1.97	1.38	2.56	0.71	7.68	1.5	6	LC..1606..

*DCINN3 – minimum bore diameter for internal application, see page 364.

**Max depth of cut for LCMF16 = 0.55 inch

Spare Parts, Parts included in delivery

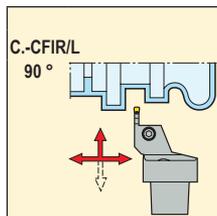
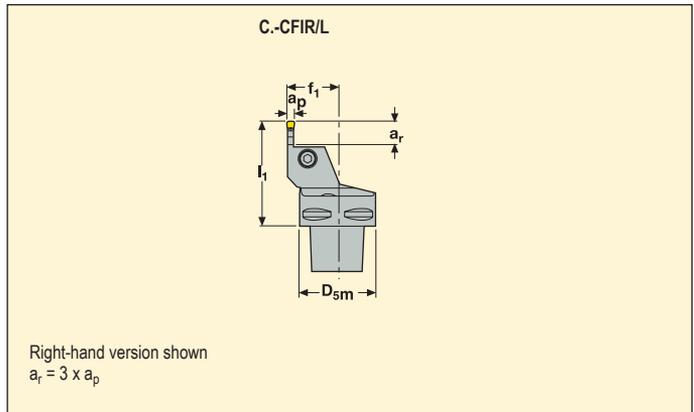
For holder	Clamp key	Clamp screw	Torque value in/lbs
CFIR/L...-03	3SMS795	MC6S4X18	31.0
CFIR/L...-04	4SMS795	MC6S5X18	44.2
CFIR/L...-05	4SMS795	MC6S5X18	44.2
CFIR/L...-06	6SMS795	TCEI0815	88.5

Please check availability in current price and stock-list

Toolholders for inserts LCGN, LCMF and LCMR



• For insert program, see pages 425-430, 433-438, 440-441



Capto size	EDP No.	Part No.	Dimensions in inch					lbs	Seat size	Image
			D _{5m}	f ₁	l ₁	a _r **	DCINN3*			
C6	94475	C6-CFIR-45065-03	2.48	1.77	2.56	0.35	7.68	2.2	3	LC..1603..
	38098	C6-CFIL-45065-03	2.48	1.77	2.56	0.35	7.68	2.2	3	LC..1603..
4	94476	C6-CFIR-45065-04	2.48	1.77	2.56	0.47	7.68	2.2	4	LC..1604..
	38100	C6-CFIL-45065-04	2.48	1.77	2.56	0.47	7.68	2.2	4	LC..1604..
5	94477	C6-CFIR-45065-05	2.48	1.77	2.56	0.59	7.68	2.2	5	LC..1605..
	12730	C6-CFIL-45065-05	2.48	1.77	2.56	0.59	7.68	2.2	5	LC..1605..
6	12338	C6-CFIR-45065-06	2.48	1.77	2.56	0.71	7.68	2.2	6	LC..1606..
	12340	C6-CFIL-45065-06	2.48	1.77	2.56	0.71	7.68	2.2	6	LC..1606..
8	38107	C6-CFIR-45075-08	2.48	1.77	2.95	0.94	7.68	2.6	8	LC..3008..
	38106	C6-CFIL-45075-08	2.48	1.77	2.95	0.94	7.68	2.6	8	LC..3008..

*DCINN3 – minimum bore diameter for internal application, see page 364.

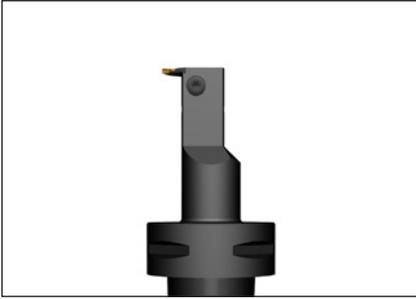
**Max depth of cut for LCMF16 = 0.55 inch and LCMF30 = 1.10 inch

Spare Parts, Parts included in delivery

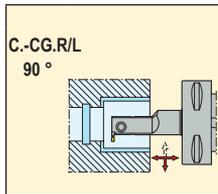
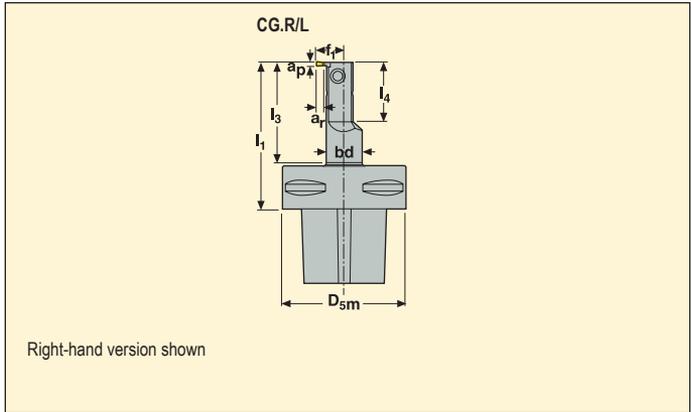
For holder	Clamp key	Clamp screw	Torque value in/lbs
CFIR/L...-03	3SMS795	MC6S4X18	31.0
CFIR/L...-04	4SMS795	MC6S5X18	44.2
CFIR/L...-05	4SMS795	MC6S5X18	44.2
CFIR/L...-06	6SMS795	TCEI0815	88.5
CFIR/L...-08	6SMS795	TCEI0825	133.0

Please check availability in current price and stock-list

Toolholders for inserts LCMF



• For insert program, see pages 420



Capto size	EDP No.	Part No.	Dimensions in inch										lbs	Seat size	
			bd	D _{5m}	f ₁	l ₁	l ₃	l ₄	a _r	DCINN*					
C4	2	65770	C4-CGHR	-15075-1902	0.71	1.57	0.57	2.95	2.09	1.20	0.22	0.79	0.9	2	LC..1902..
		65785	C4-CGHL	-15075-1902	0.71	1.57	0.57	2.95	2.09	1.20	0.22	0.79	0.9	2	LC..1902..
C5	2	65772	C5-CGHR	-15075-1902	0.71	1.97	0.57	2.95	2.09	1.20	0.22	0.79	1.1	2	LC..1902..
		65786	C5-CGHL	-15075-1902	0.71	1.97	0.57	2.95	2.09	1.20	0.22	0.79	1.1	2	LC..1902..
C6	2	65773	C6-CGHR	-15075-1902	0.71	2.36	0.57	2.95	2.01	1.20	0.22	0.79	2.0	2	LC..1902..
		65787	C6-CGHL	-15075-1902	0.71	2.36	0.57	2.95	2.01	1.20	0.22	0.79	2.0	2	LC..1902..
C4	2	65774	C4-CGJR	-19080-1902	0.91	1.57	0.75	3.15	2.28	1.20	0.30	0.98	0.9	2	LC..1902..
		65788	C4-CGJL	-19080-1902	0.91	1.57	0.75	3.15	2.28	1.20	0.30	0.98	0.9	2	LC..1902..
C5	2	65778	C5-CGJR	-19080-1902	0.91	1.97	0.75	3.15	2.28	1.20	0.30	0.98	1.3	2	LC..1902..
		65789	C5-CGJL	-19080-1902	0.91	1.97	0.75	3.15	2.28	1.20	0.30	0.98	1.3	2	LC..1902..
C6	2	65784	C6-CGJR	-19080-1902	0.91	2.36	0.75	3.15	2.20	1.20	0.30	0.98	2.0	2	LC..1902..
		65790	C6-CGJL	-19080-1902	0.91	2.36	0.75	3.15	2.20	1.20	0.30	0.98	2.0	2	LC..1902..

*DCINN – minimum bore diameter, see page 364.

Spare Parts, Parts included in delivery

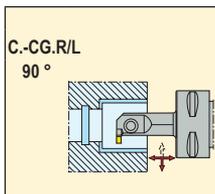
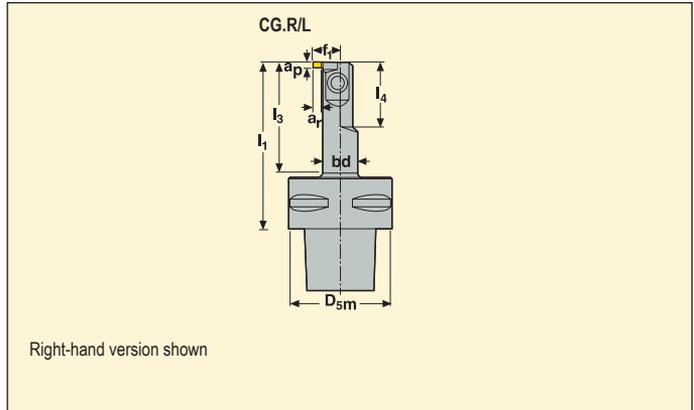
For holder	Clamp key	Clamp screw	Torque value in/lbs
CG.R/L...1902	T15P-7	L85011-T15P	44.2

Please check availability in current price and stock-list

Toolholders for inserts LCGA, LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 421-424, 439



Capto size	EDP No.	Part No.	Dimensions in inch										lbs	Seat size	Image	
			bd	D _{5m}	f ₁	l ₁	l ₃	l ₄	a _r	DCINN*						
C4	3	14998	C4-CGER	-11065-1303	0.55	1.57	0.40	2.56	1.69	1.00	0.12	0.63	0.7	3	LC..1303..	
		14996	C4-CGEL	-11065-1303	0.55	1.57	0.40	2.56	1.69	1.00	0.12	0.63	0.7	3	LC..1303..	
		14999	C4-CGFR	-15075-1303	0.71	1.57	0.57	2.95	2.09	1.20	0.22	0.79	0.9	3	LC..1303..	
		14997	C4-CGFL	-15075-1303	0.71	1.57	0.57	2.95	2.09	1.20	0.22	0.79	0.9	3	LC..1303..	
	4	15003	C4-CGFR	-15075-1304	0.71	1.57	0.57	2.95	2.09	1.20	0.22	0.79	0.9	4	LC..1304..	
		15002	C4-CGFL	-15075-1304	0.71	1.57	0.57	2.95	2.09	1.20	0.22	0.79	0.9	4	LC..1304..	
	C5	3	15005	C5-CGER	-11065-1303	0.55	1.97	0.40	2.56	1.69	1.00	0.12	0.63	1.1	3	LC..1303..
			15004	C5-CGEL	-11065-1303	0.55	1.97	0.40	2.56	1.69	1.00	0.12	0.63	1.1	3	LC..1303..
15007			C5-CGFR	-15075-1303	0.71	1.97	0.57	2.95	2.09	1.20	0.22	0.79	1.1	3	LC..1303..	
15006			C5-CGFL	-15075-1303	0.71	1.97	0.57	2.95	2.09	1.20	0.22	0.79	1.1	3	LC..1303..	
59198			C5-CGHL	-19080-1303	0.91	1.97	0.75	3.15	2.28	1.59	0.30	0.98	2.0	3	LC..1303..	
59296			C5-CGHR	-19080-1303	0.91	1.97	0.75	3.15	2.28	1.59	0.30	0.98	2.0	3	LC..1303..	
59299			C5-CGJR	-26110-1303	1.18	1.97	1.00	4.33	3.46	1.99	0.41	1.26	2.0	3	LC..1303..	
59298			C5-CGJL	-26110-1303	1.18	1.97	1.00	4.33	3.46	1.99	0.41	1.26	2.0	3	LC..1303..	
4		15012	C5-CGFR	-15075-1304	0.71	1.97	0.57	2.95	2.09	1.20	0.22	0.79	1.1	4	LC..1304..	
		15015	-19080-1304	0.91	1.97	0.75	3.15	2.28	1.59	0.30	0.98	1.3	4	LC..1304..		
		15011	C5-CGFL	-15075-1304	0.71	1.97	0.57	2.95	2.09	1.20	0.22	0.79	1.1	4	LC..1304..	
		15013	-19080-1304	0.91	1.97	0.75	3.15	2.28	1.59	0.30	0.98	1.3	4	LC..1304..		
		59297	C5-CGHR	-26110-1304	1.18	1.97	1.00	4.33	3.46	1.99	0.41	1.26	2.0	4	LC..1304..	
		59295	C5-CGHL	-26110-1304	1.18	1.97	1.00	4.33	3.46	1.99	0.41	1.26	2.0	4	LC..1304..	

*DCINN – minimum bore diameter, see page 364.

Spare Parts, Parts included in delivery

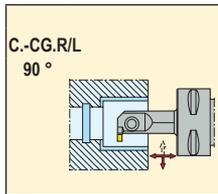
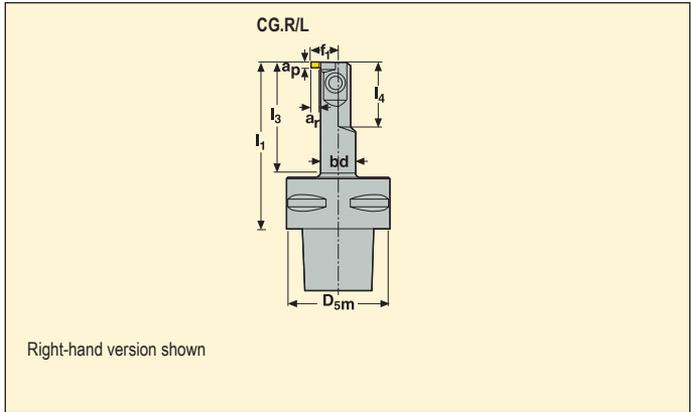
For holder	Clamp key	Clamp screw	Torque value in/lbs
CG.R/L..-1303	T15P-7	L85011-T15P	44.2
CG.R/L..-1304	T15P-7	L85011-T15P	44.2

Please check availability in current price and stock-list

Toolholders for inserts LCGA, LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 421-424, 439



Capto size	EDP No.	Part No.	Dimensions in inch								lbs	Seat size	Image		
			bd	D _{5m}	f ₁	l ₁	l ₃	l ₄	a _r	DCINN*					
C6	3	15018	C6-CGER	-11065-1303	0.55	2.48	0.40	2.56	1.69	1.00	0.12	0.63	1.8	3	LC..1303..
		15017	C6-CGEL	-11065-1303	0.55	2.48	0.40	2.56	1.69	1.00	0.12	0.63	1.8	3	LC..1303..
		15020	C6-CGFR	-15075-1303	0.71	2.48	0.57	2.95	2.09	1.20	0.22	0.79	2.0	3	LC..1303..
		15019	C6-CGFL	-15075-1303	0.71	2.48	0.57	2.95	2.09	1.20	0.22	0.79	2.0	3	LC..1303..
		59302	C6-CGHR	-19080-1303	0.91	2.48	0.75	3.15	2.20	1.59	0.30	0.98	1.3	3	LC..1303..
		59300	C6-CGHL	-19080-1303	0.91	2.48	0.75	3.15	2.28	1.57	0.30	0.98	1.3	3	LC..1303..
	59305	C6-CGJR	-26110-1303	1.18	2.48	1.00	4.33	3.39	1.97	0.41	1.26	2.4	3	LC..1303..	
	4	15026	C6-CGFR	-15075-1304	0.71	2.48	0.57	2.95	2.09	1.20	0.22	0.79	2.0	4	LC..1304..
		10400		-19080-1304	0.91	2.48	0.75	3.15	2.28	1.59	0.30	0.98	2.0	4	LC..1304..
		15024	C6-CGFL	-15075-1304	0.71	2.48	0.57	2.95	2.09	1.20	0.22	0.79	2.0	4	LC..1304..
15027			-19080-1304	0.91	2.48	0.75	3.15	2.28	1.59	0.30	0.98	2.0	4	LC..1304..	
59303		C6-CGHR	-26110-1304	1.18	2.48	1.00	4.33	3.39	1.99	0.41	1.26	2.4	4	LC..1304..	
59301		C6-CGHL	-26110-1304	1.18	2.48	1.00	4.33	3.46	1.97	0.41	1.26	2.4	4	LC..1304..	

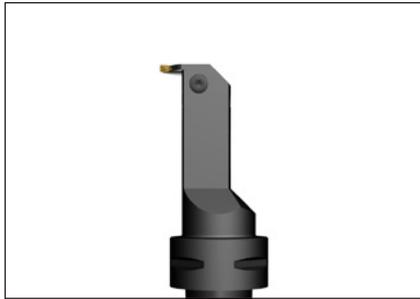
*DCINN – minimum bore diameter, see page 364.

Spare Parts, Parts included in delivery

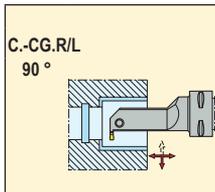
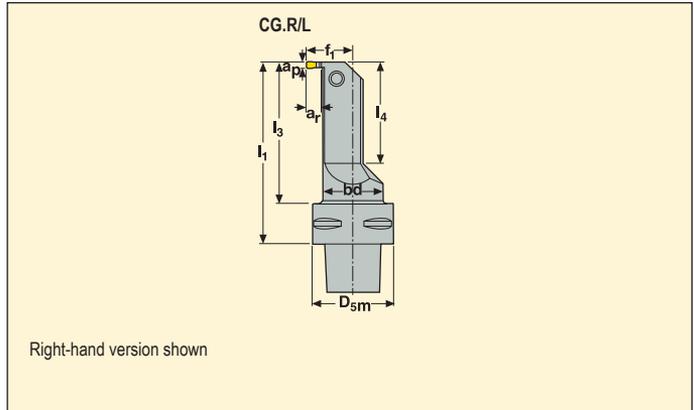
For holder	Clamp key	Clamp screw	Torque value in/lbs
CG.R/L...-1303	T15P-7	L85011-T15P	44.2
CG.R/L...-1304	T15P-7	L85011-T15P	44.2

Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 425-438, 440-441



Capto size	EDP No.	Part No.	Dimensions in inch										lbs	Seat size	Insert
			bd	D _{5m}	f ₁	l ₁	l ₃	l ₄	a _r	DCINN*					
C4	3	59313	C4-CGIR -24090-1603	1.18	1.57	0.94	3.54	2.68	1.98	0.35	1.26	1.1	3	LC..1603..	
		59310	C4-CGIL -24090-1603	1.18	1.57	0.94	3.54	2.68	1.98	0.35	1.26	1.1	3	LC..1603..	
	4	59319	C4-CGGR -24090-1604	1.18	1.57	0.94	3.54	2.68	1.98	0.35	1.26	1.1	4	LC..1604..	
		59316	C4-CGGL -24090-1604	1.18	1.57	0.94	3.54	2.68	1.98	0.35	1.26	1.1	4	LC..1604..	
	5	59325	C4-CGFR -24090-1605	1.18	1.57	0.94	3.54	2.68	1.98	0.35	1.26	1.1	5	LC..1605..	
		59322	C4-CGFL -24090-1605	1.18	1.57	0.94	3.54	2.68	1.99	0.35	1.26	1.1	5	LC..1605..	
C5	3	59314	C5-CGIR -24090-1603	1.18	1.97	0.94	3.54	2.68	1.98	0.35	1.26	2.0	3	LC..1603..	
		59311	C5-CGIL -24090-1603	1.18	1.97	0.94	3.54	2.68	1.98	0.35	1.26	2.0	3	LC..1603..	
	4	59320	C5-CGGR -24090-1604	1.18	1.97	0.94	3.54	2.68	1.96	0.35	1.26	2.0	4	LC..1604..	
		59317	C5-CGGL -24090-1604	1.18	1.97	0.94	3.54	2.68	1.96	0.35	1.26	2.0	4	LC..1604..	
	5	59326	C5-CGFR -24090-1605	1.18	1.97	0.94	3.54	2.68	1.96	0.35	1.26	2.0	5	LC..1605..	
		59323	C5-CGFL -24090-1605	1.18	1.97	0.94	3.54	2.68	1.96	0.35	1.26	2.0	5	LC..1605..	
	6	59330	C5-CGFR -24090-1606	1.18	1.97	0.94	3.54	2.68	1.96	0.35	1.26	2.0	6	LC..1606..	
		59328	C5-CGFL -24090-1606	1.18	1.97	0.94	3.54	2.68	1.96	0.35	1.26	2.0	6	LC..1606..	

*DCINN – minimum bore diameter, see page 364.

Spare Parts, Parts included in delivery

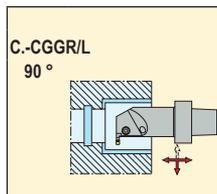
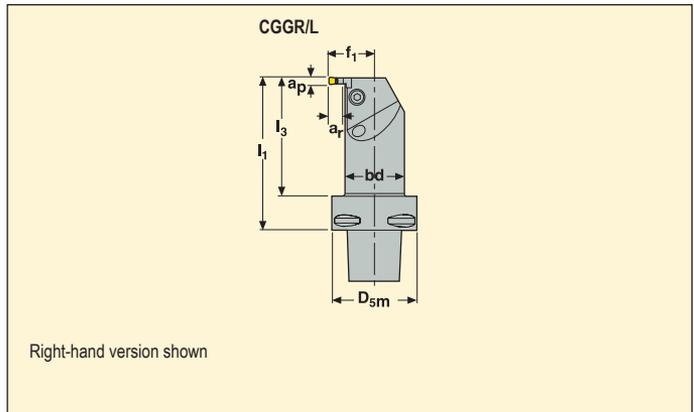
For holder	Clamp key	Clamp screw	Torque value in/lbs
CG.R/L...-1603	T15P-7	L85011-T15P	44.2
CG.R/L...-1604	T15P-7	L85011-T15P	44.2
CG.R/L...-1605	T20P-7	L86015-T20P	53.1
CG.R/L...-1606	T20P-7	L86015-T20P	53.1

Please check availability in current price and stock-list

Toolholders for inserts LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 425-438, 440-441



Capto size	EDP No.	Part No.	Dimensions in inch								lbs	Seat size	Insert
			bd	D _{sm}	f ₁	l ₁	l ₃	a _r	DCINN*				
C4	3	38031	C4-CGGR -25090-03	1.38	1.57	0.98	3.54	2.76	0.24	1.77	1.5	3	LC..1603..
		38030	C4-CGGL -25090-03	1.38	1.57	0.98	3.54	2.76	0.24	1.77	1.5	3	LC..1603..
	4	38037	C4-CGGR -27090-04	1.38	1.57	1.06	3.54	2.76	0.31	1.77	1.5	4	LC..1604..
		38036	C4-CGGL -27090-04	1.38	1.57	1.06	3.54	2.76	0.31	1.77	1.5	4	LC..1604..
	5	59307	C4-CGGR -28090-05	1.28	1.57	1.09	3.54	2.48	0.39	1.77	1.1	5	LC..1605..
		59306	C4-CGGL -28090-05	1.28	1.57	1.09	3.54	2.48	0.39	1.77	1.1	5	LC..1605..
C5	3	38033	C5-CGGR -25090-03	1.38	1.97	0.98	3.54	2.76	0.24	1.77	2.0	3	LC..1603..
		38032	C5-CGGL -25090-03	1.38	1.97	0.98	3.54	2.76	0.24	1.77	2.0	3	LC..1603..
	4	38039	C5-CGGR -27090-04	1.38	1.97	1.06	3.54	2.76	0.31	1.77	2.0	4	LC..1604..
		38038	C5-CGGL -27090-04	1.38	1.97	1.06	3.54	2.76	0.31	1.77	2.0	4	LC..1604..
	5	59309	C5-CGGR -28090-05	1.28	1.97	1.09	3.54	2.48	0.39	1.77	2.0	5	LC..1605..
		59308	C5-CGGL -28090-05	1.28	1.97	1.09	3.54	2.48	0.39	1.77	2.0	5	LC..1605..
	6	62112	C5-CGGR -29090-06	1.20	1.97	1.13	3.54	2.44	0.47	1.77	2.0	6	LC..1606..
		62111	C5-CGGL -29090-06	1.20	1.97	1.13	3.54	2.44	0.47	1.77	2.0	6	LC..1606..

*DCINN – minimum bore diameter, see page 364.

Spare Parts, Parts included in delivery

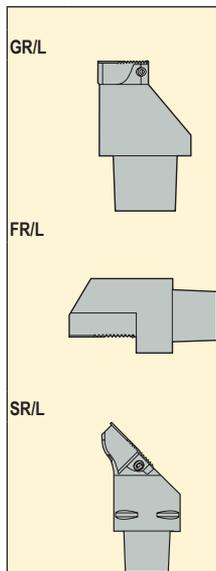
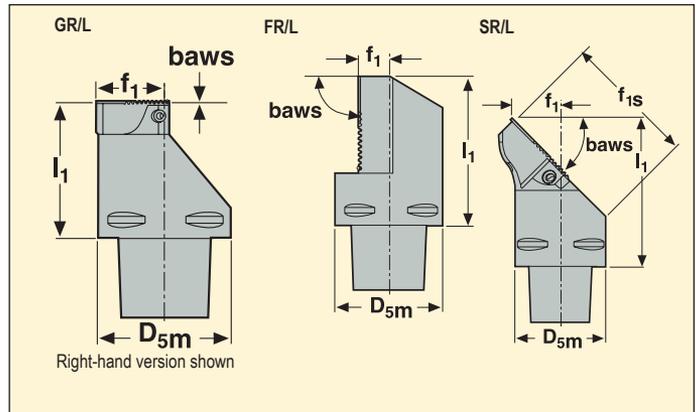
For holder	Clamp key	Clamp screw	Torque value in/lbs
CG.R/L...-03	3SMS795	MC6S4X14	44.2
CG.R/L...-04	4SMS795	MC6S5X14	44.2
CG.R/L...-05	4SMS795	MC6S5X14	53.1
CG.R/L...-06	5SMS795	TCEI0614	53.1

Please check availability in current price and stock-list

External toolholders



- How to assemble, see pages 361-363
- For modular blades, see pages 413-417



Capto size	EDP No.	Part No.	Dimensions in inch				baws°	lbs
			D _{5m}	f ₁	f _{1s}	l ₁		
C4	26919	C4-GR-21050-V21	1.57	0.83	–	1.97	0	1.1
	26920	C4-GL-21050-V21	1.57	0.83	–	1.97	0	1.1
C5	26921	C5-GR-29060-V21	1.97	1.02	–	2.36	0	2.0
	26922	C5-GL-29060-V21	1.97	1.02	–	2.36	0	2.0
C6	26923	C6-GR-39065-V21	2.48	1.54	–	2.56	0	3.1
	26924	C6-GL-39065-V21	2.48	1.54	–	2.56	0	3.1
C4	26912	C4-FR-11055-V21	1.57	0.44	–	2.17	90	1.1
	26913	C4-FL-11055-V21	1.57	0.44	–	2.17	90	1.1
C5	26914	C5-FR-16060-V21	1.97	0.63	–	2.36	90	2.0
	26916	C5-FL-16060-V21	1.97	0.63	–	2.36	90	2.0
C6	26917	C6-FR-23065-V21	2.48	0.89	–	2.56	90	3.5
	26918	C6-FL-23065-V21	2.48	0.89	–	2.56	90	3.5
C4	62409	C4-SR-21065-V21	1.57	0.83	2.33	2.56	45	1.1
	62407	C4-SL-21065-V21	1.57	0.83	2.33	2.56	45	1.1
C5	62410	C5-SR-26075-V21	1.97	1.02	2.89	2.95	45	2.0
	62406	C5-SL-26075-V21	1.97	1.02	2.89	2.95	45	2.0
C6	62411	C6-SR-33085-V21	2.48	1.30	3.64	3.35	45	3.3
	62408	C6-SL-33085-V21	2.48	1.30	3.64	3.35	45	3.3

Spare Parts, Parts included in delivery

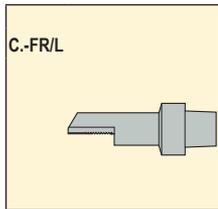
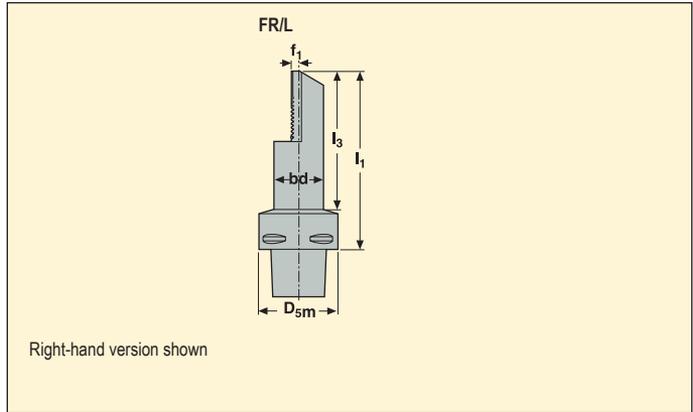
For holder	Key	Mounitng screw	Insert locking screw	Insert locking screw torque value in/lbs
...V21	T20P-7L	F85015-T20P	C46017-T20P	53.1

Please check availability in current price and stock-list

Internal toolholders



- How to assemble, see pages 361-362
- For modular blades, see pages 414-417



Capto size	EDP No.	Part No.	Dimensions in inch					lbs
			bd	D _{5m}	f ₁	l ₁	l ₃	
C4	26925	C4-FR-04090-V21	0.98	1.57	0.14	3.54	2.76	1.1
	26926	C4-FL-04090-V21	0.98	1.57	0.14	3.54	2.76	1.1
	26927	C4-FR-07110-V21	1.26	1.57	0.28	4.33	3.54	1.5
	26928	C4-FL-07110-V21	1.26	1.57	0.28	4.33	3.54	1.5
	26929	C4-FR-11140-V21	1.57	1.57	0.43	5.51	4.72	2.9
	26930	C4-FL-11140-V21	1.57	1.57	0.43	5.51	4.72	2.9
C5	26931	C5-FR-04090-V21	0.98	1.97	0.14	3.54	2.76	1.5
	26932	C5-FL-04090-V21	0.98	1.97	0.14	3.54	2.76	1.5
	26933	C5-FR-07110-V21	1.26	1.97	0.28	4.33	3.54	2.0
	26934	C5-FL-07110-V21	1.26	1.97	0.28	4.33	3.54	2.0
	26935	C5-FR-11140-V21	1.57	1.97	0.43	5.51	4.72	3.5
	26936	C5-FL-11140-V21	1.57	1.97	0.43	5.51	4.72	3.5
C6	26937	C6-FR-04090-V21	0.98	2.48	0.14	3.54	2.68	2.0
	26938	C6-FL-04090-V21	0.98	2.48	0.14	3.54	2.68	2.0
	26939	C6-FR-07110-V21	1.26	2.48	0.28	4.33	3.46	3.1
	26940	C6-FL-07110-V21	1.26	2.48	0.28	4.33	3.46	3.1
	26941	C6-FR-11140-V21	1.57	2.48	0.43	5.51	4.65	4.0
	26942	C6-FL-11140-V21	1.57	2.48	0.43	5.51	4.65	4.0

Spare Parts, Parts included in delivery

For holder	Key	Mounitng screw	Insert locking screw	Insert locking screw torque value in/lbs	
...V21	T20P-7L	F85015-T20P	C46017-T20P	53.1	

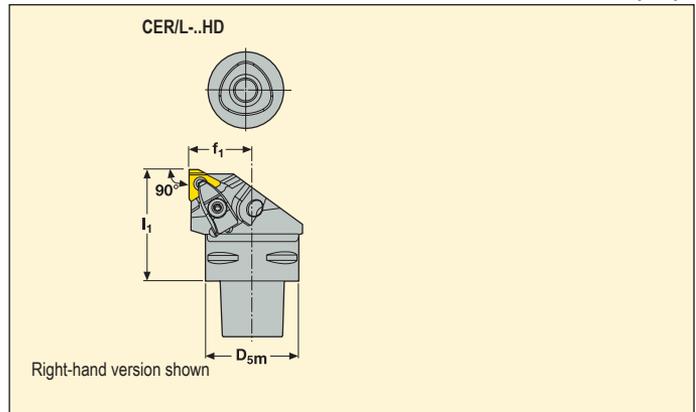
Please check availability in current price and stock-list

Toolholders for S-inserts

Snap-Tap®



- For inserts, please see threading insert section beginning on page 494



Application	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch			lbs	
				D _{5m}	l ₁	f ₁		
	3/8	21726	C4-CER -27050-16HD	1.57	1.97	1.06	1.1	16..
		21737	C4-CEL -27050-16HD	1.57	1.97	1.06	1.1	16..
	1/2	21732	C4-CER -27050-22HD	1.57	1.97	1.06	1.1	22..
		21738	C4-CEL -27050-22HD	1.57	1.97	1.06	1.1	22..
	3/8	21733	C5-CER -35060-16HD	1.97	2.36	1.38	1.8	16..
		21739	C5-CEL -35060-16HD	1.97	2.36	1.38	1.8	16..
	1/2	21734	C5-CER -35060-22HD	1.97	2.36	1.38	1.8	22..
		21740	C5-CEL -35060-22HD	1.97	2.36	1.38	1.8	22..
	5/8	76701	C5-CER -35060-27HD	1.97	2.36	1.38	1.8	27..
		76704	C5-CEL -35060-27HD	1.97	2.36	1.38	1.8	27..
	3/8	21735	C6-CER -45065-16HD	2.48	2.56	1.77	2.9	16..
		21741	C6-CEL -45065-16HD	2.48	2.56	1.77	2.9	16..
	1/2	21736	C6-CER -45065-22HD	2.48	2.56	1.77	2.9	22..
		21742	C6-CEL -45065-22HD	2.48	2.56	1.77	2.9	22..
	5/8	21762	C6-CER -45065-27HD	2.48	2.56	1.77	2.9	27..
		21764	C6-CEL -45065-27HD	2.48	2.56	1.77	2.9	27..

Spare Parts, Parts included in delivery

Toolholder/Insert dimension	Anvil for insert type S	Anvil for insert type M*	Anvil screw/ Key*	Clamp	Clamp screw	Spring	Key
-16	GX16-1	MX16-1	CS3507-T09P	T09P-2	CHD16	L85020-T15P	T15P-2
-22	NX22-1	MX22-1	CS4009-T15P	T15P-2	CHD22	L86025-T20P	T20P-7
-27	VX27-1	MX27-1	CO5012-T15P	T15P-2	CHD27	L86025-T20P	T20P-7

Please check availability in current price and stock-list

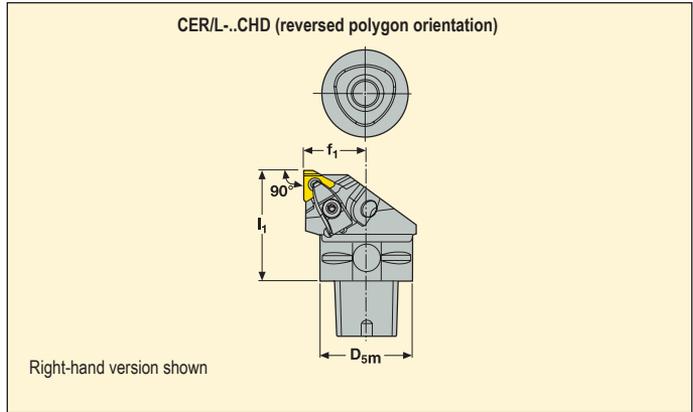
*To be ordered separately

Toolholders for S-inserts

Snap-Tap®



- For inserts, please see threading insert section beginning on page 494



Application	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch			lbs	Insert
				D _{5m}	l ₁	f ₁		
	3/8	21743	C4-CER -27050-16CHD	1.57	1.97	1.06	1.1	16..
		21754	C4-CEL -27050-16CHD	1.57	1.97	1.06	1.1	16..
	1/2	21749	C4-CER -27050-22CHD	1.57	1.97	1.06	1.1	22..
		21755	C4-CEL -27050-22CHD	1.57	1.97	1.06	1.1	22..
	3/8	21750	C5-CER -35060-16CHD	1.97	2.36	1.38	1.8	16..
		21756	C5-CEL -35060-16CHD	1.97	2.36	1.38	1.8	16..
	1/2	21751	C5-CER -35060-22CHD	1.97	2.36	1.38	1.8	22..
		21757	C5-CEL -35060-22CHD	1.97	2.36	1.38	1.8	22..
	3/8	21752	C6-CER -45065-16CHD	2.48	2.56	1.77	2.9	16..
		21759	C6-CEL -45065-16CHD	2.48	2.56	1.77	2.9	16..
	1/2	21753	C6-CER -45065-22CHD	2.48	2.56	1.77	2.9	22..
		21761	C6-CEL -45065-22CHD	2.48	2.56	1.77	2.9	22..
	5/8	21763	C6-CER -45065-27CHD	2.48	2.56	1.77	2.9	27..
		21765	C6-CEL -45065-27CHD	2.48	2.56	1.77	2.9	27..

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Insert shim (S)	Insert shim (M)*	Shim screw/Key*		Floating wedge clamp	Clamp screw	Spring	Locking key
-16	GX16-1	MX16-1	CS3507-T09P	T09P-2	CHD16	L85020-T15P	S6912	T15P-2
-22	NX22-1	MX22-1	CS4009-T15P	T15P-2	CHD22	L86025-T20P	S7616	T20P-7
-27	VX27-1	MX27-1	CO5012-T15P	T15P-2	CHD27	L86025-T20P	S7616	T20P-7

Please check availability in current price and stock-list

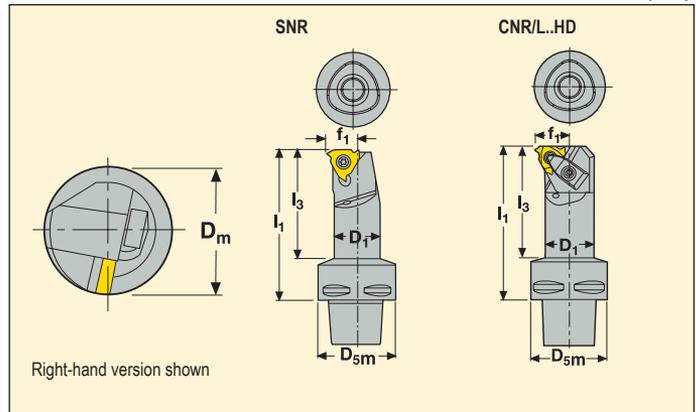
*To be ordered separately

Toolholders for S-inserts

Snap-Tap



• For inserts, please see threading insert section beginning on page 495



Application	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch						lbs	
				D ₁	D _{5m}	f ₁	D _m min	l ₁	l ₃		
	3/8	08610	C4-SNR -10060-16	0.63	1.57	0.39	0.75	2.36	1.46	0.7	16..
		30403	C4-CNR -14060-16HD	0.79	1.57	0.54	0.94	2.36	1.42	0.9	16..
		30405	-17070-16HD	0.98	1.57	0.64	1.14	2.76	1.89	1.1	16..
		30406	-20090-16HD	1.26	1.57	0.78	1.42	3.54	2.72	1.5	16..
		30410	C4-CNL -14060-16HD	0.79	1.57	0.54	0.94	2.36	1.42	0.9	16..
		30409	-17070-16HD	0.98	1.57	0.64	1.14	2.76	1.89	1.1	16..
		30411	-20090-16HD	1.26	1.57	0.78	1.42	3.54	2.72	1.5	16..
1/2	30428	C4-CNR -22090-22HD	1.26	1.57	0.84	1.50	3.54	2.72	1.3	22..	
	30430	C4-CNL -22090-22HD	1.26	1.57	0.84	1.50	3.54	2.72	1.3	22..	
3/8	30429	C5-CNR -14060-16HD	0.79	1.97	0.54	0.94	2.36	1.42	1.3	16..	
	30431	-17070-16HD	0.98	1.97	0.64	1.14	2.76	1.85	1.3	16..	
	30432	-20090-16HD	1.26	1.97	0.78	1.42	3.54	2.68	1.8	16..	
	30441	C5-CNL -14060-16HD	0.79	1.97	0.54	0.94	2.36	1.42	1.3	16..	
	30442	-17070-16HD	0.98	1.97	0.64	1.14	2.76	1.85	1.3	16..	
	30443	-20090-16HD	1.26	1.97	0.78	1.42	3.54	2.68	1.8	16..	
1/2	30444	C5-CNR -18070-22HD	0.98	1.97	0.70	1.18	2.76	1.85	1.3	22..	
	30446	-22090-22HD	1.26	1.97	0.84	1.50	3.54	2.68	1.8	22..	
	30447	C5-CNL -18070-22HD	0.98	1.97	0.70	1.18	2.76	1.85	1.3	22..	
	30449	-22090-22HD	1.26	1.97	0.84	1.50	3.54	2.68	1.8	22..	
5/8	17651	C5-CNR -26105-27HD	1.57	1.97	0.98	1.81	4.13	3.27	2.6	27..	
	17660	C5-CNL -26105-27HD	1.57	1.97	0.98	1.81	4.13	3.27	2.6	27..	

Spare Parts, Parts included in delivery

Toolholder/Insert dimension	Anvil for insert type S	Anvil for insert type M*	Anvil screw/ Key*	Clamp	Spring	Screw	Clamp screw/ Key/ Screw
-16	-	-	-	-	-	-	-
-14..-16HD	GX16-1	MX16-1	CS3507-T09P	T09P-2	-	-	CSP16HD-T15P
-17..-16HD	GX16-1	MX16-1	CS3507-T09P	T09P-2	-	-	CSP16HD-T15P
-20..-16HD	GX16-1	MX16-1	CS3507-T09P	T09P-2	CHD16	S6912	L85020-T15P
...-22HD	NX22-1	MX22-1	CS4009-T15P	T15P-2	-	-	CSP22HD-T15P
...-27HD	VX27-1	MX27-1	C05012-T15P	T15P-2	CHD27	S7616	L86025-T20P

Please check availability in current price and stock-list

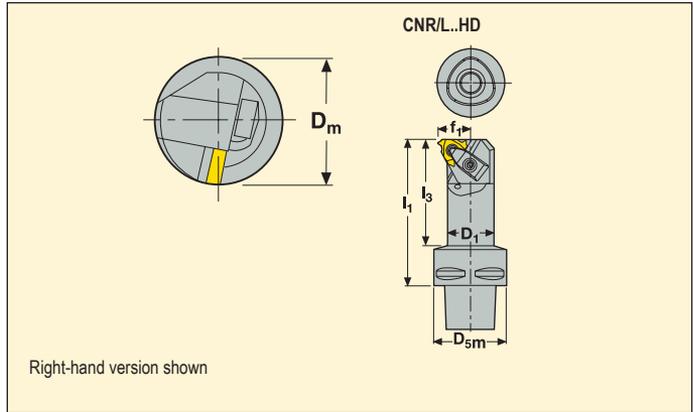
*To be ordered separately

Toolholders for S-inserts

Snap-Tap®



- For inserts, please see threading insert section beginning on page 495



Application	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch						lbs	
				D ₁	D _{5m}	f ₁	D _m min	l ₁	l ₃		
	3/8	30453	C6-CNR -17075-16HD	0.98	2.48	0.64	1.14	2.95	2.09	2.0	16
		30454	-20090-16HD	1.26	2.48	0.78	1.42	3.54	2.68	2.4	16
		30457	-24105-16HD	1.57	2.48	0.94	1.73	4.13	3.15	3.3	16
		30458	C6-CNL -17075-16HD	0.98	2.48	0.64	1.14	2.95	2.09	2.0	16
		30459	-20090-16HD	1.26	2.48	0.78	1.42	3.54	2.68	2.4	16
		30460	-24105-16HD	1.57	2.48	0.94	1.73	4.13	3.15	3.3	16
	1/2	30461	C6-CNR -18075-22HD	0.98	2.48	0.70	1.18	2.95	2.09	2.0	22
		30463	-22090-22HD	1.26	2.48	0.84	1.50	3.54	2.68	2.4	22
		30465	-26105-22HD	1.57	2.48	1.00	1.81	4.13	3.15	3.3	22
		30466	C6-CNL -18075-22HD	0.98	2.48	0.70	1.18	2.95	2.09	2.0	22
		30468	-22090-22HD	1.26	2.48	0.84	1.50	3.54	2.68	2.4	22
		30469	-26105-22HD	1.57	2.48	1.00	1.81	4.13	3.15	3.3	22
	5/8	43889	C6-CNR -26105-27HD	1.57	2.48	1.00	1.81	4.13	3.03	3.5	27
		43904	-36182-27HD	2.48	2.48	1.42	2.76	7.17	–	9.0	27
		43891	C6-CNL -26105-27HD	1.57	2.48	1.00	1.81	4.13	3.03	3.5	27
		43896	-36182-27HD	2.48	2.48	1.42	2.76	7.17	–	9.0	27
		43898	C8-CNR -36190-27HD	2.48	3.15	1.42	2.76	7.48	6.30	10.8	27
		43899	C8-CNL -36190-27HD	2.48	3.15	1.42	2.76	7.48	6.30	10.8	27

Spare Parts, Parts included in delivery

Toolholder/ Insert dimension	Insert shim (S)	Insert shim (M)*	Shim screw/Key*	Floating wedge clamp	Spring	Clamp screw	Cantilever clamp/Locking key
CNR/L-17...-16	GX16-1	MX16-1	CS3507-T09P	T09P-2	–	–	CSP16HD-T15P
CNR/L-20...-16	GX16-1	MX16-1	CS3507-T09P	T09P-2	CHD16	S6912	L85020-T15P
CNR/L-24...-16	GX16-1	MX16-1	CS3507-T09P	T09P-2	CHD16	S6912	L85020-T15P
CNR/L-18...-22	NX22-1	MX22-1	CS4009-T15P	T15P-2	–	–	CSP22HD-T15P
CNR/L-22...-22	NX22-1	MX22-1	CS4009-T15P	T15P-2	–	–	CSP22HD-T15P
CNR/L-26...-22	NX22-1	MX22-1	CS4009-T15P	T15P-2	CHD22	S7616	L86025-T20P
CNR/L...-27	VX27-1	MX27-1	C05012-T15P	T15P-2	CHD27	S7616	L86025-T20P

Please check availability in current price and stock-list

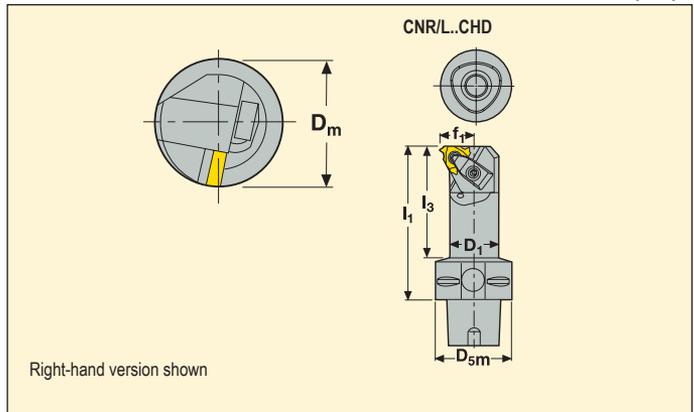
*To be ordered separately

Toolholders for S-inserts

Snap-Tap®



• For inserts, please see threading insert section beginning on page 495



Application	Insert I.C. inch	EDP No.	Part No.	Dimensions in inch						lbs	
				D ₁	D _{sm}	f ₁	D _m min	l ₁	l ₃		
	3/8	30470	C4-CNR -14060-16CHD	0.79	1.57	0.54	0.94	2.36	1.42	0.9	16
		30471	C4-CNL -14060-16CHD	0.79	1.57	0.54	0.94	2.36	1.42	0.9	16
		30472	C5-CNR -17070-16CHD	0.98	1.97	0.64	1.14	2.76	1.85	1.3	16
		30473	-20090-16CHD	1.26	1.97	0.78	1.42	3.54	2.68	1.8	16
		30476	C5-CNL -17070-16CHD	0.98	1.97	0.64	1.14	2.76	1.85	1.3	16
		30477	-20090-16CHD	1.26	1.97	0.78	1.42	3.54	2.68	1.8	16
	1/2	30479	C5-CNR -18070-22CHD	0.98	1.97	0.70	1.18	2.76	1.85	1.3	22
		30480	C5-CNL -18070-22CHD	0.98	1.97	0.70	1.18	2.76	1.85	1.3	22
	3/8	30481	C6-CNR -20090-16CHD	1.26	2.48	0.78	1.42	3.54	2.68	2.4	16
		30482	-24105-16CHD	1.57	2.48	0.94	1.73	4.13	3.15	3.3	16
		30483	C6-CNL -20090-16CHD	1.26	2.48	0.78	1.42	3.54	2.68	2.4	16
		30484	-24105-16CHD	1.57	2.48	0.94	1.73	4.13	3.15	3.3	16
	1/2	30488	C6-CNR -22090-22CHD	1.26	2.48	0.84	1.50	3.54	2.68	2.4	22
		30489	-26105-22CHD	1.57	2.48	1.00	1.81	4.13	3.15	3.3	22
		30491	C6-CNL -22090-22CHD	1.26	2.48	0.84	1.50	3.54	2.68	2.4	22
		30493	-26105-22CHD	1.57	2.48	1.00	1.81	4.13	3.15	3.3	22

Spare Parts, Parts included in delivery

Toolholder/Insert dimension	Insert shim (S)	Insert shim (M)*	Shim screw/Key*	Floating wedge clamp	Spring	Clamp screw	Cantilever clamp/Locking key
CNR/L-14...-16	GX16-1	MX16-1	CS3507-T09P T09P-2				
CNR/L-17...-16	GX16-1	MX16-1	CS3507-T09P T09P-2	–	–	–	CSP16HD-T15P T15P-2
CNR/L-20...-16	GX16-1	MX16-1	CS3507-T09P T09P-2	CHD16	S6912	L85020-T15P	– T15P-2
CNR/L-24...-16	GX16-1	MX16-1	CS3507-T09P T09P-2	CHD16	S6912	L85020-T15P	– T15P-2
CNR/L-18...-22	NX22-1	MX22-1	CS4009-T15P T15P-2	–	–	–	CSP22HD-T15P T15P-2
CNR/L-22...-22	NX22-1	MX22-1	CS4009-T15P T15P-2	–	–	–	CSP22HD-T15P T15P-2
CNR/L-26...-22	NX22-1	MX22-1	CS4009-T15P T15P-2	CHD22	S7616	L86025-T20P	– T20P-7

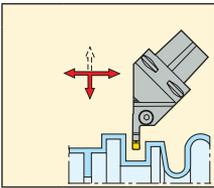
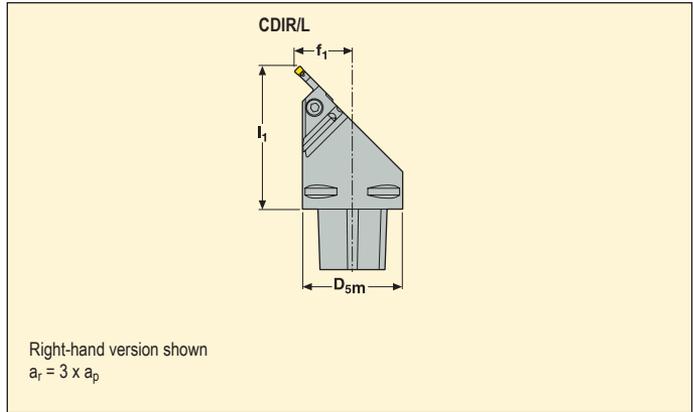
Please check availability in current price and stock-list

*To be ordered separately

Toolholders for inserts LCGF, LCGN, LCMF and LCMR



• For insert program, see pages 425-438, 440-441



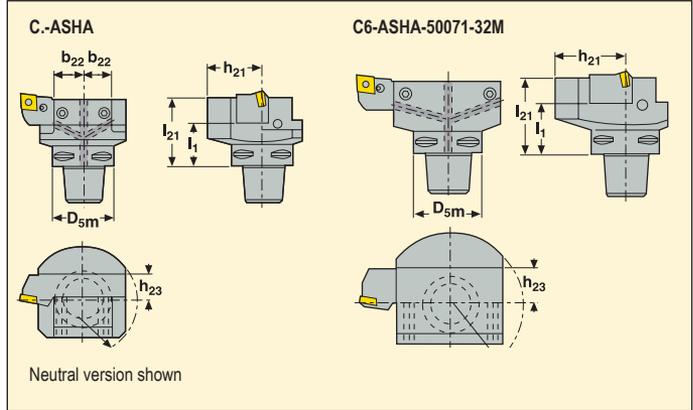
	EDP No.	Part No.	Dimensions in inch				lbs	Seat size	
			D _{sm}	f ₁	l ₁	a _r			
3	13276	C6-CDIR-33090-03JET	2.48	1.30	3.54	0.35	3.7	3	LC..1603..
	38006	C6-CDIL-33090-03JET	2.48	1.30	3.54	0.35	3.7	3	LC..1603..
4	13279	C6-CDIR-33090-04JET	2.48	1.30	3.54	0.47	3.7	4	LC..1604..
	38007	C6-CDIL-33090-04JET	2.48	1.30	3.54	0.47	3.7	4	LC..1604..
5	13281	C6-CDIR-33090-05JET	2.48	1.30	3.54	0.59	3.7	5	LC..1605..
	38008	C6-CDIL-33090-05JET	2.48	1.30	3.54	0.59	3.7	5	LC..1605..
6	13282	C6-CDIR-33090-06JET	2.48	1.30	3.54	0.71	3.7	6	LC..1606..
	38009	C6-CDIL-33090-06JET	2.48	1.30	3.54	0.71	3.7	6	LC..1606..
8	13283	C6-CDIR-33090-08JET	2.48	1.30	3.54	0.94	3.7	8	LC..3008..
	38010	C6-CDIL-33090-08JET	2.48	1.30	3.54	0.94	3.7	8	LC..3008..

Spare Parts, Parts included in delivery

For holder	Clamp key	Clamp screw	Torque value in/lbs
CDIR/L...-03	4SMS795	TCEI0513	53.1
CDIR/L...-04	5SMS795	TCEI0613	70.8
CDIR/L...-05	5SMS795	TCEI0613	70.8
CDIR/L...-06	6SMS795	TCEI0815	88.5
CDIR/L...-08	6SMS795	TCEI1020	132.8

Please check availability in current price and stock-list

For metric shank tools



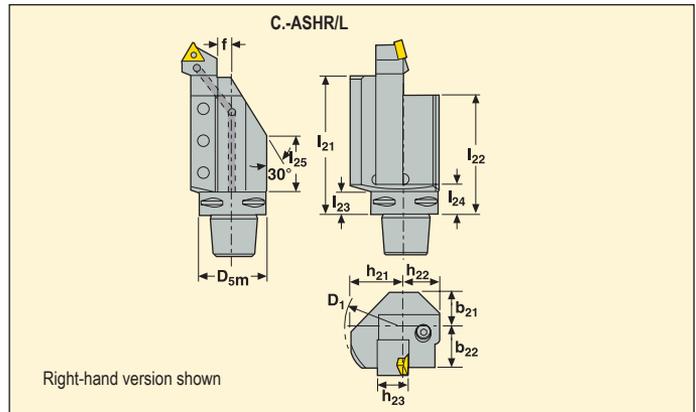
Capto size	EDP No.	Part No.	Dimensions in mm							lbs
			D _{5m}	D ₁	b ₂₂	h ₂₁	h ₂₃	l ₁	l ₂₁	
C5	53157	C5-ASHA -38058-20M	50	90	23	38	20	38	58	3.3
C6	53159	C6-ASHA -38060-20M	63	90	23	38	20	40	60	4.0
	53160	-45071-25M	63	110	30	45	25	45	71	5.1
	53167	-50071-32M	63	130	–	50	32	45	71	7.5
C8	53168	C8-ASHA -55085-32M	80	142	40	55	32	63	85	11.0

Spare Parts, Parts included in delivery

For size	Bolt	Circlip	Nozzle	O-ring	Screw
C5-	VB23	SGH1510	CN9	ORING-9X2	T6SS10X25
C6...20	VB23	SGH1510	CN9	ORING-9X2	T6SS8X25
C6...25, ...32	VB23	SGH1510	CN9	ORING-9X2	T6SS12X30
C8	VB23	SGH1510	CN9	ORING-9X2	T6SS12X30

Please check availability in current price and stock-list

For inch shank tools



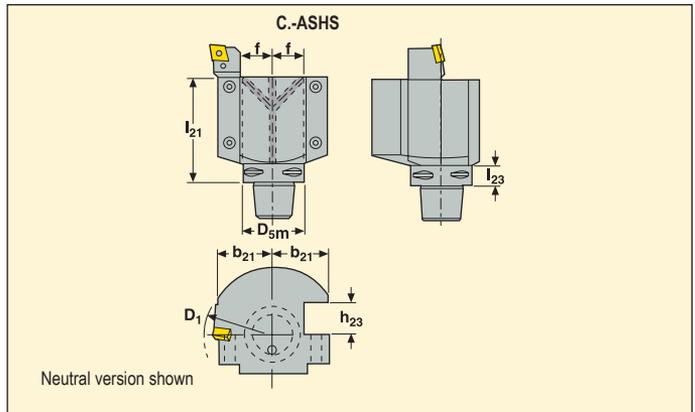
Capto size	EDP No.	Part No.	Dimensions in inch												lbs
			D _{5m}	D ₁	b ₂₁	b ₂₂	f	h ₂₁	h ₂₂	h ₂₃	l ₂₁	l ₂₂	l ₂₃	l ₂₄	
C5	38458	C5-ASHR -30098-12-A	1.969	3.543	1.142	1.181	0.433	1.614	1.299	0.748	3.858	3.465	0.787	0.906	2.0
	35287	C5-ASHL -30098-12-A	1.969	3.543	1.142	1.181	0.433	1.614	1.299	0.748	3.858	3.465	0.787	0.906	2.0
C6	35288	C6-ASHR -30100-12-A	2.480	3.543	1.142	1.181	0.433	1.614	1.299	0.748	3.937	3.543	0.866	0.984	3.3
	26005	C6-ASHR -38130-16-A	2.480	4.331	1.260	1.496	0.512	1.969	1.299	0.984	5.118	4.409	0.866	1.102	7.5
	35289	C6-ASHL -30100-12-A	2.480	3.543	1.142	1.181	0.433	1.614	1.299	0.748	3.937	3.543	0.866	0.984	3.3
	20742	C6-ASHL -38130-16-A	2.480	4.331	1.260	1.496	0.512	1.969	1.299	0.984	5.118	4.409	0.866	1.102	7.5

Spare Parts, Parts included in delivery

For size	Nozzle	Screw
C5..12	CN10	T6SS10X25
C6..12	CN10	T6SS10X25
C6..16	CN10	T6SS12X30

Please check availability in current price and stock-list

For inch shank tools



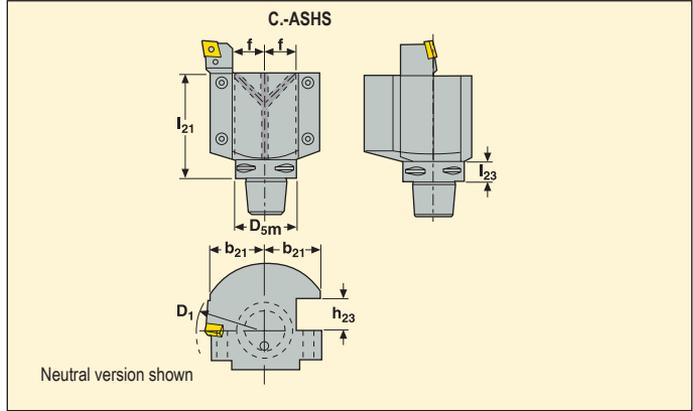
Capto size	EDP No.	Part No.	Dimensions in inch							lbs
			D _{5m}	D ₁	b ₂₁	f	h ₂₃	l ₂₁	l ₂₃	
C6	35325	C6-ASHS-54090-12U	2.480	4.213	2.106	–	0.750	3.543	–	3.3

Spare Parts, Parts included in delivery

For size	Screw
C6	P6SS8X12

Please check availability in current price and stock-list

For metric shank tools



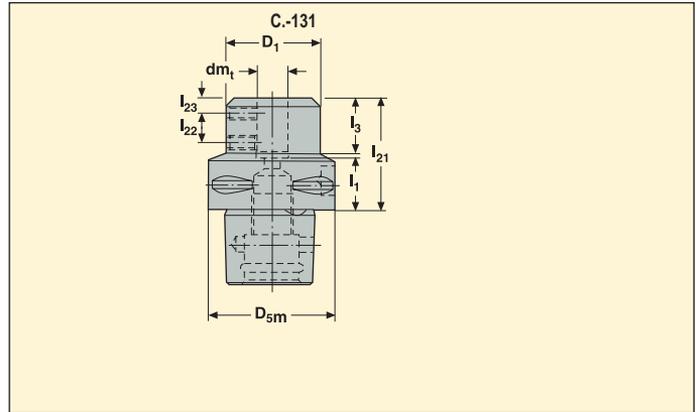
Capto size	EDP No.	Part No.	Dimensions in mm							lbs
			D _{5m}	D ₁	b ₂₁	f	h ₂₃	l ₂₁	l ₂₃	
C6	43952	C6-ASHS-58115-32	63	140	58	33	32	115	22	16.3

Spare Parts, Parts included in delivery

For size	Nozzle	Screw
C6	CN9	T6SS12X30

Please check availability in current price and stock-list

Inch

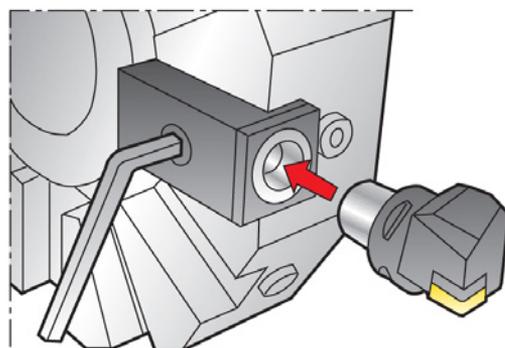
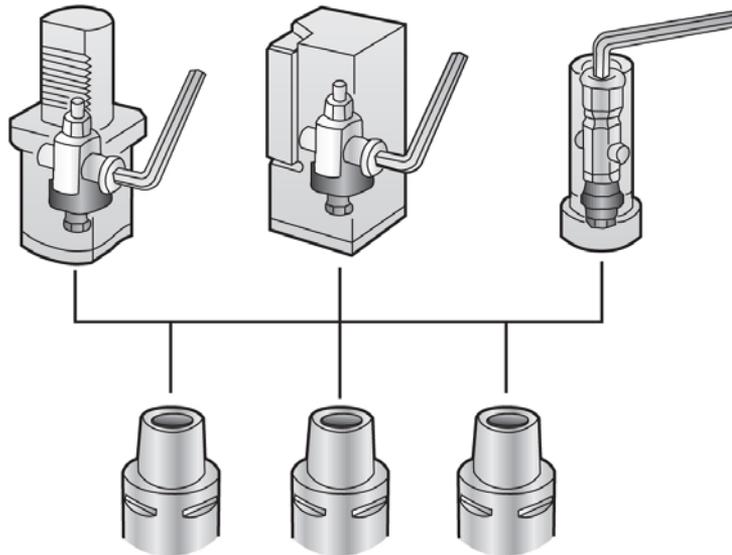


Capto size	EDP No.	Part No.	Dimensions in inch								lbs
			D _{5m}	dm ₁	D ₁	l ₁	l ₃	l ₂₁	l ₂₂	l ₂₃	
C4	61730	C4-131 -00050-250	1.57	0.250	1.42	1.97	1.07	1.97	0.197	0.630	0.7
	77762	-00050-375	1.57	0.375	1.42	1.18	1.13	1.97	0.197	0.354	1.1
	77765	-00050-500	1.57	0.500	1.42	0.95	1.13	1.97	0.236	0.472	1.0
	77771	-00050-625	1.57	0.625	1.42	0.71	1.13	1.97	0.315	0.591	1.0
	77772	-00060-750	1.57	0.750	1.42	0.83	1.42	2.36	0.315	0.630	1.1
	04958	-00091-1000	1.57	1.000	2.48	3.58	2.81	3.58	0.630	0.708	1.5
C5	77773	C5-131 -00060-500	1.97	0.500	1.42	1.34	1.57	2.36	0.236	0.472	1.6
	77774	-00060-625	1.97	0.625	1.42	1.10	1.57	2.36	0.315	0.630	1.6
	77775	-00060-750	1.97	0.750	1.42	0.83	1.57	2.36	0.315	0.630	1.5
C6	77778	C6-131 -00065-750	2.48	0.750	1.42	1.27	1.54	2.66	0.417	0.630	2.2
	77779	-00075-1000	2.48	1.000	2.13	0.95	2.04	2.95	0.472	0.984	3.3

Spare Parts, Parts included in delivery

For size	Screw
C.-131	1/2-20UNFX.5SSS

Please check availability in current price and stock-list



Selection of VDI clamping unit

Internal/Toolholder Right Clamping unit LC	External/Toolholder Right Clamping unit RC	Internal/Toolholder Right Clamping unit RC	External/Toolholder Right Clamping unit LC
Internal/Toolholder Right	External/Toolholder Right	Internal/Toolholder Right	External/Toolholder Right

Note: The polygon socket has to be rotated 180°

Selection of VDI clamping unit

Internal/Toolholder Left Clamping unit LC	External/Toolholder Left Clamping unit RC	Internal/Toolholder Left Clamping unit RC	External/Toolholder Left Clamping unit LC
Internal/Toolholder Left	External/Toolholder Left	Internal/Toolholder Left	External/Toolholder Left

Note: The polygon socket has to be rotated 180°

Selection of clamping unit 2000/3000/2085

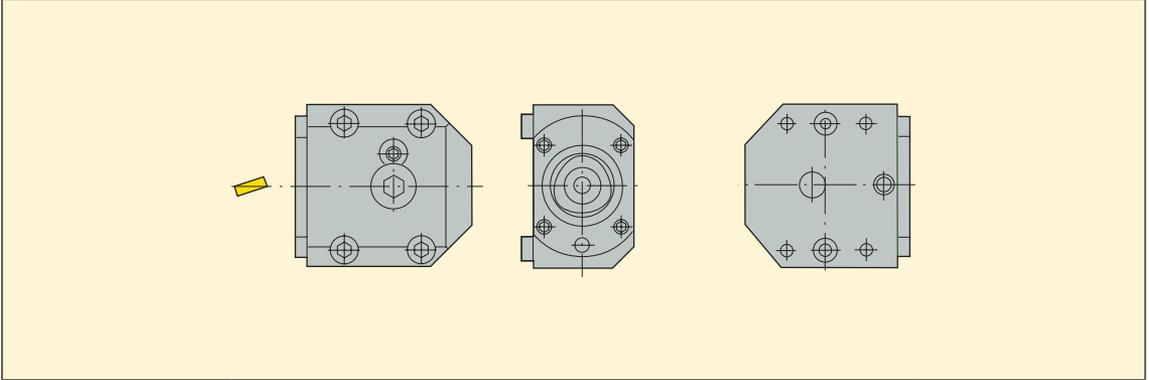
	<p>Internal/Toolholder Right NC 2000/3000 Upside-down</p>	<p>External/Toolholder Right RC 2085 Upside-down</p>
	<p>Internal/Toolholder Right NC 2000/3000</p>	<p>External/Toolholder Right RC 2085</p>

Selection of clamping unit 2000/3000/2085

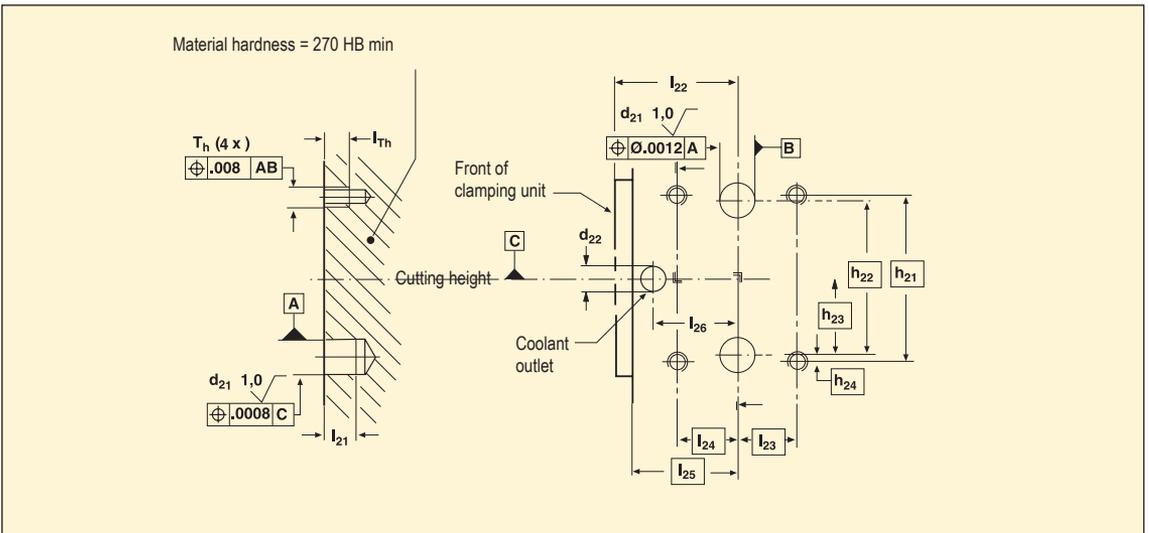
	<p>Internal/Toolholder Left NC 2000/3000</p>	<p>External/Toolholder Left LC 2085</p>
	<p>Internal/Toolholder Left NC 2000/3000 Upside-down</p>	<p>External/Toolholder Left LC 2085 Upside-down</p>

2000 = cylindrical type with drawbar, 3000 = cylindrical type with screw, 2085 = shank type.

Clamping unit 2090 for special applications



Design instruction for application of clamping unit RC/LC 2090



Seco-Capto™ size	Part No.	Dimensions in inch													
		d ₂₁ H7	d ₂₂	h ₂₁	h ₂₂	h ₂₃	h ₂₄	l ₂₁ min	l ₂₂	l ₂₃	l ₂₄	l ₂₅	l ₂₆	l _{Th} min	T _h
C3	C3-R/LC2090-19039M	0.472	0.197	1.654	1.535	0.768	0.059	0.335	1.535	0.748	0.748	1.319	1.102	0.295	M6
C4	C4-R/LC2090-24043A	0.630	0.276	2.362	0.197	1.083	0.098	0.433	1.693	0.748	0.748	1.437	1.181	0.433	M8
C5	C5-R/LC2090-32048A	0.787	0.276	2.756	2.441	1.220	0.157	0.472	1.890	0.827	0.827	1.555	1.299	0.512	M10
C6	C6-R/LC2090-42060	0.984	0.394	3.228	2.795	1.398	0.217	0.787	2.362	0.965	0.965	1.969	1.614	0.472	M10
C8	C8-R/LC2090-50088	1.260	0.433	4.331	3.622	1.811	0.354	0.787	3.465	1.693	1.693	2.992	2.480	0.571	M12

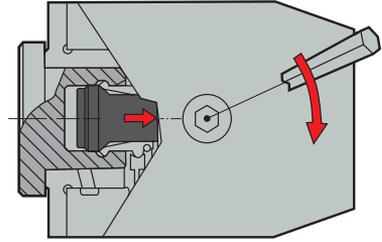
Toolholders

A large range of Seco-Capto toolholders are available:
 For external and internal turning with negative inserts.
 For external and internal turning with positive inserts.
 For external and internal turning with MDT inserts.
 For external and internal threading.

For selection of toolholder use the guidelines for conventional tools.

Cover plug

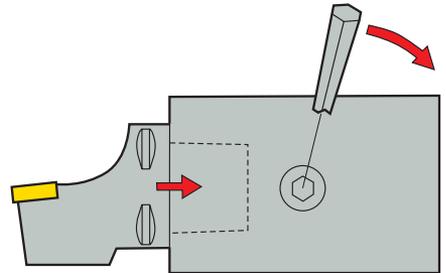
A cover plug should always be used to protect the ground surfaces of the connecting sleeve from dirt or damage on the clamping units when they do not have a cutting unit coupled or when they are held in stock.



Clamping force

In order to obtain the necessary clamping force (F) the clamping unit should be tightened to the torque value (Mv) as recommended in the table below.

Torque Mv		
Size	Nm	Lbft
C3	35	26
C4	50	37
C5	70	52
C6	90	67
C8	130	96



Turning the cutting tool 180°

If the entire clamping unit has to be rotated 180°, the polygon socket should be rotated 180°.

1. Loosen the screws (2).
2. Dismantle the polygon socket. Use the special tool shown on page 763 (ordered separately).
3. Move the guiding pin to the opposite side of the clamping unit.
4. Rotate the polygon socket 180° and reassemble. Tap carefully with a plastic mallet.

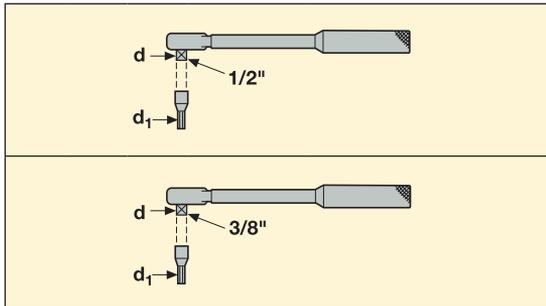
Lubrication

All manual clamping units are lubricated with BP Energrease ACS-2 prior to delivery (Alternative MOBIL Temp Shc 32 or STATOIL Beacon 325). The lubrication should be checked every six months. New grease can be applied via the cam.

1. Remove the screw (1).
2. Assemble grease nipple 5692 012-01.
3. Pump in grease with grease gun until it begins to seep out around the key handle at the cam.
4. Remove grease nipple.
5. Replace screw (1) into the cam.

Note: Clamping unit must be clamped during lubrication.

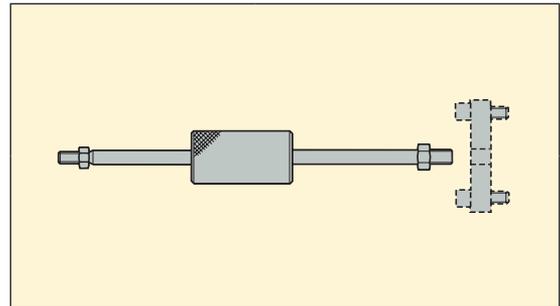
Torque wrench



Size	ft/lbs	Nm	Part No.	Spare Parts		
				Adapter*	d	d ₁
C3	26	35	BT-TK-02	5680 035-05	3/8"	8
C4	37	50	C-TK-01	5680 035-06	1/2"	10
C5	52	70	C-TK-01	5680 035-07	1/2"	12
C6	66	90	C-TK-01	5680 035-07	1/2"	12
C8	96	130	C-TK-02	5680 035-07	1/2"	12

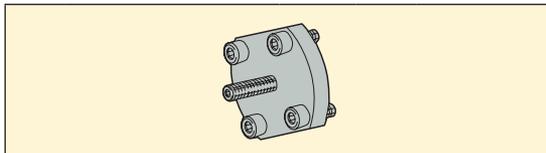
*To be ordered separately

Sliding hammer for dismantling the polygon socket



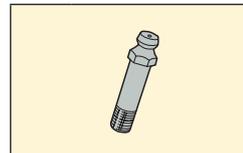
Size	Part No.
C3	CC-ET-01
C4	CC-ET-01
C5	CC-ET-02
C6	CC-ET-02
C8	CC-ET-02

Tool for dismantling the polygon socket on manual clamping unit



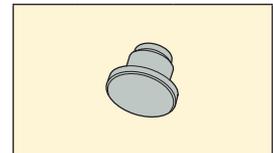
Size	Part No.	Spare Parts	
		Center	Peripheral
C3	C3-WDT-01M	3214 030-463	5512 040-03
C4	C4-WDT-01M	3214 030-464	5512 040-04
C5	C5-WDT-01M	3214 030-516	5512 040-05
C6	C6-WDT-01M	3214 030-516	5512 040-06
C8	C8-WDT-01	3214 030-516	5512 072-01

Grease nipple



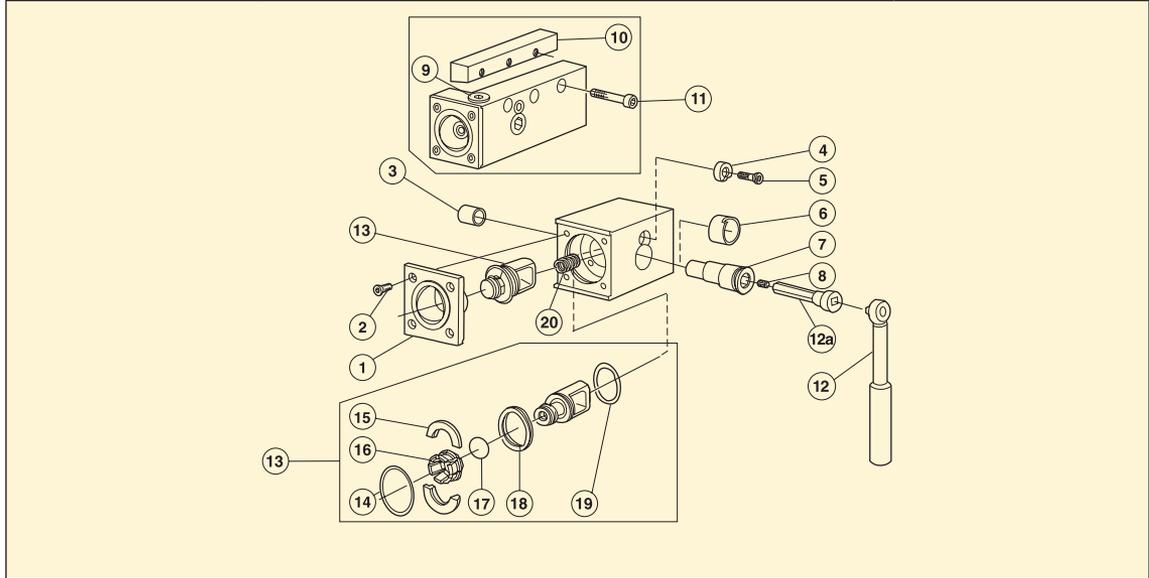
Size	Part No.
C3	5692 012-01
C4	5692 012-01
C5	5692 012-01
C6	5692 012-01
C8	5692 012-01

Cover plug



Size	Part No.	
	Type 3000	Other types
C3	C3-CP-11	C3-CP-01
C4	C4-CP-11	C4-CP-01
C5	C5-CP-11	C5-CP-01
C6	-	C6-CP-01
C8	-	C8-CP-01

Manually operated clamping unit – Type 2085



Size	1 Sleeve	2 Screw (4x)	3 Bushing	4 Locking washer	5 Screw
C3	5252 015-01	416.1-834	3823 010-101	5541 030-01	416.1-834
C4	5252 015-02	5513 020-26	3823 010-122	5541 030-02	416.1-834
C5	5252 015-03	5513 020-14	3823 010-162	5541 030-03	5513 020-14

Size	6 Bushing	7 Cam shaft	8 Screw	9 Plug	10 Metric wedge
C3	5638 022-01	5333 025-01	3214 010-355	3611 005-180	5431 115-01
C4	5638 022-02	5333 025-02	3214 010-355	3611 005-180	5431 115-02
C5	5638 022-03	5333 025-03	3214 010-355	3611 005-180	5431 115-03

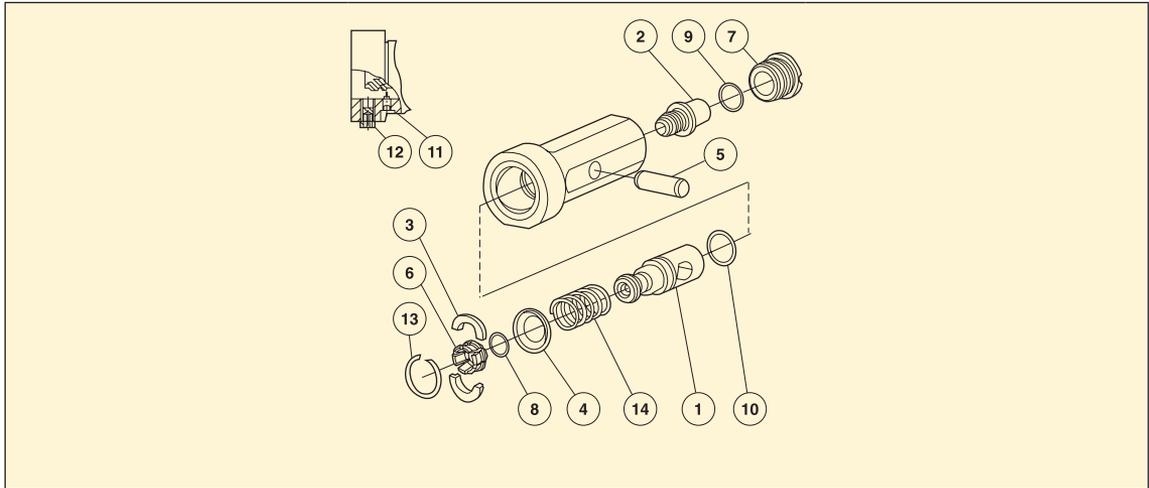
Size	11 Screw	12 Torque wrench	12a Adapter	20 Compression spring
C3	3212 010-362	BT-TK-02	5680 035-05	5561 001-71
C4	3212 010-364	C-TK-01	5680 035-06	5561 001-41
C5	3212 010-416	C-TK-01	5680 035-07	5561 001-41

Draw bar set

Parts included in draw bar set

Size	13 Draw bar set	14 Spiral retaining ring	15 Holder ring (set of 2)	16 Segment (set of 6)	17 O-ring	18 Flat wire spring	19 O-ring
C3	5461 100-101	5545 039-01	5546 001-16	5549 120-08	5641 005-01	5561 015-02	5641 005-15
C4	5461 100-111	5545 039-03	5546 001-20	5549 120-06	5641 005-05	5561 015-03	5641 005-19
C5	5461 100-121	5545 039-02	5546 001-17	5549 120-07	5641 005-06	5561 015-04	5641 005-16

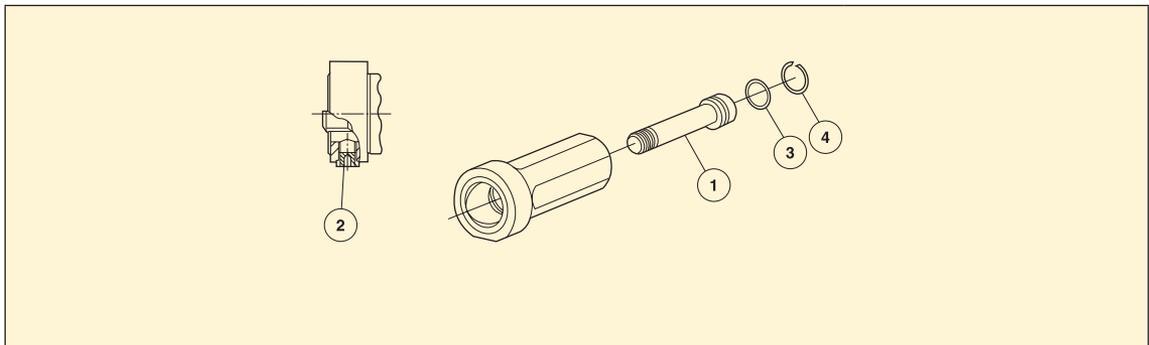
Manually operated clamping unit – Type 2000



Size	1 Drawbar	2 Clamping screw	3 Holder ring (set of 2)	4 Ring	5 Support pin	6 Segment (set of 6)	7 Thread ring	8 O-ring
C3	5461 105-01	5519 105-01	5546 002-01	5541 028-01	5552 032-01	5549 120-08	5512 091-03	5641 005-01
C4	5461 105-02	5519 105-02	5546 002-02	5541 028-02	5552 032-02	5549 120-06	5512 091-01	5641 005-05
C5	5461 105-03	5519 105-03	5546 002-03	5541 028-03	5552 032-03	5549 120-07	5512 091-02	5641 005-06

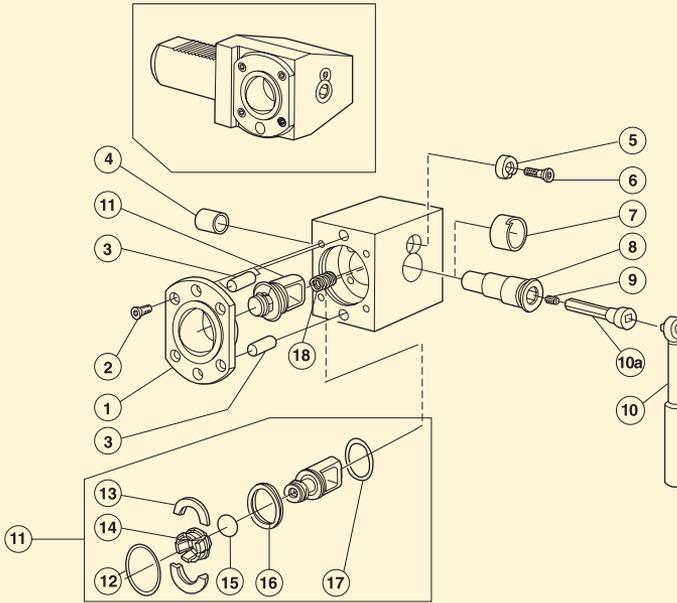
Size	9 Drawbar	10 Clamping screw	11 Holder ring (set of 2)	12 Ring	13 Support pin	14 Segment (set of 6)	Key (size, mm)
C3	3671 010-118	3671 010-124	3214 020-204	3611 005-180	5545 042-01	5561 001-52	3021 013-080 (8.0)
C4	3671 010-120	3671 010-126	3214 020-255	3611 005-180	3421 105-026	5561 001-53	5680 010-03 (10.0)
C5	3671 010-124	3671 010-128	3214 020-255	3611 005-180	3421 105-032	5561 001-54	5680 010-04 (12.0)

Manually operated clamping unit – Type 3000



Size	1 Clamping screw	2 Blind plug	3 O-ring	4 Retaining ring	Key (size, mm)
C3	5512 096-01	3611 005-180	3671 010-020	5545 040-03	3021 013-080 (8.0)
C4	5512 096-02	3611 005-180	3671 010-022	5545 040-05	5680 010-03 (10.0)
C5	5512 096-03	3611 005-180	3671 010-024	5545 040-06	5680 010-04 (12.0)

Manually operated clamping unit – VDI angled design, DIN 69880



Size	1 Sleeve	2 Screw (4x)	3 Pin	4 Bushing	5 Locking washer	6 Screw
C3	5252 010-01	416.1-834	3111 050-558	3823 010-101	5541 030-01	416.1-834
C4	5252 010-02	5513 020-26	3111 050-610	3823 010-122	5541 030-02	416.1-834
C5	5252 010-03	5513 020-14	3111 050-661	3823 010-162	5541 030-03	5513 020-14
C6	5252 010-04	3213 010-410	3111 050-715	3823 010-183	5541 030-04	5513 020-14

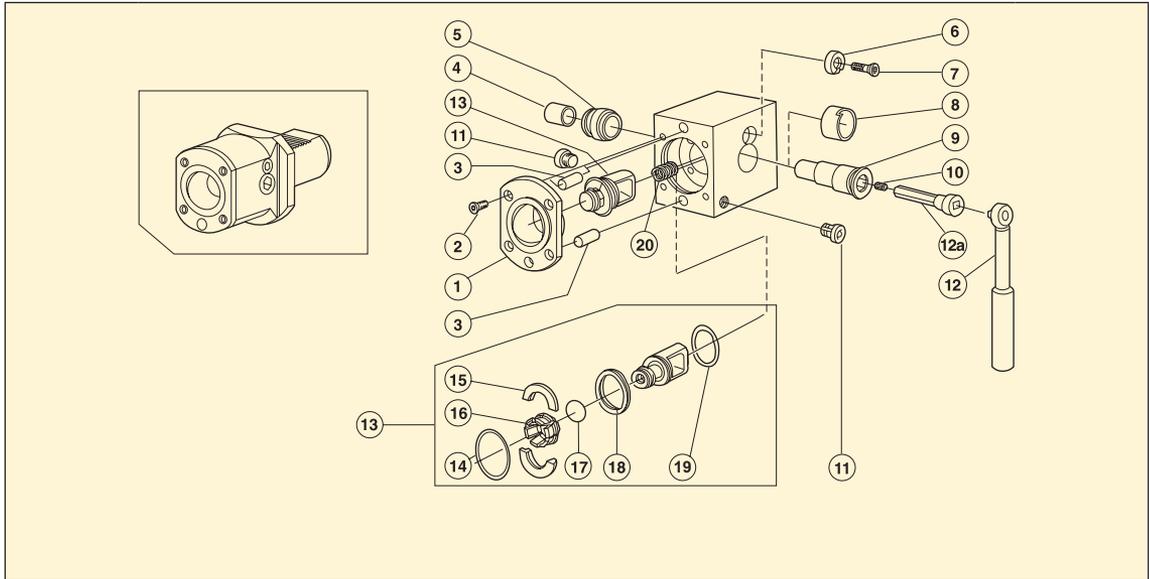
Size	7 Bushing	8 Cam shaft	9 Screw	10 Torque wrench	10a Adapter	18 Compression spring
C3	5638 022-01	5333 025-01	3214 010-355	BT-TK-02	5680 035-05	5561 001-71
C4	5638 022-02	5333 025-02	3214 010-355	C-TK-01	5680 035-06	5561 001-41
C5	5638 022-03	5333 025-03	3214 010-355	C-TK-01	5680 035-07	5561 001-41
C6	5638 022-04	5333 025-04	3214 010-355	C-TK-01	5680 035-07	5561 001-41

Draw bar set

Parts included in draw bar set

Size	11 Draw bar set	12 Spiral retaining ring	13 Holder ring (set of 2)	14 Segment (set of 6)	15 O-ring	16 Flat wire spring	17 O-ring
C3	5461 100-101	5545 039-01	5546 001-16	5549 120-08	5641 005-01	5561 015-02	5641 005-15
C4	5461 100-111	5545 039-03	5546 001-20	5549 120-06	5641 005-05	5561 015-03	5641 005-19
C5	5461 100-121	5545 039-02	5546 001-17	5549 120-07	5641 005-06	5561 015-04	5641 005-16
C6	5461 100-131	5545 039-04	5546 001-18	5549 120-04	5641 005-04	5561 015-05	5641 005-17

Manually operated clamping unit – VDI straight design, DIN 69880



Size	1 Sleeve	2 Screw (4x)	3 Pin	4 Bushing	5 Sleeve
C3	5252 010-01	416.1-834	3111 050-558	3823 010-101	5638 024-01
C4	5252 010-02	5513 020-26	3111 050-610	3823 010-122	5638 024-02
C5	5252 010-03	5513 020-14	3111 050-661	3823 010-162	5638 024-03
C6	5252 010-04	3213 010-410	3111 050-715	3823 010-183	5638 024-04

Size	6 Locking washer	7 Screw	8 Bushing	9 Cam shaft	10 Screw
C3	5541 030-01	416.1-834	5638 022-01	5333 025-01	3214 010-355
C4	5541 030-02	416.1-834	5638 022-02	5333 025-02	3214 010-355
C5	5541 030-03	5513 020-14	5638 022-03	5333 025-03	3214 010-355
C6	5541 030-04	5513 020-14	5638 022-04	5333 025-04	3214 010-355

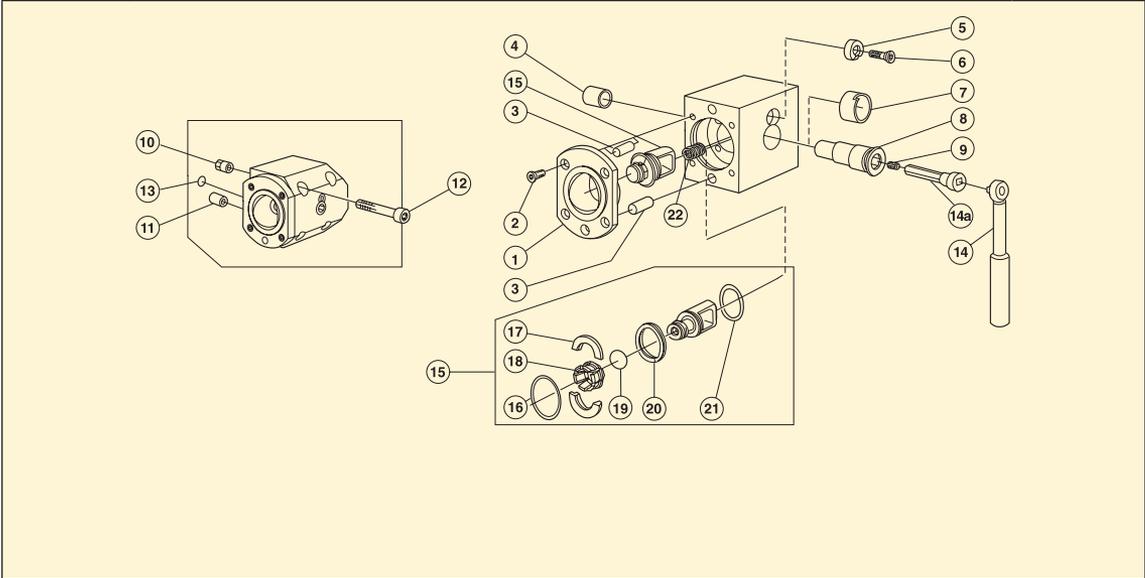
Size	11 Plug	12 Torque wrench	12a Adapter	20 Compression spring
C3	3611 005-180	BT-TK-02	5680 035-05	5561 001-71
C4	3611 005-180	C-TK-01	5680 035-06	5561 001-41
C5	3611 005-180	C-TK-01	5680 035-07	5561 001-41
C6	3611 005-140	C-TK-01	5680 035-07	5561 001-41

Draw bar set

Parts included in draw bar set

Size	13 Draw bar set	14 Spiral retaining ring	15 Holder ring (set of 2)	16 Segment (set of 6)	17 O-ring	18 Flat wire spring	19 O-ring
C3	5461 100-101	5545 039-01	5546 001-16	5549 120-08	5641 005-01	5561 015-02	5641 005-15
C4	5461 100-111	5545 039-03	5546 001-20	5549 120-06	5641 005-05	5561 015-03	5641 005-19
C5	5461 100-121	5545 039-02	5546 001-17	5549 120-07	5641 005-06	5561 015-04	5641 005-16
C6	5461 100-131	5545 039-04	5546 001-18	5549 120-04	5641 005-04	5561 015-05	5641 005-17

Manually operated clamping unit – Type 2090



Size	1 Sleeve	2 Screw (4x)	3 Pin	4 Bushing	5 Locking washer	6 Screw
C3	5252 010-01	416.1-834	3111 050-558	3823 010-101	5541 030-01	416.1-834
C4	5252 010-02	5513 020-26	3111 050-610	3823 010-122	5541 030-02	416.1-834
C5	5252 010-03	5513 020-14	3111 050-661	3823 010-162	5541 030-03	5513 020-14
C6	5252 010-04	3213 010-410	3111 050-715	3823 010-183	5541 030-04	5513 020-14
C8	5252 010-05	3213 010-462	3111 050-769	3823 010-225	5541 030-05	5513 020-14

Size	7 Bushing	8 Cam shaft	9 Screw	10 Locating pin	11 Dowel pin	12 Screw
C3	5638 022-01	5333 025-01	3214 010-355	5552 063-05	5552 061-07	3212 010-363
C4	5638 022-02	5333 025-02	3214 010-355	5552 063-07	5552 061-09	3212 010-414
C5	5638 022-03	5333 025-03	3214 010-355	5552 063-06	5552 061-08	3212 010-466
C6	5638 022-04	5333 025-04	3214 010-355	5552 063-03	5552 061-05	3212 010-469
C8	5638 022-05	5333 025-05	3214 010-355	5552 063-04	5552 061-06	3212 010-521

Size	13 O-ring	14 Torque wrench	14a Adapter	22 Compression spring		
C3	5641 001-22	BT-TK-02	5680 035-05	5561 001-71		
C4	3671 010-114	C-TK-01	5680 035-06	5561 001-41		
C5	3671 010-114	C-TK-01	5680 035-07	5561 001-41		
C6	3671 010-119	C-TK-01	5680 035-07	5561 001-41		
C8	3671 010-119	C-TK-02	5680 035-07	5561 001-41		

Draw bar set

Parts included in draw bar set

Size	15 Draw bar set	16 Spiral retaining ring	17 Holder ring (set of 2)	18 Segment (set of 6)	19 O-ring	20 Flat wire spring	21 O-ring
C3	5461 100-101	5545 039-01	5546 001-16	5549 120-08	5641 005-01	5561 015-02	5641 005-15
C4	5461 100-111	5545 039-03	5546 001-20	5549 120-06	5641 005-05	5561 015-03	5641 005-19
C5	5461 100-121	5545 039-02	5546 001-17	5549 120-07	5641 005-06	5561 015-04	5641 005-16
C6	5461 100-131	5545 039-04	5546 001-18	5549 120-04	5641 005-04	5561 015-05	5641 005-17
C8	5461 100-141	5545 039-05	5546 001-19	5549 120-05	5641 005-07	5561 015-06	5641 005-18

SMG version 2 – Introduction

Seco Material Groups version 2 (SMG v2) is the foundation for a new and accurate way of organizing work materials and choosing the correct speed, feed rate and depth of cut for any work material and any Seco tool. In addition to using a greater number of work material groups compared to our previous system, SMG v2 also incorporates a reference material or standard for each group. The machinability of all other materials within that group can be compared to the standard, allowing for adjustments to the cutting data, accounting for the unique characteristics of each material.

The use of SMG v2 is illustrated below.

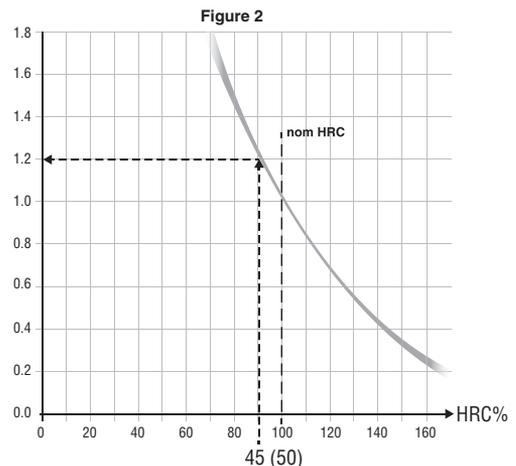
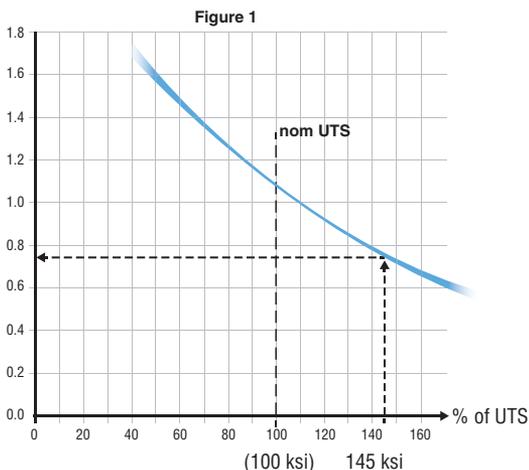
As shown below in Table I, the reference material for work material group P4 is 1045, for P5 it is 4140 steel and for H5 it is 4140 hardened to 50 HRC. 4140 steel is available in a wide variety of hardness and tensile strengths. As to be expected the machinability will vary with these properties.

SMG	Description	Properties	Reference	SMG	Description	Properties	Reference
P4	Low alloy general structural steels, 0.25% < C < 0.67%wt Low alloy Quench & Temper steels	75 < UTS < 175	1045 UTS = 95 ksi	H5	Quenched & Tempered steels	38 < HRC < 56	4140 50 HRC
P5	Structural steels, 0.25% < C < 0.67%wt Quench & Temper steels	80 < UTS < 175	4140 UTS = 100 ksi				

Table II below gives some examples of 4140 in different conditions.

SMG	EN	W-Nr	AFNOR	BS	UNI	JIS	AISI / ASTM	GOST	Condition	UTS (ksi)	HRC _{nom}
P5	42 CrMo 4	1.1201	42 CD 4	708 M 40	42 CrMo 4	SCM 440 (H)	4142, 4140	38HM	Annealed	100	
	42 CrMo 4	1.1201	42 CD 4	708 M 40	42 CrMo 4	SCM 440 (H)	4142, 4140	38HM	Quenched & Tempered	145	
H5	42 CrMo 4	1.1201	42 CD 4	708 M 40	42 CrMo 4	SCM 440 (H)	4142, 4140	38HM	Quenched & Tempered		45
	42 CrMo 4	1.1201	42 CD 4	708 M 40	42 CrMo 4	SCM 440 (H)	4142, 4140	38HM	Quenched & Tempered		50

The graphs indicate how the speed recommendation for a specific material can be adjusted to account for the different properties of the steel. As an example, consider 4140 with a tensile strength (UTS) of 145 ksi. The standard material for SMG P5 is 4140 steel with a tensile strength of 100 ksi. Since the material of interest is 45% stronger, the cutting speed will have to be reduced. Following the black arrows in Figure 1, it can be seen that a speed 75% of that recommended for 4140 at 100 ksi should be used. So if a cutting speed of 900 sf/min is suggested for a tool of interest when machining 4140 at 100 ksi, a speed of 675 sf/min (900 X 0.75) should be used if the 4140 has a tensile strength of 145 ksi.



If the 4140 is quenched and tempered to a hardness of 45 HRC, an accurate cutting speed can be obtained by using Figure 2. The standard material for SMG H5 is 4140 heat treated to a hardness of 50 HRC. Logically, a softer material, in this case 45 HRC, can be machined at a higher speed. Since the hardness, 45 HRC, is 90% that of the standard material, the graph shows a speed 120% that of the standard could be used. If a speed of 200 sfpm is recommended when machining 4140 at 50 HRC, a speed of 240 sf/min (200 X 1.2) could be used if the 4140 is only 45 HRC.

Note that when using PCBN tools use cutting data recommendations beginning on page 71.

For further workpiece material details please see page 770 and suggested cutting data on applicable pages.

For more convenient cutting data handling we recommend applicable tools in My Pages – Suggest on www.secotools.com

SMG version 2 – Introduction

The foundation for SMG v2 is a classification of workpiece materials based on their type rather than their relative machinability and consequently it contains workpiece materials like composites. It is comprehensive enough, but still easy to identify which SMG a particular material belongs.

Each SMG has a specific material standard in a specific condition assigned as reference to allow easy adjustment of cutting data for any actual material compared to any Seco reference material see pages 32, 769.

As example the reference materials EN C45E for SMG P4 and EN 42 CrMo 4 for both SMG P5 and SMG H5 see further details in the following tables.

Steels, ferritic and martensitic stainless steels

SMG	Description	Properties	Reference
P1	Free-cutting steels	50 < UTS < 125	1213 UTS = 55 ksi
P2	Low alloy ferritic steels, C < 0.25%wt Low alloy weldable general structural steels	45 < UTS < 85	A284 GRC UTS = 60 ksi
P3	Ferritic & ferritic/pearlitic steels, C < 0.25%wt Weldable general structural steels Case hardening steels	60 < UTS < 90	5115 UTS = 80 ksi
P4	Low alloy general structural steels, 0.25% < C < 0.67%wt Low alloy Quench & Temper steels	75 < UTS < 175	1045 UTS = 95 ksi
P5	Structural steels, 0.25% < C < 0.67%wt Quench & Temper steels	80 < UTS < 175	4140 UTS = 100ksi
P6	Low alloy through hardening steels, C > 0.67%wt Low alloy spring and bearing steels	75 < UTS < 175	1095 UTS = 85 ksi
P7	Through hardening steels, C > 0.67%wt Spring and bearing steels	85 < UTS < 175	52100 UTS = 95 ksi
P8	Tool steels High Speed Steels (HSS)	85 < UTS < 175	H13 UTS = 100 ksi
P11	Ferritic & martensitic stainless steels	60 < UTS < 175	420 UTS = 95 ksi

Free-cutting, austenitic and duplex stainless steels

SMG	Description	Properties	Reference
M1	Free-cutting austenitic stainless steels		303
M2	Low alloy austenitic stainless steels		304
M3	Medium alloy austenitic stainless steels		316 L
M4	High alloy austenitic and duplex stainless steels		2205 Duplex
M5	Difficult high alloy austenitic and duplex stainless steels		2507 Super duplex

Cast irons

SMG	Description	Properties	Reference
K1	Grey cast irons (GCI)		A48 35 B
K2	Compacted graphite irons (CGI)		Grade 400-15
K3	Malleable cast irons (MCI)		A220 60004
K4	Nodular cast irons (SGI)		80-55-06
K5	Austempered ductile irons (ADI)		1050/700/7
K6	Austenitic lamellar cast irons		A436 Type 1 (Ni-Resist 1)
K7	Austenitic nodular cast irons		A439 Type D-2M (Ni-Resist D-2M)

Non-ferrous metals

SMG	Description	Properties	Reference
N1	Aluminum alloys, Si < 9%		7075-T6
N2	Aluminum alloys, 9% < Si < 16%		413.2 Si = 12%
N3	Aluminum alloys, Si > 16%		AlSi17Cu5
N11	Copper alloys		UNS C38500

Superalloys and titanium

SMG	Description	Properties	Reference
S1	Iron based superalloys		Discalloy
S2	Cobalt based superalloys		Stellite 21
S3	Nickel based superalloys		Inconel 718
S11	Titanium, low alloyed, (α)		Ti
S12	Titanium, medium alloyed, (α + β)		TiAl6V4
S13	Titanium, high alloyed, (near β and β)		Ti10V2Fe3Al

Hard materials

SMG	Description	Properties	Reference
H3	Case hardened steels	58 < HRC < 62	5115 60 HRC
H5	Quenched & Tempered steels	38 < HRC < 56	4140 50 HRC
H7	Quenched & Tempered steels Bearing steels	56 < HRC < 64	52100 60 HRC
H8	Tool steels High Speed Steels	38 < HRC < 64	H13 50 HRC
H11	Martensitic stainless steels	38 < HRC < 50	420 45 HRC
H12	Precipitation hardened stainless steels	33 < HRC < 50	17-4PH 35 HRC
H21	Manganese steels	23 < HRC < 64	Hadfield, High manganese steel 50 HRC
H31	White cast irons	50 < HRC < 64	A532 ID, White cast iron 55 HRC

Other difficult materials

SMG	Description	Properties	Reference
PM1	Low alloy PM materials		F-0008 Fe-0.7C
PM2	Medium alloy PM materials		FLC-4608 Fe2Cu1.8Ni0.5Mo0.2Mn0.8C
PM3	High alloy PM materials Exhaust valve seat materials		
HF1	Hard facing alloys Welded or plasma deposited iron based alloys		
HF2	Hard facing alloys Welded or plasma deposited cobalt and nickel based alloys		
CC1	Sintered tungsten carbide		G50

Plastics and Composites

SMG	Description	Properties	Reference
TS1	Thermosetting polymers		Urea formaldehyde (UF)
TS2	Thermosetting Carbon fiber composites		T300 T700 T800 HTA-S IMA - Epoxy (M21)...
TS3	Thermosetting Glass fiber composites		Epoxy - HX.(42.)/E glass (7781...)...
TS4	Thermosetting Aramide fiber composites		Kevlar 49
TP1	Thermoplastic polymers		Polycarbonate (PC)
TP2	Thermoplastic Carbon fiber composites		PPS/PEEK - T300..
TP3	Thermoplastic Glass fiber composites		PPS/PEEK - E glass or A glass...
TP4	Thermoplastic Aramide fiber composites		

Graphite

SMG	Description	Properties	Reference
GR1	Graphite		R 8500

SMG

SMG	AISI / ASTM	EN	EN-Nr	W-Nr	DIN	AFNOR	BS	UNI	JIS	SS
P1	1213	11 SMn30	1.0715	1.0715	9 SMn 28	S 250	230 M 07	CF 9 SMn 28	SUM 22	1912
	12 L 13	11 SMnPb30	1.0718	1.0718	9 SMnPb 28	S 250 Pb		CF 9 SMnPb 28	SUM 22 L	1914
	1108	10 S 20	1.0721	1.0721	10 S 20	10 F 1	210 M 15	CF 10 S 20		
	11 L 08				10 SPb 20	10 PbF 2		CF 10 SPb 20		
		15 SMn13	1.0725	1.0723	15 S 20		210 A 15		SUM 32	1922
	1140	35 S20	1.0726	1.0726	35 S 20	35 MF 4	212 M 36			1957
	1146	46 S20	1.0727	1.0727	46 S 20	45 MF 4	212 M 44			1973
	1215	11 SMn37	1.0736	1.0736	9 SMn 36	S 300	240 M 07	CF 9 SMn 36		
12 L 14	11 SMnPb 37	1.0737	1.0737	9 SMnPb 36	S 300 Pb		CF 9 SMnPb 36		1926	
P2		S235JR	1.0037	1.0037	St 37-2	E 24-2		Fe 360 B	STKM 12 C	1311
	A 573 Gr. 58	S235JRG2	1.0038	1.0116	St 37-3	E 24-3, E 24-4	4360-40 C	Fe 360 D FF		1312, 1313
	A 573 Gr. 70	S275J2G3	1.0144	1.0144	St 44-3 N	E 28-3, E 28-4	4360-43 C	Fe 430 D FF	SM 41 C	1412, 1414
	1010	C 10	1.0301	1.0301	C 10	AF 34 C 10, XC 10	045 M 10	C 10	S 10 C	
	1015			1.0401	C 15	AF3 7 C 12, XC 18	080 M 15	C 15, C 16		1350
	1023	C22+N	1.0402	1.0402	C 22	C 22	050 A 20	C 20, C 21		1450
		S355JR	1.0570	1.0570	St 52-3	E 36-3, E 36-4	4360-50 C	Fe 510 B	SM 50 YA	2172, 2132
	1015	C 15R	1.1141	1.1141	Ck 15	XC 15, XC 18	080 M 15	C 15, C 16	S 15 C, S 15 CK	1370
	1025			1.1158	Ck 25	XC 25	060 A 25	C 25	S 25 C	
				1.2162	21 MnCr 5	20 NC 5			SCR 420 H	
P3	A 204 Gr. A	16 Mo 3	1.5415	1.5415	15 Mo 3	15 D 3	1501-240	16 Mo 3		2912
	4520			1.5423	16 Mo 5		1503-245-420	16 Mo 5	SB 450 M	
	3310, 9314	14 NiCr 14	1.5752	1.5752	14 NiCr 14	12 NC 15	655 M 13		SNC 815 (H)	
	4320			1.5919	15 CrNi 6	16 NC 6	S 107	16 CrNi 4		
		18 NiCrMo 7 6	1.6587	1.6587	18 CrNiMo 7 6	18 NCD 6	820 A 16	18 NiCrMo 7		
	5115	16 MnCr 5	1.7131	1.7131	16 MnCr 5	16 MC 5	527 M 17	16 MnCr 5	SCR 415	2511
		16 MnCrS 5	1.7139	1.7139	16 MnCrS 5					
	5120	20 MnCr 5	1.7147	1.7147	20 MnCr 5	20 MC 5		20 MnCr 5	SMnC 420 (H)	
	5120 H	20 MnCrS 5	1.7149	1.7149	20 MnCrS 5	20 MnCrS 5			SMnC 21 H	
	A 182-F11, F12	13 CrMo 4 5	1.7335	1.7335	13 CrMo 4 4	15 CD 3.5	1501-620 Gr. 27	14 CrMo 4 5		2216
A 387 Gr. 12 Cl. 2			1.7337	16 CrMo 4 4	15 CD 4.5	1501-620 Gr. 27	14 CrMo 4 5		2216	
A 182-F22	10 CrMo 9 10	1.7380	1.7380	10 CrMo 9 10	10 CD 9.10	1501-622 Gr. 31	12 CrMo 9 10		2218	
P4	1035	C35+N		1.0501	C 35	AF 55 C 35	060 A 35	C 35		1550
	1045	E 335	1.0503	1.0503	C 45	AF 65 C 45	80 M 46	C 45	S 45 C	1650
	1040	C40+N		1.0511	C 40	AF 60 C 40	080 M 40	C 40	S 40 C	
	1055	E 360	1.0070	1.0535	St 70-2	A 70-2		Fe 690		1655
	1060	C60+N	1.0601	1.0601	C 60	CC 55	080 A 62	C 60		
	1039			1.1157	40 Mn 4	35 M 5	150 M 36			
	1330	G 28 Mn6	1.1165	1.1165	30 Mn 5		120 M 36		SMn 1 H, SCMn 2	
	1335	G 28 Mn6+QT	1.1165	1.1167	36 Mn 5	40 M 5	150 M 36		SMn 438 (H), SCMn 3	2120
	1035	C 35E	1.1181	1.1181	Ck 35	XC 38 H1	080 M 36	C 35	S 35 C	1572
	1045	C 45E	1.1191	1.1191	Ck 45	XC 42	080 M 46	C 45	S 45 C	1672
1064	C 60E	1.1221	1.1221	Ck 60	XC 60	080 A 62	C 60	S 58 C	1665, 1678	
1060			1.1740	C 60 W	Y3 55			SK 7		
P5	9255	55 SiCr7	1.7100	1.0904	55 Si 7	55 S 7	250 A 53	55 Si 8		2085, 2090
	4142, 4140	42 CrMo 4	1.7225	1.1201	42 CrMo 4	42 CD 4	708 M 40	42 CrMo 4	SCM 440 (H)	2244
	4142, 4140	42 CrMo 4	1.7225	1.1201	42 CrMo 4	42 CD 4	708 M 40	42 CrMo 4	SCM 440 (H)	2244
	4135			1.2330	35 CrMo 4	34 CD 4	708 A 37	35 CrMo 4		2234
	S1			1.2542	45 WCrV 7		BS 1	45 WCrV 8 KU		2710
	L6		1.2714	1.2714	56 NiCrMoV 7		BH 224-5	56 NiCrMoV7-KU	SKT 4	
	5045			1.5121	46 MnSi 4					
	3135			1.5710	36 NiCr 6	35 NC 6	640 A 35		SNC 236	
	3435			1.5736	36 NiCr 10	35 NC 11		35 NiCr 9	SNC 631 (H)	
	9840	36CrNiMo4+TA		1.6511	36 CrNiMo 4	40 NCD 3	816 M 40	38 NiCrMo 4 (KB)		
	4340	34 CrNiMo 6	1.6582	1.6582	34 CrNiMo 6	35 NCD 6	817 M 40	35 NiCrMo 6 (KW)	SNCM 447	2541
	5132	34 Cr 4	1.7033	1.7033	34 Cr 4	32 C 4	530 A 32	34 Cr 4 (KB)	SCR 430 (H)	
	5140	41 Cr 4	1.7035	1.7035	41 Cr 4	42 C 4	530 M 40	41 Cr 4	SCR 440 (H)	
4130	25 CrMo 4	1.7218	1.7218	25 CrMo 4	25 CD 4 S	708 M 25	25 CrMo 4 (KB)	SCM 425	2225	
			1.7361	32 CrMo 12	30 CD 12	722 M 24	32 CrMo 12		2240	
6150	50 CrV 4	1.8159	1.8159	50 CrV 4	50 CV 4	735 A 50	51 CrV 4	SUP 10	2230	
A 355 Cl. A	41 CrAlMo 7 10	1.8509	1.8509	41 CrAlMo 7	40 CAD 6.12	905 M 39	41 CrAlMo 7	SACM 645	2940	
P6	1070	C 67S	1.1231	1.1231	Ck 67	XC 68	060 A 67	C 70		1770
	1095	C 100S	1.1274	1.1274	Ck 101		060 A 96		SUP 4	1870
	W1	C 105U	1.1545	1.1545	C 105 W1	Y1 105		C 100 KU		1880
				1.1645	C 105 W2	Y1 105		C 100 KU	SK 3	
	W1			1.1663	C 125 W	Y2 120		C 120 KU	SK 2	

SMG

UNS	U.N.E./ I.H.A.	GOST	Misc. Brands	Condition	Structure
G12130				Annealed	
G12134				Annealed	
				Annealed	
				Annealed	
G11400		40		Annealed	
G11460				Annealed	
G12150				Annealed	
G12144				Annealed	
		16D		Annealed	
		18kp		Annealed	
		S114kP		Annealed	
G10100		10		Annealed	
G10170	F.1110	15		Annealed	
G10200		20		Annealed	
		17G1S		Annealed	
G10170	F.1511	15		Annealed	
G10250	F.1120	25		Annealed	
				Annealed	
				Annealed	
G45200				Annealed	
G33106		20X2H4A		Annealed	
				Annealed	
				Annealed	
G51170	F.1516	12KHN2		Annealed	
		18HG		Annealed	
G51200		20KH		Annealed	
		20KH		Annealed	
		12KHM		Annealed	
				Annealed	
J21890	F.155	12KH8		Annealed	
G10350	F.1130	35		Annealed	
G10430	F.5110	45		Annealed	
		40		Annealed	
	F.1150	55		Annealed	
G10600		60		Annealed	
G10390		40G		Annealed	
G13300		30G2		Annealed	
G13350	F.411	35G2		Annealed	
G10340	F.1135	35		Annealed	
G10420	F.1140	45		Annealed	
G10640	F.1150	60		Annealed	
		60		Annealed	
	F.144	55S2		Annealed	
G41400	F.1252	38HM		Annealed	
G41400	F.1252	38HM		Quenched & Tempered	
T51620	F.1250	35KHM		Annealed	
T41901	F.5241	5KHV2S		Annealed	
T61206		5KHNV		Annealed	
				Annealed	
				Quenched & Tempered	
				Annealed	
G98400				Quenched & Tempered	
	F.1280	38H2N2MA		Annealed	
G51320		35KH		Quenched & Tempered	
G51400		40H		Quenched & Tempered	
G41300	F.1251	20KHM		Quenched & Tempered	
				Quenched & Tempered	
H61500	F.143	50KHFA		Quenched & Tempered	
K24065	F.1740			Annealed	
G10700	F.5103	70		Annealed	
G10950	F.5117			Annealed	
	F.5118	U10A		Annealed	
		U10		Annealed	
		U13		Annealed	

SMG

SMG	AISI / ASTM	EN	EN-Nr	W-Nr	DIN	AFNOR	BS	UNI	JIS	SS	UNS
P7	L2	107 CrV 3	1.2210	1.2210	115 CrV 3	100 C 3		107 CrV 3 KU			T61202
	O1			1.2510	100 MnCrV 4	90 MWCV 5	BO 1	95 MnWCr 5 KU	SKS 3	2140	T31501
	O2	90 MnCrV 8	1.2842	1.2842	90 MnCrV 8	90 MV 8	BO 2	90 MnVCr 8 KU			T31502
	52100	100 Cr 6	1.3505	1.3505	100 Cr 6	100 C 6	534 A 99	100 Cr 6	SUJ 2	2258	G51986
P8	D3	X 210 Cr 12	1.2080	1.2080	X 210 Cr 12	Z 200 C 12	BD 3	X 210 Cr 13 KU	SKD 1		T30403
	H11			1.2343	X 38 CrMoV 5 1	Z 38 CDV 5	BH 11	X 37 CrMoV 5 1 KU	SKD 6		T20811
	H13	X 40 CrMoV 5 1	1.2344	1.2344	X 40 CrMoV 5 1	Z 40 CDV 5	BH 13	X 40 CrMo 5 1 1 KU	SKD 61	2242	T20813
	A2	X 100 CrMoV 5	1.2363	1.2363	X 100 CrMoV 5 1	Z 100 CDV 5	BA 2	X 100 CrMoV 5 1 KU	SKD 12	2260	T30102
	H10			1.2365	X 32 CrMoV 3 3	32 DCV 28	BH 10	30 CrMoV 12 27 KU	SKD 7		T20810
				1.2436	X 210 CrW 12			X 215 CrW 12 1 KU	SKD 2	2312	
				1.2601	X 165 CrMoV 12			X 165 CrMoV 12 KU		2310	
	L6			1.2713	55 NiCrMoV 6	55 NCDV 7			SKT 4		T61206
	M35	HS 6-5-2-5	1.3243	1.3243	S 6-5-2-5	Z 85 WDKCV 06-05-05-04-02		HS 6-5-2-5	SKH 55	2723	
	M42	HS 2-10-1-8	1.3247	1.3247	S 2-10-1-8	Z 110 DKCWV 09-08-04	BM 42	HS 2-9-1-8	SKH 51		T11342
	T4	HS 18-1-2-5	1.3255	1.3255	S 18-1-2-5	Z 80 WKCVC 18-05-04-01	BT 4	HS 18-1-1-5	SKH 3		T12004
	M2	HS 6-5-2	1.3343	1.3343	S 6-5-2	Z 85 WDCV 06-05-04-02	BM 2	HS 6-5-2	SKH 9, SKH 51	2722	T11302
	M7	HS 2-9-2	1.3348	1.3348	S 2-9-2	Z 100 DCWV 09-04-02-02		HS 2-9-2	SKH 58	2782	T11307
	T1	HS 18-0-1	1.3355	1.3355	S 18-0-1	Z 80 WCV 18-04-01	BT 1	HS 18-0-1	SKH 2		T12001
P11	403	X 6 Cr 13	1.4000	1.4000	X 6 Cr 13	Z 6 C 12	403 S 17	X 6 Cr 13	SUS 403	2301	S41008
	410, CA-15	X 12 Cr 13	1.4006	1.4006	X 10 Cr 13	Z 10 C 13	410 S 21	X 12 Cr 13	SUS 410	2302	S41000
	430	X 6 Cr 17	1.4016	1.4016	X 6 Cr 17	Z 8 C 17	430 S 15	X 8 Cr 17	SUS 430	2320	S43000
	420	X 20 Cr 13	1.4021	1.4021	X 20 Cr 13	Z 20 C 13	420 S 37	X 20 Cr 13	SUS 420 J 1	2303	S42000
	420	X 39 Cr 13	1.4031	1.4031	X 40 Cr 13	Z 40 C 14	420 S 45	X 40 Cr 14	SUS 420	2304	S40280
	440 A	X 70 CrMo 15	1.4109	1.4109	X 65 CrMo 14	Z 70 D 14			SUS 440 A		S44002
	440 B	X 90 CrMoV 18	1.4112	1.4112	X 90 CrMoV 18	Z 2 CND 18 05	409 S 19	X CrTi 12	SUS 440 B	2327	S44003
	440 C	X 105 CrMo 17	1.4125	1.4125	X 105 CrMo 17	Z 100 CD 17		X 105 CrMo 17	SUS 440 C		S44004
		X 3 CrNiMo 13 3	1.4313	1.4313	X 5 CrNi 13 4	Z 5 CN 13.4	425 C 11	X 6 CrNi 13 04	SCS 5	2385	J91540
	446	X 18 CrN 28	1.4749	1.4749	X 18 CrN 28	Z 18 C 25				2322	S44600
M1	303	X 10 CrNiS 18 9	1.4305	1.4305	X 10 CrNiS 18 9	Z 10 CNF 18.09	303 S 31	X 10 CrNi 18 09	SUS 303	2346	S30300
M2	302	X 12 CrNi 18 8	1.4300	1.4300	X 12 CrNi 18 8	Z 12 CN 18	302 S 25		SUS 302	2331	S30200
	304, 304 H	X 5 CrNi 18 9	1.4301	1.4301	X 6 CrNi 18 10	Z 6 CN 18.09	304 S 31	X 5 CrNi 18 11	SUS 304	2333	S30400
	304 L	X 2 CrNi 19 11	1.4306	1.4306	X 2 CrNi 19 11	Z 2 CN 18.10	304 S 12	X 3 Cr Ni 18 11	SUS 304 L	2352	S30403
	301	X 9 CrNi 18 8	1.4310	1.4310	X 12 CrNi 17 7	Z 12 CN 17.07	301 S 21	X 12 CrNi 17 07	SUS 301	(2331)	S30100
	316	X 5 CrNiMo 17 12 2	1.4401	1.4401	X 5 CrNiMo 17 12 2	Z 3 CND 17.11.1	316 S 31	X 5 CrNiMo 17 12	SUS 316	2347	S31600
	347	X 6 CrNiNb 18 10	1.4550	1.4550	X 6 CrNiNb 18 10	Z 6 CENNb 18.10	347 S 31	X 6 CrNiNb 18 11	SUS 347	2338	S34700
M3	304 LN	X 2 CrNiN 18 10	1.4311	1.4311	X 2 CrNiN 19 11	Z 2 CN 18 .10Az	304 S 62	X 2 CrNiN 18 11	SUS 304 LN	2371	S30453
	310 S	X 12 CrNi 25 21	1.4335	1.4335	X 12 CrNi 25 21	Z 12 CN 25.20	310 S 24	X 6 CrNi 26 20	SUH 310, SUS 310 S	2361	S31008
	316 LN	X 2 CrNiMoN 17 13 3	1.4429	1.4429	X 2 CrNiMoN 17 13 3	Z 2 CND 17.13 Az	316 S 62	X 2 CrNiMoN 17 13 3	SUS 316 LN	2375	S31653
	316 L	X 2 CrNiMo 18 14 3	1.4435	1.4435	X 2 CrNiMo 18 14 3	Z 2 CND 17.13	316 S 12	X 2 CrNiMo 17 13 2	SCS 16, SUS 316 L	2353	S31603
	317	X 3 CrNiMo 18 12 3	1.4466	1.4466	X 5 CrNi 18 15		317 S 16	X 5 CrNi 18 15	SUS 317	2366	S31700
	X 9 CrNiSiNc 21 11 2	1.4835	1.4893	X 9 CrNiSiNc 21 11 2		310 S 31			2368	S30815	
M4		X 2 CrNiMoSi 19 5	1.4424	1.4417	X 2 CrNiMoSi 19 5	Z 2 CND 18.05.03				2376	S31500
	329	X 3 CrNiMo 27 5 2	1.4460	1.4460	X 4 CrNiMo 27 5 2	Z 3 CND 25.7 Az		X 3 CrNiMo 27 5 2	SUS 329 J 1	2324	S32900
	329 LN	X 2 CrNiMoN 22 5 3	1.4462	1.4462	X 2 CrNiMoN 22 5	Z 2 CND 22.05 Az	332 S 15	X 2 CrNiMoN 22 5		2377	S31803
	904L	X 2 NiCrMoCu 25 20 5	1.4539	1.4539	X 2 NiCrMoCu 25 20 5	Z 2 NCDU 25 20	904 S 13			2562	N08904
M5	F 53	X 2 CrNiMoN 25 7 4	1.4410	1.4410	X 2 CrNiMoN 25 7 4	Z 3 CND 25.07 Az		X 2 CrNiMoN 25 7 4		2328	S32750
		X 1 CrNiMoN 20 18 7	1.4547	1.4529	X 1 CrNiMoN 20 18 7	Z 1 CNDU 20.18.05 Az		X 1 CrNiMoN 20 18 7		2778	S31254
	XM-13	X 6 NiCrTiMoV 25 15	1.4534	1.4534	X 3 CrNiMoAl 13 8 2						S13800
	XM-12		1.4540	1.4540	X 4 CrNiCuNb 16 4	Z 4 CUNUNb 16.4 M					S15500
	AMS 5528	X 3 CrNiMoAl 13 8 2	1.4568	1.4568	X 7 CrNiAl 17 7	Z 9 CAN 17.7	301 S 81	X 7 CrNiAl 17 7	SUS 631	2388	S17700
		X 1 CrNiMoN 25 22 8	1.4652	1.4652	X 2 CrNiMoN 25 22 7						S32654
		X 10 NiCrAlTi 32 20	1.4876	1.4876	X 10 NiCrAlTi 32 20	Z 10 NC 32.21			NCF 800		N08800
660	X 5 CrNiCuNb 16 4	1.4980	1.4943	X 4 NiCrTi 25 15	Z 6 NCTDU 25.15	HR 51		SUH 660	2570	S66286	

SMG

UNS	U.N.E./ I.H.A.	GOST	Misc. Brands	Condition	Structure
T61202	F.520L	11KHf		Annealed	
T31501	F.5220	9KHVG		Annealed	
T31502		9G2F		Annealed	
G51986	F.5230	SHKH15		Annealed	
T30403	F.5212	KH12		Annealed	
T20811		4KH5MFS		Annealed	
T20813	F.5318	4KH5MF1S		Annealed	
T30102	F.5227	9KH5VF		Annealed	
T20810		3KH3M3F		Annealed	
	F.5213	KH12		Annealed	
		KH12MF		Annealed	
T61206	F.520.S	5KHNM		Annealed	
	F.5613	R6M5K5		Annealed	
T11342		R2AM9K5		Annealed	
T12004		R18K5F2		Annealed	
T11302	F.5603	R6M5		Annealed	
T11307				Annealed	
T12001		R18		Annealed	
S41008		08KH13		Annealed	Ferrite
S41000	F.3401	12KH13, 08KH13		Annealed	Martensite
S43000	F.3113	12KH17		Annealed	Ferrite
S42000	F.5261	20KH13		Annealed	Martensite
S40280	F.3404	40KH13		Annealed	Martensite
S44002				Annealed	Martensite
S44003		95KH18		Annealed	Martensite
S44004		95KH18		Annealed	Martensite
J91540			F6NM	Annealed	Martensite
S44600		15KH28		Annealed	Ferrite
S30300	F.3508	12KH19N9		Annealed	Austenite
S30200		12KH18N9		Annealed	Austenite
S30400	F.3504	08KH18N10		Annealed	Austenite
S30403	F.3504	03KH18N11		Annealed	Austenite
S30100	F.3517	07KH16N6		Annealed	Austenite
S31600	F.3534	08KH17H13M2T		Annealed	Austenite
S34700	F.3524	08KH18N12B		Annealed	Austenite
S30453	F.3541	03KH18N11		Annealed	Austenite
S31008		12KH25N20		Annealed	Austenite
S31653		03KH16N15M3		Annealed	Austenite
S31603	F.3533	03KH17N14M3		Annealed	Austenite
S31700		08KH17H15M3T		Annealed	Austenite
S30815			253 MA	Annealed	Austenite
S31500			3RE60	Annealed	Duplex
S32900				Annealed	Duplex
S31803			SAF 2205	Annealed	Duplex
N08904				Annealed	Super austenite
S32750			SAF 2507	Annealed	Super duplex
S31254			254 SMO	Annealed	Super austenite
S13800			PH13-8Mo	Solution treated	Austenite
S15500			15-5-PH	Solution treated	Martensite
S17700		09KH17N7YU1	17-7-PH	Solution treated	Austenite/ferrite
S32654			654 SMO	Annealed	Super austenite
N08800			Alloy 800	Annealed	Austenite
S66286			A286	Solution treated	Austenite

SMG

SMG	AISI / ASTM	EN	EN-Nr	W-Nr	DIN	AFNOR	BS	UNI	JIS	SS
K1	A48 25 B	EN-GJL-150	0.6150	0.6150	GG-15	Ft 15 D	Grade 150	G15	FC 150	01 15-00
	A48 30 B	EN-GJL-200	0.6200	0.6200	GG-20	Ft 20 D	Grade 220	G20	FC 200	01 20-00
	G 3500	EN-GJL-215			GG-220 HB					02 19
	A48 35 B	EN-GJL-250	0.6250	0.6250	GG-25	Ft 25 D	Grade 260	G25	FC 250	01 25-00
	A48 45 B	EN-GJL-300	0.6300	0.6300	GG-30	Ft 30 D	Grade 300	G30	FC 300	01 30-00
A48 50 B	EN-GJL-350	0.6350	0.6350	GG-35	Ft 35 D	Grade 350	G35	FC 350	01 35-00	
K2	Grade 350	EN-GJV-300			GJV-300					
	Grade 400	EN-GJV-350			GJV-350					
	Grade 400-15	EN-GJV-400			GJV-400					
	Grade 450	EN-GJV-450			GJV-450					
Grade 500	EN-GJV-500			GJV-500						
K3	A220 60004	EN-GJMB-550-4	0.8155		GTS-55-04	P 540/5	P 540/5	P 55-04	PCMP55-04	08 54-00
K4		EN-GJS-350-22	0.7033	0.7033	GGG-35.3	FGS 370-17	Grade 350/22		FCD 350-22L	07 17-15
	60-40-18	EN-GJS-400-15	0.7040	0.7040	GGG-40	FGS 400-12	Grade 420/12	GS 400-12	FCD 400-18L	07 17-02
	60-40-18	EN-GJS-400-18	0.7043	0.7043	GGG-40.3	FGS-370-17	Grade 370/17	GSO 42/17		07 17-12
	A536 80-55-6	EN-GJS-500-7	0.7050	0.7050	GGG-50	FGS 500-7	Grade 500/7	GS 500-7	FCD 500-7	07 27-02
	A476 80-60-03	EN-GJS-600-3	0.7060	0.7060	GGG-60	FGS 600-3	Grade 600/3	GS 600-3	FCD 600-3	07 32-03
A536 100-70-03	EN-GJS-700-2	0.7070	0.7070	GGG-70	FGS 700-2	Grade 700/2	GS 700-2	FCD 700-2	07 37-01	
K5	1600/1300/-	-								
	1050/700/7	EN-GJS-1000-5			GJS-1000-5					
	1200/850/4	EN-GJS-1200-2			GJS-1200-2					
	1400/1100/1	EN-GJS-1400-1			GJS-1400-1					
850/550/10	EN-GJS-800-8			GJS-800-8						
K6	A436 Type 2	EN-GJLA-XNiCr 20-2	0.6660	0.6660	GGL-NiCr 20 2	FGL Ni20 Cr2	Grade F2			05 23-00
	A436 Type 3	EN-GJLA-XNiCr 30-3	0.6676	0.6676	GGL-NiCr 30 3	FGL Ni30 Cr3	Grade F3			
	A436 Type 1	EN-GJLA-XNiCuCr15-6-2	0.6655	0.6655	GGL-NiCuCr 15 6 2	FGL Ni15 Cu6 Cr2	Grade F1			
K7	A439 Type D-5	EN-GJSA-XNi35	0.7683	0.7683	GGG-Ni 35	FGS Ni35				
	A436 Type D-2	EN-GJSA-XNiCr20-2	0.7660	0.7660	GGG-NiCr 20 2	FGS Ni20 Cr2	Grade S2			
	A436 Type D-3	EN-GJSA-XNiCr30-3	0.7676	0.7676	GGG-NiCr 30 3	FGS Ni30 Cr3	Grade S3			
	-	EN-GJSA-XNiMn13-7	0.7652	0.7652	GGG-NiMn 13 7	FGS Ni13 Mn7	Grade S6			07 72-00
A439 Type D-2M	EN-GJSA-XNiMn23-4	0.7673	0.7673	GGG-NiMn 23 4	FGS Ni23 Mn4	Grade S2M				
N1		AW-1050A	AI99.5	3.0255	AI99.5	A-5/1050A	1B		(A1050)	4007
		AW-3103	AlMn1	3.0515	AlMn1		N3			4054
		AW-3003	AlMn1Cu	3.0517	AlMn1Cu	A-M1/3003			A3003	
		AW-2014	AlCuSiMn	3.1255	AlCuSiMn	A-U4SG/2014	H15			4338
		AW-2011	AlCuBiPb	3.1655	AlCuBiPb	A-U5PbBi/2011	FC1		A2011	4355
	A380	AC-46200	AlSi8Cu3(Si)	3.2161	G-AlSi8Cu3	A-S7G	LM25	3599	AC 4C	4244
	B26	AC-42000		3.2341	G-AlSi5Mg	A-S7G	LM25			4244
		AW-6060	AlMgSi0.5	3.3206	AlMgSi0.5	A-GS/6060	(H9)			4103
		AW-6063	AlMgSi0.7	3.3210	AlMgSi0.7	A-GSUC/6061	(H10)		(A6063)	4104,4107
		AW-5005	AlMg1	3.3315	AlMg1	A-G0.6	N41			4106
		AW-7020	AlZn4.5Mg1	3.4335	AlZn4.5Mg1	A-Z5G/7020	H17			4425
		AW-7075		3.4365	AlZnMgCu1.5	A-Z5GU/7075	2L95/2L96		A7075	
	AMS 4442	MN65120	MgSe3Zn2Zr1	3.5103	G-MgSe3Zn2Zr1	ZRE1	MAG6-TE			
AZ61A	MG-P-63	MgAl6Zn	3.5612	G-MgAl6Zn	G-A6-Z1	MAG-E-121				
AZ80A	MG-P-61	MgAl8Zn	3.5812	G-MgAl8Zn	(G-A7-Z1)					
N2		AW-6082	AlMgSi1	3.2315	AlMgSi1	A-SGM0.7/6082	H30			4212
	B85	AC-43400	AlSi10Mg(Fe)	3.2381	G-AlSi10Mg	A-S10G	LM9			4253
	A413.2	AC-44200	AlSi12	3.2382	GD-AlSi12					
N3	B390.0		AlSi17Cu5						ADC14	
N11	CA952	CC331G		2.0940.01	CuAl10Fe	CuAl10Fe	AB1			5710
	CA955	CC333G		2.0975.01	CuAl10Ni	CuAl10Ni5Fe5	AB2			5716
					CuNi10Fe1Mn	CuNi10Fe1Mn	CN102			5667
					CuNi10Zn45					
					CW408J	CuNi18Zn19Pb	CuNi18Zn19Pb1			
	CA937	CW352H		2.1176	CuPb10Sn	CuSn10Pb10	LB2			5640
		CC480K		2.1050.01	CuSn10	CuSn10	CT1			5443
				2.1087	CuSn10Zn					5458
		CW452K	CuSn6	2.1020	CuSn6	CuSn6	PB103		C5191	5428
		CW502L	CuZn15	2.0240	CuZn15	CuZn15	CZ102		CZ300	5112
		CW706R	CuZn28Sn1	2.0470	CuZn28Sn1	CuZn29Sn1				5220
		CW508L	CuZn37	2.0321	CuZn37	CuZn37	CZ108			5150
		CW717R	CuZn38Sn1	2.0530	CuZn38Sn1					
	CW614N	CuZn39Pb3	2.0401	CuZn39Pb3	CuZn39Pb3	CZ121			5170	
	CW612N	CuZn40Pb2	2.0402	CuZn40Pb2	CuZn39Pb2	CZ120			5168	
	CW622N	CuZn44Pb2	2.0410	CuZn44Pb2		CZ104			5272	

SMG

UNS	U.N.E./ I.H.A.	GOST	Misc. Brands	Condition	Structure
F11601		Sc 15			Grey cast iron (GCI)
F12101		Sc 20			Grey cast iron (GCI)
					Grey cast iron (GCI)
F12401		Sc 25			Grey cast iron (GCI)
F13101		Sc 30			Grey cast iron (GCI)
F13502		Sc 35			Grey cast iron (GCI)
					Compacted graphite irons (CGI)
					Compacted graphite irons (CGI)
					Compacted graphite irons (CGI)
					Compacted graphite irons (CGI)
					Compacted graphite irons (CGI)
F24130				Tempered	Malleable cast irons (MCI)
					Nodular cast irons (SGI)
F32800	FGE 38-17	Vc 42-12			Nodular cast irons (SGI)
F32800		Vc 42-12			Nodular cast irons (SGI)
F33800	FGE 50-7	Vc 50-2			Nodular cast irons (SGI)
F34100	FGE 60-2	Vc 60-2			Nodular cast irons (SGI)
F34800	FGE 70-2	Vc 70-2			Nodular cast irons (SGI)
ADI grade 5					Austempered cast irons (ADI)
ADI grade 2					Austempered cast irons (ADI)
ADI grade 3					Austempered cast irons (ADI)
ADI grade 4					Austempered cast irons (ADI)
ADI grade 1					Austempered cast irons (ADI)
F41002			Ni-Resist 2		Austenitic lamellar cast irons
F41004			Ni-Resist 3		Austenitic lamellar cast irons
F41000			Ni-Resist 1		Austenitic lamellar cast irons
F43006			Ni-Resist D-5		Austenitic nodular cast irons
F43000			Ni-Resist D-2		Austenitic nodular cast irons
F43003			Ni-Resist D-3		Austenitic nodular cast irons
-			Nodumag		Austenitic nodular cast irons
F43010			Ni-Resist D-2M		Austenitic nodular cast irons
AA1050A					
AA3103					
AA3003					
AA2014					
AA2011					
A13800					
AA6060					
AA6005					
AA5005					
AA7020					
AA7075					
M12330					
M11600					
AA6082					
A13600					
C95200		BrA9ZH3L			
C95500		BrA10ZH4N4L			
C70600					
C76300					
C93700					
C90700					
C90500					
C51900		BrOF6.5-0.15			
C23000		L90			
C44300		LOMsh70-1-0.05			
C27200					
C46400		LO60-1			
C38500					
C37800					
C68700		LAMsh77-2-0.05			

SMG

SMG	AISI / ASTM	EN	EN-Nr	W-Nr	DIN	AFNOR	BS	UNI	JIS	SS
S1										
S2										
S3		NiMo30		2.4810						
		NiMo16Cr15W		2.4819						
		NiCr19Fe19Nb5Mo3		2.4668						
				2.4669						
		NiCr20TiAl		2.4631						
		NiCr19Co18Mo4Ti3Al3								
	NiCr20Co13Mo4Ti3Al		2.4654							
S11				3.7024						
	AMS 4919									
S12	AMS 4943									
	AMS 4920, Grd 5	TiAl6V4		3.7164						
S13	AMS 4986				TiV10Fe2Al3					
H3	5115	16 MnCr 5	1.7131	1.7131	16 MnCr 5	16 MC 5	527 M 17	16 MnCr 5	SCR 415	2511
H5	4142, 4140	42 CrMo 4	1.7225	1.1201	42 CrMo 4	42 CD 4	708 M40	42 CrMo 4	SCM 440 (H)	2244
	1070	C 67S	1.1231	1.1231	Ck 67	XC 68	060 A 67	C 70		1770
	1078, 1080	C 75S	1.1248	1.1248	Ck 75	XC 75	060 A 78	C 75		1774, 1778
	1095	C 100S	1.1274	1.1274	Ck 101		060 A 96		SUP 4	1870
	W 1	C 105U	1.1545	1.1545	C 105 W1	Y1 105		C 100 KU		1880
	S1			1.2550		60 WCV 7	55 WC 20		55 WCrV 8 KU	
	5155	55 Cr 3	1.7176	1.7176	55 Cr 3	55 C 3	527 A 60	55 Cr 3	SUP 9 (A)	2253
H7	L2	107 CrV 3	1.2210	1.2210	115 CrV 3	100 C 3		107 CrV 3 KU		
	O1			1.2510		100 MnCrW 4	90 MWCV 5	BO 1	95 MnWCr 5 KU	SKS 3
	O2	90 MnCrV 8	1.2842	1.2842	90 MnCrV 8	90 MV 8		BO 2	90 MnVCr 8 KU	
	52100	100 Cr 6	1.3505	1.3505	100 Cr 6	100 C 6	534 A 99	100 Cr 6	SUJ 2	2258
H8	H13	X 40 CrMoV 5 1	1.2344	1.2344	X 40 CrMoV 5 1	Z 40 CDV 5	BH 13	X 40 CrMo 5 1 1 KU	SKD 61	2242
	A2	X 100 CrMoV 5	1.2363	1.2363	X 100 CrMoV 5 1	Z 100 CDV 5	BA 2	X 100 CrMoV 5 1 KU	SKD 12	2260
	D2	X 155 CrVMo 12 1		1.2379	X 155 CrVMo 12 1	Z 160 CDV 12	BD 2	X 155 CrVMo 12 1 KU	SKD 11	
				1.2436		X 210 CrW 12			X 215 CrW 12 1 KU	SKD 2
				1.2601		X 165 CrMoV 12			X 165 CrMoW 12 KU	
				1.2713		55 NiCrMoV 6	55 NCDV 7			SKT 4
	M35	HS 6-5-2-5	1.3243	1.3243	S 6-5-2-5	Z 85 WDKCV 06-05-05-04-02		HS 6-5-2-5	SKH 55	2723
M42	HS 2-10-1-8	1.3247	1.3247	S 2-10-1-8	Z 110 DKCWV 09-08-04	BM 42	HS 2-9-1-8	SKH 51		
M2	HS 6-5-2	1.3343	1.3343	S 6-5-2	Z 85 WDCV 06-05-04-0	BM 2	HS 6-5-2	SKH 9, SKH 51	2722	
T1	HS 18-0-1	1.3355	1.3355	S 18-0-1	Z 80 WCV 18-04-01	BT 1	HS 18-0-1	SKH 2		
H11	420	X 20 Cr 13	1.4021	1.4021	X 20 Cr 13	Z 20 C 13	420 S 37	X 20 Cr 13	SUS 420 J 1	2303
	440 A	X 70 CrMo 15	1.4109	1.4109	X 65 CrMo 14	Z 70 D 14			SUS 440 A	
	440 B	X 90 CrMoV 18	1.4112	1.4112	X 90 CrMoV 18	Z 2 CND 18 05	409 S 19	X CrTi 12	SUS 440 B	2327
	440 C	X 105 CrMo 17	1.4125	1.4125	X 105 CrMo 17	Z 100 CD 17		X 105 CrMo 17	SUS 440 C	
H12	XM-13	X 3 CrNiMoAl 13 8 2	1.4534	1.4534	X 3 CrNiMoAl 13 8 2					
	630	X 5 CrNiCuNb 16 4	1.4548	1.4542	X 5 CrNiCuNb 17 4	Z 6 CNU 17.4			SCS 24, SUS 630	
	AMS 5528	X 7 CrNiAl 17 7	1.4568	1.4568	X 7 CrNiAl 17 7	Z 9 CAN 17.7	301 S 81	X 7 CrNiAl 17 7	SUS 631	2388
	660	X 6 NiCrTiMoV 25 15	1.4980	1.4943	X 4 NiCrTi 25 15	Z 6 NCTDV 25.15	HR 51		SUH 660	2570
H21	A128 Grade A	X 120 Mn 12	1.3401	1.3401	X 120 Mn 12	Z 120 M 12	BW 10		SC MnH 1	2183
H31	A532 IB (NiCr-LC)	EN-GJN-HV520	0.9620	G-X330 NiCr 4 2	FB Ni4 Cr2 BC	Grade 2 A	Grade 2 A			05 12-00
	A532 IA (NiCr-HC)	EN-GJN-HV550	0.9625	G-X260 NiCr 4 2	FB Ni4 Cr2 HC	Grade 2 B	Grade 2 B			05 13-00
	A532 ID (Ni-HiCr)	EN-GJN-HV600(XCr11)	0.9630	G-X300 CrNiSi 9 5 2	FB Cr9 Ni5	Grade 2 C, D, E	Grade 2 C, D, E			04 57-00

SMG

UNS	U.N.E./ I.H.A.	GOST	Misc. Brands	Condition	Structure
			Discalloy	Precipitation hardened	
			Haynes 25		
			Stellite 21		
			Stellite 31		
N10002			Hastelloy C		
N10276		KHN65MV	Hastelloy C-276		
			IN 100		
N07718			Inconel 718		
N07750			Inconel X-750	Solution treated	
N07080			Nimonic 80A		
			René 41		
N07500			Udimet 500		
N07001			Waspalloy		
			Ti	Commercially pure	Ti (α)
R54620			Ti 6-2-4-2	Annealed	Ti (α)
R56320			Ti 3Al-2.5V (grd 9)	Annealed	Ti ($\alpha+\beta$)
R56400		VT6	Ti 6Al-4V	Annealed	Ti ($\alpha+\beta$)
			Ti 10V-2Fe-3Al	Annealed	Ti (β)
G51170	F.1516	12KHN2		Case hardened	
G41400	F.1252	38HM		Quenched & Tempered	
G10700	F.5103	70		Quenched & Tempered	
G10780	F.5107	75		Quenched & Tempered	
G10950	F.5117			Quenched & Tempered	
	F.5118	U10A		Quenched & Tempered	
		5KHV2SF		Quenched & Tempered	
G51550				Quenched & Tempered	
T61202	F.520L	11KHF		Quenched & Tempered	
T31501	F.5220	9KHVG		Quenched & Tempered	
T31502		9G2F		Quenched & Tempered	
G51986	F.5230	SHKH15		Quenched & Tempered	
T20813	F.5318	4KH5MF1S		Quenched & Tempered	
T30102	F.5227	9KH5VF		Quenched & Tempered	
T30402	F.5211	KH12MF		Quenched & Tempered	
	F.5213	KH12		Quenched & Tempered	
		KH12MF		Quenched & Tempered	
T61206	F.520.S	5KHNM		Quenched & Tempered	
	F.5613	R6M5K5		Quenched & Tempered	
T11342		R2AM9K5		Quenched & Tempered	
T11302	F.5603	R6M5		Quenched & Tempered	
T12001		R18		Quenched & Tempered	
S42000	F.5261	20KH13		Quenched & Tempered	Martensite
S44002				Quenched & Tempered	Martensite
S44003		95KH18		Quenched & Tempered	Martensite
S44004		95KH18		Quenched & Tempered	Martensite
S13800			PH13-8Mo	Precipitation hardened	Martensite
S17400			17-4-PH	Precipitation hardened	Martensite
S17700		09KH17N7YU1	17-7-PH	Precipitation hardened	Austenite/ferrite
S66286			A286	Precipitation hardened	Austenite
F45001			Ni-Hard 2		White cast iron
F45000			Ni-Hard 1		White cast iron
F45003			Ni-Hard 4		White cast iron

Cemented carbide inserts and insert carriers

Cemented carbide inserts and cemented carbide insert carriers from Seco Tools are not included in the product range intended for the following requirements. Nevertheless Seco Tools can make the following declaration.

These products meet all requirements in RoHS (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment), WEEE (Waste Electrical & Electronic Equipment) and ELV (End of Life Vehicles) requirements.

Products do not contain mercury, lead, hexavalent chromium, cadmium, CFC, HCFC, flame retardants or solvents in concentrations that exceed specifications in the regulations.

Regrinding:

Wet or dry grinding can produce potentially hazardous dusts or mists that can irritate skin, eyes, nose, throat and result in lung damage or disease. To avoid injury use proper safety precautions and protective equipment.

Disposal:

Seco Tools will buy back used inserts and solid carbide tools for recycling. Inserts and solid carbide tools should be separated from other metal waste (steel, aluminum, copper etc).

All packing material is fully recyclable.

CBN and PCD inserts

Inserts from Seco Tools are not included in the product range intended for the following requirements. Nevertheless Seco Tools can make the following declaration.

This product meets all requirements in RoHS (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment), WEEE (Waste Electrical & Electronic Equipment) and ELV (End of Life Vehicles) requirements.

Products do not contain mercury, lead, hexavalent chromium, cadmium, CFC, HCFC, flame retardants or solvents in concentrations that exceed specifications in the regulations.

Regrinding:

Wet or dry grinding can produce potentially hazardous dusts or mists that can irritate skin, eyes, nose, throat and result in lung damage or disease. To avoid injury use proper safety precautions and protective equipment.

Disposal:

Seco Tools will buy back used CBN- or PCD-tipped inserts for recycling. Inserts should be separated from other metal waste (steel, aluminum, copper etc). Solid CBN-inserts may be discarded as landfill waste.

All packing material is fully recyclable.

Black oxide insert carriers

Insert carriers from Seco Tools are not included in the product range intended for the following requirements. Nevertheless Seco Tools can make the following declaration.

This product meets all requirements in RoHS (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment), WEEE (Waste Electrical & Electronic Equipment) and ELV (End of Life Vehicles) requirements.

Products do not contain mercury, lead, hexavalent chromium, cadmium, CFC, HCFC, flame retardants or solvents in concentrations that exceed specifications in the regulations.

Disposal:

Used insert carriers may be sent for recycling together with ordinary steel waste (swarf and discarded steel scrap) for recycling.

All packing material is fully recyclable.

Cermet inserts

Inserts from Seco Tools are not included in the product range intended for the following requirements. Nevertheless Seco Tools can make the following declaration.

This product meets all requirements in RoHS (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment), WEEE (Waste Electrical & Electronic Equipment) and ELV (End of Life Vehicles) requirements.

Cermet grade C15M inserts do contain nickel and will leach nickel when in contact with the skin. Amount of leaching is higher than specified in norm SS-EN 1811 Reference test method for release of nickel from products intended to come into direct and prolonged contact with the skin. These norms are intended for products that are in direct and prolonged contact with the skin and are therefore not directly applicable for cermet inserts. Persons with known allergic reactions to nickel are advised to wear protective gloves when handling cermet inserts.

Regrinding:

Wet or dry grinding can produce potentially hazardous dusts or mists that can irritate skin, eyes, nose, throat and result in lung damage or disease. To avoid injury use proper safety precautions and protective equipment.

Disposal:

Used inserts may be recycled. Inserts should be separated from other metal waste (steel, aluminum, copper, etc) including cemented carbide inserts.

All packing material is fully recyclable.

Nickel coated insert carriers

Insert carriers from Seco Tools are not included in the product range intended for the following requirements. Nevertheless Seco Tools can make the following declaration.

This product meets all requirements in RoHS (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment), WEEE (Waste Electrical & Electronic Equipment) and ELV (End of Life Vehicles) requirements.

Products do not contain mercury, lead, hexavalent chromium, cadmium, CFC, HCFC, flame retardants or solvents in concentrations that exceed specifications in the regulations.

Insert carriers do contain nickel and will leach nickel when in contact with the skin. Amount of leaching is not higher than norm SS-EN 1811 Reference test method for release of nickel from products intended to come into direct and prolonged contact with the skin.

These norms are intended for products that are in direct and prolonged contact with the skin and are therefore not directly applicable for insert carriers. Persons with known allergic reactions to nickel are advised to wear protective gloves when handling nickel coated insert carriers.

Disposal:

Used tools maybe sent for recycling together with ordinary steel waste (swarf and discarded steel scrap) for recycling.

All packing material is fully recyclable.

Intentionally added alloying elements

Grade	Cemented carbide										Coating						
	W	Ti	Ta	Nb	Co	Cr	Ni	Mo	C	N	Ti	Al	C	N	O	Si	Nb
CP20	■				■				■		■			■			
CP200	■				■	■			■		■			■			
CP300	■	■	■	■	■				■		■	■		■			
CP500	■				■	■			■		■	■		■			
CP600	■				■	■			■		■	■		■			
C15M	■	■	■	■	■		■	■	■	■							
CF	■		■		■		■	■	■								
CM	■		■		■		■	■	■								
DP2000	■		■	■	■				■		■	■	■	■	■		
DP3000	■	■	■	■	■				■	■	■	■	■	■	■		
F15M	■				■	■			■		■	■		■			
F25M	■	■			■	■			■		■	■		■			
F30M	■				■	■			■		■	■		■			
F40M	■				■	■			■		■	■		■			
HX	■				■	■			■		■						
H02	■		■		■	■			■		■						
H15	■				■	■			■		■						
H25	■				■	■			■		■						
KX	■				■	■			■		■						
MH1000	■				■	■			■		■	■		■			
MK1500	■		■		■				■		■	■	■	■	■		
MK2050	■		■		■	■			■		■	■	■	■		■	
MM4500	■				■	■			■		■	■	■	■	■		
MP1020	■	■	■	■	■				■		■						
MP1500	■		■	■	■				■		■	■	■	■	■		
MP2500	■		■	■	■				■		■	■	■	■	■		
MP3000	■				■	■			■		■	■	■	■	■		
MS2500	■		■	■	■				■		■	■	■	■	■		
MS2050	■				■	■			■		■	■	■	■			
RX1500	■		■		■		■	■	■		■	■	■	■	■		
RX2000	■		■		■	■			■		■	■	■	■	■		
T350M	■			■	■				■		■	■	■	■	■		
T25M	■			■	■				■		■	■	■	■	■		
TGK1500	■		■		■				■		■	■	■	■	■		
TGP25	■	■	■	■	■				■		■	■	■	■	■		
TGP35	■		■	■	■				■		■	■	■	■	■		
TGP45	■		■	■	■				■		■	■	■	■	■		
TH1000	■				■	■			■		■	■	■	■	■		■
TH1500	■				■	■			■		■	■	■	■	■		
TK1001	■				■	■			■		■	■	■	■	■		
TK2001	■		■		■	■			■		■	■	■	■	■		
TM2000	■	■	■	■	■				■	■	■	■	■	■	■		
TM4000	■	■	■	■	■				■	■	■	■	■	■	■		
TP0500	■	■	■	■	■				■		■	■	■	■	■		
TP0501	■	■	■	■	■	■			■		■	■	■	■	■		
TP1020	■	■	■	■	■				■	■	■	■	■	■	■		
TP1030	■	■	■	■	■				■	■	■	■	■	■	■		■
TP1500	■	■	■	■	■				■		■	■	■	■	■		
TP1501	■	■	■	■	■				■		■	■	■	■	■		
TP200	■	■	■	■	■				■	■	■	■	■	■	■		
TP2500	■	■	■	■	■				■	■	■	■	■	■	■		
TP2501	■	■	■	■	■	■			■	■	■	■	■	■	■		
TP40	■		■	■	■				■		■	■	■	■	■		
TS2000	■				■	■			■		■	■	■	■	■		
TS2500	■		■		■				■		■	■	■	■	■		
T250D	■				■	■			■		■	■	■	■	■		
T400D	■				■	■			■		■	■	■	■	■		
T100R	■				■	■			■		■	■	■	■	■		
T60M	■	■	■	■	■				■		■	■	■	■	■		
883	■		■		■				■		■						
890	■				■	■			■		■						

ANSI	ISO
CCGT 21.50	CCGT060201
CCGT 21.50.0	CCGT0602005
CCGT 21.50.5	CCGT060202
CCGT 21.51	CCGT060204
CCGT 32.50	CCGT09T301
CCGT 32.50.5	CCGT09T302
CCGT 32.51	CCGT09T304
CCGT 32.52	CCGT09T308
CCGT 431	CCGT120404
CCGT 432	CCGT120408
CCGW 21.50.5-00420	CCGW060202-01020
CCGW 21.51-00420	CCGW060204-01020
CCGW 21.52-00420	CCGW060208-01020
CCGW 32.50.5-00420	CCGW09T302-01020
CCGW 32.51	CCGW09T304
CCGW 32.51-00420	CCGW09T304-01020
CCGW 32.52	CCGW09T308
CCGW 32.52-00420	CCGW09T308-01020
CCGW 431	CCGW120404
CCGW 432	CCGW120408
CCMT 21.50.5	CCMT060202
CCMT 21.51	CCMT060204
CCMT 21.52	CCMT060208
CCMT 32.50.5	CCMT09T302
CCMT 32.51	CCMT09T304
CCMT 32.52	CCMT09T308
CCMT 32.53	CCMT09T312
CCMT 321	CCMT090304
CCMT 431	CCMT120404
CCMT 432	CCMT120408
CCMT 433	CCMT120412
CCMT 53.52	CCMT160508
CCMT 53.53	CCMT160512
CCMT 866	CCMT250924
CCMW 21.50.5	CCMW060202
CCMW 21.51	CCMW060204
CCMW 21.52	CCMW060208
CCMW 32.50.5	CCMW09T302
CCMW 32.51	CCMW09T304
CCMW 32.52	CCMW09T308
CCMW 32.53	CCMW09T312
CCMW 431	CCMW120404
CCMW 432	CCMW120408
CDCB 1.21.20	CDCB04T000
CDCB 1.21.20.5	CDCB04T002
CDCB 1.21.21	CDCB04T004
CNGA 431	CNGA120404
CNGA 432	CNGA120408
CNGA 432-00625	CNGA120408-01525
CNGA 433	CNGA120412
CNGA 433-00625	CNGA120412-01525
CNGN 321	CNGN090304
CNGN 322	CNGN090308
CNGN 323	CNGN090312
CNGP 430	CNGG120401
CNGP 430.5	CNGG120402
CNGP 431	CNGG120404
CNGP 432	CNGG120408
CNMA 431	CNMA120404

ANSI	ISO
CNMA 432	CNMA120408
CNMA 433	CNMA120412
CNMA 434	CNMA120416
CNMA 542	CNMA160608
CNMA 543	CNMA160612
CNMA 544	CNMA160616
CNMA 642	CNMA190608
CNMA 643	CNMA190612
CNMA 644	CNMA190616
CNMG 321	CNMG090304
CNMG 322	CNMG090308
CNMG 431	CNMG120404
CNMG 432	CNMG120408
CNMG 433	CNMG120412
CNMG 434	CNMG120416
CNMG 542	CNMG160608
CNMG 543	CNMG160612
CNMG 544	CNMG160616
CNMG 546	CNMG160624
CNMG 642	CNMG190608
CNMG 643	CNMG190612
CNMG 644	CNMG190616
CNMG 646	CNMG190624
CNMG 866	CNMG250924
CNMM 432	CNMM120408
CNMM 433	CNMM120412
CNMM 434	CNMM120416
CNMM 543	CNMM160612
CNMM 544	CNMM160616
CNMM 546	CNMM160624
CNMM 643	CNMM190612
CNMM 644	CNMM190616
CNMM 646	CNMM190624
CNMN 322	CNMN090308
CNMN 323	CNMN090312
CNMN 324	CNMN090316
CNMN 432	CNMN120408
CNMN 433	CNMN120412
CNMN 434	CNMN120416
CNMN 434-01515	CNMN120416-04015
CNMP 431	CNMG120404
CNMP 432	CNMG120408
CNMP 433	CNMG120412
CNMP 542	CNMG160608
CNMP 543	CNMG160612
CNMP 642	CNMG190608
CNMP 643	CNMG190612
CPG 420	CPGN120302
CPG 421	CPGN120304
CPG 422	CPGN120308
CPGN 421	CPGN120304
CPGN 422	CPGN120308
CPGN 422	CPGN120308
CPGW 1.81.51	CPGW050204
CPGW 21.50.5	CPGW060202
CPGW 21.51	CPGW060204
CPGW 21.52	CPGW060208
CPGW 32.51	CPGW09T304
CPGW 431	CPGW120404

ANSI	ISO
CPGW 432	CPGW120408
CPMT 21.50	CPMT060201
CPMT 21.50.5	CPMT060202
CPMT 21.51	CPMT060204
CPMT 21.52	CPMT060208
CPMT 32.50	CPMT09T301
CPMT 32.50.5	CPMT09T302
CPMT 32.51	CPMT09T304
CPMT 32.52	CPMT09T308
DCGT 21.50	DCGT070201
DCGT 21.50.0	DCGT0702005
DCGT 21.50.5	DCGT070202
DCGT 21.51	DCGT070204
DCGT 32.50	DCGT11T301
DCGT 32.50.5	DCGT11T302
DCGT 32.51	DCGT11T304
DCGT 32.52	DCGT11T308
DCGW 21.50.5-00420	DCGW070202-01020
DCGW 21.51-00420	DCGW070204-01020
DCGW 21.52-00420	DCGW070208-01020
DCMT 21.50.5	DCMT070202
DCMT 21.51	DCMT070204
DCMT 21.52	DCMT070208
DCMT 32.50.5	DCMT11T302
DCMT 32.51	DCMT11T304
DCMT 32.52	DCMT11T308
DCMT 32.53	DCMT11T312
DCMT 431	DCMT150404
DCMT 432	DCMT150408
DCMT 433	DCMT150412
DCMW 21.50.5	DCMW070202
DCMW 21.51	DCMW070204
DCMW 21.52	DCMW070208
DCMW 32.50.5	DCMW11T302
DCMW 32.51	DCMW11T304
DCMW 32.52	DCMW11T308
DCMX 32.51	DCMX11T304
DCMX 32.52	DCMX11T308
DNGA 431	DNGA150404
DNGA 432	DNGA150408
DNGA 433	DNGA150412
DNGA 441	DNGA150604
DNGA 442	DNGA150608
DNGA 443	DNGA150612
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DNGM 432	DNGM150408
DNGM 442	DNGM150608
DNGN 321	DNGN110304
DNGN 322	DNGN110308
DNGN 323	DNGN110312
DNGP 430.5	DNGG150402
DNGP 431	DNGG150404
DNGP 432	DNGG150408
DNMA 332	DNMA110408
DNMA 333	DNMA110412
DNMA 334	DNMA110416
DNMA 432	DNMA150408
DNMA 433	DNMA150412
DNMA 434	DNMA150416

ANSI	ISO
DNMA 442	DNMA150608
DNMA 443	DNMA150612
DNMA 444	DNMA150616
DNMG 330.5	DNMG110402
DNMG 331	DNMG110404
DNMG 332	DNMG110408
DNMG 333	DNMG110412
DNMG 431	DNMG150404
DNMG 432	DNMG150408
DNMG 433	DNMG150412
DNMG 441	DNMG150604
DNMG 442	DNMG150608
DNMG 443	DNMG150612
DNMG 444	DNMG150616
DNMG 542	DNMG190608
DNMM 441	DNMM150604
DNMM 442	DNMM150608
DNMM 443	DNMM150612
DNMM 444	DNMM150616
DNMN 322	DNMN110308
DNMN 323	DNMN110312
DNMN 324	DNMN110316
DNMP 331	DNMG110404
DNMP 332	DNMG110408
DNMP 431	DNMG150404
DNMP 432	DNMG150408
DNMP 441	DNMG150604
DNMP 442	DNMG150608
DNMP 543	DNMG190612
DNMX 331	DNMX110404
DNMX 332	DNMX110408
DNMX 432	DNMX150408
DNMX 433	DNMX150412
DNMX 442	DNMX150608
DNMX 443	DNMX150612
DPGW 21.51	DPGW070204
DPGW 21.52	DPGW070208
DPGW 32.51	DPGW11T304
DPMT 32.52	DPMT11T308
LNIX 191940	LNIX191940
LNIX 301940	LNIX301940
RCGN 0803M0	RCGN0803M0
RCGN 32	RCGN090300
RCGS 1.5	RCGS4.76
RCGS 2	RCGS6.35
RCGS 3	RCGS9.525
RCGS 4	RCGS12.7
RCMM 43	RCMM120400
RCMM 54	RCMM150600
RCMM 64	RCMM190600
RCMM 84	RCMM250600
RCMT 0602M0	RCMT0602M0
RCMT 0803M0	RCMT0803M0
RCMT 10T3M0	RCMT10T3M0
RCMT 1204M0	RCMT1204M0
RCMT 1606M0	RCMT1606M0
RCMT 22	RCMT060300
RCMT 32.5	RCMT09T300
RCMT 43	RCMT120400

ANSI	ISO
RCMX 100300	RCMX100300
RCMX 120400	RCMX120400
RCMX 160600	RCMX160600
RCMX 200600	RCMX200600
RCMX 250700	RCMX250700
RCMX 320900	RCMX320900
RD 6PF	RCGA090300
RD 8PF	RCGA120300
RNGN 22	RNGN060300
RNGN 32	RNGN090300
RNGN 42	RNGN120300
RNGN 43	RNGN120400
RNMA 43	RNMA120400
RNMA 54	RNMA150600
RNMA 64	RNMA190600
RNMG 32	RNMG090300
RNMG 43	RNMG120400
RNMG 64	RNMG190600
RNMG 86	RNMG250900
RNMN 22	RNMN060300
RNMN 32	RNMN090300
RNMN 42	RNMN120300
RNMN 43	RNMN120400
RNMN 83S-06020	RNMN250400S-15020
RNMN 84S-06020	RNMN250600S-15020
SCGW 21.50.5-00420	SCGW060202-01020
SCGW 21.51-00420	SCGW060204-01020
SCGW 21.52-00420	SCGW060208-01020
SCGW 32.51-00420	SCGW09T304-01020
SCGW 32.52-00420	SCGW09T308-01020
SCMN 332	SCMN090408
SCMT 060204	SCMT060204
SCMT 070308	SCMT070308
SCMT 09T308	SCMT09T308
SCMT 21.51	SCMT060204
SCMT 222	SCMT070308
SCMT 32.51	SCMT09T304
SCMT 32.52	SCMT09T308
SCMT 32.53	SCMT09T312
SCMT 432	SCMT120408
SCMT 433	SCMT120412
SCMT 53.53	SCMT150512
SCMT 866	SCMT250924
SCMW 32.51	SCMW09T304
SNG 322	SNGN090308
SNG 633	SNGN190412
SNG 634	SNGN190416
SNGA 432	SNGA120408
SNGF 322	SNGF090308
SNGN 222	SNGN060308
SNGN 321	SNGN090304
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SNGN 432	SNGN120408
SNGN 433	SNGN120412
SNGN 434	SNGN120416
SNMA 322	SNMA090308
SNMA 432	SNMA120408
SNMA 433	SNMA120412

ANSI	ISO
SNMA 434	SNMA120416
SNMA 543	SNMA150612
SNMA 643	SNMA190612
SNMA 644	SNMA190616
SNMG 321	SNMG090304
SNMG 322	SNMG090308
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SNMG 432	SNMG120408
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SNMG 542	SNMG150608
SNMG 543	SNMG150612
SNMG 544	SNMG150616
SNMG 643	SNMG190612
SNMG 644	SNMG190616
SNMG 646	SNMG190624
SNMG 866	SNMG250924
SNMM 432	SNMM120408
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SNMN 222	SNMN060308
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SNMN 432	SNMN120408
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SNMN 434	SNMN120416
SNMP 432	SNMG120408
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SNU 432	SNUN120408
SNU 433	SNUN120412
SNU 434	SNUN120416
SNU 633	SNUN190412
SPG 321	SPGN090304
SPG 323	SPGN090312
SPG 421	SPGN120304
SPG 422	SPGN120308
SPG 423	SPGN120312
SPG 424	SPGN120316
SPG 433	SPGN120412
SPG 633	SPGN190412
SPG 634	SPGN190416
SPG 638	SPGN190432
SPGW 1.820.5-00420	SPGW050302-01020
SPGW 2.521	SPGW070304
SPGW 2.522	SPGW070308
SPGW 220.5-00420	SPGW060302-01020
SPGW 221-00420	SPGW060304-01020

ANSI	ISO
SPGW 32.51	SPGW09T304
SPGW 32.52	SPGW09T308
SPMM 322	SPMM090308
SPMM 432	SPMM120408
SPMM 433	SPMM120412
SPMM 543	SPMM150612
SPMM 642	SPMM190608
SPMM 644	SPMM190616
SPMR 321	SPMR090304
SPMR 322	SPMR090308
SPMR 421	SPMR120304
SPMR 422	SPMR120308
SPMR 423	SPMR120312
SPMT 32.52	SPMT09T308
SPU 321	SPUN090304
SPU 322	SPUN090308
SPU 421	SPUN120304
SPU 422	SPUN120308
SPU 423	SPUN120312
SPU 533	SPUN150412
SPU 632	SPUN190408
SPU 633	SPUN190412
SPU 634	SPUN190416
TCGN 1.211	TCGN060104
TCGT 1.81.50.5	TCGT090202
TCGT 1.81.51	TCGT090204
TCGT 21.50	TCGT110201
TCGT 21.50.5	TCGT110202
TCGT 21.51	TCGT110204
TCGT 21.52	TCGT110208
TCGT 32.51	TCGT16T304
TCGT 32.52	TCGT16T308
TCGW 1.81.50.5-00420	TCGW090202-01020
TCGW 1.81.51-00420	TCGW090204-01020
TCGW 1.81.52-00420	TCGW090208-01020
TCGW 21.50.5-00420	TCGW110202-01020
TCGW 21.51-00420	TCGW110204-01020
TCGW 21.52-00420	TCGW110208-01020
TCMT 21.50.5	TCMT110202
TCMT 21.51	TCMT110204
TCMT 21.52	TCMT110208
TCMT 32.50.5	TCMT16T302
TCMT 32.51	TCMT16T304
TCMT 32.52	TCMT16T308
TCMT 32.53	TCMT16T312
TCMT 431	TCMT220404
TCMT 432	TCMT220408
TCMW 1.81.50.5	TCMW090202
TCMW 1.81.51	TCMW090204
TCMW 21.50.5	TCMW110202
TCMW 21.51	TCMW110204
TCMW 21.52	TCMW110208
TCMW 32.51	TCMW16T304
TCMX 32.51	TCMX16T304
TCMX 32.52	TCMX16T308
TDAB 1.21.50	TDAB06T000
TDAB 1.21.50.5	TDAB06T002
TDAB 1.21.51	TDAB06T004
TDCH 1.21.50.5	TDCH06T002

ANSI	ISO
TDCH 1.21.51	TDCH06T004
TNG 322	TNGN160308
TNGA 222	TNGA110308
TNGA 223	TNGA110312
TNGA 322	TNGA160308
TNGA 331	TNGA160404
TNGA 332	TNGA160408
TNGA 432	TNGA220408
TNGN 221	TNGN110304
TNGN 222	TNGN110308
TNGN 223	TNGN110312
TNGN 321	TNGN160304
TNGN 333	TNGN160412
TNGX 221	TNGX110304
TNGX 222	TNGX110308
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TNMA 323	TNMA160312
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TNMA 332	TNMA160408
TNMA 333	TNMA160412
TNMA 334	TNMA160416
TNMA 431	TNMA220404
TNMA 432	TNMA220408
TNMA 433	TNMA220412
TNMA 434	TNMA220416
TNMA 438	TNMA220432
TNMA 543	TNMA270612
TNMA 544	TNMA270616
TNMG 220.5	TNMG110302
TNMG 221	TNMG110304
TNMG 222	TNMG110308
TNMG 321	TNMG160304
TNMG 322	TNMG160308
TNMG 323	TNMG160312
TNMG 324	TNMG160316
TNMG 326	TNMG160324
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TNMG 332	TNMG160408
TNMG 333	TNMG160412
TNMG 334	TNMG160416
TNMG 431	TNMG220404
TNMG 432	TNMG220408
TNMG 433	TNMG220412
TNMG 434	TNMG220416
TNMG 436	TNMG220424
TNMG 438	TNMG220432
TNMG 542	TNMG270608
TNMG 543	TNMG270612
TNMG 544	TNMG270616
TNMG 548	TNMG270632
TNMG 666	TNMG330924
TNMM 331	TNMM160404
TNMM 332	TNMM160408
TNMM 333	TNMM160412
TNMM 432	TNMM220408
TNMM 433	TNMM220412
TNMM 434	TNMM220416

ANSI	ISO
TNMN 221	TNMN110304
TNMN 222	TNMN110308
TNMN 223	TNMN110312
TNMN 333	TNMN160412
TNMN 334	TNMN160416
TNMP 321	TNMG160304
TNMP 322	TNMG160308
TNMP 332	TNMG160408
TNMP 431	TNMG220404
TNMP 432	TNMG220408
TNMP 433	TNMG220412
TNMP 434	TNMG220416
TNMP 544	TNMG270616
TNMP 666	TNMG330924
TNMX 222	TNMX110308
TNMX 332	TNMX160408
TNMX 333	TNMX160412
TNU 332	TNUN160408
TNU 333	TNUN160412
TNU 334	TNUN160416
TPG 211	TPGN110204
TPG 221	TPGN110304
TPG 222	TPGN110308
TPG 320	TPGN160302
TPG 321	TPGN160304
TPG 322	TPGN160308
TPG 323	TPGN160312
TPG 324	TPGN160316
TPG 430	TPGN220402
TPG 431	TPGN220404
TPG 432	TPGN220408
TPG 433	TPGN220412
TPG 434	TPGN220416
TPGA 211	TPGA110204
TPGA 322	TPGA160308
TPGN 220.5	TPGN110302
TPGN 221	TPGN110304
TPGN 222	TPGN110308
TPGN 32.05	TPGN160302
TPGN 321	TPGN160304
TPGN 322	TPGN160308
TPGN 323	TPGN160312
TPGN 431	TPGN220404
TPGN 432	TPGN220408
TPGN 433	TPGN220412
TPGW 21.51	TPGW110204
TPGW 21.52	TPGW110208
TPGW 32.51	TPGW16T304
TPGW 32.52	TPGW16T308
TPMM 2.521	TPMM130304
TPMM 2.522	TPMM130308
TPMM 321	TPMM160304
TPMM 322	TPMM160308
TPMM 323	TPMM160312
TPMM 324	TPMM160316
TPMM 431	TPMM220404
TPMM 432	TPMM220408
TPMM 433	TPMM220412
TPMM 434	TPMM220416

ANSI	ISO
TPMR 221	TPMR110304
TPMR 222	TPMR110308
TPMR 321	TPMR160304
TPMR 322	TPMR160308
TPMR 323	TPMR160312
TPMR 432	TPMR220408
TPMR 433	TPMR220412
TPMT 21.51	TPMT110204
TPMT 21.52	TPMT110208
TPMT 32.51	TPMT16T304
TPMT 32.52	TPMT16T308
TPU 212	TPUN110208
TPU 221	TPUN110304
TPU 222	TPUN110308
TPU 321	TPUN160304
TPU 322	TPUN160308
TPU 323	TPUN160312
TPU 431	TPUN220404
TPU 432	TPUN220408
VBGT 21.50	VBGT110201
VBGT 330	VBGT160401
VBGW 330.5	VBGW160402
VBGW 331	VBGW160404
VBGW 332	VBGW160408
VBMT 21.50.5	VBMT110202
VBMT 21.51	VBMT110204
VBMT 21.52	VBMT110208
VBMT 330.5	VBMT160402
VBMT 331	VBMT160404
VBMT 332	VBMT160408
VBMT 333	VBMT160412
VBMW 330.5	VBMW160402
VBMW 331	VBMW160404
VCGR 331	VCGR160404
VCGR 332	VCGR160408
VCGT 221	VCGT110304
VCGT 330.5	VCGT160402
VCGT 331	VCGT160404
VCGT 332	VCGT160408
VCGT 333	VCGT160412
VNGA 331	VNGA160404
VNGA 332	VNGA160408
VNGM 331	VNGM160404
VNGM 332	VNGM160408
VNGP 330.5	VNGG160402
VNGP 331	VNGG160404
VNGP 332	VNGG160408
VNGP 432	VNGG220408
VNMA 2.532	VNMA130408
VNMA 2.534	VNMA130416
VNMA 332	VNMA160408
VNMA 333	VNMA160412
VNMA 334	VNMA160416
VNMG 2.53.5	VNMG130402
VNMG 2.531	VNMG130404
VNMG 2.532	VNMG130408
VNMG 331	VNMG160404
VNMG 332	VNMG160408
VNMG 333	VNMG160412

EDP No.	Product Desc.
72645	03HL03
72646	03HL05
73577	03M03C
77806	1.5SMS795
11063	10SMS795
16092	110.19-621
79287	110.19-629
16102	111.19-620
16103	111.19-621
79286	112.19-624
86959	117.10-620
11868	117.10-622
04462	117.26-655
16085	123.19-621
42909	126.19-620
40661	12SMS795
78184	150.10-600
78185	150.10-601
78183	150.10-620
45730	150.10-647
45731	150.10-648
33059	150.10A-150
86574	150.10A-3-JET-KIT
86565	150.10A-4-JET-KIT
86570	150.10A-5-JET-KIT
86586	150.10A-6-JET-KIT
42908	171.19-620
09391	174.10-621
09392	174.10-622
21594	174.10-650.9-T07P
21593	174.10-652-T07P
43067	174.18-634
43066	174.18-635
43052	174.18-638
10700	179.17-680
14596	179.17-683
11050	179.17-684
10244	179.17-685
97475	179.17-686
10702	179.17-687
21657	179.17-690-T15P
11891	179.17-693
21658	179.17-696-T25P
21659	179.17-697-T25P
21660	179.17-698-T09P
55839	19TB0305
72639	19TB04075
42998	2.5SMS795
00261	2SMS795
83414	3.5SMS795
95818	3111050-558
09883	3111050-610
09884	3111050-661
09885	3111050-715
95820	3111050-769
95821	3212010-362
40559	3212010-363
95822	3212010-364
95960	3212010-414
95823	3212010-415
95824	3212010-416
95825	3212010-469
95826	3212010-521
83361	3213010-410
95827	3213010-462
40443	3214010-355
95828	3214010-360

EDP No.	Product Desc.
95830	3214020-255
95831	3421105-026
95832	3421105-032
95833	3611005-140
95834	3611005-180
95842	3671010-020
95843	3671010-022
95844	3671010-024
95835	3671010-114
95836	3671010-118
95837	3671010-119
95838	3671010-120
95839	3671010-124
40454	3671010-126
68313	3671010-128
40425	3823010-101
83365	3823010-122
95845	3823010-162
95846	3823010-183
00373	3SMS795
97116	3SMS795/T15P
40434	416.1-834
00262	4SMS795
99985	5252010-01
83372	5252010-02
95850	5252010-03
83358	5252010-04
95958	5252015-02
95959	5252015-03
40432	5333025-01
83370	5333025-02
95871	5333025-03
95872	5333025-04
23838	5461100-111
22860	5461100-121
95884	5461105-01
95885	5461105-02
95886	5461105-03
40386	5512091-01
40387	5512091-02
40385	5512091-03
95887	5512096-01
95888	5512096-02
95891	5513020-14
83364	5513020-26
95894	5519105-02
95895	5519105-03
95900	5541028-02
95901	5541028-03
40457	5541030-02
95902	5541030-03
95905	5545040-03
95906	5545040-05
95907	5545040-06
95914	5546002-02
95915	5546002-03
40436	5549120-06
95919	5549120-07
95926	5552032-02
95927	5552032-03
40448	5561001-41
95940	5561001-53
95941	5561001-54
83366	5638022-02
95942	5638022-03
40438	5641005-05
95953	5641005-06

EDP No.	Product Desc.
00374	5SMS795
43000	6SMS795
10021	8SMS795
43099	9/64SMS875
72515	950D0616
47412	950DC0412
47410	950DC0616
82524	950L0406
55887	950L0608
86760	951C0610
86762	951C0810
26161	AKL-10
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26158	AKR-14
47405	AU6102003
92250	AU6103003
92253	AU6104003
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16703	C02505-T07P
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07369	C02506-T08P
00060	C03007-T09P
00902	C03508-T15P
00813	C03509-T10P
12631	C03509-T15P
16715	C03510-T15P
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16717	C04008-T15P
16718	C04010-T15P
04199	C04011-T15P
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00059	C05013-T20P
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51596	CA8020SEATSCREW
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01771	CC17P-06
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76582	CILC12RA-F
76575	CILC12RA-R
76588	CILD15LA-F
76580	CILD15LA-R
76587	CILD15RA-F
76579	CILD15RA-R
76586	CILS12LA-F
76578	CILS12LA-R
76584	CILS12RA-F
76577	CILS12RA-R
81425	CILT16LA-F
81424	CILT16RA-F
11321	CILW06LA-F
11323	CILW06LA-R
11322	CILW06RA-F
11324	CILW06RA-R
84548	CILW08LA-F
76554	CILW08LA-R
76581	CILW08RA-F
76542	CILW08RA-R
76590	CILV16LA-F
76592	CILV16LC-F
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18321	CL-20
41141	CL-24
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69638	CRN0603M0
57655	CS110
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57668	CS120
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41169	CSN-846
32332	CSP16HD-T15P
21641	CSP16-T15P
32333	CSP22HD-T15P
77217	CTN110308
38620	DAI313
33705	DCN322.5
07443	DCN444
33706	DCN544
33707	DCN634
41539	DCN836
86564	DCO120310
33710	DDN322.5
32372	DDN434
07447	DDN444
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39108	DRN64
33716	DSN322.5
37153	DSN-323
48118	DSN-423
41189	DSN-433
33718	DSN444
33719	DSN546
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43563	DSN836
37562	DTN322.5
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33725	DTN444
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45726	DWD060210
45727	DWD080316
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33729	DWN322.5
43398	DWN424
32373	DWN434
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41919	EASM-0816F
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19160	IRSN-43
51616	IWSN323
56420	IWSN-423
79689	IWSN-433
11971	JET-ADM6
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97755	MC6S4X14
97756	MC6S4X18
91719	MC6S5X14
14108	MC6S5X18
45728	MC6S8X20
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21595	MN0909L-T09P
21603	MN1515SL-T15P
10391	MP0912
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25027	MX16-1
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18565	NL-23
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45886	NX22-0.5
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45883	NX22-97.5
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91623	P6SS4X8
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57437	P6SS8X6
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44308	PCN160408
10682	PCN160412
10683	PCN190416
79204	PCN250620
91929	PDN150408
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01263	PSN19X340
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19190	ISSN-543	08793	SL40	24155	T00T-20P	54900	UC6S1/4UNFX1SHCS
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19250	ITSN-433	89884	SRN16T3M0	35914	T00T-25P50	64387	VB23
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33740	S5608	19540	SSN844	24148	T00T-30P80	21654	WS1920-T20P
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50884	S6912	03403	T00-06P03	16667	T08P-2	45893	VX27-0.5
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