



THREADING
OIL & GAS

EMUGE

NEW Thread Milling Solutions for the Oil & Gas Industry

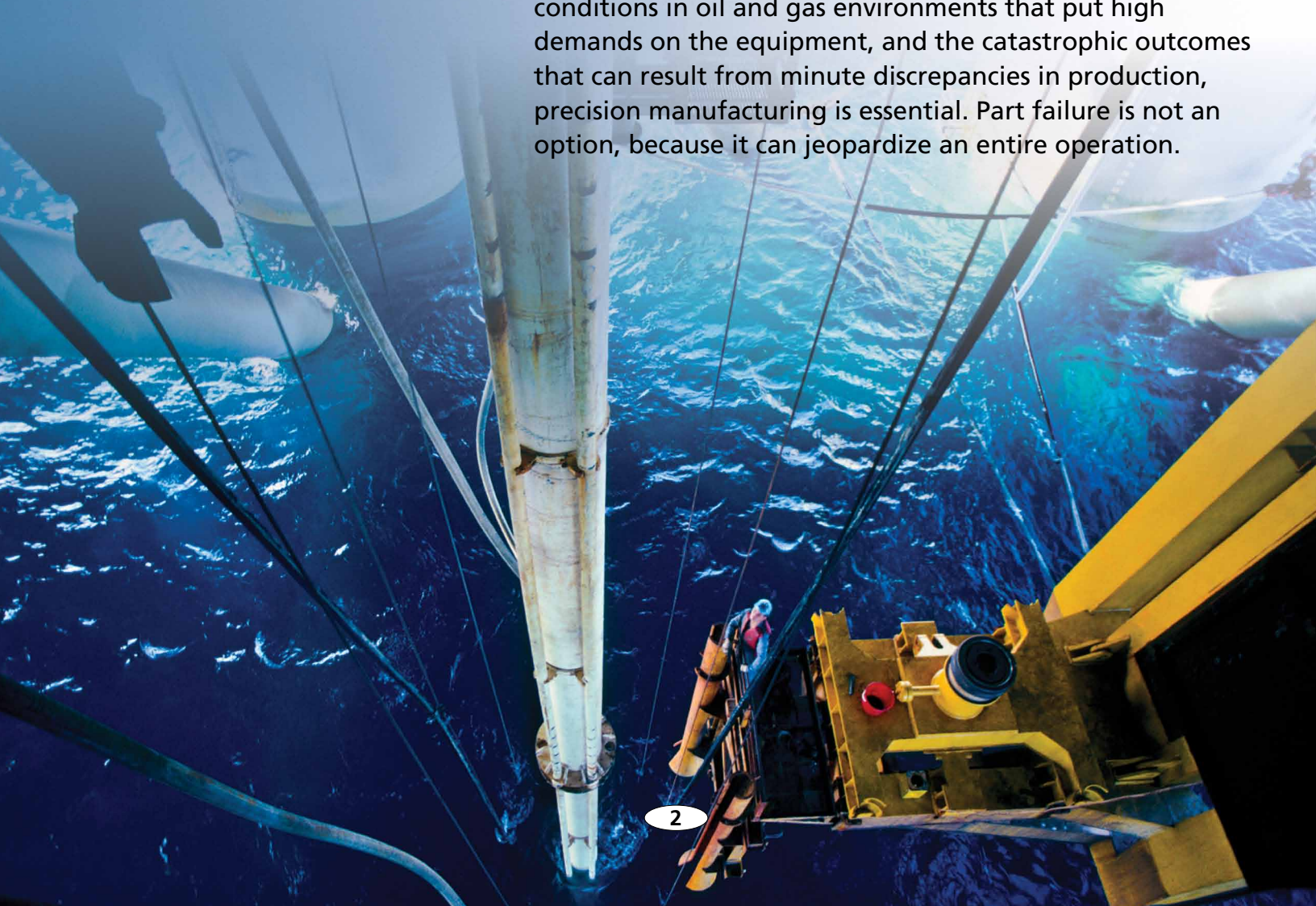
Meeting Today's Global Oil &



The demands for energy are increasing globally, especially as emerging economies progress and improve their living standards. More countries are striving to be self-sufficient in their energy generation, making exploration and energy production processes more complex and hard to access. Many of the key components of an oil extrusion operation are threaded parts, including blow-out preventers, valves, pumps, pump jacks, compressors and gears.



Threading parts that serve the energy sector presents demanding metalworking challenges. Between the hostile conditions in oil and gas environments that put high demands on the equipment, and the catastrophic outcomes that can result from minute discrepancies in production, precision manufacturing is essential. Part failure is not an option, because it can jeopardize an entire operation.



Gas Manufacturing Challenges.

Emuge has a comprehensive line of Thread Milling tools with new, innovative features designed to meet and exceed even the most difficult oil, gas, and petrochemical manufacturing challenges.

Emuge Thread Mills offer unparalleled performance, security, quality and versatility:

- ▶ Unique flute designs, sizes and geometry
- ▶ Premium micro-grain carbide with state-of-the-art grinding for maximum durability under pressure
- ▶ Advanced multilayered coating capability, applied at Emuge
- ▶ Unmatched design and manufacturing excellence using the latest technology, through years of continued R&D advancements and application expertise
- ▶ Superb thread form, finish and dimensional accuracy
- ▶ Greatly reduced cycle time and tool wear
- ▶ Process security/confidence
- ▶ Easy machining of difficult materials such as chrome-moly steel, stainless steel and nickel alloys



NEW Solid Carbide Thread Mills

UNC • 8 UN • 12 UNF

Emuge has introduced a new generation high performance thread mill program in a class of its own – ideal for valve components, frack pumps and more. Tools feature a unique left hand spiral flute design, **increased flute count**, core diameter and multilayered TiALN-T46 coating, resulting in **reduced vibration, cycle time and tool wear**, combined with **higher feed rates and improved thread quality**.

- ▶ **Innovative flute geometry** directs cutting forces in axial direction toward spindle head, providing stable, chatter-free cutting
- ▶ **Increased number of flutes** for higher feed rate and reduced cycle times
- ▶ **Increased core diameter** for improved radial stiffness and stability
- ▶ **Cutting geometry produces smaller chips** that can be removed faster and easier

UNC • 8 UN • 12 UNF Specifications

Thread Form	Size	Thread Pitch	# of Flutes	Flute Angle	Cutter Dia.	Depth Max	Shank Dia.	Overall Length	Tool EDP#
UNC	1/2"	13	5	LH 15°	.409"	1.00"	1/2"	3.15"	GFR8B1095013
		13	5	LH 15°	10.4mm	25.4mm	12mm	80mm	GFB3B1095013
UNC	5/8"	11	5	LH 15°	.512"	1.25"	1/2"	3.54"	GFR8B1095015
		11	5	LH 15°	13mm	31.75mm	14mm	90mm	GFB3B1095015
UNC	3/4"	10	5	LH 15°	.626"	1.50"	5/8"	3.94"	GFR8B1095016
		10	5	LH 15°	15.9mm	38.10mm	16mm	100mm	GFB3B1095016
UNC	7/8"	9	6	LH 15°	.744"	1.75"	3/4"	4.33"	GFR8B1095017
		9	6	LH 15°	18.9mm	44.45mm	20mm	110mm	GFB3B1095017
8 UN	≥ 1"	8	6	LH 15°	.85"	2.00"	1.00"	4.92"	GFR8B1095018
		8	6	LH 15°	21.6mm	50.80mm	25mm	125mm	GFB3B1095018
12 UNF	≥ 1 1/8"	12	8	LH 15°	.98"	1.24"	1.00"	2.244"	GFR9B1095052
		12	8	LH 15°	24.9mm	57mm	25mm	57mm	GFBVB1095052

NOTE: Tools feature axial internal coolant

- ▶ Cutting edges enhanced for strength
- ▶ Advanced multilayer coating resists heat, edge wear, and chipping
- ▶ Extended milling section for thread depths up to 2xD
- ▶ Axial internal coolant for superior cooling and chip removal
- ▶ Precision ground for high repeatability
- ▶ Produces threads with excellent surface finish

NPT API LP

NPT API LP innovative high performance thread mills have all the features and benefits of the UNC, UN and UNF Program, except:

- ▶ Extended milling section with 14 cutting teeth, to produce API LP thread depth
- ▶ Multiple thread sizes possible with 1 tool
- ▶ Features external coolant only

Higher feed rates
Reduced cycle time
Vibration-free machining
Innovative left-hand flute geometry



NPT • API LP Specifications

Thread Form/ Size NPT - API LP	# of Flutes	Cutter Dia.	Depth Max	Shank Dia.	Overall Length	Tool EDP#
1/16" - 1/8" 27	4	0.232"	0.537"	5/16"	2 1/4"	GFT8B2099676
	4	5.90mm	13.63mm	8mm	60mm	GF18B2099676
1/4" - 3/8" 18	4	0.400"	0.804"	1/2"	3 1/4"	GFT8B2199677
	4	10.15mm	20.43mm	12mm	80mm	GF18B2199677
1/2" - 3/4" 14	4	0.561"	1.03"	5/8"	3 1/2"	GFT8B2399678
	4	14.25mm	26.27mm	16mm	85mm	GF18B2399678
1" - 2" 11 1/2	5	0.772"	1.26"	3/4"	3 3/4"	GFT8B2599679
	5	19.60mm	31.98mm	20mm	95mm	GF18B2599679

NOTE: Tools feature external coolant only

GIGANT-IC *Insert Thread Milling System*

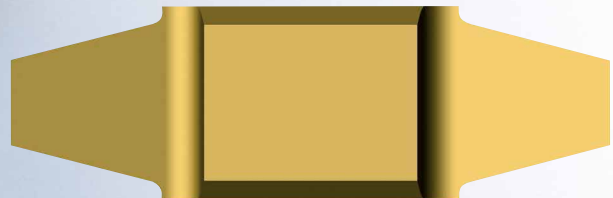
NEW Acme • Stub Acme INSERTS



Rigidity, security and precision are key benefits of the new Emuge indexable insert thread milling program that includes a full range of tool bodies and inserts for vibration-free machining of large threads. Deep access and large thread capability are ideal for subsea components and more. Inserts have 4 useable cutting edges for long tool life and maximum cutting efficiency.

- ▶ Advanced partial profile insert technology further enhances the versatility and economy of the system
- ▶ For easy machining of all difficult materials the inserts are made of select micro-grain carbide and offered with either TiN or TiAlN coatings

See pages 8 and 9 for bar / tool body information.



Acme insert with flat, trapezoidal profile

Acme Specifications

Size	Pitch	Bar Size	No. Inserts	Cutter Dia.	Shank Dia.	Depth Max	Bar* EDP#	Insert TiN EDP#	Insert TiAlN-T4 EDP#					
1 5/8"	6	11	3	0.940"	1 1/4"	2.36"	GZ340121	GF6431059722	GF6431079722					
						3.00"	GZ340001							
	6	11	3	23.85mm	32mm	60mm	GZ341121							
						80mm	GZ341001							
3"	4	12	4	1.417"	1 1/4"	5.12"	GZ340212	GF6432159834	GF6432179834					
										3 1/8"	4	12	4	36mm
3 3/4"	4	13	5	1.89"	1 1/4"	6.69"	GZ340203	GF6433059834	GF6433079834					
										4"	48mm	32mm	170mm	GZ341203

ALL NEW

Stub Acme Specifications

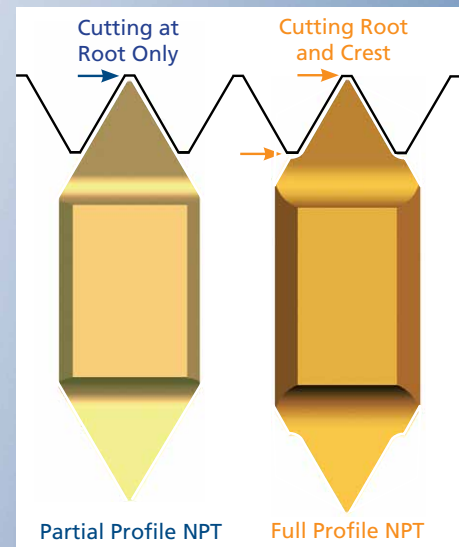
1 3/4"	6	10	5	0.940"	1 1/4"	3.00"	GZ340200	GF6430059841	GF6430079841					
	6	10	5	23.85mm	32mm	80mm	GZ341200							
3"	4	12	4	1.417"	1 1/4"	5.12"	GZ340212	GF6432059844	GF6432079844					
										3 1/8"	4	12	4	36mm
3 3/4"	4	13	5	1.89"	1 1/4"	6.69"	GZ340203	GF6433059844	GF6433079844					
										4"	48mm	32mm	170mm	GZ341203

NOTE: The Acme and Stub Acme inserts listed in above data tables must be assembled with specified bar and only used to machine the designated thread size range and pitch.

*All Gigantic bars have internal coolant exiting radially at insert.

Inch shanks Metric shanks

- ▶ Precision ground rake and relief angles allow for high chip-per-tooth load for increased productivity
- ▶ The inserts' free-cutting geometry produces low radial cutting pressure, ensuring true-to-gauge threads with excellent thread quality
- ▶ Smaller machines can produce larger threads due to less spindle torque
- ▶ Each indexable insert has **4 useable cutting edges for exceptional tool life and fast edge indexing** can easily be accomplished at the machine

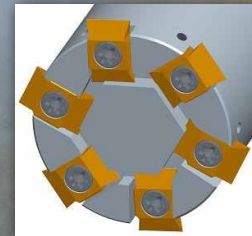


NPT API LP INSERTS

Inserts have the same performance/feature-benefits as Acme and Stub Acme, except:

- ▶ Produces internal NPT & API LP taper pipe threads
- ▶ For taper pipe threads 1" and above
- ▶ Advanced full and partial profile insert technology

See pages 8 and 9 for bar / tool body information.



New Tool bar design with 6 inserts

NPT • API LP • 1 1/2 Specifications

Size	Bar Sz.	No. Inserts	Cutter Dia.	Shank Dia.	Depth Max	Bar* EDP#	ALL NEW			
							Insert TiN EDP# Full Profile	Insert TiALN-T4 EDP# Full Profile	Insert TiN EDP# Partial Profile	Insert TiALN-T4 EDP# Partial Profile
1" 1 1/4"	11	3	0.940"	1 1/4"	2.36"	GZ340121	GF6431059679	GF6431079679	GF6431059514	GF6431079514
					3.00"	GZ340001				
1 1/2" 2"	11	3	23.85mm	32mm	60mm	GZ341121				
					80mm	GZ341001				
1 1/2" 2"	11	6	1.339"	1 1/4"	2.36"	GZ340221	GF6431059679	GF6431079679	GF6431059514	GF6431079514
	11	6	34mm	32mm	60mm	GZ341221				
1 1/2" 2"	11	5	1.102"	1 1/4"	3.54"	GZ340211	GF6431059679	GF6431079679	GF6431059514	GF6431079514
	11	5	28mm	32mm	90mm	GZ341211				

NPT • API LP • 8 Specifications

2 1/2" 3"	12	3	1.293"	1 1/4"	3.50"	GZ340012	GF6432059680	GF6432079680		
		5	1.585"		4.25"	GZ340202				
3 1/2" ≥ 4"	12	3	32.85mm	32mm	95mm	GZ341012				
		5	40.25mm		110mm	GZ341202				
2 1/2" 3"	13	4	1.585"	1 1/4"	4.25"	GZ340153			GF6433059514	GF6433079514
					5.78"	GZ340143				
3 1/2" ≥ 4"	13	4	40.25mm	32mm	110mm	GZ341153				
					147mm	GZ341143				

*All Gigantic bars have internal coolant exiting radially at insert.

Inch shanks Metric shanks

GIGANT-IC *Insert Thread Milling System*

UNC • 8 UN - Weldon Shank • 8 UN - CAT 50 Shank

TOOL BODIES

- ▶ Modular bar design allows for 4 bar sizes to be easily set-up and interchanged on a variety of CNC machines with Weldon style shank
- ▶ Rigid, anti-vibration body design allows for a length-to-dia-ratio to 2xD and greater
- ▶ Bodies are made of a hardened tool steel and offered with CNC ground Weldon type shank
- ▶ Modular Weldon type shank design allows for quick and easy adaptation to a variety of machine tools for maximum flexibility and economy

Ideal for large threads

UNC - Weldon Shank Specifications

Size	Bar Size	No. Inserts	d1	d2	L1	L2	Bar* EDP#	Insert TiN EDP#	Insert TiALN-T4 EDP#
			Cutter Dia.	Shank Dia.	Overall Length	Depth Max			
7/8 - 9"	10	2	0.669"	1/2"	3.42"	1.57"	GZ340000	GF6430059514	GF6430079514
	10	2	17mm	12mm	87mm	40mm	GZ341000		
≥ 1"	10	3	0.807"	5/8"	4.57"	2.55"	GZ340050		
	10	3	20.5mm	16mm	116mm	65mm	GZ341050		

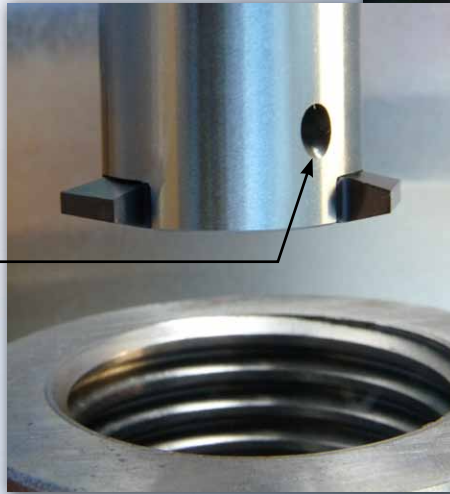
8 UN - Weldon Shank Specifications

More 8 UN bar options are available from stock by request.

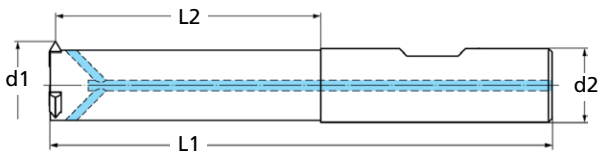
≥ 1 1/8"	11	3	.0940"	1 1/4"	5.51"	3.15"	GZ340001	GF6431059517	GF6431079517		
					5.91"	3.50"	GZ340101				
	11	3	23.85mm	32mm	142mm	80mm	GZ341001				
					152mm	90mm	GZ341101				
≥ 1 1/2"	11	5	1.293"	1 1/4"	6.26"	3.74"	GZ340201				
	11	5	32.85mm	32mm	159mm	95mm	GZ341201				
≥ 1 1/2"	11	6	1.339"	1 1/4"	4.80"	2.36"	GZ340221				
	11	6	34mm	32mm	124mm	60mm	GZ341221				
≥ 2"	11	8	1.585"	1 1/4"	5.59"	3.15"	GZ340231				
	11	8	40.25mm	32mm	144mm	80mm	GZ341231				
≥ 1 1/2"	12	3	1.293"	1 1/4"	6.10"	3.74"	GZ340012	GF6432059517	GF6432079517		
					6.89"	4.50"	GZ340112				
	12	3	32.85mm	32mm	158mm	95mm	GZ341012				
					178mm	115mm	GZ341112				
≥ 2"	12	5	1.585"	1 1/4"	6.77"	4.33"	GZ340202				
	12	5	40.25mm	32mm	172mm	110mm	GZ341202				
≥ 2"	13	4	1.585"	1 1/4"	6.73"	4.33"	GZ340153			GF6433059518	GF6433079518
					8.11"	5.78"	GZ340143				
	13	4	40.25mm	32mm	173mm	110mm	GZ341153				
					208mm	147mm	GZ341143				
≥ 2 3/8"	13	5	1.889"	1 1/4"	9.56"	6.69"	GZ340203				
	13	5	48mm	32mm	245mm	170mm	GZ341203				

*All Gigantic bars have internal coolant exiting radially at insert.

- ▶ Precision insert pockets are machined into the bodies' solid steel end face to close tolerance dimensions for precise positioning of the inserts
- ▶ The end, bottom face and side surfaces of the insert are rigidly affixed in a solid steel pocket and securely fastened with a Torx locking screw
- ▶ **Innovative internal coolant supply** exiting radially at the insert cutting edge optimizes cooling, thread quality, tool life and evacuation of small broken chips



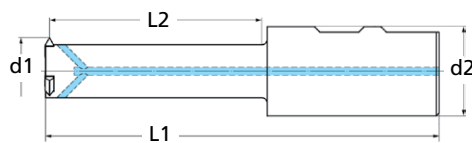
Weldon Shank



Modular Design - Chuck Sold Separately - #10



2 useable cutting edges

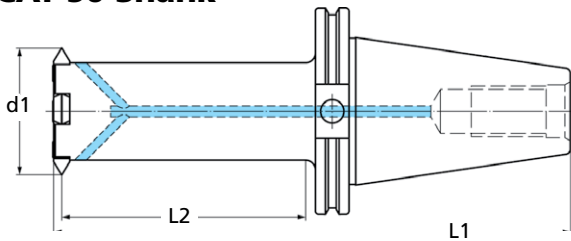


Modular Design - Chuck Sold Separately - #11, #12, #13



4 useable cutting edges

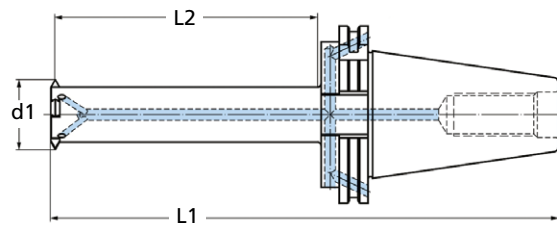
CAT 50 Shank



L1

Solid One-Piece Construction - #13, #14

DIN/SK 50 Shank



8 UN - CAT 50 and DIN/SK 50 Shank Specifications

More bar options are available from stock by request.

Size	Shank	Bar Size	No. Inserts	d1	L1	L2	Bar* EDP#	Insert TiN EDP#	Insert TiALN-T4 EDP#
				Cutter Dia.	Overall Length	Depth Max			
≥ 2"	CAT 50	13	4	1.585"	9.62"	4.33"	GZ346013	GF6433059518	GF6433079518
					11.0"	5.70"	GZ346003		
	DIN/SK 50	13	4	40.25mm	245mm	110mm	GZ344003		
					247mm	145mm	GZ344103		
≥ 2 1/2"	CAT 50	14	4	2.069"	13.0"	7.50"	GZ346024	GF6434059518	GF6434079518
					DIN/SK 50	14	4		

*All Gigantic bars have internal coolant exiting radially at insert.

THREADS-ALL *Solid Carbide Thread Mills*

Miniature Sizes

Miniature size thread mills provide a high-quality and dependable threading solution for a variety of difficult materials.

The new expanded sizes provide manufacturers a ready tooling solution which allows for quick adaptation to a variety of threading requirements, in a wide range of materials.

- ▶ Easy machining of difficult materials
- ▶ One tool for through and blind holes
- ▶ Pitch diameter can be easily controlled
- ▶ Full bottom threading to within 1 pitch
- ▶ STI threads can be easily produced
- ▶ Produces excellent thread finish and gaging
- ▶ In addition, Threads-All tools provide total control over pitch diameter limits including 2B • 3B and all oversize variants
- ▶ External coolant only

THREADS-ALL Miniature - UNC Specifications

Size	Thread Pitch	No. Flutes	Flute Angle	Cutter Dia.	Depth Max	Shank Dia.	Overall Length	Tool EDP#
4	40	3	Straight	0.081"	0.224"	1/8"	1.62"	GFS237065003
	40	3	Straight	2.05mm	5.7mm	3mm	39mm	GF2537065003
6	32	3	Straight	0.100"	0.276"	1/8"	1.62"	GFS237065005
	32	3	Straight	2.54mm	7.0mm	3mm	39mm	GF2537065005
8	32	3	Straight	0.124"	0.328"	1/8"	1.62"	GFS237065006
	32	3	Straight	3.15mm	8.3mm	3mm	42mm	GF2537065006

SHUR-THREAD™ *Solid Carbide Thread Mills*

for 1 1/8" and under

The Shur-Thread Series is designed and priced to offer a superior level of value and packed with essential advanced technology for assured quality, performance, versatility and ease of use.

- ▶ Specially engineered multiple-spiral flutes eliminate chatter
- ▶ Large cutter diameter with high profile correction ensures true-to-gauge threads
- ▶ Extended milling portion allows for length-of-cut to 2xD
- ▶ TiCN coated for long tool life
- ▶ Cuts a wide range of soft and pre-hardened steels to 58 Rc, stainless steels, aluminum, cast iron, titanium, inconel, and all difficult to machine exotics
- ▶ All tools have axial internal coolant

SHUR-THREAD for 1 1/8" and under - UNC Specifications

Size	Pitch	No. Flutes	Flute Angle	Cutter Dia.	Depth Max	Shank Dia.	Overall Length	Bar EDP#
1/2"	13	3	RH 15°	0.371"	1.00"	3/8"	3.00"	GFR351065013
5/8"	11	4	RH 15°	0.496"	1.25"	1/2"	3.75"	GFR351065015
3/4"	10	4	RH 15°	0.621"	1.50"	5/8"	4.25"	GFR351065016
7/8"	9	4	RH 15°	0.621"	1.75"	5/8"	4.25"	GFR351065017
1"	8	4	RH 15°	0.746"	2.00"	3/4"	4.75"	GFR351065018

Global Service and Technical Support

With over 90 years of expertise, more than 43 locations throughout the world, and an extensive network of application engineering and representatives in the field, you can rest assured that Emuge has the solutions and support you need to succeed.

See back cover for locations near you.



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