VARGUS

MINIPRO

Turning Tools for Small Bores

Take a closer Look

Inch

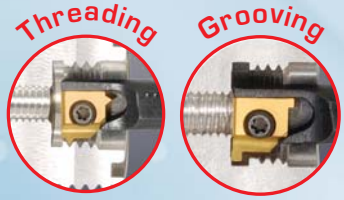
MINIPRO Threading

MINIPRO Grooving

MINIPRO Boring

MINIPRO - Turning Tools for Small Bores

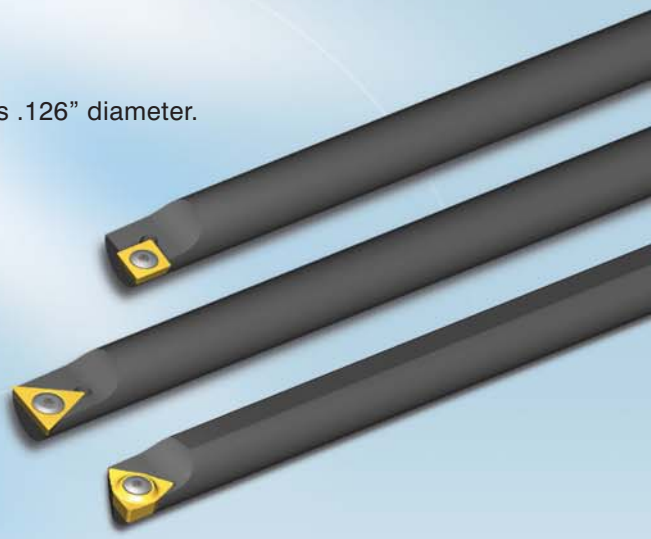
Mini Tools



Indexable inserts for threading and grooving in bores as small as .240” diameter.

Micro Tools

Solid carbide tools for threading, grooving and boring in bores as small as .126” diameter. The Micro range includes both double-ended and single-ended inserts and a selection of tool holders in various shank sizes.



Powerbore Tools

Indexable inserts for precision boring of holes as small as .180” diameter.

MINIPRO Turning Tools for Small Bores

Index

Threading Inserts — MINIPRO

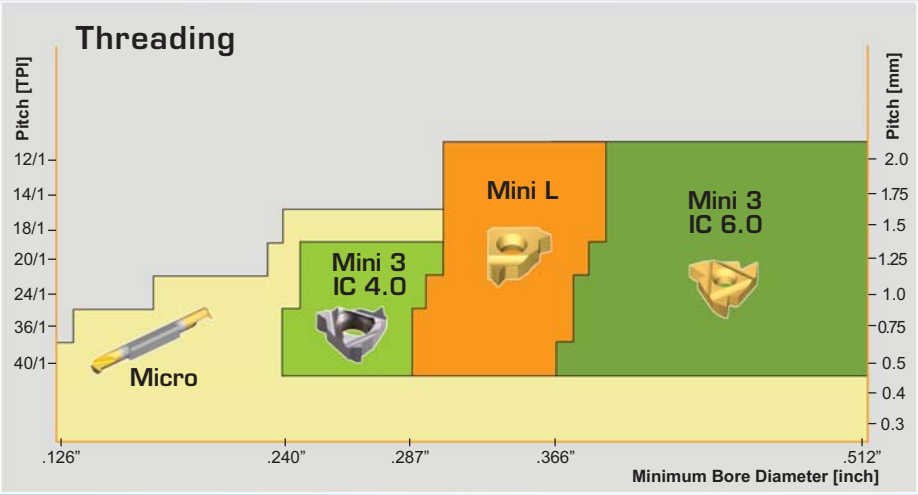
Grooving Inserts — MINIPRO

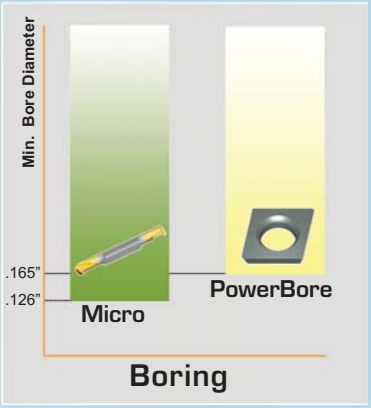
Boring Inserts — MINIPRO

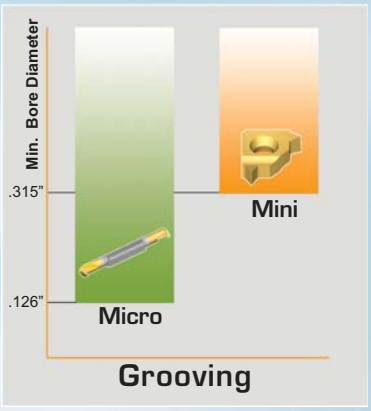
Toolholders — MINIPRO

The MiniPro Range by Diameter

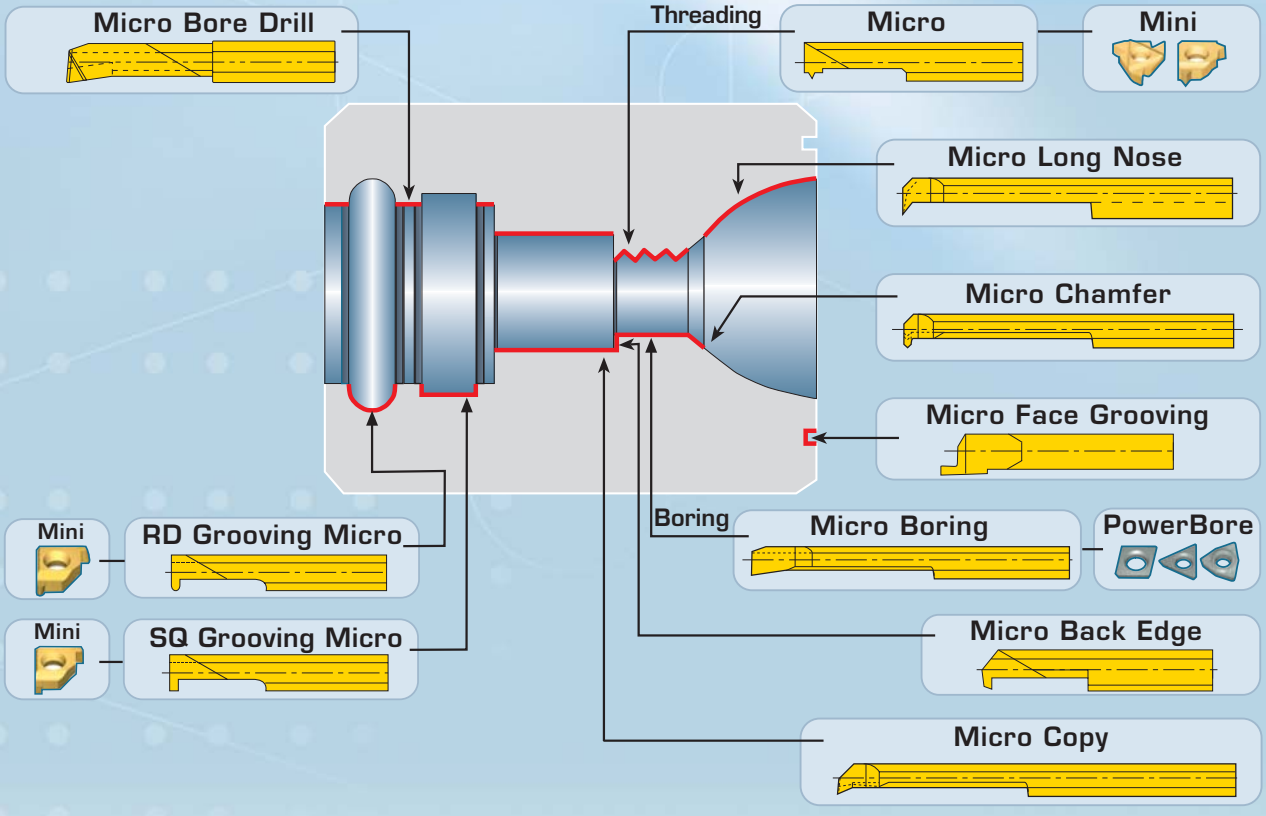
From Ø.13”





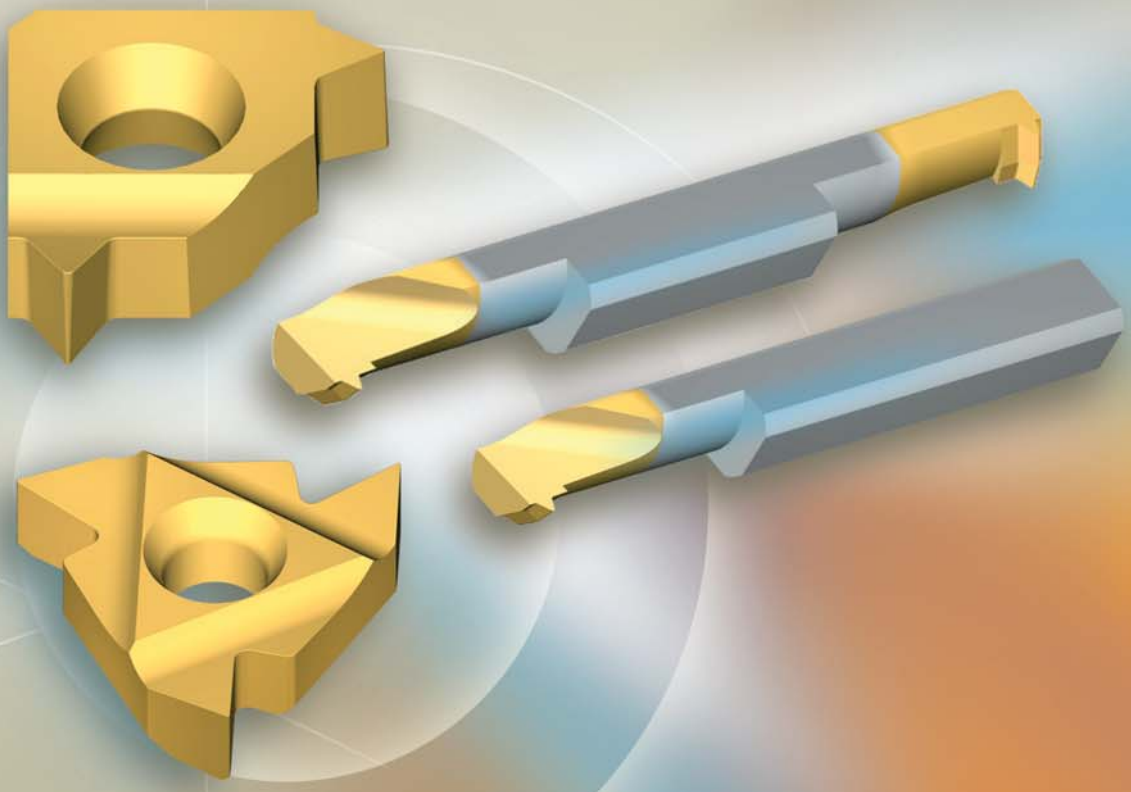


The MiniPro Range by Application



VARGUS

Take a closer Look



MINIPRO

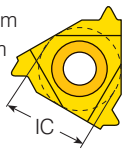
Threading

Vardex Ordering Code System
Threading Inserts (not including Micro system)

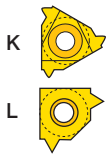
4.0	K	I	R	0.5	ISO	VTX
1	2	3	4	5	6	7

1 - Insert size

4.0K -IC4.0 mm
5L - IC5.0L mm
6.0 - IC6.0 mm



2 - Insert style



3 - Type of Insert

I - Internal

4 - RH/LH Insert

R - Right Hand Insert
L - Left Hand Insert

5 - Pitch

Full Profile - Pitch Range

mm	tpi
0.5-2.0	32-14

Partial Profile - Pitch Range

	mm	tpi
A	0.5 - 1.5	48 - 16

6 - Standard

60° - Partial Profile 60°
55° - Partial Profile 55°
ISO - ISO Metric
UN - American UN
W - Whitworth for BSW, BSP
BSPT - British Standard Pipe Thread
NPT - NPT
NPTF - NPTF
TR - Trapez DIN 103
ACME - ACME
STACME - Stub ACME
UNJ - UNJ
PG - Pg DIN 40430

7 - Carbide Grade

VHX, VKP, VBX, VTX

Micro Threading Inserts

3	S	I	R	0.5	ISO	VMX	1- SIDE
1	2	3	4	5	6	7	8

1 - Insert Dia.

3.0 - 3.0 mm
4.0 - 4.0 mm
6.0 - 6.0 mm
8.0 - 8.0 mm
10.0 - 10.0 mm

2 - Insert style

S - Micro Insert

3 - Type of Insert

I - Internal

4 - RH/LH Insert

R - Right Hand Insert
L - Left Hand Insert

5 - Pitch

Full Profile - Pitch Range

mm	tpi
0.30-1.5	40-16

Partial Profile - Pitch Range

	mm	tpi
A	0.5 - 1.5	48 - 16
F	0.25 - 1.0	72 - 24

6 - Standard

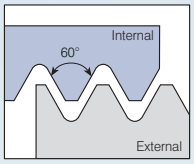
55° - Partial Profile 55°
60° - Partial Profile 60°
ISO - ISO Metric
MJ - ISO 5855
NPT - NPT
NPTF - NPTF
UN - American UN
W - British Standard Whitworth

7 - Carbide Grade

VMX

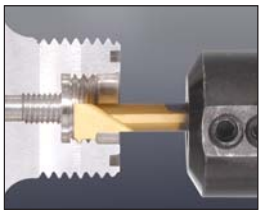
8 - Micro Ended

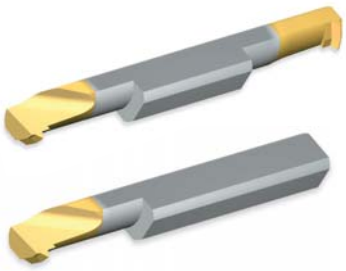
1- SIDE - Single Ended
None - Double Ended

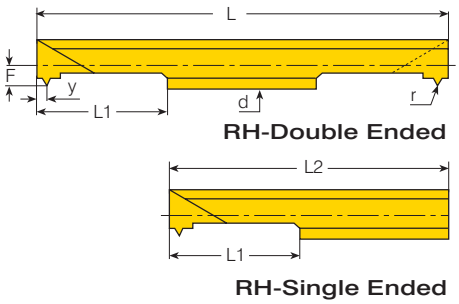


Partial Profile 60°

Internal



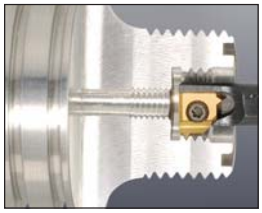


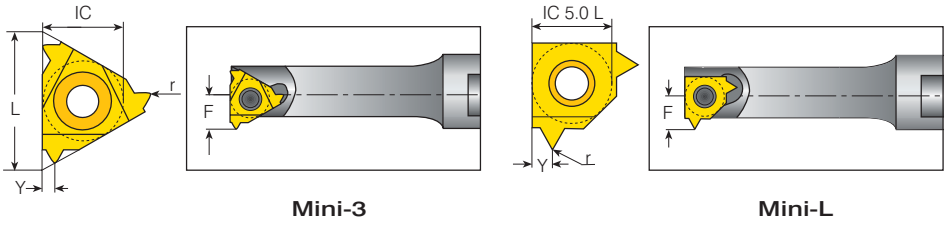


Micro

Insert dia.	Pitch		Ordering Code		Dimensions Inch						Min. Bore dia.	
d mm	**mm**	**tpi**	**RH-**Single Ended	**RH-**Double Ended	**r**	**L1**	**L2**	**L**	**F**	**Y**	**Inch**	**Toolholder**
3.0	0.5-1.0	48-24	3.0SIRF60...1-SIDE	3.0SIRF60...	.002	.63	1.69	1.97	.06	.35	.13	SMC..-3.0
4.0	0.5-1.0	48-24	4.0SIRF60...1-SIDE	4.0SIRF60...	.002	.63	1.69	1.97	.08	.35	.17	SMC..-4.0
6.0	0.5-1.5	48-16	6.0SIRA60...1-SIDE	6.0SIRA60...	.002	.63	1.69	1.97	.08	.35	.24	SMC..-6.0

Internal





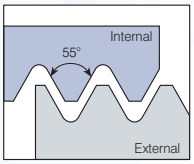
Mini-L

Insert Size		Pitch		Ordering Code		Dimensions Inch			Min. Bore dia.	
IC mm		**mm**	**tpi**	**RH**	**r**	**Y**	**F**	**Inch**	**Toolholder**	
5.0L		0.5-1.5	48-16	5LIRA60...	.002	.04	.18	.31	.NVR ...-5L	

Mini-3

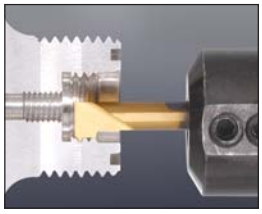
Insert Size			Pitch		Ordering Code		Dimensions Inch			Min. Bore dia.	
IC mm	**L** Inch		**mm**	**tpi**	**RH**	**r**	**Y**	**F**	**Inch**	**Toolholder**	
4.0	0.24		0.5-1.25	48-20	4.0KIRA60...	.002	.02	.15	.25	.NVR.020-4.0K	
6.0	0.39		0.5-1.5	48-16	6.0IRA60...	.002	.04	.21	.39	.NVR ...-6.0	

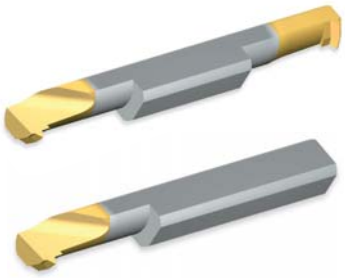
Mini and Micro Left Handed tools, supplied by request (**Example:** 6.0SI**L**A60...1-SIDE)

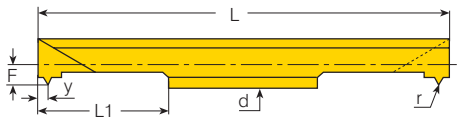


Partial Profile 55°

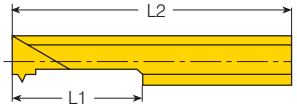
Internal







RH-Double Ended

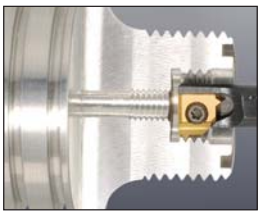


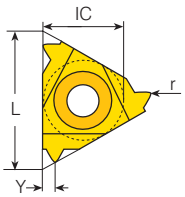
RH-Single Ended

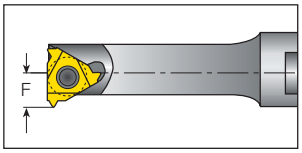
Micro

Insert dia.	Pitch		Ordering Code		Dimensions Inch						Min. Bore dia.	
d mm	**mm**	**tpi**	**RH**-Single Ended	**RH**-Double Ended	**r**	**L1**	**L2**	**L**	**F**	**Y**	**Inch**	**Toolholder**
3.0	0.5-1.0	48-24	3.0SIRF55...1-SIDE	3.0SIRF55...	.002	.63	1.69	1.97	.06	.03	.13	SMC..-3.0
4.0	0.5-1.0	48-24	4.0SIRF55...1-SIDE	4.0SIRF55...	.002	.63	1.69	1.97	.08	.03	.17	SMC..-4.0
6.0	0.5-1.5	48-16	6.0SIRA55...1-SIDE	6.0SIRA55...	.002	.63	1.69	1.97	.08	.03	.24	SMC..-6.0

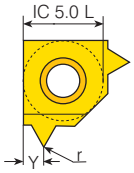
Internal

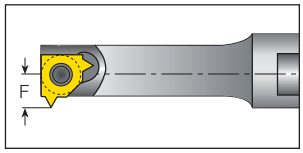






Mini-3





Mini-L

Mini-L

Insert Size	Pitch		Ordering Code	Dimensions Inch			Min. Bore dia.	
IC mm	**mm**	**tpi**	**RH**	**r**	**Y**	**F**	**Inch**	**Toolholder**
5.0L	0.5-1.5	48-16	5LIRA55...	.002	.04	.18	.31	.NVR....-5L

Mini-3

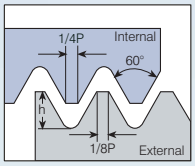
Insert Size		Pitch		Ordering Code	Dimensions Inch			Min. Bore dia.	
IC mm	**L** Inch	**mm**	**tpi**	**RH**	**r**	**Y**	**F**	**Inch**	**Toolholder**
4.0	.24	0.5-1.25	48-20	4.0KIRA55...	.002	.02	.15	.25	.NVR.020-4.0K
6.0	.39	0.5-1.5	48-16	6.0IRA55...	.002	.04	.21	.39	.NVR...-6.0

Mini and Micro Left Handed tools, supplied by request (**Example:** 6.0SI**L**A55...1-SIDE)

VARGUS

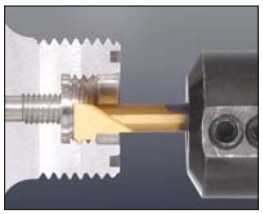
Defined by:
ANSI B1.1:74

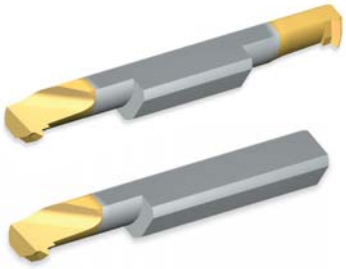
Tolerance class:
2A/2B

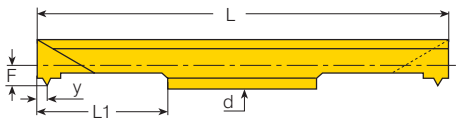


American UN

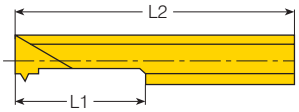
Internal







RH-Double Ended



RH-Single Ended

Micro Thread

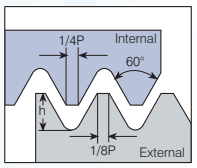
Insert dia.	Pitch	Ordering Code		Dimensions Inch						Min. Bore dia.	
d mm	**tpi**	**RH-**Single Ended	**RH-**Double Ended	**L1**	**L2**	**L**	**F**	**Y**	**h** min	**Inch**	**Toolholder**
3.0	40	3.0SIR40UN...1-SIDE	3.0SIR40UN...	.63	1.69	1.97	.05	.02	.015	.13	SMC..-3.0
	36	3.0SIR36UN...1-SIDE	3.0SIR36UN...	.63	1.69	1.97	.06	.02	.016	.13	
	32	3.0SIR32UN...1-SIDE	3.0SIR32UN...	.63	1.69	1.97	.06	.02	.018	.13	
4.0	40	4.0SIR40UN...1-SIDE	4.0SIR40UN...	.63	1.69	1.97	.06	.02	.015	.16	SMC..-4.0
	36	4.0SIR36UN...1-SIDE	4.0SIR36UN...	.63	1.69	1.97	.07	.02	.016	.16	
	32	4.0SIR32UN...1-SIDE	4.0SIR32UN...	.63	1.69	1.97	.07	.02	.018	.16	
	28	4.0SIR28UN...1-SIDE	4.0SIR28UN...	.63	1.69	1.97	.07	.03	.020	.17	
	27	4.0SIR27UN...1-SIDE	4.0SIR27UN...	.63	1.69	1.97	.07	.03	.021	.17	
	24	4.0SIR24UN...1-SIDE	4.0SIR24UN...	.63	1.69	1.97	.08	.03	.024	.17	
	20	4.0SIR20UN...1-SIDE	4.0SIR20UN...	.63	1.69	1.97	.08	.03	.028	.17	
6.0	32	6.0SIR32UN...1-SIDE	6.0SIR32UN...	.63	1.69	1.97	.08	.02	.018	.22	SMC..-6.0
	28	6.0SIR28UN...1-SIDE	6.0SIR28UN...	.63	1.69	1.97	.08	.03	.020	.22	
	27	6.0SIR27UN...1-SIDE	6.0SIR27UN...	.63	1.69	1.97	.08	.03	.021	.22	
	24	6.0SIR24UN...1-SIDE	6.0SIR24UN...	.63	1.69	1.97	.09	.03	.024	.22	
	20	6.0SIR20UN...1-SIDE	6.0SIR20UN...	.63	1.69	1.97	.09	.04	.029	.23	
	18	6.0SIR18UN...1-SIDE	6.0SIR18UN...	.63	1.69	1.97	.09	.04	.032	.23	
	16	6.0SIR16UN...1-SIDE	6.0SIR16UN...	.63	1.69	1.97	.10	.04	.036	.24	

continued on next page ▸

Mini and Micro Left Handed tools, supplied by request (**Example:** 6.0SI**L**16UN...1-SIDE)

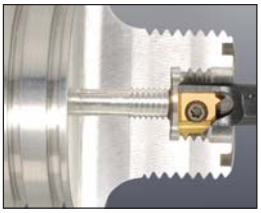
Defined by:
ANSI B1.1:74

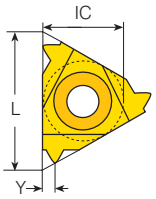
Tolerance class:
2A/2B

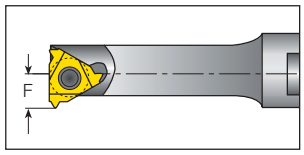


American UN (con't)

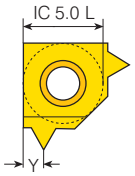
Internal

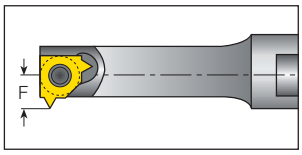






Mini-3





Mini-L

Mini-L

Insert Size		Pitch	Ordering Code	Dimensions Inch			Min. Bore dia.	
IC mm		tpi	RH	h min	Y	F	Inch	Toolholder
5.0L		40	5LIR40UN...	.014	.02	.15	.31	.NVR...-5L
		36	5LIR36UN...	.016	.02	.15	.31	
		32	5LIR32UN...	.018	.02	.15	.31	
		28	5LIR28UN...	.020	.03	.16	.31	
		24	5LIR24UN...	.024	.03	.16	.31	
		20	5LIR20UN...	.029	.04	.17	.31	
		18	5LIR18UN...	.032	.04	.17	.31	
		16	5LIR16UN...	.036	.04	.17	.31	
		14	5LIR14UN...	.041	.04	.18	.31	

Mini-3

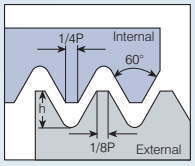
Insert Size		Pitch	Ordering Code	Dimensions Inch			Min. Bore dia.	
IC mm	L Inch	tpi	RH	h min	Y	F	Inch	Toolholder
4.0	.24	32	4.0KIR32UN...	.018	.02	.14	.24	.NVR.020-4.0K
		28	4.0KIR28UN...	.020	.02	.14	.24	
		24	4.0KIR24UN...	.024	.02	.14	.25	
		20	4.0KIR20UN...	.029	.02	.15	.25	
		18	4.0KIR18UN...	.032	.03	.15	.25	
6.0	.39	40	6.0IR40UN...	.013	.02	.18	.37	.NVR...-6.0
		36	6.0IR36UN...	.016	.02	.18	.37	
		32	6.0IR32UN...	.018	.02	.18	.37	
		28	6.0IR28UN...	.020	.03	.19	.38	
		24	6.0IR24UN...	.024	.03	.19	.38	
		20	6.0IR20UN...	.029	.04	.19	.39	
		18	6.0IR18UN...	.032	.04	.20	.39	
		16	6.0IR16UN...	.036	.04	.20	.39	
		14	6.0IR14UN...	.041	.04	.20	.39	

Mini and Micro Left Handed tools, supplied by request (**Example:** 5LI**L**14UN...)

VARGUS

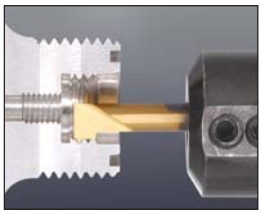
Defined by:
R262 (DIN 13)

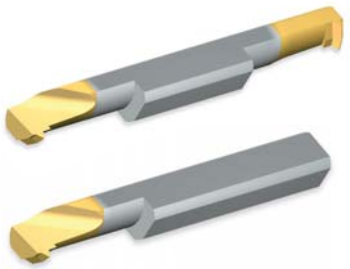
Tolerance class:
6g/6H

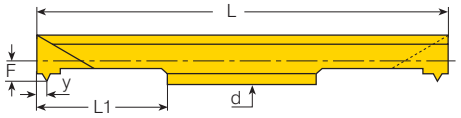


ISO Metric

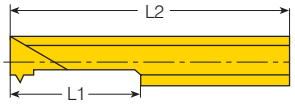
Internal







RH-Double Ended



RH-Single Ended

Micro

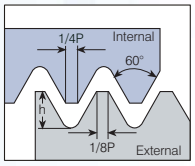
Insert dia.	Pitch	Ordering Code		Dimensions Inch						Min. Bore dia.	
d mm	**mm**	**RH-**Single Ended	**RH-**Double Ended	**L1**	**L2**	**L**	**F**	**Y**	**h** min	**mm**	**Toolholder**
3.0	0.3	3.0SIR0.3ISO...1-SIDE	3.0SIR0.3ISO...	.63	1.69	1.97	.052	.009	.004	.12	SMC..-3.0
	0.4	3.0SIR0.4ISO...1-SIDE	3.0SIR0.4ISO...	.63	1.69	1.97	.052	.014	.009	.12	
	0.5	3.0SIR0.5ISO...1-SIDE	3.0SIR0.5ISO...	.63	1.69	1.97	.052	.016	.011	.12	
	0.6	3.0SIR0.6ISO...1-SIDE	3.0SIR0.6ISO...	.63	1.69	1.97	.053	.024	.014	.12	
	0.7	3.0SIR0.7ISO...1-SIDE	3.0SIR0.7ISO...	.63	1.69	1.97	.056	.024	.016	.13	
	0.75	3.0SIR0.75ISO...1-SIDE	3.0SIR0.75ISO...	.63	1.69	1.97	.057	.024	.017	.13	
	0.8	3.0SIR0.8ISO...1-SIDE	3.0SIR0.8ISO...	.63	1.69	1.97	.058	.024	.018	.13	
4.0	0.4	4.0SIR0.4ISO...1-SIDE	4.0SIR0.4ISO...	.63	1.69	1.97	.065	.014	.009	.16	SMC..-4.0
	0.5	4.0SIR0.5ISO...1-SIDE	4.0SIR0.5ISO...	.63	1.69	1.97	.065	.016	.011	.16	
	0.6	4.0SIR0.6ISO...1-SIDE	4.0SIR0.6ISO...	.63	1.69	1.97	.066	.024	.014	.16	
	0.7	4.0SIR0.7ISO...1-SIDE	4.0SIR0.7ISO...	.63	1.69	1.97	.070	.024	.016	.16	
	0.75	4.0SIR0.75ISO...1-SIDE	4.0SIR0.75ISO...	.63	1.69	1.97	.071	.024	.017	.17	
	0.8	4.0SIR0.8ISO...1-SIDE	4.0SIR0.8ISO...	.63	1.69	1.97	.071	.024	.018	.17	
	1.0	4.0SIR1.0ISO...1-SIDE	4.0SIR1.0ISO...	.63	1.69	1.97	.077	.035	.023	.17	
6.0	0.5	6.0SIR0.5ISO...1-SIDE	6.0SIR0.5ISO...	.63	1.69	1.97	.075	.024	.011	.21	SMC..-6.0
	0.75	6.0SIR0.75ISO...1-SIDE	6.0SIR0.75ISO...	.63	1.69	1.97	.081	.024	.017	.22	
	1.0	6.0SIR1.0ISO...1-SIDE	6.0SIR1.0ISO...	.63	1.69	1.97	.087	.028	.023	.22	
	1.25	6.0SIR1.25ISO...1-SIDE	6.0SIR1.25ISO...	.63	1.69	1.97	.093	.035	.028	.23	
	1.5	6.0SIR1.5ISO...1-SIDE	6.0SIR1.5ISO...	.63	1.69	1.97	.098	.039	.034	.24	

continued on next page ▸

Mini and Micro Left Handed tools, supplied by request (**Example:** 6.0SI**L**1.5ISO...1-SIDE)

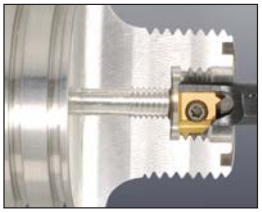
Defined by:
R262 (DIN 13)

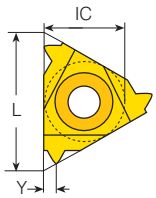
Tolerance class:
6g/6H

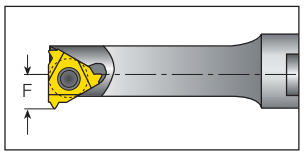


ISO Metric (con't)

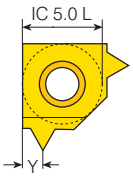
Internal

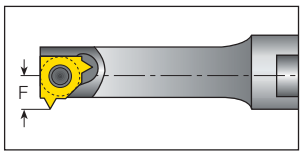






Mini-3





Mini-L

Mini-L

Insert Size		Pitch	Ordering Code	Dimensions Inch			Min. Bore dia.	
IC mm		mm	RH	h min	Y	F	Inch	Toolholder
5.0L		0.5	5LIR0.5ISO...	.011	.015	.15	.31	.NVR...-5L
		0.75	5LIR0.75ISO...	.017	.02	.15	.31	
		1.0	5LIR1.0ISO...	.023	.03	.16	.31	
		1.25	5LIR1.25ISO...	.028	.04	.17	.31	
		1.5	5LIR1.5ISO...	.034	.04	.17	.31	
		1.75	5LIR1.75ISO...	.040	.04	.18	.31	
		2.0	5LIR2.0ISO...	.045	.04	.18	.31	

Mini-3

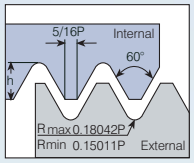
Insert Size		Pitch	Ordering Code	Dimensions Inch			Min. Bore dia.	
IC mm	L Inch	mm	RH	h min	Y	F	Inch	Toolholder
4.0	.24	0.5	4.0KIR0.5ISO...	.011	.02	.14	.24	.NVR.020-4.0K
		0.75	4.0KIR0.75ISO...	.017	.02	.14	.24	
		1.0	4.0KIR1.0ISO...	.023	.02	.14	.25	
		1.25	4.0KIR1.25ISO...	.028	.02	.15	.25	
6.0	.39	0.5	6.0IR0.5ISO...	.011	.015	.17	.37	.NVR...-6.0
		0.75	6.0IR0.75ISO...	.017	.02	.18	.37	
		1.0	6.0IR1.0ISO...	.023	.03	.19	.38	
		1.25	6.0IR1.25ISO...	.028	.04	.19	.39	
		1.5	6.0IR1.5ISO...	.034	.04	.20	.39	
		1.75	6.0IR1.75ISO...	.040	.04	.20	.39	
		2.0	6.0IR2.0ISO...	.045	.04	.21	.39	

Mini and Micro Left Handed tools, supplied by request (**Example:** 6.0I**L**2.0ISO...)

VARGUS

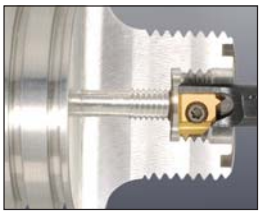
Defined by:
MIL-S-8879C

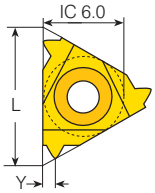
Tolerance class:
3A/3B

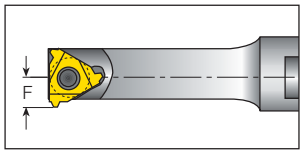


UNJ

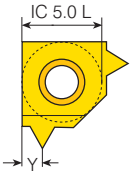
Internal

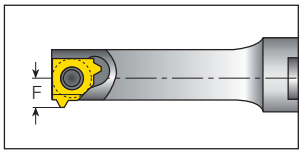






Mini-3





Mini-L

Mini-L

Insert Size		Pitch	Ordering Code	Dimensions Inch			Min. Bore dia.	
IC mm		**tpi**	**RH**	**h** min	**Y**	**F**	**Inch**	**Toolholder**
5.0L		20	5LIR20UNJ...	.029	.04	.17	.31	.NVR ... -5L

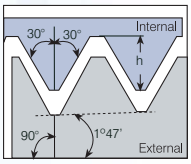
Mini-3

Insert Size			Pitch	Ordering Code	Dimensions Inch			Min. Bore dia.	
IC mm	**L** Inch		**tpi**	**RH**	**h** min	**Y**	**F**	**Inch**	**Toolholder**
6.0	.39		20	6.0IR20UNJ...	.03	.04	.19	.39	.NVR...-6.0

Mini and Micro Left Handed tools, supplied by request (**Example:** 6.0SI**L**19UNJ...)

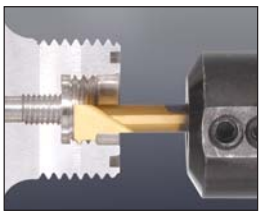
Defined by:
USAS B2.1:1968

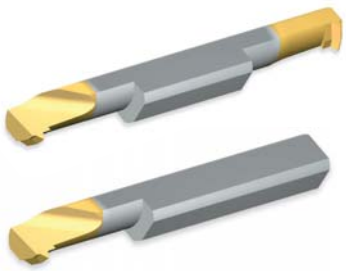
Tolerance class:
Standard NPT

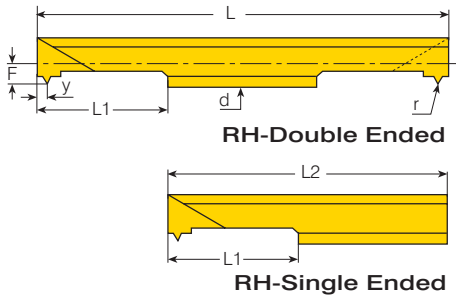


NPT

Internal







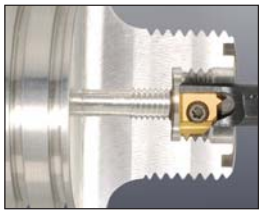
RH-Double Ended

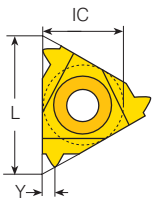
RH-Single Ended

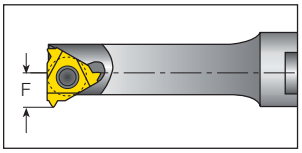
Micro

Insert dia.	Pitch	Ordering Code		Dimensions Inch						Min. Bore dia.	
d mm	**tpi**	**RH**-Single Ended	**RH**-Double Ended	**L1**	**L2**	**L**	**F**	**Y**	**h** min	**Inch**	**Toolholder**
6.0	27	6.0SIR27NPT...1-SIDE	6.0SIR27NPT...	.63	1.69	1.97	.10	.04	.026	.24	SMC..-6.0
	18	6.0SIR18NPT...1-SIDE	6.0SIR18NPT...	.63	1.69	1.97	.10	.03	.040		

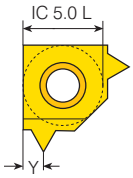
Internal

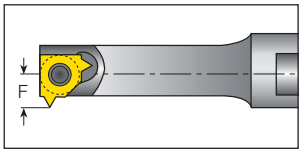






Mini-3





Mini-L

Mini-L

Insert Size		Pitch	Ordering Code	Dimensions Inch			Min. Bore dia.	
IC mm		**tpi**	**RH**	**h** min	**Y**	**F**	**Inch**	**Toolholder**
5.0L		27	5LIR27NPT...	.026	.03	.18	0.31	.NVR...-5L
		18	5LIR18NPT...	.040	.04	.18		
		14	5LIR14NPT...	.052	.04	.18		

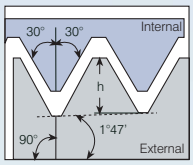
Mini-3

Insert Size		Pitch	Ordering Code	Dimensions Inch			Min. Bore dia.	
IC mm	**L** Inch	**tpi**	**RH**	**h** min	**Y**	**F**	**Inch**	**Toolholder**
4.0	.24	27	4.0KIR27NPT...	.026	.02	.15	0.25	.NVR.020-4.0K
6.0	.39	27	6.0IR27NPT...	.026	.03	.21	0.39	.NVR...-6.0
		18	6.0IR18NPT...	.040	.04	.21		
		14	6.0IR14NPT...	.052	.04	.21		

Mini and Micro Left Handed tools, supplied by request (**Example:** 6.0I**L**18NPT...)

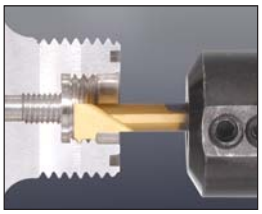
Defined by:
ANSI B1.20.3-1976

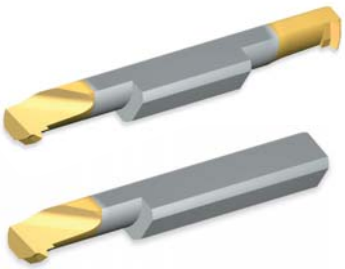
Tolerance class:
Class 2

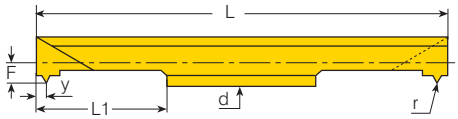


NPTF

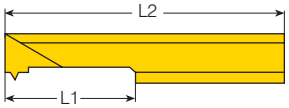
Internal







RH-Double Ended

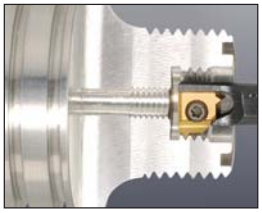


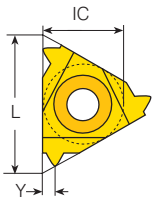
RH-Single Ended

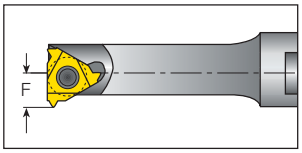
Micro

Insert dia.	Pitch	Ordering Code		Dimensions Inch						Min. Bore dia.	
d mm	**tpi**	**RH**-Single Ended	**RH**-Double Ended	**L1**	**L2**	**L**	**F**	**Y**	**h** min	**Inch**	**Toolholder**
6.0	27	6.0SIR27NPTF...1-SIDE	6.0SIR27NPTF...	.63	1.69	1.97	.03	.02	.026	.24	SMC..-6.0
	18	6.0SIR18NPTF...1-SIDE	6.0SIR18NPTF...	.63	1.69	1.97	.04	.04	.040		

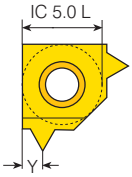
Internal

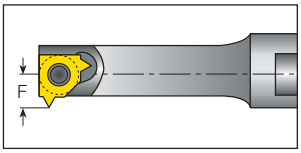






Mini-3





Mini-L

Mini-L

Insert Size	Pitch	Ordering Code	Dimensions Inch			Min. Bore dia.	
	tpi	**RH**	**h** min	**Y**	**F**	**Inch**	**Toolholder**
5.0L	27	5LIR27NPTF...	.025	.03	.18	.31	.NVR...-5L
	18	5LIR18NPTF...	.039	.04	.18		
	14	5LIR14NPTF...	.053	.04	.18		

Mini-3

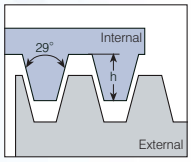
Insert Size		Pitch	Ordering Code	Dimensions Inch			Min. Bore dia.	
IC mm	**L** Inch	**tpi**	**RH**	**h** min	**Y**	**F**	**Inch**	**Toolholder**
4.0	.24	27	4.0KIR27NPTF...	.025	.02	.14	.25	.NVR.020-4.0K
6.0	.39	27	6.0IR27NPTF...	.025	.03	.21	.39	.NVR...-6.0
		18	6.0IR18NPTF...	.039	.04	.21		
		14	6.0IR14NPTF...	.053	.04	.21		

Mini and Micro Left Handed tools, supplied by request (**Example:** 6.0I**L**14NPTF...)

American ACME

Defined by:
ANSI B1.5:1988

Tolerance class:
3G



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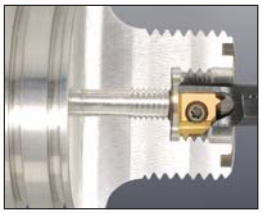
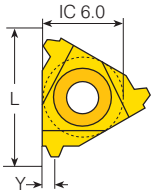
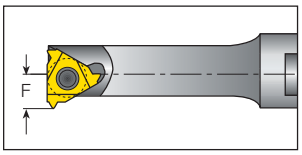
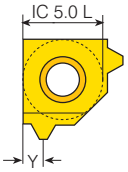
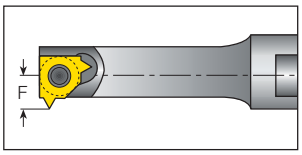






Mini-3





Mini-L

Mini-L

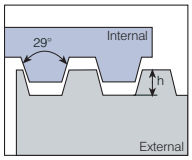
Insert Size		Pitch	Ordering Code		Dimensions Inch		Min. Bore dia.	
IC mm		tpi	RH	h min	Y	F	Inch	Toolholder
5.0L		12	5LIR12ACME...	.047	.04	.17	.31	.NVR... -5L

Mini-3

Insert Size		Pitch	Ordering Code		Dimensions Inch		Min. Bore dia.	
IC	L Inch	tpi	RH	h min	Y	F	Inch	Toolholder
6.0	.39	12	6.0IR12ACME...	.05	.04	.20	.39	.NVR...-6.0

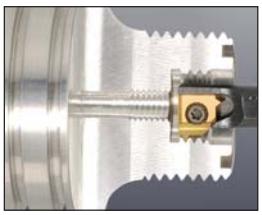
Defined by:
ANSI B1.8:1988

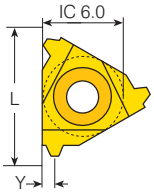
Tolerance class:
2G

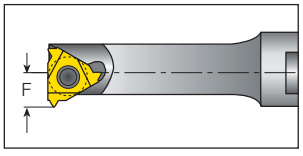


Stub ACME

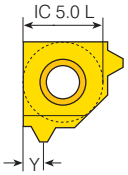
Internal

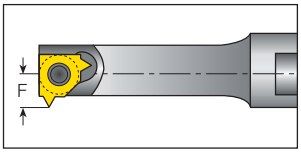






Mini-3





Mini-L

Mini-L

Insert Size		Pitch	Ordering Code		Dimensions Inch		Min. Bore dia.	
IC mm		tpi	RH	h min	Y	F	Inch	Toolholder
5.0L		12	5LIR12STACME...	.030	.05	.17	.31	.NVR... -5L

Mini-3

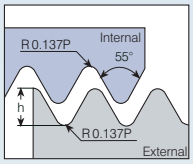
Insert Size		Pitch	Ordering Code		Dimensions Inch		Min. Bore dia.	
IC mm	L Inch	tpi	RH	h min	Y	F	Inch	Toolholder
6.0	.39	12	6.0IR12STACME...	.030	.05	.20	.39	.NVR...-6.0

Mini and Micro Left Handed tools, supplied by request (**Example:** 6.0I**L**12ACME...)

Whitworth for BSW, BSP

Defined by:
B.S.84:1956,
DIN 259,
ISO228/1:1982

Tolerance class:
Medium Class A



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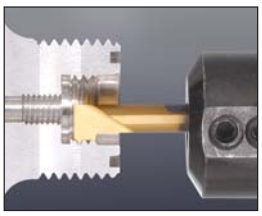
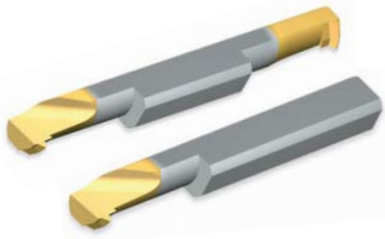
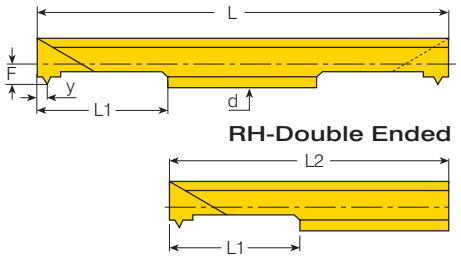






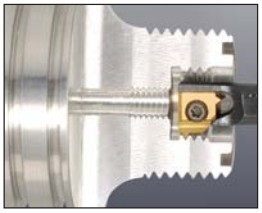
RH-Double Ended

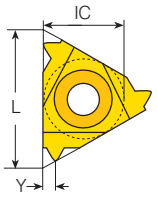
RH-Single Ended

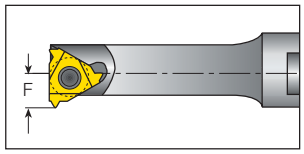
Micro

Insert dia.	Pitch	Ordering Code		Dimensions Inch						Min. Bore dia.	
d mm	**tpi**	**RH**-Single Ended	**RH**-Double Ended	**L1**	**L2**	**L**	**F**	**Y**	**h**min	**Inch**	**Toolholder**
4.0	28	4.0SIR28W...1-SIDE	4.0SIR28W...	.63	1.69	1.97	.07	.03	.023	.17	SMC..-4.0
	26	4.0SIR26W...1-SIDE	4.0SIR26W...	.63	1.69	1.97	.08	.03	.025	.17	
	24	4.0SIR24W...1-SIDE	4.0SIR24W...	.63	1.69	1.97	.08	.03	.027	.17	
6.0	28	6.0SIR28W...1-SIDE	6.0SIR28W...	.63	1.69	1.97	.10	.03	.023	.24	SMC..-6.0
	26	6.0SIR26W...1-SIDE	6.0SIR26W...	.63	1.69	1.97	.10	.03	.025	.24	
	24	6.0SIR24W...1-SIDE	6.0SIR24W...	.63	1.69	1.97	.10	.03	.027	.24	
	22	6.0SIR22W...1-SIDE	6.0SIR22W...	.63	1.69	1.97	.10	.04	.029	.24	
	20	6.0SIR20W...1-SIDE	6.0SIR20W...	.63	1.69	1.97	.10	.04	.034	.24	
	19	6.0SIR19W...1-SIDE	6.0SIR19W...	.63	1.69	1.97	.10	.04	.034	.24	

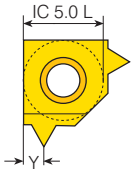
Internal

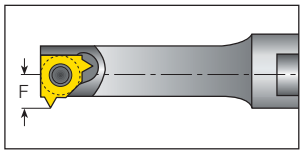






Mini-3





Mini-L

Mini-L

Insert Size	Pitch	Ordering Code	Dimensions Inch			Min. Bore dia.	
IC mm	**tpi**	**RH**	**h** min	**Y**	**F**	**Inch**	**Toolholder**
5.0 L	28	5LIR28W...	.023	.03	.16	.31	.NVR... -5L
	19	5LIR19W...	.034	.04	.17	.31	
	14	5LIR14W...	.046	.04	.18	.31	

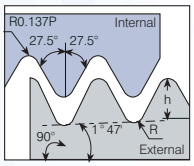
Mini-3

Insert Size		Pitch	Ordering Code	Dimensions Inch			Min. Bore dia.	
IC mm	**L** Inch	**tpi**	**RH**	**h** min	**Y**	**F**	**Inch**	**Toolholder**
4.0	.24	26	4.0KIR26W...	.025	.02	.14	.25	.NVR.020-4.0K
		22	4.0KIR22W...	.029	.02	.15	.25	
		20	4.0KIR20W...	.032	.03	.15	.25	
		18	4.0KIR18W...	.035	.03	.15	.25	
6.0	.39	28	6.0IR28W...	.023	.03	.19	.38	.NVR...-6.0
		19	6.0IR19W...	.034	.04	.20	.39	
		14	6.0IR14W...	.046	.04	.21	.39	

Mini and Micro Left Handed tools, supplied by request (**Example:** 6.0I**L**14W...)

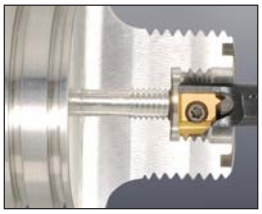
Defined by:
B.S. 21:1985

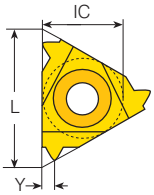
Tolerance class:
Standard BSPT

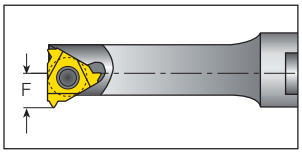


BSPT

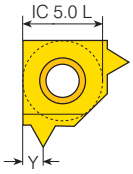
Internal

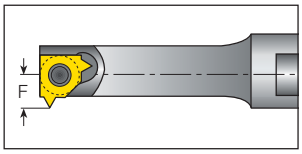






Mini-3





Mini-L

Mini-L

Insert Size		Pitch	Ordering Code	Dimensions Inch			Min. Bore dia.	
IC mm		**tpi**	**RH**	**h** min	**Y**	**F**	**Inch**	**Toolholder**
5.0L		28	5LIR28BSPT...	.023	.02	.19	.315	.NVR... -5L
		19	5LIR19BSPT...	.034	.04	.20	.315	
		14	5LIR14BSPT...	.046	.05	.21	.315	

Mini-3

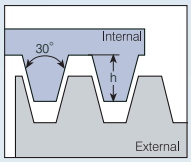
Insert Size		Pitch	Ordering Code	Dimensions Inch			Min. Bore dia.	
IC	**L** Inch	**tpi**	**RH**	**h** min	**Y**	**F**	**Inch**	**Toolholder**
4.0	.24	28	4.0KIR28BSPT...	.023	.02	.14	.250	.NVR.020-4.0K
6.0	.39	28	6.0IR28BSPT...	.023	.02	.19	.378	.NVR...-6.0
		19	6.0IR19BSPT...	.034	.04	.20	.390	
		14	6.0IR14BSPT...	.046	.05	.21	.394	

Mini and Micro Left Handed tools, supplied by request (**Example:** 6.0I**L**14BSPT...)

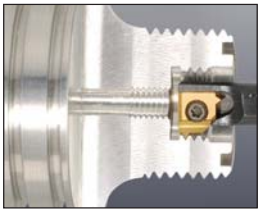
TRAPEZ

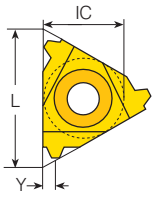
Defined by:
DIN 103

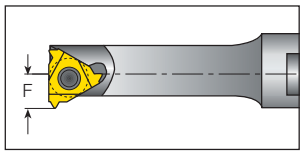
Tolerance class:
7e/7H



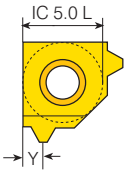
Internal

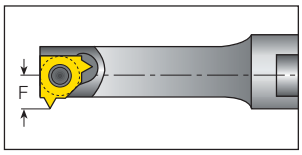






Mini-3





Mini-L

Mini-L

Insert Size		Pitch	Ordering Code	Dimensions Inch			Min. Bore dia.	
IC mm		mm	RH	h min	Y	F	Inch	Toolholder
5.0L		1.5	5LIR1.5TR...	.033	.03	.18	.315	.NVR... -5L
		2.0	5LIR2.0TR...	.049	.05	.18	.315	

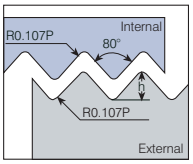
Mini-3

Insert Size		Pitch	Ordering Code	Dimensions Inch			Min. Bore dia.	
IC	L Inch	mm	RH	h min	Y	F	Inch	Toolholder
6.0	.39	1.5	6.0IR1.5TR...	.033	.03	.21	.39	.NVR...-6.0
		2.0	6.0IR2.0TR...	.049	.05	.21	.39	

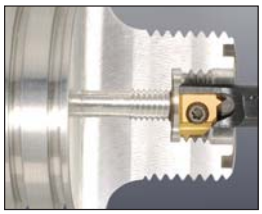
Pg

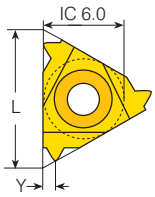
Defined by:
DIN 40430

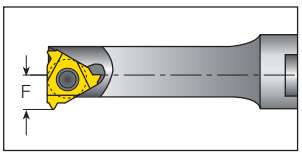
Tolerance class:
Standard



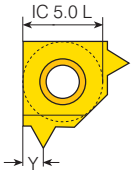
Internal

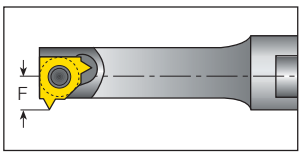






Mini-3





Mini-L

Mini-L

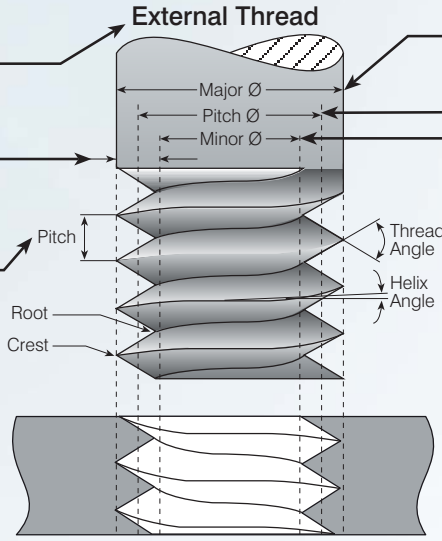
Insert Size		Pitch	Thread	Ordering Code	Dimensions Inch			Min. Bore dia.	
IC		tpi		RH	h min	Y	F	Inch	Toolholder
5.0L		20	Pg7	5LIR20PG...	.024	.03	.18	.31	.NVR...-5L
		18	Pg9/11/13.5/16	5LIR18PG...	.026	.04	.18		

Mini-3

Insert Size		Pitch	Thread	Ordering Code	Dimensions Inch			Min. Bore dia.	
IC	L Inch	tpi		RH	h min	Y	F	Inch	Toolholder
6.0	.39	20	Pg7	6.0IR20PG...	.024	.03	.21	.39	.NVR...-6.0
		18	Pg9/11/13.5/16	6.0IR18PG...	.026	.04	.21		

Mini and Micro Left Handed tools, supplied by request (**Example:** 6.0I**L**14PG...)

Thread Terminology



External Thread
A thread on the external surface of a cylinder screw or cone.

Depth of Thread
The distance between crest and root measured normal to the axis.

Pitch
The distance between corresponding points on adjacent thread forms measured parallel to the axis. This distance can be defined in millimeters or by the tpi (threads per inch), which is the reciprocal of the pitch.

Nominal Diameter
The diameter from which the diameter limits are derived by the application of deviation allowances and tolerances.

Major Diameter
The largest diameter of a screw thread.

Pitch Diameter
On a straight thread, the diameter of an imaginary cylinder, the surface of which cuts the thread forms where the width of the thread and groove are equal.

Minor Diameter
The smallest diameter of a screw thread.

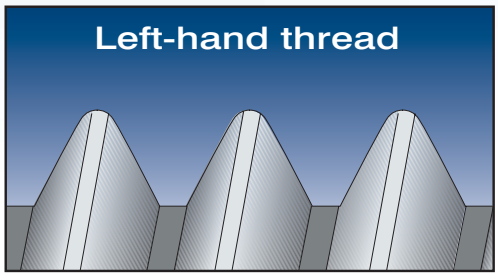
Helix Angle
For a straight thread, where the lead of the thread and the pitch diameter circle circumference form a right angled triangle, the helix angle is the angle opposite the lead.

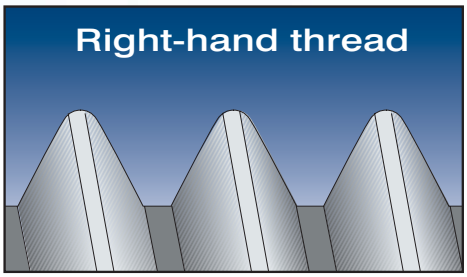
Straight Thread
A thread formed on a cylinder.

Taper Thread
A thread formed on a cone.

Internal Thread
A thread on the internal surface of a cylinder or cone.

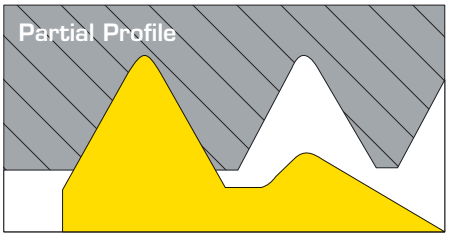
A thread which, when viewed axially, winds in a counterclockwise and receding direction. All left-hand threads are designated LH.



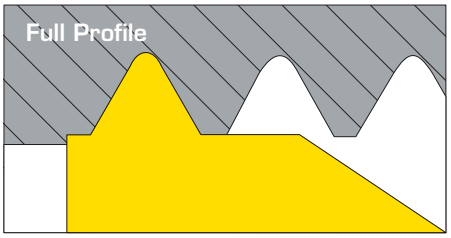


A thread which, when viewed axially, winds in a clockwise and receding direction. Threads are always right-hand unless otherwise specified.

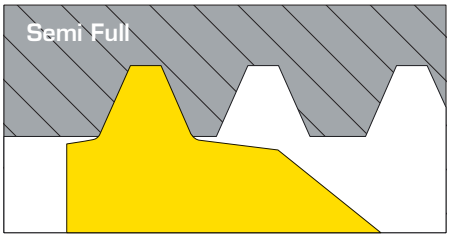
Insert Profile Styles



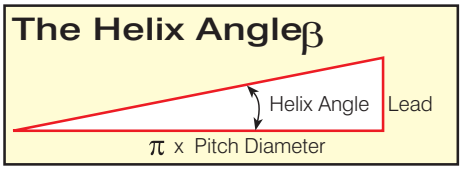
The V partial profile insert cuts without topping the outer diameter of the thread. The same insert can be used for a range of different thread pitches which have a common thread angle.



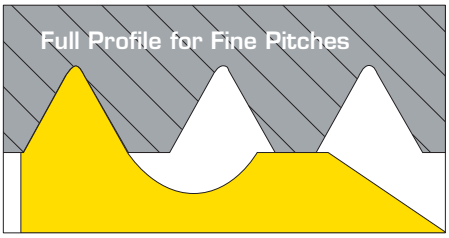
The full profile insert will form a complete thread profile including the crest. For every thread pitch and standard, a separate insert is required.



The semi profile insert will form a complete thread including crest radius, but without topping the outer diameter. Mainly used for trapezoidal profiles.



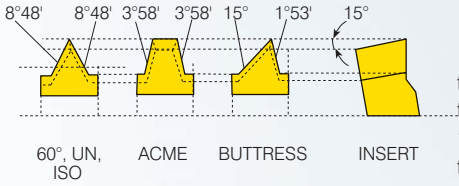
Lead
The distance a threaded part moves axially, with respect to a fixed mating part, in one complete revolution. The lead is equal to the pitch multiplied by the number of thread starts.



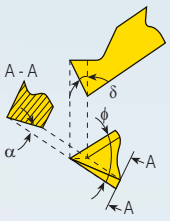
The full profile for fine pitches (0.25-0.45mm/80-52 TPI) will form a complete thread. The topping of the outer diameter is generated by second tooth.

Calculating the Helix Angle

Flank Clearance Angle α

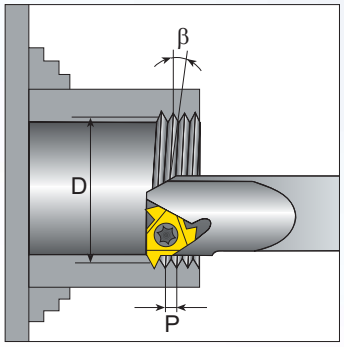


Vardex toolholders are designed to tilt the insert when seatecd in the toolholder (10° for external, 15° for internal tooling). this results in the differing flank clearance angles, based on the geometry of insert. To ensure that the side of the insert cutting edge will not rub on the workpiece, it is most important that the insert helix angle be correct - especially in profiles with small enclosed flank angles. This correction is provided by Vardex anvils.



$\alpha = \arctan(\tan \varnothing/2 \times \tan\delta)$

Where: α - Flank clearance angle
δ - Tilt angle
$\varnothing$ - Enclosed flank angle



Calculating the Helix Angle β

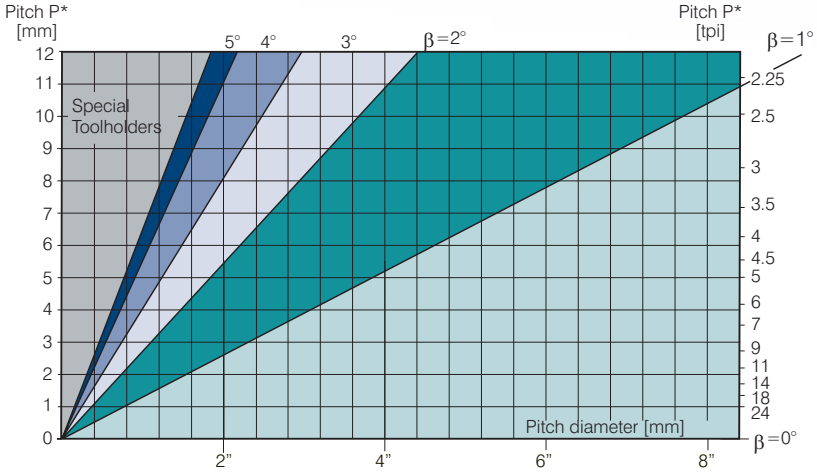
The helix angle is calculated by the following formula:

$$\beta = \arctan\frac{P \times N}{\pi \times D}$$

β - Helix angle [°]
P - Pitch [inch]
N - No. of starts
D - Pitch diameter [inch]
Lead = P x N

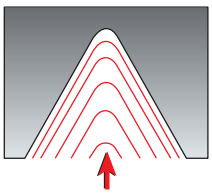
The helix angle can also be found from the diagram below.

Helix Angle Diagram



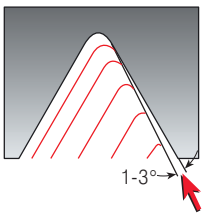
Thread Infeed Methods

Radial Infeed



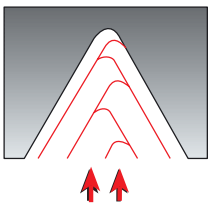
Radial infeed is the simplest and quickest method. The feed is perpendicular to the turning axis, and both flanks of the insert perform the cutting operation. Radial infeed is recommended in 3 cases:
- when the pitch is smaller than 16 tpi
- for material with short chips
- for work with hardened material

Flank Infeed (modified)



Flank infeed is recommended in the following cases:
- when the thread pitch is greater than 16 tpi., using the radial method, the effective cutting edge length is too large, resulting in chatter.
- for TRAPEZ and ACME. The radial method result in three cutting edges, making chip flow very difficult.

Alternate Flank Infeed



Use of the alternate flank method is recommended especially in large pitches and for materials with long chips. This method divides the load equally on both flanks, resulting in equal wear along the cutting edges. Alternate flank infeed requires more complicated programming, and is not available on all lathes.

Recommended Grades and Cutting Speeds Vc [ft/min]

Mini and Micro

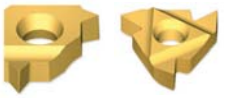
	Material		Hardness Brinell HB	Vc[ft/min] Coated VMX Micro Inserts	VKP/VBX Mini Inserts	VTX Mini Inserts	VHX Mini Inserts
P	Unalloyed steel	Low carbon (C=0.1-0.25 %)	125	164-394	459-656	505-656	66-164
		Medium carbon (C=0.25-0.55 %)	150	131-328	394-590	433-590	49-131
		High carbon (C=0.55-0.85 %)	170	98-262	361-590	397-590	49-98
	Low alloy steel (alloying elements ≤ 5%)	Non hardened	180	164-230	328-508	361-508	66-148
		Hardened	275	131-197	295-476	325-476	33-82
		Hardened	350	98-164	262-443	288-443	33-82
	High alloy steel (alloying elements > 5%)	Annealed	200	98-164	213-377	234-377	
		Hardened	325	82-131	164-328	438-328	
	Cast steel	Low alloy (alloying elements <5%)	200	98-164	98-164	108-164	82-164
		High alloy (alloying elements >5%)	225	82-131	82-131	90-131	66-131
M	Stainless steel Ferritic	Non hardened	200	197-328	262-394	288-394	
		Hardened	330	131-197	180-312	198-312	
	Stainless steel Austenitic	Austenitic	180	164-295	197-328	217-262	
		Super austenitic	200	131-197	164-295	180-295	
	Stainless steel Cast ferritic	Non hardened	200	131-197	197-262	217-262	
		Hardened	330	98-164	148-213	163-213	
	Stainless steel Cast austenitic	Austenitic	200	131-197	164-230	180-230	
		Hardened	330	98-164	131-197	144-197	
	High temperature alloys	Annealed (Iron based)	200	82-148	82-148	90-148	
		Aged (Iron based)	280	66-98	66-98	73-98	
		Annealed (Nickel or Cobalt based)	250	49-66	49-66	54-66	
		Aged (Nickel or Cobalt based)	350	33-49	33-49	36-49	
	Titanium alloys	Pure 99.5 Ti	400Rm	197-328	197-328	217-328	
		α+β alloys	1050Rm	131-164	131-164	144-164	
K	Extra hard steel	Hardened & tempered	55HRc	66-131	66-131	73-131	
	Malleable cast iron	Ferritic (short chips)	130	164-230	197-262	217-262	
		Pearlitic (long chips)	230	164-230	197-262	217-262	
	Grey cast iron	Low tensile strength	180	164-230	197-262	217-262	
		High tensile strength	260	131-197	131-230	144-230	
	Nodular SG iron	Ferritic	160	164-230	197-262	217-262	
		Pearlitic	260	197-262	230-295	253-295	
	Aluminium alloys Wrought	non aging	60	328-984	262-787	288-787	98-197
		Aged	100	328-492	328-558	361-558	82-164
	Aluminium alloys	Cast	75	328-492	328-492	361-492	82-164
		Cast & aged	90	197-328	197-328	217-328	66-131
	Aluminium alloys	Cast Si 13-22%	130	328-492	328-492	361-492	49-98
	Copper and copper alloys	Brass	90	197-328	262-656	288-656	49-115
		Bronze and non leaded copper	100	197-328	262-656	288-656	49-115

Grades and Applications

VMX

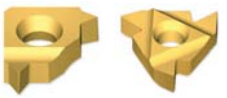
General use carbide grade for Micro inserts. TiN coated.

VHX



General use HSS grade for Mini inserts. For machining at low cutting speed. TiN coated.

VKP



General use carbide grade for Mini inserts. TiN coated.

VBX

Carbide grade for IC 4.0. For machining steel and for general use. TiCN coated.

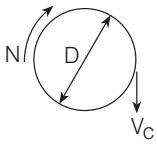
VTX

Carbide grade for IC 4.0. For machining stainless steel. TiAlN coated.

Calculation of N [RPM]

$$N = \frac{12 \times V_C}{\pi \times D}$$

$$V_C = \frac{N \times \pi \times D}{12}$$



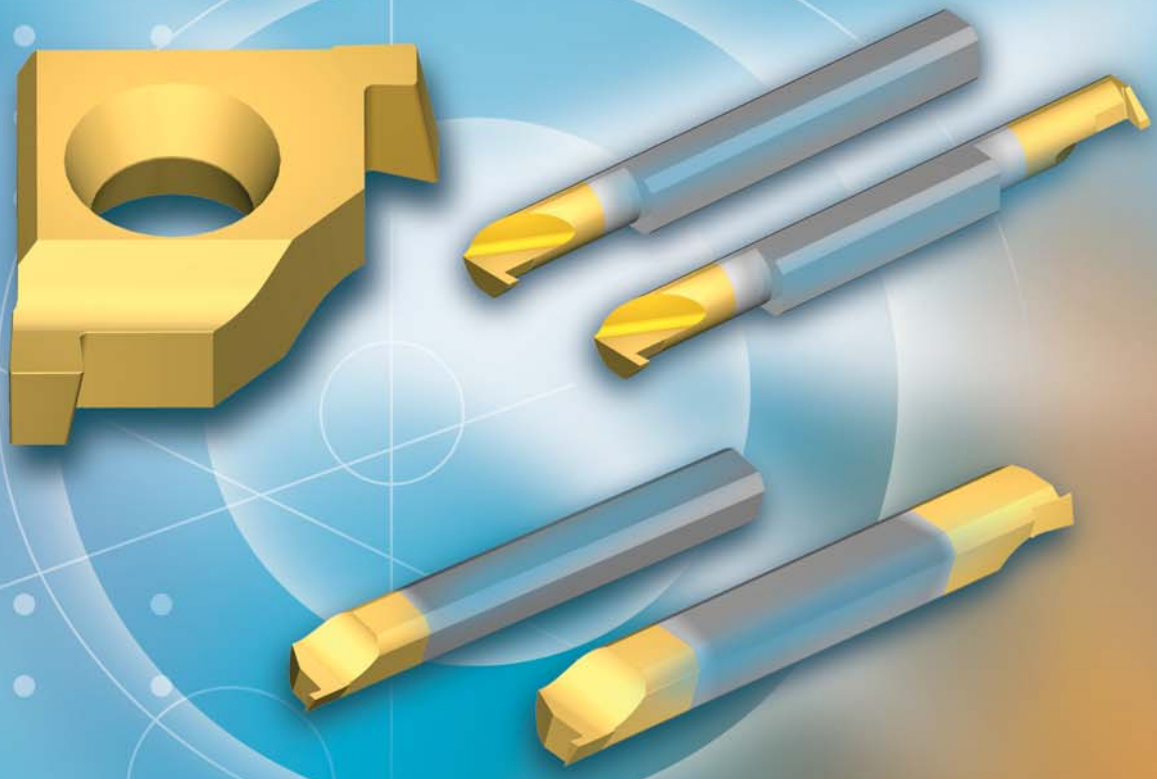
N - Revolution Per Minute [RPM]
V_C - Cutting Speed [ft/min]
D - Workpiece Diameter [inch]

Number of Passes

Pitch	mm	0.50	0.75	1.00	1.25	1.50	1.75	2.00
	tpi	48	32	24	20	16	14	12
No. of passes (Micro&Mini)		6-9	6-11	6-12	8-14	9-15	11-18	11-18

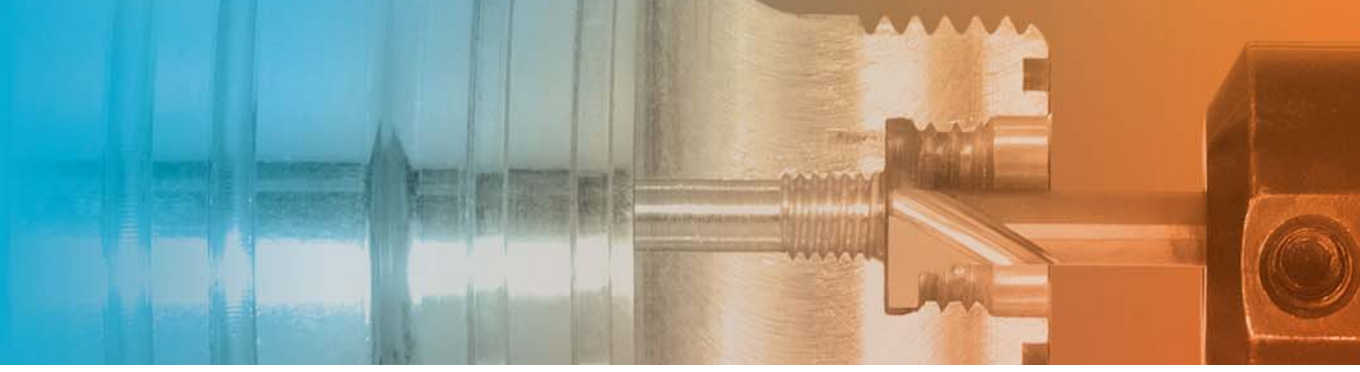
VARGUS

Take a closer Look...



MINIPRO

Grooving



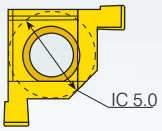
Vardex Ordering Code System

Grooving Inserts

5	L	I	R	1.1	-	D472	-	1.3	VKP
1	2	3	4	5	6	7		8	9

1 - Insert Size

5.0 L - IC5.0L



2 - Insert Style

L

3 - Type of Insert

I - Internal

4 - RH / LH Insert

R - Right Hand Insert
L - Left Hand Insert

5 - Groove Std. Width

.31"-.055" (inch)

6 - Profile Style

C - Full profile

7 - Groove Standard

DIN 472 Partial
DIN 7993 Partial

8 - Groove Depth

.028"-.059" (inch)

9 - Carbide Grade

VKP (for Mini)
VHX (for Mini)

Grooving Micro Insert

4.0	S	I	R	090	S	-	D472	-	1.1	VMX	1-Side
1	2	3	4	5	6		7		8	9	10

1 - Insert Dia.

3.0 - 3.0 mm
4.0 - 4.0 mm
6.0 - 6.0 mm
8.0 - 8.0 mm
10.0 - 10.0 mm

2 - Insert Style

S - Micro Insert

3 - Type of Insert

I - Internal

4 - RH / LH Insert

R - Right Hand Insert

5 - Groove std. Width

0.9 - 2.15 (mm)

6 - Insert Length

A - Axially
S - Short
M - Medium
L - Long

7 - Groove Standard

DIN 472
CIRCLIP
DIN 7993
DIN3770S, DIN3770D
Snap Ring
CIRCLIP - Face Grooving

8 - Groove Depth

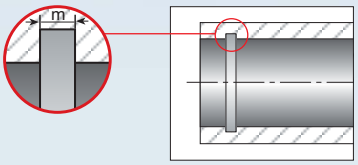
.020 - .059 (inch)

9 - Carbide Grade

VMX

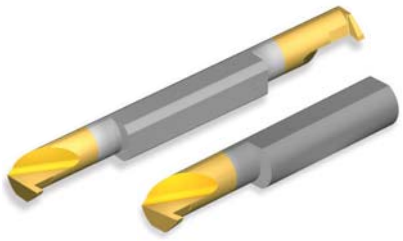
10 - Micro Ended

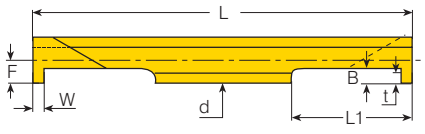
1-Side Single Ended
None - Double Ended



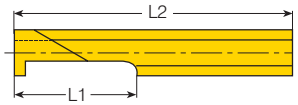
Square Groove

Internal





RH-Double Ended

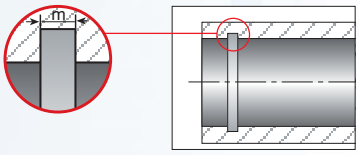


RH-Single Ended

Micro DIN 472

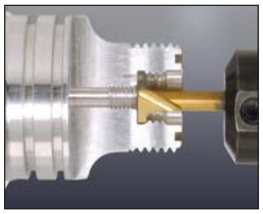
Groove dimensions		Insert dia.	Ordering Code		Groove Std.	Dimensions inch						Min. Bore dia.
W	t	d mm	RH-Single Ended	RH-Double Ended	m (H13)	L1	L2	L	B	F	Holder	
.039	.020	3.0	3.0SIR0.90S-D472-0.5...1-SIDE	3.0SIR0.90S-D472-0.5...	.035	.354	1.42	1.42	.031	.055	SMC..-3.0	.126
.039			3.0SIR0.90M-D472-0.5...1-SIDE	3.0SIR0.90M-D472-0.5...	.035	.630	1.69	1.97				
.047			3.0SIR1.10S-D472-0.5...1-SIDE	3.0SIR1.10S-D472-0.5...	.043	.354	1.42	1.42				
.047			3.0SIR1.10M-D472-0.5...1-SIDE	3.0SIR1.10M-D472-0.5...	.043	.630	1.69	1.97				
.039	.043	4.0	4.0SIR0.90S-D472-1.1...1-SIDE	4.0SIR0.90S-D472-1.1...	.035	.354	1.42	1.42	.055	.075	SMC..-4.0	.161
.039			4.0SIR0.90M-D472-1.1...1-SIDE	4.0SIR0.90M-D472-1.1...	.035	.630	1.69	1.97				
.039			4.0SIR0.90L-D472-1.1...1-SIDE	4.0SIR0.90L-D472-1.1...	.035	.827	1.97	2.36				
.047			4.0SIR1.10S-D472-1.1...1-SIDE	4.0SIR1.10S-D472-1.1...	.043	.354	1.42	1.42				
.047			4.0SIR1.10M-D472-1.1...1-SIDE	4.0SIR1.10M-D472-1.1...	.043	.630	1.69	1.97				
.047			4.0SIR1.10L-D472-1.1...1-SIDE	4.0SIR1.10L-D472-1.1...	.043	.827	1.97	2.36				
.055			4.0SIR1.30S-D472-1.1...1-SIDE	4.0SIR1.30S-D472-1.1...	.051	.354	1.42	1.42				
.055			4.0SIR1.30M-D472-1.1...1-SIDE	4.0SIR1.30M-D472-1.1...	.051	.630	1.69	1.97				
.055			4.0SIR1.30L-D472-1.1...1-SIDE	4.0SIR1.30L-D472-1.1...	.051	.827	1.97	2.36				
.067			4.0SIR1.60S-D472-1.1...1-SIDE	4.0SIR1.60S-D472-1.1...	.063	.354	1.42	1.42				
.067			4.0SIR1.60M-D472-1.1...1-SIDE	4.0SIR1.60M-D472-1.1...	.063	.630	1.69	1.97				
.067			4.0SIR1.60L-D472-1.1...1-SIDE	4.0SIR1.60L-D472-1.1...	.063	.827	1.97	2.36				
.039	.059	6.0	6.0SIR0.90S-D472-1.5...1-SIDE	6.0SIR0.90S-D472-1.5...	.035	.354	1.42	1.42	.071	.114	SMC..-6.0	.240
.039			6.0SIR0.90M-D472-1.5...1-SIDE	6.0SIR0.90M-D472-1.5...	.035	.630	1.69	1.97				
.039			6.0SIR0.90L-D472-1.5...1-SIDE	6.0SIR0.90L-D472-1.5...	.035	.827	1.97	2.36				
.047			6.0SIR1.10S-D472-1.5...1-SIDE	6.0SIR1.10S-D472-1.5...	.043	.354	1.42	1.42				
.047			6.0SIR1.10M-D472-1.5...1-SIDE	6.0SIR1.10M-D472-1.5...	.043	.630	1.69	1.97				
.047			6.0SIR1.10L-D472-1.5...1-SIDE	6.0SIR1.10L-D472-1.5...	.043	.827	1.97	2.36				
.055			6.0SIR1.30S-D472-1.5...1-SIDE	6.0SIR1.30S-D472-1.5...	.051	.354	1.42	1.42				
.055			6.0SIR1.30M-D472-1.5...1-SIDE	6.0SIR1.30M-D472-1.5...	.051	.630	1.69	1.97				
.055			6.0SIR1.30L-D472-1.5...1-SIDE	6.0SIR1.30L-D472-1.5...	.051	.827	1.97	2.36				

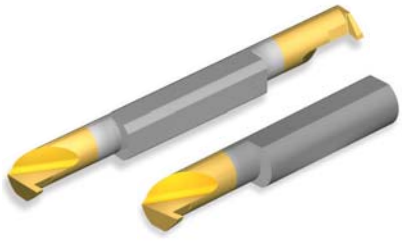
continued on next page

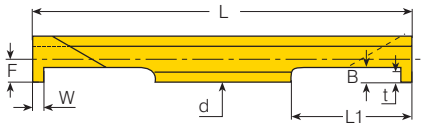


Square Groove

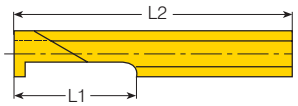
Internal







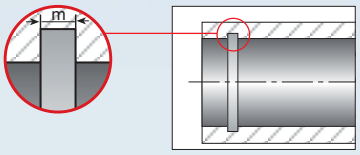
RH-Double Ended



RH-Single Ended

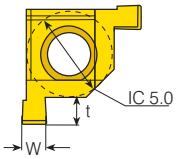
Micro DIN 472 (con't)

Groove dimensions		Insert dia.	Ordering Code		Groove Std.	Dimensions inch						Min. Bore dia.
W	t	d mm	RH-Single Ended	RH-Double Ended	m (H13)	L1	L2	L	B	F	Holder	
.067	.059	6.0	6.0SIR1.60S-D472-1.5...1-SIDE	6.0SIR1.60S-D472-1.5...	.063	.354	1.42	1.42	.071	.114	SMC...-6.0	.240
.067			6.0SIR1.60M-D472-1.5...1-SIDE	6.0SIR1.60M-D472-1.5...	.063	.630	1.69	1.97				
.067			6.0SIR1.60L-D472-1.5...1-SIDE	6.0SIR1.60L-D472-1.5...	.063	.827	1.97	2.36				
.076			6.0SIR1.85S-D472-1.5...1-SIDE	6.0SIR1.85S-D472-1.5...	.073	.354	1.42	1.42				
.076			6.0SIR1.85M-D472-1.5...1-SIDE	6.0SIR1.85M-D472-1.5...	.073	.630	1.69	1.97				
.076			6.0SIR1.85L-D472-1.5...1-SIDE	6.0SIR1.85L-D472-1.5...	.073	.827	1.97	2.36				
.088			6.0SIR2.15S-D472-1.5...1-SIDE	6.0SIR2.15S-D472-1.5...	.085	.354	1.42	1.42				
.088			6.0SIR2.15M-D472-1.5...1-SIDE	6.0SIR2.15M-D472-1.5...	.085	.630	1.69	1.97				
.088			6.0SIR2.15L-D472-1.5...1-SIDE	6.0SIR2.15L-D472-1.5...	.085	.827	1.97	2.36				
.047	.079	8.0	8.0SIR1.10M-D472-2.0...1-SIDE	8.0SIR1.10M-D472-2.0...	.043	.790	2.48	2.76	.098	.154	SMC...-8.0	.331
.055	.079		8.0SIR1.30M-D472-2.0...1-SIDE	8.0SIR1.30M-D472-2.0...	.051	.790	2.48	2.76	.098			
.067	.098		8.0SIR1.60M-D472-2.5...1-SIDE	8.0SIR1.60M-D472-2.5...	.063	.790	2.48	2.76	.118			
.076	.098		8.0SIR1.85M-D472-2.5...1-SIDE	8.0SIR1.85M-D472-2.5...	.073	.790	2.48	2.76	.118			
.088	.118		8.0SIR2.15M-D472-3.0...1-SIDE	8.0SIR2.15M-D472-3.0...	.085	.790	2.48	2.76	.138			
.108	.138		8.0SIR2.65M-D472-3.5...1-SIDE	8.0SIR2.65M-D472-3.5...	.104	.790	2.48	2.76	.157			
.130	.138		8.0SIR3.15M-D472-3.5...1-SIDE	8.0SIR3.15M-D472-3.5...	.124	.790	2.48	2.76	.157			
.055	.138	10.0	10.0SIR1.30M-D472-3.5...1-SIDE	10.0SIR1.30M-D472-3.5...	.051	.980	2.80	3.15	.157	.193	SMC...-10.0	.409
.067			10.0SIR1.60M-D472-3.5...1-SIDE	10.0SIR1.60M-D472-3.5...	.063	.980	2.80	3.15				
.076			10.0SIR1.85M-D472-3.5...1-SIDE	10.0SIR1.85M-D472-3.5...	.073	.980	2.80	3.15				
.088			10.0SIR2.15M-D472-3.5...1-SIDE	10.0SIR2.15M-D472-3.5...	.085	.980	2.80	3.15				
.108			10.0SIR2.65M-D472-3.5...1-SIDE	10.0SIR2.65M-D472-3.5...	.104	.980	2.80	3.15				
.129			10.0SIR3.15M-D472-3.5...1-SIDE	10.0SIR3.15M-D472-3.5...	.124	.980	2.80	3.15				
.168			10.0SIR4.15M-D472-3.5...1-SIDE	10.0SIR4.15M-D472-3.5...	.163	.980	2.80	3.15				
.208			10.0SIR5.15M-D472-3.5...1-SIDE	10.0SIR5.15M-D472-3.5...	.202	.980	2.80	3.15				



Square Groove

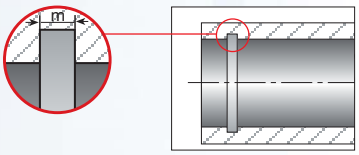
Internal



Mini-L
(Partial Profile)

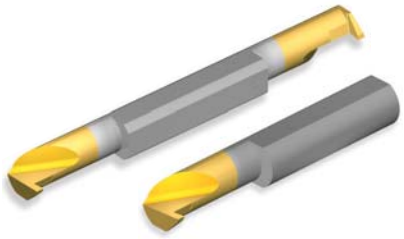
Mini-L DIN 472 (Partial Profile)

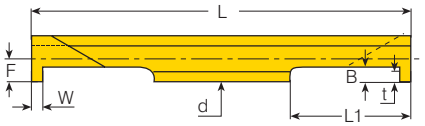
Groove dimensions		Insert size	Ordering Code	Groove Std.	Min. Bore dia.	Holder
W	t	IC		m (H13)		
.039	.028	5.0L	5LIR0.9-D472-0.7	.035	.315	.NVR...-5L
.047	.039		5LIR1.1-D472-1.0	.043		
.055	.051		5LIR1.3-D472-1.5	.051		



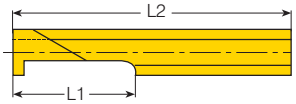
Square Groove

Internal





RH-Double Ended

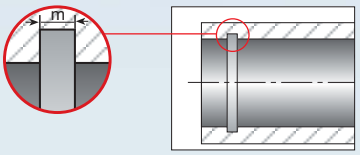


RH-Single Ended

Micro (Partial Profile) Circlip Inch Standard

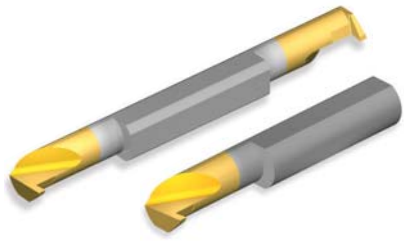
Groove dimensions		Insert dia.	Ordering Code		Dimensions inch						Min. Bore dia.
W	t	d mm	RH-Single Ended	RH-Double Ended	L1	L2	L	B	F	Holder	
.027	.023	3.0	3.0SIR.027S-CIRC-.02...1-SIDE	3.0SIR.027S-CIRC-.02...	.354	1.42	1.42	.035	.055	SMC0..-3.0	.126
.027			3.0SIR.027M-CIRC-.02...1-SIDE	3.0SIR.027M-CIRC-.02...	.630	1.69	1.97				
.031			3.0SIR.031S-CIRC-.02...1-SIDE	3.0SIR.031S-CIRC-.02...	.354	1.42	1.42				
.031			3.0SIR.031M-CIRC-.02...1-SIDE	3.0SIR.031M-CIRC-.02...	.630	1.69	1.97				
.041			3.0SIR.041S-CIRC-.02...1-SIDE	3.0SIR.041S-CIRC-.02...	.354	1.42	1.42				
.041			3.0SIR.041M-CIRC-.02...1-SIDE	3.0SIR.041M-CIRC-.02...	.630	1.69	1.97				
.046	.043		3.0SIR.046S-CIRC-.04...1-SIDE	3.0SIR.046S-CIRC-.04...	.354	1.42	1.42	.055			
.046			3.0SIR.046M-CIRC-.04...1-SIDE	3.0SIR.046M-CIRC-.04...	.630	1.69	1.97				
.027	.043	4.0	4.0SIR.027S-CIRC-.04...1-SIDE	4.0SIR.027S-CIRC-.04...	.354	1.42	1.42	.055	.074	SMC..-4.0	.165
.027			4.0SIR.027M-CIRC-.04...1-SIDE	4.0SIR.027M-CIRC-.04...	.630	1.69	1.97				
.027			4.0SIR.027L-CIRC-.04...1-SIDE	4.0SIR.027L-CIRC-.04...	.827	1.97	2.36				
.031			4.0SIR.031S-CIRC-.04...1-SIDE	4.0SIR.031S-CIRC-.04...	.354	1.42	1.42				
.031			4.0SIR.031M-CIRC-.04...1-SIDE	4.0SIR.031M-CIRC-.04...	.630	1.69	1.97				
.031			4.0SIR.031L-CIRC-.04...1-SIDE	4.0SIR.031L-CIRC-.04...	.827	1.97	2.36				
.041			4.0SIR.041S-CIRC-.04...1-SIDE	4.0SIR.041S-CIRC-.04...	.354	1.42	1.42				
.041			4.0SIR.041M-CIRC-.04...1-SIDE	4.0SIR.041M-CIRC-.04...	.630	1.69	1.97				
.041			4.0SIR.041L-CIRC-.04...1-SIDE	4.0SIR.041L-CIRC-.04...	.827	1.97	2.36				
.046			4.0SIR.047S-CIRC-.04...1-SIDE	4.0SIR.047S-CIRC-.04...	.354	1.42	1.42				
.046			4.0SIR.047M-CIRC-.04...1-SIDE	4.0SIR.047M-CIRC-.04...	.630	1.69	1.97				
.046			4.0SIR.047L-CIRC-.04...1-SIDE	4.0SIR.047L-CIRC-.04...	.827	1.97	2.36				
.058			4.0SIR.058S-CIRC-.04...1-SIDE	4.0SIR.058S-CIRC-.04...	.354	1.42	1.42				
.058			4.0SIR.058M-CIRC-.04...1-SIDE	4.0SIR.058M-CIRC-.04...	.630	1.69	1.97				
.058			4.0SIR.058L-CIRC-.04...1-SIDE	4.0SIR.058L-CIRC-.04...	.827	1.97	2.36				
.062	.059		4.0SIR.062S-CIRC-.06...1-SIDE	4.0SIR.062S-CIRC-.06...	.354	1.42	1.42	.071			
.062			4.0SIR.062M-CIRC-.06...1-SIDE	4.0SIR.062M-CIRC-.06...	.630	1.69	1.97				
.062			4.0SIR.062L-CIRC-.06...1-SIDE	4.0SIR.062L-CIRC-.06...	.827	1.97	2.36				
.078			4.0SIR.078S-CIRC-.06...1-SIDE	4.0SIR.078S-CIRC-.06...	.354	1.42	1.42				
.078			4.0SIR.078M-CIRC-.06...1-SIDE	4.0SIR.078M-CIRC-.06...	.630	1.69	1.97				
.078			4.0SIR.078L-CIRC-.06...1-SIDE	4.0SIR.078L-CIRC-.06...	.827	1.97	2.36				

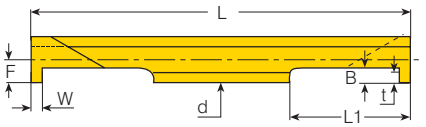
continued on next page ▸



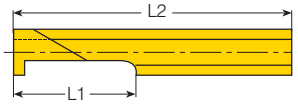
Square Groove

Internal





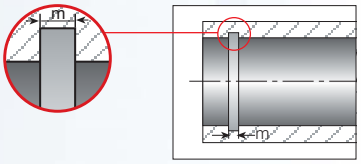
RH-Double Ended



RH-Single Ended

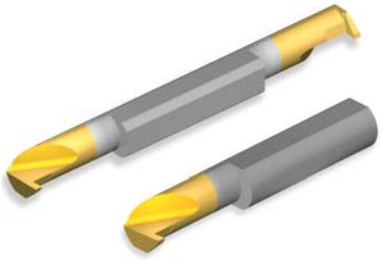
Micro (Partial Profile) Circlip Inch Standard (con't)

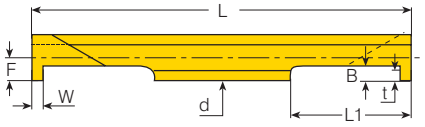
Groove dimensions		Insert dia.	Ordering Code		Dimensions inch						Min. Bore dia.
W	t	d mm	RH-Single Ended	RH-Double Ended	L1	L2	L	B	F	Holder	
.046	.059	6.0	6.0SIR.046S-CIRC-.06...1-SIDE	6.0SIR.046S-CIRC-.06...	.354	1.42	1.42	.071	.114	SMC0..-4.0	.244
.046			6.0SIR.046M-CIRC-.06...1-SIDE	6.0SIR.046M-CIRC-.06...	.630	1.69	1.97				
.046			6.0SIR.046L-CIRC-.06...1-SIDE	6.0SIR.046L-CIRC-.06...	.827	1.97	2.36				
.058			6.0SIR.058S-CIRC-.06...1-SIDE	6.0SIR.058S-CIRC-.06...	.354	1.42	1.42				
.058			6.0SIR.058M-CIRC-.06...1-SIDE	6.0SIR.058M-CIRC-.06...	.630	1.69	1.97				
.058			6.0SIR.058L-CIRC-.06...1-SIDE	6.0SIR.058L-CIRC-.06...	.827	1.97	2.36				
.062			6.0SIR.062S-CIRC-.06...1-SIDE	6.0SIR.062S-CIRC-.06...	.354	1.42	1.42				
.062			6.0SIR.062M-CIRC-.06...1-SIDE	6.0SIR.062M-CIRC-.06...	.630	1.69	1.97				
.062			6.0SIR.062L-CIRC-.06...1-SIDE	6.0SIR.062L-CIRC-.06...	.827	1.97	2.36				
.072			6.0SIR.072S-CIRC-.06...1-SIDE	6.0SIR.072S-CIRC-.06...	.354	1.42	1.42				
.072			6.0SIR.072M-CIRC-.06...1-SIDE	6.0SIR.072M-CIRC-.06...	.630	1.69	1.97				
.072			6.0SIR.072L-CIRC-.06...1-SIDE	6.0SIR.072L-CIRC-.06...	.827	1.97	2.36				
.078			6.0SIR.078S-CIRC-.06...1-SIDE	6.0SIR.078S-CIRC-.06...	.354	1.42	1.42				
.078			6.0SIR.078M-CIRC-.06...1-SIDE	6.0SIR.078M-CIRC-.06...	.630	1.69	1.97				
.078			6.0SIR.078L-CIRC-.06...1-SIDE	6.0SIR.078L-CIRC-.06...	.827	1.97	2.36				
.088			6.0SIR.088S-CIRC-.06...1-SIDE	6.0SIR.088S-CIRC-.06...	.354	1.42	1.42				
.088			6.0SIR.088M-CIRC-.06...1-SIDE	6.0SIR.088M-CIRC-.06...	.630	1.69	1.97				
.088			6.0SIR.088L-CIRC-.06...1-SIDE	6.0SIR.088L-CIRC-.06...	.827	1.97	2.36				
.094	.069		6.0SIR.094S-CIRC-.07...1-SIDE	6.0SIR.094S-CIRC-.07...	.354	1.42	1.42	.079			
.094			6.0SIR.094M-CIRC-.07...1-SIDE	6.0SIR.094M-CIRC-.07...	.630	1.69	1.97				
.094			6.0SIR.094L-CIRC-.07...1-SIDE	6.0SIR.094L-CIRC-.07...	.827	1.97	2.36				
.097			6.0SIR.097S-CIRC-.07...1-SIDE	6.0SIR.097S-CIRC-.07...	.354	1.42	1.42				
.097			6.0SIR.097M-CIRC-.07...1-SIDE	6.0SIR.097M-CIRC-.07...	.630	1.69	1.97				
.097			6.0SIR.097L-CIRC-.07...1-SIDE	6.0SIR.097L-CIRC-.07...	.827	1.97	2.36				
.105			6.0SIR.105S-CIRC-.07...1-SIDE	6.0SIR.105S-CIRC-.07...	.354	1.42	1.42				
.105			6.0SIR.105M-CIRC-.07...1-SIDE	6.0SIR.105M-CIRC-.07...	.630	1.69	1.97				
.105			6.0SIR.105L-CIRC-.07...1-SIDE	6.0SIR.105L-CIRC-.07...	.827	1.97	2.36				



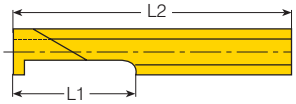
Square Groove (DIN 3770)

Internal





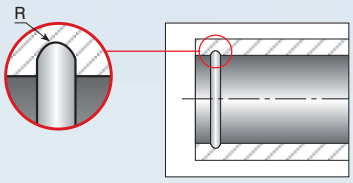
RH-Double Ended



RH-Single Ended

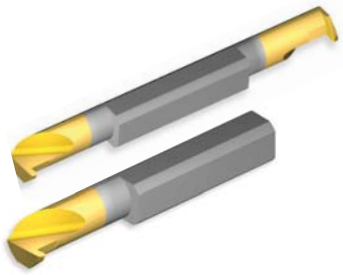
Micro DIN 3770

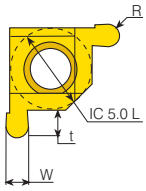
Groove dimensions		Insert dia.	Ordering Code		Groove Std.	Dimensions inch					Min. Bore dia.
W	t	d mm	RH-Single Ended	RH-Double Ended	m (H13)	L1	L2	L	B	F	Holder	
.078	.059	6.0	6.0SIR1.6S-D3770S-1.5...1-SIDE	6.0SIR1.6S-D3770S-1.5...	.063	.354	1.42	1.417	.071	.114	SMC..-6.0	.240
.078			6.0SIR1.6M-D3770S-1.5...1-SIDE	6.0SIR1.6M-D3770S-1.5...	.063	.630	1.69	1.969				
.078			6.0SIR1.6L-D3770S-1.5...1-SIDE	6.0SIR1.6L-D3770S-1.5...	.063	.827	1.97	2.362				
.094	.071		6.0SIR2.0S-D3770D-1.8...1-SIDE	6.0SIR2.0S-D3770D-1.8...	.079	.354	1.42	1.417	.079			
.094			6.0SIR2.0M-D3770D-1.8...1-SIDE	6.0SIR2.0M-D3770D-1.8...	.079	.630	1.69	1.969				
.094			6.0SIR2.0L-D3770D-1.8...1-SIDE	6.0SIR2.0L-D3770D-1.8...	.079	.827	1.97	2.362				



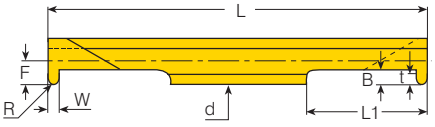
Round Groove

Internal

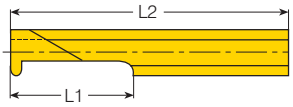




Mini-L
(Partial Profile)



RH-Double Ended



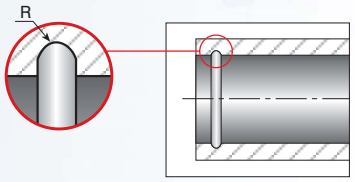
RH-Single Ended

Micro (Partial Profile) DIN 7993 Snap Ring

Groove dimensions		Insert dia.	Ordering Code		Groove Std.	Dimensions inch						Min. Bore dia.
W	t	d mm	RH-Single Ended	RH-Double Ended	R	L1	L2	L	B	F	Holder	
.031	.024	3.0	3.0SIR0.4S-D7993-0.6...1-SIDE	3.0SIR0.4S-D7993-0.6...	.016	.354	1.42	1.42	.031	.055	SMC..-3.0	.128
.031			3.0SIR0.4M-D7993-0.6...1-SIDE	3.0SIR0.4M-D7993-0.6...	.016	.630	1.69	1.97				
.031	.024	4.0	4.0SIR0.4S-D7993-0.6...1-SIDE	4.0SIR0.4S-D7993-0.6...	.016	.354	1.42	1.42	.035	.075	SMC..-4.0	.161
.031			4.0SIR0.4M-D7993-0.6...1-SIDE	4.0SIR0.4M-D7993-0.6...	.016	.630	1.69	1.97				
.031	.031		4.0SIR0.4L-D7993-0.8...1-SIDE	4.0SIR0.4L-D7993-0.8...	.016	.827	1.97	2.36	.043			
.047			4.0SIR0.6S-D7993-0.8...1-SIDE	4.0SIR0.6S-D7993-0.8...	.024	.354	1.42	1.42				
.047			4.0SIR0.6M-D7993-0.8...1-SIDE	4.0SIR0.6M-D7993-0.8...	.024	.630	1.69	1.97				
.047			4.0SIR0.6L-D7993-0.8...1-SIDE	4.0SIR0.6L-D7993-0.8...	.024	.827	1.97	2.36				
.071	.043		4.0SIR0.9S-D7993-1.1...1-SIDE	4.0SIR0.9S-D7993-1.1...	.035	.354	1.42	1.42	.055			
.071			4.0SIR0.9M-D7993-1.1...1-SIDE	4.0SIR0.9M-D7993-1.1...	.035	.630	1.69	1.97				
.071			4.0SIR0.9L-D7993-1.1...1-SIDE	4.0SIR0.9L-D7993-1.1...	.035	.827	1.97	2.36				
.071	.043	6.0	6.0SIR0.9S-D7993-1.1...1-SIDE	6.0SIR0.9S-D7993-1.1...	.035	.354	1.42	1.42	.055	.114	SMC..-6.0	.240
.071			6.0SIR0.9M-D7993-1.1...1-SIDE	6.0SIR0.9M-D7993-1.1...	.035	.630	1.69	1.97				
.071			6.0SIR0.9L-D7993-1.1...1-SIDE	6.0SIR0.9L-D7993-1.1...	.035	.827	1.97	2.36				
.079	.047		6.0SIR1.0S-D7993-1.2...1-SIDE	6.0SIR1.0S-D7993-1.2...	.039	.354	1.42	1.42	.059			
.079			6.0SIR1.0M-D7993-1.2...1-SIDE	6.0SIR1.0M-D7993-1.2...	.039	.630	1.69	1.97				
.079			6.0SIR1.0L-D7993-1.2...1-SIDE	6.0SIR1.0L-D7993-1.2...	.039	.827	1.97	2.36				
.087	.051		6.0SIR1.1S-D7993-1.3...1-SIDE	6.0SIR1.1S-D7993-1.3...	.043	.354	1.42	1.42	.063			
.087			6.0SIR1.1M-D7993-1.3...1-SIDE	6.0SIR1.1M-D7993-1.3...	.043	.630	1.69	1.97				
.087			6.0SIR1.1L-D7993-1.3...1-SIDE	6.0SIR1.1L-D7993-1.3...	.043	.827	1.97	2.36				
.071	.079	8.0	8.0SIR0.9M-D7993-2.0...1-SIDE	8.0SIR0.9M-D7993-2.0...	.035	.787	2.48	2.76	.098	.154	SMC..-8.0	.331
.087			8.0SIR1.1M-D7993-2.0...1-SIDE	8.0SIR1.1M-D7993-2.0...	.043	.787	2.48	2.76				
.110			8.0SIR1.4M-D7993-2.0...1-SIDE	8.0SIR1.4M-D7993-2.0...	.055	.787	2.48	2.76				
.110	.114	10.0	10.0SIR1.4M-D7993-2.9...1-SIDE	10.0SIR1.4M-D7993-2.9...	.055	.984	2.80	3.15	.134	.193	SMC..-10.0	.409
.142			10.0SIR1.8M-D7993-2.9...1-SIDE	10.0SIR1.8M-D7993-2.9...	.071	.984	2.80	3.15				

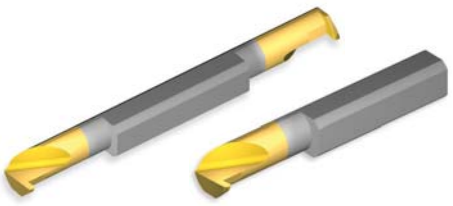
Mini-L (Partial Profile) DIN 7993 Snap Ring

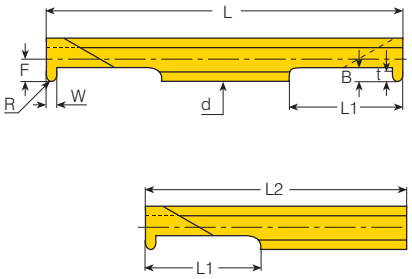
Groove dimensions		Insert size	Ordering Code	Dimensions inch	Minimum Bore dia	Holder
W	t	IC	RH	R		
.031	.031	5.0L	5LIR0.4-D7993-0.8	.016	.315	.NVR...-5L
.047	.039		5LIR0.6-D7993-1.0	.024		



Round Groove (Cont')

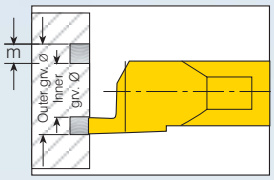
Internal





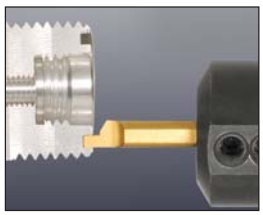
Micro (Partial Profile) Snap Ring Inch Standard

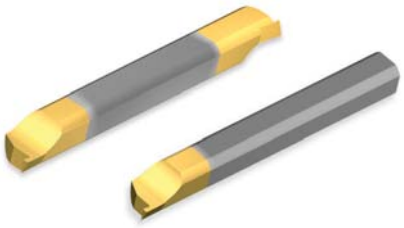
Groove dimensions		Insert dia.	Ordering Code		Groove Std.	Dimensions inch						Min. Bore dia.
W	t	d mm	RH-Single Ended	RH-Double Ended	R	L1	L2	L	B	F	Holder	
.030	.024	3.0	3.0SIR.015S-SNAP-.02...1-SIDE	3.0SIR.015S-SNAP-.02...	.015	.354	1.42	1.42	.035	.055	SMC0...-3.0	.126
.030			3.0SIR.015M-SNAP-.02...1-SIDE	3.0SIR.015M-SNAP-.02...	.015	.630	1.69	1.97				
.030	.024	4.0	4.0SIR.015S-SNAP-.02...1-SIDE	4.0SIR.015S-SNAP-.02...	.015	.354	1.42	1.42	.035	.075	SMC0...-4.0	.161
.030			4.0SIR.015M-SNAP-.02...1-SIDE	4.0SIR.015M-SNAP-.02...	.015	.630	1.69	1.97				
.030			4.0SIR.015L-SNAP-.02...1-SIDE	4.0SIR.015L-SNAP-.02...	.015	.827	1.97	2.36				
.047	.035		4.0SIR.023S-SNAP-.03...1-SIDE	4.0SIR.023S-SNAP-.03...	.023	.354	1.42	1.42	.047			
.047			4.0SIR.023M-SNAP-.03...1-SIDE	4.0SIR.023M-SNAP-.03...	.023	.630	1.69	1.97				
.047			4.0SIR.023L-SNAP-.03...1-SIDE	4.0SIR.023L-SNAP-.03...	.023	.827	1.97	2.36				
.062	.047		4.0SIR.031S-SNAP-.05...1-SIDE	4.0SIR.031S-SNAP-.05...	.031	.354	1.42	1.42	.059			
.062			4.0SIR.031M-SNAP-.05...1-SIDE	4.0SIR.031M-SNAP-.05...	.031	.630	1.69	1.97				
.062			4.0SIR.031L-SNAP-.05...1-SIDE	4.0SIR.031L-SNAP-.05...	.031	.827	1.97	2.36				
.062	.051	6.0	6.0SIR.031S-SNAP-.05...1-SIDE	6.0SIR.031S-SNAP-.05...	.031	.354	1.42	1.42	.063	.114	SMC0...-6.0	.240
.062			6.0SIR.031M-SNAP-.05...1-SIDE	6.0SIR.031M-SNAP-.05...	.031	.630	1.69	1.97				
.062			6.0SIR.031L-SNAP-.05...1-SIDE	6.0SIR.031L-SNAP-.05...	.031	.827	1.97	2.36				
.072			6.0SIR.036S-SNAP-.05...1-SIDE	6.0SIR.036S-SNAP-.05...	.036	.354	1.42	1.42				
.072			6.0SIR.036M-SNAP-.05...1-SIDE	6.0SIR.036M-SNAP-.05...	.036	.630	1.69	1.97				
.072			6.0SIR.036L-SNAP-.05...1-SIDE	6.0SIR.036L-SNAP-.05...	.036	.827	1.97	2.36				
.078			6.0SIR.039S-SNAP-.05...1-SIDE	6.0SIR.039S-SNAP-.05...	.039	.354	1.42	1.42				
.078			6.0SIR.039M-SNAP-.05...1-SIDE	6.0SIR.039M-SNAP-.05...	.039	.630	1.69	1.97				
.078			6.0SIR.039L-SNAP-.05...1-SIDE	6.0SIR.039L-SNAP-.05...	.039	.827	1.97	2.36				
.094			6.0SIR.047S-SNAP-.05...1-SIDE	6.0SIR.047S-SNAP-.05...	.047	.354	1.42	1.42				
.094			6.0SIR.047M-SNAP-.05...1-SIDE	6.0SIR.047M-SNAP-.05...	.047	.630	1.69	1.97				
.094			6.0SIR.047L-SNAP-.05...1-SIDE	6.0SIR.047L-SNAP-.05...	.047	.827	1.97	2.36				
.125	.067		6.0SIR.062S-SNAP-.07...1-SIDE	6.0SIR.062S-SNAP-.07...	.062	.354	1.42	1.42	.079			
.125			6.0SIR.062M-SNAP-.07...1-SIDE	6.0SIR.062M-SNAP-.07...	.062	.630	1.69	1.97				
.125			6.0SIR.062L-SNAP-.07...1-SIDE	6.0SIR.062L-SNAP-.07...	.062	.827	1.97	2.36				

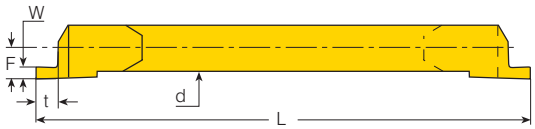


Face Groove

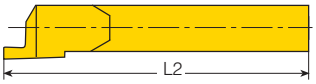
Internal







RH-Double Ended



RH-Single Ended

Micro (Partial Profile) Circlip

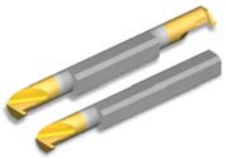
Groove dimensions		Insert dia.	Ordering Code		Dimensions inch				Inner Groove Ø	Outer Groove Ø
W	t	d mm	RH-Single Ended	RH-Double Ended	L	L2	F	Sleeve		
.031	.043	4.0	4.0SIR.031A-CIRC-.055...1-SIDE	4.0SIR.031A-CIRC-.055...	1.969	1.69	.076	SMC...-4.0	.138	.198
.041	.051		4.0SIR.041A-CIRC-.063...1-SIDE	4.0SIR.041A-CIRC-.063...					.130	.212
.047	.059		4.0SIR.047A-CIRC-.071...1-SIDE	4.0SIR.047A-CIRC-.071...					.122	.216
.058	.075		4.0SIR.058A-CIRC-.082...1-SIDE	4.0SIR.058A-CIRC-.082...					.110	.226
.062	.083		4.0SIR.062A-CIRC-.086...1-SIDE	4.0SIR.062A-CIRC-.086...					.106	.230
.031	.043	6.0	6.0SIR.031A-CIRC-.055...1-SIDE	6.0SIR.031A-CIRC-.055...	1.969	.1.69	.126	SMC...-6.0	.216	.276
.041	.051		6.0SIR.041A-CIRC-.063...1-SIDE	6.0SIR.041A-CIRC-.063...					.209	.291
.047	.059		6.0SIR.047A-CIRC-.071...1-SIDE	6.0SIR.047A-CIRC-.071...					.200	.294
.058	.075		6.0SIR.058A-CIRC-.082...1-SIDE	6.0SIR.058A-CIRC-.082...					.189	.305
.062	.083		6.0SIR.062A-CIRC-.086...1-SIDE	6.0SIR.062A-CIRC-.086...					.185	.309
.072	.087		6.0SIR.072A-CIRC-.094...1-SIDE	6.0SIR.072A-CIRC-.094...					.177	.321
.078	.087		6.0SIR.078A-CIRC-.088...1-SIDE	6.0SIR.078A-CIRC-.088...					.169	.325
.088	.088		6.0SIR.088A-CIRC-.110...1-SIDE	6.0SIR.088A-CIRC-.110...					.161	.337

Recommended Grades, Cutting Speeds Vc [ft/min] and Feed f [inch/rev]

	Material		Hardness Brinell HB	Vc[ft/min] Coated			Feed f [inch/rev]	
				Micro Grooving VMX	Mini Grooving VKP	Mini Grooving VHX	Laydown & Mini Grooving	Micro Grooving
P	Unalloyed steel	Low carbon (C=0.1-0.25 %)	125	164-394	459-656	66-164	.0012	.0012
		Medium carbon (C=0.25-0.55 %)	150	131-328	394-590	49-131	.0006	.0008
		High carbon (C=0.55-0.85 %)	170	98-262	361-590	49-98	.0020	.0006
	Low alloy steel (alloying elements ≤ 5%)	Non hardened	180	164-230	328-508	66-148	.0098	.0008
		Hardened	275	131-197	295-476	33-82	.0039	.0006
		Hardened	350	98-164	262-443	33-82	.0020	.0004
	High alloy steel (alloying elements > 5%)	Annealed	200	98-164	213-377		.0079	.0008
		Hardened	325	82-131	164-328		.0020	.0004
	Cast steel	Low alloy (alloying elements <5%)	200	98-164	98-164	82-164	.0079	.0008
		High alloy (alloying elements >5%)	225	82-131	82-131	66-131	.0020	.0008
M	Stainless steel Ferritic	Non hardened	200	197-328	262-394		.0079	.0006
		Hardened	330	131-197	180-312		.0020	.0004
	Stainless steel Austenitic	Austenitic	180	164-295	197-328		.0079	.0006
		Super austenitic	200	131-197	164-295		.0020	.0006
	Stainless steel Cast ferritic	Non hardened	200	131-197	197-262		.0079	.0008
		Hardened	330	98-164	148-213		.0020	.0004
	Stainless steel Cast austenitic	Austenitic	200	131-197	164-230		.0079	.0008
		Hardened	330	98-164	131-197		.0020	.0004
	High temperature alloys	Annealed (Iron based)	200	82-148	82-148		.0079	.0006
		Aged (Iron based)	280	66-98	66-98		.0020	.0004
		Annealed (Nickel or Cobalt based)	250	49-66	49-66		.0020	.0006
		Aged (Nickel or Cobalt based)	350	33-49	33-49		.0020	.0004
	Titanium alloys	Pure 99.5 Ti	400Rm	197-328	197-328		.0039	.0008
		α+β alloys	1050Rm	131-164	131-164		.0020	.0008
K	Extra hard steel	Hardened & tempered	55HRc	66-131	66-131		.0008	.0004
	Malleable cast iron	Ferritic (short chips)	130	164-230	197-262		.0079	.0008
		Pearlitic (long chips)	230	164-233	197-262		.0006	.0004
	Grey cast iron	Low tensile strength	180	164-236	197-262		.0079	.0008
		High tensile strength	260	131-197	131-230		.0039	.0006
	Nodular SG iron	Ferritic	160	164-230	197-262		.0079	.0008
		Pearlitic	260	197-262	230-295		.0039	.0006
	Aluminium alloys Wrought	non aging	60	328-984	262-787	98-197	.0016	.0012
		Aged	100	328-492	328-558	82-164	.0039	.0012
	Aluminium alloys	Cast	75	328-492	328-492	82-164	.0098	.0012
		Cast & aged	90	197-328	197-328	66-131	.0059	.0012
	Aluminium alloys	Cast Si 13-22%	130	328-492	328-492	49-98	.0059	.0012
	Copper and copper alloys	Brass	90	197-328	262-656	49-115	.0012	.0012
		Bronze and non leaded copper	100	197-328	262-656	49-115	.0059	.0012

Grades and Applications

VMX



General use carbide grade for Micro inserts. TiN coated.

VHX

General use HSS grade for Mini inserts. For machining at low cutting speed. TiN coated.

VKP

General use carbide grade for Mini inserts. TiN coated.

VARGUS

Take a closer Look...

MINIPRO Boring

Vardex Ordering Code System

PowerBore Inserts

T	D	0	W	41	14	VTX
1	2	3	4	5	6	7

1 - Insert Shape

C - Diamond 80 deg.

T - Triangle

W - Trigon 80 deg.

2 - Clearance Angle

C - 7 deg.
D - 15 deg.

3 - Tolerance Class

0 - Special Tolerance Class

4 - Insert Type

W - Hole + Countersink

5 - Insert Dimension

40-IC 0.156" - Thickness - .040"
41-IC 0.160" - Thickness - .047"
42-IC 0.156" - Thickness - .062"
50-IC 0.187" - Thickness - .094"

6 - Corner Radius

11 - R .002
12 - R .007
13 - R .008
14 - R .015

7 - Carbide Grade

VTX

Micro Boring Inserts

6.0	S	I	R	0.2	M		Bore		1	VMX	1-Side
1	2	3	4	5	6		7		8	9	10

1 - Insert Dia. (mm)

3.0
4.0
6.0
8.0
10.0

2 - Tool Group

S - Solid Carbide

3 - Type of Insert

I - Internal

4 - Hand of Insert

R - Right Hand Insert
L - Left Hand Insert

5 - Corner Radius (mm)

0.2

6 - Tool Length

S - Short
M - Medium
L - Long

7 - Tool Application

Bore
Copy
Chamfer
Back
3527, 3537, 3547-Long Nose
BD-Bore Drill

8 - Front Relief

1 - With Relief
0 - Without Relief

9 - Carbide Grade

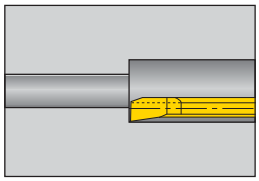
VMX

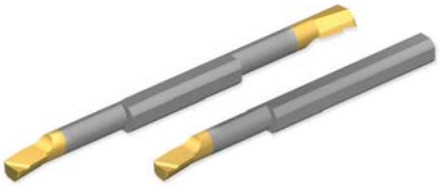
10 - Micro Ended

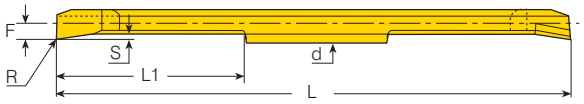
1-Side - Single Ended
None - Double Ended

Boring

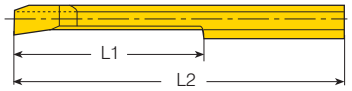
Internal







RH-Double Ended



RH-Single Ended

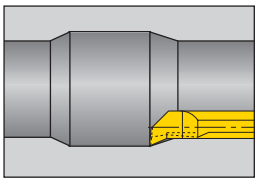
Micro

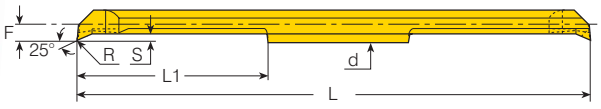
Insert dia.	Ordering Code		Dimensions Inch						Holder	Min. Bore dia.
d mm	**RH-**Single Ended	**RH-**Double Ended	R	L	L1	L2	F	S		
3.0	3.0SIR0.2S-Bore-1...1-SIDE	3.0SIR0.2S-Bore-1...	.008	1.417	.354	1.417	.056	.026	SMC..-3.0	.126
	3.0SIR0.2M-Bore-1...1-SIDE	3.0SIR0.2M-Bore-1...	.008	1.969	.630	1.692	.056	.026		
4.0	4.0SIR0.2S-Bore-1...1-SIDE	4.0SIR0.2S-Bore-1...	.008	1.417	.354	1.417	.076	.026	SMC..-4.0	.165
	4.0SIR0.2M-Bore-1...1-SIDE	4.0SIR0.2M-Bore-1...	.008	1.969	.630	1.692	.076	.026		
	4.0SIR0.2L-Bore-1...1-SIDE	4.0SIR0.2L-Bore-1...	.008	2.382	.827	1.969	.076	.026		
6.0	6.0SIR0.2S-Bore-1...1-SIDE	6.0SIR0.2S-Bore-1...	.008	1.417	.354	1.417	.115	.030	SMC..-6.0	.244
	6.0SIR0.2M-Bore-1...1-SIDE	6.0SIR0.2M-Bore-1...	.008	1.969	.630	1.692	.115	.030		
	6.0SIR0.2L-Bore-1...1-SIDE	6.0SIR0.2L-Bore-1...	.008	2.382	.827	1.969	.115	.030		
8.0	8.0SIR0.2S-Bore-1...1-SIDE	8.0SIR0.2S-Bore-1...	.008	2.126	.472	2.126	.154	.032	SMC..-8.0	.323
	8.0SIR0.2M-Bore-1...1-SIDE	8.0SIR0.2M-Bore-1...	.008	2.756	.787	2.480	.154	.032		
	8.0SIR0.2L -Bore-1...1-SIDE	8.0SIR0.2L -Bore-1...	.008	3.386	1.102	2.756	.154	.032		
10.0	10.0SIR0.2S-Bore-1...1-SIDE	10.0SIR0.2S-Bore-1...	.008	2.362	.591	2.362	.194	.039	SMC..-10.0	.402
	10.0SIR0.2M-Bore-1...1-SIDE	10.0SIR0.2M-Bore-1...	.008	3.150	.984	2.795	.194	.039		
	10.0SIR0.2L-Bore-1...1-SIDE	10.0SIR0.2L-Bore-1...	.008	3.937	1.378	3.150	.194	.039		

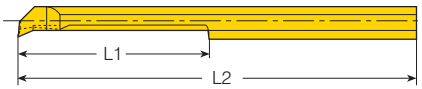
For PowerBore **holders**, see pages 51-54

Copy

Internal





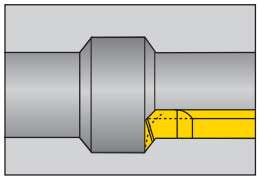


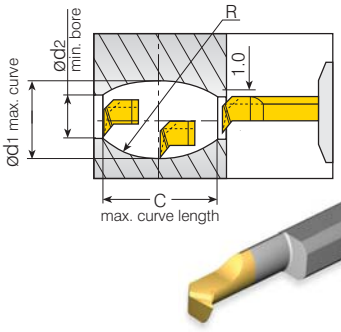
Micro

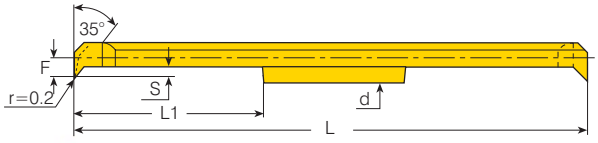
Insert dia.	Ordering Code		Dimensions inch						Holder	Min. Bore dia.
d (mm)	**RH-**Single Ended	**RH-**Double Ended	**R**	**L**	**L1**	**L2**	**F**	**S**		
4.0	4.0SIR0.2S-Copy-1...1-SIDE	4.0SIR0.2S-Copy-1...	.008	1.417	.354	1.42	.076	.039	SMC..-4.0	.165
	4.0SIR0.2M-Copy-1...1-SIDE	4.0SIR0.2M-Copy-1...	.008	1.969	.630	1.69	.076	.039		
	4.0SIR0.2L-Copy-1...1-SIDE	4.0SIR0.2L-Copy-1...	.008	2.382	.827	1.97	.076	.039		
6.0	6.0SIR0.2S-Copy-1...1-SIDE	6.0SIR0.2S-Copy-1...	.008	1.417	.354	1.42	.115	.051	SMC..-6.0	.276
	6.0SIR0.2M-Copy-1...1-SIDE	6.0SIR0.2M-Copy-1...	.008	1.969	.630	1.69	.115	.051		
	6.0SIR0.2L-Copy-1...1-SIDE	6.0SIR0.2L-Copy-1...	.008	2.382	.827	1.97	.115	.051		

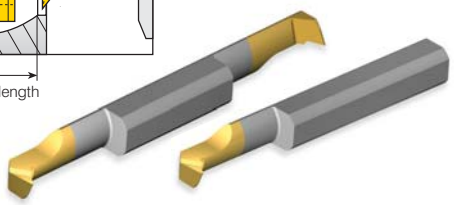
Copy (Long Nose)

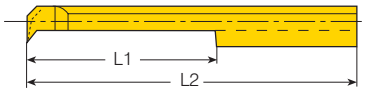
Internal











Micro

Insert dia.	Ordering Code		Dimensions Inch					Holder	Max.Curve	Min. Bore dia.
d (mm)	**RH-**Single Ended	**RH-**Double Ended	**L**	**L1**	**L2**	**F**	**S**		**d1**	**d2**
6.0	6.0SIR0.2S-3527-1...1-SIDE	6.0SIR0.2S-3527-1...	1.417	.364	1.417	.115	.106	SMC...-6.0	.48	.27
	6.0SIR0.2M-3527-1...1-SIDE	6.0SIR0.2M-3527-1...	1.969	.630	1.693	.115	.106			
	6.0SIR0.2L-3527-1...1-SIDE	6.0SIR0.2L-3527-1...	2.362	.827	1.969	.115	.106			
8.0	8.0SIR0.2S-3537-1...1-SIDE	8.0SIR0.2S-3537-1...	2.126	.472	2.126	.154	.146	SMC...-8.0	.63	.35
	8.0SIR0.2M-3537-1...1-SIDE	8.0SIR0.2M-3537-1...	2.756	.787	2.480	.154	.146			
	8.0SIR0.2L-3537-1...1-SIDE	8.0SIR0.2L-3537-1...	3.386	1.102	2.756	.154	.146			
10.0	10.0SIR0.2S-3547-1...1-SIDE	10.0SIR0.2S-3547-1...	2.362	.591	2.362	.193	.185	SMC...-10.0	.80	.43
	10.0SIR0.2M-3547-1...1-SIDE	10.0SIR0.2M-3547-1...	3.150	.984	2.795	.193	.185			
	10.0SIR0.2L-3547-1...1-SIDE	10.0SIR0.2L-3547-1...	3.937	1.378	3.150	.193	.185			

Note:

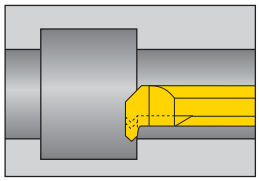
1.Radius R can be calculated using formula $R=(4S1^2+C^2)/8S$

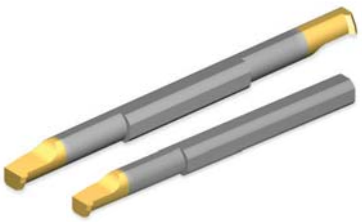
2.Curve length can be calculated using formula $C=2\sqrt{2S1 \times R-S^2}$

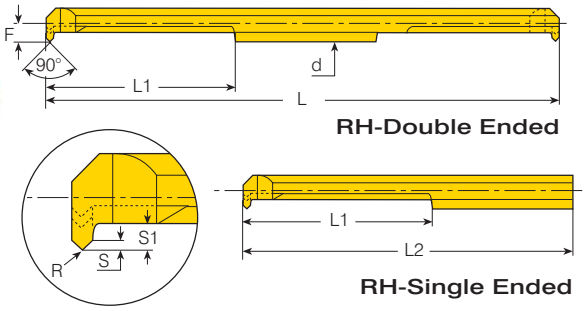
For PowerBore **holders**, see pages 51-54

Chamfer

Internal





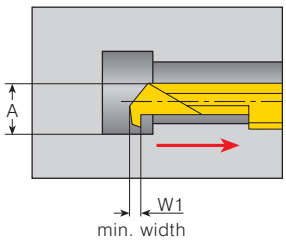


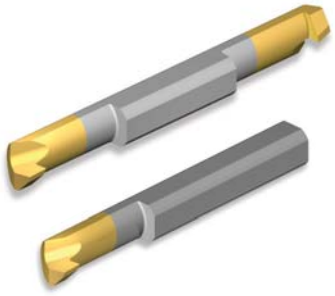
Micro

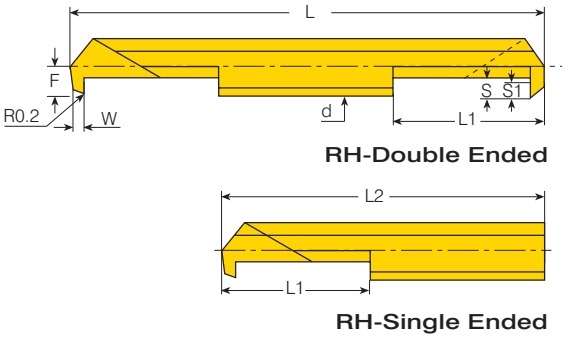
Insert dia.	Ordering Code		Dimensions Inch							Holder	Min. Bore dia.
d (mm)	RH-Single Ended	RH-Double Ended	R	L	L1	L2	F	S1	S		
4.0	4.0SIR0.2S-Chamfer-0...1-SIDE	4.0SIR0.2S-Chamfer-0...	.008	1.417	.354	1.42	.076	.031	.016	SMC...-4.0	.165
	4.0SIR0.2M-Chamfer-0...1-SIDE	4.0SIR0.2M-Chamfer-0...	.008	1.969	.630	1.69	.076	.031	.016		
	4.0SIR0.2L-Chamfer-0...1-SIDE	4.0SIR0.2L-Chamfer-0...	.008	2.382	.827	1.97	.076	.031	.016		
6.0	6.0SIR0.2S-Chamfer-0...1-SIDE	6.0SIR0.2S-Chamfer-0...	.008	1.417	.354	1.42	.115	.039	.028	SMC...-6.0	.276
	6.0SIR0.2M-Chamfer-0...1-SIDE	6.0SIR0.2M-Chamfer-0...	.008	1.969	.630	1.69	.115	.039	.028		
	6.0SIR0.2L-Chamfer-0...1-SIDE	6.0SIR0.2L-Chamfer-0...	.008	2.382	.827	1.97	.115	.039	.028		

Back Edge

Internal







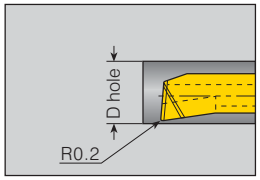
Micro

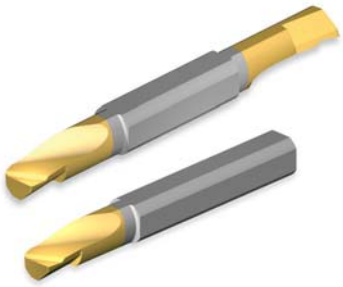
Insert dia.	Ordering Code		Dimensions Inch								
d (mm)	RH-Single Ended	RH-Double Ended	L	L1	L2	A	W	W1	F	S	S1
3.0	3.0SIR0.2S-Back-1...1-SIDE	3.0SIR0.2S-Back-1...	1.417	.354	1.417	.134	.059	.071	.056	.032	.024
	3.0SIR0.2M-Back-1...1-SIDE	3.0SIR0.2M-Back-1...	1.970	.630	1.693						
4.0	4.0SIR0.2S-Back-1...1-SIDE	4.0SIR0.2S-Back-1...	1.417	.354	1.417	.175	.079	.092	.076	.051	.039
	4.0SIR0.2M-Back-1...1-SIDE	4.0SIR0.2M-Back-1...	1.970	.630	1.693						
	4.0SIR0.2L-Back-1...1-SIDE	4.0SIR0.2L-Back-1...	2.362	.827	1.970						
6.0	6.0SIR0.2S-Back-1...1-SIDE	6.0SIR0.2S-Back-1...	1.417	.354	1.417	.254	.079	.097	.115	.075	.063
	6.0SIR0.2M-Back-1...1-SIDE	6.0SIR0.2M-Back-1...	1.970	.630	1.693						
	6.0SIR0.2L-Back-1...1-SIDE	6.0SIR0.2L-Back-1...	2.362	.827	1.970						

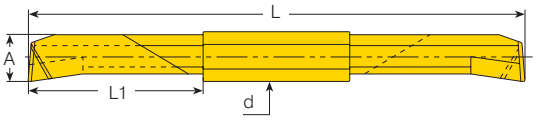
For PowerBore **holders**, see pages 51-54

Bore-Drill

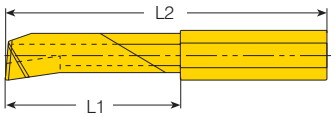
Internal







RH-Double Ended



RH-Single Ended

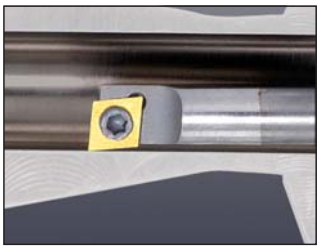
Micro

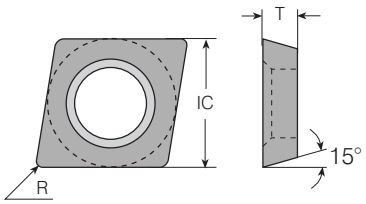
Insert dia.	Ordering Code		Dimensions Inch				Min. Bore dia
d (mm)	**RH-**Single Ended	**RH-**Double Ended	**L**	**L1**	**L2**	**A**	**D**
4.0	4.0SIR0.2M-BD-1...1-SIDE	4.0SIR0.2M-BD-1...	1.970	.630	1.693	.138	.147
6.0	6.0SIR0.2M-BD-1...1-SIDE	6.0SIR0.2M-BD-1...	1.970	.630	1.693	.205	.228
	6.0SIR0.2L-BD-1...1-SIDE	6.0SIR0.2L-BD-1...	2.362	.827	1.970		
8.0	8.0SIR0.2S-BD-1...1-SIDE	8.0SIR0.2S-BD-1...	2.126	.472	2.126	.272	.307
	8.0SIR0.2M-BD-1...1-SIDE	8.0SIR0.2M-BD-1...	2.756	.787	2.480		
	8.0SIR0.2L-BD-1...1-SIDE	8.0SIR0.2L-BD-1...	3.386	1.102	2.756		

For PowerBore **holders**, see pages 51-54

Boring Indexable inserts

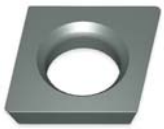
Internal





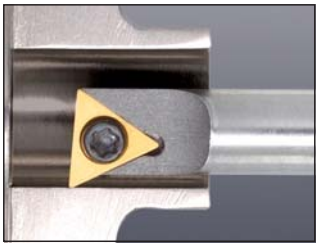
CD0W inserts for PowerBore boring bar

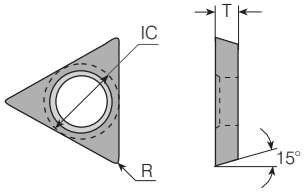
PowerBore CD0W Inserts



Insert Size	Ordering Code	Dimensions Inch		Insert Screw
IC		R	T	
.156"	CD0W4011...	.002	.040	VS01
	CD0W4012...	.007	.040	
	CD0W4014...	.015	.040	

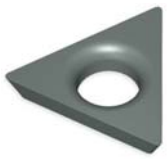
Internal





TD0W inserts for PowerBore boring bar

PowerBore TD0W Inserts

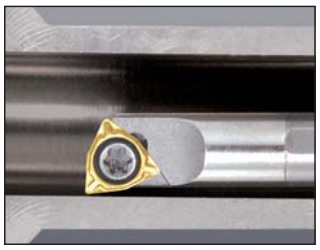


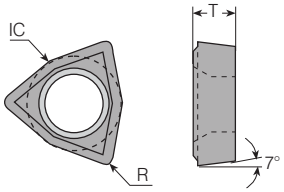
Insert Size	Ordering Code	Dimensions Inch		Insert Screw
IC		R	T	
.160"	TD0W4111...	.002	.047	VS01, VS40
	TD0W4112...	.007	.047	
	TD0W4114...	.015	.047	

For PowerBore **holders**, see pages 51-54

Boring Indexable inserts (Cont')

Internal



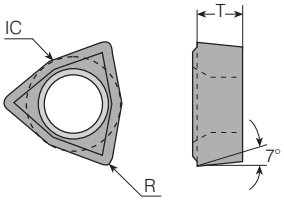


WC0W inserts for PowerBore boring bar

PowerBore WC0W Inserts

Insert Size	Ordering Code	Dimensions Inch		Insert Screw
IC		R	T	
.156"	WC0W4213...	.008	.062	VS40
	WC0W4214...	.015	.062	

Internal



WC0W inserts for PowerBore boring bar

PowerBore WC0W Inserts

Insert Size	Ordering Code	Dimensions inch		Insert Screw
IC		R	T	
.187"	WC0W5013...	.008	.094	VS41
	WC0W5014...	.015	.094	

For PowerBore **holders**, see pages 51-54

Recommended Grades, Cutting Speeds Vc [ft/min], Feed f [inch/rev] and Max Depth [inch]

	Material		Hardness Brinell HB	Vc[ft/min] Coated PowerBore VTX	Vc[ft/min] Coated Micro VMX	Feed f [inch/rev] PowerBore	Feed f [inch/rev] Micro	Max. depth [inch] PowerBore CD0W	Max. depth [inch] PowerBore TD0W	Max. depth [inch] PowerBore WD0W	Max. depth [inch] Micro
P	Unalloyed steel	Low carbon (C=0.1-0.25 %)	125	377-623	164-394	.0098	.0022	.020	.018	.024	.016
		Medium carbon (C=0.25-0.55 %)	150	328-574	131-328	.0079	.0016	.020	.018	.024	.016
		High carbon (C=0.55-0.85 %)	170	295-541	98-262	.0059	.0012	.020	.018	.024	.016
	Low alloy steel (alloying elements ≤ 5%)	Non hardened	180	279-476	164-230	.0079	.0016	.016	.014	.020	.012
		Hardened	275	246-459	131-197	.0059	.0016	.016	.014	.020	.012
		Hardened	350	230-443	98-164	.0039	.0012	.016	.014	.020	.012
	High alloy steel (alloying elements > 5%)	Annealed	200	230-361	98-164	.0039	.0016	.008	.007	.016	.006
		Hardened	325	164-328	82-131	.0020	.0012	.008	.007	.016	.006
	Cast steel	Low alloy (alloying elements <5%)	200	246-459	98-164	.0098	.0016	.008	.007	.016	.006
		High alloy (alloying elements >5%)	225	197-394	82-131	.0039	.0016	.008	.007	.016	.006
M	Stainless steel Ferritic	Non hardened	200	230-426	197-328	.0079	.0016	.010	.009	.020	.008
		Hardened	330	197-377	131-197	.0032	.0012	.008	.007	.016	.006
	Stainless steel Austenitic	Austenitic	180	295-459	164-295	.0079	.0016	.010	.009	.020	.008
		Super austenitic	200	131-361	131-197	.0032	.0016	.008	.007	.016	.006
	Stainless steel Cast ferritic	Non hardened	200	295-394	131-197	.0079	.0016	.010	.009	.020	.008
		Hardened	330	213-361	98-164	.0032	.0012	.008	.007	.016	.006.
	Stainless steel Cast austenitic	Austenitic	200	279-361	131-197	.0079	.0016	.010	.009	.020	.008
		Hardened	330	197-328	98-164	.0032	.0012	.008	.007	.016	.006
	High temperature alloys	Annealed (Iron based)	200	148-197	82-148	.0079	.0016	.010	.009	.020	.008
		Aged (Iron based)	280	98-164	66-98	.0032	.0012	.008	.007	.016	.006
		Annealed (Nickel or Cobalt based)	250	66-98	49-66	.0032	.0006	.008	.007	.016	.006
		Aged (Nickel or Cobalt based)	350	49-82	33-49	.0020	.0004	.008	.007	.016	.006
	Titanium alloys	Pure 99.5 Ti	400Rm	459-558	197-328	.0020	.0008	.008	.007	.016	.006
		α+β alloys	1050Rm	164-230	131-164	.0020	.0008	.008	.007	.016	.006
K	Extra hard steel	Hardened & tempered	55HRc	148-197	66-131	.0004	.0004	.004	.002	.008	.002
	Malleable cast iron	Ferritic (short chips)	130	230-525	164-230	.0059	.0008	.012	.012	.016	.010
		Pearlitic (long chips)	230	197-476	164-230	.0039	.0004	.012	.012	.016	.010
	Grey cast iron	Low tensile strength	180	230-426	164-238	.0059	.0008	.020	.018	.024	.016
		High tensile strength	260	197-377	131-197	.0039	.0006	.020	.018	.024	.016
	Nodular SG iron	Ferritic	160	410-525	164-230	.0059	.0008	.020	.018	.024	.016
		Pearlitic	260	295-394	197-262	.0039	.0006	.020	.018	.024	.016
	Aluminium alloys Wrought	Non aging	60	328-1197	328-984	.0118	.0012	.030	.025	.039	.020
		Aged	100	262-722	328-492	.0079	.0012	.030	.025	.039	.020
	Aluminium alloys	Cast	75	656-1312	328-492	.0118	.0012	.030	.025	.039	.020
		Cast & aged	90	656-918	197-328	.0079	.0012	.030	.025	.039	.020
	Aluminium alloys	Cast Si 13-22%	130	197-590	328-492	.0118	.0008	.030	.025	.039	.020
	Copper and copper alloys	Brass	90	262-738	197-328	.0118	.0012	.030	.025	.039	.020
		Bronze and non leaded copper	100	262-836	197-328	.0079	.0012	.030	.025	.039	.020

Grades and Their Applications

Grade	Application	Sample
VTX	**General use carbide grade.** A tough sub-micron substrate with TiAlN coating. Provides good fracture toughness and excellent wear resistance.	
VMX	General use carbide grade for Micro inserts. TiN coated.	

VARGUS

Take a closer Look

MINIPRO

Toolholders

Vardex Ordering Code System

Micro & Adjustable Toolholders (Sleeves)

S	M	C	0625	-	3
1	2	3	4		5

1 - Holder Shape
S - Sleeve

2 - Holder Type
V - Adjustable Holders for Mini
M - Micro

3 - Cooling
C - Coolant Channel

4 - Holder Dia.
050 - 1/2"
0625 - 5/8"
075 - 3/4"

5 - Holder Bore Size
Micro Size
3, 4, 6, 8, 10
Adjustable Holders (for Mini)
6.2
8

Mini Toolholders

B	N	VR		0375	M	-	5	L	
1	2	3	4	5	6		7	8	9

1 - Shank Type
B - Anti Vibration System
C - Carbide Shank
S - Mini Holders

2 - Anvil
N - No Anvil required

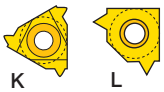
3 - Tool Type
VR - Internal Round Shank

4 - Cooling
C - Coolant Channel

5 - Shank Dia
.205", .375", .050"
6.2 mm (Mini Adjust)
8.0 mm (Mini Adjust)

6 - Holder Length
U - Ultra Short
S - Short
M - Medium
L - Long
T - Adjustable

7 - Insert Size
4.0 - IC4.0
5 - IC5.0L
6.0 - IC6.0

8 - Insert Style


9 - RH / LH Holder
None - Right Hand
LH - Left Hand

PowerBore Boring Bars

C	06	-	23	C	40	5
1	2		3	4	5	6

1 - Shank Style
C - Carbide
S - Steel

2 - Shank Dia.
05 - 5/32" - 0.156
06 - 3/16" - 0.187
08 - 1/4" - 0.250
10 - 5/16" - 0.312
12 - 3/8" - 0.375
16 - 1/2" - 0.500

3 - Bar Dia. [D1]
21 - 0.165
23 - 0.180
24 - 0.187
26 - 0.203
32 - 0.250
40 - 0.312

4 - Insert Shape
C - Diamond 80 Deg.

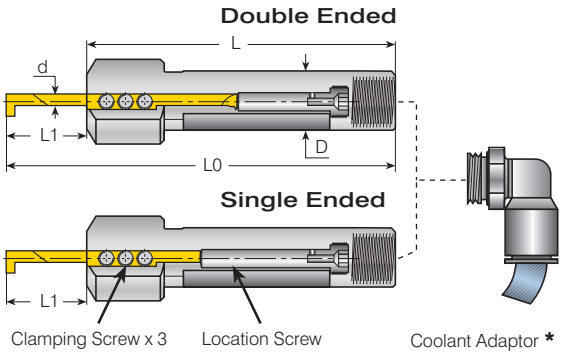
T - Triangle

W - Trigon 80 Deg.


5 - Holder Length [L2]
23 - 2.25
25 - 2.50
27 - 2.75
30 - 3.00
35 - 3.50
40 - 4.00
45 - 4.50
50 - 5.00
60 - 6.00

6 - Front Relief Angle
0, 5, 7

Internal Toolholders



Micro

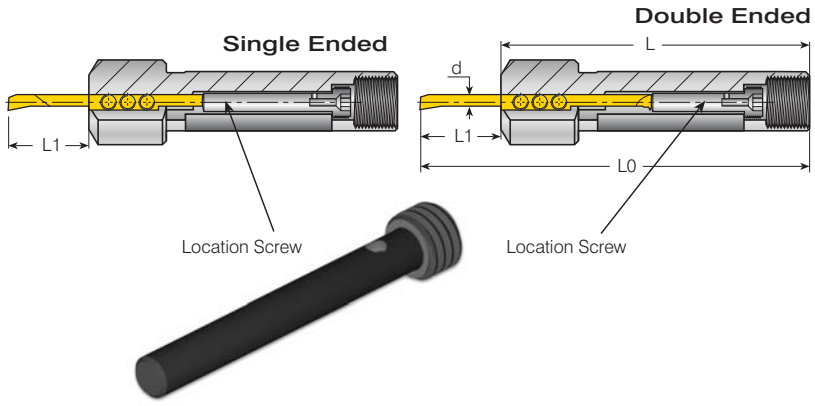
Micro Insert Dia.	Ordering Code	Dimensions Inch		Spare Parts				
				Coolant Adaptor	Location Screw		Clamping Screw x 3	
d (mm)		**D**	**L**		Screw	Key	Screw	Key
3.0	SMC050-3.0	.500	3.15	-	see next page	K4.0	M4X0.7X4.0	K2.0
	SMC0625-3.0	.625	3.74	G1/4A				
	SMC075-3.0	.750		G1/4A				
4.0	SMC050-4.0	.500	3.15	-	see next page	K4.0	M4X0.7X4.0	K2.0
	SMC0625-4.0	.625	3.74	G1/4A				
	SMC075-4.0	.750		G1/4A				
6.0	SMC050-6.0	.500	3.15	-	see next page	K4.0	M4X0.7X4.0	K2.0
	SMC0625-6.0	.625	3.74	G1/4A				
	SMC075-6.0	.750		G1/4A				
8.0	SMC0625-8.0	.625	3.74	G1/4A	see next page	K4.0	M6X1.0X5.0	K3.0
	SMC075-8.0	.750		G1/4A				
10.0	SMC0625-10.0	.625	3.74	G1/4A	see next page	K4.0	M6X1.0X5.0	K3.0
	SMC075-10.0	.750		G1/4A				

continued on next page

* Coolant Adaptor is optional

NOTE: All Micro holders can hold any single-ended or double-ended insert.

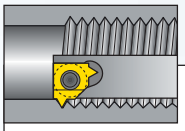
Internal Toolholders



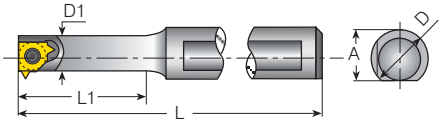
Micro Toolholders - Location Screws

Micro Insert Dia.	Toolholder	Dimensions Inch			Location Screw			M
d [mm]		L	L1	L0	Single Ended	M	Double Ended	M
3	SMC050-3.0	3.15	.35 - Short	3.50	4GISM8X28	1.10	4GISM8X28	1.10
		3.15	.63 - Medium	3.78			4GISM8X21	.83
	SMC0625-3.0 SMC075-3.0	3.74	.35 - Short	4.09	4GISM8X4	1.93	4GISM8X49	1.93
		3.74	.63 - Medium	4.37			4GISM8X42	1.65
4	SMC050-4.0	3.15	.35 - Short	3.50	4GISM8X28	1.10	4GISM8X28	1.10
		3.15	.63 - Medium	3.78			4GISM8X21	.83
		3.15	.83 - Long	3.98			4GISM8X16	.63
	SMC0625-4.0 SMC075-4.0	3.74	.35 - Short	4.09	4GISM8X49	1.93	4GISM8X49	1.93
		3.74	.63 - Medium	4.37			4GISM8X42	1.65
		3.74	.83 - Long	4.57			4GISM8X37	1.46
6	SMC050-6.0	3.15	.35 - Short	3.50	4GISM8X28	1.10	4GISM8X28	1.10
		3.15	.63 - Medium	3.78			4GISM8X21	.83
		3.15	.83 - Long	3.98			4GISM8X16	.63
	SMC0625-6.0 SMC075-6.0	3.74	.35 - Short	4.09	4GISM8X49	1.93	4GISM8X49	.93
		3.74	.63 - Medium	4.37			4GISM8X42	1.65
		3.74	.83 - Long	4.57			4GISM8X37	1.46
8	SMC0625-8.0 SMC075-8.0	3.74	.47 - Short	4.21	4GISM8X33	1.30	4GISM8X33	1.30
		3.74	.79 - Medium	4.53			4GISM8X25	.98
		3.74	1.10 - Long	4.84			4GISM8X17	.67
10	SMC0625-10.0 SMC075-10.0	3.74	.59 - Short	4.33	4GISM8X30	1.18	4GISM8X30	1.18
		3.74	.98 - Medium	4.72			4GISM8X20	.79
		3.74	1.38 - Long	5.12			4GISM8X10	.39

* Every toolholder package contains the full range of location screws needed.

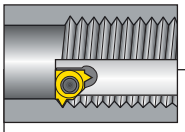


Internal Toolholders

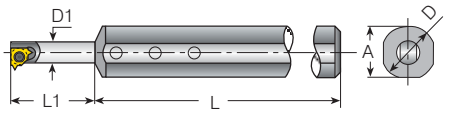


Mini-L

Insert Size	Ordering Code	Dimensions Inch					Anti-Vibration System	Spare Parts	
									
IC mm		**A**	**L**	**L1**	**D**	**D1**		Insert Screw	Torx Key
5.0L	SNVR 0375U-5L	.363	3.189	.630	.375	.244	No	SN5LT	K5LT
	BNVR 0375S-5L	.363	3.425	.866	.375	.244	Yes		
	BNVR 0375M-5L	.363	3.819	1.220	.375	.244	Yes		
	BNVR 0375L-5L	.363	4.291	1.693	.375	.244	Yes		
5.0L	SNVR 050U-5L	.489	3.189	.630	.500	.244	No		
	BNVR 050S-5L	.489	3.425	.866	.500	.244	Yes		
	BNVR 050M-5L	.489	3.819	1.220	.500	.244	Yes		
	BNVR 050L-5L	.489	4.291	1.693	.500	.244	Yes		



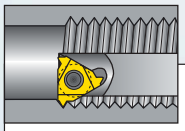
Internal Toolholders



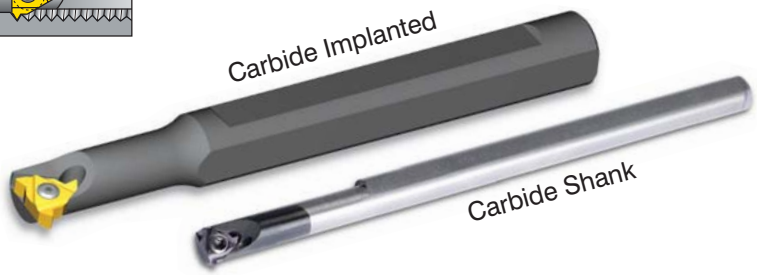
Mini-L-Adjustable

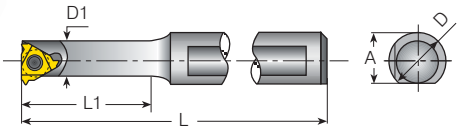
Insert Size	Ordering Code		Dimensions Inch					Spare Parts			
											
IC mm	**Sleeve**	**Holder**	**A**	**L**	**L1**	**D**	**D1**	Insert Screw	Torx Key for Insert Screw	Holder Screw x3	Key for Holder Screw
5.0L	SV0625-6.2	BNVR6.2T-5L	.584	4	.315-1.73	.625	.244	SN5LT	K5LT	S4.0	K4.0

The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code.
The above toolholders have 2.5 ° helix angle.



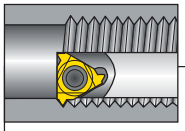
Internal Toolholders



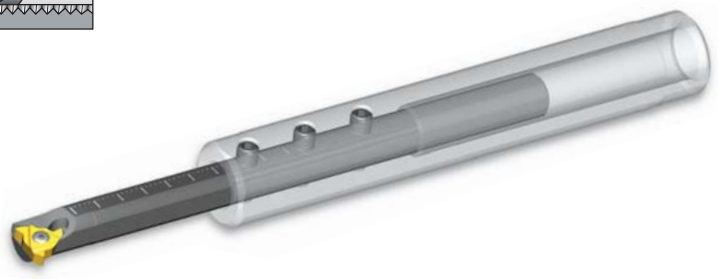


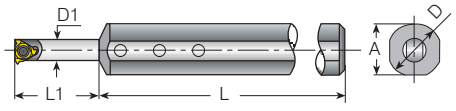
Mini-3

Insert Size	Ordering Code	Dimensions inch					Anti-Vibration System	Spare Parts	
IC		A	L	L1	D	D1		Insert Screw	Torx Key
4.0	CNVRC0205-4.0K	.205	4.000	1.02	.250	.200	Carbide Shank	SN4MT	K6MT
	SNVR0205-4.0K	.461	4.000	.470	.500	.200	No		
6.0	SNVR 375U-6.0	.363	3.228	.630	.375	.315	No	SN6MT	K6MT
	BNVR 375S-6.0	.363	3.504	.866	.375	.315	Carbide Implanted		
	BNVR 375M-6.0	.363	3.858	1.220	.375	.315	Carbide Implanted		
	BNVR 375L-6.0	.363	4.330	1.693	.375	.315	Carbide Implanted		
6.0	SNVR 050U-6.0	.489	3.228	.630	.500	.315	No		
	BNVR 050S-6.0	.489	3.504	.866	.500	.315	Carbide Implanted		
	BNVR 050M-6.0	.489	3.858	1.220	.500	.315	Carbide Implanted		
	BNVR 050L-6.0	.489	4.330	1.693	.500	.315	Carbide Implanted		



Internal Toolholders



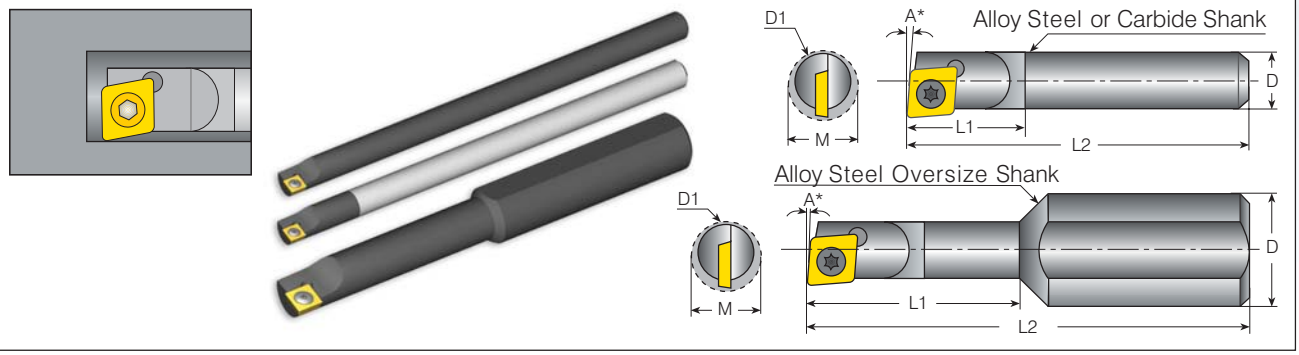


Mini-3-Adjustable

Insert Size	Ordering Code		Dimensions Inch					Spare Parts			
IC mm	Sleeve	Holder	A	L	L1	D	D1	Insert Screw	Torx Key for Insert Screw	Holder Screw x3	Key for Holder Screw
6.0	SV0625-8.0	BNVR8.0T-6.0	.584	4	.315-2.2	.625	.315	SN6MT	K6MT	S4.0	K4.0

The above toolholders have 2.5° helix angle.

PowerBore Boring Bars for CDOW Inserts



Alloy Steel Shanks - Standard Size

Spare Parts

Shank	Ordering Code	A	D	D1	M	L2	L1			
		angle	shank dia	bar dia	min.bore	overall length	bar length	Insert Type	Screw	Torx Key
3/16"	S06-21C257	7°	.187	.165	.180	2.500	.500	CD0W	VS01	VT51
	S06-23C255	5°	.187	.180	.208	2.500				
	S06-24C255	5°	.187	.187	.230	2.500	D1=D			
	S06-24C250	0°	.187	.187	.244	2.500				
1/4"	S08-32C305	5°	.250	.250	.290	3.000				
	S08-32C300	0°	.250	.250	.300	3.000				

Solid Carbide Shank with Alloy Steel Head - Standard Size

Spare Parts

Shank	Ordering Code	A	D	D1	M	L2	L1			
		angle	shank dia	bar dia	min.bore	overall length	bar length	Insert Type	Screw	Torx Key
5/32"	C05-21C607	7°	.156	.165	.180	6.000	.500	CD0W	VS01	VT51
3/16"	C06-23C405	5°	.187	.180	.208	4.000				
	C06-24C405	5°	.187	.187	.230	4.000	D1=D			
	C06-24C400	0°	.187	.187	.244	4.000				
1/4"	C08-32C405	5°	.250	.250	.290	4.000				
	C08-32C400	0°	.250	.250	.300	4.000				

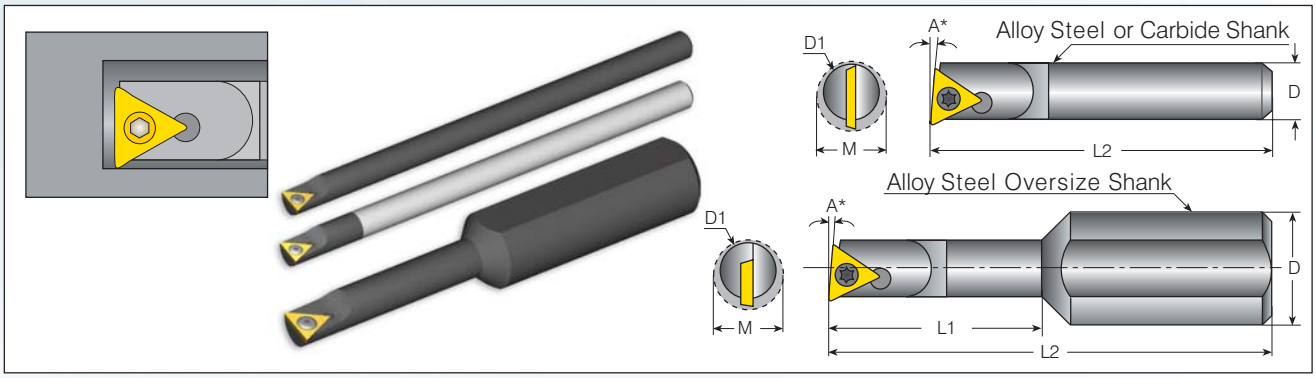
Alloy Steel Shanks - Oversize

Spare Parts

Shank	Ordering Code	A	D	D1	M	L2	L1			
		angle	shank dia	bar dia	min.bore	overall length	bar length	Insert Type	Screw	Torx Key
3/8"	S12-23C235	5°	.375	.180	.208	2.250	1.000	CD0W	VS01	VT51
	S12-26C235	5°	.375	.203	.230	2.250				
	S12-26C230	0°	.375	.203	.244	2.250				
	S12-32C255	5°	.375	.250	.290	2.500	1.250			
	S12-32C250	0°	.375	.250	.300	2.500				

* 5° angle for facing and through hole boring
* 0° angle for through hole boring and boring to a shoulder

PowerBore Boring Bars for TDOW Inserts



Alloy Steel Shanks - Standard Size

Shank	Ordering Code	A	D = D1	M	L2	Spare Parts		
		angle	bar dia	min.bore	overall length	Insert Type	Screw	Torx Key
3/16"	S06-24T355	5°	.187	.270	3.500	TD0W	VS01	VT51
	S06-24T350	0°	.187	.270	3.500			
1/4"	S08-32T405	5°	.250	.300	4.000		VS40	
	S08-32T400	0°	.250	.300	4.000			
5/16"	S10-40T405	5°	.312	.360	4.000			
	S10-40T400	0°	.312	.360	4.000			

Solid Carbide Shank with Alloy Steel Head - Standard Size

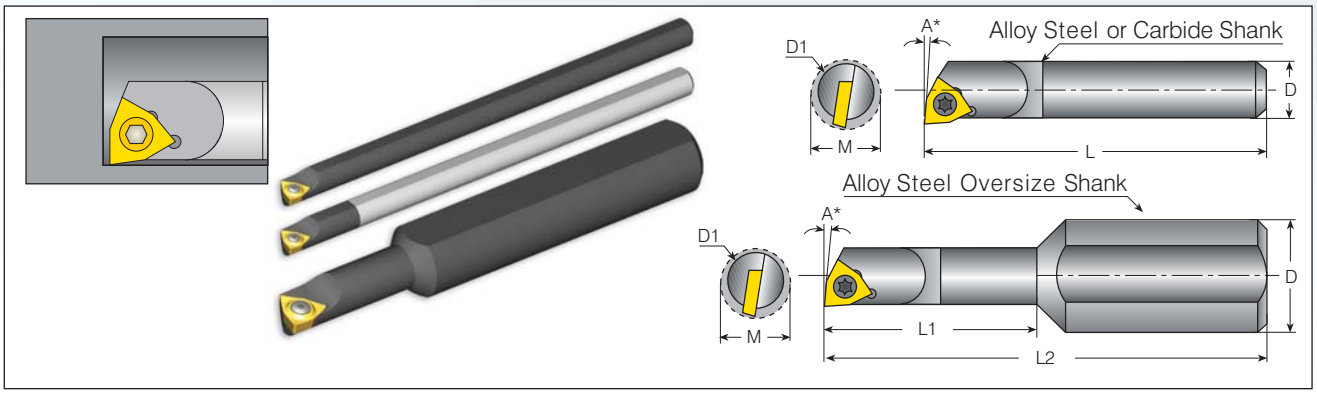
Shank	Ordering Code	A	D = D1	M	L2	Spare Parts		
		angle	bar dia	min.bore	overall length	Insert Type	Screw	Torx Key
3/16"	C06-24T405	5°	.187	.270	4.000	TD0W	VS01	VT51
	C06-24T400	0°	.187	.270	4.000			
1/4"	C08-32T405	5°	.250	.300	4.000		VS40	
	C08-32T400	0°	.250	.300	4.000			
5/16"	C10-40T405	5°	.312	.360	4.000			
	C10-40T400	0°	.312	.360	4.000			

Alloy Steel Shanks - Oversize

Shank	Ordering Code	A	D	D1	M	L2	L1	Spare Parts		
		angle	shank dia	bar dia	min.bore	overall length	bar length	Insert Type	Screw	Torx Key
3/8"	S12-26T255	5°	.375	.203	.270	2.500	1.000	TD0W	VS01	VT51
	S12-26T250	0°	.375	.203	.270	2.500				
	S12-32T275	5°	.375	.250	.300	2.750	1.250		VS40	
	S12-32T270	0°	.375	.250	.300	2.750				
	S12-40T305	5°	.375	.312	.360	3.000	1.500			
	S12-40T300	0°	.375	.312	.360	3.000				

* 5° angle for facing and through hole boring
* 0° angle for through hole boring and boring to a shoulder

PowerBore Boring Bars for WCOW Inserts (4213, 4214)



Alloy Steel Shanks - Standard Size

Spare Parts

Shank	Ordering Code	A	D = D1	M	L	Insert Type	Screw	Torx Key
		angle	bar dia.	min.bore	bar length			
3/16"	S06-24W255	5°	.187	.230	2.500	WC0W4213 WC0W4214	VS40	VT51
	S06-24W250	0°	.187	.244	2.500			
1/4"	S08-32W405	5°	.250	.300	4.000			
	S08-32W400	0°	.250	.300	4.000			

Solid Carbide Shank with Alloy Steel Head - Standard Size

Spare Parts

Shank	Ordering Code	A	D = D1	M	L	Insert Type	Screw	Torx Key
		angle	bar dia.	min.bore	bar length			
3/16"	C06-24W405	5°	.187	.230	4.000	WC0W4213 WC0W4214	VS40	VT51
	C06-24W400	0°	.187	.244	4.000			
1/4"	C08-32W405	5°	.250	.290	4.000			
	C08-32W400	0°	.250	.300	4.000			

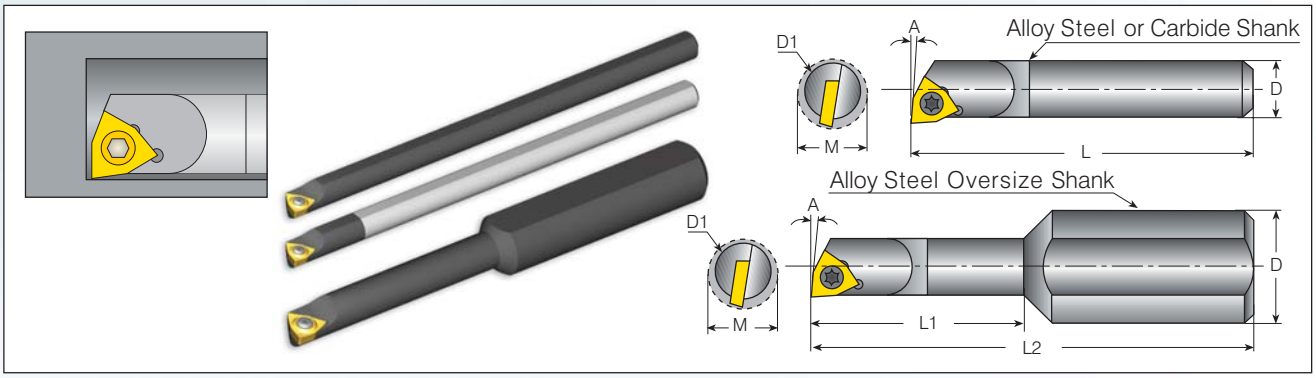
Alloy Steel Shanks - Oversize

Spare Parts

Shank	Ordering Code	A	D	D1	M	L2	L1	Insert Type	Screw	Torx Key
		angle	shank dia	bar dia	min.bore	overall length	bar length			
3/8"	S12-26W235	5°	.375	.203	.230	2.250	.500	WC0W4213 WC0W4214	VS40	VT51
	S12-26W230	0°	.375	.203	.244	2.250				
	S12-32W255	5°	.375	.250	.290	2.500	.750			
	S12-32W250	0°	.375	.250	.300	2.500				

* 5° angle for facing and through hole boring
* 0° angle for through hole boring and boring to a shoulder

PowerBore Boring Bars for WCOW Inserts (5013, 5014)



Alloy Steel Shanks - Standard Size

Shank	Ordering Code	A	D=D1	M	L	Spare Parts		
		angle	bar dia	min.bore	bar length	Insert Type	Screw	Torx Key
5/16"	S10-40W405	5°	.312	.360	4.000	WCOW5013	VS41	VT51
	S10-40W400	0°	.312	.360	4.000	WCOW5014		

Solid Carbide Shank with Alloy Steel Head - Standard Size

Shank	Ordering Code	A	D=D1	M	L	Spare Parts		
		angle	bar dia	min.bore	bar length	Insert Type	Screw	Torx Key
5/16"	C10-40W405	5°	.312	.360	4.000	WC0W5013	VS41	VT51
	C10-40W400	0°	.312	.360	4.000	WC0W5014		

Alloy Steel Shanks - Oversize

Shank	Ordering Code	A	D	D1	M	L2	L1	Spare Parts		
		angle	shank dia	bar dia	min.bore	overall length	bar length	Insert Type	Screw	Torx Key
3/8"	S12-40W305	5°	.375	.312	.360	3.000	1.500	WC0W5013	VS41	VT51
	S12-40W300	0°	.375	.312	.360	3.000	1.500	WC0W5014		

* 5° angle for facing and through hole boring
* 0° angle for through hole boring and boring to a shoulder

VARGUS

Thread Milling Tools for Small Bores

MilliPro

New!

For very small bores.
Minimum: 1-72 UN

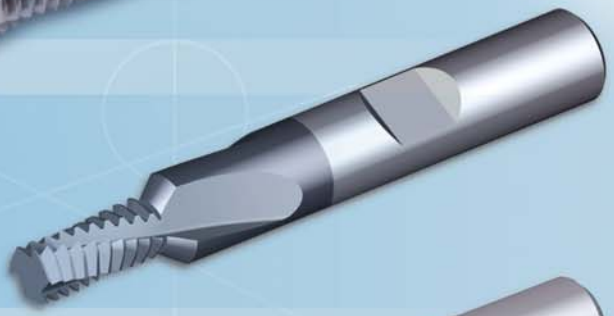
HeliCool Line

New!

With thru-Hole Coolant
Minimum: 10-32 UN

TM Solid Helical

For small bores.
Minimum: 10-32 UN

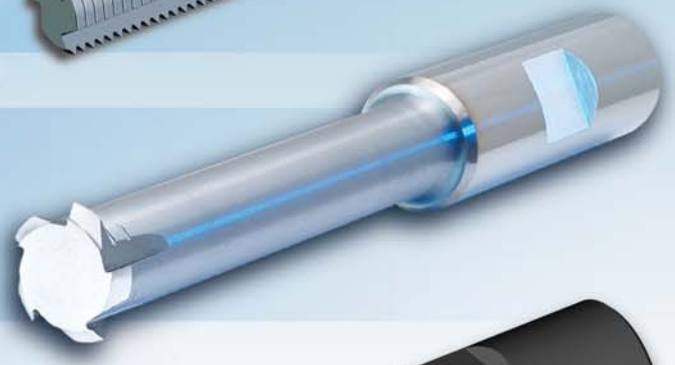


TM Solid Straight

Economical solution for small bores. Normal use.
Minimum: 8-36 UN

TM Solid Deep

For deep holes, up to 3 x D
Minimum: 1/4” x 20 UN



TM Mini

Indexable insert for small bores
Minimum: 7/16” x 32 UN