VARGUS

MINIPRO

Turning Tools for Small Bores

Metric

Take a closer Look

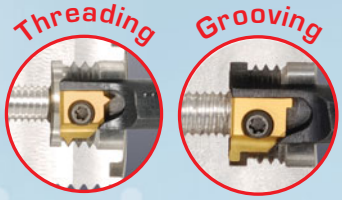
MINIPRO Threading

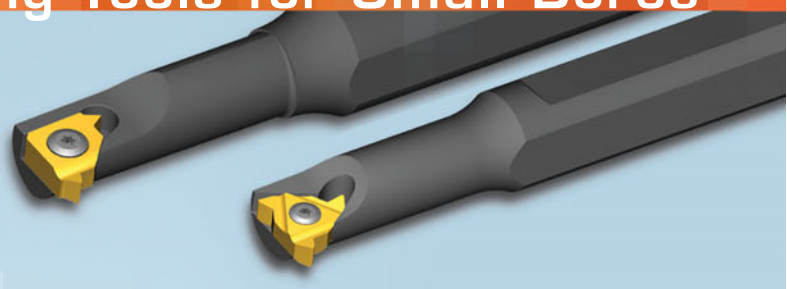
MINIPRO Grooving

MINIPRO Boring

MINIPRO - Turning Tools for Small Bores

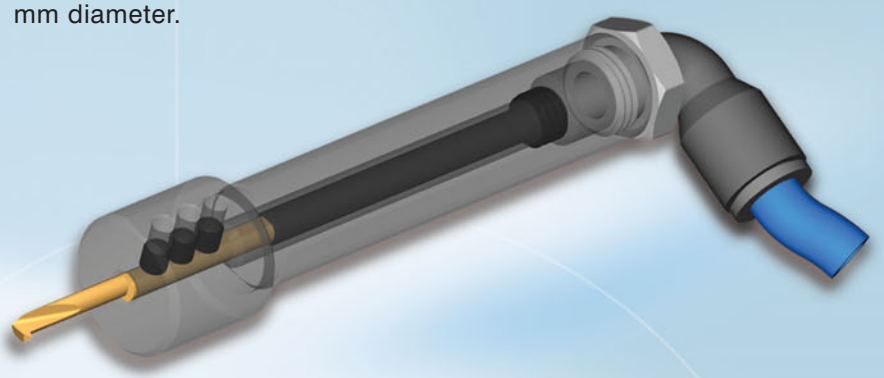
Mini Tools





Indexable inserts for threading and grooving in bores as small as 6.1 mm diameter.

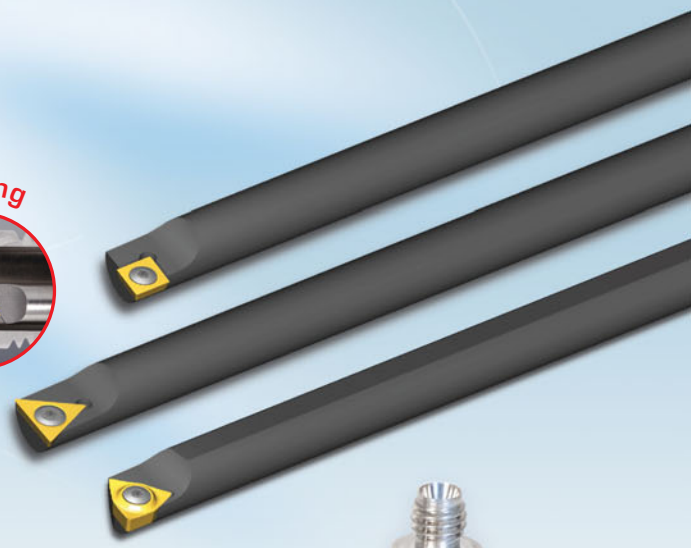
Micro Tools



Solid carbide tools
for threading, grooving and boring
in bores as small as 3.2 mm 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
4.6 mm diameter.



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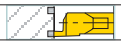
Face Grooving 	29
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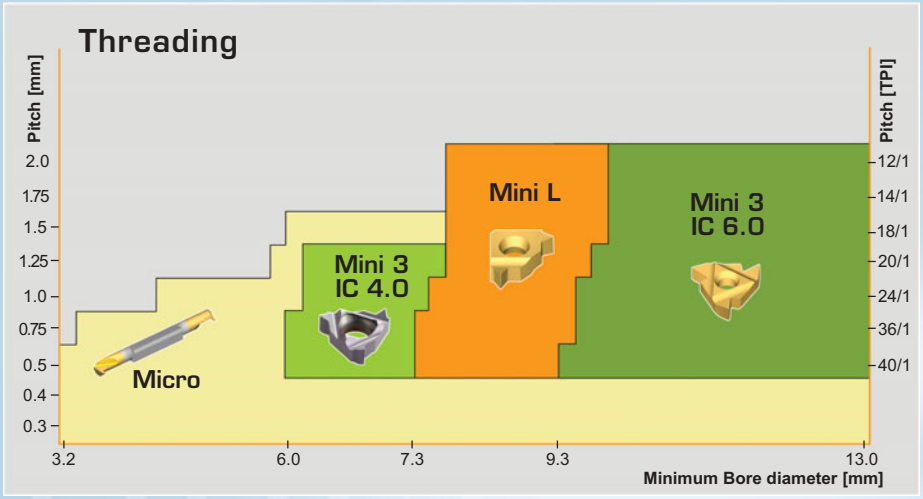
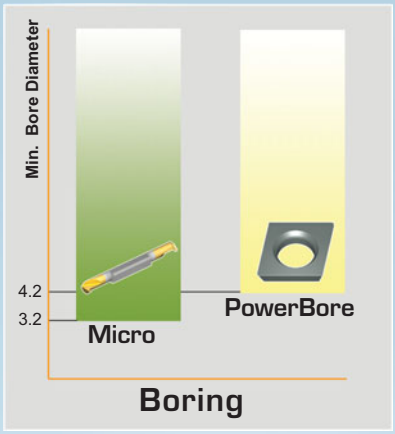
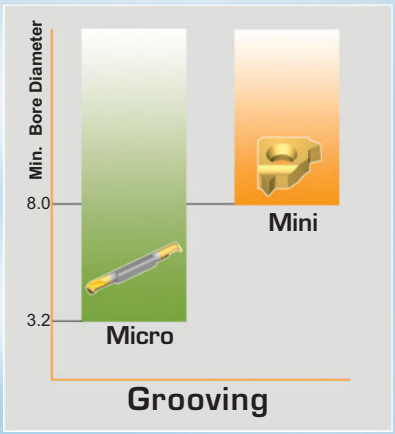
The MiniPro Range by Diameter

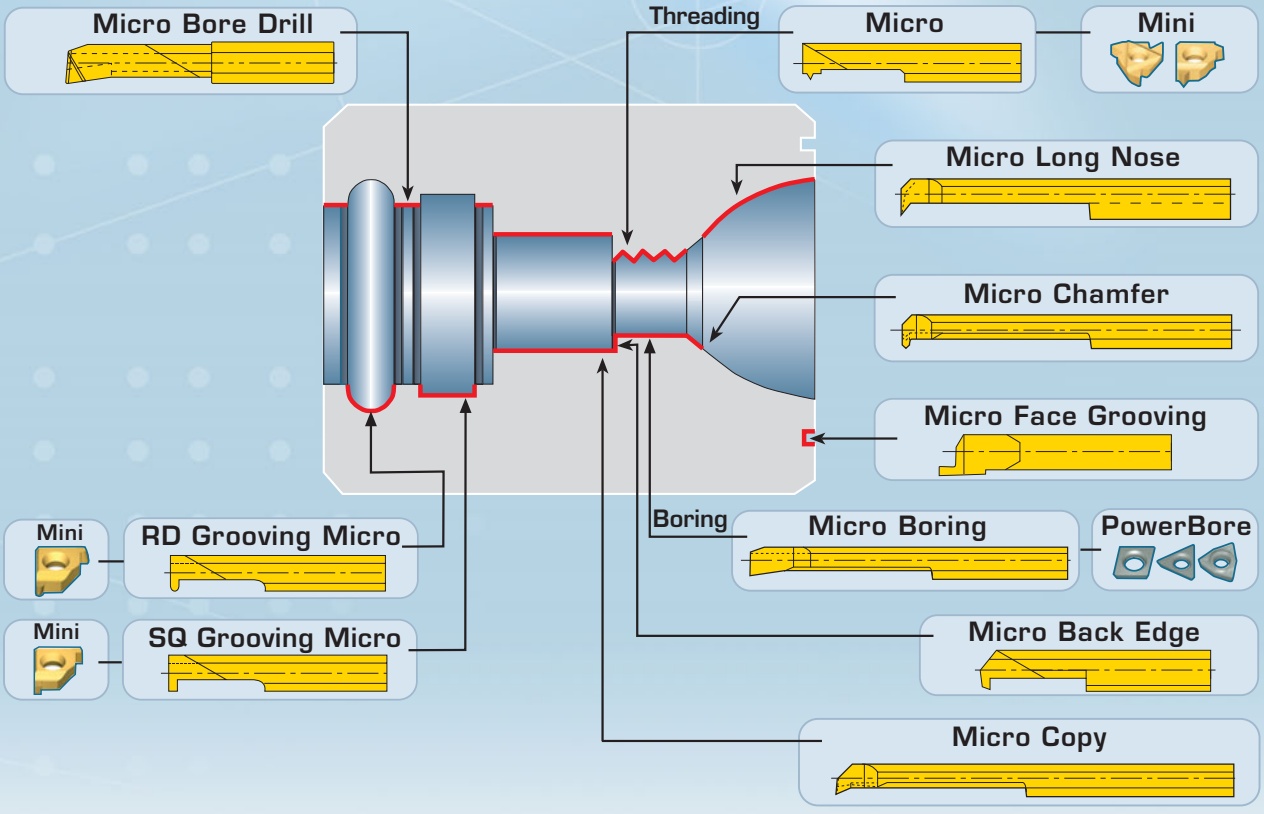
From Ø3.2





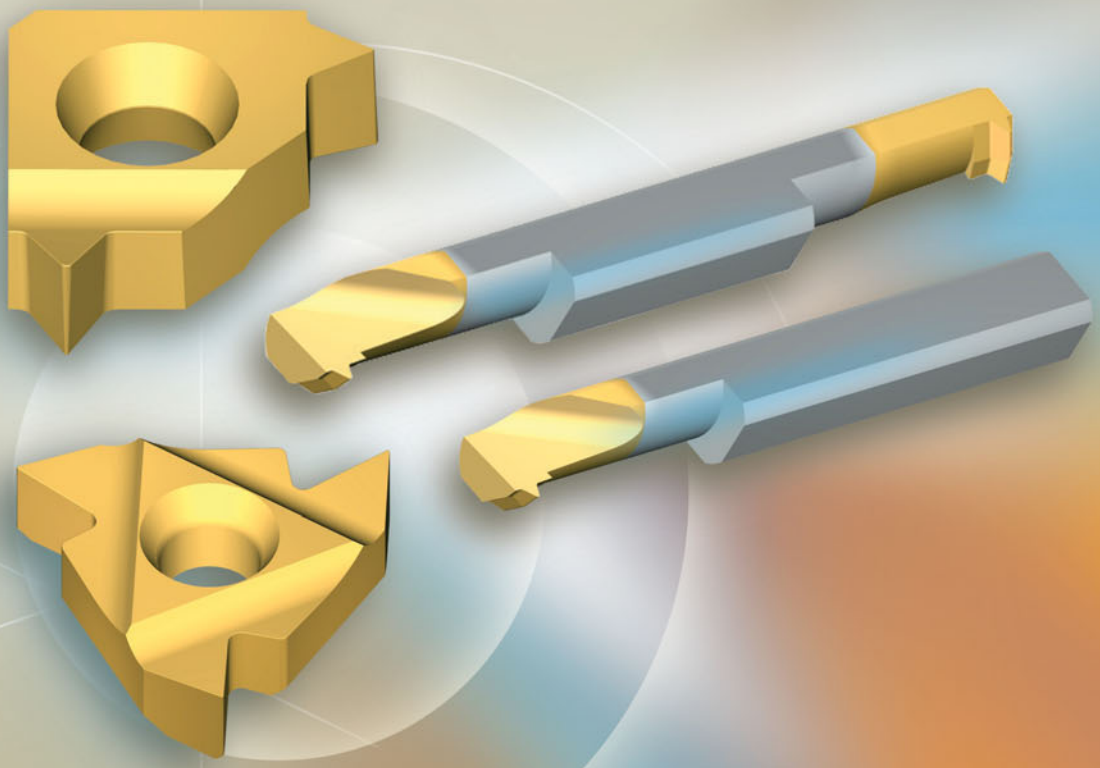


The MiniPro Range by Application



VARGUS

Take a closer Look



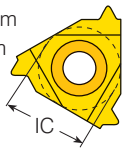
MINIPRO

Threading

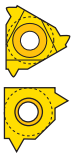
Vardex Ordering Code System
Threading Inserts (not including Micro system)

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
K
L



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

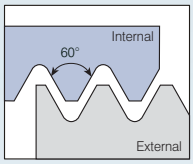
	mm	tpi
A	0.5 - 1.5	48 - 16
F	0.25 - 1.0	72 - 24

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

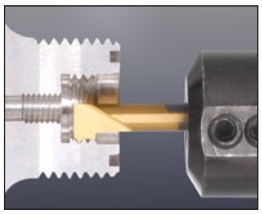
7 - Carbide Grade
VMX

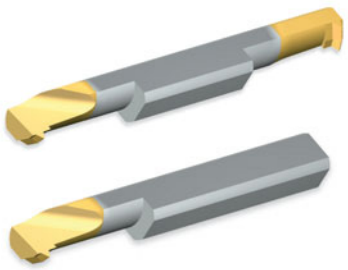
8 - Micro Ended
1- SIDE - Single Ended
None - Double Ended

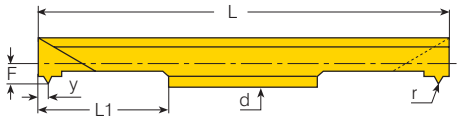
Partial Profile 60°



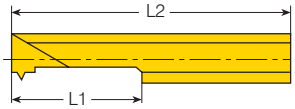
Internal







RH-Double Ended

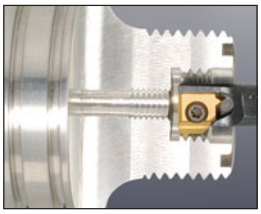


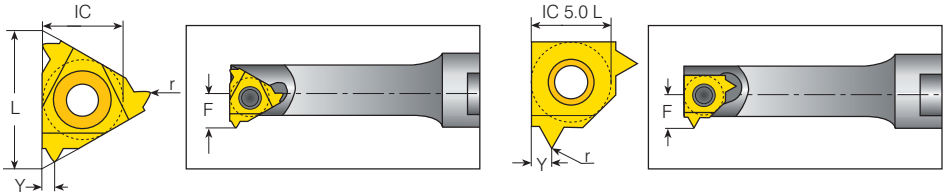
RH-Single Ended

Micro

Insert dia.	Pitch		Ordering Code		Dimensions mm						Min. Bore dia.	
d mm	**mm**	**tpi**	**RH-**Single Ended	**RH-**Double Ended	**r**	**L1**	**L2**	**L**	**F**	**Y**	**mm**	**Toolholder**
3.0	0.5-1.0	48-24	3.0SIRF60...1-SIDE	3.0SIRF60...	0.05	16	43	50	1.46	0.9	3.3	SMC..-3.0
4.0	0.5-1.0	48-24	4.0SIRF60...1-SIDE	4.0SIRF60...	0.05	16	43	50	1.96	0.9	4.3	SMC..-4.0
6.0	0.5-1.5	48-16	6.0SIRA60...1-SIDE	6.0SIRA60...	0.05	16	43	50	2.50	0.9	6.0	SMC..-6.0

Internal





Mini-3 Mini-L

Mini-L

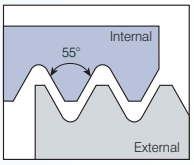
Insert Size	Pitch		Ordering Code		Dimensions mm			Min. Bore dia.	
ICmm	**mm**	**tpi**	**RH**	**r**	**Y**	**F**	**mm**	**Toolholder**
5.0L	0.5-1.5	48-16	5LIRA60...	0.05	0.9	4.65	8.0	.NVR 10.-5L

Mini-3

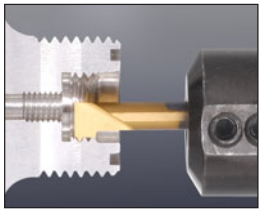
Insert Size		Pitch				Dimensions mm			Min. Bore dia.	
ICmm	**L**	**mm**	**tpi**	**RH**	**r**	**Y**	**F**	**mm**	**Toolholder**
4.0	6	0.5-1.25	48-20	4.0KIRA60...	0.05	0.6	3.7	6.35	.NVR.5-4.0K
6.0	10	0.5-1.5	48-16	6.0IRA60...	0.05	0.9	5.3	10.0	.NVR 1..-6.0

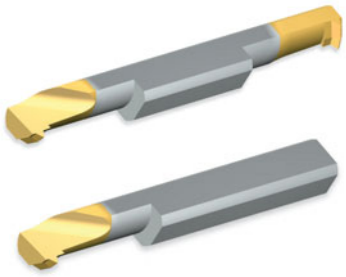
Mini and Micro Left Handed tools, supplied by request (**Example:** 6.0SI**L**A60...1-SIDE)

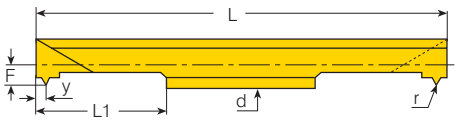
Partial Profile 55°



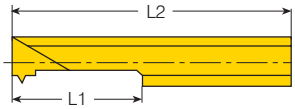
Internal







RH-Double Ended

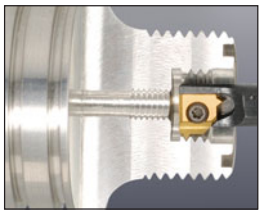


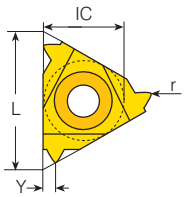
RH-Single Ended

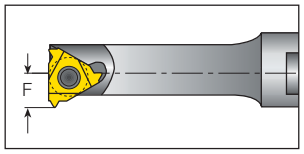
Micro

Insert dia.	Pitch		Ordering Code		Dimensions mm						Min. Bore dia.	
dmm	mm	tpi	RH-Single Ended	RH-Double Ended	r	L1	L2	L	F	Y	mm	Toolholder
3.0	0.5-1.0	48-24	3.0SIRF55...1-SIDE	3.0SIRF55...	0.05	16	43	50	1.46	0.9	3.3	SMC..-3.0
4.0	0.5-1.0	48-24	4.0SIRF55...1-SIDE	4.0SIRF55...	0.05	16	43	50	1.96	0.9	4.3	SMC..-4.0
6.0	0.5-1.5	48-16	6.0SIRA55...1-SIDE	6.0SIRA55...	0.05	16	43	50	2.50	0.9	6.0	SMC..-6.0

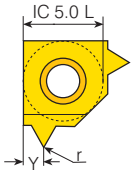
Internal

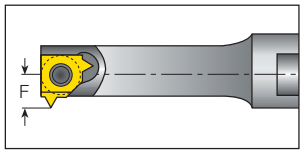






Mini-3





Mini-L

Mini-L

Insert Size		Pitch		Ordering Code		Dimensions mm		Min. Bore dia.	
ICmm		mm	tpi	RH	r	Y	F	mm	Toolholder
5.0L		0.5-1.5	48-16	5LIRA55...	0.05	0.9	4.65	8.0	.NVR 10.-5L

Mini-3

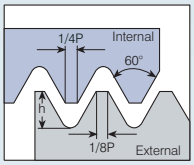
Insert Size		Pitch		Ordering Code		Dimensions mm		Min. Bore dia.	
ICmm	L	mm	tpi	RH	r	Y	F	mm	Toolholder
4.0	6	0.5-1.25	48-20	4.0KIRA55...	0.05	0.6	3.8	6.45	.NVR.5-4.0K
6.0	10	0.5-1.5	48-16	6.0IRA55...	0.05	0.9	5.3	10.0	.NVR 1..-6.0

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

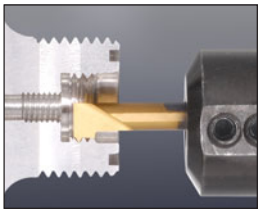
ISO Metric

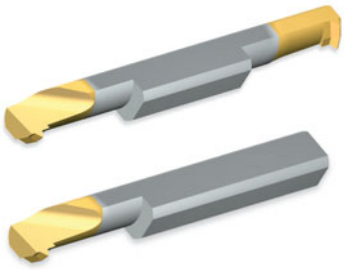
Defined by:
R262 (DIN 13)

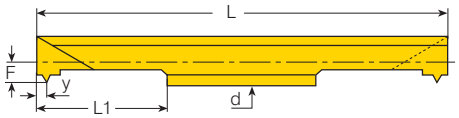
Tolerance class:
6g/6H



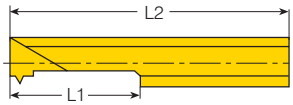
Internal







RH-Double Ended



RH-Single Ended

Micro

Insert dia.	Pitch	Ordering Code		Dimensions mm						Min. Bore dia.	
dmm	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...	16	43	50	1.31	0.20	0.10	3.2	SMC..-3.0
	0.4	3.0SIR0.4ISO...1-SIDE	3.0SIR0.4ISO...	16	43	50	1.31	0.35	0.22	3.2	
	0.5	3.0SIR0.5ISO...1-SIDE	3.0SIR0.5ISO...	16	43	50	1.31	0.40	0.29	3.2	
	0.6	3.0SIR0.6ISO...1-SIDE	3.0SIR0.6ISO...	16	43	50	1.34	0.60	0.35	3.2	
	0.7	3.0SIR0.7ISO...1-SIDE	3.0SIR0.7ISO...	16	43	50	1.43	0.60	0.40	3.3	
	0.75	3.0SIR0.75ISO...1-SIDE	3.0SIR0.75ISO...	16	43	50	1.45	0.60	0.43	3.3	
	0.8	3.0SIR0.8ISO...1-SIDE	3.0SIR0.8ISO...	16	43	50	1.46	0.60	0.46	3.3	
4.0	0.4	4.0SIR0.4ISO...1-SIDE	4.0SIR0.4ISO...	16	43	50	1.65	0.35	0.22	4.0	SMC..-4.0
	0.5	4.0SIR0.5ISO...1-SIDE	4.0SIR0.5ISO...	16	43	50	1.65	0.40	0.29	4.0	
	0.6	4.0SIR0.6ISO...1-SIDE	4.0SIR0.6ISO...	16	43	50	1.68	0.60	0.35	4.0	
	0.7	4.0SIR0.7ISO...1-SIDE	4.0SIR0.7ISO...	16	43	50	1.77	0.60	0.40	4.1	
	0.75	4.0SIR0.75ISO...1-SIDE	4.0SIR0.75ISO...	16	43	50	1.81	0.60	0.43	4.2	
	0.8	4.0SIR0.8ISO...1-SIDE	4.0SIR0.8ISO...	16	43	50	1.80	0.60	0.46	4.2	
	1.0	4.0SIR1.0ISO...1-SIDE	4.0SIR1.0ISO...	16	43	50	1.96	0.90	0.58	4.3	
6.0	0.5	6.0SIR0.5ISO...1-SIDE	6.0SIR0.5ISO...	16	43	50	1.90	0.60	0.29	5.4	SMC..-6.0
	0.75	6.0SIR0.75ISO...1-SIDE	6.0SIR0.75ISO...	16	43	50	2.06	0.60	0.43	5.6	
	1.0	6.0SIR1.0ISO...1-SIDE	6.0SIR1.0ISO...	16	43	50	2.21	0.70	0.58	5.7	
	1.25	6.0SIR1.25ISO...1-SIDE	6.0SIR1.25ISO...	16	43	50	2.36	0.90	0.72	5.9	
	1.5	6.0SIR1.5ISO...1-SIDE	6.0SIR1.5ISO...	16	43	50	2.50	1.00	0.87	6.0	

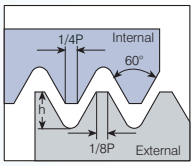
continued on next page

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

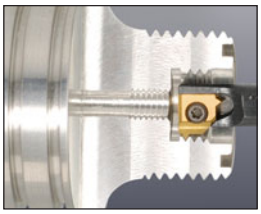
ISO Metric (con't)

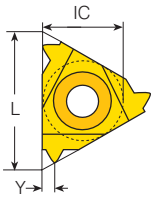
Defined by:
R262 (DIN 13)

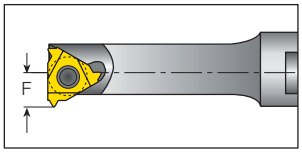
Tolerance class:
6g/6H



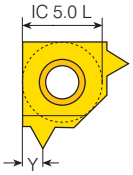
Internal

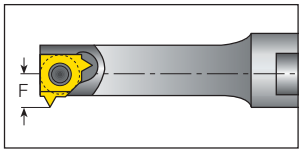






Mini-3





Mini-L

Mini-L

Insert Size	Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	mm	RH	hmin	Y	F	mm	Toolholder
5.0L	0.5	5LIR0.5ISO...	0.29	0.6	3.75	7.3	.NVR10.-5L
	0.75	5LIR0.75ISO...	0.43	0.6	3.91	7.5	
	1.0	5LIR1.0ISO...	0.58	0.7	4.06	7.7	
	1.25	5LIR1.25ISO...	0.72	0.9	4.21	7.8	
	1.5	5LIR1.5ISO...	0.87	1.0	4.35	7.9	
	1.75	5LIR1.75ISO...	1.01	1.05	4.51	8.0	
	2.0	5LIR2.0ISO...	1.15	1.05	4.65	8.0	

Mini-3

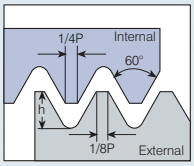
Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	L	mm	RH	h_{min}	Y	F	mm	Toolholder
4.0	6	0.5	4.0KIR0.5ISO...	0.29	0.5	3.4	6.05	.NVR5.-4.0K
		0.75	4.0KIR0.75ISO...	0.43	0.5	3.5	6.15	
		1.0	4.0KIR1.0ISO...	0.58	0.6	3.6	6.25	
		1.25	4.0K1.25ISO...	0.72	0.6	3.7	6.35	
6.0	10	0.5	6.0IR0.5ISO...	0.29	0.6	4.4	9.3	.NVR1..-6.0
		0.75	6.0IR0.75ISO...	0.43	0.6	4.6	9.5	
		1.0	6.0IR1.0ISO...	0.58	0.7	4.7	9.6	
		1.25	6.0IR1.25ISO...	0.72	0.9	4.9	9.8	
		1.5	6.0IR1.5ISO...	0.87	1.0	5.0	9.9	
		1.75	6.0IR1.75ISO...	1.01	1.05	5.2	10.0	
		2.0	6.0IR2.0ISO...	1.15	1.05	5.3	10.0	

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

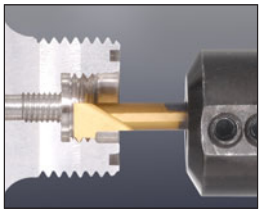
American UN

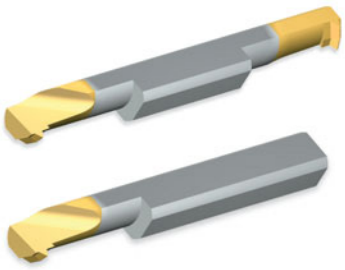
Defined by:
ANSI B1.1:74

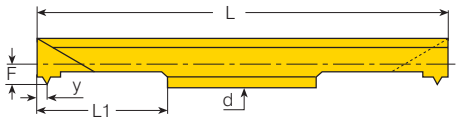
Tolerance class:
2A/2B



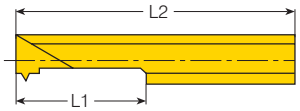
Internal







RH-Double Ended



RH-Single Ended

Micro Thread

Insert dia.	Pitch	Ordering Code		Dimensions mm						Min. Bore dia.	
dmm	tpi	RH-Single Ended	RH-Double Ended	L1	L2	L	F	Y	hmin	mm	Toolholder
3.0	40	3.0SIR40UN...1-SIDE	3.0SIR40UN...	16	43	50	1.35	0.60	0.37	3.2	SMC..-3.0
	36	3.0SIR36UN...1-SIDE	3.0SIR36UN...	16	43	50	1.46	0.60	0.41	3.2	
	32	3.0SIR32UN...1-SIDE	3.0SIR32UN...	16	43	50	1.40	0.60	0.46	3.3	
4.0	40	4.0SIR40UN...1-SIDE	4.0SIR40UN...	16	43	50	1.65	0.60	0.37	4.0	SMC..-4.0
	36	4.0SIR36UN...1-SIDE	4.0SIR36UN...	16	43	50	1.70	0.60	0.41	4.1	
	32	4.0SIR32UN...1-SIDE	4.0SIR32UN...	16	43	50	1.76	0.60	0.46	4.1	
	28	4.0SIR28UN...1-SIDE	4.0SIR28UN...	16	43	50	1.83	0.65	0.52	4.2	
	27	4.0SIR27UN...1-SIDE	4.0SIR27UN...	16	43	50	1.85	0.75	0.54	4.2	
	24	4.0SIR24UN...1-SIDE	4.0SIR24UN...	16	43	50	1.93	0.75	0.61	4.3	
6.0	32	6.0SIR32UN...1-SIDE	6.0SIR32UN...	16	43	50	2.01	0.60	0.46	5.5	SMC..-6.0
	28	6.0SIR28UN...1-SIDE	6.0SIR28UN...	16	43	50	2.08	0.65	0.52	5.6	
	27	6.0SIR27UN...1-SIDE	6.0SIR27UN...	16	43	50	2.10	0.75	0.54	5.6	
	24	6.0SIR24UN...1-SIDE	6.0SIR24UN...	16	43	50	2.18	0.75	0.61	5.7	
	20	6.0SIR20UN...1-SIDE	6.0SIR20UN...	16	43	50	2.30	0.90	0.73	5.8	
	18	6.0SIR18UN...1-SIDE	6.0SIR18UN...	16	43	50	2.39	1.00	0.81	5.9	
	16	6.0SIR16UN...1-SIDE	6.0SIR16UN...	16	43	50	2.50	1.05	0.92	6.0	

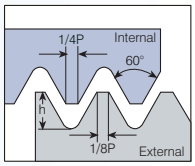
continued on next page ▸

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

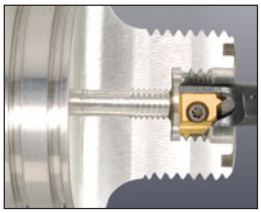
American UN (con't)

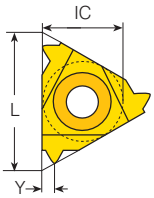
Defined by:
ANSI B1.1:74

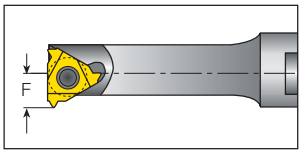
Tolerance class:
2A/2B



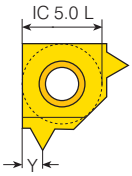
Internal

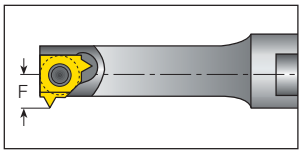






Mini-3





Mini-L

Mini-L

Insert Size	Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	tpi	RH	h_{min}	Y	F	mm	Toolholder
5.0L	32	5LIR32UN...	0.46	0.6	3.92	7.5	.NVR10.-5L
	28	5LIR28UN...	0.52	0.65	3.99	7.6	
	24	5LIR24UN...	0.61	0.75	4.09	7.7	
	20	5LIR20UN...	0.73	0.9	4.21	7.8	
	18	5LIR18UN...	0.81	1.0	4.30	7.9	
	16	5LIR16UN...	0.92	1.05	4.41	8.0	
	14	5LIR14UN...	1.05	1.05	4.54	8.0	

Mini-3

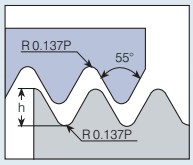
Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	L	tpi	RH	h_{min}	Y	F	mm	Toolholder
4.0	6	32	4.0KIR32UN...	0.46	0.5	3.50	6.15	.NVR.5-4.0K
		28	4.0KIR28UN...	0.52	0.6	3.50	6.15	
		24	4.0KIR24UN...	0.61	0.6	3.60	6.25	
		20	4.0KIR20UN...	0.73	0.6	3.70	6.35	
		18	4.0KIR18UN...	0.81	0.7	3.70	6.35	
6.0	10	32	6.0IR32UN...	0.46	0.6	4.60	9.5	.NVR1..-6.0
		28	6.0IR28UN...	0.52	0.65	4.70	9.6	
		24	6.0IR24UN...	0.61	0.75	4.80	9.7	
		20	6.0IR20UN...	0.73	0.9	4.90	9.8	
		18	6.0IR18UN...	0.81	1.0	5.00	9.9	
		16	6.0IR16UN...	0.92	1.05	5.10	10.0	
		14	6.0IR14UN...	1.05	1.05	5.20	10.0	

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

Whitworth for BSW, BSP

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

Tolerance class:
Medium Class A



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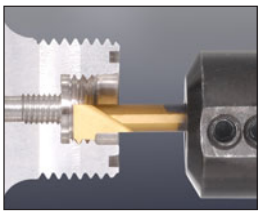
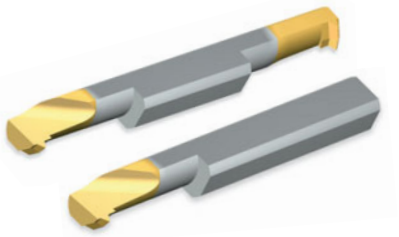
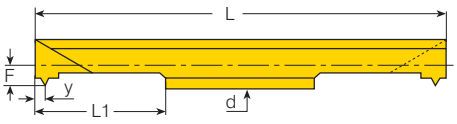
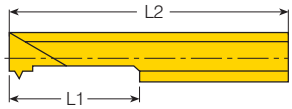






RH-Double Ended

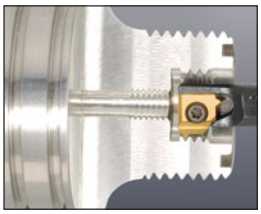


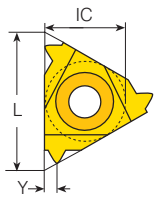
RH-Single Ended

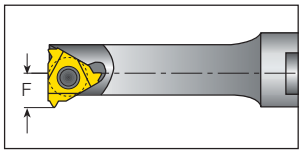
Micro

Insert dia.	Pitch	Ordering Code		Dimensions mm						Min. Bore dia.	
dmm	tpi	RH-Single Ended	RH-Double Ended	L1	L2	L	F	Y	h_{min}	mm	Toolholder
4.0	28	4.0SIR28W...1-SIDE	4.0SIR28W...	16	43	50	1.86	0.65	0.58	4.2	SMC..-4.0
	26	4.0SIR26W...1-SIDE	4.0SIR26W...	16	43	50	1.93	0.75	0.63	4.2	
	24	4.0SIR24W...1-SIDE	4.0SIR24W...	16	43	50	1.96	0.75	0.68	4.3	
6.0	28	6.0SIR28W...1-SIDE	6.0SIR28W...	16	43	50	2.50	0.65	0.58	6.0	SMC..-6.0
	26	6.0SIR26W...1-SIDE	6.0SIR26W...	16	43	50	2.50	0.75	0.63	6.0	
	24	6.0SIR24W...1-SIDE	6.0SIR24W...	16	43	50	2.50	0.75	0.68	6.0	
	22	6.0SIR22W...1-SIDE	6.0SIR22W...	16	43	50	2.50	0.90	0.74	6.0	
	20	6.0SIR20W...1-SIDE	6.0SIR20W...	16	43	50	2.50	0.90	0.81	6.0	
	19	6.0SIR19W...1-SIDE	6.0SIR19W...	16	43	50	2.50	0.95	0.86	6.0	

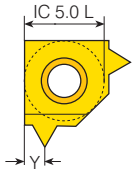
Internal

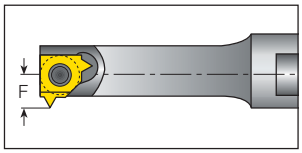






Mini-3





Mini-L

Mini-L

Insert Size	Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	tpi	RH	h_{min}	Y	F	mm	Toolholder
5.0L	28	5LIR28W...	0.58	0.7	4.05	7.6	.NVR 10. -5L
	19	5LIR19W...	0.86	1.0	4.35	7.9	
	14	5LIR14W...	1.16	1.1	4.68	8.0	

Mini-3

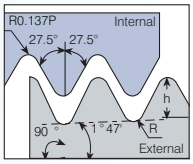
Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	L	tpi	RH	h_{min}	Y	F	mm	Toolholder
4.0	6	26	4.0KIR26W...	0.63	0.6	3.6	6.25	.NVR.5-4.0K
		22	4.0KIR22W...	0.74	0.6	3.7	6.35	
		20	4.0KIR20W...	0.81	0.7	3.7	6.35	
		18	4.0KIR18W...	0.90	0.7	3.7	6.35	
6.0	10	28	6.0IR28W...	0.58	0.7	4.7	9.6	.NVR1..-6.0
		19	6.0IR19W...	0.86	1.0	5.0	9.9	
		14	6.0IR14W...	1.16	1.1	5.3	10.0	

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

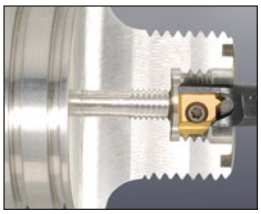
BSPT

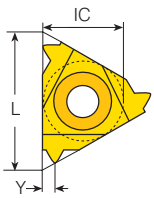
Defined by:
B.S. 21:1985

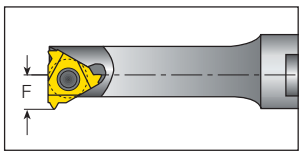
Tolerance class:
Standard BSPT



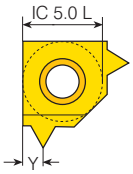
Internal

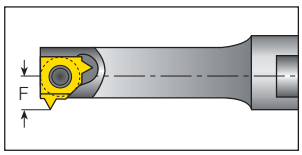






Mini-3





Mini-L

Mini-L

Insert Size	Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	tpi	RH	h_{min}	Y	F	mm	Toolholder
5.0L	28	5LIR28BSPT...	0.58	0.6	4.05	7.6	.NVR 10. -5L
	19	5LIR19BSPT...	0.86	0.9	4.35	7.9	
	14	5LIR14BSPT...	1.16	1.2	4.68	8.0	

Mini-3

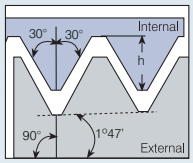
Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	L	tpi	RH	h_{min}	Y	F	mm	Toolholder
4.0	6	28	4.0KIR28BSPT...	0.58	0.6	3.6	6.25	.NVR.5-4.0K
6.0	10	28	6.0IR28BSPT...	0.58	0.6	4.7	9.6	.NVR1..-6.0
		19	6.0IR19BSPT...	0.86	0.9	5.0	9.9	
		14	6.0IR14BSPT...	1.16	1.2	5.3	10.0	

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

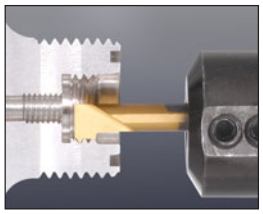
NPT

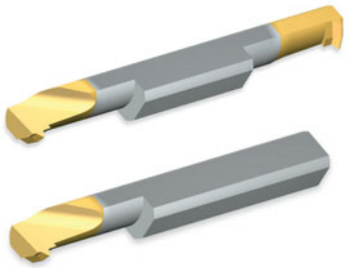
Defined by:
USAS B2.1:1968

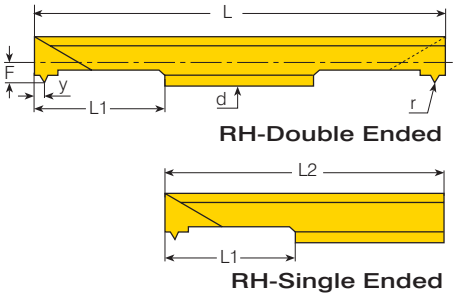
Tolerance class:
Standard NPT



Internal



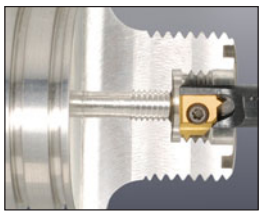


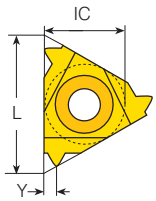


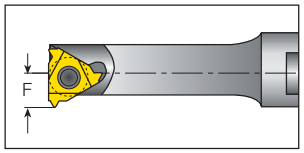
Micro

Insert dia.	Pitch	Ordering Code		Dimensions mm						Min. Bore dia.	
dmm	tpi	RH-Single Ended	RH-Double Ended	L1	L2	L	F	Y	h min	mm	Toolholder
6.0	27	6.0SIR27NPT...1-SIDE	6.0SIR27NPT...	16	43	50	2.50	1.00	0.66	6.0	SMC..-6.0
	18	6.0SIR18NPT...1-SIDE	6.0SIR18NPT...	16	43	50	2.50	0.80	1.01		

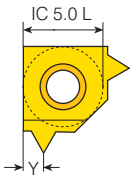
Internal

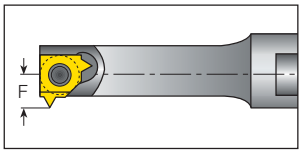






Mini-3





Mini-L

Mini-L

Insert Size	Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	tpi	RH	hmin	Y	F	mm	Toolholder
5.0L	27	5LIR27NPT...	0.66	0.8	4.65	8.0	.NVR 10. -5L
	18	5LIR18NPT...	1.01	1.0	4.65		
	14	5LIR14NPT...	1.33	1.1	4.65		

Mini-3

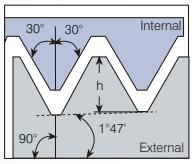
Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	L	tpi	RH	h min	Y	F	mm	Toolholder
4.0	6	27	4.0KIR27NPT	0.66	0.6	3.7	6.35	.NVR.5-4.0K
6.0	10	27	6.0IR27NPT...	0.66	0.8	5.3	10.0	.NVR1..-6.0
		18	6.0IR18NPT...	1.01	1.0	5.3		
		14	6.0IR14NPT...	1.33	1.1	5.3		

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

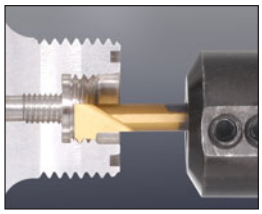
NPTF

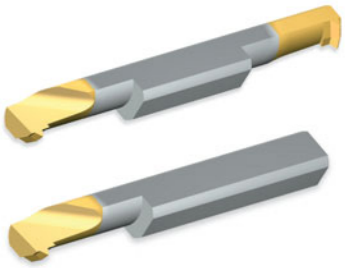
Defined by:
ANSI B1.20.3-1976

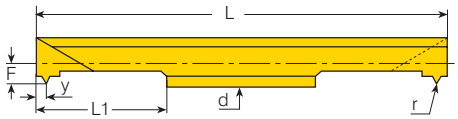
Tolerance class:
Class 2



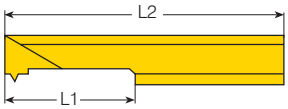
Internal







RH-Double Ended

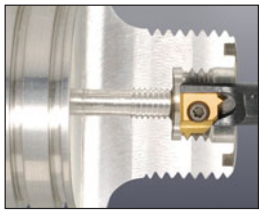


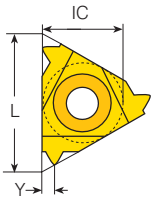
RH-Single Ended

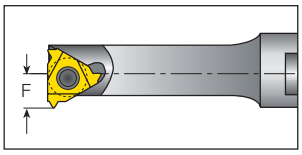
Micro

Insert dia.	Pitch	Ordering Code		Dimensions mm						Min. Bore dia.	
dmm	tpi	RH-Single Ended	RH-Double Ended	L1	L2	L	F	Y	h_{min}	mm	Toolholder
6.0	27	6.0SIR27NPTF...1-SIDE	6.0SIR27NPTF...	16	43	50	0.64	0.80	0.80	6.0	.NVR 10. -5L
	18	6.0SIR18NPTF...1-SIDE	6.0SIR18NPTF...	16	43	50	1.00	1.00	1.00		

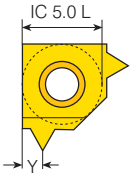
Internal

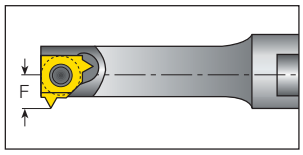






Mini-3





Mini-L

Mini-L

Insert Size	Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	tpi	RH	h_{min}	Y	F	mm	Toolholder
5.0L	27	5LIR27NPTF...	0.64	0.8	4.65	8.0	.NVR 10. -5L
	18	5LIR18NPTF...	1.00	1.0	4.65		
	14	5LIR14NPTF...	1.35	1.1	4.65		

Mini-3

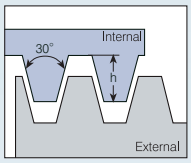
Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	L	tpi	RH	h_{min}	Y	F	mm	Toolholder
4.0	6	27	4.0KIR27NPTF...	0.64	0.6	3.6	6.25	.NVR.5-4.0K
6.0	10	27	6.0IR27NPTF...	0.64	0.8	5.3	10.0	.NVR1..-6.0
		18	6.0IR18NPTF...	1.00	1.0	5.3		
		14	6.0IR14NPTF...	1.35	1.1	5.3		

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

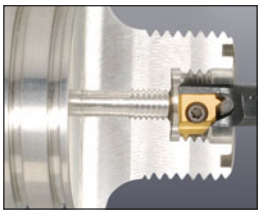
TRAPEZ

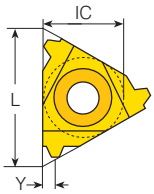
Defined by:
DIN 103

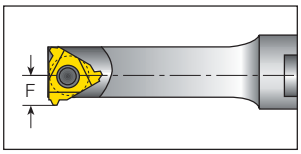
Tolerance class:
7e/7H



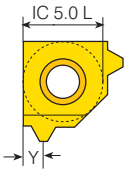
Internal

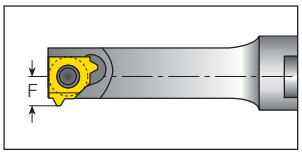






Mini-3





Mini-L

Mini-L

Insert Size	Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	**mm**	**RH**	**h_{min}**	**Y**	**F**	**mm**	**Toolholder**
5.0L	1.5	5LIR1.5TR...	0.85	0.85	4.65	8.0	.NVR10.-5L
	2.0	5LIR2.0TR...	1.25	1.30	4.65		

Mini-3

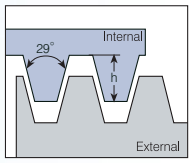
Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	**L**	**mm**	**RH**	**h_{min}**	**Y**	**F**	**mm**	**Toolholder**
6.0	10	1.5	6.0IR1.5TR...	0.85	0.85	5.3	10.0	.NVR1..-6.0
		2.0	6.0IR2.0TR...	1.25	1.30	5.3		

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

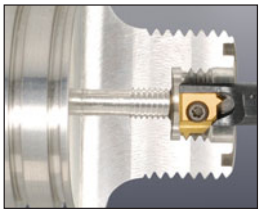
American ACME

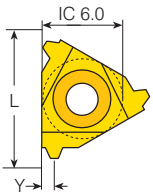
Defined by:
ANSI B1.5:1988

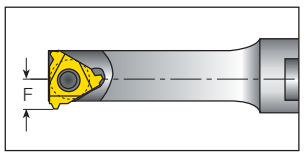
Tolerance class:
3G



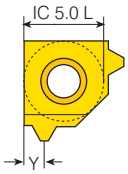
Internal

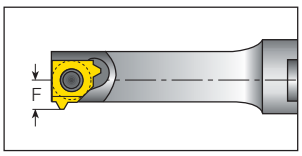






Mini-3





Mini-L

Mini-L

Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm		tpi	RH	h_{min}	Y	F	mm	Toolholder
5.0L		12	5LIR12ACME...	1.19	1.10	4.42	8.0	.NVR 10. -5L

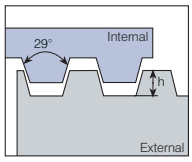
Mini-3

Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	L	tpi	RH	h_{min}	Y	F	mm	Toolholder
6.0	10	12	6.0IR12ACME...	1.19	1.10	5.1	10.0	.NVR1..-6.0

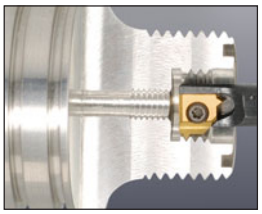
Stub ACME

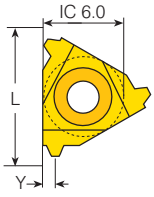
Defined by:
ANSI B1.8:1988

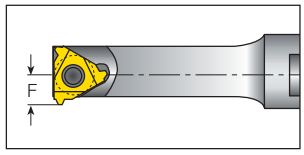
Tolerance class:
2G



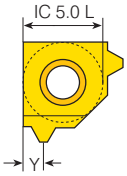
Internal

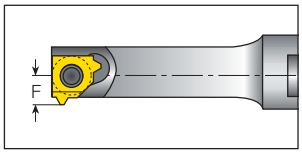






Mini-3





Mini-L

Mini-L

Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm		tpi	RH	h_{min}	Y	F	mm	Toolholder
5.0L		12	5LIR12STACME...	0.76	1.2	4.42	8.0	.NVR 10. -5L

Mini-3

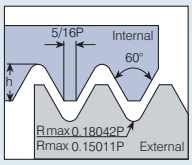
Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	L	tpi	RH	h_{min}	Y	F	mm	Toolholder
6.0	10	12	6.0IR12STACME...	0.76	1.2	5.1	10.0	.NVR1..-6.0

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

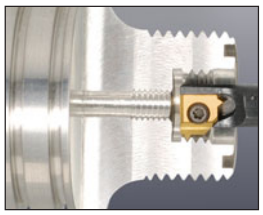
UNJ

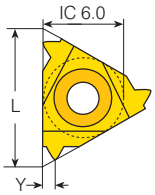
Defined by:
MIL-S-8879C

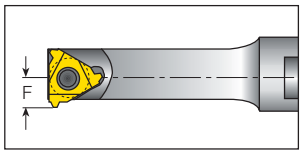
Tolerance class:
3A/3B



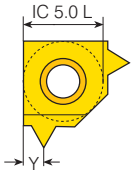
Internal

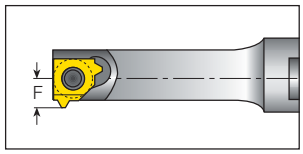






Mini-3





Mini-L

Mini-L

Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm		tpi	RH	h_{min}	Y	F	mm	Toolholder
5.0L		20	5LIR20UNJ...	0.66	0.9	4.21	7.8	.NVR 10. -5L

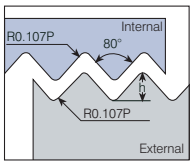
Mini-3

Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	L	tpi	RH	h_{min}	Y	F	mm	Toolholder
6.0	10	20	6.0IR20UNJ...	0.66	0.9	4.9	9.8	.NVR1..-6.0

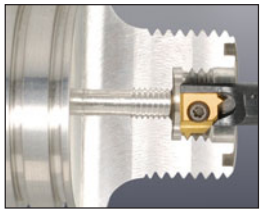
Pg

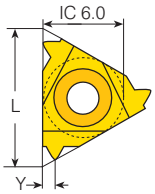
Defined by:
DIN 40430

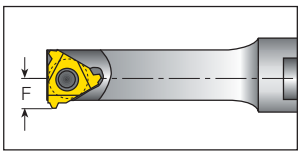
Tolerance class:
Standard



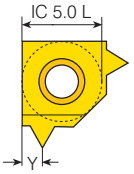
Internal

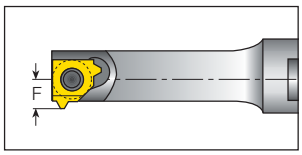






Mini-3





Mini-L

Mini-L

Insert Size		Pitch	Ordering Code	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm		tpi		RH	h_{min}	Y	F	mm	Toolholder
5.0L		20	Pg7	5LIR20PG...	0.61	0.8	4.65	8.0	.NVR10..-5L
		18	Pg9/11/13.5/16	5LIR18PG...	0.67	0.9	4.65		

Mini-3

Insert Size		Pitch	Ordering Code	Ordering Code	Dimensions mm			Min. Bore dia.	
ICmm	L	tpi		RH	h_{min}	Y	F	mm	Toolholder
6.0	10	20	Pg7	6.0IR20PG...	0.61	0.8	5.3	10.0	.NVR1..-6.0
		18	Pg9/11/13.5/16	6.0IR18PG...	0.67	0.9	5.3		

Mini and Micro Left Handed tools, supplied by request (**Example:** 6.0I**L**20PG...)

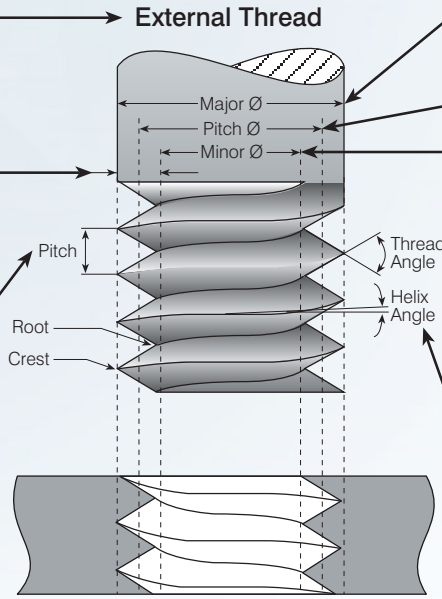
Thread Terminology

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.



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

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.

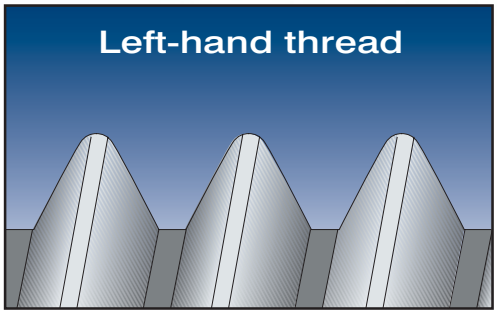
Minor Diameter
The smallest diameter of a screw thread.

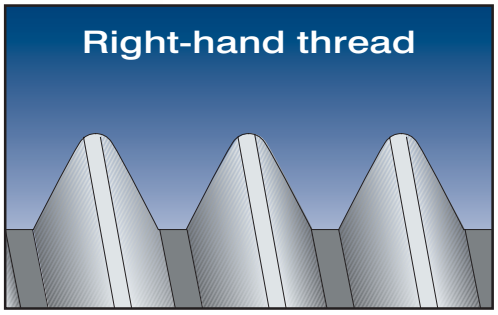
Helix Angle
For a straight thread, where the lead of the thread and the pitch diameter circle circumference form a right angled triangle, the helix angle is the angle opposite the lead.

Straight Thread
A thread formed on a cylinder.

Taper Thread
A thread formed on a cone.

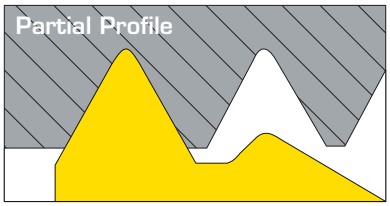
A thread which, when viewed axially, winds in a counterclockwise and receding direction. All left-hand threads are designated LH.



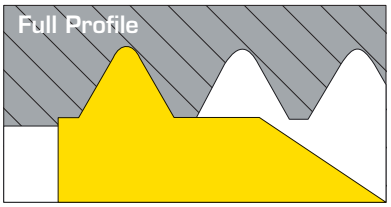


A thread which, when viewed axially, winds in a clockwise and receding direction. Threads are always right-hand unless otherwise specified.

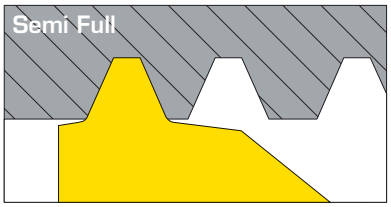
Insert Profile Styles



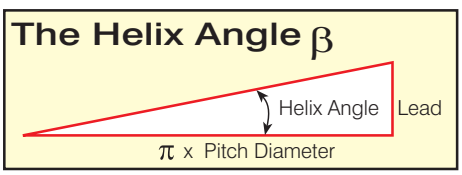
The V partial profile insert cuts without topping the outer diameter of the thread. The same insert can be used for a range of different thread pitches which have a common thread angle.



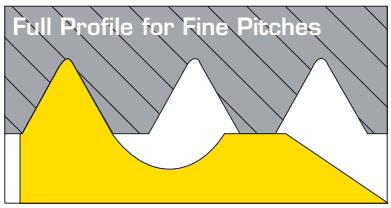
The full profile insert will form a complete thread profile including the crest. For every thread pitch and standard, a separate insert is required.



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



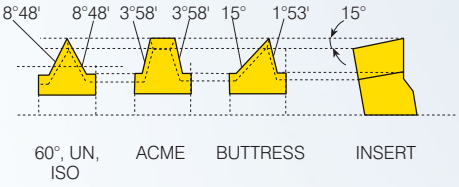
Lead
The distance a threaded part moves axially, with respect to a fixed mating part, in one complete revolution. The lead is equal to the pitch multiplied by the number of thread starts.



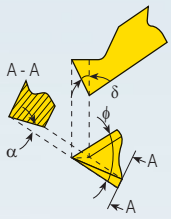
The full profile for fine pitches (0.25-0.45mm/80-52 TPI) will form a complete thread. The topping of the outer diameter is generated by second tooth.

Calculating the Helix Angle

Flank Clearance Angle α

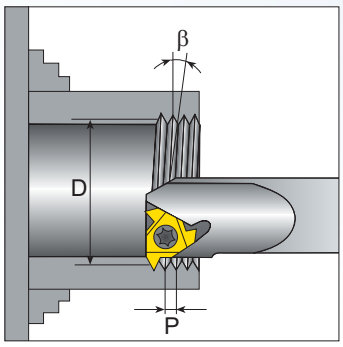


Vardex toolholders are designed to tilt the insert when seated in the toolholder (10° for external, 15° for internal tooling). This results in the differing flank clearance angles, based on the geometry of insert. To ensure that the side of the insert cutting edge will not rub on the workpiece, it is 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
Ø - Enclosed flank angle



Calculating the Helix Angle β

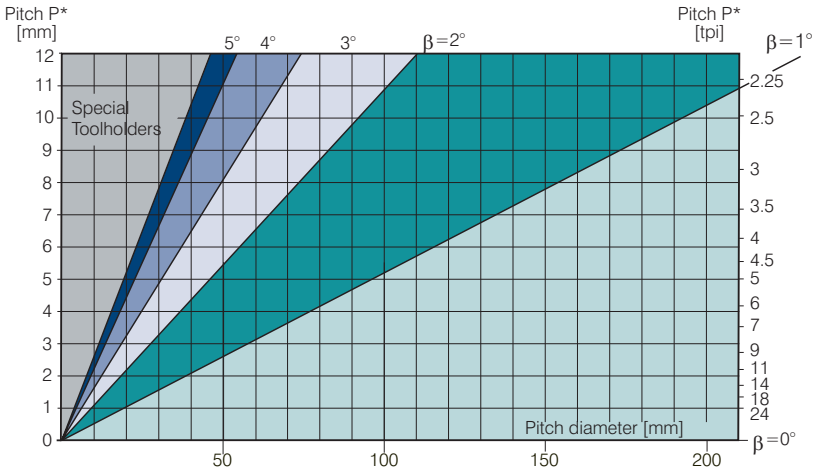
The helix angle is calculated by the following formula:

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

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

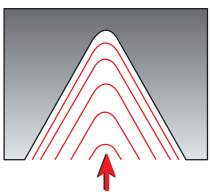
The helix angle can also be found from the diagram below.

Helix Angle Diagram



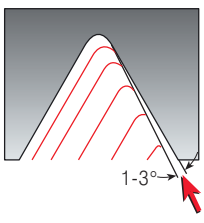
Thread Infead Methods

Radial Infead



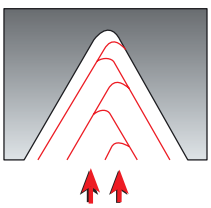
Radial infead is the simplest and quickest method. The feed is perpendicular to the turning axis, and both flanks of the insert perform the cutting operation. Radial infead is recommended in 3 cases:
- when the pitch is smaller than 16 tpi
- for material with short chips
- for work with hardened material

Flank Infead (modified)



Flank infead 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 Infead



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.

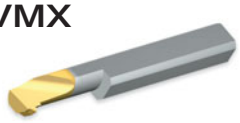
Recommended Grades and Cutting Speeds Vc [m/min]

Mini and Micro

	Material		Hardness Brinell HB	Vc[m/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	50-120	140-200	150-200	20-50
		Medium carbon (C=0.25-0.55 %)	150	40-100	120-180	130-180	15-40
		High carbon (C=0.55-0.85 %)	170	30-80	110-180	120-180	15-30
	Low alloy steel (alloying elements ≤ 5%)	Non hardened	180	50-70	100-155	110-155	20-45
		Hardened	275	40-60	90-145	100-145	10-25
		Hardened	350	30-50	80-135	90-135	10-25
	High alloy steel (alloying elements > 5%)	Annealed	200	30-50	65-115	70-115	
		Hardened	325	25-40	50-100	60-100	
	Cast steel	Low alloy (alloying elements <5%)	200	30-50	30-50	30-50	25-50
		High alloy (alloying elements >5%)	225	25-40	25-40	30-40	20-40
M	Stainless steel Feritic	Non hardened	200	60-100	80-120	90-120	
		Hardened	330	40-60	55-95	60-95	
	Stainless steel Austenitic	Austenitic	180	50-90	60-100	70-100	
		Super austenitic	200	40-60	50-90	60-90	
	Stainless steel Cast feritic	Non hardened	200	40-60	60-80	70-80	
		Hardened	330	30-50	45-65	50-65	
	Stainless steel Cast austenitic	Austenitic	200	40-60	50-70	60-70	
		Hardened	330	30-50	40-60	40-60	
	High temperature alloys	Annealed (Iron based)	200	25-45	25-45	30-45	
		Aged (Iron based)	280	20-30	20-30	20-30	
		Annealed (Nickel or Cobalt based)	250	15-20	15-20	20-20	
		Aged (Nickel or Cobalt based)	350	10-15	10-15	10-15	
	Titanium alloys	Pure 99.5 Ti	400Rm	60-100	60-100	70-100	
		α+β alloys	1050Rm	40-50	40-50	40-50	
K	Extra hard steel	Hardened & tempered	55HRc	20-40	20-40	20-40	
	Malleable cast iron	Ferritic (short chips)	130	50-70	60-80	70-80	
		Pearlitic (long chips)	230	50-70	60-80	70-80	
	Grey cast iron	Low tensile strength	180	50-70	60-80	70-80	
		High tensile strength	260	40-60	40-70	40-70	
	Nodular SG iron	Feritic	160	50-70	60-80	70-80	
		Pearlitic	260	60-80	70-90	80-90	
	Aluminium alloys Wrought	non aging	60	100-300	80-240	90-240	30-60
		Aged	100	100-150	100-170	110-170	25-50
	Aluminium alloys	Cast	75	100-150	100-150	110-150	25-50
		Cast & aged	90	60-100	60-100	70-100	20-40
	Aluminium alloys	Cast Si 13-22%	130	100-150	100-150	110-150	15-30
	Copper and copper alloys	Brass	90	60-100	80-200	90-200	15-35
		Bronze and non leaded copper	100	60-100	80-200	90-200	15-35

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.

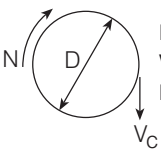
VTX

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

Calculation of N [RPM]

$$N = \frac{1000 \times V_C}{\pi \times D}$$

$$V_C = \frac{N \times \pi \times D}{1000}$$



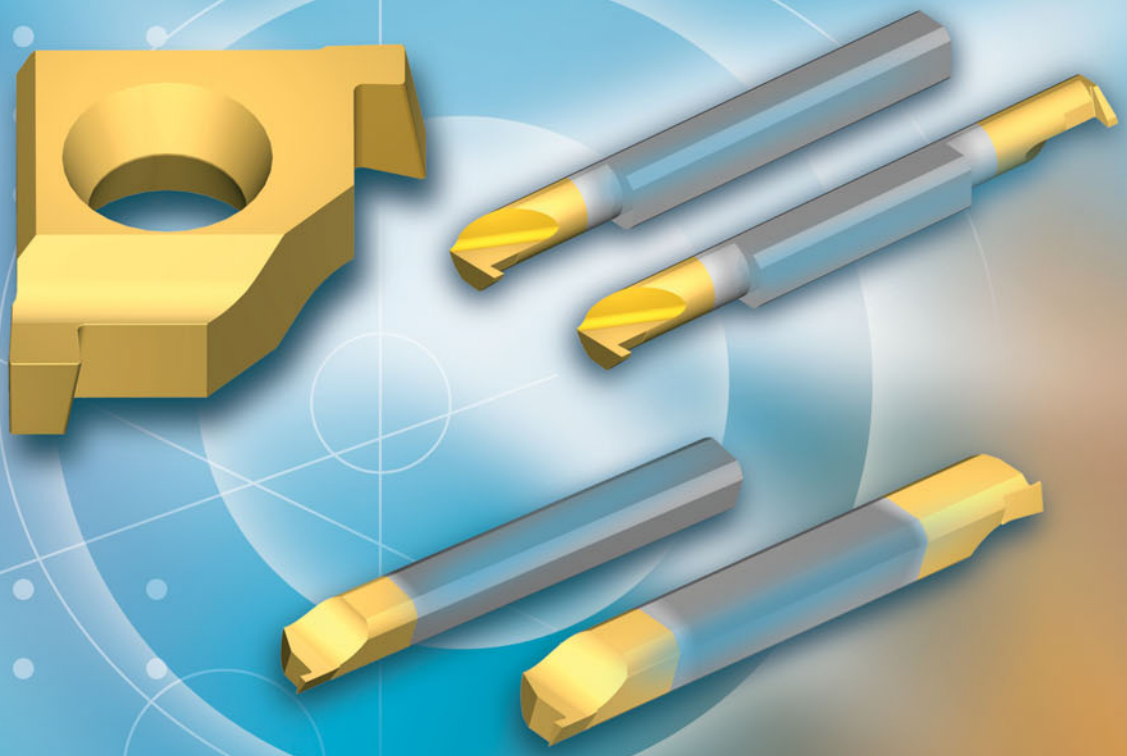
N - Revolution Per Minute [RPM]
V_C - Cutting Speed [m/min]
D - Workpiece Diameter [mm]

Number of Passes

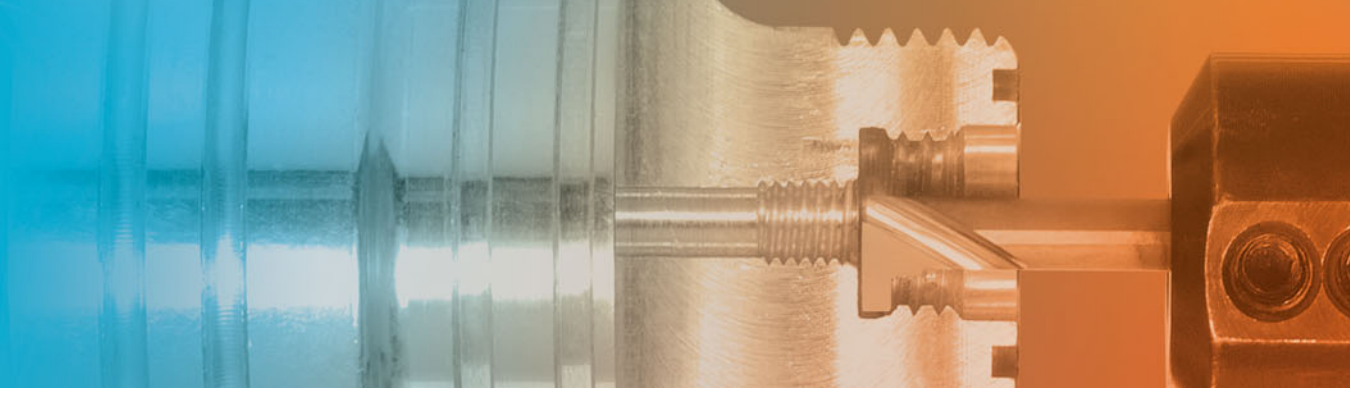
Pitch	mm	0.50	0.75	1.00	1.25	1.50	1.75	2.00
	tpi	48	32	24	20	16	14	12
No. of passes (Micro&Mini)		6-9	6-11	6-12	8-14	9-15	11-18	11-18

VARGUS

Take a closer Look...



MINIPRO Grooving



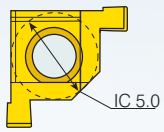
Vardex Ordering Code System

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

0.8 - 1.39 (mm)

6 - Profile Style

C - Full profile

7 - Groove Standard

DIN 472 Partial
DIN 7993 Partial

8 - Groove Depth

0.7 - 1.5 (mm)

9 - Carbide Grade

VKP (for Mini)
VHX (for Mini)

Micro Grooving Inserts

4.0	S	I	R	0.7	A	-	D471/D472	-	1.4	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 471
DIN 472
DIN 7993
DIN 76SH, DIN76ST
DIN3770S, DIN3770S
DIN 471/472- Face Grooving

8 - Groove Depth

0.5 - 1.5 (mm)

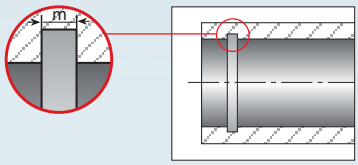
9 - Carbide Grade

VMX

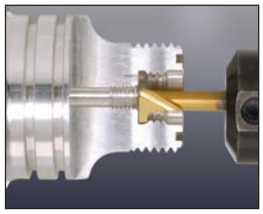
10 - Micro Ended

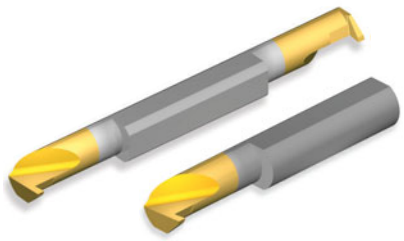
1- Side - Single Ended
None - Double Ended

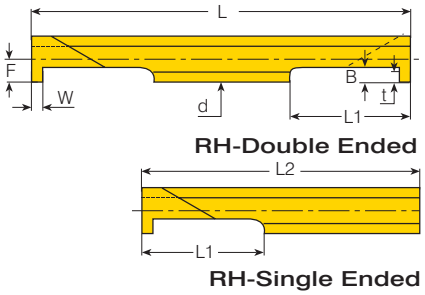
Square Groove



Internal





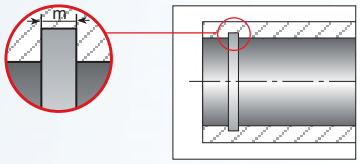


Micro DIN 472

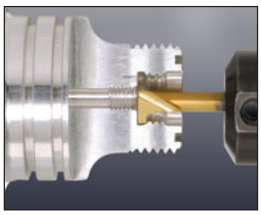
Groove dimensions		Insert dia.	Ordering Code		Groove Std.	Dimensions mm						Min. Bore dia.
W	t	d mm	RH-Single Ended	RH-Double Ended	m (H13)	L1	L2	L	B	F	Holder	
1.0	0.5	3.0	3.0SIR0.90S-D472-0.5...1-SIDE	3.0SIR0.90S-D472-0.5...	0.90	9.0	36	36.0	0.8	1.40	SMC..-3.0	3.2
1.0			3.0SIR0.90M-D472-0.5...1-SIDE	3.0SIR0.90M-D472-0.5...	0.90	16.0	43	50.0				
1.2			3.0SIR1.10S-D472-0.5...1-SIDE	3.0SIR1.10S-D472-0.5...	1.10	9.0	36	36.0				
1.2			3.0SIR1.10M-D472-0.5...1-SIDE	3.0SIR1.10M-D472-0.5...	1.10	16.0	43	50.0				
1.0	1.1	4.0	4.0SIR0.90S-D472-1.1...1-SIDE	4.0SIR0.90S-D472-1.1...	0.90	9.0	36	36.0	1.4	1.90	SMC..-4.0	4.1
1.0			4.0SIR0.90M-D472-1.1...1-SIDE	4.0SIR0.90M-D472-1.1...	0.90	16.0	43	50.0				
1.0			4.0SIR0.90L-D472-1.1...1-SIDE	4.0SIR0.90L-D472-1.1...	0.90	21.0	50	60.0				
1.2			4.0SIR1.10S-D472-1.1...1-SIDE	4.0SIR1.10S-D472-1.1...	1.10	9.0	36	36.0				
1.2			4.0SIR1.10M-D472-1.1...1-SIDE	4.0SIR1.10M-D472-1.1...	1.10	16.0	43	50.0				
1.2			4.0SIR1.10L-D472-1.1...1-SIDE	4.0SIR1.10L-D472-1.1...	1.10	21.0	50	60.0				
1.4			4.0SIR1.30S-D472-1.1...1-SIDE	4.0SIR1.30S-D472-1.1...	1.30	9.0	36	36.0				
1.4			4.0SIR1.30M-D472-1.1...1-SIDE	4.0SIR1.30M-D472-1.1...	1.30	16.0	43	50.0				
1.4			4.0SIR1.30L-D472-1.1...1-SIDE	4.0SIR1.30L-D472-1.1...	1.30	21.0	50	60.0				
1.7			4.0SIR1.60S-D472-1.1...1-SIDE	4.0SIR1.60S-D472-1.1...	1.60	9.0	36	36.0				
1.7			4.0SIR1.60M-D472-1.1...1-SIDE	4.0SIR1.60M-D472-1.1...	1.60	16.0	43	50.0				
1.7			4.0SIR1.60L-D472-1.1...1-SIDE	4.0SIR1.60L-D472-1.1...	1.60	21.0	50	60.0				
1.0	1.5	6.0	6.0SIR0.90S-D472-1.5...1-SIDE	6.0SIR0.90S-D472-1.5...	0.90	9.0	36	36.0	1.8	2.90	SMC..-6.0	6.1
1.0			6.0SIR0.90M-D472-1.5...1-SIDE	6.0SIR0.90M-D472-1.5...	0.90	16.0	43	50.0				
1.0			6.0SIR0.90L-D472-1.5...1-SIDE	6.0SIR0.90L-D472-1.5...	0.90	21.0	50	60.0				
1.2			6.0SIR1.10S-D472-1.5...1-SIDE	6.0SIR1.10S-D472-1.5...	1.10	9.0	36	36.0				
1.2			6.0SIR1.10M-D472-1.5...1-SIDE	6.0SIR1.10M-D472-1.5...	1.10	16.0	43	50.0				
1.2			6.0SIR1.10L-D472-1.5...1-SIDE	6.0SIR1.10L-D472-1.5...	1.10	21.0	50	60.0				
1.4			6.0SIR1.30S-D472-1.5...1-SIDE	6.0SIR1.30S-D472-1.5...	1.30	9.0	36	36.0				
1.4			6.0SIR1.30M-D472-1.5...1-SIDE	6.0SIR1.30M-D472-1.5...	1.30	16.0	43	50.0				
1.4			6.0SIR1.30L-D472-1.5...1-SIDE	6.0SIR1.30L-D472-1.5...	1.30	21.0	50	60.0				
1.7			6.0SIR1.60S-D472-1.5...1-SIDE	6.0SIR1.60S-D472-1.5...	1.60	9.0	36	36.0				
1.7			6.0SIR1.60M-D472-1.5...1-SIDE	6.0SIR1.60M-D472-1.5...	1.60	16.0	43	50.0				
1.7			6.0SIR1.60L-D472-1.5...1-SIDE	6.0SIR1.60L-D472-1.5...	1.60	21.0	50	60.0				
1.95			6.0SIR1.85S-D472-1.5...1-SIDE	6.0SIR1.85S-D472-1.5...	1.85	9.0	36	36.0				
1.95			6.0SIR1.85M-D472-1.5...1-SIDE	6.0SIR1.85M-D472-1.5...	1.85	16.0	43	50.0				
1.95			6.0SIR1.85L-D472-1.5...1-SIDE	6.0SIR1.85L-D472-1.5...	1.85	21.0	50	60.0				
2.25			6.0SIR2.15S-D472-1.5...1-SIDE	6.0SIR2.15S-D472-1.5...	2.15	9.0	36	36.0				
2.25			6.0SIR2.15M-D472-1.5...1-SIDE	6.0SIR2.15M-D472-1.5...	2.15	16.0	43	50.0				
2.25			6.0SIR2.15L-D472-1.5...1-SIDE	6.0SIR2.15L-D472-1.5...	2.15	21.0	50	60.0				

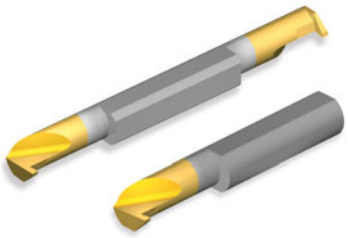
continued on next page

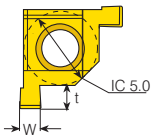
Square Groove (Cont')



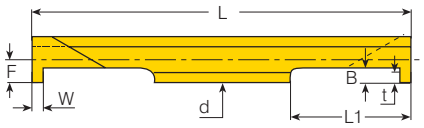
Internal



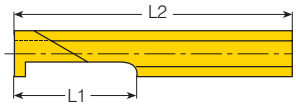




Mini-L
(Partial Profile)



RH-Double Ended



RH-Single Ended

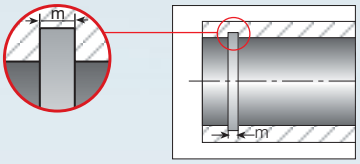
Micro DiN 472 (con't)

Groove dimensions		Insert dia.	Ordering Code		Groove Std.	Dimensions mm						Min. Bore dia.
W	t	d mm	RH-Single Ended	RH-Double Ended	m (H13)	L1	L2	L	B	F	Holder	
1.2	2.0	8.0	8.0SIR1.10M-D472-2.0...1-SIDE	8.0SIR1.10M-D472-2.0...	1.10	20	63	70	2.5	3.9	SMC..-8.0	8.4
1.4	2.0		8.0SIR1.30M-D472-2.0...1-SIDE	8.0SIR1.30M-D472-2.0...	1.30	20	63	70	2.5			
1.7	2.5		8.0SIR1.60M-D472-2.5...1-SIDE	8.0SIR1.60M-D472-2.5...	1.60	20	63	70	3.0			
0.95	2.5		8.0SIR1.85M-D472-2.5...1-SIDE	8.0SIR1.85M-D472-2.5...	1.85	20	63	70	3.0			
2.25	3.0		8.0SIR2.15M-D472-3.0...1-SIDE	8.0SIR2.15M-D472-3.0...	2.15	20	63	70	3.5			
2.75	3.5		8.0SIR2.65M-D472-3.5...1-SIDE	8.0SIR2.65M-D472-3.5...	2.65	20	63	70	4.0			
3.3	3.5		8.0SIR3.15M-D472-3.5...1-SIDE	8.0SIR3.15M-D472-3.5...	3.15	20	63	70	4.0			
1.4	3.5	10.0	10.0SIR1.30M-D472-3.5...1-SIDE	10.0SIR1.30M-D472-3.5...	1.30	25	71	80	4.0	4.9	SMC..-10.0	10.4
1.7			10.0SIR1.60M-D472-3.5...1-SIDE	10.0SIR1.60M-D472-3.5...	1.60	25	71	80				
1.95			10.0SIR1.85M-D472-3.5...1-SIDE	10.0SIR1.85M-D472-3.5...	1.85	25	71	80				
2.25			10.0SIR2.15M-D472-3.5...1-SIDE	10.0SIR2.15M-D472-3.5...	2.15	25	71	80				
2.75			10.0SIR2.65M-D472-3.5...1-SIDE	10.0SIR2.65M-D472-3.5...	2.65	25	71	80				
3.3			10.0SIR3.15M-D472-3.5...1-SIDE	10.0SIR3.15M-D472-3.5...	3.15	25	71	80				
4.3			10.0SIR4.15M-D472-3.5...1-SIDE	10.0SIR4.15M-D472-3.5...	4.15	25	71	80				
5.3			10.0SIR5.15M-D472-3.5...1-SIDE	10.0SIR5.15M-D472-3.5...	5.15	25	71	80				

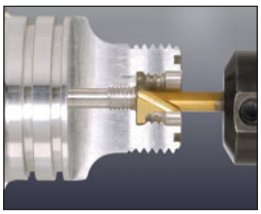
Mini-L DiN 472 (Partial Profile)

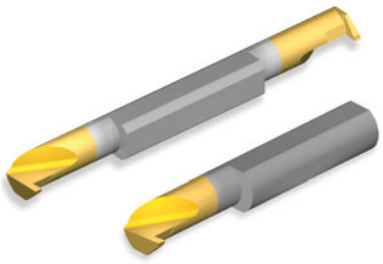
Groove dimensions		Insert size	Ordering Code	Groove Std.	Min. Bore dia. (mm)	Holder
W	t	IC		m (H13)		
1.0	0.7	5.0L	5LIR0.9-D472-0.7	0.9	8.0	.NVR10..-5L
1.2	1.0		5LIR1.1-D472-1.0	1.1		
1.4	1.5		5LIR1.3-D472-1.5	1.3		

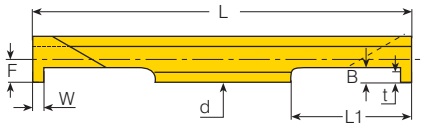
Square Groove (Cont')



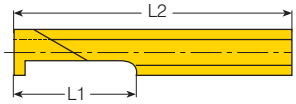
Internal







RH-Double Ended

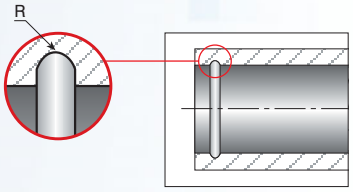


RH-Single Ended

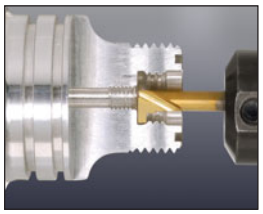
Micro DIN 3770

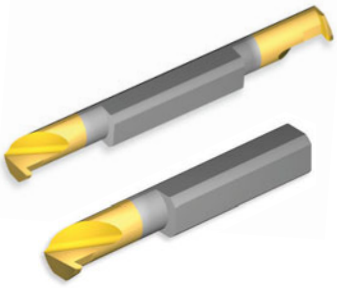
Groove dimensions		Insert dia.	Ordering Code		Groove Std.	Dimensions mm						Min. Bore dia.
W	t	d mm	RH-Single Ended	RH-Double Ended	m (H13)	L1	L2	L	B	F	Holder	
2.0	1.5	6.0	6.0SIR1.6S-D3770S-1.5...1-SIDE	6.0SIR1.6S-D3770S-1.5...	1.6	9.0	36.0	36.0	2.0	2.9	SMC..-6.0	6.1
2.0			6.0SIR1.6M-D3770S-1.5...1-SIDE	6.0SIR1.6M-D3770S-1.5...	1.6	16.0	43.0	50.0				
2.0			6.0SIR1.6L-D3770S-1.5...1-SIDE	6.0SIR1.6L-D3770S-1.5...	1.6	21.0	50.0	60.0				
2.4	1.8		6.0SIR2.0S-D3770D-1.8...1-SIDE	6.0SIR2.0S-D3770D-1.8...	2.0	9.0	36.0	36.0	2.0	2.9		
2.4			6.0SIR2.0M-D3770D-1.8...1-SIDE	6.0SIR2.0M-D3770D-1.8...	2.0	16.0	43.0	50.0				
2.4			6.0SIR2.0L-D3770D-1.8...1-SIDE	6.0SIR2.0L-D3770D-1.8...	2.0	21.0	50.0	60.0				

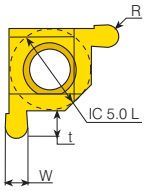
Round Groove



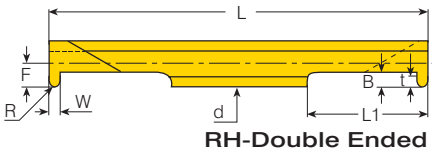
Internal



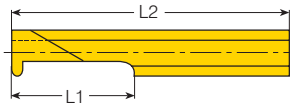




Mini-L
(Partial Profile)



RH-Double Ended



RH-Single Ended

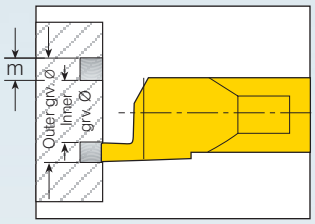
Micro (Partial Profile) DiN 7993

Groove dimensions		Insert dia.	Ordering Code		Groove Std.	Dimensions mm						Min. Bore dia.
W	t	d mm	RH-Single Ended	RH-Double Ended	R	L1	L2	L	B	F	Holder	
0.80	0.6	3.0	3.0SIR0.4S-D7993-0.6...1-SIDE	3.0SIR0.4S-D7993-0.6...	0.40	9.0	36	36.0	0.8	1.4	SMC..-3.0	3.2
0.80			3.0SIR0.4M-D7993-0.6...1-SIDE	3.0SIR0.4M-D7993-0.6...	0.40	16.0	43	50.0				
0.80	0.6	4.0	4.0SIR0.4S-D7993-0.6...1-SIDE	4.0SIR0.4S-D7993-0.6...	0.40	9.0	36	36.0	0.9	1.9	SMC..-4.0	4.1
0.80			4.0SIR0.4M-D7993-0.6...1-SIDE	4.0SIR0.4M-D7993-0.6...	0.40	16.0	43	50.0				
0.80	0.8		4.0SIR0.4L-D7993-0.8...1-SIDE	4.0SIR0.4L-D7993-0.8...	0.40	21.0	50	60.0	1.1			
1.20			4.0SIR0.6S-D7993-0.8...1-SIDE	4.0SIR0.6S-D7993-0.8...	0.60	9.0	36	36.0				
1.20			4.0SIR0.6M-D7993-0.8...1-SIDE	4.0SIR0.6M-D7993-0.8...	0.60	16.0	43	50.0				
1.20			4.0SIR0.6L-D7993-0.8...1-SIDE	4.0SIR0.6L-D7993-0.8...	0.60	21.0	50	60.0				
1.80	1.1		4.0SIR0.9S-D7993-1.1...1-SIDE	4.0SIR0.9S-D7993-1.1...	0.90	9.0	36	36.0	1.4			
1.80			4.0SIR0.9M-D7993-1.1...1-SIDE	4.0SIR0.9M-D7993-1.1...	0.90	16.0	43	50.0				
1.80			4.0SIR0.9L-D7993-1.1...1-SIDE	4.0SIR0.9L-D7993-1.1...	0.90	21.0	50	60.0				
1.80	1.1	6.0	6.0SIR0.9S-D7993-1.1...1-SIDE	6.0SIR0.9S-D7993-1.1...	0.90	9.0	36	36.0	1.4	2.9	SMC..-6.0	6.1
1.80			6.0SIR0.9M-D7993-1.1...1-SIDE	6.0SIR0.9M-D7993-1.1...	0.90	16.0	43	50.0				
1.80			6.0SIR0.9L-D7993-1.1...1-SIDE	6.0SIR0.9L-D7993-1.1...	0.90	21.0	50	60.0				
2.00	1.2		6.0SIR1.0S-D7993-1.2...1-SIDE	6.0SIR1.0S-D7993-1.2...	1.00	9.0	36	36.0	1.5			
2.00			6.0SIR1.0M-D7993-1.2...1-SIDE	6.0SIR1.0M-D7993-1.2...	1.00	16.0	43	50.0				
2.00			6.0SIR1.0L-D7993-1.2...1-SIDE	6.0SIR1.0L-D7993-1.2...	1.00	21.0	50	60.0				
2.20	1.3		6.0SIR1.1S-D7993-1.3...1-SIDE	6.0SIR1.1S-D7993-1.3...	1.10	9.0	36	36.0	1.6			
2.20			6.0SIR1.1M-D7993-1.3...1-SIDE	6.0SIR1.1M-D7993-1.3...	1.10	16.0	43	50.0				
2.20			6.0SIR1.1L-D7993-1.3...1-SIDE	6.0SIR1.1L-D7993-1.3...	1.10	21.0	50	60.0				
1.80	2.0	8.0	8.0SIR0.9M-D7993-2.0...1-SIDE	8.0SIR0.9M-D7993-2.0...	0.90	20.0	63	70.0	2.5	3.9	SMC..-8.0	8.4
2.20			8.0SIR1.1M-D7993-2.0...1-SIDE	8.0SIR1.1M-D7993-2.0...	1.10	20.0	63	70.0				
2.80			8.0SIR1.4M-D7993-2.0...1-SIDE	8.0SIR1.4M-D7993-2.0...	1.40	20.0	63	70.0				
2.80	2.0	10.0	10.0SIR1.4M-D7993-2.9...1-SIDE	10.0SIR1.4M-D7993-2.9...	1.40	25.0	71	80.0	3.4	4.9	SMC..-10.0	10.4
3.60			10.0SIR1.8M-D7993-2.9...1-SIDE	10.0SIR1.8M-D7993-2.9...	1.80	25.0	71	80.0				

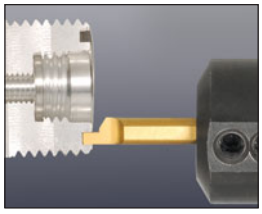
Mini-L (Partial Profile for Bores) DiN 7993

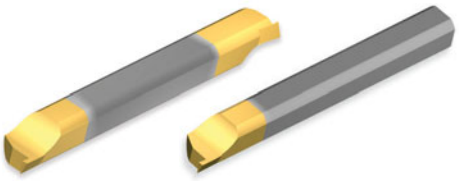
Groove dimensions		Insert size	Ordering Code	Dimensions mm	Minimum Bore dia (mm)	Holder
W	t	IC	RH	R		
0.8	0.8	5.0L	5LIR0.4-D7993-0.8	0.4	8.0	.NVR10..-5L
1.2	1.0		5LIR0.6-D7993-1.0	0.6		

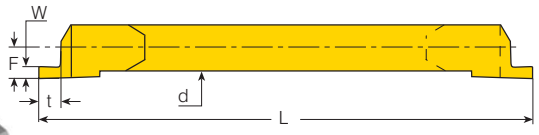
Face Groove



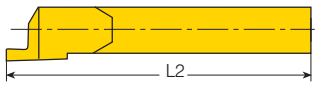
Internal







RH-Double Ended



RH-Single Ended

Micro (Partial Profile) DiN 471, DiN 472

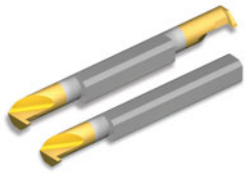
Groove dimensions		Insert dia.	Ordering Code		Groove Std.	Dimensions mm				Inner Groove Ø	Outer Groove Ø
W	t	d mm	RH-Single Ended	RH-Double Ended	m (H13)	L	L2	F	Sleeve		
0.8	1.4	4.0	4.0SIR0.7A-D471/472-1.4...1-SIDE	4.0SIR0.7A-D471/472-1.4...	0.70	50	43	1.40	SMC..-4.0	3.50	5.00
0.9	1.5		4.0SIR0.8A-D471/472-1.5...1-SIDE	4.0SIR0.8A-D471/472-1.5...	0.80					3.40	5.20
1.0	1.6		4.0SIR0.9A-D471/472-1.6...1-SIDE	4.0SIR0.9A-D471/472-1.6...	0.90					3.30	5.30
1.2	1.8		4.0SIR1.1A-D471/472-1.8...1-SIDE	4.0SIR1.1A-D471/472-1.8...	1.10					3.10	5.50
1.4	2.0		4.0SIR1.3A-D471/472-2.0...1-SIDE	4.0SIR1.3A-D471/472-2.0...	1.30					2.90	5.70
1.7	2.3		4.0SIR1.6A-D471/472-2.3...1-SIDE	4.0SIR1.6A-D471/472-2.3...	1.60					2.60	6.00
0.8	1.4	6.0	6.0SIR0.7A-D471/472-1.4...1-SIDE	6.0SIR0.7A-D471/472-1.4...	0.70	50	43	1.90	SMC..-6.0	5.50	7.00
0.9	1.5		6.0SIR0.8A-D471/472-1.5...1-SIDE	6.0SIR0.8A-D471/472-1.5...	0.80					5.40	7.20
1.0	1.6		6.0SIR0.9A-D471/472-1.6...1-SIDE	6.0SIR0.9A-D471/472-1.6...	0.90					5.30	7.30
1.2	1.8		6.0SIR1.1A-D471/472-1.8...1-SIDE	6.0SIR1.1A-D471/472-1.8...	1.10					5.10	7.50
1.4	2.0		6.0SIR1.3A-D471/472-2.0...1-SIDE	6.0SIR1.3A-D471/472-2.0...	1.30					4.90	7.70
1.7	2.3		6.0SIR1.6A-D471/472-2.3...1-SIDE	6.0SIR1.6A-D471/472-2.3...	1.60					4.60	8.00
1.95	2.5		6.0SIR1.85A-D471/472-2.5...1-SIDE	6.0SIR1.85A-D471/472-2.5...	1.85					4.40	8.20
2.25	2.8		6.0SIR2.15A-D471/472-2.8...1-SIDE	6.0SIR2.15A-D471/472-2.8...	2.15					4.10	8.50
1.2	1.8	8.0	8.0SIR1.1A-D471/472-1.8...1-SIDE	8.0SIR1.1A-D471/472-1.8...	1.10	70	63	3.95	SMC..-8.0	8.06	10.44
1.4	2.0		8.0SIR1.3A-D471/472-2.0...1-SIDE	8.0SIR1.3A-D471/472-2.0...	1.30					7.66	10.44
1.7	2.3		8.0SIR1.6A-D471/472-2.3...1-SIDE	8.0SIR1.6A-D471/472-2.3...	1.60					7.06	10.44
1.95	2.5		8.0SIR1.85A-D471/472-2.5...1-SIDE	8.0SIR1.85A-D471/472-2.5...	1.85					6.56	10.44
2.25	2.8		8.0SIR2.15A-D471/472-2.8...1-SIDE	8.0SIR2.15A-D471/472-2.8...	2.15					5.96	10.44
2.75	3.3		8.0SIR2.65A-D471/472-3.3...1-SIDE	8.0SIR2.65A-D471/472-3.3...	2.65					4.96	10.44
1.4	1.8	10.0	10.0SIR1.3A-D471/472-1.8...1-SIDE	10.0SIR1.3A-D471/472-1.8...	1.30	80	71	4.95	SMC..-10.0	9.66	12.44
1.7	2.3		10.0SIR1.6A-D471/472-2.3...1-SIDE	10.0SIR1.6A-D471/472-2.3...	1.60					9.06	12.44
1.95	2.5		10.0SIR1.85A-D471/472-2.5...1-SIDE	10.0SIR1.85A-D471/472-2.5...	1.85					8.56	12.44
2.25	2.8		10.0SIR2.15A-D471/472-2.8...1-SIDE	10.0SIR2.15A-D471/472-2.8...	2.15					7.96	12.44
2.75	3.3		10.0SIR2.65A-D471/472-3.3...1-SIDE	10.0SIR2.65A-D471/472-3.3...	2.65					6.96	12.44
3.25	3.8		10.0SIR3.15A-D471/472-3.8...1-SIDE	10.0SIR3.15A-D471/472-3.8...	3.15					5.96	12.44
4.25	4.8		10.0SIR4.15A-D471/472-4.8...1-SIDE	10.0SIR4.15A-D471/472-4.8...	4.15					3.96	12.44

Recommended Grades, Cutting Speeds Vc [m/min] and Feed f [mm/rev]

	Material		Hardness Brinell HB	Vc[m/min] Coated			Feed f [mm/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	50-120	140-200	20-50	0.3	0.03
		Medium carbon (C=0.25-0.55 %)	150	40-100	120-180	15-40	0.15	0.02
		High carbon (C=0.55-0.85 %)	170	30-80	110-180	15-30	0.05	0.015
	Low alloy steel (alloying elements≤5%)	Non hardened	180	50-70	100-155	20-45	0.25	0.02
		Hardened	275	40-60	90-145	10-25	0.1	0.015
		Hardened	350	30-50	80-135	10-25	0.05	0.01
	High alloy steel (alloying elements > 5%)	Annealed	200	30-50	65-115		0.2	0.02
		Hardened	325	25-40	50-100		0.05	0.01
	Cast steel	Low alloy (alloying elements <5%)	200	30-50	30-50	25-50	0.2	0.02
		High alloy (alloying elements >5%)	225	25-40	25-40	20-40	0.05	0.02
M	Stainless steel Feritic	Non hardened	200	60-100	80-120		0.2	0.015
		Hardened	330	40-60	55-95		0.05	0.01
	Stainless steel Austenitic	Austenitic	180	50-90	60-100		0.2	0.015
		Super austenitic	200	40-60	50-90		0.05	0.015
	Stainless steel Cast feritic	Non hardened	200	40-60	60-80		0.2	0.02
		Hardened	330	30-50	45-65		0.05	0.01
	Stainless steel Cast austenitic	Austenitic	200	40-60	50-70		0.2	0.02
		Hardened	330	30-50	40-60		0.05	0.01
	High temperature alloys	Annealed (Iron based)	200	25-45	25-45		0.2	0.015
		Aged (Iron based)	280	20-30	20-30		0.05	0.01
		Annealed (Nickel or Cobalt based)	250	15-20	15-20		0.05	0.015
		Aged (Nickel or Cobalt based)	350	10-15	10-15		0.05	0.01
	Titanium alloys	Pure 99.5 Ti	400Rm	60-100	60-100		0.1	0.02
		α+β alloys	1050Rm	40-50	40-50		0.05	0.02
K	Extra hard steel	Hardened & tempered	55HRc	20-40	20-40		0.02	0.01
	Malleable cast iron	Ferritic (short chips)	130	50-70	60-80		0.2	0.02
		Pearlitic (long chips)	230	50-71	60-80		0.15	0.01
	Grey cast iron	Low tensile strength	180	50-72	60-80		0.2	0.02
		High tensile strength	260	40-60	40-70		0.1	0.015
	Nodular SG iron	Feritic	160	50-70	60-80		0.2	0.02
		Pearlitic	260	60-80	70-90		0.1	0.015
	Aluminium alloys Wrought	non aging	60	100-300	80-240	30-60	0.4	0.03
		Aged	100	100-150	100-170	25-50	0.1	0.03
	Aluminium alloys	Cast	75	100-150	100-150	25-50	0.25	0.03
		Cast & aged	90	60-100	60-100	20-40	0.15	0.03
	Aluminium alloys	Cast Si 13-22%	130	100-150	100-150	15-30	0.15	0.02
	Copper and copper alloys	Brass	90	60-100	80-200	15-35	0.2	0.03
		Bronze and non leaded copper	100	60-100	80-200	15-35	0.15	0.03

Grades and Applications

VMX



General use carbide grade for Micro inserts. TiN coated.

VHX

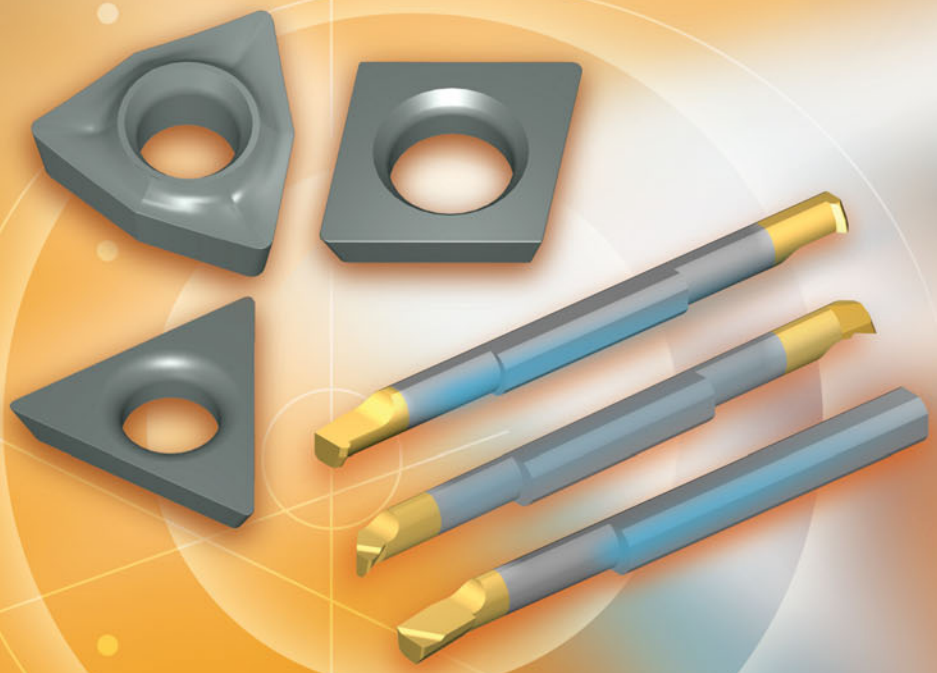
General use HSS grade for Mini inserts. For machining at low cutting speed. TiN coated.

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 1.02mm
41-IC 0.160" - Thickness 1.19mm
42-IC 0.156" - Thickness 1.57mm
50-IC 0.187" - Thickness 2.44mm

6 - Corner Radius

11 - R 0.05
12 - R 0.18
13 - R 0.20
14 - R 0.38

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.

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

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

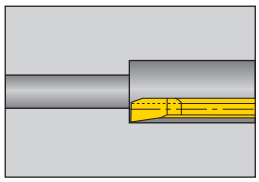
VMX

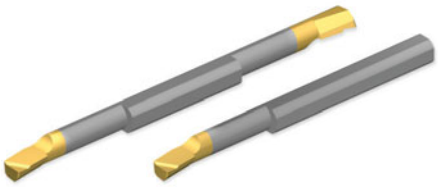
10 - Micro Ended

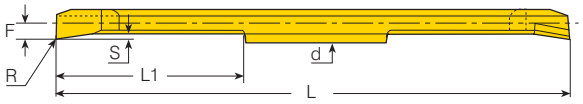
1-Side - Single Ended
None - Double Ended

Boring

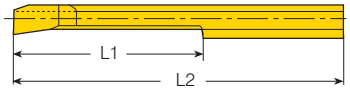
Internal







RH-Double Ended



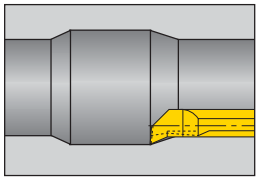
RH-Single Ended

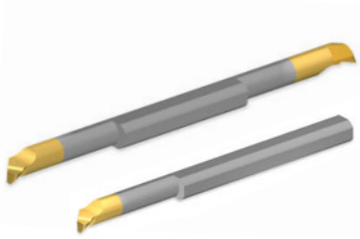
Micro

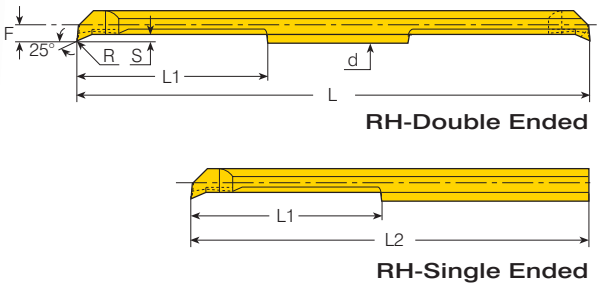
Insert dia.			Dimensions mm						Holder	Min. Bore dia.
d mm	**RH**-Single Ended	**RH**-Double Ended	**R**	**L**	**L1**	**L2**	**F**	**S**		
3.0	3.0SIR0.1USBore-1...1-SIDE	3.0SIR0.1USBore-1	0.1	36	6	36	1.22	0.40	SMC..-3.0	3.2
	3.0SIR0.1S-Bore-1...1-SIDE	3.0SIR0.1S-Bore-1	0.1	36	9	36	1.22	0.40		
	3.0SIR0.2S-Bore-1...1-SIDE	3.0SIR0.2S-Bore-1...	0.2	36	9	36	1.42	0.66		
	3.0SIR0.2M-Bore-1...1-SIDE	3.0SIR0.2M-Bore-1...	0.2	50	16	43	1.42	0.66		
4.0	4.0SIR0.2S-Bore-1...1-SIDE	4.0SIR0.2S-Bore-1...	0.2	36	9	36	1.92	0.66	SMC..-4.0	4.2
	4.0SIR0.2M-Bore-1...1-SIDE	4.0SIR0.2M-Bore-1...	0.2	50	16	43	1.92	0.66		
	4.0SIR0.2L-Bore-1...1-SIDE	4.0SIR0.2L-Bore-1...	0.2	60	21	50	1.92	0.66		
6.0	6.0SIR0.2S-Bore-1...1-SIDE	6.0SIR0.2S-Bore-1...	0.2	36	9	36	2.92	0.77	SMC..-6.0	6.2
	6.0SIR0.2M-Bore-1...1-SIDE	6.0SIR0.2M-Bore-1...	0.2	50	16	43	2.92	0.77		
	6.0SIR0.2L-Bore-1...1-SIDE	6.0SIR0.2L-Bore-1...	0.2	60	21	50	2.92	0.77		
8.0	8.0SIR0.2S-Bore-1...1-SIDE	8.0SIR0.2S-Bore-1...	0.2	54	12	54	3.92	0.82	SMC..-8.0	8.2
	8.0SIR0.2M-Bore-1...1-SIDE	8.0SIR0.2M-Bore-1...	0.2	70	20	63	3.92	0.82		
	8.0SIR0.2L -Bore-1...1-SIDE	8.0SIR0.2L -Bore-1...	0.2	86	28	70	3.92	0.82		
10.0	10.0SIR0.2S-Bore-1...1-SIDE	10.0SIR0.2S-Bore-1...	0.2	60	15	60	4.92	1.00	SMC..-10.0	10.2
	10.0SIR0.2M-Bore-1...1-SIDE	10.0SIR0.2M-Bore-1...	0.2	80	25	71	4.92	1.00		
	10.0SIR0.2L-Bore-1...1-SIDE	10.0SIR0.2L-Bore-1...	0.2	100	35	80	4.92	1.00		

Copy

Internal





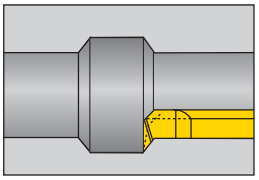


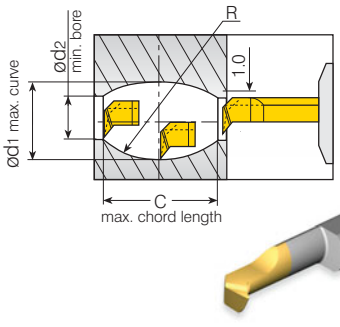
Micro

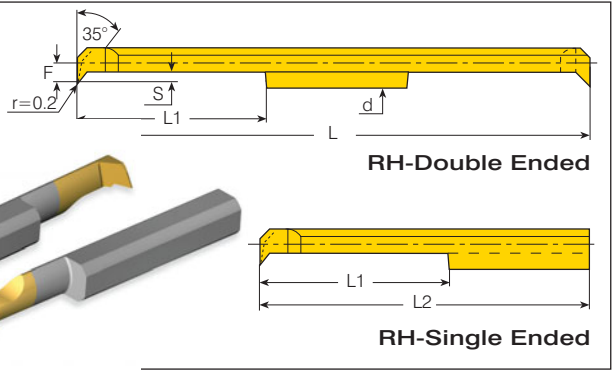
Insert dia.			Dimensions mm						Holder	Min. Bore dia.
d (mm)	RH-Single Ended	RH-Double Ended	R	L	L1	L2	F	S		
4.0	4.0SIR0.2S-Copy-1...1-SIDE	4.0SIR0.2S-Copy-1...	0.2	36	9	36	1.92	1.0	SMC..-4.0	4.2
	4.0SIR0.2M-Copy-1...1-SIDE	4.0SIR0.2M-Copy-1...	0.2	50	16	43	1.92	1.0		
	4.0SIR0.2L-Copy-1...1-SIDE	4.0SIR0.2L-Copy-1...	0.2	60	21	50	1.92	1.0		
6.0	6.0SIR0.2S-Copy-1...1-SIDE	6.0SIR0.2S-Copy-1...	0.2	36	9	36	2.92	1.3	SMC..-6.0	7.0
	6.0SIR0.2M-Copy-1...1-SIDE	6.0SIR0.2M-Copy-1...	0.2	50	16	43	2.92	1.3		
	6.0SIR0.2L-Copy-1...1-SIDE	6.0SIR0.2L-Copy-1...	0.2	60	21	50	2.92	1.3		

Copy (Long Nose)

Internal







Micro

Insert dia.	Ordering Code		Dimensions mm					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...	36	9	36	2.92	2.7	SMC...-6.0	12.3	6.9
	6.0SIR0.2M-3527-1...1-SIDE	6.0SIR0.2M-3527-1...	50	16	43	2.92	2.7			
	6.0SIR0.2L-3527-1...1-SIDE	6.0SIR0.2L-3527-1...	60	21	50	2.92	2.7			
8.0	8.0SIR0.2S-3537-1...1-SIDE	8.0SIR0.2S-3537-1...	54	12	54	3.92	3.7	SMC...-8.0	16.1	8.9
	8.0SIR0.2M-3537-1...1-SIDE	8.0SIR0.2M-3537-1...	70	20	63	3.92	3.7			
	8.0SIR0.2L-3537-1...1-SIDE	8.0SIR0.2L-3537-1...	86	28	70	3.92	3.7			
10.0	10.0SIR0.2S-3547-1...1-SIDE	10.0SIR0.2S-3547-1...	60	15	60	4.92	4.7	SMC...-10.0	20.2	10.8
	10.0SIR0.2M-3547-1...1-SIDE	10.0SIR0.2M-3547-1...	80	25	71	4.92	4.7			
	10.0SIR0.2L-3547-1...1-SIDE	10.0SIR0.2L-3547-1...	100	35	80	4.92	4.7			

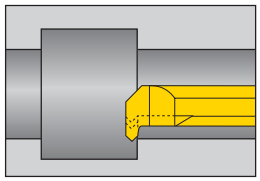
Note:

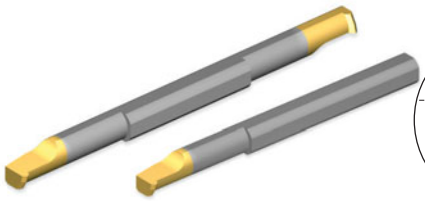
1.Radius R can be calculated using formula $R=(4S1^2+C^2)/8S$

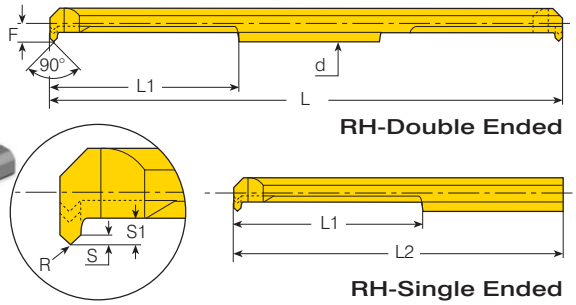
2.Chord length can be calculated using formula $C=2\sqrt{2S1 \times R-S^2}$

Chamfer

Internal





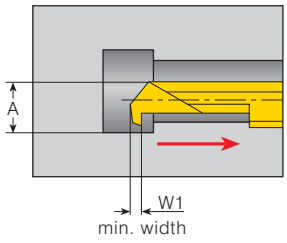


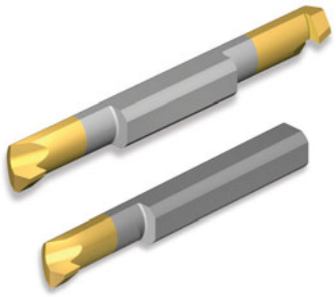
Micro

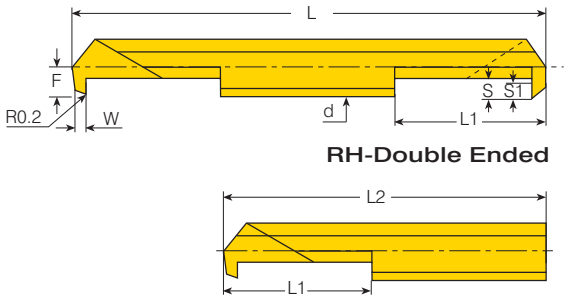
Insert dia.			Dimensions mm							Holder	Min. Bore dia.
d (mm)	RH-Single Ended	RH-Double Ended	R	L	L1	L2	F	S1	S		
4.0	4.0SIR0.2S-Chamfer-0...1-SIDE	4.0SIR0.2S-Chamfer-0...	0.2	36	9	36	1.92	1.0	0.40	SMC...-4.0	4.2
	4.0SIR0.2M-Chamfer-0...1-SIDE	4.0SIR0.2M-Chamfer-0...	0.2	50	16	43	1.92	1.0	0.40		
	4.0SIR0.2L-Chamfer-0...1-SIDE	4.0SIR0.2L-Chamfer-0...	0.2	60	21	50	1.92	1.0	0.40		
6.0	6.0SIR0.2S-Chamfer-0...1-SIDE	6.0SIR0.2S-Chamfer-0...	0.2	36	9	36	2.92	1.2	0.70	SMC...-6.0	7.0
	6.0SIR0.2M-Chamfer-0...1-SIDE	6.0SIR0.2M-Chamfer-0...	0.2	50	16	43	2.92	1.2	0.70		
	6.0SIR0.2L-Chamfer-0...1-SIDE	6.0SIR0.2L-Chamfer-0...	0.2	60	21	50	2.92	1.2	0.70		

Back Edge

Internal





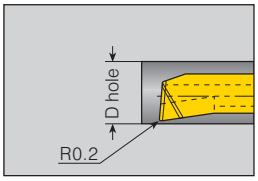


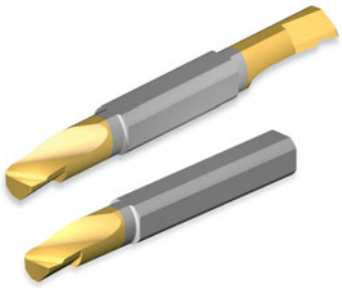
Micro

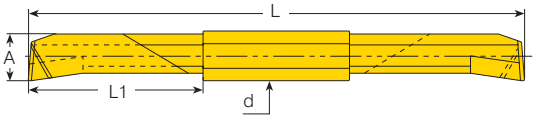
Insert dia.	Ordering Code		Dimensions mm									Holder
d (mm)	RH-Single Ended	RH-Double Ended	L	L1	L2	A	W	W1	F	S	S1	
3.0	3.0SIR0.2S-Back-1...1-SIDE	3.0SIR0.2S-Back-1...	36	9.0	36	3.42	1.5	1.81	1.42	0.8	0.6	SMC...-3.0
	3.0SIR0.2M-Back-1...1-SIDE	3.0SIR0.2M-Back-1...	50	16.0	43							
4.0	4.0SIR0.2S-Back-1...1-SIDE	4.0SIR0.2S-Back-1...	36	9.0	36	4.44	2.0	2.34	1.92	1.3	1.0	SMC...-4.0
	4.0SIR0.2M-Back-1...1-SIDE	4.0SIR0.2M-Back-1...	50	16.0	43							
	4.0SIR0.2L-Back-1...1-SIDE	4.0SIR0.2L-Back-1...	60	21.0	50							
6.0	6.0SIR0.2S-Back-1...1-SIDE	6.0SIR0.2S-Back-1...	36	9.0	36	6.44	2.0	2.46	2.92	1.9	1.6	SMC...-6.0
	6.0SIR0.2M-Back-1...1-SIDE	6.0SIR0.2M-Back-1...	50	16.0	43							
	6.0SIR0.2L-Back-1...1-SIDE	6.0SIR0.2L-Back-1...	60	21.0	50							

Bore-Drill

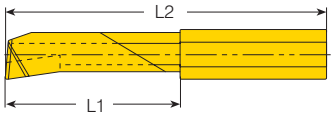
Internal







RH-Double Ended



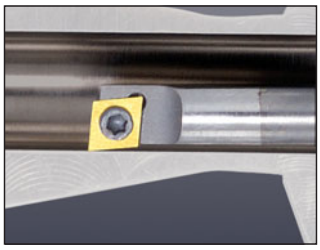
RH-Single Ended

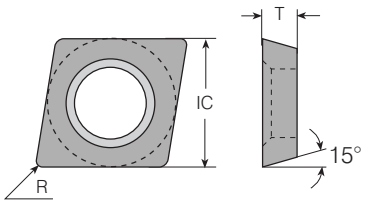
Micro

Insert dia.	Ordering Code		Dimensions mm				Min. Bore dia	Holder
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...	50	16	43	3.53	3.74	SMC...-4.0
6.0	6.0SIR0.2M-BD-1...1-SIDE	6.0SIR0.2M-BD-1...	50	16	43	5.20	5.80	SMC...-6.0
	6.0SIR0.2L-BD-1...1-SIDE	6.0SIR0.2L-BD-1...	60	21	50			
8.0	8.0SIR0.2S-BD-1...1-SIDE	8.0SIR0.2S-BD-1...	54	12	54	6.90	7.80	SMC...-8.0
	8.0SIR0.2M-BD-1...1-SIDE	8.0SIR0.2M-BD-1...	70	20	63			
	8.0SIR0.2L-BD-1...1-SIDE	8.0SIR0.2L-BD-1...	86	28	70			

Boring Indexable inserts

Internal



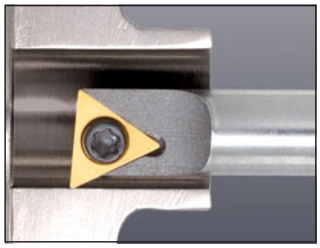


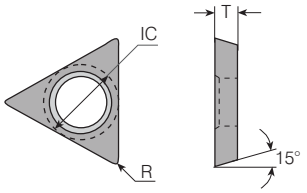
CD0W inserts for PowerBore boring bar

PowerBore CD0W Inserts

Insert Size	Ordering Code	Dimensions [mm]		Insert Screw
IC		R	T	
.156"	CD0W4011...	0.05	1.02	VS01
	CD0W4012...	0.18	1.02	
	CD0W4014...	0.38	1.02	

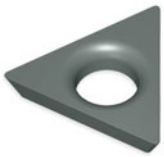
Internal





TD0W inserts for PowerBore boring bar

PowerBore TD0W Inserts

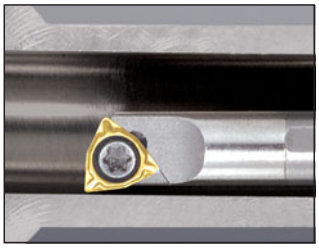


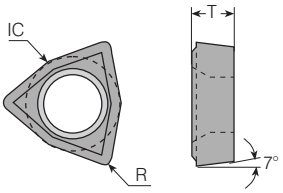
Insert Size	Ordering Code	Dimensions [mm]		Insert Screw
IC		R	T	
.160"	TD0W4111...	0.05	1.19	VS01, VS40
	TD0W4112...	0.18	1.19	
	TD0W4114...	0.38	1.19	

For PowerBore **holders**, see pages 47-50

Boring Indexable inserts (Cont')

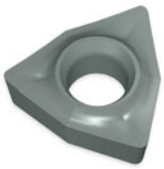
Internal





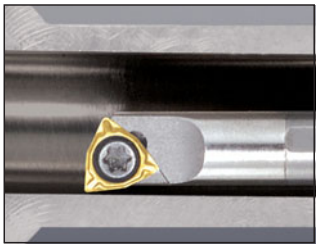
WC0W inserts for PowerBore boring bar

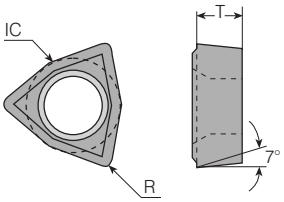
PowerBore WC0W Inserts



Insert Size	Ordering Code	Dimensions mm		Insert Screw
IC		R	T	
.156"	WC0W4213...	0.20	1.57	VS40
	WC0W4214...	0.38	1.57	

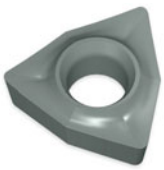
Internal





WC0W inserts for PowerBore boring bar

PowerBore WC0W Inserts



Insert Size	Ordering Code	Dimensions mm		Insert Screw
IC		R	T	
.187"	WC0W5013...	0.20	2.44	VS41
	WC0W5014...	0.38	2.44	

For PowerBore **holders**, see pages 47-50

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

	Material		Hardness Brinell HB	Vc[m/min] Coated PowerBore VTX	Vc[m/min] Coated Micro VMX	Feed f [mm/rev] PowerBore	Feed f [mm/rev] Micro	Max. depth [mm] PowerBore CD0W	PowerBore TD0W	PowerBore WD0W	Max. depth [mm] Micro
P	Unalloyed steel	Low carbon (C=0.1-0.25 %)	125	115-190	50-120	0.25	0.055	0.5	0.45	0.6	0.4
		Medium carbon (C=0.25-0.55 %)	150	100-175	40-100	0.2	0.04	0.5	0.45	0.6	0.4
		High carbon (C=0.55-0.85 %)	170	90-165	30-80	0.15	0.03	0.5	0.45	0.6	0.4
	Low alloy steel (alloying elements≤5%)	Non hardened	180	85-145	50-70	0.2	0.04	0.4	0.35	0.5	0.3
		Hardened	275	75-140	40-60	0.15	0.04	0.4	0.35	0.5	0.3
		Hardened	350	70-135	30-50	0.1	0.03	0.4	0.35	0.5	0.3
	High alloy steel (alloying elements > 5%)	Annealed	200	70-110	30-50	0.1	0.04	0.2	0.18	0.4	0.15
		Hardened	325	50-100	25-40	0.05	0.03	0.2	0.18	0.4	0.15
	Cast steel	Low alloy (alloying elements <5%)	200	75-140	30-50	0.25	0.04	0.2	0.18	0.4	0.15
		High alloy (alloying elements >5%)	225	60-120	25-40	0.1	0.04	0.2	0.18	0.4	0.15
M	Stainless steel Feritic	Non hardened	200	70-130	60-100	0.2	0.04	0.25	0.22	0.5	0.2
		Hardened	330	60-115	40-60	0.08	0.03	0.2	0.18	0.4	0.15
	Stainless steel Austenitic	Austenitic	180	90-140	50-90	0.2	0.04	0.25	0.22	0.5	0.2
		Super austenitic	200	40-110	40-60	0.08	0.04	0.2	0.18	0.4	0.15
	Stainless steel Cast feritic	Non hardened	200	90-120	40-60	0.2	0.04	0.25	0.22	0.5	0.2
		Hardened	330	65-110	30-50	0.08	0.03	0.2	0.18	0.4	0.15
	Stainless steel Cast austenitic	Austenitic	200	85-110	40-60	0.2	0.04	0.25	0.22	0.5	0.2
		Hardened	330	60-100	30-50	0.08	0.03	0.2	0.18	0.4	0.15
	High temperature alloys	Annealed (Iron based)	200	45-60	25-45	0.2	0.04	0.25	0.22	0.5	0.2
		Aged (Iron based)	280	30-50	20-30	0.08	0.03	0.2	0.18	0.4	0.15
		Annealed (Nickel or Cobalt based)	250	20-30	15-20	0.08	0.015	0.2	0.18	0.4	0.15
		Aged (Nickel or Cobalt based)	350	15-25	10-15	0.05	0.01	0.2	0.18	0.4	0.15
	Titanium alloys	Pure 99.5 Ti	400Rm	140-170	60-100	0.05	0.02	0.2	0.18	0.4	0.15
		α+β alloys	1050Rm	50-70	40-50	0.05	0.02	0.2	0.18	0.4	0.15
K	Extra hard steel	Hardened & tempered	55HRc	45-60	20-40	0.02	0.01	0.1	0.05	0.2	0.05
	Malleable cast iron	Ferritic (short chips)	130	70-160	50-70	0.15	0.02	0.3	0.3	0.4	0.25
		Pearlitic (long chips)	230	60-145	50-70	0.1	0.01	0.3	0.3	0.4	0.25
	Grey cast iron	Low tensile strength	180	70-130	50-72	0.15	0.02	0.5	0.45	0.6	0.4
		High tensile strength	260	60-115	40-60	0.1	0.015	0.5	0.45	0.6	0.4
	Nodular SG iron	Feritic	160	125-160	50-70	0.15	0.02	0.5	0.45	0.6	0.4
		Pearlitic	260	90-120	60-80	0.1	0.015	0.5	0.45	0.6	0.4
	Aluminium alloys Wrought	Non aging	60	100-365	100-300	0.3	0.03	0.76	0.63	1.0	0.5
		Aged	100	80-220	100-150	0.2	0.03	0.76	0.63	1.0	0.5
	Aluminium alloys	Cast	75	200-400	100-150	0.3	0.03	0.76	0.63	1.0	0.5
		Cast & aged	90	200-280	60-100	0.2	0.03	0.76	0.63	1.0	0.5
	Aluminium alloys	Cast Si 13-22%	130	60-180	100-150	0.3	0.02	0.76	0.63	1.0	0.5
	Copper and copper alloys	Brass	90	80-225	60-100	0.3	0.03	0.76	0.63	1.0	0.5
		Bronze and non leaded copper	100	80-255	60-100	0.2	0.03	0.76	0.63	1.0	0.5

Grades and 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	16	-	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.
10, 12, 16, 20

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

Mini Toolholders

B	N	VR		10	M	-	5.0	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

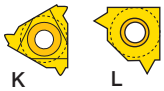
3 - Tool Type
VR - Internal Round Shank

4 - Cooling
C - Coolant Channel

5 - Shank Dia
10, 12
6.2 (Mini Adjust)
8.0 (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

K L

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

PowerBore Boring Bars

C	05	D	T	J		5
1	2	3	4	5		6

1 - Shank Style
C - Carbide
S - Steel

2 - Shank Dia.
04 - 4.0 mm
05 - 5.0 mm
06 - 6.0 mm
08 - 8.0 mm
10 - 10.0 mm
12 - 12.0 mm

3 - Bar Dia. [D1]
A - 4.2
B - 4.6
C - 4.8
D - 5.0
E - 5.2
F - 6.0
G - 6.4
H - 7.9
J - 8.0

4 - Insert Shape
C - Diamond 80 Deg.

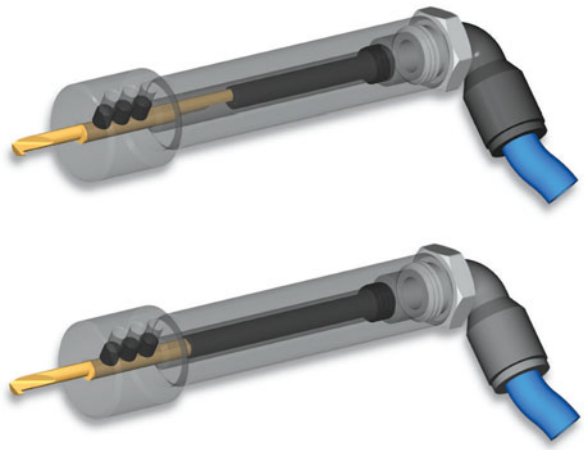
T - Triangle

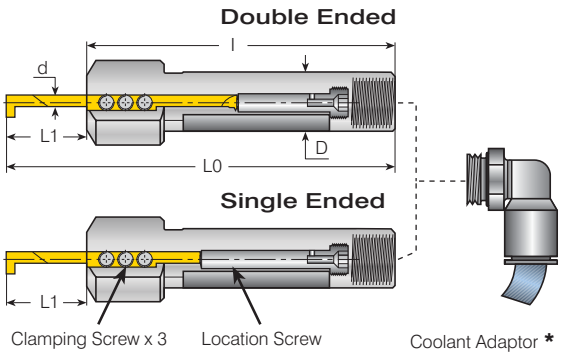
W - Trigon 80 Deg.


5 - Holder Length [L2]
A - 57
C - 64
D - 70
E - 76
G - 89
J - 102
P - 152

6 - Front Relief Angle
0, 5, 7

Internal Toolholders





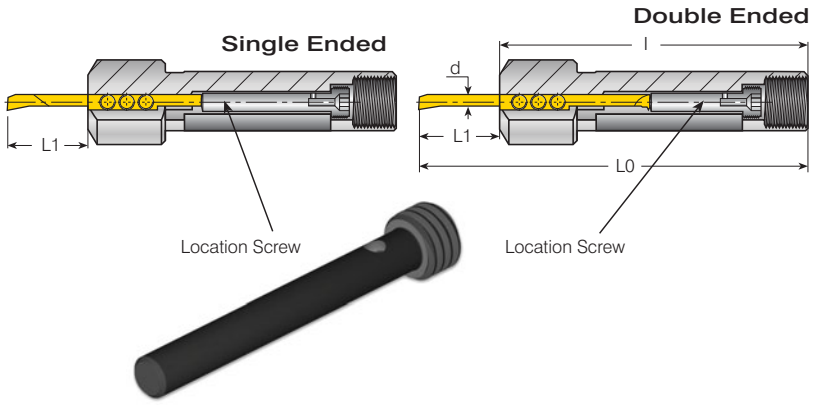
Micro

Micro Insert Dia.	Ordering Code	Dimensions		Spare Parts: Coolant Adaptor	Location Screw: Screw	Location Screw: Key	Clamping Screw x 3: Screw	Clamping Screw x 3: Key
d (mm)		D	l					
3.0	SMC10-3.0	10	80	-	see next page	K4.0	M4X0.7X4.0	K2.0
	SMC12-3.0	12		-				
	SMC16-3.0	16	95	G1/4A				
	SMC20-3.0	20		G1/4A				
4.0	SMC10-4.0	10	80	-	see next page	K4.0	M4X0.7X4.0	K2.0
	SMC12-4.0	12		-				
	SMC16-4.0	16	95	G1/4A				
	SMC20-4.0	20		G1/4A				
6.0	SMC12-6.0	12	80	-	see next page	K4.0	M4X0.7X4.0	K2.0
	SMC16-6.0	16	95	G1/4A				
	SMC20-6.0	20		G1/4A				
8.0	SMC16-8.0	16	95	G1/4A	see next page	K4.0	M6X1.0X5.0	K3.0
	SMC20-8.0	20		G1/4A				
10.0	SMC16-10.0	16	95	G1/4A	see next page	K4.0	M6X1.0X5.0	K3.0
	SMC20-10.0	20		G1/4A				

* Coolant Adaptor is optional

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

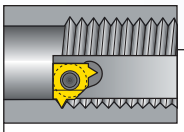
Internal Toolholders



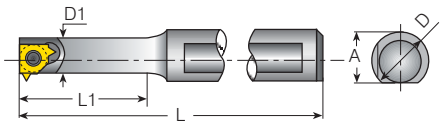
Micro Toolholders - Location Screws

Micro Insert Dia.	Toolholder	Dimensions mm			Location Screw			
d [mm]		**l**	**L1**	**L0**	**Single Ended**	**M**	**Double Ended**	**M**
3	SMC10-3.0 SMC12-3.0	80	9 - Short	89	4GISM8X28	28	4GISM8X28	28
		80	16 - Medium	96			4GISM8X21	21
	SMC16-3.0 SMC20-3.0	95	9 - Short	104	4GISM8X49	49	4GISM8X49	49
		95	16 - Medium	111			4GISM8X42	42
4	SMC10-4.0 SMC12-4.0	80	9 - Short	89	4GISM8X28	28	4GISM8X28	28
		80	16 - Medium	96			4GISM8X21	21
		80	21 - Long	101			4GISM8X16	16
	SMC16-4.0 SMC20-4.0	95	9 - Short	104	4GISM8X49	49	4GISM8X49	49
		95	16 - Medium	111			4GISM8X42	42
		95	21 - Long	116			4GISM8X37	37
6	SMC12-6.0	80	9 - Short	89	4GISM8X28	28	4GISM8X28	28
		80	16 - Medium	96			4GISM8X21	21
		80	21 - Long	101			4GISM8X16	16
	SMC16-6.0 SMC20-6.0	95	9 - Short	104	4GISM8X49	49	4GISM8X49	49
		95	16 - Medium	111			4GISM8X42	42
		95	21 - Long	116			4GISM8X37	37
8	SMC16-8.0 SMC20-8.0	95	12 - Short	107	4GISM8X33	33	4GISM8X33	33
		95	20 - Medium	115			4GISM8X25	25
		95	28 - Long	123			4GISM8X17	17
10	SMC16-10.0 SMC20-10.0	95	15 - Short	110	4GISM8X30	30	4GISM8X30	30
		95	25 - Medium	120			4GISM8X20	20
		95	35 - Long	130			4GISM8X10	10

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

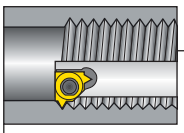


Internal Toolholders

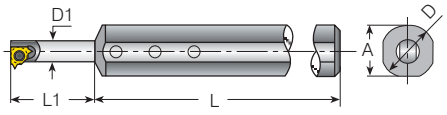


Mini-L

Insert Size	Ordering Code	Dimensions mm					Anti-Vibration System	Spare Parts	
IC		A	L	L1	D	D1		Insert Screw	Torx Key
5.0L	SNVR 10U-5L	9.4	81	16	10	6.2	No	SN5LT	K5LT
	BNVR 10S-5L	9.4	87	22	10	6.2	Yes		
	BNVR 10M-5L	9.4	97	31	10	6.2	Yes		
	BNVR 10L-5L	9.4	109	43	10	6.2	Yes		

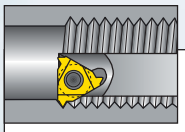


Internal Toolholders



Mini-L-Adjustable

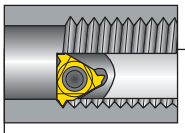
Insert Size	Ordering Code		Dimensions mm					Spare Parts			
IC	Sleeve	Holder	A	L	L1	D	D1	Insert Screw	Torx Key for Insert Screw	Holder Screw x 3	Key for Holder Screw
5.0L	SV16-6.2	BNVR6.2T-5L	15.6	100	8-44	16	6.2	SN5LT	K5LT	S4.0	K4.0



Internal Toolholders

Mini-3

Insert Size	Ordering Code	Dimensions mm					Anti-Vibration System	Spare Parts	
IC		A	L	L1	D	D1		Insert Screw	Torx Key
4.0	CNVRC 5-4.0K	5.2	100	26	6	5.1	Carbide Shank	SN4MT	K6MT
	SNVR 5-4.0K	11.0	100	12	12	5.1	No		
6.0	SNVR 12U-6.0	11.4	82	16	12	8	No	SN6MT	K6MT
	BNVR 10S-6.0	9.4	89	22	10	8	Carbide Implanted		
	BNVR 10M-6.0	9.4	98	31	10	8	Carbide Implanted		
	BNVR 10L-6.0	9.4	110	43	10	8	Carbide Implanted		



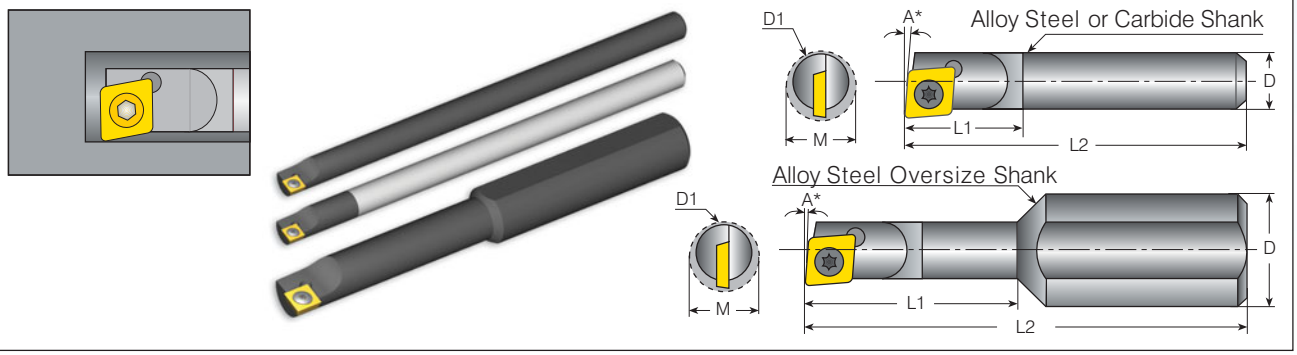
Internal Toolholders

Mini-3-Adjustable

Insert Size	Ordering Code		Dimensions mm					Spare Parts			
IC	Sleeve	Holder	A	L	L1	D	D1	Insert Screw	Torx Key for Insert Screw	Holder Screw x 3	Key for Holder Screw
6.0	SV16-8.0	BNVR8.0T-6.0	15.6	100	8-56	16	8	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

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
5.0	S05-ACC--7	7°	5.0	4.2	4.6	64	12	CD0W	VS01	VT51
	S05-BCC--5	5°	5.0	4.6	5.3	64				
	S05-DCC--5	5°	5.0	5.0	6.1	64	D1=D			
	S05-DCC--0	0°	5.0	5.0	6.4	64				
6.0	S06-FCE--5	5°	6.0	6.0	7.0	76				
	S06-FCE--0	0°	6.0	6.0	7.3	76				

Solid Carbide Shank with Alloy Steel Head - Standard Size

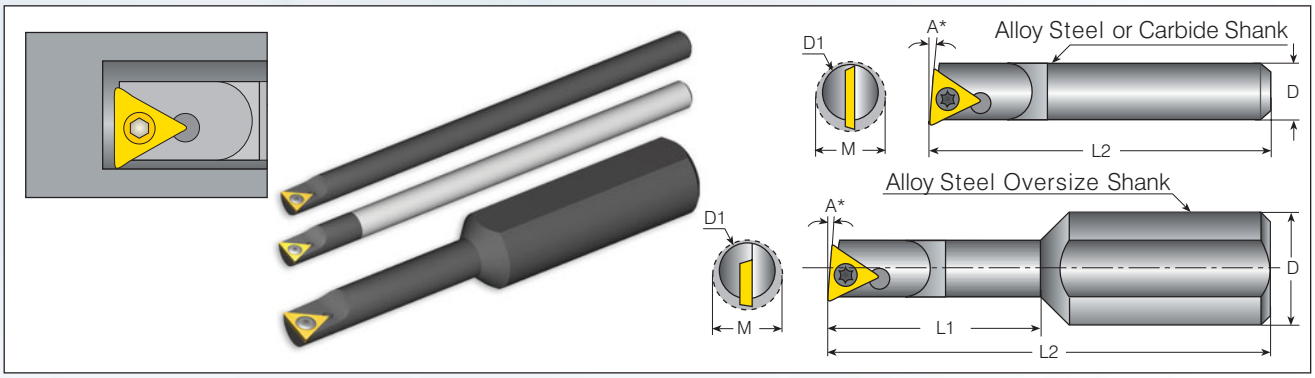
Shank	Ordering Code	A	D	D1	M	L2	L1	Spare Parts		
		angle	shank dia	bar dia	min.bore	overall length	bar length	Insert Type	Screw	Torx Key
4.0	C04-ACP--7	7°	4.0	4.2	4.6	152	12	CD0W	VS01	VT51
5.0	C05-CCJ--5	5°	5.0	4.8	5.5	102				
	C05-DCJ--5	5°	5.0	5.0	6.1	102	D1=D			
	C05-DCJ--0	0°	5.0	5.0	6.5	102				
6.0	C06-FCJ--5	5°	6.0	6.0	7.0	102				
	C06-FCJ--0	0°	6.0	6.0	7.3	102				

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
8.0	S08-BCA--5	5°	8.0	4.6	5.5	57	25	CD0W	VS01	VT51
	S08-ECA--5	5°	8.0	5.2	5.8	57				
	S08-ECA--0	0°	8.0	5.2	6.2	57				
	S08-GCC--5	5°	8.0	6.4	7.4	64	32			
	S08-GCC--0	0°	8.0	6.4	7.6	64				

* 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
5.0	S05-DTG--5	5°	5.0	7.1	89	TD0W	VS01	VT51
	S05-DTG--0	0°	5.0	7.1	89			
6.0	S06-FTJ--5	5°	6.0	7.3	102		VS40	
	S06-FTJ--0	0°	6.0	7.3	102			
8.0	S08-JTJ--5	5°	8.0	9.2	102			
	S08-JTJ--0	0°	8.0	9.2	102			

Solid Carbide Shank with Alloy Steel Head - Standard Size

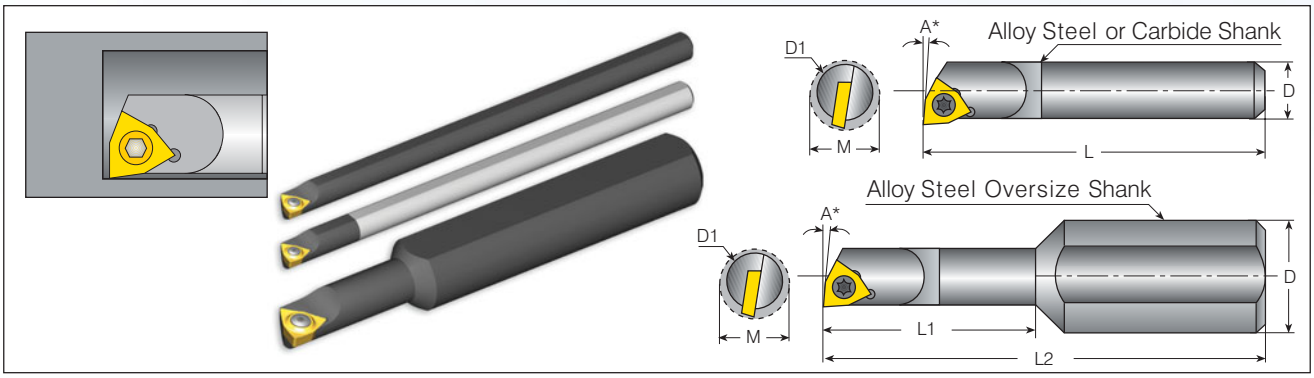
Shank	Ordering Code	A	D = D1	M	L2	Spare Parts		
		angle	bar dia	min.bore	overall length	Insert Type	Screw	Torx Key
5.0	C05-DTJ--5	5°	5.0	7.1	102	TD0W	VS01	VT51
	C05-DTJ--0	0°	5.0	7.1	102			
6.0	C06-FTJ--5	5°	6.0	7.3	102		VS40	
	C06-FTJ--0	0°	6.0	7.3	102			
8.0	C08-JTJ--5	5°	8.0	9.2	102			
	C08-JTJ--0	0°	8.0	9.2	102			

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
12.0	S12-ETC--5	5°	12.0	5.2	6.9	64	25	TD0W	VS01	VT51
	S12-ETC--0	0°	12.0	5.2	6.9	64				
	S12-GTD--5	5°	12.0	6.4	7.6	70	32		VS40	
	S12-GTD--0	0°	12.0	6.4	7.6	70				
	S12-HTE--5	5°	12.0	7.9	9.1	76	38			
	S12-HTE--0	0°	12.0	7.9	9.1	76				

* 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

Shank	Ordering Code	A	D = D1	M	L	Spare Parts		
		angle	bar dia.	min.bore	bar length	Insert Type	Screw	Torx Key
5.0	S05-DWC--5	5°	5.0	6.1	64	WC0W4213 WC0W4214	VS40	VT51
	S05-DWC--0	0°	5.0	6.4	64			
6.0	S06-FWJ--5	5°	6.0	7.0	102			
	S06-FWJ--0	0°	6.0	7.3	102			

Solid Carbide Shank with Alloy Steel Head - Standard Size

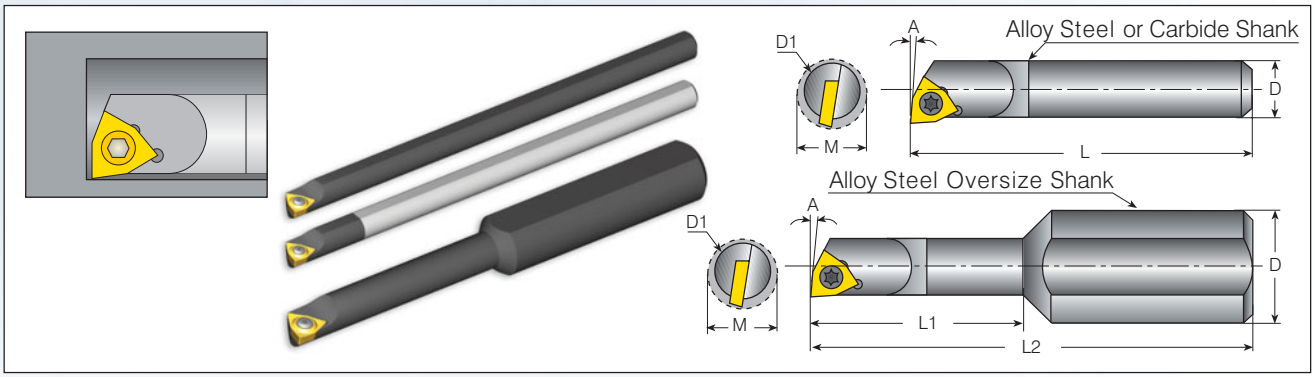
Shank	Ordering Code	A	D = D1	M	L	Spare Parts		
		angle	bar dia.	min.bore	bar length	Insert Type	Screw	Torx Key
5.0	C05-DWJ--5	5°	5.0	6.1	102	WC0W4213 WC0W4214	VS40	VT51
	C05-DWJ--0	0°	5.0	6.4	102			
6.0	C06-FWJ--5	5°	6.0	7.0	102			
	C06-FWJ--0	0°	6.0	7.3	102			

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
10.0	S10-EWA--5	5°	10.0	5.2	5.8	57	13	WC0W4213 WC0W4214	VS40	VT51
	S10-EWA--0	0°	10.0	5.2	6.2	57				
	S10-GWC--5	5°	10.0	6.4	7.4	64	19			
	S10-GWC--0	0°	10.0	6.4	7.6	64				

* 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
8.0	S08-JWJ--5	5°	8.0	9.2	102	WCOW5013	VS41	VT51
	S08-JWJ--0	0°	8.0	9.2	102	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
8.0	C08-JWJ--5	5°	8.0	9.2	102	WC0W5013	VS41	VT51
	C08-JWJ--0	0°	8.0	9.2	102	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
10.0	S10-HWE--5	5°	10.0	7.9	9.2	76	38	WC0W5013	VS41	VT51
	S10-HWE--0	0°	10.0	7.9	9.2	76	38	WC0W5014		

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

VARGUS

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MilliPro

New!

For very small bores.
Minimum: M2 x 0.4

TM Solid Helical

For small bores. Heavy-duty use.
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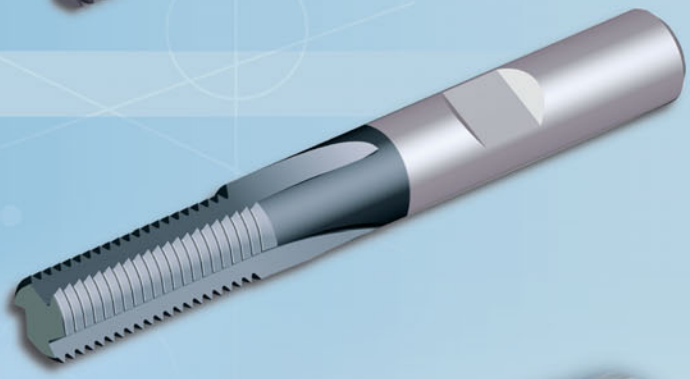
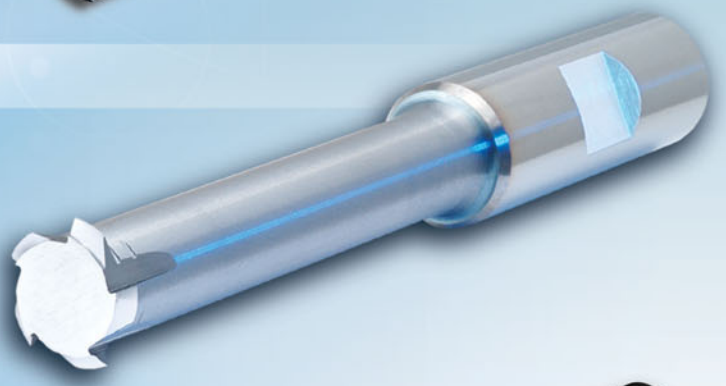
TM Solid Straight

Economical solution for small bores. Normal use.
Minimum: M4.5 x 0.75



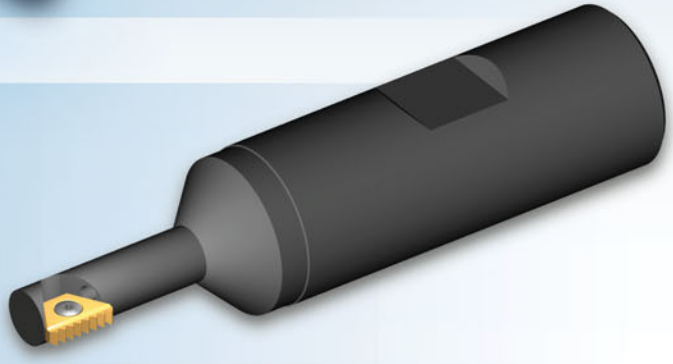
TM Solid Deep

For deep holes, up to 3 x D
Minimum: M6 x 1.0



TM Mini

Indexable insert for small bores
Minimum: M10 x 0.75



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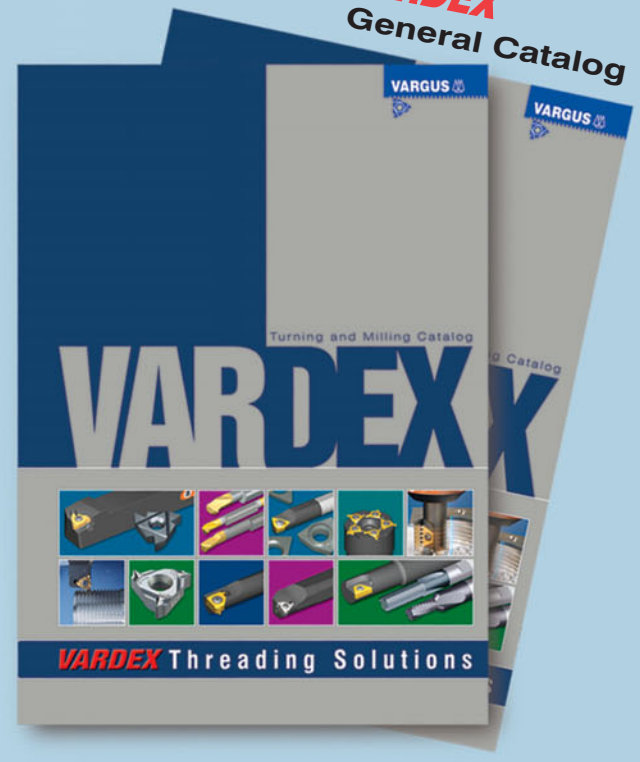

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