

Multiplus

Multi-tooth inserts
for high-volume production.

Available in three styles

M+ Style



2-3 teeth

Z+ Style



2 teeth

T+ Style



Up to 8 teeth

NEW
Improved design!

- Fewer passes for higher productivity
- Optimal distribution of cutting load
- Longer tool life



FINISH

SEMI-FINISH

ROUGHING

Metric

ISO Metric

External

M+ Style



Insert Size	Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L	mm	RH	h _{min}	X	Y	RH Toolholder	
3/8"	16	1.0	3	3ER1.0ISO3M+...	0.61	1.8	2.6	YE3M AL...-3
		1.5	2	3ER1.5ISO2M+...	0.92	1.6	2.4	
		2.0	2	3ER2.0ISO2M+...	1.23	2.1	3.1	
1/2"	22	1.5	3	4ER1.5ISO3M+...	0.92	2.5	3.8	YE4M AL...-4
		2.0	2	4ER2.0ISO2M+...	1.23	2.1	3.1	
		2.0	3	4ER2.0ISO3M+...	1.23	3.2	5.1	
		2.5	2	4ER2.5ISO2M+...	1.53	2.5	3.9	

T+ Style



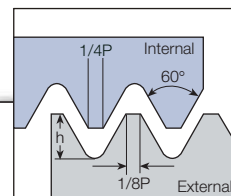
1/2"	T	22	2.0	8	4ER2.0ISO8T+...	1.23	0.2	17.5	Y4T AL...-4T
------	---	----	-----	---	-----------------	------	-----	------	--------------

Internal

M+ Style

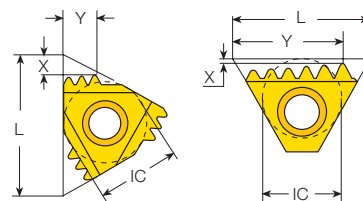


Insert Size	Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L	mm	RH	h _{min}	X	Y	RH Toolholder	
3/8"	16	1.0	3	3IR1.0ISO3M+...	0.58	1.7	2.6	YI3M AVR...-3
		1.5	2	3IR1.5ISO2M+...	0.87	1.6	2.4	
		2.0	2	3IR2.0ISO2M+...	1.15	2.0	3.1	
1/2"	22	2.0	2	4IR2.0ISO2M+...	1.15	2.0	3.1	YI4M AVR...-4
		2.0	3	4IR2.0ISO3M+...	1.15	3.2	5.1	



Defined by: R262 (DIN 13)
Tolerance class: 6g/6H

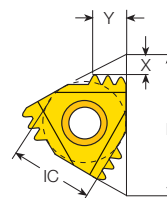
External



M+ Style

T+ Style

Internal



M+ Style

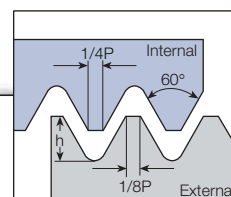
American UN

External

M+ Style

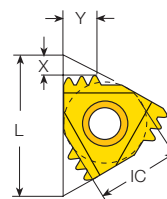


Insert Size	Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L	mm	tpi	RH	h _{min}	X	Y	RH Toolholder
3/8"	16	20	3	3ER20UN3M+...	0.78	2.2	3.3	YE3M AL...-3
		18	3	3ER18UN3M+...	0.87	2.3	3.6	
		16	2	3ER16UN2M+...	0.97	1.7	2.5	
		14	2	3ER14UN2M+...	1.11	1.9	2.8	
		12	2	3ER12UN2M+...	1.3	2.2	3.3	
1/2"	22	16	3	4ER16UN3M+...	0.97	2.6	4.1	YE4M AL...-4
		12	2	4ER12UN2M+...	1.3	2.2	3.3	
		12	3	4ER12UN3M+...	1.3	3.4	5.4	
		11	2	4ER11UN2M+...	1.42	2.3	3.6	
5/8"	27	8	2	5ER8UN2M+...	1.95	3.1	4.9	YE5M AL...-5M



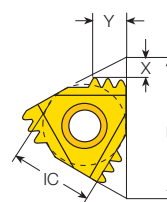
Defined by: ANSI B1.1:74
Tolerance class: 2A/2B

External



M+ Style

Internal



M+ Style

Internal

M+ Style



Insert Size	Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L	mm	tpi	RH	h _{min}	X	Y	RH Toolholder
3/8"	16	12	2	3IR12UN2M+...	1.22	2.2	3.3	YI3M AVR...-3
		16	2	3IR16UN2M+...	0.92	1.7	2.5	
1/2"	22	16	3	4IR16UN3M+...	0.92	2.6	4.1	YI4M AVR...-4
		12	2	4IR12UN2M+...	1.22	2.2	3.3	
		12	3	4IR12UN3M+...	1.22	3.4	5.4	
5/8"	27	8	2	5IR8UN2M+...	1.83	3.1	4.9	YI5M AVR...-5M



Whitworth for BSW, BSP

External

M+ Style



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	tpi		RH	h min	X	Y	RH	Toolholder
3/8"	16	19	3	3ER19W3M+...	0.86	2.2	3.4	YE3M	AL...-3
		14	2	3ER14W2M+...	1.16	2.0	3.0		
1/2"	22	14	3	4ER14W3M+...	1.16	2.9	4.6	YE4M	AL...-4
		11	2	4ER11W2M+...	1.48	2.3	3.5		

Internal

M+ Style



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	tpi		RH	h min	X	Y	RH	Toolholder
3/8"	16	14	2	3IR14W2M+...	1.16	2.0	3.0	YI3M	AVR...-3
1/2"	22	11	2	4IR11W2M+...	1.48	2.3	3.5	YI4M	AVR...-4

NPT

External

M+ Style



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	tpi		RH	h min	X	Y	RH	Toolholder
1/2"	22	11.5	2	4ER11.5NPT2M+...	1.64	2.2	3.4	YE4M	AL...-4
5/8"	27	11.5	3	5ER11.5NPT3M+...	1.64	3.5	5.6	YE5M	AL...-5M
		8	2	5ER8NPT2M+...	2.42	3.1	4.9		

Z+ Style



1/2"	22	11.5	2	4ER11.5NPT2Z+...	1.64	2.7	10.0	YE4Z	AL...-4Z
		8	2	4ER8NPT2Z+...	2.42	3.4	9.6		

Internal

M+ Style

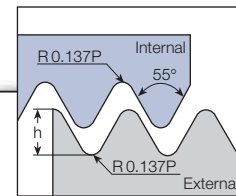


Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	tpi		RH	h min	X	Y	RH	Toolholder
1/2"	22	11.5	2	4IR11.5NPT2M+...	1.64	2.2	3.4	YI4M	AVR...-4
5/8"	27	11.5	3	5IR11.5NPT3M+...	1.64	3.5	5.6	YI5M	AVR...-5M
		8	2	5IR8NPT2M+...	2.42	3.1	4.9		

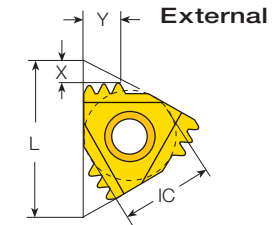
Z+ Style



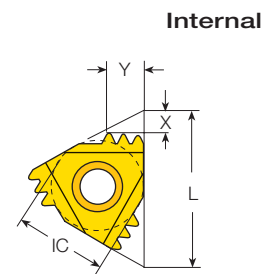
1/2"	22	11.5	2	4IR11.5NPT2Z+...	1.64	2.7	10.0	YI4Z	AVR...-4Z
		8	2	4IR8NPT2Z+...	2.42	3.4	9.6		



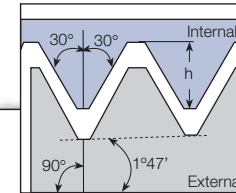
Defined by:
B.S.84:1956, DIN 259,
ISO228/1:1982
Tolerance class: Medium class A



M+ Style

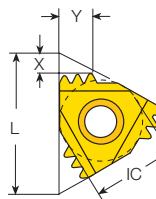


M+ Style

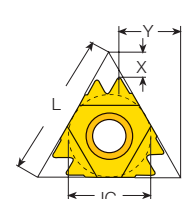


Defined by: USAS B2.1:1968
Tolerance class: Standard NPT

External

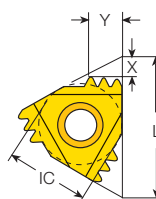


M+ Style

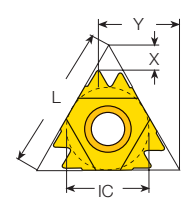


Z+ Style

Internal



M+ Style



Z+ Style

API Buttress Casing

External

T+ Style



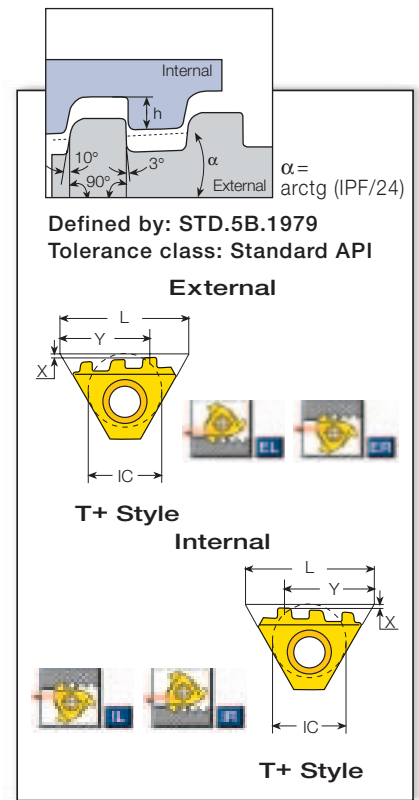
Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	tpi		RH	h min	X	Y	RH	Toolholder
1/2"T	22	5	3	4ER5BUT753T+...	1.55	0.1	16.1	Y4T	AL...-4T

Internal

T+ Style



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	tpi		RH	h min	X	Y	RH	Toolholder
1/2"T	22	5	3	4IR5BUT753T+...	1.55	0.1	16.1	Y4T	AVR...-4T



API Round Casing & Tubing

External

M+ Style



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	tpi		RH	h min	X	Y	RH	Toolholder
5/8"	27	10	3	5ER10APIRD3M+...	1.41	3.9	6.3	YE5M	AL...-5M
		8	2	5ER8APIRD2M+...	1.81	2.9	4.5		

T+ Style



1/2"T	22	8	3	4ER8APIRD3T+...	1.81	0.2	14.2	Y4T	AL...-4T
		8	5	4ER8APIRD5T+...	1.81	0.2	16.7		

Internal

M+ Style



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	tpi		RH	h min	X	Y	RH	Toolholder
1/2"	22	10	2	4IR10APIRD2M+...	1.41	2.4	3.7	YI4M	AVR...-4
5/8"	27	10	3	5IR10APIRD3M+...	1.41	3.9	6.3	YI5M	AVR...-5M
		8	2	5IR8APIRD2M+...	1.81	2.9	4.5		

Z+ Style

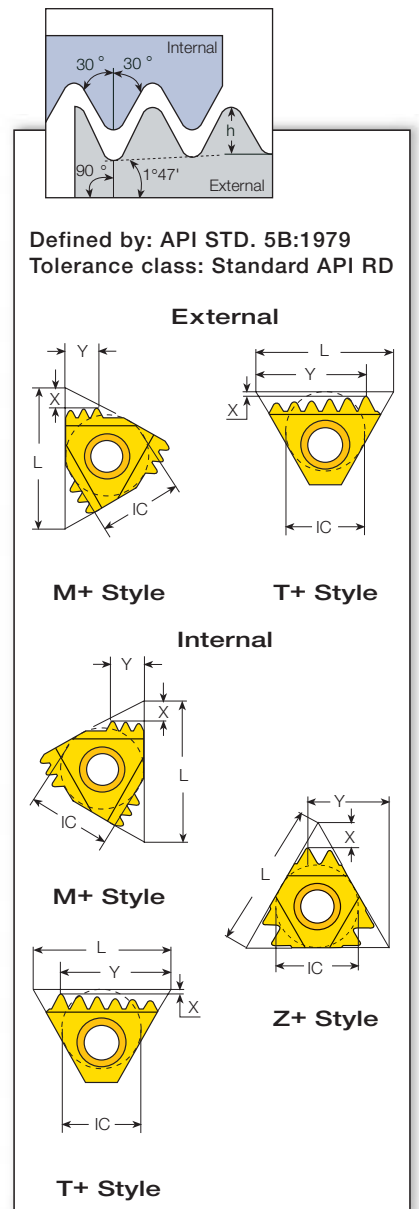


1/2"	22	8	2	4IR8APIRD2Z+...	1.81	3.7	9.6	YI4Z	AVR...-4Z
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T+ Style

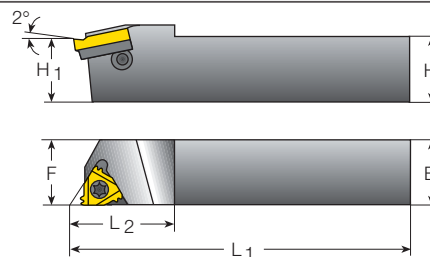
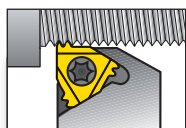


1/2"T	22	8	5	4IR8APIRD5T+...	1.81	0.2	16.7	Y4T	AVR...-4T
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External Toolholders



M Style

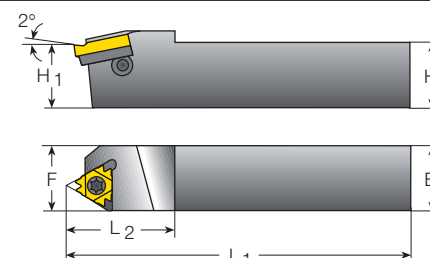
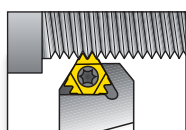
Insert Size	Ordering Code	Dimensions mm			
IC	H=H1=B	F	L1	L2	
5/8" M	AL32-5M	32	32	176.6	40
	AL40-5M	40	40	206.6	40
	AL50-5M	50	50	256.6	40

Spare Parts

Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
SA5T	SY5T	K5T	YE5M	YI5M

All M Style toolholders have a 1.5° helix angle.

External Toolholders



Z Style

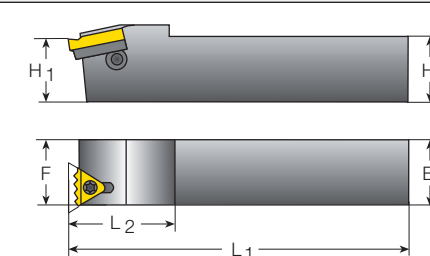
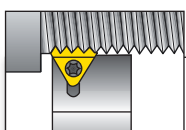
Insert Size	Ordering Code	Dimensions mm			
IC	H=H1=B	F	L1	L2	
1/2" Z	AL32-4Z	32	32	178.4	38
	AL40-4Z	40	40	208.4	38
5/8" Z	AL32-5Z	32	32	179.1	40
	AL40-5Z	40	40	209.1	40
	AL50-5Z	50	50	259.1	40

Spare Parts

Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
SA4T	SY4T	K4T	YE4Z	YI4Z
SA5T	SY5T	K5T	YE5Z	YI5Z

All Z Style toolholders have a 1.5° helix angle.

External Toolholders



T Style

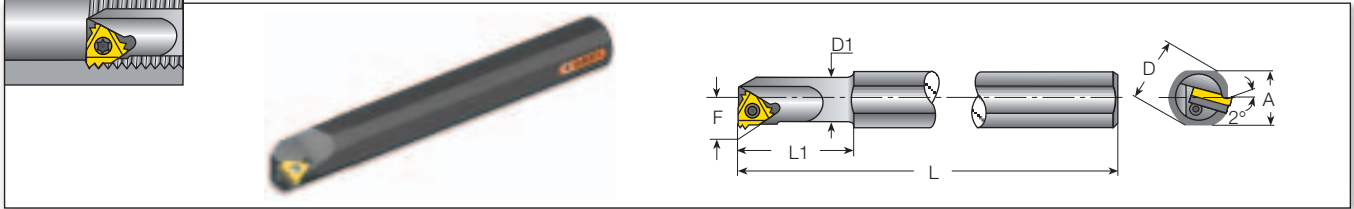
Insert Size	Ordering Code	Dimensions mm			
IC	H=H1=B	F	L1	L2	
1/2" T	AL25-4T	25	27	150	30
	AL32-4T	32	34	170	30
	AL40-4T	40	42	200	30

Spare Parts

Insert Screw	Anvil Screw	Insert Torx Key	Anvil Torx Key	Anvil RH/LH
SA4T	SY4K2	K4T	K2	Y4T

All T Style toolholders have a 0° helix angle.

Internal Toolholders



M Style

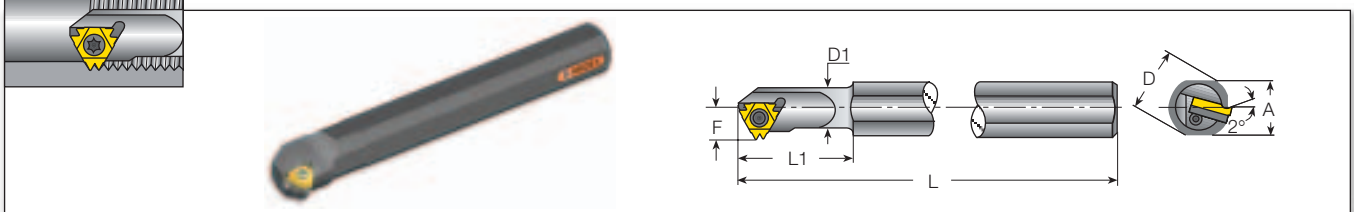
Insert Size	Ordering Code	Dimensions mm						Min. bore dia
IC		A	L	L1	D	D1	F	mm
5/8" M	AVR32-5M	29	250	60	32	32	22.4	40
	AVR40-5M	36	300	60	40	40	26.4	48
	AVR50-5M	45	350	75	50	50	31.4	58
	AVR60-5M	54	400	75	60	60	36.4	69

Spare Parts

Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
SA5T	SY5T	K5T	YI5M	YE5M

All M style toolholders have a 1.5° helix angle.
 Holders with coolant channel available as standard. Sample order: AVRC 32-5M

Internal Toolholders



Z Style

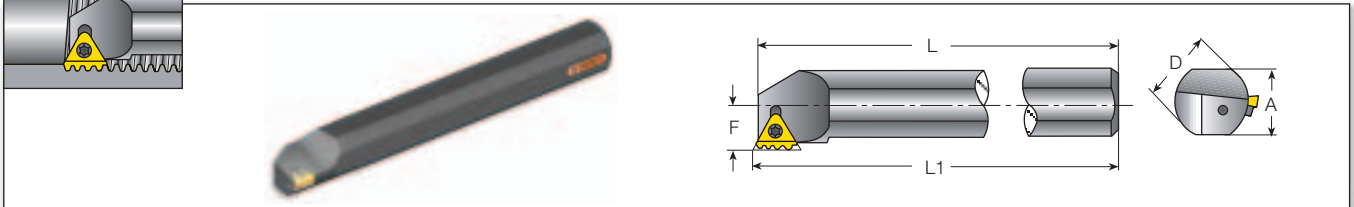
Insert Size	Ordering Code	Dimensions mm						Min. bore dia
IC		A	L	L1	D	D1	F	mm
1/2" Z	AVR32-4Z	29	250	60	32	32	25.5	42
	AVR40-4Z	36	300	60	40	40	29.5	51
5/8" Z	NVR32-5Z	29	250	60	32	32	24.7	42
	AVR40-5Z	36	300	60	40	40	29.4	53
	AVR50-5Z	45	350	75	50	50	34.3	63
	AVR60-5Z	54	400	75	60	60	39.3	74

Spare Parts

Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
SA4T	SY4T	K4T	YI4Z	YE4Z
SA5T	SY5T	K5T	YI5Z	YE5Z

All Z style toolholders have a 1.5° helix angle.
 Holders with coolant channel available as standard. Sample order: AVRC 32-4Z

Internal Toolholders



T Style

Insert Size	Ordering Code	Dimensions mm						Min. bore dia
IC		A	L	L1	D	F	mm	
1/2" T	AVR40-4T	36	300	302	40	23.3	60	
	AVR50-4T	45	350	352	50	28.3	70	
	AVR60-4T	54	400	402	60	33.3	80	

Spare Parts

Insert Screw	Anvil Screw	Torx Key	Anvil Torx Key	Anvil RH/LH
SA4T	SY4K2	K4T	K2	Y4T

All T style toolholders have a 0° helix angle.
 Holders with coolant channel available as standard. Sample order: AVRC 40-4T



NEW!

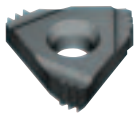
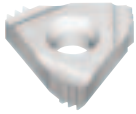
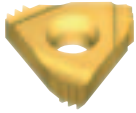
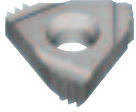
Number of Passes and Depth of Cut Per Pass for MultiPlus Inserts

Standard	Insert Type	Insert Size		Pitch	Teeth	Ordering Code	Passes						
		IC	L mm				RH						
							1	2	3	4			
ISO External	M+	3/8"	16	1.0 mm	3	3ER1.0ISO3M+...	2	0.32	0.3				
				1.5 mm	2	3ER1.5ISO2M+...	3	0.34	0.3	0.29			
				2.0 mm	2	3ER2.0ISO2M+...	3	0.45	0.4	0.38			
	M+	1/2"	22	1.5 mm	3	4ER1.5ISO3M+...	2	0.48	0.45				
				2.0 mm	2	4ER2.0ISO2M+...	3	0.45	0.4	0.38			
				2.0 mm	3	4ER2.0ISO3M+...	2	0.64	0.59				
	T+	1/2"	22	2.5 mm	2	4ER2.5ISO2M+...	4	0.46	0.42	0.38	0.36		
				2.0 mm	8	4ER2.0ISO8T+...	1	1.23					
ISO Internal	M+	3/8"	16	1.0 mm	3	3IR1.0ISO3M+...	2	0.3	0.28				
				1.5 mm	2	3IR1.5ISO2M+...	3	0.31	0.28	0.27			
				2.0 mm	2	3IR2.0ISO2M+...	3	0.42	0.37	0.36			
	M+	1/2"	22	2.0 mm	2	4IR2.0ISO2M+...	3	0.42	0.37	0.36			
				2.0 mm	3	4IR2.0ISO3M+...	2	0.59	0.56				
UN External	M+	3/8"	16	20 tpi	3	3ER20UN3M+...	2	0.41	0.38				
				18 tpi	3	3ER18UN3M+...	2	0.45	0.42				
				16 tpi	2	3ER16UN2M+...	3	0.36	0.32	0.3			
				14 tpi	2	3ER14UN2M+...	3	0.43	0.38	0.37			
	M+	1/2"	22	12 tpi	2	3ER12UN2M+...	3	0.47	0.43	0.4			
				16 tpi	3	4ER16UN3M+...	2	0.51	0.47				
				12 tpi	2	4ER12UN2M+...	3	0.47	0.43	0.4			
				11 tpi	2	4ER11UN2M+...	4	0.43	0.38	0.36	0.32		
	M+	5/8"	27	10 tpi	2	4ER10UN2M+...	4	0.46	0.42	0.4	0.36		
				8 tpi	2	5ER8UN2M+...	4	0.56	0.5	0.48	0.41		
UN Internal	M+	3/8"	16	12 tpi	2	3IR12UN2M+...	3	0.45	0.39	0.38			
				16 tpi	2	3IR16UN2M+...	3	0.33	0.3	0.28			
	M+	1/2"	22	16 tpi	3	4IR16UN3M+...	2	0.47	0.44				
				12 tpi	2	4IR12UN2M+...	3	0.45	0.39	0.38			
	M+	5/8"	27	12 tpi	3	4IR12UN3M+...	2	0.63	0.59				
				8 tpi	2	5IR8UN2M+...	4	0.52	0.47	0.44	0.38		
BSW External	M+	3/8"	16	19 tpi	3	3ER19W3M+...	2	0.45	0.41				
				14 tpi	2	3ER14W2M+...	3	0.43	0.38	0.35			
	M+	1/2"	22	14 tpi	3	4ER14W3M+...	2	0.6	0.56				
				11 tpi	2	4ER11W2M+...	4	0.44	0.38	0.36	0.3		
BSW Internal	M+	3/8"	16	14 tpi	2	3IR14W2M+...	3	0.43	0.38	0.35			
	M+	1/2"	22	11 tpi	2	4IR11W2M+...	4	0.44	0.38	0.36	0.3		
NPT External	M+	1/2"	22	11.5 tpi	2	4ER11.5NPT2M+...	4	0.46	0.43	0.42	0.4		
				11.5 tpi	3	5ER11.5NPT3M+...	4	0.48	0.43	0.42	0.38		
	M+	5/8"	27	8 tpi	2	5ER8NPT2M+...	4	0.72	0.64	0.6	0.53		
				11.5 tpi	2	4ER11.5NPT2Z+...	4	0.46	0.43	0.42	0.4		
NPT Internal	M+	1/2"	22	8 tpi	2	4ER8NPT2Z+...	4	0.72	0.64	0.6	0.53		
				11.5 tpi	2	4IR11.5NPT2M+...	4	0.46	0.43	0.42	0.4		
	M+	5/8"	27	11.5 tpi	3	5IR11.5NPT3M+...	4	0.48	0.43	0.42	0.38		
				8 tpi	2	5IR8NPT2M+...	4	0.72	0.64	0.6	0.53		
Z+	1/2"	22	11.5 tpi	2	4IR11.5NPT2Z+...	4	0.46	0.43	0.42	0.4			
			8 tpi	2	4IR8NPT2Z+...	4	0.72	0.64	0.6	0.53			
API BUT External	T+	1/2"	22	5 tpi	3	4ER5BUT753T+...	3	0.57	0.52	0.5			
API BUT Internal	T+	1/2"	22	5 tpi	3	4IR5BUT753T+...	3	0.57	0.52	0.5			
API RD External	M+	5/8"	27	10 tpi	3	5ER10APIRD3M+...	2	0.74	0.69				
				8 tpi	2	5ER8APIRD2M+...	3	0.66	0.6	0.58			
	T+	1/2"	22	8 tpi	3	4ER8APIRD3T+...	2	0.94	0.9				
				8 tpi	5	4ER8APIRD5T+...	2	0.94	0.9				
API RD Internal	M+	1/2"	22	10 tpi	2	4IR10APIRD2M+...	3	0.52	0.46	0.45			
				10 tpi	3	5IR10APIRD3M+...	3	0.48	0.48	0.47			
	M+	5/8"	27	8 tpi	2	5IR8APIRD2M+...	3	0.66	0.6	0.58			
				8 tpi	2	4IR8APIRD2Z+...	3	0.66	0.6	0.58			
	T+	1/2"	22	8 tpi	5	4IR8APIRD5T+...	2	0.94	0.9				

Recommended Grades and Cutting Speeds Vc [m/min]

Material	Hardness Brinell HB	Vc [m/min]			
		Coated			Uncoated
		VTX	VM7	VKX	VK2
P Unalloyed steel Medium carbon (0.25-0.55 %)	150	100-175		120-180	
Low alloy steel Non hardened	180	85-145		100-155	
M Stainless steel Austenitic	200	90-140	90-160	70-100	
K Aluminium alloys Non aging	60	100-365		100-240	100-250

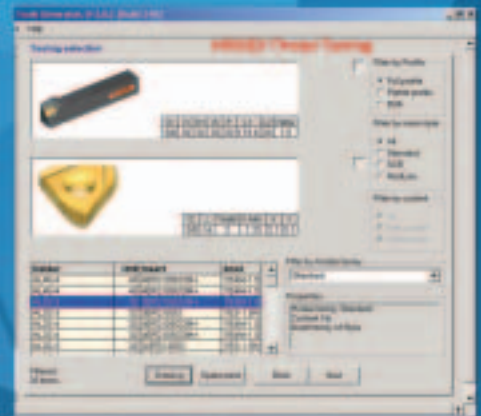
Grades and Applications

Grade	Application	Sample
VTX	A tough sub-micron substrate with TiAlN coating for general use. Provides fracture toughness and excellent wear resistance.	
VM7	Premium grade for stainless steel. Extra tough coating. Special multi-layer PVD coating guaranteeing higher resistance to wear in Stainless Steel application.	
VKX	High hardness substrate for steels, stainless steel, non ferrous & aluminium. Recommended for rigid machine conditions. TiN coating.	
VK2	The uncoated grade for nonferrous, aluminium, high temperature and titanium alloys.	

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