

TOOLCUT

THREAD
TURNING

2016



SCHWARZ beliefert als Hersteller seine Kunden weltweit mit hochpräzisen Zerspanungswerkzeugen und garantiert Ihnen eine hohe Qualität und Standzeit. Namhafte Unternehmen aus fast jeder Branche der Industrie wissen bereits unsere Technologie hoch zu schätzen.

Wir arbeiten ständig an individuellen und innovativen Lösungen und möchten Ihnen unsere neue Produktpalette Toolcut präsentieren. In unserem Katalog finden Sie Dreh- sowie Fräsplatten, Werkzeughalter und unsere neuen Tiny Tools. **Toolcut** ist unsere Premiumlinie im Gewindebereich.

Unsere Werkzeuge werden mit höchster Präzision nach DIN ISO 9001:2008 gefertigt und erfüllen die strengsten Industriestandards. Um bestehende und zukünftige Bedürfnisse unserer Kunden zufrieden stellen zu können, entwickeln wir uns ständig weiter und sorgen für beste Leistung und innovative Technologie.

SCHWARZ steht nicht nur für ausgezeichnete Qualität und hohe Standzeit, sondern legt auch viel Wert darauf, einen wertvollen Beitrag für die Umwelt zu leisten, indem wir bei der Herstellung ausschließlich grüne und saubere Technologien einsetzen.

Wir freuen uns, Ihre Produktionsabläufe mit unseren Werkzeugen optimieren zu dürfen!

As a manufacturer **SCHWARZ** supplies its customers worldwide with high-precision cutting tools and guarantees high quality and long durability. Well-known companies from almost every industry sector appreciates our technology.

We constantly work on individual and innovative solutions and present you our new product range **Toolcut**. In our catalogue you will find thread turning inserts and thread milling tools, tool holders and a new member of our product family - Tiny Tools. Toolcut is a premium line for threading tools.

We produce our tools with highest precision in accordance with DIN ISO 9001:2008 and fulfill all strict industrial standards. Furthermore, we are always in development of new technologies to meet all present and future needs of our customers.

SCHWARZ has excellent quality and high durability and also pays attention to the protection of our environment through exclusive use of clean and green technologies in our production processes.

We are looking forward to optimize your production with our tools!

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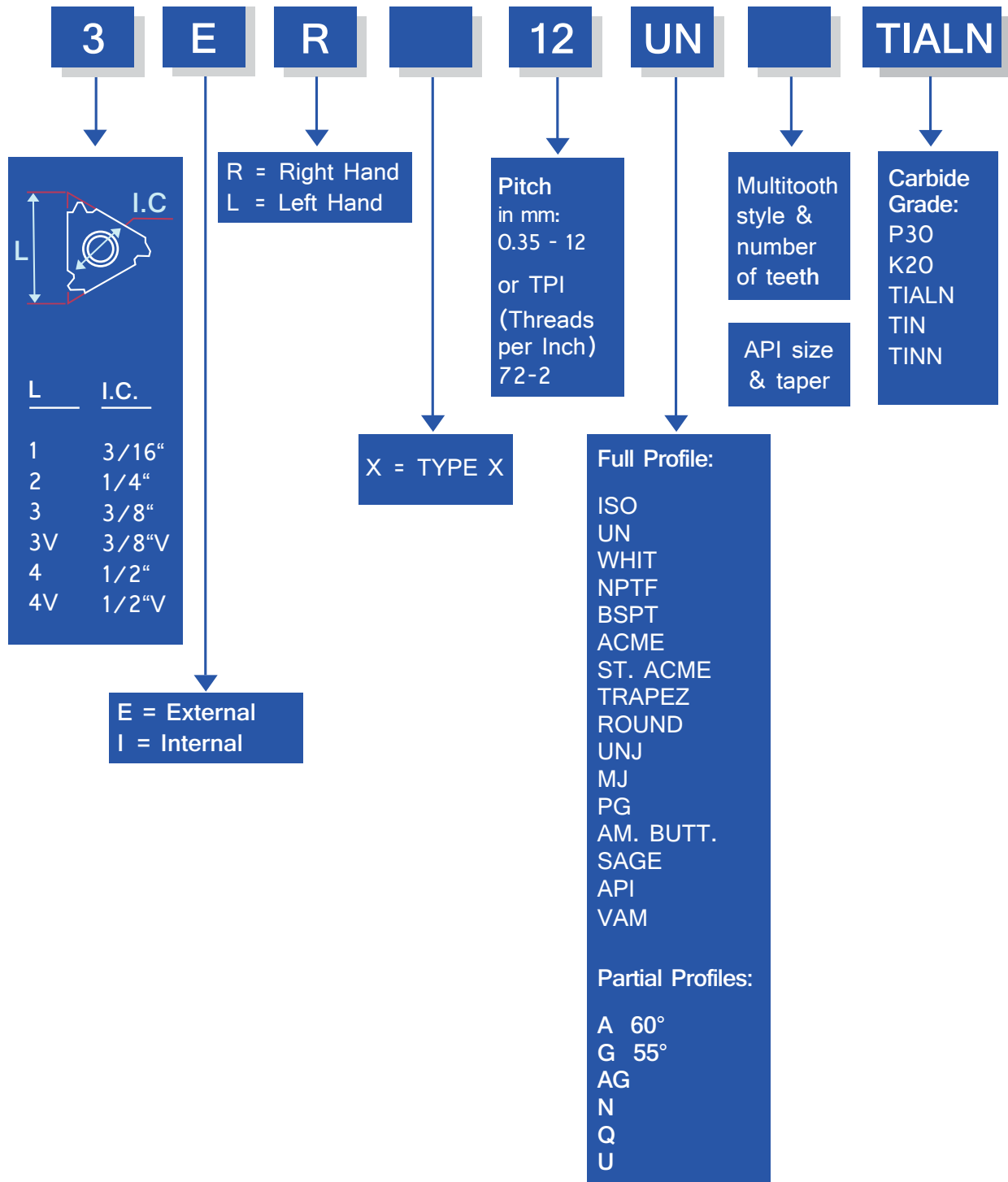
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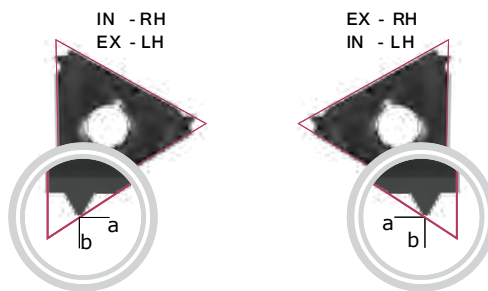
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PRODUCT IDENTIFICATION THREAD TURNING INSERTS ORDERING CODE



THREAD TURNING INSERTS



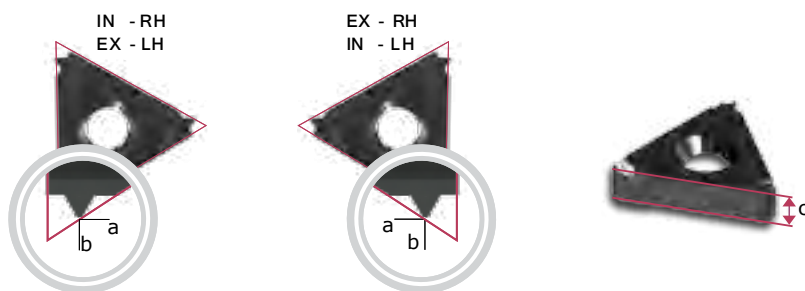
PARTIAL PROFILE 60°

PITCH in mm		LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
mm	TPI	mm		a	b	c	Uncoated	TiN/TiNN	TiAlN
0.5 - 1.5	48 - 16	8	1 IR A60	0.6	0.7	-			
			1 IL A60						
0.5 - 1.5	48 - 16	11	2 ER A60	0.8	0.9	-			
			2 IR A60						
			2 EL A60						
			2 IL A60						
0.5 - 1.5	48 - 16	16	3 ER A60	0.8	0.9	-			
			3 IR A60						
			3 EL A60						
			3 IL A60						
1.75 - 3.0	14 - 8	16	3 ER G60	1.2	1.7	-			
			3 IR G60						
			3 EL G60						
			3 IL G60						
0.5 - 3.0	48 - 8	16	3 ER AG60	1.2	1.7	-			
			3 IR AG60						
			3 EL AG60						
			3 IL AG60						
3.5 - 5.0	7 - 5	22	4 ER N60	1.7	2.5	-			
			4 IR N60						
			4 EL N60						
			4 IL N60						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



PARTIAL PROFILE 60°

Type X - Ground Profile With Sintered Chip Breaker

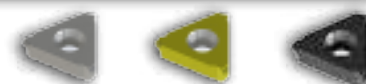
PITCH in mm		LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
mm	TPI	mm		a	b	c	Uncoated	TiN/TiNN	TiAlN
0.5 - 1.5	48 - 16	16	3 ER X A60 3 IR X A60	0.8	0.9	-			
1.75 - 3.0	14 - 8	16	3 ER X G60 3 IR X G60	1.2	1.7	-			
0.5 - 3.0	48 - 8	16	3 ER X AG60 3 IR X AG60	1.2	1.7	-			

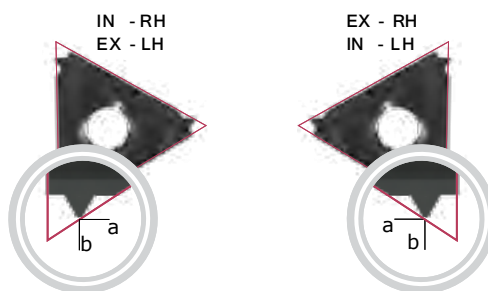


Vertical

PITCH in mm		LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
mm	TPI	mm		a	b	c	Uncoated	TiN/TiNN	TiAlN
0.5 - 1.5	48 - 16	16	3 V ER A60 3 V EL A60	1.0	0.9	3.6			
1.75 - 3.0	14 - 8	16	3 V ER G60 3 V EL G60	1.0	1.8	3.6			
0.5 - 3.0	48 - 8	16	3 V ER AG60 3 V EL AG60	1.0	1.8	3.6			
1.75 - 3.0	14 - 8	22	4 V ER G60 4 V EL G60	1.2	1.7	4.0			
0.5 - 5.0	7 - 5	22	4 V ER N60 4 V EL N60	1.2	2.5	4.8			

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66





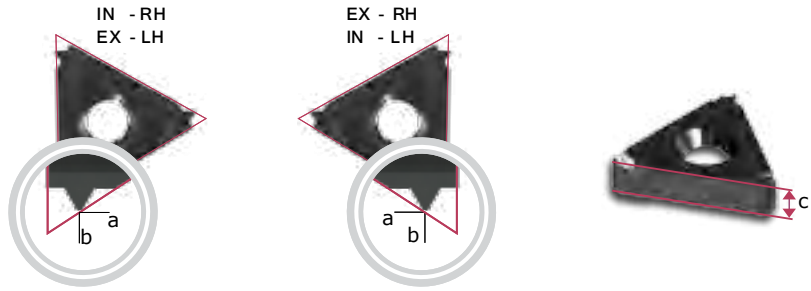
PARTIAL PROFILE 55°

PITCH in mm		LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
mm	TPI	mm		a	b	c	Uncoated	TiN/TiNN	TiAlN
0.5 - 1.5	48 - 16	8	1 IR A55	0.6	0.7	-			
			1 IL A55						
0.5 - 1.5	48 - 16	11	2 ER A55	0.8	0.9	-			
			2 IR A55						
			2 EL A55						
			2 IL A55						
0.5 - 1.5	48 - 16	16	3 ER A55	0.8	0.9	-			
			3 IR A55						
			3 EL A55						
			3 IL A55						
1.75 - 3.0	14 - 8	16	3 ER G55	1.2	1.7	-			
			3 IR G55						
			3 EL G55						
			3 IL G55						
0.5 - 3.0	48 - 8	16	3 ER AG55	1.2	1.7	-			
			3 IR AG55						
			3 EL AG55						
			3 IL AG55						
3.5 - 5.0	7 - 5	22	4 ER N55	1.7	2.5	-			
			4 IR N55						
			4 EL N55						
			4 IL N55						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



PARTIAL PROFILE 55°

Type X - Ground Profile With Sintered Chip Breaker

PITCH in mm		LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
mm	TPI	mm		a	b	c	Uncoated	TiN/TiNN	TiAlN
0.5	48	16	3 ER X AG55	1.2	1.7	-			
-	-		3 IR X AG55						
3.0	8								
1.75	14	16	3 ER X G55	1.2	1.7	-			
-	-		3 IR X G55						
3.0	8								



Vertical

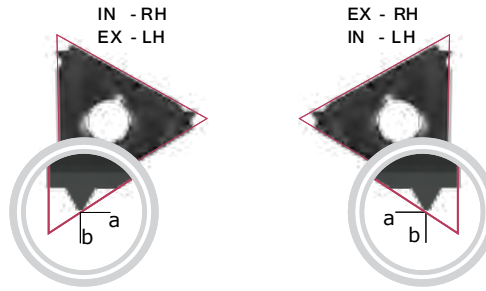
PITCH in mm		LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
mm	TPI	mm		a	b	c	Uncoated	TiN/TiNN	TiAlN
0.5	48	16	3 V ER A55	1.0	0.9	3.6			
-	-		3 V EL A55						
1.5	16								
0.5	48	16	3 V ER AG55	1.0	1.8	3.6			
-	-		3 V EL AG55						
3.0	8								
1.75	14	16	3 V ER G55	1.0	1.7	3.6			
-	-		3 V EL G55						
3.0	8								
3.5	7	22	4 V ER N55	1.2	2.5	4.8			
-	-		4 V EL N55						
5.0	5								

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



ISO - METRIC

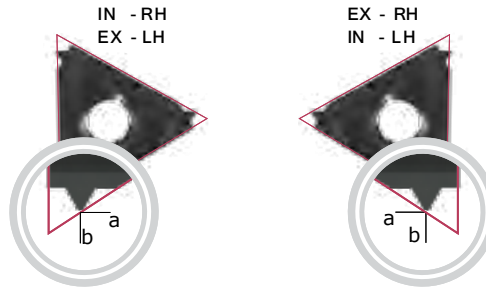
PITCH in mm	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
0.5	8	1 IR 0.5 ISO	0.6	0.5	-			
		1 IL 0.5 ISO						
0.75	8	1 IR 0.75 ISO	0.6	0.5	-			
		1 IL 0.75 ISO						
1.0	8	1 IR 1.0 ISO	0.6	0.6	-			
		1 IL 1.0 ISO						
1.25	8	1 IR 1.25 ISO	0.6	0.7	-			
		1 IL 1.25 ISO						
1.5	8	1 IR 1.5 ISO	0.6	0.7	-			
		1 IL 1.5 ISO						
1.75	8	1 IR 1.75 ISO	0.6	0.8	-			
		1 IL 1.75 ISO						
0.35	11	2 ER 0.35 ISO	0.8	0.4	-			
		2 EL 0.35 ISO						
		2 IR 0.35 ISO	0.8	0.3	-			
		2 IL 0.35 ISO						
0.4	11	2 ER 0.4 ISO	0.7	0.4	-			
		2 EL 0.4 ISO						
		2 IR 0.4 ISO	0.8	0.4	-			
		2 IL 0.4 ISO						
0.45	11	2 ER 0.45 ISO	0.7	0.4	-			
		2 EL 0.45 ISO						
		2 IR 0.45 ISO	0.8	0.4	-			
		2 IL 0.45 ISO						
0.5	11	2 ER 0.5 ISO	0.6	0.6	-			
		2 EL 0.5 ISO						
		2 IR 0.5 ISO						
		2 IL 0.5 ISO						
0.6	11	2 ER 0.6 ISO	0.6	0.6	-			
		2 EL 0.6 ISO						
		2 IR 0.6 ISO						
		2 IL 0.6 ISO						

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



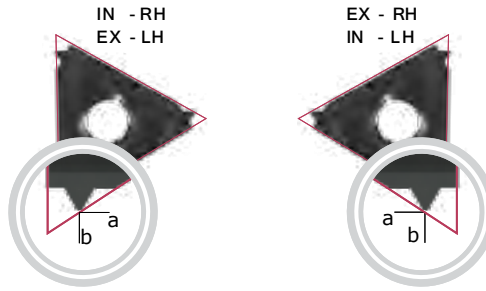
ISO - METRIC

PITCH in mm	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
0.7	11	2 ER 0.7 ISO	0.6	0.6	-			
		2 EL 0.7 ISO						
		2 IR 0.7 ISO						
		2 IL 0.7 ISO						
0.75	11	2 ER 0.75 ISO	0.6	0.6	-			
		2 EL 0.75 ISO						
		2 IR 0.75 ISO						
		2 IL 0.75 ISO						
0.8	11	2 ER 0.8 ISO	0.6	0.6	-			
		2 EL 0.8 ISO						
		2 IR 0.8 ISO						
		2 IL 0.8 ISO						
1.0	11	2 ER 1.0 ISO	0.7	0.7	-			
		2 EL 1.0 ISO						
		2 IR 1.0 ISO	0.6	0.7				
		2 IL 1.0 ISO						
1.25	11	2 ER 1.25 ISO	0.8	0.9	-			
		2 EL 1.25 ISO						
		2 IR 1.25 ISO	0.8	0.8				
		2 IL 1.25 ISO						
1.5	11	2 ER 1.5 ISO	0.8	1.0	-			
		2 EL 1.5 ISO						
		2 IR 1.5 ISO						
		2 IL 1.5 ISO						
1.75	11	2 ER 1.75 ISO	0.8	1.1	-			
		2 EL 1.75 ISO						
		2 IR 1.75 ISO						
		2 IL 1.75 ISO						
2.0	11	2 IR 2.0 ISO	0.8	0.9	-			
		2 IL 2.0 ISO						
2.5	11	2 IR 2.5 ISO	0.8	1.2	-			
		2 IL 2.5 ISO						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



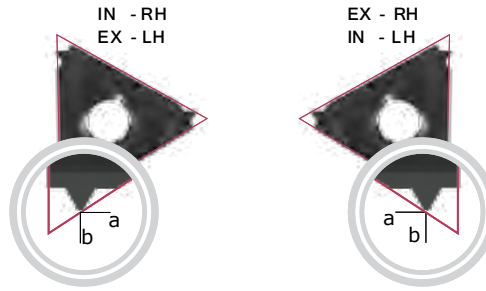
ISO - METRIC

PITCH in mm	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
0.35	16	3 ER 0.35 ISO	0.8	0.4	-			
		3 EL 0.35 ISO						
		3 IR 0.35 ISO	0.8	0.3				
		3 IL 0.35 ISO						
0.4	16	3 ER 0.4 ISO	0.7	0.4	-			
		3 EL 0.4 ISO						
		3 IR 0.4 ISO	0.8	0.4				
		3 IL 0.4 ISO						
0.45	16	3 ER 0.45 ISO	0.7	0.4	-			
		3 EL 0.45 ISO						
		3 IR 0.45 ISO	0.8	0.4				
		3 IL 0.45 ISO						
0.5	16	3 ER 0.5 ISO	0.6	0.6	-			
		3 EL 0.5 ISO						
		3 IR 0.5 ISO						
		3 IL 0.5 ISO						
0.6	16	3 ER 0.6 ISO	0.6	0.6	-			
		3 EL 0.6 ISO						
		3 IR 0.6 ISO						
		3 IL 0.6 ISO						
0.7	16	3 ER 0.7 ISO	0.6	0.6	-			
		3 EL 0.7 ISO						
		3 IR 0.7 ISO						
		3 IL 0.7 ISO						
0.75	16	3 ER 0.75 ISO	0.6	0.6	-			
		3 EL 0.75 ISO						
		3 IR 0.75 ISO						
		3 IL 0.75 ISO						
0.8	16	3 ER 0.8 ISO	0.6	0.6	-			
		3 EL 0.8 ISO						
		3 IR 0.8 ISO						
		3 IL 0.8 ISO						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



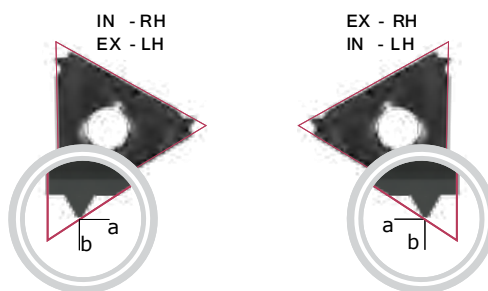
ISO - METRIC

PITCH in mm	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
1.0	16	3 ER 1.0 ISO	0.7	0.7	-			
		3 EL 1.0 ISO						
		3 IR 1.0 ISO	0.6	0.7	-			
		3 IL 1.0 ISO						
1.25	16	3 ER 1.25 ISO	0.8	0.9	-			
		3 EL 1.25 ISO						
		3 IR 1.25 ISO						
		3 IL 1.25 ISO						
1.5	16	3 ER 1.5 ISO	0.8	1.0	-			
		3 EL 1.5 ISO						
		3 IR 1.5 ISO						
		3 IL 1.5 ISO						
1.75	16	3 ER 1.75 ISO	0.9	1.2	-			
		3 EL 1.75 ISO						
		3 IR 1.75 ISO						
		3 IL 1.75 ISO						
2.0	16	3 ER 2.0 ISO	1.0	1.3	-			
		3 EL 2.0 ISO						
		3 IR 2.0 ISO						
		3 IL 2.0 ISO						
2.5	16	3 ER 2.5 ISO	1.1	1.5	-			
		3 EL 2.5 ISO						
		3 IR 2.5 ISO						
		3 IL 2.5 ISO						
3.0	16	3 ER 3.0 ISO	1.2	1.6	-			
		3 EL 3.0 ISO						
		3 IR 3.0 ISO	1.1	1.5	-			
		3 IL 3.0 ISO						
3.5	16	3 ER 3.5 ISO	1.2	1.7	-			
		3 EL 3.5 ISO						
		3 IR 3.5 ISO						
		3 IL 3.5 ISO						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



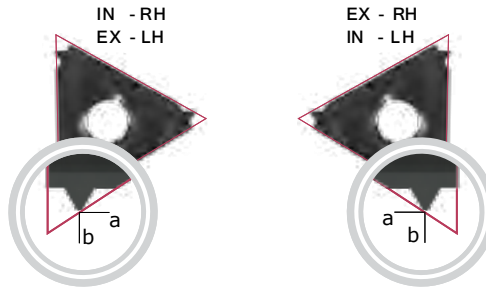
ISO - METRIC

PITCH in mm	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiN	TiAlN
3.5	22	4 ER 3.5 ISO	1.6	2.3	-			
		4 EL 3.5 ISO						
		4 IR 3.5 ISO						
		4 IL 3.5 ISO						
4.0	22	4 ER 4.0 ISO	1.6	2.3	-			
		4 EL 4.0 ISO						
		4 IR 4.0 ISO						
		4 IL 4.0 ISO						
4.5	22	4 ER 4.5 ISO	1.7	2.4	-			
		4 EL 4.5 ISO	1.6	2.4				
		4 IR 4.5 ISO						
		4 IL 4.5 ISO						
5.0	22	4 ER 5.0 ISO	1.7	2.5	-			
		4 EL 5.0 ISO	1.6	2.3				
		4 IR 5.0 ISO						
		4 IL 5.0 ISO						
5.5	22	4 ER 5.5 ISO	1.7	2.6	-			
		4 EL 5.5 ISO	1.6	2.3				
		4 IR 5.5 ISO						
		4 IL 5.5 ISO						
6.0	22	4 ER 6.0 ISO	1.9	2.7	-			
		4 EL 6.0 ISO	1.6	2.4				
		4 IR 6.0 ISO						
		4 IL 6.0 ISO						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



ISO - METRIC

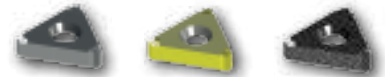
Type X - Ground Profile With Sintered Chip Breaker



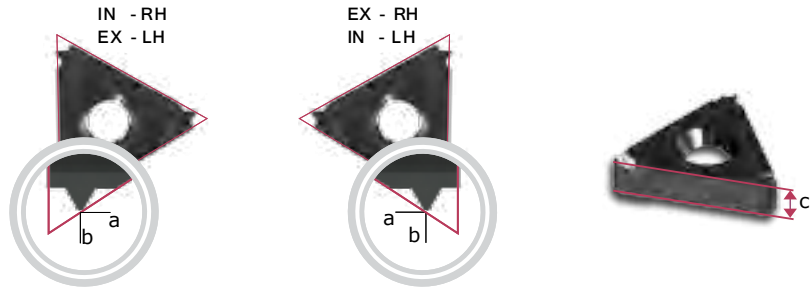
PITCH in mm mm	LENGTH in mm mm	ARTICLE NUMBER ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
0.8	16	3 ER X 0.8 ISO	0.6	0.6	-			
1.0	16	3 ER X 1.0 ISO	0.7	0.7	-			
		3 IR X 1.0 ISO	0.6	0.7				
1.25	16	3 ER X 1.25 ISO	0.8	0.9	-			
		3 IR X 1.25 ISO						
1.5	16	3 ER X 1.5 ISO	0.8	1.0	-			
		3 IR X 1.5 ISO						
1.75	16	3 ER X 1.75 ISO	0.9	1.2	-			
		3 IR X 1.75 ISO						
2.0	16	3 ER X 2.0 ISO	1.0	1.3	-			
		3 IR X 2.0 ISO						
2.5	16	3 ER X 2.5 ISO	1.1	1.5	-			
		3 IR X 2.5 ISO						
3.0	16	3 ER X 3.0 ISO	1.2	1.6	-			
		3 IR X 3.0 ISO	1.1	1.5				

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



ISO - METRIC

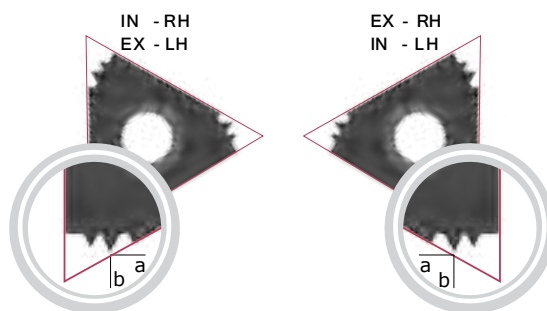
Vertical



PITCH in mm	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
0.5	16	3 V ER 0.5 ISO	1.0	0.6	3.6			
		3 V EL 0.5 ISO						
0.75	16	3 V ER 0.75 ISO	1.0	0.6	3.6			
		3 V EL 0.75 ISO						
0.8	16	3 V ER 0.8 ISO	1.0	0.6	3.6			
		3 V EL 0.8 ISO						
1.0	16	3 V ER 1.0 ISO	1.0	0.7	3.6			
		3 V EL 1.0 ISO						
1.25	16	3 V ER 1.25 ISO	1.0	0.9	3.6			
		3 V EL 1.25 ISO						
1.5	16	3 V ER 1.5 ISO	1.0	0.9	3.6			
		3 V EL 1.5 ISO						
1.75	16	3 V ER 1.75 ISO	1.0	1.2	3.6			
		3 V EL 1.75 ISO						
2.0	16	3 V ER 2.0 ISO	1.0	1.3	3.6			
		3 V EL 2.0 ISO						
2.5	16	3 V ER 2.5 ISO	1.0	1.5	3.6			
		3 V EL 2.5 ISO						
3.0	16	3 V ER 3.0 ISO	1.0	1.7	3.6			
		3 V EL 3.0 ISO						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66





ISO - METRIC

Multitooth

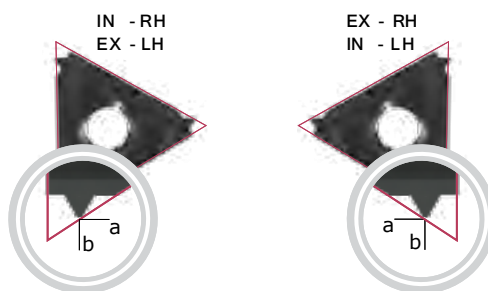


PITCH in mm	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiN	TiAlN
1.0	16	3 ER 1.0 ISO 3M	1.7	2.5	-			
		3 IR 1.0 ISO 3M						
1.5	16	3 ER 1.5 ISO 2M	1.5	2.3	-			
		3 IR 1.5 ISO 2M						
1.5	22	4 ER 1.5 ISO 3M	2.3	3.7	-			
		4 IR 1.5 ISO 3M						
2.0	22	4 ER 2.0 ISO 2M	2.0	3.0	-			
		4 IR 2.0 ISO 2M						
2.0	22	4 ER 2.0 ISO 3M	3.1	5.0	-			
		4 IR 2.0 ISO 3M						

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66





UN - UNIFIED UNC,UNF,UNEF,UNS

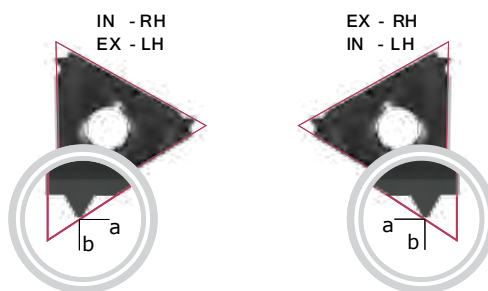
PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
32	8	1 IR 32 UN	0.6	0.5	-			
		1 IL 32 UN						
28	8	1 IR 28 UN	0.6	0.6	-			
		1 IL 28 UN						
24	8	1 IR 24 UN	0.6	0.6	-			
		1 IL 24 UN						
20	8	1 IR 20 UN	0.6	0.7	-			
		1 IL 20 UN						
18	8	1 IR 18 UN	0.6	0.7	-			
		1 IL 18 UN						
16	8	1 IR 16 UN	0.6	0.7	-			
		1 IL 16 UN						
14	8	1 IR 14 UN	0.6	0.8	-			
		1 IL 14 UN						
56	11	2 ER 56 UN	0.7	0.4	-			
		2 EL 56 UN						
		2 IR 56 UN						
		2 IL 56 UN						
48	11	2 ER 48 UN	0.6	0.6	-			
		2 EL 48 UN						
		2 IR 48 UN						
		2 IL 48 UN						

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



UN - UNIFIED UNC,UNF,UNEF,UNS

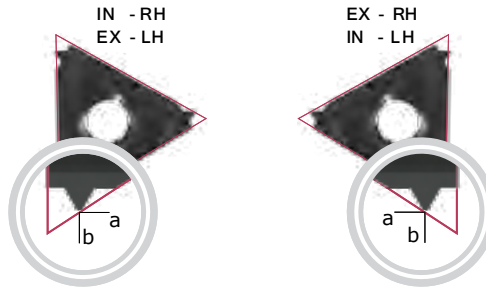
PITCH in TPI	LENGTH in mm	ARTICLE NUMBER ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
40	11	2 ER 40 UN	0.6	0.6	-			
		2 EL 40 UN						
		2 IR 40 UN						
		2 IL 40 UN						
36	11	2 ER 36 UN	0.6	0.6	-			
		2 EL 36 UN						
		2 IR 36 UN						
		2 IL 36 UN						
32	11	2 ER 32 UN	0.6	0,6	-			
		2 EL 23 UN						
		2 IR 23 UN						
		2 IL 32 UN						
28	11	2 ER 28 UN	0.6	0.7	-			
		2 EL 28 UN						
		2 IR 28 UN						
		2 IL 28 UN						
27	11	2 ER 27 UN	0.7	0.8	-			
		2 EL 27 UN						
		2 IR 27 UN						
		2 IL 27 UN						
24	11	2 ER 24 UN	0.7	0.8	-			
		2 EL 24 UN						
		2 IR 24 UN						
		2 IL 24 UN						

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



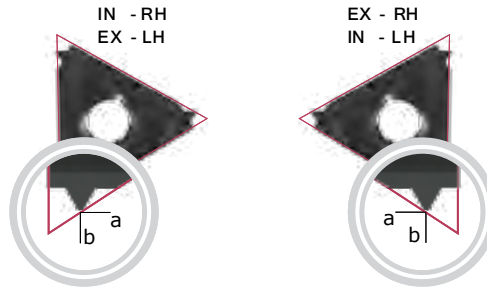
UN - UNIFIED UNC,UNF,UNEF,UNS

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
20	11	2 ER 20 UN	0.8	0.9	-			
		2 EL 20 UN						
		2 IR 20 UN						
		2 IL 20 UN						
18	11	2 ER 18 UN	0.8	1.0	-			
		2 EL 18 UN						
		2 IR 18 UN						
		2 IL 18 UN						
16	11	2 ER 16 UN	0.9	1.1	-			
		2 EL 16 UN						
		2 IR 16 UN						
		2 IL 16 UN						
14	11	2 ER 14 UN	0.9	1.1	-			
		2 EL 14 UN						
		2 IR 14 UN						
		2 IL 14 UN						
72	16	3 ER 72 UN	0.8	0.4	-			
		3 EL 72 UN						
		3 IR 72 UN	0.8	0.3	-			
		3 IL 72 UN						
64	16	3 ER 64 UN	0.8	0.4	-			
		3 EL 64 UN						
		3 IR 64 UN						
		3 IL 64 UN						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



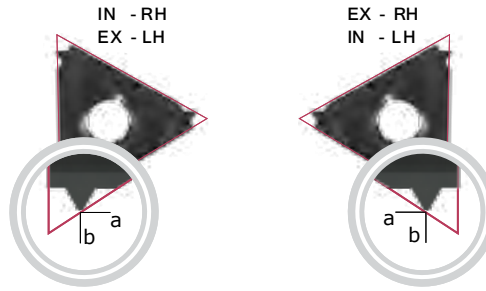
UN - UNIFIED UNC,UNF,UNEF,UNS

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiN	TiAlN
56	16	3 ER 56 UN	0.7	0.4	-			
		3 EL 56 UN						
		3 IR 56 UN						
		3 IL 56 UN						
48	16	3 ER 48 UN	0.6	0.6	-			
		3 EL 48 UN						
		3 IR 48 UN						
		3 IL 48 UN						
44	16	3 ER 44 UN	0.6	0.6	-			
		3 EL 44 UN						
		3 IR 44 UN						
		3 IL 44 UN						
40	16	3 ER 40 UN	0.6	0.6	-			
		3 EL 40 UN						
		3 IR 40 UN						
		3 IL 40 UN						
36	16	3 ER 36 UN	0.6	0.6	-			
		3 EL 36 UN						
		3 IR 36 UN						
		3 IL 36 UN						
32	16	3 ER 32 UN	0.6	0.6	-			
		3 EL 32 UN						
		3 IR 32 UN						
		3 IL 32 UN						
28	16	3 ER 28 UN	0.6	0.7	-			
		3 EL 28 UN						
		3 IR 28 UN						
		3 IL 28 UN						
27	16	3 ER 27 UN	0.7	0.8	-			
		3 EL 27 UN						
		3 IR 27 UN						
		3 IL 27 UN						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



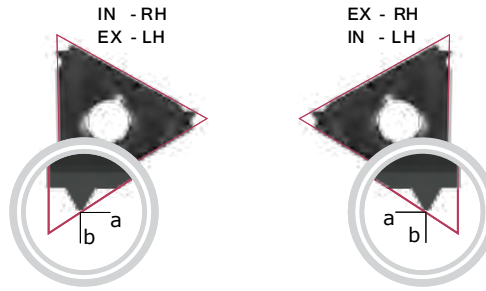
UN - UNIFIED UNC,UNF,UNEF,UNS

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiN	TiAlN
24	16	3 ER 24 UN	0.7	0.8	-			
		3 EL 24 UN						
		3 IR 24 UN						
		3 IL 24 UN						
20	16	3 ER 20 UN	0.8	0.9	-			
		3 EL 20 UN						
		3 IR 20 UN						
		3 IL 20 UN						
18	16	3 ER 18 UN	0.8	1.0	-			
		3 EL 18 UN						
		3 IR 18 UN						
		3 IL 18 UN						
16	16	3 ER 16 UN	0.9	1.1	-			
		3 EL 16 UN						
		3 IR 16 UN						
		3 IL 16 UN						
14	16	3 ER 14 UN	1.0	1.2	-			
		3 EL 14 UN						
		3 IR 14 UN	0.9	1.2	-			
		3 IL 14 UN						
13	16	3 ER 13 UN	1.0	1.3	-			
		3 EL 13 UN						
		3 IR 13 UN						
		3 IL 13 UN						
12	16	3 ER 12 UN	1.1	1.4	-			
		3 EL 12 UN						
		3 IR 12 UN						
		3 IL 12 UN						
11.5	16	3 ER 11.5 UN	1.1	1.5	-			
		3 EL 11.5 UN						
		3 IR 11.5 UN						
		3 IL 11.5 UN						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



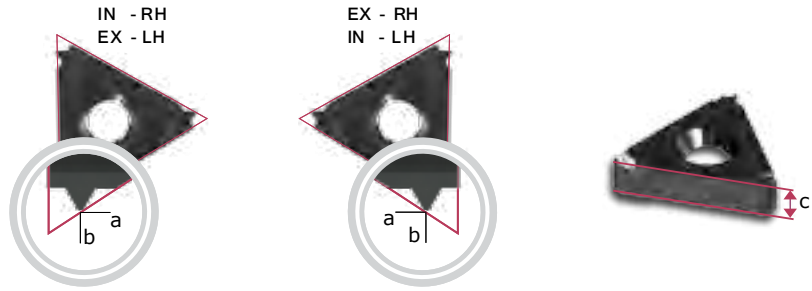
UN - UNIFIED UNC,UNF,UNEF,UNS

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAIN
11	16	3 ER 11 UN	1.1	1.5	-			
		3 EL 11 UN						
		3 IR 11 UN						
		3 IL 1 UN						
10	16	3 ER 10 UN	1.1	1.5	-			
		3 EL 10 UN						
		3 IR 10 UN						
		3 IL 10 UN						
9	16	3 ER 9 UN	1.2	1.7	-			
		3 EL 9 UN						
		3 IR 9 UN						
		3 IL 9 UN						
8	16	3 ER 8 UN	1.2	1.6	-			
		3 EL 8 UN						
		3 IR 8 UN	1.1	1.5	-			
		3 IL 8 UN						
7	22	4 ER 7 UN	1.6	2.3	-			
		4 EL 7 UN						
		4 IR 7 UN						
		4 IL 7 UN						
6	22	4 ER 6 UN	1.6	2.3	-			
		4 EL 6 UN						
		4 IR 6 UN						
		4 IL 6 UN						
5	22	4 ER 5 UN	1.7	2.5	-			
		4 EL 5 UN						
		4 IR 5 UN	1.6	2.3	-			
		4 IL 5 UN						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



UN - UNIFIED UNC,UNF,UNEF,UNS

Vertical

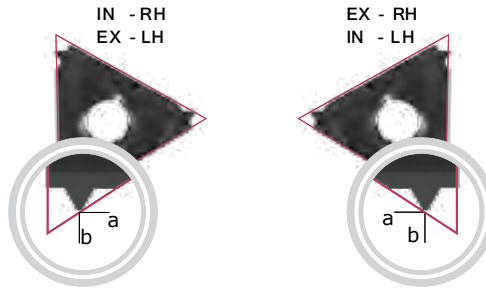


PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
32	16	3 V ER 32 UN	1.0	0.6	3.6			
		3 V EL 32 UN						
28	16	3 V ER 28 UN	1.0	0.7	3.6			
		3 V EL 28 UN						
24	16	3 V ER 24 UN	1.0	0.8	3.6			
		3 V EL 24 UN						
20	16	3 V ER 20 UN	1.0	0.9	3.6			
		3 V EL 20 UN						
18	16	3 V ER 18 UN	1.0	1.0	3.6			
		3 V EL 18 UN						
16	16	3 V ER 16 UN	1.0	1.1	3.6			
		3 V EL 16 UN						
14	16	3 V ER 14 UN	1.0	1.2	3.6			
		3 V EL 14 UN						
12	16	3 V ER 12 UN	1.0	1.4	3.6			
		3 V EL 12 UN						
10	16	3 V ER 10 UN	1.0	1.5	3.6			
		3 V EL 10 UN						
8	16	3 V ER 8 UN	1.0	1.6	3.6			
		3 V EL 8 UN						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



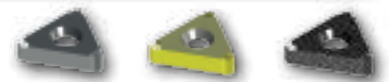
UN - UNIFIED UNC,UNF,UNEF,UNS

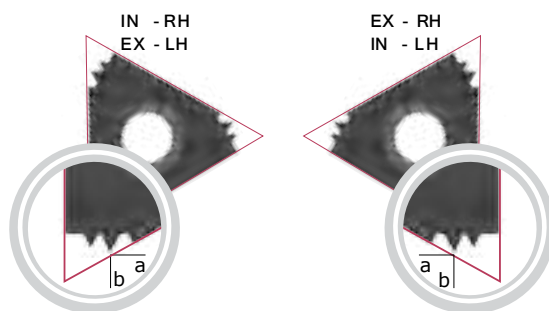
Type X - Ground Profile With Sintered Chip Breaker



PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
24	16	3 ER X 24 UN	0.7	0.8	-			
		3 IR X 24 UN						
20	16	3 ER X 20 UN	0.8	0.9	-			
		3 IR X 20 UN						
18	16	3 ER X 18 UN	0.8	1.0	-			
		3 IR X 18 UN						
16	16	3 ER X 16 UN	0.9	1.1	-			
		3 IR X 16 UN						
14	16	3 ER X 14 UN	1.0	1.2	-			
		3 IR X 14 UN	0.9	1.2	-			
13	16	3 ER X 13 UN	1.0	1.3	-			
12	16	3 ER X 12 UN	1.1	1.4	-			
		3 IR X 12 UN						
11	16	3 ER X 11 UN	1.1	1.5	-			
10	16	3 ER X 10 UN	1.1	1.5	-			
		3 IR X 10 UN						
9	16	3 ER X 9 UN	1.2	1.7	-			
8	16	3 ER X 8 UN	1.2	1.6	-			
		3 IR X 8 UN	1.1	1.1				

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66





UN - UNIFIED UNC, UNF, UNEF, UNS

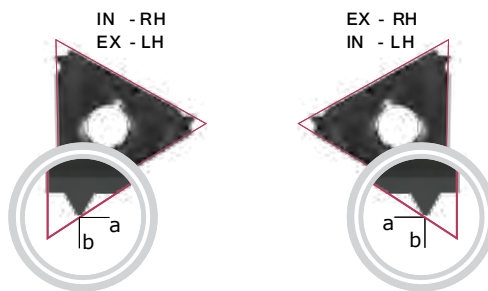
Multitooth



PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
16	16	3 ER 16 UN 2M	1.5	2.3	-			
		3 IR 16 UN 2M						
12	22	4 ER 12 UN 2M	2.2	3.4	-			
		4 IR 12 UN 2M						
12	22	4 ER 12 UN 3M	3.3	5.3	-			
		4 IR 12 UN 3M						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



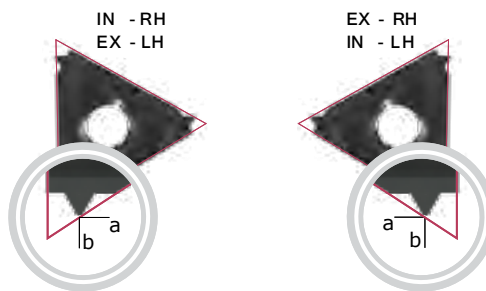


WHITWORTH - 55° BSW, BSF, BSP, BSB

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
28	8	1 IR 28 W	0.6	0.6	-			
		1 IL 28 W						
24	8	1 IR 24 W	0.6	0.6	-			
		1 IL 24 W						
20	8	1 IR 20 W	0.6	0.7	-			
		1 IL 20 W						
19	8	1 IR 19 W	0.6	0.7	-			
		1 IL 19 W						
16	8	1 IR 16 W	0.6	0.7	-			
		1 IL 16 W						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66





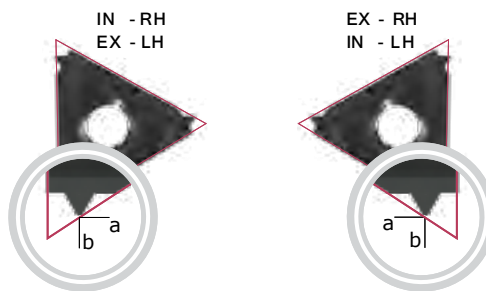
WHITWORTH - 55° BSW, BSF, BSP, BSB

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
40	11	2 ER 40 W	0.6	0.6	-			
		2 IR 40 W						
		2 EL 40 W						
		2 IL 40 W						
36	11	2 ER 36 W	0.6	0.6	-			
		2 IR 36 W						
		2 EL 36 W						
		2 IL 36 W						
32	11	2 ER 32 W	0.6	0.6	-			
		2 IR 32 W						
		2 EL 32 W						
		2 IL 32 W						
28	11	2 ER 40 W	0.6	0.7	-			
		2 IR 40 W						
		2 EL 40 W						
		2 IL 40 W						
26	11	2 ER 26 W	0.7	0.7	-			
		2 IR 26 W						
		2 EL 26 W						
		2 IL 26 W						

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66



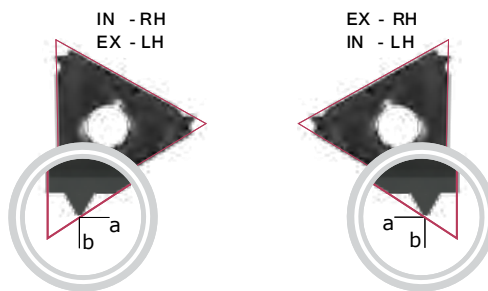


WHITWORTH - 55° BSW, BSF, BSP, BSB

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
20	11	2 ER 20 W	0.8	0.9	-			
		2 IR 20 W						
		2 EL 20 W						
		2 IL 20 W						
19	11	2 ER 19 W	0.8	1.0	-			
		2 IR 19 W						
		2 EL 19 W						
		2 IL 19 W						
18	11	2 ER 18 W	0.8	1.0	-			
		2 IR 18 W						
		2 EL 18 W						
		2 IL 18 W						
16	11	2 ER 16 W	0.9	1.1	-			
		2 IR 16 W						
		2 EL 16 W						
		2 IL 16 W						
14	11	2 ER 14 W	0.9	1.1	-			
		2 IR 14 W						
		2 EL 14 W						
		2 IL 14 W						
12	11	2 IR 12 W	1.0	1.1	-			
		2 IL 12 W						
11	11	2 IR 11 W	0.9	1.2	-			
		2 IL 11 W						

(1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



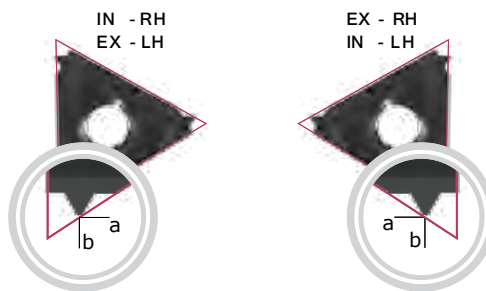


WHITWORTH - 55° BSW, BSF, BSP, BSB

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
48	16	3 ER 48 W	0.6	0.6	-			
		3 IR 48 W						
		3 EL 48 W						
		3 IL 48 W						
40	16	3 ER 40 W	0.6	0.6	-			
		3 IR 40 W						
		3 EL 40 W						
		3 IL 40 W						
36	16	3 ER 36 W	0.6	0.6	-			
		3 IR 36 W						
		3 EL 36 W						
		3 IL 36 W						
32	16	3 ER 32 W	0.6	0.6				
		3 IR 32 W						
		3 EL 32 W						
		3 IL 32 W						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



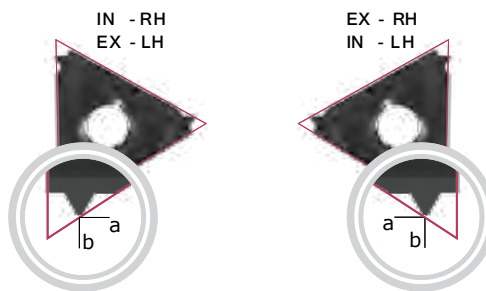


WHITWORTH - 55° BSW, BSF, BSP, BSB

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
28	16	3 ER 28 W	0.6	0.7	-			
		3 IR 28 W						
		3 EL 28 W						
		3 IL 28 W						
26	16	3 ER 26 W	0.7	0.7	-			
		3 IR 26 W						
		3 EL 26 W						
		3 IL 26 W						
24	16	3 ER 24 W	0.7	0.8	-			
		3 IR 24 W						
		3 EL 24 W						
		3 IL 24 W						
22	16	3 ER 22 W	0.8	0.9	-			
		3 IR 22 W						
		3 EL 22 W						
		3 IL 22 W						
20	16	3 ER 20 W	0.8	0.9	-			
		3 IR 20 W						
		3 EL 20 W						
		3 IL 20 W						
19	16	3 ER 19 W	0.8	1.0	-			
		3 IR 19 W						
		3 EL 19 W						
		3 IL 19 W						
18	16	3 ER 18 W	0.8	1.0	-			
		3 IR 18 W						
		3 EL 18 W						
		3 IL 18 W						

(1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



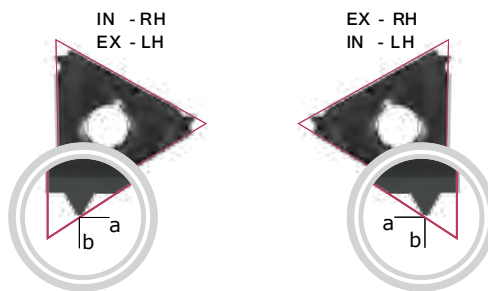


WHITWORTH - 55° BSW, BSF, BSP, BSB

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
16	16	3 ER 16 W	0.9	1.1	-			
		3 IR 16 W						
		3 EL 16 W						
		3 IL 16 W						
14	16	3 ER 14 W	1.0	1.2	-			
		3 IR 14 W						
		3 EL 14 W						
		3 IL 14 W						
12	16	3 ER 12 W	1.1	1.4	-			
		3 IR 12 W						
		3 EL 12 W						
		3 IL 12 W						
11	16	3 ER 11 W	1.1	1.5	-			
		3 IR 11 W						
		3 EL 11 W						
		3 IL 11 W						
10	16	3 ER 10 W	1.1	1.5	-			
		3 IR 10 W						
		3 EL 10 W						
		3 IL 10 W						
9	16	3 ER 9 W	1.2	1.7	-			
		3 IR 9 W						
		3 EL 9 W						
		3 IL 9 W						
8	16	3 ER 8 W	1.2	1.5	-			
		3 IR 8 W						
		3 EL 8 W						
		3 IL 8 W						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66





WHITWORTH - 55° BSW, BSF, BSP, BSB

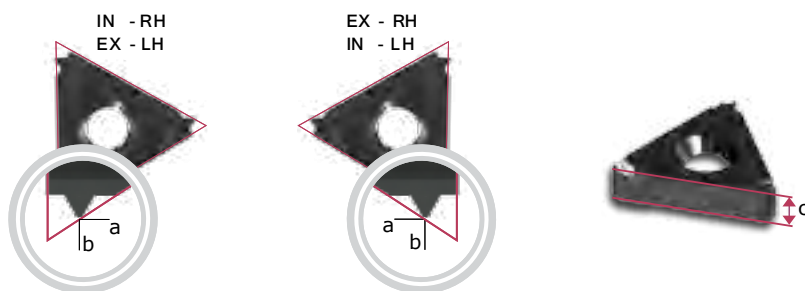
Type X - Ground Profile With Sintered Chip Breaker



PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
19	16	3 ER X 19 W	0.8	1.0	-			
		3 IR X 19 W						
16	16	3 ER X 16 W	0.9	1.1	-			
		3 IR X 16 W						
14	16	3 ER X 14 W	1.0	1.2	-			
		3 IR X 14 W						
11	16	3 ER X 11 W	1.1	1.5	-			
		3 IR X 11 W						
10	16	3 ER X 10 W	1.1	1.5	-			
		3 IR X 10 W						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66

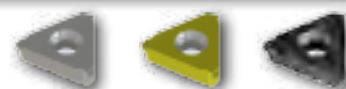




WHITWORTH - 55° BSW, BSF, BSP, BSB

Vertical

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
20	16	3 V ER 20 W	1.0	0.9	3.6			
		3 V EL 20 W						
19	16	3 V ER 19 W	1.0	0.9	3.6			
		3 V EL 19 W						
18	16	3 V ER 18 W	1.0	1.0	3.6			
		3 V EL 18 W						
16	16	3 V ER 16 W	1.0	1.0	3.6			
		3 V EL 16 W						
14	16	3 V ER 14 W	1.0	1.2	3.6			
		3 V EL 14 W						
12	16	3 V ER 12 W	1.0	1.4	3.6			
		3 V EL 12 W						
11	16	3 V ER 11 W	1.0	1.5	3.6			
		3 V EL 11 W						



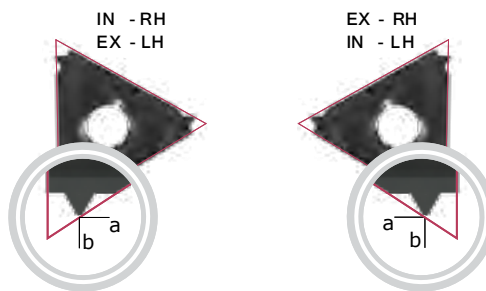
Multitooth

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
14	16	3 ER 14 W 2M	1.7	2.7	-			
		3 IR 14 W 2M						
14	22	4 ER 14 W 3M	2.8	4.5	-			
		4 IR 14 W 3M						
11	22	4 ER 11 W 2M	2.3	3.4	-			
		4 IR 11 W 2M						



(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66



NPT

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
27	8	*1 IR 27 NPT	0.6	0.6	-			
		*1 IL 27 NPT						
18	8	*1 IR 18 NPT	0.6	0.6	-			
		*1 IL 18 NPT						
27	11	2 ER 27 NPT	0.7	0.8	-			
		2 EL 27 NPT						
		2 IR 27 NPT						
		2 IL 27 NPT						
18	11	2 ER 18 NPT	0.8	1.0	-			
		2 EL 18 NPT						
		2 IR 18 NPT						
		2 IL 18 NPT						
14	11	2 ER 14 NPT	0.8	1.0	-			
		2 EL 14 NPT						
		2 IR 14 NPT						
		2 IL 14 NPT						
27	16	3 ER 27 NPT	0.7	0.8	-			
		3 EL 27 NPT						
		3 IR 27 NPT						
		3 IL 27 NPT						
18	16	3 ER 18 NPT	0.8	1.0	-			
		3 EL 18 NPT						
		3 IR 18 NPT						
		3 IL 18 NPT						
14	16	3 ER 14 NPT	0.9	1.2	-			
		3 EL 14 NPT						
		3 IR 14 NPT						
		3 IL 14 NPT						

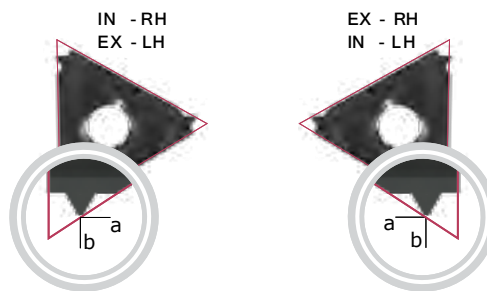
*Available only in TiNN grade

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



NPT

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
11.5	16	3 ER 11.5 NPT	1.1	1.5	-			
		3 EL 11.5 NPT						
		3 IR 11.5 NPT						
		3 IL 11.5 NPT						
8	16	3 ER 8 NPT	1.3	1.8	-			
		3 EL 8 NPT						
		3 IR 8 NPT						
		3 IL 8 NPT						



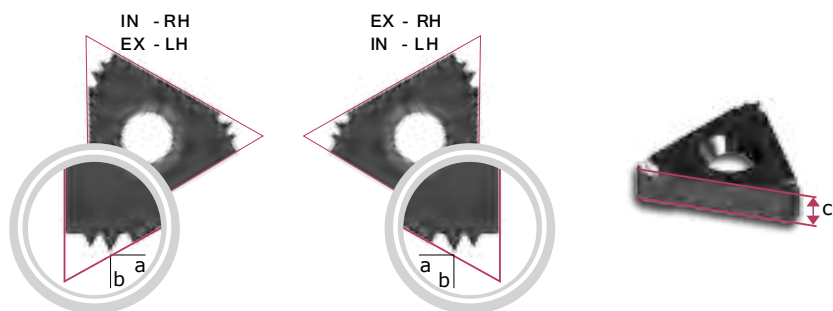
Type X - Ground Profile with Sintered Chip-Breaker

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
14	16	3 ER X 14 NPT	0.9	1.2	-			
		3 IR X 14 NPT						



- (1) For additional holders see page 55 - 59
- (2) For cutting conditions see page 60 - 66





NPT

Multitooth



PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
11.5	22	4 ER 11.5 NPT 2M	2.3	3.5	-			
		4 IR 11.5 NPT 2M						



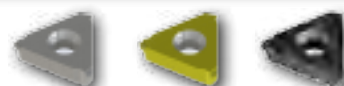
Vertical

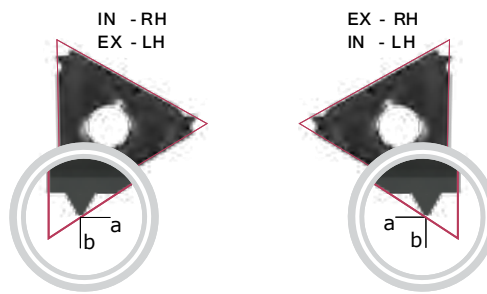


PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
27	16	3 V ER 27 NPT	1.0	0.8	3.6			
		3 V EL 27 NPT						
18	16	3 V ER 18 NPT	1.0	1.0	3.6			
		3 V EL 18 NPT						
14	16	3 V ER 14 NPT	1.0	1.2	3.6			
		3 V EL 14 NPT						
11.5	16	3 V ER 11.5 NPT	1.0	1.5	3.6			
		3 V EL 11.5 NPT						

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66





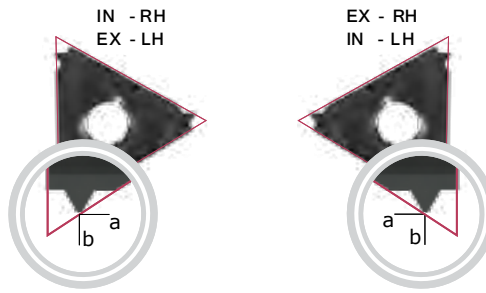
NPTF - Dryseal

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
27	8	1 IR 27 NPTF	0.6	0.6	-			
		1 IL 27 NPTF						
18	8	1 IR 18 NPTF	0.6	0.6	-			
		1 IL 18 NPTF						
27	11	2 ER 27 NPTF	0.7	0.7	-			
		2 EL 27 NPTF						
		2 IR 27 NPTF						
		2 IL 27 NPTF						
18	11	2 ER 18 NPTF	0.8	1.0	-			
		2 EL 18 NPTF						
		2 IR 18 NPTF						
		2 IL 18 NPTF						
14	11	2 ER 14 NPTF	0.8	1.0	-			
		2 EL 14 NPTF						
		2 IR 14 NPTF						
		2 IL 14 NPTF						
27	16	3 ER 27 NPTF	0.7	0.7	-			
		3 EL 27 NPTF						
		3 IR 27 NPTF						
		3 IL 27 NPTF						
18	16	3 ER 18 NPTF	0.8	1.0	-			
		3 EL 18 NPTF						
		3 IR 18 NPTF						
		3 IL 18 NPTF						
14	16	3 ER 14 NPTF	0.9	1.2	-			
		3 EL 14 NPTF						
		3 IR 14 NPTF						
		3 IL 14 NPTF						

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66



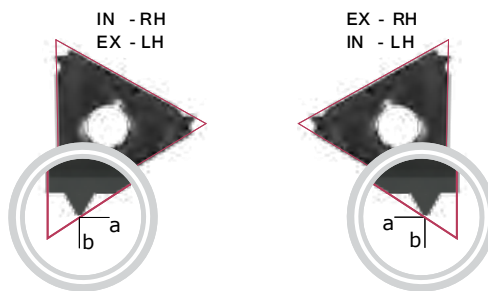


NPTF - Dryseal

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
11.5	16	3 ER 11.5 NPTF	1.1	1.5	-			
		3 EL 11.5 NPTF						
		3 IR 11.5 NPTF						
		3 IL 11.5 NPTF						
8	16	3 ER 8 NPTF	1.3	1.8	-			
		3 EL 8 NPTF						
		3 IR 8 NPTF						
		3 IL 8 NPTF						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



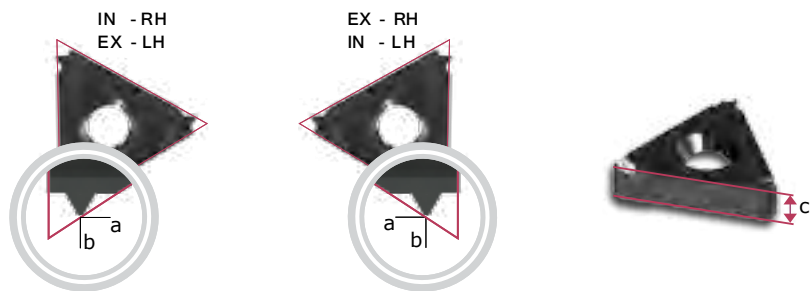


BSPT

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
28	8	1 IR 28 BSPT	0.6	0.6	-			
		1 IL 28 BSPT						
19	8	1 IR 19 BSPT	0.6	0.6	-			
		1 IL 19 BSPT						
28	11	2 IR 28 BSPT	0.6	0.6	-			
		2 IL 28 BSPT						
19	11	2 IR 19 BSPT	0.8	0.9	-			
		2 IL 19 BSPT						
28	16	3 ER 28 BSPT	0.6	0.6	-			
		3 EL 28 BSPT						
		3 IR 28 BSPT						
		3 IL 28 BSPT						
19	16	3 ER 19 BSPT	0.8	0.9	-			
		3 EL 19 BSPT						
		3 IR 19 BSPT						
		3 IL 19 BSPT						
14	16	3 ER 14 BSPT	1.0	1.2	-			
		3 EL 14 BSPT						
		3 IR 14 BSPT						
		3 IL 14 BSPT						
11	16	3 ER 11 BSPT	1.1	1.5	-			
		3 EL 11 BSPT						
		3 IR 11 BSPT						
		3 IL 11 BSPT						

(1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66





BSPT

Type X - Ground Profile with Sintered Chip-Breaker



PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
19	16	3 ER X 19 BSPT	1.0	1.1	-			
14	16	3 ER X 16 BSPT	1.2	1.0	-			
		3 IR X 16 BSPT						
11	16	3 ER X 11 BSPT	1.5	1.1	-			
		3 IR X 11 BSPT						



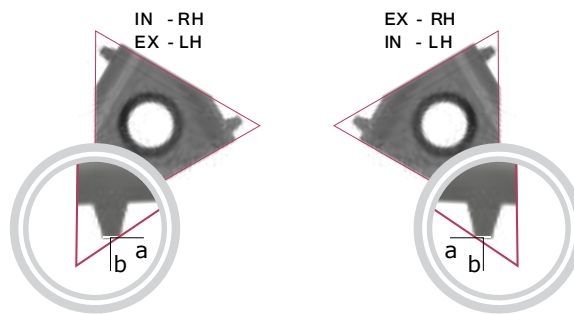
Vertical



PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
28	16	3 V ER 28 BSPT	1.0	0.6	3.6			
		3 V EL 28 BSPT						
19	16	3 V ER 19 BSPT	1.0	0.9	3.6			
		3 V EL 19 BSPT						
14	16	3 V ER 14 BSPT	1.0	1.2	3.6			
		3 V EL 14 BSPT						
11	16	3 V ER 11 BSPT	1.0	1.5	3.6			
		3 V EL 11 BSPT						

- (1) For additional holders see page 55 - 59
- (2) For cutting conditions see page 60 - 66





ACME

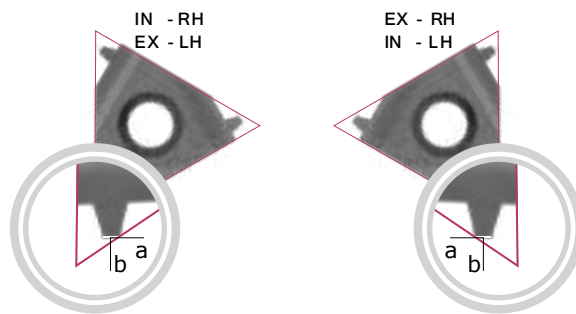
PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
16	8	*1 IR 16 ACME	0.6	0.6	-			
		*1 IL 16 ACME						
16	11	2 ER 16 ACME	0.9	1.0	-			
		2 EL 16 ACME						
		2 IR 16 ACME						
		2 IL 16 ACME						
16	16	3 ER 16 ACME	0.9	1.0	-			
		3 EL 16 ACME						
		3 IR 16 ACME						
		3 IL 16 ACME						
14	16	3 ER 14 ACME	1.0	1.2	-			
		3 EL 14 ACME						
		3 IR 14 ACME						
		3 IL 14 ACME						
12	16	3 ER 12 ACME	1.1	1.2	-			
		3 EL 12 ACME						
		3 IR 12 ACME						
		3 IL 12 ACME						
10	16	3 ER 10 ACME	1.3	1.3	-			
		3 EL 10 ACME						
		3 IR 10 ACME						
		3 IL 10 ACME						
8	16	3 ER 8 ACME	1.5	1.5	-			
		3 EL 8 ACME						
		3 IR 8 ACME						
		3 IL 8 ACME						
6	16	3 ER 6 ACME	1.7	1.8	-			
		3 EL 6 ACME						
		3 IR 6 ACME						
		3 IL 6 ACME						

* One Cutting Edge

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66





STUB ACME

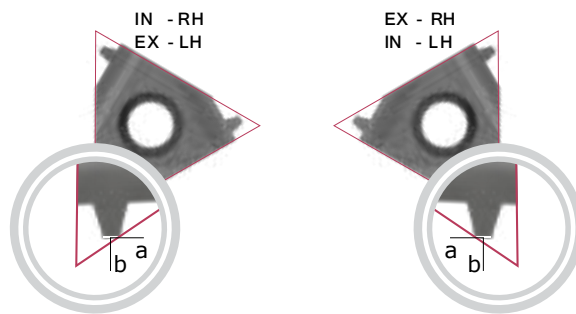
PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
16	8	*1 IR 16 STACME	0.6	0.6	-			
		*1 IL 16 STACME						
16	11	2 ER 16 STACME	1.0	1.0	-			
		2 EL 16 STACME						
16	16	3 ER 16 STACME	1.0	1.0	-			
		3 EL 16 STACME						
		3 IR 16 STACME						
		3 IL 16 STACME						
14	16	3 ER 14 STACME	1.1	1.1	-			
		3 EL 14 STACME						
		3 IR 14 STACME						
		3 IL 14 STACME						
12	16	3 ER 12 STACME	1.2	1.2	-			
		3 EL 12 STACME						
		3 IR 12 STACME						
		3 IL 12 STACME						
10	16	3 ER 10 STACME	1.3	1.3	-			
		3 EL 10 STACME						
		3 IR 10 STACME						
		3 IL 10 STACME						
8	16	3 ER 8 STACME	1.5	1.5	-			
		3 EL 8 STACME						
		3 IR 8 STACME						
		3 IL 8 STACME						
6	16	3 ER 6 STACME	1.8	1.8	-			
		3 EL 6 STACME						
		3 IR 6 STACME						
		3 IL 6 STACME						

* One Cutting Edge

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66





TRAPEZ - DIN 103

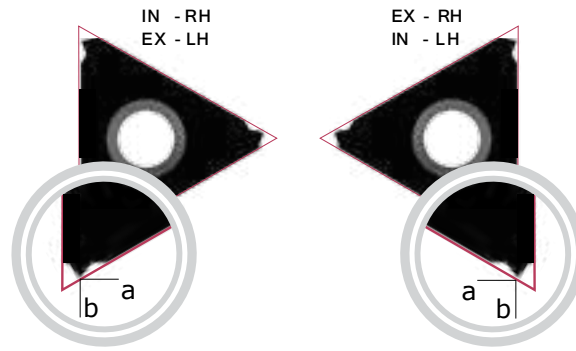
PITCH in TPI	LENGTH in mm	ARTICLE NUMBER ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
1.5	8	*1 IR 1.5 TR	0.6	0.6	-			
		*1 IL 1.5 TR						
1.5	16	3 ER 1.5 TR	1.0	1.1	-			
		3 EL 1.5 TR						
2.0	16	3 ER 2 TR	1.0	1.3	-			
		3 EL 2 TR						
		3 IR 2 TR						
		3 IL 2 TR						
3.0	16	3 ER 3 TR	1.3	1.5	-			
		3 EL 3 TR						
		3 IR 3 TR						
		3 IL 3 TR						
4.0	16	3 ER 4 TR	1.3	1.5	-			
		3 EL 4 TR						
		3 IR 4 TR						
		3 IL 4 TR						
4.0	22	4 ER 4 TR	1.8	1.9	-			
		4 EL 4 TR						
		4 IR 4 TR						
		4 IL 4 TR						
5.0	22	4 ER 5 TR	2.0	2.4	-			
		4 EL 5 TR						
		4 IR 5 TR						
		4 IL 5 TR						
6.0	22	4 ER 6 TR	2.0	2.4	-			
		4 EL 6 TR						
		4 IR 6 TR						
		4 IL 6 TR						

* One Cutting Edge

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66





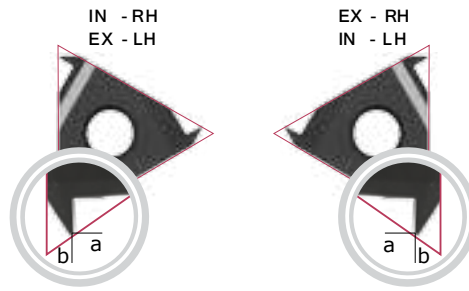
PG - DIN40430

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
20	8	1 IR 20 PG	0.6	0.7	-			
18	11	2 IR 18 PG	0.8	0.9	-			
20	16	3 ER 20 PG	0.7	0.8	-			
18	16	3 ER 18 PG	0.8	0.9	-			
		3 IR 18 PG						
16	16	3 ER 16 PG	0.8	1.0	-			
		3 IR 16 PG						



- (1) For additional holders see page 55 - 59
- (2) For cutting conditions see page 60 - 66



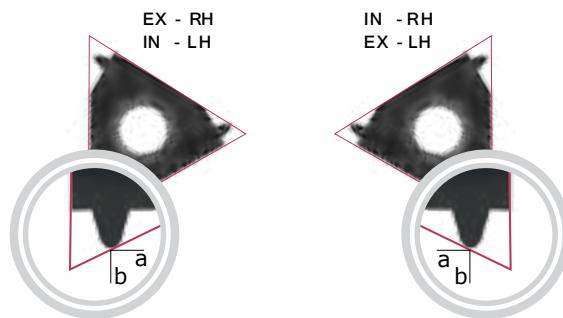


SAGENGWINDE - DIN 513

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
2.0	16	3 ER 2 SAGE	1.1	1.6	-			
		3 EL 2 SAGE						
		3 IR 2 SAGE	1.2	1.7				
		3 IL 2 SAGE						
3.0	22	4 ER 3 SAGE	1.5	2.4	-			
		4 EL 3 SAGE						
		4 IR 3 SAGE	1.9	2.9	-			
		4 IL 3 SAGE						
4.0	22	4 ER 4 SAGE	1.9	3.1	-			
		4 EL 4 SAGE						
		4 IR 4 SAGE	2.3	3.5	-			
		4 IL 4 SAGE						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66





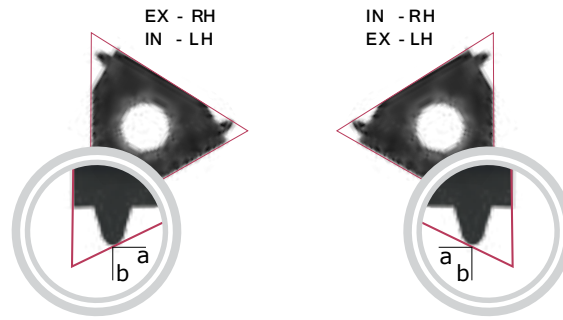
ROUND - DIN 405

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
10	16	3 ER 10 RD	1.1	1.2	-			
		3 EL 10 RD						
		3 IR 10 RD						
		3 IL 10 RD						
8	16	3 ER 8 RD	1.4	1.4	-			
		3 EL 8 RD						
		3 IR 8 RD						
		3 IL 8 RD						
6	16	3 ER 6 RD	1.4	1.5	-			
		3 EL 6 RD						
		3 IR 6 RD						
		3 IL 6 RD						
6	22	4 ER 6 RD	1.5	1.7	-			
		4 EL 6 RD						
		4 IR 6 RD						
		4 IL 6 RD						
4	22	4 ER 4 RD	2.2	2.3	-			
		4 EL 4 RD						
		4 IR 4 RD						
		4 IL 4 RD						

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66





ROUND - DIN 20400

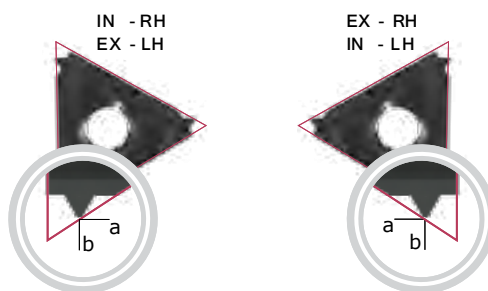


PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
4.0	22	4 ER 4.0 RD 20400	1.4	1.4	-			
		4 IR 4.0 RD 20400						
5.0	22	4 ER 5.0 RD 20400	1.7	1.8	-			
		4 IR 5.0 RD 20400						
6.0	22	4 ER 6.0 RD 20400	1.7	2.0	-			
		4 IR 6.0 RD 20400						

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66





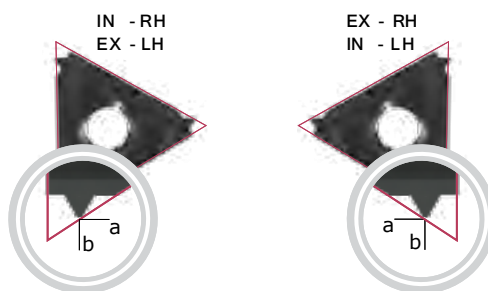
UNJ - UNJC, UNJF, UNJEF, UNJS

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
40	11	2 ER 40 UNJ	0.6	0.6	-			
		2 EL 40 UNJ						
		2 IR 40 UNJ						
		2 IL 40 UNJ						
36	11	2 ER 36 UNJ	0.6	0.6	-			
		2 EL 36 UNJ						
		2 IR 36 UNJ						
		2 IL 36 UNJ						
32	11	2 ER 32 UNJ	0.6	0.6	-			
		2 EL 32 UNJ						
		2 IR 32 UNJ						
		2 IL 32 UNJ						
28	11	2 ER 28 UNJ	0.6	0.6	-			
		2 EL 28 UNJ						
		2 IR 28 UNJ						
		2 IL 28 UNJ						
24	11	2 ER 24 UNJ	0.7	0.8	-			
		2 EL 24 UNJ						
		2 IR 24 UNJ						
		2 IL 24 UNJ						

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66





UNJ - UNJC, UNJF, UNJEF, UNJS

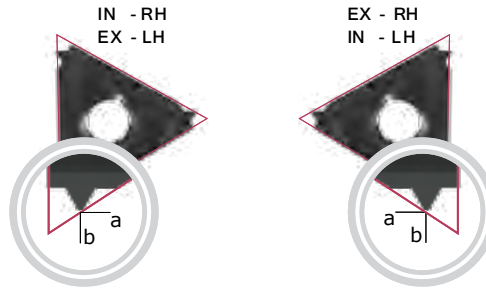
PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
20	11	2 ER 20 UNJ	0.8	0.9	-			
		2 EL 20 UNJ						
		2 IR 20 UNJ						
		2 IL 20 UNJ						
18	11	2 ER 18 UNJ	0.8	1.0	-			
		2 EL 18 UNJ						
		2 IR 18 UNJ						
		2 IL 18 UNJ						
14	11	2 ER 14 UNJ	0.9	1.0	-			
		2 EL 14 UNJ						
		2 IR 14 UNJ						
		2 IL 14 UNJ						
40	16	3 ER 40 UNJ	0.6	0.6	-			
		3 EL 40 UNJ						
		3 IR 40 UNJ						
		3 IL 40 UNJ						

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



UNJ - UNJC, UNJF, UNJEF, UNJS

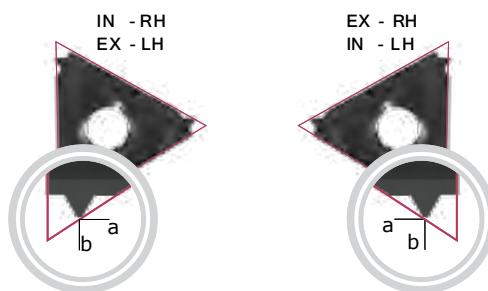
PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
36	16	3 ER 36 UNJ	0.6	0.6	-			
		3 EL 36 UNJ						
		3 IR 36 UNJ						
		3 IL 36 UNJ						
32	16	3 ER 32 UNJ	0.6	0.6	-			
		3 EL 32 UNJ						
		3 IR 32 UNJ						
		3 IL 32 UNJ						
28	16	3 ER 28 UNJ	0.6	0.6	-			
		3 EL 28 UNJ						
		3 IR 28 UNJ						
		3 IL 28 UNJ						
24	16	3 ER 24 UNJ	0.7	0.8	-			
		3 EL 24 UNJ						
		3 IR 24 UNJ						
		3 IL 24 UNJ						
20	16	3 ER 20 UNJ	0.8	0.9	-			
		3 EL 20 UNJ						
		3 IR 20 UNJ						
		3 IL 20 UNJ						
18	16	3 ER 18 UNJ	0.8	1.0	-			
		3 EL 18 UNJ						
		3 IR 18 UNJ						
		3 IL 18 UNJ						
16	16	3 ER 16 UNJ	0.8	1.0	-			
		3 EL 16 UNJ						
		3 IR 16 UNJ						
		3 IL 16 UNJ						



(1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



UNJ - UNJC, UNJF, UNJEF, UNJS

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			TPI	mm	a	b	c	Uncoated
14	16	3 ER 14 UNJ	1.0	1.2	-			
		3 EL 14 UNJ						
		3 IR 14 UNJ						
		3 IL 14 UNJ						
13	16	3 ER 13 UNJ	1.0	1.3	-			
		3 EL 13 UNJ						
		3 IR 13 UNJ						
		3 IL 13 UNJ						
12	16	3 ER 12 UNJ	1.1	1.4	-			
		3 EL 12 UNJ						
		3 IR 12 UNJ						
		3 IL 12 UNJ						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66





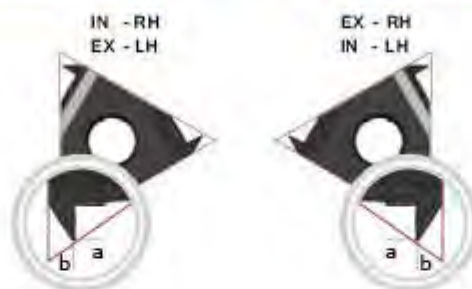
MJ - ISO 5855



PITCH in mm	LENGTH in mm	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiN	TiAlN
1.0	11	2 IR 1.0 MJ	0.7	0.8	-			
1.25	11	2 IR 1.25 MJ	0.8	0.9	-			
1.5	16	2 IR 1.5 MJ	0.8	1.0	-			
2.0	16	2 IR 2.0 MJ	0.9	1.0	-			
1.5	16	3 ER 1.5 MJ	0.8	1.0	-			
		3 IR 1.5 MJ						
1.25	16	3 ER 1.25 MJ	0.8	0.9	-			
		3 IR 1.25 MJ						
1.5	16	3 ER 1.5 MJ	0.8	1.0	-			
		3 IR 1.5 MJ						
2.0	16	3 ER 2.0 MJ	1.0	1.3	-			
		3 IR 2.0 MJ						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66





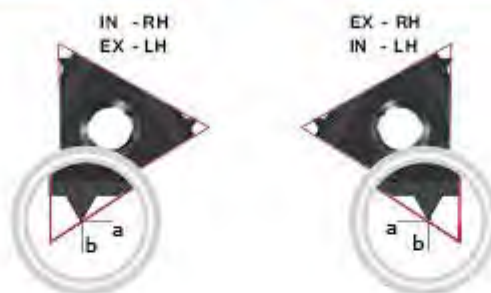
AMERICAN BUTTRESS

PITCH in TPI	LENGTH in mm	ARTICLE NUMBER ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left	DIMENSIONS in mm			PRICE PER PIECE in Euro		
			a	b	c	Uncoated	TiN/TiNN	TiAIN
16	11	2 ER 16 ABUT	1.0	1.5	-			
		2 EL 16 ABUT						
		2 IR 16 ABUT						
		2 IL 16 ABUT						
20	16	3 ER 20 ABUT	1.0	1.3	-			
		3 EL 20 ABUT						
		3 IR 20 ABUT						
		3 IL 20 ABUT						
16	16	3 ER 16 ABUT	1.0	1.5	-			
		3 EL 16 ABUT						
		3 IR 16 ABUT						
		3 IL 16 ABUT						
12	16	3 ER 12 ABUT	1.4	2.0	-			
		3 EL 12 ABUT						
		3 IR 12 ABUT						
		3 IL 12 ABUT						
10	16	3 ER 10 ABUT	1.5	2.3	-			
		3 EL 10 ABUT						
		3 IR 10 ABUT						
		3 IL 10 ABUT						
8	22	4 ER 8 ABUT	2.1	3.3	-			
		4 EL 8 ABUT						
		4 IR 8 ABUT						
		4 IL 8 ABUT						
6	22	4 ER 6 ABUT	2.1	3.4	-			
		4 EL 6 ABUT						
		4 IR 6 ABUT						
		4 IL 6 ABUT						

(1) For additional holders see page 55 - 59

(2) For cutting conditions see page 60 - 66





OIL THREADS API ROUND

PITCH <small>in TPI</small>	LENGTH <small>in mm</small>	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS <small>in mm</small>			PRICE PER PIECE <small>in Euro</small>		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
10	16	3 ER 10 API RD	1.5	1.4	-			
		3 IR 10 API RD						
8	16	3 ER 8 API RD	1.3	1.6	-			
		3 IR 8 API RD						



Multitooth

PITCH <small>in TPI</small>	LENGTH <small>in mm</small>	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS <small>in mm</small>			PRICE PER PIECE <small>in Euro</small>		
			a	b	c	Uncoated	TiN/TiNN	TiAlN
10	22	4 ER 10 API RD 2M	2.4	3.7	-			
		4 IR 10 API RD 2M						



- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



THREAD TURNING INSERTS



OIL THREADS V - 0.040

PITCH <small>in TPI</small>	LENGTH <small>in mm</small>	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS <small>in mm</small>			PRICE PER PIECE <small>in Euro</small>		
			TPI	mm	a	b	c	Uncoated
5	22	4 ER 5 API 403	1.8	2.5	-			
		4 IR 5 API 403						



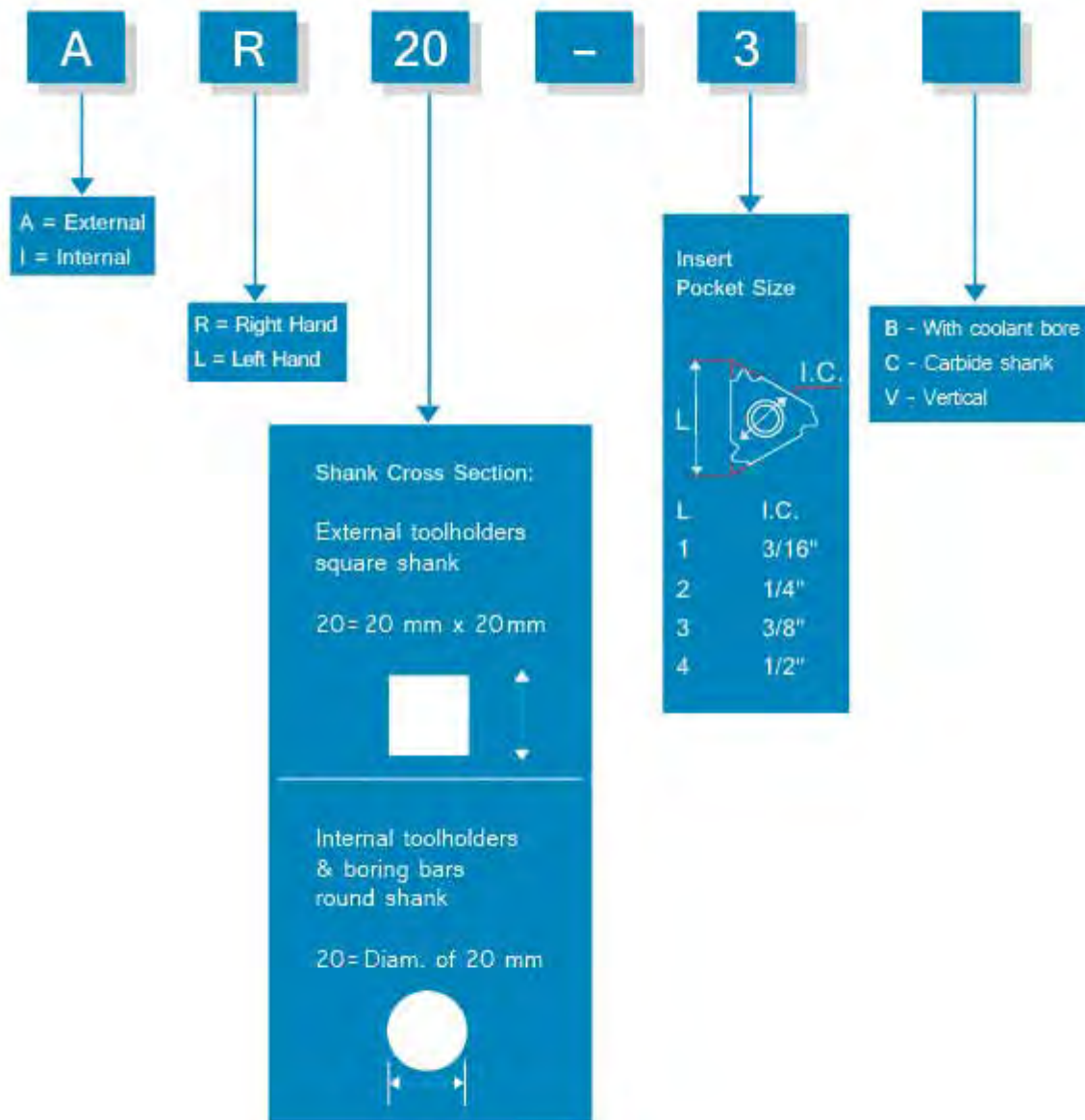
OIL THREADS EXTREME - LINE CASING

PITCH <small>in TPI</small>	LENGTH <small>in mm</small>	ARTICLE NUMBER <small>ER = External Right, IR = Internal Right, EL = External Left, IL = Internal Left</small>	DIMENSIONS <small>in mm</small>			PRICE PER PIECE <small>in Euro</small>		
			TPI	mm	a	b	c	Uncoated
6	22	4 ER 6 EL 1.5	1.9	1.9	-			
		4 IR 6 EL 1.5						
5	22	4 ER 5 EL 1.25	2.4	2.3	-			
		4 IR 5 EL 1.25						

- (1) For additional holders see page 55 - 59
 (2) For cutting conditions see page 60 - 66



PRODUCT IDENTIFICATION THREAD TURNING HOLDERS ORDERING CODE






B	L	ARTICLE NUMBER AR = External Right		RH	LH
				Anvil	Anvil
8	100	*AR08-2	2	-	-
10	100	*AR10-2	2	-	-
12	125	*AR12-2	2	-	-
12	80	AR12-3	3	AE3	AI3
16	100	AR16-3	3	AE3	AI3
20	125	AR20-3	3	AE3	AI3
25	150	AR25-3	3	AE3	AI3
32	170	AR32-3	3	AE3	AI3
25	150	AR25-4	4	AE4	AI4
32	170	AR32-3	4	AE4U	AI4U
40	200	AR40-4	4	AE4U	AI4U

* Toolholders with no anvil





Vertical toolholders

B	L	ARTICLE NUMBER AR = External Right		RH Anvil	LH Anvil
16	100	AR 16-3V	3	-	-
20	125	AR 20-3V	3	-	-
25	150	AR 25-3V	3	-	-
25	150	AR 25-4V	4	-	-





L	L1	ARTICLE NUMBER IR = Internal Right		D	D1	MIN BORE	RH	LH
						Diam.	Anvil	Anvil
125	18	*IR07-1	1	16	6.6	7.8	-	-
100	-	*IR10-2	2	10	10	12	-	-
125	25	*IR10-2D	2	16	10	12	-	-
140	32	*IR13-2	2	16	13	15	-	-
150	32	*IR13-3	3	16	13	16	-	-
170	40	*IR16-3	3	20	16	19	-	-
170	-	IR20-3	3	20	20	24	-	-
200	-	IR25-3	3	25	25	29	AI3	AE3
250	-	IR32-3	3	32	32	36	AI3	AE3
300	-	IR40-3	3	40	40	44	AI3	AE3
350	-	IR50-3	3	50	50	54	AI3	AE3
170	-	*IR20-4	4	20	20	24	-	-
200	-	IR25-4	4	25	25	29	AI4	AE4
250	-	IR32-4	4	32	32	38	AI4	AE4
300	-	IR40-4	4	40	40	46	AI4	AE4
350	-	IR50-4	4	50	50	56	AI4	AE4

* Toolholders with no anvil






Internal toolholders with coolant bore

L	L1	ARTICLE NUMBER IR = Internal Right		D	D1	MIN BORE	RH	LH
						Diam.	Anvil	Anvil
125	25	*IR10-2B	2	16	10	12	-	-
150	32	*IR13-3B	3	16	13	16	-	-
170	40	*IR16-3B	3	20	16	19	-	-
170	-	IR20-3B	3	20	20	24	AI3	AE3
200	-	IR25-3B	3	25	25	29	AI3	AE3
250	-	IR32-3B	3	32	32	36	AI3	AE3
200	-	IR25-4B	4	25	25	29	AI4	AE4



Carbide shank boring bars with coolant bore

L	L1	ARTICLE NUMBER IR = Internal Right		D	D1	MIN BORE	RH	LH
						Diam.	Anvil	Anvil
125	26	IR07-1CB	1	8	6.6	7.8	-	-
150	31	IR10-2CB	2	10	10	12	-	-
170	35	IR12-2CB	2	12	12	15	-	-
200	-	IR16-3CB	3	16	16	19	-	-
250	-	IR20-3CB	3	20	20	23	AI3	AE3
250	-	IR25-3CB	3	25	25	28	AI3	AE3



CARBIDE GRADE SELECTION

Choose the **TOOLCUT** grade specifically formulated for your application from the following list:

COATED GRADES

TiAlN (P20-P40) (K20-K30)

PVD TiAlN coated sub-micrograin grade for stainless steels and exotic materials at medium to high cutting speeds.

TiN (K10-K20) (P10-P25)

PVD TiN coated micrograin for free cutting untreated alloy steels (below 30 HRc), for stainless steels and cast iron.

TiNN** (P30-P50) (K25-K40)

PVD TiN coated grade for low cutting speed. Works well with wide range of stainless steels.

UNCOATED GRADES

P30* (P20-P30)

Carbide grade for carbon and cast steels, works well at medium to low cutting speeds.

K20* (K10-K30)

Carbide grade for non ferrous metals, aluminum and cast iron.

NOTE: Due to our unique and specialized production techniques, **TOOLCUT** coated inserts provide superior cutting performance and exceptionally long tool life.

CARBIDE GRADE SELECTION

ISO	Material		Condition	Coated			Uncoated	
				TIALN	TIN	TINN	K20	P30
P	Non-Alloy Steel and Cast Steel, Free Cutting Steel	< 0.25%C	Annealed	120 180	100 180	70 150		50 130
		≥ 0.25%C	Annealed					
		< 0.55%C	Quenched & Tempered					
		≥ 0.55%C	Annealed					
			Quenched & Tempered					
	Low Alloy Steel and Cast Steel (less than 5% alloying elements)	Annealed	80-130	70-120	60-90		50-80	
High Alloy Steel, Cast Steel and Tool Steel	Annealed	60-80	55-70	50-60		40-50		
	Quenched & Tempered							
M	Stainless Steel and Cast Steel		Ferritic /Martensitic	90-130	60-90	50-80	50-80	
			Martensitic					
			Austenitic					
K	Cast Iron Nodular (GGG)		Ferritic / Pearlitic	100-130	80-110	60-90		
			Pearlitic					
	Grey Cast Iron (GG)		Ferritic	120-130	90-100	65-85		
			Pearlitic					
	Malleable Cast Iron		Ferritic	100-130	80-100	60-85		
			Pearlitic					
N	Aluminium-Wrought Alloy		Not Cureable		600 800	450 600	600 800	350 500
			Cured					
	Aluminium-Cast, Alloyed	<= 12% Si	Not Cureable		200 550	150 350	200 550	110 300
			Cured					
		> 12% Si	High Temperature					
	Copper Alloys	> 1% Pb	Free Cutting		150 250	110 180	150 250	90 150
			Brass					
			Electrolytic Copper					
	Non Metallic		Duroplastics, Fiber Plastics		200 300	150 210	100 200	110 150
			Hard Rubber					
S	High Temp. Alloys, Super Alloys	Fe based	Annealed	25-60				
			Cured					
		Ni or Co based	Annealed					
			Cured					
		Cast						
Titanium Alloys		Alpha + Beta Alloys Cured	35-45				35-45	
H	Hardened Steel		Hardened 45-50 HRc	35-45				
			Hardened 51-55 HRc					
			Hardened 56-62 HRc					
	Chilled Cast Iron		Cast	25-35				
Cast Iron		Hardened	15-25					

THREAD TURNING TECHNICAL SECTION NUMBERS



$$N = \frac{V \times 1000}{\pi \times D} = \frac{120 \times 1000}{3.14 \times 30} = 1274 \text{ RPM}$$

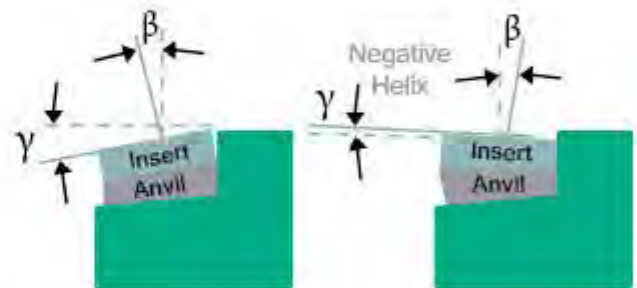
Number of threading passes: Selection for single point inserts

PITCH:												
	in mm	0.5	0.8	1.0	1.5	1.75	2.0	2.5	3.0	3.0	4.0	6.0
in TPI	48	32	24	20	16	14	12	10	8	6	4	
Number of Passes	3-6	4-7	4-9	6-10	5-11	9-12	6-13	7-15	8-17	10-20	11-22	

Number of passes and path of cut per pass for multitooth inserts

	PITCH: in mm	INSERT SIZE		NO. OF TEETH	ORDERING CODE	NO. OF PASSES	DEPTH OF CUT PER PASS			
		L	I.C. (in)				1	2	3	4
ISO EXTERNAL	1.00	16	3/8	3	3 ER 1.0 ISO 3M	2	0.38	0.25		
	1.50	16	3/8	2	3 ER 1.5 ISO 2M	3	0.42	0.30	0.20	
	1.50	22	1/2	3	4 ER 1.5 ISO 3M	2	0.55	0.37		
	2.00	22	1/2	2	4 ER 2.0 ISO 2M	3	0.57	0.40	0.28	
	2.00	22	1/2	3	4 ER 2.0 ISO 3M	2	0.76	0.49		
ISO INTERNAL	1.00	16	3/8	3	3 IR 1.0 ISO 3M	2	0.33	0.25		
	1.50	16	3/8	2	3 IR 1.5 ISO 2M	3	0.38	0.29	0.20	
	1.50	22	1/2	3	4 IR 1.5 ISO 3M	2	0.50	0.37		
	2.00	22	1/2	2	4 IR 2.0 ISO 2M	3	0.52	0.37	0.26	
	2.00	22	1/2	3	4 IR 2.0 ISO 3M	2	0.70	0.45		
UN External	16	16	3/8	2	3 ER 16 UN 2M	3	0.44	0.31	0.22	
	16	22	1/2	3	4 ER 16 UN 3M	2	0.58	0.39		
	12	22	1/2	2	4 ER 12 UN 2M	3	0.59	0.42	0.30	
	12	22	1/2	3	4 ER 12 UN 3M	2	0.78	0.52		
UN INTERNAL	16	16	3/8	2	3 IR 16 UN 2M	3	0.42	0.28	0.22	
	16	22	1/2	3	4 IR 16 UN 3M	2	0.55	0.37		
	12	22	1/2	2	4 IR 12 UN 2M	3	0.53	0.38	0.31	
	12	22	1/2	3	4 IR 12 UN 3M	2	0.74	0.48		
WITHWORTH 55° External	14	16	3/8	3	3 ER 14 W 2M	3	0.52	0.37	0.27	
	14	22	1/2	2	4 ER 14 W 3M	2	0.70	0.46		
	11	22	1/2	3	4 ER 11 W 2M	3	0.67	0.47	0.34	
WITHWORTH 55° External	14	16	3/8	2	3 IR 14 W 2M	3	0.55	0.55	0.27	
	14	22	1/2	3	4 IR 14 W 3M	2	0.55	0.55		
	11	22	1/2	2	4 IR 11 W 2M	3	0.55	0.55	0.34	
NPT External	11.5	16	3/8	2	3 ER 11.5 NPT 2M	4	0.54	0.47	0.37	0.30
	11.5	22	1/2	3	4 ER 11.5 NPT 3M	3	0.76	0.54	0.38	
	8	22	1/2	2	4 ER 8 NPT 2M	4	0.81	0.60	0.55	0.45
NPT INTERNAL	11.5	16	3/8	2	3 IR 11.5 NPT 2M	4	0.54	0.47	0.37	
	11.5	22	1/2	3	4 IR 11.5 NPT 3M	3	0.76	0.54	0.38	
	8	22	1/2	2	4 IR 8 NPT 2M	4	0.81	0.60	0.55	0.45
API ROUND INTERNAL	10	22	1/2	2	4 IR 10 APIRD 2M	3	0.60	0.50	0.31	

Simplified formula
 $\beta = 20P/D$



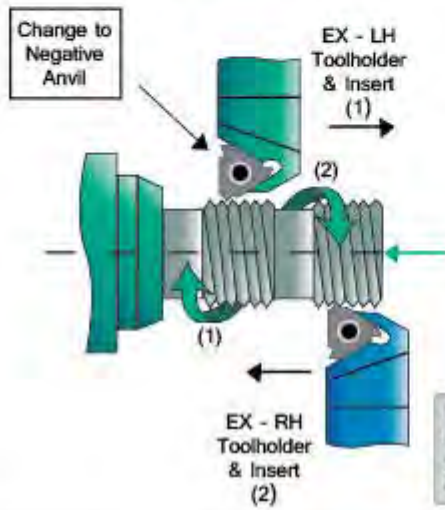
TOOLCUT. toolholders pockets have a built in 1.5 helix angle. This angle may be adjusted to better match the thread helix angle by simple changing the anvil.

Negative helix is usually used when threading RH thread with LH holder or LH thread with RH holder.

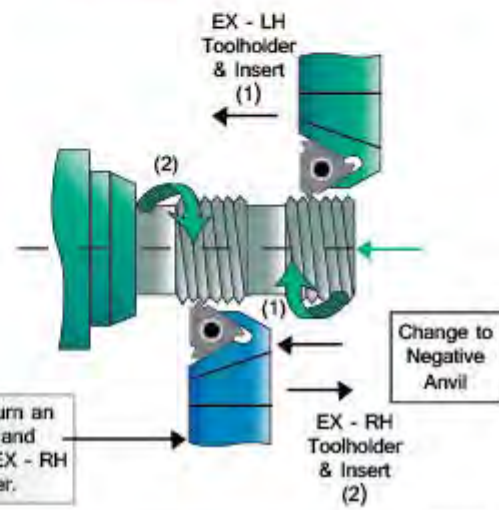
L	IC	Pocket Angle	$\gamma \rightarrow 4.5^\circ$	3.5°	2.5°	1.5°	0.5°	-0.5°	-1.5°
16	3/8	EX-RH OR IN-LH	AE 3+4.5	AE 3+3.5	AE 3+2.5	AE 3+1.5	AE 3+0.5	AE 3-0.5	AE 3-1.5
16	3/8	EX-LH OR IN-LH	AI 3+4.5	AI 3+3.5	AI 3+2.5	AI 3+1.5	AI 3+0.5	AI 3-0.5	AI 3-1.5
22	1/2	EX-RH OR IN-LH	AE 4+4.5	AE 4+3.5	AE 4+2.5	AE 4+1.5	AE 4+0.5	AE 4-0.5	AE 4-1.5
22	1/2	EX-LH OR IN-LH	AI 4+4.5	AI 4+3.5	AI 4+2.5	AI 4+1.5	AI 4+0.5	AI 4-0.5	AI 4-1.5

THREAD TURNING METHODS

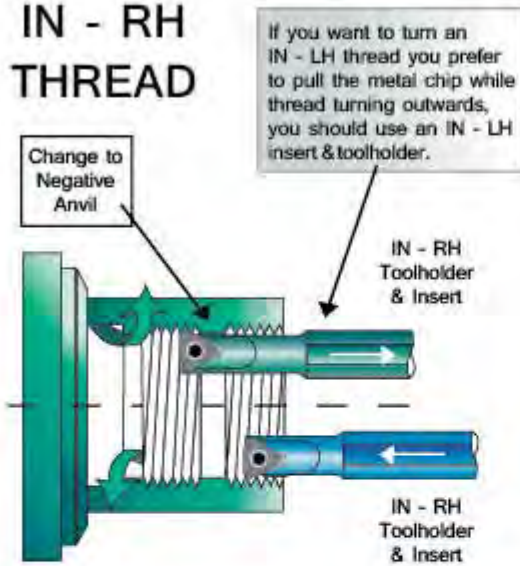
EX - RH
THREAD



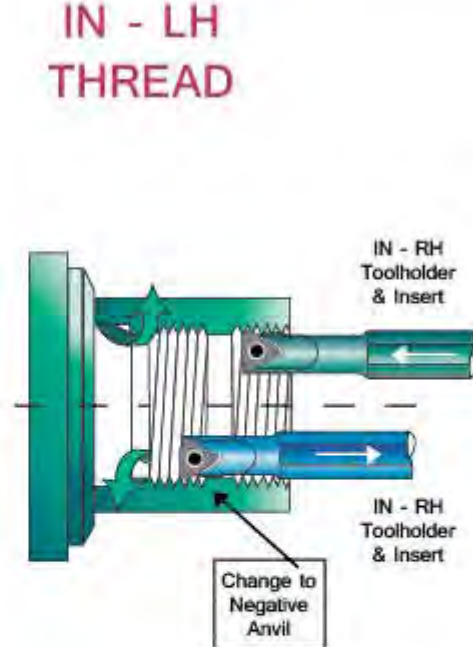
EX - LH
THREAD



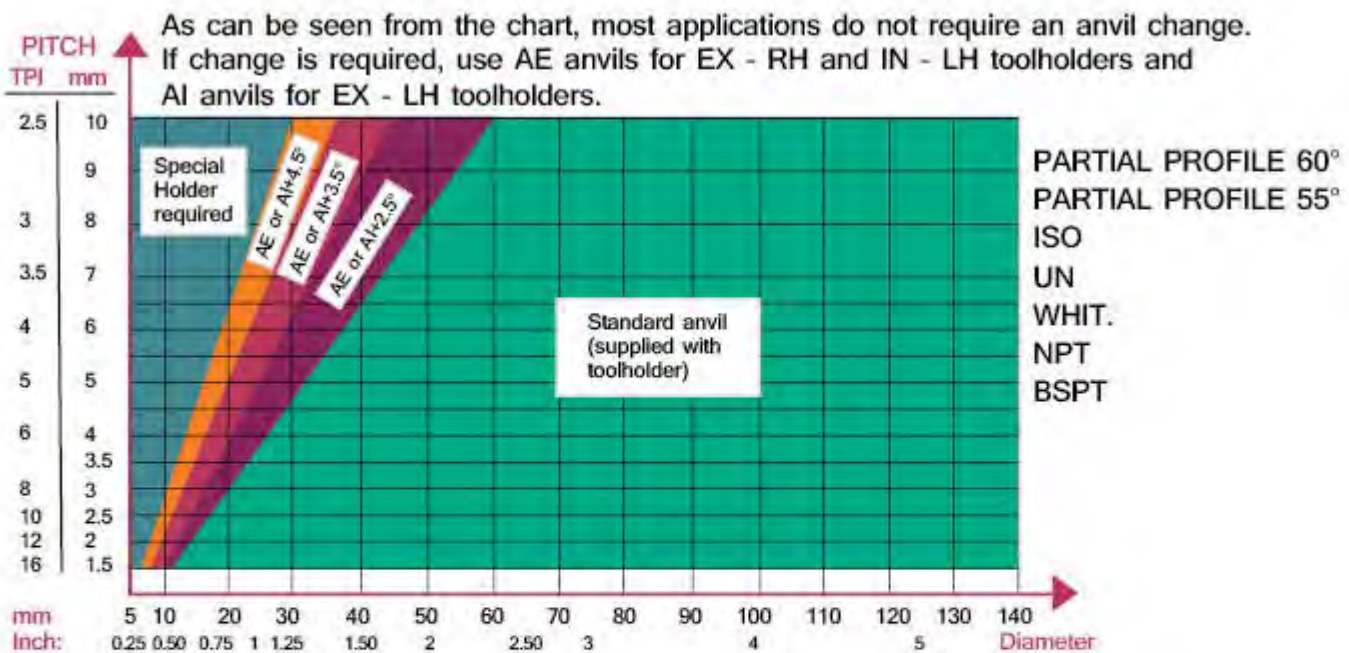
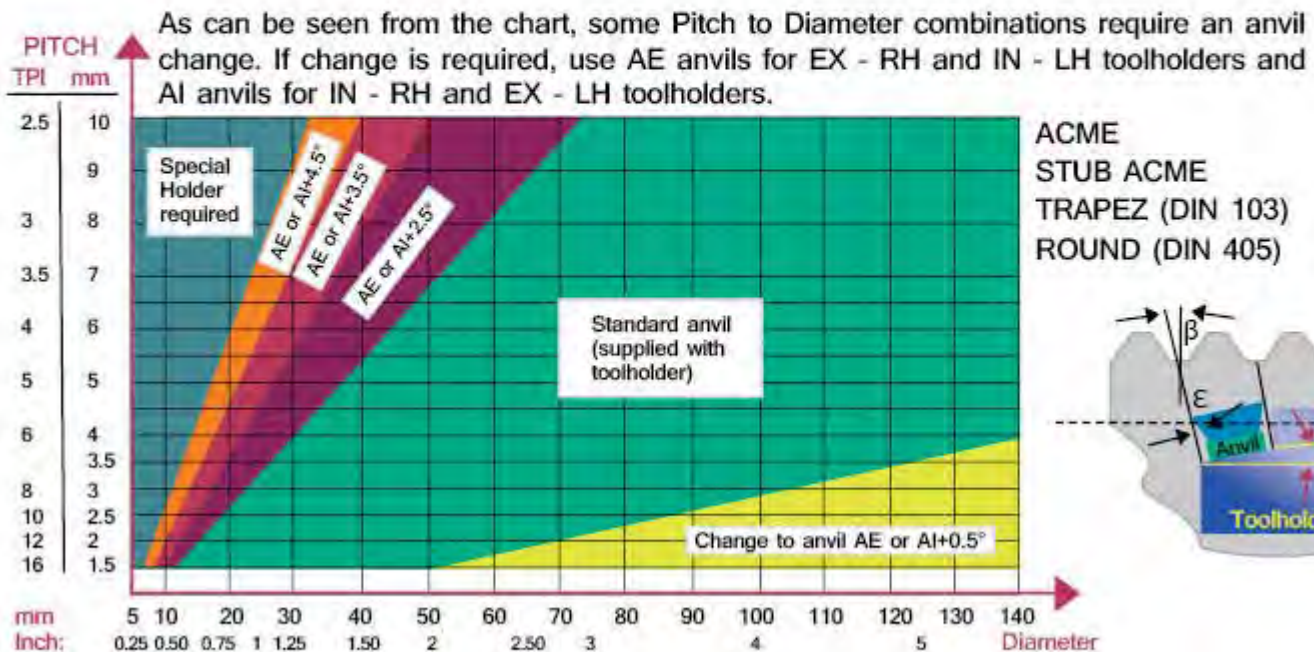
IN - RH
THREAD



IN - LH
THREAD

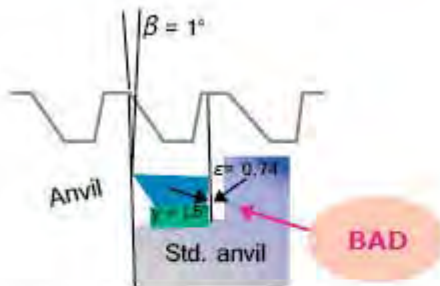
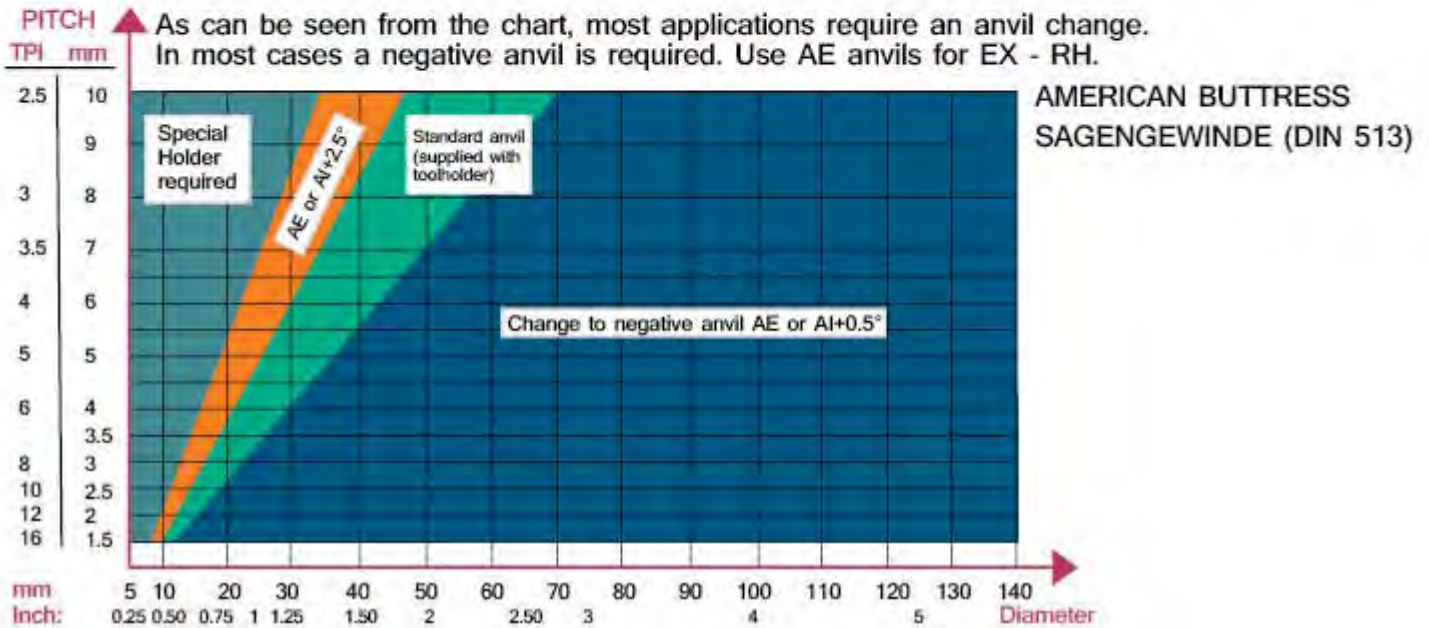


THREAD HELIX ANGLE

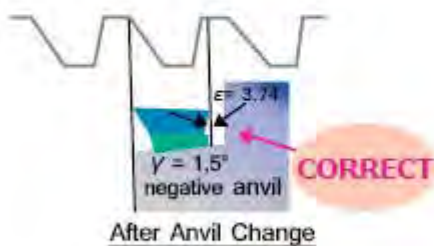


Simplified formula
 $\beta = 20P/D$

THREAD HELIX ANGLE



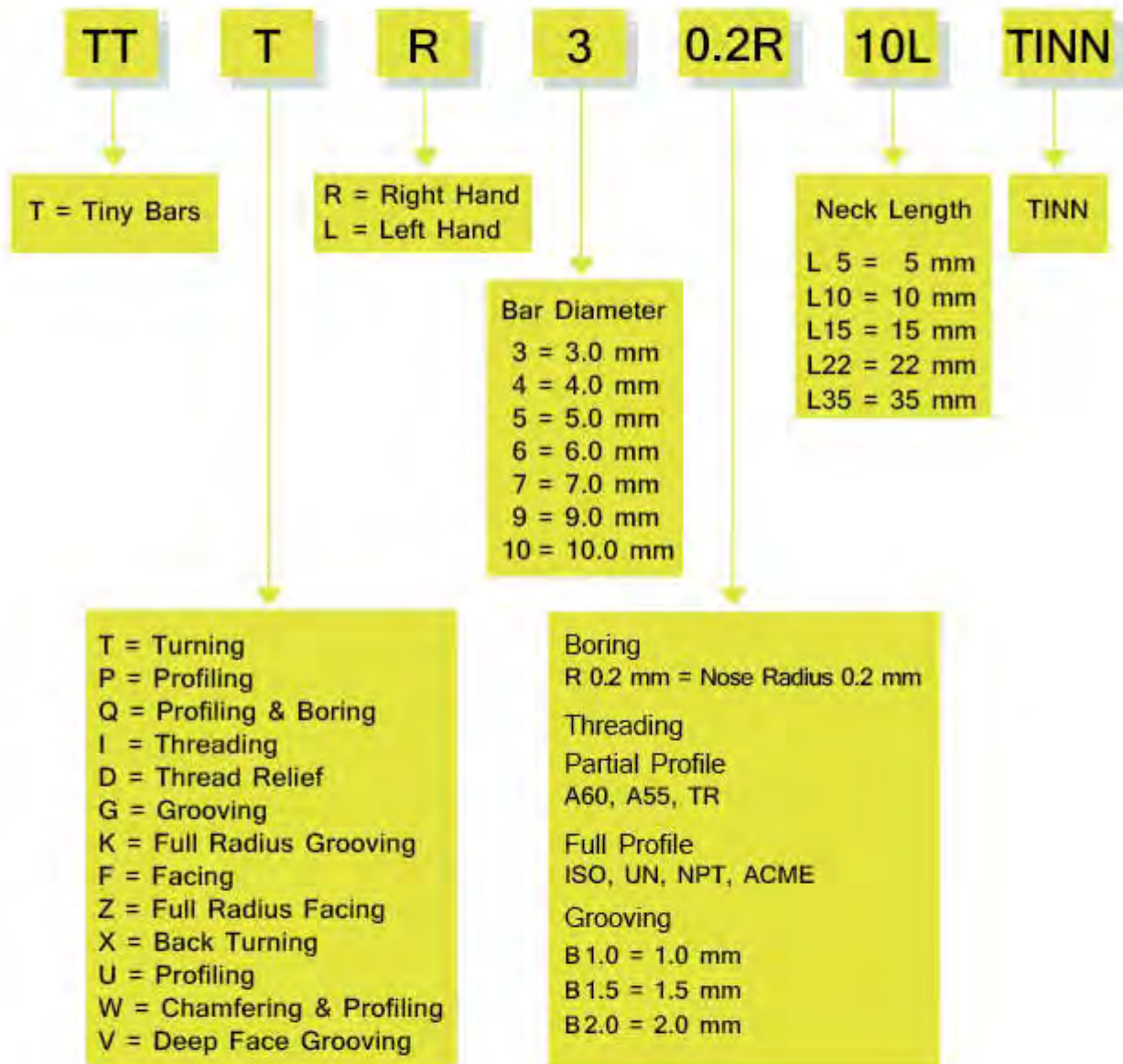
Before Anvil Change
Replacing the standard anvil with an anvil with negative angle, will eliminate side rubbing.



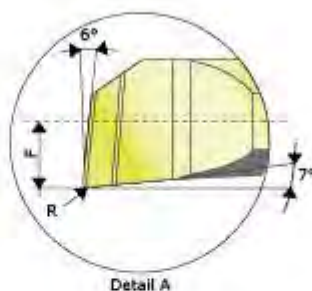
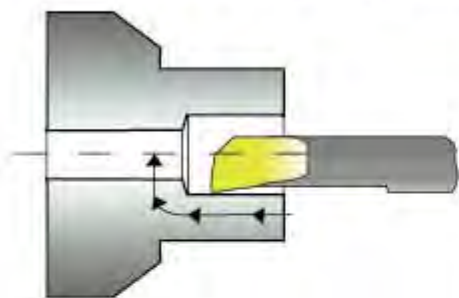
After Anvil Change

PRODUCT - IDENTIFICATION

Tiny Tools



TTTR BARS Boring - with Coolant Channel



LENGTH in mm L	LENGTH in mm L1	ARTICLE NUMBER	D in mm	R in mm	F	MIN. BORE DIAME- TER	HOLDER	PRICE PER PIECE in Euro		
								Un- coated	TiN	TiAlN
39	4	* TTTR 1 - 0.05R - 4 L	3.0	0.05	0.5	1.0	TTH 20 - 3			
39	6	* TTTR 1.5 - 0.1R - 6 L	3.0	0.10	0.7	1.5	TTH 20 - 3			
39	10	* TTTR 2 - 0.05R -10 L	3.0	0.05	0.8	2.1	TTH 20 - 3			
39	5	* TTTR 2 - 0.15R - 5 L	3.0	0.15	0.8	2.1	TTH 20 - 3			
39	10	* TTTR 2 - 0.15R -10 L	3.0	0.15	0.8	2.1	TTH 20 - 3			
39	10	TTTR 3 - 0.05R -10 L	3.0	0.05	1.3	3.1	TTH 20 - 3			
39	15	TTTR 3 - 0.05R -15 L	3.0	0.05	1.3	3.1	TTH 20 - 3			
39	15	TTTR 3 - 0.1R -15 L	3.0	0.10	1.3	3.1	TTH 20 - 3			
39	10	TTTR 3 - 0.2R -10 L	3.0	0.20	1.3	3.1	TTH 20 - 3			
39	15	TTTR 3 - 0.2R -15 L	3.0	0.20	1.3	3.1	TTH 20 - 3			
51	10	TTTR 4 - 0.1R -10 L	4.0	0.10	1.7	4.1	TTH 20 - 4			
51	15	TTTR 4 - 0.1R -15 L	4.0	0.10	1.7	4.1	TTH 20 - 4			
51	22	TTTR 4 - 0.1R -22 L	4.0	0.10	1.7	4.1	TTH 20 - 4			
51	10	TTTR 4 - 0.2R -10 L	4.0	0.20	1.7	4.1	TTH 20 - 4			
51	15	TTTR 4 - 0.2R -15 L	4.0	0.20	1.7	4.1	TTH 20 - 4			
51	22	TTTR 4 - 0.2R -22 L	4.0	0.20	1.7	4.1	TTH 20 - 4			

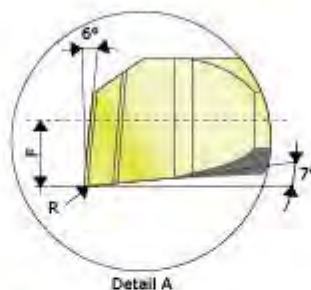
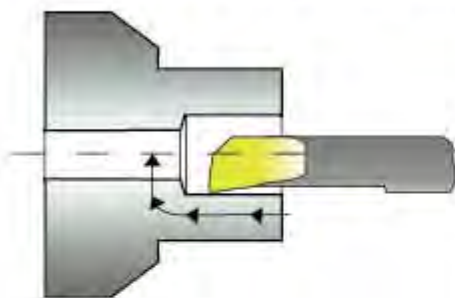
* Without coolant channel

(1) For additional holders see page 90 - 91

(2) For cutting conditions see page 92



TTTR BARS Boring - with Coolant Channel



LENGTH in mm L	LENGTH in mm L1	ARTICLE NUMBER	D in mm	R in mm	F	MIN. BORE DIAME- TER	HOLDER	PRICE PER PIECE in Euro		
								Un- coated	TINN	TiAlN
51	15	TTTR 5 - 0.1R - 15 L	5.0	0.10	2.1	5.1	TTH 20 - 5			
51	22	TTTR 5 - 0.1R - 22 L	5.0	0.10	2.1	5.1	TTH 20 - 5			
76	30	TTTR 5 - 0.1R - 30 L	5.0	0.10	2.1	5.1	TTH 20 - 5			
51	15	TTTR 5 - 0.2R - 15 L	5.0	0.20	2.1	5.1	TTH 20 - 5			
51	22	TTTR 5 - 0.2R - 22 L	5.0	0.20	2.1	5.1	TTH 20 - 5			
76	30	TTTR 5 - 0.2R - 30 L	5.0	0.20	2.1	5.1	TTH 20 - 5			
51	15	TTTR 6 - 0.05R -15 L	6.0	0.05	2.8	6.1	TTH 20 - 6			
51	15	TTTR 6 - 0.1R -15 L	6.0	0.10	2.8	6.1	TTH 20 - 6			
51	15	TTTR 6 - 0.2R -15 L	6.0	0.20	2.8	6.1	TTH 20 - 6			
51	22	TTTR 6 - 0.2R -22 L	6.0	0.20	2.8	6.1	TTH 20 - 6			
58	30	TTTR 6 - 0.2R -30 L	6.0	0.20	2.8	6.1	TTH 20 - 6			
62	22	TTTR 7 - 0.2R -22 L	7.0	0.20	3.3	7.1	TTH 20 - 7			
62	30	TTTR 7 - 0.2R -30 L	7.0	0.20	3.3	7.1	TTH 20 - 7			
64	15	TTTR 8 - 0.2R -15 L	8.0	0.20	3.8	8.1	TTH 20 - 8			
64	22	TTTR 8 - 0.2R -22 L	8.0	0.20	3.8	8.1	TTH 20 - 8			
76	35	TTTR 8 - 0.2R -35 L	8.0	0.20	3.8	8.1	TTH 20 - 8			
73	35	TTTR10 - 0.2R -35 L	10.0	0.20	4.8	10.1	TTH 20 - 10			

Order example: TTTR 4 - 0.2R - 15 L TINN

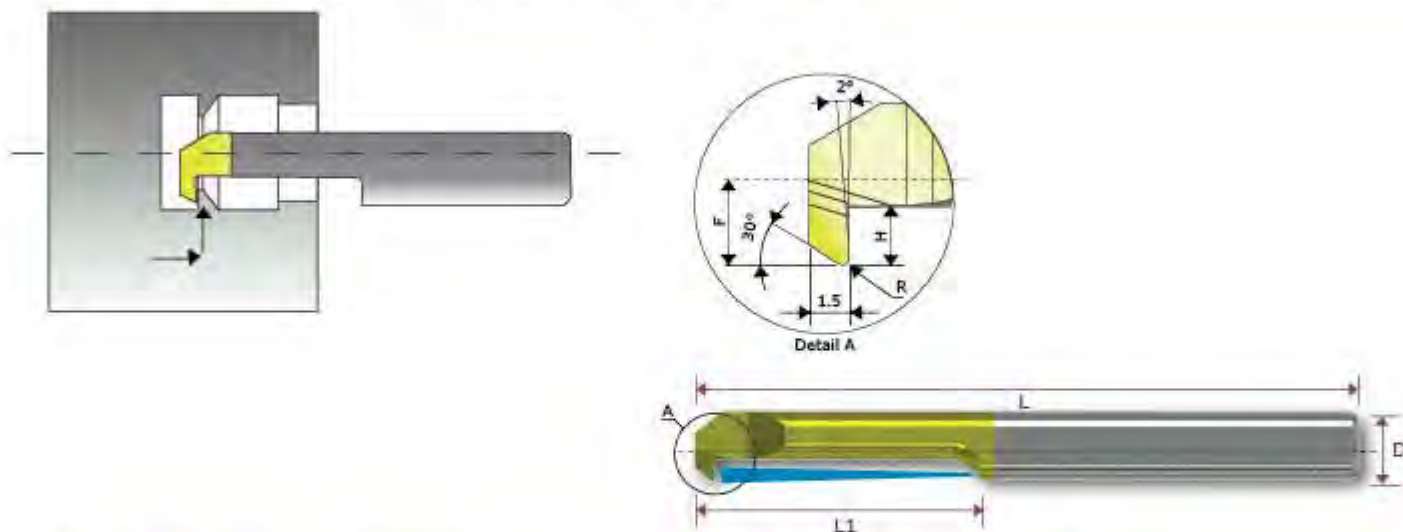
For L.H. bars specify TTTL instead of TTTR

(1) For additional holders see page 90 - 91

(2) For cutting conditions see page 92



TTXR BARS Back Turning - with Coolant Channel



LENGTH in mm L	LENGTH in mm L1	ARTICLE NUMBER	D in mm	R in mm	F	H	MIN. BORE DIAME- TER	HOLDER	PRICE PER PIECE in Euro		
									Un- coated	TiN	TiAlN
51	10	TTXR 4 - 0.1 R - 10 L	4.0	0.10	1.3	0.5	3.1	TTH 20 - 4			
51	10	TTXR 4 - 0.15R - 10 L	4.0	0.15	1.6	0.8	4.1	TTH 20 - 4			
51	15	TTXR 4 - 0.15R - 15 L	4.0	0.15	1.6	0.8	4.1	TTH 20 - 4			
51	15	TTXR 5 - 0.2 R - 15 L	5.0	0.20	2.2	1.0	5.1	TTH 20 - 5			
51	22	TTXR 5 - 0.2 R - 22 L	5.0	0.20	2.2	1.0	5.1	TTH 20 - 5			
51	15	TTXR 6 - 0.2 R - 15 L	6.0	0.20	2.8	1.8	6.1	TTH 20 - 6			
51	22	TTXR 6 - 0.2 R - 22 L	6.0	0.20	2.8	1.8	6.1	TTH 20 - 6			

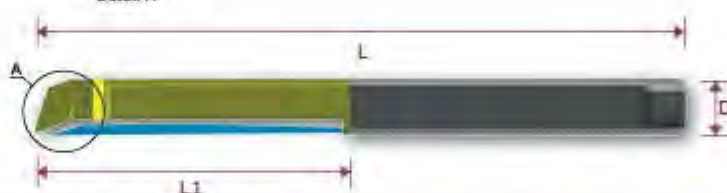
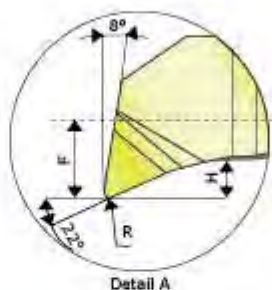
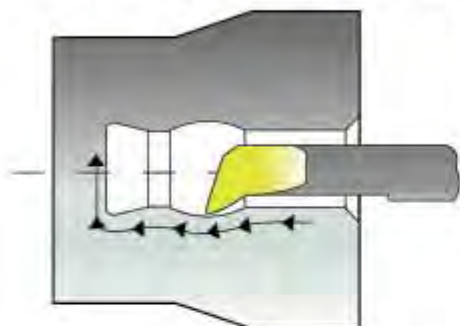
Order example: TTXR 4 - 0.15 R -15 L TiN

(1) For additional holders see page 90 - 91

(2) For cutting conditions see page 92



TTPR BARS Profiling and Boring - with Coolant Channel



LENGTH in mm L	LENGTH in mm L1	ARTICLE NUMBER	D in mm	R in mm	F	H	MIN. BORE DIAME- TER	HOLDER	PRICE PER PIECE in Euro		
									Un- coated	TiNN	TiAlN
39	4	*TTPR 1 - 0.05R - 4 L	3.0	0.05	0.5	0.2	1.0	TTH 20 - 3			
39	6	*TTPR 1.5 - 0.1 R - 6 L	3.0	0.10	0.7	0.3	1.5	TTH 20 - 3			
39	10	*TTPR 2 - 0.05R - 10 L	3.0	0.05	0.8	0.5	2.1	TTH 20 - 3			
39	10	*TTPR 2 - 0.1 R - 10 L	3.0	0.10	0.8	0.5	2.1	TTH 20 - 3			
39	5	*TTPR 2 - 0.15R - 5 L	3.0	0.15	0.8	0.5	2.1	TTH 20 - 3			
39	10	*TTPR 2 - 0.15R - 10 L	3.0	0.15	0.8	0.5	2.1	TTH 20 - 3			
39	10	TTPR 3 - 0.05R - 10 L	3.0	0.05	1.3	0.7	3.1	TTH 20 - 3			
39	15	TTPR 3 - 0.05R - 15 L	3.0	0.05	1.3	0.7	3.1	TTH 20 - 3			
39	15	TTPR 3 - 0.1 R - 15 L	3.0	0.10	1.3	0.7	3.1	TTH 20 - 3			
47	22	TTPR 3 - 0.1 R - 22 L	3.0	0.10	1.3	0.7	3.1	TTH 20 - 3			
39	10	TTPR 3 - 0.2 R - 10 L	3.0	0.20	1.3	0.7	3.1	TTH 20 - 3			
39	15	TTPR 3 - 0.2 R - 15 L	3.0	0.20	1.3	0.7	3.1	TTH 20 - 3			
47	22	TTPR 3 - 0.2 R - 22 L	3.0	0.20	1.3	0.7	3.1	TTH 20 - 3			
51	15	TTPR 4 - 0.1 R - 15 L	4.0	0.10	1.7	0.8	4.1	TTH 20 - 4			
51	22	TTPR 4 - 0.1 R - 22 L	4.0	0.10	1.7	0.8	4.1	TTH 20 - 4			
51	10	TTPR 4 - 0.2 R - 10 L	4.0	0.20	1.7	0.8	4.1	TTH 20 - 4			
51	15	TTPR 4 - 0.2 R - 15 L	4.0	0.20	1.7	0.8	4.1	TTH 20 - 4			
51	22	TTPR 4 - 0.2 R - 22 L	4.0	0.20	1.7	0.8	4.1	TTH 20 - 4			

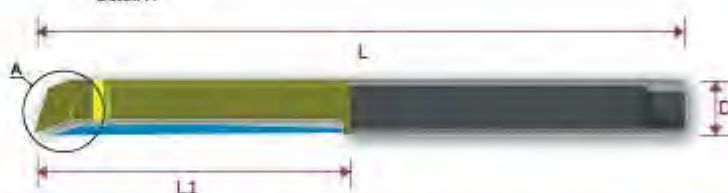
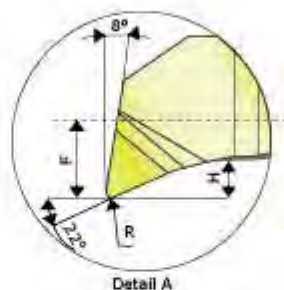
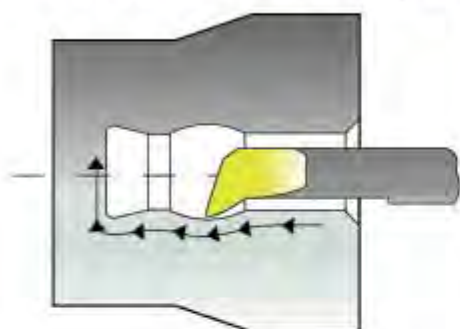
* Without coolant channel

(1) For additional holders see page 90 - 91

(2) For cutting conditions see page 92



TTPR BARS Profiling and Boring - with Coolant Channel



LENGTH in mm L	LENGTH in mm L1	ARTICLE NUMBER	D in mm	R in mm	F	H	MIN. BORE DIA- METER	HOLDER	PRICE PER PIECE in Euro		
									Un- coated	TiNN	TiAlN
51	22	TTPR 5 - 0.1 R - 22 L	5.0	0.10	2.1	1.2	5.1	TTH 20 - 5			
76	30	TTPR 5 - 0.1 R - 30 L	5.0	0.10	2.1	1.2	5.1	TTH 20 - 5			
51	15	TTPR 5 - 0.2 R - 15 L	5.0	0.20	2.1	1.2	5.1	TTH 20 - 5			
51	22	TTPR 5 - 0.2 R - 22 L	5.0	0.20	2.1	1.2	5.1	TTH 20 - 5			
76	30	TTPR 5 - 0.2 R - 30 L	5.0	0.20	2.1	1.2	5.1	TTH 20 - 5			
51	15	TTPR 6 - 0.2 R - 15 L	6.0	0.20	2.8	1.4	6.1	TTH 20 - 6			
51	22	TTPR 6 - 0.2 R - 22 L	6.0	0.20	2.8	1.4	6.1	TTH 20 - 6			
76	30	TTPR 6 - 0.2 R - 30 L	6.0	0.20	2.8	1.4	6.1	TTH 20 - 6			
62	22	TTPR 7 - 0.2 R - 22 L	7.0	0.20	3.3	1.5	7.1	TTH 20 - 7			
62	30	TTPR 7 - 0.2 R - 30 L	7.0	0.20	3.3	1.5	7.1	TTH 20 - 7			
64	15	TTPR 8 - 0.2 R - 15 L	8.0	0.20	3.8	1.6	8.1	TTH 20 - 8			
64	22	TTPR 8 - 0.2 R - 22 L	8.0	0.20	3.8	1.6	8.1	TTH 20 - 8			
76	35	TTPR 8 - 0.2 R - 35 L	8.0	0.20	3.8	1.6	8.1	TTH 20 - 8			
73	35	TTPR10 - 0.2 R - 35 L	10.0	0.20	4.8	2.0	10.1	TTH 20 - 10			

Order example: TTPR 4 - 0.2R - 15 L TiNN

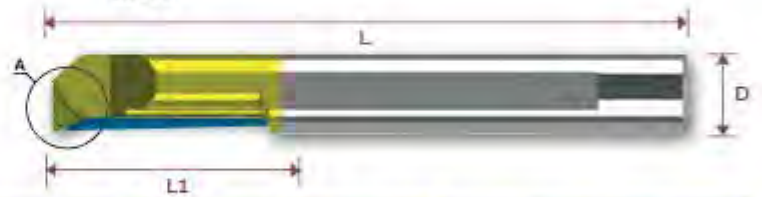
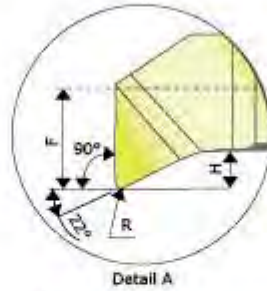
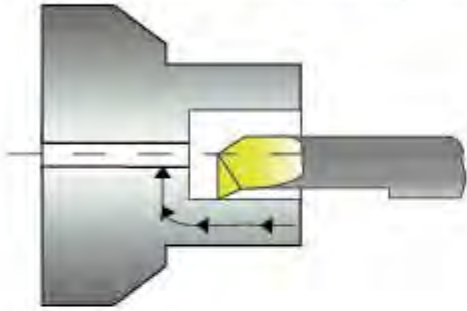
For L.H. bars specify TTPL instead of TTPR

(1) For additional holders see page 90 - 91

(2) For cutting conditions see page 92



TTUR BARS Profiling 90° Face Cutting - with Coolant Channel



LENGTH in mm L	LENGTH in mm L1	ARTICLE NUMBER	D in mm	R in mm	F	H	MIN. BORE DIA- METER	HOLDER	PRICE PER PIECE in Euro		
									Un- coated	TiNN	TiAlN
39	10	TTUR 3 - 0.05R - 10 L	3.0	0.05	1.3	0.4	3.1	TTH 20 - 3			
39	15	TTUR 3 - 0.05R - 15 L	3.0	0.05	1.3	0.4	3.1	TTH 20 - 3			
51	10	TTUR 4 - 0.1 R - 10 L	4.0	0.10	1.7	0.5	4.1	TTH 20 - 4			
51	15	TTUR 4 - 0.1 R - 15 L	4.0	0.10	1.7	0.5	4.1	TTH 20 - 4			
51	15	TTUR 5 - 0.15R - 15 L	5.0	0.15	2.1	0.7	5.1	TTH 20 - 5			
51	22	TTUR 5 - 0.15R - 22 L	5.0	0.15	2.1	0.7	5.1	TTH 20 - 5			
51	15	TTUR 6 - 0.15R - 15 L	6.0	0.15	2.8	0.9	6.1	TTH 20 - 6			
51	22	TTUR 6 - 0.15R - 22 L	6.0	0.15	2.8	0.9	6.1	TTH 20 - 6			
64	22	TTPR 8 - 0.2 R - 22 L	8.0	0.20	3.8	1.1	8.1	TTH 20 - 8			

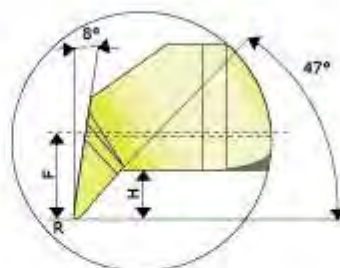
Order example: TTUR 5 - 0.15R - 15 L TiNN

(1) For additional holders see page 90 - 91

(2) For cutting conditions see page 92



TTQR BARS Profiling and Boring - with Coolant Channel



LENGTH in mm L	LENGTH in mm L1	ARTICLE NUMBER	D in mm	R in mm	F	H	MIN. BORE DIA- METER	HOLDER	PRICE PER PIECE in Euro		
									Un- coated	TiNN	TiAlN
51	10	TTQR 4 - 0.2 R - 10 L	4.0	0.20	1.8	0.8	4.1	TTH 20 - 4			
51	15	TTQR 4 - 0.2 R - 15 L	4.0	0.20	1.8	0.8	4.1	TTH 20 - 4			
51	22	TTQR 4 - 0.2 R - 22 L	4.0	0.20	1.8	0.8	4.1	TTH 20 - 4			
51	15	TTQR 5 - 0.2 R - 15 L	5.0	0.20	2.3	1.0	5.1	TTH 20 - 5			
51	22	TTQR 5 - 0.2 R - 22 L	5.0	0.20	2.3	1.0	5.1	TTH 20 - 5			
51	15	TTQR 6 - 0.2 R - 15 L	6.0	0.20	2.8	1.4	6.1	TTH 20 - 6			
51	22	TTQR 6 - 0.2 R - 22 L	6.0	0.20	2.8	1.4	6.1	TTH 20 - 6			
58	30	TTQR 6 - 0.2 R - 30 L	6.0	0.20	2.8	1.4	6.1	TTH 20 - 6			
64	22	TTQR 8 - 0.2 R - 22 L	8.0	0.20	3.8	1.6	8.1	TTH 20 - 8			
64	27	TTQR 8 - 0.2 R - 27 L	8.0	0.20	3.8	2.0	8.1	TTH 20 - 8			

Order example: TTQR 5 - 0.2R - 15 L TiNN

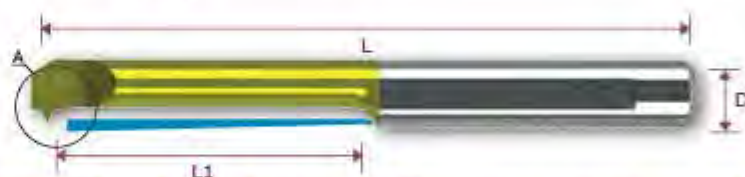
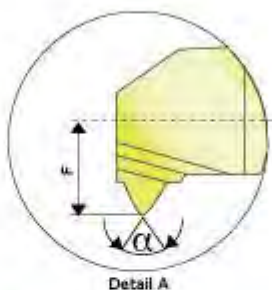
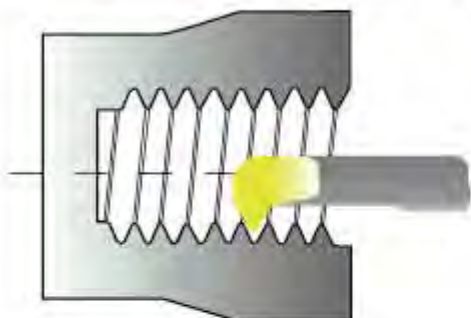
For L.H. bars specify TTQL instead of TTQR

(1) For additional holders see page 90 - 91

(2) For cutting conditions see page 92



TTIR BARS Threading - with Coolant Channel



PARTIAL PROFILE 55°

PITCH RANGE		LENGTH in mm	LENGTH in mm	ARTICLE NUMBER	D in mm	F	α	MIN. BORE DIA-METER	HOLDER	PRICE PER PIECE in Euro		
mm	TPI	L	L1							Un-coated	TINN	TiAIN
0.5 - 1.0	48 - 24	39	15	TTIR 3 - A55 - 15 L	3.0	1.4	55	3.2	TTH 20 - 3			
0.5 - 1.0	48 - 24	51	15	TTIR 4 - A55 - 15 L	4.0	1.8	55	4.1	TTH 20 - 4			
0.5 - 1.25	48 - 20	51	15	TTIR 5 - A55 - 15 L	5.0	2.3	55	5.1	TTH 20 - 5			
0.5 - 1.25	48 - 20	51	22	TTIR 5 - A55 - 22 L	5.0	2.3	55	5.1	TTH 20 - 5			
0.5 - 1.5	48 - 16	51	15	TTIR 6 - A55 - 15 L	6.0	2.6	55	6.0	TTH 20 - 6			
0.5 - 1.5	48 - 16	51	22	TTIR 6 - A55 - 22 L	6.0	2.6	55	6.0	TTH 20 - 6			

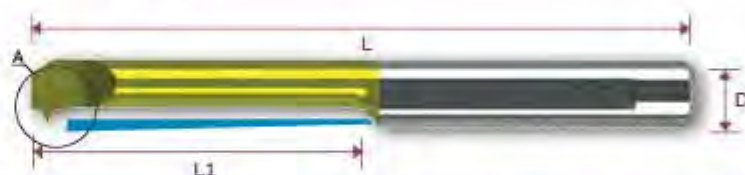
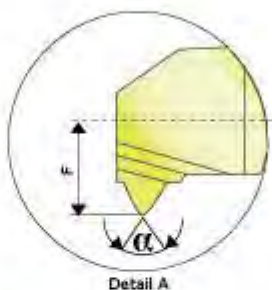
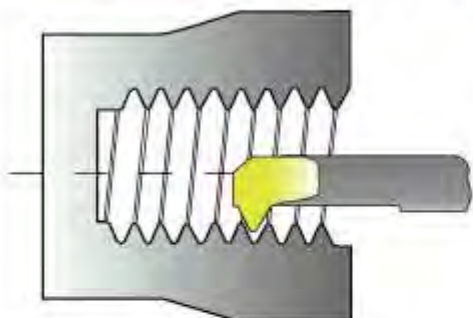
Order example: TTIR 5 - A55 - 15 L TINN

(1) For additional holders see page 90 - 91

(2) For cutting conditions see page 92



TTIR BARS Threading - with Coolant Channel



PARTIAL PROFILE 60°

PITCH RANGE		LENGTH in mm	LENGTH in mm	ARTICLE NUMBER	D in mm	F	α	MIN. BORE DIA-METER	HOLDER	PRICE PER PIECE in Euro		
mm	TPI	L	L1							Un-coated	TiNN	TiAlN
0.45 - 0.7	56 - 32	39	8	* TTIR 2 - A60 - 8 L	3.0	1.0	60	2.1	TTH 20 - 3			
0.7 - 1.0	32 - 24	39	15	TTIR 3 - A60 - 15 L	3.0	1.4	60	3.2	TTH 20 - 3			
0.8 - 1.0	32 - 24	51	15	TTIR 4 - A60 - 15 L	4.0	1.8	60	4.1	TTH 20 - 4			
1.0 - 1.25	24 - 20	51	15	TTIR 5 - A60 - 15 L	5.0	2.3	60	5.1	TTH 20 - 5			
1.0 - 1.25	24 - 20	51	22	TTIR 5 - A60 - 22 L	5.0	2.3	60	5.1	TTH 20 - 5			
1.0 - 1.5	24 - 16	51	15	TTIR 6 - A60 - 15 L	6.0	2.6	60	6.0	TTH 20 - 6			
1.0 - 1.5	24 - 16	51	22	TTIR 6 - A60 - 22 L	6.0	2.6	60	6.0	TTH 20 - 6			
1.0 - 2.0	24 - 13	64	22	TTIR 8 - A60 - 22 L	8.0	3.6	60	8.0	TTH 20 - 8			

Order example: TTIR 5 - A60 - 15 L TiNN

For L.H. bars specify TTIL instead of TTIR

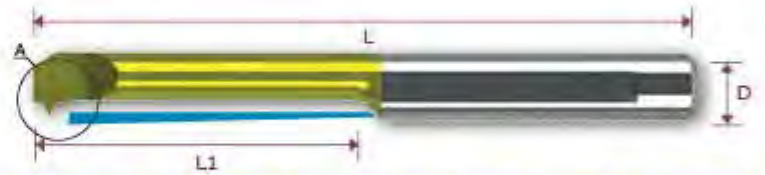
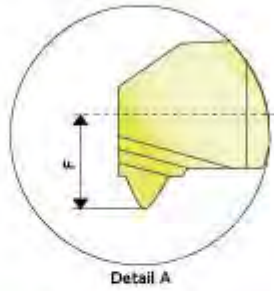
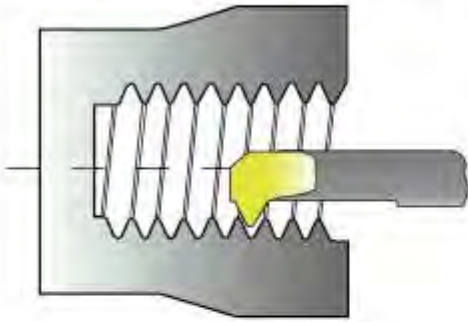
* Without coolant channel

(1) For additional holders see page 90 - 91

(2) For cutting conditions see page 92



TTIR BARS Threading - with Coolant Channel



FULL PROFILE - ISO 60°

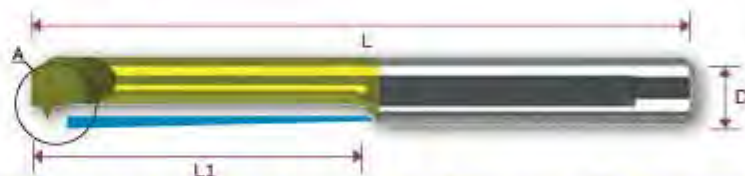
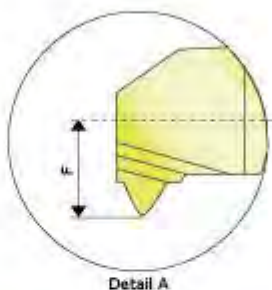
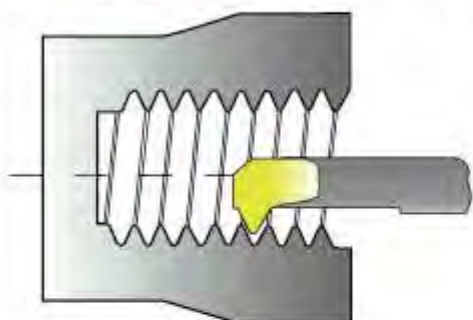
LENGTH in mm L	LENGTH in mm L1	ARTICLE NUMBER	D in mm	F	THREAD	MIN. BORE DIA- METER	HOLDER	PRICE PER PIECE in Euro		
								Un- coated	TiNN	TiAlN
39	15	TTIR 3 - 0.5 ISO - 15 L	3.0	1.4	M4 x 0.5	3.2	TTH 20 - 3			
39	15	TTIR 3 - 0.7 ISO - 15 L	3.0	1.4	M4 x 0.7	3.2	TTH 20 - 3			
39	15	TTIR 3 - 0.75ISO - 15 L	3.0	1.4	M4.5 x 0.75	3.2	TTH 20 - 3			
51	15	TTIR 4 - 0.5 ISO - 15 L	4.0	1.8	M5 x 0.5	4.1	TTH 20 - 4			
51	15	TTIR 4 - 0.75ISO - 15 L	4.0	1.8	M5 x 0.75	4.1	TTH 20 - 4			
51	15	TTIR 4 - 0.8 ISO - 15 L	4.0	1.8	M5 x 0.8	4.1	TTH 20 - 4			
51	15	TTIR 5 - 1.0 ISO - 15 L	5.0	2.2	M6 x 1.0	4.9	TTH 20 - 5			
51	22	TTIR 6 - 1.25ISO - 22 L	6.0	2.8	M8 x 1.25	6.1	TTH 20 - 6			

Order example: TTIR 5 - 1.0 ISO - 15 L TiNN

- (1) For additional holders see page 90 - 91
- (2) For cutting conditions see page 92



TTIR BARS Threading - with Coolant Channel



FULL PROFILE - UN 60°

LENGTH in mm L	LENGTH in mm L1	ARTICLE NUMBER	D in mm	F	THREAD	MIN. BORE DIA- METER	HOLDER	P21, PRICE PER PIECE in Euro		
								Un- coated	TiNN	TiAlN
39	15	TTIR 3 - 36 UN - 15 L	3.0	1.4	8 - 36 UNF	3.2	TTH 20 - 3			
39	15	TTIR 3 - 32 UN - 15 L	3.0	1.4	8 - 32 UNC	3.2	TTH 20 - 3			
51	15	TTIR 4 - 36 UN - 15 L	4.0	1.8	12 - 36 UNS	4.1	TTH 20 - 4			
51	15	TTIR 4 - 32 UN - 15 L	4.0	1.8	12 - 32 UNEF	4.1	TTH 20 - 4			
51	15	TTIR 5 - 28 UN - 15 L	5.0	2.2	1/4 - 28 UNF	4.9	TTH 20 - 5			
51	18	TTIR 5 - 20 UN - 18 L	5.0	2.3	1/4 - 20 UNC	5.0	TTH 20 - 5			
51	18	TTIR 6 - 24 UN - 18 L	6.0	2.8	5/16 - 24 UNF	6.5	TTH 20 - 6			
51	18	TTIR 6 - 18 UN - 18 L	6.0	2.8	5/16 - 18 UNC	6.2	TTH 20 - 6			

Order example: TTIR 4 - 36 UN - 15 L TiNN

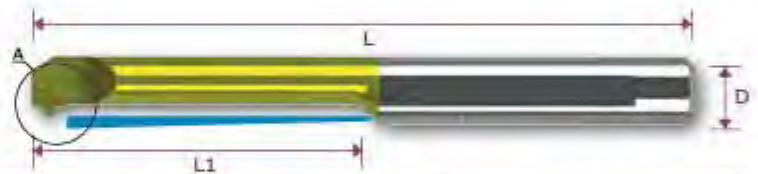
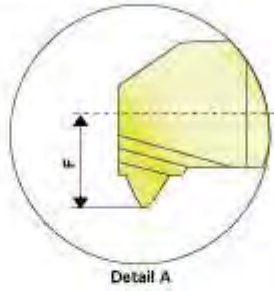
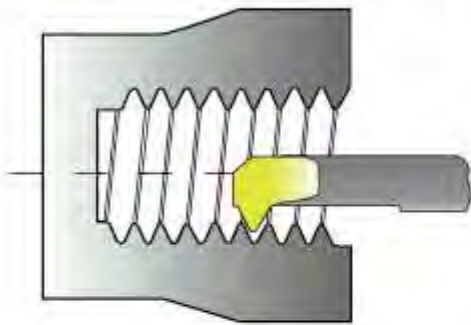
For L.H. bars specify TTIL instead of TTIR

(1) For additional holders see page 90 - 91

(2) For cutting conditions see page 92



TTIR BARS Threading - with Coolant Channel



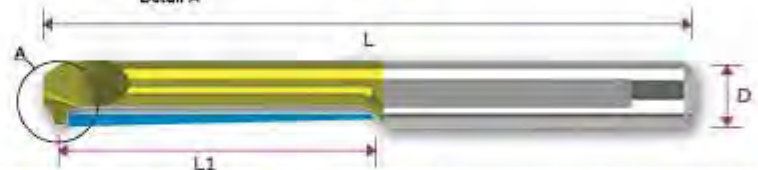
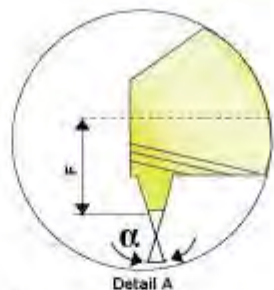
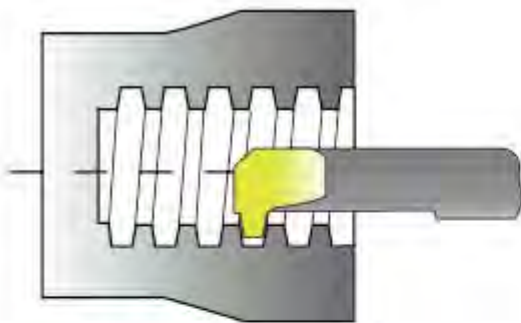
FULL PROFILE - NPT 60°

PITCH TPI	L	L1	ARTICLE NUMBER	D in mm	F	THREAD SIZE	MIN. BORE DIA- METER	HOLDER	PRICE PER PIECE in Euro		
									Un- coated	TiNN	TiAlN
27	51	15	TTIR 6 - 27 NPT - 15 L	6.0	2.6	1/16x27NPT 1/8x27NPT	5.9	TTH 20 - 6			

Order example: TTIR 6 - 27 NPT - 15 L TiNN

(1) For additional holders see page 90 - 91

(2) For cutting conditions see page 92



ACME

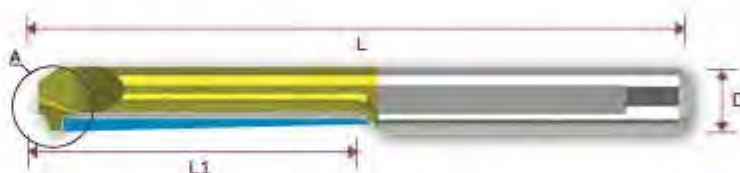
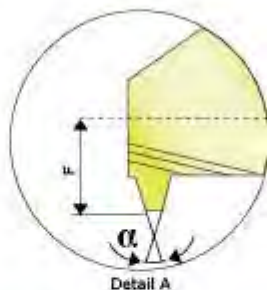
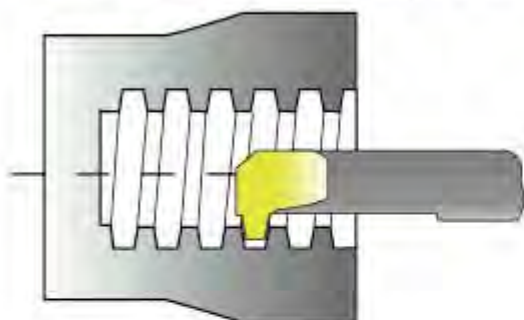
PITCH TPI	L	L1	ARTICLE NUMBER	D in mm	F	α	THREAD SIZE	MIN. BORE DIA- METER	HOLDER	PRICE PER PIECE in Euro		
										Un- coated	TiNN	TiAlN
16	51	15	TTIR 4 - 16 ACME - 15 L	4.0	1.8	29	1/4 x 16	4.6	TTH 20 - 4			
14	51	20	TTIR 6 - 14 ACME - 20 L	6.0	2.8	29	5/16 x 14	6.0	TTH 20 - 6			
12	62	22	TTIR 7 - 12 ACME - 22 L	7.0	3.3	29	3/8 x 12	7.2	TTH 20 - 7			

Order example: TTIR 6 - 14 ACME - 20 L TiNN

(1) For additional holders see pages 90 - 91

(2) For cutting conditions see page 92

TTIR BARS Threading - with Coolant Channel



Partial Profile Trapez - DIN 103

PITCH in mm	L	L1	ARTICLE NUMBER	D in mm	F in mm	α	MIN. BORE DIA- METER	THREAD SIZE	HOLDER	PRICE PER PIECE in Euro		
										Un- coated	TiNN	TiAlN
2	62	25	TTIR 7-2 TR-25 L	7.0	3.2	30	6.9	Tr 9 x 2	TTH 20 - 7			
								Tr 10 x 2				
								Tr 11 x 2				
								Tr 12 x 2				
2	73	35	TTIR 10-2 TR-35 L	10.0	4.8	30	11.0	Tr 14 x 2	TTH 20 - 10			
								Tr 16 x 2				
								Tr 18 x 2				
								Tr 20 x 2				
3	62	35	TTIR 7-3 TR-35 L	7.0	3.3	30	7.5	Tr 11 x 3	TTH 20 - 7			
								Tr 12 x 3				
3	73	35	TTIR 10-3 TR-35 L	10.0	4.8	30	10.5	Tr 14 x 3	TTH 20 - 10			
								Tr 22 x 3				
								Tr 24 x 3				
								Tr 26 x 3				
4	105	45	TTIR 10-4 TR-45 L	10.0	4.8	30	11.5	Tr 16 x 4	TTH 20 - 10			
								Tr 18 x 4				
								Tr 20 x 4				
5	105	55	TTIR 10-5 TR-55 L	10.0	4.8	30	11.0	Tr 22 x 5	TTH 20 - 10			
								Tr 24 x 5				
								Tr 28 x 5				

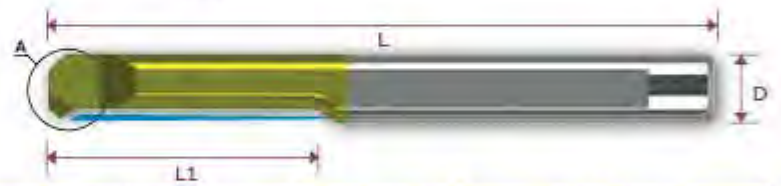
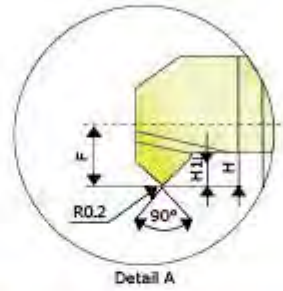
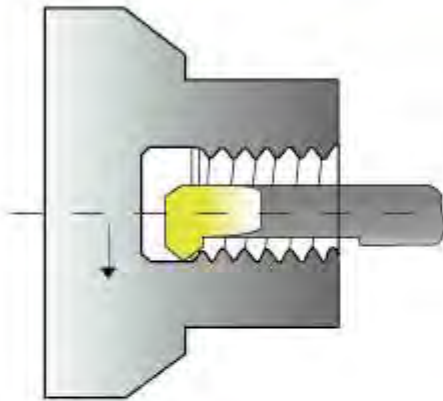
Order example: TTIR 10 - 3 TR - 35 L TiNN

(1) For additional holders see page 90 - 91

(2) For cutting conditions see page 92



TTCR BARS Chamfering and Grooving - with Coolant Channel



L	L1	ARTICLE NUMBER	D in mm	F	H	H1	R	MIN. BORE DIA-METER	HOLDER	PRICE PER PIECE in Euro		
										Un-coated	TiNN	TiAlN
39	10	TTCR 3 - 0.2 R - 10 L	3.0	1.3	0.7	0.3	0.20	3.1	TTH 20 - 3			
51	15	TTCR 4 - 0.2 R - 15 L	4.0	1.7	0.8	0.4	0.20	4.1	TTH 20 - 4			
51	15	TTCR 5 - 0.2 R - 15 L	5.0	2.1	1.2	0.7	0.20	5.1	TTH 20 - 5			
51	15	TTCR 6 - 0.2 R - 15 L	6.0	2.8	1.4	0.7	0.20	6.1	TTH 20 - 6			

Order example: TTCR 4 - 0.2 R - 15 L TiNN

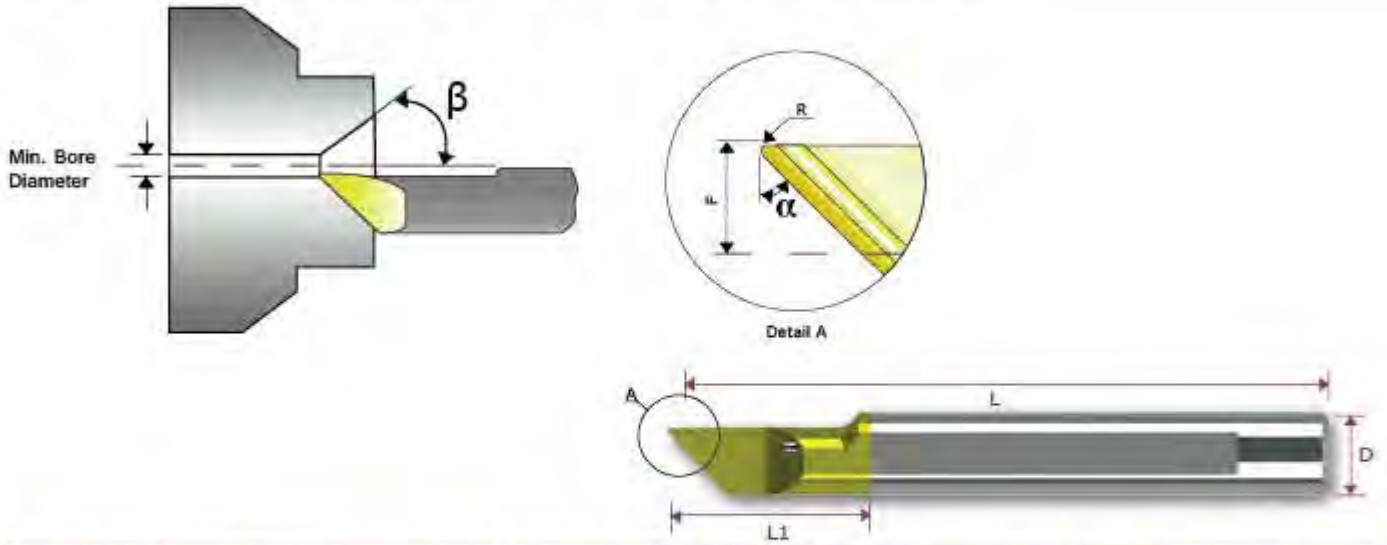
For L.H. bars specify TTCL instead of TTCR

(1) For additional holders see pages 90 - 91

(2) For cutting conditions see page 92



TTWR BARS Chamfering and Grooving - with Coolant Channel



L	L1	ARTICLE NUMBER	D in mm	F	α	β	R	MIN. BORE DIA-METER	HOLDER	PRICE PER PIECE in Euro		
										Un-coated	TiNN	TiAlN
51	15.0	TTWR 6 - 0.2 R - 90 A	6.0	2.3	45 °	45 °	0.20	1.0	TTH 20 - 6			
51	15.0	TTWR 6 - 0.2 R - 60 A	6.0	2.3	60 °	30 °	0.20	1.0	TTH 20 - 6			

Order example: TTWR 6 - 0.2 R - 90 A TiNN

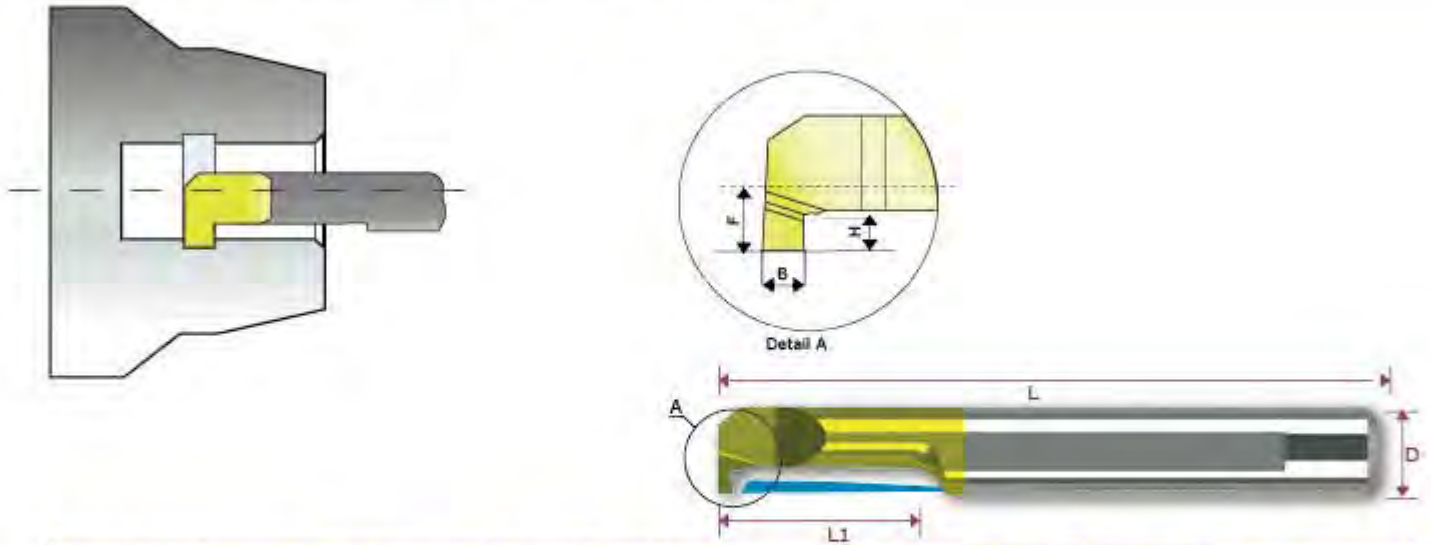
For L.H. bars specify TTWL instead of TTWR

(1) For additional holders see pages 90 - 91

(2) For cutting conditions see page 92



TTGR BARS C Grooving - with Coolant Channel



L	L1	ARTICLE NUMBER	D in mm	F	H	B	MIN. BORE DIA-METER	HOLDER	PRICE PER PIECE in Euro		
									Un-coated	TiN	TiAlN
51	10	TTGR 4 - 1.0 B - 10 L	4.0	1.7	1.0	1.0	4.1	TTH 20 - 4			
51	10	TTGR 4 - 1.5 B - 10 L	4.0	1.7	1.0	1.5	4.1	TTH 20 - 4			
51	15	TTGR 5 - 1.0 B - 15 L	5.0	2.3	1.2	1.0	5.1	TTH 20 - 5			
51	15	TTGR 5 - 1.5 B - 15 L	5.0	2.3	1.2	1.5	5.1	TTH 20 - 5			
51	15	TTGR 5 - 2.0 B - 15 L	5.0	2.3	1.2	2.0	5.1	TTH 20 - 5			
51	15	TTGR 6 - 1.0 B - 15 L	6.0	2.8	1.4	1.0	6.1	TTH 20 - 6			
51	15	TTGR 6 - 1.5 B - 15 L	6.0	2.8	1.4	1.5	6.1	TTH 20 - 6			
51	15	TTGR 6 - 2.0 B - 15 L	6.0	2.8	1.4	2.0	6.1	TTH 20 - 6			
64	22	TTGR 8 - 1.5 B - 22 L	8.0	3.8	1.7	1.5	8.1	TTH 20 - 8			
64	22	TTGR 8 - 2.0 B - 22 L	8.0	3.8	2.6	2.0	8.1	TTH 20 - 8			

Order example: TTGR 5 - 1.5 B - 15 L TiN

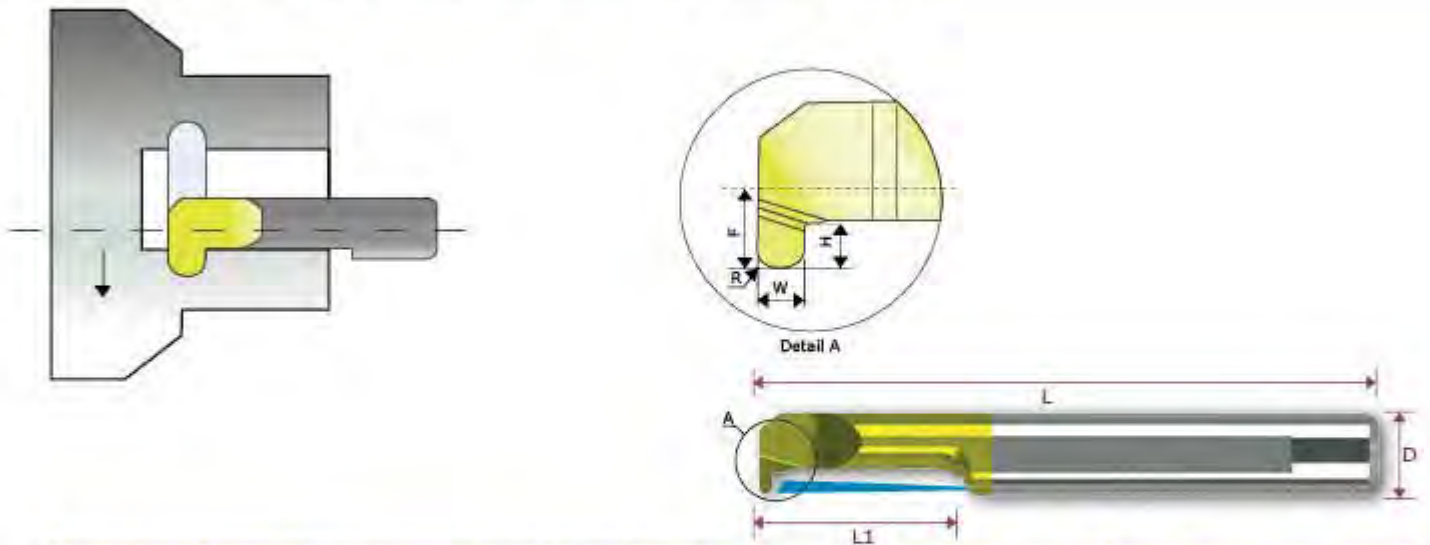
For L.H. bars specify TTGL instead of TTGR

(1) For additional holders see pages 90 - 91

(2) For cutting conditions see page 92



TTKR BARS Full Radius Grooving - with Coolant Channel

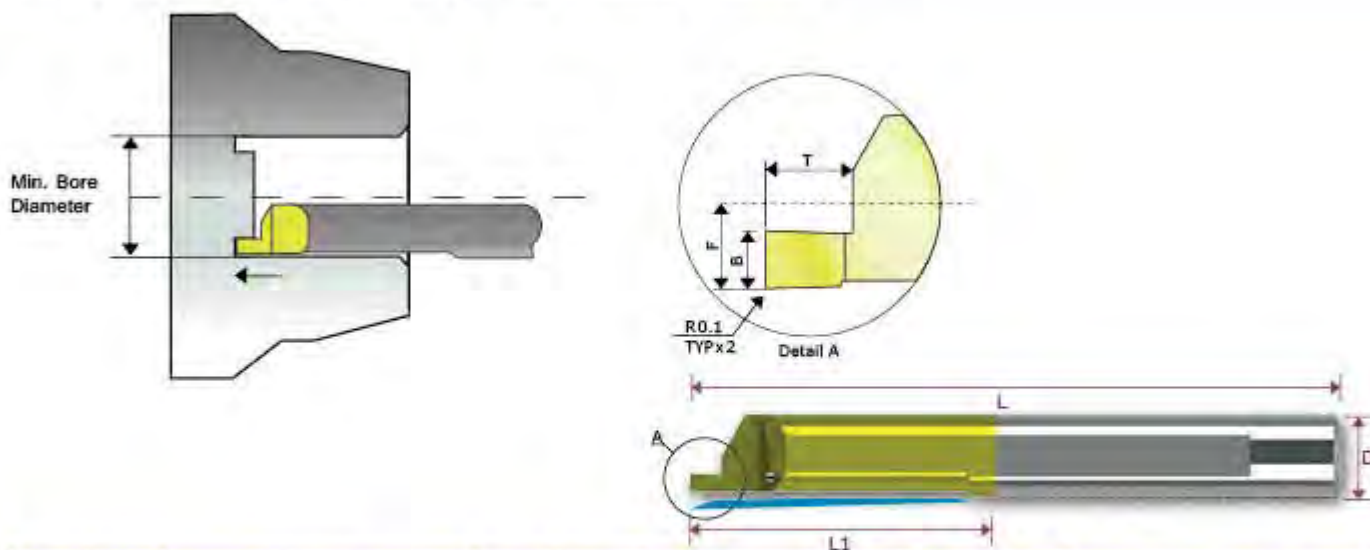


L	L1	ARTICLE NUMBER	D in mm	F	W	H	R	MIN. BORE DIA-METER	HOLDER	PRICE PER PIECE in Euro		
										Un-coated	TiNN	TiAlN
51	10	TTKR 4 - 0.5 R - 10 L	4.0	1.7	1.0	1.0	0.50	4.1	TTH 20 - 4			
51	10	TTKR 4 - 0.75 R - 10 L	4.0	1.7	1.5	1.0	0.75	4.1	TTH 20 - 4			
51	15	TTKR 5 - 0.5 R - 15 L	5.0	2.3	1.0	1.2	0.50	5.1	TTH 20 - 5			
51	15	TTKR 5 - 0.75 R - 15 L	5.0	2.3	1.5	1.2	0.75	5.1	TTH 20 - 5			
51	15	TTKR 5 - 1.0 R - 15 L	5.0	2.3	2.0	1.2	1.00	5.1	TTH 20 - 5			
51	15	TTKR 6 - 0.5 R - 15 L	6.0	2.8	1.0	1.6	0.50	6.1	TTH 20 - 6			
51	15	TTKR 6 - 0.75 R - 15 L	6.0	2.8	1.5	1.6	0.75	6.1	TTH 20 - 6			
51	15	TTKR 6 - 1.0 R - 15 L	6.0	2.8	2.0	1.6	1.00	6.1	TTH 20 - 6			

Order example: TTKR 5 - 1.0 R - 15 L TiNN
 For L.H. bars specify TTKL instead of TTKR
 (1) For additional holders see pages 90 - 91
 (2) For cutting conditions see page 92



TTFR BARS Face Grooving - with Coolant Channel



L	L1	ARTICLE NUMBER	D in mm	F	B	T	MIN. BORE DIA-METER	HOLDER	PRICE PER PIECE in Euro		
									Un-coated	TiNN	TiAlN
51	15	TTFR 4 - 0.75 B - 15 L	4.0	1.95	0.75	1.2	5.0	TTH 20 - 4			
51	15	TTFR 4 - 1.0 B - 15 L	4.0	1.95	1.0	1.5	5.0	TTH 20 - 4			
51	22	TTFR 5 - 0.75 B - 22 L	5.0	2.45	0.75	1.2	6.0	TTH 20 - 5			
51	22	TTFR 5 - 1.0 B - 22 L	5.0	2.45	1.0	1.5	6.0	TTH 20 - 5			
51	22	TTFR 5 - 1.5 B - 22 L	5.0	2.45	1.5	2.5	6.0	TTH 20 - 5			
51	22	TTFR 6 - 1.0 B - 22 L	6.0	2.95	1.0	1.5	8.0	TTH 20 - 6			
51	22	TTFR 6 - 1.5 B - 22 L	6.0	2.95	1.5	2.5	8.0	TTH 20 - 6			
51	22	TTFR 6 - 2.0 B - 22 L	6.0	2.95	2.0	3.0	8.0	TTH 20 - 6			
64	22	TTFR 8 - 2.5 B - 22 L	8.0	3.95	2.5	3.5	10.0	TTH 20 - 8			

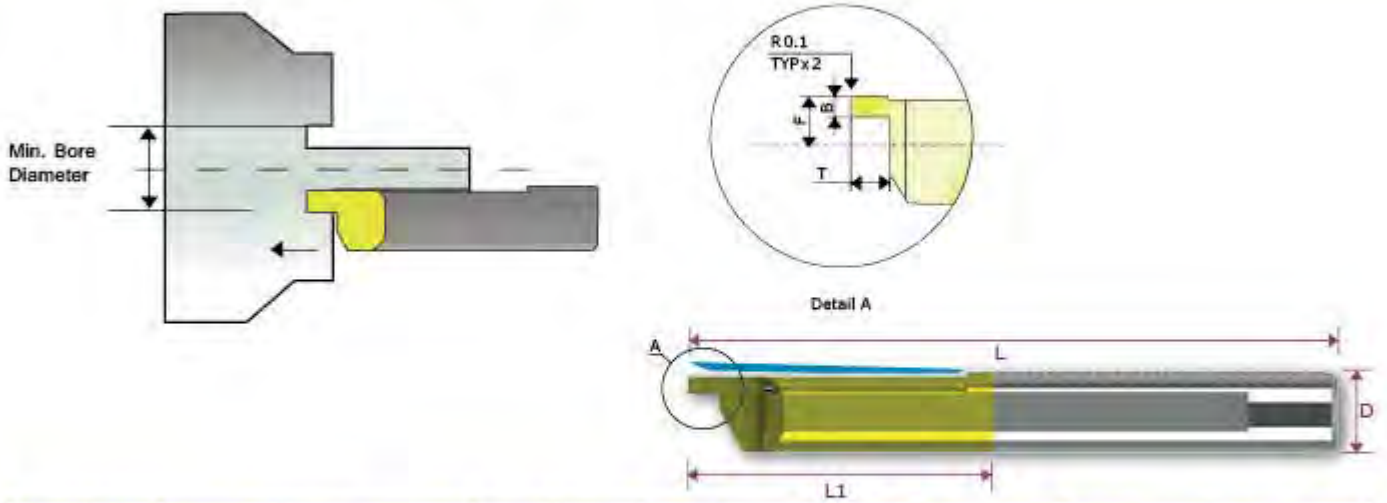
Order example: TTFR 5 - 1.0 B - 22 L TiNN

(1) For additional holders see pages 90 - 91

(2) For cutting conditions see page 92



TTFL BARS Face Grooving - with Coolant Channel



L	L1	ARTICLE NUMBER	D in mm	F	B	T	MIN. BORE DIA-METER	HOLDER	PRICE PER PIECE in Euro		
									Un-coated	TiNN	TiAlN
51	15	TTFL 4 - 0.75 B - 15 L	4.0	1.75	0.75	1.2	5.0	TTH 20 - 4			
51	15	TTFL 4 - 1.0 B - 15 L	4.0	1.75	1.0	1.5	5.0	TTH 20 - 4			
51	22	TTFL 5 - 0.75 B - 22 L	5.0	2.25	0.75	1.2	6.0	TTH 20 - 5			
51	22	TTFL 5 - 1.0 B - 22 L	5.0	2.25	1.0	1.5	6.0	TTH 20 - 5			
51	22	TTFL 5 - 1.5 B - 22 L	5.0	2.25	1.5	2.5	6.0	TTH 20 - 5			
51	22	TTFL 6 - 1.0 B - 22 L	6.0	2.75	1.0	1.5	8.0	TTH 20 - 6			
51	22	TTFL 6 - 1.5 B - 22 L	6.0	2.75	1.5	2.5	8.0	TTH 20 - 6			
51	22	TTFL6 - 2.0 B - 22 L	6.0	2.75	2.0	3.0	8.0	TTH 20 - 6			
64	22	TTFL 8 - 2.5 B - 22 L	8.0	3.75	2.5	3.5	10.0	TTH 20 - 8			

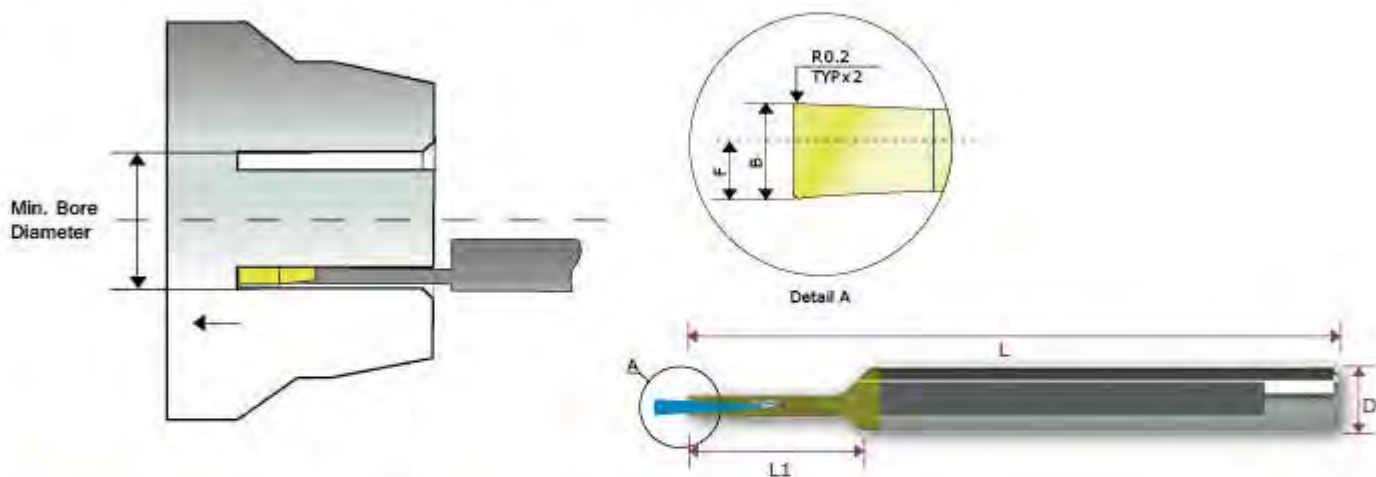
Order example: TTFL 6 - 1.0 B - 22 L TiNN

(1) For additional holders see pages 90 - 91

(2) For cutting conditions see page 92



TTVR BARS Deep Face Grooving - with 2 Coolant Bores



L	L1	ARTICLE NUMBER	D in mm	F	B	MIN. BORE DIA-METER	HOLDER	PRICE PER PIECE in Euro		
								Un-coated	TiNN	TiAlN
64	15	TTVR 6 - 2.0 B - 15 L	6.0	1.7	2.0	12.0	TTH 20 - 6			
64	22	- 2.0 B - 22 L	6.0	1.7	2.0	12.0	TTH 20 - 6			
64	22	TTVR 6 - 2.5 B - 22 L	6.0	2.2	2.5	12.0	TTH 20 - 6			
64	27	TTVR 8 - 3.0 B - 27 L	8.0	2.5	3.0	15.0	TTH 20 - 8			

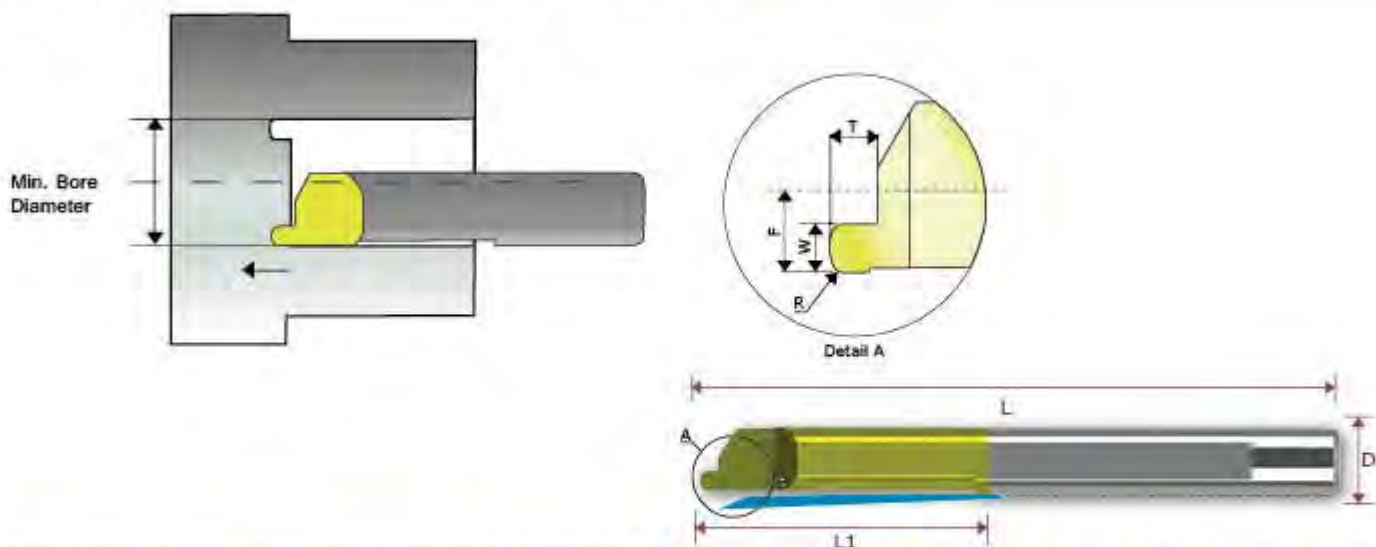
Order example: TTVR 6 - 2.0 B - 22 L TiNN

(1) For additional holders see pages 90 - 91

(2) For cutting conditions see page 92



TTZR BARS Face Grooving - with Coolant Channel



L	L1	ARTICLE NUMBER	D in mm	F	W	T	R	MIN. BORE DIA-METER	HOLDER	PRICE PER PIECE in Euro		
										Un-coated	TiNN	TiAlN
51	15	TTZR 4 - 0.5 R - 15 L	4.0	1.95	1.0	1.2	0.50	5.0	TTH 20 - 4			
51	15	TTZR 4 - 0.75 R - 15 L	4.0	1.95	1.5	1.5	0.75	5.0	TTH 20 - 4			
51	22	TTZR 5 - 0.5 R - 22 L	5.0	2.45	1.0	1.2	0.50	6.0	TTH 20 - 5			
51	22	TTZR 5 - 0.75 R - 22 L	5.0	2.45	1.5	1.5	0.75	6.0	TTH 20 - 5			
51	22	TTZR 5 - 1.0 R - 22 L	5.0	2.45	2.0	2.5	1.00	6.0	TTH 20 - 5			
51	22	TTZR 6 - 0.5 R - 22 L	6.0	2.95	1.0	1.2	0.50	8.0	TTH 20 - 6			
51	22	TTZR 6 - 0.75 R - 22 L	6.0	2.95	1.5	1.5	0.75	8.0	TTH 20 - 6			
51	22	TTZR 6 - 1.0 R - 22 L	6.0	2.95	2.0	2.5	1.00	8.0	TTH 20 - 6			

Order example: TTZR 5 - 0.5 R - 22 L TiNN

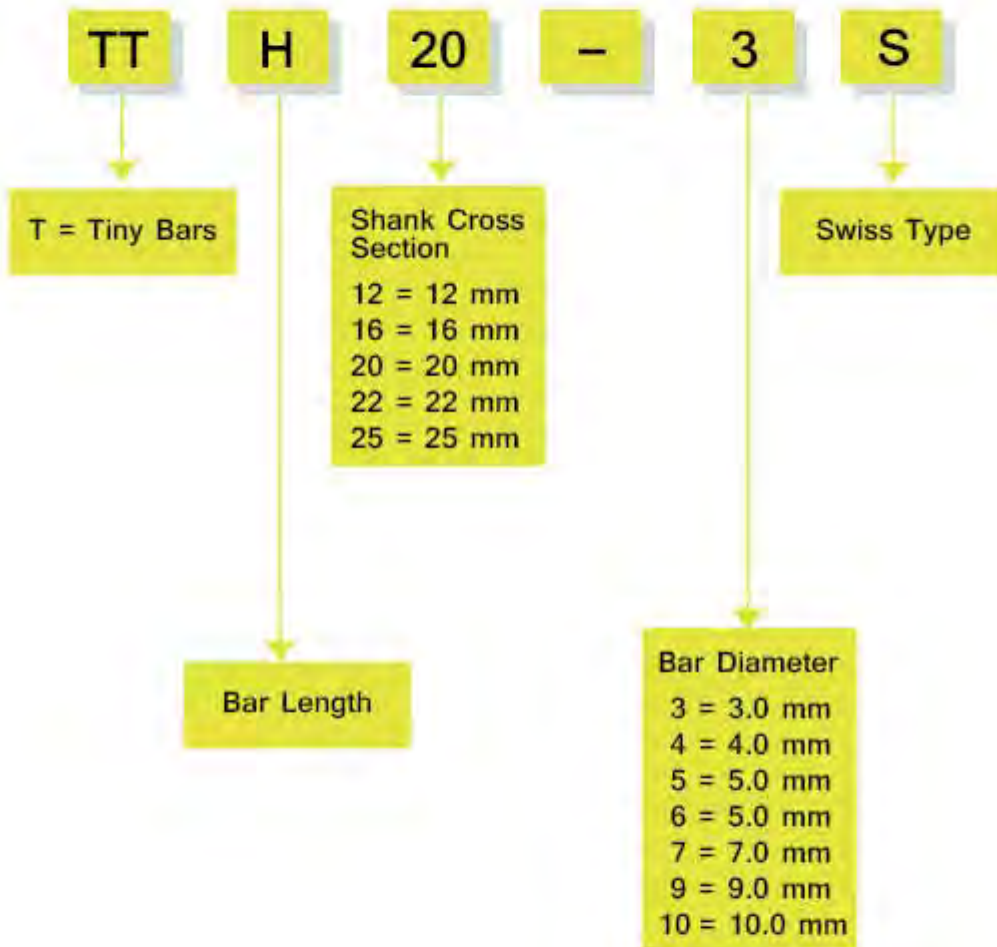
(1) For additional holders see pages 90 - 91

(2) For cutting conditions see page 92



PRODUCT - IDENTIFICATION

Tiny Bar Holders Ordering Codes



TINY TOOLS BAR HOLDERS



L	ARTICLE NUMBER	D1 in mm	D	d	KEY	CLAMPING SCREW	ADJUSTING SCREW	PRICE PER PIECE in Euro
88	TTH 12 - 3 SP	3.0	12	12	K25	S24	S35	
75	* TTH 16 - 3 S	3.0	16	20	K25	S25	S35S	
88	TTH 16 - 3	3.0	16	20	K25	S25	S35	
88	TTH 20 - 3	3.0	20	20	K25	S25	S35	
88	* TTH 22 - 3	3.0	22	22	K25	S25	S35	
88	TTH 12 - 4 SP	4.0	12	12	K25	S24	S35	
75	* TTH 16 - 4 S	4.0	16	20	K25	S25	S35S	
88	TTH 16 - 4	4.0	16	20	K25	S25	S35	
88	TTH 20 - 4	4.0	20	20	K25	S25	S35	
88	TTH 22 - 4	4.0	22	22	K25	S25	S35	
88	TTH 12 - 5 SP	5.0	12	12	K25	S24	S35	
75	* TTH 16 - 5 S	5.0	16	20	K25	S25	S35S	
88	TTH 16 - 5	5.0	16	20	K25	S25	S35	
88	TTH 20 - 5	5.0	20	20	K25	S25	S35	
75	* TTH 22 - 5	5.0	22	22	K25	S25	S35	
75	* TTH 16 - 6 S	6.0	16	20	K25	S25	S35S	
88	TTH 16 - 6	6.0	16	20	K25	S25	S35	
88	TTH 20 - 6	6.0	20	20	K25	S25	S35	
88	* TTH 22 - 6	6.0	22	22	K25	S25	S35	
88	TTH 16 - 7	7.0	16	20	K25	S25	S35	
88	TTH 20 - 7	7.0	20	20	K25	S25	S35	
88	TTH 16 - 8	8.0	16	20	K25	S25	S35	
88	TTH 20 - 8	8.0	20	20	K25	S25	S35	
88	TTH 20 - 10	10.0	20	20	K25	S25	S35	

* Can also be used with Swiss Type lathe machines



TINY TOOLS BAR HOLDERS



L	ARTICLE NUMBER	D1 in mm	D	d	KEY	CLAMPING SCREW	ADJUSTING SCREW	PRICE PER PIECE in Euro
62	TTH 25 - 3	3.0	25	10.8	K25	S25	S35M	
62	TTH 25 - 4	4.0	25	10.8	K25	S25	S35M	
62	TTH 25 - 5	5.0	25	10.8	K25	S25	S35M	
62	TTH 25 - 6	6.0	25	10.8	K25	S25	S35M	



Carbide Grade: **TINN (P30 - P50, K25 - K40)**
 PVD TIN coated grade for low cutting speed.
 Works well with a wide range of stainless steels.



Threading Passes

PITCH:	0.5	0.7	0.8	1.0	1.25	1.5	2-5
	in mm						
in TPI	48	36	32	24	20	16	
Number of Passes	6-12	7-14	7-16	8-18	8-20	10-22	20-38

Cutting Speed for Tiny Tools

Recommended Feed Rate: 0.01-0.03 mm/rev

ISO	Material		Condition	Cutting Speed m/min
				TINN
P	Non-Alloy Steel and Cast Steel, Free Cutting Steel	< 0.25%C	Annealed	25 - 50
		≥ 0.25%C	Annealed	
		< 0.55%C	Quenched & Tempered	
		≥ 0.55%C	Annealed	
			Quenched & Tempered	
	Low Alloy Steel and Cast Steel (less than 5% alloying elements)	Annealed	20 - 25	
High Alloy Steel, Cast Steel and Tool Steel	Annealed	18 - 20		
	Quenched & Tempered			
M	Stainless Steel and Cast Steel		Ferritic / Martensitic	25 - 30
			Martensitic	
			Austenitic	
K	Cast Iron Nodular (GGG)		Ferritic / Pearlitic	17 - 23
			Pearlitic	
	Grey Cast Iron (GG)		Ferritic	17 - 23
			Pearlitic	
	Malleable Cast Iron		Ferritic	17 - 23
			Pearlitic	
N	Aluminium-Wrought Alloy		Not Cureable	50 - 70
			Cured	
	Aluminum-Cast, Alloyed	≤ 12% Si	Not Cureable	30 - 40
			Cured	
	Copper Alloys	> 12% Si	High Temperature	22 - 25
		> 1% Pb	Free Cutting	
			Brass	
Non Metallic		Duroplastics, Fiber Plastics	35 - 45	
		Hard Rubber		
S	High Temp. Alloys, Super Alloys	Fe based	Annealed	15 - 20
			Cured	
		Ni or Co based	Annealed	
			Cured	
			Cast	
Titanium Alloys		Alpha + Beta Alloys Cured	12 - 18	
H	Hardened Steel		Hardened 45-50 HRC	15 - 20
			Hardened 51-55 HRC	
			Hardened 56-62 HRC	
	Chilled Cast Iron		Cast	10 - 14
Cast Iron		Hardened	8 - 12	



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