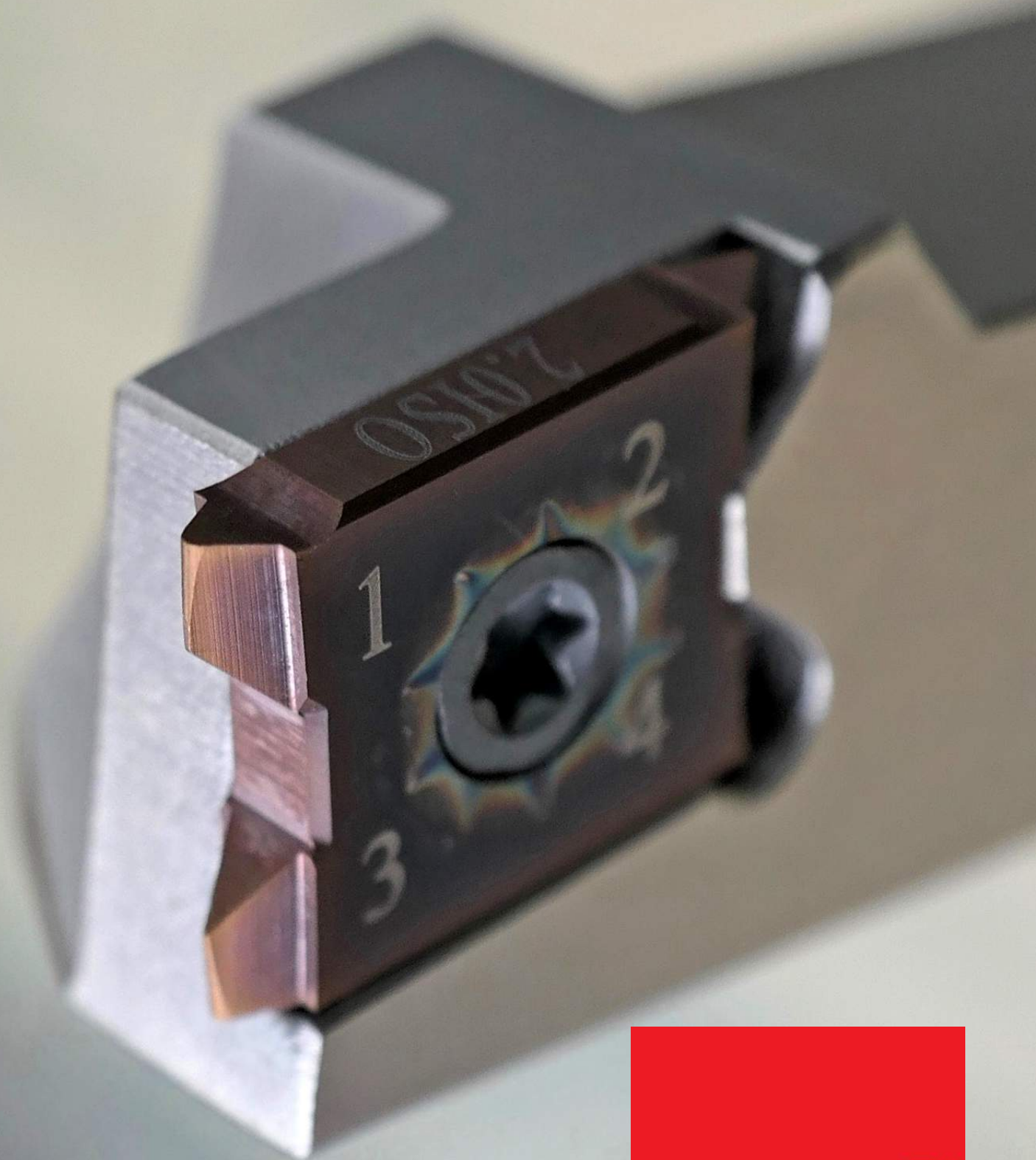


FourCut

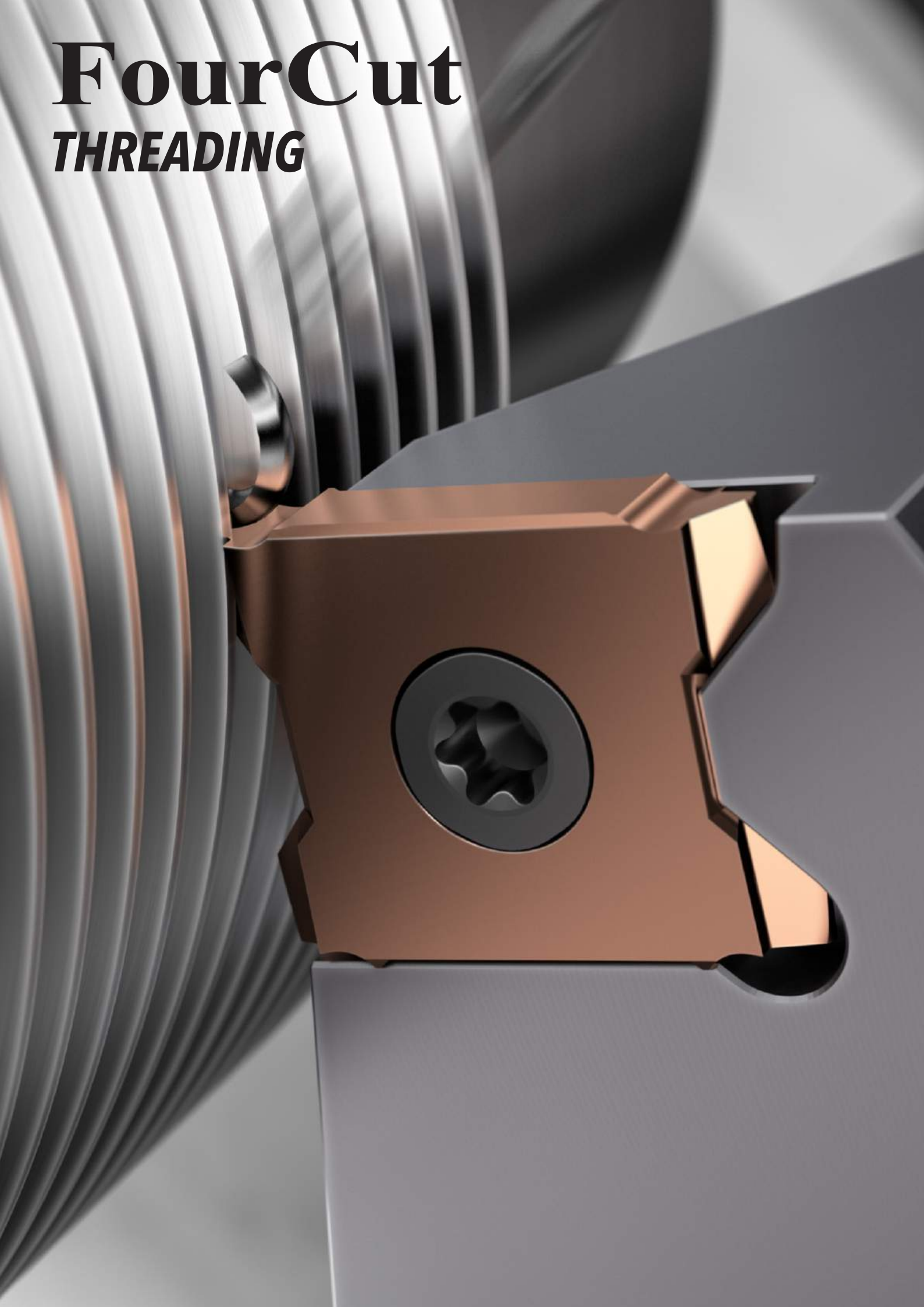


2023



FourCut

THREADING



CONTENTS

FourCut Advantages	4
Cutting Data	6
Threading Inserts	8
Toolholders	12
Grooving Inserts	14

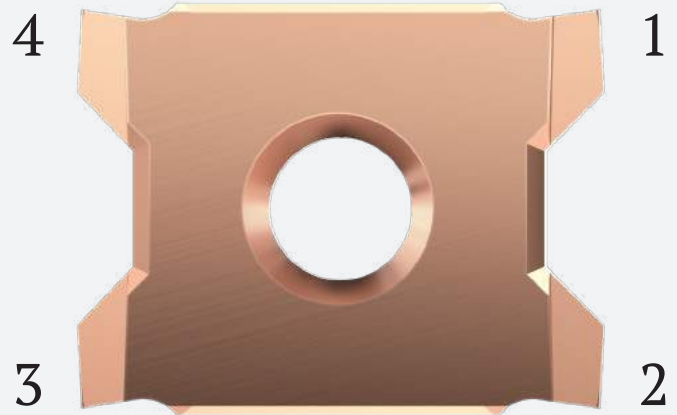
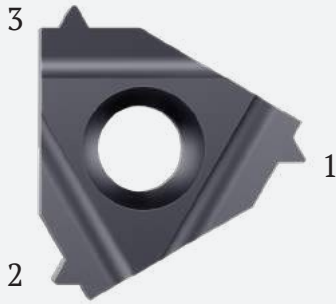
The Schmidt family has developed and produced cutting tools for more than 60 years. Today there are three generations working in the company. Threading tools has always been the main product for the Schmidt family. The company is located in Sweden.

Cost-effective

FourCut

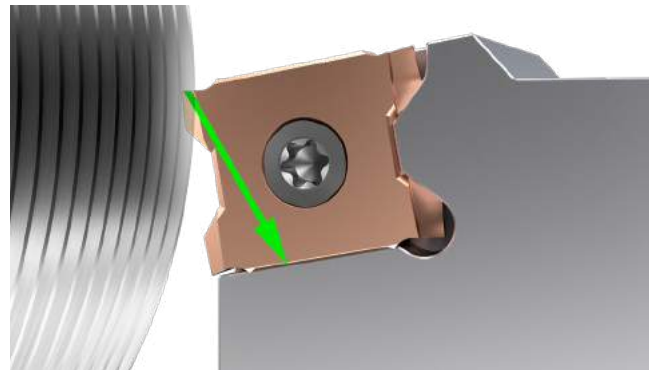
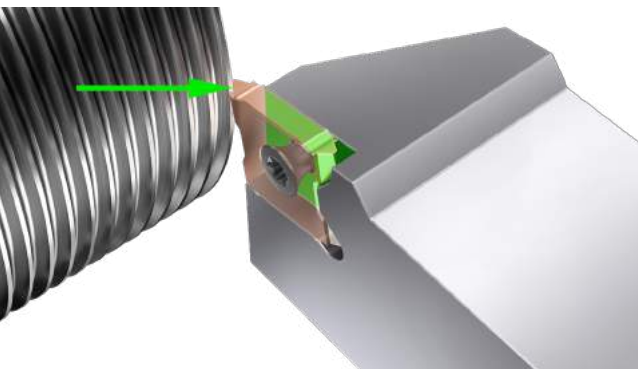
The Master of Threading

Four Cutting Edges
for the Price of Three



As the price for the inserts are the same, the FourCut threading insert is 25% cheaper as it has four cutting edges instead of three.

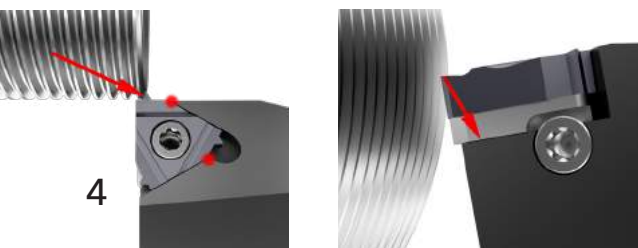
Strength



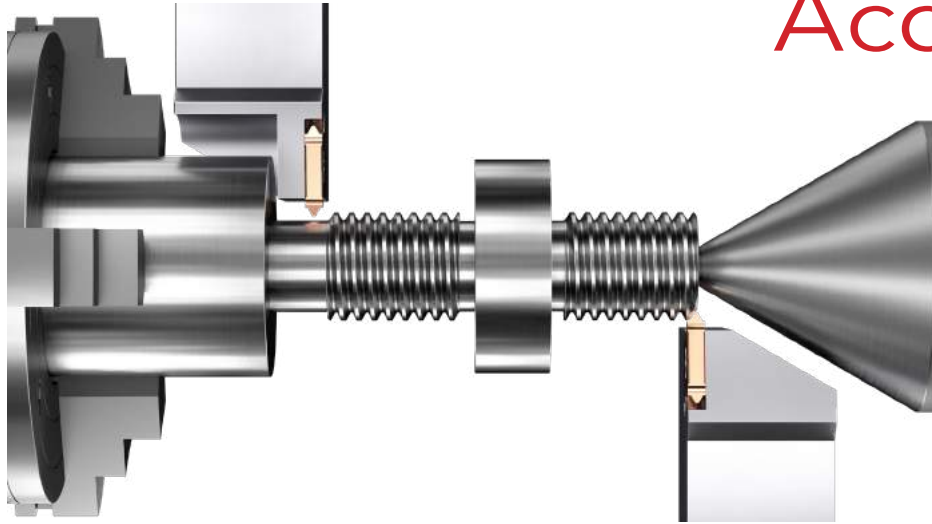
Strong and Stable Machining

FourCut is a vertical insert. This gives a very strong insert. The cutting forces go in to the insert and you don't need any anvil as the carbide insert take up the forces.

- No problem with the side forces as the flat surface of the insert take up these forces.
- No weak point on the toolholder.



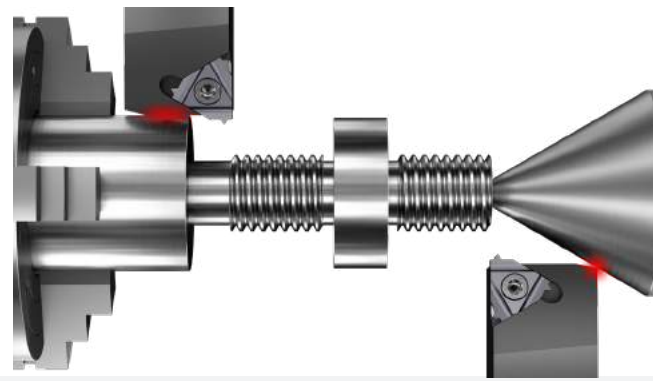
Accessibility



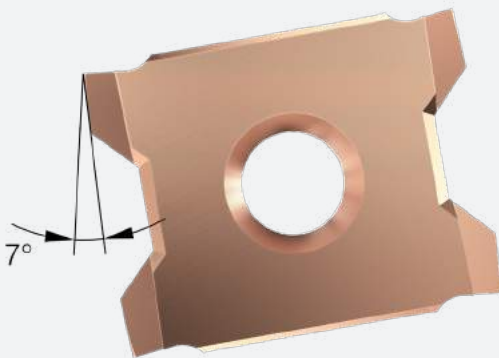
Minimum
Waste of
Material

With a vertical insert the accessibility gives you two main advantages.

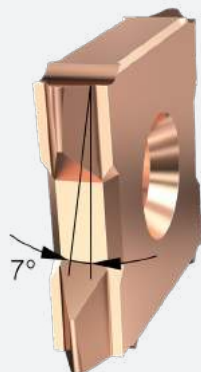
- Less waste of material as you don't need to turn away material to be able to make the thread.
- As you have more space you can use a live center when you are threading small diameters. This will give you a stable machining and a better quality of the thread.



Optimal Clearance



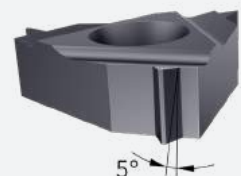
7° is optimal



Perfect Cutting Conditions

The inserts are ground on all sides with a complex grinding technology on 6-axis grinding machines to get a 7° clearance angle all around the thread profile which gives the following advantages:

- Extra clearance on the flanks gives better cutting conditions.
- Same toolholder for different helix angles as the extra clearance allow you to have bigger difference in helix angle.
- Less clearance on the radius gives stronger cutting edge and longer tool life.



Cutting Speed (V_c) and Material Factor (F_m)

MATERIAL		Hardness HB	Tensile Strength N/mm ²	Cutting Speed (V_c) m/min	Material Factor (F_m)
Steel	Low carbon, C < 0,25%	< 120	< 400	150 - 200	1,2
	Medium carbon, C < 0,55%	< 200	< 700	120 - 170	1,1
	High carbon, C < 0,85%	< 250	< 850	110 - 150	1,0
	Low alloy	< 250	< 850	100 - 140	1,0
	High alloy	< 350	< 1200	70 - 110	0,9
	Hardened, HRC < 45			60 - 100	0,8
	Hardened, HRC < 55			30 - 60	0,7
	Hardened, HRC < 65			20 - 40	0,6
Cast iron	Lamellar graphite	< 150	< 500	130 - 180	1,2
	Lamellar graphite	< 300	< 1000	100 - 150	1,1
	Nodular graphite, malleable	< 200	< 700	100 - 150	1,0
	Nodular graphite, malleable	< 300	< 1000	80 - 120	0,9
Stainless steel	Free machining	< 250	< 850	130 - 180	1,0
	Austenitic	< 250	< 850	90 - 140	0,9
	Ferritic and austenitic	< 300	< 1000	80 - 120	0,8
Titanium	Unalloyed	< 200	< 700	60 - 80	0,8
	Alloyed	< 270	< 900	50 - 70	0,7
	Alloyed	< 350	< 1250	30 - 50	0,6
Nickel	Unalloyed	< 150	< 500	80 - 120	0,8
	Alloyed	< 270	< 900	60 - 80	0,7
	Alloyed	< 350	< 1250	50 - 70	0,6
Copper	Unalloyed	< 100	< 350	150 - 250	1,0
	Brass, bronze	< 200	< 700	130 - 180	1,0
	High strength bronze	< 470	< 1500	60 - 80	0,8
Aluminium	Unalloyed	< 100	< 350	500 - 900	1,4
	Alloyed, Si < 0.5%	< 150	< 500	400 - 800	1,3
	Alloyed, Si < 10%	< 120	< 400	300 - 500	1,2
	Alloyed, Si > 10%	< 120	< 400	200 - 400	1,1
Inconel	718	< 370		50 - 70	0,6
Graphite				300 - 500	1,0

Code Key

INSERTS



TOOLHOLDERS



H = 100 mm
K = 125 mm
M = 150 mm

Number of Passes

ISO	Pitch			Material Factor (F_m)									
	UN	W	NPT	0,6	0,7	0,8	0,9	1,0	1,1	1,2	1,3	1,4	
0,5				7	6	5	4	4	4	4	4	4	
0,75	32	28		8	6	6	5	4	4	4	4	4	
1,0	28-24	19		8	7	6	6	5	5	4	4	4	
1,25	20			9	8	7	6	6	5	5	4	4	
1,5	18-16	14		10	9	8	7	6	5	5	5	4	
1,75	14			12	10	9	8	7	6	6	5	5	
2,0	13-12		27	14	12	11	9	8	8	7	7	6	
2,5	11-10	11	18	16	14	13	11	10	9	8	8	7	
3,0	9-8		14	18	16	14	12	11	10	9	8	8	
3,5	7			20	17	15	13	12	11	10	9	9	
			11,5	22	19	16	14	13	12	11	10	9	

Radial Infeed Each Pass

PASS	Percentage of the total infeed																
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	33	28	25	22	20	19	18	16	14	12	11	11	11	11	10	10	9
2	27	24	20	18	17	16	15	14	13	11	10	10	10	10	10	9	9
3	22	19	17	16	15	14	13	12	11	10	9	9	9	9	9	8	8
4	18	16	15	14	13	12	11	10	9	9	8	8	8	9	8	8	8
5		13	13	12	11	10	9	8	8	8	8	8	8	8	8	7	7
6			10	10	10	9	8	8	8	8	8	7	7	7	7	6	6
7				8	8	8	7	8	8	7	7	7	7	6	6	6	6
8					6	7	7	7	7	7	7	7	6	6	6	6	6
9						5	7	7	7	7	7	6	6	5	6	5	5
10							5	6	6	6	6	6	5	5	5	5	5
11								4	5	6	6	5	5	5	5	5	5
12									4	5	5	5	5	4	4	5	5
13										4	4	4	4	4	4	4	4
14											3	4	4	4	3	4	4
15												3	3	3	3	4	3
16													2	2	2	3	3
17														2	2	2	2
18															2	1,5	2
19																1,5	1,5
20																	1,5

Threading Methods

RIGHT HAND THREAD		
Tool	Rotation	Direction
SER		
SEL		

LEFT HAND THREAD		
Tool	Rotation	Direction
SEL		
SER		

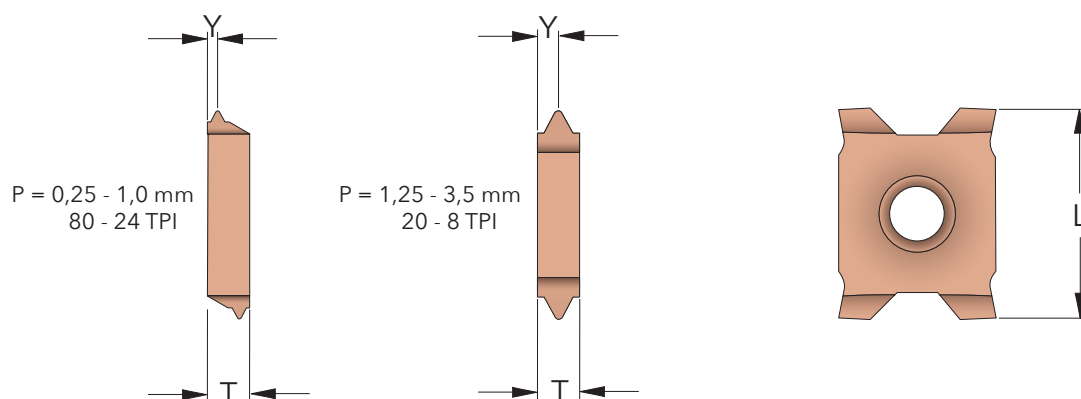
Carbide Grades

HC Micrograin Carbide with AlTiSiN coating. Allround Grade with high hardness and heat resistance. Use cutting data according to the tables.

FC Micrograin Carbide with TiAlN coating. Allround Grade with high heat resistance. Use cutting data according to the tables.

THREADING INSERTS

FourCut



M

METRIC

Pitch mm	Part Number EXTERNAL	L mm	T mm	Y mm
0,25	12E_0.25ISO_HC	12	2,4	0,2
0,3	12E_0.3ISO_HC	12	2,4	0,2
0,35	12E_0.35ISO_HC	12	2,4	0,25
0,4	12E_0.4ISO_HC	12	2,4	0,3
0,45	12E_0.45ISO_HC	12	2,4	0,4
0,5	12E_0.5ISO_HC	12	2,4	0,4
0,6	12E_0.6ISO_HC	12	2,4	0,4
0,7	12E_0.7ISO_HC	12	2,4	0,4
0,75	12E_0.75ISO_HC	12	2,4	0,4
0,8	12E_0.8ISO_HC	12	2,4	0,5
1,0	12E_1.0ISO_HC	12	2,4	0,6
1,25	12E_1.25ISO_HC	12	2,4	1,2
1,5	12E_1.5ISO_HC	12	2,4	1,2
1,75	12E_1.75ISO_HC	12	2,4	1,2
2,0	12E_2.0ISO_HC	12	2,4	1,2
2,5	12E_2.5ISO_HC	12	3,6	1,8
3,0	12E_3.0ISO_HC	12	3,6	1,8
3,5	12E_3.5ISO_HC	12	3,6	1,8

UN

UNIFIED

Pitch TPI	Part Number EXTERNAL	L mm	T mm	Y mm
80	12E_80UN_HC	12	2,4	0,2
72	12E_72UN_HC	12	2,4	0,25
64	12E_64UN_HC	12	2,4	0,3
56	12E_56UN_HC	12	2,4	0,4
48	12E_48UN_HC	12	2,4	0,4
44	12E_44UN_HC	12	2,4	0,4
40	12E_40UN_HC	12	2,4	0,4
36	12E_36UN_HC	12	2,4	0,4
32	12E_32UN_HC	12	2,4	0,5
28	12E_28UN_HC	12	2,4	0,6
24	12E_24UN_HC	12	2,4	0,6
20	12E_20UN_HC	12	2,4	1,2
18	12E_18UN_HC	12	2,4	1,2
16	12E_16UN_HC	12	2,4	1,2
14	12E_14UN_HC	12	2,4	1,2
13	12E_13UN_HC	12	2,4	1,2
12	12E_12UN_HC	12	2,4	1,2
11	12E_11UN_HC	12	3,6	1,8
10	12E_10UN_HC	12	3,6	1,8
9	12E_9UN_HC	12	3,6	1,8
8	12E_8UN_HC	12	3,6	1,8

THREADING INSERTS



FourCut

60°

PARTIAL PROFILE 60°

Pitch mm	TPI	Part Number EXTERNAL	L mm	T mm	Y mm
0,25 - 1,0	100-24	12E_AAA60_HC	12	2,4	0,6
0,35 - 1,0	72-24	12E_AA60_HC	12	2,4	0,6
0,5 - 2,0	48-12	12E_A60_HC	12	2,4	1,2
0,5 - 3,0	48-8	12E_AG60_HC	12	3,6	1,8
1,75 - 3,0	14-8	12E_G60_HC	12	3,6	1,8

55°

PARTIAL PROFILE 55°

Pitch mm	TPI	Part Number EXTERNAL	L mm	T mm	Y mm
0,35 - 1,0	72-24	12E_AA55_HC	12	2,4	0,6
0,5 - 2,0	48-12	12E_A55_HC	12	2,4	1,2
0,5 - 3,0	48-8	12E_AG55_HC	12	3,6	1,8
1,75 - 3,0	14-8	12E_G55_HC	12	3,6	1,8

BS/G/Rp

WHITWORTH PIPE THREAD

Pitch TPI	Part Number EXTERNAL	L mm	T mm	Y mm
28	12E_28W_HC	12	2,4	0,6
24	12E_24W_HC	12	2,4	0,6
20	12E_20W_HC	12	2,4	1,2
19	12E_19W_HC	12	2,4	1,2
18	12E_18W_HC	12	2,4	1,2
16	12E_16W_HC	12	2,4	1,2
14	12E_14W_HC	12	2,4	1,2
12	12E_12W_HC	12	2,4	1,2
11	12E_11W_HC	12	3,6	1,8
10	12E_10W_HC	12	3,6	1,8
9	12E_9W_HC	12	3,6	1,8
8	12E_8W_HC	12	3,6	1,8

R/Rc

BSPT PIPE THREAD

Pitch TPI	Part Number EXTERNAL	L mm	T mm	Y mm
28	12E_28BSPT_HC	12	2,4	1,2
19	12E_19BSPT_HC	12	2,4	1,2
14	12E_14BSPT_HC	12	3,6	1,8
11	12E_11BSPT_HC	12	3,6	1,8

NPT

NPT PIPE THREAD

Pitch TPI	Part Number EXTERNAL	L mm	T mm	Y mm
27	12E_27NPT_HC	12	2,4	0,6
18	12E_18NPT_HC	12	2,4	1,2
14	12E_14NPT_HC	12	2,4	1,2
11,5	12E_11.5NPT_HC	12	3,6	1,8
8	12E_8NPT_HC	12	3,6	1,8

NPTF

NPTF DRYSEAL PIPE THREAD

Pitch TPI	Part Number EXTERNAL	L mm	T mm	Y mm
27	12E_27NPTF_HC	12	2,4	0,6
18	12E_18NPTF_HC	12	2,4	1,2
14	12E_14NPTF_HC	12	2,4	1,2
11,5	12E_11.5NPTF_HC	12	3,6	1,8
8	12E_8NPTF_HC	12	3,6	1,8

All inserts have ground profile and chipbreaker.

THREADING INSERTS

FourCut

PG

STEEL CONDUIT THREAD DIN 40430

Pitch TPI	Part Number EXTERNAL	L mm	T mm	Y mm
20	12E_20PG_HC	12	2,4	1,2
18	12E_18PG_HC	12	2,4	1,2
16	12E_16PG_HC	12	2,4	1,2

TR

TRAPEZ DIN 103

Pitch mm	Part Number EXTERNAL	L mm	T mm	Y mm
1,5	12E_1.5TR_HC	12	2,4	1,2
2,0	12E_2.0TR_HC	12	2,4	1,2
3,0	12E_3.0TR_HC	12	2,4	1,2
4,0	12E_4.0TR_HC	12	3,6	1,8

RD

ROUND DIN 405

Pitch TPI	Part Number EXTERNAL	L mm	T mm	Y mm
10	12E_10RD_HC	12	3,6	1,8
8	12E_8RD_HC	12	3,6	1,8

ACME

ACME

Pitch TPI	Part Number EXTERNAL	L mm	T mm	Y mm
16	12E_16ACME_HC	12	2,4	1,2
14	12E_14ACME_HC	12	2,4	1,2
12	12E_12ACME_HC	12	2,4	1,2
10	12E_10ACME_HC	12	2,4	1,2
8	12E_8ACME_HC	12	2,4	1,2
6	12E_6ACME_HC	12	3,6	1,8

STACME

STUB ACME

Pitch TPI	Part Number EXTERNAL	L mm	T mm	Y mm
16	12E_16STACME_HC	12	2,4	1,2
14	12E_14STACME_HC	12	2,4	1,2
12	12E_12STACME_HC	12	2,4	1,2
10	12E_10STACME_HC	12	2,4	1,2
8	12E_8STACME_HC	12	2,4	1,2
6	12E_6STACME_HC	12	3,6	1,8
5	12E_5STACME_HC	12	3,6	1,8

MJ

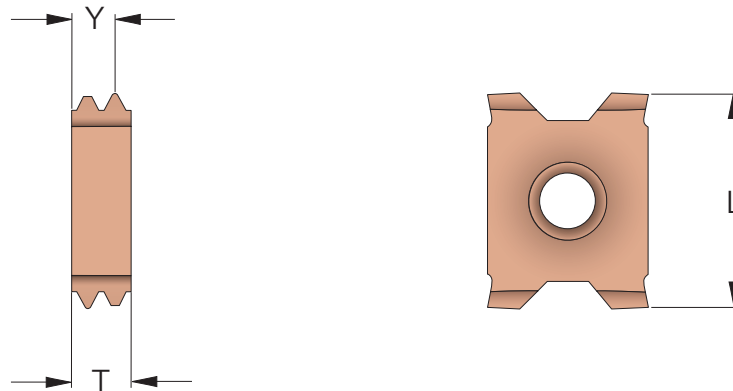
METRIC

Pitch mm	Part Number EXTERNAL	L mm	T mm	Y mm
1,0	12E_1.0MJ_HC	12	2,4	0,6
1,5	12E_1.5MJ_HC	12	2,4	1,2
2,0	12E_2.0MJ_HC	12	3,6	1,8

■ All inserts have ground profile and chipbreaker.

THREADING INSERTS

FourCut Multitooth



M

METRIC

Pitch mm	Part Number EXTERNAL	L mm	T mm	Y mm	Radial infeed per pass		
					1	2	3
1,0	12ER_1.0ISO2M_HC	12	2,4	1,7	0,24	0,21	0,18
1,5	12ER_1.5ISO2M_HC	12	3,6	2,55	0,43	0,30	0,21
2,0	12ER_2.0ISO2M_HC	12	3,6	2,8	0,57	0,40	0,28

G/Rp

WHITWORTH PIPE THREAD

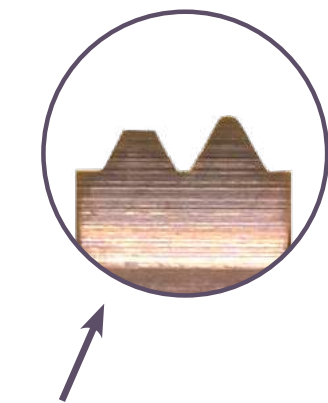
Pitch TPI	Part Number EXTERNAL	L mm	T mm	Y mm	Radial infeed per pass		
					1	2	3
14	12ER_14W2M_HC	12	3,6	2,7	0,55	0,38	0,25

Advantages with Multitooth Inserts

With multitooth inserts the machining time can be reduced about 50% as two cutting edges are working every pass.

The first edge will cut the flanks of the thread and the second one will make the root radius. This will result in three easy breakable chips.

It is important to use radial infeed to get best performance. Above you have recommended infeed per pass for each insert.



Threading Inserts Kits

0.75 ISO	1.25 ISO	1.75 ISO	2.5 ISO	14 W
1.0 ISO	1.5 ISO	2.0 ISO	3.0 ISO	11 W

Part Number

10X12E_HC

■ 10 different inserts in one box.

1.0 ISO	1.5 ISO	2.0 ISO	2.5 ISO	3.0 ISO

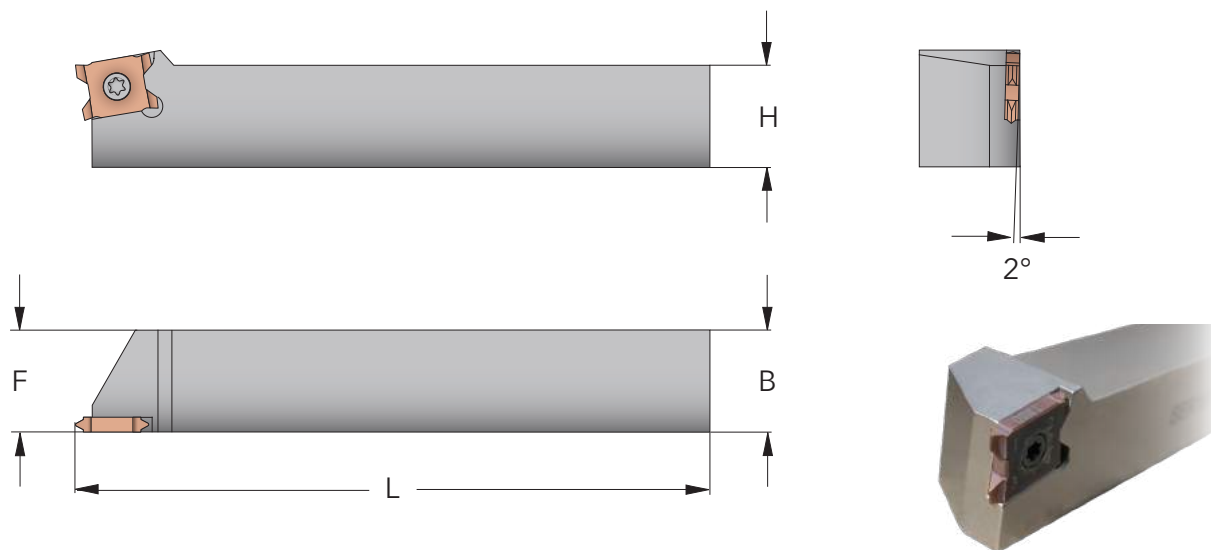
Part Number

5X12E_HC

■ 5 different inserts in one box.

TOOLHOLDERS

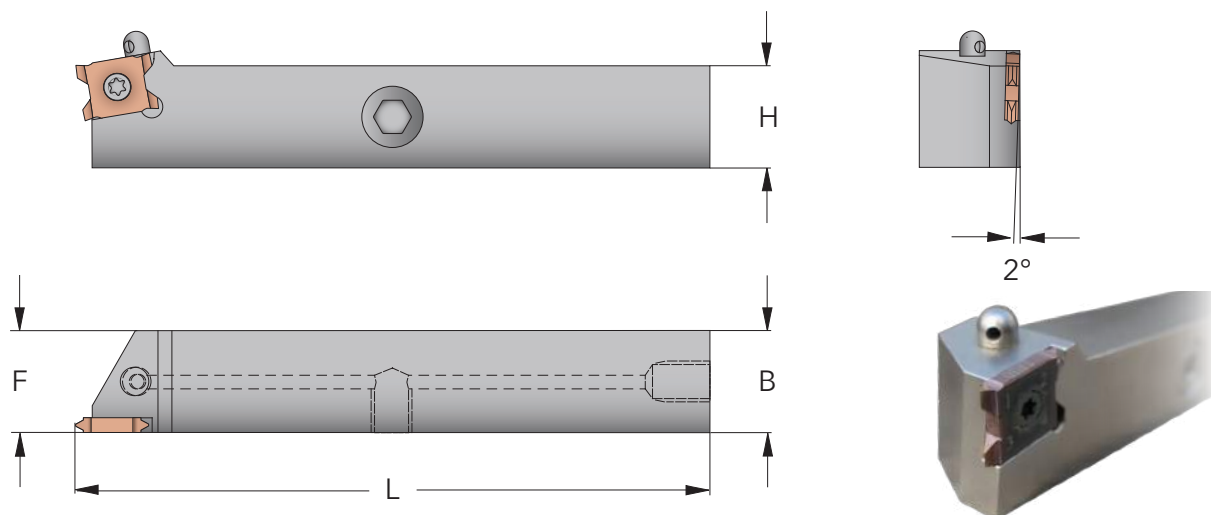
FourCut



Insert mm	Part Number	B/H mm	L mm	F mm
12	SER0808H12	8	100	8
12	SER1010H12	10	100	10
12	SER1212H12	12	100	12
12	SER1616H12	16	100	16
12	SER2020K12	20	125	20
12	SER2525M12	25	150	25
12	SER3232P12	32	170	32

■ The Part Numbers are for Right Hand Toolholders. For Left Hand specify L instead of R. The Price is 10% higher for L.

with Internal Coolant

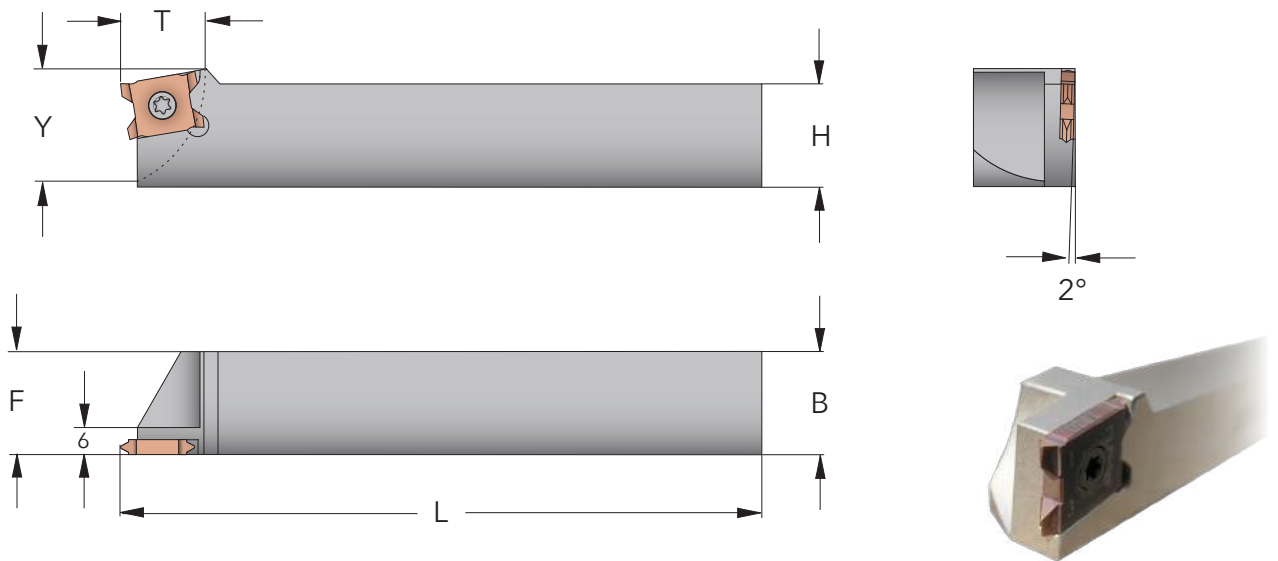


Insert mm	Part Number	B/H mm	L mm	F mm	PLUG
12	SER1212H12-J*	12	100	12	M8x1
12	SER1616H12-J	16	100	16	G1/8
12	SER2020K12-J	20	125	20	G1/8
12	SER2525M12-J	25	150	25	G1/8

* This toolholder also has a plug on the backside, totally three plugs.

TOOLHOLDERS

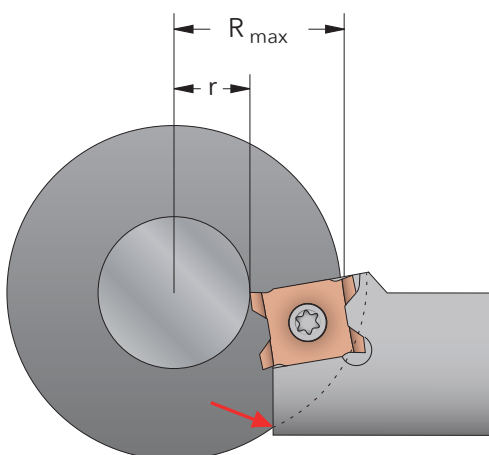
with Extra Accessibility



Insert mm	Part Number	B/H mm	L mm	F mm	T mm	Y mm
12	SER1212T09H12	12	100	12	9	11,0
12	SER1616T11H12	16	100	16	11	14,7
12	SER2020T14K12	20	125	20	14	18,7
12	SER2525T18M12	25	150	25	18	23,8

Maximum Allowable Access

When you are working between shoulders there is a limit of the accessibility which depends on the toolholder and the diameters of the workpiece.



$$R_{\max} = \sqrt{(r + 2,5)^2 + Y^2}$$

$$T = R - r$$

You should never exceed the calculated R_{\max} or the T dimension of the toolholder. If you need better accessibility you have to modify the holder.

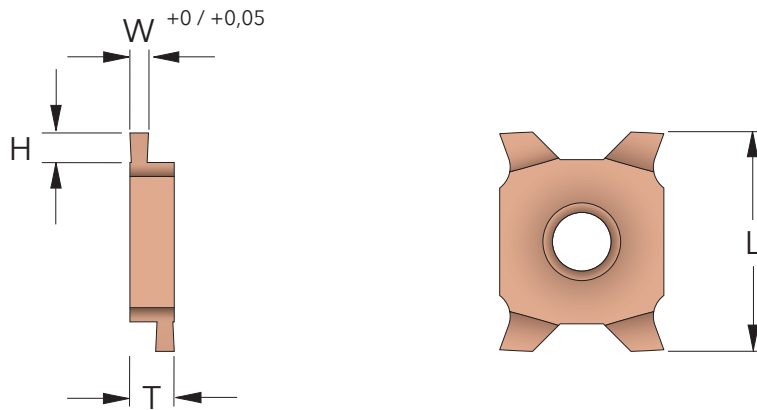
For diagram of accessibility go to smicut.com/acc

Spare Parts

Insert mm	Screw to insert	Torx key
12	T9XM3	TORX_T9

GROOVING INSERTS

FourCut

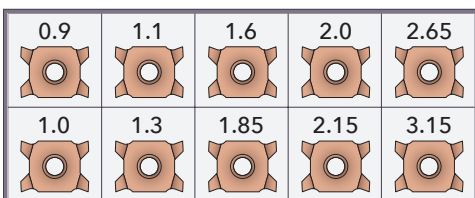


SQ

GROOVING

W +0 / +0,05	EXTERNAL Part Number	L mm	T mm	H mm
0,4	12ER_0.4SQ_HC	12	2,4	0,8
0,5	12ER_0.5SQ_HC	12	2,4	1,0
0,6	12ER_0.6SQ_HC	12	2,4	1,2
0,7	12ER_0.7SQ_HC	12	2,4	1,4
0,8	12ER_0.8SQ_HC	12	2,4	1,6
0,9	12ER_0.9SQ_HC	12	2,4	1,8
1,0	12ER_1.0SQ_HC	12	2,4	2,0
1,1	12ER_1.1SQ_HC	12	2,4	2,0
1,2	12ER_1.2SQ_HC	12	2,4	2,0
1,3	12ER_1.3SQ_HC	12	2,4	2,0
1,4	12ER_1.4SQ_HC	12	2,4	2,0
1,5	12ER_1.5SQ_HC	12	2,4	2,0
1,6	12ER_1.6SQ_HC	12	2,4	2,0
1,7	12ER_1.7SQ_HC	12	2,4	2,0
1,85	12ER_1.85SQ_HC	12	2,4	2,0
2,0	12ER_2.0SQ_HC	12	2,4	2,0
2,15	12ER_2.15SQ_HC	12	2,4	2,0
2,3	12ER_2.3SQ_HC	12	2,4	2,0
2,5	12ER_2.5SQ_HC	12	3,6	2,0
2,65	12ER_2.65SQ_HC	12	3,6	2,0
2,8	12ER_2.8SQ_HC	12	3,6	2,0
3	12ER_3.0SQ_HC	12	3,6	2,0
3,15	12ER_3.15SQ_HC	12	3,6	2,0
3,3	12ER_3.3SQ_HC	12	3,6	2,0
3,5	12ER_3.5SQ_HC	12	3,6	2,0

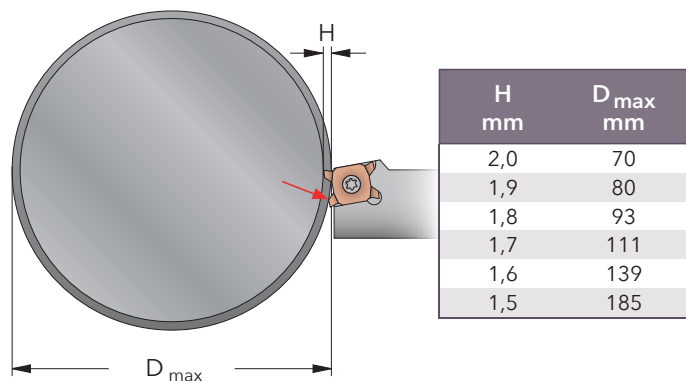
Grooving Inserts Kit



Part Number
10X12SQ_HC

■ 10 different inserts in one box

Maximum Grooving Diameter



You are not able to use the maximum grooving depth when the diameter is bigger then D_{max} as the cutting edge below will touch the part.

FourCut

GROOVING

A close-up photograph of a metal cutting tool, specifically a FourCut toolholder, in the process of cutting a groove into a metal workpiece. The toolholder is a complex, multi-faceted metal part with a central circular opening containing a cutting insert. The workpiece is a cylindrical metal rod, and the tool is positioned to cut a groove into its surface. The lighting is dramatic, highlighting the metallic surfaces and the precision of the cutting process.

Same toolholder for
GROOVING and THREADING!

SmiCut

The Master of Threading



SmiCut AB

Fläderstigen 12 - SE-771 43 Ludvika - Sweden

tel. +46 240 182 30 - info@smicut.se - www.smicut.se