الماسه ساز

Threading

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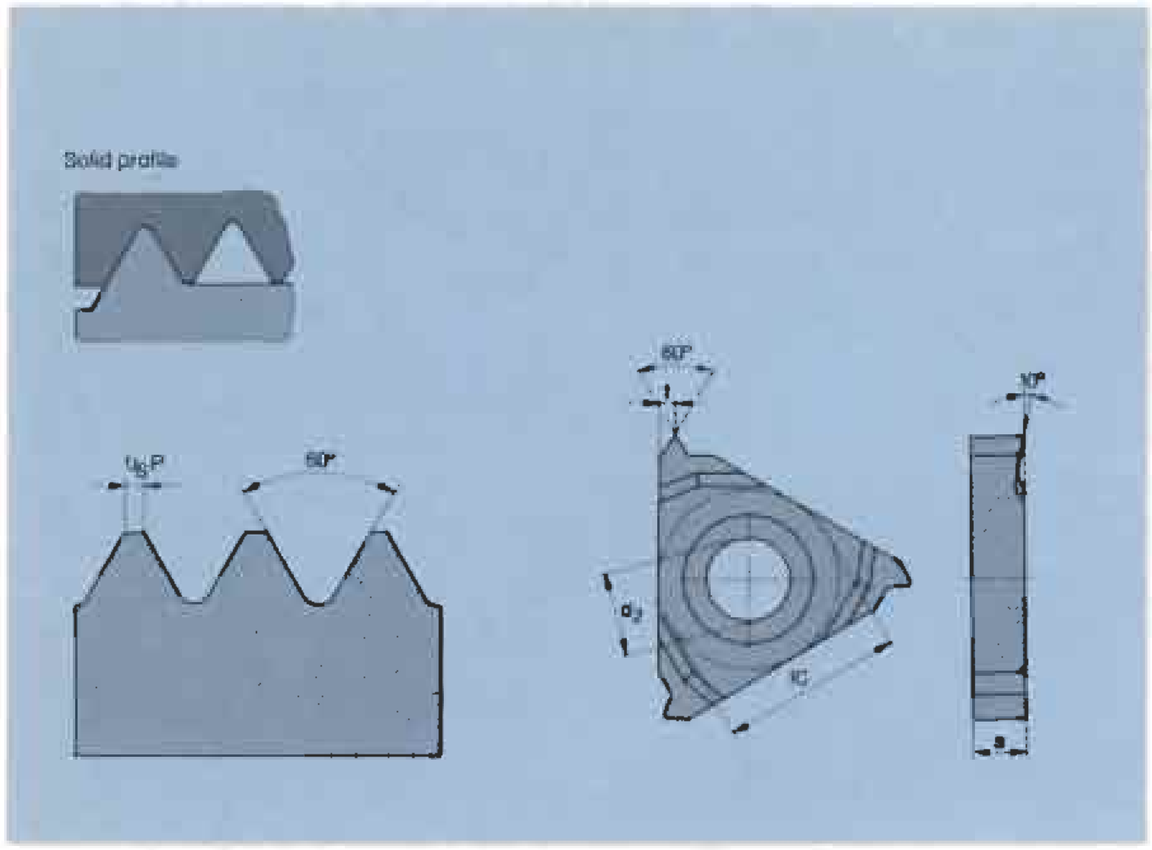
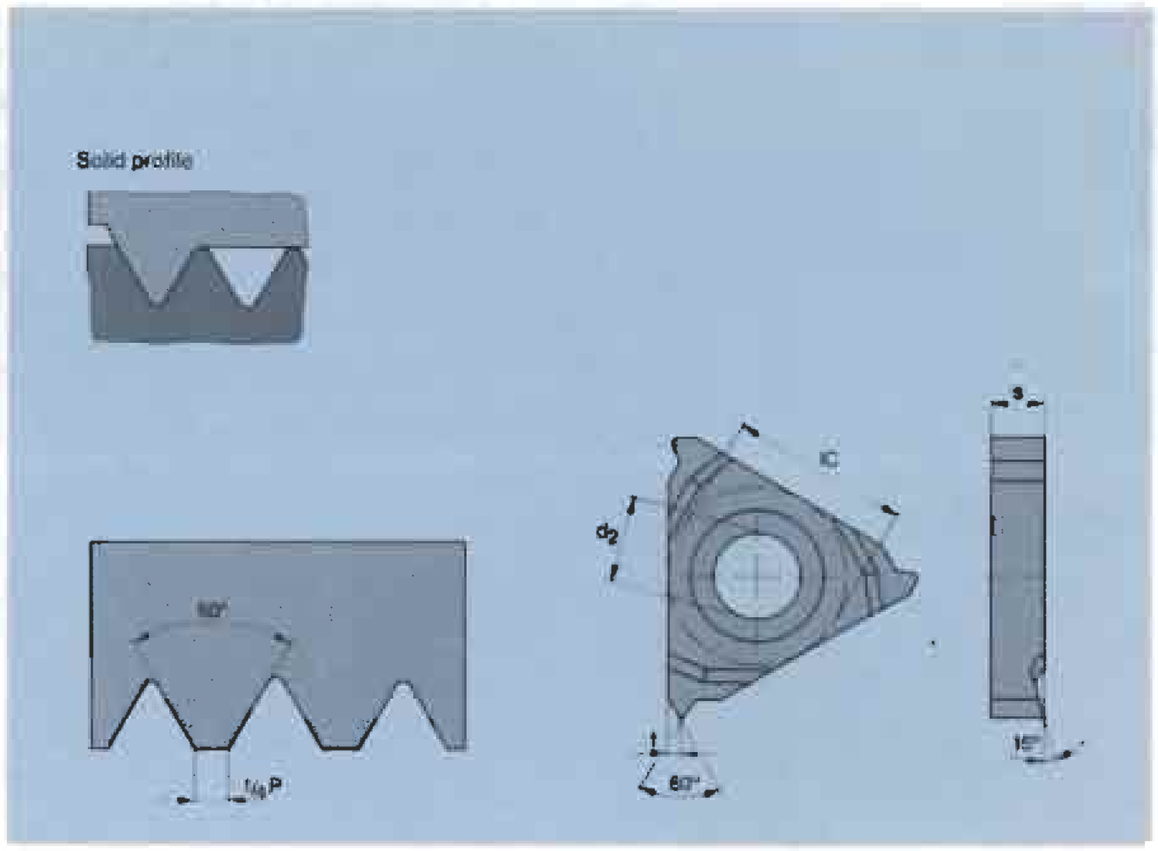


Internal machining, solid profile



For external machining
Carbide grades: P10 P2F KM1 CF4

RIGHT CODE	LEFT CODE	Pitch mm	s	t	IC	d_2
1·47002-205	1·47002-105	0,5	3,60	0,5	9,52	4.5
-207	-107	0,75		0,5		
-210	-110	1,0		0,8		
-212	-112	1,25		0,8		
-215	-115	1,5		0,8		
-217	-117	1,75		1,5		
-220	-120	2,0		1,5		
-225	-125	2,5		1,5		
-230	-130	3,0		1,5		
1·47003-235	1·47003-135	3,5	4,76	2,5	12,7	4,5
-240	-140	4,0		2,5		
-245	-145	4,5		2,5		
-250	-150	5,0		2,5		

For internal machining
Carbide grades: P10 P2F KM1 CF4

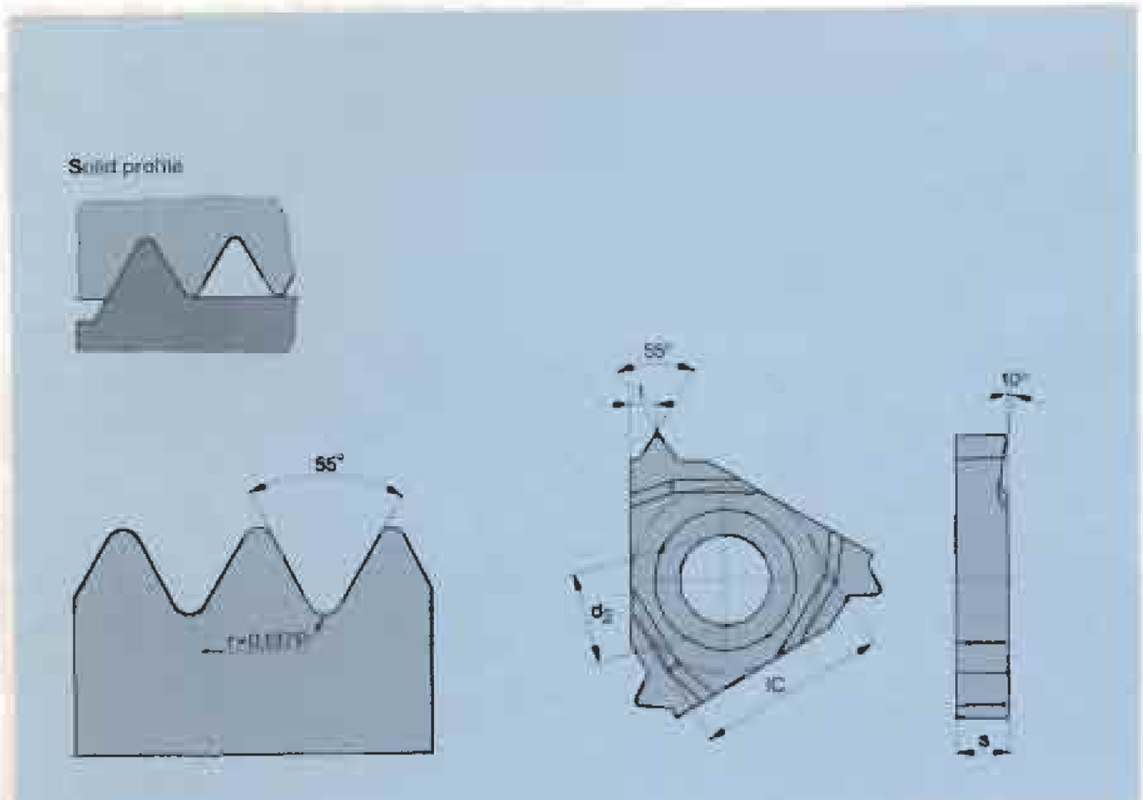
RIGHT CODE	LEFT CODE	Pitch mm	s	t	IC	d_2
1·47001-405	1·47001-305	0,5	3,2	0,5	6,35	2,85
-407	-307	0,75		0,5		
-410	-310	1,0		0,8		
-412	-312	1,25		0,8		
-415	-315	1,5		0,8		
-417	–	1,75		0,8		
-420	–	2,0		0,9		
1·47002-405	–	0,5	3,60	0,5	9,52	4,5
-407	–	0,75		0,5		
-410	1·47002-310	1,0		0,8		
-412	–	1,25		0,8		
-415	-315	1,5		0,8		
-417	-317	1,75		1,5		
-420	-320	2,0		1,5		
-425	-325	2,5		1,5		
-430	-330	3,0		1,5		
1·47003-435	1·47003-335	3,5	4,76	2,5	12,7	4,5
-440	-340	4,0		2,5		
-445	-345	4,5		2,5		
-450	-350	5,0		2,5		

Because of continuous development we reserve the right to make technical modifications

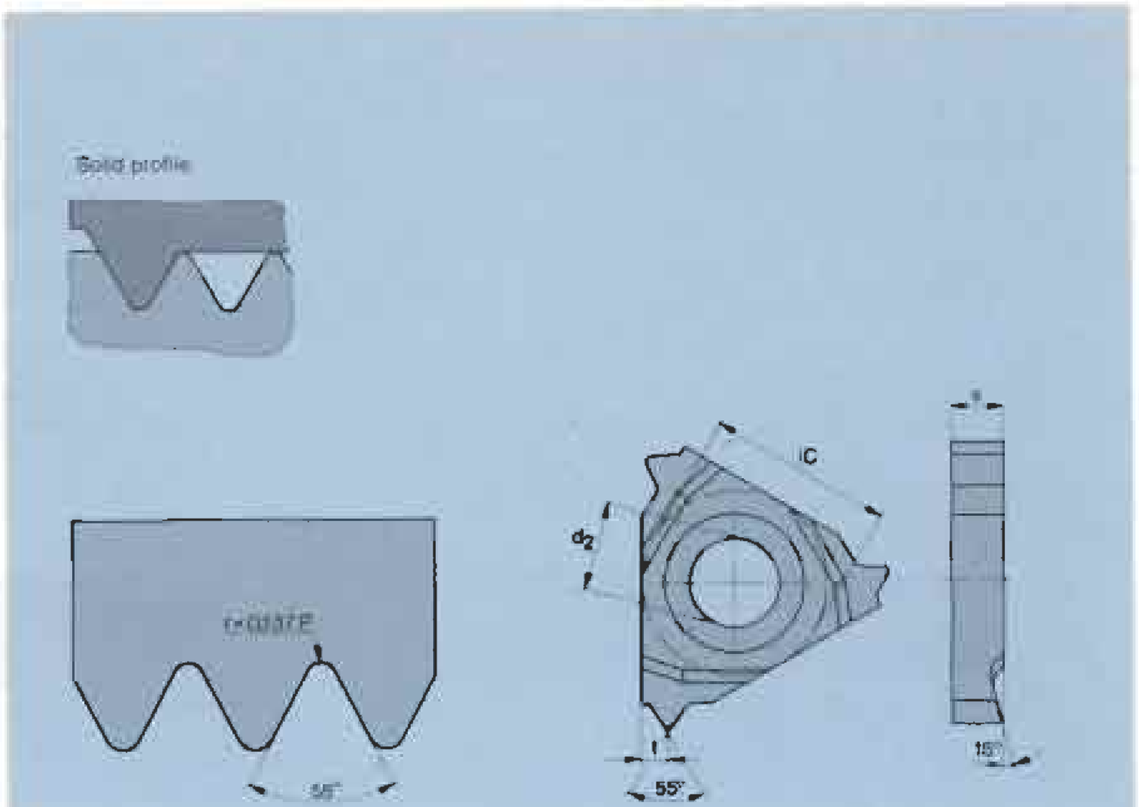
Availability see current price list
Order example:
10 pieces 1·47002-205 P10

Indexable inserts for Whitworth threads

External machining, solid profile



Internal machining, solid profile



For external machining
Carbide grades: P10 P2F KM1 CF4

RIGHT CODE	LEFT CODE	Pitch No. of threads per inch	s	t	IC	d_2
1·47002-628	1·47002-528	28	3,60	0,8	9,52	4,5
-620	–	20		0,8		
-619	-519	19		0,8		
-616	–	16		0,9		
-614	-514	14		1,5		
-612	–	12		1,5		
-611	-511	11		1,5		
-610	-510	10		1,5		
-609	–	9		1,5		
-608	–	8		1,5		
1·47003-607	–	7	4,76	2,5	12,7	4,5
-606	–	6		2,5		
-605	1·47003-505	5		2,5		

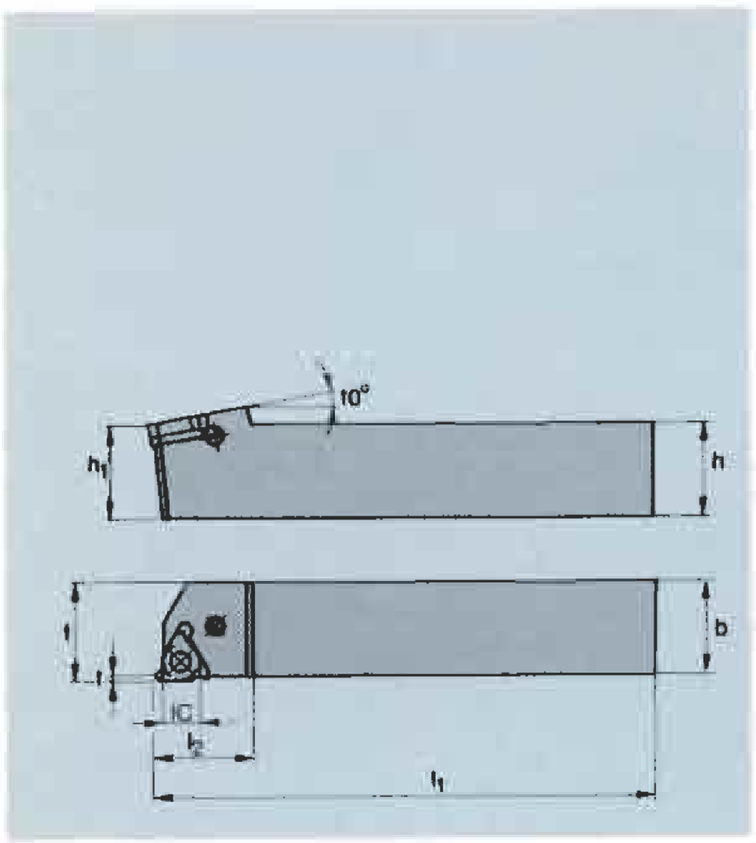
For internal machining
Carbide grades: P10 P2F KM1 CF4

RIGHT CODE	LEFT CODE	Pitch No. of threads per inch	s	t	IC	d_2
1·47001-819	1·47001-719	19	3,2	0,8	6,35	2,85
-814	–	14		0,9		
1·47002-820	–	20	3,60	0,8	9,52	4,5
-819	–	19		0,8		
-816	–	16		0,9		
-814	1·47002-714	14		1,5		
-812	–	12		1,5		
-811	-711	11		1,5		
-810	-710	10		1,5		
-809	–	9		1,5		
-808	–	8		1,5		
1·47003-807	–	7	4,76	2,5	12,7	4,5
-806	–	6		2,5		
-805	1·47003-705	5		2,5		

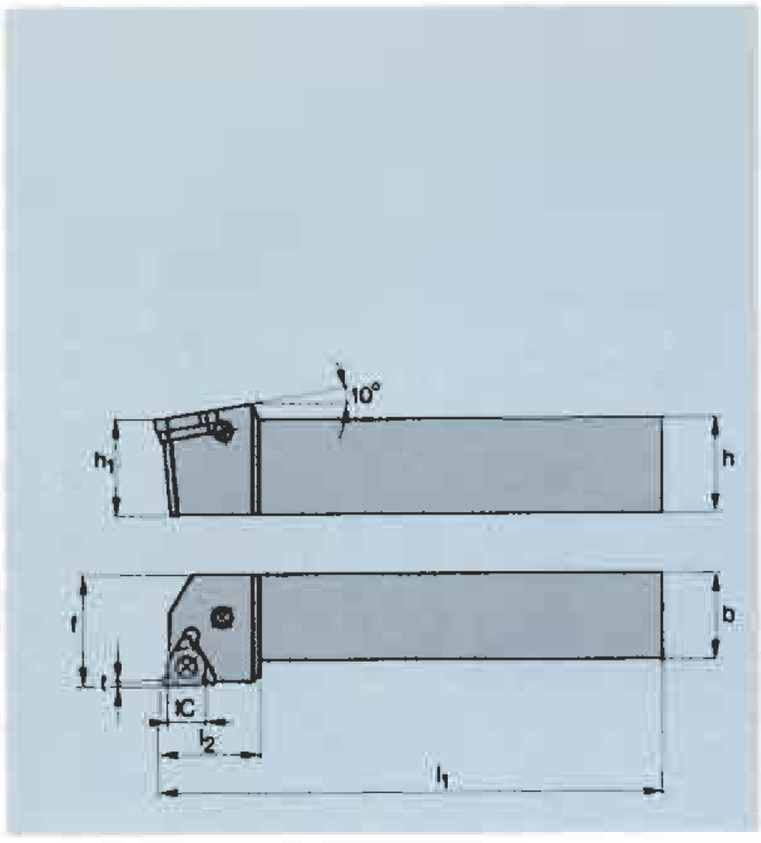
Availability see current price list
Order example:
10 pieces 1·47002-628 P2F

Toolholder for external threading

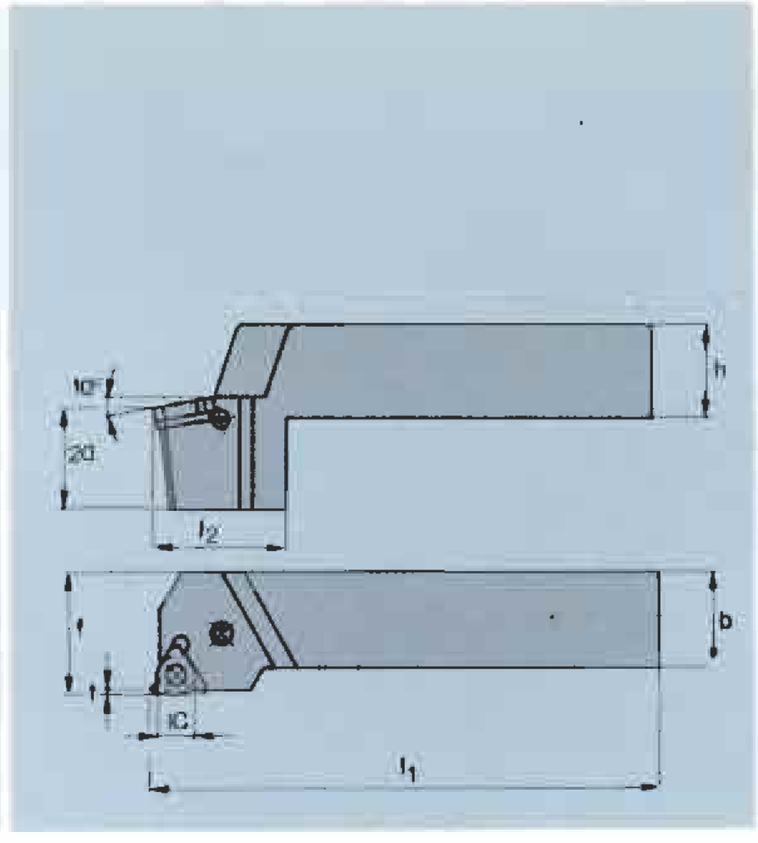
Straight version



Cranked version



Overhead version



Straight version

CODE	h = h_1	b	l_1	l_2	f	IC	t	Pitch mm	Pitch No. of threads per inch	Shim	Socket-head screw for Shim	Clamping nute	Clamping screw
RIGHT						**INDEXABLE INSERT**				**SPARE PARTS**			
1·37120 **R** 200	20	20	125	22	20	9,52	0,5 – 1,5	0,5 – 3	48 – 8	168·701	127·304	112·244	121·612
125 **R** 200	25	25	150	22	25	9,52	0,5 – 1,5	0,5 – 3	48 – 8	168·701	127·304	112·244	121·612
1·37225 **R** 300	25	25	150	28	25	12,7	2,5	3,5 – 5	7 – 5	168·721	127·304	112·244	121·612
LEFT													
1·37120 **L** 200	20	20	125	22	20	9,52	0,5 – 1,5	0,5 – 3	48 – 8	168·711	127·304	112·244	121·612
125 **L** 200	25	25	150	22	25	9,52	0,5 – 1,5	0,5 – 3	48 – 8	168·711	127·304	112·244	121·612
1·37225 **L** 300	25	25	150	28	25	12,7	2,5	3,5 – 5	7 – 5	168·731	127·304	112·244	121·612

Cranked version

CODE	h = h_1	b	l_1	l_2	f	IC	t	Pitch mm	Pitch No, of threads per inch	Shim	Socket-head screw for Shim	Clamping nute	Clamping screw
RIGHT						**INDEXABLE INSERT**				**SPARE PARTS**			
1·37116 **R** 205	16	16	100	22	20	9,52	0,5 – 1,5	0,5 – 3	48 – 8	168·701	127·304	112·244	121·612
120 **R** 205	20	20	125	22	25	9,52	0,5 – 1,5	0,5 – 3	48 – 8	168·701	127·304	112·244	121·612
125 **R** 205	25	25	150	22	32	9,52	0,5 – 1,5	0,5 – 3	48 – 8	168·701	127·304	112·244	121·612
131 **R** 205	32	25	170	22	32	9,52	0,5 – 1,5	0,5 – 3	48 – 8	168·701	127·304	112·244	121·612
1·37225 **R** 305	25	25	150	28	32	12,7	2,5	3,5 – 5	7 – 5	168·721	127·304	112·244	121·612
231 **R** 305	32	25	170	28	32	12,7	2,5	3,5 – 5	7 – 5	168·721	127·304	112·244	121·612
LEFT													
1·37116 **L** 205	16	16	100	22	20	9,52	0,5 – 1,5	0,5 – 3	48 – 8	168·711	127·304	112·244	121·612
120 **L** 205	20	20	125	22	25	9,52	0,5 – 1,5	0,5 – 3	48 – 8	168·711	127·304	112·244	121·612
125 **L** 205	25	25	150	22	32	9,52	0,5 – 1,5	0,5 – 3	48 – 8	168·711	127·304	112·244	121·612
131 **L** 205	32	25	170	22	32	9,52	0,5 – 1,5	0,5 – 3	48 – 8	168·711	127·304	112·244	121·612
1·37225 **L** 305	25	25	150	28	32	12,7	2,5	3,5 – 5	7 – 5	168·731	127·304	112·244	121·612
231 **L** 305	32	25	170	28	32	12,7	2,5	3,5 – 5	7 – 5	168·731	127·304	112·244	121·612

Overhead version

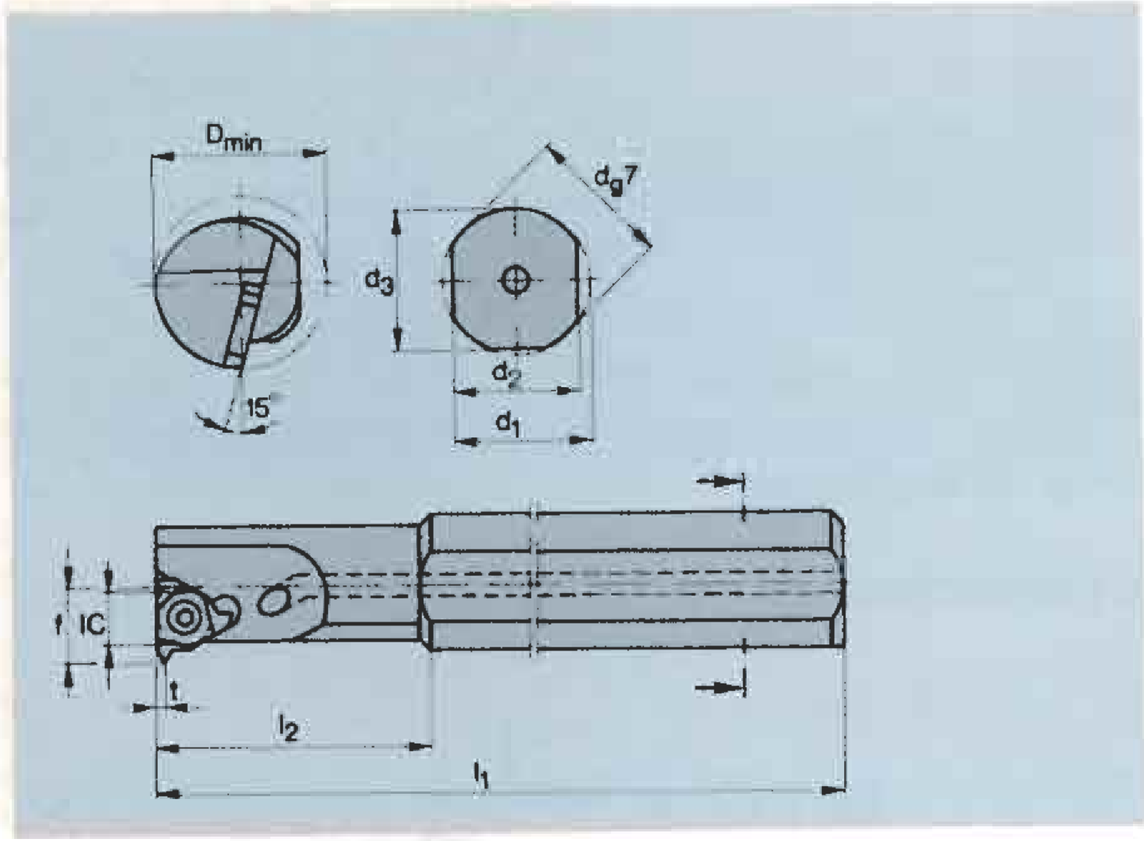
CODE	h = h_1	b	l_1	l_2	f	IC	t	Pitch mm	Pitch No, of threads per inch	Shim	Socket-head screw for Shim	Clamping nute	Clamping screw
RIGHT						**INDEXABLE INSERT**				**SPARE PARTS**			
1·37125 **R** 206	25	25	150	38	32	9,52	0,5 – 1,5	0,5 – 3	48 – 8	168·701	127·304	112·244	121·612
131 **R** 206	32	25	170	38	32	9,52	0,5 – 1,5	0,5 – 3	48 – 8	168·701	127·304	112·244	121·612
1·37225 **R** 306	25	25	150	38	32	12,7	2,5	3,5 – 5	7 – 5	168·721	127·304	112·244	121·612
231 **R** 306	32	25	170	38	32	12,7	2,5	3,5 – 5	7 – 5	168·721	127·304	112·244	121·612
LEFT													
1·37125 **L** 206	25	25	150	38	32	9,52	0,5 – 1,5	0,5 – 3	48 – 8	168·711	127·304	112·244	121·612
131 **L** 206	32	25	170	38	32	9,52	0,5 – 1,5	0,5 – 3	48 – 8	168·711	127·304	112·244	121·612
1·37225 **L** 306	25	25	150	38	32	12,7	2,5	3,5 – 5	7 – 5	168·731	127·304	112·244	121·612
231 **L** 306	32	25	170	38	32	12,7	2,5	3,5 – 5	7 – 5	168·731	127·304	112·244	121·612

Availability see current price list

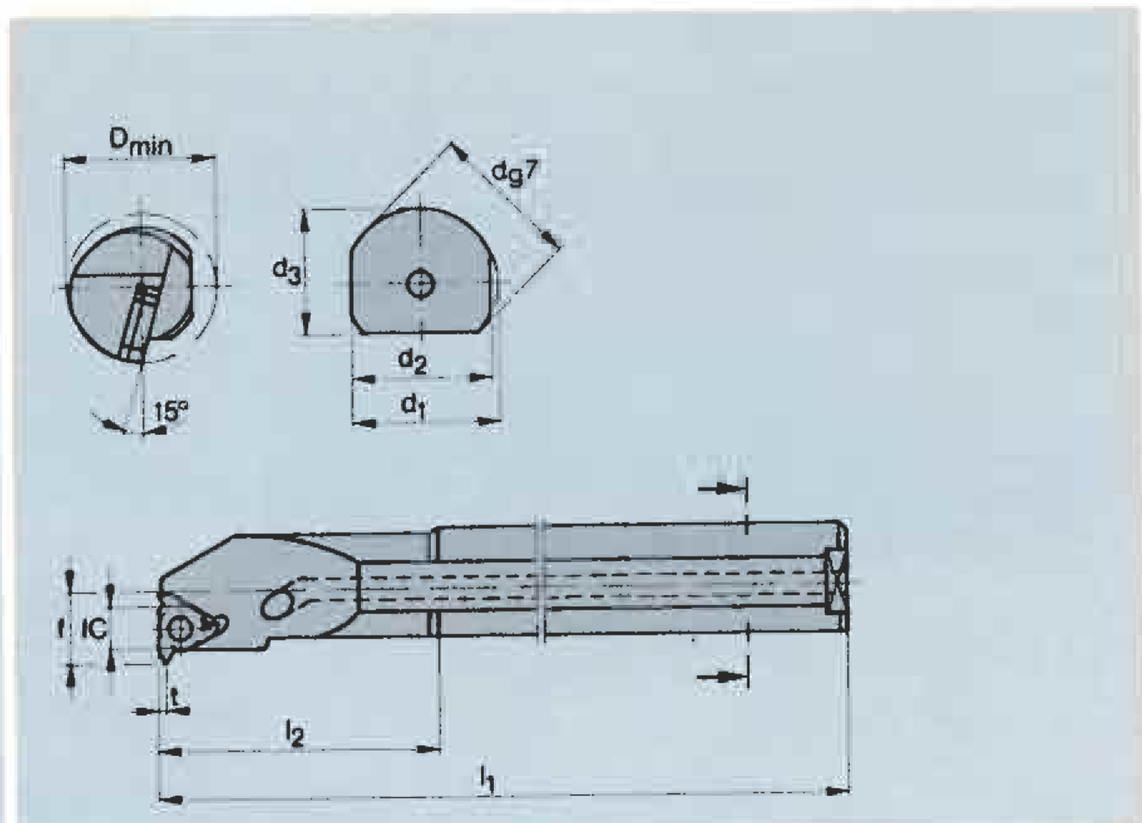
Order example:

1 piece 1·37120 **R** 200

Without shim



With shim



CODE	d_{g7}	d_1	d_2	l_1	l_2	f	D_{min}	IC	t	Pitch mm	Pitch No. of threads per inch	Shim	Clamping sleeve	Clamping screw
RIGHT								**INDEXABLE INSERT**				**SPARE PARTS**		
Tool without insert shim*														
1·37310 **R** 103	10	9,5	–	100	–	7,5	13	6,35	0,5 – 0,9	0,5 – 2	19 – 14	–	–	192·432
316 **R** 103	16	15	14	140	32	8	15	6,35	0,5 – 0,9	0,5 – 2	19 – 14	–	–	192·432
1·37416 **R** 203	16	15	14	150	40	10,3	19	9,52	0,5 – 1,5	0,5 – 3	28 – 8	–	–	191·848
1·37620 **R** 303	20	19	18	180	50	13	24	12,7	2,5	3,5 – 5	7 – 5	–	–	192·916
Tool with insert shim**														
1·37420 **R** 201	20	19	18	180	–	13,8	24	9,52	0,5 – 1,5	0,5 – 3	28 – 8	168·761	191·916	191·698
425 **R** 201	25	24	23	200	–	16,3	29	9,52	0,5 – 1,5	0,5 – 3	28 – 8	168·761	191·942	191·698
432 **R** 201	32	30,5	29	250	–	19,8	36	9,52	0,5 – 1,5	0,5 – 3	28 – 8	168·761	191·942	191·698
1·37625 **R** 301	25	24	23	200	–	17,8	30,3	12,7	2,5	3,5 – 5	7 – 5	168·781	192·906	192·907
632 **R** 301	32	30,5	29	250	–	21,3	38	12,7	2,5	3,5 – 5	7 – 5	168·781	192·906	192·907
LEFT														
Tool without insert shim*														
1·37310 **L** 103	10	9,5	–	100	–	7,5	13	6,35	0,5 – 0,9	0,5 – 2	19 – 14	–	–	192·432
316 **L** 103	16	15	14	140	32	8	15	6,35	0,5 – 0,9	0,5 – 2	19 – 14	–	–	192·432
1·37416 **L** 203	16	15	14	150	40	10,3	19	9,52	0,5 – 1,5	0,5 – 3	28 – 8	–	–	191·848
1·37620 **L** 303	20	19	18	180	50	13	24	12,7	2,5	3,5 – 5	7 – 5	–	–	192·916
Tool with insert shim**														
1·37420 **L** 201	20	19	18	180	–	13,8	24	9,52	0,5 – 1,5	0,5 – 3	28 – 8	168·751	191·916	191·698
425 **L** 201	25	24	23	200	–	16,3	29	9,52	0,5 – 1,5	0,5 – 3	28 – 8	168·751	191·942	191·698
432 **L** 201	32	30,5	29	250	–	19,8	36	9,52	0,5 – 1,5	0,5 – 3	28 – 8	168·751	191·942	191·698
1·37625 **L** 301	25	24	23	200	–	17,8	30,3	12,7	2,5	3,5 – 5	7 – 5	168·771	192·906	192·907
632 **R** 301	32	30,5	29	250	–	21,3	38	12,7	2,5	3,5 – 5	7 – 5	168·771	192·906	192·907

*) Tool without shim and
2° inclination in the insert seat

**) Tool with shim and
1° inclination in the insert seat

Availability see current price list
Order example:
1 piece 1·373310 **R** 103

The shims – selection and assembly tools

To produce threads with accurate profiles, keeping flank wear as low as possible, the inclination angle of the tool must approximately correspond to the helix angle of the thread.

Select the shims according to the following equation:

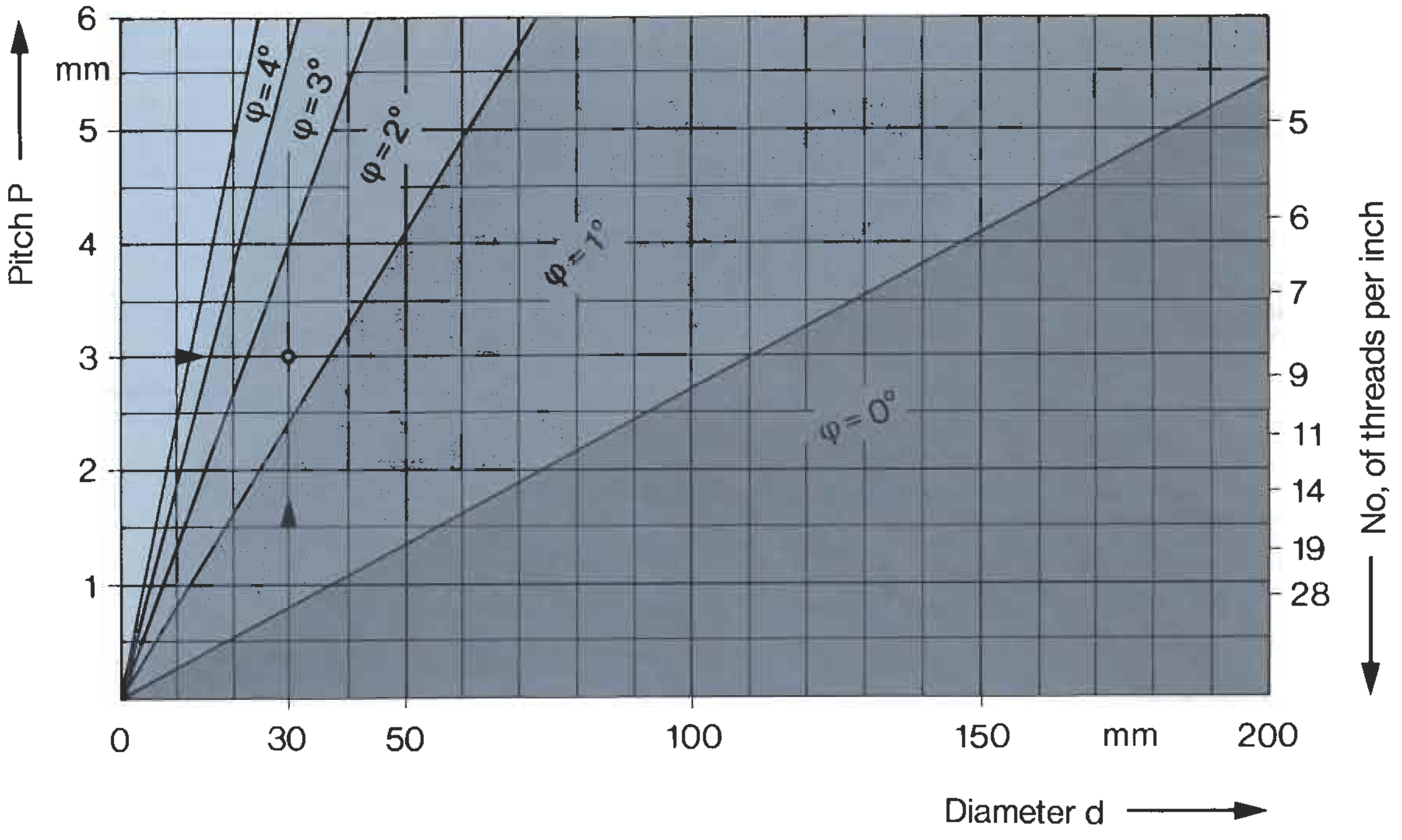
$$\varphi = \lambda$$

With the exception of boring bars up to 20 mm diameter, ALMASE SAZ threading tools are provided with exchangeable shims. They protect the toolholders against damage, and serve for presenting the threading insert to the workpiece at the correct helix angle.

They also enable a stepped inclination of the angle "λ" in the tool to the present helix angle "φ" of the thread.

Helix angle φ

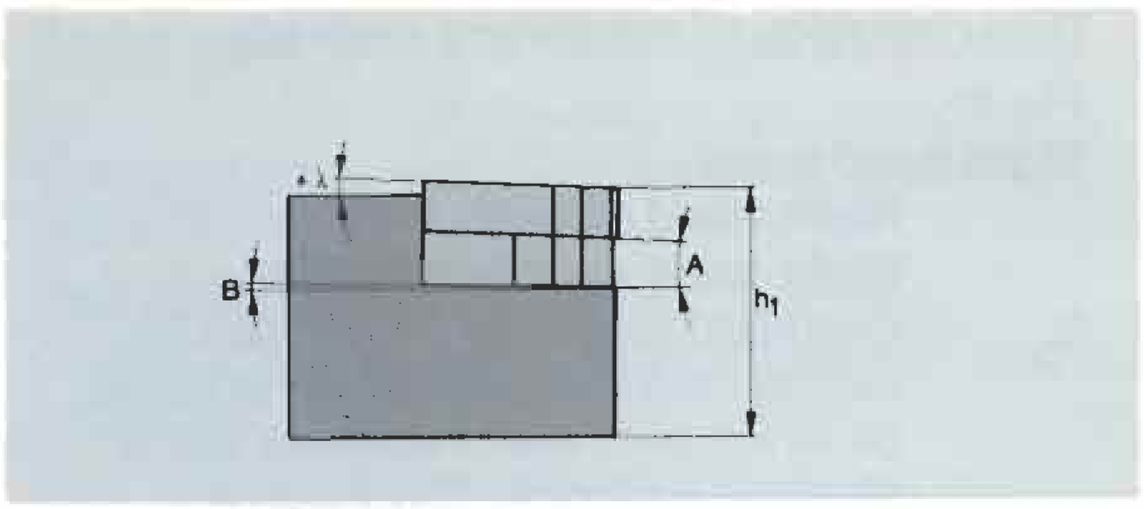
$$\tan \varphi = \frac{P}{d \times \pi}$$

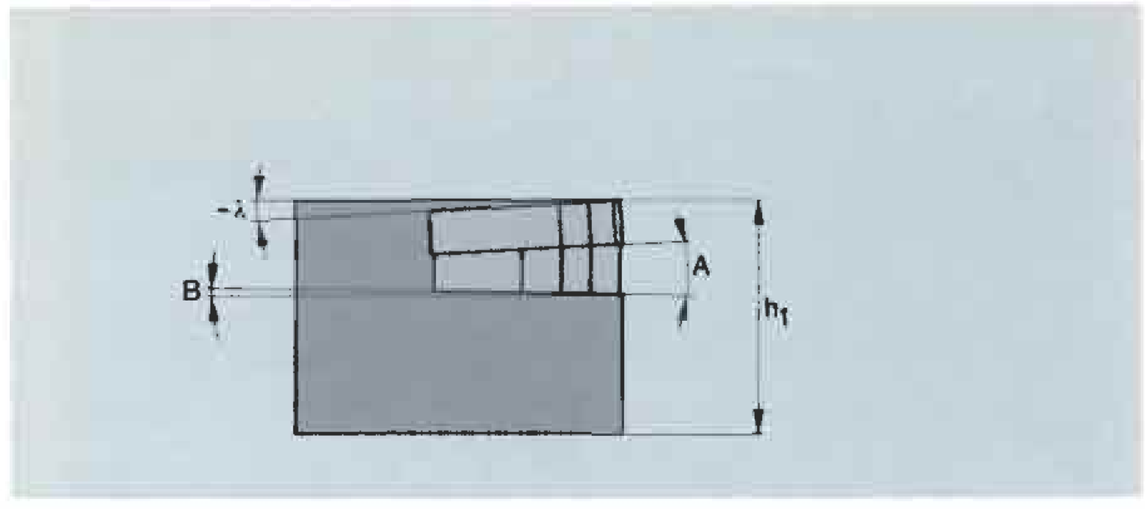


Attention:

For small thread diameters, with large pitches and threads with multi-starts, the flank clearance angle **must** be corrected by **modifying** the **inclination angle**.

Mounting position





Note: The center height "h_1" remains **unchanged** in all cases!

Inclination angle λ_u of the shim						
Inclination angle λ in the tool			+ 4°	+ 3°	+ 2°	+ 1°	± 0°
Shims for toolholders						standard	
	IC						
Right	9,52		168.704	168.703	168.702	168.701	168.700
	12,7		168.724	168.723	168.722	168.721	168.720
Left	9,52		168.714	168.713	168.712	168.711	168.710
	12,7		168.734	168.733	168.732	168.731	168.730
Shims for boring bars						standard	
	IC						
Right	9,52		168.764	168.763	168.762	168.761	168.760
	12,7		168.784	168.783	168.782	168.781	168.780
Left	9,52		168.754	168.753	168.752	168.751	168.750
	12,7		168.774	168.773	168.772	168.771	168.770

Note: Choose the shims with the help of the **helix anlge diagram**, according to the respective colour background of a column.

Application example:

Given: External thread M30 x 3 with right-hand toolholder and indexable insert with IC 9,52,
Helix angle φ from diagram = 2° (see arrow)

Choice of the shim

Inclination angle λ ..... 2°
Toolholder ..... right
Indexable insert ..... IC 9,52
=> Chosen shim = No. 168 · 702

Availability see current price list

Order example:

10 pieces 168 · 704

B = 1° in insert seat for toolholders and boring bars

Preparatory measures

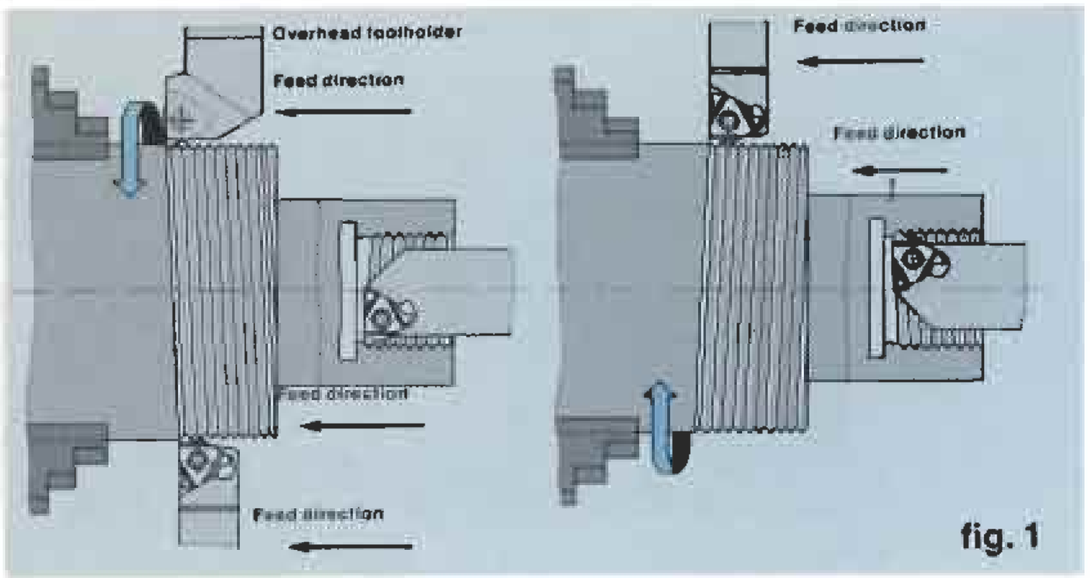


fig. 1

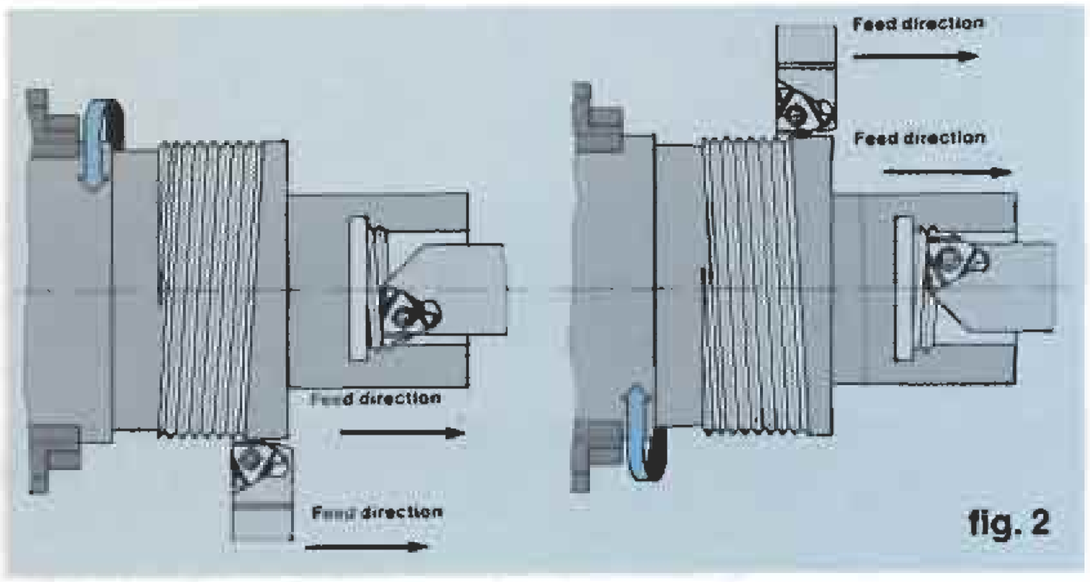


fig. 2

Attention: In both applications, the inclination angle **must** be corrected, taking into account the specifications of page 6 and 7/The shims and assembly tools.

Determination of machining methods

Fig. 1:
Right hand tools

Right-hand threads with
Right-hand spindle rotation

*) Overhead toolholder for use on CNC turning machines without VDI adaptors, on which overhead machining with a standard toolholder is not possible.

Left hand tools

- **Left-hand threads** with
  Left-hand spindle rotation

Fig. 2:
Right hand tools

- **Left-hand threads** with
  Right-hand spindle rotation

Left hand tools

Right-hand threads with
Left-hand spindle rotation

Feed type	Characteristic chip shape
Radial feed, 0°	
Flank feed Recommendable	
Modified flank feed	
Changing flank feed (for very big threads)	

Selection of the feed procedure

The priority of the different criteria depends on the cutting conditions and the machinability of the materials. Further influencing factors result from the feed procedure, the stability of the production system and the configuration of the cutting edge.

Reduced wear on the trailing flank angle.

In this case alternating cutting edge increases tool life.

Effects of the feed procedure

Radial feed

Bending stress on the cutting edge caused by V-shaped chips at long-chipping steel work-piece materials.

High cutting forces with small cutting thick-nesses to a great extent, sharp edges with high strength.

Its application is recommended for tough and hard, wear-resistant carbides with good resistance to thermal and mechanical shocks.

Flank feed

Less bending stress and stabilized cutting edges produce more favourable chip shapes and larger cutting thicknesses.

Carbides with high hardness, good wear resistance and temperature stability are advantageous.

When turning short threads with short engagement times, there is a good resist-ance to thermal and mechanical shocks.

Distribution of cuts:

Determination of the number of passes "u" by means of "P",

The number of passes per thread "u" is decisive for successful threading or tapping. Table 1 to the right gives standard values for the application conditions in an optimal production process.

Determination of the number of passes "u" by means of cutting thickness "H_u"

The number of passes can more exactly be determined on the basis of the cutting thickness "H_u" (see table 2). It guarantees that a high-quality thread is turned in an economic way.

Pitch "P"		Number of passes "u"
mm	No. of threads per inch	
0,5 to 0,75	48 to 52	6 x P
1,0 to 1,25	24 to 20	5 x P
1,5 to 4,00	16 to 06	4 x P
4,5 to 6,00	5,5 to 4	3 x P

Table 1

Standard values for flank feed based on cutting thickness "H_u"

Cutting Group	Workpiece material: Material	Workpiece material: Resistance	Cutting thickness H_u [mm]: Radial feed	Cutting thickness H_u [mm]: Flank feed
1.0 – 3.0 4,0 – 5.0 6,0 – 7,0 8,0 – 8,1	Plain and alloyed steels	400 < 600 N/mm² 600 < 800 N/mm² 800 < 1000 N/mm² 1000 N/mm² and more	0,06 0,05 0,045 0,04	0,12 0,10 0,09 0,08
9,0 – 9,1 10,0 11,0 – 12,1	Stainless. acidproof steels	400 < 600 N/mm² 600 < 800 N/mm² 800 N/mm² and more	0,06 0,05 0,04	0,12 0,10 0,08
13.. 14.. 15..	Cast iron	140 < 200 HV 600 < 800 HV 800 HV and more	0,07 0,06 0,05	0,14 0,12 0,10
22,0 – 24,0	Aluminium and aluminium alloys		0,08	0,16
21,0	Brass, bronze		0,06	0,12

Table 2

With the help of the standard values for cutting thickness "H_u", in connection with the conversion factor "a" (see table 2), you can determine the number of passes "u" in a simple and reliable way.

$$u = a \times P$$

Note:
Always round the calculated value down or up to the next.

H_u [mm]	Conversion factor "a"		
	External metric ISO threads	Internal metric ISO threads	External and internal Whitworth threads
0,06	6,58	5,67	6,93
0,08	5,00	4,33	5,72
0,10	4,06	3,72	4,72
0,12	3,43	2,98	3,61
0,14	2,98	2,60	3,13
0,16	2,65	2,31	2,78

Table 3

Conversion factors "a" to determine the number of passes for threading/tapping.

Determination of feed values

Application example:

Task:

Material "C45", strength = 700 N/mm²

external metric ISO thread,

pitch P = 2,0 mm, flank feed

Solution:

Determination of number of passes "u":
1. Acc. to table 2: H_u = 0.10 mm
2. Acc. to table 3: a = 4.06
3. For "u", (see above)

$u = a \times P$

▶ $u = a \times P = 4.06 \times 2.0 = 8.12$;
rounded: u = 8;

Carbide grades – selection and properties

The following carbide grades are available

Carbide grade	Properties	Suitability
P10	uncoated; extremely hard, very heat and wear-resistant	well suited for flank feed in long-chipping iron materials
P2F	uncoated; hard, very heat and wear-resistant; most resistant to thermal and mechanical shocks	well suited for radial and flank feed in long-chipping iron materials, in particular with short engagement times
CF4	special TiN-TiC/N-TiN coating; extremely hard, heat and wear-resistant; most resistant to thermal and mechanical shocks	particularly well suited for flank feed in soft, long-chipping steel materials and cast iron including stainless and acidproof steels
KM1	uncoated; extremely hard, heat and wear-resistant	suited both for radial and flank feed in short chipping iron materials, as well as in aluminium, aluminium alloys and non-ferrous heavy metals

Influence of the coolant

If possible, you should always work with abundant coolant, in order to considerably reduce the risk of plastic deformation on the cutting corner. Furthermore, the workpieces remain cool (no heat expansion!) and the lubricating effect of the coolant keeps the width of wear land smaller (less friction!). In this way, precision is increased, while the tool life remains unchanged!

Attention

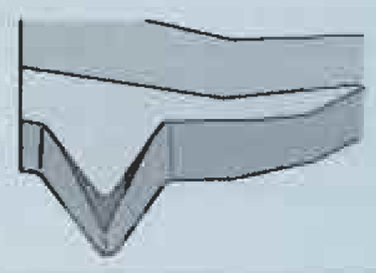
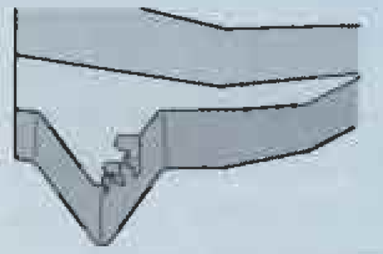
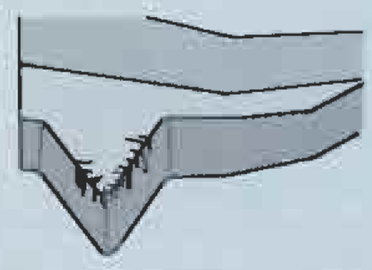
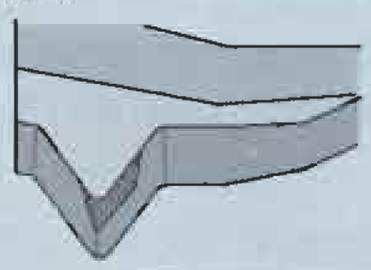
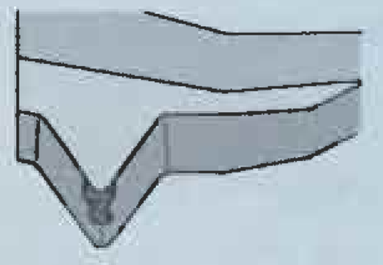
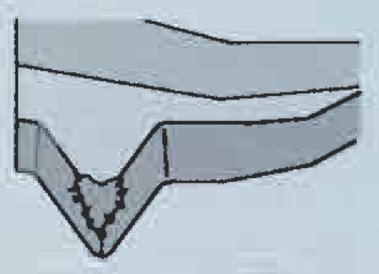
1. An interrupted coolant flow must be avoided. If favours cracks through thermal shocks which may lead to a premature failure of the cutting edge.

2. The use of coolant is not recommended if the turning operation requires low cutting speeds (small diameters, bulky or unbalanced parts), as this would increase the risk of a formation of built-up edges.

Standard values for cutting speeds

Cutting group	Workpiece material		Hardness HB 30	Cutting speed for carbide grade (m/mn)	V_C [m/min] P10	P2F	KM1	CF4
1.0 – 1.1 2.0 – 3.0 4.0	Plain steels	C < 0,2% C = 0,2 – 0,4% C = 0,4 – 0,6%		350/500 500/700 700/900	190-210 170-190 150-170	120-140 100-120 80-100		210-240 190-210 170-190
5.0 6.0 – 7.0 8.0 – 8.1	Alloyed steels			650/850 850/1050 1050/1250	120-140 100-130 85-100	60-80 50-60 40-50		150-170 120-150 90-120
9.0 – 9.1 10.0 11.0 - 12.1	Stainless and Acidproof steels			550/700 700/900 900/1100		70-90 50-70 40-50	70-80 50-60	110-130 90-110 70-90
13 .. 14 .. 15.0 – 15.4 15.5 – 15.9	Cast iron Nodular cast iron White temper cast Black temper cast	GG GGG GTW GTS	120/290 140/290 120/290 140/290				70-100 60-90 60-90 60-90	120-180 100-160 100-160 100-160
19.0 – 24.0	Non-ferrous metals		60/110				120-250	

Trouble shooting

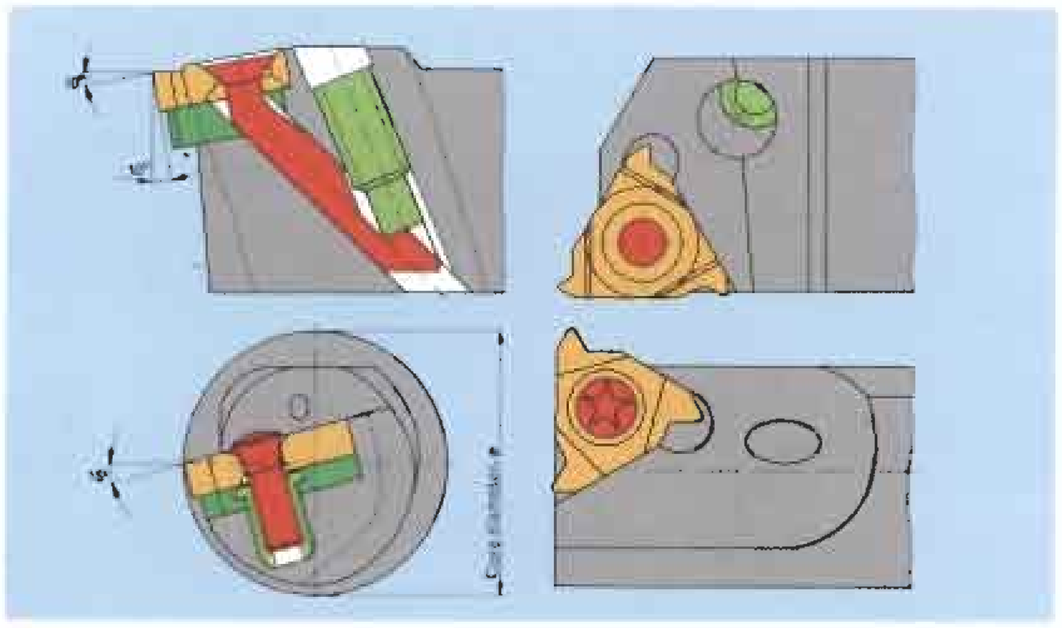
Problem	Cause of trouble	Elimination
Fast flank wear 	– Unsuitable carbide grade – Two small feed per pass – too many passes – Cutting speed too high – Insufficient coolant supply	– Choose a more wear-resistant carbide grade – Increase feed values – reduce number of passes – Reduce cutting speed – Increase coolant supply
Chipping of cutting edge 	– Unstable workpiece and/or tool mounting	– Check rigidity of mounting – Choose a tougher carbide grade
Formation of comb-shaped fissures 	– Interrupted coolant supply	– Increase coolant supply and/or supply coolant more precisely
Irregular flank wear 	– Incorrect inclination angle in pitch direction – Unfavourable feed type	– Correct pitch angle with the help of the diagram – Work with modified feed flank; reduce feed angle by ± (3° to 5°)
Extreme plastic deformation 	– Insufficient coolant supply – Too high feed per pass – too few passes – Cutting speed too high – Unsuitable carbide grade	– Increase coolant supply – Reduce feed values – increase number of passes – Reduce cutting speed – Choose a more wear-resistant carbide grade
Insert breakage 	– Instability – Extreme plastic deformation – Incorrect preparation – No chip control – Insufficient or interrupted coolant supply	– Check rigidity of mounting – Same feed for all passes – Check dimensions of blank – Choose a tougher grade – work with modified flank feed – More precise and/or increased coolant supply
Thread profile too flat	– Extreme wear of inserts – Incorrect height in relation to workpiece axis – Indexable cutting insert does not machine crest of thread (unfavourable overmeasure on outer diameter)	– Change indexable cutting insert earlier – Adjust height of cutting insert – Check dimensions of blank
Thread profile defective	– Incorrect tool setting	– Correct tool setting
No chip control	– Radial feed – Unfavourable feed type for the pass	– Choose a modified flank feed – Use the same feed for all passes
Bad surface quality	– Flank feed – Incorrect inclination angle – Cutting speed too low	– Choose a modified flank feed or a radial feed – Correct with the help of the diagram – Increase cutting speed

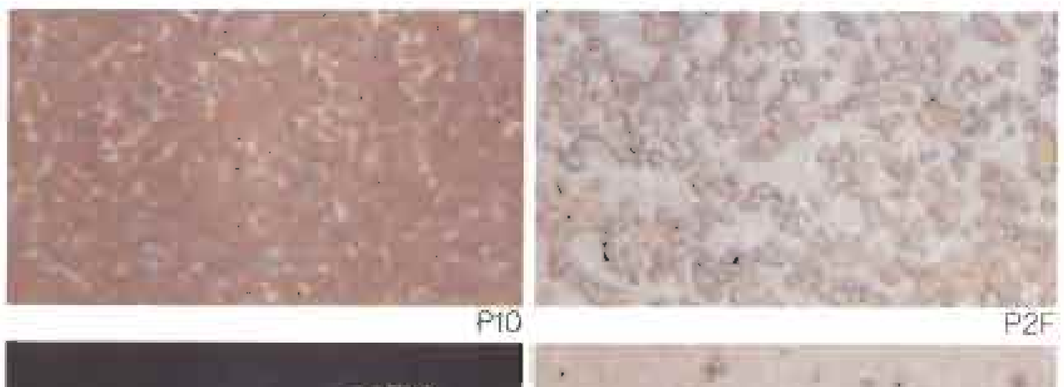
The ALMASE SAZ threading programme

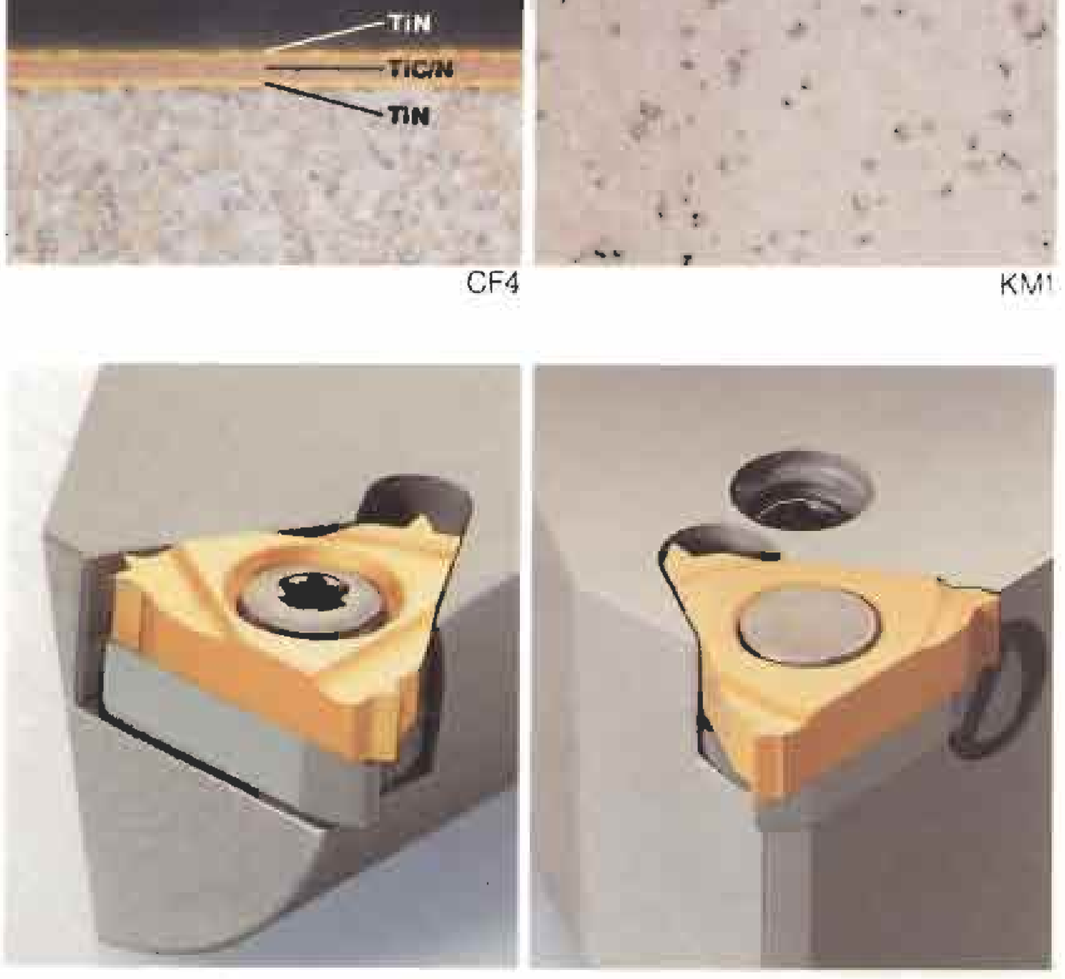
The revised ALMASE SAZ threading programme comprises toolholders for external machining, in straight and cranked version and a version for overhead machining, as well as boring bars for internal machining, with or without shim for tapping. These tools are available in right-hand and left-hand version. Using different shims, the inclination angle in the tool can be modified, enabling the production of threads with different helix angles. The cutting insert programme offers improved solid-profile indexable inserts for metric ISO threads and Whitworth threads, both in left-hand and right-hand version. The solid-profile indexable inserts are suitable for stud clamping, screw clamping systems and clamping shoe systems.

The clamping system

For external machining tasks, the approved stud clamping system is still being used. For boring bars, screw clamping is generally preferred. A new feature in the latter case is the use of shims with various inclination angles. The clamping system provides for safe and secure positioning of the indexable inserts in the insert seat, in the direction of the cutting forces.







The carbide grades

P10 is an uncoated carbide grade, very hard and wear resistant, suited for flank feed in long-chipping workpiece materials.

P2F new in the programme, is an uncoated grade, very hard, heat and wear-resistant, extremely resistant to thermal and mechanical shocks. It is particularly well suited for application in long-chipping workpiece materials, with radial and flank feed, primarily for short engagement times.

CF4 consists of a TiN-TiC/N-TiN coating and is characterized by its extremely high wear resistance with good hardness and heat resistance. It is recommendable for flank feed, long-chipping as well as short-chipping workpiece materials, including stainless and acid proof steels.

KM1 is an uncoated, very hard and wear-resistant carbide grade, used with radial and flank feed in short-chipping workpiece materials.

The inserts

The inserts are designed as solid-profile indexable inserts. The special shape of the chip-breaker guarantees a favourable chip formation with improved chip evacuation. In addition, the edge rounding stabilizes the cutting edge of the tool. The combination of these two factors contributes to a longer tool life.