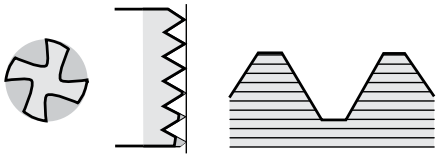
Female thread creation: Screw tapping

When creating a thread by tapping, a core hole and counterbore must be made in the material. The screw tap carries out the cutting motion. Thus, the thread pitch determines the feed rate. Material is cut out and the chips are removed via flutes.

Advantages:
- high machining speed
- cost-effective tools
- simple tool handling and well-known procedure
- broad field of application
- use on simple machines possible
- regrindable tools

Disadvantages:
- clamping problems with very deep threads
- screw tap breakage with difficult materials
- average surface quality
- risk of axial cutting (taper)
- of the thread
- tapping chuck required

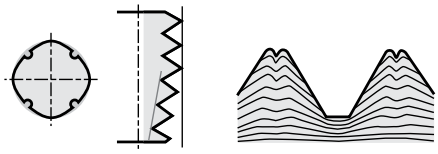


Female thread creation: Thread forming (thread tapping)

In contrast to tapping, where sections are cut out of the material, the process of thread forming does not involve cutting. The material is made to flow through the polygon shape of the thread former. The fibre pattern is not interrupted.

Advantages:
- Very high working speed and process reliability
- Very high surface quality
- One tool for through hole and blind hole
- No clamping problems
- Higher thread strength
- Tools are easier to use
- Long service life, less breakage
- Deep threads

Disadvantages:
- Higher torque
- Special pre-drilling diameter with tight tolerance
- Incomplete moulding of cores (claw)
- Minimum expansion of tool must be ensured
- Regrinding not possible
- Lubrication essential
- Where used in the food or medicine industries, there is a risk of germ build-up in the area of the moulding recess.



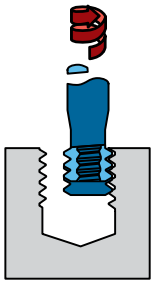
Female thread creation: Milling cutter

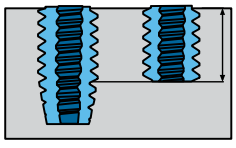
The development of computer-controlled machines has made the thread milling procedure another option for creating female threads. The thread is produced by the helical diagonal immersion of a rotating tool. In the process, the axial movement of the tool in one revolution produces the pitch. For this procedure, a CNC machine with at least three axes is required (XYZ).

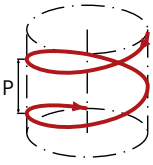
Advantages, tool cost minimisation:
- right-hand and left-hand thread can be manufactured with a tool
- thread milling cutters cover different threads with the same pitch
- for partial thread profiles, a wide range of threads can be produced with a cutting insert

Advantages, process reliability:
- Extremely high process reliability with very expensive components
- Reliable process solution for problem materials with poor chip breaking and difficult chip formation
- First choice with thin-walled workpieces or unstable clamping operations
- High thread quality
- Thread can be made right to the base of a blind hole
- Radius compensation programming enables thread tolerance to be adjusted easily

Disadvantages:
- machine requirements (XYZ axes)
- machining times generally longer in series production
- limited experience of the user in thread milling







Thread production process at a glance

	Screw tapping	Thread forming	Milling cutter
Process reliability	○	+	++
Surface quality	○	++	+
Machining speed	+	++	○
Service life	○	++	+
Flexibility/universal use	○	+	++
Thread depth	○	++	++

○ = limited suitability | + = well suited | ++ = very well suited

Tolerances for threads

standards ensure that male and female threads of the desired form fit together. depending on the application, the appropriate tolerance must be taken into account for the screw tap or thread former. in thread milling, the tolerance can be produced as desired using radius correction. the graphic shows the different tolerance classes and their use.

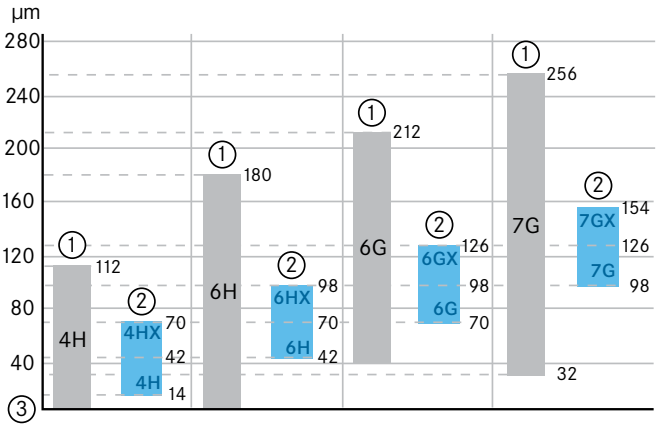
DIN EN 22857		Tolerance range of nut thread to be cut					DIN 802 part 1	Technical application
Application class of the screw tap							Tolerance class of the screw tap	
Name	Identification							
Class 1	ISO 1	4H	5H				4H	Screw connection with little play
Class 2	ISO 2			6H			6H	Standard screw connection
Class 3	ISO 3				6G		6G	Screw connection with a lot of play
–	–					7		As a preventive measure against warping in heat treatment

The graphic shows the position of the tolerance field of the nut thread in the different tolerance classes, such as 6H (highlighted in grey). The blue tolerance fields show the position of the tolerance field for the corresponding screw taps or thread formers.

It can be advantageous to produce screw taps and thread formers in a different tolerance class. This tolerance is indicated by an X after the tolerance class (e.g. 6HX instead of 6H). The X represents a manufacturer-specific tolerance and can differ between manufacturers.

Tough materials have recoiling properties. To counteract this effect, the X range is used in the ATORN thread cutting programme for these tough materials. Screw taps for titanium and nickel alloys, for example, are produced in the X range.

Where abrasive materials (those with friction or a grinding effect) are concerned, it also makes sense to produce tools in the X range. This results in a longer service life, because the screw taps are still within tolerance even having been subject to wear. The red ring screw tap for cast and short-chipping non-ferrous metals is produced in this tolerance range.



① Nut thread tolerance field ② Screw tap tolerance class ③ Tolerances

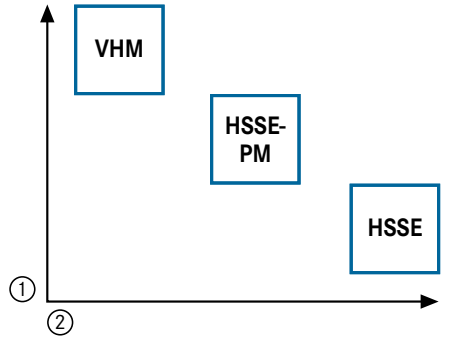
Cutting materials and cutting process during thread cutting

The following list of cutting materials is used for female thread machining in the screw tapping, thread moulding and thread milling processes. The graphic shows the toughness/breaking strength parameters in comparison to wear resistance/hardness.

SC – solid carbide
- Very high level of hardness
- Cutting material for applications up to 65 HRC
- Very high cutting speed, high precision

HSSE-PM – high speed steel, powder metal
- Cutting material for applications up to 1300 N/mm²
- Medium to high cutting speed
- High elasticity, high cutting speed

HSSE – high-speed steel
- Cutting material for applications up to 1300 N/mm²
- Low to medium cutting speeds
- 5% cobalt content
- Very high elasticity

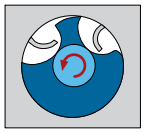


① Hardness/wear resistance/cutting speed
② Toughness/breakage resistance

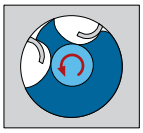
Screw tapping

Screw tapping produces extremely high torsional forces. Particularly when producing blind holes in long-chipping materials, the chips must be broken at the changeover point. The following procedure for blind hole tapping illustrates the relationship.

The thread is in the cutting process and guides the chips to the top.



after reaching the thread depth the switching process follows, in which the forces return to almost zero.

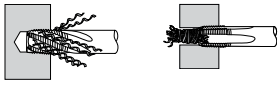
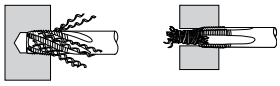
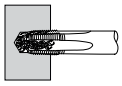


The chip must now be broken off through the back of the screw tap. The forces reach maximum level.

The chip is now broken off and the torque is drastically reduced.

For this reason, primarily HSSE and HSSE-PM cutting materials are used for screw taps. These cutting materials can work with all material groups except hardened materials. Solid carbide is only used as a cutting material in a few tapping applications.

If the material hardness is too high, such as in hardened material above 55 HRC, solid carbide must be used. However, solid carbide is also used as a cutting material with short-chipping materials, since torsion forces are low in these applications. The following graphic shows the various machining tasks and the appropriate cutting material for the application.

	Steel	Stainless steel	Cast metal	Non-ferrous metals	Special alloy	Hardened steels	
HSSE	ISO P	ISO M	ISO K	ISO N			
HSSE-PM	ISO P	ISO M	ISO K	ISO N	ISO S		
VHM			ISO K	ISO N		ISO H	

Coatings and surface treatments for tapping

Coatings form a protective layer between the workpiece and the cutting tool. Through the use of coatings and surface treatments, the following properties are achieved.

- Higher wear resistance
- Increased hardness
- Higher cutting speed and feed rate
- Corrosion protection
- Reduced friction
- Higher temperature resistance

We differentiate between the following coatings and surface treatments:

titanium nitride
universal layer for universal machining.
- Vickers hardness: 2200–2300 HV
- Friction coefficient: 0.5
- Temperature resistance: 500–600°C
- Colour: Gold

TiN

Titanium aluminium nitride
Universal layer for high-performance machining with high cutting speed.
- Vickers hardness: 3200 HV
- Friction coefficient of steel: 0.55
- Temperature resistance: 700-800°C
- Colour: Dark blue grey

TiAlN

Titanium carbon nitride
Its high level of hardness and excellent wear resistance make the TiCN layer suitable for machining difficult materials.
- Vickers hardness: 3500 HV
- Friction coefficient of steel: 0.2
- Temperature resistance: 400°C
- Colour: Blue grey (anthracite)

TiCN

ULTRA HL
This modern layer has been specially developed for thread machining and is currently the highest-performing layer due to being extremely smooth and very heat resistant while at the same time exhibiting low thermal conductivity. Particularly in processing stainless steel.
- Vickers hardness: 3000 HV
- Friction coefficient of steel: 0.15–0.20
- Temperature resistance: 800°C
- Colour: Dark grey

ULTRA HL

CARBO

A new type of special coating for high-performance machining of non-ferrous metals (aluminium alloys, wrought alloys), which are characterised by good emergency running properties and low edge build-up formation.

- Vickers hardness: 6000 HV
- Friction coefficient: 0.1
- Temperature resistance: 700°C
- Colour: Black

Vaporisation

This is a chemical surface treatment rather than a classic coating.

This steam treatment ensures that the lubricating film on the screw tap surface does not tear off during tapping.

Thread types and thread depths when tapping

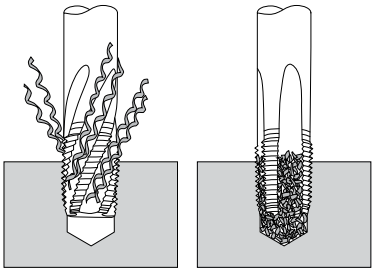
In thread machining, we distinguish between through holes and blind holes. The blind hole places the most demands on a screw tap, as the chips in long-chipping materials have to be transported upwards out of the hole and must be broken at the changeover point. As a result, spiralised screw taps must be used with long-chipping materials.

A spiralised design is not necessary with short-chipping materials, as the short chips fall into the blind hole and are rinsed out by the coolant.

As a rule, a thread depth of 3xD can be achieved in blind hole machining, depending on the material. maximum process reliability is achieved but with thread depths up to 2.5xD.

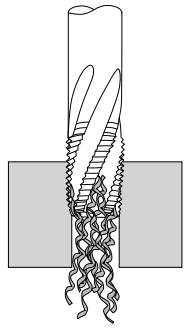
Through holes can be made with thread depths of up to 4xD. Here too, for process reliability can be expected for 3xD.

The through hole is a relatively non-critical process, as the chips are removed in the direction of feed. The chips are removed either through a spiral point or a left-hand spiral. Screw taps designed for both blind and through holes are another consideration. However, these only work with short-chipping materials or very low thread depths.

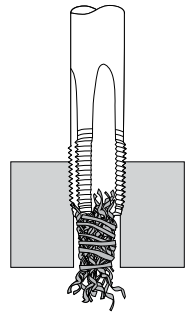


Blind hole machining with spiralised screw tap in long-chipping materials

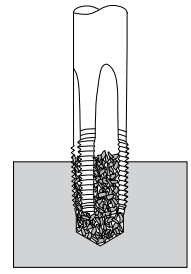
Blind hole machining with straight-grooved screw tap in short-chipping materials



Through-hole machining with left-hand spiralised screw tap in long-chipping materials



Through-hole machining with spiral point in long-chipping materials



Blind hole and through-hole machining with straight-grooved screw tap

Max. thread depth 2.5xD of blind hole
(e.g. M6 = max. thread depth 15 mm)

Max. thread depth 3xD of blind hole
(e.g. M6 = max. thread depth 18 mm)

Blind and through-hole machining with straight-grooved screw tap
(e.g. M6 = max. thread depth 15 mm)

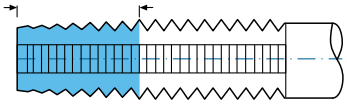
Cutting point shapes and their function

on a screw tap, the point plays an important role in the thread cutting process and is decisive when it comes to service life and thread quality.

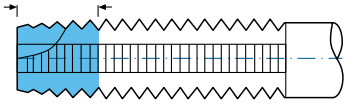
We distinguish between the following five point shapes. Apart from point shape B with a spiral point, which is only a straight-grooved shape, all other point shapes can be combined with the different chip flutes.

In principle: Longer points mean a longer service life. This a particular advantage at high quantities. However, the required torque also increases, producing higher forces. Short point shapes enable the thread to be cut nearly to the base of the hole.

Common point shapes are B, C and E.

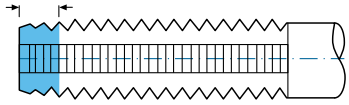


Long, 6–8 turns
for short through holes

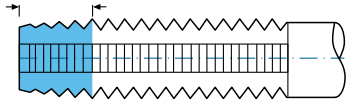


Medium, 3.5–5.5 turns
with spiral point, for all through holes and large thread depths in medium- and long-chipping materials

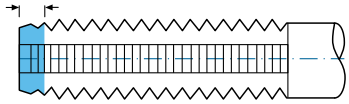
Source: Hahn+Kolb Werkzeuge GmbH
Technical data subject to change.
Availability subject to country specific rules and regulations.



Short, 2–3 turns
for blind holes and generally for aluminium, grey cast iron and brass



Medium, 3.5–5 turns
for short through holes



Extremely short, 1.5–2 turns
for blind holes with a very short thread run-out; avoid if possible

Screw tapping designs

We distinguish between two fundamental designs for screw tapping. DIN 371 with reinforced shank well as DIN 376 and DIN 374 with continuous shank.

DIN 371 reinforced shank

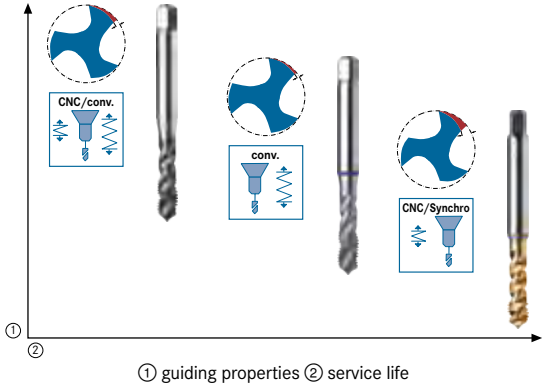
DIN 376 and DIN 374 protruding shank

Usage conditions and clearance angle

The size of the clearance angle has an effect on the service life and guiding properties of the screw tap.

A large clearance angle minimises friction and increases the service life; a smaller clearance angle improves the guidance of the screw tap.

In principle, spiralised screw taps for blind holes have a smaller clearance angle than straight-grooved screw taps. If the clearance angle were too large, the chips would jam during the reverse motion, leading to breakage of the screw tap.



① guiding properties ② service life

CNC/conventional

These screw tap types are designed for both conventional and CNC machines, and they represent a compromise between the ideal guidance and an increase in the service life through increasing the clearance angle.

This mixed type is the most common and the best solution for the majority of machining tasks.

By moderate machining conditions, we mean e.g. cutting of threads on a CNC machine in a length compensation chuck or a synchronous chuck. With this machine tap type, for example, a thread can also be cut on a conventional drill with a length compensation chuck.

Conventional use

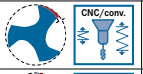
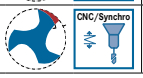
These threaded drill types are suitable for conventional machining in the small and medium quantity range in unstable clamping conditions. Its very long guide part and the low clearance angle make these screw taps ideal in unstable machining conditions on old machines with a standard length compensation chuck or cutting by hand.

CNC/synchro

In comparison with the conventional CNC types, these screw taps are characterised by a minimal guide part and a very large clearance angle. Their very free geometry ensures a long service life in the medium to high quantity range. However, correct tool clamping must be ensured

in the synchronous chuck or as a rigidly clamped tool. In addition, the thread must be created on a synchronous CNC machine with low play. These screw taps are all equipped with an H6 shank in order that they can be clamped rigidly in a surface chuck or shrink-fit chuck.

Clamping device recommendation for screw taps

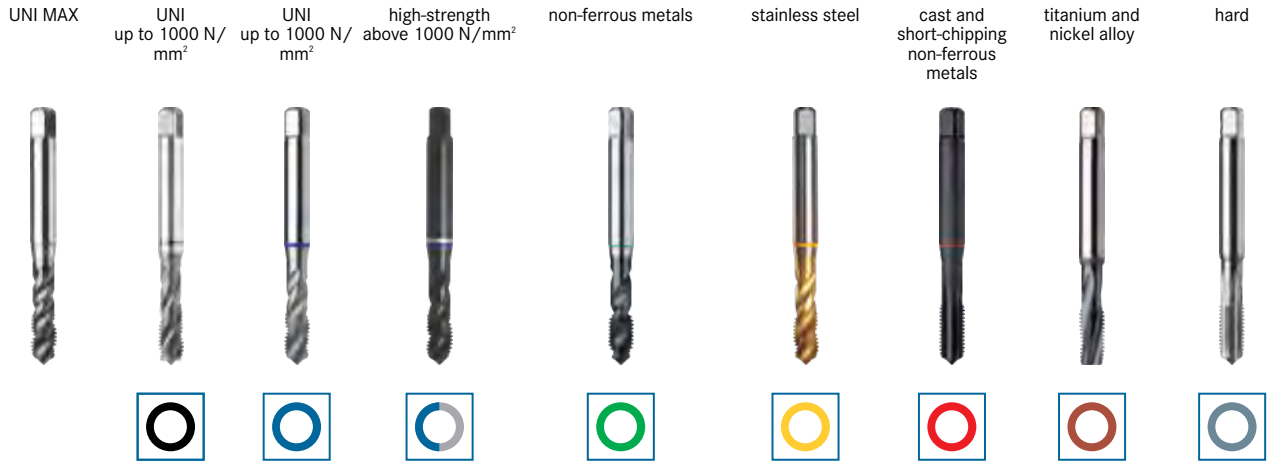
	Length compensation chuck	Synchronous tapping chuck	Collet chucks	Shrink-fit chucks	Hydro-expansion chucks	Surface chuck
						
Length compensation range	9-15 mm	0.5-1 mm	0	0	0	0
Suitable for usage conditions	Unstable	Unstable-stable (synchronous)	Stable (synchronous)	Stable (synchronous)	Stable (synchronous)	Stable (synchronous)
Suitable for conventional machines	◉	○	○	○	○	○
Suitable for CNC machines	○	●	◉	◉	◉	◉
Suitable for conventional screw taps (low relief grinding) 	◉	○	○	○	○	○
Suitable for standard screw taps (medium relief grinding) 	○	◉	◉	◉	◉	◉
Suitable for synchronous screw taps (high relief grinding) 		●	◉	◉	◉	◉

● = very well suited ◉ = suitable ○ = limited suitability

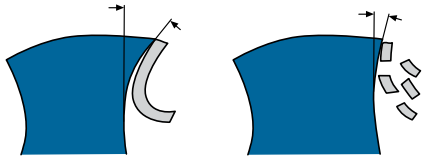
Source: Hahn+Kolb Werkzeuge GmbH
Technical data subject to change.
Availability subject to country specific rules and regulations.

Screw tap colour ring system

With the screw tap colour ring system, users can find the right screw tap for their task quickly and reliably. Each colour ring represents an ideal clamping geometry for the material to be processed. The colour system is based on the ISO code for indexable inserts and therefore can be understood worldwide. Extremely universal tools do not have a ring. The various geometries and their purposes are illustrated in the graphic below.



each material has its specific characteristics and needs individual chip geometries. this means that the chip angle, clearance angle and guide length must be set to achieve an optimal result. stainless steels and steels need positive cutting to reliably penetrate the material and safely remove the chips. for processing very hard materials, the cutter must be as stable as possible.



Source: Hahn+Kolb Werkzeuge GmbH
Technical data subject to change.
Availability subject to country specific rules and regulations.

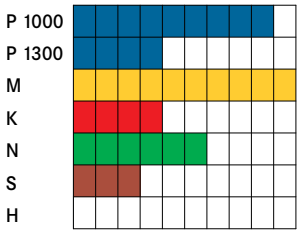
Screw tap UNI MAX 50HL Speed

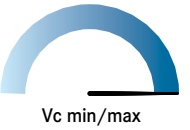
For universal high-performance use up to 1200 N/mm² in series production



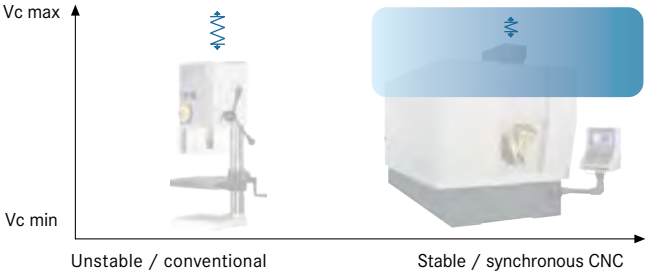


Performance:





Conditions of use:



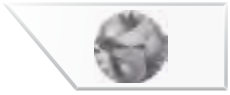
UNI MAX 50HL Speed

	Ø	Cutting material	Surface	Tol.	Lead angle shape	Coolant supply	Twist angle		page
13201020-100	M2-M30	HSSE-PM	ULTRA HL	ISO 2X (6HX)	B	External	0°		184
13201730-800	M3-M20	HSSE-PM	ULTRA HL	ISO 3X (6GX)	B	External	0°		184
13202020-100	M2-M30	HSSE-PM	ULTRA HL	ISO 2X (6HX)	C	External	50° (right)		184
13202730-800	M3-M20	HSSE-PM	ULTRA HL	ISO 3X (6GX)	C	External	50° (right)		184
13202820-900	M3-M20	HSSE-PM	ULTRA HL	ISO 3X (6GX)	C	External	50° (right)		184
13201460-500	M6-M20	HSSE-PM	ULTRA HL	ISO 2X (6HX)	B	Internal	0°		-
13202460-500	M6-M20	HSSE-PM	ULTRA HL	ISO 2X (6HX)	C	Internal	50° (right)		-
13202520-600	M6-M20	HSSE-PM	ULTRA HL	ISO 2X (6HX)	C	Internal	50° (right)		-
13211086-203	MF8-MF20	HSSE-PM	ULTRA HL	ISO 2X (6HX)	B	External	0°		208-209
13204086-203	MF8-MF20	HSSE-PM	ULTRA HL	ISO 2X (6HX)	C	External	50° (right)		208-209
13213010-080	G 1/8-G 1 inch	HSSE-PM	ULTRA HL		B	External	0°		219

Screw tap UNI MAX 45HL Control
for universal use up to 1200 N/mm²

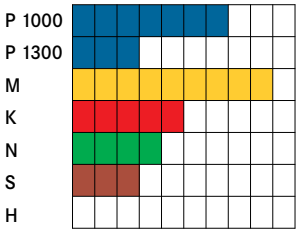
application:
machine tap for universal application up to 1000 N/mm² both on modern CNC machines and on conventional machines.

advantages:
- Universal application in steel, stainless steel, cast iron and non-ferrous metals ensures maximum flexibility
- Problem-solver in stainless steel machining!
- Innovative cutting geometry ensures reliable thread cutting even in stainless steel
- Ultra HL coating for very long service life in stainless steel and steel
- Broad product range in MF and G threads

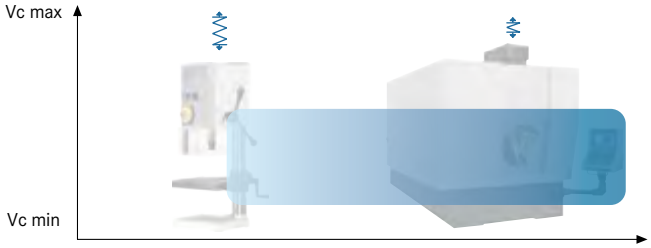


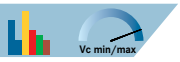


Performance:



Conditions of use:



UNI MAX 45HL Control 

	Ø	Cutting material	Surface	Tol.	Lead angle shape	Coolant supply	Twist angle		page
13103	MF6-MF24	HSSE	ULTRA HL	ISO 2 (6H)	B	External	0°		209
13315	MF6-MF24	HSSE	ULTRA HL	ISO 2 (6H)	C	External	45° (right)		209
13208	G 1/16-G 7/8 inch	HSSE	ULTRA HL	ISO 2 (6H)	B	External	0°		220
13377	G 1/16-G 1 inch	HSSE	ULTRA HL	ISO 2 (6H)	C	External	45° (right)		220

Screw tap UNI MAX 40 + 45 Control
For universal use up to 1000 N/mm²

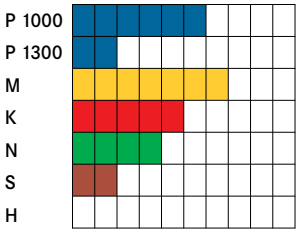
Application:
Machine tap for universal high-performance use up to 1000 N/mm² both on modern CNC machines and on conventional machines.

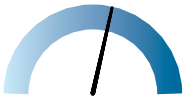
Advantages:
- Universal application in steel, stainless steel, cast iron and non-ferrous metals ensures maximum flexibility and extremely long service life in series production
- Problem-solver for all tough stainless steels
- Innovative cutting geometry ensures reliable thread cutting even in stainless steel
- Ideal chip breaking in difficult machining conditions



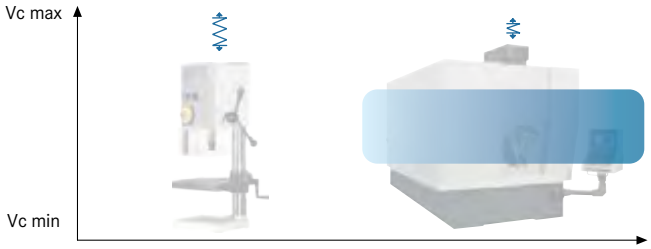


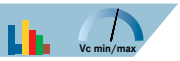
Performance:

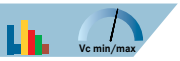




Conditions of use:



UNI MAX 40 Control 

UNI MAX 45 Control 

	Ø	Cutting material	Surface	Tol.	Lead angle shape	Coolant supply	Twist angle		page
13217230-560	M3-M36	HSSE V3	Vaporised	ISO 2 (6H)	B	External	0°		187
13218230-760	M3-M36	HSSE V3	Vaporised	ISO 2 (6H)	C	External	40° (right)		187

Screw tap UNI 40 Control black ring
For universal use up to 1000 N/mm²

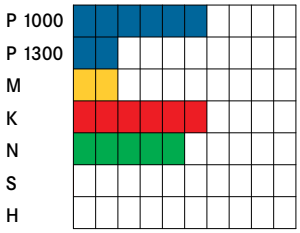
application:
machine tap for universal application up to 1000 N/mm² both on modern CNC machines and on conventional machines.

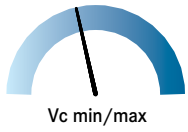
advantages:
- Universal application in steel, stainless steel, cast iron and non-ferrous metals ensures maximum flexibility
- Innovative cutting geometry provides reliable thread cutting
- Wide range of cutting materials and coatings
- Good value for money



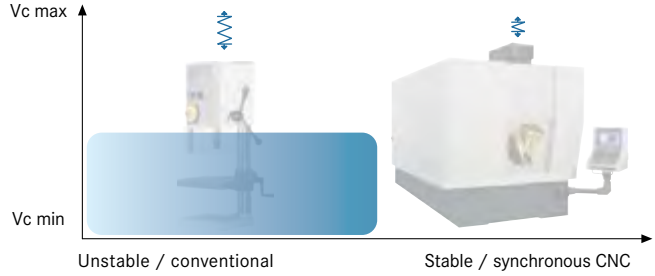


Performance:

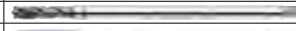
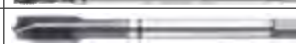
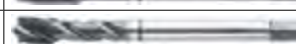
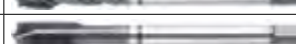
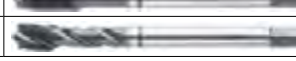




Conditions of use:



UNI 40 Control

	Ø	Cutting material	Surface	Tol.	Lead angle shape	Coolant supply	Twist angle		page
13121010-100	M1-M30	HSSE	Vaporised	ISO 2 (6H)	B	External	0°		188-189
13125010-100	M1-M30	HSSE	Vaporised	ISO 2 (6H)	C	External	40° (right)		188-189
13121430-500	M3-M20	HSSE	TiN	ISO 2 (6H)	B	External	0°		188-189
13125430-500	M3-M20	HSSE	TiN	ISO 2 (6H)	C	External	40° (right)		188-189
13049430-500	M3-M20	HSSE	ULTRA HL	ISO 2 (6H)	B	External	0°		190
13049030-100	M3-M20	HSSE	ULTRA HL	ISO 2 (6H)	C	External	40°		190
13050730-800	M3-M20	HSSE-PM	ULTRA HL	ISO 2 (6H)	B	External	0°		190
13050330-400	M3-M20	HSSE-PM	ULTRA HL	ISO 2 (6H)	C	External	40°		190
13207310-400	G 1/8-G 1 1/4 inch	HSSE	Vaporised	ISO 2 (6H)	B	External	0°		220-221
13378310-400	G 1/8-G 1 1/4 inch	HSSE	Vaporised	ISO 2 (6H)	C	External	40° (right)		220-221
13121630-760	M3-M16	HSSE	Vaporised	ISO 2 (6H)	B	External	0°		189
13125630-760	M3-M16	HSSE	Vaporised	ISO 2 (6H)	C	External	40° (right)		189
13121900-916	UNC 7/16-UNC 1 inch	HSSE	Vaporised	ISO 2 (6H)	B	External	0°		222-223
13125900-916	UNC 7/16-UNC 1 inch	HSSE	Vaporised	ISO 2 (6H)	C	External	40° (right)		222-223
13121930-946	UNC 7/16-UNC 1 inch	HSSE	Vaporised	ISO 2 (6H)	B	External	0°		223
13125930-946	UNC 7/16-UNC 1 inch	HSSE	Vaporised	ISO 2 (6H)	C	External	40° (right)		223

Screw tap P Max 1000 Control
For universal use up to 1000 N/mm²

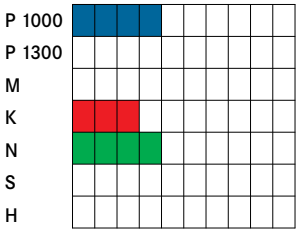
Application:
Machine tap for universal application up to 1000 N/mm² optimised for use on conventional machines.

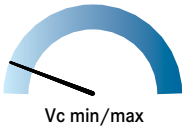
Advantages:
- Universal application in steel, cast iron and non-ferrous metals ensures maximum flexibility
- Optimised geometry for conventional application – cutting of thread minimised
- Wide product range in M, MF



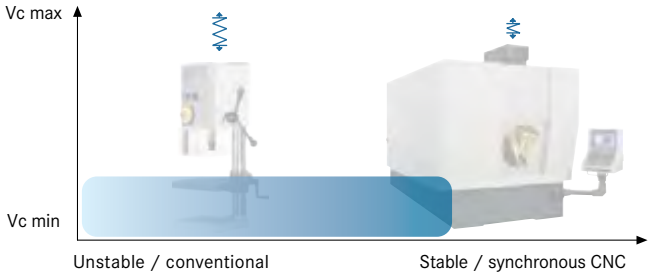


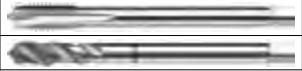
Performance:





Conditions of use:



	Ø	Cutting material	Surface	Tol.	Lead angle shape	Coolant supply	Twist angle		page
13063	M2-M24	HSSE	Uncoated	ISO 2 (6H)	B	External	0°		191
13100030-100	M3-M20	HSSE	Uncoated	ISO 2 (6H)	D	External	15° (left)		-
13106014-100	M1,4-M24	HSSE	Uncoated	ISO 2 (6H)	B	External	0°		193-194
13101	M1,6-M36	HSSE	Uncoated	ISO 2 (6H)	B	External	0°		194-195
13326020-100	M2-M20	HSSE	Uncoated	ISO 2 (6H)	C	External	40° (right)		194-195
13320	MF3-MF36	HSSE	Uncoated	ISO 2 (6H)	C	External	0°		209-210
13144	MF3-MF40	HSSE	Uncoated	ISO 2 (6H)	B	External	0°		210-211
13335	MF8-MF20	HSSE	Uncoated	ISO 2 (6H)	C	External	40° (right)		210-211

Screw tap P Max 1000
For universal use up to 1000 N/mm²

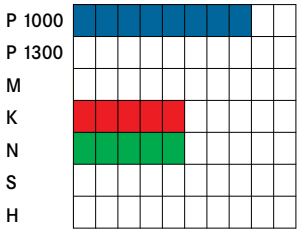
Application:
Machine tap for universal application up to 1000 N/mm² both on CNC machines and on conventional machines.

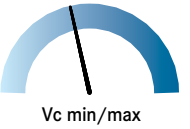
Advantages:
- Universal application in steel, cast iron and non-ferrous metals ensures maximum flexibility
- Very long service life, in particular in steel materials
- Large selection of coatings
- Wide product range in M, MF, G, NPT



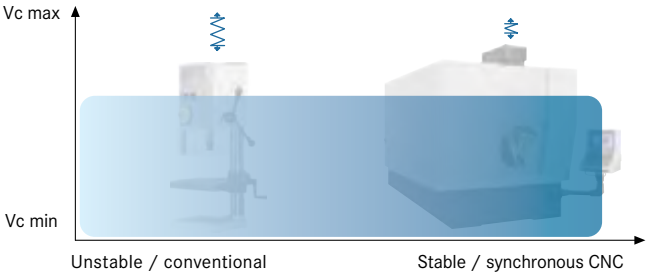


Performance:





Conditions of use:



	Ø	Cutting material	Surface	Tol.	Lead angle shape	Coolant supply	Twist angle		page
13113010-100	M1-M10	HSSE	Vaporised	ISO 2 (6H)	B	External	0°		195-196
13115430-500	M3-M24	HSSE	TiN	ISO 2 (6H)	B	External	0°		196-197
13307030-100	M3-M20	HSSE	TiN	ISO 2 (6H)	C	External	40° (right)		196-197
13115030-100	M3-M20	HSSE	TiCN	ISO 2 (6H)	B	External	0°		-
13117	M2-M36	HSSE	Vaporised	ISO 2 (6H)	B	External	0°		197-198
13283	M3-M36	HSSE	Vaporised	ISO 2 (6H)	C	External	40° (right)		197-198
13281020-100	M2-M24	HSSE	Uncoated	ISO 2 (6H)	C	External	15° (right)		-
13311	M3-M10	HSSE	Vaporised	ISO 2 (6H)	E	External	40° (right)		-
13116	M3-M10	HSSE	Vaporised	ISO 3 (6G)	B	External	0°		-
13099030-100	M3-M10	HSSE	Vaporised	ISO 3 (6G)	C	External	40° (right)		-
13108	M3 L-M10 L	HSSE	TiN	ISO 2 (6H)	B	External	0°		199
13113330-400	M3 L-M20 L	HSSE	TiN	ISO 2 (6H)	C	External	40° (right)		199
13059	M3-M16	HSSE	Uncoated	ISO 2X (6HX)		External	0°		197
13161	MF5-MF50	HSSE	Vaporised	ISO 2 (6H)	B	External	0°		211-212
13332	MF4-MF30	HSSE	Vaporised	ISO 2 (6H)	C	External	40° (right)		211-212
13207	G 1/8-G 1 1/4 inch	HSSE	Vaporised	ISO 2 (6H)	B	External	0°		221
13378	G 1/16-G 1 inch	HSSE	Vaporised	ISO 2 (6H)	C	External	40° (right)		221
13359	NPT 1/8-NPT 1 inch	HSSE	Uncoated	ISO 2 (6H)	C	External	15° (right)		225
13347	UNC Nr.4-UNC 3/8 inch	HSSE	Vaporised	2B	B	External	0°		223-224
13348025-110	UNC Nr.2-UNC 1 inch	HSSE	Vaporised	2B	C	External	40° (right)		223-224
13357040-110	UNF Nr.4-UNF 5/8 inch	HSSE	Vaporised	2B	B	External	0°		224
13358070-110	UNF 7/16-UNF 1 inch	HSSE	Vaporised	2B	C	External	40° (right)		224

Screw tap P Max 1300
For universal use up to 1300 N/mm²

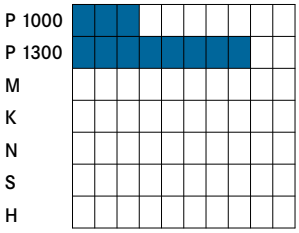
Application:
Machine tap for universal application up to 1300 N/mm² both on CNC machines and on conventional machines.

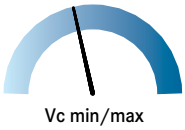
Advantages:
- Very long service life in high-strength steel
- Large selection of coatings
- Wide product range in M, MF



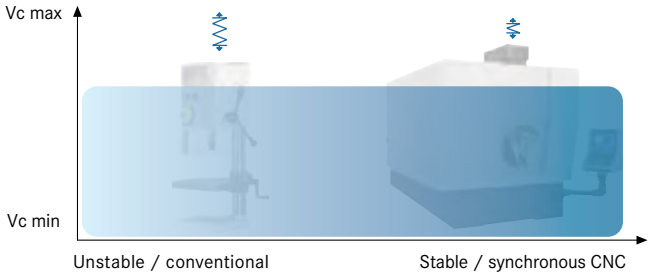


Performance:





Conditions of use:



	Ø	Cutting material	Surface	Tol.	Lead angle shape	Coolant supply	Twist angle		page
13130020-100	M2-M24	HSSE	Vaporised	ISO 2 (6H)	B	External	0°		200-201
13306020-100	M2-M12	HSSE	Vaporised	ISO 2 (6H)	C	External	40° (right)		200-201
13128030-100	M3-M20	HSSE	TiCN	ISO 2 (6H)	B	External	0°		201
13305030-100	M3-M20	HSSE	TiCN	ISO 2 (6H)	C	External	40° (right)		201
13308	M3-M30	HSSE	Vaporised	ISO 2 (6H)	C	External	40° (right)		202
13077030-100	M3-M10	HSSE	Vaporised	ISO 3 (6G)	B	External	0°		202-203
13309	M2-M10	HSSE	Vaporised	ISO 3 (6G)	C	External	40° (right)		202-203

Screw tap M max Control
For use on stainless steel

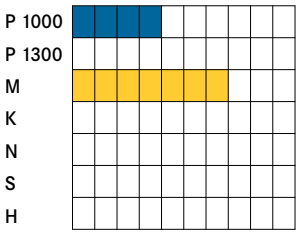
Application:
Machine tap for application in stainless steel both on CNC machines and on conventional machines.

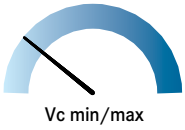
Advantages:
- Very long service life in stainless steel
- Large selection of coatings
- Wide product range in M, MF



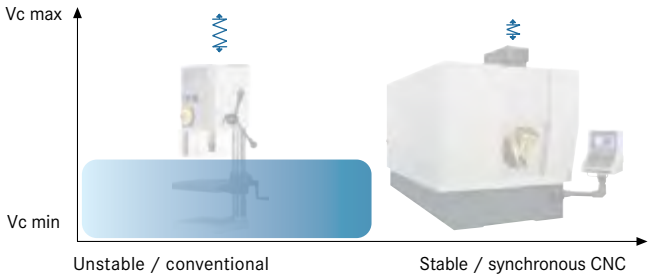


Performance:





Conditions of use:



	Ø	Cutting material	Surface	Tol.	Lead angle shape	Coolant supply	Twist angle		page
13136030-100	M3-M30	HSSE	Vaporised	ISO 2 (6H)	B	External	0°		203-204
13288020-100	M2-M30	HSSE	Vaporised	ISO 2 (6H)	C	External	40° (right)		203-204
13107030-100	M3-M30	HSSE	TiN	ISO 2 (6H)	B	External	0°		204
13088	M3-M10	HSSE	Uncoated	ISO 2 (6H)	B	External	0°		-
13143	MF4-MF50	HSSE	Vaporised	ISO 2 (6H)	B	External	0°		212-213
13324	MF4-MF30	HSSE	Vaporised	ISO 2 (6H)	C	External	15° (right)		212-213
13360	NPT 1/8-NPT 3/4 inch	HSSE	Vaporised	ISO 2 (6H)	C	External	15° (right)		222
13361	NPT 1/8-NPT 3/4 inch	HSSE	TiN	ISO 2 (6H)	C	External	15° (right)		222

Screw tap K max Control
For use in cast iron and short-chipping non-ferrous metals

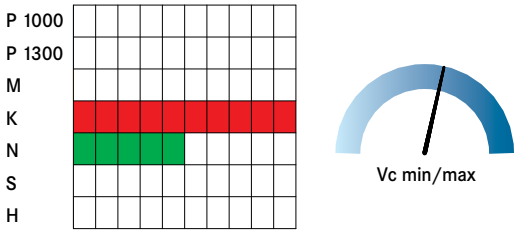
Application:
Machine tap for application in stainless steel both on CNC machines and on conventional machines.

Advantages:
- Very long service life in cast iron and short-chipping non-ferrous metals
- Large selection of coatings and cutting materials
- Optimised geometry for short-chipping materials

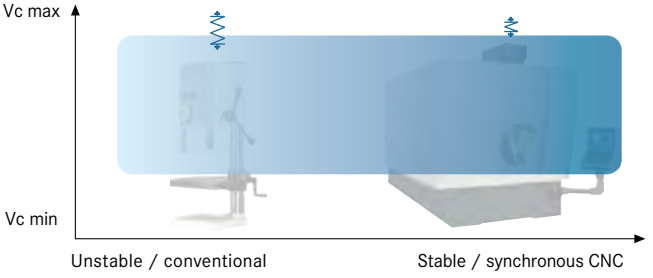




Performance:



Conditions of use:



	Ø	Cutting material	Surface	Tol.	Lead angle shape	Coolant supply	Twist angle		page
13290030-100	M3-M24	HSSE	TiAlN	ISO 2X (6HX)	C	External	0°		206
13291	M5-M10	HSSE	TiAlN	ISO 2X (6HX)	C	Internal	0°		206

Screw tap H max Control
For use in hard machining from 55-65 HRC

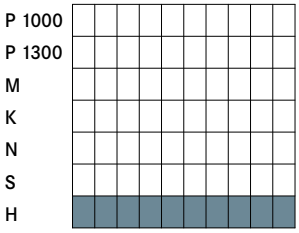
Application:
machine tap in hard machining both on CNC machines and on conventional machines.

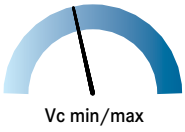
Advantages:
- Very long service life in hard machining
- High-quality cutting materials and coatings ensure long service life



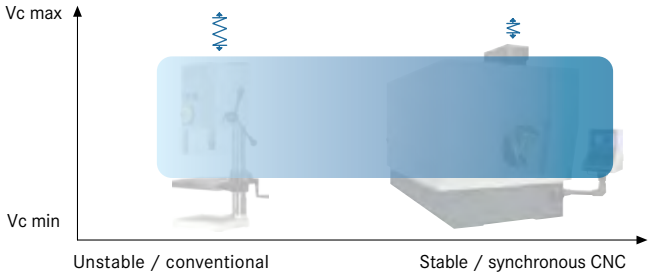


Performance:





Conditions of use:



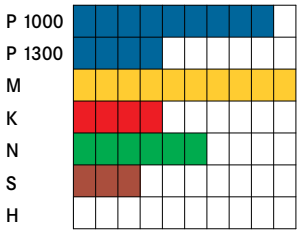
	Ø	Cutting material	Surface	Tol.	Lead angle shape	Coolant supply	Twist angle		page
13152086-126	MF8-MF12	HSSE-PM	TiCN	ISO 2 (6H)	D	External	0°		213
13153060-126	MF6-MF12	VHM	TiCN	ISO 2 (6H)	D	External	0°		213

Screw tap UNI MAX 50HL Speed
For universal high-performance use up to 1200 N/mm² in series production

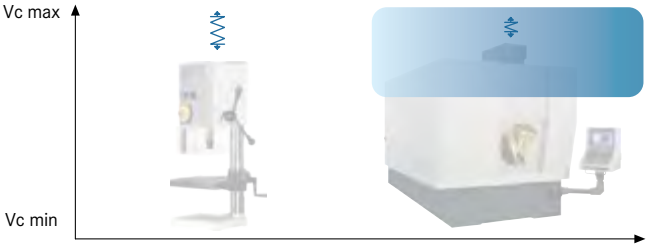




Performance:



Conditions of use:



UNI MAX 50HL Speed

ATORN® Machine tap HSSE-PM Ultra HL
For universal use in series production, up to 1200 N/mm²

M | ≤3xd | ≤2,5xd | HSSE-PM | ULTRA HL | ISO 2 x | ISO 3 x | B (3,5-5) | C (2-3) | CNC/conv.

Application:
No. 13201: For producing metric threads on CNC machines or conventional machines in **through holes** in the steel, stainless steel, non-ferrous metals, cast and special alloys material groups up to a strength of 1200 N/mm².
No. 13202: For producing metric threads on CNC machines or conventional machines in **blind holes** in the steel, stainless steel, non-ferrous metals and cast material groups up to a strength of 1200 N/mm²

Advantage:
- Universal use for maximum flexibility of application
- Innovative cutter geometry ensures high process reliability even in difficult machining conditions


No. 13201


No. 13202

UNI MAX 50HL Speed

p. 170 | p. 174 | p. 22 | p. 757 | p. 284 | p. 185

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13201020-100	22	16	12	12	12	14	30	17	24	12	20	30	16	18	7	6	6		
13201120-300	22	16	12	12	12	14	30	17	24	12	20	30	16	18	7	6	6		
13201730-800	22	16	12	12	12	14	30	17	24	12	20	30	16	18	7	6	6		
13201820-900	22	16	12	12	12	14	30	17	24	12	20	30	16	18	7	6	6		
13202020-100	22	16	12	12	12	14	30	17	24	12	20	30	16	18	7	6	6		
13202120-300	22	16	12	12	12	14	30	17	24	12	20	30	16	18	7	6	6		
13202730-800	22	16	12	12	12	14	30	17	24	12	20	30	16	18	7	6	6		
13202820-900	22	16	12	12	12	14	30	17	24	12	20	30	16	18	7	6	6		

							Cutting material	HSSE-PM		HSSE-PM		HSSE-PM		HSSE-PM	
							Surface	ULTRA HL		ULTRA HL		ULTRA HL		ULTRA HL	
							Tol.	ISO 2X (6HX)		ISO 2X (6HX)		ISO 3X (6GX)		ISO 3X (6GX)	
							Lead angle shape	B		C		B		C	
							Twist angle	0°		50° (right)		0°		50° (right)	
							Coolant supply	External		External		External		External	
	mm	mm	mm	mm	mm	DIN	13201... Ident. No.		13202... Ident. No.		13201... Ident. No.		13202... Ident. No.		
M2	0.4	1.6	45	2.8	2.1	371	020	●	020	●	-	-	-	-	
M2.5	0.45	2.05	50	2.8	2.1	371	025	●	025	●	-	-	-	-	
M3	0.5	2.5	56	3.5	2.7	371	030	●	030	●	730	●	730	●	
M4	0.7	3.3	63	4.5	3.4	371	040	●	040	●	740	●	740	●	
M5	0.8	4.2	70	6	4.9	371	050	●	050	●	750	●	750	●	
M6	1	5	80	6	4.9	371	060	●	060	●	760	●	760	●	
M8	1.25	6.8	90	8	6.2	371	080	●	080	●	780	●	780	●	
M10	1.5	8.5	100	10	8	371	100	●	100	●	800	●	800	●	
M12	1.75	10.2	110	9	7	376	120	●	120	●	820	●	820	●	
M14	2	12	110	11	9	376	140	●	140	●	-	-	-	-	
M16	2	14	110	12	9	376	160	●	160	●	860	●	860	●	
M20	2.5	17.5	140	16	12	376	200	●	200	●	900	●	900	●	
M24	3	21	160	18	14.5	376	240	●	240	●	-	-	-	-	
M27	3	24	160	20	16	376	270	●	270	●	-	-	-	-	
M30	3.5	26.5	180	22	18	376	300	●	300	●	-	-	-	-	

Prod. Gr. 1KA

Usage values, screw tap, HSSE PM ULTRA HL

13201020-100 13202020-100 13201120-300

13201460-500, 13201520-600, 13201730-800, 13201820-900, 13202120-300, 13202460-500, 13202520-600, 13202730-800, 13202820-900, 13204086-203, 13211086-203, 13213010-080, 13216010-080, 13217830-980

	Strength Class [N/mm²]	Description regarding DIN	Vc [m/min]
1. Steels			
1.1 Free machining steel	< 900	9 S 20	16-30
1.2 Structural steel	<500	ST 37-2	16-30
1.3 Structural steel	> 500	ST 60-2	14-25
1.4 Heat-treated steel	<1000	42 CrMo 4	10-18
1.5 Cast iron	<1000	GS-45	10-18
1.6 Case-hardened steel	<1200	16 MnCr 5	10-16
1.7 Ferritic/martensitic stainless steel	<1100	X 10 Cr 13	10-14
1.8 Heat-treated steel	>1000	43 CrMo 4	10-16
1.9 Nitriding steel	<1300	31 CrMoV 9	10-16
1.10 Tool steel	<1300	X 38 CrMoV 5 1	6-12
2. Stainless steels			
2.1 Austenitic stainless steel	<1100	G-X 2 CrNiMo 18 15	10-14
3. Non-ferrous metals			
3.1 Long-chipping aluminium	<500	Al99.9	20-30
3.2 Short-chipping aluminium	<500	G-AlSi12	12-16
3.3 Copper alloy bronze, long-chipping	<1200	CuSn4	15-25
3.4 Copper alloy bronze, short-chipping	<850	CuNi12Zn24	8-16
3.5 Copper alloy brass, long-chipping	<600	Cu Zn 20	15-25
3.6 Copper alloy brass, short-chipping	<600	Cu Zn 39 Pb 3	15-20
3.7 Thermoplastic	<100	PVC, Acrylglas	10-30
3.8 Duroplast	<150	Bakelit, Melamin	8-25
3.9 Fibre-reinforced plastics	<1500	CFK, GFK	5-12
3.10 Graphite	<60	C8000	10-20
3.11 Composite materials			
4. Cast metal			
4.1 Cast iron with lamellar graphite	<260 HB	GG10	15-25
4.2 Nodular cast iron	<310 HB	GGG 40	15-25
4.3 Ductile iron	<280 HB	GTW-55	15-25
5. Special alloys			
5.1 Titanium alloy	<1200	TiAl5Sn2,5	4-8
5.2 Nickel-based alloy	<1400	NiCr21Mo	2-8
5.3 Super alloys	<1400	X45CrSi 9 3	2-8

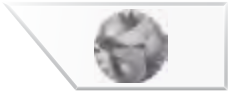
Screw tap UNI MAX 45HL Control
for universal use up to 1200 N/mm²

application:

machine tap for universal application up to 1000 N/mm² both on modern CNC machines and on conventional machines.

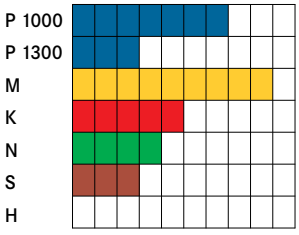
advantages:

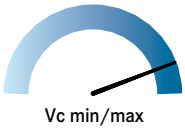
- Universal application in steel, stainless steel, cast iron and non-ferrous metals ensures maximum flexibility
- Problem-solver in stainless steel machining!
- Innovative cutting geometry ensures reliable thread cutting even in stainless steel
- Ultra HL coating for very long service life in stainless steel and steel
- Broad product range in MF and G threads



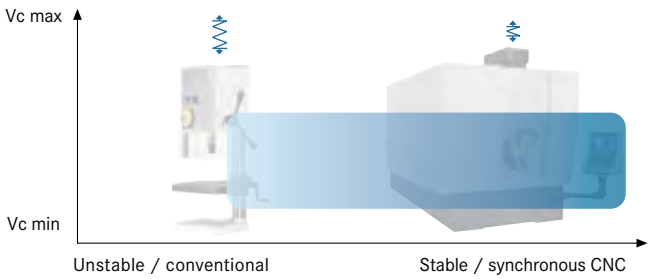


Performance:





Conditions of use:



Screw tap UNI MAX 40 + 45 Control
For universal use up to 1000 N/mm²

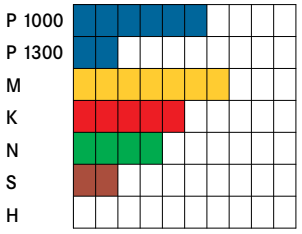
Application:
Machine tap for universal high-performance use up to 1000 N/mm² both on modern CNC machines and on conventional machines.

Advantages:
- Universal application in steel, stainless steel, cast iron and non-ferrous metals ensures maximum flexibility and extremely long service life in series production
- Problem-solver for all tough stainless steels
- Innovative cutting geometry ensures reliable thread cutting even in stainless steel
- Ideal chip breaking in difficult machining conditions

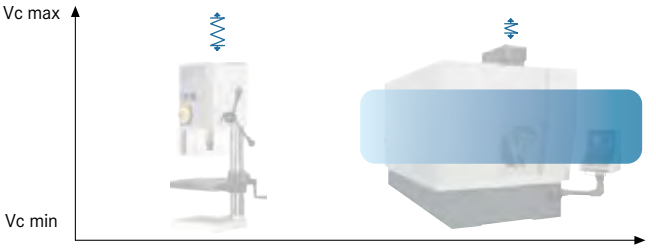




Performance:



Conditions of use:



UNI MAX 40 Control — Vc min/max

UNI MAX 45 Control — Vc min/max

ATORN® HSSE V3 machine tap
for universal use up to 1200 N/mm2

M | ≤3xd | ≤2,5xd | HSSE V3 | ISO 2 | B (3,5-5) | C (2-3) | CNC/conv.

Application:
No. 13217: For producing metric threads on CNC machines or conventional machines in **through holes** in the steel, stainless steel, non-ferrous metals, cast and special alloys material groups up to a strength of 1200 N/mm².
No. 13218: For producing metric threads on CNC machines or conventional machines in **blind holes** in the steel, stainless steel, non-ferrous metals and cast material groups up to a strength of 1200 N/mm²

Advantage:
- Universal use for maximum flexibility of application
- Innovative cutter geometry ensures high process reliability even in difficult machining conditions


No. 13217


No. 13218 020–13218 100

UNI MAX 40 Control — Vc min/max


No. 13218 520–13218 960

UNI MAX 45 Control — Vc min/max

p. 755 p. 170 p. 174 p. 22 p. 757

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13217020-100	18	12	6	8	8	8	18	6	16	10	14	15		15	3	3	3		
13218020-100	18	12	6	8	8	8	18	6	16	10	14	15		15	3	3	3		
13218530-960	18	12	6	8	8	8	18	6	16	10	14	15		15	3	3	3		

Cutting material							HSSE V3		HSSE V3		HSSE V3	
Surface							Vaporised		Vaporised		Vaporised	
Tol.							ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)	
Lead angle shape							B		C		C	
Twist angle							0°		40° (right)		45° (right)	
Coolant supply							External		External		External	
	mm	mm	mm	mm	mm	DIN	13217... Ident. No.		13218... Ident. No.		13218... Ident. No.	
M2	0.4	1.6	45	2.8	2.1	371	020	●	020	●	520	●
M2.5	0.45	2.05	50	2.8	2.1	371	025	●	025	●	525	●
M3	0.5	2.5	56	3.5	2.7	371	030	●	030	●	530	●
M3.5	0.6	2.9	56	4	3	371	035	●	035	●	535	●
M4	0.7	3.3	63	4.5	3.4	371	040	●	040	●	540	●
M5	0.8	4.2	70	6	4.9	371	050	●	050	●	550	●
M6	1	5	80	6	4.9	371	060	●	060	●	560	●
M8	1.25	6.8	90	8	6.2	371	080	●	080	●	580	●

Source: Hahn+Kolb Werkzeuge GmbH
Technical data subject to change.
Availability subject to country specific rules and regulations.

						Cutting material	HSSE V3		HSSE V3		HSSE V3	
						Surface	Vaporised		Vaporised		Vaporised	
						Tol.	ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)	
						Lead angle shape	B		C		C	
						Twist angle	0°		40° (right)		45° (right)	
						Coolant supply	External		External		External	
	mm	mm	mm	mm	mm	DIN	13217... Ident. No.		13218... Ident. No.		13218... Ident. No.	
M10	1.5	8.5	100	10	8	371	100	●	100	●	600	●
M12	1.75	10.2	110	9	7	376	-	-	-	-	620	●
M14	2	12	110	11	9	376	-	-	-	-	640	●
M16	2	14	110	12	9	376	-	-	-	-	660	●
M18	2.5	15.5	125	14	11	376	-	-	-	-	680	●
M20	2.5	12.5	140	16	12	376	-	-	-	-	700	●
M22	2.5	19.5	140	18	14.5	376	-	-	-	-	720	●
M24	3	21	160	18	14.5	376	-	-	-	-	840	●
M27	3	24	160	20	16	376	-	-	-	-	870	●
M30	3.5	26.5	180	22	18	376	-	-	-	-	900	●
M33	3.5	29.5	180	25	20	376	-	-	-	-	930	●
M36	4	32	200	28	22	376	-	-	-	-	960	●

Prod. Gr. 1KA

ATORN® HSSE V3 machine tap (DIN 376)

for universal use up to 1200 N/mm2

M | ≤3xd | ≤2,5xd | HSSE V3 | ISO 2 | B (3,5-5) | C (2-3) | CNC/conv.

Application:

No. 13217: For producing metric threads on CNC machines or conventional machines in **through holes** in the steel, stainless steel, non-ferrous metals, cast and special alloys material groups up to a strength of 1200 N/mm².

No. 13218: For producing metric threads on CNC machines or conventional machines in **blind holes** in the steel, stainless steel, non-ferrous metals and cast iron material groups up to a strength of 1200 N/mm²

Advantage:

- Universal use for maximum flexibility of application
- Innovative cutter geometry ensures high process reliability even in difficult machining conditions

No. 13217

No. 13218

UNI MAX 40 Control | Vc min/max

p. 755 | p. 170 | p. 174 | p. 22 | p. 757

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13217230-560	18	12	6	8	8	8	18	6	16	10	14	15		15	3	3	3		
13218230-760	18	12	6	8	8	8	18	6	16	10	14	15		15	3	3	3		

						Cutting material	HSSE V3		HSSE V3	
						Surface	Vaporised		Vaporised	
						Tol.	ISO 2 (6H)		ISO 2 (6H)	
						Lead angle shape	B		C	
						Twist angle	0°		40° (right)	
						Coolant supply	External		External	
	mm	mm	mm	mm	mm	DIN	13217... Ident. No.		13218... Ident. No.	
M3	0.5	2.5	56	2.2	-	376	230	●	230	●
M4	0.7	3.3	63	2.8	2.1	376	240	●	240	●
M5	0.8	4.2	70	3.5	2.7	376	250	●	250	●
M6	1	5	80	4.5	3.4	376	260	●	260	●
M8	1.25	6.8	90	6	4.9	376	280	●	280	●
M10	1.5	8.5	100	7	5.5	376	300	●	300	●
M12	1.75	10.2	110	9	7	376	320	●	320	●
M14	2	12	110	11	9	376	340	●	340	●
M16	2	14	110	12	9	376	360	●	360	●
M18	2.5	15.5	125	14	11	376	380	●	380	●
M20	2.5	17.5	140	16	12	376	400	●	400	●
M22	2.5	19.5	140	18	14.5	376	420	●	420	●
M24	3	21	160	18	14.5	376	440	●	440	●
M27	3	24	160	20	16	376	470	●	470	●
M30	3.5	26.5	180	22	18	376	500	●	500	●
M33	3.5	29.5	180	25	18	376	530	●	730	●
M36	4	32	200	28	22	376	560	●	760	●

Prod. Gr. 1KA

Screw tap UNI 40 Control black ring
For universal use up to 1000 N/mm²

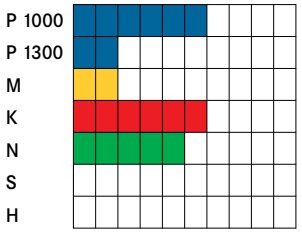
application:
machine tap for universal application up to 1000 N/mm² both on modern CNC machines and on conventional machines.

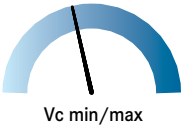
advantages:
- Universal application in steel, stainless steel, cast iron and non-ferrous metals ensures maximum flexibility
- Innovative cutting geometry provides reliable thread cutting
- Wide range of cutting materials and coatings
- Good value for money





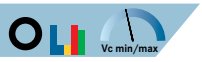
Performance:





Conditions of use:

UNI 40 Control



ATORN® HSSE machine tap
For universal use up to 1000 N/mm²

M | ≤3xd | ≤2,5xd | HSSE | TiN | ISO 2 | B (3,5-5) | C (2-3) | CNC/conv.

Application:
No. 13121: For producing metric threads on CNC machines or conventional machines in **through holes** in the steel, stainless steel, non-ferrous metals and cast iron material groups up to a strength of 1000 N/mm².
No. 13125: For producing metric threads on CNC machines or conventional machines in **blind holes** in the steel, stainless steel, non-ferrous metals and cast iron material groups up to a strength of 1000 N/mm²

Execution:
- Structural dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = over-long shank (from M12)

Advantage:
- Universal use for maximum flexibility in use
- Innovative cutter geometry ensures high process reliability even in difficult machining conditions


No. 13121 010–13121 300


No. 13121 430–13121 600


No. 13125 010–13125 300


No. 13125 430–13125 600

UNI 40 Control

p. 755 | p. 170 | p. 174 | p. 22 | p. 757 | p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13121010-100	18	12	8	8	8		18		19		18	15		15					
13121120-300	18	12	8	8	8		18		19		18	15		15					
13121430-500	18	12	8	8	8		18		19		18	15		15					
13121520-600	18	12	8	8	8		18		19		18	15		15					
13125010-100	18	12	8	8	8		18		19		18	15		15					
13125120-300	18	12	8	8	8		18		19		18	15		15					
13125430-500	18	12	8	8	8		18		19		18	15		15					
13125520-600	18	12	8	8	8		18		19		18	15		15					

Cutting material								HSSE		HSSE		HSSE		HSSE	
Surface								Vaporised		Vaporised		TiN		TiN	
Tol.								ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)	
Lead angle shape								B		C		B		C	
Twist angle								0°		40° (right)		0°		40° (right)	
Coolant supply								External		External		External		External	
	mm	mm	mm	mm	mm	DIN	13121... Ident. No.		13125... Ident. No.		13121... Ident. No.		13125... Ident. No.	
M1	0.25	0.75	40	2.5	2.1	371	010	●	010	●	-	-	-	-
M1.2	0.25	0.95	40	2.5	2.1	371	012	●	012	●	-	-	-	-

Source: Hahn+Kolb Werkzeuge GmbH
Technical data subject to change.
Availability subject to country specific rules and regulations.

							Cutting material	HSSE		HSSE		HSSE		HSSE	
							Surface	Vaporised		Vaporised		TiN		TiN	
							Tol.	ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)	
							Lead angle shape	B		C		B		C	
							Twist angle	0°		40° (right)		0°		40° (right)	
							Coolant supply	External		External		External		External	
	mm	mm	mm	mm	mm	DIN	13121... Ident. No.		13125... Ident. No.		13121... Ident. No.		13125... Ident. No.	
M1.4	0.3	1.1	40	2.5	2.1	371	014	●	014	●	-	-	-	-
M1.6	0.35	1.25	40	2.5	2.1	371	016	●	016	●	-	-	-	-
M1.7	0.35	1.35	40	2.5	2.1	371	017	●	017	●	-	-	-	-
M1.8	0.35	1.45	40	2.5	2.1	371	018	●	018	●	-	-	-	-
M2	0.4	1.6	45	2.8	2.1	371	020	●	020	●	-	-	-	-
M2.2	0.45	1.75	45	2.8	2.1	371	022	●	022	●	-	-	-	-
M2.3	0.4	1.9	45	2.8	2.1	371	023	●	023	●	-	-	-	-
M2.5	0.45	2.05	50	2.8	2.1	371	025	●	025	●	-	-	-	-
M2.6	0.45	2.15	50	2.8	2.1	371	026	●	026	●	-	-	-	-
M3	0.5	2.5	56	3.5	2.7	371	030	●	030	●	430	●	430	●
M4	0.7	3.3	63	4.5	3.4	371	040	●	040	●	440	●	440	●
M5	0.8	4.2	70	6	4.9	371	050	●	050	●	450	●	450	●
M6	1	5	80	6	4.9	371	060	●	060	●	460	●	460	●
M8	1.25	6.8	90	8	6.2	371	080	●	080	●	480	●	480	●
M10	1.5	8.5	100	10	8	371	100	●	100	●	500	●	500	●
M12	1.75	10.2	110	9	7	376	120	●	120	●	520	●	520	●
M16	2	14	110	12	9	376	160	●	160	●	560	●	560	●
M20	2.5	17.5	140	16	12	376	200	●	200	●	600	●	600	●
M24	3	21	160	18	14.5	376	240	●	240	●	-	-	-	-
M27	3	24	160	20	16	376	270	●	270	●	-	-	-	-
M30	3.5	26.5	180	22	18	376	300	●	300	●	-	-	-	-

Prod. Gr. 1KA

ATORN® HSSE machine tap, extra long

For universal use up to 1000 N/mm²

M | ≤3xd | ≤2,5xd | HSSE | ISO 2 | B (3,5-5) | C (2-3) | CNC/conv.

Application:

No. 13121: For producing metric threads on CNC machines or conventional machines in **through holes** in the steel, stainless steel, non-ferrous metals and cast iron material groups up to a strength of 1000 N/mm².

No. 13125: For producing metric threads on CNC machines or conventional machines in **blind holes** in the steel, stainless steel, non-ferrous metals and cast iron material groups up to a strength of 1000 N/mm².

Advantage:

- Universal use for maximum flexibility of application
- Innovative cutter geometry ensures high process reliability even in difficult machining conditions

No. 13121

No. 13125

UNI 40 Control Vc min/max

p. 755 | p. 170 | p. 174 | p. 22 | p. 757 | p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13121630-760	18	12	8	8	8		18		19		18	15		15					
13125630-760	18	12	8	8	8		18		19		18	15		15					

						Cutting material	HSSE		HSSE	
						Surface	Vaporised		Vaporised	
						Tol.	ISO 2 (6H)		ISO 2 (6H)	
						Lead angle shape	B		C	
						Twist angle	0°		40° (right)	
						Coolant supply	External		External	
	mm	mm	mm	mm	mm		13121... Ident. No.		13125... Ident. No.	
M3	0.5	2.5	112	3.5	2.7		630	●	630	●
M4	0.7	3.3	126	4.5	3.4		640	●	640	●
M5	0.8	4.2	140	6	4.9		650	●	650	●
M6	1	5	160	6	4.9		660	●	660	●
M8	1.25	6.8	180	8	6.2		680	●	680	●
M10	1.5	8.5	200	10	8		700	●	700	●
M12	1.75	10.2	220	9	7		720	●	720	●
M14	2	12	220	11	9		740	●	740	●
M16	2	14	220	12	9		760	●	760	●

Prod. Gr. 1KA

ATORN® HSSE/HSSE-PM ULTRA HL machine tap

For universal use up to 1000 N/mm²

M | ≤3xd | ≤2,5xd | HSSE | HSSE-PM | ULTRA HL | ISO 2 | B (3,5-5) | C (2-3) | CNC/conv.

Application:

No. 13049 030–13049 200, 13050 330–13050 500: For producing metric threads on CNC machines or conventional machines in **blind holes** in the steel, stainless steel, non-ferrous metals and cast iron material groups up to a strength of 1000 N/mm²

No. 13049 430–13049 600, 13050 730–13050 800: For producing metric threads on CNC machines or conventional machines in **through holes** in the steel, stainless steel, non-ferrous metals and cast iron material groups up to a strength of 1000 N/mm².

No. 13050 820–13050 900: For producing metric threads on CNC machines or conventional machines in **through holes** in the steel, stainless steel, non-ferrous metals and cast iron material groups up to a strength of 1200 N/mm².

Execution:

- **No. 13049 030–13050 800:** Structural dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = over-long shank (from M12)
- **No. 13050 820–13050 900:** Structural dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = protruding shank (from M12)

Advantage:

- Innovative cutter geometry and newly developed ULTRA HL coating ensures high process reliability even in difficult machining conditions

No. 13049 430–13049 600, 13050 500–13050 900

No. 13049 030–13049 200, 13050 330–13050 460

UNI 40 Control | Vc min/max

p. 755 | p. 170 | p. 174 | p. 22 | p. 757

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13049030-100	18	12	8	8	8		18		19		18	15		15					
13049120-200	18	12	8	8	8		18		19		18	15		15					
13049430-500	18	12	8	8	8		18		19		18	15		15					
13049520-600	18	12	8	8	8		18		19		18	15		15					
13050330-400	22	15	8	11	11		25		28		20	20		22					
13050420-500	22	15	8	11	11		25		28		20	20		22					
13050730-800	22	15	8	11	11		25		28		20	20		22					
13050820-900	22	15	8	11	11		25		28		20	20		22					

							Cutting material	HSSE		HSSE		HSSE-PM		HSSE-PM	
							Surface	ULTRA HL		ULTRA HL		ULTRA HL		ULTRA HL	
							Tol.	ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)	
							Lead angle shape	B		C		B		C	
							Twist angle	0°		40°		0°		40°	
							Coolant supply	External		External		External		External	
	mm	mm	mm	mm	mm	DIN		13049... Ident. No.		13049... Ident. No.		13050... Ident. No.		13050... Ident. No.	
M3	0.5	2.5	56	3.5	2.7	371		430	●	030	●	730	●	330	●
M4	0.7	3.3	63	4.5	3.4	371		440	●	040	●	740	●	340	●
M5	0.8	4.2	70	6	4.9	371		450	●	050	●	750	●	350	●
M6	1	5	80	6	4.9	371		460	●	060	●	760	●	360	●
M8	1.25	6.8	90	8	6.2	371		480	●	080	●	780	●	380	●
M10	1.5	8.5	100	10	8	371		500	●	100	●	800	●	400	●
M12	1.75	10.2	110	9	7	376		520	●	120	●	820	●	420	●
M16	2	14	110	12	9	376		560	●	160	●	860	●	460	●
M20	2.5	17.5	140	16	12	376		600	●	200	●	900	●	500	●

Prod. Gr. 1KA

Screw tap P Max 1000 Control
For universal use up to 1000 N/mm²

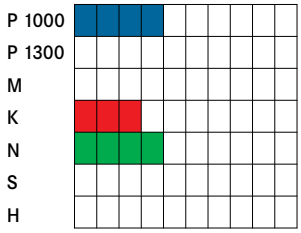
Application:
Machine tap for universal application up to 1000 N/mm² optimised for use on conventional machines.

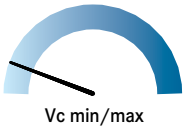
Advantages:
- Universal application in steel, cast iron and non-ferrous metals ensures maximum flexibility
- Optimised geometry for conventional application – cutting of thread minimised
- Wide product range in M, MF



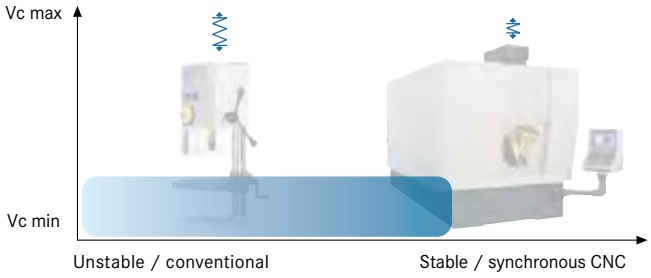


Performance:





Conditions of use:



ATORN® ORION® HSS machine tap, short (DIN 352)
For universal conventional use up to 1000 N/mm²

Application:
For producing metric threads on CNC machines or conventional machines and by hand in **through holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

Execution:
- Machine tap, short design

Advantage:
- Easy accessibility thanks to short design

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13063	16	11		9		18	18	15	18	15	15	13		16					
13064	15	10		9		18	18	15	18	15	15	13		16					

							ATORN®		ORION®	
						Cutting material	HSSE		HSSE	
						Surface	Uncoated		Uncoated	
						Tol.	ISO 2 (6H)		ISO 2 (6H)	
						Lead angle shape	B		B	
						Twist angle	0°		0°	
						Coolant supply	External		External	
	mm	mm	mm	mm	mm	DIN	13063... Ident. No.		13064... Ident. No.	
M2	0.4	1.6	36	2.8	2.1	352	020	●	020	●
M2.5	0.45	2.05	36	2.8	2.1	352	025	●	025	●
M3	0.5	2.5	40	3.5	2.7	352	030	●	030	●
M4	0.7	3.3	45	4.5	3.4	352	040	●	040	●
M5	0.8	4.2	50	6	4.9	352	050	●	050	●
M6	1	5	50	6	4.9	352	060	●	060	●
M8	1.25	6.8	56	6	4.9	352	080	●	080	●
M10	1.5	8.5	70	7	5.5	352	100	●	100	●
M12	1.75	10.2	75	9	7	352	120	●	120	●
M16	2	14	80	12	9	352	160	●	160	●
M18	2.5	15.5	95	14	11	352	180	●	-	-
M20	2.5	17.5	95	16	12	352	200	●	-	-
M22	2.5	19.5	100	18	14.5	352	220	●	-	-
M24	3	21	110	18	14.5	352	240	●	-	-

ORION = Prod. Gr. 1DB
ATORN® = Prod. Gr. 1KA

ATORN® ORION® Machine tap, HSSE

For universal conventional use up to 1000 N/mm²

M | ≤3xd | HSSE | ISO 2 | C (2-3) | conv.

Application:
For producing metric threads on conventional machines in **blind holes and through holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

Execution:
- **No. 13270:** Structural dimensions according to: DIN 371 = reinforced shank (up to M10), DIN 376 = protruding shank (from M12)
- **No. 13323:** Dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = transition-fit shank (from M12)

Advantage:
- **No. 13270:** Long service life and good process reliability due to innovative cutting geometry and universal use for maximum application versatility
- **No. 13323:** Long service life and high process reliability thanks to innovative cutting geometry, and universal use for maximum flexibility in use.

P 1000 Control | Vc min/max

p. 755 | p. 170 | p. 174 | p. 22 | p. 757 | p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13270020-100	16	11		9		18	18	15	18	15	15	13		16					
13270120-360	16	11		9		18	18	15	18	15	15	13		16					
13323030-100	16	11		9		18	18	15	18	15	15	13		16					
13323120	16	11		9		18	18	15	18	15	15	13		16					

							ATORN®		ORION®	
						Cutting material	HSSE		HSSE	
						Surface	Uncoated		Uncoated	
						Tol.	ISO 2 (6H)		ISO 2 (6H)	
						Lead angle shape	C		C	
						Twist angle	0°		0°	
						Coolant supply	External		External	
	mm	mm	mm	mm	mm	DIN	13270... Ident. No.		13323... Ident. No.	
M2	0.4	1.6	45	2.8	2.1	371	020	●	-	-
M2.5	0.45	2.05	50	2.8	2.1	371	025	●	-	-
M3	0.5	2.5	56	3.5	2.7	371	030	●	030	●
M4	0.7	3.3	63	4.5	3.4	371	040	●	040	●
M5	0.8	4.2	70	6	4.9	371	050	●	050	●
M6	1	5	80	6	4.9	371	060	●	060	●
M8	1.25	6.8	90	8	6.2	371	080	●	080	●
M10	1.5	8.5	100	10	8	371	100	●	100	●
M12	1.75	10.2	110	9	7	376	120	●	120	●
M14	2	12	110	11	9	376	140	●	-	-
M16	2	14	110	12	9	376	160	●	-	-
M18	2.5	15.5	125	14	11	376	180	●	-	-
M20	2.5	17.5	140	16	12	376	200	●	-	-
M24	3	21	160	18	14.5	376	240	●	-	-
M30	3.5	26.5	180	22	18	376	300	●	-	-
M36	4	32	200	28	22	376	360	●	-	-

ORION = Prod. Gr. 1DB
ATORN® = Prod. Gr. 1KA

Usage values, screw tap, HSSE

13105030-100 13077030-100 13121120-300

13121010-100, 13121520-600, 13125010-100, 13125120-300, 13125430-500, 13125520-600, 13048030-100, 13048120, 13059, 13063, 13064, 13083030-100, 13083120-160, 13088, 13099030-100, 13100030-100, 13100120-200, 13101, 13105120, 13106014-100, 13106120-240, 13113010-100, 13116, 13117, 13118020-100, 13118120-240, 13119030-100, 13119105-300, 13130020-100, 13130120-240, 13136030-100, 13136120-300, 13143, 13144, 13145030-100, 13145120-240, 13147, 13149030-100, 13149120, 13161, 13207, 13209, 13215030-300, 13228, 13229, 13249030-100, 13249120, 13254030-100, 13254120-200, 13260, 13261, 13263, 13264020-100, 13264120-200, 13266020-100, 13266120-240, 13267020-100, 13267120-360, 13268030-100, 13268120, 13270020-100, 13270120-360, 13271030-100, 13271120-240, 13274, 13279030-100, 13279120, 13281020-100, 13281120-240, 13283, 13288020-100, 13288120-300, 13306020-100, 13306120, 13308, 13309, 13311, 13318020-100, 13318120, 13319030-100, 13319120, 13320, 13321030-300, 13323030-100, 13323120, 13324, 13325120-300, 13326020-100, 13326120-200, 13332, 13335, 13347, 13348025-110, 13357040-110, 13357150-170, 13358070-110, 13358120-180, 13359, 13360, 13378, 13379, 13104500-565, 13317500-565, 13207310-400, 13348120-160, 13378310-400, 13121630-760, 13121630-760, 13121900-916, 13121930-946, 13125630-760, 13125630-760, 13125900-916, 13125930-946

	Strength Class [N/mm²]	Description regarding DIN	Vc [m/min]
1. Steels			
1.1 Free machining steel	< 900	9 S 20	10-18
1.2 Structural steel	<500	ST 37-2	10-18
1.3 Structural steel	> 500	ST 60-2	10-15
1.4 Heat-treated steel	<1000	42 CrMo 4	8-12
1.5 Cast iron	<1000	GS-45	8-12
1.6 Case-hardened steel	<1200	16 MnCr 5	8-12
1.7 Ferritic/martensitic stainless steel	<1100	X 10 Cr 13	6-8
1.8 Heat-treated steel	>1000	43 CrMo 4	8-12
1.9 Nitriding steel	<1300	31 CrMoV 9	8-12
1.10 Tool steel	<1300	X 38 CrMoV 5 1	6-12
2. Stainless steels			
2.1 Austenitic stainless steel	<1100	G-X 2 CrNiMo 18 15	6-8
3. Non-ferrous metals			
3.1 Long-chipping aluminium	<500	Al99.9	15-25
3.2 Short-chipping aluminium	<500	G-AlSi12	15-20
3.3 Copper alloy bronze, long-chipping	<1200	CuSn4	10-20
3.4 Copper alloy bronze, short-chipping	<850	CuNi12Zn24	10-20
3.5 Copper alloy brass, long-chipping	<600	Cu Zn 20	10-25
3.6 Copper alloy brass, short-chipping	<600	Cu Zn 39 Pb 3	10-25
3.7 Thermoplastic	<100	PVC, Acrylglas	10-20
3.8 Duroplast	<150	Bakelit, Melamin	8-15
3.9 Fibre-reinforced plastics	<1500	CFK, GFK	5-12
3.10 Graphite	<60	C8000	15-25
3.11 Composite materials			5-12
4. Cast metal			
4.1 Cast iron with lamellar graphite	<260 HB	GG10	15-20
4.2 Nodular cast iron	<310 HB	GGG 40	12-20
4.3 Ductile iron	<280 HB	GTW-55	12-18

ATORN® Machine tap, HSSE

For universal conventional use up to 1000 N/mm²

Application:

No. 13106: For producing metric threads on conventional machines in **through holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

No. 13267: For producing metric threads on conventional machines in **blind holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

Execution:

- **No. 13106:** structural dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = over-long shank (from M12)
- **No. 13267:** Structural dimensions according to: DIN 371 = reinforced shank (up to M10), DIN 376 = protruding shank (from M12)

Advantage:

- **No. 13106:** good service life and process reliability thanks to innovative cutting geometry and universal use for the greatest flexibility in applications
- **No. 13267:** Long service life and good process reliability due to innovative cutting geometry and universal use for maximum application versatility

No. 13106

No. 13267

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13106014-100	16	11		9		18	18	15	18	15	15	13		16					
13106120-240	16	11		9		18	18	15	18	15	15	13		16					
13267020-100	16	12		9		18	18	15	18	15	15	13		16					
13267120-360	16	12		9		18	18	15	18	15	15	13		16					

							Cutting material	HSSE		HSSE	
							Surface	Uncoated		Uncoated	
							Tol.	ISO 2 (6H)		ISO 2 (6H)	
							Lead angle shape	B		C	
							Twist angle	0°		40° (right)	
							Coolant supply	External		External	
	mm	mm	mm	mm	mm		DIN	13106... Ident. No.		13267... Ident. No.	
M1.4	0.3	1.1	40	2.5	2.1		371	014	●	-	-
M1.6	0.35	1.25	40	2.5	2.1		371	016	●	-	-
M1.7	0.35	1.3	40	2.5	2.1		371	017	●	-	-
M1.8	0.35	1.45	40	2.5	2.1		371	018	●	-	-
M2	0.4	1.6	45	2.8	2.1		371	020	●	020	●
M2.2	0.45	1.75	45	2.8	2.1		371	022	●	-	-
M2.3	0.4	1.9	45	2.8	2.1		371	023	●	-	-
M2.5	0.45	2.05	50	2.8	2.1		371	025	●	025	●
M2.6	0.45	2.15	50	2.8	2.1		371	026	●	-	-
M3	0.5	2.5	56	3.5	2.7		371	030	●	030	●
M3.5	0.6	2.9	56	4	3		371	035	●	035	●
M4	0.7	3.3	63	4.5	3.4		371	040	●	040	●
M5	0.8	4.2	70	6	4.9		371	050	●	050	●
M6	1	5	80	6	4.9		371	060	●	060	●
M8	1.25	6.8	90	8	6.2		371	080	●	080	●
M10	1.5	8.5	100	10	8		371	100	●	100	●
M12	1.75	10.2	110	9	7		376	120	●	120	●
M14	2	12	110	11	9		376	140	●	140	●
M16	2	14	110	12	9		376	160	●	160	●
M20	2.5	17.5	140	16	12		376	200	●	200	●
M24	3	21	160	18	14.5		376	240	●	240	●
M18	2.5	15.5	125	14	11		376	-	-	180	●
M30	3.5	26.5	180	22	18		376	-	-	300	●
M36	4	32	180	28	22		376	-	-	360	●

Prod. Gr. 1KA

ATORN® Machine tap, HSSE (DIN 376)

For universal conventional use up to 1000 N/mm²

M | ≤3xd | ≤2,5xd | HSSE | ISO 2 | B (3,5-5) | C (2-3) | conv.

Application:

No. 13101: For producing metric threads on conventional machines in **through holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

No. 13326: For producing metric threads on conventional machines in **blind holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

Execution:

- **No. 13101:** With protruding shank
- **No. 13326:** With transition-fit shank

Advantage:

- **No. 13101:** Long service life and high level of process reliability thanks to innovative cutting geometry and universal application for maximum flexibility in use
- **No. 13326:** Long service life and high process reliability thanks to innovative cutting geometry, and universal use for maximum flexibility in use.

No. 13101

No. 13326

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13101	15	11		9		18	18	15	18	15	15	13		16					
13326020-100	16	11		9		18	18	15	18	15	15	13		16					
13326120-200	16	11		9		18	18	15	18	15	15	13		16					

							Cutting material	HSSE		HSSE	
							Surface	Uncoated		Uncoated	
							Tol.	ISO 2 (6H)		ISO 2 (6H)	
							Lead angle shape	B		C	
							Twist angle	0°		40° (right)	
							Coolant supply	External		External	
	mm	mm	mm	mm	mm		DIN	13101... Ident. No.		13326... Ident. No.	
M1.6	0.35	1.25	40	1.2	-		376	016	●	-	-
M1.8	0.35	1.45	40	1.2	-		376	018	●	-	-
M2	0.4	1.6	45	1.6	-		376	020	●	020	●
M2.2	0.45	1.75	45	1.6	-		376	022	●	-	-
M2.3	0.4	1.9	45	1.6	-		376	023	●	-	-
M2.5	0.45	2.05	50	1.8	-		376	025	●	025	●
M2.6	0.45	2.15	50	1.8	-		376	026	●	-	-
M3	0.5	2.5	56	2.2	-		376	030	●	030	●
M3.5	0.6	2.9	56	2.5	2.1		376	035	●	-	-
M4	0.7	3.3	63	2.8	2.1		376	040	●	040	●
M5	0.8	4.2	70	3.5	2.7		376	050	●	050	●
M6	1	5	80	4.5	3.4		376	060	●	060	●
M8	1.25	6.8	90	6	4.9		376	080	●	080	●
M10	1.5	8.5	100	7	5.5		376	100	●	100	●
M12	1.75	10.2	110	9	7		376	120	●	120	●

Source: Hahn+Kolb Werkzeuge GmbH
Technical data subject to change.
Availability subject to country specific rules and regulations.

						Cutting material	HSSE		HSSE	
						Surface	Uncoated		Uncoated	
						Tol.	ISO 2 (6H)		ISO 2 (6H)	
						Lead angle shape	B		C	
						Twist angle	0°		40° (right)	
						Coolant supply	External		External	
	mm	mm	mm	mm	mm	DIN	13101... Ident. No.		13326... Ident. No.	
M14	2	12	110	11	9	376	140	●	140	●
M16	2	14	110	12	9	376	160	●	160	●
M18	2.5	15.5	125	14	11	376	180	●	180	●
M20	2.5	17.5	140	16	12	376	200	●	200	●
M22	2.5	19.5	140	18	14.5	376	220	●	-	-
M24	3	21	160	18	14.5	376	240	●	-	-
M27	3	24	160	20	16	376	270	●	-	-
M30	3.5	26.5	180	22	18	376	300	●	-	-
M33	3.5	29.5	180	25	20	376	330	●	-	-
M36	4	32	200	28	22	376	360	●	-	-

Prod. Gr. 1KA

Screw tap P Max 1000
For universal use up to 1000 N/mm²

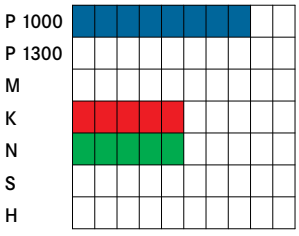
Application:
Machine tap for universal application up to 1000 N/mm² both on CNC machines and on conventional machines.

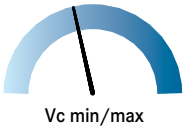
Advantages:
- Universal application in steel, cast iron and non-ferrous metals ensures maximum flexibility
- Very long service life, in particular in steel materials
- Large selection of coatings
- Wide product range in M, MF, G, NPT



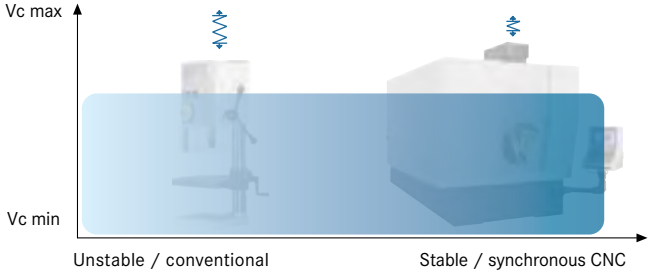


Performance:





Conditions of use:



P MAX 1000 Control Vc min/max

ATORN® ORION® Machine tap, HSSE, vaporised
For universal use up to 1000 N/mm²

M | ≤3xd | ≤2,5xd | HSSE | ISO 2 | B (3,5-5) | C (2-3) | CNC/conv.

Application:
No. 13113–13119: For producing metric threads on CNC machines or conventional machines in **through holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².
No. 13264–13318: For producing metric threads on CNC machines or conventional machines in **blind holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

Execution:
- **No. 13113:** structural dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = over-long shank (from M12)
- **No. 13119:** Dimensions to: DIN 371 = reinforced shank (to M10), DIN 376 = protruding shank (from M12)
- **No. 13264:** Structural dimensions according to: DIN 371 = reinforced shank (up to M10), DIN 376 = protruding shank (from M12)
- **No. 13318:** Dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = transition-fit shank (from M12)

Advantage:
- **No. 13113:** good service life and process reliability thanks to innovative cutting geometry and universal use for the greatest flexibility in applications
- **No. 13119:** Standard geometry with very good price/performance ratio
- **No. 13264:** Long service life and good process reliability due to innovative cutting geometry and universal use for maximum application versatility
- **No. 13318:** Standard geometry with an excellent price-performance ratio


No. 13113–13119


No. 13264–13318

P MAX 1000 Control Vc min/max

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13113010-100	17	12		10		19	19	17	19	17	17	15		18					
13119030-100	16	11		9		18	18	15	18	15	15	13		16					
13264020-100	17	12		10		19	19	17	19	17	17	15		18					
13264120-200	17	12		10		19	19	17	19	17	17	15		18					
13318020-100	17	12		10		19	19	17	19	17	17	15		18					
13318120	17	12		10		19	19	17	19	17	17	15		18					

							ATORN®		ORION®				ATORN®	
Cutting material							HSSE		HSSE		HSSE		HSSE	
Surface							Vaporised		Vaporised		Vaporised		Vaporised	
Tol.							ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)	
Lead angle shape							B		B		C		C	
Twist angle							0°		0°		40° (right)		40° (right)	
Coolant supply							External		External		External		External	
	mm	mm	mm	mm	mm	DIN	13113... Ident. No.		13119... Ident. No.		13318... Ident. No.		13264... Ident. No.	
M1	0.25	0.75	40	2.5	2.1	371	010	●	-	-	-	-	-	-
M1.4	0.3	1.1	40	2.5	2.1	371	014	●	-	-	-	-	-	-
M1.6	0.35	1.25	40	2.5	2.1	371	016	●	-	-	-	-	-	-
M1.7	0.35	1.3	40	2.5	2.1	371	017	●	-	-	-	-	-	-
M1.8	0.35	1.45	40	2.5	2.1	371	018	●	-	-	-	-	-	-
M2	0.4	1.6	45	2.8	2.1	371	020	●	-	-	020	●	020	●
M2.5	0.45	2.05	50	2.8	2.1	371	025	●	-	-	025	●	-	-
M3	0.5	2.5	56	3.5	2.7	371	030	●	030	●	030	●	030	●
M3.5	0.6	2.9	56	4	3	371	035	●	-	-	-	-	-	-
M4	0.7	3.3	63	4.5	3.4	371	040	●	040	●	040	●	040	●
M5	0.8	4.2	70	6	4.9	371	050	●	050	●	050	●	050	●
M6	1	5	80	6	4.9	371	060	●	060	●	060	●	060	●
M8	1.25	6.8	90	8	6.2	371	080	●	080	●	080	●	080	●
M10	1.5	8.5	100	10	8	371	100	●	100	●	100	●	100	●
M12	1.75	10.2	110	9	7	376	-	-	-	-	120	●	120	●
M14	2	12	110	11	9	376	-	-	-	-	-	-	140	●
M16	2	14	110	12	9	376	-	-	-	-	-	-	160	●
M20	2.5	17.5	140	16	12	376	-	-	-	-	-	-	200	●

ORION = Prod. Gr. 1DB
ATORN® = Prod. Gr. 1KA

ATORN® HSSE TiN machine tap

For universal use up to 1000 N/mm²

M | ≤3xd | ≤2,5xd | HSSE | TiN | ISO 2 | B (3,5-5) | C (2-3) | CNC/conv.

Application:

No. 13115: For producing metric threads on CNC machines or conventional machines in **through holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

No. 13307: For producing metric threads on CNC machines or conventional machines in **blind holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

Advantage:

- **No. 13115:** good service life and process reliability thanks to innovative cutting geometry and coating as well as universal use for the greatest flexibility in applications
- **No. 13307:** Long service life and high level of process reliability thanks to innovative cutter geometry and coating and universal application for maximum flexibility in use

Execution:

- structural dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = over-long shank (from M12)

No. 13115

No. 13307

P MAX 1000 Control | Vc min/max

p. 755 p. 170 p. 174 p. 22 p. 757

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13115430-500	18	13		10		19	19	17	19	17	17	15		18					
13115520-640	18	13		10		19	19	17	19	17	17	15		18					
13307030-100	18	13		10		19	19	17	19	17	17	15		18					
13307120-200	18	13		10		19	19	17	19	17	17	15		18					

							HSSE		HSSE	
Cutting material							HSSE		HSSE	
Surface							TiN		TiN	
Tol.							ISO 2 (6H)		ISO 2 (6H)	
Lead angle shape							B		C	
Twist angle							0°		40° (right)	
Coolant supply							External		External	
	mm	mm	mm	mm	mm	DIN	13115... Ident. No.		13307... Ident. No.	
M3	0.5	2.5	56	3.5	2.7	371	430	●	030	●
M4	0.7	3.3	63	4.5	3.4	371	440	●	040	●
M5	0.8	4.2	70	6	4.9	371	450	●	050	●
M6	1	5	80	6	4.9	371	460	●	060	●
M8	1.25	6.8	90	8	6.2	371	480	●	080	●

							Cutting material	HSSE		HSSE	
							Surface	TiN		TiN	
							Tol.	ISO 2 (6H)		ISO 2 (6H)	
							Lead angle shape	B		C	
							Twist angle	0°		40° (right)	
							Coolant supply	External		External	
	mm	mm	mm	mm	mm	DIN	13115... Ident. No.			13307... Ident. No.	
M10	1.5	8.5	100	10	8	371	500	●		100	●
M12	1.75	10.2	110	9	7	376	520	●		120	●
M16	2	14	110	12	9	376	560	●		160	●
M20	2.5	17.5	140	16	12	376	600	●		200	●
M24	3	21	160	18	14.5	376	640	●		-	-

Prod. Gr. 1KA

ATORN® Machine nut taps (DIN 357)

for universal use up to 1000 N/mm2

Application:
For machining metric threads (cutting nuts or bridging cavities) in through holes on CNC or conventional machines in the steel, (stainless steel), NF metal and (cast) material groups up to a strength of 1000 N/mm².

Execution:
- Long design

Advantage:
- Very long thread section can bridge cavities between threads
- Universal use for maximum flexibility

P MAX 1000 Control — Vc min/max

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13059	16	11		9		18	18	15	18	15	15	13		16					

						Cutting material	HSSE	
						Surface	Uncoated	
						Tol.	ISO 2X (6HX)	
						Twist angle	0°	
						Coolant supply	External	
	mm	mm	mm	mm	mm	DIN	13059... Ident. No.	
M3	0.5	2.5	70	2.2	-	357	030	●
M4	0.7	3.3	90	2.8	2.1	357	040	●
M5	0.8	4.2	100	3.5	2.7	357	050	●
M6	1	5	110	4.5	3.4	357	060	●
M8	1.25	6.8	125	6	4.9	357	080	●
M10	1.5	8.5	140	7	5.5	357	100	●
M12	1.75	10.2	180	9	7	357	120	●
M16	2	14	200	12	9	357	160	●

Prod. Gr. 1KA

ATORN® ORION® Machine tap, HSSE, vaporised (DIN 376)

For universal use up to 1000 N/mm²

Application:
No. 13117–13119: For producing metric threads on CNC machines or conventional machines in **through holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².
No. 13283–13321: For producing metric threads on CNC machines or conventional machines in **blind holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

Execution:
- **No. 13117 020–13117 360, 13283 030–13283 360:** with over-long shank
- **No. 13119:** With protruding shank
- **No. 13321:** With transition-fit shank

Advantage:
- **No. 13117 020–13117 360, 13283 030–13283 360:** good service life and process reliability thanks to innovative cutting geometry and universal use for the greatest flexibility in applications
- **No. 13119 106–13119 300, 13321 030–13321 300:** Standard geometry with very good price/performance ratio

No. 13117–13119

No. 13283–13321

P MAX 1000 Control — Vc min/max

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13117	16	11		9		18	18	15	18	15	15	13		16					
13119105-300	16	11		9		18	18	15	18	15	15	13		16					
13283	17	12		10		19	19	17	19	17	17	15		18					
13321030-300	17	12		10		19	19	17	19	17	17	15		18					

								ATORN®				ORION®			
							Cutting material	HSSE		HSSE		HSSE		HSSE	
							Surface	Vaporised		Vaporised		Vaporised		Vaporised	
							Tol.	ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)	
							Lead angle shape	B		C		C		B	
							Twist angle	0°		40° (right)		40° (right)		0°	
							Coolant supply	External		External		External		External	
	mm	mm	mm	mm	mm	DIN		13117... Ident. No.		13283... Ident. No.		13321... Ident. No.		13119... Ident. No.	
M2	0.4	1.6	45	1.4	2.1	376		020	●	-	-	-	-	-	-
M3	0.5	2.5	56	2.2	2.7	376		030	●	030	●	030	●	-	-
M4	0.7	3.3	63	2.8	2.1	376		040	●	040	●	040	●	-	-
M5	0.8	4.2	70	3.5	2.7	376		050	●	050	●	050	●	-	-
M6	1	5	80	4.5	3.4	376		060	●	060	●	060	●	106	●
M8	1.25	6.8	90	6	4.9	376		080	●	080	●	080	●	108	●
M10	1.5	8.5	100	7	5.5	376		100	●	100	●	100	●	110	●
M12	1.75	10.2	110	9	7	376		120	●	120	●	120	●	120	●
M14	2	12	110	11	9	376		140	●	140	●	-	-	-	-
M16	2	14	110	12	9	376		160	●	160	●	160	●	160	●
M18	2.5	15.5	125	14	11	376		180	●	180	●	-	-	-	-
M20	2.5	17.5	140	16	12	376		200	●	200	●	200	●	200	●
M22	2.5	19.5	140	18	14.5	376		220	●	-	-	-	-	-	-
M24	3	21	160	18	14.5	376		240	●	240	●	240	●	240	●
M27	3	24	160	20	16	376		270	●	270	●	-	-	-	-
M30	3.5	26.5	180	22	18	376		300	●	300	●	300	●	300	●
M36	4	32	200	28	22	376		360	●	360	●	-	-	-	-

ORION = Prod. Gr. 1DB
ATORN® = Prod. Gr. 1KA

Usage values, screw tap, HSSE

13105030-100

13077030-100

13121120-300

13121010-100, 13121520-600, 13125010-100, 13125120-300, 13125430-500, 13125520-600, 13048030-100, 13048120, 13059, 13063, 13064, 13083030-100, 13083120-160, 13088, 13099030-100, 13100030-100, 13100120-200, 13101, 13105120, 13106014-100, 13106120-240, 13113010-100, 13116, 13117, 13118020-100, 13118120-240, 13119030-100, 13119105-300, 13130020-100, 13130120-240, 13136030-100, 13136120-300, 13143, 13144, 13145030-100, 13145120-240, 13147, 13149030-100, 13149120, 13161, 13207, 13209, 13215030-300, 13228, 13229, 13249030-100, 13249120, 13254030-100, 13254120-200, 13260, 13261, 13263, 13264020-100, 13264120-200, 13266020-100, 13266120-240, 13267020-100, 13267120-360, 13268030-100, 13268120, 13270020-100, 13270120-360, 13271030-100, 13271120-240, 13274, 13279030-100, 13279120, 13281020-100, 13281120-240, 13283, 13288020-100, 13288120-300, 13306020-100, 13306120, 13308, 13309, 13311, 13318020-100, 13318120, 13319030-100, 13319120, 13320, 13321030-300, 13323030-100, 13323120, 13324, 13325120-300, 13326020-100, 13326120-200, 13332, 13335, 13347, 13348025-110, 13357040-110, 13357150-170, 13358070-110, 13358120-180, 13359, 13360, 13378, 13379, 13104500-565, 13317500-565, 13207310-400, 13348120-160, 13378310-400, 13121630-760, 13121630-760, 13121900-916, 13121930-946, 13125630-760, 13125630-760, 13125900-916, 13125930-946

	Strength Class [N/mm²]	Description regarding DIN	Vc [m/min]
1. Steels			
1.1 Free machining steel	< 900	9 S 20	10-18
1.2 Structural steel	<500	ST 37-2	10-18
1.3 Structural steel	> 500	ST 60-2	10-15
1.4 Heat-treated steel	<1000	42 CrMo 4	8-12
1.5 Cast iron	<1000	GS-45	8-12
1.6 Case-hardened steel	<1200	16 MnCr 5	8-12
1.7 Ferritic/martensitic stainless steel	<1100	X 10 Cr 13	6-8
1.8 Heat-treated steel	>1000	43 CrMo 4	8-12
1.9 Nitriding steel	<1300	31 CrMoV 9	8-12
1.10 Tool steel	<1300	X 38 CrMoV 5 1	6-12
2. Stainless steels			
2.1 Austenitic stainless steel	<1100	G-X 2 CrNiMo 18 15	6-8
3. Non-ferrous metals			
3.1 Long-chipping aluminium	<500	Al99.9	15-25
3.2 Short-chipping aluminium	<500	G-AlSi12	15-20
3.3 Copper alloy bronze, long-chipping	<1200	CuSn4	10-20
3.4 Copper alloy bronze, short-chipping	<850	CuNi12Zn24	10-20
3.5 Copper alloy brass, long-chipping	<600	Cu Zn 20	10-25
3.6 Copper alloy brass, short-chipping	<600	Cu Zn 39 Pb 3	10-25
3.7 Thermoplastic	<100	PVC, Acrylglas	10-20
3.8 Duroplast	<150	Bakelit, Melamin	8-15
3.9 Fibre-reinforced plastics	<1500	CFK, GFK	5-12
3.10 Graphite	<60	C8000	15-25
3.11 Composite materials			5-12
4. Cast metal			
4.1 Cast iron with lamellar graphite	<260 HB	GG10	15-20
4.2 Nodular cast iron	<310 HB	GGG 40	12-20
4.3 Ductile iron	<280 HB	GTW-55	12-18

ATORN® HSSE TiN left-handed machine tap

For universal use up to 1000 N/mm²

M-L | ≤3xd | HSSE | TiN | ISO 2 | B (3,5-5) | CNC/conv.

Application:
For producing metric threads on CNC machines or conventional machines in **through holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

Execution:
- structural dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = over-long shank (from M12)

Advantage:
- good service life and process reliability thanks to innovative cutting geometry and coating as well as universal use for the greatest flexibility in applications

P MAX 1000 Control | Vc min/max

p. 755 p. 170 p. 174 p. 22 p. 757

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13108	18	12		10		19	19	17	19	17	17	15		18					
13109	18	12		10		19	19	17	19	17	17	15		18					

							Cutting material	HSSE		HSSE	
							Surface	TiN		TiN	
							Tol.	ISO 2 (6H)		ISO 2 (6H)	
							Lead angle shape	B		B	
							Twist angle	0°		0°	
							Coolant supply	External		External	
	mm	mm	mm	mm	mm		DIN	13108... Ident. No.		13109... Ident. No.	
M-L3	0.5	2.5	56	3.5	2.7		371	030	●	-	-
M-L4	0.7	3.3	63	4.5	3.4		371	040	●	-	-
M-L5	0.8	4.2	70	6	4.9		371	050	●	-	-
M-L6	1	5	80	6	4.9		371	060	●	-	-
M-L8	1.25	6.8	90	8	6.2		371	080	●	-	-
M-L10	1.5	8.5	100	10	8		371	100	●	-	-
M-L12	1.75	10.2	110	9	7		376	-	-	120	●
M-L16	2	14	110	12	9		376	-	-	160	●

Prod. Gr. 1KA

ATORN® HSSE TiN left-handed machine tap

For universal use up to 1000 N/mm²

M-L | ≤2,5xd | HSSE | TiN | ISO 2 | C (2-3) | CNC/conv.

Application:
For producing metric threads on CNC machines or conventional machines in **blind holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

Advantage:
- good service life and process reliability thanks to innovative cutting geometry and coating as well as universal use for the greatest flexibility in applications

Execution:
- structural dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = over-long shank (from M12)

P MAX 1000 Control | Vc min/max

p. 755 p. 170 p. 174 p. 22 p. 757

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13113330-400	17	12		10		19	19	17	19	17	17	15		18					
13113420-540	17	12		10		19	19	17	19	17	17	15		18					

						Cutting material	HSSE	
						Surface	TiN	
						Tol.	ISO 2 (6H)	
						Lead angle shape	C	
						Twist angle	40° (right)	
						Coolant supply	External	
	mm	mm	mm	mm	mm	DIN	13113... Ident. No.	
M-L3	0.5	2.5	56	3.5	2.7	371	330	●
M-L4	0.7	3.3	63	4.5	3	371	340	●
M-L5	0.8	4.2	70	6	4.9	371	350	●
M-L6	1	5	80	6	4.9	371	360	●
M-L8	1.25	6.8	90	8	6.2	371	380	●
M-L10	1.5	8.5	100	10	8	371	400	●
M-L12	1.75	10.2	110	9	7	376	420	●
M-L16	2	14	110	12	9	376	460	●
M-L18	2.5	15.5	125	14	11	376	500	●
M-L20	2.5	17.5	140	16	12	376	540	●

Prod. Gr. 1KA

Screw tap P Max 1300
For universal use up to 1300 N/mm²

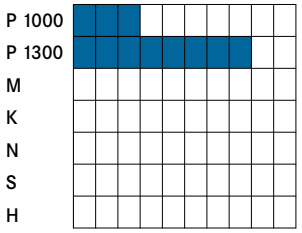
Application:
Machine tap for universal application up to 1300 N/mm² both on CNC machines and on conventional machines.

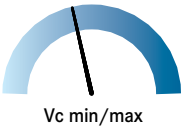
Advantages:
- Very long service life in high-strength steel
- Large selection of coatings
- Wide product range in M, MF



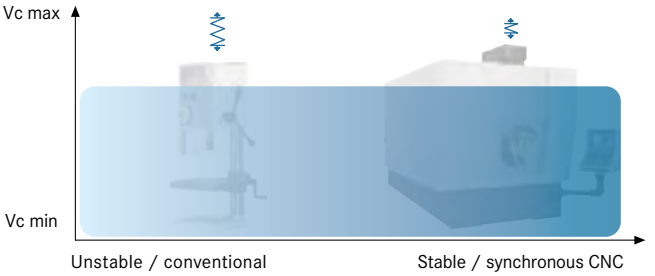


Performance:

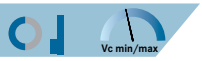




Conditions of use:



P MAX 1300 Control



ATORN® ORION® Machine tap, HSSE
For use in high-strength steel up to 1300 N/mm²

M | ≤3xd | ≤2,5xd | HSSE | ISO 2 | B (3,5-5) | C (2-3) | CNC/conv.

Application:
No. 13130–13149: For producing metric threads on CNC machines or conventional machines in **through holes** in the high-strength steel material group up to a strength of 1300 N/mm².
No. 13306–13319: For producing metric threads on CNC machines or conventional machines in **blind holes** in the high-strength steel material group up to a strength of 1300 N/mm².

Execution:
- **No. 13130:** Dimensions to: DIN 371 = reinforced shank (to M10), DIN 376 = protruding shank (from M12)
- **No. 13149 030–13149 120, 13319 030–13319 120:** Dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = transition-fit shank (from M12)
- **No. 13306:** structural dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = over-long shank (from M12)

Advantage:
- **No. 13130:** Long service life and process reliability through innovative cutting geometry for use in high-strength steel
- **No. 13149 030–13149 120, 13319 030–13319 120:** Standard geometry with an excellent price-performance ratio
- **No. 13306:** good service life and process reliability thanks to innovative cutting geometry and coating for use in high-strength steel


No. 13130–13149


No. 13306


No. 13319

P MAX 1300 Control

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13130020-100	16	12	9																
13130120-240	16	12	9																
13149030-100	16	12	9																
13149120	16	12	9																
13306020-100	16	12	9																
13306120	16	12	9																
13319030-100	16	12	9																
13319120	16	12	9																

							ATORN®		ORION®		ATORN®		ORION®	
						Cutting material	HSSE		HSSE		HSSE		HSSE	
						Surface	Vaporised		Vaporised		Vaporised		Uncoated	
						Tol.	ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)	
						Lead angle shape	B		B		C		C	
						Twist angle	0°		0°		40° (right)		40° (right)	
						Coolant supply	External		External		External		External	
	mm	mm	mm	mm	mm	DIN	13130... Ident. No.		13149... Ident. No.		13306... Ident. No.		13319... Ident. No.	
M2	0.4	1.6	45	2.8	2.1	371	020	●	-	-	020	●	-	-
M2.5	0.45	2.05	50	2.8	2.1	371	025	●	-	-	025	●	-	-
M3	0.5	2.5	56	3.5	2.7	371	030	●	030	●	030	●	030	●
M4	0.7	3.3	63	4.5	3.4	371	040	●	040	●	040	●	040	●
M5	0.8	4.2	70	6	4.9	371	050	●	050	●	050	●	050	●
M6	1	5	80	6	4.9	371	060	●	060	●	060	●	060	●
M8	1.25	6.8	90	8	6.2	371	080	●	080	●	080	●	080	●
M10	1.5	8.5	100	10	8	371	100	●	100	●	100	●	100	●
M12	1.75	10.2	110	9	7	376	120	●	120	●	120	●	120	●
M16	2	14	110	12	9	376	160	●	-	-	-	-	-	-
M20	2.5	17.5	140	16	12	376	200	●	-	-	-	-	-	-
M24	3	21	160	18	14.5	376	240	●	-	-	-	-	-	-

ORION = Prod. Gr. 1DB
ATORN® = Prod. Gr. 1KA

ATORN® HSSE TiCN machine tap

For use in high-strength steel up to 1300 N/mm²

Application:

No. 13128: For producing metric threads on CNC machines or conventional machines in **through holes** in the high-strength steel material group up to a strength of 1300 N/mm².

No. 13305: For producing metric threads on CNC machines or conventional machines in **blind holes** in the high-strength steel material group up to a strength of 1300 N/mm².

Execution:

- **No. 13128:** Dimensions to: DIN 371 = reinforced shank (to M10), DIN 376 = protruding shank (from M12)
- **No. 13305:** structural dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = over-long shank (from M12)

Advantage:

- **No. 13128:** Long service life and process reliability through innovative cutting geometry for use in high-strength steel
- **No. 13305:** good service life and process reliability thanks to innovative cutting geometry for use in high-strength steel

No. 13128

No. 13305

p. 755 p. 170 p. 174 p. 22 p. 757

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13128030-100	18	13	10																
13128120-200	18	13	10																
13305030-100	18	13	10																
13305120-200	18	13	10																

						Cutting material	HSSE		HSSE	
						Surface	TiCN		TiCN	
						Tol.	ISO 2 (6H)		ISO 2 (6H)	
						Lead angle shape	B		C	
						Twist angle	0°		40° (right)	
						Coolant supply	External		External	
	mm	mm	mm	mm	mm	DIN	13128... Ident. No.		13305... Ident. No.	
M3	0.5	2.5	56	3.5	2.7	371	030	●	030	●
M4	0.7	3.3	63	4.5	3.4	371	040	●	040	●
M5	0.8	4.2	70	6	4.9	371	050	●	050	●
M6	1	5	80	6	4.9	371	060	●	060	●
M8	1.25	6.8	90	8	6.2	371	080	●	080	●
M10	1.5	8.5	100	10	8	371	100	●	100	●
M12	1.75	10.2	110	9	7	376	120	●	120	●
M16	2	14	110	12	9	376	160	●	160	●
M20	2.5	17.5	140	16	12	376	200	●	200	●

Prod. Gr. 1KA

ATORN® Machine tap, HSSE, vaporised (DIN 376)

For use in high-strength steel up to 1300 N/mm²

Application:
For producing metric threads on CNC machines or conventional machines in **blind holes** in the high-strength steel material group up to a strength of 1300 N/mm² in individual part and series production.

Execution:
- With protruding shank

Advantage:
- good service life and process reliability thanks to innovative cutting geometry and coating for use in high-strength steel

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13308	16	12	9																

							Cutting material	HSSE
							Surface	Vaporised
							Tol.	ISO 2 (6H)
							Lead angle shape	C
							Twist angle	40° (right)
							Coolant supply	External
	mm	mm	mm	mm	mm	DIN	13308... Ident. No.	
M3	0.5	2.5	56	2.2	-	376	030	●
M4	0.7	3.3	63	2.8	2.1	376	040	●
M5	0.8	4.2	70	3.5	3.4	376	050	●
M6	1	5	80	4.5	3.4	376	060	●
M8	1.25	6.8	90	6	4.9	376	080	●
M10	1.5	8.5	100	7	5.5	376	100	●
M12	1.75	10.2	110	9	7	376	120	●
M14	2	12	110	11	9	376	140	●
M16	2	14	110	12	9	376	160	●
M18	2.5	15.5	125	14	11	376	180	●
M20	2.5	17.5	140	16	12	376	200	●
M24	3	21	160	18	14.5	376	240	●
M30	3.5	26.5	180	22	18	376	300	●

Prod. Gr. 1KA

ATORN® Machine tap HSSE vaporised, oversize ISO 3 (6G) (DIN 371)

For use in high-strength steel up to 1300 N/mm²

Application:
No. 13077: For manufacturing oversized metric threads to ISO 3 (for subsequent surface treatment or thread shrinking as part of a hardening process) in through holes on CNC and conventional machines in the steel material group up to a strength of 1300 N/mm².
No. 13309: For creating metric threads with ISO 3 oversize (for subsequent surface treatment or shrinking of the thread in the course of hardening) in the blind hole on CNC or conventional machines for the material group of steel up to a strength of 1300 N/mm².

Execution:
- **No. 13077:** With reinforced shank
- **No. 13309:** with reinforced shank

Advantage:
- **No. 13077:** Long service life and high level of process reliability thanks to innovative cutting geometry and coating for use in high-strength steel
- **No. 13309:** good service life and process reliability thanks to innovative cutting geometry and coating for use in high-strength steel

No. 13077 No. 13309

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13077030-100	16	12	9																
13309	16	12	9																

							Cutting material	HSSE	HSSE
							Surface	Vaporised	Vaporised
							Tol.	ISO 3 (6G)	ISO 3 (6G)
							Lead angle shape	C	B
							Twist angle	40° (right)	0°
							Coolant supply	External	External
	mm	mm	mm	mm	mm	DIN	13309... Ident. No.		13077... Ident. No.	
M2	0.4	1.6	45	2.8	2.1	371	020	●	-	-
M3	0.5	2.5	56	3.5	2.7	371	030	●	030	●
M4	0.7	3.3	63	4.5	3.4	371	040	●	040	●
M5	0.8	4.2	70	6	4.9	371	050	●	050	●

						Cutting material	HSSE		HSSE	
						Surface	Vaporised		Vaporised	
						Tol.	ISO 3 (6G)		ISO 3 (6G)	
						Lead angle shape	C		B	
						Twist angle	40° (right)		0°	
						Coolant supply	External		External	
	mm	mm	mm	mm	mm	DIN	13309... Ident. No.		13077... Ident. No.	
M6	1	5	80	6	4.9	371	060	●	060	●
M8	1.25	6.8	90	8	6.2	371	080	●	080	●
M10	1.5	8.5	100	10	8	371	100	●	100	●

Prod. Gr. 1KA

Screw tap M max Control
For use on stainless steel

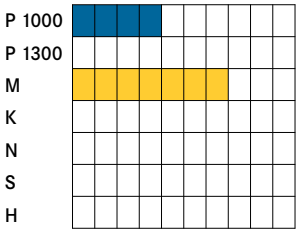
Application:
Machine tap for application in stainless steel both on CNC machines and on conventional machines.

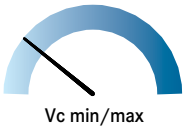
Advantages:
- Very long service life in stainless steel
- Large selection of coatings
- Wide product range in M, MF



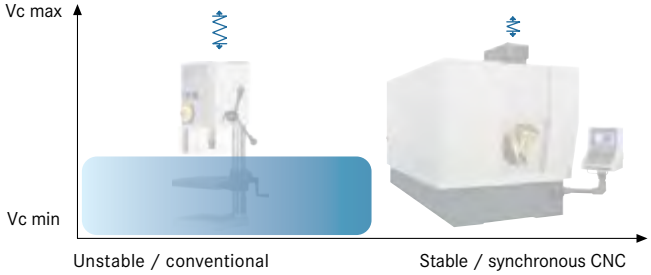


Performance:





Conditions of use:



ATORN® ORION® HSSE machine taps, vaporised
For use on stainless steels

Application:
No. 13136–13145: For producing metric threads on CNC or conventional machines in **through holes** in the stainless steel material group.
No. 13279–13288: For producing metric threads on CNC machines or conventional machines in **blind holes** in the stainless steel material group.

Execution:
- **No. 13136:** Dimensions to: DIN 371 = reinforced shank (to M10), DIN 376 = protruding shank (from M12)
- **No. 13145:** Dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = transition-fit shank (from M12)
- **No. 13279:** Structural dimensions according to: DIN 371 = reinforced shank (up to M10), DIN 376 = protruding shank (from M12)
- **No. 13288:** structural dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = over-long shank (from M12)

Advantage:
- **No. 13136:** Long service life and process reliability through innovative cutting geometry in machining stainless steel
- **No. 13145 120–13145 240:** Standard geometry with an excellent price-performance ratio
- **No. 13279:** Standard geometry with very good price/performance ratio
- **No. 13288:** long service life and high process reliability thanks to innovative cutting geometry for machining stainless steel


No. 13136–13145


No. 13279


No. 13288

p. 755 p. 170 p. 174 p. 40 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13136030-100	16	12		9	10														
13136120-300	16	12		9	10														
13145030-100	16	12		9	10														
13145120-240	16	12		9	10														
13279030-100	16	12		9	10														
13279120	16	12		9	10														

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13288020-100	16	12		9	10														
13288120-300	16	12		9	10														

							ATORN®				ORION®			
						Cutting material	HSSE		HSSE		HSSE		HSSE	
						Surface	Vaporised		Vaporised		Vaporised		Vaporised	
						Tol.	ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)	
						Lead angle shape	C		B		B		C	
						Twist angle	40° (right)		0°		0°		40° (right)	
						Coolant supply	External		External		External		External	
	mm	mm	mm	mm	mm	DIN	13288... Ident. No.		13136... Ident. No.		13145... Ident. No.		13279... Ident. No.	
M2	0.4	1.6	45	2.8	2.1	371	020	●	-	-	-	-	-	-
M2.5	0.45	2.05	50	2.8	2.1	371	025	●	-	-	-	-	-	-
M3	0.5	2.5	56	3.5	2.7	371	030	●	030	●	030	●	030	●
M4	0.7	3.3	63	4.5	3.4	371	040	●	040	●	040	●	040	●
M5	0.8	4.2	70	6	4.9	371	050	●	050	●	050	●	050	●
M6	1	5	80	6	4.9	371	060	●	060	●	060	●	060	●
M8	1.25	6.8	90	8	6.2	371	080	●	080	●	080	●	080	●
M10	1.5	8.5	100	10	8	371	100	●	100	●	100	●	100	●
M12	1.75	10.2	110	9	7	376	120	●	120	●	120	●	120	●
M14	2	12	110	11	9	376	140	●	140	●	-	-	-	-
M16	2	14	110	12	9	376	160	●	160	●	160	●	-	-
M18	2.5	15.5	125	14	11	376	180	●	180	●	-	-	-	-
M20	2.5	17.5	140	16	12	376	200	●	200	●	200	●	-	-
M24	3	21	160	18	14.5	376	240	●	240	●	240	●	-	-
M30	3.5	26.5	180	22	18	376	300	●	300	●	-	-	-	-

ORION = Prod. Gr. 1DB
ATORN® = Prod. Gr. 1KA

ATORN® HSSE TiN machine tap

For use on stainless steels

Application:
No. 13107: For producing metric threads on CNC or conventional machines in **through holes** in the stainless steel material group.
No. 13277: For producing metric threads on CNC machines or conventional machines in **blind holes** in the stainless steel material group.

Execution:
- **No. 13107:** structural dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = over-long shank (from M12)
- **No. 13277:** Structural dimensions according to: DIN 371 = reinforced shank (up to M10), DIN 376 = protruding shank (from M12)

Advantage:
- **No. 13107:** long service life and high process reliability thanks to innovative cutting geometry for machining stainless steel
- **No. 13277:** Long service life and good process reliability due to innovative cutting geometry when machining stainless steel

No. 13107 No. 13277

p. 755 p. 170 p. 174 p. 40 p. 757

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13107030-100	18	13		13	11														
13107120-300	18	13		13	11														
13277120-200	18	13		13	11														

							ATORN®			
						Cutting material	HSSE		HSSE	
						Surface	TiN		TiN	
						Tol.	ISO 2 (6H)		ISO 2 (6H)	
						Lead angle shape	B		C	
						Twist angle	0°		40° (right)	
						Coolant supply	External		External	
	mm	mm	mm	mm	mm	DIN	13107... Ident. No.		13277... Ident. No.	
M3	0.5	2.5	56	3.5	2.7	371	030	●	-	-
M4	0.7	3.3	63	4.5	3.4	371	040	●	-	-
M5	0.8	4.2	70	6	4.9	371	050	●	-	-
M6	1	5	80	6	4.9	371	060	●	-	-
M8	1.25	6.8	90	8	6.2	371	080	●	-	-
M10	1.5	8.5	100	10	8	371	100	●	-	-
M12	1.75	10.2	110	9	7	376	120	●	120	●
M14	2	12	110	11	9	376	140	●	-	-
M16	2	14	110	12	9	376	160	●	160	●
M18	2.5	15.5	125	14	11	376	180	●	-	-
M20	2.5	17.5	140	16	12	376	200	●	200	●
M24	3	21	160	18	14.5	376	240	●	-	-
M30	3.5	26.5	180	22	18	376	300	●	-	-

Prod. Gr. 1KA

ATORN® HSSE machine taps with interrupted teeth

For use on non-ferrous metals

Application:
For producing metric threads on CNC or conventional machines in **through holes** in the non-ferrous metals material group.

Execution:
- Dimensions pursuant to: DIN 371 = reinforced shank (up to M10), DIN 376 = transition-fit shank (from M12)

Advantage:
- Innovative cutting geometry with exposed teeth reduces the torque, improves lubricant distribution and ensures very high process reliability and chip removal
- Specialised insert with optimised chipping geometry for use in NF metals with adhesive or lubricating properties

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13083030-100	16					18	18	15	18	15	15	13							
13083120-160	16					18	18	15	18	15	15	13							

Cutting material	HSSE
Surface	Uncoated
Tol.	ISO 2 (6H)
Lead angle shape	B
Twist angle	0°
Coolant supply	External

						DIN	13083... Ident. No.	
	mm	mm	mm	mm	mm			
M3	0.5	2.5	56	3.5	2.7	371	030	●
M4	0.7	3.3	63	4.5	3.4	371	040	●
M5	0.8	4.2	70	6	4.9	371	050	●
M6	1	5	80	6	4.9	371	060	●
M8	1.25	6.8	90	8	6.2	371	080	●
M10	1.5	8.5	100	10	8	371	100	●
M12	1.75	10.2	110	9	7	376	120	●
M16	2	14	110	12	9	376	160	●

Prod. Gr. 1KA

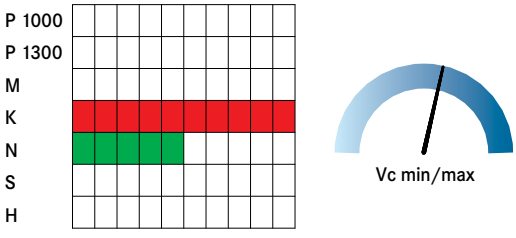
Screw tap K max Control

For use in cast iron and short-chipping non-ferrous metals

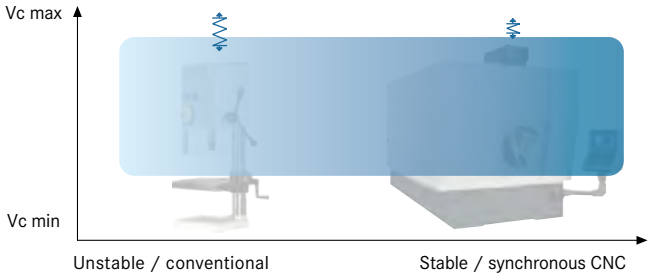
Application:
Machine tap for application in stainless steel both on CNC machines and on conventional machines.

Advantages:
- Very long service life in cast iron and short-chipping non-ferrous metals
- Large selection of coatings and cutting materials
- Optimised geometry for short-chipping materials

Performance:



Conditions of use:



ATORN® Machine tap, HSSE

For use on cast and short-chipping non-ferrous metals

M | ≤3xd | HSSE | TiAlN | ISO 2 x | C (2-3) | IK | CNC/conv.

Application:
For producing metric threads on CNC or conventional machines in **through holes and blind holes** in the non-ferrous metals (short-chipping) and cast iron material groups.

Execution:
- structural dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = over-long shank (from M12)

No. 13290

No. 13291
High-efficiency HSSE-PM tap with internal cooling ensures secure chip removal and outstanding tool life

Advantage:
- long service life and high degree of process reliability thanks to innovative cutting geometry for machining cast iron and short-chip non-ferrous metals
- **No. 13291:** optimum chip removal thanks to inner cooling

K MAX Control | Vc min/max

p. 755 p. 170 p. 174 p. 22 p. 757

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13290030-100						22		20		19		17	16	21					
13290120-240						22		20		19		17	16	21					
13291						22		20		19		17	16	21					

							Cutting material	HSSE		HSSE	
							Surface	TiAlN		TiAlN	
							Tol.	ISO 2X (6HX)		ISO 2X (6HX)	
							Lead angle shape	C		C	
							Twist angle	0°		0°	
							Coolant supply	External		Internal	
	mm	mm	mm	mm	mm	DIN	13290... Ident. No.		13291... Ident. No.	
M3	0.5	2.5	56	3.5	2.7	371	030	●	-	-
M4	0.7	3.3	63	4.5	3.4	371	040	●	-	-
M5	0.8	4.2	70	6	4.9	371	050	●	050	●
M6	1	5	80	6	4.9	371	060	●	060	●
M8	1.25	6.8	90	8	6.2	371	080	●	080	●
M10	1.5	8.5	100	10	8	371	100	●	100	●
M12	1.75	10.2	110	9	7	376	120	●	-	-
M16	2	14	110	12	9	376	160	●	-	-
M18	2.5	15.5	125	14	11	376	180	●	-	-
M20	2.5	17.5	140	16	12	376	200	●	-	-
M24	3	21	160	18	14.5	376	240	●	-	-

Prod. Gr. 1KA

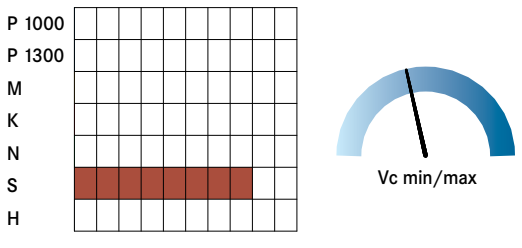
Screw tap S max Control
For use in titanium and nickel alloys

Application:
Machine tap in titanium and nickel alloys both on CNC machines and on conventional machines.

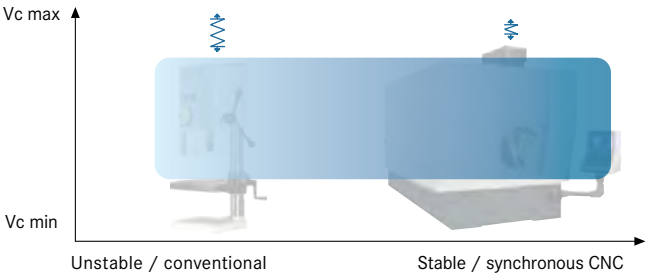
Advantages:
- Very long service life in titanium and nickel alloys
- High-quality cutting materials and coatings ensure long service life

CNC/conv.

Performance:



Conditions of use:



S MAX Control | Vc min/max

ATORN® HSSE-PM machine tap

For use in titanium and nickel alloys up to 1000 N/mm²

M | ≤3xd | ≤2xd | HSSE-PM | TiCN | ISO 2 x | ISO 2 | B (3,5-5) | C (2-3) | CNC/conv.

Application:

No. 13134: For producing metric threads on CNC machines or conventional machines in **through holes** in the titanium and nickel alloy material group **up to 1000 N/mm²**.

No. 13286–13287: For producing metric threads on CNC machines or conventional machines in **blind holes** in the titanium and nickel alloy material group **up to 1000 N/mm²**.

Execution:

- **No. 13134:** Dimensions to: DIN 371 = reinforced shank (to M10), DIN 376 = protruding shank (from M12)
- **No. 13286–13287:** structural dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = over-long shank (from M12)

Advantage:

- **No. 13134:** Long service life and process reliability through innovative cutting geometry and coating for use in titanium-and-nickel alloys
- **No. 13286–13287:** good service life and process reliability thanks to innovative cutting geometry and coating for use in titanium and nickel alloys

No. 13134

No. 13286

No. 13287

S MAX Control | Vc min/max

p. 755 | p. 170 | p. 174 | p. 40 | p. 757

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13134020-100															6	5			
13134120-160															6	5			
13286030-100															6	5			
13286120-160															6	5			
13287030-100															6	5			
13287120-160															6	5			

							Cutting material	HSSE-PM		HSSE-PM		HSSE-PM	
							Surface	TiCN		Vaporised		TiCN	
							Tol.	ISO 2X (6HX)		ISO 2X (6HX)		ISO 2 (6H)	
							Lead angle shape	B		C		C	
							Twist angle	0°		30° (right)		30° (right)	
							Coolant supply	External		External		External	
	mm	mm	mm	mm	mm	DIN	13134... Ident. No.		13286... Ident. No.		13287... Ident. No.		
M2	0.4	1.6	45	2.8	2.1	371	020	●	-	-	-	-	
M2.5	0.45	2.05	50	2.8	2.1	371	025	●	-	-	-	-	
M3	0.5	2.5	56	3.5	2.7	371	030	●	030	●	030	●	
M3.5	0.6	2.9	56	4	3	371	035	●	-	-	-	-	
M4	0.7	3.3	63	4.5	3.4	371	040	●	040	●	040	●	
M5	0.8	4.2	70	6	4.9	371	050	●	050	●	050	●	
M6	1	5	80	6	4.9	371	060	●	060	●	060	●	
M8	1.25	6.8	90	8	6.2	371	080	●	080	●	080	●	
M10	1.5	8.5	100	10	8	371	100	●	100	●	100	●	
M12	1.75	10.2	110	9	7	376	120	●	120	●	120	●	
M16	2	14	110	12	9	376	160	●	160	●	160	●	

Prod. Gr. 1KA

ATORN® HSSE-PM machine tap

For use in titanium and nickel alloys over 1000 N/mm²

M | ≤3xd | ≤2xd | ≤1xd | HSSE-PM | TiAlN | ISO 2 | B (3,5-5) | C (2-3) | CNC/conv.

Application:

No. 13203: For manufacturing metric threads on CNC or conventional machines in **through holes** in the titanium and nickel alloy material group **over 1000 N/mm²**.

No. 13313: For producing metric threads on CNC machines or conventional machines in **blind holes** in the titanium and nickel alloy material group **over 1000 N/mm²**.

Execution:

- Dimensions in accordance with: DIN 371 = reinforced shank (up to M10), DIN 376 = transition-fit shank (from M12)

Advantage:

- Long service life and high process reliability thanks to innovative cutting geometry and coating for use with titanium and nickel alloys

No. 13203

No. 13313

S MAX Control | Vc min/max

p. 755 | p. 170 | p. 174 | p. 40 | p. 757

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13203030-100															6	5			
13203120															6	5			
13313120-160															6	5			

						Cutting material	HSSE-PM		HSSE-PM	
						Surface	TiAlN		TiAlN	
						Tol.	ISO 2 (6H)		ISO 2 (6H)	
						Lead angle shape	B		C	
						Twist angle	0°		15° (right)	
						Coolant supply	External		External	
	mm	mm	mm	mm	mm	DIN	13203... Ident. No.		13313... Ident. No.	
M3	0.5	2.5	56	3.5	2.7	371	030	●	-	-
M4	0.7	3.3	63	4.5	3.4	371	040	●	040	●
M5	0.8	4.2	70	6	4.9	371	050	●	050	●
M6	1	5	80	6	4.9	371	060	●	060	●
M8	1.25	6.8	90	8	6.2	371	080	●	080	●
M10	1.5	8.5	100	10	8	371	100	●	100	●
M12	1.75	10.2	110	9	7	376	120	●	120	●
M16	2	14	110	12	9	376	-	-	160	●

Prod. Gr. 1KA

Screw tap H max Control
For use in hard machining from 55-65 HRC

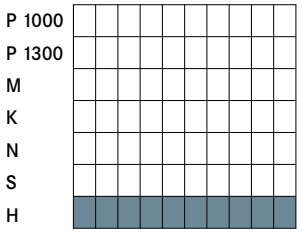
Application:
machine tap in hard machining both on CNC machines and on conventional machines.

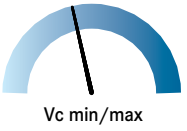
Advantages:
- Very long service life in hard machining
- High-quality cutting materials and coatings ensure long service life



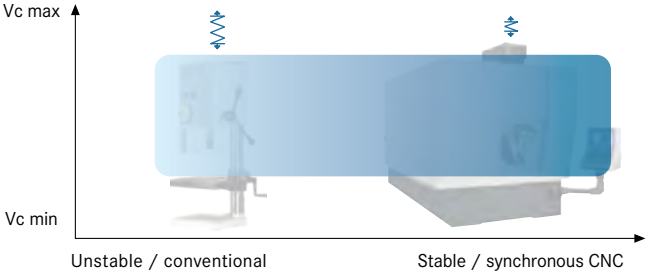


Performance:





Conditions of use:



ATORN® machine tap HSSE PM Ultra HL (DIN 374)
for universal use up to 1200 N/mm2

Application:
No. 13204: For producing fine metric threads on CNC machines or conventional machines in **through holes** in the steel, stainless steel, non-ferrous metals, cast and special alloy material groups up to a strength of 1200 N/mm².
No. 13211: For producing fine metric threads on CNC machines or conventional machines in **blind holes** in the steel, stainless steel, non-ferrous metals, cast iron and special alloy material groups up to a strength of 1200 N/mm².

Advantage:
- Universal use for maximum flexibility of application
- Innovative cutter geometry ensures high process reliability even in difficult machining conditions


No. 13211


No. 13204

p. 755 p. 170 p. 174 p. 22 p. 757 p. 185

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13204086-203	22	16	12	12	12	14	30	17	24	12	20	30	16	18	7	6	6		
13211086-203	22	16	12	12	12	14	30	17	24	12	20	30	16	18	7	6	6		

						Cutting material	HSSE-PM		HSSE-PM	
						Surface	ULTRA HL		ULTRA HL	
						Tol.	ISO 2X (6HX)		ISO 2X (6HX)	
						Lead angle shape	C		B	
						Twist angle	50° (right)		0°	
						Coolant supply	External		External	
	mm	mm	mm	mm	mm	DIN	13204... Ident. No.		13211... Ident. No.	
MF8	1	7	90	6	4.9	374	086	●	086	●
MF10	1	9	90	7	5.5	374	103	●	103	●
MF10	1.25	8.8	100	7	5.5	374	106	●	106	●
MF12	1	11	100	9	7	374	120	●	120	●
MF12	1.25	10.8	100	9	7	374	123	●	123	●
MF12	1.5	10.5	100	9	7	374	126	●	126	●
MF14	1.5	12.5	100	11	9	374	146	●	146	●
MF16	1.5	14.5	100	12	9	374	165	●	165	●
MF18	1.5	16.5	110	14	11	374	183	●	183	●
MF20	1.5	18.5	125	16	12	374	203	●	203	●

Prod. Gr. 1KC

ATORN® Machine tap, HSSE Ultra HL (DIN 374)

For universal use, for use up to 1000 N/mm²

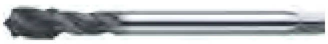
MF | ≤3xd | ≤2,5xd | HSSE | ULTRA HL | ISO 2 | B (3,5-5) | C (2-3) | CNC/conv.

Application:
No. 13103: For producing fine metric threads on CNC machines or conventional machines in **through holes** in the steel, stainless steel, non-ferrous metals, cast iron and special alloy material groups up to a strength of 1000 N/mm².
No. 13315: For producing fine metric threads on CNC machines or conventional machines in **blind holes** in the steel, stainless steel, non-ferrous metals, cast iron and special alloy material groups up to a strength of 1000 N/mm².

Execution:
- With transition-fit shank

Advantage:
- Ideal for long service life requirements and materials that are difficult to machine, such as stainless steel
- Innovative cutting geometry and ULTRA HL coating guarantee high process reliability even under difficult machining conditions


No. 13103


No. 13315

p. 755 p. 170 p. 174 p. 22 p. 757

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13103	18	12	8	11	10	19	19	17	19	17	18	13		18	7	6	6		
13315	18	12	8	11	10	19	19	17	19	17	18	13		18	7	6	6		

						Cutting material	HSSE		HSSE	
						Surface	ULTRA HL		ULTRA HL	
						Tol.	ISO 2 (6H)		ISO 2 (6H)	
						Lead angle shape	B		C	
						Twist angle	0°		45° (right)	
						Coolant supply	External		External	
	mm	mm	mm	mm	mm	DIN	13103... Ident. No.		13315... Ident. No.	
MF6	0.75	5.2	80	4.5	3.4	374	065	●	065	●
MF8	0.75	7.2	80	6	4.9	374	-	-	083	●
MF8	1	7	90	6	4.9	374	086	●	086	●
MF10	1	9	90	7	5.5	374	103	●	103	●
MF10	1.25	8.8	100	7	5.5	374	-	-	106	●
MF12	1	11	100	9	7	374	120	●	120	●
MF12	1.5	10.5	100	9	7	374	126	●	126	●
MF12	1.25	10.8	100	9	7	374	-	-	123	●
MF14	1.5	12.5	100	11	9	374	146	●	146	●
MF16	1.5	14.5	100	12	9	374	165	●	165	●
MF18	1.5	16.5	110	14	11	374	183	●	183	●
MF20	1.5	18.5	125	16	12	374	-	-	203	●
MF24	1.5	22.5	140	18	14.5	374	243	●	243	●
MF24	2	22	140	18	14.5	374	246	●	-	-

Prod. Gr. 1KC

ATORN® Machine tap, HSSE (DIN 374)

for universal use up to 1000 N/mm2

MF | ≤2xd | HSSE | ISO 2 | C (2-3) | CNC/conv.

Application:
For producing fine metric threads on CNC machines or conventional machines in **through holes and blind holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

Execution:
- With transition-fit shank

Advantage:
- Long service life and high process reliability thanks to innovative cutting geometry, and universal use for maximum flexibility in use.

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13320	16	11		9		18	18	15	18	15	15	13	14	16					

Cutting material	HSSE
Surface	Uncoated
Tol.	ISO 2 (6H)
Lead angle shape	C
Twist angle	0°
Coolant supply	External

	mm	mm	mm	mm	mm	DIN	13320... Ident. No.	
MF3	0.35	2.65	56	2.2	-	374	030	●
MF4	0.5	3.5	63	2.8	2.1	374	045	●
MF5	0.5	4.5	70	3.5	2.7	374	050	●
MF6	0.5	5.5	80	4.5	3.4	374	060	●
MF6	0.75	5.2	80	4.5	3.4	374	065	●
MF8	0.5	7.5	80	6	4.9	374	080	●
MF8	0.75	7.2	80	6	4.9	374	083	●
MF8	1	7	90	6	4.9	374	086	●
MF9	1	8	90	7	5.5	374	090	●
MF10	0.75	9.2	90	7	5.5	374	100	●
MF10	1	9	90	7	5.5	374	103	●
MF10	1.25	8.8	100	7	5.5	374	106	●
MF12	1	11	100	9	7	374	120	●
MF12	1.25	10.8	100	9	7	374	123	●
MF12	1.5	10.5	100	9	7	374	126	●
MF14	1	13	100	11	9	374	140	●
MF14	1.25	12.8	100	11	9	374	143	●
MF14	1.5	12.5	100	11	9	374	146	●
MF15	1	14	100	12	9	374	154	●
MF16	1	15	100	12	9	374	160	●
MF16	1.5	14.5	100	12	9	374	165	●
MF18	1	17	110	14	11	374	180	●
MF18	1.5	16.5	110	14	11	374	183	●
MF20	1	19	125	16	12	374	200	●
MF20	2	18	140	16	12	374	206	●
MF22	1.5	20.5	125	18	14.5	374	223	●
MF24	1	23	140	18	14.5	374	240	●
MF24	1.5	22.5	140	18	14.5	374	243	●
MF24	2	22	140	18	14.5	374	246	●
MF26	1.5	24.5	140	18	14.5	374	260	●
MF27	1.5	25.5	140	20	16	374	270	●
MF27	2	25	140	20	16	374	273	●
MF30	1.5	28.5	150	22	18	374	303	●
MF30	2	28	150	22	18	374	306	●
MF36	1.5	34.5	170	28	22	374	360	●

Prod. Gr. 1KC

ATORN® ORION® HSSE machine tap (DIN 374)

For universal use up to 1000 N/mm²

Application:

No. 13144–13147: For producing fine metric threads on CNC machines or conventional machines in **through holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

No. 13335: For producing fine metric threads on CNC machines or conventional machines in **blind holes** in the steel, (stainless steel), non-ferrous metals and cast iron material groups up to a strength of 1000 N/mm².

Execution:

- **No. 13144:** With protruding shank
- **No. 13147–13335:** With transition-fit shank

Advantage:

- **No. 13144:** Long service life and process reliability through innovative cutting geometry and universal use for maximum application flexibility
- **No. 13147:** Long service life and high process reliability thanks to innovative cutting geometry, and universal use for maximum flexibility in use.
- **No. 13335:** Standard geometry with an excellent price-performance ratio

No. 13144–13147

No. 13335

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13144	16	11		9		18	18	15	18	15	15	13	14	16					
13147	16	11		9		18	18	15	18	15	15	13	14	16					
13335	16	11		9		18	18	15	18	15	15	13	14	16					

							ATORN		ORION			
						Cutting material	HSSE		HSSE		HSSE	
						Surface	Uncoated		Uncoated		Uncoated	
						Tol.	ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)	
						Lead angle shape	B		B		C	
						Twist angle	0°		0°		40° (right)	
						Coolant supply	External		External		External	
	mm	mm	mm	mm	mm	DIN	13144... Ident. No.		13147... Ident. No.		13335... Ident. No.	
MF3	0.35	2.65	56	2.2	-	374	030	●	-	-	-	-
MF4	0.5	3.5	63	2.8	2.1	374	045	●	-	-	-	-
MF5	0.5	4.5	70	3.5	2.7	374	050	●	-	-	-	-
MF6	0.5	5.5	80	4.5	3.4	374	060	●	-	-	-	-
MF6	0.75	5.2	80	4.5	3.4	374	065	●	-	-	-	-
MF7	0.75	6.2	80	5.5	4.3	374	070	●	-	-	-	-
MF8	0.5	7.5	80	6	4.9	374	080	●	-	-	-	-
MF8	0.75	7.2	80	6	4.9	374	083	●	-	-	-	-
MF8	1	7	90	6	4.9	374	086	●	086	●	086	●
MF9	1	8	90	7	5.5	374	090	●	-	-	-	-
MF10	0.75	9.2	90	7	5.5	374	100	●	-	-	-	-
MF10	1	9	90	7	5.5	374	103	●	103	●	103	●
MF10	1.25	8.8	100	7	5.5	374	106	●	106	●	-	-
MF11	1	10	90	8	6.2	374	110	●	110	●	-	-
MF12	1	11	100	9	7	374	120	●	120	●	120	●
MF12	1.25	10.8	100	9	7	374	123	●	123	●	123	●
MF12	1.5	10.5	100	9	7	374	126	●	126	●	126	●
MF14	1	13	100	11	9	374	140	●	140	●	-	-
MF14	1.25	12.8	100	11	9	374	143	●	-	-	-	-
MF14	1.5	12.5	100	11	9	374	146	●	146	●	146	●
MF15	1	14	100	12	9	374	150	●	150	●	-	-
MF15	1.5	13.5	100	12	9	374	154	●	154	●	-	-
MF16	1	15	100	12	9	374	160	●	160	●	-	-
MF16	1.5	14.5	100	12	9	374	165	●	165	●	165	●
MF18	1	17	110	14	11	374	180	●	-	-	-	-
MF18	1.5	16.5	110	14	11	374	183	●	183	●	183	●
MF18	2	16	125	14	11	374	185	●	185	●	-	-
MF20	1	19	125	16	12	374	200	●	200	●	-	-
MF20	1.5	18.5	125	16	12	374	203	●	203	●	203	●
MF20	2	18	140	16	12	374	206	●	-	-	-	-
MF22	1	21	125	18	14.5	374	220	●	-	-	-	-
MF22	1.5	20.5	125	18	14.5	374	223	●	-	-	-	-
MF22	2	20	140	18	14.5	374	226	●	-	-	-	-
MF24	1	23	140	18	14.5	374	240	●	-	-	-	-
MF24	1.5	22.5	140	18	14.5	374	243	●	-	-	-	-
MF24	2	22	140	18	14.5	374	246	●	-	-	-	-
MF26	1.5	24.5	140	18	14.5	374	260	●	-	-	-	-
MF27	1.5	25.5	140	20	16	374	270	●	-	-	-	-
MF27	2	25	140	20	16	374	273	●	-	-	-	-
MF30	1.5	28.5	150	22	18	374	303	●	-	-	-	-
MF30	2	28	150	22	18	374	306	●	-	-	-	-
MF32	1.5	30.5	150	22	18	374	320	●	-	-	-	-
MF33	1.5	31.5	160	25	20	374	330	●	-	-	-	-
MF35	1.5	33.5	170	28	22	374	350	●	-	-	-	-
MF36	1.5	34.5	170	28	22	374	360	●	-	-	-	-
MF38	1.5	36.5	170	28	22	374	380	●	-	-	-	-
MF40	1.5	38.5	170	32	24	374	405	●	-	-	-	-

ORION = Prod. Gr. 1DB
ATORN® = Prod. Gr. 1KC

ATORN® HSSE machine tap (DIN 374)

For universal use up to 1000 N/mm²

Application:

No. 13161: For producing fine metric threads on CNC machines or conventional machines in **through holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

No. 13332: For producing fine metric threads on CNC machines or conventional machines in **blind holes** in the steel, (stainless steel), non-ferrous metals and cast iron material groups up to a strength of 1000 N/mm².

Execution:

- **No. 13161:** With transition-fit shank
- **No. 13332:** With protruding shank

Advantage:

- Long service life and high process reliability thanks to innovative cutting geometry, and universal use for maximum flexibility in use.

No. 13161

No. 13332

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13161	16	11		9		18	18	15	18	15	15	13	14	16					
13332	16	11		9		18	18	15	18	15	15	13	14	16					

							Cutting material	HSSE		HSSE	
							Surface	Vaporised		Vaporised	
							Tol.	ISO 2 (6H)		ISO 2 (6H)	
							Lead angle shape	C		B	
							Twist angle	40° (right)		0°	
							Coolant supply	External		External	
	mm	mm	mm	mm	mm		DIN	13332... Ident. No.		13161... Ident. No.	
MF4	0.5	3.5	63	2.8	2.1		374	045	●	-	-
MF5	0.5	4.5	70	3.5	2.7		374	050	●	050	●
MF6	0.75	5.2	80	4.5	3.4		374	065	●	065	●
MF8	0.75	7.2	80	6	4.9		374	083	●	083	●
MF8	1	7	90	6	4.9		374	086	●	086	●
MF10	1	9	90	7	5.5		374	103	●	103	●
MF10	1.25	8.8	100	7	5.5		374	106	●	-	-
MF12	1	11	100	9	7		374	120	●	120	●
MF12	1.25	10.8	100	9	7		374	123	●	-	-
MF12	1.5	10.5	100	9	7		374	126	●	126	●
MF14	1.5	12.5	100	11	9		374	146	●	146	●
MF16	1	15	100	12	9		374	160	●	-	-
MF16	1.5	14.5	100	12	9		374	165	●	165	●
MF18	1.5	16.5	110	14	11		374	183	●	183	●
MF20	1.5	18.5	125	16	12		374	203	●	203	●
MF22	1.5	20.5	125	18	14.5		374	-	-	220	●
MF24	1.5	22.5	140	18	14.5		374	243	●	243	●
MF24	2	22	140	18	14.5		374	-	-	246	●
MF26	1.5	24.5	140	18	14.5		374	-	-	260	●
MF28	1.5	26.5	140	20	16		374	280	●	-	-
MF30	1.5	28.5	150	22	18		374	303	●	303	●
MF30	2	28	150	22	18		374	-	-	306	●
MF36	1.5	34.5	170	28	22		374	-	-	360	●
MF42	1.5	40.5	170	32	24		374	-	-	420	●
MF45	1.5	43.5	180	36	29		374	-	-	450	●
MF48	1.5	46.5	190	36	29		374	-	-	480	●
MF50	1.5	48.5	190	36	29		374	-	-	500	●

Prod. Gr. 1KC

ATORN® HSSE machine tap (DIN 374)

For universal use up to 1000 N/mm²

MF | ≤3xd | ≤2,5xd | HSSE | ISO 2 | B (3,5-5) | C (2-3) | CNC/conv.

Application:

No. 13143: For producing fine metric threads on CNC or conventional machines in **through holes** in the stainless steel material group.

No. 13324: For producing fine metric threads on CNC machines or conventional machines in **blind holes** in the stainless steel material group.

Execution:

- **No. 13143:** With protruding shank
- **No. 13324:** With transition-fit shank

Advantage:

- **No. 13143:** Long service life and process reliability through innovative cutting geometry in machining stainless steel
- **No. 13324:** Long service life and high process reliability thanks to innovative cutting geometry for use on stainless steels

No. 13143

No. 13324

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13143	16	11		9	10														
13324	16	11		9	10														

							Cutting material	HSSE		HSSE	
							Surface	Vaporised		Vaporised	
							Tol.	ISO 2 (6H)		ISO 2 (6H)	
							Lead angle shape	B		C	
							Twist angle	0°		15° (right)	
							Coolant supply	External		External	
	mm	mm	mm	mm	mm		DIN	13143... Ident. No.		13324... Ident. No.	
MF4	0.5	3.5	63	2.8	2.1		374	045	●	045	●
MF5	0.5	4.5	70	3.5	2.7		374	050	●	050	●
MF6	0.5	5.5	80	4.5	3.4		374	060	●	060	●
MF6	0.75	5.2	80	4.5	3.4		374	065	●	065	●
MF7	0.75	6.2	80	5.5	4.3		374	070	●	-	-
MF8	0.5	7.5	80	6	4.9		374	080	●	-	-
MF8	0.75	7.2	80	6	4.9		374	083	●	083	●
MF8	1	7	90	6	4.9		374	086	●	086	●
MF9	1	8	90	7	5.5		374	090	●	-	-
MF10	0.75	9.2	90	7	5.5		374	100	●	-	-
MF10	1	9	90	7	5.5		374	103	●	103	●
MF10	1.25	8.8	100	7	5.5		374	106	●	106	●
MF11	1	10	90	8	6.2		374	110	●	-	-
MF12	1	11	100	9	7		374	120	●	120	●

							Cutting material	HSSE		HSSE	
							Surface	Vaporised		Vaporised	
							Tol.	ISO 2 (6H)		ISO 2 (6H)	
							Lead angle shape	B		C	
							Twist angle	0°		15° (right)	
							Coolant supply	External		External	
	mm	mm	mm	mm	mm	DIN	13143... Ident. No.			13324... Ident. No.	
MF12	1.25	10.8	100	9	7	374	123	●		-	-
MF12	1.5	10.5	100	9	7	374	126	●		126	●
MF14	1	13	100	11	9	374	140	●		-	-
MF14	1.25	12.8	100	11	9	374	143	●		-	-
MF14	1.5	12.5	100	11	9	374	146	●		146	●
MF15	1	14	100	12	9	374	150	●		-	-
MF16	1	15	100	12	9	374	160	●		-	-
MF16	1.5	14.5	100	12	9	374	165	●		165	●
MF18	1	17	110	14	11	374	180	●		-	-
MF18	1.5	16.5	110	14	11	374	183	●		183	●
MF20	1	19	125	16	12	374	200	●		-	-
MF20	1.5	18.5	125	16	12	374	203	●		203	●
MF20	2	18	140	16	12	374	206	●		206	●
MF22	1	21	125	18	14.5	374	220	●		-	-
MF22	1.5	20.5	125	18	14.5	374	223	●		223	●
MF24	1	23	140	18	14.5	374	240	●		-	-
MF24	1.5	22.5	140	18	14.5	374	243	●		243	●
MF24	2	22	140	18	14.5	374	246	●		-	-
MF26	1.5	24.5	140	18	14.5	374	260	●		-	-
MF30	1.5	28.5	150	22	18	374	303	●		-	-
MF30	2	28	150	22	18	374	306	●		306	●
MF33	1.5	31.5	160	25	20	374	330	●		-	-
MF33	2	31	160	25	20	374	335	●		-	-
MF36	2	34	170	28	22	374	363	●		-	-
MF35	1.5	33.5	170	28	22	374	350	●		-	-
MF36	1.5	34.5	170	28	22	374	360	●		-	-
MF38	1.5	36.5	170	28	22	374	380	●		-	-
MF42	1.5	40.5	170	32	24	374	420	●		-	-
MF48	1.5	46.5	190	36	29	374	480	●		-	-
MF50	1.5	48.5	190	36	29	374	500	●		-	-

Prod. Gr. 1KC

ATORN® HSSE-PM and solid carbide machine tap (DIN Similar to 371)

For machining hardened steels

MF | ≤1xd | VHM | HSSE-PM | TiCN | ISO 2 | D (3,5-5) | CNC/conv.

Application:

No. 13152: For producing fine metric threads on CNC machines in **through holes and blind holes** in the hardened steel material group **up to 55 HRC**.

No. 13153: For manufacturing fine metric threads on CNC machines in **through and blind holes** in the hardened steel material group **up to 65 HRC**.

Execution:

- With reinforced shank

Advantage:

- Long service life and high process reliability thanks to innovative cutting geometry and coating for use on hardened steel

No. 13152

No. 13153

p. 755 p. 170 p. 174 p. 22 p. 757

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13152086-126																		3	
13153060-126																		3	2

							Cutting material	VHM		HSSE-PM	
							Surface	TiCN		TiCN	
							Tol.	ISO 2 (6H)		ISO 2 (6H)	
							Lead angle shape	D		D	
							Twist angle	0°		0°	
							Coolant supply	External		External	
	mm	mm	mm	mm	mm	DIN	13153... Ident. No.			13152... Ident. No.	
MF6	0.5	5.5	80	6	4.9	Similar to 371	060	●		-	-
MF8	1	7	90	8	6.2	Similar to 371	086	●		086	●
MF10	1	9	90	10	8	Similar to 371	103	●		103	●
MF12	1	11	100	12	9	Similar to 371	120	●		120	●
MF12	1.5	10.5	100	12	9	Similar to 371	126	●		126	●

Prod. Gr. 1KC

ATORN® HSS hand tap (DIN 352)

For universal use up to 1000 N/mm²

M | HSS | ≤3xd | ISO 2 | A (6-8) | D (3,5-5) | C (2-3)

Application:

Ident. No. 010–420: For manually tapping metric threads in through holes and blind holes in the steel, NF metal and (cast) material groups up to a strength of 1000 N/mm² in single part production.

Ident. No. 720–952: For producing metric threads by hand in through holes and blind holes, in steel, non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm² in single-part production.

Execution:

- **Ident. No. 010–420:** Set consisting of taper tap (form A), second tap (form D) and third tap (form C)
- **Ident. No. 720–752:** Taper tap with notch shape A with one ring
- **Ident. No. 820–852:** Second tap with notch shape D with two rings
- **Ident. No. 920–952:** Third tap (plug) with notch shape C without ring

Advantage:

- **Ident. No. 010–420:** Long service life and high level of process reliability thanks to innovative cutting geometry and universal application for maximum flexibility in use
- **Ident. No. 720–952:** Long service life and process reliability through innovative cutting geometry and universal use for maximum application flexibility

Ident. No. 010–752
Taper tap, shape A

Ident. No. 010–420, 820–852
Second tap, shape D

Ident. No. 010–420, 920–952
Third tap, shape C

p. 755 | p. 170 | p. 62 | p. 282 | p. 283

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13010010-420	●	●		○		○	●	●	●	●	●	●	○	○					
13010720-752	●	●		○		○	●	●	●	●	●	●	○	○					
13010820-852	●	●		○		○	●	●	●	●	●	●	○	○					
13010920-952	●	●		○		○	●	●	●	●	●	●	○	○					

						Version	Set		Taper tap		Second tap		Third tap	
						Lead angle shape	A/D/C		A		D		C	
	mm	mm	mm	mm	mm		13010... Ident. No.		13010... Ident. No.		13010... Ident. No.		13010... Ident. No.	
M1	0.25	0.75	32	2.5	2.1		010	●	-	-	-	-	-	-
M1.2	0.25	0.95	32	2.5	2.1		012	●	-	-	-	-	-	-
M1.4	0.3	1.1	32	2.5	2.1		014	●	-	-	-	-	-	-
M1.6	0.35	1.25	32	2.5	2.1		016	●	-	-	-	-	-	-
M1.7	0.35	1.3	32	2.5	2.1		017	●	-	-	-	-	-	-
M1.8	0.35	1.45	32	2.5	2.1		018	●	-	-	-	-	-	-
M2	0.4	1.6	36	2.8	2.1		020	●	720	●	820	●	920	●
M2.3	0.4	1.9	36	2.8	2.1		023	●	-	-	-	-	-	-
M2.5	0.45	2.05	40	2.8	2.1		025	●	-	-	-	-	-	-
M2.6	0.45	2.1	40	2.8	2.1		026	●	726	●	826	●	926	●
M3	0.5	2.5	40	3.5	2.7		030	●	730	●	830	●	930	●
M3.5	0.6	2.9	45	4	3		035	●	-	-	-	-	-	-
M4	0.7	3.3	45	4.5	3.4		040	●	734	●	834	●	934	●
M4.5	0.75	3.7	50	6	4.9		045	●	-	-	-	-	-	-
M5	0.8	4.2	50	6	4.9		050	●	738	●	838	●	938	●
M6	1	5	50	6	4.9		060	●	740	●	840	●	940	●
M7	1	6	50	6	4.9		070	●	-	-	-	-	-	-
M8	1.25	6.8	56	6	4.9		080	●	744	●	844	●	944	●
M9	1.25	7.8	63	7	5.5		090	●	-	-	-	-	-	-
M10	1.5	8.5	70	7	5.5		100	●	748	●	848	●	948	●
M11	1.5	9.5	70	8	6.2		110	●	-	-	-	-	950	●
M12	1.75	10.2	75	9	7		120	●	752	●	852	●	952	●
M14	2	12	80	11	9		140	●	-	-	-	-	-	-
M16	2	14	80	12	9		160	●	-	-	-	-	-	-
M18	2.5	15.5	95	14	11		180	●	-	-	-	-	-	-
M20	2.5	17.5	95	16	12		200	●	-	-	-	-	-	-
M24	3	21	110	18	14.5		240	●	-	-	-	-	-	-
M36	4	32	150	28	22		360	●	-	-	-	-	-	-
M42	4.5	37.5	150	32	24		420	●	-	-	-	-	-	-

Prod. Gr. 1KM

ATORN® HSS left-hand hand tap set (DIN 352)

For universal use up to 1000 N/mm²

M-L | ≤3xd | HSS | ISO 2

Application:
For manually tapping metric left-hand threads in through holes and blind holes in the steel, NF metal and (cast) material groups up to a strength of 1000 N/mm² in single part production.

Execution:
- Set consisting of taper tap (form A), second tap (form D) and third tap (form C)

Advantage:
- Long service life and high level of process reliability thanks to innovative cutting geometry and universal application for maximum flexibility in use

Taper tap, shape A

Second tap, shape D

Third tap, shape C

p. 170 p. 62 p. 282 p. 283 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13012	●	●		○		○	●	●	●	●	●	●	○	○					

						Version Lead angle shape	Set A/D/F	
	mm	mm	mm	mm	mm		13012... Ident. No.	
M-L4	0.7	3.3	45	4.5	3.4		040	●
M-L5	0.8	4.2	50	6	4.9		050	●
M-L6	1	5	50	6	4.9		060	●
M-L8	1.25	6.8	56	6	4.9		080	●
M-L10	1.5	8.5	70	7	5.5		100	●
M-L12	1.75	10.2	75	9	7		120	●
M-L14	2	12	80	11	9		140	●
M-L16	2	14	80	12	9		160	●
M-L20	2.5	17.5	95	16	12		200	●

Prod. Gr. 1KM

ORION® HSS hand tap (DIN 352)

For universal use up to 1000 N/mm²

M | HSS | ≤3xd | ISO 2 | A (6-8) | D (3,5-5) | C (2-3)

Application:
Ident. No. 010–300: For manually tapping metric threads in through holes and blind holes in the steel, NF metal and (cast) material groups up to a strength of 1000 N/mm² in single part production.

Ident. No. 720–968: For producing metric threads by hand in through holes and blind holes, in steel, non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm² in single-part production.

Execution:
- **Ident. No. 010–300:** Set consisting of taper tap (form A), second tap (form D) and third tap (form C)
- **Ident. No. 720–768:** Taper tap with notch shape A with one ring
- **Ident. No. 820–868:** Second tap with notch shape D with two rings
- **Ident. No. 920–968:** Third tap (plug) with notch shape C without ring

Advantage:
- **Ident. No. 010–300:** Standard geometry with a very good price-performance ratio
- **Ident. No. 720–968:** Standard geometry with very good price/performance ratio

Ident. No. 010–768
Taper tap, shape A

Ident. No. 010–300, 820–868
Second tap, shape D

Ident. No. 010–300, 920–968
Third tap, shape C

p. 170 p. 62 p. 282 p. 283 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13013010-300	●	●		○		○	●	●	●	●	●	●	○	○					
13013720-768	●	●		○		○	●	●	●	●	●	●	○	○					
13013820-868	●	●		○		○	●	●	●	●	●	●	○	○					
13013920-968	●	●		○		○	●	●	●	●	●	●	○	○					

						Version Lead angle shape	Set A/D/C		Taper tap A		Second tap D		Third tap C	
	mm	mm	mm	mm	mm		13013... Ident. No.		13013... Ident. No.		13013... Ident. No.		13013... Ident. No.	
M1	0.25	0.75	32	2.5	2.1		010	●	-	-	-	-	-	-
M2	0.4	1.6	36	2.8	2.1		020	●	720	●	820	●	920	●
M2.2	0.45	1.75	36	2.8	2.1		022	●	-	-	-	-	-	-
M2.5	0.45	2.05	36	2.8	2.1		025	●	725	●	825	●	925	●
M3	0.5	2.5	40	3.5	2.7		030	●	730	●	830	●	930	●

						Version	Set	Taper tap		Second tap		Third tap	
						Lead angle shape	A/D/C	A		D		C	
	mm	mm	mm	mm	mm		13013... Ident. No.	13013... Ident. No.		13013... Ident. No.		13013... Ident. No.	
M3.5	0.6	2.9	45	4	3		035	●	-	-	-	-	-	-
M4	0.7	3.3	45	4.5	3.4		040	●	734	●	834	●	934	●
M5	0.8	4.2	50	6	4.9		050	●	738	●	838	●	938	●
M6	1	5	50	6	4.9		060	●	740	●	840	●	940	●
M7	1	6	50	6	4.9		070	●	-	-	-	-	-	-
M8	1.25	6.8	56	6	4.9		080	●	744	●	844	●	944	●
M10	1.5	8.5	70	7	5.5		100	●	748	●	848	●	948	●
M12	1.75	10.2	75	9	7		120	●	752	●	852	●	952	●
M14	2	12	80	11	9		140	●	754	●	854	●	954	●
M16	2	14	80	12	9		160	●	756	●	856	●	956	●
M18	2.5	15.5	95	14	11		180	●	758	●	858	●	958	●
M20	2.5	17.5	95	16	12		200	●	760	●	860	●	960	●
M22	2.5	19.5	100	18	14.5		220	●	-	-	-	-	-	-
M24	3	21	110	18	14.5		240	●	764	●	864	●	964	●
M27	3	24	110	20	16		270	●	-	-	-	-	-	-
M30	3.5	26.5	125	22	18		300	●	768	●	868	●	968	●

Prod. Gr. 1DA

ATORN® HSSE hand tap (DIN 352)

For machining stainless steel

M | HSS | HSSE | ≤3xd | ISO 2 | A (6-8) | D (3,5-5) | C (2-3)

Application:

Ident. No. 020–200: For manually tapping metric threads in through holes and blind holes in the (steel), stainless steel, (cast) and special alloy material groups up to a strength of 1300 N/mm² in single part production.

Ident. No. 220–800: For producing metric threads by hand in through holes and blind holes, in (steel), stainless steel, (cast iron) and special alloys material groups up to a strength of 1300 N/mm² in single-part production.

Execution:

- **Ident. No. 020–200:** Set consisting of taper tap (form A), second tap (form D) and third tap (form C)
- **Ident. No. 220–400:** Taper tap with notch shape A with one ring
- **Ident. No. 420–600:** Second tap with notch shape D with two rings
- **Ident. No. 620–800:** Hand tap, third tap (plug) with notch shape C without ring

Advantage:

- **Ident. No. 020–200:** Long service life and high level of process reliability thanks to innovative cutting geometry for machining stainless steel and special alloys
- **Ident. No. 220–800:** Long service life and process reliability through innovative cutting geometry in machining stainless steel and special alloys

Ident. No. 020–400
Taper tap, shape A

Ident. No. 020–200, 420–600
Second tap, shape D

Ident. No. 620–800
Third tap, shape C

p. 170 p. 62 p. 282 p. 283 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13014020-200				●	●														
13014220-400				●	●														
13014420-600				●	●														
13014620-800				●	●														

						Version	Set	Taper tap		Second tap		Third tap	
						Lead angle shape	A/D/C	A		D		C	
	mm	mm	mm	mm	mm		13014... Ident. No.	13014... Ident. No.		13014... Ident. No.		13014... Ident. No.	
M2	0.4	1.6	36	2.8	2.1		020	●	220	●	420	●	620	●
M2.5	0.45	2.05	40	2.8	2.1		025	●	225	●	425	●	625	●
M3	0.5	2.5	40	3.5	2.5		030	●	230	●	430	●	630	●
M3.5	0.6	2.9	45	4	2.9		035	●	235	●	435	●	635	●
M4	0.7	3.3	45	4.5	3.3		040	●	240	●	440	●	640	●
M5	0.8	4.2	50	6	4.2		050	●	250	●	450	●	650	●
M6	1	5	56	6	5		060	●	260	●	460	●	660	●
M8	1.25	6.8	63	6	6.8		080	●	280	●	480	●	680	●
M10	1.5	8.5	70	7	8.5		100	●	300	●	500	●	700	●
M12	1.75	10.2	75	9	10.2		120	●	320	●	520	●	720	●
M16	2	14	80	12	14		160	●	360	●	560	●	760	●
M20	2.5	17.5	95	16	17.5		200	●	400	●	600	●	800	●

Prod. Gr. 1KM

ATORN® HSSE hand tap set (DIN 352)

For high-strength steels < 1300 N/mm²

M | HSSE | ≤3xd | ISO 2 | A (6-8) | D (3,5-5) | C (2-3)

Application:

Ident. No. 020–160: For manually tapping metric threads in through holes and blind holes in the (steel), stainless steel, (cast) and special alloy material groups up to a strength of 1300 N/mm² in single part production.

Ident. No. 720–952: For producing metric threads by hand in through holes and blind holes, in steel, (stainless steel), cast iron and (special alloys) material groups up to a strength of 1300 N/mm² in single-part production.

Execution:

- **Ident. No. 020–160:** Set consisting of taper tap (form A), second tap (form D) and third tap (form C)
- **Ident. No. 720–752:** Taper tap with notch shape A with one ring
- **Ident. No. 820–852:** Second tap with notch shape D with two rings
- **Ident. No. 920–952:** Third tap (plug) with notch shape C without ring

Advantage:

- **Ident. No. 020–160:** Long service life and high level of process reliability thanks to innovative cutting geometry for machining high-strength steel
- **Ident. No. 720–952:** Long service life and process reliability through innovative cutting geometry in machining high-strength steel

Ident. No. 020–752
Taper tap, shape A

Ident. No. 020–160, 820–852
Second tap, shape D

Ident. No. 020–160, 920–952
Third tap, shape C

p. 170 p. 62 p. 282 p. 283 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13015020-160	○	○	●	○		○	○	○	○	○	○	○		●	○	○	○		
13015720-752	○	○	●	○		○	○	○	○	○	○	○		●	○	○	○		
13015820-852	○	○	●	○		○	○	○	○	○	○	○		●	○	○	○		
13015920-952	○	○	●	○		○	○	○	○	○	○	○		●	○	○	○		

						Version	Set		Taper tap		Second tap		Third tap	
						Lead angle shape	A/D/C		A		D		C	
	mm	mm	mm	mm	mm		13015... Ident. No.		13015... Ident. No.		13015... Ident. No.		13015... Ident. No.	
M2	0.4	1.6	36	2.8	2.1		020	●	720	●	820	●	920	●
M2.5	0.45	2.05	40	2.8	2.1		025	●	-	-	-	-	-	-
M3	0.5	2.5	40	3.5	2.7		030	●	730	●	830	●	930	●
M4	0.7	3.3	45	4.5	3.4		040	●	734	●	834	●	934	●
M5	0.8	4.2	50	6	4.9		050	●	738	●	838	●	938	●
M6	1	5	50	6	4.9		060	●	740	●	840	●	940	●
M8	1.25	6.8	56	6	4.9		080	●	744	●	844	●	944	●
UN10	1.5	8.5	70	7	5.5		100	●	-	-	-	-	-	-
M10	1.5	8.5	70	7	5.5		-	-	748	●	848	●	948	●
M12	1.75	10.2	75	9	7		120	●	752	●	852	●	952	●
M14	2	12	80	11	9		140	●	-	-	-	-	-	-
M16	2	14	80	12	9		160	●	-	-	-	-	-	-

Prod. Gr. 1KM

ATORN® HSSE-PM hand tap (DIN 352)

For high-strength steels < 1300 N/mm²

M | HSSE-PM | ≤3xd | ISO 2 x | A (6-8) | D (3,5-5) | C (2-3)

Application:

Ident. No. 030–120: For manually tapping metric threads in through holes and blind holes in the (steel), stainless steel, (cast) and special alloy material groups up to a strength of 1300 N/mm² in single part production.

Ident. No. 734–944: For producing metric threads by hand in through holes and blind holes, in steel, (stainless steel), cast iron and (special alloys) material groups up to a strength of 1300 N/mm² in single-part production.

Execution:

- **Ident. No. 030–120:** Set consisting of taper tap (form A), second tap (form D) and third tap (form C)
- **Ident. No. 734–744:** Taper tap with notch shape A with one ring
- **Ident. No. 834–844:** Second tap with notch shape D with two rings
- **Ident. No. 934–944:** Third tap (plug) with notch shape C without ring

Advantage:

- **Ident. No. 030–120:** Long service life and high level of process reliability thanks to innovative cutting geometry for machining high-strength steel
- **Ident. No. 734–944:** Long service life and process reliability through innovative cutting geometry in machining high-strength steel

Ident. No. 030–120, 744–844
Second tap, shape D

Ident. No. 030–120, 934–944
Third tap, shape C

Ident. No. 030–740
Taper tap, shape A

p. 170 p. 62 p. 282 p. 283 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13017030-120	○	○	●	○		○	○	○	○	○	○	○		●	○	○	○		
13017734-744	○	○	●	○		○	○	○	○	○	○	○		●	○	○	○		
13017834-844	○	○	●	○		○	○	○	○	○	○	○		●	○	○	○		
13017934-944	○	○	●	○		○	○	○	○	○	○	○		●	○	○	○		

						Version	Set		Taper tap		Second tap		Third tap	
						Lead angle shape	A/D/C		A		D		C	
	mm	mm	mm	mm	mm		13017... Ident. No.		13017... Ident. No.		13017... Ident. No.		13017... Ident. No.	
M3	0.5	2.5	40	3.5	2.7		030	●	-	-	-	-	-	-
M4	0.7	3.3	45	4.5	3.4		040	●	734	●	834	●	934	●
M5	0.8	4.2	50	6	4.9		050	●	738	●	838	●	938	●
M6	1	5	50	6	4.9		060	●	740	●	840	●	940	●
M8	1.25	6.8	56	6	4.9		080	●	744	●	844	●	944	●
M10	1.5	8.5	70	7	5.5		100	●	-	-	-	-	-	-
M12	1.75	10.2	75	9	7		120	●	-	-	-	-	-	-

Prod. Gr. 1KM

ORION® ATORN® HSS hand tap (DIN 2181)

For universal use up to 1000 N/mm²

MF | HSS | ≤3xd | ISO 2 | D (3,5-5) | C (2-3)

Application:

No. 13020 045–13020 360, 13023 803–13023 886: For manually tapping fine metric threads in through holes and blind holes in the steel, NF metal and (cast) material groups up to a strength of 1000 N/mm² in single part production.

No. 13023 030–13023 786: For producing metric fine threads by hand in through holes and blind holes, in steel, non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm² in single-part production.

Execution:

- **No. 13020:** Set consisting of taper tap (form A) and third tap (form C)
- **No. 13023 030–13023 280:** Set containing taper tap (form A) and third tap (plug) (form C)
- **No. 13023 703–13023 786:** Taper tap with notch shape A with one ring
- **No. 13023 803–13023 886:** Third tap notch shape C without ring

Advantage:

- **No. 13020:** Long service life and high level of process reliability thanks to innovative cutting geometry and universal application for maximum flexibility in use
- **No. 13023 030–13023 786:** Standard geometry with very good price/performance ratio
- **No. 13023 803–13023 886:** Standard geometry with a very good price-performance ratio

No. 13020 045–13023 786
Taper tap, shape D

No. 13020 045–13023 280, 13023 803–13023 886
Third tap, shape C

p. 755 p. 170 p. 62 p. 282 p. 283

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13020	●	●		○		●	●	●	●	●	●	●	○	○					
13023030-280	●	●		○		●	●	●	●	●	●	●	○	○					
13023703-786	●	●		○		●	●	●	●	●	●	●	○	○					
13023803-886	●	●		○		●	●	●	●	●	●	●	○	○					

							ORION		ATORN		ORION			
						Version	Set		Set		Taper tap		Third tap	
						Lead angle shape	D/C		D/C		D		C	
	mm	mm	mm	mm	mm		13023... Ident. No.		13020... Ident. No.		13023... Ident. No.		13023... Ident. No.	
MF3	0.35	2.65	40	3.5	2.7		030	●	-	-	-	-	-	-
MF4	0.5	3.5	45	4.5	3.4		045	●	045	●	-	-	-	-
MF5	0.5	4.5	50	6	4.9		050	●	050	●	-	-	-	-
MF6	0.5	5.5	50	6	4.9		-	-	060	●	-	-	-	-
MF6	0.75	5.2	50	6	4.9		065	●	065	●	-	-	-	-
MF7	0.75	6.2	50	6	4.9		-	-	070	●	-	-	-	-
MF8	0.5	7.5	50	6	4.9		-	-	080	●	-	-	-	-
MF8	0.75	7.2	50	6	4.9		083	●	083	●	-	-	-	-
MF8	1	7	56	6	4.9		086	●	086	●	786	●	886	●
MF10	1	9	63	7	5.5		103	●	103	●	703	●	803	●
MF10	1.25	8.8	70	7	5.5		106	●	106	●	-	-	-	-
MF10	0.75	9.2	68	7	5.5		-	-	100	●	-	-	-	-
MF12	1	11	70	9	7		120	●	120	●	720	●	820	●
MF12	1.25	10.8	70	9	7		123	●	123	●	-	-	-	-
MF12	1.5	10.5	70	9	7		126	●	126	●	726	●	826	●
MF14	1	13	70	11	9		140	●	140	●	-	-	-	-
MF14	1.25	12.8	70	11	9		143	●	143	●	-	-	-	-
MF14	1.5	12.5	70	11	9		146	●	146	●	742	●	842	●
MF15	1	14	70	12	9		-	-	150	●	-	-	-	-
MF16	1	15	70	12	9		160	●	160	●	-	-	-	-
MF16	1.5	14.5	70	12	9		165	●	165	●	765	●	865	●
MF18	1	17	80	14	11		180	●	180	●	780	●	880	●
MF18	1.5	16.5	80	14	11		183	●	183	●	783	●	883	●
MF20	1	19	80	16	12		200	●	200	●	-	-	-	-
MF20	1.5	18.5	80	16	12		203	●	203	●	713	●	813	●
MF20	2	18	80	16	12		206	●	-	-	-	-	-	-
MF22	1.5	20.5	80	18	14.5		223	●	223	●	-	-	-	-
MF22	1	21	80	18	14.5		220	●	-	-	-	-	-	-
MF24	1	23	90	18	14.5		-	-	240	●	-	-	-	-
MF24	1.5	22.5	90	18	14.5		243	●	243	●	-	-	-	-
MF24	2	22	90	18	14.5		-	-	246	●	-	-	-	-
MF26	1.5	24.5	90	18	14.5		260	●	-	-	-	-	-	-
MF27	2	25	90	20	16		-	-	275	●	-	-	-	-
MF28	1.5	26.5	90	20	16		280	●	-	-	-	-	-	-
MF30	1.5	28.5	90	22	18		-	-	303	●	-	-	-	-
MF30	2	28	90	22	18		-	-	306	●	-	-	-	-
MF36	1.5	34.5	100	28	22		-	-	360	●	-	-	-	-

ORION = Prod. Gr. 1DA
ATORN® = Prod. Gr. 1KM

ATORN® HSS left-hand hand tap set (DIN 2181)

for universal use up to 1000 N/mm2

MF-L | ≤3xd | HSS | ISO 2

Application:
For producing metric fine threads by hand in through holes and blind holes, in steel, non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm² in single-part production.

Execution:
- Set containing taper tap (form A) and third tap (plug) (form C)

Advantage:
- Long service life and process reliability through innovative cutting geometry and universal use for maximum application flexibility

Taper tap, shape D

Third tap, shape C

p. 755 p. 170 p. 62 p. 282 p. 283

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13022	●	●		○		●	●	●	●	●	●	●	○	○					

						Version	Set
						Lead angle shape	D/C
	mm	mm	mm	mm	mm	13022... Ident. No.	
MF-L8	1	7	56	6	4.9	086	●
MF-L10	1	9	63	7	5.5	103	●
MF-L12	1	11	70	9	7	120	●
MF-L12	1.5	10.5	70	9	7	126	●
MF-L14	1.5	12.5	70	11	9	146	●
MF-L16	1.5	14.5	70	12	9	165	●
MF-L18	1.5	16.5	80	14	11	183	●
MF-L20	1.5	18.5	80	16	12	203	●

Prod. Gr. 1KM

ATORN® machine tap HSSE PM Ultra HL (DIN 5156)

for universal use up to 1200 N/mm2

G | ≤3xd | HSSE-PM | ULTRA HL | B (3,5-5) | CNC/conv.

Application:
For manufacturing pipe threads on CNC or conventional machines in **through holes** in the steel, stainless steel, NF metal, cast and special alloy material groups up to a strength of 1200 N/mm².

Advantage:
- Universal use for maximum flexibility of application

- Innovative cutter geometry ensures high process reliability even in difficult machining conditions

Technical data:
- PICTO=1749639: 0 mm
- DIN: 5156

p. 755 p. 170 p. 174 p. 22 p. 757 p. 185

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13213010-080	22	16	12	12	12	14	30	17	24	12	20	30	16	18	7	6	6		

						Cutting material	HSSE-PM
						Surface	ULTRA HL
						Lead angle shape	B
						Twist angle	0°
						Coolant supply	External
	mm	mm	mm	mm	mm	13213... Ident. No.	
G 1/8 in	28	8.8	90	7	5.5	010	●
G 1/4 in	19	11.8	100	11	9	020	●
G 3/8 in	19	15.25	100	12	9	030	●
G 1/2 in	14	19	125	16	12	040	●
G 5/8 in	14	21	125	18	14.5	050	●
G 3/4 in	14	24.5	140	20	16	060	●
G 1 in	11	30.75	160	25	20	080	●

Prod. Gr. 1KC

ATORN® Machine tap, HSSE Ultra HL (DIN 5156)

for universal use up to 1000 N/mm2

G | ≤3xd | ≤2,5xd | HSSE | ULTRA HL | ISO 2 | B (3,5-5) | C (2-3) | CNC/conv.

Application:

No. 13208: For manufacturing pipe threads on CNC or conventional machines in **through holes** in the steel, stainless steel, NF metal, cast and special alloy material groups up to a strength of 1000 N/mm².

No. 13377: For producing pipe threads on CNC machines or conventional machines in **blind holes** in the steel, stainless steel, non-ferrous metals, cast iron and special alloy material groups up to a strength of 1000 N/mm².

Execution:

- With transition-fit shank

Advantage:

- **No. 13208:**
  - Innovative cutting geometry and ULTRA HL coating guarantee high process reliability even under difficult machining conditions
  - High-quality, torsion-resistant HSSE cutting material and cutting edge finish for very high service life requirements
  - Universal use for maximum flexibility in use
- **No. 13377:**
  - Innovative cutting geometry and newly developed ULTRA HL coating guarantee high process reliability even under difficult machining conditions.
  - High-quality, torsion-resistant HSSE cutting material and cutting edge finish for very high service life requirements.
  - Universal use for maximum flexibility in use.

No. 13208

No. 13377

p. 755 p. 170 p. 174 p. 22 p. 757

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13208	18	12	8	11	10	19	19	17	19	17	18	13		18	7	6	6		
13377	18	12	8	11	10	19	19	17	19	17	18	13		18	7	6	6		

Cutting material							HSSE	HSSE
Surface							ULTRA HL	ULTRA HL
Tol.							ISO 2 (6H)	ISO 2 (6H)
Lead angle shape							B	C
Twist angle							0°	45° (right)
Coolant supply							External	External
	mm	mm	mm	mm	mm	DIN	13208... Ident. No.	13377... Ident. No.
G 1/16 in	28	6.8	90	6	4.9	5156	005 ●	005 ●
G 1/8 in	28	8.8	90	7	5.5	5156	010 ●	010 ●
G 1/4 in	19	11.8	100	11	9	5156	020 ●	020 ●
G 3/8 in	19	15.25	100	12	9	5156	030 ●	030 ●
G 1/2 in	14	19	125	16	12	5156	040 ●	040 ●
G 5/8 in	14	21	125	18	14.5	5156	- -	050 ●
G 3/4 in	14	24.5	140	20	16	5156	060 ●	060 ●
G 7/8 in	14	28.25	150	22	18	5156	070 ●	070 ●
G 1 in	11	30.75	160	25	20	5156	- -	080 ●

Prod. Gr. 1KC

ATORN® HSSE machine tap (DIN 374)

For universal use up to 1000 N/mm²

G | ≤3xd | ≤2,5xd | HSSE | ISO 2 | B (3,5-5) | C (2-3) | CNC/conv.

Application:

No. 13207: For manufacturing pipe threads in through holes on CNC or conventional machines in the steel, stainless steel, NF metal and cast material groups up to a strength of 1000 N/mm².

No. 13378: For producing pipe threads on CNC machines or conventional machines in blind holes in the steel, stainless steel, non-ferrous metals and cast material groups up to a strength of 1000 N/mm².

Execution:

- With protruding shank

Advantage:

- Universal use for maximum flexibility of application
- Innovative cutter geometry ensures high process reliability even in difficult machining conditions

No. 13207

No. 13378

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13207310-400	18	12	8	8	8		18		19		18	15		15					
13378310-400	18	12	8	8	8		18		19		18	15		15					

							ATORN®			
						Cutting material	HSSE		HSSE	
						Surface	Vaporised		Vaporised	
						Tol.	ISO 2 (6H)		ISO 2 (6H)	
						Lead angle shape	B		C	
						Twist angle	0°		40° (right)	
						Coolant supply	External		External	
	mm	mm	mm	mm	mm	DIN	13207... Ident. No.		13378... Ident. No.	
G 1/8 in	28	8.7	90	7	5.5	374	310	●	310	●
G 1/4 in	19	11.8	100	11	9	374	320	●	320	●
G 3/8 in	19	15.3	100	12	9	374	330	●	330	●
G 1/2 in	14	19	125	16	12	374	340	●	340	●
G 3/4 in	14	24.5	140	20	16	374	360	●	360	●
G 1 in	11	30.75	160	25	20	374	380	●	380	●
G 1-1/4 in	11	39.5	170	32	24	374	400	●	400	●

Prod. Gr. 1KC

ATORN® ORION® HSSE machine tap (DIN 5156)

For universal use up to 1000 N/mm²

G | ≤3xd | ≤2,5xd | HSSE | ISO 2 | B (3,5-5) | C (2-3) | CNC/conv.

Application:

No. 13207–13209: For manufacturing pipe threads on CNC or conventional machines in **through holes** in the steel, (stainless steel), NF metal and (cast iron) material groups up to a strength of 1000 N/mm².

No. 13378–13379: For producing pipe threads on CNC machines or conventional machines in **blind holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

Advantage:

- **No. 13207:** Long service life and high process reliability thanks to innovative cutting geometry, and universal use for maximum flexibility in use.
- **No. 13209:** Standard geometry with an excellent price-performance ratio
- **No. 13378–13379:** Long service life and high level of process reliability thanks to innovative cutter geometry and universal application for maximum flexibility in use

Execution:

- With transition-fit shank

No. 13207–13209

No. 13378–13379

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13207	16	12		9		18	18	15	18	15	15	13		16					
13209	16	12		9		18	18	15	18	15	15	13		16					
13379	16	12		9		18	18	15	18	15	15	13		16					

							ATORN®				ORION®			
						Cutting material	HSSE		HSSE		HSSE		HSSE	
						Surface	Vaporised		Vaporised		Vaporised		Vaporised	
						Tol.	ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)		ISO 2 (6H)	
						Lead angle shape	B		C		C		B	
						Twist angle	0°		40° (right)		40° (right)		0°	
						Coolant supply	External		External		External		External	
	mm	mm	mm	mm	mm	DIN	13207... Ident. No.		13378... Ident. No.		13379... Ident. No.		13209... Ident. No.	
G 1/8 in	28	8.8	90	7	5.5	5156	010	●	010	●	010	●	010	●
G 1/4 in	19	11.8	100	11	9	5156	020	●	020	●	020	●	020	●
G 3/8 in	19	15.25	100	12	9	5156	030	●	030	●	030	●	030	●
G 1/2 in	14	19	125	16	12	5156	040	●	040	●	040	●	040	●
G 5/8 in	14	21	125	18	14.5	5156	-	-	050	●	050	●	-	-
G 3/4 in	14	24.5	140	20	16	5156	060	●	060	●	060	●	060	●
G 7/8 in	14	28.25	150	22	18	5156	-	-	070	●	-	-	-	-
G 1 in	11	30.75	160	25	20	5156	080	●	080	●	080	●	080	●
G 1-1/4 in	11	39.25	170	32	24	5156	100	●	-	-	-	-	100	●

ORION = Prod. Gr. 1DB
ATORN® = Prod. Gr. 1KC

ATORN® Machine tap, HSSE (DIN Similar to 371)

For use on stainless steels

NPT | HSSE | TiN | ISO 2 | C (2-3) | CNC/conv.

Application:
For manufacturing NPT (National Pipe Taper) on CNC or conventional machines in the (steel) and stainless steel material groups up to a strength of 1000 N/mm².

Execution:
- With protruding shank

Advantage:
- Innovative cutting geometry for very high dimensional accuracy, process reliability and chip removal.
- High-quality, torsion-resistant HSSE cutting material and cutting edge finish for very high service life requirements.
- **No. 13360:** Specialised use with optimised chip geometry for use in stainless steels.
- **No. 13361:** Universal use for maximum flexibility in use.

No. 13360

No. 13361

M MAX Control — Vc min/max

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13360	16	11		11	10														
13361	17	12		10	11														

Cutting material							HSSE		HSSE	
Surface							Vaporised		TiN	
Tol.							ISO 2 (6H)		ISO 2 (6H)	
Lead angle shape							C		C	
Twist angle							15° (right)		15° (right)	
Coolant supply							External		External	
	mm	mm	mm	mm	mm	DIN	13360... Ident. No.		13361... Ident. No.	
NPT 1/8 in	27	8.5	90	11	9	Similar to 371	010	●	010	●
NPT 1/4 in	27	11	100	14	11	Similar to 371	020	●	-	-
NPT 1/4 in	18	11	100	14	11	Similar to 371	-	-	020	●
NPT 3/8 in	18	14.4	110	16	12	Similar to 371	030	●	030	●
NPT 1/2 in	14	17.8	125	18	14.5	Similar to 371	040	●	040	●
NPT 3/4 in	14	23.1	140	22	18	Similar to 371	050	●	050	●

Prod. Gr. 1KC

ATORN® HSSE machine tap

For universal use up to 1000 N/mm²

UNC | ≤3xd | ≤2,5xd | HSSE | ISO 2 | B (3,5-5) | C (2-3) | CNC/conv.

Application:
No. 13121: For producing metric threads on CNC machines or conventional machines in **through holes** in the steel, stainless steel, non-ferrous metals and cast iron material groups up to a strength of 1000 N/mm².
No. 13125: For producing metric threads on CNC machines or conventional machines in **blind holes** in the steel, stainless steel, non-ferrous metals and cast iron material groups up to a strength of 1000 N/mm².

Advantage:
- Universal use for maximum flexibility of application
- Innovative cutter geometry ensures high process reliability even in difficult machining conditions

No. 13121

No. 13125

UNI 40 Control — Vc min/max

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13121900-916	18	12	8	8	8		18		19		18	15		15					
13125900-916	18	12	8	8	8		18		19		18	15		15					

Cutting material							HSSE		HSSE	
Surface							Vaporised		Vaporised	
Tol.							ISO 2 (6H)		ISO 2 (6H)	
Lead angle shape							B		C	
Twist angle							0°		40° (right)	
Coolant supply							External		External	
	mm	mm	mm	mm	mm		13121... Ident. No.		13125... Ident. No.	
UNC 1/4 in	20	5.2	80	7	5.5		900	●	900	●
UNC 5/16 in	18	6.6	90	8	6.2		902	●	902	●
UNC 3/8 in	16	8	100	9	7		904	●	904	●
UNC 7/16 in	14	9.4	100	8	6.2		906	●	906	●

Source: Hahn+Kolb Werkzeuge GmbH
Technical data subject to change.
Availability subject to country specific rules and regulations.

						Cutting material	HSSE		HSSE	
						Surface	Vaporised		Vaporised	
						Tol.	ISO 2 (6H)		ISO 2 (6H)	
						Lead angle shape	B		C	
						Twist angle	0°		40° (right)	
						Coolant supply	External		External	
	mm	mm	mm	mm	mm		13121... Ident. No.		13125... Ident. No.	
UNC 1/2 in	13	10.8	110	9	7		908	●	908	●
UNC 5/8 in	11	13.6	110	12	9		910	●	910	●
UNC 3/4 in	10	16.5	125	14	11		912	●	912	●
UNC 7/8 in	9	19.5	140	18	14.5		914	●	914	●
UNC 1 in	8	22.3	160	20	16		916	●	916	●

Prod. Gr. 1KC

ATORN® HSSE machine tap

For universal use up to 1000 N/mm²

UNF | ≤3xd | ≤2,5xd | HSSE | ISO 2 | B (3,5-5) | C (2-3) | CNC/conv.

Application:

No. 13121: For producing metric threads on CNC machines or conventional machines in **through holes** in the steel, stainless steel, non-ferrous metals and cast iron material groups up to a strength of 1000 N/mm².

No. 13125: For producing metric threads on CNC machines or conventional machines in **blind holes** in the steel, stainless steel, non-ferrous metals and cast iron material groups up to a strength of 1000 N/mm².

Advantage:

- Universal use for maximum flexibility of application
- Innovative cutter geometry ensures high process reliability even in difficult machining conditions

No. 13121

No. 13125

UNI 40 Control | Vc min/max

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13121930-946	18	12	8	8	8		18		19		18	15		15					
13125930-946	18	12	8	8	8		18		19		18	15		15					

						Cutting material	HSSE		HSSE	
						Surface	Vaporised		Vaporised	
						Tol.	ISO 2 (6H)		ISO 2 (6H)	
						Lead angle shape	B		C	
						Twist angle	0°		40° (right)	
						Coolant supply	External		External	
	mm	mm	mm	mm	mm		13121... Ident. No.		13125... Ident. No.	
UNF 1/4 in	20	5.2	80	7	5.5		930	●	930	●
UNF 5/16 in	18	6.6	90	8	6.2		932	●	932	●
UNF 3/8 in	16	8	100	9	7		934	●	934	●
UNF 7/16 in	20	9.9	100	8	6.2		936	●	936	●
UNF 1/2 in	20	11.5	100	9	7		938	●	938	●
UNF 5/8 in	18	14.5	100	12	9		940	●	940	●
UNF 3/4 in	16	17.5	110	14	11		942	●	942	●
UNF 7/8 in	14	20.4	125	18	14.5		944	●	944	●
UNF 1 in	12	23.3	140	18	14.5		946	●	946	●

Prod. Gr. 1KC

ATORN® Machine tap, HSSE (DIN Similar to 371)

for universal conventional use up to 1000 N/mm2

UNC | ≤2,5xd | ≤3xd | HSSE | C (2-3) | B (3,5-5) | CNC/conv.

Application:

No. 13347: For producing UNC (Unified Coarse) threads on CNC machines or conventional machines in **through holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

No. 13348: For producing UNC (Unified Coarse) threads on CNC machines or conventional machines in **blind holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

Execution:

- **No. 13347 030–13347 110, 13348 120–13348 160:** With transition-fit shank
- **No. 13348 025–13348 110:** With reinforced shank

Advantage:

- Long service life and high process reliability thanks to innovative cutting geometry, and universal use for maximum flexibility in use.

No. 13347

No. 13348

P MAX 1000 Control | Vc min/max

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13347	16	11		9		18	18	15	18	15	15	13	14	16					
13348025-110	16	11		9		18	18	15	18	15	15	13	14	16					
13348120-160	16	11		9		18	18	15	18	15	15	13	14	16					

Cutting material													HSSE				HSSE		
Surface													Vaporised				Vaporised		
Tol.													2B				2B		
Lead angle shape													C				B		
Twist angle													40° (right)				0°		
Coolant supply													External				External		
	mm		mm		mm		mm		mm		DIN		13348... Ident. No.				13347... Ident. No.		
UNC 2 in	56		1.85		45		2.8		2.1		Similar to 371		025	●			-	-	
UNC 4 in	40		2.35		56		3.5		2.7		Similar to 371		030	●			030	●	
UNC 5 in	40		2.65		56		3.5		2.7		Similar to 371		-	-			035	●	
UNC 6 in	32		2.85		56		4		3		Similar to 371		050	●			050	●	
UNC 8 in	32		3.5		63		4.5		3.4		Similar to 371		060	●			060	●	
UNC 10 in	24		3.9		70		6		4.9		Similar to 371		070	●			070	●	
UNC 12 in	24		4.5		80		6		4.9		Similar to 371		-	-			075	●	
UNC 1/4 in	20		5.1		80		7		5.5		Similar to 371		090	●			090	●	
UNC 5/16 in	18		6.6		90		8		6.2		Similar to 371		100	●			100	●	
UNC 3/8 in	16		8		100		10		8		Similar to 371		110	●			110	●	
UNC 7/16 in	14		9.4		100		8		6.2		Similar to 371		120	●			-	-	
UNC 1/2 in	13		10.8		110		9		7		Similar to 371		130	●			-	-	
UNC 9/16 in	12		12.2		110		11		9		Similar to 371		135	●			-	-	
UNC 5/8 in	11		13.5		110		12		9		Similar to 371		140	●			-	-	
UNC 3/4 in	10		16.5		125		14		11		Similar to 371		145	●			-	-	
UNC 7/8 in	9		19.5		140		18		14.5		Similar to 371		150	●			-	-	
UNC 1 in	8		22.5		160		18		14.5		Similar to 371		160	●			-	-	

Prod. Gr. 1KC

ATORN® HSSE machine tap

For universal use up to 1000 N/mm²

UNF | ≤3xd | ≤2,5xd | HSSE | B (3,5-5) | C (2-3) | CNC/conv.

Application:

No. 13357: For producing UNF (Unified Fine) threads on CNC machines or conventional machines in **through holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

No. 13358: For producing UNF (Unified Fine) threads on CNC machines or conventional machines in **blind holes** in the steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

Execution:

- **No. 13357 040–13357 110, 13358 070–13358 110:** With reinforced shank
- **No. 13357 150–13357 170:** With transition-fit shank
- **No. 13358 120–13358 180:** With protruding shank

Advantage:

- Innovative cutting geometry for very high dimensional accuracy, process reliability and chip removal.
- High-quality, torsion-resistant HSSE cutting material and cutting edge finish for very high service life requirements.
- Universal use for maximum flexibility in use.

No. 13357

No. 13358

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13357040-110	14	10		8		18	18	15	18	15	15	13	14	16					
13357150-170	14	10		8		18	18	15	18	15	15	13	14	16					
13358070-110	16	11		9		18	18	15	18	15	15	13	14	16					
13358120-180	16	11		9		18	18	15	18	15	15	13	14	16					

Cutting material													HSSE				HSSE		
Surface													Vaporised				Vaporised		
Tol.													2B				2B		
Lead angle shape													B				C		
Twist angle													0°				40° (right)		
Coolant supply													External				External		
	mm		mm		mm		mm		mm		DIN		13357... Ident. No.				13358... Ident. No.		
UNF 4 in	48		2.4		56		2.2		0		Similar to 371		040	●			-	-	
UNF 6 in	40		2.95		56		2.5		2.1		Similar to 371		050	●			-	-	
UNF 10 in	32		4.1		70		6.0		4.9		Similar to 371		070	●			070	●	
UNF 12 in	28		4.6		80		6.0		4.9		Similar to 371		-	-			080	●	
UNF 1/4 in	28		5.5		80		7.0		5.5		Similar to 371		-	-			090	●	
UNF 1/4 in	28		5.5		80		4.5		3.4		Similar to 371		100	●			-	-	
UNF 5/16 in	24		6.9		90		8.0		6.2		Similar to 371		-	-			100	●	
UNF 3/8 in	24		8.5		90		10.0		8.0		Similar to 371		110	●			110	●	
UNF 5/8 in	18		14.5		100		12.0		9.0		Similar to 376		150	●			150	●	
UNF 7/8 in	14		20.4		125		19.0		14.5		Similar to 376		170	●			170	●	
UNF 7/16 in	20		9.9		90		8.0		6.2		Similar to 376		-	-			120	●	
UNF 1/2 in	20		11.5		100		9.0		7.0		Similar to 376		-	-			130	●	
UNF 1 in	12		23.25		140		20.0		14.5		Similar to 376		-	-			180	●	

Prod. Gr. 1KC

ATORN® Machine tap, HSSE (DIN Similar to 371)

for universal use up to 1000 N/mm2

NPT | HSSE | ISO 2 | C (2-3) | CNC/conv.

Application:
For manufacturing NPT (National Pipe Taper) on CNC or conventional machines in the steel, NF metal and (cast) material groups up to a strength of 1000 N/mm².

Execution:
- With protruding shank

Advantage:
- Innovative cutting geometry for very high dimensional accuracy, process reliability and chip removal.
- High-quality, torsion-resistant HSSE cutting material and cutting edge finish for very high service life requirements.
- Universal use for maximum flexibility in use.

P 1000 Control — Vc min/max

p. 755 p. 170 p. 174 p. 22 p. 757 p. 193

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13359	16	11				18	18	15	18	15	15	13							

						Cutting material	HSSE
						Surface	Uncoated
						Tol.	ISO 2 (6H)
						Lead angle shape	C
						Twist angle	15° (right)
						Coolant supply	External
	mm	mm	mm	mm	mm	DIN	13359... Ident. No.
NPT 1/8 in	27	8.5	63	7	5.5	Similar to 371	010 ●
NPT 1/4 in	18	11.1	63	11	9	Similar to 371	020 ●
NPT 3/8 in	18	14.5	70	12	9	Similar to 371	030 ●
NPT 1/2 in	14	17.75	80	16	12	Similar to 371	040 ●
NPT 3/4 in	14	23	100	20	16	Similar to 371	050 ●
NPT 1 in	11,5	29	110	25	20	Similar to 371	060 ●

Prod. Gr. 1KC

ATORN® HSS hand tap set

for universal use up to 1000 N/mm2

UNC | ≤3xd | HSS

Application:
For producing UNC (unified coarse threads) by hand in through holes and blind holes, in steel, non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm² in single-part production.

Execution:
- Set containing taper tap (form A), second tap (form D) and third tap (plug) (form C)

Advantage:
- Long service life and process reliability through innovative cutting geometry and universal use for maximum application flexibility

Taper tap, shape A

Second tap, shape D

Third tap, shape C

p. 755 p. 170 p. 62 p. 282 p. 283

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13030	●	●		○		●	●	●	●	●	●	●	○	○					

						Version	Set
						Lead angle shape	A/D/C
	mm	mm	mm	mm	mm		13030... Ident. No.
UNC 3 in	48	2.1	40	2.8	2.1	030	●
UNC 4 in	40	2.35	40	3.5	2.7	040	●
UNC 5 in	40	2.65	40	3.5	2.7	050	●
UNC 6 in	32	2.85	45	4	3	060	●
UNC 8 in	32	3.5	45	4.5	3.4	070	●
UNC 10 in	24	3.9	50	6	4.9	080	●
UNC 1/4 in	20	5.1	50	6	4.9	100	●
UNC 5/6 in	18	6.6	56	6	4.9	110	●
UNC 3/8 in	16	8	70	7	5.5	120	●
UNC 7/16 in	14	9.4	75	8	6.2	130	●
UNC 1/2 in	13	10.8	75	9	7	140	●
UNC 5/8 in	11	13.5	80	12	9	160	●
UNC 3/4 in	10	16.5	95	14	11	170	●
UNC 7/8 in	9	19.5	100	18	14.5	180	●

Prod. Gr. 1KM

ATORN® HSS hand tap set (DIN 2181)

for universal use up to 1000 N/mm2

UNF | ≤3xd | HSS

Application:
For producing UNC (unified coarse threads) by hand in through holes and blind holes, in steel, non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm² in single-part production.

Execution:
- Set containing taper tap (form D) and third tap (plug) (form C)

Advantage:
- Long service life and process reliability through innovative cutting geometry and universal use for maximum application flexibility

Third tap, shape C

Taper tap, shape D

p. 755 p. 170 p. 62 p. 282 p. 283

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13035	●	●		○		●	●	●	●	●	●	●	○	○					

						Version	Set
						Lead angle shape	D/C
	mm	mm	mm	mm	mm		13035... Ident. No.	
UNF 4 in	48	2.4	40	3.5	2.7		050	●
UNF 6 in	40	2.95	45	4	3		070	●
UNF 8 in	36	3.5	45	4.5	3.4		080	●
UNF 10 in	32	4.1	50	6	4.9		090	●
UNF 12 in	28	4.6	50	6	4.9		100	●
UNF 1/4 in	28	5.5	50	6	4.9		110	●
UNF 5/16 in	24	6.9	56	6	4.9		120	●
UNF 3/8 in	24	8.5	63	7	5.5		130	●
UNF 7/16 in	20	9.9	63	8	6.2		140	●
UNF 1/2 in	20	11.5	63	9	7		150	●
UNF 9/16 in	18	12.9	70	11	9		160	●
UNF 5/8 in	18	14.5	70	12	9		170	●

Prod. Gr. 1KM

ATORN® ORION® HSS hand tap (DIN 5157)

For universal use up to 1000 N/mm²

G | HSS | ≤3xd | ISO 2 | D (3,5-5) | C (2-3)

Application:
No. 13045 010–13046 140: For producing pipe threads by hand in through holes and blind holes, in steel, non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm² in single-part production.
No. 13046 710–13046 880: For manually tapping pipe threads in through holes and blind holes in the steel, NF metal and (cast) material groups up to a strength of 1000 N/mm² in single part production.

Execution:
- **No. 13045 010–13046 140:** Set containing taper tap (form D) and third tap (plug) (form C)
- **No. 13046 710–13046 780:** Taper tap with notch shape A with one ring
- **No. 13046 820–13046 880:** Third tap notch shape C without ring

Advantage:
- **No. 13045:** Long service life and process reliability through innovative cutting geometry and universal use for maximum application flexibility
- **No. 13046 010–13046 140:** Standard geometry with very good price/performance ratio
- **No. 13046 710–13046 880:** Standard geometry with a very good price-performance ratio

No. 13045 010–13046 140, 13046 820–13046 880
Third tap, shape C

No. 13045 010–13046 780
Taper tap, shape D

p. 755 p. 170 p. 62 p. 282 p. 283

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13045	●	●		○		●	●	●	●	●	●	●	○	○					
13046010-140	●	●		○		●	●	●	●	●	●	●	○	○					
13046710-780	●	●		○		●	●	●	●	●	●	●	○	○					
13046810-880	●	●		○		●	●	●	●	●	●	●	○	○					

							ATORN®		ORION®					
						Version	Set		Set		Taper tap		Third tap	
						Lead angle shape	D/C		D/C		D		C	
	mm	mm	mm	mm	mm		13045... Ident. No.		13046... Ident. No.		13046... Ident. No.		13046... Ident. No.	
G 1/8 in	28	8.8	63	7	5.5		010	●	010	●	710	●	-	-
G 1/4 in	19	11.8	70	11	9		020	●	020	●	720	●	820	●
G 3/8 in	19	15.25	70	12	9		030	●	030	●	730	●	830	●
G 1/2 in	14	19	80	16	12		040	●	040	●	740	●	840	●

						ATORN®		ORION®					
						Version		Set		Set		Taper tap		Third tap	
						Lead angle shape		D/C		D/C		D		C	
	mm	mm	mm	mm	mm	13045... Ident. No.				13046... Ident. No.		13046... Ident. No.		13046... Ident. No.	
G 5/8 in	14	21	80	18	14.5	-	-	050	●	750	●	850	●
G 3/4 in	14	24.5	90	20	16	060	●	060	●	760	●	860	●
G 7/8 in	14	28.25	90	22	18	-	-	070	●	-	-	-	-
G 1 in	11	30.75	100	22	20	-	-	080	●	780	●	880	●
G 1-1/4 in	11	39.25	125	32	24	-	-	100	●	-	-	-	-
G 1-1/2 in	11	45.25	140	36	29	-	-	120	●	-	-	-	-
G 2 in	11	57	160	45	35	-	-	140	●	-	-	-	-

ORION = Prod. Gr. 1DA
ATORN® = Prod. Gr. 1KM

ATORN® HSS hand tap set (DIN 351)

for universal use up to 1000 N/mm2

BSW | ≤3xd | HSS | ISO 2

Application:
For producing UNC (unified coarse threads) by hand in through holes and blind holes, in steel, non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm² in single-part production.

Execution:
- Set containing taper tap (form A), second tap (form D) and third tap (plug) (form C)

Advantage:
- Long service life and process reliability through innovative cutting geometry and universal use for maximum application flexibility

Taper tap, shape A

Second tap, shape D

Third tap, shape C

p. 755 p. 170 p. 62 p. 282 p. 283

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13040	●	●		○		●	●	●	●	●	●	●	○	○					

						Version	Set
						Lead angle shape	A/D/C
	mm	mm	mm	mm	mm	13040... Ident. No.	
BSW 1/8 in	40	2.5	40	3.5	2.7	030	●
BSW 5/32 in	32	3.2	45	4.5	3.4	040	●
BSW 3/16 in	24	3.6	50	6	4.9	050	●
BSW 7/32 in	24	4.5	50	6	4.9	060	●
BSW 1/4 in	20	5.1	50	6	4.9	070	●
BSW 5/16 in	18	6.5	56	6	4.9	080	●
BSW 3/8 in	16	7.9	70	7	5.5	090	●
BSW 1/2 in	12	10.5	75	9	7	110	●
BSW 5/8 in	11	13.5	80	12	9	130	●
BSW 3/4 in	10	16.5	95	14	11	140	●

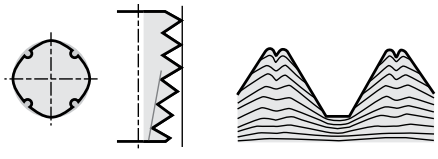
Prod. Gr. 1KM

Female thread creation: Thread forming (thread tapping)

In contrast to tapping, where sections are cut out of the material, the process of thread forming does not involve cutting. The material is made to flow through the polygon shape of the thread former. The fibre pattern is not interrupted.

Advantages:
- Very high working speed and process reliability
- Very high surface quality
- One tool for through hole and blind hole
- No clamping problems
- Higher thread strength
- Tools are easier to use
- Long service life, less breakage
- Deep threads

Disadvantages:
- Higher torque
- Special pre-drilling diameter with tight tolerance
- Incomplete moulding of cores (claw)
- Minimum expansion of tool must be ensured
- Regrinding not possible
- Lubrication essential
- Where used in the food or medicine industries, there is a risk of germ build-up in the area of the moulding recess.



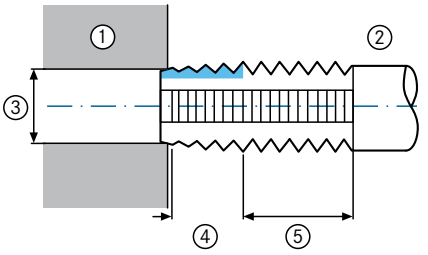
Thread forming — the process

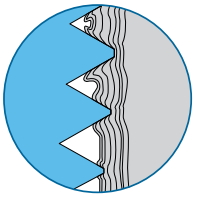
Process:
In contrast to tapping, where sections are cut out of the material, thread forming is a non-cutting, pressure forming procedure.

Advantages:
- No chip formation
- Up to 30% higher surface quality than with thread cutting
- Up to 40% higher processing speed than with thread cutting
- Threads in through holes and blind holes can be produced with the same tool
- Wide range of materials processable
- Cutting of thread eliminated
- Thread pitch and thread angle errors as with cut threads eliminated
- Shaped threads have higher strength owing to non-continuous cut

Requirements: For all shapeable materials with elongation >10 %.

unlike with screw tapping, in thread forming the thread is produced by deforming the material. the screw-shaped, polygonal, threaded part of the tool is „screwed in“ to the pre-drilled workpiece. It is fed in evenly to match the target thread pitch. the thread profile penetrates the workpiece gradually via the initial cut, causing it to flow and deform plastically.





① workpiece ② tool ③ pre-drill diameter
④ run-in ⑤ guide part

For more detailed information and explanations, refer to the technical manual.

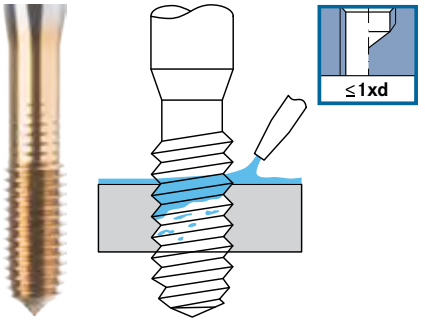
Lubrication grooves on thread formers

Process:
In contrast to tapping, where sections are cut out of the material, thread forming is a non-cutting, pressure forming procedure.

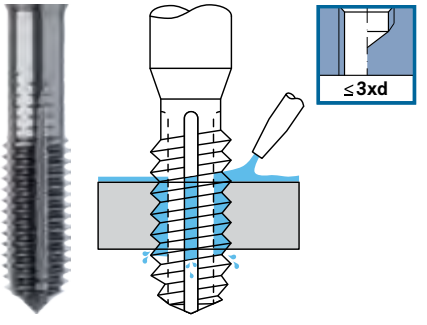
Advantages:
- No chip formation
- Up to 30% higher surface quality than with thread cutting
- Up to 40% higher processing speed than with thread cutting
- Threads in through holes and blind holes can be produced with the same tool
- Wide range of materials processable
- Cutting of thread eliminated
- Thread pitch and thread angle errors as with cut threads eliminated
- Shaped threads have higher strength owing to non-continuous cut

Requirements: For all shapeable materials with elongation >10 %.

We distinguish between two different tool types when it comes to thread formers. There are thread formers with and without lubrication grooves. Lubrication grooves ensure uniform lubrication even in the lower section of deeper threads. Lubrication grooves are also necessary in horizontal machining. Thread formers with lubrication grooves can be used universally. Thread formers without lubrication grooves can produce thread depths of up to 1.5xD with an optimum service life.



Thread formers without lubrication grooves



Thread formers with lubrication grooves

For more detailed information and explanations, refer to the technical manual.

Core hole drilling when thread forming

Process:
In contrast to tapping, where sections are cut out of the material, thread forming is a non-cutting, pressure forming procedure.

Advantages:
- No chip formation
- Up to 30% higher surface quality than with thread cutting
- Up to 40% higher processing speed than with thread cutting
- Threads in through holes and blind holes can be produced with the same tool
- Wide range of materials processable
- Cutting of thread eliminated
- Thread pitch and thread angle errors as with cut threads eliminated
- Shaped threads have higher strength owing to non-continuous cut

Requirements: For all shapeable materials with elongation >10 %.

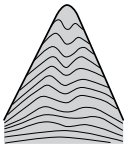
It is also necessary to drill core holes when thread forming, in order to create a shaped thread. The core hole must have a defined diameter within a certain tolerance range. Countersinking is also essential. When thread forming, however, the core hole is significantly more accurate than when tapping.

Example:
Thread M10 x 1.5 is 9.30 mm.
Tolerance = max. hole 9.38 mm - min. hole = 9.26 mm = 0.12 mm.
When tapping, the tolerance for the same thread is 0.3 mm.

It is important that the drilling is conducted with very accurate drills. The best results are achieved with solid carbide tools. The following graphics illustrate the relationship between the various core hole diameters and their impact on the formed thread.

Pre-drill diameter too large:
- Thread not fully formed
- Moulding recess too big
- Profile height too low

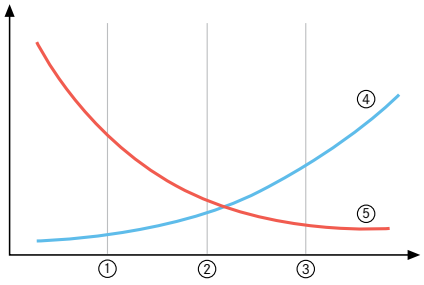
Optimal pre-drill diameter:
- Thread fully formed
- Small moulding recess
- Ideal profile height



Pre-drill diameter too small:
- Thread over-formed
- No moulding recess
- Profile height too high

By optimising the pre-drill diameter, a significantly higher service life can be achieved, not only in series production generally, but also with materials which are difficult to machine such as stainless steel. This graphic illustrates the relationship:

① Minimum dimension
② Nominal dimension
③ Maximum dimension
④ Service life
⑤ Torque



For more detailed information and explanations, refer to the technical manual.

Lubrication and cooling during thread forming

Process:
In contrast to tapping, where sections are cut out of the material, thread forming is a non-cutting, pressure forming procedure.

Advantages:
- No chip formation
- Up to 30% higher surface quality than with thread cutting
- Up to 40% higher processing speed than with thread cutting
- Threads in through holes and blind holes can be produced with the same tool
- Wide range of materials processable
- Cutting of thread eliminated
- Thread pitch and thread angle errors as with cut threads eliminated
- Shaped threads have higher strength owing to non-continuous cut

Requirements: For all shapeable materials with elongation >10 %.

in thread forming, the main job of the coolant is lubrication. the more lubrication is used with the highest possible grease content, the longer the service life. we distinguish between the following coolants:

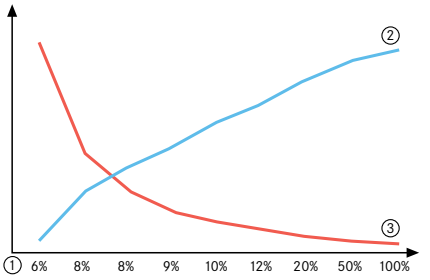
non water-soluble coolants

these are mineral oils with the best lubricating properties. they minimise friction and thus increase the service life.

water-soluble coolants

can be emulsified with water. the grease content of these coolants should be no lower than 6%. the ideal grease content is over 12%.

① coolant grease content ② service life ③ friction



For more detailed information and explanations, refer to the technical manual.

Cutting materials in thread forming

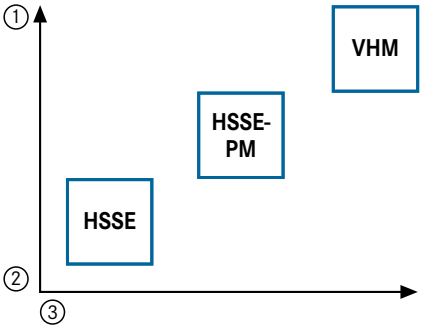
Process:
In contrast to tapping, where sections are cut out of the material, thread forming is a non-cutting, pressure forming procedure.

Advantages:
- No chip formation
- Up to 30% higher surface quality than with thread cutting
- Up to 40% higher processing speed than with thread cutting
- Threads in through holes and blind holes can be produced with the same tool
- Wide range of materials processable
- Cutting of thread eliminated
- Thread pitch and thread angle errors as with cut threads eliminated
- Shaped threads have higher strength owing to non-continuous cut

Requirements: For all shapeable materials with elongation >10 %.

Selecting the correct cutting material in thread forming depends strongly on the machine conditions and the quantity to be manufactured. The cutting materials HSSE and HSSE-PM are used in the small to medium quantity range or with unstable machine conditions. In large-scale series production, it is more economical to use solid carbide thread formers.

① Stable ② Unstable ③ Service life/procurement costs



For more detailed information and explanations, refer to the technical manual.

Clamping device recommendation for thread forming

	Length compensation chuck	Synchronous tapping chuck	Collet chucks	Shrink-fit chucks	Hydro-expansion chucks	Surface chuck
						
Length compensation range	9-15 mm	0.5-1 mm	0	0	0	0
Suitable for usage conditions	Unstable	Unstable-stable (synchronous)	Stable (synchronous)	Stable (synchronous)	Stable (synchronous)	Stable
Suitable for conventional machines	◉	○	○			
Suitable for CNC machines	○	●	◉	◉	◉	◉
Suitable for HSSE/HSSE PM thread formers	◉	◉	◉	◉	◉	◉
Suitable for solid carbide thread formers		◉	○	○	○	○

● = very well suited ◉ = suitable ○ = limited suitability

Coatings and surface treatments for thread forming

Process:
In contrast to tapping, where sections are cut out of the material, thread forming is a non-cutting, pressure forming procedure.

Advantages:
- No chip formation
- Up to 30% higher surface quality than with thread cutting
- Up to 40% higher processing speed than with thread cutting
- Threads in through holes and blind holes can be produced with the same tool
- Wide range of materials processable
- Cutting of thread eliminated
- Thread pitch and thread angle errors as with cut threads eliminated
- Shaped threads have higher strength owing to non-continuous cut

Requirements: For all shapeable materials with elongation >10 %.

Titanium nitride
TiN

This universal coating is suitable for softer steels and non-ferrous metals. It is only of limited suitability for high-strength steel and stainless steels.
- Vickers hardness: 2200–2300 HV
- Friction coefficient: 0.5
- Temperature resistance: 500–600°C
- Colour: Gold

Titanium carbon nitride
TiCN

Its high level of hardness makes titanium carbon nitride coating very well suited to all steels as well as stainless steels, titanium and cast materials above GGG50.
- Vickers hardness: 3000 HV
- Friction coefficient of steel: 0.2
- Temperature resistance: 400°C
- Colour: Blue grey
- (anthracite) lubrication: Oil/emulsion

Titanium aluminium nitride
TiAlN

The titanium aluminium nitride coating is suitable for steels and for alloyed heat-treated steels, tool steels, high-speed steels, stainless steels, titanium, hardened steels and nickel-based materials.
- Vickers hardness: 3200 HV
- Friction coefficient of steel: 0.2
- Temperature resistance: <800°C
- Colour: Blue-grey (anthracite)
- Lubrication: Oil/emulsion

Aluminium chrome nitride
AlCrN

The aluminium chrome nitride coating achieves a very long service life due to its wear resistance, oxidation resistance and high-temperature hardness. This coating is only suitable for steel materials in combination with oil as a coolant.
- Vickers hardness: 3200 HV
- Friction coefficient of steel: 0.35
- Temperature resistance: <1100°C
- Colour: Grey blue
- Lubrication: Oil

CARBO

The CARBO coating is an extremely hard layer and was developed for all non-ferrous metals such as copper, brass and aluminium. Built-up edges are significantly reduced by the high level of hardness and low friction coefficient.

CARBO

- Vickers hardness: 6000 HV
- Friction coefficient: 0.1
- Temperature resistance: 700°C
- Colour: Black
- Lubrication: Oil/emulsion

For more detailed information and explanations, refer to the technical manual.

thread formers without lubrication grooves
for thread depths of up to 1-1.5xD

≤1xd

	Ø	Cutting material	Surface	Toler-ance of screw taps	Coolant supply	P 700 N/mm²	P 1000 N/mm²	P 1300 N/mm²	M	N		page
13394009-100	M1-M20	HSSE	TiN	ISO 2 (6H)	External	●	●	●	●	○		234
13394620-700	M2-M12	HSSE	TiN	ISO 3 (6G)	External	●	●	●	●	○		234

thread formers with lubrication grooves
for thread depths of up to 3xD

≤3xd

	Ø	Cutting material	Surface	Toler-ance of screw taps	Coolant supply	P 700 N/mm²	P 1000 N/mm²	P 1300 N/mm²	M	N		page
13392210-300	M1-M30	HSSE	TiCN	ISO 2X (6HX)	External	○	●	●		○		235
13390110-300	M1-M20	HSSE-PM	TiCN	ISO 2X (6HX)	External	●	●	●	●	○		234
13394130-200	M3-M16	HSSE	TiN	ISO 2X (6HX)	External	●	●	●	●	○		235-236
13394530-600	M3-M16	HSSE	AlCrN	ISO 2X (6HX)	External	●	●	●	●	○		236-237
13394330-400	M3-M16	HSSE	TiN	ISO 3X (6GX)	External	●	●	●	●	○		235-236
13396350-374	M8-M24	HSSE	TiCN	ISO 2X (6HX)	External	○	●	●		○		239
13396100-134	MF6-MF24	HSSE	TiN	ISO 2 (6H)	External	●	●	●	●	○		240
13396200-210	G 1/16-G 3/4 inch	HSSE	TiN		External	●	●	●	●	○		240

thread formers with lubrication grooves with internal cooling
for thread depths of up to 3xD

≤3xd

	Ø	Cutting material	Surface	Toler-ance of screw taps	Coolant supply	P 700 N/mm²	P 1000 N/mm²	P 1300 N/mm²	M	N		page
13390350-500	M5-M20	HSSE-PM	TiCN	ISO 2X (6HX)	Internal radial	●	●	●	●	○		237-238
13393350-400	M5-M20	HSSE-PM	TiCN	ISO 2 (6H)	Internal radial	●	●	●	●	○		238
13398650-700	M5-M20	HSSE-PM	TiAlN	ISO 2X (6HX)	Internal radial	●	●	●	●	○		-
13399530-600	M3-M20	HSSE-PM	TiN	ISO 2X (6HX)	Internal axial	●	●	●	●	○		238-239

ATORN® Machine thread former HSSE-TiN type Uni
for universal use up to 1300 N/mm2

M | ≤1xd | HSSE | CNC/conv. | TiN | C (2-3)

Application:
For producing metric threads in through holes and blind holes on CNC and conventional machines in the steel, stainless steel and NF metal material groups up to a strength of 1300 N/mm² with > 10% material expansion.

Execution:
- Without lubrication grooves, structural dimensions according to: DIN 371 = reinforced shank (up to M10), DIN 376 = protruding shank (from M12)

Advantage:
- Innovative mould geometry ensures very high dimensional accuracy and process reliability
- **Ident. No. 120–201, 720:** High-quality, torsion-resistant HSSE cutting material and surface finish for very high service life requirements

Ident. No. 009–201

Ident. No. 620–720

p. 170 p. 231 p. 22 p. 757 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13394009-100	30	25	10	10	7	26	38	20	30	18	25								
13394120-201	30	25	10	10	7	26	38	20	30	18	25								
13394620-700	30	25	10	10	7	26	38	20	30	18	25								
13394720	30	25	10	10	7	26	38	20	30	18	25								

							Cutting material	HSSE		HSSE	
							Surface	TiN		TiN	
							Tolerance of screw taps	ISO 2 (6H)		ISO 3 (6G)	
							Lead angle shape	C		C	
							Application type/machine type	CNC | Conventional		CNC | Conventional	
							Coolant supply	External		External	
	mm	mm	mm	mm	mm	DIN	13394... Ident. No.			13394... Ident. No.	
M1	0.25	0.9	40	2.5	2.1	Similar to 371	009	●		-	-
M1.2	0.25	1.1	40	2.5	2.1	Similar to 371	012	●		-	-
M1.4	0.3	1.28	40	2.5	2.1	Similar to 371	014	●		-	-
M1.6	0.35	1.46	40	2.5	2.1	Similar to 371	016	●		-	-
M1.7	0.35	1.55	40	2.5	2.1	Similar to 371	017	●		-	-
M1.8	0.35	1.66	40	2.5	2.1	Similar to 371	018	●		-	-
M2	0.4	1.8	45	2.8	2.1	Similar to 371	020	●		620	●
M2.5	0.45	2.3	50	2.8	2.1	Similar to 371	025	●		625	●
M3	0.5	2.8	56	3.5	2.7	Similar to 371	030	●		630	●
M3.5	0.6	3.25	56	4	3	Similar to 371	035	●		635	●
M4	0.7	3.7	63	4.5	3.4	Similar to 371	040	●		640	●
M5	0.8	4.65	70	6	4.9	Similar to 371	050	●		650	●
M6	1	5.55	80	6	4.9	Similar to 371	060	●		660	●
M8	1.25	7.4	90	8	6.2	Similar to 371	080	●		680	●
M10	1.5	9.3	100	10	8	Similar to 371	100	●		700	●
M12	1.75	11.2	110	9	7	Similar to 376	120	●		720	●
M14	2	13.1	110	11	9	Similar to 376	141	●		-	-
M16	2	15.1	110	12	9	Similar to 376	161	●		-	-
M20	2.5	18.9	140	16	12	Similar to 376	201	●		-	-

Prod. Gr. 1KE

ATORN® Machine thread former HSSE-PM type UNI MAX H6

For use up to 1300 N/mm²

M | ≤3xd | HSSE-PM | TiCN | C (2-3)

Application:
For producing metric threads on CNC and conventional machines in blind holes in the steel, stainless steel and NF metal material groups up to a strength of 1300 N/mm² with > 10% material expansion.

Execution:
- with oil grooves, h6 shank

Advantage:
- H6 shank for shrinking applications
- Innovative mould geometry ensures very high dimensional accuracy and process reliability
- High-quality, torsion-resistant HSSE PM cutting material and surface finish for very high service life requirements

p. 170 p. 231 p. 22 p. 757 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13390110-300	30	25	10	10	7	26	38	20	30	18	25								

							Cutting material	HSSE-PM		HSSE-PM	
							Surface	TiCN		TiCN	
							Tolerance of screw taps	ISO 1X (4HX)		ISO 2X (6HX)	
							Lead angle shape	C		C	
							Coolant supply	External		External	
	mm	mm	mm	mm	mm	DIN	13390... Ident. No.			13390... Ident. No.	
M1	0.25	0.9	40	2.5	2.1	Similar to 371	110	●		-	-
M1.2	0.25	1.1	40	2.5	2.1	Similar to 371	112	●		-	-
M1.4	0.3	1.25	40	2.5	2.1	Similar to 371	114	●		-	-
M1.6	0.35	1.45	40	2.5	2.1	Similar to 371	-	-		116	●
M1.7	0.35	1.55	40	2.5	2.1	Similar to 371	-	-		117	●
M1.8	0.35	1.65	40	2.5	2.1	Similar to 371	-	-		118	●
M2	0.4	1.85	45	2.8	2.1	Similar to 371	-	-		121	●
M2.5	0.45	2.30	50	2.8	2.1	Similar to 371	-	-		125	●
M3	0.5	2.80	56	3.5	2.7	Similar to 371	-	-		130	●
M4	0.7	3.70	63	4.5	3.4	Similar to 371	-	-		140	●
M5	0.8	4.65	70	6	4.9	Similar to 371	-	-		150	●
M6	1	5.55	80	6	4.9	Similar to 371	-	-		160	●
M8	1.25	7.40	90	8	6.2	Similar to 371	-	-		180	●
M10	1.5	9.30	100	10	8.0	Similar to 371	-	-		200	●
M12	1.75	11.20	110	9	7.0	376	-	-		220	●
M14	2	13.10	110	11	9.0	376	-	-		240	●
M16	2	15.10	110	12	9.0	376	-	-		260	●
M20	2.5	18.90	140	16	12.0	376	-	-		300	●

Prod. Gr. 1KE

ATORN® Machine thread former HSSE TiCN type Uni Max

For universal use in series production, up to 1500 N/mm²

M | ≤3xd | HSSE | CNC/conv. | TiCN | C (2-3)

Application:
For producing metric threads on CNC machines or conventional machines in through holes and blind holes in the **steel, stainless steel and non-ferrous metals material groups up to a strength of 1500 N/mm²** with > 10% material expansion.

Execution:
- With lubrication grooves, structural dimensions according to: DIN 371 = reinforced shank (up to M10), DIN 376 = protruding shank (from M12)

Advantage:
- Innovative shape geometry optimised for machining high-strength materials
- High-quality, torsion-resistant HSSE cutting material and surface finish ensure a long service life

p. 170 p. 231 p. 22 p. 757 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13392210-300	28	12	10			30	40	30	40	25	35	30							
13392320-500	28	12	10			30	40	30	40	25	35	30							

Cutting material	HSSE
Surface	TiCN
Tolerance of screw taps	ISO 2X (6HX)
Lead angle shape	C
Application type/machine type	CNC | Conventional
Coolant supply	External

	mm	mm	mm	mm	mm	DIN	13392... Ident. No.	
M1	0.25	0.9	40	2.5	2.1	371	210	●
M1.2	0.25	1.1	40	2.5	2.1	371	212	●
M1.4	0.3	1.27	40	2.5	2.1	371	214	●
M1.6	0.35	1.45	40	2.5	2.1	371	216	●
M2	0.4	1.85	45	2.8	2.1	371	220	●
M2.5	0.45	2.33	50	2.8	2.1	371	225	●
M3	0.5	2.8	56	3.5	2.7	371	230	●
M4	0.7	3.7	63	4.5	3.4	371	240	●
M5	0.8	4.65	70	6	4.9	371	250	●
M6	1	5.55	80	6	4.9	371	260	●
M8	1.25	7.4	90	8	6.2	371	280	●
M10	1.5	9.3	100	10	8	371	300	●
M12	1.75	11.2	110	9	7	376	320	●
M14	2	13	110	11	9	376	340	●
M16	2	15	110	12	9	376	360	●
M18	2.5	16.8	125	14	11	376	380	●
M20	2.5	18.8	140	16	12	376	400	●
M22	2.5	20.8	140	18	14.5	376	420	●
M24	3	22.5	160	18	14.5	376	440	●
M27	3	25.5	160	20	16	376	470	●
M30	3.5	28.2	180	22	18	376	500	●

Prod. Gr. 1KE

ATORN® Machine thread former HSSE-TiN type Uni

For universal use up to 1300 N/mm²

M | ≤3xd | HSSE | CNC/conv. | TiN | C (2-3)

Application:
For producing metric threads on CNC machines or conventional machines in through holes and blind holes in the **steel, stainless steel and non-ferrous metals material groups up to a strength of 1300 N/mm²** with > 10% material expansion.

Execution:
- With lubrication grooves, structural dimensions according to: DIN 371 = reinforced shank (up to M10), DIN 376 = protruding shank (from M12)

Advantage:
- Innovative mould geometry ensures very high dimensional accuracy and process reliability.
- High-quality, torsion-resistant HSSE cutting material and surface finish for very high service life requirements.

p. 170 p. 231 p. 22 p. 757 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13394130-200	30	25	10	10	7	26	38	20	30	18	25								
13394212-216	30	25	10	10	7	26	38	20	30	18	25								
13394330-400	30	25	10	10	7	26	38	20	30	18	25								
13394412-416	30	25	10	10	7	26	38	20	30	18	25								

							Cutting material	HSSE		HSSE	
							Surface	TiN		TiN	
							Tolerance of screw taps	ISO 2X (6HX)		ISO 3X (6GX)	
							Lead angle shape	C		C	
							Application type/machine type	CNC | Conventional		CNC | Conventional	
							Coolant supply	External		External	
	mm	mm	mm	mm	mm	DIN	13394... Ident. No.			13394... Ident. No.	
M3	0.5	2.8	56	3.5	2.7	Similar to 371	130	●		330	●
M4	0.7	3.7	63	4.5	3.4	Similar to 371	140	●		340	●
M5	0.8	4.65	70	6	4.9	Similar to 371	150	●		350	●
M6	1	5.55	80	6	4.9	Similar to 371	160	●		360	●
M8	1.25	7.4	90	8	6.2	Similar to 371	180	●		380	●
M10	1.5	9.3	100	10	8	Similar to 371	200	●		400	●
M12	1.75	11.2	110	9	7	Similar to 376	212	●		412	●
M16	2	15	110	12	9	Similar to 376	216	●		416	●

Prod. Gr. 1KE

ORION® Machine thread former HSSE-TiN type Uni

For universal use up to 1300 N/mm²

M | ≤3xd | HSSE | TiN | C (2-3)

Application:
For producing metric threads on CNC machines or conventional machines in through holes and blind holes in the **steel, stainless steel and non-ferrous metals material groups up to a strength of 1300 N/mm²** with > 10% material expansion.

Execution:
- With lubrication grooves, structural dimensions according to: DIN 371 = reinforced shank (up to M10), DIN 376 = protruding shank (from M12)

Advantage:
- Innovative mould geometry ensures very high dimensional accuracy and process reliability
- High-quality, torsion-resistant HSSE cutting material and surface finish for very high service life requirements

p. 170 p. 231 p. 22 p. 757 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13392730-820	WS-P	WS-P	WS-P	WS-P	WS-M	WS-N	WS-N	WS-N	WS-N	WS-N	WS-N	WS-N	WS-N	WS-K	WS-S	WS-S	WS-S	WS-H	WS-H

							Cutting material	HSSE	
							Surface	TiN	
							Tolerance of screw taps	ISO 2X (6HX)	
							Lead angle shape	C	
							Coolant supply	External	
	mm	mm	mm	mm	mm	DIN	13392... Ident. No.		
M3	0.5	2.8	56	3.5	2.7	Similar to 371	730	●	
M4	0.7	3.7	63	4.5	3.4	Similar to 371	740	●	
M5	0.8	4.65	70	6	4.9	Similar to 371	750	●	
M6	1	5.55	80	6	4.9	Similar to 371	760	●	
M8	1.25	7.4	90	8	6.2	Similar to 371	780	●	
M10	1.5	9.3	100	10	8	Similar to 371	800	●	
M12	1.75	11.2	110	9	7	Similar to 376	820	●	

Prod. Gr. 1DB

ATORN® Machine thread former HSSE-ALCRN lubrication grooves

for universal use up to 1300 N/mm² with oil lubrication

M | ≤3xd | HSSE | CNC/conv. | AlCrN | C (2-3)

Application:
For producing metric threads on CNC machines or conventional machines in through holes and blind holes **with oil lubrication** in the **steel, stainless steel and non-ferrous metals material groups up to a strength of 1300 N/mm²** with > 10% material expansion.

Execution:
- With lubrication grooves, structural dimensions according to: DIN 371 = reinforced shank (up to M10), DIN 376 = protruding shank (from M12)

Advantage:
- Innovative mould geometry ensures very high dimensional accuracy and process reliability.
- High-quality, torsion-resistant HSSE cutting material and surface finish for very high service life requirements.

p. 170 p. 231 p. 22 p. 757 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13394530-600	30	25	10	10	7	26	38	20	30	18	25								
13394612-616	30	25	10	10	7	26	38	20	30	18	25								

						Cutting material	HSSE	
						Surface	AlCrN	
						Tolerance of screw taps	ISO 2X (6HX)	
						Lead angle shape	C	
						Application type/machine type	CNC | Conventional	
						Coolant supply	External	
	mm	mm	mm	mm	mm	DIN	13394... Ident. No.	
M3	0.5	2.8	56	3.5	2.7	Similar to 371	530	●
M4	0.7	3.7	63	4.5	3.4	Similar to 371	540	●
M5	0.8	4.65	70	6	4.9	Similar to 371	550	●
M6	1	5.55	80	6	4.9	Similar to 371	560	●
M8	1.25	7.4	90	8	6.2	Similar to 371	580	●
M10	1.5	9.3	100	10	8	Similar to 371	600	●
M12	1.75	11.2	110	9	7	Similar to 376	612	●
M16	2	15	110	12	9	Similar to 376	616	●

Prod. Gr. 1KE

ATORN® HSSE-PM TiN synchronous machine thread former

For universal use up to 1300 N/mm²

Application:
For manufacturing metric threads in through holes and blind holes on CNC and conventional machines in the steel, stainless steel and NF metal material groups up to a strength of 1300 N/mm² with > 10% material expansion.

Execution:
- With lubrication grooves, structural dimensions according to: DIN 371 = reinforced shank (up to M10), DIN 376 = protruding shank (from M12)

Advantage:
- Innovative mould geometry ensures very high dimensional accuracy and process reliability.
- Short guide component reduces friction.

p. 170 p. 231 p. 22 p. 757 p. 284

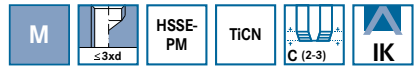
Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13393130-200	30	25	10	10	7	26	38	20	30	18	25								
13393220-260	30	25	10	10	7	26	38	20	30	18	25								

						Cutting material	HSSE-PM	
						Surface	TiN	
						Tolerance of screw taps	ISO 2 (6H)	
						Lead angle shape	C	
						Application type/machine type	CNC | Conventional	
						Coolant supply	External	
	mm	mm	mm	mm	mm	DIN	13393... Ident. No.	
M3	0.5	2.8	56	3.5	2.7	Similar to 371	130	●
M4	0.7	3.7	63	4.5	3.4	Similar to 371	140	●
M5	0.8	4.65	70	6	4.9	Similar to 371	150	●
M6	1	5.55	80	6	4.9	Similar to 371	160	●
M8	1.25	7.4	90	8	6.2	Similar to 371	180	●
M10	1.5	9.3	100	10	8	Similar to 371	200	●
M12	1.75	11.2	110	9	7	Similar to 376	220	●
M14	2	13.1	110	14	11	Similar to 376	240	●
M16	2	15	110	12	9	Similar to 376	260	●

Prod. Gr. 1KE

ATORN® Machine thread former HSSE-PM TiCN IC radial type Uni Max H6

For universal use up to 1300 N/mm²



Application:
For producing metric threads on CNC and conventional machines in blind holes in the steel, stainless steel and NF metal material groups up to a strength of 1300 N/mm² with > 10% material expansion.

Execution:
- with oil grooves and internal cooling h6 shank

Advantage:
- H6 shank for shrinking applications
- Innovative mould geometry ensures very high dimensional accuracy and process reliability
- High-quality, torsion-resistant HSSE PM cutting material and surface finish for very high service life requirements

p. 170 p. 231 p. 22 p. 757 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13390350-500	45	30	20	18	12	40	50	35	45	27	32								

						Cutting material	HSSE-PM	
						Surface	TiCN	
						Tolerance of screw taps	ISO 2X (6HX)	
						Lead angle shape	C	
						Coolant supply	Internal radial	
	mm	mm	mm	mm	mm	DIN	13390... Ident. No.	
M5	0.8	4.65	70	6	4.9	Similar to 371	350	●
M6	1	5.55	80	6	4.9	Similar to 371	360	●
M8	1.25	7.40	90	8	6.2	Similar to 371	380	●
M10	1.5	9.30	100	10	8.0	Similar to 371	400	●
M12	1.75	11.20	110	9	7.0	376	420	●
M14	2	13.10	110	11	9.0	376	440	●
M16	2	15.10	110	12	9.0	376	460	●
M20	2.5	18.90	140	16	12.0	376	500	●

Prod. Gr. 1KE

ATORN® Machine thread former HSSE-PM TiALN IC radial, type Uni

For universal use up to 1300 N/mm²

M | ≤3xd | HSSE-PM | CNC/conv. | TiCN | C (2-3) | IK

Application:
For producing metric threads on CNC and conventional machines in blind holes in the steel, stainless steel and NF metal material groups up to a strength of 1300 N/mm² with > 10% material expansion.

Execution:
- With lubrication grooves and internal cooling, structural dimensions according to: DIN 371 = reinforced shank (up to M10), DIN 376 = protruding shank (from M12)

Advantage:
- Innovative mould geometry ensures very high dimensional accuracy and process reliability
- High-quality, torsion-resistant HSSE PM cutting material and surface finish for very high service life requirements
- Cutting edge finish for very high service life requirements

p. 170 p. 231 p. 22 p. 757 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plastics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13393350-400	45	30	20	18	12	40	50	35	45	27	32								
13393420-500	45	30	20	18	12	40	50	35	45	27	32								

						Cutting material	HSSE-PM	
						Surface	TiCN	
						Tolerance of screw taps	ISO 2 (6H)	
						Lead angle shape	C	
						Application type/machine type	CNC | Conventional	
						Coolant supply	Internal radial	
	mm	mm	mm	mm	mm	DIN	13393... Ident. No.	
M5	0.8	4.65	70	6	4.9	Similar to 371	350	●
M6	1	5.55	80	6	4.9	Similar to 371	360	●
M8	1.25	7.4	90	8	6.2	Similar to 371	380	●
M10	1.5	9.3	100	10	8	Similar to 371	400	●
M12	1.75	11.2	110	9	7	Similar to 376	420	●
M16	2	15	110	12	9	Similar to 376	460	●
M18	2.5	16.9	125	14	11	Similar to 376	480	●
M20	2.5	18.9	140	16	12	Similar to 376	500	●

Prod. Gr. 1KE

ATORN® Machine thread former, extra long, HSSE-PM TiN type Uni

For universal use up to 1300 N/mm²

M | ≤3xd | HSSE-PM | CNC/conv. | TiN | C (2-3) | IK

Application:
For manufacturing deeply recessed fine metric threads in through holes and blind holes on CNC and conventional machines in the steel, stainless steel and non-ferrous metal material groups up to a strength of 1300 N/mm² with > 10% material expansion in single part and series production.

Execution:
- Extra-long machine thread former with lubrication grooves

Advantage:
- Innovative mould geometry ensures very high dimensional accuracy and process reliability.
- Very easy access to deeply recessed threads.
- **Ident. No. 530–600:**
  - High-quality, torsion-resistant HSSE PM cutting material and surface finish for very high service life requirements.
  - Cutting edge finish for very high service life requirements.

p. 170 p. 231 p. 22 p. 757 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plastics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13399530-600	45	30	20	18	12	40	50	35	45	27	32								
13399620-700	45	30	20	18	12	40	50	35	45	27	32								

						Cutting material	HSSE-PM	
						Surface	TiN	
						Tolerance of screw taps	ISO 2X (6HX)	
						Lead angle shape	C	
						Application type/machine type	CNC | Conventional	
						Coolant supply	Internal axial	
	mm	mm	mm	mm	mm	DIN	13399... Ident. No.	
M3	0.5	2.8	112	2.2	-	Similar to 371 | 2174	530	●
M4	0.7	3.7	112	2.8	2.1	Similar to 371 | 2174	540	●
M5	0.8	4.65	125	3.5	2.7	Similar to 371 | 2174	550	●
M6	1	5.55	125	4.5	3.7	Similar to 371 | 2174	560	●
M8	1.25	7.4	140	6.0	4.9	Similar to 371 | 2174	580	●
M10	1.5	9.3	160	7	5.5	Similar to 371 | 2174	600	●
M12	1.75	11.2	180	9	7	Similar to 376 | 2174	620	●
M16	2	15.1	220	12	9	Similar to 376 | 2174	660	●
M20	2.5	18.9	280	16	12	Similar to 376 | 2174	700	●

Prod. Gr. 1KE

ATORN® Machine thread former HSSE TiCN type Uni Max (DIN 374)

For universal use in series production, up to 1500 N/mm²

MF | ≤3xd | HSSE | CNC/conv. | TiCN | C (2-3)

Application:
For producing metric threads on CNC machines or conventional machines in through holes and blind holes in the **steel, stainless steel and non-ferrous metals material groups up to a strength of 1500 N/mm²** with > 10% material expansion.

Execution:
- With lubrication grooves, structural dimensions according to: DIN 371 = reinforced shank (up to M10), DIN 376 = protruding shank (from M12)

Advantage:
- Innovative shape geometry optimised for machining high-strength materials
- High-quality, torsion-resistant HSSE cutting material and surface finish ensure a long service life

p. 170 | p. 231 | p. 22 | p. 757 | p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13396350-374	28	12	10			30	40	30	40	25	35	30							

						Cutting material	HSSE	
						Surface	TiCN	
						Tolerance of screw taps	ISO 2X (6HX)	
						Lead angle shape	C	
						Application type/machine type	CNC | Conventional	
						Coolant supply	External	
	mm	mm	mm	mm	mm	DIN	13396... Ident. No.	
MF8	1	7.55	90	8	6.2	374	350	●
MF10	1	9.55	90	10	8	374	352	●
MF10	1.25	9.45	100	10	8	374	354	●
MF12	1	11.55	100	9	7	374	356	●
MF12	1.25	11.45	100	9	7	374	358	●
MF12	1.5	11.3	100	9	7	374	360	●
MF14	1.25	13.4	100	11	9	374	362	●
MF14	1.5	13.3	100	11	9	374	364	●
MF16	1.5	15.3	100	12	9	374	366	●
MF18	1.5	17.3	110	14	11	374	368	●
MF20	1.5	19.3	125	16	12	374	370	●
MF22	1.5	21.3	125	18	14.5	374	372	●
MF24	1.5	23.3	140	18	14.5	374	374	●

Prod. Gr. 1KF

ATORN® Machine thread former HSSE-TiN type Uni (DIN 374)

For universal use up to 1300 N/mm²

MF | ≤3xd | HSSE | CNC/conv. | TiN | C (2-3)

Application:
For producing metric threads in through holes and blind holes on CNC and conventional machines in the steel, stainless steel and NF metal material groups up to a strength of 1300 N/mm² with > 10% material expansion.

- High-quality, torsion-resistant HSSE cutting material and surface finish for very high service life requirements

Technical data:
- DIN: 374

Advantage:
- Innovative mould geometry ensures very high dimensional accuracy and process reliability

p. 170 p. 231 p. 22 p. 757 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13396100-134	30	25	10	10	7	26	38	20	30	18	25								

Cutting material	HSSE
Surface	TiN
Tolerance of screw taps	ISO 2 (6H)
Lead angle shape	C
Application type/machine type	CNC | Conventional
Coolant supply	External

	mm	mm	mm	mm	mm	13396... Ident. No.	
MF6	0.75	5.65	80	4.5	3.4	100	●
MF8	0.75	7.65	90	6	4.9	102	●
MF8	1	7.55	90	6	4.9	104	●
MF10	1	9.55	100	7	5.5	106	●
MF10	1.25	9.4	100	7	5.5	108	●
MF12	1	11.55	100	9	7	110	●
MF12	1.25	11.4	100	9	7	112	●
MF12	1.5	11.3	100	9	7	114	●
MF14	1	13.55	100	11	9	116	●
MF14	1.5	13.3	100	11	9	118	●
MF16	1	15.55	100	12	9	120	●
MF16	1.5	15.3	100	12	9	122	●
MF18	1	17.55	110	14	11	124	●
MF18	1.5	17.3	110	14	11	126	●
MF20	1	19.55	125	16	12	128	●
MF20	1.5	19.3	125	16	12	130	●
MF22	1.5	21.3	125	18	14.5	132	●
MF24	1.5	23.3	140	18	14.5	134	●

Prod. Gr. 1KF

ATORN® HSSE TiN machine thread former

for universal use up to 1300 N/mm2

G | ≤3xd | HSSE | CNC/conv. | TiN | C (2-3)

Application:
For producing metric threads in through holes and blind holes on CNC and conventional machines in the steel, stainless steel and NF metal material groups up to a strength of 1300 N/mm² with > 10% material expansion.

Advantage:
- Innovative mould geometry ensures very high dimensional accuracy and process reliability
- High-quality, torsion-resistant HSSE cutting material and surface finish for very high service life requirements

p. 170 p. 231 p. 22 p. 757 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13396200-210	30	25	10	10	7	26	38	20	30	18	25								

Cutting material	HSSE
Surface	TiN
Lead angle shape	C
Application type/machine type	CNC | Conventional
Coolant supply	External

	mm	mm	mm	mm	mm	13396... Ident. No.	
G1/16	28	7.3	90	6	4.9	200	●
G1/8	28	9.3	90	7	5.5	202	●
G1/4	19	12.5	100	11	9	204	●
G3/8	19	16	100	12	9	206	●
G1/2	14	20	125	16	12	208	●
G3/4	14	25.5	140	20	16	210	●

Prod. Gr. 1KF

Female thread creation: Milling cutter

The development of computer-controlled machines has made the thread milling procedure another option for creating female threads. The thread is produced by the helical diagonal immersion of a rotating tool. In the process, the axial movement of the tool in one revolution produces the pitch. For this procedure, a CNC machine with at least three axes is required (XYZ).

Advantages, tool cost minimisation:

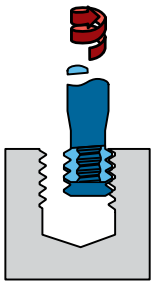
- right-hand and left-hand thread can be manufactured with a tool
- thread milling cutters cover different threads with the same pitch
- for partial thread profiles, a wide range of threads can be produced with a cutting insert

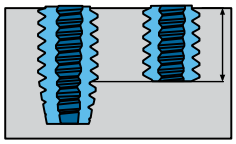
Disadvantages:

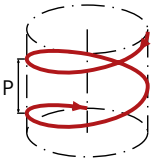
- machine requirements (XYZ axes)
- machining times generally longer in series production
- limited experience of the user in thread milling

Advantages, process reliability:

- Extremely high process reliability with very expensive components
- Reliable process solution for problem materials with poor chip breaking and difficult chip formation
- First choice with thin-walled workpieces or unstable clamping operations
- High thread quality
- Thread can be made right to the base of a blind hole
- Radius compensation programming enables thread tolerance to be adjusted easily







Internal cooling during thread milling

Internal cooling is of particular importance when it comes to thread milling. The short chips must be rinsed out of the working area by the coolant medium. Otherwise, the chips produced could damage the surface of the thread or even cause cavities on the tool.

We make a fundamental distinction between thread milling cutters with axial coolant flow, used for blind holes, and modified variants with radial coolant flow, which are ideal for through holes.

Thread milling cutters with axial coolant flow

Thread milling cutters with radial coolant flow

Clamping device recommendation for thread milling

	Collet chucks	Shrink-fit chucks	Hydro-expansion chucks	Surface chuck	Power chucks
					
Suitable for pitches up to 1.5 mm	○	○	○	◎	●
Suitable for pitches above 1.5 mm			◎	●	●
Vibration-damping	○	○	◎	○	◎
Surface quality	○	◎	◎	○	●

● = very well suited ◎ = suitable ○ = limited suitability

Source: Hahn+Kolb Werkzeuge GmbH
Technical data subject to change.
Availability subject to country specific rules and regulations.

Types of thread milling cutter

We distinguish between the following types of thread milling cutter:

Multi-range thread milling cutter without collar recess
The simple construction of the multi-range thread milling cutter makes it a cost-effective tool for milling female threads. With this type of cutter, two to three thread sizes can be produced at the same pitch above the specified nominal dimensions. Please note the relationship between milling diameter and thread size.

Multi-range thread milling cutter with collar recess

The multi-range thread milling cutter with collar recess is suitable for universal application. The collar recess enables very deep threads to be milled. With this type of cutter, all thread sizes can be produced at the same pitch above a nominal dimension.

Process steps for thread milling cutter with collar recess:
① Tool moves to initial position, centred above drill hole
② Start of thread milling with descending loop
③ Milling of tread with subsequent ascending loop
④ Start of second thread milling program with descending loop
⑤ Milling of thread with subsequent ascending loop
⑥ Movement to initial position and end of machining procedure

Thread milling cutter with countersinking step

The thread milling cutter with countersinking step is characterised by the combination of countersinking and thread milling. With this type of cutter, two to three thread sizes can be produced at the same pitch above the specified nominal dimensions.

Process steps:
① Tool moves to start position centred on hole
② 90° bevel countersink
③ Begins thread milling with descending loop
④ Thread milling with subsequent ascending loop
⑤ Moves to start position and ends machining

Micro-thread milling cutter

Micro thread milling cutters allow threads to be produced reliably from M1 up to a thread depth of 5xD. Here, we differentiate between two tool geometries: A universal geometry covering all material groups up to 1500 N/mm² and a hard machining geometry, developed for hardened materials up to 63 HRC. With hard machining, the thread milling cutter is used in anti-clockwise rotation M04 to achieve the optimum service life.

Process steps:
① Tool moves to start position centred on hole
② 90° arc in
③ Thread milling
④ 90° arc out
⑤ Final position

Thread milling cutter with thread cutting insert
The advantages of thread milling are particularly apparent with larger threads. Due to the enormous cost of the solid carbide cutting material over the diameter range of 20 mm, supports made of steel or solid carbide and fitted with a solid carbide cutting insert can be used. With high projections or deep threads, a support made from solid carbide should be used to ensure sufficient rigidity. If the correct cutting insert has been selected, male threads can also be created. The cutting inserts are all in a full profile design and enable the production of high-precision thread.

Thread milling system with front milling cutter insert
The development of the thread milling system with front milling cutter insert has enabled the production of medium to large thread through a reliable process. Here, two support designs are also available in steel and solid carbide. In terms of cutting inserts, both partial and full-profile plates are available. Partial profile plates allow threads to be created with different pitches, and full-profile plates allow precise threads with one pitch.

multi-range thread milling cutter
for female thread milling

		IK	P	M	N	K	S		page
13496192-217	Multi-range thread milling cutter, solid carbide TiAlN (M, MF) without internal cooling for universal use up to 1500 N/mm2 in female threads	External	●	●	●	●			245
13496560-612	Multi-range thread milling cutter, solid carbide TIAlN (M, MF) with axial internal cooling For universal use up to 1500 N/mm2 in female threads.	Internal	●	●	●	●	●		246

multi-range thread milling cutter with collar recess
for female thread milling

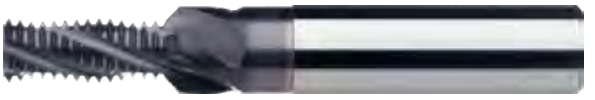
micro-thread milling cutter type Uni
for female thread milling

		P	M	N	K	S	H 65HRC		page
13496801-928	Solid carbide TiAlN 2xD thread milling cutter (M, MF) For universal use up to 1500 N/mm2 in female threads.	●	●	●	●	●			247
13496930-962	Thread milling cutter SC TiAlN 3xD (M, MF) For universal use up to 1500 N/mm2 in female threads.	●	●	●	●	●			247

micro-thread milling cutter type hard
for female thread milling

		P	M	N	K	S	H 65HRC		page
13496970-981	Thread milling cutter SC TiAlN 2xD (M, MF) For hard machining up to 63 HRC in female threads.						●		248
13496990-998	Thread milling cutter SC TiAlN 3xD (M, MF) For hard machining up to 63 HRC in female threads						●		248

multi-range thread milling cutter with countersink
for female thread milling



		P	M	N	K	S	H 65HRC		page
13496003-016	Multi-range thread milling cutter with 45° chamfer, solid carbide For universal use up to 1500 N/mm2, in female thread 1.5xD	●	●	●	●	●			249
13496031-162	Multi-range thread milling cutter with 45° chamfer, solid carbide For universal use up to 1500 N/mm2, in female thread 2.0xD	●	●	●	●	●			250
13496230-360	Multi-range thread milling cutter with 45° chamfer, solid carbide For universal use up to 1500 N/mm2, in female thread 2.5xD	●	●	●	●	●			250-251

single-tooth thread milling cutters
for miniature thread milling

ATORN solid carbide multi-range thread milling cutter for female threads

Application: For variable and exact thread milling of female threads with constant pitch.
Due to the collar recess between the threaded portion and shank, a depth offset is possible in order to produce a deeper thread.

Advantages:
- Reduced tool costs owing to high variability in thread diameter and one tool for right-hand and left-hand threads
- Considerable thread depths achievable
- Very high wear resistance and cutting speeds owing to micro-fine grain structure

Note: Ensure tool is clamped firmly!

Process steps for thread milling cutter with collar recess:
① Tool moves to initial position, centred above drill hole
③ Start of thread milling with descending loop
③ Milling of tread with subsequent ascending loop
④ Start of second thread milling program with descending loop
⑤ Milling of thread with subsequent ascending loop
⑥ Movement to initial position and end of machining procedure

ATORN® Multi-range thread milling cutter SC TIAIN M/MF (60°) without IC

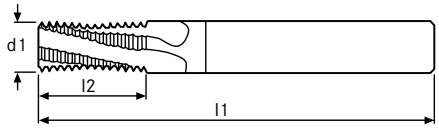
for universal use up to 1500 N/mm2 in female threads

VHM | TiAlN | ≤3xd | ≤2xd | HA

Application:
For producing **metric** right-hand and left-hand threads on CNC machines in through holes and blind holes in the steel, stainless steel, non-ferrous metals, cast iron and special alloy material groups up to a strength of 1500 N/mm².

Execution:
- Precision-ground thread milling cutter

Advantage:
- Innovative cutting geometry for very high dimensional accuracy, process reliability and chip removal.
- High-performance coating and cemented carbide ensure long service life



p. 241 p. 22 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13496192-217	100	90	80	80	60	200	200	160	16	140	140	180	120	70					

d1 (mm)	Pitch (mm)	Suitable for metric fine threads from	Suitable for metric threads from	L1 (mm)	l2 (mm)	Shaft Ø (mm)	Number of cutting edges (PCS)	fz steel 1000 ● (mm)	13496... Ident. No.	
2.2	0.5	MF4	M3	58	5.3	6	3	0.03	192	●
3.8	0.5	MF5	-	58	10.3	6	3	0.04	193	●
3.1	0.7	MF5	M4	58	7.4	6	3	0.04	194	●
4.5	0.75	MF6	-	58	10.1	6	3	0.04	195	●
3.6	0.8	MF6	M5	58	9.2	6	3	0.04	196	●
4	1	MF7	M6	58	10.5	6	3	0.04	197	●
4	1	MF7	M6	58	14.5	6	3	0.04	198	●
6	1	MF9	-	58	12.5	6	3	0.06	199	●
8	1	MF10	-	64	16.5	8	4	0.07	200	●
5	1.25	MF10	M8	58	14.4	6	3	0.04	201	●
5	1.25	MF10	M8	58	19.4	6	3	0.04	202	●
7	1.5	MF12	M10	64	17.3	8	3	0.06	203	●
7	1.5	MF12	M10	76	24.8	8	3	0.06	204	●
10	1.5	MF14	-	73	21.8	10	4	0.08	205	●
16	1.5	MF20	-	105	33.8	16	6	0.12	206	●
8	1.75	MF14	M12	64	20.1	8	3	0.07	207	●
8	1.75	MF14	M12	76	28.9	8	3	0.07	208	●
10	2	MF17	M16	73	27	10	3	0.08	209	●
10	2	MF17	M16	105	39	10	3	0.08	210	●
12	2	MF18	-	84	27	12	4	0.09	211	●
20	2	MF26	-	105	41	20	6	0.15	212	●
14	2.5	MF22	M20	84	33.8	14	4	0.11	213	●
14	2.5	MF22	M20	105	48.8	14	4	0.11	214	●
16	3	MF25	M24	105	40.5	16	3	0.12	215	●
16	3	MF25	M24	120	58.5	16	3	0.12	216	●
20	3	MF28	M27	105	43.5	20	4	0.15	217	●

Prod. Gr. 132

ATORN® Multi-range thread milling cutter SC TIAIN M/MF (60°) IC axial

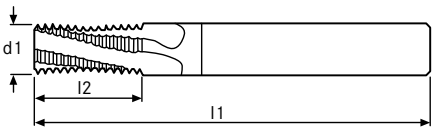
for universal use up to 1500 N/mm2 in female threads

VHM | TiAlN | ≤2xd | ≤1,5xd | IK | HA

Application:
For producing **metric** right-hand and left-hand threads on CNC machines in through holes and blind holes in the steel, stainless steel, non-ferrous metals, cast iron and special alloy material groups up to a strength of 1500 N/mm².

Execution:
- Precision-ground thread milling cutter

Advantage:
- Innovative cutting geometry for very high dimensional accuracy, process reliability and chip removal.



p. 241 p. 22 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13496560-612	120	110	90	100	80	220	240	200	200	180	180	220	150	90	50	40	40		

d1 (mm)	Pitch (mm)	Suitable for metric fine threads from	Suitable for metric threads from	L1 (mm)	l2 (mm)	Shaft Ø (mm)	Number of cutting edges (PCS)	fz steel 1000 ● (mm)	13496... Ident. No.	
3.8	0.5	MF5	-	58	10.3	6	3	0.03	560	●
3.1	0.7	MF4	M4	58	7.4	6	3	0.03	562	●
4.5	0.75	MF6	-	58	10.1	6	3	0.03	564	●
3.8	0.8	MF6	M5	58	9.2	6	3	0.03	566	●
4.6	1	MF7	M6	58	10.5	6	3	0.03	568	●
4.6	1	MF7	M6	58	14.5	6	3	0.03	570	●
6	1	MF9	-	58	12.5	6	3	0.04	572	●
8	1	MF10	-	64	16.5	8	4	0.06	574	●
10	1	MF12	-	73	24.5	10	4	0.07	576	●
6	1.25	MF10	M8	58	14.4	6	3	0.04	578	●
6	1.25	MF10	M8	58	19.4	6	6	0.04	580	●
7.8	1.5	MF12	M10	64	17	8	3	0.06	582	●
7.8	1.5	MF12	M10	76	24.8	8	3	0.06	584	●
10	1.5	MF14	-	73	21.8	10	4	0.07	586	●
12	1.5	MF16	-	84	26.3	12	4	0.08	588	●
16	1.5	MF20	-	105	33.8	16	6	0.08	590	○
9	1.75	MF12	M12	73	20.1	10	3	0.06	592	●
9	1.75	MF12	M12	73	28.8	10	3	0.06	594	●
10	2	MF15	M14	73	27	10	3	0.06	596	●
11.8	2	MF17	M16	84	27	12	4	0.07	598	●
11.8	2	MF17	M16	105	39	12	4	0.07	600	●
20	2	MF26	-	105	41	20	6	0.08	602	○
15	2.5	MF22	M20	105	33.8	16	5	0.07	604	○
15	2.5	MF22	M20	105	48.8	16	5	0.07	606	●
18	3	MF25	M24	105	40.5	20	4	0.08	608	●
18	3	MF25	M24	120	58.5	20	4	0.08	610	○
20	3	MF27	M27	105	43.5	20	4	0.08	612	○

Prod. Gr. 132

ATORN solid carbide thread milling cutter

application:
for smaller boreholes with straight shank from M1x0.25 to 3xD.

advantages:
- extremely low cutting pressure produces excellent surface quality
- universal applications
- multilayer coating for very long service life
- thread milling up to blind holes
- one tool for right-hand and left-hand threads

process steps:
① tool moves to start position centred on hole
② 90° arc in
③ thread milling
④ 90° arc out
⑤ final position

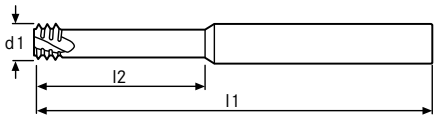
ATORN® Solid carbide TiAlN 2xD thread milling cutter (M, MF)

for universal use up to 1500 N/mm2 in female threads

VHM | TiAlN | ≤2xd | HA

Application:
For producing metric right-hand and left-hand threads on CNC machines in through holes and blind holes in the steel, stainless steel, non-ferrous metals, cast iron and special alloy material groups up to a strength of 1500 N/mm².

Advantage:
- Innovative cutting geometry and high-quality cemented carbide ensure very high degree of dimensional accuracy, process reliability and chip removal
- Tapping of very small threads from M1 x 0.2 possible



Execution:
- Thread milling cutters with short thread section

p. 241 p. 22 p. 284

d1 (mm)	Pitch (mm)	Suitable for metric threads from	l1 (mm)	l2 (mm)	Shaft Ø (mm)	Number of cutting edges (PCS)	fz steel 1000 ● (mm)	13496... Ident. No.	
0.72	0.25	M1	39	2.5	3	3	0.01	902	●
1.55	0.4	M2	58	4.5	6	3	0.03	904	●
1.65	0.45	M2.2	58	5	6	3	0.03	906	○
1.95	0.45	M2.5	58	5.5	6	3	0.03	908	●
2.35	0.5	M3	58	6.5	6	3	0.03	910	●
2.75	0.6	M3.5	58	7.5	6	3	0.05	912	●
3.1	0.7	M4	58	9	6	3	0.05	914	●
3.8	0.8	M5	58	12.5	6	3	0.07	916	●
4.65	1	M6	58	14	6	3	0.07	918	●
5.95	1.25	M8	58	18	6	3	0.09	920	●
7.8	1.5	M10	64	23	8	3	0.12	922	●
9	1.75	M12	73	26	10	3	0.14	924	●
11.8	2	M16	84	35	12	4	0.16	926	●
15	2.5	M20	105	43	16	5	0.18	928	●

Prod. Gr. 132

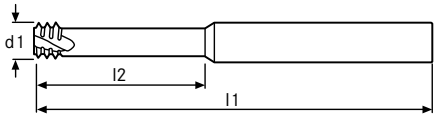
ATORN® Thread milling cutter SC TiAlN 3xD (M, MF)

for universal use up to 1500 N/mm2 in female threads

VHM | TiAlN | ≤3xd | HA

Application:
For producing metric right-hand and left-hand threads on CNC machines in through holes and blind holes in the steel, stainless steel, non-ferrous metals, cast iron and special alloy material groups up to a strength of 1500 N/mm².

Advantage:
- Innovative cutting geometry and high-quality cemented carbide ensure very high degree of dimensional accuracy, process reliability and chip removal
- Tapping of very small threads from M1 x 0.2 possible



Execution:
- Thread milling cutters with short thread section

p. 241 p. 22 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13496930-962	90	70	60	70	60	140	140	135	135	120	120	135	120	50	30	25	25		

d1 (mm)	Pitch (mm)	Suitable for metric threads from	l1 (mm)	l2 (mm)	Shaft Ø (mm)	Number of cutting edges (PCS)	fz steel 1000 ● (mm)	13496... Ident. No.	
15	0.3	M1.4	39	4	3	3	0.01	930	○
1.2	0.35	M1.6	39	4.8	3	3	0.01	932	●
1.53	0.4	M2	39	6	3	3	0.03	934	●
1.95	0.45	M2.5	58	7.5	6	3	0.03	936	●
2.37	0.5	M3	58	9.5	6	3	0.04	938	●
2.37	0.5	M3	105	9.5	6	3	0.04	940	●
2.75	0.6	M3.5	58	10.5	6	3	0.05	944	●
3.1	0.7	M4	58	12.5	6	3	0.05	946	●
3.1	0.7	M4	105	12.5	6	3	0.05	948	●
3.8	0.8	M5	58	16	6	3	0.05	950	●
3.8	0.8	M5	105	16	6	3	0.05	952	●
4.65	1	M6	58	20	6	3	0.06	954	●
4.65	1	M6	105	20	6	3	0.06	956	●
6	1.25	M8	58	24	6	3	0.07	958	●

Prod. Gr. 132

ATORN® Thread milling cutter SC TIAIN 2xD (M, MF)

For hard machining up to 63 HRC in female threads

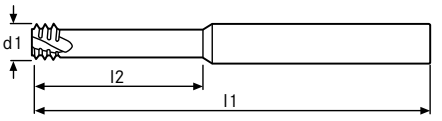
VHM | TiAlN | ≤2xd | HA

Application:
For producing metric right-hand and left-hand threads on CNC machines in through holes and blind holes in the hardened steel material group up to a strength of 63HRC.

Execution:
- Thread milling cutters with short thread section

Advantage:
- Innovative cutting geometry and coating technology ensure very high dimensional accuracy, process reliability and chip removal.
- Tapping of very small threads from M2 x 0.4 possible.

Notes:
The tool must be used in an anti-clockwise direction!



p. 241 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13496970-981																		50	40

d1 (mm)	Pitch (mm)	Suitable for metric threads from	l1 (mm)	l2 (mm)	Shaft Ø (mm)	Number of cutting edges (PCS)	fz steel 1000 ● (mm)	13496... Ident. No.	
1.53	0.4	M2	58	4.5	6	3	0.01	970	●
1.65	0.45	M2.2	58	5	6	3	0.01	971	○
1.95	0.45	M2.5	58	5.5	6	3	0.01	972	●
2.37	0.5	M3	58	6.5	6	3	0.01	973	●
2.75	0.6	M3.5	58	7.5	6	3	0.02	974	○
3.1	0.7	M4	58	9	6	3	0.02	975	●
3.8	0.8	M5	58	12.5	6	3	0.02	976	●
4.65	1	M6	58	14	6	3	0.02	977	●
6	1.25	M8	58	18	6	3	0.03	978	●
7.8	1.5	M10	64	23	8	3	0.03	979	●
9	1.75	M12	73	26	10	3	0.03	980	●
11.8	2	M16	84	35	12	4	0.04	981	●

Prod. Gr. 132

ATORN® Solid carbide TiAlN 3xD thread milling cutter (M, MF)

For hard machining up to 63 HRC in female threads

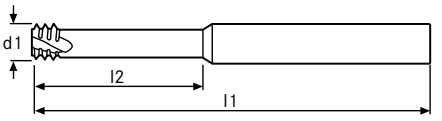
VHM | TiAlN | ≤3xd | HA

Application:
For producing metric right-hand and left-hand threads on CNC machines in through holes and blind holes in the hardened steel material group up to a strength of 63HRC.

Execution:
- Thread milling cutters with short thread section

Advantage:
- Innovative cutting geometry and coating technology ensure very high degree of dimensional accuracy, process reliability and chip removal
- Thread milling cutting of very small threads from M1.4 x 0.3 possible

Notes:
The tool must be used in an anti-clockwise direction!



p. 241 p. 284

d1 (mm)	Pitch (mm)	Suitable for metric threads from	l1 (mm)	l2 (mm)	Shaft Ø (mm)	Number of cutting edges (PCS)	fz steel 1000 ● (mm)	13496... Ident. No.	
1.05	0.3	M1.4	39	4	3	3	0.01	990	○
1.2	0.35	M1.6	39	4.8	3	3	0.01	991	○
1.53	0.4	M2	39	6	3	3	0.02	992	●
1.95	0.45	M2.5	58	7.5	6	3	0.02	993	○
2.37	0.5	M3	58	9.5	6	3	0.02	994	●
3.1	0.7	M4	58	12.5	6	3	0.03	995	●
3.8	0.8	M5	58	16	6	3	0.03	996	●
4.65	1	M6	58	20	6	3	0.04	997	●
6	1.25	M8	58	24	6	3	0.04	998	●

Prod. Gr. 132

ATORN solid carbide thread milling cutter for female threads with 45° countersink

Application: For thread milling and countersinking in one step.

Advantages:: low power requirement and short processing time thanks to high cutting speeds and 2 processes (countersinking and thread cutting) using one tool, very good surface quality, precise thread depth possible down to near the base, 1 tool for right-handed and left-handed threads, for blind holes and through holes.

Process steps for thread milling cutter with countersinking step:
① Tool moves to start position centred on hole
② 90° bevel countersink
③ Begins thread milling with descending loop
④ Thread milling with subsequent ascending loop
⑤ Moves to start position and ends machining

ATORN® Solid carbide multi-range thread milling cutter with 45° countersink

For universal use up to 1500 N/mm² in female threads 1.5xD

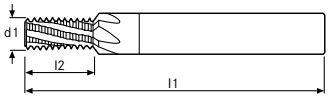
VHM | TiAlN | ≤3xd | IK | HA

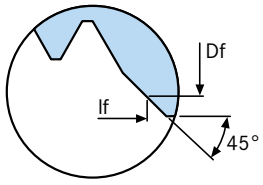
Application:
For producing metric right-hand threads and left-hand threads with countersink on CNC machines in blind holes and through holes, in steel, stainless steel, non-ferrous metals, cast iron and special alloys material groups up to a strength of 1500 N/mm² in single-part production and series production.

Execution:
- Precision-ground thread milling cutter with chamfer for maximum requirements in terms of process reliability and service life

Advantage:
- Innovative cutting geometry and coating technology ensure very high degree of dimensional accuracy, process reliability and chip removal
- High-quality cutting material and cutting edge treatment for very high service life requirements
- Low tool costs thanks to high variability in the thread diameter, just one tool required for right-hand thread and left-hand thread
- Significantly optimised process times, as bore and countersink are produced in one step

Technical data:
- Suitable for thread type: M | M-L





p. 241 p. 22 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13496003-016	120	90	70	50	40	250	250	220	220	200	200	180	160	100	40	30	30		

Nominal Ø (mm)	Pitch (mm)	l1 (mm)	l2 (mm)	lf (mm)	Df (mm)	Shaft Ø (mm)	Number of cutting edges (PCS)	fz steel 1000 ● (mm)	13496... Ident. No.	
3	0.5	48	5.25	5.7	3.4	6	3	0.02	003	○
4	0.7	48	7.35	7.9	4.5	6	3	0.03	004	○
5	0.8	54	9.15	9.9	5.5	6	3	0.03	005	○
6	1	62	10.45	11.3	6.6	8	3	0.04	006	○
8	1.25	74	13.1	14.1	9	10	3	0.05	008	○
10	1.5	80	17.2	18.4	11	12	4	0.06	010	○
12	1.75	90	20.05	21.5	13.5	14	4	0.07	012	○
16	2	102	26.95	28.6	17.5	18	4	0.1	016	●

Prod. Gr. 132

ATORN® Solid carbide multi-range thread milling cutter with 45° countersink

For universal use up to 1500 N/mm² in female threads 2.0xD

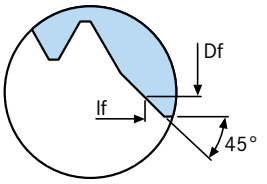
VHM | TiAlN | ≤2xd | IK | HA

Application:
For producing metric right-hand threads and left-hand threads with countersink on CNC machines in blind holes and through holes, in steel, stainless steel, non-ferrous metals, cast iron and special alloys material groups up to a strength of 1500 N/mm² in single-part production and series production.

Execution:
- Precision-ground thread milling cutter with chamfer for maximum requirements in terms of process reliability and service life

Advantage:
- Innovative cutting geometry and coating technology ensure very high degree of dimensional accuracy, process reliability and chip removal
- High-quality cutting material and cutting edge treatment for very high service life requirements
- Low tool costs thanks to high variability in the thread diameter, just one tool required for right-hand thread and left-hand thread
- Significantly optimised process times, as bore and countersink are produced in one step

Technical data:
- Suitable for thread type: M | M-L



p. 241 p. 22 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13496031-162	120	90	70	50	40	250	250	220	220	200	200	180	160	100	40	30	30		

Nominal Ø (mm)	Pitch (mm)	l1 (mm)	l2 (mm)	lf (mm)	Df (mm)	Shaft Ø (mm)	Number of cutting edges (PCS)	fz steel 1000 ● (mm)	13496... Ident. No.	
3	0.5	48	6.73	7.2	3.2	6	3	0.02	031	●
4	0.7	48	8.73	9.3	4.5	6	3	0.03	041	●
5	0.8	54	10.77	11.5	5.5	6	3	0.03	051	○
6	1	62	13.47	14.3	6.6	8	3	0.04	066	●
8	1.25	74	18.08	19.1	9	10	3	0.05	082	●
10	1.5	80	21.7	22.9	11	12	4	0.06	110	●
12	1.75	90	25.32	26.7	13.5	14	4	0.07	112	○
16	2	102	34.93	36.6	17.5	18	4	0.1	162	○

Prod. Gr. 132

ATORN® Solid carbide multi-range thread milling cutter with 45° countersink

For universal use up to 1500 N/mm² in female threads 2.5xD

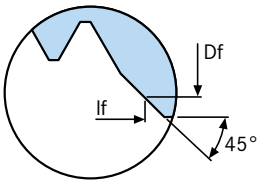
VHM | TiAlN | ≤2,5xd | IK | HA

Application:
For producing metric right-hand threads and left-hand threads with countersink on CNC machines in blind holes and through holes, in steel, stainless steel, non-ferrous metals, cast iron and special alloys material groups up to a strength of 1500 N/mm² in single-part production and series production.

Execution:
- Precision-ground thread milling cutter with chamfer for maximum requirements in terms of process reliability and service life

Advantage:
- Innovative cutting geometry and coating technology ensure very high degree of dimensional accuracy, process reliability and chip removal
- High-quality cutting material and cutting edge treatment for very high service life requirements
- Low tool costs thanks to high variability in the thread diameter, just one tool required for right-hand thread and left-hand thread
- Significantly optimised process times, as bore and countersink are produced in one step

Technical data:
- Suitable for thread type: M | M-L



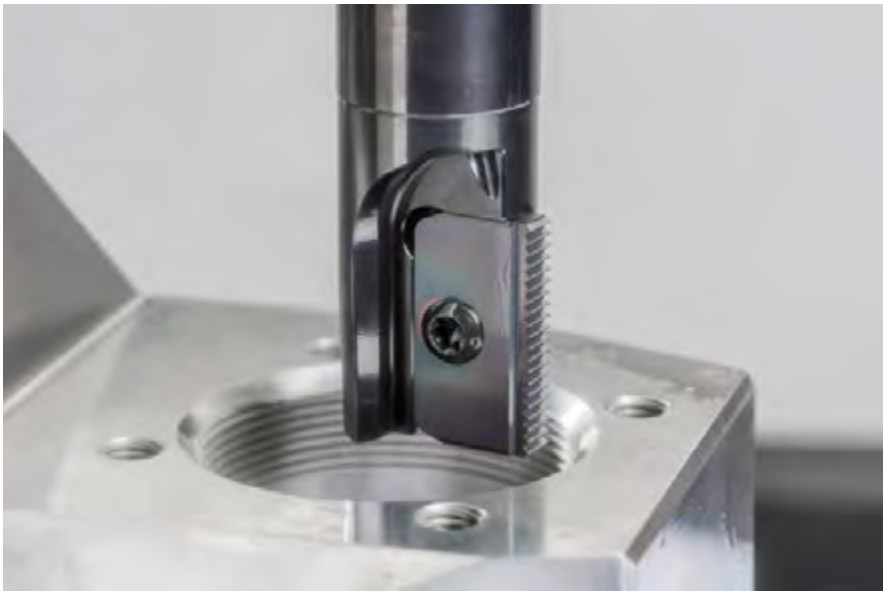
p. 241 p. 22 p. 284

Nominal Ø (mm)	Pitch (mm)	l1 (mm)	l2 (mm)	lf (mm)	Df (mm)	Shaft Ø (mm)	Number of cutting edges (PCS)	fz steel 1000 ● (mm)	13496... Ident. No.	
4	0.7	48	10.85	11.4	4.5	6	3	0.03	240	●
5	0.8	54	13.15	13.9	5.5	6	3	0.03	250	●
6	1	62	16.45	17.3	6.6	8	3	0.04	260	●
8	1.25	74	21.85	22.8	9	10	3	0.05	280	●
10	1.5	80	26.2	27.4	11	12	4	0.06	300	●
12	1.75	90	32.3	33.7	13.5	14	4	0.07	320	●
16	2	102	42.95	44.6	17.5	18	4	0.1	360	○

Prod. Gr. 132

thread milling system with indexable insert
for universal use

- Multi-cutter attachments ensure high production rates and long service life
- Innovative coating technology and cemented carbide mixtures for high service life and wide-ranging machining applications up to a hardness of 62 HRC
- Very high surface quality of thread
- Deep threads can be reliably produced



- innovative coating technology and cemented carbide mixtures for high service life and wide-ranging machining applications up to a hardness of 62 HRC
- very high surface quality of thread
- deep threads can be reliably produced

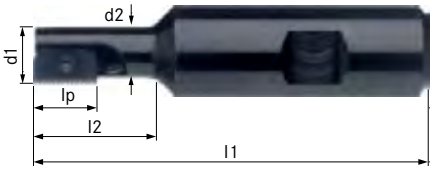
ATORN® Steel holder for single-edge thread milling cutter
For using thread milling cutter plates

HB IK

Application:
For using ground thread milling cutter inserts no. 13397.

Execution:
- Burnished steel tool holder with one insert seat

Advantage:
- High process reliability and dimensional accuracy due to precise insert seating
- High-quality carrier material for very high service life requirements



p. 241 p. 253 p. 284

Suitable for indexable insert size	Cutting edge length (mm)	d1 (mm)	Suitable for min. Ø (mm)	Shaft Ø (mm)	l1 (mm)	l2 (mm)	13397... Ident. No.	
12	12	9.5	12.2	20	85	14	005	●
12	12	9.9	12.8	20	85	16	012	○
14	14	12	15.5	20	75	20	015	●
14	14	14.5	18.7	20	85	25	022	●
14	14	17	21.9	20	85	30	025	●
21	21	18	23.2	20	85	30	032	●
21	21	21	27.1	20	94	40	035	●
21	21	25	32.3	20	125	-	042	●
30	30	29	37.4	25	110	50	045	●
30	30	31	40	25	150	-	052	●
30	30	38	49	32	150	-	055	○
40	40	48	61.9	40	153	78	060	○

Prod. Gr. 132

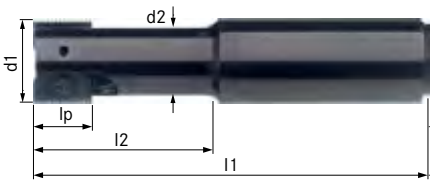
ATORN® Steel holder for double-edge thread milling cutter
For using thread milling cutter plates

HB IK

Application:
For using ground thread milling cutter inserts no. 13397.

Execution:
- Burnished steel tool holder with two insert seats

Advantage:
- High process reliability and dimensional accuracy due to precise insert seating
- High-quality carrier material for very high service life requirements
- High machining speed due to two-tip geometry



Suitable for indexable insert size		14	21	30	40
Cutting edge length (mm)		14	21	30	40
d1 (mm)		20	30	40	50
Suitable for min. Ø (mm)		26	39	52	65
Shaft Ø (mm)		20	25	32	40
l1 (mm)		93	108	130	153
l2 (mm)		41	52	70	78
13397...	Ident. No.	090	095	100	105
		○	○	○	○

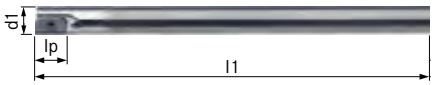
p. 241 p. 253 p. 284

Prod. Gr. 132

ATORN® Solid carbide holder for single-edge thread milling cutter

For using thread milling cutter plates

HA IK



Application:
For using ground thread milling cutter inserts no. 13397.

Execution:
- Solid carbide steel tool holder with one insert seat

Advantage:
- High process reliability and dimensional accuracy due to precise insert seating
- High quality solid carbide carrier material for very high requirements in terms of service life and low vibration

p. 241 p. 253 p. 284

Suitable for indexable insert size	Cutting edge length (mm)	d1 (mm)	Suitable for min. Ø (mm)	Shaft Ø (mm)	l1 (mm)	13397... Ident. No.	
12	12	9.9	12.8	8	125	065	○
14	14	13.2	17.0	10	150	070	○
14	14	15.2	19.7	12	175	075	○
21	21	21	27.1	16	200	080	○
30	30	27	35	20	270	085	○

Prod. Gr. 132

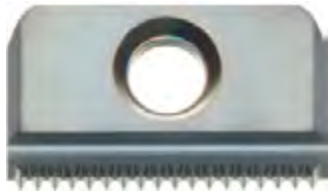
ATORN® Indexable inserts for thread milling cutter

For universal use up to 1300 N/mm²

Application:
For producing metric right-hand and left-hand threads on CNC machines, in steel, stainless steel, non-ferrous metals, cast iron and special alloys material groups up to a strength of 1500 N/mm² in single-part production and series production.

Execution:
- **Ident. No. 200–268:** Indexable insert, solid profile 60° female, both sides precision-ground (indexable insert size 12 = one side only)
- **Ident. No. 310–368:** Indexable insert, solid profile, 60° male
- **Ident. No. 406–456:** Indexable insert, solid profile 55° male and female, both sides precision-ground (indexable insert size 12 = one side only)

Advantage:
- Innovative cutting geometry ensures very high dimensional accuracy, process reliability and chip removal
- High-quality cutting material and cutting edge treatment for very high service life requirements
- Low tool costs thanks to high variability in the thread diameter, just one tool required for right-hand thread and left-hand thread



p. 241 p. 284

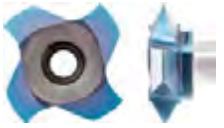
Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13397200-268	140	130	100	120	100	240	240	220	220	200	200	220		90	60	50	50		
13397310-368	140	130	100	120	100	240	240	220	220	200	200	220		90	60	50	50		
13397406-456	140	130	100	120	100	240	240	220	220	200	200	220		90	60	50	50		

Machining type			Inside		Outside		Inside | Outside	
Thread type			Solid profile 60°		Solid profile 60°		Solid profile 55°	
Size of index-able insert	Pitch (mm)	Number of thread starts per inch	13397... Ident. No.		13397... Ident. No.		13397... Ident. No.	
12	0.5	-	200	○	-	-	-	-
12	0.75	-	202	●	-	-	-	-
12	1	-	204	●	-	-	-	-
12	1.25	-	206	●	-	-	-	-
14	0.5	-	208	●	-	-	-	-
14	0.75	-	210	●	310	○	-	-
14	1	-	212	●	312	○	-	-
14	1.25	-	214	●	314	○	-	-
14	1.5	-	216	●	316	○	-	-
14	1.75	-	218	●	318	○	-	-
14	2	-	220	●	320	○	-	-
14	2.5	-	222	●	322	○	-	-
21	1	-	224	●	324	○	-	-
21	1.5	-	226	●	326	○	-	-
21	1.75	-	228	○	-	-	-	-
21	2	-	230	●	330	○	-	-
21	2.5	-	232	○	332	○	-	-
21	3	-	234	●	334	○	-	-
21	3.5	-	236	●	-	-	-	-
30	1.5	-	238	●	338	○	-	-
30	2	-	240	●	340	○	-	-
30	3	-	242	○	342	○	-	-
30	3.5	-	244	○	344	○	-	-
30	4	-	246	●	346	○	-	-
30	4.5	-	248	●	-	-	-	-

Machining type			Inside		Outside		Inside | Outside	
Thread type			Solid profile 60°		Solid profile 60°		Solid profile 55°	
Size of index-able insert	Pitch (mm)	Number of thread starts per inch	13397... Ident. No.		13397... Ident. No.		13397... Ident. No.	
30	5	-	250	●	-	-	-	-
40	1.5	-	252	○	352	○	-	-
40	2	-	254	○	354	○	-	-
40	3.5	-	258	○	-	-	-	-
40	4	-	260	○	360	○	-	-
40	4.5	-	262	○	-	-	-	-
40	5	-	264	○	364	○	-	-
40	5.5	-	266	○	-	-	-	-
40	6	-	268	○	368	○	-	-
40	3	-	-	-	356	○	-	-
12	-	19	-	-	-	-	406	○
14	-	24	-	-	-	-	412	○
14	-	20	-	-	-	-	414	○
14	-	19	-	-	-	-	416	○
14	-	16	-	-	-	-	418	○
14	-	14	-	-	-	-	420	○
21	-	20	-	-	-	-	424	○
21	-	19	-	-	-	-	426	○
21	-	16	-	-	-	-	428	○
21	-	14	-	-	-	-	430	○
21	-	11	-	-	-	-	432	○
30	-	16	-	-	-	-	438	○
30	-	14	-	-	-	-	440	○
30	-	11	-	-	-	-	442	○
40	-	11	-	-	-	-	454	○
40	-	8	-	-	-	-	456	○

Prod. Gr. 132

Thread milling system with front insert
For universal use



- multi-cutter attachments ensure high production rates and long service life
- innovative coating technology and cemented carbide mixtures for high service life and wide-ranging machining applications up to a hardness of 62 HRC
- very high surface quality of thread
- deep threads can be reliably produced

ATORN® Steel holder for thread milling cutter
For front-face cutting attachment

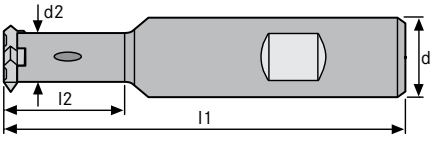
HB IK

Application:
For using ground thread milling cutter inserts no. 13397.

Execution:
- Burnished steel tool holder

Advantage:
- High process reliability and dimensional accuracy due to precise insert seating
- High-quality carrier material for very high service life requirements

Technical data:
- Tool holding device: HB parallel shank



p. 241 p. 22 p. 284

Suitable for indexable inserts type	Holder type	l2 (mm)	l1 (mm)	d2 (mm)	d (mm)	Suitable for screw	13397... Ident. No.	
A10	A1	19	70	7.3	12	S5	500	●
A10	A2	19	90	7.3	16	S5	502	●
A12	A3	25	70	9	12	S10	504	●
A12	A4	25	90	9	16	S10	506	●
A12	A5	35	100	9	16	S10	508	●
A18	A6	48	100	13.8	16	S16	510	●
A18	A7	32	100	13.8	20	S16	512	●
A18	A8	48	110	13.8	20	S16	514	●
A18	A9	74	140	13.8	20	S16	516	●
A25	A10	45	115	17.5	25	S27	518	●
A25	A11	80	150	17.5	25	S27	520	●

Prod. Gr. 1FD

ATORN® Solid carbide holder for thread milling cutter

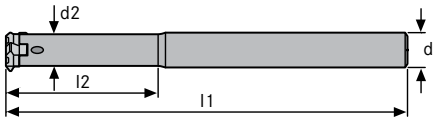
For front-face cutting attachment

Application:
For using ground thread milling cutter inserts no. 13397.

Execution:
- Solid carbide steel tool holder with one insert seat

Advantage:
- High process reliability and dimensional accuracy due to precise insert seating
- High quality solid carbide carrier material for very high requirements in terms of service life and low vibration

Technical data:
- Tool holding device: HA parallel shank



p. 241 p. 22 p. 284

Suitable for indexable inserts type	Holder type	l2 (mm)	l1 (mm)	d2 (mm)	d (mm)	Suitable for screw	13397... Ident. No.	
A10	A12	35	125	7.3	8	S5	522	●
A10	A13	-	125	8	8	S5	524	●
A12	A14	-	150	10	10	S10	526	●
A18	A15	-	170	12	12	S16	528	●
A25	A16	-	205	16	16	S27	530	●
A25	A17	85	250	17.5	20	S27	532	●

Prod. Gr. 1FD

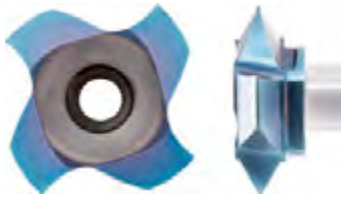
ATORN® Cutting insert, multi-flute cutter, 60° partial profile

For universal use up to 1500 N/mm² in male and female threads

Application:
For producing metric right-hand and left-hand threads on CNC machines, in steel, stainless steel, non-ferrous metals, cast iron and special alloy material groups up to a strength of 1500 N/mm².

Execution:
- Multiple-edge cutter in sub-profile design

Advantage:
- Innovative cutting geometry ensures very high dimensional accuracy, process reliability and chip removal
- High-quality cutting material and cutting edge finish for very high service life requirements
- Low tool costs thanks to high variability in the thread diameter, just one tool required for right-hand thread and left-hand thread



p. 241 p. 254 p. 284

Indexable insert type	Suitable for holder	Min./ max. pitch internal	Min./max. number of thread starts per inch internal	Suitable for metric threads from	Number of cutting edges (PCS)	Machining type Outside | Inside fz steel 1300 ● (mm)	13397... Ident. No.	
A18	A6 | A7 | A8 | A9 | A15	1.5-2.5 mm	16-10	M23	6	0.16	650	●
A18	A16	3.0-5.0 mm	28-13	M25	4	0.16	652	●

Prod. Gr. 1FE

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plastics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13397650-652	100	80	60	80	60	120	180	100	160	80	140	140		60	30	30	30	60	

ATORN® Cutting insert, triple cutter, 60° partial profile

For universal use up to 1500 N/mm² in male and female threads

Application:
For producing metric right-hand and left-hand threads on CNC machines, in steel, stainless steel, non-ferrous metals, cast iron and special alloy material groups up to a strength of 1500 N/mm².

Execution:
- Three-flute cutter in sub-profile design (indexable inserts type A25 in four-flute cutter design)

Advantage:
- Innovative cutting geometry ensures very high dimensional accuracy, process reliability and chip removal
- High-quality cutting material and cutting edge finish for very high service life requirements
- Low tool costs thanks to high variability in the thread diameter, just one tool required for right-hand thread and left-hand thread

p. 241 p. 254 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plastics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13397550-568	100	80	60	80	60	120	180	100	160	80	140	140		60	30	30	30	60	

Indexable insert type	Suitable for holder	Min./max. pitch internal	Min./ max. pitch external	Min./max. number of thread starts per inch internal	Min./max. number of thread starts per inch external	Cutting edge Ø (mm)	Suitable for metric threads from	Suitable for metric fine threads from	fz steel 1300 ● (mm)	13397... Ident. No.	
A10	A1 | A2 | A12 | A13	0.5-0.8 mm	0.4-0.8 mm	56-28	64-32	10	M11	MF12	0.10	550	●

Indexable insert type	Suitable for holder	Min./max. pitch internal	Min./ max. pitch external	Min./max. number of thread starts per inch internal	Min./max. number of thread starts per inch external	Cutting edge Ø (mm)	Suitable for metric threads from	Suitable for metric fine threads from	fz steel 1300 ● (mm)	13397... Ident. No.	
A10	A1 | A2 | A12	1-2 mm	0.8-1.75 mm	28-13	32-15	10	M12	MF14	0.10	552	●
A12	A3 | A4 | A5 | A14	0.5-0.8 mm	0.4-0.8 mm	56-28	64-32	12	M13	MF14	0.12	554	●
A12	A3 | A4 | A5 | A14	1-2 mm	0.8-1.75 mm	28-13	32-15	12	M14	MF16	0.12	556	●
A18	A6 | A7 | A8 | A9 | A15	0.5-0.8 mm	0.4-0.8 mm	56-28	64-32	18	M19	MF19	0.16	558	●
A18	A6 | A7 | A8 | A9 | A15	1-1.75 mm	0.8-1.5 mm	28-14	32-16	18	M20	MF21	0.16	560	●
A18	A6 | A7 | A8 | A9 | A15	2-3 mm	1.75-2.5 mm	13-8	15-10	18	M21	MF23	0.16	562	●
A25	A10 | A11 | A16 | A17	1.5-2.5 mm	1-2 mm	16-10	28-13	25	M28	MF30	0.18	564	●
A25	A10 | A11 | A16 | A17	3-5 mm	2.5-4.5 mm	8-5	10-6	25	M30	MF34	0.18	566	●
A25	A10 | A11 | A16 | A17	5-6 mm	4.5-5 mm	5-4	6-5	25	M34	MF35	0.18	568	●

Prod. Gr. 1FE

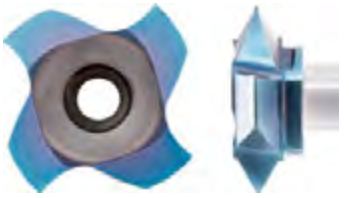
ATORN® Cutting insert, multi-flute cutter, 55° partial profile

For universal use up to 1500 N/mm² in male and female threads

Application:
For producing imperial right-hand and left-hand threads on CNC machines, in steel, stainless steel, non-ferrous metals, cast iron and special alloy material groups up to a strength of 1500 N/mm².

Execution:
- Multiple-edge cutter in sub-profile design

Advantage:
- Innovative cutting geometry ensures very high dimensional accuracy, process reliability and chip removal
- High-quality cutting material and cutting edge finish for very high service life requirements
- Low tool costs thanks to high variability in the thread diameter, just one tool required for right-hand thread and left-hand thread



Indexable insert type	Suitable for holder	Max. number of thread starts per inch	Suitable for min. Ø (mm)	Number of cutting edges (PCS)	fz steel 1300 ● (mm)	13397... Ident. No.	
A18	A6 | A7 | A8 | A9 | A16	14	23	6	0.16	654	●
A18	A16	8	24	4	0.16	656	●

p. 241 p. 254 p. 284

Prod. Gr. 1FE

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plastics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13397654-656	100	80	60	80	60	120	180	100	160	80	140	140		60	30	30	30	60	

ATORN® Cutting insert, triple cutter, 55° partial profile

For universal use up to 1500 N/mm² in male and female threads

Application:
For producing metric right-hand and left-hand threads on CNC machines, in steel, stainless steel, non-ferrous metals, cast iron and special alloy material groups up to a strength of 1500 N/mm².

Execution:
- Three-flute cutter in sub-profile design (indexable inserts type A25 in four-flute cutter design)

Advantage:
- Innovative cutting geometry ensures very high dimensional accuracy, process reliability and chip removal
- High-quality cutting material and cutting edge finish for very high service life requirements
- Low tool costs thanks to high variability in the thread diameter, just one tool required for right-hand thread and left-hand thread

p. 241 p. 254 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plastics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13397570-578	100	80	60	80	60	120	180	100	160	80	140	140		60	30	30	30	60	

Indexable insert type	Suitable for holder	Min./max. number of thread starts per inch	Cutting edge Ø (mm)	Suitable for min. Ø (mm)	fz steel 1300 ● (mm)	13397... Ident. No.	
A10	A1 | A2 | A12	19-14	10	13	0.10	570	●
A12	A3 | A4 | A5 | A14	28-19	12	14	0.12	572	●
A12	A3 | A4 | A5	14-11	12.2	16	0.12	574	●
A18	A6 | A7 | A8 | A9 | A15	14-8	18	23	0.16	576	●
A25	A10 | A11 | A16 | A17	7-5	25	31	0.18	578	●

Prod. Gr. 1FE

ATORN® Cutting insert, multi-flute cutter, 60° full profile

for universal use up to 1500 N/mm2

Application:
For producing metric right-hand and left-hand threads on CNC machines, in steel, stainless steel, non-ferrous metals, cast iron and special alloy material groups up to a strength of 1500 N/mm².

Execution:
- Multiple-edge cutter in full-profile design

Advantage:
- Innovative cutting geometry ensures very high dimensional accuracy, process reliability and chip removal
- High-quality cutting material and cutting edge finish for very high service life requirements
- Precise thread milling of profiles

p. 241 p. 254 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13397658-674	100	80	60	80	60	120	180	100	160	80	140	140		60	30	30	30	60	

Indexable insert type	Suitable for holder	Pitch (mm)	Suitable for metric threads from	Suitable for metric fine threads from	Number of cutting edges (PCS)	Number of teeth (PCS)	Cutting edge Ø (mm)	fz steel 1300 ● (mm)	13397... Ident. No.	
A18	A6 | A7 | A8 | A9 | A15	1	-	MF18	8	5	16.3	0.14	658	●
A18	A6 | A7 | A8 | A9 | A15	1.5	-	MF20	8	3	17.5	0.16	660	●
A18	A6 | A7 | A8 | A9 | A15	2	-	MF22	6	2	18.6	0.16	662	●
A18	A6 | A7 | A8 | A9 | A15	2.5	M22	MF22	6	2	17.8	0.16	664	●
A18	A6 | A7 | A8 | A9 | A15	3	M24 | M27	MF24	6	1	18.9	0.16	666	●
A18	A6 | A7 | A8 | A9 | A15	3.5	M30 | M33	MF26	6	1	20	0.20	668	●
A18	A6 | A7 | A8 | A9 | A15	4	M36 | M39	MF27	6	1	20	0.20	670	●
A18	A6 | A7 | A8 | A9 | A15	4.5	M42 | M45	MF28	5	1	20	0.20	672	●
A18	A15	5	M48 | M52	MF29	4	1	20	0.20	674	●

Prod. Gr. 1FE

ATORN® Cutting insert, triple cutter, 60° full profile

for universal use up to 1500 N/mm2

Application:
For producing metric right-hand and left-hand threads on CNC machines, in steel, stainless steel, non-ferrous metals, cast iron and special alloy material groups up to a strength of 1500 N/mm².

Execution:
- Three-flute cutter in full profile design (indexable inserts type A25 in four-flute cutter design)

Advantage:
- Innovative cutting geometry ensures very high dimensional accuracy, process reliability and chip removal
- High-quality cutting material and cutting edge finish for very high service life requirements
- Precise thread milling of profiles

p. 241 p. 254 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13397580-630	100	80	60	80	60	120	180	100	160	80	140	140		60	30	30	30	60	

Indexable insert type	Suitable for holder	Pitch (mm)	Suitable for metric threads from	Suitable for metric fine threads from	Number of teeth (PCS)	Cutting edge Ø (mm)	fz steel 1300 ● (mm)	13397... Ident. No.	
A10	A1 | A2 | A12 | A13	0.5	-	MF10	6	9	0.10	580	●
A10	A1 | A2 | A12 | A13	1.0	-	MF12	3	10	0.10	582	●
A10	A1 | A2 | A12 | A13	1.5	-	MF13	2	10	0.10	584	●
A10	A1 | A2 | A12 | A13	1.75	M12	MF13	1	9.6	0.10	586	●
A10	A1 | A2 | A12	2.0	M14	MF14	1	10	0.10	588	●
A12	A3 | A4 | A5 | A14	0.5	-	MF13	6	12	0.12	590	●
A12	A3 | A4 | A5 | A14	0.75	-	MF13	4	12	0.12	592	●
A12	A3 | A4 | A5 | A14	1.0	-	MF14	3	12	0.12	594	●
A12	A3 | A4 | A5 | A14	1.5	-	MF15	2	12	0.12	596	●
A12	A3 | A4 | A5 | A14	2.0	M16	MF16	1	12.4	0.12	598	●
A12	A3 | A4 | A5	2.5	M18 | M20	MF17	1	12	0.12	600	●
A12	A3 | A4 | A5	3.0	-	MF17	1	12.4	0.16	602	●
A18	A6 | A7 | A8 | A9 | A15	0.5	-	MF19	9	17.8	0.16	604	●

Indexable insert type	Suitable for holder	Pitch (mm)	Suitable for metric threads from	Suitable for metric fine threads from	Number of teeth (PCS)	Cutting edge Ø (mm)	fz steel 1300 ● (mm)	13397... Ident. No.	
A18	A6 | A7 | A8 | A9 | A15	0.75	-	MF19	6	17.8	0.16	606	●
A18	A6 | A7 | A8 | A9 | A15	1.0	-	MF20	5	17.8	0.16	608	●
A18	A6 | A7 | A8 | A9 | A15	1.5	-	MF20	3	17.8	0.16	610	●
A18	A6 | A7 | A8 | A9 | A15	2.0	-	MF21	2	17.8	0.16	612	●
A18	A6 | A7 | A8 | A9 | A15	2.5	M22	MF22	2	17.8	0.16	614	●
A18	A6 | A7 | A8 | A9 | A15	3.0	M24 | M27	MF23	1	17.8	0.16	616	●
A18	A6 | A7 | A8 | A9 | A15	3.5	M30 | M33	MF24	1	17.8	0.16	618	●
A25	A10 | A11 | A16 | A17	3.0	M32 | M33	MF30	2	25	0.18	620	●
A25	A10 | A11 | A16 | A17	4.0	M36 | M39	MF32	1	25	0.18	622	●
A25	A10 | A11 | A16 | A17	4.5	M45	MF33	1	25	0.18	624	●
A25	A10 | A11 | A16 | A17	5.0	M48 | M52	MF34	1	25	0.18	626	●
A25	A10 | A11 | A16 | A17	5.5	M60	MF35	1	25	0.18	628	●
A25	A10 | A11 | A16 | A17	6.0	M64 | M68	MF36	1	25	0.18	630	●

Prod. Gr. 1FE

ATORN® Cutting insert, triple cutter, 55° full profile

for universal use up to 1500 N/mm²

Application:
For producing metric right-hand and left-hand threads on CNC machines, in steel, stainless steel, non-ferrous metals, cast iron and special alloy material groups up to a strength of 1500 N/mm².

Execution:
- Triple-edge cutter in full-profile design

Advantage:
- Innovative cutting geometry ensures very high dimensional accuracy, process reliability and chip removal
- High-quality cutting material and cutting edge finish for very high service life requirements
- Precise thread milling of profiles

p. 241 p. 254 p. 284

Indexable insert type	Suitable for holder	Number of thread starts per inch	Suitable from thread size	Number of teeth (PCS)	Cutting edge Ø (mm)	fz steel 1300 ● (mm)	13397... Ident. No.	
A10	A1 | A2 | A12 | A13	19	G 1/4 inch	2	10	0.10	632	●
A12	A3 | A4 | A5 | A14	19	G 3/8 inch	2	12	0.12	634	●
A18	A6 | A7 | A8 | A9 | A15	14	G 7/8 inch	2	17.8	0.16	636	●
A18	A6 | A7 | A8 | A9 | A16	11	G 1 inch	2	17.8	0.16	638	●

Prod. Gr. 1FE

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plastics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13397632-638	100	80	60	80	60	120	180	100	160	80	140	140		60	30	30	30	60	

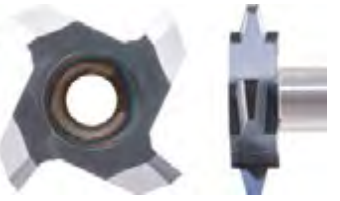
ATORN® Cutting insert, triple cutter, full profile, trapezoidal thread

for universal use up to 1500 N/mm²

Application:
For producing metric right-hand and left-hand threads on CNC machines, in steel, stainless steel, non-ferrous metals, cast iron and special alloy material groups up to a strength of 1500 N/mm².

Execution:
- Three-flute cutter in full profile design (indexable inserts type A25 in four-flute cutter design)

Advantage:
- Innovative cutting geometry ensures very high dimensional accuracy, process reliability and chip removal
- High-quality cutting material and cutting edge finish for very high service life requirements
- Precise thread milling of profiles



p. 241 p. 254 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plastics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13397640-648	100	80	60	80	60	120	180	100	160	80	140	140		60	30	30	30	60	

Indexable insert type	Suitable for holder	Pitch (mm)	Suitable for min. Ø (mm)	Number of teeth (PCS)	Cutting edge Ø (mm)	fz steel 1300 ● (mm)	13397... Ident. No.	
A10	A1 | A2 | A12	2	16	1	10	0.10	640	●
A18	A6 | A7 | A8 | A9 | A15	3	24	1	17.8	0.16	642	●
A18	A15	4	26	1	17.8	0.16	644	●
A18	A15	5	28	1	17.8	0.16	646	●

Indexable insert type	Suitable for holder	Pitch (mm)	Suitable for min. Ø (mm)	Number of teeth (PCS)	Cutting edge Ø (mm)	fz steel 1300 ● (mm)	13397... Ident. No.	
A25	A10 | A11 | A16 | A17	6	36	1	25	0.18	648	●

Prod. Gr. 1FE

ATORN® HSS hand tap set in box (DIN 352)

for use in high-tensile steel up to 1300 N/mm²

M | ≤1xd | HSS | HSSE | HSSE-PM

p. 170 p. 62 p. 282 p. 283 p. 284

Application:

Ident. No. 010: For producing metric threads by hand in through holes and blind holes, in steel, non-ferrous metals and (cast iron) material groups up to a strength of **1000 N/mm²**.

Ident. No. 012–016: For producing metric threads by hand in through holes and blind holes, in the high-strength steel material group up to a strength of **1300 N/mm²**.

Execution:

- **Ident. No. 010:** Hand tap set, HSS, comprising taper tap with one ring (Type A), second tap with two rings (Type D) and third tap (plug) (Type C) for M3, M4, M5, M6, M8, M10, M12
- **Ident. No. 012:** Hand tap set, HSSE, comprising taper tap with one ring (Type A), second tap with two rings (Type D) and third tap (plug) (Type C) for M3, M4, M5, M6, M8, M10, M12
- **Ident. No. 016:** Hand tap set, HSSE-PM, comprising taper tap with one ring (Type A), second tap with two rings (Type D) and third tap (plug) (Type C) for M3, M4, M5, M6, M8, M10, M12

Advantage:

- Innovative cutting geometry ensures very high dimensional accuracy, process reliability and chip removal
- Robust metal box protects the tool from damage and contamination
- **Ident. No. 010:** Universal use for maximum application flexibility
- **Ident. No. 012–016:** Specialised use with optimised chip geometry for use in hardened steel

Cutting material		HSS	HSSE	HSSE-PM
Composition of set		3 hand taps for each size (taper tap/ second tap/ third tap (plug)) M3/ M4/M5/M6/ M8/M10/M12	3 hand taps for each size (taper tap/ second tap/ third tap (plug)) M3/ M4/M5/M6/ M8/M10/M12	3 hand taps for each size (taper tap/ second tap/ third tap (plug)) M3/ M4/M5/M6/ M8/M10/M12
Colour ring system		Steels	Steels	Steels
13395...	Ident. No.	010	012	016
		●	●	●

Prod. Gr. 1KB

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13395010	●	●					●	●	●	●	●	●							
13395012			●											●					
13395016			●											●					

ATORN® Box for hand tap set

Application:

For storing M3 to M12 hand taps.

Execution:

- Empty steel metal box for hand taps

Advantage:

- Robust metal box made from high-quality steel

p. 22 p. 284

Composition of set		Can hold 3 hand taps for each size (taper tap/ second tap/ third tap (plug)) M3/ M4/M5/M6/ M8/M10/M12
13395...	Ident. No.	020
		●

Prod. Gr. 1KB

ORION® HSS hand tap set in box (DIN 352)

For universal use up to 1000 N/mm²

M | ≤1xd | HSS

p. 170 p. 282 p. 283 p. 284

Application:

For producing metric threads by hand in through holes and blind holes, in steel, non-ferrous metals and (cast iron) material groups up to a strength of **1000 N/mm²**.

Execution:

- **Ident. No. 010:** Hand tap set, HSS, comprising taper tap with one ring (Type A), second tap with two rings (Type D) and third tap (plug) (Type C) for M3, M4, M5, M6, M8, M10, M12
- **Ident. No. 020:** Hand tap set, HSS, comprising taper tap with one ring (Type A), second tap with two rings (Type D) and third tap (plug) (Type C) for M3, M4, M5, M6, M8, M10, M12 and core drills

Advantage:

- Standard geometry with very good price/performance ratio

Cutting material		HSS	HSS
Composition of set		3 hand taps for each size (taper tap/second tap/third tap (plug)) M3/M4/M5/M6/M8/M10/M12	3 hand taps for each size (taper tap/second tap/third tap (plug)) M3/M4/M5/M6/M8/M10/M12, 1 of each core drill with diameter 2.5/3.3/4.2/5.0/6.8/8.5/10.2
Colour ring system		Steels	Steels
13396...	Ident. No.	010	020
		●	●

Prod. Gr. 1DC

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13396010	●	●					●	●	●	●	●	●							
13396020	●	●					●	●	●	●	●	●							

ORION® Thread-cutting tools sets

For universal use up to 1000 N/mm²

M | MF | G | ≤1xd | HSS

Application:

Ident. No. 312–900: for producing **metric (M)** male and female threads by hand in blind holes and through holes, in steel, non-ferrous metals and (cast-iron) material groups up to a strength of 1000 N/mm².

Ident. No. 902: for producing fine male and female metric threads (MF) by hand in blind holes and through holes, in steel, non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

Ident. No. 904: for producing male and female pipe (G) threads by hand in blind holes and through holes, in steel, non-ferrous metals and (cast iron) material groups up to a strength of 1000 N/mm².

Execution:

- **Ident. No. 312:** Hand tap sets, HSS, comprising taper tap with one ring (Type A), second tap with two rings (Type D) and third tap (plug) (Type C) and die with tap wrench and thread gauge
- **Ident. No. 520–900:** Hand tap sets, HSS, comprising taper tap with one ring (Type A), second tap with two rings (Type D) and third tap (plug) (Type C) and die with tap wrench, die holder and thread gauge
- **Ident. No. 902–904:** Hand tap sets, HSS, comprising taper tap with one ring (Type A) and third tap (plug) (Type C) and die with tap wrench, die holder and thread gauge

Advantage:

- Standard geometry with very good price/performance ratio

Ident. No. 312–520, 904

Ident. No. 900

Ident. No. 902

p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13399312	●	●					●	●	●	●	●	●							
13399520	●	●					●	●	●	●	●	●							
13399900	●	●					●	●	●	●	●	●							
13399902	●	●					●	●	●	●	●	●							
13399904	●	●					●	●	●	●	●	●							

Composition of set		3 hand taps for each size (taper tap/second tap/third tap (plug)) and 1 die for each size M3/M4/M5/M6/M8/M10/M12	3 hand taps for each size (taper tap/second tap/third tap (plug)) and 1 die for each size M5/M6/M8/M10/M12/M14/M16/M18/M20	3 hand taps for each size (taper tap/second tap/third tap (plug)) and 1 die for each size M3/M4/M5/M6/M8/M10/M12/M14/M16/M18/M20/M22/M24	2 hand taps for each size (taper tap and third tap (plug)) and 1 die for each size M3x0.35/M4x0.35/M5x0.5/M6x0.75/M8x1/M10x1.25/M12x1.25/M14x1.5/M16x1.5/M18x1.5/M20x1.5/M22x1.5/M24x1.5	2 hand taps for each size (taper tap and third tap (plug)) and 1 die for each thread size 1/8"/1/4"/3/8"/1/2"/3/4"/1"
13399...	Ident. No.	312	520	900	902	904
		●	●	●	●	●

Prod. Gr. 1DC

ATORN® Machine tap + core drill set

In blind holes

M | HSSE | ≤2,5xd

Application:
Ident. No. 015: For producing metric threads on CNC machines or conventional machines in blind holes, in steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of **1000 N/mm²**.
Ident. No. 025: For producing metric threads on CNC machines or conventional machines in blind holes, in the high-strength steel material group up to a strength of **1300 N/mm²**.
Ident. No. 035: For producing metric threads on CNC machines or conventional machines in blind holes, in steel, (stainless steel), non-ferrous metals and cast iron material groups up to a strength of **1300 N/mm²**.
Ident. No. 060: For producing metric threads on CNC machines or conventional machines in blind holes, in steel, stainless steel, non-ferrous metals and cast iron material groups up to a strength of **1000 N/mm²**.

Execution:
- **Ident. No. 015:** Machine tap set, comprising HSSE 13281 and core drills 11020 for M3, M4, M5, M6, M8, M10, M12
- **Ident. No. 025:** Machine tap set, comprising HSSE 13306 and core drills 11020 for M3, M4, M5, M6, M8, M10, M12
- **Ident. No. 035:** Machine tap set, comprising HSSE 13052 and core drills 11020 for M3, M4, M5, M6, M8, M10, M12
- **Ident. No. 060:** Machine tap set, comprising HSSE 13121 and core drills 11020 for M3, M4, M5, M6, M8, M10, M12

Advantage:
- **Ident. No. 015, 035–060:** Universal use for maximum application flexibility
- **Ident. No. 015–035:**
  - Innovative cutting geometry and coating ensure high process reliability
  - Robust and user-friendly plastic box ensures reliable protection and good accessibility
- **Ident. No. 025:** Specialised use with optimised chip geometry for use in high-strength steel
- **Ident. No. 060:**
  - Innovative cutter geometry and coating ensure high process reliability
  - Robust metal box protects the tool from damage and contamination

Ident. No. 015–035

Ident. No. 060

p. 170,174 | p. 22 | p. 755 | p. 284

Composition of set		1 of each HSSE 13281 machine tap M3/M4/M5/M6/M8/M10/M12, 1 of each core drill no. 11020 with diameter 2.5/3.3/4.2/5.0/6.8/8.5/10.2	1 of each HSSE 13306 machine tap M3/M4/M5/M6/M8/M10/M12, 1 of each core drill no. 11020 with diameter 2.5/3.3/4.2/5.0/6.8/8.5/10.2	1 of each HSSE 13052 machine tap M3/M4/M5/M6/M8/M10/M12, 1 of each core drill no. 11020 with diameter 2.5/3.3/4.2/5.0/6.8/8.5/10.2	1 of each HSSE 13125 machine tap M3/M4/M5/M6/M8/M10/M12, 1 of each core drill no. 11020 with diameter 2.5/3.3/4.2/5.0/6.8/8.5/10.2
Cutting material		HSSE	HSSE	HSSE	HSSE
Colour ring system		Steels	Steels	UNI	UNI
13400...	Ident. No.	015	025	035	060
		●	●	●	●

Prod. Gr. 1KB

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13400015	16	11		9		18	18	15	18	15	15	13		16					
13400025	15	10	9																
13400035	17	11	10	9	11	19	19	17	19	17	17	15	16	18					

ATORN® Machine tap set

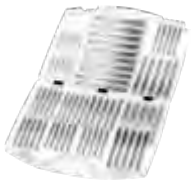
In through holes and blind holes

M | ≤2,5xd | ≤2,5xd | HSSE

Application:
No. 13400: For manufacturing metric threads in through and blind holes on CNC or conventional machines in the steel, stainless steel, NF metals and cast material groups up to a strength of **1000 N/mm²**.
No. 13401 015: For producing metric threads on CNC machines or conventional machines in blind holes and through holes, in steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of **1000 N/mm²**.
No. 13401 045: For producing metric threads on CNC machines or conventional machines in through holes, in steel, (stainless steel), non-ferrous metals and cast iron material groups up to a strength of **1300 N/mm²**.
No. 13401 080: For manufacturing fine metric threads in through and blind holes on CNC or conventional machines in the steel, stainless steel, NF metals and cast material groups up to a strength of **1000 N/mm²**.

Execution:
- **No. 13400:** Machine tap set consisting of **HSSE 13121 + 13125**
- **No. 13401 015:** Machine tap set, comprising **HSSE 13113 + 13117 + 13281** for M3, M4, M5, M6, M8, M10, M12
- **No. 13401 045:** Machine tap set, comprising **HSSE-TiN 13246 + 13052** for M3, M4, M5, M6, M8, M10, M12
- **No. 13401 080:** machine tap set, comprising **HSSE 13121 + 13125** for M3, M4, M5, M6, M8, M10, M12

Advantage:
- Universal use for maximum application flexibility
- Robust metal box protects the tool from damage and contamination
- **No. 13400 100, 13401 080:** Innovative cutter geometry and coating ensure high process reliability
- **No. 13401 015–13401 045:** Innovative cutting geometry and coating ensure high process reliability



No. 13400

No. 13401 015–13401 045

No. 13401 080

p. 170,174 p. 22 p. 755 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13401015	14	10		8		18	18	15	18	15	15	13		16					
13401045	17	11	10	9	11	19	19	17	19	17	17	15	16	18					

Composition of set		1 of each machine tap M3/M4/M5/M6/M8/M10/M12 for through holes and blind holes	1 of each machine tap M3/M4/M5/M6/M8/M10/M12 for through holes and blind holes	1 of each HSSE 13121 + 13125 machine tap M3/M4/M5/M6/M8/M10/M12 for through hole and blind hole	5 of each HSSE 13121 + 13125 machine tap M3/M4/M5/M6/M8/M10/M12 for through hole and blind hole
Cutting material		HSSE	HSSE	HSSE	HSSE
Colour ring system		Steels	UNI	UNI	UNI
13401...	Ident. No.	015 ●	045 ●	080 ●	-
13400...	Ident. No.	-	-	-	100 ●

Prod. Gr. 1KB

ATORN® Machine tap + core drill set

In through holes and blind holes

M | HSSE | ≤2,5xd | ≤2,5xd

Ident. No. 060

Application:
Ident. No. 025: For producing metric threads on CNC machines or conventional machines in blind holes and through holes, in steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of **1000 N/mm²**.
Ident. No. 035: For producing metric threads on CNC machines or conventional machines in blind holes and through holes, in the high-strength steel material group up to a strength of **1300 N/mm²**.
Ident. No. 060: For manufacturing metric threads in through and blind holes on CNC or conventional machines in the steel, stainless steel, NF metals and cast material groups up to a strength of **1000 N/mm²**.

Execution:
- **Ident. No. 025:** Machine tap set, comprising HSSE 13113 + 13117 + 13281 and core drill no. 11020 for M3, M4, M5, M6, M8, M10, M12
- **Ident. No. 035:** Machine tap set, comprising HSSE 13130 + 13306 and core drill no. 11029 for M3, M4, M5, M6, M8, M10, M12
- **Ident. No. 060:** Machine tap set consisting of **HSSE 13121 + 13125** and core drill 11020 for M3, M4, M5, M6, M8, M10, M12

Advantage:
- Robust metal box protects the tool from damage and contamination
- **Ident. No. 025, 060:** Universal use for maximum application flexibility
- **Ident. No. 025–035:** Innovative cutting geometry and coating ensure high process reliability
- **Ident. No. 035:** Specialised use with optimised chip geometry for use in high-strength steel
- **Ident. No. 060:** Innovative cutter geometry and coating ensure high process reliability

p. 170,174 p. 22 p. 755 p. 284

Composition of set		1 of each HSSE 13113 + 13117 + 13281 machine tap M3/M4/M5/M6/M8/M10/M12 for through holes and blind holes, 1 of each core drill no. 11020 with diameter 2.5/3.3/4.2/5.0/6.8/8.5/10.2	1 of each HSSE 13130 + 13306 machine tap M3/M4/M5/M6/M8/M10/M12 for through holes and blind holes, 1 of each core drill no. 11029 with diameter 2.5/3.3/4.2/5.0/6.8/8.5/10.2	1 of each HSSE 13121 + 13125 machine tap M3/M4/M5/M6/M8/M10/M12 for through holes and blind holes, 1 of each core drill no. 11020 with diameter 2.5/3.3/4.2/5.0/6.8/8.5/10.2
Cutting material		HSSE	HSSE	HSSE
Colour ring system		Steels	High-strength steels	UNI
13401...	Ident. No.	025 ●	035 ●	060 ●

Prod. Gr. 1KB

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13401025	14	10		8		18	18	15	18	15	15	13		16					
13401035	15	10	9																

ATORN® Machine tap set, empty

For screw taps and core drills

Application:
For storing M3 to M12 machine taps and core drills.

Execution:
- Empty steel metal box for screw taps and core drills

Advantage:
- Robust metal box protects the tool from damage and contamination

Composition of set		1 of each machine tap M3/M4/M5/M6/M8/M10/M12 for through holes and blind holes, 1 of each core drill with diameter 2.5/3.3/4.2/5.0/6.8/8.5/10.2
13401...	Ident. No.	050 ●

Prod. Gr. 1KB

p. 22 p. 284

ATORN® Machine tap set + core drill

In through holes

M | HSSE | HSSE-PM | ≤3xd

Application:

Ident. No. 015: For producing metric threads on CNC machines or conventional machines in through holes, in steel, (stainless steel), non-ferrous metals and (cast iron) material groups up to a strength of **1000 N/mm²**.

Ident. No. 035: For producing metric threads on CNC machines or conventional machines in blind holes and through holes, in the high-strength steel material group up to a strength of **1300 N/mm²**.

Ident. No. 045: For producing metric threads on CNC machines or conventional machines in through holes, in steel, (stainless steel), non-ferrous metals and cast iron material groups up to a strength of **1300 N/mm²**.

Ident. No. 060: For producing metric threads on CNC machines or conventional machines in through holes, in steel, stainless steel, non-ferrous metals and cast iron material groups up to a strength of **1000 N/mm²**.

Execution:

- **Ident. No. 015:** Machine tap set, comprising **HSSE 13113 + 13117 and core drill no. 11020** for M3, M4, M5, M6, M8, M10, M12
- **Ident. No. 035:** Machine tap set, comprising **HSSE 13130 and core drill no. 11029** for M3, M4, M5, M6, M8, M10, M12 for the highest requirements in terms of process reliability and service life
- **Ident. No. 045:** Machine tap set, comprising **HSSE-TiN 13246 and core drill no. 11020**, for M3, M4, M5, M6, M8, M10, M12
- **Ident. No. 060:** Machine tap set comprising HSSE 13121 and core drills 11020 for M3, M4, M5, M6, M8, M10, M12

Advantage:

- **Ident. No. 015, 045–060:** Universal use for maximum application flexibility
- **Ident. No. 015–045:**
  - Innovative cutting geometry and coating ensure high process reliability
  - Robust and user-friendly plastic box ensures reliable protection and good accessibility
- **Ident. No. 035:** Specialised use with optimised chip geometry for use in high-strength steel
- **Ident. No. 060:**
  - Innovative cutter geometry and coating ensure high process reliability
  - Robust metal box protects the tool from damage and contamination

Ident. No. 015–045

Ident. No. 060

p. 170,174 | p. 22 | p. 755 | p. 284

Composition of set		1 of each HSSE 13113 + 13117 machine tap M3/M4/M5/M6/M8/M10/M12, 1 of each core drill no. 11020 with diameter 2.5/3.3/4.2/5.0/6.8/8.5/10.2	1 of each HSSE 13130 machine tap M3/M4/M5/M6/M8/M10/M12, 1 of each core drill no. 11029 with diameter 2.5/3.3/4.2/5.0/6.8/8.5/10.2	1 of each HSSE-TiN 13246 machine tap M3/M4/M5/M6/M8/M10/M12, 1 of each core drill no. 11020 with diameter 2.5/3.3/4.2/5.0/6.8/8.5/10.2	1 of each HSSE 13121 machine tap M3/M4/M5/M6/M8/M10/M12, 1 of each core drill no. 11020 with diameter 2.5/3.3/4.2/5.0/6.8/8.5/10.2
Cutting material		HSSE	HSSE	HSSE-PM	HSSE
Colour ring system		Steels	Steels	UNI	UNI
13402...	Ident. No.	015	035	045	060
		●	●	●	●

Prod. Gr. 1KB

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plastics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13402015	14	10		8		18	18	15	18	15	15	13		16					
13402035	15	10	9																
13402045	18	13	10	10	10	19	19	17	19	17	17	15		18					

ATORN® Machine tap set

For universal use up to 1000 N/mm² in through holes

M | HSSE | ≤3xd

Application:

Ident. No. 025–045: For producing metric threads on CNC machines or conventional machines or cutting by hand in **through holes**, in steel, (stainless steel), non-ferrous metals and cast iron material groups up to a strength of **1000 N/mm²**.

Ident. No. 090: For producing metric threads in through holes on CNC machines or conventional machines in the steel, stainless steel, non-ferrous metals and cast iron material groups up to a strength of **1000 N/mm²**.

Execution:

- **Ident. No. 025:** Machine tap set, short, comprising **HSSE 13063** for M3, M4, M5, M6, M8, M10, M12
- **Ident. No. 045:** Machine tap set, short, comprising **HSSE 13063 and core drill no. 11020** for M3, M4, M5, M6, M8, M10, M12
- **Ident. No. 090:** machine tap set, comprising **HSSE 13121** for M3, M4, M5, M6, M8, M10, M12

Advantage:

- Universal use for maximum application flexibility
- Robust metal box protects the tool from damage and contamination
- **Ident. No. 025:** Innovative cutting geometry ensures high process reliability
- **Ident. No. 045–090:** Innovative cutter geometry and coating ensure high process reliability

Ident. No. 025–045

Ident. No. 090

p. 170,174 | p. 22 | p. 755 | p. 284

Composition of set		1 of each machine tap M3/M4/M5/M6/M8/M10/M12	1 of each machine tap M3/M4/M5/M6/M8/M10/M12, 1 of each core drill with diameter 2.5/3.3/4.2/5.0/6.8/8.5/10.2	1 of each HSSE 13121 machine tap M3/M4/M5/M6/M8/M10/M12 for through hole
Cutting material		HSSE	HSSE	HSSE
Colour ring system		Steels	Steels	UNI
13403...	Ident. No.	025	045	090
		●	●	●

Prod. Gr. 1KB

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plastics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13403025	15	10		9		18	18	15	18	15	15	13		16					
13403045	15	10		9		18	18	15	18	15	15	13		16					

ORION® Screw tap bit set

For universal use up to 700 N/mm²

M | HSS | ≤1xd

Application:
For producing metric threads for portable use on cordless drill screwdrivers in through holes, in steel, non-ferrous metals and (cast iron) material groups up to a strength of 700 N/mm² in single-part production.

Execution:
- Precision-ground, right-hand and short machine tap set with 1/4“ hexagon drive, HSS for M3, M4, M5, M6, M8, M10, M12 and magnetic steel tool holder for high requirements in terms of process reliability and service life

Advantage:
- Standard geometry with very good price/performance ratio

Number of pieces in assortment/set (PCS)		6
Composition of set		1 of each screw tap bit M3/M4/M5/M6/M8/M10
13407...	Ident. No.	550 ●

Prod. Gr. 105

p. 22 p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plastics	Graphite G(C)FK	GG(G) GjMW	Titanalloy	Nickelalloy	Superalloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13407550	●	●				●	●	●	●	●	●	●							

ORION® Core drill bit set

For universal use up to 700 N/mm²

Typ N | HSS

Application:
For producing core holes for portable use on cordless drill screwdrivers, in steel, non-ferrous metals and (cast iron) material groups up to a strength of 700 N/mm² in single-part production.

Execution:
- Precision-ground, right-hand and short core drill set with 1/4“ hexagon drive, HSS for M3, M4, M5, M6, M8, M10 and M12 for high requirements in terms of process reliability and service life

Advantage:
- Standard geometry with very good price/performance ratio

Composition of set		1 of each core drill with diameter 2.5/3.3/4.2/5.0/6.8/8.5
13407...	Ident. No.	690 ●

Prod. Gr. 105

p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plastics	Graphite G(C)FK	GG(G) GjMW	Titanalloy	Nickelalloy	Superalloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13407690	●	●				●	●	●	●	●	●	●							

ORION® Combination thread bit

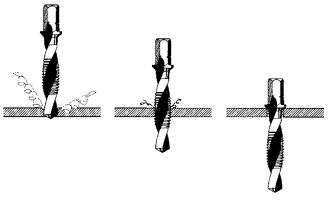
For universal use up to 700 N/mm²

M | HSS | ≤1xd

Application:
For producing metric threads (drill, thread, deburr and clean thread in one operation!) for portable use on cordless drill screwdrivers and hand drills in clockwise rotation and anti-clockwise rotation in steel, non-ferrous metals and (cast iron) material groups up to a strength of 700 N/mm² up to 1xD thread depth in single-part production.

Execution:
- Precision-ground, right-hand screw tap with drill step and 1/4“ hexagon drive

Advantage:
- Standard geometry with very good price/performance ratio
- High productivity, since drilling, thread de-burring and thread cleaning are achieved in one operation
- Robust metal box protects the tool from damage and contamination



Tap drilling – thread cutting – deburring

p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plastics	Graphite G(C)FK	GG(G) GjMW	Titanalloy	Nickelalloy	Superalloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13407030-100	●	●				●	●	●	●	●	●	●							

Thread type x nominal Ø	Pitch (mm)	Length (mm)	Core hole Ø (mm)	Recommended rotation speed in steel (U/min(rpm))	Recommended rotation speed in aluminium (U/min(rpm))	13407... Ident. No.	
M3	0.5	36	2.5	1600	1900	030	●
M4	0.7	39	3.3	1200	1500	040	●
M5	0.8	41	4.2	950	1200	050	●
M6	1	44	5.0	800	950	060	●
M8	1.25	50	6.8	600	700	080	●
M10	1.5	59	8.5	450	550	100	●

Prod. Gr. 1DB

ORION® Combination thread bit set

For universal use up to 700 N/mm²

M | HSS | ≤1xd

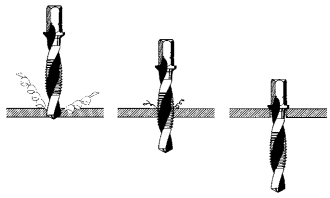
Application:
For producing metric threads (drill, thread, deburr and clean thread in one operation!) for portable use on cordless drill screwdrivers and hand drills in clockwise rotation and anti-clockwise rotation in steel, non-ferrous metals and (cast iron) material groups up to a strength of 700 N/mm² up to 1xD thread depth in single-part production.

Execution:
- Precision-ground, right-hand screw tap set with drill step and 1/4" hexagon drive, HSS for M3, M4, M5, M6, M8, M10 for high requirements in terms of process reliability and service life

Advantage:
- Standard geometry with very good price/performance ratio
- High productivity, since drilling, thread de-burring and thread cleaning are achieved in one operation
- Robust metal box protects the tool from damage and contamination

Composition of set		1 of each combi screw tap bit M3/M4/M5/M6/M8/M10
13407...	Ident. No.	200
		●

Prod. Gr. 1DB



Tap drilling – thread cutting – deburring

p. 284

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plastics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13407200	●	●				●	●	●	●	●	●	●							

WALTON screw tap extractor

Application:
No. 13510–13512: For extracting broken screw taps. When the retaining ring is displaced, the fingers are introduced into the screw tap flutes and secured with the guide bushing. The broken screw tap is loosened and screwed out by the tap wrench.
No. 13514: Extractor for screw taps with 3 flutes.
No. 13516: Extractor for screw taps with 4 flutes.

Execution:
- **No. 13510:** Extractor with 3 steel flutes and spring steel fingers
- **No. 13512:** Extractor with 4 steel flutes and spring steel fingers
- **No. 13514–13516:** Spare spring-steel finger

Advantage:
- **No. 13510–13512:** User-friendly and rational removal of screw taps saves time and money

No. 13510

No. 13512

Suitable for screw thread	Suitable for thread (imperial)	13510... Ident. No.		13512... Ident. No.		13514... Ident. No.		13516... Ident. No.	
M3	G 1/8 inch	030	●	-	-	030	●	-	-
M4	G 5/32 inch	040	●	040	●	040	●	040	●
M5	G 3/16 inch	050	●	050	●	050	●	050	●
M6	G 1/4 inch	060	●	060	●	060	●	060	●
M8	G 5/16 inch	080	●	080	●	080	●	080	●
M10	G 3/8 inch	100	●	100	●	100	●	100	●
M12	G 1/2 inch	120	●	120	●	120	●	120	●
M16	G 5/8 inch	160	●	160	●	160	●	-	-

Prod. Gr. 139

WALTON screw tap extractor sets

Application:
For extracting broken screw taps. Sliding the holder ring pushes the fingers into the screw tap grooves where they are held in place by the guide bush. The broken screw tap is then loosened and removed by unscrewing using a tap wrench.

Execution:
- **No. 13518 010:** Extractor with 3 steel grooves and spring steel fingers, 6 pieces (consisting of 13510)
- **No. 13518 020:** Extractor with 3 steel grooves and spring steel fingers, 10 pieces (consisting of 13510)
- **No. 13520 010:** Extractor with 4 steel grooves and spring steel fingers, 6 pieces (consisting of 13512)
- **No. 13520 020:** Extractor with 3 steel grooves and spring steel fingers, 10 pieces (consisting of 13512)

Advantage:
- User-friendly and efficient removal of broken taps saves time and money

Composition of set	Number of pieces in assortment/ set (PCS)	13518... Ident. No.		13520... Ident. No.	
1 extractor for each of the screw tap sizes M4/M5/M6/M8/M10/ M12	6	010	●	010	●
1 extractor for each of the screw tap sizes M3/M4/M5/M6/M8/ M10/M12/M14/M16/M20	10	020	●	020	●

Prod. Gr. 139

ATORN® Drill extractor for machine tap (DIN 374)

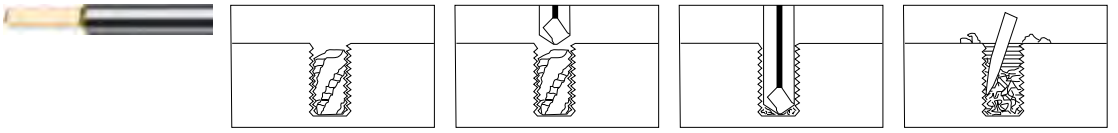
For use in hardened steels to 63HRC

VHM

Application:
For drilling out broken-off screw taps (HSS, HSSE, HSSE PM) up to a hardness of 65 HRC using bench-type or column-type drills, wet or dry machining at a rotation speed of 1000-2000 rpm in hand-feed or for wet machining on CNC machines at a rotation speed of 1400-2400 rpm and a feed rate of 0.03-0.06 per revolution. The drill bit has a service life of 3 to 5 screw taps.

Execution:
- Solid carbide-TiN drill bit, with three cutting edges

Advantage:
- User-friendly and efficient removal of screw taps saves time and money.
- Innovative cutting geometry ensures high process reliability and a long service life.



Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas- tics	Graphite G(C)FK	GG(G) GjMW	Titan- alloy	Nickel- alloy	Super- alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13521																		●	●

Suitable for screw thread	Cutting edge Ø (mm)	Chip flute length (mm)	Length (mm)	Shaft Ø (mm)	13521... Ident. No.	
M3	2.5	10	38	3	030	●
M4	3.3	14	46	4	040	●
M5	4.2	19	50	5	050	●
M6	5	23	50	6	060	●
M8	6.8	23	60	7	080	●
M10	8.5	25	80	9	100	●
M12	10.2	35	80	11	120	●

Prod. Gr. 139

ATORN® Drill extractor for machine tap set (DIN 374)

For use in hardened steels to 63HRC

Application:
For drilling out broken-off M3, M4, M5, M6, M8, M10 and M12 screw taps (HSS, HSSE, HSSE-PM) up to a hardness of 65 HRC using bench-type or column-type drills in wet or dry machining at a rotation speed of 1000–2000 rpm with hand-feed or for wet machining on CNC machines at a rotation speed of 1400–2400 rpm with a feed rate of 0.03–0.06 per revolution. The drill bit has a service life of 3 to 5 screw taps.

Execution:
- Precision-ground drill bit for screw taps, solid carbide-TiN, with three cutting edges for M3, M4, M5, M6, M8, M10 and M12 for extremely high requirements for process reliability and service life.

Advantage:
- User-friendly and efficient removal of screw taps saves time and money.
- Innovative cutting geometry ensures high process reliability and a long service life.
- Sturdy plastic tool box protects the tools from dirt and damage.

Technical data:
- Suitable for screw thread: M3 | M4 | M5 | M6 | M8 | M10 | M12

13521...	Ident. No.	300
		●

Prod. Gr. 139

overview: threading dies

	Ø	P 700	P 1000	P 1300	M	N	K	S		page
13410	M1-M36	●				○				268
13412	M3 L-M24 L	●				○				268
13418	M2-M24		●	●	●			●		270
13421	M3-M20	●				○				269
13440	MF2-MF63	●				○				271-272
13442	MF8 L-MF24 L	●				○				271-272
13446	MF5-MF30		●	●	●			●		272
13450	UNC Nr.2-UNC 1 inch	●				○				275
13460	UNF Nr.4-UNF 3/4 inch	●				○				275
13466	NPT 1/8-NPT 3/4 inch	●				○				274
13470	BSW 1/8-BSW 5/8 inch	●				○				274
13480	G 1/8-G 2 inch	●				○				273
13484	G 1/8-G 1 inch		●	●	●			●		273-274
13487	G 1/8-G 1 1/4 inch	●				○				273

	Ø	P 700	P 1000	P 1300	M	N	K	S		page
13491	PG 7-PG 29	●								-
13434	M3-M30	●				○				270

ATORN® HSS threading die (EN standard 22568)

For universal use up to 700 N/mm²

M | HSS | DIN 13 6g

Application:

No. 13410: For tapping metric male threads in the steel and NF metal material groups up to a strength of 700 N/mm².

No. 13412: For producing **left-hand metric male threads** in the steel and non-ferrous metals material groups up to a strength of 700 N/mm².

Execution:

- **No. 13410:** Right-handed die, M1 to M1.4 = tol. 6h, M1.6 to M36 = tol. 6g with spiral point (from M3), pre-slotted, 1.75-threaded chamfer
- **No. 13412:** Left-handed die M3 to M24 = tol. 6g with spiral point, pre-slotted, 1.75-threaded chamfer

Advantage:

- Universal use for maximum flexibility
- Micro-cutting edge treatment and special lapping process for high process reliability and a long service life

No. 13410

No. 13412

p. 283 p. 277

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13410	●					●					●	●							
13412	●					●					●	●							

Thread type x nominal Ø	Pitch (mm)	Outer Ø (mm)	Height (mm)	Cutting direction: Right-hand cutting 13410... Ident. No.		Left-hand cutting 13412... Ident. No.	
M1	0.25	16	5	010	●	-	-
M1.2	0.25	16	5	012	●	-	-
M1.4	0.3	16	5	014	●	-	-
M1.6	0.35	16	5	016	●	-	-
M1.7	0.35	16	5	017	●	-	-
M1.8	0.35	16	5	018	●	-	-
M2	0.4	16	5	020	●	-	-
M2.2	0.45	16	5	022	●	-	-
M2.3	0.4	16	5	023	●	-	-
M2.5	0.45	16	5	025	●	-	-
M2.6	0.45	16	5	026	●	-	-
M3	0.5	20	5	030	●	030	●
M3.5	0.6	20	5	035	●	-	-
M4	0.7	20	5	040	●	040	●
M4.5	0.75	20	7	045	●	-	-
M5	0.8	20	7	050	●	050	●
M6	1	20	7	060	●	060	●
M7	1	25	9	070	●	-	-
M8	1.25	25	9	080	●	080	●
M9	1.25	25	9	090	●	-	-
M10	1.5	30	11	100	●	100	●
M11	1.5	30	11	110	●	-	-
M12	1.75	38	14	120	●	120	●
M14	2	38	14	140	●	140	●
M16	2	45	18	160	●	160	●
M18	2.5	45	18	180	●	-	-
M20	2.5	45	18	200	●	200	●
M22	2.5	55	22	220	●	-	-
M24	3	55	22	240	●	240	●
M27	3	65	25	270	●	-	-
M30	3.5	65	25	300	●	-	-
M33	3.5	65	25	330	●	-	-
M36	4	65	25	360	●	-	-

Prod. Gr. 1KI

ORION® Thread-cutting die HSS (EN standard 22568)

for universal use up to 700 N/mm2

M | HSS | DIN 13 6g

Application:
For tapping metric male threads in the steel and NF metal material groups up to a strength of 700 N/mm².

Execution:
- Right-handed die, M1 to M1.4 = tol. 6h, M1.6 to M36 = tol. 6g with spiral point (from M3), pre-slotted, 1.75-threaded chamfer

Advantage:
- Standard geometry with a very good price-performance ratio

p. 283 p. 277

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plastics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13417	●					●					●	●							

Thread type x nominal Ø	Pitch (mm)	Outer Ø (mm)	Height (mm)	Cutting direction: Right-hand cutting, 13417... Ident. No.	
M2	0.4	16	5	020	●
M2.5	0.45	16	5	025	●
M3	0.5	20	5	030	●
M4	0.7	20	5	040	●
M5	0.8	20	7	050	●
M6	1	20	7	060	●
M7	1	25	9	070	●
M8	1.25	25	9	080	●
M10	1.5	30	11	100	●

Thread type x nominal Ø	Pitch (mm)	Outer Ø (mm)	Height (mm)	Cutting direction: Right-hand cutting, 13417... Ident. No.	
M12	1.75	38	14	120	●
M14	2	38	14	140	●
M16	2	45	18	160	●
M18	2.5	45	18	180	●
M20	2.5	45	18	200	●
M22	2.5	55	22	220	●
M24	3	55	22	240	●
M27	3	65	25	270	●
M30	3.5	65	25	300	●

Prod. Gr. 1DC

ORION® Thread-cutting die HSSE (EN standard 22568)

for universal use up to 1300 N/mm2

M | HSSE | DIN 13 6g

Application:
For tapping metric male threads in the steel, stainless steel, NF metal and special alloy material groups up to a strength of 1300 N/mm².

Execution:
- Right-handed thread-cutting die, tol. 6g, pre-slotted and 2.0 threaded chamfer

Advantage:
- Standard geometry with a very good price-performance ratio

p. 283 p. 277

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plastics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13421	●					●					●	●							

Thread type x nominal Ø	Pitch (mm)	Outer Ø (mm)	Height (mm)	Cutting direction: Right-hand cutting, 13421... Ident. No.	
M3	0.5	20	5	030	●
M4	0.7	20	5	040	●
M5	0.8	20	7	050	●
M6	1	20	7	060	●
M8	1.25	25	9	080	●

Thread type x nominal Ø	Pitch (mm)	Outer Ø (mm)	Height (mm)	Cutting direction: Right-hand cutting, 13421... Ident. No.	
M10	1.5	30	11	100	●
M12	1.75	38	14	120	●
M14	2	38	14	140	●
M16	2	45	18	160	●
M20	2.5	45	18	200	●

Prod. Gr. 1DC

ORION® HSS thread-cutting die set (EN standard 22568)

for universal use up to 700 N/mm2

M | HSSE | DIN 13 6g

Application:
For tapping metric male threads in the steel and NF metal material groups up to a strength of 700 N/mm².

Execution:
- Right-handed die set consisting of 13417 for M3, M4, M5, M6, M8, M10 and M12, tol. 6g with spiral point, pre-slotted, 1.75-threaded chamfer

Advantage:
- Standard geometry with an excellent price-performance ratio

p. 283 p. 277

Min./max. thread-cutting area, metric		3-12 mm
Number of pieces in assortment/set (PCS)		7
13417...	Ident. No.	500
		●

Prod. Gr. 1DC

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13417500		●	●	●	●	●					●				●	●	●		

ATORN® Thread-cutting die HSSE (EN standard 22568)

for universal use up to 1300 N/mm2

M | HSSE | DIN 13 6g

Application:
For tapping metric male threads in the steel, stainless steel, NF metal and special alloy material groups up to a strength of 1300 N/mm².

Execution:
- Right-handed die, tol. 6g with spiral point (from M2) and nitrided, pre-slotted, 2.0-threaded chamfer

Advantage:
- Specialised insert with optimised chipping geometry for use in materials that are difficult to machine
- Micro-cutting edge treatment and special lapping process for high process reliability and a long service life

p. 283 p. 277

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13418		●	●	●	●	●					●				●	●	●		

Thread type x nominal Ø	Pitch (mm)	Outer Ø (mm)	Height (mm)	Cutting direction Right-hand cutting 13418... Ident. No.	
M2	0.4	16	3.5	020	●
M2.5	0.45	16	5	025	●
M2.6	0.45	16	5	026	○
M3	0.5	20	5	030	●
M3.5	0.6	20	5	035	●
M4	0.7	20	5	040	●
M5	0.8	20	7	050	●
M6	1	20	7	060	●

Thread type x nominal Ø	Pitch (mm)	Outer Ø (mm)	Height (mm)	Cutting direction Right-hand cutting 13418... Ident. No.	
M8	1.25	25	9	080	●
M10	1.5	30	11	100	●
M12	1.75	38	14	120	●
M14	2	38	14	140	●
M16	2	45	18	160	●
M18	2.5	45	18	180	●
M20	2.5	45	18	200	●
M24	3	55	22	240	●

Prod. Gr. 1KI

ATORN® Hexagonal thread-cutting die HSS (DIN 382)

for universal use up to 700 N/mm2

M | HSS | DIN 13 6g

Application:
For retapping and repairing damaged metric male threads in the steel and NF metal material groups up to a strength of 700 N/mm².

Execution:
- Right-handed hexagonal die with tol. 6g

Advantage:
- Hexagonal design for tapping difficult to reach threads
- Micro-cutting edge treatment and special lapping process for high process reliability and a long service life

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13434	●					●					●	●							

Thread type x nominal Ø	Pitch (mm)	Width across flats	Height (mm)	13434... Ident. No.	
M3	0.5	18 mm	5	030	○
M4	0.7	18 mm	5	040	●
M5	0.8	18 mm	7	050	●
M6	1	18 mm	7	060	●
M8	1.25	21 mm	9	080	●
M10	1.5	27 mm	11	100	●

Thread type x nominal Ø	Pitch (mm)	Width across flats	Height (mm)	13434... Ident. No.	
M12	1.75	36 mm	14	120	●
M14	2	36 mm	14	140	●
M16	2	41 mm	18	160	●
M20	2.5	41 mm	18	200	●
M24	3	50 mm	22	240	●
M30	3.5	60 mm	25	300	●

Prod. Gr. 1KI

ATORN® Thread-cutting die set, hexagonal, HSS (DIN 382)

for universal use up to 700 N/mm2

M | HSS | DIN 13 6g

Application:
For retapping and repairing damaged metric male threads in the steel and NF metal material groups up to a strength of 700 N/mm².

Execution:
- Right-handed die set, hexagonal, for M3, M4, M5, M6, M8, M10 and M12, tol. 6g

Advantage:
- Innovative cutting geometry for high process reliability
- Micro-cutting edge treatment and special lapping process for high process reliability and a long service life
- Hexagonal design for tapping difficult to reach threads
- Sturdy metal case protects the tool from dirt and damage

Min./max. thread-cutting area, metric		3-12 mm
Number of pieces in assortment/set (PCS)		7
13434...	Ident. No.	500 ●

Prod. Gr. 1KI

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13434500	●					●					●	●							

ATORN® ORION® HSS threading die (EN standard 22568)

For universal use up to 700 N/mm²

MF | HSS | DIN 13 6g

Application:

No. 13440: For tapping fine metric male threads in the steel and NF metal material groups up to a strength of 700 N/mm².

No. 13442–13445: For cutting fine metric threads externally in the material groups of steel and non-ferrous metals up to a strength of 700 N/mm².

Execution:

- **No. 13440: Right-handed** die, MF2 = tol. 6h, MF2.6 to MF50 = tol. 6g, MF63 = tol. 8g with spiral point, pre-slotted, 1.75-threaded chamfer
- **No. 13442: left** die, tol. 6 g with spiral point, pre-slotted and 1.75 pitch
- **No. 13445: right** die, tol. 6 g with spiral point, pre-slotted and 1.75 pitch

Advantage:

- **No. 13440:**
  - Universal use for maximum flexibility
  - Micro-cutting edge treatment and special lapping process for high process reliability and a long service life
- **No. 13442:**
  - universal use for maximum flexibility during application
  - micro cut edge treatment and special lapping method for excellent process reliability and long service life
- **No. 13445:** standard geometry with excellent price/performance ratio

No. 13440

No. 13442

No. 13445

p. 283 p. 277

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13440	●					●					●	●							
13442	●					●					●	●							
13445	●					●					●	●							

				ATORN®		ORION®		ATORN®	
			Cutting direction	Right-hand cutting		Right-hand cutting		Left-hand cutting	
Thread type x nominal Ø	Pitch (mm)	Outer Ø (mm)	Height (mm)	13440... Ident. No.		13445... Ident. No.		13442... Ident. No.	
MF2	0.25	16	5	020	●	-	-	-	-
MF2.6	0.35	16	5	026	○	-	-	-	-
MF3	0.35	20	5	030	●	030	●	-	-
MF4	0.35	20	5	040	●	-	-	-	-
MF4	0.5	20	5	045	●	045	●	-	-
MF5	0.5	20	5	050	●	050	●	-	-
MF6	0.5	20	5	060	●	060	●	-	-
MF6	0.75	20	7	065	●	065	●	-	-
MF7	0.75	25	9	070	●	-	-	-	-
MF8	0.5	25	9	080	●	080	●	-	-
MF8	0.75	25	9	083	●	083	●	083	●
MF8	1	25	9	086	●	086	●	086	●
MF9	1	25	9	090	●	-	-	-	-
MF10	0.75	30	11	100	●	-	-	-	-
MF10	1	30	11	103	●	103	●	103	●
MF10	1.25	30	11	106	●	106	●	-	-
MF11	1	30	11	110	●	-	-	-	-
MF12	1	38	10	120	●	120	●	120	●
MF12	1.25	38	10	123	●	123	●	-	-
MF12	1.5	38	10	126	●	126	●	126	●
MF14	1	38	10	140	●	140	●	-	-
MF14	1.25	38	10	143	●	143	●	-	-
MF14	1.5	38	10	146	●	146	●	146	●
MF15	1	38	10	150	●	-	-	-	-
MF16	1	45	14	160	●	160	●	-	-
MF16	1.5	45	14	165	●	165	●	165	●
MF18	1	45	14	180	●	180	●	-	-
MF18	1.5	45	14	183	●	183	●	183	●
MF20	1	45	14	200	●	200	●	-	-
MF20	1.5	45	14	203	●	203	●	203	●
MF20	2	45	14	206	●	206	●	-	-
MF22	1	55	16	220	●	-	-	-	-
MF22	1.5	55	16	223	●	223	●	-	-
MF22	2	55	16	226	●	-	-	-	-
MF24	1	55	16	240	●	-	-	-	-
MF24	1.5	55	16	243	●	243	●	243	○

				ATORN®		ORION®		ATORN®	
			Cutting direction	Right-hand cutting		Right-hand cutting		Left-hand cutting	
Thread type x nominal Ø	Pitch (mm)	Outer Ø (mm)	Height (mm)	13440... Ident. No.		13445... Ident. No.		13442... Ident. No.	
MF24	2	55	16	246	●	246	●	-	-
MF25	1.5	55	16	250	●	255	●	-	-
MF26	1.5	55	16	260	●	-	-	-	-
MF27	2	65	18	275	●	275	●	-	-
MF27	1.5	65	18	-	-	270	●	-	-
MF28	1.5	65	18	280	●	-	-	-	-
MF30	1.5	65	18	303	●	303	●	-	-
MF30	2	65	18	306	●	306	●	-	-
MF32	1.5	65	18	320	●	320	●	-	-
MF33	1.5	65	18	330	●	-	-	-	-
MF33	2	65	18	335	●	-	-	-	-
MF34	1.5	65	18	340	●	-	-	-	-
MF35	1.5	65	18	350	●	-	-	-	-
MF36	1.5	65	18	360	●	-	-	-	-
MF36	2	65	18	363	●	-	-	-	-
MF36	3	65	25	366	●	-	-	-	-
MF40	1.5	75	20	400	●	405	●	-	-
MF42	1.5	75	20	420	●	-	-	-	-
MF42	2	75	20	423	●	-	-	-	-
MF45	1.5	90	22	450	●	-	-	-	-
MF48	1.5	90	22	480	●	-	-	-	-
MF50	1.5	90	22	500	●	505	●	-	-
MF63	1.5	105	22	630	○	-	-	-	-

ORION = Prod. Gr. 1DC
ATORN® = Prod. Gr. 1KJ

ATORN® ORION® HSS threading die (EN standard 22568)

For universal use and stainless steel

MF | HSSE | DIN 13 6g

Application:
For cutting fine metric threads externally in the material groups of steel, stainless steel, non-ferrous metals and special alloys up to a strength of 1300 N/mm².

Execution:
- right die. tol. 6 g with spiral point, nitrided, pre-slotted and 2.0 pitch

Advantage:
- **No. 13446:**
  - specialised application with optimised cutting geometry for use in difficult-to-machine materials
  - micro cut edge treatment and special lapping method for excellent process reliability and long service life
- **No. 13447:** standard geometry with excellent price/performance ratio

No. 13446

No. 13447

p. 283 p. 277

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13446		●	●	●	●	●					●				●	●	●		
13447		●	●	●	●	●					●				●	●	●		

				ATORN®		ORION®	
			Cutting direction	Right-hand cutting		Right-hand cutting	
Thread type x nominal Ø	Pitch (mm)	Outer Ø (mm)	Height (mm)	13446... Ident. No.		13447... Ident. No.	
MF5	0.5	20	5	050	●	-	-
MF6	0.75	20	7	065	●	-	-
MF8	0.75	25	9	083	●	-	-
MF8	1	25	9	086	●	086	●
MF10	1	30	11	103	●	103	●
MF12	1	38	10	120	●	120	●
MF12	1.5	38	10	126	●	126	●

				ATORN®		ORION®	
			Cutting direction	Right-hand cutting		Right-hand cutting	
Thread type x nominal Ø	Pitch (mm)	Outer Ø (mm)	Height (mm)	13446... Ident. No.		13447... Ident. No.	
MF14	1.5	38	10	146	●	146	●
MF16	1.5	45	14	165	●	165	●
MF18	1.5	45	14	183	●	183	●
MF20	1.5	45	14	203	●	203	●
MF22	1.5	55	16	223	●	-	-
MF24	1.5	55	16	243	●	-	-
MF30	1.5	65	18	303	●	-	-

ORION = Prod. Gr. 1DC
ATORN® = Prod. Gr. 1KJ

ATORN® ORION® HSS threading die (EN standard 24231)

For universal use up to 700 N/mm²

G | HSS | A

Application:
For cutting G (pipe) threads externally in the material groups of steel and non-ferrous metals up to a strength of 700 N/mm².

Execution:
- right die. tol. A with spiral point and 1.75 pitch

Advantage:
- **No. 13480:**
  - universal use for maximum flexibility during application
  - micro cut edge treatment and special lapping method for excellent process reliability and long service life
- **No. 13487:** standard geometry with excellent price/performance ratio

No. 13480

No. 13487

p. 283 p. 277

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13480	●					●					●	●							
13487	●					●					●	●							

				ATORN®		ORION®	
				Cutting direction		Right-hand cutting	
Thread type x nominal Ø in inches	Number of thread starts per inch	Outer Ø (mm)	Height (mm)	13480... Ident. No.		13487... Ident. No.	
G 1/8 in	28	30	11	010	●	010	●
G 1/4 in	19	38	10	020	●	020	●
G 3/8 in	19	45	14	030	●	030	●
G 1/2 in	14	45	14	040	●	040	●
G 3/4 in	14	55	16	060	●	060	●
G 5/8 in	14	55	16	-	-	050	●

				ATORN®		ORION®	
				Cutting direction		Right-hand cutting	
Thread type x nominal Ø in inches	Number of thread starts per inch	Outer Ø (mm)	Height (mm)	13480... Ident. No.		13487... Ident. No.	
G 1 in	11	65	18	080	●	080	●
G 7/8 in	14	65	18	-	-	070	●
G 1-1/4 in	11	75	20	-	-	100	●
G 1-1/2 in	11	90	22	120	●	-	-
G 2 in	11	105	22	140	●	-	-

ORION = Prod. Gr. 1DC
ATORN® = Prod. Gr. 1KJ

ATORN® ORION® HSS threading die (EN standard 24231)

For use in steel up to 1300 N/mm², stainless steel and special alloys

G | HSSE | A

Application:
No. 13484: For cutting G (pipe) threads externally in the material groups of steel, stainless steel, non-ferrous metals and special alloys up to a strength of 1300 N/mm².
No. 13488: For tapping male (pipe) threads in the steel, stainless steel, NF metal and special alloy material groups up to a strength of 1300 N/mm².

Execution:
- **No. 13484:** right die. tol. A with spiral point, nitrided, pre-slotted and 2.0 pitch
- **No. 13488:** Right-handed die, tol. A with spiral point, pre-slotted, 2.0-threaded chamfer

Advantage:
- **No. 13484:**
  - specialised application with optimised cutting geometry for use in difficult-to-machine materials
  - micro cut edge treatment and special lapping method for excellent process reliability and long service life
- **No. 13488:** Standard geometry with a very good price-performance ratio

No. 13484

No. 13488

p. 283 p. 277

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13484		●	●	●	●	●					●				●	●	●		
13488		●	●	●	●	●					●				●	●	●		

Thread type x nominal Ø in inches	Number of thread starts per inch	Outer Ø (mm)	Height (mm)	Cutting direction	ATORN® Right-hand cutting 13484... Ident. No.		ORION® Right-hand cutting 13488... Ident. No.	
G 1/8 in	28	30	11		010	●	010	●
G 1/4 in	19	38	10		020	●	020	●
G 3/8 in	19	45	14		030	●	030	●
G 1/2 in	14	45	14		040	●	040	●
G 3/4 in	14	55	16		060	●	060	●
G 1 in	11	65	18		080	●	080	●

ORION = Prod. Gr. 1DC
ATORN® = Prod. Gr. 1KJ

ATORN® Thread-cutting die HSS (EN standard 22568)

for universal use up to 700 N/mm2

BSW | HSS

Application:
For cutting BSW (British Whitworth) threads externally in the material groups of steel and non-ferrous metals up to a strength of 700 N/mm².

Execution:
- right die with spiral point and 1.75 pitch

Advantage:
- universal use for maximum flexibility during application
- micro cut edge treatment and special lapping method for excellent process reliability and long service life

p. 283 p. 277

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13470	●						●			●		●							

Thread type x nominal Ø in inches	Number of thread starts per inch	Outer Ø (mm)	Height (mm)	Cutting direction	Right-hand cutting 13470... Ident. No.	
BSW 1/8 in	40	20	5		030	●
BSW 5/32 in	32	20	7		040	○
BSW 7/32 in	24	20	7		060	○
BSW 1/4 in	20	20	7		070	●
BSW 5/16 in	18	25	9		080	●
BSW 3/8 in	16	30	11		090	●
BSW 1/2 in	12	38	14		110	●
BSW 5/8 in	11	45	18		130	●

Prod. Gr. 1KJ

ATORN® Thread-cutting die HSS (EN standard 24230)

for universal use up to 700 N/mm2

NPT | HSS

Application:
For cutting tapered 1: 16 NPT (National Pipe Taper) threads externally in the material groups of steel and non-ferrous metals up to a strength of 700 N/mm².

Execution:
- right die with spiral point and 1.75 pitch

Advantage:
- universal use for maximum flexibility during application
- micro cut edge treatment and special lapping method for excellent process reliability and long service life

p. 283 p. 277

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13466	●						●			●		●							

Thread type x nominal Ø in inches	Number of thread starts per inch	Outer Ø (mm)	Height (mm)	Cutting direction	Right-hand cutting 13466... Ident. No.	
NPT 1/8 in	27	30	11		010	●
NPT 1/4 in	18	38	14		020	●
NPT 3/8 in	18	45	14		030	●
NPT 1/2 in	14	45	18		040	●
NPT 3/4 in	14	55	22		050	●

Prod. Gr. 1KJ

ATORN® Thread-cutting die HSS (EN standard 22568)

for universal use up to 700 N/mm2

UNC | HSS | 2A

Application:
For cutting UNC (Unified Coarse) threads externally in the material groups of steel and non-ferrous metals up to a strength of 700 N/mm².

Execution:
- right die. tol. 2A with spiral point and 1.75 pitch

Advantage:
- universal use for maximum flexibility during application
- micro cut edge treatment and special lapping method for excellent process reliability and long service life

p. 283 p. 277

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13450	●						●			●		●							

Thread type x nominal Ø in inches	Number of thread starts per inch	Outer Ø (mm)	Height (mm)	Cutting direction Right-hand cutting 13450... Ident. No.	
UNC 2 in	56	16	5	020	●
UNC 4 in	40	16	5	040	●
UNC 6 in	32	20	7	060	●
UNC 8 in	32	20	7	070	●
UNC 10 in	24	20	7	080	●
UNC 1/4 in	20	20	7	100	●
UNC 5/16 in	18	25	9	110	●

Thread type x nominal Ø in inches	Number of thread starts per inch	Outer Ø (mm)	Height (mm)	Cutting direction Right-hand cutting 13450... Ident. No.	
UNC 3/8 in	16	30	11	120	●
UNC 7/16 in	14	30	11	130	●
UNC 1/2 in	13	38	14	140	●
UNC 9/16 in	12	38	14	150	●
UNC 5/8 in	11	45	18	160	●
UNC 3/4 in	10	45	18	170	●
UNC 1 in	8	55	22	190	●

Prod. Gr. 1KJ

ATORN® HSS thread-cutting die (EN standard 22568)

for universal use up to 700 N/mm2

UNF | HSS | 2A

Application:
For cutting UNF (Unified Fine) threads externally in the material groups of steel and non-ferrous metals up to a strength of 700 N/mm².

Execution:
- right die. tol. 2A with spiral point and 1.75 pitch

Advantage:
- universal use for maximum flexibility during application
- micro cut edge treatment and special lapping method for excellent process reliability and long service life

p. 283 p. 277

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
13460	●						●			●		●							

Thread type x nominal Ø in inches	Number of thread starts per inch	Outer Ø (mm)	Height (mm)	Cutting direction Right-hand cutting 13460... Ident. No.	
UNF 4 in	48	16	5	050	○
UNF 6 in	40	20	5	070	●
UNF 8 in	36	20	7	080	●
UNF 10 in	32	20	7	090	●
UNF 12 in	28	20	7	100	●
UNF 1/4 in	28	20	7	110	●

Thread type x nominal Ø in inches	Number of thread starts per inch	Outer Ø (mm)	Height (mm)	Cutting direction Right-hand cutting 13460... Ident. No.	
UNF 5/16 in	24	25	9	120	●
UNF 3/8 in	24	30	11	130	●
UNF 7/16 in	20	30	11	140	●
UNF 1/2 in	20	38	10	150	●
UNF 9/16 in	18	38	10	160	●
UNF 5/8 in	18	45	14	170	●
UNF 3/4 in	16	45	14	180	●

Prod. Gr. 1KJ

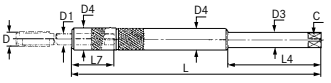
ORION® Machine tap extension

For using machine taps

Application:
For extending machine taps in conjunction with deep and difficult to reach threads on CNC and conventional machines, in tapping chucks or quick-change chucks in single part production.

Execution:
- Steel tool holder with collet chuck and clamping nut; steel shank of the extension pursuant to DIN for high requirements for process reliability and service life

Advantage:
- Very flexible and fast solution as there is no need to procure special machine taps
- User-friendly handling with short changeover times
- Excellent value for money



Suitable for DIN 371 screw tap	Suitable for DIN 374/376 screw tap	Suitable for screw tap square socket size (mm)	C (mm)	L7 (mm)	D1 (mm)	D4 (mm)	D3 (mm)	L (mm)	L4 (mm)	13533... Ident. No.	
M2-M2.6	M4	2.1	4.9	22	2.8	6.1	6	130	60	001	●
M2-M2.6	M4	2.1	4.9	22	2.8	6.1	6	230	70	011	●
M3	M4.5-M5	2.7	4.9	23	3.5	7.5	6	130	60	002	●
M3	M4.5-M5	2.7	4.9	23	3.5	7.5	6	230	70	020	●
M4	M6	3.4	4.9	23	4.5	8.4	6	130	60	003	●
M4	M6	3.4	4.9	23	4.5	8.4	6	230	70	030	●
M4.5-M6	M8	4.9	5.5	26	6	12.1	7	130	60	004	●
M4.5-M6	M8	4.9	5.5	26	6	12.1	7	230	70	040	●
M7	M9-M10	5.5	5.5	26	7	12.1	7	130	60	005	●
M7	M9-M10	5.5	5.5	26	7	12.1	7	230	70	050	●
M8	M11	6.2	6.2	30	8	13	8	130	60	006	●
M8	M11	6.2	6.2	30	8	13	8	230	80	060	●
M9	M12	7	7	31	9	15	9	130	60	007	●
M9	M12	7	7	31	9	15	9	230	80	070	●
M10	-	8	8	33	10	15	10	130	60	008	●
M10	-	8	8	33	10	15	10	230	80	080	●
-	M14	9	9	36	11	18	11	130	90	009	●
-	M14	9	9	36	11	18	11	230	90	090	●
-	M16	9	9	36	12	18	12	130	90	010	●
-	M16	9	9	36	12	18	12	230	90	111	●
-	M18	11	11	46	14	22	14	200	90	021	○
-	M18	11	11	46	14	22	14	330	90	121	○
-	M20	12	12	46	16	22	16	200	90	022	●
-	M20	12	12	46	16	22	16	330	90	122	●
-	M20-M24	14.5	14.5	47	18	26	18	200	100	023	●
-	M20-M24	14.5	14.5	47	18	26	18	330	100	123	○

Prod. Gr. 139

ORION® Tool extension

For screw taps with straight shanks and square drives

Application:
For extending machine taps for use with threads that are deep and difficult to reach.

Execution:
- Precision-ground steel tool holder, hardened and tempered with square drive pursuant to DIN 10

Advantage:
- User-friendly handling with short changeover times
- Excellent value for money

Technical data:
- Shank style: Reduced shank

Inner square size (mm)	Length (mm)	Size of square (mm)	13532... Ident. No.	
2.1	60	2.1	021	●
2.7	80	2.7	027	●
3	90	3	030	●
3.4	95	3.4	034	●
4.3	105	4.3	043	●
4.9	110	4.9	049	●
5.5	115	5.5	055	●
6.2	120	6.2	062	●
7	125	7	070	●

Inner square size (mm)	Length (mm)	Size of square (mm)	13532... Ident. No.	
8	125	8	080	●
9	130	9	090	●
10	140	10	100	●
11	150	11	110	●
12	155	12	120	●
14.5	175	14.5	145	●
16.0	180	16	160	●
18	200	18	180	●
20	220	20	200	●
22	220	22	220	●

Prod. Gr. 139

Thread-cutting die holder

DIN EN 22568 including packing rings

Application:
For holding dies and for tapping male threads on conventional machines. The holder is pushed on to the arbour in the tailstock. The tool is applied straight when the tailstock spindle is set in motion and the thread can be cut.

Advantage:
- User-friendly handling on the machine
- Reliable positioning and precise thread cutting without ripping out thread pitches
- Quick changing of the holder on the machine
- No thread distortion

Execution:
- Burnished and knurled steel tool holder with a packing ring (for fitting other die sizes)

Suitable for mandrel size	Suitable for die size	Ring Ø x height	Die mount Ø (mm)	13535... Ident. No.	
1	16 x 5 mm	-	12	010	●
1	20 x 7 mm | 20 x 5 mm	20 x 5 mm	12	030	●
2	20 x 7 mm | 20 x 5 mm	20 x 5 mm	20	040	●
2	25 x 9 mm	-	20	050	●
2	30 x 11 mm	-	20	060	●
2	38 x 14 mm | 38 x 10 mm	38 x 10 mm	20	080	●
2	45 x 18 mm | 45 x 14 mm	45 x 14 mm	20	100	●
3	45 x 18 mm | 45 x 14 mm	45 x 14 mm	25	120	●
3	55 x 22 mm | 55 x 16 mm	55 x 16 mm	25	140	●
3	65 x 18 mm | 65 x 25 mm	65 x 18 mm	25	160	●

Prod. Gr. 139

Holder for screw taps

With square clamping chuck

Application:
For fitting screw taps on conventional machines. The holder is pushed on to the arbour in the tailstock. The tool is applied straight when the tailstock spindle is set in motion and the thread can be cut.

Advantage:
- reliable positioning of the threading die and user-friendly handling
- precision thread cutting without stripping threads
- no thread distortion

Execution:
- Steel tool holder, burnished and knurled, with square chuck

Notes:
screw tap is only to be inserted and must not be tightened!

Suitable for mandrel size		1	2	3
Suitable for min./max. square socket size		2.1-4.9 mm	2.7-9 mm	3.4-14.5 mm
13537...	Ident. No.	010	020	030
		●	●	●

Prod. Gr. 139

Arbour for thread-cutting dies and screw tap holders

Application:
For fitting screw taps and dies on conventional lathes with Morse taper.

Advantage:
- High-quality steel and exact grinding precision ensure accurate machining

Execution:
- precision-ground arbor, hardened, with scale for depth indication

Notes:
size 1 holder, delivered without a guide groove and may need to be held by hand in some instances

Size	Tap length (mm)	Morse taper size	Die mount Ø (mm)	13539... Ident. No.	
1	60	MK 2	12	020	●
1	60	MK 3	12	040	●
2	90	MK 2	20	050	●
2	90	MK 3	20	060	●
2	90	MK 4	20	070	●
3	100	MK 3	25	080	●
3	100	MK 4	25	090	●

Prod. Gr. 139

Threading die and screw tap holder sets

Other features conform to no. 13535

Application:

Ident. No. 060–140: For holding dies for cutting male threads, tapping and cutting female threads on conventional machines. The holders are pushed on to the arbour in the tailstock. The tool is applied straight when the tailstock spindle is set in motion and the thread can be cut.

Ident. No. 170: For mounting dies for male thread cutting, screw tapping and female thread cutting on conventional machines. The holders are pushed onto the arbor in the tailstock. On approaching the tailstock sleeve, the tool is positioned straight and the thread can be cut.

Execution:

- **Ident. No. 060–080:** Comprising 1 steel tool holder, size 1, for 20 x 7 die; 1 adapter ring for 20 x 5 die; 1 size 1 holder for 16 x 5 die and each screw tap size; 1 size 1 arbour for either MT2 or MT3
- **Ident. No. 100–140:** Comprising 1 size 2 steel tool holder for 38 x 14 die; 1 adapter ring for 38 x 10 and 20 x 5 dies; 1 reducer for each die size 30 x 11/25 x 9/20 x 7; 1 size 2 arbour for either MT2, MT3 or MT4; ref. no. 120-140 also includes 1 additional size 2 holder for screw taps
- **Ident. No. 170:** Comprising 1 steel tool holder, size 3, for dies 45 x 18 and 55 x 22, 1 support ring for dies 45 x 14 and 55 x 16, 1 steel tool holder for screw taps, size 3, and arbor, size 3, with either Morse taper 3 or Morse taper 4

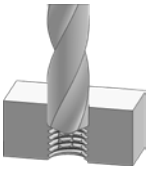
Advantage:

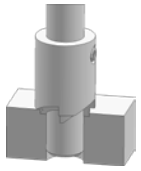
- Excellent value for money
- **Ident. No. 060–140:**
  - Broad range of applications for high user flexibility
  - User-friendly handling with short changeover times
- **Ident. No. 170:**
  - High user flexibility through broad range of applications
  - User-friendly handling and short retooling times

Suitable for mandrel size	Suitable for min./max. male thread size	Suitable for min./max. female thread size	Morse taper size of mandrel	13541... Ident. No.	
1	M1-M6	M1-M6	MK 2	060	●
1	M1-M6	M1-M6	MK 3	080	○
2	M3-M14	-	MK 3	100	●
2	M3-M14	M3-M16	MK 2	120	●
2	M3-M14	M3-M16	MK 3	130	●
2	M3-M14	M3-M16	MK 4	140	●
3	M16-M24	M4-M24	MK 3	170	○

Prod. Gr. 139

thread repair
for the production of pressure-tight and continuous duty thread





1. Drill the damaged thread down to the bottom. Note the drilling guidance!

5. Continue to turn the tool until the screw-in resistance is noticeably reduced again. This is the only way to ensure that the bushing is pressed into the threads of the workpiece.

advantages:

- ATORN thread repair bushings are designed for continuous high loads as well as frequent screwing and unscrewing.
- pressure-sealed for water, oil, other liquids and gases.
- secured against unscrewing without adhesive.
- the collar makes additional fixing in the workpiece unnecessary.
- also suitable for the food industry, available in stainless steel on request.
- can be used in the following materials: aluminium, brass, steel and cast iron materials.

Thread repair

Design:

Thread inserts are formed into a helix from rhombic-profiled stainless steel wire. This results in wear-resistant, corrosion-resistant and heat-resistant threads with narrow tolerances.

Application: ideal for

- **Thread reinforcement** in materials with low shear strength
- **Repairing** damaged and worn-out threads
- **Scrap recycling**

Important: Thread insert at least ¼ turn below the workpiece top surface and seated only in fully cut thread.

Installation:

1. Drill the tapping hole for the insert

2. Cut the adapter thread

3. Screw in the thread insert

4. Break the threaded pin

HELICOIL® Plus made by BÖLLHOFF — Thread repair assortment box M5 to M12

For repairs or reinforcement of threads

Application:
For thread reinforcement in materials with low shear resistance, for repairing damaged and worn threads and for scrap recovery.

Execution:
- 230-part set containing 20x M5/M6, 10x M8/M10/M12, in 1xD/1.5xD/2.0xD and 5 x HSS twist drill, HSS screw tap, turning tool and pin breaker made from high-strength steel. Thread inserts made from rhombically profiled stainless steel wire formed in a helix

Advantage:
- Broad assortment covers a broad range of machining applications
- High-quality and durable insert, user-friendly handling
- Corrosion-resistant and heat-resistant, non-wearing, scrap recovery, even load distribution and tension distribution

Technical data:
- Suitable for screw thread: M5-M12

13568...	Ident. No.	050
		●

Prod. Gr. 153

HELICOIL® Plus made by BÖLLHOFF — Thread repair set, metric

For repairs or reinforcement of threads

Application:
For thread reinforcement in materials with low shear resistance, for repairing damaged and worn threads and for scrap recovery.

Execution:
- Repair set for thread size 20 x M4/M5/M6 or 10 x M8/M10/M12, in 1 x D/1.5 x D/2.0 x D and HSS twist drill, HSS screw tap, turning tool and pin breaker made from high-strength steel

Advantage:
- Corrosion-resistant and heat-resistant, non-wearing, scrap recovery, even load distribution and tension distribution
- Broad assortment covers a broad range of machining applications
- High-quality and durable insert, user-friendly handling

Suitable for screw thread	13561... Ident. No.	
M4	004	●
M5	005	●
M6	006	●
M8	008	●
M10	010	●
M12	012	●
M16	016	●

Prod. Gr. 153

HELICOIL® Plus made by BÖLLHOFF — Taps

For cutting threads in Helicoil inserts

Application:
Very well suited for cutting Helicoil threads in through holes and blind holes, in steel, non-ferrous metals and (cast iron) material groups, up to a strength of 1000 N/mm² in small batch numbers.

Execution:
- Precision-ground, right-hand Helicoil screw tap with protruding shank

Advantage:
- Innovative cutting geometry ensures very high dimensional accuracy, process reliability and chip removal
- High-quality cutting material and cutting edge treatment for very high service life requirements
- Cutting geometry optimised for Helicoil inserts

Suitable for screw thread	Helicoil pilot hole Ø (mm)	13563... Ident. No.	
M4	4.2	040	●
M5	5.2	050	●

Suitable for screw thread	Helicoil pilot hole Ø (mm)	13563... Ident. No.	
M6	6.3	060	●
M8	8.4	080	●

Source: Hahn+Kolb Werkzeuge GmbH
Technical data subject to change.
Availability subject to country specific rules and regulations.

Suitable for screw thread	Helicoil pilot hole Ø (mm)	13563... Ident. No.	
M10	10.5	100	●
M12	12.5	120	●
M16	16.5	160	●
M20	20.75	201	●

Suitable for screw thread	Helicoil pilot hole Ø (mm)	13563... Ident. No.	
M10 x 1	10.2	101	●
M12 x 1.25	12.25	121	●
M14 x 1.25	14.25	141	●

Prod. Gr. 153

HELICOIL® Plus made by BÖLLHOFF — Installation mandrel

For screwing in Helicoil inserts

Application:
For screwing in Helicoil threads.

Execution:
- Installation mandrel made from high-quality steel

Advantage:
- High-quality burnished steel ensures a high level of wear protection
- Screw-in geometry optimised for Helicoil

Suitable for screw thread	13562... Ident. No.	
M4	040	●
M5	050	●
M6	060	●
M8	080	●
M10	100	●
M10 x 1	101	●

Suitable for screw thread	13562... Ident. No.	
M12	120	●
M12 x 1.25	121	●
M14 x 1.25	141	●
M16	160	●
M20	200	●

Prod. Gr. 153

HELICOIL® Plus made by BÖLLHOFF — Tang break-off tool

For breaking off pin on Helicoil

Execution:
- Tang break-off tool made from high-strength steel

Suitable for screw thread	13561... Ident. No.	
M4	040	●
M5-M6	055	●
M8	080	●

Suitable for screw thread	13561... Ident. No.	
M10	100	●
M12	120	●

Prod. Gr. 153

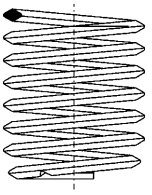
HELICOIL® Plus made by BÖLLHOFF — Metric thread inserts

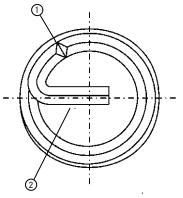
For repairs or reinforcement of threads

Application:
For thread reinforcement in materials with low shear resistance, for repairing damaged and worn threads and for scrap recovery.

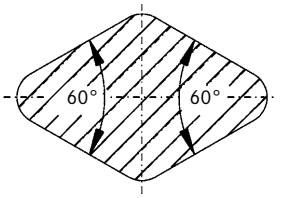
Execution:
- Made from corrosion-proof and rhombically profiled chrome-nickel steel wire

Advantage:
- High-quality and durable insert, user-friendly handling
- Corrosion-resistant and heat-resistant, non-wearing, scrap recovery, even load distribution and tension distribution





① Notch, ② Threaded pin



Wire cross section

Suitable for screw thread	Helicoil thread depth	Min. core hole depth (mm)	Effective thread length (mm)	13562... Ident. No.	
M4	1xD	7.8	3.3	220	●
M4	1.5xD	9.8	5.3	221	●
M4	2xD	11.8	7.3	222	●
M5	1xD	9.2	4.2	230	●
M5	1.5xD	11.7	6.7	231	●
M5	2xD	14.2	9.2	232	●
M6	1xD	11.1	5	240	●
M6	1.5xD	14.1	8	241	●
M6	2xD	17.1	11	242	●
M8	1xD	14.2	6.8	250	●
M8	1.5xD	18.2	10.8	251	●
M8	2xD	22.2	14.4	252	●

Suitable for screw thread	Helicoil thread depth	Min. core hole depth (mm)	Effective thread length (mm)	13562... Ident. No.	
M10	1xD	17.3	8.5	260	●
M10	1.5xD	22.3	13.5	261	●
M10	2xD	27.3	18.5	262	●
M12	1xD	20.3	10.3	270	●
M12	1.5xD	26.3	16.3	271	●
M12	2xD	32.3	22.3	272	●
M16	1xD	25.3	14	280	●
M16	1.5xD	33.3	22	281	●
M16	2xD	41.3	30	282	●
M20	1xD	31.2	17.5	290	●
M20	1.5xD	41.2	37.5	291	●

Prod. Gr. 153

HELICOIL® Plus made by BÖLLHOFF — Thread inserts for spark plug threads

For repair of spark plug threads

Application:
For repairing spark plug threads.

Execution:
- Made from corrosion-proof and rhombically profiled chrome-nickel steel wire

Advantage:
- High-quality and durable insert, user-friendly handling
- Corrosion-resistant and heat-resistant, non-wearing, scrap recovery, even load distribution and tension distribution

Suitable for screw thread		M10 x 1	M12 x 1.25	M12 x 1.25	M14 x 1.25
Effective thread length (mm)		10	12	18	16.4
13562...	Ident. No.	110	111	112	113
		●	●	●	●

Prod. Gr. 153

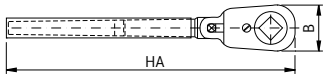
bilz Ratchet, single arm

For holding screw taps and hand reamers

Application:
For thread cutting or reaming during assembly in hard-to-reach areas, right-hand and left-hand.

Execution:
- Ratchet tools with control lever on the head, made from steel for high stability requirements

Advantage:
- Standard design with very good price/performance ratio
- User-friendly handling and short retooling times
- Highly compact, robust design
- Thread cutting and reaming even in hard-to-reach areas



Ratchet size	Suitable for min./max. square socket size	B (mm)	H (mm)	HA (mm)	Max. torque (Nm)	13553... Ident. No.	
00	2-8 mm	20	8	115	40	003	●
0	3.4-11 mm	29	11	155	100	005	●
1	4.9-14.5 mm	37	17	175	130	010	●
2	10-18 mm	45	22	220	180	020	●
3	14-22 mm	56	28	300	400	030	●
4	18-30 mm	70	34	380	500	040	●
5	25-46 mm	100	38	550	800	050	●

Prod. Gr. 136

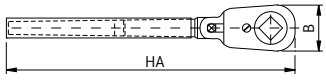
bilz Ratchet, single arm

For holding screw taps and hand reamers

Application:
For thread cutting or reaming during assembly in hard-to-reach areas, right-hand and left-hand.

Execution:
- Ratchet tool with integrated switchover in handle, made from high-quality hardened steel for maximum stability requirements

Advantage:
- High-quality design for high service life requirement
- User-friendly handling and short retooling times
- Form-locking of switching direction (right, left, neutral) to prevent uncontrolled changing of the switching direction
- Extremely robust design with hardened components



Ratchet size	Suitable for min./max. square socket size	B (mm)	H (mm)	HA (mm)	Max. torque (Nm)	13553... Ident. No.	
0	3.4-11 mm	29	11	165	100	105	○
1	4.9-14.5 mm	37	17	200	130	110	○
2	10-18 mm	45	22	240	180	120	●
3	14-22 mm	56	28	300	400	130	○
4	18-30 mm	70	34	380	500	140	○

Prod. Gr. 136

bilz Square insert

For ratchet tools, single arm

Application:
For use in ratchet tool no. 13553.

Execution:
- Square insert made from high-quality steel

Advantage:
- High-quality steel with very good wear characteristics
- User-friendly handling and short retooling times

Suitable for ratchet size	Square socket size (mm)	Outer Ø (mm)	Number of teeth (PCS)	13555... Ident. No.	
00	2.1	16	16	294	○
00	2.7	16	16	300	●
00	3	16	16	303	○
00	3.4	16	16	306	●
00	4	16	16	313	○
00	4.9	16	16	321	●
00	5.5	16	16	327	●
00	6.2	16	16	330	●
00	7	16	16	336	●
00	8	16	16	339	●
0	3.4	22	16	243	●
0	4.9	22	16	261	●
0	5.5	22	16	267	●
0	6.2	22	16	273	●
0	7	22	16	279	●
0	8	22	16	282	●
0	9	22	16	285	●
0	10	22	16	288	●
0	11	22	16	291	●
1	4.9	29	18	342	●
1	5.5	29	18	348	●
1	6.2	29	18	354	●
1	7	29	18	360	●
1	8	29	18	363	●
1	9	29	18	366	●

Suitable for ratchet size	Square socket size (mm)	Outer Ø (mm)	Number of teeth (PCS)	13555... Ident. No.	
1	10	29	18	369	●
1	11	29	18	372	●
1	12	29	18	375	●
1	13	29	18	378	●
1	14	29	18	381	●
2	10	36	18	387	●
2	11	36	18	390	●
2	12	36	18	393	●
2	13	36	18	396	●
2	14	36	18	399	●
2	14.5	36	18	402	●
2	16	36	18	408	●
2	17	36	18	411	●
3	14	45	18	417	●
3	16	45	18	426	○
3	17	45	18	429	●
3	18	45	18	432	●
3	19	45	18	435	●
3	20	45	18	438	●
3	22	45	18	444	●
4	20	60	18	453	○
4	22	60	18	456	●
4	24	60	18	459	●
5	36	85	18	495	●

Prod. Gr. 136

Universal ratchet tool set

In metal case

Application:
For thread cutting and reaming in hard-to-reach areas during assembly and repair work.

Execution:
- Square insert made from high-quality steel

Advantage:
- High-quality steel with very good wear characteristics
- User-friendly handling and short retooling times

Composition of set		1 universal ratchet tool, size 00, 1 screwdriver and ratchet tool inserts with square 2.1/2.7/3/3.4/4.9/5.5/6.2/7/8	1 each of universal ratchet tool, size 0, 1 screwdriver and ratchet tool inserts with square 3.4/4.9/5.5/6.2/7/8/9/11
13557...	Ident. No.	410	420
		●	●

Prod. Gr. 136

Fixed ball-type tap wrench

For holding screw taps and reamers

Application:
For mounting screw taps and reamers with square.

Execution:
- Steel tool holder with screw-off arm and 4 square holes to DIN 10

Advantage:
- High-quality steel with very good wear characteristics and chromium-plated extensions for high corrosion resistance
- User-friendly handling and short retooling times
- Excellent value for money

Tap wrench size	Square size	Min./max. thread-cutting area, metric	Min./max. thread-cutting area, imperial	Length (mm)	13545... Ident. No.	
0	2.1 mm/2.7 mm/3 mm/3.4 mm	1-4 mm	1/16-5/32 in	170	005	●
1	3 mm/3.4 mm/4.3 mm/4.9 mm	3.5-8 mm	5/32-5/16 in	195	010	●
2	3.4 mm/4.3 mm/4.9 mm/5.5 mm	4-10 mm	5/32-3/8 in	240	020	●
3	4.9 mm/5.5 mm/6.2 mm/7 mm	5-12 mm	3/16-1/2 in	290	030	●
4	5.5 mm/6.2 mm/7 mm/9 mm	10-16 mm	3/8-5/8 in	220	040	●

Prod. Gr. 109

Adjustable tap wrench, round version

for holding screw taps and reamers

Application:
For mounting very small screw taps and reamers with square.

Execution:
- Plastic tool holders with hardened steel jaws

Advantage:
- Ergonomic design for delicate, precise operations
- Hardened clamping jaws ensure low wear
- Highly compact, robust design

Suitable for square socket size (mm)		2.4
Min./max. thread-cutting area, metric		1-2.6 mm
Min./max. thread-cutting area, imperial		1/16-3/32 in
13547...	Ident. No.	010
		●

Prod. Gr. 139

ORION® Adjustable tap wrench

For holding screw taps and reamers, with removable handle

Application:
For mounting screw taps and reamers with square.

Execution:
- **No. 13549:** Housing, size 0-5 made from die-cast zinc, steel jaws ground and hardened with screw-off and galvanised arm with knurling for moderate requirements
- **No. 13551:** Housing, size 1-2, made from forged steel, size 3-7/8, welded solid steel design, steel jaws ground and hardened, screw-off and galvanised arm with knurling for very high requirements

Advantage:
- User-friendly handling and short retooling times
- **No. 13549:**
  - Die-cast zinc ensures excellent value for money
  - Highly compact, robust design
- **No. 13551:**
  - Safe work even using high forces
  - Knurling ensures safe work, even with severe contamination

No. 13549

No. 13551

Tap wrench size	Suitable for min./max. square socket size	Min./max. reamer cutting range	Min./max. thread-cutting area, metric	Length (mm)	13549... Ident. No.		13551... Ident. No.	
0	2-5 mm	3-6 mm	1-8 mm	125	005	●	-	-
1	2-6 mm	3-7 mm	1-10 mm	180	010	●	010	●
1 1/2	2-8 mm	3-9 mm	1-12 mm	200	015	●	-	-
2	4-9 mm	5-9 mm	4-12 mm	280	020	●	020	●
3	4.9-12 mm	7-15 mm	5-20 mm	375	030	●	030	●
4	5.5-16 mm	7-21 mm	9-27 mm	480	040	●	040	●
5	7-20 mm	9-26 mm	12-33 mm	700	050	●	050	●
6	9-25 mm	16-30 mm	20-42 mm	960	-	-	060	●
7 | 8	16-44 mm	20-50 mm	27-86 mm	1200	-	-	070	●

Prod. Gr. 109

ORION® Thread-cutting die holder with manual clamp

For holding thread-cutting dies

Application:
For mounting closed and/or slotted dies to DIN EN 22568 and DIN EN 24231.

Execution:
- Housing, size 0-12, made from die-cast zinc, size 13-17, made from steel and from size 7 with screw-off arm

Advantage:
- User-friendly handling and short retooling times
- Knurling ensures safe work, even with severe contamination

Die holder size	Min./max. thread-cutting area, metric	Suitable for die size	Min./max. thread-cutting area, metric fine	Length (mm)	13559... Ident. No.	
0	1-2.6 mm	16 x 5 mm	-	160	005	●
1	27-36 mm	20 x 5 mm	3-4 mm	180	010	●
2	4.5-6 mm	20 x 7 mm	4.5-6 mm	180	020	●
3	7-9 mm	25 x 9 mm	7-9 mm	210	030	●
4	10-11 mm	30 x 11 mm	10-11 mm	270	040	●
5	-	38 x 10 mm	12-15 mm	310	050	●
6	10-14 mm	38 x 14 mm	-	310	060	●
7	-	45 x 14 mm	16-20 mm	440	070	●
8	10-23 mm	45 x 18 mm	-	440	080	●
9	-	55 x 16 mm	22-25 mm	490	090	●
10	22-24 mm	55 x 22 mm	-	490	100	●
11	-	65 x 18 mm	26-36 mm	630	110	●
12	27-36 mm	65 x 25 mm	-	630	120	●
13	-	75 x 20 mm	38-42 mm	900	130	●
14	39-42 mm	75 x 30 mm	-	900	140	●
15	-	90 x 22 mm	45-52 mm	920	150	●
16	45-52 mm	90 x 36 mm	-	920	160	●
17	-	105 x 22 mm	55-62 mm	1100	170	●

Prod. Gr. 109

core hole diameter for thread cutting and thread milling
standard metric ISO thread DIN 13

nominal dia.	pitch P	core hole (drill) Ø DIN 336	core dia. female thread 6H*	
	mm	mm	min. mm	max. mm
M 1	0,25	0,75	0,729	0,785
M 1.1	0,25	0,85	0,829	0,885
M 1.2	0,25	0,95	0,929	0,985
M 1.4	0,30	1,10	1,075	1,142
M 1.6	0,35	1,25	1,221	1,321
M 1.8	0,35	1,45	1,421	1,521
M 2	0,40	1,60	1,567	1,679
M 2.2	0,45	1,75	1,713	1,838
M 2.5	0,45	2,05	2,013	2,138
M 3	0,50	2,50	2,459	2,599
M 3.5	0,60	2,90	2,850	3,010
M 4	0,70	3,30	3,242	3,422
M 4.5	0,75	3,70	3,688	3,878
M 5	0,80	4,20	4,134	4,334
M 6	1,00	5,00	4,917	5,153
M 7	1,00	6,00	5,917	6,153
M 8	1,25	6,80	6,647	6,912
M 9	1,25	7,80	7,647	7,912
M 10	1,50	8,50	8,376	8,676

nominal dia.	pitch P	core hole (drill) Ø DIN 336	core dia. female thread 6H*	
	mm	mm	min. mm	max. mm
M 11	1,50	9,50	9,376	9,676
M 12	1,75	10,20	10,106	10,441
M 14	2,00	12,00	11,835	12,210
M 16	2,00	14,00	13,835	14,210
M 18	2,50	15,50	15,294	15,744
M 20	2,50	17,50	17,294	17,744
M 22	2,50	19,50	19,294	19,744
M 24	3,00	21,00	20,752	21,252
M 27	3,00	24,00	23,752	24,252
M 30	3,50	26,50	26,211	26,771
M 33	3,50	29,50	29,211	29,771
M 36	4,00	32,00	31,670	32,270
M 39	4,00	35,00	34,670	35,270
M 42	4,50	37,50	37,129	37,799
M 45	4,50	40,50	40,129	40,799
M 48	5,00	43,00	42,587	43,297
M 52	5,00	47,00	46,587	47,297
M 56	5,50	50,50	50,046	50,796

* M 1.1 to M 1.4 core dia. female thread 5H

core hole diameter for thread cutting and thread milling
metric ISO fine thread DIN 13

nominal dia. x pitch P	core hole (drill) Ø DIN 336	core dia. female thread 6H	
mm	mm	min. mm	max. mm
M 2.5 x 0.35	2,15	2,121	2,221
M 3.0 x 0.35	2,65	2,621	2,721
M 3.5 x 0.35	3,15	3,121	3,221
M 4.0 x 0.50	3,50	3,459	3,599
M 4.5 x 0.50	4,00	3,959	4,099
M 5.0 x 0.50	4,50	4,459	4,599
M 5.5 x 0.50	5,00	4,959	5,099
M 6.0 x 0.75	5,20	5,188	5,378
M 7.0 x 0.75	6,20	6,188	6,378
M 8.0 x 0.50	7,50	7,459	7,599
M 8.0 x 0.75	7,20	7,188	7,378
M 8.0 x 1.00	7,00	6,917	7,153
M 9.0 x 0.75	8,20	8,188	8,378
M 9.0 x 1.00	8,00	7,917	8,153
M 10 x 0.75	9,20	9,188	9,378
M 10 x 1.00	9,00	8,917	9,153
M 10 x 1.25	8,80	8,647	8,912
M 11 x 0.75	10,20	10,188	10,378
M 11 x 1.00	10,00	9,917	10,153
M 12 x 1.00	11,00	10,917	11,153
M 12 x 1.25	10,80	10,647	10,912
M 12 x 1.50	10,50	10,376	10,676
M 14 x 1.00	13,00	12,917	13,153
M 14 x 1.25	12,80	12,647	12,912
M 14 x 1.50	12,50	12,376	12,676
M 15 x 1.00	14,00	13,917	14,153
M 15 x 1.50	13,50	13,376	13,676
M 16 x 1.00	15,00	14,917	15,153
M 16 x 1.25	14,80	14,647	14,912
M 16 x 1.50	14,50	14,376	14,676
M 17 x 1.00	16,00	15,917	16,153
M 17 x 1.50	15,50	15,376	15,676

nominal dia. x pitch P	core hole (drill) Ø DIN 336	core dia. female thread 6H	
mm	mm	min. mm	max. mm
M 18 x 1.00	17,00	16,917	17,153
M 18 x 1.50	16,50	16,376	16,676
M 20 x 1.00	19,00	18,917	19,153
M 20 x 1.50	18,50	18,376	18,676
M 20 x 2.00	18,00	17,835	18,210
M 22 x 1.00	21,00	20,917	21,153
M 22 x 1.50	20,50	20,376	20,676
M 22 x 2.00	20,00	19,835	20,210
M 24 x 1.00	23,00	22,917	23,153
M 24 x 1.50	22,50	22,376	22,676
M 24 x 2.00	22,00	21,835	22,210
M 25 x 1.00	24,00	23,917	24,153
M 25 x 1.50	23,50	23,376	23,676
M 25 x 2.00	23,00	22,835	23,210
M 27 x 1.00	26,00	25,917	26,153
M 27 x 1.50	25,50	25,376	25,676
M 27 x 2.00	25,00	24,835	25,210
M 28 x 1.00	27,00	26,917	27,153
M 28 x 1.50	26,50	26,376	26,676
M 28 x 2.00	26,00	25,835	26,210
M 30 x 1.00	29,00	28,917	29,153
M 30 x 1.50	28,50	28,376	28,676
M 30 x 2.00	28,00	27,835	28,210
M 30 x 3.00	27,00	26,752	27,252
M 32 x 1.50	30,50	30,376	30,676
M 32 x 2.00	30,00	29,835	30,210
M 33 x 1.50	31,50	31,376	31,676
M 33 x 2.00	31,00	30,835	31,210
M 33 x 3.00	30,00	29,752	30,252
M 35 x 1.50	33,50	33,376	33,676
M 36 x 1.50	34,50	34,376	34,676

core hole diameter for thread cutting and thread milling
UNC thread ASME B1.1

Source: Hahn+Kolb Werkzeuge GmbH
Technical data subject to change.
Availability subject to country specific rules and regulations.

nominal dia.	gear per inch	core hole (drill) Ø DIN 336 mm	core dia. female thread 2B min. mm	core dia. female thread 2B max. mm
No. 1-64		1,55	1,425	1,580
No. 2-56		1,85	1,694	1,872
No. 3-48		2,10	1,941	2,146
No. 4-40		2,35	2,157	2,385
No. 5-40		2,65	2,487	2,698
No. 6-32		2,85	2,642	2,896
No. 8-32		3,50	3,302	3,531
No. 10-24		3,90	3,683	3,937
No. 12-24		4,50	4,343	4,597
1/4-20		5,10	4,978	5,258
5/16-18		6,60	6,401	6,731
3/8-16		8,00	7,798	8,153
7/16-14		9,40	9,144	9,550

nominal dia.	gear per inch	core hole (drill) Ø DIN 336 mm	core dia. female thread 2B min. mm	core dia. female thread 2B max. mm
1/2-13		10,80	10,592	11,024
9/16-12		12,20	11,989	12,446
5/8-11		13,50	13,386	13,868
3/4-10		16,50	16,307	16,840
7/8-9		19,50	19,177	19,761
1-8		22,25	21,971	22,606
1 1/8-7		25,00	24,638	25,349
1 1/4-7		28,00	27,813	28,524
1 3/8-6		30,75	30,353	31,115
1 1/2-6		34,00	33,528	34,290
1 3/4-5		39,50	38,938	39,802
2-4.5		45,00	44,679	45,593

core hole diameter for thread cutting and thread milling
MJ thread DIN ISO 5855

nominal dia. x pitch P mm	core hole (drill) dia. mm	core dia. female thread 5H* min. mm	core dia. female thread 5H* max. mm
MJ 3 x 0.50	2,60	2,513	2,653
MJ 4 x 0.70	3,40	3,318	3,498
MJ 5 x 0.80	4,30	4,221	4,421
MJ 6 x 0.50	5,55	5,513	5,625
MJ 6 x 0.75	5,35	5,269	5,419
MJ 6 x 1.00	5,10	5,026	5,216
MJ 8 x 0.50	7,55	7,513	7,625
MJ 8 x 0.75	7,35	7,269	7,419

nominal dia. x pitch P mm	core hole (drill) dia. mm	core dia. female thread 5H* min. mm	core dia. female thread 5H* max. mm
MJ 8 x 1.00	7,10	7,026	7,216
MJ 8 x 1.25	6,90	6,782	6,994
MJ 10 x 1.00	9,10	9,026	9,216
MJ 10 x 1.25	8,90	8,782	8,994
MJ 10 x 1.50	8,60	8,539	8,775
MJ 12 x 1.75	10,40	10,295	10,560
MJ 16 x 2.00	14,20	14,051	14,351

* MJ 3 x 0.50 to MJ 5 x 0.80 core dia. female thread 6H

core hole diameter for thread cutting and thread milling
UNJC thread ISO 3161

nominal dia.	gear per inch	core hole (drill) dia. mm	core dia. female thread 3B min. mm	core dia. female thread 3B max. mm
No. 6-32		2,85	2,733	2,939
No. 8-32		3,55	3,393	3,599
No. 10-24		4,00	3,795	4,064
No. 12-24		4,60	4,455	4,704
No. 1/4-20		5,30	5,113	5,387
5/16-18		6,75	6,563	6,833

nominal dia.	gear per inch	core hole (drill) dia. mm	core dia. female thread 3B min. mm	core dia. female thread 3B max. mm
3/8-16		8,20	7,978	8,255
7/16-14		9,60	9,346	9,639
1/2-13		11,00	10,798	11,095
9/16-12		12,40	12,228	12,482
5/8-11		13,80	13,627	13,904

core hole diameter for thread cutting and thread milling
UNJF thread ISO 3161

nominal dia.	gear per inch	core hole (drill) dia. mm	core dia. female thread 3B min. mm	core dia. female thread 3B max. mm
No. 6-40		3,00	2,888	3,053
No. 8-36		3,60	3,480	3,663
No. 10-32		4,20	4,054	4,255
No. 12-28		4,75	4,602	4,816
No. 1/4-28		5,60	5,466	5,662
5/16-24		7,00	6,906	7,109

nominal dia.	gear per inch	core hole (drill) dia. mm	core dia. female thread 3B min. mm	core dia. female thread 3B max. mm
3/8-24		8,60	8,494	8,679
7/16-20		10,00	9,876	10,084
1/2-20		11,60	11,463	11,661
9/16-18		13,00	12,913	13,122
5/8-18		14,60	14,501	14,702

core hole diameter for thread cutting and thread milling
UNF thread ASME B1.1

nominal dia.	gear per inch	core hole (drill) Ø DIN 336 mm	core dia. female thread 2B min. mm	core dia. female thread 2B max. mm
No. 1-72		1,55	1,473	1,610
No. 2-64		1,85	1,755	1,910
No. 3-56		2,15	2,024	2,197
No. 4-48		2,40	2,271	2,459
No. 5-44		2,70	2,550	2,741
No. 6-40		2,95	2,819	3,023

nominal dia.	gear per inch	core hole (drill) Ø DIN 336 mm	core dia. female thread 2B min. mm	core dia. female thread 2B max. mm
7/16-20		9,90	9,728	10,033
1/2-20		11,50	11,328	11,608
9/16-18		12,90	12,751	13,081
5/8-18		14,50	14,351	14,681
3/4-16		17,50	17,323	17,678
7/8-14		20,40	20,269	20,650

nominal dia.	gear	core hole (drill) Ø DIN 336	core dia. female thread 2B	
	per inch	mm	min. mm	max. mm
No. 8-36		3,50	3,404	3,607
No. 10-32		4,10	3,962	4,166
No. 12-28		4,60	4,496	4,724
1/4-28		5,50	5,359	5,588
5/16-24		6,90	6,782	7,036
3/8-24		8,50	8,382	8,636

nominal dia.	gear	core hole (drill) Ø DIN 336	core dia. female thread 2B	
	per inch	mm	min. mm	max. mm
1-12		23,25	23,114	23,571
1 1/8-12		26,50	26,289	26,746
1 1/4-12		29,50	29,464	29,921
1 3/8-12		32,75	32,639	33,096
1 1/2-12		36,00	35,814	36,271

core hole diameter for thread cutting and thread milling
BSW (Whitworth) thread BS84

nominal dia.	gear	core hole (drill) dia.	core dia. female thread	
	per inch	mm	min. mm	max. mm
W 1/16	60	1,20	1,045	1,230
W 3/32	48	1,80	1,704	1,912
W 1/8	40	2,50	2,362	2,591
W 5/32	32	3,20	2,952	3,214
W 3/16	24	3,60	3,407	3,745
W 7/32	24	4,50	4,201	4,539
W 1/4	20	5,10	4,724	5,156
W 5/16	18	6,50	6,130	6,590
W 3/8	16	7,90	7,492	7,987
W 7/16	14	9,20	8,789	9,330
W 1/2	12	10,50	9,989	10,591
W 9/16	12	12,00	11,577	12,179

nominal dia.	gear	core hole (drill) dia.	core dia. female thread	
	per inch	mm	min. mm	max. mm
W 5/8	11	13,50	12,918	13,558
W 3/4	10	16,25	15,797	16,483
W 7/8	9	19,25	18,611	19,353
W 1	8	22,00	21,334	22,147
W 1 1/8	7	24,50	23,928	24,832
W 1 1/4	7	27,75	27,103	28,007
W 1 3/8	6	30,50	29,504	30,528
W 1 1/2	6	33,50	32,679	33,703
W 1 5/8	5	35,50	34,769	35,963
W 1 3/4	5	39,00	37,944	39,138
W 2	4,5	44,50	43,571	44,877

core hole diameter for thread cutting and thread milling
(Whitworth) pipe thread (in accordance with DIN ISO 228-1)

nominal dia.	gear	core hole (drill) Ø DIN 336	core dia. female thread	
	per inch	mm	min. mm	max. mm
G 1/16	28	6,80	6,561	6,843
G 1/8	28	8,80	8,566	8,848
G 1/4	19	11,80	11,445	11,890
G 3/8	19	15,25	14,950	15,395
G 1/2	14	19,00	18,631	19,172
G 5/8	14	21,00	20,587	21,128
G 3/4	14	24,50	24,117	24,658

nominal dia.	gear	core hole (drill) Ø DIN 336	core dia. female thread	
	per inch	mm	min. mm	max. mm
G 7/8	14	28,25	27,877	28,418
G 1	11	30,75	30,291	30,931
G 1 1/8	11	35,50	34,939	35,579
G 1 1/4	11	39,50	38,952	39,592
G 1 1/2	11	45,25	44,845	45,485
G 1 3/4	11	51,00	50,788	51,428
G 2	11	57,00	56,656	57,296

core hole diameter for thread cutting and thread milling
steel-armoured pipe thread according to DIN 40430

nominal dia.	gear	core hole (drill) dia.	core dia. female thread	
	per inch	mm	min. mm	max. mm
Pg 7	20	11,40	11,280	11,430
Pg 9	18	14,00	13,860	14,010
Pg 11	18	17,30	17,260	17,410
Pg 13.5	18	19,00	19,060	19,210
Pg 16	18	21,30	21,160	21,310

nominal dia.	gear	core hole (drill) dia.	core dia. female thread	
	per inch	mm	min. mm	max. mm
Pg 21	16	26,90	26,780	27,030
Pg 29	16	35,50	35,480	35,730
Pg 36	16	45,50	45,480	45,730
Pg 42	16	52,50	52,480	52,730
Pg 48	16	57,80	57,780	58,030

core hole diameter for thread cutting and thread milling
EG thread metr./metr. fine (EG M 14 x 1.25) for thread inserts DIN 8140

nominal dia.	pitch P	core hole (drill) dia.	core dia. female thread	
	mm	mm	min. mm	max. mm
EG M 4	0,70	4,20	4,152	4,292
EG M 5	0,80	5,25	5,174	5,334
EG M 6	1,00	6,30	6,217	6,407
EG M 8	1,25	8,40	8,271	8,483

nominal dia.	pitch P	core hole (drill) dia.	core dia. female thread	
	mm	mm	min. mm	max. mm
EG M 10	1,50	10,50	10,324	10,560
EG M 12	1,75	12,50	12,379	12,644
EG M 14	1,25	14,40	14,271	14,483
EG M 16	2,00	16,50	16,433	16,733

core hole diameter for thread cutting and thread milling
EG UNC (UNC-STI) thread for threaded wire inserts ASME B18.29.1

Source: Hahn+Kolb Werkzeuge GmbH
Technical data subject to change.
Availability subject to country specific rules and regulations.

nominal dia.	gear per inch	core hole (drill) dia. mm	core dia. female thread min. mm	core dia. female thread max. mm
EG no. 6-32		3,80	3,678	3,879
EG no. 8-32		4,40	4,338	4,524
EG no. 10-24		5,20	5,055	5,283
EG no. 12-24		5,80	5,715	5,944
EG 1/4-20		6,70	6,624	6,868
EG 5/16-18		8,40	8,242	8,489

nominal dia.	gear per inch	core hole (drill) dia. mm	core dia. female thread min. mm	core dia. female thread max. mm
EG 3/8-16		10,00	9,868	10,127
EG 7/16-14		11,60	11,506	11,783
EG 1/2-13		13,30	13,122	13,393
EG 9/16-12		14,90	14,747	15,032
EG 5/8-11		16,50	16,375	16,673

core hole diameter for thread cutting and thread milling
EG UNF (UNF-STI) thread for thread wire inserts ASME B18.29.1

nominal dia.	gear per inch	core hole (drill) dia. mm	core dia. female thread min. mm	core dia. female thread max. mm
EG no. 6-40		3,70	3,644	3,818
EG no. 8-36		4,40	4,321	4,498
EG no. 10-32		5,10	4,999	5,184
EG no. 12-28		5,70	5,682	5,809
EG 1/4-28		6,60	6,546	6,721
EG 5/16-24		8,25	8,166	8,352

nominal dia.	gear per inch	core hole (drill) dia. mm	core dia. female thread min. mm	core dia. female thread max. mm
EG 3/8-24		9,80	9,754	9,931
EG 7/16-20		11,50	11,389	11,585
EG 1/2-20		13,10	12,974	13,172
EG 9/16-18		14,70	14,592	14,798
EG 5/8-18		16,25	16,180	16,386

core hole diameter for thread cutting and thread milling
NPT ANSI B 2.1 Americ. tapered pipe thread, taper 1:16

nominal dia.	gear per inch	core hole dia. cylindr. (A) d_1	core hole dia. conical (B) D_1	incision depth ET mm	drilling depth BT min. mm
1/16-27		6,15	6,39	9,29	10,7
1/8-27		8,40	8,74	9,32	10,8
1/4-18		11,10	11,36	13,52	15,6
3/8-18		14,30	14,80	13,83	16,0
1/2-14		17,90	18,32	18,07	20,8
3/4-14		23,30	23,67	18,55	21,3

nominal dia.	gear per inch	core hole dia. cylindr. (A) d_1	core hole dia. conical (B) D_1	incision depth ET mm	drilling depth BT min. mm
1-11.5		29,00	29,69	22,29	25,6
1 1/4-11.5		37,70	38,45	22,80	26,1
1 1/2-11.5		43,70	44,52	22,80	26,1
2-11.5		55,60	56,56	23,20	26,5
2 1/2-8		66,30	67,62	31,75	36,3
3-8		82,30	83,52	33,74	38,5

recommended drill diameter for thread forming
metric ISO thread DIN 13

nominal dia.	pitch P mm	drilling dia. mm	drilling dia. min. mm	drilling dia. max. mm	core dia. female thread 7H* min. mm	core dia. female thread 7H* max. mm
M 1	0,25	0,90	0,89	0,92	0,729	0,819
M 1.2	0,25	1,10	1,09	1,12	0,929	1,019
M 1.4	0,30	1,28	1,27	1,30	1,075	1,181
M 1.6	0,35	1,46	1,45	1,48	1,221	1,346
M 1.7	0,35	1,56	1,55	1,58	1,321	1,446
M 1.8	0,35	1,66	1,65	1,68	1,421	1,546
M 2	0,40	1,85	1,84	1,88	1,567	1,679
M 2.2	0,45	2,00	2,01	2,05	1,713	1,838
M 2.5	0,45	2,30	2,28	2,32	2,013	2,138
M 3	0,50	2,80	2,78	2,85	2,459	2,639
M 3.5	0,60	3,25	3,23	3,30	2,850	3,050
M 4	0,70	3,70	3,68	3,76	3,242	3,466
M 4.5	0,75	4,20				
M 5	0,80	4,65	4,62	4,71	4,134	4,384
M 6	1,00	5,55	5,52	5,62	4,917	5,217
M 7	1,00	6,55	6,52	6,62	5,917	6,217
M 8	1,25	7,40	7,36	7,47	6,647	6,982

nominal dia.	pitch P mm	drilling dia. mm	drilling dia. min. mm	drilling dia. max. mm	core dia. female thread 7H* min. mm	core dia. female thread 7H* max. mm
M 9	1,25	8,40	8,36	8,47	7,647	7,982
M 10	1,50	9,30	9,26	9,38	8,376	8,751
M 11	1,50	10,30	10,26	10,38	9,376	9,751
M 12	1,75	11,20	11,15	11,29	10,106	10,531
M 14	2,00	13,10	13,05	13,20	11,835	12,310
M 16	2,00	15,10	15,05	15,20	13,835	14,310
M 18	2,50	16,90	16,83	17,02	15,294	15,854
M 20	2,50	18,90	18,83	19,02	17,294	17,854
M 22	2,50	20,90	20,83	21,02	19,294	19,854
M 24	3,00	22,70	22,62	22,80	20,752	21,382
M 27	3,00	25,70	25,62	25,80	23,752	24,382
M 30	3,50	28,50	28,40	28,60	26,211	26,921
M 33	3,50	31,50	31,40	31,60	29,211	29,921
M 36	4,00	34,30	34,17	34,40	31,670	32,420
M 39	4,00	37,30	37,17	37,40	34,670	35,420
M 42	4,50	40,10	39,95	40,20	37,129	37,979

* M 2 to M 2.5 core dia. female thread 6H

recommended drill diameter for thread forming
metric ISO fine thread DIN 13

nominal dia. x pitch P mm	drilling dia. mm	drilling dia. min. mm	drilling dia. max. mm	core dia. female thread 7H* min. mm	core dia. female thread 7H* max. mm
M 2.5 x 0.35	2,35	2,35	2,38	2,121	2,221
M 3 x 0.35	2,85	2,85	2,88	2,621	2,721
M 4 x 0.35	3,85	3,85	3,88	3,621	3,721
M 4 x 0.50	3,80	3,78	3,83	3,459	3,639

nominal dia.	drilling dia. mm	drilling dia. min. mm	drilling dia. max. mm	core dia. female thread 7H* min. mm	core dia. female thread 7H* max. mm
M 14 x 1.50	13,30	13,26	13,38	12,376	12,751
M 15 x 1.00	14,55	14,52	14,62	13,917	14,217
M 15 x 1.50	14,30	14,26	14,38	13,376	13,751
M 16 x 1.00	15,55	15,52	15,62	14,917	15,217

Source: Hahn+Kolb Werkzeuge GmbH
Technical data subject to change.
Availability subject to country specific rules and regulations.

nominal dia. x pitch P	drilling dia.	drilling dia.		core dia. female thread 7H*	
mm	mm	min. mm	max. mm	min. mm	max. mm
M 5 x 0.50	4,80	4,78	4,83	4,459	4,639
M 5.5 x 0.50	5,30	5,28	5,33	4,959	5,139
M 6 x 0.75	5,65	5,62	5,70	5,188	5,424
M 7 x 0.75	6,65	6,62	6,70	6,188	6,424
M 8 x 0.75	7,65	7,62	7,70	7,188	7,424
M 8 x 1.00	7,55	7,52	7,62	6,917	7,217
M 9 x 0.75	8,65	8,62	8,70	8,188	8,424
M 9 x 1.00	8,55	8,52	8,62	7,917	8,217
M 10 x 0.75	9,65	9,62	9,70	9,188	9,424
M 10 x 1.00	9,55	9,52	9,62	8,917	9,217
M 10 x 1.25	9,40	9,36	9,47	8,647	8,982
M 11 x 0.75	10,65	10,62	10,70	10,188	10,424
M 11 x 1.00	10,55	10,52	10,62	9,917	10,217
M 12 x 1.00	11,55	11,52	11,62	10,917	11,217
M 12 x 1.25	11,40	11,36	11,47	10,647	10,982
M 12 x 1.50	11,30	11,26	11,38	10,376	10,751
M 14 x 1.00	13,55	13,52	13,62	12,917	13,217
M 14 x 1.25	13,40	13,36	13,47	12,647	12,982

* M 2.5 x 0.35 to M 4 x 0.35 core dia. female thread 6H

nominal dia.	drilling dia.	drilling dia.		core dia. female thread 7H*	
	mm	min. mm	max. mm	min. mm	max. mm
M 16 x 1.50	15,30	15,26	15,38	14,376	14,751
M 17 x 1.00	16,55	16,52	16,62	15,917	16,217
M 17 x 1.50	16,30	16,26	16,38	15,376	15,751
M 18 x 1.00	17,55	17,52	17,62	16,917	17,217
M 18 x 1.50	17,30	17,26	17,38	16,376	16,751
M 18 x 2.00	17,10	17,05	17,20	15,835	16,310
M 20 x 1.00	19,55	19,52	19,62	18,917	19,217
M 20 x 1.50	19,30	19,26	19,38	18,376	19,751
M 24 x 1.00	23,55	23,52	23,62	22,917	23,217
M 24 x 1.50	23,30	23,26	23,38	22,376	22,751
M 24 x 2.00	23,10	23,05	23,20	21,835	22,310
M 27 x 1.50	26,30	26,26	26,38	25,376	25,751
M 30 x 1.50	29,30	29,26	29,38	28,376	28,751
M 33 x 1.50	32,30	32,26	32,38	31,376	31,751
M 36 x 1.50	35,30	35,26	35,38	34,376	34,751
M 39 x 1.50	38,30	38,26	38,38	37,376	37,751
M 42 x 1.50	41,30	41,26	41,38	42,376	42,751

recommended drill diameter for thread forming
UNC thread ASME B1.1

nominal dia.	gear	drilling dia.	drilling dia.		core dia. female thread 2B	
	per inch	mm	min. mm	max. mm	min. mm	max. mm
No. 1-64		1,68	1,67	1,70	1,425	1,580
No. 2-56		1,98	1,97	2,01	1,694	1,872
No. 3-48		2,28	2,27	2,32	1,941	2,146
No. 4-40		2,55	2,54	2,59	2,157	2,385
No. 5-40		2,90	2,89	2,94	2,487	2,698
No. 6-32		3,15	3,14	3,19	2,642	2,896
No. 8-32		3,80	3,78	3,82	3,302	3,531
No. 10-24		4,35	4,33	4,39	3,683	3,937
No. 12-24		5,00	4,97	5,03	4,343	4,597
1/4-20		5,75	5,72	5,80	4,978	5,258

nominal dia.	gear	drilling dia.	drilling dia.		core dia. female thread 7H*	
	per inch	mm	min. mm	max. mm	min. mm	max. mm
5/16-18		7,30	7,26	7,37	6,401	6,731
3/8-16		8,80	8,77	8,88	7,798	8,153
7/16-14		10,30	10,27	10,37	9,144	9,550
1/2-13		11,80	11,77	11,88	10,592	11,024
9/16-12		13,30	13,28	13,39	11,989	12,446
5/8-11		14,80	14,78	14,90	13,386	13,868
3/4-10		17,90	17,85	17,97	16,307	16,840
7/8-9		21,00	20,95	21,10	19,177	19,761
1-8		24,00	23,95	24,12	21,971	22,606

recommended drill diameter for thread forming
UNF thread ASME B1.1

nominal dia.	gear	drilling dia.	drilling dia.		core dia. female thread 2B	
	per inch	mm	min. mm	max. mm	min. mm	max. mm
No. 1-72		1,68	1,67	1,70	1,425	1,580
No. 2-64		1,98	1,97	2,01	1,694	1,872
No. 3-56		2,28	2,27	2,32	1,941	2,146
No. 4-48		2,55	2,54	2,59	2,157	2,385
No. 5-44		2,90	2,89	2,94	2,487	2,698
No. 6-40		3,15	3,14	3,19	2,642	2,896
No. 8-36		3,80	3,78	3,82	3,302	3,531
No. 10-32		4,35	4,33	4,39	3,683	3,937
No. 12-28		5,00	4,97	5,03	4,343	4,597
1/4-28		5,75	5,72	5,80	4,978	5,258

nominal dia.	gear	drilling dia.	drilling dia.		core dia. female thread 7H*	
	per inch	mm	min. mm	max. mm	min. mm	max. mm
5/16-24		7,30	7,26	7,37	6,401	6,731
3/8-24		8,80	8,77	8,88	7,798	8,153
7/16-20		10,30	10,27	10,37	9,144	9,550
1/2-20		11,80	11,77	11,88	10,592	11,024
9/16-18		13,30	13,28	13,39	11,989	12,446
5/8-18		14,80	14,78	14,90	13,386	13,868
3/4-16		17,90	17,85	17,97	16,307	16,840
7/8-14		21,00	20,95	21,10	19,177	19,761
1-12		24,00	23,95	24,12	21,971	22,606

recommended drill diameter for thread forming
(Whitworth) pipe thread G DIN EN ISO 228-1

nominal dia.	gear	drilling dia.	drilling dia.		core dia. female thread 2B	
	per inch	mm	min. mm	max. mm	min. mm	max. mm
G 1/16	28	7,30	7,28	7,35	6,561	6,843
G 1/8	28	9,30	9,28	9,35	8,566	8,848
G 1/4	19	12,50	12,48	12,55	11,445	11,890
G 3/8	19	16,00	15,98	16,05	14,950	15,395
G 1/2	14	20,00	19,98	20,12	18,631	19,172

nominal dia.	gear	drilling dia.	drilling dia.		core dia. female thread 7H*	
	per inch	mm	min. mm	max. mm	min. mm	max. mm
G 5/8	14	22,00	21,98	22,12	20,587	21,128
G 3/4	14	25,50	25,48	25,62	24,117	24,658
G 7/8	14	29,25	29,23	29,37	27,877	28,418
G 1	11	32,00	31,98	32,15	30,291	30,931
G 11/4	11	40,75	40,70	40,85	38,952	39,592

Source: Hahn+Kolb Werkzeuge GmbH
Technical data subject to change.
Availability subject to country specific rules and regulations.