



PRECISION TOOLS  
**catalogue**

2016/17



## Precision tools

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Metal processing can be fun: with high-grade tools that impress our customers with their quality.

In order to transform an ordinary material like steel into a precision tool, every stage of production requires the highest quality standards: from the careful selection of raw materials and the innovative development of cutting geometries for a range of applications, through to state-of-the-art production methods and continuous quality controls.

With the aim of turning metal into not just a tool, but a precision tool that bears the name of RUKO.



“AS A MANUFACTURER OF HIGH-GRADE  
PRECISION TOOLS, WE ENSURE QUALITY  
FROM THE RAW MATERIAL TO THE FINAL  
PRODUCT.”

FRANK STAUCH  
MANAGING DIRECTOR



# RUKO GmbH

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### Company history

RUKO OHG was founded in November 1974 in Böblingen. It was reorganised into RUKO GmbH Precision Tools in July 1980. At this time it also concentrated its activities on the manufacture of drilling and cutting tools.

Since November 1990 the headquarters of RUKO GmbH have been in Holzgerlingen (near Stuttgart). The modern building has a useful floor space of around 6800 m<sup>2</sup>. Around 1300 m<sup>2</sup> of this is head office space, 2400 m<sup>2</sup> is production space and 3100 m<sup>2</sup> stores.

The 28 fully-automated CNC grinding machines in Holzgerlingen used in production permit maximum precision in the manufacture of drills and cutters. This means that RUKO currently has one of the most up-to-date production methods in Europe.

The building in Kyjov has a useful floor space of around 3000 m<sup>2</sup>. 1000 m<sup>2</sup> of this is office space for the head office and 2000 m<sup>2</sup> is production space. The 15 CNC grinding machines used in production permit maximum precision in the manufacture of twist drills and thread-cutting tools.

### Quality as standard

The established RUKO quality has been confirmed once again with the DIN EN ISO 9001:2008 certificate for 2013-2016.

The RUKO quality system was first tested and certified according to DIN EN ISO 9001, the highest level of accreditation, in January 1998.

The DIN EN ISO 9001 system is based on not only perfect product quality, but also an integral quality concept in all corporate divisions.

Innovative strength, reliability and quality matched to the requirements of industry and craftsmen are the hallmarks of our corporate philosophy.

The special attention of the 120 employees in Holzgerlingen is aimed at our customers, because satisfied customers make us successful!





## Plant in Holzgerlingen

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### Productivity

RUKO has some of the most up-to-date machinery with a high production capacity. With the intention of achieving permanent increases in productivity, we are continually investing in the latest manufacturing technology and production plant. Fully-automatic CNC grinding centres, aided by CBN (cubic crystalline boron nitride) grinding techniques, permit maximum precision and repeatability in tool manufacture. This means that RUKO currently has one of the most up-to-date production methods in the world.

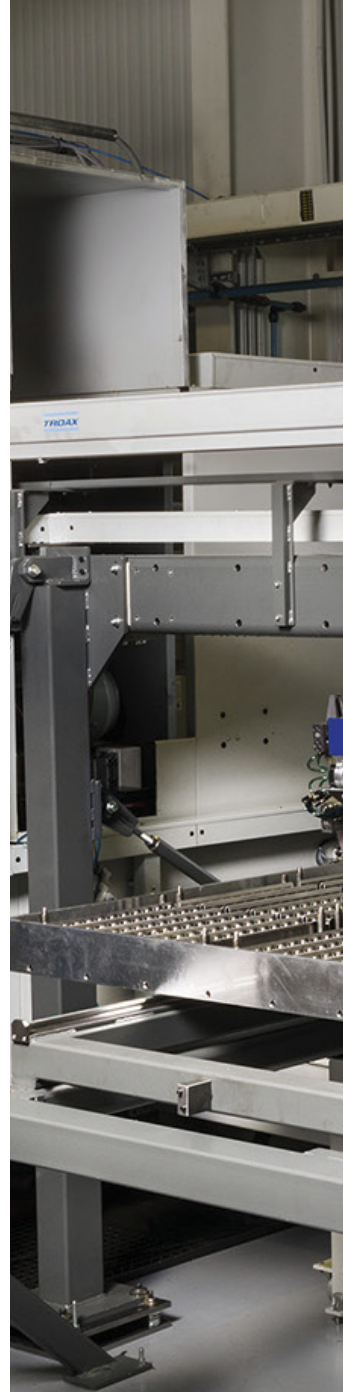
### Innovation

Our development department is constantly working to improve our existing products and develop new tools to meet the demands of the market. From development (CAD) via CNC programming to production simulation, all work sequences are produced via modern networked computer systems. The focus of RUKO's activities in the near future, through also at the present, is in expanding and improving the entire range of metals.

### Quality management

Our up-to-date quality control guarantees a uniform high standard of quality. The individual data obtained from the measurement series made on the tools we test are registered and stored with the help of the latest optical testing equipment.

Materials testing during production is also part of our day-to-day quality assurance. Certification in accordance with DIN EN ISO 9001:2008 confirms the integrated quality philosophy we have been practicing for years.





## Competence worldwide

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### **Distribution**

Over 40 years of „Competence in Precision and Quality“ has made company RUKO one of the world's leading manufacturers of drilling and countersinking tools. With an export share of 70 % we consider ourselves an European company with an international orientation.

RUKO drilling tools are sold in over 70 countries by 2,300 qualified specialist tool dealers.

RUKO GmbH in Holzgerlingen has its own subsidiaries in the USA, France, England, Turkey, Czech Republic, Scandinavia and Austria.

We regard ourselves as a specialist for metal drilling tools. Orientated to the requirements of professional users, RUKO offers an extensive, competent range of products.

The flexible structure of the organisation and production process allows the economic manufacture of industrial scale series as well as special tools and customised products.

### **RUKO GmbH Precision tools**

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## Steel characteristics



Heavy-duty high speed steel with 8 % cobalt content. Extremely high ductility and outstanding heat resistance, for drilling holes in high strength materials, austenitic steel, for hot working etc. with a strength of up to 1100 N/mm<sup>2</sup>.



Heavy-duty high speed steel for drilling holes in easy-to-machine materials with a strength of up to 900 N/mm<sup>2</sup>.



Heavy-duty high speed steel with 5 % cobalt content. High ductility and heat resistance, for drilling holes in difficult-to-machine materials with a strength of up to 1100 N/mm<sup>2</sup>.



Same as HSS, drill is ground.



Solid tungsten carbide. Particularly suitable for drilling work in high strength steel at high cutting speeds.



Same as HSS, drill is rolled.

Description	Standard			Chemical composite in %								Hardness
	DIN	EN	AISI	C	Cr	Mo	V	TiC TAC	W	Wc	Co	
HSS	1.3343	ENHS 6-5-2	M 2	0,90	4,1	5,0	1,8	-	6,4	-	-	780-800 HV10
HSSE-Co5	1.3243	ENHS 6-5-2-5	M 35	0,92	4,1	5,0	1,9	-	6,4	-	4,8	820-920 HV10
HSSE-Co8	1.3247	ENHS 2-10-1-8	M 42	1,10	3,9	9,2	1,2	-	1,4	-	7,8	850-960 HV10
TC	K20	-	-	-	-	-	-	2,0	-	92,0	6,0	15500 HV30



## Coatings



The titanium nitride coating is a universally usable standard coating. It has a 300-400 % longer service life than non-coated materials. Cooling is recommended.



The aluminium titanium nitride coating offers very high heat and oxidation resistance. Extremely well suited for drilling hard materials without cooling.



The titanium carbon nitride coating offers high strength and good ductility. It has a very low friction coefficient. Suitable for drilling high strength steel. Cooling is required.



The Tecrona coating offers extremely high heat resistance. The very low friction coefficient increases the service life and ensures low wear.



The titanium aluminium nitride coating offers high heat and oxidation resistance. Suitable for drilling hard materials without cooling.

Description	Colour	Nano hardness up to [GPa]	Coat thickness [µm]	coefficient of friction	Max. application temperature [°C]
TiN	gold-yellow	24	1-7	0,55	600
TiCN	red-copper	32	1-4	0,2	400
TiAlN	purple-black	30	1-4	0,6	700
AlTiN	blue-black	38	1-4	0,7	900
Tecrona	blue-grey	42	1-7	0,35	1100



# TWIST DRILLS



## Twist drills

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### Versions according to DIN standards

Twist drills in accordance with all usual DIN standards. Geometry, point angles and shaft shapes for every application and specific machining task.

### Material qualities and coatings

Our product range includes material qualities from HSS steel to high-quality cobalt alloys and carbide metal.

Different coatings are available for a finer match to the material to be machined.

### Bit geometry

The bit geometry, i.e. point angles, of our twist drills is always matched to the materials to be machined.







# Overview of symbols



Centre drills 60° - shape A and R



Short twist drills with straight shank



Long twist drills with straight shank



Twist drills with morse taper shank



Extra long twist drills with straight shank



Extra short twist drills with straight shank



High-speed steel



High-speed steel, ground



High-speed steel with 8 % Cobalt content, ground



High-speed steel rolled



High-speed steel with 5 % Cobalt content, ground



Tungsten carbide



bright



Gold / black oxidized surface



TiAlN coating



Gold surface



TiN coating



AlTiN coating



Black surface



TiCN coating



TECRONA coating



bright / black surface



right hand cutting



left hand cutting



Drilling depth e.g. 5 x diameter



Point angle e.g. 130°



Helix angle e.g. 40°



Centre angle e.g. 60°



Tolerance e.g. h8



Shank: cylindrical



Shank: reduced



Shank: 3-way clamping surface



Shank: Weldon



Shank: Morse taper



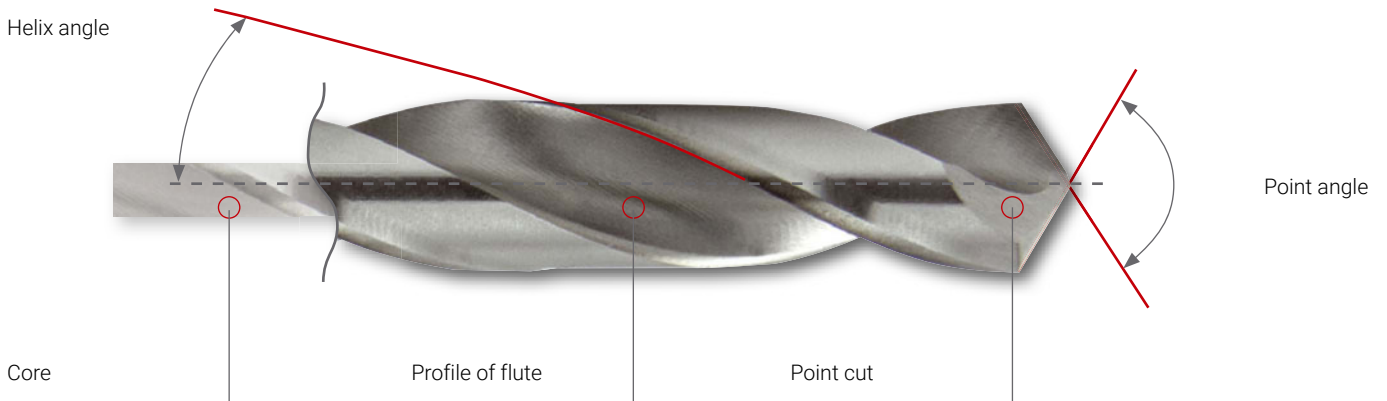
NEW at RUKO



Very suitable for all-purpose use in drilling machines and cordless drills

# Overview of symbols

<p><b>N</b></p> <p>Helix angle: 25-30°          Profile of flute: normal          Core: normal          Point angle: 118°          Point cut: form C</p>	<p><b>TL 3000</b></p> <p>Helix angle: 40°          Profile of flute: wide with rounded rear edges          Core: thick          Point angle: 130°          Point cut: shape C</p>
<p><b>FO</b></p> <p>Helix angle: 38°          Profile of flute: wide with rounded rear edges          Core: very thick          Point angle: 130°          Point cut: shape C</p>	<p><b>W</b></p> <p>Helix angle: 35-40°          Profile of flute: wide, for better chip removal          Core: normal          Point angle: 130°          Point cut: shape C</p>
<p><b>Ti</b></p> <p>Helix angle: 36°          Profile of flute: normal          Core: thickened          Point angle: 130°          Point cut: shape C</p>	<p><b>UNI</b></p> <p>Helix angle: 40°          Profile of flute: wide, for better chip removal          Core: normal          Point angle: 135°          Point cut: shape C</p>
<p><b>UTL 3000</b></p> <p>Helix angle: 40°          Profile of flute: wide with rounded rear edges          Core: very thick          Point angle: 130°          Point cut: shape U</p>	<p><b>VA</b></p> <p>Helix angle: 36°          Profile of flute: normal          Core: thickened          Point angle: 130°          Point cut: shape C</p>
<p><b>TURBO</b></p> <p>Helix angle: 36°          Profile of flute: normal          Core: thickened          Centre angle: 130°          Point cut: shape C</p>	<p><b>KV</b></p> <p>Helix angle: 25-30°          Profile of flute: normal          Core: normal          Point angle: 130°          Point cut: shape C</p>





## Point cuts in accordance with DIN 1412



### Shape N: Helical point normal ground

Applications: for all normal drilling work in steel, non-ferrous metal and plastic. The point angles depend on the ease with which the materials can be cut. Advantages: powerful main cut, resistant to impact and lateral forces. Simple manual grinding possible. Disadvantages: broad cutting edge requires considerable pressure.



### Shape A: Cut chisel edge

Applications: for all normal drilling work using drills with a strong core, for drilling into solid materials with larger drill diameters. Advantages: good centring when starting to drill, as the length of the chisel edge is reduced to 1/10 of the drill diameter, and fewer pressure is required. Disadvantages: additional regrinding work.



### Shape B: Cut chisel edge with corrected major cutting edge

Applications: for drilling high-density steel, for manganese steel with over 10 % Mn, for hard spring steel and for drilling out. Advantages: resistant to impact, one-way load and lateral forces. Does not catch in thin workpieces. Disadvantages: high pressure required, tendency to slip, extra work involved in regrinding.



### Shape C: Split point

Applications: for drills with very strong cores, for particularly tough, hard materials and for deep-hole drills. Advantages: good centring, little pressure required. Chip spreading improves chip removal. Disadvantages: perfect grinding only possible by machine.



### Shape D: Ground for grey cast iron

Applications: for drilling grey cast iron, malleable cast iron and forgings. Advantages: wear on cutting corners is reduced by extended major cutting edges, resistant to impact, good heat conductivity, all giving improved tool life. Disadvantages: extra work involved in regrinding.



### Shape E: Centre point

Applications: for drilling sheet-metal and soft materials, for blind holes with flat bottoms. Advantages: good centring, minimal formation of burrs when through-drilling, precise drilling in thin sheets and pipes, does not catch. Available in diameters of 2.5 mm upwards. Disadvantages: sensitive to impact and one-way loading. Can only be ground to perfection by machine.



## Other point cuts



### Shape U: Special ground

Applications: for drills with sturdy profiles suitable for use in automated processing, with narrow grooves and strong cores. Advantages: extremely good self-centring behaviour when maximum cutting valuminiumes are employed. Concave cutting produces short metal chips. Disadvantages: extra work involved in regrinding.

Parts and applications overview:



Material	Surface	DIN	Shape	Point cuts	Point angle	Helix angle	Shank	Ø mm	Article no.	Page
HSSE Co 8		DIN 338	VA					1,0 - 16,0	281 010 E - 281 160 E	26 - 29
HSSE Co 8	TiAIN	DIN 338	VA					1,0 - 16,0	281 010 EF - 281 160 EF	26 - 29
HSSE Co 5		DIN 338	FO					1,0 - 13,0	280 010 E - 280 130 E	30 - 31
HSSE Co 5		DIN 338	UTL 3000					1,0 - 16,0	229 010 - 229 160	32 - 35
HSSE Co 5	TiAIN	DIN 338	UTL 3000					1,0 - 16,0	229 010 F - 229 160 F	32 - 35
HSSE Co 5		DIN 338	VA					1,0 - 20,0	215 010 - 215 210	36 - 37
HSSE Co 5		DIN 338	VA					1,0 - 16,0	215 010 Z - 215 160 Z	38 - 41
HSSE Co 5	TiAIN	DIN 338	VA					1,0 - 16,0	215 010 F - 215 160 F	38 - 41
HSSE Co 5		DIN 338	UNI					1,0 - 13,0	228 010 - 228 130	42
HSS		DIN 338	TL 3000					1,0 - 16,0	258 010 - 258 160	44 - 46
HSS	TIN	DIN 338	TL 3000					1,0 - 16,0	258 010 T - 258 160 T	44 - 46
HSS	TiAIN	DIN 338	TL 3000					1,0 - 16,0	258 010 F - 258 160 F	44 - 46
HSS		DIN 338	TURBO					1,0 - 13,0	2146 010 - 2146 130	47 - 48
HSS		DIN 338	N					0,3 - 20,0	214 003 - 214 201	49 - 52
HSS		DIN 338	N					0,3 - 16,0	214 003 S - 214 160 S	49 - 52
HSS	TIN	DIN 338	N					0,3 - 16,0	214 003 T - 214 160 T	49 - 52
HSS		DIN 338	N					1,0 - 13,0	214 010 Li - 214 130 Li	53
HSS		DIN 338	N					1,0 - 13,0	2501 010 T - 2501 130 T	54
HSS		DIN 338	N					10,5 - 25,0	200 105 - 200 250	58
HSS		DIN 338	N					10,5 - 20,0	200 4 105 - 200 4 200	58
HSSE Co 5		DIN 338	N					10,5 - 20,0	200 5 105 - 200 5 200	58
TC	TiAIN	DIN 338	N					3,0 - 13,0	814 030 - 814 130	59

Steel (N/mm <sup>2</sup> ) < 900	Steel (N/mm <sup>2</sup> ) < 1100	Steel (N/mm <sup>2</sup> ) < 1300	Stainless steel	Aluminium für / for ALU	Brass Zn Cu	Bronze Cu Sn	Plastics Plastic	Cast iron	Titanium alloyed Ti
□	■	■	■	■	■	□	■	■	□
□	■	■	■	■	■	■	■	■	■
■	■	□	■	■	■	□	■	□	
■	■	□	■	■	■	□	■	□	
■	■	□	■	■	■	■	■	□	
■	■		■	■	■	□	■	□	
■	■		■	■	■	□	■	□	
■	■	□	■	■	■	■	■	□	□
■	■		■	■	■	□	■	□	
■				■	■	□	■	□	
■	□		□		■	□	■	□	
■	□	□	■	■	■	■	■	□	
■				■	■	□	■		
■				■	■	□	■	□	
■				■	■	□	■	□	
■	□		□		■	□	■	□	
■	□		□	■	■	□	■	□	
■	□		□		■	□	■	□	
■				■	■	□	■	□	
■	□		□	■	■	□	■	□	
■	■		■	■	■	□	■	□	
■	■	■	■	■	■	■	■	■	■

Parts and applications overview:



Material	Surface	DIN	Shape	Point cuts	Point angle	Helix angle	Shank	Ø mm	Article no.	Page
HSS-R		DIN 338	N		118°	25-30°		0,3 - 20,0	201 003 - 201 200	56 - 57
TC		DIN 338	N		120°	25-30°		2,0 - 13,0	815 020 - 815 130	60 - 61
TC		DIN 338	N		120°	25-30°		2,0 - 13,0	815 020 C - 815 130 C	60 - 61
HSS-G		DIN 338	TL 3000		130°	40°		1/16 - 1/2	258 801 - 258 829	62
HSS-G	TIN	DIN 338	TL 3000		130°	40°		1/16 - 1/2	258 801 T - 258 829 T	62
HSS-G	TiAlN	DIN 338	TL 3000		130°	40°		1/16 - 1/2	258 801 F - 258 829 F	62
HSSE Co 5		DIN 338	UTL 3000		130°	40°		1/16 - 1/2	229 801 - 229 829	63
HSSE Co 5		DIN 338	VA		130°	36°		1/16 - 1/2	215 801 - 215 829	64
HSS-G		DIN 338	N		118°	25-30°		1/16 - 1/2	214 801 - 214 829	65
HSS-G	TIN	DIN 338	N		118°	25-30°		1/16 - 1/2	250 801 T - 250 829 T	65
HSSE Co 5		DIN 340	TL 3000		130°	40°		2,5 - 13,0	253 025 - 253 130	66 - 67
HSSE Co 5	TiAlN	DIN 340	TL 3000		130°	40°		2,5 - 13,0	253 025 F - 253 130 F	66 - 67
HSS-G		DIN 340	N		118°	25-30°		2,5 - 13,0	203 025 - 203 130	68 - 69
HSS-G	TIN	DIN 340	N		118°	25-30°		2,5 - 13,0	203 025 T - 203 130 T	68 - 69
HSS-G		DIN 1869	TL 3000		130°	40°		2,0 - 13,0	254 020 - 254 130	70 - 71
HSS		DIN 1869	TL 3000		130°	40°		3,0 - 13,0	255 030 - 255 130	70 - 71
HSS		DIN 1869	TL 3000		130°	40°		3,5 - 13,0	256 035 - 256 130	70 - 71
HSS		DIN 345	N		118°	20-30°		10,0 - 60,0	204 100 - 204 600	72 - 73
HSSE Co 5		DIN 345	N		118°	20-30°		10,0 - 30,0	204 100 E - 204 300 E	72 - 73
HSSE Co 5		DIN 345	N		118°	20-30°		10,0 - 30,0	204 100 T - 204 300 T	72 - 73
HSSE Co 5		DIN 1897	UTL		130°	40°		2,0 - 16,0	284 020 E - 284 160 E	74 - 75
HSSE Co 5	TiAlN	DIN 1897	UTL		130°	40°		2,0 - 16,0	284 020 EF - 284 160 EF	74 - 75

Steel (N/mm <sup>2</sup> ) < 900	Steel (N/mm <sup>2</sup> ) < 1100	Steel (N/mm <sup>2</sup> ) < 1300	Stainless steel	Aluminium für / for ALU	Brass Zn Cu	Bronze Cu Sn	Plastics Plastic	Cast iron	Titanium alloyed Ti
■				■	■	□	■	□	
■	■	□	□	■	■	□	■	■	□
■	■	□	■	■	■	■	■	■	■
■				■	■	□	■	□	
■	□		□		■	□	■	□	
■	□	□	■	■	■	■	■	□	
■	■	□	■	■	■	□	■	□	
■	■		■	■	■	□	■	□	
■	■		■	■	■	□	■	□	
■			□	■	■	□	■	□	
■	□		□		■	□	■	□	
■	■		■	■	■	□	■	□	
■	■	□	■	■	■	■	■	□	□
■				■	■	□	■	□	
■	□		□		■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	■	
■				■	■	□	■	□	
■	■		■	■	■	□	■	□	
■	■	□	■		■	□	■	□	□
■	■		■	■	■	□	■	□	

Parts and applications overview:



	Material	Surface	DIN	Shape	Point cuts	Point angle	Helix angle	Shank	Ø mm	Article no.	Page
									2,0 - 13,0	202 020 E - 202 130 E	76 - 77
									2,0 - 13,0	202 020 EF - 202 130 EF	76 - 77
									2,0 - 16,0	202 020 - 202 160	78 - 79
									2,0 - 16,0	202 020 T - 202 160 T	78 - 79
									2,5 - 6,5	251 025 - 251 065	80
									2,5 - 8,0	252 025 - 252 065	81
									0,8 - 6,3	217 008 - 217 063	82
									0,8 - 6,3	217 1 008 - 217 1 063	82
									0,8 - 6,3	217 2 008 - 217 2 063	82
									4,9 - 5,8	257 515 - 257 583	83

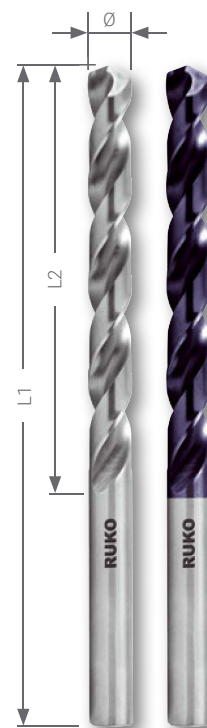


Steel (N/mm <sup>2</sup> ) < 900	Steel (N/mm <sup>2</sup> ) < 1100	Steel (N/mm <sup>2</sup> ) < 1300	Stainless steel	Aluminium für / for ALU	Brass Zn Cu	Bronze Cu Sn	Plastics Plastic	Cast iron	Titanium alloyed Ti
■	■	□	■	■	■	■	■	□	□
■	■		■	■	■	□	■	□	
■	■	□	■	■	■	■	■	□	□
■				■	■	□	■	□	
■	□		□		■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				□	■		■		



## Twist drills DIN 338 type VA, HSSE-Co 8 ground





Powerful special drill that should ideally be used for titanium base alloys as well as stainless, acid-resistant and heat-resistant austenitic steels. It is also suitable for high strength steels with low ductility. Under certain conditions, these drills can be used for special alloys such as hastelloy, inconel and nimonic etc.



Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	<input type="checkbox"/>	<input type="checkbox"/>	Brass	<input type="checkbox"/>	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Rust-resistant steel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Cast iron	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Ø mm	L1 mm	L2 mm	HSSE Co 8			HSSE Co 8 TITAN		
1,00	34,0	12,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
1,10	36,0	14,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
1,20	38,0	16,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
1,30	38,0	16,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
1,40	40,0	18,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
1,50	40,0	18,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
1,60	43,0	20,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
1,70	43,0	20,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
1,80	46,0	22,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
1,90	46,0	22,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
2,00	49,0	24,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
2,10	49,0	24,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
2,20	53,0	27,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
2,30	53,0	27,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
2,40	57,0	30,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
2,50	57,0	30,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
2,60	57,0	30,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
2,70	61,0	33,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
2,80	61,0	33,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
2,90	61,0	33,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
3,00	61,0	33,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
3,10	65,0	36,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
3,20	65,0	36,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
3,30	65,0	36,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
3,40	70,0	39,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
3,50	70,0	39,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
3,60	70,0	39,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
3,70	70,0	39,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
3,80	75,0	43,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
3,90	75,0	43,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
4,00	75,0	43,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
4,10	75,0	43,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
4,20	75,0	43,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
4,30	80,0	47,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
4,40	80,0	47,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
4,50	80,0	47,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
4,60	80,0	47,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
4,70	80,0	47,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
4,80	86,0	52,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10
4,90	86,0	52,0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10

Ø mm	L1 mm	L2 mm	HSSE Co 8		HSSE Co 8 TIAN	
						
4,50	80,0	47,0	281 045 E	10	281 045 EF	10
4,60	80,0	47,0	281 046 E	10	281 046 EF	10
4,70	80,0	47,0	281 047 E	10	281 047 EF	10
4,80	86,0	52,0	281 048 E	10	281 048 EF	10
4,90	86,0	52,0	281 049 E	10	281 049 EF	10
5,00	86,0	52,0	281 050 E	10	281 050 EF	10
5,10	86,0	52,0	281 051 E	10	281 051 EF	10
5,20	86,0	52,0	281 052 E	10	281 052 EF	10
5,30	86,0	52,0	281 053 E	10	281 053 EF	10
5,40	93,0	57,0	281 054 E	10	281 054 EF	10
5,50	93,0	57,0	281 055 E	10	281 055 EF	10
5,60	93,0	57,0	281 056 E	10	281 056 EF	10
5,70	93,0	57,0	281 057 E	10	281 057 EF	10
5,80	93,0	57,0	281 058 E	10	281 058 EF	10
5,90	93,0	57,0	281 059 E	10	281 059 EF	10
6,00	93,0	57,0	281 060 E	10	281 060 EF	10
6,10	101,0	63,0	281 061 E	10	281 061 EF	10
6,20	101,0	63,0	281 062 E	10	281 062 EF	10
6,30	101,0	63,0	281 063 E	10	281 063 EF	10
6,40	101,0	63,0	281 064 E	10	281 064 EF	10
6,50	101,0	63,0	281 065 E	10	281 065 EF	10
6,60	101,0	63,0	281 066 E	10	281 066 EF	10
6,70	101,0	63,0	281 067 E	10	281 067 EF	10
6,80	109,0	69,0	281 068 E	10	281 068 EF	10
6,90	109,0	69,0	281 069 E	10	281 069 EF	10
7,00	109,0	69,0	281 070 E	10	281 070 EF	10
7,10	109,0	69,0	281 071 E	10	281 071 EF	10
7,20	109,0	69,0	281 072 E	10	281 072 EF	10
7,30	109,0	69,0	281 073 E	10	281 073 EF	10
7,40	109,0	69,0	281 074 E	10	281 074 EF	10
7,50	109,0	69,0	281 075 E	10	281 075 EF	10
7,60	117,0	75,0	281 076 E	10	281 076 EF	10
7,70	117,0	75,0	281 077 E	10	281 077 EF	10
7,80	117,0	75,0	281 078 E	10	281 078 EF	10
7,90	117,0	75,0	281 079 E	10	281 079 EF	10
8,00	117,0	75,0	281 080 E	10	281 080 EF	10
8,10	117,0	75,0	281 081 E	10	281 081 EF	10
8,20	117,0	75,0	281 082 E	10	281 082 EF	10
8,30	117,0	75,0	281 083 E	10	281 083 EF	10
8,40	117,0	75,0	281 084 E	10	281 084 EF	10
8,50	117,0	75,0	281 085 E	10	281 085 EF	10
8,60	125,0	81,0	281 086 E	10	281 086 EF	10
8,70	125,0	81,0	281 087 E	10	281 087 EF	10
8,80	125,0	81,0	281 088 E	10	281 088 EF	10
8,90	125,0	81,0	281 089 E	10	281 089 EF	10
9,00	125,0	81,0	281 090 E	10	281 090 EF	10
9,10	125,0	81,0	281 091 E	10	281 091 EF	10
9,20	125,0	81,0	281 092 E	10	281 092 EF	10
9,30	125,0	81,0	281 093 E	10	281 093 EF	10
9,40	125,0	81,0	281 094 E	10	281 094 EF	10
9,50	125,0	81,0	281 095 E	10	281 095 EF	10
9,60	133,0	87,0	281 096 E	10	281 096 EF	10
9,70	133,0	87,0	281 097 E	10	281 097 EF	10
9,80	133,0	87,0	281 098 E	10	281 098 EF	10
9,90	133,0	87,0	281 099 E	10	281 099 EF	10
10,00	133,0	87,0	281 100 E	10	281 100 EF	10
10,20	133,0	87,0	281 102 E	10	281 102 EF	10
10,50	133,0	87,0	281 105 E	5	281 105 EF	5
11,00	142,0	94,0	281 110 E	5	281 110 EF	5
11,50	142,0	94,0	281 115 E	5	281 115 EF	5
12,00	151,0	101,0	281 120 E	5	281 120 EF	5
12,50	151,0	101,0	281 125 E	5	281 125 EF	5
13,00	151,0	101,0	281 130 E	5	281 130 EF	5
13,50	160,0	108,0	281 135 E	5	281 135 EF	5
14,00	160,0	108,0	281 140 E	5	281 140 EF	5
14,50	169,0	114,0	281 145 E	5	281 145 EF	5
15,00	169,0	114,0	281 150 E	5	281 150 EF	5
15,50	178,0	120,0	281 155 E	5	281 155 EF	5
16,00	178,0	120,0	281 160 E	5	281 160 EF	5



## Twist drill sets DIN 338 type VA, HSSE-Co 8 ground

	HSSE Co 8	HSSE Co 8 TiAIN
19-piece set of twist drills DIN 338 type VA Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case	281 214 E	281 214 EF
25-piece set of twist drills DIN 338 type VA Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case	281 215 E	281 215 EF
19-piece set of twist drills DIN 338 type VA Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case	281 214 ERO	281 214 EFRO
25-piece set of twist drills DIN 338 type VA Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case	281 215 ERO	281 215 EFRO



### Coolants and lubricants

The RUKO coolants and lubricants provide an outstanding separation and cooling effect. They generate a high surface quality and increase the service life of the tools, even with hard and brittle materials.

Suitably aligned to our product range, you will find the coolants and lubricants in our section 14 from page 319.





DIN 338 · VA





## Twist drills DIN 338 type FO, HSSE-Co 5 ground

Highly stable multirange drill with excellent thermal resilience, a large chip space, a rounded rear edge and a very thick core. Ideal for drilling materials of low to high strength.



Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>
Rust-resistant steel	<input checked="" type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>

Ø mm	L1 mm	L2 mm			
1,00	34,0	12,0	280 010 E		10
1,50	40,0	18,0	280 015 E		10
1,60	43,0	20,0	280 016 E		10
2,00	49,0	24,0	280 020 E		10
2,10	49,0	24,0	280 021 E		10
2,50	57,0	30,0	280 025 E		10
3,00	61,0	33,0	280 030 E		10
3,30	65,0	36,0	280 033 E		10
3,50	70,0	39,0	280 035 E		10
4,00	75,0	43,0	280 040 E		10
4,20	75,0	43,0	280 042 E		10
4,50	80,0	47,0	280 045 E		10
5,00	86,0	52,0	280 050 E		10
5,50	93,0	57,0	280 055 E		10
6,00	93,0	57,0	280 060 E		10
6,50	101,0	63,0	280 065 E		10
6,80	109,0	69,0	280 068 E		10
7,00	109,0	69,0	280 070 E		10
7,50	109,0	69,0	280 075 E		10
7,80	117,0	75,0	280 078 E		10
8,00	117,0	75,0	280 080 E		10
8,50	117,0	75,0	280 085 E		10
9,00	125,0	81,0	280 090 E		10
9,50	125,0	81,0	280 095 E		10
10,00	133,0	87,0	280 100 E		10
10,20	133,0	87,0	280 102 E		10
10,50	133,0	87,0	280 105 E		5
11,00	142,0	94,0	280 110 E		5
11,50	142,0	94,0	280 115 E		5
12,00	151,0	101,0	280 120 E		5
12,50	151,0	101,0	280 125 E		5
13,00	151,0	101,0	280 130 E		5



## Twist drill sets DIN 338 type FO, HSSE-Co 5 ground

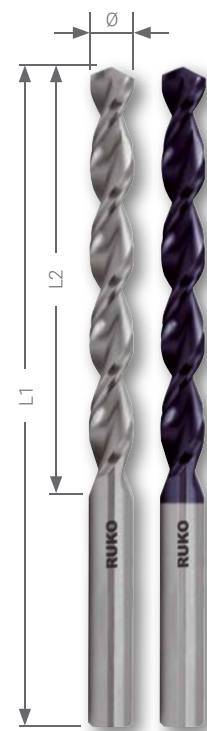
	HSSE Co 5
19-piece set of twist drills DIN 338 type FO Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case	280 214 E
25-piece set of twist drills DIN 338 type FO Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case	280 215 E
19-piece set of twist drills DIN 338 type FO Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case	280 214 ERO
25-piece set of twist drills DIN 338 type FO Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case	280 215 ERO





## Twist drills DIN 338 UTL 3000, HSSE-Co 5 ground

Highly stable multirange drill with outstanding heat resistance, a reinforced drill core and a parabolic flute for ideal chip removal. Ideal for drilling medium and long-chipping materials. Thanks to its thick core and the special flute with a rounded rear edge, this drill is best suited for high-performance use. It covers types N, H and W for a wide range of applications.






Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input type="checkbox"/>	<input type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Rust-resistant steel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Cast iron	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>	<input type="checkbox"/>

Ø mm	L1 mm	L2 mm	HSSE Co 5		HSSE Co 5 TITAN	
1,00	34,0	12,0	229 010	10	229 010 F	10
1,10	36,0	14,0	229 011	10	229 011 F	10
1,20	38,0	16,0	229 012	10	229 012 F	10
1,30	38,0	16,0	229 013	10	229 013 F	10
1,40	40,0	18,0	229 014	10	229 014 F	10
1,50	40,0	18,0	229 015	10	229 015 F	10
1,60	43,0	20,0	229 016	10	229 016 F	10
1,70	43,0	20,0	229 017	10	229 017 F	10
1,80	46,0	22,0	229 018	10	229 018 F	10
1,90	46,0	22,0	229 019	10	229 019 F	10
2,00	49,0	24,0	229 020	10	229 020 F	10
2,10	49,0	24,0	229 021	10	229 021 F	10
2,20	53,0	27,0	229 022	10	229 022 F	10
2,30	53,0	27,0	229 023	10	229 023 F	10
2,40	57,0	30,0	229 024	10	229 024 F	10
2,50	57,0	30,0	229 025	10	229 025 F	10
2,60	57,0	30,0	229 026	10	229 026 F	10
2,70	61,0	33,0	229 027	10	229 027 F	10
2,80	61,0	33,0	229 028	10	229 028 F	10
2,90	61,0	33,0	229 029	10	229 029 F	10
3,00	61,0	33,0	229 030	10	229 030 F	10
3,10	65,0	36,0	229 031	10	229 031 F	10
3,20	65,0	36,0	229 032	10	229 032 F	10
3,30	65,0	36,0	229 033	10	229 033 F	10
3,40	70,0	39,0	229 034	10	229 034 F	10
3,50	70,0	39,0	229 035	10	229 035 F	10
3,60	70,0	39,0	229 036	10	229 036 F	10
3,70	70,0	39,0	229 037	10	229 037 F	10
3,80	75,0	43,0	229 038	10	229 038 F	10
3,90	75,0	43,0	229 039	10	229 039 F	10
4,00	75,0	43,0	229 040	10	229 040 F	10
4,10	75,0	43,0	229 041	10	229 041 F	10
4,20	75,0	43,0	229 042	10	229 042 F	10
4,30	80,0	47,0	229 043	10	229 043 F	10
4,40	80,0	47,0	229 044	10	229 044 F	10
4,50	80,0	47,0	229 045	10	229 045 F	10
4,60	80,0	47,0	229 046	10	229 046 F	10
4,70	80,0	47,0	229 047	10	229 047 F	10
4,80	86,0	52,0	229 048	10	229 048 F	10
4,90	86,0	52,0	229 049	10	229 049 F	10



Ø mm	L1 mm	L2 mm	HSSE Co 5			HSSE Co 5	TAIN	
5,00	86,0	52,0	229 050		10	229 050 F		10
5,10	86,0	52,0	229 051		10	229 051 F		10
5,20	86,0	52,0	229 052		10	229 052 F		10
5,30	86,0	52,0	229 053		10	229 053 F		10
5,40	93,0	57,0	229 054		10	229 054 F		10
5,50	93,0	57,0	229 055		10	229 055 F		10
5,60	93,0	57,0	229 056		10	229 056 F		10
5,70	93,0	57,0	229 057		10	229 057 F		10
5,80	93,0	57,0	229 058		10	229 058 F		10
5,90	93,0	57,0	229 059		10	229 059 F		10
6,00	93,0	57,0	229 060		10	229 060 F		10
6,10	101,0	63,0	229 061		10	229 061 F		10
6,20	101,0	63,0	229 062		10	229 062 F		10
6,30	101,0	63,0	229 063		10	229 063 F		10
6,40	101,0	63,0	229 064		10	229 064 F		10
6,50	101,0	63,0	229 065		10	229 065 F		10
6,60	101,0	63,0	229 066		10	229 066 F		10
6,70	101,0	63,0	229 067		10	229 067 F		10
6,80	109,0	69,0	229 068		10	229 068 F		10
6,90	109,0	69,0	229 069		10	229 069 F		10
7,00	109,0	69,0	229 070		10	229 070 F		10
7,10	109,0	69,0	229 071		10	229 071 F		10
7,20	109,0	69,0	229 072		10	229 072 F		10
7,30	109,0	69,0	229 073		10	229 073 F		10
7,40	109,0	69,0	229 074		10	229 074 F		10
7,50	109,0	69,0	229 075		10	229 075 F		10
7,60	117,0	75,0	229 076		10	229 076 F		10
7,70	117,0	75,0	229 077		10	229 077 F		10
7,80	117,0	75,0	229 078		10	229 078 F		10
7,90	117,0	75,0	229 079		10	229 079 F		10
8,00	117,0	75,0	229 080		10	229 080 F		10
8,10	117,0	75,0	229 081		10	229 081 F		10
8,20	117,0	75,0	229 082		10	229 082 F		10
8,30	117,0	75,0	229 083		10	229 083 F		10
8,40	117,0	75,0	229 084		10	229 084 F		10
8,50	117,0	75,0	229 085		10	229 085 F		10
8,60	125,0	81,0	229 086		10	229 086 F		10
8,70	125,0	81,0	229 087		10	229 087 F		10
8,80	125,0	81,0	229 088		10	229 088 F		10
8,90	125,0	81,0	229 089		10	229 089 F		10
9,00	125,0	81,0	229 090		10	229 090 F		10
9,10	125,0	81,0	229 091		10	229 091 F		10
9,20	125,0	81,0	229 092		10	229 092 F		10
9,30	125,0	81,0	229 093		10	229 093 F		10
9,40	125,0	81,0	229 094		10	229 094 F		10
9,50	125,0	81,0	229 095		10	229 095 F		10
9,60	133,0	87,0	229 096		10	229 096 F		10
9,70	133,0	87,0	229 097		10	229 097 F		10
9,80	133,0	87,0	229 098		10	229 098 F		10
9,90	133,0	87,0	229 099		10	229 099 F		10
10,00	133,0	87,0	229 100		10	229 100 F		10
10,10	133,0	87,0	229 101		10	229 101 F		10
10,20	133,0	87,0	229 102		10	229 102 F		10
10,30	133,0	87,0	229 103		5	229 103 F		5
10,40	133,0	87,0	229 104		5	229 104 F		5
10,50	133,0	87,0	229 105		5	229 105 F		5
10,60	133,0	87,0	229 106		5	229 106 F		5
10,70	142,0	94,0	229 107		5	229 107 F		5
10,80	142,0	94,0	229 108		5	229 108 F		5
10,90	142,0	94,0	229 109		5	229 109 F		5
11,00	142,0	94,0	229 110		5	229 110 F		5
11,10	142,0	94,0	229 111		5	229 111 F		5
11,20	142,0	94,0	229 112		5	229 112 F		5
11,30	142,0	94,0	229 113		5	229 113 F		5
11,40	142,0	94,0	229 114		5	229 114 F		5
11,50	142,0	94,0	229 115		5	229 115 F		5
11,60	142,0	94,0	229 116		5	229 116 F		5
11,70	142,0	94,0	229 117		5	229 117 F		5
11,80	142,0	94,0	229 118		5	229 118 F		5
11,90	151,0	101,0	229 119		5	229 119 F		5
12,00	151,0	101,0	229 120		5	229 120 F		5
12,10	151,0	101,0	229 121		5	229 121 F		5
12,20	151,0	101,0	229 122		5	229 122 F		5
12,30	151,0	101,0	229 123		5	229 123 F		5



### Twist drills DIN 338 UTL 3000, HSSE-Co 5 ground

Ø mm	L1 mm	L2 mm	HSSE Co 5		HSSE Co 5	TiAIN	
12,40	151,0	101,0	229 124	5	229 124 F		5
12,50	151,0	101,0	229 125	5	229 125 F		5
12,60	151,0	101,0	229 126	5	229 126 F		5
12,70	151,0	101,0	229 127	5	229 127 F		5
12,80	151,0	101,0	229 128	5	229 128 F		5
12,90	151,0	101,0	229 129	5	229 129 F		5
13,00	151,0	101,0	229 130	5	229 130 F		5
13,50	160,0	108,0	229 135	5	229 135 F		5
14,00	160,0	108,0	229 140	5	229 140 F		5
14,50	169,0	114,0	229 145	5	229 145 F		5
15,00	169,0	114,0	229 150	5	229 150 F		5
15,50	178,0	120,0	229 155	5	229 155 F		5
16,00	178,0	120,0	229 160	5	229 160 F		5

### Twist drill sets DIN 338 UTL 3000, HSSE-Co 5 ground

	HSSE Co 5	HSSE Co 5 TiAIN
19-piece set of twist drills DIN 338 type UTL 3000 Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case	229 214	229 214 F
25-piece set of twist drills DIN 338 type UTL 3000 Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case	229 215	229 215 F
19-piece set of twist drills DIN 338 type UTL 3000 Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case	229 214 RO	229 214 FRO
25-piece set of twist drills DIN 338 type UTL 3000 Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case	229 215 RO	229 215 FRO





DIN 338 · UTL 3000





## Twist drills DIN 338 type VA, HSSE-Co 5 ground

Powerful right-hand cutting high-performance drill with distinctive heat resistance. Ideal for drilling high-strength stainless, acid-resistant and heat-resistant steel.



Packing unit: in plastic box

Steel (N/mm2) < 900	■
Steel (N/mm2) < 1100	■
Steel (N/mm2) < 1300	
Rust-resistant steel	■
Aluminium	■

Brass	■
Bronze	□
Plastics	■
Cast iron	□
Titanium alloyed	

Ø mm	L1 mm	L2 mm	HSSE Co 5		
1,00	34,0	12,0	215 010		10
1,10	36,0	14,0	215 011		10
1,20	38,0	16,0	215 012		10
1,25	38,0	16,0	215 0125		10
1,30	38,0	16,0	215 013		10
1,40	40,0	18,0	215 014		10
1,50	40,0	18,0	215 015		10
1,60	43,0	20,0	215 016		10
1,70	43,0	20,0	215 017		10
1,75	46,0	22,0	215 0175		10
1,80	46,0	22,0	215 018		10
1,90	46,0	22,0	215 019		10
2,00	49,0	24,0	215 020		10
2,10	49,0	24,0	215 021		10
2,20	53,0	27,0	215 022		10
2,25	53,0	27,0	215 0225		10
2,30	53,0	27,0	215 023		10
2,40	57,0	30,0	215 024		10
2,50	57,0	30,0	215 025		10
2,60	57,0	30,0	215 026		10
2,70	61,0	33,0	215 027		10
2,75	61,0	33,0	215 0275		10
2,80	61,0	33,0	215 028		10
2,90	61,0	33,0	215 029		10
3,00	61,0	33,0	215 030		10
3,10	65,0	36,0	215 031		10
3,20	65,0	36,0	215 032		10
3,25	65,0	36,0	215 0325		10
3,30	65,0	36,0	215 033		10
3,40	70,0	39,0	215 034		10
3,50	70,0	39,0	215 035		10
3,60	70,0	39,0	215 036		10
3,70	70,0	39,0	215 037		10
3,75	70,0	39,0	215 0375		10
3,80	75,0	43,0	215 038		10
3,90	75,0	43,0	215 039		10
4,00	75,0	43,0	215 040		10
4,10	75,0	43,0	215 041		10
4,20	75,0	43,0	215 042		10
4,25	75,0	43,0	215 0425		10

Ø mm	L1 mm	L2 mm	HSSE Co 5		
4,30	80,0	47,0	215 043		10
4,40	80,0	47,0	215 044		10
4,50	80,0	47,0	215 045		10
4,60	80,0	47,0	215 046		10
4,70	80,0	47,0	215 047		10
4,75	80,0	47,0	215 0475		10
4,80	86,0	52,0	215 048		10
4,90	86,0	52,0	215 049		10
5,00	86,0	52,0	215 050		10
5,10	86,0	52,0	215 051		10
5,20	86,0	52,0	215 052		10
5,25	86,0	52,0	215 0525		10
5,30	86,0	52,0	215 053		10
5,40	93,0	57,0	215 054		10
5,50	93,0	57,0	215 055		10
5,60	93,0	57,0	215 056		10
5,70	93,0	57,0	215 057		10
5,75	93,0	57,0	215 0575		10
5,80	93,0	57,0	215 058		10
5,90	93,0	57,0	215 059		10
6,00	93,0	57,0	215 060		10
6,10	101,0	63,0	215 061		10
6,20	101,0	63,0	215 062		10
6,25	101,0	63,0	215 0625		10
6,30	101,0	63,0	215 063		10
6,40	101,0	63,0	215 064		10
6,50	101,0	63,0	215 065		10
6,60	101,0	63,0	215 066		10
6,70	101,0	63,0	215 067		10
6,75	101,0	63,0	215 0675		10
6,80	109,0	69,0	215 068		10
6,90	109,0	69,0	215 069		10
7,00	109,0	69,0	215 070		10
7,10	109,0	69,0	215 071		10
7,20	109,0	69,0	215 072		10
7,25	109,0	69,0	215 0725		10
7,30	109,0	69,0	215 073		10
7,40	109,0	69,0	215 074		10
7,50	109,0	69,0	215 075		10
7,60	117,0	75,0	215 076		10



## Twist drills DIN 338 type VA, HSSE-Co 5 ground

Ø mm	L1 mm	L2 mm	HSSE Co 5			Ø mm	L1 mm	L2 mm	HSSE Co 5		
7,70	117,0	75,0	215 077	10		10,90	142,0	94,0	215 109	5	
7,75	117,0	75,0	215 0775	10		11,00	142,0	94,0	215 110	5	
7,80	117,0	75,0	215 078	10		11,10	142,0	94,0	215 111	5	
7,90	117,0	75,0	215 079	10		11,20	142,0	94,0	215 112	5	
8,00	117,0	75,0	215 080	10		11,30	142,0	94,0	215 113	5	
8,10	117,0	75,0	215 081	10		11,40	142,0	94,0	215 114	5	
8,20	117,0	75,0	215 082	10		11,50	142,0	94,0	215 115	5	
8,25	117,0	75,0	215 0825	10		11,60	142,0	94,0	215 116	5	
8,30	117,0	75,0	215 083	10		11,70	142,0	94,0	215 117	5	
8,40	117,0	75,0	215 084	10		11,80	142,0	94,0	215 118	5	
8,50	117,0	75,0	215 085	10		11,90	151,0	101,0	215 119	5	
8,60	125,0	81,0	215 086	10		12,00	151,0	101,0	215 120	5	
8,70	125,0	81,0	215 087	10		12,10	151,0	101,0	215 121	5	
8,75	125,0	81,0	215 0875	10		12,20	151,0	101,0	215 122	5	
8,80	125,0	81,0	215 088	10		12,30	151,0	101,0	215 123	5	
8,90	125,0	81,0	215 089	10		12,40	151,0	101,0	215 124	5	
9,00	125,0	81,0	215 090	10		12,50	151,0	101,0	215 125	5	
9,10	125,0	81,0	215 091	10		12,60	151,0	101,0	215 126	5	
9,20	125,0	81,0	215 092	10		12,70	151,0	101,0	215 127	5	
9,25	125,0	81,0	215 0925	10		12,80	151,0	101,0	215 128	5	
9,30	125,0	81,0	215 093	10		12,90	151,0	101,0	215 129	5	
9,40	125,0	81,0	215 094	10		13,00	151,0	101,0	215 130	5	
9,50	125,0	81,0	215 095	10		13,50	160,0	108,0	215 135	5	
9,60	133,0	87,0	215 096	10		14,00	160,0	108,0	215 140	5	
9,70	133,0	87,0	215 097	10		14,50	169,0	114,0	215 145	5	
9,75	133,0	87,0	215 0975	10		15,00	169,0	114,0	215 150	5	
9,80	133,0	87,0	215 098	10		15,50	178,0	120,0	215 155	5	
9,90	133,0	87,0	215 099	10		16,00	178,0	120,0	215 160	5	
10,00	133,0	87,0	215 100	10		16,50	184,0	125,0	215 165	1	
10,10	133,0	87,0	215 101	10		17,00	184,0	125,0	215 170	1	
10,20	133,0	87,0	215 102	10		17,50	191,0	130,0	215 175	1	
10,30	133,0	87,0	215 103	5		18,00	191,0	130,0	215 180	1	
10,40	133,0	87,0	215 104	5		18,50	198,0	135,0	215 185	1	
10,50	133,0	87,0	215 105	5		19,00	198,0	135,0	215 190	1	
10,60	133,0	87,0	215 106	5		19,50	205,0	140,0	215 195	1	
10,70	142,0	94,0	215 107	5		20,00	205,0	140,0	215 210	1	
10,80	142,0	94,0	215 108	5		—	—	—	—	—	—

## Twist drill sets DIN 338 type VA, HSSE-Co 5 ground

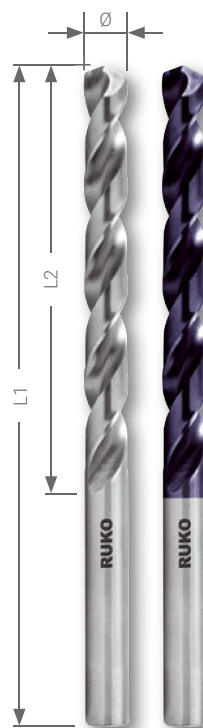
	HSSE Co 5
19-piece set of twist drills DIN 338 type VA Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case	215 214
25-piece set of twist drills DIN 338 type VA Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case	215 215
41-piece set of twist drills DIN 338 type VA Ø 6,0 mm up to 10,0 mm in increments of 0,1 mm in steel case	215 218
50-piece set of twist drills DIN 338 type VA Ø 1,0 mm up to 5,9 mm in increments of 0,1 mm in steel case	215 217
19-piece set of twist drills DIN 338 type VA Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case	215 214 RO
25-piece set of twist drills DIN 338 type VA Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case	215 215 RO





## Twist drills DIN 338 type VA, HSSE-Co 5 ground







Powerful right-hand cutting high-performance drill with distinctive heat resistance and reinforced drill core. Ideal for drilling high-strength stainless, acid-resistant and heat-resistant steel.



Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	■	■	Brass	■	■
Steel (N/mm <sup>2</sup> ) < 1100	■	■	Bronze	□	■
Steel (N/mm <sup>2</sup> ) < 1300		□	Plastics	■	■
Rust-resistant steel	■	■	Cast iron	□	□
Aluminium	■	■	Titanium alloyed		□

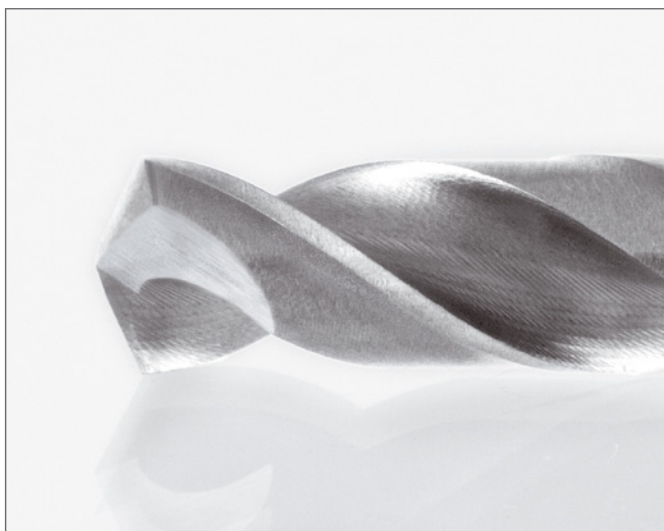
Ø mm	L1 mm	L2 mm	HSSE Co 5		HSSE Co 5 TITAN	
1,00	34,0	12,0	215 010 Z	10	215 010 F	10
1,10	36,0	14,0	215 011 Z	10	215 011 F	10
1,20	38,0	16,0	215 012 Z	10	215 012 F	10
1,25	38,0	16,0	215 0125 Z	10	215 0125 F	10
1,30	38,0	16,0	215 013 Z	10	215 013 F	10
1,40	40,0	18,0	215 014 Z	10	215 014 F	10
1,50	40,0	18,0	215 015 Z	10	215 015 F	10
1,60	43,0	20,0	215 016 Z	10	215 016 F	10
1,70	43,0	20,0	215 017 Z	10	215 017 F	10
1,75	46,0	22,0	215 0175 Z	10	215 0175 F	10
1,80	46,0	22,0	215 018 Z	10	215 018 F	10
1,90	46,0	22,0	215 019 Z	10	215 019 F	10
2,00	49,0	24,0	215 020 Z	10	215 020 F	10
2,10	49,0	24,0	215 021 Z	10	215 021 F	10
2,20	53,0	27,0	215 022 Z	10	215 022 F	10
2,25	53,0	27,0	215 0225 Z	10	215 0225 F	10
2,30	53,0	27,0	215 023 Z	10	215 023 F	10
2,40	57,0	30,0	215 024 Z	10	215 024 F	10
2,50	57,0	30,0	215 025 Z	10	215 025 F	10
2,60	57,0	30,0	215 026 Z	10	215 026 F	10
2,70	61,0	33,0	215 027 Z	10	215 027 F	10
2,75	61,0	33,0	215 0275 Z	10	215 0275 F	10
2,80	61,0	33,0	215 028 Z	10	215 028 F	10
2,90	61,0	33,0	215 029 Z	10	215 029 F	10
3,00	61,0	33,0	215 030 Z	10	215 030 F	10
3,10	65,0	36,0	215 031 Z	10	215 031 F	10
3,20	65,0	36,0	215 032 Z	10	215 032 F	10
3,25	65,0	36,0	215 0325 Z	10	215 0325 F	10
3,30	65,0	36,0	215 033 Z	10	215 033 F	10
3,40	70,0	39,0	215 034 Z	10	215 034 F	10
3,50	70,0	39,0	215 035 Z	10	215 035 F	10
3,60	70,0	39,0	215 036 Z	10	215 036 F	10
3,70	70,0	39,0	215 037 Z	10	215 037 F	10
3,75	70,0	39,0	215 0375 Z	10	215 0375 F	10
3,80	75,0	43,0	215 038 Z	10	215 038 F	10
3,90	75,0	43,0	215 039 Z	10	215 039 F	10
4,00	75,0	43,0	215 040 Z	10	215 040 F	10
4,10	75,0	43,0	215 041 Z	10	215 041 F	10
4,20	75,0	43,0	215 042 Z	10	215 042 F	10
4,25	75,0	43,0	215 0425 Z	10	215 0425 F	10

Ø mm	L1 mm	L2 mm	 		 	
4,30	80,0	47,0	215 043 Z	10	215 043 F	10
4,40	80,0	47,0	215 044 Z	10	215 044 F	10
4,50	80,0	47,0	215 045 Z	10	215 045 F	10
4,60	80,0	47,0	215 046 Z	10	215 046 F	10
4,70	80,0	47,0	215 047 Z	10	215 047 F	10
4,75	80,0	47,0	215 0475 Z	10	215 0475 F	10
4,80	86,0	52,0	215 048 Z	10	215 048 F	10
4,90	86,0	52,0	215 049 Z	10	215 049 F	10
5,00	86,0	52,0	215 050 Z	10	215 050 F	10
5,10	86,0	52,0	215 051 Z	10	215 051 F	10
5,20	86,0	52,0	215 052 Z	10	215 052 F	10
5,25	86,0	52,0	215 0525 Z	10	215 0525 F	10
5,30	86,0	52,0	215 053 Z	10	215 053 F	10
5,40	93,0	57,0	215 054 Z	10	215 054 F	10
5,50	93,0	57,0	215 055 Z	10	215 055 F	10
5,60	93,0	57,0	215 056 Z	10	215 056 F	10
5,70	93,0	57,0	215 057 Z	10	215 057 F	10
5,75	93,0	57,0	215 0575 Z	10	215 0575 F	10
5,80	93,0	57,0	215 058 Z	10	215 058 F	10
5,90	93,0	57,0	215 059 Z	10	215 059 F	10
6,00	93,0	57,0	215 060 Z	10	215 060 F	10
6,10	101,0	63,0	215 061 Z	10	215 061 F	10
6,20	101,0	63,0	215 062 Z	10	215 062 F	10
6,25	101,0	63,0	215 0625 Z	10	215 0625 F	10
6,30	101,0	63,0	215 063 Z	10	215 063 F	10
6,40	101,0	63,0	215 064 Z	10	215 064 F	10
6,50	101,0	63,0	215 065 Z	10	215 065 F	10
6,60	101,0	63,0	215 066 Z	10	215 066 F	10
6,70	101,0	63,0	215 067 Z	10	215 067 F	10
6,75	101,0	63,0	215 0675 Z	10	215 0675 F	10
6,80	109,0	69,0	215 068 Z	10	215 068 F	10
6,90	109,0	69,0	215 069 Z	10	215 069 F	10
7,00	109,0	69,0	215 070 Z	10	215 070 F	10
7,10	109,0	69,0	215 071 Z	10	215 071 F	10
7,20	109,0	69,0	215 072 Z	10	215 072 F	10
7,25	109,0	69,0	215 0725 Z	10	215 0725 F	10
7,30	109,0	69,0	215 073 Z	10	215 073 F	10
7,40	109,0	69,0	215 074 Z	10	215 074 F	10
7,50	109,0	69,0	215 075 Z	10	215 075 F	10
7,60	117,0	75,0	215 076 Z	10	215 076 F	10
7,70	117,0	75,0	215 077 Z	10	215 077 F	10
7,75	117,0	75,0	215 0775 Z	10	215 0775 F	10
7,80	117,0	75,0	215 078 Z	10	215 078 F	10
7,90	117,0	75,0	215 079 Z	10	215 079 F	10
8,00	117,0	75,0	215 080 Z	10	215 080 F	10
8,10	117,0	75,0	215 081 Z	10	215 081 F	10
8,20	117,0	75,0	215 082 Z	10	215 082 F	10
8,25	117,0	75,0	215 0825 Z	10	215 0825 F	10
8,30	117,0	75,0	215 083 Z	10	215 083 F	10
8,40	117,0	75,0	215 084 Z	10	215 084 F	10
8,50	117,0	75,0	215 085 Z	10	215 085 F	10
8,60	125,0	81,0	215 086 Z	10	215 086 F	10
8,70	125,0	81,0	215 087 Z	10	215 087 F	10
8,75	125,0	81,0	215 0875 Z	10	215 0875 F	10
8,80	125,0	81,0	215 088 Z	10	215 088 F	10
8,90	125,0	81,0	215 089 Z	10	215 089 F	10
9,00	125,0	81,0	215 090 Z	10	215 090 F	10
9,10	125,0	81,0	215 091 Z	10	215 091 F	10
9,20	125,0	81,0	215 092 Z	10	215 092 F	10
9,25	125,0	81,0	215 0925 Z	10	215 0925 F	10
9,30	125,0	81,0	215 093 Z	10	215 093 F	10
9,40	125,0	81,0	215 094 Z	10	215 094 F	10
9,50	125,0	81,0	215 095 Z	10	215 095 F	10
9,60	133,0	87,0	215 096 Z	10	215 096 F	10
9,70	133,0	87,0	215 097 Z	10	215 097 F	10
9,75	133,0	87,0	215 0975 Z	10	215 0975 F	10
9,80	133,0	87,0	215 098 Z	10	215 098 F	10
9,90	133,0	87,0	215 099 Z	10	215 099 F	10
10,00	133,0	87,0	215 100 Z	10	215 100 F	10
10,10	133,0	87,0	215 101 Z	10	215 101 F	10
10,20	133,0	87,0	215 102 Z	10	215 102 F	10
10,30	133,0	87,0	215 103 Z	10	215 103 F	10
10,40	133,0	87,0	215 104 Z	10	215 104 F	10
10,50	133,0	87,0	215 105 Z	5	215 105 F	5



## Twist drills DIN 338 type VA, HSSE-Co 5 ground

Ø mm	L1 mm	L2 mm	HSSE Co 5		HSSE Co 5 TITAIN	
10,60	133,0	87,0	215 106 Z	5	215 106 F	5
10,70	142,0	94,0	215 107 Z	5	215 107 F	5
10,80	142,0	94,0	215 108 Z	5	215 108 F	5
10,90	142,0	94,0	215 109 Z	5	215 109 F	5
11,00	142,0	94,0	215 110 Z	5	215 110 F	5
11,10	142,0	94,0	215 111 Z	5	215 111 F	5
11,20	142,0	94,0	215 112 Z	5	215 112 F	5
11,30	142,0	94,0	215 113 Z	5	215 113 F	5
11,40	142,0	94,0	215 114 Z	5	215 114 F	5
11,50	142,0	94,0	215 115 Z	5	215 115 F	5
11,60	142,0	94,0	215 116 Z	5	215 116 F	5
11,70	142,0	94,0	215 117 Z	5	215 117 F	5
11,80	142,0	94,0	215 118 Z	5	215 118 F	5
11,90	151,0	101,0	215 119 Z	5	215 119 F	5
12,00	151,0	101,0	215 120 Z	5	215 120 F	5
12,10	151,0	101,0	215 121 Z	5	215 121 F	5
12,20	151,0	101,0	215 122 Z	5	215 122 F	5
12,30	151,0	101,0	215 123 Z	5	215 123 F	5
12,40	151,0	101,0	215 124 Z	5	215 124 F	5
12,50	151,0	101,0	215 125 Z	5	215 125 F	5
12,60	151,0	101,0	215 126 Z	5	215 126 F	5
12,70	151,0	101,0	215 127 Z	5	215 127 F	5
12,80	151,0	101,0	215 128 Z	5	215 128 F	5
12,90	151,0	101,0	215 129 Z	5	215 129 F	5
13,00	151,0	101,0	215 130 Z	5	215 130 F	5
13,50	160,0	108,0	215 135 Z	5	215 135 F	5
14,00	160,0	108,0	215 140 Z	5	215 140 F	5
14,50	169,0	114,0	215 145 Z	5	215 145 F	5
15,00	169,0	114,0	215 150 Z	5	215 150 F	5
15,50	178,0	120,0	215 155 Z	5	215 155 F	5
16,00	178,0	120,0	215 160 Z	5	215 160 F	5







## Twist drill sets DIN 338 type VA, HSSE-Co 5 ground

	HSSE Co 5	HSSE Co 5 TiAIN
19-piece set of twist drills DIN 338 type VA Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case	215 214 Z	215 214 F
25-piece set of twist drills DIN 338 type VA Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case	215 215 Z	215 215 F



215 214 Z



215 214 F



215 215 Z

	HSSE Co 5	HSSE Co 5 TiAIN
19-piece set of twist drills DIN 338 type VA Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case	215 214 ZRO	215 214 FRO
25-piece set of twist drills DIN 338 type VA Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case	215 215 ZRO	215 215 FRO



215 214 ZRO



215 214 FRO



215 215 ZRO



## Twist drills DIN 338 type UNI, HSSE-Co 5 ground

- » The 3-surface-shank provides an excellent fixing within the drill chuck with little effort. In addition, the shank ensures an ideal power transmission. No spinning of the drill!
- » The 135° high performance cutting edge ensures a very high aligned preciseness, particularly when hand-operated with a cordless drilling machine. The edge prevents sliding off corrugated surfaces whilst spot-drilling.
- » Increased wear resistance of the rechargeable battery due to reduction of cutting forces.
- » The black bevel increases the wear resistance and prevents cold welding and build-up edges.
- » The 40° helix angle enables a perfect and fast chip removal and provides a high cutting speed along with increased stability and accuracy.



High performance twist drill for all-purpose use in drilling machines and cordless drills. (Materials up to 5,0 mm thickness)



Steel (N/mm2) < 900	■	Brass	■
Steel (N/mm2) < 1100	■	Bronze	□
Steel (N/mm2) < 1300		Plastics	■
Rust-resistant steel	■	Cast iron	□
Aluminium	■	Titanium alloyed	

Packing unit: in plastic box

Ø mm	L1 mm	L2 mm	HSSE Co 5		
1,00	34,0	12,0	228 010		10
1,50	40,0	18,0	228 015		10
2,00	49,0	24,0	228 020		10
2,50	57,0	30,0	228 025		10
3,00	61,0	33,0	228 030		10
3,30	65,0	36,0	228 033		10
3,50	70,0	39,0	228 035		10
4,00	75,0	43,0	228 040		10
4,20	75,0	43,0	228 042		10
4,50	80,0	47,0	228 045		10
5,00	86,0	52,0	228 050		10
5,50	93,0	57,0	228 055		10
6,00	93,0	57,0	228 060		10
6,50	101,0	63,0	228 065		10
6,80	109,0	69,0	228 068		10

Ø mm	L1 mm	L2 mm	HSSE Co 5		
7,00	109,0	69,0	228 070		10
7,50	109,0	69,0	228 075		10
7,80	117,0	75,0	228 078		10
8,00	117,0	75,0	228 080		10
8,50	117,0	75,0	228 085		10
9,00	125,0	81,0	228 090		10
9,50	125,0	81,0	228 095		10
10,00	133,0	87,0	228 100		10
10,20	133,0	87,0	228 102		10
10,50	133,0	87,0	228 105		5
11,00	142,0	94,0	228 110		5
11,50	142,0	94,0	228 115		5
12,00	151,0	101,0	228 120		5
12,50	151,0	101,0	228 125		5
13,00	151,0	101,0	228 130		5

## Twist drill sets DIN 338 type UNI, HSSE-Co5 ground

	HSSE Co 5
19-piece set of twist drills DIN 338 type UNI Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case	228 214
25-piece set of twist drills DIN 338 type UNI Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case	228 215
19-piece set of twist drills DIN 338 type UNI Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case	228 214 RO
25-piece set of twist drills DIN 338 type UNI Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case	228 215 RO





DIN 338 · UNI





## Twist drills DIN 338 TL 3000, HSS ground

Stable multirange drill with reinforced drill core and parabolic flute for ideal chip removal. Ideal for drilling medium and long-chipping materials. Thanks to its thick core and the special flute with a rounded rear edge, this drill is best suited for high-performance use. It covers types N, H and W for a wide range of applications.









Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	■	■	■
Steel (N/mm <sup>2</sup> ) < 1100		□	□
Steel (N/mm <sup>2</sup> ) < 1300			□
Rust-resistant steel		□	■
Aluminium	■	□	■

Brass	■	■	■
Bronze	□	□	■
Plastics	■	■	■
Cast iron	□	□	□
Titanium alloyed			

Ø mm	L1 mm	L2 mm	HSS		HSS		HSS	
			Part No.	Pack	Part No.	Pack	Part No.	Pack
1,00	34,0	12,0	258 010	10	258 010 T	10	258 010 F	10
1,10	36,0	14,0	258 011	10	258 011 T	10	258 011 F	10
1,20	38,0	16,0	258 012	10	258 012 T	10	258 012 F	10
1,30	38,0	16,0	258 013	10	258 013 T	10	258 013 F	10
1,40	40,0	18,0	258 014	10	258 014 T	10	258 014 F	10
1,50	40,0	18,0	258 015	10	258 015 T	10	258 015 F	10
1,60	43,0	20,0	258 016	10	258 016 T	10	258 016 F	10
1,70	43,0	20,0	258 017	10	258 017 T	10	258 017 F	10
1,80	46,0	22,0	258 018	10	258 018 T	10	258 018 F	10
1,90	46,0	22,0	258 019	10	258 019 T	10	258 019 F	10
2,00	49,0	24,0	258 020	10	258 020 T	10	258 020 F	10
2,10	49,0	24,0	258 021	10	258 021 T	10	258 021 F	10
2,20	53,0	27,0	258 022	10	258 022 T	10	258 022 F	10
2,30	53,0	27,0	258 023	10	258 023 T	10	258 023 F	10
2,40	57,0	30,0	258 024	10	258 024 T	10	258 024 F	10
2,50	57,0	30,0	258 025	10	258 025 T	10	258 025 F	10
2,60	57,0	30,0	258 026	10	258 026 T	10	258 026 F	10
2,70	61,0	33,0	258 027	10	258 027 T	10	258 027 F	10
2,80	61,0	33,0	258 028	10	258 028 T	10	258 028 F	10
2,90	61,0	33,0	258 029	10	258 029 T	10	258 029 F	10
3,00	61,0	33,0	258 030	10	258 030 T	10	258 030 F	10
3,10	65,0	36,0	258 031	10	258 031 T	10	258 031 F	10
3,20	65,0	36,0	258 032	10	258 032 T	10	258 032 F	10
3,30	65,0	36,0	258 033	10	258 033 T	10	258 033 F	10
3,40	70,0	39,0	258 034	10	258 034 T	10	258 034 F	10
3,50	70,0	39,0	258 035	10	258 035 T	10	258 035 F	10
3,60	70,0	39,0	258 036	10	258 036 T	10	258 036 F	10
3,70	70,0	39,0	258 037	10	258 037 T	10	258 037 F	10
3,80	75,0	43,0	258 038	10	258 038 T	10	258 038 F	10
3,90	75,0	43,0	258 039	10	258 039 T	10	258 039 F	10
4,00	75,0	43,0	258 040	10	258 040 T	10	258 040 F	10
4,10	75,0	43,0	258 041	10	258 041 T	10	258 041 F	10
4,20	75,0	43,0	258 042	10	258 042 T	10	258 042 F	10
4,30	80,0	47,0	258 043	10	258 043 T	10	258 043 F	10
4,40	80,0	47,0	258 044	10	258 044 T	10	258 044 F	10
4,50	80,0	47,0	258 045	10	258 045 T	10	258 045 F	10
4,60	80,0	47,0	258 046	10	258 046 T	10	258 046 F	10
4,70	80,0	47,0	258 047	10	258 047 T	10	258 047 F	10
4,80	86,0	52,0	258 048	10	258 048 T	10	258 048 F	10
4,90	86,0	52,0	258 049	10	258 049 T	10	258 049 F	10

Ø mm	L1 mm	L2 mm	HSS		TIN		HSS TITAN	
								
5,00	86,0	52,0	258 050	10	258 050 T	10	258 050 F	10
5,10	86,0	52,0	258 051	10	258 051 T	10	258 051 F	10
5,20	86,0	52,0	258 052	10	258 052 T	10	258 052 F	10
5,30	86,0	52,0	258 053	10	258 053 T	10	258 053 F	10
5,40	93,0	57,0	258 054	10	258 054 T	10	258 054 F	10
5,50	93,0	57,0	258 055	10	258 055 T	10	258 055 F	10
5,60	93,0	57,0	258 056	10	258 056 T	10	258 056 F	10
5,70	93,0	57,0	258 057	10	258 057 T	10	258 057 F	10
5,80	93,0	57,0	258 058	10	258 058 T	10	258 058 F	10
5,90	93,0	57,0	258 059	10	258 059 T	10	258 059 F	10
6,00	93,0	57,0	258 060	10	258 060 T	10	258 060 F	10
6,10	101,0	63,0	258 061	10	258 061 T	10	258 061 F	10
6,20	101,0	63,0	258 062	10	258 062 T	10	258 062 F	10
6,30	101,0	63,0	258 063	10	258 063 T	10	258 063 F	10
6,40	101,0	63,0	258 064	10	258 064 T	10	258 064 F	10
6,50	101,0	63,0	258 065	10	258 065 T	10	258 065 F	10
6,60	101,0	63,0	258 066	10	258 066 T	10	258 066 F	10
6,70	101,0	63,0	258 067	10	258 067 T	10	258 067 F	10
6,80	109,0	69,0	258 068	10	258 068 T	10	258 068 F	10
6,90	109,0	69,0	258 069	10	258 069 T	10	258 069 F	10
7,00	109,0	69,0	258 070	10	258 070 T	10	258 070 F	10
7,10	109,0	69,0	258 071	10	258 071 T	10	258 071 F	10
7,20	109,0	69,0	258 072	10	258 072 T	10	258 072 F	10
7,30	109,0	69,0	258 073	10	258 073 T	10	258 073 F	10
7,40	109,0	69,0	258 074	10	258 074 T	10	258 074 F	10
7,50	109,0	69,0	258 075	10	258 075 T	10	258 075 F	10
7,60	117,0	75,0	258 076	10	258 076 T	10	258 076 F	10
7,70	117,0	75,0	258 077	10	258 077 T	10	258 077 F	10
7,80	117,0	75,0	258 078	10	258 078 T	10	258 078 F	10
7,90	117,0	75,0	258 079	10	258 079 T	10	258 079 F	10
8,00	117,0	75,0	258 080	10	258 080 T	10	258 080 F	10
8,10	117,0	75,0	258 081	10	258 081 T	10	258 081 F	10
8,20	117,0	75,0	258 082	10	258 082 T	10	258 082 F	10
8,30	117,0	75,0	258 083	10	258 083 T	10	258 083 F	10
8,40	117,0	75,0	258 084	10	258 084 T	10	258 084 F	10
8,50	117,0	75,0	258 085	10	258 085 T	10	258 085 F	10
8,60	125,0	81,0	258 086	10	258 086 T	10	258 086 F	10
8,70	125,0	81,0	258 087	10	258 087 T	10	258 087 F	10
8,80	125,0	81,0	258 088	10	258 088 T	10	258 088 F	10
8,90	125,0	81,0	258 089	10	258 089 T	10	258 089 F	10
9,00	125,0	81,0	258 090	10	258 090 T	10	258 090 F	10
9,10	125,0	81,0	258 091	10	258 091 T	10	258 091 F	10
9,20	125,0	81,0	258 092	10	258 092 T	10	258 092 F	10
9,30	125,0	81,0	258 093	10	258 093 T	10	258 093 F	10
9,40	125,0	81,0	258 094	10	258 094 T	10	258 094 F	10
9,50	125,0	81,0	258 095	10	258 095 T	10	258 095 F	10
9,60	133,0	87,0	258 096	10	258 096 T	10	258 096 F	10
9,70	133,0	87,0	258 097	10	258 097 T	10	258 097 F	10
9,80	133,0	87,0	258 098	10	258 098 T	10	258 098 F	10
9,90	133,0	87,0	258 099	10	258 099 T	10	258 099 F	10
10,00	133,0	87,0	258 100	10	258 100 T	10	258 100 F	10
10,10	133,0	87,0	258 101	10	258 101 T	10	258 101 F	10
10,20	133,0	87,0	258 102	10	258 102 T	10	258 102 F	10
10,30	133,0	87,0	258 103	5	258 103 T	5	258 103 F	5
10,40	133,0	87,0	258 104	5	258 104 T	5	258 104 F	5
10,50	133,0	87,0	258 105	5	258 105 T	5	258 105 F	5
10,60	133,0	87,0	258 106	5	258 106 T	5	258 106 F	5
10,70	142,0	94,0	258 107	5	258 107 T	5	258 107 F	5
10,80	142,0	94,0	258 108	5	258 108 T	5	258 108 F	5
10,90	142,0	94,0	258 109	5	258 109 T	5	258 109 F	5
11,00	142,0	94,0	258 110	5	258 110 T	5	258 110 F	5
11,10	142,0	94,0	258 111	5	258 111 T	5	258 111 F	5
11,20	142,0	94,0	258 112	5	258 112 T	5	258 112 F	5
11,30	142,0	94,0	258 113	5	258 113 T	5	258 113 F	5
11,40	142,0	94,0	258 114	5	258 114 T	5	258 114 F	5
11,50	142,0	94,0	258 115	5	258 115 T	5	258 115 F	5
11,60	142,0	94,0	258 116	5	258 116 T	5	258 116 F	5
11,70	142,0	94,0	258 117	5	258 117 T	5	258 117 F	5
11,80	142,0	94,0	258 118	5	258 118 T	5	258 118 F	5
11,90	151,0	101,0	258 119	5	258 119 T	5	258 119 F	5
12,00	151,0	101,0	258 120	5	258 120 T	5	258 120 F	5
12,10	151,0	101,0	258 121	5	258 121 T	5	258 121 F	5
12,20	151,0	101,0	258 122	5	258 122 T	5	258 122 F	5
12,30	151,0	101,0	258 123	5	258 123 T	5	258 123 F	5



### Twist drills DIN 338 TL 3000, HSS ground

Ø mm	L1 mm	L2 mm	HSS		HSS TIN		HSS TiAIN	
			Part No.	Qty	Part No.	Qty	Part No.	Qty
12,40	151,0	101,0	258 124	5	258 124 T	5	258 124 F	5
12,50	151,0	101,0	258 125	5	258 125 T	5	258 125 F	5
12,60	151,0	101,0	258 126	5	258 126 T	5	258 126 F	5
12,70	151,0	101,0	258 127	5	258 127 T	5	258 127 F	5
12,80	151,0	101,0	258 128	5	258 128 T	5	258 128 F	5
12,90	151,0	101,0	258 129	5	258 129 T	5	258 129 F	5
13,00	151,0	101,0	258 130	5	258 130 T	5	258 130 F	5
13,50	160,0	108,0	258 135	5	258 135 T	5	258 135 F	5
14,00	160,0	108,0	258 140	5	258 140 T	5	258 140 F	5
14,50	169,0	114,0	258 145	5	258 145 T	5	258 145 F	5
15,00	169,0	114,0	258 150	5	258 150 T	5	258 150 F	5
15,50	178,0	120,0	258 155	5	258 155 T	5	258 155 F	5
16,00	178,0	120,0	258 160	5	258 160 T	5	258 160 F	5

### Twist drill sets DIN 338 TL 3000, HSS ground

	HSS	HSS TIN	HSS TiAIN
19-piece set of twist drills DIN 338 type TL 3000 Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case	258 214	258 214 T	258 214 F
25-piece set of twist drills DIN 338 type TL 3000 Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case	258 215	258 215 T	258 215 F
19-piece set of twist drills DIN 338 type TL 3000 Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case	258 214 RO	258 214 TRO	258 214 FRO
25-piece set of twist drills DIN 338 type TL 3000 Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case	258 215 RO	258 215 TRO	258 215 FRO





## Twist drills DIN 338 type TURBO, HSS ground

Ground twist drill in high-performance high-speed steel.

Drills very cleanly with burr-free hole edges. Immediate drilling start after insertion as no prepunching is necessary. Shatter stability is increased by up to 50 % as the core diameter increases constantly in the direction of the shank (from Ø 3,2 mm). Triple milled clamping areas prevent the drill from spinning in the machine (from Ø 5,0 mm).

For use on: non-alloy and alloy steel (up to grade of approx. 900 N/mm<sup>2</sup>), for drilling thin-walled profiles and sheeting up to 5,0 mm, plastics and wood.



Packing unit: in plastic box



High-performance twist drill, particularly suited for handheld drilling of thin-walled materials.

Steel (N/mm <sup>2</sup> ) < 900	■
Steel (N/mm <sup>2</sup> ) < 1100	
Steel (N/mm <sup>2</sup> ) < 1300	
Rust-resistant steel	
Aluminium	■

Brass	■
Bronze	□
Plastics	■
Cast iron	
Titanium alloyed	

Ø mm	L1 mm	L2 mm		
1,00	34,0	12,0	2146 010	10
1,50	40,0	18,0	2146 015	10
2,00	49,0	24,0	2146 020	10
2,50	57,0	30,0	2146 025	10
3,00	61,0	33,0	2146 030	10
3,20	65,0	36,0	2146 032	10
3,30	65,0	36,0	2146 033	10
3,50	70,0	39,0	2146 035	10
4,00	75,0	43,0	2146 040	10
4,10	75,0	43,0	2146 041	10
4,20	75,0	43,0	2146 042	10
4,50	80,0	46,0	2146 045	10
4,80	86,0	46,0	2146 048	10
5,00	86,0	46,0	2146 050	10
5,10	86,0	46,0	2146 051	10
5,20	86,0	46,0	2146 052	10
5,40	93,0	52,0	2146 054	10
5,50	93,0	52,0	2146 055	10
6,00	93,0	57,0	2146 060	10
6,50	101,0	58,0	2146 065	10
6,80	109,0	66,0	2146 068	10
7,00	109,0	66,0	2146 070	10
7,50	109,0	66,0	2146 075	10
8,00	117,0	72,0	2146 080	10
8,50	117,0	72,0	2146 085	10
9,00	125,0	78,0	2146 090	10
9,50	125,0	78,0	2146 095	10
10,00	133,0	84,0	2146 100	10
10,50	133,0	84,0	2146 105	5
11,00	142,0	91,0	2146 110	5
11,50	142,0	91,0	2146 115	5
12,00	151,0	98,0	2146 120	5
12,50	151,0	98,0	2146 125	5
13,00	151,0	98,0	2146 130	5

## Twist drill sets DIN 338 type TURBO, HSS ground

19-piece set of twist drills DIN 338 type TURBO Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case	214 614
25-piece set of twist drills DIN 338 type TURBO Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case	214 615
19-piece set of twist drills DIN 338 type TURBO Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case	214 614 RO
19-piece set of twist drills DIN 338 type TURBO Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case	214 615 RO







## Twist drills DIN 338 type N, HSS ground

High-performance ground standard twist drill made from heavy-duty high speed steel. The fully ground twist drill has a precise concentricity. Thanks to the split point, this drill has good centring properties and requires little pressure.



Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	■	■	■
Steel (N/mm <sup>2</sup> ) < 1100			□
Steel (N/mm <sup>2</sup> ) < 1300			
Rust-resistant steel			□
Aluminium	■	■	

Brass	■	■	■
Bronze	□	□	□
Plastics	■	■	■
Cast iron	□	□	□
Titanium alloyed			

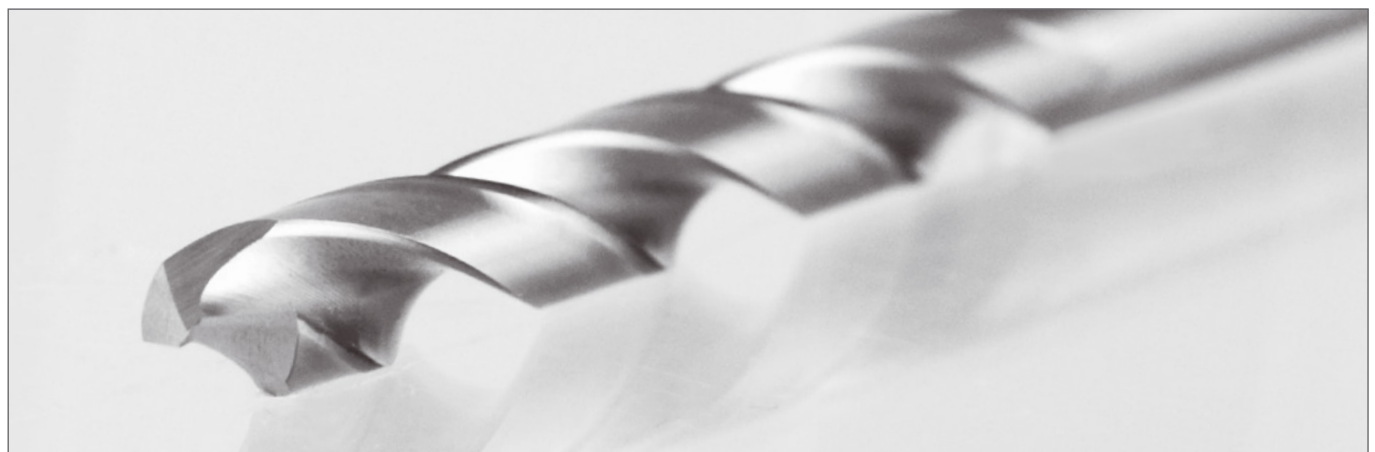
Ø mm	L1 mm	L2 mm	HSS		HSS		HSS	
			Code	Pack	Code	Pack	Code	Pack
0,30	19,0	3,0	214 003	10	214 003 S	10	250 003 T	10
0,40	20,0	5,0	214 004	10	214 004 S	10	250 004 T	10
0,50	22,0	6,0	214 005	10	214 005 S	10	250 005 T	10
0,60	24,0	7,0	214 006	10	214 006 S	10	250 006 T	10
0,70	28,0	9,0	214 007	10	214 007 S	10	250 007 T	10
0,80	30,0	10,0	214 008	10	214 008 S	10	250 008 T	10
0,90	32,0	11,0	214 009	10	214 009 S	10	250 009 T	10
1,00	34,0	12,0	214 010	10	214 010 S	10	250 010 T	10
1,10	36,0	14,0	214 011	10	214 011 S	10	250 011 T	10
1,20	38,0	16,0	214 012	10	214 012 S	10	250 012 T	10
1,25	38,0	16,0	214 0125	10	214 0125 S	10	250 0125 T	10
1,30	38,0	16,0	214 013	10	214 013 S	10	250 013 T	10
1,40	40,0	18,0	214 014	10	214 014 S	10	250 014 T	10
1,50	40,0	18,0	214 015	10	214 015 S	10	250 015 T	10
1,60	43,0	20,0	214 016	10	214 016 S	10	250 016 T	10
1,70	43,0	20,0	214 017	10	214 017 S	10	250 017 T	10
1,75	46,0	20,0	214 0175	10	214 0175 S	10	250 0175 T	10
1,80	46,0	22,0	214 018	10	214 018 S	10	250 018 T	10
1,90	46,0	22,0	214 019	10	214 019 S	10	250 019 T	10
2,00	49,0	24,0	214 020	10	214 020 S	10	250 020 T	10
2,10	49,0	24,0	214 021	10	214 021 S	10	250 021 T	10
2,20	53,0	27,0	214 022	10	214 022 S	10	250 022 T	10
2,25	53,0	27,0	214 0225	10	214 0225 S	10	250 0225 T	10
2,30	53,0	27,0	214 023	10	214 023 S	10	250 023 T	10
2,40	57,0	30,0	214 024	10	214 024 S	10	250 024 T	10
2,50	57,0	30,0	214 025	10	214 025 S	10	250 025 T	10
2,60	57,0	30,0	214 026	10	214 026 S	10	250 026 T	10
2,70	61,0	33,0	214 027	10	214 027 S	10	250 027 T	10
2,75	61,0	33,0	214 0275	10	214 0275 S	10	250 0275 T	10
2,80	61,0	33,0	214 028	10	214 028 S	10	250 028 T	10
2,90	61,0	33,0	214 029	10	214 029 S	10	250 029 T	10
3,00	61,0	33,0	214 030	10	214 030 S	10	250 030 T	10
3,10	65,0	36,0	214 031	10	214 031 S	10	250 031 T	10
3,20	65,0	36,0	214 032	10	214 032 S	10	250 032 T	10
3,25	65,0	36,0	214 0325	10	214 0325 S	10	250 0325 T	10
3,30	65,0	36,0	214 033	10	214 033 S	10	250 033 T	10
3,40	70,0	39,0	214 034	10	214 034 S	10	250 034 T	10
3,50	70,0	39,0	214 035	10	214 035 S	10	250 035 T	10
3,60	70,0	39,0	214 036	10	214 036 S	10	250 036 T	10
3,70	70,0	39,0	214 037	10	214 037 S	10	250 037 T	10



## Twist drills DIN 338 type N, HSS ground





Ø mm	L1 mm	L2 mm	HSS		HSS		HSS TIN	
3,75	70,0	39,0	214 0375	10	214 0375 S	10	250 0375 T	10
3,80	75,0	43,0	214 038	10	214 038 S	10	250 038 T	10
3,90	75,0	43,0	214 039	10	214 039 S	10	250 039 T	10
4,00	75,0	43,0	214 040	10	214 040 S	10	250 040 T	10
4,10	75,0	43,0	214 041	10	214 041 S	10	250 041 T	10
4,20	75,0	43,0	214 042	10	214 042 S	10	250 042 T	10
4,25	75,0	43,0	214 0425	10	214 0425 S	10	250 0425 T	10
4,30	80,0	47,0	214 043	10	214 043 S	10	250 043 T	10
4,40	80,0	47,0	214 044	10	214 044 S	10	250 044 T	10
4,50	80,0	47,0	214 045	10	214 045 S	10	250 045 T	10
4,60	80,0	47,0	214 046	10	214 046 S	10	250 046 T	10
4,70	80,0	47,0	214 047	10	214 047 S	10	250 047 T	10
4,75	80,0	47,0	214 0475	10	214 0475 S	10	250 0475 T	10
4,80	86,0	52,0	214 048	10	214 048 S	10	250 048 T	10
4,90	86,0	52,0	214 049	10	214 049 S	10	250 049 T	10
5,00	86,0	52,0	214 050	10	214 050 S	10	250 050 T	10
5,10	86,0	52,0	214 051	10	214 051 S	10	250 051 T	10
5,20	86,0	52,0	214 052	10	214 052 S	10	250 052 T	10
5,25	86,0	52,0	214 0525	10	214 0525 S	10	250 0525 T	10
5,30	86,0	52,0	214 053	10	214 053 S	10	250 053 T	10
5,40	93,0	57,0	214 054	10	214 054 S	10	250 054 T	10
5,50	93,0	57,0	214 055	10	214 055 S	10	250 055 T	10
5,60	93,0	57,0	214 056	10	214 056 S	10	250 056 T	10
5,70	93,0	57,0	214 057	10	214 057 S	10	250 057 T	10
5,75	93,0	57,0	214 0575	10	214 0575 S	10	250 0575 T	10
5,80	93,0	57,0	214 058	10	214 058 S	10	250 058 T	10
5,90	93,0	57,0	214 059	10	214 059 S	10	250 059 T	10
6,00	93,0	57,0	214 060	10	214 060 S	10	250 060 T	10
6,10	101,0	63,0	214 061	10	214 061 S	10	250 061 T	10
6,20	101,0	63,0	214 062	10	214 062 S	10	250 062 T	10
6,25	101,0	63,0	214 0625	10	214 0625 S	10	250 0625 T	10
6,30	101,0	63,0	214 063	10	214 063 S	10	250 063 T	10
6,40	101,0	63,0	214 064	10	214 064 S	10	250 064 T	10
6,50	101,0	63,0	214 065	10	214 065 S	10	250 065 T	10
6,60	101,0	63,0	214 066	10	214 066 S	10	250 066 T	10
6,70	101,0	63,0	214 067	10	214 067 S	10	250 067 T	10
6,75	101,0	63,0	214 0675	10	214 0675 S	10	250 0675 T	10
6,80	109,0	69,0	214 068	10	214 068 S	10	250 068 T	10
6,90	109,0	69,0	214 069	10	214 069 S	10	250 069 T	10
7,00	109,0	69,0	214 070	10	214 070 S	10	250 070 T	10
7,10	109,0	69,0	214 071	10	214 071 S	10	250 071 T	10
7,20	109,0	69,0	214 072	10	214 072 S	10	250 072 T	10
7,25	109,0	69,0	214 0725	10	214 0725 S	10	250 0725 T	10
7,30	109,0	69,0	214 073	10	214 073 S	10	250 073 T	10
7,40	109,0	69,0	214 074	10	214 074 S	10	250 074 T	10
7,50	109,0	69,0	214 075	10	214 075 S	10	250 075 T	10
7,60	117,0	75,0	214 076	10	214 076 S	10	250 076 T	10
7,70	117,0	75,0	214 077	10	214 077 S	10	250 077 T	10
7,75	117,0	75,0	214 0775	10	214 0775 S	10	250 0775 T	10
7,80	117,0	75,0	214 078	10	214 078 S	10	250 078 T	10
7,90	117,0	75,0	214 079	10	214 079 S	10	250 079 T	10
8,00	117,0	75,0	214 080	10	214 080 S	10	250 080 T	10
8,10	117,0	75,0	214 081	10	214 081 S	10	250 081 T	10
8,20	117,0	75,0	214 082	10	214 082 S	10	250 082 T	10
8,25	117,0	75,0	214 0825	10	214 0825 S	10	250 0825 T	10
8,30	117,0	75,0	214 083	10	214 083 S	10	250 083 T	10
8,40	117,0	75,0	214 084	10	214 084 S	10	250 084 T	10
8,50	117,0	75,0	214 085	10	214 085 S	10	250 085 T	10
8,60	125,0	81,0	214 086	10	214 086 S	10	250 086 T	10
8,70	125,0	81,0	214 087	10	214 087 S	10	250 087 T	10
8,75	125,0	81,0	214 0875	10	214 0875 S	10	250 0875 T	10
8,80	125,0	81,0	214 088	10	214 088 S	10	250 088 T	10
8,90	125,0	81,0	214 089	10	214 089 S	10	250 089 T	10
9,00	125,0	81,0	214 090	10	214 090 S	10	250 090 T	10
9,10	125,0	81,0	214 091	10	214 091 S	10	250 091 T	10
9,20	125,0	81,0	214 092	10	214 092 S	10	250 092 T	10

Ø mm	L1 mm	L2 mm	HSS		HSS		HSS TiN	
			Icon 1	Icon 2	Icon 1	Icon 2	Icon 1	Icon 2
9,25	125,0	81,0	214 0925	10	214 0925 S	10	250 0925 T	10
9,30	125,0	81,0	214 093	10	214 093 S	10	250 093 T	10
9,40	125,0	81,0	214 094	10	214 094 S	10	250 094 T	10
9,50	125,0	81,0	214 095	10	214 095 S	10	250 095 T	10
9,60	133,0	87,0	214 096	10	214 096 S	10	250 096 T	10
9,70	133,0	87,0	214 097	10	214 097 S	10	250 097 T	10
9,75	133,0	87,0	214 0975	10	214 0975 S	10	250 0975 T	10
9,80	133,0	87,0	214 098	10	214 098 S	10	250 098 T	10
9,90	133,0	87,0	214 099	10	214 099 S	10	250 099 T	10
10,00	133,0	87,0	214 100	10	214 100 S	10	250 100 T	10
10,10	133,0	87,0	214 101	10	214 101 S	10	250 101 T	10
10,20	133,0	87,0	214 102	10	214 102 S	10	250 102 T	10
10,30	133,0	87,0	214 103	10	214 103 S	10	250 103 T	10
10,40	133,0	87,0	214 104	10	214 104 S	10	250 104 T	10
10,50	133,0	87,0	214 105	5	214 105 S	5	250 105 T	5
10,60	133,0	87,0	214 106	5	214 106 S	5	250 106 T	5
10,70	142,0	94,0	214 107	5	214 107 S	5	250 107 T	5
10,80	142,0	94,0	214 108	5	214 108 S	5	250 108 T	5
10,90	142,0	94,0	214 109	5	214 109 S	5	250 109 T	5
11,00	142,0	94,0	214 110	5	214 110 S	5	250 110 T	5
11,10	142,0	94,0	214 111	5	214 111 S	5	250 111 T	5
11,20	142,0	94,0	214 112	5	214 112 S	5	250 112 T	5
11,30	142,0	94,0	214 113	5	214 113 S	5	250 113 T	5
11,40	142,0	94,0	214 114	5	214 114 S	5	250 114 T	5
11,50	142,0	94,0	214 115	5	214 115 S	5	250 115 T	5
11,60	142,0	94,0	214 116	5	214 116 S	5	250 116 T	5
11,70	142,0	94,0	214 117	5	214 117 S	5	250 117 T	5
11,80	142,0	94,0	214 118	5	214 118 S	5	250 118 T	5
11,90	151,0	101,0	214 119	5	214 119 S	5	250 119 T	5
12,00	151,0	101,0	214 120	5	214 120 S	5	250 120 T	5
12,10	151,0	101,0	214 121	5	214 121 S	5	250 121 T	5
12,20	151,0	101,0	214 122	5	214 122 S	5	250 122 T	5
12,30	151,0	101,0	214 123	5	214 123 S	5	250 123 T	5
12,40	151,0	101,0	214 124	5	214 124 S	5	250 124 T	5
12,50	151,0	101,0	214 125	5	214 125 S	5	250 125 T	5
12,60	151,0	101,0	214 126	5	214 126 S	5	250 126 T	5
12,70	151,0	101,0	214 127	5	214 127 S	5	250 127 T	5
12,80	151,0	101,0	214 128	5	214 128 S	5	250 128 T	5
12,90	151,0	101,0	214 129	5	214 129 S	5	250 129 T	5
13,00	151,0	101,0	214 130	5	214 130 S	5	250 130 T	5
13,50	160,0	108,0	214 135	5	214 135 S	5	250 135 T	5
14,00	160,0	108,0	214 140	5	214 140 S	5	250 140 T	5
14,50	169,0	114,0	214 145	5	214 145 S	5	250 145 T	5
15,00	169,0	114,0	214 150	5	214 150 S	5	250 150 T	5
15,50	178,0	120,0	214 155	5	214 155 S	5	250 155 T	5
16,00	178,0	120,0	214 160	5	214 160 S	5	250 160 T	5
16,50	184,0	125,0	214 165	1	—	—	—	—
17,00	184,0	125,0	214 170	1	—	—	—	—
17,50	191,0	130,0	214 175	1	—	—	—	—
18,00	191,0	130,0	214 180	1	—	—	—	—
18,50	198,0	135,0	214 185	1	—	—	—	—
19,00	198,0	135,0	214 190	1	—	—	—	—
19,50	205,0	140,0	214 195	1	—	—	—	—
20,00	205,0	140,0	214 201	1	—	—	—	—









## Twist drill sets DIN 338 type N, HSS ground

	HSS 	HSS 	HSS  
19-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case	214 214	214 214 S	250 214 T
25-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case	214 215	214 215 S	250 215 T
41-piece set of twist drills DIN 338 type N Ø 6,0 mm up to 10,0 mm in increments of 0,1 mm in steel case	214 218	–	–
50-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 5,9 mm in increments of 0,1 mm in steel case	214 217	–	–



	HSS 	HSS 	HSS  
19-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case	214 214 RO	214 214 SRO	250 214 TRO
25-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case	214 215 RO	214 215 SRO	250 215 TRO





## Twist drills DIN 338 type N, HSS ground - left hand cutting

High-performance ground twist drill made from heavy-duty high speed steel. The fully ground twist drill has a precise concentricity.



Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	■	Brass	■
Steel (N/mm <sup>2</sup> ) < 1100	□	Bronze	□
Steel (N/mm <sup>2</sup> ) < 1300		Plastics	■
Rust-resistant steel	□	Cast iron	□
Aluminium	■	Titanium alloyed	

Ø mm	L1 mm	L2 mm	HSS		
1,00	34,0	12,0	214 010 Li	10	
1,50	40,0	18,0	214 015 Li	10	
2,00	49,0	24,0	214 020 Li	10	
2,50	57,0	30,0	214 025 Li	10	
3,00	61,0	33,0	214 030 Li	10	
3,20	65,0	36,0	214 032 Li	10	
3,30	65,0	36,0	214 033 Li	10	
3,50	70,0	39,0	214 035 Li	10	
4,00	75,0	43,0	214 040 Li	10	
4,20	75,0	43,0	214 042 Li	10	
4,50	80,0	47,0	214 045 Li	10	
4,80	86,0	52,0	214 048 Li	10	
5,00	86,0	52,0	214 050 Li	10	
5,50	93,0	57,0	214 055 Li	10	
6,00	93,0	57,0	214 060 Li	10	
6,50	101,0	63,0	214 065 Li	10	

Ø mm	L1 mm	L2 mm	HSS		
6,80	109,0	69,0	214 068 Li	10	
7,00	109,0	69,0	214 070 Li	10	
7,50	109,0	69,0	214 075 Li	10	
8,00	117,0	75,0	214 080 Li	10	
8,50	117,0	75,0	214 085 Li	10	
9,00	125,0	81,0	214 090 Li	10	
9,50	125,0	81,0	214 095 Li	10	
10,00	133,0	87,0	214 100 Li	10	
10,20	133,0	87,0	214 102 Li	10	
10,50	133,0	87,0	214 105 Li	5	
11,00	142,0	94,0	214 110 Li	5	
11,50	142,0	94,0	214 115 Li	5	
12,00	151,0	101,0	214 120 Li	5	
12,50	151,0	101,0	214 125 Li	5	
13,00	151,0	101,0	214 130 Li	5	
-	-	-	-	-	

## Twist drill sets DIN 338 type N, HSS ground - left hand cutting

	HSS
19-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case	214 214 Li
25-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case	214 215 Li
19-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case	214 214 Li RO
25-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case	214 215 Li RO



214 214 Li RO



## **N** Twist drill DIN 338 type N, HSS-G with TiN-coated bits

High-performance ground standard twist drill made from heavy-duty high speed steel. The fully ground twist drill has a precise concentricity. Thanks to the split point, this drill has good centring properties and requires little pressure.

The titanium nitride coating is a universally usable standard coating. It has a 300-400 % longer service life than non-coated materials. Cooling is recommended.



Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>

Ø mm	L1 mm	L2 mm	HSS		
1,00	34,0	12,0	2501 010 T	10	
1,50	40,0	18,0	2501 015 T	10	
1,60	43,0	20,0	2501 016 T	10	
2,00	49,0	24,0	2501 020 T	10	
2,10	49,0	24,0	2501 021 T	10	
2,50	57,0	30,0	2501 025 T	10	
3,00	61,0	33,0	2501 030 T	10	
3,30	65,0	36,0	2501 033 T	10	
3,50	70,0	39,0	2501 035 T	10	
4,00	75,0	43,0	2501 040 T	10	
4,20	75,0	43,0	2501 042 T	10	
4,50	80,0	47,0	2501 045 T	10	
5,00	86,0	52,0	2501 050 T	10	
5,50	93,0	57,0	2501 055 T	10	
6,00	93,0	57,0	2501 060 T	10	
6,50	101,0	63,0	2501 065 T	10	

Ø mm	L1 mm	L2 mm	HSS		
6,80	109,0	69,0	2501 068 T	10	
7,00	109,0	69,0	2501 070 T	10	
7,50	109,0	69,0	2501 075 T	10	
8,00	117,0	75,0	2501 080 T	10	
8,50	117,0	75,0	2501 085 T	10	
9,00	125,0	81,0	2501 090 T	10	
9,50	125,0	81,0	2501 095 T	10	
10,00	133,0	87,0	2501 100 T	10	
10,20	133,0	87,0	2501 102 T	10	
10,50	133,0	87,0	2501 105 T	5	
11,00	142,0	94,0	2501 110 T	5	
11,50	142,0	94,0	2501 115 T	5	
12,00	151,0	101,0	2501 120 T	5	
12,50	151,0	101,0	2501 125 T	5	
13,00	151,0	101,0	2501 130 T	5	

## Twist drill sets DIN 338 type N, HSS-G with TiN-coated bits

	HSS
19-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case	2501 214 T
25-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case	2501 215 T
19-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case	2501 214 TRO
25-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case	2501 215 TRO





### Twist drill sets, DIN 338 type N and type VA in bench stand

91-piece set of twist drills DIN 338 Ø 1,0 mm up to 10,0 mm in increments of 0,1 mm	205 223	214 223	215 223

### Twist drill sets, DIN 338 type N and type VA in magazine

Consisting of 170 twist drills DIN 338 10 pcs, Ø 1,0 - 8,0 mm in increments of 0,5 mm 5 pcs, Ø 8,5 - 10,0 mm in increments of 0,5 mm	214 200	215 200

### Twist drill cabinet, DIN 338 type N and type VA

Drill cabinet consisting of 570 twist drills DIN 338 50 pcs Ø 1,0 - 2,5 mm in increments of 0,5 mm 30 pcs Ø 3,0 - 5,5 mm in increments of 0,5 mm 20 pcs Ø 6,0 - 7,5 mm in increments of 0,5 mm 20 pcs Ø 8,0 - 13,0 mm in increments of 0,5 mm	205 208	214 208	215 208
Drill cabinet empty Ø 1,0 mm up to 10,0 mm in increments of 0,1 mm + Ø 10,5 mm up to 13,0 mm in increments of 0,5 mm	205 2081 L		
Drill cabinet empty Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm	205 208 L		





## Twist drills DIN 338 type N, HSS rolled

High-performance rolled, steam-treated twist drill made from heavy-duty high speed steel. The manufacturing procedure (no structural disruption) solidifies the material making it more elasticated. This makes it more resistant to fracture and suitable for robust drilling units (e.g. hand-held drilling machines).




Packing unit: in plastic box


	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 900	<input checked="" type="checkbox"/>	Brass	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input type="checkbox"/>	Plastics	<input type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	Cast iron	<input checked="" type="checkbox"/>
Aluminium	<input type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>

Ø mm	L1 mm	L2 mm	HSS-R	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
0,30	19,0	3,0	201 003	10	
0,40	20,0	5,0	201 004	10	
0,50	22,0	6,0	201 005	10	
0,60	24,0	7,0	201 006	10	
0,70	28,0	9,0	201 007	10	
0,80	30,0	10,0	201 008	10	
0,90	32,0	11,0	201 009	10	
1,00	34,0	12,0	201 010	10	
1,10	36,0	14,0	201 011	10	
1,20	38,0	16,0	201 012	10	
1,25	38,0	16,0	201 0125	10	
1,30	38,0	16,0	201 013	10	
1,40	40,0	18,0	201 014	10	
1,50	40,0	18,0	201 015	10	
1,60	43,0	20,0	201 016	10	
1,70	43,0	20,0	201 017	10	
1,75	46,0	20,0	201 0175	10	
1,80	46,0	22,0	201 018	10	
1,90	46,0	22,0	201 019	10	
2,00	49,0	24,0	201 020	10	
2,10	49,0	24,0	201 021	10	
2,20	53,0	27,0	201 022	10	
2,25	53,0	27,0	201 0225	10	
2,30	53,0	27,0	201 023	10	
2,40	57,0	30,0	201 024	10	
2,50	57,0	30,0	201 025	10	
2,60	57,0	30,0	201 026	10	
2,70	61,0	33,0	201 027	10	
2,75	61,0	33,0	201 0275	10	
2,80	61,0	33,0	201 028	10	
2,90	61,0	33,0	201 029	10	
3,00	61,0	33,0	201 030	10	
3,10	65,0	36,0	201 031	10	
3,20	65,0	36,0	201 032	10	
3,25	65,0	36,0	201 0325	10	
3,30	65,0	36,0	201 033	10	
3,40	70,0	39,0	201 034	10	
3,50	70,0	39,0	201 035	10	
3,60	70,0	39,0	201 036	10	
3,70	70,0	39,0	201 037	10	

Ø mm	L1 mm	L2 mm	HSS-R	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3,75	70,0	39,0	201 0375	10	
3,80	75,0	43,0	201 038	10	
3,90	75,0	43,0	201 039	10	
4,00	75,0	43,0	201 040	10	
4,10	75,0	43,0	201 041	10	
4,20	75,0	43,0	201 042	10	
4,25	75,0	43,0	201 0425	10	
4,30	80,0	47,0	201 043	10	
4,40	80,0	47,0	201 044	10	
4,50	80,0	47,0	201 045	10	
4,60	80,0	47,0	201 046	10	
4,70	80,0	47,0	201 047	10	
4,75	80,0	47,0	201 0475	10	
4,80	86,0	52,0	201 048	10	
4,90	86,0	52,0	201 049	10	
5,00	86,0	52,0	201 050	10	
5,10	86,0	52,0	201 051	10	
5,20	86,0	52,0	201 052	10	
5,25	86,0	52,0	201 0525	10	
5,30	86,0	52,0	201 053	10	
5,40	93,0	57,0	201 054	10	
5,50	93,0	57,0	201 055	10	
5,60	93,0	57,0	201 056	10	
5,70	93,0	57,0	201 057	10	
5,75	93,0	57,0	201 0575	10	
5,80	93,0	57,0	201 058	10	
5,90	93,0	57,0	201 059	10	
6,00	93,0	57,0	201 060	10	
6,10	101,0	63,0	201 061	10	
6,20	101,0	63,0	201 062	10	
6,25	101,0	63,0	201 0625	10	
6,30	101,0	63,0	201 063	10	
6,40	101,0	63,0	201 064	10	
6,50	101,0	63,0	201 065	10	
6,60	101,0	63,0	201 066	10	
6,70	101,0	63,0	201 067	10	
6,75	101,0	63,0	201 0675	10	
6,80	109,0	69,0	201 068	10	
6,90	109,0	69,0	201 069	10	
7,00	109,0	69,0	201 070	10	



Ø mm	L1 mm	L2 mm	HSS-R	
7,10	109,0	69,0	201 071	10
7,20	109,0	69,0	201 072	10
7,25	109,0	69,0	201 0725	10
7,30	109,0	69,0	201 073	10
7,40	109,0	69,0	201 074	10
7,50	109,0	69,0	201 075	10
7,60	117,0	75,0	201 076	10
7,70	117,0	75,0	201 077	10
7,75	117,0	75,0	201 0775	10
7,80	117,0	75,0	201 078	10
7,90	117,0	75,0	201 079	10
8,00	117,0	75,0	201 080	10
8,10	117,0	75,0	201 081	10
8,20	117,0	75,0	201 082	10
8,25	117,0	75,0	201 0825	10
8,30	117,0	75,0	201 083	10
8,40	117,0	75,0	201 084	10
8,50	117,0	75,0	201 085	10
8,60	125,0	81,0	201 086	10
8,70	125,0	81,0	201 087	10
8,75	125,0	81,0	201 0875	10
8,80	125,0	81,0	201 088	10
8,90	125,0	81,0	201 089	10
9,00	125,0	81,0	201 090	10
9,10	125,0	81,0	201 091	10
9,20	125,0	81,0	201 092	10
9,25	125,0	81,0	201 0925	10
9,30	125,0	81,0	201 093	10
9,40	125,0	81,0	201 094	10
9,50	125,0	81,0	201 095	10
9,60	133,0	87,0	201 096	10
9,70	133,0	87,0	201 097	10
9,75	133,0	87,0	201 0975	10
9,80	133,0	87,0	201 098	10
9,90	133,0	87,0	201 099	10
10,00	133,0	87,0	201 100	10
10,10	133,0	87,0	201 101	10
10,20	133,0	87,0	201 102	10
10,30	133,0	87,0	201 103	10
10,40	133,0	87,0	201 104	10

Ø mm	L1 mm	L2 mm	HSS-R	
10,50	133,0	87,0	201 105	5
10,60	133,0	87,0	201 106	5
10,70	142,0	94,0	201 107	5
10,80	142,0	94,0	201 108	5
10,90	142,0	94,0	201 109	5
11,00	142,0	94,0	201 110	5
11,10	142,0	94,0	201 111	5
11,20	142,0	94,0	201 112	5
11,30	142,0	94,0	201 113	5
11,40	142,0	94,0	201 114	5
11,50	142,0	94,0	201 115	5
11,60	142,0	94,0	201 116	5
11,70	142,0	94,0	201 117	5
11,80	142,0	94,0	201 118	5
11,90	151,0	101,0	201 119	5
12,00	151,0	101,0	201 120	5
12,10	151,0	101,0	201 121	5
12,20	151,0	101,0	201 122	5
12,30	151,0	101,0	201 123	5
12,40	151,0	101,0	201 124	5
12,50	151,0	101,0	201 125	5
12,60	151,0	101,0	201 126	5
12,70	151,0	101,0	201 127	5
12,80	151,0	101,0	201 128	5
12,90	151,0	101,0	201 129	5
13,00	151,0	101,0	201 130	5
13,50	160,0	108,0	201 135	5
14,00	160,0	108,0	201 140	5
14,50	169,0	114,0	201 145	5
15,00	169,0	114,0	201 150	5
15,50	178,0	120,0	201 155	5
16,00	178,0	120,0	201 160	5
16,50	184,0	125,0	201 165	1
17,00	184,0	125,0	201 170	1
17,50	191,0	130,0	201 175	1
18,00	191,0	130,0	201 180	1
18,50	198,0	135,0	201 185	1
19,00	198,0	135,0	201 190	1
19,50	205,0	140,0	201 195	1
20,00	205,0	140,0	201 200	1

## Twist drill sets DIN 338 type N, HSS rolled

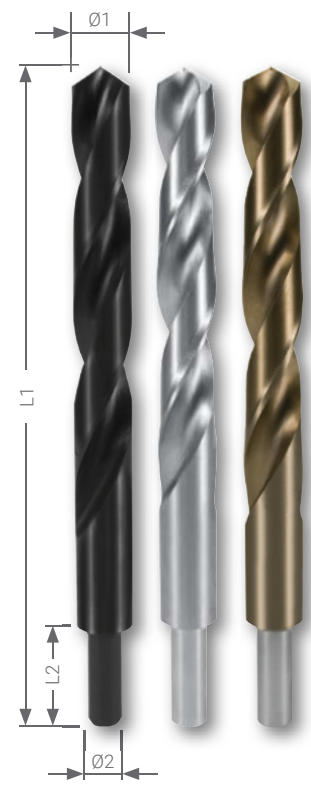
	HSS-R
19-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in steel case	205 212
25-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in steel case	205 213
41-piece set of twist drills DIN 338 type N Ø 6,0 mm up to 10,0 mm in increments of 0,1 mm in steel case	205 218
50-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 5,9 mm in increments of 0,1 mm in steel case	205 217
19-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case	205 212 RO
25-piece set of twist drills DIN 338 type N Ø 1,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case	205 213 RO





## Twist drills DIN 338 type N, with reduced shank

Ideally suitable for drilling larger drilling diameters on all commonly-used drilling machines with a clamping chuck up to 13,0 mm.



Steel (N/mm <sup>2</sup> ) < 900	■	■	■
Steel (N/mm <sup>2</sup> ) < 1100		□	■
Steel (N/mm <sup>2</sup> ) < 1300			
Rust-resistant steel		□	■
Aluminium	■	■	■

Brass	■	■	■
Bronze	□	□	
Plastics	■	■	■
Cast iron	□	□	□
Titanium alloyed			

Ø1 mm	L1 mm	Ø2 mm	L2 mm			
10,50	133,0	10,0	30,0	200 105	1	1
11,00	142,0	10,0	30,0	200 110	1	1
11,50	142,0	10,0	30,0	200 115	1	1
12,00	151,0	10,0	30,0	200 120	1	1
12,50	151,0	10,0	30,0	200 125	1	1
13,00	151,0	10,0	30,0	200 130	1	1
13,50	160,0	10,0	30,0	200 135	1	1
14,00	160,0	10,0	30,0	200 140	1	1
14,50	169,0	10,0	30,0	200 145	1	1
15,00	169,0	10,0	30,0	200 150	1	1
15,50	178,0	10,0	30,0	200 155	1	1
16,00	178,0	10,0	30,0	200 160	1	1
16,50	184,0	13,0	35,0	200 165	1	1
17,00	184,0	13,0	35,0	200 170	1	1
17,50	191,0	13,0	35,0	200 175	1	1
18,00	191,0	13,0	35,0	200 180	1	1
18,50	198,0	13,0	35,0	200 185	1	1
19,00	198,0	13,0	35,0	200 190	1	1
19,50	205,0	13,0	35,0	200 195	1	1
20,00	205,0	13,0	35,0	200 200	1	1
22,00	205,0	13,0	35,0	200 220	1	1
24,00	205,0	13,0	35,0	200 240	1	1
25,00	205,0	13,0	35,0	200 250	1	1

200 4 105	1	1
200 4 110	1	1
200 4 115	1	1
200 4 120	1	1
200 4 125	1	1
200 4 130	1	1
200 4 135	1	1
200 4 140	1	1
200 4 145	1	1
200 4 150	1	1
200 4 155	1	1
200 4 160	1	1
200 4 165	1	1
200 4 170	1	1
200 4 175	1	1
200 4 180	1	1
200 4 185	1	1
200 4 190	1	1
200 4 195	1	1
200 4 200	1	1
—	—	—
—	—	—
—	—	—

200 5 105	1	1
200 5 110	1	1
200 5 115	1	1
200 5 120	1	1
200 5 125	1	1
200 5 130	1	1
200 5 135	1	1
200 5 140	1	1
200 5 145	1	1
200 5 150	1	1
200 5 155	1	1
200 5 160	1	1
200 5 165	1	1
200 5 170	1	1
200 5 175	1	1
200 5 180	1	1
200 5 185	1	1
200 5 190	1	1
200 5 195	1	1
200 5 200	1	1
—	—	—
—	—	—
—	—	—



## Solid TC twist drills DIN 338 type N

High performance solid carbide K 20 twist drill, especially well suited for high strength steels at high cutting speeds.



Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	■	Brass	■
Steel (N/mm <sup>2</sup> ) < 1100	■	Bronze	■
Steel (N/mm <sup>2</sup> ) < 1300	■	Plastics	■
Rust-resistant steel	■	Cast iron	■
Aluminium	■	Titanium alloyed	■

Ø mm	L1 mm	L2 mm	TC	TiAlN	
3,00	61,0	33,0	814 030		1
3,50	70,0	39,0	814 035		1
4,00	75,0	43,0	814 040		1
4,50	80,0	47,0	814 045		1
5,00	86,0	52,0	814 050		1
5,50	93,0	57,0	814 055		1
6,00	93,0	57,0	814 060		1
6,50	101,0	63,0	814 065		1
7,00	109,0	69,0	814 070		1
7,50	109,0	69,0	814 075		1
8,00	117,0	75,0	814 080		1
8,50	117,0	75,0	814 085		1
9,00	125,0	81,0	814 090		1
9,50	125,0	81,0	814 095		1
10,00	133,0	87,0	814 100		1
10,50	133,0	87,0	814 105		1
11,00	142,0	94,0	814 110		1
11,50	142,0	94,0	814 115		1
12,00	151,0	101,0	814 120		1
12,50	151,0	101,0	814 125		1
13,00	151,0	101,0	814 130		1





## Twist drill DIN 338 Type N, with brazed-on TC cutting inserts

High-performance twist drill with brazed-on HM cutting inserts made from K20 fine grained material. It is suited for universal applications and for high-strength steel. Continuous cooling is required when drilling into high-strength steel. Highly recommended for machining cast iron.



Packing unit: in plastic box



Steel (N/mm <sup>2</sup> ) < 900	■	■	Brass	■	■
Steel (N/mm <sup>2</sup> ) < 1100	■	■	Bronze	□	■
Steel (N/mm <sup>2</sup> ) < 1300	□	□	Plastics	■	■
Rust-resistant steel	□	■	Cast iron	■	■
Aluminium	■	■	Titanium alloyed	□	■

Ø mm	L1 mm	L2 mm		
2,00	49,0	24,0	815 020	1
2,50	57,0	30,0	815 025	1
3,00	61,0	33,0	815 030	1
3,30	65,0	36,0	815 033	1
3,50	70,0	39,0	815 035	1
4,00	75,0	43,0	815 040	1
4,20	75,0	43,0	815 042	1
4,50	80,0	47,0	815 045	1
5,00	86,0	52,0	815 050	1
5,50	93,0	57,0	815 055	1
6,00	93,0	57,0	815 060	1
6,50	101,0	63,0	815 065	1
6,80	109,0	69,0	815 068	1
7,00	109,0	69,0	815 070	1
7,50	109,0	69,0	815 075	1
8,00	117,0	75,0	815 080	1
8,50	117,0	75,0	815 085	1
9,00	125,0	81,0	815 090	1
9,50	125,0	81,0	815 095	1
10,00	133,0	87,0	815 100	1
10,20	133,0	87,0	815 102	1
10,50	133,0	87,0	815 105	1
11,00	142,0	94,0	815 110	1
11,50	142,0	94,0	815 115	1
12,00	151,0	101,0	815 120	1
12,50	151,0	101,0	815 125	1
13,00	151,0	101,0	815 130	1

815 020 C		1
815 025 C		1
815 030 C		1
815 033 C		1
815 035 C		1
815 040 C		1
815 042 C		1
815 045 C		1
815 050 C		1
815 055 C		1
815 060 C		1
815 065 C		1
815 068 C		1
815 070 C		1
815 075 C		1
815 080 C		1
815 085 C		1
815 090 C		1
815 095 C		1
815 100 C		1
815 102 C		1
815 105 C		1
815 110 C		1
815 115 C		1
815 120 C		1
815 125 C		1
815 130 C		1



## Twist drill sets DIN 338 Type N, with brazed-on TC cutting inserts

	 TC	 TC
17-piece set of twist drills DIN 338 type N Ø 2,0 mm up to 10,0 mm in increments of 0,5 mm in steel case	815 214	815 214 C
23-piece set of twist drills DIN 338 type N Ø 2,0 mm up to 13,0 mm in increments of 0,5 mm in steel case	815 215	815 215 C
17-piece set of twist drills DIN 338 type N Ø 2,0 mm up to 10,0 mm in increments of 0,5 mm in plastic case	815 214 RO	815 214 CRO
23-piece set of twist drills DIN 338 type N Ø 2,0 mm up to 13,0 mm in increments of 0,5 mm in plastic case	815 215 RO	815 215 CRO





## Twist drills DIN 338 TL 3000, in fractional sizes

Highly stable multirange drill with outstanding heat resistance, a reinforced drill core and a parabolic flute for ideal chip removal. Ideal for drilling medium and long-chipping materials. Thanks to its thick core and the special flute with a rounded rear edge, this drill is best suited for high-performance use. It covers types N, H and W for a wide range of applications.

Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	■	■	■	■	■	■
Steel (N/mm <sup>2</sup> ) < 1100		□	□	■	■	■
Steel (N/mm <sup>2</sup> ) < 1300			□	■	■	■
Rust-resistant steel		□	■	■	■	■
Aluminium	■		■			
Brass	■	■	■	■	■	■
Bronze	□	□	■	■	■	■
Plastics	■	■	■	■	■	■
Cast iron	□	□	□	□	□	□
Titanium alloyed						



Ø inch	Ø mm	L1 inch	L2 inch	HSS-G		HSS-G	TiN		HSS-G	TiAlN	
1/16	1,59	1 7/8	7/8	258 801	10	258 801 T	10		258 801 F	10	
5/64	1,98	2	1	258 802	10	258 802 T	10		258 802 F	10	
3/32	2,38	2 1/4	1 1/4	258 803	10	258 803 T	10		258 803 F	10	
7/64	2,78	2 5/8	1 1/2	258 804	10	258 804 T	10		258 804 F	10	
1/8	3,18	2 3/4	1 5/8	258 805	10	258 805 T	10		258 805 F	10	
9/64	3,57	2 7/8	1 3/4	258 806	10	258 806 T	10		258 806 F	10	
5/32	3,97	3 1/8	2	258 807	10	258 807 T	10		258 807 F	10	
11/64	4,37	3 1/4	2 1/8	258 808	10	258 808 T	10		258 808 F	10	
3/16	4,76	3 1/2	2 5/16	258 809	10	258 809 T	10		258 809 F	10	
13/64	5,16	3 5/8	2 7/16	258 810	10	258 810 T	10		258 810 F	10	
7/32	5,56	3 3/4	2 1/2	258 811	10	258 811 T	10		258 811 F	10	
15/64	5,95	3 7/8	2 5/8	258 812	10	258 812 T	10		258 812 F	10	
1/4	6,35	4	2 3/4	258 813	10	258 813 T	10		258 813 F	10	
17/64	6,75	4 1/8	2 7/8	258 814	10	258 814 T	10		258 814 F	10	
9/32	7,14	4 1/4	2 15/16	258 815	10	258 815 T	10		258 815 F	10	
19/64	7,54	4 3/8	3 1/16	258 816	10	258 816 T	10		258 816 F	10	
5/16	7,94	4 1/2	3 3/16	258 817	10	258 817 T	10		258 817 F	10	
21/64	8,33	4 5/8	3 5/16	258 818	10	258 818 T	10		258 818 F	10	
11/32	8,73	4 3/4	3 7/16	258 819	10	258 819 T	10		258 819 F	10	
23/64	9,13	4 7/8	3 1/2	258 820	10	258 820 T	10		258 820 F	10	
3/8	9,53	5	3 5/8	258 821	10	258 821 T	10		258 821 F	10	
25/64	9,92	5 1/8	3 3/4	258 822	10	258 822 T	10		258 822 F	10	
13/32	10,32	5 1/4	3 7/8	258 823	10	258 823 T	10		258 823 F	10	
27/64	10,72	5 3/8	3 15/16	258 824	5	258 824 T	5		258 824 F	5	
7/16	11,11	5 1/2	4 1/16	258 825	5	258 825 T	5		258 825 F	5	
29/64	11,51	5 5/8	4 3/16	258 826	5	258 826 T	5		258 826 F	5	
15/32	11,91	5 3/4	4 5/16	258 827	5	258 827 T	5		258 827 F	5	
31/64	12,30	5 7/8	4 3/8	258 828	5	258 828 T	5		258 828 F	5	
1/2	12,70	6	4 1/2	258 829	5	258 829 T	5		258 829 F	5	

## Twist drill sets DIN 338 TL 3000, in fractional sizes

	HSS-G	HSS-G TiN	HSS-G TiAlN
21-piece set of twist drills DIN 338 TL 3000, in fractional sizes Ø 1/16" up to 3/8" in increments of 1/64" in steel case	258 850	258 850 T	258 850 F
29-piece set of twist drills DIN 338 TL 3000, in fractional sizes Ø 1/16" up to 1/2" in increments of 1/64" in steel case	258 851	258 851 T	258 851 F



## Twist drills DIN 338 UTL 3000, in fractional sizes

Highly stable multirange drill with outstanding heat resistance, a reinforced drill core and a parabolic flute for ideal chip removal. Ideal for drilling medium and long-chipping materials. Thanks to its thick core and the special flute with a rounded rear edge, this drill is best suited for high-performance use. It covers types N, H and W for a wide range of applications.

Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	■	Brass	■
Steel (N/mm <sup>2</sup> ) < 1100	■	Bronze	□
Steel (N/mm <sup>2</sup> ) < 1300	□	Plastics	■
Rust-resistant steel	■	Cast iron	□
Aluminium	■	Titanium alloyed	



Ø inch	Ø mm	L1 inch	L2 inch		
1/16	1,59	1 7/8	7/8	229 801	10
5/64	1,98	2	1	229 802	10
3/32	2,38	2 1/4	1 1/4	229 803	10
7/64	2,78	2 5/8	1 1/2	229 804	10
1/8	3,18	2 3/4	1 5/8	229 805	10
9/64	3,57	2 7/8	1 3/4	229 806	10
5/32	3,97	3 1/8	2	229 807	10
11/64	4,37	3 1/4	2 1/8	229 808	10
3/16	4,76	3 1/2	2 5/16	229 809	10
13/64	5,16	3 5/8	2 7/16	229 810	10
7/32	5,56	3 3/4	2 1/2	229 811	10
15/64	5,95	3 7/8	2 5/8	229 812	10
1/4	6,35	4	2 3/4	229 813	10
17/64	6,75	4 1/8	2 7/8	229 814	10
9/32	7,14	4 1/4	2 15/16	229 815	10
19/64	7,54	4 3/8	3 1/16	229 816	10
5/16	7,94	4 1/2	3 3/16	229 817	10
21/64	8,33	4 5/8	3 5/16	229 818	10
11/32	8,73	4 3/4	3 7/16	229 819	10
23/64	9,13	4 7/8	3 1/2	229 820	10
3/8	9,53	5	3 5/8	229 821	10
25/64	9,92	5 1/8	3 3/4	229 822	10
13/32	10,32	5 1/4	3 7/8	229 823	10
27/64	10,72	5 3/8	3 15/16	229 824	5
7/16	11,11	5 1/2	4 1/16	229 825	5
29/64	11,51	5 5/8	4 3/16	229 826	5
15/32	11,91	5 3/4	4 5/16	229 827	5
31/64	12,30	5 7/8	4 3/8	229 828	5
1/2	12,70	6	4 1/2	229 829	5

## Twist drill sets DIN 338 UTL 3000, in fractional sizes

21-piece set of twist drills DIN 338 UTL 3000, in fractional sizes Ø 1/16" up to 3/8" in increments of 1/64" in steel case	229 850
29-piece set of twist drills DIN 338 UTL 3000, in fractional sizes Ø 1/16" up to 1/2" in increments of 1/64" in steel case	229 851



## Twist drills DIN 338 type VA, in fractional sizes

Powerful right-hand cutting high-performance drill with distinctive heat resistance and reinforced drill core. Ideal for drilling high-strength stainless, acid-resistant and heat-resistant steel.

Packing unit: in plastic box

Steel (N/mm2) < 900	■	Brass	■
Steel (N/mm2) < 1100	■	Bronze	□
Steel (N/mm2) < 1300		Plastics	■
Rust-resistant steel	■	Cast iron	□
Aluminium	■	Titanium alloyed	



Ø mm	L1 mm	L1 inch	L2 inch	HSSE Co 5	
1/16	1,59	1 7/8	7/8	215 801	10
5/64	1,98	2	1	215 802	10
3/32	2,38	2 1/4	1 1/4	215 803	10
7/64	2,78	2 5/8	1 1/2	215 804	10
1/8	3,18	2 3/4	1 5/8	215 805	10
9/64	3,57	2 7/8	1 3/4	215 806	10
5/32	3,97	3 1/8	2	215 807	10
11/64	4,37	3 1/4	2 1/8	215 808	10
3/16	4,76	3 1/2	2 5/16	215 809	10
13/64	5,16	3 5/8	2 7/16	215 810	10
7/32	5,56	3 3/4	2 1/2	215 811	10
15/64	5,95	3 7/8	2 5/8	215 812	10
1/4	6,35	4	2 3/4	215 813	10
17/64	6,75	4 1/8	2 7/8	215 814	10
9/32	7,14	4 1/4	2 15/16	215 815	10
19/64	7,54	4 3/8	3 1/16	215 816	10
5/16	7,94	4 1/2	3 3/16	215 817	10
21/64	8,33	4 5/8	3 5/16	215 818	10
11/32	8,73	4 3/4	3 7/16	215 819	10
23/64	9,13	4 7/8	3 1/2	215 820	10
3/8	9,53	5	3 5/8	215 821	10
25/64	9,92	5 1/8	3 3/4	215 822	10
13/32	10,32	5 1/4	3 7/8	215 823	10
27/64	10,72	5 3/8	3 15/16	215 824	5
7/16	11,11	5 1/2	4 1/16	215 825	5
29/64	11,51	5 5/8	4 3/16	215 826	5
15/32	11,91	5 3/4	4 5/16	215 827	5
31/64	12,30	5 7/8	4 3/8	215 828	5
1/2	12,70	6	4 1/2	215 829	5

## Twist drill sets DIN 338 type VA, in fractional sizes

21-piece set of twist drills DIN 338 type VA, in fractional sizes Ø 1/16" up to 3/8" in increments of 1/64" in steel case	215 850
29-piece set of twist drills DIN 338 type VA, in fractional sizes Ø 1/16" up to 1/2" in increments of 1/64" in steel case	215 851







## Twist drills DIN 338 type N, in fractional sizes

High-performance ground standard twist drill made from heavy-duty high speed steel. The fully ground twist drill has a precise concentricity. Thanks to the split point, this drill has good centring properties and requires little pressure.

Packing unit: in plastic box

Steel (N/mm2) < 900	■	■
Steel (N/mm2) < 1100	■	□
Steel (N/mm2) < 1300		
Rust-resistant steel	□	□
Aluminium	■	
Brass	■	■
Bronze	□	□
Plastics	■	■
Cast iron	□	□
Titanium alloyed		



Ø mm	L1 mm	L1 inch	L2 inch	HSS-G	
1/16	1,59	1 7/8	7/8	214 801	10
5/64	1,98	2	1	214 802	10
3/32	2,38	2 1/4	1 1/4	214 803	10
7/64	2,78	2 5/8	1 1/2	214 804	10
1/8	3,18	2 3/4	1 5/8	214 805	10
9/64	3,57	2 7/8	1 3/4	214 806	10
5/32	3,97	3 1/8	2	214 807	10
11/64	4,37	3 1/4	2 1/8	214 808	10
3/16	4,76	3 1/2	2 5/16	214 809	10
13/64	5,16	3 5/8	2 7/16	214 810	10
7/32	5,56	3 3/4	2 1/2	214 811	10
15/64	5,95	3 7/8	2 5/8	214 812	10
1/4	6,35	4	2 3/4	214 813	10
17/64	6,75	4 1/8	2 7/8	214 814	10
9/32	7,14	4 1/4	2 15/16	214 815	10
19/64	7,54	4 3/8	3 1/16	214 816	10
5/16	7,94	4 1/2	3 3/16	214 817	10
21/64	8,33	4 5/8	3 5/16	214 818	10
11/32	8,73	4 3/4	3 7/16	214 819	10
23/64	9,13	4 7/8	3 1/2	214 820	10
3/8	9,53	5	3 5/8	214 821	10
25/64	9,92	5 1/8	3 3/4	214 822	10
13/32	10,32	5 1/4	3 7/8	214 823	10
27/64	10,72	5 3/8	3 15/16	214 824	5
7/16	11,11	5 1/2	4 1/16	214 825	5
29/64	11,51	5 5/8	4 3/16	214 826	5
15/32	11,91	5 3/4	4 5/16	214 827	5
31/64	12,30	5 7/8	4 3/8	214 828	5
1/2	12,70	6	4 1/2	214 829	5

HSS-G	TIN	
250 801 T	10	
250 802 T	10	
250 803 T	10	
250 804 T	10	
250 805 T	10	
250 806 T	10	
250 807 T	10	
250 808 T	10	
250 809 T	10	
250 810 T	10	
250 811 T	10	
250 812 T	10	
250 813 T	10	
250 814 T	10	
250 815 T	10	
250 816 T	10	
250 817 T	10	
250 818 T	10	
250 819 T	10	
250 820 T	10	
250 821 T	10	
250 822 T	10	
250 823 T	10	
250 824 T	5	
250 825 T	5	
250 826 T	5	
250 827 T	5	
250 828 T	5	
250 829 T	5	

## Twist drill sets DIN 338 type N, in fractional sizes

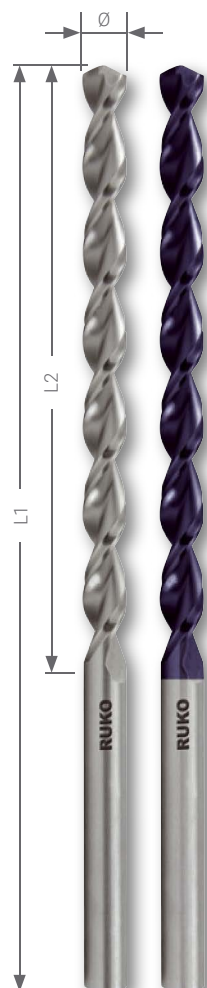
	HSS-G	HSS-G TIN
21-piece set of twist drills DIN 338 type N, in fractional sizes Ø 1/16" up to 3/8" in increments of 1/64" in steel case	214 850	250 850 T
29-piece set of twist drills DIN 338 type N, in fractional sizes Ø 1/16" up to 1/2" in increments of 1/64" in steel case	214 851	250 851 T





## Twist drills DIN 340 TL 3000, HSSE-Co 5 ground

Highly stable multirange drill with outstanding heat resistance, a reinforced drill core and a parabolic flute for ideal chip removal. Ideal for drilling medium and long-chipping materials. Thanks to its thick core and the special flute with a rounded rear edge, this drill is best suited for high-performance use. It covers types N, H and W for a wide range of applications.



Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input type="checkbox"/>	<input type="checkbox"/>
Rust-resistant steel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Brass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bronze	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Plastics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Cast iron	<input type="checkbox"/>	<input type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>	<input type="checkbox"/>

Ø mm	L1 mm	L2 mm	HSSE Co 5	
2,50	95,0	62,0	253 025	10
3,00	100,0	66,0	253 030	10
3,10	106,0	69,0	253 031	10
3,20	106,0	69,0	253 032	10
3,30	106,0	69,0	253 033	10
3,40	112,0	73,0	253 034	10
3,50	112,0	73,0	253 035	10
3,60	112,0	73,0	253 036	10
3,70	112,0	73,0	253 037	10
3,80	119,0	78,0	253 038	10
3,90	119,0	78,0	253 039	10
4,00	119,0	78,0	253 040	10
4,10	119,0	78,0	253 041	10
4,20	119,0	78,0	253 042	10
4,30	126,0	82,0	253 043	10
4,40	126,0	82,0	253 044	10
4,50	126,0	82,0	253 045	10
4,60	126,0	82,0	253 046	10
4,70	126,0	82,0	253 047	10
4,80	132,0	87,0	253 048	10
4,90	132,0	87,0	253 049	10
5,00	132,0	87,0	253 050	10
5,10	132,0	87,0	253 051	10
5,20	132,0	87,0	253 052	10
5,30	132,0	87,0	253 053	10
5,40	139,0	91,0	253 054	10
5,50	139,0	91,0	253 055	10
5,60	139,0	91,0	253 056	10
5,70	139,0	91,0	253 057	10
5,80	139,0	91,0	253 058	10
5,90	139,0	91,0	253 059	10
6,00	139,0	91,0	253 060	10
6,10	148,0	97,0	253 061	10
6,20	148,0	97,0	253 062	10
6,30	148,0	97,0	253 063	10

HSSE Co 5	TITAN
253 025 F	10
253 030 F	10
253 031 F	10
253 032 F	10
253 033 F	10
253 034 F	10
253 035 F	10
253 036 F	10
253 037 F	10
253 038 F	10
253 039 F	10
253 040 F	10
253 041 F	10
253 042 F	10
253 043 F	10
253 044 F	10
253 045 F	10
253 046 F	10
253 047 F	10
253 048 F	10
253 049 F	10
253 050 F	10
253 051 F	10
253 052 F	10
253 053 F	10
253 054 F	10
253 055 F	10
253 056 F	10
253 057 F	10
253 058 F	10
253 059 F	10
253 060 F	10
253 061 F	10
253 062 F	10
253 063 F	10

Ø mm	L1 mm	L2 mm	HSSE Co 5		HSSE TiAIN	
			HSSE Co 5	Icon	HSSE TiAIN	Icon
6,40	148,0	97,0	253 064	10	253 064 F	10
6,50	148,0	97,0	253 065	10	253 065 F	10
6,60	148,0	97,0	253 066	10	253 066 F	10
6,70	148,0	97,0	253 067	10	253 067 F	10
6,80	156,0	102,0	253 068	10	253 068 F	10
6,90	156,0	102,0	253 069	10	253 069 F	10
7,00	156,0	102,0	253 070	10	253 070 F	10
7,10	156,0	102,0	253 071	10	253 071 F	10
7,20	156,0	102,0	253 072	10	253 072 F	10
7,30	156,0	102,0	253 073	10	253 073 F	10
7,40	156,0	102,0	253 074	10	253 074 F	10
7,50	156,0	102,0	253 075	10	253 075 F	10
7,60	165,0	109,0	253 076	10	253 076 F	10
7,70	165,0	109,0	253 077	10	253 077 F	10
7,80	165,0	109,0	253 078	10	253 078 F	10
7,90	165,0	109,0	253 079	10	253 079 F	10
8,00	165,0	109,0	253 080	10	253 080 F	10
8,10	165,0	109,0	253 081	10	253 081 F	10
8,20	165,0	109,0	253 082	10	253 082 F	10
8,30	165,0	109,0	253 083	10	253 083 F	10
8,40	165,0	109,0	253 084	10	253 084 F	10
8,50	165,0	109,0	253 085	10	253 085 F	10
8,60	175,0	115,0	253 086	10	253 086 F	10
8,70	175,0	115,0	253 087	10	253 087 F	10
8,80	175,0	115,0	253 088	10	253 088 F	10
8,90	175,0	115,0	253 089	10	253 089 F	10
9,00	175,0	115,0	253 090	10	253 090 F	10
9,10	175,0	115,0	253 091	10	253 091 F	10
9,20	175,0	115,0	253 092	10	253 092 F	10
9,30	175,0	115,0	253 093	10	253 093 F	10
9,40	175,0	115,0	253 094	10	253 094 F	10
9,50	175,0	115,0	253 095	10	253 095 F	10
9,60	184,0	121,0	253 096	10	253 096 F	10
9,70	184,0	121,0	253 097	10	253 097 F	10
9,80	184,0	121,0	253 098	10	253 098 F	10
9,90	184,0	121,0	253 099	10	253 099 F	10
10,00	184,0	121,0	253 100	10	253 100 F	10
10,50	184,0	121,0	253 105	5	253 105 F	5
11,00	195,0	128,0	253 110	5	253 110 F	5
11,50	195,0	128,0	253 115	5	253 115 F	5
12,00	205,0	134,0	253 120	5	253 120 F	5
12,50	205,0	134,0	253 125	5	253 125 F	5
13,00	205,0	134,0	253 130	5	253 130 F	5





## Twist drills DIN 340 type N, HSS ground

High-performance ground standard twist drill made from heavy-duty high speed steel. The fully ground twist drill has a precise concentricity.



Packing unit: in plastic box

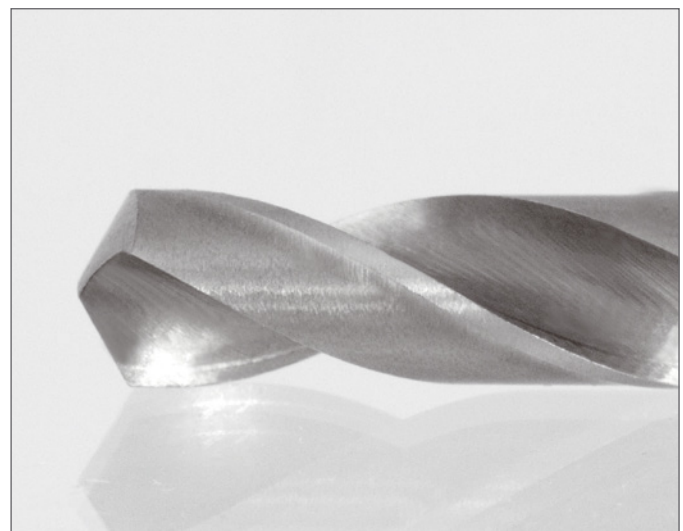
Steel (N/mm <sup>2</sup> ) < 900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input type="checkbox"/>	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input type="checkbox"/>	<input type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Brass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bronze	<input type="checkbox"/>	<input type="checkbox"/>
Plastics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Cast iron	<input type="checkbox"/>	<input type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>	<input type="checkbox"/>

Ø mm	L1 mm	L2 mm	HSS-G	
2,50	95,0	62,0	203 025	10
3,00	100,0	66,0	203 030	10
3,10	106,0	69,0	203 031	10
3,20	106,0	69,0	203 032	10
3,30	106,0	69,0	203 033	10
3,40	112,0	73,0	203 034	10
3,50	112,0	73,0	203 035	10
3,60	112,0	73,0	203 036	10
3,70	112,0	73,0	203 037	10
3,80	119,0	78,0	203 038	10
3,90	119,0	78,0	203 039	10
4,00	119,0	78,0	203 040	10
4,10	119,0	78,0	203 041	10
4,20	119,0	78,0	203 042	10
4,30	126,0	82,0	203 043	10
4,40	126,0	82,0	203 044	10
4,50	126,0	82,0	203 045	10
4,60	126,0	82,0	203 046	10
4,70	126,0	82,0	203 047	10
4,80	132,0	87,0	203 048	10
4,90	132,0	87,0	203 049	10
5,00	132,0	87,0	203 050	10
5,10	132,0	87,0	203 051	10
5,20	132,0	87,0	203 052	10
5,30	132,0	87,0	203 053	10
5,40	139,0	91,0	203 054	10
5,50	139,0	91,0	203 055	10
5,60	139,0	91,0	203 056	10
5,70	139,0	91,0	203 057	10
5,80	139,0	91,0	203 058	10
5,90	139,0	91,0	203 059	10
6,00	139,0	91,0	203 060	10
6,10	148,0	97,0	203 061	10
6,20	148,0	97,0	203 062	10
6,30	148,0	97,0	203 063	10

HSS-G	TIN	
203 025 T		10
203 030 T		10
203 031 T		10
203 032 T		10
203 033 T		10
203 034 T		10
203 035 T		10
203 036 T		10
203 037 T		10
203 038 T		10
203 039 T		10
203 040 T		10
203 041 T		10
203 042 T		10
203 043 T		10
203 044 T		10
203 045 T		10
203 046 T		10
203 047 T		10
203 048 T		10
203 049 T		10
203 050 T		10
203 051 T		10
203 052 T		10
203 053 T		10
203 054 T		10
203 055 T		10
203 056 T		10
203 057 T		10
203 058 T		10
203 059 T		10
203 060 T		10
203 061 T		10
203 062 T		10
203 063 T		10

Ø mm	L1 mm	L2 mm	HSS-G		HSS-G TIN	
			Icon	Quantity	Icon	Quantity
6,40	148,0	97,0	203 064	10	203 064 T	10
6,50	148,0	97,0	203 065	10	203 065 T	10
6,60	148,0	97,0	203 066	10	203 066 T	10
6,70	148,0	97,0	203 067	10	203 067 T	10
6,80	156,0	102,0	203 068	10	203 068 T	10
6,90	156,0	102,0	203 069	10	203 069 T	10
7,00	156,0	102,0	203 070	10	203 070 T	10
7,10	156,0	102,0	203 071	10	203 071 T	10
7,20	156,0	102,0	203 072	10	203 072 T	10
7,30	156,0	102,0	203 073	10	203 073 T	10
7,40	156,0	102,0	203 074	10	203 074 T	10
7,50	156,0	102,0	203 075	10	203 075 T	10
7,60	165,0	109,0	203 076	10	203 076 T	10
7,70	165,0	109,0	203 077	10	203 077 T	10
7,80	165,0	109,0	203 078	10	203 078 T	10
7,90	165,0	109,0	203 079	10	203 079 T	10
8,00	165,0	109,0	203 080	10	203 080 T	10
8,10	165,0	109,0	203 081	10	203 081 T	10
8,20	165,0	109,0	203 082	10	203 082 T	10
8,30	165,0	109,0	203 083	10	203 083 T	10
8,40	165,0	109,0	203 084	10	203 084 T	10
8,50	165,0	109,0	203 085	10	203 085 T	10
8,60	175,0	115,0	203 086	10	203 086 T	10
8,70	175,0	115,0	203 087	10	203 087 T	10
8,80	175,0	115,0	203 088	10	203 088 T	10
8,90	175,0	115,0	203 089	10	203 089 T	10
9,00	175,0	115,0	203 090	10	203 090 T	10
9,10	175,0	115,0	203 091	10	203 091 T	10
9,20	175,0	115,0	203 092	10	203 092 T	10
9,30	175,0	115,0	203 093	10	203 093 T	10
9,40	175,0	115,0	203 094	10	203 094 T	10
9,50	175,0	115,0	203 095	10	203 095 T	10
9,60	184,0	121,0	203 096	10	203 096 T	10
9,70	184,0	121,0	203 097	10	203 097 T	10
9,80	184,0	121,0	203 098	10	203 098 T	10
9,90	184,0	121,0	203 099	10	203 099 T	10
10,00	184,0	121,0	203 100	10	203 100 T	10
10,50	184,0	121,0	203 105	5	203 105 T	5
11,00	195,0	128,0	203 110	5	203 110 T	5
11,50	195,0	128,0	203 115	5	203 115 T	5
12,00	205,0	134,0	203 120	5	203 120 T	5
12,50	205,0	134,0	203 125	5	203 125 T	5
13,00	205,0	134,0	203 130	5	203 130 T	5





# Twist drills DIN 1869 TL 3000, HSS ground - extra long

Stable special drill. Ideally suitable for deep holes under difficult conditions, e.g. bad chipping materials.

Suitable for all usual drilling work in all normal materials. High rotational precision. For drilling deep holes please use small feed and remove chips frequently.

Packing unit: in plastic box

Steel (N/mm2) < 900	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1100	<input type="checkbox"/>
Steel (N/mm2) < 1300	<input type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>

Brass	<input checked="" type="checkbox"/>
Bronze	<input type="checkbox"/>
Plastics	<input checked="" type="checkbox"/>
Cast iron	<input type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>

Ø mm	L1 mm	L2 mm	HSS-G	
2,00	125,0	85,0	254 020	1
2,50	140,0	95,0	254 025	1
3,00	150,0	100,0	254 030	1
3,20	155,0	105,0	254 032	1
3,30	155,0	105,0	254 033	1
3,50	165,0	115,0	254 035	1
4,00	175,0	120,0	254 040	1
4,20	175,0	120,0	254 042	1
4,50	185,0	125,0	254 045	1
5,00	195,0	135,0	254 050	1
5,50	205,0	140,0	254 055	1
6,00	205,0	140,0	254 060	1
6,50	215,0	150,0	254 065	1

Ø mm	L1 mm	L2 mm	HSS-G	
7,00	225,0	155,0	254 070	1
7,50	225,0	155,0	254 075	1
8,00	240,0	165,0	254 080	1
8,50	240,0	165,0	254 085	1
9,00	250,0	175,0	254 090	1
9,50	250,0	175,0	254 095	1
10,00	265,0	185,0	254 100	1
10,50	265,0	185,0	254 105	1
11,00	280,0	195,0	254 110	1
11,50	280,0	195,0	254 115	1
12,00	295,0	205,0	254 120	1
12,50	295,0	205,0	254 125	1
13,00	295,0	205,0	254 130	1

3,00	190,0	130,0	255 030	1
3,20	200,0	135,0	255 032	1
3,30	200,0	135,0	255 033	1
3,50	210,0	145,0	255 035	1
4,00	220,0	150,0	255 040	1
4,20	220,0	150,0	255 042	1
4,50	235,0	160,0	255 045	1
5,00	245,0	170,0	255 050	1
5,50	260,0	180,0	255 055	1
6,00	260,0	180,0	255 060	1
6,50	275,0	190,0	255 065	1
7,00	290,0	200,0	255 070	1

7,50	290,0	200,0	255 075	1
8,00	305,0	210,0	255 080	1
8,50	305,0	210,0	255 085	1
9,00	320,0	220,0	255 090	1
9,50	320,0	220,0	255 095	1
10,00	340,0	235,0	255 100	1
10,50	340,0	235,0	255 105	1
11,00	365,0	250,0	255 110	1
11,50	365,0	250,0	255 115	1
12,00	375,0	260,0	255 120	1
12,50	375,0	260,0	255 125	1
13,00	375,0	260,0	255 130	1

3,50	265,0	180,0	256 035	1
4,00	280,0	190,0	256 040	1
4,20	280,0	190,0	256 042	1
4,50	295,0	200,0	256 045	1
5,00	315,0	210,0	256 050	1
5,50	330,0	225,0	256 055	1
6,00	330,0	225,0	256 060	1
6,50	350,0	235,0	256 065	1
7,00	370,0	250,0	256 070	1
7,50	370,0	250,0	256 075	1
8,00	390,0	265,0	256 080	1

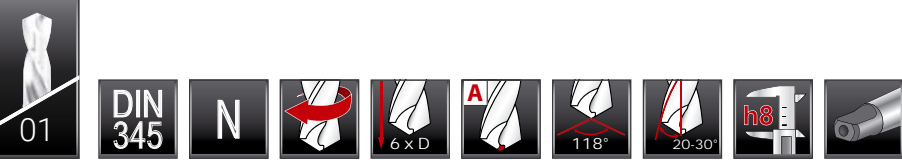
8,50	390,0	265,0	256 085	1
9,00	410,0	280,0	256 090	1
9,50	410,0	280,0	256 095	1
10,00	430,0	295,0	256 100	1
10,50	430,0	295,0	256 105	1
11,00	455,0	310,0	256 110	1
11,50	455,0	310,0	256 115	1
12,00	480,0	330,0	256 120	1
12,50	480,0	330,0	256 125	1
13,00	480,0	330,0	256 130	1
—	—	—	—	—





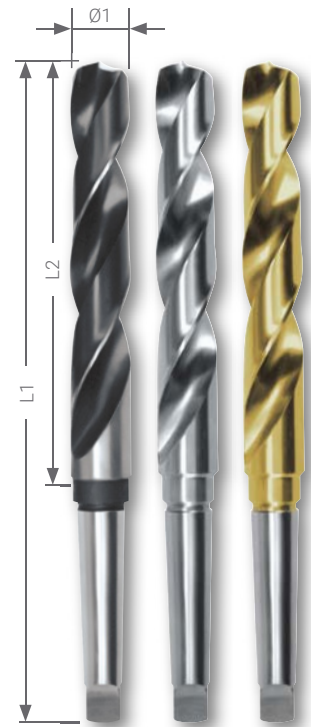
DIN 1869 · TL 3000





## Twist drills DIN 345 type N, HSS and HSSE-Co 5

Highly efficient standard drill with morse taper. For drilling steel, cast steel and cast iron – alloyed and unalloyed. Highly secure against fracture.










Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	■	■	■
Steel (N/mm <sup>2</sup> ) < 1100		■	■
Steel (N/mm <sup>2</sup> ) < 1300			□
Rust-resistant steel		□	□
Aluminium	■	■	

Brass	■	■	■
Bronze	□	□	□
Plastics	■	■	■
Cast iron	□	□	□
Titanium alloyed			□

Ø1 mm	L1 mm	L2 mm		HSS		HSSE Co 5		HSSE Co 5 TIN	
10,00	168,0	87,0	1	204 100	1	204 100 E	1	204 100 T	1
10,50	168,0	87,0	1	204 105	1	204 105 E	1	204 105 T	1
11,00	175,0	94,0	1	204 110	1	204 110 E	1	204 110 T	1
11,50	175,0	94,0	1	204 115	1	204 115 E	1	204 115 T	1
12,00	182,0	101,0	1	204 120	1	204 120 E	1	204 120 T	1
12,50	182,0	101,0	1	204 125	1	204 125 E	1	204 125 T	1
13,00	182,0	101,0	1	204 130	1	204 130 E	1	204 130 T	1
13,50	189,0	108,0	1	204 135	1	204 135 E	1	204 135 T	1
14,00	189,0	108,0	1	204 140	1	204 140 E	1	204 140 T	1
14,50	212,0	114,0	2	204 145	1	204 145 E	1	204 145 T	1
15,00	212,0	114,0	2	204 150	1	204 150 E	1	204 150 T	1
15,50	218,0	120,0	2	204 155	1	204 155 E	1	204 155 T	1
16,00	218,0	120,0	2	204 160	1	204 160 E	1	204 160 T	1
16,50	223,0	125,0	2	204 165	1	204 165 E	1	204 165 T	1
17,00	223,0	125,0	2	204 170	1	204 170 E	1	204 170 T	1
17,50	228,0	130,0	2	204 175	1	204 175 E	1	204 175 T	1
18,00	228,0	130,0	2	204 180	1	204 180 E	1	204 180 T	1
18,50	233,0	135,0	2	204 185	1	204 185 E	1	204 185 T	1
19,00	233,0	135,0	2	204 190	1	204 190 E	1	204 190 T	1
19,50	238,0	140,0	2	204 195	1	204 195 E	1	204 195 T	1
20,00	238,0	140,0	2	204 200	1	204 200 E	1	204 200 T	1
20,50	243,0	145,0	2	204 205	1	204 205 E	1	204 205 T	1
21,00	243,0	145,0	2	204 210	1	204 210 E	1	204 210 T	1
21,50	248,0	150,0	2	204 215	1	204 215 E	1	204 215 T	1
22,00	248,0	150,0	2	204 220	1	204 220 E	1	204 220 T	1
22,50	253,0	155,0	2	204 225	1	204 225 E	1	204 225 T	1
23,00	253,0	155,0	2	204 230	1	204 230 E	1	204 230 T	1
23,50	276,0	155,0	3	204 235	1	204 235 E	1	204 235 T	1
24,00	281,0	160,0	3	204 240	1	204 240 E	1	204 240 T	1
24,50	281,0	160,0	3	204 245	1	204 245 E	1	204 245 T	1
25,00	281,0	160,0	3	204 250	1	204 250 E	1	204 250 T	1
25,50	286,0	165,0	3	204 255	1	204 255 E	1	204 255 T	1
26,00	286,0	165,0	3	204 260	1	204 260 E	1	204 260 T	1
26,50	286,0	165,0	3	204 265	1	204 265 E	1	204 265 T	1
27,00	291,0	170,0	3	204 270	1	204 270 E	1	204 270 T	1
27,50	291,0	170,0	3	204 275	1	204 275 E	1	204 275 T	1
28,00	291,0	170,0	3	204 280	1	204 280 E	1	204 280 T	1
28,50	296,0	175,0	3	204 285	1	204 285 E	1	204 285 T	1
29,00	296,0	175,0	3	204 290	1	204 290 E	1	204 290 T	1
29,50	296,0	175,0	3	204 295	1	204 295 E	1	204 295 T	1



Ø1 mm	L1 mm	L2 mm							
30,00	296,0	175,0	3	204 300	1	204 300 E	1	204 300 T	1
30,50	301,0	180,0	3	204 305	1	—	—	—	—
31,00	301,0	180,0	3	204 310	1	—	—	—	—
31,50	301,0	180,0	3	204 315	1	—	—	—	—
32,00	334,0	185,0	4	204 320	1	—	—	—	—
32,50	334,0	185,0	4	204 325	1	—	—	—	—
33,00	334,0	185,0	4	204 330	1	—	—	—	—
33,50	334,0	185,0	4	204 335	1	—	—	—	—
34,00	339,0	190,0	4	204 340	1	—	—	—	—
34,50	339,0	190,0	4	204 345	1	—	—	—	—
35,00	339,0	190,0	4	204 350	1	—	—	—	—
35,50	339,0	190,0	4	204 355	1	—	—	—	—
36,00	344,0	195,0	4	204 360	1	—	—	—	—
36,50	344,0	195,0	4	204 365	1	—	—	—	—
37,00	344,0	195,0	4	204 370	1	—	—	—	—
37,50	344,0	195,0	4	204 375	1	—	—	—	—
38,00	349,0	200,0	4	204 380	1	—	—	—	—
38,50	349,0	200,0	4	204 385	1	—	—	—	—
39,00	349,0	200,0	4	204 390	1	—	—	—	—
39,50	349,0	200,0	4	204 395	1	—	—	—	—
40,00	349,0	200,0	4	204 400	1	—	—	—	—
40,50	354,0	205,0	4	204 405	1	—	—	—	—
41,00	354,0	205,0	4	204 410	1	—	—	—	—
41,50	354,0	205,0	4	204 415	1	—	—	—	—
42,00	354,0	205,0	4	204 420	1	—	—	—	—
42,50	354,0	205,0	4	204 425	1	—	—	—	—
43,00	359,0	210,0	4	204 430	1	—	—	—	—
43,50	359,0	210,0	4	204 435	1	—	—	—	—
44,00	359,0	210,0	4	204 440	1	—	—	—	—
44,50	359,0	210,0	4	204 445	1	—	—	—	—
45,00	359,0	210,0	4	204 450	1	—	—	—	—
45,50	364,0	215,0	4	204 455	1	—	—	—	—
46,00	364,0	215,0	4	204 460	1	—	—	—	—
46,50	364,0	215,0	4	204 465	1	—	—	—	—
47,00	364,0	215,0	4	204 470	1	—	—	—	—
47,50	364,0	215,0	4	204 475	1	—	—	—	—
48,00	369,0	220,0	4	204 480	1	—	—	—	—
48,50	369,0	220,0	4	204 485	1	—	—	—	—
49,00	369,0	220,0	4	204 490	1	—	—	—	—
49,50	369,0	220,0	4	204 495	1	—	—	—	—
50,00	369,0	220,0	4	204 500	1	—	—	—	—
51,00	412,0	225,0	5	204 510	1	—	—	—	—
52,00	412,0	225,0	5	204 520	1	—	—	—	—
53,00	412,0	225,0	5	204 530	1	—	—	—	—
54,00	417,0	230,0	5	204 540	1	—	—	—	—
55,00	417,0	230,0	5	204 550	1	—	—	—	—
56,00	417,0	230,0	5	204 560	1	—	—	—	—
57,00	422,0	235,0	5	204 570	1	—	—	—	—
58,00	422,0	235,0	5	204 580	1	—	—	—	—
59,00	422,0	235,0	5	204 590	1	—	—	—	—
60,00	422,0	235,0	5	204 600	1	—	—	—	—





## Twist drills DIN 1897 type UTL, HSSE-Co 5 ground - short





Short and highly stable multirange drill with outstanding heat resistance and special geometry for optimising chip formation and removal. Ideally suited for assembly work in thin-walled materials such as sheet steels, flat steel and profile steel comprising of medium and long-chipping materials.

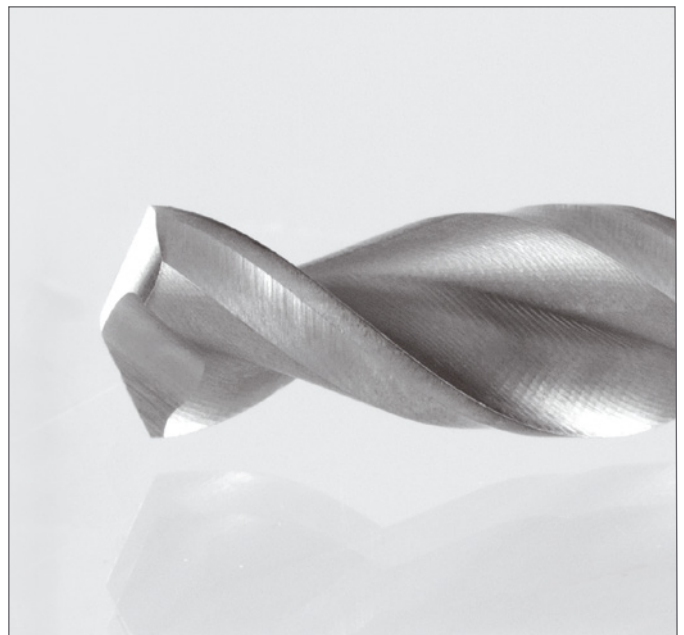


Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	■	■	Brass	■	■
Steel (N/mm <sup>2</sup> ) < 1100	■	■	Bronze	□	■
Steel (N/mm <sup>2</sup> ) < 1300		□	Plastics	■	■
Rust-resistant steel	■	■	Cast iron	□	□
Aluminium	■	■	Titanium alloyed		□

Ø mm	L1 mm	L2 mm	HSSE Co 5		HSSE Co 5 TITAN	
2,00	38,0	12,0	284 020 E	10	284 020 EF	10
2,50	43,0	14,0	284 025 E	10	284 025 EF	10
2,80	46,0	16,0	284 028 E	10	284 028 EF	10
3,00	46,0	16,0	284 030 E	10	284 030 EF	10
3,10	49,0	18,0	284 031 E	10	284 031 EF	10
3,20	49,0	18,0	284 032 E	10	284 032 EF	10
3,30	49,0	18,0	284 033 E	10	284 033 EF	10
3,40	52,0	20,0	284 034 E	10	284 034 EF	10
3,50	52,0	20,0	284 035 E	10	284 035 EF	10
3,60	52,0	20,0	284 036 E	10	284 036 EF	10
3,70	52,0	20,0	284 037 E	10	284 037 EF	10
3,80	55,0	22,0	284 038 E	10	284 038 EF	10
3,90	55,0	22,0	284 039 E	10	284 039 EF	10
4,00	55,0	22,0	284 040 E	10	284 040 EF	10
4,10	55,0	22,0	284 041 E	10	284 041 EF	10
4,20	55,0	22,0	284 042 E	10	284 042 EF	10
4,30	58,0	24,0	284 043 E	10	284 043 EF	10
4,40	58,0	24,0	284 044 E	10	284 044 EF	10
4,50	58,0	24,0	284 045 E	10	284 045 EF	10
4,60	58,0	24,0	284 046 E	10	284 046 EF	10
4,70	58,0	24,0	284 047 E	10	284 047 EF	10
4,80	62,0	26,0	284 048 E	10	284 048 EF	10
4,90	62,0	26,0	284 049 E	10	284 049 EF	10
5,00	62,0	26,0	284 050 E	10	284 050 EF	10
5,10	62,0	26,0	284 051 E	10	284 051 EF	10
5,20	62,0	26,0	284 052 E	10	284 052 EF	10
5,30	62,0	26,0	284 053 E	10	284 053 EF	10
5,40	66,0	28,0	284 054 E	10	284 054 EF	10
5,50	66,0	28,0	284 055 E	10	284 055 EF	10
5,60	66,0	28,0	284 056 E	10	284 056 EF	10
5,70	66,0	28,0	284 057 E	10	284 057 EF	10
5,80	66,0	28,0	284 058 E	10	284 058 EF	10
5,90	66,0	28,0	284 059 E	10	284 059 EF	10
6,00	66,0	28,0	284 060 E	10	284 060 EF	10
6,10	70,0	31,0	284 061 E	10	284 061 EF	10
6,20	70,0	31,0	284 062 E	10	284 062 EF	10
6,50	70,0	31,0	284 065 E	10	284 065 EF	10
6,80	74,0	34,0	284 068 E	10	284 068 EF	10
7,00	74,0	34,0	284 070 E	10	284 070 EF	10
7,20	74,0	34,0	284 072 E	10	284 072 EF	10

Ø mm	L1 mm	L2 mm	HSSE Co 5		HSSE Co 5 TiAIN	
						
7,50	74,0	34,0	284 075 E	10	284 075 EF	10
7,80	79,0	37,0	284 078 E	10	284 078 EF	10
8,00	79,0	37,0	284 080 E	10	284 080 EF	10
8,20	79,0	37,0	284 082 E	10	284 082 EF	10
8,50	79,0	37,0	284 085 E	10	284 085 EF	10
8,80	84,0	40,0	284 088 E	10	284 088 EF	10
9,00	84,0	40,0	284 090 E	10	284 090 EF	10
9,20	84,0	40,0	284 092 E	10	284 092 EF	10
9,50	84,0	40,0	284 095 E	10	284 095 EF	10
9,80	89,0	43,0	284 098 E	10	284 098 EF	10
10,00	89,0	43,0	284 100 E	10	284 100 EF	10
10,20	89,0	43,0	284 102 E	10	284 102 EF	10
10,50	89,0	43,0	284 105 E	5	284 105 EF	5
10,80	95,0	47,0	284 108 E	5	284 108 EF	5
11,00	95,0	47,0	284 110 E	5	284 110 EF	5
11,20	95,0	47,0	284 112 E	5	284 112 EF	5
11,50	95,0	47,0	284 115 E	5	284 115 EF	5
11,80	95,0	47,0	284 118 E	5	284 118 EF	5
12,00	102,0	51,0	284 120 E	5	284 120 EF	5
12,50	102,0	51,0	284 125 E	5	284 125 EF	5
12,80	102,0	51,0	284 128 E	5	284 128 EF	5
13,00	102,0	51,0	284 130 E	5	284 130 EF	5
13,50	107,0	54,0	284 135 E	5	284 135 EF	5
14,00	107,0	54,0	284 140 E	5	284 140 EF	5
14,50	111,0	56,0	284 145 E	5	284 145 EF	5
15,00	111,0	56,0	284 150 E	5	284 150 EF	5
15,50	115,0	58,0	284 155 E	5	284 155 EF	5
16,00	115,0	58,0	284 160 E	5	284 160 EF	5





## Twist drills DIN 1897 type N, HSSE-Co 5 ground - short






Short and stable twist drill with distinctive heat resistance. Ideally suited for assembly work with thin-walled materials such as sheet steels, flat steels and profile steel in bodysell construction. Use in hand-held drilling machines, with automatic machines and with turret lathes.



Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input type="checkbox"/>	<input type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Rust-resistant steel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Cast iron	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>	<input type="checkbox"/>

Ø mm	L1 mm	L2 mm	HSSE Co 5		HSSE Co 5 TITAN	
2,00	38,0	12,0	202 020 E	10	202 020 EF	10
2,10	38,0	12,0	202 021 E	10	202 021 EF	10
2,20	40,0	13,0	202 022 E	10	202 022 EF	10
2,30	40,0	13,0	202 023 E	10	202 023 EF	10
2,40	43,0	14,0	202 024 E	10	202 024 EF	10
2,50	43,0	14,0	202 025 E	10	202 025 EF	10
2,60	43,0	14,0	202 026 E	10	202 026 EF	10
2,70	46,0	16,0	202 027 E	10	202 027 EF	10
2,80	46,0	16,0	202 028 E	10	202 028 EF	10
2,90	46,0	16,0	202 029 E	10	202 029 EF	10
3,00	46,0	16,0	202 030 E	10	202 030 EF	10
3,10	49,0	18,0	202 031 E	10	202 031 EF	10
3,20	49,0	18,0	202 032 E	10	202 032 EF	10
3,30	49,0	18,0	202 033 E	10	202 033 EF	10
3,40	52,0	20,0	202 034 E	10	202 034 EF	10
3,50	52,0	20,0	202 035 E	10	202 035 EF	10
3,60	52,0	20,0	202 036 E	10	202 036 EF	10
3,70	52,0	20,0	202 037 E	10	202 037 EF	10
3,80	55,0	22,0	202 038 E	10	202 038 EF	10
3,90	55,0	22,0	202 039 E	10	202 039 EF	10
4,00	55,0	22,0	202 040 E	10	202 040 EF	10
4,10	55,0	22,0	202 041 E	10	202 041 EF	10
4,20	55,0	22,0	202 042 E	10	202 042 EF	10
4,30	58,0	24,0	202 043 E	10	202 043 EF	10
4,40	58,0	24,0	202 044 E	10	202 044 EF	10
4,50	58,0	24,0	202 045 E	10	202 045 EF	10
4,60	58,0	24,0	202 046 E	10	202 046 EF	10
4,70	58,0	24,0	202 047 E	10	202 047 EF	10
4,80	62,0	26,0	202 048 E	10	202 048 EF	10
4,90	62,0	26,0	202 049 E	10	202 049 EF	10
5,00	62,0	26,0	202 050 E	10	202 050 EF	10
5,10	62,0	26,0	202 051 E	10	202 051 EF	10
5,20	62,0	26,0	202 052 E	10	202 052 EF	10
5,30	62,0	26,0	202 053 E	10	202 053 EF	10
5,40	66,0	28,0	202 054 E	10	202 054 EF	10
5,50	66,0	28,0	202 055 E	10	202 055 EF	10
5,60	66,0	28,0	202 056 E	10	202 056 EF	10
5,70	66,0	28,0	202 057 E	10	202 057 EF	10
5,80	66,0	28,0	202 058 E	10	202 058 EF	10
5,90	66,0	28,0	202 059 E	10	202 059 EF	10

Ø mm	L1 mm	L2 mm	HSSE Co 5 		HSSE Co 5 	TITAIN 	
6,00	66,0	28,0	202 060 E	10	202 060 EF		10
6,10	70,0	31,0	202 061 E	10	202 061 EF		10
6,20	70,0	31,0	202 062 E	10	202 062 EF		10
6,30	70,0	31,0	202 063 E	10	202 063 EF		10
6,40	70,0	31,0	202 064 E	10	202 064 EF		10
6,50	70,0	31,0	202 065 E	10	202 065 EF		10
6,60	70,0	31,0	202 066 E	10	202 066 EF		10
6,70	70,0	31,0	202 067 E	10	202 067 EF		10
6,80	74,0	34,0	202 068 E	10	202 068 EF		10
6,90	74,0	34,0	202 069 E	10	202 069 EF		10
7,00	74,0	34,0	202 070 E	10	202 070 EF		10
7,10	74,0	34,0	202 071 E	10	202 071 EF		10
7,20	74,0	34,0	202 072 E	10	202 072 EF		10
7,30	74,0	34,0	202 073 E	10	202 073 EF		10
7,40	74,0	34,0	202 074 E	10	202 074 EF		10
7,50	74,0	34,0	202 075 E	10	202 075 EF		10
7,60	79,0	37,0	202 076 E	10	202 076 EF		10
7,70	79,0	37,0	202 077 E	10	202 077 EF		10
7,80	79,0	37,0	202 078 E	10	202 078 EF		10
7,90	79,0	37,0	202 079 E	10	202 079 EF		10
8,00	79,0	37,0	202 080 E	10	202 080 EF		10
8,10	79,0	37,0	202 081 E	10	202 081 EF		10
8,20	79,0	37,0	202 082 E	10	202 082 EF		10
8,30	79,0	37,0	202 083 E	10	202 083 EF		10
8,40	79,0	37,0	202 084 E	10	202 084 EF		10
8,50	79,0	37,0	202 085 E	10	202 085 EF		10
8,60	84,0	40,0	202 086 E	10	202 086 EF		10
8,70	84,0	40,0	202 087 E	10	202 087 EF		10
8,80	84,0	40,0	202 088 E	10	202 088 EF		10
8,90	84,0	40,0	202 089 E	10	202 089 EF		10
9,00	84,0	40,0	202 090 E	10	202 090 EF		10
9,10	84,0	40,0	202 091 E	10	202 091 EF		10
9,20	84,0	40,0	202 092 E	10	202 092 EF		10
9,30	84,0	40,0	202 093 E	10	202 093 EF		10
9,40	84,0	40,0	202 094 E	10	202 094 EF		10
9,50	84,0	40,0	202 095 E	10	202 095 EF		10
9,60	89,0	43,0	202 096 E	10	202 096 EF		10
9,70	89,0	43,0	202 097 E	10	202 097 EF		10
9,80	89,0	43,0	202 098 E	10	202 098 EF		10
9,90	89,0	43,0	202 099 E	10	202 099 EF		10
10,00	89,0	43,0	202 100 E	10	202 100 EF		10
10,10	89,0	43,0	202 101 E	10	202 101 EF		10
10,20	89,0	43,0	202 102 E	10	202 102 EF		10
10,30	89,0	43,0	202 103 E	10	202 103 EF		10
10,40	89,0	43,0	202 104 E	10	202 104 EF		10
10,50	89,0	43,0	202 105 E	5	202 105 EF		5
10,60	89,0	43,0	202 106 E	5	202 106 EF		5
10,70	95,0	47,0	202 107 E	5	202 107 EF		5
10,80	95,0	47,0	202 108 E	5	202 108 EF		5
10,90	95,0	47,0	202 109 E	5	202 109 EF		5
11,00	95,0	47,0	202 110 E	5	202 110 EF		5
11,10	95,0	47,0	202 111 E	5	202 111 EF		5
11,20	95,0	47,0	202 112 E	5	202 112 EF		5
11,30	95,0	47,0	202 113 E	5	202 113 EF		5
11,40	95,0	47,0	202 114 E	5	202 114 EF		5
11,50	95,0	47,0	202 115 E	5	202 115 EF		5
11,60	95,0	47,0	202 116 E	5	202 116 EF		5
11,70	95,0	47,0	202 117 E	5	202 117 EF		5
11,80	95,0	47,0	202 118 E	5	202 118 EF		5
11,90	102,0	51,0	202 119 E	5	202 119 EF		5
12,00	102,0	51,0	202 120 E	5	202 120 EF		5
12,10	102,0	51,0	202 121 E	5	202 121 EF		5
12,20	102,0	51,0	202 122 E	5	202 122 EF		5
12,30	102,0	51,0	202 123 E	5	202 123 EF		5
12,40	102,0	51,0	202 124 E	5	202 124 EF		5
12,50	102,0	51,0	202 125 E	5	202 125 EF		5
12,60	102,0	51,0	202 126 E	5	202 126 EF		5
12,70	102,0	51,0	202 127 E	5	202 127 EF		5
12,80	102,0	51,0	202 128 E	5	202 128 EF		5
12,90	102,0	51,0	202 129 E	5	202 129 EF		5
13,00	102,0	51,0	202 130 E	5	202 130 EF		5
—	—	—	—	—	—		—
—	—	—	—	—	—		—
—	—	—	—	—	—		—



DIN 1897

N

HSS-G



## Twist drills DIN 1897 type N, HSS-G ground - short

Short and stable twist drill with distinctive heat resistance. Ideally suited for assembly work with thin-walled materials such as sheet steels, flat steels and profile steel in bodysell construction. Use in hand-held drilling machines, with automatic machines and with turret lathes.

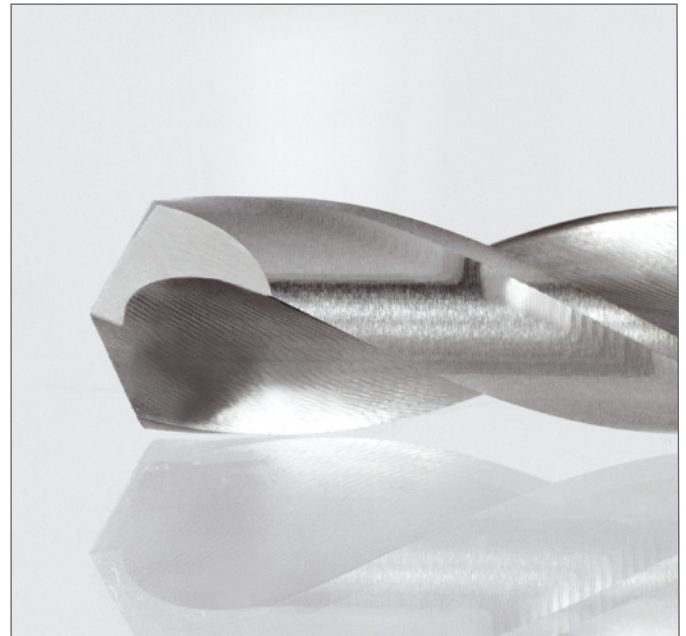


Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input type="checkbox"/>	<input type="checkbox"/>	Bronze	<input type="checkbox"/>	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input type="checkbox"/>	<input type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	<input type="checkbox"/>	Cast iron	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>	<input type="checkbox"/>

Ø mm	L1 mm	L2 mm	HSS-G		HSS-G TIN	
2,00	38,0	12,0	202 020	10	202 020 T	10
2,10	38,0	12,0	202 021	10	202 021 T	10
2,20	40,0	13,0	202 022	10	202 022 T	10
2,30	40,0	13,0	202 023	10	202 023 T	10
2,40	43,0	14,0	202 024	10	202 024 T	10
2,50	43,0	14,0	202 025	10	202 025 T	10
2,60	43,0	14,0	202 026	10	202 026 T	10
2,70	46,0	16,0	202 027	10	202 027 T	10
2,80	46,0	16,0	202 028	10	202 028 T	10
2,90	46,0	16,0	202 029	10	202 029 T	10
3,00	46,0	16,0	202 030	10	202 030 T	10
3,10	49,0	18,0	202 031	10	202 031 T	10
3,20	49,0	18,0	202 032	10	202 032 T	10
3,30	49,0	18,0	202 033	10	202 033 T	10
3,40	52,0	20,0	202 034	10	202 034 T	10
3,50	52,0	20,0	202 035	10	202 035 T	10
3,60	52,0	20,0	202 036	10	202 036 T	10
3,70	52,0	20,0	202 037	10	202 037 T	10
3,80	55,0	22,0	202 038	10	202 038 T	10
3,90	55,0	22,0	202 039	10	202 039 T	10
4,00	55,0	22,0	202 040	10	202 040 T	10
4,10	55,0	22,0	202 041	10	202 041 T	10
4,20	55,0	22,0	202 042	10	202 042 T	10
4,30	58,0	24,0	202 043	10	202 043 T	10
4,40	58,0	24,0	202 044	10	202 044 T	10
4,50	58,0	24,0	202 045	10	202 045 T	10
4,60	58,0	24,0	202 046	10	202 046 T	10
4,70	58,0	24,0	202 047	10	202 047 T	10
4,80	62,0	26,0	202 048	10	202 048 T	10
4,90	62,0	26,0	202 049	10	202 049 T	10

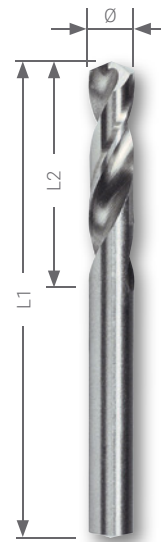
Ø mm	L1 mm	L2 mm	HSS-G		HSS-G TiN	
			Icon	Quantity	Icon	Quantity
5,00	62,0	26,0	202 050	10	202 050 T	10
5,10	62,0	26,0	202 051	10	202 051 T	10
5,20	62,0	26,0	202 052	10	202 052 T	10
5,30	62,0	26,0	202 053	10	202 053 T	10
5,40	66,0	28,0	202 054	10	202 054 T	10
5,50	66,0	28,0	202 055	10	202 055 T	10
5,60	66,0	28,0	202 056	10	202 056 T	10
5,70	66,0	28,0	202 057	10	202 057 T	10
5,80	66,0	28,0	202 058	10	202 058 T	10
5,90	66,0	28,0	202 059	10	202 059 T	10
6,00	66,0	28,0	202 060	10	202 060 T	10
6,50	70,0	31,0	202 065	10	202 065 T	10
6,80	74,0	34,0	202 068	10	202 068 T	10
7,00	74,0	34,0	202 070	10	202 070 T	10
7,20	74,0	34,0	202 072	10	202 072 T	10
7,50	74,0	34,0	202 075	10	202 075 T	10
7,80	79,0	37,0	202 078	10	202 078 T	10
8,00	79,0	37,0	202 080	10	202 080 T	10
8,50	79,0	37,0	202 085	10	202 085 T	10
9,00	84,0	40,0	202 090	10	202 090 T	10
9,50	84,0	40,0	202 095	10	202 095 T	10
10,00	89,0	43,0	202 100	10	202 100 T	10
10,20	89,0	43,0	202 102	10	202 102 T	10
10,50	89,0	43,0	202 105	5	202 105 T	5
11,00	95,0	47,0	202 110	5	202 110 T	5
11,50	95,0	47,0	202 115	5	202 115 T	5
12,00	102,0	51,0	202 120	5	202 120 T	5
12,50	102,0	51,0	202 125	5	202 125 T	5
13,00	102,0	51,0	202 130	5	202 130 T	5
14,00	107,0	54,0	202 140	5	202 140 T	5
15,00	111,0	56,0	202 150	5	202 150 T	5
16,00	115,0	58,0	202 160	5	202 160 T	5





## Spot drills type N, HSS ground - extra short

Extra short and stable standard drill. Shorter than DIN 1897. Ideally suitable for assembly work in thin-walled materials such as sheet steels, flat steels and profile steels. Highly secure against fracture. For use in all hand-held drilling machines. Advantages DIN 1412 C: good centring, little pressure required. Chip spreading improves chip removal.



Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	■	Brass	■
Steel (N/mm <sup>2</sup> ) < 1100		Bronze	□
Steel (N/mm <sup>2</sup> ) < 1300		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	

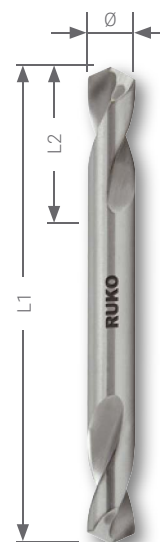
Ø mm	L1 mm	L2 mm	HSS-G	
2,50	38,0	14,0	251 025	10
2,80	40,0	16,0	251 028	10
3,00	40,0	16,0	251 030	10
3,10	40,0	16,0	251 031	10
3,20	40,0	16,0	251 032	10
3,25	41,0	16,0	251 0325	10
3,30	41,0	16,0	251 033	10
3,40	42,0	16,0	251 034	10
3,50	42,0	16,0	251 035	10
4,00	42,0	16,0	251 040	10
4,10	44,0	18,0	251 041	10
4,20	44,0	18,0	251 042	10
4,30	44,0	18,0	251 043	10
4,50	48,0	20,0	251 045	10
4,70	48,0	20,0	251 047	10
4,80	48,0	20,0	251 048	10
4,90	50,0	22,0	251 049	10
5,00	52,0	24,0	251 050	10
5,10	52,0	24,0	251 051	10
5,20	52,0	24,0	251 052	10
5,50	52,0	24,0	251 055	10
6,00	55,0	26,0	251 060	10
6,50	60,0	26,0	251 065	10








## Double end drills type KV, HSS ground

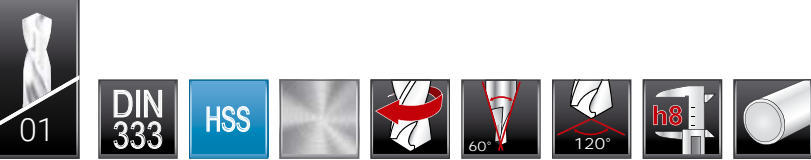
Extra short and stable standard drill. Shorter than DIN 1897. Ideally suitable for assembly work in thin-walled materials such as sheet steels, flat steels and profile steels. High security against fracture. For use in hand-held drilling machines. Usable at both ends. Advantages DIN 1412 C: good centring, little pressure required. Chip distribution improves chip removal.



Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	■	Brass	■
Steel (N/mm <sup>2</sup> ) < 1100		Bronze	□
Steel (N/mm <sup>2</sup> ) < 1300		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	

Ø mm	L1 mm	L2 mm	 	
2,50	43,0	10,0	252 025	10
2,80	46,0	11,0	252 028	10
3,00	46,0	11,0	252 030	10
3,10	49,0	11,0	252 031	10
3,20	49,0	11,0	252 032	10
3,25	49,0	11,0	252 0325	10
3,30	49,0	11,0	252 033	10
3,40	52,0	14,0	252 034	10
3,50	52,0	14,0	252 035	10
4,00	55,0	14,0	252 040	10
4,10	55,0	14,0	252 041	10
4,20	55,0	14,0	252 042	10
4,30	58,0	17,0	252 043	10
4,50	58,0	17,0	252 045	10
4,80	62,0	17,0	252 048	10
4,90	62,0	17,0	252 049	10
5,00	62,0	17,0	252 050	10
5,10	62,0	17,0	252 051	10
5,20	62,0	17,0	252 052	10
5,50	66,0	20,0	252 055	10
6,00	66,0	20,0	252 060	10
6,50	70,0	20,0	252 065	10



## Centre drills DIN 333, HSS ground

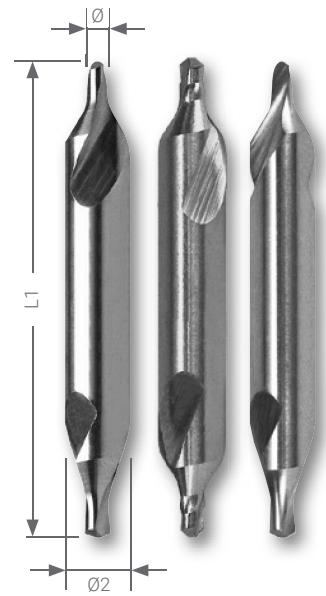
Centre drills for making centre holes according to shape A, shape A with reinforcing bead and shape R.

**A** shape A

**A+** shape A with reinforcing bead

**R** shape R

Packing unit: in plastic box



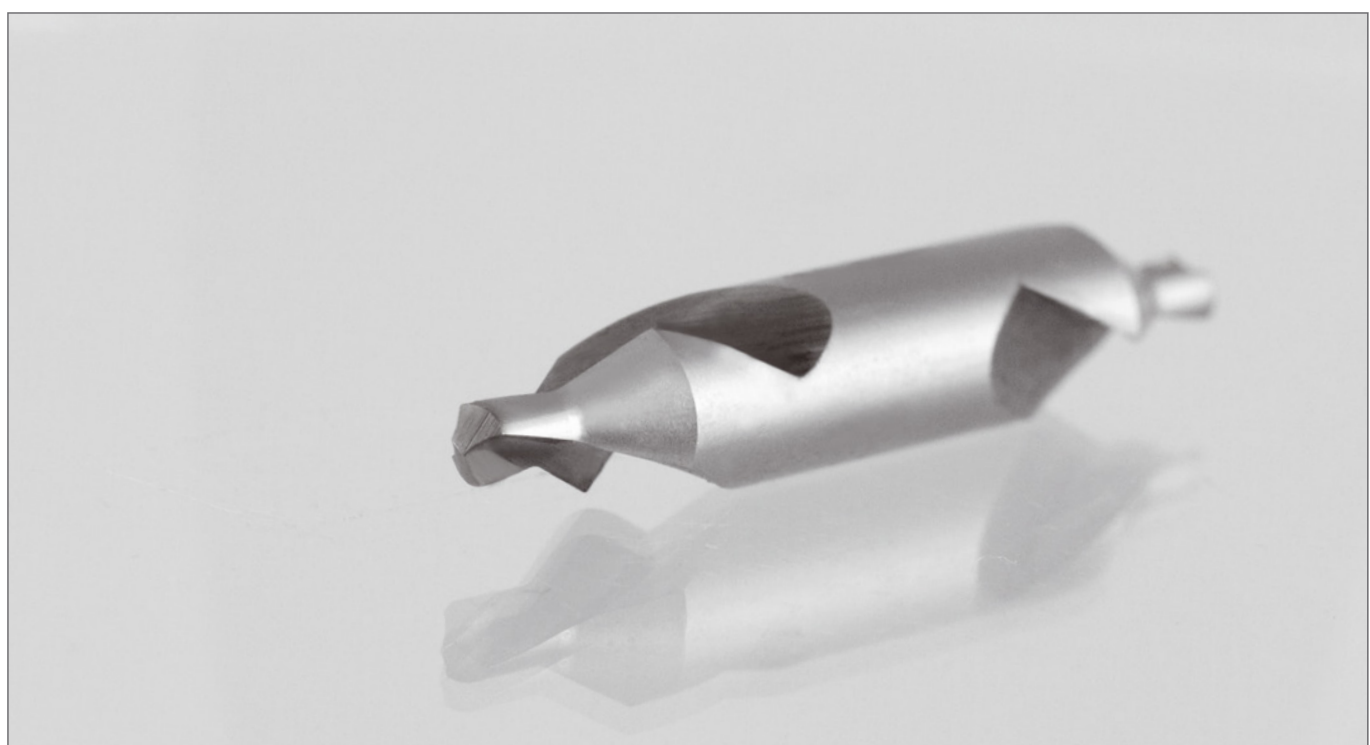
	<b>A</b>	<b>A+</b>	<b>R</b>
Steel (N/mm <sup>2</sup> ) < 900	■	■	■
Steel (N/mm <sup>2</sup> ) < 1100			
Steel (N/mm <sup>2</sup> ) < 1300			
Rust-resistant steel			
Aluminium	■	■	■

	<b>A</b>	<b>A+</b>	<b>R</b>
Brass	■	■	■
Bronze	□	□	□
Plastics	■	■	■
Cast iron	□	□	□
Titanium alloyed			

Ø1 mm	L1 mm	Ø2 mm	HSS	<b>A</b>	
0,80	20,0	3,15	217 008		1
1,00	31,5	3,15	217 010		1
1,60	35,5	4,00	217 016		1
2,00	40,0	5,00	217 020		1
2,50	45,0	6,30	217 025		1
3,15	50,0	8,00	217 315		1
4,00	56,0	10,00	217 040		1
5,00	63,0	12,50	217 050		1
6,30	71,0	16,00	217 063		1

HSS	<b>A+</b>	
—		1
217 1 010		1
217 1 016		1
217 1 020		1
217 1 025		1
217 1 315		1
217 1 040		1
217 1 050		1
217 1 063		1

HSS	<b>R</b>	
217 2 008		1
217 2 010		1
217 2 016		1
217 2 020		1
217 2 025		1
217 2 315		1
217 2 040		1
217 2 050		1
217 2 063		1





## Hollow section twist drills type N, HSS ground

Due to the short spiral shape the drill is particularly suitable for the working and fitting of hollow sections. The reduction of the cross cutting edge guarantees an optimized centring and long tool life.

Packing unit: in plastic box

Steel (N/mm <sup>2</sup> ) < 900	■	Brass	■
Steel (N/mm <sup>2</sup> ) < 1100		Bronze	
Steel (N/mm <sup>2</sup> ) < 1300		Plastics	■
Rust-resistant steel		Cast iron	
Aluminium	■	Titanium alloyed	



Ø mm	L1 mm	L2 mm	HSS-G	
4,90	70,0	30,0	257 515	10
4,90	100,0	30,0	257 491	10
4,90	120,0	30,0	257 516	10
4,90	150,0	30,0	257 492	10
5,00	70,0	30,0	257 501	10
5,00	100,0	30,0	257 502	10
5,00	120,0	30,0	257 517	10
5,00	150,0	30,0	257 503	10
5,00	180,0	30,0	257 518	10
5,00	210,0	30,0	257 504	10
5,10	70,0	30,0	257 519	10
5,10	100,0	30,0	257 511	10
5,10	120,0	30,0	257 520	10
5,10	150,0	30,0	257 512	10
5,10	180,0	30,0	257 518	10
5,10	210,0	30,0	257 513	10
5,30	70,0	30,0	257 522	10
5,30	100,0	30,0	257 531	10
5,30	120,0	30,0	257 523	10
5,30	150,0	30,0	257 532	10
5,30	180,0	30,0	257 524	10
5,30	210,0	30,0	257 533	10
5,50	70,0	30,0	257 525	10
5,50	100,0	30,0	257 551	10
5,50	120,0	30,0	257 526	10
5,50	150,0	30,0	257 552	10
5,50	180,0	30,0	257 527	10
5,50	210,0	30,0	257 553	10
5,70	70,0	30,0	257 571	10
5,70	100,0	30,0	257 572	10
5,70	120,0	30,0	257 528	10
5,70	150,0	30,0	257 573	10
5,70	180,0	30,0	257 529	10
5,70	210,0	30,0	257 574	10
5,80	70,0	30,0	257 530	10
5,80	100,0	30,0	257 581	10
5,80	120,0	30,0	257 534	10
5,80	150,0	30,0	257 582	10
5,80	180,0	30,0	257 535	10
5,80	210,0	30,0	257 583	10





# Table of cutting speeds for twist drills



Drills Ø inch	Cutting speed Vc = m/min															
	4	6	8	10	12	15	18	20	25	30	35	40	50	60	80	100
	r.p.m.															
1/16	800	1190	1590	1990	2390	2990	3580	3980	4980	5970	6970	7960	9950	11940	15920	19900
5/64	640	960	1270	1590	1910	2390	2870	3180	3980	4780	5570	6370	7960	9550	12740	15920
3/32	530	800	1060	1330	1590	1990	2390	2650	3320	3980	4640	5310	6630	7960	10620	13270
7/64	450	680	910	1140	1360	1710	2050	2270	2840	3410	3980	4550	5690	6820	9100	11370
1/8	400	600	800	1000	1190	1490	1790	1990	2490	2990	3480	3980	4980	5970	7960	9950
9/64	350	530	710	880	1060	1330	1590	1770	2210	2650	3100	3540	4420	5310	7080	8850
5/32	320	480	640	800	960	1190	1430	1590	1990	2390	2790	3180	3980	4780	6370	7960
11/64	290	430	580	720	870	1090	1300	1450	1810	2170	2530	2900	3620	4340	5790	7240
3/16	270	400	530	660	800	1000	1190	1330	1660	1990	2320	2650	3320	3980	5310	6630
13/64	240	370	490	610	730	920	1100	1220	1530	1840	2140	2450	3060	3670	4900	6120
7/32	230	340	450	570	680	850	1020	1140	1420	1710	1990	2270	2840	3410	4550	5690
15/64	210	320	420	530	640	800	960	1060	1330	1590	1860	2120	2650	3180	4250	5310
1/4	200	300	400	500	600	750	900	1000	1240	1490	1740	1990	2490	2990	3980	4980
17/64	190	290	380	480	570	710	860	950	1190	1430	1660	1900	2380	2850	3800	4750
9/32	180	270	360	450	540	670	810	900	1120	1350	1570	1790	2240	2690	3590	4490
19/64	170	250	340	420	510	640	760	850	1060	1270	1490	1700	2120	2550	3400	4250
5/16	160	240	320	400	480	600	730	810	1010	1210	1410	1610	2020	2420	3230	4030
21/64	150	230	310	380	460	580	690	770	960	1150	1340	1530	1920	2300	3070	3840
11/32	150	220	290	370	440	550	660	730	920	1100	1280	1460	1830	2200	2930	3660
23/64	140	210	280	350	420	520	630	700	870	1050	1220	1400	1750	2100	2800	3500
3/8	130	200	270	340	400	500	600	670	840	1010	1170	1340	1680	2010	2680	3350
25/64	130	190	260	320	390	480	580	640	800	970	1130	1290	1610	1930	2570	3220
13/32	120	190	250	310	370	460	560	620	770	930	1080	1240	1550	1860	2470	3090
27/64	120	180	240	300	360	450	540	600	740	890	1040	1190	1490	1790	2380	2980
7/16	110	170	230	290	340	430	520	570	720	860	1000	1150	1430	1720	2300	2870
29/64	110	170	220	280	330	420	500	550	690	830	970	1110	1380	1660	2220	2770
15/32	110	160	210	270	320	400	480	540	670	800	940	1070	1340	1610	2140	2680
31/64	110	160	210	260	310	390	470	520	650	780	910	1040	1290	1550	2070	2590
1/2	110	150	200	250	300	380	450	500	630	750	880	1000	1250	1500	2010	2510

Material	Cutting speed Vc m/min	Coolant
High carbon struc. steel < 700 N/mm <sup>2</sup>	30 - 35	cutting spray
High carbon struc. steel > 700 N/mm <sup>2</sup>	20 - 25	cutting spray
Alloyed steel < 1000 N/mm <sup>2</sup>	20 - 25	cutting spray
Cast iron < 250 N/mm <sup>2</sup>	15 - 25	compressed air
Cast iron > 250 N/mm <sup>2</sup>	10 - 20	compressed air
CuZn alloy brittle	60 - 100	compressed air

Material	Cutting speed Vc m/min	Coolant
CuZn alloy tough	35 - 60	compressed air
Al alloy 11% Si	30 - 50	cutting spray
Thermoplastics	20 - 40	water
Duroplastics with inorganic filling	15 - 25	compressed air
Duroplastics with organic filling	15 - 35	compressed air



# Application of drills and cutting conditions

Material	Recommended for use		Cooling	Cutting speed v [m/min]	Drill diameter d [mm]				
	Main suggestion	Other suggestion			2	4	6	9	12
					Feed rate f [mm/rotation]				
Free cutting steel 350-500 N/mm2	214 ...	258 ... / 202 ...	E	30-40	0,05	0,1	0,125	0,16	0,2
Free cutting steel 500-900 N/mm2	214 ...	228 ... / 202 ...	E	25-30	0,04	0,08	0,1	0,125	0,16
Structural steel up to 500 N/mm2	214 ...	258 ... / 202 ...	E	30-40	0,04	0,08	0,1	0,125	0,16
Structural steel 500-900 N/mm2	214 ...	228 ... / 202 ...	E	20-25	0,032	0,063	0,08	0,1	0,125
Plain carbon case hardening steel up to 600 N/mm2	214 ...	258 ... / 202 ...	E	25-35	0,05	0,1	0,125	0,16	0,2
Alloyed case hardening steel 500-900 N/mm2	214 ...	228 ... / 202 ...	E	20-25	0,4	0,08	0,1	0,125	0,16
Alloyed case hardening steel 900-1000 N/mm2	282 ... E	281 ... E / 202 ... E	E, O	10-15	0,025	0,05	0,063	0,08	0,1
Nitriding steel 700-900 N/mm2	282 ... E	228 ... / 202 ... E	E	15-20	0,032	0,063	0,08	0,1	0,125
Heat treated nitriding steel 800-1250 N/mm2	282 ... E	228 ...	E, O	8-12	0,025	0,05	0,063	0,08	0,1
Mild steel for heat treatment 500-750 N/mm2	214 ...	228 ... / 202 ...	E	25-35	0,04	0,08	0,1	0,125	0,16
Plain carbon steel for heat treatment 700-1000 N/mm2	282 ... E	228 ... / 284 ... E	E	15-20	0,04	0,08	0,1	0,125	0,16
Alloyed steel heat treatment 900-1250 N/mm2	282 ... E	228 ... / 284 ... E	E, O	10-15	0,032	0,063	0,08	0,1	0,125
Maganese steel with content over 10 % Mn	282 ... E	281 ... E / 202 ... E	E, O	3-6	0,2	0,04	0,063	0,08	0,1
Plain carbon tool steel 700-900 N/mm2	282 ... E	228 ... / 202 ... E	E	14-18	0,032	0,063	0,08	0,1	0,12
Alloyed tool steel 850-1250 N/mm2	282 ... E	228 ...	E, O	8-12	0,025	0,05	0,063	0,08	0,1
Heat resistant steel 450-600 N/mm2	281 ... E	281 ... EF	O	15-20	0,032	0,063	0,08	0,1	0,125
Stainless steel	215 ...	281 ... E	E, O	6-10	0,02	0,032	0,05	0,08	0,1
Alloys hastelloy, inconel, nimonic	281 ... E	281 ... EF	O	3-6	0,02	0,04	0,063	0,08	0,125
Grey cast iron HB 180-240	214 ...	228 ...	E, CA	30-40	0,05	0,1	0,125	0,16	0,2
Grey cast iron HB 240-300	214 ...	228 ...	E, CA	20-30	0,05	0,1	0,125	0,16	0,2
Malleable cast iron HB 180-240	214 ...	228 ...	CA	20-30	0,05	0,1	0,125	0,16	0,2
Aluminium	280 ...	258 ...	E	50-80	0,05	0,1	0,125	0,16	0,2
Aluminium alloys with content up to 10 % Si and 180 N/mm2	280 ...	258 ...	E	40-65	0,063	0,1255	0,16	0,2	0,25
Aluminium alloys with content up to 10 % Si and 150-250 N/mm2	214 ...	202 ...	E	30-50	0,063	0,1255	0,16	0,2	0,25
Copper 200-400 N/mm2	280 ...	228 ...	E, O	30-40	0,05	0,1	0,125	0,16	0,2
Fragile brass with short chip 350-550 N/mm2	281 ... E	281 ... EF	E, O	60-80	0,063	0,1255	0,16	0,2	0,25
Tough brass with long chip 250-550 N/mm2	280 ...	280 ...	E, O	30-50	0,063	0,1	0,125	0,16	0,2
Bronze 200-500 N/mm2	280 ...	280 ...	E, O	20-40	0,05	0,08	0,125	0,16	0,2
Bronze 500-800 N/mm2	214 ...	258 ...	E, O	15-30	0,05	0,08	0,125	0,16	0,2
Magnesium alloys-electron	281 ... E	281 ... EF	-	60-100	0,08	0,125	0,016	0,02	0,25
Zinc, zinc alloys	214 ...	258 ...	E	35-45	0,05	0,1	0,125	0,16	0,2
Titanium alloys up to 700 N/mm2	281 ... E	281 ... EF	O	3-6	0,03	0,05	0,063	0,08	0,1
Titanium alloys 700-1000 N/mm2	281 ... E	281 ... EF	O	3-6	0,02	0,04	0,05	0,063	0,08
Silver	214 ...	258 ...	E	30-40	0,05	0,08	0,1	0,125	0,16
Duroplastics	281 ... E	281 ... EF	CA	10-20	0,04	0,08	0,1	0,125	0,16
Thermoplastics	280 ...	280 ...	W, CA	20-40	0,05	0,1	0,125	0,16	0,2
Plerspex	280 ...	280 ...	W	15-25	0,05	0,08	0,125	0,16	0,2
Laminated materials (paper, wood) across layer	280 ...	280 ...	CA	15-25	0,05	0,08	0,125	0,16	0,2

E = emulsion / O = cutting oil / CA = compressed air / W = water



## SPECIAL DRILLS



## Special drills

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### Spot weld miller

For removing spot welds from sheet metal.  
Exchangeable and double-headed milling crown.  
Adjustable milling depth with setting screw.  
No tearing of the sheet metal. No deformation  
of the sheet metal. Efficient and rapid working.

### Fast Cut

Extra stable special drill for hard requirements on  
hand drills. Good suited for clean and burr-free  
milling of welding spots and thin-walled work  
pieces without centering. Extreme high precision.  
Applicable for sheet steel, sheet brass, sheet alu-  
minium, sheet zinc, sheet copper, plastic sheets.

### Spotle Drill

Special shank for the application in pneumatic  
machines. For clean and burr-free milling of wel-  
ding spots and thin-walled work pieces without  
centering. Extreme high precision.  
(v = vario)







# Overview of symbols



High-speed steel



High-speed steel with 5 % Cobalt content, ground



Tungsten carbide



Bright surface



Bright / black surface



Black surface



TiCN coating



AlTiN coating



TiN coating



right hand cutting



Shape N:  
Helical point normal ground



Tolerance e.g. h8



Point angle e.g. 180°



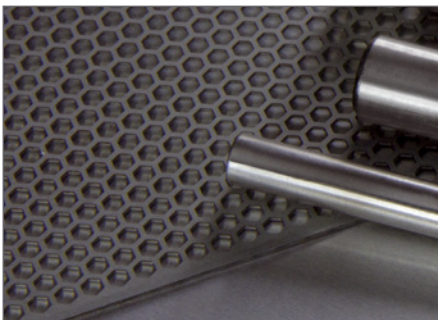
Helix angle e.g. 25-30°



DIN 1897



Centre point



Parts and applications overview:



Material	Surface	DIN	Point cuts	Point angle	Helix angle	Shank	Ø mm	Article no.	Page
HSS							9,6	101 101 - 101 104 M	92
HSSE Co 5		DIN 1897					6,0 - 8,0	101 107-1 101 108-1	93
HSSE Co 5		DIN 1897					6,0 - 10,0	101 107 - 101 114	93
HSSE Co 5		DIN 1897					6,0 - 10,0	101 107 TC - 101 114 TC	93
TC		DIN 1897					6,5 - 8,0	101 107 HM - 101 114 HM	93
HSSE Co 5							6,5 - 8,0	101 065 - 101 081	94
HSSE Co 5							6,5 - 8,0	101 080 TC - 101 081 TC	94
TC							6,5 - 8,0	101 080 HM - 101 081 HM	94
HSS							6,5 - 8,0	101 201 - 101 202	94
HSS							6,5 - 8,0	101 201 T - 101 202 T	94

Steel (N/mm <sup>2</sup> ) < 900	Steel (N/mm <sup>2</sup> ) < 1100	Steel (N/mm <sup>2</sup> ) < 1300	Stainless steel	Aluminium für / for ALU	Brass Zn Cu	Bronze Cu Sn	Plastics Plastic	Cast iron	Titanium alloyed Ti
■				■	■	□	■		
■	■	□	■	■	■	□	■	□	
■	■	□	■	■	■	□	■	□	
■	■	□	■	■	■	□	■	□	□
■	■	■	■	■	□	□	■	■	■
■	■	□	■	■	■	□	■	□	
■	■	□	■	■	■	□	■	□	□
■	■	■	■	■	□	□	■	■	■
■				■	■	□	■	□	
■			□		■	□	■	□	

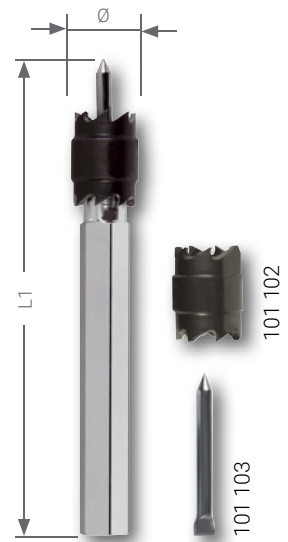


## Spot weld miller HSS

For removing spot welds from sheet metal. Exchangeable and double-headed milling crown. Adjustable milling depth with setting screw. No tearing of the sheet metal. No deformation of the sheet metal. Efficient and rapid working.

Packing unit: in plastic boxes

Steel (N/mm2) < 900	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1100	<input type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm2) < 1300	<input type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>
Stainless steel	<input type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>



	L1 mm	Ø mm			
Spot weld miller, complete	72,0	-			
Milling crown	-	9,6			
Centering pin	-	2,5			



## Spot weld miller set

Packing unit: in plastic boxes

13-piece set of spot weld miller 1 spot weld miller, complete + 10 milling crowns + 2 centering pins	101 104



## Spot weld miller special set

Packing unit: in plastic boxes

9-piece set of spot weld miller-special set 1 spot weld miller, complete + 5 milling + 2 centering pins + 1 fast cut HSSE-Co 5 Ø 8,0 mm	101 104 M	





## Fast Cut HSSE-Co 5

High-strength cutting edge since a secondary chamfer is not required. Enhanced chip evacuation due to wide chip groove and optimized chip angle. High-strength tool core and increased stiffness due to shortened chip groove. Good suited for clean and burr-free milling of welding spots and thin-walled work pieces without centering. Extreme high precision. Applicable for sheet steel, sheet brass, sheet aluminium, sheet zinc, sheet copper, plastic sheets.

Packing unit: in plastic boxes

Steel (N/mm <sup>2</sup> ) < 900	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>
Stainless steel	<input checked="" type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>

∅ mm	L1 mm	HSSE Co 5	
6,0	66,0	101 107-1	1
8,0	80,0	101 108-1	1



## Fast Cut HSSE-Co 5 and tungsten-carbide

Extra stable special drill for hard requirements on hand drills. Good suited for clean and burr-free milling of welding spots and thin-walled work pieces without centering. Extreme high precision. Applicable for sheet steel, sheet brass, sheet aluminium, sheet zinc, sheet copper, plastic sheets.

Packing unit: in plastic boxes

Steel (N/mm <sup>2</sup> ) < 900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Stainless steel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Cast iron	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

∅ mm	L1 mm	HSSE Co 5	HSSE Co 5 TiCN	TC TiAlN	
6,0	66,0	101 107	101 107 TC	101 107 HM	1
7,0	74,0	101 111	—	—	1
8,0	80,0	101 108	101 108 TC	101 108 HM	1
10,0	88,0	101 114	101 114 TC	—	1

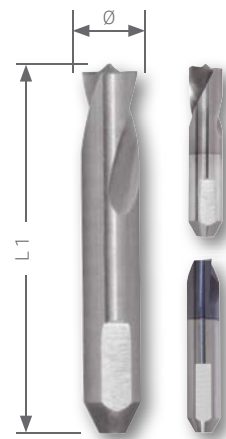




## Spotle Drill HSSE-Co 5 and tungsten-carbide

Special shank for the application in pneumatic machines.  
For clean and burr-free milling of welding spots and thin-walled work pieces without centering.  
Extreme high precision. (v = vario)

Packing unit: in plastic boxes



Steel (N/mm2) < 900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Steel (N/mm2) < 1100	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Steel (N/mm2) < 1300	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Stainless steel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Aluminium	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Brass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
Bronze	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Plastics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Cast iron	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Titanium alloyed						<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Ø mm	L1 mm					
6,5	40,0	101 065	—	—	—	1
8,0	40,0	101 080	101 080 TC	101 080 HM	—	1
8,0 (v)	44,0	101 081	101 081 TC	101 081 HM	—	1



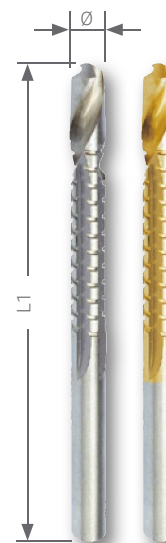
## Milling Drill HSS

For drilling and milling contours into wood, sheet metal, plastics and other thin-walled materials.  
Twist drill in front, milling cutter with chip breakers afterwards.

Packing unit: in plastic boxes

Steel (N/mm2) < 900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Steel (N/mm2) < 1100				<input type="checkbox"/>	<input type="checkbox"/>	
Steel (N/mm2) < 1300				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Stainless steel				<input type="checkbox"/>	<input type="checkbox"/>	
Aluminium	<input checked="" type="checkbox"/>					
Brass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
Bronze	<input type="checkbox"/>	<input type="checkbox"/>				
Plastics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
Cast iron	<input type="checkbox"/>	<input type="checkbox"/>				
Titanium alloyed						

Ø mm	L1 mm			
6,0	90,0	101 201	101 201 T	1
8,0	90,0	101 202	101 202 T	1



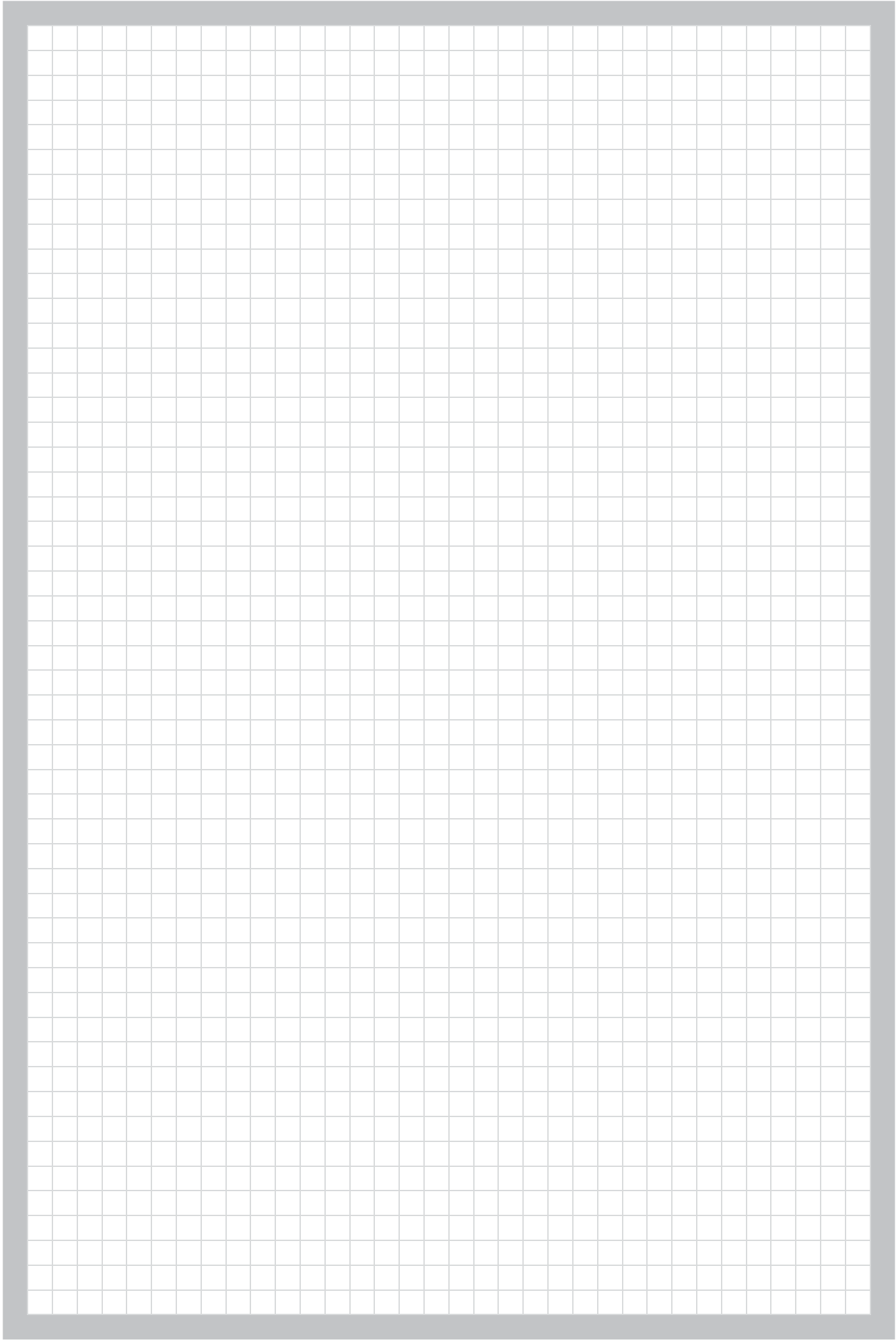


# Table of cutting speeds for special drills

Vc = m/min	4	6	8	10	12	15	18	20	25	30	35	40	50	60	80	100
Ø mm	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.
1,0	1274	1911	2548	3185	3822	4777	5732	6369	7962	9554	11146	12739	15924	19108	25478	31847
1,5	849	1274	1699	2123	2548	3185	3822	4246	5308	6369	7431	8493	10616	12739	16985	21231
2,0	637	955	1274	1592	1911	2389	2866	3185	3981	4777	5573	6369	7962	9554	12739	15924
2,5	510	764	1019	1274	1529	1911	2293	2548	3185	3822	4459	5096	6369	7643	10191	12739
3,0	425	637	849	1062	1274	1592	1911	2123	2654	3185	3715	4246	5308	6369	8493	10616
3,5	364	546	728	910	1092	1365	1638	1820	2275	2730	3185	3640	4550	5460	7279	9099
4,0	318	478	637	796	955	1194	1433	1592	1990	2389	2787	3185	3981	4777	6369	7962
4,5	283	425	566	708	849	1062	1274	1415	1769	2123	2477	2831	3539	4246	5662	7077
5,0	255	382	510	637	764	955	1146	1274	1592	1911	2229	2548	3185	3822	5096	6369
5,5	232	347	463	579	695	869	1042	1158	1448	1737	2027	2316	2895	3474	4632	5790
6,0	212	318	425	531	637	796	955	1062	1327	1592	1858	2123	2654	3185	4246	5308
6,5	196	294	392	490	588	735	882	980	1225	1470	1715	1960	2450	2940	3920	4900
7,0	182	273	364	455	546	682	819	910	1137	1365	1592	1820	2275	2730	3640	4550
7,5	170	255	340	425	510	637	764	849	1062	1274	1486	1699	2123	2548	3397	4246
8,0	159	239	318	398	478	597	717	796	995	1194	1393	1592	1990	2389	3185	3981
8,5	150	225	300	375	450	562	674	749	937	1124	1311	1499	1873	2248	2997	3747
9,0	142	212	283	354	425	531	637	708	885	1062	1238	1415	1769	2123	2831	3539
9,5	134	201	268	335	402	503	603	670	838	1006	1173	1341	1676	2011	2682	3352
10,0	127	191	255	318	382	478	573	637	796	955	1115	1274	1592	1911	2548	3185
11,0	116	174	232	290	347	434	521	579	724	869	1013	1158	1448	1737	2316	2895
12,0	106	159	212	265	318	398	478	531	663	796	929	1062	1327	1592	2123	2654
13,0	98	147	196	245	294	367	441	490	612	735	857	980	1225	1470	1960	2450
14,0	91	136	182	227	273	341	409	455	569	682	796	910	1137	1365	1820	2275
15,0	85	127	170	212	255	318	382	425	531	637	743	849	1062	1274	1699	2123
16,0	80	119	159	199	239	299	358	398	498	597	697	796	995	1194	1592	1990
17,0	75	112	150	187	225	281	337	375	468	562	656	749	937	1124	1499	1873
18,0	71	106	142	177	212	265	318	354	442	531	619	708	885	1062	1415	1769
19,0	67	101	134	168	201	251	302	335	419	503	587	670	838	1006	1341	1676
20,0	64	96	127	159	191	239	287	318	398	478	557	637	796	955	1274	1592
21,0	61	91	121	152	182	227	273	303	379	455	531	607	758	910	1213	1517
22,0	58	87	116	145	174	217	261	290	362	434	507	579	724	869	1158	1448
23,0	55	83	111	138	166	208	249	277	346	415	485	554	692	831	1108	1385
24,0	53	80	106	133	159	199	239	265	332	398	464	531	663	796	1062	1327
25,0	51	76	102	127	153	191	229	255	318	382	446	510	637	764	1019	1274
26,0	49	73	98	122	147	184	220	245	306	367	429	490	612	735	980	1225
27,0	47	71	94	118	142	177	212	236	295	354	413	472	590	708	944	1180
28,0	45	68	91	114	136	171	205	227	284	341	398	455	569	682	910	1137
29,0	44	66	88	110	132	165	198	220	275	329	384	439	549	659	879	1098
30,0	42	64	85	106	127	159	191	212	265	318	372	425	531	637	849	1062
31,0	41	62	82	103	123	154	185	205	257	308	360	411	514	616	822	1027
32,0	40	60	80	100	119	149	179	199	249	299	348	398	498	597	796	995
33,0	39	58	77	97	116	145	174	193	241	290	338	386	483	579	772	965
34,0	37	56	75	94	112	141	169	187	234	281	328	375	468	562	749	937
35,0	36	55	73	91	109	136	164	182	227	273	318	364	455	546	728	910
36,0	35	53	71	88	106	133	159	177	221	265	310	354	442	531	708	885
37,0	34	52	69	86	103	129	155	172	215	258	301	344	430	516	689	861
38,0	34	50	67	84	101	126	151	168	210	251	293	335	419	503	670	838
39,0	33	49	65	82	98	122	147	163	204	245	286	327	408	490	653	817
40,0	32	48	64	80	96	119	143	159	199	239	279	318	398	478	637	796
41,0	31	47	62	78	93	117	140	155	194	233	272	311	388	466	621	777
42,0	30	45	61	76	91	114	136	152	190	227	265	303	379	455	607	758
43,0	30	44	59	74	89	111	133	148	185	222	259	296	370	444	593	741
44,0	29	43	58	72	87	109	130	145	181	217	253	290	362	434	579	724
45,0	28	42	57	71	85	106	127	142	177	212	248	283	354	425	566	708
46,0	28	42	55	69	83	104	125	138	173	208	242	277	346	415	554	692
47,0	27	41	54	68	81	102	122	136	169	203	237	271	339	407	542	678
48,0	27	40	53	66	80	100	119	133	166	199	232	265	332	398	531	663
49,0	26	39	52	65	78	97	117	130	162	195	227	260	325	390	520	650
50,0	25	38	51	64	76	96	115	127	159	191	223	255	318	382	510	637

Material	Cutting speed Vc m/min	Coolant
High carbon struc. steel < 700 N/mm <sup>2</sup>	30 - 35	cutting spray
High carbon struc. steel > 700 N/mm <sup>2</sup>	20 - 25	cutting spray
Alloyed steel < 1000 N/mm <sup>2</sup>	20 - 25	cutting spray
Cast iron < 250 N/mm <sup>2</sup>	15 - 25	compressed air
Cast iron > 250 N/mm <sup>2</sup>	10 - 20	compressed air
CuZn alloy brittle	60 - 100	compressed air

Material	Cutting speed Vc m/min	Coolant
CuZn alloy tough	35 - 60	compressed air
Al alloy 11% Si	30 - 50	cutting spray
Thermoplastics	20 - 40	water
Duroplastics with inorganic filling	15 - 25	compressed air
Duroplastics with organic filling	15 - 35	compressed air







# TUBE AND SHEET DRILLS



## Tube and sheet drills

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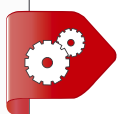
The flutes of the RUKO high performance tube and sheet drills are CBN ground from the solid hardened form. Because CBN (cubical boron nitride) is a much harder abrasive than even silicon carbide or corundum, a better and sharper cutting edge is achieved - without burrs.

And, with higher dimensional precision the drills will last considerably longer while maintaining the precise process tolerances. The ideal tool for sheet metal working in the following sectors of industries: electrical, sanitary engineering, heating technics, automotive, mechanical engineering, switching systems, aviation.

This tough tool is suitable for all standard industrial materials: nonferrous metal, special steel, thermoplastics and duroplastics as well as sheet metals up to 4,0 mm thickness.

This durable and versatile tool will center, spot-drill and bore - all in one smooth, high performance working cycle. By using RUKO cutting spray or RUKO cutting paste tool life will be considerably prolonged.

Special sizes available on request.



- Cooling
- Adjust speed
- Do not press

Hole cutter drill is pulled automatically into the plate.



## Overview of symbols



High-speed steel



Point angle: 118°



Point cut:  
work's specification



bright surface



High-speed steel  
with 5 % Cobalt content,  
ground



Shape C: split point



Ø tolerance:  
work's specification



TiN coating



right hand cutting



Cone angle: 20-30°



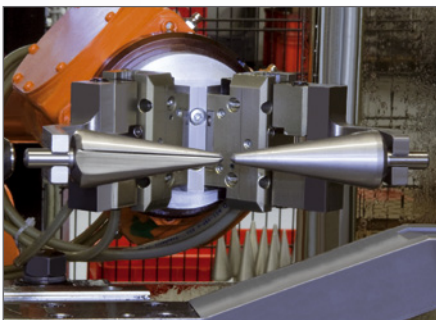
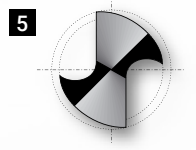
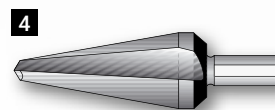
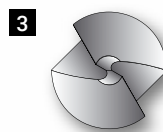
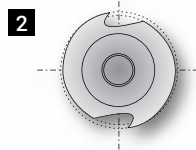
Shank:  
3-way clamping surface



Bit shank:  
6,35 mm x 27,0 mm

## Product Information

- 1 CBN ground flute**  
Because CBN ground flutes have better and sharper cutting edges - without burrs - unlike the conventional milled flutes. This guarantees a superior cutting edge and longer tool life.
- 2 Radially adjusted relief produced by CBN grinding**  
Because radially adjusted relief produced by CBN grinding relates directly to its diameter, the cutting edge is always the highest point of the diameter.
- 3 Flute**  
The straight or spiral flute offers absolute running smoothness and high cutting performance. In the spiral flute non-breaking chips in particular are transported away cleanly as with a spiral drill.
- 4 Cone at the end**  
The cone at the end of these tube and sheet drills makes it easier to withdraw the tool from the material.
- 5 CBN ground bit with split point DIN 1412 C**  
The CBN ground bit ensures centering and spot-drilling even in thin-walled material.



Parts and applications overview:



Material	Surface	Shape	Point angle	Cone angle	Shank	Ø mm	Article no.	Page
HSS						3,0 - 22,5	101 001 - 101 022	101
HSS	TiN					3,0 - 22,5	101 001 E - 101 008 E	101
HSSE Co 5						3,0 - 22,5	101 001 T - 101 008 T	101
HSS						5,0 - 22,0	101 049 H	101
HSS						2,0 - 11,8	101 041 - 101 045	103

Steel (N/mm <sup>2</sup> ) < 900	Steel (N/mm <sup>2</sup> ) < 1100	Steel (N/mm <sup>2</sup> ) < 1300	Stainless steel	Aluminium	Brass	Bronze	Plastics	Cast iron	Titanium alloyed
				für / for ALU					
<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>			<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	





## Tube and sheet drills HSS and HSSE-Co 5, CBN ground with split point

The CBN ground flutes guarantee quiet running and high cutting performance. The cone makes it easier to withdraw the tool from the material.

Packing unit: in plastic boxes



Steel (N/mm2) < 900	■	■	■
Steel (N/mm2) < 1100		■	
Steel (N/mm2) < 1300			
Stainless steel		■	□
Aluminium	■	■	

Brass	■	■	■
Bronze	□	□	□
Plastics	■	■	■
Cast iron	□	□	□
Titanium alloyed			

Size no.	Ø1 - Ø2 mm	L1 mm	Ø3 mm					
1	3,0 - 14,0	58,0	6,0	101 001	101 001 E	101 001 T		1
2	4,0 - 20,0	71,0	8,0	101 002	101 002 E	101 002 T		1
3	16,0 - 30,5	76,0	9,0	101 003	101 003 E	101 003 T		1
4	24,0 - 40,0	89,0	10,0	101 004	—	101 004 T		1
5	36,0 - 50,0	97,0	12,0	101 005	—	—		1
6	40,0 - 61,0	103,0	13,0	101 006	—	—		1
7	5,0 - 25,4	87,0	10,0	101 007	—	—		1
8	5,0 - 31,0	103,0	9,0	101 008	101 008 E	101 008 T		1
9	5,0 - 22,5	79,0	8,0	101 022	—	—		1



## Tube and sheet drill bits HSS, 1/4", CBN ground with split point

The CBN ground flutes guarantee quiet running and high cutting performance. The cone makes it easier to withdraw the tool from the material.

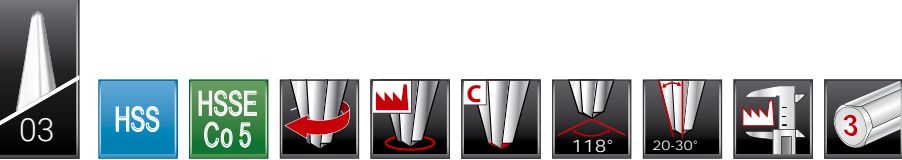
Packing unit: in plastic boxes






Steel (N/mm2) < 900	■
Steel (N/mm2) < 1100	
Steel (N/mm2) < 1300	
Stainless steel	
Aluminium	■

Brass	■
Bronze	□
Plastics	■
Cast iron	□
Titanium alloyed	

Size no.	Ø1 - Ø2 mm	L1 mm	Ø3 mm	Ø3 inch		
2	5,0 - 20,0	78,0	6,35 x 27,0	1/4"	101 049 H	1






## Tube and sheet drill sets HSS and HSSE-Co 5 in steel case

	HSS 	HSSE Co 5 	HSS TIN 
4-piece set of tube and sheet drills sizes 1, 2, 3 and 1 cutting spray 50 ml in polystyrene case	101 009	—	—
4-piece set of tube and sheet drills sizes 1, 2, 3 and 1 cutting paste 30 g in steel case	101 020	101 020 E	101 020 T



## Tube and sheet drill sets HSS and HSSE-Co 5 in plastic case

	HSS 	HSSE Co 5 	HSS TIN 
4-piece set of tube and sheet drills sizes 1, 2, 3 and 1 cutting paste 30 g	101 020 RO	101 020 ERO	101 020 TRO





## Tube and sheet drills HSS with stopper and spot facer for cavity sealing, CBN ground with split point

The CBN ground flutes guarantee quiet running and high cutting performance.

Packing unit: in plastic boxes

Steel (N/mm2) < 900	■	Brass	■
Steel (N/mm2) < 1100		Bronze	□
Steel (N/mm2) < 1300		Plastics	■
Stainless steel		Cast iron	□
Aluminium	■	Titanium alloyed	

Size no.	Ø1 - Ø2 mm	L1 mm	Ø3 mm	HSS		
1	3,0 - 7,8	48,0	6,0	101 041		1
2	3,0 - 10,2	52,0	6,0	101 042		1
3	3,0 - 11,8	56,0	6,0	101 043		1
5	2,0 - 7,8	48,0	6,0	101 045		1



## Hexagonal magnetic holder

Packing unit: in plastic boxes

	Article no.	
Hexagonal magnetic holder	270 013	1



## Coolants and lubricants

The RUKO coolants and lubricants provide an outstanding separation and cooling effect. They generate a high surface quality and increase the service life of the tools, even with hard and brittle materials.

Suitably aligned to our product range, you will find the coolants and lubricants in our section 14 from page 319.



## Table of cutting speeds for tube and sheet drills

Material:		High carbon struc. steel up to 700 N/mm <sup>2</sup>	High carbon struc. steel over 700 N/mm <sup>2</sup>	Alloyed steel over 1000 N/mm <sup>2</sup>	Cast iron up to 250 N/mm <sup>2</sup>	Cast iron over 250 N/mm <sup>2</sup>	CuZn-alloy brittle	CuZn-alloy tough	Al-alloy up to 11% Si	Thermoplastics	Duroplastics
Sheet thickness:		up to 4,0	up to 4,0	up to 4,0	up to 4,0	up to 4,0	up to 4,0	up to 4,0	up to 4,0	up to 4,0	up to 4,0
Vc = m/min		30	20	20	15	10	60	35	30	20	15
Cooling lubricant:		Cutting spray	Cutting spray	Cutting spray	Cutting spray	Air	Air	Air	Cutting spray	Water	Air
Size	Ø mm	n = r.p.m.	n = r.p.m.	n = r.p.m.	n = r.p.m.	n = r.p.m.	n = r.p.m.	n = r.p.m.	n = r.p.m.	n = r.p.m.	n = r.p.m.
No. 1	3,0-14,0	3185-682	2123-455	2123-455	1592-341	1062-227	6369-1365	3715-796	3185-682	2123-455	1592-341
No. 2	4,0-20,0	1911-478	1274-318	1274-318	955-239	637-159	3822- 955	2229-557	1911-478	1274-318	955-239
No. 3	16,0-30,5	597-313	398-209	398-209	299-157	199-104	1194- 627	697-365	597-313	398-209	299-157
No. 4	24,0-40,0	398-239	265-159	265-159	199-119	133- 80	796- 478	464-279	398-239	265-159	199-119
No. 5	36,0-50,0	265-191	177-127	177-127	133- 96	88- 64	531- 382	310-223	265-191	177-127	133- 96
No. 6	40,0-61,0	239-157	159-104	159-104	119- 78	80- 52	478- 313	279-183	239-157	159-104	119- 78
No. 7	5,0-25,4	1911-376	1274-251	1274-251	955-188	637-125	3822- 752	2229-439	1911-376	1274-251	955-188
No. 8	5,0-31,0	1911-308	1274-205	1274-205	955-154	637-103	3822- 616	2229-360	1911-308	1274-205	955-154
No. 9	5,0-22,5	1911-425	1274-283	1274-283	955-212	637-142	3822- 849	2229-495	1911-425	1274-283	955-212







# STEP DRILLS



## Step drills

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The flutes of RUKO high performance step drills are CBN ground from the solid hardened form. Because CBN (cubical boron nitride) is a much harder abrasive than even silicium carbide or corundum, a better and sharper cutting edge is achieved - without burrs.

And, with higher dimensional precision the drills will last considerably longer while maintaining the precise process tolerances.

The ideal tool for sheet metal working in the following sectors of industries: electrical (size 4 + size 9), sanitary engineering and heating technics (size 6 + size 7) or automotive, mechanical engineering, aviation (size 0/5, size 0/9, size 1, size 2, size 3, size 5) and switching systems (size 0/9k, size 1k, size 2k) up to 2,0 mm sheet thickness.

This tough tool is suitable for all standard industrial materials: nonferrous metal, special steel, thermoplastics and duroplastics as well as sheet metals up to 4,0 mm thickness.

This durable and versatile tool will center, spot-drill, bore and debur - all in one smooth, high performance working cycle.

By using RUKO cutting spray or RUKO cutting paste tool life will be considerably prolonged.



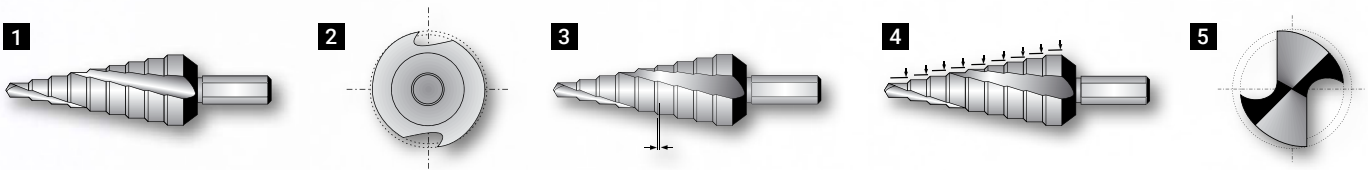


## Overview of symbols

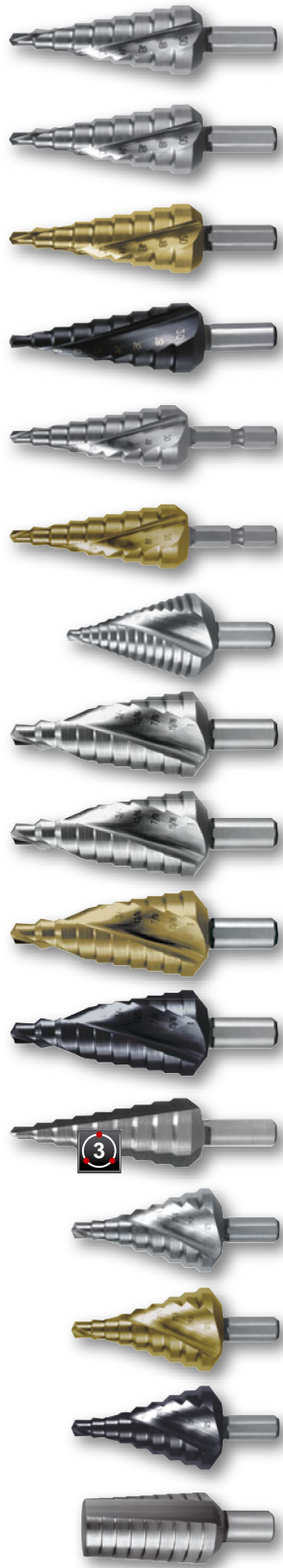
 High-speed steel	 Step angle, e.g. 90°	 Point angle: 118°	 bright surface
 High-speed steel with 5 % Cobalt content, ground	 Shank: 3-way clamping surface	 Point cut: work's specification	 TiAlN coating
 Shape C: split point	 Bit shank: 6,35 mm x 27,0 mm	 Ø tolerance: work's specification	 TiN coating
 right hand cutting	 3 cutting edges		

## Product Information

- 1 CBN ground flute**  
CBN ground spiral flutes enable very sharp and burr-free cutting edges compared to the ordinary milled flutes. Especially the chip flow is optimized, so even long, non-breaking chips will be removed easily. The optimized chip flow protects the cutting edges and reduces built-up edges and cold weld marks. Due to these special features, cutting performance and tool life are extended significantly.
- 2 Radially adjusted relief produced by CBN grinding**  
Each step has a radially adjusted relief produced by CBN grinding that relates directly to the diameter of the step. This means the cutting edge is always the highest point of the diameter.
- 3 Flute**  
Each step is axially CBN relief ground. This means the cutting edge is always the highest point of the axial cutting axis.
- 4 CBN ground relief angle**  
The cutting edge of each step has relief angle. This means the cutting edge is also the highest point in advance direction.
- 5 CBN ground bit with split point DIN 1412 C**  
The CBN ground bit ensures centering and spot-drilling even in thin-walled material.



Parts and applications overview:



Material	Surface	Shape	Point angle	Step angle	Point cut	Shank	Size no.	Article no.	Page
HSS							4,0 - 12,0 - 6,0 - 40,0	101 050-5 - 101 097	110
HSSE Co 5							4,0 - 12,0 - 6,5 - 32,5	101 050-9 E - 101 534 E	110
HSS	TiN						4,0 - 12,0 - 6,0 - 40,0	101 050-5 T - 101 097 T	110
HSS	TiAlN						4,0 - 12,0 - 6,0 - 40,0	101 050-5 F - 101 097 F	110
HSS							4,0 - 12,0 - 4,0 - 30,0	101 050-9 H - 101 052 H	112
HSS	TiN						4,0 - 12,0 - 4,0 - 30,0	101 050-9 TH - 101 052 TH	112
HSS							4,0 - 12,0 - 4,0 - 30,0	101 061 - 101 063	112
HSS							3/16 - 1/2 - 7/8 - 1 1/8	101 701 - 101 709	113
HSSE Co 5							3/16 - 1/2 - 7/8 - 1 1/8	101 701 E - 101 709 E	113
HSS	TiN						3/16 - 1/2 - 7/8 - 1 1/8	101 701 T - 101 709 T	113
HSS	TiAlN						3/16 - 1/2 - 7/8 - 1 1/8	101 701 F - 101 709 F	113
HSS							4,0 - 12,0 - 4,0 - 30,0	101 350-9 - 101 352	114
HSS							5,3 - 30,5 - 6,5 - 32,5	101 090 - 101 093	115
HSS	TiN						5,3 - 30,5 - 6,5 - 32,5	101 090 T - 101 093 T	115
HSS	TiAlN						5,3 - 30,5 - 6,5 - 32,5	101 090 F - 101 093 F	115
HSS							12,0 - 20,0 - 30,0 - 40,0	101 361 - 101 363	115

Steel (N/mm <sup>2</sup> ) < 900	Steel (N/mm <sup>2</sup> ) < 1100	Steel (N/mm <sup>2</sup> ) < 1300	Stainless steel	Aluminium für / for ALU	Brass	Bronze	Plastics	Cast iron	Titanium alloyed
■				■	■	□	■	□	
■	■		■	■	■	□	■	□	
■			□		■	□	■	□	
■	■	□	□	■	■	□	■	□	
■				■	■	□	■	□	
■			□		■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■	■		■	■	■	□	■	□	
■			□		■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■	■	□	□	■	■	□	■	□	
■				■	■	□	■	□	




## Step drills HSS and HSSE-Co 5, CBN ground, spiral fluted with split point

The CBN ground and spiral flutes guarantee quiet running and high cutting performance. Especially the chip flow is optimized, so even long, non-breaking chips will be removed easily. The optimized chip flow protects the cutting edges and reduces built-up edges and cold weld marks. The cone makes it easier to withdraw the tool from the material.



Packing unit: in plastic tubes of 1



- Cooling
- Adjust speed
- Do not press
- Step drill is pulled automatically into the plate

Steel (N/mm <sup>2</sup> ) < 900	■	■	■	■
Steel (N/mm <sup>2</sup> ) < 1100		■		■
Steel (N/mm <sup>2</sup> ) < 1300				□
Rust-resistant steel		■	□	□
Aluminium	■	■		■

Brass	■	■	■	■
Bronze	□	□	□	□
Plastics	■	■	■	■
Cast iron	□	□	□	□
Titanium alloyed				

Size no.	Ø1 - Ø2 mm	L1 mm	Steps	Ø3 mm	HSS	HSSE Co5	HSS TIN	HSS TITAN	
0/5	4,0 - 12,00	65,0	5	6,0	101 050-5	—	101 050-5 T	101 050-5 F	1
0/9	4,0 - 12,00	65,0	9	6,0	101 050-9	101 050-9 E	101 050-9 T	101 050-9 F	1
1	4,0 - 20,00	75,0	9	8,0	101 051	101 051 E	101 051 T	101 051 F	1
2	4,0 - 30,00	100,0	14	10,0	101 052	101 052 E	101 052 T	101 052 F	1
3	6,0 - 38,00	100,0	12	10,0	101 053	—	101 053 T	101 053 F	1
4	6,0 - 26,75	75,0	8	10,0	101 055	—	101 055 T	101 055 F	1
5	4,0 - 39,00	107,0	13	10,0	101 056	101 056 E	101 056 T	101 056 F	1
6	6,0 - 32,00	75,0	8	10,0	101 057	—	101 057 T	101 057 F	1
7	5,0 - 28,00	69,0	7	10,0	101 058	—	101 058 T	101 058 F	1
8	6,0 - 30,50	80,0	9	10,0	101 098	—	101 098 T	101 098 F	1
9	6,0 - 37,00	100,0	12	10,0	101 060	101 060 E	101 060 T	101 060 F	1
12	6,0 - 32,00	76,0	9	10,0	101 096	—	101 096 T	101 096 F	1
13	6,0 - 40,00	105,0	16	13,0	101 097	—	101 097 T	101 097 F	1
18	6,5 - 32,50	91,0	12	10,0	—	101 534 E	—	—	1

\* straight flute

Size no.	Drilling range Ø mm
0/5	4,0 / 6,0 / 8,0 / 10,0 / 12,0
0/9	4,0 / 5,0 / 6,0 / 7,0 / 8,0 / 9,0 / 10,0 / 11,0 / 12,0
1	4,0 / 6,0 / 8,0 / 10,0 / 12,0 / 14,0 / 16,0 / 18,0 / 20,0
2	4,0 / 6,0 / 8,0 / 10,0 / 12,0 / 14,0 / 16,0 / 18,0 / 20,0 / 22,0 / 24,0 / 26,0 / 28,0 / 30,0
3	6,0 / 9,0 / 13,0 / 16,0 / 19,0 / 21,0 / 23,0 / 26,0 / 29,0 / 32,0 / 35,0 / 38,0
4	6,0 / 9,0 / 11,4 (PG7) / 14,0 (PG9) / 17,25 (PG11) / 19,0 (PG13,5) / 21,25 (PG16) / 26,75 (PG21)
5	4,0 / 6,0 / 12,0 / 15,0 / 18,0 / 21,0 / 24,0 / 27,0 / 30,0 / 33,0 / 36,0 / 39,0
6	6,0 / 9,0 / 11,2 (R1/8) / 14,5 (R1/4) / 18,2 (R3/8) / 22,3 (R1/2) / 27,9 (R3/4) / 32,0
7	5,0 / 8,8 (G1/8) / 11,8 (G1/4) / 15,3 (G3/8) / 19,0 (G1/2) / 24,5 (G3/4) / 28,0
8	6,0 / 9,0 / 12,5 (PG7) / 15,2 (PG9) / 18,6 (PG11) / 20,4 (PG13,5) / 22,5 (PG16) / 28,3 (PG21) / 30,5
9	6,0 / 9,0 / 12,5 (PG7) / 15,2 (PG9) / 18,6 (PG11) / 20,4 (PG13,5) / 22,5 (PG16) / 26,0 / 28,3 (PG21) / 30,5 / 34,0 / 37,0 (PG29)
12	6,0 / 9,0 / 12,0 / 16,0 / 20,0 / 22,5 / 25,0 / 28,5 / 32,0
13	6,0 / 11,0 / 17,0 / 23,0 / 29,0 / 30,0 / 31,0 / 32,0 / 33,0 / 34,0 / 35,0 / 36,0 / 37,0 / 38,0 / 39,0 / 40,0
18	6,5 / 8,5 / 10,5 / 12,7 / 15,2 (PG9) / 16,2 / 18,6 (PG11) / 20,4 (PG13,5) / 22,5 (PG16) / 25,5 / 28,3 (PG21) / 32,5



Step drill sets HSS and HSSE-Co 5  
in steel case

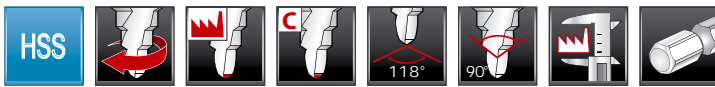
3-piece set of step drills spiral fluted, sizes 0/9, 1, 2	101 026	101 026 E	101 026 T	101 026 F



Step drill sets HSS and HSSE-Co 5  
in plastic case

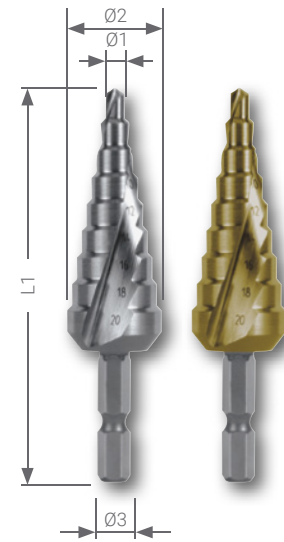
3-piece set of step drills spiral fluted, sizes 0/9, 1, 2	101 026 RO	101 026 ERO	101 026 TRO	101 026 FRO





## Step drills bit HSS, CBN ground, spiral fluted with split point

Packing unit: in plastic tubes of 1



Steel (N/mm2) < 900	■	■	Brass	■	■
Steel (N/mm2) < 1100			Bronze	□	□
Steel (N/mm2) < 1300			Plastics	■	■
Rust-resistant steel		□	Cast iron	□	□
Aluminium	■		Titanium alloyed		

Size no.	Ø1 - Ø2 mm	L1 mm	Steps	Ø3 mm	Ø3 inch			
0/9	4,0 - 12,00	72,0	9	6,35 x 27,0	1/4"	101 050-9 H	101 050-9 TH	1
1	4,0 - 20,00	81,0	9	6,35 x 27,0	1/4"	101 051 H	101 051 TH	1
2	4,0 - 30,00	105,0	14	6,35 x 27,0	1/4"	101 052 H	101 052 TH	1

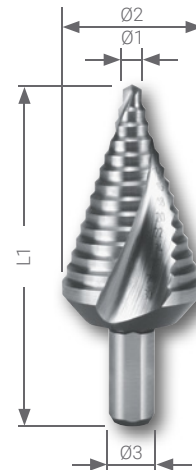
0/9	4,0 / 5,0 / 6,0 / 7,0 / 8,0 / 9,0 / 10,0 / 11,0 / 12,0							
1	4,0 / 6,0 / 8,0 / 10,0 / 12,0 / 14,0 / 16,0 / 18,0 / 20,0							
2	4,0 / 6,0 / 8,0 / 10,0 / 12,0 / 14,0 / 16,0 / 18,0 / 20,0 / 22,0 / 24,0 / 26,0 / 28,0 / 30,0							



## Step drills HSS, CBN ground, spiral fluted with split point, short design

Step height 2,0 mm ideal to produce switchboards.

Packing unit: in plastic tubes of 1



Steel (N/mm2) < 900	■	■	Brass	■	■
Steel (N/mm2) < 1100			Bronze	□	□
Steel (N/mm2) < 1300			Plastics	■	■
Rust-resistant steel		□	Cast iron	□	□
Aluminium	■		Titanium alloyed		

Size no.	Ø1 - Ø2 mm	L1 mm	Steps	Ø3 mm			
0/9k	4,0 - 12,00	48,0	9	6,0	101 061		1
1k	4,0 - 20,00	58,0	9	8,0	101 062		1
2k	4,0 - 30,00	72,0	14	10,0	101 063		1

0/9k	4,0 / 5,0 / 6,0 / 7,0 / 8,0 / 9,0 / 10,0 / 11,0 / 12,0							
1k	4,0 / 6,0 / 8,0 / 10,0 / 12,0 / 14,0 / 16,0 / 18,0 / 20,0							
2k	4,0 / 6,0 / 8,0 / 10,0 / 12,0 / 14,0 / 16,0 / 18,0 / 20,0 / 22,0 / 24,0 / 26,0 / 28,0 / 30,0							





## Step drills HSS and HSSE-Co 5, fractional sizes, CBN ground, spiral fluted with split point

The CBN ground and spiral flutes guarantee quiet running and high cutting performance. Especially the chip flow is optimized, so even long, non-breaking chips will be removed easily. The optimized chip flow protects the cutting edges and reduces built-up edges and cold weld marks. The cone makes it easier to withdraw the tool from the material.



Packing unit: in plastic tubes of 1

Steel (N/mm <sup>2</sup> ) < 900	■	■	■	■	Brass	■	■	■	■
Steel (N/mm <sup>2</sup> ) < 1100		■		■	Bronze	□	□	□	□
Steel (N/mm <sup>2</sup> ) < 1300				□	Plastics	■	■	■	■
Rust-resistant steel		■	□	□	Cast iron	□	□	□	□
Aluminium	■	■		■	Titanium alloyed				

Size no.	Ø1 - Ø2 inch	L1 inch	Steps	Ø3 inch	HSS	HSSE Co 5	HSS TIN	HSS TITAN	
1	3/16 - 1/2	3 1/8	6	1/4	101 701	101 701 E	101 701 T	101 701 F	1
2	1/8 - 1/2	3 1/8	13	1/4	101 702	101 702 E	101 702 T	101 702 F	1
3	1/4 - 3/4	2 3/4	9	3/8	101 703	101 703 E	101 703 T	101 703 F	1
4	3/16 - 7/8	3 1/4	12	3/8	101 704	101 704 E	101 704 T	101 704 F	1
5	5/16 - 1	3 1/4	9	3/8	101 705	101 705 E	101 705 T	101 705 F	1
6	7/8 - 1 3/8	3 1/4	5	3/8	101 706	101 706 E	101 706 T	101 706 F	1
7	3/8 - 1/2	1 7/8	2	1/4	101 707	101 707 E	101 707 T	101 707 F	1
8	7/8	2 19/32	1	3/8	101 708	101 708 E	101 708 T	101 708 F	1
9	7/8 - 1 1/8	3 7/64	2	3/8	101 709	101 709 E	101 709 T	101 709 F	1

Size no.	Drilling range Ø mm
1	3/16 - 1/4 - 5/16 - 3/8 - 7/16 - 1/2
2	1/8 - 5/32 - 3/16 - 7/32 - 1/4 - 9/32 - 5/16 - 11/32 - 3/8 - 19/32 - 3/16 - 15/32 - 1/2
3	1/4 - 5/16 - 3/8 - 7/16 - 1/2 - 9/16 - 5/8 - 11/16 - 3/4
4	3/16 - 1/4 - 5/16 - 3/8 - 7/16 - 1/2 - 9/16 - 5/8 - 11/16 - 3/4 - 13/16 - 7/8
5	5/16 - 1/2 - 9/16 - 5/8 - 11/16 - 3/4 - 13/16 - 7/8 - 15/16 - 1"
6	7/8 - 1 1/8 - 1 7/32 - 1 1/4 - 1 3/8
7	3/8 - 1/2
8	7/8
9	7/8 - 1 1/8

## Hexagonal magnetic holder

Packing unit: in plastic tubes of 1

Description	Article no.	
Hexagonal magnetic holder	270 013	1

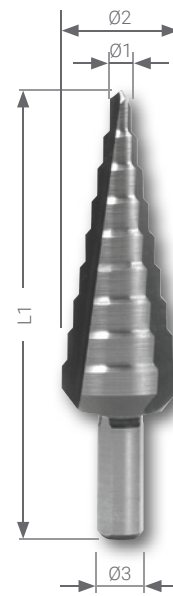




## Step drills HSS, CBN ground with 3 cutting edges

The deep-ground flutes of step drills with 3 cutting edges guarantee absolutely chatter-free working. The reduced load of the cutting edges allows a higher feed rate especially for soft materials like non-ferrous metals. The cone makes it easier to withdraw the tool from the material.

Packing unit: in plastic tubes of 1



Steel (N/mm2) < 900	■	Brass	■
Steel (N/mm2) < 1100		Bronze	□
Steel (N/mm2) < 1300		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	

Size no.	Ø1 - Ø2 mm	L1 mm	Steps	Ø3 mm	HSS		
0/9	4,0 - 12,00	65,0	9	6,0	101 350-9		1
1	4,0 - 20,00	75,0	9	8,0	101 351		1
2	4,0 - 30,00	100,0	14	10,0	101 352		1

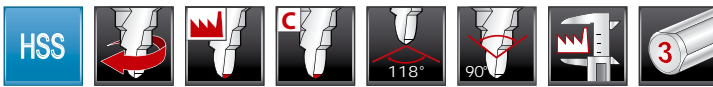
0/9	4,0 / 5,0 / 6,0 / 7,0 / 8,0 / 9,0 / 10,0 / 11,0 / 12,0
1	4,0 / 6,0 / 8,0 / 10,0 / 12,0 / 14,0 / 16,0 / 18,0 / 20,0
2	4,0 / 6,0 / 8,0 / 10,0 / 12,0 / 14,0 / 16,0 / 18,0 / 20,0 / 22,0 / 24,0 / 26,0 / 28,0 / 30,0



## Step drill sets HSS, with 3 cutting edges in steel case

Description	
3-piece set of step drills with 3 cutting edges, sizes 0/9, 1, 2	101 326





## Step drills HSS, CBN ground, spiral fluted with split point for metric cable connections

Packing unit: in plastic tubes of 1

Steel (N/mm2) < 900	■	■	■
Steel (N/mm2) < 1100			■
Steel (N/mm2) < 1300			□
Rust-resistant steel		□	□
Aluminium	■		■

Brass	■	■	■
Bronze	□	□	□
Plastics	■	■	■
Cast iron	□	□	□
Titanium alloyed			



Size no.	Measurements	Ø1 - Ø2 mm	L1 mm	Steps	Ø3 mm				
14	Core holes	5,3 - 30,5	79,0	9	10,0	101 093	101 093 T	101 093 F	1
15	Through holes	6,5 - 32,5	79,0	9	10,0	101 092	101 092 T	101 092 F	1
16	Core holes	5,3 - 38,5	96,0	11	10,0	101 091	101 091 T	101 091 F	1
17	Through holes	6,5 - 40,5	96,0	11	10,0	101 090	101 090 T	101 090 F	1

14	DIN/EN 60423	5,3 / 7,0 / 9,0 / 10,5 / 14,5 / 18,5 / 23,5 / 27,0 / 30,5
15	DIN/EN 50262	6,5 / 8,5 / 10,5 / 12,5 / 16,5 / 20,5 / 25,5 / 29,0 / 32,5
16	DIN/EN 60423	5,3 / 7,0 / 9,0 / 10,5 / 14,5 / 18,5 / 23,5 / 27,0 / 30,5 / 34,5 / 38,5
17	DIN/EN 50262	6,5 / 8,5 / 10,5 / 12,5 / 16,5 / 20,5 / 25,5 / 29,0 / 32,5 / 36,5 / 40,5



## Step drills HSS without point, CBN ground

Packing unit: in plastic tubes of 1

Steel (N/mm2) < 900	■
Steel (N/mm2) < 1100	
Steel (N/mm2) < 1300	
Rust-resistant steel	
Aluminium	■

Brass	■
Bronze	□
Plastics	■
Cast iron	□
Titanium alloyed	



Size no.	Ø1 - Ø2 mm	L1 mm	Steps	Ø3 mm		
20	12,0 - 20,00	66,0	9	8,0	101 361	1
30	20,0 - 30,00	78,0	11	10,0	101 362	1
40	30,0 - 40,00	78,0	11	10,0	101 363	1

20	12,0 / 13,0 / 14,0 / 15,0 / 16,0 / 17,0 / 18,0 / 19,0 / 20,0
30	20,0 / 21,0 / 22,0 / 23,0 / 24,0 / 25,0 / 26,0 / 27,0 / 28,0 / 29,0 / 30,0
40	30,0 / 31,0 / 32,0 / 33,0 / 34,0 / 35,0 / 36,0 / 37,0 / 38,0 / 39,0 / 40,0



## Table of cutting speeds for step drills

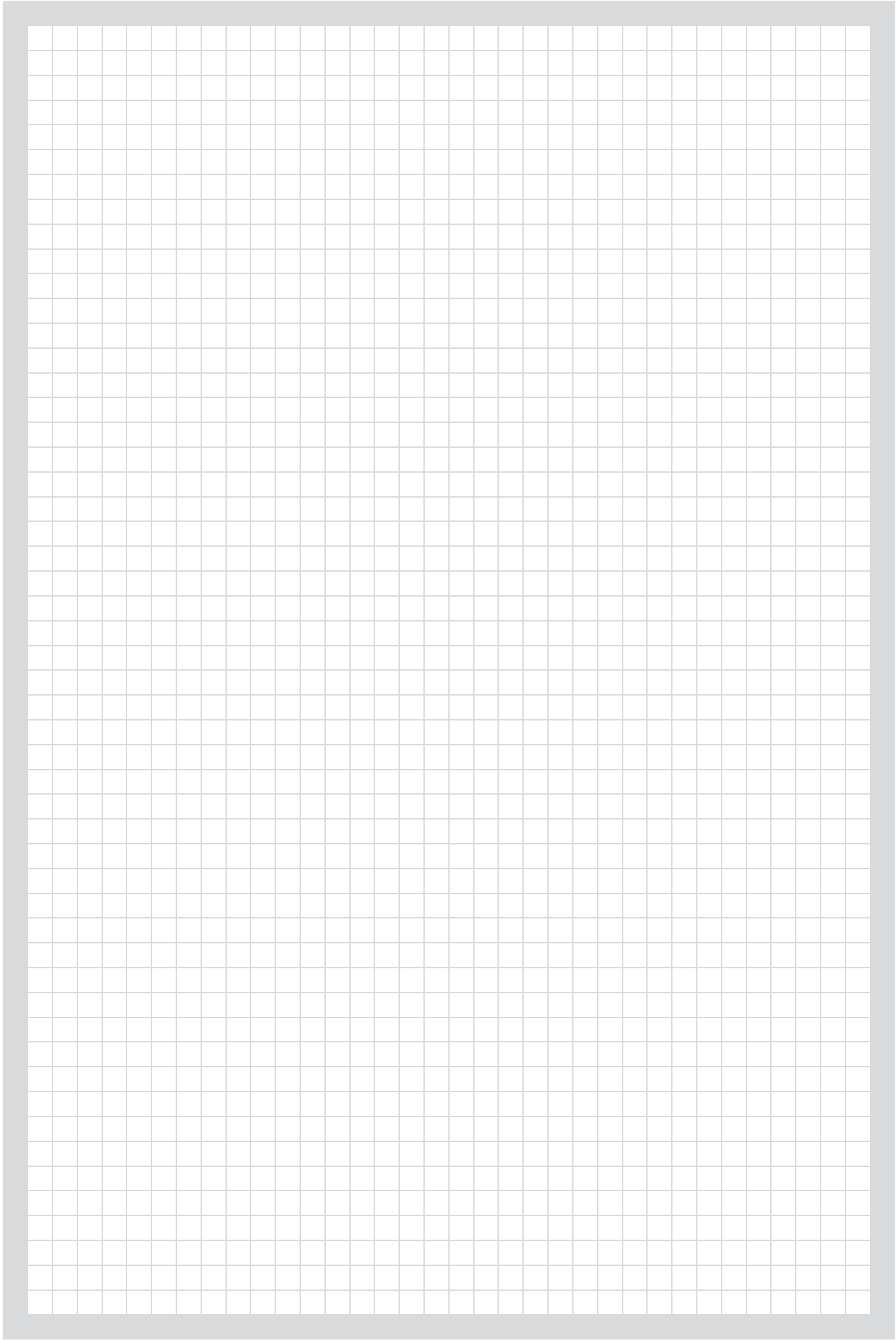
Material:		High carbon struc. steel up to 700 N/mm <sup>2</sup>	High carbon struc. steel over 700 N/mm <sup>2</sup>	Alloyed steel over 1000 N/mm <sup>2</sup>	Cast iron up to 250 N/mm <sup>2</sup>	Cast iron over 250 N/mm <sup>2</sup>	CuZn-alloy brittle	CuZn-alloy tough	Al-alloy up to 11% Si	Thermo-plastics	Duro-plastics
Sheet thickness mm:		up to 4,0	up to 4,0	up to 4,0	up to 4,0	up to 4,0	up to 4,0	up to 4,0	up to 4,0	up to 4,0	up to 4,0
Vc = m/min		30	20	20	15	10	60	35	30	20	15
Cooling lubricant:		Cutting spray	Cutting spray	Cutting spray	Air	Air	Air	Air	Cutting spray	Water	Air
Size	Ø mm	n = r.p.m	n = r.p.m	n = r.p.m	n = r.p.m	n = r.p.m	n = r.p.m	n = r.p.m	n = r.p.m	n = r.p.m	n = r.p.m
0/5	4,0- 12,0	800-2400	500-1600	500-1600	400-1200	300- 800	1600- 4800	900- 2800	800-2400	500- 1600	400-1200
0/9	4,0- 12,0	800-2400	500-1600	500-1600	400-1200	300- 800	1600- 4800	900- 2800	800-2400	500- 1600	400-1200
1	4,0- 20,0	500-2400	300-1600	300-1600	200-1200	200- 800	1000- 4800	600- 2800	500-2400	300-1600	200-1200
2	4,0- 30,0	300-2400	200-1600	200-1600	200-1200	100- 800	600- 4800	400- 2800	300-2400	200-1600	200-1200
3	6,0- 38,0	300-1600	200-1100	200-1100	100- 800	100- 500	500- 3200	300- 1900	300-1600	200-1100	100- 800
4	6,0- 26,8	400-1600	200-1100	200-1100	200- 800	100- 500	700- 3200	400- 1900	400-1600	200-1100	200- 800
5	4,0- 32,0	300-2400	200-1600	200-1600	1200- 100	100- 800	600- 4800	300- 2800	300-2400	200-1600	100-1200
6	6,0- 32,0	300-1600	200-1100	200-1100	800- 100	100- 500	600- 3200	300- 1900	300-1600	200-1100	100- 800
7	5,0- 28,0	300-1900	200-1300	200-1300	200-1000	100- 600	700- 3800	400- 2200	300-1900	200-1300	200-1000
8	6,0- 30,5	300-1600	200-1100	200-1100	200- 800	100- 500	600- 3200	400- 1900	300-1600	200-1100	200- 800
9	6,0- 37,0	300-1600	200-1100	200-1100	100- 800	100- 500	500- 3200	300- 1900	300-1600	200-1100	100- 800
10	4,8- 10,7	900-2000	600-1300	600-1300	400-1000	300- 700	1800- 4000	1000- 2300	900-2000	600-1300	400-1000
11	6,0- 25,0	400-1600	300-1100	300-1100	200- 800	100- 500	800- 3200	400- 1900	400-1600	300-1100	200- 800
12	6,0- 32,0	300-1600	200-1100	200-1100	100- 800	100- 500	600- 3200	300- 1900	300-1600	200-1100	100- 800
13	6,0- 40,0	200-1600	200-1100	200-1100	100- 800	100- 500	500- 3200	300- 1900	200-1600	200-1100	100- 800
14	5,3- 30,5	300-1800	200-1200	200-1200	200- 900	100- 600	600- 3600	400- 2100	300-1800	200-1200	200- 900
15	6,5- 32,5	300-1500	200-1000	200-1000	100- 700	100- 500	600- 2900	300- 700	300-1500	200-1000	100- 700
16	5,3- 38,5	200-1800	200-1200	200-1200	100- 900	100- 600	500- 3600	300- 2100	200-1800	200-1200	100- 900
17	6,5- 40,5	200-1500	200-1000	200-1000	100- 700	100- 500	500- 2900	300- 1700	200-1500	200-1000	100- 700
18	6,5- 32,5	300-1500	200-1000	200-1000	100- 700	100- 500	600- 2900	300- 1700	300-1500	200-1000	100- 700
20	12,0- 20,0	500- 800	300- 500	300- 500	200- 400	200- 300	600- 1600	600- 900	500- 800	300- 500	200- 400
30	20,0- 30,0	300- 500	200- 300	200- 300	200- 200	100- 200	600- 1000	400- 600	300- 500	200- 300	200- 200
40	30,0- 40,0	200- 300	200- 200	200- 200	100- 200	100- 100	500- 600	300- 400	200- 300	200- 200	100- 200

Size	Ø inch	n = r.p.m	n = r.p.m	n = r.p.m	n = r.p.m	n = r.p.m	n = r.p.m	n = r.p.m	n = r.p.m	n = r.p.m	n = r.p.m
1	3/16 - 1/2	800-2000	500-1300	1300- 500	400-1000	300- 700	1500- 4000	900- 2300	800-2000	500-1300	400-1000
2	1/8 - 1/2	800-3000	500-2000	2000- 500	400-1500	300-1000	1500- 6000	900- 3500	800-3000	500-2000	400-1500
3	1/4 - 3/4	500-1500	300-1000	1000- 300	300- 800	200- 500	1000- 3000	600- 1800	500-1500	300-1000	300- 800
4	3/16 - 7/8	400-2000	300-1300	1300- 300	200-1000	100- 700	900- 4000	500- 2300	400-2000	300-1300	200-1000
5	5/16 - 1	400-1200	300- 800	800- 300	200- 600	100- 400	800- 2400	400- 1400	400-1200	300- 800	200- 600
6	7/8 - 1 3/8	300- 400	200- 300	300- 200	100- 200	100- 100	500- 900	300- 500	300- 400	200- 300	100- 200
7	3/8 - 1/2	800-1000	500- 700	700- 500	400- 500	300- 300	1500- 2000	900- 1200	800-1000	500- 700	400- 500
8	7/8	400	300	300	200	100	900	500	400	300	200
9	7/8 - 1 1/8	300- 400	200- 300	300- 200	200- 200	100- 100	700- 900	400- 500	300- 400	200- 300	200- 200



## Table of application for step drills

Size No-	Drilling range Ø mm													
0/5	for metric hole diameters													
	Ø 4,0	Ø 6,0	Ø 8,0	Ø 10,0	Ø 12,0									
0/9	for metric hole diameters													
	Ø 4,0	Ø 5,0	Ø 6,0	Ø 7,0	Ø 8,0	Ø 9,0	Ø 10,0	Ø 11,0	Ø 12,0					
1	for metric hole diameters													
	Ø 4,0	Ø 6,0	Ø 8,0	Ø 10,0	Ø 12,0	Ø 14,0	Ø 16,0	Ø 18,0	Ø 20,0					
2	for metric hole diameters													
	Ø 4,0	Ø 6,0	Ø 8,0	Ø 10,0	Ø 12,0	Ø 14,0	Ø 16,0	Ø 18,0	Ø 20,0	Ø 22,0	Ø 24,0	Ø 26,0	Ø 28,0	Ø 30,0
3	for metric hole diameters													
	Ø 6,0	Ø 9,0	Ø 13,0	Ø 16,0	Ø 19,0	Ø 21,0	Ø 23,0	Ø 26,0	Ø 29,0	Ø 32,0	Ø 35,0	Ø 38,0		
4	for steel conduit threads (core holes)													
	PG 7 / Ø 11,4		PG 9 / Ø 14,0		PG 11 / Ø 17,25		PG 13,5 / Ø 19,0		PG 16 / Ø 21,25		PG 21 / Ø 26,75			
5	for metric hole diameters													
	Ø 4,0	Ø 6,0	Ø 9,0	Ø 12,0	Ø 15,0	Ø 18,0	Ø 21,0	Ø 24,0	Ø 27,0	Ø 30,0	Ø 33,0	Ø 36,0	Ø 39,0	
6	for pipe threads (external Ø, through holes)													
	R 1/8" / Ø 11,2		R 1/4" / 14,5		R 3/8" / Ø 18,2		R 1/2" / Ø 22,3		R 3/4" / Ø 27,9					
7	for pipe threads (core holes)													
	G 1/8" / Ø 8,8		G 1/4" / 11,8		G 3/8" / Ø 15,3		G 1/2" / Ø 19,0		G 3/4" / Ø 24,5					
8	for steel conduit threads (through holes)													
	PG 7 / Ø 12,5		PG 9 / Ø 15,2		PG 11 / Ø 18,6		PG 13,5 / Ø 20,4		PG 16 / Ø 22,5		PG 21 / Ø 28,3			
9	for steel conduit threads (through holes)													
	PG 7 / Ø 12,5		PG 9 / Ø 15,2		PG 11 / Ø 18,6		PG 13,5 / Ø 20,4		PG 16 / Ø 22,5		PG 21 / Ø 28,3		PG 29 / Ø 37,0	
10	for blind rivets M3 - M4 - M5 - M6 - M8													
	Ø 4,8	Ø 6,4	Ø 7,2	Ø 9,6	Ø 10,65									
11	for metric hole diameters with high steps													
	Ø 6,0	Ø 9,0	Ø 12,0	Ø 16,0	Ø 20,0	Ø 22,5	Ø 25,0							
12	for metric hole diameters with high steps													
	Ø 6,0	Ø 9,0	Ø 12,0	Ø 16,0	Ø 20,0	Ø 22,5	Ø 25,0	Ø 28,5	Ø 32,0					
13	for metric hole diameters and large diameters													
	Ø 6,0	Ø 11,0	Ø 17,0	Ø 23,0	Ø 29,0	Ø 30,0	Ø 31,0	Ø 32,0	Ø 33,0	Ø 34,0	Ø 35,0	Ø 36,0	Ø 37,0	Ø 38,0
	Ø 39,0	Ø 40,0												
14	for metric cable connections, core holes after DIN/EN 60423													
	M 6	M 8	M 10	M 12	M 16	M 20	M 25	M 32						
	Ø 5,3	Ø 7,0	Ø 9,0	Ø 10,5	Ø 14,5	Ø 18,5	Ø 23,5	Ø 30,5						
15	for metric cable connections, through holes after DIN/EN 50262													
	M 6	M 8	M 10	M 12	M 16	M 20	M 25	M 32						
	Ø 6,5	Ø 8,5	Ø 10,5	Ø 12,5	Ø 16,5	Ø 20,5	Ø 25,5	Ø 32,5						
16	for metric cable connections, core holes after DIN/EN 60423													
	M 6	M 8	M 10	M 12	M 16	M 20	M 25	M 32	M 40					
	Ø 5,3	Ø 7,0	Ø 9,0	Ø 10,5	Ø 14,5	Ø 18,5	Ø 23,5	Ø 30,5	Ø 38,5					
17	for metric cable connections, through holes after DIN/EN 50262													
	M 6	M 8	M 10	M 12	M 16	M 20	M 25	M 32	M 40					
	Ø 6,5	Ø 8,5	Ø 10,5	Ø 12,5	Ø 16,5	Ø 20,5	Ø 25,5	Ø 32,5	Ø 40,5					
18	for metric cable connections / for steel conduit threads, through holes													
	M 6	M 8	M 10	M 12 / PG 7	PG 9	M 16	PG 11	M 20 / PG 13,5	PG 16	M 25	PG 21	M 32		
	Ø 6,5	Ø 8,5	Ø 10,5	Ø 12,7	Ø 15,2	Ø 16,2	Ø 18,6	Ø 20,4	Ø 22,5	Ø 25,5	Ø 28,3	Ø 32,5		





# TAPER AND DEBURRING COUNTERSINKERS



## Taper and deburring countersinkers

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The flutes of the new RUKO high-performance taper and deburring countersinkers are CBN ground from the fully hardened material. Because CBN (cubic crystalline boron nitride) is a much harder abrasive than even silicon carbide or corundum, a better and sharper cutting edge is achieved - without burrs. And, with higher dimensional precision the countersinkers will last considerably longer while maintaining the precise tolerances. Because of the CBN deep-ground flutes the cutting edges are extremely sharp. Ideal for burr- and chatter-free deburring and countersinking. Applicable for steel, cast iron, non-ferrous and light metals. Best results at low cutting speeds.

The ideal tool for countersinking and deburring in the following sectors of industry: electrical, sanitary engineering, heating technics, mechanical engineering, switching systems, tubular steel construction, furniture and wood working, automotive and aviation.

This tough tool is suitable for all standard industrial materials: non-ferrous metal, stainless steel, thermoplastics and duroplastics as well as sheet metals.

The taper and deburring countersinkers as per DIN 335 are suitable in particular for countersinkings of type A and B of fine execution as per DIN 74.





















By using RUKO cutting spray or RUKO cutting paste, longer tool life and superior surface quality of the workpiece is guaranteed.







## Overview of symbols

 <b>HSS</b> High-speed steel	 Shank: Morse taper	 Countersink angle: 90°	 Uncoated surface
 <b>HSSE Co5</b> High-speed steel with 5% Cobalt content, ground	 Shank: cylindrical	 Cutting edges: diagonal slot	 Black surface
 <b>TC</b> Tungsten carbide	 Shank: 3-way clamping surface	 Cutting edges: 1	 TiAlN coating
 right hand cutting	 Bit shank: 6,35 mm x 27,0 mm	 Cutting edges: 3	 TiN coating
 Tolerance: h8	 Helical point normal ground	 Point angle: 118°	 For aluminium

## Product Information

### 1 CBN ground flute

CBN deep-ground flutes have better and sharper cutting edges - without burrs - unlike conventional milled flutes.

This guarantees a superior cutting edge and considerably longer tool life. The CBN ground countersinkers ensure an excellent chip flow, chatter free working, scratch-free surface and have ideal centring features.

### 2 Radially adjusted relief produced by CBN grinding

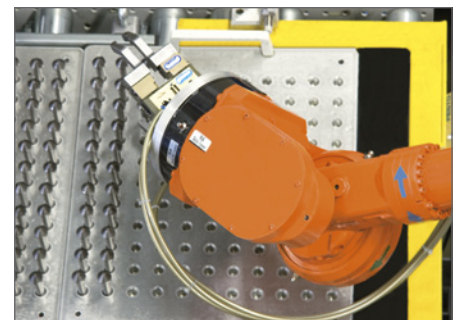
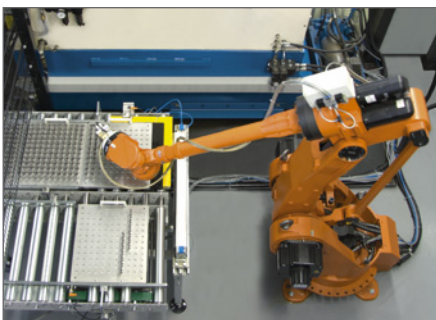
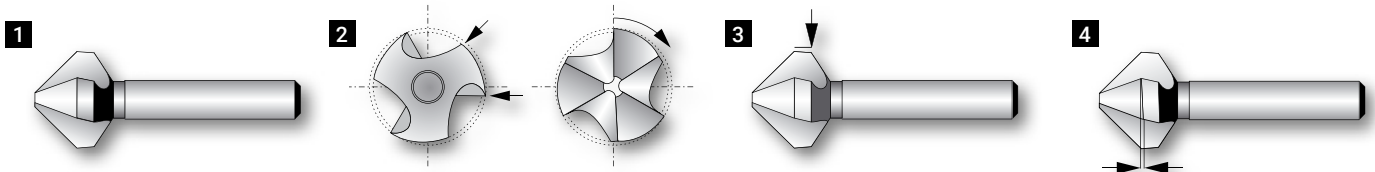
Because the radially-adjusted relief produced by CBN grinding relates directly to its diameter, the cutting edge is always the highest point of the diameter.

### 3 Axial relief produced by CBN grinding

The axial relief produced by CBN grinding guarantees a smooth low-heat cut.

### 4 CBN ground relief angle











Each diameter has its own relief angle. Consequently the cutting edge is always the highest point, too.



Parts and applications overview:



Material	Surface	DIN	Shape	Counters. angle	Cutting edges	Shank	Ø mm	Article no.	Miscellaneous	Page
HSS		DIN 335	C	90°			4,3 - 40,0 mm	102 101 - 102 174		126 - 128
HSS		DIN 335	C	90°			6,3 - 31,0 mm	102 107 A - 102 125 A	für / for ALU	126 - 128
HSSE Co 5		DIN 335	C	90°			4,3 - 31,0 mm	102 101 E - 102 125 E		126 - 128
HSS	TiN	DIN 335	C	90°			4,3 - 40,0 mm	102 101 T - 102 174 T		126 - 128
HSS	TiAlN	DIN 335	C	90°			4,3 - 40,0 mm	102 101 F - 102 174 F		126 - 128
TC		DIN 335	C	90°			6,3 - 31,0 mm	102 261 - 102 268		126 - 128
ASP		DIN 335	C	90°			6,3 - 31,0 mm	102 107 ASP - 102 125 ASP		129
HSS			C	90°		3	6,3 - 31,0 mm	102 707 - 102 725	QUICK CUT	130 - 131
HSS	TiAlN		C	90°		3	6,3 - 31,0 mm	102 707 F - 102 725 F	QUICK CUT	130 - 131
HSSE Co 5			C	90°		3	6,3 - 31,0 mm	102 707 E - 102 725 E	QUICK CUT	130 - 131
HSSE Co 5	TiAlN		C	90°		3	6,3 - 31,0 mm	102 707 EF - 102 725 EF	QUICK CUT	130 - 131
HSS		DIN 335	C	82°			1/4" - 1"	102 182 - 102 191		139
HSS		DIN 335	C	90°			6,3 - 25,0 mm	102 271 - 102 288		132
HSS		DIN 335	D	90°			6,3 - 31,0 mm	102 126 - 102 141		133
HSS		DIN 334	C	60°			6,3 - 25,0 mm	102 201 - 102 207		134
HSS		DIN 334	D	60°			16,0 - 80,0 mm	102 208 - 102 215		134
HSS			C	75°			6,3 - 25,0 mm	102 221 - 102 227		135
HSS			D	75°			16,5 - 40,0 mm	102 228 - 102 232		135

<p>Steel (N/mm2) &lt; 900</p> 	<p>Steel (N/mm2) &lt; 1100</p> 	<p>Steel (N/mm2) &lt; 1300</p> 	<p>Stainless steel</p> 	<p>Aluminium</p> <p>für / for ALU</p> 	<p>Brass</p> 	<p>Bronze</p> 	<p>Plastics</p> 	<p>Cast iron</p> 	<p>Titanium alloyed</p> 
■				■	■	□	■	□	
□				■	□		■		
■	■		■	■	■	□	■	□	
■	□		□		■	□	■	□	
■	□	□	■	■	■	□	■	□	
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■				■	■	□	■	□	
■				■	■	□	■	□	
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■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	

Parts and applications overview:



Material	Surface	DIN	Shape	Counters. angle	Cutting edges	Shank	Ø mm	Article no.	Miscellaneous	Page
HSS			C	120°			6,3 - 25,0 mm	102 241 - 102 247		136
HSS			D	120°			16,5 - 40,0 mm	102 248 - 102 252		136
HSS			C	60°			6,0 - 50,0 mm	102 501 - 102 510		137
HSS			D	60°			16,0 - 50,0 mm	102 511 - 102 516		137
HSS			C	90°			6,0 - 50,0 mm	102 521 - 102 530		138
HSS			D	90°			16,0 - 50,0 mm	102 531 - 102 536		138
HSS				90°			6,3 - 20,5 mm	W102 313 - W102 318		140
HSS	TiN			90°			6,3 - 20,5 mm	W102 313T - W102 318T		140
HSS				90°			6,3 - 20,5 mm	102 313 - 102 318		141
HSS	TiN			90°			6,3 - 20,5 mm	102 313T - 102 318T		141
HSS							1/4 - 20/25	102 301 - 102 305		142
HSSE Co 5							1/4 - 20/25	102 300 E - 102 305 E		142
HSS	TiN						1/4 - 20/25	102 301 T - 102 305 T		142
HSS				180°			M10 - M22	102 422 - 102 442		143
HSS				180°			M3 - M12	102 401 - 102 421		144 - 145
HSS	TiN			180°			M3 - M12	102 401 T - 102 421 T		144 - 145
HSS		DIN 8374 DIN 8376 DIN 8378	N	90°			M3 - M12	102 601 - 102 619		146
HSS		DIN 8374 DIN 8376 DIN 8378	N	90°			M3 - M12	102 620 - 102 638		147

Steel (N/mm <sup>2</sup> ) < 900	Steel (N/mm <sup>2</sup> ) < 1100	Steel (N/mm <sup>2</sup> ) < 1300	Stainless steel	Aluminium für / for ALU	Brass Zn	Bronze Cu Sn	Plastics Plastic	Cast iron	Titanium alloyed Ti
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■	□		□		■	□	■	□	
■				■	■	□	■	□	
■	□		□		■	□	■	□	
■				■	■	□	■	□	
■	■		■	■	■	□	■	□	
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■				■	■	□	■	□	
■				■	■	□	■	□	
■	□		□		■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	



## Taper and deburring countersinkers DIN 335 type C 90°

Because of the CBN deep-ground flutes the cutting edges are extremely sharp.  
 Ideal for burr- and chatter-free deburring and countersinking.  
 Best results at low cutting speeds.

Packing unit: in plastic tubes of 1



To increase the service life - reduce speed!  
 Cooling while countersinking!

Steel (N/mm2) < 900	■	□	■	■	■	■
Steel (N/mm2) < 1100			■	□	■	■
Steel (N/mm2) < 1300				□	■	■
Rust-resistant steel			■	□	□	■
Aluminium	■	■	■		■	■

Brass	■	□	■	■	■	□
Bronze	□		□	□	□	□
Plastics	■	■	■	■	■	■
Cast iron	□		□	□	□	■
Titanium alloyed						

Ø2 mm	Ø1 mm	L1 mm	Ø3 mm	Countersinkings as per DIN 74								
				AF	BF							
4,3	1,3	40,0	4,0			102 101	—	102 101 E	102 101 T	102 101 F	—	1
4,8	1,5	40,0	4,0			102 102	—	—	102 102 T	102 102 F	—	1
5,0	1,5	40,0	4,0	M 2,5		102 103	—	102 103 E	102 103 T	102 103 F	—	1
5,3	1,5	40,0	4,0			102 104	—	102 104 E	102 104 T	102 104 F	—	1
5,8	1,5	45,0	5,0			102 105	—	—	102 105 T	102 105 F	—	1
6,0	1,5	45,0	5,0	M 3		102 106	—	102 106 E	102 106 T	102 106 F	—	1
6,3	1,5	45,0	5,0		M 3	102 107	102 107 A	102 107 E	102 107 T	102 107 F	102 261	1
7,0	1,8	50,0	6,0	M 3,5		102 108	—	—	102 108 T	102 108 F	—	1
7,3	1,8	50,0	6,0			102 109	—	—	102 109 T	102 109 F	—	1
8,0	2,0	50,0	6,0	M 4		102 110	—	102 110 E	102 110 T	102 110 F	—	1
8,3	2,0	50,0	6,0		M 4	102 111	102 111 A	102 111 E	102 111 T	102 111 F	102 262	1
9,4	2,2	50,0	6,0			102 112	—	—	102 112 T	102 112 F	—	1
10,0	2,5	50,0	6,0	M 5		102 113	—	102 113 E	102 113 T	102 113 F	—	1
10,4	2,5	50,0	6,0		M 5	102 114	102 114 A	102 114 E	102 114 T	102 114 F	102 263	1
11,5	2,8	56,0	8,0	M 6		102 115	—	102 115 E	102 115 T	102 115 F	—	1
12,4	2,8	56,0	8,0		M 6	102 116	102 116 A	102 116 E	102 116 T	102 116 F	102 264	1
13,4	2,9	56,0	8,0			102 117	—	—	102 117 T	102 117 F	—	1
15,0	3,2	60,0	10,0	M 8		102 118	—	102 118 E	102 118 T	102 118 F	—	1
16,5	3,2	60,0	8,0		M 8	102 119	102 119 A	102 119 E	102 119 T	102 119 F	—	1
16,5	3,2	60,0	10,0		M 8	102 119-1	102 119-1 A	102 119-1 E	102 119-1 T	102 119-1 F	102 265	1
19,0	3,5	63,0	10,0	M 10		102 120	—	102 120 E	102 120 T	102 120 F	—	1
20,5	3,5	63,0	10,0		M 10	102 121	102 121 A	102 121 E	102 121 T	102 121 F	102 266	1
23,0	3,8	67,0	10,0	M 12		102 122	—	102 122 E	102 122 T	102 122 F	—	1
25,0	3,8	67,0	10,0		M 12	102 123	102 123 A	102 123 E	102 123 T	102 123 F	102 267	1
26,0	3,9	71,0	12,0	M 14		102 171	—	—	102 171 T	102 171 F	—	1
28,0	4,0	71,0	12,0		M 14	102 124	—	102 124 E	102 124 T	102 124 F	—	1
30,0	4,1	71,0	12,0	M 16		102 172	—	—	102 172 T	102 172 F	—	1
31,0	4,2	71,0	12,0		M 16	102 125	102 125 A	102 125 E	102 125 T	102 125 F	102 268	1
37,0	4,8	90,0	12,0			102 173	—	—	102 173 T	102 173 F	—	1
40,0	10,0	80,0	15,0			102 174	—	—	102 174 T	102 174 F	—	1



## Taper and deburring countersinker sets DIN 335 type C 90° HSS, HSSE-Co 5 and tungsten carbide K 20 in steel case

	HSS	HSS	HSSE Co 5	HSS	HSS	TC
5-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 6,3 - 10,4 - 16,5 - 20,5 - 25,0 mm (Ø 16,5 mm = shank-Ø 10,0 mm)	102 154	102 154 A	102 154 E	102 154 T	102 154 F	—
6-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm (Ø 16,5 mm = shank-Ø 10,0 mm)	102 152	102 152 A	102 152 E	102 152 T	102 152 F	102 152 HM
5-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 10,4 - 16,5 - 20,5 - 25,0 mm (Ø 16,5 mm = shank-Ø 8,0 mm) + 1 x 30 g tin of cutting paste	102 150	102 150 A	102 150 E	102 150 T	—	—
5-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 8,3 - 10,4 - 16,5 - 20,5 mm (Ø 16,5 mm = shank-Ø 8,0 mm) + 1 x 30 g tin of cutting paste	102 151	102 151 A	102 151 E	102 151 T	—	—

## Taper and deburring countersinker sets DIN 335 type C 90° HSS in wooden case

17-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 4,3 - 5,0 - 6,0 - 6,3 - 7,0 - 8,0 - 8,3 - 10,0 - 10,4 - 11,5 - 12,4 - 15,0 - 16,5 - 19,0 - 20,5 - 23,0 - 25,0 mm (Ø 16,5 mm = shank-Ø 10,0 mm) in wooden case	102 155	—	—	—	—	—
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102 152



102 152 T



102 154 F



102 150 T



102 151 E



102 155



## Taper and deburring countersinker sets DIN 335 type C 90° HSS, HSSE-Co 5 and tungsten carbide K 20 in plastic case

	HSS	HSS	HSSE Co 5	HSS	HSS	TC
5-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 6,3 - 10,4 - 16,5 - 20,5 - 25,0 mm (Ø 16,5 mm = shank-Ø 10,0 mm)	102 154 RO	–	102 154 ERO	102 154 TRO	102 154 FRO	–
6-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm (Ø 16,5 mm = shank-Ø 10,0 mm)	102 152 RO	–	102 152 ERO	102 152 TRO	102 152 FRO	102 152 HMRO
17-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 4,3 - 5,0 - 6,0 - 6,3 - 7,0 - 8,0 - 8,3 - 10,0 - 10,4 - 11,5 - 12,4 - 15,0 - 16,5 - 19,0 - 20,5 - 23,0 - 25,0 mm (Ø 16,5 mm = shank-Ø 10,0 mm)	102 155 RO	–	–	–	–	–
6-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 6,3 - 10,4 - 16,5 - 20,5 - 25,0 mm (Ø 16,5 mm = shank-Ø 8,0 mm) + 1 x 50 ml tin of cutting spray	102 142	102 142 A	102 142 E	102 142 T	–	–







## Taper and deburring countersinkers DIN 335 type C 90° ASP

The taper and deburring countersinker DIN 335 form C 90° ASP is made of powder-metallurgical metal and thus has a higher cutting edge stability. Best results in VA steels, Hardox 400 steels, titanium and titanium alloys.

Packing unit: in plastic tubes of 1

Steel (N/mm <sup>2</sup> ) < 900	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input checked="" type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>
Rust-resistant steel	<input checked="" type="checkbox"/>	Cast iron	<input checked="" type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	Titanium alloyed	<input checked="" type="checkbox"/>



Ø2 mm	Ø1 mm	L1 mm	Ø3 mm	Countersinkings as per DIN 74 / BF			
6,3	1,5	45,0	5,0	M 3	102 107 ASP		1
8,3	2,0	50,0	6,0	M 4	102 111 ASP		1
10,4	2,5	50,0	6,0	M 5	102 114 ASP		1
12,4	2,8	56,0	8,0	M 6	102 116 ASP		1
16,5	3,2	60,0	10,0	M 8	102 119-1 ASP		1
20,5	3,5	63,0	10,0	M 10	102 121 ASP		1
25,0	3,8	67,0	10,0	M 12	102 123 ASP		1
31,0	4,2	71,0	12,0	M 16	102 125 ASP		1



## Taper and deburring countersinker sets DIN 335 type C 90° ASP in steel case

6-piece set of taper and deburring countersinkers DIN 335 type C 90° ASP Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm	102 152 ASP
5-piece set of taper and deburring countersinkers DIN 335 type C 90° ASP Ø 6,3 - 10,4 - 16,5 - 20,5 - 25,0 mm	102 154 ASP





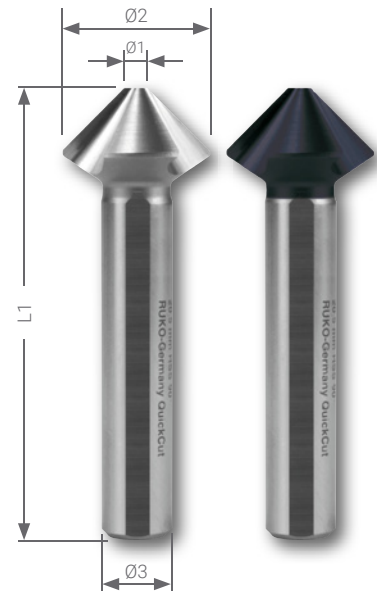
## Taper and deburring countersinkers "QUICKCut" (DIN 335) type C 90°

Thanks to a new, innovative production process, it is possible to generate a significantly larger clearance angle on the countersink QUICKCut than has previously been possible with the known production methods. In combination with the 3-surface shank, the cutting properties and cutting performance of this new countersink generation could be significantly improved compared to conventional countersinks.

Packing unit: in plastic tubes of 1



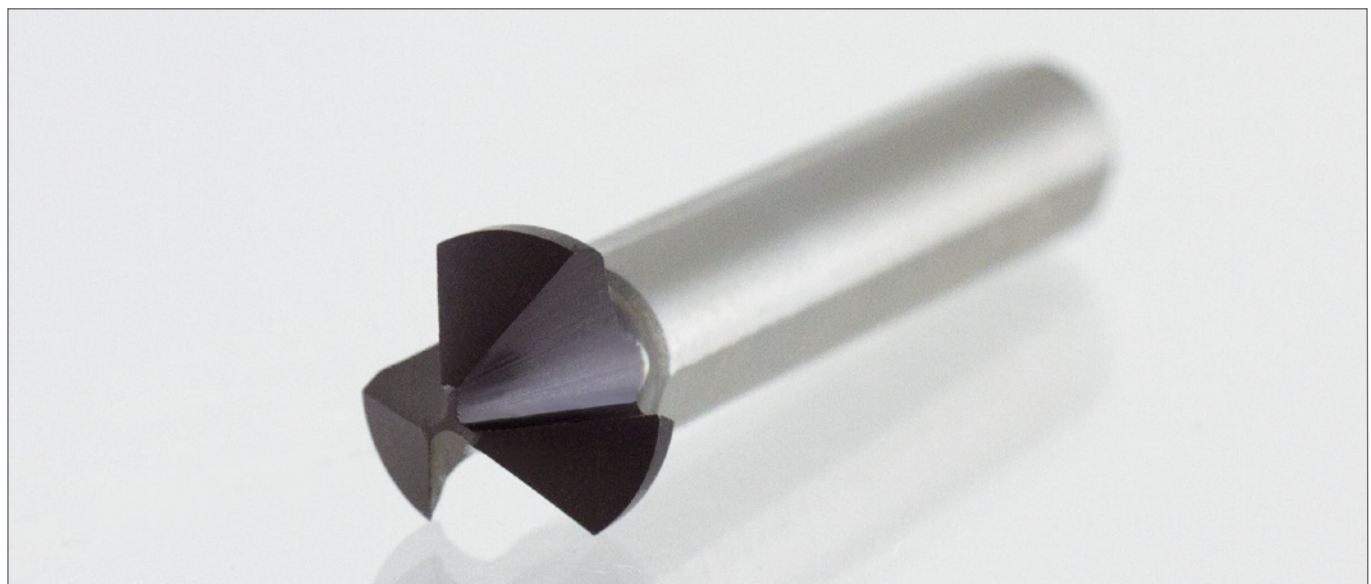
- 3-surface shank
- Up to 25% lower wear
- Up to 40% longer service life
- Up to 30% faster countersinking
- Automatic and fast feed!



Steel (N/mm2) < 900	■	■	■	■
Steel (N/mm2) < 1100		■	□	■
Steel (N/mm2) < 1300		□		□
Rust-resistant steel		■	■	■
Aluminium	■	■	■	■









Brass	■	■	■	■
Bronze	□	□	□	□
Plastics	■	■	■	■
Cast iron	□	□	□	□
Titanium alloyed				□

Ø2 mm	Ø1 mm	L1 mm	Ø3 mm	Countersinkings as per DIN 74 / BF	HSS	HSS TiAlN	HSSE Co5	HSSE Co5 TiAlN	
6,3	1,5	45,0	5,0	M 3	102 707	102 707 F	102 707 E	102 707 EF	1
8,3	2,0	50,0	6,0	M 4	102 711	102 711 F	102 711 E	102 711 EF	1
10,4	2,5	50,0	6,0	M 5	102 714	102 714 F	102 714 E	102 714 EF	1
12,4	2,8	56,0	8,0	M 6	102 716	102 716 F	102 716 E	102 716 EF	1
15,0	3,2	60,0	10,0	M 8	102 718	102 718 F	102 718 E	102 718 EF	1
16,5	3,2	60,0	10,0	M 8	102 719	102 719 F	102 719 E	102 719 EF	1
19,0	3,5	63,0	10,0	M10	102 720	102 720 F	102 720 E	102 720 EF	1
20,5	3,5	63,0	10,0	M10	102 721	102 721 F	102 721 E	102 721 EF	1
23,0	3,8	67,0	10,0	M12	102 722	102 722 F	102 722 E	102 722 EF	1
25,0	3,8	67,0	10,0	M12	102 723	102 723 F	102 723 E	102 723 EF	1
31,0	4,2	71,0	12,0	M16	102 725	102 725 F	102 725 E	102 725 EF	1













Taper and deburring countersinker sets "QUICKCut" (DIN 335)  
type C 90° in steel case

	 	 	 	 
6-piece set of taper and deburring countersinkers "QUICKCut" (DIN 335) type C 90° Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm	102 752	102 752 F	102 752 E	102 752 EF
5-piece set of taper and deburring countersinkers "QUICKCut" (DIN 335) type C 90° Ø 6,3 - 10,4 - 16,5 - 20,5 - 25,0 mm	102 754	102 754 F	102 754 E	102 754 EF



Taper and deburring countersinker sets "QUICKCut" (DIN 335)  
type C 90° in plastic case

	 	 	 	 
6-piece set of taper and deburring countersinkers "QUICKCut" (DIN 335) type C 90° Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm	102 752 RO	102 752 FRO	102 752 ERO	102 752 EFRO
5-piece set of taper and deburring countersinkers "QUICKCut" (DIN 335) type C 90° Ø 6,3 - 10,4 - 16,5 - 20,5 - 25,0 mm	102 754 RO	102 754 FRO	102 754 ERO	102 754 EFRO



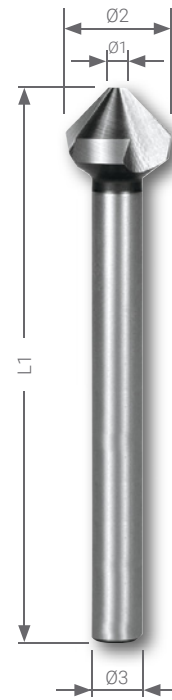


## Taper and deburring countersinkers DIN 335 type C 90° HSS, with long cylindrical shank

Because of the CBN deep-ground flutes the cutting edges are extremely sharp. Ideal for burr- and chatter-free deburring and countersinking. Best results at low cutting speeds.

Packing unit: in plastic tubes of 1

Steel (N/mm2) < 900	■	Brass	■
Steel (N/mm2) < 1100		Bronze	□
Steel (N/mm2) < 1300		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	



Ø2 mm	Ø1 mm	L1 mm	Ø3 mm	Countersinkings as per DIN 74				
				AF	BF			
6,3	1,5	85,0	5,0	-	M 3	102 271		1
8,3	2,0	85,0	6,0	-	M 4	102 272		1
10,4	2,5	88,0	6,0	-	M 5	102 273		1
12,4	2,8	108,0	8,0	-	M 6	102 274		1
15,0	3,2	110,0	10,0	M 8	-	102 275		1
16,5	3,2	112,0	10,0	-	M 8	102 276		1
20,5	3,5	115,0	10,0	-	M10	102 277		1
25,0	3,8	118,0	10,0	-	M12	102 278		1

Ø2 mm	Ø1 mm	L1 mm	Ø3 mm	Countersinkings as per DIN 74				
				AF	BF			
6,3	1,5	154,0	5,0	-	M 3	102 281		1
8,3	2,0	155,0	6,0	-	M 4	102 282		1
10,4	2,5	157,0	6,0	-	M 5	102 283		1
12,4	2,8	158,0	8,0	-	M 6	102 284		1
15,0	3,2	158,0	10,0	M 8	-	102 285		1
16,5	3,2	161,0	10,0	-	M 8	102 286		1
20,5	3,5	164,0	10,0	-	M10	102 287		1
25,0	3,8	164,0	10,0	-	M12	102 288		1



## Taper and deburring countersinkers DIN 335 type C 90° HSS, with long cylindrical shank, in plastic case

6-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm	102 158 RO





## Taper and deburring countersinkers DIN 335 type D 90° HSS

Packing unit: in plastic tubes of 1

Steel (N/mm2) < 900	■	Brass	■
Steel (N/mm2) < 1100		Bronze	□
Steel (N/mm2) < 1300		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	



Ø2 mm	Ø1 mm	L1 mm	Shank S1	Senkungen nach DIN 74			
				AF	BF		
15,0	3,2	85,0	MT 1	M 8	-	102 126	1
16,5	3,2	85,0	MT 1	-	M 8	102 127	1
19,0	3,5	100,0	MT 2	M 10	-	102 128	1
20,5	3,5	100,0	MT 2	-	M 10	102 129	1
23,0	3,8	106,0	MT 2	M 12	-	102 130	1
25,0	3,8	106,0	MT 2	-	M 12	102 131	1
26,0	3,8	106,0	MT 2	M 14	-	102 132	1
28,0	4,0	112,0	MT 2	-	M 14	102 133	1
30,0	4,2	112,0	MT 2	M 16	-	102 134	1
31,0	4,2	112,0	MT 2	-	M 16	102 135	1
34,0	4,5	118,0	MT 2	M 18	M 18	102 136	1
37,0	4,8	118,0	MT 2	M 20	M 20	102 137	1
40,0	10,0	140,0	MT 3	-	-	102 138	1
50,0	14,0	150,0	MT 3	-	-	102 139	1
63,0	16,0	180,0	MT 4	-	-	102 140	1
80,0	22,0	190,0	MT 4	-	-	102 141	1



## Hand deburrer DIN 335 type C 90° HSS, CBN ground

Packing unit: in plastic tubes of 1

Hand deburrer with countersinker Ø 12,4 mm	102 143	1
Hand deburrer with countersinker Ø 15,0 mm	102 144	1
Hand deburrer with countersinker Ø 16,5 mm	102 145	1
Hand deburrer with countersinker Ø 20,5 mm	102 146	1
Hand deburrer with countersinker Ø 25,0 mm	102 147	1



## Universal handle to fit countersinkers

Packing unit: in plastic tubes of 1

Universal handle for countersinker with 8,0 mm shank Ø	102 148	1
Universal handle for countersinker with 10,0 mm shank Ø	102 149	1
Universal handle for countersinker with 1/4" hexagon socket	102 320	1





## Taper and deburring countersinkers DIN 334 type C 60° HSS

Packing unit: in plastic tubes of 1

Steel (N/mm <sup>2</sup> ) < 900	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>

Ø2 mm	Ø1 mm	L1 mm	Ø3 mm	HSS		
6,3	1,6	45,0	5,0	102 201		1
8,0	2,0	50,0	6,0	102 202		1
10,0	2,5	50,0	6,0	102 203		1
12,5	3,2	56,0	8,0	102 204		1
16,0	4,0	63,0	10,0	102 205		1
20,0	5,0	67,0	10,0	102 206		1
25,0	6,3	71,0	10,0	102 207		1

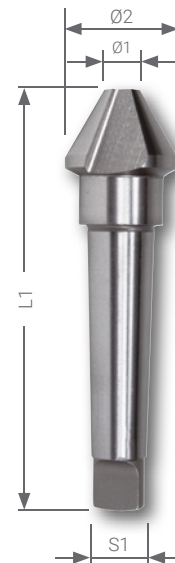


## Taper and deburring countersinkers DIN 334 type D 60° HSS

Packing unit: in plastic tubes of 1

Steel (N/mm <sup>2</sup> ) < 900	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>

Ø2 mm	Ø1 mm	L1 mm	Shank S1	HSS		
16,0	4,0	90,0	MT 1	102 208		1
20,0	5,0	106,0	MT 2	102 209		1
25,0	6,3	112,0	MT 2	102 210		1
31,5	10,0	118,0	MT 2	102 211		1
40,0	12,5	150,0	MT 3	102 212		1
50,0	16,0	160,0	MT 3	102 213		1
63,0	20,0	190,0	MT 4	102 214		1
80,0	25,0	200,0	MT 4	102 215		1





## Taper and deburring countersinkers type C 75° HSS

Packing unit: in plastic tubes of 1

Steel (N/mm2) < 900	■	Brass	■
Steel (N/mm2) < 1100		Bronze	□
Steel (N/mm2) < 1300		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	

Ø2 mm	Ø1 mm	L1 mm	Ø3 mm	HSS		
6,3	1,6	45,0	5,0	102 221		1
8,3	2,0	50,0	6,0	102 222		1
10,4	2,5	50,0	6,0	102 223		1
12,4	3,2	56,0	8,0	102 224		1
16,5	4,0	63,0	10,0	102 225		1
20,5	5,0	67,0	10,0	102 226		1
25,0	6,3	71,0	10,0	102 227		1



## Taper and deburring countersinkers type D 75° HSS

Packing unit: in plastic tubes of 1

Steel (N/mm2) < 900	■	Brass	■
Steel (N/mm2) < 1100		Bronze	□
Steel (N/mm2) < 1300		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	

Ø2 mm	Ø1 mm	L1 mm	Shank S1	HSS		
16,5	3,5	87,0	MT 1	102 228		1
20,5	4,5	102,0	MT 2	102 229		1
25,0	5,0	109,0	MT 2	102 230		1
31,0	5,0	116,0	MT 2	102 231		1
40,0	10,0	145,0	MT 3	102 232		1





## Taper and deburring countersinkers type C 120° HSS

Packing unit: in plastic tubes of 1

Steel (N/mm <sup>2</sup> ) < 900	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>

Ø2 mm	Ø1 mm	L1 mm	Ø3 mm	HSS		
6,3	1,5	45,0	5,0	102 241		1
8,3	2,0	50,0	6,0	102 242		1
10,4	2,5	50,0	6,0	102 243		1
12,4	3,0	56,0	8,0	102 244		1
16,5	3,5	63,0	10,0	102 245		1
20,5	4,0	67,0	10,0	102 246		1
25,0	5,0	71,0	10,0	102 247		1

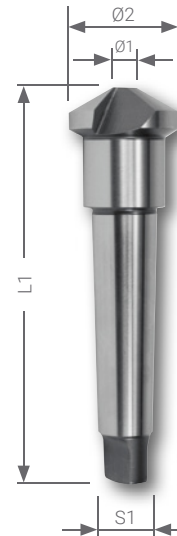


## Taper and deburring countersinkers type D 120° HSS

Packing unit: in plastic tubes of 1

Steel (N/mm <sup>2</sup> ) < 900	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>

Ø2 mm	Ø1 mm	L1 mm	Shank S1	HSS		
16,5	3,5	87,0	MT 1	102 248		1
20,5	4,5	102,0	MT 2	102 249		1
25,0	5,0	109,0	MT 2	102 250		1
31,0	5,0	116,0	MT 2	102 251		1
40,0	10,0	145,0	MT 3	102 252		1







## Taper and deburring countersinkers type C 60° HSS

Only countersinking and deburring possible.  
Countersink with a blade not recommended for full countersinking.

Packing unit: in plastic tubes of 1



Steel (N/mm2) < 900	■	Brass	■
Steel (N/mm2) < 1100		Bronze	□
Steel (N/mm2) < 1300		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	

Ø2 mm	L1 mm	Ø3 mm	HSS		
6,0	45,0	5,0	102 501		1
8,0	50,0	6,0	102 502		1
10,0	50,0	6,0	102 503		1
12,0	56,0	8,0	102 504		1
16,0	63,0	10,0	102 505		1
20,0	67,0	10,0	102 506		1
25,0	71,0	10,0	102 507		1
30,0	81,0	12,0	102 508		1
40,0	89,0	15,0	102 509		1
50,0	98,0	15,0	102 510		1



## Taper and deburring countersinkers type D 60° HSS

Only countersinking and deburring possible.  
Countersink with a blade not recommended for full countersinking.

Packing unit: in plastic tubes of 1



Steel (N/mm2) < 900	■	Brass	■
Steel (N/mm2) < 1100		Bronze	□
Steel (N/mm2) < 1300		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	

Ø2 mm	L1 mm	Shank S1	HSS		
16,0	92,0	MT 1	102 511		1
20,0	107,0	MT 2	102 512		1
25,0	110,0	MT 2	102 513		1
30,0	114,0	MT 2	102 514		1
40,0	145,0	MT 3	102 515		1
50,0	152,0	MT 3	102 516		1



## Taper and deburring countersinkers type C 90° HSS

Only countersinking and deburring possible.  
Countersink with a blade not recommended for full countersinking.

Packing unit: in plastic tubes of 1



Steel (N/mm2) < 900	■	Brass	■
Steel (N/mm2) < 1100		Bronze	□
Steel (N/mm2) < 1300		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	

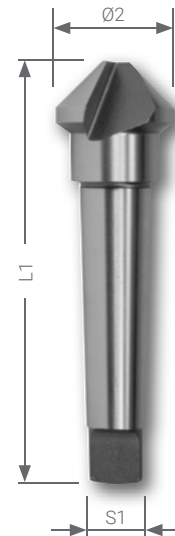
Ø2 mm	L1 mm	Ø3 mm	HSS		
6,0	45,0	5,0	102 521		1
8,0	50,0	6,0	102 522		1
10,0	50,0	6,0	102 523		1
12,0	56,0	8,0	102 524		1
16,0	60,0	10,0	102 525		1
20,0	63,0	10,0	102 526		1
25,0	67,0	10,0	102 527		1
30,0	71,0	12,0	102 528		1
40,0	89,0	15,0	102 529		1
50,0	98,0	15,0	102 530		1



## Taper and deburring countersinkers type D 90° HSS

Only countersinking and deburring possible.  
Countersink with a blade not recommended for full countersinking.

Packing unit: in plastic tubes of 1



Steel (N/mm2) < 900	■	Brass	■
Steel (N/mm2) < 1100		Bronze	□
Steel (N/mm2) < 1300		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	

Ø2 mm	L1 mm	Shank S1	HSS		
16,0	92,0	MT 1	102 531		1
20,0	107,0	MT 2	102 532		1
25,0	110,0	MT 2	102 533		1
30,0	114,0	MT 2	102 534		1
40,0	145,0	MT 3	102 535		1
50,0	152,0	MT 3	102 536		1



## Taper and deburring countersinkers type C 82° HSS, inch size

Packing unit: in plastic tubes of 1

Steel (N/mm2) < 900	■	Brass	■
Steel (N/mm2) < 1100		Bronze	□
Steel (N/mm2) < 1300		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	



Ø2		Ø1	Ø3		L1		HSS		
inch	mm	inch	inch	mm	inch	mm			
1/4	6,4	3/64	3/16	5,0	1 3/4	45,0	102 182		1
5/16	7,9	4/64	1/4	6,0	2"	50,0	102 183		1
3/8	9,5	5/64	1/4	6,0	2"	50,0	102 184		1
1/2	12,7	6/64	5/16	8,0	2 3/16	56,0	102 186		1
5/8	15,9	7/64	3/8	10,0	2 3/8	60,0	102 188		1
3/4	19,1	8/64	3/8	10,0	2 1/2	63,0	102 189		1
7/8	22,2	9/64	3/8	10,0	2 5/8	67,0	102 190		1
1	25,4	9/64	3/8	10,0	2 5/8	76,0	102 191		1



## Taper and deburring countersinker set type C 82° HSS, inch size, in plastic case

5-piece set of taper and deburring countersinkers type C 82° HSS Ø 1/4 - 3/8 - 1/2 - 3/4 - 1 inch	102 193 RO	



102 193 RO



## Coolants and lubricants

The RUKO coolants and lubricants provide an outstanding separation and cooling effect. They generate a high surface quality and increase the service life of the tools, even with hard and brittle materials.

Suitably aligned to our product range, you will find the new series of coolants and lubricants in our new section 14 from page 319.

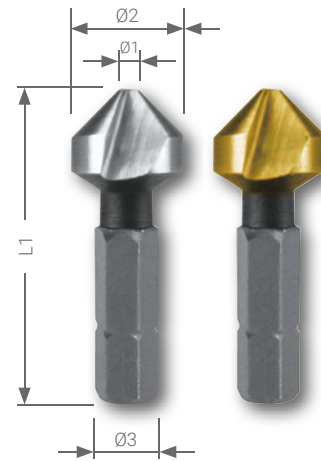




## Taper and deburring countersinker Bits 90° "short" HSS und HSS-TiN

Rapid tool-changing thanks to hexagonal bit holder. Ideal for burr- and chatter-free deburring and countersinking. Applicable for steel, cast iron, non-ferrous and light metals. Best results at low cutting speeds.

Packing unit: in plastic tubes of 1



Steel (N/mm <sup>2</sup> ) < 900	■	■
Steel (N/mm <sup>2</sup> ) < 1100		□
Steel (N/mm <sup>2</sup> ) < 1300		
Rust-resistant steel		□
Aluminium	■	
Brass	■	■
Bronze	□	□
Plastics	■	■
Cast iron	□	□
Titanium alloyed		

Ø2 mm	Ø1 mm	L1 mm	Ø3 inch	Countersinkings as per DIN 74				
				AF	BF			
6,3	1,5	31,0	1/4"	-	M 3	W 102 313	W 102 313T	1
8,3	2,0	31,0	1/4"	-	M 4	W 102 314	W 102 314T	1
10,4	2,5	34,0	1/4"	-	M 5	W 102 315	W 102 315T	1
12,4	2,8	35,0	1/4"	-	M 6	W 102 316	W 102 316T	1
16,5	3,2	40,0	1/4"	-	M 8	W 102 317	W 102 317T	1
20,5	3,5	41,0	1/4"	-	M 10	W 102 318	W 102 318T	1



## Taper and deburring countersinker bit set "short" 90° HSS and HSS-TiN in steel case

7-piece set of taper and deburring countersinker bits 90° 6 taper and deburring countersinker bits Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm + 1 universal handle with 1/4" hexagon socket	W102 319	W102 319 T



## Hexagonal magnetic holder

Packing unit: in plastic tubes of 1

Hexagonal magnetic holder	270 013	1

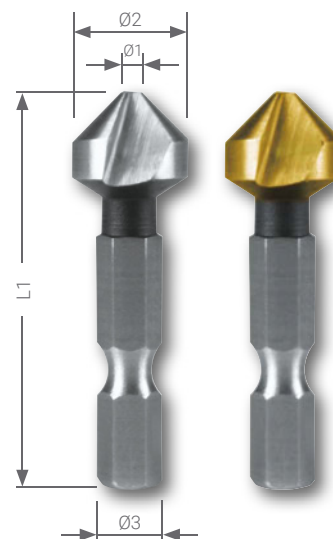











## Taper and deburring countersinker Bits 90° "long" HSS and HSS-TiN

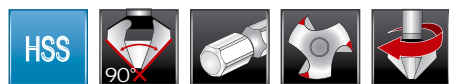
Rapid tool-changing thanks to hexagonal bit holder. Ideal for burr- and chatter-free deburring and countersinking. Applicable for steel, cast iron, non-ferrous and light metals. Best results at low cutting speeds.

Packing unit: in plastic tubes of 1





					
Steel (N/mm2) < 900	■	■		■	■
Steel (N/mm2) < 1100		□		□	□
Steel (N/mm2) < 1300					
Rust-resistant steel		□		□	□
Aluminium	■				
Brass	■	■		■	■
Bronze	□	□		□	□
Plastics	■	■		■	■
Cast iron	□	□		□	□
Titanium alloyed					

Ø2 mm	Ø1 mm	L1 mm	Ø3 inch	Countersinkings as per DIN 74				
				AF	BF			
6,3	1,5	38,0	1/4"	-	M 3	102 313	102 313 T	1
8,3	2,0	38,0	1/4"	-	M 4	102 314	102 314 T	1
10,4	2,5	41,0	1/4"	-	M 5	102 315	102 315 T	1
12,4	2,8	42,0	1/4"	-	M 6	102 316	102 316 T	1
16,5	3,2	47,0	1/4"	-	M 8	102 317	102 317 T	1
20,5	3,5	48,0	1/4"	-	M 10	102 318	102 318 T	1





## Taper and deburring countersinker bit set "long" 90° HSS and HSS-TiN in steel case

		
7-piece set of taper and deburring countersinker bits 90° 6 taper and deburring countersinker bits Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm + 1 universal handle with 1/4" hexagon socket	102 319	102 319 T



102 319

## Taper and deburring countersinker bit set "long" 90° HSS and HSS-TiN in plastic case

		
8-piece set of taper and deburring countersinker bits 90° Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm + 1 universal handle with 1/4" hexagon socket + 1 cutting paste 30 g	102 319 RO	102 319 TRO



102 319 TRO



## Slotted taper and deburring countersinkers 90° HSS, HSSE-Co 5 and HSS-TiN

Peeling cut. Chip removal through the slot prevents chips from clogging the workpiece.  
Ideal for burr- and chatter-free deburring and countersinking.  
Applicable for steel, cast iron, non-ferrous and light metals. Best results at low cutting speeds.

Countersink with a blade not recommended for full countersinking.  
Packing unit: in plastic tubes of 1



Steel (N/mm2) < 900	■	■	■
Steel (N/mm2) < 1100		■	□
Steel (N/mm2) < 1300		□	
Rust-resistant steel		■	
Aluminium	■	■	
Brass	■	■	■
Bronze	□	□	□
Plastics	■	■	■
Cast iron	□	□	□
Titanium alloyed			

Size no.	Ø1 mm	Ø2 mm	Ø3 mm	L1 mm				
1/4	1,0 - 4,0	6,35	6,35	45,0	—	102 300 E	—	1
2/5	2,0 - 5,0	10,00	6,00	45,0	102 301	102 301 E	102 301 T	1
5/10	5,0 - 10,0	14,00	8,00	48,0	102 302	102 302 E	102 302 T	1
10/15	10,0 - 15,0	21,00	10,00	65,0	102 303	102 303 E	102 303 T	1
15/20	15,0 - 20,0	28,00	12,00	85,0	102 304	102 304 E	102 304 T	1
20/25	20,0 - 25,0	35,00	12,00	102,0	102 305	102 305 E	102 305 T	1

## Slotted taper and deburring countersinkers sets 90° HSS, HSSE-Co 5 and HSS-TiN

6-piece set of slotted taper and deburring countersinkers 90° in polystyrene case nominal Ø mm: 2/5 - 5/10 - 10/15 - 15/20 + 1 x 50 ml tin of cutting spray	—	102 310 E	—
5-piece set of slotted taper and deburring countersinkers 90° in steel case nominal Ø mm: 2/5 - 5/10 - 10/15 - 15/20 + 1 x 30 g tin of cutting paste	102 312	102 312 E	102 312 T



## Slotted taper and deburring countersinkers sets 90° HSS, HSSE-Co 5 and HSS-TiN in plastic case

4-piece set of slotted taper and deburring countersinkers 90° nominal Ø mm: 2/5 - 5/10 - 10/15 - 15/20	102 312 RO	102 312 ERO	102 312 TRO





## Flat countersinkers HSS with fixed guide

For producing countersinkings for cylinderhead screws, thread-cutting screws and thread-furrowing screws. Ideal for burr- and chatter-free deburring and countersinking.

Applicable for steel, cast iron, non-ferrous and light metals. Best results at low cutting speeds.

Packing unit: in plastic tubes of 1

Steel (N/mm2) < 900	■	Brass	■
Steel (N/mm2) < 1100		Bronze	□
Steel (N/mm2) < 1300		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	



## Fine grade for through hole

For thread	Ø2 mm	Ø1 mm	Shank S1	L1 mm	HSS		
M 10	18,0	10,5	MT 2	150,0		102 422	1
M 12	20,0	13,0	MT 2	150,0		102 423	1
M 14	24,0	15,0	MT 2	160,0		102 424	1
M 16	26,0	17,0	MT 3	190,0		102 425	1
M 18	30,0	19,0	MT 3	190,0		102 426	1
M 20	33,0	21,0	MT 3	190,0		102 427	1
M 22	36,0	23,0	MT 3	205,0		102 428	1

## Medium grade for through hole

For thread	Ø2 mm	Ø1 mm	Shank S1	L1 mm	HSS		
M 10	18,0	11,0	MT 2	150,0		102 429	1
M 12	20,0	13,5	MT 2	150,0		102 430	1
M 14	24,0	15,5	MT 2	160,0		102 431	1
M 16	26,0	17,5	MT 3	190,0		102 432	1
M 18	30,0	20,0	MT 3	190,0		102 433	1
M 20	33,0	22,0	MT 3	190,0		102 434	1
M 22	36,0	24,0	MT 3	205,0		102 435	1

## For thread core hole

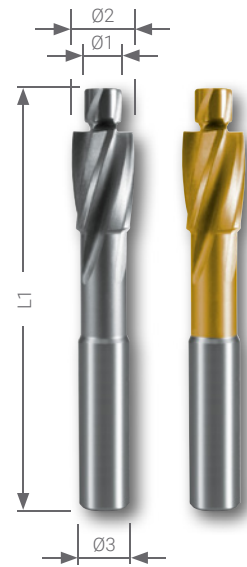
For thread	Ø2 mm	Ø1 mm	Shank S1	L1 mm	HSS		
M 10	18,0	8,5	MT 2	150,0		102 436	1
M 12	20,0	10,2	MT 2	150,0		102 437	1
M 14	24,0	12,0	MT 2	160,0		102 438	1
M 16	26,0	14,0	MT 3	190,0		102 439	1
M 18	30,0	15,5	MT 3	190,0		102 440	1
M 20	33,0	17,5	MT 3	190,0		102 441	1
M 22	36,0	19,5	MT 3	205,0		102 442	1



## Flat countersinkers DIN 373 HSS and HSS-TiN with fixed guide

For producing countersinkings for cylinderhead screws, thread-cutting screws and thread-furrowing screws. Ideal for burr- and chatter-free deburring and countersinking. Applicable for steel, cast iron, non-ferrous and light metals. Best results at low cutting speeds.

Packing unit: in plastic tubes of 1



Steel (N/mm <sup>2</sup> ) < 900	■	■
Steel (N/mm <sup>2</sup> ) < 1100		□
Steel (N/mm <sup>2</sup> ) < 1300		
Rust-resistant steel		□
Aluminium	■	
Brass	■	■
Bronze	□	□
Plastics	■	■
Cast iron	□	□
Titanium alloyed		

## Fine grade for through hole

For thread	Ø2 mm	Ø1 mm	Ø3 mm	L1 mm			
M 3	6,0	3,2	5,0	71,0	102 401	102 401 T	1
M 4	8,0	4,3	5,0	71,0	102 402	102 402 T	1
M 5	10,0	5,3	8,0	80,0	102 403	102 403 T	1
M 6	11,0	6,4	8,0	80,0	102 404	102 404 T	1
M 8	15,0	8,4	12,5	100,0	102 405	102 405 T	1
M 10	18,0	10,5	12,5	100,0	102 406	102 406 T	1
M 12	20,0	13,0	12,5	100,0	102 407	102 407 T	1

## Medium grade for through hole

For thread	Ø2 mm	Ø1 mm	Ø3 mm	L1 mm			
M 3	6,0	3,4	5,0	71,0	102 408	102 408 T	1
M 4	8,0	4,5	5,0	71,0	102 409	102 409 T	1
M 5	10,0	5,5	8,0	80,0	102 410	102 410 T	1
M 6	11,0	6,6	8,0	80,0	102 411	102 411 T	1
M 8	15,0	9,0	12,5	100,0	102 412	102 412 T	1
M 10	18,0	11,0	12,5	100,0	102 413	102 413 T	1
M 12	20,0	13,5	12,5	100,0	102 414	102 414 T	1




## For thread core hole

For thread	Ø2 mm	Ø1 mm	Ø3 mm	L1 mm			
M 3	6,0	2,5	5,0	71,0	102 415	102 415 T	1
M 4	8,0	3,3	5,0	71,0	102 416	102 416 T	1
M 5	10,0	4,2	8,0	80,0	102 417	102 417 T	1
M 6	11,0	5,0	8,0	80,0	102 418	102 418 T	1
M 8	15,0	6,8	12,5	100,0	102 419	102 419 T	1
M 10	18,0	8,5	12,5	100,0	102 420	102 420 T	1
M 12	20,0	10,2	12,5	100,0	102 421	102 421 T	1








## Flat countersinker sets DIN 373 HSS and HSS-TiN with straight shank and fixed pilot in steel case

	HSS 	HSS  
6-piece set of flat countersinkers for through holes, fine grade, for threads: M 3 - M 4 - M 5 - M 6 - M 8 - M 10	102 450	102 450 T
6-piece set of flat countersinkers for through holes, medium grade, for threads: M 3 - M 4 - M 5 - M 6 - M 8 - M 10	102 451	102 451 T
6-piece set of flat countersinkers for core holes, for threads: M 3 - M 4 - M 5 - M 6 - M 8 - M 10	102 452	102 452 T



## Flat countersinker sets DIN 373 HSS and HSS-TiN with straight shank and fixed pilot in plastic case

	HSS 	HSS  
6-piece set of flat countersinkers for through holes, fine grade, for threads: M 3 - M 4 - M 5 - M 6 - M 8 - M 10	102 450 RO	102 450 TRO
6-piece set of flat countersinkers for through holes, medium grade, for threads: M 3 - M 4 - M 5 - M 6 - M 8 - M 10	102 451 RO	102 451 TRO
6-piece set of flat countersinkers for core holes, for threads: M 3 - M 4 - M 5 - M 6 - M 8 - M 10	102 452 RO	102 452 TRO





## Subland drills long type N HSS

Enables drilling and sinking combined in one step. Application: adjust the cutting speed according to the big diameter and the feed rate according to the small diameter.

Packing unit: in plastic tubes of 1

Steel (N/mm <sup>2</sup> ) < 900	■	Brass	■
Steel (N/mm <sup>2</sup> ) < 1100		Bronze	□
Steel (N/mm <sup>2</sup> ) < 1300		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	



## 90° fine grade for through hole

For efficient drilling of through holes and screw head counterborings with 90° angle.

For thread	Ø1 mm	Ø2 / Ø3 mm	L3 mm	L2 mm	L1 mm	HSS		
M 3	3,2	6,0	9,0	57,0	93,0	102 601	■	1
M 4	4,3	8,0	11,0	75,0	117,0	102 602	■	1
M 5	5,3	10,0	13,0	87,0	133,0	102 603	■	1
M 6	6,4	11,5	15,0	94,0	142,0	102 604	■	1
M 8	8,4	15,0	19,0	114,0	169,0	102 605	■	1
M 10	10,5	19,0	23,0	135,0	198,0	102 606	■	1



## 180° medium grade for through hole

For efficient drilling of through holes and screw head counterborings with 180° angle.

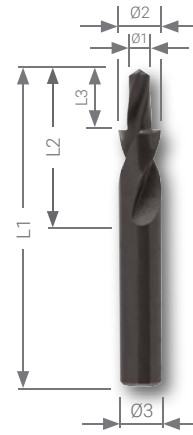
For thread	Ø1 mm	Ø2 / Ø3 mm	L3 mm	L2 mm	L1 mm	HSS		
M 3	3,4	6,0	9,0	57,0	93,0	102 607	■	1
M 4	4,5	8,0	11,0	75,0	117,0	102 608	■	1
M 5	5,5	10,0	13,0	87,0	133,0	102 609	■	1
M 6	6,6	11,0	15,0	94,0	142,0	102 610	■	1
M 8	9,0	15,0	19,0	114,0	169,0	102 611	■	1
M 10	11,0	18,0	23,0	130,0	191,0	102 612	■	1



## 90° for thread core hole

For efficient drilling of tapping holes and countersinkings with 90° angle.

For thread	Ø1 mm	Ø2 / Ø3 mm	L3 mm	L2 mm	L1 mm	HSS		
M 3	2,5	3,4	8,8	39,0	70,0	102 613	■	1
M 4	3,3	4,5	11,4	47,0	80,0	102 614	■	1
M 5	4,2	5,5	13,6	57,0	93,0	102 615	■	1
M 6	5,0	6,6	16,5	63,0	101,0	102 616	■	1
M 8	6,8	9,0	21,0	81,0	125,0	102 617	■	1
M 10	8,5	11,0	25,5	94,0	142,0	102 618	■	1
M 12	10,2	13,5	30,0	108,0	160,0	102 619	■	1

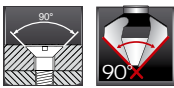


## Subland drills short type N HSS

Short and torsion stable drill, suitable for the use on CNC or NC machines. The drilling and countersinking is made in one step. Application: adjust the cutting speed according to the big diameter and the feed rate according to the small diameter.

Packing unit: in plastic tubes of 1

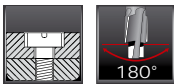
Steel (N/mm <sup>2</sup> ) < 900	■	Brass	■
Steel (N/mm <sup>2</sup> ) < 1100		Bronze	□
Steel (N/mm <sup>2</sup> ) < 1300		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	



## 90° fine grade for through hole

For efficient drilling of through holes and screw head counterborings with 90° angle.

For thread	Ø1 mm	Ø2 / Ø3 mm	L3 mm	L2 mm	L1 mm	HSS		
M 3	3,2	6,0	9,0	28,0	66,0	102 620		1
M 4	4,3	8,0	11,0	37,0	79,0	102 621		1
M 5	5,3	10,0	13,0	43,0	89,0	102 622		1
M 6	6,4	11,5	15,0	47,0	95,0	102 623		1
M 8	8,4	15,0	19,0	56,0	111,0	102 624		1
M 10	10,5	19,0	23,0	64,0	127,0	102 625		1



## 180° medium grade for through hole

For efficient drilling of through holes and screw head counterborings with 180° angle.

For thread	Ø1 mm	Ø2 / Ø3 mm	L3 mm	L2 mm	L1 mm	HSS		
M 3	3,4	6,0	9,0	28,0	66,0	102 626		1
M 4	4,5	8,0	11,0	37,0	79,0	102 627		1
M 5	5,5	10,0	13,0	43,0	89,0	102 628		1
M 6	6,6	11,0	15,0	47,0	95,0	102 629		1
M 8	9,0	15,0	19,0	56,0	111,0	102 630		1
M 10	11,0	18,0	23,0	62,0	123,0	102 631		1



## 90° for thread core hole

For efficient drilling of tapping holes and countersinkings with 90° angle.

For thread	Ø1 mm	Ø2 / Ø3 mm	L3 mm	L2 mm	L1 mm	HSS		
M 3	2,5	3,4	8,8	20,0	52,0	102 632		1
M 4	3,3	4,5	11,4	24,0	58,0	102 633		1
M 5	4,2	5,5	13,6	28,0	66,0	102 634		1
M 6	5,0	6,6	16,5	31,0	70,0	102 635		1
M 8	6,8	9,0	21,0	40,0	84,0	102 636		1
M 10	8,5	11,0	25,5	47,0	95,0	102 637		1
M 12	10,2	13,5	30,0	54,0	107,0	102 638		1

## Table of recommended cutting speeds for taper and deburring countersinkers

Material:	High carbon struc. steel up to 700 N/mm <sup>2</sup>	High carbon struc. steel up to 700 N/mm <sup>2</sup>	Alloyed steel up to 1000 N/mm <sup>2</sup>	Cast iron up to 250 N/mm <sup>2</sup>	Cast iron over 250 N/mm <sup>2</sup>	CuZn alloy brittle	CuZn alloy tough	Aluminium alloy up to 11% Si	Thermo-plastics	Duro-plastics
Vc = m/min	20	15	10	10	8	40	20	20	15	10
Cooling lubricant	Cutting spray	Cutting spray	Cutting spray	Compressed air	Compressed air	Compressed air	Compressed air	Cutting spray	Water	Compressed air
Ø mm	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.
4,3	1481	1111	741	741	593	2963	1481	1481	1111	741
5,0	1274	955	637	637	510	2548	1274	1274	955	637
5,3	1202	901	601	601	481	2404	1202	1202	901	601
5,8	1098	824	549	549	439	2196	1098	1098	824	549
6,0	1062	796	531	531	425	2123	1062	1062	796	531
6,3	1011	758	506	506	404	2022	1011	1011	758	506
7,0	910	682	455	455	364	1820	910	910	682	455
7,3	873	654	436	436	349	1745	873	873	654	436
8,0	796	597	398	398	318	1592	796	796	597	398
8,3	767	576	384	384	307	1535	767	767	576	384
9,4	678	508	339	339	271	1355	678	678	508	339
10,0	637	478	318	318	255	1274	637	637	478	318
10,4	612	459	306	306	245	1225	612	612	459	306
11,5	554	415	277	277	222	1108	554	554	415	277
12,0	531	398	265	265	212	1062	531	531	398	265
12,4	514	385	257	257	205	1027	514	514	385	257
12,5	510	382	255	255	204	1019	510	510	382	255
13,4	475	356	238	238	190	951	475	475	356	238
15,0	425	318	212	212	170	849	425	425	318	212
16,0	398	299	199	199	159	796	398	398	299	199
16,5	386	290	193	193	154	772	386	386	290	193
19,0	335	251	168	168	134	670	335	335	251	168
20,0	318	239	159	159	127	637	318	318	239	159
20,5	311	233	155	155	124	621	311	311	233	155
23,0	277	208	138	138	111	554	277	277	208	138
25,0	255	191	127	127	102	510	255	255	191	127
26,0	245	184	122	122	98	490	245	245	184	122
28,0	227	171	114	114	91	455	227	227	171	114
30,0	212	159	106	106	85	425	212	212	159	106
31,0	205	154	103	103	82	411	205	205	154	103
31,5	202	152	101	101	81	404	202	202	152	101
34,0	187	141	94	94	75	375	187	187	141	94
37,0	172	129	86	86	69	344	172	172	129	86
40,0	159	119	80	80	64	318	159	159	119	80
50,0	127	96	64	64	51	255	127	127	96	64
63,0	101	76	51	51	40	202	101	101	76	51
80,0	80	60	40	40	32	159	80	80	60	40

## Countersinkings as per DIN 74 for countersunk screws as per DIN

type AF	as per DIN 74	type BF
DIN 963 / DIN 964 DIN 965 / DIN 966 DIN 7513 F. u. G. DIN 7516 D. u. E.		DIN 7991 (ISO 10642)





## Table of recommended cutting speeds for Solid TC countersinkers

Material:	High carbon struc. steel up to 700 N/mm <sup>2</sup>		High carbon struc. steel up to 700 N/mm <sup>2</sup>		Alloyed steel up to 1200 N/mm <sup>2</sup>		Cast iron up to 250 N/mm <sup>2</sup>		Cast iron over 250 N/mm <sup>2</sup>		CuZn alloy brittle		CuZn alloy tough		Aluminium alloy up to 11% Si		Thermo-plastics		Duro-plastics	
Vc = m/min	15		12		8		12		10		25		15		20		20		10	
Ø mm	r.p.m.	f	r.p.m.	f	r.p.m.	f	r.p.m.	f	r.p.m.	f	r.p.m.	f	r.p.m.	f	r.p.m.	f	r.p.m.	f	r.p.m.	f
6,3	758	0,10	606	0,10	404	0,10	606	0,15	505	0,15	1263	0,13	758	0,13	1011	0,13	1011	0,13	505	0,13
8,3	575	0,15	460	0,15	307	0,15	460	0,20	384	0,20	959	0,16	575	0,16	767	0,16	767	0,18	384	0,18
10,4	459	0,15	367	0,15	245	0,15	367	0,20	306	0,20	765	0,16	459	0,16	612	0,16	612	0,20	306	0,20
12,4	385	0,20	308	0,20	205	0,20	308	0,25	257	0,25	642	0,20	385	0,20	513	0,20	513	0,20	257	0,20
16,5	289	0,20	231	0,20	154	0,20	231	0,25	193	0,25	482	0,22	289	0,22	386	0,22	386	0,25	193	0,25
20,5	233	0,25	186	0,25	124	0,25	186	0,30	155	0,30	388	0,25	233	0,25	311	0,25	311	0,25	155	0,25
25,0	191	0,30	153	0,30	102	0,30	153	0,30	127	0,30	318	0,25	191	0,25	255	0,25	255	0,30	127	0,30
31,0	154	0,35	123	0,35	82	0,35	123	0,35	103	0,35	257	0,30	154	0,30	205	0,30	205	0,35	103	0,35

f in mm/rev = feed per revolution

## Countersinkings as per DIN 74, Sheet 2

### Countersinkings, type H

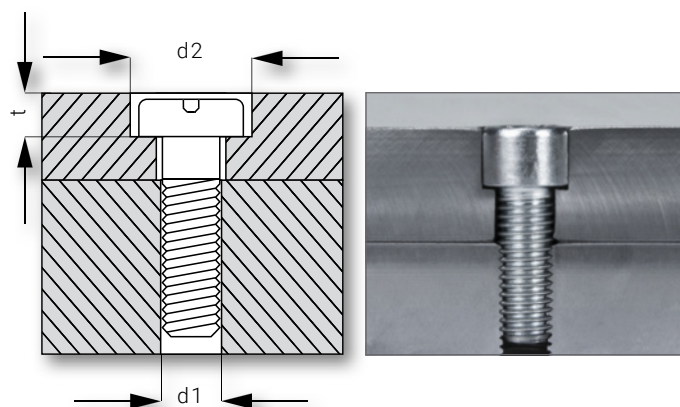
for cylinder-head screws as per DIN 84 and DIN 7984  
for thread-cutting screws as per DIN 7513, Type B  
for thread-furrowing screws as per DIN 7500, Type B

### Countersinkings, type J

for cylinder-head screws as per DIN 6912

### Countersinkings, type K

for cylinder-head screws as per DIN 912



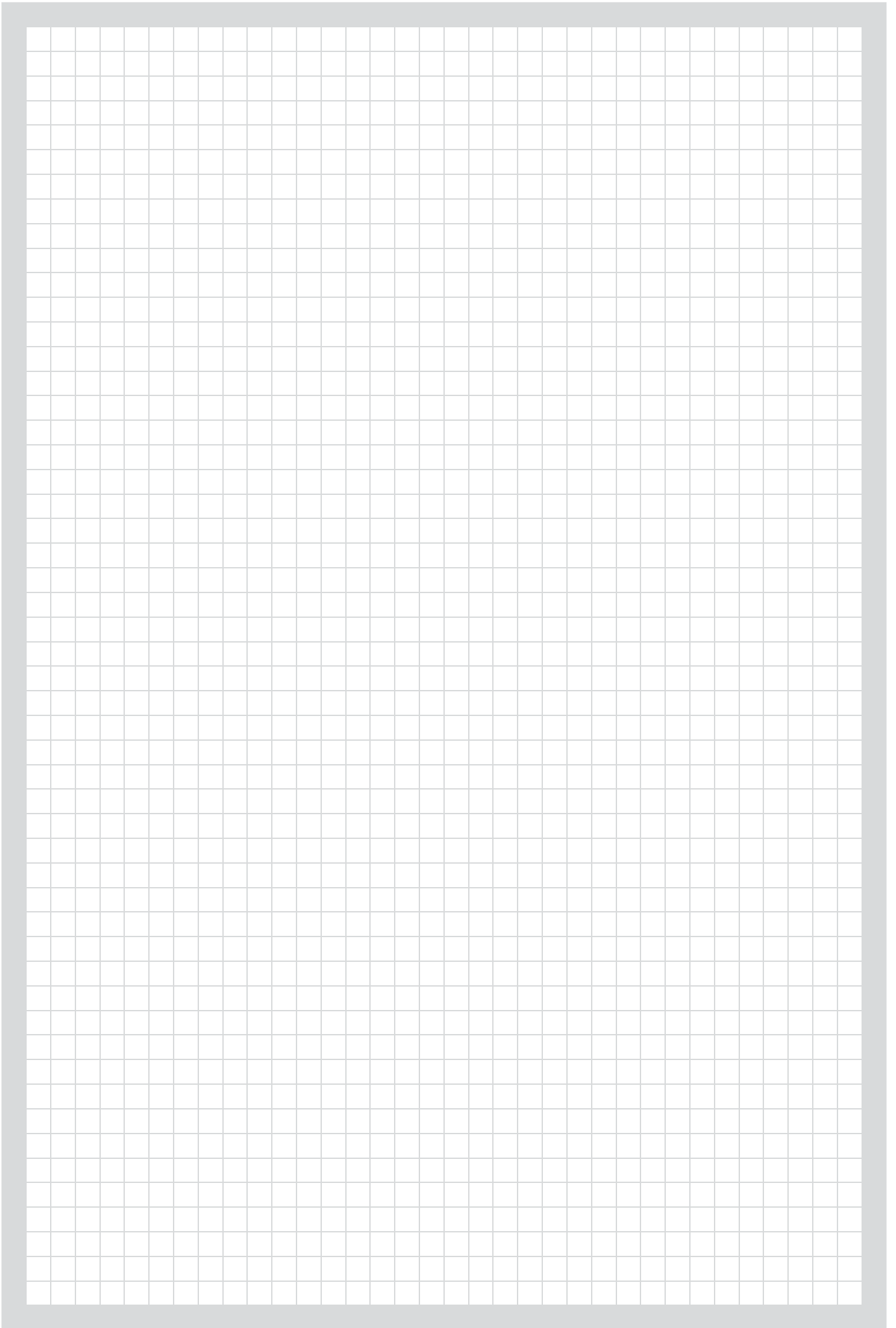
For thread	d1 fine H 12 mm	d1 medium H 13 mm	d1 core hole mm	d2 H 13 mm	t type H mm	t type J mm	t type K mm	Tolerance for t mm
M 3	3,2	3,4	2,5	6,0	2,4	—	3,4	0 + 0,1
M 4	4,3	4,5	3,3	8,0	3,2	3,4	4,6	0 + 0,4
M 5	5,3	5,5	4,2	10,0	4,0	4,2	5,7	0 + 0,4
M 6	6,4	6,6	5,0	11,0	4,7	4,8	6,8	0 + 0,4
M 8	8,4	9,0	6,8	15,0	6,0	6,0	6,0	0 + 0,4
M 10	10,5	11,0	8,5	18,0	7,0	7,5	11,0	0 + 0,4
M 12	13,0	13,5	10,2	20,0	8,0	8,5	13,0	0 + 0,4
M 14	15,0	15,5	12,0	24,0	9,0	9,5	15,0	0 + 0,4
M 16	17,0	17,5	14,0	26,0	10,5	11,5	17,5	0 + 0,4
M 18	19,0	20,0	15,5	30,0	11,5	12,5	19,5	0 + 0,4
M 20	21,0	22,0	17,5	33,0	12,5	13,5	21,5	0 + 0,4
M 22	23,0	24,0	19,5	36,0	13,5	14,5	23,5	0 + 0,4

### Type A for:

- countersunk screws as per DIN 963 and DIN 965,
- raised countersunk head screws as per DIN 964 and DIN 966,
- thread forming screws type F and G as per DIN 7513 and type D and E as per DIN 7516,
- countersunk tapping screws type K, L, M and N as per DIN 7500,
- wood screws as per DIN 97 and DIN 7997
- oval head wood screws as per DIN 95 DIN 7997

### Type B for:

countersunk screws with hexagon socket DIN 7991





# THREAD-CUTTING TOOLS



## Product description for hand tapping tools

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### HSS

The hand tap consists of heavy-duty high-speed steel. For through threads and bottoming threads in unalloyed and low-alloyed steels up to a strength of 800 N/mm<sup>2</sup>, malleable cast iron and non-ferrous metals. The thread is cut in three operation.

### HSSE-Co 5

The hand tap consists of 5% cobalt alloyed heavy-duty high-speed steel. For through threads and bottoming threads in unalloyed and alloyed steels up to a strength of 900 N/mm<sup>2</sup>, malleable cast iron and non-ferrous metals. The thread is cut in three operation.

## Product description for dies

---

### HSS + HSSE-Co 5

The round die consists of heavy-duty high-speed steel (HSS) in unalloyed and low-alloyed steels up to a strength of 800 N/mm<sup>2</sup>. The round die consists of 5% cobalt alloyed heavy-duty high-speed steel (HSSE-Co 5) in unalloyed and alloyed steels up to a strength of 1000 N/mm<sup>2</sup> and non-ferrous metals.

The thread is cut in one operation.







# Overview of symbols



High-speed steel



High-speed steel with 5% Cobalt content, ground



left hand cutting



right hand cutting



Blind hole



metric, DIN ISO 13



metric fine, DIN ISO 13



British Standard Whitworth thread according to BS 84



British Standard Fine thread according to BS 84



DIN ISO 228 "G" (cylindrical pipe thread)



bright surface



Black surface



Type B, 4 - 5 threads with progressive tap



Type C / 35° right-hand spiral flutes, 2 - 3 threads



Type D, 4 - 6 threads



Interrupted threads for machining soft materials



Through hole



American UNC coarse thread ANSI / ASME B 1.1



American UNF fine thread ANSI / ASME B 1.1



American conical pipe thread to ANSI B.1.20.1



DIN 2999 "Rp" Whitworth pipe thread



DIN 40 430 steel conduit thread



TiAlN coating



TiN coating



TiCN coating



Thread tolerance for American threads for internal threads



Thread tolerance for American threads for external threads



Thread tolerance for metric and metric fine threads according to DIN ISO 13 for internal threads



Thread tolerance for metric and metric fine threads according to DIN ISO 13 for external threads



Ø tolerance: work's specification



Machine taps with reinforced shank



Machine taps with overflow shank



Tenacity classes



Thread angle



Coloured ring mark



Bit shank: 6,35 mm x 27,0 mm



Shank: square as per DIN 10

## Thread-cutting tools

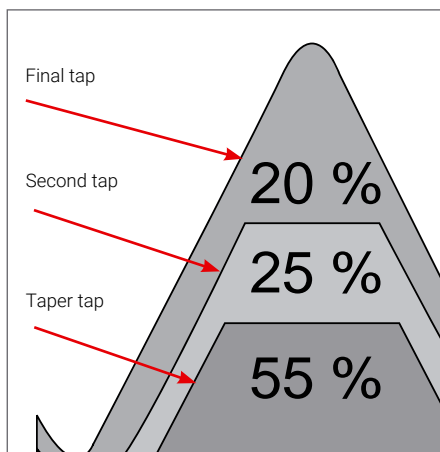
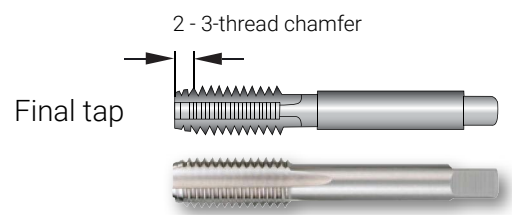
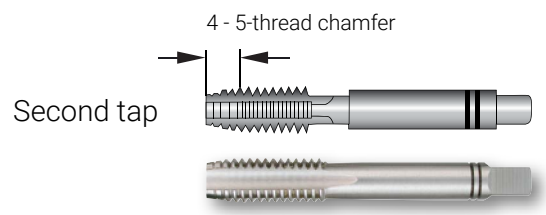
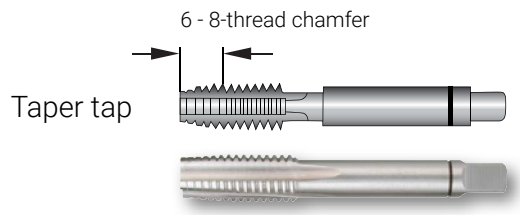
To cut an internal thread, at first a core hole is drilled, whose diameter is approximately smaller by the pitch of the thread than the nominal diameter of the thread.

Subsequently tapered counter bores are placed, which match the size of the thread diameter plus 10% of it. This is done to get a better insertion into the bore hole and to prevent the first and the last thread from being pushed out when beginning to cut.

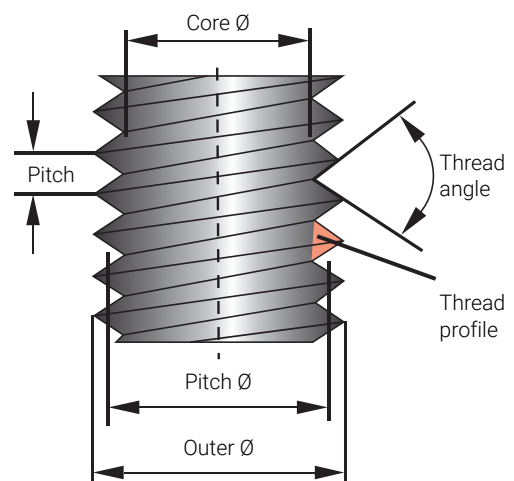
Then the taps are screwed in and out in order. The final core hole diameter is created through the additional plastic deformation of the thread flanks.

To increase the tool life and for optimum surface qualities, RUKO cutting oils or other cooling lubricants for the lubrication are used, as it minimises the friction between the chip and the cutting of the tap and thereby also reduce the necessary torque.

In hand taps, after two rotations of the drill, 1/3 rotation is rotated back to break the chip. In this way the stressing on the drill drops and it doesn't break so quickly.



Form B dies = Closed, pre-slotted version!














Parts and applications overview:



Material	Surface	DIN	Shape	Left hand cutting / right hand cutting	Thread	Tenacity classes	Nominal thread size	Article no.	Page
HSS		DIN 352			M	800 N/mm²	M 2 - M 52	230 020 - 230 520	158
HSS		DIN 352			M	800 N/mm²	M 3 - M 20	230 030 Li - 230 200 Li	158
HSSE Co 5		DIN 352			M	1000 N/mm²	M 2 - M 24	230 020 E - 230 240 E	158
HSS		DIN 2181			MF	800 N/mm²	MF 3 - MF 52	235 030 - 235 520	160
HSS		DIN 5157			G (BSP)	800 N/mm²	G 1/8 - G 2"	236 018 - 236 020	162
HSS		DIN 352			Ww (BSW)	800 N/mm²	1/16 - 2"	246 116 - 246 020	163
HSS		DIN 352			UNC	800 N/mm²	Nr. 2 - 2"	246 020 UNC - 246 200 UNC	164
HSS		DIN 352			UNF	800 N/mm²	Nr. 2 - 1 1/2"	246 020 UNF - 246 112 UNF	165
HSS		DIN 382	C		NPT	800 N/mm²	1/16 - 2"	231 116 NPT - 231 020 NPT	169
HSS		DIN 352	B		M	800 N/mm²	M 3 - M 12	231 030 - 231 120	168
HSSE Co 5		DIN 352	B		M	1000 N/mm²	M 3 - M 12	231 030 E - 231 120 E	168
HSS		DIN 5157	B		G (BSP)	800 N/mm²	G 1/8 - G 1"	236 210 - 236 238	170



HSS		DIN 22568	B		M	800 N/mm²	M 2 - M 52	237 020 - 237 520	159
HSS		DIN 22568	B		M	800 N/mm²	M 3 - M 12	238 030 - 238 120	159
HSS		DIN 22568	B		M	800 N/mm²	M 3 - M 20	237 030 Li - 230 200 Li	159
HSSE Co 5		DIN 22568	B		M	1000 N/mm²	M 2 - M 24	237 020 E - 237 240 E	159
HSS		DIN 22568	B		MF	800 N/mm²	MF 3 - MF 52	239 030 - 239 520	161
HSS		DIN 24231	B		G (BSP)	800 N/mm²	G 1/8 - G 2"	240 018 - 240 020	162
HSS		DIN 22568	B		Ww (BSW)	800 N/mm²	1/16 - 2"	247 116 - 247 020	163
HSS		DIN 22568	B		UNC	800 N/mm²	Nr. 2 - 2"	240 020 UNC - 240 112 UNC	164
HSS		DIN 22568	B		UNF	800 N/mm²	Nr. 2 - 1 1/2"	240 020 UNF - 240 112 UNF	165
HSS		DIN 382			M	800 N/mm²	M 3 - M 30	267 030 - 267 300	169
HSS		DIN 382	B		G (BSP)	800 N/mm²	G 1/8 - G 1"	267 610 - 267 638	170

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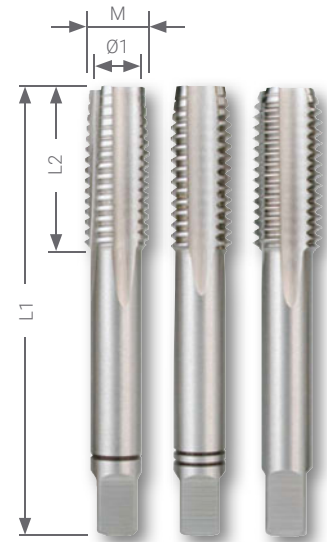
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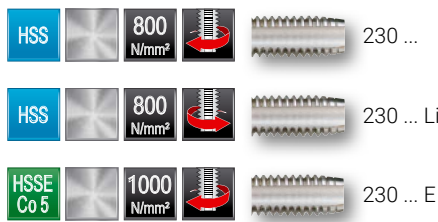
# Hand taps M DIN 352 HSS, HSS-left-handed thread and HSSE-Co 5 ground

Set: 3-piece  
 Taper tap: 6 - 8-thread chamfer  
 Second tap: 4 - 5-thread chamfer  
 Final tap: 2 - 3-thread chamfer  
 Thread: metric, DIN ISO 13  
 Flanks: relief-ground

Also available individually  
 Taper tap: Article no. 230 .....-1  
 Second tap: Article no. 230 .....-2  
 Final tap: Article no. 230 .....-3



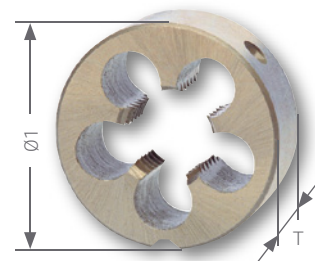
Packing unit: set in plastic pack



Steel (N/mm <sup>2</sup> ) < 800	■	■	■
Steel (N/mm <sup>2</sup> ) < 1000			■
Rust-resistant steel			■
Aluminium	■	■	■

Brass	■	■	■
Bronze	□	□	■
Plastics	■	■	■
Cast iron	□	□	□
Titanium alloyed			

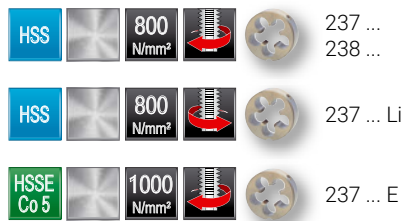
Nominal thread size M	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm				
M 2	0,40	1,60	36,0	8,0	230 020	—	230 020 E	1
M 2,5	0,45	2,10	40,0	8,0	230 025	—	—	1
M 3	0,50	2,50	40,0	10,0	230 030	230 030 Li	230 030 E	1
M 3,5	0,60	2,90	45,0	12,0	230 035	—	—	1
M 4	0,70	3,30	45,0	12,0	230 040	230 040 Li	230 040 E	1
M 4,5	0,75	3,70	50,0	16,0	230 045	—	—	1
M 5	0,80	4,20	50,0	13,0	230 050	230 050 Li	230 050 E	1
M 6	1,00	5,00	56,0	15,0	230 060	230 060 Li	230 060 E	1
M 7	1,00	6,00	56,0	16,0	230 070	—	—	1
M 8	1,25	6,80	56,0	18,0	230 080	230 080 Li	230 080 E	1
M 9	1,25	7,80	63,0	22,0	230 090	—	—	1
M 10	1,50	8,50	70,0	24,0	230 100	230 100 Li	230 100 E	1
M 11	1,50	9,50	70,0	24,0	230 110	—	—	1
M 12	1,75	10,20	75,0	29,0	230 120	230 120 Li	230 120 E	1
M 14	2,00	12,00	80,0	30,0	230 140	230 140 Li	230 140 E	1
M 15	2,00	13,00	80,0	32,0	230 150	—	—	1
M 16	2,00	14,00	80,0	32,0	230 160	230 160 Li	230 160 E	1
M 18	2,50	15,50	95,0	40,0	230 180	230 180 Li	230 180 E	1
M 20	2,50	17,50	95,0	40,0	230 200	230 200 Li	230 200 E	1
M 22	2,50	19,50	100,0	40,0	230 220	—	230 220 E	1
M 24	3,00	21,00	110,0	45,0	230 240	—	230 240 E	1
M 27	3,00	24,00	110,0	50,0	230 270	—	—	1
M 30	3,50	26,50	125,0	56,0	230 300	—	—	1
M 33	3,50	29,50	125,0	56,0	230 330	—	—	1
M 36	4,00	32,00	150,0	63,0	230 360	—	—	1
M 39	4,00	35,00	150,0	63,0	230 390	—	—	1
M 42	4,50	37,50	150,0	63,0	230 420	—	—	1
M 45	4,50	40,50	160,0	70,0	230 450	—	—	1
M 48	5,00	43,00	180,0	75,0	230 480	—	—	1
M 52	5,00	47,00	180,0	75,0	230 520	—	—	1



# Round dies M DIN EN 22568 HSS, HSS-left-handed thread and HSSE-Co 5 ground

Type: Type B closed, preslotted  
Thread: metric, DIN ISO 13

Packing unit: in plastic tubes of 1



Steel (N/mm²) < 800	■	■	■
Steel (N/mm²) < 1000			■
Rust-resistant steel			■
Aluminium	■	■	■

Brass	■	■	■
Bronze	□	□	■
Plastics	■	■	■
Cast iron	□	□	□
Titanium alloyed			

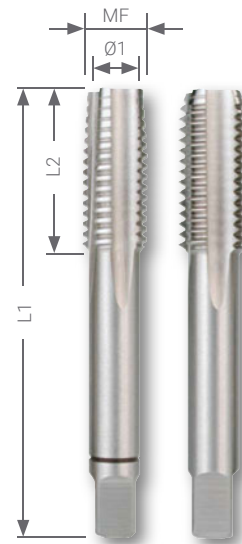
Nominal thread size M	Pitch mm	Outside Ø1 mm	Thickness T mm					
M 2	0,40	16,0	5,0	237 020	—	—	237 020 E	1
M 2,5	0,45	16,0	5,0	237 025	—	—	—	1
M 3	0,50	20,0	5,0	237 030	—	237 030 Li	237 030 E	1
M 3	0,50	25,0	9,0	—	238 030	—	—	1
M 3,5	0,60	20,0	5,0	237 035	—	—	—	1
M 4	0,70	20,0	5,0	237 040	—	237 040 Li	237 040 E	1
M 4	0,70	25,0	9,0	—	238 040	—	—	1
M 4,5	0,75	20,0	7,0	237 045	—	—	—	1
M 5	0,80	20,0	7,0	237 050	—	237 050 Li	237 050 E	1
M 5	0,80	25,0	9,0	—	238 050	—	—	1
M 6	1,00	20,0	7,0	237 060	—	237 060 Li	237 060 E	1
M 6	1,00	25,0	9,0	—	238 060	—	—	1
M 7	1,00	25,0	9,0	237 070	—	237 070 Li	—	1
M 8	1,25	25,0	9,0	237 080	238 080	237 080 Li	237 080 E	1
M 9	1,25	25,0	9,0	237 090	—	—	—	1
M 10	1,50	30,0	11,0	237 100	—	237 100 Li	237 100 E	1
M 10	1,50	25,0	9,0	—	238 100	—	—	1
M 11	1,50	30,0	11,0	237 110	—	—	—	1
M 12	1,75	38,0	14,0	237 120	—	237 120 Li	237 120 E	1
M 12	1,75	25,0	9,0	—	238 120	—	—	1
M 14	2,00	38,0	14,0	237 140	—	237 140 Li	237 140 E	1
M 16	2,00	45,0	18,0	237 160	—	237 160 Li	237 160 E	1
M 18	2,50	45,0	18,0	237 180	—	237 180 Li	237 180 E	1
M 20	2,50	45,0	18,0	237 200	—	237 200 Li	237 200 E	1
M 22	2,50	55,0	22,0	237 220	—	—	237 220 E	1
M 24	3,00	55,0	22,0	237 240	—	—	237 240 E	1
M 27	3,00	65,0	25,0	237 270	—	—	—	1
M 30	3,50	65,0	25,0	237 300	—	—	—	1
M 33	3,50	65,0	25,0	237 330	—	—	—	1
M 36	4,00	65,0	25,0	237 360	—	—	—	1
M 39	4,00	75,0	30,0	237 390	—	—	—	1
M 42	4,50	75,0	30,0	237 420	—	—	—	1
M 45	4,50	90,0	36,0	237 450	—	—	—	1
M 48	5,00	90,0	36,0	237 480	—	—	—	1
M 52	5,00	90,0	36,0	237 520	—	—	—	1



# Hand taps MF DIN 2181 HSS, ground

Set: 2-piece  
 Taper tap: 5 - 6-thread chamfer  
 Final tap: 2 - 3-thread chamfer  
 Thread: metric, fine, DIN ISO 13  
 Flanks: relief-ground

Also available individually  
 Taper tap: Article no. 235 .....-1  
 Final tap: Article no. 235 .....-2



Packing unit: set in plastic pack

After two rotations of the drill turn back 1/3 rotation to break the chip. Thus the strain on the screw tap decreases. Lubrication with RUKO cutting oil is recommended.

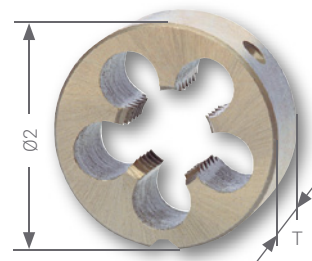
Steel (N/mm <sup>2</sup> ) < 800	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1000	<input type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>

Brass	<input checked="" type="checkbox"/>
Bronze	<input type="checkbox"/>
Plastics	<input checked="" type="checkbox"/>
Cast iron	<input type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>

Nominal thread size MF	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
MF 3	0,35	2,60	40,0	10,0	235 030	1
MF 4	0,35	3,10	45,0	10,0	235 040	1
MF 4	0,50	3,50	45,0	12,0	235 041	1
MF 5	0,50	4,50	50,0	13,0	235 050	1
MF 5	0,75	4,25	50,0	13,0	235 051	1
MF 6	0,50	5,50	50,0	14,0	235 061	1
MF 6	0,75	5,20	50,0	15,0	235 060	1
MF 7	0,75	6,20	50,0	14,0	235 070	1
MF 8	0,50	7,50	50,0	19,0	235 082	1
MF 8	0,75	7,20	56,0	18,0	235 080	1
MF 8	1,00	7,00	56,0	18,0	235 081	1
MF 9	0,75	8,20	56,0	19,0	235 092	1
MF 9	1,00	8,00	63,0	20,0	235 090	1
MF 10	0,75	9,20	63,0	20,0	235 102	1
MF 10	1,00	9,00	63,0	18,0	235 100	1
MF 10	1,25	8,70	70,0	24,0	235 101	1
MF 11	1,00	9,20	63,0	20,0	235 110	1
MF 11	1,25	9,80	63,0	22,0	235 111	1
MF 12	1,00	11,00	70,0	20,0	235 122	1
MF 12	1,25	10,70	70,0	20,0	235 121	1
MF 12	1,50	10,50	70,0	20,0	235 120	1
MF 13	1,00	12,00	70,0	22,0	235 130	1
MF 13	1,50	11,50	70,0	22,0	235 131	1
MF 14	1,00	13,00	70,0	20,0	235 142	1
MF 14	1,25	12,70	70,0	20,0	235 140	1
MF 14	1,50	12,50	70,0	20,0	235 141	1
MF 15	1,50	13,50	70,0	22,0	235 150	1
MF 16	1,00	15,00	70,0	20,0	235 161	1
MF 16	1,25	14,75	70,0	20,0	235 162	1
MF 16	1,50	14,50	70,0	20,0	235 160	1
MF 18	1,00	17,00	80,0	22,0	235 181	1
MF 18	1,25	16,80	80,0	22,0	235 183	1

Nominal thread size MF	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
MF 18	1,50	16,50	80,0	22,0	235 180	1
MF 18	2,00	16,00	80,0	22,0	235 182	1
MF 20	1,00	19,00	80,0	22,0	235 201	1
MF 20	1,25	18,80	80,0	22,0	235 203	1
MF 20	1,50	18,50	80,0	22,0	235 200	1
MF 20	2,00	18,00	80,0	22,0	235 202	1
MF 22	1,00	21,00	80,0	22,0	235 221	1
MF 22	1,50	20,50	80,0	22,0	235 220	1
MF 22	2,00	20,00	80,0	22,0	235 222	1
MF 24	1,00	23,00	90,0	22,0	235 242	1
MF 24	1,50	22,50	90,0	22,0	235 240	1
MF 24	2,00	22,00	90,0	22,0	235 241	1
MF 25	1,50	23,50	90,0	22,0	235 250	1
MF 26	1,50	24,50	90,0	22,0	235 261	1
MF 26	2,00	24,00	90,0	22,0	235 260	1
MF 27	1,50	25,50	90,0	22,0	235 270	1
MF 27	2,00	25,00	90,0	22,0	235 271	1
MF 28	1,50	26,50	90,0	22,0	235 280	1
MF 28	2,00	26,00	90,0	22,0	235 281	1
MF 30	1,00	29,00	90,0	22,0	235 300	1
MF 30	1,50	28,50	90,0	22,0	235 301	1
MF 30	2,00	28,00	90,0	22,0	235 302	1
MF 32	1,50	30,50	90,0	22,0	235 320	1
MF 35	1,50	33,50	100,0	25,0	235 350	1
MF 38	1,50	36,50	110,0	25,0	235 380	1
MF 40	1,50	38,50	110,0	25,0	235 400	1
MF 42	1,50	40,50	110,0	25,0	235 420	1
MF 45	1,50	43,50	110,0	25,0	235 450	1
MF 48	1,50	46,50	125,0	40,0	235 480	1
MF 50	1,50	48,50	125,0	40,0	235 500	1
MF 52	1,50	50,50	125,0	40,0	235 520	1





## Round dies MF DIN EN 22568 HSS, ground

Type: Type B closed, preslotted  
 Thread: metric fine, DIN ISO 13

Packing unit: in plastic tubes of 1



It is recommended that the threading dies are turned back briefly now and then so that the chips break and do not clog the threads. Lubrication with RUKO cutting oil is recommended.

Steel (N/mm2) < 800	■
Steel (N/mm2) < 1000	
Rust-resistant steel	
Aluminium	■

Brass	■
Bronze	□
Plastics	■
Cast iron	□
Titanium alloyed	

Nominal thread size MF	Pitch mm	Outside Ø2 mm	Thickness T mm	HSS	
MF 3	0,35	20,0	5,0	239 030	1
MF 4	0,35	20,0	5,0	239 040	1
MF 4	0,50	20,0	5,0	239 041	1
MF 5	0,50	20,0	5,0	239 050	1
MF 5	0,75	20,0	7,0	239 051	1
MF 6	0,50	20,0	5,0	239 061	1
MF 6	0,75	20,0	7,0	239 060	1
MF 7	0,75	25,0	9,0	239 070	1
MF 8	0,50	25,0	9,0	239 082	1
MF 8	0,75	25,0	9,0	239 080	1
MF 8	1,00	25,0	9,0	239 081	1
MF 9	0,75	25,0	9,0	239 090	1
MF 9	1,00	25,0	9,0	239 091	1
MF 10	0,75	30,0	11,0	239 102	1
MF 10	1,00	30,0	11,0	239 100	1
MF 10	1,25	30,0	11,0	239 101	1
MF 11	1,00	30,0	11,0	239 110	1
MF 11	1,25	30,0	11,0	239 111	1
MF 12	1,00	38,0	10,0	239 121	1
MF 12	1,25	38,0	10,0	239 122	1
MF 12	1,50	38,0	10,0	239 120	1
MF 13	1,00	38,0	10,0	239 131	1
MF 13	1,50	38,0	10,0	239 130	1
MF 14	1,00	38,0	10,0	239 142	1
MF 14	1,25	38,0	10,0	239 140	1
MF 14	1,50	38,0	10,0	239 141	1
MF 15	1,50	38,0	10,0	239 150	1
MF 16	1,00	45,0	14,0	239 161	1
MF 16	1,25	45,0	14,0	239 162	1
MF 16	1,50	45,0	14,0	239 160	1
MF 18	1,00	45,0	14,0	239 181	1
MF 18	1,25	45,0	14,0	239 183	1

Nominal thread size MF	Pitch mm	Outside Ø2 mm	Thickness T mm	HSS	
MF 18	1,50	45,0	14,0	239 180	1
MF 18	2,00	45,0	14,0	239 182	1
MF 20	1,00	45,0	14,0	239 201	1
MF 20	1,25	45,0	14,0	239 203	1
MF 20	1,50	45,0	14,0	239 200	1
MF 20	2,00	45,0	14,0	239 202	1
MF 22	1,00	55,0	16,0	239 221	1
MF 22	1,50	55,0	16,0	239 220	1
MF 22	2,00	55,0	16,0	239 222	1
MF 24	1,00	55,0	16,0	239 242	1
MF 24	1,50	55,0	16,0	239 240	1
MF 24	2,00	55,0	16,0	239 241	1
MF 25	1,50	55,0	16,0	239 250	1
MF 26	1,50	55,0	16,0	239 261	1
MF 26	2,00	55,0	16,0	239 262	1
MF 27	1,50	65,0	18,0	239 270	1
MF 27	2,00	65,0	18,0	239 271	1
MF 28	1,50	65,0	18,0	239 281	1
MF 28	2,00	65,0	18,0	239 282	1
MF 30	1,00	65,0	18,0	239 300	1
MF 30	1,50	65,0	18,0	239 301	1
MF 30	2,00	65,0	18,0	239 302	1
MF 32	1,50	65,0	18,0	239 320	1
MF 35	1,50	65,0	18,0	239 350	1
MF 38	1,50	75,0	20,0	239 380	1
MF 40	1,50	75,0	20,0	239 400	1
MF 42	1,50	75,0	20,0	239 420	1
MF 45	1,50	90,0	22,0	239 450	1
MF 48	1,50	90,0	22,0	239 480	1
MF 50	1,50	90,0	22,0	239 500	1
MF 52	1,50	90,0	22,0	239 520	1

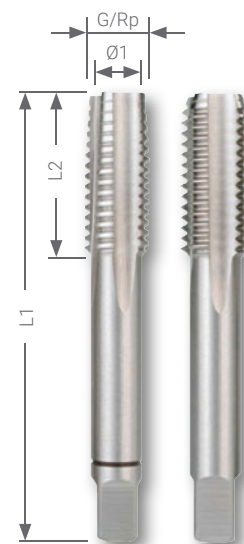


## Hand taps G DIN 5157 HSS, ground

Set: 2-piece  
 Taper tap: 5 - 6-thread chamfer  
 Final tap: 2 - 3-thread chamfer  
 Thread: DIN ISO 228 "G" (cylindrical pipe thread)  
 DIN 2999 "Rp" (Whitworth pipe thread)  
 Flanks: relief-ground

Packing unit: set in plastic pack

	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 800	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1000	<input type="checkbox"/>	Bronze	<input type="checkbox"/>
	<input type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>



Also available individually  
 Taper tap: Article no. 236 .....-1  
 Final tap: Article no. 236 .....-2

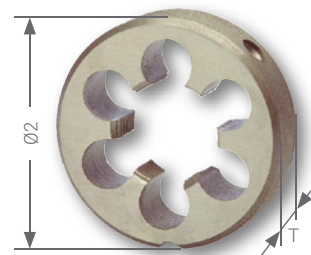
Nominal thread size G / Rp		Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
G 1/8	Rp 1/8	28	8,80	63,0	18,0	236 018	1
G 1/4	Rp 1/4	19	11,80	70,0	20,0	236 014	1
G 3/8	Rp 3/8	19	15,25	70,0	20,0	236 038	1
G 1/2	Rp 1/2	14	19,00	80,0	22,0	236 012	1
G 5/8	Rp 5/8	14	21,00	80,0	22,0	236 058	1
G 3/4	Rp 3/4	14	24,50	90,0	22,0	236 034	1
G 7/8	Rp 7/8	14	28,25	90,0	22,0	236 078	1
G 1"	Rp 1"	11	30,75	100,0	25,0	236 010	1
G 1 1/8	Rp 1 1/8	11	35,30	125,0	40,0	236 118	1
G 1 1/4	Rp 1 1/4	11	39,25	125,0	40,0	236 114	1
G 1 3/8	Rp 1 3/8	11	41,70	140,0	40,0	236 138	1
G 1 1/2	Rp 1 1/2	11	45,25	140,0	40,0	236 112	1
G 1 3/4	Rp 1 3/4	11	51,10	140,0	40,0	236 134	1
G 2"	Rp 2"	11	57,00	160,0	40,0	236 020	1



## Round dies G DIN EN 24231 HSS, ground

Type: Type B closed, preslotted  
 Thread: DIN ISO 228 "G" (cylindrical pipe thread)

Packing unit: individual plastic pack

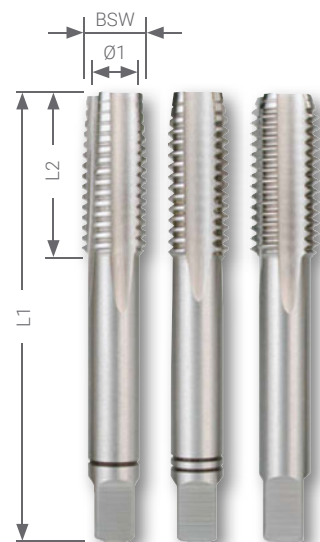


Nominal thread size G	Threads per inch	Outside Ø2 mm	Thickness T mm	HSS		Nominal thread size G	Threads per inch	Outside Ø2 mm	Thickness T mm	HSS	
G 1/8	28	30,0	11,0	240 018	1	G 1 1/8	11	75,0	20,0	240 118	1
G 1/4	19	38,0	10,0	240 014	1	G 1 1/4	11	75,0	20,0	240 114	1
G 3/8	19	45,0	14,0	240 038	1	G 1 3/8	11	90,0	22,0	240 138	1
G 1/2	14	45,0	14,0	240 012	1	G 1 1/2	11	90,0	22,0	240 112	1
G 5/8	14	55,0	16,0	240 058	1	G 1 5/8	11	90,0	22,0	240 158	1
G 3/4	14	55,0	16,0	240 034	1	G 1 3/4	11	105,0	22,0	240 134	1
G 7/8	14	65,0	18,0	240 078	1	G 2"	11	105,0	22,0	240 020	1
G 1"	11	65,0	18,0	240 010	1						



## Hand taps BSW ≈ DIN 352 HSS, ground

Set: 3-piece  
 Taper tap: 5 - 6-thread chamfer  
 Second tap: 4 - 5-thread chamfer  
 Final tap: 2 - 3-thread chamfer  
 Thread: BSW, formerly DIN 11  
 Flanks: relief-ground



Packing unit: set in plastic pack

Steel (N/mm²) < 800	■	Brass	■
Steel (N/mm²) < 1000		Bronze	□
		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	

Also available individually  
 Taper tap: Article no. 246 .....-1  
 Second tap: Article no. 246 .....-2  
 Final tap: Article no. 246 .....-3

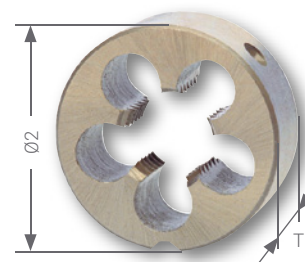
Nominal thread size BSW	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
1/16	60	1,15	32,0	7,0	246 116	1
3/32	48	1,80	40,0	8,0	246 332	1
1/8	40	2,50	40,0	10,0	246 018	1
5/32	32	3,10	45,0	12,0	246 532	1
3/16	24	3,60	50,0	13,0	246 316	1
7/32	24	4,40	50,0	15,0	246 732	1
1/4	20	5,10	50,0	16,0	246 014	1
5/16	18	6,50	56,0	18,0	246 516	1
3/8	16	7,90	70,0	24,0	246 038	1
7/16	14	9,30	70,0	24,0	246 716	1
1/2	12	10,50	80,0	30,0	246 012	1
9/16	12	12,00	80,0	30,0	246 916	1

Nominal thread size BSW	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
5/8	11	13,50	80,0	32,0	246 058	1
3/4	10	16,50	95,0	40,0	246 034	1
7/8	9	19,25	100,0	40,0	246 078	1
1"	8	22,00	110,0	50,0	246 010	1
1 1/8	7	24,75	125,0	50,0	246 118	1
1 1/4	7	27,75	125,0	50,0	246 114	1
1 3/8	6	30,20	150,0	63,0	246 138	1
1 1/2	6	33,50	150,0	63,0	246 112	1
1 5/8	5	35,50	150,0	63,0	246 158	1
1 3/4	5	38,50	160,0	70,0	246 134	1
1 7/8	4 1/2	41,50	180,0	75,0	246 178	1
2"	4 1/2	44,50	180,0	75,0	246 020	1



## Round dies BSW ≈ DIN EN 22568 HSS, ground

Type: Type B closed, preslotted  
 Thread: BSW, formerly DIN 11



Packing unit: individual plastic pack

Nominal thread size BSW	Threads per inch	Outside Ø2 mm	Thickness T mm	HSS	
1/16	60	16,0	5,0	247 116	1
3/32	48	16,0	5,0	247 332	1
1/8	40	20,0	5,0	247 018	1
5/32	32	20,0	5,0	247 532	1
3/16	24	20,0	7,0	247 316	1
7/32	24	20,0	7,0	247 732	1
1/4	20	25,0	9,0	247 014	1
5/16	18	25,0	9,0	247 516	1
3/8	16	30,0	11,0	247 038	1
7/16	14	30,0	11,0	247 716	1
1/2	12	38,0	14,0	247 012	1
9/16	12	38,0	14,0	247 916	1

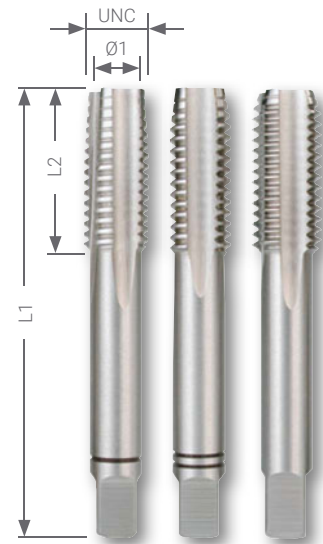
Nominal thread size BSW	Threads per inch	Outside Ø2 mm	Thickness T mm	HSS	
5/8	11	45,0	18,0	247 058	1
3/4	10	45,0	18,0	247 034	1
7/8	9	55,0	22,0	247 078	1
1"	8	55,0	22,0	247 010	1
1 1/8	7	65,0	25,0	247 118	1
1 1/4	7	65,0	25,0	247 114	1
1 3/8	6	65,0	25,0	247 138	1
1 1/2	6	75,0	30,0	247 112	1
1 5/8	5	75,0	30,0	247 158	1
1 3/4	5	90,0	36,0	247 134	1
1 7/8	4 1/2	90,0	36,0	247 178	1
2"	4 1/2	90,0	36,0	247 020	1



## Hand taps UNC ≈ DIN 352 HSS, ground

Set: 3-piece  
 Taper tap: 5 - 6-thread chamfer  
 Second tap: 4 - 5-thread chamfer  
 Final tap: 2 - 3-thread chamfer  
 Thread: American UNC coarse thread  
 Flanks: relief-ground

Packing unit: set in plastic pack



	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Steel (N/mm²) < 800	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm²) < 1000	<input type="checkbox"/>	Bronze	<input type="checkbox"/>
	<input type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>

Also available individually  
 Taper tap: Article no. 246 ..... UNC1  
 Second tap: Article no. 246 ..... UNC2  
 Final tap: Article no. 246 ..... UNC3

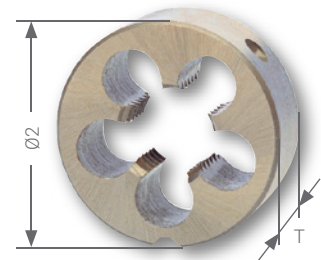
Nominal thread size UNC	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
Nr. 2	56	1,8	36,0	11,0	246 020 UNC	1
Nr. 3	48	2,1	36,0	11,0	246 030 UNC	1
Nr. 4	40	2,3	40,0	12,0	246 040 UNC	1
Nr. 5	40	2,6	40,0	12,0	246 050 UNC	1
Nr. 6	32	2,8	45,0	14,0	246 060 UNC	1
Nr. 8	32	3,5	45,0	14,0	246 080 UNC	1
Nr. 10	24	3,9	50,0	16,0	246 100 UNC	1
Nr. 12	24	4,5	50,0	18,0	246 120 UNC	1
1/4	20	5,1	50,0	19,0	246 014 UNC	1
5/16	18	6,6	56,0	22,0	246 516 UNC	1
3/8	16	8,0	70,0	24,0	246 038 UNC	1
7/16	14	9,4	70,0	24,0	246 716 UNC	1

Nominal thread size UNC	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
1/2	13	10,8	75,0	29,0	246 012 UNC	1
9/16	12	12,2	80,0	30,0	246 916 UNC	1
5/8	11	13,5	80,0	32,0	246 058 UNC	1
3/4	10	16,5	95,0	40,0	246 034 UNC	1
7/8	9	19,5	100,0	40,0	246 078 UNC	1
1"	8	22,2	110,0	50,0	246 010 UNC	1
1 1/8	7	25,0	132,0	56,0	246 118 UNC	1
1 1/4	7	28,0	132,0	56,0	246 114 UNC	1
1 3/8	6	30,7	150,0	63,0	246 138 UNC	1
1 1/2	6	34,0	150,0	63,0	246 112 UNC	1
1 3/4	5	39,5	160,0	70,0	246 134 UNC	1
2"	4 1/2	45,0	190,0	80,0	246 200 UNC	1



## Round dies UNC ≈ DIN EN 22568 HSS, ground

Type: Type B closed, preslotted  
 Thread: American UNC coarse thread



Packing unit: individual plastic pack

Nominal thread size UNC	Threads per inch	Outside Ø2 mm	Thickness T mm	HSS	
Nr. 2	56	16,0	5,0	240 020 UNC	1
Nr. 3	48	16,0	5,0	240 030 UNC	1
Nr. 4	40	20,0	5,0	240 040 UNC	1
Nr. 5	40	20,0	5,0	240 050 UNC	1
Nr. 6	32	20,0	7,0	240 060 UNC	1
Nr. 8	32	20,0	7,0	240 080 UNC	1
Nr. 10	24	20,0	7,0	240 100 UNC	1
Nr. 12	24	20,0	7,0	240 120 UNC	1
1/4	20	20,0	7,0	240 014 UNC	1
5/16	18	25,0	9,0	240 516 UNC	1
3/8	16	30,0	11,0	240 038 UNC	1
7/16	14	30,0	11,0	240 716 UNC	1

Nominal thread size UNC	Threads per inch	Outside Ø2 mm	Thickness T mm	HSS	
1/2	13	38,0	14,0	240 012 UNC	1
9/16	12	38,0	14,0	240 916 UNC	1
5/8	11	45,0	18,0	240 058 UNC	1
3/4	10	45,0	18,0	240 034 UNC	1
7/8	9	55,0	22,0	240 078 UNC	1
1"	8	55,0	22,0	240 010 UNC	1
1 1/8	7	65,0	25,0	240 118 UNC	1
1 1/4	7	65,0	25,0	240 114 UNC	1
1 3/8	6	65,0	25,0	240 138 UNC	1
1 1/2	6	75,0	30,0	240 112 UNC	1
1 3/4	5	90,0	36,0	240 134 UNC	1
2"	4,5	90,0	36,0	240 200 UNC	1

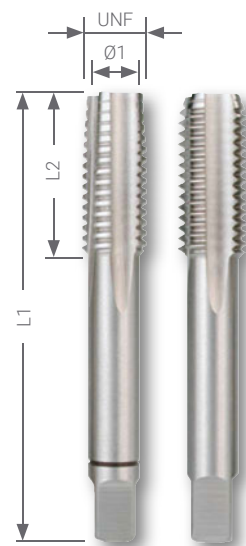


## Hand taps UNF ≈ DIN 2181 HSS, ground

Set: 2-piece  
 Taper tap: 5 - 6-thread chamfer  
 Final tap: 2 - 3-thread chamfer  
 Thread: American UNF fine thread  
 Flanks: relief-ground

Packing unit: set in plastic pack

Steel (N/mm²) < 800	■	Brass	■
Steel (N/mm²) < 1000		Bronze	□
		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	



Also available individually  
 Taper tap: Article no. 246 ..... UNF1  
 Final tap: Article no. 246 ..... UNF2

Nominal thread size UNF	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
Nr. 2	64	1,85	32,0	10,0	246 020 UNF	1
Nr. 3	56	2,15	32,0	10,0	246 030 UNF	1
Nr. 4	48	2,40	36,0	11,0	246 040 UNF	1
Nr. 5	44	2,70	36,0	11,0	246 050 UNF	1
Nr. 6	40	2,95	40,0	12,0	246 060 UNF	1
Nr. 8	36	3,50	40,0	12,0	246 080 UNF	1
Nr. 10	32	4,10	45,0	14,0	246 100 UNF	1
Nr. 12	28	4,60	50,0	14,0	246 120 UNF	1
1/4	28	5,50	50,0	18,0	246 014 UNF	1
5/16	24	6,90	56,0	22,0	246 516 UNF	1
3/8	24	8,50	63,0	22,0	246 038 UNF	1

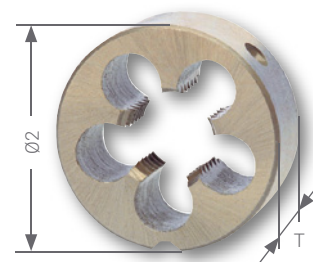
Nominal thread size UNF	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
7/16	20	9,90	63,0	22,0	246 716 UNF	1
1/2	20	11,50	75,0	24,0	246 012 UNF	1
9/16	18	12,90	80,0	28,0	246 916 UNF	1
5/8	18	14,50	80,0	28,0	246 058 UNF	1
3/4	16	17,50	95,0	32,0	246 034 UNF	1
7/8	14	20,50	100,0	36,0	246 078 UNF	1
1"	12	23,25	110,0	40,0	246 010 UNF	1
1 1/8	12	22,00	110,0	50,0	246 118 UNF	1
1 1/4	12	22,00	132,0	56,0	246 114 UNF	1
1 3/8	12	28,00	132,0	56,0	246 138 UNF	1
1 1/2	12	32,00	150,0	63,0	246 112 UNF	1



## Round dies UNF ≈ DIN EN 22568 HSS, ground

Type: Type B closed, preslotted  
 Thread: American UNF fine thread

Packing unit: individual plastic pack



Nominal thread size UNF	Threads per inch	Outside Ø2 mm	Thickness T mm	HSS	
Nr. 2	64	16,0	5,0	240 020 UNF	1
Nr. 3	56	16,0	5,0	240 030 UNF	1
Nr. 4	48	16,0	5,0	240 040 UNF	1
Nr. 5	44	20,0	5,0	240 050 UNF	1
Nr. 6	40	20,0	5,0	240 060 UNF	1
Nr. 8	36	20,0	7,0	240 080 UNF	1
Nr. 10	32	20,0	7,0	240 100 UNF	1
Nr. 12	28	20,0	7,0	240 120 UNF	1
1/4	28	20,0	7,0	240 014 UNF	1
5/16	24	25,0	9,0	240 516 UNF	1
3/8	24	30,0	11,0	240 038 UNF	1

Nominal thread size UNF	Threads per inch	Outside Ø2 mm	Thickness T mm	HSS	
7/16	20	30,0	11,0	240 716 UNF	1
1/2	20	38,0	10,0	240 012 UNF	1
9/16	18	38,0	10,0	240 916 UNF	1
5/8	18	45,0	14,0	240 058 UNF	1
3/4	16	45,0	14,0	240 034 UNF	1
7/8	14	55,0	16,0	240 078 UNF	1
1"	12	55,0	16,0	240 010 UNF	1
1 1/8	12	65,0	18,0	240 118 UNF	1
1 1/4	12	65,0	18,0	240 114 UNF	1
1 3/8	12	65,0	18,0	240 138 UNF	1
1 1/2	12	75,0	20,0	240 112 UNF	1

### Hand tap sets HSS and HSSE-Co 5 in steel case

	HSS	HSSE Co 5
21- piece set of hand taps M DIN 352 one three-piece set each of M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12	245 001	245 001 E
22- piece set of hand taps M DIN 352 one three-piece set each of M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 1 tap wrench DIN 1814 size 1 1/2	245 002	245 002 E
29- piece set of hand taps DIN 352 one three-piece set each of M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 Type N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm + 1 tap wrench DIN 1814 size 1 1/2	245 003	245 003 E



### Hand tap sets HSS and HSSE-Co 5 in plastic case

	HSS	HSSE Co 5
21- piece set of hand taps M DIN 352 one three-piece set each of M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12	245 001 RO	245 001 ERO
28- piece set of hand taps DIN 352 one three-piece set each of M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 Type N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm	245 003 RO	245 003 ERO





## Thread-cutting sets HSS and HSSE-Co 5 in steel case

	HSS	HSSE Co 5
<p>31-piece set of DIY thread-cutting tools</p> <ul style="list-style-type: none"> <li>one three-piece set each of hand taps M DIN 352 M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12</li> <li>+ 7 dies Ø 25,0 mm ≈ DIN EN 22568 in each of the sizes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12</li> <li>+ 1 die stock 25,0 x 9,0 mm DIN 225</li> <li>+ 1 tap wrench, size 1½ DIN 1814</li> <li>+ 1 screwdriver</li> </ul>	245 010	245 010 E
<p>37-piece set of thread-cutting tools</p> <ul style="list-style-type: none"> <li>one three-piece set each of hand taps M DIN 352 M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12</li> <li>+ 7 dies M DIN EN 22568 in each of the sizes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12</li> <li>+ 5 die stocks DIN 225 in each of the sizes 20,0 x 5,0 mm - 20,0 x 7,0 mm - 25,0 x 9,0 mm - 30,0 x 11,0 mm - 38,0 x 14,0 mm</li> <li>+ 2 tap wrenches, size 1 and size 2 DIN 1814</li> <li>+ 1 screwdriver + 1 screw-pitch gauge</li> </ul>	245 020	245 020 E
<p>44-piece set of thread-cutting tools</p> <ul style="list-style-type: none"> <li>one three-piece set each of hand taps M DIN 352 M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12</li> <li>+ 7 twist drills DIN 338 type N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm</li> <li>+ 7 dies M DIN EN 22568 in each of the sizes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12</li> <li>+ 5 die stocks DIN 225 in each of the sizes 20,0 x 5,0 mm - 20,0 x 7,0 mm - 25,0 x 9,0 mm - 30,0 x 11,0 mm - 38,0 x 14,0 mm</li> <li>+ 2 tap wrenches, size 1 and size 2 DIN 1814</li> <li>+ 1 screwdriver + 1 screw-pitch gauge</li> </ul>	245 030	245 030 E
<p>54-piece set of thread-cutting tools</p> <ul style="list-style-type: none"> <li>one three-piece set each of hand taps M DIN 352 M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 - M 14 - M 16 - M 18 - M 20</li> <li>+ 11 dies M DIN EN 22568 in each of the sizes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 - M 14 - M 16 - M 18 - M 20</li> <li>+ 6 die stocks DIN 225 in each of the sizes 20,0 x 5,0 mm - 20,0 x 7,0 mm - 25,0 x 9,0 mm - 30,0 x 11,0 mm - 38,0 x 14,0 mm - 45,0 x 18,0 mm</li> <li>+ 2 tap wrenches, size 1 and size 3 DIN 1814</li> <li>+ 1 screwdriver</li> <li>+ 1 screw-pitch gauge</li> </ul>	245 040	245 040 E
<p>43-piece set of thread-cutting tools MF (metric fine)</p> <ul style="list-style-type: none"> <li>one two-piece set each of hand taps MF DIN 2181 MF 3 x 0,35 - MF 4 x 0,35 - MF 5 x 0,5 - MF 6 x 0,75 - MF 8 x 0,75 - MF 10 x 1,0 - MF 12 x 1,5 - MF 14 x 1,5 - MF 16 x 1,5 - MF 18 x 1,5 - MF 20 x 1,5 mm</li> <li>+ 11 dies MF DIN 22568 in each of the sizes MF 3 - MF 4 - MF 5 - MF 6 - MF 8 - MF 10 - MF 12 - MF 14 - MF 16 - MF 18 - MF 20</li> <li>+ 6 die stocks DIN 225 in each of the sizes 20,0 x 5,0 mm - 20,0 x 7,0 mm - 25,0 x 9,0 mm - 30,0 x 11,0 mm - 38,0 x 10,0 mm - 45,0 x 14,0 mm</li> <li>+ 2 tap wrenches, size 1 and 3 DIN 1814</li> <li>+ 1 screwdriver</li> <li>+ 1 screw-pitch gauge</li> </ul>	245 041	—



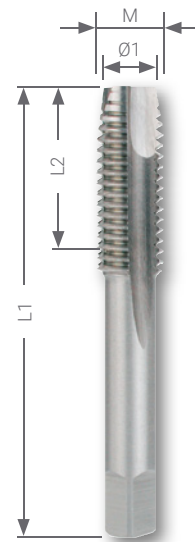


## Single-cut taps M ≈ DIN 352 HSS and HSSE-Co 5 ground

Thread: metric, DIN ISO 13  
Flanks: relief-ground

The single-cut tap HSS for through threads in unalloyed and low-alloyed steels up to a strength of 800 N/mm<sup>2</sup>. The single-cut tap HSSE-Co 5 for through threads in unalloyed and alloyed steels up to a strength of 1000 N/mm<sup>2</sup>, malleable cast iron and non-ferrous metals. The thread can be cut in one operation by hand or machine.

Packing unit: individual plastic pack



<b>HSS</b>		<b>800</b> N/mm <sup>2</sup>		231 ...		
<b>HSSE Co 5</b>		<b>1000</b> N/mm <sup>2</sup>		231 ... E		

Steel (N/mm <sup>2</sup> ) < 800		
Steel (N/mm <sup>2</sup> ) < 1000		
Rust-resistant steel		
Aluminium		

Brass		
Bronze		
Plastics		
Cast iron		
Titanium alloyed		

Nominal thread size M	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	<b>HSS</b>	<b>HSSE Co 5</b>	
M 3	0,50	2,50	40,0	10,0	231 030	231 030 E	1
M 4	0,70	3,30	45,0	12,0	231 040	231 040 E	1
M 5	0,80	4,20	50,0	13,0	231 050	231 050 E	1
M 6	1,00	5,00	50,0	15,0	231 060	231 060 E	1
M 8	1,25	6,80	56,0	18,0	231 080	231 080 E	1
M 9	1,25	7,80	67,0	22,0	231 090	-	1
M 10	1,50	8,50	70,0	24,0	231 100	231 100 E	1
M 12	1,75	10,20	75,0	29,0	231 120	231 120 E	1

## Single-cut tap set HSS in steel case

15-piece set of single-cut taps 7 single-cut taps ≈ DIN 352 HSS, ground M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 Type N HSS, ground Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm + 1 tap wrench, size 1 1/2 DIN 1814	245 004



## Single-cut tap set HSS in plastic case

15-piece set of single-cut taps 7 single-cut taps ≈ DIN 352 HSS, ground M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 Type N HSS, ground Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm + 1 tap wrench, size 1 1/2 DIN 1814	245 004 RO





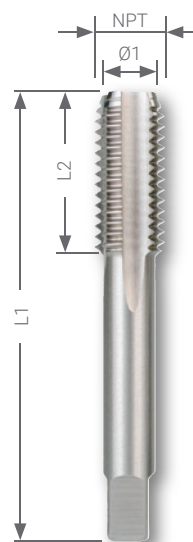


## Single-cut taps NPT HSS, ground

Thread: American conical pipe thread to ANSI B.1.20.1  
 Flanks: relief-ground  
 Cone: 1:16

For through threads in unalloyed or low-alloyed steels up to 800 N/mm<sup>2</sup> strength, malleable cast iron and non-ferrous metals. The thread can be cut in one operation by hand or machine.

Note: pilot drill cylindrically



Packing unit: individual plastic pack

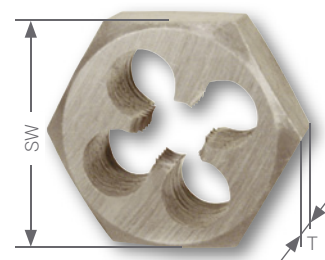
Steel (N/mm <sup>2</sup> ) < 800	■	Brass	■
Steel (N/mm <sup>2</sup> ) < 1000		Bronze	□
		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	

Nominal thread size NPT	Threads per inch	Thread core hole Ø1 mm	Cutting depth mm	L1 mm	L2 mm	HSS	
1/16	27,0	6,00	12,00	65,0	19,0	231 116 NPT	1
1/8	27,0	8,25	12,00	65,0	19,0	231 018 NPT	1
1/4	18,0	10,70	17,50	70,0	25,0	231 014 NPT	1
3/8	18,0	14,10	17,50	75,0	26,0	231 038 NPT	1
1/2	14,0	17,40	22,90	80,0	31,0	231 012 NPT	1
3/4	14,0	22,60	23,00	100,0	33,0	231 034 NPT	1
1"	11,5	28,50	27,40	110,0	38,0	231 010 NPT	1
1 1/4"	11,5	37,00	28,10	125,0	41,0	231 114 NPT	1
1 1/2"	11,5	43,50	28,40	140,0	42,0	231 112 NPT	1
2"	11,5	55,00	28,40	160,0	44,0	231 020 NPT	1



## Hexagonal solid square bolt die M DIN 382 HSS ground

Thread: metric, DIN ISO 13



Packing unit: individual plastic pack

Nominal thread size M	Pitch mm	Outside Ø SW mm	Thickness T mm	HSS	
M 3	0,50	18,0	5,0	267 030	1
M 4	0,70	18,0	5,0	267 040	1
M 5	0,80	18,0	7,0	267 050	1
M 6	1,00	18,0	7,0	267 060	1
M 8	1,25	21,0	9,0	267 080	1
M 10	1,50	27,0	11,0	267 100	1
M 12	1,75	36,0	14,0	267 120	1
M 14	2,00	36,0	14,0	267 140	1

Nominal thread size M	Pitch mm	Outside Ø SW mm	Thickness T mm	HSS	
M 16	2,00	41,0	18,0	267 160	1
M 18	2,50	41,0	18,0	267 180	1
M 20	2,50	41,0	18,0	267 200	1
M 22	2,50	50,0	22,0	267 220	1
M 24	3,00	50,0	22,0	267 240	1
M 27	3,00	60,0	25,0	267 270	1
M 30	3,50	60,0	25,0	267 300	1

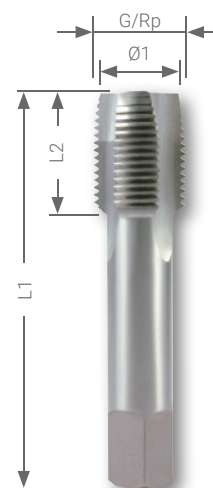


## Single-cut taps G ≈ DIN 5157 HSS, ground

Thread: DIN ISO 228 "G" (cylindrical pipe thread)  
 DIN 2999 "Rp" (Whitworth pipe thread)  
 Flanks: relief-ground

Packing unit: individual plastic pack

Steel (N/mm <sup>2</sup> ) < 800	■	Brass	■
Steel (N/mm <sup>2</sup> ) < 1000		Bronze	□
		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	



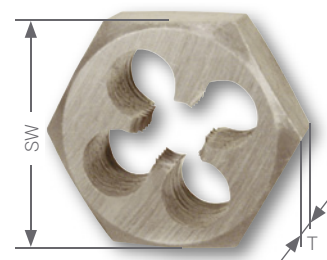
Nominal thread size G / Rp		Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
G 1/8	Rp 1/8	28	8,6	63,0	20,0	236 218	1
G 1/4	Rp 1/4	19	11,5	70,0	22,0	236 214	1
G 3/8	Rp 3/8	19	15,0	70,0	22,0	236 238	1
G 1/2	Rp 1/2	14	19,0	80,0	22,0	236 212	1
G 3/4	Rp 3/4	14	24,5	90,0	22,0	236 234	1
G 1"	Rp 1"	11	30,5	100,0	25,0	236 210	1



## Hexagonal solid square bolt die G DIN 382 HSS, ground

Thread: DIN ISO 228 "G" (cylindrical pipe thread)

Packing unit: individual plastic pack



Nominal thread size G	Threads per inch	Outside Ø SW mm	Thickness T mm	HSS	
G 1/8	28	27,0	11,0	267 618	1
G 1/4	19	36,0	10,0	267 614	1
G 3/8	19	41,0	14,0	267 638	1
G 1/2	14	41,0	14,0	267 612	1
G 3/4	14	50,0	16,0	267 634	1
G 1"	11	60,0	18,0	267 610	1

## Sanitary repair thread-cutting set HSS for cylindrical pipe thread in plastic case

13-piece set of sanitary repair thread-cutting tools 6 single-cut taps G/Rp ≈ DIN 5157 HSS, ground G/Rp 1/8" x 28 - G/Rp 1/4" x 19 - G/Rp 3/8" x 19 - G/Rp 1/2" x 14 - G/Rp 3/4" x 14 - G/Rp 1" x 11 + 6 hexagonal dies G DIN 382 HSS, ground G 1/8" x 28 - G 1/4" x 19 - G 3/8" x 19 - G 1/2" x 14 - G 3/4" x 14 - G 1" x 11 + 1 cutting spray, 50 ml	245 059	




## Extension sleeves DIN 377

As extension for hand thread-cutting tools.  
Inside and outside square of identical size.



Version: hardened and ground  
Shank: square as per DIN 10

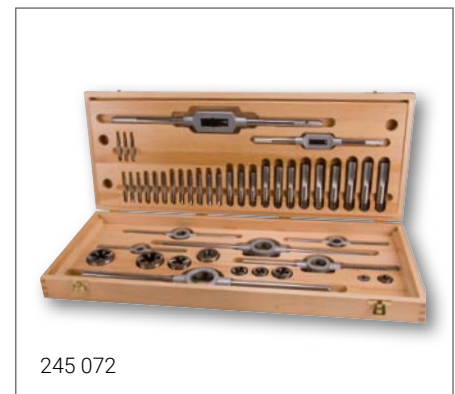
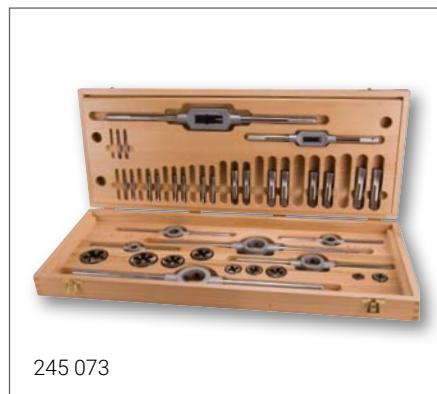
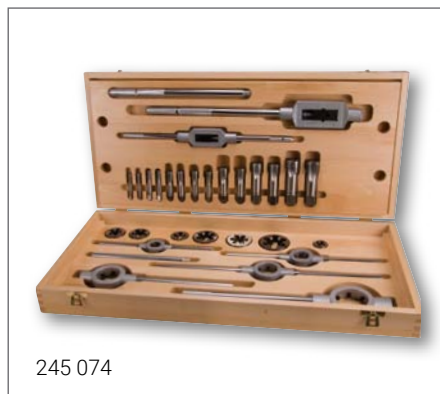
Packing unit: individual plastic pack

Square mm	Length mm	for hand tap size			G		
		M	Ww				
2,1	60,0	M 1 - M 2,6	1/16 - 3/32	—	241 021	1	
2,7	80,0	M 3	—	—	241 027	1	
3,4	95,0	M 4	5/32	—	241 034	1	
4,9	110,0	M 5 - M 8	7/32 - 5/16	—	241 049	1	
5,5	115,0	M 9 - M 10	3/8	1/8	241 055	1	
7,0	125,0	M 12	1/2	—	241 070	1	
9,0	135,0	M 13 - M 16	9/16 - 5/8	1/4	241 090	1	
11,0	150,0	M 18	11/16 - 3/4	—	241 110	1	
12,0	155,0	M 20	13/16	1/2	241 120	1	
14,5	174,0	M 22 - M 24	7/8 - 15/16	5/8	241 145	1	
16,0	185,0	M 27 - M 28	1	3/4	241 160	1	
18,0	195,0	M 30 - M 32	1 1/8	7/8	241 180	1	



## Thread-cutting sets HSS in wood case

	 
28- piece set of thread-cutting tools one two-piece set each of hand taps G DIN 5157 – 1/8 - 1/4 - 3/8 - 1/2 - 5/8 - 3/4 - 1" + 7 dies G DIN EN 24231 in each of the sizes - 1/8 - 1/4 - 3/8 - 1/2 - 5/8 - 3/4 - 1" + 5 die stocks DIN 225 in each of the sizes 30,0 x 11,0 mm - 38,0 x 10,0 mm - 45,0 x 14,0 mm - 55,0 x 16,0 mm - 65,0 x 18,0 mm + 2 tap wrenches, size 3 and size 5 DIN 1814	245 074
35- piece set of thread-cutting tools one two-piece set each of hand taps UNF ≈ DIN 2181 – 1/4 - 5/16 - 3/8 - 7/16 - 1/2 - 5/8 - 3/4 - 7/8 - 1" + 9 dies UNF ≈ DIN EN 22568 in each of the sizes - 1/4 - 5/16 - 3/8 - 7/16 - 1/2 - 5/8 - 3/4 - 7/8 - 1" + 6 die stocks DIN 225 in each of the sizes 20,0 x 7,0 - 25,0 x 9,0 - 30,0 x 11,0 - 38,0 x 10,0 - 45,0 x 14,0 - 55,0 x 16,0 mm + 2 tap wrenches, size 2 and size 4 DIN 1814	245 073
44- piece set of thread-cutting tools one three-piece set each of hand taps UNC ≈ DIN 352 – 1/4 - 5/16 - 3/8 - 7/16 - 1/2 - 5/8 - 3/4 - 7/8 - 1" + 9 dies UNC ≈ DIN EN 22568 in each of the sizes - 1/4 - 5/16 - 3/8 - 7/16 - 1/2 - 5/8 - 3/4 - 7/8 - 1" + 6 die stocks DIN 225 in each of the sizes 20,0 x 7,0 mm - 25,0 x 9,0 mm - 30,0 x 11,0 mm - 38,0 x 10,0 mm - 45,0 x 14,0 mm - 55,0 x 16,0 mm + 2 tap wrenches, size 2 and size 4 DIN 1814	245 072



# Die stocks as per DIN 225

For closed and slotted taps as per DIN EN 24231.  
 With steel handles one of which can be unscrewed and five screws for clamping the tap.

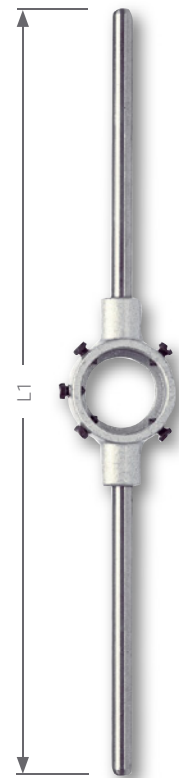
Version: die-cast zinc housing

Packing unit: individual plastic pack

Size	Thickness mm	L1 mm	for tap size				
			M + MF	Ww	G		
16	5,0	160,0	M 1 - M 2,6	1/16 - 3/32	—	242 165	1
20	5,0	175,0	M 3 - M 4	1/8 - 5/32	—	242 205	1
20	7,0	175,0	M 4,5 - M 6	3/16 - 1/4	—	242 207	1
25	9,0	210,0	M 7 - M 9	5/16	1/16	242 259	1
30	11,0	260,0	M 10 - M 11	3/8 - 7/16	1/8	242 3011	1
38	14,0	310,0	M 12 - M 14	1/2 - 9/16	—	242 3814	1
45	18,0	440,0	M 16 - M 20	5/8 - 3/4	—	242 4518	1
55	22,0	495,0	M 22 - M 24	7/8 - 1	—	242 5522	1
65	25,0	630,0	M 27 - M 36	1 1/8 - 1 3/8	—	242 6525	1
75	30,0	700,0	M 38 - M 42	1 1/2 - 1 5/8	—	242 7530	1
90	36,0	900,0	M 45 - M 52	1 3/4 - 2	—	242 9036	1
105	36,0	930,0	M 54 - M 63	2 1/4 - 2 3/4	—	242 10536	1

38	10,0	310,0	MF 12 - MF 14	—	1/4	242 3810	1
45	14,0	440,0	MF 16 - MF 20	—	3/8 - 1/2	242 4514	1
55	16,0	495,0	MF 22 - MF 24	—	5/8 - 3/4	242 5516	1
65	18,0	630,0	MF 27 - MF 36	—	7/8 - 1	242 6518	1
75	20,0	700,0	MF 38 - MF 42	—	1 1/8 - 1 1/4	242 7520	1
90	22,0	900,0	MF 45 - MF 52	—	1 3/8 - 1 5/8	242 9022	1
105	22,0	930,0	MF 54 - MF 63	—	1 3/4 - 2	242 10522	1



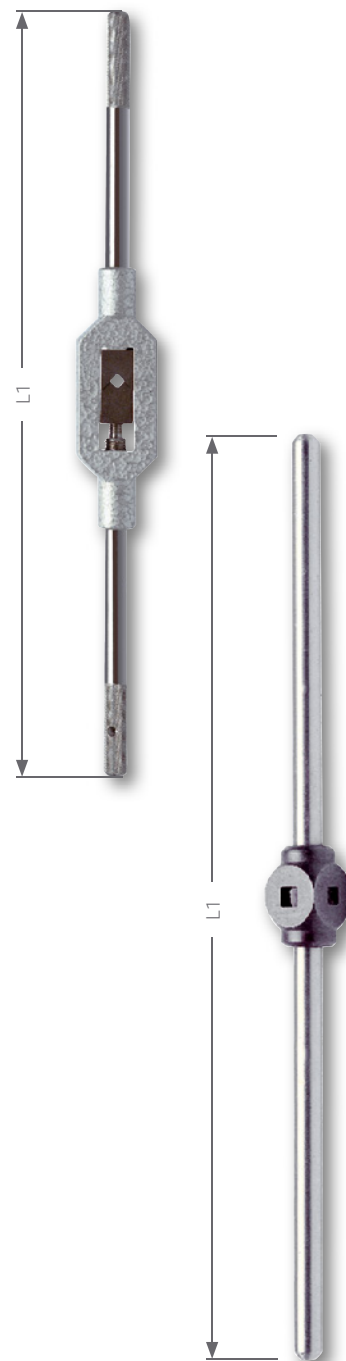
## Adjustable tap wrenches as per DIN 1814

Ideal for thread-cutting in inaccessible places.  
 With two-jaw chuck for tensioning square shanks.  
 With steel handles one of which can be unscrewed.

Version: die-cast zinc housing  
 Chuck jaws: hardened

Packing unit: individual plastic pack

Size	L1 mm	M	for hand tape size				
			Ww	G			
0	125,0	M 1 - M 8	1/16 - 5/16	—	241 100	1	
1	175,0	M 1 - M 10	1/8 - 3/8	—	241 101	1	
1 1/2	175,0	M 1 - M 12	1/8 - 1/2	1/8	241 112	1	
2	265,0	M 4 - M 12	3/16 - 5/8	1/8 - 3/8	241 102	1	
3	370,0	M 5 - M 20	1/4 - 3/4	1/8 - 1/2	241 103	1	
4	480,0	M 11 - M 27	1/2 - 1	1/8 - 3/4	241 104	1	
5	700,0	M 13 - M 32	5/8 - 1 1/4	1/4 - 1	241 105	1	
6	1000,0	M 19 - M 38	3/4 - 1 1/2	1/4 - 1 1/4	241 106	1	
7	1250,0	M 25 - M 52	7/8 - 2	5/8 - 2 1/4	241 107	1	



## Ball tap wrenches

Ideal for rapid fitting of taps.

Version: die-cast zinc housing  
 Shank: square as per DIN 10

Packing unit: individual plastic pack

Size	L1 mm	M	for hand tape size				
			Ww	G			
0	200,0	M 1 - M 4	1/16 - 5/32	—	241 200	1	
1	200,0	M 3,5 - M 8	5/32 - 5/16	—	241 201	1	
2	240,0	M 4 - M 10	5/32 - 3/8	—	241 202	1	
3	300,0	M 5 - M 12	7/32 - 1/2	—	241 203	1	
4	340,0	M 9 - M 16	3/8 - 5/8	—	241 204	1	
5	450,0	M 12 - M 20	1/2 - 13/16	—	241 205	1	
6	650,0	M 18 - M 27	11/16 - 1	—	241 206	1	

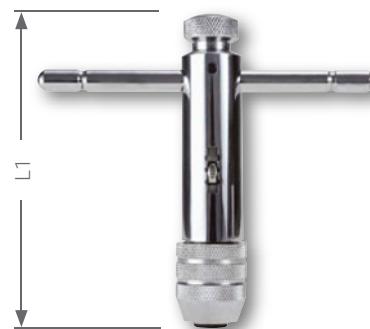
## Tap wrench with ratchet

Ideal for thread-cutting in inaccessible places.  
 With two-jaw chuck for tensioning square shanks.

Version: adjustable left, right, fixed  
 Shank: sliding cross-handle with grooves at both ends  
 Surface: chromium-plated

Packing unit: individual plastic pack

Size	L1 mm	M	for hand tape size				
			Ww	G			
1	85,0	M 3 - M 10	1/8 - 3/8	—	241 001	1	
2	100,0	M 5 - M 12	7/32 - 1/2	1/8	241 002	1	
10	250,0	M 3 - M 10	1/8 - 3/8	—	241 010	1	
20	300,0	M 5 - M 12	7/32 - 1/2	1/8	241 020	1	



## Thread-cutting tools

---

To cut an internal thread, at first a core hole is drilled, whose diameter is approximately smaller by the pitch of the thread than the nominal diameter of the thread.

Subsequently tapered counter bores are placed, which match the size of the thread diameter plus 10% of it. This is done to get a better insertion into the bore hole and to prevent the first and the last thread from being pushed out when beginning to cut.

Then the taps are screwed in and out in order. The final core hole diameter is created through the additional plastic deformation of the thread flanks.

To increase the tool life and for optimum surface qualities, RUKO cutting oils or other cooling lubricants for the lubrication are used, as it minimises the friction between the chip and the cutting of the tap and thereby also reduce the necessary torque.

In hand taps, after two rotations of the drill, 1/3 rotation is rotated back to break the chip. In this way the stressing on the drill drops and it doesn't break so quickly.





# Overview of symbols



High-speed steel



High-speed steel with 5% Cobalt content, ground



left hand cutting



right hand cutting



Blind hole



metric, DIN ISO 13



metric fine, DIN ISO 13



British Standard Whitworth thread according to BS 84



British Standard Fine thread according to BS 84



DIN ISO 228 "G" (cylindrical pipe thread)



bright surface



Black surface



Type B, 4 - 5 threads with progressive tap



Type C / 35° right-hand spiral flutes, 2 - 3 threads



Type D, 4 - 6 threads



Interrupted threads for machining soft materials



Through hole



American UNC coarse thread ANSI / ASME B 1.1



American UNF fine thread ANSI / ASME B 1.1



American conical pipe thread to ANSI B.1.20.1



DIN 2999 "Rp" Whitworth pipe thread



DIN 40 430 steel conduit thread



TiAlN coating



TiN coating



TiCN coating



Thread tolerance for American threads for internal threads



Thread tolerance for American threads for external threads



Thread tolerance for metric and metric fine threads according to DIN ISO 13 for internal threads



Thread tolerance for metric and metric fine threads according to DIN ISO 13 for external threads



Ø tolerance: work's specification



Machine taps with reinforced shank



Machine taps with overflow shank



Tenacity classes



Thread angle



Coloured ring mark



Bit shank: 6,35 mm x 27,0 mm



Shank: square as per DIN 10

Parts and applications overview:



Material	Surface	DIN	Shape	Left hand cutting / right hand cutting	Thread	Tenacity classes	Blind hole / Through hole	Nominal thread size	Article no.	Page
HSS		DIN 371	B		M	800 N/mm <sup>2</sup>		M 2 - M 10	232 020 - 232 100	182
HSSE Co 5		DIN 371	B		M	1000 N/mm <sup>2</sup>		M 2 - M 10	232 020 E - 232 100 E	182
HSSE Co 5		DIN 371	B		M	1000 N/mm <sup>2</sup>		M 2 - M 10	232 020 VA - 232 100 VA	182
HSS	TiN	DIN 371	B		M	900 N/mm <sup>2</sup>		M 2 - M 10	232 020 T - 232 100 T	182
HSSE Co 5	TiAlN	DIN 371	B		M	1200 N/mm <sup>2</sup>		M 2 - M 10	232 020 EF - 232 100 EF	182
HSS		DIN 371	C		M	800 N/mm <sup>2</sup>		M 2 - M 10	234 020 - 234 100	183
HSSE Co 5		DIN 371	C		M	1000 N/mm <sup>2</sup>		M 2 - M 10	234 020 E - 234 100 E	183
HSSE Co 5		DIN 371	C		M	1000 N/mm <sup>2</sup>		M 2 - M 10	234 020 VA - 234 100 VA	183
HSS	TiN	DIN 371	C		M	900 N/mm <sup>2</sup>		M 2 - M 10	234 020 T - 234 100 T	183
HSSE Co 5	TiAlN	DIN 371	C		M	1200 N/mm <sup>2</sup>		M 2 - M 10	234 020 EF - 234 100 EF	183
HSS		DIN 376	B		M	800 N/mm <sup>2</sup>		M 12 - M 30	232 120 - 232 300	184
HSSE Co 5		DIN 376	B		M	1000 N/mm <sup>2</sup>		M 3 - M 30	232 031 E - 232 300 E	184
HSSE Co 5		DIN 376	B		M	1000 N/mm <sup>2</sup>		M 3 - M 30	232 031 VA - 232 300 VA	184
HSS	TiN	DIN 376	B		M	900 N/mm <sup>2</sup>		M 12 - M 30	232 120 T - 232 300 T	184
HSSE Co 5	TiAlN	DIN 376	B		M	1200 N/mm <sup>2</sup>		M 3 - M 30	232 031 EF - 232 300 EF	184
HSS		DIN 376	C		M	800 N/mm <sup>2</sup>		M 12 - M 30	233 120 - 233 300	185
HSSE Co 5		DIN 376	C		M	1000 N/mm <sup>2</sup>		M 3 - M 30	233 030 E - 233 300 E	185
HSSE Co 5		DIN 376	C		M	1000 N/mm <sup>2</sup>		M 3 - M 30	233 030 VA - 233 300 VA	185
HSS	TiN	DIN 376	C		M	900 N/mm <sup>2</sup>		M 12 - M 30	233 120 T - 233 300 T	185
HSSE Co 5	TiAlN	DIN 376	C		M	1200 N/mm <sup>2</sup>		M 3 - M 30	233 030 EF - 233 300 EF	185
HSS		DIN 371	B <sub>AZ</sub>		M	800 N/mm <sup>2</sup>		M 3 - M 10	272 030 - 272 100	188
HSS		DIN 376	B <sub>AZ</sub>		M	800 N/mm <sup>2</sup>		M 12 - M 24	272 120 - 272 240	188



Steel (N/mm <sup>2</sup> ) < 800	Steel (N/mm <sup>2</sup> ) < 1000	Steel (N/mm <sup>2</sup> ) < 1200	Stainless steel	Aluminium für / for ALU	Brass Zn Cu	Bronze Cu Sn	Plastics Plastic	Cast iron	Titanium alloyed Ti
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Parts and applications overview:



Material	Surface	DIN	Shape	Left hand cutting / right hand cutting	Thread	Tenacity classes	Blind hole / Through hole	Nominal thread size	Article no.	Page
HSSE Co 5	TiCN	DIN 371	B		M	800 N/mm²		M 3 - M 10	273 030 ETC - 273 100 ETC	189
HSSE Co 5	TiCN	DIN 376	C		M	1000 N/mm²		M 12 - M 24	273 120 ETC - 273 240 ETC	189
HSSE Co 5		DIN 5156	B		G (BSP)	1000 N/mm²		G 1/8 - G 2"	262 018 E - 262 020 E	190
HSSE Co 5		DIN 5156	C		G (BSP)	1000 N/mm²		G 1/8 - G 2"	263 018 E - 263 020 E	190
HSSE Co 5		DIN 374	B		MF	1000 N/mm²		MF 4 - MF 30	260 041 E - 260 302 E	192
HSSE Co 5		DIN 374	C		MF	1000 N/mm²		MF 4 - MF 30	261 041 E - 261 302 E	193
HSSE Co 5		DIN 2182	B		UNC	1000 N/mm²		Nr. 4 - 3/8	265 040 UNC - 265 038 UNC	194
HSSE Co 5		DIN 2183	B		UNC	1000 N/mm²		7/16 - 1"	265 716 UNC - 265 010 UNC	194
HSSE Co 5		DIN 2182	C		UNC	1000 N/mm²		Nr. 4 - 3/8	266 040 UNC - 266 038 UNC	195
HSSE Co 5		DIN 2183	C		UNC	1000 N/mm²		7/16 - 1"	266 716 UNC - 266 010 UNC	195
HSSE Co 5		DIN 2182	B		UNF	1000 N/mm²		Nr. 4 - 3/8	265 040 UNF - 265 038 UNF	196
HSSE Co 5		DIN 2183	B		UNF	1000 N/mm²		7/16 - 1"	265 716 UNF - 265 010 UNF	196
HSSE Co 5		DIN 2182	C		UNF	1200 N/mm²		Nr. 4 - 3/8	266 040 UNF - 266 038 UNF	197
HSSE Co 5		DIN 2183	C		UNF	1000 N/mm²		7/16 - 1"	266 716 UNF - 266 010 UNF	197
HSS		DIN 40430	B		PG	800 N/mm²		PG 7 - PG 48	264 007 - 264 048	198
HSS		DIN 357			M	800 N/mm²		M 3 - M 24	243 030 - 243 240	198
HSSE Co 5		DIN 2174	D		M	1000 N/mm²		M 3 - M 12	271 003 N - 271 012 N	199
HSSE Co 5	TiAIN	DIN 2174	D		M	1200 N/mm²		M 3 - M 12	271 003 F - 271 012 F	199
HSS					M	600 N/mm²		M 3 - M 10	270 014 - 270 019	200 - 201
HSS	TiN				M	900 N/mm²		M 3 - M 10	270 014 T - 270 019 T	200 - 201
HSS					M	600 N/mm²		M 3 - M 10	R 270 014 - R 270 019	200 - 201
HSS	TiN				M	900 N/mm²		M 3 - M 10	R 270 014 T - R 270 019 T	200 - 201

Steel (N/mm <sup>2</sup> ) < 800	Steel (N/mm <sup>2</sup> ) < 1000	Steel (N/mm <sup>2</sup> ) < 1200	Stainless steel	Aluminium für / for ALU	Brass Zn	Bronze Cu Sn	Plastics Plastic	Cast iron	Titanium alloyed Ti
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## HSS

The machine tap consists of heavy-duty high-speed steel. For through threads and bottoming threads in unalloyed steels up to a strength of 800 N/mm<sup>2</sup>, malleable. The thread is cut in one operation.

High speed tool steel, best known as 'high speed steel', refers to a group of alloyed tool steels with up to 2,06% carbon content and up to 30% proportion of alloying elements such as tungsten, molybdenum, vanadium, cobalt, nickel and titanium. HSS materials are characterised by great hardness, wear resistance and heat resistance up to 600° C. The HSS tools are less sensitive to shocks and vibrations, which sometimes quickly lead to breaks in the harder cutting materials.



## HSSE-Co 5

The machine tap consists of cobalt alloyed heavy-duty high-speed steel. Its high heat resistance means a longer tool life. For through threads and bottoming threads in unalloyed and alloyed steels up to a strength of 1000 N/mm<sup>2</sup>, malleable cast iron and non-ferrous metals. The thread is cut in one operation.

Like high speed steel with cobalt alloy. This heat-resistant material is used for processing materials with high strength and in long cutting channels with correspondingly strong heating. The cobalt content of 5% provides a higher heat resistance and higher stressing capacity.



## HSSE-Co 5 VAP for stainless steel

The machine tap consists of cobalt alloyed and vaporised heavy-duty high-speed steel. For through threads and bottoming threads in unalloyed and alloyed steels up to a strength of 1000 N/mm<sup>2</sup>, stainless steel. The thread is cut in one operation.

By "vaporisation" is meant the evaporation of a non-metallic oxide film. Vaporisation acts as a separating layer and reduces the occurrence of cold welding. In cold welding there are workpiece chips that build up on the flanks of the tap and damage the finished thread. Consequences of cold welding are torn and dirty flanks. VAP improves the adhesion of lubricants to the tool surface.





### HSS-TiN

The machine tap consists of heavy-duty high-speed steel with a titanium nitride coating. For universal use on a wide range of materials due to layer of hard material! For through threads and bottoming threads in unalloyed and alloyed steels up to a strength of 900 N/mm<sup>2</sup>, stainless steel. The thread is cut in one operation.

Note: cutting speeds from 10 m/min. By the TiN wear-resistant coating, the surface hardness increases to about 2500 HV. Titanium nitride is a chemical compound of the two elements, titanium and nitrogen. TiN is a metallic hard material with a typical golden yellow colour.

Advantages: Increased hardness, low friction coefficient, more service life. Cooling is not necessary, but recommended.



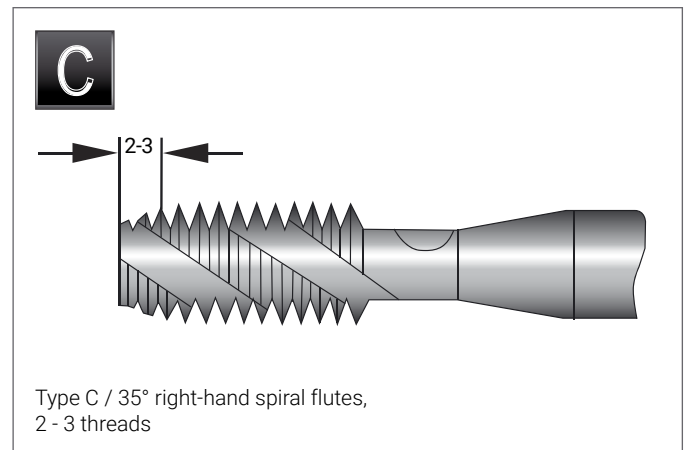
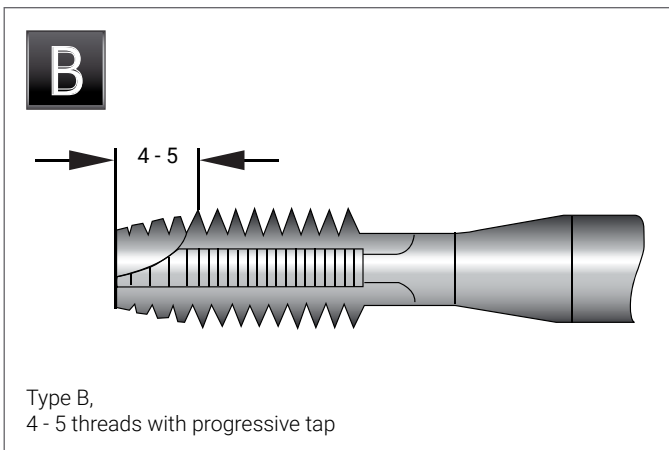
### HSSE-Co 5 TiAlN

The machine tap consists of heavy-duty high-speed steel. For through-hole threads and blind-hole threads, in unalloyed, low alloy and alloyed steels up to 1200 N/mm<sup>2</sup> strength and cast. The thread is cut in one operation.

By the TiAlN wear-resistant coating, the surface hardness increases to about 3500 HV. Titanium aluminium nitride is a chemical compound of three elements titanium, aluminium and nitrogen. TiAlN is a metallic hard material with a typical black/violet colour.

Advantages: The TiAlN coating enables the dry machining tools to cut without a cooling. Increased hardness, very low friction coefficient, optimal service life.

### Technical data:





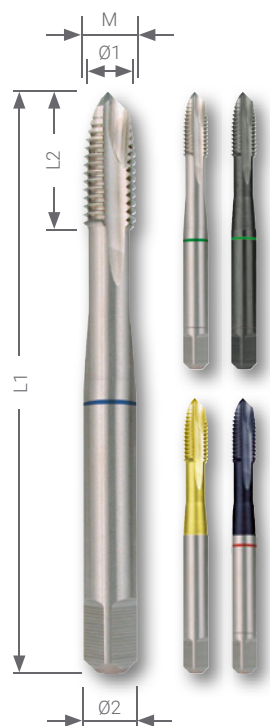
# Machine taps M DIN 371 HSS and HSSE-Co 5, ground

**Machine taps with reinforced shank for through threads.**

Chamfer: type B, 4 - 5 threads with progressive tap  
Thread: metric, DIN ISO 13  
Flanks: relief-ground

Packing unit: individual plastic pack

To increase the service life - reduce speed!  
Cooling while countersinking!



Steel (N/mm <sup>2</sup> ) < 800	■	■	■	■	■
Steel (N/mm <sup>2</sup> ) < 1000		■	■	□	■
Steel (N/mm <sup>2</sup> ) < 1200					■
Rust-resistant steel		■	■	□	■
Aluminium	□	□	□		□

Brass	■	■	■	■	■
Bronze	□	□	□	□	■
Plastics	□	□	□	□	□
Cast iron	□	□	□	□	□
Titanium alloyed					□

Nominal thread size	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm
M 2	0,40	1,60	45,0	8,0	2,8
M 2,5	0,45	2,05	50,0	9,0	2,8
M 3	0,50	2,50	56,0	9,0	3,5
M 4	0,70	3,30	63,0	12,0	4,5
M 5	0,80	4,20	70,0	13,0	6,0
M 6	1,00	5,00	80,0	15,0	6,0
M 8	1,25	6,80	90,0	18,0	8,0
M 10	1,50	8,50	100,0	20,0	10,0

Nominal thread size													
M 2		232 020		232 020 E		232 020 VA		232 020 T		232 020 EF		1	
M 2,5		232 025		232 025 E		232 025 VA		232 025 T		232 025 EF		1	
M 3		232 030		232 030 E		232 030 VA		232 030 T		232 030 EF		1	
M 4		232 040		232 040 E		232 040 VA		232 040 T		232 040 EF		1	
M 5		232 050		232 050 E		232 050 VA		232 050 T		232 050 EF		1	
M 6		232 060		232 060 E		232 060 VA		232 060 T		232 060 EF		1	
M 8		232 080		232 080 E		232 080 VA		232 080 T		232 080 EF		1	
M 10		232 100		232 100 E		232 100 VA		232 100 T		232 100 EF		1	



# Machine taps M DIN 371 HSS and HSSE-Co 5, ground

**Machine taps with reinforced shank  
and 35° right-hand spiral flutes for bottoming.**

Chamfer: type C / 35° right-hand spiral flutes, 2 - 3 threads  
Thread: metric, DIN ISO 13  
Flanks: relief-ground

Packing unit: individual plastic pack

To increase the service life - reduce speed!  
Cooling while countersinking!



Steel (N/mm <sup>2</sup> ) < 800	■	■	■	■	■
Steel (N/mm <sup>2</sup> ) < 1000		■	■	□	■
Steel (N/mm <sup>2</sup> ) < 1200					■
Rust-resistant steel		■	■	□	■
Aluminium	□	□	□		□

Brass	■	■	■	■	■
Bronze	□	□	□	□	■
Plastics	□	□	□	□	□
Cast iron	□	□	□	□	□
Titanium alloyed					□

Nominal thread size	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm
M 2	0,40	1,60	45,0	6,0	2,8
M 2,5	0,45	2,05	50,0	7,5	2,8
M 3	0,50	2,50	56,0	5,0	3,5
M 4	0,70	3,30	63,0	7,0	4,5
M 5	0,80	4,20	70,0	8,0	6,0
M 6	1,00	5,00	80,0	10,0	6,0
M 8	1,25	6,80	90,0	13,0	8,0
M 10	1,50	8,50	100,0	15,0	10,0

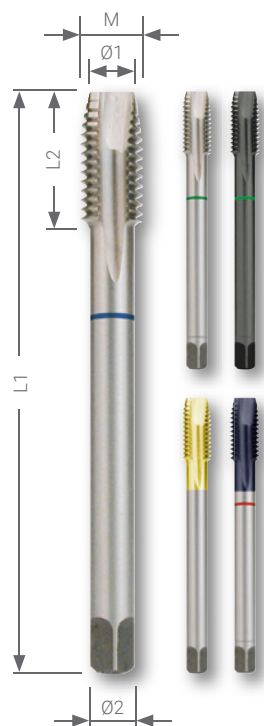
Nominal thread size						
M 2	234 020	234 020 E	234 020 VA	234 020 T	234 020 EF	1
M 2,5	234 025	234 025 E	234 025 VA	234 025 T	234 025 EF	1
M 3	234 030	234 030 E	234 030 VA	234 030 T	234 030 EF	1
M 4	234 040	234 040 E	234 040 VA	234 040 T	234 040 EF	1
M 5	234 050	234 050 E	234 050 VA	234 050 T	234 050 EF	1
M 6	234 060	234 060 E	234 060 VA	234 060 T	234 060 EF	1
M 8	234 080	234 080 E	234 080 VA	234 080 T	234 080 EF	1
M 10	234 100	234 100 E	234 100 VA	234 100 T	234 100 EF	1



# Machine taps M DIN 376 HSS and HSSE-Co 5, ground

Machine taps with overflow shank for through threads.

Chamfer: type B, 4 - 5 threads with progressive tap  
Thread: metric, DIN ISO 13  
Flanks: relief-ground



Packing unit: individual plastic pack

Steel (N/mm <sup>2</sup> ) < 800	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1200	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Aluminium	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Brass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bronze	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Plastics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cast iron	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Nominal thread size	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm
M 3	0,50	2,50	56,0	9,0	2,2
M 4	0,70	3,30	63,0	12,0	2,8
M 5	0,80	4,20	70,0	13,0	3,5
M 6	1,00	5,00	80,0	15,0	4,5
M 8	1,25	6,80	90,0	18,0	6,0
M 10	1,50	8,50	100,0	20,0	7,0
M 12	1,75	10,20	110,0	23,0	9,0
M 14	2,00	12,00	110,0	25,0	11,0
M 16	2,00	14,00	110,0	25,0	12,0
M 18	2,50	15,50	125,0	30,0	14,0
M 20	2,50	17,50	140,0	30,0	16,0
M 22	2,50	19,50	140,0	30,0	18,0
M 24	3,00	21,00	160,0	36,0	18,0
M 27	3,00	24,00	160,0	36,0	20,0
M 30	3,50	26,50	180,0	40,0	22,0

Nominal thread size	HSS	800 N/mm <sup>2</sup>	HSSE Co 5	1000 N/mm <sup>2</sup>	HSSE Co 5	1000 N/mm <sup>2</sup>	HSS	TiN	900 N/mm <sup>2</sup>	HSSE Co 5	TiAlN	1200 N/mm <sup>2</sup>	
M 3	—	—	232 031 E	232 031 VA	—	—	—	—	—	232 031 EF	—	—	1
M 4	—	—	232 041 E	232 041 VA	—	—	—	—	—	232 041 EF	—	—	1
M 5	—	—	232 051 E	232 051 VA	—	—	—	—	—	232 051 EF	—	—	1
M 6	—	—	232 061 E	232 061 VA	—	—	—	—	—	232 061 EF	—	—	1
M 8	—	—	232 081 E	232 081 VA	—	—	—	—	—	232 081 EF	—	—	1
M 10	—	—	232 101 E	232 101 VA	—	—	—	—	—	232 101 EF	—	—	1
M 12	232 120	—	232 120 E	232 120 VA	—	—	232 120 T	—	—	232 120 EF	—	—	1
M 14	232 140	—	232 140 E	232 140 VA	—	—	232 140 T	—	—	232 140 EF	—	—	1
M 16	232 160	—	232 160 E	232 160 VA	—	—	232 160 T	—	—	232 160 EF	—	—	1
M 18	232 180	—	232 180 E	232 180 VA	—	—	232 180 T	—	—	232 180 EF	—	—	1
M 20	232 200	—	232 200 E	232 200 VA	—	—	232 200 T	—	—	232 200 EF	—	—	1
M 22	232 220	—	232 220 E	232 220 VA	—	—	232 220 T	—	—	232 220 EF	—	—	1
M 24	232 240	—	232 240 E	232 240 VA	—	—	232 240 T	—	—	232 240 EF	—	—	1
M 27	232 270	—	232 270 E	232 270 VA	—	—	232 270 T	—	—	232 270 EF	—	—	1
M 30	232 300	—	232 300 E	232 300 VA	—	—	232 300 T	—	—	232 300 EF	—	—	1





# Machine taps M DIN 376 HSS and HSSE-Co 5, ground

**Machine taps with overflow shank and 35° right-hand spiral flutes for bottoming.**

Chamfer: type C / 35° right-hand spiral flutes, 2 - 3 threads  
 Thread: metric, DIN ISO 13  
 Flanks: relief-ground



Packing unit: individual plastic pack

Steel (N/mm <sup>2</sup> ) < 800	■	■	■	■	■
Steel (N/mm <sup>2</sup> ) < 1000		■	■	□	■
Steel (N/mm <sup>2</sup> ) < 1200					■
Rust-resistant steel		■	■	□	■
Aluminium	□	□	□		□

Brass	■	■	■	■	■
Bronze	□	□	□	□	■
Plastics	□	□	□	□	□
Cast iron	□	□	□	□	□
Titanium alloyed					□

Nominal thread size	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm
M 3	0,50	2,50	56,0	5,0	2,2
M 4	0,70	3,30	63,0	7,0	2,8
M 5	0,80	4,20	70,0	8,0	3,5
M 6	1,00	5,00	80,0	10,0	4,5
M 8	1,25	6,80	90,0	13,0	6,0
M 10	1,50	8,50	100,0	15,0	7,0
M 12	1,75	10,20	110,0	18,0	9,0
M 14	2,00	12,00	110,0	20,0	11,0
M 16	2,00	14,00	110,0	20,0	12,0
M 18	2,50	15,50	125,0	25,0	14,0
M 20	2,50	17,50	140,0	25,0	16,0
M 22	2,50	19,50	140,0	25,0	18,0
M 24	3,00	21,00	160,0	30,0	18,0
M 27	3,00	24,00	160,0	30,0	20,0
M 30	3,50	26,50	180,0	35,0	22,0

Nominal thread size	HSS	800 N/mm <sup>2</sup>	HSSE Co 5	1000 N/mm <sup>2</sup>	HSSE Co 5	1000 N/mm <sup>2</sup>	HSS	TIN	900 N/mm <sup>2</sup>	HSSE Co 5	TITAN	1200 N/mm <sup>2</sup>	
M 3	—	—	233 030 E	233 030 VA	—	—	—	—	—	233 030 EF	—	—	1
M 4	—	—	233 040 E	233 040 VA	—	—	—	—	—	233 040 EF	—	—	1
M 5	—	—	233 050 E	233 050 VA	—	—	—	—	—	233 050 EF	—	—	1
M 6	—	—	233 060 E	233 060 VA	—	—	—	—	—	233 060 EF	—	—	1
M 8	—	—	233 080 E	233 080 VA	—	—	—	—	—	233 080 EF	—	—	1
M 10	—	—	233 100 E	233 100 VA	—	—	—	—	—	233 100 EF	—	—	1
M 12	233 120	—	233 120 E	233 120 VA	233 120 T	—	—	—	—	233 120 EF	—	—	1
M 14	233 140	—	233 140 E	233 140 VA	233 140 T	—	—	—	—	233 140 EF	—	—	1
M 16	233 160	—	233 160 E	233 160 VA	233 160 T	—	—	—	—	233 160 EF	—	—	1
M 18	233 180	—	233 180 E	233 180 VA	233 180 T	—	—	—	—	233 180 EF	—	—	1
M 20	233 200	—	233 200 E	233 200 VA	233 200 T	—	—	—	—	233 200 EF	—	—	1
M 22	233 220	—	233 220 E	233 220 VA	233 220 T	—	—	—	—	233 220 EF	—	—	1
M 24	233 240	—	233 240 E	233 240 VA	233 240 T	—	—	—	—	233 240 EF	—	—	1
M 27	233 270	—	233 270 E	233 270 VA	233 270 T	—	—	—	—	233 270 EF	—	—	1
M 30	233 300	—	233 300 E	233 300 VA	233 300 T	—	—	—	—	233 300 EF	—	—	1









## Machine tap sets HSS and HSSE-Co 5, in steel case

		HSS	HSSE Co 5	HSSE Co 5	HSS TIN	HSSE Co 5 TITAN
<b>B</b> 	7-piece set of machine taps M DIN 371 / 376 type B with progressive tap M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12	245 057	245 061	245 063	245 065	245 068
<b>C</b> 	7-piece set of machine taps M DIN 371 / 376 type C / 35° right-hand spiral flutes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12	245 058	245 062	245 064	245 066	245 069
<b>B</b> 	14-piece set of machine taps 7 machine taps DIN 371 / 376 type B with progressive tap M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 type N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm	245 048	245 051	—	—	—
<b>C</b> 	14-piece set of machine taps 7 machine taps DIN 371 / 376 type C / 35° right-hand spiral flutes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 type N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm	245 049	245 052	—	—	—
<b>B</b>  <b>C</b> 	21-piece set of machine taps 7 machine taps DIN 371 / 376 type B with progressive tap M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 machine taps DIN 371 / 376 type C / 35° right-hand spiral flutes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 Typ N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm	—	245 054	—	—	—





## Machine tap sets HSS in HSSE-Co 5, in plastic case

		HSS	HSSE Co 5	HSSE Co 5	HSS	TIN	HSSE Co 5	TITAIN
<b>B</b> 	7-piece set of machine taps M DIN 371 / 376 type B with progressive tap M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12	245 057 RO	245 061 RO	245 063 RO	245 065 RO			
<b>C</b> 	7-piece set of machine taps M DIN 371 / 376 type C / 35° right-hand spiral flutes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12	245 058 RO	245 062 RO	245 064 RO	245 066 RO			245069 RO
<b>B</b> 	14-piece set of machine taps 7 machine taps DIN 371 / 376 type B with progressive tap M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 type N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm	245 048 RO	245 051 RO	—	—			—
<b>C</b> 	14-piece set of machine taps 7 machine taps DIN 371 / 376 type C / 35° right-hand spiral flutes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 type N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm	245 049 RO	245 052 RO	—	—			—
<b>B</b>  <b>C</b> 	21-piece set of machine taps 7 machine taps DIN 371 / 376 type B with progressive tap M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 machine taps DIN 371 / 376 type C / 35° right-hand spiral flutes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 Typ N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm	—	—	—	—			—





## Machine taps M DIN 371/376 HSS, ground with interrupted threads

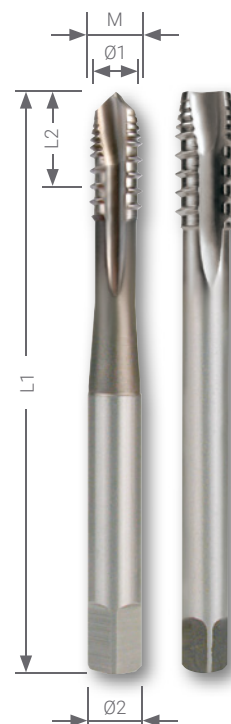
Chamfer: type B, 4 - 5 threads with progressive tap and interrupted threads

Thread: metric, DIN ISO 13

Flanks: relief-ground

Packing unit: individual plastic pack

	<input type="checkbox"/>		<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 800	<input type="checkbox"/>	Brass	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1000		Bronze	
Steel (N/mm <sup>2</sup> ) < 1200		Plastics	<input checked="" type="checkbox"/>
Rust-resistant steel		Cast iron	
Aluminium	<input checked="" type="checkbox"/>	Titanium alloyed	



**DIN 371** Machine tap with reinforced shank, for through threads in aluminium, aluminium alloys, bronze, copper, nickel and plastics.

Nominal thread size	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSS		
M 3	0,50	2,50	56,0	11,0	3,5	272 030	1	
M 4	0,70	3,30	63,0	13,0	4,5	272 040	1	
M 5	0,80	4,20	70,0	16,0	6,0	272 050	1	
M 6	1,00	5,00	80,0	19,0	6,0	272 060	1	
M 8	1,25	6,80	90,0	22,0	8,0	272 080	1	
M 10	1,50	8,50	100,0	24,0	10,0	272 100	1	

**DIN 376** Machine tap with overflow shank, for through threads in aluminium, aluminium alloys, bronze, copper, nickel and plastics.

Nominal thread size	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSS		
M 12	1,75	10,20	110,0	29,0	9,0	272 120	1	
M 14	2,00	12,00	110,0	30,0	11,0	272 140	1	
M 16	2,00	14,00	110,0	32,0	12,0	272 160	1	
M 18	2,50	15,50	125,0	34,0	14,0	272 180	1	
M 20	2,50	17,50	140,0	34,0	16,0	272 200	1	
M 22	2,50	19,50	140,0	34,0	18,0	272 220	1	
M 24	3,00	21,00	160,0	38,0	18,0	272 240	1	

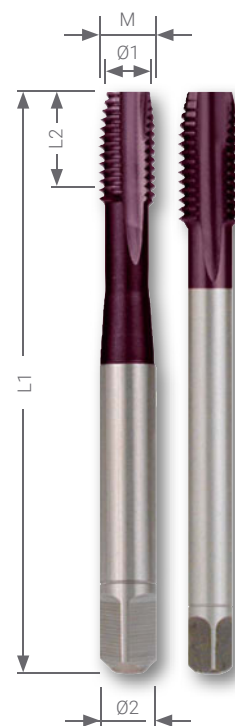


## Machine taps M DIN 371/376 HSSE-Co 5 TiCN, ground

Chamfer: type C / 2 - 3 threads  
Thread: metric, DIN ISO 13  
Flanks: relief-ground

Packing unit: individual plastic pack

Steel (N/mm2) < 800	■	Brass	■
Steel (N/mm2) < 1000	■	Bronze	□
Steel (N/mm2) < 1200		Plastics	□
Rust-resistant steel	■	Cast iron	□
Aluminium	□	Titanium alloyed	

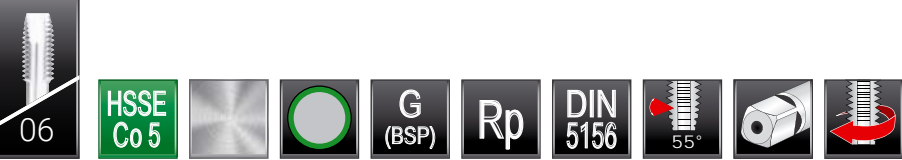


### **DIN 371** Machine taps with reinforced shank for through-hole thread in cast iron and cast alloys.

Nominal thread size	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5 TiCN	
M 3	0,50	2,50	56,0	11,0	3,5	273 030 ETC	1
M 4	0,70	3,30	63,0	13,0	4,5	273 040 ETC	1
M 5	0,80	4,20	70,0	16,0	6,0	273 050 ETC	1
M 6	1,00	5,00	80,0	19,0	6,0	273 060 ETC	1
M 8	1,25	6,80	90,0	22,0	8,0	273 080 ETC	1
M 10	1,50	8,50	100,0	24,0	10,0	273 100 ETC	1

### **DIN 376** Machine taps with reduced shank for through-hole thread in cast iron and cast alloys.

Nominal thread size	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5 TiCN	
M 12	1,75	10,20	110,0	29,0	9,0	273 120 ETC	1
M 14	2,00	12,00	110,0	30,0	11,0	273 140 ETC	1
M 16	2,00	14,00	110,0	32,0	12,0	273 160 ETC	1
M 18	2,50	15,50	125,0	34,0	14,0	273 180 ETC	1
M 20	2,50	17,50	140,0	34,0	16,0	273 200 ETC	1
M 22	2,50	19,50	140,0	34,0	18,0	273 220 ETC	1
M 24	3,00	21,00	160,0	38,0	18,0	273 240 ETC	1

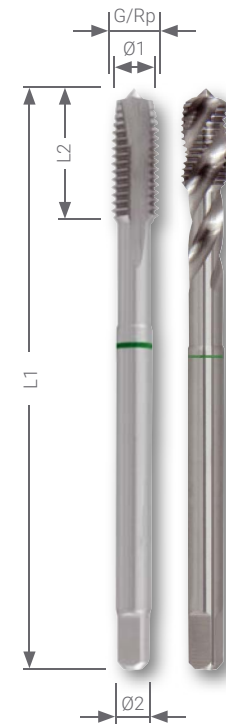


## Machine taps G DIN 5156 HSS Co 5, ground

Thread: DIN ISO 228 "G" (cylindrical pipe thread)  
 DIN 2999 "Rp" (Whitworth pipe thread)  
 Flanks: relief-ground

Packing unit: individual plastic pack

	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Steel (N/mm2) < 800	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1000	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm2) < 1200	<input type="checkbox"/>	Plastics	<input type="checkbox"/>
Rust-resistant steel	<input checked="" type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>

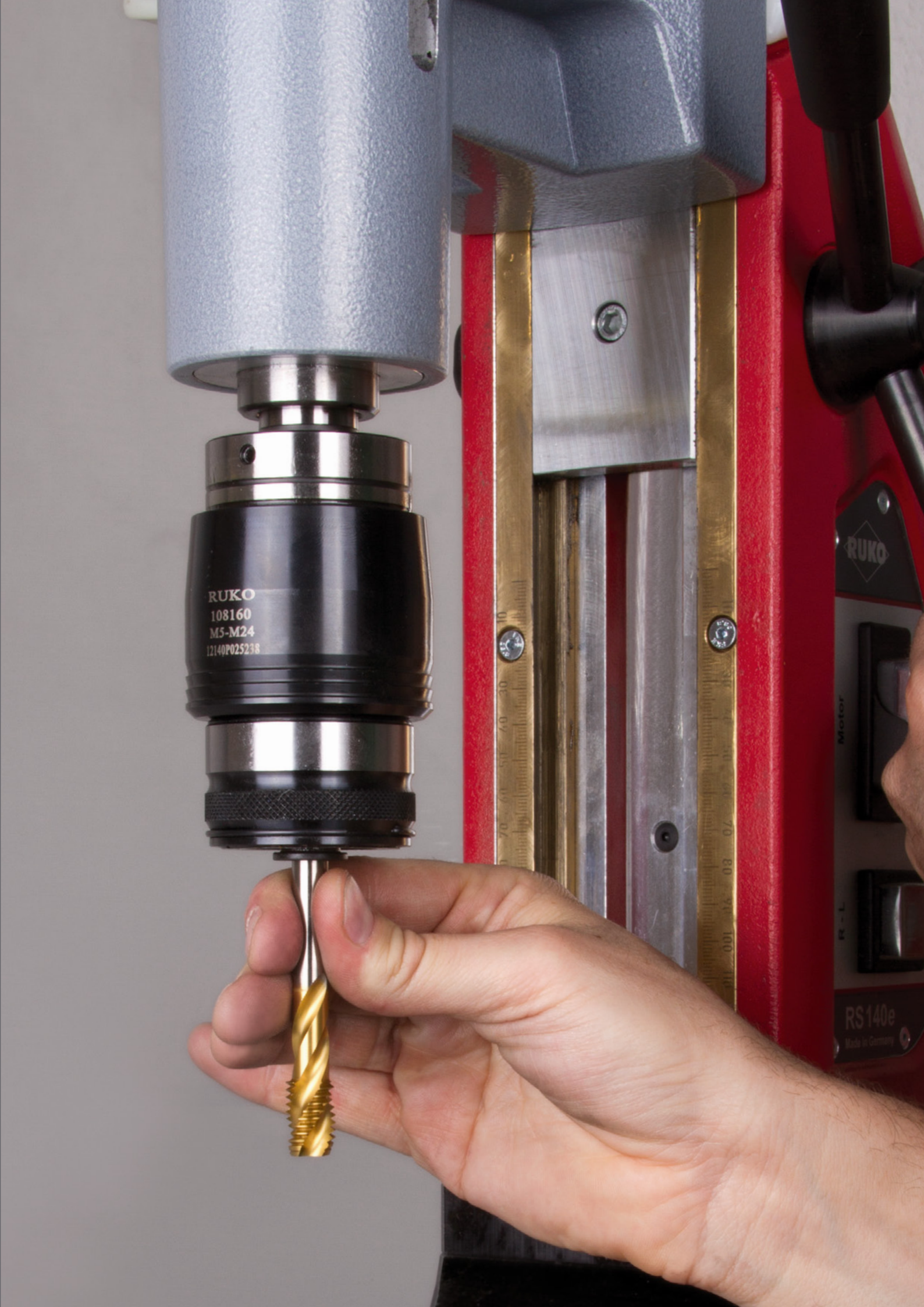


### **B** Machine taps with overflow shank for through threads.

Nominal thread size G / Rp		Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5		
G 1/8	Rp 1/8	28	8,80	90,0	20,0	7,0	262 018 E		1
G 1/4	Rp 1/4	19	11,80	100,0	21,0	11,0	262 014 E		1
G 3/8	Rp 3/8	19	15,25	100,0	21,0	12,0	262 038 E		1
G 1/2	Rp 1/2	14	19,00	125,0	24,0	16,0	262 012 E		1
G 5/8	Rp 5/8	14	21,00	125,0	24,0	18,0	262 058 E		1
G 3/4	Rp 3/4	14	24,50	140,0	26,0	20,0	262 034 E		1
G 7/8	Rp 7/8	14	28,25	150,0	28,0	22,0	262 078 E		1
G 1"	Rp 1"	11	30,75	160,0	30,0	25,0	262 010 E		1
G 1 1/8	Rp 1 1/8	11	35,50	170,0	30,0	28,0	262 118 E		1
G 1 1/4	Rp 1 1/4	11	39,50	170,0	30,0	32,0	262 114 E		1
G 1 3/8	Rp 1 3/8	11	41,80	180,0	32,0	36,0	262 138 E		1
G 1 1/2	Rp 1 1/2	11	45,25	190,0	32,0	36,0	262 112 E		1
G 1 3/4	Rp 1 3/4	11	51,30	190,0	32,0	40,0	262 134 E		1
G 2"	Rp 2"	11	57,20	220,0	40,0	45,0	262 020 E		1

### **C** Machine taps with overflow shank and 35° right-hand spiral flutes for bottoming.

Nominal thread size G / Rp		Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5		
G 1/8	Rp 1/8	28	8,80	90,0	12,0	7,0	263 018 E		1
G 1/4	Rp 1/4	19	11,80	100,0	16,0	11,0	263 014 E		1
G 3/8	Rp 3/8	19	15,25	100,0	16,0	12,0	263 038 E		1
G 1/2	Rp 1/2	14	19,00	125,0	20,0	16,0	263 012 E		1
G 5/8	Rp 5/8	14	21,00	125,0	20,0	18,0	263 058 E		1
G 3/4	Rp 3/4	14	24,50	140,0	22,0	20,0	263 034 E		1
G 7/8	Rp 7/8	14	28,25	150,0	26,0	22,0	263 078 E		1
G 1"	Rp 1"	11	30,75	160,0	30,0	25,0	263 010 E		1
G 1 1/8	Rp 1 1/8	11	35,50	170,0	30,0	28,0	263 118 E		1
G 1 1/4	Rp 1 1/4	11	39,50	170,0	30,0	32,0	263 114 E		1
G 1 3/8	Rp 1 3/8	11	41,80	180,0	32,0	36,0	263 138 E		1
G 1 1/2	Rp 1 1/2	11	45,25	190,0	32,0	36,0	263 112 E		1
G 1 3/4	Rp 1 3/4	11	51,30	190,0	32,0	40,0	263 134 E		1
G 2"	Rp 2"	11	57,20	220,0	40,0	45,0	263 020 E		1



RUKO  
108160  
M5-M24  
12140P025238

RUKO

Motor

R - L

RS140e  
Made in Germany



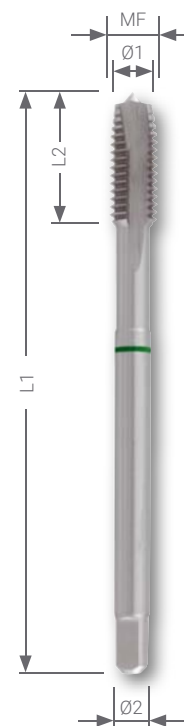
## Machine taps MF DIN 374 HSSE-Co 5, ground

Thread: metric, fine, DIN ISO 13

Flanks: relief-ground

Packing unit: individual plastic pack

Steel (N/mm <sup>2</sup> ) < 800	■	Brass	■
Steel (N/mm <sup>2</sup> ) < 1000	■	Bronze	□
Steel (N/mm <sup>2</sup> ) < 1200		Plastics	□
Rust-resistant steel	■	Cast iron	□
Aluminium	□	Titanium alloyed	



### **B** Machine tap with overflow shank for through threads.

Nominal thread size MF	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5		
MF 4	0,50	3,50	63,0	12,0	2,8	260 041 E		1
MF 5	0,50	4,50	70,0	13,0	3,5	260 050 E		1
MF 6	0,75	5,20	80,0	15,0	4,5	260 060 E		1
MF 8	1,00	7,00	90,0	18,0	6,0	260 081 E		1
MF 10	1,00	9,00	90,0	20,0	7,0	260 100 E		1
MF 10	1,25	8,80	100,0	20,0	7,0	260 101 E		1
MF 12	1,00	11,00	100,0	21,0	9,0	260 122 E		1
MF 12	1,25	10,80	100,0	21,0	9,0	260 121 E		1
MF 12	1,50	10,50	100,0	21,0	9,0	260 120 E		1
MF 14	1,00	13,00	100,0	21,0	11,0	260 142 E		1
MF 14	1,25	12,80	100,0	21,0	11,0	260 143 E		1
MF 14	1,50	12,50	100,0	21,0	11,0	260 141 E		1
MF 16	1,00	15,00	100,0	21,0	12,0	260 161 E		1
MF 16	1,50	14,50	100,0	21,0	12,0	260 160 E		1
MF 18	1,00	17,00	110,0	24,0	14,0	260 181 E		1
MF 18	1,50	16,50	110,0	24,0	14,0	260 180 E		1
MF 18	2,00	16,00	125,0	24,0	14,0	260 182 E		1
MF 20	1,00	19,00	125,0	24,0	16,0	260 201 E		1
MF 20	1,50	18,50	125,0	24,0	16,0	260 200 E		1
MF 20	2,00	18,00	140,0	30,0	16,0	260 202 E		1
MF 22	1,50	20,50	125,0	24,0	18,0	260 220 E		1
MF 22	2,00	20,00	140,0	30,0	18,0	260 222 E		1
MF 24	1,00	23,00	140,0	26,0	18,0	260 242 E		1
MF 24	1,50	22,50	140,0	26,0	18,0	260 240 E		1
MF 24	2,00	22,00	140,0	26,0	18,0	260 241 E		1
MF 28	1,50	26,50	140,0	26,0	20,0	260 281 E		1
MF 28	2,00	26,00	140,0	26,0	20,0	260 282 E		1
MF 30	1,50	28,50	150,0	28,0	22,0	260 301 E		1
MF 30	2,00	28,00	150,0	28,0	22,0	260 302 E		1



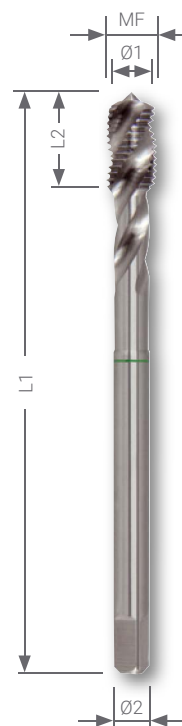


# Machine taps MF DIN 374 HSSE-Co 5, ground

Thread: metric, fine, DIN ISO 13  
Flanks: relief-ground

Packing unit: individual plastic pack

	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Steel (N/mm2) < 800	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1000	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm2) < 1200	<input type="checkbox"/>	Plastics	<input type="checkbox"/>
Rust-resistant steel	<input checked="" type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>



**C** Machine taps with overflow shank and 35° right-hand spiral flutes for bottoming.

Nominal thread size MF	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5	
MF 4	0,50	3,50	63,0	7,0	2,8	261 041 E	1
MF 5	0,50	4,50	70,0	8,0	3,5	261 050 E	1
MF 6	0,75	5,20	80,0	10,0	4,5	261 060 E	1
MF 8	1,00	7,00	90,0	13,0	6,0	261 081 E	1
MF 10	1,00	9,00	90,0	12,0	7,0	261 100 E	1
MF 10	1,25	8,80	100,0	15,0	7,0	261 101 E	1
MF 12	1,00	11,00	100,0	14,0	9,0	261 122 E	1
MF 12	1,25	10,80	100,0	14,0	9,0	261 121 E	1
MF 12	1,50	10,50	100,0	14,0	9,0	261 120 E	1
MF 14	1,00	13,00	100,0	16,0	11,0	261 142 E	1
MF 14	1,25	12,80	100,0	16,0	11,0	261 143 E	1
MF 14	1,50	12,50	100,0	16,0	11,0	261 141 E	1
MF 16	1,00	15,00	100,0	16,0	12,0	261 161 E	1
MF 16	1,50	14,50	100,0	16,0	12,0	261 160 E	1
MF 18	1,00	17,00	110,0	20,0	14,0	261 181 E	1
MF 18	1,50	16,50	110,0	20,0	14,0	261 180 E	1
MF 18	2,00	16,00	125,0	20,0	14,0	261 182 E	1
MF 20	1,00	19,00	125,0	20,0	16,0	261 201 E	1
MF 20	1,50	18,50	125,0	20,0	16,0	261 200 E	1
MF 20	2,00	18,00	140,0	20,0	16,0	261 202 E	1
MF 22	1,50	20,50	125,0	20,0	18,0	261 220 E	1
MF 22	2,00	20,00	140,0	20,0	18,0	261 222 E	1
MF 24	1,00	23,00	140,0	22,0	18,0	261 242 E	1
MF 24	1,50	22,50	140,0	22,0	18,0	261 240 E	1
MF 24	2,00	22,00	140,0	22,0	18,0	261 241 E	1
MF 28	1,50	26,50	140,0	22,0	20,0	261 281 E	1
MF 28	2,00	26,00	140,0	22,0	20,0	261 282 E	1
MF 30	1,50	28,50	150,0	26,0	22,0	261 301 E	1
MF 30	2,00	28,00	150,0	26,0	22,0	261 302 E	1



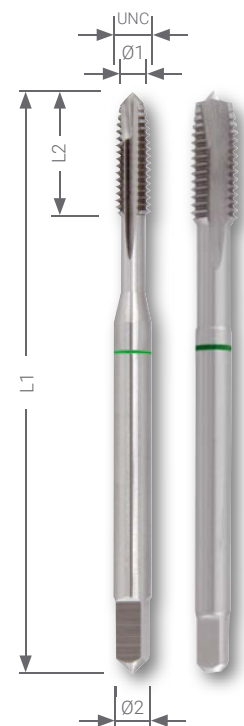
## Machine taps UNC DIN 2182/2183 HSSE-Co 5, ground

Thread: American UNC coarse thread

Flanks: relief-ground

Packing unit: individual plastic pack

Steel (N/mm <sup>2</sup> ) < 800	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1000	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1200	<input type="checkbox"/>	Plastics	<input type="checkbox"/>
Rust-resistant steel	<input checked="" type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>



### DIN 2182 Machine taps with reinforced shank for through threads.

Nominal thread size UNC	Threads per inch	Thread core hole 1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5		
Nr. 4	40	2,3	56,0	11,0	3,5	265 040 UNC		1
Nr. 5	40	2,6	56,0	11,0	3,5	265 050 UNC		1
Nr. 6	32	2,8	56,0	13,0	4,0	265 060 UNC		1
Nr. 8	32	3,5	63,0	13,0	4,5	265 080 UNC		1
Nr. 10	24	3,8	70,0	16,0	6,0	265 100 UNC		1
Nr. 12	24	4,5	70,0	16,0	6,0	265 120 UNC		1
1/4	20	5,1	80,0	17,0	7,0	265 014 UNC		1
5/16	18	6,5	90,0	20,0	8,0	265 516 UNC		1
3/8	16	8,0	100,0	22,0	10,0	265 038 UNC		1

### DIN 2183 Machine taps with overflow shank for through threads.

Nominal thread size UNC	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5		
7/16	14	9,3	100,0	22,0	8,0	265 716 UNC		1
1/2	13	10,8	110,0	25,0	9,0	265 012 UNC		1
9/16	12	12,2	110,0	26,0	11,0	265 916 UNC		1
5/8	11	13,5	110,0	27,0	12,0	265 058 UNC		1
3/4	10	16,5	125,0	30,0	14,0	265 034 UNC		1
7/8	9	19,3	140,0	32,0	18,0	265 078 UNC		1
1"	8	22,2	160,0	36,0	18,0	265 010 UNC		1

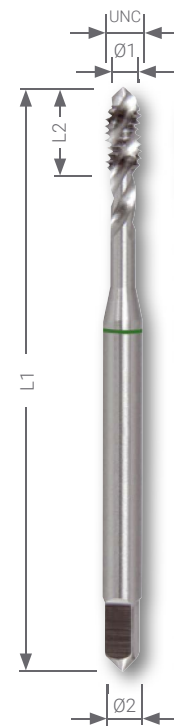


## Machine taps UNC DIN 2182/2183 HSSE-Co 5, ground

Thread: American UNC coarse thread  
Flanks: relief-ground

Packing unit: individual plastic pack

Steel (N/mm2) < 800	■	Brass	■
Steel (N/mm2) < 1000	■	Bronze	□
Steel (N/mm2) < 1200		Plastics	□
Rust-resistant steel	■	Cast iron	□
Aluminium	□	Titanium alloyed	



### DIN 2182 Machine taps with reinforced shank and 35° right-hand spiral flutes for bottoming.

Nominal thread size UNC	Threads per inch	Thread core hole 1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5		
Nr. 4	40	2,3	56,0	7,0	3,5	266 040 UNC		1
Nr. 5	40	2,6	56,0	7,0	3,5	266 050 UNC		1
Nr. 6	32	2,8	56,0	8,0	4,0	266 060 UNC		1
Nr. 8	32	3,5	63,0	8,0	4,5	266 080 UNC		1
Nr. 10	24	3,8	70,0	10,0	6,0	266 100 UNC		1
Nr. 12	24	4,5	70,0	10,0	6,0	266 120 UNC		1
1/4	20	5,1	80,0	13,0	7,0	266 014 UNC		1
5/16	18	6,5	90,0	14,0	8,0	266 516 UNC		1
3/8	16	8,0	100,0	16,0	10,0	266 038 UNC		1

### DIN 2183 Machine taps with overflow shank and 35° right-hand spiral flutes for bottoming.

Nominal thread size UNC	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5		
7/16	14	9,3	100,0	17,0	8,0	266 716 UNC		1
1/2	13	10,8	110,0	20,0	9,0	266 012 UNC		1
9/16	12	12,2	110,0	20,0	11,0	266 916 UNC		1
5/8	11	13,5	110,0	22,0	12,0	266 058 UNC		1
3/4	10	16,5	125,0	25,0	14,0	266 034 UNC		1
7/8	9	19,3	140,0	27,0	18,0	266 078 UNC		1
1"	8	22,2	160,0	30,0	18,0	266 010 UNC		1

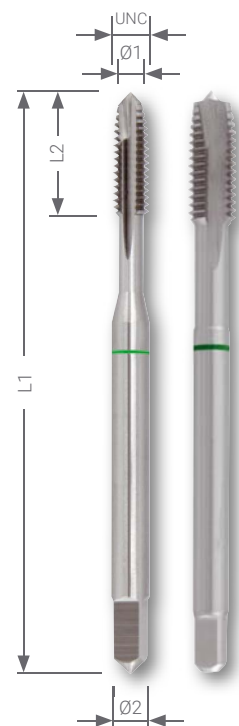


# Machine taps UNF DIN 2182/2183 HSSE-Co 5, ground

Thread: American UNF fine thread  
Flanks: relief-ground

Packing unit: individual plastic pack

	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Steel (N/mm2) < 800	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1000	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm2) < 1200	<input type="checkbox"/>	Plastics	<input type="checkbox"/>
Rust-resistant steel	<input checked="" type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>



## DIN 2182 Machine taps with reinforced shank for through threads.

Nominal thread size UNF	Threads per inch	Thread core hole Ø <sub>1</sub> mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5	
Nr. 4	48	2,40	56,0	11,0	3,5	265 040 UNF	1
Nr. 5	44	2,70	56,0	11,0	3,5	265 050 UNF	1
Nr. 6	40	2,95	56,0	13,0	4,0	265 060 UNF	1
Nr. 8	36	3,50	63,0	13,0	4,5	265 080 UNF	1
Nr. 10	32	4,10	70,0	16,0	6,0	265 100 UNF	1
Nr. 12	28	4,60	70,0	16,0	6,0	265 120 UNF	1
1/4	28	5,50	80,0	17,0	7,0	265 014 UNF	1
5/16	24	6,60	90,0	17,0	8,0	265 516 UNF	1
3/8	24	8,50	100,0	18,0	10,0	265 038 UNF	1

## DIN 2183 Machine taps with overflow shank for through threads.

Nominal thread size UNF	Threads per inch	Thread core hole Ø <sub>1</sub> mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5	
7/16	20	9,90	100,0	22,0	8,0	265 716 UNF	1
1/2	20	11,50	100,0	22,0	9,0	265 012 UNF	1
9/16	18	12,90	100,0	22,0	11,0	265 916 UNF	1
5/8	18	14,50	100,0	22,0	12,0	265 058 UNF	1
3/4	16	17,50	110,0	25,0	14,0	265 034 UNF	1
7/8	14	20,50	140,0	26,0	18,0	265 078 UNF	1
1"	12	23,25	150,0	28,0	18,0	265 010 UNF	1

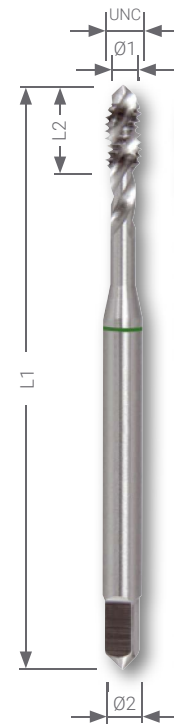


## Machine taps UNF DIN 2182/2183 HSSE-Co 5, ground

Thread: American UNF fine thread  
Flanks: relief-ground

Packing unit: individual plastic pack

	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Steel (N/mm2) < 800	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1000	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm2) < 1200	<input type="checkbox"/>	Plastics	<input type="checkbox"/>
Rust-resistant steel	<input checked="" type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>



### DIN 2182 Machine taps with reinforced shank and 35° right-hand spiral flutes for bottoming.

Nominal thread size UNF	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5		
Nr. 4	48	2,40	56,0	5,5	3,5	266 040 UNF		1
Nr. 5	44	2,70	56,0	6,0	3,5	266 050 UNF		1
Nr. 6	40	2,95	56,0	7,0	4,0	266 060 UNF		1
Nr. 8	36	3,50	63,0	7,5	4,5	266 080 UNF		1
Nr. 10	32	4,10	70,0	8,0	6,0	266 100 UNF		1
Nr. 12	28	4,60	70,0	9,0	6,0	266 120 UNF		1
1/4	28	5,50	80,0	10,0	7,0	266 014 UNF		1
5/16	24	6,90	90,0	10,0	8,0	266 516 UNF		1
3/8	24	8,50	100,0	10,0	10,0	266 038 UNF		1

### DIN 2183 Machine taps with overflow shank and 35° right-hand spiral flutes for bottoming.

Nominal thread size UNF	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5		
7/16	20	9,90	100,0	13,0	8,0	266 716 UNF		1
1/2	20	11,50	100,0	13,0	9,0	266 012 UNF		1
9/16	18	12,90	100,0	15,0	11,0	266 916 UNF		1
5/8	18	14,50	100,0	15,0	12,0	266 058 UNF		1
3/4	16	17,50	110,0	17,0	14,0	266 034 UNF		1
7/8	14	20,50	140,0	17,0	18,0	266 078 UNF		1
1"	12	23,25	150,0	20,0	18,0	266 010 UNF		1



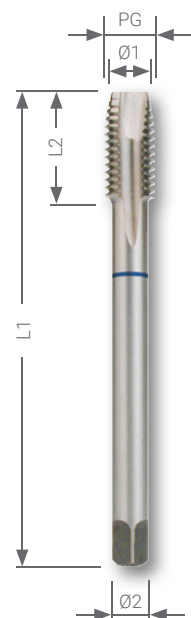
## Machine taps PG HSS, ground

Machine taps with overflow shank for through threads.

Thread: DIN 40 430 steel conduit thread  
Flanks: relief-ground

Packing unit: individual plastic pack

	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Steel (N/mm2) < 800	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1000	<input type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm2) < 1200	<input type="checkbox"/>	Plastics	<input type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>



Nominal thread size PG	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSS	
PG 7	20	11,35	70,0	22,0	9,0	264 007	1
PG 9	18	13,95	70,0	22,0	12,0	264 009	1
PG 11	18	17,35	80,0	22,0	14,0	264 011	1
PG 13,5	18	19,15	80,0	22,0	16,0	264 135	1
PG 16	18	21,25	80,0	22,0	18,0	264 016	1
PG 21	16	26,95	90,0	22,0	22,0	264 021	1
PG 29	16	35,60	100,0	25,0	28,0	264 029	1
PG 36	16	45,60	140,0	40,0	36,0	264 036	1
PG 42	16	52,60	140,0	40,0	40,0	264 042	1
PG 48	16	57,90	160,0	40,0	45,0	264 048	1



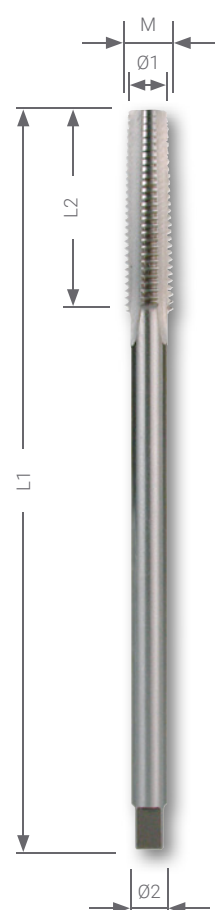
## Nut taps M DIN 357 HSS, ground

Long shank to retain several cut nuts.

Chamfer: 2/3 of the thread length  
Thread: metric, DIN ISO 13  
Flanks: relief-ground

Packing unit: individual plastic pack

Nominal thread size M	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSS	
M 3	0,50	2,5	70,0	22,0	2,2	243 030	1
M 4	0,70	3,3	90,0	25,0	2,8	243 040	1
M 5	0,80	4,2	100,0	28,0	3,5	243 050	1
M 6	1,00	5,0	110,0	32,0	4,5	243 060	1
M 8	1,25	6,8	125,0	40,0	6,0	243 080	1
M 10	1,50	8,5	140,0	45,0	7,0	243 100	1
M 12	1,75	10,2	180,0	50,0	9,0	243 120	1
M 14	2,00	12,0	200,0	56,0	11,0	243 140	1
M 16	2,00	14,0	200,0	63,0	12,0	243 160	1
M 18	2,50	15,5	220,0	63,0	14,0	243 180	1
M 20	2,50	17,5	250,0	70,0	16,0	243 200	1
M 22	2,50	19,5	280,0	80,0	18,0	243 220	1
M 24	3,00	21,0	280,0	80,0	18,0	243 240	1





## Forming taps DIN 2174 HSS Co 5-nitrated-VAP and HSS Co 5-TiAlN, ground

Forming taps with reinforced shank for through threads and bottoming.

Thread: metric, DIN ISO 13  
Flanks: relief-ground

As shaping is done without cutting, no interruption of the course of the fibre in the material. The deformation creates very rigid threads. Consistent accuracy even with high productivity.



### HSS Co 5-nitrated-VAP

The forming tap consists of cobalt alloyed, nitrated and vaporised heavy-duty high-speed steel. Applications: for non-alloyed and alloyed steels up to a strength of 1000 N/mm<sup>2</sup> and non-ferrous metals.

### HSSE-Co 5 TiAlN

The forming tap consists of cobalt alloyed heavy-duty high-speed steel with titanium aluminium nitride coating. Applications: for non-alloyed and alloyed steels up to a strength of 1000 N/mm<sup>2</sup>, V2A and non-ferrous metals.

Packing unit: individual plastic pack



Steel (N/mm <sup>2</sup> ) < 800	■	■
Steel (N/mm <sup>2</sup> ) < 1000	■	■
Steel (N/mm <sup>2</sup> ) < 1200		■
Rust-resistant steel	■	■
Aluminium	□	□

Brass	■	■
Bronze	□	□
Plastics	□	□
Cast iron	□	□
Titanium alloyed		□

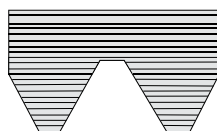
Nominal thread size M	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm			
M 3	0,50	2,80	56,0	11,0	3,5	271 003 N	271 003 F	1
M 4	0,70	3,70	63,0	13,0	4,5	271 004 N	271 004 F	1
M 5	0,80	4,65	70,0	16,0	6,0	271 005 N	271 005 F	1
M 6	1,00	5,55	80,0	19,0	6,0	271 006 N	271 006 F	1
M 8	1,25	7,45	90,0	22,0	8,0	271 008 N	271 008 F	1
M 10	1,50	9,35	100,0	24,0	10,0	271 010 N	271 010 F	1
M 12	1,75	11,20	110,0	28,0	9,0	271 012 N	271 012 F	1



### General information:

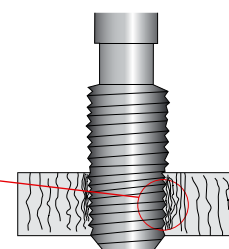
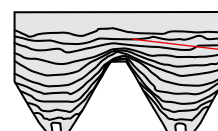
#### Tapping

Fibre orientation in tapping



#### Thread forming

Fibre orientation in thread forming



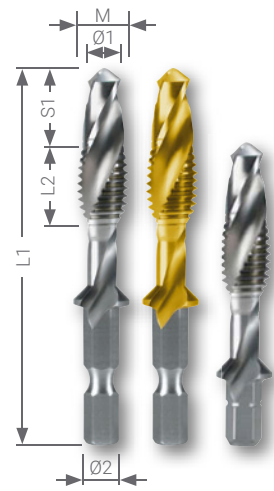


## Combined machine taps bit "long" and bit "short" HSS and HSS-TiN, ground

Combined machine tap with 1/4" hexagon shank for tapping drill hole and through thread.

Flanks: relief-ground  
Shank: 6,35 x 27,0 mm

The combined machine tap is suitable for sheet metal working with right/left handed rotation cordless drilling machines. The thread is cut in one operation, without any tool changing. The tool incorporates a twist drill before the thread-tapping part.



**Cooperation work process:**

- ✓ hole drilling with twist drill
- ✓ thread cutting (tapping)
- ✓ thread deburring
- ✓ thread cleaning when using

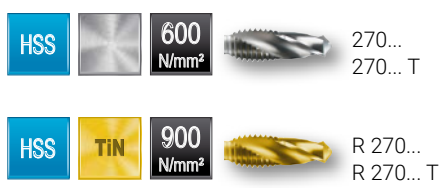
### HSS

Applications:  
for unalloyed and low-alloyed steels up to 600 N/mm<sup>2</sup> strength, malleable cast iron and non-ferrous metals.

### HSS-TiN

Applications:  
for unalloyed and low-alloyed steels up to 900 N/mm<sup>2</sup> strength, malleable cast iron and non-ferrous metals.

Packing unit: individual plastic pack



	HSS	HSS-TiN
Steel (N/mm <sup>2</sup> ) < 800	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1000	<input type="checkbox"/>	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1200	<input type="checkbox"/>	<input type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	HSS	HSS-TiN
Brass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bronze	<input type="checkbox"/>	<input type="checkbox"/>
Plastics	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cast iron	<input type="checkbox"/>	<input type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>	<input type="checkbox"/>

## Combined machine taps bit "long" HSS and HSS-TiN, ground

Nominal thread size M	Pitch mm	L1 mm	S1 mm	L2 mm	Ø1 mm	Ø2 mm	HSS	HSS-TiN	Packaging
M 3	0,50	51,0	5,0	7,0	2,5	7,0	270 014	270 014 T	1
M 4	0,70	54,0	6,0	8,5	3,3	7,0	270 015	270 015 T	1
M 5	0,80	57,0	7,0	10,0	4,2	7,0	270 016	270 016 T	1
M 6	1,00	60,0	8,0	12,0	5,0	7,0	270 017	270 017 T	1
M 8	1,25	68,0	11,0	15,0	6,8	9,5	270 018	270 018 T	1
M 10	1,50	75,0	15,0	17,0	8,5	11,5	270 019	270 019 T	1

## Combined machine taps bit "short" HSS and HSS-TiN, ground

Nominal thread size M	Pitch mm	L1 mm	S1 mm	L2 mm	Ø1 mm	Ø2 mm	HSS	HSS-TiN	Packaging
M 3	0,50	36,0	5,0	6,0	2,5	7,2	R 270 014	R 270 014 T	1
M 4	0,70	39,0	6,0	8,0	3,3	7,2	R 270 015	R 270 015 T	1
M 5	0,80	41,0	7,0	9,0	4,2	7,2	R 270 016	R 270 016 T	1
M 6	1,00	44,0	8,0	11,0	5,0	7,2	R 270 017	R 270 017 T	1
M 8	1,25	51,0	11,0	14,0	6,8	8,8	R 270 018	R 270 018 T	1
M 10	1,50	59,0	15,0	15,0	8,5	11,0	R 270 019	R 270 019 T	1





## Combined machine tap sets "long" HSS and HSS-TiN in steel case

7-piece set of combined machine taps "long" 6 combined machine taps M 3 - M 4 - M 5 - M 6 - M 8 - M 10 + 1 hexagon magnetic holder	270 020	270 020 T



270 020 T

## Combined machine tap sets "short" HSS and HSS-TiN in steel case

7-piece set of combined machine taps "short" 6 combined machine taps M 3 - M 4 - M 5 - M 6 - M 8 - M 10 + 1 hexagon magnetic holder	R 270 020	R 270 021 T



R 270 020

## Hexagonal magnetic holder

Packing unit: in plastic tubes of 1

	Article no.	
Hexagonal magnetic holder	270 013	1



## Thread-extractor sets in plastic case



Set 1: 21-pieces in plastic case 4 twist drills, 4 studs, 4 extractor nuts and 9 drilling jigs	244 150
Set 2: 25-pieces in plastic case 5 twist drills, 5 studs, 5 extractor nuts and 10 drilling jigs	244 151

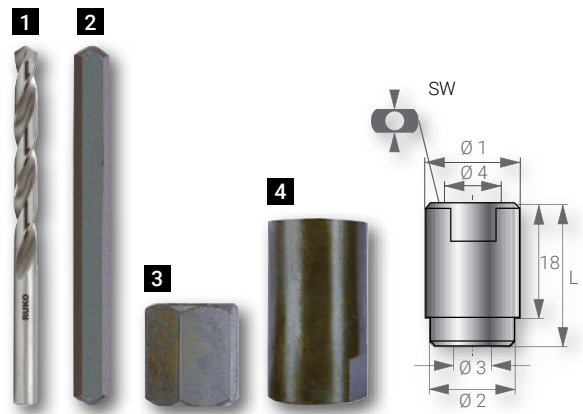


244 150

# 1 High-performance twist drills DIN 338 HSS ground



ground version, made to match the drilling jigs exactly

Ø mm	Ø inch	for stud size	Length mm		
3,2	1/8	1 - 4	65,0	214 032	1
4,8	3/16	5 - 7	86,0	214 048	1
6,4	1/4	8	101,0	214 064	1
8,0	5/16	9	117,0	214 080	1
8,7	11/32	10	125,0	214 087	1





# 2 Studs

made of special steel profile, hardened, gunmetal finish

Size	For threads	Ø mm	Ø inch	Length mm		
1	M 5 - M 6	3,2	1/8	60,0	244 001	1
2	M 7 - M 8	4,8	3/16	70,0	244 002	1
3	M 9 - M 10	6,4	1/4	78,0	244 003	1
4	M 12	8,0	5/16	83,0	244 004	1
5	M 14 - M 16	8,7	11/32	94,0	244 005	1



# 3 Extractor nuts

with special inside profile, hardened, gunmetal finish

Size	For stud size	Spanner width mm	Length mm		
1	1	10,0	16,0	244 032	1
2	2	11,0	16,0	244 046	1
3	3	13,0	16,0	244 064	1
4	4	14,0	16,0	244 080	1
5	5	17,0	16,0	244 087	1

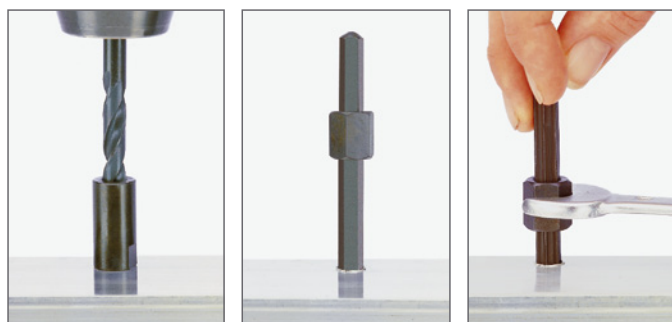
# 4 Drilling jigs

reduced shank, hardened, gunmetal finish, for lower-lying broken screws (Ø 1 + Ø 2), for protruding broken screws (Ø 4)

Size	Ø 1 mm	Ø 2 mm	Ø 3 mm	Ø 4 mm	Ø 3 Zoll	Ø 4 Zoll	SW mm	L mm		
1	7,0	6,0	3,2	5,0	1/8	3/16	6,0	30,0	244 101	1
2	8,0	7,0	3,2	6,0	1/8	—	7,0	30,0	244 102	1
3	9,0	—	3,2	7,0	1/8	1/4	8,0	30,0	244 103	1
4	10,0	—	3,2	8,0	1/8	5/16	9,0	30,0	244 104	1
5	11,0	—	4,8	8,0	3/16	5/16	9,0	30,0	244 105	1
6	12,0	—	4,8	9,0	3/16	—	10,0	30,0	244 106	1
7	13,0	—	4,8	10,0	3/16	1/8	11,0	30,0	244 107	1
8	14,0	—	6,4	11,0	1/4	7/16	12,0	30,0	244 108	1
9	15,0	—	8,0	12,0	5/16	—	13,0	30,0	244 109	1
10	17,0	16,0	8,7	14,0	11/32	—	14,0	30,0	244 110	1



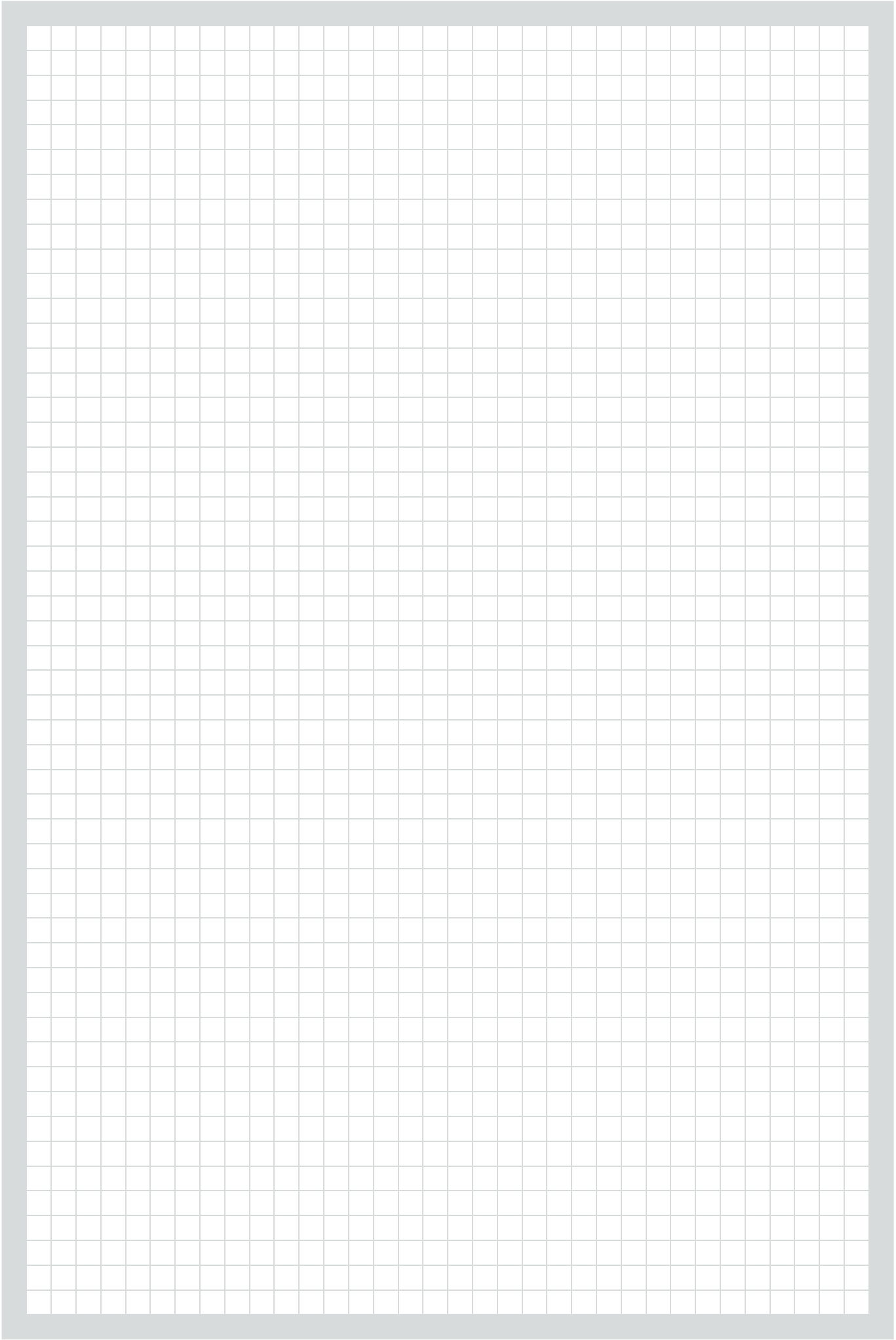
## Instructions for use

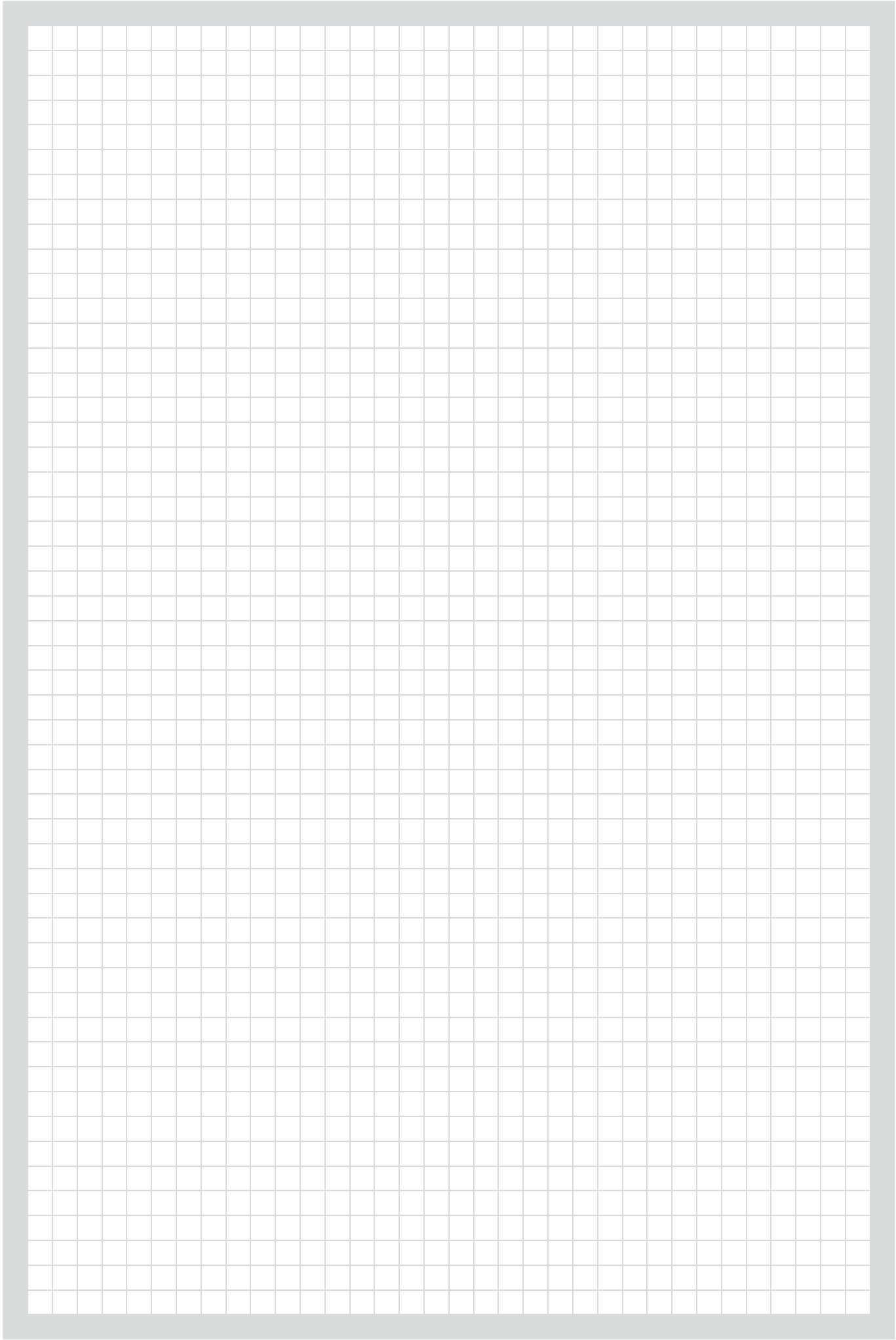


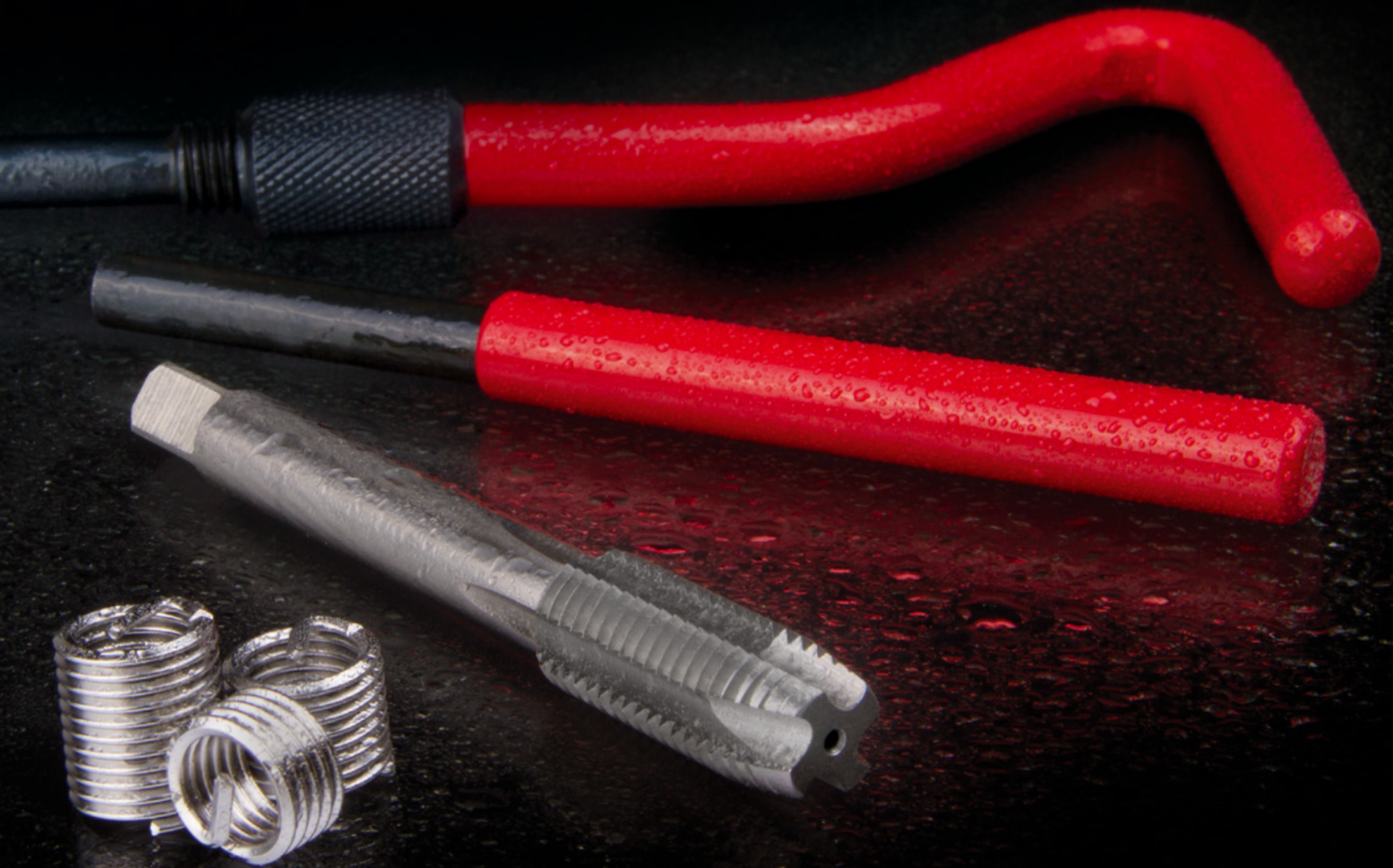
No. 1  
Drill into broken thread with drilling jig

No. 2  
Drive in stud and screw nut down to the base.

No. 3  
Turn broken screw out steadily without tilting







# THREAD REPAIR TOOL



## Thread repair tool

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There are various causes that lead to the destruction of threads.

These include for instance corrosion, wear or a too high tightening torque. The ProCoil thread repair range by RUKO allows for a low-cost, simple and quick repair of damaged and worn out threads. Galvanized steel guarantees high quality internal threads that withstand effects of temperature and corrosion.

















One more advantage of the ProCoil range is the simple and quick installation.

Application areas are for instance machine and plant construction, automotive and electrical engineering, power plant technology or ship-building. Besides repair, scrap recycling is also of great significance to the industry.



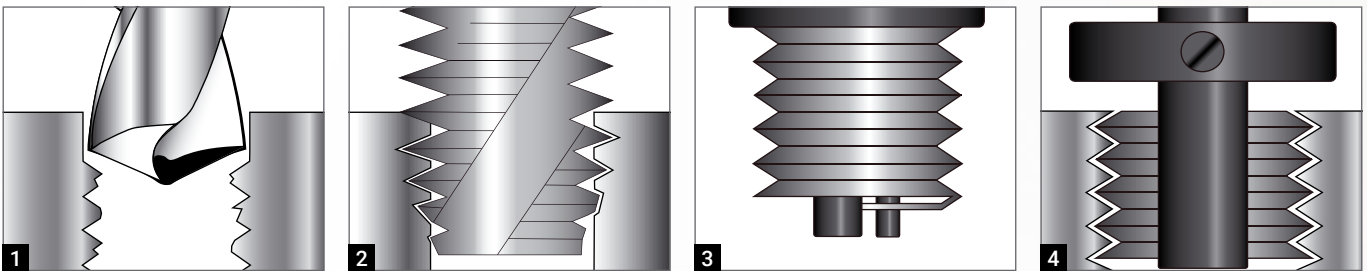


## Overview of symbols

 HSS Height-speed steel	 $\geq \varnothing 2,0 \text{ mm}$ Shape C: Split point	 Shank: square as per DIN 10	 right hand cutting
 M metric, DIN ISO 13	 right hand cutting	 Shank: cylindrical	 Thread tolerance for metric and metric fine threads according to DIN ISO 13 for internal threads
 60° Thread angle	 bright surface	 118° Point angle: 118°	 h8 Tolerance e.g. h8
 N Type N	 800 N/mm <sup>2</sup> Tenacity classes	 25-30° Helix angle e.g. 25-30°	 5 x D Drilling depth e.g. 5 x diameter

## Product Information

- 1 Drilling out:**  
Firstly drill out the damaged thread with a RUKO twist drill. In this regard it should be noted that larger drill holes are necessary with thread formers. Check that the screw tap and threaded bolt from the ProCoil set have the same thread and pitch.
- 2 Thread cutting:** The new internal thread is now cut into the drilled out hole with a RUKO screw tap. Using RUKO cutting oil is recommended.
- 3 Fitting the thread insert:**  
Place the insert onto the insertion tool. Care should be taken here that the tang fits in the groove and the adjusting ring is correctly set. Now use light pressure to twist the thread insert in the direction of the thread. Attention: Do NOT twist against the thread direction, as the tang may break off.
- 4 Breaking the tang:**  
Remove the insertion tool and break the tang with the tang breaking tool. The new thread with the ProCoil thread insert is now ready for use.



# Thread Inserts

Standard design, stainless steel and free running.

Thread reinforcement for materials with low shearing strength, e.g. aluminium alloys and magnesium alloys as well as to repair enables worn and damaged threads.

Packing unit: in plastic box



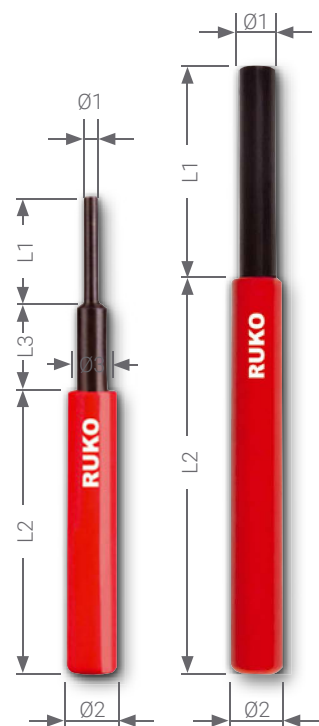
Nominal thread size	Pitch mm	Height = factor x Ø	Article no.	
M 3	0,50	1,0	244 303	50
M 4	0,70	1,0	244 304	50
M 5	0,80	1,0	244 305	50
M 6	1,00	1,0	244 306	50
M 8	1,25	1,0	244 308	50
M 10	1,50	1,0	244 310	50
M 12	1,75	1,0	244 312	25
M 14	2,00	1,0	244 314	25
MF 14	1,25	1,0	244 315	25

M 3	0,50	1,5	244 403	50
M 4	0,70	1,5	244 404	50
M 5	0,80	1,5	244 405	50
M 6	1,00	1,5	244 406	50
M 8	1,25	1,5	244 408	50
M 10	1,50	1,5	244 410	50
M 12	1,75	1,5	244 412	25
M 14	2,00	1,5	244 414	25
MF 14	1,25	1,5	244 415	25

M 3	0,50	2,0	244 503	50
M 4	0,70	2,0	244 504	50
M 5	0,80	2,0	244 505	50
M 6	1,00	2,0	244 506	50
M 8	1,25	2,0	244 508	50
M 10	1,50	2,0	244 510	50
M 12	1,75	2,0	244 512	25
M 14	2,00	2,0	244 514	25
MF 14	1,25	2,0	244 515	25

# Pin-Breaker

Nominal thread size	Ø1 mm	Ø2 mm	Ø3 mm	L1 mm	L2 mm	L3 mm	Article no.	
M 3	2,0	9,8	6,0	15,0	75,0	25,0	244 163	1
M 4	2,7	9,8	6,0	20,0	75,0	20,0	244 164	1
M 5	3,5	9,8	-	22,0	75,0	18,0	244 165	1
M 6	4,6	9,8	-	22,0	75,0	18,0	244 166	1
M 8	6,0	9,8	-	40,0	75,0	-	244 168	1
M 10	7,5	9,8	-	40,0	75,0	-	244 170	1
M 12	9,0	12,2	-	40,0	75,0	-	244 172	1
M 14	10,0	14,5	-	40,0	80,0	-	244 174	1




# Fitting-Tools

Nominal thread size	Ø1 mm	L1 mm	Article no.	
M 3	2,0	60,0	244 183	1
M 4	2,8	60,0	244 184	1
M 5	3,5	60,0	244 185	1
M 6	4,8	60,0	244 186	1
M 8	6,0	80,0	244 188	1
M 10	7,5	80,0	244 190	1
M 12	9,5	80,0	244 192	1
M 14	11,2	80,0	244 194	1





# ProCoil Thread repairing assortment in plastic case

		Article no.
Assortment 1	Assortment M 5 - M12 5 twist drills HSS Ø 5,2 - 6,2 - 8,3 - 10,3 - 12,4 mm + 5 single-cut taps DIN 352 HSS M 5 - M 6 - M 8 - M 10 - M 12 + 5 fitting tools M 5 - M 6 - M 8 - M 10 - M 12 + 5 pin-Breakers Ø 3,5 - 4,6 - 6,0 - 7,5 - 9,0 mm + 60 inserts M 5 - M 10, each 5 x Ø 1,0 / 1,5 / 2,0 : Height = 1,0 x Ø + 6 inserts M 12, each 2 x Ø 1,0 / 1,5 / 2,0 Height = 1,0 x Ø	244 208
Assortment 2	 Assortment M 6 - M14 5 twist drills HSS Ø 6,2 - 8,3 - 10,3 - 12,4 - 14,5 mm + 5 single-cut taps DIN 352 HSS M 6 - M 8 - M 10 - M 12 - MF 14 + 5 fitting tools M 6 - M 8 - M 10 - M 12 - M 14 + 5 pin-Breakers Ø 4,6 - 6,0 - 7,5 - 9,0 - 10,0 mm + 45 inserts M 6 - M 10, each 5 x Ø 1,0 / 1,5 / 2,0: Height = 1,0 x Ø + 12 inserts M 12 - MF 14, each 2 x Ø 1,0 / 1,5 / 2,0: Height = 1,0 x Ø	244 209



# ProCoil Thread repairing sets in plastic case

18-piece set of ProCoil thread repairing tools

		Article no.
Set M 3	1 twist drill Ø 3,1 mm + 1 single-cut tap DIN 352 HSS for thread M 3 x 0,5 + 1 fitting tool M 3 + 1 pin-Breaker Ø 2,0 mm + each 5 inserts Height = 1,0 x Ø / Height = 1,5 x Ø / Height = 2,0 x Ø	244 200
Set M 4	1 twist drill Ø 4,1 mm + 1 single-cut tap DIN 352 HSS for thread M 4 x 0,7 + 1 fitting tool M 4 + 1 pin-Breaker Ø 2,7 mm + each 5 inserts Height = 1,0 x Ø / Height = 1,5 x Ø / Height = 2,0 x Ø	244 201
Set M 5	1 twist drill Ø 5,2 mm + 1 single-cut tap DIN 352 HSS for thread M 5 x 0,8 + 1 fitting tool M 5 + 1 pin-Breaker Ø 3,5 mm + each 5 inserts Height = 1,0 x Ø / Height = 1,5 x Ø / Height = 2,0 x Ø	244 202
Set M 6	1 twist drill Ø 6,2 mm + 1 single-cut tap DIN 352 HSS for thread M 6 x 1,0 + 1 fitting tool M 6 + 1 pin-Breaker Ø 4,6 mm + each 5 inserts Height = 1,0 x Ø / Height = 1,5 x Ø / Height = 2,0 x Ø	244 203
Set M 8	1 twist drill Ø 8,3 mm + 1 single-cut tap DIN 352 HSS for thread M 8 x 1,25 + 1 fitting tool M 8 + 1 pin-Breaker Ø 6,0 mm + each 5 inserts Height = 1,0 x Ø / Height = 1,5 x Ø / Height = 2,0 x Ø	244 204
Set M 10	1 twist drill Ø 10,3 mm + 1 single-cut tap DIN 352 HSS for thread M 10 x 1,5 + 1 fitting tool M 10 + 1 pin-Breaker Ø 7,5 mm + each 5 inserts Height = 1,0 x Ø / Height = 1,5 x Ø / Height = 2,0 x Ø	244 205
Set M 12	1 twist drill Ø 12,4 mm + 1 single-cut tap DIN 352 HSS for thread M 12 x 1,75 + 1 fitting tool M 12 + 1 pin-Breaker Ø 9,0 mm + each 5 inserts Height = 1,0 x Ø / Height = 1,5 x Ø / Height = 2,0 x Ø	244 206
Set M 14	1 twist drill Ø 14,5 mm + 1 single-cut tap DIN 352 HSS for thread M 14 x 2,0 + 1 fitting tool M 14 + 1 pin-Breaker Ø 10,0 mm + each 5 inserts Height = 1,0 x Ø / Height = 1,5 x Ø / Height = 2,0 x Ø	244 207





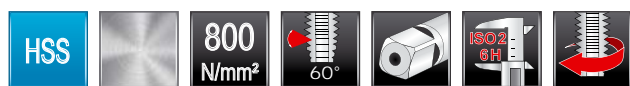
## Twist drills DIN 338 type N HSS ground

Height performance ground twist drill consisting of heavy-duty high speed steel. The fully ground twist drill has a more precise concentricity. Application areas: for steel, alloyed and unalloyed cast iron (up to a strength of 900 N/mm<sup>2</sup>), grey, malleable, ductile and die-cast iron, sintered iron, nickel silver, graphite, short chipping aluminium alloys, brass and bronze.

Packing unit: individual plastic pack

Steel (N/mm <sup>2</sup> ) < 900	■	Brass	■
Steel (N/mm <sup>2</sup> ) < 1100		Bronze	□
Steel (N/mm <sup>2</sup> ) < 1300		Plastics	■
Stainless steel		Cast iron	□
Aluminium	■	Titanium alloyed	

For thread	Thread core hole Ø <sub>1</sub> mm	L1 mm	L2 mm	HSS		
M 3	3,10	65,0	36,0	214 031		10
M 4	4,10	75,0	43,0	214 041		10
M 5	5,20	86,0	52,0	214 052		10
M 6	6,20	101,0	63,0	214 062		10
M 8	8,30	117,0	75,0	214 083		10
M 10	10,30	133,0	87,0	214 103		10
M 12	12,40	151,0	101,0	214 124		5
M 14 + MF 14	14,50	169,0	114,0	214 145		5



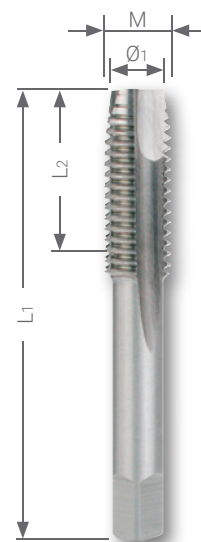
## Single-cut taps HSS ground

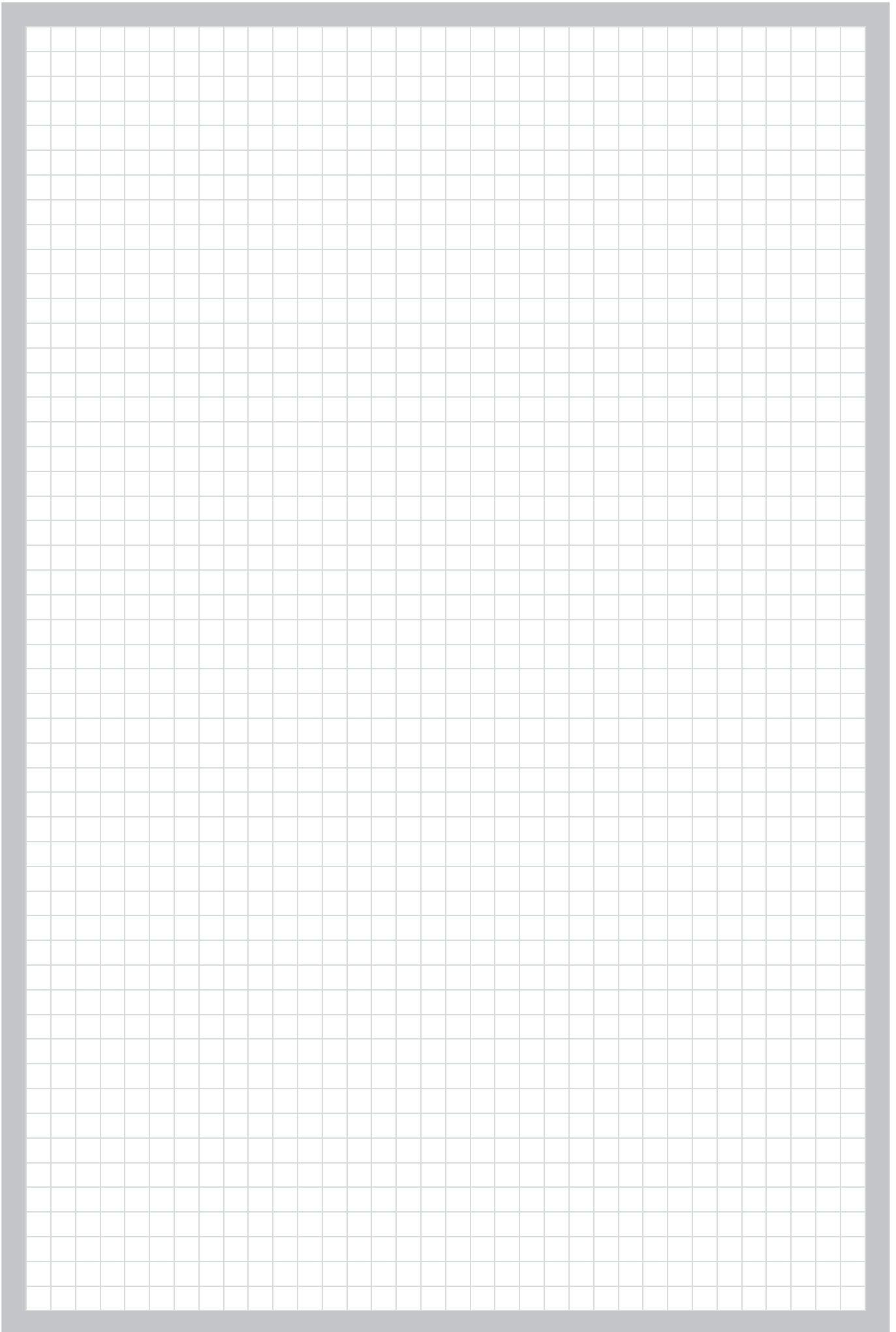
The single-cut tap HSS for through threads in unalloyed and low-alloyed steels up to a strength of 800 N/mm<sup>2</sup>, malleable cast iron and non-ferrous metals. The thread can be cut in one operation by hand or machine.

Packing unit: individual plastic pack

Steel (N/mm <sup>2</sup> ) < 900	■	Brass	■
Steel (N/mm <sup>2</sup> ) < 1100		Bronze	□
Steel (N/mm <sup>2</sup> ) < 1300		Plastics	■
Stainless steel		Cast iron	□
Aluminium	■	Titanium alloyed	

For thread	Thread core hole Ø <sub>1</sub> mm	M mm	L1 mm	L2 mm	HSS		
M 3	3,10	3,6	53,0	13,0	244 603		1
M 4	4,10	4,9	58,0	16,0	244 604		1
M 5	5,20	6,0	66,0	19,0	244 605		1
M 6	6,20	7,3	72,0	22,0	244 606		1
M 8	8,30	9,6	80,0	24,0	244 608		1
M 10	10,30	11,9	89,0	29,0	244 610		1
M 12	12,40	14,3	95,0	30,0	244 612		1
M 14	14,50	16,6	102,0	32,0	244 614		1
MF 14	14,50	15,6	102,0	32,0	244 615		1







# CORE DRILLS



## Core drills

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### **Core drills HSS**

Core drill made of heavy-duty high speed steel. Suitable for steel (such as T-brackets, large sheets), cast iron, non-ferrous and light metals.

### **Core drills HSSE-Co 5**

Core drills made of cobalt alloyed heavy-duty high speed steel with increased heat resistance. Ideal for drilling materials that are difficult to cut and for the highest demands. Suitable for working with unalloyed and alloyed steel (up to a strength of 1200 N/mm<sup>2</sup>), hot and cold-working steel and also for reinforced and case-hardened steel.

### **Core drills TC**

Core drills with tungsten carbide cutters. Particularly for rail tracks, Hardox / Weldox 400 steel, steel, cast iron, high-alloyed chromium steel such as stainless and acid-resistant steel.





## Overview of symbols



High-speed steel



Weldon shank



Drilling depth  
e.g. 30,0 mm



bright surface



High-speed steel  
with 5 % Cobalt content,  
ground



Quick IN-adaptor



Right hand cutting



TiAlN coating



Tungsten carbide



Threaded retainer



Ø tolerance:  
work's specification



Tecrona coating

## Coatings



### Core drills HSS-TiAlN

Core drills made of heavy-duty high speed steel with titanium aluminium nitride coating. The TiAlN wear-resistant coating increases the surface hardness of the tool to approx. 3,000 HV / micro-hardness and the heat resistance to 900° C. It is characterised by high tenacity plus high thermal and chemical stability and helps to achieve better tool life and cutting values. Suitable for dry finishing due to TiAlN coating. Especially suitable for working with unalloyed and alloyed steel (up to a strength of 1200 N/mm<sup>2</sup>), high-alloyed chromium steel such as stainless and acid-resistant steel, as well as cast iron and tough brass.



### Core drills TC Tecrona

The new RUKO core drills with Tecrona coating and hard metal cutting edges can be universally used in non-hardened steels and super alloys (materials with very high alloy percentages of Al,Ti, nickel like inconel, hastelloy, Inox, etc.).



Parts and applications overview:



Material	Surface	Drilling depth	Shank	Ejector pin	Magnetic-stand drilling machine	Ø mm	Article no.	Page
HSS		30,0 mm		-	RS 5e/10 RS 25e/40e RS 126e/140e	10,0 - 15,0	108 1210 - 108 1215	219
HSS		30,0 mm		108 304	RS 5e/10 RS 25e/40e RS 126e/140e	12,0 - 60,0	108 212 - 108 260	220 - 221
HSSE Co 5		30,0 mm		108 304	RS 5e/10 RS 25e/40e RS 126e/140e	12,0 - 60,0	108 212 E - 108 260 E	220 - 221
HSS	TiAlN	30,0 mm		108 304	RS 5e/10 RS 25e/40e RS 126e/140e	12,0 - 60,0	108 212 F - 108 260 F	220 - 221
HSS		55,0 mm		108 305	RS 10 RS 25e/40e RS 126e/140e	12,0 - 60,0	108 512 - 108 560	222
HSSE Co 5		55,0 mm		108 305	RS 10 RS 25e/40e RS 126e/140e	12,0 - 60,0	108 512 E - 108 560 E	222
HSS	TiAlN	55,0 mm		108 305	RS 10 RS 25e/40e RS 126e/140e	12,0 - 60,0	108 512 F - 108 560 F	222
HSS		110,0 mm		108 2000	RS 126e/140e	20,0 - 50,0	108 2020 - 108 2050	223
HSS	TiAlN	110,0 mm		108 2000	RS 126e/140e	20,0 - 50,0	108 2020 F - 108 2050 F	223
HSS		35,0 mm		108 306	RS 10 RS 25e/40e RS 126e/140e	12,0 - 60,0	108 912 E - 108 960 E	224
TC		50,0 mm		108 305 108 701	RS 10 RS 25e/40e RS 126e/140e	12,0 - 50,0	108 712 - 108 750	227
TC	Tecrona	50,0 mm		108 305 108 701	RS 10 RS 25e/40e RS 126e/140e	12,0 - 50,0	108 712 C - 108 750 C	227
TC		50,0 mm		108 306 108 110	RS 25e/40e RS 126e/140e	12,0 - 80,0	108 1112 - 108 1180	228 - 229
TC	Tecrona	50,0 mm		108 306 108 110	RS 25e/40e RS 126e/140e	12,0 - 80,0	108 1112 C - 108 1180 C	228 - 229
TC		50,0 mm		108 110	RS 10 RS 25e/40e RS 126e/140e	12,0 - 80,0	108 012 - 108 080	230 - 231
TC	Tecrona	50,0 mm		108 110	RS 10 RS 25e/40e RS 126e/140e	12,0 - 80,0	108 012 C - 108 080 C	230 - 231
TC		30,0 mm		108 1510	RS 5e/10 RS 25e/40e RS 126e/140e	19,0 - 36,0	108 1519 - 108 1536	232
TC	Tecrona	30,0 mm		108 1510	RS 5e/10 RS 25e/40e RS 126e/140e	19,0 - 36,0	108 1519 C - 108 1536 C	232



Steel (N/mm <sup>2</sup> ) < 900	Steel (N/mm <sup>2</sup> ) < 1100	Steel (N/mm <sup>2</sup> ) < 1300	Stainless steel	Aluminium für / for ALU	Brass Zn	Bronze Cu Sn	Plastics	Cast iron	Titanium alloyed Ti
■				■	□	□	■	□	
■				■	□	□	■	□	
■	■	□	■	■	□	□	■	□	
■	■	□	■	■	□	□	■	□	
■				■	□	□	■	□	
■	■	□	■	■	□	□	■	□	
■	■	□	■	■	□	□	■	□	
■				■	□	□	■	□	
■	■	□	■	■	□	□	■	□	
■	■	□	■	■	■	□		■	□
■	■	■	■	■	■	■		■	■
■	■	□	■	■	■	□		■	□
■	■	■	■	■	■	■		■	■
■	■	□	■	■	■	□		■	□
■	■	■	■	■	■	■		■	■
■	■	□	■	■	■	□		■	□
■	■	■	■	■	■	■		■	■



## Solid drills with weldon shank (3/4")

For use in magnetic-stand and pillar drilling machines with morse taper retainer. In connection with RUKO arbor holders no. 108 302 / 108 303 / 108 315 / 108 316, with RUKO EasyLock no. 108 312 / 108 313 / 108 314 or a weldon direct shank such as the RUKO magnetic-stand RS 5e / RS10 drill.

### Handling

- Push Solid drill „Solid 3S“ into arbor and tighten hexagon socket screw firmly.
- Check proper seating of Solid drill „Solid 3S“ in arbor holder.
- With the EasyLock arbor, the Solid drill „Solid 3S“ gets automatically locked.
- Drill to full dimension straight away. No centring or pre-drilling required.
- The blade geometry of the Solid drill „Solid 3S“ permits rapid upward chip removal.
- Observe table of cutting speeds and employ appropriate cooling agent.



## Core drills with weldon shank (3/4")

For use in magnetic-stand and pillar drilling machines with morse taper retainer. In connection with RUKO arbor holders no. 108 302 / 108 303 / 108 315 / 108 316, with RUKO EasyLock no. 108 312 / 108 313 / 108 314 or a weldon direct shank such as the RUKO magnetic-stand RS 5e / RS10 drill.

### Handling

- Insert Weldon shank ejector pin into core drill.
- Push core drill into arbor and tighten hexagon socket screw firmly.
- Check proper seating of core drill in arbor holder.
- With the EasyLock arbor, the core drill gets automatically locked.
- Drill to full dimension straight away. No centring or pre-drilling required.
- The blade geometry of the core drill permits rapid upward chip removal.
- The spring-loaded ejector pin facilitates removal of the cut-out.
- Observe table of cutting speeds and employ appropriate cooling agent.



## Core drills HSS with Quick IN-shank

For use in magnetic-stand and column drilling machines in connection with Quick IN-adaptor as the Fein KBM 32 Q.

### Handling

- Insert ejector pin into core drill.
- Push core drill into Quick In-adaptor.
- Drill to full dimension straight away. No centring or pre-drilling required.
- The blade geometry of the core drill permits rapid upward chip removal.
- The spring-loaded ejector pin facilitates removal of the cut-outs.
- Observe table of cutting speeds and employ appropriate cooling agent.



## Core drills with threaded retainer

For use in magnetic-stand and pillar drilling machines with morse taper retainer. In connection with RUKO arbor holders no. 108 102 / 108 103 / 108 104 / 108 105 or a threaded retainer such as the Fein KBM 542 / KBM 65.

### Handling

- Screw core drill into arbor holder.
- Drill to full dimension straight away. No centring or pre-drilling required.
- The blade geometry of the core drill permits rapid upward chip removal.
- The spring-loaded ejector pin facilitates removal of the cut-outs.
- Observe table of cutting speeds and employ appropriate cooling agent.



RS5e / RS10 / RS25e / RS40e  
RS125e / RS126e / RS140e



## Solid drills „Solid 3S“ with weldon shank (3/4"), CBN ground and 3 cutting edges, cutting depth 30,0 mm

The spiral-grooved geometry with 3 cutting edges ensures extremely high stability of the "Solid 3S" solid drill, thus preventing the risk of breakage of the cutting edges by overloading or jamming of the chips. Thanks to the high stability, the service life of the "Solid 3S" is considerably increased. This reduces the costs of use. The "Solid 3S" enables drilling to full dimension without centring or pre-drilling. The "Solid 3S" can be ground more simply than core drills of the same diameter.

Packing unit: in plastic tubes of 1



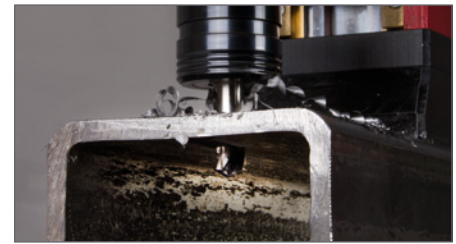
Reduces the risk of breakage compared to core drills up to Ø 15.0 mm.

Cooling required.

	<input type="checkbox"/>
Steel (N/mm2) < 900	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1100	<input type="checkbox"/>
Steel (N/mm2) < 1300	<input type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>

	<input type="checkbox"/>
Brass	<input type="checkbox"/>
Bronze	<input type="checkbox"/>
Plastics	<input type="checkbox"/>
Cast iron	<input type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>

Ø1 mm	Ø2 mm	L1 mm	Cutting depth mm	HSS		
10,0	19,0	64,0	30,0	108 1210	1	
11,0	19,0	64,0	30,0	108 1211	1	
12,0	19,0	64,0	30,0	108 1212	1	
13,0	19,0	64,0	30,0	108 1213	1	
14,0	19,0	64,0	30,0	108 1214	1	
15,0	19,0	64,0	30,0	108 1215	1	



RS5e / RS10 / RS25e / RS40e  
RS126e / RS140e

## Solid drills „Solid 3S“ with weldon shank (3/4") and 3 cutting edges in steel case

Description	HSS
6- piece set of solid drills „Solid 3S“ HSS Ø 10,0 mm - 11,0 mm - 12,0 mm - 13,0 mm - 14,0 mm - 15,0 mm	108 830



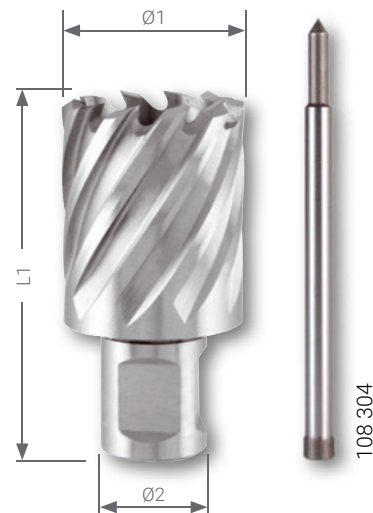


RS5e / RS10 / RS25e / RS40e  
RS125e / RS126e / RS140e

## Core drills HSS and HSSE-Co 5 with weldon shank (3/4"), CBN ground, cutting depth 30,0 mm

Ejector pin: Article no. 108 304 (Ø 6,35 x 77,0 mm)

Packing unit: in plastic tubes of 1



Steel (N/mm2) < 900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1100	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1300	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Brass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bronze	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plastics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Cast iron	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Ø1 mm	Ø2 mm	L1 mm	Cutting depth mm	HSS	HSSE Co 5	HSS	TITAIN	
12,0	19,0	63,0	30,0	108 212	108 212 E	108 212 F		1
13,0	19,0	63,0	30,0	108 213	108 213 E	108 213 F		1
14,0	19,0	63,0	30,0	108 214	108 214 E	108 214 F		1
15,0	19,0	63,0	30,0	108 215	108 215 E	108 215 F		1
16,0	19,0	63,0	30,0	108 216	108 216 E	108 216 F		1
17,0	19,0	63,0	30,0	108 217	108 217 E	108 217 F		1
18,0	19,0	63,0	30,0	108 218	108 218 E	108 218 F		1
19,0	19,0	63,0	30,0	108 219	108 219 E	108 219 F		1
20,0	19,0	63,0	30,0	108 220	108 220 E	108 220 F		1
21,0	19,0	63,0	30,0	108 221	108 221 E	108 221 F		1
22,0	19,0	63,0	30,0	108 222	108 222 E	108 222 F		1
23,0	19,0	63,0	30,0	108 223	108 223 E	108 223 F		1
24,0	19,0	63,0	30,0	108 224	108 224 E	108 224 F		1
25,0	19,0	63,0	30,0	108 225	108 225 E	108 225 F		1
26,0	19,0	63,0	30,0	108 226	108 226 E	108 226 F		1
27,0	19,0	63,0	30,0	108 227	108 227 E	108 227 F		1
28,0	19,0	63,0	30,0	108 228	108 228 E	108 228 F		1
29,0	19,0	63,0	30,0	108 229	108 229 E	108 229 F		1
30,0	19,0	63,0	30,0	108 230	108 230 E	108 230 F		1
31,0	19,0	63,0	30,0	108 231	108 231 E	108 231 F		1
32,0	19,0	63,0	30,0	108 232	108 232 E	108 232 F		1
33,0	19,0	63,0	30,0	108 233	108 233 E	108 233 F		1
34,0	19,0	63,0	30,0	108 234	108 234 E	108 234 F		1
35,0	19,0	63,0	30,0	108 235	108 235 E	108 235 F		1
36,0	19,0	63,0	30,0	108 236	108 236 E	108 236 F		1
37,0	19,0	63,0	30,0	108 237	108 237 E	108 237 F		1
38,0	19,0	63,0	30,0	108 238	108 238 E	108 238 F		1
39,0	19,0	63,0	30,0	108 239	108 239 E	108 239 F		1
40,0	19,0	63,0	30,0	108 240	108 240 E	108 240 F		1
41,0	19,0	63,0	30,0	108 241	108 241 E	108 241 F		1
42,0	19,0	63,0	30,0	108 242	108 242 E	108 242 F		1
43,0	19,0	63,0	30,0	108 243	108 243 E	108 243 F		1
44,0	19,0	63,0	30,0	108 244	108 244 E	108 244 F		1
45,0	19,0	63,0	30,0	108 245	108 245 E	108 245 F		1
46,0	19,0	63,0	30,0	108 246	108 246 E	108 246 F		1
47,0	19,0	63,0	30,0	108 247	108 247 E	108 247 F		1
48,0	19,0	63,0	30,0	108 248	108 248 E	108 248 F		1
49,0	19,0	63,0	30,0	108 249	108 249 E	108 249 F		1
50,0	19,0	63,0	30,0	108 250	108 250 E	108 250 F		1
51,0	19,0	63,0	30,0	108 251	108 251 E	108 251 F		1
52,0	19,0	63,0	30,0	108 252	108 252 E	108 252 F		1
53,0	19,0	63,0	30,0	108 253	108 253 E	108 253 F		1
54,0	19,0	63,0	30,0	108 254	108 254 E	108 254 F		1
55,0	19,0	63,0	30,0	108 255	108 255 E	108 255 F		1
56,0	19,0	63,0	30,0	108 256	108 256 E	108 256 F		1
57,0	19,0	63,0	30,0	108 257	108 257 E	108 257 F		1
58,0	19,0	63,0	30,0	108 258	108 258 E	108 258 F		1
59,0	19,0	63,0	30,0	108 259	108 259 E	108 259 F		1
60,0	19,0	63,0	30,0	108 260	108 260 E	108 260 F		1



RS5e / RS10 / RS25e / RS40e  
RS125e / RS126e / RS140e

Set of core drills HSS and HSSE-Co 5 with weldon shank (3/4"),  
CBN ground, cutting depth 30,0 mm in plastic case

Description	HSS	HSSE Co 5
10-piece set of core drills with weldon shank (3/4") 8 core drills with weldon shank (3/4") Ø 12,0 mm - 14,0 mm - 16,0 mm - 18,0 mm - 20,0 mm - 22,0 mm - 24,0 mm - 26,0 mm + 1 cutting spray 50 ml article-no. 101 010 + 1 ejector pin Ø 6,35 mm x 77,0 mm for cutting depth 30,0 mm article-no. 108 304	108 810	108 810 E
10-piece set of core drills with weldon shank (3/4") 8 core drills with weldon shank (3/4") Ø 2 x 14,0 mm - 2 x 16,0 mm - 2 x 18,0 mm - 1 x 20,0 mm - 1 x 22,0 mm + 1 cutting spray 50 ml article-no. 101 010 + 1 ejector pin Ø 6,35 mm x 77,0 mm for cutting depth 30,0 mm article-no. 108 304	108 813	—



Set of core drills HSS and HSSE-Co 5 with weldon shank (3/4"),  
CBN ground, cutting depth 30,0 mm in steel case

Description	HSS	HSSE Co 5	HSS TITAIN
7-piece set of core drills with weldon shank (3/4") 6 core drills with weldon shank (3/4") Ø 12,0 mm - 14,0 mm - 16,0 mm - 18,0 mm - 20,0 mm - 22,0 mm + 1 ejector pin Ø 6,35 mm x 77,0 mm for cutting depth 30,0 mm article-no. 108 304	108 820	—	108 820 F
7-piece set of core drills with weldon shank (3/4") 6 core drills with weldon shank (3/4") Ø 2 x 14,0 mm - 2 x 18,0 mm - 2 x 22,0 mm + 1 ejector pin Ø 6,35 mm x 77,0 mm for cutting depth 30,0 mm article-no. 108 304	108 840	108 840 E	108 840 F





RS10 / RS25e / RS40e  
RS125e / RS126e / RS140e

## Core drills HSS and HSSE-Co 5 with weldon shank (3/4"), CBN ground, cutting depth 55,0 mm

Ejector pin: Article no. 108 305 (Ø 6,35 x 102,0 mm)

Packing unit: in plastic tubes of 1



Steel (N/mm2) < 900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1100	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1300	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Brass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bronze	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plastics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Cast iron	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Ø1 mm	Ø2 mm	L1 mm	Cutting depth mm	HSS	HSSE Co 5	HSS  TITAN	
12,0	19,0	88,0	55,0	108 512	108 512 E	108 512 F	1
13,0	19,0	88,0	55,0	108 513	108 513 E	108 513 F	1
14,0	19,0	88,0	55,0	108 514	108 514 E	108 514 F	1
15,0	19,0	88,0	55,0	108 515	108 515 E	108 515 F	1
16,0	19,0	88,0	55,0	108 516	108 516 E	108 516 F	1
17,0	19,0	88,0	55,0	108 517	108 517 E	108 517 F	1
18,0	19,0	88,0	55,0	108 518	108 518 E	108 518 F	1
19,0	19,0	88,0	55,0	108 519	108 519 E	108 519 F	1
20,0	19,0	88,0	55,0	108 520	108 520 E	108 520 F	1
21,0	19,0	88,0	55,0	108 521	108 521 E	108 521 F	1
22,0	19,0	88,0	55,0	108 522	108 522 E	108 522 F	1
23,0	19,0	88,0	55,0	108 523	108 523 E	108 523 F	1
24,0	19,0	88,0	55,0	108 524	108 524 E	108 524 F	1
25,0	19,0	88,0	55,0	108 525	108 525 E	108 525 F	1
26,0	19,0	88,0	55,0	108 526	108 526 E	108 526 F	1
27,0	19,0	88,0	55,0	108 527	108 527 E	108 527 F	1
28,0	19,0	88,0	55,0	108 528	108 528 E	108 528 F	1
29,0	19,0	88,0	55,0	108 529	108 529 E	108 529 F	1
31,0	19,0	88,0	55,0	108 530	108 530 E	108 530 F	1
32,0	19,0	88,0	55,0	108 531	108 531 E	108 531 F	1
33,0	19,0	88,0	55,0	108 532	108 532 E	108 532 F	1
34,0	19,0	88,0	55,0	108 533	108 533 E	108 533 F	1
35,0	19,0	88,0	55,0	108 534	108 534 E	108 534 F	1
36,0	19,0	88,0	55,0	108 535	108 535 E	108 535 F	1
37,0	19,0	88,0	55,0	108 536	108 536 E	108 536 F	1
38,0	19,0	88,0	55,0	108 537	108 537 E	108 537 F	1
39,0	19,0	88,0	55,0	108 538	108 538 E	108 538 F	1
40,0	19,0	88,0	55,0	108 539	108 539 E	108 539 F	1
41,0	19,0	88,0	55,0	108 540	108 540 E	108 540 F	1
42,0	19,0	88,0	55,0	108 541	108 541 E	108 541 F	1
43,0	19,0	88,0	55,0	108 542	108 542 E	108 542 F	1
44,0	19,0	88,0	55,0	108 543	108 543 E	108 543 F	1
45,0	19,0	88,0	55,0	108 544	108 544 E	108 544 F	1
46,0	19,0	88,0	55,0	108 545	108 545 E	108 545 F	1
47,0	19,0	88,0	55,0	108 546	108 546 E	108 546 F	1
48,0	19,0	88,0	55,0	108 547	108 547 E	108 547 F	1
49,0	19,0	88,0	55,0	108 548	108 548 E	108 548 F	1
50,0	19,0	88,0	55,0	108 549	108 549 E	108 549 F	1
51,0	19,0	88,0	55,0	108 550	108 550 E	108 550 F	1
52,0	19,0	88,0	55,0	108 551	108 551 E	108 551 F	1
53,0	19,0	88,0	55,0	108 552	108 552 E	108 552 F	1
54,0	19,0	88,0	55,0	108 553	108 553 E	108 553 F	1
55,0	19,0	88,0	55,0	108 554	108 554 E	108 554 F	1
56,0	19,0	88,0	55,0	108 555	108 555 E	108 555 F	1
57,0	19,0	88,0	55,0	108 556	108 556 E	108 556 F	1
58,0	19,0	88,0	55,0	108 557	108 557 E	108 557 F	1
59,0	19,0	88,0	55,0	108 558	108 558 E	108 558 F	1
60,0	19,0	88,0	55,0	108 559	108 559 E	108 559 F	1
60,0	19,0	88,0	55,0	108 560	108 560 E	108 560 F	1



RS125e / RS126e  
RS140e



## Core drills HSS with weldon shank (3/4"), CBN ground, cutting depth 110,0 mm

Ejector pin: Article no. 108 2000 (Ø 8,0 x 155,0 mm)

Packing unit: in plastic tubes of 1



Move core drill out of the hole, remove the chips in the bore-hole. Repeat this procedure several times.

Reduces the risk of breakage and increases the service life of the core drill.

Steel (N/mm <sup>2</sup> ) < 900	■	■
Steel (N/mm <sup>2</sup> ) < 1100		■
Steel (N/mm <sup>2</sup> ) < 1300		□
Rust-resistant steel		■
Aluminium	■	■
Brass	□	□
Bronze	□	□
Plastics	■	■
Cast iron	□	□
Titanium alloyed		



Ø1 mm	Ø2 mm	L1 mm	Cutting depth mm				
20,0	19,0	145,0	110,0	108 2020	108 2020 F		1
21,0	19,0	145,0	110,0	108 2021	108 2021 F		1
22,0	19,0	145,0	110,0	108 2022	108 2022 F		1
24,0	19,0	145,0	110,0	108 2024	108 2024 F		1
25,0	19,0	145,0	110,0	108 2025	108 2025 F		1
26,0	19,0	145,0	110,0	108 2026	108 2026 F		1
28,0	19,0	145,0	110,0	108 2028	108 2028 F		1
30,0	19,0	145,0	110,0	108 2030	108 2030 F		1
32,0	19,0	145,0	110,0	108 2032	108 2032 F		1
33,0	19,0	145,0	110,0	108 2033	108 2033 F		1
34,0	19,0	145,0	110,0	108 2034	108 2034 F		1
35,0	19,0	145,0	110,0	108 2035	108 2035 F		1
36,0	19,0	145,0	110,0	108 2036	108 2036 F		1
38,0	19,0	145,0	110,0	108 2038	108 2038 F		1
40,0	19,0	145,0	110,0	108 2040	108 2040 F		1
41,0	19,0	145,0	110,0	108 2041	108 2041 F		1
42,0	19,0	145,0	110,0	108 2042	108 2042 F		1
45,0	19,0	145,0	110,0	108 2045	108 2045 F		1
50,0	19,0	145,0	110,0	108 2050	108 2050 F		1



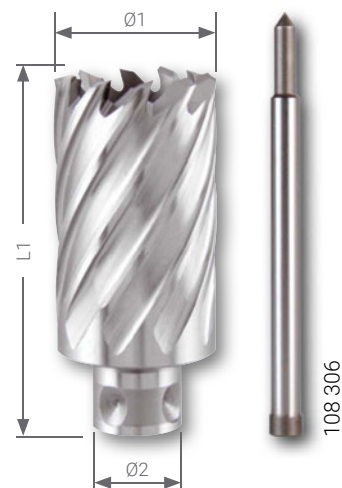


RS5e / RS10 / RS25e / RS40e  
RS125e / RS126e / RS140e

## Core drills HSSE-Co 5 with Quick IN-shank, CBN ground, cutting depth 35,0 mm

Ejector pin: Article no. 108 306 (Ø 6,35 x 87,0 mm)  
Machine no.: with Quick IN-adaptor

Packing unit: in plastic tubes of 1



Steel (N/mm2) < 900	<input checked="" type="checkbox"/>	Brass	<input type="checkbox"/>
Steel (N/mm2) < 1100	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm2) < 1300	<input type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>
Rust-resistant steel	<input checked="" type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>

Ø1 mm	Ø2 mm	L1 mm	Cutting depth mm	HSSE Co 5	
12,0	18,0	77,0	35,0	108 912 E	1
13,0	18,0	77,0	35,0	108 913 E	1
14,0	18,0	77,0	35,0	108 914 E	1
15,0	18,0	77,0	35,0	108 915 E	1
16,0	18,0	77,0	35,0	108 916 E	1
17,0	18,0	77,0	35,0	108 917 E	1
18,0	18,0	77,0	35,0	108 918 E	1
19,0	18,0	77,0	35,0	108 919 E	1
20,0	18,0	77,0	35,0	108 920 E	1
21,0	18,0	77,0	35,0	108 921 E	1
22,0	18,0	77,0	35,0	108 922 E	1
23,0	18,0	77,0	35,0	108 923 E	1
24,0	18,0	77,0	35,0	108 924 E	1
25,0	18,0	77,0	35,0	108 925 E	1
26,0	18,0	77,0	35,0	108 926 E	1
27,0	18,0	77,0	35,0	108 927 E	1
28,0	18,0	77,0	35,0	108 928 E	1
29,0	18,0	77,0	35,0	108 929 E	1
30,0	18,0	77,0	35,0	108 930 E	1
32,0	18,0	77,0	35,0	108 932 E	1
35,0	18,0	77,0	35,0	108 935 E	1
36,0	18,0	77,0	35,0	108 936 E	1
40,0	18,0	77,0	35,0	108 940 E	1
45,0	18,0	77,0	35,0	108 945 E	1
50,0	18,0	77,0	35,0	108 950 E	1
55,0	18,0	77,0	35,0	108 955 E	1
60,0	18,0	77,0	35,0	108 960 E	1

## Set of core drills HSSE-Co 5 with Quick IN-shank, CBN ground in plastic case

10-piece set of core drills HSSE-Co 5 with Quick IN-shank 8 core drills HSSE-Co 5 Ø 12,0 mm - 14,0 mm - 16,0 mm - 18,0 mm 20,0 mm - 22,0 mm - 24,0 mm - 26,0 mm + 1 cutting spray 50 ml article no. 101 010 + 1 ejector pin Ø 6,35 x 87,0 mm for cutting depth 35,0 mm article no. 108 306	108 811 E



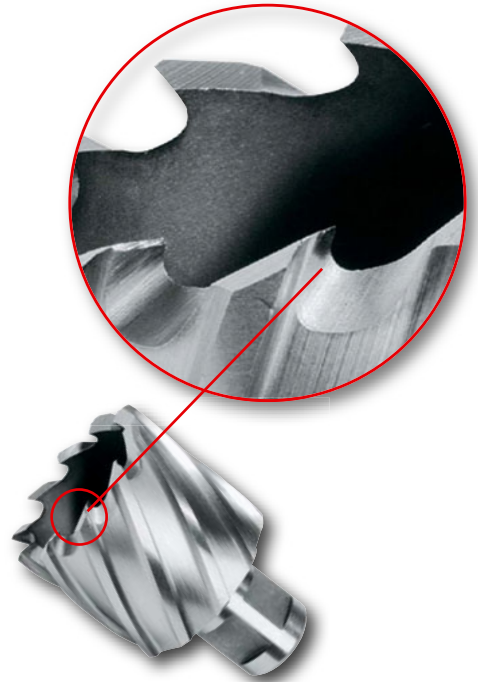




## The cutting edge is the important thing ...

Considerably improved cutting behaviour was attained by research into the cutting geometry, which has a beneficial effect on cutting performance and drill life.

1. Optimised cutting edge geometry for increased cutting performances and reduced cutting forces.
2. The effective cutting angles are designed for universal use in various sorts of steel.
3. Improved removal of chips thanks to U-shaped recesses. The specific geometry of the recess reduces the thermal load on the HSS core drill as the heat created in cutting is removed with the chips to a very great extent.
4. Reduction of the friction between the HSS core drill and the workpiece thanks to optimised spiral-shaped guide chamfers.



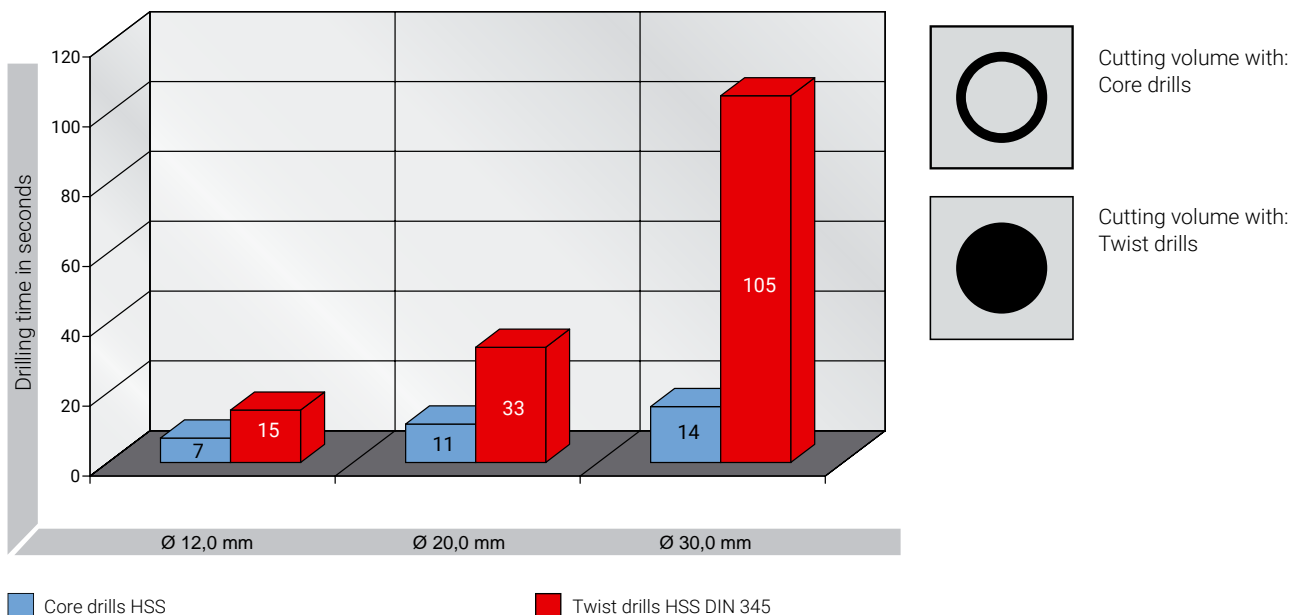
## Comparison of cutting times core drills HSS vs. twist drills HSS DIN 345

Work piece: steel girder  
 Material: construction steel S235JR  
 Cutting depth: 12,0 mm

Machine: RUKO Magnetic-stand drilling machine RS140  
 Cutting with twist drills has been made without pilot drilling directly into the material. No cooling or lubrication has been used.

RUKO core drills will save costs and time. As core drills only cut the width of the teeth and as twist drills cut the entire diameter of the hole, core drills are many times faster (see diagram). Centering and pilot drilling are not necessary anymore.

Core drills cut up to ten times faster than twist drills. Core drills only cut the width of the teeth. The core is ejected. Lower energy requirements and less wear result in a longer working life. Twist drills have to machine the entire diameter of the hole. This calls for considerable downward pressure and high driving power.





## Product Information

The RUKO core drills with Tecrona coating and hard metal cutting edges can be universally used in non-hardened steels and super alloys (materials with very high alloy percentages of Al,Ti, nickel like inconel, hastelloy, Inox, etc.).

## Technical data:

<b>Surface:</b>	<b>blue-grey</b>
<b>Hardness:</b>	<b>4200 HV</b>
<b>Thickness:</b>	<b>1µm - 7µm</b>
<b>Coefficient of friction:</b>	<b>0.35</b>

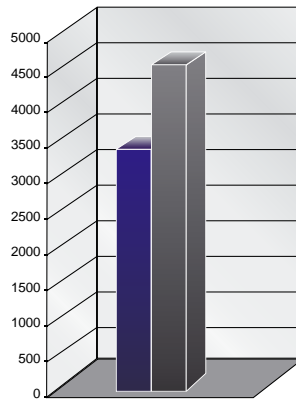
## Advantages of the Tecrona coating

The Tecrona coating is the ideal coating for all drilling works that stress the tool extremely. It adheres very well to the tool, where by the wear-resistant coating increases the surface hardness to approximately 4200 HV. The coefficient of friction is extremely low in this coating, thereby increasing the service life with low wear.

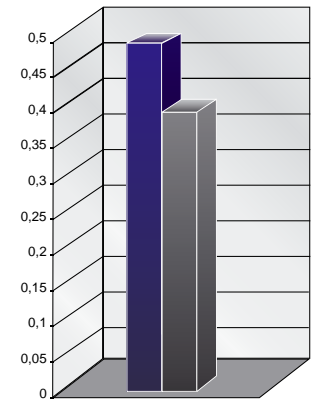
### Applications:

Particularly for rail tracks, Hardox / Weldox steel, steel, cast iron, high-alloyed chromium steel such as stainless and acid-resistant steel.

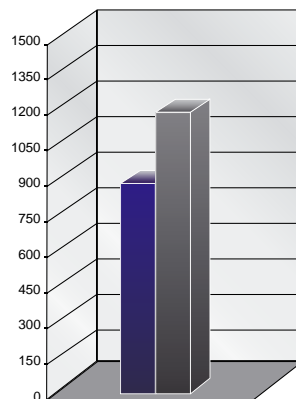
### Comparison of hardness



### Comparison of coefficients of friction



### Temperature resistance



■ TiAlN  
■ Tecrona



■ Main application

□ Other application



RS10 / RS25e / RS40e  
RS125e / RS126e / RS140e



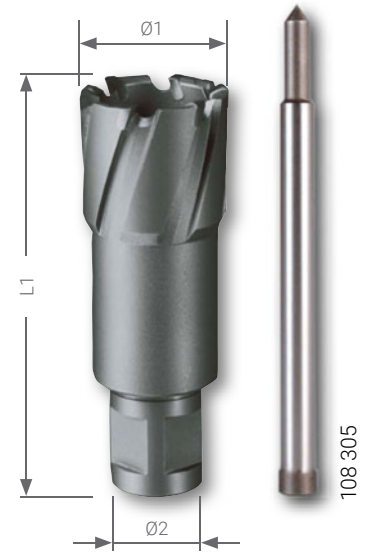
## Core drills with tungsten-carbide cutting edges and weldon shank (3/4"), cutting depth 50,0 mm

Suitable for Hardox / Weldom 400 steel

Ejector pin:

Ø 12,0 mm up to Ø 17,0, Article no. 108 305 (Ø 6,35 x 102,0 mm)

Ø 18,0 mm up to Ø 50,0, Article no. 108 701 (Ø 8,0 x 112,0 mm)



Packing unit: individual plastic pack

Steel (N/mm <sup>2</sup> ) < 900	■	■
Steel (N/mm <sup>2</sup> ) < 1100	■	■
Steel (N/mm <sup>2</sup> ) < 1300	□	■
Rust-resistant steel	■	■
Aluminium	■	■

Brass	■	■
Bronze	□	■
Plastics		
Cast iron	■	■
Titanium alloyed	□	■

Ø1 mm	Ø2 mm	L1 mm	Cutting depth mm	TC	TC	
12,0	19,0	84,0	50,0	108 712	108 712 C	1
13,0	19,0	84,0	50,0	108 713	108 713 C	1
14,0	19,0	84,0	50,0	108 714	108 714 C	1
15,0	19,0	84,0	50,0	108 715	108 715 C	1
16,0	19,0	84,0	50,0	108 716	108 716 C	1
17,0	19,0	84,0	50,0	108 717	108 717 C	1
18,0	19,0	84,0	50,0	108 718	108 718 C	1
19,0	19,0	84,0	50,0	108 719	108 719 C	1
20,0	19,0	84,0	50,0	108 720	108 720 C	1
21,0	19,0	84,0	50,0	108 721	108 721 C	1
22,0	19,0	84,0	50,0	108 722	108 722 C	1
23,0	19,0	84,0	50,0	108 723	108 723 C	1
24,0	19,0	84,0	50,0	108 724	108 724 C	1
25,0	19,0	84,0	50,0	108 725	108 725 C	1
26,0	19,0	84,0	50,0	108 726	108 726 C	1
27,0	19,0	84,0	50,0	108 727	108 727 C	1
28,0	19,0	84,0	50,0	108 728	108 728 C	1
29,0	19,0	84,0	50,0	108 729	108 729 C	1
30,0	19,0	84,0	50,0	108 730	108 730 C	1
31,0	19,0	84,0	50,0	108 731	108 731 C	1
32,0	19,0	84,0	50,0	108 732	108 732 C	1
33,0	19,0	84,0	50,0	108 733	108 733 C	1
34,0	19,0	84,0	50,0	108 734	108 734 C	1
35,0	19,0	84,0	50,0	108 735	108 735 C	1
36,0	19,0	84,0	50,0	108 736	108 736 C	1
37,0	19,0	84,0	50,0	108 737	108 737 C	1
38,0	19,0	84,0	50,0	108 738	108 738 C	1
39,0	19,0	84,0	50,0	108 739	108 739 C	1
40,0	19,0	84,0	50,0	108 740	108 740 C	1
41,0	19,0	84,0	50,0	108 741	108 741 C	1
42,0	19,0	84,0	50,0	108 742	108 742 C	1
43,0	19,0	84,0	50,0	108 743	108 743 C	1
44,0	19,0	84,0	50,0	108 744	108 744 C	1
45,0	19,0	84,0	50,0	108 745	108 745 C	1
46,0	19,0	84,0	50,0	108 746	108 746 C	1
47,0	19,0	84,0	50,0	108 747	108 747 C	1
48,0	19,0	84,0	50,0	108 748	108 748 C	1
49,0	19,0	84,0	50,0	108 749	108 749 C	1
50,0	19,0	84,0	50,0	108 750	108 750 C	1

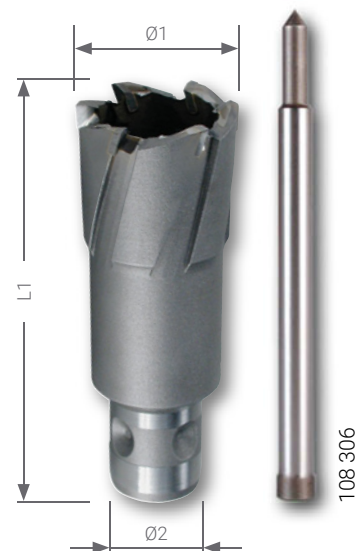


RS10 / RS25e / RS40e  
RS125e / RS126e / RS140e

## Core drills with tungsten-carbide and Quick IN-shank, CBN ground, cutting depth 35,0 / 50,0 mm

Ø 12,0 mm up to Ø 32,0 mm with fixed shank.  
Ø 33,0 mm up to Ø 80,0 mm including Quick IN-adaptor No. 108 111.

Machine no.: with Quick IN-adaptor  
Ejector pin: Ø 12,0 mm up to Ø 32,0 mm, article no. 108 306 (Ø 6,35 x 87,0 mm)  
Ø 33,0 mm up to Ø 80,0 mm, article no. 108 110 (Ø 6,35 x 123,0 mm)






Packing unit: individual plastic pack

Steel (N/mm <sup>2</sup> ) < 900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Rust-resistant steel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>


Brass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bronze	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Plastics	<input type="checkbox"/>	<input type="checkbox"/>
Cast iron	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Ø1 mm	Ø2 mm	L1 mm	Cutting depth mm	TC	TC Tecrona	
12,0	18,0	83,0	35,0	108 1112	108 1112 C	1
13,0	18,0	83,0	35,0	108 1113	108 1113 C	1
14,0	18,0	83,0	35,0	108 1114	108 1114 C	1
15,0	18,0	83,0	35,0	108 1115	108 1115 C	1
16,0	18,0	83,0	35,0	108 1116	108 1116 C	1
17,0	18,0	83,0	35,0	108 1117	108 1117 C	1
18,0	18,0	83,0	35,0	108 1118	108 1118 C	1
19,0	18,0	83,0	35,0	108 1119	108 1119 C	1
20,0	18,0	83,0	35,0	108 1120	108 1120 C	1
21,0	18,0	83,0	35,0	108 1121	108 1121 C	1
22,0	18,0	83,0	35,0	108 1122	108 1122 C	1
23,0	18,0	83,0	35,0	108 1123	108 1123 C	1
24,0	18,0	83,0	35,0	108 1124	108 1124 C	1
25,0	18,0	83,0	35,0	108 1125	108 1125 C	1
26,0	18,0	83,0	35,0	108 1126	108 1126 C	1
27,0	18,0	83,0	35,0	108 1127	108 1127 C	1
28,0	18,0	83,0	35,0	108 1128	108 1128 C	1
29,0	18,0	83,0	35,0	108 1129	108 1129 C	1
30,0	18,0	83,0	35,0	108 1130	108 1130 C	1
31,0	18,0	83,0	35,0	108 1131	108 1131 C	1
32,0	18,0	83,0	35,0	108 1132	108 1132 C	1
33,0	18,0	112,0	50,0	108 1133	108 1133 C	1
34,0	18,0	112,0	50,0	108 1134	108 1134 C	1
35,0	18,0	112,0	50,0	108 1135	108 1135 C	1
36,0	18,0	112,0	50,0	108 1136	108 1136 C	1
37,0	18,0	112,0	50,0	108 1137	108 1137 C	1
38,0	18,0	112,0	50,0	108 1138	108 1138 C	1
39,0	18,0	112,0	50,0	108 1139	108 1139 C	1
40,0	18,0	112,0	50,0	108 1140	108 1140 C	1
41,0	18,0	112,0	50,0	108 1141	108 1141 C	1
42,0	18,0	112,0	50,0	108 1142	108 1142 C	1
43,0	18,0	112,0	50,0	108 1143	108 1143 C	1
44,0	18,0	112,0	50,0	108 1144	108 1144 C	1
45,0	18,0	112,0	50,0	108 1145	108 1145 C	1
46,0	18,0	112,0	50,0	108 1146	108 1146 C	1
47,0	18,0	112,0	50,0	108 1147	108 1147 C	1
48,0	18,0	112,0	50,0	108 1148	108 1148 C	1
49,0	18,0	112,0	50,0	108 1149	108 1149 C	1
50,0	18,0	112,0	50,0	108 1150	108 1150 C	1

Ø1 mm	Ø2 mm	L1 mm	Cutting depth mm	TC 	TC 	
51,0	18,0	112,0	50,0	108 1151	108 1151 C	1
52,0	18,0	112,0	50,0	108 1152	108 1152 C	1
53,0	18,0	112,0	50,0	108 1153	108 1153 C	1
54,0	18,0	112,0	50,0	108 1154	108 1154 C	1
55,0	18,0	112,0	50,0	108 1155	108 1155 C	1
60,0	18,0	112,0	50,0	108 1160	108 1160 C	1
61,0	18,0	112,0	50,0	108 1161	108 1161 C	1
63,0	18,0	112,0	50,0	108 1163	108 1163 C	1
65,0	18,0	112,0	50,0	108 1165	108 1165 C	1
68,0	18,0	112,0	50,0	108 1168	108 1168 C	1
70,0	18,0	112,0	50,0	108 1170	108 1170 C	1
71,0	18,0	112,0	50,0	108 1171	108 1171 C	1
75,0	18,0	112,0	50,0	108 1175	108 1175 C	1
80,0	18,0	112,0	50,0	108 1180	108 1180 C	1



Set of core drills with tungsten-carbide cutting edges and Quick IN-shank, CBN ground in plastic case

	TC 
10-piece set of core drills with tungsten-carbide cutting edges 8 core drills with tungsten-carbide cutting edges and Quick IN-shank Ø 12,0 mm - 14,0 mm - 16,0 mm - 18,0 mm 20,0 mm - 22,0 mm - 24,0 mm - 26,0 mm + 1 cutting spray 50 ml article no. 101 010 + 1 ejector pin Ø 6,35 x 87,0 mm for cutting depth 35,0 mm article no. 108 306	108 822



**i**

## Coolants and lubricants

The RUKO coolants and lubricants provide an outstanding separation and cooling effect. They generate a high surface quality and increase the service life of the tools, even with hard and brittle materials.

Suitably aligned to our product range, you will find the coolants and lubricants in our section 14 from page 319.





RS10 / RS25e / RS40e  
RS125e / RS126e / RS140e

## Core drills with tungsten-carbide cutting edges and threaded retainer, cutting depth 50,0 mm

Ejector pin: article no. 108 110 (Ø 6,35 x 123,0 mm)  
Adapter: thread M18 x 6 P1,5






Packing unit: individual plastic pack

Steel (N/mm2) < 900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1100	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1300	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Rust-resistant steel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Brass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bronze	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Plastics	<input type="checkbox"/>	<input type="checkbox"/>
Cast iron	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Ø1 mm	Ø2 mm	L1 mm	Cutting depth mm			
12,0	MT 2 / 3	84,0	50,0	108 012	108 012 C	1
13,0	MT 2 / 3	84,0	50,0	108 013	108 013 C	1
14,0	MT 2 / 3	84,0	50,0	108 014	108 014 C	1
15,0	MT 2 / 3	84,0	50,0	108 015	108 015 C	1
16,0	MT 2 / 3	84,0	50,0	108 016	108 016 C	1
17,0	MT 2 / 3	84,0	50,0	108 017	108 017 C	1
18,0	MT 2 / 3	84,0	50,0	108 018	108 018 C	1
19,0	MT 2 / 3	84,0	50,0	108 019	108 019 C	1
20,0	MT 2 / 3	84,0	50,0	108 020	108 020 C	1
21,0	MT 2 / 3	84,0	50,0	108 021	108 021 C	1
22,0	MT 2 / 3	84,0	50,0	108 022	108 022 C	1
23,0	MT 2 / 3	84,0	50,0	108 023	108 023 C	1
24,0	MT 2 / 3	84,0	50,0	108 024	108 024 C	1
25,0	MT 2 / 3	84,0	50,0	108 025	108 025 C	1
26,0	MT 2 / 3	84,0	50,0	108 026	108 026 C	1
27,0	MT 2 / 3	84,0	50,0	108 027	108 027 C	1
28,0	MT 2 / 3	84,0	50,0	108 028	108 028 C	1
29,0	MT 2 / 3	84,0	50,0	108 029	108 029 C	1
30,0	MT 2 / 3	84,0	50,0	108 030	108 030 C	1
31,0	MT 2 / 3	84,0	50,0	108 031	108 031 C	1
32,0	MT 2 / 3	84,0	50,0	108 032	108 032 C	1
33,0	MT 2 / 3	84,0	50,0	108 033	108 033 C	1
34,0	MT 2 / 3	84,0	50,0	108 034	108 034 C	1
35,0	MT 2 / 3	84,0	50,0	108 035	108 035 C	1
36,0	MT 2 / 3	84,0	50,0	108 036	108 036 C	1
37,0	MT 2 / 3	84,0	50,0	108 037	108 037 C	1
38,0	MT 2 / 3	84,0	50,0	108 038	108 038 C	1
39,0	MT 2 / 3	84,0	50,0	108 039	108 039 C	1
40,0	MT 2 / 3	84,0	50,0	108 040	108 040 C	1
41,0	MT 2 / 3	84,0	50,0	108 041	108 041 C	1
42,0	MT 2 / 3	84,0	50,0	108 042	108 042 C	1
43,0	MT 2 / 3	84,0	50,0	108 043	108 043 C	1
44,0	MT 2 / 3	84,0	50,0	108 044	108 044 C	1
45,0	MT 2 / 3	84,0	50,0	108 045	108 045 C	1
46,0	MT 2 / 3	84,0	50,0	108 046	108 046 C	1
47,0	MT 2 / 3	84,0	50,0	108 047	108 047 C	1
48,0	MT 2 / 3	84,0	50,0	108 048	108 048 C	1
49,0	MT 2 / 3	84,0	50,0	108 049	108 049 C	1
50,0	MT 2 / 3	84,0	50,0	108 050	108 050 C	1


Ø1 mm	Ø2 mm	L1 mm	Cutting depth mm	TC 	TC 	
51,0	MT 2 / 3	84,0	50,0	108 051	108 051 C	1
52,0	MT 2 / 3	84,0	50,0	108 052	108 052 C	1
53,0	MT 2 / 3	84,0	50,0	108 053	108 053 C	1
54,0	MT 2 / 3	84,0	50,0	108 054	108 054 C	1
55,0	MT 2 / 3	84,0	50,0	108 055	108 055 C	1
60,0	MT 2 / 3	84,0	50,0	108 060	108 060 C	1
61,0	MT 2 / 3	84,0	50,0	108 061	108 061 C	1
63,0	MT 2 / 3	84,0	50,0	108 063	108 063 C	1
65,0	MT 2 / 3	84,0	50,0	108 065	108 065 C	1
68,0	MT 2 / 3	84,0	50,0	108 068	108 068 C	1
70,0	MT 2 / 3	84,0	50,0	108 070	108 070 C	1
71,0	MT 2 / 3	84,0	50,0	108 071	108 071 C	1
75,0	MT 2 / 3	84,0	50,0	108 075	108 075 C	1
80,0	MT 2 / 3	84,0	50,0	108 080	108 080 C	1






 RS10 / RS25e / RS40e  
 RS125e / RS126e / RS140e

Set of core drills with tungsten-carbide cutting edges and threaded retainer in plastic case

	TC 
8-piece set of core drills with tungsten-carbide cutting edges 8 core drills with tungsten-carbide and threaded retainer Ø 12,0 mm - 14,0 mm - 16,0 mm - 18,0 mm 20,0 mm - 22,0 mm - 24,0 mm - 26,0 mm	108 823





RS5e / RS10 / RS25e / RS40e  
RS125e / RS126e / RS140e

## Core drills with tungsten-carbide cutting edges and Weldon shank (3/4") for railway tracks, cutting depth 30,0 mm

Can be used on all track drilling machines. The cutting geometry has been specially optimized for heavy duty chip removal from railway tracks, thus makes efficient use possible.

Ejector pin: Article no. 108 1510 (Ø 8,0 x 81,0 mm)



Packing unit: individual plastic pack

Steel (N/mm2) < 900	<input type="checkbox"/>	<input type="checkbox"/>
Steel (N/mm2) < 1100	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1300	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium	<input type="checkbox"/>	<input type="checkbox"/>

Brass	<input type="checkbox"/>	<input type="checkbox"/>
Bronze	<input type="checkbox"/>	<input type="checkbox"/>
Plastics	<input type="checkbox"/>	<input type="checkbox"/>
Cast iron	<input type="checkbox"/>	<input type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>	<input type="checkbox"/>

Ø1 mm	Ø2 mm	L1 mm	Cutting depth mm			
19,0	19,0	63,0	30,0	108 1519	108 1519 C	1
20,0	19,0	63,0	30,0	108 1520	108 1520 C	1
21,0	19,0	63,0	30,0	108 1521	108 1521 C	1
22,0	19,0	63,0	30,0	108 1522	108 1522 C	1
23,0	19,0	63,0	30,0	108 1523	108 1523 C	1
24,0	19,0	63,0	30,0	108 1524	108 1524 C	1
25,0	19,0	63,0	30,0	108 1525	108 1525 C	1
26,0	19,0	63,0	30,0	108 1526	108 1526 C	1
26,5	19,0	63,0	30,0	108 15265	108 15265 C	1
27,0	19,0	63,0	30,0	108 1527	108 1527 C	1
27,5	19,0	63,0	30,0	108 15275	108 15275 C	1
28,0	19,0	63,0	30,0	108 1528	108 1528 C	1
29,0	19,0	63,0	30,0	108 1529	108 1529 C	1
30,0	19,0	63,0	30,0	108 1530	108 1530 C	1
31,0	19,0	63,0	30,0	108 1531	108 1531 C	1
32,0	19,0	63,0	30,0	108 1532	108 1532 C	1
33,0	19,0	63,0	30,0	108 1533	108 1533 C	1
34,0	19,0	63,0	30,0	108 1534	108 1534 C	1
36,0	19,0	63,0	30,0	108 1536	108 1536 C	1



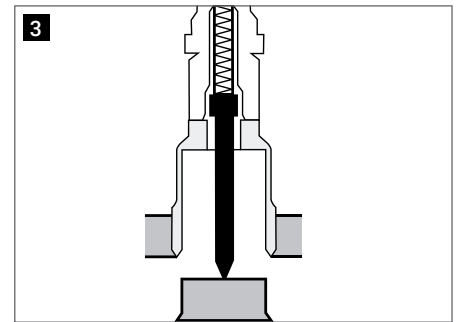
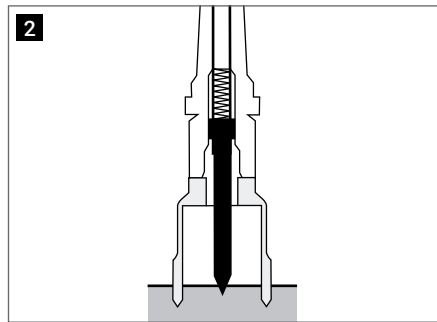
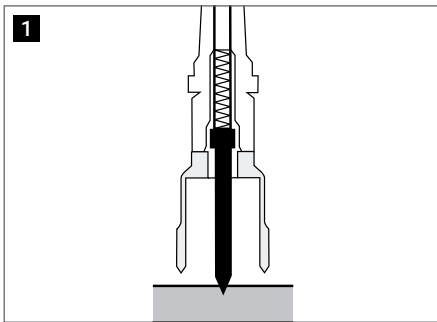


# Ejector pins for core drills



Packing unit: individual plastic pack





- 1 Centring:**  
Position the ejector pin centrally on the centre punch.  
Now the machine is in the correct drilling position. Please turn on magnet now.
- 2 Coolant supply:**  
The cutting oil is supplied through the ejector pin by the automatic internal lubrication and is issued optimally to the cutting edges.
- 3 Ejecting:**  
In the final phase, the drill core is pushed from the borehole by the spring pretensioned ejector pin.



## Ejector pins for core drills HSS

	Core drills cutting depth mm		
Ejector pin Ø 6,35 x 77,0 mm for core drills HSS with Weldon shank (3/4")	30,0	108 304	1
Ejector pin Ø 6,35 x 87,0 mm for core drills HSS / TC with Quick IN-shank	35,0 / 50,0	108 306	1
Ejector pin Ø 6,35 x 102,0 mm for core drills HSS / TC with Weldon shank (3/4")	55,0	108 305	1
Ejector pin Ø 8,0 x 155,0 mm for core drills HSS with Weldon shank (3/4")	110,0	108 2000	1
Ejector pin Ø 6,35 x 70,0 mm for core drills HSS with Weldon shank (3/4") for RS5e	30,0	108 344	1

## Ejector pins for core drills TC

	Core drills cutting depth mm		
Ejector pin Ø 8,0 x 81,0 mm for core drills TC with Weldon shank (3/4") for railway tracks	30,0	108 1510	1
Ejector pin Ø 6,35 x 87,0 mm for core drills HSS / TC with Quick IN-shank	35,0 / 50,0	108 306	1
Ejector pin Ø 8,0 x 112,0 mm for core drills TC with Weldon shank (3/4")	50,0	108 701	1
Ejector pin Ø 6,35 x 123,0 mm for core drills TC with Weldon- (3/4") and Quick IN-shank	50,0 + Adapter	108 110	1
Ejector pin Ø 6,35 x 102,0 mm for core drills HSS / TC with Weldon shank (3/4")	55,0	108 305	1



# Recommended cutting speeds for HSS core drills

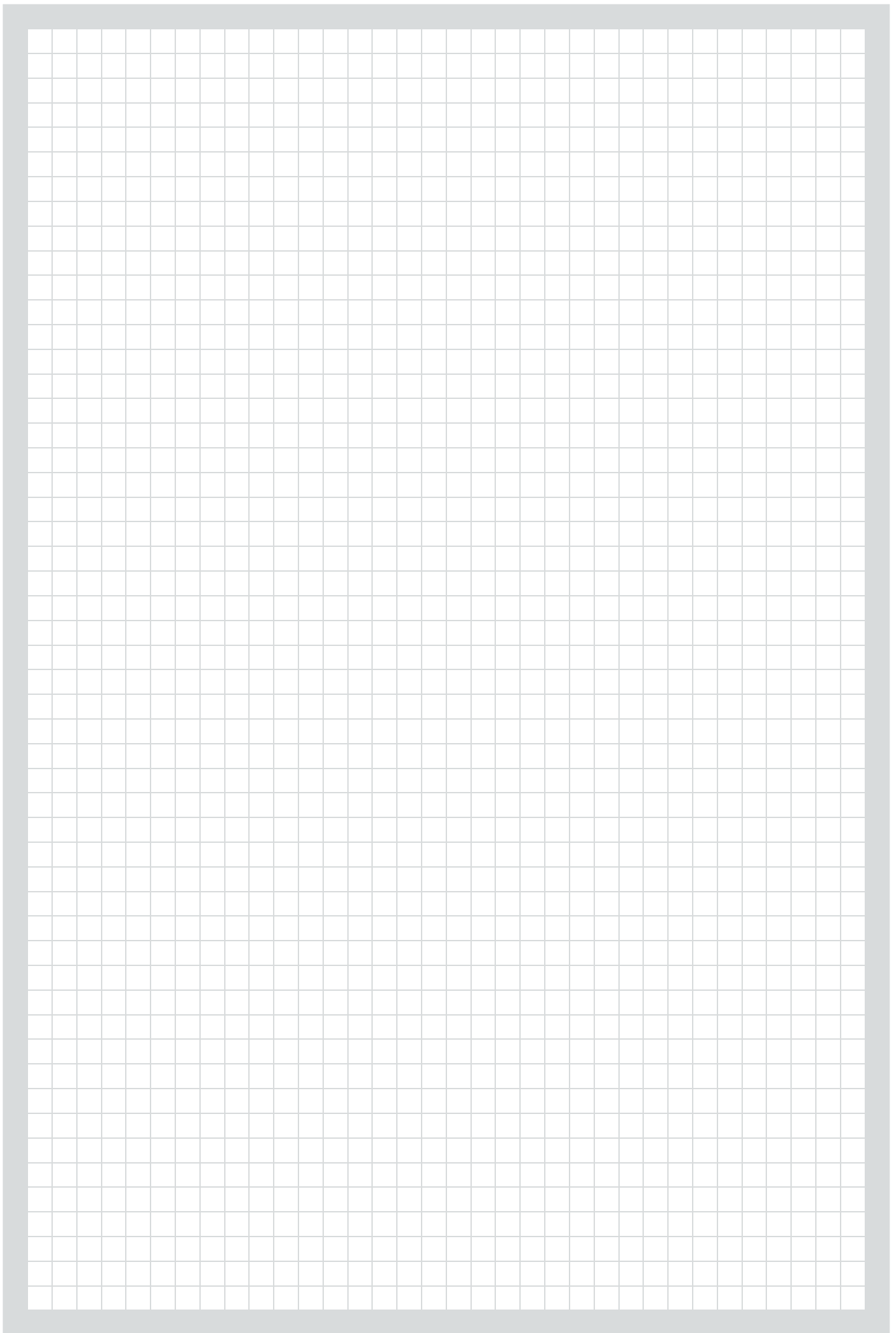
Material:		High carbon struc. steel up to 700 N/mm <sup>2</sup>	Alloyed steel up to 1000 N/mm <sup>2</sup>	Cast iron over 250 N/mm <sup>2</sup>	CuZn-alloy brittle	CuZn-alloy tough	Aluminium alloy up to 11% Si	Thermo-plastics	Duro-plastics
Vc = m/min		30	20	10	60	35	30	20	15
Coolant:		Cutting spray	Cutting spray	Compressed air	Compressed air	Compressed air	Cutting spray	Water	Compressed air
Ø mm	Ø inch	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.
12,0	15/32	796	531	265	1592	929	796	531	398
13,0	33/64	735	490	245	1470	857	735	490	367
14,0	35/64	682	455	227	1365	796	682	455	341
15,0	19/32	637	425	212	1274	743	637	425	318
16,0	5/8	597	398	199	1194	697	597	398	299
17,0	43/64	562	375	187	1124	656	562	375	281
18,0	45/64	531	354	177	1062	619	531	354	265
19,0	3/4	503	335	168	1006	587	503	335	251
20,0	25/32	478	318	159	955	557	478	318	239
21,0	53/64	455	303	152	910	531	455	303	227
22,0	7/8	434	290	145	869	507	434	290	217
23,0	29/32	415	277	138	831	485	415	277	208
24,0	15/16	398	265	133	796	464	398	265	199
25,0	63/64	382	255	127	764	446	382	255	191
26,0	1 1/32	367	245	122	735	429	367	245	184
27,0	1 1/16	354	236	118	708	413	354	236	177
28,0	1 3/32	341	227	114	682	398	341	227	171
29,0	1 9/64	329	220	110	659	384	329	220	165
30,0	1 3/16	318	212	106	637	372	318	212	159
31,0	1 7/32	308	205	103	616	360	308	205	154
32,0	1 17/64	299	199	100	597	348	299	199	149
33,0	1 19/64	290	193	97	579	338	290	193	145
34,0	1 11/32	281	187	94	562	328	281	187	141
35,0	1 3/8	273	182	91	546	318	273	182	136
36,0	1 27/64	265	177	88	531	310	265	177	133
37,0	1 29/64	258	172	86	516	301	258	172	129
38,0	1 1/2	251	168	84	503	293	251	168	126
39,0	1 17/32	245	163	82	490	286	245	163	122
40,0	1 37/64	239	159	80	478	279	239	159	119
41,0	1 39/64	233	155	78	466	272	233	155	117
42,0	1 21/32	227	152	76	455	265	227	152	114
43,0	1 11/16	222	148	74	444	259	222	148	111
44,0	1 47/64	217	145	72	434	253	217	145	109
45,0	1 25/32	212	142	71	425	248	212	142	106
46,0	1 13/16	208	138	69	415	242	208	138	104
47,0	1 55/64	203	136	68	407	237	203	136	102
48,0	1 57/64	199	133	66	398	232	199	133	100
49,0	1 15/16	195	130	65	390	227	195	130	97
50,0	1 31/32	191	127	64	382	223	191	127	96
51,0	2	187	125	62	375	219	187	125	94
52,0	2 3/64	184	122	61	367	214	184	122	92
53,0	2 3/32	180	120	60	361	210	180	120	90
54,0	2 1/8	177	118	59	354	206	177	118	88
55,0	2 5/32	174	116	58	347	203	174	116	87
60,0	2 3/8	159	106	53	318	186	159	106	80



# Recommended cutting speeds for tungsten-carbide core drills



Material:		High carbon struc. steel up to 700 N/mm <sup>2</sup>	Alloyed steel up to 1000 N/mm <sup>2</sup>	Cast iron over 250 N/mm <sup>2</sup>	CuZn-alloy brittle	CuZn-alloy tough	Aluminium alloy up to 11% Si	Thermo-plastics	Duro-plastics
Vc = m/min		50	35	40	60	40	60	45	40
Coolant:		Cutting spray	Cutting spray	Compressed air	Compressed air	Compressed air	Cutting spray	Water	Compressed air
Ø mm	Ø inch	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.
12,0	15/32	1327	929	1062	1592	265	1592	1194	1062
13,0	33/64	1225	857	980	1470	245	1470	1102	980
14,0	35/64	1137	796	910	1365	227	1365	1024	910
15,0	19/32	1062	743	849	1274	212	1274	955	849
16,0	5/8	995	697	796	1194	199	1194	896	796
17,0	34/64	937	656	749	1124	187	1124	843	749
18,0	45/64	885	619	708	1062	177	1062	796	708
19,0	3/4	838	587	670	1006	168	1006	754	670
20,0	25/32	796	557	637	955	159	955	717	637
21,0	3/4	758	531	607	910	152	910	682	607
22,0	7/8	724	507	579	869	145	869	651	579
23,0	13/16	692	485	554	831	138	831	623	554
24,0	15/16	663	464	531	796	133	796	597	531
25,0	63/64	637	446	510	764	127	764	573	510
26,0	1 1/32	612	429	490	735	122	735	551	490
27,0	1 1/16	590	413	472	708	118	708	531	472
28,0	1 3/32	569	398	455	682	114	682	512	455
29,0	1 9/64	549	384	439	659	110	659	494	439
30,0	1 3/16	531	372	425	637	106	637	478	425
31,0	1 7/32	514	360	411	616	103	616	462	411
32,0	1 17/64	498	348	398	597	100	597	448	398
33,0	1 19/64	483	338	386	579	97	579	434	386
34,0	1 11/32	468	328	375	562	94	562	422	375
35,0	1 3/8	455	318	364	546	91	546	409	364
36,0	1 27/64	442	310	354	531	88	531	398	354
37,0	1 29/64	430	301	344	516	86	516	387	344
38,0	1 1/2	419	293	335	503	84	503	377	335
39,0	1 17/32	408	286	327	490	82	490	367	327
40,0	1 37/64	398	279	318	478	80	478	358	318
41,0	1 39/64	388	272	311	466	78	466	350	311
42,0	1 21/32	379	265	303	455	76	455	341	303
43,0	1 11/16	370	259	296	444	74	444	333	296
44,0	1 47/64	362	253	290	434	72	434	326	290
45,0	1 25/32	354	248	283	425	71	425	318	283
46,0	1 13/16	346	242	277	415	69	415	312	277
47,0	1 55/64	339	237	271	407	68	407	305	271
48,0	1 57/64	332	232	265	398	66	398	299	265
49,0	1 15/16	325	227	260	390	65	390	292	260
50,0	1 31/32	318	223	255	382	64	382	287	255
51,0	2	312	219	250	375	62	375	281	250
52,0	2 3/64	306	214	245	367	61	367	276	245
53,0	2 3/32	300	210	240	361	60	361	270	240
54,0	2 1/8	295	206	236	354	59	354	265	236
55,0	2 5/32	290	203	232	347	58	347	261	232
60,0	2 3/8	265	186	212	318	53	318	239	212
61,0	2 13/32	261	183	209	313	52	313	235	209
65,0	2 9/16	245	171	196	294	49	294	220	196
68,0	2 43/64	234	164	187	281	47	281	211	187
70,0	2 3/4	227	159	182	273	45	273	205	182
71,0	2 51/64	224	157	179	269	45	269	202	179
75,0	2 61/64	212	149	170	255	42	255	191	170
80,0	3 5/32	199	139	159	239	40	239	179	159
85,0	3 11/32	187	131	150	225	37	225	169	150
90,0	3 35/64	177	124	142	212	35	212	159	142
95,0	3 47/64	168	117	134	201	34	201	151	134
100,0	3 15/16	159	111	127	191	32	191	143	127





# ROTARY BURRS



## Rotary burrs

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The high-performance tungsten carbide rotary burrs provide maximum cutting edge stability with a simultaneous high tenacity of the cutting edge.

### **Tungsten carbide rotary burrs Alu**

High-performance tungsten carbide rotary burrs with aluminium toothing. Fields of application: non-ferrous metals, aluminium, brass, copper, zinc, diecasts and plastics. To debur, break edges, trim and surface processing.

### **Tungsten carbide rotary burrs TC**

High-performance tungsten carbide rotary burrs with cross toothing. The cross toothing provides a higher cutting capacity compared with the simple toothing. This particularly has a positive effect on materials which are difficult to cut. Fields of application: for high-alloy steels, non-rusting steels, acid-resistant steels, heat-resistant steels, die casts and plastics. To debur, break edges, trim, process welding seams, surface processing.

### **Tungsten carbide rotary burrs TiCN**

Like tungsten carbide rotary burrs TC with titanium carbon nitride coating. The TiCN wear-resistant coating increases the surface hardness of the tool to approx. 3,000 HV / micro-hardness and the heat resistance to 400° C. This increases service life and productivity. Fields of application: for high-alloy steels, non-rusting steels, acid-resistant steels, heat-resistant steels, die casts and plastics. To debur, break edges, trim, process welding seams, surface processing.





## Overview of symbols



Tungsten carbide



Cross toothing  
CT 4



bright surface



Shank:  
cylindrical



DIN 8033



Toothing ALU



TiCN coating



Speed



Average  
air consumption



Air pressure



Weight



Tool adapter



Hose size

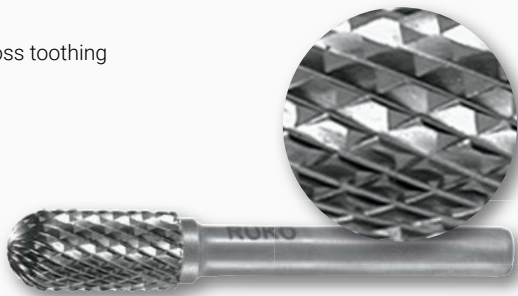


Noise level



## Cutting

With cross toothing

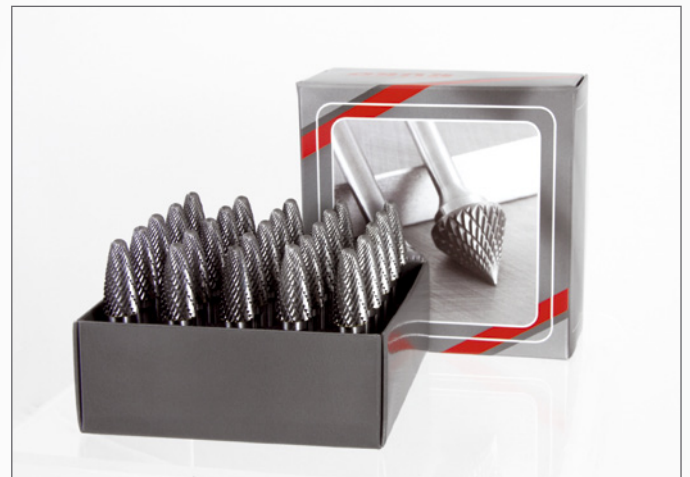


With aluminium toothing



Packing unit: each in plastic packaging

Packing unit: 25 units per carton












Parts and applications overview:



Material	Surface	DIN	Shape		Toothing	Shank	Ø mm	Article no.	Page
TC		DIN 8033	A	ZYA	CT 4		3,0 - 16,0	116 010 116 046	242
TC		DIN 8033	A	ZYA	CT 4		6,0 - 12,0	116 010 TC 116 013 TC	242
TC		DIN 8033	A	ZYA	CT 4		6,0 - 12,0	116 015 116 047	242
TC		DIN 8033	A	ZYA	CT 4		3,0 - 16,0	116 015 TC 116 018 TC	242
TC		DIN 8033	A	ZYA	ALU		6,0 - 12,0	116 015 A 116 018 A	242
TC		DIN 8033	C	WRC	CT 4		3,0 - 16,0	116 020 116 048	243
TC		DIN 8033	C	WRC	CT 4		6,0 - 12,0	116 020 TC 116 023 TC	243
TC		DIN 8033	C	WRC	ALU		6,0 - 12,0	116 020 A 116 023 A	243
TC		DIN 8033	D	KUD	CT 4		3,0 - 16,0	116 041 116 052	243
TC		DIN 8033	D	KUD	CT 4		10,0	116 043 TC	243
TC		DIN 8033	D	KUD	ALU		6,0 - 12,0	116 041 A 116 044 A	243
TC		DIN 8033	E	TRE	CT 4		3,0 - 16,0	116 210 116 215	244
TC		DIN 8033	F	RBF	CT 4		3,0 - 16,0	116 030 116 050	244
TC		DIN 8033	F	RBF	CT 4		6,0 - 16,0	116 030 TC 116 034 TC	244
TC		DIN 8033	F	RBF	ALU		6,0 - 12,0	116 030 A 116 033 A	244
TC		DIN 8033	G	SPG	CT 4		3,0 - 16,0	116 025 116 049	245
TC		DIN 8033	G	SPG	CT 4		6,0 - 16,0	116 025 TC 116 029 TC	245
TC		DIN 8033	G	SPG	ALU		6,0 - 12,0	116 025 A 116 028 A	245
TC		DIN 8033	H	FLH	CT 4		3,0 - 16,0	116 216 116 221	245
TC		DIN 8033	J	KSJ	CT 4		3,0 - 16,0	116 222 116 226	246
TC		DIN 8033	K	KSK	CT 4		3,0 - 16,0	116 227 116 231	246
TC		DIN 8033	L	KEL	CT 4		3,0 - 16,0	116 232 116 237	247
TC		DIN 8033	L	KEL	ALU		6,0 - 12,0	116 233 A 116 236 A	247
TC		DIN 8033	M	SKM	CT 4		3,0 - 16,0	116 035 116 051	247
TC		DIN 8033	M	SKM	CT 4		6,0 - 16,0	116 035 TC 116 039 TC	247
TC		DIN 8033	N	WKN	CT 4		3,0 - 16,0	116 238 116 242	248



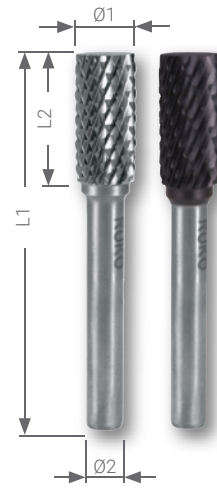
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## Tungsten carbide rotary burrs shape A cylinder (ZYA) without end tothing

Also available as a set of 25 units per carton  
Article no.: 116 ... -25

Packing unit: each in plastic packaging



Steel (N/mm2) < 900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1100	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>	<input type="checkbox"/>
Steel (N/mm2) < 1300	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Plastics	<input type="checkbox"/>	<input type="checkbox"/>
Stainless steel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Cast iron	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Aluminium	<input type="checkbox"/>	<input type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>	<input type="checkbox"/>

Ø1 mm	L2 mm	L1 mm	Ø2 mm								
3,0	14,0	38,0	3,0	—		116 046		—			1
6,0	18,0	58,0	6,0	—		116 010		116 010 TC			1
8,0	18,0	60,0	6,0	—		116 011		116 011 TC			1
10,0	20,0	60,0	6,0	—		116 012		116 012 TC			1
12,0	25,0	65,0	6,0	—		116 013		116 013 TC			1
16,0	25,0	65,0	6,0	—		116 014		—			1



## Tungsten carbide rotary burrs shape A cylinder (ZYA) with end tothing

Also available as a set of 25 units per carton  
Article no.: 116 ... -25

Packing unit: each in plastic packaging



Steel (N/mm2) < 900	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Brass	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1100	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Bronze	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steel (N/mm2) < 1300	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stainless steel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Cast iron	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

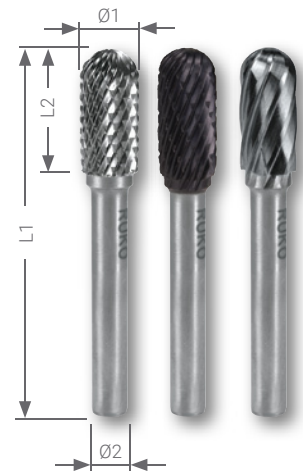
Ø1 mm	L2 mm	L1 mm	Ø2 mm								
3,0	14,0	38,0	3,0	—		116 047		—			1
6,0	18,0	58,0	6,0	116 015 A		116 015		116 015 TC			1
8,0	18,0	60,0	6,0	—		116 016		116 016 TC			1
10,0	20,0	60,0	6,0	—		116 017		116 017 TC			1
12,0	25,0	65,0	6,0	116 018 A		116 018		116 018 TC			1
16,0	25,0	65,0	6,0	—		116 019		—			1



## Tungsten carbide rotary burrs shape C oval (WRC)

Also available as a set of 25 units per carton  
Article no.: 116 ... -25

Packing unit: each in plastic packaging



	ALU	CT4	CT4
Steel (N/mm <sup>2</sup> ) < 900		■	■
Steel (N/mm <sup>2</sup> ) < 1100		■	■
Steel (N/mm <sup>2</sup> ) < 1300		■	■
Stainless steel		■	■
Aluminium	■		

	ALU	CT4	CT4
Brass		■	■
Bronze	■		
Plastics	■		
Cast iron		■	■
Titanium alloyed		■	■

Ø1 mm	L2 mm	L1 mm	Ø2 mm	TC	ALU	TC	CT4	TC	TICN	CT4	
3,0	14,0	38,0	3,0	—		116 048		—			1
6,0	18,0	56,0	6,0	116 020 A		116 020		116 020 TC			1
8,0	18,0	60,0	6,0	—		116 021		116 021 TC			1
10,0	20,0	60,0	6,0	—		116 022		116 022 TC			1
12,0	25,0	65,0	6,0	116 023 A		116 023		116 023 TC			1
16,0	25,0	65,0	6,0	—		116 024		—			1



## Tungsten carbide rotary burrs shape D ball type (KUD)

Also available as a set of 25 units per carton  
Article no.: 116 ... -25

Packing unit: each in plastic packaging



	ALU	CT4	CT4
Steel (N/mm <sup>2</sup> ) < 900		■	■
Steel (N/mm <sup>2</sup> ) < 1100		■	■
Steel (N/mm <sup>2</sup> ) < 1300		■	■
Stainless steel		■	■
Aluminium	■		

	ALU	CT4	CT4
Brass		■	■
Bronze	■		
Plastics	■		
Cast iron		■	■
Titanium alloyed		■	■

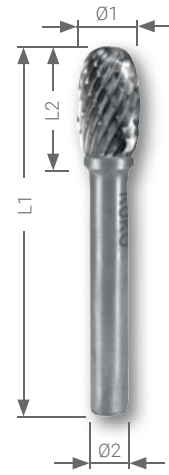
Ø1 mm	L2 mm	L1 mm	Ø2 mm	TC	ALU	TC	CT4	TC	TICN	CT4	
3,0	2,7	38,0	3,0	—		116 052		—			1
6,0	5,0	56,0	6,0	116 041 A		116 041		—			1
8,0	7,0	47,0	6,0	—		116 042		—			1
10,0	9,0	49,0	6,0	—		116 043		116 043 TC			1
12,0	11,0	51,0	6,0	116 044 A		116 044		—			1
16,0	15,0	54,0	6,0	—		116 045		—			1



## Tungsten carbide rotary burrs shape E tear drop (TRE)

Also available as a set of 25 units per carton  
Article no.: 116 ... -25

Packing unit: each in plastic packaging



Steel (N/mm <sup>2</sup> ) < 900	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input checked="" type="checkbox"/>
Stainless steel	<input checked="" type="checkbox"/>
Aluminium	<input type="checkbox"/>

Brass	<input checked="" type="checkbox"/>
Bronze	<input type="checkbox"/>
Plastics	<input type="checkbox"/>
Cast iron	<input checked="" type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>

Ø1 mm	L2 mm	L1 mm	Ø2 mm								
3,0	6,0	38,0	3,0	—		116 210		—		1	
6,0	10,0	50,0	6,0	—		116 211		—		1	
8,0	15,0	60,0	6,0	—		116 212		—		1	
10,0	16,0	60,0	6,0	—		116 213		—		1	
12,0	22,0	67,0	6,0	—		116 214		—		1	
16,0	25,0	70,0	6,0	—		116 215		—		1	



## Tungsten carbide rotary burrs shape F ball nose tree (RBF)

Also available as a set of 25 units per carton  
Article no.: 116 ... -25

Packing unit: each in plastic packaging



Steel (N/mm <sup>2</sup> ) < 900	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Stainless steel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Brass	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bronze	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plastics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cast iron	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Ø1 mm	L2 mm	L1 mm	Ø2 mm								
3,0	13,0	38,0	3,0	—		116 050		—		1	
6,0	18,0	58,0	6,0	116 030 A		116 030		116 030 TC		1	
8,0	18,0	60,0	6,0	—		116 031		116 031 TC		1	
10,0	20,0	60,0	6,0	—		116 032		116 032 TC		1	
12,0	25,0	65,0	6,0	116 033 A		116 033		116 033 TC		1	
16,0	25,0	70,0	6,0	—		116 034		116 034 TC		1	



## Tungsten carbide rotary burrs shape G tree (SPG)

Also available as a set of 25 units per carton  
Article no.: 116 ... -25

Packing unit: each in plastic packaging



	ALU	CT4	CT4
Steel (N/mm <sup>2</sup> ) < 900		■	■
Steel (N/mm <sup>2</sup> ) < 1100		■	■
Steel (N/mm <sup>2</sup> ) < 1300		■	■
Stainless steel		■	■
Aluminium	■		

	ALU	CT4	CT4
Brass		■	■
Bronze	■		
Plastics	■		
Cast iron		■	■
Titanium alloyed		■	■

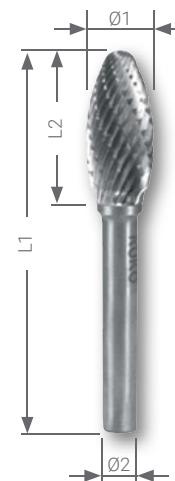
Ø1 mm	L2 mm	L1 mm	Ø2 mm	TC	ALU	TC	CT4	TC	TICN	CT4	
3,0	13,0	38,0	3,0	—		116 049		—			1
6,0	18,0	58,0	6,0	116 025 A		116 025		116 025 TC			1
8,0	18,0	60,0	6,0	—		116 026		116 026 TC			1
10,0	20,0	60,0	6,0	—		116 027		116 027 TC			1
12,0	25,0	65,0	6,0	116 028 A		116 028		116 028 TC			1
16,0	25,0	70,0	6,0	—		116 029		116 029 TC			1



## Tungsten carbide rotary burrs shape H flame (FLH)

Also available as a set of 25 units per carton  
Article no.: 116 ... -25

Packing unit: each in plastic packaging



	CT4
Steel (N/mm <sup>2</sup> ) < 900	■
Steel (N/mm <sup>2</sup> ) < 1100	■
Steel (N/mm <sup>2</sup> ) < 1300	■
Stainless steel	■
Aluminium	

	CT4
Brass	■
Bronze	
Plastics	
Cast iron	■
Titanium alloyed	■

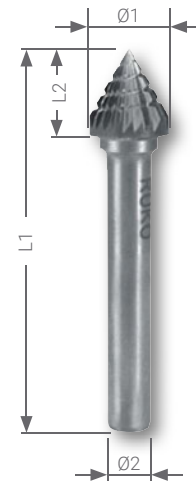
Ø1 mm	L2 mm	L1 mm	Ø2 mm	TC	ALU	TC	CT4	TC	TICN	CT4	
3,0	6,0	38,0	3,0	—		116 216		—			1
6,0	14,0	50,0	6,0	—		116 217		—			1
8,0	20,0	65,0	6,0	—		116 218		—			1
10,0	20,0	65,0	6,0	—		116 219		—			1
12,0	32,0	77,0	6,0	—		116 220		—			1
16,0	36,0	82,0	6,0	—		116 221		—			1



## Tungsten carbide rotary burrs shape J cone 60° (KSJ)

Also available as a set of 25 units per carton  
Article no.: 116 ... -25

Packing unit: each in plastic packaging



Steel (N/mm2) < 900	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1100	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1300	<input checked="" type="checkbox"/>
Stainless steel	<input checked="" type="checkbox"/>
Aluminium	<input type="checkbox"/>

Brass	<input checked="" type="checkbox"/>
Bronze	<input type="checkbox"/>
Plastics	<input type="checkbox"/>
Cast iron	<input checked="" type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>

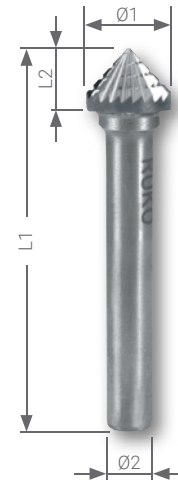
Ø1 mm	L2 mm	L1 mm	Ø2 mm								
3,0	3,0	38,0	3,0	—		116 222		—			1
6,0	6,0	50,0	6,0	—		116 223		—			1
10,0	8,0	65,0	6,0	—		116 224		—			1
12,0	11,0	77,0	6,0	—		116 225		—			1
16,0	14,5	82,0	6,0	—		116 226		—			1



## Tungsten carbide rotary burrs shape K cone 90° (KSK)

Also available as a set of 25 units per carton  
Article no.: 116 ... -25

Packing unit: each in plastic packaging



Steel (N/mm2) < 900	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1100	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1300	<input checked="" type="checkbox"/>
Stainless steel	<input checked="" type="checkbox"/>
Aluminium	<input type="checkbox"/>

Brass	<input checked="" type="checkbox"/>
Bronze	<input type="checkbox"/>
Plastics	<input type="checkbox"/>
Cast iron	<input checked="" type="checkbox"/>
Titanium alloyed	<input checked="" type="checkbox"/>

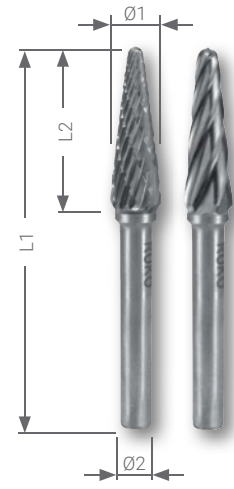
Ø1 mm	L2 mm	L1 mm	Ø2 mm								
3,0	3,0	38,0	3,0	—		116 227		—			1
6,0	3,0	50,0	6,0	—		116 228		—			1
10,0	5,0	53,0	6,0	—		116 229		—			1
12,0	7,0	55,0	6,0	—		116 230		—			1
16,0	8,0	57,0	6,0	—		116 231		—			1



## Tungsten carbide rotary burrs shape L round cone (KEL)

Also available as a set of 25 units per carton  
Article no.: 116 ... -25

Packing unit: each in plastic packaging



	ALU	CT4
Steel (N/mm2) < 900		■
Steel (N/mm2) < 1100		■
Steel (N/mm2) < 1300		■
Stainless steel		■
Aluminium	■	

	ALU	CT4
Brass		■
Bronze	■	
Plastics	■	
Cast iron		■
Titanium alloyed		■

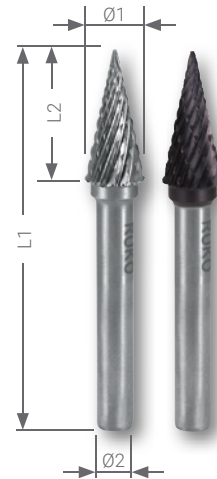
Ø1 mm	L2 mm	L1 mm	Ø2 mm	TC	ALU	TC	CT4	TC	TICN	CT4	
3,0	14,0	38,0	3,0	—		116 232		—			1
6,0	18,0	50,0	6,0	116 233 A		116 233		—			1
8,0	25,0	70,0	6,0	—		116 234		—			1
10,0	20,0	65,0	6,0	116 235 A		116 235		—			1
12,0	32,0	77,0	6,0	116 236 A		116 236		—			1
16,0	33,0	78,0	6,0	—		116 237		—			1



## Tungsten carbide rotary burrs shape M cone (SKM)

Also available as a set of 25 units per carton  
Article no.: 116 ... -25

Packing unit: each in plastic packaging



	CT4	CT4
Steel (N/mm2) < 900	■	■
Steel (N/mm2) < 1100	■	■
Steel (N/mm2) < 1300	■	■
Stainless steel	■	■
Aluminium		

	CT4	CT4
Brass	■	■
Bronze		
Plastics		
Cast iron	■	■
Titanium alloyed	■	■

Ø1 mm	L2 mm	L1 mm	Ø2 mm	TC	ALU	TC	CT4	TC	TICN	CT4	
3,0	11,0	38,0	3,0	—		116 051		—			1
6,0	18,0	58,0	6,0	—		116 035		116 035 TC			1
8,0	18,0	60,0	6,0	—		116 036		116 036 TC			1
10,0	20,0	60,0	6,0	—		116 037		116 037 TC			1
12,0	25,0	65,0	6,0	—		116 038		116 038 TC			1
16,0	25,0	70,0	6,0	—		116 039		116 039 TC			1



# Tungsten carbide rotary burrs shape N angle (WKN)

Also available as a set of 25 units per carton  
Article no.: 116 ... -25

Packing unit: each in plastic packaging



Steel (N/mm2) < 900	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1100	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1300	<input checked="" type="checkbox"/>
Stainless steel	<input checked="" type="checkbox"/>
Aluminium	<input type="checkbox"/>

Brass	<input checked="" type="checkbox"/>
Bronze	<input type="checkbox"/>
Plastics	<input type="checkbox"/>
Cast iron	<input checked="" type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>

Ø1 mm	L2 mm	L1 mm	Ø2 mm								
3,0	5,0	38,0	3,0	—	—	—	116 238	—	—	—	1
6,0	8,0	50,0	6,0	—	—	—	116 239	—	—	—	1
10,0	10,0	55,0	6,0	—	—	—	116 240	—	—	—	1
12,0	13,0	58,0	6,0	—	—	—	116 241	—	—	—	1
16,0	19,0	64,0	6,0	—	—	—	116 242	—	—	—	1







## Sets of tungsten carbide rotary burrs in steel case

 	<p>10-piece set of tungsten carbide rotary burrs TC</p> <p>2 x shape A, cylinder (ZYA) without end tothing Ø D1 10,0 / 12,0 mm                  2 x shape C, oval (WRC) Ø D1 10,0 / 12,0 mm                  2 x shape G, tree (SPG) Ø D1 10,0 / 12,0 mm                  2 x shape F, ball nose tree (RBF) Ø D1 10,0 / 12,0 mm                  1 x shape M, cone (SKM) Ø D1 12,0 mm                  1 x shape D, ball type (KUD) Ø D1 12,0 mm</p>	116 003
  	<p>10-piece set of tungsten carbide rotary burrs TiCN</p> <p>2 x shape A, cylinder (ZYA) without end tothing Ø D1 10,0 / 12,0 mm                  2 x shape C, oval (WRC) Ø D1 10,0 / 12,0 mm                  2 x shape G, tree (SPG) Ø D1 10,0 / 12,0 mm                  2 x shape F, ball nose tree (RBF) Ø D1 10,0 / 12,0 mm                  1 x shape M, cone (SKM) Ø D1 12,0 mm                  1 x shape D, ball type (KUD) Ø D1 12,0 mm</p>	116 003 TC
 	<p>10-piece set of tungsten carbide rotary burrs ALU</p> <p>2 x shape A, cylinder (ZYA) with end tothing Ø D1 6,0 / 12,0 mm                  2 x shape C, oval (WRC) Ø D1 6,0 / 12,0 mm                  2 x shape G, tree (SPG) Ø D1 6,0 / 12,0 mm                  2 x shape F, ball nose tree (RBF) Ø D1 6,0 / 12,0 mm                  2 x shape D, ball type (KUD) Ø D1 6,0 / 12,0 mm</p>	116 103 A



116 003



116 003 TC



## Sets of tungsten carbide rotary burrs in plastic case

 	<p>10-piece set of tungsten carbide rotary burrs TC</p> <p>2 x shape A, cylinder (ZYA) without end tothing Ø D1 10,0 / 12,0 mm                  2 x shape C, oval (WRC) Ø D1 10,0 / 12,0 mm                  2 x shape G, tree (SPG) Ø D1 10,0 / 12,0 mm                  2 x shape F, ball nose tree (RBF) Ø D1 10,0 / 12,0 mm                  1 x shape M, cone (SKM) Ø D1 12,0 mm                  1 x shape D, ball type (KUD) Ø D1 12,0 mm</p>	116 003 RO
  	<p>10-piece set of tungsten carbide rotary burrs TiCN</p> <p>2 x shape A, cylinder (ZYA) without end tothing Ø D1 10,0 / 12,0 mm                  2 x shape C, oval (WRC) Ø D1 10,0 / 12,0 mm                  2 x shape G, tree (SPG) Ø D1 10,0 / 12,0 mm                  2 x shape F, ball nose tree (RBF) Ø D1 10,0 / 12,0 mm                  1 x shape M, cone (SKM) Ø D1 12,0 mm                  1 x shape D, ball type (KUD) Ø D1 12,0 mm</p>	116 003 TCRO
 	<p>10-piece set of tungsten carbide rotary burrs ALU</p> <p>2 x shape A, cylinder (ZYA) with end tothing Ø D1 6,0 / 12,0 mm                  2 x shape C, oval (WRC) Ø D1 6,0 / 12,0 mm                  2 x shape G, tree (SPG) Ø D1 6,0 / 12,0 mm                  2 x shape F, ball nose tree (RBF) Ø D1 6,0 / 12,0 mm                  2 x shape D, ball type (KUD) Ø D1 6,0 / 12,0 mm</p>	116 103 ARO













116 003 RO





116 003 TCRO


## Sets of tungsten carbide rotary burrs 25 units per carton


	Ø1 mm	L1 mm	 	 	  	
	3,0	38,0	—	116 046 -25	—	25
	6,0	58,0	—	116 010 -25	116 010 TC -25	25
	8,0	60,0	—	116 011 -25	116 011 TC -25	25
	10,0	60,0	—	116 012 -25	116 012 TC -25	25
	12,0	65,0	—	116 013 -25	116 013 TC -25	25
	16,0	65,0	—	116 014 -25	116 014 TC -25	25


	3,0	38,0	—	116 047 -25	—	25
	6,0	58,0	116 015 A -25	116 015 -25	116 015 TC -25	25
	8,0	60,0	—	116 016 -25	116 016 TC -25	25
	10,0	60,0	—	116 017 -25	116 017 TC -25	25
	12,0	65,0	116 018 A -25	116 018 -25	116 018 TC -25	25
	16,0	65,0	—	116 019 -25	—	25


	3,0	38,0	—	116 048 -25	—	25
	6,0	56,0	116 020 A -25	116 020 -25	116 020 TC -25	25
	8,0	60,0	—	116 021 -25	116 021 TC -25	25
	10,0	60,0	—	116 022 -25	116 022 TC -25	25
	12,0	65,0	116 023 A -25	116 023 -25	116 023 TC -25	25
	16,0	65,0	—	116 024 -25	—	25

	3,0	38,0	—	116 052 -25	—	25
	6,0	56,0	116 041 A -25	116 041 -25	—	25
	8,0	47,0	—	116 042 -25	—	25
	10,0	49,0	—	116 043 -25	116 043 TC -25	25
	12,0	51,0	116 044 A -25	116 044 -25	—	25
	16,0	54,0	—	116 045 -25	—	25










	3,0	38,0	—	116 210 -25	—	25
	6,0	50,0	—	116 211 -25	—	25
	8,0	60,0	—	116 212 -25	—	25
	10,0	60,0	—	116 213 -25	—	25
	12,0	67,0	—	116 214 -25	—	25
	16,0	70,0	—	116 215 -25	—	25


	3,0	38,0	—	116 050 -25	—	25
	6,0	58,0	116 030 A -25	116 030 -25	116 030 TC -25	25
	8,0	60,0	—	116 031 -25	116 031 TC -25	25
	10,0	60,0	—	116 032 -25	116 032 TC -25	25
	12,0	65,0	116 033 A -25	116 033 -25	116 033 TC -25	25
	16,0	70,0	—	116 034 -25	116 034 TC -25	25


	3,0	38,0	—	116 049 -25	—	25
	6,0	58,0	116 025 A -25	116 025 -25	116 025 TC -25	25
	8,0	60,0	—	116 026 -25	116 026 TC -25	25
	10,0	60,0	—	116 027 -25	116 027 TC -25	25
	12,0	65,0	116 028 A -25	116 028 -25	116 028 TC -25	25
	16,0	70,0	—	116 029 -25	116 029 TC -25	25


	3,0	38,0	—	116 216 -25	—	25
	6,0	50,0	—	116 217 -25	—	25
	8,0	65,0	—	116 218 -25	—	25
	10,0	65,0	—	116 219 -25	—	25
	12,0	77,0	—	116 220 -25	—	25
	16,0	82,0	—	116 221 -25	—	25


Sets of tungsten carbide rotary burrs  
25 units per carton

	Ø1 mm	L1 mm	 	 	  	
	3,0	38,0	—	116 222-25	—	25
	6,0	50,0	—	116 223-25	—	25
	8,0	—	—	—	—	25
	10,0	65,0	—	116 224-25	—	25
	12,0	77,0	—	116 225-25	—	25
	16,0	82,0	—	116 226-25	—	25

	3,0	38,0	—	116 227 -25	—	25
	6,0	50,0	—	116 228 -25	—	25
	8,0	—	—	—	—	25
	10,0	53,0	—	116 229 -25	—	25
	12,0	55,0	—	116 230 -25	—	25
	16,0	57,0	—	116 231 -25	—	25

	3,0	38,0	—	116 232 -25	—	25
	6,0	50,0	116 233 A -25	116 233 -25	—	25
	8,0	70,0	—	116 234 -25	—	25
	10,0	65,0	116 235 -A -25	116 235 -25	—	25
	12,0	77,0	116 236 A -25	116 236 -25	—	25
	16,0	78,0	—	116 237 -25	—	25

	3,0	38,0	—	116 051 -25	—	25
	6,0	58,0	—	116 035 -25	116 035 TC -25	25
	8,0	60,0	—	116 036 -25	116 036 TC -25	25
	10,0	60,0	—	116 037 -25	116 037 TC -25	25
	12,0	65,0	—	116 038 -25	116 038 TC -25	25
	16,0	70,0	—	116 039 -25	116 039 TC -25	25

	3,0	38,0	—	116 238 -25	—	25
	6,0	50,0	—	116 239 -25	—	25
	8,0	—	—	—	—	25
	10,0	55,0	—	116 240 -25	—	25
	12,0	58,0	—	116 241 -25	—	25
	16,0	64,0	—	116 242 -25	—	25





## Sets of tungsten carbide rotary burrs in a convenient table display

<p>TC</p> <p>CT 4</p>	<p>35-piece set of tungsten carbide rotary burrs TC in a convenient table display</p> <p>each 1 x Ø D1 6,0 mm + 8,0 mm + 10,0 mm + 12,0 mm + 16,0 mm</p> <p>5 TC rotary burrs shape A, cylinder (ZYA) with end tothing</p> <p>5 TC rotary burrs shape A, cylinder (ZYA) without end tothing</p> <p>5 TC rotary burrs shape C, oval (WRC)</p> <p>5 TC rotary burrs shape G, tree (SPG)</p> <p>5 TC rotary burrs shape F, ball nose tree (RBF)</p> <p>5 TC rotary burrs shape M, cone (SKM)</p> <p>5 TC rotary burrs shape D, ball type (KUD)</p>	<p>116 008</p>
<p>TC</p> <p>TiCN</p> <p>CT 4</p>	<p>35-piece set of tungsten carbide rotary burrs TiCN in a convenient table display</p> <p>each 1 x Ø D1 6,0 mm + 8,0 mm + 10,0 mm + 12,0 mm + 16,0 mm</p> <p>5 TC rotary burrs shape A, cylinder (ZYA) with end tothing</p> <p>5 TC rotary burrs shape A, cylinder (ZYA) without end tothing</p> <p>5 TC rotary burrs shape C, oval (WRC)</p> <p>5 TC rotary burrs shape G, tree (SPG)</p> <p>5 TC rotary burrs shape F, ball nose tree (RBF)</p> <p>5 TC rotary burrs shape M, cone (SKM)</p> <p>5 TC rotary burrs shape D, ball type (KUD)</p>	<p>116 008 TC</p>



116 008



116 008 TC



## Set of tungsten carbide rotary burrs in mini-box

<p>TC</p> <p>CT 4</p>	<p>3-piece set of tungsten carbide rotary burrs in mini-box each 1 x Ø D1 10,0 mm</p> <p>1 TC rotary burr shape A, cylinder (ZYA) with end tothing</p> <p>1 TC rotary burr shape G, pionted arch (SPG)</p> <p>1 TC rotary burr shape D, cone (KUD)</p>	<p>116 001</p>
<p>TC</p> <p>CT 4</p>	<p>10-piece set of tungsten carbide rotary burrs in mini-box each 1 x Ø D1 6,0 mm + Ø D1 12,0 mm</p> <p>2 TC rotary burrs shape A, cylinder (ZYA) with end tothing</p> <p>2 TC rotary burrs shape C, oval (WRC)</p> <p>2 TC rotary burrs shape G, tree (SPG)</p> <p>2 TC rotary burrs shape F, ball nose tree (RBF)</p> <p>2 TC rotary burrs shape D, ball type (KUD)</p>	<p>116 002</p>
<p>TC</p> <p>CT 4</p>	<p>5-piece set of tungsten carbide rotary burrs in mini-box each 1 x Ø D1 10,0 mm</p> <p>1 TC rotary burr shape A, cylinder (ZYA) with end tothing</p> <p>1 TC rotary burr shape C, oval (WRC)</p> <p>1 TC rotary burr shape G, tree (SPG)</p> <p>1 TC rotary burr shape F, ball nose tree (RBF)</p> <p>1 TC rotary burr shape D, ball type (KUD)</p>	<p>116 004</p>



116 002



116 004

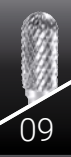


# Table of recommended cutting speeds for rotary burrs



Material groups			Machining application	Toothing	Cutting speed
Steel Cast steel	Unhardened, untempered steels up to 1200 N/mm <sup>2</sup> (< 38 HRC)	Structural steels, carbon steels, tool steels, unalloyed steels, case hardening steels, cast steel	Coarse machining= High material removal	CT 4	250 - 350 m/min
	Hardened, tempered steels up to 1200 N/mm <sup>2</sup> (> 38 HRC)	Tool steels, heat-treatable steels, alloyed steels, cast steel		CT 4	250 - 350 m/min
Stainless steel (INOX)	Rust and acid-resistant steels	Austenitic and ferritic stainless steels	Coarse machining= High material removal	CT 4	250 - 350 m/min
Nonferrous metals	Soft nonferrous metals Nonferrous heavy metals	Aluminium alloys, brass, Copper, zinc	Coarse machining= High material removal	Alu	600 - 900 m/min
	Hard nonferrous metals	Bronze, titanium/titanium alloys, hard aluminium alloys (high silicon content)		CT 4	250 - 350 m/min
	Highly heat-resistant Materials	Nickel-based and cobalt-based alloys (engine and turbine construction)		CT 4	300 - 450 m/min
Cast iron	Grey cast iron, white cast iron	Cast iron with lamellar graphite, with nodular/spheroidal graphite white malleable (cast) iron black malleable (cast) iron	Coarse machining= High material removal	Alu	600 - 900 m/min
Plastics, other materials	Fibre-reinforced plastics, thermoplastics, hard rubber		Coarse machining= High material removal	Alu	500 - 1.100 m/min
			Fine machining= Low material removal		

Cutting speed V <sub>c</sub> = m/min	250	300	350	400	450	500	600	900
Ø mm	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.
3,0	27.000	32.00	37.000	44.000	48.000	54.000	64.000	95.000
4,0	20.000	24.000	28.000	32.000	36.000	40.000	48.000	72.000
6,0	13.000	16.000	19.000	21.000	24.000	27.000	32.000	48.000
8,0	10.000	12.000	14.000	16.000	18.000	20.000	24.000	36.000
10,0	8.000	10.000	11.000	13.000	14.000	16.000	19.000	29.000
12,0	7.000	8.000	9.000	11.000	12.000	13.000	16.000	24.000
16,0	5.000	6.000	7.000	8.000	9.000	10.000	12.000	18.000



## Pneumatic grinder (short)

The RUKO pneumatic grinder in the short design - The compact, fast tool for deburring, polishing and machining welding seams!

The RUKO pneumatic grinder has a rubberised, non-slip handle, which absorbs vibration and protects the user from slipping off whilst working. The speed can be adjusted by a governor on top of the handle. It has a tool adapter made of hardened steel. The exhaust air is directed backwards through the handle by means of a 360° rotational principle. The RUKO pneumatic grinder features an integrated air filter, which protects the motor from dirt that could get into the inside with the compressed air.



**Connection adapter included!**

Packing unit: individual cartons

	L1 mm	Ø	Article no.	
Pneumatic grinder (short)	157,0	G 1/4"	116 100 L	1



## Pneumatic grinder (90° angle head)

The RUKO pneumatic grinder with 90° angle head - The compact, fast tool for deburring, polishing and machining welding seams!

The RUKO pneumatic grinder has a rubberised, non-slip handle, which absorbs vibration and protects the user from slipping off whilst working. The speed can be adjusted by a governor on top of the handle. It has a tool adapter made of hardened steel. The exhaust air is directed backwards through the handle by means of a 360° rotational principle. The RUKO pneumatic grinder features an integrated air filter, which protects the motor from dirt that could get into the inside with the compressed air. The 90° angle head makes it easier to work in tight and difficult to reach places.



**Connection adapter included!**

Packing unit: individual cartons

	L1 mm	Ø	Article no.	
Pneumatic grinder (90°)	162,0	G 1/4"	116 110 L	1



## Pneumatic grinder (115° angle head)


The RUKO pneumatic grinder with 115° angle head - The compact, fast tool for deburring, polishing and machining welding seams!

The RUKO pneumatic grinder has a rubberised, non-slip handle, which absorbs vibration and protects the user from slipping off whilst working. The speed can be adjusted by a governor on top of the handle. It has a tool adapter made of hardened steel. The exhaust air is directed backwards through the handle by means of a 360° rotational principle. The RUKO pneumatic grinder features an integrated air filter, which protects the motor from dirt that could get into the inside with the compressed air. The 115° angle head makes it easier to work in tight and difficult to reach places.

**Connection adapter included!**

Packing unit: individual cartons



	L1 mm	Ø	Article no.	
Pneumatic grinder (115°)	201,0	G 1/4"	116 120 L	1



## Pneumatic grinder (long)


The RUKO pneumatic grinder in the long design - The compact, fast tool for deburring, polishing and machining welding seams!

The RUKO pneumatic grinder has a rubberised, non-slip handle, which absorbs vibration and protects the user from slipping off whilst working. The speed can be adjusted by a governor on top of the handle. It has a tool adapter made of hardened steel. The exhaust air is directed backwards through the handle by means of a 360° rotational principle. The RUKO pneumatic grinder features an integrated air filter, which protects the motor from dirt that could get into the inside with the compressed air. The tool extension makes it possible to work in tight, difficult to reach and deep places.

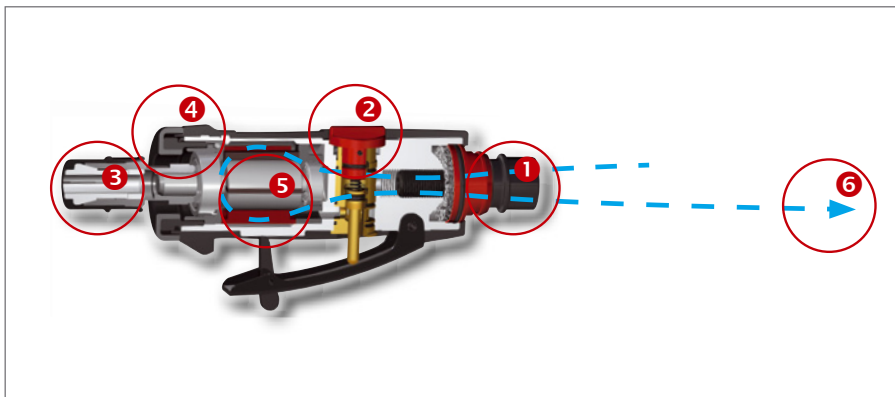
**Connection adapter included!**

Packing unit: individual cartons

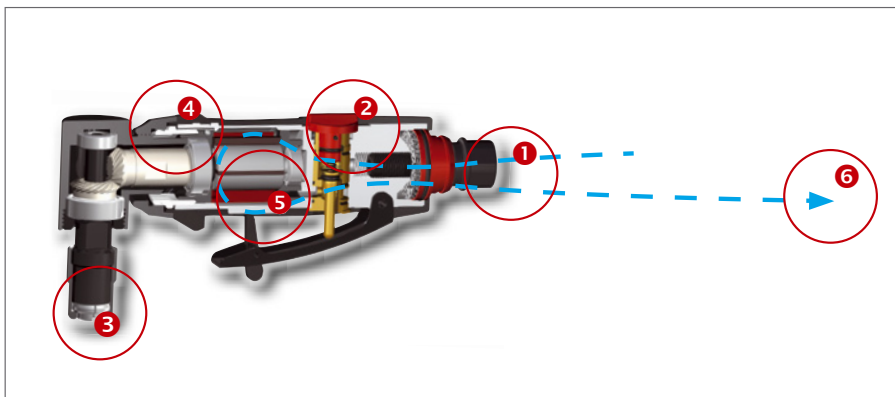


	L1 mm	Ø	Article no.	
Pneumatic grinder (long)	257,0	G 1/4"	116 130 L	1

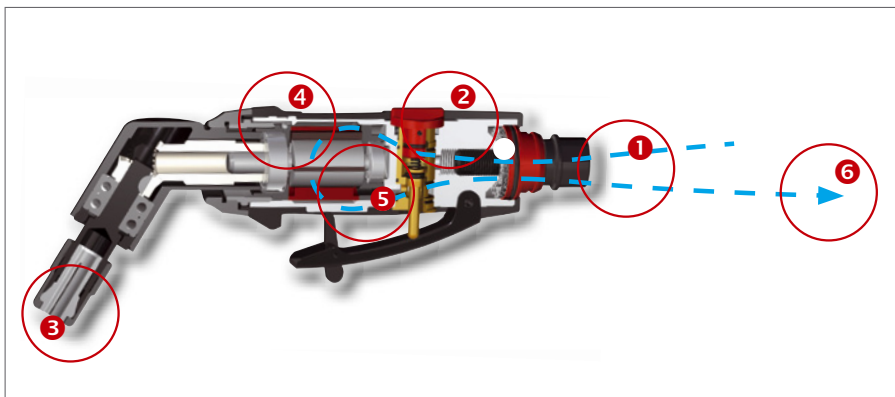
Pneumatic grinder (short)  
116 100 L



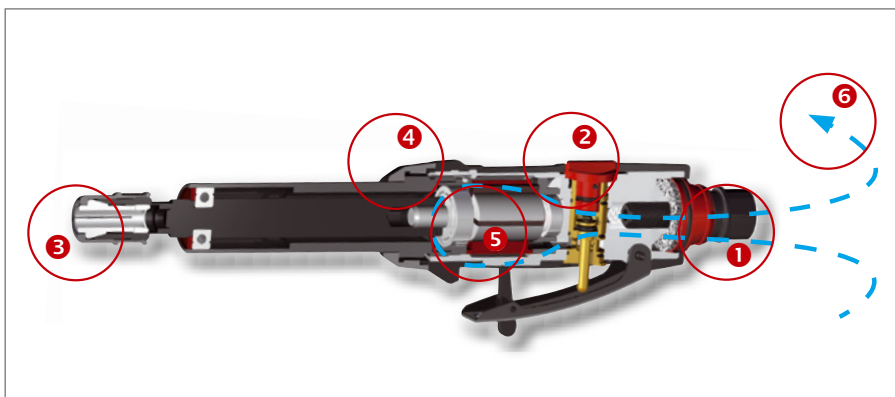
Pneumatic grinder (90°)  
116 110 L



Pneumatic grinder (115°)  
116 120 L



Pneumatic grinder (long)  
116 130 L



- ❶ Air filter
- ❷ Speed control
- ❸ Adapter made of hardened steel
- ❹ Rubberised, non-slip handle
- ❺ Heavy-duty vane motor
- ❻ Exhaust air directed through the handle by means of 360° rotational principle





## Compressed air grinder set with coupling plug incl. set of rotary burrs TC in plastic case

	Article no.
12-piece set of compressed air grinder 1 Compressed air grinder + Set of tungsten carbide rotary burrs in mini-box, 10 pcs. each 1x Ø D1 6,0 + 12,0 mm 2 TC rotary burrs shape A, cylinder (ZYA) with end toothing 2 TC rotary burrs shape C, oval (WRC) 2 TC rotary burrs shape G, tree (SPG) 2 TC rotary burrs shape F, ball nose tree (RBF) 2 TC rotary burrs shape D, ball type (KUD) + Coupling plug for compressed air grinder	116 100
5-piece set of compressed air grinder 1 Compressed air grinder + Set of tungsten carbide rotary burrs in mini-box, 3 pcs. each 1x Ø D1 6,0 + 12,0 mm 1 TC rotary burr shape A, cylinder (ZYA) with end toothing 1 TC rotary burr shape G, pioned arch (SPG) 1 TC rotary burr shape D, cone (KUD) + Coupling plug for compressed air grinder	116 113



116 100



116 113

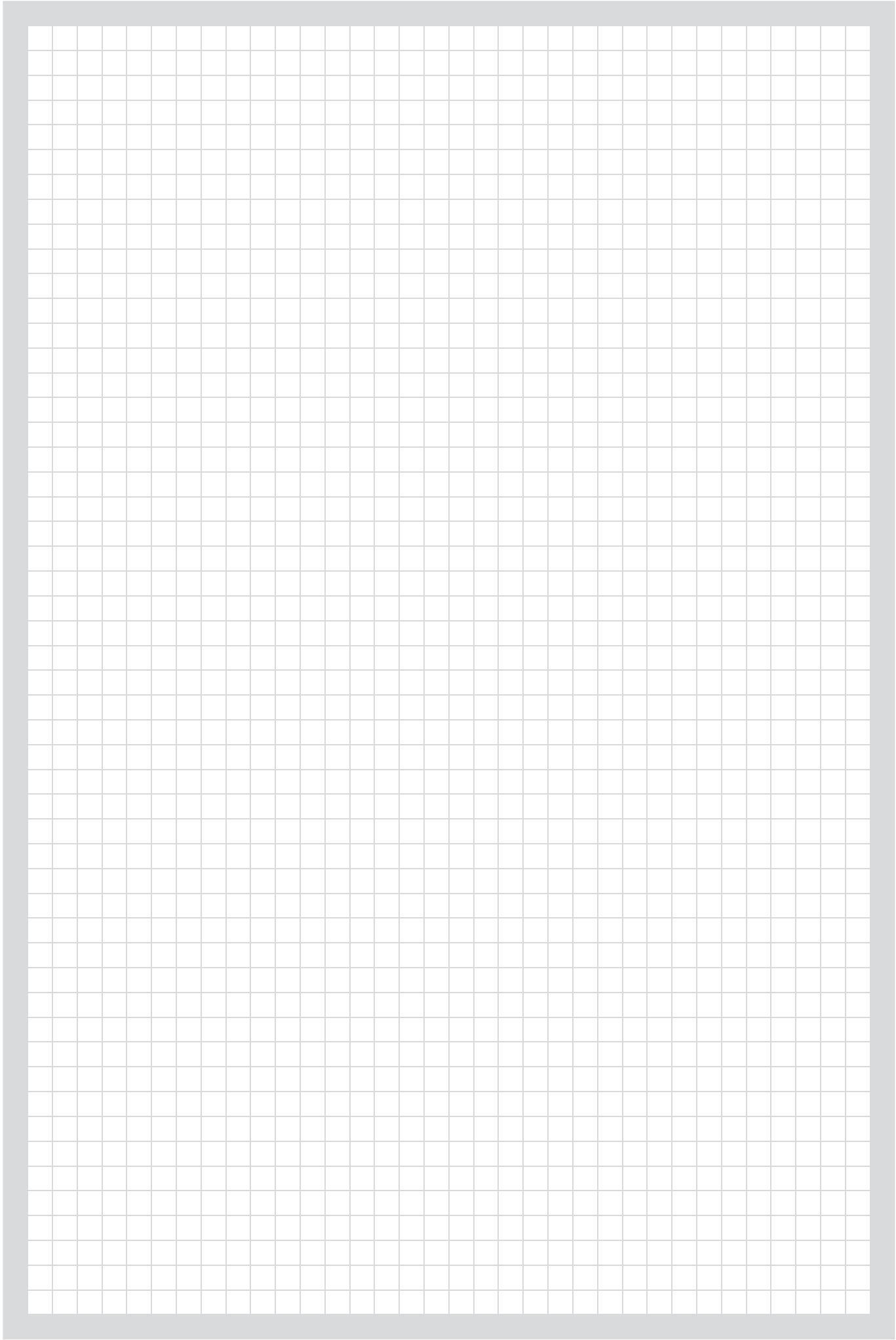
## Accessories for compressed air grinder set

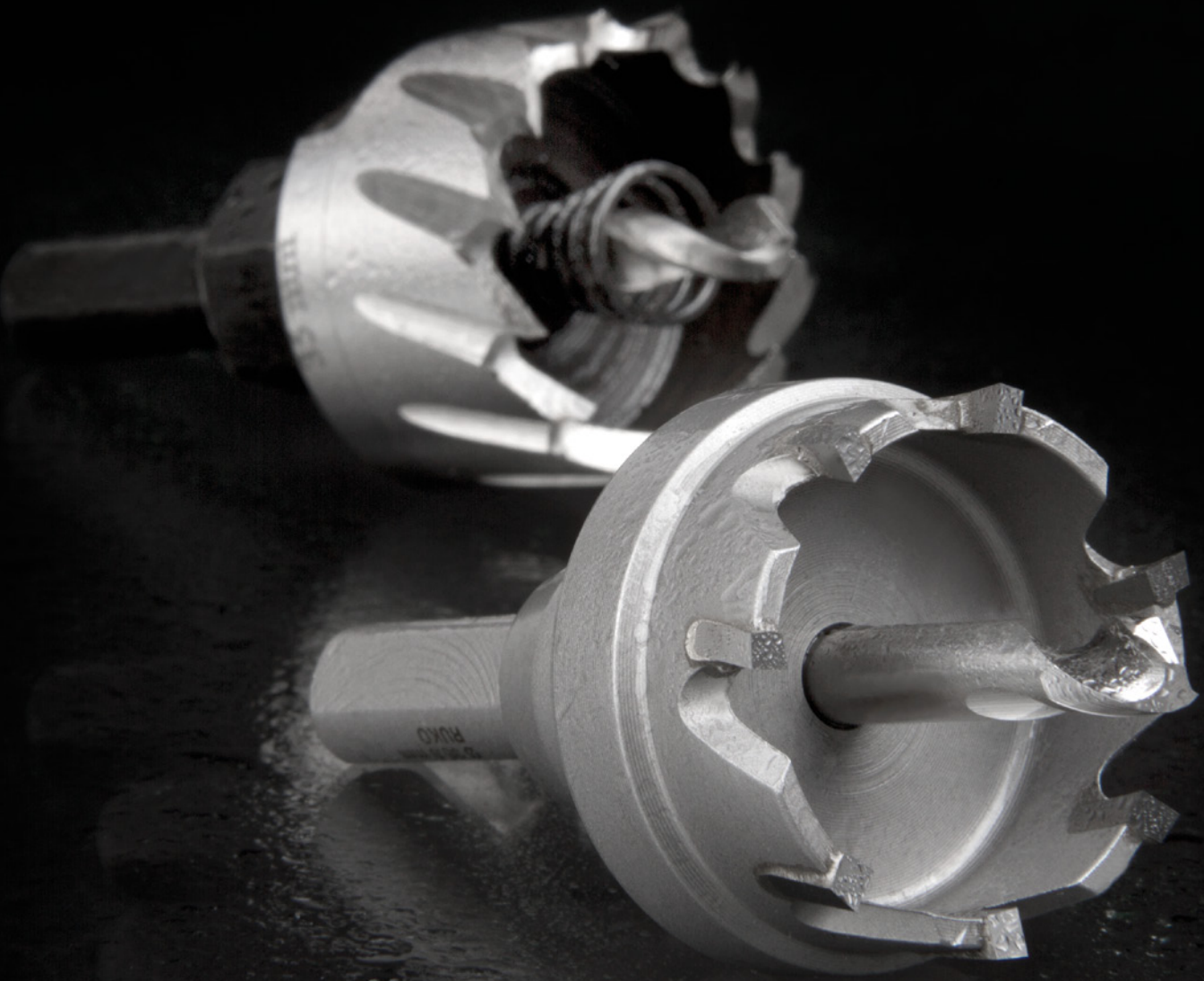
Packing unit: each in plastic packaging

	Article no.
Compressed air grinder solo 116 100 L + Coupling plug 116 101 L	116 100 S
Rotor replacement for compressed air grinder	116 100-1
Coupling plug, nominal size 7,2 mm, external thread G 1/4"	116 101 L
Collet 3,0 mm for compressed air grinder	116 121
Collet 1/4" for compressed air grinder	116 119



116 101 L





# HOLE SAWS



## Hole saws

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### HSS-G hole saws

The new RUKO HSS-G hole saws can be used in hand and pillar drills. When employing pillar drills, use manual advance only. Suitable for steel (up to 800 N/mm<sup>2</sup>) and cast steel, non-ferrous and light metals up to 2.5 mm, as well as plastics, reinforced fabrics, plasterboard and lightweight boards up to max. 5.0 mm.

### Tungsten carbide hole saws, shallow cut

The RUKO tungsten-carbide-tipped hole saws can be used in hand and pillar drills. When employing pillar drills, use manual advance only. Suitable for high chrome alloyed steels such as V2A and V4A (up to 2.0 mm), steel and cast steel, non-ferrous and lightweight metals, plastics, reinforced fabrics, plasterboard and lightweight boards, wood processing up to max. 4.0 mm.

### Tungsten carbide multigrade hole saws MHS

The RUKO tungsten-carbide-multigrade hole saws MHS can be used in magnetic and standard drills to a maximum of 20,0 mm in steel. For hand drills up to 6,0 mm in steel. Suitable for high-alloyed steels such as stainless and acid-resistant steel, steel and cast steel (up to 20,0 mm), non-ferrous and light metals, plastics (up to 28,0 mm). Applications: drills flat materials, tubes, vaulted surfaces, overlapped holes possible.

### User instructions:

- Unsuitable for percussion-drill operation
- Only slight pressure required to start drilling
- Drill with light, steady pressure
- Avoid pendulum movements while drilling
- Observe table of drilling speeds
- Use prescribed cooling agents





## Overview of symbols



High-speed steel



Shank:  
3-way clamping surface



Cutting depth:  
up to max. 10,0 mm



bright surface



High-speed steel  
with 5 % Cobalt content,  
ground



HSS  
with varied toothing



Ø tolerance:  
work's specification



Material thickness:  
up to 2,5 mm



tungsten carbide



HSSE-Co 8  
with fine toothing



Cutting edges  
hole saws



right hand cutting



Bi-metal

### HSS-G hole saws

**Characteristics:**

- Pilot drill HSSE-Co 5
- High rotational precision
- Sturdy construction
- Triangular shank
- Exchangeable centring drill
- Regrindable
- Chip breaker
- The side cutting edge ensures a simple machining, high efficiency and precision when cutting holes

### Tungsten carbide hole saws, shallow cut

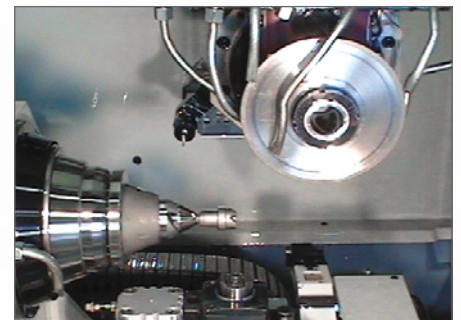
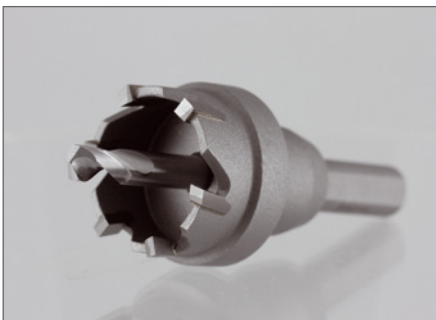
**Characteristics:**

- Pilot drill HSSE-Co 5
- High rotational precision
- Sturdy construction
- Hole saw and shank in one piece
- Triangular shank
- With cutting-depth limiter
- Positive chipping angle with specially ground cutting edge
- Good chip removal
- Exchangeable centring drill
- Regrindable tungsten-carbide blades

### Tungsten carbide multigrade hole saws MHS

**Characteristics:**

- Pilot pin HSSE-Co 5
- High rotational precision
- Sturdy construction
- Adapter with triangular shank
- Exchangeable pilot pin
- Regrindable tungsten-carbide blades



Parts and applications overview:



Surface	Cutting edges	Ø tolerance	Cutting depth	Material thickness	Shank	Ø mm	Article no.	Page
						12,0 - 80,0	128 035 - 128 080	263
						16,0 - 120,0	105 016 - 105 120	264 - 265
						15,0 - 100,0	113 015 - 113 100	266
						14,0 - 210,0	106 014 - 106 200	269
						14,0 - 210,0	126 014 - 126 200	269

Steel (N/mm <sup>2</sup> ) < 900	Steel (N/mm <sup>2</sup> ) < 1100	Steel (N/mm <sup>2</sup> ) < 1300	Stainless steel	Aluminium	Brass	Bronze	Plastics	Cast iron	Titanium alloyed





## HSS-G hole saws

Packing unit: individual plastic pack

Steel (N/mm <sup>2</sup> ) < 900			■	Brass			□
Steel (N/mm <sup>2</sup> ) < 1100				Bronze			□
Steel (N/mm <sup>2</sup> ) < 1300				Plastics			□
Stainless steel				Cast iron			□
Aluminium			■	Titanium alloyed			

Ø1 mm	Ø inch	PG	Tube dimensions inch	Ø2 mm	HSS		
12,0	15/32			8,0	128 012	1	
13,0				8,0	128 013	1	
14,0	9/16			8,0	128 014	1	
15,0				10,0	128 015	1	
16,0	5/8	PG 9		10,0	128 016	1	
17,0				10,0	128 017	1	
18,0				10,0	128 018	1	
19,0	3/4		3/8	10,0	128 019	1	
20,0				10,0	128 020	1	
21,0				10,0	128 021	1	
22,0			1/2	10,0	128 022	1	
23,0				10,0	128 023	1	
24,0	15/16			10,0	128 024	1	
25,0				10,0	128 025	1	
26,0				10,0	128 026	1	
27,0	1 1/16			10,0	128 027	1	
28,0	1 3/32			10,0	128 028	1	
29,0			3/4	10,0	128 029	1	
30,0	1 3/16			10,0	128 030	1	
31,0	1 7/32			10,0	128 031	1	
32,0	1 1/4			10,0	128 032	1	
33,0				10,0	128 033	1	
34,0				10,0	128 034	1	

Ø1 mm	Ø inch	PG	Tube dimensions inch	Ø2 mm	HSS		
35,0	1 3/8		1	10,0	128 035	1	
36,0				10,0	128 036	1	
37,0	1 7/16	PG 29		10,0	128 037	1	
38,0	1 1/2			10,0	128 038	1	
39,0				10,0	128 039	1	
40,0	1 9/16			10,0	128 040	1	
41,0	1 5/8			10,0	128 041	1	
42,0				10,0	128 042	1	
43,0	1 11/16			10,0	128 043	1	
44,0	1 3/4		1 1/4	10,0	128 044	1	
45,0				10,0	128 045	1	
46,0				10,0	128 046	1	
47,0	1 7/8	PG 36		10,0	128 047	1	
48,0				10,0	128 048	1	
49,0				10,0	128 049	1	
50,0	1 31/32			10,0	128 050	1	
55,0				12,0	128 055	1	
60,0	2 3/8	PG 48		12,0	128 060	1	
65,0				12,0	128 065	1	
70,0	2 3/4			12,0	128 070	1	
75,0				12,0	128 075	1	
80,0				12,0	128 080	1	

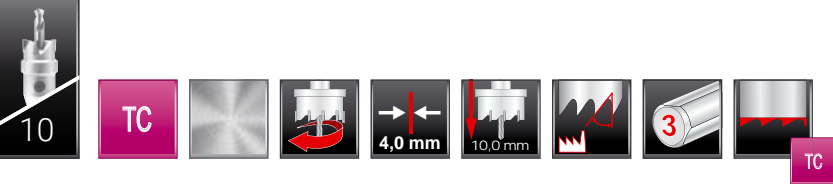


## Accessories

Packing unit: individual plastic pack



	For hole saws Ø mm	Shank	Magnetic-stand drilling machine	HSS		
Arbor holder including pilot drill M 10 x 1,25 mm	12,0 - 14,0	Ø 8,0 mm	RS10	128 211	1	
Arbor holder including pilot drill M 12 x 1,25 mm	15,0 - 34,0	Ø 10,0 mm	RS10	128 212	1	
Arbor holder including pilot drill M 14 x 1,50 mm	35,0 - 50,0	Ø 10,0 mm	RS20 - RS40e	128 213	1	
Arbor holder including pilot drill M 16 x 1,50 mm	51,0 - 100,0	Ø 12,0 mm	RS20 - RS40e	128 214	1	
Pilot pin Ø 6,0 x 52,0 mm	12,0 - 100,0	-	-	128 215	1	
Ejector spring	Ø > 20,0	-	-	128 216	1	



## Tungsten carbide hole saws, shallow cut

Packing unit: individual carton



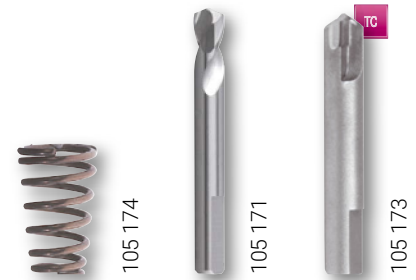
Steel (N/mm2) < 900			■
Steel (N/mm2) < 1100			■
Steel (N/mm2) < 1300			■
Stainless steel			■
Aluminium			■
Brass			■
Bronze			□
Plastics			■
Cast iron			■
Titanium alloyed			■

Ø1 mm	Ø inch	M + PG	Tube dimensions inch	Ø2 mm	TC		
16,0	5/8	~ PG 9		10,0	105 016		1
16,5		M 16		10,0	105 165		1
17,0				10,0	105 017		1
18,0				10,0	105 018		1
18,6		PG 11		10,0	105 186		1
19,0	3/4		3/8	10,0	105 019		1
20,0				10,0	105 020		1
20,4	13/16	M 20 / PG 13,5		10,0	105 204		1
21,0				10,0	105 021		1
22,0			1/2	10,0	105 022		1
22,5	7/8	PG 16		10,0	105 225		1
23,0				10,0	105 023		1
24,0	15/16			10,0	105 024		1
25,0				10,0	105 025		1
25,5	1	M 25		10,0	105 255		1
26,0				10,0	105 026		1
27,0	1 1/16			10,0	105 027		1
28,0	1 3/32			10,0	105 028		1
28,3	1 1/8	PG 21		10,0	105 283		1
29,0			3/4	10,0	105 029		1
30,0	1 3/16			10,0	105 030		1
32,0	1 1/4			10,0	105 032		1
32,5		M 32		10,0	105 325		1
34,0				10,0	105 034		1
35,0	1 3/8		1	10,0	105 035		1
36,0				10,0	105 036		1
37,0	1 7/16	PG 29		10,0	105 037		1
38,0	1 1/2			10,0	105 038		1
40,0	1 9/16			10,0	105 040		1
40,5		M 40		10,0	105 405		1
41,0	1 5/8			10,0	105 041		1
42,0				10,0	105 042		1
43,0	1 11/16			10,0	105 043		1
44,0	1 3/4		1 1/4	10,0	105 044		1
45,0				10,0	105 045		1
48,0				10,0	105 048		1
50,0	1 31/32			10,0	105 050		1
50,5		M 50		10,0	105 505		1
51,0	2		1 1/2	13,0	105 051		1
52,0				13,0	105 052		1
54,0	2 1/8	PG 42		13,0	105 054		1
55,0				13,0	105 055		1
57,0	2 1/4			13,0	105 057		1
60,0	2 3/8	~ PG 48		13,0	105 060		1
63,5	2 1/2	M 63	2	13,0	105 635		1
65,0				13,0	105 065		1
68,0				13,0	105 068		1
70,0	2 3/4			13,0	105 070		1
75,0				13,0	105 075		1
80,0				13,0	105 080		1
85,0				13,0	105 085		1
90,0				13,0	105 090		1
95,0	3 3/4			13,0	105 095		1
100,0				13,0	105 100		1
110,0				13,0	105 110		1
120,0				13,0	105 120		1



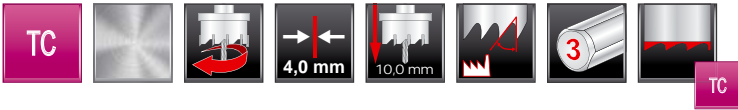
## Accessories

Packing unit: individual plastic pack



Ø mm	Length mm	For hole saws Ø mm	For hole saws cutting depth	HSSE Co 5	TC	
6,0	52,0	16,0 - 70,0	shallow	105 170	105 172	1
8,0	52,0	75,0 - 150,0	shallow	105 171	105 173	1
Ejector spring				105 174		1



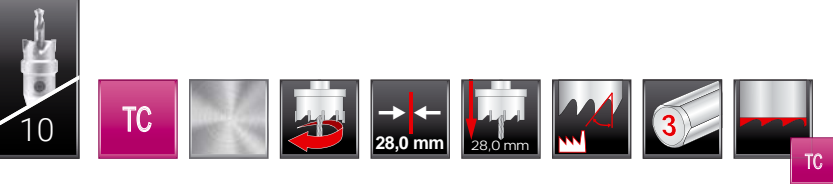


Set of tungsten carbide hole saws,  
shallow cut in plastic case

	TC
7-piece set of tungsten carbide hole saws with 5 tungsten carbide hole saws, shallow cut Ø 20,0 mm - 22,0 mm - 25,0 mm - 32,0 mm - 35,0 mm 1 cutting spray 50 ml article no. 101 010 1 extra pilot drill 6,0 mm HSSE-Co 5 article no. 105 170	105 300
6-piece set of tungsten carbide hole saws with 4 tungsten carbide hole saws, shallow cut Ø 16,5 mm ≈ M 16, Ø 20,4 mm ≈ M 20 / PG 13,5, Ø 25,5 mm ≈ M 25, Ø 32,5 mm ≈ M 32 1 cutting spray 50 ml article no. 101 010 1 extra pilot drill 6,0 mm HSSE-Co 5 article no. 105 170	105 302



If possible, do not use automatic feed motion, since otherwise the risk of fracture increases.



# Tungsten carbide multigrade hole saws MHS

Ø 15,0 up to 30,0 mm hole saw MHS and shank in one piece. Complete with pilot pin and wrench.  
 Ø 31,0 up to 100,0 mm hole saws MHS without arbor.  
 Ø 65,0 up to 100,0 mm on we recommend to use our morse taper holder article no. 113 203, 108 102 - 108 105.



Adapter: thread M 18 x 6 P1,5

Packing unit: individual carton

**Cutting depth in steel and VA steel max. up to 20.0 mm.**

In soft and non-ferrous metals max. up to 28.0 mm.

Steel (N/mm <sup>2</sup> ) < 900			■
Steel (N/mm <sup>2</sup> ) < 1100			■
Steel (N/mm <sup>2</sup> ) < 1300			■
Stainless steel			■
Aluminium			■

Brass			■
Bronze			□
Plastics			■
Cast iron			■
Titanium alloyed			■

Ø1 mm	Ø inch	Tube dimensions inch	Ø2 mm	TC		
15,0			13,0 mm	113 015	1	
16,0	5/8		13,0 mm	113 016	1	
17,0			13,0 mm	113 017	1	
18,0			13,0 mm	113 018	1	
19,0	3/4	3/8	13,0 mm	113 019	1	
20,0			13,0 mm	113 020	1	
21,0			13,0 mm	113 021	1	
22,0	7/8	1/2	13,0 mm	113 022	1	
23,0			13,0 mm	113 023	1	
24,0	15/16		13,0 mm	113 024	1	
25,0	1		13,0 mm	113 025	1	
26,0			13,0 mm	113 026	1	
27,0	1 1/16		13,0 mm	113 027	1	
28,0	1 3/32		13,0 mm	113 028	1	
29,0	1 1/8	3/4	13,0 mm	113 029	1	
30,0	1 3/16		13,0 mm	113 030	1	
32,0	1 1/4		13,0 mm / MT 2/3	113 032	1	

Ø1 mm	Ø inch	Tube dimensions inch	Ø2 mm	TC		
34,0			13,0 mm / MT 2/3	113 034	1	
35,0	1 3/8	1	13,0 mm / MT 2/3	113 035	1	
36,0			13,0 mm / MT 2/3	113 036	1	
38,0	1 1/2		13,0 mm / MT 2/3	113 038	1	
40,0			13,0 mm / MT 2/3	113 040	1	
42,0			13,0 mm / MT 2/3	113 042	1	
44,0	1 3/4	1 1/4	13,0 mm / MT 2/3	113 044	1	
45,0			13,0 mm / MT 2/3	113 045	1	
50,0			13,0 mm / MT 2/3	113 050	1	
55,0			13,0 mm / MT 2/3	113 055	1	
60,0	2 3/8		13,0 mm / MT 2/3	113 060	1	
65,0			13,0 mm / MT 2/3	113 065	1	
68,0			13,0 mm / MT 2/3	113 068	1	
70,0	2 3/4		13,0 mm / MT 2/3	113 070	1	
75,0			13,0 mm / MT 2/3	113 075	1	
80,0			13,0 mm / MT 2/3	113 080	1	
100,0			13,0 mm / MT 2/3	113 100	1	



## Accessories

Packing unit: individual plastic pack




Ø mm	Length mm	For hole saws MHS Ø mm	HSSE Co 5	TC	
6,0	80,0	15,0 - 100,0	113 216	113 217	1
Ejector spring			113 218		1


## Arbor holders for tungsten carbide multigrade hole saws MHS with threaded retainer M18 x 6 P1,5

Packing unit: individual plastic pack




	For hole saws MHS Ø mm	Shank	Magnetic-stand drilling machine	Article no.	
Arbor holder including pilot drill article no. 113 216	31,0 - 100,0	Ø 13,0 mm	RS10	113 201	1
Arbor holder including pilot drill article no. 113 216	31,0 - 100,0	MT 2	RS20 / RS25e	113 203	1

## Arbor holders for tungsten carbide multigrade hole saws MHS with threaded retainer M18 x 6 P1,5

	For hole saws MHS Ø mm	Shank morse taper	Magnetic-stand drilling machine	Article no.	
Arbor holder including adapter article no. 108 108, pilot pin article no. 108 110 and cooling bottle article no. 108 101	31,0 - 100,0	MT 2	RS20 / RS25e	108 102	1
Arbor holder with interior cooling including adapter article no. 108 108 and pilot pin article no. 108 110	31,0 - 100,0	MT 2	RS20 / RS25e	108 104	1
Arbor holder including adapter article no. 108 108, pilot pin article no. 108 110 and cooling bottle article no. 108 101	31,0 - 100,0	MT 3	RS30e / RS40e	108 103	1
Arbor holder with interior cooling including adapter article no. 108 108 and pilot pin article no. 108 110	31,0 - 100,0	MT 3	RS30e / RS40e	108 105	1

## Adapter for tungsten carbide multigrade hole saws MHS with threaded retainer M18 x 6 P1,5

	For hole saws MHS Ø mm	Article no.	
Adapter with Weldon shank 3/4"	31,0 - 100,0	108 108	1
Ejector pin Ø 6,35 x 118,0 mm	31,0 - 100,0	108 110	1

## Hole saws

The RUKO bi-metal hole saws can be used in hand and pillar drills. When employing pillar drills, use manual advance only.

### Bi-metal hole saws HSS with varied toothing

On easily cut materials the varied toothing ensures that the cut is more even and requires less effort. The reduction in vibrations and heat development during cutting achieves up to three times the tool life. Suitable for unalloyed steel (up to 700 N/mm<sup>2</sup> strength), non-ferrous and light metals, plastics, plasterboard and light building boards, fibreboard, plywood and wood.

### Bi-metal hole saws HSSE-Co 8 with fine toothing

The fine toothing is particularly suitable for cutting metals. It ensures smoother running and reduces the necessary effort. The reduction in heat development during cutting increases tool life, especially in the case of metals. Suitable for alloyed and non-alloyed steels (up to 1.000 N/mm<sup>2</sup> strength), high chromium alloyed steels such as stainless steel, steels resistant to rusts and acids, non-ferrous and light metals.

### Characteristics:

- High rotational precision
- Sturdy construction
- Hole saw and shank in two parts, so hole saws of different diameters can be exchanged and fitted more rapidly
- Positive chipping and cutting angles ensure more aggressive cutting
- The teeth are welded onto a jacket of special steel
- Good chip removal
- Slots in the jacket side assist removal of cut outs
- Exchangeable centring drill

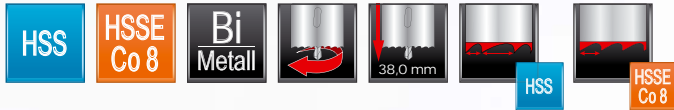
### User instructions:

- Unsuitable for percussion-drill operation
- Only slight pressure required to start drilling
- Drill with light, steady pressure
- Avoid pendulum movements while drilling
- Observe table of drilling speeds
- Use prescribed cooling agents



Best results are achieved in steel with a max. of 5.0 mm material thickness.





Jacket: special steel



# Bi-metal hole saws HSS with varied toothings / HSSE-Co 8 with fine toothings

Packing unit: individual carton

Steel (N/mm <sup>2</sup> ) < 900	<input type="checkbox"/>	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1100	<input type="checkbox"/>	<input type="checkbox"/>
Steel (N/mm <sup>2</sup> ) < 1300	<input type="checkbox"/>	<input type="checkbox"/>
Stainless steel	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Brass	<input type="checkbox"/>	<input type="checkbox"/>
Bronze	<input type="checkbox"/>	<input type="checkbox"/>
Plastics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Cast iron	<input type="checkbox"/>	<input type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>	<input type="checkbox"/>

Ø mm	Ø inch	PG	Tube dimensions inch	For arbor holders	HSS	HSSE Co 8	
14,0	9/16			A1 / A4 / A5	106 014	126 014	1
16,0	5/8	~ PG 9		A1 / A4 / A5	106 016	126 016	1
17,0				A1 / A4 / A5	106 017	126 017	1
19,0	3/4	~ PG 11	3/8	A1 / A4 / A5	106 019	126 019	1
20,0				A1 / A4 / A5	106 020	126 020	1
21,0		~ PG 13,5		A1 / A4 / A5	106 021	126 021	1
22,0	7/8		1/2	A1 / A4 / A5	106 022	126 022	1
24,0	15/16	~ PG 16		A1 / A4 / A5	106 024	126 024	1
25,0	1			A1 / A4 / A5	106 025	126 025	1
27,0	1 1/16			A1 / A4 / A5	106 027	126 027	1
28,0	1 3/32			A1 / A4 / A5	106 028	126 028	1
29,0	1 1/8	~ PG 21	3/4	A1 / A4 / A5	106 029	126 029	1
30,0	1 3/16			A1 / A4 / A5	106 030	126 030	1
32,0	1 1/4			A2 / A6 / A7	106 032	126 032	1
33,0				A2 / A6 / A7	106 033	126 033	1
35,0	1 3/8		1	A2 / A6 / A7	106 035	126 035	1
36,0				A2 / A6 / A7	106 036	126 036	1
37,0		PG 29		A2 / A6 / A7	106 037	126 037	1
38,0	1 1/2			A2 / A6 / A7	106 038	126 038	1
40,0				A2 / A6 / A7	106 040	126 040	1
41,0	1 5/8			A2 / A6 / A7	106 041	126 041	1
43,0	1 11/16			A2 / A6 / A7	106 043	126 043	1
44,0	1 3/4		1 1/4	A2 / A6 / A7	106 044	126 044	1
46,0	1 13/16			A2 / A6 / A7	106 046	126 046	1
48,0	1 7/8	~ PG 36		A2 / A6 / A7	106 048	126 048	1
50,0				A2 / A6 / A7	106 050	126 050	1
51,0	2		1 1/2	A2 / A6 / A7	106 051	126 051	1
52,0				A2 / A6 / A7	106 052	126 052	1
54,0	2 1/8	PG 42		A2 / A6 / A7	106 054	126 054	1
55,0				A2 / A6 / A7	106 055	126 055	1
57,0	2 1/4			A2 / A6 / A7	106 057	126 057	1
59,0				A2 / A6 / A7	106 059	126 059	1
60,0	2 3/8	~ PG 48		A2 / A6 / A7	106 060	126 060	1
63,0				A2 / A6 / A7	106 063	126 063	1
64,0	2 1/2		2	A2 / A6 / A7	106 064	126 064	1
65,0				A2 / A6 / A7	106 065	126 065	1
67,0	2 5/8			A2 / A6 / A7	106 067	126 067	1
68,0				A2 / A6 / A7	106 068	126 068	1
70,0	2 3/4			A2 / A6 / A7	106 070	126 070	1
73,0	2 7/8			A2 / A6 / A7	106 073	126 073	1
76,0	3		2 1/2	A2 / A6 / A7	106 076	126 076	1
79,0	3 1/8			A2 / A6 / A7	106 079	126 079	1
83,0	3 1/4			A2 / A6 / A7	106 083	126 083	1
86,0	3 3/8			A2 / A6 / A7	106 086	126 086	1
89,0	3 1/2			A2 / A6 / A7	106 089	126 089	1
92,0	3 5/8		3	A2 / A6 / A7	106 092	126 092	1
95,0	3 3/4			A2 / A6 / A7	106 095	126 095	1
98,0	3 7/8			A2 / A6 / A7	106 098	126 098	1
102,0	4			A2 / A6 / A7	106 102	126 102	1
105,0			3 1/2	A2 / A6 / A7	106 105	126 105	1
108,0	4 1/4			A2 / A6 / A7	106 108	126 108	1
111,0	4 3/8			A2 / A6 / A7	106 111	126 111	1
114,0	4 1/2		4	A2 / A6 / A7	106 114	126 114	1
121,0	4 3/4			A2 / A6 / A7	106 121	126 121	1
127,0	5			A2 / A6 / A7	106 127	126 127	1
133,0				A2 / A6 / A7	106 133	126 133	1
140,0	5 1/2			A2 / A6 / A7	106 140	126 140	1
152,0	6			A2 / A6 / A7	106 152	126 152	1
160,0	6 5/16			A2 / A6 / A7	106 160	126 160	1
168,0	6 5/8			A2 / A6 / A7	106 168	126 168	1
177,0				A2 / A6 / A7	106 177	126 177	1
210,0	8 1/4			A2 / A6 / A7	106 200	126 200	1

## Arbor holders including pilot drill for bi-metal hole saws HSS and HSSE-Co 8

Packing unit: individual carton



Hole saws Ø mm	Arbor holders Type	Shank Ø mm	Shank shape	Thread	HSS	HSSE Co 5	
14,0 - 30,0	A1	11,0		1/2" x 20	106 201	126 201	1
32,0 - 210,0	A2	11,0		5/8" x 18	106 202	126 202	1
14,0 - 30,0	A4	6,0		1/2" x 20	106 204	126 204	1
14,0 - 30,0	A5	9,5		1/2" x 20	106 210	126 210	1
32,0 - 210,0	A6	9,5		5/8" x 18	106 209	126 209	1
32,0 - 210,0	A7	10,0	SDS-Plus	5/8" x 18	106 211	126 211	1

## Accessories for bi-metal hole saws HSS and HSSE-Co 8

Packing unit: individual plastic pack





	Arbor holders type	HSS	HSSE Co 5	
Adapter to support HSS and HSSE-Co 8 bi-metal hole saws from Ø 32,0 to Ø 210,0 mm	A1 / A4 / A5	106 212	—	1
Pilot drill HSS / HSSE-Co 5, ground, Ø 6,35 x 102,0 mm and split point in accordance with DIN 1412 C	A4	106 207	126 207	1
Pilot drill HSS / HSSE-Co 5, ground, Ø 6,35 x 82,0 mm and split point in accordance with DIN 1412 C	A1 / A2 / A5 / A6 / A7	106 206	126 206	1
Extension 300,0 mm, shank shape  11,0 mm	A1 / A2	106 205	—	1
Ejector spring	—	106 208	—	1



Jacket: special steel



## Sets of bi-metal hole saws HSS / HSSE-Co 8 in plastic cases

			
PK 1	8- piece set of bi-metal hole saws for plumbers 6 bi-metal hole saws Ø 19,0 - 22,0 - 29,0 - 38,0 - 44,0 - 57,0 mm + 2 arbor holders A2 and A4	106 301	126 301
PK 2	11- piece set of bi-metal hole saws for plumbers 9 bi-metal hole saws Ø 19,0 - 22,0 - 29,0 - 35,0 - 38,0 - 44,0 - 51,0 - 57,0 - 64,0 mm + 2 arbor holders A2 and A4	106 306	126 306
EK 1	8- piece set of bi-metal hole saws for electricians 6 bi-metal hole saws Ø 22,0 - 29,0 - 35,0 - 44,0 - 51,0 - 64,0 mm + 2 arbor holders A2 and A4	106 305	126 305
EK 2	8- piece set of bi-metal hole saws for electricians 6 bi-metal hole saws Ø 22,0 - 29,0 - 35,0 - 44,0 - 51,0 - 68,0 mm + 2 arbor holders A2 and A4	106 302	126 302
Universal	12- piece set of bi-metal hole saws Ø 19,0 - 22,0 - 25,0 - 29,0 - 35,0 - 38,0 - 44,0 - 51,0 - 57,0 - 64,0 mm + 2 arbor holders A2 and A4	106 303	126 303
Super	12- piece set of bi-metal hole saws Ø 22,0 - 25,0 - 32,0 - 35,0 - 41,0 - 44,0 - 51,0 - 54,0 - 60,0 - 68,0 mm + 2 arbor holders A2 and A4	106 304	126 304
Premium	19- piece set of bi-metal hole saws Ø 16,0 - 19,0 - 21,0 - 24,0 - 25,0 - 29,0 - 32,0 - 37,0 - 40,0 - 48,0 - 51,0 - 54,0 - 60,0 - 73,0 - 83,0 mm + 2 arbor holders A1 and A2 + 1 Pilot drill HSS Ø 6,35 mm x 82,0 mm + 1 Extension 300,0 mm, arbors for A1 and A2	106 318	126 318





## Recommended cutting speeds for bi-metal hole saws HSS and HSSE-Co 8

Material:		High carbon struc. steel	Alloyed steel	Cast iron	CuZn alloy	Aluminium alloy	Thermo- plastics	Duro- plastics	Wood
		up to 700 N/mm <sup>2</sup>	up to 1000 N/mm <sup>2</sup>	over 250 N/mm <sup>2</sup>		up to 11% Si			
Vc = m/min		30	20	10	35	30	20	15	40
Coolant:		Cutting spray	Cutting spray	Compressed air	Compressed air	Cutting spray	Water	Compressed air	Compressed air
Ø mm	Ø inch	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.
14,0	9/16	682	455	227	796	682	455	341	910
16,0	5/8	597	398	199	697	597	398	299	796
17,0		562	375	187	656	562	375	281	749
19,0	3/4	503	335	168	587	503	335	251	670
21,0		455	303	152	531	455	303	227	607
22,0	7/8	434	290	145	507	434	290	217	579
24,0	15/16	398	265	133	464	398	265	199	531
25,0	1	382	255	127	446	382	255	191	510
27,0	1 1/16	354	236	118	413	354	236	177	472
28,0	1 3/32	341	227	114	398	341	227	171	455
29,0	1 1/8	329	220	110	384	329	220	165	439
30,0	1 3/16	318	212	106	372	318	212	159	425
32,0	1 1/4	299	199	100	348	299	199	149	398
33,0		290	193	97	338	290	193	145	386
35,0	1 3/8	273	182	91	318	273	182	136	364
36,0		265	177	88	310	265	177	133	354
37,0		258	172	86	301	258	172	129	344
38,0	1 1/2	251	168	84	293	251	168	126	335
40,0		239	159	80	279	239	159	119	318
41,0	1 5/8	233	155	78	272	233	155	117	311
43,0	1 11/16	222	148	74	259	222	148	111	296
44,0	1 3/4	217	145	72	253	217	145	109	290
46,0	1 3/4	208	138	69	242	208	138	104	277
48,0	1 7/8	199	133	66	232	199	133	100	265
50,0	1 31/32	190	128	64	225	194	129	97	257
51,0	2	187	125	62	219	187	125	94	250
52,0		184	122	61	214	184	122	92	245
54,0	2 1/8	177	118	59	206	177	118	88	236
57,0	2 1/4	168	112	56	196	168	112	84	223
59,0		162	108	54	189	162	108	81	216
60,0	2 3/8	159	106	53	186	159	106	80	212
63,0		152	101	51	177	152	101	76	202
64,0	2 1/2	149	100	50	174	149	100	75	199
65,0		147	98	49	171	147	98	73	196
67,0	2 5/8	143	95	48	166	143	95	71	190
68,0		141	94	47	164	141	94	70	187
70,0	2 3/4	136	91	45	159	136	91	68	182
73,0	2 7/8	131	87	44	153	131	87	65	175
76,0	3	126	84	42	147	126	84	63	168
79,0	3 1/8	121	81	40	141	121	81	60	161
83,0	3 1/4	115	77	38	134	115	77	58	153
86,0	3 3/8	111	74	37	130	111	74	56	148
89,0	3 1/2	107	72	36	125	107	72	54	143
92,0	3 5/8	104	69	35	121	104	69	52	138
95,0	3 3/4	101	67	34	117	101	67	50	134
98,0	3 7/8	97	65	32	114	97	65	49	130
102,0	4	94	62	31	109	94	62	47	125
105,0		91	61	30	106	91	61	45	121
108,0	4 1/4	88	59	29	103	88	59	44	118
111,0	4 3/8	86	57	29	100	86	57	43	115
114,0	4 1/2	84	56	28	98	84	56	42	112
121,0	4 3/4	79	53	26	92	79	53	39	105
127,0	5	75	50	25	88	75	50	38	100
140,0	5 1/2	68	45	23	80	68	45	34	91
152,0	6	63	42	21	73	63	42	31	84
160,0	6 5/16	60	40	20	70	60	40	30	80
168,0	6 5/8	57	38	19	66	57	38	28	76
177,0		54	36	18	63	54	36	27	72
210,0	8 9/32	45	30	15	53	45	30	23	61

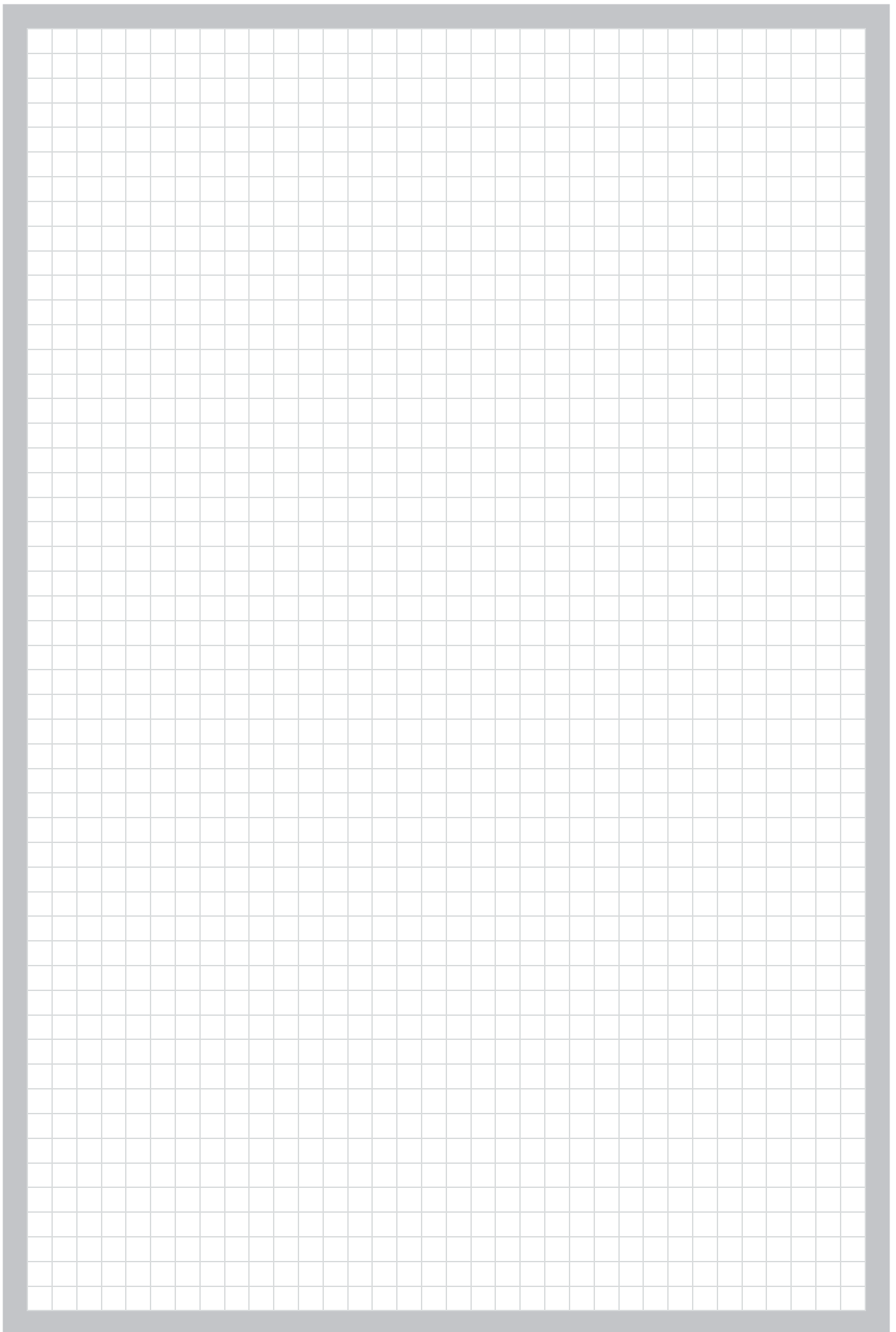




# Recommended cutting speeds for tungsten carbide hole saws



Material:		High carbon struc. steel	Alloyed steel	Cast iron	CuZn alloy	Aluminium alloy	Thermo-plastics	Duro-plastics	Wood
		up to 700 N/mm <sup>2</sup>	up to 1000 N/mm <sup>2</sup>	over 250 N/mm <sup>2</sup>		up to 11% Si			
Vc = m/min		30	20	10	60	35	30	20	15
Coolant:		Cutting spray	Cutting spray	Compressed air	Compressed air	Cutting spray	Water	Compressed air	Compressed air
Ø mm	Ø inch	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.
16,0	5/8	995	697	796	1194	1194	896	796	995
16,5		965	676	772	1158	1158	869	772	965
17,0		937	656	749	1124	1124	843	749	937
18,0		885	619	708	1062	1062	796	708	885
18,6		856	599	685	1027	1027	770	685	856
19,0	3/4	838	587	670	1006	1006	754	670	838
20,0		796	557	637	955	955	717	637	796
20,4	13/16	781	546	624	937	937	703	624	781
21,0		758	531	607	910	910	682	607	758
22,0		724	507	579	869	869	651	579	724
22,5	7/8	708	495	566	849	849	637	566	708
23,0		692	485	554	831	831	623	554	692
24,0	15/16	663	464	531	796	796	597	531	663
25,0		637	446	510	764	764	573	510	637
25,5	1	624	437	500	749	749	562	500	624
26,0		612	429	490	735	735	551	490	612
27,0	1 1/16	590	413	472	708	708	531	472	590
28,0	1 3/32	569	398	455	682	682	512	455	569
28,3	1 1/8	563	394	450	675	675	506	450	563
29,0		549	384	439	659	659	494	439	549
30,0	1 3/16	531	372	425	637	637	478	425	531
31,0	1 7/32	514	360	411	616	616	462	411	514
32,0	1 1/4	498	348	398	597	597	448	398	498
32,5		490	343	392	588	588	441	392	490
33,0		483	338	386	579	579	434	386	483
34,0		468	328	375	562	562	422	375	468
35,0	1 3/8	455	318	364	546	546	409	364	455
36,0		442	310	354	531	531	398	354	442
37,0	1 7/16	430	301	344	516	516	387	344	430
38,0	1 1/2	419	293	335	503	503	377	335	419
39,0		408	286	327	490	490	367	327	408
40,0	1 9/16	398	279	318	478	478	358	318	398
40,5		393	275	315	472	472	354	315	393
41,0	1 5/8	388	272	311	466	466	350	311	388
42,0		379	265	303	455	455	341	303	379
43,0	1 11/16	370	259	296	444	444	333	296	370
44,0	1 3/4	362	253	290	434	434	326	290	362
45,0		354	248	283	425	425	318	283	354
46,0		346	242	277	415	415	312	277	346
47,0	1 7/8	339	237	271	407	407	305	271	339
48,0		332	232	265	398	398	299	265	332
49,0		325	227	260	390	390	292	260	325
50,0	1 31/32	318	223	255	382	382	287	255	318
50,5		315	221	252	378	378	284	252	315
51,0	2	312	219	250	375	375	281	250	312
52,0		306	214	245	367	367	276	245	306
53,0		300	210	240	361	361	270	240	300
54,0	2 1/8	295	206	236	354	354	265	236	295
55,0		290	203	232	347	347	261	232	290
56,0		284	199	227	341	341	256	227	284
57,0	2 1/4	279	196	223	335	335	251	223	279
58,0		275	192	220	329	329	247	220	275
59,0		270	189	216	324	324	243	216	270
60,0	2 3/8	265	186	212	318	318	239	212	265
63,5	2 1/2	251	176	201	301	301	226	201	251
65,0		245	171	196	294	294	220	196	245
70,0	2 3/4	227	159	182	273	273	205	182	227
75,0		212	149	170	255	255	191	170	212
80,0		199	139	159	239	239	179	159	199
85,0		187	131	150	225	225	169	150	187
90,0		177	124	142	212	212	159	142	177
95,0	3 3/4	168	117	134	201	201	151	134	168
100,0		159	111	127	191	191	143	127	159
110,0		145	101	116	174	174	130	116	145
120,0		133	93	106	159	159	119	106	133
130,0	5 1/8	122	86	98	147	147	110	98	122
140,0	5 1/2	114	80	91	136	136	102	91	114
150,0		106	74	85	127	127	96	85	106





# SAW PROGRAM



## T-shank style jig-saw and reciprocating blades

Technical advice for T-shank style jig-saw and reciprocating blades

### Tooth spacing

In order to prevent the teeth from breaking off or the blade from snapping, at least three teeth should be cutting at the same time. The thickness of the work piece should determine whether a coarse- or fine-toothed saw blade is to be used. The following information can be used as a rule of thumb for selecting the correct saw blade for the job in hand: A tooth spacing of 0,7 to 2,0 mm is suitable for thin materials and fine cuts. A tooth spacing of 2,5 to 4,0 mm is suitable for thick materials and coarse cuts.

### Blades for profiled cuts

The blades which are most suitable for cutting tight-profiled cuts are narrow saw blades or narrow saw blades with toothed spines.

### HSS bi-metal

HSS bi-metal saw blades are the correct choice where the material to be cut and the conditions of use subject the saw-blade to extreme stresses. The teeth of the saw blade are made of HSS steel whereas the spine is made of a softer and more elastic HCS steel. This combination of materials makes the HSS bi-metal saw blades highly flexible and gives them high cutting performance and long service life at the same time.





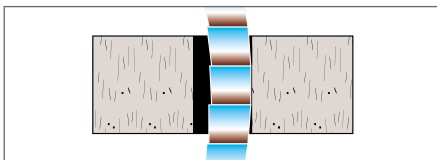
# Overview of symbols

	Steel, iron		Eternit (asbestos cement) plates		Pipe		Fast cuts
	Sheet steel		Hardwoods and softwoods		Profiled cuts		Special technology
	Stainless steel		Chipboard		Clean cuts		Laminated / coated boards
	Aluminium		Blockboard		Straight cuts		TOP / Bestseller
	Non-ferrous metals		Sandwich materials		Plywood		
	Wood with nails embedded		Profiled section		Right-angled cuts		
	Plastics		Porous concrete		Pruning		

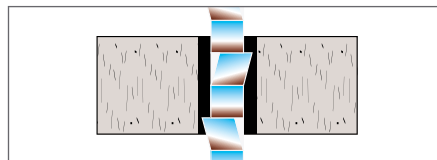
## Cutting quality

The quality of the saw cut is largely determined by the type and geometry of the teeth on the saw blade. In order to prevent clamping of the saw blade in the work piece, three tooth systems are currently used.

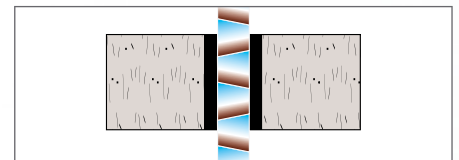
**1** Wavy set



**2** Tooth side set



**3** Blade tapered-ground away from the teet (saw blades are thinner at the spine)



T-shank style jig-saw  
5 units per carton



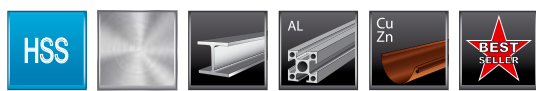
T-shank style jig-saw  
20 units per plastic packaging



Reciprocating blades  
5 units per plastic packaging



# T-shank jig-saw blades for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.



Blades to replace \*  
Bosch® T 118 B | Metabo® 23 638  
MPS® 3113 | Wilpu® MG 12 | AEG® 254-064

## RUKO 8011 HSS steel

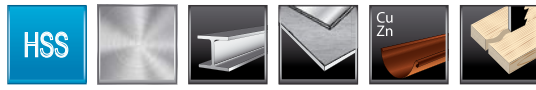
Standard saw blade, wavy set.

Application range: St 37 up to 4,0 mm thickness, non-ferrous metals, aluminium 3,0 - 10,0 mm cooled with RUKO cutting spray. Hard plastics, acrylic glass 3,0 - 8,0 mm, Pertinax, Resitex. Asbestos cement 2,0 - 4,0 mm. Eternit up to 10,0 mm, cooled with water.



			mm	mm	mm	Tooth spacing teeth per mm	Tooth spacing teeth per inch	HSS		
77,0	7,5	1,0				2,0	14 Tpi	321 8011		5

HSS		
323 8011		20



Blades to replace \*  
Bosch® T 218 A | Metabo® 23 647  
MPS® 3112 | Wilpu® MG 21 | AEG® 254-063

## RUKO 8009 HSS steel

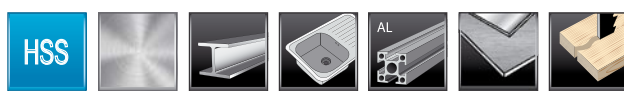
Standard saw blade, wavy set. Narrow blade suitable for profiled cuts.

Application range: St 37, non-ferrous metals. Suitable for profiled cuts. Suitable for glass-fibre reinforced plastics up to 4,0 mm thickness, acrylic glass up to 8,0 mm, cooled with water. Pressed materials, hard fabrics, insulation materials up 8,0 mm thickness, cooled with water.



			mm	mm	mm	Tooth spacing teeth per mm	Tooth spacing teeth per inch	HSS		
77,0	6,3	1,0				1,2	24 Tpi	321 8009		5

HSS		
323 8009		20



Blades to replace \*  
Bosch® T 118 A | Metabo® 23 637  
MPS® 3111 | Wilpu® MG 11 | AEG® 254-063

## RUKO 8010 HSS steel

Standard saw blade, wavy set. Narrow blade suitable for profiled cuts.

Application range: St 37, non-ferrous metals, aluminium up to 4,0 mm thick, high-alloyed chromium steel such as stainless and acid-resistant steel sheet up to 2,0 mm. Hard and softwood, insulation material up to 8,0 mm. Suitable for glassfibre reinforced plastics up to 2,0 mm, acrylic glass, pressed materials, hard fabrics, cooled with water.

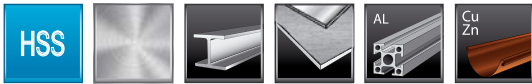


			mm	mm	mm	Tooth spacing teeth per mm	Tooth spacing teeth per inch	HSS		
77,0	7,5	1,0				1,2	24 Tpi	321 8010		5

HSS		
323 8010		20

\* Competitive blades may vary from our specifications.

# T-shank jig-saw blades for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.



Blades to replace \*  
Bosch® T 118 G | Metabo® 23 636  
MPS® 3110 | Wilpu® MG 107 | AEG® 274-652

## RUKO 8012 HSS steel

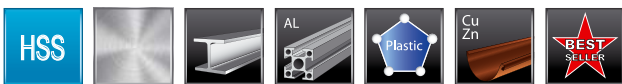
Standard saw blade, wavy set. For thin sheet steel.

Application range:  
Thin-gauged sheet and profiled section less than 1,0 mm. St 37, non-ferrous metals, aluminium up to 2,0 mm. Armoured plastics, acrylic glass, cooled with water. Thin-gauged hard fabrics, insulation materials, cooled with water.



			Tooth spacing teeth per mm	Tooth spacing teeth per inch			
77,0	7,5	1,0	0,7	36 Tpi	321 8012	5	

323 8012	20	



Blades to replace \*  
Bosch® T 127 D | Metabo® 23 639  
MPS® 3118 | Wilpu® K 14 | AEG® 274-315

## RUKO 8013 HSS steel

Standard saw blade, side set.

Application range:  
Mild steel 3,0 - 6,0 mm, non-ferrous metals, aluminium and aluminium alloys 3,0 - 15,0 mm, cooled with RUKO cutting spray. Plastics, armoured plastics. Asbestos cement, eternit and hard materials.



			Tooth spacing teeth per mm	Tooth spacing teeth per inch			
100,0	7,5	1,0	3,0	8 Tpi	321 8013	5	

323 8013	20	



Blades to replace \*  
Bosch® T 318 B | Metabo® 23 697  
MPS® 3115 | Wilpu® MG 32 bi | AEG® 274-653

## RUKO 8017 HSS steel

Standard saw blade, extra long, wavy set.

Application range:  
Profiled section, mild steel, aluminium 2,0 - 10,0 mm, composite materials, sandwich materials up to 70,0 mm. Insulation materials.



			Tooth spacing teeth per mm	Tooth spacing teeth per inch			
132,0	7,5	1,25	2,0	14 Tpi	321 8017	5	

323 8017	20	

# T-shank jig-saw blades for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.



Blades to replace \*  
Bosch® T 318 A | Metabo® 23 629  
MP.S® 3114 | Wilpu® MG 31 bi | AEG® 274-654

## RUKO 8016 HSS steel

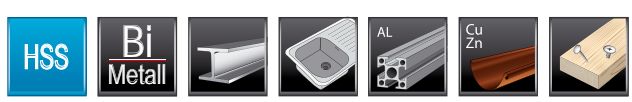
Standard saw blade, extra long, wavy set.

Application range:  
Profiled section, mild steel, aluminium 1,5 - 4,0 mm, composite materials, sandwich materials up to 70,0 mm.  
Insulation materials.



			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
132,0	9,5	1,0	2,0	14 Tpi	321 8016	5

323 8016	20



Blades to replace \*  
Bosch® T 118 BF | Metabo® 23 973  
MP.S® 3113 F | Wilpu® MG 12 bi | AEG® 340-012

## RUKO 8028 HSS bi-metal

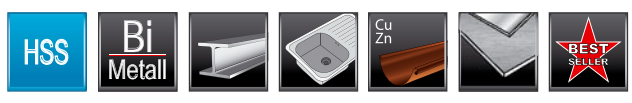
Saw blade wavy set.

Application range:  
Mild steel, non-ferrous metals 3,0 - 10,0 mm thickness as well as sheet high-alloyed chromium steel such as stainless and acid-resistant steel, wood with nails, acrylic glass.



			Tooth spacing teeth per mm	Tooth spacing teeth per inch			
77,0	7,5	1,0	2,0	14 Tpi	321 8028	5	

323 8028	20	



Blades to replace \*  
Bosch® T 118 AF | Metabo® 23 971  
MP.S® 3111 F | Wilpu® MG 11 bi | AEG® 340-011

## RUKO 8033 HSS bi-metal

Saw blade wavy set.

Application range:  
Mild steel, non-ferrous metals, aluminium and aluminium alloys 1,5 - 4,0 mm thickness, sheet high-alloyed chromium steel such as stainless and acid-resistant steel.



			Tooth spacing teeth per mm	Tooth spacing teeth per inch			
77,0	7,5	1,0	1,2	21 Tpi	321 8033	5	

323 8033	20	

\* Competitive blades may vary from our specifications.



# T-shank jig-saw blades for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.



Blades to replace \*  
Bosch® T 318 BF | Metabo® 23 979  
MPS® 3115 F | Wilpu® MG 32 bi | AEG 274-653



## RUKO 8020 HSS bi-metal

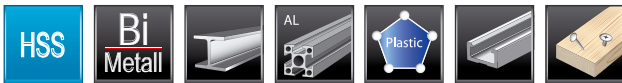
Standard saw blade, side set.

Application range:

Profiled section, pipe up to Ø 60,0 mm with wall thickness 3,0 - 10,0 mm, non-ferrous metals, high-alloyed chromium steel such as stainless and acid-resistant steel. Wood with nails, acrylic glass, armoured plastics.

			mm	mm	mm	Tooth spacing teeth per mm	Tooth spacing teeth per inch	HSS	Bi Metall	
132,0	7,5	1,0	1,8	14 Tpi	321 8020	5				

HSS	Bi Metall	
323 8020	20	



Blades to replace \*  
Bosch® T 318 AF | Metabo® 23 978  
MPS® 3114 F | Wilpu® MG 31 bi | AEG 274-654



## RUKO 8019 HSS bi-metal

Saw blade wavy set.

Application range:

Profiled section, pipe up to Ø 60,0 mm with wall thickness 1,4 - 4,0 mm, high-alloyed chromium steel such as stainless and acid-resistant steel.

			mm	mm	mm	Tooth spacing teeth per mm	Tooth spacing teeth per inch	HSS	Bi Metall	
132,0	7,5	1,0	1,06	24 Tpi	321 8019	5				

HSS	Bi Metall	
323 8019	20	



Blades to replace \*  
Bosch® T 144 DF | Metabo® 23 978  
MPS® 3104 F | Wilpu® HGS 14 bi | AEG 373 391



## RUKO 8021 HSS bi-metal

Blade sharpened, teeth side set.

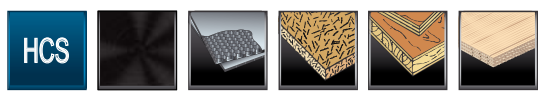
Application range:

Hardwood and softwood up to 60,0 mm, rough cut, high cutting performance (can take heavy cuts). Suitable for wood with nails.

			mm	mm	mm	Tooth spacing teeth per mm	Tooth spacing teeth per inch	HSS	Bi Metall	
100,0	7,5	1,25	4,0	6 Tpi	321 8021	5				

HSS	Bi Metall	
323 8021	20	

# T-shank jig-saw blades for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.



Blades to replace \*  
Bosch® T 119 B | Metabo® 23 631  
MP.S® 3108 | Wilpu® HW 12 | AEG® 274-353

## RUKO 8005 HCS

Standard saw blade, wavy set.

Application range:  
Plywood and wood-fibre board up to 30,0 mm thickness. Insulating materials, acrylic glass up to 6,0 mm, cooled with water. Pressed material, hard fabric up to 4,0 mm thickness, cardboard, linoleum up to 6,0 mm thickness, cooled with water.



			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
77,0	7,5	1,0	2,0	14 Tpi	321 8005	5

323 8005	20	



Blades to replace \*  
Bosch® T 101 D | Metabo® 23 635  
MP.S® 3105 | Wilpu® HGS 24 | AEG® 274-351

## RUKO 8007 HCS

Tapered blade, ground teeth.  
Fast and rough cut. Narrow blade suitable for profiled cuts.

Application range:  
Hardwood, softwood, plywood and wood-fibre boards up to 50,0 mm thickness, clean cut, suitable for slots and grooves. Various soft plastics up to 30,0 mm, clean cuts.



			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
100,0	7,2	1,5	4,0	6 Tpi	321 8007	5

323 8007	20	



Blades to replace \*  
Bosch® T 118 AF | Metabo® 23 971  
MP.S® 3111 F | Wilpu® MG 11 bi | AEG® 340-011

## RUKO 8002 HCS

Tapered blade, ground teeth. Clean and fast cut.

Application range:  
Hardwood, softwood, plywood and wood-fibre board up to 60,0 mm.  
Parallel cuts and clean cuts. Various soft plastics up to 25,0 mm thickness, clean cuts.



			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
100,0	7,5	1,5	4,0	6 Tpi	321 8002	5

323 8002	20	

\* Competitive blades may vary from our specifications.

# T-shank jig-saw blades for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.



Blades to replace \*  
Bosch® T 144 D | Metabo® 23 633  
MPS® 3104 | Wilpu® HGS 14 | AEG® 213-116



## RUKO 8006 HCS

Blade sharpened and side set. Fast and rough cut.

Application range:

Hardwood and softwood up to 60,0 mm thickness. Fast and rough cut. Polystyrene, polyamide, soft plastics up to 50,0 mm thickness and plexiglas up to 30,0 mm thickness, cooled with water. Hard fabric, insulation material and cardboard.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
100,0	7,2	1,25	4,0	6 Tpi	321 8006	5

323 8006	20



Blades to replace \*  
Bosch® T 244 D | Metabo® 23 649  
MPS® 3105 | Wilpu® HGS 24 | AEG® 346-078



## RUKO 8072 HCS

Blade side set and sharpened. Suitable for profiled cuts.

Application range:

Hardwoods and softwoods up to 60,0 mm thickness, rough cut, especially suitable for profiled cuts. Polystyrene, polyamide, soft plastics up to 50,0 mm.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
100,0	6,4	1,25	4,0	6 Tpi	321 8072	5

323 8072	20



Blades to replace \*  
Bosch® T 111 C | Metabo® 23 632  
MPS® - | Wilpu® HG 13 | AEG® 254-071



## RUKO 8070 HCS

Saw blade side set. Rough cut with high cutting performance.

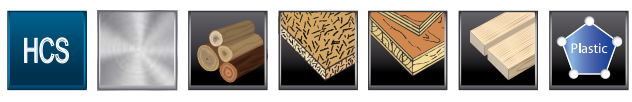
Application range:

Hardwoods and softwoods up to 60,0 mm thickness, rough cut, high cutting performance (can take heavy cuts). Polystyrene, polyamide, soft plastics up to 30,0 mm thickness.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
100,0	7,5	1,25	3,0	8 Tpi	321 8070	5

323 8070	20

# T-shank jig-saw blades for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.



Blades to replace \*  
Bosch® T 101 B | Metabo® 23 634  
MPS® 3101 | Wilpu® HC 12 | AEG® 254-061



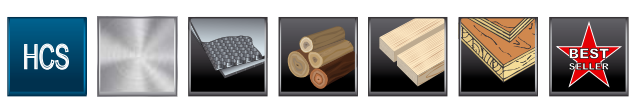
## RUKO 8001 HCS

Tapered blade, ground teeth. Clean and fast cut.

Application range:  
Hardwood, softwood, plywood and wood-fibre board up to 50,0 mm thickness.  
Suitable for slots and grooves. Various soft plastics up to 20,0 mm thickness.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
100,0	7,2	1,5	2,5	10 Tpi	321 8001	5

323 8001	20	



Blades to replace \*  
Bosch® T 101 BR | Metabo® 23 650  
MPS® 3102 | Wilpu® HC 12 R | AEG® 346-079



## RUKO 8018 HCS

Tapered blade, ground teeth. Clean cut. Reversed cutting direction.

Application range:  
Hardwoods and softwoods, plywood, wood-fibre boards up to 60,0 mm.  
Formica and laminated / coated boards. Soft plastics.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
100,0	7,2	1,5	2,7	9 Tpi	321 8018	5

323 8018	20	



Blades to replace \*  
Bosch® T 301 D | Metabo® 23 654  
MPS® 3101 L



## RUKO 8023 HCS

Tapered blade, ground teeth.

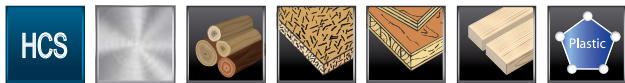
Application range:  
Hardwood and softwood, plywood and wood-fibre boards up to 70,0 mm, clean cut, suitable for slots and grooves.  
Various soft plastics up to 40,0 mm, clean cut.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
117,0	7,2	1,5	4,0	6 Tpi	321 8023	5

323 8023	20	

\* Competitive blades may vary from our specifications.

# T-shank jig-saw blades for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.



Blades to replace \*  
Bosch® T 301 DL | MP.S® 3104 L  
Wilpu® HGS 34



## RUKO 8024 HCS

Tapered blade, ground teeth. Very clean and fast cut.

Application range:

Hardwood and softwood, plywood and wood-fibre boards up to 70,0 mm, clean and fast cut, suitable for slots and grooves. Various soft plastics up to 40,0 mm, clean cut.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch			
132,0	9,2	1,5	4,0	6 Tpi	321 8024	5	323 8024 20

## Reference table for RUKO jig-saw blades

Competitive blades may vary from our specifications.

	Bosch®	D+N®	Gematic®	Hawera®	Lenox®	Metabo®	MP.S®	Wilpu®	Atlas Copco®/ AEG®	Holz-Her®	Festo®
321 8001	T 101 B	3 22 25	10 2255	240 515	F 450 S	23 634	3101	HC 12	254-061	Ho 75 F	S 75/2,5
321 8002	T 101 DP	3 29 40	10 2258	240 516	F 456 S	23 655	3103	HC 14 D	274-351	—	S 75/4
321 8005	T 119 B	3 20 20	10 2249	144 212	F 410 S	23 631	3108	HW 12	274-353	SP 50 G	—
321 8006	T 144 D	3 23 40	10 2270	240 520	F 406 S	23 633	3104	HGS 14	213-116	HW 75 G	S75/4
321 8007	T 101 D	3 22 40	—	240 521	F 416 SC	23 635	3105	HGS 24	274-351	HO 75 G	—
321 8009	T 218 A	3 13 12	10 2104	240 523	F 324 S	23 647	3112	MG 21	254-063	ME 50 M	—
321 8010	T 118 A	3 10 12	—	—	F 318 SC	23 637	3111	MG 11	254-063	AK 50 M	HS 50/1.2
321 8011	T 118 B	3 10 20	10 2107	240 525	F 340 SV	23 638	3113	MG 12	254-064	ME 50 G	HS 50/2
321 8012	T 118 G	3 10 07	10 2101	240 526	—	23 636	3110	MG 107	274-652	ME 50 F	—
321 8013	T 127 D	3 10 30	10 2110	240 528	F 410 S	23 639	3118	K 14	274-315	AL 75 G	HS 75/3
321 8016	T 318 A	3 11 12	10 2113	240 527	F 518 S	23 629	3114	MG 31 bi	274-654	AK 100 M	—
321 8017	T 318 B	3 11 20	10 2116	240 534	F 410 S	23 697	3115	MG 32 bi	274-653	ME 100 G	—
321 8018	T 101 BR	3 26 25	10 2264	240 545	F 450 SR	23 650	3102	HC 12 R	346-079	—	—
321 8019	T 318 AF	3 15 12	—	144 223	F 324 S	23 978	—	MG 31 bi	274-654	HS 105 / 1,2 bi	—
321 8020	T 318 BF	3 15 20	—	144 227	—	23 979	3115 F	MG 32 bi	274-653	HS 105 / 2,0 bi	—
321 8021	T 144 DF	3 33 40	—	144 220	F 456 S	23 976 23 933	3104 F	HGS 14 bi	373 391	—	HS 75/4 bi
321 8023	T 301 D	3 27 40	—	—	F 410 S	23 654	3101 L	—	—	HO 90 G	—
321 8024	T 301 DL	3 40 40	10 2253	144 213	F 686 S	—	3104 L	HGS 34	—	—	—
321 8028	T 118 BF	3 14 20	10 2322	144 225	F 314 S	23 973	3113 F	MG 12 bi	340-012	—	—
321 8033	T 118 AF	3 14 12	10 2319	240 503	F 324 S	23 971	3111 F	MG 11 bi	340-011	—	—
321 8070	T 111 C	3 20 30	—	—	—	23 632	—	HG 13	254-071	HO 75 R	S 75/3
321 8072	T 244 D	3 24 40	—	—	—	23 649	3105	HGS 24	346-078	HW 75 K	S 75/4 K

# Jig-saw blades for pneumatic body saws by SIG®, FLEX® and Wieländer+Schill®








Blades to replace \*  
CS 118 BF

## RUKO 8814 HSS bi-metal

For thin steel sheet such as car body panels.

Application range:  
St 37, non-ferrous metals up to 2,5 mm thickness. Wood, plastics, hard fabrics.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
96,0	12,7	0,6	1,8	14 Tpi	321 8814	5








Blades to replace \*  
CS 118 AF

## RUKO 8824 HSS bi-metal

For thin steel sheet such as car body panels.

Application range: St 37, high-alloyed chromium steel such as stainless and acid-resistant steel, non-ferrous metals up to 2,0 mm thickness. Suitable for profiled cuts.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
96,0	12,7	0,6	1,0	24 Tpi	321 8824	5








Blades to replace \*  
CS 118 6F

## RUKO 8832 HSS bi-metal

For thin steel sheet such as car body panels.

Application range: St 37, high-alloyed chromium steel such as stainless and acid-resistant steel, non-ferrous metals up to 1,0 mm thickness. Suitable for profiled cuts.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
96,0	12,7	0,6	0,8	32 Tpi	321 8832	5



\* Competitive blades may vary from our specifications.

# Jig-saw blades for pneumatic body saws by Ober®, Chicago Pneumatic®, Shinano®, Facom® and Pneutec®








Blades to replace \*  
CC 118 AF

## RUKO 8811 HSS bi-metal

For thin steel sheet such as car body panels.

Application range: St 37, high-alloyed chromium steel such as stainless and acid-resistant steel, non-ferrous metals up to 2,0 mm thickness. Suitable for profiled cuts.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
91,5	12,7	0,6	1,0	24 Tpi	321 8811	5








Blades to replace \*  
CC 118 GF

## RUKO 8812 HSS bi-metal

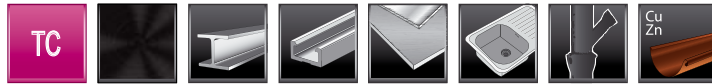
For thin steel sheet such as car body panels.

Application range: St 37, high-alloyed chromium steel such as stainless and acid-resistant steel, non-ferrous metals up to 1,0 mm thickness. Suitable for profiled cuts.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
91,5	12,7	0,6	0,8	32 Tpi	321 8812	5



# Reciprocating blades for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.



Blades to replace \*  
Bosch® S 518 EHM

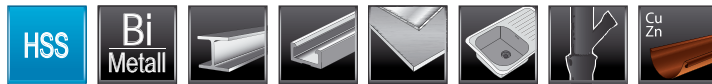
## RUKO 8939 TC

Toothing ground.

Application range:

Inox sheeting from 2,0 - 4,0 mm material thickness, Inox profiles from Ø 2,0 - 50,0 mm, FRP / epoxy from 2,0 - 15,0 mm. For material with reduced stroke rate and cooling, work without oscillation.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
115,0	19,0	1,0	1,4	18 Tpi	331 89395	5



Blades to replace \*  
Bosch® S 922 | Metabo® 31130  
MPS® 4411 | Wilpu® 3013-150 | AEG® 354-789

## RUKO 8915 HSS bi-metal

Toothing crossed and milled.

Application range:

Thick sheeting from 3,0 - 8,0 mm material thickness, solid pipes and profiles Ø 10,0 - 100,0 mm, fast cutting.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch			
152,0	18,0	0,9	2,0	14 Tpi	331 89155	5	



Blades to replace \*  
Bosch® S 123 XF | MPS® 4446

## RUKO 8940 HSS bi-metal

Toothing crossed and milled.

Application range:

Thick sheeting from 3,0 - 8,0 mm material thickness, solid pipes and profiles Ø 10,0 - 100,0 mm, fast cutting.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch			
152,0	18,0	0,9	1,45 - 3,4	8 - 18 Tpi	331 89405	5	



\* Competitive blades may vary from our specifications.



# Reciprocating blades for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.

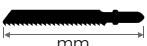






Blades to replace \*  
Bosch® S 922 EF | Metabo® 31132  
MP.S® 4401 | Wilpu® 3014-150 | AEG® 354-792

## RUKO 8908 HSS bi-metal

Toothing crossed and milled.

Application range:  
Thin sheeting from 1,5 - 4,0 mm material thickness, pipes and profiles Ø 5,0 - 100,0 mm.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
150,0	18,0	0,9	1,4	18 Tpi	331 89085	5

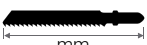






Blades to replace \*  
Bosch® S 922 AF | Metabo® 31129  
MP.S® 4405 | Wilpu® 3015-150 | AEG® 354-796

## RUKO 8906 HSS bi-metal

Toothing crossed and milled.

Application range:  
Thin sheeting from 0,7 - 3,0 mm material thickness, fine pipes and profiles from Ø 5,0 - 10,0 mm. Easy, fine cut.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
152,0	18,4	0,9	1,0	24 Tpi	331 89065	5

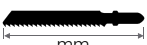






Blades to replace \*  
Bosch® S 1025 VF

## RUKO 8918 HSS bi-metal

Toothing crossed and milled.

Application range:  
Medium to thick sheeting from 2,0 - 12,0 mm material thickness, solid pipes and profiles from Ø 10,0 - 150,0 mm.  
Easy, fine cut.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
203,0	17,8	1,25	1,8 - 2,6	10 - 14 Tpi	331 89185	5



# Reciprocating blades demolition for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.







Blades to replace \*  
Bosch® S 1122 BF | Metabo® 31135 / 31485  
MP.S® 4415 | AEG® 354-790 | Wilpu® 3013-250

## RUKO 8916 HSS bi-metal

Toothing crossed and milled.

Application range:  
Thin sheeting from 3,0 - 8,0 mm material thickness, solid pipes and profiles from Ø 10,0 - 175,0 mm.  
Flexible, flush and fast cut.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch	HSS	Bi Metal	
228,0	18,4	0,9	2,0	14 Tpi	331 89165		5







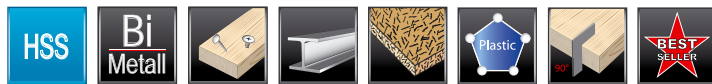
Blades to replace \*  
Bosch® S 1122 EF | Metabo® 31133 / 31483  
MP.S® 4402 | AEG® 354-793 | Wilpu® 3014-200

## RUKO 8913 HSS bi-metal

Toothing crossed and milled.

Application range:  
Thin sheeting from 1,5 - 4,0 mm material thickness, pipes and profiles Ø 5,0 - 175,0 mm.  
Flexible, flush cut.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch	HSS	Bi Metal	
228,0	18,4	0,9	1,4	18 Tpi	331 89135		5







Blades to replace \*  
Bosch® S 610 DF | Metabo® 31925  
AEG® 373-243 | Wilpu® 3055-150

## RUKO 8985 HSS bi-metal

Toothing crossed and milled.

Application range:  
Wood with nails, metal, chipboard from 10,0 - 100,0 mm material thickness, plastic profiles from Ø 5,0 - 100,0 mm,  
solid plastics / FRP from 8,0 - 50,0 mm, wood and metal window frames. Especially suitable for plunge cuts.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch	HSS	Bi Metal	
152,0	21,0	1,6	4,2	6 Tpi	331 89855		5



\* Competitive blades may vary from our specifications.

# Reciprocating blades demolition for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.



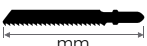




Blades to replace \*  
Bosch® S 920 CF | AEG® 373-247

## RUKO 8986 HSS bi-metal

Toothing crossed and milled.

Application range:

Plates from 4,0 - 10,0 mm, solid pipes and profiles from Ø 20,0 - 100,0 mm.  
Ideal for pipe cutting equipment, rescue and demolition work. Powerful, coarse cut.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
152,0	21,0	1,6	2,54 - 3,18	8 - 10 Tpi	331 89865	5



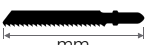




Blades to replace \*  
Bosch® S 1110 DF | Metabo® 31926  
Wilpu® 3055-225 | AEG® 373-244

## RUKO 8988 HSS bi-metal

Toothing crossed and milled.

Application range:

Wood with nails, metal, chipboard from 10,0 - 175,0 mm material thickness, solid plastics / FRP from 8,0 - 50,0 mm, wood and metal wall pieces to 150,0 mm. For rescue and demolition work.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
228,0	21,0	1,6	4,25	6 Tpi	331 89885	5








Blades to replace \*  
Bosch® S 1110 DF | Metabo® 31993  
Wilpu® 3055-225 | AEG® 373-244

## RUKO 8989 HSS bi-metal

Toothing crossed and milled.

Application range:

Plates from 4,0 - 10,0 mm, solid pipes and profiles from Ø 20,0 - 175,0 mm.  
Ideal for pipe cutting equipment, rescue and demolition work. Powerful, coarse cut.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
228,0	21,0	1,6	2,54 - 3,18	8 - 10 Tpi	331 89895	5



# Reciprocating blades demolition for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.








Blades to replace \*  
Bosch® S 611 DF | Metabo® 31985  
MP.S® 4016 | AEG® 354-775 | Wilpu® 3021/150bi

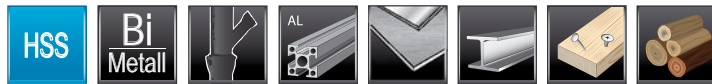
## RUKO 8917 HSS bi-metal

Toothing crossed and milled.

Application range:

Wood with nails, metal, chipboard from 10,0 - 100,0 mm material thickness, plastic profiles from Ø 5,0 - 100,0 mm, solid plastics/ FRP from 8,0 - 50,0 mm, wood and metal window frames. Especially suitable for plunge cuts.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
152,0	18,0	1,25	4,2	6 Tpi	331 89175	5








Blades to replace \*  
Bosch® S 922 HF | Metabo® 31131  
MP.S® 4430 | AEG® 318-127 | Wilpu® 3018/150

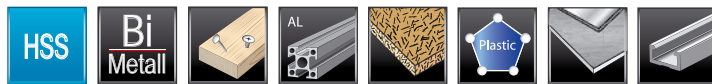
## RUKO 8901 HSS bi-metal

Toothing crossed and milled.

Application range:

Wood with nails and metal from 5,0 - 100,0 mm material thickness, metal sheeting, pipes, aluminium profiles from 3,0 - 12,0 mm and pallets.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
152,0	18,0	0,9	2,5	10 Tpi	331 89015	5



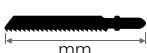




Blades to replace \*  
Bosch® S 3456 XF | Metabo® 31915  
MP.S® 4447

## RUKO 8943 HSS bi-metal

Toothing crossed and milled.

Application range:

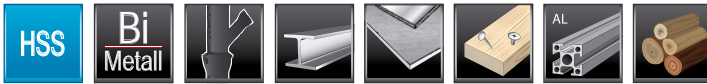
Wood with nails and metal, chipboard from 5,0 - 150,0 mm material thickness, metal sheeting, aluminium profiles from 3,0 - 18,0 mm, plastics / FRP and profiles Ø 5,0 - 150,0 mm.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
203,0	18,0	1,25	2,1 - 4,3	6 - 12 Tpi	331 89435	5



\* Competitive blades may vary from our specifications.

# Reciprocating blades demolition for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.







Blades to replace \*  
Bosch® S 1022 HF | Metabo® 31932  
Wilpu® 3018-200 | MPS® 4431

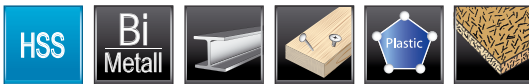
## RUKO 8909 HSS bi-metal

Toothing crossed and milled.

Application range:

Wood with nails and metal from 5,0 - 150,0 mm material thickness,  
metal sheeting, pipes, aluminium profiles from 3,0 - 12,0 mm and pallets.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch	HSS	Bi Metall	
203,0	18,0	0,9	2,5	10 Tpi	331 89095		5







Blades to replace \*  
Bosch® S 1111 DF | AEG® 318-125

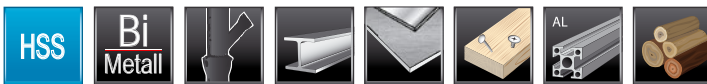
## RUKO 8936 HSS bi-metal

Toothing crossed and milled.

Application range:

Wood with nails and metal, chipboard from 10,0 - 175,0 mm material thickness,  
plastic profiles from Ø 5,0 - 175,0 mm, solid plastics / FRP from 8,0 - 50,0 mm.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch	HSS	Bi Metall	
228,0	18,0	1,25	4,25	6 Tpi	331 89365		5







Blades to replace \*  
Bosch® S 1122 HF

## RUKO 8945 HSS bi-metal

Toothing crossed and milled.

Application range:

Wood with nails and metal from 5,0 - 175,0 mm material thickness, metal sheeting, pipes,  
aluminium profiles from 3,0 - 12,0 mm and for pallet repairs. Flexible, flush cut.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch	HSS	Bi Metall	
228,0	18,0	0,9	2,54	10 Tpi	331 89455		5



# Reciprocating blades demolition for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.



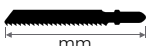




Blades to replace \*  
Bosch® S 1125 VF | AEG® 323-813

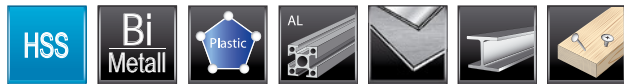
## RUKO 8933 HSS bi-metal

Toothing crossed and milled.

Application range:

Wood with nails and metal from 5,0 - 175,0 mm material thickness, metal sheeting, aluminium profiles from 3,0 - 10,0 mm and plastic profiles from Ø 3,0 - 175,0 mm.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
228,0	18,0	1,25	1,8 - 2,6	10 - 14 Tpi	331 89335	5



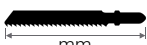




Blades to replace \*  
Bosch® S 1122 VF | AEG® 323-813

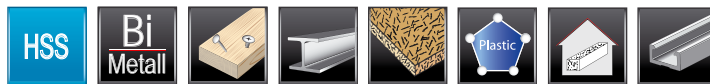
## RUKO 8928 HSS bi-metal

Toothing crossed and milled.

Application range:

Wood with nails and metal from 5,0 - 175,0 mm material thickness, metal sheeting, aluminium profiles from 3,0 - 10,0 mm and plastic profiles from Ø 3,0 - 175,0 mm. Flexible, flush cut.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
228,0	18,0	0,9	1,8 - 2,6	10 - 14 Tpi	331 89285	5








Blades to replace \*  
Bosch® S 1411 DF | Wilpu® 3021-300 bi

## RUKO 8937 HSS bi-metal

Toothing crossed and milled.

Application range:

Wood with nails, metal and chipboard from 10,0 - 250,0 mm material thickness, gas concrete from 10,0 - 250,0 mm, plastics / FRP and profiles from 5,0 - 60,0 mm.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
305,0	18,0	1,25	4,2	6 Tpi	331 89375	5



\* Competitive blades may vary from pour specifications.

# Reciprocating blades demolition for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.








Blades to replace \*  
Bosch® S 1222 VF | Metabo® 31125 / 31475  
MPS® 4432 | AEG® 354-778 | Wilpu® 3021/300 bi

## RUKO 8910 HSS bi-metal

Toothing crossed and milled.

Application range:

Wood with nails and metal from 5,0 - 250,0 mm material thickness, metal sheeting, aluminium profiles from 3,0 - 10,0 mm and plastic profiles from Ø 3,0 - 250,0 mm. Flexible, flush cut.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
305,0	18,0	0,9	1,8 - 2,4	10 - 14 Tpi	331 89105	5








Blades to replace \*  
Bosch® S 1225 VF | Metabo® 31124 / 31474  
MPS® 4422

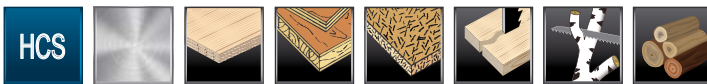
## RUKO 8929 HSS bi-metal

Toothing crossed and milled.

Application range:

Wood with nails and metal from 5,0 - 250,0 mm material thickness, metal sheeting, aluminium profiles from 3,0 - 10,0 mm and plastic profiles from Ø 3,0 - 250,0 mm.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
305,0	18,0	1,25	1,8 - 2,4	10 - 14 Tpi	331 89295	5








Blades to replace \*  
Bosch® S 617 K | Metabo® 28241  
MPS® 4021 | Wilpu® 3019-150 | AEG® 354 779

## RUKO 8905 HCS

Toothing crossed and milled.

Application range:

Coarse and nail-free wood from 20,0 - 100,0 mm, living wood, prune to Ø 100,0 mm. Especially suitable for curved cuts and plunge cuts.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
152,0	18,35	1,25	8,5	3 Tpi	331 89055	5



# Reciprocating blades for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.

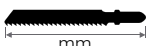






Blades to replace \*  
Bosch® S 828 D | Metabo® 31136  
MPS® 4014/4060 | Wilpu® 3025-150 | AEG® 318-131

## RUKO 8903 HCS

Toothing crossed.

Application range:  
Specifically for various plaster and Rigips panels from 8,0 - 100,0 mm.  
Wood, Eternit and plastics.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
152,0	18,35	1,0	4,2	6 Tpi	331 89035	5

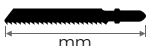






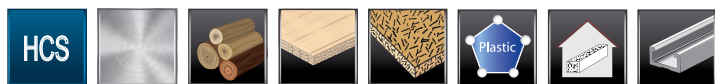
Blades to replace \*  
Bosch® S 644 D | Metabo® 31120 / 31470  
MPS® 4011/4012 | AEG® 323-800 | Wilpu® 3021-150

## RUKO 8924 HCS

Toothing crossed and ground.

Application range:  
Structural wood, plywood and plastics from 6,0 - 100,0 mm, wooden wall to 75,0 mm, chipboard and MDF from 6,0 - 60,0 mm. Especially suitable for plunge cuts.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
152,0	18,1	1,25	4,0	6 Tpi	331 89245	5

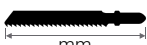






Blades to replace \*  
Bosch® S 2345 X | Metabo® 31910/31913  
MPS® 4046 | Wilpu® 3023/150-240

## RUKO 8944 HCS

Toothing crossed and ground.

Application range:  
Structural wood, plywood and plastics from 6,0 - 150,0 mm, wooden walls up to 175,0 mm,  
Chipboard and MDF from 6,0 - 60,0 mm.

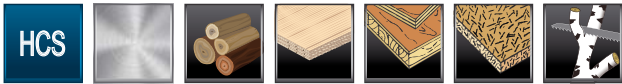
			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
203,0	18,1	1,25	2,4 - 4,0	6 - 10 Tpi	331 89445	5



\* Competitive blades may vary from our specifications.



# Reciprocating blades for power tools by Bosch®, Metabo®, MP.S®, Wilpu®, Atlas Copco® / AEG® etc.








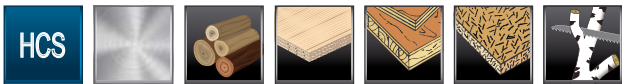
Blades to replace \*  
Bosch® S 1111 K | Metabo® 31125 / 31475  
MP.S® 4432 | AEG® 354-778 | Wilpu® 3021/300 bi

## RUKO 8923 HCS

Toothing crossed and milled.

Application range:  
Coarse and nail-free wood from 20,0 - 175,0 mm, firewood from Ø 20,0 - 175,0 mm.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
225,0	18,0	1,25	8,5	3 Tpi	331 89235	5








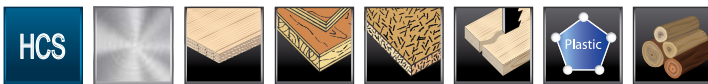
Blades to replace \*  
Bosch® S 1531 L | Metabo® 31139 / 31488  
MP.S® 4052 | AEG® 323-803 | Wilpu® 3030-225

## RUKO 8922 HCS

Toothing crossed and ground.

Application range:  
Coarse and nail-free wood from 15,0 - 190,0 mm, living wood, pruned to Ø 190,0 mm,  
firewood from Ø 15,0 - 190,0 mm.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
240,0	18,0	1,6	4,0 - 6,5	5 Tpi	331 89225	5








Blades to replace \*  
Bosch® S 1344 D | Metabo® 31122 / 31472  
MP.S® 4015 | AEG® 323-802 | Wilpu® 3021-300

## RUKO 8904 HCS

Toothing crossed and ground.

Application range:  
Structural wood, wooden wall, chipboard, MDF, plywood, plastics.

			Tooth spacing teeth per mm	Tooth spacing teeth per inch		
300,0	18,0	1,25	4,2	6 Tpi	331 89045	5





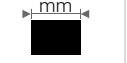
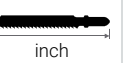






## HSS-Co Bihart cobalt hacksaw blade

This HSS bi-metallic hacksaw blade is made of two different types of steel. The cutting edge is made of hard HSS molybdenum steel and the saw blade body is made of alloyed heat-treated steel. The combination of the two types of steel in one saw blade makes the hacksaw blade extremely wear-resistant, unbreakable and gives it outstanding cutting durability. Suitable for all common materials. The ideal blade for high demands.

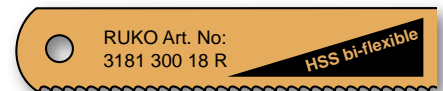


Packing unit: 100 blades per carton (10 x 10 pieces)


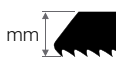






 mm	 mm	 mm	 inch	 inch	 inch	Tooth spacing teeth per inch	Tooth spacing teeth per cm		
300,0	13,0	0,65	12	1/2	0.025	18 Tpi	8	3121 300 18 R	100
300,0	13,0	0,65	12	1/2	0.025	24 Tpi	10	3121 300 24 R	100
300,0	13,0	0,65	12	1/2	0.025	32 Tpi	12	3121 300 32 R	100

## HSS bi-flexible hacksaw blade

Due to a special heat treatment, this HSS all-steel saw blade combines two seemingly incompatible properties: hardness and elasticity. Only the teeth are hardened whilst the HSS saw blade body remains flexible. Because of these two hardness zones, the hacksaw blade virtually features the properties of an HSS bi-metallic hacksaw blade. The ideal blade for the craftsman.



Packing unit: 100 blades per carton (10 x 10 pieces)

 mm	 mm	 mm	 inch	 inch	 inch	Tooth spacing teeth per inch	Tooth spacing teeth per cm		
300,0	13,0	0,65	12	1/2	0.025	18 Tpi	8	3181 300 18 R	100
300,0	13,0	0,65	12	1/2	0.025	24 Tpi	10	3181 300 24 R	100
300,0	13,0	0,65	12	1/2	0.025	32 Tpi	12	3181 300 32 R	100

## Compact 33 hacksaw frame

Handle made from lacquered light-metal pressure-die casting.  
 Frame made from polished chrome-plated square tube.  
 Suitable for 300,0 mm saw blades.  
 Includes 1 Bihart cobalt saw blade with 24 teeth per inch.



 mm	 mm			
420,0	130,0	580 g	317 000 33 R	1

\* Competitive blades may vary from our specifications.



# Reference table for RUKO reciprocating blades

Competitive blades may vary from our specifications.



	Bosch®	D+N®	Gematic®	Hawera®	Metabo®	M.P.S®	Fein®	Alfra®
33189015	S 922 HF	11 10 18	11 5346	144248	31131	4430	48015	30 058
33189035	S 828 D	11 20 41	11 5222	121605	31136	4014 / 4060	56012	30 082
33189045	S 1344 D	11 20 46	11 5210	144235	31122 / 31472	4015	–	30 079
33189055	S 617 K	11 20 40	11 5207	121590	28241	4021	50011	30 076
33189065	S 922 AF	11 10 21	11 5354	144239	31129	4405	–	30 061
33189085	S 922 EF	11 10 20	11 5352	144242	31132	4401	–	30 060
33189095	S 1022 HF	11 10 24	11 5361	144249	31932	4431	52013	30 063
33189105	S 1222 VF	11 10 31	–	–	31125 / 31475	4432	–	30 071
33189135	S 1122 EF	11 10 26	11 5367	144243	31133 / 31483 / 31493	4402	59018	30 065
33189155	S 922 BF	11 10 19	11 5349	144245	31130	4411	47017	30 059
33189165	S 1122 BF	11 10 25	11 5364	–	31135 / 31485	4415	51010	30 064
33189175	S 611 DF	11 22 70	11 5328	–	31985	4016	–	–
33189185	S 1025 VF	–	–	–	31991	–	–	–
33189225	S 1531 L	11 20 51	11 5219	121611	31139 / 31488	4052	–	–
33189235	S 1111 K	–	–	–	–	–	–	–
33189245	S 644 D	11 20 44	11 5201	121600	31120 / 31470	4011	55019	–
33189285	S 1122 VF	11 10 35	–	–	–	–	–	–
33189295	S 1225 VF	11 10 32	11 5379	–	31124 / 31474	4422	–	–
33189335	S 1125 VF	11 10 34	–	–	–	–	–	–
33189365	S 1111 DF	11 22 71	–	–	–	–	–	–
33189375	S 1411 DF	11 22 72	–	–	–	–	–	–
33189395	S 518 EHM	–	–	–	–	–	–	–
33189405	S 123 XF	–	–	–	–	–	–	–
33189435	S 3456 XF	–	–	–	–	–	–	–
33189445	S 2345 X	–	–	–	31910 / 31913	4046	–	–
33189455	S 1122 HF	–	–	–	–	–	–	–
33189855	S 610 DF	–	–	–	–	–	–	–
33189865	S 920 CF	–	–	–	–	–	–	–
33189885	S 1110 DF	–	–	–	31926	–	–	–
33189895	S 1120 CF	–	–	–	–	–	–	–



## Reference table for RUKO reciprocating blades

Competitive blades may vary from our specifications.

	Flex®	Wilpu®	Atlas Copco® AEG®	Makita® Hitachi®	Milford® Rockwell®	Lenox®	Rothenberger®
33189015	–	3018-150	318-127	–	M 88176 / R12415	20562-610R	–
33189035	200.786	3025-150	318-131 / 323-801	M 0.30.20 / H 983 605 Z	M 87945	20560-606R	–
33189045	201.936	3021-300	318-125 / 323-802	M 0.30.21	M 88010 / R12403	20585-156R	–
33189055	200.751	3019-150	354-779	M 0.30.19	M 87936	–	–
33189065	200.743	3015-150	354-796	M 0.30.07 / H 983 603 Z	M 88179 / R 12433	20568-624R	86.5784
33189085	200.735	3014-150	354-792	M 0.30.06 / H 983 602 Z	M 88178 / R12454	20566-618R	86.5785
33189095	–	–	–	–	M 88174	20580-810R	–
33189105	201.928	3018-280	323-813	M 0.30.18	M 88208 / M 12418	–	–
33189135	217.751	3014-200	354-789	M 0.30.09	M 88187 / R 12420	20578-818R	86.5787
33189155	200.727	3013-150	323-810	M 0.30.13	M 88177 / M 12451	205654-614R	86.5786
33189165	217.190	3013-200	354-790	M 0.30.08 / H 983 601 Z	M 88186 / R 12419	–	86.5788
33189175	–	3021-150 bi	354-775	–	–	20570-636RP	–
33189185	–	–	–	–	–	–	–
33189225	250.056	3030-225	323-803	M 0.30.29	–	–	–
33189235	–	–	–	–	–	–	–
33189245	–	3021-150	318-126 / 323-800	–	M 88000 / R 12400	20572-656R	–
33189285	–	–	323-813	–	–	–	–
33189295	–	–	–	–	M 88218 / R 12457	20583-110R	86.5789
33189335	–	–	323-813	–	–	–	–
33189365	–	–	318-125	–	–	–	–
33189375	–	3021-300 bi	–	–	–	–	–
33189395	–	–	–	–	–	–	–
33189405	–	–	–	–	–	–	–
33189435	–	–	–	–	–	–	–
33189445	–	3023 / 150-240	–	–	–	–	–
33189455	–	–	–	–	–	–	–
33189855	–	3055-225	373-244	–	–	–	–
33189865	–	–	–	–	–	–	–
33189885	–	–	–	–	–	–	–
33189895	–	–	–	–	–	–	–



# DEBURRING PROGRAM



## Product Information

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Unigrat „Universal Handle”, designed in accordance with the latest ergonomic research.

### **One-hand operation**

The locking head can be drawn back with thumb and finger of the hand holding the tool. With the locking head withdrawn, all steel holders (B-C-D-E-F) can be used and adjusted to lengths of up to 100,0 mm.

### **Grip grooves**

The ends of the grip grooves are raised, preventing the tool from slipping out of the hand.

### **Offset surfaces**

The offset between the surfaces means that the Unigrat „Universal Handle” can be held firmly for maximum torque.

### **Tapered handle**

Gets narrower towards the base, giving improved grip.

### **Removable cap**

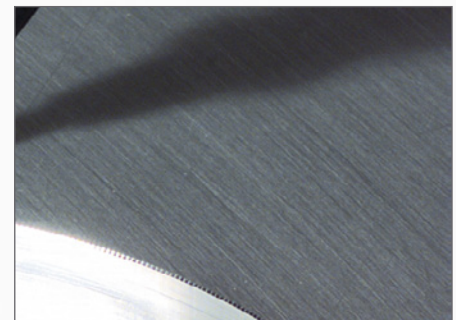
The relevant blades can be stored inside the handle.





# Application table

	Alloyed steel	Rust-resistant steel	Steel	Sheet metal	Cast iron	Aluminium	Copper	Brass	Polyacetal	Polyamid (PA)	Polyvinyl chlorid (PVC)	Polyphenylene oxide	Polyethylene	Polypropylene	Poly carbonate	Polytetrafluoroethylene	Polystyrene
Unigrat B 10			■			■	■		■	□	■	■	■	■	■	■	■
Unigrat B 20					■			■	■	□	■	■	□	■	■	■	■
Unigrat B 30			■			■	■		■	■	■	■	■	■	■	■	□
Unigrat B 50	□	□	■	■	■	■	■	■	■	■	■	■	■	■	■	■	□
Unigrat B 60			■			■	■		□	□	□	□	□	□	□	□	□
Unigrat B 70	□	■	■	■		■	■	□	□		■	■			■		□
Unigrat C 40		■	■	□	□	□	■	□	□	□	□	□	□	□	□	□	□
Unigrat C 42		■	■	□	□	□	■	□	□	□	□	□	□	□	□	□	□
Unigrat D 80	□	■	■	■	□	□	□		□		■	■			□		□
Unigrat D 82	□	■	■	■	□	□	□		□		■	■			□		□
Unigrat E 100			■			■	■		■	□	■	■	■	■	■	■	■
Unigrat E 200					■			■	■	□	■	■	□	■	■	■	■
Unigrat E 300			■			■	■		■	■	■	■	■	■	■	■	□
Unigrat E 350					■			■									
Unigrat E 600			■			■	■		■	□	□	□	□	□	■	■	□
Unigrat F 12		□	■	□	□	■	■	□	■	■	■	■	■	■	□	□	■
Unigrat F 20		□	■	□	□	■	■	□	■	■	■	■	■	■	□	□	■
Unigrat F 30		□	■	□	□	■	■	□	■	■	■	■	■	■	□	□	■
Double deburrer		□	■	□	□	■	■	□	□	□	□	□	□	□	□	□	□
Groove deburrer		□	■		□	■	■	□	■	■	■	■	■	■	■	■	■
Sheet-metal deburrer	□	■	■	■	□	■	■	□	■	■	■	■	■	■	■	■	■
Tube deburrer		□	□		□	■	■	□	■	□	■	■	■	■	■	□	■





## A Unigrat „Universal Handle”

This handle fits all holders B-C-D-E-F.

With the locking head withdrawn, the steel holders can be adjusted up to 100,0 mm in length and can be locked in any position. The replacement blades fit in the bottom cavity of the handle.

Packing unit: in plastic pack

	L1 mm	Article no.	
Universal handle A	150,0	107 010	1



## B Unigrat „Blade B”

Packing unit: in plastic pack

	Article no.	
The HSS blade most commonly used for internal and external deburring work on long-chipping materials such as steel, aluminium, plastics etc.	107 012	10
<b>B20</b> This HSS blade is used for short-chipping materials such as brass and cast iron. Can be used in both directions.	107 014	10
This HSS blade is suitable for the simultaneous deburring of inside and outside bores in material up to 4,0 mm thickness.	107 015	10
<b>B50</b> Scriber with carbide-tipped point, regrindable.	107 016	1
This HSS blade removes burrs from the back of material up to 20,0 mm thickness.	107 017	10
<b>B70</b> This carbide-tipped blade deburs workpieces made of material up to 3,0 mm thickness.	107 018	1



## C Unigrat „Blade C”

Packing unit: in plastic pack

	Article no.	
<b>C40</b> Small HSS triangular scraper 4,0 x 20,0 mm for precision work on surfaces up to 4 mm width.	107 020	1
<b>C42</b> Large HSS triangular scraper 8,0 x 30,0 mm for standard work on surfaces up to 8,0 mm width.	107 021	1



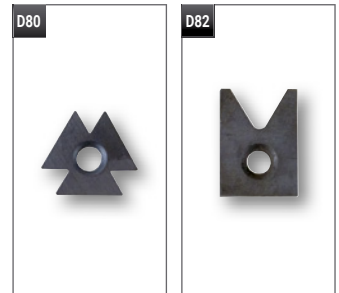




## D Unigrat „Blade D"

Packing unit: in plastic pack

		Article no.	
<b>D80</b>	Reversible tungsten-carbide insert for blunt scraping and deburring sheet metal up to 3,0 mm thickness. 6 cutting edges.	107 023	1
<b>D82</b>	Reversible tungsten-carbide insert for deburring sheet metal up to 8,0 mm thickness. 2 cutting edges.	107 024	1



## E Unigrat „Blade E"

Packing unit: in plastic pack

		Article no.	
<b>E100</b>	HSS blade with B 10 cutting edge, long shank only. For internal and external deburring work on long-chipping materials such as steel, aluminium, plastics etc.	107 026	10
<b>E200</b>	HSS blade with B 20 cutting edge, long shank only. For short-chipping materials such as brass and cast iron. Usable in both directions.	107 027	10
<b>E300</b>	HSS blade with B 30 cutting edge, long shank only. For simultaneous deburring of internal and external bores in materials up to 4,0 mm thickness.	107 028	10
<b>E350</b>	This HSS blade is suitable for deburring straight edges, keyways etc.	107 029	10
<b>E600</b>	This HSS blade is suitable for deburring from behind in materials up to 20,0 mm thickness.	107 030	5



## F Unigrat „Blade F"


Packing unit: in plastic pack

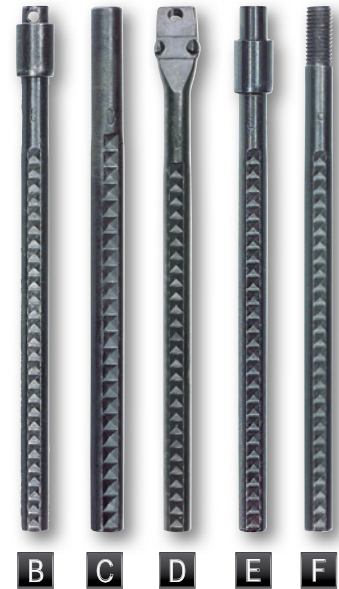
		Article no.	
<b>F12</b>	HSS countersinker for deburring bores up to Ø 12,0 mm.	107 032	1
<b>F20</b>	HSS countersinker for deburring bores up to Ø 20,0 mm.	107 033	1
<b>F30</b>	HSS countersinker for deburring bores up to Ø 30,0 mm.	107 034	1



## Unigrat „Steel holder”

Packing unit: in plastic pack


	Article no.	
Steel holder B	107 011	1
Steel holder C	107 019	1
Steel holder D	107 022	1
Steel holder E	107 025	1
Steel holder F	107 031	1



## Edge trimmer with HSS blades

- Plastic handle with removable back for spare blade storage.
- Exchangeable blades.
- Ideal for trimming edges, tubes, steel, aluminium, brass and copper sheets, cast iron and plastic sheets.

Packing unit: in plastic pack


	Article no.	
Edge trimmer A1 complete with E 100 HSS blade	107 050	1
4-piece set of edge trimmer A3 complete with 3 HSS blades	107 051	1



## Rapid deburrer with HSS blade

- Hexagonal aluminium handle.
- Small and handy.
- Pocket-sized for permanent readiness.

Packing unit: in plastic bags of 1 each

	Article no.	
Rapid deburrer with non-exchangeable E 100 HSS blade	107 052	1
Rapid deburrer with exchangeable E 100 HSS blade	107 054	1




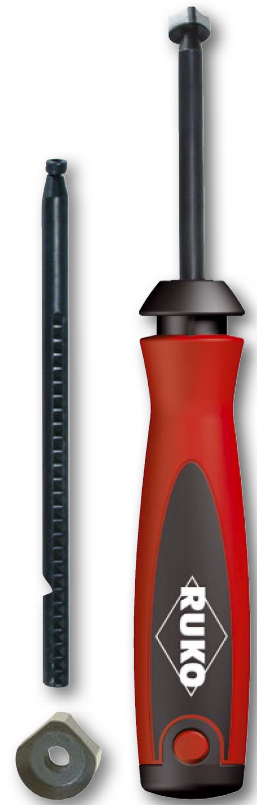


## Groove deburrer set "N" with HSS disk blade

- Plastic handle.
- Exchangeable HSS disk blade.
- Ideal for grooves from 2,4 - 11,0 mm width.
- Especially suitable for deburring shaft keyways and bores in steel and aluminium.

Packing unit: in plastic pack


	Article no.	
3-piece set of groove deburrer "N" 3 pieces with RUKO universal handle A	107 062	1
1 replacement steel holder N	107 037	1
1 replacement HSS disk blade	107 063	1

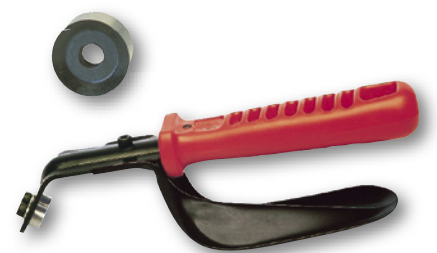


## Double deburrer with HSS disk blades

- Plastic handle with hand protector and 2 HSS blades.
- Exchangeable HSS disk blades.
- The disk blades can be turned when the cutting surfaces become worn, enabling the whole blade circumference to be utilized.
- The distance between the disk blades can be adjusted.
- Suitable for double-sided deburring of steel, aluminium, brass, copper and plastic sheets up to 10,0 mm thickness.

Packing unit: in plastic pack


	Article no.	
Double deburrer, complete	107 060	1
Replacement HSS disk blade	107 061	2



## Tube deburrer with HSS cutting edges

- Ideal for internal tube deburring.
- Ideal for external tube deburring.
- Suitable for tube diameters from 4,0 to 36,0 mm.

Packing unit: individual cartons




	Article no.	
Tube deburrer	107 053	1

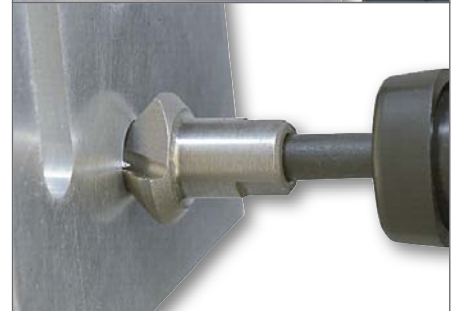
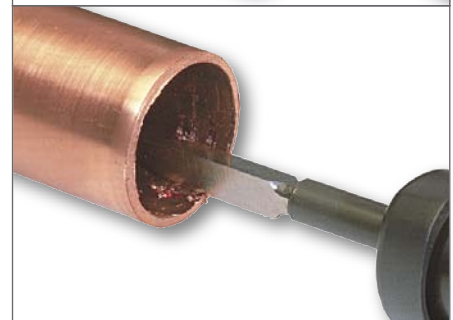


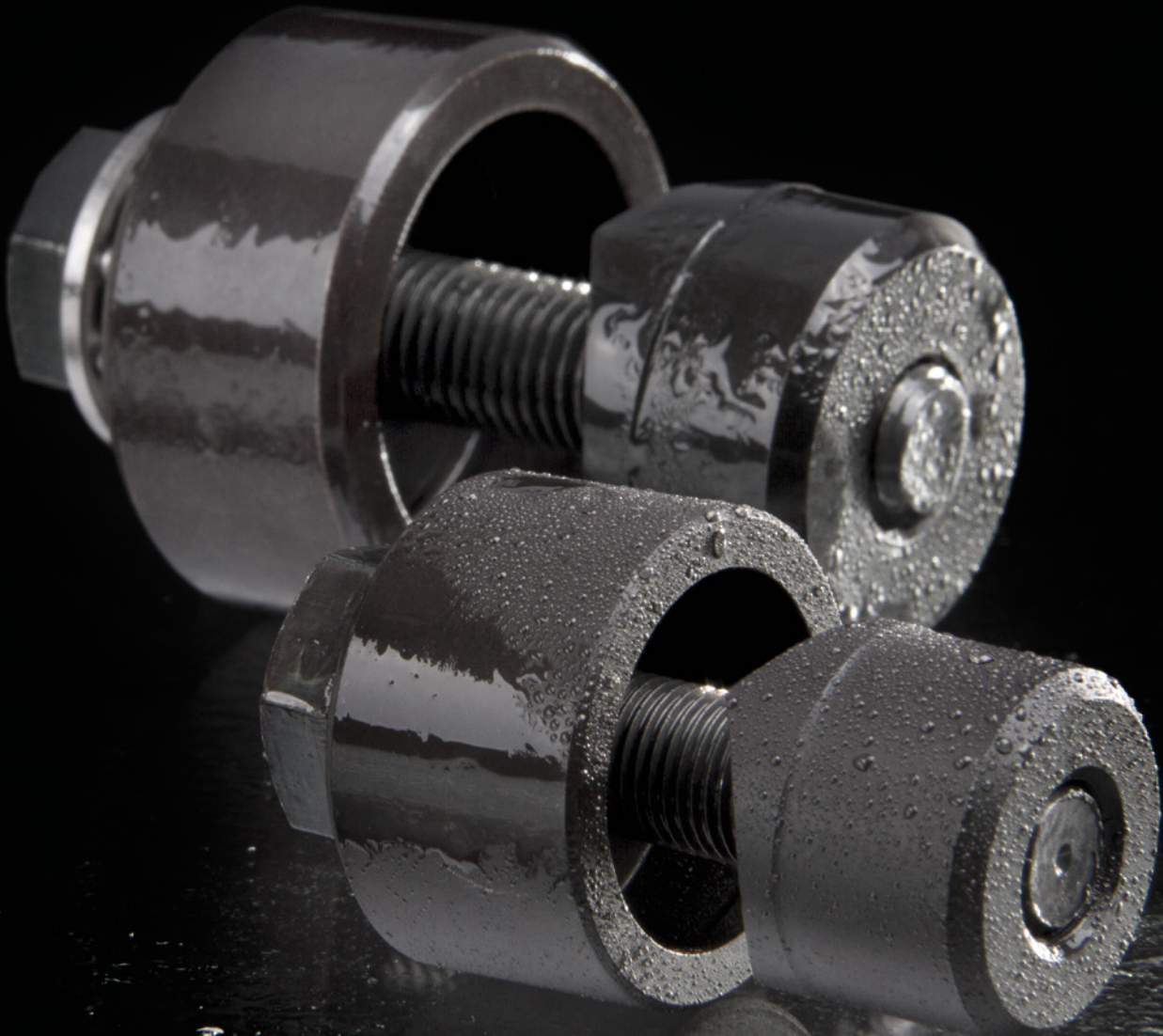
## Unigrat sets

A rational deburring system for all deburring work that has to be done by hand.  
The wide selection of blades provides a wide range of deburring possibilities for bores and edges.  
The various blades enable you to debur bores from inside, outside or on both sides, as the blade itself adapts to the contours.

Packing unit: in plastic packs

	Article no.
4-piece set of unigrat deburrer "B" 	107 003
3-piece set of unigrat deburrer "C" 	107 004
4-piece set of unigrat deburrer "D" 	107 005
5-piece set of unigrat deburrer "E" 	107 006
3-piece set of unigrat deburrer "F" 	107 007





# SCREW-HOLE PUNCHES



## Screw-hole punches

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Cuts holes in thin materials quickly, easily, cleanly and without burrs in a few simple operations.

Three-point cut gives improved contact and thus less deformation of the punched parts, preventing damage to the draw-in bolt.

The ball bearing between draw-in bolt and die plate makes handling even simpler and quicker, reducing the force required by approx. 67 %.

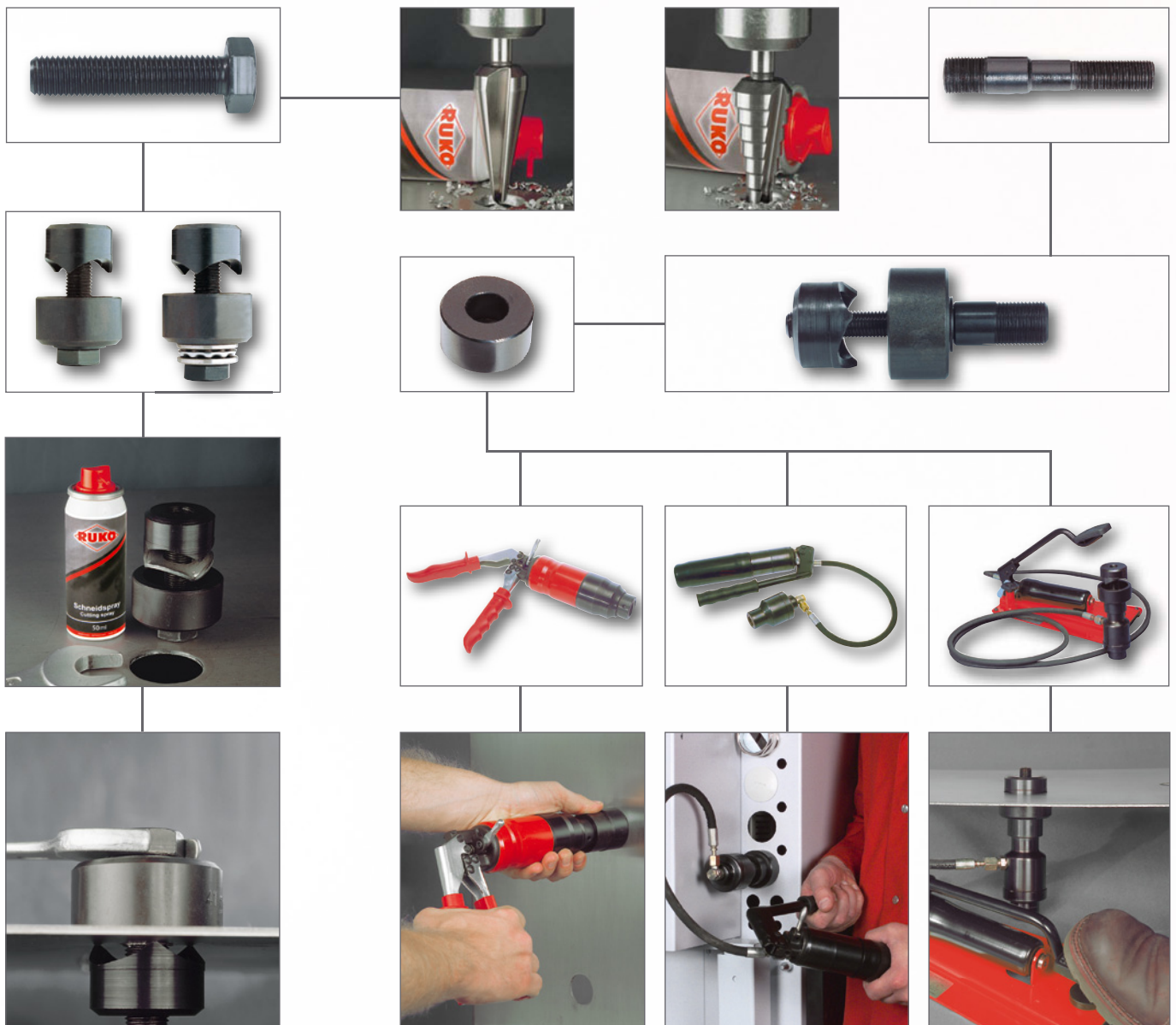
Before the screw-hole punch is used, the draw-in bolt should always be lubricated with RUKO cutting spray or cutting paste.

The metric draw-in bolts of RUKO screw-hole punches are always of the highest quality grade and are thus designed for extreme loads. If lost, they can be replaced for short periods of time by standard metric fine threaded bolts.

Particularly suitable for use with spanners, manual or foot-operated hydraulic punches.

Special sizes available on request.





## Recommendations for the use of screw-hole punches

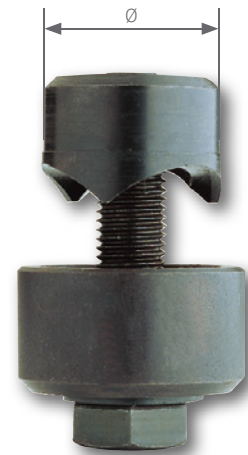
Draw-in bolt	Sheet steel	Stainless-steel sheets	Non-ferrous and light metals	Plastics
MF 8 x 1,0 mm	2,0 mm	1,0 mm	4,0 mm	4,0 mm
MF 10 x 1,0 mm	2,0 mm	1,0 mm	4,0 mm	4,0 mm
MF 12 x 1,5 mm	3,0 mm	1,5 mm	4,0 mm	4,0 mm
MF 16 x 1,5 mm	3,0 mm	1,5 mm	4,0 mm	4,0 mm



## Screw-hole punches with three-point cutting tip

Die: three-point cutting tip  
 Material: special steel  
 Draw-in bolt: metric fine-threads, from MF 10 grade 12.9

Suitable for sheet steel, stainless-steel sheets, non-ferrous and light metals, plastics.  
 Ideal for switchgear manufacturers, electricians, plumbers, industry and handicrafts.

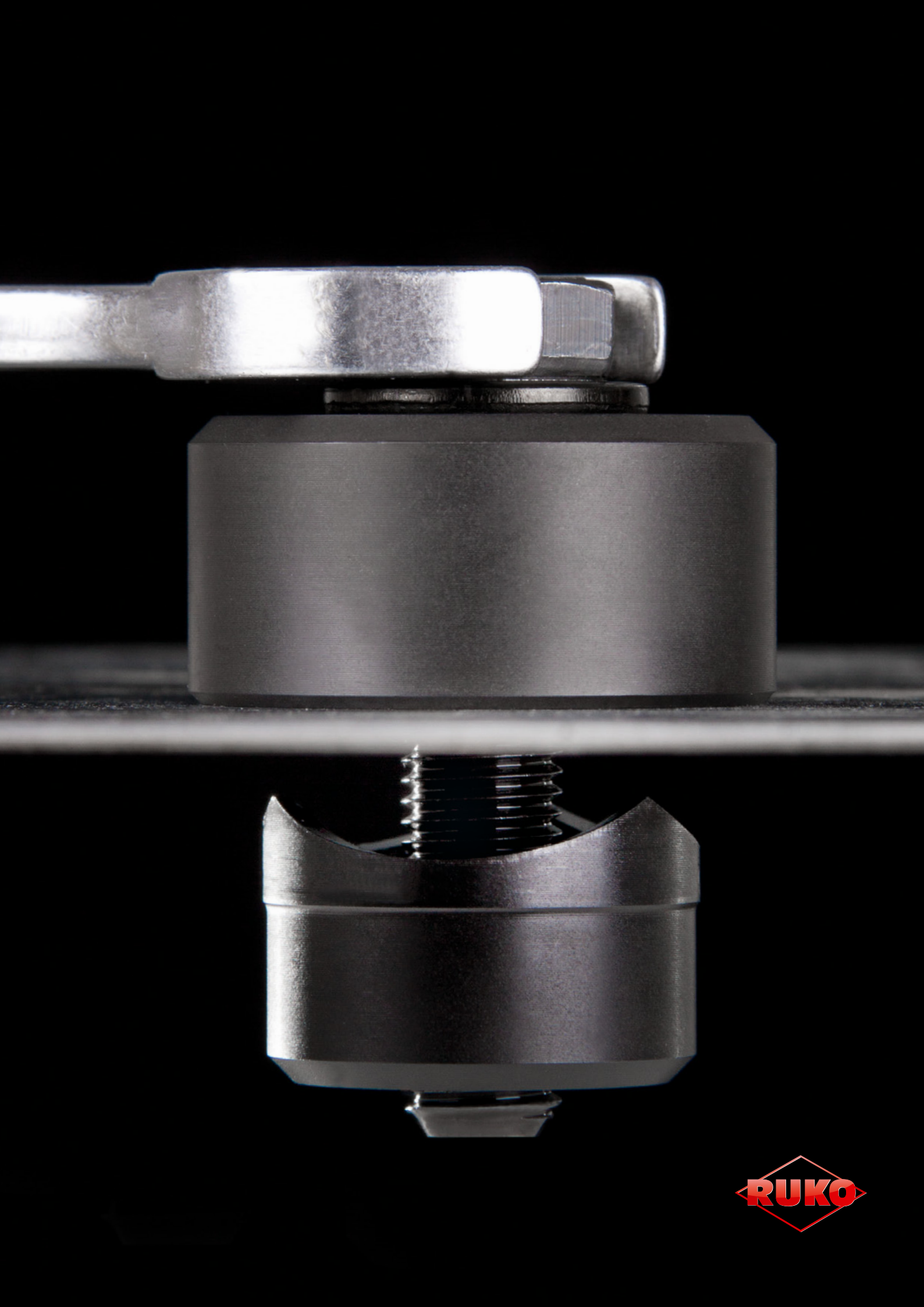


The through hole should be only slightly bigger than the diameter (+ 1.0 mm) of the traction bolt. Apply (spread) RUKO lubricating paste on the cutting edges and the traction bolt. This reduces wear and thus increases the service life of the screw hole punch.

Packing unit: individual cartons

Ø mm	Through dimensions		Conduit & Pipe Size	Ø inch	Draw-in bolt MF	Article no. standard	Article no. ball bearing	
	M	PG						
12,7	12	7		1/2"	MF 8	109 127	—	1
15,2		9			MF 10	109 152	109 152 K	1
16,0					MF 10	109 160	109 160 K	1
16,5	16				MF 10	109 165	109 165 K	1
18,6		11			MF 10	109 186	109 186 K	1
19,0				3/4"	MF 10	109 190	109 190 K	1
20,0					MF 10	109 200	109 200 K	1
20,4	20	13,5			MF 10	109 204	109 204 K	1
21,0					MF 10	109 210	109 210 K	1
22,0					MF 10	109 220	109 220 K	1
22,5		16	1/2"	7/8"	MF 10	109 225	109 225 K	1
23,0					MF 10	109 230	109 230 K	1
24,0					MF 10	109 240	109 240 K	1
25,0					MF 10	109 250	109 250 K	1
25,4	25			1"	MF 10	109 254	109 254 K	1
26,0					MF 10	109 260	109 260 K	1
27,0					MF 10	109 270	109 270 K	1
28,3		21	3/4"		MF 12	109 283	109 283 K	1
29,0					MF 12	109 290	109 290 K	1
30,0					MF 12	109 300	109 300 K	1
30,5				1 7/32"	MF 12	109 305	109 305 K	1
31,0					MF 12	109 310	109 310 K	1
31,7					MF 12	109 317	109 317 K	1
32,0					MF 12	109 320	109 320 K	1
32,5	32				MF 12	109 325	109 325 K	1
33,0					MF 12	109 330	109 330 K	1
34,0					MF 12	109 340	109 340 K	1
35,0				1 3/8"	MF 12	109 350	109 350 K	1
36,0					MF 12	109 360	109 360 K	1
37,0		29			MF 12	109 370	109 370 K	1
38,0				1 1/2"	MF 12	109 380	109 380 K	1
40,0	40				MF 12	109 400	109 400 K	1
40,5					MF 16	109 405	109 405 K	1
42,0					MF 16	109 420	109 420 K	1
43,0			1 1/4"		MF 16	109 430	109 430 K	1
45,0					MF 16	109 450	109 450 K	1
47,0		36			MF 16	109 470	109 470 K	1
50,0			1 1/2"		MF 16	109 500	109 500 K	1
50,5	50				MF 16	109 505	109 505 K	1
51,0					MF 16	109 510	109 510 K	1
53,0					MF 16	109 530	109 530 K	1
54,0		42		2 1/8"	MF 16	109 540	109 540 K	1
55,0					MF 16	109 550	109 550 K	1
60,0		~ 48			MF 16	109 600	109 600 K	1
61,5			2"	2 3/8"	MF 16	109 615	109 615 K	1
63,5	63			2 1/2"	MF 16	109 635	109 635 K	1





**RUKO**

## Sets of screw-hole punches in plastic cases

		Article no.
Set 1	11 - piece set of screw-hole punches 6 screw-hole punches Ø 15,2 (PG 9) - 18,6 (PG 11) - 20,4 (M 20 / PG 13,5) - 22,5 (PG 16) - 28,3 (PG 21) + 32,0 mm + 1 tube and sheet drill HSS size 1 + 1 cutting paste 30 g + 2 draw-in bolts MF 10 x 1,0 x 45, grade 12.9 + 1 draw-in bolt MF 12 x 1,5 x 55, grade 12.9	109 002
Set 2	13 - piece set of screw-hole punches 8 screw-hole punches Ø 15,2 (PG 9) - 18,6 (PG 11) - 20,4 (M 20 / PG 13,5) - 22,5 (PG 16) - 28,3 (PG 21) 37,0 (PG 29) - 47,0 (PG 36) + 54,0 mm (PG 42) + 1 tube and sheet drill HSS size 2 + 1 cutting paste 30 g + 1 draw-in bolt MF 10 x 1,0 x 45, grade 12.9 + 1 draw-in bolt MF 12 x 1,5 x 55, grade 12.9 + 1 draw-in bolt MF 16 x 1,5 x 60, grade 12.9	109 003
Set 3	10 - piece set of screw-hole punches 5 screw-hole punches Ø 16,5 (M 16) - 20,4 (M 20 / PG 13,5) - 25,4 (M 25) - 32,5 (M 32) + 40,5 mm (M 40) + 1 tube and sheet drill HSS size 2 + 1 cutting paste 30 g + 1 draw-in bolt MF 10 x 1,0 x 45, grade 12.9 + 1 draw-in bolt MF 12 x 1,5 x 55, grade 12.9 + 1 draw-in bolt MF 16 x 1,5 x 60, grade 12.9	109 006
Set 4	12 - piece set of screw-hole punches 7 screw-hole punches Ø 16,5 (M 16) - 20,4 (M 20 / PG 13,5) - 25,4 (M 25) - 32,5 (M 32) - 40,5 (M 40) 50,5 (M 50) + 63,5 mm (M 63) + 1 tube and sheet drill HSS size 2 + 1 cutting paste 30 g + 1 draw-in bolt MF 10 x 1,0 x 45, grade 12.9 + 1 draw-in bolt MF 12 x 1,5 x 55, grade 12.9 + 1 draw-in bolt MF 16 x 1,5 x 60, grade 12.9	109 008





## Sets of screw-hole punches with ball-bearing in plastic cases

		Article no.
Set 1 K	11 - piece set of screw-hole punches 6 screw-hole punches Ø 15,2 (PG 9) - 18,6 (PG 11) - 20,4 (M 20 / PG 13,5) - 22,5 (PG 16) - 28,3 (PG 21) + 32,0 mm + 1 tube and sheet drill HSS size 1 + 1 cutting paste 30 g + 2 ball-bearing draw-in bolts MF 10 x 1,0 x 50, grade 12.9 + 1 ball-bearing draw-in bolt MF 12 x 1,5 x 60, grade 12.9	109 002 K
Set 2 K	13 - piece set of screw-hole punches 8 screw-hole punches Ø 15,2 (PG 9) - 18,6 (PG 11) - 20,4 (M 20 / PG 13,5) - 22,5 (PG 16) - 28,3 (PG 21) 37,0 (PG 29) - 47,0 (PG 36) + 54,0 mm (PG 42) + 1 tube and sheet drill HSS size 2 + 1 cutting paste 30 g + 1 ball-bearing draw-in bolt MF 10 x 1,0 x 50, grade 12.9 + 1 ball-bearing draw-in bolt MF 12 x 1,5 x 60, grade 12.9 + 1 ball-bearing draw-in bolt MF 16 x 1,5 x 70, grade 12.9	109 003 K
Set 3 K	10 - piece set of screw-hole punches 5 screw-hole punches Ø 16,5 (M 16) - 20,4 (M 20 / PG 13,5) - 25,4 (M 25) - 32,5 (M 32) + 40,5 mm (M 40) + 1 tube and sheet drill HSS size 2 + 1 cutting paste 30 g + 1 ball-bearing draw-in bolt MF 10 x 1,0 x 50, grade 12.9 + 1 ball-bearing draw-in bolt MF 12 x 1,5 x 60, grade 12.9 + 1 ball-bearing draw-in bolt MF 16 x 1,5 x 70, grade 12.9	109 006 K
Set 4 K	12 - piece set of screw-hole punches 7 screw-hole punches Ø 16,5 (M 16) - 20,4 (M 20 / PG 13,5) - 25,4 (M 25) - 32,5 (M 32) - 40,5 (M 40) 50,5 (M 50) + 63,5 mm (M 63) + 1 tube and sheet drill HSS size 2 + 1 cutting paste 30 g + 1 ball-bearing draw-in bolt MF 10 x 1,0 x 50, grade 12.9 + 1 ball-bearing draw-in bolt MF 12 x 1,5 x 60, grade 12.9 + 1 ball-bearing draw-in bolt MF 16 x 1,5 x 70, grade 12.9	109 008 K



## Set of foot-operated hydraulic punch in plastic case

	Article no.
Foot-operated hydraulic punch, complete + 1 distance sleeve + 1 adapter bolt MF 10 x 1,0, 3/4" UNF fitting + 1 adapter bolt MF 12 x 1,5, 3/4" UNF fitting + 1 adapter bolt MF 16 x 1,5, 3/4" UNF fitting pulling power 50 kN	109 301



109 301

## Sets of manual hydraulic punch in plastic case

	Article no.
Compact manual hydraulic punch, complete + 1 distance sleeve + 1 adapter bolt MF 10 x 1,0, 3/4" UNF fitting + 1 adapter bolt MF 12 x 1,5, 3/4" UNF fitting + 1 adapter bolt MF 16 x 1,5, 3/4" UNF fitting pulling power 50 kN	109 101
Manual hydraulic punch, complete + 1 distance sleeve + 1 adapter bolt MF 10 x 1,0, 3/4" UNF fitting + 1 adapter bolt MF 12 x 1,5, 3/4" UNF fitting + 1 adapter bolt MF 16 x 1,5, 3/4" UNF fitting pulling power 50 kN	109 201



109 101



109 201

## Sets of screw-hole punches with compact manual hydraulic punch in plastic case

	Article no.
12 - piece set of screw-hole punches with compact manual hydraulic punch 1 compact manual hydraulic punch + 8 screw-hole punches Ø 16,5 (M 16) - 20,4 (M 20 / PG 13,5) - 25,4 (M 25) - 32,5 (M 32) - 40,5 (M 40) + 50,5 mm (M 50) + 1 tube and sheet drill HSS size 2 + 1 cutting paste 30 g + 1 distance sleeve + 1 adapter bolt MF 10 x 1,0, 3/4" UNF fitting + 1 adapter bolt MF 12 x 1,5, 3/4" UNF fitting + 1 adapter bolt MF 16 x 1,5, 3/4" UNF fitting pulling power 50 kN	109 009
14 - piece set of screw-hole punches with compact manual hydraulic punch 1 compact manual hydraulic punch + 8 screw-hole punches Ø 15,2 (PG 9) - 18,6 (PG11) - 20,4 (M 20 / PG 13,5) - 22,5 (PG 16) - 28,3 (PG 21) - 37,0 (PG 29) - 47,0 (PG 36) + 54,0 mm (PG 42) + 1 tube and sheet drill HSS size 2 + 1 cutting paste 30 g + 1 distance sleeve + 1 adapter bolt MF 10 x 1,0, 3/4" UNF fitting + 1 adapter bolt MF 12 x 1,5, 3/4" UNF fitting + 1 adapter bolt MF 16 x 1,5, 3/4" UNF fitting pulling power 50 kN	109 004



109 009



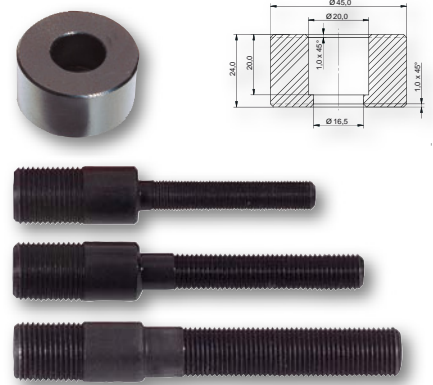
109 004



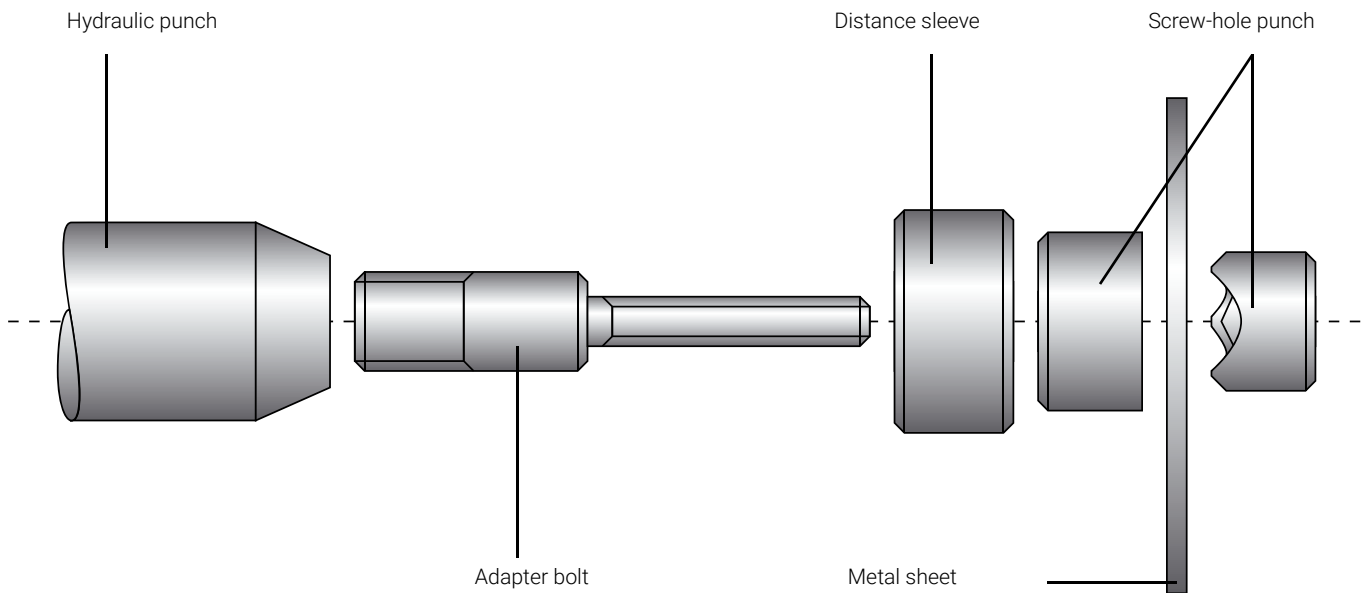
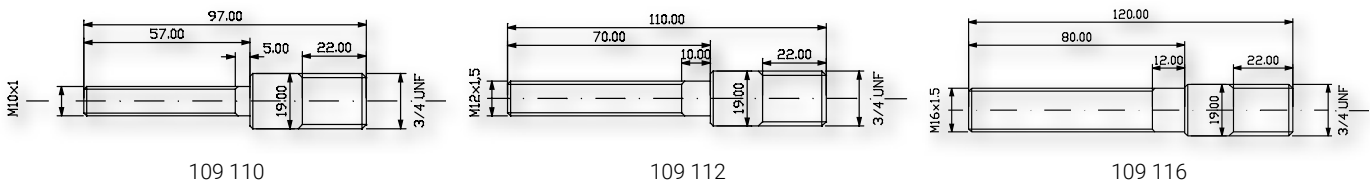
# Spare parts

Packing unit: individual plastic packing

	Article no.
Distance sleeve	109 000
Adapter bolt MF 10 x 1,0, 3/4" UNF fitting	109 110
Adapter bolt MF 12 x 1,5, 3/4" UNF fitting	109 112
Adapter bolt MF 16 x 1,5, 3/4" UNF fitting	109 116
Replacement bolt MF 8 x 1,0 x 40, grade 12,9	103 108
Replacement bolt MF 10 x 1,0 x 45, grade 12,9	103 110
Replacement bolt MF 12 x 1,5 x 55, grade 12,9	103 112
Replacement bolt MF 16 x 1,5 x 60, grade 12,9	103 116
Replacement bolt with ball-bearing MF 10 x 1,0 x 50 grade 12,9	103 110 K
Replacement bolt with ball-bearing MF 12 x 1,5 x 60 grade 12,9	103 112 K
Replacement bolt with ball-bearing MF 16 x 1,5 x 70 grade 12,9	103 116 K



The adapter bolts may be used on all standard hydraulic punches.





## COOLANTS AND LUBRICANTS



## Coolants and lubricants

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The RUKO coolants and lubricants provide an outstanding separation and cooling effect. They generate a high surface quality and increase the service life of the tools, even with hard and brittle materials.

- Cutting pastes
- Cutting spray cans
- Universal cutting oil concentrate






## Cutting pastes

High performance cutting paste with outstanding separation and cooling effect. Increases tool life even with hard and brittle materials. High heat resistance ensures good lubrication and cooling even at high temperatures. Good adhesion improves lubrication.

For all standard metal working processes such as thread cutting, grinding, sawing, drilling, countersinking, deburring, turning, stamping and milling. Cutting spray including 360° valve!


	Article no.	
Cutting paste, 50 g	101 021	1
Cutting paste, 30 g	101 035	1



## Cutting spray cans

High performance cutting spray with outstanding separation and cooling effect. Increases tool life even with hard and brittle materials. High heat resistance ensures good lubrication and cooling even at high temperatures. Good adhesion improves lubrication.

For all standard metal working processes such as thread cutting, grinding, sawing, drilling, countersinking, deburring, turning, stamping and milling.


	Article no.	
Cutting spray, 50 ml	101 010	12
Cutting spray, 200 ml	101 025	12
Cutting spray, 400 ml	101 036	12



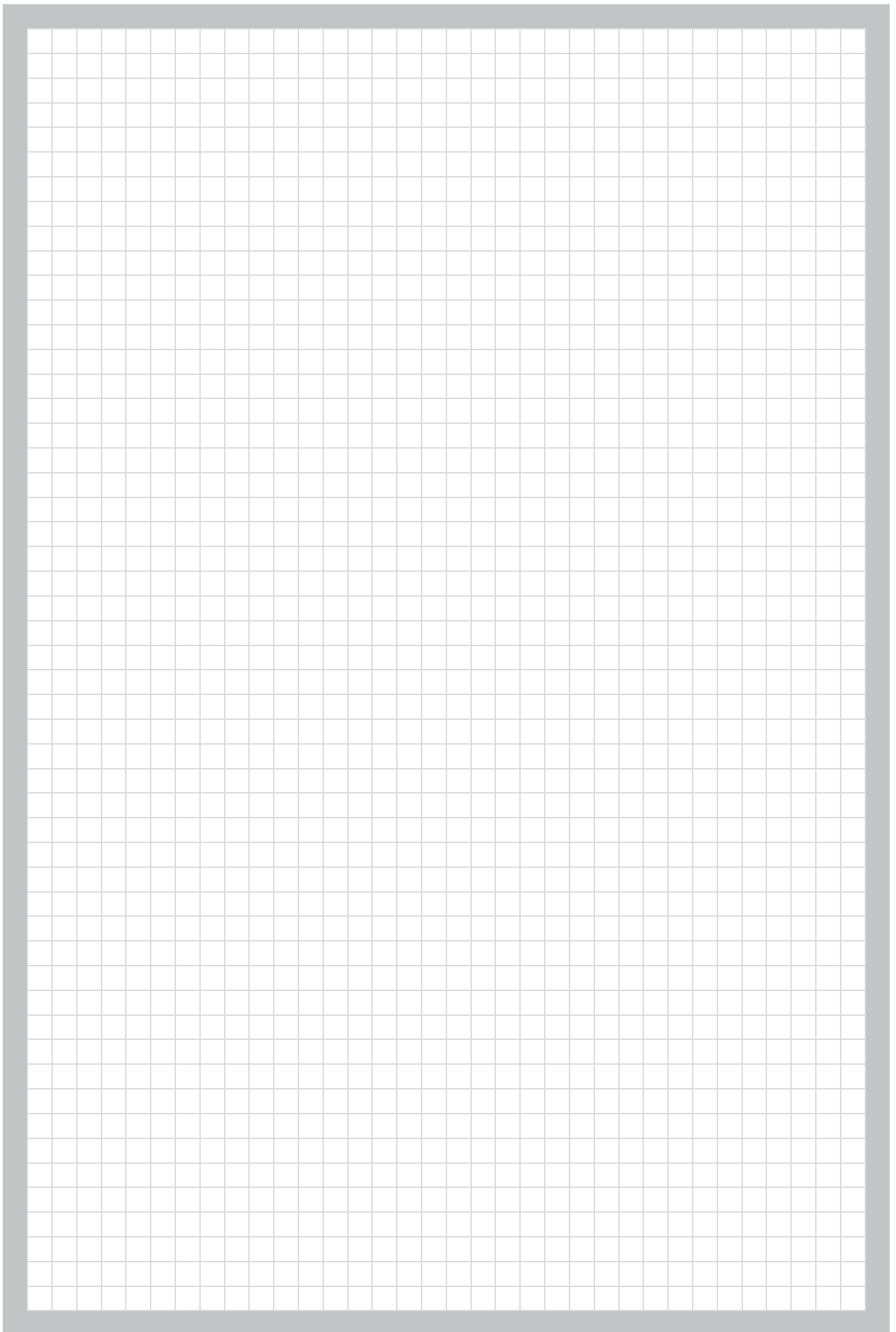
## Universal cutting oil concentrate

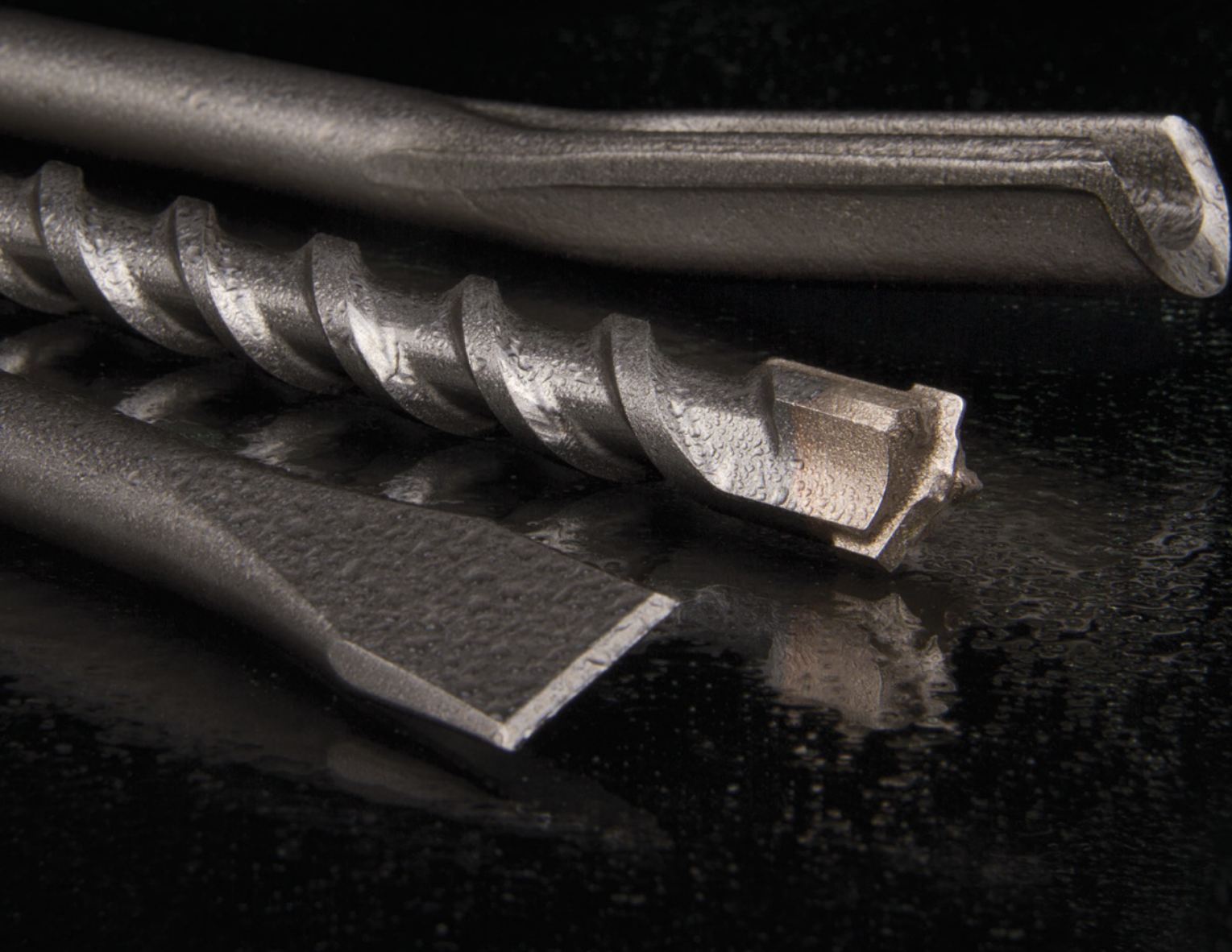
Excellent lubricating and cooling effect. Increases tool life by excellent lubricity, even at low concentration. Transparent solution does not stick, prevents corrosion, clear view of machine, workpiece and tool. Skin friendly, free of PCBs, formaldehyde, sulfur and sodium nitrite, organically stable, corresponds to TRGS 611.

For all conventional metal processing methods in unalloyed and alloyed steels, when thread-cutting, reaming, sawing, drilling, turning, milling and grinding. Boron and amine-free. Application concentration in water depending on work process: 5% - 15% cation concentration in water.

	Article no.	
Universal cutting oil concentrate, 1 L bottle	101 034	1
Universal cutting oil concentrate, 5 L canister	101 033	1







# CONCRETE DRILLS



## Concrete drills

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- SDS-plus hammer drills
- SDS-plus hammer drills with 3 cutters
- SDS-plus concrete hammer drills with 3 cutters
- Concrete drills with carbide cutting edge and straight shank
- Masonry drills extra long with carbide cutting edge and hexagon shank
- Percussion drills with carbide cutting edge and straight shank
- SDS-max concrete hammer drills
- Universal drills with carbide cutting edge and straight shank
- Glass and tile drills with carbide cutting edge and straight shank
- Hammer percussion drill bits with carbide cutting edges
- SDS-plus and SDS-max chisels





# Overview of symbols



right hand cutting



Shank:  
cylindrical



Non-ferrous metals



Tiles



Point angle  
e.g. 130°



Hexagon shank



Plastics



Bricks



Drilling depth:  
up to 60,0 mm



ISO 5468



Glass



Lightweight material



Shank:  
SDS-Plus



DIN 8039



Masonry



Hardwoods and  
softwoods



Shank:  
SDS-Max



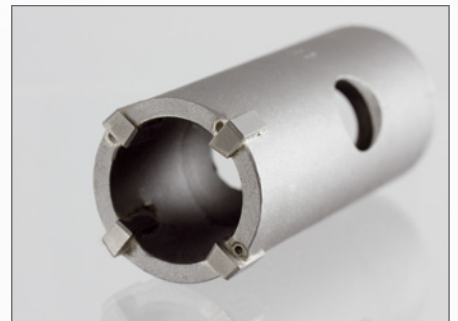
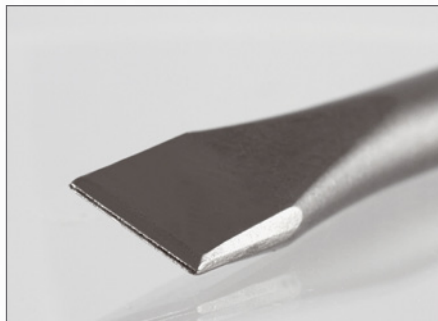
Concrete

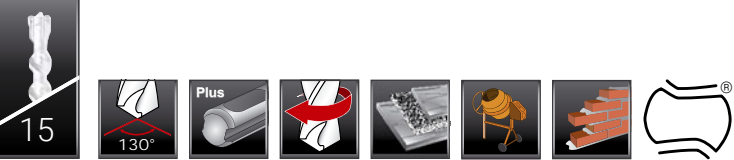


Granite and marble



Accumulator machines



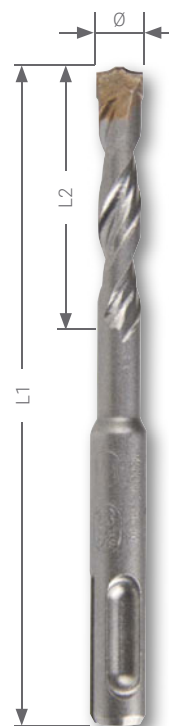


## SDS-plus hammer drills

Longer service life in concrete and reinforcement thanks to the stabilised head geometry and rounded cutting edges. Patented double-edge cutting design according to the bionic principle.

Innovative Twinmax 3D spiral profile provides the ideal removal of drill dust. Certified by the Prüfungsgemeinschaft Mauerbohrer (PGM) in accordance with the requirements of the Deutsches Institut für Bautechnik. (DIBt).

Fields of application: for granite, concrete, concrete reinforcement, clinker, stone, brickwork and marble. In all hammer drills with SDS-plus adaptor and 2-groove adaptor such as Hilti TE 10-22.



Packaging: in plastic clip of 1 each

Ø mm	Ø inch	L1 mm	L2 mm	Article no.	
3,5	9/64	110,0	50,0	211 035	1
4,0	5/32	110,0	50,0	211 040	1
4,0	5/32	160,0	100,0	211 041	1
<b>5,0</b>	<b>3/16</b>	<b>110,0</b>	<b>50,0</b>	211 050	1
<b>5,0</b>	<b>3/16</b>	<b>160,0</b>	<b>100,0</b>	211 051	1
5,0	3/16	210,0	150,0	211 052	1
5,5	7/32	110,0	50,0	211 055	1
5,5	7/32	160,0	100,0	211 056	1
<b>6,0</b>	<b>15/64</b>	<b>110,0</b>	<b>50,0</b>	211 060	1
<b>6,0</b>	<b>15/64</b>	<b>160,0</b>	<b>100,0</b>	211 061	1
6,0	15/64	210,0	150,0	211 062	1
6,0	15/64	260,0	200,0	211 063	1
6,0	15/64	460,0	* 400,0	211 068	1
6,5	8/32	110,0	50,0	211 065	1
6,5	8/32	160,0	100,0	211 066	1
6,5	8/32	210,0	150,0	211 067	1
6,5	8/32	260,0	200,0	211 069	1
7,0	9/32	110,0	50,0	211 070	1
7,0	9/32	160,0	100,0	211 071	1
7,0	9/32	210,0	150,0	211 072	1
<b>8,0</b>	<b>5/16</b>	<b>110,0</b>	<b>50,0</b>	211 080	1
<b>8,0</b>	<b>5/16</b>	<b>160,0</b>	<b>100,0</b>	211 081	1
<b>8,0</b>	<b>5/16</b>	<b>210,0</b>	<b>150,0</b>	211 082	1
8,0	5/16	260,0	200,0	211 083	1
8,0	5/16	310,0	250,0	211 085	1
8,0	5/16	460,0	* 400,0	211 084	1
8,0	5/16	610,0	* 550,0	211 086	1
9,0	11/32	160,0	100,0	211 090	1
9,0	11/32	210,0	150,0	211 091	1
<b>10,0</b>	<b>3/8</b>	<b>110,0</b>	<b>50,0</b>	211 105	1
<b>10,0</b>	<b>3/8</b>	<b>160,0</b>	<b>100,0</b>	211 100	1
<b>10,0</b>	<b>3/8</b>	<b>210,0</b>	<b>150,0</b>	211 101	1
<b>10,0</b>	<b>3/8</b>	<b>260,0</b>	<b>200,0</b>	211 102	1
10,0	3/8	310,0	250,0	211 104	1
10,0	3/8	360,0	300,0	211 103	1
10,0	3/8	460,0	* 400,0	211 106	1
10,0	3/8	610,0	* 550,0	211 107	1
10,0	3/8	1000,0	* 950,0	211 108	1
11,0	7/16	160,0	100,0	211 110	1
11,0	7/16	210,0	150,0	211 111	1
11,0	7/16	260,0	200,0	211 112	1
12,0	15/32	160,0	100,0	211 120	1
12,0	15/32	210,0	150,0	211 122	1
12,0	15/32	260,0	200,0	211 121	1

Ø mm	Ø Inch	L1 mm	L2 mm	Article no.	
12,0	15/32	310,0	250,0	211 124	1
12,0	15/32	460,0	* 400,0	211 123	1
12,0	15/32	600,0	* 550,0	211 125	1
12,0	15/32	1000,0	* 950,0	211 126	1
13,0	1/2	160,0	100,0	211 130	1
13,0	1/2	210,0	150,0	211 133	1
13,0	1/2	260,0	200,0	211 131	1
13,0	1/2	310,0	250,0	211 132	1
<b>14,0</b>	<b>9/16</b>	<b>160,0</b>	<b>100,0</b>	211 140	1
<b>14,0</b>	<b>9/16</b>	<b>210,0</b>	<b>150,0</b>	211 141	1
<b>14,0</b>	<b>9/16</b>	<b>260,0</b>	<b>200,0</b>	211 142	1
14,0	9/16	310,0	250,0	211 143	1
14,0	9/16	460,0	* 400,0	211 144	1
14,0	9/16	600,0	* 550,0	211 145	1
14,0	9/16	1000,0	* 950,0	211 146	1
15,0	19/32	160,0	100,0	211 150	1
15,0	19/32	210,0	150,0	211 152	1
15,0	19/32	260,0	200,0	211 151	1
15,0	19/32	450,0	* 400,0	211 153	1
16,0	5/8	160,0	100,0	211 162	1
16,0	5/8	210,0	150,0	211 160	1
16,0	5/8	250,0	200,0	211 163	1
16,0	5/8	310,0	250,0	211 164	1
16,0	5/8	450,0	* 400,0	211 161	1
16,0	5/8	600,0	* 550,0	211 165	1
16,0	5/8	800,0	* 750,0	211 166	1
16,0	5/8	1000,0	* 950,0	211 167	1
17,0	43/64	210,0	150,0	211 170	1
18,0	11/16	200,0	150,0	211 180	1
18,0	11/16	250,0	200,0	211 184	1
18,0	11/16	300,0	250,0	211 183	1
18,0	11/16	450,0	* 400,0	211 181	1
18,0	11/16	600,0	* 550,0	211 185	1
18,0	11/16	1000,0	* 950,0	211 182	1
19,0	3/4	200,0	150,0	211 190	1
19,0	3/4	450,0	* 400,0	211 191	1
20,0	25/32	200,0	150,0	211 200	1
20,0	25/32	300,0	250,0	211 201	1
20,0	25/32	450,0	* 400,0	211 202	1
20,0	25/32	600,0	* 550,0	211 203	1
20,0	25/32	1000,0	* 950,0	211 204	1
22,0	7/8	250,0	200,0	211 221	1
22,0	7/8	300,0	250,0	211 222	1
22,0	7/8	450,0	* 400,0	211 220	1



## SDS-plus hammer drills

Ø mm	Ø inch	L1 mm	L2 mm	Article no.	
22,0	7/8	600,0	* 550,0	211 223	1
22,0	7/8	1000,0	* 950,0	211 224	1
24,0	15/16	250,0	200,0	211 240	1
24,0	15/16	450,0	* 400,0	211 241	1
25,0	63/64	250,0	200,0	211 251	1

Ø mm	Ø inch	L1 mm	L2 mm	Article no.	
25,0	63/64	300,0	250,0	211 252	1
25,0	63/64	450,0	* 400,0	211 250	1
25,0	63/64	1000,0	* 950,0	211 253	1
26,0	1 3/16	250,0	200,0	211 261	1
26,0	1 3/16	450,0	* 400,0	211 260	1

\* Please note when using these bits it is recommended to pre-drill with a shorter hammer drill of a same diameter.  
Mostly required diameters are emphasized in extra-bold letters.

## SDS-plus hammer drills in plastic box

Fields of application: for granite, concrete, concrete reinforcement, clinker, stone, brickwork and marble. In all hammer drills with SDS-plus adaptor and 2-groove adaptor such as Hilti TE 10-22.

	Article no.
7-piece set of SDS-plus hammer drills in steel case Ø 5,0 - 6,0 - 8,0 x 110,0 mm and Ø 6,0 - 8,0 - 10,0 - 12,0 x 160,0 mm	205 246
7-piece set of SDS-plus hammer drills in plastic case Ø 5,0 - 6,0 - 8,0 x 110,0 mm and Ø 6,0 - 8,0 - 10,0 - 12,0 x 160,0 mm	205 246 RO



205 246

## SDS-plus hammer drills sets

Ø mm	Ø inch	L1 mm	L2 mm	Article no.	
5,0	3/16	110,0	50,0	211 050 K	10
5,0	3/16	160,0	100,0	211 051 K	10
6,0	15/64	110,0	50,0	211 060 K	10
6,0	15/64	160,0	100,0	211 061 K	10
8,0	5/16	110,0	50,0	211 080 K	10
8,0	5/16	160,0	100,0	211 081 K	10
8,0	5/16	210,0	150,0	211 082 K	10
10,0	3/8	110,0	50,0	211 105 K	10
10,0	3/8	160,0	100,0	211 100 K	10
12,0	15/32	160,0	100,0	211 120 K	10
12,0	15/32	210,0	150,0	211 122 K	10
14,0	9/16	160,0	100,0	211 140 K	5
14,0	9/16	210,0	150,0	211 141 K	5



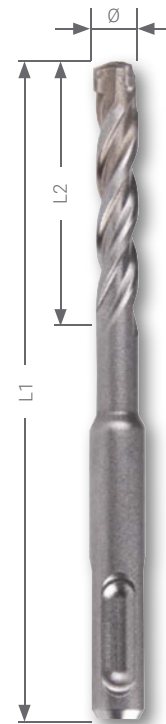
211 100 K




## SDS-plus hammer drills with 3 cutters

Impeller cutting edge with 3 blades for more effective material removal; increased power transmission thanks to shaft-form head design; extremely long service life thanks to extremely wear-resistant single-phase tungsten carbide alloy; stable head geometry due to embedded tungsten carbide head; optimised low-vibration triple spiral; DuraTec hardening technique; certified by the Prüfungsgemeinschaft Mauerbohrer (PGM) in accordance with the requirements of the Deutsches Institut für Bautechnik. (DIBt).

Fields of application: for granite, concrete, clinker, stone, brickwork and marble.  
In all hammer drills with SDS-plus adaptor and 2-groove adaptor such as Hilti TE 10-22.



Packaging: in plastic clip of 1 each

Ø mm	Ø inch	L1 mm	L2 mm	Article no.	
5,0	3/16	110,0	50,0	213 050	1
5,0	3/16	160,0	100,0	213 051	1
5,0	3/16	210,0	150,0	213 052	1
5,5	7/32	110,0	50,0	213 055	1
5,5	7/32	160,0	100,0	213 056	1
6,0	15/64	115,0	50,0	213 060	1
6,0	15/64	165,0	100,0	213 061	1
6,0	15/64	215,0	150,0	213 062	1
6,0	15/64	265,0	200,0	213 063	1
6,5	8/32	115,0	50,0	213 065	1
6,5	8/32	165,0	100,0	213 066	1
6,5	8/32	265,0	200,0	213 067	1
8,0	5/16	115,0	50,0	213 080	1
8,0	5/16	165,0	100,0	213 081	1
8,0	5/16	215,0	150,0	213 082	1
8,0	5/16	265,0	200,0	213 083	1
8,0	5/16	365,0	300,0	213 084	1
8,0	5/16	465,0	400,0	213 085	1
10,0	3/8	115,0	50,0	213 100	1
10,0	3/8	165,0	100,0	213 101	1
10,0	3/8	215,0	150,0	213 102	1
10,0	3/8	265,0	200,0	213 103	1
10,0	3/8	365,0	300,0	213 104	1
10,0	3/8	465,0	400,0	213 105	1
12,0	15/32	165,0	100,0	213 120	1
12,0	15/32	215,0	150,0	213 121	1
12,0	15/32	265,0	200,0	213 122	1
12,0	15/32	365,0	300,0	213 123	1
12,0	15/32	465,0	400,0	213 124	1
14,0	9/16	165,0	100,0	213 140	1
14,0	9/16	215,0	150,0	213 141	1
14,0	9/16	265,0	200,0	213 142	1
14,0	9/16	365,0	300,0	213 143	1
14,0	9/16	465,0	400,0	213 144	1






### SDS-plus hammer drill sets with 3 cutters

	Article no.
7-piece set of SDS-plus hammer drills in steel case Ø 5,0 - 6,0 - 8,0 x 110,0 mm and Ø 6,0 - 8,0 - 10,0 - 12,0 x 160,0 mm	213 246
77-piece set of SDS-plus hammer drills in plastic case Ø 5,0 - 6,0 - 8,0 x 110,0 mm and Ø 6,0 - 8,0 - 10,0 - 12,0 x 160,0 mm	213 246 RO



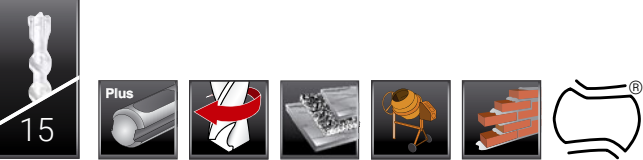
213 246

### SDS-plus hammer drills with 3 cutters in plastic box

Ø mm	Ø inch	L1 mm	L2 mm	Article no.	
5,0	3/16	110,0	50,0	213 050 K	10
5,0	3/16	160,0	100,0	213 051 K	10
6,0	15/64	110,0	50,0	213 060 K	10
6,0	15/64	160,0	100,0	213 061 K	10
8,0	5/16	110,0	50,0	213 080 K	10
8,0	5/16	160,0	100,0	213 081 K	10
8,0	5/16	210,0	150,0	213 082 K	10
10,0	3/8	110,0	50,0	213 100 K	10
10,0	3/8	160,0	100,0	213 101 K	10
12,0	15/32	160,0	100,0	213 120 K	10
12,0	15/32	210,0	150,0	213 121 K	10
14,0	9/16	160,0	100,0	213 140 K	5
14,0	9/16	210,0	150,0	213 141 K	5



213 100 K




## SDS-plus concrete hammer drills with 3 cutters

3D cutting edge profile in Y-shape for exact positioning and ideal starting; long service life and low probability of breakage, even on impact with reinforcements thanks to the highly effective technique of hardening by blasting; high drilling speed due to wide Twinmax spirals; vibration-optimised drilling performance; certified by the Prüfungsgemeinschaft Mauerbohrer (PGM) in accordance with the requirements of the Deutsches Institut für Bautechnik. (DIBt).

Application: in all hammer drills with SDS-plus adaptor and 2-groove adaptor such as Hilti TE 10-22.

Packaging: in plastic bags of 1 each



Ø mm	Ø inch	L1 mm	L2 mm	Quantity of cutters	Article no.	
16,0	5/8	250,0	200,0	3	224 161	1
16,0	5/8	450,0	* 400,0	3	224 160	1
18,0	11/16	250,0	200,0	3	224 180	1
18,0	11/16	450,0	* 400,0	3	224 181	1
20,0	25/32	250,0	200,0	3	224 200	1
20,0	25/32	450,0	* 400,0	3	224 201	1
22,0	7/8	450,0	* 400,0	3	224 220	1
24,0	15/16	450,0	* 400,0	3	224 240	1
25,0	63/64	450,0	* 400,0	3	224 250	1
28,0	1 1/8	450,0	* 400,0	3	224 280	1
30,0	1 3/16	450,0	* 400,0	3	224 300	1

\* Please note when using these bits it is recommended to pre-drill with a shorter hammer drill.



## Concrete drills with carbide cutting edge and straight shank

Long service life due to ideal tungsten carbide geometry with large carbide tip angle; wide Twin-max-G2 spirals; special surface hardening technique by blasting guarantees extreme breaking strength.

Fields of application: for granite, concrete, clinker, stone, brickwork, wall tiles and marble.  
Application: in light hammer drills and strong impact drills with chuck adaptor.



Packing unit:

Art-. No. 221... in plastic bags of 1

Art-. No. 221... K in plastic box

Ø mm	Ø inch	L1 mm	L2 mm	Article no.		Article no.	
3,0	1/8	70,0	40,0	221 030	1	-	-
4,0	5/32	75,0	40,0	221 040	1	221 040 K	10
5,0	3/16	85,0	50,0	221 050	1	221 050 K	10
5,0	3/16	150,0	90,0	221 051	1	-	-
6,0	15/64	100,0	60,0	221 060	1	221 060 K	10
6,0	15/64	150,0	90,0	221 061	1	-	-
6,5	1/4	100,0	60,0	221 065	1	-	-
6,5	1/4	150,0	90,0	221 066	1	-	-
7,0	9/32	100,0	60,0	221 070	1	-	-
8,0	5/16	120,0	80,0	221 080	1	221 080 K	10
8,0	5/16	250,0	200,0	221 081	1	-	-
10,0	3/8	120,0	80,0	221 100	1	221 100 K	10
10,0	3/8	250,0	200,0	221 101	1	-	-
12,0	15/32	150,0	90,0	221 120	1	221 120 K	5
12,0	15/32	250,0	200,0	221 121	1	-	-
13,0	1/2	150,0	90,0	221 130	1	-	-
14,0	9/16	150,0	90,0	221 140	1	221 140 K	5
14,0	9/16	250,0	200,0	221 141	1	-	-
16,0	5/8	160,0	100,0	221 160	1	-	-
18,0	11/16	160,0	100,0	221 180	1	-	-
20,0	25/32	160,0	100,0	221 200	1	-	-

## Concrete drill sets with carbide cutting edge and straight shank

	Article no.
7-piece set of concrete drills with carbide cutting edge and straight shank in steel case Ø 4,0 x 75,0 mm - 5,0 x 85,0 mm - 6,0 x 100,0 mm - 6,0 x 100,0 mm Ø 8,0 x 120,0 mm - 10,0 x 120,0 mm - 12,0 x 150,0 mm	205 255
7-piece set of concrete drills with carbide cutting edge and straight shank in plastic case Ø 4,0 x 75,0 mm - 5,0 x 85,0 mm - 6,0 x 100,0 mm - 6,0 x 100,0 mm Ø 8,0 x 120,0 mm - 10,0 x 120,0 mm - 12,0 x 150,0 mm	205 255 RO



205 255




## Masonry drills extra long with carbide cutting edge and hexagon shank

Masonry drill made from coated special steel with high tenacity and resiliency in a special rugged finish. Good drilling capacity for highest stressing. Suitable for drilling in deep holes and walls. Special tungsten carbide plate in special alloying.

Applications: for concrete, stone, masonry.  
 Suitable for impact drilling machines with taper shaft for drilling chucks.

Packing unit: in plastic bags of 1

Ø mm	Ø inch	L1 mm	L2 mm	inch	
8,0	5/16	400,0	350,0	218 080	1
10,0	3/8	400,0	350,0	218 100	1
12,0	15/32	400,0	350,0	218 120	1
14,0	9/16	400,0	350,0	218 140	1
16,0	5/8	400,0	350,0	218 160	1
18,0	11/16	400,0	350,0	218 180	1
20,0	25/32	400,0	350,0	218 200	1





## Percussion drills with carbide cutting edge and straight shank

Percussion drill made from coated special steel with high tenacity and resiliency in a special rugged finish. Good drilling capacity for high stressing. Strong special tungsten carbide plate in special alloying.

Applications: for drilling in concrete, clinker, stone and masonry.  
Suitable for impact drilling machines with taper shaft for drill chucks.



Packing unit:  
Art- No. 209... in plastic bags of 1  
Art- No. 209... K in plastic box

Ø mm	Ø inch	L1 mm	L2 mm	Article no.		Article no.	
3,0	1/8	70,0	40,0	209 030	1	-	-
4,0	5/32	75,0	40,0	209 040	1	209 040 K	10
5,0	3/16	85,0	50,0	209 050	1	209 050 K	10
5,0	3/16	150,0	90,0	210 050	1	-	-
6,0	15/64	100,0	60,0	209 060	1	209 060 K	10
6,0	15/64	150,0	90,0	210 060	1	-	-
6,5	1/4	100,0	60,0	209 065	1	-	-
6,5	1/4	150,0	90,0	210 065	1	-	-
7,0	9/32	100,0	60,0	209 070	1	-	-
8,0	5/16	120,0	80,0	209 080	1	209 080 K	10
8,0	5/16	200,0	150,0	210 080	1	-	-
10,0	3/8	120,0	80,0	209 100	1	209 100 K	10
10,0	3/8	200,0	150,0	210 100	1	-	-
12,0	15/32	150,0	90,0	209 120	1	209 120 K	5
12,0	15/32	200,0	150,0	210 120	1	-	-
13,0	1/2	150,0	90,0	209 130	1	-	-
14,0	9/16	150,0	90,0	209 140	1	209 140 K	5
15,0	19/32	160,0	100,0	209 150	1	-	-
16,0	5/8	160,0	100,0	209 160	1	-	-
18,0	11/16	160,0	100,0	209 180	1	-	-
20,0	25/32	160,0	100,0	209 200	1	-	-

## Percussion drill set with carbide cutting edge and straight shank

	Article no.
7-piece set of percussion drills with carbide cutting edge and straight shank in steel case Ø 4,0 x 75,0 mm - 5,0 x 85,0 mm - 6,0 x 100,0 mm - 6,0 x 100,0 mm - Ø 8,0 x 120,0 mm - 10,0 x 120,0 mm - 12,0 x 150,0 mm	205 256
7-piece set of percussion drills with carbide cutting edge and straight shank in plastic case Ø 4,0 x 75,0 mm - 5,0 x 85,0 mm - 6,0 x 100,0 mm - 6,0 x 100,0 mm - 8,0 x 120,0 mm - 10,0 x 120,0 mm - 12,0 x 150,0 mm	205 256 RO






## SDS-max concrete hammer drills

3D cutting edge profile in Y-shape for exact positioning and ideal starting; long service life and low probability of breakage, even on impact with reinforcements thanks to the highly effective technique of hardening by blasting; high drilling speed due to wide Twinmax spirals; vibration-optimised drilling performance; certified by the Prüfgemeinschaft Mauerbohrer (PGM) in accordance with the requirements of the Deutsches Institut für Bautechnik. (DIBt).

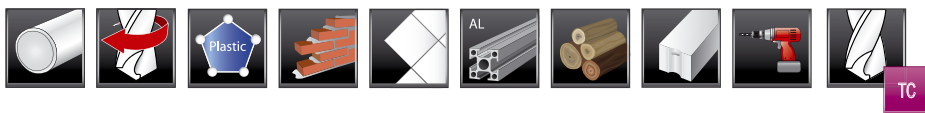
Application: in all hammer drills with SDS-plus adaptor and 2-groove adaptor such as Hilti TE 10-22.

Packaging: in plastic bags of 1 each



Ø mm	Ø inch	L1 mm	L2 mm	Quantity of cutters	Article no.	
12,0	15/32	340,0	200,0	2	225 120	1
12,0	15/32	540,0	* 400,0	2	225 121	1
14,0	9/16	340,0	200,0	2	225 140	1
14,0	9/16	540,0	* 400,0	2	225 141	1
15,0	19/32	340,0	200,0	2	225 150	1
15,0	19/32	540,0	* 400,0	2	225 151	1
16,0	5/8	340,0	200,0	4	225 160	1
16,0	5/8	540,0	* 400,0	4	225 161	1
18,0	11/16	340,0	200,0	4	225 180	1
18,0	11/16	540,0	* 400,0	4	225 181	1
18,0	11/16	940,0	* 800,0	4	225 182	1
20,0	25/32	320,0	200,0	4	225 200	1
20,0	25/32	520,0	* 400,0	4	225 201	1
20,0	25/32	920,0	* 800,0	4	225 202	1
22,0	7/8	320,0	200,0	4	225 220	1
22,0	7/8	520,0	* 400,0	4	225 221	1
22,0	7/8	920,0	* 800,0	4	225 222	1
24,0	15/16	320,0	200,0	4	225 240	1
24,0	15/16	520,0	* 400,0	4	225 241	1
25,0	63/64	320,0	200,0	4	225 250	1
25,0	63/64	520,0	* 400,0	4	225 251	1
25,0	63/64	920,0	* 800,0	4	225 252	1
25,0	93/64	1320,0	* 1200,0	2	225 253	1
28,0	1 1/8	520,0	400,0	4	225 281	1
32,0	1 17/64	920,0	* 800,0	4	225 322	1
32,0	1 17/64	1320,0	* 1200,0	2	225 323	1
35,0	1 3/8	520,0	400,0	4	225 351	1
38,0	1 1/2	370,0	250,0	4	225 380	1
40,0	1 37/64	920,0	* 800,0	4	225 402	1
40,0	1 37/64	1320,0	* 1200,0	2	225 403	1

\* Please note when using these bits it is recommended to pre-drill with a shorter hammer drill of a same diameter. Mostly required diameters are emphasized in extra-bold letters.

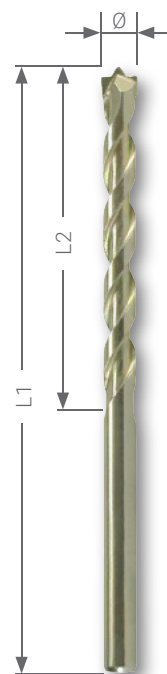



## Universal drills with carbide cutting edge and straight shank

High time of exposure is guaranteed by a special alloyed steel quality. For precise center drilling on hard surfaces. Ideal for non splitting and precise drilling. Special tungsten carbide plate with center point.

Applications: for drilling in tiles, clinker, stone, masonry, plastics, non-ferrous metals, soft and hard wood and lightweight material. Only usable for revolving application in turning and impact drilling machines. Ideal for accumulator machines.

Packing unit: in plastic bags of 1



Ø mm	Ø inch	L1 mm	L2 mm	Article no.	
5,0	3/16	95,0	50,0	223 050	1
6,0	15/64	100,0	60,0	223 060	1
8,0	5/16	120,0	80,0	223 080	1
10,0	3/8	120,0	80,0	223 100	1
12,0	15/32	150,0	90,0	223 120	1

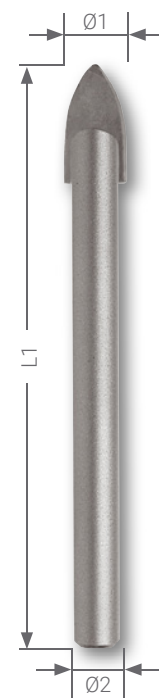



## Glass and tile drills with carbide cutting edge and straight shank

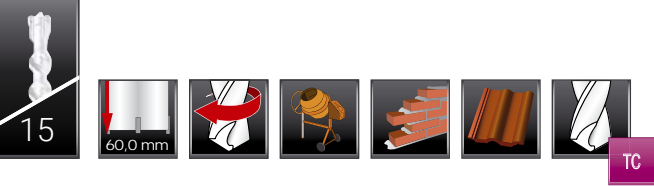
Best results with lower r.p.m. and good cooling with water, vinegar, turpentine and kerosine. Especially suited for drilling of window pane, mirror glass, bottles, porcelain, tiles, ceramics etc.

Cutting edge: special tungsten carbide plate polished  
Soldering: high-performance special soldering

Packing unit: in plastic bags of 1



Ø mm	Ø inch	L1 mm	L2 mm	Article no.	
3,0	1/8	3,0	80,0	223 003	1
4,0	5/32	3,0	90,0	223 004	1
5,0	3/16	4,0	90,0	223 005	1
6,0	15/64	5,0	100,0	223 006	1
8,0	5/16	6,0	100,0	223 008	1
10,0	3/8	6,0	100,0	223 010	1
12,0	15/32	8,0	100,0	223 012	1



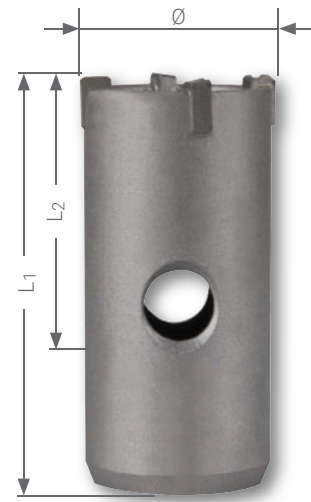
## Hammer percussion drill bits with carbide cutting edges

High efficiency is guaranteed by the very stable and thin-walled drill bit body.  
Applications: for drilling in concrete, stone, masonry and bricks.


Suitable for hammer drills up to 4,0 kg maximum with SDS-plus adaptor. In impact drilling machines with hexagon shank.

Necessary machine-efficiency: up to  $\varnothing$  50,0 mm at least 600 Watt and up to  $\varnothing$  65,0 mm at least 800 Watt. Delivery without center drill and adaptor.


Cutting edges: strong special tungsten carbide plates with special alloying  
Soldering: high-performance special soldering  
Adaptor: thread M16



Packaging: in plastic bags of 1 each

Examples for applications	$\varnothing$ mm	L1 mm	L2 mm	Quantity of teeth TC	Article no.	
Sanitation and heating tubes	30,0	72,0	50,0	4	226 0301	1
Sanitation and heating tubes	35,0	72,0	50,0	4	226 0351	1
Waste, water and heating tubes	40,0	72,0	50,0	4	226 0401	1
Waste, water and heating tubes	50,0	72,0	50,0	6	226 0501	1
Switch boxes	68,0	72,0	50,0	6	226 0651	1
Branch and distribution boxes	82,0	72,0	50,0	6	226 0801	1
Branch, distribution and ventilating tubes	90,0	72,0	50,0	6	226 0901	1
Ventilating tubes	100,0	72,0	50,0	6	226 1001	1

## Accessoires for percussion drill bits

	Article no.	
Center drill with carbide cutting edge $\varnothing$ 8,0 mm total length 120,0 mm	226 200	1
Adaptor with hexagon shank span of jaw 12,0 mm total length 95,0 mm	226 201	1
Adaptor SDS-plus total length 110,0 mm	226 203	1





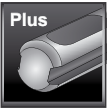
## SDS-plus and SDS-max chisels

Special impact resistant chisel forged in one piece with high surface-hardened.  
Optimum denudation capacity by maximum energy transmission of the hammer drill to the chisel edge.

Applications: for chiseling in concrete, masonry, stone, bricks.  
Suitable for all hammer drills with SDS-plus / SDS-max adaptor and 2-groove adaptor with rotating stop. Eye shield is necessary.

Material: high-quality special steel  
Surface: high capacity of resistance to wear on the basis of special solidification

Packaging: in plastic bags of 1 each



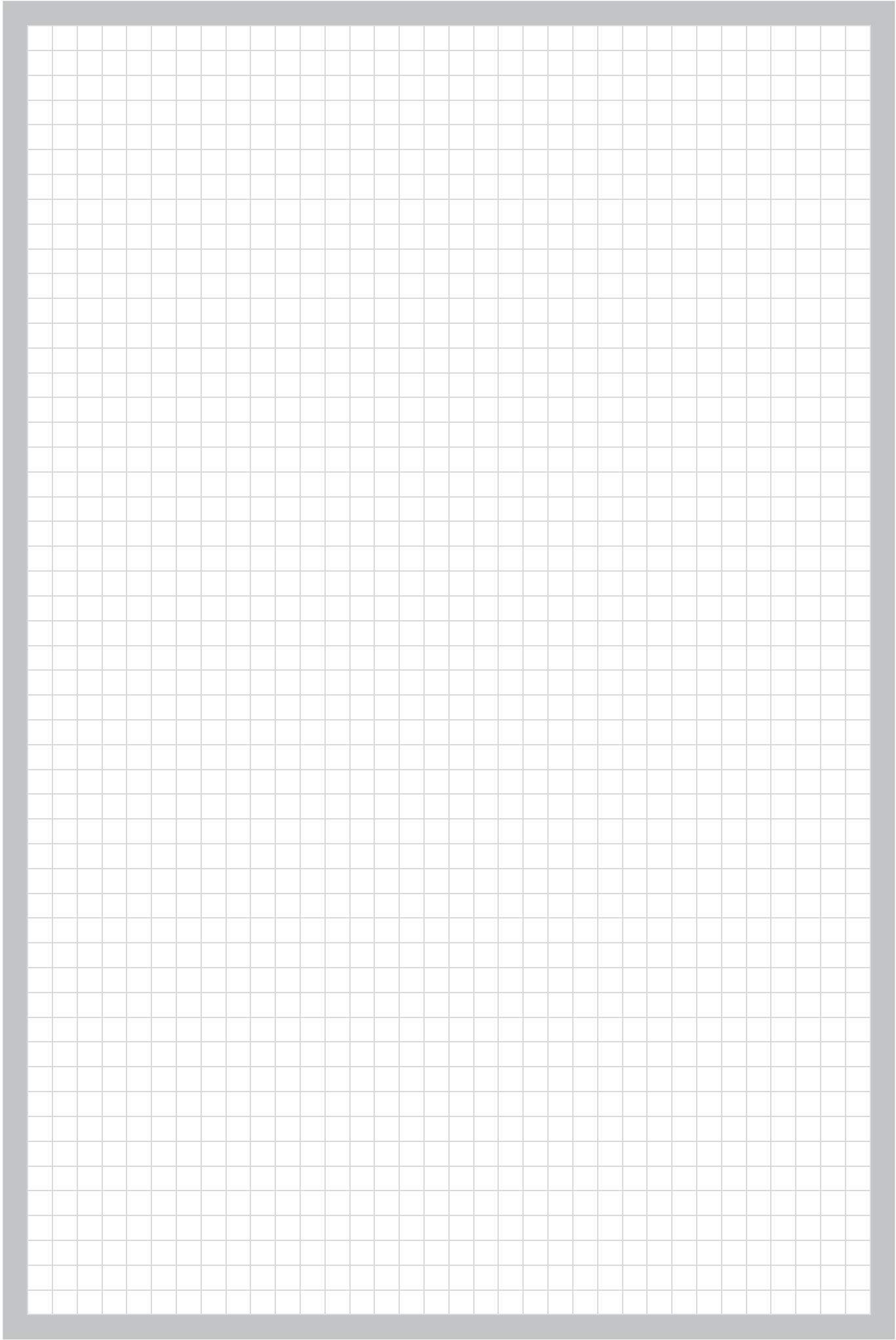
### SDS-plus chisels

	Length L1 mm	Breath B1 mm	Shank Ø mm	Article no.	
Pointed chisel, round version	250,0	-	10,0	227 001	1
Flat chisel	250,0	20,0	-	227 003	1
Spade chisel	250,0	40,0	-	227 004	1
Channel chisel	250,0	22,0	-	227 005	1
Comb chisel	250,0	27,0	-	227 006	1



### SDS-max chisels

	Length L1 mm	Breath B1 mm	Shank Ø mm	Article no.	
Pointed chisel, round version	280,0	-	18,0	227 010	1
Pointed chisel, round version	400,0	-	18,0	227 011	1
Pointed chisel, round version	600,0	-	18,0	227 012	1
Flat chisel	280,0	25,0	-	227 013	1
Flat chisel	400,0	25,0	-	227 014	1
Flat chisel	600,0	25,0	-	227 015	1
Spade chisel	400,0	50,0	-	227 016	1
Spade chisel	300,0	75,0	-	227 017	1
Channel chisel	300,0	26,0	-	227 018	1





# WOOD DRILLS



## Wood drills

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### **Wood twist drills for machines, chrome vanadium steel**

Applications: for drilling in soft wood, hard wood, plywood, hardboards and veneer wood.

### **Twist augers, chrome vanadium steel**

Applications: for drilling in soft wood, hard wood, glue wood, solid wood, face wood and beams.

### **Formwork drills, chrome vanadium steel**

Applications: suitable for all drillings in soft wood, hard wood, thin boards, deal boards, beams, gypsum wallboards, light building boards, insulation and heat insulation materials.





# Overview of symbols



right hand cutting



Shank:  
cylindrical



Plastics



Wood core plywood



Point angle: 118°



Hexagon shank



Hardwoods and  
softwoods



Beams



Shape N:  
Helical point normal  
ground



Shank:  
SDS-Plus



Plywood



Form board



Centre point



Black surface



Chipboard



Insulation materials



≈ DIN 7483 G



bright / black  
surface

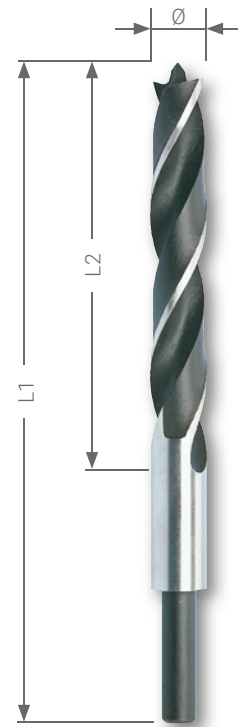





## Wood twist drills for machines - chrome vanadium steel

Highly efficient wood drill made of abrasion-proof chrome vanadium steel. The center point guarantees precise drilling. Exact and non-splintering drilling with the shoulder cutting edges. Ideal suitable for dowel-drillings. Applications: for drilling in soft wood, hard wood, plywood, hardboards and veneer wood.

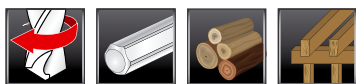
Point cut: center point and 2 shoulder cutting edges



Packing unit: in plastic bags of 1

Ø mm	L1 mm	L2 mm	Article no.	
3,0	61,0	46,0	208 030	1
4,0	73,0	52,0	208 040	1
5,0	86,0	60,0	208 050	1
6,0	91,0	66,0	208 060	1
7,0	107,0	72,0	208 070	1
8,0	116,0	80,0	208 080	1
9,0	124,0	84,0	208 090	1
10,0	132,0	90,0	208 100	1
11,0	132,0	100,0	208 110	1
12,0	150,0	102,0	208 120	1
13,0	152,0	112,0	208 130	1
14,0	159,0	112,0	208 140	1
15,0	167,0	112,0	208 150	1
16,0	168,0	112,0	208 160	1
18,0	184,0	130,0	208 180	1
20,0	200,0	130,0	208 200	1
22,0	200,0	130,0	208 220	1
24,0	200,0	130,0	208 240	1
26,0	200,0	130,0	208 260	1
28,0	200,0	130,0	208 280	1
30,0	200,0	130,0	208 300	1






## Twist augers - chrome vanadium steel

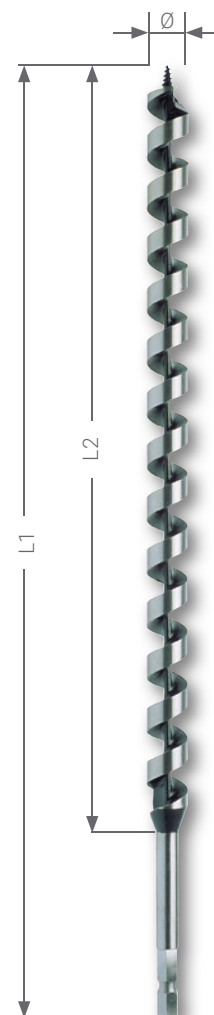
Twist augers made of abrasion-proof chrome vanadium steel. The self-drawing crest of thread guarantees precise drilling. Exact and non-splintering drilling with the taper tap. The hardened head and major cutting edge guarantees high endurance, LEWIS-spiral for an optimum chip clearance. Applications: for drilling in soft wood, hard wood, glue wood, solid wood, face wood and beams.

Point: self-drawing crest of thread with taper tap

Shank: hexagon shank up to span of the jaw maximum 12,0 mm

Packaging: in plastic bags of 1 each

Ø mm	L1 mm	L2 mm	Article no.	
6,0	230,0	160,0	208 406	1
8,0	230,0	160,0	208 408	1
10,0	230,0	160,0	208 410	1
12,0	230,0	160,0	208 412	1
14,0	230,0	160,0	208 414	1
16,0	230,0	160,0	208 416	1
18,0	230,0	160,0	208 418	1
20,0	230,0	160,0	208 420	1
22,0	230,0	160,0	208 422	1
24,0	230,0	160,0	208 424	1
26,0	230,0	160,0	208 426	1
28,0	230,0	160,0	208 428	1
30,0	230,0	160,0	208 430	1
32,0	230,0	160,0	208 432	1
8,0	460,0	360,0	208 508	1
10,0	460,0	360,0	208 510	1
12,0	460,0	360,0	208 512	1
14,0	460,0	360,0	208 514	1
16,0	460,0	360,0	208 516	1
18,0	460,0	360,0	208 518	1
20,0	460,0	360,0	208 520	1
22,0	460,0	360,0	208 522	1
24,0	460,0	360,0	208 524	1
26,0	460,0	360,0	208 526	1
28,0	460,0	360,0	208 528	1
30,0	460,0	360,0	208 530	1
32,0	460,0	360,0	208 532	1
8,0	600,0	530,0	208 608	1
10,0	600,0	530,0	208 610	1
12,0	600,0	530,0	208 612	1
14,0	600,0	530,0	208 614	1
16,0	600,0	530,0	208 616	1
18,0	600,0	530,0	208 618	1
20,0	600,0	530,0	208 620	1
22,0	600,0	530,0	208 622	1
24,0	600,0	530,0	208 624	1
26,0	600,0	530,0	208 626	1
28,0	600,0	530,0	208 628	1
30,0	600,0	530,0	208 630	1
32,0	600,0	530,0	208 632	1






## Formwork drills - chrome vanadium steel

Formwork drills made of abrasion-proof chrome vanadium steel. Big chip flow up to Ø 16,0 mm.

The screwed-in shank guarantees a high running precision. On recommendation of the German Professional Organisation for woodworking it is suitable for all drilling works in the building trade. Applications: suitable for all drillings in soft wood, hard wood, thin boards, deal boards, beams, gypsum wallboards, light building boards, insulation and heat insulation materials.



Packing unit: in plastic bags of 1

Ø mm	L1 mm	L2 mm	Shank	Article no.	
6,0	400,0	67,0	round	208 706	1
8,0	400,0	75,0	round	208 708	1
10,0	400,0	87,0	round	208 710	1
12,0	400,0	100,0	round	208 712	1
14,0	400,0	110,0	round	208 714	1
16,0	400,0	100,0	round	208 716	1
18,0	400,0	100,0	round	208 718	1
20,0	400,0	100,0	round	208 720	1
22,0	400,0	100,0	round	208 722	1
24,0	400,0	100,0	round	208 724	1
26,0	400,0	100,0	round	208 726	1
28,0	400,0	100,0	round	208 728	1
30,0	400,0	100,0	round	208 730	1
8,0	600,0	75,0	round	208 808	1
10,0	600,0	87,0	round	208 810	1
12,0	600,0	100,0	round	208 812	1
14,0	600,0	110,0	round	208 814	1
16,0	600,0	100,0	round	208 816	1
18,0	600,0	100,0	round	208 818	1
20,0	600,0	100,0	round	208 820	1
22,0	600,0	100,0	round	208 822	1
24,0	600,0	100,0	round	208 824	1
26,0	600,0	100,0	round	208 826	1
28,0	600,0	100,0	round	208 828	1
30,0	600,0	100,0	round	208 830	1
8,0	800,0	75,0	round	208 850	1
10,0	800,0	87,0	round	208 851	1
12,0	800,0	100,0	round	208 852	1
14,0	800,0	110,0	round	208 854	1
16,0	800,0	100,0	round	208 856	1
18,0	800,0	100,0	round	208 858	1
20,0	800,0	100,0	round	208 860	1
22,0	800,0	100,0	round	208 862	1
24,0	800,0	100,0	round	208 864	1
26,0	800,0	100,0	round	208 868	1
28,0	800,0	100,0	round	208 870	1
30,0	800,0	100,0	round	208 871	1
10,0	400,0	87,0	SDS-plus	208 910	1
12,0	400,0	100,0	SDS-plus	208 912	1
14,0	400,0	110,0	SDS-plus	208 914	1
16,0	400,0	100,0	SDS-plus	208 916	1
18,0	400,0	100,0	SDS-plus	208 918	1
20,0	400,0	100,0	SDS-plus	208 920	1
22,0	400,0	100,0	SDS-plus	208 922	1
24,0	400,0	100,0	SDS-plus	208 924	1
26,0	400,0	100,0	SDS-plus	208 926	1
28,0	400,0	100,0	SDS-plus	208 928	1
30,0	400,0	100,0	SDS-plus	208 930	1

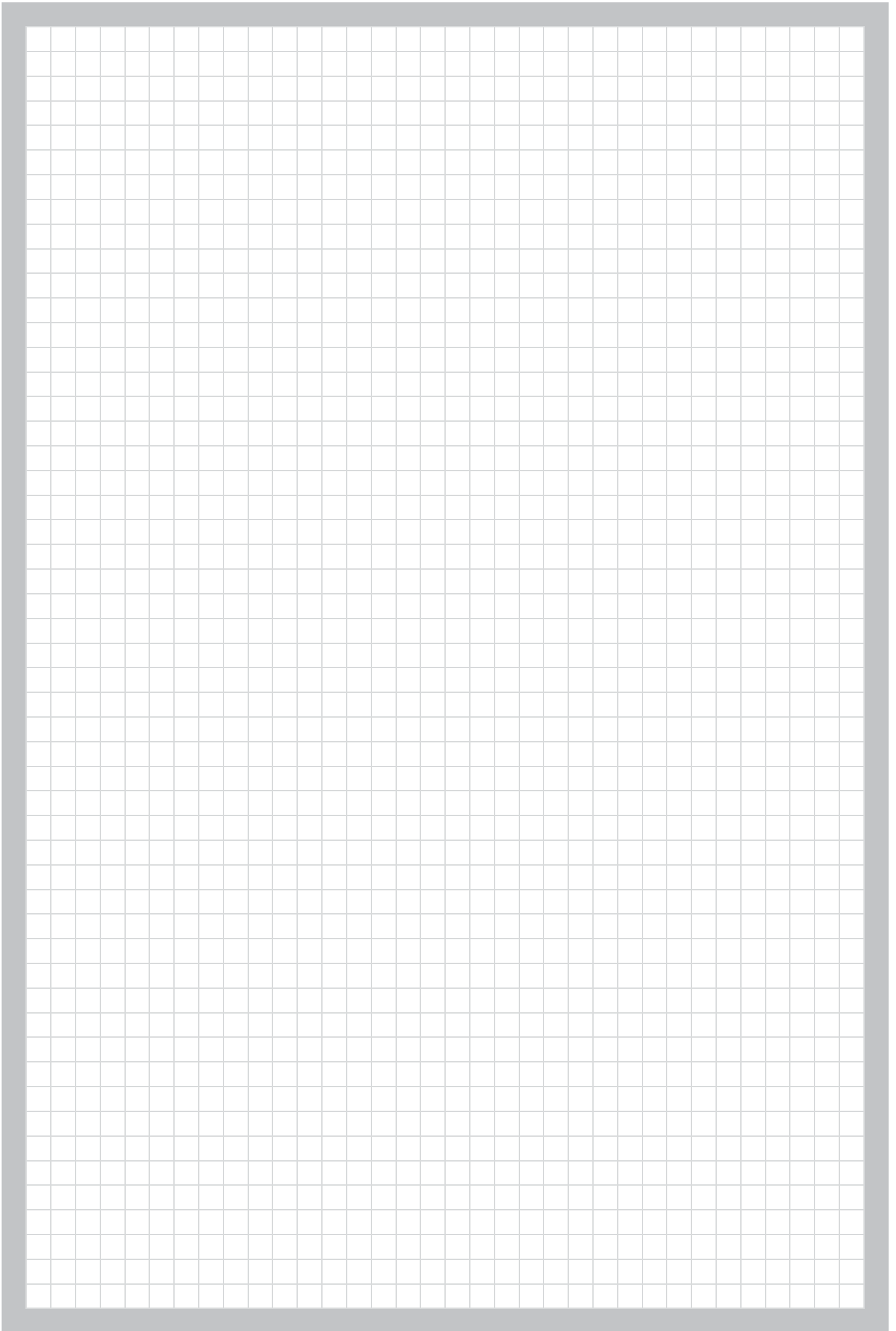


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215 223		55	1	244 101	- 244 110	202	6	270 014 T	- 270 019 T	200	6
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215 850	+ 215 851	64	1	244 163	- 244 174	208	7	271 003 F	- 271 012 F	199	6
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217 1 010	- 217 1 063	82	1	244 208	+ 244 209	209	7	272 120	- 272 240	188	6
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230 020 E	- 230 240 E	158	6	250 801 T	- 250 829 T	65	1	815 214 C / CRO	- 815 215 C / CRO	61	1
230 030 Li	- 230 200 Li	158	6	250 850 T	+ 250 851 T	65	1	R 270 014	- R 270 019	200	6
231 030	- 231 120	168	6	2501 010 T	- 2501 130 T	54	1	R 270 014 T	- R 270 019 T	200	6
231 030 E	- 231 120 E	168	6	2501 214 T / TRO	- 2501 215 T / TRO	54	1	R 270 020	- R 270 021 T	201	6
231 116 NPT	- 231 020 NPT	169	6	251 025	- 251 065	80	1	W 102 313	- W 102 318	140	5
232 020	- 232 100	182	6	252 025	- 252 065	81	1	W 102 313 T	- W 102 318 T	140	5
232 020 E	- 232 100 E	182	6	253 025	- 253 130	66-	67 1	W 102 319	+ W 102 319 T	140	5
232 020 EF	- 232 100 EF	182	6	253 025 F	- 253 130 F	66-	67 1				
232 020 T	- 232 100 T	182	6	254 020	- 254 130	70-	71 1				
232 020 VA	- 232 100 VA	182	6	255 030	- 255 130	70-	71 1				
232 031 E	- 232 300 E	184	6	256 035	- 256 130	70-	71 1				
232 031 EF	- 232 300 EF	184	6	257 491	- 257 583	83	1				
232 031 VA	- 232 300 VA	184	6	258 010	- 258 160	44-	46 1				
232 120	- 232 300	184	6	258 010 F	- 258 160 F	44-	46 1				
232 120 T	- 232 300 T	184	6	258 010 T	- 258 160 T	44-	46 1				





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