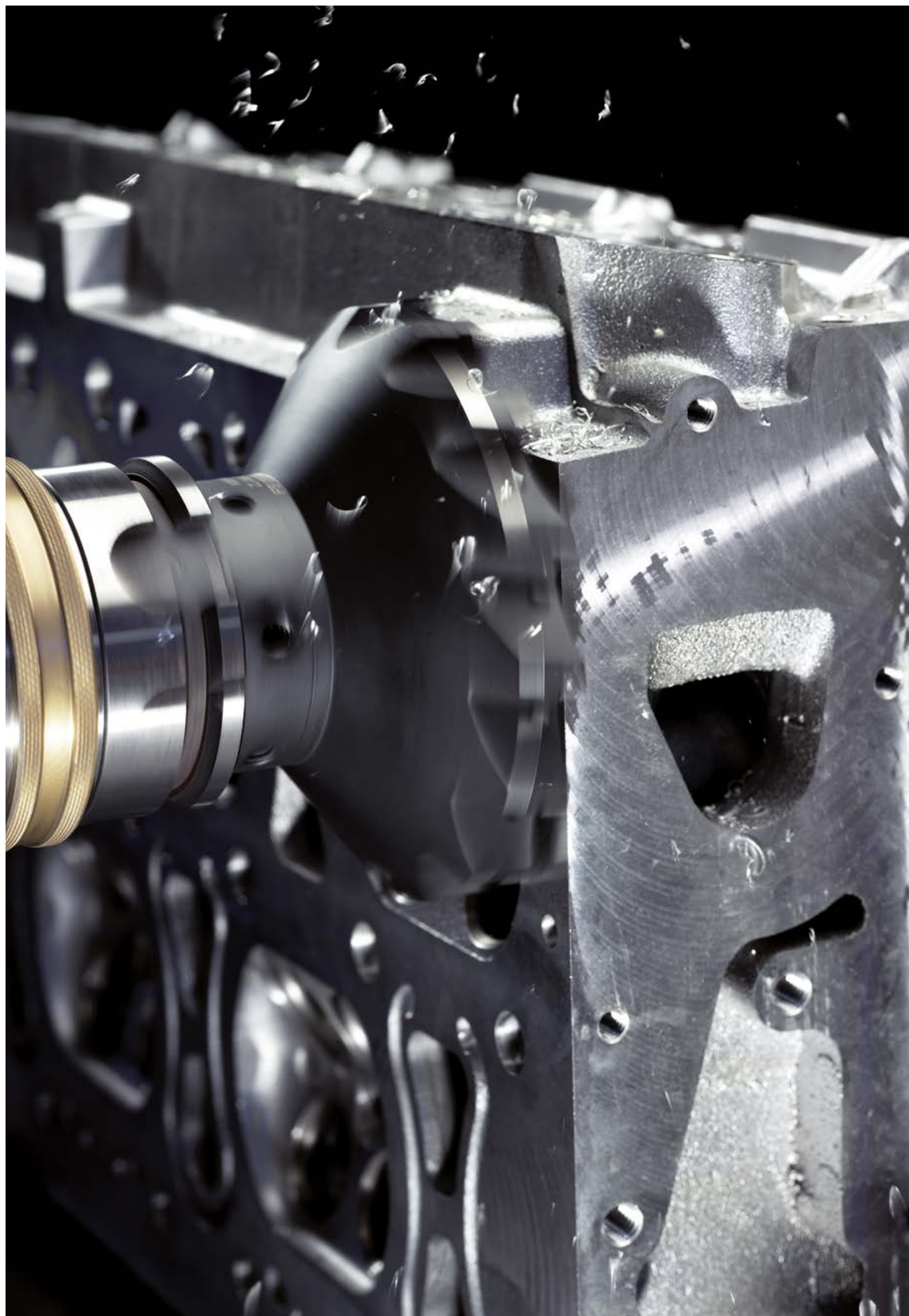


_WALTER PRODUCT-HIGHLIGHTS

Aluminium Tools – extend your possibilities





Aluminium – Standard Program

Catalogue – Turning, Drilling, Threading, Milling

Highlights

NF-Metal ISO N	4
HIPIMS PVD WNN10	5
GX PCD Grooving – WDN10	6
PCD Special Tools	7
DC165 / DC166 Special Tools	8
DC166 Special tool	9
Ramping-Cutter M2131	10
Ramping-Cutter M2331	12
Walter BLAXX slitting cutter F5055	13
PCD Standard Tools	14
Walter Xpress	15
Xpress Cutting – Overview	17

A1 – Turning

ISO-turning	18
Grooving and parting off – cutting inserts	19

B1 – Holemaking

Drilling from solid	35
Boring and precision boring	35

B3 – Threading

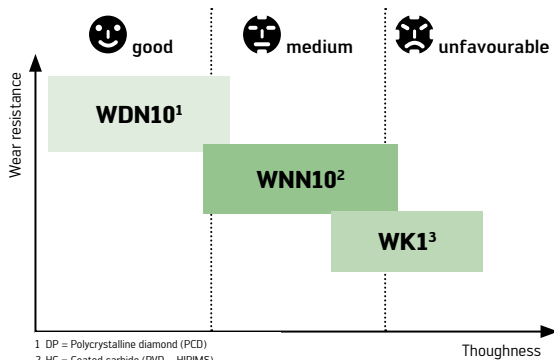
HSS-E (-PM) tapping	44
---------------------	----

C1 – Milling

Solid carbide milling tools	58
Brazed milling tools	59
Milling tools with indexable inserts	60
Indexable inserts for milling	61
Tools and Inserts – Overview	102

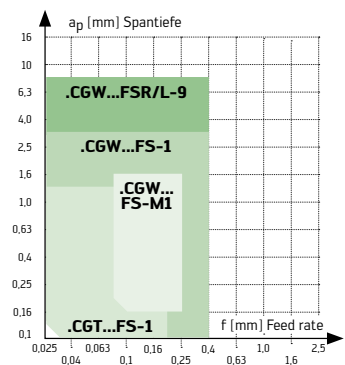
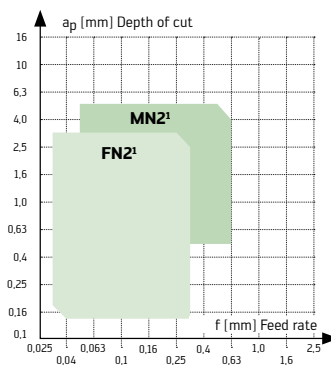
Grades and Geometries

NF-Metal ISO N



Positive basic shape Carbide

Positive basic shape PCD



¹ Circumference fully ground

Walter Indexable Turning

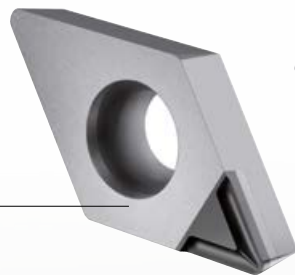
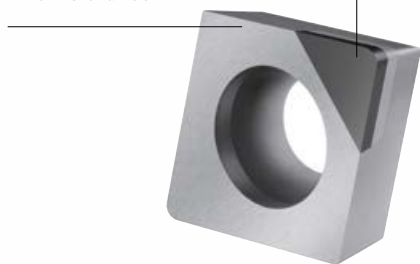
PCD- ISO STANDARD INSERTS – WDN10

Tolerance

- All PCD- inserts are ground in ISO G-Tolerance

Edge preparation

- F Version
- 6-8 μ m edge sharpness



PCD-Substrate

- polycrystalline medium grain size diamond 6-10 μ m
- universal application in ISO N und ISO O material

Large range of application

- 0° rake angle
- 7-10° rake angle
- Chip breaker geometry
- Full-edge tipped

Inserts available:

CCGT..	DCGT..	SCGW..	TCGW..	VCGT..
CCGW..	DCGW..	SPGW..	TPGW..	VCGW..
CPGW..	DPGW..			

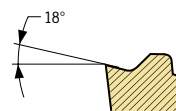
Perfect performance thanks to the new HIPIMS grade

THE GEOMETRIES

FN2 – Positive indexable inserts for finishing ISO N:

- Finishing insert with circumference fully ground
- For low cutting forces
- Polished rake face
- For long, small-diameter shafts with a tendency to vibrate

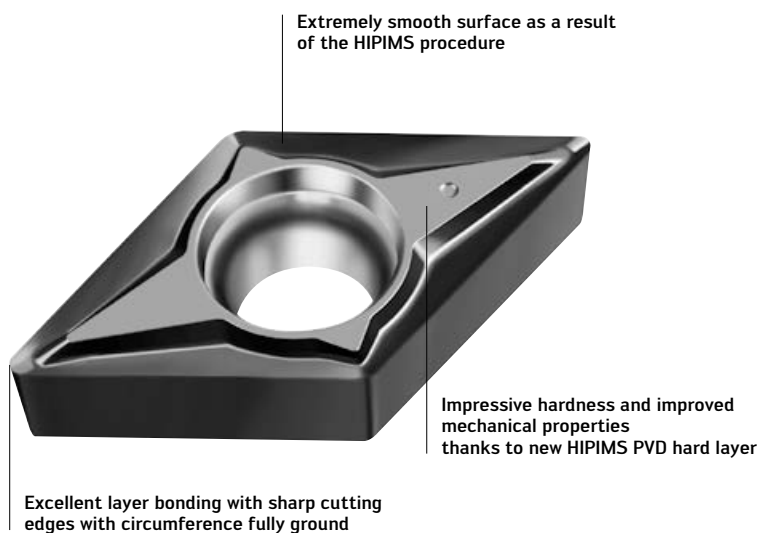
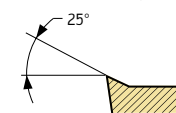
Main cutting edge



MN2 – Positive indexable inserts for medium machining of ISO N:

- Can be used universally for non-ferrous metal
- Sharp cutting edge with circumference fully ground
- Polished rake face
- Precision finishing on steel and stainless materials

Main cutting edge



Grade: WNN10

Fig.: FN2 geometry

BENEFITS FOR YOU

- Excellent surface quality and dimensional accuracy
- High process reliability thanks to the new WNN10 grade
- No layer flaking and even wear due to excellent layer bonding
- Longer tool life on materials with a tendency to stick (adhesion) thanks to improved surface roughness

THE APPLICATION

Primary application

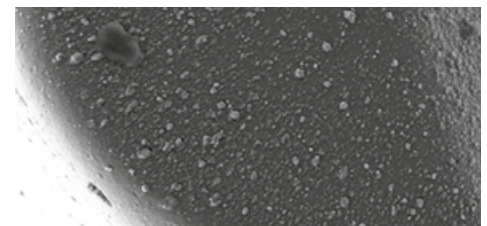
- Finishing and roughing of:
 - ISO N alloys
 - Aluminium-based alloys (e.g. 3.2382, AlSi10Mg(Fe))
 - Copper-based alloys (e.g. 2.0265, CuZn30)
 - Magnesium-based alloys (e.g. 3.5200, MgMn2)

Secondary application

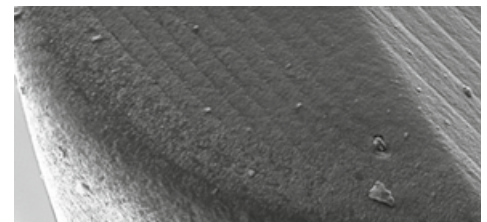
- Fine finishing of small components made from:
 - ISO P (steel)
 - ISO M (stainless steels)
 - ISO S (high-temperature alloys)
- Finishing and roughing of:
 - ISO O (thermosets and thermoplastics)

SURFACE COMPARISON:

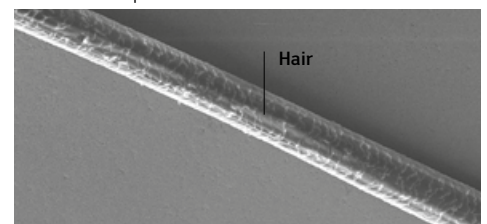
Standard PVD process: Increased droplet formation



HIPIMS PVD process (WNN10): Extremely smooth surface



HIPIMS surface and structure of a hair as a direct comparison



Efficient grooving in aluminium and titanium alloys

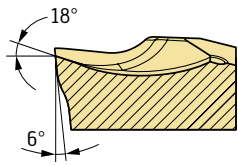
THE INDEXABLE INSERT

- Straight and full-radius grooving inserts
- Efficient, laser-generated chip formation for reliable grooving
- Insert widths from 2–8 mm

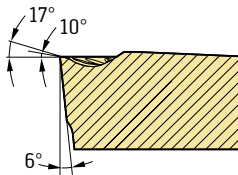
THE APPLICATION

- Parting off, grooving and recessing
- Areas of use: Aerospace industry, medical engineering, automotive industry
- Threaded aluminium joints, parting off, rim-base machining on aluminium wheels
- Parting off titanium bone screws

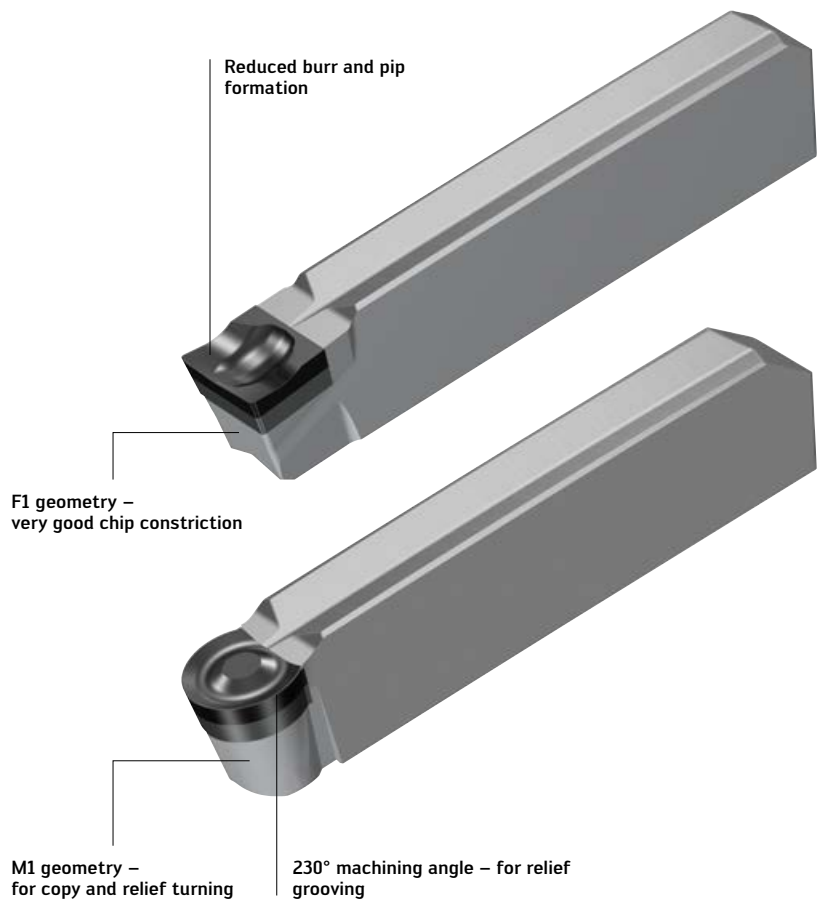
THE LASER-GENERATED PCD GEOMETRIES



- F1 geometry for grooving and parting



- M1 geometry for grooving and copy turning



GX grooving inserts

Fig.: GX24-3F400N02FS-F1 WDN10, GX24-3F400N20FS-M1 WDN10

BENEFITS FOR YOU

- High cutting speeds and long tool life
- Maximum process reliability through laser-generated chip formation geometry
- Maximum surface quality and constantly high quality

Walter PCD – Special tools for every application

Walter PCD – Special Tools

THE TOOL

- Tools with steel body
- Tools with solid carbide body
- Monobloc tools
- Step tools and combination tools with high complexity
- Tool length up to 444 mm depending on adaption
- Maximum cutting diameter D_c up to Ø 300 mm (SC body up to Ø 25 mm)



Chip breakers for long chipping materials

The example shows a PCD combination tool D4140 with Drill insert and long PCD cutting edges (46 mm) including a chip breaking geometry for better chip control.



Walter PCD combination tool



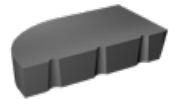
Without Chip Breaker



With Chip Breaker

PCD Chip Splitter

Chip splitters are mainly used with wide cutting edges. With this kind of geometry, the chips get split into a smaller width, especially in spot facing operations or in milling operations with very long axial cutting edges.



PCD Chip former

Chip formers can be applied for alloys with a specific silicon content. The typical long chips get formed into shorter chips. Chip formers provide softer cutting and reduce the cutting forces.



PCD Chip Breaker

Chip breakers are usually applied in aluminum wrought alloys. In these alloys, chip breakers are used to turn long chips into shorter chips.



BENEFITS FOR YOU

- Highly productive special solutions
- Special design for the use of emulsion or MQL
- Newest laser technology for highly precise cutting edges and lasered chip breakers
- Chip, chip former and chip breaker for challenging applications
- Reconditioning available

Xpress Drilling

DC165 / DC166

THE TOOL DC165

- Solid Carbide Drill
- Straight fluted
- Internal Coolant Supply
- Polished chipflutes and polished clearance angle
- Point angle 120° to 140° or Form E
- Diameter range 3 to 20 mm
- Stepdrills up to 3 Steps
- Length up to 8 x D_c
- NHC coating available

THE APPLICATION

- ISO material Group N
- Suitable for emulsion
- Areas of use: Automotive industries, general mechanical engineering, energy industries, medical, aerospace industries



Description

DC165	cylindrical, straight flute
DC265	Drill with chamfer, straight flute
DC365	Stepdrill, straight flute

THE TOOL DC166

- Solid Carbide Drill
- Helical flutes
- Internal Coolant Supply
- Polished chipflutes and polished clearance angle
- Point angle 120° to 140° or Form E
- Diameter range 3 to 20 mm
- Stepdrills up to 3 Steps
- Length up to 8 x D_c
- NHC coating available

THE APPLICATION

- ISO material Group N
- Suitable for emulsion
- Areas of use: Automotive industries, general mechanical engineering, energy industries, medical, aerospace industries



Description

DC166	cylindrical, helical flute
DC266	Drill with chamfer, helical flute
DC366	Stepdrill, helical flute

Superior productivity in all types of aluminium alloys

THE TOOL

- DC166 solid carbide high-performance drill with internal coolant
- Dia. 4–20 mm drilling depth up to $30 \times D_c$
- Step drill with up to three steps
- Uncoated or NHC-Tip-coated, polished flutes and face
- Special tools in line with customer's requirements

THE APPLICATION

- ISO material group N
- Cast aluminium and wrought alloys
- Can be used with emulsion or MQL
- Areas of use: Automotive industry, general mechanical engineering, components with large batch sizes
- Deep-hole drilling up to $30 \times D_c$

Also available from:

Walter Xpress



DC166 solid carbide step drill

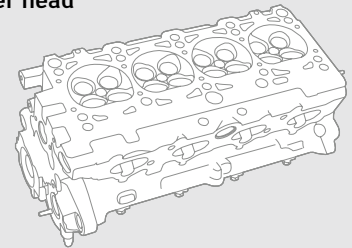
Fig.: Ø 9/16 mm

BENEFITS FOR YOU

- Customer-specific version adapted to the application
- Up to 30% higher feed rate for maximum productivity
- High process reliability thanks to reliable chip removal
- For cast aluminium and wrought alloys

APPLICATION EXAMPLE

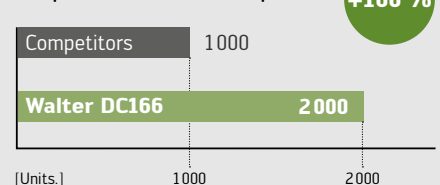
Cylinder head



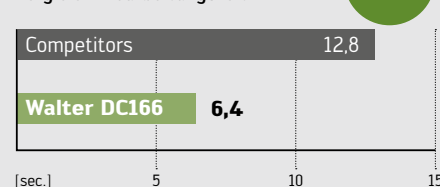
Material: AlSi10MgCu
Tool: DC166 step drill, dia. Ø 9/16 mm
Drilling depth: 60 mm
Drilled holes per workpiece: 16

	Competitors	Walter DC166
v_c (m/min)	753	753
n (min ⁻¹)	15 000	15 000
f_u (mm)	0,3	0,6
v_f (mm/min)	4 500	9 000

Comparison: Number of workpieces



Vergleich: Bearbeitungszeit



Walter M2131 ramping cutter: Benchmark for aluminium wrought alloy in the aircraft industry

THE TOOL

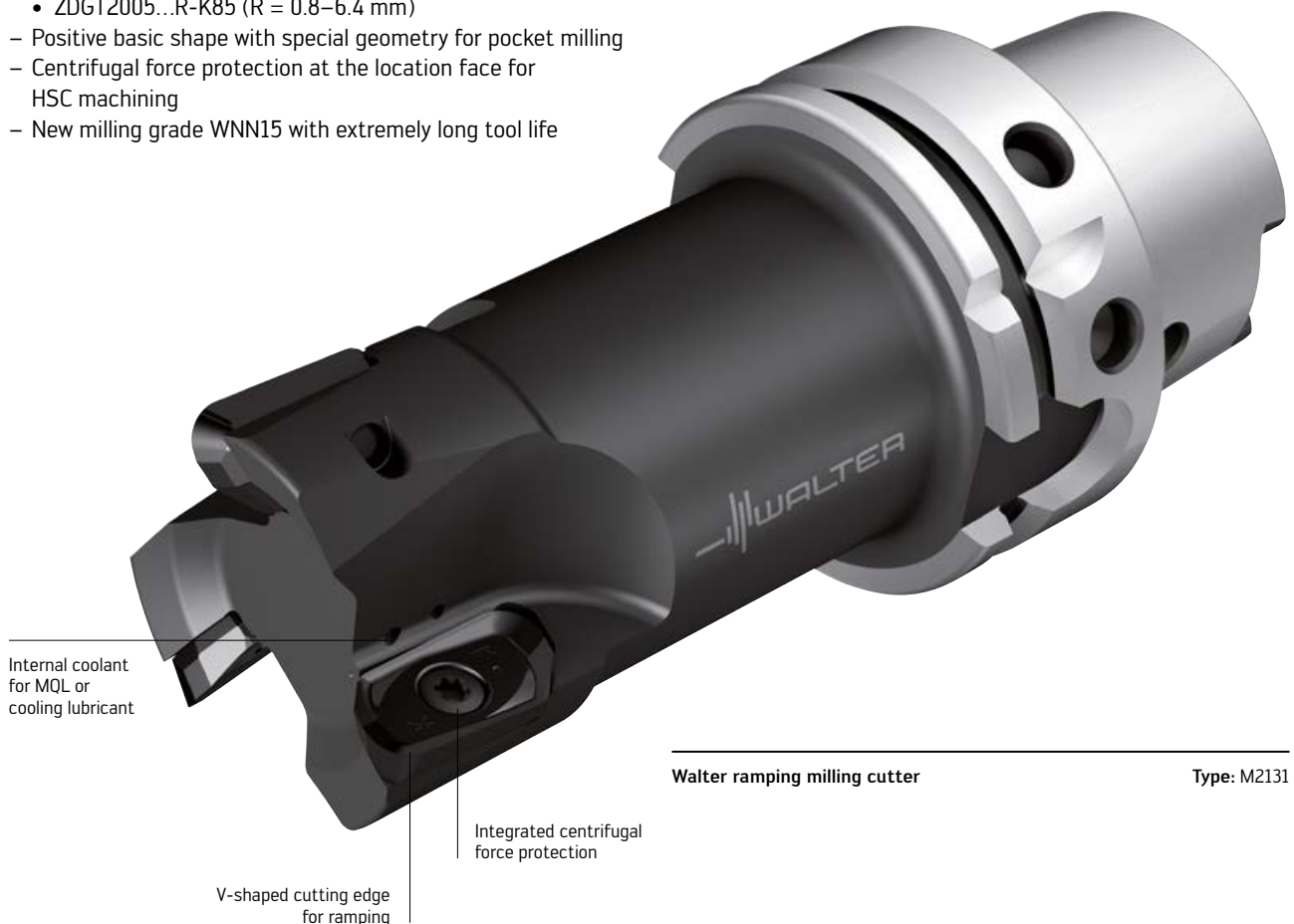
- 90° ramping cutter for HSC milling
- Maximum cutting depth 15 mm or 20 mm
- Diameter 25–80 mm or 1–3"
- High level of radial runout accuracy
- Finely balanced basic body
- With different interfaces such as HSK, ScrewFit, parallel shank or bore adaption

THE INDEXABLE INSERTS

- Two sizes of indexable insert with various corner radii
 - ZDGT1504 ...R-K85 (R = 0.4–4.0 mm)
 - ZDGT2005...R-K85 (R = 0.8–6.4 mm)
- Positive basic shape with special geometry for pocket milling
- Centrifugal force protection at the location face for HSC machining
- New milling grade WNN15 with extremely long tool life

THE APPLICATION

- For machining non-ferrous metals (ISO N) such as aluminium wrought alloys or aluminium lithium alloys
- Machining of structural components in aircraft construction
- Rough milling and semi-finishing of pockets with high chip volume

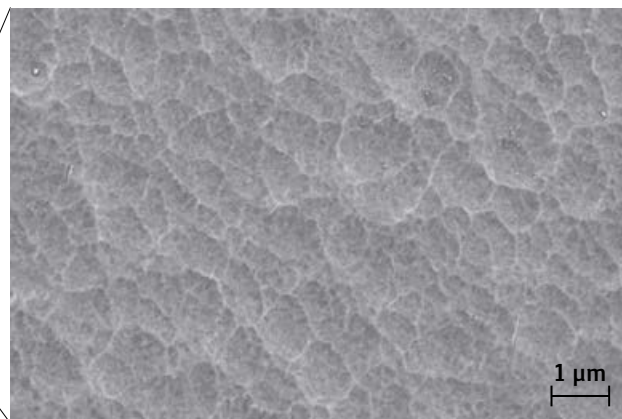


BENEFITS FOR YOU

- High level of process reliability even at maximum speeds thanks to centrifugal force protection
- Short machining time due to maximum metal removal rate
- Long tool life thanks to low formation of build-up on the cutting edge



DETAIL OF THE RAKE FACE

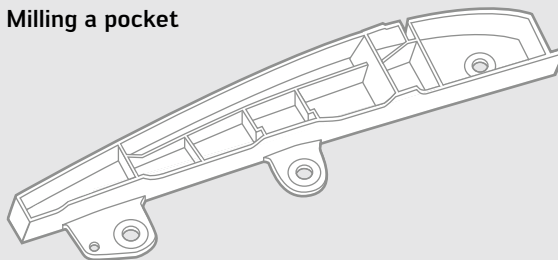


Extremely smooth surface of the WNN15 grade

Walter ISO N indexable insert

Type: ZDGT

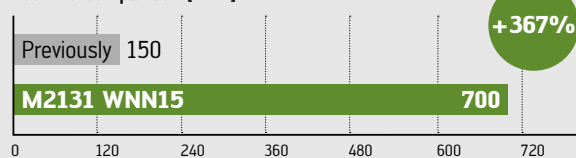
Milling a pocket



Material: Aluminium 7075
Tool: M2131 / Z=3 / Ø 50 mm
Insert: ZDGT200540R-K85
Cutting material: WNN15
Cooling medium: Emulsion

Cutting data:		Previously	WNN15
v_c		2 356 m/min	2 356 m/min
n		15 000 rpm	15 000 rpm
f_z		0.20 mm	0.20 mm
v_f		9 000 mm/min	9 000 mm/min
a_e		42 mm	42 mm
a_p		9 mm	9 mm

Tool life comparison [min.]



Machine specialist for wrought aluminium alloys

THE TOOL

- M2331 90° ramping milling cutter for HSC milling
- Maximum depth of cut 15 mm or 20 mm
- Dia. 32–50 mm or 1.5–2"
- High concentricity
- Finely balanced basic body
With different interfaces such as HSK for Makino machines, ScrewFit or bore adaption
- Extremely high speeds are possible

THE APPLICATION

- Non-ferrous metals (ISO N) such as wrought aluminium alloys or aluminium-lithium alloys
- Machining of structural components in aircraft construction
- Rough milling and semi-finishing of pockets with high chip volume
- Can be used at extremely high speeds (e.g. for $D_c = 50$ mm; $n = 33,000$ rpm)

THE INDEXABLE INSERTS

- Two indexable insert sizes with various corner radii
ZDGT15A4...R-K85 ($r = 0.4\text{--}4.0$ mm)
ZDGT20A5...R-K85 ($r = 0.8\text{--}6.4$ mm)
- Positive basic shape with special geometry for pocket milling
- Centrifugal force protection at the location face for HSC machining
- Indexable inserts in grade WMG40



Walter ramping cutter

Fig.: M2331

BENEFITS FOR YOU

- High level of process reliability even at maximum speeds thanks to centrifugal force protection
- Short machining times thanks to maximum metal removal rate
- Long tool life due to minimised build-up on the cutting edge
- Machine-specific variants of milling cutters are available (Makino)

Reliable cutting off and slitting – in aluminium

NEW ADDITION TO THE PRODUCT RANGE

- Indexable insert with new SK8 geometry – aluminium machining at its sharpest
- Uncoated grade: WK1
- Low cutting forces due to sharp cutting edge

THE INDEXABLE INSERTS

- Single-edged indexable insert
- Cutting widths:
1.5 / 2.0 / 3.0 / 4.0 / 5.0 mm
- Available with CE4, SF5, CE6 and SK8 geometries

THE APPLICATION

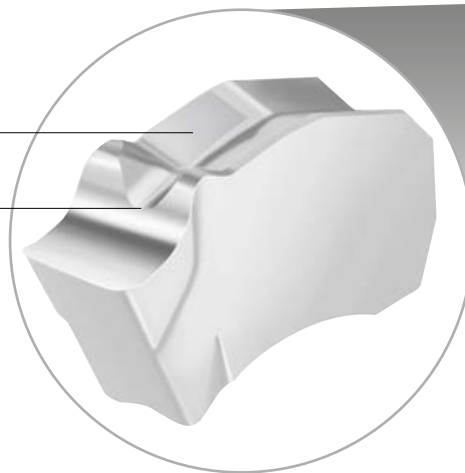
- Cutting off and slitting of aluminium
- Areas of use: General mechanical engineering, automotive industry, aerospace industry, etc.

THE TOOL

- Walter BLAXX F5055 slitting cutter
- Diameter range 63–250 mm
- Positive, self locking insert clamping in the body - easy to use
- Optimised top clamp with extremely high retaining forces

Prism-shaped
insert support face

Compatible with
SX grooving system



Walter BLAXX

Walter SX indexable insert

Fig.: SX-...SK8..

BENEFITS FOR YOU

- Optimal process reliability as the machining force is introduced into the most rigid part of the insert seat
- High level of radial and axial runout accuracy
- User-friendly indexable insert self-clamping system
- Low inventory costs thanks to universal system inserts (can be used in slitting cutters and groove turning holders)

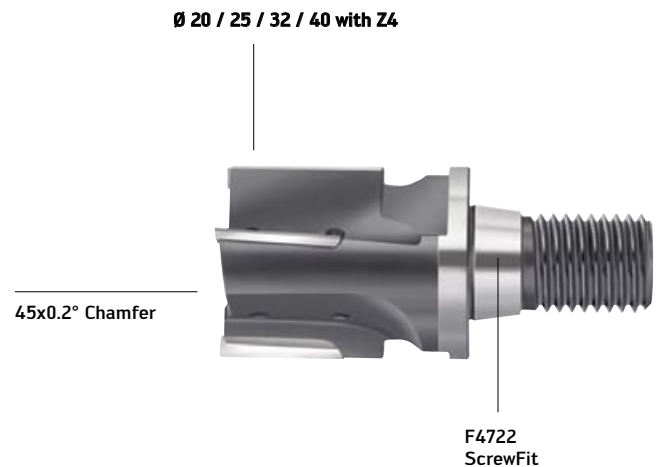
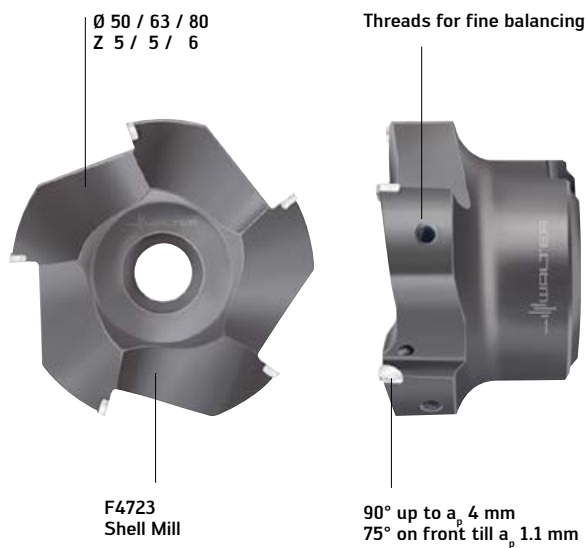
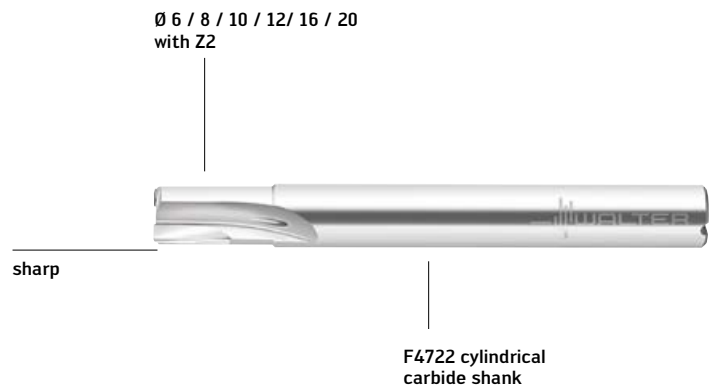
Powered by
Tiger-tec[®]Silver

Walter PCD – Solutions with perfect performance

Walter PCD – Standard Tools

THE TOOL

- Standard PCD- milling cutters
- SC cylindrical shank Z2 up to Ø20
- ScrewFit Adaption Z4 up to Ø40
- Shell mill Z5/Z6 up to Ø80 mm
- all tools with internal coolant

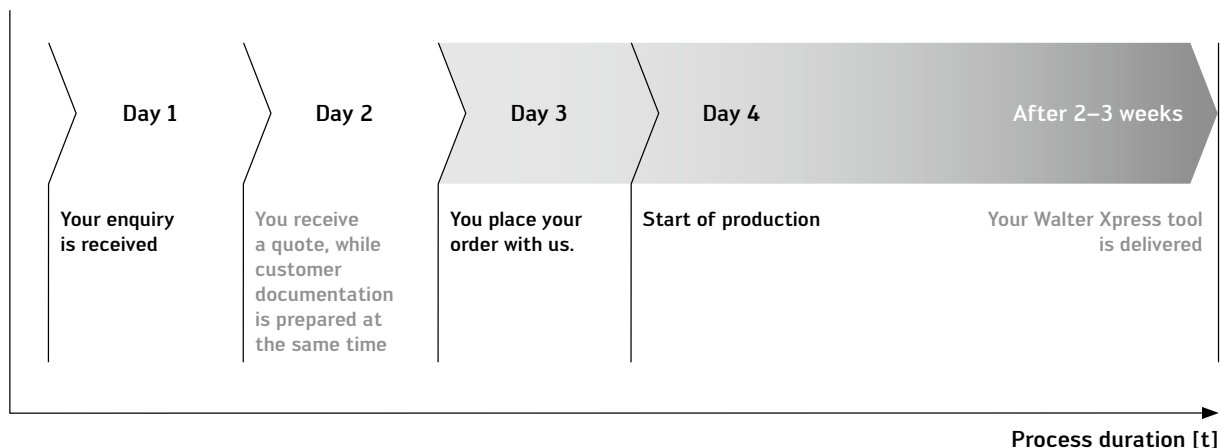


BENEFITS FOR YOU

- Highest productivity and tool life
- Highest precision – brazed and lasered cutting edges
- Available on stock
- Reconditioning Service

Walter Xpress – Delivery Service Efficiency and Economy

Customised special tools let you perform multiple operations with a single tool.
This enables you to forgo unproductive tool changes and streamline your entire machining process.



OPTIMISE YOUR PROCESS

Special tools let you perform multiple machining operations with a single tool

Let's assume you have a particular machining task. Even before you start work, Walter will determine an approach to the solution that will optimise your process. Whereas previously, for example, you needed a drill and chamfering tool, you can now work much more efficiently by carrying out both operations using a single tool. This is because both machining operations are combined within the tool. The advantage for you? Your process becomes significantly more streamlined.

More integrated operations means more efficiency

Performing more than one operation with one and the same tool – that's the logical conclusion of our all-encompassing understanding of how processes work. Our objective is to organise your processes in a way that are demonstrably more efficient.

Minimise set-up times and downtimes

You too can reduce non-productive time during machining operations. Combining individual steps reduces the number of tool changes and enables simultaneous machining operations. The result? Your productivity increases.

MAXIMUM DELIVERY TIME OF 3 WEEKS

Reduce the number of tools you have in circulation

The name itself says it all. Walter Xpress stands out thanks to extremely short delivery times. For you, this means that no later than three weeks after placing your order – and usually far sooner – you will receive custom-designed tools from the Walter Xpress tool range. This helps keep your tool inventories low and reduces the amount of capital you have tied up.

Save hard cash with Walter Xpress

Walter Xpress is fast, efficient and individually designed. These are qualities through which – depending on the number of machining operations – you can make enormous savings in comparison to conventional machining strategies.

Make use of the time for your core area of expertise

Increasing your productivity with Walter Xpress gives you a remarkable degree of freedom. The time you gain can be used to obtain considerable leverage, if you decide to use it for your core areas of expertise, for example.

Reap the benefits even before delivery

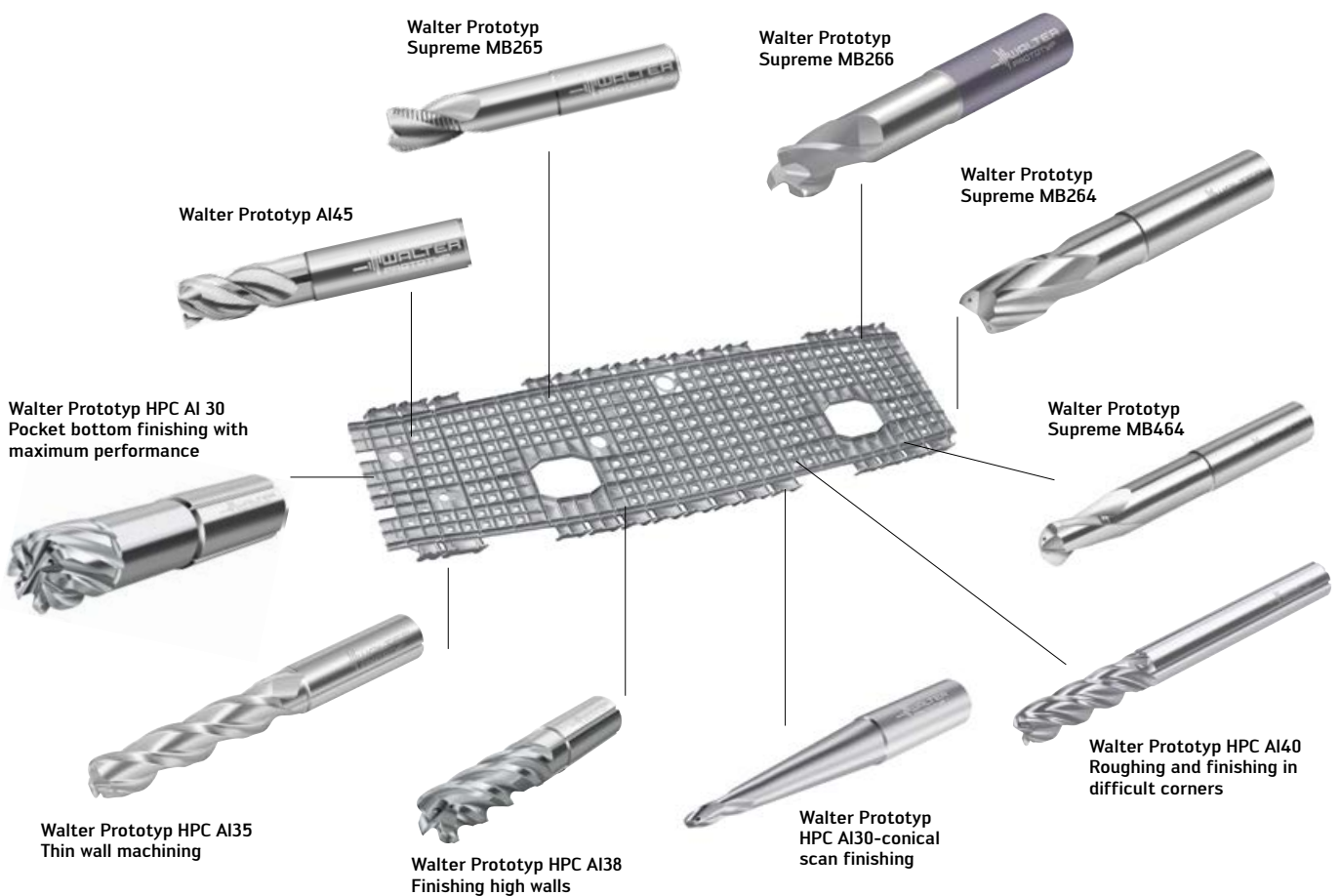
With Walter Xpress, you benefit from an extremely high degree of certainty when planning – right from the very start. That's because all of the detailed information is available as soon as the quote is provided.

Walter Xpress

Simple design – fast delivery

APPLICATION

For non ferrous metals according to ISO N in this application specifically for Aluminium machining. Specialized and customized tools for roughing, finishing, universal and 5 axis machining. The main industry sector suitable for this range of tools is Aerospace but also excellent in the application area of Automotive and general engineering.



BENEFITS FOR YOU

- Standardized geometries
- Short delivery 2-3 weeks
- Highest productivity, because of customized tools for your application

Xpress Milling ISO N – Tool Overview

	Tool	Z	Dc	Use
	MB265	3	6-25 1/4" – 1"	– Roughing – Full Slotting 1,5xDc – Internal coolant
	MB266	3	6-25 1/4" – 1"	– Roughing and finishing – Universal tool – Full slotting 1xDc – Internal coolant
	MB264	2	5-25 3/16" – 1"	– Roughing and finishing – Unstable conditions – Difficult corners – Full Slotting 1,5-2xDc – Internal coolant
	AI45	2-4	6-25 1/4" – 1"	– Roughing and finishing – Universal tool – Full slotting 1,5xDc – External coolant
	MB464	2	6-25 1/4" – 1"	– Roughing and finishing – Scan milling – Internal coolant
	AL30 Conical	2		– Scan finishing 5 axis operations – Scan finishing special form features
	AI30	6-8	12-25 1/2" – 1"	– Finishing thin bottom pockets
	AI35	3	6-25 1/4" – 1"	– Long edge finishing – Up to 5xDc – Thin wall machining – Higher core thickness – No center cutting edge
	AI38	4	6-25 1/4" – 1"	– Long edge wall finishing – Thin wall machining
	AI40	4	5-20 3/16" – 3/4"	– Roughing and finishing – Difficult corners – Long edge finishing – Full slotting 1xDc – Internal coolant

Product range overview of indexable inserts and cutting tool materials: ISO-turning – Carbide



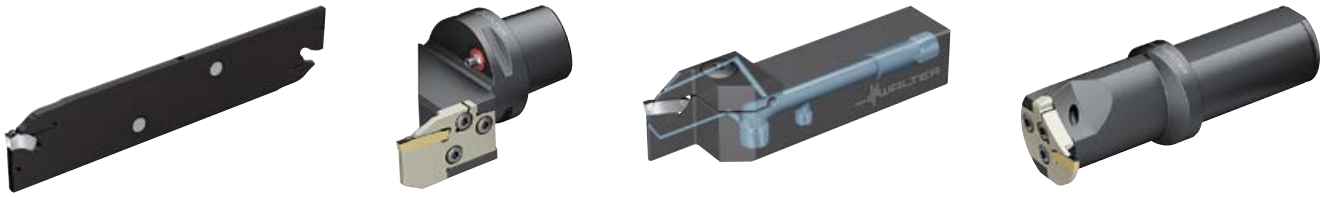
Indexable inserts

Insert shape	Description	Page
  C	Positive basic shape 7°	20
	Positive basic shape 7° - PCD	26
  D	Positive basic shape 7°	21
	Positive basic shape 7° - PCD	27
 R	Positive basic shape 7°	22
 S	Positive basic shape 7°	22
	Positive basic shape 7° / 11° - PCD	29
 T	Positive basic shape 7°	23
	Positive basic shape 7° / 11° - PCD	30
 V	Positive basic shape 5° / 7°	24
	Positive basic shape 7°	31
  W	Positive basic shape 7°	25

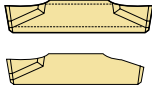
Cutting tool materials: Carbide

		Application range									
Application	Coating	01	05	10	15	20	25	30	35	40	45
ISO P	CVD	WPP01									
	CVD	WPP05S									
	CVD	WPP10S									
	CVD	WPP20S									
	CVD	WMP20S									
	CVD	WPP30S									
	CVD	WKP30S									
ISO M	PVD	WSM10S									
	CVD	WMP20S									
	PVD	WSM20S									
	PVD	WSM21									
	PVD	WSM30S									
ISO K	CVD	WKK10S									
	CVD	WKK20S									
	CVD	WKP30S									
ISO N	PVD	WNN10									
	—	WK1									
ISO S	PVD	WSM10S									
	—	WS10									
	PVD	WSM20S									
	PVD	WSM21									
	PVD	WSM30S									
		Wear resistance Toughness									

Product range overview of indexable inserts and cutting tool materials: Grooving



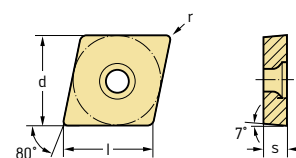
Indexable inserts

Insert shape	Description	Page
Parting off/grooving		
 GX	Walter Cut GX-grooving inserts Double-edged/ single-edged	32
 SX	Walter Cut SX-grooving inserts single-edged	34
Recessing		
 GX	Walter Cut GX-grooving inserts single-edged	33

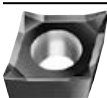
Cutting tool materials: Carbide

		Application range									
Application	Coating	01		10		20		30		40	
		05	15	25	35	45					
ISO P	CVD	WKP13S									
	CVD		WKP23S								
	CVD			WKP33S							
	PVD		WSM23S								
	PVD			WSM33S							
	PVD				WSM43S						
ISO M	PVD	WSM13S									
	PVD		WSM23S								
	PVD			WSM33S							
	PVD				WSM43S						
ISO K	CVD	WKP13S									
	CVD		WKP23S								
	CVD			WKP33S							
ISO N	—	WK1									
ISO S	PVD	WSM13S									
	PVD		WSM23S								
	PVD			WSM33S							
	PVD				WSM43S						
		← Wear resistance Toughness →									

Positive rhombic 80° CCGT



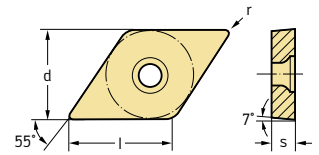
Indexable inserts

	Designation	l mm	r mm	f mm	a _p mm	P				M				K		N			S		
						HC				HC				HC		HC	HW		HC		
						WPP10S	WPP20S	WPP30S	WMP20S	WMP20S	WSM10S	WSM20S	WSM30S	WKK10S	WKK20S	WNN10	WXN10	WK1	WSM10S	WSM20S	WSM30S
	CCGT060202-PF2	6.45	0.2	0.05–0.12	0.2–2.0																
	CCGT060204-PF2	6.45	0.4	0.08–0.25	0.2–2.5																
	CCGT09T302-PF2	9.67	0.2	0.05–0.12	0.2–2.0																
	CCGT09T304-PF2	9.67	0.4	0.08–0.25	0.2–2.5																
	CCGT09T308-PF2	9.67	0.8	0.10–0.30	0.3–3.0																
	CCGT120404-PF2	12.90	0.4	0.08–0.25	0.2–3.0																
	CCGT120408-PF2	12.90	0.8	0.10–0.30	0.3–3.5																
	CCGT060201-FN2	6.45	0.1	0.02–0.06	0.1–1.5																
	CCGT060202-FN2	6.45	0.2	0.05–0.12	0.2–2.0																
	CCGT060204-FN2	6.45	0.4	0.08–0.25	0.2–2.5																
	CCGT09T301-FN2	9.67	0.1	0.02–0.06	0.1–1.5																
	CCGT09T302-FN2	9.67	0.2	0.05–0.12	0.2–2.0																
	CCGT09T304-FN2	9.67	0.4	0.08–0.25	0.2–2.5																
	CCGT09T308-FN2	9.67	0.8	0.10–0.30	0.3–3.0																
	CCGT120404-FN2	12.90	0.4	0.08–0.25	0.2–3.0																
	CCGT120408-FN2	12.90	0.8	0.10–0.30	0.3–3.5																
	CCGT060201-PM2	6.45	0.1	0.02–0.06	0.5–1.5																
	CCGT060202-PM2	6.45	0.2	0.05–0.12	0.5–2.0																
	CCGT060204-PM2	6.45	0.4	0.08–0.25	0.6–3.0																
	CCGT09T301-PM2	9.67	0.1	0.02–0.06	0.5–1.5																
	CCGT09T302-PM2	9.67	0.2	0.05–0.12	0.5–2.0																
	CCGT09T304-PM2	9.67	0.4	0.08–0.25	0.6–4.0																
	CCGT09T308-PM2	9.67	0.8	0.10–0.35	0.8–4.0																
	CCGT120402-PM2	12.90	0.2	0.05–0.12	0.5–2.0																
	CCGT120404-PM2	12.90	0.4	0.08–0.25	0.6–5.0																
	CCGT060201-MN2	6.45	0.1	0.02–0.06	0.5–1.5																
	CCGT060202-MN2	6.45	0.2	0.05–0.12	0.5–2.0																
	CCGT060204-MN2	6.45	0.4	0.08–0.25	0.6–3.0																
	CCGT09T301-MN2	9.67	0.1	0.02–0.06	0.5–1.5																
	CCGT09T302-MN2	9.67	0.2	0.05–0.12	0.5–2.0																
	CCGT09T304-MN2	9.67	0.4	0.08–0.25	0.6–4.0																
	CCGT09T308-MN2	9.67	0.8	0.10–0.35	0.8–4.0																
	CCGT120402-MN2	12.90	0.2	0.05–0.12	0.5–2.0																
	CCGT120404-MN2	12.90	0.4	0.08–0.25	0.6–5.0																
	CCGT120408-MN2	12.90	0.8	0.10–0.35	0.8–5.0																

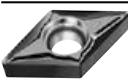
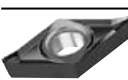
See the ISO 1832 designation key for dimensions

 HC = coated carbide
 HW = uncoated carbide

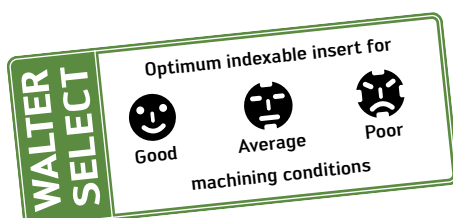
Positive rhombic 55° DCGT



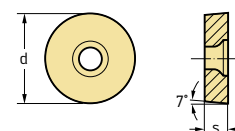
Indexable inserts

	Designation	l mm	r mm	f mm	a _p mm	P				M				K		N			S		
						HC				HC				HC		HW			HC		
						WPP10S	WPP20S	WPP30S	WMP20S	WMP20S	WSM10S	WSM20S	WSM30S	WKK10S	WKK20S	WNN10	WXN10	WK1	WSM10S	WSM20S	WSM30S
	DCGT070202-PF2	7.75	0.2	0.05–0.12	0.2–2.0														☺		
	DCGT070204-PF2	7.75	0.4	0.08–0.25	0.2–2.5														☺		
	DCGT11T302-PF2	11.63	0.2	0.05–0.12	0.2–2.0														☺		
	DCGT11T304-PF2	11.63	0.4	0.08–0.25	0.2–2.5														☺		
	DCGT11T308-PF2	11.63	0.8	0.10–0.30	0.3–3.0														☺		
	DCGT070201-FN2	7.75	0.1	0.02–0.06	0.1–1.5											☺					
	DCGT070202-FN2	7.75	0.2	0.05–0.12	0.2–2.0											☺					
	DCGT070204-FN2	7.75	0.4	0.08–0.25	0.2–2.5											☺					
	DCGT11T301-FN2	11.63	0.1	0.02–0.06	0.1–1.5											☺					
	DCGT11T302-FN2	11.63	0.2	0.05–0.12	0.2–2.0											☺					
	DCGT11T304-FN2	11.63	0.4	0.08–0.25	0.2–2.5											☺					
	DCGT11T308-FN2	11.63	0.8	0.10–0.30	0.3–3.0											☺					
	DCGT070201-PM2	7.75	0.1	0.02–0.06	0.5–1.5														☺		
	DCGT070202-PM2	7.75	0.2	0.05–0.12	0.5–2.0														☺		
	DCGT070204-PM2	7.75	0.4	0.08–0.25	0.6–2.5														☺		
	DCGT11T301-PM2	11.63	0.1	0.02–0.06	0.5–1.5														☺		
	DCGT11T302-PM2	11.63	0.2	0.05–0.12	0.5–2.0														☺		
	DCGT11T304-PM2	11.63	0.4	0.08–0.25	0.6–3.0														☺		
	DCGT11T308-PM2	11.63	0.8	0.10–0.30	0.8–3.5														☺		
	DCGT070201-MN2	7.75	0.1	0.02–0.06	0.5–1.5											☺					
	DCGT070202-MN2	7.75	0.2	0.05–0.12	0.5–2.0											☺					
	DCGT070204-MN2	7.75	0.4	0.08–0.25	0.6–2.5											☺					
	DCGT11T301-MN2	11.63	0.1	0.02–0.06	0.5–1.5											☺					
	DCGT11T302-MN2	11.63	0.2	0.05–0.12	0.5–2.0											☺					
	DCGT11T304-MN2	11.63	0.4	0.08–0.25	0.6–3.0											☺					
	DCGT11T308-MN2	11.63	0.8	0.10–0.30	0.8–3.5											☺					

See the ISO 1832 designation key for dimensions

 HC = coated carbide
 HW = uncoated carbide


Positive round RCGT



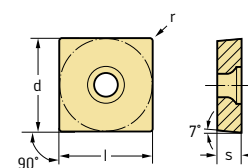
Indexable inserts

	Designation	d mm	f mm	a _p mm	P				M				K		N		S		
					HC				HC				HC		HC HW		HC		
	RCGT0602M0-PM2	6	0.10–0.55	0.6–2.5	WPP10S	WPP20S	WPP30S	WMP20S	WMP20S	WSM10S	WSM20S	WSM30S	WKK10S	WKK20S	WNN10	WK1	WSM10S	WSM20S	WSM30S
	RCGT0803M0-PM2	8	0.12–0.60	0.7–3.0															
	RCGT10T3M0-PM2	10	0.15–0.70	0.8–4.0															
	RCGT1204M0-PM2	12	0.18–0.80	1.0–5.0															
	RCGT0602M0-MN2	6	0.10–0.55	0.6–2.5															
	RCGT0803M0-MN2	8	0.12–0.60	0.7–3.0															
	RCGT10T3M0-MN2	10	0.15–0.70	0.8–4.0															
	RCGT1204M0-MN2	12	0.18–0.80	1.0–5.0															
	RCGT120400-MN2	12.7	0.18–0.80	1.0–5.0															

See the ISO 1832 designation key for dimensions

HC = coated carbide
HW = uncoated carbide

Positive square SCGT



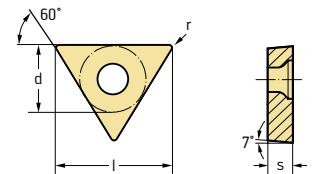
Indexable inserts

	Designation	l mm	r mm	f mm	a _p mm	P				M				K		N		S		
						HC				HC				HC		HC HW		HC		
	SCGT09T304-FN2	9.53	0.4	0.08–0.25	0.2–2.5	WPP10S	WPP20S	WPP30S	WMP20S	WMP20S	WSM10S	WSM20S	WSM30S	WKK10S	WKK20S	WNN10	WK1	WSM10S	WSM20S	WSM30S
	SCGT09T308-FN2	9.53	0.8	0.10–0.30	0.3–3.0															
	SCGT120408-FN2	12.7	0.8	0.10–0.30	0.3–3.0															
	SCGT09T304-PM2	9.53	0.4	0.08–0.25	0.6–4.0															
	SCGT09T308-PM2	9.53	0.8	0.10–0.35	0.7–4.0															
	SCGT120408-PM2	12.7	0.8	0.10–0.40	0.8–6.0															
	SCGT09T304-MN2	9.53	0.4	0.08–0.25	0.6–4.0															
	SCGT09T308-MN2	9.53	0.8	0.10–0.35	0.7–4.0															
	SCGT120408-MN2	12.7	0.8	0.10–0.40	0.8–6.0															

See the ISO 1832 designation key for dimensions

HC = coated carbide
HW = uncoated carbide

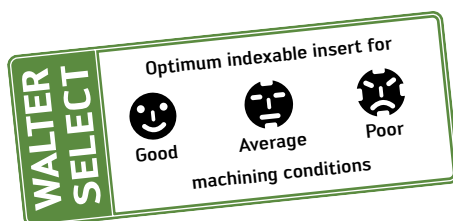
Positive triangular 60° TCGT



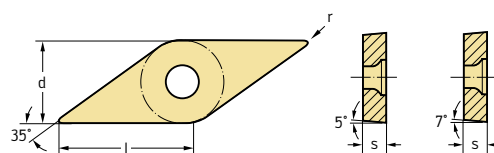
Indexable inserts

	Designation	l mm	r mm	f mm	a _p mm	P				M				K		N			S			
						HC				HC				HC		HW			HC			
						WPP10S	WPP20S	WPP30S	WMP20S	WMP20S	WSM10S	WSM20S	WSM30S	WKK10S	WKK20S	WNN10	WXN10	WK1	WSM10S	WSM20S	WSM30S	
	TCGT06T104-PF2	6.87	0.4	0.08–0.25	0.2–2.5														☹			
	TCGT090204-PF2	9.62	0.4	0.08–0.25	0.2–2.5														☹			
	TCGT110204-PF2	11.00	0.4	0.08–0.25	0.2–2.5														☹			
	TCGT16T301-PF2	16.50	0.1	0.02–0.06	0.1–1.5														☹			
	TCGT16T304-PF2	16.50	0.4	0.08–0.25	0.2–2.5														☹			
	TCGT16T308-PF2	16.50	0.8	0.10–0.30	0.3–3.0														☹			
	TCGT06T101-FN2	6.87	0.1	0.02–0.06	0.1–1.5											☹						
	TCGT06T102-FN2	6.87	0.2	0.05–0.12	0.2–2.0											☹						
	TCGT06T104-FN2	6.87	0.4	0.08–0.25	0.2–2.5											☹						
	TCGT090202-FN2	9.62	0.2	0.05–0.12	0.2–2.0											☹						
	TCGT090204-FN2	9.62	0.4	0.08–0.25	0.2–2.5											☹						
	TCGT110202-FN2	11.00	0.2	0.05–0.12	0.2–2.0											☹						
	TCGT110204-FN2	11.00	0.4	0.08–0.25	0.2–2.5											☹						
	TCGT16T304-FN2	16.50	0.4	0.08–0.25	0.2–2.5											☹						
	TCGT16T308-FN2	16.50	0.8	0.10–0.30	0.3–3.0											☹						
	TCGT110201-PM2	11.00	0.1	0.02–0.06	0.5–1.5														☹			
	TCGT110202-PM2	11.00	0.2	0.05–0.12	0.6–2.0														☹			
	TCGT110204-PM2	11.00	0.4	0.08–0.25	0.6–3.0														☹			
	TCGT16T302-PM2	16.50	0.2	0.05–0.12	0.5–2.0														☹			
	TCGT16T304-PM2	16.50	0.4	0.08–0.25	0.6–4.0														☹			
	TCGT16T308-PM2	16.50	0.8	0.10–0.35	0.8–4.0														☹			
	TCGT110201-MN2	11.00	0.1	0.02–0.06	0.5–1.5											☹						
	TCGT110202-MN2	11.00	0.2	0.05–0.12	0.6–2.0											☹						
	TCGT110204-MN2	11.00	0.4	0.08–0.25	0.6–3.0											☹						
	TCGT16T302-MN2	16.50	0.2	0.05–0.12	0.5–2.0											☹						
	TCGT16T304-MN2	16.50	0.4	0.08–0.25	0.6–4.0											☹						
	TCGT16T308-MN2	16.50	0.8	0.10–0.35	0.8–4.0											☹						

See the ISO 1832 designation key for dimensions

 HC = coated carbide
 HW = uncoated carbide


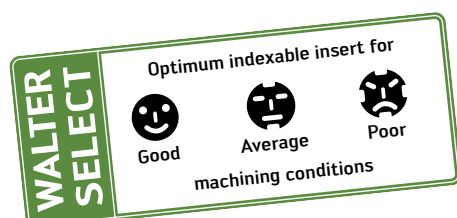
Positive rhombic 35° VCGT



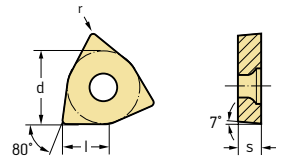
Indexable inserts

	Designation	l mm	r mm	f mm	a _p mm	P				M				K		N			S		
						HC				HC				HC		HC	HW		HC		
						WPP10S	WPP20S	WPP30S	WMP20S	WMP20S	WSM10S	WSM20S	WSM30S	WKK10S	WKK20S	WNN10	WXN10	WK1	WSM10S	WSM20S	WSM30S
	VCGT110302-PF2	11.07	0.2	0.05–0.12	0.2–2.0																
	VCGT110304-PF2	11.07	0.4	0.08–0.25	0.2–2.5																
	VCGT160402-PF2	16.61	0.2	0.05–0.12	0.2–2.0																
	VCGT160404-PF2	16.61	0.4	0.08–0.25	0.2–2.5																
	VCGT160408-PF2	16.61	0.8	0.10–0.30	0.3–3.0																
	VCGT110301-FN2	11.07	0.1	0.02–0.06	0.1–1.5																
	VCGT110302-FN2	11.07	0.2	0.05–0.12	0.2–2.0																
	VCGT110304-FN2	11.07	0.4	0.08–0.25	0.2–2.5																
	VCGT160402-FN2	16.61	0.2	0.05–0.12	0.2–2.0																
	VCGT160404-FN2	16.61	0.4	0.08–0.25	0.2–2.5																
	VCGT160408-FN2	16.61	0.8	0.10–0.30	0.3–3.0																
	VCGT110301-PM2	11.07	0.1	0.02–0.06	0.5–1.5																
	VCGT110302-PM2	11.07	0.2	0.05–0.12	0.5–2.0																
	VCGT110304-PM2	11.07	0.4	0.08–0.25	0.6–2.5																
	VCGT110308-PM2	11.07	0.8	0.10–0.35	0.8–3.0																
	VCGT130301-PM2	13.1	0.1	0.02–0.06	0.5–1.5																
	VCGT130302-PM2	13.1	0.2	0.05–0.12	0.5–2.0																
	VCGT130304-PM2	13.1	0.4	0.08–0.25	0.6–3.0																
	VCGT160404-PM2	16.61	0.4	0.08–0.25	0.6–3.5																
	VCGT160408-PM2	16.61	0.8	0.10–0.35	0.8–3.5																
	VCGT160412-PM2	16.61	1.2	0.10–0.45	1.0–3.5																
	VCGT110301-MN2	11.07	0.1	0.02–0.06	0.5–1.5																
	VCGT110302-MN2	11.07	0.2	0.05–0.12	0.5–2.0																
	VCGT110304-MN2	11.07	0.4	0.08–0.25	0.6–2.5																
	VCGT110308-MN2	11.07	0.8	0.10–0.35	0.8–3.0																
	VCGT130301-MN2	13.1	0.1	0.02–0.06	0.5–1.5																
	VCGT130302-MN2	13.1	0.2	0.05–0.12	0.5–2.0																
	VCGT130304-MN2	13.1	0.4	0.08–0.25	0.6–3.0																
	VCGT160404-MN2	16.61	0.4	0.08–0.25	0.6–3.5																
	VCGT160408-MN2	16.61	0.8	0.10–0.35	0.8–3.5																
	VCGT160412-MN2	16.61	1.2	0.10–0.45	1.0–3.5																

See the ISO 1832 designation key for dimensions

 HC = coated carbide
 HW = uncoated carbide


Positive Trigon 80° WCGT



Indexable inserts

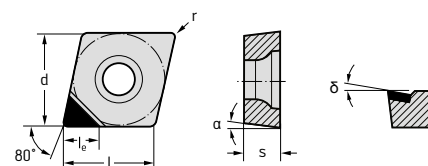
	Designation	l mm	r mm	f mm	a _p mm	P			M			K		N		S		
						HC			HC			HC		HW		HC		
						WPP10S	WPP20S	WPP30S	WMP20S	WSM10S	WSM20S	WSM30S	WKK10S	WKK20S	WNN10	WSM10S	WSM20S	WSM30S
	WCGT020102-FN2	2.7	0.2	0.05–0.12	0.2–1.5										☺			
	WCGT020104-FN2	2.7	0.4	0.08–0.20	0.2–1.5										☺			
	WCGT030202-FN2	3.91	0.2	0.05–0.12	0.2–2.0										☺			
	WCGT030204-FN2	3.91	0.4	0.08–0.25	0.2–2.5										☺			
	WCGT040202-FN2	4.34	0.2	0.05–0.12	0.2–2.0										☺			
	WCGT040204-FN2	4.34	0.4	0.08–0.25	0.2–2.5										☺			
	WCGT06T304-FN2	6.52	0.4	0.08–0.25	0.2–2.5										☺			
	WCGT06T308-FN2	6.52	0.8	0.10–0.30	0.3–3.0										☺			
	WCGT06T304-PM2	6.52	0.4	0.08–0.25	0.6–3.0										☺			
	WCGT080408-PM2	8.69	0.8	0.10–0.35	0.8–4.0										☺			
	WCGT030202-MN2	3.91	0.2	0.05–0.12	0.5–1.5										☺			
	WCGT030204-MN2	3.91	0.4	0.08–0.20	0.6–1.5										☺			
	WCGT040204-MN2	4.34	0.4	0.08–0.25	0.6–2.5										☺			
	WCGT06T302-MN2	6.52	0.2	0.05–0.12	0.6–2.0										☺			
	WCGT06T304-MN2	6.52	0.4	0.08–0.25	0.6–3.0										☺			
	WCGT080404-MN2	8.69	0.4	0.08–0.25	0.6–4.0										☺			
	WCGT080408-MN2	8.69	0.8	0.10–0.35	0.8–4.0										☺			

See the ISO 1832 designation key for dimensions

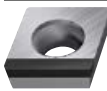
 HC = coated carbide
 HW = uncoated carbide

PCD – Positive rhombic 80°

CCGT / CCGW



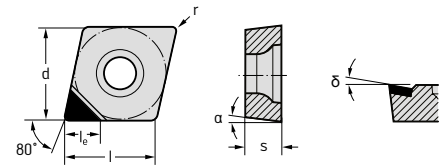
Indexable inserts

	Designation	Number of cutting edges	l _e mm	r mm	α	δ	f mm	a _p mm	K			N	S	H		O			
									CN	BH				DP	BH				
										WCK10	WBK20	WBK30	WDN10			WBS10			
	CCGT060204FS-M1	1	3.5	0.4	7°		0.08–0.20	0.1–2.0				☺					☺		
	CCGT09T304FS-M1	1	4	0.4	7°		0.08–0.20	0.1–2.0				☺					☺		
	CCGT060202FS-1	1	3.5	0.2	7°	7°	0.03–0.12	0.1–3.0				☺					☺		
	CCGT060204FS-1	1	3.5	0.4	7°	7°	0.03–0.25	0.1–3.0				☺					☺		
	CCGT060208FS-1	1	3.5	0.8	7°	7°	0.03–0.38	0.1–3.0				☺					☺		
	CCGT09T304FS-1	1	4	0.4	7°	10°	0.03–0.25	0.1–3.5				☺					☺		
	CCGT09T308FS-1	1	4	0.8	7°	10°	0.03–0.38	0.1–3.5				☺					☺		
	CCGW060202FS-1	1	3.6	0.2	7°	0°	0.03–0.12	0.1–3.0				☺					☺		
	CCGW060204FS-1	1	3.5	0.4	7°	0°	0.03–0.25	0.1–3.0				☺					☺		
	CCGW060208FS-1	1	3.5	0.8	7°	0°	0.03–0.38	0.1–3.0				☺					☺		
	CCGW09T302FS-1	1	4.1	0.2	7°	0°	0.03–0.12	0.1–3.5				☺					☺		
	CCGW09T304FS-1	1	4.1	0.4	7°	0°	0.03–0.25	0.1–3.5				☺					☺		
	CCGW09T308FS-1	1	4	0.8	7°	0°	0.03–0.38	0.1–3.5				☺					☺		
	CCGW120404FS-1	1	4.1	0.4	7°	0°	0.03–0.25	0.1–3.5				☺					☺		
	CCGW120408FS-1	1	4	0.8	7°	0°	0.03–0.38	0.1–3.5				☺					☺		
	CCGW060204FSL-9	1	6.4	0.4	7°	0°	0.03–0.25	0.1–6.4				☺					☺		
	CCGW09T304FSL-9	1	9.7	0.4	7°	0°	0.03–0.25	0.1–9.7				☺					☺		
	CCGW09T308FSL-9	1	9.7	0.8	7°	0°	0.03–0.38	0.1–9.7				☺					☺		
	CCGW060204FSR-9	1	6.4	0.4	7°	0°	0.03–0.25	0.1–6.4				☺					☺		
	CCGW09T304FSR-9	1	9.7	0.4	7°	0°	0.03–0.25	0.1–9.7				☺					☺		
	CCGW09T308FSR-9	1	9.7	0.8	7°	0°	0.03–0.38	0.1–9.7				☺					☺		

See the ISO 1832 designation key for dimensions

CN = Silicon nitride Si₃N₄
 BH = CBN with high CBN content
 DP = polycrystalline diamond
 BL = CBN with low CBN content

PCD – Positive rhombic 80° CPGW



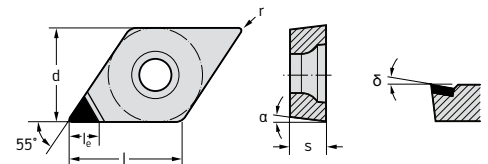
Indexable inserts

Designation	Number of cutting edges	l_e mm	r mm	α	δ	f mm	a_p mm	K			N		S		H		O	
								CN			DP		BH		BL		DP	
								WCK10	WBK20	WBK30	WDN10	WBS10	WBH10C	WBH10	WBH20	WDN10		
 CPGW050204FS-1	1	3	0.4	11°	0°	0.03–0.25	0.1–2.5				☺					☺		
CPGW060204FS-1	1	3.5	0.4	11°	0°	0.03–0.25	0.1–3.0				☺					☺		
CPGW09T304FS-1	1	4	0.4	11°	0°	0.03–0.25	0.1–3.5				☺					☺		
CPGW09T308FS-1	1	4	0.8	11°	0°	0.03–0.38	0.1–3.5				☺					☺		
CPGW120408FS-1	1	4	0.8	11°	0°	0.03–0.38	0.1–3.5				☺					☺		

See the ISO 1832 designation key for dimensions

CN = Silicon nitride Si_3N_4
 BH = CBN with high CBN content
 DP = polycrystalline diamond
 BL = CBN with low CBN content

PCD – Positive rhombic 55° DCGT / DCGW

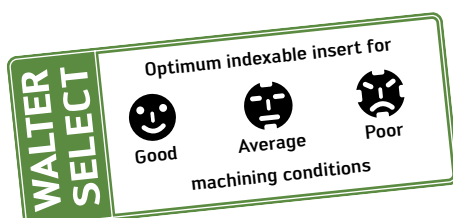


Indexable inserts

Designation	Number of cutting edges	l_e mm	r mm	α	δ	f mm	a_p mm	K			N		S		H		O	
								CN			DP		BH		BL		DP	
								WCK10	WBK20	WBK30	WDN10	WBS10	WBH10C	WBH10	WBH20	WDN10		
 DCGT070204FS-M1	1	3.5	0.4	7°		0.08–0.20	0.1–2.0				☺					☺		
DCGT11T304FS-M1	1	4	0.4	7°		0.08–0.20	0.1–2.0				☺					☺		
 DCGT070202FS-1	1	3.7	0.2	7°	7°	0.03–0.12	0.1–3.0				☺					☺		
DCGT070204FS-1	1	3.5	0.4	7°	7°	0.03–0.25	0.1–3.0				☺					☺		
DCGT070208FS-1	1	3.5	0.8	7°	7°	0.03–0.38	0.1–3.0				☺					☺		
DCGT11T302FS-1	1	4.2	0.2	7°	10°	0.03–0.12	0.1–3.5				☺					☺		
DCGT11T304FS-1	1	4	0.4	7°	10°	0.03–0.25	0.1–3.0				☺					☺		
DCGT11T308FS-1	1	4	0.8	7°	10°	0.03–0.38	0.1–3.5				☺					☺		

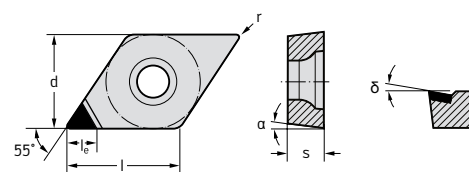
See the ISO 1832 designation key for dimensions

CN = Silicon nitride Si_3N_4
 BH = CBN with high CBN content
 DP = polycrystalline diamond
 BL = CBN with low CBN content

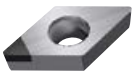


PCD – Positive rhombic 55°

DCGT / DCGW



Indexable inserts

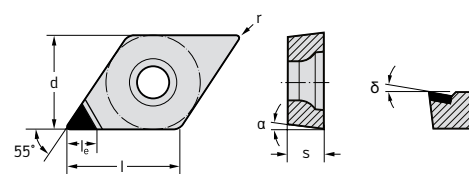
Designation	Number of cutting edges	l _e mm	r mm	α	δ	f mm	a _p mm	K		N	S	H		O		
								CN	BH	DP	BH	BL	BL	DP		
								WCK10	WBK20	WBK30	WDN10	WBS10	WBH10C	WBH10	WBH20	WDN10
	DCGW070202FS-1	1	3.7	0.2	7°	0°	0.03–0.12	0.1–3.0								
	DCGW070204FS-1	1	3.5	0.4	7°	0°	0.03–0.25	0.1–3.0								
	DCGW070208FS-1	1	3.5	0.8	7°	0°	0.03–0.38	0.1–3.0								
	DCGW11T302FS-1	1	4.2	0.2	7°	0°	0.03–0.12	0.1–3.5								
	DCGW11T304FS-1	1	4	0.4	7°	0°	0.03–0.25	0.1–3.5								
	DCGW11T308FS-1	1	4	0.8	7°	0°	0.03–0.38	0.1–3.5								

See the ISO 1832 designation key for dimensions

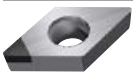
CN = Silicon nitride Si₃N₄
 BH = CBN with high CBN content
 DP = polycrystalline diamond
 BL = CBN with low CBN content

PCD – Positive rhombic 55°

DPGW



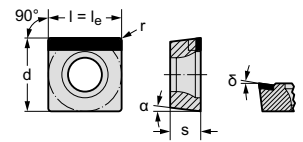
Indexable inserts

Designation	Number of cutting edges	l _e mm	r mm	α	δ	f mm	a _p mm	K		N	S	H		O		
								CN	BH	DP	BH	BL	BL	DP		
								WCK10	WBK20	WBK30	WDN10	WBS10	WBH10C	WBH10	WBH20	WDN10
	DPGW070204FS-1	1	3.5	0.4	11°	0°	0.03–0.25	0.1–3.0								
	DPGW11T304FS-1	1	4	0.4	11°	0°	0.03–0.25	0.1–3.5								
	DPGW11T308FS-1	1	4	0.8	11°	0°	0.03–0.38	0.1–3.5								

See the ISO 1832 designation key for dimensions

CN = Silicon nitride Si₃N₄
 BH = CBN with high CBN content
 DP = polycrystalline diamond
 BL = CBN with low CBN content

PCD – Positive square SCGW



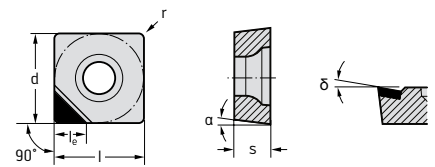
Indexable inserts

Designation	Number of cutting edges	l_e mm	r mm	α	δ	f mm	a_p mm	K		N		S		H		O	
								CN	BH	DP	BH	BL	DP	BL	DP	BL	DP
 SCGW09T304FS-9	1	9.5	0.4	7°	0°	0.03–0.25	0.1–9.5	WCK10	WBK20	WBK30	WDN10	WBS10	WBH10C	WBH10	WBH20	WDN10	
											☺					☺	

See the ISO 1832 designation key for dimensions

CN = Silicon nitride Si_3N_4
 BH = CBN with high CBN content
 DP = polycrystalline diamond
 BL = CBN with low CBN content

PCD – Positive square SPGW

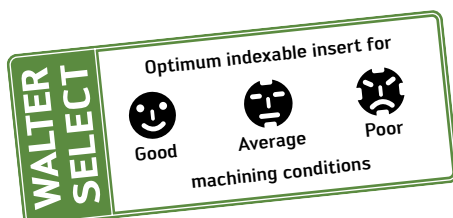


Indexable inserts

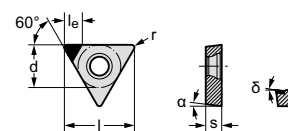
Designation	Number of cutting edges	l_e mm	r mm	α	δ	f mm	a_p mm	K		N		S		H		O	
								CN	BH	DP	BH	BL	DP	BL	DP	BL	DP
 SPGW09T308FS-1	1	4	0.8	11°	0°	0.03–0.38	0.1–3.5	WCK10	WBK20	WBK30	WDN10	WBS10	WBH10C	WBH10	WBH20	WDN10	
											☺					☺	

See the ISO 1832 designation key for dimensions

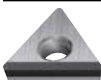
CN = Silicon nitride Si_3N_4
 BH = CBN with high CBN content
 DP = polycrystalline diamond
 BL = CBN with low CBN content



PCD – Positive triangular 60° TCGW



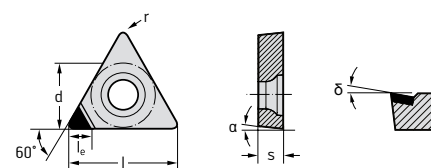
Indexable inserts

	Designation	Number of cutting edges	l _e mm	r mm	α	δ	f mm	a _p mm	K			N		S		H		O	
									CN			DP		BH		BL		DP	
									WCK10	WBK20	WBK30	WDN10	WBS10	WBH10C	WBH10	WBH20	WDN10		
	TCGW090202FS-1	1	3.9	0.2	7°	0°	0.03–0.12	0.1–3.0				☺					☺		
	TCGW090204FS-1	1	3.8	0.4	7°	0°	0.03–0.25	0.1–3.0				☺					☺		
	TCGW110202FS-1	1	4.4	0.2	7°	0°	0.03–0.12	0.1–3.0				☺					☺		
	TCGW110204FS-1	1	4.3	0.4	7°	0°	0.03–0.25	0.1–3.0				☺					☺		
	TCGW110208FS-1	1	4	0.8	7°	0°	0.03–0.38	0.1–3.0				☺					☺		
	TCGW16T304FS-1	1	4.3	0.4	7°	0°	0.03–0.25	0.1–3.5				☺					☺		
	TCGW16T308FS-1	1	4	0.8	7°	0°	0.03–0.38	0.1–3.5				☺					☺		
	TCGW090204FS-9	1	9	0.4	7°	0°	0.03–0.25	0.1–9.0				☺					☺		
	TCGW110204FS-9	1	10.4	0.4	7°	0°	0.03–0.25	0.1–10.4				☺					☺		
	TCGW16T308FS-9	1	15.3	0.8	7°	0°	0.03–0.38	0.1–15.3				☺					☺		

See the ISO 1832 designation key for dimensions

CN = Silicon nitride Si₃N₄
 BH = CBN with high CBN content
 DP = polycrystalline diamond
 BL = CBN with low CBN content

PCD – Positive triangular 60° TPGW



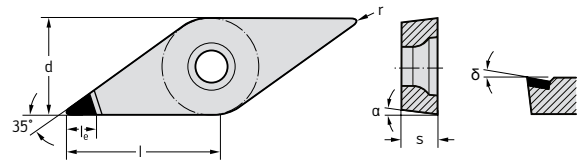
Indexable inserts

	Designation	Number of cutting edges	l _e mm	r mm	α	δ	f mm	a _p mm	K			N		S		H		O	
									CN			DP		BH		BL		DP	
									WCK10	WBK20	WBK30	WDN10	WBS10	WBH10C	WBH10	WBH20	WDN10		
	TPGW110204FS-1	1	4.2	0.4	11°	0°	0.03–0.25	0.1–3.5				☺					☺		
	TPGW110208FS-1	1	4	0.8	11°	0°	0.03–0.38	0.1–3.5				☺					☺		
	TPGW16T304FS-1	1	4.2	0.4	11°	0°	0.03–0.25	0.1–3.5				☺					☺		
	TPGW16T308FS-1	1	4	0.8	11°	0°	0.03–0.38	0.1–3.5				☺					☺		

See the ISO 1832 designation key for dimensions

CN = Silicon nitride Si₃N₄
 BH = CBN with high CBN content
 DP = polycrystalline diamond
 BL = CBN with low CBN content

PCD – Positive rhombic 35° VCGT / VCGW

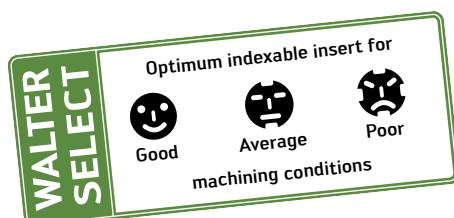


Indexable inserts

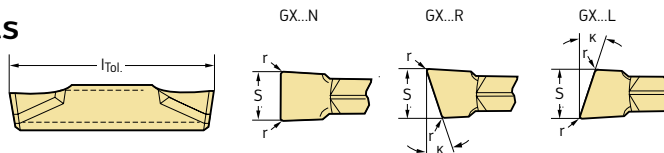
	Designation	Number of cutting edges	l _e mm	r mm	α	δ	f mm	a _p mm	K		N		S		H		O	
									CN	BH	DP	BH	BL	BL	BL	BL	DP	
	VCGT110302FS-1	1	4.1	0.2	7°	10°	0.03–0.12	0.1–3.0										
	VCGT110304FS-1	1	3.7	0.4	7°	10°	0.03–0.25	0.1–3.0										
	VCGT160404FS-1	1	4.5	0.4	7°	10°	0.03–0.25	0.1–4.0										
	VCGT160408FS-1	1	4.5	0.8	7°	10°	0.03–0.38	0.1–4.0										
	VCGW110302FS-1	1	4.1	0.2	7°	0°	0.03–0.12	0.1–3.0										
	VCGW110304FS-1	1	3.7	0.4	7°	0°	0.03–0.25	0.1–3.0										
	VCGW160404FS-1	1	4.5	0.4	7°	0°	0.03–0.25	0.1–4.0										
	VCGW160408FS-1	1	4.5	0.8	7°	0°	0.03–0.38	0.1–4.0										

See the ISO 1832 designation key for dimensions

CN = Silicon nitride Si₃N₄
 BH = CBN with high CBN content
 DP = polycrystalline diamond
 BL = CBN with low CBN content



Grooving and parting off – cutting inserts GX



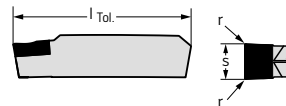
Cutting inserts

Designation	s mm	r mm	k	l mm	f mm	S _{Tol} mm	l _{Tol} mm	P		M		K		N		S	
								HC		HC		HC		HW		HC	
								WKP23S	WSM33S	WSM43S	WSM33S	WSM43S	WKP23S	WK1	WSM33S	WSM43S	
 GX16-1E200N02-CK8	2	0.2		16.6	0.04–0.12	±0.02	±0.03							☺			
GX16-2E300N02-CK8	3	0.2		16.6	0.08–0.20	±0.02	±0.03							☺			
GX24-2E300N02-CK8	3	0.2		24.6	0.08–0.20	±0.02	±0.03							☺			
GX24-3E400N02-CK8	4	0.2		24.6	0.10–0.22	±0.02	±0.03							☺			

l_{Tol} = Repeat accuracy when changing indexable inserts within one insert batch
Radius tolerance r_{Tol} = ±0.05 mm

HC = coated carbide
HW = uncoated carbide

PCD – grooving and parting off GX



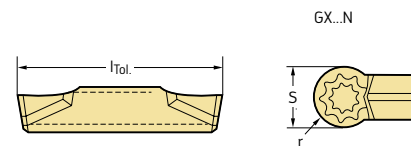
Cutting inserts

Designation	s mm	r mm	l mm	f mm	S _{Tol} mm	l _{Tol} mm	P		M		N		K		S	
							HC		HC		DP		HC		HC	
							WKP23S	WSM33S	WSM43S	WSM33S	WSM43S	WDN10	WKP23S	WSM33S	WSM43S	WDN10
 GX16-1F200N02FS-F1	2	0.2	16	0.04–0.12	±0.02	±0.02						☺				☺
GX24-2F300N02FS-F1	3	0.2	24	0.05–0.16	±0.02	±0.02						☺				☺
GX24-3F400N02FS-F1	4	0.2	24	0.06–0.22	±0.02	±0.02						☺				☺
GX24-3F500N02FS-F1	5	0.2	24	0.06–0.25	±0.02	±0.02						☺				☺
GX24-4F600N02FS-F1	6	0.2	24	0.06–0.28	±0.02	±0.02						☺				☺

l_{Tol} = Repeat accuracy when changing indexable inserts within one insert batch
Radius tolerance r_{Tol} = ±0.05 mm

HC = coated carbide
DP = polycrystalline diamond

Grooving and copy turning – cutting inserts GX



A2

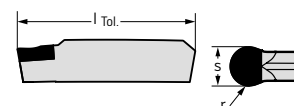
Cutting inserts

	Designation	s mm	r mm	l mm	f mm	a _p mm	S _{Tol} mm	l _{Tol} mm	P			M		K	N	S									
									WKP23S	WSM33S	WSM43S	WSM33S	WSM43S	WKP23S	WK1	WSM33S				WSM43S					
																					HC	HC	HC	HW	HC
GX24-4R300N-RK8	6	3	25.4	0.10–0.60	0.1–4.0	±0.02	±0.05							☺											
GX24-5R400N-RK8	8	4	25.4	0.10–0.80	0.1–5.0	±0.02	±0.05							☺											

l_{Tol} = Repeat accuracy when changing indexable inserts within one insert batch
Radius tolerance r_{Tol} = ±0.05 mm

HC = coated carbide
HW = uncoated carbide

PCD – grooving and copy turning GX

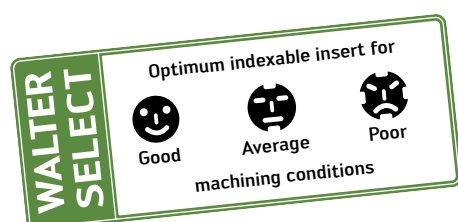


Cutting inserts

	Designation	s mm	r mm	l mm	f mm	a _p mm	S _{Tol} mm	l _{Tol} mm	P			M		N	K	S				
									HC	WKP23S	WSM33S	WSM43S	HC	WSD10	WKP23S	WSM33S	WSM43S			WSD10
	GX16-1F200N10FS-M1	2	1	16	0.05–0.25	0.1–1.0	±0.02	±0.02												
	GX24-2F300N15FS-M1	3	1.5	24	0.05–0.30	0.1–1.5	±0.02	±0.02												
	GX24-2F318N16FS-M1	3.18	1.59	24	0.05–0.30	0.1–1.5	±0.02	±0.02												
	GX24-3F400N20FS-M1	4	2	24	0.05–0.35	0.1–2.0	±0.02	±0.02												
	GX24-4F600N30FS-M1	6	3	24	0.05–0.50	0.1–3.0	±0.02	±0.02												

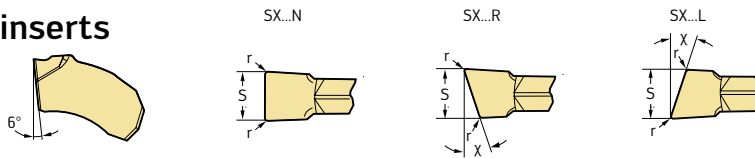
l_{Tol} = Repeat accuracy when changing indexable inserts within one insert batch
Radius tolerance r_{Tol} = ±0.05 mm

HC = coated carbide
DP = polycrystalline diamond



Grooving and parting off – cutting inserts SX

A2



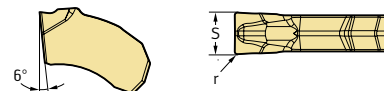
Cutting inserts

	Designation	s mm	r mm	κ	f mm	S _{Tol} mm	l _{Tol} mm	P			M		K	N	S				
								WKP23S	HC		WSM33S	HC		WKP23S	WK1	WSM33S			WSM43S
									WSM33S	WSM43S		WSM33S	WSM43S						
	SX-2E200N02-CK8	2	0.2		0.04–0.12	±0.02	±0.05							☺					
	SX-3E300N02-CK8	3	0.2		0.08–0.20	±0.02	±0.05							☺					
	SX-4E400N02-CK8	4	0.2		0.10–0.22	±0.02	±0.05							☺					
	SX-5E500N04-CK8	5	0.4		0.10–0.25	±0.02	±0.05							☺					

l_{Tol} = Repeat accuracy when changing indexable inserts within one insert batch
Radius tolerance r_{Tol} = ±0.05 mm

HC = coated carbide
HW = uncoated carbide

Slitting – cutting inserts SX

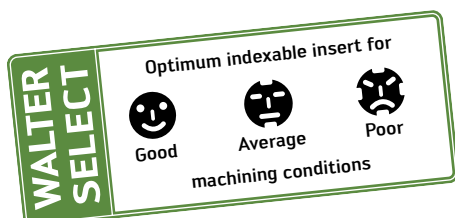


Cutting inserts

	Designation	s mm	r mm	f mm	S _{Tol} mm	l _{Tol} mm	P			M		K	N	S			
							HC			HC		HC	HW	HC			
							WKP23S	WSM33S	WSM43S	WSM33S	WSM43S	WKP23S	WK1	WSM33S			WSM43S
SX-1E150N01-SK8		1.5	0.1	0.03–0.08	±0.02	±0.05							☺				
SX-2E200N02-SK8		2	0.2	0.05–0.10	±0.02	±0.05							☺				
SX-3E300N02-SK8		3	0.2	0.05–0.15	±0.02	±0.05							☺				
SX-4E400N02-SK8		4	0.2	0.05–0.20	±0.02	±0.05							☺				
SX-5E500N04-SK8		5	0.4	0.05–0.25	±0.02	±0.05							☺				

l_{Tol} = Repeat accuracy when changing indexable inserts within one insert batch
Radius tolerance r_{Tol} = ±0.05 mm

HC = coated carbide
HW = uncoated carbide



Product range overview of indexable inserts
for drilling from solid and boring / precision boring



Application	Insert shape	Description	Page
Drilling from solid		P6001 . . P6003 . . P6004 . . P6005 . . For drilling from solid	36

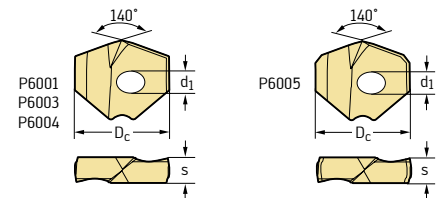


Machining	Insert shape	Description	Page
Boring Precision boring		C	For boing For precision boring - PCD
			39 43
		W	For boing For precision boring
			38 41
		T	For precision boring For precision boring- PCD
			40 43

B 1

Drill inserts P6004

P6004



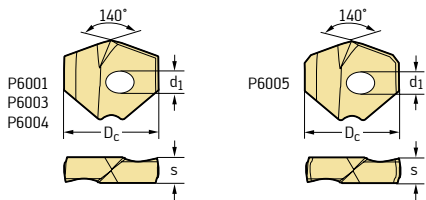
Drill inserts

Designation	Number of cutting edges	D _c mm	D _c Inches/Wire/ Letter	Seat size	mm	s mm	P6004
							N HC WNN25
P6004							
P60..-D12,00R	2	12		A	3	3.6	
P60..-D12,50R	2	12.5		A	3	3.6	
P60..-D13,00R	2	13		A	3	3.6	
P60..-D13,50R	2	13.5		A	3	3.6	
P60..-D14,00R	2	14		B	3	4	
P60..-D14,50R	2	14.5		B	3	4	
P60..-D14,80R	2	14.8		B	3	4	
P60..-D15,00R	2	15		B	3	4	
P60..-D15,50R	2	15.5		B	3	4	
P60..-D16,00R	2	16		C	4	4.5	
P60..-D16,50R	2	16.5		C	4	4.5	
P60..-D16,66R	2	16.66		C	4	4.5	
P60..-D17,00R	2	17		C	4	4.5	
P60..-D17,50R	2	17.5		C	4	4.5	
P60..-D17,70R	2	17.7		C	4	4.5	
P60..-D18,00R	2	18		D	4	5	
P60..-D18,50R	2	18.5		D	4	5	
P60..-D18,65R	2	18.65		D	4	5	
P60..-D19,00R	2	19		D	4	5	
P60..-D19,50R	2	19.5		D	4	5	
P60..-D19,70R	2	19.7		D	4	5	
P60..-D19,84R	2	19.84		D	4	5	
P60..-D20,00R	2	20		E	5	5.5	
P60..-D20,50R	2	20.5		E	5	5.5	
P60..-D21,00R	2	21		E	5	5.5	
P60..-D21,50R	2	21.5		E	5	5.5	
P60..-D21,70R	2	21.7		E	5	5.5	
P60..-D22,00R	2	22		F	5	6	
P60..-D22,50R	2	22.5		F	5	6	
P60..-D23,00R	2	23		F	5	6	
P60..-D23,50R	2	23.5		F	5	6	
P60..-D24,00R	2	24		G	5	6.5	
P60..-D24,50R	2	24.5		G	5	6.5	
P60..-D25,00R	2	25		G	5	6.5	
P60..-D25,50R	2	25.5		G	5	6.5	
P60..-D26,00R	2	26		H	6	7.1	
P60..-D26,50R	2	26.5		H	6	7.1	
P60..-D27,00R	2	27		H	6	7.1	
P60..-D27,50R	2	27.5		H	6	7.1	
P60..-D28,00R	2	28		J	6	7.7	
P60..-D28,50R	2	28.5		J	6	7.7	
P60..-D29,00R	2	29		J	6	7.7	
P60..-D29,50R	2	29.5		J	6	7.7	

Ordering example: P60..-D13.00R is available as
P6003 in grade WMP35 (ISO P, ISO M and ISO S); P6003-D13.00R WMP35 or as
P6001 in grade WPP45C (ISO P); P6001-D13.00R WPP45C

HC =
coated
carbide

Drill inserts
P6004



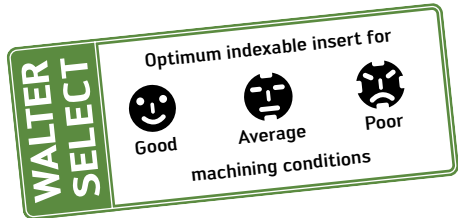
P6004

Drill inserts

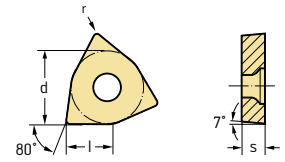
		Number of cutting edges	D _c mm	D _c Inches/Wire/ Letter	Seat size	mm	s mm	P6004 N HC WNN25
Designation								
	P60..-D30,00R	2	30		K	6	8	
	P60..-D30,50R	2	30.5		K	6	8	
	P60..-D31,00R	2	31		K	6	8	
	P60..-D31,50R	2	31.5		K	6	8	

Ordering example: P60..-D13.00R is available as
P6003 in grade WMP35 (ISO P, ISO M and ISO S); P6003-D13.00R WMP35 or as
P6001 in grade WPP45C (ISO P); P6001-D13.00R WPP45C

HC =
coated
carbide



Positive Trigon 80° WCGT



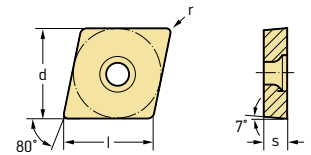
Indexable inserts

	Designation	l mm	r mm	P			M			K		N	S		
				HC			HC			HC		HC	HC		
				WPP10S	WPP20S	WPP30S	WMP20S	WSM10S	WSM20S	WSM30S	WKK10S	WKK20S	WNN10	WSM10S	WSM20S
	WCGT030202-MN2	3.91	0.2									☺			
	WCGT030204-MN2	3.91	0.4									☺			
	WCGT040204-MN2	4.34	0.4									☺			
	WCGT06T302-MN2	6.52	0.2									☺			
	WCGT06T304-MN2	6.52	0.4									☺			
	WCGT080404-MN2	8.69	0.4									☺			
	WCGT080408-MN2	8.69	0.8									☺			

See the ISO 1832 designation key for dimensions

HC = coated carbide

Positive rhombic 80° CCGT



Indexable inserts

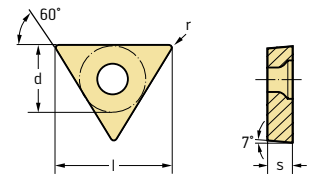
	Designation	l mm	r mm	P			M						K		N			S			
				HC			HC						HC		HC			HC			
				WPP10S	WPP20S	WPP30S	WMP20S	WSM01	WSM10S	WSM20S	WSM21	WSM30S	WSM10	WKK10S	WKK20S	WXN10	WNN10	WK1	WSM01	WSM10S	WSM20S
	CCGT060201-FN2	6.45	0.1												☹						
	CCGT060202-FN2	6.45	0.2												☹						
	CCGT060204-FN2	6.45	0.4												☹						
	CCGT09T301-FN2	9.67	0.1												☹						
	CCGT09T302-FN2	9.67	0.2												☹						
	CCGT09T304-FN2	9.67	0.4												☹						
	CCGT09T308-FN2	9.67	0.8												☹						
	CCGT120404-FN2	12.90	0.4												☹						
	CCGT120408-FN2	12.90	0.8												☹						
	CCGT060201-MN2	6.45	0.1												☹						
	CCGT060202-MN2	6.45	0.2												☹						
	CCGT060204-MN2	6.45	0.4												☹						
	CCGT09T301-MN2	9.67	0.1												☹						
	CCGT09T302-MN2	9.67	0.2												☹						
	CCGT09T304-MN2	9.67	0.4												☹						
	CCGT09T308-MN2	9.67	0.8												☹						
	CCGT120402-MN2	12.90	0.2												☹						
	CCGT120404-MN2	12.90	0.4												☹						
CCGT120408-MN2	12.90	0.8												☹							
	CCGT060202-PF2	6.45	0.2													☹					
	CCGT060204-PF2	6.45	0.4													☹					
	CCGT09T302-PF2	9.67	0.2													☹					
	CCGT09T304-PF2	9.67	0.4													☹					
	CCGT09T308-PF2	9.67	0.8													☹					
	CCGT120404-PF2	12.90	0.4													☹					
	CCGT120408-PF2	12.90	0.8													☹					
	CCGT060201-PM2	6.45	0.1													☹					
	CCGT060202-PM2	6.45	0.2													☹					
	CCGT060204-PM2	6.45	0.4													☹					
	CCGT09T301-PM2	9.67	0.1													☹					
	CCGT09T302-PM2	9.67	0.2													☹					
	CCGT09T304-PM2	9.67	0.4													☹					
	CCGT09T308-PM2	9.67	0.8													☹					
	CCGT120402-PM2	12.90	0.2													☹					
	CCGT120404-PM2	12.90	0.4													☹					
CCGT120408-PM2	12.90	0.8													☹						

See the ISO 1832 designation key for dimensions

HC = coated carbide

B2

Positive triangular 60° TCGT

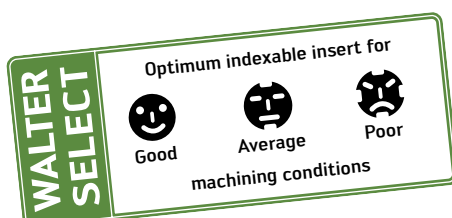


Indexable inserts

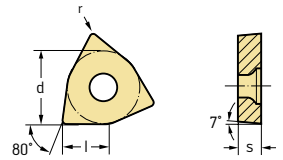
	Designation	l mm	r mm	P			M						K		N			S				
				HC										HC		HC				HC		
				WPP10S	WPP20S	WPP30S	WMP20S	WSM01	WSM10S	WSM20S	WSM21	WSM30S	WSM10	WKK10S	WKK20S	WXN10	WNN10	WK1	WSM01	WSM10S	WSM20S	WSM30S
	TCGT06T101-FN2	6.87	0.1														☺					
	TCGT06T102-FN2	6.87	0.2														☺					
	TCGT06T104-FN2	6.87	0.4														☺					
	TCGT090202-FN2	9.62	0.2														☺					
	TCGT090204-FN2	9.62	0.4														☺					
	TCGT110202-FN2	11.00	0.2														☺					
	TCGT110204-FN2	11.00	0.4														☺					
	TCGT16T304-FN2	16.50	0.4														☺					
TCGT16T308-FN2	16.50	0.8														☺						
	TCGT06T104-PF2	6.87	0.4															☺				
	TCGT090204-PF2	9.62	0.4															☺				
	TCGT110204-PF2	11.00	0.4															☺				
	TCGT16T301-PF2	16.50	0.1															☺				
	TCGT16T304-PF2	16.50	0.4															☺				
	TCGT16T308-PF2	16.50	0.8															☺				
	TCGT110201-MN2	11.00	0.1														☺					
	TCGT110202-MN2	11.00	0.2														☺					
	TCGT110204-MN2	11.00	0.4														☺					
	TCGT16T302-MN2	16.50	0.2														☺					
	TCGT16T304-MN2	16.50	0.4														☺					
	TCGT16T308-MN2	16.50	0.8														☺					

See the ISO 1832 designation key for dimensions

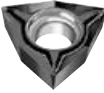
HC = coated carbide



Positive Trigon 80° WCGT



Indexable inserts

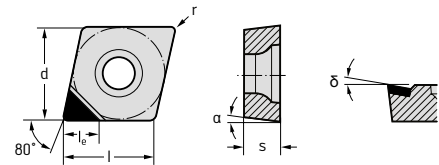
	Designation	l mm	r mm	P			M						K		N		S			
				HC			HC						HC		HC		HC			
				WPP10S	WPP20S	WPP30S	WMP20S	WSM01	WSM10S	WSM20S	WSM21	WSM30S	WSM10	WKK10S	WKK20S	WNN10	WK1	WSM01	WSM10S	WSM20S
	WCGT020102-FN2	2.7	0.2												☺					
	WCGT020104-FN2	2.7	0.4												☺					
	WCGT030202-FN2	3.91	0.2												☺					
	WCGT030204-FN2	3.91	0.4												☺					
	WCGT040202-FN2	4.34	0.2												☺					
	WCGT040204-FN2	4.34	0.4												☺					
	WCGT06T304-FN2	6.52	0.4												☺					
	WCGT06T308-FN2	6.52	0.8												☺					
	WCGT030202-MN2	3.91	0.2												☺					
	WCGT030204-MN2	3.91	0.4												☺					
	WCGT040204-MN2	4.34	0.4												☺					
	WCGT06T302-MN2	6.52	0.2												☺					
	WCGT06T304-MN2	6.52	0.4												☺					
	WCGT080404-MN2	8.69	0.4												☺					
	WCGT080408-MN2	8.69	0.8												☺					
	WCGT06T304-PM2	6.52	0.4													☺				
	WCGT080408-PM2	8.69	0.8													☺				

See the ISO 1832 designation key for dimensions

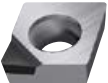
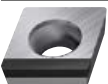
HC = coated carbide

B 2

PCD – Positive rhombic 80° CCGT / CCGW

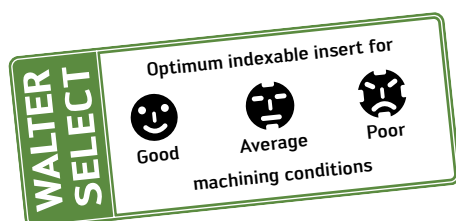


Indexable inserts

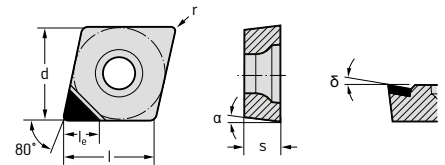
				K		N	S	H		O			
				BH	CN	DP	BH	BL		DP			
Designation		l _e mm	r mm	WCB80	WCK10	WDN10	WBS10	WBH10C	WBH10	WBH20	WDN10		
	CCGT060202FS-1	3.5	0.2			☺					☺		
	CCGT060204FS-1	3.5	0.4			☺					☺		
	CCGT060208FS-1	3.5	0.8			☺					☺		
	CCGT09T304FS-1	4	0.4			☺					☺		
	CCGT09T308FS-1	4	0.8			☺					☺		
	CCGW060204FS-1	3.5	0.4			☺					☺		
	CCGW060208FS-1	3.5	0.8			☺					☺		
	CCGW060202FS-1	3.6	0.2			☺					☺		
	CCGW09T308FS-1	4	0.8			☺					☺		
	CCGW120408FS-1	4	0.8			☺					☺		
	CCGW09T302FS-1	4.1	0.2			☺					☺		
	CCGW09T304FS-1	4.1	0.4			☺					☺		
	CCGW120404FS-1	4.1	0.4			☺					☺		
	CCGT060204FS-M1	3.5	0.4			☺					☺		
	CCGT09T304FS-M1	4	0.4			☺					☺		
													
	CCGW060204FSL-9	6.4	0.4			☺					☺		
	CCGW09T304FSL-9	9.7	0.4			☺					☺		
	CCGW09T308FSL-9	9.7	0.8			☺					☺		
	CCGW060204FSR-9	6.4	0.4			☺					☺		
	CCGW09T304FSR-9	9.7	0.4			☺					☺		
	CCGW09T308FSR-9	9.7	0.8			☺					☺		

See the ISO 1832 designation key for dimensions

BH = CBN with high CBN content
 CN = Silicon nitride Si₃N₄
 DP = polycrystalline diamond
 BL = CBN with low CBN content



PCD – Positive rhombic 80° CPGW



Indexable inserts

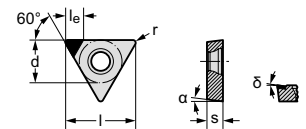
	Designation	l _e mm	r mm	K		N		S		H		O				
				BH	CN	DP	BH	DP	BH	BL	DP	DP	DP			
				WCB80	WCK10	WDN10	WBS10	WBH10C	WBH10	WBH20	WDN10					
	CPGW050204FS-1	3	0.4			☺					☺					
	CPGW060204FS-1	3.5	0.4			☺					☺					
	CPGW09T304FS-1	4	0.4			☺					☺					
	CPGW09T308FS-1	4	0.8			☺					☺					
	CPGW120408FS-1	4	0.8			☺					☺					

See the ISO 1832 designation key for dimensions

BH = CBN with high CBN content
 CN = Silicon nitride Si₃N₄
 DP = polycrystalline diamond
 BL = CBN with low CBN content

B 2

PCD – Positive triangular 60° TCGW



Indexable inserts

	Designation	l _e mm	r mm	K		N		S		H		O				
				BH	CN	DP	BH	DP	BH	BL	DP	DP	DP			
				WCB80	WCK10	WDN10	WBS10	WBH10C	WBH10	WBH20	WDN10					
	TCGW090204FS-1	3.8	0.4			☺					☺					
	TCGW090202FS-1	3.9	0.2			☺					☺					
	TCGW110208FS-1	4	0.8			☺					☺					
	TCGW16T308FS-1	4	0.8			☺					☺					
	TCGW110204FS-1	4.3	0.4			☺					☺					
	TCGW16T304FS-1	4.3	0.4			☺					☺					
	TCGW110202FS-1	4.4	0.2			☺					☺					
	TCGW090204FS-9	9	0.4			☺					☺					
	TCGW110204FS-9	10.4	0.4			☺					☺					
	TCGW16T308FS-9	15.3	0.8			☺					☺					

See the ISO 1832 designation key for dimensions

BH = CBN with high CBN content
 CN = Silicon nitride Si₃N₄
 DP = polycrystalline diamond
 BL = CBN with low CBN content

Product overview HSS-E (-PM) taps

M – Metric thread

Machining		 			
Thread depth	3 x D _N	2 x D _N	3 x D _N	3 x D _N	
Designation	Prototex® X-pert N	Paradur® AP	KMB Ms	Paradur® X-pert N	Paradur® X-pert N
Dimension range	M 2–M 10	M 3–M 20	M 2–M 8	M 2–M 8	M 1.6–M 20
Tolerance	6H	6HX	6H	6H	6H / 6G
Coolant supply	external	external	external	external	external
Chamfer form	B	C	E	C	C
Coating/grade	uncoated	NIT	uncoated	uncoated	uncoated
Version length	M	M	S	M	M
Page	46	50	46	47	48
					

Product overview HSS-E (-PM) taps

MF – Metric fine-pitch thread

Machining	
Thread depth	3 x D _N
Designation	Paradur® X-pert N
Dimension range	MF 8x1– MF 20x1.5
Tolerance	6H
Coolant supply	external
Chamfer form	C
Coating/grade	uncoated
Version length	M
Page	51
	

Product overview HSS-E (-PM) taps UNC/UNF/UN 8

Machining		
Thread depth	3 x D _N	
Designation	Paradur® X-pert N	Paradur® X-pert N
Dimension range	UNC 2-56– UNC 5/16-18	UNC 2-56– UNC 3/8-16
Tolerance	2B	2B
Coolant supply	external	external
Chamfer form	C	C
Coating/grade	uncoated	uncoated
Version length	M	M
Page	52	52
		

G/Rc/Rp

Machining			
Thread depth	3 x D _N	3 x D _N	3 x D _N
Designation	KMB Ms	Paradur® X-pert N	
Dimension range	G 1/8-28– G 1"-11	G 1/8-28	
Tolerance	NORMAL	NORMAL	
Coolant supply	external	external	
Chamfer form	F	C	
Coating/grade	uncoated	uncoated	
Version length		M	
Page	53	54	
			

B 3

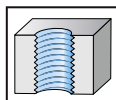
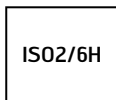
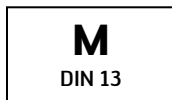
Product overview HSS-E (-PM) taps Thread insert

Machining				
Thread depth	3 x D _N			
Designation	Paradur® X-pert N	Paradur® X-pert N	Paradur® X-pert N	Paradur® X-pert N
Dimension range	EGM 2.5– EGM 16	EGUNC 2-56– EGUNC 1/4-20	EGUNC 6-32– EGUNC 1/4-20	EGUNF 10-32– EGUNF 1/4-28
Tolerance	6Hmod	3B	3B	3B
Coolant supply	external	external	external	external
Chamfer form	C	C	C	C
Coating/grade	uncoated	uncoated	uncoated	uncoated
Version length		M	M	M
Page	55	56	56	57
				

HSS-E machine taps Prototex® X-pert N

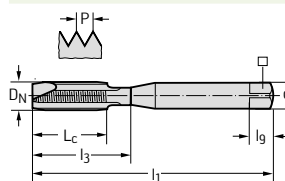


– For long-chipping materials



	P	M	K	N	S	H	O
uncoated				●	●		●

DIN 371

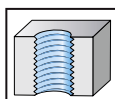
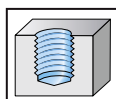
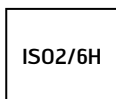
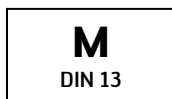


Designation uncoated	DN	P mm	l ₁ mm	L _c mm	l ₃ mm	d ₁ h9 mm	□ mm	l _g mm	N
N20219-M2	M 2	0.4	45	6	9	2.8	2.1	5	2
N20219-M2.5	M 2.5	0.45	50	8	12.5	2.8	2.1	5	2
N20219-M3	M 3	0.5	56	9	18	3.5	2.7	6	2
N20219-M4	M 4	0.7	63	12	21	4.5	3.4	6	2
N20219-M5	M 5	0.8	70	13	25	6	4.9	8	2
N20219-M6	M 6	1	80	15	30	6	4.9	8	3
N20219-M8	M 8	1.25	90	18	35	8	6.2	9	3
N20219-M10	M 10	1.5	100	20	39	10	8	11	3

HSS-E taps, short KMB Ms

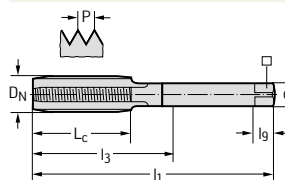


– For short-chipping materials



	P	M	K	N	S	H	O
uncoated				●	●		●

DIN 2184-2

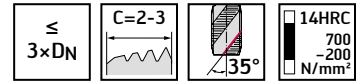
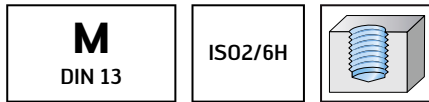


Designation uncoated	DN	P mm	l ₁ mm	L _c mm	l ₃ mm	d ₁ h9 mm	□ mm	l _g mm	N
20165-M2	M 2	0.4	36	8	8	2.8	2.1	5	3
20165-M2.5	M 2.5	0.45	40	9	9	2.8	2.1	5	3
20165-M3	M 3	0.5	40	9	13.5	3.5	2.7	6	3
20165-M3.5	M 3.5	0.6	45	10	15	4	3	6	3
20165-M4	M 4	0.7	45	11	16.5	4.5	3.4	6	3
20165-M5	M 5	0.8	50	13	19	6	4.9	8	3
20165-M6	M 6	1	56	15	27	6	4.9	8	3
20165-M8	M 8	1.25	63	19	40	6	4.9	8	3

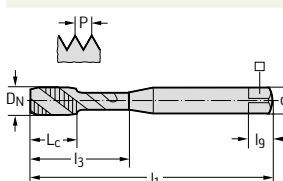
≤ M 2.5: Without reduced neck after the thread

HSS-E machine taps

Paradur® X-pert N



	P	M	K	N	S	H	O
uncoated				●	●		●

DIN/ANSI	Designation uncoated	D _N -P	D _N in	l ₁ in	L _c in	l ₃ in	d ₁ h9 in	□ in	l _g in	N
	AN20516-M2	M 2	0.079	1.772	0.157	0.354	0.141	0.110	0.190	2
	AN20516-M2.5	M 2.5	0.098	1.969	0.157	0.492	0.141	0.110	0.190	2
	AN20516-M3	M 3	0.118	2.205	0.236	0.709	0.141	0.110	0.190	2
	AN20516-M4	M 4	0.157	2.480	0.276	0.827	0.168	0.131	0.250	2
	AN20516-M5	M 5	0.197	2.756	0.315	0.984	0.194	0.152	0.250	2
	AN20516-M6	M 6	0.236	3.150	0.394	1.181	0.255	0.191	0.313	2
	AN20516-M8	M 8	0.315	3.543	0.472	1.378	0.318	0.238	0.380	2

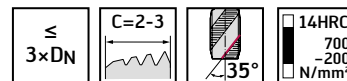
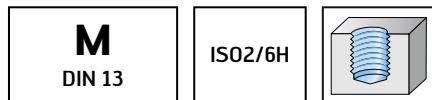
B 3



HSS-E machine taps Paradur® X-pert N

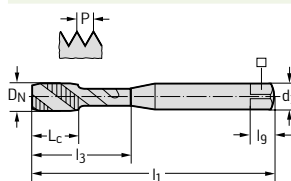


– For long-chipping materials



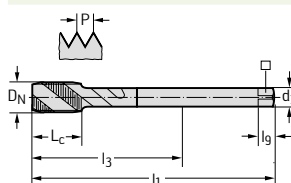
	P	M	K	N	S	H	O
uncoated				●	●		●

DIN 371



Designation uncoated	D _N	P mm	l ₁ mm	L _c mm	l ₃ mm	d ₁ h9 mm	□ mm	l _g mm	N
N20516-M1.6	M 1.6	0.35	40	6	6	2.5	2.1	5	2
N20516-M2	M 2	0.4	45	4	9	2.8	2.1	5	2
N20516-M2.3	M 2.3	0.4	45	4	12	2.8	2.1	5	2
N20516-M2.5	M 2.5	0.45	50	4	12.5	2.8	2.1	5	2
N20516-M3	M 3	0.5	56	6	18	3.5	2.7	6	2
N20516-M3.5	M 3.5	0.6	56	6.5	20	4	3	6	2
N20516-M4	M 4	0.7	63	7	21	4.5	3.4	6	2
N20516-M5	M 5	0.8	70	8	25	6	4.9	8	2
N20516-M6	M 6	1	80	10	30	6	4.9	8	2
N20516-M8	M 8	1.25	90	12	35	8	6.2	9	2
N20516-M10	M 10	1.5	100	15	39	10	8	11	2

DIN 376



Designation uncoated	D _N	P mm	l ₁ mm	L _c mm	l ₃ mm	d ₁ h9 mm	□ mm	l _g mm	N
N20566-M6	M 6	1	80	10	59	4.5	3.4	6	2
N20566-M8	M 8	1.25	90	12	67	6	4.9	8	2
N20566-M10	M 10	1.5	100	15	77	7	5.5	8	2
N20566-M12	M 12	1.75	110	16	83	9	7	10	3
N20566-M14	M 14	2	110	20	81	11	9	12	3
N20566-M16	M 16	2	110	20	68	12	9	12	3
N20566-M20	M 20	2.5	140	25	95	16	12	15	3

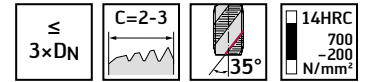
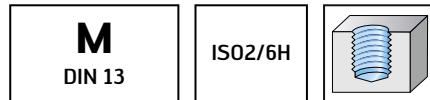


HSS-E machine taps

Paradur® X-pert N



- Increased number of grooves
- For long-chipping materials



	P	M	K	N	S	H	O
uncoated				●	●		●

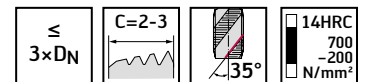
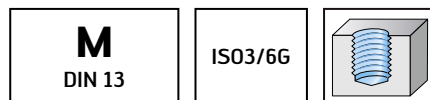
DIN 371	Designation uncoated	D _N	P mm	l ₁ mm	L _c mm	l ₃ mm	d ₁ h9 mm	□ mm	l _g mm	N
	N205166-M3	M 3	0.5	56	6	18	3.5	2.7	6	3
	N205166-M4	M 4	0.7	63	7	21	4.5	3.4	6	3
	N205166-M5	M 5	0.8	70	8	25	6	4.9	8	3
	N205166-M6	M 6	1	80	10	30	6	4.9	8	3
	N205166-M7	M 7	1	80	10	30	7	5.5	8	3
	N205166-M8	M 8	1.25	90	12	35	8	6.2	9	3
	N205166-M10	M 10	1.5	100	15	39	10	8	11	3

HSS-E machine taps

Paradur® X-pert N



- For long-chipping materials



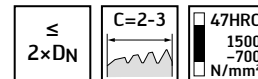
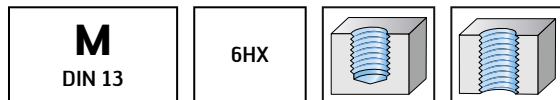
	P	M	K	N	S	H	O
uncoated				●	●		●

DIN 371	Designation uncoated	D _N	P mm	l ₁ mm	L _c mm	l ₃ mm	d ₁ h9 mm	□ mm	l _g mm	N
	N20536-M2	M 2	0.4	45	4	9	2.8	2.1	5	2
	N20536-M2.5	M 2.5	0.45	50	4	12.5	2.8	2.1	5	2
	N20536-M3	M 3	0.5	56	6	18	3.5	2.7	6	2
	N20536-M4	M 4	0.7	63	7	21	4.5	3.4	6	2
	N20536-M5	M 5	0.8	70	8	25	6	4.9	8	2
	N20536-M6	M 6	1	80	10	30	6	4.9	8	2
	N20536-M8	M 8	1.25	90	12	35	8	6.2	9	2

HSS-E machine taps Paradur® AP

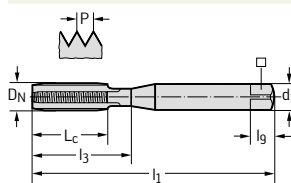


- For short-chipping materials
- For Ampco



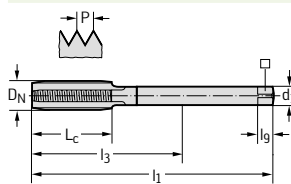
	P	M	K	N	S	H	O
NIT				●	●		

DIN 371



Designation NIT	DN	P mm	l ₁ mm	L _c mm	l ₃ mm	d ₁ h9 mm	□ mm	l _g mm	N
20312-M3	M 3	0.5	56	9	18	3.5	2.7	6	3
20312-M4	M 4	0.7	63	12	21	4.5	3.4	6	3
20312-M5	M 5	0.8	70	13	25	6	4.9	8	3
20312-M6	M 6	1	80	15	30	6	4.9	8	3
20312-M8	M 8	1.25	90	18	35	8	6.2	9	3
20312-M10	M 10	1.5	100	20	39	10	8	11	3

DIN 376



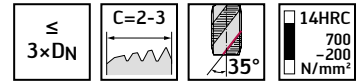
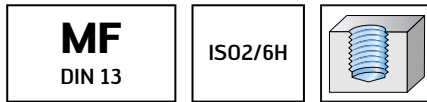
Designation NIT	DN	P mm	l ₁ mm	L _c mm	l ₃ mm	d ₁ h9 mm	□ mm	l _g mm	N
20362-M12	M 12	1.75	110	23	83	9	7	10	4
20362-M16	M 16	2	110	25	68	12	9	12	4
20362-M20	M 20	2.5	140	30	95	16	12	15	4

HSS-E machine taps

Paradur® X-pert N

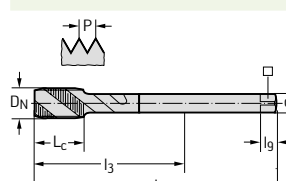


– For long-chipping materials



	P	M	K	N	S	H	O
uncoated				●	●		●

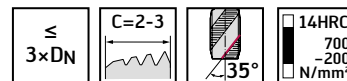
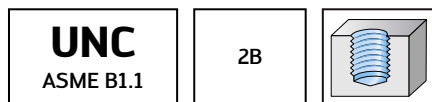
DIN 374



Designation uncoated	D _N	P mm	l ₁ mm	L _c mm	l ₃ mm	d ₁ h9 mm	 mm	l _g mm	N
N21566-M8X1	MF 8x1	1	90	12	67	6	4.9	8	2
N21566-M10X1	MF 10x1	1	90	12	67	7	5.5	8	3
N21566-M12X1	MF 12x1	1	100	13	73	9	7	10	3
N21566-M12X1.5	MF 12x1.5	1.5	100	13	73	9	7	10	3
N21566-M14X1.5	MF 14x1.5	1.5	100	15	71	11	9	12	3
N21566-M16X1	MF 16x1	1	100	15	58	12	9	12	4
N21566-M16X1.5	MF 16x1.5	1.5	100	15	58	12	9	12	3
N21566-M18X1.5	MF 18x1.5	1.5	110	17	66	14	11	14	4
N21566-M20X1.5	MF 20x1.5	1.5	125	17	80	16	12	15	4

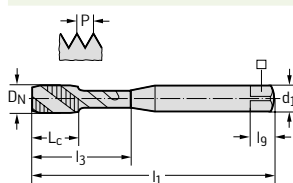
B 3

HSS-E machine taps Paradur® X-pert N



	P	M	K	N	S	H	O
uncoated				●	●		●

DIN/ANSI

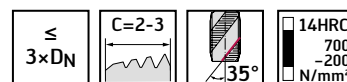
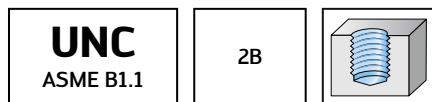


Designation uncoated	D _N -P	D _N in	l ₁ in	L _c in	l ₃ in	d ₁ h9 in	□ in	l _g in	N
AN22516-UNC2	UNC 2-56	0.086	1.772	0.157	0.472	0.141	0.110	0.190	2
AN22516-UNC4	UNC 4-40	0.112	2.205	0.236	0.709	0.141	0.110	0.190	2
AN22516-UNC5/16	UNC 5/16-18	0.313	3.543	0.472	1.378	0.318	0.238	0.380	2

HSS-E machine taps Paradur® X-pert N

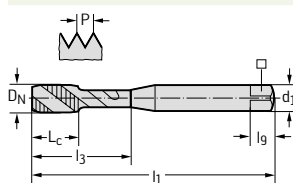


– For long-chipping materials



	P	M	K	N	S	H	O
uncoated				●	●		●

DIN 2184-1



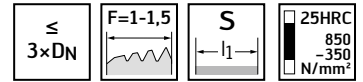
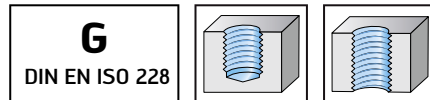
Designation uncoated	D _N -P	D _N mm	l ₁ mm	L _c mm	l ₃ mm	d ₁ h9 mm	□ mm	l _g mm	N
N22516-UNC2	UNC 2-56	2.184	45	4	12	2.8	2.1	5	2
N22516-UNC4	UNC 4-40	2.845	56	6	18	3.5	2.7	6	2
N22516-UNC6	UNC 6-32	3.505	56	6.5	20	4	3	6	2
N22516-UNC8	UNC 8-32	4.166	63	7	21	4.5	3.4	6	2
N22516-UNC10	UNC 10-24	4.826	70	8	25	6	4.9	8	2
N22516-UNC1/4	UNC 1/4-20	6.35	80	10	30	7	5.5	8	2
N22516-UNC5/16	UNC 5/16-18	7.938	90	12	35	8	6.2	9	2
N22516-UNC3/8	UNC 3/8-16	9.525	100	15	39	10	8	11	2



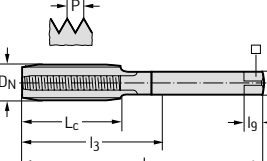
HSS-E taps, short KMB Ms



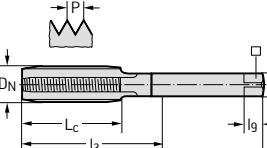
– For short-chipping materials



	P	M	K	N	S	H	O
uncoated				●			●

DIN 5157		Designation uncoated	D _N -P	D _N mm	Th- reads per inch	l ₁ mm	L _c mm	l ₃ mm	d ₁ h9 mm	□ mm	l ₉ mm	N
	24165-G1/8	G 1/8-28	9.728	28	63	20	40	7	5.5	8	3	
	24165-G1/4	G 1/4-19	13.157	19	70	20	41	11	9	12	4	
	24165-G3/8	G 3/8-19	16.662	19	70	20	28	12	9	12	4	
	24165-G1/2	G 1/2-14	20.955	14	80	22	35	16	12	15	6	
	24165-G3/4	G 3/4-14	26.441	14	90	22	27	20	16	19	6	
	24165-G1	G 1"-11	33.249	11	100	25	33	25	20	23	6	

Thread machining allowance 0.05 mm

DIN 5157												
	Designation uncoated	D _N -P	D _N mm	Th- reads per inch	l ₁ mm	L _c mm	l ₃ mm	d ₁ h9 mm	 mm	l ₉ mm	N	
	24195-G1/8	G 1/8-28	9.728	28	63	20	40	7	5.5	8	3	
	24195-G1/4	G 1/4-19	13.157	19	70	20	41	11	9	12	4	
	24195-G3/8	G 3/8-19	16.662	19	70	20	28	12	9	12	4	
	24195-G1/2	G 1/2-14	20.955	14	80	22	35	16	12	15	6	
	24195-G3/4	G 3/4-14	26.441	14	90	22	27	20	16	19	6	

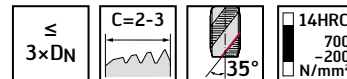
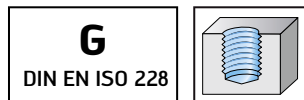
Thread machining allowance 0.1 mm

B3

HSS-E machine taps Paradur® X-pert N



– For long-chipping materials



	P	M	K	N	S	H	O
uncoated				●	●		●

DIN 5156		Designation uncoated	D _N -P	D _N mm	Th- reads per inch	l ₁ mm	L _c mm	l ₃ mm	d ₁ h9 mm	□ mm	l _g mm	N
		N24566-G1/8	G 1/8-28	9.728	28	90	12	67	7	5.5	8	3

B3

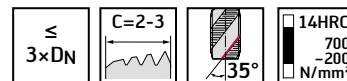
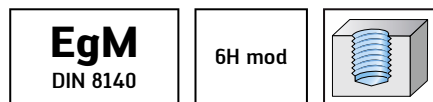


HSS-E machine taps

Paradur® X-pert N

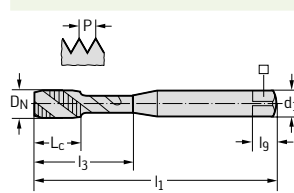


– For long-chipping materials



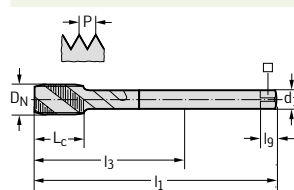
	P	M	K	N	S	H	O
uncoated				●	●		●

DIN 40435



Designation uncoated	D _N	P mm	l ₁ mm	L _c mm	l ₃ mm	d ₁ h9 mm	□ mm	l _g mm	N
N205069-EGM2.5	EGM 2.5	0.45	56	6	18	3.5	2.7	6	2
N205069-EGM3	EGM 3	0.5	63	7	21	4.5	3.4	6	2
N205069-EGM4	EGM 4	0.7	70	8	25	6	4.9	8	2
N205069-EGM5	EGM 5	0.8	80	10	30	6	4.9	8	3
N205069-EGM6	EGM 6	1	90	12	35	8	6.2	9	3
N205069-EGM8	EGM 8	1.25	100	15	39	10	8	11	3

DIN 40435



Designation uncoated	D _N	P mm	l ₁ mm	L _c mm	l ₃ mm	d ₁ h9 mm	□ mm	l _g mm	N
N205569-EGM10	EGM 10	1.5	100	13	73	9	7	10	3
N205569-EGM12	EGM 12	1.75	110	20	81	11	9	12	3
N205569-EGM16	EGM 16	2	125	25	81	14	11	14	4

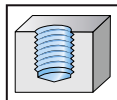
B3

HSS-E machine taps Paradur® X-pert N



STI-UNC
NASM 33537

3B



$\leq 3 \times D_N$

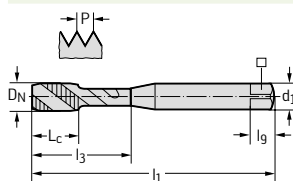
C=2-3

$\angle 35^\circ$

14HRC
700
-200
N/mm²

	P	M	K	N	S	H	O
uncoated				●	●		●

DIN/ANSI



Designation
uncoated

D_N-P

D_N
in

l₁
in

L_c
in

l₃
in

d₁
h9
in

□
in

l_g
in

N

AN225069-STIUNC2	EGUNC 2-56	0.109	2.205	0.236	0.709	0.141	0.110	0.190	2
AN225069-STIUNC4	EGUNC 4-40	0.144	2.205	0.276	0.827	0.141	0.110	0.190	2
AN225069-STIUNC6	EGUNC 6-32	0.179	2.756	0.315	0.984	0.194	0.152	0.250	2
AN225069-STIUNC8	EGUNC 8-32	0.205	2.756	0.394	0.984	0.194	0.152	0.250	2
AN225069-STIUNC1/4	EGUNC 1/4-20	0.315	3.543	0.472	1.378	0.318	0.238	0.380	2

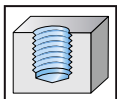
HSS-E machine taps Paradur® X-pert N



– For long-chipping materials

EgUNC
NASM 33537

3B



$\leq 3 \times D_N$

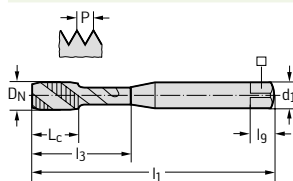
C=2-3

$\angle 35^\circ$

14HRC
700
-200
N/mm²

	P	M	K	N	S	H	O
uncoated				●	●		●

DIN 2184-1



Designation
uncoated

D_N-P

D_N
mm

l₁
mm

L_c
mm

l₃
mm

d₁
h9
mm

□
mm

l_g
mm

N

N225069-EGUNC6	EGUNC 6-32	4.536	70	8	25	6	4.9	8	2
N225069-EGUNC8	EGUNC 8-32	5.197	80	10	30	6	4.9	8	2
N225069-EGUNC10	EGUNC 10-24	6.201	80	10	30	7	5.5	8	2
N225069-EGUNC1/4	EGUNC 1/4-20	8	90	12	35	8	6.2	9	2

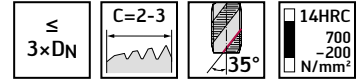
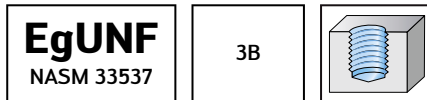


HSS-E machine taps

Paradur® X-pert N

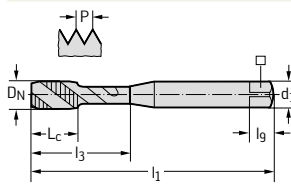


– For long-chipping materials



	P	M	K	N	S	H	O
uncoated				●	●		●

DIN 2184-1



Designation uncoated	D _N -P	D _N mm	l ₁ mm	L _c mm	l ₃ mm	d ₁ h9 mm	□ mm	l _g mm	N
N235069-EGUNF10	EGUNF 10-32	5.857	80	10	30	6	4.9	8	2
N235069-EGUNF1/4	EGUNF 1/4-28	7.528	90	12	35	8	6.2	9	3

B 3



Product overview Solid carbide milling tools

Shoulder milling cutters

Shoulder/slot milling cutters

Machining							
Helix angle	30°	45°	30°	25°	30°		40°
Designation	H404491 Protostar®	AH602511 AH602551 H602311 H6023114 H602411 ... Protostar®	H901411 H901451 Protostar®	AH602681 H602641 H602681 H602881 Protostar®	MB266 Supreme	MB265 Supreme	AH608411 H608411 H608771 H608871 H618911 Protostar®
Diameter range [mm]	0,4–3	1–25	2–12	2–20	6,35–25,4	16–25	6–25
Z	2	2–3	1–2	2	3	3	3
Corner radius [mm]	0,05–0,3	0–0,5	0	0–4	0,38–4	2–4	0
Page	62	65	67	68	70	72	73
							

Product overview Solid carbide milling tools

Copy milling cutters

with ConeFit interface

Shoulder/slot milling cutters

Machining			
Helix angle	30°		45°
Designation	AH602111 H602111 Protostar®	H404691 Protostar®	H6E2211 H6E2511 Protostar®
Diameter range [mm]	2–16	0,3–3	10–25
Z	2	2	2–3
Corner radius [mm]	1–8	0,15–1,5	0
Page	75	76	77
			

Product overview
Shoulder milling cutters

Machining			
Designation	F4722	F4722	F4723
Diameter range [mm]	20–40	6–20	50–80
Z	4	2	5–6
Shank [mm]	ScrewFit	Parallel shank	Parallel bore
Page	78	78	79
			

Product overview Indexable insert milling cutters

Face milling cutters

Machining		
Lead angle κ	90°	
Designation	F2250	F2250
D _c [mm]	63–100	125
D _c [inch]	2,480–3,937	4,921
Page	92	93
		

Product overview Indexable insert milling cutters

Shoulder milling cutters

Machining		
Lead angle κ	90°	
Designation	M2131	M2331
D _c [mm]	25–80	40–51
D _c [inch]	0,984–3,150	1,575–2,000
Page	94	98
		

Indexable inserts for milling product range overview



C2

Insert shape		Description	Page
	A	Positive rhombic for Xtra-tec®	80
	B	Positive rhombic	81
	L	Negative rhombic for Xtra-tec®	90
		Tangential rhombic	91
	M	Positive rhombic	82
	O	Positive octagonal for Xtra-tec®	82
	R	Positive round	83
	S	Positive square Negative square for Xtra-tec®	83 90
	X	Positive rhombic PCD	87
	Z	Positive rhombic	87
	SX ..	Indexable inserts for Walter BLAXX slitting cutters	91
		Double-sided finishing inserts	89

Cutting tool materials: Coated carbide

Cutting tool material applications

Application	Cutting tool material	Application range									
		01	05	10	15	20	25	30	35	40	45
ISO N	PVD										
	PVD										
		Wear resistance									
		Toughness									

Cutting tool materials: Uncoated carbide, cermet, ceramic, CBN and PCD

Cutting tool material applications

Application	Cutting tool material	Application range									
		01	05	10	15	20	25	30	35	40	45
ISO P	HT										
ISO K	CBN										
	Si ₃ N ₄										
ISO N	HW										
	PKD										
	PKD										
	HW										
ISO H	CBN										
		Wear resistance									
		Toughness									

Si₃N₄ = Silicon nitride ceramic
 HW = Uncoated carbide
 HT = Cermet
 CBN = Cubic boron nitride
 PKD = Polycrystalline diamond

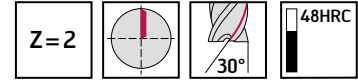
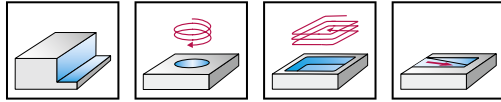
Solid carbide shoulder milling cutters

H404491

Protostar®



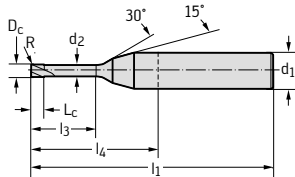
- Long reach
- Type HSC 30, mini



	P	M	K	N	S	H	O
uncoated				●●			

PWZ-NORM MINI

DIN 6535 HA shank



Designation uncoated	D _c h7 mm	r mm	L _c mm	l ₃ mm	d ₂ mm	l ₁ mm	l ₄ mm	d ₁ h5 mm	Z
H404491-0.4-1	0.4	0.05	0.4	1	0.37	38	10	3	2
H404491-0.4-2	0.4	0.05	0.4	2	0.37	38	10	3	2
H404491-0.5-1.25	0.5	0.05	0.5	1	0.47	38	10	3	2
H404491-0.5-2.5	0.5	0.05	0.5	3	0.47	38	10	3	2
H404491-0.5-5	0.5	0.05	0.5	5	0.47	38	10	3	2
H404491-0.6-1.5	0.6	0.05	0.6	2	0.57	38	10	3	2
H404491-0.6-3	0.6	0.05	0.6	3	0.57	38	10	3	2
H404491-0.6-4.5	0.6	0.05	0.6	5	0.57	38	10	3	2
H404491-0.6-6	0.6	0.05	0.6	6	0.57	38	10	3	2
H404491-0.6-9	0.6	0.05	0.6	9	0.57	38	10	3	2
H404491-0.8-2	0.8	0.05	0.8	2	0.77	38	10	3	2
H404491-0.8-4	0.8	0.05	0.8	4	0.77	38	10	3	2
H404491-0.8-6	0.8	0.05	0.8	6	0.77	38	10	3	2
H404491-0.8-8	0.8	0.05	0.8	8	0.77	38	10	3	2
H404491-0.8-12	0.8	0.05	0.8	12	0.77	60	32	3	2
H404491-1-2.5	1	0.1	1	3	0.97	38	10	3	2
H404491-1-5	1	0.1	1	5	0.97	60	32	3	2
H404491-1-7.5	1	0.1	1	8	0.97	60	32	3	2
H404491-1-10	1	0.1	1	10	0.97	60	32	3	2
H404491-1-15	1	0.1	1	15	0.97	60	32	3	2
H404491-1-20	1	0.1	1	20	0.97	60	32	3	2
H404491-1.5-7.5	1.5	0.15	1.5	8	1.47	60	32	3	2
H404491-1.5-15	1.5	0.15	1.5	15	1.47	60	32	3	2
H404491-2-10	2	0.2	2	10	1.97	60	32	3	2
H404491-2-15	2	0.2	2	15	1.97	60	32	3	2
H404491-2-20	2	0.2	2	20	1.97	60	32	3	2
H404491-2-30	2	0.2	2	30	1.97	60	32	3	2
H404491-2.5-12.5	2.5	0.25	2.5	13	2.47	60	32	3	2
H404491-2.5-25	2.5	0.25	2.5	25	2.47	60	32	3	2
H404491-3-15	3	0.3	3	15	2.97	60	32	3	2
H404491-3-22.5	3	0.3	3	23	2.97	60	32	3	2
H404491-3-30	3	0.3	3	30	2.97	60	32	3	2

Slot milling $a_p \leq 0.1 \times D_c$
Shoulder milling $a_e \leq 0.05 \times D_c$

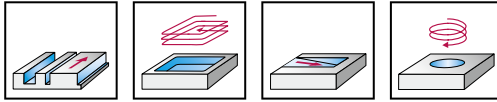
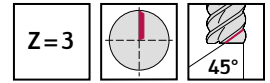
Solid carbide shoulder/slot milling cutters

H6023114 / H602311

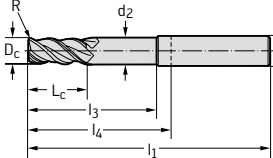
Protostar®



- Long reach
- Type AI 45



	P	M	K	N	S	H	O
CRN				••			
uncoated				••			

DIN 6527 L	Designation CRN	Designation uncoated	D _c h9 mm	r mm	L _c mm	l ₃ mm	d ₂ mm	l ₁ mm	l ₄ mm	d ₁ h6 mm	Z
	H6023114-1	H602311-1	1	0.2	3	7	0.96	57	21	6	3
	H6023114-2	H602311-2	2	0.2	6	10	1.92	57	21	6	3
	H6023114-3	H602311-3	3	0.3	7	10	2.9	57	21	6	3
	H6023114-4	H602311-4	4	0.5	8	15	3.8	57	21	6	3
	H6023114-5	H602311-5	5	0.5	10	16	4.75	57	21	6	3
	H6023114-6	H602311-6	6	0.5	10	19	5.7	57	21	6	3
	H6023114-8	H602311-8	8	0.5	16	25	7.6	63	27	8	3
	H6023114-10	H602311-10	10	0.5	19	30	9.5	72	32	10	3
	H6023114-12	H602311-12	12	0.5	22	36	11.4	83	38	12	3
	H6023114-14	H602311-14	14	0.5	22	36	13.3	83	38	14	3
	H6023114-16	H602311-16	16	0.5	26	42	15.2	92	44	16	3
	H6023114-20	H602311-20	20	0.5	32	52	19	104	54	20	3
	H6023114-25	H602311-25	25	0.5	45	63	23.75	121	65	25	3

Slot milling $a_p \leq 0.5 \times D_c$ Shoulder milling $a_e \leq 0.3 \times D_c$

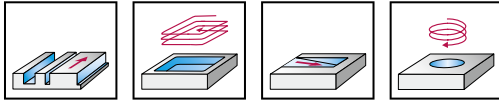
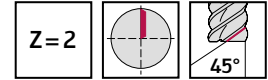
Solid carbide shoulder/slot milling cutters

H602411 / H602511 / AH602511

Protostar®



- Long reach
- Type AI 45



	P	M	K	N	S	H	O
uncoated				●●			

DIN 6527 L	Designation uncoated	D _c h10 mm	L _c mm	l ₃ mm	d ₂ mm	l ₁ mm	l ₄ mm	d ₁ h6 mm	Z
	H602411-1	1	3	7	1.0	57	21	6	2
	H602411-1.5	1.5	3	7	1.4	57	21	6	2
	H602411-2	2	6	10	1.9	57	21	6	2
	H602411-3	3	7	10	2.9	57	21	6	2
	H602411-4	4	8	15	3.8	57	21	6	2
	H602411-5	5	10	16	4.8	57	21	6	2
	H602411-6	6	10	19	5.7	57	21	6	2
	H602411-8	8	16	25	7.6	63	27	8	2
	H602411-10	10	19	30	9.5	72	32	10	2
	H602411-12	12	22	36	11.4	83	38	12	2
	H602411-16	16	26	42	15.2	92	44	16	2
	H602411-20	20	32	52	19	104	54	20	2

Slot milling $a_p \leq 1.0 \times D_c$
Shoulder milling $a_e \leq 0.5 \times D_c$

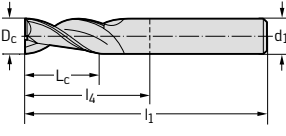
DIN 6527 L	Designation uncoated	D _c h10 mm	L _c mm	l ₁ mm	l ₄ mm	d ₁ h6 mm	Z
	H602511-1	1	3	57	21	6	2
	H602511-1.5	1.5	3	57	21	6	2
	H602511-2	2	6	57	21	6	2
	H602511-2.5	2.5	7	57	21	6	2
	H602511-3	3	7	57	21	6	2
	H602511-3.5	3.5	7	57	21	6	2
	H602511-4	4	8	57	21	6	2
	H602511-4.5	4.5	8	57	21	6	2
	H602511-5	5	10	57	21	6	2
	H602511-5.5	5.5	10	57	21	6	2
	H602511-6	6	10	57	21	6	2
	H602511-8	8	16	63	27	8	2
	H602511-10	10	19	72	32	10	2
	H602511-12	12	22	83	38	12	2
	H602511-14	14	22	83	38	14	2
	H602511-16	16	26	92	44	16	2
	H602511-18	18	26	92	44	18	2
	H602511-20	20	32	104	54	20	2

Slot milling $a_p \leq 1.0 \times D_c$
Shoulder milling $a_e \leq 0.5 \times D_c$

Continued



Continued

STANDARD	Designation uncoated	D_c h10	L_c	l_1	l_4	d_1 h6	Z
		Inches/Wire/Letter	in	in	in	in	
 DIN 6535 HA shank	AH602511-1/16	1/16"	0.187	2.500	1.083	0.250	2
	AH602511-3/32	3/32"	0.375	2.500	1.083	0.250	2
	AH602511-1/8	1/8"	0.500	2.500	1.083	0.250	2
	AH602511-3/16	3/16"	0.625	2.500	1.083	0.250	2
	AH602511-1/4	1/4"	0.750	2.500	1.083	0.250	2
	AH602511-5/16	5/16"	0.813	3.000	1.437	0.375	2
	AH602511-3/8	3/8"	0.875	3.000	1.437	0.375	2
	AH602511-7/16	7/16"	1.000	3.500	1.717	0.500	2
	AH602511-1/2	1/2"	1.000	3.500	1.717	0.500	2
	AH602511-5/8	5/8"	1.250	3.500	1.594	0.625	2
	AH602511-3/4	3/4"	1.500	4.000	1.969	0.750	2

Slot milling $a_p \leq 1.0 \times D_c$ Shoulder milling $a_e \leq 0.5 \times D_c$

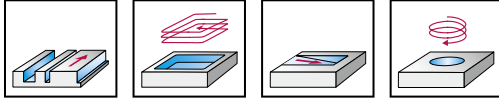
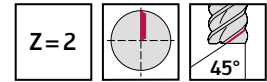
Solid carbide shoulder/slot milling cutters

H602551 / AH602551

Protostar®

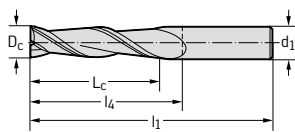


– Type AI 45, long



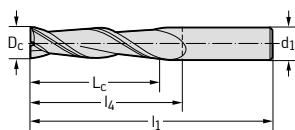
	P	M	K	N	S	H	O
uncoated				●●			

PWZ-NORM L	Designation uncoated	D _c h10 mm	L _c mm	l ₁ mm	l ₄ mm	d ₁ h6 mm	Z
DIN 6535 HA shank	H602551-6	6	35	80	44	6	2
	H602551-8	8	45	97	61	8	2
	H602551-10	10	50	118	78	10	2
	H602551-12	12	60	120	75	12	2
	H602551-16	16	65	130	82	16	2
	H602551-20	20	75	145	95	20	2



Slot milling $a_p \leq 1.0 \times D_c$
Shoulder milling $a_e \leq 0.5 \times D_c$

LONG	Designation uncoated	D _c h10 Inches/Wire/Letter	L _c in	l ₁ in	l ₄ in	d ₁ h6 in	Z
DIN 6535 HA shank	AH602551-1/8	1/8"	0.750	2.500	1.083	0.250	2
	AH602551-1/4	1/4"	1.125	3.000	1.583	0.250	2
	AH602551-5/16	5/16"	1.125	3.000	1.458	0.375	2
	AH602551-3/8	3/8"	1.125	3.000	1.437	0.375	2
	AH602551-1/2	1/2"	2.000	4.500	2.717	0.500	2
	AH602551-5/8	5/8"	2.250	5.000	3.094	0.625	2
	AH602551-3/4	3/4"	2.250	5.000	2.969	0.750	2



Slot milling $a_p \leq 1.0 \times D_c$
Shoulder milling $a_e \leq 0.5 \times D_c$

C 1



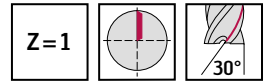
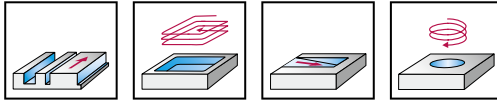
Solid carbide shoulder/slot milling cutters

H901451 / H901411

Protostar®

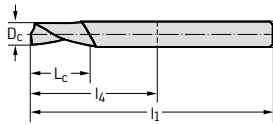


– Type AI 30



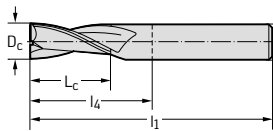
	P	M	K	N	S	H	O
uncoated				●●			

DIN 6527 L	Designation uncoated	D _c h10 mm	L _c mm	l ₁ mm	l ₄ mm	d ₁ h6 mm	Z
DIN 6535 HA shank	H901451-3	3	7	57	21	6	1
	H901451-4	4	8	57	21	6	1
	H901451-5	5	10	57	21	6	1
	H901451-6	6	10	57	21	6	1
	H901451-8	8	16	63	27	8	1
	H901451-10	10	19	72	32	10	1



Slot milling $a_p \leq 1.0 \times D_c$
Shoulder milling $a_e \leq 0.6 \times D_c$

DIN 6527 L	Designation uncoated	D _c h10 mm	L _c mm	l ₁ mm	l ₄ mm	d ₁ h6 mm	Z
DIN 6535 HA shank	H901411-2	2	6	57	21	6	2
	H901411-3	3	7	57	21	6	2
	H901411-4	4	8	57	21	6	2
	H901411-5	5	10	57	21	6	2
	H901411-6	6	10	57	21	6	2
	H901411-8	8	16	63	27	8	2
	H901411-10	10	19	72	32	10	2
	H901411-12	12	22	83	38	12	2



Slot milling $a_p \leq 1.0 \times D_c$
Shoulder milling $a_e \leq 0.6 \times D_c$

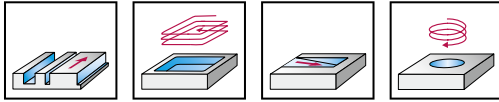
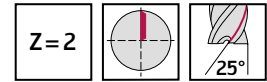
Solid carbide shoulder/slot milling cutters

H602641 / H602681 / AH602681

Protostar®



– Type AI 25



	P	M	K	N	S	H	O
uncoated				●●			

PWZ-NORM L		D _c h10 mm	L _c mm	l ₁ mm	l ₄ mm	d ₁ h6 mm	Z
	Designation uncoated						
	DIN 6535 HA shank						
	H602641-2	2	8	38	11	3	2
	H602641-3	3	12	38	10	3	2
	H602641-4	4	14	50	22	4	2
	H602641-5	5	16	57	21	6	2
	H602641-6	6	22	65	29	6	2
	H602641-8	8	28	80	44	8	2
	H602641-10	10	32	90	50	10	2
	H602641-12	12	38	100	55	12	2
	H602641-16	16	50	115	67	16	2
	H602641-20	20	50	125	75	20	2

Slot milling $a_p \leq 0.5 \times D_c$

Shoulder milling $a_e \leq 0.3 \times D_c$

PWZ-NORM L		D _c h10 mm	L _c mm	l ₃ mm	d ₂ mm	l ₁ mm	l ₄ mm	d ₁ h6 mm	Z
	Designation uncoated								
	DIN 6535 HA shank								
	H602681-2	2	3	9	1.9	38	10	3	2
	H602681-3	3	4	12	2.9	38	12	3	2
	H602681-4	4	6	14	3.8	50	22	4	2
	H602681-5	5	8	16	4.8	57	21	6	2
	H602681-6	6	10	28	5.7	65	29	6	2
	H602681-8	8	12	35	7.6	80	44	8	2
	H602681-10	10	14	45	9.5	90	50	10	2
	H602681-12	12	16	50	11.4	100	55	12	2
	H602681-16	16	20	63	15.2	115	67	16	2
	H602681-20	20	20	70	19	125	75	20	2

Slot milling $a_p \leq 0.5 \times D_c$

Shoulder milling $a_e \leq 0.3 \times D_c$

Continued

EXTRA-LONG		D _c h10 Inches/Wire/Letter	L _c in	l ₃ in	d ₂ in	l ₁ in	l ₄ in	d ₁ h6 in	Z
	Designation uncoated								
	DIN 6535 HA shank								
	AH602681-1/8	1/8"	0.250	1.062	0.119	3.000	1.937	0.250	2
	AH602681-3/16	3/16"	0.375	1.625	0.178	3.000	1.687	0.250	2
	AH602681-1/4	1/4"	0.500	2.375	0.237	4.000	2.583	0.250	2
	AH602681-5/16	5/16"	0.500	2.375	0.297	4.500	2.937	0.375	2
	AH602681-3/8	3/8"	0.563	2.500	0.356	4.500	2.937	0.375	2
	AH602681-1/2	1/2"	0.625	4.000	0.475	6.000	4.217	0.500	2
	AH602681-5/8	5/8"	0.875	4.000	0.594	6.000	4.094	0.625	2

Slot milling $a_p \leq 0.5 \times D_c$

Shoulder milling $a_e \leq 0.3 \times D_c$



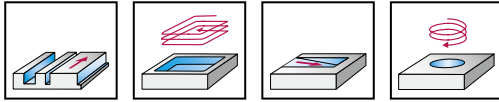
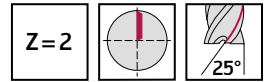
Solid carbide shoulder/slot milling cutters

H602881

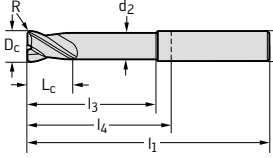
Protostar®



- Long reach
- Type AI 25



	P	M	K	N	S	H	O
uncoated				●●			

PWZ-NORM L		D_c h9 mm	r mm	L_c mm	l_3 mm	d_2 mm	l_1 mm	l_4 mm	d_1 h5 mm	Z
	DIN 6535 HA shank									
	H602881-6-0.5	6	0.5	10	28	5.7	65	29	6	2
	H602881-6-1	6	1	10	28	5.7	65	29	6	2
	H602881-8-1	8	1	12	35	7.6	80	44	8	2
	H602881-8-2	8	2	12	35	7.6	80	44	8	2
	H602881-10-1	10	1	14	45	9.5	90	50	10	2
	H602881-10-2	10	2	14	45	9.5	90	50	10	2
	H602881-12-1.5	12	1.5	16	50	11.4	100	55	12	2
	H602881-12-3	12	3	16	50	11.4	100	55	12	2
	H602881-16-2	16	2	20	63	15.2	115	67	16	2
	H602881-16-4	16	4	20	63	15.2	115	67	16	2
	H602881-20-2	20	2	20	70	19	125	75	20	2
	H602881-20-4	20	4	20	70	19	125	75	20	2

Slot milling $a_p \leq 0.5 \times D_c$

Shoulder milling $a_e \leq 0.6 \times D_c$

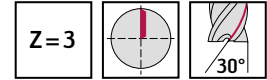
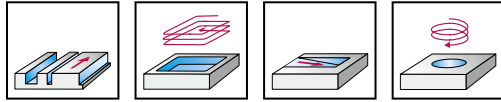


Solid carbide shoulder/slot milling cutters

MB266 Supreme



– Long reach



	P	M	K	N	S	H	O
WJ30UU				●●			

PWZ-NORM XL		D_c h9 mm	r mm	L_c mm	l_3 mm	d_2 mm	l_1 mm	l_4 mm	d_1 h5 mm	Z	WJ30UU
DIN 6535 HA shank											
	Designation										
	MB266-12.0A3X050A-	12	0.5	12	68	11.5	115	70	12	3	⊕
	MB266-12.0A3X050B-	12	0.5	18	53	11.5	100	55	12	3	⊕
	MB266-12.0A3X050C-	12	0.5	24	36	11.5	83	38	12	3	⊕
	MB266-12.0A3X200A-	12	2	12	68	11.5	115	70	12	3	⊕
	MB266-12.0A3X200B-	12	2	18	53	11.5	100	55	12	3	⊕
	MB266-12.0A3X200C-	12	2	24	36	11.5	83	38	12	3	⊕
	MB266-16.0A3X050A-	16	0.5	16	80	15.2	130	82	16	3	⊕
	MB266-16.0A3X050B-	16	0.5	24	65	15.2	115	67	16	3	⊕
	MB266-16.0A3X050C-	16	0.5	32	42	15.2	92	44	16	3	⊕
	MB266-16.0A3X200A-	16	2	16	80	15.2	130	82	16	3	⊕
	MB266-16.0A3X200B-	16	2	24	65	15.2	115	67	16	3	⊕
	MB266-16.0A3X200C-	16	2	32	42	15.2	92	44	16	3	⊕
	MB266-16.0A3X300B-	16	3	24	65	15.2	115	67	16	3	⊕
	MB266-16.0A3X400A-	16	4	16	80	15.2	130	82	16	3	⊕
	MB266-16.0A3X400C-	16	4	32	42	15.2	92	44	16	3	⊕
	MB266-20.0A3X050A-	20	0.5	20	88	19	140	90	20	3	⊕
	MB266-20.0A3X050B-	20	0.5	30	73	19	125	75	20	3	⊕
	MB266-20.0A3X300A-	20	3	20	88	19	140	90	20	3	⊕
	MB266-20.0A3X300B-	20	3	30	73	19	125	75	20	3	⊕
	MB266-20.0A3X400B-	20	4	30	73	19	125	75	20	3	⊕
	MB266-25.0A3X050C-	25	0.5	37	72	23.75	130	74	25	3	⊕
	MB266-25.0A3X400A-	25	4	25	92	23.75	150	94	25	3	⊕
	MB266-25.0A3X400C-	25	4	37	72	23.75	130	74	25	3	⊕

Slot milling $a_p \leq 0.9 \times D_c$

Shoulder milling $a_e \leq 0.6 \times D_c$

Order example for grade WJ30UU: MB266-12.0A3X050A-WJ30UU

C 1

PWZ-NORM XL		D_c h9 Inches/Wire/Letter	r in	L_c in	l_3 in	d_2 in	l_1 in	l_4 in	d_1 h5 in	Z	WJ30UU
DIN 6535 HA shank											
	Designation										
	MB266.6.35A3X038B-	1/4"	0.015	0.375	1.500	0.236	3.000	1.583	0.250	3	⊕
	MB266.6.35A3X076B-	1/4"	0.030	0.375	1.500	0.236	3.000	1.583	0.250	3	⊕
	MB266.9.53A3X038B-	3/8"	0.015	0.500	1.550	0.355	3.250	1.687	0.375	3	⊕
	MB266.9.53A3X076B-	3/8"	0.030	0.500	1.550	0.355	3.250	1.687	0.375	3	⊕
	MB266.12.7A3X038B-	1/2"	0.015	0.625	2.125	0.470	4.000	2.217	0.500	3	⊕
	MB266.12.7A3X038C-	1/2"	0.015	1.250	3.125	0.470	5.000	3.217	0.500	3	⊕
	MB266.12.7A3X076B-	1/2"	0.030	0.625	2.125	0.470	4.000	2.217	0.500	3	⊕
	MB266.12.7A3X076C-	1/2"	0.030	1.250	3.125	0.470	5.000	3.217	0.500	3	⊕
	MB266.12.7A3X152C-	1/2"	0.060	1.250	3.125	0.470	5.000	3.217	0.500	3	⊕
	MB266.12.7A3X305C-	1/2"	0.120	1.250	3.125	0.470	5.000	3.217	0.500	3	⊕
	MB266.15.9A3X038C-	5/8"	0.015	1.625	3.125	0.600	5.000	3.148	0.625	3	⊕
	MB266.15.9A3X076C-	5/8"	0.030	1.625	3.125	0.600	5.000	3.148	0.625	3	⊕
	MB266.15.9A3X152C-	5/8"	0.060	1.625	3.125	0.600	5.000	3.148	0.625	3	⊕
	MB266.15.9A3X305C-	5/8"	0.120	1.625	3.125	0.600	5.000	3.148	0.625	3	⊕

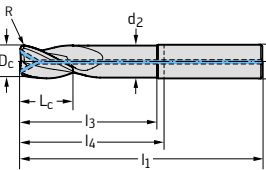
Slot milling $a_p \leq 0.9 \times D_c$

Shoulder milling $a_e \leq 0.6 \times D_c$

Order example for grade WJ30UU: MB266.6.35A3X038B-WJ30UU

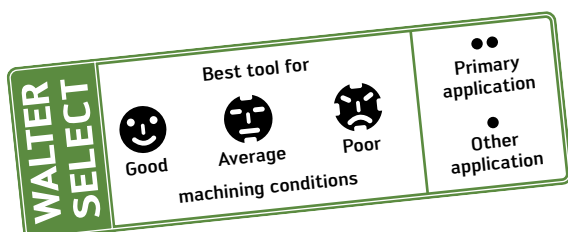
Continued

Continued

PWZ-NORM XL												
	Designation	D_c h9 Inches/Wire/Letter	r in	L_c in	l_3 in	d_2 in	l_1 in	l_4 in	d_1 h5 in	Z	WJ30UU	
	DIN 6535 HA shank	MB266.19.1A3X038C-	3/4"	0.015	1.625	3.125	0.715	5.000	3.156	0.750	3	☺
		MB266.19.1A3X076C-	3/4"	0.030	1.625	3.125	0.715	5.000	3.156	0.750	3	☺
		MB266.19.1A3X152B-	3/4"	0.060	1.000	2.125	0.715	4.000	2.156	0.750	3	☺
		MB266.19.1A3X305C-	3/4"	0.120	1.625	3.125	0.715	5.000	3.156	0.750	3	☺
		MB266.25.4A3X038B-	1"	0.015	1.250	2.125	0.955	5.000	2.717	1.000	3	☺
		MB266.25.4A3X076B-	1"	0.030	1.250	2.125	0.955	5.000	2.717	1.000	3	☺
		MB266.25.4A3X152B-	1"	0.060	1.250	2.125	0.955	5.000	2.717	1.000	3	☺
		MB266.25.4A3X305B-	1"	0.120	1.250	2.125	0.955	5.000	2.717	1.000	3	☺

Slot milling $a_p \leq 0.9 \times D_c$ Shoulder milling $a_e \leq 0.6 \times D_c$

Order example for grade WJ30UU: MB266.6.35A3X038B-WJ30UU

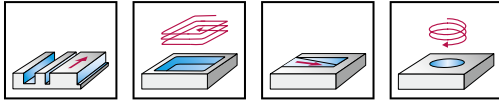
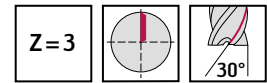


Solid carbide shoulder/slot milling cutters

MB265 Supreme



– Long reach



	P	M	K	N	S	H	O
WJ30CA				●●			
WJ30UU				●●			

PWZ-NORM XL

	Designation	D _c h9 mm	r mm	L _c mm	l ₃ mm	d ₂ mm	l ₁ mm	l ₄ mm	d ₁ h5 mm	Z	WJ30CA	WJ30UU
	MB265-16.0A3X200A-	16	2	20	65	15.2	115	67	16	3	●	●
	MB265-16.0A3X200B-	16	2	24	42	15.2	92	44	16	3	●	●
	MB265-16.0A3X300A-	16	3	20	65	15.2	115	67	16	3		●
	MB265-20.0A3X200A-	20	2	20	88	19	140	90	20	3	●	●
	MB265-20.0A3X200B-	20	2	25	73	19	125	75	20	3	●	●
	MB265-20.0A3X400B-	20	4	25	73	19	125	75	20	3		●
	MB265-25.0A3X200A-	25	2	25	92	23.75	150	94	25	3		●
	MB265-25.0A3X200B-	25	2	30	72	23.75	130	74	25	3		●
	MB265-25.0A3X200C-	25	2	37	52	23.75	110	54	25	3	●	
	MB265-25.0A3X300B-	25	3	30	72	23.75	130	74	25	3		●
	MB265-25.0A3X400A-	25	4	25	92	23.75	150	94	25	3		●
	MB265-25.0A3X400B-	25	4	30	72	23.75	130	74	25	3	●	●
	MB265-25.0A3X400C-	25	4	37	52	23.75	110	54	25	3		●

Slot milling $a_p \leq 1.5 \times D_c$

Shoulder milling $a_e \leq 0.6 \times D_c$

Order example for grade WJ30CA: MB265-16.0A3X200A-WJ30CA

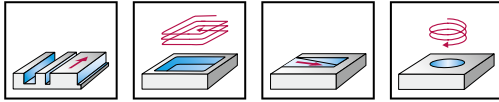
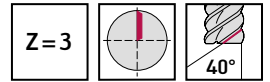
Solid carbide shoulder/slot milling cutters

H608411 / AH608411 / H608771

Protostar®

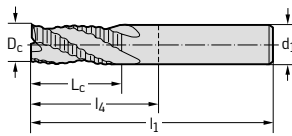


- Type Al Kordel G 40
- With V cutting edge



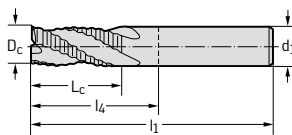
	P	M	K	N	S	H	O
uncoated				●●			

DIN 6527 L	Designation uncoated	D _c h12 mm	L _c mm	l ₁ mm	l ₄ mm	d ₁ h5 mm	Z
DIN 6535 HA shank	H608411-6	6	13	57	21	6	3
	H608411-8	8	19	63	27	8	3
	H608411-10	10	22	72	32	10	3
	H608411-12	12	26	83	38	12	3
	H608411-16	16	32	92	44	16	3
	H608411-20	20	38	104	54	20	3



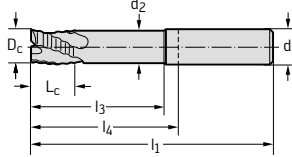
Slot milling $a_p \leq 1.0 \times D_c$
Shoulder milling $a_e \leq 0.6 \times D_c$

STANDARD	Designation uncoated	D _c h12 Inches/Wire/Letter	L _c in	l ₁ in	l ₄ in	d ₁ h6 in	Z
DIN 6535 HA shank	AH608411-5/16	5/16"	0.813	3.000	1.437	0.375	3
	AH608411-3/8	3/8"	0.875	3.000	1.437	0.375	3
	AH608411-1/2	1/2"	1.000	3.500	1.717	0.500	3
	AH608411-5/8	5/8"	1.250	3.500	1.594	0.625	3
	AH608411-3/4	3/4"	1.500	4.000	1.969	0.750	3



Slot milling $a_p \leq 1.0 \times D_c$
Shoulder milling $a_e \leq 0.6 \times D_c$

PWZ-NORM L	Designation uncoated	D _c h12 mm	L _c mm	l ₃ mm	d ₂ mm	l ₁ mm	l ₄ mm	d ₁ h5 mm	Z
DIN 6535 HA shank	H608771-6	6	10	24	5.5	63	27	8	3
	H608771-8	8	12	29	7.5	72	32	10	3
	H608771-10	10	14	35	9.5	83	38	12	3
	H608771-12	12	16	50	11.4	100	55	12	3
	H608771-16	16	20	63	15.2	115	67	16	3
	H608771-20	20	20	70	19	125	75	20	3



Slot milling $a_p \leq 1.0 \times D_c$
Shoulder milling $a_e \leq 0.6 \times D_c$



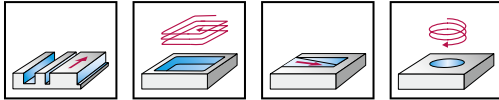
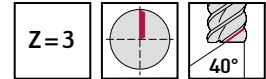
Solid carbide shoulder/slot milling cutters

H608871 / H618911

Protostar®



- Long reach
- With V cutting edge



	P	M	K	N	S	H	O
uncoated				●●			

PWZ-NORM L		D_c h12 mm	L_c mm	l_3 mm	d_2 mm	l_1 mm	l_4 mm	d_1 h5 mm	Z
DIN 6535 HA shank									
	H608871-6	6	10	24	5.5	63	27	8	3
	H608871-8	8	12	29	7.5	72	32	10	3
	H608871-10	10	14	35	9.5	83	38	12	3
	H608871-12	12	16	50	11.4	100	55	12	3
	H608871-16	16	20	63	15.2	115	67	16	3
	H608871-20	20	20	70	19	125	75	20	3
	H608871-25	25	25	75	23.8	135	79	25	3

Slot milling $a_p \leq 1.0 \times D_c$
Shoulder milling $a_e \leq 0.6 \times D_c$

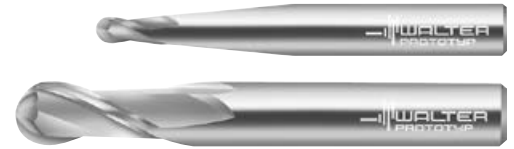
DIN 6527 L		D_c h12 mm	L_c mm	l_1 mm	l_4 mm	d_1 h6 mm	Z
DIN 6535 HB shank							
	H618911-6	6	13	57	21	6	3
	H618911-8	8	19	63	27	8	3
	H618911-10	10	22	72	32	10	3
	H618911-12	12	26	83	38	12	3
	H618911-14	14	26	83	38	14	3
	H618911-16	16	32	92	44	16	3
	H618911-20	20	38	104	54	20	3

Slot milling $a_p \leq 1.0 \times D_c$
Shoulder milling $a_e \leq 0.6 \times D_c$

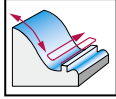
Solid carbide ball-nose copy milling cutters

H602111 / AH602111

Protostar®



– Type AI 30



Z = 2



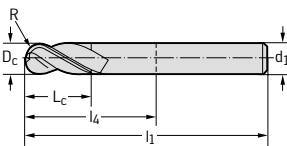
	P	M	K	N	S	H	O
uncoated				●●			

PWZ-NORM L

	Designation uncoated	D _c h9 mm	r mm	L _c mm	l ₁ mm	l ₄ mm	d ₁ h5 mm	Z
DIN 6535 HA shank	H602111-2	2	1	6	60	32	3	2
	H602111-3	3	1.5	7	80	44	6	2
	H602111-4	4	2	8	80	44	6	2
	H602111-5	5	2.5	10	80	44	6	2
	H602111-6	6	3	10	80	44	6	2
	H602111-8	8	4	16	100	64	8	2
	H602111-10	10	5	19	100	60	10	2
	H602111-12	12	6	22	100	55	12	2
	H602111-16	16	8	26	100	52	16	2

Shank tolerance h6 with shank diameter d₁ > 10 mm

Tool

	Designation uncoated	D _c h9 Inches/Wire/Letter	r in	L _c in	l ₁ in	l ₄ in	d ₁ h6 in	Z
	AH602111-3/8	3/8"	0.188	0.875	3.000	1.437	0.375	2



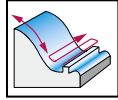
Solid carbide mini ball-nose copy milling cutters

H404691

Protostar®



- Long reach
- Type HSC 30



	P	M	K	N	S	H	O
uncoated				●●			

PWZ-NORM MINI		D _c h7 mm	r mm	L _c mm	l ₃ mm	d ₂ mm	l ₁ mm	l ₄ mm	d ₁ h5 mm	Z
	Designation									
	uncoated									
	H404691-0.3-0.75	0.3	0.15	0.3	0.75	0.3	38	10	3	2
	H404691-0.3-1.5	0.3	0.15	0.3	1.5	0.3	38	10	3	2
	H404691-0.3-3	0.3	0.15	0.3	3	0.3	38	10	3	2
	H404691-0.4-1	0.4	0.2	0.4	1	0.4	38	10	3	2
	H404691-0.4-2	0.4	0.2	0.4	2	0.4	38	10	3	2
	H404691-0.5-1.25	0.5	0.25	0.5	1.25	0.5	38	10	3	2
	H404691-0.5-2.5	0.5	0.25	0.5	2.5	0.5	38	10	3	2
	H404691-0.5-5	0.5	0.25	0.5	5	0.5	38	10	3	2
	H404691-0.6-1.5	0.6	0.3	0.6	1.5	0.6	38	10	3	2
	H404691-0.6-3	0.6	0.3	0.6	3	0.6	38	10	3	2
	H404691-0.8-2	0.8	0.4	0.8	2	0.8	38	10	3	2
	H404691-0.8-4	0.8	0.4	0.8	4	0.8	38	10	3	2
	H404691-1-2.5	1	0.5	1	2.5	1.0	38	10	3	2
	H404691-1-5	1	0.5	1	5	1.0	60	32	3	2
	H404691-1-7.5	1	0.5	1	7.5	1.0	60	32	3	2
	H404691-1-10	1	0.5	1	10	1.0	60	32	3	2
	H404691-1-15	1	0.5	1	15	1.0	60	32	3	2
	H404691-1-20	1	0.5	1	20	1.0	60	32	3	2
	H404691-1.5-7.5	1.5	0.75	1.5	7.5	1.5	60	32	3	2
	H404691-1.5-15	1.5	0.75	1.5	15	1.5	60	32	3	2
	H404691-2-10	2	1	2	10	2.0	60	32	3	2
	H404691-2-15	2	1	2	15	2.0	60	32	3	2
	H404691-2-20	2	1	2	20	2.0	60	32	3	2
	H404691-3-15	3	1.5	3	15	3.0	60	32	3	2
	H404691-3-30	3	1.5	3	30	3.0	60	32	3	2

C 1



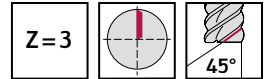
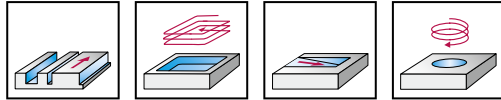
Solid carbide shoulder/slot milling cutters

H6E2211

Protostar®



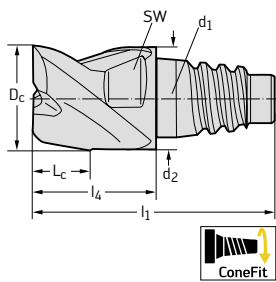
– Type AI 45



	P	M	K	N	S	H	O
uncoated				●●			

PWZ-NORM

	Designation uncoated	D _c h10 mm	L _c mm	d ₂ mm	l ₁ mm	l ₄ mm	SW mm	d ₁ mm	Z
ConeFit	H6E2211-E10-10	10	5.5	9.7	23.6	12.4	8	E10	3
	H6E2211-E12-12	12	6.5	11.7	28.3	14.5	10	E12	3
	H6E2211-E16-16	16	8.5	15.5	35.7	18.7	12	E16	3
	H6E2211-E20-20	20	11	19.3	40.8	21.3	16	E20	3
	H6E2211-E25-25	25	13.5	24.2	49.6	25.6	20	E25	3

Slot milling $a_p \leq 0.5 \times D_c$ Shoulder milling $a_e \leq 0.3 \times D_c$

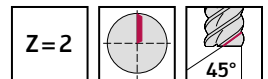
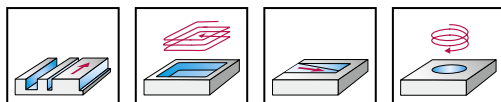
Solid carbide shoulder/slot milling cutters

H6E2511

Protostar®



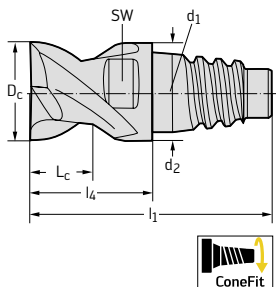
– Type AI 45



	P	M	K	N	S	H	O
uncoated				●●			

PWZ-NORM

	Designation uncoated	D _c h10 mm	L _c mm	d ₂ mm	l ₁ mm	l ₄ mm	SW mm	d ₁ mm	Z
ConeFit	H6E2511-E10-10	10	5.5	9.7	23.6	12.4	8	E10	2
	H6E2511-E12-12	12	6.5	11.7	28.3	14.5	10	E12	2
	H6E2511-E16-16	16	8.5	15.5	35.7	18.7	12	E16	2

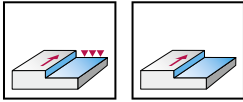
Slot milling $a_p \leq 0.5 \times D_c$ Shoulder milling $a_e \leq 0.5 \times D_c$

C 1

PCD shoulder milling cutters F4722



Z=4



	P	M	K	N	S	H	O
WCD10				●●			●

Tool

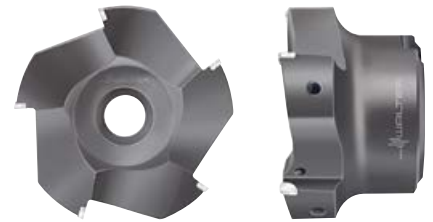
	Designation	D _c mm	l ₁₁ mm	L _c mm	l ₁ mm	l ₄ mm	d ₁ mm	Z	kg	WCD10
ScrewFit	F4722.T18.020.Z04.20.D	20	0.2	20	51	30	T18	4	0.1	●
	F4722.T22.025.Z04.20.D	25	0.2	20	58	35	T22	4	0.1	●
	F4722.T28.032.Z04.20.D	32	0.2	20	69	40	T28	4	0.4	●
	F4722.T36.040.Z04.20.D	40	0.2	20	75	40	T36	4	0.4	●

Pre-balanced to G6.3 where n = 16,000 rpm
Order example for grade WCD10: F4722.T18.020.Z04.20.DWCD10

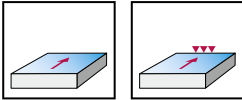
Tool

	Designation	D _c mm	l ₁₁ mm	L _c mm	l ₁ mm	l ₄ mm	d ₁ mm	Z	kg	WCD10
Parallel shank	F4722.Z06.006.Z02.08.D	6	0	8	50	13	6	2	0.0	●
	F4722.Z08.008.Z02.10.D	8	0	10	70	15	6	2	0.1	●
	F4722.Z10.010.Z02.12.D	10	0	12	80	17	10	2	0.1	●
	F4722.Z12.012.Z02.16.D	12	0	16	80	21	12	2	0.1	●
	F4722.Z16.016.Z02.20.D	16	0	20	90	25	16	2	0.2	●
	F4722.Z20.020.Z02.20.D	20	0	20	100	25	20	2	0.4	●

Order example for grade WCD10: F4722.Z06.006.Z02.08.DWCD10



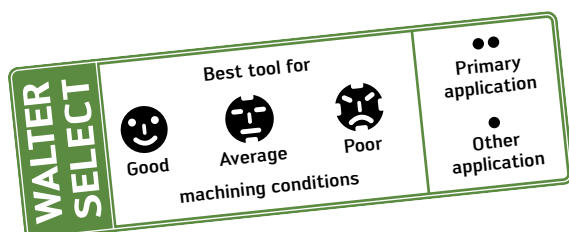
Z=
5-6



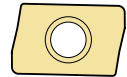
	P	M	K	N	S	H	O
WCD10				●●			●

[illegible]

Pre-balanced to G6.3 where n = 16,000 rpm
Order example for grade WCD10: F4723.B22.050.Z05.05.DWCD10
Bodies and assembly parts are included in the scope of delivery



Positive rhombic ACGT

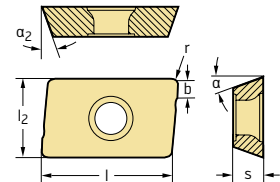


Indexable inserts

	Designation	Tolerance class	Number of cutting edges	l ₂ mm	l mm	s mm	α	α ₂	r mm	b mm	P		M	K	N		S		
											HC		HC	HC	HC	HW	HC		
											WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S	WXN15	WK10
	ACGT060204R-M85	G	2	4.4	6.7	2.38	7°	15°	0.4	0.9						☺	☺		

HC = coated carbide
HW = uncoated carbide

Positive rhombic ADHT

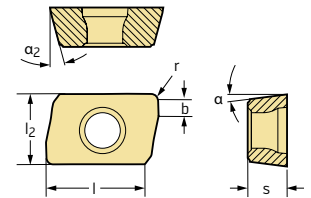


Indexable inserts

	Designation	Tolerance class	Number of cutting edges	l ₂ mm	l mm	s mm	α	α ₂	r mm	b mm	P			M		K		N		S	
											HC			HC		HC		HC	HW	HC	
											WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S	WXN15	WK10	WSM35S	WSP45S
	ADHT0803PER-G88	H	2	6.75	9.52	3.35	15°	20°	0.4	1.2							☺	☺			
	ADHT0803PEL-G88	H	2	6.75	9.52	3.35	15°	20°	0.4	1.2							☺	☺			
	ADHT10T3PER-G88	H	2	7.25	11.3	3.8	15°	15°	0.8	1.2							☺	☺			
	ADHT1204PER-G88	H	2	8.4	13.6	4.76	15°	20°	0.8	1.2							☺	☺			
	ADHT1204PEL-G88	H	2	8.4	13.6	4.76	15°	20°	0.8	1.2							☺	☺			
	ADHT120416R-G88	H	2	8.4	13.6	4.76	15°	20°	1.6	1							☺	☺			
	ADHT120416L-G88	H	2	8.4	13.6	4.76	15°	20°	1.6	1							☺	☺			
	ADHT120430R-G88	H	2	8.4	13.6	4.76	15°	20°	3	0.8								☺			
	ADHT120430R-G88	H	2	8.4	13.6	4.76	15°		3	0.8							☺				
	ADHT120430L-G88	H	2	8.4	13.6	4.76	15°	20°	3	0.8							☺				
	ADHT120440R-G88	H	2	8.4	13.6	4.76	15°	20°	4	0.4								☺			
	ADHT120440L-G88	H	2	8.4	13.6	4.76	15°	20°	4	0.4							☺				
	ADHT1606PER-G88	H	2	10.8	17.5	6.15	15°	20°	0.8	1.6							☺	☺			
	ADHT1606PEL-G88	H	2	10.8	17.5	6.15	15°	20°	0.8	1.6							☺				
	ADHT160616R-G88	H	2	10.8	17.5	6.15	15°	20°	1.6	1.4							☺	☺			
	ADHT160616L-G88	H	2	10.8	17.5	6.15	15°	20°	1.6	1.4							☺				
	ADHT160630R-G88	H	2	10.8	17.5	6.15	15°	20°	3	1.2								☺			
	ADHT160640R-G88	H	2	10.8	17.5	6.15	15°	20°	4	1								☺			

HC = coated carbide
HW = uncoated carbide

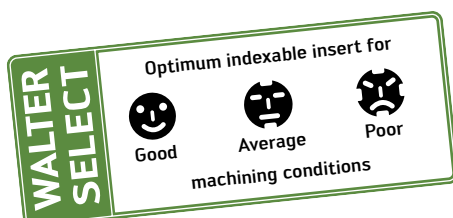
Positive rhombic BCHT



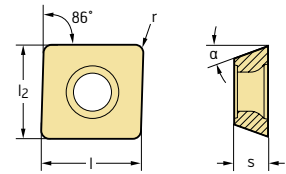
Indexable inserts

Designation	Tolerance class	Number of cutting edges	l ₂ mm	l mm	s mm	α	α ₂	r mm	b mm	P			M		K		N		S	
										HC			HC		HC		HC HW		HC	
										WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S	WXN15	WK10	WSM35S	WSP45S
 BCHT120408R-K85	H	2	7.6	13.8	4.8	7°	15°	0.8	1.3								☺	☺		
BCHT120412R-K85	H	2	7.6	13.8	4.8	7°	15°	1.2	1.2								☺	☺		
BCHT120416R-K85	H	2	7.6	13.8	4.8	7°	15°	1.6	1.1								☺	☺		
BCHT120420R-K85	H	2	7.6	13.8	4.8	7°	15°	2	1.2								☺	☺		
BCHT120425R-K85	H	2	7.6	13.8	4.8	7°	15°	2.5	1								☺	☺		
BCHT120430R-K85	H	2	7.6	13.8	4.8	7°	15°	3	0.7								☺	☺		
BCHT120440R-K85	H	2	7.6	13.8	4.8	7°	15°	4	0.4								☺	☺		
BCHT160508R-K85	H	2	9.9	17.3	5.75	7°	15°	0.8	2								☺	☺		
BCHT160512R-K85	H	2	9.9	17.3	5.75	7°	15°	1.2	1.7								☺	☺		
BCHT160516R-K85	H	2	9.9	17.3	5.75	7°	15°	1.6	1.7								☺	☺		
BCHT160520R-K85	H	2	9.9	17.3	5.75	7°	15°	2	1.5								☺	☺		
BCHT160525R-K85	H	2	9.9	17.3	5.75	7°	15°	2.5	1.4								☺	☺		
BCHT160530R-K85	H	2	9.9	17.3	5.75	7°	15°	3	1.2								☺	☺		
BCHT160540R-K85	H	2	9.9	17.3	5.75	7°	15°	4	1.1								☺	☺		

HC = coated carbide
HW = uncoated carbide



Positive rhombic MPHX / MPHT

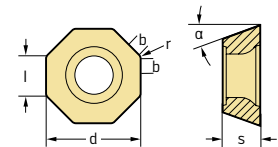


Indexable inserts

	Designation	Tolerance class	Number of cutting edges	l ₂ mm	l mm	s mm	α	r mm	P			M		K		N		S	
									HC	HC	HC	HC	HC	HC	HC	HC	HC	HC	HC
	MPHX060304-G88	H	2	6.35	6.35	3.18	11°	0.4	WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S	WXN15	WSM35S	WSP45S	
	MPHX080305-G88	H	2	8.3	8.3	3.18	11°	0.5											
	MPHT120408-G88	H	2	12.7	12.7	4.76	11°	0.8											

HC = coated carbide

Positive octagonal ODHT



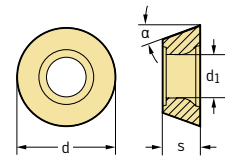
Indexable inserts

	Designation	Tolerance class	Number of cutting edges	l mm	d mm	s mm	α	r mm	b mm	P			M		K		N		S	
										HC	HC	HC	HC	HC	HC	HC	HC	HC	HC	HC
	ODHT0605ZZN-G88	H	8	6.58	15.88	5.56	15°	0.8	1.6	WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S	WXN15	WK10	WSM35S	WSP45S
	ODHT0504ZZN-G88	H	8	5.26	12.7	4.76	15°	0.8	1.2											

HC = coated carbide

HW = uncoated carbide

Positive round RDGT



Indexable inserts

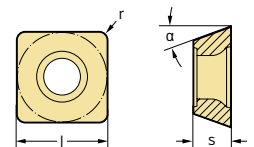
	Designation	Tolerance class	d mm	s mm	α	d ₁ mm	P			M		K		N			S		O
							HC			HC		HC		HC HW HF			HC		HF
							WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S	WXN15	WK10	WMG40	WSM35S	WSP45S	WMG40
	RDGT1204M0-G85	G	12	4.76	15°	4.4													☺
	RDGT2006M0-G85	G	20	6.35	15°	6.5													☺
	RDGT0803M0-G88	G	8	3.18	15°	3.4								☺	☺				
	RDGT10T3M0-G88	G	10	3.97	15°	4.4								☺	☺				
	RDGT1204M0-G88	G	12	4.76	15°	4.4								☺	☺				
	RDGT1605M0-G88	G	16	5.56	15°	5.5								☺	☺				
	RDGT2006M0-G88	G	20	6.35	15°	6.5								☺	☺				

HC = coated carbide

HW = uncoated carbide

HF = uncoated fine-grained carbide

Positive square SDGT

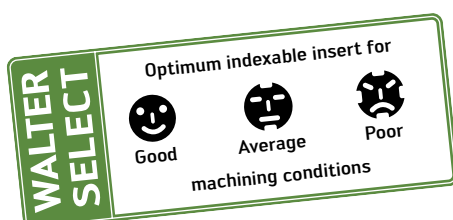


Indexable inserts

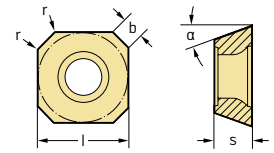
	Designation	Tolerance class	Number of cutting edges	l mm	s mm	α	r mm	P			M		K		N			S	
								HC			HC		HC		HC HW			HC	
								WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S	WXN15	WK10	WSM35S	WSP45S	
	SDHT06T204-G88	H	4	6.35	2.78	15°	0.4								☺	☺			
	SDHT09T304-G88	H	4	9.52	3.97	15°	0.4								☺	☺			
	SDHT09T308-G88	H	4	9.52	3.97	15°	0.8								☺	☺			
	SDHT120408-G88	H	4	12.7	4.76	15°	0.8								☺	☺			

HC = coated carbide

HW = uncoated carbide



Positive square SDGT

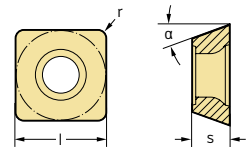


Indexable inserts

Designation	Tolerance class	Number of cutting edges	l mm	s mm	α	r mm	b mm	P			M		K		N		S	
								HC			HC		HC		HC HW		HC	
								WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S	WXN15	WK10	WSM35S	WSP45S
SDHT09T3AZN-G88	H	4	9.5	3.97	15°	0.3	1.2								☺	☺		
SDHT1204AZN-G88	H	4	12.7	4.76	15°	0.3	1.4								☺	☺		

HC = coated carbide
HW = uncoated carbide

Positive square SPHT

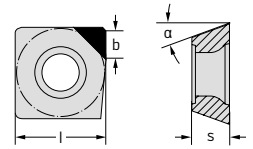


Indexable inserts

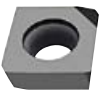
Designation	Tolerance class	Number of cutting edges	l mm	s mm	α	r mm	P			M		K		N		S	
							HC			HC		HC		HC HW		HC	
							WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S	WXN15	WK10	WSM35S	WSP45S
SPHT060304-G88	H	4	6.35	3.18	11°	0.4								☺	☺		
SPHT09T308-G88	H	4	9.52	3.97	11°	0.8								☺	☺		
SPHT120408-G88	H	4	12.7	4.76	11°	0.8								☺	☺		

HC = coated carbide
HW = uncoated carbide

Positive square SPHW

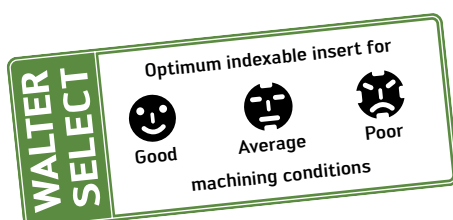


Indexable inserts

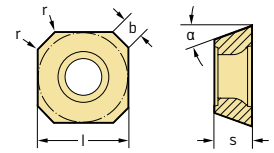
	Designation	Tolerance class	Number of cutting edges	l mm	s mm	α	b mm	P				M			K		N	S		
								HC				HC			HC		DP	HC		
								WKP25S	WKP35S	WSP45S	WSP45G	WSM35S	WSP45S	WSP45G	WKP25S	WKP35S	WCD10	WSM35S	WSP45S	WSP45G
	SPHW1204EDR-A88	H	1	12.7	4.76	11°	1.5										☺			
	SPHW1204PDR-A88	H	1	12.7	4.76	11°	1.5										☺			

HC = coated carbide

DP = polycrystalline diamond



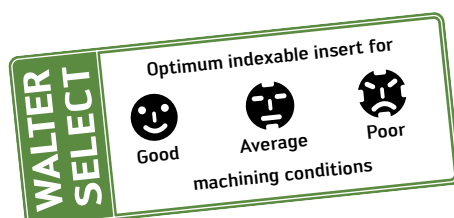
Positive square SPGT / SDGT / SEHW / SEHT



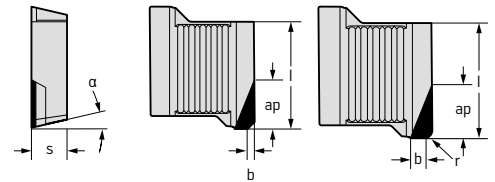
Indexable inserts

	Designation	Tolerance class	Number of cutting edges	l mm	s mm	α	r mm	b mm	P			M		K		N		S	
									HC			HC		HC		HC HW		HC	
									WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S	WXN15	WK10	WSM35S	WSP45S
	SPGT1204AEN-K88	G	4	12.7	4.76	11°		1.5								☺	☺		
	SDGT09T3AEN-G88	G	4	9.5	3.97	15°	0.3	1.2								☺	☺		
	SFFW1203EFR	F	4	12.7	3.18	25°		2.3											
	SEHT1204AFN	H	4	12.7	4.76	20°	0.8	2									☹		
	SEHT1204AFN-K88	H	4	12.7	4.76	20°	0.8	1.8									☹		

HC = coated carbide
HW = uncoated carbide



PCD indexable inserts XOEN

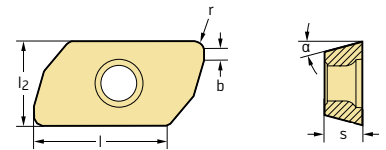


Indexable inserts

		Tolerance class	Number of cutting edges	l mm	s mm	α	a _p mm	b mm	r mm	P			M		K		N	S		
										HC			HC	HC	DP	HC				
										WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S				
	Designation	E	1	12.11	4	13°	5	1.2	0.8											
	Designation	E	1	12.21	4	13°	5.1	0.8												
	Designation	E	1	12.11	4	13°	10.3	1.2	0.8											

HC = coated carbide
DP = polycrystalline diamond

Positive rhombic ZDGT



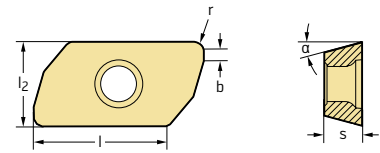
Indexable inserts

	Designation	Tolerance class	Number of cutting edges	l ₂ mm	l mm	s mm	α	r mm	b mm	P			M		K		N			S	
										WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S	WKN15	WNN15	WK10	WSM35S	WSP45S
	ZDGT150404R-K85	G	2	10.5	16.2	4.76	15°	0.4	1.2								☹	☹	☹		
	ZDGT150408R-K85	G	2	10.5	16.2	4.76	15°	0.8	1.2								☹	☹	☹		
	ZDGT150412R-K85	G	2	10.5	16.2	4.76	15°	1.2	1.2								☹	☹	☹		
	ZDGT150416R-K85	G	2	10.5	16.2	4.76	15°	1.6	1.2								☹	☹	☹		
	ZDGT150420R-K85	G	2	10.5	16.2	4.76	15°	2	1.2								☹	☹	☹		
	ZDGT150425R-K85	G	2	10.5	16.2	4.76	15°	2.5	1.2								☹	☹	☹		
	ZDGT150430R-K85	G	2	10.5	16.2	4.76	15°	3	1.2								☹	☹	☹		
	ZDGT150440R-K85	G	2	10.5	16.2	4.76	15°	4	1.2								☹	☹	☹		
	ZDGT200508R-K85	G	2	14	21.2	5.56	15°	0.8	1.2									☹	☹		
	ZDGT200512R-K85	G	2	14	21.2	5.56	15°	1.2	1.2										☹		
	ZDGT200516R-K85	G	2	14	21.2	5.56	15°	1.6	1.2										☹		
	ZDGT200520R-K85	G	2	14	21.2	5.56	15°	2	1.2									☹	☹		
	ZDGT200530R-K85	G	2	14	21.2	5.56	15°	3	1.2									☹	☹		
	ZDGT200540R-K85	G	2	14	21.2	5.56	15°	4	1.2									☹	☹		
	ZDGT200550R-K85	G	2	14	21.2	5.56	15°	5	1.2										☹		

ZDGT1504 and ZDGT2005 insertable in Ramping-Cutter M2131

HC = coated carbide
HW = uncoated carbide

Positive rhombic ZDGT



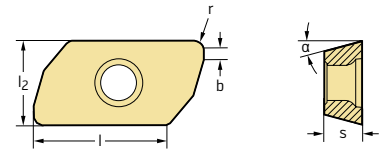
Indexable inserts

Designation	Tolerance class	Number of cutting edges	l ₂ mm	l mm	s mm	α	r mm	b mm	P		M	K	N		S	
									HC		HC	HC	HC	HW	HC	
									WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S	WXN15
 ZDGT200560R-K85	G	2	14	21.2	5.56	15°	6	1.2							☺	
ZDGT200564R-K85	G	2	14	21.2	5.56	15°	6.4	1.2							☺	

ZDGT1504 and ZDGT2005 insertable in Ramping-Cutter M2131

HC = coated carbide
HW = uncoated carbide

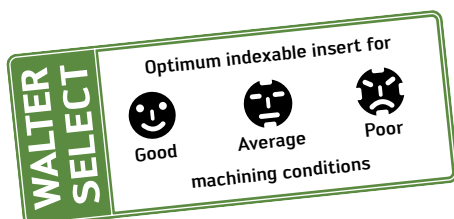
Positive rhombic ZDGT



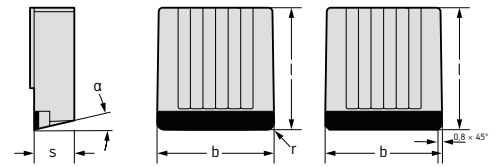
Indexable inserts

Designation	Tolerance class	Number of cutting edges	l ₂ mm	l mm	s mm	α	r mm	b mm	P		M		K		N		S		O
									HC		HC		HC		HF		HC		HF
									WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S	WMG40	WSM35S	WSP45S	WMG40
 ZDGT15A404R-K85	G	2	10.5	16.2	4.76	15°	0.4	1.2											
ZDGT15A408R-K85	G	2	10.5	16.2	4.76	15°	0.8	1.2											
ZDGT15A412R-K85	G	2	10.5	16.2	4.76	15°	1.2	1.2											
ZDGT15A416R-K85	G	2	10.5	16.2	4.76	15°	1.6	1.2											
ZDGT15A420R-K85	G	2	10.5	16.2	4.76	15°	2	1.2											
ZDGT15A425R-K85	G	2	10.5	16.2	4.76	15°	2.5	1.2											
ZDGT15A430R-K85	G	2	10.5	16.2	4.76	15°	3	1.2											
ZDGT15A440R-K85	G	2	10.5	16.2	4.76	15°	4	1.2											
ZDGT20A508R-K85	G	2	14	21.2	5.56	15°	0.8	1.2											
ZDGT20A512R-K85	G	2	14	21.2	5.56	15°	1.2	1.2											
ZDGT20A516R-K85	G	2	14	21.2	5.56	15°	1.6	1.2											
ZDGT20A520R-K85	G	2	14	21.2	5.56	15°	2	1.2											
ZDGT20A530R-K85	G	2	14	21.2	5.56	15°	3	1.2											
ZDGT20A540R-K85	G	2	14	21.2	5.56	15°	4	1.2											
ZDGT20A550R-K85	G	2	14	21.2	5.56	15°	5	1.2											
ZDGT20A560R-K85	G	2	14	21.2	5.56	15°	6	1.2											
ZDGT20A564R-K85	G	2	14	21.2	5.56	15°	6.4	1.2											

ZDGT15A4 and ZDGT20A5 insertable in Ramping-Cutter M2131 and M2331

HC = coated carbide
HF = uncoated fine-grained carbide


PCD finishing inserts XOEX

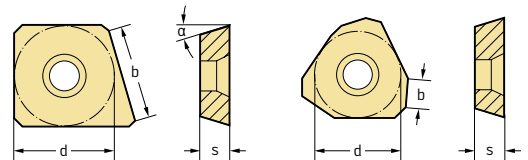


Indexable inserts

Designation	Tolerance class	Number of cutting edges	l mm	s mm	α	b mm	P			M			K			N			S		
							HC			HC			HC			DP			HC		
							WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WSP45S	WKP25S	WKP35S	WSP45S	WDN20	WSM35S	WSP45S	WSM35S	WSP45S	WSP45S
 XOEX12T3AZR-F-A88	E	1	12.16	4	13°	11.8															
XOEX12T308N-F-A88	E	1	12.16	4	13°	11.8															

HC = coated carbide
DP = polycrystalline diamond

Finishing inserts SPHX

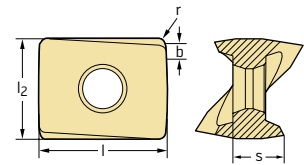


Indexable inserts

Designation	Tolerance class	Number of cutting edges	d mm	s mm	α	b mm	P			M			K			N			S		
							HC			HC			HC			HW DP			HC		
							WKP25S	WKP35S	WSP45S	WSP45G	WSM35S	WSP45S	WSP45G	WKP25S	WKP35S	WK10	WCD10	WSM35S	WSP45S	WSP45G	WSP45G
 SPHX1204PDR-A88	H	1	12.7	4.76	11°	3.5															

HC = coated carbide
HW = uncoated carbide
DP = polycrystalline diamond

Negative rhombic LNGX

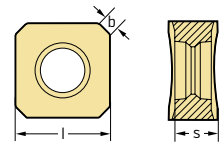


Indexable inserts

	Designation	Tolerance class	Number of cutting edges	l ₂ mm	l mm	s mm	r mm	b mm	P			M		K			N		S	
									HC			HC		HC			HC HW		HC	
									WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WAK15	WKK25S	WKP25S	WKP35S	WXN15	WK10	WSM35S
	LNGX130708R-L88	G	4	11	13.7	7.74	0.8	1.2									☺	☺		

HC = coated carbide
HW = uncoated carbide

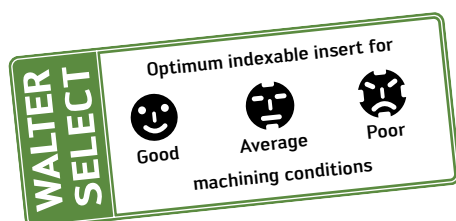
Negative square SNHX



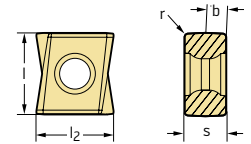
Indexable inserts

	Designation	Number of cutting edges	l mm	s mm	b mm	P			M		K			N		S			
						HC			HC		HC			HC HW		HC			
						WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WAK15	WKK25S	WKP25S	WKP35S	WXN15	WK10	WSM35S	WSP45S	
	SNHX0904ANN-K88	8	9.52	4.68	1.5										☺	☺			
	SNHX1205ANN-K88	8	12.7	5.54	1.5											☺	☺		

HC = coated carbide
HW = uncoated carbide



Tangential rhombic LNHU

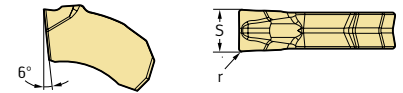


Indexable inserts

	Designation	Tolerance class	Number of cutting edges	l ₂ mm	l mm	s mm	r mm	b mm	P			M		K			N		S		
									HC			HC		HC			HC	HW	HC		
									WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WAK15	WKK25S	WKP25S	WKP35S	WXN15	WK10	WSM35S	WSP45S
	LNHU090404R-L85T	H	4	8.5	9	4.5	0.4	1.5									☺	☺			
	LNHU130608R-L85T	H	4	12	13	6.8	0.8	2.2									☺	☺			
	LNHU160708R-L85T	H	4	15.5	16	7.2	0.8	2.3									☺	☺			

HC = coated carbide
HW = uncoated carbide

Slitting – cutting inserts SX



Cutting inserts

	Designation	s mm	r mm	S _{Tol} mm	l _{Tol} mm	P			M		K			N			S	
						HC			HC		HC			HC	HW		HC	
						WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WAK15	WKK25S	WKP25S	WKP35S	WXN15	WK10	WK1	WSM35S
	SX-1E150N01-SK8	1.5	0.1	±0.02	±0.05													
	SX-2E200N02-SK8	2	0.2	±0.02	±0.05													
	SX-3E300N02-SK8	3	0.2	±0.02	±0.05													
	SX-4E400N02-SK8	4	0.2	±0.02	±0.05													
	SX-5E500N04-SK8	5	0.4	±0.02	±0.05													

l_{Tol} = Repeat accuracy when changing indexable inserts within one insert batch
Radius tolerance r_{Tol} = ±0.05 mm

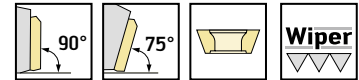
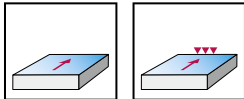
HC = coated carbide
HW = uncoated carbide

Face milling cutters for light metals

F2250



- Adjustable runout
- 1 cutting edge per indexable insert



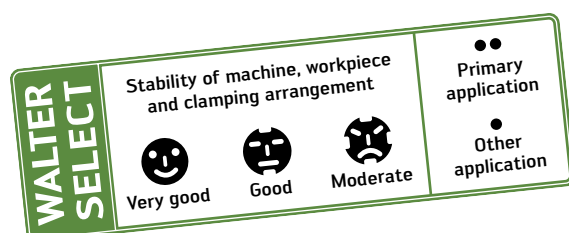
	P	M	K	N	S	H	O
F2250				●●			

Tool	Designation	D _c mm	d ₁ mm	l ₄ mm	L _c mm	Z	kg	No. of indexable inserts	Type
Parallel bore DIN 138 transverse keyway	F2250.B22.063.Z05.03	63	22	40	3	5	0.4	5	
	F2250.B27.080.Z06.03	80	27	50	3	6	0.8	6	
	F2250.B32.100.Z07.03	100	32	50	3	7	1.3	7	

Pre-balanced tools
D_c 80–100 mm, basic body made of steel; D_c 125–200 mm, basic body made of aluminium
*Approach angle $\kappa = 75^\circ$ (EDR) / $\kappa = 90^\circ$ (PDR)
Bodies and assembly parts are included in the scope of delivery

Assembly parts		D _c [mm]	63–100
	Clamping screw for indexable insert		FS1030 (Torx 20) 5.0 Nm
	Countersunk screw		FS1148 (SW 2.5)
	Balancing screw		FS1145 (SW 2.5)

Accessories		D _c [mm]	63–100
	Screwdriver for indexable insert		FS228 (Torx 20)
	ISO 2936 key: Tapered/balancing screw		ISO2936-2,5 (SW 2.5)

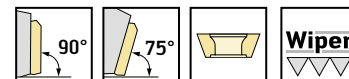
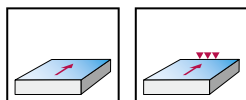


Face milling cutters for light metals

F2250

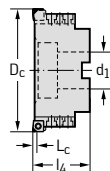


- Adjustable runout
- 1 cutting edge per indexable insert



	P	M	K	N	S	H	O
F2250				●●			

Tool	Designation	D _c mm	d ₁ mm	l ₄ mm	L _c mm	Z	kg	No. of indexable inserts	Type
Parallel bore DIN 138 transverse keyway	F2250.B.125.Z08.03.R594	125	40	63	3	8	1.2	8	



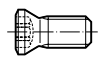
Pre-balanced tools

D_c 80–100 mm, basic body made of steel; D_c 125–200 mm, basic body made of aluminium

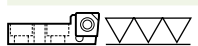
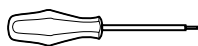
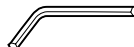
*Approach angle $\kappa = 75^\circ$ (EDR) / $\kappa = 90^\circ$ (PDR)

Bodies and assembly parts are included in the scope of delivery

Assembly parts

	D _c [mm]	125
	Cartridge for tool body	FR594
	Clamping screw for indexable insert Torque	FS1030 (Torx 20) 5.0 Nm
	Clamping screw for cartridge	FS1147 (SW 5)
	Conical spring washer	FS1100
	Balancing screw	FS1145 (SW 2.5)
	Eccentric bolt for cartridge	FS1131 (SW 2.5)

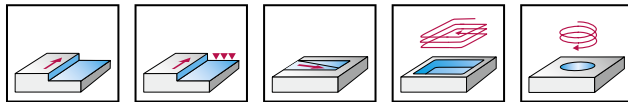
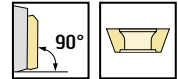
Accessories

	D _c [mm]	125
	Cartridge: SPHX1204PDR-A88 finish insert	FR595
	Screwdriver for indexable insert	FS228 (Torx 20)
	ISO 2936 key for cartridge	ISO2936-5 (SW 5)
	ISO 2936 key for balancing screw	ISO2936-2,5 (SW 2.5)

Ramping milling cutters M2131



- For pocket machining
- 2 cutting edges per indexable insert



	P	M	K	N	S	H	O
M2131				●●			●

Tool	Designation	D _c mm	d ₁ mm	l ₄ mm	l ₁₆ mm	l ₁ mm	L _c mm	Z	kg	No. of indexable inserts	Type
ScrewFit 	M2131-025-T22-02-15	25	T22	45			15	2	0.1	2	ZDGT1504 .. R
	M2131-032-T28-02-15	32	T28	50			15	2	0.2	2	
	M2131-032-T28-02-20	32	T28	50			20	2	0.2	2	ZDGT2005 .. R
	M2131-032-T28-03-15	32	T28	50			15	3	0.2	3	ZDGT1504 .. R
	M2131-040-T36-02-20	40	T36	50			20	2	0.4	2	ZDGT2005 .. R
	M2131-040-T36-03-15	40	T36	50			15	3	0.4	3	ZDGT1504 .. R
Parallel shank 	M2131-025-A20-02-15-S	25	20	40		110	15	2	0.3	2	ZDGT1504 .. R
	M2131-025-A25-02-15-L	25	25	40		150	15	2	0.5	2	
	M2131-032-A20-02-15-S	32	20	40		110	15	2	0.3	2	
	M2131-032-A20-03-15-S	32	20	40		110	15	3	0.3	3	
	M2131-032-A25-02-15-L	32	25	40		175	15	2	0.6	2	
	M2131-032-A25-03-15-L	32	25	40		175	15	3	0.6	3	
	M2131-032-A25-02-20-L	32	25	40		175	20	2	0.6	2	ZDGT2005 .. R
	M2131-032-A32-02-15-L	32	32	50		175	15	2	1.0	2	ZDGT1504 .. R
	M2131-032-A32-02-20-L	32	32	50		175	20	2	0.9	2	ZDGT2005 .. R
	M2131-032-A32-03-15-L	32	32	50		175	15	3	1.0	3	ZDGT1504 .. R
	M2131-040-A32-02-20-L	40	32	50		175	20	2	1.0	2	ZDGT2005 .. R
	M2131-040-A32-03-15-L	40	32	50		175	15	3	1.1	3	ZDGT1504 .. R
HSK DIN 69893-1 A 	M2131-025-H63-02-15	25	HSK-A63	110	60		15	2	1.0	2	ZDGT1504 .. R
	M2131-032-H63-02-15	32	HSK-A63	110	65		15	2	1.1	2	
	M2131-032-H63-03-15	32	HSK-A63	110	65		15	3	1.0	3	
	M2131-040-H63-02-20	40	HSK-A63	110	65		20	2	1.2	2	ZDGT2005 .. R
	M2131-050-H63-04-15	50	HSK-A63	110	80		15	4	1.5	4	ZDGT1504 .. R
	M2131-050-H63-03-20	50	HSK-A63	110	80		20	3	1.4	3	ZDGT2005 .. R
	M2131-050-H80-03-20-D	50	HSK-A80/A63	110	80		20	3	1.9	3	
	M2131-063-H63-04-20	63	HSK-A63	110	80		20	4	1.7	4	
	M2131-063-H63-05-15	63	HSK-A63	110	80		15	5	1.7	5	ZDGT1504 .. R
Parallel bore DIN 138 transverse keyway 	M2131-040-B16-03-15	40	16	50			15	3	0.3	3	ZDGT1504 .. R
	M2131-050-B22-03-20	50	22	60			20	3	0.4	3	ZDGT2005 .. R
	M2131-050-B22-04-15	50	22	50			15	4	0.4	4	ZDGT1504 .. R
	M2131-063-B22-04-20	63	22	50			20	4	0.5	4	ZDGT2005 .. R
	M2131-063-B22-05-15	63	22	50			15	5	0.6	5	ZDGT1504 .. R
	M2131-080-B27-05-15	80	27	60			15	5	1.4	5	

Pre-balanced tools

For information on high-speed applications, see „Technical information/Information on high-speed applications“

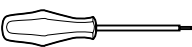
Tools with HSK have a residual imbalance of 3 gmm – with chip hole, without chip

M2131-...-D special interface for Dörries Scharmann (similar to HSK-A DIN 69893)

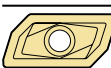
For HSK accessories, see „Assembly parts and accessories/Transfer units for HSK“

Bodies and assembly parts are included in the scope of delivery

Assembly parts	Type D _c [mm]	ZDGT1504 .. R 25–32	ZDGT1504 .. R 40	ZDGT1504 .. R 50–63	ZDGT1504 .. R 80	ZDGT2005 .. R 32	ZDGT2005 .. R 40	ZDGT2005 .. R 50	ZDGT2005 .. R 63
		FS1222 (Torx 15IP) 3.5 Nm	FS1453 (Torx 15IP) 3.5 Nm	FS1453 (Torx 15IP) 3.5 Nm	FS1453 (Torx 15IP) 3.5 Nm	FS2139 (Torx 20IP) 5.0 Nm	FS2281 (Torx 20IP) 5.0 Nm	FS2281 (Torx 20IP) 5.0 Nm	FS2281 (Torx 20IP) 5.0 Nm
	Clamping screw for indexable insert								
	Clamping screw for arbour-mounted tools		M08X040 ISO4762 12.9	M10X035 ISO4762 12.9	M12X040 ISO4762 12.9			M10X040 ISO4762 12.9	M10X035 ISO4762 12.9

Accessories			
Type		ZDGT1504 .. R	ZDGT2005 .. R
	Torque screwdriver, analogue	FS2003 1.5–5.0 Nm	FS2003 1.5–5.0 Nm
	Torque screwdriver, digital	FS2248 1.0–6.0 Nm	FS2248 1.0–6.0 Nm
	Interchangeable blade	FS2014 (Torx 15IP)	FS2015 (Torx 20IP)
	Screwdriver	FS1485 (Torx 15IP)	FS1486 (Torx 20IP)

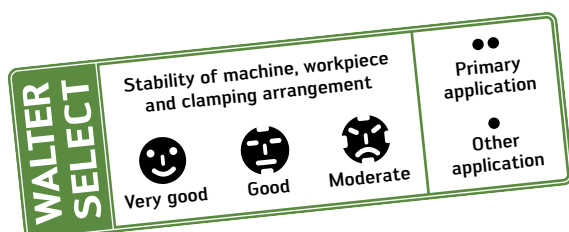
Indexable inserts

	Designation	r mm	b mm	P			M		K		N			S		
				HC			HC		HC		HC		HW		HC	
				WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S	WXN15	WNN15	WK10	WSM35S	WSP45S	
	ZDGT150404R-K85	0.4	1.2								☺	☺	☺			
	ZDGT150408R-K85	0.8	1.2								☺	☺	☺			
	ZDGT150412R-K85	1.2	1.2								☺	☺	☺			
	ZDGT150416R-K85	1.6	1.2								☺	☺	☺			
	ZDGT150420R-K85	2	1.2								☺	☺	☺			
	ZDGT150425R-K85	2.5	1.2								☺	☺	☺			
	ZDGT150430R-K85	3	1.2								☺	☺	☺			
	ZDGT150440R-K85	4	1.2								☺	☺	☺			
	ZDGT200508R-K85	0.8	1.2									☺	☺			
	ZDGT200512R-K85	1.2	1.2										☺			
	ZDGT200516R-K85	1.6	1.2										☺			
	ZDGT200520R-K85	2	1.2										☺			
	ZDGT200530R-K85	3	1.2										☺			
	ZDGT200540R-K85	4	1.2										☺			
	ZDGT200550R-K85	5	1.2											☺		
	ZDGT200560R-K85	6	1.2												☺	
	ZDGT200564R-K85	6.4	1.2												☺	

If the corner radius $r = 2.0$ mm or above, the corner area of the body must be reworked:
 $R(\text{body}) = r(\text{indexable insert}) - 1 \text{ mm}$

HC = coated carbide
 HW = uncoated carbide

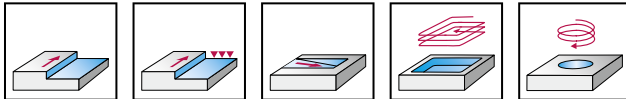
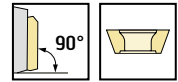
C 2



Ramping milling cutters M2131 inch



- For pocket machining
- 2 cutting edges per indexable insert



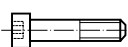
	P	M	K	N	S	H	O
M2131				●●			●

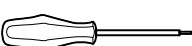
Tool	Designation	D _c in	d ₁ in	l ₄ in	l ₁ in	L _c in	Z	lbs	No. of indexable inserts	Type
ScrewFit 	M2131.026-T22-02-15	1.000	T22	1.752	2.657	0.591	2	0.0	2	ZDGT1504 .. R
	M2131.031-T28-02-15	1.250	T28	2.000	3.142	0.591	2	0.5	2	
	M2131.031-T28-03-15	1.250	T28	2.000	3.142	0.591	3	0.5	3	
	M2131.038-T36-03-15	1.500	T36	2.000	3.378	0.591	3	0.8	3	
Parallel shank 	M2131.026-A26-02-15-L	1.000	1.000	1.500	6.000	0.591	2	1.2	2	ZDGT1504 .. R
	M2131.031-A26-02-15-L	1.250	1.000	1.500	7.000	0.591	2	1.5	2	
	M2131.031-A26-03-15-L	1.250	1.000	1.500	7.000	0.591	3	1.4	3	
	M2131.038-A31-03-15-L	1.500	1.250	2.252	7.000	0.591	3	2.4	3	
Parallel bore DIN 138 transverse keyway 	M2131.051-B19-03-20	2.000	0.750	2.000	2.000	0.787	3	0.8	3	ZDGT2005 .. R
	M2131.051-B19-04-15	2.000	0.750	2.000	2.000	0.591	4	0.9	4	ZDGT1504 .. R
	M2131.064-B26-04-20	2.500	1.000	2.000	2.000	0.787	4	1.1	4	ZDGT2005 .. R
	M2131.064-B26-05-15	2.500	1.000	2.000	2.000	0.591	5	1.2	5	ZDGT1504 .. R
	M2131.076-B26-05-20	3.000	1.000	2.000	2.000	0.787	5	1.8	5	ZDGT2005 .. R
	M2131.076-B26-05-15	3.000	1.000	2.000	2.000	0.591	5	2.1	5	ZDGT1504 .. R

Pre-balanced tools

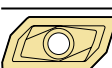
For information on high-speed applications, see „Technical information/Information on high-speed applications“

Bodies and assembly parts are included in the scope of delivery

Assembly parts		Type	ZDGT1504 .. R 1.000–1.250	ZDGT1504 .. R 1.500–3.000	ZDGT1504 .. R 2.000	ZDGT2005 .. R 2.000	ZDGT2005 .. R 2.500–3.000
	Type D _c [in]	Clamping screw for indexable insert	FS1222 (Torx 15IP)	FS1453 (Torx 15IP)	FS1453 (Torx 15IP)	FS2281 (Torx 20IP)	FS2281 (Torx 20IP)
		Torque	3.5 Nm	3.5 Nm	3.5 Nm	5.0 Nm	5.0 Nm
		Clamping screw for arbour-mounted tools			FS1338	FS1338	

Accessories		Type	ZDGT1504 .. R	ZDGT2005 .. R
	Torque screwdriver, analogue	Torque	FS2004	FS2004
		Torque	1.5–5.0 Nm	1.5–5.0 Nm
	Torque screwdriver, digital	Torque	FS2248	FS2248
		Torque	1.0–6.0 Nm	1.0–6.0 Nm
		Interchangeable blade	FS2014 (Torx 15IP)	FS2015 (Torx 20IP)
		Screwdriver	FS1485 (Torx 15IP)	FS1486 (Torx 20IP)

Indexable inserts

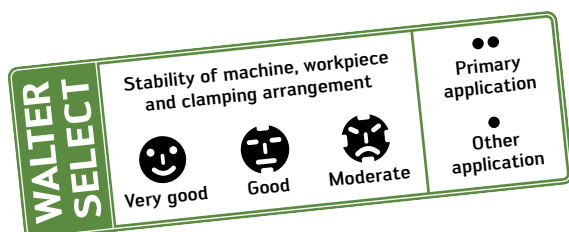
	Designation	r mm	b mm	P			M		K		N			S	
				HC			HC		HC		HC			HC	
				WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S	WXN15	WNN15	WK10	WSM35S	WSP45S
	ZDGT150404R-K85	0.4	1.2								☺	☺	☺		
	ZDGT150408R-K85	0.8	1.2								☺	☺	☺		
	ZDGT150412R-K85	1.2	1.2								☺	☺	☺		
	ZDGT150416R-K85	1.6	1.2								☺	☺	☺		
	ZDGT150420R-K85	2	1.2								☺	☺	☺		
	ZDGT150425R-K85	2.5	1.2								☺	☺	☺		
	ZDGT150430R-K85	3	1.2								☺	☺	☺		
	ZDGT150440R-K85	4	1.2								☺	☺	☺		
	ZDGT200508R-K85	0.8	1.2									☺	☺		
	ZDGT200512R-K85	1.2	1.2										☺		
	ZDGT200516R-K85	1.6	1.2										☺		
	ZDGT200520R-K85	2	1.2									☺	☺		
	ZDGT200530R-K85	3	1.2									☺	☺		
	ZDGT200540R-K85	4	1.2									☺	☺		
	ZDGT200550R-K85	5	1.2										☺		
	ZDGT200560R-K85	6	1.2										☺		
	ZDGT200564R-K85	6.4	1.2										☺		

If the corner radius $r = 2.0$ mm or above, the corner area of the body must be reworked: $R(\text{body}) = r(\text{indexable insert}) - 1 \text{ mm}$

HC = coated carbide

HW = uncoated carbide

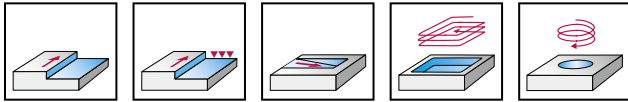
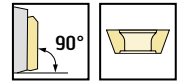
C 2



Ramping milling cutters M2331



- For pocket machining
- 2 cutting edges per indexable insert



	P	M	K	N	S	H	O
M2331				●●			●

Tool	Designation	D _c mm	d ₁ mm	l ₄ mm	l ₁₆ mm	L _c mm	Z	kg	No. of indexable inserts	Type
HSK DIN 69893-1 A	M2331-050-H80F-04-15-MA	50	HSK-A80/A63	110	80	15	4	1.9	4	ZDGT15A4 .. R
Parallel bore DIN 138 transverse keyway 	M2331-040-B16-03-15	40	16	50		15	3	0.2	3	ZDGT15A4 .. R
	M2331-050-B22-03-20	50	22	60		20	3	0.4	3	ZDGT20A5 .. R
	M2331-050-B22-04-15	50	22	50		15	4	0.3	4	ZDGT15A4 .. R
	M2331-050-B22-02-15	50	22	50		15	2	0.4	2	
	M2331-050-B22-03-15	50	22	50		15	3	0.4	3	

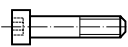
Pre-balanced tools

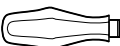
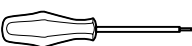
For information on high-speed applications, see „Technical information/Information on high-speed applications“

Tools with HSK have a residual imbalance of 3 gmm – with chip hole, without chip

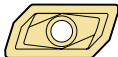
M2331-...-MA special interface for Makino (similar to HSK-A DIN 69893)

Bodies and assembly parts are included in the scope of delivery

Assembly parts		Type D _c [mm]	ZDGT15A4 .. R 40	ZDGT15A4 .. R 50	ZDGT20A5 .. R 50
	Clamping screw for indexable insert	Torque	FS1453 (Torx 15IP) 3.5 Nm	FS1453 (Torx 15IP) 3.5 Nm	FS2281 (Torx 20IP) 5.0 Nm
	Clamping screw for arbour-mounted tools		M08X040 ISO4762 12.9	M10X035 ISO4762 12.9	M10X040 ISO4762 12.9

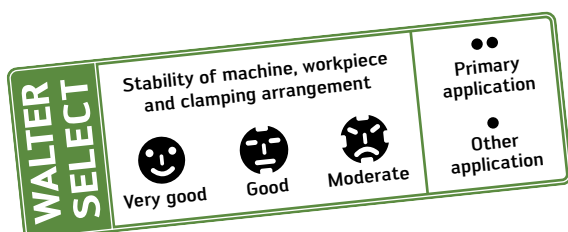
Accessories		Type	ZDGT15A4 .. R	ZDGT20A5 .. R
	Torque screwdriver, analogue	Torque	FS2003 1.5–5.0 Nm	FS2003 1.5–5.0 Nm
	Torque screwdriver, digital	Torque	FS2248 1.0–6.0 Nm	FS2248 1.0–6.0 Nm
	Interchangeable blade		FS2014 (Torx 15IP)	FS2015 (Torx 20IP)
	Screwdriver		FS1485 (Torx 15IP)	FS1486 (Torx 20IP)

Indexable inserts

	Designation	r mm	b mm	P			M		K		N	S	O
				HC			HC		HC		HF	HC	HF
				WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S	WMG40	WSM35S	WSP45S
	ZDGT15A404R-K85	0.4	1.2										
	ZDGT15A408R-K85	0.8	1.2										
	ZDGT15A412R-K85	1.2	1.2										
	ZDGT15A416R-K85	1.6	1.2										
	ZDGT15A420R-K85	2	1.2										
	ZDGT15A425R-K85	2.5	1.2										
	ZDGT15A430R-K85	3	1.2										
	ZDGT15A440R-K85	4	1.2										
	ZDGT20A508R-K85	0.8	1.2										
	ZDGT20A512R-K85	1.2	1.2										
	ZDGT20A516R-K85	1.6	1.2										
	ZDGT20A520R-K85	2	1.2										
	ZDGT20A530R-K85	3	1.2										
	ZDGT20A540R-K85	4	1.2										
	ZDGT20A550R-K85	5	1.2										
	ZDGT20A560R-K85	6	1.2										
	ZDGT20A564R-K85	6.4	1.2										

If the corner radius $r = 2.0$ mm or above, the corner area of the body must be reworked.
 $R(\text{body}) = r(\text{indexable insert}) - 1 \text{ mm}$

HC = coated carbide
 HF = uncoated fine-grained carbide

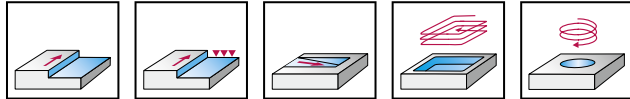
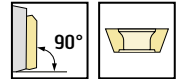


Ramping milling cutters

M2331 inch



- For pocket machining
- 2 cutting edges per indexable insert



	P	M	K	N	S	H	O
M2331				●	●		●

Tool	Designation	D _c in	d ₁ in	l ₄ in	l ₁₆ in	L _c in	Z	lbs	No. of indexable inserts	Type
ScrewFit	M2331.051-T45-03-15	2.000	T45	2.000		0.591	3	1.3	3	ZDGT15A4 .. R
HSK DIN 69893-1 A	M2331.051-H80F-03-20-MA	2.000	80.000	4.331	3.150	0.787	3	4.2	3	ZDGT20A5 .. R
	M2331.051-H80F-04-15-MA	2.000	80.000	4.331	3.150	0.591	4	4.2	4	ZDGT15A4 .. R
Parallel bore DIN 138 transverse keyway	M2331.051-B19-03-15	2.000	0.750	2.000		0.591	3	1.0	3	ZDGT15A4 .. R

Pre-balanced tools

For information on high-speed applications, see „Technical information/Information on high-speed applications“

Tools with HSK have a residual imbalance of 3 gmm – with chip hole, without chip

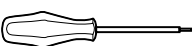
M2331-...-MA special interface for Makino (similar to HSK-A DIN 69893)

Bodies and assembly parts are included in the scope of delivery

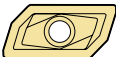
Assembly parts

Type	ZDGT15A4 .. R	ZDGT20A5 .. R
 Clamping screw for indexable insert Torque	FS1453 (Torx 15IP) 3.5 Nm	FS2281 (Torx 20IP) 5.0 Nm
 Clamping screw for arbour-mounted tools	FS1338	

Accessories

Type	ZDGT15A4 .. R	ZDGT20A5 .. R
 Torque screwdriver, analogue Torque	FS2004 1.5–5.0 Nm	FS2004 1.5–5.0 Nm
 Torque screwdriver, digital Torque	FS2248 1.0–6.0 Nm	FS2248 1.0–6.0 Nm
 Interchangeable blade	FS2014 (Torx 15IP)	FS2015 (Torx 20IP)
 Screwdriver	FS1485 (Torx 15IP)	FS1486 (Torx 20IP)

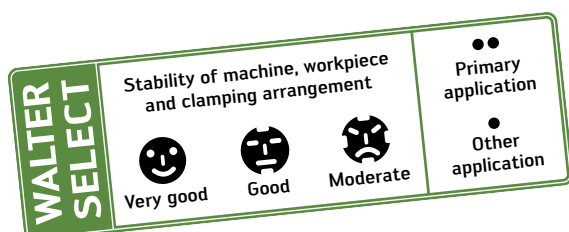
Indexable inserts

	Designation	r mm	b mm	P			M		K	N	S	O
				HC			HC		HC	HF	HC	HF
				WKP25S	WKP35S	WSP45S	WSM35S	WSP45S	WKP25S	WKP35S	WMG40	WSM35S
	ZDGT15A404R-K85	0.4	1.2									
	ZDGT15A408R-K85	0.8	1.2									
	ZDGT15A412R-K85	1.2	1.2									
	ZDGT15A416R-K85	1.6	1.2									
	ZDGT15A420R-K85	2	1.2									
	ZDGT15A425R-K85	2.5	1.2									
	ZDGT15A430R-K85	3	1.2									
	ZDGT15A440R-K85	4	1.2									
	ZDGT20A508R-K85	0.8	1.2									
	ZDGT20A512R-K85	1.2	1.2									
	ZDGT20A516R-K85	1.6	1.2									
	ZDGT20A520R-K85	2	1.2									
	ZDGT20A530R-K85	3	1.2									
	ZDGT20A540R-K85	4	1.2									
	ZDGT20A550R-K85	5	1.2									
	ZDGT20A560R-K85	6	1.2									
	ZDGT20A564R-K85	6.4	1.2									

If the corner radius $r = 2.0$ mm or above, the corner area of the body must be reworked:
 $R(\text{body}) = r(\text{indexable insert}) - 1 \text{ mm}$

HC = coated carbide
 HF = uncoated fine-grained carbide

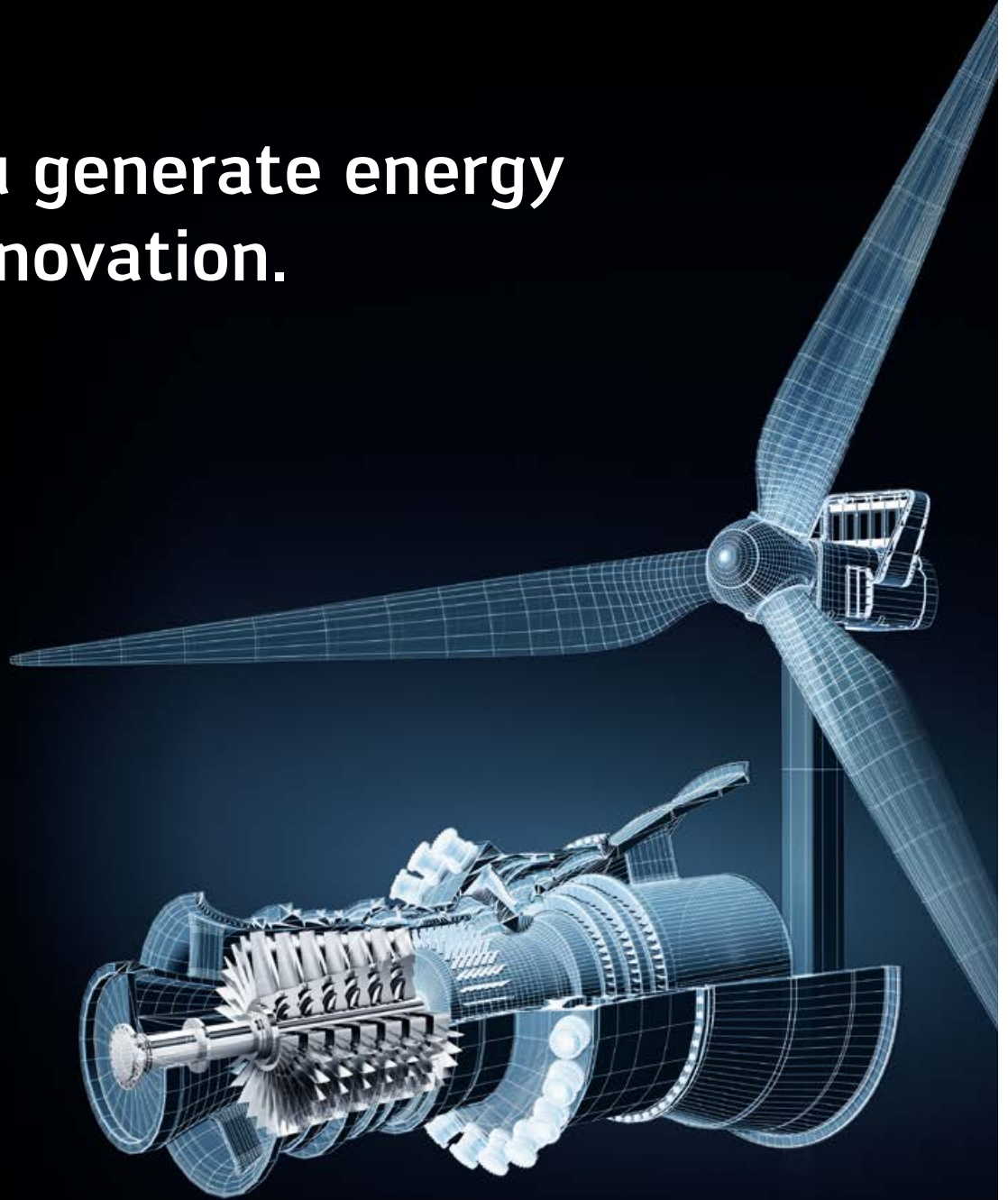
C 2



Overview

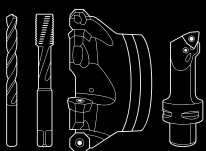
Insert	Insert typ	Tool	Tool type
ACGT0602..	rhombic positive	M5130	Shoulder mill
ADHT0803.. ADHT10T3.. ADHT1204.. ADHT1606..	rhombic positive	F4042 F4042R F4038 F4138 F4238 F2010 F2252	Shoulder mill Shoulder mill Porcupine mill Porcupine mill Porcupine mill Cartridge Half side mill
BCGT0903.. BCHT1204.. BCHT1605..	rhombic positive	M5130	Shoulder mill
MPHX1204..	rhombic positive	F2252	Half side mill
ODHT0504.. ODHT0605..	octagonal positive	F4080 F2010	Face mill
RDGT0803.. RDGT10T3.. RDGT1204.. RDGT1605.. RDGT2006..	round positive	F2231 F2234	Copy milling cutter
SDHT06T2.. SDHT09T3.. SDHT1204..	square positive	M4002 M4132 M4574 M4575 M4791 F2010	Highfeed mill Shoulder mill Chamfer mill T-slot mill Bohrnutenfräser Cartridge
SPHT0603.. SPHT09T3.. SPHT1204..	square positive		
XOEN12T3.. XOEX12T3.. SPHW1204.. SPHX1204..	PCD	M2127 M2127 F2250 F2250	Face mill
ZDGT1504.. ZDGT2005..	rhombic positive	M2131	Ramping cutter
ZDGT15A4.. ZDGT20A5..	rhombic positive	M2131 M2331	Ramping cutter
LNGX1307..	rhombic positive	F4041 F2010	Shoulder mill Cartridge
SNHX0904.. SNHX1205..	square negative	M5009	Face mill
LNHU0904.. LNHU1306.. LNHU1607..	rhombic tangential	F5041 F5038 F5141 F5138 F5241 F2010	Shoulder mill Porcupine mill Shoulder mill Porcupine mill Shoulder mill Cartridge
SX-1E150N01.. SX-2E200N02.. SX-3E300N02.. SX-4E400N02.. SX-5E500N04..	parting	F5055	Parting and slitting cutter

Can you generate energy from innovation.



The world's population will reach over 8 billion by 2025. This increasing number of people is using an increasing amount of energy – meaning that achieving optimum efficiency in energy generation has never been more important. Components for the energy industry need to be optimised to fulfil their maximum potential, which requires the use of new machining techniques and technologies. Having a partner that provides reliable tool solutions and a dependable service is therefore crucial.

Harnessing energy for the future: with Engineering Kompetenz from Walter.



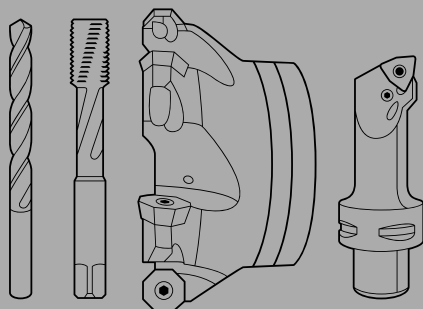
walter-tools.com

 **WALTER**
Engineering Kompetenz

Walter AG

Derendinger Straße 53, 72072 Tübingen
Postfach 2049, 72010 Tübingen
Deutschland

walter-tools.com



Walter GB Ltd.

Bromsgrove, England
+44 (1527) 839 450, service.uk@walter-tools.com

Walter Kesici Takımlar Sanayi ve Ticaret Ltd. Şti.

İstanbul, Türkiye
+90 (0) 216 528 1900 Pbx, service.tr@walter-tools.com

Walter Wuxi Co. Ltd.

Wuxi, Jiangsu, P.R. China
+86 (510) 853 72199, service.cn@walter-tools.com

Walter AG Singapore Pte. Ltd.

+65 6773 6180, service.sg@walter-tools.com

Walter Korea Ltd.

Anyang-si Gyeonggi-do, Korea
+82 (31) 337 6100, service.kr@walter-tools.com

Walter Tools India Pvt. Ltd.

Pune, India
+91 (20) 3045 7300, service.in@walter-tools.com

Walter (Thailand) Co., Ltd.

Bangkok, 10120, Thailand
+66 2 687 0388, service.th@walter-tools.com

Walter Malaysia Sdn. Bhd.

Selangor D.E., Malaysia
+60 (3) 5624 4265, service.my@walter-tools.com

Walter Japan K.K.

Nagoya, Japan
+81 (52) 533 6135, service.jp@walter-tools.com

Walter USA, LLC

Waukesha WI, USA
+1 800-945-5554, service.us@walter-tools.com

Walter Canada

Mississauga, Canada
service.ca@walter-tools.com
