

Jongen Werkzeugtechnik

Working depth
3 x D



Drilling by JONGEN

BP 04 to 12



THE TOOL

New at Jongen: universally applicable high-performance drill for use on lathes and milling centers. It offers the highest efficiency and process reliability with extremely easy handling and lowest storage costs.

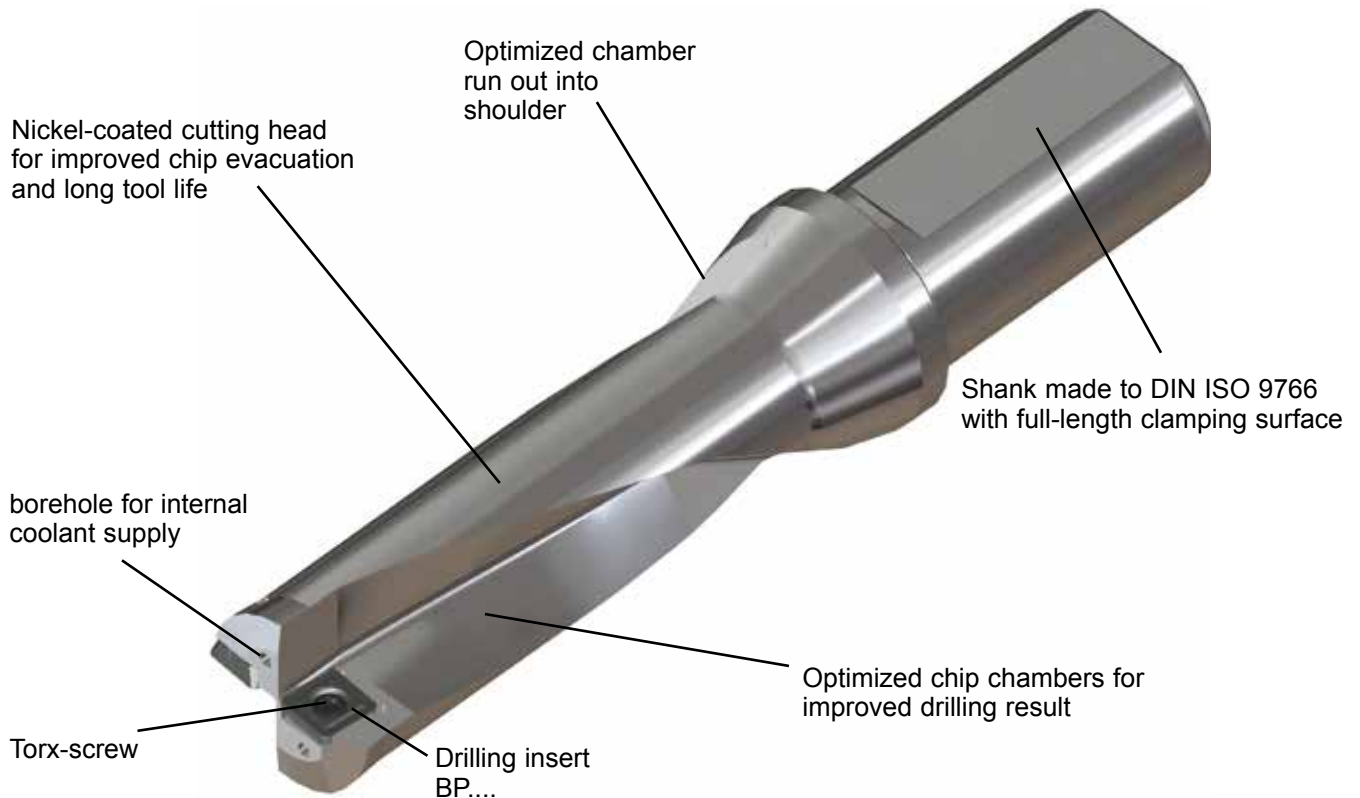
Product characteristics

Characteristics	Your advantage
For the high performance chipping of steel, high grade steel, cast iron and aluminium	For processing almost all usual materials
Effectively 4 cutting edges per insert	High cost effectiveness
Same geometry and shape of external-diameter cutting edge and central cutting edge	Simple handling No mix-up danger Reduced warehousing costs
Soft entry in material thanks to perfect coordination of insert's geometry and angles of incidence	Good initial drill penetration High process reliability even with difficult spot drilling conditions. Low deflection of the tool allow tight bore tolerances
Drilling depth 3xø	Bore depth up to 3 x diameter without any problems possible
Diameter range 14-44mm in 0,5mm steps	Almost all useful bore dimensions can be manufactured
New quality covering a wide general range HT65	Universally applicable quality for all materials
Quality K15M	Quality for processing aluminium and plastics
Rigid design allows high feed rates	High productivity and cost effectiveness
Nickel plated and very straight surface	Good chip flow and long tool life
Reduced axial forces	Low deflection
Stable setting of tools and inserts	High productivity
Rotating and standing application possible	Applicable on milling machines and lathes

DRILLING INSERT

☞ Precision sintered, with 4 effective cutting edges

ø14,0-16,0	ø16,5-18,0	ø18,5-20,5	ø21,0-24,0	ø24,0-28,0	ø29,0-34,0	ø35,0-44,0
						
BP0402	BP0502	BP0602	BP0702	BP0802	BP1004	BP1205



Following carbide qualities are offered:

HT65

Code 39 , Iso-classification P30-P40, M20-M30



Very tough and hard multi range quality, with finest grain, especially developed for the drilling processing with a TiALN/TiALSIN coating. This quality is suitable for processing steel, high grade steel, cast iron and almost all difficult-to-mill materials.

K15M

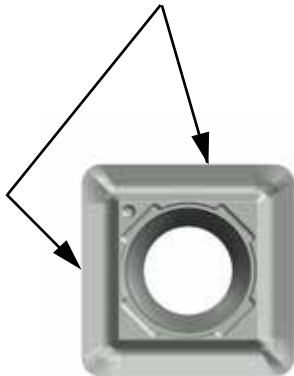
Code 8 , Iso-classification K10



Very hard wearing fine grain carbide, for high cutting speeds with high feed rates. This quality is suitable for dry milling and can also be adopted with cooling. Application areas are roughing and finishing nonferrous heavy materials and aluminium up to a Si-component of approx. 8%.

ADJUSTMENT OF DRILLING INSERTS

Outer and inner cutting edges are identical, therefore no risk of confusion, easy handling and low storage cost.



OFF-CENTRE DRILLING Maximal adjustment range „X“ (only with a motionless tool respectively with a rotating workpiece)



By displacing the centre axis of the drilling cutter in direction of the external cutting edge with the value “x” a greater borehole can be produced.

Example:

Permitted feed rates if X is max: $f \times 0,09 - 0,17 \text{ mm/U}$.

Having max. adjustment X max the bore hole becomes:

e.g. for $D_{\max} = D + 2X_{\max}$

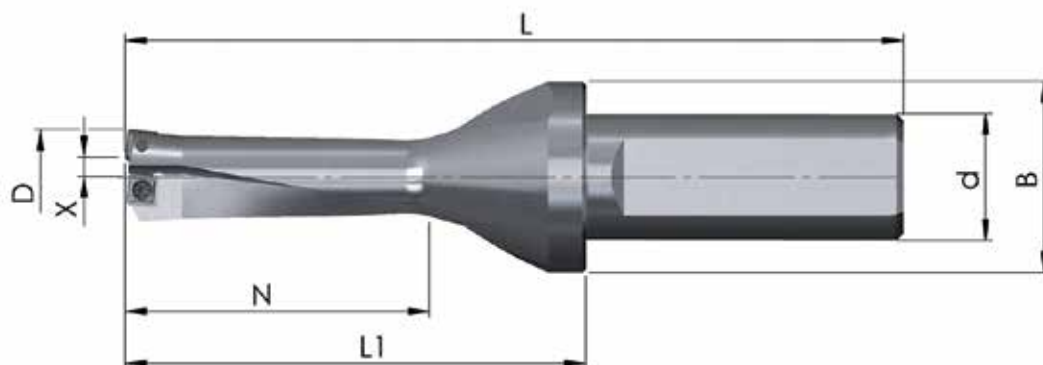
z.B. $D = 20,0\text{mm}$, $X_{\max} = 0,5\text{mm}$

$D_{\max} = D + 1,0 = 21,0\text{mm}$










DRILLING TOOL 04 - TECHNICAL DATA

Shank Type Milling



Order-Nr.	D	N	L ₁	L	d _{h6}	B	Z	X max.
BW-14-42-20-04	14,0	42,0	69	119	20	30	1+1	0,25
BW-14,5-45-20-04	14,5	43,5	72	122	20	30	1+1	0,25
BW-15-45-20-04	15,0	45,0	72	122	20	30	1+1	0,25
BW-15,5-48-20-04	15,5	46,5	75	125	20	30	1+1	0,25
BW-16-48-20-04	16,0	48,0	75	125	20	30	1+1	0,25

Drilling Insert

		HT65 (code 39)	K15M (code 33)				
 BP 0402 (D1) IK ø4,9 x 1,8 R 0,4							
 BP 0402 (D1) IK ø4,9 x 1,8 R 0,4							
		10	10				

Spare Parts

 SS 1,8-1 (M = 0,4-0,6 Nm)	 T 06+	 100g
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PARAMETERS

Material		Hardness	Quality	Cutting speed v_c [m/min.]	Feed speed per revolution $\varnothing 14,0-16,0$ f [mm/U]
P	Structural steel, Unalloyed steel	<180 HB	HT65	160 (140-180)	0,08 (0,05-0,12)
	Tool steel, Heat-treatable steel, Alloyed steel	180-350 HB	HT65	140 (120-160)	0,08 (0,05-0,12)
M	Stainless-steel, High grade steel, High alloyed steel,	<270 HB	HT65	120 (100-140)	0,08 (0,05-0,12)
S	Heat-resistant super alloys Titan alloys	-	HT65 (K15M)	50 (30-70)	0,08 (0,05-0,12)
K	Grey cast iron	<800 N/mm ²	HT65	160 (140-180)	0,15 (0,08-0,20)
	Globular graphite cast iron	<350 N/mm ²	HT65	120 (100-140)	0,15 (0,08-0,20)
N	Aluminium Non-ferrous metals	bis 8% Si	K15M	260 (240-280)	0,11 (0,08-0,20)

The above mentioned data are standard values.

Up and down corrections are admitted depending on the machine type, tool and holding fixture.

DRILLING TOOL 05 - TECHNICAL DATA

Shank Type Milling



Order-Nr.	D	N	L ₁	L	d _{h6}	B	Z	X max.
BW-16,5-51-20-05	16,5	49,5	78	128	20	30	1+1	0,40
BW-17-51-20-05	17,0	51,0	78	128	20	30	1+1	0,40
BW-17,5-54-20-05	17,5	52,5	81	131	20	30	1+1	0,40
BW-18-54-20-05	18,0	54,0	81	131	20	30	1+1	0,40

Drilling Insert

		HT65 (code 39)	K15M (code 33)				
		10	10				

Spare Parts

	SS 1,8-1 (M = 0,4-0,6 Nm)		T 06+		PBC 100g
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PARAMETERS

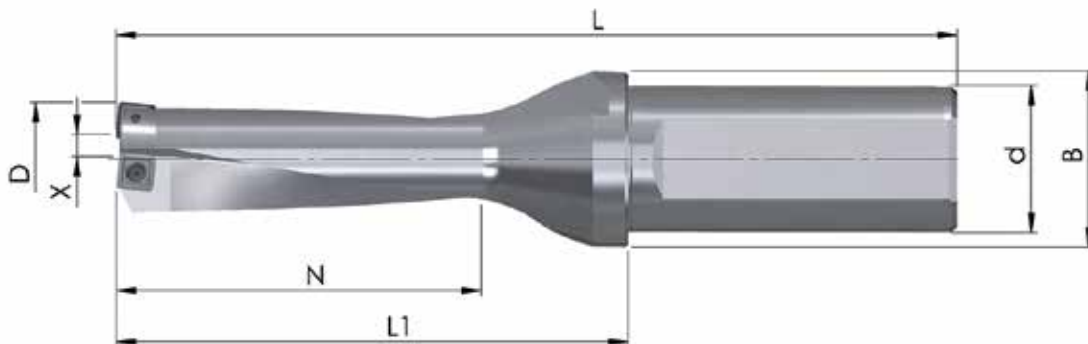
Material	Hardness	Quality	Cutting speed v_c [m/min.]	Feed speed per revolution $\varnothing 16,5-18,0$ f [mm/U]	
P	Structural steel, Unalloyed steel	<180 HB	HT65	160 (140-180)	0,10 (0,07-0,15)
	Tool steel, Heat-treatable steel, Alloyed steel	180-350 HB	HT65	140 (120-160)	0,10 (0,07-0,15)
M	Stainless-steel, High grade steel, High alloyed steel,	<270 HB	HT65	120 (100-140)	0,10 (0,07-0,15)
S	Heat-resistant super alloys Titan alloys	-	HT65 (K15M)	50 (30-70)	0,10 (0,07-0,15)
K	Grey cast iron	<800 N/mm ²	HT65	160 (140-180))	0,15 (0,10-0,20)
	Globular graphite cast iron	<350 N/mm ²	HT65	120 (100-140)	0,15 (0,10-0,20)
N	Aluminium Non-ferrous metals	bis 8% Si	K15M	260 (240-280)	0,13 (0,08-0,20)

The above mentioned data are standard values.

Up and down corrections are admitted depending on the machine type, tool and holding fixture.

DRILLING TOOL 06 - TECHNICAL DATA

Shank Type Milling



Order-Nr.	D	N	L ₁	L	d _{h6}	B	Z	X max.
BW-18,5-57-25-06	18,5	55,5	84	140	25	30	1+1	0,5
BW-19-57-25-06	19,0	57,0	84	140	25	30	1+1	0,5
BW-19,5-60-25-06	19,5	58,5	87	143	25	30	1+1	0,5
BW-20-60-25-06	20,0	60,0	87	143	25	30	1+1	0,5
BW-20,5-63-25-06	20,5	61,5	90	146	25	30	1+1	0,5

Drilling Insert

		HT65 (code 39)	K15M (code 33)				
		10	10				

Spare Parts

SS 2,0-5
(M = 0,4-0,6 Nm)

T 06+

PBC **100g**

PARAMETERS

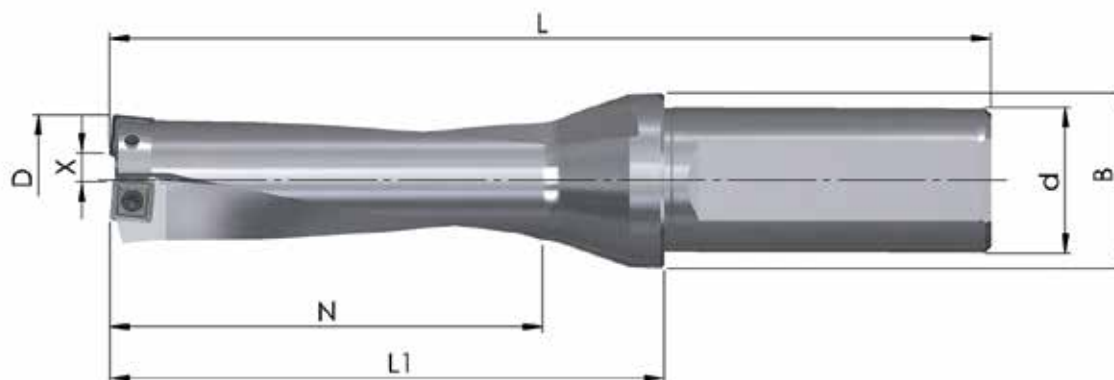
Material		Hardness	Quality	Cutting speed v_c [m/min.]	Feed speed per revolution $\varnothing 18,5-20,5$ f [mm/U]
P	Structural steel, Unalloyed steel	<180 HB	HT65	160 (140-180)	0,12 (0,09-0,17)
	Tool steel, Heat-treatable steel, Alloyed steel	180-350 HB	HT65	140 (120-160)	0,12 (0,09-0,17)
M	Stainless-steel, High grade steel, High alloyed steel,	<270 HB	HT65	120 (100-140)	0,12 (0,09-0,17)
S	Heat-resistant super alloys Titan alloys	-	HT65 (K15M)	50 (30-70)	0,12 (0,09-0,17)
K	Grey cast iron	<800 N/mm ²	HT65	160 (140-180))	0,17 (0,10-0,20)
	Globular graphite cast iron	<350 N/mm ²	HT65	120 (100-140)	0,17 (0,10-0,20)
N	Aluminium Non-ferrous metals	bis 8% Si	K15M	260 (240-280)	0,15 (0,08-0,20)

The above mentioned data are standard values.

Up and down corrections are admitted depending on the machine type, tool and holding fixture.

DRILLING TOOL 07 - TECHNICAL DATA

Shank Type Milling

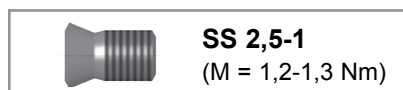


Order-Nr.	D	N	L ₁	L	d _{h6}	B	Z	X max.
BW-21-63-25-07	21,0	63,0	90	146	25	30	1+1	0,5
BW-21,5-63-25-07	21,5	64,5	90	146	25	30	1+1	0,5
BW-22-66-25-07	22,0	66,0	92	148	25	30	1+1	0,5
BW-22,5-69-25-07	22,5	67,5	95	151	25	30	1+1	0,5
BW-23-69-25-07	23,0	69,0	95	151	25	30	1+1	0,5
BW-23,5-72-25-07	23,5	70,5	98	154	25	30	1+1	0,5
BW-24-72-25-07	24,0	72,0	98	154	25	30	1+1	0,5

Drilling Insert

		HT65 (code 39)	K15M (code 33)				
	10	10					

Spare Parts



PARAMETERS

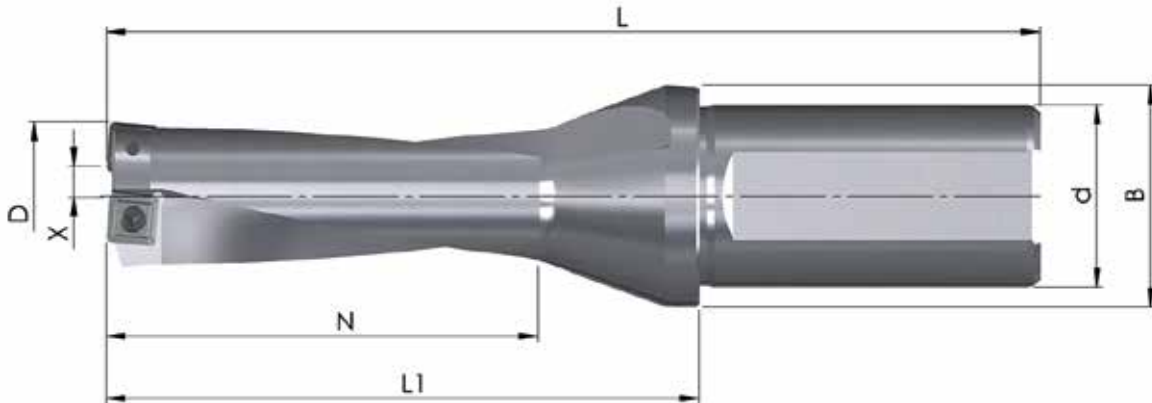
Material	Hardness	Quality	Cutting speed v_c [m/min.]	Feed speed per revolution $\phi 21,0-24,0$ f [mm/U]	
P	Structural steel, Unalloyed steel	<180 HB	HT65	160 (140-180)	0,14 (0,09-0,20)
	Tool steel, Heat-treatable steel, Alloyed steel	180-350 HB	HT65	140 (120-160)	0,14 (0,09-0,20)
M	Stainless-steel, High grade steel, High alloyed steel,	<270 HB	HT65	120 (100-140)	0,14 (0,09-0,20)
S	Heat-resistant super alloys Titan alloys	-	HT65 (K15M)	50 (30-70)	0,14 (0,09-0,20)
K	Grey cast iron	<800 N/mm ²	HT65	160 (140-180))	0,19 (0,10-0,25)
	Globular graphite cast iron	<350 N/mm ²	HT65	120 (100-140)	0,19 (0,10-0,25)
N	Aluminium Non-ferrous metals	bis 8% Si	K15M	260 (240-280)	0,17 (0,08-0,50)

The above mentioned data are standard values.

Up and down corrections are admitted depending on the machine type, tool and holding fixture.

DRILLING TOOL 08 - TECHNICAL DATA

Shank Type Milling



Order-Nr.	D	N	L ₁	L	d _{h6}	B	Z	X max.
BW-24,5-75-32-08	24,5	73,5	101	161	32	39	1+1	0,5
BW-25-75-32-08	25,0	75,0	101	161	32	39	1+1	0,5
BW-25,5-78-32-08	25,5	76,5	104	164	32	39	1+1	0,5
BW-26-78-32-08	26,0	78,0	104	164	32	39	1+1	0,5
BW-26,5-81-32-08	26,5	79,5	107	167	32	39	1+1	0,5
BW-27-81-32-08	27,0	81,0	107	167	32	39	1+1	0,5
BW-28-84-32-08	28,0	84,0	110	170	32	39	1+1	0,5

Drilling Insert

		HT65 (code 39)	K15M (code 33)				
	10	10					

Spare Parts

SS 3,0-1 (M = 1,7-1,8 Nm)	T 09	PBC 100g
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PARAMETERS

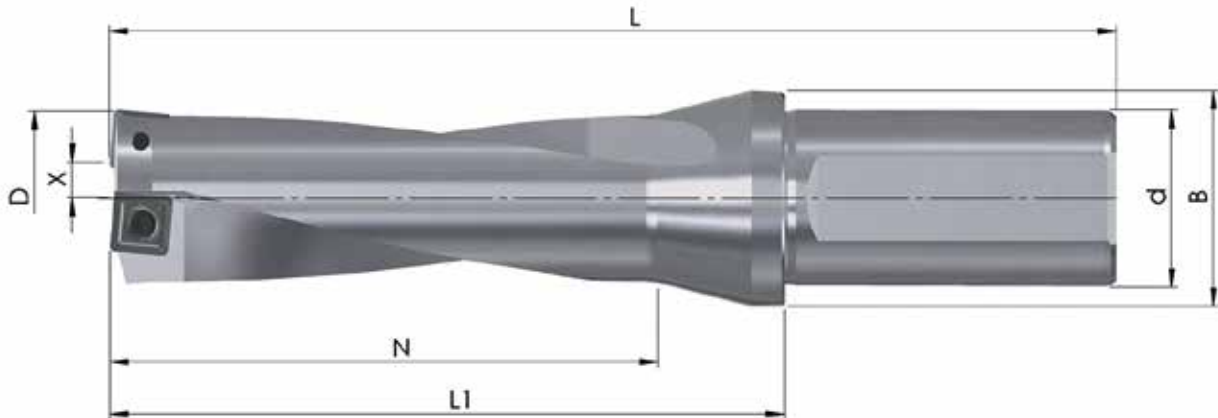
Material	Hardness	Quality	Cutting speed v_c [m/min.]	Feed speed per revolution $\phi 24,5-28,0$ f [mm/U]	
P	Structural steel, Unalloyed steel	<180 HB	HT65	160 (140-180)	0,14 (0,09-0,20)
	Tool steel, Heat-treatable steel, Alloyed steel	180-350 HB	HT65	140 (120-160)	0,14 (0,09-0,20)
M	Stainless-steel, High grade steel, High alloyed steel,	<270 HB	HT65	120 (100-140)	0,14 (0,09-0,20)
S	Heat-resistant super alloys Titan alloys	-	HT65 (K15M)	50 (30-70)	0,14 (0,09-0,20)
K	Grey cast iron	<800 N/mm ²	HT65	160 (140-180))	0,19 (0,10-0,25)
	Globular graphite cast iron	<350 N/mm ²	HT65	120 (100-140)	0,19 (0,10-0,25)
N	Aluminium Non-ferrous metals	bis 8% Si	K15M	260 (240-280)	0,17 (0,08-0,50)

The above mentioned data are standard values.

Up and down corrections are admitted depending on the machine type, tool and holding fixture.

DRILLING TOOL 10 - TECHNICAL DATA

Shank Type Milling



Order-Nr.	D	N	L ₁	L	d _{h6}	B	Z	X max.
BW-29-87-32-10	29,0	87	113	173	32	39	1+1	0,5
BW-30-90-32-10	30,0	90	116	176	32	39	1+1	0,5
BW-31-93-32-10	31,0	93	119	179	32	39	1+1	0,5
BW-32-96-32-10	32,0	96	122	182	32	39	1+1	0,5
BW-33-99-32-10	33,0	99	125	185	32	39	1+1	0,5
BW-34-102-32-10	34,0	102	128	188	32	39	1+1	0,5

Drilling Insert

		HT65 (code 39)	K15M (code 33)				
		10	10				

Spare Parts

	SS 4,0-1 (M = 3,2-3,3 Nm)		T 15		PBC 100g
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PARAMETERS

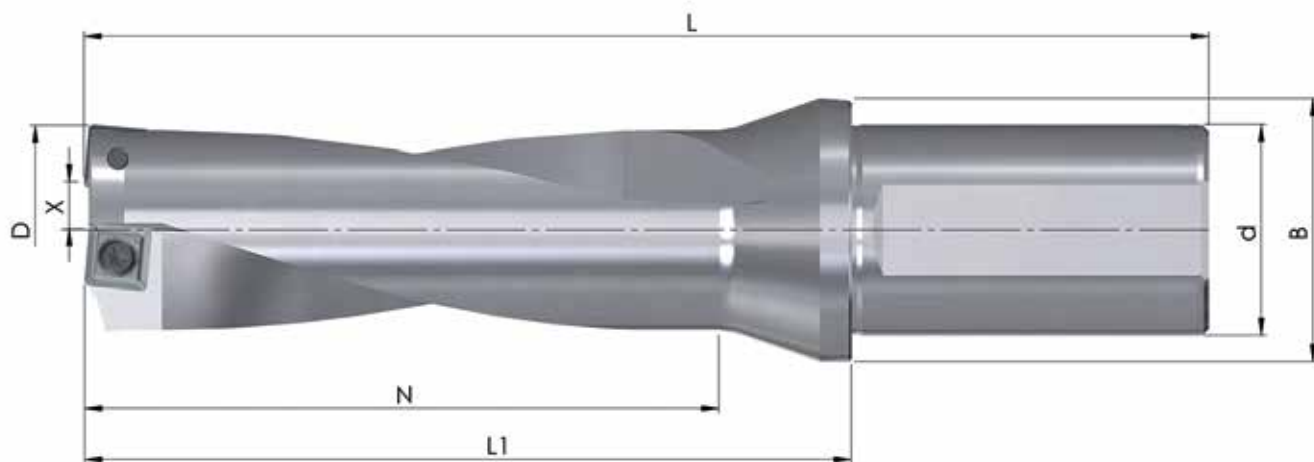
Material	Hardness	Quality	Cutting speed v_c [m/min.]	Feed speed per revolution $\phi 29,0-34,0$ f [mm/U]	
P	Structural steel, Unalloyed steel	<180 HB	HT65	160 (140-180)	0,14 (0,09-0,20)
	Tool steel, Heat-treatable steel, Alloyed steel	180-350 HB	HT65	140 (120-160)	0,14 (0,09-0,20)
M	Stainless-steel, High grade steel, High alloyed steel,	<270 HB	HT65	120 (100-140)	0,14 (0,09-0,20)
S	Heat-resistant super alloys Titan alloys	-	HT65 (K15M)	50 (30-70)	0,14 (0,09-0,20)
K	Grey cast iron	<800 N/mm ²	HT65	160 (140-180))	0,19 (0,10-0,25)
	Globular graphite cast iron	<350 N/mm ²	HT65	120 (100-140)	0,19 (0,10-0,25)
N	Aluminium Non-ferrous metals	bis 8% Si	K15M	260 (240-280)	0,17 (0,08-0,50)

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Up and down corrections are admitted depending on the machine type, tool and holding fixture.








DRILLING TOOL 12 - TECHNICAL DATA

Shank Type Milling

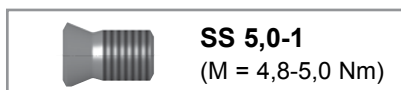


Order-Nr.	D	N	L ₁	L	d _{h6}	B	Z	X max.
BW-35-105-40-12	35,0	105	131	199	40	50	1+1	0,5
BW-36-108-40-12	36,0	108	134	202	40	50	1+1	0,5
BW-37-111-40-12	37,0	111	137	205	40	50	1+1	0,5
BW-38-114-40-12	38,0	114	140	208	40	50	1+1	0,5
BW-39-117-40-12	39,0	117	143	211	40	50	1+1	0,5
BW-40-120-40-12	40,0	120	146	214	40	50	1+1	0,5
BW-41-123-40-12	41,0	123	149	217	40	50	1+1	0,5
BW-42-126-40-12	42,0	126	152	220	40	50	1+1	0,5
BW-43-129-40-12	43,0	129	155	223	40	50	1+1	0,5
BW-44-132-40-12	44,0	132	158	226	40	50	1+1	0,5

Drilling Insert

		HT65 (code 39)	K15M (code 33)				
							
							
		10	10				

Spare Parts



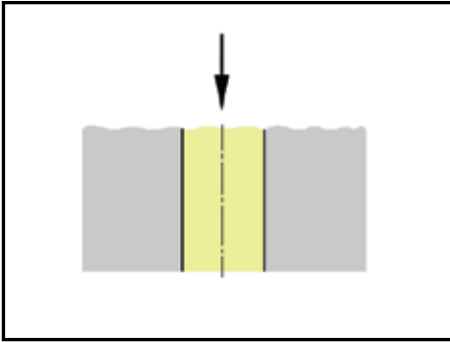
PARAMETERS

Material	Hardness	Quality	Cutting speed v_c [m/min.]	Feed speed per revolution $\phi 35,0-44,0$ f [mm/U]	
P	Structural steel, Unalloyed steel	<180 HB	HT65	160 (140-180)	0,14 (0,09-0,20)
	Tool steel, Heat-treatable steel, Alloyed steel	180-350 HB	HT65	140 (120-160)	0,14 (0,09-0,20)
M	Stainless-steel, High grade steel, High alloyed steel,	<270 HB	HT65	120 (100-140)	0,14 (0,09-0,20)
S	Heat-resistant super alloys Titan alloys	-	HT65 (K15M)	50 (30-70)	0,14 (0,09-0,20)
K	Grey cast iron	<800 N/mm ²	HT65	160 (140-180))	0,19 (0,10-0,25)
	Globular graphite cast iron	<350 N/mm ²	HT65	120 (100-140)	0,19 (0,10-0,25)
N	Aluminium Non-ferrous metals	bis 8% Si	K15M	260 (240-280)	0,17 (0,08-0,50)

The above mentioned data are standard values.

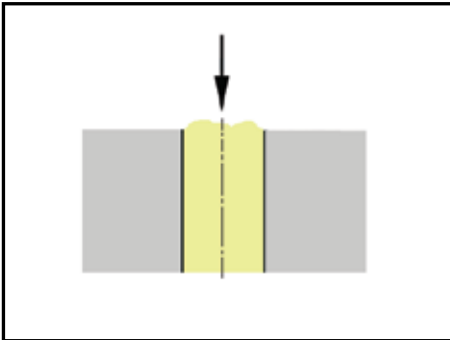
Up and down corrections are admitted depending on the machine type, tool and holding fixture.

APPLICATION NOTES:



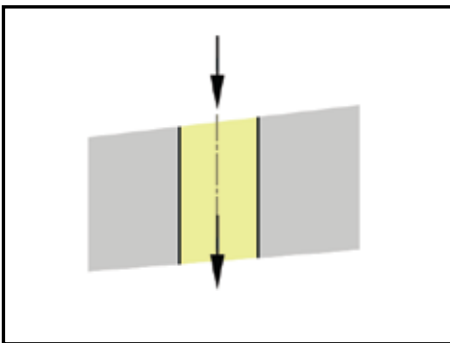
Spot drilling of irregular surfaces (cast iron surfaces)

Depending on the surface quality, it may be necessary to reduce the feed rate for spot drilling operations



Spot drilling of black forged skin / weld seam / cast skin

- The feed rate is to be reduced

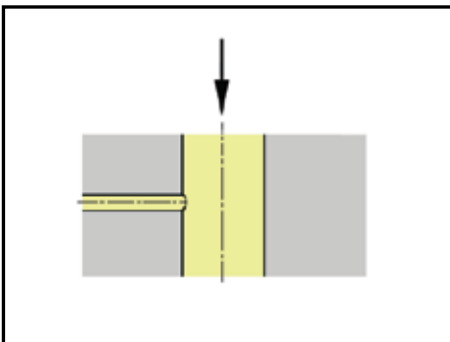


Spot drilling of inclined surfaces

- Up to max. 3° inclined position: no feed rate reduction necessary
- > 3° Inclined position, reduce the feed rate of up to 50% till the full nominal diameter is reached

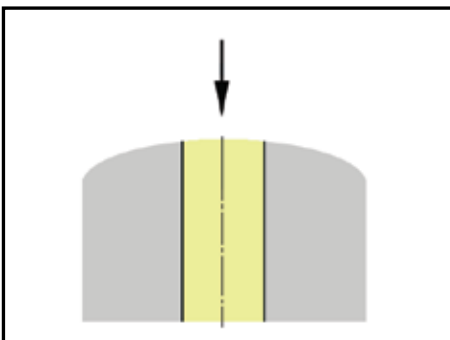
Inclined bore outlet

- > 3° Inclined position, by cut interruption: reduce the feed rate of up to 50%



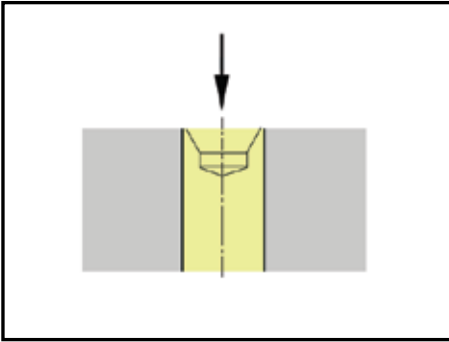
Drilling through a cross hole

- Reduce the feed rate up to 50% (depending on the relation between hole and cross hole)



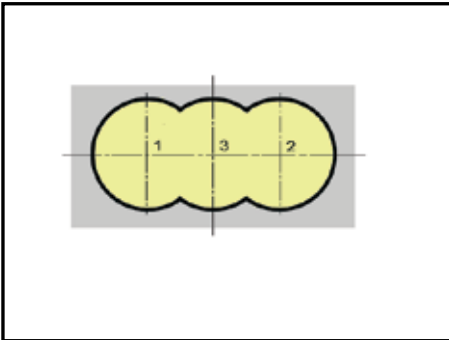
Spot drilling of a convex surface

- Possible without problems
- If necessary reduce the feed rate of up to 50% (depending on the relation -hole to radius- of the convex surface)



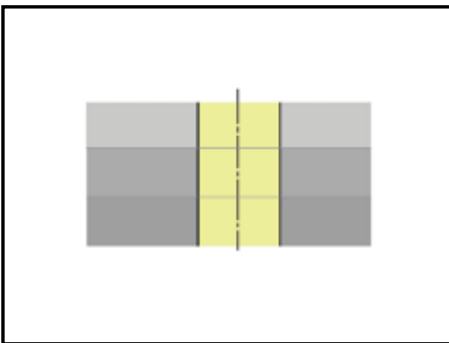
Spot drilling in a counter bore or centre hole

- It may be operated with face milling
- Reduce the feed rate up to 50%



Assembly holes with overlapping

- First the hole 1 and 2 – at the end the centre hole 3
- The symmetric distribution is to be considered
- Avoid chip seizing
- By cut interruption: reduce the feed rate of up to 50%



Multiple Drilling

- Possible
- Good work piece clamping is necessary

The drilling cutters work with a controlled deflection of about 0,2mm, this means that the measured tool diameter is smaller than the drilling diameter.

Example:

Drilled diameter 22mm - measured tool diameter 21,8mm

Tolerance bore preciseness: nominal diameter $\pm 0,2\text{mm}$

A sharp blanks is being dropped off when the drilling operation is done as through hole machining. Use safety precautions. Against ejected chips a protective cover is to be adopted.

NOTES

