KHALNN

ZHENGZHOU HALNN SUPERHARD MATERIAL CO.LTD
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COMPANY PROFILE

HALNN specializes in manufacturing and developing deep hole machining gun drills and solid carbide tools. Based on more than ten years of rich experience in gun drill, deep hole drill tool manufacturing, and deep hole machining of automotive parts, we are at the forefront of domestic gun drill, deep hole drill, solid carbide tool manufacturing, and research and development.

HALNN specializes in the research and manufacturing of standard and special gun drills, such as CHIP-BREAK Gun Drill, Indexable Insert Gun Drill, Solid Carbide Gun Drill, PCD Tipped Gun Drill, and BTA systems. With rich and professional research and development technology, we can immediately meet the various needs of our customers.

HALNN prioritizes the most competitive prices, excellent quality, and precise delivery times, and continuously strengthens its competitiveness through technological development.We are committed to becoming a leading professional tool manufacturer in the world.



2013002265D

中国认可
国际互认
检测
TESTING
CNAS L0207

ISO 9001
质量体系认证

HALNN ADVANTAGES

1. Product diversification;Cost effective and precise holemaking.

2. High process reliability;Minimum centerline deviation.

3. Tool lengths up to 5,000 mm are available depending on tool type and tool dia.

4. Drills can be used horizontally or vertically with either tool, workpiece or counterrotation.

5. Tools can be regrind and Re-tip at HALNN factory

6. Each of our tools is the product of over 15 years' experience in deep hole drill production and applications.

The gundrilling process and the requirements for application

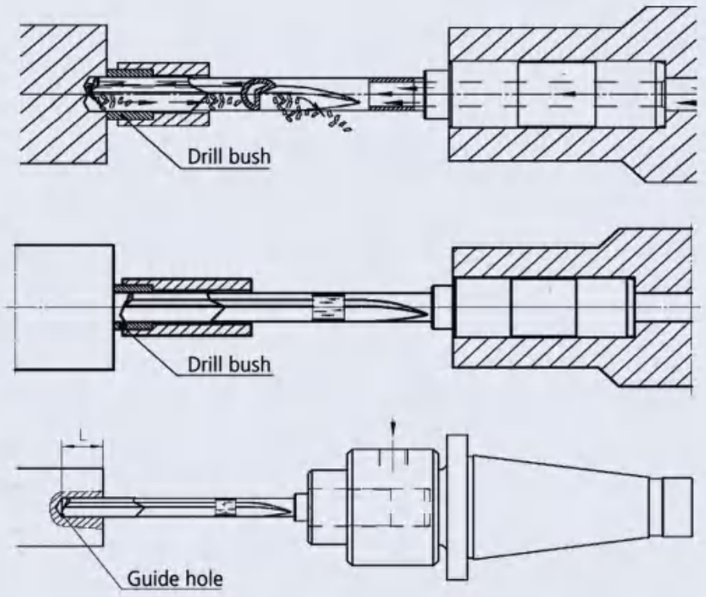
The characteristic of the single flute gundrilling process is that coolant is fed through the coolant hole in the tool and exits along with the chips in the V-shaped groove on the drill tube from the drilled hole.

The coolant also provides lubrication to the drill periphery.

Deep hole drilling oil or emulsion (min. 8 - 12 % concentration, with additives), is provided in sufficient quantity and pressure

High pressure coolant systems should already be integrated in the machine or can be provided as a separate unit by the machine' s manufacturer.

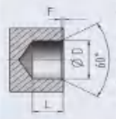
Deep-hole drilling is not only be used in special/professional deep hole drilling machines but also on CNC machining centres (lathes, horizontal boring machines,



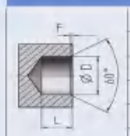
Gun drill is a single edged tool without automatic centeringfunction. When positioning the drill bit, it is necessary to guide thetool through the guide bush or pilot hole.

The quality of pilot holes affects the performance of drilling(tool life, centerline, straightness deviation, etc.).

Dimensions of the pilot hole for solid carbide gundrill

	Drill diameter	Pilot hole diameter	Pilot hole depth matched to the tool length(without driver)				
			L×D Drilling depth	Pilot hole depth			
				Ø0.00-1.599	Ø1.600-3.999	Ø4.000-6.999	Ø7.000-12.000
	0.900 mm - 4.000 mm	+ 0.005 to + 0.010	ap. 20xD	3.0 x D	2.0 x D	2.0 x D	2.5 x D
	4.001 mm - 12.000 mm	+ 0.010 to + 0.020	ap. 30xD		3.0 x D	3.0 x D	3.5 x D
			ap. 40xD		4.0 x D	4.0 x D	40 mm
			ap. 50xD	6.0 x D	6.0 x D	35 mm	
			ap. 60xD		30 mm		
			> 60xD				

Dimensions of the pilot hole for carbide tip brazed gundrill

	Drill diameter	Pilot hole diameter	Pilot hole depth matched to the tool length(without driver)						
			L×D Drilling depth	Pilot hole depth					
				Ø2.00 -4.000	Ø4.001 -8.500	Ø8.501 -12.000	Ø12.001 -20.999	Ø21.000 -30.999	Ø31.000 -40.999	Ø41.000 -50.000
	1.85 mm - 4.00 mm	+ 0.005 to + 0.010	ap. 10xD	2.0 x D	1.0 x D	1.0 x D	1.0 x D	1 x D	1 x D	1 x D
	4.01 mm - 12.00 mm	+ 0.010 to + 0.020	ap. 20xD	3.0 x D	1.5 x D	1.5 x D	1.5 x D			
	12.01 mm - 50.00 mm	+ 0.015 to + 0.040	ap. 25xD	4.0 x D	2.0 x D	2.0 x D	1.5 x D			
			ap. 30xD	6.0 x D	3.0 x D	3.0 x D	1.5 x D			
			ap. 35xD	30 mm	35 mm	3.0 x D	1.5 x D			
			ap. 40xD							

TZS type – solid carbide gundrill

1.Can be regrinded for several times.

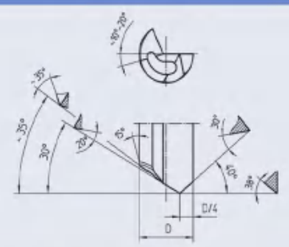
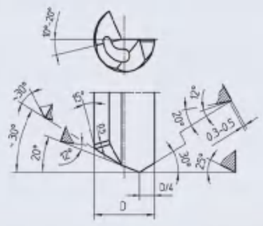
2.Deep holes with extremely small diameters can be drilled.Min diameter 0.9mm, Max length 100XD;

3.Even higher cutting speeds are possible compared to the gundrill with brazed gun drills;

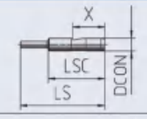
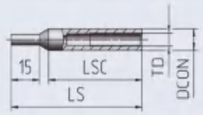
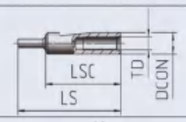
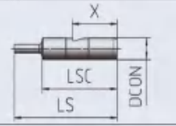
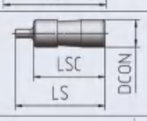
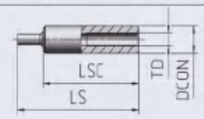
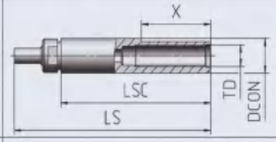
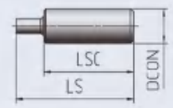
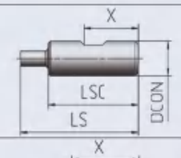
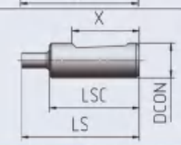
4.Solid carbide design, drill head and drill shaft in one piece, allows greater rigidity reducing vibration and tensional flex during drilling

5.Higher feedrates ， greater penetration feed rates， various peripheral contours for greater application flexibility.

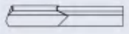
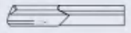
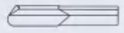
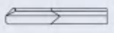
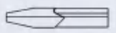
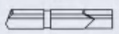
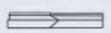
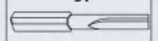
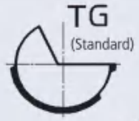
Grinding angle of drill tip for solid carbide gundrill

Standardz angle grinds for solid carbide gundrill	
	
Applicable Diameter Range： 0.900-4.000mm	Applicable Diameter Range： 4.000-12.000mm

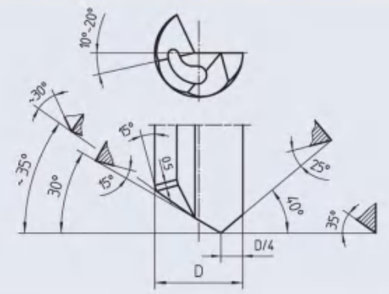
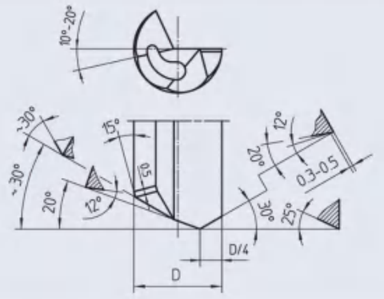
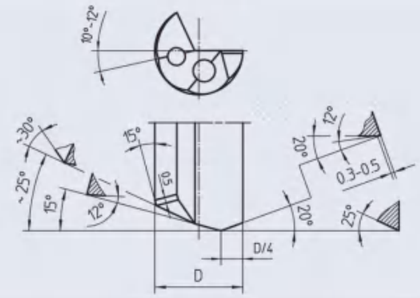
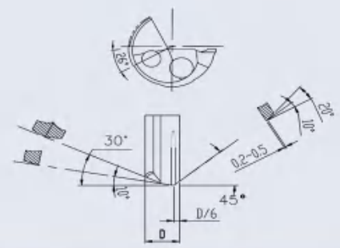
Standard drivers for solid carbide gundrills - Overview

designation		Drawing	for tool length calculation			Notch location	Thread size	driver NO.
Ø dia. (mm)	Type		drill dia. (mm) from - to	LSC	Driver with pin			
6			0.900 - 4.5	30	45	17		DR-30
10	Applicable to Hydraulic Chucks		0.900 - 6	55	70		M6x0.5	DR-70
10			0.900 - 5.249	40	55	33	M6x0.5	DR-55-33
10			0.900 - 7.249	40	55	24		DR-10-55-24
12.7			0.900 - 6.349	38	48	25.4		DR-12.7-48-25
12.7			0.900 - 6.349	51	65		M6x0.5	DR-12.7-65-M6
16			0.900 - 8.049	80	105	37	M10x1	DR-10-105-M10
4			0.900 - 5.149	34	46			DR-46
6			0.900 - 4.649	36	50			DR-50
10			0.900 - 7.249	40	55			DR-55
12			0.900 - 8.049	45	60			DR-60
16			0.900 - 8.049	48	63			DR-63
6			0.900 - 4.649	36	50	20		DR-50
10			0.900 - 7.249	40	55	23.5		DR-55
12			0.900 - 8.049	45	60	26.5		DR-60
16			0.900 - 8.049	48	63	29		DR-63
6			0.900 - 4.649	36	50	25		DR-50
10			0.900 - 7.249	40	55	28		DR-55
12			0.900 - 8.049	45	60	33		DR-60
16			0.900 - 8.049	48	63	36		DR-63

Basic information for all gundrills

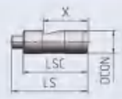
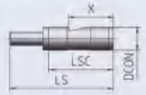
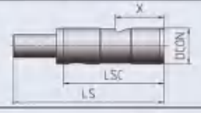
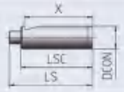
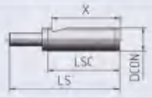
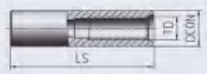
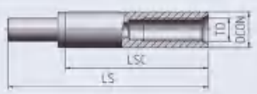
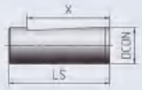
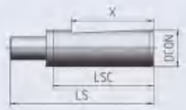
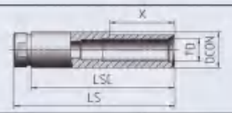
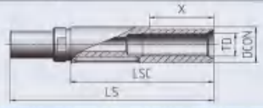
Drill head design	Solid carbide tip				
Gundrill type	1. Standard Type	2. SF Type	3. Radius Type	4. Radius Flat Type	5. Back Taper Type
	6. Double Sections Type	7. Stepped Type	8. Flat Type	9. Multi-F Gun Reamer	10. Single Flute Gun Reamer
Illustration					
					
Drilling range from-to(mm)	2.00~38.00				
Tool length	depending on diameter, max. 5000 mm				
Coolant hole design (standard)	kidney  **tool dia.** 2.00-9.00		2-holes  **tool dia.** 7.99-45.00		
Peripheral contours	TG (Standard)  - All materials - Suitable for nearly all drilling - Close hole tolerance - Minimal drift		TC  - Stainless steel, wood - Not easily machinable materials - Preferred for water soluble (emulsion) coolants		
	TA  - Aluminium - Close hole tolerance		TD  - Cast iron and graphite - Close hole tolerance in cast iron		TEM  - Steel, cast iron - Soft materials
	TEA  - Steel and aluminium - Crosshole drilling - Angular entrance and exit bores		TS  - Steel - Close hole tolerance - Good surface quality - Ideal for short holes		

Standard angle grinds for all gundrills

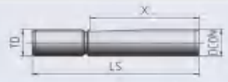
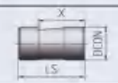
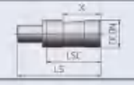
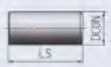
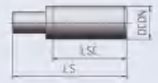
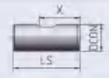
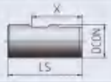
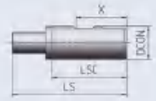
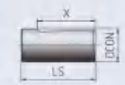
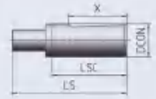
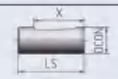
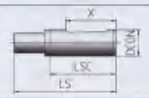
Standard angle grinds for all gundrills	
TZ-0001 for drill range 2.00-4.00 mm	
TZ-0002 for drill range 4.00-20.00 mm	
TZ-0003 for drill range 20.01-45.00 mm	
TZ-0004 for drill range 4.00-45.00 mm SF-TYPE	
We are pleased to provide regrinding instructions on request.	

All tools are also available with special point grind

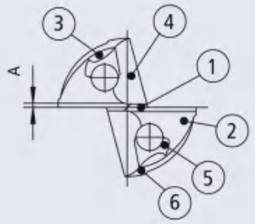
Standard drivers for all gundrills -Overview

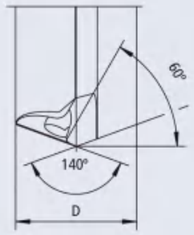
designation		Drawing	for tool length calculation			X = Notch location	TD = Thread size	driver no.
ø dia. (mm)	Type		drill dia.range from-to (mm)	LSC	LS Driver with Pin			
10			1.850 - 7.299	40		24.0		DR10-00
16			1.850 - 12.399	45	53	31.0		DR16-03
25			6.000 - 19.509	70	78	34.0		DR25-00
10	with pin		7.300 - 12.399	40	57	24.0		DR10-01
16			12.400 - 20.509	45	72	31.0		DR16-04
25	With pin and drive key		19.510 - >	70	105	34.0		DR25-01
16			1.850 - 12.399	50	58	47.5		DR16-02
16	with pin		12.400 - 20.509	50	77	47.5		DR16-33
10	With thread		1.850 - 7.299	60			M6x0.5	DR10-06
16			1.850 - 12.399	80			M10x1	DR16-15
25			6.000 - 19.509	100			M16x1.5	DR25-08
10	With thread and pin		7.300 - 12.399	60	77		M6x0.5	DR10-28
16			12.400 - 20.509	80	105		M10x1	DR16-22
25			19.509 - >	100	140		M16x1.5	DR25-10
12.7	½"		1.850 - 9.699	38.1		25.3		DR12.7-00
19.05	¾"		3.960 - 14.899	70		45.0		DR19.05-0
25.4	1"		6.000 - 19.509	70		57.5		DR25.4-00
31.7	1¼"		9.700 - 25.609	70		57.5		DR31.7-00
38.1	1½"		9.700 - 32.609	70		57.5		DR38.1-00
19.05	¾"		14.900 - 24.609	70	97	45.0		DR19.05-1
25.4	1"		19.510 - >	70	100	57.5		DR25.4-01
31.7	1¼"		25.610 - >	70	110	57.5		DR31.7-01
38.1	1½" inch dia. with pin		32.610 - >	70	110	57.5		DR38.1-01
10	With thread		1.850 - 6.749	60	68	35	M6x0.5	DR10-44
16			1.850 - 10.799	80	90	37	M10x1	DR16-31
25			6.000 - 19.509	100	112	45	M16x1.5	DR25-34
16	With thread		10.800 - 16.399	80	110	37	M10x1	DR16-66
25			19.510 - 42.699	100	142	45	M16x1.5	DR25-40

Standard drivers for gundrills with brazed carbide head-Overview

designation		Drawing	for tool length calculation			X = Notch location	TD = Thread size	driver no.
ø dia. (mm)	Type		drill dia. range (mm) from - to	LSC	LS Driver with Pin			
16	Adjustable driver with external thread		1.850 - 12.899	112		73.0	TR16x1.5	DT16-00
20			1.850 - 14.899	126		82.0	TR20x2	DT20-00
28			6.000 - 21.509	126		82.0	TR28x2	DT28-00
36			8.700 - 28.609	162		109.0	TR36x2	DT36-00
16	With pin		1.850 - 12.399	40		28.0		DR16-21
25			6.750 - 19.509	50		35.0		DR25-16
35			9.700 - 28.609	60		40.0		DR35-00
16			12.400 - 20.509	40	67	28.0		DR16-30
25			19.510 - 30.609	50	77	35.0		DR25-20
35			28.610 - >	60	100	40.0		DR35-01
10			1.850 - 7.299	40				DR10-40
12			1.850 - 8.999	45				DR12-18
16			1.850 - 12.399	48				DR16-11
20			5.000 - 15.899	50				DR20-01
25			6.000 - 19.509	56				DR25-11
32			9.700 - 25.600	60				DR32-24
40			9.700 - 32.609	70				DR40-03
10			7.300 - 12.399	40	57			DR10-41
12			9.000 - 15.899	45	62			DR12-19
16			12.400 - 20.509	48	75			DR16-20
20			15.900 - 25.603	50	77			DR20-60
25			19.510 - 42.699	56	86			DR25-21
32			25.610 - 45.699	60	100			DR32-23
40			32.610 - >	70	110			DR40-04
10			1.850 - 7.299	40		23.5		DR10-11
12			1.850 - 8.999	45		26.5		DR12-07
16			1.850 - 12.399	48		29.0		DR16-32
20			1.850 - 15.899	50		30.5		DR20-29
25			6.000 - 19.509	56		38.0		DR25-22
32			9.700 - 25.609	60		43.0		DR32-10
40			9.700 - 32.609	70		47.0		DR40-13
50			15.900 - 42.699	80		54.0		DR50-05
10	With pin		7.300 - 12.399	40	57	23.5		DR10-23
12			9.000 - 15.899	45	62	26.5		DR12-02
16			12.400 - 20.509	48	75	29.0		DR16-53
20			15.900 - 25.609	50	77	30.5		DR20-34
25			19.510 - >	56	86	38.0		DR25-31
32			25.610 - >	60	100	43.0		DR32-11
40			32.610 - >	70	110	47.0		DR40-14
50			42.700 - >	80	120	54.0		DR50-06
10			1.850 - 7.299	40		28.0		DR10-20
12			1.850 - 8.999	45		33.0		DR12-08
16			1.850 - 12.399	48		36.0		DR16-47
20			1.850 - 15.899	50		38.0		DR20-40
25			6.000 - 19.509	56		44.0		DR25-36
32			9.700 - 25.609	60		48.0		DR32-12
40			9.700 - 32.609	70		66.0		DR40-18
10	With pin		7.300 - 12.399	40	57	28.0		DR10-24
12			9.000 - 15.899	45	62	33.0		DR12-05
16			12.400 - 20.509	48	75	36.0		DR16-51
20			15.900 - 29.609	50	77	38.0		DR20-43
25			19.510 - >	56	86	44.0		DR25-37
32			25.610 - >	60	100	48.0		DR32-13
40			32.610 - >	70	110	66.0		DR40-17
10			1.850 - 7.299	40		28.0		DR10-29
12			1.850 - 8.999	45		33.0		DR12-13
16			1.850 - 12.399	48		36.0		DR16-62
20			1.850 - 15.899	50		38.0		DR20-55
10	With pin		7.300 - 12.399	40	57	28.0		DR10-30
12			9.000 - 15.899	45	62	33.0		DR12-14
16			12.400 - 20.509	48	75	36.0		DR16-70
20			15.900 - 29.609	50	77	38.0		DR20-56

TZW type twin-flutes gundrills with brazed carbide head

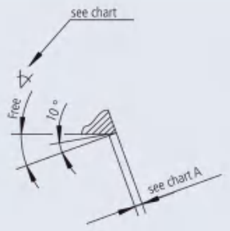


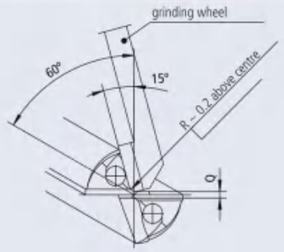


Operation	Swing	Tilt	Torsion	Gage	Remarks
1	20°	10°	0°	A	cutting land 2nd edge 180°
2	20°	Ø 3.000 - 6.009 25° Ø 6.010 - 25.000 20°	0°		relief angle 2nd edge 180°
3	10°	35°	0°		relief angle 2nd edge 180°
4	60°	0°	grinding wheel 15°	Q	web thinning 2nd edge 180°
5	15°	0°	0°		grinding into half of the coolant hole
6	60°	0°		C	grinding land hand chamfer

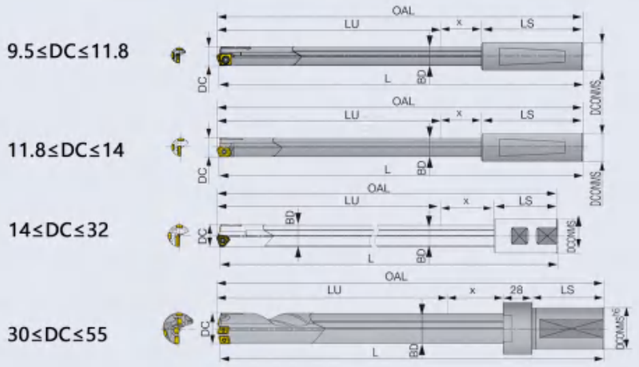
Dimensions (mm)

Drill-Ø	A Cutting land	Q Web thickness + 0.1	C Chamfer	R Radius
3.000 - 6.009	0.4	0.4	0.5	1.0
6.010 - 10.009	0.4	0.5	0.5	1.0
10.010 - 15.009	0.5	0.6	0.6	1.5
15.010 - 20.009	0.6	0.8	0.7	2.0
20.010 - 35.000	0.7	0.9	0.8	2.5



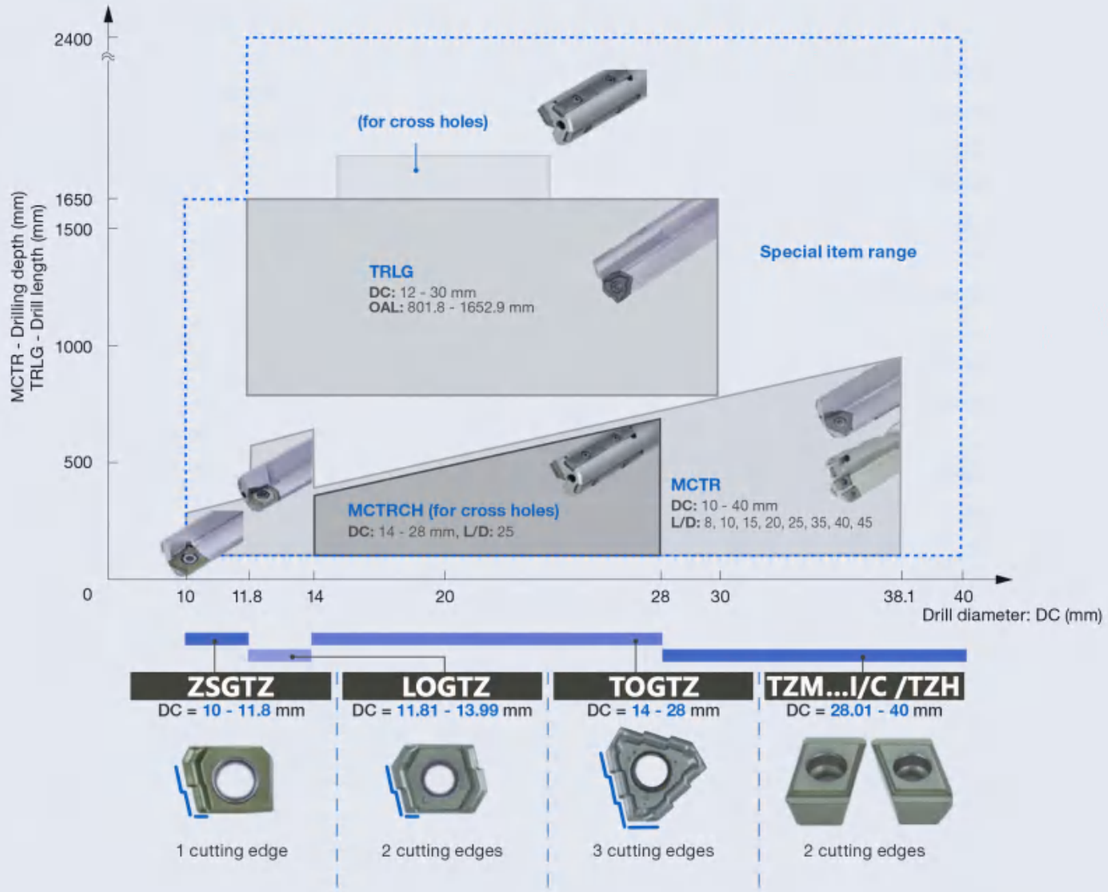


TZI type indexable insert gundrill

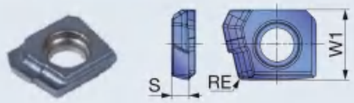


Smallest diameter indexable gun dril
-Deep Tri-Drill expansion down to φ10 mm

Wide range of solutions for various deep hole applications



ZSGTZ



Designation	DCN	DCX	W1	S	RE
ZSGT060204R-NDJ	10	11.8	6	1.5	0.4

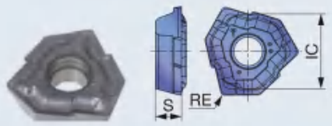
Package quantity = 10 pcs.

LOGTZ

Designation	DCN	DCX	W1	S	RE
LOGT060204R-NDJ	11.81	13.99	7.08	2	0.4

Package quantity = 10 pcs.

TOGTZ-J



TOGTZ-J

Designation	DCN	DCX	IC	S	RE
TOGTZ070304R-J	14	15.99	7.69	2.3	0.4
TOGTZ080305R-J	16	18	8.55	2.8	0.5
TOGTZ090305R-J	18.01	20	8.32	3	0.5
TOGTZ100305R-J	20.01	21.99	9.23	3.3	0.5
TOGTZ110505R-J	22	25	10.4	3.8	0.5
TOGTZ120405R-J	25.01	28	11.59	4.3	0.5

Package quantity = 10 pcs.

TOGTZ-L(07...,08...)

TOGTZ-L(09...,-12...)

Designation	DCN	DCX	IC	S	RE
TOGTZ070304R-L	14	15.99	7.69	2.3	0.4
TOGTZ080305R-L	16	18	8.55	2.8	0.5
TOGTZ090305R-L	18.01	20	8.32	3	0.5
TOGTZ100305R-L	20.01	21.99	9.23	3.3	0.5
TOGTZ110405R-L	22	25	10.4	3.8	0.5
TOGTZ120405R-L	25.01	28	11.59	4.3	0.5

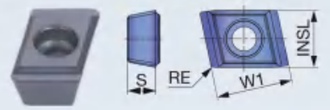
Package quantity = 10 pcs.

TZM-C(For ceentral) 中心刀片

Designation	INSL	W1	S	DCN	DCX	RE
TZM070408L-G-C	6.5	10	4	28.01	35	0.8
TZM080408L-G-C	8	10	4	35.01	40	0.8

Package quantity = 10 pcs.

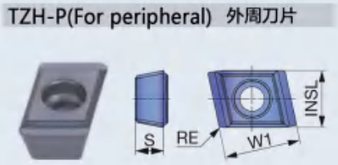
TZM-I(For intermediate) 中间刀片



Designation	INSL	W1	S	DCN	DCX	RE
TZM060304R-G-I	5.5	8	3	28.01	29.99	0.4
TZM060304R-DL-I	5.5	8	3	28.01	29.99	0.4
TZM070404R-G-I	6.5	10	4	30	40	0.4
TZM070404R-DL-I	6.5	10	4	30	40	0.4

Package quantity = 10 pcs.

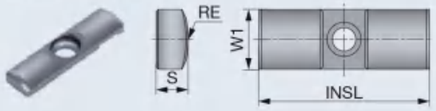
TZH-P(For peripheral) 外周刀片



Designation	INSL	W1	S	DCN	DCX	RE
TZH060304R-G-P	6	8	3	28.01	29.99	0.4
TZH060308R-G-P	6	8	3	28.01	29.99	0.8
TZH080404R-G-P	7.5	10	4	30	38	0.4
TZH080408R-G-P	7.5	10	4	30	38	0.8
TZH090404R-G-P	9	10	4	38.01	40	0.4
TZH090408R-G-P	9	10	4	38.01	40	0.8

Package quantity = 10 pcs.

GP04,05,06,07,08

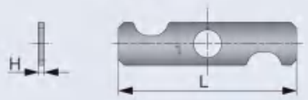


Designation	DCN	DCX	W1	INSL	S	RE
GP04-16-045-DC	10	10.99	4	16	1.8	4.5
GP04-16-050-DC	11	11.99	4	16	1.8	5
GP04-055	12	13.99	4	16	2	5.5
GP04-16-055-DC	12	13.99	4	16	2	5.5
GP05-060	14	15.99	5	18	2.5	6
GP05-18-060-DC	14	15.99	5	18	2.5	6
GP05-075	16	18	5	18	2.5	7.5
GP05-18-075-DC	16	18	5	18	2.5	7.5
GP06-085	18.01	21	6	20	3	8.5
GP06-20-085-DC	18.01	21	6	20	3	8.5
GP06-100	21.01	25	6	20	3	10
GP06-20-100-DC	21.01	25	6	20	3	10
GP06	25.01	33	6	20	3	12
GP06-20-120-DC	25.01	33	6	20	3	12
GP07	33.01	38	7	20	3.5	12
GP07-20-120-DC	33.01	38	7	20	3.5	12
GP08	38.01	40	8	25	4.5	15.5
GP08-25-155-DC	38.01	40	8	25	4.5	15.5

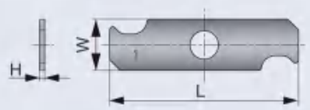
Package quantity = 5 pcs.

For fine adjustments of hole diameters

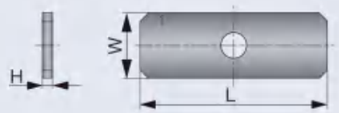
SHIMSET-GP04



SHIMSET-GP05



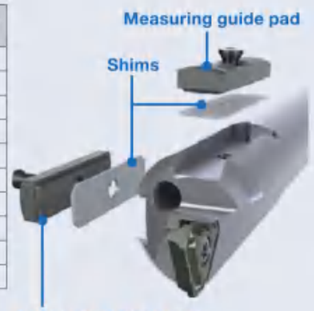
SHIMSET-GP06



Designation	DC	W	L	H
SHIMSET-GP04	10 - 13.99	4	16	0.01 - 0.05
SHIMSET-GP05	14 - 18	5	18	0.01 - 0.05
SHIMSET-GP06	18.01 - 33	5	18	0.01 - 0.05

Shim combinations for various diameters

Diameter adjustments	Shim(s) for measuring guide pad	Shim(s) for supporting guide pad	Number of shim sets needed
+0.01	0.01	-	1
+0.02	0.02	0.01	1
+0.03	0.03	0.01 + 0.02	1
+0.04	0.04	0.01 + 0.03	1
+0.05	0.05	0.02 + 0.03	1
+0.06	0.01 + 0.05	0.02 + 0.04	1
+0.07	0.02 + 0.05	0.03 + 0.04	1
+0.08	0.03 + 0.05	0.04 + 0.04	2
+0.09	0.04 + 0.05	0.04 + 0.05	2
+0.1	0.05 + 0.05	0.04 + 0.04 + 0.02	2



adjusting shims

1. Measure the drill diameter.

2. Select the shim sizes for adjustment.

3. Remove the guide pads.

4. Place the shims underneath both guide pads.

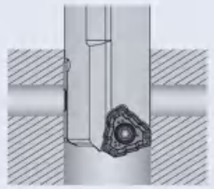
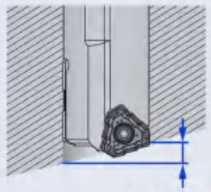
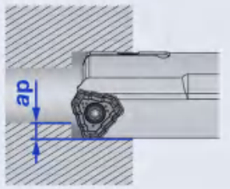
5. Measure to make sure the required diameter is achieved.

6. Drill a test hole to ensure the required hole size is achieved.

Standard processing parameters

ISO	Workpiece Material	Priority	Chipbreaker	Vc (m/min)	f (mm/rev) ø12 - ø13.99	ø14 - ø18	ø18.01 - ø28	ø28.01 - ø40
P	low-carbon steel (C < 0.3) SS400 / St42-1, SM490 / St52-3, S25C / C25,etc.	For Low-Feed Machines	NDL	50 - 100	-	0.03 - 0.1	0.03 - 0.1	-
		Preferred	NDJ/G	80 - 140	0.05 - 0.1	0.05 - 0.1	0.05 - 0.1	0.1 - 0.2
	Carbon Steel (C > 0.3) S45C / C45, S55C / C55, etc.	For Low-Feed Machines	NDL	50 - 100	-	0.03 - 0.1	0.03 - 0.12	-
		Preferred	NDJ/G	80 - 140	0.05 - 0.16	0.05 - 0.16	0.05 - 0.2	0.1 - 0.2
	low-alloy steel (C < 0.3) SCM415, 18CrMo4, etc.	For Low-Feed Machines	NDL	50 - 100	-	0.03 - 0.1	0.03 - 0.1	-
		Preferred	NDJ/G	80 - 140	0.05 - 0.1	0.05 - 0.1	0.05 - 0.1	0.1 - 0.2
	Alloy steel (C > 0.3) SCM440 / 42CrMo4, SCr420 / 20Cr4, etc.	For Low-Feed Machines	NDL	50 - 100	-	0.03 - 0.1	0.03 - 0.12	-
		Preferred	NDJ/G	80 - 120	0.05 - 0.16	0.05 - 0.16	0.05 - 0.2	0.1 - 0.2
M	SUS304 / X5CrNi18-9, SUS316 / X5CrNiMo17-12-3, etc.	For Low-Feed Machines	NDL	50 - 100	-	0.03 - 0.06	0.03 - 0.06	-
		Preferred	NDJ/G	60 - 100	0.05 - 0.1	0.05 - 0.1	0.05 - 0.1	0.1 - 0.15
	SUS430 / X6Cr17, SUS416 / X12CrS13,etc.	For Low-Feed Machines	NDL	50 - 100	-	0.03 - 0.06	0.03 - 0.06	-
		Preferred	NDJ/G	60 - 100	0.05 - 0.1	0.05 - 0.1	0.05 - 0.1	0.1 - 0.15
	Stainless steel (precipitation hardening) SUS630 / X5CrNiCuNb16-4, etc.	For Low-Feed Machines	NDL	50 - 100	-	0.03 - 0.06	0.03 - 0.06	-
		Preferred	NDJ/G	60 - 100	0.05 - 0.1	0.05 - 0.1	0.05 - 0.1	0.1 - 0.15
K	Grey cast iron FC250 / 250, etc.	For Low-Feed Machines	NDL	50 - 100	-	0.03 - 0.15	0.05 - 0.18	-
		Preferred	NDJ/G	80 - 140	0.05 - 0.25	0.05 - 0.25	0.05 - 0.3	0.1 - 0.3
	Nodular cast iron FCD700 / 700-2, etc.	For Low-Feed Machines	NDL	50 - 100	-	0.03 - 0.15	0.05 - 0.18	-
		Preferred	NDJ/G	80 - 140	0.05 - 0.25	0.05 - 0.25	0.05 - 0.3	0.1 - 0.3
N	Aluminum Alloy	For Low-Feed Machines	NDL	80 - 160	-	0.03 - 0.15	0.03 - 0.15	-
		Preferred	NDJ/G	100 - 200	0.05 - 0.2	0.05 - 0.2	0.05 - 0.2	0.1 - 0.25
S	Heat-resistant alloy Inconel 718, etc.	For Low-Feed Machines	NDL	20 - 50	-	0.03 - 0.06	0.03 - 0.08	-
		Preferred	NDJ/G	20 - 50	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.06 - 0.13
	Titanium alloy Ti-6Al-4V, etc.	For Low-Feed Machines	NDL	30 - 60	-	0.03 - 0.1	0.03 - 0.12	-
		Preferred	NDJ/G	30 - 60	0.05 - 0.13	0.05 - 0.13	0.05 - 0.15	0.1 - 0.18
H	Hardened Steel ≥ 40HRC	For Low-Feed Machines	NDL	40 - 100	-	0.03 - 0.08	0.03 - 0.08	-
		Preferred	NDJ/G	50 - 100	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.06 - 0.13

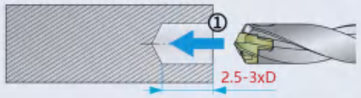
Application

f (mm/rev)	0.03 - 0.05	0.03 - 0.05	0.1 - 0.3
Application	cross holes 	oblique  16mm or smaller (for standard hole machining)	bring holes 

1) When machining cross holes or inclined exits, ensure that the guide pads are engaged in cutting.
2) Drill a pilot hole before boring. A recommended cutting depth for boring is ap > 1 mm.

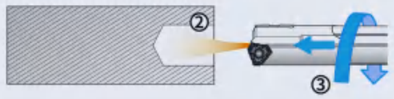
Standard processing parameters

To ensure optimal tool performance, please follow the instructions below:



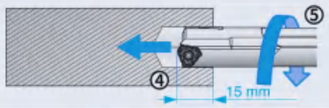
① Drill a Pilot Hole

Hole Tolerance: +0.01 to +0.02 mm
Hole Depth (H): 2.5 to 3 × D
Use a drill with a flute length of 3 × D or shorter to machine the pilot hole.



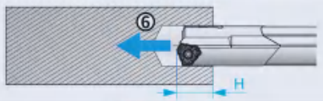
② Turn On Internal Coolant
③ Slowly Insert the Tool Head into the Pilot Hole

Spindle Speed (n): 50-100 rpm
Feed Rate (Vf): 100-300 mm/min
Note: Do not enter the pilot hole at high spindle speed.



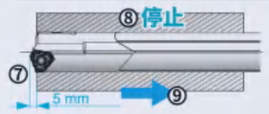
④ Slowly Insert the Tool Head into the Pilot Hole

⑤ Start Normal Spindle Rotation



⑥ Start Axial Feeding

Entrance Area (H = 10-20 mm):
→ Feed Rate: 50%–80% of programmed feed rate
Hole Depth (H ≥ 20 mm) → Feed Rate: 100% of programmed feed rate

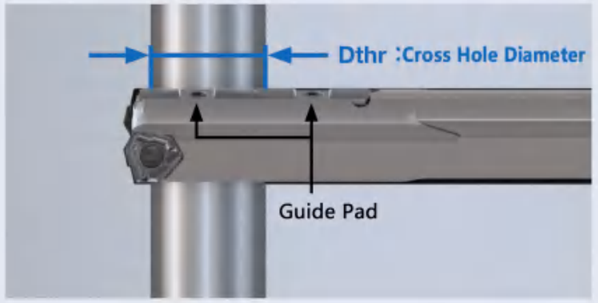


⑦ Drill Through Hole

Continue drilling until the tip extends 5 mm beyond the workpiece

⑧ Stop spindle rotation and turn off internal coolant
⑨ Retract the drill

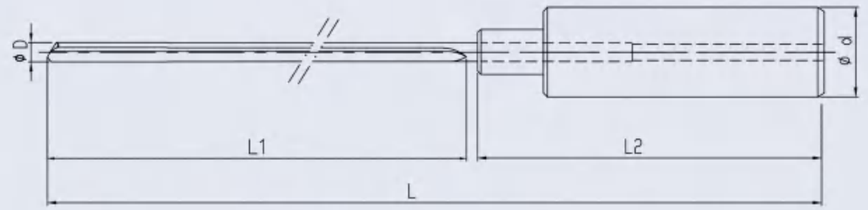
Tool selection for driling cross hole



- **Reduce the feed rate when the drill contacts a cross hole**
  (f = 0.03 - 0.05 mm/rev)
- **Withdraw the gun drill at a low spindle speed**
  (n=100min-1, Vf = 300mm/min)
- **If the drill is retracted rapidly after stopping rotation, the insert or guide pad may come into contact with burrs at the cross hole, potentially causing damage.**

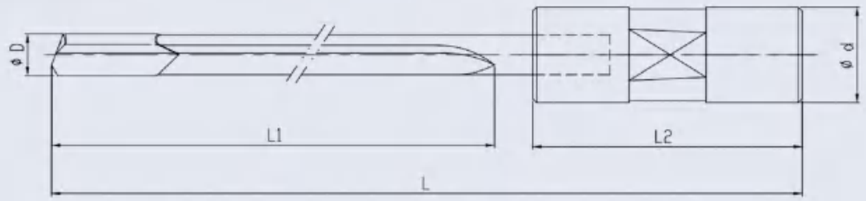
Multi-guide pad design is suitable for drilling cross holes.

Gundrill Code Rules -Overview



e.g. OREDER CODE: TZS 0152 0200 - 10 x 55

TZS Type for Gundrill	0152 Diameter of Drill	0200 Overall Length	—	10 Diameter of Driver	X	55 The Length of Driver
Solid Carbide Gundrill	øD = ø 1.52	L = 200 MM		ød = ø 10.00		L2 = 55 MM



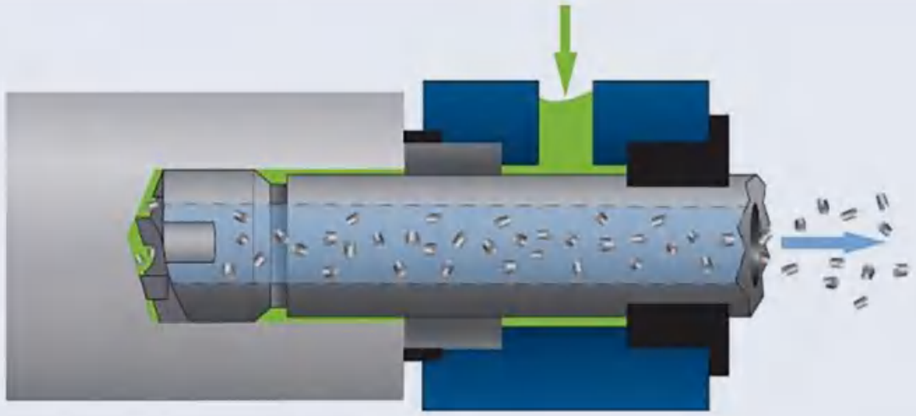
e.g. OREDER CODE: TZG 1200 1250 - 25 x 70

TZG Type for Gundrill	1200 Diameter of Drill	1250 Overall Length	—	25 Diameter of Driver	X	70 The Length of Driver
Single Flute Brazed Gundrill	øD = ø 12.00	L = 1250 MM		ød = ø 25.00		L2 = 70 MM

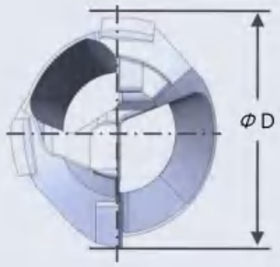
e.g. OREDER CODE: TZI 2 1400 1000 - 20 x 50

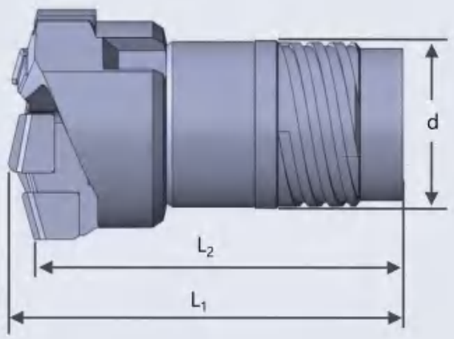
TZI Type for Gundrill	2 Quantity of Pads	1400 Diameter of Drill	1000 Overall Length	—	20 Diameter of Driver	X	50 The Length of Driver
Indexable Insert Gundrill	2 - Standard 2 Pads 4 - Extension 4 Pads	øD = ø 1.52	L = 200MM		ød = ø 20.00		L2 = 50 MM

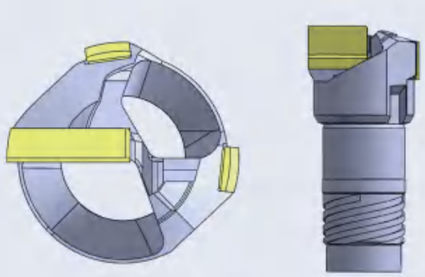
STS Brazed BTA



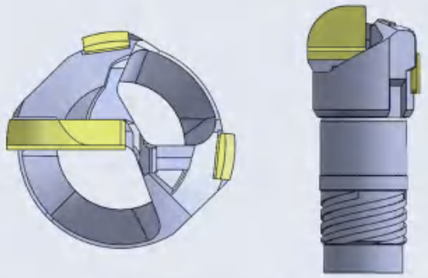
Drill Size Range of 16.8mm ~ 65.00mm
Excellent Hole Tolerance, Surface Finish, & Straightness
Multiple Coating Options for Optimal Drilling Process (TiN, TiCN, TiAlN)







Square Type BTA drill



Radius Type BTA Drill

STS brazed BTA overview

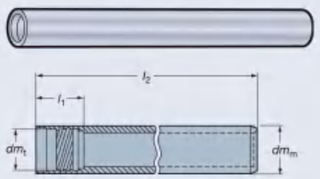
Designation	Φ D_{min}(mm)	Φ D_{max}(mm)	L_1(mm)	L_2(mm)	d(mm)	Drill Tube Dia.(mm)
TZB-BTA-1771840	17.71	18.40	47.0	44.2	14.5	16.0
TZB-BTA-1841890	18.41	18.90	47.0	44.1	14.5	16.0
TZB-BTA-1891920	18.91	19.20	47.0	44.1	15.5	17.0
TZB-BTA-1921000	19.21	20.00	47.0	44.0	15.5	17.0
TZB-BTA-2001090	20.01	20.90	52.5	49.4	16.0	18.0
TZB-BTA-2091180	20.91	21.80	52.5	49.2	16.0	18.0
TZB-BTA-2181290	21.81	22.90	56.0	52.8	18.0	20.0
TZB-BTA-2291410	22.91	24.10	56.0	52.6	18.0	20.0
TZB-BTA-2411520	24.11	25.20	57.5	54.0	19.5	22.0
TZB-BTA-2521640	25.21	26.40	57.5	54.0	19.5	22.0
TZB-BTA-2641750	26.41	27.50	57.5	53.8	21.0	24.0
TZB-BTA-2751870	27.51	28.70	57.5	53.8	21.0	24.0
TZB-BTA-2871980	28.71	29.80	63.5	59.5	23.5	26.0
TZB-BTA-2981100	29.81	31.00	63.5	59.3	23.5	26.0
TZB-BTA-3101210	31.01	32.10	63.5	59.4	25.5	28.0
TZB-BTA-3211330	32.11	33.30	63.5	59.1	25.5	28.0
TZB-BTA-3331480	33.31	34.80	63.5	59.0	28.0	30.0
TZB-BTA-3481620	34.81	36.20	63.5	58.9	28.0	30.0
TZB-BTA-3621730	36.21	37.30	73.5	68.7	30.0	33.0
TZB-BTA-3731840	37.31	38.40	73.5	68.5	30.0	33.0
TZB-BTA-3841960	38.41	39.60	73.5	68.3	30.0	33.0
TZB-BTA-3961060	39.61	40.60	73.5	68.2	33.0	36.0
TZB-BTA-4061180	40.61	41.80	73.5	68.0	33.0	36.0
TZB-BTA-4181300	41.81	43.00	73.5	67.8	33.0	36.0
TZB-BTA-4301430	43.01	44.30	75.0	69.5	36.0	39.0
TZB-BTA-4431560	44.31	45.60	75.0	69.3	36.0	39.0
TZB-BTA-4561700	45.61	47.00	75.0	69.1	36.0	39.0
TZB-BTA-4701850	47.01	48.50	75.0	68.8	39.0	43.0
TZB-BTA-4851010	48.51	50.10	75.0	68.7	39.0	43.0
TZB-BTA-5011170	50.11	51.70	75.0	68.5	39.0	43.0
TZB-BTA-5171320	51.71	53.20	82.0	75.2	43.0	47.0
TZB-BTA-5321470	53.21	54.70	82.0	75.5	43.0	47.0
TZB-BTA-5471620	54.71	56.20	82.0	75.2	43.0	47.0
TZB-BTA-5621840	56.21	58.40	84.0	77.2	47.0	51.0
TZB-BTA-5841060	58.41	60.60	84.0	76.7	47.0	51.0
TZB-BTA-6061280	60.61	62.80	84.0	76.8	47.0	51.0
TZB-BTA-6281500	62.81	65.00	84.0	76.5	47.0	51.0

STS system deep hole drilling

Drill head

800.20
Diameter range
25,00–65,00 mm

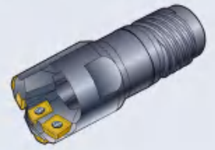
Drill tube 420.5-

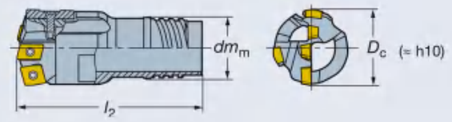


Diameter range, mm	Tube range	Dimensions, mm Standard length l_2			
D_c mm		3000	dm_m	dm_t	l_1
25,00–26,40	03	4	22	19,5	26
26,41–28,70	04	4	24	21	26
28,71–31,00	05	4	26	23,5	29
31,01–33,30	06	4	28	25,5	29
33,31–36,20	07	4	30	28	29
36,21–39,60	08	4	33	30	36
39,61–43,00	09	4	36	33	36
43,01–47,00	10	4	39	36	36
47,01–51,70	11	4	43	39	36
51,71–56,20	12	4	47	43	40
56,21–65,00	13	4	51	47	40
60,61–65,00	13E	4	56	51	40

Indexable Insert BTA -TZMAX

Diameter range
25,00 – 65,00 mm





Diameter range: 25,00–65,00 mm
Hole depth: 150 × Dia.
Hole tolerance: IT 10
Surface finish: R_a 2 µm

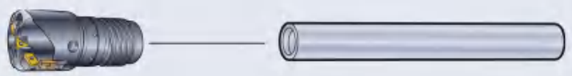
Diameter range, mm	Tube range	Dimensions, mm		Inserts			Support pads	
D_c mm		dm_m	$\leq l_2$	Central	Intermediate	Peripheral	Pad	No.
25,00–26,40	03	19,5	75	800-05 03 08M-C-G	800-05 03 08M-I-G	800-06 03 08H-P-G	800-06A	2
26,41–28,70	04	21	78	800-05 03 08M-C-G	800-05 03 08M-I-G	800-06 03 08H-P-G	800-06A	2
28,71–31,00	05	23,5	80	800-06 T3 08M-C-G	800-05 03 08M-I-G	800-06 03 08H-P-G	800-06A	2
31,01–33,30	06	25,5	85,0	800-06 T3 08M-C-G	800-06 T3 08M-I-G	800-08 T3 08H-P-G	800-07A	2
33,31–36,20	07	28,0	85,0	800-06 T3 08M-C-G[1)] 800-08 T3 08M-C-G[1)]	800-06 T3 08M-I-G[1)] 800-08 T3 08M-I-G[1)]	800-08 T3 08H-P-G	800-07A	2
36,21–39,60	08	30,0	95,0	800-08 T3 08M-C-G	800-08 T3 08M-I-G	800-08 T3 08H-P-G[1)] 800-09 T3 08H-P-G[1)]	800-07A	2
39,61–43,00	09	33,0	100,0	800-08 T3 08M-C-G	800-08 T3 08M-I-G	800-09 T3 08H-P-G	800-08A	2
43,01–47,00	10	36,0	100,0	800-10 T3 08M-C-G	800-08 T3 08M-I-G	800-09 T3 08H-P-G	800-08A	2
47,01–51,70	11	39,0	110,0	800-12 T3 08M-C-G[1)] 800-10 T3 08M-C-G[1)]	800-08 T3 08M-I-G	800-09 T3 08H-P-G[1)] 800-11 T3 08H-P-G[1)]	800-10A	2
51,71–56,20	12	43,0	120,0	800-10 T3 08M-C-G	800-08 T3 08M-I-G[1)] 800-12 T3 08M-I-G[1)]	800-11 T3 08H-P-G	800-10A[1)] 800-12A[1)]	2 2
56,21–65,00	13	47,0	125,0	800-10 T3 08M-C-G[1)] 800-12 T3 08M-C-G[1)]	800-12 T3 08M-I-G	800-11 T3 08H-P-G	800-12A	2
60,61–65,00	13E	51,0	125,0	800-10 T3 08M-C-G[1)] 800-12 T3 08M-C-G[1)]	800-12 T3 08M-I-G	800-11 T3 08H-P-G	800-12A	2

Drill diameter range – insert and pad sizes

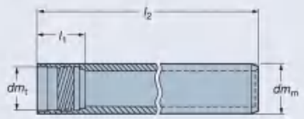
Inserts								Support pads	
Diameter mm		Central	Diameter mm		Intermediate	Diameter mm		Peripheral	Diameter mm	Pad
25,00–28,70	05	800-05 03 08M-C-G	**25,00–31,00**	05	800-05 03 08M-I-G	**25,00–31,00**	06	800-06 03 08H-P-G	**25,00–31,00**	800-06A
28,71–33,99	06	800-06 T3 08M-C-G	**31,01–34,99**	06	800-06 T3 08M-I-G	**31,01–38,99**	08	800-08 T3 08H-P-G	**31,01–39,60**	800-07A
34,00–43,00	08	800-08 T3 08M-C-G	**35,00–54,99**	08	800-08 T3 08M-I-G	**39,00–49,99**	09	800-09 T3 08H-P-G	**39,61–47,00**	800-08A
43,01–47,00	10	800-10 T3 08M-C-G	**55,00–65,00**	12	800-12 T3 08M-I-G	**50,00–65,00**	11	800-11 T3 08H-P-G	**47,01–54,99**	800-10A
47,01–49,99	12	800-12 T3 08M-C-G							**55,00–65,00**	800-12A
50,00–57,99	10	800-10 T3 08M-C-G								
58,00–65,00	12	800-12 T3 08M-C-G								

STS system deep hole drilling

Drill head



Diameter range
63,50–183,90 mm

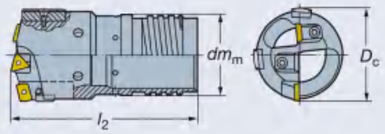


Diameter range, mm	Tube range	Dimensions, mm Standard length l_2			
D_C mm		3000	dm_m	dm_t	l_1
63,50	13	4	51	47	40
65,00	13E	4	56	51	40
65,00	14	–	56	52	75
69,85 70,00 71,45	15	–	62	58	75
75,00 76,20	16	–	68	63	75
80,00 82,55 85,00	17	–	75	70	97
88,90 90,00 95,00 95,25	18	–	82	77	97
100,00 101,60 105,00 107,95 110,00	19	–	94	89	97
114,30 115,00 120,00 120,65	20	–	106	101	118
125,00 127,00 130,00	21	–	118	113	118
136,00-147,90	22	–	130	125	118
148,00-159,90	23	–	142	137	139
160,00-171,90	24	–	154	149	139
172,00-183,90	25	–	166	161	139

Indexable Insert BTA -TZMAX

Diameter range
63,50 – 183,90 mm

Diameter range: 63,50–183,90 mm
Hole depth: 100 × Dia.
Hole tolerance: IT 10
Surface finish: R_a 3 µm



Diameter[2] range, mm	Tube range	Dimensions, mm			Cartridges							
D_C mm		dm_m	l_2	Radial[3] adjust-ment	Central	No.	Inter-mediate	No.	Peripheral	No.	Support pad	No.
63,50	13	47	115	+1	L430.31-1216-16	1	R430.30-1216-16	1	R430.28-1516-16	1	430.32-12 D65,0	2
65,00	13E	51	115	+1,5	L430.31-1216-16	1	R430.30-1216-16	1	R430.28-1516-16	1	430.32-12 D65,0	2
65,00	14	52	150	+1,5	L430.31-1216-16	1	R430.30-1216-16	1	R430.28-1516-16	1	430.32-12 D65,0	2
69,85	15	58	150	+1	L430.31-1216-16	1	R430.30-1216-16	1	R430.28-1516-16	1	430.32-12 D65,0	2
70,00		58	150	+1	L430.31-1216-16	1	R430.30-1216-16	1	R430.28-1516-16	1	430.32-12 D70,0	2
71,45		58	150	+0,75	L430.31-1216-16	1	R430.30-1216-16	1	R430.28-1516-16	1	430.32-12 D70,0	2
75,00	16	63	160	+2	L430.31-1216-16	1	R430.30-1216-16	1	R430.28-1822-22	1	430.32-12 D75,0	2
76,20		63	160	+2	L430.31-1216-16	1	R430.30-1216-16	1	R430.28-1822-22	1	430.32-12 D75,0	2
80,00	17	70	190	+1,25	L430.31-1216-16	1	R430.30-1216-16	1	R430.28-1822-22	1	430.32-12 D80,0	2
82,55		70	190	+0,75	L430.31-1216-16	1	R430.30-1216-16	1	R430.28-1822-22	1	430.32-12 D80,0	2
85,00		70	190	+1,75	L430.31-1522-22	1	R430.30-1216-16	1	R430.28-1822-22	1	430.32-12 D85,0	2
88,90	18	77	190	+1,75	L430.31-1522-22	1	R430.30-1216-16	1	R430.28-1822-22	1	430.32-12 D85,0	2
90,00		77	190	+1,75	L430.31-1522-22	1	R430.30-1216-16	1	R430.28-1822-22	1	430.32-12 D90,0	2
95,00		77	190	+2	L430.31-1522-22	1	R430.30-15 22-22	1	R430.28-1822-22	1	430.32-12 D95,0	2
95,25		77	190	+2	L430.31-1522-22	1	R430.30-15 22-22	1	R430.28-1822-22	1	430.32-12 D95,0	2
100,00	19	89	195	+1	L430.31-1522-22	1	R430.30-15 22-22	1	R430.28-1822-22	1	430.32-16 D100,0	2
101,60		89	195	+1,25	L430.31-1522-22	1	R430.30-15 22-22	1	R430.28-1822-22	1	430.32-16 D100,0	2
105,00		89	195	+0,5	L430.31-1522-22	1	R430.30-15 22-22	1	R430.28-1822-22	1	430.32-16 D105,0	2
107,95		89	195	+2	L430.31-1216-16	1	R430.30-1216-16	1	R430.28-1516-16	1	430.32-16 D105,0	2
110,00		89	195	+1,5	L430.31-1216-16	1	R430.30-1216-16	1	R430.28-1516-16	1	430.32-16 D110,0	2
114,30	20	101	220	+1,75	L430.31-1216-16	1	R430.30-1216-16	3	R430.28-1516-16	1	430.32-16 D110,0	2
115,00		101	220	+1,5	L430.31-1216-16	1	R430.30-1216-16	3	R430.28-1516-16	1	430.32-16 D115,0	2
120,00		101	220	+1,5	L430.31-1216-16	1	R430.30-1216-16	3	R430.28-1516-16	1	430.32-16 D120,0	2
120,65		101	220	+1,5	L430.31-1216-16	1	R430.30-1216-16	3	R430.28-1516-16	1	430.32-16 D120,0	2
125,00	21	113	220	+1,75	L430.31-1216-16	1	R430.30-1216-16	3	R430.28-1822-22	1	430.32-16 D125,0	2
127,00		113	220	+1,25	L430.31-1216-16	1	R430.30-1216-16	3	R430.28-1822-22	1	430.32-16 D125,0	2
130,00		113	220	+0,5	L430.31-1216-16	1	R430.30-1216-16	3	R430.28-1822-22	1	430.32-16 D130,0	2
136,00-147,90	22											
148,00-159,90	23											
160,00-171,90	24											
172,00-183,90	25											

Inserts

Central cartridge		Insert	Intermediate cartridge		Insert	Peripheral cartridge		Insert
L430.31-1216-16	16	TPMT 16T312R-22	R430.30-1216-16	16	TPMT 16T312R-22	R430.28-1516-16	13	R424.9-13T308-22
	16	TPMT 16T312TR-23		16	TPMT 16T312TR-23		13	R424.9-13T308-23
L430.31-1522-22	22	TPMT 220612R-22	R430.30-1522-22	22	TPMT 220612R-22	R430.28-1822-22	18	R424.9-180608-22
	22	TPMT 220612TR-23		22	TPMT 220612TR-23		18	R424.9-180608-23