DrillLine

DEEP TURN DRILL

www.tungaloy.com

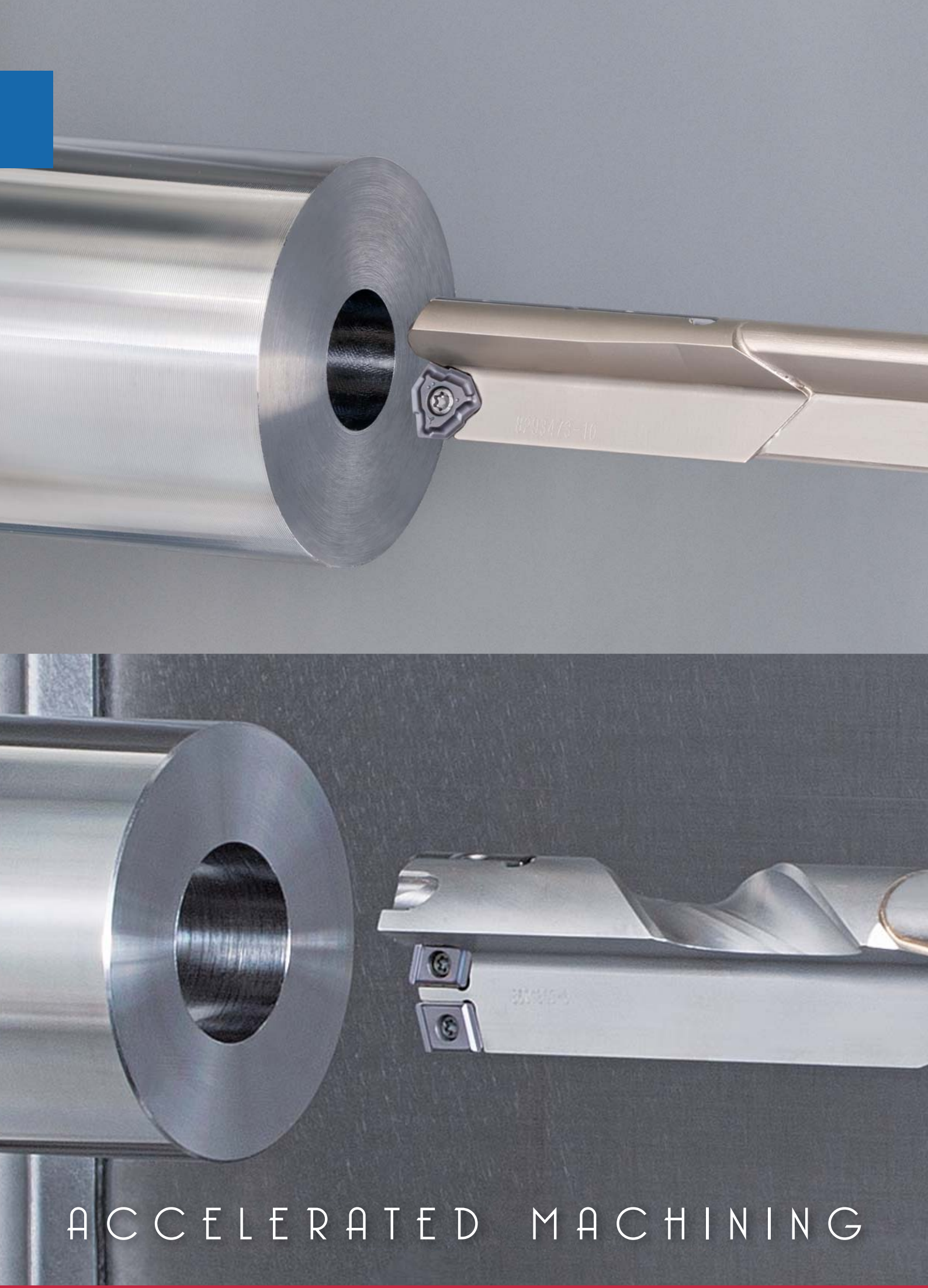
Tungaloy Report No. 430-G

Member IMC Group Tungaloy

Deep hole drills for **extreme productivity in a wide range of applications**

INDUSTRY 4.0

FEED the SPEED!



ACCELERATED MACHINING

DrillLine

DEEP TRI DRILL

TUNGALOY

TUNG FORCE DRILL

ACCELERATED MACHINING

DeepTri-drill, the easy-to-handle indexable gundrill series, delivers outstanding performance and stability in deep hole drilling.

Ultimate efficiency

Unique chipbreakers on the cutting edge enable impressive chip control and high feed rates.

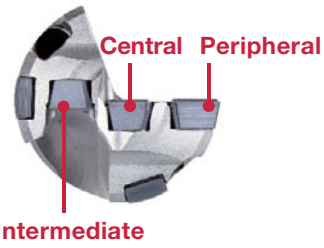
Excellent chip control

- Chip splitters breaks chips into smaller segments to facilitate smooth chip evacuation process
- Tool diameters in ø28 mm and up incorporate three inserts
- Its smooth chip evacuation ability allows the use in standard lathes and machining centers

High thermal shock resistance allows higher cutting parameters to be applied.

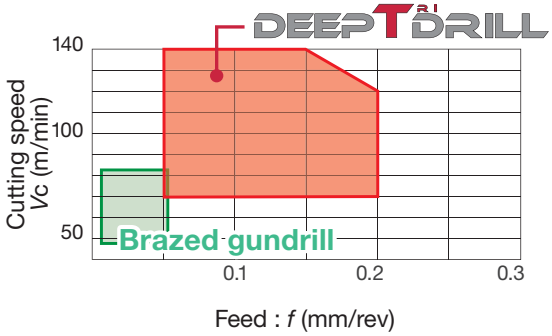
NDJ chipbreaker

- Low cutting force
- For general purpose



Performance comparison with other types of drills

P S55C / C55



Chip control

P S55C / C55 Drill diameter : DC = 21 mm

Cutting speed : *Vc* = 100 m/min
Feed : *f* = 0.15 mm/rev

Vc = 60 m/min
f = 0.05 mm/rev

Unique inserts

- No reconditioning cost
- Easy Inventory control
- Reduces operation cost due to indexable system

FBM**-I
FBH**-P

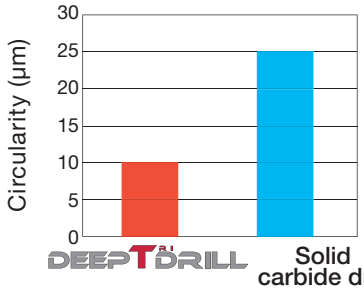
FBM**-C

TOHT...

Excellent circularity, straightness, and surface finish

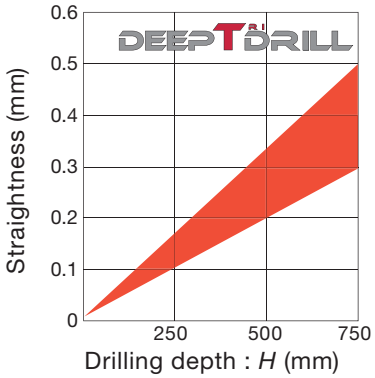
Special cutting edge geometry and optimized guide pads provide high hole accuracy.

Roundness



Material : SCM440 / 42CrMo4
Cutting speed : *Vc* = 100 m/min
Feed : *f* = 0.2 mm/rev

Straightness



Surface finish

Ra = 1 - 1.2 μm

Ra = 2.5 - 4.5 μm

Two bodies available for machining centers, lathes, and gundrill machines

MCTR : for machining centers and lathes

Drill diameter : DC = 14 - 36 mm
*Max. DC = 40: Available tailer made tools
L/D : 8, 10, 15, 20, 25

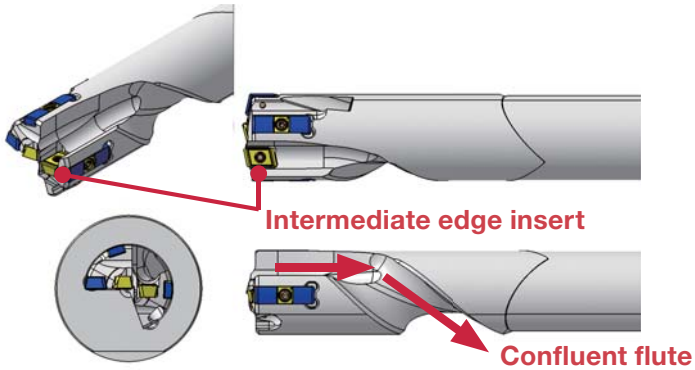
TRLG : for gundrill machines

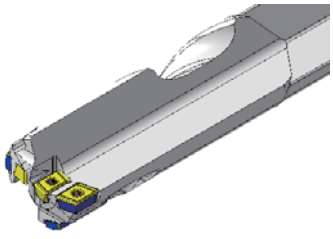
Drill diameter : DC = 14 - 30 mm
*Max. DC = 40: Available tailer made tools
Overall length : 800, 1000, 1500, 1650 mm
※ Can be tailored up to 2400 mm overall length

New

Additional line up over ø28 mm

- Smooth chip flow of intermediate chips to join to the flute of the pipe
- Optimized flute shape for intermediate cutting edge

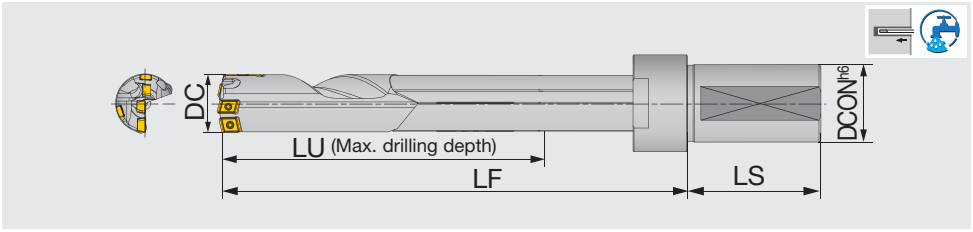




MCTR L/D=8

Drill body for lathes and machining centers, L/D = 8, Tool diameter ø33.1, ø39.1 mm

New



Designation	DC	DCON	LU	LS	LF	Insert	Guide pad
MCTR33.10XFM40-8	33.1	40	272	69	350	FBM06**-C, FBM06**-I, FBH07**-P	GP07
MCTR39.10XFM40-8	39.1	40	320	69	407	FBM08**-C, FBM06**-I, FBH09**-P	GP08

DC	Tool diameter tolerance	Applicable tolerance range of hole diameter
33.1, 39.1	0 / - 0.07	+ 0.05 / - 0.1

*Max. DC = 40: Available tailer made tools

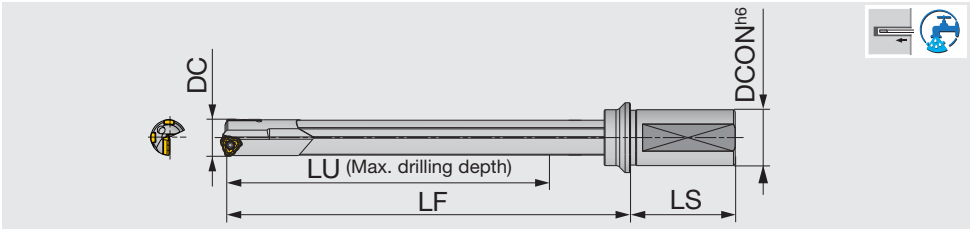
SPARE PARTS

Designation	Insert						Guide pad	
	Central		Intermediate		Peripheral		Screw	Wrench
	Screw	Wrench	Screw	Wrench	Screw	Wrench		
MCTR33.1..., MCTR39.1...	CSTB-2.5	T-8F	CSTB-2.5	T-8F	CSTB-2.5	T-8F	CSTB-3S	T-9F

*The drill pipe is blackened for improved corrosion resistance, and the finished surface may appear uneven. This, however, will not affect the performance of the drill.

MCTR L/D=10

Drill body for lathes and machining centers, L/D = 10, Tool diameter ø16 - ø28 mm



Designation	DC	DCON	LU	LS	LF	Insert	Guide pad
MCTR16.00XM25A-10	16	25	170	56	209	TOHT08...	GP05-075
MCTR16.50XM25A-10	16.5	25	170	56	209	TOHT08...	GP05-075
MCTR17.00XM25A-10	17	25	180	56	220	TOHT08...	GP05-075
MCTR18.00XM25A-10	18	25	190	56	232	TOHT08...	GP05-075
MCTR19.00XM25-10	19	25	200	56	243	TOHT09...	GP06-085
MCTR20.00XM32-10	20	32	210	60	255	TOHT09...	GP06-085
MCTR21.00XM32-10	21	32	220	60	266	TOHT10...	GP06-085
MCTR22.00XM32-10	22	32	230	60	278	TOHT11...	GP06-100
MCTR23.00XM32-10	23	32	240	60	289	TOHT11...	GP06-100
MCTR24.00XM32-10	24	32	250	60	301	TOHT11...	GP06-100
MCTR25.00XM32-10	25	32	260	60	312	TOHT11...	GP06-100
MCTR26.00XM40-10	26	40	270	70	324	TOHT12...	GP06
MCTR27.00XM40-10	27	40	280	70	335	TOHT12...	GP06
MCTR28.00XM40-10	28	40	280	70	337	TOHT12...	GP06

DC	Tool diameter tolerance	Applicable tolerance range of hole diameter
16 - 28	0 / - 0.07	+ 0.05 / - 0.1

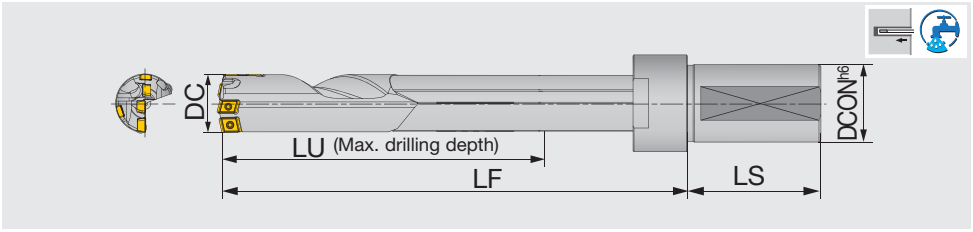
SPARE PARTS

Designation	Insert		Guide pad	
	Screw	Wrench	Screw	Wrench
MCTR16**A... - MCTR18**A...	SR14-560/S	T-8F	SR34-508	T-7F
MCTR19... - MCTR20...	SR14-560/S	T-8F	SR34-508	T-7F
MCTR21...	SR34-506	T-9F	SR34-508	T-7F
MCTR22... - MCTR25...	SR14-571/S	T-10/5	SR34-508	T-7F
MCTR26... - MCTR28...	SR14-506	T-15F	SR34-508	T-7F

MCTR L/D=10

Drill body for lathes and machining centers, L/D = 10, Tool diameter ø29 - ø36 mm

New



Designation	DC	DCON	LU	LS	LF	Insert	Guide pad
MCTR29.00XFM40-10	29	40	290	69	360	FBM06**-C, FBM05**-I, FBH06**-P	GP06
MCTR30.00XFM40-10	30	40	310	69	383	FBM06**-C, FBM06**-I, FBH07**-P	GP06
MCTR31.00XFM40-10	31	40	310	69	383	FBM06**-C, FBM06**-I, FBH07**-P	GP06
MCTR32.00XFM40-10	32	40	320	69	395	FBM06**-C, FBM06**-I, FBH07**-P	GP06
MCTR33.00XFM40-10	33	40	330	69	406	FBM06**-C, FBM06**-I, FBH07**-P	GP06
MCTR34.00XFM40-10	34	40	340	69	418	FBM06**-C, FBM06**-I, FBH07**-P	GP07
MCTR35.00XFM40-10	35	40	350	69	428	FBM06**-C, FBM06**-I, FBH07**-P	GP07
MCTR36.00XFM40-10	36	40	360	69	441	FBM08**-C, FBM06**-I, FBH07**-P	GP07

DC	Tool diameter tolerance	Applicable tolerance range of hole diameter
29 -36	0 / - 0.07	+ 0.05 / - 0.1

*Max. DC = 40: Available tailer made tools

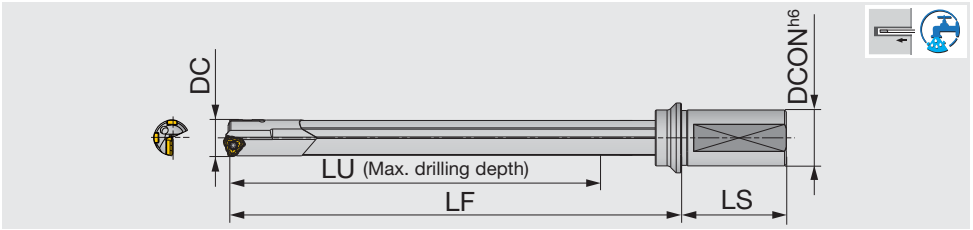
SPARE PARTS

Designation	Insert						Guide pad	
	Central		Intermediate		Peripheral		Screw	Wrench
	Screw	Wrench	Screw	Wrench	Screw	Wrench		
MCTR29...	CSTB-2.5	T-8F	CSTB-2.2	T-7F	CSTB-2.2	T-7F	SR34-508	T-7F
MCTR30... - MCTR33...	CSTB-2.5	T-8F	CSTB-2.5	T-8F	CSTB-2.5	T-8F	SR34-508	T-7F
MCTR34... - MCTR36...	CSTB-2.5	T-8F	CSTB-2.5	T-8F	CSTB-2.5	T-8F	CSTB-3S	T-9F

*The drill pipe is blackened for improved corrosion resistance, and the finished surface may appear uneven.
This, however, will not affect the performance of the drill.

MCTR L/D=15

Drill body for lathes and machining centers, L/D = 15, Tool diameter ø14 - ø28 mm



Designation	DC	DCON	LU	LS	LF	Insert	Guide pad
MCTR14.00XM25-15	14	25	225	56	261	TOHT07...	GP05-060
MCTR14.50XM25-15	14.5	25	225	56	262	TOHT07...	GP05-060
MCTR15.00XM25-15	15	25	240	56	278	TOHT07...	GP05-060
MCTR16.00XM25A-15	16	25	255	56	294	TOHT08...	GP05-075
MCTR16.50XM25A-15	16.5	25	255	56	294	TOHT08...	GP05-075
MCTR17.00XM25A-15	17	25	270	56	310	TOHT08...	GP05-075
MCTR17.50XM25A-15	17.5	25	270	56	310	TOHT08...	GP05-075
MCTR18.00XM25A-15	18	25	285	56	327	TOHT08...	GP05-075
MCTR18.50XM25-15	18.5	25	285	56	327	TOHT09...	GP06-085
MCTR19.00XM25-15	19	25	300	56	343	TOHT09...	GP06-085
MCTR19.50XM25-15	19.5	25	300	56	343	TOHT09...	GP06-085
MCTR20.00XM32-15	20	32	315	60	360	TOHT09...	GP06-085
MCTR21.00XM32-15	21	32	330	60	376	TOHT10...	GP06-085
MCTR22.00XM32-15	22	32	345	60	393	TOHT11...	GP06-100
MCTR23.00XM32-15	23	32	360	60	409	TOHT11...	GP06-100
MCTR24.00XM32-15	24	32	375	60	426	TOHT11...	GP06-100
MCTR25.00XM32-15	25	32	390	60	442	TOHT11...	GP06-100
MCTR26.00XM40-15	26	40	405	70	459	TOHT12...	GP06
MCTR27.00XM40-15	27	40	420	70	475	TOHT12...	GP06
MCTR28.00XM40-15	28	40	420	70	477	TOHT12...	GP06

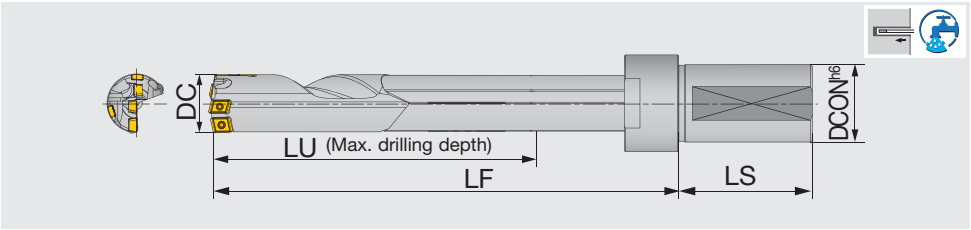
DC	Tool diameter tolerance	Applicable tolerance range of hole diameter
14 - 28	0 / - 0.07	+ 0.05 / - 0.1

SPARE PARTS

Designation	Insert		Guide pad	
	Screw	Wrench	Screw	Wrench
MCTR14... - MCTR15...	SR14-560/S	T-8F	SR34-508	T-7F
MCTR16**A... - MCTR18.0**A...	SR14-560/S	T-8F	SR34-508	T-7F
MCTR18.5... - MCTR20...	SR14-560/S	T-8F	SR34-508	T-7F
MCTR21...	SR34-506	T-9F	SR34-508	T-7F
MCTR22... - MCTR25...	SR14-571/S	T-10/5	SR34-508	T-7F
MCTR26... - MCTR28...	SR14-506	T-15F	SR34-508	T-7F

MCTR L/D=15

Drill body for lathes and machining centers, L/D = 15, Tool diameter ø29 - ø36 mm



Designation	DC	DCON	LU	LS	LF	Insert	Guide pad
MCTR29.00XFM40-15	29	40	435	69	505	FBM06**-C, FBM05**-I, FBH06**-P	GP06
MCTR30.00XFM40-15	30	40	465	69	538	FBM06**-C, FBM05**-I, FBH07**-P	GP06
MCTR31.00XFM40-15	31	40	465	69	538	FBM06**-C, FBM05**-I, FBH07**-P	GP06
MCTR32.00XFM40-15	32	40	480	69	555	FBM06**-C, FBM05**-I, FBH07**-P	GP06
MCTR33.00XFM40-15	33	40	495	69	571	FBM06**-C, FBM05**-I, FBH07**-P	GP06
MCTR34.00XFM40-15	34	40	510	69	588	FBM06**-C, FBM05**-I, FBH07**-P	GP07
MCTR35.00XFM40-15	35	40	525	69	603	FBM06**-C, FBM05**-I, FBH07**-P	GP07
MCTR36.00XFM40-15	36	40	540	69	621	FBM08**-C, FBM05**-I, FBH07**-P	GP07

DC	Tool diameter tolerance	Applicable tolerance range of hole diameter
29- 36	0 / - 0.07	+ 0.05 / - 0.1

*Max. DC = 40: Available tailer made tools

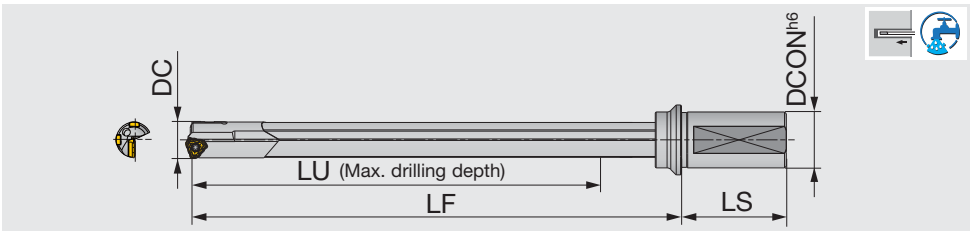
SPARE PARTS

Designation	Insert						Guide pad	
	Central		Intermediate		Peripheral		Screw	Wrench
	Screw	Wrench	Screw	Wrench	Screw	Wrench		
MCTR29...	CSTB-2.5	T-8F	CSTB-2.2	T-7F	CSTB-2.2	T-7F	SR34-508	T-7F
MCTR30... - MCTR33...	CSTB-2.5	T-8F	CSTB-2.5	T-8F	CSTB-2.5	T-8F	SR34-508	T-7F
MCTR34... - MCTR36...	CSTB-2.5	T-8F	CSTB-2.5	T-8F	CSTB-2.5	T-8F	CSTB-3S	T-9F

*The drill pipe is blackened for improved corrosion resistance, and the finished surface may appear uneven. This, however, will not affect the performance of the drill.

MCTR L/D=20

Drill body for lathes and machining centers, L/D = 20, Tool diameter ø14 - ø15 mm



Designation	DC	DCON	LU	LS	LF	Insert	Guide pad
MCTR14.00XM25-20	14	25	300	56	336	TOHT07...	GP05-060
MCTR14.50XM25-20	14.5	25	300	56	337	TOHT07...	GP05-060
MCTR15.00XM25-20	15	25	320	56	358	TOHT07...	GP05-060

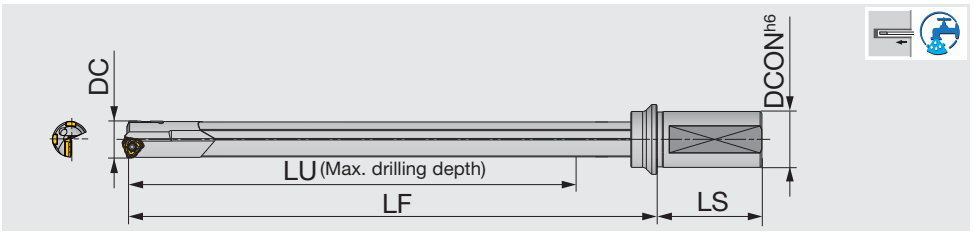
øDc	Tool diameter tolerance	Applicable tolerance range of hole diameter
14 - 15	0 / - 0.07	+ 0.05 / - 0.1

SPARE PARTS

Designation	Insert		Guide pad	
	Screw	Wrench	Screw	Wrench
MCTR14...-MCTR15...	SR14-560/S	T-8F	SR34-508	T-7F

MCTR L/D=25

Drill body for lathes and machining centers, L/D = 25, Tool diameter ø14 - ø28 mm



Designation	DC	DCON	LU	LS	LF	Insert	Guide pad
MCTR14.00XM25-25	14	25	375	56	411	TOHT07...	GP05-060
MCTR14.50XM25-25	14.5	25	375	56	412	TOHT07...	GP05-060
MCTR15.00XM25-25	15	25	400	56	438	TOHT07...	GP05-060
MCTR16.00XM25A-25	16	25	425	56	464	TOHT08...	GP05-075
MCTR16.50XM25A-25	16.5	25	425	56	464	TOHT08...	GP05-075
MCTR17.00XM25A-25	17	25	450	56	490	TOHT08...	GP05-075
MCTR17.50XM25A-25	17.5	25	450	56	490	TOHT08...	GP05-075
MCTR18.00XM25A-25	18	25	475	56	517	TOHT08...	GP05-075
MCTR18.50XM25-25	18.5	25	475	56	517	TOHT09...	GP06-085
MCTR19.00XM25-25	19	25	500	56	543	TOHT09...	GP06-085
MCTR19.50XM25-25	19.5	25	500	56	543	TOHT09...	GP06-085
MCTR20.00XM32-25	20	32	525	60	570	TOHT09...	GP06-085
MCTR21.00XM32-25	21	32	550	60	596	TOHT10...	GP06-085
MCTR22.00XM32-25	22	32	575	60	623	TOHT11...	GP06-100
MCTR23.00XM32-25	23	32	600	60	649	TOHT11...	GP06-100
MCTR24.00XM32-25	24	32	625	60	676	TOHT11...	GP06-100
MCTR25.00XM32-25	25	32	650	60	702	TOHT11...	GP06-100
MCTR26.00XM40-25	26	40	675	70	729	TOHT12...	GP06
MCTR27.00XM40-25	27	40	700	70	755	TOHT12...	GP06
MCTR28.00XM40-25	28	40	700	70	757	TOHT12...	GP06

DC	Tool diameter tolerance	Applicable tolerance range of hole diameter
14 - 28	0 / - 0.07	+ 0.05 / - 0.1

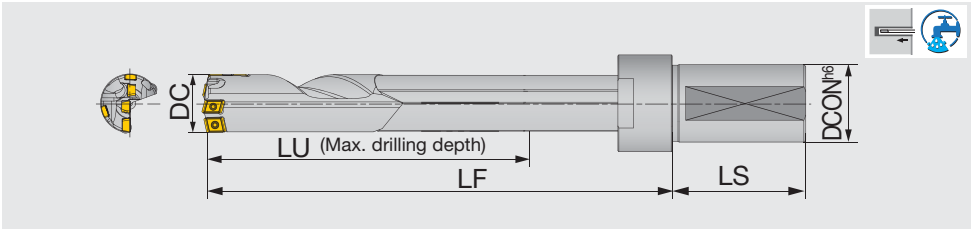
SPARE PARTS

Designation	Insert		Guide pad	
	Screw	Wrench	Screw	Wrench
MCTR14... - MCTR15...	SR14-560/S	T-8F	SR34-508	T-7F
MCTR16**A... - MCTR18.0**A...	SR14-560/S	T-8F	SR34-508	T-7F
MCTR18.5... - MCTR20...	SR14-560/S	T-8F	SR34-508	T-7F
MCTR21...	SR34-506	T-9F	SR34-508	T-7F
MCTR22... - MCTR25...	SR14-571/S	T-10/5	SR34-508	T-7F
MCTR26... - MCTR28...	SR14-506	T-15F	SR34-508	T-7F

MCTR L/D=25

Drill body for lathes and machining centers, L/D = 25, Tool diameter ø30 mm

New



Designation	DC	DCON	LU	LS	LF	Insert	Guide pad
MCTR30.00XFM40-25	30	40	775	69	848	FBM06**-C/I, FBH07**-P	GP06

DC	Tool diameter tolerance	Applicable tolerance range of hole diameter
30	0 / - 0.07	+ 0.05 / - 0.1

*Max. DC = 40: Available tailer made tools

SPARE PARTS

Designation	Insert						Guide pad	
	Central		Intermediate		Peripheral		Screw	Wrench
	Screw	Wrench	Screw	Wrench	Screw	Wrench		
MCTR30...	CSTB-2.5	T-8F	CSTB-2.5	T-8F	CSTB-2.5	T-8F	SR34-508	T-7F

*The drill pipe is blackened for improved corrosion resistance, and the finished surface may appear uneven.
This, however, will not affect the performance of the drill.

DEEP TRI DRILL
TUNGALOY

DESIGNATION FOR TAILOR MADE TOOLS

For tailor-made drills, use the below guide line to make the designation (Cat. No).

MCTR	18.50	XM	25	-	22
1	2		3		4

1 Series	
MCTR	DeepTri-Drill (For machining centers and lathes)

2 Drill dia. DC (mm)	
18.50	18.50

3 Driver dia. DCON (mm)	
25	25

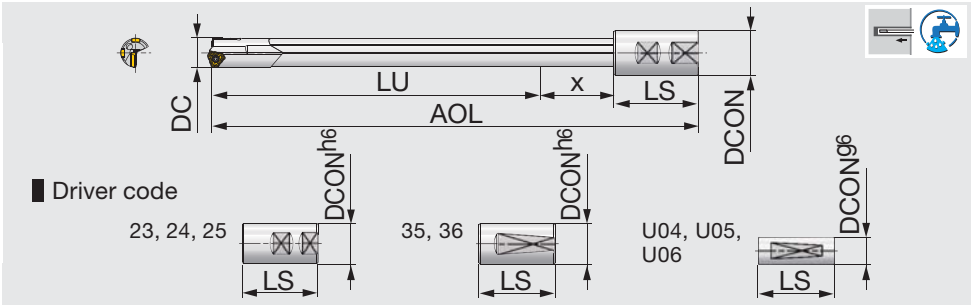
4 L/D ratio

AVAILABLE RANGE OF TAILOR MADE DRILL BODIES

DC	DCON	LU	LS	LF
14 - 14.49	25	120 - 375	56	156 - 411
14.5 - 14.99	25	120 - 375	56	157 - 412
15 - 15.99	25	128 - 400	56	166 - 438
16 - 16.79	25	136 - 425	56	175 - 464
16.8 - 17.69	25	144 - 450	56	184 - 490
17.7 - 18.69	25	152 - 475	56	194 - 517
18.7 - 19.69	25	160 - 500	56	203 - 543
19.7 - 20.69	32	168 - 525	60	213 - 570
20.7 - 21.69	32	176 - 550	60	222 - 596
21.7 - 22.69	32	184 - 575	60	232 - 623
22.7 - 23.69	32	192 - 600	60	241 - 649
23.7 - 24.69	32	200 - 625	60	251 - 676
24.7 - 25.69	32	208 - 650	60	260 - 702
25.7 - 26.69	40	216 - 675	70	270 - 719
26.7 - 27.69	40	224 - 700	70	279 - 745
27.7 - 28	40	224 - 700	70	281 - 747
28.01 - 29	40	145 - 725	69	215 - 795
29.01 - 29.99	40	150 - 750	69	222 - 822
30 - 31	40	155 - 775	69	228 - 848
31.01 - 32	40	160 - 800	69	235 - 875
32.01 - 33	40	165 - 825	69	241 - 901
33.01 - 34	40	170 - 850	69	248 - 928
34.01 - 35	40	175 - 875	69	253 - 953
35.01 - 36	40	180 - 900	69	261 - 981
36.01 - 37	40	185 - 925	69	266 - 1006
37.01 - 38	40	190 - 950	69	274 - 1034
38.01 - 39	40	195 - 975	69	279 - 1059
39.01 - 40	40	200 - 1000	69	287 - 1087

TRLG

Drill body for gundrill machine, Tool diameter ø14 - ø28 mm



Designation	DC	AOL	DCON	LU	LS	x	Driver code	Insert	Guide pad
TRLG14.00X800-23	14	800	25	723	56	21	23	TOHT07...	GP05-060
TRLG14.00X800-U04	14	800	25.4	709	70	21	U04	TOHT07...	GP05-060
TRLG14.00X1000-23	14	1000	25	923	56	21	23	TOHT07...	GP05-060
TRLG14.00X1000-U04	14	1000	25.4	909	70	21	U04	TOHT07...	GP05-060
TRLG14.00X1650-23	14	1650	25	1573	56	21	23	TOHT07...	GP05-060
TRLG14.00X1650-U04	14	1650	25.4	1559	70	21	U04	TOHT07...	GP05-060
TRLG14.50X800-23	14.5	800	25	722	56	22	23	TOHT07...	GP05-060
TRLG14.50X800-U04	14.5	800	25.4	708	70	22	U04	TOHT07...	GP05-060
TRLG14.50X1000-23	14.5	1000	25	922	56	22	23	TOHT07...	GP05-060
TRLG14.50X1000-U04	14.5	1000	25.4	908	70	22	U04	TOHT07...	GP05-060
TRLG14.50X1650-23	14.5	1650	25	1572	56	22	23	TOHT07...	GP05-060
TRLG14.50X1650-U04	14.5	1650	25.4	1558	70	22	U04	TOHT07...	GP05-060
TRLG15.00X800-23	15	800	25	721	56	23	23	TOHT07...	GP05-060
TRLG15.00X800-U04	15	800	25.4	707	70	23	U04	TOHT07...	GP05-060
TRLG15.00X1000-23	15	1000	25	921	56	23	23	TOHT07...	GP05-060
TRLG15.00X1000-U04	15	1000	25.4	907	70	23	U04	TOHT07...	GP05-060
TRLG15.00X1650-23	15	1650	25	1571	56	23	23	TOHT07...	GP05-060
TRLG15.00X1650-U04	15	1650	25.4	1557	70	23	U04	TOHT07...	GP05-060
TRLG16.00X800-23A	16	800	25	720	56	24	23	TOHT08...	GP05-075
TRLG16.00X800-U04A	16	800	25.4	706	70	24	U04	TOHT08...	GP05-075
TRLG16.00X800-35A	16	800	25	720	56	24	35	TOHT08...	GP05-075
TRLG16.00X1000-23A	16	1000	25	920	56	24	23	TOHT08...	GP05-075
TRLG16.00X1000-U04A	16	1000	25.4	906	70	24	U04	TOHT08...	GP05-075
TRLG16.00X1000-35A	16	1000	25	920	56	24	35	TOHT08...	GP05-075
TRLG16.00X1500-U04A	16	1500	25.4	1406	70	24	U04	TOHT08...	GP05-075
TRLG16.00X1500-23A	16	1500	25	1420	56	24	23	TOHT08...	GP05-075
TRLG16.00X1500-35A	16	1500	25	1420	56	24	35	TOHT08...	GP05-075
TRLG17.00X800-23A	17	800	25	719	56	25	23	TOHT08...	GP05-075
TRLG17.00X800-U04A	17	800	25.4	705	70	25	U04	TOHT08...	GP05-075
TRLG17.00X800-35A	17	800	25	719	56	25	35	TOHT08...	GP05-075
TRLG17.00X1000-23A	17	1000	25	919	56	25	23	TOHT08...	GP05-075
TRLG17.00X1000-U04A	17	1000	25.4	905	70	25	U04	TOHT08...	GP05-075
TRLG17.00X1000-35A	17	1000	25	919	56	25	35	TOHT08...	GP05-075
TRLG17.00X1500-23A	17	1500	25	1419	56	25	23	TOHT08...	GP05-075
TRLG17.00X1500-U04A	17	1500	25.4	1405	70	25	U04	TOHT08...	GP05-075
TRLG17.00X1500-35A	17	1500	25	1419	56	25	35	TOHT08...	GP05-075
TRLG18.00X800-23A	18	800	25	717	56	27	23	TOHT08...	GP05-075
TRLG18.00X800-U04A	18	800	25.4	703	70	27	U04	TOHT08...	GP05-075
TRLG18.00X800-35A	18	800	25	717	56	27	35	TOHT08...	GP05-075
TRLG18.00X1000-23A	18	1000	25	917	56	27	23	TOHT08...	GP05-075
TRLG18.00X1000-U04A	18	1000	25.4	903	70	27	U04	TOHT08...	GP05-075
TRLG18.00X1000-35A	18	1000	25	917	56	27	35	TOHT08...	GP05-075

DEEP TRI DRILL
TUNGALOY

TRLG

Designation	DC	AOL	DCON	LU	LS	x	Driver code	Insert	Guide pad
TRLG18.00X1500-U04A	18	1500	25.4	1403	70	27	U04	TOHT08...	GP05-075
TRLG18.00X1500-23A	18	1500	25	1417	56	27	23	TOHT08...	GP05-075
TRLG18.00X1500-35A	18	1500	25	1417	56	27	35	TOHT08...	GP05-075
TRLG18.00X1560-U04A	18	1560	25.4	1477	70	27	U04	TOHT08...	GP05-075
TRLG18.50X1500-U04	18.5	1500	25.4	1403	70	27	U04	TOHT09...	GP06-085
TRLG18.50X1500-23	18.5	1500	25	1417	56	27	23	TOHT09...	GP06-085
TRLG19.00X800-23	19	800	25	716	56	28	23	TOHT09...	GP06-085
TRLG19.00X800-U04	19	800	25.4	702	70	28	U04	TOHT09...	GP06-085
TRLG19.00X800-35	19	800	25	716	56	28	35	TOHT09...	GP06-085
TRLG19.00X1000-23	19	1000	25	916	56	28	23	TOHT09...	GP06-085
TRLG19.00X1000-U04	19	1000	25.4	902	70	28	U04	TOHT09...	GP06-085
TRLG19.00X1000-35	19	1000	25	916	56	28	35	TOHT09...	GP06-085
TRLG19.00X1500-U04	19	1500	25.4	1402	70	28	U04	TOHT09...	GP06-085
TRLG19.00X1500-23	19	1500	25	1416	56	28	23	TOHT09...	GP06-085
TRLG19.00X1500-35	19	1500	25	1416	56	28	35	TOHT09...	GP06-085
TRLG20.00X800-24	20	800	32	710	60	30	24	TOHT09...	GP06-085
TRLG20.00X800-U05	20	800	31.75	700	70	30	U05	TOHT09...	GP06-085
TRLG20.00X800-36	20	800	32	710	60	30	36	TOHT09...	GP06-085
TRLG20.00X1000-24	20	1000	32	910	60	30	24	TOHT09...	GP06-085
TRLG20.00X1000-U05	20	1000	31.75	900	70	30	U05	TOHT09...	GP06-085
TRLG20.00X1000-36	20	1000	32	910	60	30	36	TOHT09...	GP06-085
TRLG20.00X1500-24	20	1500	32	1410	60	30	24	TOHT09...	GP06-085
TRLG20.00X1500-U05	20	1500	31.75	1400	70	30	U05	TOHT09...	GP06-085
TRLG20.00X1500-36	20	1500	32	1410	60	30	36	TOHT09...	GP06-085
TRLG21.00X1000-24	21	1000	32	909	60	31	24	TOHT10...	GP06-085
TRLG21.00X1000-U05	21	1000	31.75	899	70	31	U05	TOHT10...	GP06-085
TRLG21.00X1000-36	21	1000	32	909	60	31	36	TOHT10...	GP06-085
TRLG21.00X1500-24	21	1500	32	1409	60	31	24	TOHT10...	GP06-085
TRLG21.00X1500-U05	21	1500	31.75	1399	70	31	U05	TOHT10...	GP06-085
TRLG21.00X1500-36	21	1500	32	1409	60	31	36	TOHT10...	GP06-085
TRLG22.00X1000-24	22	1000	32	907	60	33	24	TOHT11...	GP06-100
TRLG22.00X1000-U05	22	1000	31.75	897	70	33	U05	TOHT11...	GP06-100
TRLG22.00X1000-36	22	1000	32	907	60	33	36	TOHT11...	GP06-100
TRLG22.00X1500-24	22	1500	32	1407	60	33	24	TOHT11...	GP06-100
TRLG22.00X1500-U05	22	1500	31.75	1397	70	33	U05	TOHT11...	GP06-100
TRLG22.00X1500-36	22	1500	32	1407	60	33	36	TOHT11...	GP06-100
TRLG23.00X1000-24	23	1000	32	906	60	34	24	TOHT11...	GP06-100
TRLG23.00X1000-U05	23	1000	31.75	896	70	34	U05	TOHT11...	GP06-100
TRLG23.00X1000-36	23	1000	32	906	60	34	36	TOHT11...	GP06-100
TRLG23.00X1500-24	23	1500	32	1406	60	34	24	TOHT11...	GP06-100
TRLG23.00X1500-U05	23	1500	31.75	1396	70	34	U05	TOHT11...	GP06-100
TRLG23.00X1500-36	23	1500	32	1406	60	34	36	TOHT11...	GP06-100
TRLG24.00X1000-24	24	1000	32	904	60	36	24	TOHT11...	GP06-100
TRLG24.00X1000-U05	24	1000	31.75	894	70	36	U05	TOHT11...	GP06-100
TRLG24.00X1000-36	24	1000	32	904	60	36	36	TOHT11...	GP06-100
TRLG24.00X1500-24	24	1500	32	1404	60	36	24	TOHT11...	GP06-100
TRLG24.00X1500-U05	24	1500	31.75	1394	70	36	U05	TOHT11...	GP06-100
TRLG24.00X1500-36	24	1500	32	1404	60	36	36	TOHT11...	GP06-100
TRLG25.00X1000-24	25	1000	32	903	60	37	24	TOHT11...	GP06-100
TRLG25.00X1000-U05	25	1000	31.75	893	70	37	U05	TOHT11...	GP06-100
TRLG25.00X1000-36	25	1000	32	903	60	37	36	TOHT11...	GP06-100
TRLG25.00X1500-24	25	1500	32	1403	60	37	24	TOHT11...	GP06-100
TRLG25.00X1500-U05	25	1500	31.75	1393	70	37	U05	TOHT11...	GP06-100
TRLG25.00X1500-36	25	1500	32	1403	60	37	36	TOHT11...	GP06-100

Designation	DC	AOL	DCON	LU	LS	x	Driver code	Insert	Guide pad
TRLG26.00X1000-25	26	1000	40	891	70	39	25	TOHT12...	GP06
TRLG26.00X1000-U06	26	1000	38.1	891	70	39	U06	TOHT12...	GP06
TRLG26.00X1500-25	26	1500	40	1391	70	39	25	TOHT12...	GP06
TRLG26.00X1500-U06	26	1500	38.1	1391	70	39	U06	TOHT12...	GP06
TRLG27.00X1000-25	27	1000	40	890	70	40	25	TOHT12...	GP06
TRLG27.00X1000-U06	27	1000	38.1	890	70	40	U06	TOHT12...	GP06
TRLG27.00X1500-25	27	1500	40	1390	70	40	25	TOHT12...	GP06
TRLG27.00X1500-U06	27	1500	38.1	1390	70	40	U06	TOHT12...	GP06
TRLG28.00X1000-25	28	1000	40	888	70	42	25	TOHT12...	GP06
TRLG28.00X1000-U06	28	1000	38.1	888	70	42	U06	TOHT12...	GP06
TRLG28.00X1500-25	28	1500	40	1388	70	42	25	TOHT12...	GP06
TRLG28.00X1500-U06	28	1500	38.1	1388	70	42	U06	TOHT12...	GP06

DC	Tool diameter tolerance	Applicable tolerance range of hole diameter
14 - 28	0 / - 0.07	+ 0.05 / - 0.1

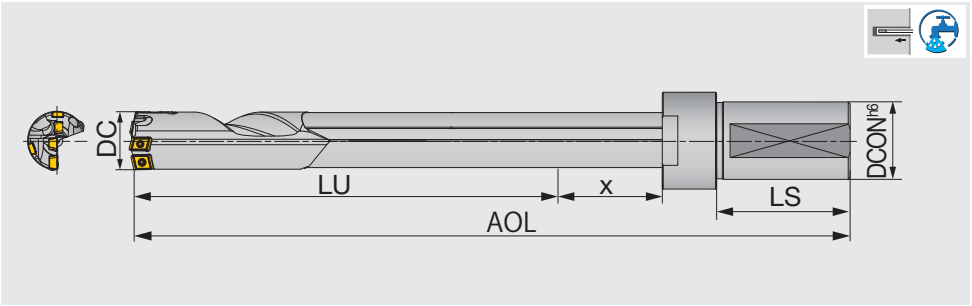
SPARE PARTS

Designation	Insert		Guide pad	
	Screw	Wrench	Screw	Wrench
TRLG14... - TRLG15...	SR14-560/S	T-8F	SR34-508	T-7F
TRLG16**A - TRLG18.0**A	SR14-560/S	T-8F	SR34-508	T-7F
TRLG18.5... - TRLG20...	SR14-560/S	T-8F	SR34-508	T-7F
TRLG21...	SR34-506	T-9F	SR34-508	T-7F
TRLG22... - TRLG25...	SR14-571/S	T-10/5	SR34-508	T-7F
TRLG26... - TRLG28...	SR14-506	T-15F	SR34-508	T-7F

TRLG

Drill body for gundrill machine, Tool diameter ø30 mm

New



Designation	DC	AOL	DCON	LU	LS	x	Driver code	Insert	Guide pad
TRLG30.00X1000-FM40	30	1000	40	858	69	73	FM40	FBM06**-C, FBM06**-I, FBH07**-P	GP06
TRLG30.00X1650-FM40	30	1650	40	1508	69	73	FM40	FBM06**-C, FBM06**-I, FBH07**-P	GP06
TRLG30.00X1650-FU38.1	30	1650	38.1	1508	69	73	FU38.1	FBM06**-C, FBM06**-I, FBH07**-P	GP06

DC	Tool diameter tolerance	Applicable tolerance range of hole diameter
30	0 / - 0.07	+ 0.05 / - 0.1

*Max. DC = 40: Available tailer made tools

SPARE PARTS

Designation	Insert						Guide pad	
	Central		Intermediate		Peripheral		Screw	Wrench
	Screw	Wrench	Screw	Wrench	Screw	Wrench		
TRLG30...	CSTB-2.5	T-8F	CSTB-2.5	T-8F	CSTB-2.5	T-8F	SR34-508	T-7F

*The drill pipe is blackened for improved corrosion resistance, and the finished surface may appear uneven.
This, however, will not affect the performance of the drill.

DESIGNATION FOR TAILOR MADE TOOLS

For tailor-made drills, use the below guide line to make the designation (Cat. No).

TRLG ① **18.50** ② **X** **900** ③ **-** **23** ④

① Series	
TRLG	DeepTri-Drill (For gundrill machine)

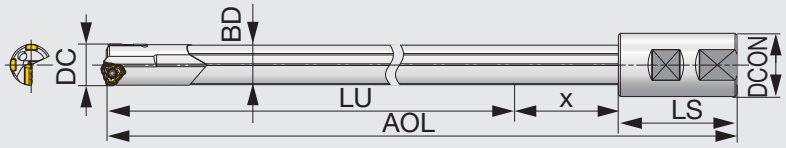
② Drill dia. DC (mm)	
18.50	18.50

③ Overall length: *L* (mm)	
900	900

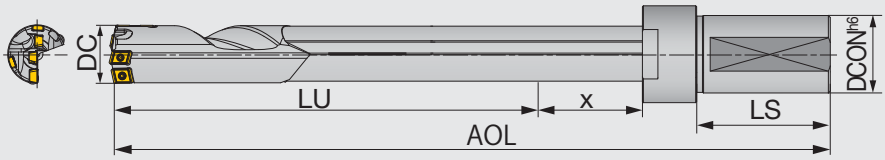
④ Driver code	
23	23

DEEP TRI DRILL
TUNGALOY

14 ≤ DC ≤ 28



28 < DC ≤ 40



AVAILABLE RANGE OF TAILOR MADE DRILL BODIES

DC	AOL	x
14 - 14.49	400 - 2400	21
14.5 - 14.99	400 - 2400	22
15 - 15.99	400 - 2400	23
16 - 16.79	400 - 2400	24
16.8 - 17.69	400 - 2400	25
17.7 - 18.69	400 - 2400	27
18.7 - 19.69	400 - 2400	28
19.7 - 20.69	400 - 2400	30
20.7 - 21.69	400 - 2400	31
21.7 - 22.69	400 - 2400	33
22.7 - 23.69	400 - 2400	34
23.7 - 24.69	400 - 2400	36
24.7 - 25.69	400 - 2400	37
25.7 - 26.69	400 - 2400	39

DC	AOL	x
26.7 - 27.69	400 - 2400	40
27.7 - 28	400 - 2400	42
28.01 - 29	400 - 2400	42
29.01 - 29.99	400 - 2400	44
30 - 31	400 - 2400	45
31.01 - 32	400 - 2400	47
32.01 - 33	400 - 2400	48
33.01 - 34	400 - 2400	50
34.01 - 35	400 - 2400	50
35.01 - 36	400 - 2400	53
36.01 - 37	400 - 2400	53
37.01 - 38	400 - 2400	56
38.01 - 39	400 - 2400	56
39.01 - 40	400 - 2400	59

Please provide the driver shape depending on your request

TUBE DIAMETER

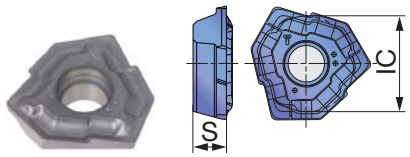
-

DC	BD
14 - 14.49	13.5
14.5 - 14.99	14
15 - 15.99	14.5
16 - 16.79	15.5
16.8 - 17.69	16.2
17.7 - 18.69	17.2
18.7 - 19.69	18.2
19.7 - 20.69	19
20.7 - 21.69	20
21.7 - 22.69	21
22.7 - 23.69	22
23.7 - 24.69	23
24.7 - 25.69	24
25.7 - 26.69	25

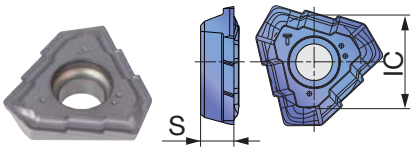
DC	BD
26.7 - 27.69	26
27.7 - 28	27
28.01 - 29	27
29.01 - 29.99	28
30 - 31	29
31.01 - 32	30
32.01 - 33	31
33.01 - 34	32
34.01 - 35	32
35.01 - 36	34
36.01 - 37	34
37.01 - 38	36
38.01 - 39	36
39.01 - 40	38

INSERT

TOHT-NDJ (07..., 08...)



TOHT-NDJ (09... - 12...)



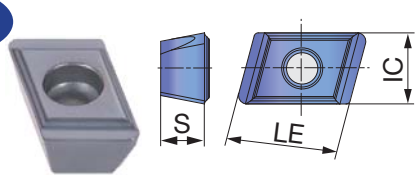
NDJ chipbreaker

- Low cutting force
- For general purpose

Designation	DC	AH725	IC	S
TOHT070304R-NDJ	14 - 15.99	●	7.69	2.3
TOHT080305R-NDJ	16 - 18	●	8.55	2.8
TOHT090305R-NDJ	18.01 - 20	●	8.32	3
TOHT100305R-NDJ	20.01 - 21.99	●	9.23	3.3
TOHT110405R-NDJ	22 - 25	●	10.4	3.8
TOHT120405R-NDJ	25.01 - 28	●	11.59	4.3

FBM-C (For central)

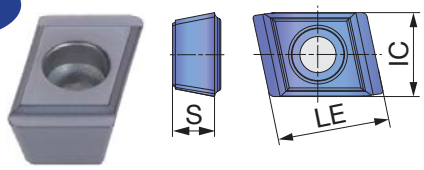
New



Designation	DC	UC2220	UC3120	IC	LE	S
FBM06504LG-C	28.01 - 35	●		5.5	8	3
FBM08004LG-C	35.01 - 40	●		8	10	4

FBM-I (For intermidiate)

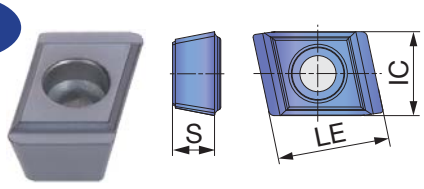
New



Designation	DC	UC2220	UC3120	IC	LE	S
FBM05503RG-I	28.01 - 29.99	●		5.5	8	3
FBM06504RG-I	30 - 40	●		6.5	10	4

FBH-P (For peripheral)

New

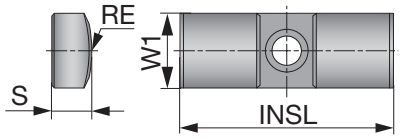


Designation	DC	UC2220	UC3120	IC	LE	S
FBH06003RG-P	28.01- 29.99	●	●	6	8	3
FBH07504RG-P	30 - 38	●	●	7.5	10	4
FBH09004RG-P	38.01 - 40	●	●	9	10	4

● : Line - up
Package quantity = 10 pcs.

GUIDE PAD

GP05, 06, 07, 08



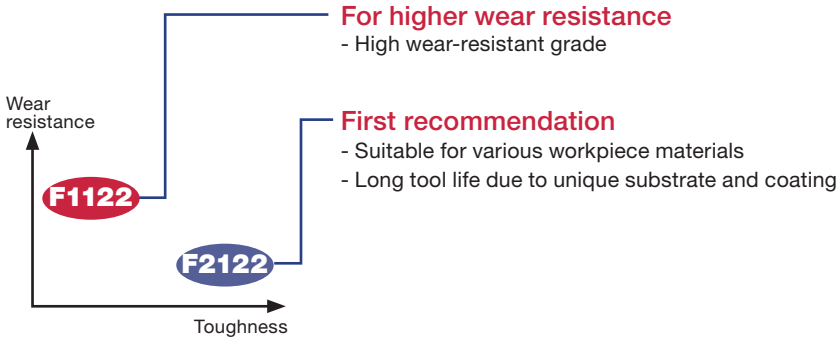
Designation	DC	F1122	F2122	W1	INSL	S	RE
GP05-060	14 - 15.99	●	●	5	18	2.5	6
GP05-075	16 - 18	●	●	5	18	2.5	7.5
GP06-075	16 - 18	●	●	6	20	3	7.5
GP06-085	18.01 - 21	●	●	6	20	3	8.5
GP06-100	21.01 - 25	●	●	6	20	3	10
New GP06	28.01 - 33	●	●	6	20	2.5	12
New GP07	33.01-38	●	●	7	20	3.5	12
New GP08	38.01-40	●	●	8	25	4.5	15.5

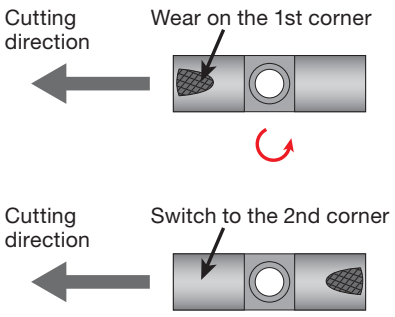
● : standard
Package quantity = 5 pcs.

Replacing guide pads

Guide pads are subject to wear, like inserts

- The guide pad has two corners.
- Each guide pad can be used on two sides. When the first corner wears out a 70% of the width, reverse the guide pad to use the second corner.
- Replace with a new guide pad when the second corner wears out.

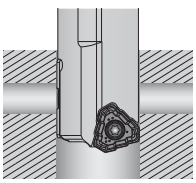
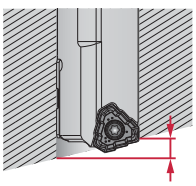
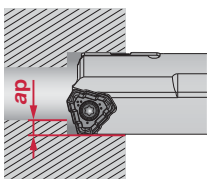




STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Cutting speed *Vc* (m/min)	Feed: *f* (mm/rev)		
			ø14 - ø18	ø18.01 - ø28	ø28.01 - ø40
P	Low carbon steel (C < 0.3) SS400 / St42-1, SM490 / St52-3, S25C / C25, etc.	80 - 140	0.05 - 0.1	0.05 - 0.1	0.05 - 0.15
P	Carbon steel (C > 0.3) S45C / C45, S55C / C55, etc.	80 - 140	0.05 - 0.16	0.05 - 0.2	0.05 - 0.2
P	Low alloy steel (C < 0.3) SCM415, 18CrMo4, etc.	80 - 140	0.05 - 0.1	0.05 - 0.1	0.05 - .15
P	Alloy steel (C > 0.3) SCM440 / 42CrMo4, SCr420 / 20Cr4, etc.	80 - 120	0.05 - 0.16	0.05 - 0.2	0.05 - 0.2
M	Stainless steel (Austenitic) SUS304 / X5CrNi18-9, SUS316 / X5CrNiMo17-12-3, etc.	60 - 100	0.05 - 0.1	0.05 - 0.1	0.05 - 0.15
M	Stainless steel (Martensitic, Ferritic) SUS430 / X6Cr17, SUS416 / X12CrS13, etc.	60 - 100	0.05 - 0.1	0.05 - 0.1	0.05 - 0.15
M	Stainless steel (Precipitation hardening) SUS630 / X5CrNiCuNb16-4, etc.	60 - 100	0.05 - 0.1	0.05 - 0.1	0.05 - 0.15
K	Grey cast iron FC250 / 250, etc.	80 - 140	0.05 - 0.25	0.05 - 0.3	0.05 - 0.3
K	Ductile cast iron FCD700 / 700-2, etc.	80 - 140	0.05 - 0.25	0.05 - 0.3	0.05 - 0.3
N	Aluminium alloys	100 - 200	0.05 - 0.2	0.05 - 0.2	0.05 - 0.25
S	Heat-resistant alloys Inconel 718, etc.	20 - 50	0.04 - 0.08	0.04 - 0.1	0.04 - 0.13
S	Titanium alloys Ti-6Al-4V, etc.	30 - 60	0.05 - 0.13	0.05 - 0.15	0.05 - 0.18
H	Hardened steel ≥ 40HRC	50 - 100	0.04 - 0.08	0.04 - 0.1	0.04 - 0.13

APPLICATION RANGE

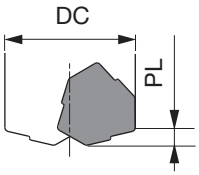
Feed *f* (mm/rev)	0.03 - 0.05	0.03 - 0.05	0.1 - 0.3
Application	OK Cross hole drilling	OK Inclined exit	OK Boring
		 16 mm or less (for standard drill)	

Note 1) When drilling cross holes or exiting the inclined surface, make sure the guide-pads are suitable.
Note 2) A pilot hole is needed prior to a boring operation. *ap* ≥ 1 mm is recommended for boring operations.

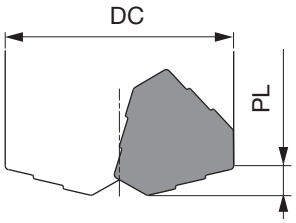
SHAPES OF THE HOLE BOTTOM

DC	Insert	Maximum difference PL
14 - 15.99	TOHT07	2
16 - 18	TOHT08	2.2
18.01 - 20	TOHT09	3
20.01 - 21.99	TOHT10	3.2
22 - 25	TOHT11	3.4
25.01 - 28	TOHT12	3.7

TOHT07..., 08...



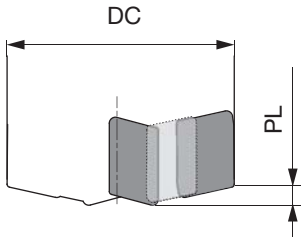
TOHT09... - TOHT12...



New

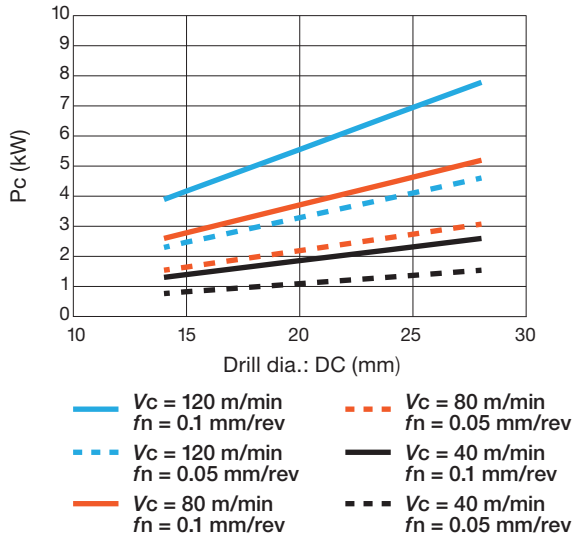
DC	Insert			Maximum difference PL
	Central	Intermediate	Peripheral	
28.01 - 29	FBM06504LG-C	FBM05503RG-I	FBH06003RG-P	2.6
29.01 - 29.99	FBM06504LG-C	FBM05503RG-I	FBH06003RG-P	2.6
30 - 31	FBM06504LG-C	FBM06504RG-I	FBH07504RG-P	2.9
31.01 - 32	FBM06504LG-C	FBM06504RG-I	FBH07504RG-P	3
32.01 - 33	FBM06504LG-C	FBM06504RG-I	FBH07504RG-P	3.1
33.01 - 34	FBM06504LG-C	FBM06504RG-I	FBH07504RG-P	3
34.01 - 35	FBM06504LG-C	FBM06504RG-I	FBH07504RG-P	3.1
35.01 - 36	FBM08004LG-C	FBM06504RG-I	FBH07504RG-P	3.1
36.01 - 37	FBM08004LG-C	FBM06504RG-I	FBH07504RG-P	3
37.01 - 38	FBM08004LG-C	FBM06504RG-I	FBH07504RG-P	3.1
38.01 - 39	FBM08004LG-C	FBM06504RG-I	FBH09004RG-P	3.4
39.01 - 40	FBM08004LG-C	FBM06504RG-I	FBH09004RG-P	3.3

FBM...

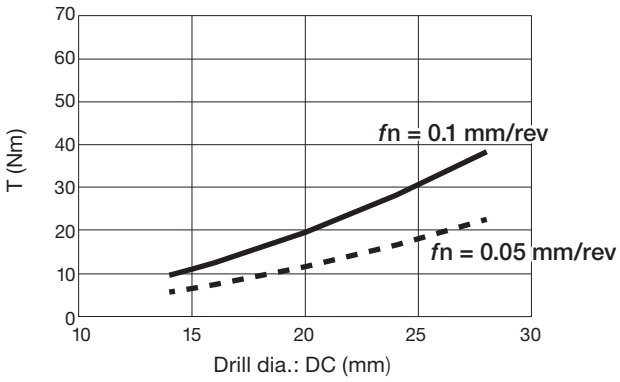


REQUIRED SPINDLE POWER AND COOLANT PRESSURE

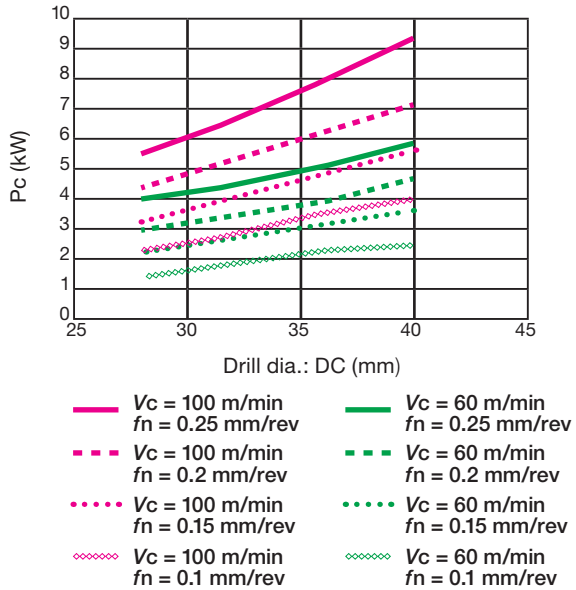
Net power (S45C)



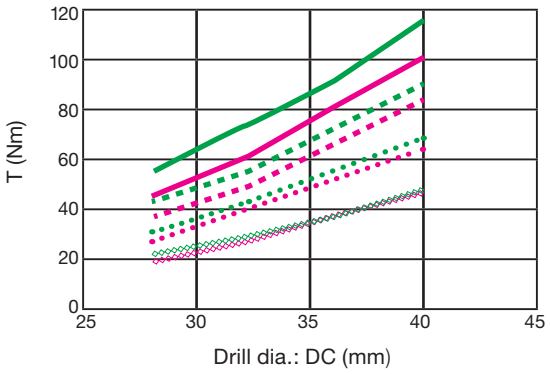
Torque (S45C)



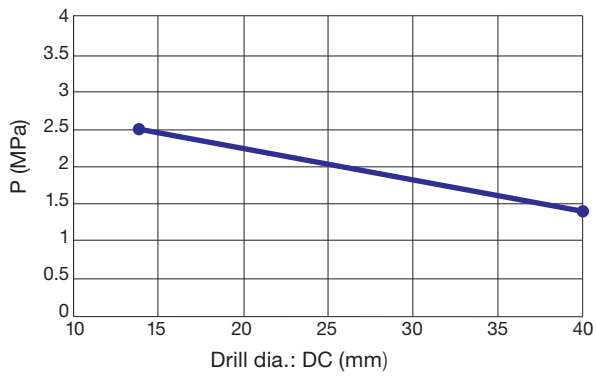
Net power (S45C)



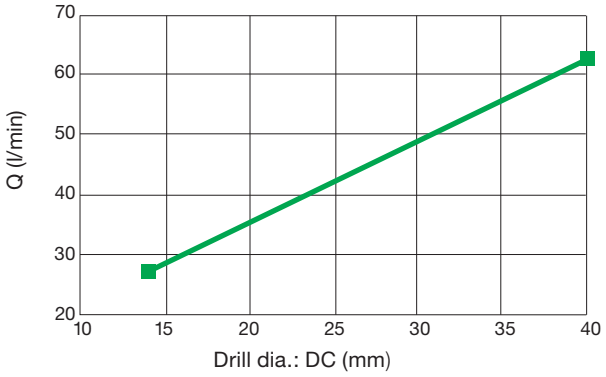
Torque (S45C)



Coolant pressure (Recommended value)

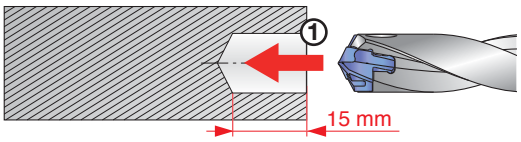


Coolant flow rate (Recommended value)



DRILLING PROCEDURE ON MACHINING CENTERS AND LATHES

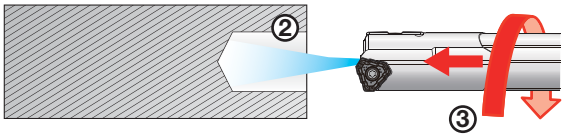
Proceed as instructed below in order to maximize the tool performance.



① Drill a pilot hole

Hole diameter tolerance: +0.01 - +0.1 mm
Hole depth: H = 15 mm

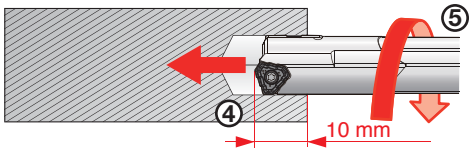
Please use DrillMeister or DrillForce-Meister for a pilot hole
Use a drill with 3xD or smaller



② Start coolant
③ Slowly insert DeepTri-Drill into the pilot hole

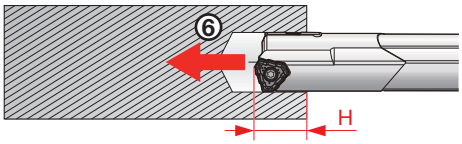
No. of revolution: n = 50 - 100 min^{-1}
Feed speed: Vf = 100 - 300 mm/min

Caution: Do not rotate the drill at a full machining speed before engaging the pilot hole.



④ Stop the drill at 10 mm depth

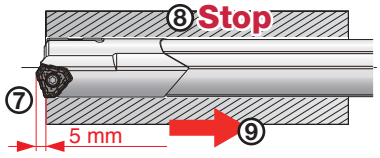
⑤ Start rotating at full machining speed



⑥ Start feeding

At the entry (H = 10 - 20 mm):
→ Feed: f = 80% of programmed feed

Hole depth:
H ≥ 20 mm → Feed: f = 100%



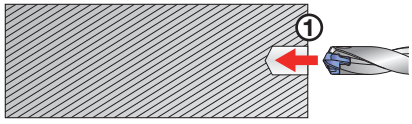
⑦ For a through hole

Continue drilling until the drill head passes through the workpiece by 5 mm

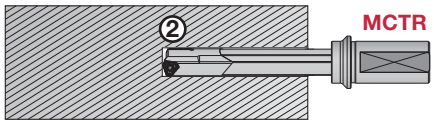
⑧ Stop the rotation and coolant
⑨ Return the drill

HOW TO USE A **TRLG** TYPE DEEPTRI-DRILL ON A HORIZONTAL MACHINING CENTER OR BORING MACHINE

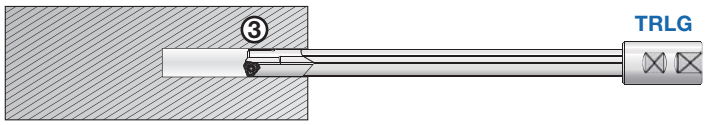
When using the TRLG drill on a conventional machining center or horizontal boring machine where there are no drilling-bush supports available, a pilot hole needs to be further deepened with a MCTR drill to better support the long gundrill. A Long gundrill such as the TRLG type drill tends to “whip” when the pilot hole is too short to support the gundrill.



① Drill a pilot hole

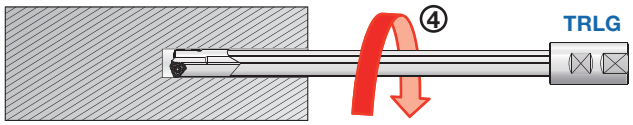


② Expand the pilot hole deeper using a MCTR drill

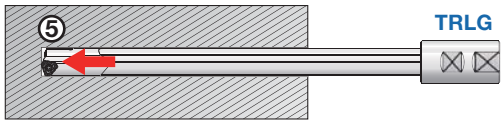


③ Drill with a TRLG drill at a reduced rotation and feed. Use the following parameters:

No. of revolution: n = 50 - 100 min^{-1}
Feed speed: Vf = 100 - 300 mm/min



④ When DeepTri-Drill reaches all the way to the end of the pilot hole, increase drill rotation at full machining speed.



⑤ Start feeding to complete the drilling

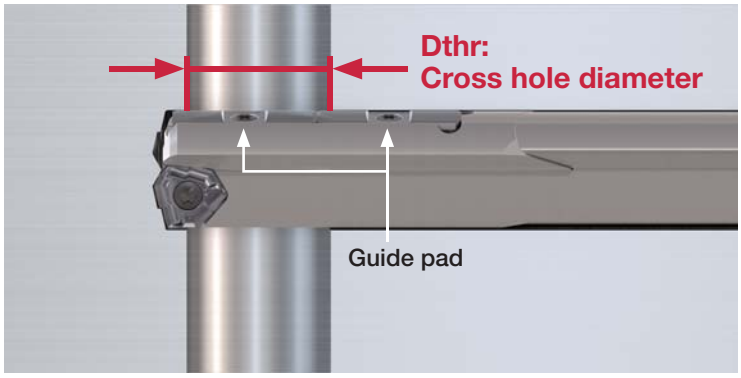
(Caution)
Always use Step② to prevent the gundrill from whipping, which may lead to drill breakage and a possible human injury.

CAUTIONS FOR CROSS HOLE DRILLING

- DeepTri-Drill can drill cross holes.
- For a cross hole diameter (Dthr) of 16 mm or less, use standard “MCTR” and “TRLG”.
- For a cross hole diameter (Dthr) of 16 mm to 32 mm, use tailor-made cross hole types: “MCTRCH” or “TRLGCH”.

How to select a proper DeepTri-Drill model for suitable cross hole distance.

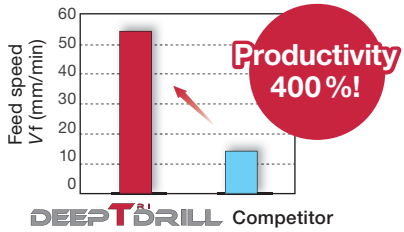
Dthr < 16 mm: use MCTR or TRLG
16 mm ≤ Dthr < 32 mm: use MCTRCH or TRLGCH

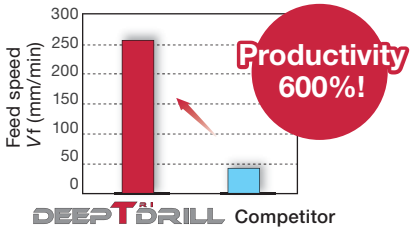
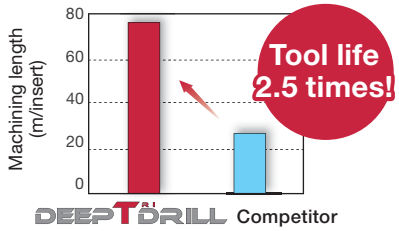


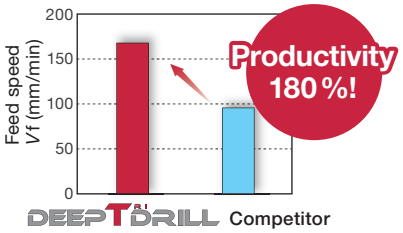
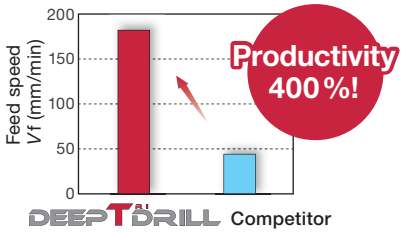
- Decrease the feed rate when the drill head comes in contact with a cross hole. (*f* = 0.03 - 0.05 mm/rev)
- **Retract the gundrill with a slow rotation. (*n* = 100 min^{-1}, *V*f = 300 mm/min)**
- **When the gundrill is rapidly pulled out without rotating, the insert and/or guide pads may come in contact with burrs on the cross holes on the way back, resulting in damages.**

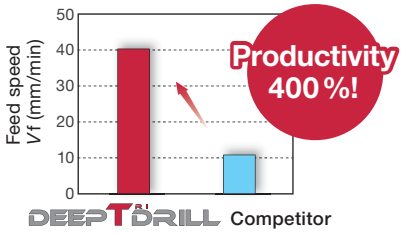
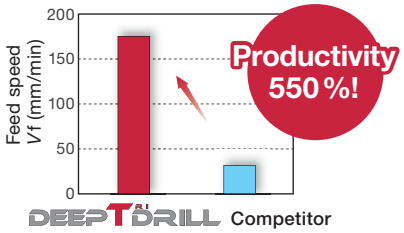
A tailor-made tool for a cross hole distance over 16 mm

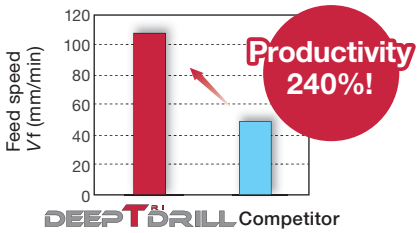
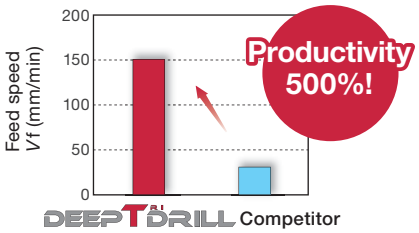
PRACTICAL EXAMPLES

Workpiece type		Forging mold	Construction machine part
Drill		MCTR20.00XM32-15, DC = 20 mm	MCTR22.00XM32-15, DC = 22 mm
Insert		TOHT090305R-NDJ	TOHT110405R-NDJ
Grade		AH725	AH725
Guide pad		GP06-085 F2122	GP06-100 F2122
Workpiece material		SKD61 / X40CrMoV5-1	Cast steel
		H	P
Cutting conditions	Cutting speed: *Vc* (m/min)	70	60
	Feed : *f* (mm/rev)	0.05	0.08
	Feed speed : *Vf* (mm/min)	55	70
	Drilling depth: *H* (mm)	291	200
	Machine	Horizontal M/C	Horizontal M/C
	Coolant	Wet	Wet
Results		 DeepTri-Drill increases productivity by 4 times compared to the competitor's brazed gundrill since higher cutting speed and feed are applicable.	**Machining process** Tool / Process: DEEP DRILL / Competitor 1: Making a guide hole (15 mm) / Drilling (100 mm) 2: Drilling (200 mm) / Drilling (100 mm) 3: Reaming / Counter boring 4: / Reaming DeepTri-Drill machines 200 mm depth in one operation. Also, due to the excellent hole straightness, DeepTri-Drill eliminates the boring process.

Workpiece type		Mold base	Shaft
Drill		TRLG21.00X1000-U05, DC = 21 mm	TRLG20.00X1500-24, DC = 20 mm
Insert		TOHT100305R-NDJ	TOHT090305R-NDJ
Grade		AH725	AH725
Guide pad		GP06-085 F2122	GP06-085 F2122
Workpiece material		SCM440 / 42CrMo4 P	SCM440 / 42CrMo4 P
Cutting conditions	Cutting speed: *Vc* (m/min)	99	99
	Feed : *f* (mm/rev)	0.17	0.17
	Feed speed : *Vf* (mm/min)	255	268
	Drilling depth: *H* (mm)	300	1050
	Machine	Gundrill machine	Gundrill machine
	Coolant	Wet	Wet
Results		 DeepTri-Drill increases productivity by 6 times compared to the competitor's brazed gundrill since higher cutting speed and feed are applicable.	 Tool life per insert is improved by 2.5 times due to the increased number of cutting edges. Also, tool life per corner is expanded due to high wear resistance.

Workpiece type		Oil pin	Axel shaft
Drill		TRLG14.00X800-U04, DC = 14 mm	MCTR14.00XM25-15, DC = 14 mm
Insert		TOHT070304R-NDJ	TOHT070304R-NDJ
Grade		AH725	AH725
Guide pad		GP05-060 F2122	GP05-060 F2122
Workpiece material		SCM435	SCM435H
Cutting conditions	Cutting speed: *Vc* (m/min)	70	80
	Feed : *f* (mm/rev)	0.11	0.1
	Feed speed : *Vf* (mm/min)	168	182
	Hole diameter: ø*Dc* (mm)	14	14
	Hole depth : *H* (mm)	180	200
	Machine	Gundrill machine	Lathe
	Coolant	Internal	Internal
Results		 DeepTri-Drill increases productivity by 1.8 times compared to the competitor's brazed gundrill. Due to the indexable inserts, regrinding is not required.	 Unlike the competitor's HSS drill, DeepTri-Drill does not require step feed and increases productivity by 4 times.

Workpiece type		Mold	Mold
Drill		TRLG24.00X1500-U05, DC = 24 mm	TRLG18.00X1500-U04, DC = 18 mm
Insert		TOHT110405R-NDJ	TOHT080305R-NDJ
Grade		AH725	AH725
Guide pad		GP06-100 F2122	GP06-075 F2122
Workpiece material		CENA-V H	S55C / C55 P
Cutting conditions	Cutting speed: *Vc* (m/min)	60	90
	Feed : *f* (mm/rev)	0.05	0.11
	Feed speed : *Vf* (mm/min)	40	175
	Hole diameter: ø*Dc* (mm)	24	18
	Hole depth : *H* (mm)	500	1000
	Machine	Gundrill machine	Gundrill machine
	Coolant	Internal	Internal
Results		 DeepTri-Drill delivers high efficiency in machining difficult-to-cut material for molds, increasing productivity by 4 times compared to the competitor's brazed gundrill.	 DeepTri-Drill drastically reduces time to produce molds, increasing productivity by 5.5 times compared to the competitor's brazed gundrill.

Workpiece type		Tower flange	Cylinder rod
Drill		MCTR33.10XFM40-8, DC = 33.1 mm	MCTR30.00XFM40-25, DC = 30 mm
Insert		FBM06504LG-C	FBM06504LG-C
Grade		UC2220	UC2220
Guide pad		GP05-060 F2122	GP06 F2122
Workpiece material		Q345E (Low carbon steel)	SCM435
Cutting conditions	Cutting speed: *Vc* (m/min)	100	100
	Feed : *f* (mm/rev)	0.1	0.14
	Feed speed : *Vf* (mm/min)	106	150
	Hole diameter: ø*Dc* (mm)	33.1	30
	Hole depth : *H* (mm)	220	400
	Machine	Drilling center	Multi tasking machine
	Coolant	Wet	Wet
Results		 DeepTri-Drill increases productivity by 2.4 times over the current HSS long drill. FBM/H insert enables excellent chip control even in low carbon steel.	 DeepTri-Drill increases productivity by 5 times over the current competitor's gundrill

GUNDRILL
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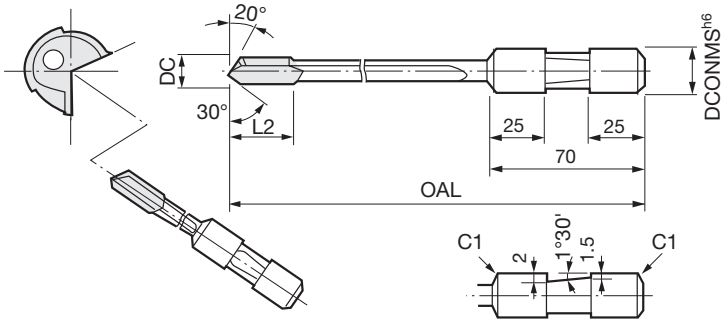
SLJ (Blazed gundrill)

Ideal drilling tool for highly accurate deep hole!

Drill body

Specifications of A type drivers

Tool dia. øDc (mm)	Driver dia. øDs (mm)
3.00 ≤ øDc < 5.50	12.70
5.50 ≤ øDc < 12.70	19.05
12.70 ≤ øDc < 20.00	25.40
20.00 ≤ øDc ≤ 24.00	31.75



Stock

Tool dia. øDc (mm)	Cat. No. Overall length L: 400 (mm)	Stock	Cat. No. Overall length L: 600 (mm)	Stock	Cat. No. Overall length L: 1000 (mm)	Stock	Cat. No. Overall length L: 1250 (mm)	Stock	Cat. No. Overall length L: 1650 (mm)	Stock
3	SLJ0300L0400NA	●	SLJ0300L0600NA	●						
5			SLJ0500L0600NA	●	SLJ0500L1000NA	●				
5.5			SLJ0550L0600NA	●						
6			SLJ0600L0600NA	●	SLJ0600L1000NA	●	SLJ0600L1250NA	●	SLJ0600L1650NA	●
6.1							SLJ0610L1250NA	●	SLJ0610L1650NA	●
6.2							SLJ0620L1250NA	●	SLJ0620L1650NA	●
7			SLJ0700L0600NA	●	SLJ0700L1000NA	●	SLJ0700L1250NA	●	SLJ0700L1650NA	●
8			SLJ0800L0600NA	●	SLJ0800L1000NA	●	SLJ0800L1250NA	●	SLJ0800L1650NA	●
8.1							SLJ0810L1250NA	●	SLJ0810L1650NA	●
8.2							SLJ0820L1250NA	●	SLJ0820L1650NA	●
10			SLJ1000L0600NA	●	SLJ1000L1000NA	●	SLJ1000L1250NA	●	SLJ1000L1650NA	●
10.1							SLJ1010L1250NA	●	SLJ1010L1650NA	●
10.2							SLJ1020L1250NA	●	SLJ1020L1650NA	●
12							SLJ1200L1250NA	●	SLJ1200L1650NA	●
12.1							SLJ1210L1250NA	●	SLJ1210L1650NA	●
12.2							SLJ1220L1250NA	●	SLJ1220L1650NA	●

Please inquire for sizes not in the above list

● : Stocked items

Guidelines for attainable accuracies

Workpiece materials	Surface roughness (µm)	Roundness (µm)	Cylindricity (µm)	Over size (µm)
Carbon and alloy steels	6 - 25	5 - 10	10 - 15	-5 - 30
Cast irons (FC,FCD / GG, GGG)	3 - 15	3 - 5	5 - 10	-5 - 15
Aluminium alloys, Copper alloys	0.3 - 6	3 - 5	5 - 10	-10 - 5

Note: Over size values given in the table are based on the tool diameter.

Tip length

Tool dia. øDc (mm)	Tip length ℓ (mm)
3.0 ≤ øDc < 4.0	15
4.0 ≤ øDc < 5.0	20
5.0 ≤ øDc < 10.0	25
10.0 ≤ øDc < 15.0	30
15.0 ≤ øDc < 20.0	35
20.0 ≤ øDc ≤ 24.0	40

STANDARD CUTTING CONDITIONS (SLJ type)

ISO	Workpiece material	Heat treatment	Hardness HB	Hardness HRC	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	Free-cutting carbon steels		160 - 190	(5) - (11)	130	Refer to Fig. 1
	C10C ~ C15 S10C ~ S15C	Cold drawn				
	S30C ~ S50C C30 ~ C50	Cold drawn	200 - 230	(12) - 20	100	
	S35C ~ S50C C30 ~ C50	Hardened and tempered	250 - 300	25 - 32	80	
	Carbon steels		110 ~ 120		130	
	S10C ~ S35C C10 ~ C30	Annealed				
	S10C ~ S50C C10 ~ C50	Annealed	120 ~ 185	~ (9)	120	
	S50C ~ C50 ~	Annealed	170 ~ 200	(5) ~ (13)	100	
	S20C ~ S30C C20 ~ C30	Hardened and tempered	210 ~ 250	(16) ~ 24	90	Refer to Fig. 2
	S30C ~ S55C C30 ~ C55	Hardened and tempered	260 ~ 310	26 ~ 33	70	
	S50C ~ C50 ~	Hardened and tempered	320 ~ 375	34 ~ 40	50	
	S50C ~ C55 ~	Hardened and tempered	380 ~ 440	41 ~ 47	40	
	Alloy steels	Annealed	150 ~ 230	~ (20)	90	Refer to Fig. 2
		Annealed or Hardened and tempered	240 ~ 310	23 ~ 33	70	Refer to Fig. 2
			315 ~ 370	34 ~ 40	50	Refer to Fig. 3
			380 ~ 440	40 ~ 47	40	
			450 ~ 500	48 ~ 51	30	
	Cast steels	Annealed	140 ~ 180	~ (8)	100	Refer to Fig. 2
		Annealed	190 ~ 240	(11) ~ 22	90	
	Tool steels	Annealed	150 ~ 200	~ (13)	70	Refer to Fig. 3
		Annealed	210 ~ 300	(16) ~ 32	50	
M	Stainless steels Ferritic SUS405, 430 X6Cr17	Annealed	150 ~ 200	~ (13)	70	Refer to Fig. 3
	Austenitic SUS304, 305 X5CrNi18-9	Annealed	160 ~ 220	~ (18)	50	
	Martensitic SUS403, 410 X12Cr13	Hardened and tempered	160 ~ 220	~ (18)	70	
			300 ~ 350	32 ~ 38	50	
K	Grey cast irons		110 ~ 180		90	Refer to Fig. 4
			190 ~ 220		80	
			220 ~ 260		70	
	Ductile cast irons		120 ~ 170		80	Refer to Fig. 5
			180 ~ 240		65	
			240 ~ 280		55	
			260 ~ 320		40	
	Malleable cast irons		110 ~ 180		90	
			190 ~ 220		80	
			220 ~ 260		70	
N	Cast aluminium alloys Aluminium die cast alloys	Annealed	5000load 40 ~ 100		180	Refer to Fig. 4
	Copper alloys	Annealed	120 ~ 160		< 150	Refer to Fig. 4
			160 ~ 205		< 150	Refer to Fig. 5
H	Bearing steels		150 ~ 210		70	Refer to Fig. 3
	High-resistant steels				20	
	High speed steels		210 ~ 285	(16) ~ 30	50	

Num. of revolution n(min-1) = Cutting speed *Vc* x 1000 / ϖ / Drill diameter *Dc*
Feed speed *Vf* (mm/min) = Num of revolution x feed per revolution *f*

Fig. 1 Carbon steels

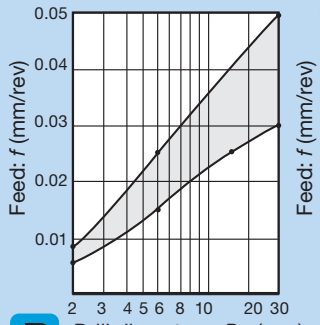
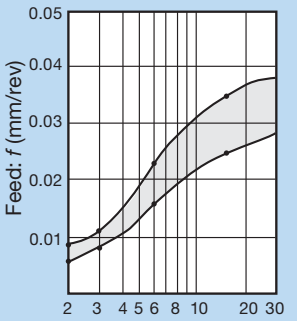
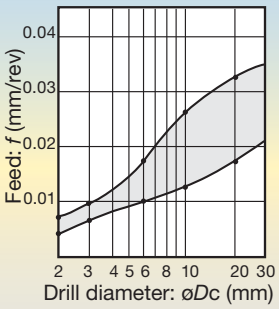


Fig. 2 Alloy steels



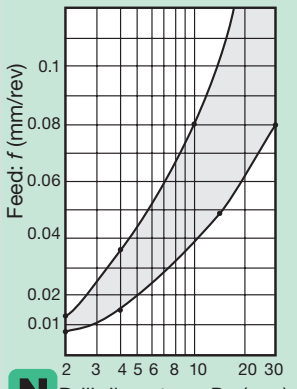
P

Fig. 3 Tool steels and other special steels



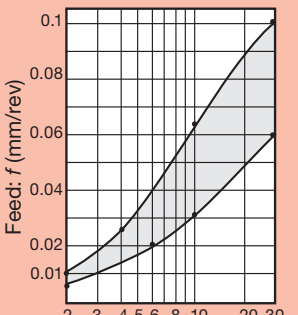
P M H

Fig. 4 Cast irons, aluminium alloys



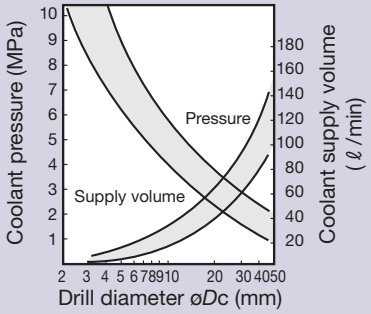
N

Fig. 5 Ductile and malleable cast irons



K

Coolant supply pressure and volume



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