

TOGLON HARD SERIES

Tolerance H7 • up to 72 HRC

**HOLE TOLERANCE H7 BY DRILLING ONLY
NO REAMING NECESSARY**

FOR HARDENED STEELS 40-72 HRC


DRILLING DEPTH 5XD TO 50XD

3 FLUTE GEOMETRY

DOUBLE TIP ANGLE

ULTRA HARD AND THIN ALT-COATING

 **IWATA TOOL**



Iwata Tool, established in 1926, is a manufacturer of high-speed steel and carbide cutting tools. Situated in Nagoya, the heartland of Japan's automotive and machining industry, Iwata Tool is surrounded by many of its customers and major Japanese universities that allow Iwata Tool to combine the development demands of production with the innovation power of highest ranked technical institutes.

In its nearly 100-year history, Iwata Tool has transformed itself many times, always adapting to the new demands of the market. One of the latest developments is the TOGLON Hard® Line. TOGLON derives from the Japanese word for spiral, while HARD refers to the applications in work materials between 45 and 72 HRC. Originally designed for drilling holes for ejector pins in the mold and die industry, TOGLON Hard® drills are now used in a wide range of applications with one common requirement: drilling with H7 tolerance in hardened steel. This feature allows to finish molds, on CNC machining centers without the need to manufacture precision holes on EDM machines as done conventionally. The result is impressive! Holes that have taken hours to EDM can now be drilled in a few minutes. The setup times on the EDM machines and back to the CNC machining centers are completely eliminated. On top of this the precision of the holes is better as the work piece can be completed in one setup.

Apart from the use of highest quality micro grain carbide and the latest developments in coating technology, TOGLON Hard® tools feature a unique cutting geometry. The high spiral flute design features sharp cutting edges but only in combination with the double angle tip TOGLON Hard® drills to perform as they do.

The ability to drill directly into hardened steel with tolerance H7 is one of the outstanding properties of TOGLON Hard® drills. The second is the extreme roundness of the drilled holes. Air sealed holes can be manufactured in hardened steels within minutes without reaming. Both time and cost reduction achieved by TOGLON Hard® drills compared to conventional EDM are substantial, to the benefit of our customers.

 **IWATA TOOL**

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Page Reference	Product Family	Product Photo	Product Code	Range diameter	Tolerance
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TOGLON HARD SP

06	TOGLON HARD SP 90° MINIATURE		TGHMSP-CBALT	0.1~1.5	-
07	TOGLON HARD SP 90°		90TGHSP-CBALD	1.0~25.0	-
08	TOGLON HARD SP 90° LONG		90LTGHSP-CBALD	3.0~12.0	-
09	TOGLON HARD SP 60°		60TGHSP-CBALD	1.0~20.0	-

TOGLON HARD DRILLS

10	TOGLON HARD DRILL MINIATURE SHORT		TGHMDS-CBALT	0.1~2.0	+0 -0.01
11	TOGLON HARD DRILL MINIATURE REGULAR		TGHMDR-CBALT	0.1~2.0	+0 -0.01
12-13	TOGLON HARD DRILL SHORT		TGHDS-CBALD	1.0~12.0	+0 -0.02
14-15	TOGLON HARD DRILL REGULAR 5D		TGHDR-CBALT5D	0.5~12.0	H7
16-17	TOGLON HARD DRILL REGULAR		TGHDR-CBALT	0.8~6.0	H7
18-19	TOGLON HARD DRILL LONG 20D		TGHDL-CBALT20D	0.8~6.0	H7
20	TOGLON HARD DRILL LONG 30D		TGHDL-CBALT30D	0.8~3.0	H7
21	TOGLON HARD DRILL LONG 50D		TGHDL-CBALT50D	0.8~2.0	H7

TOGLON HARD REAMERS

22	TOGLON HARD REAMER		TGHR-CBALT	2.99~12.02	-
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PRODUCT INDEX

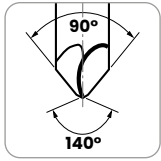
References

Flutes	Tip Angle	Machinable Length	Coating	Alloy Steel	Heat treated Steel	Hardened Steel	Hardened Steel	Titanium Alloy	Aluminium Alloy	Zirconia Glass
				SCM SCR	SKD SKS	~45 HRC	45~ HRC		Al	Machinable
FLUTES 2	TIP 90° 140°	-	ALT COATING	○	●●	●●	●●●	○	-	●●
FLUTES 3	TIP 90° 140°	-	ALD COATING	○	●●	●●	●●●	○	-	●●
FLUTES 3	TIP 90° 140°	-	ALD COATING	○	●●	●●	●●●	○	-	●●
FLUTES 3	POINT 60° 140°	-	ALD COATING	○	●●	●●	●●●	○	-	●●
FLUTES 2	TIP 90° 140°	5xD	ALT COATING	-	○	●●●	●●●	○	-	●●
FLUTES 2	TIP 90° 140°	10xD	ALT COATING	-	○	●●●	●●●	○	-	●●
FLUTES 3	TIP 90° 140°	5xD	ALD COATING	-	○	●●●	●●●	○	-	●●
FLUTES 3	TIP 90° 140°	5xD	ALT COATING	-	○	●●●	●●●	○	-	●●
FLUTES 3	TIP 90° 140°	10xD	ALT COATING	-	○	●●●	●●●	○	-	●●
FLUTES 3	TIP 90° 140°	20xD	ALT COATING	-	○	●●●	●●●	○	-	●●
FLUTES 3	TIP 90° 140°	30xD	ALT COATING	-	○	●●●	●●●	○	-	●●
FLUTES 3	TIP 90° 140°	50xD	ALT COATING	-	○	●●●	●●●	○	-	●●
FLUTES 4	CHAMFER 45°	-	ALT COATING	-	○	●●●	●●●	○	-	●●

Suitable Work Materials: Most Suitable [●●●] Suitable [●●] Possible [○]

TOGLON HARD SP 90°

ALD Coating



SOLID CARBIDE MATERIAL

ALD COATING

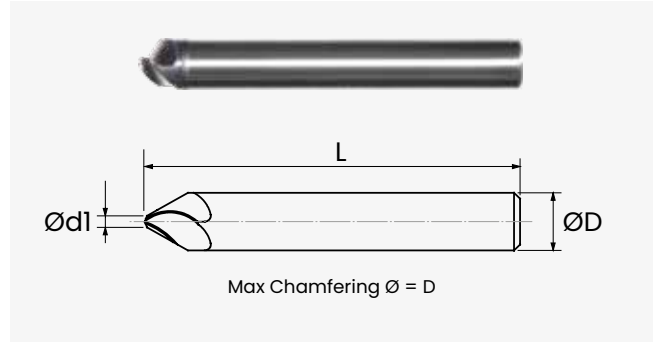
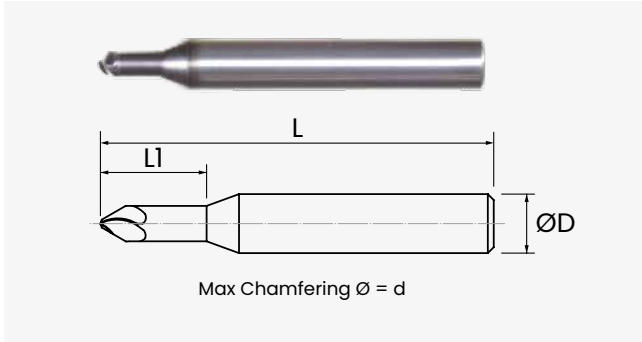
SHANK h6

FLUTES 3

TIP 90° 140°

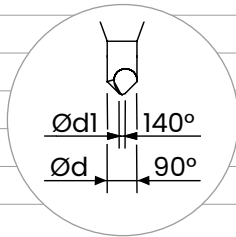


1.0~25.0



Product Code	Ø d1	Ø d	Ø D	L1	L
90TGHSPICBALD	0,2	1,0	3	3,0	40
90TGHSPI1.5CBALD	0,3	1,5	3	4,5	40
90TGHSPI2CBALD	0,4	2,0	3	6,0	40

Product Code	Ø d1	Ø d	Ø D	L1	L
90TGHSPI3CBALD	0,6	3	3	-	40
90TGHSPI4CBALD	0,8	4	4	-	40
90TGHSPI6CBALD	1,2	6	6	-	50
90TGHSPI8CBALD	1,6	8	8	-	60
90TGHSPI10CBALD	2,0	10	10	-	70
90TGHSPI12CBALD	2,4	12	12	-	75
90TGHSPI16CBALD	3,0	16	16	-	80
90TGHSPI20CBALD	4,0	20	20	-	100
90TGHSPI25CBALD	5,0	25	25	-	100



Suitable Work Materials: Most Suitable [●●●] Suitable [●●] Possible [○]

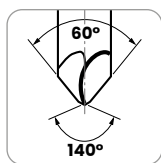
Mild Steel	Carbon Steel	Alloy Steel	Heat treated Steel	Tool Steel	Hardened Steel		Stainless Steel	Cast Iron	Ductile Cast Iron	Titanium Alloy	Aluminium Alloy	Copper	Plastic	Ceramics etc.	
SS	S45C	SCM SCR	SKD SKS	~40 HRC	~45 HRC	45~ HRC	SUS	FC	FDC		Al	Cu		Machinable	Zirconia Glass
		○	●●		●●	●●●				○				●●	

Cutting condition from page 24

TOGLON HARD SP 90°

TOGLON HARD SP 60°

ALD Coating



SOLID CARBIDE MATERIAL

ALD COATING

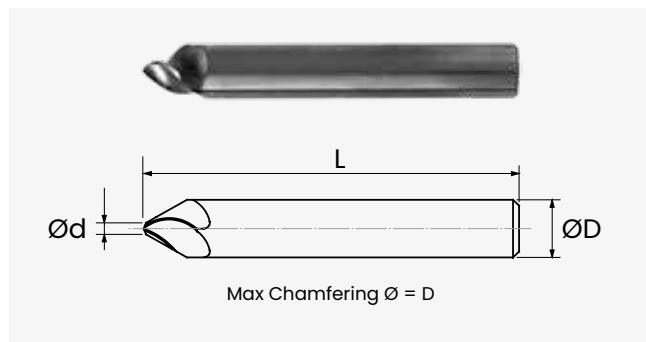
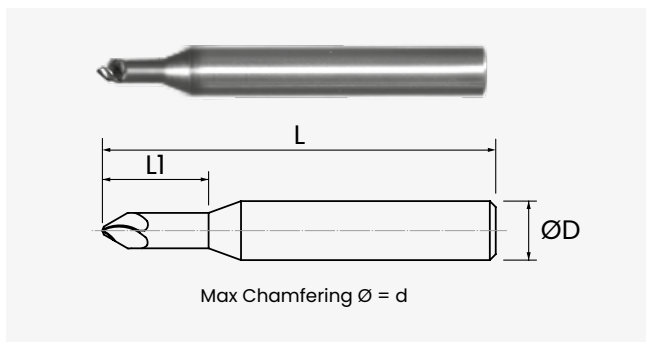
SHANK h6

FLUTES 3

POINT 60° 140°

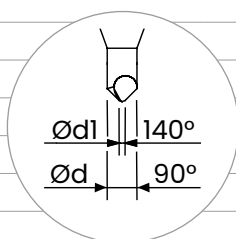


1.0~20.0



Product Code	Ø d1	Ø d	Ø D	L1	L
60TGHSPICBALD	0,2	1,0	3	3,0	40
60TGHSP1.5CBALD	0,3	1,5	3	4,5	40
60TGHSP2CBALD	0,4	2,0	3	6,0	40

Product Code	Ø d1	Ø d	Ø D	L1	L
60TGHSP3CBALD	0,6	3	3	-	40
60TGHSP4CBALD	0,8	4	4	-	40
60TGHSP6CBALD	1,2	6	6	-	50
60TGHSP8CBALD	1,6	8	8	-	60
60TGHSP10CBALD	2,0	10	10	-	70
60TGHSP12CBALD	2,4	12	12	-	75
60TGHSP16CBALD	3,0	16	16	-	80
60TGHSP20CBALD	4,0	20	20	-	100



Suitable Work Materials: Most Suitable [●●●] Suitable [●●] Possible [○]

Mild Steel	Carbon Steel	Alloy Steel	Heat treated Steel	Tool Steel	Hardened Steel		Stainless Steel	Cast Iron	Ductile Cast Iron	Titanium Alloy	Aluminium Alloy	Copper	Plastic	Ceramics etc.	
SS	S45C	SCM SCR	SKD SKS	~40 HRC	~45 HRC	45~ HRC	SUS	FC	FDC		Al	Cu		Machinable	Zirconia Glass
		○	●●		●●	●●●				○				●●	

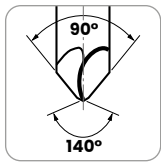
Cutting condition from page 24

TOGLON HARD SP 60°

TOGLON HARD DRILL MINIATURE SHORT



5xD • ALT Coating



SOLID CARBIDE MATERIAL

ALT COATING

SHANK h6

FLUTES 2

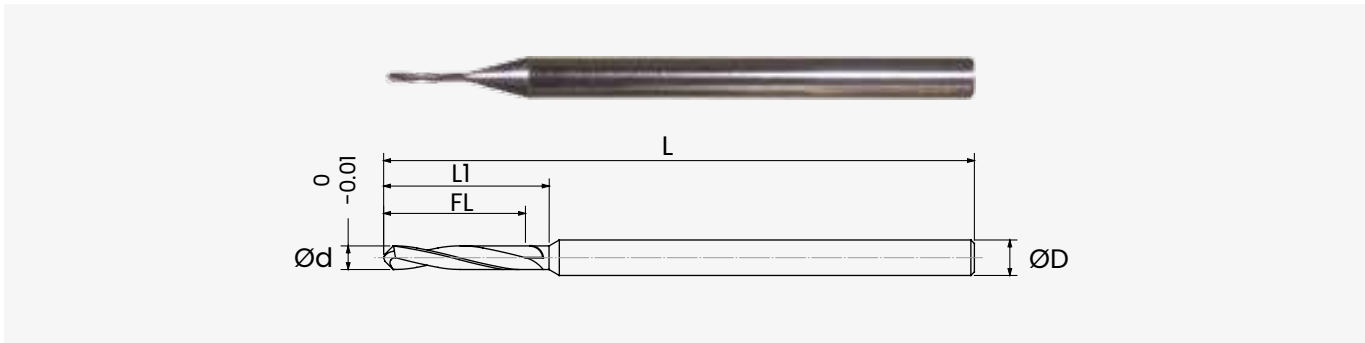
TIP 90° 140°

5xD



0.1~ 2.0

+0 -0.01



TOGLON HARD DRILL MINIATURE SHORT

Product Code	Ø d	Ø D	FL	LI	L
TGHMDS0.1CBALT	0,10	3	0,6	0,7	50
TGHMDS0.15CBALT	0,15	3	0,9	1,1	50
TGHMDS0.2CBALT	0,20	3	1,2	1,4	50
TGHMDS0.25CBALT	0,25	3	1,5	1,8	50
TGHMDS0.3CBALT	0,30	3	1,8	2,1	50
TGHMDS0.4CBALT	0,40	3	2,4	2,8	50
TGHMDS0.5CBALT	0,50	3	3,0	3,5	50
TGHMDS0.6CBALT	0,60	3	3,6	4,2	50
TGHMDS0.7CBALT	0,70	3	4,2	4,9	50
TGHMDS0.8CBALT	0,80	3	4,8	5,6	50
TGHMDS0.9CBALT	0,90	3	5,4	6,3	50
TGHMDS1CBALT	1,00	3	6,0	7,0	50
TGHMDS1.1CBALT	1,10	3	6,6	7,7	50
TGHMDS1.2CBALT	1,20	3	7,2	8,4	50
TGHMDS1.3CBALT	1,30	3	7,8	9,1	50
TGHMDS1.4CBALT	1,40	3	8,4	10,2	50
TGHMDS1.5CBALT	1,50	3	9,0	10,5	50
TGHMDS1.6CBALT	1,60	3	9,6	11,2	50
TGHMDS1.7CBALT	1,70	3	10,2	11,9	50
TGHMDS1.8CBALT	1,80	3	10,8	12,6	50

Product Code	Ø d	Ø D	FL	LI	L
TGHMDS1.9CBALT	1,90	3	11,4	13,3	50
TGHMDS2CBALT	2,00	3	12,0	14,0	50

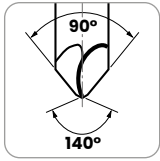
Suitable Work Materials: Most Suitable [●●●] Suitable [●●] Possible [○]

Mild Steel	Carbon Steel	Alloy Steel	Heat treated Steel	Tool Steel	Hardened Steel		Stainless Steel	Cast Iron	Ductile Cast Iron	Titanium Alloy	Aluminium Alloy	Copper	Plastic	Ceramics etc.	
SS	S45C	SCM SCR	SKD SKS	~40 HRC	~45 HRC	45~ HRC	SUS	FC	FDC		Al	Cu		Machinable	Zirconia Glass
			○		●●●	●●●				○				●●	

Cutting condition from page 24

TOGLON HARD DRILL MINIATURE REGULAR

10xD • ALT Coating



SOLID CARBIDE MATERIAL

ALT COATING

SHANK h6

FLUTES 2

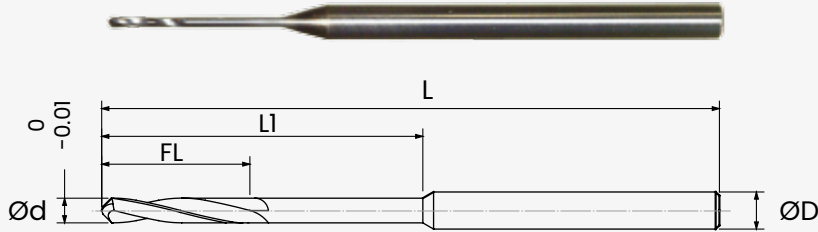
TIP 90°/140°

10xD



0.1~2.0

+0/-0.01



Product Code	Ø d	Ø D	FL	LI	L
TGHMDR0.1CBALT	0,10	3	0,6	1,3	50
TGHMDR0.15CBALT	0,15	3	0,9	2,0	50
TGHMDR0.2CBALT	0,20	3	1,2	2,6	50
TGHMDR0.25CBALT	0,25	3	1,5	3,3	50
TGHMDR0.3CBALT	0,30	3	1,8	3,9	50
TGHMDR0.4CBALT	0,40	3	2,4	5,2	50
TGHMDR0.5CBALT	0,50	3	3,0	6,5	50
TGHMDR0.6CBALT	0,60	3	3,6	7,8	50
TGHMDR0.7CBALT	0,70	3	4,2	9,1	50
TGHMDR0.8CBALT	0,80	3	4,8	10,4	50
TGHMDR0.9CBALT	0,90	3	5,4	11,7	50
TGHMDR1CBALT	1,00	3	6,0	13,0	50
TGHMDR1.1CBALT	1,10	3	6,6	14,3	50
TGHMDR1.2CBALT	1,20	3	7,2	15,6	50
TGHMDR1.3CBALT	1,30	3	7,8	16,9	50
TGHMDR1.4CBALT	1,40	3	8,4	18,2	50
TGHMDR1.5CBALT	1,50	3	9,0	19,5	50
TGHMDR1.6CBALT	1,60	3	9,6	20,8	50
TGHMDR1.7CBALT	1,70	3	10,2	22,1	50
TGHMDR1.8CBALT	1,80	3	10,8	23,4	50

Product Code	Ø d	Ø D	FL	LI	L
TGHMDR1.9CBALT	1,90	3	11,4	24,7	50
TGHMDR2CBALT	2,00	3	12,0	26,0	50

Suitable Work Materials: Most Suitable [●●●] Suitable [●●] Possible [○]

Mild Steel	Carbon Steel	Alloy Steel	Heat treated Steel	Tool Steel	Hardened Steel		Stainless Steel	Cast Iron	Ductile Cast Iron	Titanium Alloy	Aluminium Alloy	Copper	Plastic	Ceramics etc.	
SS	S45C	SCM SCR	SKD SKS	~40 HRC	~45 HRC	45~ HRC	SUS	FC	FDC		Al	Cu		Machi-nable	Zirconia Glass
			○		●●●	●●●				○				●●	

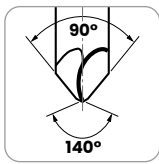
Cutting condition from page 24

TOGLON HARD DRILL MINIATURE REGULAR

TOGLON HARD DRILL SHORT

5xD • ALD Coating

IWATA TOOL



SOLID CARBIDE MATERIAL

ALD COATING

SHANK h6

FLUTES 3

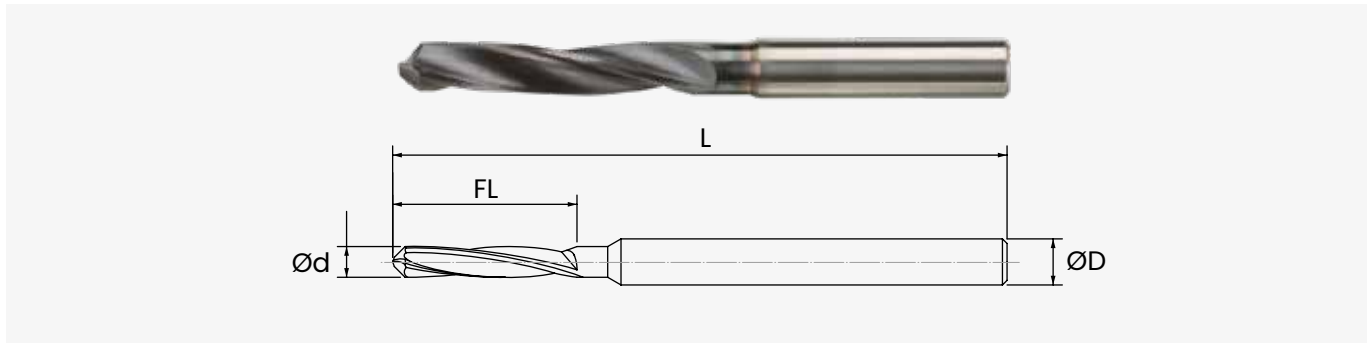
TIP 90° / 140°

5xD



1.0~12.0

+0 / -0.02



TOGLON HARD DRILL SHORT

Product Code	Ø d	Ø D	FL	L
TGHDS1CBALD	1,0	3	6	50
TGHDS1.1CBALD	1,1	3	7	50
TGHDS1.2CBALD	1,2	3	7	50
TGHDS1.3CBALD	1,3	3	8	50
TGHDS1.4CBALD	1,4	3	8	50
TGHDS1.5CBALD	1,5	3	9	50
TGHDS1.6CBALD	1,6	3	10	50
TGHDS1.7CBALD	1,7	3	10	50
TGHDS1.8CBALD	1,8	3	11	50
TGHDS1.9CBALD	1,9	3	11	50
TGHDS2CBALD	2,0	4	12	60
TGHDS2.1CBALD	2,1	4	12	60
TGHDS2.2CBALD	2,2	4	13	60
TGHDS2.3CBALD	2,3	4	13	60
TGHDS2.4CBALD	2,4	4	14	60
TGHDS2.5CBALD	2,5	4	14	60
TGHDS2.6CBALD	2,6	4	14	60
TGHDS2.7CBALD	2,7	4	16	60
TGHDS2.8CBALD	2,8	4	16	60
TGHDS2.9CBALD	2,9	4	16	60

Product Code	Ø d	Ø D	FL	L
TGHDS3CBALD	3,0	4	16	60
TGHDS3.1CBALD	3,1	4	18	60
TGHDS3.2CBALD	3,2	4	18	60
TGHDS3.3CBALD	3,3	4	18	60
TGHDS3.4CBALD	3,4	4	20	60
TGHDS3.5CBALD	3,5	4	20	60
TGHDS3.6CBALD	3,6	4	21	60
TGHDS3.7CBALD	3,7	4	21	60
TGHDS3.8CBALD	3,8	4	22	60
TGHDS3.9CBALD	3,9	4	22	60
TGHDS4CBALD	4,0	4	22	60
TGHDS4.1CBALD	4,1	6	24	60
TGHDS4.2CBALD	4,2	6	24	60
TGHDS4.3CBALD	4,3	6	24	60
TGHDS4.4CBALD	4,4	6	24	60
TGHDS4.5CBALD	4,5	6	24	60
TGHDS4.6CBALD	4,6	6	25	60
TGHDS4.7CBALD	4,7	6	25	60
TGHDS4.8CBALD	4,8	6	25	60
TGHDS4.9CBALD	4,9	6	25	60

Continue >>

Suitable Work Materials: Most Suitable [●●●] Suitable [●●] Possible [○]

Mild Steel	Carbon Steel	Alloy Steel	Heat treated Steel	Tool Steel	Hardened Steel		Stainless Steel	Cast Iron	Ductile Cast Iron	Titanium Alloy	Aluminium Alloy	Copper	Plastic	Ceramics etc.	
SS	S45C	SCM SCR	SKD SKS	~40 HRC	~45 HRC	45~ HRC	SUS	FC	FDC		Al	Cu		Machi-nable	Zirconia Glass
			○		●●●	●●●				○				●●	

Cutting condition from page 24

TOGLON HARD DRILL SHORT

5xD • ALD Coating

 IWATA TOOL

Product Code	Ø d	Ø D	FL	L
TGHDS5CBALD	5,0	6	26	60
TGHDS5.1CBALD	5,1	6	26	60
TGHDS5.2CBALD	5,2	6	26	60
TGHDS5.3CBALD	5,3	6	26	60
TGHDS5.4CBALD	5,4	6	26	60
TGHDS5.5CBALD	5,5	6	28	60
TGHDS5.6CBALD	5,6	6	28	60
TGHDS5.7CBALD	5,7	6	28	60
TGHDS5.8CBALD	5,8	6	28	60
TGHDS5.9CBALD	5,9	6	28	60
TGHDS6CBALD	6,0	6	28	60
TGHDS6.1CBALD	6,1	8	31	80
TGHDS6.2CBALD	6,2	8	31	80
TGHDS6.5CBALD	6,5	8	31	80
TGHDS6.8CBALD	6,8	8	34	80
TGHDS6.9CBALD	6,9	8	34	80
TGHDS7CBALD	7,0	8	34	80
TGHDS7.5CBALD	7,5	8	34	80
TGHDS7.8CBALD	7,8	8	37	80
TGHDS7.9CBALD	7,9	8	37	80

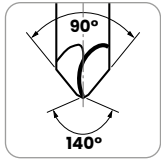
Product Code	Ø d	Ø D	FL	L
TGHDS8CBALD	8,0	8	37	80
TGHDS8.5CBALD	8,5	10	37	100
TGHDS8.6CBALD	8,6	10	40	100
TGHDS8.7CBALD	8,7	10	40	100
TGHDS8.8CBALD	8,8	10	40	100
TGHDS9CBALD	9	10	40	100
TGHDS9.5CBALD	9,5	10	40	100
TGHDS9.6CBALD	9,6	10	43	100
TGHDS9.7CBALD	9,7	10	43	100
TGHDS9.8CBALD	9,8	10	43	100
TGHDS10CBALD	10	10	43	100
TGHDS10.3CBALD	10,3	12	43	110
TGHDS10.4CBALD	10,4	12	43	110
TGHDS10.5CBALD	10,5	12	43	110
TGHDS10.8CBALD	10,8	12	47	110
TGHDS11CBALD	11	12	47	110
TGHDS11.5CBALD	11,5	12	47	110
TGHDS11.8CBALD	11,8	12	47	110
TGHDS12CBALD	12	12	51	110

TOGLON HARD DRILL SHORT

Cutting condition from page 24

TOGLON HARD DRILL REGULAR 5D

5xD • Tolerance H7 • ALT Coating



SOLID CARBIDE MATERIAL

ALT COATING

SHANK h6

FLUTES 3

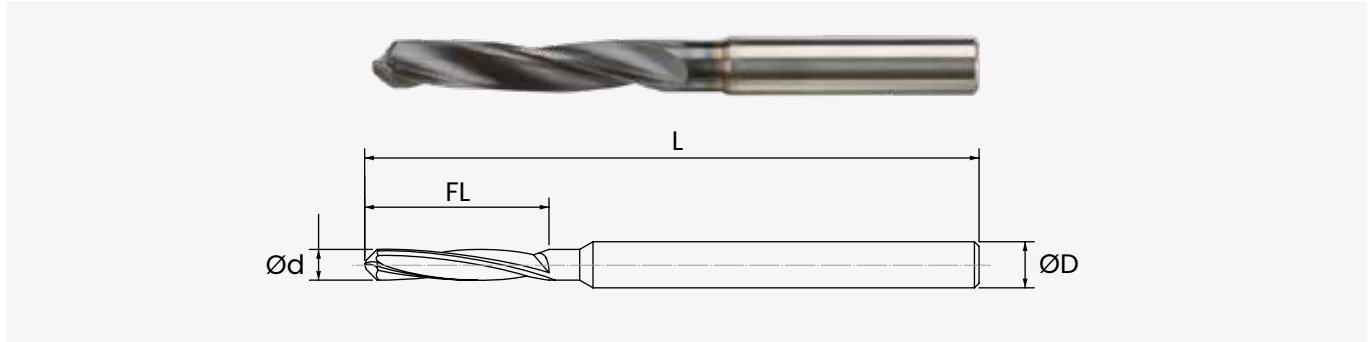
TIP 90° 140°

5xD

R

0.5~12.0

H7



TOGLON HARD DRILL REGULAR 5D

Product Code	Ø d	Ø D	FL	L
TGHDR0.5CBALT5D	0,5	3	3,0	40
TGHDR0.6CBALT5D	0,6	3	3,6	40
TGHDR0.7CBALT5D	0,7	3	4,2	40
TGHDR0.8CBALT5D	0,8	3	4,8	40
TGHDR0.9CBALT5D	0,9	3	5,4	40
TGHDR1.0CBALT5D	1,0	3	6,0	50
TGHDR1.1CBALT5D	1,1	3	6,6	50
TGHDR1.2CBALT5D	1,2	3	7,2	50
TGHDR1.3CBALT5D	1,3	3	7,8	50
TGHDR1.4CBALT5D	1,4	3	8,4	50
TGHDR1.5CBALT5D	1,5	3	9,0	50
TGHDR1.6CBALT5D	1,6	3	9,6	50
TGHDR1.7CBALT5D	1,7	3	10,2	50
TGHDR1.8CBALT5D	1,8	3	10,8	50
TGHDR1.9CBALT5D	1,9	3	11,4	50
TGHDR2.0CBALT5D	2,0	3	12,0	50
TGHDR2.1CBALT5D	2,1	4	12,6	60
TGHDR2.2CBALT5D	2,2	4	13,2	60
TGHDR2.3CBALT5D	2,3	4	13,8	60
TGHDR2.4CBALT5D	2,4	4	14,4	60

Product Code	Ø d	Ø D	FL	L
TGHDR2.5CBALT5D	2,5	4	15,0	60
TGHDR2.6CBALT5D	2,6	4	15,6	60
TGHDR2.7CBALT5D	2,7	4	16,2	60
TGHDR2.8CBALT5D	2,8	4	16,8	60
TGHDR2.9CBALT5D	2,9	4	17,4	60
TGHDR3.0CBALT5D	3,0	4	18,0	60
TGHDR3.1CBALT5D	3,1	4	18,6	60
TGHDR3.2CBALT5D	3,2	4	19,2	60
TGHDR3.3CBALT5D	3,3	4	19,8	60
TGHDR3.4CBALT5D	3,4	4	20,4	60
TGHDR3.5CBALT5D	3,5	4	21,0	60
TGHDR3.6CBALT5D	3,6	6	21,6	80
TGHDR3.7CBALT5D	3,7	6	22,2	80
TGHDR3.8CBALT5D	3,8	6	22,8	80
TGHDR3.9CBALT5D	3,9	6	23,4	80
TGHDR4.0CBALT5D	4,0	6	24,0	80
TGHDR4.1CBALT5D	4,1	6	24,6	80
TGHDR4.2CBALT5D	4,2	6	25,2	80
TGHDR4.3CBALT5D	4,3	6	25,8	80
TGHDR4.4CBALT5D	4,4	6	26,4	80

Continue >>

Suitable Work Materials: Most Suitable [●●●] Suitable [●●] Possible [○]

Mild Steel	Carbon Steel	Alloy Steel	Heat treated Steel	Tool Steel	Hardened Steel		Stainless Steel	Cast Iron	Ductile Cast Iron	Titanium Alloy	Aluminium Alloy	Copper	Plastic	Ceramics etc.	
SS	S45C	SCM SCR	SKD SKS	~40 HRC	~45 HRC	45~ HRC	SUS	FC	FDC		Al	Cu		Machinable	Zirconia Glass
			○		●●●	●●●				○				●●	

Cutting condition from page 24

TOGLON HARD DRILL REGULAR 5D

5xD • Tolerance H7 • ALT Coating

 IWATA TOOL

Product Code	Ø d	Ø D	FL	L
TGHDR4.5CBALT5D	4,5	6	27,0	80
TGHDR4.6CBALT5D	4,6	6	27,6	80
TGHDR4.7CBALT5D	4,7	6	28,2	80
TGHDR4.8CBALT5D	4,8	6	28,8	80
TGHDR4.9CBALT5D	4,9	6	29,4	80
TGHDR5CBALT5D	5,0	6	30,0	80
TGHDR5.1CBALT5D	5,1	6	30,6	80
TGHDR5.2CBALT5D	5,2	6	31,2	80
TGHDR5.3CBALT5D	5,3	6	31,8	80
TGHDR5.4CBALT5D	5,4	6	32,4	80
TGHDR5.5CBALT5D	5,5	6	33,0	80
TGHDR5.6CBALT5D	5,6	8	33,6	100
TGHDR5.7CBALT5D	5,7	8	34,2	100
TGHDR5.8CBALT5D	5,8	8	34,8	100
TGHDR5.9CBALT5D	5,9	8	35,4	100
TGHDR6CBALT5D	6,0	8	36,0	100
TGHDR6.1CBALT5D	6,1	8	36,6	100
TGHDR6.2CBALT5D	6,2	8	37,2	100
TGHDR6.3CBALT5D	6,3	8	37,8	100
TGHDR6.4CBALT5D	6,4	8	38,4	100
TGHDR6.5CBALT5D	6,5	8	39,0	100
TGHDR6.6CBALT5D	6,6	8	39,6	100
TGHDR6.7CBALT5D	6,7	8	40,2	100
TGHDR6.8CBALT5D	6,8	8	40,8	100
TGHDR6.9CBALT5D	6,9	8	41,4	100
TGHDR7CBALT5D	7,0	8	42,0	100
TGHDR7.1CBALT5D	7,1	8	42,6	100
TGHDR7.2CBALT5D	7,2	8	43,2	100
TGHDR7.3CBALT5D	7,3	8	43,8	100
TGHDR7.4CBALT5D	7,4	8	44,4	100
TGHDR7.5CBALT5D	7,5	8	45,0	100
TGHDR7.6CBALT5D	7,6	8	45,6	100
TGHDR7.7CBALT5D	7,7	10	46,2	110
TGHDR7.8CBALT5D	7,8	10	46,8	110
TGHDR7.9CBALT5D	7,9	10	47,4	110
TGHDR8CBALT5D	8,0	10	48,0	110
TGHDR8.1CBALT5D	8,1	10	48,6	110
TGHDR8.2CBALT5D	8,2	10	49,2	110

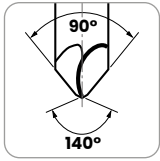
Product Code	Ø d	Ø D	FL	L
TGHDR8.3CBALT5D	8,3	10	49,8	110
TGHDR8.4CBALT5D	8,4	10	50,4	110
TGHDR8.5CBALT5D	8,5	10	51,0	110
TGHDR8.6CBALT5D	8,6	10	51,6	110
TGHDR8.7CBALT5D	8,7	10	52,2	110
TGHDR8.8CBALT5D	8,8	10	52,8	110
TGHDR8.9CBALT5D	8,9	10	53,4	110
TGHDR9CBALT5D	9,0	10	54,0	110
TGHDR9.1CBALT5D	9,1	10	54,6	110
TGHDR9.2CBALT5D	9,2	10	55,2	110
TGHDR9.3CBALT5D	9,3	10	55,8	110
TGHDR9.4CBALT5D	9,4	12	56,4	140
TGHDR9.5CBALT5D	9,5	12	57,0	140
TGHDR9.6CBALT5D	9,6	12	57,6	140
TGHDR9.7CBALT5D	9,7	12	58,2	140
TGHDR9.8CBALT5D	9,8	12	58,8	140
TGHDR9.9CBALT5D	9,9	12	59,4	140
TGHDR10CBALT5D	10,0	12	60,0	140
TGHDR10.1CBALT5D	10,1	12	60,6	140
TGHDR10.2CBALT5D	10,2	12	61,2	140
TGHDR10.3CBALT5D	10,3	12	61,8	140
TGHDR10.4CBALT5D	10,4	12	62,4	140
TGHDR10.5CBALT5D	10,5	12	63,0	140
TGHDR10.6CBALT5D	10,6	12	63,6	140
TGHDR10.7CBALT5D	10,7	12	64,2	140
TGHDR10.8CBALT5D	10,8	12	64,8	140
TGHDR10.9CBALT5D	10,9	12	65,4	140
TGHDR11CBALT5D	11,0	12	66,0	140
TGHDR11.1CBALT5D	11,1	12	66,6	140
TGHDR11.2CBALT5D	11,2	12	67,2	140
TGHDR11.3CBALT5D	11,3	12	67,8	140
TGHDR11.4CBALT5D	11,4	14	68,4	160
TGHDR11.5CBALT5D	11,5	14	69,0	160
TGHDR11.6CBALT5D	11,6	14	69,6	160
TGHDR11.7CBALT5D	11,7	14	70,2	160
TGHDR11.8CBALT5D	11,8	14	70,8	160
TGHDR11.9CBALT5D	11,9	14	71,4	160
TGHDR12CBALT5D	12,0	14	72,0	160

TOGLON HARD DRILL REGULAR 5D

Cutting condition from page 24

TOGLON HARD DRILL REGULAR

10xD • Tolerance H7 • ALT Coating



SOLID CARBIDE MATERIAL

ALT COATING

SHANK h6

FLUTES 3

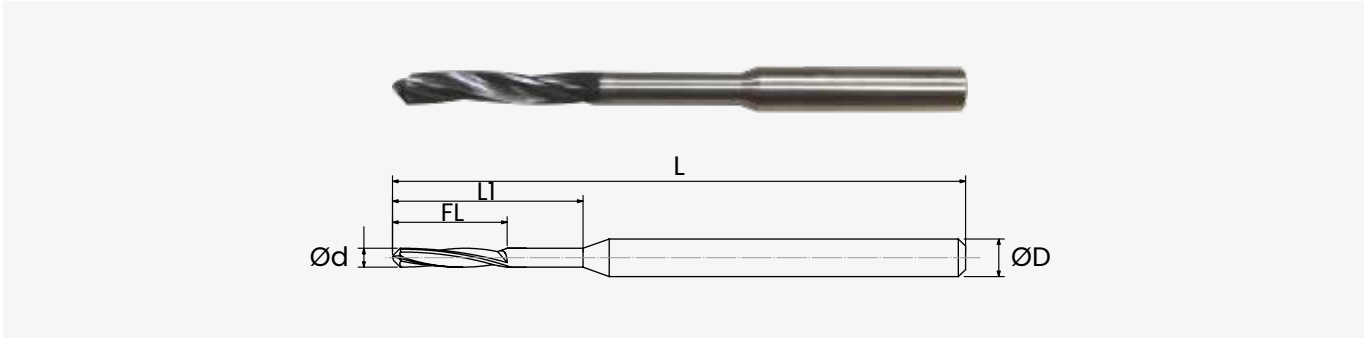
TIP 90° 140°

10xD



0.8~6.0

H7



TOGLON HARD DRILL REGULAR

Product Code	Ø d	Ø D	FL	L1	L
TGHDR0.8CBALT	0,8	3	4,8	9,6	50
TGHDR0.9CBALT	0,9	3	5,4	10,8	50
TGHDR1CBALT	1,0	3	6,0	12,0	50
TGHDR1.1CBALT	1,1	3	6,6	13,2	50
TGHDR1.2CBALT	1,2	3	7,2	14,4	50
TGHDR1.3CBALT	1,3	3	7,8	15,6	50
TGHDR1.4CBALT	1,4	3	8,4	16,8	50
TGHDR1.5CBALT	1,5	3	9,0	18,0	50
TGHDR1.6CBALT	1,6	3	9,6	19,2	50
TGHDR1.7CBALT	1,7	3	10,2	20,4	50
TGHDR1.8CBALT	1,8	3	10,8	21,6	50
TGHDR1.9CBALT	1,9	3	11,4	22,8	50
TGHDR2CBALT	2,0	4	12,0	24,0	60
TGHDR2.1CBALT	2,1	4	12,6	25,2	60
TGHDR2.2CBALT	2,2	4	13,2	26,4	60
TGHDR2.3CBALT	2,3	4	13,8	27,6	60
TGHDR2.4CBALT	2,4	4	14,4	28,8	60
TGHDR2.5CBALT	2,5	4	15,0	30,0	60
TGHDR2.6CBALT	2,6	4	15,6	31,2	60
TGHDR2.7CBALT	2,7	4	16,2	32,4	60

Product Code	Ø d	Ø D	FL	L1	L
TGHDR2.8CBALT	2,8	4	16,8	33,6	60
TGHDR2.9CBALT	2,9	4	17,4	34,8	60
TGHDR3CBALT	3,0	4	18,0	36,0	60
TGHDR3.1CBALT	3,1	4	18,6	37,2	80
TGHDR3.2CBALT	3,2	4	19,2	38,4	80
TGHDR3.3CBALT	3,3	4	19,8	39,6	80
TGHDR3.4CBALT	3,4	4	20,4	40,8	80
TGHDR3.5CBALT	3,5	4	21,0	42,0	80
TGHDR3.6CBALT	3,6	6	21,6	43,2	100
TGHDR3.7CBALT	3,7	6	22,2	44,4	100
TGHDR3.8CBALT	3,8	6	22,8	45,6	100
TGHDR3.9CBALT	3,9	6	23,4	46,8	100
TGHDR4CBALT	4,0	6	24,0	48,0	100
TGHDR4.1CBALT	4,1	6	24,6	49,2	100
TGHDR4.2CBALT	4,2	6	25,2	50,4	100
TGHDR4.3CBALT	4,3	6	25,8	51,6	100
TGHDR4.4CBALT	4,4	6	26,4	52,8	100
TGHDR4.5CBALT	4,5	6	27,0	54,0	100
TGHDR4.6CBALT	4,6	6	27,6	55,2	100
TGHDR4.7CBALT	4,7	6	28,2	56,4	100

Continue >>

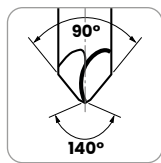
Suitable Work Materials: Most Suitable [●●●] Suitable [●●] Possible [○]

Mild Steel	Carbon Steel	Alloy Steel	Heat treated Steel	Tool Steel	Hardened Steel		Stainless Steel	Cast Iron	Ductile Cast Iron	Titanium Alloy	Aluminium Alloy	Copper	Plastic	Ceramics etc.	
SS	S45C	SCM SCR	SKD SKS	~40 HRC	~45 HRC	45~ HRC	SUS	FC	FDC		Al	Cu		Machinable	Zirconia Glass
			○		●●●	●●●				○				●●	

Cutting condition from page 24

TOGLON HARD DRILL LONG 20D

20xD • Tolerance H7 • ALT Coating



SOLID CARBIDE MATERIAL

ALT COATING

SHANK h6

FLUTES 3

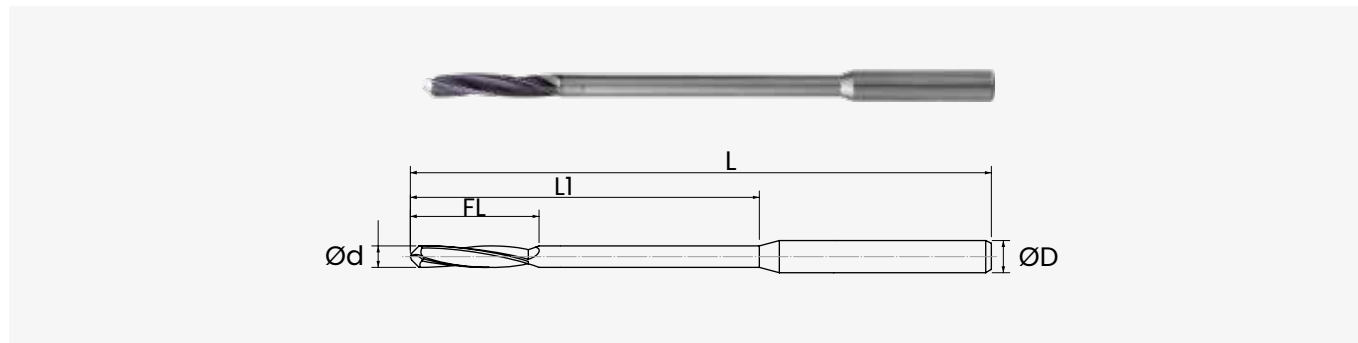
TIP 90°/140°

20xD

R

0.8~6.0

H7



TOGLON HARD DRILL LONG 20D

Product Code	Ø d	Ø D	FL	L1	L
TGHDL0.8CBALT20D	0,8	3	4,8	18,4	50
TGHDL0.9CBALT20D	0,9	3	5,4	20,7	50
TGHDL1.0CBALT20D	1,0	4	6,0	23,0	60
TGHDL1.1CBALT20D	1,1	4	6,6	25,3	60
TGHDL1.2CBALT20D	1,2	4	7,2	27,6	60
TGHDL1.3CBALT20D	1,3	4	7,8	29,9	60
TGHDL1.4CBALT20D	1,4	4	8,4	32,2	60
TGHDL1.5CBALT20D	1,5	4	9,0	34,5	60
TGHDL1.6CBALT20D	1,6	4	9,6	36,8	80
TGHDL1.7CBALT20D	1,7	4	10,2	39,1	80
TGHDL1.8CBALT20D	1,8	4	10,8	41,4	80
TGHDL1.9CBALT20D	1,9	4	11,4	43,7	80
TGHDL2.0CBALT20D	2,0	4	12,0	46,0	80
TGHDL2.1CBALT20D	2,1	4	12,6	48,3	80
TGHDL2.2CBALT20D	2,2	4	13,2	50,6	80
TGHDL2.3CBALT20D	2,3	4	13,8	52,9	80
TGHDL2.4CBALT20D	2,4	4	14,4	55,2	80
TGHDL2.5CBALT20D	2,5	6	15,0	57,5	100
TGHDL2.6CBALT20D	2,6	6	15,6	59,8	100
TGHDL2.7CBALT20D	2,7	6	16,2	62,1	100

Product Code	Ø d	Ø D	FL	L1	L
TGHDL2.8CBALT20D	2,8	6	16,8	64,4	100
TGHDL2.9CBALT20D	2,9	6	17,4	66,7	100
TGHDL3.0CBALT20D	3,0	6	18,0	69,0	100
TGHDL3.1CBALT20D	3,1	6	18,6	71,3	120
TGHDL3.2CBALT20D	3,2	6	19,2	73,6	120
TGHDL3.3CBALT20D	3,3	6	19,8	75,9	120
TGHDL3.4CBALT20D	3,4	6	20,4	78,2	120
TGHDL3.5CBALT20D	3,5	6	21,0	80,5	120
TGHDL3.6CBALT20D	3,6	6	21,6	82,8	120
TGHDL3.7CBALT20D	3,7	6	22,2	85,1	120
TGHDL3.8CBALT20D	3,8	6	22,8	87,4	120
TGHDL3.9CBALT20D	3,9	6	23,4	89,7	120
TGHDL4.0CBALT20D	4,0	6	24,0	92,0	120
TGHDL4.1CBALT20D	4,1	6	24,6	94,3	150
TGHDL4.2CBALT20D	4,2	6	25,2	96,6	150
TGHDL4.3CBALT20D	4,3	6	25,8	98,9	150
TGHDL4.4CBALT20D	4,4	6	26,4	101,2	150
TGHDL4.5CBALT20D	4,5	6	27,0	103,5	150
TGHDL4.6CBALT20D	4,6	6	27,6	105,8	150
TGHDL4.7CBALT20D	4,7	6	28,2	108,1	150

Continue >>

Suitable Work Materials: Most Suitable [●●●] Suitable [●●] Possible [○]

Mild Steel	Carbon Steel	Alloy Steel	Heat treated Steel	Tool Steel	Hardened Steel		Stainless Steel	Cast Iron	Ductile Cast Iron	Titanium Alloy	Aluminium Alloy	Copper	Plastic	Ceramics etc.	
SS	S45C	SCM SCR	SKD SKS	~40 HRC	~45 HRC	45~ HRC	SUS	FC	FDC		Al	Cu		Mach-nable	Zirconia Glass
			○		●●●	●●●				○				●●	

Cutting condition from page 24

TOGLON HARD DRILL LONG 20D

20xD • Tolerance H7 • ALT Coating

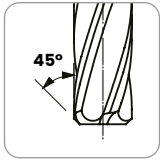
 IWATA TOOL

Product Code	Ø d	Ø D	FL	L1	L
TGHDL4.8CBALT20D	4,8	6	28,8	110,4	150
TGHDL4.9CBALT20D	4,9	6	29,4	112,7	150
TGHDL5CBALT20D	5,0	6	30,0	115,0	150
TGHDL5.1CBALT20D	5,1	8	30,6	117,3	200
TGHDL5.2CBALT20D	5,2	8	31,2	119,6	200
TGHDL5.3CBALT20D	5,3	8	31,8	121,9	200
TGHDL5.4CBALT20D	5,4	8	32,4	124,2	200
TGHDL5.5CBALT20D	5,5	8	33,0	126,5	200
TGHDL5.6CBALT20D	5,6	8	33,6	128,8	200
TGHDL5.7CBALT20D	5,7	8	34,2	131,1	200
TGHDL5.8CBALT20D	5,8	8	34,8	133,4	200

Product Code	Ø d	Ø D	FL	L1	L
TGHDL5.9CBALT20D	5,9	8	35,4	135,7	200
TGHDL6CBALT20D	6,0	8	36,0	138	200

TOGLON HARD REAMER

ALT Coating



SOLID CARBIDE MATERIAL

ALT COATING

SHANK h6

FLUTES 4

CHAMFER 45°



2.99~12.02

H7

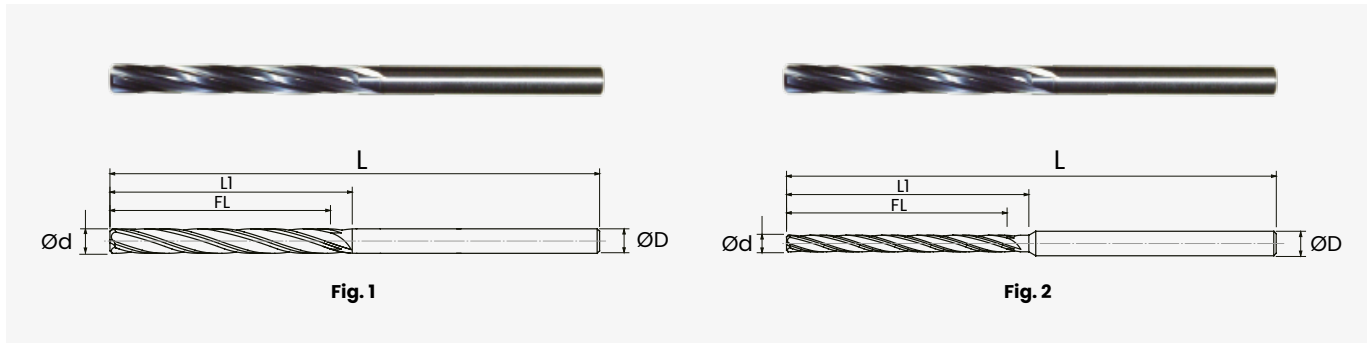


Fig. 1

Fig. 2

Product Code	Ø d	Ø D	FL	L1	L	Tol.	Fig.
TGHR2.99CBALT	2,99	4	40	44	80	A	2
TGHR3.00CBALT	3,00	4	40	44	80	A	2
TGHR3.01CBALT	3,01	4	40	44	80	A	2
TGHR3.02CBALT	3,02	4	40	44	80	A	2
TGHR3.99CBALT	3,99	4	40	44	80	B	1
TGHR4.00CBALT	4,00	4	40	44	80	B	1
TGHR4.01CBALT	4,01	4	40	44	80	B	1
TGHR4.02CBALT	4,02	4	40	44	80	B	1
TGHR4.99CBALT	4,99	6	50	57	100	B	2
TGHR5.00CBALT	5,00	6	50	57	100	B	2
TGHR5.01CBALT	5,01	6	50	57	100	B	2
TGHR5.02CBALT	5,02	6	50	57	100	B	2
TGHR5.99CBALT	5,99	6	50	57	100	B	1
TGHR6.00CBALT	6,00	6	50	57	100	B	1
TGHR6.01CBALT	6,01	6	50	57	100	B	1
TGHR6.02CBALT	6,02	6	50	57	100	B	1
TGHR6.99CBALT	6,99	8	50	60	100	C	2
TGHR7.00CBALT	7,00	8	50	60	100	C	2
TGHR7.01CBALT	7,01	8	50	60	100	C	2
TGHR7.02CBALT	7,02	8	50	60	100	C	2

Product Code	Ø d	Ø D	FL	L1	L	Tol.	Fig.
TGHR7.99CBALT	7,99	8	50	60	100	C	1
TGHR8.00CBALT	8,00	8	50	60	100	C	1
TGHR8.01CBALT	8,01	8	50	60	100	C	1
TGHR8.02CBALT	8,02	8	50	60	100	C	1
TGHR8.99CBALT	8,99	10	60	73	120	C	2
TGHR9.00CBALT	9,00	10	60	73	120	C	2
TGHR9.01CBALT	9,01	10	60	73	120	C	2
TGHR9.02CBALT	9,02	10	60	73	120	C	2
TGHR9.99CBALT	9,99	10	60	73	120	C	1
TGHR10.00CBALT	10,00	10	60	73	120	C	1
TGHR10.01CBALT	10,01	10	60	73	120	C	1
TGHR10.02CBALT	10,02	10	60	73	120	C	1
TGHR10.99CBALT	10,99	12	70	86	140	D	2
TGHR11.00CBALT	11,00	12	70	86	140	D	2
TGHR11.01CBALT	11,01	12	70	86	140	D	2
TGHR11.02CBALT	11,02	12	70	86	140	D	2
TGHR11.99CBALT	11,99	12	70	86	140	D	1
TGHR12.00CBALT	12,00	12	70	86	140	D	1
TGHR12.01CBALT	12,01	12	70	86	140	D	1
TGHR12.02CBALT	12,02	12	70	86	140	D	1

Ø D Tolerance	A		B		C		D	
	+0.007	+0.002	+0.009	+0.003	+0.011	+0.004	+0.013	+0.006

Suitable Work Materials: Most Suitable [●●●] Suitable [●●] Possible [○]

Mild Steel	Carbon Steel	Alloy Steel	Heat treated Steel	Tool Steel	Hardened Steel		Stainless Steel	Cast Iron	Ductile Cast Iron	Titanium Alloy	Aluminium Alloy	Copper	Plastic	Ceramics etc.	
SS	S45C	SCM SCR	SKD SKS	~40 HRC	~45 HRC	45~ HRC	SUS	FC	FDC		Al	Cu		Machinable	Zirconia Glass
			○		●●●	●●●				○				●●	

Cutting condition from page 24

TOGLON HARD REAMER



△ IWATA TOOL

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TOGLON HARD SP 90° MINIATURE

CUTTING CONDITIONS



Work Material	50~60 HRC Hardened Steels (SKD, HSS)
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V_c	10-30 m/min
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Max chamfering diameter mm	Speed Min-1		Feed (drilling) Mm/rev-1		Feed (V grooving) Mm/rev-1	
	Min	Max	Min	Max	Min	Max
0,3	10600	31800	0,002	0,010	0,003	0,012
0,5	6400	1900	0,005	0,015	0,010	0,020
1,0	3200	9500	0,010	0,030	0,020	0,040
1,5	2100	6400	0,020	0,040	0,030	0,050

PLEASE OBSERVE WHEN CHOOSING THE CUTTING CONDITIONS

- The above values are standard conditions. They need to be adapted for optimal use of the tools.
- For drilling please use ample water soluble coolant or oil mist.
- Please lower the speed when working conditions are not stable (vibrations, moving of work piece, etc.).
- If the recommended cutting speed exceeds the maximum speed of the machine used, please use the maximum speed of the machine and adjust the other work parameters accordingly.
- For smoother surfaces please decrease the feed rate (this may cause shorter tool life).
- Drilling without step cycles is possible.



- Please chose the size of the centering drill equal to the drill diameter. If this size does not exist please chose the next bigger size.

For example:

For TGHDR5.2CBALT please chose 90TGHSP6CBALD

- The drilling depth of the center drill is calculated by 0.3 x the diameter of the DRILL (not of the Center Drill).

For example:

For drilling a bore of diameter 5.2 mm please use the center drill 90TGHSP6CBALD and a depth of 0.3 x 5.2 = 1,56 mm



- For centering a Toglon Hard Drill always use 90° Toglon Hard SP center drills (NEVER 60° Toglon Hard SP)
- The Drilling depth may not exceed 45% of the tool diameter.



Work Material	50~60 HRC Hardened Steels (SKD, HSS)
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V_c	20-40 m/min
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Max chamfering diameter mm	Speed Min-1		Feed (drilling) Mm/rev-1		Feed (V grooving) Mm/rev-1	
	Min	Max	Min	Max	Min	Max
1	3600	7200	0,100	0,030	0,010	0,030
2	2800	5500	0,015	0,050	0,015	0,050
3	2100	4200	0,020	0,060	0,030	0,080
4	1600	3200	0,020	0,060	0,030	0,080
6	1100	2100	0,020	0,060	0,050	0,100
8	800	1600	0,030	0,080	0,100	0,200
10	600	1300	0,050	0,130	0,200	0,300
12	500	1100	0,100	0,200	0,200	0,500
16	400	800	0,100	0,200	0,300	0,600
20	300	600	0,100	0,200	0,300	0,600

PLEASE OBSERVE WHEN CHOOSING THE CUTTING CONDITIONS

- The above values are standard conditions. They need to be adapted for optimal use of the tools.
- For drilling please use ample water soluble coolant or oil mist.
- Please lower the speed when working conditions are not stable (vibrations, moving of work piece, etc.).
- If the recommended cutting speed exceeds the maximum speed of the machine used, please use the maximum speed of the machine and adjust the other work parameters accordingly.
- For smoother surfaces please decrease the feed rate (this may cause shorter tool life).
- Drilling without step cycles is possible.



- Please chose the size of the centering drill equal to the drill diameter. If this size does not exist please chose the next bigger size.

For example:

For TGHDR5.2CBALT please chose 90TGHSP6CBALD

- The drilling depth of the center drill is calculated by 0.3 x the diameter of the DRILL (not of the Center Drill).

For example:

For drilling a bore of diameter 5.2 mm please use the center drill 90TGHSP6CBALD and a depth of 0.3 x 5.2 = 1,56 mm



- For centering a Toglon Hard Drill always use 90° Toglon Hard SP center drills (NEVER 60° Toglon Hard SP)
- The Drilling depth may not exceed 45% of the tool diameter.

TOGLON HARD DRILL MINIATURE

CUTTING CONDITIONS



Work Material	50~60 HRC Hardened Steels (SKD, HSS)
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50~60 HRC High Vanadium or Chromium Steels / Super Clean Steels

V_c	10~30 m/min
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5-15 m/min

Max Chamfering Diameter Mm	Speed Min-1		Feed Mm/rev-1	
	Min	Max	Min	Max
0,3	10600	31800	0,002	0,010
0,5	6400	19000	0,005	0,015
1,0	3200	9500	0,010	0,030
1,5	2100	6400	0,020	0,040
2,0	1600	4800	0,020	0,050

Speed Min-1		Feed Mm/rev-1	
Min	Max	Min	Max
5300	15900	0,0015	0,007
3200	9500	0,0040	0,010
1600	4750	0,0070	0,020
1050	3200	0,0140	0,030
800	2400	0,0140	0,035

PLEASE OBSERVE WHEN CHOOSING THE CUTTING CONDITIONS

- The above values are standard conditions. They need to be adapted for optimal use of the tools.
- For drilling please use ample water soluble coolant or oil mist.
- Please lower the speed when working conditions are not stable (vibrations, moving of work piece, etc.).
- If the recommended cutting speed exceeds the maximum speed of the machine used, please use the maximum speed of the machine and adjust the other work parameters accordingly.
- For smoother surfaces please decrease the feed rate (this may cause shorter tool life).
- Step drilling is necessary for chip removal. We recommend step cycles of 10% to 50% of the tool diameter. Shorter step cycles will improve the chip removal, the cooling of the cutting edges and increase tool life.

TOGLON HARD DRILL SHORT • REGULAR

CUTTING CONDITIONS



Work Material	40~50 HRC Hardened Steels					50~60 HRC Hardened Steels					60~65 HRC Hardened Steels						
	Diameter mm	V _c m/min	Speed Min-1	Feed Mm/rev-1	Feed mm/min	Pecking mm	Diameter mm	V _c m/min	Speed Min-1	Feed Mm/rev-1	Feed mm/min	Pecking mm	Diameter mm	V _c m/min	Speed Min-1	Feed Mm/rev-1	Feed mm/min
	0,8	26	10300	0,020	210	0,2	20	8000	0,015	120	0,18	13	5200	0,010	50	0,15	
	1,0	30	9500	0,025	240	0,3	22	7000	0,020	140	0,24	15	4800	0,015	70	0,22	
	1,5	35	7400	0,035	260	0,4	24	5100	0,030	150	0,36	18	3800	0,020	80	0,30	
	2,0	40	6400	0,045	290	0,5	30	4800	0,035	170	0,42	20	3200	0,025	80	0,38	
	3,0	40	4200	0,060	250	0,6	30	3200	0,050	160	0,60	20	2100	0,035	70	0,53	
	4,0	40	3200	0,075	240	0,8	30	2400	0,060	140	0,72	20	1600	0,040	60	0,60	
	6,0	40	2100	0,100	210	1,0	30	1600	0,080	130	0,96	20	1100	0,050	60	0,75	
	8,0	40	1600	0,120	190	1,2	30	1200	0,100	120	1,20	20	800	0,050	40	0,75	
	10,0	40	1300	0,130	170	1,3	30	1000	0,110	110	1,32	20	600	0,050	30	0,75	
	12,0	40	1100	0,140	150	1,4	30	800	0,110	90	1,32	20	500	0,050	30	0,75	

Work Material	65 HRC Hardened Steels				
Diameter mm	V _c m/min	Speed Min-1	Feed Mm/rev-1	Feed mm/min	Pecking mm
0,8	10	4000	0,006	20	0,09
1,0	11	3500	0,008	30	0,12
1,5	13	2800	0,010	30	0,15
2,0	15	2400	0,012	30	0,18
3,0	15	1600	0,018	30	0,27
4,0	15	1200	0,025	30	0,38
6,0	15	800	0,035	30	0,53
8,0	15	600	0,040	20	0,60
10,0	15	500	0,040	20	0,60
12,0	15	400	0,040	20	0,60

50~60 HRC High Vanadium or Chromium Steels / Super Clean Steels				
V _c m/min	Speed Min-1	Feed Mm/rev-1	Feed mm/min	Pecking mm
10	4000	0,010	40	0,05
11	3500	0,015	50	0,07
12	2500	0,020	50	0,10
15	2400	0,025	60	0,12
15	1600	0,035	55	0,18
15	1200	0,040	50	0,20
15	800	0,055	45	0,30
15	600	0,070	40	0,35
15	500	0,080	40	0,40
15	400	0,080	30	0,40

PLEASE OBSERVE WHEN CHOOSING THE CUTTING CONDITIONS

- The above values are standard conditions. They need to be adapted for optimal use of the tools
- For drilling please use ample water soluble coolant or oil mist.
- Please lower the speed when working conditions are not stable (vibrations, moving of work piece, etc.).
- If the recommended cutting speed exceeds the maximum speed of the machine used, please use the maximum speed of the machine and adjust the other work parameters accordingly.
- For smoother surfaces please decrease the feed rate (this may cause shorter tool life).
- Drilling without step cycles is possible. When drilling deeper than 3xD step drilling is recommended for better chip removal. We recommend step cycles of 10% to 50% of the tool diameter. Shorter step cycles will improve the chip removal, the cooling of the cutting edges and increase tool life.
- Drilling without step cycles is possible until 3xD. When drilling deeper than 3xD step drilling is necessary. We recommend step cycles of 10% to 50% of the tool diameter. Shorter step cycles will improve the chip removal, the cooling of the cutting edges and increase tool life.

TOGLON HARD DRILL LONG 20D • LONG 30D • 50D

CUTTING CONDITIONS



Work Material	40~50 HRC Hardened Steels					50~60 HRC Hardened Steels					60~65 HRC Hardened Steels							
	Diameter mm	V _c m/min	Speed Min ⁻¹	Feed Mm/rev ⁻¹	Feed mm/min	Pecking mm	Diameter mm	V _c m/min	Speed Min ⁻¹	Feed Mm/rev ⁻¹	Feed mm/min	Pecking mm	Diameter mm	V _c m/min	Speed Min ⁻¹	Feed Mm/rev ⁻¹	Feed mm/min	Pecking mm
	0,8	22	8800	0,017	150	0,1	17	6800	0,013	90	0,1	11	4400	0,009	40	0,1		
	1,0	26	8300	0,021	170	0,2	19	6000	0,017	100	0,1	13	4100	0,013	50	0,1		
	1,5	30	6400	0,030	190	0,2	20	4200	0,026	110	0,2	15	3200	0,017	50	0,1		
	2,0	34	5400	0,038	210	0,3	26	4100	0,030	120	0,2	17	2700	0,021	60	0,2		
	3,0	34	3600	0,051	180	0,4	26	2800	0,043	120	0,3	17	1800	0,030	50	0,2		

Work Material	65 HRC Hardened Steels				
Diameter mm	V _c m/min	Speed Min ⁻¹	Feed Mm/rev ⁻¹	Feed mm/min	Pecking mm
0,8	9	3600	0,005	20	0,06
1,0	9	2900	0,007	20	0,10
1,5	11	2300	0,009	20	0,10
2,0	13	2100	0,010	20	0,10
3,0	13	1400	0,015	20	0,10

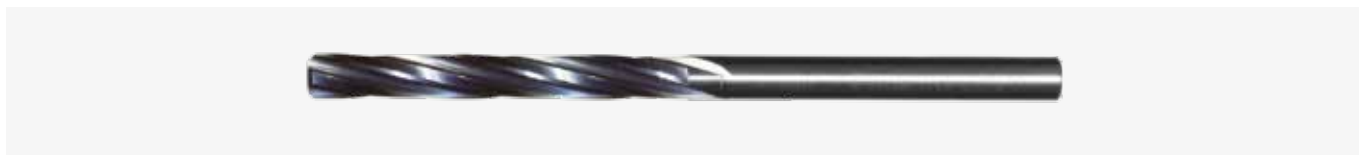
50~60 HRC High Vanadium or Chromium Steels / Super Clean Steels				
V _c m/min	Speed Min ⁻¹	Feed Mm/rev ⁻¹	Feed mm/min	Pecking mm
9	3600	0,009	30	0,1
9	2900	0,013	40	0,1
10	2100	0,017	40	0,1
13	2100	0,021	40	0,2
13	1400	0,030	40	0,2

PLEASE OBSERVE WHEN CHOOSING THE CUTTING CONDITIONS

- The above values are standard conditions. They need to be adapted for optimal use of the tools
- For drilling please use ample water soluble coolant or oil mist.
- Please lower the speed when working conditions are not stable (vibrations, moving of work piece, etc.).
- If the recommended cutting speed exceeds the maximum speed of the machine used, please use the maximum speed of the machine and adjust the other work parameters accordingly.
- For smoother surfaces please decrease the feed rate (this may cause shorter tool life).
- Drilling without step cycles is possible. When drilling deeper than 3xD step drilling is recommended for better chip removal. We recommend step cycles of 10% to 50% of the tool diameter. Shorter step cycles will improve the chip removal, the cooling of the cutting edges and increase tool life.
- Step drilling is necessary for chip removal. We recommend step cycles of 10% to 50% of the tool diameter. Shorter step cycles will improve the chip removal, the cooling of the cutting edges and increase tool life.

TOGLON HARD REAMER

CUTTING CONDITIONS



Work Material	50~60 HRC Hardened Steels (SKD, HSS)
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V_c	10-20 m/min
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Diameter mm	Speed Min-1		Feed Mm/rev-1	
	Min	Max	Min	Max
3	1100	2100	0,02	0,06
4	800	1600	0,02	0,07
6	500	1100	0,02	0,07
8	400	800	0,02	0,08
10	320	640	0,03	0,08
12	270	530	0,03	0,09

PLEASE OBSERVE WHEN CHOOSING THE CUTTING CONDITIONS

- The above values are standard conditions. They need to be adapted for optimal use of the tools
- For please use ample water soluble coolant or oil mist.
- Please lower the speed when working conditions are not stable (vibrations, moving of work piece, etc.).
- If the recommended cutting speed exceeds the maximum speed of the machine used, please use the maximum speed of the machine and adjust the other work parameters accordingly.
- For smoother surfaces please decrease the feed rate (this may cause shorter tool life).

IWATA TOOL

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