



1st	1st Choice
2nd	2nd choice

SERIES GROUP	Name	Series	Diameter Range (In mm)	Page Number	Coating Type	Internal Coolant	Low Carbon Steel	Alloy Steel (Upto 35Hrc)	Alloy Steel (35 To 45Hrc)	Austenitic Stainless Steel	Precipitation Hardened Stainless	Cast Iron	Special Alloys	Hardened Steels	Non-Ferrous
							1st	2nd	2nd	2nd	1st	1st	1st	1st	1st
<b>GENERAL PURPOSE DRILLS</b>	STUB SERIES	C1GS	2 ~ 13	12	TiAlN	NO	1st	2nd	2nd	2nd		1st			1st
	JOBBER SERIES	C1GJ	2 ~ 13	14	NONE	NO	1st	2nd	2nd	2nd		1st			1st
	PCB DRILL SERIES	CPCB	1.95 ~ 7.3	16	NONE	NO									1st
<b>HIGH PERFORMANCE DRILLS</b>	SHORT SERIES	C1HS	2 ~ 20	18	TiAlN	NO	1st	1st	1st	1st	1st	1st	1st		
	LONG SERIES	C1HL	2 ~ 20	20	TiAlN	NO	1st	1st	1st	1st	1st	1st	1st		
	COOLANT FED SHORT DRILLS	CTHS	4 ~ 20	22	AC-S-X	YES	1st	1st	1st	1st	1st	1st	1st	2nd	
	COOLANT FED LONG DRILLS	CTHL	4 ~ 20	24	AC-S-X	YES	1st	1st	1st	1st	1st	1st	1st	2nd	
	MQL DRILLS	CTHM	4 ~ 12	26	AC-S-X	YES	1st	1st	2nd	2nd		1st			
	3-FLUTE DRILLS	C1HN	4 ~ 16	27	NONE	NO	2nd					2nd			1st
<b>MISC. DRILLS</b>	NC-SPOTTING DRILLS 90*	C1N1	6 ~ 20	29	NONE	NO	1st	1st	1st	1st	1st	1st	1st	1st	
	NC-SPOTTING DRILLS 120*	C1N2	6 ~ 20	29	NONE	NO	1st	1st	1st	1st	1st	1st	1st	1st	
	CENTRE DRILLS BS328	C1CB	BS1-BS8	30	NONE	NO	1st	1st	1st	1st	1st	1st	1st	1st	
	CENTRE DRILLS DIN333	C1CD	1.25 ~ 8	31	NONE	NO	1st	1st	1st	1st	1st	1st	1st	1st	

Name	Series	Diameter Range (In mm)	Page Number	Coating Type	Internal Coolant	Low Carbon Steel	Alloy Steel (Upto 35Hrc)	Alloy Steel (35 To 45Hrc)	Austenitic Stainless Steel	Precipitation Hardened Stainless	Cast Iron	Special Alloys	Hardened Steels	Non-Ferrous
						1st	1st	1st	1st	1st	1st	1st	1st	1st
Carbide St. Flute Reamers	C1RS	3~16	42	None	No	1st	1st	1st	1st	1st	1st	1st	1st	1st
Carbide LHS/RHC Reamers	C1RL	3~16	43	None	No	1st	1st	1st	1st	1st	1st	1st	1st	1st
Carbide RHS/RHC Reamers	C1RR	3~16	44	None	No	1st	1st	1st	1st	1st	1st	1st	1st	1st
Technical Information			46-49											

Icons



Solid Carbide



Coolant Fed



3X Drill Length



135° Drill Point Angle



12° Helix Angle



>3mm DIN 6537L



45° Chamfer



RHC Right hand Cutting



Z2 Number of Flutes

Carbide Grain Size



NG Nano Fine Grain



UMG Ultra Micro Fine Grain



SMG Sub Micro Fine Grain



MG Micro Fine Grain

Coatings



Workpiece Material Group



Steels



Hardened Steels (35-65Rc)

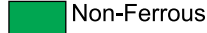
Stainless Steels



Cast Iron



Special Alloys



Non-Ferrous

High Performance Drilling

Features

- Advanced “Active Cut” Geometric Design
- Redefined Critical Cut Zone Characteristics
- High-Efficiency Flute Profile
- Stable Low-Thrust Point Form
- Coolant-Fed or Solid Carbide construction
- Diameter Range - 2.0mm to 25.0mm, 5/64” to 1”
- Stub (3X), Regular (5X), Long (7X+) and Extra Long (12X+)

Benefits

- Extended Tool Life
- Elevated Metal Removal Rates (MRR)
- Lower cost Per Hole
- Improved Hole/Part Quality
- Increased Tool Reliability
- Factory Reconditioning Service



Type	Description	Series No.	Page No
General Purpose Drills	STUB series	C1GS	12
	Jobber Series	C1GJ	14
	PCB Drill Series	CPCB	16
High Performance Drills	SHORT series	C1HS	18
	LONG series	C1HL	20
	Coolant Fed SHORT Drills	CTHS	22
	Coolant Fed LONG Drills	CTHL	24
	MQL Drills	CTHM	26
	3-Flute Drills	C1HN	27
Misc. Drills	NC-Spotting Drills 90*	C1N1	29
	NC-Spotting Drills 120*	C1N2	29
	Centre Drills BS328	C1CB	30
	Centre Drills DIN333	C1CD	31
	Technical Information		32-40

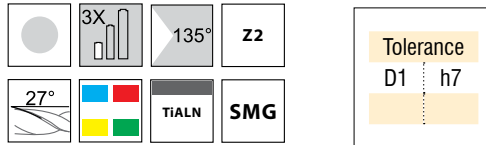
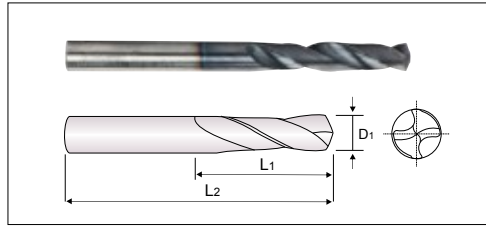




**Application :**

- Solid Carbide GP Drills suitable for general purpose Drilling in materials like Cast Iron, high Al-Si Alloys, non-ferrous metals, abrasive plastics etc.

**For Feed & Speed Rates go to Page no. 34**



Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1GS0200-F	2.0	12	39	2.0
C1GS0210-F	2.1	14	39	2.1
C1GS0220-F	2.2	14	39	2.2
C1GS0230-F	2.3	14	39	2.3
C1GS0240-F	2.4	14	39	2.4
C1GS0250-F	2.5	14	39	2.5
C1GS0260-F	2.6	20	54	2.6
C1GS0270-F	2.7	20	54	2.7
C1GS0280-F	2.8	20	54	2.8
C1GS0290-F	2.9	20	54	2.9
C1GS0300-F	3.0	20	54	3.0
C1GS0310-F	3.1	20	54	3.1
C1GS0320-F	3.2	20	54	3.2
C1GS0330-F	3.3	20	54	3.3
C1GS0340-F	3.4	20	54	3.4
C1GS0350-F	3.5	20	54	3.5
C1GS0360-F	3.6	22	54	3.6
C1GS0370-F	3.7	22	54	3.7
C1GS0380-F	3.8	22	54	3.8
C1GS0390-F	3.9	22	54	3.9
C1GS0400-F	4.0	22	54	4.0
C1GS0410-F	4.1	24	63	4.1
C1GS0420-F	4.2	24	63	4.2
C1GS0430-F	4.3	24	63	4.3
C1GS0440-F	4.4	24	63	4.4
C1GS0450-F	4.5	24	63	4.5
C1GS0460-F	4.6	26	63	4.6

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1GS0470-F	4.7	26	63	4.7
C1GS0480-F	4.8	26	63	4.8
C1GS0490-F	4.9	26	63	4.9
C1GS0500-F	5.0	26	63	5.0
C1GS0510-F	5.1	26	63	5.1
C1GS0520-F	5.2	26	63	5.2
C1GS0530-F	5.3	28	63	5.3
C1GS0540-F	5.4	28	63	5.4
C1GS0550-F	5.5	28	63	5.5
C1GS0560-F	5.6	28	63	5.6
C1GS0570-F	5.7	28	63	5.7
C1GS0580-F	5.8	28	63	5.8
C1GS0590-F	5.9	28	63	5.9
C1GS0600-F	6.0	28	63	6.0
C1GS0610-F	6.1	31	63	6.1
C1GS0620-F	6.2	31	63	6.2
C1GS0630-F	6.3	31	63	6.3
C1GS0640-F	6.4	31	63	6.4
C1GS0650-F	6.5	31	63	6.5
C1GS0660-F	6.6	34	63	6.6
C1GS0670-F	6.7	34	63	6.7
C1GS0680-F	6.8	34	63	6.8
C1GS0690-F	6.9	34	63	6.9
C1GS0700-F	7.0	34	63	7.0
C1GS0710-F	7.1	34	79	7.1
C1GS0720-F	7.2	34	79	7.2
C1GS0730-F	7.3	34	79	7.3



Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1GS0740-F	7.4	34	79	7.4
C1GS0750-F	7.5	34	79	7.5
C1GS0760-F	7.6	37	79	7.6
C1GS0770-F	7.7	37	79	7.7
C1GS0780-F	7.8	37	79	7.8
C1GS0790-F	7.9	37	79	7.9
C1GS0800-F	8.0	37	79	8.0
C1GS0810-F	8.1	37	79	8.1
C1GS0820-F	8.2	37	79	8.2
C1GS0830-F	8.3	37	79	8.3
C1GS0840-F	8.4	37	79	8.4
C1GS0850-F	8.5	37	79	8.5
C1GS0860-F	8.6	40	79	8.6
C1GS0870-F	8.7	40	79	8.7
C1GS0880-F	8.8	40	79	8.8
C1GS0890-F	8.9	40	79	8.9
C1GS0900-F	9.0	40	79	9.0
C1GS0910-F	9.1	40	79	9.1
C1GS0920-F	9.2	40	79	9.2
C1GS0930-F	9.3	40	79	9.3
C1GS0940-F	9.4	40	79	9.4
C1GS0950-F	9.5	40	79	9.5
C1GS0960-F	9.6	42	79	9.6
C1GS0970-F	9.7	42	79	9.7
C1GS0980-F	9.8	42	79	9.8
C1GS0990-F	9.9	42	79	9.9
C1GS1000-F	10.0	42	79	10.0
C1GS1020-F	10.2	42	79	10.2
C1GS1050-F	10.5	47	100	10.5
C1GS1100-F	11.0	47	100	11.0
C1GS1150-F	11.5	47	100	11.5
C1GS1200-F	12.0	49	100	12.0
C1GS1300-F	13.0	51	102	13.0

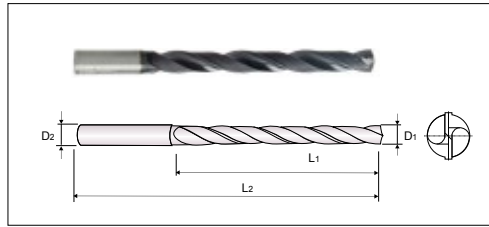
Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)

**Application :**

- Solid Carbide GP Drills suitable for general purpose Drilling in materials like Cast Iron, high Al-Si Alloys, non-ferrous metals, abrasive plastics etc.

\*Coated Drills available on request in short time

**For Feed & Speed Rates go to Page no. 34**



		<b>Z2</b>
		<b>SMG</b>

Tolerance  
D1 h7

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1GJ0200-U	2.0	24	49	2.0
C1GJ0210-U	2.1	24	49	2.1
C1GJ0220-U	2.2	27	53	2.2
C1GJ0230-U	2.3	27	53	2.3
C1GJ0240-U	2.4	30	57	2.4
C1GJ0250-U	2.5	30	57	2.5
C1GJ0260-U	2.6	30	57	2.6
C1GJ0270-U	2.7	33	61	2.7
C1GJ0280-U	2.8	33	61	2.8
C1GJ0290-U	2.9	33	61	2.9
C1GJ0300-U	3.0	33	61	3.0
C1GJ0310-U	3.1	36	65	3.1
C1GJ0320-U	3.2	36	65	3.2
C1GJ0330-U	3.3	36	65	3.3
C1GJ0340-U	3.4	39	70	3.4
C1GJ0350-U	3.5	39	70	3.5
C1GJ0360-U	3.6	39	70	3.6
C1GJ0370-U	3.7	39	70	3.7
C1GJ0380-U	3.8	43	75	3.8
C1GJ0390-U	3.9	43	75	3.9
C1GJ0400-U	4.0	43	75	4.0
C1GJ0410-U	4.1	43	75	4.1
C1GJ0420-U	4.2	43	75	4.2
C1GJ0430-U	4.3	47	80	4.3
C1GJ0440-U	4.4	47	80	4.4
C1GJ0450-U	4.5	47	80	4.5
C1GJ0460-U	4.6	47	80	4.6

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1GJ0470-U	4.7	47	80	4.7
C1GJ0480-U	4.8	52	86	4.8
C1GJ0490-U	4.9	52	86	4.9
C1GJ0500-U	5.0	52	86	5.0
C1GJ0510-U	5.1	52	86	5.1
C1GJ0520-U	5.2	52	86	5.2
C1GJ0530-U	5.3	52	86	5.3
C1GJ0540-U	5.4	57	93	5.4
C1GJ0550-U	5.5	57	93	5.5
C1GJ0560-U	5.6	57	93	5.6
C1GJ0570-U	5.7	57	93	5.7
C1GJ0580-U	5.8	57	93	5.8
C1GJ0590-U	5.9	57	93	5.9
C1GJ0600-U	6.0	57	93	6.0
C1GJ0610-U	6.1	63	101	6.1
C1GJ0620-U	6.2	63	101	6.2
C1GJ0630-U	6.3	63	101	6.3
C1GJ0640-U	6.4	63	101	6.4
C1GJ0650-U	6.5	63	101	6.5
C1GJ0660-U	6.6	63	101	6.6
C1GJ0670-U	6.7	63	101	6.7
C1GJ0680-U	6.8	69	109	6.8
C1GJ0690-U	6.9	69	109	6.9
C1GJ0700-U	7.0	69	109	7.0
C1GJ0710-U	7.1	69	109	7.1
C1GJ0720-U	7.2	69	109	7.2
C1GJ0730-U	7.3	69	109	7.3

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1GJ0740-U	7.4	69	109	7.4
C1GJ0750-U	7.5	69	109	7.5
C1GJ0760-U	7.6	75	117	7.6
C1GJ0770-U	7.7	75	117	7.7
C1GJ0780-U	7.8	75	117	7.8
C1GJ0790-U	7.9	75	117	7.9
C1GJ0800-U	8.0	75	117	8.0
C1GJ0810-U	8.1	75	117	8.1
C1GJ0820-U	8.2	75	117	8.2
C1GJ0830-U	8.3	75	117	8.3
C1GJ0840-U	8.4	75	117	8.4
C1GJ0850-U	8.5	75	117	8.5
C1GJ0860-U	8.6	81	125	8.6
C1GJ0870-U	8.7	81	125	8.7
C1GJ0880-U	8.8	81	125	8.8
C1GJ0890-U	8.9	81	125	8.9
C1GJ0900-U	9.0	81	125	9.0
C1GJ0910-U	9.1	81	125	9.1
C1GJ0920-U	9.2	81	125	9.2
C1GJ0930-U	9.3	81	125	9.3
C1GJ0940-U	9.4	81	125	9.4
C1GJ0950-U	9.5	81	125	9.5
C1GJ0960-U	9.6	87	133	9.6
C1GJ0970-U	9.7	87	133	9.7
C1GJ0980-U	9.8	87	133	9.8
C1GJ0990-U	9.9	87	133	9.9
C1GJ1000-U	10.0	87	133	10.0
C1GJ1010-U	10.1	87	133	10.1
C1GJ1020-U	10.2	87	133	10.2
C1GJ1030-U	10.3	87	133	10.3
C1GJ1040-U	10.4	87	133	10.4
C1GJ1050-U	10.5	87	133	10.5
C1GJ1060-U	10.6	87	133	10.6
C1GJ1070-U	10.7	94	142	10.7
C1GJ1080-U	10.8	94	142	10.8
C1GJ1090-U	10.9	94	142	10.9
C1GJ1100-U	11.0	94	142	11.0
C1GJ1110-U	11.1	94	142	11.1
C1GJ1120-U	11.2	94	142	11.2
C1GJ1130-U	11.3	94	142	11.3

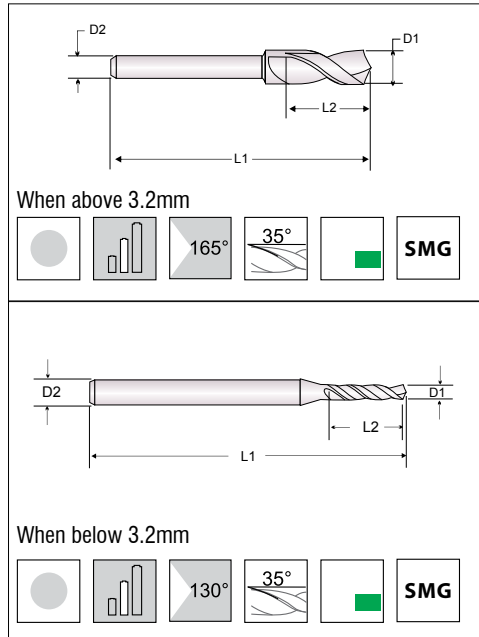
Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1GJ1140-U	11.4	94	142	11.4
C1GJ1150-U	11.5	94	142	11.5
C1GJ1160-U	11.6	94	142	11.6
C1GJ1170-U	11.7	94	142	11.7
C1GJ1180-U	11.8	94	142	11.8
C1GJ1190-U	11.9	101	151	11.9
C1GJ1200-U	12.0	101	151	12.0
C1GJ1210-U	12.1	101	151	12.1
C1GJ1220-U	12.2	101	151	12.2
C1GJ1230-U	12.3	101	151	12.3
C1GJ1240-U	12.4	101	151	12.4
C1GJ1250-U	12.5	101	151	12.5
C1GJ1260-U	12.6	101	151	12.6
C1GJ1270-U	12.7	101	151	12.7
C1GJ1280-U	12.8	101	151	12.8
C1GJ1290-U	12.9	101	151	12.9
C1GJ1300-U	13.0	101	151	13.0

**Application :**

- These general purpose drills are specifically designed for drilling in **Printed Circuit Boards** or Composite or Fiber Reinforced Materials

**For Feed & Speed Rates go to Page no. 34**

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
CPCB0195-U	1.95	12.2	38	3.18
CPCB0200-U	2.00	12.2	38	3.18
CPCB0205-U	2.05	12.2	38	3.18
CPCB0210-U	2.10	12.2	38	3.18
CPCB0215-U	2.15	12.2	38	3.18
CPCB0220-U	2.20	12.2	38	3.18
CPCB0225-U	2.25	12.2	38	3.18
CPCB0230-U	2.30	12.2	38	3.18
CPCB0235-U	2.35	12.2	38	3.18
CPCB0240-U	2.40	12.2	38	3.18
CPCB0245-U	2.45	12.2	38	3.18
CPCB0250-U	2.50	12.2	38	3.18
CPCB0255-U	2.55	12.2	38	3.18
CPCB0260-U	2.60	12.2	38	3.18
CPCB0265-U	2.65	12.2	38	3.18
CPCB0270-U	2.70	12.2	38	3.18
CPCB0275-U	2.75	12.2	38	3.18
CPCB0280-U	2.80	12.2	38	3.18
CPCB0285-U	2.85	12.2	38	3.18
CPCB0290-U	2.90	12.2	38	3.18
CPCB0295-U	2.95	12.2	38	3.18
CPCB0300-U	3.00	12.2	38	3.18
CPCB0305-U	3.05	12.2	38	3.18
CPCB0310-U	3.10	12.2	38	3.18
CPCB0315-U	3.15	12.2	38	3.18
CPCB0320-U	3.20	12.2	38	3.18
CPCB0325-U	3.25	12.2	38	3.18



Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
CPCB0330-U	3.30	12.2	38	3.18
CPCB0335-U	3.35	12.2	38	3.18
CPCB0340-U	3.40	12.2	38	3.18
CPCB0345-U	3.45	12.2	38	3.18
CPCB0350-U	3.50	12.2	38	3.18
CPCB0355-U	3.55	12.2	38	3.18
CPCB0360-U	3.60	12.2	38	3.18
CPCB0365-U	3.65	12.2	38	3.18
CPCB0370-U	3.70	12.2	38	3.18
CPCB0375-U	3.75	12.2	38	3.18
CPCB0380-U	3.80	12.2	38	3.18
CPCB0385-U	3.85	12.2	38	3.18
CPCB0390-U	3.90	12.2	38	3.18
CPCB0395-U	3.95	12.2	38	3.18
CPCB0400-U	4.00	12.2	38	3.18
CPCB0405-U	4.05	12.2	38	3.18
CPCB0410-U	4.10	12.2	38	3.18
CPCB0415-U	4.15	12.2	38	3.18
CPCB0420-U	4.20	12.2	38	3.18

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
CPCB0425-U	4.25	12.2	38	3.18
CPCB0430-U	4.30	12.2	38	3.18
CPCB0435-U	4.35	12.2	38	3.18
CPCB0440-U	4.40	12.2	38	3.18
CPCB0445-U	4.45	12.2	38	3.18
CPCB0450-U	4.50	12.2	38	3.18
CPCB0455-U	4.55	12.2	38	3.18
CPCB0460-U	4.60	12.2	38	3.18
CPCB0465-U	4.65	12.2	38	3.18
CPCB0470-U	4.70	12.2	38	3.18
CPCB0475-U	4.75	12.2	38	3.18
CPCB0480-U	4.80	12.2	38	3.18
CPCB0485-U	4.85	12.2	38	3.18
CPCB0490-U	4.90	12.2	38	3.18
CPCB0495-U	4.95	12.2	38	3.18
CPCB0500-U	5.00	12.2	38	3.18
CPCB0505-U	5.05	12.2	38	3.18
CPCB0510-U	5.10	12.2	38	3.18
CPCB0515-U	5.15	12.2	38	3.18
CPCB0520-U	5.20	12.2	38	3.18
CPCB0525-U	5.25	12.2	38	3.18
CPCB0530-U	5.30	12.2	38	3.18
CPCB0535-U	5.35	12.2	38	3.18
CPCB0540-U	5.40	12.2	38	3.18
CPCB0545-U	5.45	12.2	38	3.18
CPCB0550-U	5.50	12.2	38	3.18
CPCB0555-U	5.55	12.2	38	3.18
CPCB0560-U	5.60	12.2	38	3.18
CPCB0565-U	5.65	12.2	38	3.18
CPCB0570-U	5.70	12.2	38	3.18
CPCB0575-U	5.75	12.2	38	3.18
CPCB0580-U	5.80	12.2	38	3.18
CPCB0585-U	5.85	12.2	38	3.18
CPCB0590-U	5.90	12.2	38	3.18
CPCB0595-U	5.95	12.2	38	3.18
CPCB0600-U	6.00	12.2	38	3.18
CPCB0605-U	6.05	12.2	38	3.18
CPCB0610-U	6.10	12.2	38	3.18
CPCB0615-U	6.15	12.2	38	3.18
CPCB0620-U	6.20	12.2	38	3.18

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
CPCB0625-U	6.25	12.2	38	3.18
CPCB0630-U	6.30	12.2	38	3.18
CPCB0635-U	6.35	12.2	38	3.18
CPCB0730-U	7.30	12.2	38	3.18



**Applications:**

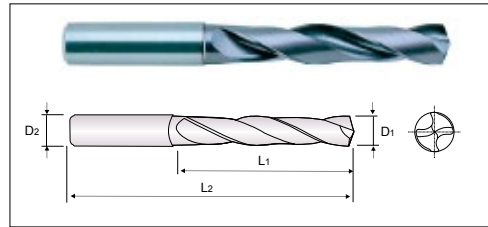
- High Performance Carbide Drills for Drilling Cast Steel, Forged Steel, Cast Iron up to 40HRc.

*Note: Machining Austenitic Stainless Steel (300 series) generally requires Drills with Internal Coolant like our CTHS Series.*

**Advantage:**

- Self Centering - Center Drilling not required
- Excellent Positioning - Bush is not necessary
- Special Design for Powerful Drilling & Good chip removal

**For Feed & Speed Rates go to Page no. 35**



			Tolerance D1 m7 D2 h6

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1HS0200-F	2.0	14	50	4.0
C1HS0210-F	2.1	14	50	4.0
C1HS0220-F	2.2	14	50	4.0
C1HS0230-F	2.3	14	50	4.0
C1HS0240-F	2.4	14	50	4.0
C1HS0250-F	2.5	14	50	4.0
C1HS0260-F	2.6	14	50	4.0
C1HS0270-F	2.7	14	50	4.0
C1HS0280-F	2.8	14	50	4.0
C1HS0290-F	2.9	14	50	4.0
C1HS0300-F	3.0	20	62	6.0
C1HS0310-F	3.1	20	62	6.0
C1HS0320-F	3.2	20	62	6.0
C1HS0330-F	3.3	20	62	6.0
C1HS0340-F	3.4	20	62	6.0
C1HS0350-F	3.5	20	62	6.0
C1HS0360-F	3.6	20	62	6.0
C1HS0370-F	3.7	20	62	6.0
C1HS0380-F	3.8	24	62	6.0
C1HS0390-F	3.9	24	62	6.0
C1HS0400-F	4.0	24	62	6.0
C1HS0410-F	4.1	24	62	6.0
C1HS0420-F	4.2	24	62	6.0
C1HS0430-F	4.3	24	62	6.0
C1HS0440-F	4.4	24	62	6.0
C1HS0450-F	4.5	24	62	6.0
C1HS0460-F	4.6	24	62	6.0

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1HS0470-F	4.7	24	62	6.0
C1HS0480-F	4.8	28	62	6.0
C1HS0490-F	4.9	28	62	6.0
C1HS0500-F	5.0	28	62	6.0
C1HS0510-F	5.1	28	62	6.0
C1HS0520-F	5.2	28	62	6.0
C1HS0530-F	5.3	28	62	6.0
C1HS0540-F	5.4	28	62	6.0
C1HS0550-F	5.5	28	62	6.0
C1HS0560-F	5.6	28	62	6.0
C1HS0570-F	5.7	28	62	6.0
C1HS0580-F	5.8	28	62	6.0
C1HS0590-F	5.9	28	62	6.0
C1HS0600-F	6.0	28	62	6.0
C1HS0610-F	6.1	34	75	8.0
C1HS0620-F	6.2	34	75	8.0
C1HS0630-F	6.3	34	75	8.0
C1HS0640-F	6.4	34	75	8.0
C1HS0650-F	6.5	34	75	8.0
C1HS0660-F	6.6	34	75	8.0
C1HS0670-F	6.7	34	75	8.0
C1HS0680-F	6.8	34	75	8.0
C1HS0690-F	6.9	34	75	8.0
C1HS0700-F	7.0	34	75	8.0
C1HS0710-F	7.1	40	80	8.0
C1HS0720-F	7.2	40	80	8.0
C1HS0730-F	7.3	40	80	8.0



Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1HS0740-F	7.4	40	80	8.0
C1HS0750-F	7.5	40	80	8.0
C1HS0760-F	7.6	40	80	8.0
C1HS0770-F	7.7	40	80	8.0
C1HS0780-F	7.8	40	80	8.0
C1HS0790-F	7.9	40	80	8.0
C1HS0800-F	8.0	40	80	8.0
C1HS0810-F	8.1	51	100	10.0
C1HS0820-F	8.2	51	100	10.0
C1HS0830-F	8.3	51	100	10.0
C1HS0840-F	8.4	51	100	10.0
C1HS0850-F	8.5	51	100	10.0
C1HS0860-F	8.6	51	100	10.0
C1HS0870-F	8.7	51	100	10.0
C1HS0880-F	8.8	51	100	10.0
C1HS0890-F	8.9	51	100	10.0
C1HS0900-F	9.0	51	100	10.0
C1HS0910-F	9.1	51	100	10.0
C1HS0920-F	9.2	51	100	10.0
C1HS0930-F	9.3	51	100	10.0
C1HS0940-F	9.4	51	100	10.0
C1HS0950-F	9.5	51	100	10.0
C1HS0960-F	9.6	51	100	10.0
C1HS0970-F	9.7	51	100	10.0
C1HS0980-F	9.8	51	100	10.0
C1HS0990-F	9.9	51	100	10.0
C1HS1000-F	10.0	51	100	10.0
C1HS1010-F	10.1	55	100	12.0
C1HS1020-F	10.2	55	100	12.0
C1HS1030-F	10.3	55	100	12.0
C1HS1040-F	10.4	55	100	12.0
C1HS1050-F	10.5	55	100	12.0
C1HS1060-F	10.6	55	100	12.0
C1HS1070-F	10.7	55	100	12.0
C1HS1080-F	10.8	55	100	12.0
C1HS1090-F	10.9	55	100	12.0
C1HS1100-F	11.0	55	100	12.0
C1HS1110-F	11.1	55	100	12.0
C1HS1120-F	11.2	55	100	12.0
C1HS1130-F	11.3	55	100	12.0

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1HS1140-F	11.4	55	100	12.0
C1HS1150-F	11.5	55	100	12.0
C1HS1160-F	11.6	55	100	12.0
C1HS1170-F	11.7	55	100	12.0
C1HS1180-F	11.8	55	100	12.0
C1HS1190-F	11.9	55	100	12.0
C1HS1200-F	12.0	55	100	12.0
C1HS1250-F	12.5	55	105	14.0
C1HS1300-F	13.0	55	105	14.0
C1HS1350-F	13.5	55	105	14.0
C1HS1400-F	14.0	55	105	14.0
C1HS1450-F	14.5	58	105	16.0
C1HS1500-F	15.0	58	105	16.0
C1HS1550-F	15.5	58	105	16.0
C1HS1600-F	16.0	58	105	16.0
C1HS1650-F	16.5	58	105	18.0
C1HS1700-F	17.0	58	105	18.0
C1HS1750-F	17.5	58	105	18.0
C1HS1800-F	18.0	58	105	18.0
C1HS1850-F	18.5	58	105	20.0
C1HS1900-F	19.0	58	105	20.0
C1HS1950-F	19.5	58	105	20.0
C1HS2000-F	20.0	58	105	20.0



**Applications:**

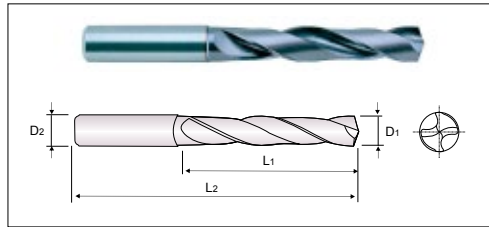
- High Performance Carbide Drills for Drilling steels, Forged Steels, Cast Iron up to 40HRc.

*Note: Machining Austenitic Stainless Steel (300 series) generally requires Drills with Internal Coolant Hole like our "CTHL" series*

**Advantage:**

- Self Centering - Center Drilling not required
- Excellent Positioning - Bush is not necessary
- Special Design for Powerful drilling & Good chip removal

**For Feed & Speed Rates go to Page. 35**



5X

142°

Z2

30°

TiAlN

UMG

Tolerance

D1 m7

D2 h6

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1HL0200-F	2.0	21	57	4.0
C1HL0210-F	2.1	21	57	4.0
C1HL0220-F	2.2	21	57	4.0
C1HL0230-F	2.3	21	57	4.0
C1HL0240-F	2.4	21	57	4.0
C1HL0250-F	2.5	21	57	4.0
C1HL0260-F	2.6	21	57	4.0
C1HL0270-F	2.7	21	57	4.0
C1HL0280-F	2.8	21	57	4.0
C1HL0290-F	2.9	21	57	4.0
C1HL0300-F	3.0	28	62	6.0
C1HL0310-F	3.1	28	62	6.0
C1HL0320-F	3.2	28	62	6.0
C1HL0330-F	3.3	28	62	6.0
C1HL0340-F	3.4	28	62	6.0
C1HL0350-F	3.5	28	62	6.0
C1HL0360-F	3.6	28	62	6.0
C1HL0370-F	3.7	28	62	6.0
C1HL0380-F	3.8	36	75	6.0
C1HL0390-F	3.9	36	75	6.0
C1HL0400-F	4.0	36	75	6.0
C1HL0410-F	4.1	36	75	6.0
C1HL0420-F	4.2	36	75	6.0
C1HL0430-F	4.3	36	75	6.0
C1HL0440-F	4.4	36	75	6.0
C1HL0450-F	4.5	36	75	6.0
C1HL0460-F	4.6	36	75	6.0

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1HL0470-F	4.7	36	75	6.0
C1HL0480-F	4.8	42	80	6.0
C1HL0490-F	4.9	42	80	6.0
C1HL0500-F	5.0	42	80	6.0
C1HL0510-F	5.1	42	80	6.0
C1HL0520-F	5.2	42	80	6.0
C1HL0530-F	5.3	42	80	6.0
C1HL0540-F	5.4	42	80	6.0
C1HL0550-F	5.5	42	80	6.0
C1HL0560-F	5.6	42	80	6.0
C1HL0570-F	5.7	42	80	6.0
C1HL0580-F	5.8	42	80	6.0
C1HL0590-F	5.9	42	80	6.0
C1HL0600-F	6.0	42	80	6.0
C1HL0610-F	6.1	55	100	8.0
C1HL0620-F	6.2	55	100	8.0
C1HL0630-F	6.3	55	100	8.0
C1HL0640-F	6.4	55	100	8.0
C1HL0650-F	6.5	55	100	8.0
C1HL0660-F	6.6	55	100	8.0
C1HL0670-F	6.7	55	100	8.0
C1HL0680-F	6.8	55	100	8.0
C1HL0690-F	6.9	55	100	8.0
C1HL0700-F	7.0	55	100	8.0
C1HL0710-F	7.1	60	105	8.0
C1HL0720-F	7.2	60	105	8.0
C1HL0730-F	7.3	60	105	8.0



Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1HL0740-F	7.4	60	105	8.0
C1HL0750-F	7.5	60	105	8.0
C1HL0760-F	7.6	60	105	8.0
C1HL0770-F	7.7	60	105	8.0
C1HL0780-F	7.8	60	105	8.0
C1HL0790-F	7.9	60	105	8.0
C1HL0800-F	8.0	60	105	8.0
C1HL0810-F	8.1	75	125	10.0
C1HL0820-F	8.2	75	125	10.0
C1HL0830-F	8.3	75	125	10.0
C1HL0840-F	8.4	75	125	10.0
C1HL0850-F	8.5	75	125	10.0
C1HL0860-F	8.6	75	125	10.0
C1HL0870-F	8.7	75	125	10.0
C1HL0880-F	8.8	75	125	10.0
C1HL0890-F	8.9	75	125	10.0
C1HL0900-F	9.0	75	125	10.0
C1HL0910-F	9.1	75	125	10.0
C1HL0920-F	9.2	75	125	10.0
C1HL0930-F	9.3	75	125	10.0
C1HL0940-F	9.4	75	125	10.0
C1HL0950-F	9.5	75	125	10.0
C1HL0960-F	9.6	75	125	10.0
C1HL0970-F	9.7	75	125	10.0
C1HL0980-F	9.8	75	125	10.0
C1HL0990-F	9.9	75	125	10.0
C1HL1000-F	10.0	75	125	10.0
C1HL1010-F	10.1	85	140	12.0
C1HL1020-F	10.2	85	140	12.0
C1HL1030-F	10.3	85	140	12.0
C1HL1040-F	10.4	85	140	12.0
C1HL1050-F	10.5	85	140	12.0
C1HL1060-F	10.6	85	140	12.0
C1HL1070-F	10.7	85	140	12.0
C1HL1080-F	10.8	85	140	12.0
C1HL1090-F	10.9	85	140	12.0
C1HL1100-F	11.0	85	140	12.0
C1HL1110-F	11.1	85	140	12.0
C1HL1120-F	11.2	85	140	12.0
C1HL1130-F	11.3	85	140	12.0

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1HL1140-F	11.4	85	140	12.0
C1HL1150-F	11.5	85	140	12.0
C1HL1160-F	11.6	85	140	12.0
C1HL1170-F	11.7	85	140	12.0
C1HL1180-F	11.8	85	140	12.0
C1HL1190-F	11.9	85	140	12.0
C1HL1200-F	12.0	85	140	12.0
C1HL1250-F	12.5	85	140	14.0
C1HL1300-F	13.0	85	140	14.0
C1HL1350-F	13.5	85	140	14.0
C1HL1400-F	14.0	85	140	14.0
C1HL1450-F	14.5	90	145	16.0
C1HL1500-F	15.0	90	145	16.0
C1HL1550-F	15.5	90	145	16.0
C1HL1600-F	16.0	90	145	16.0
C1HL1650-F	16.5	95	150	18.0
C1HL1700-F	17.0	95	150	18.0
C1HL1750-F	17.5	95	150	18.0
C1HL1800-F	18.0	95	150	18.0
C1HL1850-F	18.5	98	150	20.0
C1HL1900-F	19.0	98	150	20.0
C1HL1950-F	19.5	98	150	20.0
C1HL2000-F	20.0	98	150	20.0

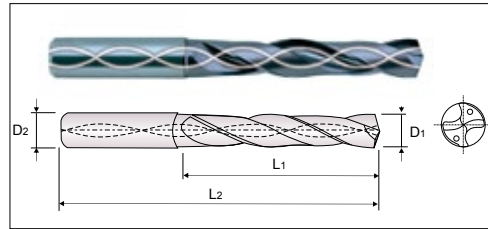
**Applications:**

- High Performance Coolant Drills for maximum productivity in Steels, Cast Iron, Stainless Steel (300 series) & non-ferrous metals.
- Extremely high feed & cutting speeds with superior process reliability and surface quality

**Advantage:**

- Internal coolant
- Self Centering - Center Drilling not required
- Excellent Positioning - Bush is not necessary
- Special Design for Powerful Drilling & Good chip removal

**For Feed & Speed Rates go to Page. 36**



⋮
⋮
⋮

3X
142°
30°

AC-S-X
DIN 6537K
UMG

Tolerance

D1 m7

D2 h6

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
CTHS0410-S	4.1	24	62	6.0
CTHS0420-S	4.2	24	62	6.0
CTHS0430-S	4.3	24	62	6.0
CTHS0440-S	4.4	24	62	6.0
CTHS0450-S	4.5	24	62	6.0
CTHS0460-S	4.6	24	62	6.0
CTHS0470-S	4.7	24	62	6.0
CTHS0480-S	4.8	28	62	6.0
CTHS0490-S	4.9	28	62	6.0
CTHS0500-S	5.0	28	62	6.0
CTHS0510-S	5.1	28	62	6.0
CTHS0520-S	5.2	28	62	6.0
CTHS0530-S	5.3	28	62	6.0
CTHS0540-S	5.4	28	62	6.0
CTHS0550-S	5.5	28	62	6.0
CTHS0560-S	5.6	28	62	6.0
CTHS0570-S	5.7	28	62	6.0
CTHS0580-S	5.8	28	62	6.0
CTHS0590-S	5.9	28	62	6.0
CTHS0600-S	6.0	28	62	6.0
CTHS0610-S	6.1	34	75	8.0
CTHS0620-S	6.2	34	75	8.0
CTHS0630-S	6.3	34	75	8.0
CTHS0640-S	6.4	34	75	8.0
CTHS0650-S	6.5	34	75	8.0
CTHS0660-S	6.6	34	75	8.0
CTHS0670-S	6.7	34	75	8.0

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
CTHS0680-S	6.8	34	75	8.0
CTHS0690-S	6.9	34	75	8.0
CTHS0700-S	7.0	34	75	8.0
CTHS0710-S	7.1	40	80	8.0
CTHS0720-S	7.2	40	80	8.0
CTHS0730-S	7.3	40	80	8.0
CTHS0740-S	7.4	40	80	8.0
CTHS0750-S	7.5	40	80	8.0
CTHS0760-S	7.6	40	80	8.0
CTHS0770-S	7.7	40	80	8.0
CTHS0780-S	7.8	40	80	8.0
CTHS0790-S	7.9	40	80	8.0
CTHS0800-S	8.0	40	80	8.0
CTHS0810-S	8.1	51	100	10.0
CTHS0820-S	8.2	51	100	10.0
CTHS0830-S	8.3	51	100	10.0
CTHS0840-S	8.4	51	100	10.0
CTHS0850-S	8.5	51	100	10.0
CTHS0860-S	8.6	51	100	10.0
CTHS0870-S	8.7	51	100	10.0
CTHS0880-S	8.8	51	100	10.0
CTHS0890-S	8.9	51	100	10.0
CTHS0900-S	9.0	51	100	10.0
CTHS0910-S	9.1	51	100	10.0
CTHS0920-S	9.2	51	100	10.0
CTHS0930-S	9.3	51	100	10.0
CTHS0940-S	9.4	51	100	10.0

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
CTHS0950-S	9.5	51	100	10.0
CTHS0960-S	9.6	51	100	10.0
CTHS0970-S	9.7	51	100	10.0
CTHS0980-S	9.8	51	100	10.0
CTHS0990-S	9.9	51	100	10.0
CTHS1000-S	10.0	51	100	10.0
CTHS1010-S	10.1	55	100	12.0
CTHS1020-S	10.2	55	100	12.0
CTHS1030-S	10.3	55	100	12.0
CTHS1040-S	10.4	55	100	12.0
CTHS1050-S	10.5	55	100	12.0
CTHS1060-S	10.6	55	100	12.0
CTHS1070-S	10.7	55	100	12.0
CTHS1080-S	10.8	55	100	12.0
CTHS1090-S	10.9	55	100	12.0
CTHS1100-S	11.0	55	100	12.0
CTHS1110-S	11.1	55	100	12.0
CTHS1120-S	11.2	55	100	12.0
CTHS1130-S	11.3	55	100	12.0
CTHS1140-S	11.4	55	100	12.0
CTHS1150-S	11.5	55	100	12.0
CTHS1160-S	11.6	55	100	12.0
CTHS1170-S	11.7	55	100	12.0
CTHS1180-S	11.8	55	100	12.0
CTHS1190-S	11.9	55	100	12.0
CTHS1200-S	12.0	55	100	12.0
CTHS1250-S	12.5	55	105	14.0
CTHS1300-S	13.0	55	105	14.0
CTHS1350-S	13.5	55	105	14.0
CTHS1400-S	14.0	55	105	14.0
CTHS1450-S	14.5	58	105	16.0
CTHS1500-S	15.0	58	105	16.0
CTHS1550-S	15.5	58	105	16.0
CTHS1600-S	16.0	58	105	16.0
CTHS1650-S	16.5	58	105	18.0
CTHS1700-S	17.0	58	105	18.0
CTHS1750-S	17.5	58	105	18.0
CTHS1800-S	18.0	58	105	18.0
CTHS1850-S	18.5	58	105	20.0
CTHS1900-S	19.0	58	105	20.0

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
CTHS1950-S	19.5	58	105	20.0
CTHS2000-S	20.0	58	105	20.0





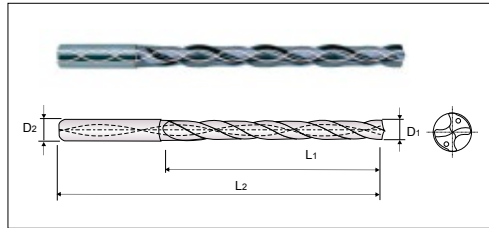
**Applications:**

High Performance Coolant Drills for maximum productivity in Steels, Cast Iron, Stainless Steel (300 series) & non-ferrous metals. Extremely high feed & cutting speeds with superior process reliability and surface quality

**Advantage:**

- Internal coolant
- Self Centering - Center Drilling not required
- Excellent Positioning - Bush is not necessary
- Special Design for Powerful Drilling & Good chip removal

**For Feed & Speed Rates go to Page No. 36**



Tolerance

D1 m7

D2 h6

AC-S-X

DIN 6537K

UMG

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
CTHL0410-S	4.1	36	75	6.0
CTHL0420-S	4.2	36	75	6.0
CTHL0430-S	4.3	36	75	6.0
CTHL0440-S	4.4	36	75	6.0
CTHL0450-S	4.5	36	75	6.0
CTHL0460-S	4.6	36	75	6.0
CTHL0470-S	4.7	36	75	6.0
CTHL0480-S	4.8	42	80	6.0
CTHL0490-S	4.9	42	80	6.0
CTHL0500-S	5.0	42	80	6.0
CTHL0510-S	5.1	42	80	6.0
CTHL0520-S	5.2	42	80	6.0
CTHL0530-S	5.3	42	80	6.0
CTHL0540-S	5.4	42	80	6.0
CTHL0550-S	5.5	42	80	6.0
CTHL0560-S	5.6	42	80	6.0
CTHL0570-S	5.7	42	80	6.0
CTHL0580-S	5.8	42	80	6.0
CTHL0590-S	5.9	42	80	6.0
CTHL0600-S	6.0	42	80	6.0
CTHL0610-S	6.1	55	100	8.0
CTHL0620-S	6.2	55	100	8.0
CTHL0630-S	6.3	55	100	8.0
CTHL0640-S	6.4	55	100	8.0
CTHL0650-S	6.5	55	100	8.0
CTHL0660-S	6.6	55	100	8.0
CTHL0670-S	6.7	55	100	8.0

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
CTHL0680-S	6.8	55	100	8.0
CTHL0690-S	6.9	55	100	8.0
CTHL0700-S	7.0	55	100	8.0
CTHL0710-S	7.1	60	105	8.0
CTHL0720-S	7.2	60	105	8.0
CTHL0730-S	7.3	60	105	8.0
CTHL0740-S	7.4	60	105	8.0
CTHL0750-S	7.5	60	105	8.0
CTHL0760-S	7.6	60	105	8.0
CTHL0770-S	7.7	60	105	8.0
CTHL0780-S	7.8	60	105	8.0
CTHL0790-S	7.9	60	105	8.0
CTHL0800-S	8.0	60	105	8.0
CTHL0810-S	8.1	75	125	10.0
CTHL0820-S	8.2	75	125	10.0
CTHL0830-S	8.3	75	125	10.0
CTHL0840-S	8.4	75	125	10.0
CTHL0850-S	8.5	75	125	10.0
CTHL0860-S	8.6	75	125	10.0
CTHL0870-S	8.7	75	125	10.0
CTHL0880-S	8.8	75	125	10.0
CTHL0890-S	8.9	75	125	10.0
CTHL0900-S	9.0	75	125	10.0
CTHL0910-S	9.1	75	125	10.0
CTHL0920-S	9.2	75	125	10.0
CTHL0930-S	9.3	75	125	10.0
CTHL0940-S	9.4	75	125	10.0



Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
CTHL0950-S	9.5	75	125	10.0
CTHL0960-S	9.6	75	125	10.0
CTHL0970-S	9.7	75	125	10.0
CTHL0980-S	9.8	75	125	10.0
CTHL0990-S	9.9	75	125	10.0
CTHL1000-S	10.0	75	125	10.0
CTHL1010-S	10.1	85	140	12.0
CTHL1020-S	10.2	85	140	12.0
CTHL1030-S	10.3	85	140	12.0
CTHL1040-S	10.4	85	140	12.0
CTHL1050-S	10.5	85	140	12.0
CTHL1060-S	10.6	85	140	12.0
CTHL1070-S	10.7	85	140	12.0
CTHL1080-S	10.8	85	140	12.0
CTHL1090-S	10.9	85	140	12.0
CTHL1100-S	11.0	85	140	12.0
CTHL1110-S	11.1	85	140	12.0
CTHL1120-S	11.2	85	140	12.0
CTHL1130-S	11.3	85	140	12.0
CTHL1140-S	11.4	85	140	12.0
CTHL1150-S	11.5	85	140	12.0
CTHL1160-S	11.6	85	140	12.0
CTHL1170-S	11.7	85	140	12.0
CTHL1180-S	11.8	85	140	12.0
CTHL1190-S	11.9	85	140	12.0
CTHL1200-S	12.0	85	140	12.0
CTHL1250-S	12.5	85	140	14.0
CTHL1300-S	13.0	85	140	14.0
CTHL1350-S	13.5	85	140	14.0
CTHL1400-S	14.0	85	140	14.0
CTHL1450-S	14.5	90	145	16.0
CTHL1500-S	15.0	90	145	16.0
CTHL1550-S	15.5	90	145	16.0
CTHL1600-S	16.0	90	145	16.0
CTHL1650-S	16.5	95	150	18.0
CTHL1700-S	17.0	95	150	18.0
CTHL1750-S	17.5	95	150	18.0
CTHL1800-S	18.0	95	150	18.0
CTHL1850-S	18.5	98	150	20.0

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
CTHL1900-S	19.0	98	150	20.0
CTHL1950-S	19.5	98	150	20.0
CTHL2000-S	20.0	98	150	20.0

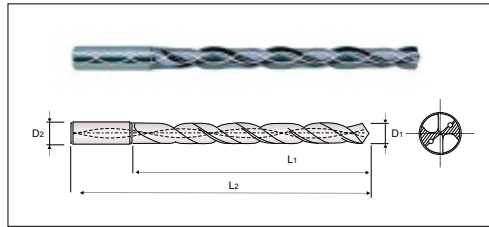
**Applications:**

- High Performance Coolant Drills for maximum productivity in Steels, Cast Iron, Stainless Steel (300 series) & non-ferrous metals.
- Extremely high feed & cutting speeds with superior process reliability and surface quality.

**Advantage:**

- Excellent positioning
- Special Design for Powerful Drilling & Good chip removal
- Available for processing MQL (Minimum Quantity Lubrication)

**For Feed & Speed Rates go to Page No. 36**



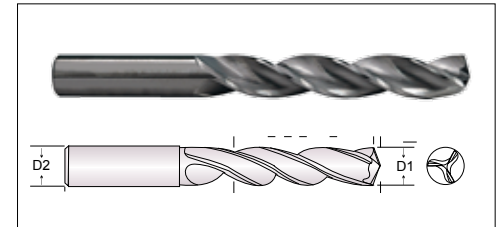
				Tolerance D1 m7 D2 h6

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
CTHM0420-S	4.2	57	105	6.0
CTHM0450-S	4.5	57	105	6.0
CTHM0500-S	5.0	65	108	6.0
CTHM0550-S	5.5	72	127	6.0
CTHM0600-S	6.0	78	133	6.0
CTHM0650-S	6.5	85	141	8.0
CTHM0700-S	7.0	91	147	8.0
CTHM0750-S	7.5	98	155	8.0
CTHM0800-S	8.0	104	160	8.0
CTHM0850-S	8.5	111	160	10.0
CTHM0900-S	9.0	117	175	10.0
CTHM0950-S	9.5	124	182	10.0
CTHM1000-S	10.0	130	188	10.0
CTHM1050-S	10.5	137	201	12.0
CTHM1100-S	11.0	143	207	12.0
CTHM1150-S	11.5	150	215	12.0
CTHM1200-S	12.0	156	221	12.0

**Application:**

- This series of Carbide Drills is recommended for higher speed & feed rates while working on materials like Aluminium, Copper, Brass and other easy to machine materials
- Three Flute for better rigidity

**For Feed & Speed Rates go to Page No. 36**



			Tolerance D1 m7 D2 h6

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1HN0400-U	4.0	36	75	6.0
C1HN0410-U	4.1	36	75	6.0
C1HN0420-U	4.2	36	75	6.0
C1HN0430-U	4.3	36	75	6.0
C1HN0440-U	4.4	36	75	6.0
C1HN0450-U	4.5	36	75	6.0
C1HN0460-U	4.6	36	75	6.0
C1HN0470-U	4.7	36	75	6.0
C1HN0480-U	4.8	42	80	6.0
C1HN0490-U	4.9	42	80	6.0
C1HN0500-U	5.0	42	80	6.0
C1HN0510-U	5.1	42	80	6.0
C1HN0520-U	5.2	42	80	6.0
C1HN0530-U	5.3	42	80	6.0
C1HN0540-U	5.4	42	80	6.0
C1HN0550-U	5.5	42	80	6.0
C1HN0560-U	5.6	42	80	6.0
C1HN0570-U	5.7	42	80	6.0
C1HN0580-U	5.8	42	80	6.0
C1HN0590-U	5.9	42	80	6.0
C1HN0600-U	6.0	42	80	6.0
C1HN0610-U	6.1	55	100	8.0
C1HN0620-U	6.2	55	100	8.0
C1HN0630-U	6.3	55	100	8.0
C1HN0640-U	6.4	55	100	8.0
C1HN0650-U	6.5	55	100	8.0
C1HN0660-U	6.6	55	100	8.0

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1HN0670-U	6.7	55	100	8.0
C1HN0680-U	6.8	55	100	8.0
C1HN0690-U	6.9	55	100	8.0
C1HN0700-U	7.0	55	100	8.0
C1HN0710-U	7.1	60	105	8.0
C1HN0720-U	7.2	60	105	8.0
C1HN0730-U	7.3	60	105	8.0
C1HN0740-U	7.4	60	105	8.0
C1HN0750-U	7.5	60	105	8.0
C1HN0760-U	7.6	60	105	8.0
C1HN0770-U	7.7	60	105	8.0
C1HN0780-U	7.8	60	105	8.0
C1HN0790-U	7.9	60	105	8.0
C1HN0800-U	8.0	60	105	8.0
C1HN0810-U	8.1	75	125	10.0
C1HN0820-U	8.2	75	125	10.0
C1HN0830-U	8.3	75	125	10.0
C1HN0840-U	8.4	75	125	10.0
C1HN0850-U	8.5	75	125	10.0
C1HN0860-U	8.6	75	125	10.0
C1HN0870-U	8.7	75	125	10.0
C1HN0880-U	8.8	75	125	10.0
C1HN0890-U	8.9	75	125	10.0
C1HN0900-U	9.0	75	125	10.0
C1HN0910-U	9.1	75	125	10.0
C1HN0920-U	9.2	75	125	10.0
C1HN0930-U	9.3	75	125	10.0



Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1HN0940-U	9.4	75	125	10.0
C1HN0950-U	9.5	75	125	10.0
C1HN0960-U	9.6	75	125	10.0
C1HN0970-U	9.7	75	125	10.0
C1HN0980-U	9.8	75	125	10.0
C1HN0990-U	9.9	75	125	10.0
C1HN1000-U	10.0	75	125	10.0
C1HN1010-U	10.1	85	140	12.0
C1HN1020-U	10.2	85	140	12.0
C1HN1030-U	10.3	85	140	12.0
C1HN1040-U	10.4	85	140	12.0
C1HN1050-U	10.5	85	140	12.0
C1HN1060-U	10.6	85	140	12.0
C1HN1070-U	10.7	85	140	12.0
C1HN1080-U	10.8	85	140	12.0
C1HN1090-U	10.9	85	140	12.0
C1HN1100-U	11.0	85	140	12.0
C1HN1110-U	11.1	85	140	12.0
C1HN1120-U	11.2	85	140	12.0
C1HN1130-U	11.3	85	140	12.0
C1HN1140-U	11.4	85	140	12.0
C1HN1150-U	11.5	85	140	12.0
C1HN1160-U	11.6	85	140	12.0
C1HN1170-U	11.7	85	140	12.0
C1HN1180-U	11.8	85	140	12.0
C1HN1190-U	11.9	85	140	12.0
C1HN1200-U	12.0	85	140	12.0
C1HN1250-U	12.5	85	140	14.0
C1HN1300-U	13.0	85	140	14.0
C1HN1350-U	13.5	85	140	14.0
C1HN1400-U	14.0	85	140	14.0
C1HN1450-U	14.5	90	145	16.0
C1HN1500-U	15.0	90	145	16.0
C1HN1550-U	15.5	90	145	16.0
C1HN1600-U	16.0	90	145	16.0



**Applications:**

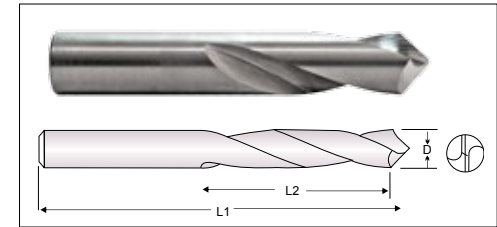
Designed for accurate Spotting on NC Machines

**Advantage:**

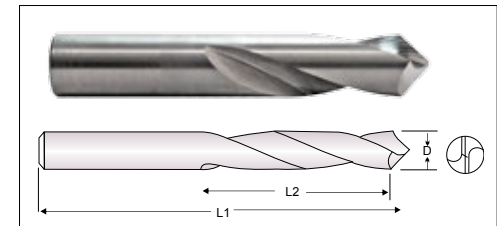
- To be used at higher speeds & feeds, compatible with other carbide tooling
- Easy to re-point as there is no web taper
- Short Flute Length & No Body Clearance makes this a very rigid tool

**For Feed & Speed Rates go to Page no. 38**

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1N10600-U	6	13	50	6
C1N10800-U	8	23	60	8
C1N11000-U	10	24	70	10
C1N11200-U	12	24	70	12
C1N11600-U	16	29	75	16
C1N12000-U	20	35	100	20



Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1N20600-U	6	13	50	6
C1N20800-U	8	23	60	8
C1N21000-U	10	24	70	10
C1N21200-U	12	24	70	12
C1N21600-U	16	29	75	16
C1N22000-U	20	35	100	20

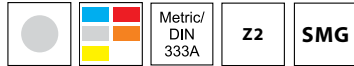
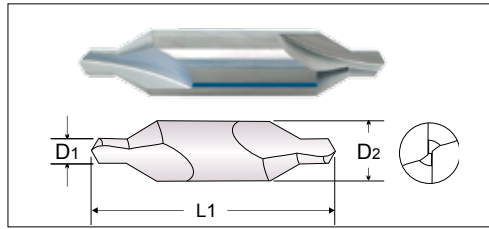


**Applications:**

Designed for accurate Spotting on NC Machines

**Advantage:**

- Designed for accurate Center Holes in long production runs Or when precise centering is required.
- Solid Carbide construction helps reduce tool changes when abrasive material is machined.
- 60° Included Angle
- Other included angles can be provided on request



**For Feed & Speed Rates go to Page no. 38**

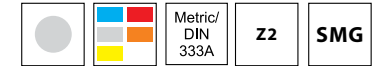
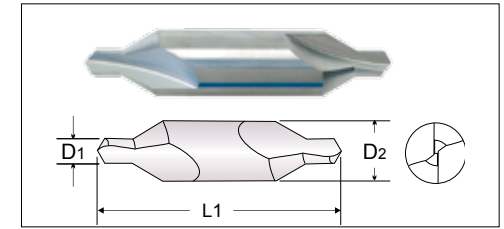
Ordering No.	Size	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1CB-BS1-U	BS1	3/64	3/64	1-1/2	1/8
C1CB-BS2-U	BS2	5/64	5/64	1-7/8	3/16
C1CB-BS3-U	BS3	7/64	7/64	2	1/4
C1CB-BS4-U	BS4	1/8	1/8	2-1/4	5/16
C1CB-BS5-U	BS5	3/16	3/16	2-3/4	7/16
C1CB-BS6-U	BS6	7/32	7/32	3	1/2
C1CB-BS7-U	BS7	1/4	1/4	3-1/4	5/8
C1CB-BS8-U	BS8	5/16	5/16	3-1/2	3/4

**Applications:**

Designed for accurate Spotting on NC Machines

**Advantage:**

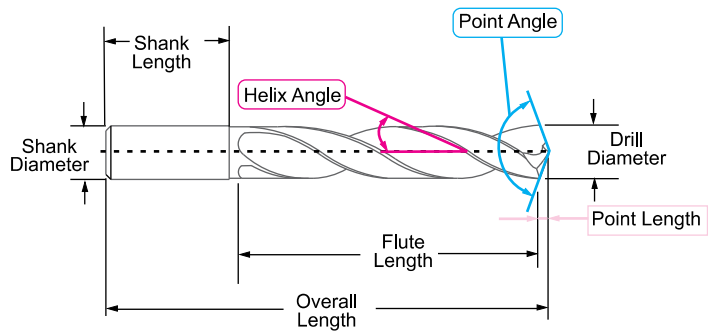
- Designed for accurate Center Holes in long production runs Or when precise centering is required.
- Solid Carbide construction helps reduce tool changes when abrasive material is machined.
- 60° Included Angle
- Other included angles can be provided on request



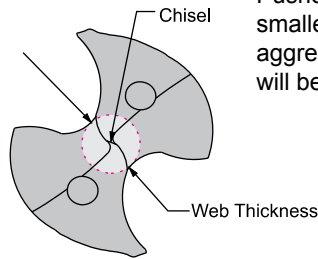
**For Feed & Speed Rates go to Page no. 38**

Ordering No.	Flute Dia(D1)	Flute Len(L1)	Overall Len(L2)	Shank Dia(D2)
C1CD0125-U	1.25	1.6	32	3.15
C1CD0160-U	1.6	2	36	4
C1CD0200-U	2	2.5	40	5
C1CD0250-U	2.5	3.1	45	6.3
C1CD0315-U	3.15	3.9	50	8
C1CD0400-U	4	5	56	10
C1CD0500-U	5	6.3	63	12.5
C1CD0630-U	6.3	8	71	16
C1CD0800-U	8	10.1	80	20

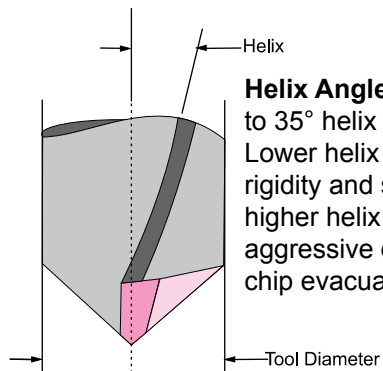
# Drill Terminology



**Chisel Edge** – The non-cutting tip of the drill. Pushes, rather than cuts material. Having a smaller chisel means that a tool will cut more aggressively. A larger chisel means that a tool will be stronger.

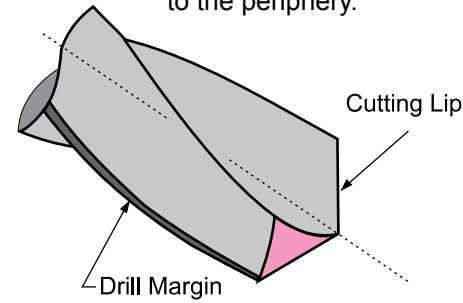


**Web** – The core of the drill that is left from the fluting operation. A thicker web means added rigidity, while a smaller web means more chip evacuation. On two flute drills, typically varies from 16% - 30% of the tool diameter.

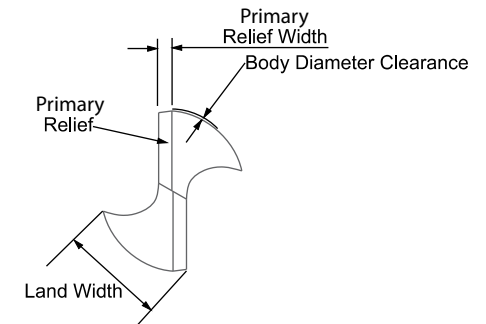


**Helix Angle** - Varies from 0° to 35° helix on standard tools. Lower helix angle means more rigidity and strength and a higher helix angle means more aggressive drilling and better chip evacuation.

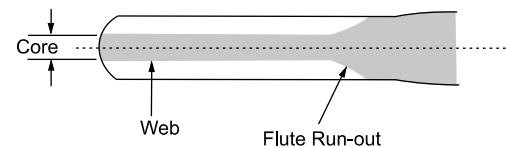
**Cutting Lip** - The cutting edges of a two flute drill extending from the chisel edge to the periphery.



**Margin Width** – Provides a surface to support the drill inside the hole during the drilling operation. RIGPL offers single margin geometries. Margin widths are a balancing act between friction build-up vs. tool support in the drilling operation.



**Land Width** – The amount of material left on the drill per side, from the fluting operation. Larger land widths mean more rigidity, while smaller land widths allow for better chip evacuation.





Series: C1GS, C1GJ		Carbide General Purpose Drills, STUB & JOBBER							
Workpiece Material Group	ISO	Examples	Cutting Speed (Vc)	Tool Diameter (in mm)					
				<3	6	10	12	16	20
			m/min	Feed per revolution (Fr) mm/rev					
Steels	P	Low Carbon Steels 1018	55	0.07	0.14	0.2	0.24	0.26	0.3
		Alloy Steels (up to 35 Rc) 4140	50	0.07	0.14	0.2	0.24	0.26	0.3
		Alloy Steels (36-45 Rc) 4140	45	0.07	0.14	0.2	0.24	0.26	0.3
Austenitic	M	304/316	40	0.07	0.14	0.2	0.24	0.26	0.3
Precipitation Hardened Stainless Steels	M	17-4 PH	X						
Cast Irons	K	Grey Cast Iron A48 Class 20/G4000	85	0.07	0.14	0.2	0.24	0.26	0.3
		Ductile Cast Iron A536/60-40-18	55	0.07	0.14	0.2	0.24	0.26	0.3
Non-Ferrous	N	Plastic	120	0.05	0.07	0.1	0.14	0.2	0.21
		Kevlar/Graphite	120	0.05	0.07	0.1	0.14	0.2	0.21

Series: GP-PCB					
Workpiece Material Group	ISO	Examples	Cutting Speed (Vc)	Tool Diameter in mm	
			m/min	1.95-3.00	>3.00
			Feed per revolution (Fr) mm/rev		
Non-Ferrous	N	Aluminium (<10% Si)	120	0.03	0.04
		Aluminium (>10% Si)	90	0.03	0.04
		Plastics	140	0.03	0.04
		"Composites/Fiber Reinforced Materials/Circuit Boards"	170	0.10	0.12

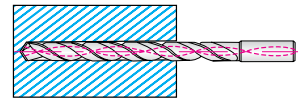
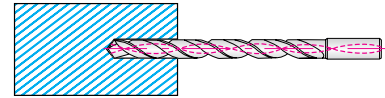


Series: C1HS, C1HL		Carbide High Performance Drills - SHORT & LONG							
Workpiece Material Group	ISO	Examples	Cutting Speed (Vc)	Tool Diameter (in mm)					
				<3	6	10	12	16	20
			m/min	Feed per revolution (Fr) mm/rev					
Steels	P	Low Carbon Steels 1018	90	0.07	0.15	0.2	0.25	0.3	0.36
		Alloy Steels (up to 35 Rc) 4140	70	0.07	0.15	0.2	0.25	0.3	0.36
		Alloy Steels (36-45 Rc) 4140	55	0.05	0.11	0.13	0.15	0.2	0.23
Austenitic	M	304/316	55	0.07	0.15	0.2	0.25	0.3	0.36
Precipitation Hardened Stainless Steels	M	17-4 PH	40	0.05	0.11	0.13	0.15	0.2	0.23
Cast Irons	K	Grey Cast Iron A48 Class 20/G4000	130	0.07	0.15	0.2	0.25	0.3	0.36
		Ductile Cast Iron A536/60-40-18	70	0.07	0.15	0.2	0.25	0.3	0.36
Special Alloys	S	Titanium 6AL-4V	40	0.05	0.11	0.13	0.15	0.2	0.23
		High Temp Alloys Inconel/Hastelloy/Waspelloy	25	0.05	0.11	0.13	0.15	0.2	0.23

Series: CTHS, CTHL, CTHM		Carbide Coolant Fed Drills : SHORT, LONG, MQL Drills							
Workpiece Material Group	ISO	Examples	Cutting Speed (Vc) m/min	Tool Diameter (in mm)					
				≤3	≤6	≤10	≤12	≤16	≤20
				Feed per revolution (Fr) mm/rev					
Steels	P	Low Carbon Steels 1018	120	0.07	0.15	0.2	0.25	0.3	0.36
		Alloy Steels (up to 35 Rc) 4140	90	0.07	0.15	0.2	0.25	0.3	0.36
		Alloy Steels (36-45 Rc) 4140	70	0.05	0.11	0.13	0.15	0.2	0.23
Austenitic	M	304/316	70	0.07	0.15	0.2	0.25	0.3	0.36
Precipitation Hardened Stainless Steels	M	17-4 PH	55	0.05	0.11	0.13	0.15	0.2	0.23
Cast Irons	K	Grey Cast Iron A48 Class 20/G4000	150	0.07	0.15	0.2	0.25	0.3	0.36
		Ductile Cast Iron A536/60-40-18	90	0.07	0.15	0.2	0.25	0.3	0.36
Special Alloys	S	Titanium 6AL-4V	55	0.05	0.11	0.13	0.15	0.2	0.23
		High Temp Alloys Inconel/Hastelloy/Waspelloy	40	0.05	0.11	0.13	0.15	0.2	0.23

Series: C1HN		Carbide High Performance 3-Flute Drills						
Workpiece Material Group	ISO	Material Examples	Cutting Speed	Tool Diameter (in mm)				
				≤3	≤6	≤10	≤12	≤16
				Feed per revolution (Fr) mm/rev				
Non-Ferrous	N	"Aluminium < 14% Si 6061T6"	185	0.16	0.24	0.28	0.37	0.41
		Aluminium > 14% Si	130	0.06	0.12	0.16	0.2	0.22
		Brass/Copper	60	0.06	0.12	0.16	0.2	0.22
		Plastics	80	0.06	0.12	0.16	0.2	0.22
			<b>L/D Ratio</b>	<b>Reduce Feed</b>	<b>Reduce RPM</b>			
			3XD	100%	100%			
			5XD	80%	85%			
			8XD	60%	75%			
			>8XD	50%	60%			

FOR MQL DRILLS or DEEP HOLE DRILLS



1. Guide Drilling should be done as Diameter+0.1mm between 3xD and 5xD depth.
2. For Main Drilling, proceed with low RPM at Guide Drilling segment. (RPM 300, FEED 400mm/min)
3. Just before the end of Guide Drilling segment, reduce feed to zero and increase the RPM according to Recommended Cutting Condition chart (See above).
4. After then, proceed main drilling by increasing feed without step drilling.
5. When coming out from Guide Drilling start point after drilling, RPM should be reduced as 300 and feed should be 1000 mm/min.
6. When coming out from Guide Drilling segment to the outside, the feed should be decreased as 50%.

Important Note:

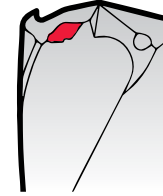
- For all deep hole drilling over 5XD guide holes are recommended
- Deep hole drills are prone to breakage without guide holes
- Minimum of 800+psi coolant pressure recommended

Series : C1N1, C1N2, C1CB, C1CD		NC Spotting Drills & Centre Drills							
Workpiece Material Group	ISO	Examples	Cutting Speed (Vc)	Tool Diameter (in mm)					
				1	1.5	3	6	10	12
			m/min	Feed per revolution (Fr) mm/rev					
Steels	P	Low Carbon Steels 1018	55	0.01	0.02	0.04	0.07	0.1	0.12
		Alloy Steels (up to 35 Rc) 4140	50	0.01	0.02	0.04	0.07	0.1	0.12
		Alloy Steels (36-45 Rc) 4140	45	0.01	0.02	0.04	0.07	0.1	0.12
Austenitic	M	304/316	40	0.01	0.02	0.04	0.07	0.1	0.12
Precipitation Hardened Stainless Steels	M	17-4 PH	20	0.01	0.02	0.04	0.07	0.1	0.12
Cast Irons	K	Grey Cast Iron A48 Class 20/G4000	85	0.01	0.02	0.04	0.07	0.1	0.12
		Ductile Cast Iron A536/60-40-18	55	0.01	0.02	0.04	0.07	0.1	0.12
Special Alloys	S	Titanium 6AL-4V	25	0.01	0.02	0.04	0.07	0.1	0.12
		High Temp Alloys Inconel/Hastelloy/Waspelloy	10	0.01	0.02	0.04	0.07	0.1	0.12
"Hardened Steels"	H	">45 Rc A2/52100"	15	0.01	0.02	0.04	0.07	0.1	0.12

### Cutting edge build-up

**Cause:**

- Low cutting speed
- Excessive honing of cutting lip
- Bright finish cutting lip



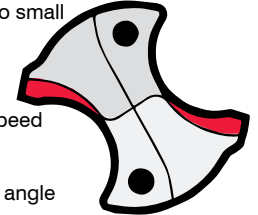
**Remedy:**

- Increase cutting speed
- Reduce cutting lip honing
- Have tool coated

### Heavy wear and tear at flank

**Cause:**

- Cutting speed too high
- Feed too low
- Clearance angle too small



**Remedy:**

- Decrease cutting speed
- Increase feed
- Increase clearance angle

### Crumbling of outer corners

**Cause:**

- Non-rigid conditions, insufficient work piece clamping
- Excessive deviation from concentricity
- Interrupted cut



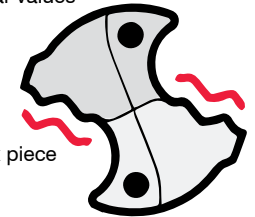
**Remedy:**

- Rigid clamping of work piece
- Check and correct concentricity if possible
- Reduce feed

### Crumbling on cutting lips

**Cause:**

- Non-rigid conditions, insufficient work piece clamping
- Interrupted cut
- Maximum wear and tear values have been exceeded
- Wrong tool type



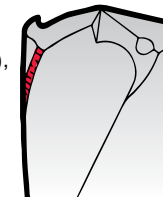
**Remedy:**

- Rigid clamping of work piece
- Reduce feed
- Reduce tool change intervals
- Apply suitable tool

### Land wear

**Cause:**

- Non-rigid conditions, insufficient work piece clamping
- Large deviation from concentricity
- Back taper too small
- Wrong coolant/lubrication (oil), soluble oil too thin



**Remedy:**

- Rigid clamping of work piece
- Check and correct concentricity if possible
- Increase back taper
- Thicken soluble oil or use neat oil

### Scoring on tool body

**Cause:**

- Non-rigid conditions, insufficient work piece clamping
- Large deviation from concentricity
- Interrupted cut
- Abrasive work piece material



**Remedy:**

- Rigid clamping of work piece
- Check and correct concentricity if possible
- Reduce feed
- Thicken soluble oil or use neat oil



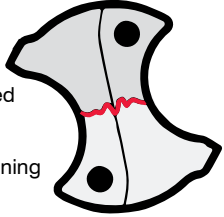
**Heavy chisel edge wear & tear**

**Cause:**

- Cutting speed too low
- Feed too high
- Excessive honing of cutting lip

**Remedy:**

- Increase cutting speed
- Decrease feed
- Reduce cutting lip honing



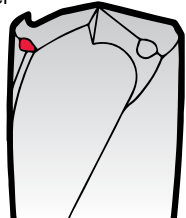
**Plastic deformation of outer corner**

**Cause:**

- Cutting speed too high
- Incorrect or no honing at corner
- Incorrect or no corner chamfer

**Remedy:**

- Decrease cutting speed
- Correct honing
- Apply correct corner chamfer



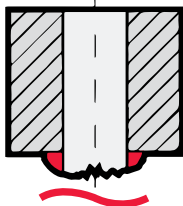
**Heavy burring on breakthrough**

**Cause:**

- Feed too high
- Maximum wear and tear values have been exceeded
- Excessive honing of cutting lip

**Remedy:**

- Decrease feed
- Reduce tool change intervals
- Reduce cutting lip honing



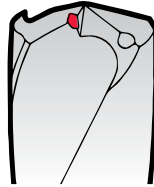
**Crumbling at intersection of web thinning and cutting lip**

**Cause:**

- Clearance angle too small
- Excessive honing of cutting lip
- Wrong tool type

**Remedy:**

- Increase clearance angle
- Reduce cutting lip honing
- Apply suitable tool



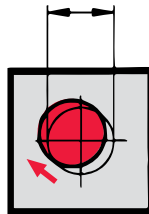
**Misalignment, axis shifting**

**Cause:**

- Non-rigid conditions, insufficient work piece clamping
- Excessive deviation from concentricity
- Spotting area transverse
- Chisel edge too large

**Remedy:**

- Rigid clamping of work piece
- Check and correct concentricity, if possible
- Use twin-fluted milling cutter for spotting
- Reduce chisel edge



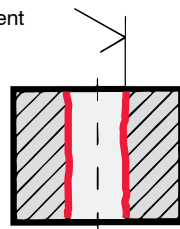
**Unsatisfactory surface quality**

**Cause:**

- Non-rigid conditions, insufficient work piece clamping
- Excessive deviation from concentricity
- Insufficient coolant

**Remedy:**

- Rigid clamping of work piece
- Check and correct concentricity, if possible
- Increase coolant (volume, pressure)



**Carbide Reamers**

In applications that require high-precision hole finishes, or tighter diameter control ROHIT's Solid Carbide Reamers can be used with confidence in a wide range of sizes for virtually all materials, including cast iron, aluminium, stainless steel, exotic alloys, plastics and other non-ferrous materials.

**Material Removal Parameters**

For proper finishing with a reamer, the correct amount of material must be left in the hole. If the hole is too close to the finish size, the reamer will tend to burnish the hole, and excessive tool wear will occur. If too much material is left, chips can clog the flutes of the reamer, resulting in a poor finish, poor size control, and possible tool breakage.

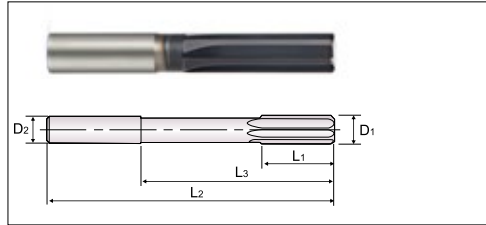
Description	Series No.	Page No
Carbide St. Flute Reamers	C1RS	42
Carbide LHS/RHC Reamers	C1RL	43
Carbide RHS/RHC Reamers	C1RR	44
Technical Information		46-49



**Applications:**

- Best suited for General Purpose Reaming in ferrous & non-ferrous materials
- Suited for both Through & blind hole construction
- Special sizes available on request

**For Feed & Speed Rates go to Page No. 49**



45°

SMG

Hole Type

Tolerance

D1 H7

D2 h6

Metric  
Din  
1420 H7

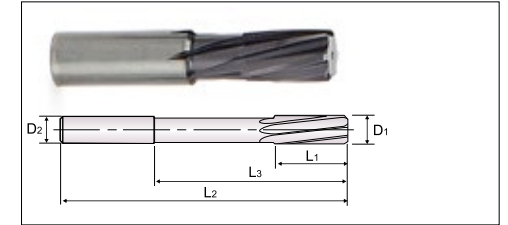
RHC

Ordering Code	Flute Diameter (D1)	Flute Length (L1)	Reach Length (L3)	Overall Length (L2)	Shank Diameter (D2)	No of Flutes
C1RS0300061-U	3	15	31	61	4	4
C1RS0350070-U	3.5	18	36	70	4	4
C1RS0400075-U	4	19	42	75	4	4
C1RS0450080-U	4.5	21	46	80	5	4
C1RS0500086-U	5	23	51	86	5	4
C1RS0550093-U	5.5	26	56	93	6	4
C1RS0600093-U	6	26	56	93	6	4
C1RS0650101-U	6.5	28	62	101	7	6
C1RS0700109-U	7	31	68	109	7	6
C1RS0750109-U	7.5	31	68	109	8	6
C1RS0800117-U	8	33	74	117	8	6
C1RS0850117-U	8.5	33	74	117	9	6
C1RS0900125-U	9	36	80	125	9	6
C1RS0950125-U	9.5	36	80	125	10	6
C1RS1000133-U	10	38	86	133	10	6
C1RS1050133-U	10.5	38	86	133	12	6
C1RS1100142-U	11	41	95	142	12	6
C1RS1200151-U	12	44	104	151	12	6
C1RS1300151-U	13	44	104	151	14	6
C1RS1400155-U	14	47	106	155	14	6
C1RS1500160-U	15	50	110	160	16	6
C1RS1600160-U	16	52	110	160	16	6

**Applications:**

- Best suited for General Purpose Reaming in ferrous & non-ferrous materials
- Suited for Through hole construction
- Better Surface finish & Size control is achieved
- Special sizes available on request.

**For Feed & Speed Rates go to Page No. 49**



45°

SMG

Hole Type

Tolerance

D1 H7

D2 h6

Metric  
Din  
1420 H7

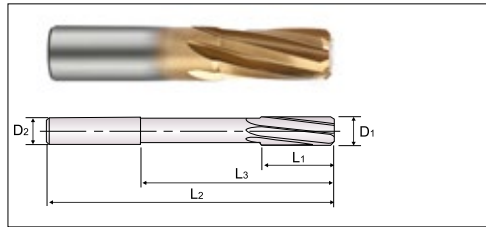
RHC


Ordering Code	Flute Diameter (D1)	Flute Length (L1)	Length below Shank (L3)	Overall Length (L2)	Shank Diameter (D2)	No of Flutes
C1RL0300061-U	3	15	31	61	4	4
C1RL0350070-U	3.5	18	36	70	4	4
C1RL0400075-U	4	19	42	75	4	4
C1RL0450080-U	4.5	21	46	80	5	4
C1RL0500086-U	5	23	51	86	5	4
C1RL0550093-U	5.5	26	56	93	6	4
C1RL0600093-U	6	26	56	93	6	4
C1RL0650101-U	6.5	28	62	101	7	6
C1RL0700109-U	7	31	68	109	7	6
C1RL0750109-U	7.5	31	68	109	8	6
C1RL0800117-U	8	33	74	117	8	6
C1RL0850117-U	8.5	33	74	117	9	6
C1RL0900125-U	9	36	80	125	9	6
C1RL0950125-U	9.5	36	80	125	10	6
C1RL1000133-U	10	38	86	133	10	6
C1RL1050133-U	10.5	38	86	133	12	6
C1RL1100142-U	11	41	95	142	12	6
C1RL1200151-U	12	44	104	151	12	6
C1RL1300151-U	13	44	104	151	14	6
C1RL1400155-U	14	47	106	155	14	6
C1RL1500160-U	15	50	110	160	16	6
C1RL1600160-U	16	52	110	160	16	6

**Applications:**

- Best suited for General Purpose Reaming in ferrous & non-ferrous materials
- Special sizes available on request

**For Feed & Speed Rates go to Page No. 49**

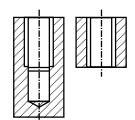




45°

SMG

Hole Type



Tolerance

D1 H7

D2 h6

Metric  
Din  
1420 H7

RHC

Ordering Code	Flute Diameter (D1)	Flute Length (L1)	Length below Shank (L3)	Overall Length (L2)	Shank Diameter (D2)	No of Flutes
C1RR0300061-U	3	15	31	61	4	4
C1RR0350070-U	3.5	18	36	70	4	4
C1RR0400075-U	4	19	42	75	4	4
C1RR0450080-U	4.5	21	46	80	5	4
C1RR0500086-U	5	23	51	86	5	4
C1RR0550093-U	5.5	26	56	93	6	4
C1RR0600093-U	6	26	56	93	6	4
C1RR0650101-U	6.5	28	62	101	7	6
C1RR0700109-U	7	31	68	109	7	6
C1RR0750109-U	7.5	31	68	109	8	6
C1RR0800117-U	8	33	74	117	8	6
C1RR0850117-U	8.5	33	74	117	9	6
C1RR0900125-U	9	36	80	125	9	6
C1RR0950125-U	9.5	36	80	125	10	6
C1RR1000133-U	10	38	86	133	10	6
C1RR1050133-U	10.5	38	86	133	12	6
C1RR1100142-U	11	41	95	142	12	6
C1RR1200151-U	12	44	104	151	12	6
C1RR1300151-U	13	44	104	151	14	6
C1RR1400155-U	14	47	106	155	14	6
C1RR1500160-U	15	50	110	160	16	6
C1RR1600160-U	16	52	110	160	16	6





Problem	Possible Solution																
	Speed & Feed						Tool Geometry						Coolant & Stock Removal				
	Reduce Feed	Increase Feed	Reduce Speed	Increase Speed	Use Larger Reamer	Use Smaller Reamer	Bad Speed & Feed	Worn Tool Margin	Worn Cutting Edge	Uneven Lip Height	Chip Capacity of Reamer	Too Much Clearance	Grind Larger Back Taper	Bent Reamer	Insufficient Stock	Too Much Stock	Use Coolant
Burnishing		X								X					X		
Reamer Wear	X		X				X									X	X
Hole Quality	X		X				X	X	X						X	X	X
Hole Undersize	X		X		X			X	X						X	X	X
Hole Oversize		X		X		X		X	X				X		X	X	
Accuracy	X					X			X								X
Chatter		X	X						X	X	X				X		X
Out of Round Hole					X			X	X	X					X	X	X
Hole Taper						X		X	X			X			X	X	
Bell Mouth		X					X	X	X		X	X	X				X
Reamer Life		X	X			X			X		X						X
Scoring in Bore						X	X	X	X						X	X	X
Deflection																	



Problem	Possible Solution																					
	Coolant & Stock Removal						Set Up							Cutting Errors								
	Run Dry	Poor Hole Prep	Insufficient Stock	Too Much Stock	Use Coolant	Run Dry	Poor Hole Prep	Alignment	Holder Accuracy	Concentricity	Use Adjustable Holder	Use Floating Holder	Lack of Rigidity in Set-Up	Work Holding Error	Spindle Bearings	Tool Extended Too Far	Poor Regrind	Poor Machinability	Built Up Edge	Wrong Tool	Poor Chip Removal	
			X					X						X			X					
	X		X	X		X	X	X	X					X			X	X		X		
	X	X	X	X		X	X	X	X					X			X	X	X	X		
			X	X				X									X					
	X	X		X	X	X	X	X						X			X	X	X	X		
				X										X			X					
				X										X			X	X				
	X	X	X	X		X			X	X	X		X	X	X	X	X	X				X



		Drill Size (mm)							
		2.8	3.8	4.8	5.8	7.8	9.8	11.8	15.7
		Reamer Diameter (mm)							
		3	4	5	6	8	10	12	16
Material	Example	Total Stock Allowance							
Magnesium		0.2	0.22	0.22	0.23	0.26	0.3	0.32	0.38
Aluminium	<5%Si	0.2	0.22	0.22	0.23	0.26	0.3	0.32	0.38
	>5%Si	0.2	0.22	0.22	0.23	0.24	0.26	0.29	0.33
Brass & Soft Bronze	Brass	0.2	0.22	0.22	0.23	0.24	0.26	0.29	0.33
	Bronze	0.2	0.22	0.22	0.23	0.25	0.28	0.3	0.35
Copper & Hard Bronze		0.2	0.22	0.22	0.23	0.25	0.28	0.3	0.35
Cast Iron	Cast	0.17	0.19	0.2	0.21	0.23	0.25	0.27	0.33
	Ductile	0.17	0.19	0.2	0.21	0.23	0.25	0.27	0.3
Steel	<35% C	0.17	0.19	0.2	0.21	0.23	0.25	0.27	0.33
	>35% C	0.14	0.16	0.17	0.18	0.2	0.23	0.24	0.3
	Tool	0.14	0.16	0.17	0.18	0.2	0.23	0.24	0.3
	Hard	0.1	0.12	0.12	0.13	0.15	0.18	0.19	0.25
Stainless		0.14	0.16	0.17	0.18	0.2	0.23	0.24	0.3
High Temp Alloys	Soft	0.14	0.16	0.17	0.18	0.19	0.21	0.24	0.28
	Hard	0.13	0.14	0.15	0.16	0.16	0.18	0.21	0.25
Titanium		0.17	0.19	0.2	0.21	0.23	0.25	0.27	0.33



Series : C1RS, C1RR, C1RL		Diameter(mm)					
		>1.5 - 3.0	>3.0 - 6.0	>6.0 - 12.0	>12.0-25.0		
Material	ISO	Examples	Vc	Feed per rev (mm/rev)			
Steels	P	Steel - Mild (.2-.3 Carbon) 1018	45-70	.035-.100	.070-.175	.100-.280	.175-.550
		Alloy Steel up to 35 Rc 4140	30-45	.035-.070	.070-.100	.100-0.175	.175-.350
		Alloy Steel 36-45 Rc 4140/A2/D2	12-30	.020-.035	.035-.070	.070-.100	.100-0.175
Stainless Steels	M	Free Machining/Austenitic Stainless 304/316	27-45	.035-.070	.070-.100	.100-0.175	.175-.350
		Ferritic/Martensitic	18-28	.035-.070	.070-.100	.100-0.175	.175-.350
		17-4 PH	15-25	.020-.070	.035-.100	.070-.175	.100-.350
Special Alloys	S	Inconel 625/718	10-15	.020-.035	.035-.070	.070-.100	.100-0.175
		Stellite/Cobalt Chrome	7-12	.020-.035	.035-.070	.070-.100	.100-0.175
		Titanium 6AL-4V	7-12	.020-.070	.035-.100	.070-.175	.100-.350
Cast Iron	K	Gray Cast Iron A48 Class 20/G4000	35-60	.020-.070	.035-.100	.070-.175	.100-.350
		Malleable/Ductile Cast Iron A536/60-40-18	30-45	.035-.070	.070-.100	.100-0.175	.175-.350
		Hard (Martensitic) Cast Iron	12-20	.020-.035	.035-.070	.070-.100	.100-0.175
Non-Ferrous	N	Aluminium/ Aluminium Alloys	150-300	.035-.100	.070-.175	.100-.280	.175-.550
		Brass/Bronze Free Machining	75-120	.035-.070	.070-.100	.100-0.175	.175-.350
		Brass/Bronze (Hard)	45-75	.035-.070	.070-.100	.100-0.175	.175-.350
		Magnesium/ Magnesium Alloys/Plastics/Bakelite Plastic-Glass Filled	110-220	.035-.100	.070-.175	.100-.280	.175-.550
		Copper/Hard Bronze	20-35	.020-.035	.035-.070	.070-.100	.100-0.175
Hard-ened Steel	H	"Hardened Steels 23-32 Rc"	30-45	.035-.070	.070-.100	.100-0.175	.175-.350
		"Hardened Steels 32-43 Rc"	10-30	.020-.035	.035-.070	.070-.100	.100-0.175
		"Hardened Steels 43-52 Rc"	7-12	.020-.035	.035-.070	.070-.100	.100-0.175