

INDRILL
Ø 0.015 - 3.00 mm
Universal



NexGen ultra mICRO mICRO Drills Universal applications

T301

T302

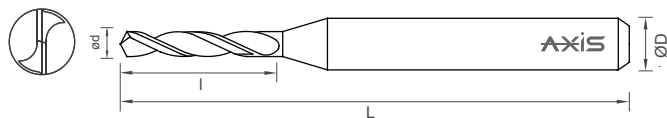
T303

Steel
Low/
UnalloyedNon-
Ferrous

Plastics

Steel
High
Alloyed

SS

Cast
Iron

Dia Tolerance

Uncoated : h6

Coated : ±0.003

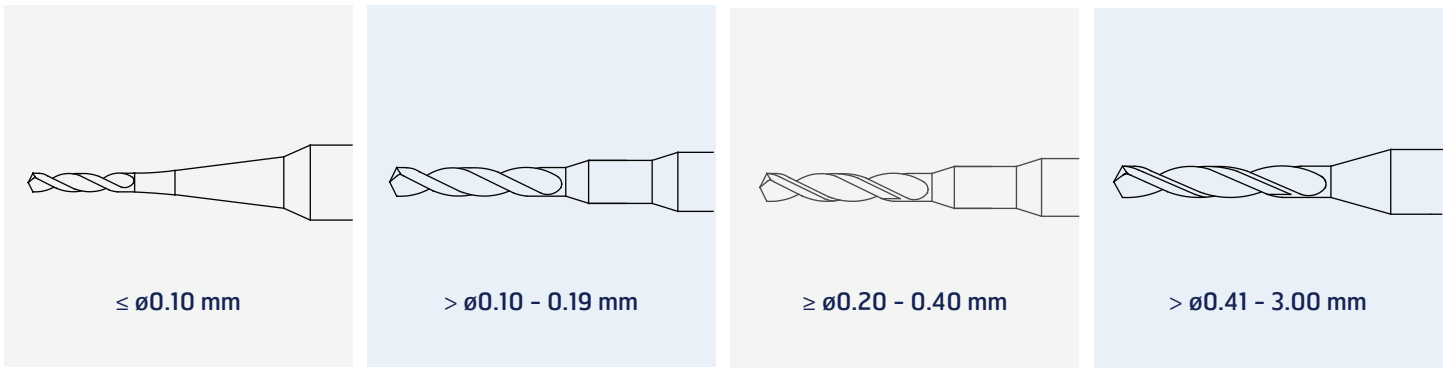


ød <0.40mm ød ≥0.40mm

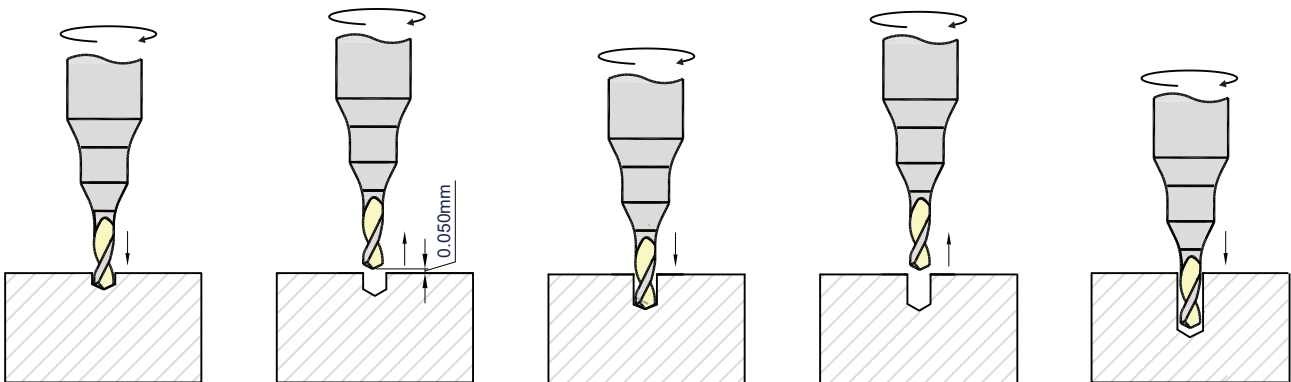
		T301 Stub Length		T302 Standard Length		T303 Long Length	
ød	ØD h6	I	L	I	L	I	L
0.015 (+0.003)	3.00					0.15	38.00
0.020 (+0.003)	3.00					0.20	38.00
0.030 (+0.003)	3.00					0.30	38.00
0.040 (+0.003)	3.00					0.40	38.00
0.050 (-0.004)	3.00					0.50	38.00
0.060 (-0.004)	3.00					0.60	38.00
0.070 (-0.004)	3.00					0.70	38.00
0.080 (-0.004)	3.00					0.80	38.00
0.090 (-0.004)	3.00					0.90	38.00
0.10	3.00			0.80	38.00	1.00	38.00
0.11	3.00			0.80	38.00	1.00	38.00
0.12	3.00			1.00	38.00	1.50	38.00
0.13	3.00			1.00	38.00	1.50	38.00
0.14	3.00			1.00	38.00	1.50	38.00
0.15	3.00			1.00	38.00	2.00	38.00
0.16	3.00			1.00	38.00	2.00	38.00
0.17	3.00			1.00	38.00	2.00	38.00
0.18	3.00			1.50	38.00	2.50	38.00
0.19	3.00			1.50	38.00	2.50	38.00
0.20	3.00			1.50	38.00	2.50	38.00
0.21	3.00			1.50	38.00	2.50	38.00
0.22	3.00			1.50	38.00	2.50	38.00
0.23	3.00			2.00	38.00	4.00	38.00
0.24	3.00			2.00	38.00	4.00	38.00
0.25	3.00			2.00	38.00	4.00	38.00
0.26	3.00			2.00	38.00	4.00	38.00
0.27	3.00			2.00	38.00	4.00	38.00
0.28	3.00			2.00	38.00	4.00	38.00
0.29	3.00			2.00	38.00	4.00	38.00
0.30	3.00	1.50	38.00	3.00	38.00	5.50	38.00
0.31	3.00	1.50	38.00	3.00	38.00	5.50	38.00
0.32	3.00	1.50	38.00	3.00	38.00	5.50	38.00
0.33	3.00	1.50	38.00	3.00	38.00	5.50	38.00
0.34	3.00	1.50	38.00	3.00	38.00	5.50	38.00
0.35	3.00	1.50	38.00	3.00	38.00	5.50	38.00
0.36	3.00	1.50	38.00	3.00	38.00	5.50	38.00
0.37	3.00	1.50	38.00	3.00	38.00	5.50	38.00
0.38	3.00	1.50	38.00	3.00	38.00	5.50	38.00
0.39	3.00	1.50	38.00	3.00	38.00	5.50	38.00
0.40	3.00	1.50	38.00	3.00	38.00	6.00	38.00
0.41	3.00	2.00	38.00	4.00	38.00	6.00	38.00
0.42	3.00	2.00	38.00	4.00	38.00	6.00	38.00
0.43	3.00	2.00	38.00	4.00	38.00	6.00	38.00
0.44	3.00	2.00	38.00	4.00	38.00	6.00	38.00
0.45	3.00	2.00	38.00	4.00	38.00	6.00	38.00
0.46	3.00	2.00	38.00	4.00	38.00	6.00	38.00
0.47	3.00	2.00	38.00	4.00	38.00	6.00	38.00
0.48	3.00	2.00	38.00	4.00	38.00	6.00	38.00
0.49	3.00	2.00	38.00	4.00	38.00	6.00	38.00
0.50	3.00	2.00	38.00	4.00	38.00	6.00	38.00
0.51	3.00	2.50	38.00	4.00	38.00	6.00	38.00
0.52	3.00	2.50	38.00	4.00	38.00	6.00	38.00
0.53	3.00	2.50	38.00	4.00	38.00	6.00	38.00
0.54	3.00	2.50	38.00	4.00	38.00	6.00	38.00
0.55	3.00	2.50	38.00	5.00	38.00	8.00	38.00
0.56	3.00	2.50	38.00	5.00	38.00	8.00	38.00
0.57	3.00	2.50	38.00	5.00	38.00	8.00	38.00
0.58	3.00	2.50	38.00	5.00	38.00	8.00	38.00
0.59	3.00	2.50	38.00	5.00	38.00	8.00	38.00
0.60	3.00	2.50	38.00	5.00	38.00	8.00	38.00

		T301 Stub Length		T302 Standard Length		T303 Long Length	
ød	ØD h6	I	L	I	L	I	L
1.41	3.00	6.00	38.00	10.00	38.00	14.00	45.00
1.42	3.00	6.00	38.00	10.00	38.00	14.00	45.00
1.43	3.00	6.00	38.00	10.00	38.00	14.00	45.00
1.44	3.00	6.00	38.00	10.00	38.00	14.00	45.00
1.45	3.00	6.00	38.00	10.00	38.00	14.00	45.00
1.46	3.00	6.00	38.00	10.00	38.00	14.00	45.00
1.47	3.00	6.00	38.00	10.00	38.00	14.00	45.00
1.48	3.00	6.00	38.00	10.00	38.00	14.00	45.00
1.49	3.00	6.00	38.00	10.00	38.00	14.00	45.00
1.50	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.51	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.52	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.53	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.54	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.55	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.56	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.57	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.58	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.59	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.60	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.61	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.62	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.63	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.64	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.65	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.66	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.67	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.68	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.69	3.00	8.00	38.00	12.00	38.00	16.00	45.00
1.70	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.71	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.72	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.73	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.74	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.75	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.76	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.77	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.78	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.79	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.80	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.81	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.82	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.83	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.84	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.85	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.86	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.87	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.88	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.89	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.90	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.91	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.92	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.93	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.94	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.95	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.96	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.97	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.98	3.00	8.00	38.00	12.00	38.00	18.00	45.00
1.99	3.00	8.00	38.00	12.00	38.00	18.00	45.00
2.00	3.00	8.00	38.00	12.00	38.00	18.00	45.00
2.01	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.02	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.03	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.04	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.05	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.06	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.07	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.08	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.09	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.10	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.11	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.12	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.13	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.14	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.15	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.16	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.17	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.18	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.19	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.20	3.00	12.00	38.00	14.00	45.00	20.00	50.00

		T301 Stub Length		T302 Standard Length		T303 Long Length	
ød	ØD h6	l	L	l	L	l	L
2.21	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.22	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.23	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.24	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.25	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.26	3.00	12.00	38.00	14.00	45.00	22.00	50.00
2.27	3.00	12.00	38.00	14.00	45.00	22.00	50.00
2.28	3.00	12.00	38.00	14.00	45.00	22.00	50.00
2.29	3.00	12.00	38.00	14.00	45.00	22.00	50.00
2.30	3.00	12.00	38.00	14.00	45.00	22.00	50.00
2.31	3.00	12.00	38.00	14.00	45.00	22.00	50.00
2.32	3.00	12.00	38.00	14.00	45.00	22.00	50.00
2.33	3.00	12.00	38.00	14.00	45.00	22.00	50.00
2.34	3.00	12.00	38.00	14.00	45.00	22.00	50.00
2.35	3.00	12.00	38.00	14.00	45.00	22.00	50.00
2.36	3.00	12.00	38.00	14.00	45.00	22.00	50.00
2.37	3.00	12.00	38.00	14.00	45.00	22.00	50.00
2.38	3.00	12.00	38.00	14.00	45.00	22.00	50.00
2.39	3.00	12.00	38.00	14.00	45.00	22.00	50.00
2.40	3.00	12.00	38.00	14.00	45.00	22.00	50.00
2.41	3.00	12.00	38.00	16.00	45.00	22.00	50.00
2.42	3.00	12.00	38.00	16.00	45.00	22.00	50.00
2.43	3.00	12.00	38.00	16.00	45.00	22.00	50.00
2.44	3.00	12.00	38.00	16.00	45.00	22.00	50.00
2.45	3.00	12.00	38.00	16.00	45.00	22.00	50.00
2.46	3.00	12.00	38.00	16.00	45.00	22.00	50.00
2.47	3.00	12.00	38.00	16.00	45.00	22.00	50.00
2.48	3.00	12.00	38.00	16.00	45.00	22.00	50.00
2.49	3.00	12.00	38.00	16.00	45.00	22.00	50.00
2.50	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.51	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.52	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.53	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.54	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.55	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.56	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.57	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.58	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.59	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.60	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.61	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.62	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.63	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.64	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.65	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.66	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.67	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.68	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.69	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.70	3.00	12.00	38.00	16.00	45.00	24.00	50.00
2.71	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.72	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.73	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.74	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.75	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.76	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.77	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.78	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.79	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.80	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.81	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.82	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.83	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.84	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.85	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.86	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.87	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.88	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.89	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.90	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.91	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.92	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.93	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.94	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.95	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.96	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.97	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.98	3.00	12.00	38.00	18.00	45.00	26.00	50.00
2.99	3.00	12.00	38.00	18.00	45.00	26.00	50.00
3.00	3.00	12.00	38.00	18.00	45.00	26.00	50.00



Drilling Strategy



Cautions

- mICRO Drilling is a challenging task, so high level of care and attention should be exercised.
- A rigid setup which prevents vibration is required for mICRO Drills, The tool and job should be firmly clamped to avoid slippage.
- The flatness of surface to be drilled is extremely important.
- For smaller Drills under $\varnothing 0.5$, the most stable rotation speed of the spindle takes precedence over the recommended conditions.
- When machines can not achieve a recommended rotation speed, please set maximum possible speed in stable rotation range of the machine and adjust the feed rate.
- Total Indicated Runout (T.I.R) should be less than $3\mu\text{m}$.
- When removing the tool from packing be careful not to touch the flute portion.
- Reduce RPM by 10% while entry and retraction of the tool.

T301 / T302 / T303

Materials			Dia Range														
			0.015	0.02-0.03	0.04-0.05	0.06-0.07	0.08-0.09	0.1-0.20	0.21-0.30	0.31-0.40	0.41-0.50	0.51-0.70	0.71-1.00	1.01-1.50	1.51-2.00	2.01-2.50	2.51-3.00
P	Low/Unalloyed Steel <600 N/mm²	N min-1	35000-30000	30000-28000	27000-26000	24000	23000	23000-21000	20000-19000	19000-18000	18000-17000	17000-15000	15000-12000	12000-10000	9500-8000	8000-7000	7000-6000
		F mm/rev	0.0003	0.0005	0.0007	0.0008	0.001-0.0012	0.002-0.005	0.005-0.010	0.010-0.015	0.015-0.017	0.017-0.020	0.020-0.030	0.030-0.35	0.035-0.040	0.040-0.045	0.045-0.050
	Low/Unalloyed Steel 600-1000 N/mm²	N min-1	35000-30000	30000-28000	27000-26000	24000	23000	23000-21000	20000-19000	19000-18000	18000-17000	17000-15000	15000-12000	12000-10000	9500-8000	8000-7000	7000-6000
		F mm/rev	0.0003	0.0005	0.0007	0.0008	0.0010-0.0012	0.002-0.005	0.005-0.010	0.010-0.015	0.015-0.017	0.017-0.020	0.020-0.030	0.030-0.35	0.035-0.040	0.040-0.045	0.045-0.050
	High Alloyed Steel 700-1500 N/mm²	N min-1	32000	28000	26000	24000	22000	22000-20000	19000-18000	18000-17000	17000-15000	15000-12000	12000-10000	10000-9000	9000-7000	7000-6000	6000-5000
		F mm/rev	0.0003	0.0005	0.0007	0.0008	0.0010-0.0012	0.002-0.005	0.005-0.010	0.010-0.015	0.015-0.017	0.017-0.020	0.020-0.030	0.030-0.35	0.035-0.040	0.040-0.045	0.045-0.050
M	Ferritic/Martensitic	N min-1	32000	28000	26000	24000	22000	20000	17500	16500	15500	12500	9000	7000	6000	5000	4000
		F mm/rev	0.0003	0.0003	0.0005	0.0006	0.0008	0.0010-0.0015	0.0015-0.0020	0.003-0.004	0.004-0.005	0.005-0.010	0.010-0.015	0.015-0.020	0.020-0.022	0.022-0.025	0.025-0.030
	Austenitic	N min-1	32000	28000	26000	24000	22000	20000	17500	16500	15500	12500	9000	7000	6000	5000	4000
		F mm/rev	0.0003	0.0004	0.0006	0.0007	0.0009	0.0010-0.0015	0.0015-0.0020	0.003-0.004	0.004-0.005	0.005-0.010	0.010-0.015	0.015-0.020	0.020-0.022	0.022-0.025	0.025-0.030
	Duplex/PH > 800 N/mm²	N min-1	30000	25200	23400	21600	19800	18000	15750	14850	13950	11625	8100	6300	5400	4500	3600
		F mm/rev	0.0003	0.0003	0.0005	0.0006	0.0008	0.0010-0.0015	0.0015-0.0020	0.003-0.004	0.004-0.005	0.005-0.007	0.007-0.010	0.010-0.015	0.015-0.020	0.020-0.022	0.025-0.030
K	GCI/NCI <180 BHN	N min-1	35000-30000	30000-28000	27000-26000	24000	23000	23000-21000	20000-19000	19000-18000	18000-17000	17000-15000	15000-12000	12000-10000	9500-8000	8000-7000	7000-6000
		F mm/rev	0.0003	0.0005	0.0007	0.0008	0.0010-0.0012	0.002-0.005	0.005-0.010	0.010-0.015	0.015-0.017	0.017-0.020	0.020-0.030	0.030-0.35	0.035-0.040	0.040-0.045	0.045-0.050
	GCI/NCI 200-250 BHN	N min-1	32000	28000	26000	24000	22000	20000	18000	17000	15700	14000	11500	9500	8000	7000	6000
		F mm/rev	0.0003	0.0005	0.0007	0.0008	0.0010-0.0012	0.002-0.005	0.005-0.010	0.010-0.015	0.015-0.017	0.017-0.020	0.020-0.025	0.025-0.030	0.030-0.035	0.035-0.040	0.040-0.045
N	Al Alloy	N min-1	37000-32000	30000-28000	27000-26000	25000	23000	23000-21000	20000-19000	19000-18000	18000-18500	18500-17500	16000-15000	14000-12000	10000-9000	9000-8000	8000-7000
		F mm/rev	0.0005	0.001	0.0015-0.0025	0.0025-0.0035	0.0035-0.0040	0.005-0.010	0.010-0.015	0.015-0.020	0.020-0.027	0.027-0.035	0.035-0.045	0.045-0.055	0.055-0.065	0.070-0.10	0.10-0.12
	Cu Alloy	N min-1	37000-32000	30000-28000	27000-26000	25000	23000	23000-21000	20000-19000	19000-18000	18000-18500	18500-17500	16000-15000	14000-12000	10000-9000	9000-8000	8000-7000
		F mm/rev	0.0003	0.0005	0.0010-0.0015	0.0015-0.0020	0.002-0.003	0.004-0.007	0.008-0.012	0.012-0.017	0.017-0.022	0.022-0.032	0.032-0.040	0.040-0.045	0.045-0.050	0.050-0.070	0.07-0.10

Dia D (mm)	0.015-0.30	0.31-0.50	0.51-3.00
Peck Depth (mm)	0.1xd	(0.2-0.3)xd	0.5xd

* When machines can not achieve a recommended rotation speed, please set maximum possible speed in stable rotation range of the machine and adjust the feed rate.

* For smaller drills under ø0.5, the most stable rotation speed of the spindle takes precedence over the recommended conditions indicated in the table.



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