

INDRILL

Ø 0.010 - 3.00 mm

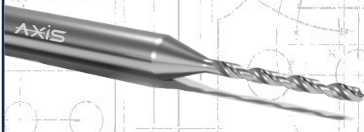


NexGen ultra mICRO mICRO Drills for universal applications

T301

T302

T303



Dia Tolerance

 Uncoated : h6
 Coated : ±0.003

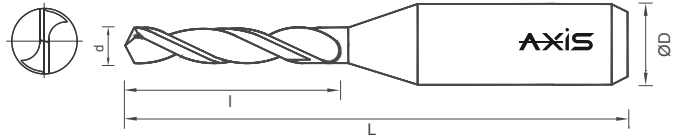
 STEEL
 Low/
 Unalloyed

 STEEL
 High
 Alloyed

SS

 CAST
 IRON

Non-Ferrous


 AxiCoat
 AlTiN

 FORM HA
 DIN 6535

Ø<0.40

Ø≥0.40

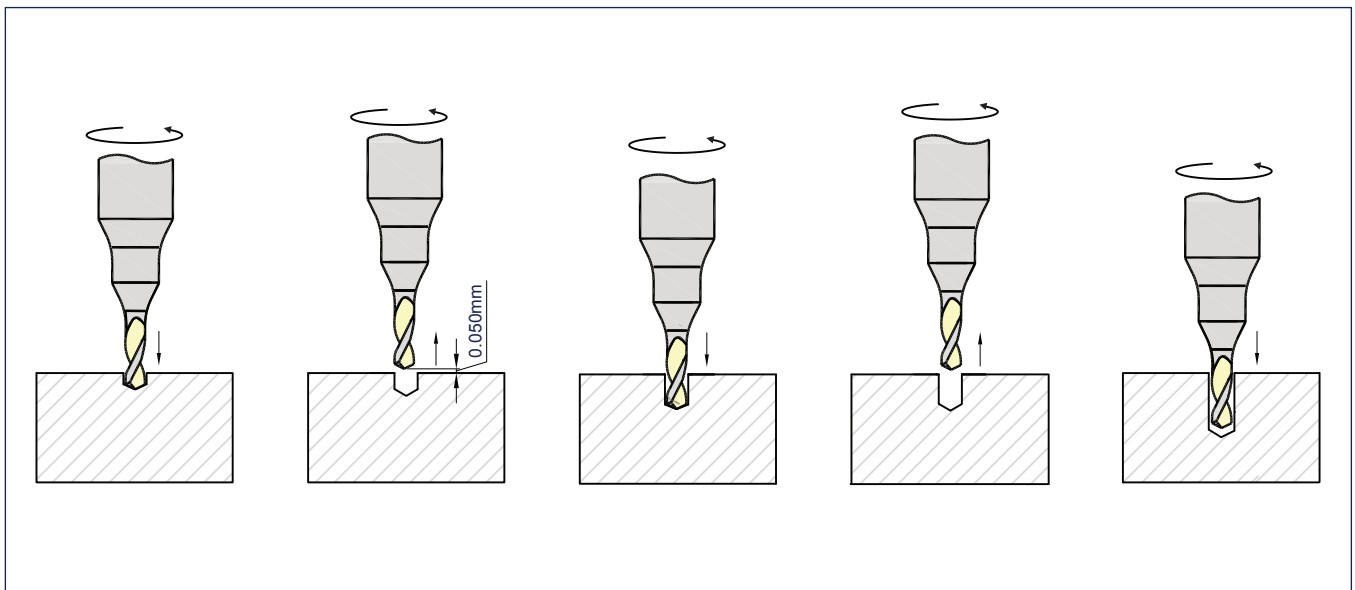
ød	ØD	T301 Stub Length		T302 Standard Length		T303 Long Length	
		L	L	L	L	L	L
0.010	3.00					0.10	38.00
0.015	3.00					0.15	38.00
0.020	3.00					0.20	38.00
0.030	3.00					0.30	38.00
0.040	3.00					0.40	38.00
0.050	3.00					0.50	38.00
0.060	3.00					0.60	38.00
0.070	3.00					0.70	38.00
0.080	3.00					0.80	38.00
0.090	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

S

		T301 Stub Length		T302 Standard Length		T303 Long Length	
ød	ØD	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	I	L	I	L	I	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.

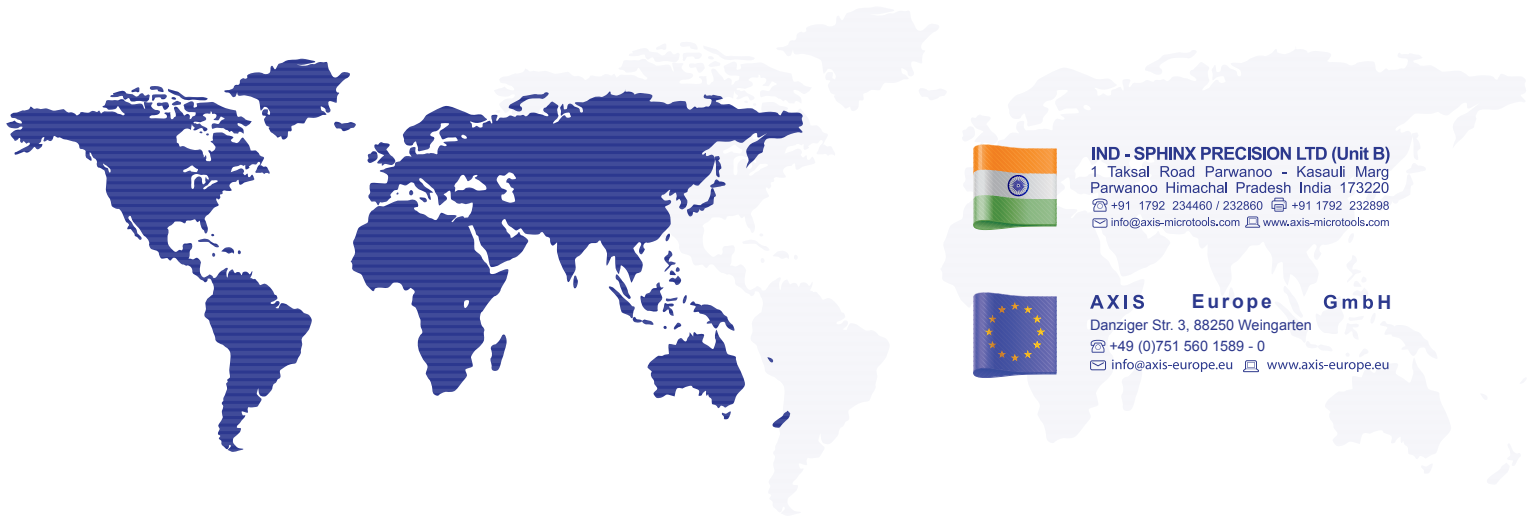
T301 / T302 / T303

Materials			Dia Range														
			0.010-0.015	0.02-0.03	0.04-0.05	0.06-0.07	0.08-0.09	0.10-0.20	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	0.0010-0.0012	0.002-0.005	0.005-0.010	0.010-0.015	0.015-0.017	0.017-0.020	0.020-0.030	0.030-0.040	0.040-0.050	0.050-0.065	0.065-0.080
	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	0.017-0.02	0.020-0.030	0.030-0.040	0.040-0.050	0.050-0.065	0.065-0.080
	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	0.02-0.030	0.030-0.040	0.040-0.050	0.050-0.065	0.065-0.080
M	Ferritic/Martensitic	N min-1	32000	28000	26000	24000	22000	20000	17500	16500	15700	13500	10500	8750	7000	6000	5000
		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	0.015-0.022	0.022-0.027	0.027-0.035	0.035-0.045
	Austenitic	N min-1	32000	28000	26000	24000	22000	20000	17500	16500	15700	13500	10500	8750	7000	6000	5000
		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	0.005-0.01	0.010-0.015	0.015-0.022	0.022-0.030	0.027-0.040	0.040-0.050
	Duplex/PH > 800 N/mm²	N min-1	30000	25200	23400	21600	19800	18000	15750	14850	14130	12150	9450	7875	6300	5400	4500
		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	0.010-0.013	0.015-0.020	0.020-0.025	0.025-0.030	0.030-0.040
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	0.030-0.040	0.040-0.050	0.050-0.065	0.065-0.080
	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	0.015-0.020	0.015-0.020	0.020-0.030	0.030-0.040	0.040-0.050	0.050-0.065	0.065-0.080
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	0.0010	0.0015-0.0025	0.0025-0.0035	0.0035-0.0040	0.005-0.010	0.010-0.020	0.020-0.030	0.030-0.040	0.040-0.050	0.050-0.060	0.060-0.080	0.080-0.100	0.100-0.120	0.120-0.150
	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	0.050-0.100	0.100-0.120

Dia d (mm)	0.010-0.30 mm	0.31-0.50 mm	0.50-3.00 mm
Peck Depth (mm)	0.10 x d	0.20-0.30 x d	0.50 x d

* 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 ø0.50, the most stable rotation speed of the spindle takes precedence over the recommended conditions indicated in the table.



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