

INDRILL

∅ 0.015 - 3.00 mm



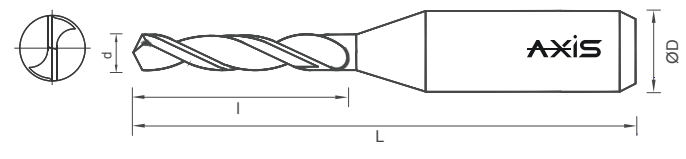
NexGen ultra **m**ICRO **m**ICRO Drills for universal applications

T301 T302 T303



Dia Tolerance
 Uncoated : h6
 Coated : ±0.003

- STEEL
Low/
Unalloyed
- STEEL
High
Alloyed
- SS
- CAST
IRON
- Non-
Ferrous



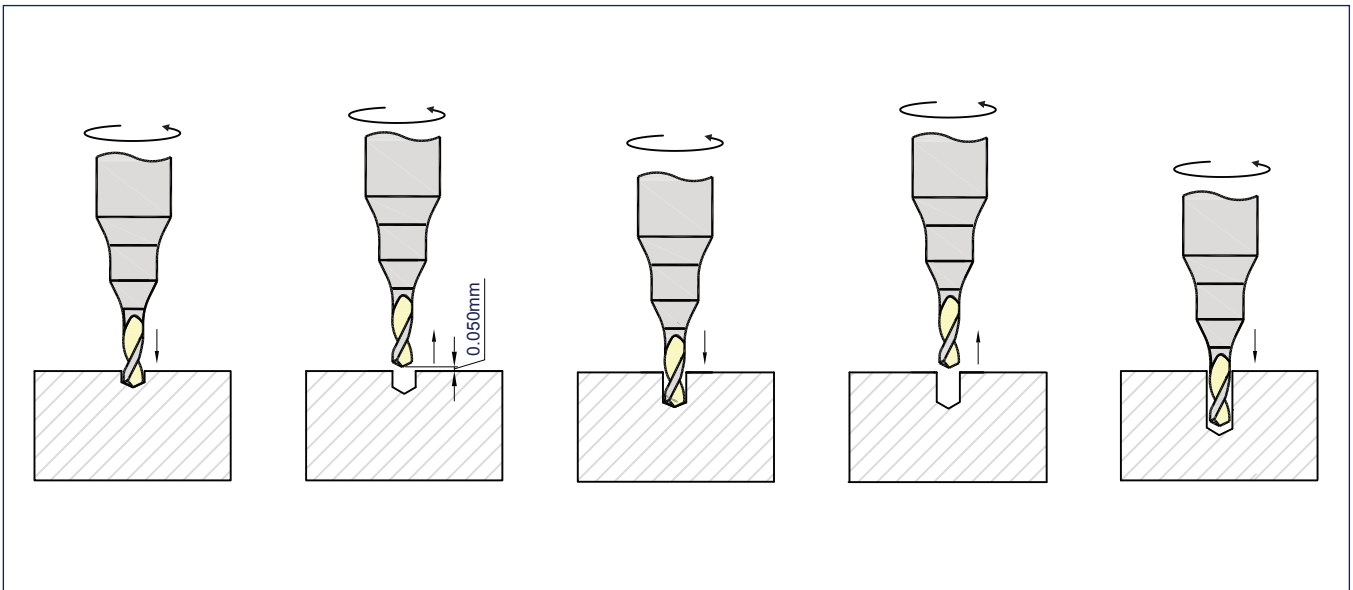
- Z
2
 - 118°
 - 130°
 - 30°
 - AxiCoat
AlTiN
 - FORM HA
DIN 6535
- Ø < 0.40 Ø ≥ 0.40

ød	ØD	T301 Stub Length		T302 Standard Length		T303 Long Length	
		l	L	l	L	l	L
0.015	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

		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
1.55	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
1.65	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
1.75	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
1.85	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
1.95	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
2.05	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
2.15	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
2.25	3.00	12.00	38.00	14.00	45.00	20.00	50.00
2.30	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
2.40	3.00	12.00	38.00	14.00	45.00	22.00	50.00
2.45	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
2.55	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
2.65	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
2.75	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
2.85	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
2.95	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								
			0.015	0.02-0.03	0.04-0.05	0.06-0.07	0.08-0.09	0.10-0.20
P	Low/Unalloyed Steel <600 N/mm ²	N min-1	35000-30000	30000-28000	27000-26000	24000	23000	23000-21000
		F mm/rev	0.0003	0.0005	0.0007	0.0008	0.0010-0.0012	0.002-0.005
	Low/Unalloyed Steel 600-1000 N/mm ²	N min-1	35000-30000	30000-28000	27000-26000	24000	23000	23000-21000
		F mm/rev	0.0003	0.0005	0.0007	0.0008	0.0010-0.0012	0.002-0.005
	High Alloyed Steel 700-1500 N/mm ²	N min-1	32000	28000	26000	24000	22000	22000-20000
		F mm/rev	0.0003	0.0005	0.0007	0.0008	0.0010-0.0012	0.002-0.005
M	Ferritic/Martensitic	N min-1	32000	28000	26000	24000	22000	20000
		F mm/rev	0.0003	0.0003	0.0005	0.0006	0.0008	0.0010-0.0015
	Austenitic	N min-1	32000	28000	26000	24000	22000	20000
		F mm/rev	0.0003	0.0004	0.0006	0.0007	0.0009	0.0010-0.0015
	Duplex/PH > 800 N/mm ²	N min-1	30000	25200	23400	21600	19800	18000
		F mm/rev	0.0003	0.0003	0.0005	0.0006	0.0008	0.0010-0.0015
K	GCI/NCI <180 BHN	N min-1	35000-30000	30000-28000	27000-26000	24000	23000	23000-21000
		F mm/rev	0.0003	0.0005	0.0007	0.0008	0.0010-0.0012	0.002-0.005
	GCI/NCI 200-250 BHN	N min-1	32000	28000	26000	24000	22000	20000
		F mm/rev	0.0003	0.0005	0.0007	0.0008	0.0010-0.0012	0.002-0.005
N	Al Alloy	N min-1	37000-32000	30000-28000	27000-26000	25000	23000	23000-21000
		F mm/rev	0.0005	0.0010	0.0015-0.0025	0.0025-0.0035	0.0035-0.0040	0.005-0.010
	Cu Alloy	N min-1	37000-32000	30000-28000	27000-26000	25000	23000	23000-21000
		F mm/rev	0.0003	0.0005	0.0010-0.0015	0.0015-0.0020	0.002-0.003	0.004-0.007

Dia d (mm)	0.015-0.30 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

Dia Range

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
20000-19000	19000-18000	18000-17000	17000-15000	15000-12000	12000-10000	9500-8000	8000-7000	7000-6000
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
20000-19000	19000-18000	18000-17000	17000-15000	15000-12000	12000-10000	9500-8000	8000-7000	7000-6000
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
19000-18000	18000-17000	17000-15000	15000-12000	12000-10000	10000-9000	9000-7000	7000-6000	6000-5000
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
17500	16500	15700	13500	10500	8750	7000	6000	5000
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
17500	16500	15700	13500	10500	8750	7000	6000	5000
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
15750	14850	14130	12150	9450	7875	6300	5400	4500
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
20000-19000	19000-18000	18000-17000	17000-15000	15000-12000	12000-10000	9500-8000	8000-7000	7000-6000
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
18000	17000	15700	14000	11500	9500	8000	7000	6000
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
20000-19000	19000-18000	18000-18500	18500-17500	16000-15000	14000-12000	10000-9000	9000-8000	8000-7000
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
20000-19000	19000-18000	18000-18500	18500-17500	16000-15000	14000-12000	10000-9000	9000-8000	8000-7000
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

* 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 $\varnothing 0.50$, the most stable rotation speed of the spindle takes precedence over the recommended conditions indicated in the table.



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