

## 2 Flutes UNIMAX DRILL Long Flute



Size  $\phi 0.3 \sim \phi 3$

# UTDLX

Super  
MG

MICRO  
COAT

30°

X  
Thinning

Shank Dia  
0/-0.005

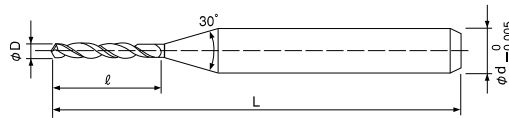
Material Applications (★ Highly Recommended ● Recommended ○ Suggested)

Work Material																			
Structural Steels	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels					Cast Iron	Aluminum Alloys	Graphite	Copper	Plastics	Glass Filled Plastics	Titanium Alloys	Heat Resistant Alloys	Cemented Carbide	Hard Brittle (Non-Metallic) Materials	
SS400	S45C S55C	SK / SCM SUS	NAK HPM	~50HRC	~55HRC	~60HRC	~65HRC	~70HRC											
●	●	●	○	Contact sales when drilling over 45HRC.					○	●		○				○	○		

### Features

A highly efficient and economic drill for both mass and prototype production of parts.  
 UT MICRO COAT offers excellent performance for cutting soft materials.  
 The new drill design and X thinning offer stable drilling performance with increased tool life.  
 The 130° point angle ensures reduced burring of the drilled hole.  
 With an aspect ratio of 15:1, the drill is ideal for deep hole drilling, that requires high accuracy.

Diameter Tolerance: 0/-0.01 mm  
 Point Angle: 130°



Total 55 models

Unit (mm)

Model Number	Diameter $\phi D$	Flute Length $\ell$	Overall Length $L$	Shank Diameter $\phi d$	Suggested Retail Price ¥
UTDLX 2030-045	0.3	4.5	38	3	4,600
UTDLX 2035-053	0.35	5.3	38	3	5,130
UTDLX 2040-060	0.4	6	38	3	4,600
UTDLX 2045-068	0.45	6.8	38	3	5,130
UTDLX 2050-075	0.5	7.5	38	3	4,600
UTDLX 2055-083	0.55	8.3	38	3	5,130
UTDLX 2060-090	0.6	9	45	3	4,600
UTDLX 2065-098	0.65	9.8	45	3	5,290
UTDLX 2070-105	0.7	10.5	45	3	4,600
UTDLX 2075-113	0.75	11.3	45	3	5,290
UTDLX 2080-120	0.8	12	45	3	4,600
UTDLX 2085-128	0.85	12.8	45	3	5,290

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Unit (mm)

Model Number	Diameter $\phi D$	Flute Length $\ell$	Overall Length L	Shank Diameter $\phi d$	Suggested Retail Price ¥
UTDLX 2090-135	0.9	13.5	45	3	4,600
UTDLX 2095-143	0.95	14.3	45	3	5,290
UTDLX 2100-150	1	15	50	3	4,600
UTDLX 2105-158	1.05	15.8	50	3	4,600
UTDLX 2110-165	1.1	16.5	50	3	4,600
UTDLX 2115-173	1.15	17.3	50	3	4,600
UTDLX 2120-180	1.2	18	50	3	4,600
UTDLX 2125-188	1.25	18.8	50	3	4,600
UTDLX 2130-195	1.3	19.5	50	3	4,600
UTDLX 2135-203	1.35	20.3	60	3	4,600
UTDLX 2140-210	1.4	21	60	3	4,600
UTDLX 2145-218	1.45	21.8	60	3	4,600
UTDLX 2150-225	1.5	22.5	60	3	4,600
UTDLX 2155-233	1.55	23.3	60	3	4,600
UTDLX 2160-240	1.6	24	60	3	4,600
UTDLX 2165-248	1.65	24.8	60	3	4,970
UTDLX 2170-255	1.7	25.5	60	3	4,970
UTDLX 2175-263	1.75	26.3	60	3	4,970
UTDLX 2180-270	1.8	27	60	3	4,970
UTDLX 2185-278	1.85	27.8	60	3	4,970
UTDLX 2190-285	1.9	28.5	60	3	4,970
UTDLX 2195-293	1.95	29.3	60	3	4,970
UTDLX 2200-300	2	30	60	3	4,970
UTDLX 2205-308	2.05	30.8	80	3	6,640
UTDLX 2210-315	2.1	31.5	80	3	5,500
UTDLX 2215-323	2.15	32.3	80	3	6,640
UTDLX 2220-330	2.2	33	80	3	5,500
UTDLX 2225-338	2.25	33.8	80	3	6,640
UTDLX 2230-345	2.3	34.5	80	3	5,500
UTDLX 2235-353	2.35	35.3	80	3	6,640
UTDLX 2240-360	2.4	36	80	3	5,500
UTDLX 2245-368	2.45	36.8	80	3	6,640
UTDLX 2250-375	2.5	37.5	80	3	5,500
UTDLX 2255-383	2.55	38.3	80	3	6,640
UTDLX 2260-390	2.6	39	80	3	5,500
UTDLX 2265-398	2.65	39.8	80	3	6,640
UTDLX 2270-405	2.7	40.5	80	3	5,500
UTDLX 2275-413	2.75	41.3	80	3	6,640
UTDLX 2280-420	2.8	42	80	3	5,500
UTDLX 2285-428	2.85	42.8	80	3	6,640
UTDLX 2290-435	2.9	43.5	80	3	5,500
UTDLX 2295-443	2.95	44.3	80	3	6,640
UTDLX 2300-450	3	45	80	3	5,500

$\phi 3mm$  Shank  
V Series

UDC-PCD  
Series

CBN  
Series

Square  
Square  
Long Neck  
Square

Radius  
Radius  
Long Neck  
Radius  
Taper Neck  
Radius

Ball / Long  
Shank Ball  
Ball  
Long Neck  
Ball  
Taper Neck  
Ball

Taper  
Taper

Barrel

Spiral  
V Cutter

Drill

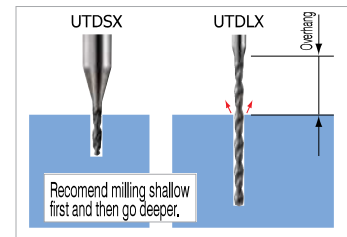
Technical Data

Drilling Conditions for UTDLX

WORK MATERIAL	STRUCTURAL STEELS SS400		CARBON STEELS S50C		ALLOY STEELS SCM / SUS		ALUMINUM ALLOYS A5052	
Velocity	Vc=20~40 m/min		Vc=20~40 m/min		Vc=15~40 m/min		Vc=25~60 m/min	
Diameter (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)
0.3	20,000	50	20,000	50	16,000	40	20,000	650
0.35	19,000	60	19,000	60	13,600	50	20,000	700
0.4	18,000	80	18,000	80	11,900	50	20,000	800
0.45	17,000	100	17,000	100	10,600	60	20,000	850
0.5	16,000	120	16,000	120	9,500	60	20,000	920
0.55	15,000	140	15,000	140	9,000	70	20,000	1,050
0.6	14,100	140	14,100	140	7,900	70	19,900	1,150
0.7	12,800	140	12,800	140	6,800	70	19,900	1,230
0.8	11,900	140	11,900	140	6,000	70	19,900	1,310
0.9	10,500	140	10,500	140	6,200	70	17,600	1,350
1	9,500	150	9,500	150	6,400	70	15,900	1,400
1.5	7,200	150	7,200	150	5,500	70	12,000	1,470
2	5,600	150	5,600	150	5,000	70	9,500	1,590
2.5	4,500	150	4,500	150	4,400	70	7,600	1,640
3	4,000	150	4,000	150	3,800	70	6,400	1,700
Peck Amount	0.5D		0.3D		0.1D		0.3D	

Note:

- Apply pre-drilling more than 3D depth before deep drilling. Recommend UTDSX for pre-drilling.
- Recommend shallower drilling than flute length (under  $\phi$  1:1D,  $\phi$  1 and over: 0.5D).
- Recommend water soluble or oil coolant.
- Recommend oil coolant for Titanium Alloys and Heat Resistant Alloys.

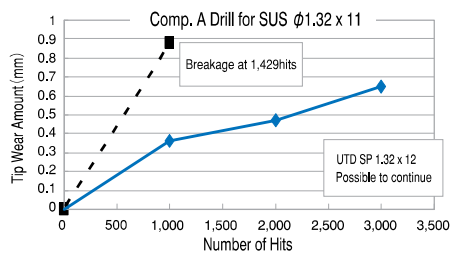


- φ3mm Shark V Series
- UDC-PCD Series
- CBN Series
- Square
- Long Neck Square
- Radius
- Long Neck Radius
- Taper Neck Radius
- Ball / Long Shark Ball
- Long Neck Ball
- Taper Neck Ball
- Taper
- Barrel
- Spiral V Cutter
- Drill
- Technical Data

## Comparison of UTD (Carbide) and HSS Drill Bit SUS420J2 (Raw Material)

UTD can drill more than 2X holes compared to an HSS model

Tool Size	φ1.32 × 12 UTD proto type
Spindle Speed	5,000 min <sup>-1</sup> (Vc: 21 m/min)
Feed Rate	200 mm/min (f: 0.04 mm/rev.)
Peck Amount	1.3 mm
Depth	7 mm blind hole

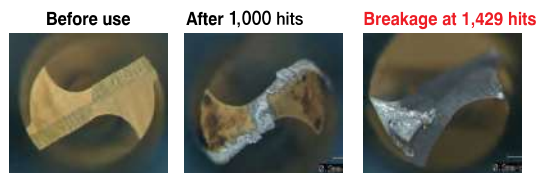


Flank wear comparison with HSS

### UTD prototype



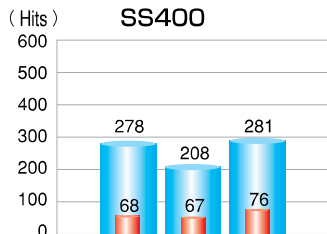
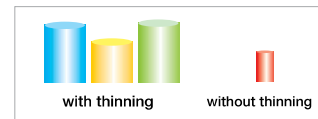
### HSS Drill (Company A: φ3 shank diameter with TiN coating for SUS)



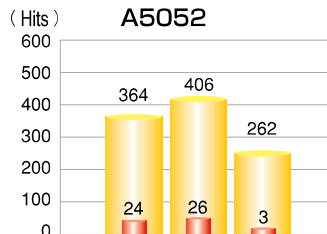
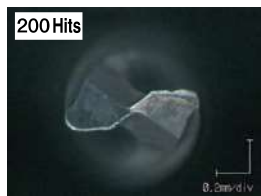
## Drilling test with various materials (Comparison of with / without thinning)

Smooth chip evacuation using the X-thinning design, offers greater resistance to breakage and more accurate drilling

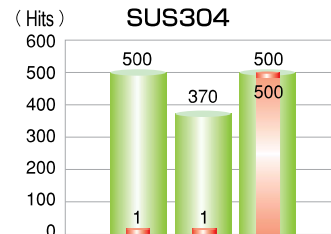
Drill Size : φ1.0 x 15  
 Tool : UTDLX 2100-150 (with thinning)  
 Test Tool: φ1.0 x 15 (without thinning)



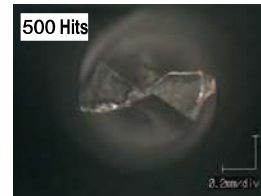
Spindle Speed	9,500 min <sup>-1</sup> (Vc: 30 m/min)
Feed Rate	400 mm/min (f: 0,042 mm/rev.)
Peck Amount	0,2 mm
Depth	14 mm blind hole



Spindle Speed	15,900 min <sup>-1</sup> (Vc: 50 m/min)
Feed Rate	1,500 mm/min (f: 0,094 mm/rev.)
Peck Amount	0,7 mm
Depth	14 mm blind hole



Spindle Speed	6,400 min <sup>-1</sup> (Vc: 20 m/min)
Feed Rate	150 mm/min (f: 0,023 mm/rev.)
Peck Amount	0,2 mm
Depth	14 mm blind hole



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