



Size $\phi 2 \sim \phi 12$

UTDF



Patented in Japan

Material Applications (★ Highly Recommended ● Recommended ○ Suggested)

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

$\phi 3$ mm Shank V Series

UDC-PCD Series

CBN Series

Square
Long Neck Square

Radius

Long Neck Radius

Taper Neck Radius

Ball / Long Shank Ball

Long Neck Ball

Taper Neck Ball

Taper

Barrel

Spiral V Cutter

Drill

Technical Data

Features

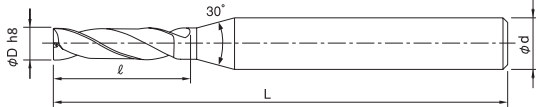
Available to a wide variety of applications by the 180° point angle.

The helix angle of 30° offers excellent chip evacuation, stable and highly efficient pilot hole drilling.

New web-thinning design for improved chip evacuation and sharpness.

Double-margin will guide the tool into inner wall and achieve high-straightness drilling to non-planar surface.

Size M4 - M12 for drilling pilot holes before tapping.



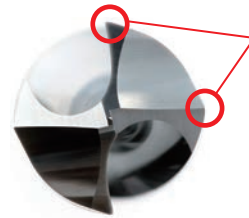
Outside Diameter	Diameter Tolerance(h8)
$\phi D \leq 3$	0/-0.014
$3 < \phi D \leq 6$	0/-0.018
$6 < \phi D \leq 10$	0/-0.022
$10 < \phi D \leq 12$	0/-0.027

Feature1 : Helix angle 30°



Excellent chip evacuation with 30° helix angle

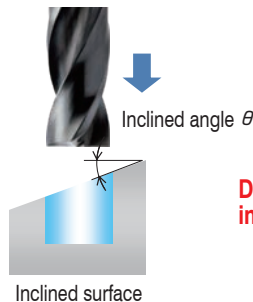
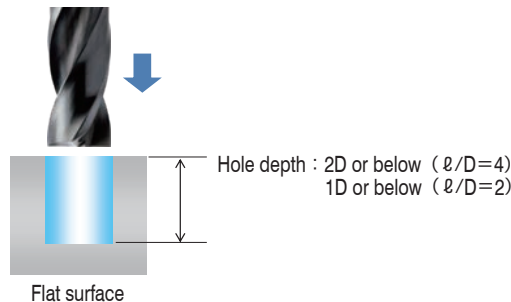
Feature2 : Double-margin



Double-margin

High-straightness drilling

Feature3 : A wide variety of applications



Designed for drilling on flat, inclined or curved surfaces.

Total 21 models

Unit (mm)

Model Number	Diameter ϕD	Flute Length ℓ	Overall Length L	Shank Diameter ϕd	Suggested Retail Price ¥
UTDF 2200-080	2	8	50	4	6,500
UTDF 2250-100	2.5	10	50	4	6,500
UTDF 2300-120	3	12	60	6	6,500
UTDF 2330-132	3.3	13.2	60	6	7,000
UTDF 2400-160	4	16	60	6	7,200
UTDF 2420-168	4.2	16.8	60	6	7,500
UTDF 2500-200	5	20	60	6	7,800
UTDF 2510-204	5.1	20.4	60	6	7,800
UTDF 2600-240	6	24	60	6	8,000
UTDF 2650-130	6.5	13	70	8	9,700
UTDF 2680-272	6.8	27.2	70	8	9,700
UTDF 2700-280	7	28	80	8	9,700
UTDF 2800-320	8	32	80	8	10,500
UTDF 2850-340	8.5	34	80	10	11,500
UTDF 2860-344	8.6	34.4	80	10	11,500
UTDF 2900-360	9	36	80	10	13,500
UTDF 2950-190	9.5	19	90	10	13,500
UTDF 21000-400	10	40	90	10	13,500
UTDF 21030-412	10.3	41.2	90	12	14,000
UTDF 21100-220	11	22	100	12	15,500
UTDF 21200-480	12	48	100	12	15,500

*Contact our sales for the custom size tool.

$\phi 3$ mm Shank
V Series

UDC-PCD
Series

CBN
Series

Square

Long Neck
Square

Radius

Long Neck
Radius

Taper Neck
Radius

Ball / Long
Shank Ball

Long Neck
Ball

Taper Neck
Ball

Taper

Barrel

Spiral
V Cutter

Drill

Technical Data

Drilling Conditions for UTDF

Flat Surface

WORK MATERIAL			CARBON STEELS STRUCTURAL STEELS GRAY CAST IRON S50C / SS400 / FC250	ALLOY STEELS SCM415	PREHARDENED STEELS NAK80	DUCTILE IRON FCD	ALUMINUM ALLOYS A5052 / A7075	ALUMINUM CAST ADC12							
Model Number	Diameter ϕ D (mm)	Flute Length ℓ (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	
□3mm Shank V Series	2200-080	2	8	15,000	900	12,900	740	6,000	160	12,900	660	25,200	2,070	18,900	1,340
	2250-100	2.5	10	12,000	880	10,320	730	4,800	160	10,320	660	20,160	2,070	15,120	1,340
UDC-PCD Series	2300-120	3	12	10,000	860	8,600	710	4,000	150	8,600	630	16,800	1,970	12,600	1,280
	2330-132	3.3	13.2	9,090	860	7,820	710	3,640	150	7,820	630	15,280	1,970	11,460	1,280
CBN Series	2400-160	4	16	7,500	830	6,450	690	3,000	150	6,450	610	12,600	1,900	9,450	1,230
	2420-168	4.2	16.8	7,150	830	6,150	690	2,860	150	6,150	610	12,000	1,900	9,000	1,230
Square	2500-200	5	20	6,000	800	5,160	660	2,400	140	5,160	590	10,080	1,840	7,560	1,190
	2510-204	5.1	20.4	5,880	800	5,060	660	2,350	140	5,060	590	9,880	1,840	7,400	1,190
Long Neck Square	2600-240	6	24	5,000	770	4,300	640	2,000	140	4,300	560	8,400	1,770	6,300	1,140
	2650-130	6.5	13	4,620	770	3,970	640	1,850	140	3,970	560	7,750	1,770	5,820	1,140
Radius	2680-272	6.8	27.2	4,420	770	3,800	640	1,770	140	3,800	560	7,420	1,770	5,560	1,140
	2700-280	7	28	4,290	760	3,680	630	1,710	140	3,680	560	7,200	1,770	5,400	1,140
Long Neck Radius	2800-320	8	32	3,750	730	3,230	600	1,500	130	3,230	540	6,300	1,670	4,730	1,080
	2850-340	8.5	34	3,530	730	3,040	600	1,420	130	3,040	540	5,930	1,670	4,450	1,080
Taper Neck Radius	2860-344	8.6	34.4	3,490	720	3,000	600	1,400	130	3,000	540	5,860	1,670	4,400	1,080
	2900-360	9	36	3,330	720	2,870	590	1,330	120	2,870	530	5,600	1,670	4,200	1,080
Ball / Long Shank Ball	2950-190	9.5	19	3,160	700	2,720	580	1,260	120	2,720	520	5,300	1,620	3,980	1,050
	21000-400	10	40	3,000	690	2,580	570	1,200	120	2,580	510	5,040	1,580	3,780	1,020
Long Neck Ball	21030-412	10.3	41.2	2,920	690	2,510	570	1,170	120	2,510	510	4,900	1,580	3,670	1,020
	21100-220	11	22	2,730	670	2,350	550	1,090	110	2,350	500	4,580	1,540	3,440	1,000
Taper Neck Ball	21200-480	12	48	2,500	650	2,150	540	1,000	110	2,150	480	4,200	1,490	3,150	960

□3mm Shank V Series

UDC-PCD Series

CBN Series

Square
Long Neck Square

Radius

Radius
Long Neck Radius
Taper Neck Radius

Ball / Long Shank Ball

Ball
Long Neck Ball
Taper Neck Ball

Taper

Barrel

Spiral V Cutter

Drill

Technical Data

Drilling Conditions for UTDF

Inclined Surface ($\theta \leq 30^\circ$)

WORK MATERIAL			CARBON STEELS STRUCTURAL STEELS GRAY CAST IRON S50C / SS400 / FC250		ALLOY STEELS SCM415		PREHARDENED STEELS NAK80		DUCTILE IRON FCD		ALUMINUM ALLOYS A5052 / A7075		ALUMINUM CAST ADC12	
Model Number	Diameter ϕ D (mm)	Flute Length l (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)
2200-080	2	8	15,000	270	12,900	220	6,000	48	12,900	190	25,200	620	18,900	400
2250-100	2.5	10	12,000	260	10,320	220	4,800	48	10,320	190	20,160	620	15,120	400
2300-120	3	12	10,000	250	8,600	210	4,000	45	8,600	180	16,800	590	12,600	380
2330-132	3.3	13.2	9,090	250	7,820	210	3,640	45	7,820	180	15,280	590	11,460	380
2400-160	4	16	7,500	240	6,450	200	3,000	45	6,450	180	12,600	570	9,450	360
2420-168	4.2	16.8	7,150	240	6,150	200	2,860	45	6,150	180	12,000	570	9,000	360
2500-200	5	20	6,000	240	5,160	190	2,400	42	5,160	170	10,080	550	7,560	350
2510-204	5.1	20.4	5,880	230	5,060	190	2,350	42	5,060	170	9,880	550	7,400	350
2600-240	6	24	5,000	230	4,300	190	2,000	42	4,300	160	8,400	530	6,300	340
2650-130	6.5	13	4,620	230	3,970	190	1,850	42	3,970	160	7,750	530	5,820	340
2680-272	6.8	27.2	4,420	230	3,800	190	1,770	42	3,800	160	7,420	530	5,560	340
2700-280	7	28	4,290	230	3,680	190	1,710	42	3,680	160	7,200	530	5,400	340
2800-320	8	32	3,750	210	3,230	180	1,500	39	3,230	160	6,300	500	4,730	320
2850-340	8.5	34	3,530	210	3,040	180	1,420	39	3,040	160	5,930	500	4,450	320
2860-344	8.6	34.4	3,490	210	3,000	180	1,400	39	3,000	160	5,860	500	4,400	320
2900-360	9	36	3,330	210	2,870	180	1,330	38	2,870	160	5,600	500	4,200	320
2950-190	9.5	19	3,160	210	2,720	170	1,260	36	2,720	150	5,300	490	3,980	310
21000-400	10	40	3,000	200	2,580	170	1,200	36	2,580	150	5,040	470	3,780	300
21030-412	10.3	41.2	2,920	200	2,510	170	1,170	36	2,510	150	4,900	470	3,670	300
21100-220	11	22	2,730	200	2,350	160	1,090	34	2,350	140	4,580	460	3,440	290
21200-480	12	48	2,500	190	2,150	160	1,000	33	2,150	140	4,200	440	3,150	280

ϕ 3mm Shank
V Series

UDC-PCD
Series

CBN
Series

Square

Long Neck
Square

Radius

Long Neck
Radius

Taper Neck
Radius

Ball / Long
Shank Ball

Long Neck
Ball

Taper Neck
Ball

Taper

Barrel

Spiral
V Cutter

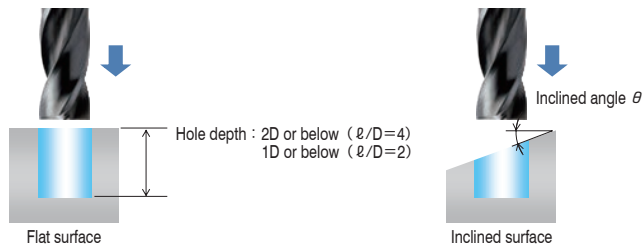
Drill

Technical Data

Drilling Conditions for UTDF

Inclined Surface ($\theta > 30^\circ$)

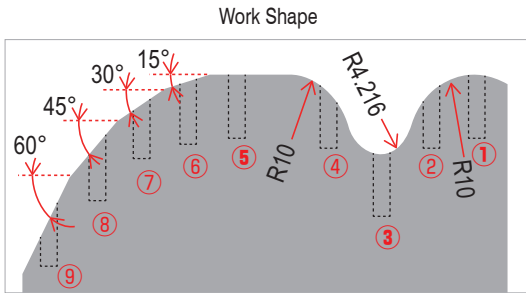
WORK MATERIAL			CARBON STEELS STRUCTURAL STEELS GRAY CAST IRON S50C / SS400 / FC250	ALLOY STEELS SCM415	PREHARDENED STEELS NAK80	DUCTILE IRON FCD	ALUMINUM ALLOYS A5052 / A7075	ALUMINUM CAST ADC12						
Model Number	Diameter ϕD (mm)	Flute Length ℓ (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)
2200-080	2	8	10,500	90	9,030	74	4,200	16	9,030	66	17,640	200	13,230	130
2250-100	2.5	10	8,400	90	7,220	74	3,360	16	7,220	66	14,110	200	10,580	130
2300-120	3	12	7,000	86	6,020	71	2,800	15	6,020	63	11,760	190	8,820	120
2330-132	3.3	13.2	6,370	86	5,480	71	2,550	15	5,480	63	10,700	190	8,030	120
2400-160	4	16	5,250	83	4,520	69	2,100	15	4,520	61	8,820	190	6,620	120
2420-168	4.2	16.8	5,010	83	4,310	69	2,010	15	4,310	61	8,400	190	6,300	120
2500-200	5	20	4,200	80	3,620	66	1,680	14	3,620	59	7,060	180	5,300	110
2510-204	5.1	20.4	4,120	80	3,540	66	1,650	14	3,540	59	6,920	180	5,190	110
2600-240	6	24	3,500	77	3,010	64	1,400	14	3,010	56	5,880	170	4,410	110
2650-130	6.5	13	3,230	77	2,780	64	1,290	14	2,780	56	5,430	170	4,070	110
2680-272	6.8	27.2	3,100	77	2,660	64	1,240	14	2,660	56	5,200	170	3,900	110
2700-280	7	28	3,000	77	2,580	64	1,200	14	2,580	56	5,040	170	3,780	110
2800-320	8	32	2,630	73	2,270	60	1,050	13	2,270	54	4,410	160	3,320	100
2850-340	8.5	34	2,480	73	2,130	60	1,000	13	2,130	54	4,160	160	3,120	100
2860-344	8.6	34.4	2,440	73	2,100	60	980	13	2,100	54	4,100	160	3,080	100
2900-360	9	36	2,330	73	2,010	60	930	13	2,010	54	3,920	160	2,940	100
2950-190	9.5	19	2,210	71	1,900	58	880	12	1,900	53	3,710	150	2,790	100
21000-400	10	40	2,100	69	1,810	57	840	12	1,810	51	3,530	150	2,650	100
21030-412	10.3	41.2	2,050	69	1,760	57	820	12	1,760	51	3,430	150	2,570	100
21100-220	11	22	1,910	67	1,640	55	760	11	1,640	49	3,210	140	2,400	90
21200-480	12	48	1,750	65	1,510	54	700	11	1,510	48	2,940	140	2,210	90



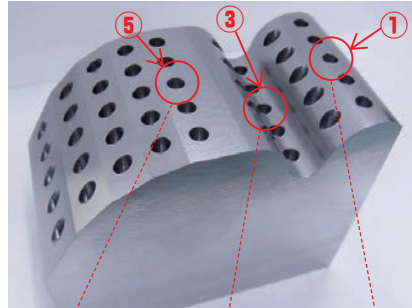
Note:

- These milling parameters are for reference only.
- Adjust the parameters in accordance with the machine rigidity, workpiece clamping condition and shape.
- Recommend water soluble or oil coolant.
- Step milling is recommended in case of clogging.

UTDF Inclined Surface Drilling Example **SS400**
 $\phi 3.5 \times$ Flute Length 14 mm (Prototype)



Coolant : Water Soluble (Nozzle)
 Work Size : 40 × 75 × 60 mm



Each hole after drilling
Excellent drilling performance with less burrs.

Drilling spot	Surface	Spindle Speed (min ⁻¹)	Feed Rate (min/min)	Drilling Depth (The Deepest spot) (mm)
1	☐ Curved surface (Top)	7,000	450	7
2	Curved surface (45°)		270	
3	☐ Curved surface (Top)		450	
4	Curved surface (45°)		270	
5	Flat Surface		450	
6	Inclined Surface (15°)		320	
7	Inclined Surface (30°)		320	
8	Inclined Surface (45°)		270	
9	Inclined Surface (60°)		225	

*Contact our sales for the custom size tool.

UTDF
 Inclined Surface
 Drilling Video



Tool After Drilling $\phi 2 \times$ Flute Length 8 mm **A5052**

Surface	Spindle Speed	Feed Rate	Drilling Depth	Number of Holes	Coolant
Flat Surface	23,100 min ⁻¹	830 mm/min	4 mm	100 holes	Water Soluble (Nozzle)

Comparison of Tip Damage after 100 hits

UTDF



Competitor



More tool-life left without adhesion after drilling 100 holes.

Chip adhesion

- ☐3mm Shank V Series
- UDC-PCD Series
- CBN Series
- Square
 - Long Neck Square
- 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



Size $\phi 0.3 \sim \phi 2$

UTDSX



Material Applications (★ Highly Recommended ● Recommended ○ Suggested)

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

Total 35 models

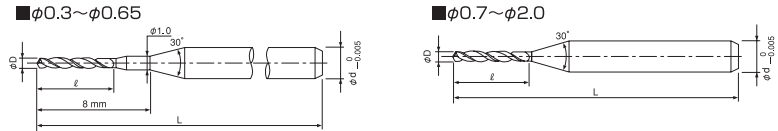
Unit (mm)

Model Number	Diameter ϕD	Flute Length ℓ	Overall Length L	Shank Diameter ϕd	Suggested Retail Price ¥
UTDSX 2030-015	0.3	1.5	38	3	3,470
UTDSX 2035-018	0.35	1.8	38	3	3,860
UTDSX 2040-020	0.4	2	38	3	3,470
UTDSX 2045-023	0.45	2.3	38	3	3,860
UTDSX 2050-025	0.5	2.5	38	3	3,860
UTDSX 2055-028	0.55	2.8	38	3	3,070
UTDSX 2060-030	0.6	3	38	3	2,670
UTDSX 2065-033	0.65	3.3	38	3	3,070
UTDSX 2070-035	0.7	3.5	38	3	2,670
UTDSX 2075-038	0.75	3.8	38	3	3,070
UTDSX 2080-040	0.8	4	38	3	2,670
UTDSX 2085-043	0.85	4.3	38	3	3,070
UTDSX 2090-045	0.9	4.5	38	3	2,670
UTDSX 2095-048	0.95	4.8	38	3	3,070
UTDSX 2100-050	1	5	38	3	2,480
UTDSX 2105-053	1.05	5.3	38	3	2,480
UTDSX 2110-055	1.1	5.5	38	3	2,480
UTDSX 2115-058	1.15	5.8	38	3	2,480
UTDSX 2120-060	1.2	6	38	3	2,480
UTDSX 2125-063	1.25	6.3	38	3	2,480
UTDSX 2130-065	1.3	6.5	38	3	2,480
UTDSX 2135-068	1.35	6.8	38	3	2,480
UTDSX 2140-070	1.4	7	38	3	2,480
UTDSX 2145-073	1.45	7.3	38	3	2,480
UTDSX 2150-075	1.5	7.5	38	3	2,480
UTDSX 2155-078	1.55	7.8	38	3	2,480
UTDSX 2160-080	1.6	8	38	3	2,480
UTDSX 2165-083	1.65	8.3	38	3	2,670
UTDSX 2170-085	1.7	8.5	38	3	2,670
UTDSX 2175-088	1.75	8.8	38	3	2,670
UTDSX 2180-090	1.8	9	38	3	2,670
UTDSX 2185-093	1.85	9.3	38	3	2,670
UTDSX 2190-095	1.9	9.5	38	3	2,670
UTDSX 2195-098	1.95	9.8	38	3	2,670
UTDSX 2200-100	2	10	38	3	2,670

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.
 The high rigidity short flute is perfect for high accuracy drilling and pilot hole drilling.

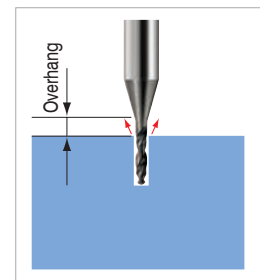
Diameter Tolerance: 0/-0.01 mm
 Point Angle: 130°



Drilling Conditions for UTDSX

WORK MATERIAL	STRUCTURAL STEELS SS400		CARBON STEELS S50C		ALLOY STEELS SCM / SUS		ALUMINUM ALLOYS A5052 / ADC12	
Velocity	Vc=20~35 m/min		Vc=20~35 m/min		Vc=15~20 m/min		Vc=20~60 m/min	
Diameter (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)
0.3	20,000	100	20,000	100	16,000	80	20,000	200
0.4	17,400	130	17,400	180	12,000	90	20,000	440
0.5	15,900	150	15,900	250	9,500	100	20,000	680
0.6	14,100	170	14,100	300	8,000	110	20,000	920
0.7	12,800	180	12,800	340	6,700	110	20,000	1,160
0.8	11,900	200	11,900	380	6,300	120	20,000	1,400
0.9	10,500	200	10,500	390	6,000	130	17,500	1,430
1	9,500	200	9,500	400	6,000	150	16,000	1,500
1.5	7,300	220	7,300	500	4,500	180	13,000	1,960
2	5,600	230	5,600	560	3,000	160	9,500	2,030
Peck Amount	0.3D		0.5D		0.3D		1.0D	

- Note:
- Recommend shallower drilling than flute length (under ϕ 1:1D, ϕ 1 and over: 0.5D).
 - Recommend water soluble or oil coolant.
 - Recommend oil coolant for Titanium Alloys and Heat Resistant Alloys.



φ3mm Shank
V Series

UDC-PCD
Series

CBN
Series

Square

Long Neck
Square

Radius

Long Neck
Radius

Taper Neck
Radius

Ball / Long
Shank Ball

Long Neck
Ball

Taper Neck
Ball

Taper

Barrel

Spiral
V Cutter

Drill

Technical Data



Size $\phi 0.1 \sim \phi 3$

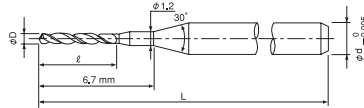
C-UMD



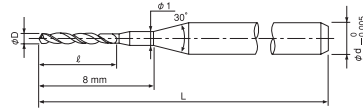
Material Applications (★ Highly Recommended ● Recommended ○ Suggested)

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

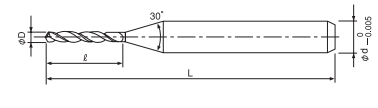
■ $\phi 0.1 \sim \phi 0.25$



■ $\phi 0.26 \sim \phi 0.65$



■ $\phi 0.66 \sim \phi 3$



Actual tool geometries for some specifications and tolerances may differ from above drawings. $\phi 3$ is Straight type.

Diameter Tolerance : $\phi D \leq \phi 3$: $\phi D -0.005$
Point Angle : 150°

Total 225 models

Unit (mm)

Model Number	Diameter ϕD	Flute Length ℓ	Overall Length L	Shank Diameter ϕd	Suggested Retail Price ¥
C-UMD 2010-012	0.1	1.2	38	3	5,500
C-UMD 2011-012	0.11	1.2	38	3	6,050
C-UMD 2012-014	0.12	1.4	38	3	6,050
C-UMD 2013-014	0.13	1.4	38	3	6,050
C-UMD 2014-014	0.14	1.4	38	3	6,050
C-UMD 2015-020	0.15	2	38	3	5,060
C-UMD 2016-020	0.16	2	38	3	5,390
C-UMD 2017-020	0.17	2	38	3	5,390
C-UMD 2018-020	0.18	2	38	3	5,390
C-UMD 2019-020	0.19	2	38	3	5,390
C-UMD 2020-025	0.2	2.5	38	3	4,400
C-UMD 2021-025	0.21	2.5	38	3	4,950
C-UMD 2022-025	0.22	2.5	38	3	4,950
C-UMD 2023-025	0.23	2.5	38	3	4,950
C-UMD 2024-025	0.24	2.5	38	3	4,950
C-UMD 2025-030	0.25	3	38	3	4,950
C-UMD 2026-030	0.26	3	38	3	4,730
C-UMD 2027-030	0.27	3	38	3	4,730
C-UMD 2028-030	0.28	3	38	3	4,730
C-UMD 2029-030	0.29	3	38	3	4,730
C-UMD 2030-050	0.3	5	38	3	3,850
C-UMD 2031-050	0.31	5	38	3	4,730
C-UMD 2032-050	0.32	5	38	3	4,730
C-UMD 2033-050	0.33	5	38	3	4,730

Unit (mm)

Model Number	Diameter ϕD	Flute Length ℓ	Overall Length L	Shank Diameter ϕd	Suggested Retail Price ¥
C-UMD 2034-050	0.34	5	38	3	4,730
C-UMD 2035-060	0.35	6	38	3	4,290
C-UMD 2036-060	0.36	6	38	3	4,730
C-UMD 2037-060	0.37	6	38	3	4,730
C-UMD 2038-060	0.38	6	38	3	4,730
C-UMD 2039-060	0.39	6	38	3	4,730
C-UMD 2040-070	0.4	7	38	3	3,850
C-UMD 2041-070	0.41	7	38	3	4,730
C-UMD 2042-070	0.42	7	38	3	4,730
C-UMD 2043-070	0.43	7	38	3	4,730
C-UMD 2044-070	0.44	7	38	3	4,730
C-UMD 2045-070	0.45	7	38	3	4,290
C-UMD 2046-070	0.46	7	38	3	4,730
C-UMD 2047-070	0.47	7	38	3	4,730
C-UMD 2048-070	0.48	7	38	3	4,730
C-UMD 2049-070	0.49	7	38	3	4,730
C-UMD 2050-070	0.5	7	38	3	4,290
C-UMD 2051-070	0.51	7	38	3	4,290
C-UMD 2052-070	0.52	7	38	3	4,290
C-UMD 2053-070	0.53	7	38	3	4,290
C-UMD 2054-070	0.54	7	38	3	4,290
C-UMD 2055-070	0.55	7	38	3	3,410
C-UMD 2056-070	0.56	7	38	3	4,290
C-UMD 2057-070	0.57	7	38	3	4,290

Next Page ➔

Unit (mm)

Model Number	Diameter ϕD	Flute Length ℓ	Overall Length L	Shank Diameter ϕd	Suggested Retail Price ¥
C-UMD 2058-070	0.58	7	38	3	4,290
C-UMD 2059-070	0.59	7	38	3	4,290
C-UMD 2060-070	0.6	7	38	3	2,970
C-UMD 2061-070	0.61	7	38	3	4,290
C-UMD 2062-070	0.62	7	38	3	4,290
C-UMD 2063-070	0.63	7	38	3	4,290
C-UMD 2064-070	0.64	7	38	3	4,290
C-UMD 2065-070	0.65	7	38	3	3,410
C-UMD 2066-070	0.66	7	38	3	4,290
C-UMD 2067-070	0.67	7	38	3	4,290
C-UMD 2068-070	0.68	7	38	3	4,290
C-UMD 2069-070	0.69	7	38	3	4,290
C-UMD 2070-080	0.7	8	38	3	2,970
C-UMD 2071-080	0.71	8	38	3	4,290
C-UMD 2072-080	0.72	8	38	3	4,290
C-UMD 2073-080	0.73	8	38	3	4,290
C-UMD 2074-080	0.74	8	38	3	4,290
C-UMD 2075-080	0.75	8	38	3	3,410
C-UMD 2076-080	0.76	8	38	3	4,290
C-UMD 2077-080	0.77	8	38	3	4,290
C-UMD 2078-080	0.78	8	38	3	4,290
C-UMD 2079-080	0.79	8	38	3	4,290
C-UMD 2080-100	0.8	10	38	3	2,970
C-UMD 2081-100	0.81	10	38	3	4,290
C-UMD 2082-100	0.82	10	38	3	4,290
C-UMD 2083-100	0.83	10	38	3	4,290
C-UMD 2084-100	0.84	10	38	3	4,290
C-UMD 2085-100	0.85	10	38	3	3,410
C-UMD 2086-100	0.86	10	38	3	4,290
C-UMD 2087-100	0.87	10	38	3	4,290
C-UMD 2088-100	0.88	10	38	3	4,290
C-UMD 2089-100	0.89	10	38	3	4,290
C-UMD 2090-100	0.9	10	38	3	2,970
C-UMD 2091-100	0.91	10	38	3	4,290
C-UMD 2092-100	0.92	10	38	3	4,290
C-UMD 2093-100	0.93	10	38	3	4,290
C-UMD 2094-100	0.94	10	38	3	4,290
C-UMD 2095-100	0.95	10	38	3	3,410
C-UMD 2096-100	0.96	10	38	3	4,290
C-UMD 2097-100	0.97	10	38	3	4,290
C-UMD 2098-100	0.98	10	38	3	4,290
C-UMD 2099-100	0.99	10	38	3	4,290
C-UMD 2100-100	1	10	38	3	2,750
C-UMD 2101-100	1.01	10	38	3	3,410
C-UMD 2102-100	1.02	10	38	3	3,410
C-UMD 2103-100	1.03	10	38	3	3,410

Unit (mm)

Model Number	Diameter ϕD	Flute Length ℓ	Overall Length L	Shank Diameter ϕd	Suggested Retail Price ¥
C-UMD 2104-100	1.04	10	38	3	3,410
C-UMD 2105-100	1.05	10	38	3	2,750
C-UMD 2106-100	1.06	10	38	3	3,410
C-UMD 2107-100	1.07	10	38	3	3,410
C-UMD 2108-100	1.08	10	38	3	3,410
C-UMD 2109-100	1.09	10	38	3	3,410
C-UMD 2110-100	1.1	10	38	3	2,750
C-UMD 2111-100	1.11	10	38	3	3,410
C-UMD 2112-100	1.12	10	38	3	3,410
C-UMD 2113-100	1.13	10	38	3	3,410
C-UMD 2114-100	1.14	10	38	3	3,410
C-UMD 2115-100	1.15	10	38	3	2,750
C-UMD 2116-100	1.16	10	38	3	3,410
C-UMD 2117-100	1.17	10	38	3	3,410
C-UMD 2118-100	1.18	10	38	3	3,410
C-UMD 2119-100	1.19	10	38	3	3,410
C-UMD 2120-100	1.2	10	38	3	2,750
C-UMD 2121-100	1.21	10	38	3	3,410
C-UMD 2122-100	1.22	10	38	3	3,410
C-UMD 2123-100	1.23	10	38	3	3,410
C-UMD 2124-100	1.24	10	38	3	3,410
C-UMD 2125-100	1.25	10	38	3	2,750
C-UMD 2126-100	1.26	10	38	3	3,410
C-UMD 2127-100	1.27	10	38	3	3,410
C-UMD 2128-100	1.28	10	38	3	3,410
C-UMD 2129-100	1.29	10	38	3	3,410
C-UMD 2130-100	1.3	10	38	3	2,750
C-UMD 2131-100	1.31	10	38	3	3,410
C-UMD 2132-100	1.32	10	38	3	3,410
C-UMD 2133-100	1.33	10	38	3	3,410
C-UMD 2134-100	1.34	10	38	3	3,410
C-UMD 2135-100	1.35	10	38	3	2,750
C-UMD 2136-100	1.36	10	38	3	3,410
C-UMD 2137-100	1.37	10	38	3	3,410
C-UMD 2138-100	1.38	10	38	3	3,410
C-UMD 2139-100	1.39	10	38	3	3,410
C-UMD 2140-100	1.4	10	38	3	2,750
C-UMD 2141-100	1.41	10	38	3	3,410
C-UMD 2142-100	1.42	10	38	3	3,410
C-UMD 2143-100	1.43	10	38	3	3,410
C-UMD 2144-100	1.44	10	38	3	3,410
C-UMD 2145-100	1.45	10	38	3	2,750
C-UMD 2146-100	1.46	10	38	3	3,410
C-UMD 2147-100	1.47	10	38	3	3,410
C-UMD 2148-100	1.48	10	38	3	3,410
C-UMD 2149-100	1.49	10	38	3	3,410

3mm Shank
V SeriesUDC-PCD
SeriesCBN
SeriesSquare
Long Neck
SquareRadius
Long Neck
RadiusTaper Neck
RadiusBall / Long
Shank BallLong Neck
BallTaper Neck
Ball

Taper

Barrel

Spiral
V Cutter

Drill

Technical Data

Next Page →

Unit (mm)

Model Number	Diameter ϕD	Flute Length ℓ	Overall Length L	Shank Diameter ϕd	Suggested Retail Price ¥
C-UMD 2150-100	1.5	10	38	3	2,750
C-UMD 2151-100	1.51	10	38	3	3,410
C-UMD 2152-100	1.52	10	38	3	3,410
C-UMD 2153-100	1.53	10	38	3	3,410
C-UMD 2154-100	1.54	10	38	3	3,410
C-UMD 2155-100	1.55	10	38	3	2,750
C-UMD 2156-100	1.56	10	38	3	3,410
C-UMD 2157-100	1.57	10	38	3	3,410
C-UMD 2158-100	1.58	10	38	3	3,410
C-UMD 2159-100	1.59	10	38	3	3,410
C-UMD 2160-120	1.6	12	38	3	2,750
C-UMD 2161-120	1.61	12	38	3	3,630
C-UMD 2162-120	1.62	12	38	3	3,630
C-UMD 2163-120	1.63	12	38	3	3,630
C-UMD 2164-120	1.64	12	38	3	3,630
C-UMD 2165-120	1.65	12	38	3	2,970
C-UMD 2166-120	1.66	12	38	3	3,630
C-UMD 2167-120	1.67	12	38	3	3,630
C-UMD 2168-120	1.68	12	38	3	3,630
C-UMD 2169-120	1.69	12	38	3	3,630
C-UMD 2170-120	1.7	12	38	3	2,970
C-UMD 2171-120	1.71	12	38	3	3,630
C-UMD 2172-120	1.72	12	38	3	3,630
C-UMD 2173-120	1.73	12	38	3	3,630
C-UMD 2174-120	1.74	12	38	3	3,630
C-UMD 2175-120	1.75	12	38	3	2,970
C-UMD 2176-120	1.76	12	38	3	3,630
C-UMD 2177-120	1.77	12	38	3	3,630
C-UMD 2178-120	1.78	12	38	3	3,630
C-UMD 2179-120	1.79	12	38	3	3,630
C-UMD 2180-120	1.8	12	38	3	2,970
C-UMD 2181-120	1.81	12	38	3	3,630
C-UMD 2182-120	1.82	12	38	3	3,630
C-UMD 2183-120	1.83	12	38	3	3,630
C-UMD 2184-120	1.84	12	38	3	3,630
C-UMD 2185-120	1.85	12	38	3	2,970
C-UMD 2186-120	1.86	12	38	3	3,630
C-UMD 2187-120	1.87	12	38	3	3,630
C-UMD 2188-120	1.88	12	38	3	3,630
C-UMD 2189-120	1.89	12	38	3	3,630
C-UMD 2190-120	1.9	12	38	3	2,970
C-UMD 2191-120	1.91	12	38	3	3,630
C-UMD 2192-120	1.92	12	38	3	3,630

Unit (mm)

Model Number	Diameter ϕD	Flute Length ℓ	Overall Length L	Shank Diameter ϕd	Suggested Retail Price ¥
C-UMD 2193-120	1.93	12	38	3	3,630
C-UMD 2194-120	1.94	12	38	3	3,630
C-UMD 2195-120	1.95	12	38	3	2,970
C-UMD 2196-120	1.96	12	38	3	3,630
C-UMD 2197-120	1.97	12	38	3	3,630
C-UMD 2198-120	1.98	12	38	3	3,630
C-UMD 2199-120	1.99	12	38	3	3,630
C-UMD 2200-120	2	12	38	3	2,970
C-UMD 2205-120	2.05	12	38	3	3,850
C-UMD 2210-120	2.1	12	38	3	3,190
C-UMD 2212-120	2.12	12	38	3	3,190
C-UMD 2213-120	2.13	12	38	3	3,190
C-UMD 2214-120	2.14	12	38	3	3,190
C-UMD 2215-120	2.15	12	38	3	3,850
C-UMD 2220-120	2.2	12	38	3	3,190
C-UMD 2225-120	2.25	12	38	3	3,850
C-UMD 2229-120	2.29	12	38	3	3,190
C-UMD 2230-120	2.3	12	38	3	3,190
C-UMD 2231-120	2.31	12	38	3	3,190
C-UMD 2232-120	2.32	12	38	3	3,190
C-UMD 2235-120	2.35	12	38	3	3,850
C-UMD 2239-120	2.39	12	38	3	3,190
C-UMD 2240-120	2.4	12	38	3	3,190
C-UMD 2241-120	2.41	12	38	3	3,190
C-UMD 2242-120	2.42	12	38	3	3,190
C-UMD 2245-120	2.45	12	38	3	3,850
C-UMD 2250-120	2.5	12	38	3	3,190
C-UMD 2255-120	2.55	12	38	3	3,850
C-UMD 2256-120	2.56	12	38	3	3,190
C-UMD 2257-120	2.57	12	38	3	3,190
C-UMD 2260-120	2.6	12	38	3	3,190
C-UMD 2265-120	2.65	12	38	3	3,850
C-UMD 2270-120	2.7	12	38	3	3,190
C-UMD 2275-120	2.75	12	38	3	3,850
C-UMD 2277-120	2.77	12	38	3	3,190
C-UMD 2278-120	2.78	12	38	3	3,190
C-UMD 2279-120	2.79	12	38	3	3,190
C-UMD 2280-120	2.8	12	38	3	3,190
C-UMD 2285-120	2.85	12	38	3	3,850
C-UMD 2290-120	2.9	12	38	3	3,190
C-UMD 2295-120	2.95	12	38	3	3,850
C-UMD 2300-120	3	12	38	3	3,190

$\phi 3\text{mm}$ Shank V Series

UDC-PCD Series

CBN Series

Square
Long Neck Square

Radius

Long Neck Radius

Taper Neck Radius

Ball / Long Shank Ball

Long Neck Ball

Taper Neck Ball

Taper

Barrel

Spiral V Cutter

Drill

Technical Data

Drilling Conditions for C-UMD

WORK MATERIAL	CARBON STEELS S45C / S50C (~225HB)		ALLOY STEELS SK / SCM / SUS (225~325HB)		PREHARDENED STEELS HARDENED STEELS NAK / SKD (30~45HRC)		ALUMINUM ALLOYS A5052 etc.	
Velocity	Vc=25~40 m/min		Vc=15~25 m/min		Vc=10~15 m/min		Vc=20~60 m/min	
Diameter (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)
0.3	20,000	40	15,900	30	10,600	10	20,000	400
0.4	17,400	50	11,800	40	8,000	20	19,900	690
0.5	15,900	80	9,500	50	6,400	30	20,000	1,000
0.6	14,100	80	7,900	40	5,300	20	19,900	1,050
0.7	12,800	90	6,800	50	4,500	20	19,900	1,120
0.8	11,900	100	6,000	50	4,000	20	19,900	1,190
0.9	10,500	100	6,200	50	3,500	20	17,600	1,220
1	9,500	100	6,400	60	3,200	20	15,900	1,270
2	5,600	170	3,200	100	1,600	20	9,500	950
3	3,700	150	2,700	110	1,600	20	6,400	640

Note:

- Recommend step amount 0.1D-0.2D. Recommend 0.2D-0.5D for Aluminum Alloys.
- Recommend water soluble or oil coolant.
- Recommend oil coolant for Titanium Alloys and Heat Resistant Alloys.

φ3mm Shank
V Series

UDC-PCD
Series

CBN
Series

Square

Long Neck
Square

Radius

Long Neck
Radius

Taper Neck
Radius

Ball / Long
Shank Ball

Long Neck
Ball

Taper Neck
Ball

Taper

Barrel

Spiral
V Cutter

Drill

Technical Data

Drilling Example 1

SUS304

Comments

● Tip Damage:

Damage by chipping can be seen on the Carbide Drill. The High-Speed Steel Drill exhibits wear on the top chisel line and corners. The High-Speed Steel Drill also has the work material adhering to it.

● Hole Position:

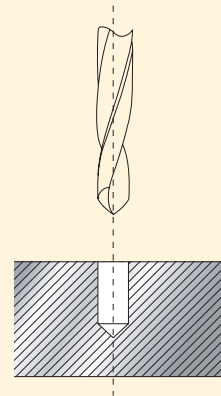
The solid carbide drill has minimal deflection when compared to a High Speed steel model, through the entire drilling cycle.

Drilling Condition

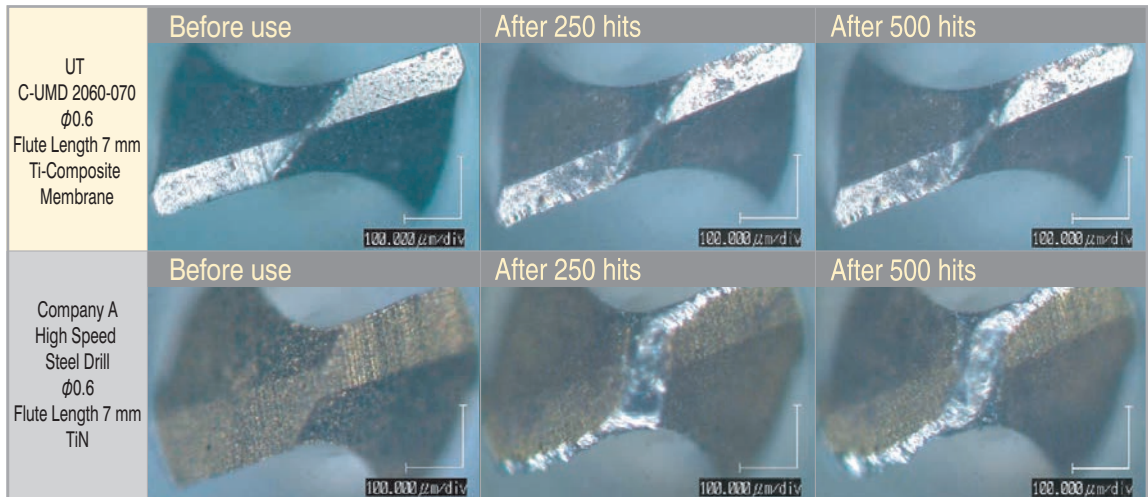
Tool:	ϕ 0.6 × Flute Length 7mm
Work Material:	SUS304 (1.4301)
Spindle Speed:	8,000 min ⁻¹
Velocity:	15 m/min
Z Feed Rate:	50 mm/min
Chip Load:	0.00625 mm/rev
Peck Amount:	0.12 mm/time
Hole Depth:	2.4 mm
Number of Holes:	500 holes
Drilling Time :	25 min/100 holes
Overhang Length :	10 mm
Coolant:	Water Soluble (Nozzle)

Process Form

* Blind Hole Step Process

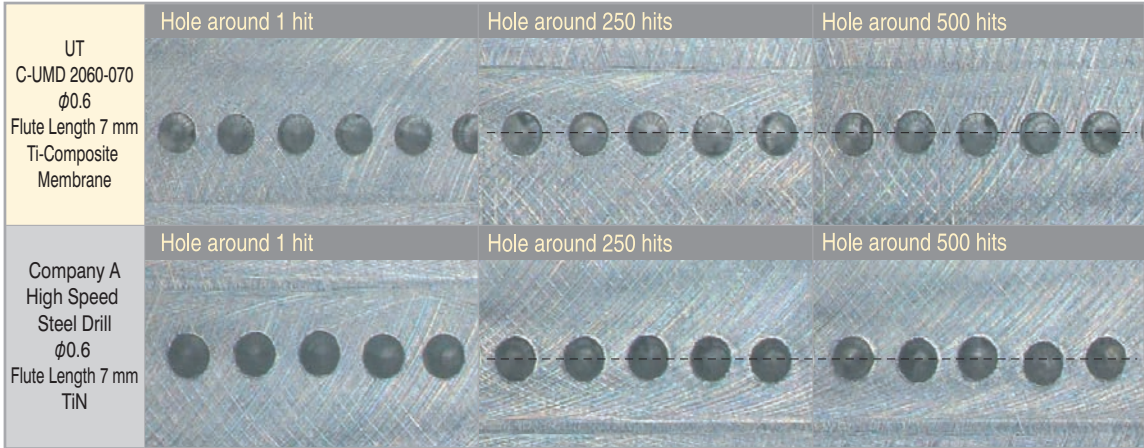


Comparison of Tip Damage



- 3mm Shank V Series
- UDC-PCD Series
- CBN Series
- Square
- Long Neck Square
- Radius
- Long Neck Radius
- Taper Neck Radius
- Ball / Long Shank Ball
- Long Neck Ball
- Taper Neck Ball
- Taper
- Barrel
- Spiral V Cutter
- Drill
- Technical Data

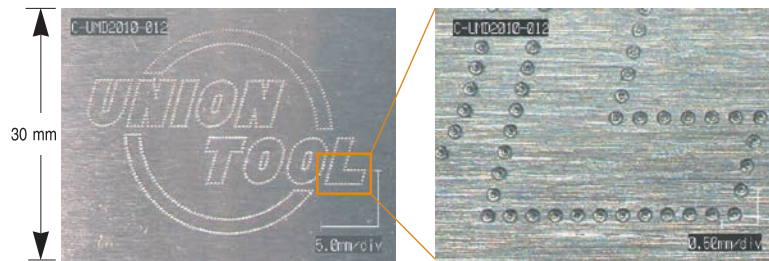
Comparison of Hole Position



Drilling Example 2

SUS304

$\phi 0.1$ Drilling (about 800 holes)



	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Peck Amount (mm/time)	Hole Depth (mm)	Drilling Time	Coolant	Note
Acrylic $\phi 0.1$							
C-UMD $\phi 0.1$	20,000	20	0.02	1.00	1 h 30 min	Air Blow	Without pilot hole drilling
SUS304 (1.4301) $\phi 0.1$							
Center Drill+Chamfering C-UMD $\phi 0.2$	10,000	2	0.01	0.05	2 h 50 min	Water Soluble	
Drilling C-UMD $\phi 0.1$	12,000	4	0.02	0.20	3 h 27 min	Water Soluble	
Aluminum (A5052) $\phi 0.2$							
C-UMD $\phi 0.2$	16,000	80	0.04	1.50	2 h 50 min	Water Soluble	Using back-up board
NAK55 (AISI P21) $\phi 0.3$							
C-UMD $\phi 0.3$	15,000	15	0.06	1.50	3 h 35 min	Water Soluble	With pilot hole drilling
SUS304 (1.4301) $\phi 0.3$							
C-UMD $\phi 0.3$	16,000	30	0.06	1.50	2 h 24 min	Water Soluble	With pilot hole drilling

$\phi 3$ mm Shank
V Series

UDC-PCD
Series

CBN
Series

Square

Long Neck
Square

Radius

Long Neck
Radius

Taper Neck
Radius

Ball / Long
Shank Ball

Long Neck
Ball

Taper Neck
Ball

Taper

Barrel

Spiral
V Cutter

Drill

Technical Data



Size $\phi 0.3 \sim \phi 3$

UTDLX



Material Applications (★ Highly Recommended ● Recommended ○ Suggested)

Work Material																			
Structural Steels SS400	Carbon Steels S45C S55C	Alloy Steels SK / SCM SUS	Prehardened Steels NAK HPM	Hardened Steels					Cast Iron	Aluminum Alloys	Graphite	Copper	Plastics	Glass Filled Plastics	Titanium Alloys	Heat Resistant Alloys	Cemented Carbide	Hard Brittle (Non-Metallic) Materials	
				~ 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.

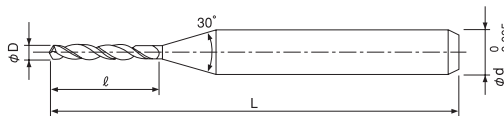
UT MICRO COAT offers excellent performance for cutting soft materials.

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 ϕD	Flute Length l	Overall Length L	Shank Diameter ϕd	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

Next Page ➔

Unit (mm)

Model Number	Diameter ϕ D	Flute Length ℓ	Overall Length L	Shank Diameter ϕ 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

ϕ 3mm Shank
V Series

UDC-PCD
Series

CBN
Series

Square

Square
Long Neck
Square

Radius

Radius
Long Neck
Radius
Taper Neck
Radius

Ball

Ball / Long
Shank Ball
Long Neck
Ball
Taper Neck
Ball

Taper

Taper

Barrel

Spiral
V Cutter

Drill

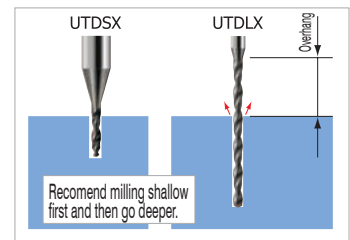
Technical Data

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 ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	Spindle Speed (min ⁻¹)	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 ϕ 1:1D, ϕ 1 and over: 0.5D).
- Recommend water soluble or oil coolant.
- Recommend oil coolant for Titanium Alloys and Heat Resistant Alloys.



- φ3mm Shank V Series
- UDC-PCD Series
- CBN Series
- Square
- Long Neck Square
- Radius
- Long Neck Radius
- Taper Neck Radius
- Ball / Long Shank 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)

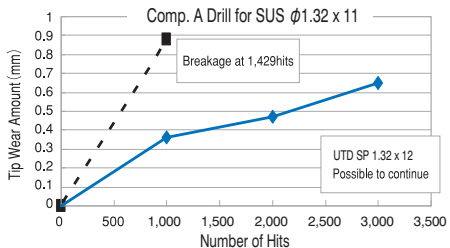
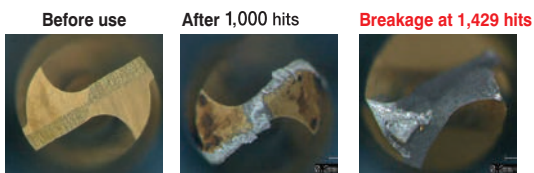
UTD can drill more than 2X holes compared to an HSS model

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

UTD prototype



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

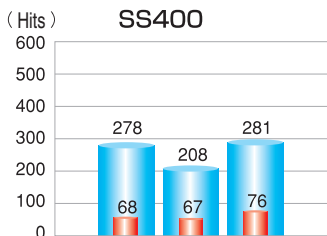
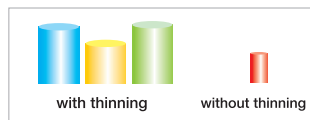


Flank wear comparison with HSS

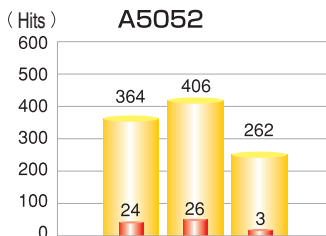
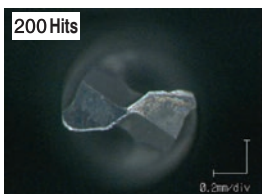
Drilling test with various materials (Comparison of with / without thinning)

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

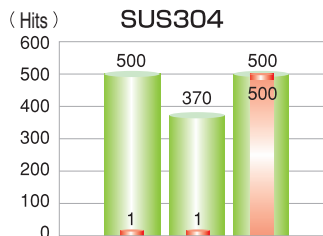
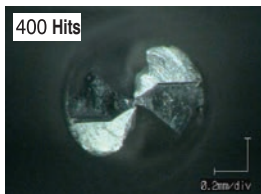
Drill Size : φ1.0 x 15
 Tool : UTDLX 2100-150 (with thinning)
 Test Tool: φ1.0 x 15 (without thinning)



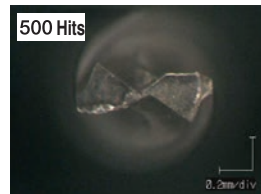
Spindle Speed	9,500 min ⁻¹ (Vc: 30 m/min)
Feed Rate	400 mm/min (f: 0.042 mm/rev.)
Peck Amount	0.2 mm
Depth	14 mm blind hole



Spindle Speed	15,900 min ⁻¹ (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 ⁻¹ (Vc: 20 m/min)
Feed Rate	150 mm/min (f: 0.023 mm/rev.)
Peck Amount	0.2 mm
Depth	14 mm blind hole



φ3mm Shank V Series

UDC-PCD Series

CBN Series

Square

Long Neck Square

Radius

Long Neck Radius

Taper Neck Radius

Ball / Long Shank Ball

Long Neck Ball

Taper Neck Ball

Taper

Barrel

Spiral V Cutter

Drill

Technical Data



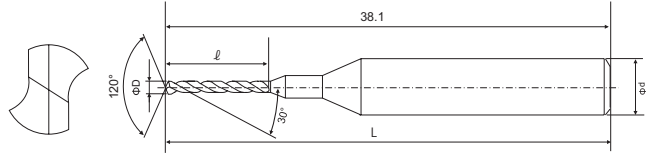
Size $\phi 0.02 \sim \phi 0.1$ Refer to page 23 for material applications.

PMD STD

h4 tolerance 3.175 shank Shrink-fit compatible

Features

Flute length L/D 10D
 Diameter tolerance 0/-3 μ m
 4-facet drill point



Total 17 models

Unit (mm)

Product code	Model Number	Diameter ϕD	Diameter tolerance	Flute length l	Overall length L	Shank Diameter ϕd	Suggested Retail Price ¥
140-0001	PMD STD 0.02 x 0.2	0.020	+0.000/-0.003	0.2	38.1	3.175	28,000
140-0002	PMD STD 0.025 x 0.3	0.025		0.3			28,000
140-0003	PMD STD 0.03 x 0.3	0.030		0.3			16,100
140-0004	PMD STD 0.035 x 0.4	0.035		0.4			16,100
140-0005	PMD STD 0.04 x 0.4	0.040		0.4			14,800
140-0006	PMD STD 0.045 x 0.5	0.045		0.5			14,800
140-0007	PMD STD 0.05 x 0.5	0.050		0.5			13,500
140-0008	PMD STD 0.055 x 0.6	0.055		0.6			13,500
140-0009	PMD STD 0.06 x 0.6	0.060		0.6			12,200
140-0010	PMD STD 0.065 x 0.7	0.065		0.7			12,200
140-0011	PMD STD 0.07 x 0.7	0.070		0.7			10,900
140-0012	PMD STD 0.075 x 0.8	0.075		0.8			10,900
140-0013	PMD STD 0.08 x 0.8	0.080		0.8			9,600
140-0014	PMD STD 0.085 x 0.9	0.085		0.9			9,600
140-0015	PMD STD 0.09 x 0.9	0.090		0.9			8,300
140-0016	PMD STD 0.095 x 1.0	0.095		1.0			8,300
140-0017	PMD STD 0.1 X 1.0	0.100		1.0			7,000

- $\phi 3$ mm Shank V Series
- UDC-PCD Series
- CBN Series
- Square
- Long Neck Square
- Radius
- Long Neck Radius
- Taper Neck Radius
- Ball / Long Shank Ball
- Long Neck Ball
- Taper Neck Ball
- Taper
- Barrel
- Spiral V Cutter
- Drill
- Technical Data

P Series Drill Features

Ultra-precision drill that utilizes the technology cultivated with PCB drills.
 All sizes with diameter tolerance 0/-0.003 and shank diameter tolerance h4 can be used with shrink-fit holders.





Size $\phi 0.02 \sim \phi 0.1$ Refer to page 23 for material applications.

PMD PLT

h4
tolerance3.175
shankShrink-fit
compatible

Features

For pilot drilling
Flute Length L/D 2D
Diameter tolerance 0/-3 μm
4-facet drill point

Total 11 models

Unit (mm)

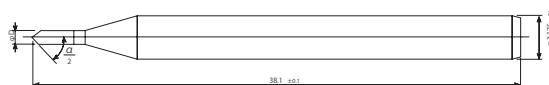
Product code	Model Number	Diameter ϕD	Diameter tolerance	Flute length ℓ	Overall length L	Shank Diameter ϕd	Suggested Retail Price ¥
※1	PMD PLT 0.02 X 0.04	0.020	※1	0.04	38.1	3.175	※1
※1	PMD PLT 0.0225 X 0.045	0.0225		0.045			※1
140-0018	PMD PLT 0.025 X 0.05	0.025	-0.003/-0.006	0.05			28,000
140-0019	PMD PLT 0.03 X 0.06	0.030	-0.005/-0.008	0.06			16,100
140-0020	PMD PLT 0.04 X 0.08	0.040		0.08			14,800
140-0021	PMD PLT 0.05 X 0.10	0.050		0.10			13,500
140-0022	PMD PLT 0.06 X 0.12	0.060		0.12			12,200
140-0023	PMD PLT 0.07 X 0.14	0.070		0.14			10,900
140-0024	PMD PLT 0.08 X 0.16	0.080		0.16			9,600
140-0025	PMD PLT 0.09 X 0.18	0.090		0.18			8,300
140-0026	PMD PLT 0.1 X 0.20	0.100		0.20			7,000

※ 1 These sizes are special items. Please contact our sales representative for details.

※ 2 Special sizes can be manufactured upon request. Please contact our sales representative for details.

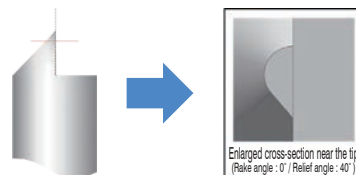
Refer to page 23 for material applications.

PSM

h4
tolerance3.175
shankShrink-fit
compatible

Features

For Chamfering · Counter sink · Center drill
Taper angle 90°



Total 1 model

Unit (mm)

Product code	Model Number	Diameter ϕD	Half Included Angle A	Overall length L	Shank Diameter ϕd	Suggested Retail Price ¥
141-9001	PSM N603A 1.0 90°	1.0	45°	38.1	3.175	6,000

※ Special sizes can be manufactured upon request. Please contact our sales representative for details.

$\phi 3\text{mm}$ Shank
V Series

UDC-PCD
Series

CBN
Series

Square

Long Neck
Square

Radius

Long Neck
Radius

Taper Neck
Radius

Ball / Long
Shank Ball

Long Neck
Ball

Taper Neck
Ball

Taper

Barrel

Spiral
V Cutter

Drill

Technical Data

φ0.06 Ultrafine hole processing on super engineering plastic

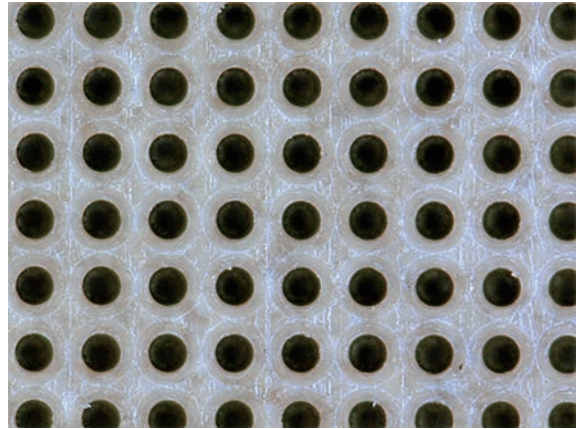
Tool

Center PSM N603A 1.0 × 90° (Center depth 0.003 mm)
 Pilot PMD PLT 0.06 × 0.12 (Pilot depth 0.009 mm)
 Through PMD STD 0.06 × 0.6

Drilling condition

Drilling depth	0.4 mm
Hole wall pitch	0.0415 mm
Spindle speed	20,000 min ⁻¹
Feed rate	10 mm/min
Peck Amount	0.005 mm/time
Hit count	961 hits
Coolant	Oil mist

Work surface

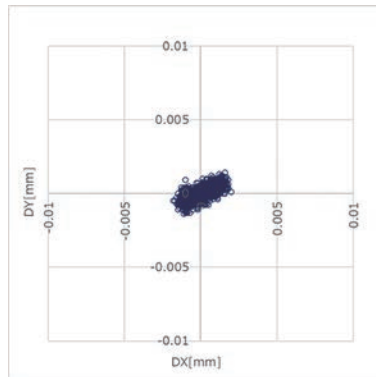


Hole diameter Avg ± 3σ φ0.0578 ± 0.0006

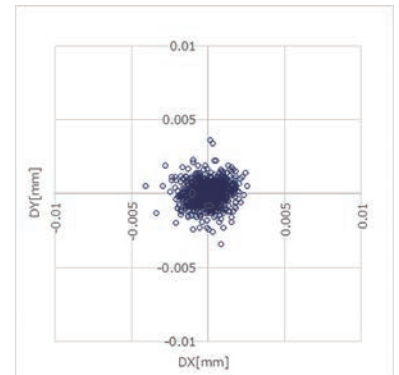
Hole registration accuracy

	Entry side	Exit side
Avg + 3σ (mm)	0.0021	0.0028
Max (mm)	0.0021	0.0041

Entry side



Exit side



∅3mm Shank
V Series

UDC-PCD
Series

CBN
Series

Square

Square

Long Neck
Square

Radius

Radius

Long Neck
Radius

Taper Neck
Radius

Ball

Ball / Long
Shank Ball

Long Neck
Ball

Taper Neck
Ball

Taper

Taper

Barrel

Spiral
V Cutter

Drill

Technical Data