

UNION TOOL

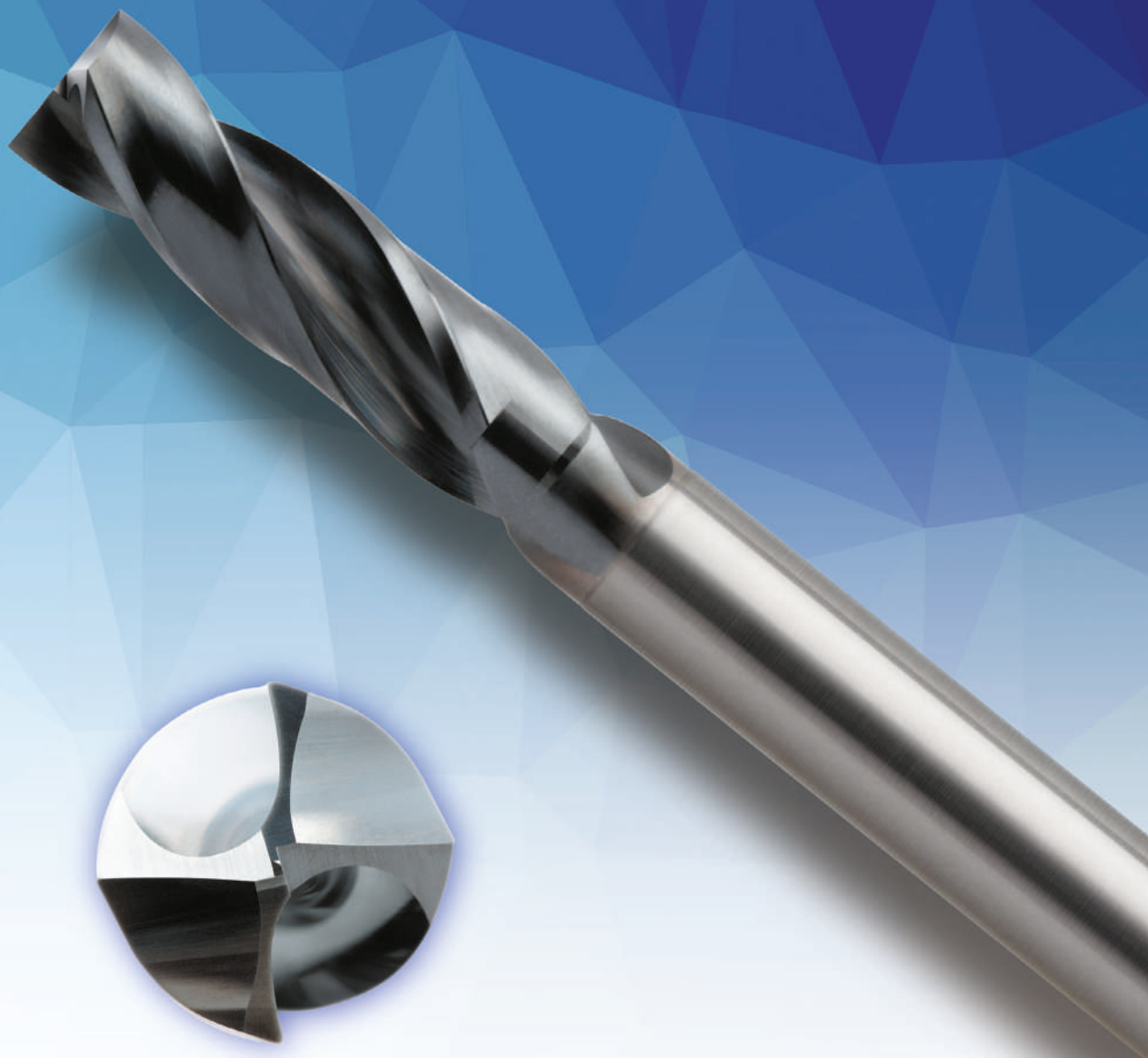
Tungsten Carbide Drills UNIMAX Series

Vol. 2

UTDF

2 Flutes Flat Drills

Additional 8 / Total 21 Models



UNION TOOL CO.

UTCOAT 2 Flutes UNIMAX Drills

Size $\varnothing 2 \sim \varnothing 12$



UTDF

Super
MG

UT
COAT

30°

Flatland

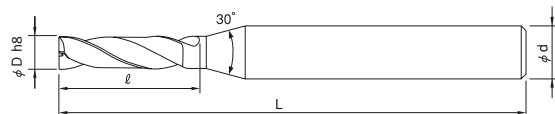
Shank Dia
0/-0.005

Additional 8 Models

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
				~ 55HRC	~ 60HRC	~ 70HRC										
◎	◎	◎	○				◎	◎								

180 degree point angle tool is available to a wide variety of applications.
Excellent chip evacuation with 30° helix angle tool offers high efficiency and stable 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.
M4 - M12 size drills for the pilot holes before tapping



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

Feature1 : Helix angle 30°



Excellent chip evacuation with 30° helix angle

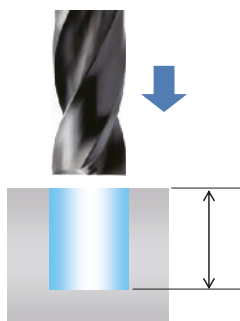
Feature2 : Double-margin



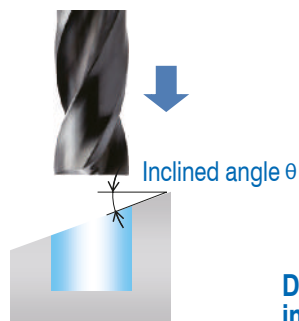
Double-margin

High-straightness drilling

Feature3 : A wide variety of applications



Flat surface



Inclined surface

Designed for drilling on flat, inclined or curved surfaces.

Total 21 models

Unit (mm)

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

* Additional model

Flat Surface

WORK MATERIAL				CARBON STEELS STRUCTURAL STEELS GRAY IRON S50C / SS400 / FC250		ALLOY STEELS SCM415		PREHARDENED STEELS NAK80		DUCTILE IRON FCD		ALUMINUM ALLOYS A5052 / A7075		ALUMINUM CAST ADC12	
Model Number	Diameter (mm)	Flute Length (mm)	ℓ / D	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	4	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	4	12,000	880	10,320	730	4,800	160	10,320	660	20,160	2,070	15,120	1,340
2300-120	3	12	4	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	4	9,090	860	7,820	710	3,640	150	7,820	630	15,280	1,970	11,460	1,280
2400-160	4	16	4	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	4	7,150	830	6,150	690	2,860	150	6,150	610	12,000	1,900	9,000	1,230
2500-200	5	20	4	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	4	5,880	800	5,060	660	2,350	140	5,060	590	9,880	1,840	7,400	1,190
2600-240	6	24	4	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	2	4,620	770	3,970	640	1,850	140	3,970	560	7,750	1,770	5,820	1,140
2680-272	6.8	27.2	4	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	4,290	760	3,680	630	1,710	140	3,680	560	7,200	1,770	5,400	1,140
2800-320	8	32	4	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	4	3,530	730	3,040	600	1,420	130	3,040	540	5,930	1,670	4,450	1,080
2860-344	8.6	34.4	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	4	3,330	720	2,870	590	1,330	120	2,870	530	5,600	1,670	4,200	1,080
2950-190	9.5	19	2	3,160	700	2,720	580	1,260	120	2,720	520	5,300	1,620	3,980	1,050
21000-400	10	40	4	3,000	690	2,580	570	1,200	120	2,580	510	5,040	1,580	3,780	1,020
21030-412	10.3	41.2	4	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	2,730	670	2,350	550	1,090	110	2,350	500	4,580	1,540	3,440	1,000
21200-480	12	48	4	2,500	650	2,150	540	1,000	110	2,150	480	4,200	1,490	3,150	960

UTDF Milling Conditions

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

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

UTDF Milling Conditions

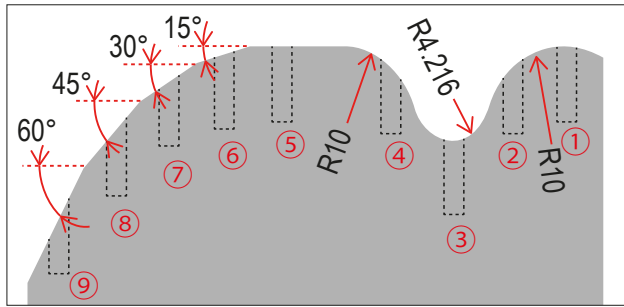
Inclined Surface ($\theta > 30^\circ$)

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

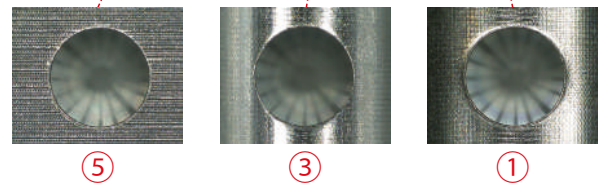
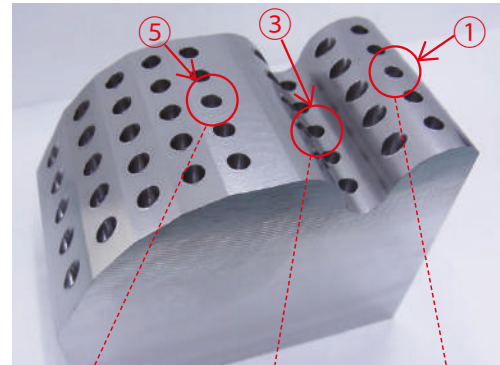
Note:

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

Work Shape



Coolant : Water Soluble (Nozzle)
 Work Size : $40 \times 75 \times 60$ 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	凸 Curved surface (Top)	7,000	450	7
2	Curved surface (45°)		270	
3	凹 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.

Tool After Drilling

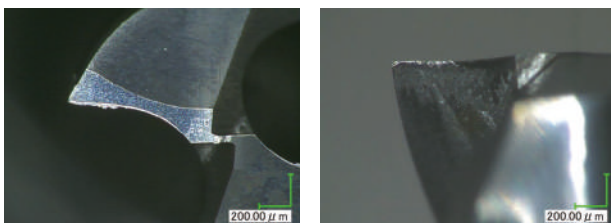
$\varnothing 2 \times$ Flute Length 8 mm

A5052

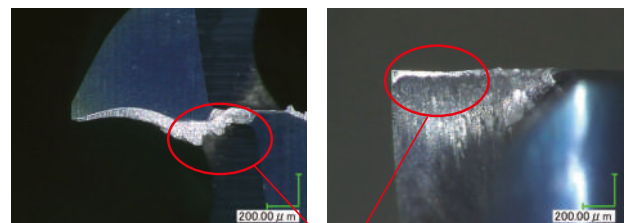
Surface	Spindle Speed	Feed Rate	Drilling Depth	Number of Holes	Coolant
Flat Surface	23,100 min ⁻¹	830 mm/min	4 mm	100 穴 100 holes	Water Soluble (Nozzle)

Comparison of Tip Damage after 100 hits

UTDF



Company A



Chip adhesion

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



Advisory for Safe Use of UNIMAX Tungsten Carbide End Mills

Correct application and operation is strongly advised to avoid clogging, abrasion, etc, that could cause serious accidents or injuries. Ignition or sparks generated during milling could lead to fire or extreme damage to the work piece. End Mills are made with very sharp cutting edges and must be handled with extra care.

- * Never touch the cutting edge with your bare hands, as this could cause serious injury. Special caution is required when opening the package.
- * Dropping the tool could cause breakage or flying debris, leading to serious injury.
- * During milling, unexpected impact or shock on the tool could cause breakage or flying debris. Ensure to use protective items such as safety glasses and a face guard.
- * For best results, fine parameter adjustment may be required, depending on the materials; milling shape and strategy; machine rigidity and spindle capability.
- * Use a machine that has high rigidity and generates a low level of vibration.
- * Do not use flammable cutting oils.

Advisory for regrinding UNIMAX Tungsten Carbide End Mills

- * Never grind the tool without wearing safety glasses and a face guard.



UNION TOOL CO.

U.S. UNION TOOL, INC. (U.S. HEADQUARTERS)

1260 N. Fee Ana Street, Anaheim, CA 92807-1817 U.S.A.
Tel: 1-714-521-6242 Fax: 1-714-521-8642

NORTHERN CALIFORNIA REGIONAL SERVICE CENTER

(Customer Service, Santa Clara, California)
2962 Scott Boulevard, Santa Clara, CA 95054 U.S.A.
Tel: 1-408-982-0205 Fax: 1-408-982-0320

UPPER MIDWEST REGIONAL SERVICE CENTER

(Customer Service, Minneapolis, Minnesota)
155 Bridgepoint Drive, Unit 3 South St. Paul, MN 55075 U.S.A.
Tel: 1-651-552-0440 Fax: 1-651-552-0435

TAIWAN UNION TOOL CORP.

No. 180, Zhong-Zun Street, 20 Lin, Hai-Hu Tsuen,
Lu-Zhu Shiang, Taoyuan Hsien, 338 TAIWAN
Tel: 886-3-354-3111 Fax: 886-3-354-3110

UNION TOOL EUROPE S.A.

Avenue des Champs-Montants 14aCH-2074 Marin / Neuchatel SWITZERLAND
Tel: 41-32-756-6633 Fax: 41-32-756-6634

UNION TOOL (SHANGHAI) Co., LTD.

Tel: 86-21-5762-8588 Fax: 86-21-5762-8436
UNION TOOL (WAIGAOQIAO SHANGHAI) Co., LTD.
No.6, Lane 385, Gaoji Road, Sijing High New Technology
Development Zone, Songjiang District, Shanghai, 201601 CHINA
Tel: 86-21-5762-8577 Fax: 86-21-5762-8436

UNION TOOL HONG KONG LTD.

Rm 503, 5/F, Win Century Centre, 2A Mong Kok Rd, Mong Kok,
Kowloon, HONG KONG
Tel: 852-2370-3012 Fax: 852-2370-2111

DONGGUAN UNION TOOL LTD.

YingHua TaiYing Industry Park, Hongmei Town,
Dongguan City, Guangdong, 523160 CHINA
Tel: 86-769-8884-8900 Tel: 86-769-8884-8901 Fax: 86-769-8884-8296

UNION TOOL SINGAPORE PTE LTD.

No.31 Harrison Road, #05-01, SINGAPORE 369649
Tel: 65-6846-9309 Fax: 65-6846-0197



0120-60-2620

<http://www.uniontool.co.jp>

Price & Specifications are subject to change without notice.