Size M2～M8 UDC

UDCT

MG UDC Shank Dia 0/-0.005

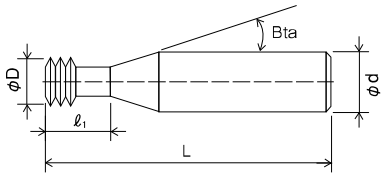
Material Applications（★ Highly Recommended ● Recommended ○ Suggested）

Work Material																
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
S45C S55C	SK / SCM SUS	NAK HPM	～50HRC	～55HRC	～60HRC	～65HRC	～70HRC										
													○			★	● *

* Hard Brittle (Non-Metallic) Materials: Ceramics (Alumina, Zirconia, etc.), Glasses etc.

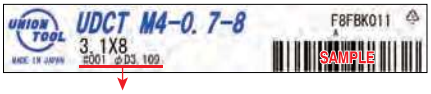
Features

Thread Mills for Cemented Carbide and Hard Brittle (Non-Metallic) Materials.
Direct milling offers higher efficiency and precision comparing to EDM and grinding process.
Developed to give improved hardness and durability, UDC also has outstanding adhesion to the tool.
UDC series End Mills and Drills are recommended to drill holes before threading.



The shank taper angle shown is not an exact value and to avoid contact with the work piece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the work piece.

Label Sample



#001 φD3.109

Measured diameter is printed on the label.

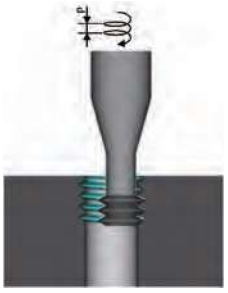
Total 10 models

Unit（mm）

Model Number	Thread Diameter M	Pitch P	Tool Diameter φD	Number of Flutes	Effective Length ℓ1	Shank Taper Angle Bta	Overall Length L	Shank Diameter φd	Suggested Retail Price ¥
UDCT M2-0.4-4	M2	0.4	1.5	2	4	16°	50	4	38,900
UDCT M2.5-0.45-5	M2.5	0.45	1.9	2	5	16°	50	4	38,900
UDCT M3-0.5-6	M3	0.5	2.4	2	6	16°	50	4	38,900
UDCT M4-0.7-8	M4	0.7	3.1	2	8	16°	50	4	38,900
UDCT M5-0.8-10	M5	0.8	3.9	2	10	16°	60	6	42,800
UDCT M5-0.8-15					15		60	6	42,800
UDCT M6-1-12	M6	1	4.6	2	12	16°	60	6	42,800
UDCT M6-1-18					18		60	6	42,800
UDCT M8-1.25-16	M8	1.25	5.9	2	16	16°	60	6	42,800
UDCT M8-1.25-24					24		60	6	42,800

Milling Conditions for UDCT

WORK MATERIAL					CEMENTED CARBIDE		
Model Number	Thread Diameter M	Pitch P	Tool Diameter φD	Effective Length ℓ1	Recommended Pilot Hole Diameter (mm)	Spindle Speed (mm^{-1})	Feed Rate (mm/min)
M2-0.4-4	M2	0.4	1.5	4	φ1.6	20,000	3
M2.5-0.45-5	M2.5	0.45	1.9	5	φ2.1	20,000	3
M3-0.5-6	M3	0.5	2.4	6	φ2.5	20,000	3
M4-0.7-8	M4	0.7	3.1	8	φ3.3	10,050	30
M5-0.8-10	M5	0.8	3.9	10	φ4.2	8,000	30
M5-0.8-15				15			
M6-1-12	M6	1	4.6	12	φ5	6,800	30
M6-1-18				18			
M8-1.25-16	M8	1.25	5.9	16	φ6.8	3,500	20
M8-1.25-24				24			



* Revised and reduced the spindle speed and feed rate for better tool life.
* These milling parameters are based on VM-40 (TAS standard) and are for reference only.
Tool life may differ depending on the type of Cemented Carbide material.
For best results, fine parameter adjustments may be required, depending on the Carbide material; milling shape and strategy; machine rigidity and spindle capability.

Note:
- This application requires a high cutting force. A machine with poor rigidity and high vibration is not recommended.
- Use a machine equipped with helical interpolating functions.
- Allow sufficient machine and spindle warm-up time for stability and to remove any expansion of the main spindle before running the program.
- Tool setting length should achieve the least possible overhang.
- Avoid contact with the coated area of the shank. This will prevent tip vibration and tool jamming in the collet / holder.
- Run-out and vibration should be checked dynamically at the tool point while mounted in the machine and both should achieve the lowest level possible.
- Decrease both spindle speed and feed rate proportionally.
- The feed rate is measured at the center of the tool.
- The radial cutting depth is recommended to cut all at once. Do not cut several times.
- Adjust turning radius amount to meet required internal thread precision.
- Air blow is highly recommended for longer tool life. Both oil mist and oil coolant are alternatives.
- Recommend water soluble coolant for Hard Brittle (Non-Metallic) Materials.
- When milling some work pieces, heavier chips may be created. To evacuate these chips it is important to accurately position the coolant nozzle on the milling part.
- Remove chips to prevent heat generation and ignition during milling process.
- Protective gear, such as safety glasses and face guards are required when milling.
- Chips / dust generated while milling can have adverse affects on the machine parts if they are not properly evacuated. Take steps to assure proper evacuation.

"Direct Drilling & Thread Milling" on Cemented Carbide!!

Cemented Carbide UDCMX φ2.5 (Hole Before Threading) + UDCT M3 (Thread Milling) VM-40(90HRA)

After drilling Holes before threading

After thread milling

Work Size:
20 × 20 × 10 mm

	Hole Before Threading	Thread Milling
Tool	UDCMX 2250-100	UDCT M3-0.5-6
Spindle Speed	2,000 min^{-1}	20,000 min^{-1}
Feed Rate	5 mm/min	3 mm/min
Peck Amount	0.5 mm	—
Coolant	Air Blow (Nozzle)	
Hole Specification	Blind Hole Depth 8 mm x 16 holes	Depth 6 mm x 16 holes
Cycle Time	2 min 2 sec per hole	9 min 15 sec per hole

New standard for Cemented Carbide Processing

- Cracks are minimized.
- Time and cost savings comparing to EDM process.
- Highly precise thread geometry generated by single path threading.