

# 5 Cemented Carbide Tap Series

Overall length	Thread length	Shank dia.	Size of square	Length of square
L	ℓ	Ds	K	ℓk

JIS

①

Spiral Fluted Taps  
(for blind hole)

②

Spiral Fluted Taps  
(for through hole)

③

Spiral Pointed Taps  
(for through hole)

④

Hand Taps

⑤

Cemented Carbide Taps

⑥

Roll Taps

⑦

Special Thread Taps  
Simple inspection tools

⑧

Pipe Taps

⑨

Thread Mills  
Premium Thread Mills

⑩

Dies

⑪

Center Drills  
Centering Tools

⑫

Precision Machinery/  
Medical Surgical Instruments

JIS

⑤-27

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## UH-CT

Carbide Taps for Ultra Hard Materials



### Specification



### Tapping Speeds depending on Materials



### Product Features

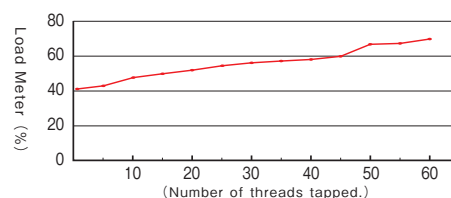
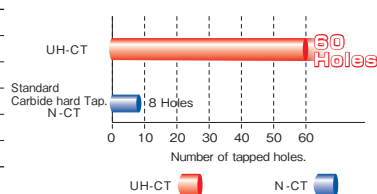
- The UH-CT is designed for tapping SKD and pre-hardened steel 50HRC to 63HRC (Max 63).
- It is produced from a ultra fine grain cemented carbide with superior abrasion resistance and impact resistance.
- The UH-CT has an improved shank roundness accuracy.
- Recommended tapping length is "Major diameter size x 1.5" or less 5P chamfer for better tool life.
- For the bored hole diameter, the maximum minor diameter of a 6H internal thread diameter maximum value is recommended.

### Tapping Data

#### Tapping Conditions [M8×1.25]

Workpiece Material	SKD11hardened material (60 HRC)
Bore Diameter	φ6.9
Tapping Length	16mm through hole
Tapping Speed	1.5m/min (60rpm)
Machinery Type	CNC rigid tapping machine
Tapping Fluid	Non-water soluble cutting oil

#### Tool Life



The figure above is a comparison of the number of tapped holes using a standard carbide tap (N-CT) and a carbide tap in SKD 11 high hardness quenched steel at 60 HRC. The N-CT tap, had chipped flutes at 8 holes. Compared to the N-CT, the UH-CT was able to process 60 holes in ultra high hardness steel. It is important to watch for a dull drill as it will cause the taps flutes to wear prematurely. The drilling is processed at a 6m/min. cutting speed and a 0.04mm/rev. feed which can easily cause work hardening.

- Bored hole in this test was prepared by using a carbide drill under such condition as could cause no work-hardening. (cutting speed: 6m/min, feed 0.04m/rev.)

The figure above shows the relationship between the number of tapped holes and the load meter (%) of the machine when machining tests are conducted up to 60 holes with UH - CT tap. The numerical value of the load meter tends to increase as the number of tapped holes increase at 50 completed threads. The cutting edge damage at this point causes the load meter to raise quickly beyond 50 tapped holes. As the number of tapped holes progresses further, the risk of tap breakage is considerable and the load will increase, so it is recommended to set the life expectancy at a safe level considering the high hardness of the steel being processed.

### Selection of hole diameter (reference)

Unit: mm

Unit: mm

Thread Size	Hole Size	JIS6H (Level 2) Internal Thread Diameter	
		Hole Size (Max)	Hole Size (Min)
M2 ×0.4	1.65	1.679	1.567
M2.5×0.45	2.11	2.138	2.013
M2.6×0.45	2.21	2.238	2.113
M3 ×0.5	2.56	2.599	2.459
M4 ×0.7	3.40	3.422	3.242
M5 ×0.8	4.30	4.334	4.134
M6 ×1	5.10	5.153	4.917
M8 ×1.25	6.90	6.912	6.647
M10 ×1.5	8.60	8.676	8.376
M10 ×1.25	8.90	8.912	8.647

Thread Size	Hole Size	JIS6H (Level 2) Internal Thread Diameter	
		Hole Size (Max)	Hole Size (Min)
M12×1.75	10.4	10.441	10.106
M12×1.5	10.60	10.676	10.376
M12×1.25	10.90	10.912	10.647
M14×2	12.1	12.210	11.835
M14×1.5	12.60	12.676	12.376
M16×2	14.1	14.210	13.835
M16×1.5	14.60	14.676	14.376
M18×2.5	15.7	15.744	15.294
M18×1.5	16.60	16.676	16.376
M20×2.5	17.6	17.744	17.294
M20×1.5	18.60	18.676	18.376

### Product system table

SLOW		Tapping Speed					Fast	
Work piece Material		1m/min	3m/min	5m/min	6m/min	15m/min	Work piece Material	
High hardness material	60HRC 55HRC	UH-CT (For ultra high-hardness steel)					60HRC 55HRC	High hardness material
	55HRC 45HRC	EH-CT (For high-hardness steel)					55HRC 45HRC	
Tempered material Tool steel Alloy steel	45HRC 25HRC SKS • SKD SCM • SCR	EH-HT EH-PO (For hard-to-machine materials)					45HRC 25HRC SKS • SKD SCM • SCR	Tempered material Tool steel Alloy steel
		1m/min	3m/min	5m/min	6m/min	15m/min		

- Please use synchronous type tooling for UH - CT / EH - CT.

Think threads with  
**YAMAWA**

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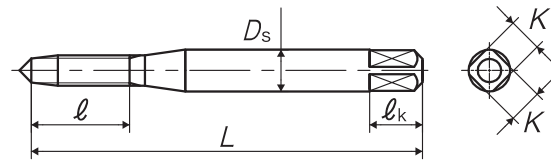
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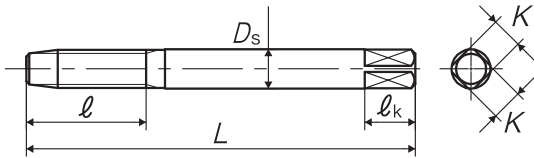
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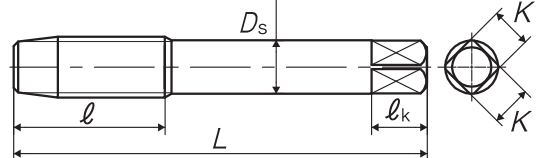
TYPE: 1



TYPE: 2



TYPE: 3



Segment : 1L

Size	Class	Code	Chamfer	L (mm)	$\ell$ (mm)	Ds (mm)	K (mm)	$\ell_k$ (mm)	No. of flutes	TYPE	MSRP
For Metric Threads											
M2 × 0.4	P3	UHCR2.0E5	5P	40	8	4	3.2	6	3	1	¥ 18,100
M2.5 × 0.45	P3	UHCR2.5F5	5P	44	9.5	4	3.2	6	4	1	¥ 17,000
M2.6 × 0.45	P3	UHCR2.6F5	5P	44	9.5	4	3.2	6	4	1	¥ 17,000
M3 × 0.5	P3	UHCR3.0G5	5P	46	11	5	4	7	4	1	¥ 16,600
M4 × 0.7	P3	UHCR4.0I5	5P	52	13	5.5	4.5	7	4	1	¥ 17,600
M5 × 0.8	P3	UHCR5.0K5	5P	60	16	6	4.5	7	4	1	¥ 18,300
M6 × 1	P3	UHCR6.0M5	5P	62	19	6.2	5	8	5	2	¥ 19,900
M8 × 1.25	P4	UHCS8.0N5	5P	70	22	7	5.5	8	5	3	¥ 24,600
M10 × 1.5	P4	UHCS010O5	5P	75	24	8.5	6.5	9	5	3	¥ 33,200
M10 × 1.25	P4	UHCS010N5	5P	75	24	8.5	6.5	9	5	3	¥ 33,200 *
M12 × 1.75	P4	UHCS012P5	5P	82	30	10.5	8	11	5	3	¥ 43,700
M12 × 1.5	P4	UHCS012O5	5P	82	30	10.5	8	11	5	3	¥ 43,700 *
M12 × 1.25	P4	UHCS012N5	5P	82	30	10.5	8	11	5	3	¥ 43,700 *
M14 × 2	P4	UHCS014Q5	5P	88	30	12.5	10	13	6	3	¥ 60,000 *
M14 × 1.5	P4	UHCS014O5	5P	88	30	12.5	10	13	6	3	¥ 60,000 *
M16 × 2	P4	UHCS016Q5	5P	95	30	14	11	14	6	3	¥ 72,600 *
M16 × 1.5	P4	UHCS016O5	5P	95	30	14	11	14	6	3	¥ 72,600 *
M18 × 2.5	P4	UHCS018R5	5P	100	35	15	12	15	6	3	¥ 85,700 *
M18 × 1.5	P4	UHCS018O5	5P	100	35	15	12	15	6	3	¥ 85,700 *
M20 × 2.5	P4	UHCS020R5	5P	105	35	17	13	16	6	3	¥ 101,000 *
M20 × 1.5	P4	UHCS020O5	5P	105	35	17	13	16	6	3	¥ 101,000 *

Note: Ds, K and  $\ell_k$  of UH-CT are one rank higher than those of standard tap dimensions.

\* = Specified Distribution Items. Made to order products.

Think threads with