

EH-CT UH-CT

Outstanding performance in tapping high hardness
steels of hardness over 45HRC.

EH-CT UH-CT



Line ups

UH-CT



■ Characteristics

• Suitable for tapping SKD die steels and pre-hardened steels which hardness ranges in 50-60HRC (Maximum hardness 63HRC).

■ Features

• As UH-CT has 5 pitch chamfer, the ideal threaded length is to be less than 1.5D.

[Tapping data]

Tap size	M8×1.25
Material	SKD die steel, heat-treated (60HRC)
Bored hole size	6.9 mm
Tapping length	16mm, through hole
Machine	CNC rigid tapping machine
Tapping speed	1.5m/min (60rpm)
Lubricant	non-soluble cutting oil (with extreme pressure additive)

Right graph shows Comparison data in tapping heat-treated SKD die steel by the standard carbide tap (CT-FC) and by the carbide tap for high hardness steel (UH-CT). Chipping occurred in 8th tapping with CT-FC. 60 hole tapings were obtained with UH-CT. Note: It is necessary to change the drills more earlier because the damage on the edge of drill is large when drilling high hardness steels.

*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 0.04mm/rev.).

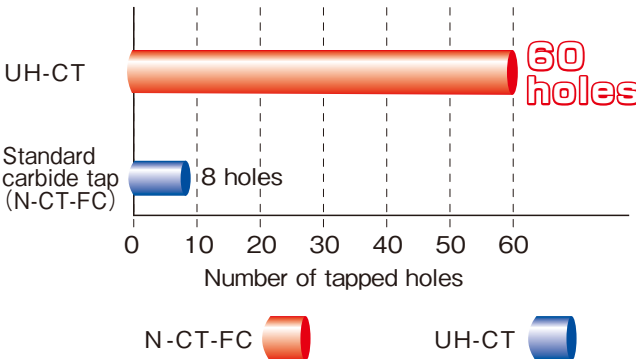
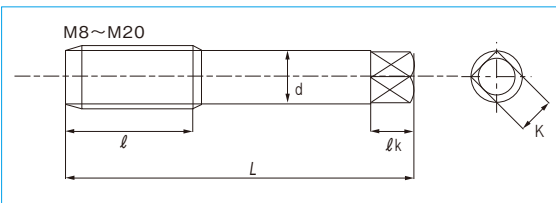
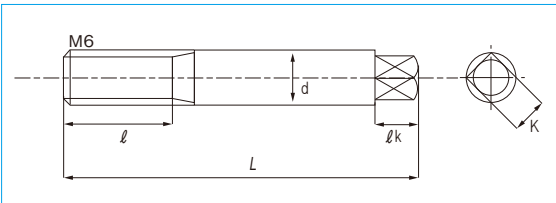
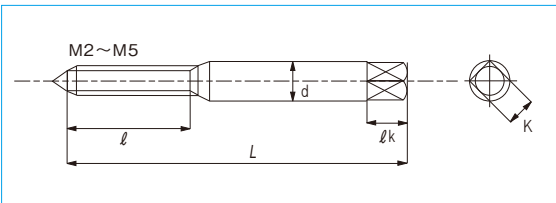
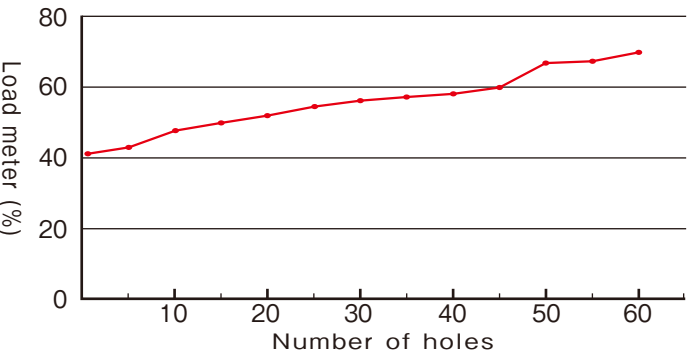


Table of dimensions and sizes



size designation	class	L	l	d	K	Kk	number of flutes	recommended bored hole sizes	product codes
M2 ×0.4	P3	40	8	4	3.2	6	3	1.65	UHCR2.0E5
M2.5 ×0.45	P3	44	9.5	4	3.2	6	4	2.1	UHCR2.5F5
M2.6 ×0.45	P3	44	9.5	4	3.2	6	4	2.2	UHCR2.6F5
M3 ×0.5	P3	46	11	5	4	7	4	2.55	UHCR3.0G5
M4 ×0.7	P3	52	13	5.5	4.5	7	4	3.4	UHCR4.0I5
M5 ×0.8	P3	60	16	6	4.5	7	4	4.3	UHCR5.0K5
M6 ×1	P3	62	19	6.2	5	8	5	5.1	UHCR6.0M5
M8 ×1.25	P4	70	22	7	5.5	8	5	6.9	UHCS8.0N5
M10 ×1.5	P4	75	24	8.5	6.5	9	5	8.6	UHCS01005
M10 ×1.25	P4	75	24	8.5	6.5	9	5	8.9	UHCS010N5
M12 ×1.75	P4	82	30	10.5	8	11	5	10.4	UHCS012P5
M12 ×1.5	P4	82	30	10.5	8	11	5	10.6	UHCS012O5
M12 ×1.25	P4	82	30	10.5	8	11	5	10.9	UHCS012N5
M14 ×2	P4	88	30	12.5	10	13	6	12.2	UHCS014Q5
M14 ×1.5	P4	88	30	12.5	10	13	6	12.6	UHCS014O5
M16 ×2	P4	95	30	14	11	14	6	14.2	UHCS016Q5
M16 ×1.5	P4	95	30	14	11	14	6	14.6	UHCS016O5
M18 ×2.5	P4	100	35	15	12	15	6	15.7	UHCS018R5
M18 ×1.5	P4	100	35	15	12	15	6	16.6	UHCS018O5
M20 ×2.5	P4	105	35	17	13	16	6	17.7	UHCS020R5
M20 ×1.5	P4	105	35	17	13	16	6	18.6	UHCS020O5



Left graph shows the relation between the number of tapped holes and the load meter data of the machine on the tapping test up to 60 holes with UH-CT tap. Percentage of load meter figure tends to increase after tapping 50 holes. This is due to the damage on the tool's cutting edge operating at high speed. Then, tap breakage will happen if the load meter figure increases more and more. Thus for safety purposes, it is better to limit the number of tapping holes (tool life) when tapping high hardness steel materials.

Line ups

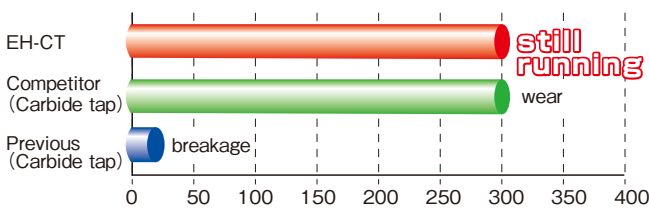
EH-CT



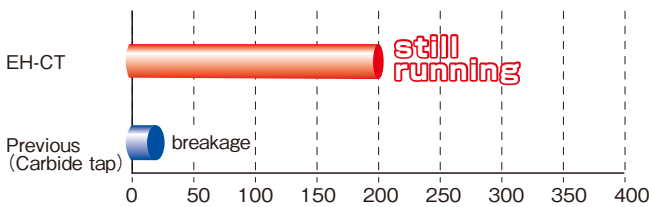
■ Features

• Ultra fine grain carbide alloys with superior wear resistance and shock resistance are adopted. By using the tap blanks in which both the run-out tolerance and the shank concentricity are improved, the high accuracy in screw threads can be obtained. Recommended bored hole size is the maximum of 6H class's minor diameter.

Comparison graph



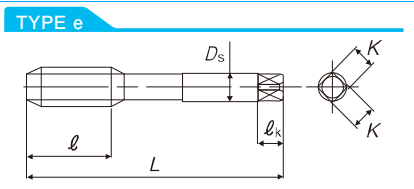
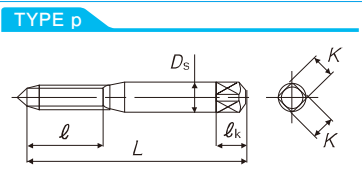
material	Type	hot forged die steel (SKD61). steel for diecasting
	hardness	50HRC
Size		M8×1.25
Tapping speed		6m/min
Feed system		full rigid
Cutting oil		non-soluble



material	Type	stainless steel for plastic die (SUS420J2)
	hardness	52HRC
Size		M8×1.25
Tapping speed		6m/min
Feed system		full rigid
Cutting oil		non-soluble

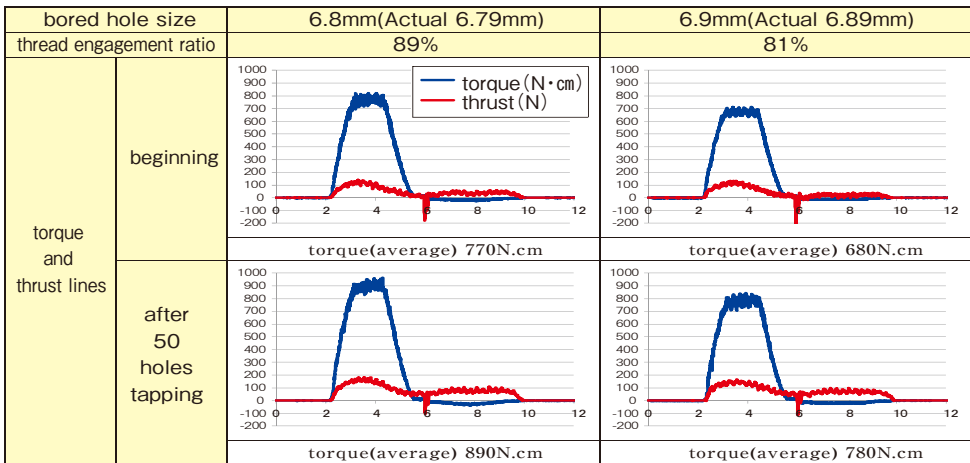
Dimension

Size	class	L	l	Ds	number of flutes	shape of tip front-end	type	product codes
M3×0.5	P3	46	11	4	4	□	p	EHCR3.0G5
M4×0.7		52	13	5				EHCR4.0I5
M5×0.8		60	16	5.5				EHCR5.0K5
M6×1		62	19	6				EHCR6.0M5
M8×1.25	P4	70	22	6.2	5	-	e	EHCS8.0N5
M10×1.5		75	24	7				EHCS01005
M12×1.75		82	30	8.5				EHCS012P5



Other data

torque line in the different bored hole size
EH-CT size: M8×1.25 material: DAC (equivalent to SKD61) 50HRC
cutting speed: 6m/min feed: rigid Lubricant: non-soluble oil



Enlarged bored hole size by 0.1mm can reduce the tapping resistance torque by 10%.
In tapping the material of high hardness, it is recommendable to make the bored hole size as large as possible.

For detailed usage, refer to this You-tube.



Think threads with YAMAWA

Application

Tapping Speed		Work piece				
		1m/min	3m/min	5m/min	6m/min	15m/min
High hardness materials	60HRC ↕ 55HRC	UH-CT				
	55HRC ↕ 45HRC					
Heat treated materials	45HRC ↕ 25HRC	EH-CT				
Tool steels	SKS·SKD					
Alloy steels	SCM·SCr	EH-HT EH-PO				

※please must use feedrate/
rotation synchronized
tapping attachments for
UH-CT/EH-CT.

Recommended bored hole size (for reference) ※●=standard size unit: mm

size	recommended bored hole size	minor diam of JIS 6H class internal screw thread	
		Max tolerance	Min tolerance
M2X0.4	1.65	1.679	1.567
M2.5X0.45	2.1	2.138	2.013
M2.6X0.45	2.2	2.238	2.113
M3X0.5	2.55	2.599	2.459
M4X0.7	3.4	3.422	3.242
M5X0.8	4.3	4.334	4.134
M6X1	5.1	5.153	4.917
M8X1.25	6.9	6.912	6.647
M10X1.5	8.6	8.676	8.376
M10X1.25	8.9	8.912	8.647

※●=standard size unit: mm

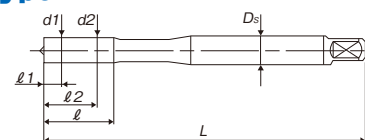
size	recommended bored hole size	minor diam of JIS 6H class internal screw thread	
		Max tolerance	Min tolerance
M12X1.75	10.4	10.441	10.106
M12X1.5	10.6	10.676	10.376
M12X1.25	10.9	10.912	10.647
M14X2	12.2	12.210	11.835
M14X1.5	12.6	12.676	12.376
M16X2	14.2	14.210	13.835
M16X1.5	14.6	14.676	14.376
M18X2.5	15.7	15.744	15.294
M18X1.5	16.6	16.676	16.376
M20X2.5	17.7	17.744	17.294
M20X1.5	18.6	18.676	18.376

For bored hole control, please use check pins for cutting taps.
For control of bored hole size, please use check-pins for cutting taps.

CPC-T Check pin for Cutting Taper



Type



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Warning

- ◆ Tool may shatter if broken. The wearing of eye protection glass is strongly advised in the vicinity of their use.
- ◆ The correct using conditions and handling of our tools are essential in securing maximum useful tool life and hazard free operation.
- ◆ The wearing of gloves is forbidden as the gloves may entangle with turning tools.
- ◆ Tools may hurt the users' feet when falling off. The safety shoes should be put on at all times.
- ◆ While fitting the tools to machine spindles and/or sleeves, care should be taken to avoid subjecting them to shock or impact.
- ◆ Check that the workpieces are properly seated and securely held in the chuck before switching on machine power.
- ◆ Do not use a tool whose cutting edges are worn-out or chipped severely.
- ◆ Tools may generate extreme heat during use. Fire protection is strongly recommended.

Changes may occur without advance notice.



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YAMAWA group for Overseas

YAMAWA International Co., Ltd.



Our target is to reduce the energy per each tool.

We will reduce the excessive machining toward such portions as do not affect the tool's performance and reduce energy consumption. Without affecting the tool's performance, we aim to minimize the excessive machining power and hence reduce the energy consumption.