

# UH-CT

Outstanding performance in tapping high hardness steels over 50HRC.

▪ Carbide Taps for High Hardness Steel ▪

# UH-CT



## Mold and Die industry



The mold industry is roughly divided into mold die (Mold) and metal press die (Die) used for casting and resin molding.

Materials used in mold dies are often stainless steel-based materials with excellent corrosion resistance and mold materials of about 40HRC.

In the threading process, mold materials which exceed 50HRC can not be processed with a tap made of HSS. It is necessary to tap with a HSS tap before heat treatment. However, in the case where the pre-hardened material that has been heat-treated Yamawa has developed our UH-CT series of tools.

The UH-CT reduces cycle times and increases productivity.

## YAMAWA Carbide Taps for hard materials, UH-CT

UH-CT



**Chamfer length is 5P for better tool life.**

**Coating**

Special coating improves heat resistance and wear resistance.

**Material**

It is produced from a ultra fine grain cemented carbide with superior abrasion resistance and impact resistance.

**Shank**

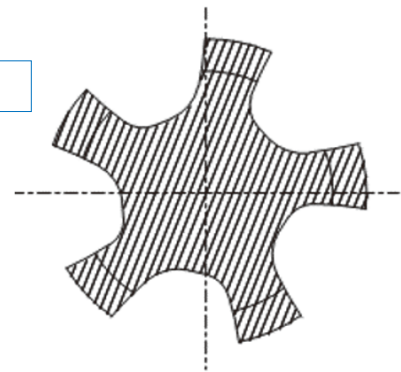
The UH-CT has an improved shank roundness accuracy.

**Special cutting angle**



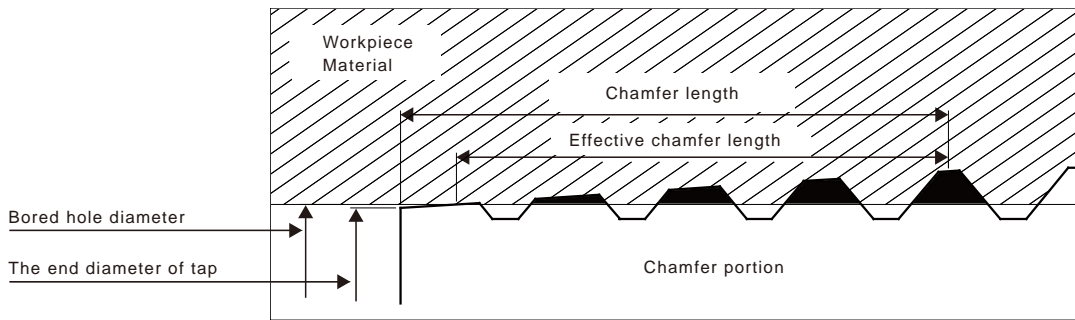
Avoid chipping by adopting special cutting angle.

**Flute design**



Compared with general purpose taps, increased number of flutes and adopted special flute shape for improving wear resistance and smooth chip ejection.

## Special chamfer design of UH-CT Tap



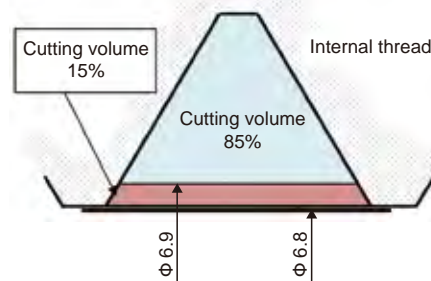
The end diameter of UH-CT is designed to be larger than that of general purpose taps according to the maximum value of 6H internal threads.

We recommend to make bored hole before tapping as close as maximum figure of 6H internal thread.

If you make small hole size, it will be caused for chipping at the chamfer or tap breakage of cutting edge.

## Recommended bored hole size before tapping

Size	Recommended bored hole size before tapping	Minor. dia.	
		Max.	Min.
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
M12X1.75	10.4	10.441	10.106
M14X2	12.2	12.210	11.835
M16X2	14.2	14.210	13.835
M18X2.5	15.7	15.744	15.294
M20X2.5	17.7	17.744	17.294



For example M8X1.25, by adjusting bored hole from 6.8mm to 6.9mm, the volume of chips will decrease by 15%.

Also, tapping load decreases as well by 13%.

Larger bored holes can decrease tap breakage and chipping problems.

## Precautions of Processing

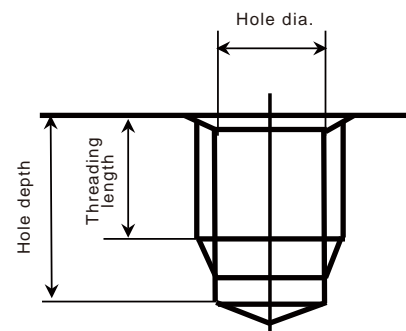
① Make the bored hole as large as possible within an allowable range and work. If the bored hole is made larger, the processing load is reduced, so more stable tapping becomes possible.

② Pay attention to vibration while tapping, tap bending, tapping speed and process it.

③ Make the depth of the prepared hole before tapping as deep as possible within an allowable range.

If the tap cuts the chips that accumulated the bottom of the bored holes, this will create a flute chipping problem.

If it is not possible to deepen the bored hole, we suggest that once you have tapped about half of the thread length, remove the tap once, remove the chips and continue tapping to the bottom of the hole.



## Recommended tapping condition

Type of material	Hardness	Recommended tapping speed (m/min)
Hot forging die	50~55HRC	2~6
Cold forging die (SKD11)	56~63HRC	1~4

<Recommended tapping length>

Major diameter X1.5 or less



Chips ejected by UH-CT

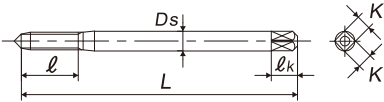
## Tapping record

UH-CT can continue to be used without any chipping or breakage.  
Parted small chips eject because of the special cutting angle.

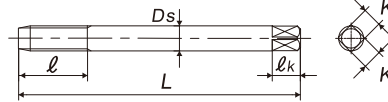
Size	Material (HRC)	Bored hole size (mm)	Machine	Tapping speed (m/min)	Feed	Lubrication	Number of tapped hole (hole/pc)
M6X1	SKD11 (60HRC)	5.1	M/C	3	Synchronized	Non-soluble oil	100
M8X1.25	SKD11 (58HRC)	6.9	M/C	1.5		Water soluble oil	80
M8X1.25	Hardened steel (60HRC)	6.9	M/C	2.5		Water soluble oil	60
M12X1.75	SKD11 (58HRC)	10.4	CNC	2		Non-soluble oil	30

## Dimensions and Sizes

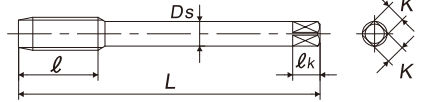
TYPE 1



TYPE 2



TYPE 3



Size	Code	L (mm)	l (mm)	Ds (mm)	K (mm)	lk (mm)	No. of flutes	TYPE	Chamfer length	Recommended bored hole size
M3X0.5	TD3.0GBBWA5	56	11	3.5	2.7	6	4	1		2.55
M4X0.7	TD4.0IBBWA5	63	13	4.5	3.4	6	4	1		3.4
M5X0.8	TD5.0KBBWA5	70	16	6	4.9	8	4	1		4.3
M6X1	TD6.0MBBWA5	80	19	6	4.9	8	5	1		5.1
M8X1.25	TD8.0NBBWA5	90	22	8	6.2	9	5	2		6.9
M10X1.5	TD010OBBWA5	100	24	10	8	11	5	2	5P	8.6
M12X1.75	TG012PBBWA5	110	29	9	7	10	5	3		10.4
M14X2	TG014QBBWA5	110	30	11	9	12	6	3		12.2
M16X2	TG016QBBWA5	110	32	12	9	12	6	3		14.2
M18X2.5	TG018RBBWA5	125	34	14	11	14	6	3		15.7
M20X2.5	TG020RBBWA5	140	34	16	12	15	6	3		17.7

### Warning

- ◆Tools may shatter. Wear cover or eye glasses to avoid injury during tapping.
- ◆Tools may shatter. Use tools under the proper tapping condition.
- ◆Never wear gloves during turning operations as the gloves may get caught with the tools.
- ◆Wear safety shoes to avoid injuring yourself by the falling tools.
- ◆On attaching tools to the machine, fasten firmly to avoid chattering and run-out.
- ◆Fasten the work pieces firmly so that they never move during operation. Never use worn tools or damaged tools with chipping.
- ◆Take a special care to fire trouble. High temperature during machining may cause fire.

