

Tungsten Carbide End Mills UNIMAX Series

Vol.2

Barrel End Mills For Highly Efficient Finishing

UTCOT 4 Flutes Oval Barrel Form

Add 2

COVB

Total 4 Models

UTCOT 4 Flutes Standard Taper Barrel Form

Add 3

CSTB

Total 5 Models

UTCOT 4 Flutes Wide Taper Barrel Form

NEW

CWTB

Total 2 Models



UNION TOOL CO.



COVB

Super
MG

UT
COAT

Form
±0.01

Shank Dia
0/-0.005

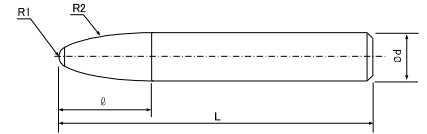
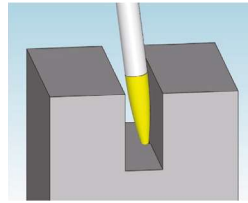
Additional 2 Models

Material Applications (☆ Highly Recommended ◎ Recommended ○ Suggested)

Work Material															
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										
◯	◯	◯	◯			◯	◯		◯			◯	◯		

Features

Broad range of application available with UTCOAT.
Suitable for narrow interference area with small inclined angle.



Total 4 models

Unit (mm)

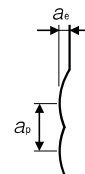
Model Number	Tip R	Barrel R	Length of Cut ℓ	Overall Length L	Shank Diameter $\varnothing d$	Price ¥
COVB 4020-85	R1	R85	19.2	60	6	23,400
* COVB 4020-90		R90	23.9	70	8	29,000
COVB 4040-80	R2	R80	23.4	80	10	33,330
* COVB 4040-80-12		R80	26.6	80	12	40,320

* Additional model

COVB Milling Conditions

WORK MATERIAL			ALUMINUM ALLOYS A7075				PREHARDENED STEELS PXA30 (30~45HRC)				HARDENED STEELS SKD61 / STAVAX (45~55HRC)			
Model Number	Tip R (mm)	Barrel R (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)
4020-85	R1	R85	10,500	2,400	2.85	0.1	4,700	1,070	2.4	0.1	3,800	900	1.9	0.07
4020-90		R90	9,250	2,200	3.6	0.1	4,250	980	2.9	0.1	3,500	850	2.4	0.07
4040-80	R2	R80	8,000	2,000	3.5	0.1	3,800	900	3	0.1	3,200	800	2.4	0.07
4040-80-12		R80	6,750	1,800	4	0.1	3,350	900	3.4	0.1	2,900	750	2.7	0.07

Note:

• Set spindle speed, feed rate, and axial depth (a_p) in accordance with the required surface quality.

 a_p : Axial Depth (mm)

 a_e : Radial Depth (mm)



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Additional 3 Models

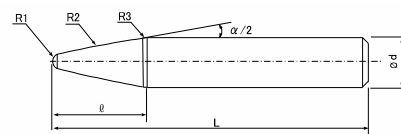
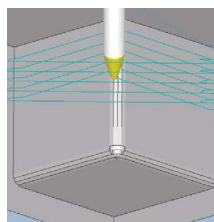
Material Applications (☆ Highly Recommended ◎ Recommended ○ Suggested)

Work Material															
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										
◯	◯	◯	◯			◯	◯		◯			◯	◯		

Features

Broad range of application available with UTCOAT.

Suitable for finishing on straight and inclined walls with larger barrel R.



Total 5 models

Unit (mm)

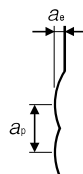
Model Number	Half Included Angle $\alpha/2$	Tip R R1	Barrel R R2	Third R R3	Length of Cut ℓ	Overall Length L	Shank Diameter $\varnothing d$	Price ¥
CSTB 4020-200-30	15°	R1	R200	R3	8.6	60	6	23,400
* CSTB 4030-250-40	20°	R1.5	R250	R4	8.7	70	8	29,000
* CSTB 4040-250-40	20°	R2	R250	R5	10.7	80	10	33,330
CSTB 4060-250-45	22.5°	R3	R250	R6	10.7	100	12	40,320
* CSTB 4020-200-85	42.5°	R1	R200	R1	6.4	100	12	40,320

* Additional model

CSTB Milling Conditions

WORK MATERIAL			ALUMINUM ALLOYS A7075				PREHARDENED STEELS PXA30 (30~45HRC)				HARDENED STEELS SKD61 / STAVAX (45~55HRC)			
Model Number	Tip R (mm)	Barrel R (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)
4020-200-30	R1	R200	18,000	2,400	2.85	0.1	11,500	1,800	1.9	0.075	9,000	1,440	1.5	0.075
4030-250-40	R1.5	R250	15,600	2,400	2.85	0.1	10,300	1,600	2.4	0.075	8,000	1,200	2	0.075
4040-250-40	R2	R250	13,200	2,400	2.85	0.1	9,100	1,600	2.4	0.075	7,000	1,200	2	0.075
4060-250-45	R3	R250	10,800	2,400	2.85	0.1	8,000	1,600	2.4	0.075	6,000	1,200	2	0.075
4020-200-85	R1	R200	10,800	1,200	2.85	0.1	8,000	700	2	0.075	6,000	500	2	0.05

Note:

• Set spindle speed, feed rate, and axial depth (a_p) in accordance with the required surface quality.

 a_p : Axial Depth (mm)

 a_e : Radial Depth (mm)



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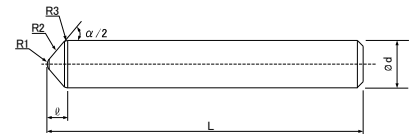
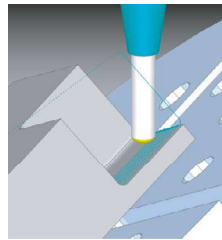
Material Applications (☆ Highly Recommended ◎ Recommended ○ Suggested)

Work Material															
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										
◯	◯	◯	◯			◯	◯		◯			◯	◯		

Features

Broad range of application available with UTCOT.

Suitable for finishing on flat surface with wide taper angle.



Total 2 models

Unit (mm)

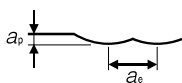
Model Number	Half Included Angle $\alpha/2$	Tip R R1	Barrel R R2	Third R R3	Length of Cut ℓ	Overall Length L	Shank Diameter $\varnothing d$	Price ¥
CWTB 4020-200-100	50°	R1	R200	R1	4.3	80	10	25,140
CWTB 4020-250-130	65°		R250		2.8	80	10	25,140

CWTB Milling Conditions

WORK MATERIAL			ALUMINUM ALLOYS A7075				PREHARDENED STEELS PXA30 (30~45HRC)				HARDENED STEELS SKD61 / STAVAX (45~55HRC)			
Model Number	Tip R (mm)	Barrel R (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)
4020-200-100	R1	R200	20,000	5,000	0.2	4	12,000	2,400	0.1	4	9,000	1,100	0.075	4
4020-250-130		R250	20,000	5,000	0.1	2.5	12,000	2,400	0.1	2.5	9,000	1,100	0.075	2.5

Note:

• Set spindle speed, feed rate, and radial depth (a_e) in accordance with the required surface quality.



a_p : Axial Depth (mm)

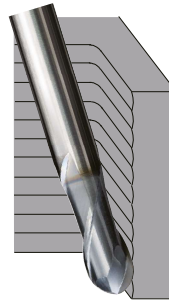
a_e : Radial Depth (mm)



Milling Video



Standard Ball End Mills



Larger a_p

Barrel End Mills



The challenge is to mill with 'Super'
efficiency on a 5-axis machine!

Size 77 × 130 × Height 80 mm

MC Mikron MILL S 400 U (GF Machining Solutions)

CAD/CAM hyperMILL (OPEN MIND Technologies)

Start!

Whole area Roughing



5 Flute Radius
CXRS Ø10 x CR2

$n : 7,040 \text{ min}^{-1}$
 $V_f : 4,600 \text{ mm/min}$
 $a_p : 20 \text{ mm } a_e : 0.25 \text{ mm}$

5-axis + trochoidal high speed roughing!

Small R corner finishing



3 Flute Long Neck Ball
CFLB R1.5 x L10

$n : 24,000 \text{ min}^{-1}$
 $V_f : 1,500 \text{ mm/min}$
 $a_p : 0.3 \text{ mm } a_e : 0.1 \text{ mm}$

Flute part Roughing



4 Flute Radius
CXERS Ø 8 x CR2

$n : 3,600 \text{ min}^{-1}$
 $V_f : 900 \text{ mm/min}$
 $a_p : 20 \text{ mm } a_e : 0.8 \text{ mm}$

Small R corner finishing



4 Flute Standard Taper Barrel
CSTB R1 x R200 x Ø6

$n : 11,500 \text{ min}^{-1}$
 $V_f : 900 \text{ mm/min}$
 $a_p : 0.05 \text{ mm } a_e : 0.07 \text{ mm}$

Smooth processing of uneven
curved surfaces

Whole area Semi-Roughing



3 Flute Ball
CFB R3

$n : 12,000 \text{ min}^{-1}$
 $V_f : 2,000 \text{ mm/min}$
 $a_p : 0.6 \text{ mm } a_e : 1.8 \text{ mm}$

Removal of uneven surfaces
after roughing using high feed rate!

Inner curved wall finishing



4 Flute Standard Taper Barrel
CSTB R1 x R200 x Ø6

$n : 11,500 \text{ min}^{-1}$
 $V_f : 900 \text{ mm/min}$
 $a_p : 0.375/0.75 \text{ mm } a_e : 0.075 \text{ mm}$

Cornering at the tip R of the barrel end
mill reduces the number of tools and the
inconvenience of tool change!

Finish!



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.



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0120-60-2620

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

Price & Specifications are subject to change without notice.

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