NS TOOL

For Crafting Tomorrow

CERMET Long Neck Corner Radius End Mill

CHR430R New

Total 8 sizes

P

Improve the flat surface finishing of carbon steel



Improve the flat surface finishing of carbon steel
Optimized cermet material minimizes adhesion and shortens polishing processes

CERMET Long Neck Corner Radius End Mill

CHR430R

New

Release in Mar, 2026.

ϕ 1 × R0.1 ～ ϕ 6 × R0.3

Total 8 sizes

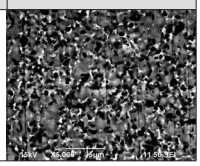


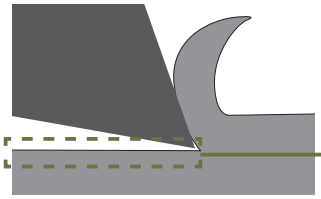
Features

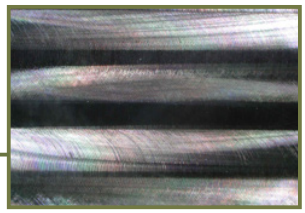
Feature 1 — Tool material — Cermet material with excellent wear resistance and anti-adhesion properties

Cermet is a composite material produced by sintering a combination of ceramics and metal to take advantage of the strengths of both. Compared with cemented carbide, it has lower affinity with iron, making it less prone to adhesion and built-up edge formation.

Cermet tools

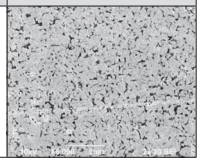
Composition			Metallic structure
Main composition	Binder	Others	
TiCN	Co + Ni	Ta,Mo etc.	

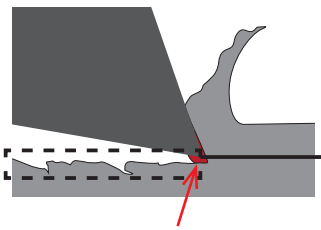




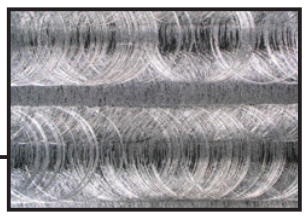
Tool marks and surface tearing ⇒ **Less**

Carbide tools

Composition			Metallic structure
Main composition	Binder	Others	
WC	Co	V,Cr etc.	



Adhesion and built-up edge

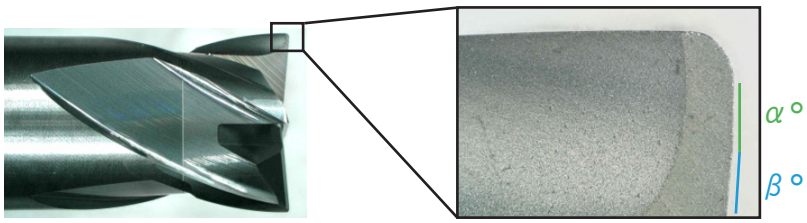


Tool marks and surface tearing ⇒ **More**

Feature 2 | High surface quality and long tool life | Specialized end cutting edge for flat surface machining

A small clearance angle at the bottom-edge corner improves surface roughness, while the two-stage relief design reduces wear and cutting resistance for stable finishing over long time machining.

CHR430R



ϕ 6×R0.1×20

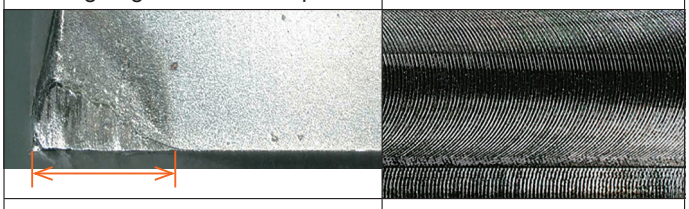
“ Double dish angle design”
that achieves both high surface quality and long tool life

■ Comparison of the contact distance between the conventional end cutting edge and the workpiece, and machining surface

Work material：S50C　　Coolant：Oil mist

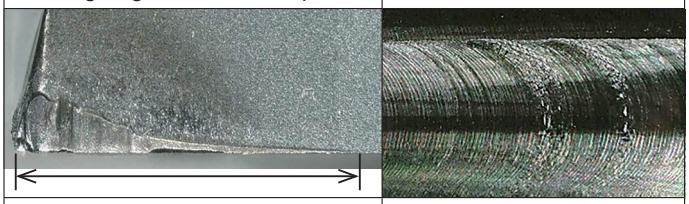
CHR430R

Tool	CHR430R ϕ6 × R0.1 × 20
Spindle speed [min^{-1}]	13,000
Feed [mm/min]	1,600
Depth of cut (ap×ae) [mm]	0.05 × 3.6

After machining 270m	
Contact distance between end cutting edge and the workpiece	Machining surface
	
0.395 mm	Tool marks and surface tearing ⇒ **Less**

Conventional 4-flute shape

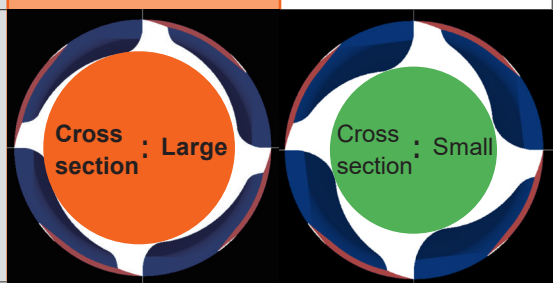
Tool	Conventional 4-flute shape ϕ6 × R0.1 × 20
Spindle speed [min^{-1}]	13,000
Feed [mm/min]	1,600
Depth of cut (ap×ae) [mm]	0.05 × 3.6

After machining 270m	
Contact distance between end cutting edge and the workpiece	Machining surface
	
1.03 mm	Tool marks and surface tearing ⇒ **More**

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Feature 3 | Tool shape | High rigidity tool design

Enhanced rigidity with larger cross section enables high-quality finishing.

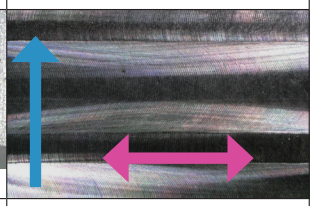
	CHR430R	General 4-flute end mill
Tool Cross Section		

■ Comparison of machining time and machining surface quality with conventional

Work material : S50C Coolant : Oil mist

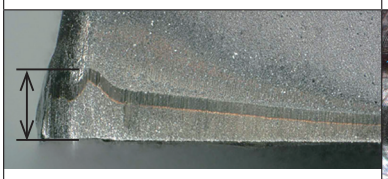
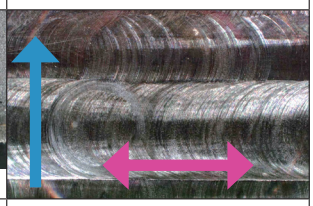
CHR430R

Tool	CHR430R ϕ6 × R0.1 × 20
Spindle speed [min^{-1}]	13,000
Feed [mm/min]	1,600
Depth of cut (ap×ae) [mm]	0.05 × 3.6

After machining 90m	
Wear condition of flank face	Machining surface
	
Tool wear **0.082** mm	Pick direction Ra **0.140** μm Feed direction Ra **0.195** μm

Other tool brand 4-flute type

Tool	Other tool brand 4-flute type ϕ6 × R0.1 × 20
Spindle speed [min^{-1}]	13,000
Feed [mm/min]	1,600
Depth of cut (ap×ae) [mm]	0.05 × 3.6

After machining 90m	
Wear condition of flank face	Machining surface
	
Tool wear 0.136 mm	Pick direction Ra 0.165 μm Feed direction Ra 0.220 μm

CHR430R New

Size ϕ1 × R0.1 ～ ϕ6 × R0.3

≦40 HRC

CERMET Long Neck Corner Radius End Mill

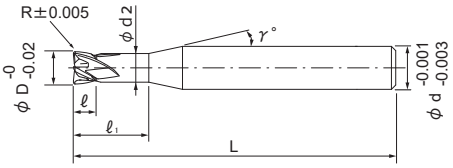
Total 8 sizes

Improve the flat surface finishing of carbon steel
Optimized cermet material minimizes adhesion and shortens polishing processes

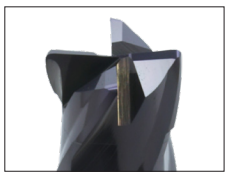
CERMET | 4 | 30° | Corner R ±0.005 | ϕd -0.001 -0.003 | Face







- Adopt cermet material with excellent wear resistance and anti-adhesion properties.
- Specialized end cutting edge for flat surface machining achieves high quality machining surface.
- MUGEN COATING delivers both long tool life and consistent machining stability.



Cutting edge shape

Work Material

Carbon Steels Alloy Steels	P
◎	

◆ Release in Mar, 2026.

Unit [Size : mm]

Code No.	Dia. (D)	Corner Radius (R)	Under Neck Length (ℓ1)	Length of Cut (ℓ)	Neck Dia. (d_2)	Neck Taper Angle (γ)	Shank Dia. (d)	Overall Length (L)
◆ 04-00830-10503	**1**	**R0.1**	**3**	0.5	0.95	12°	4	51
◆ 04-00830-15504	**1.5**	**R0.1**	**4.5**	0.75	1.45	12°	4	51
◆ 04-00830-20506	**2**	**R0.1**	**6**	1	1.94	12°	4	52
◆ 04-00830-30510	**3**	**R0.1**	**10**	1.5	2.85	12°	6	52
◆ 04-00830-40512	**4**	**R0.1**	**12**	2	3.8	12°	6	52
◆ 04-00830-50515	**5**	**R0.1**	**15**	2.5	4.8	12°	6	58
◆ 04-00830-60520	**6**	**R0.1**	**20**	3	5.8	-	6	58
◆ 04-00830-60720		**R0.3**	**20**	3	5.8	-	6	58

How to Order When you order, indicate CHR430R (D)×(R)×(ℓ1).

※ (γ) is reference value.

Recommended Milling Conditions

Work Material				Carbon Steels・Alloy Steels				
Dia.	Corner Radius	Under Neck Length	L/D	Spindle Speed	Feed	Depth of Cut		Stock before using this tool
				min^{-1}	mm/min	a_p mm	a_e mm	mm
1	**R0.1**	**3**	3	40,000	1,000	0.01	0.6	0.01
1.5	**R0.1**	**4.5**	3	40,000	1,200	0.015	0.9	0.015
2	**R0.1**	**6**	3	40,000	1,600	0.02	1.2	0.02
3	**R0.1**	**10**	3.3	27,000	1,600	0.03	1.8	0.03
4	**R0.1**	**12**	3	20,000	1,600	0.04	2.4	0.04
5	**R0.1**	**15**	3	16,000	1,600	0.05	3	0.05
6	**R0.1**	**20**	3.3	13,000	1,600	0.05	3.6	0.05
	R0.3	**20**	3.3	13,000	1,600	0.05	3.6	0.05

Notes

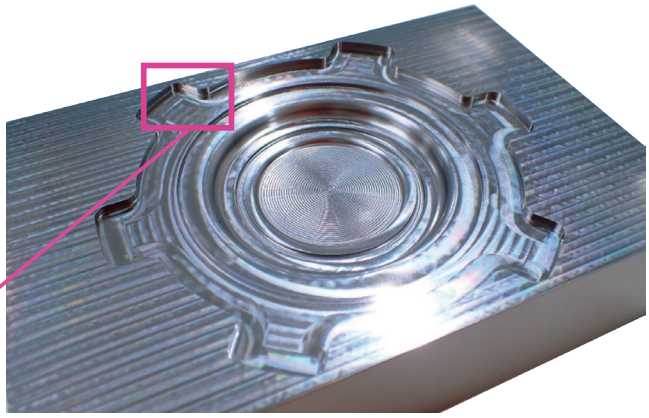
※1 Depth of Cut: ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※2 Depth of Cut shows the reference value for finishing. Adjust milling conditions depending on the rigidity of the machine, work shape and requested accuracy.
※3 Recommend to apply helical or ramping for approaching into axial direction.
※4 Be careful to obtain uniform stock amount on cutting surface before using this tool.
※5 In case of chattering etc., please adjust milling conditions if necessary.
※6 If the cutting load is high at corners, etc., set the milling conditions and tool path carefully to reduce the cutting load.
※7 If the maximum spindle speed of the machine tool is lower than the reference value, please reduce the spindle speed and feed rate in the same proportion.
※8 Minimize a possible tool overhang length.
※9 We recommend using oil mist coolant.
※10 The stock allowance for this tool is a guideline, please adjust it according to the machining condition of the previous process and the required accuracy.

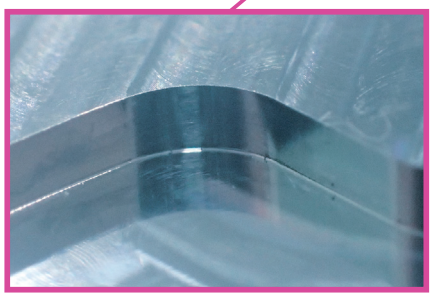
Machining case 1

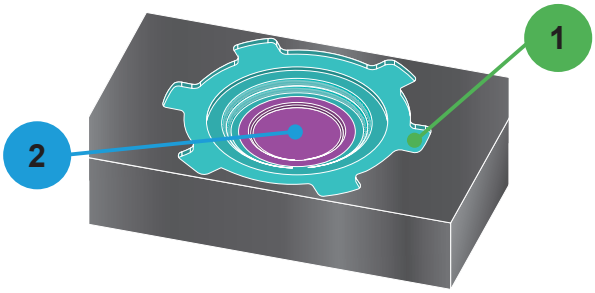
S50C Rubber gasket die

Specialized end cutting edge for flat surface finishing enables high quality machining

Work material : S50C
Work size : 150 × 100 mm
Maximum machining depth : 8.5 mm
Coolant : Oil mist
Total machining time : 2 hr 16 min

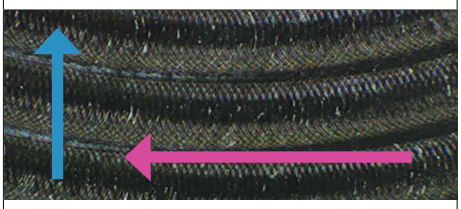






Surface roughness

	Machining surface
1	
	Pick direction Ra **0.086** µm Rz **0.580** µm
	Feed direction Ra **0.058** µm Rz **0.480** µm

	Machining surface
2	
	Pick direction Ra **0.093** µm Rz **0.701** µm
	Feed direction Ra **0.075** µm Rz **0.556** µm

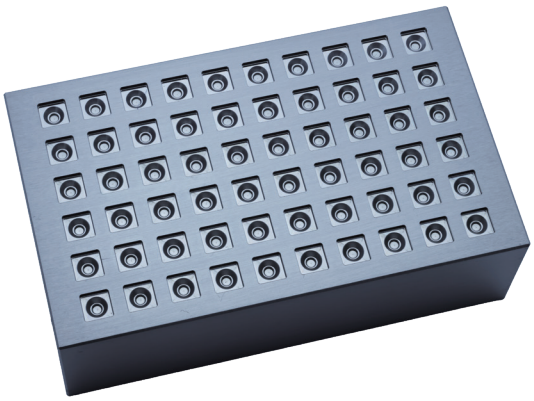
Process	Roughing 1	Roughing 2	**Finishing 1**	**Finishing 2**
Tool	MHR430R ϕ6 × R0.1 × 24	MHR430R ϕ1.5 × R0.1 × 6	**CHR430R ϕ6 × R0.1 × 20**	**CHR430R ϕ1.5 × R0.1 × 4.5**
Spindle speed [min^{-1}]	4,000	14,000	**13,000**	**20,000**
Feed [mm/min]	2,000	1,910	**1,600**	**1,200**
Depth of cut [mm] ap × ae	0.1 × 3.6	0.03 × 0.5	**0.05 × 3.6**	**0.01 × 0.9**
Stock [mm]	0.05	0.01	-	-
Machining time	51 min	25 min	**32 min**	**28 min**

Machining case 2

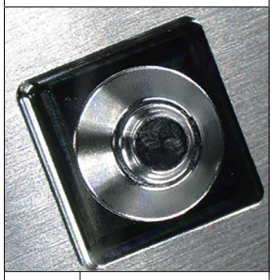
S50C Multi-cavity machining for tact switches

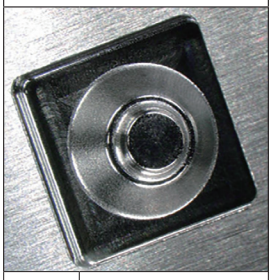
Stable machining was maintained even after 5hr 40min of multi-cavity machining, due to the cermet material properties and the end cutting edge shape

Work material ：S50C
Work size ：100 × 60 mm
Maximum machining depth ：2.5 mm
Coolant ：Oil mist
Total machining time ：8 hr 52 min

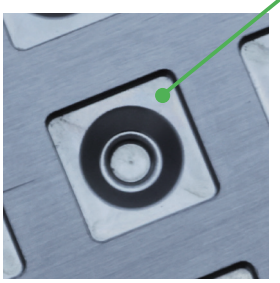


Surface roughness

	Workpiece appearance		
1pcs		Ra	0.014 μm
		Rz	0.138 μm

	Workpiece appearance		
60pcs		Ra	0.045 μm
		Rz	0.462 μm

Surface roughness measurement point



Process	Roughing	Semi-finishing	Finishing
Tool	MRB230 R0.5 × 4	MHR430R ϕ1 × R0.1 × 3	**CHR430R** **ϕ1 × R0.1 × 3**
Spindle speed [min^{-1}]	20,000	30,000	**30,000**
Feed [mm/min]	2,000	1,000	**600**
Depth of cut [mm] ap × ae	0.1 × 0.2	Side ：0.03 × 0.02 Bottom：0.02 × 0.05	**Side ：0.015 × 0.01** **Bottom：0.01 × 0.02**
Stock [mm]	0.03	0.01	**-**
Machining time	1 hr 29 min	1 hr 43 min	**5 hr 40 min**

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TEL. +1-248-829-1960

CAUTION **Attention on Safety**

1) When removing tools from cases, be careful of getting-out of tools and don't touch directly the cutting edges.
2) Never touch the cutting edges directly with bare hand.
3) Use safety covers and eye protection, as tools may be broken.
4) Use holders, etc. that match the tools and nature of the processing operations. The tool should be firmly attached to the holder to prevent shaking.
5) The work materials clamp firmly.
6) Make sure of dimensions of tools and work pieces before starting operation.
7) It is necessary to adjust conditions according to the dimensions of work materials and the machine.
8) Select a cutting fluid appropriate to the particular usage. Using a non-water cutting fluid could lead to fires due to sparks generated during processing or heat caused by breakage. Ensure that you take proper fire-prevention measures.
9) If abnormal sound, etc. occurs during processing, stop the machine immediately.
10) Don't modify tools.

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■This print uses environmentally friendly inks.