



Engineered for Speed,
Precision, and Power.

Mold-Specific End Mills -0227



GWS

For HRC 30°~40°

For roughing, semi-finishing milling on 45# steel, 40CrMo.



GRS

For HRC 40°~50°

For roughing, semi-finishing milling on P20, NAK80.



GJB

For HRC < 48°

For High efficiency roughing, semi-finishing milling on cast iron and all steel.



GHS

For HRC 45°~55°

For finishing, semi-finishing milling on S136, SKD61, with a continuous working capacity of 8 hours.



GHD

For HRC 55°~65°

For finishing milling on Precision finishing of large molds after heat treatment, applicable to a wide range of high-hardness steels (e.g., SKD11), with a continuous working capacity of 8 hours.

Base Materials for the GWS of End Mills

Grade	Co %	Grain Size μm	Hardnes HRA	Bending Strength MPa
GW10	10	0.7	91.8	≥ 4000

Coating Introduction

Grade	Coating Materials	Color	Hardnes s HV	oxidation temperature $^{\circ}\text{C}$	coefficient of friction
CA03	CrAlN	Silver-light Grey	3200HV	1100	0.35

Machining method:
Roughing, Semi-finishing

Material to be machined:
HRC30°~40°

Material like:
45# steel ,40CrMo from normal steel to pre-quenched steel.

Helix Angle for GWS:
Flat End Mill: 45°
Ballnose End Mills: 35°
Coner Radius End Mills: 35°

GWS



Base Materials for the GRS of End Mills

Grade	Co %	Grain Size μm	Hardnes HRA	Bending Strength MPa
GW12	12	0.4	92.2	≥ 4000

Coating Introduction

Grade	Coating Materials	Color	Hardness HV	oxidation temperature $^{\circ}\text{C}$	coefficient of friction
CA02	CrAlN	Silver-light grey	3200	1100	0.35

Machining method:
Roughing, Semi-finishing

Material to be machined:
HRC40°~50°

Material like :
P20, 718H, NAK80
Small mold machining for quenched and tempered and pre-quenching materials.

Helix Angle for GWS:
Flat End Mill: 45°
Ballnose End Mills: 35°
Coner Radius End Mills: 35°

GRS





GJB

GREWIN GJB Series Milling Cutter – Product Features:

Unequal indexing, variable helix, and large U-type flutes

– deliver excellent anti-vibration performance, exceptionally smooth chip evacuation, and a C-type chamfer that protects the cutting edge from chipping.

Newly upgraded substrate material – enhances edge strength and overall tool rigidity.

Proprietary composite coating – offers superior wear resistance, with consistent batch-to-batch stability in flute geometry and dimensional accuracy.

Suitable for high-speed, high-feed machining – performs well in both dry and wet cutting conditions. Ideal for various steels, castings, and other materials in high-speed cutting applications. Provides excellent results in efficient roughing and semi-finishing operations.

Machining method:

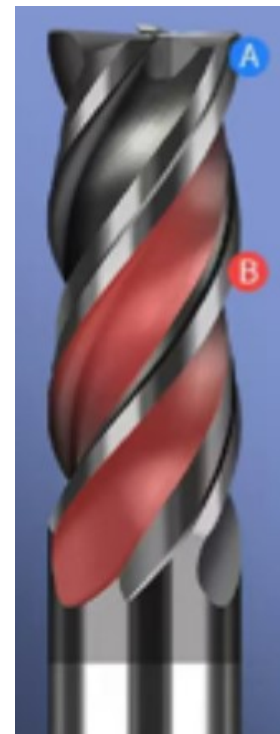
High efficiency Roughing, Semi-finishing

Material to be machined:

HRC≤48°

Material like:

various steels, castings of high speed milling.



GJB

Precision-polished U-groove

Variable helix angle

**High-efficiency dynamic
milling**

A=39.5 B=40.5 A≠B

**Extremely
versatile!!!**

Base Materials for the GHS of End Mills

Grade	Co %	Grain Size μm	Hardnes HRA	Bending Strength MPa
GW09	9	0.2-0.4	93.8	≥ 3800

Coating Introduction

Grade	Coating Materials	Color	Hardness HV	oxidation temperature $^{\circ}\text{C}$	coefficient of friction
NM3	TIS	Copper	3800HV	1300	0.4

Machining method:

Finishing, Semi-finishing

Material to be machined:

HRC45~55 $^{\circ}$

Material like:

S136, SKD61, Finishing of heat-treated dies and precision machining of parts.

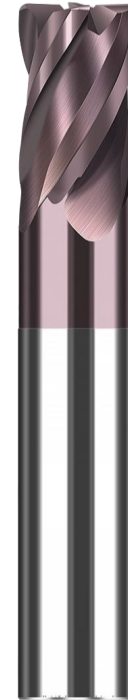
Helix Angle for GWRS:

Flat End Mill: 45 $^{\circ}$

Ballnose End Mills: 30 $^{\circ}$

Coner Radius End Mills: 35 $^{\circ}$

Tool performance: with a continuous working capacity of 8 hours



GREWIN GHD Series Milling Cutter – Product Features:

High Precision

The 0.2 μm ultra-fine grain WC substrate significantly enhances cutting edge strength and sharpness, while delivering excellent hardness, wear resistance, and anti-adhesion properties.

High Hardness

Equipped with Japanese PVD coating systems and a multi-layer composite coating process, ensuring outstanding coating stability and efficient cutting performance.

High Quality

Dedicated grinding equipment, premium grinding wheels, and imported oil-based coolant ensure exceptional dimensional consistency in batch production, guaranteeing overall product quality.

Machining method:

Finishing

Material to be machined:

HRC55 $^{\circ}$ ~65 $^{\circ}$

Material like:

a wide range of high-hardness steels (e.g., SKD11), Precision finishing of large molds after heat treatment.

Tool performance: with a continuous working capacity of 8 hours



GHS

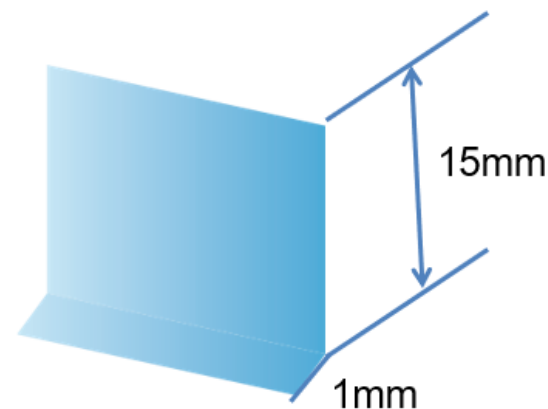
GHD



GWS- Cutting Efficiency and Cutting Life Advantages



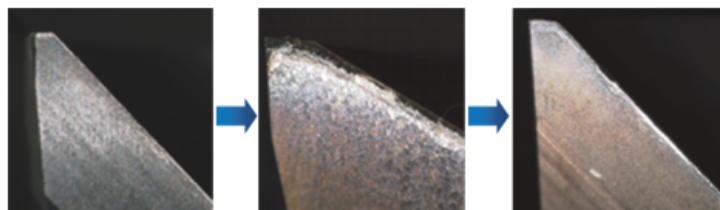
Size	D10.0*25*75*D10-GWWS
Diameter	Ø10.0mm
material being processed	45#(HRC22-25)
RPM	5000r/min (100m/min)
Feed rate	640mm/min(0.2mm/r)
Axial depth of cut	a p =15mm
Radial depth of cut	a e =1.0mm
Cutting method	Side Milling (Shunt Milling)
Cooling method	air cooling
machine	Makino F3



Tool cutting edge wear and machined surface quality

End mill	D10.0*25*75*D10-WS	A similar product	B similar product
cutting length	60m	20m	60m

Cutting edge wear condition

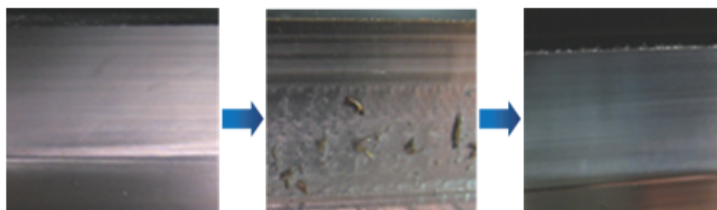


GWS

other A

other B

Quality of machined surfaces

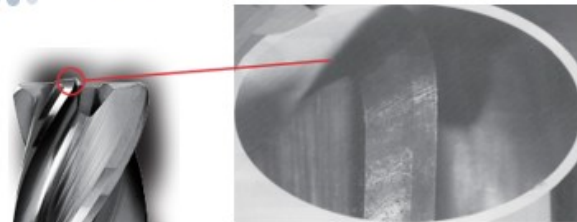


GWS

other A

other B

GWS- Cutting Efficiency and Cutting Life Advantages

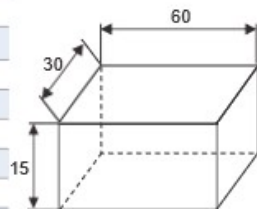


Reasonable tool structure

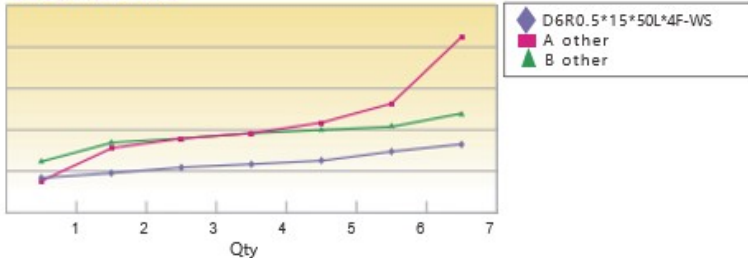
The seamless connection of the arc and peripheral edge with high precision improves wear at the joint and increases tool life.

D6R0.5*15* 50L*4F-GWWS Cavity machining 42CrMo(30HRC)

Machine	Makino F3
chuck	HSK63-A
Materials be worked	42CrMo(35HRC)
Cutting speed	100(m/min)
Feed rate/teeth	0.06(mm/teeth)
Axial depth of cut	0.3(mm)
Radial cut width	2(mm)
cooling condition	Air cooling
Milling method	Cavity machining
overhang	30mm



Wear trends

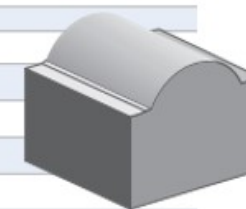


Wide range of products

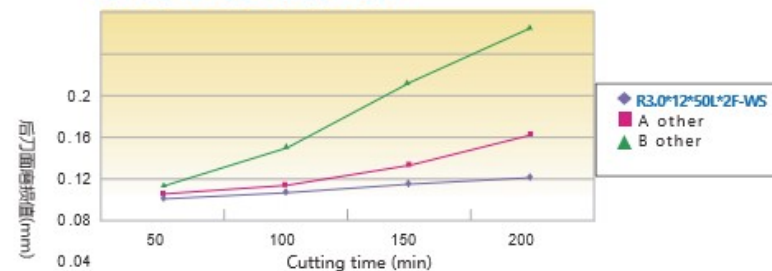
Highly rigid structural design reduces vibration and improves finishing surface quality.

R3.0*12*50L*2F-GWWS copycat processing 42CrMo(30HRC)

机床	牧野F3
Chuck	HSK40-A
Materials	42CrMo(37HRC)
Cutting speed	200(m/min)
Feed rate/teeth	0.05(mm/teeth)
Axial depth of cut	0.2(mm)
Radial cut width	0.4(mm)
cooling condition	Air cooling
Milling method	Cavity machining
Overhang	27mm



Trends in rear face wear



Wear and tear pictures (200min)



GRS- Cutting Efficiency and Life Advantages



- 45° Helix angle
- Reinforced tip and flap design for improved vibration resistance.
- More suitable for slot milling

Processing cases

Machine	Vertical machining centre
ToolModel	D12.0*30*75L*4F-RS
processed material	P20(35HRC)
Processing content	slot milling
Cooling method	Air cooling
cutting speed	150m/min
Feed per tooth	0.06mm/z
depth of cut	6mm

Comparison of machined surface quality.



A-other company

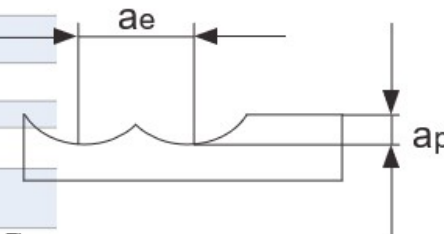


D12.0*30*75L*4F-RS

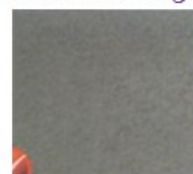
Conclusion: GRS series has good vibration resistance and excellent machining performance in slot milling, and the machining surface quality is significantly better than the similar products of A company.

High performance 2-flute ball end milling cutter for milling NAK80

ToolModel	R3.0*12*50L-RS
Diameter	Ø6.0mm
processed material	NAK80(40HRC)
RPM	10600r/min(200m/min)
Feed rate	2120mm/min(0.2mm/r)
Axial depth of cut	ap=0.2mm
Radial depth of cut	ae=0.3mm
Cutting method	Unidirectional linear milling Zig
Cooling method	Air-cooled, water-cooled, oil-cooled
machine	Makino F3
Toolover hang	20mm
Roughness Measuring Instrument	TM2000



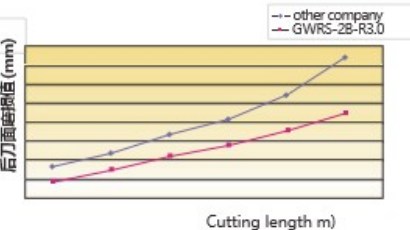
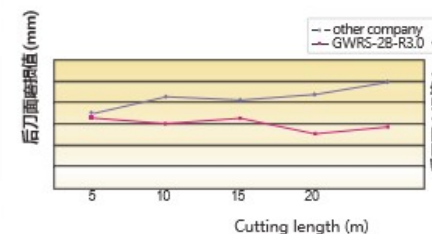
RS ball end milling cutters are able to obtain a clear cutter pattern with low roughness values and high surface quality.



RS ballnose end mill



Other company





GHS- Cutting Efficiency and Life Advantages

Longer tool working life

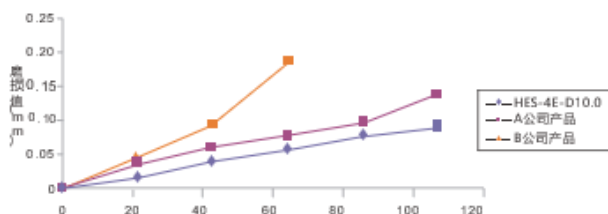
End mill	HES-4E-D10.0
workpiece	SKD11(62HRC)
RPM	100m/min
FEEDRATE	0.2mm/r
Axial depth of cut	ap= 10mm
radial depth of cut	ae=0.3mm
Cooling method	Air-cooled, water-cooled, oil-cooled



Tool wear after 60m of machining

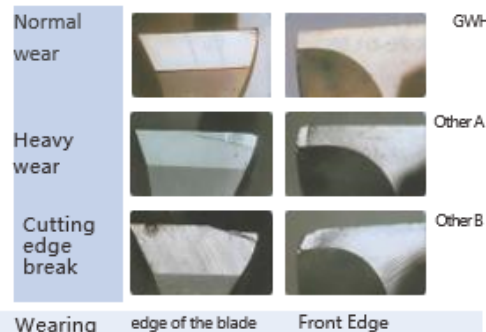


Peripheral Wear Curve



End mill	HES-4EL-D8.0
Milling method	Cast Iron
workpiece	Harden steel(HRC65)
Cutting speed	100m/min
RPM	0.15mm/r
Cutting depth	0.3mm
Cutting width	5mm
Cooling Method	Air-cooled, water-cooled, oil-cooled

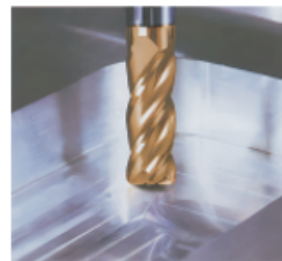
Tool wear after 40m of machining



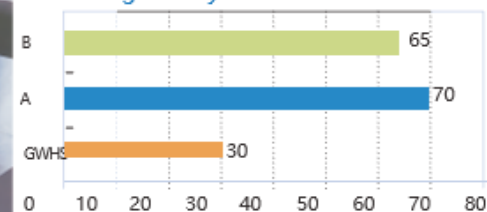
Wearing edge of the blade Front Edge

Higher processing efficiency

End Mill	HS-4R-D6.0R1.0
Processing part	(30mmX30mmX10mm)
workpiece	Harden steel (HRC55)
Cutting speed	200m/min
RPM	0.2mm/r
cutting width	0.3mm
Cutting depth	5mm
cooling	Air cooling



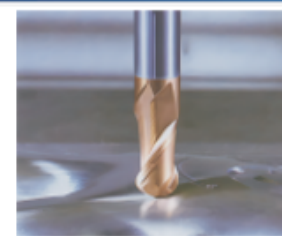
Comparison of the time required to finish machining a cavity



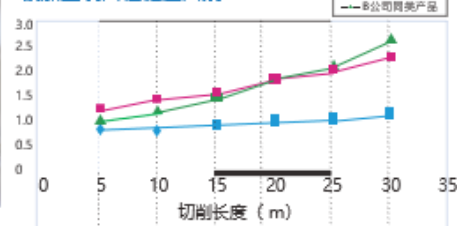
HS milling cutters more than double the machining efficiency compared to other companies' products.

Better processing quality

End mill	HES-2B-R3.0
workpiece	SKD11(HRC62)
Cutting speed	200m/min
Feed rate	0.2mm/r
cutting depth	0.2mm
Cutting width	0.3mm
Cooling method	Air-cooled, water-cooled, oil-cooled



被加工表面粗糙度曲线



ANCA FX5E, FX5, MX5 – 25 units.



Walter HELITRONIC POWER 400 2units



ROLLOMATIC-660XW 1 unit



Walter HELITRONIC MICRO 2 units



MAKINO 2 units



PVD vacuum coating furnaces – 4 units.



Vacuum Coating Furnace for High-hardness Alloys – 1 unit



ZOLLER genius 3 M



Applicable Processing Types	Production Capability (pcs/monthly)
Micro-diameter tools	21000 pcs/month
Drill Bit	21000 pcs/month
Flat End Mills	120000 pcs/month
Ballnose /Corner Radius	260000 pcs/month
Non-Standard End mills	150000 pcs/month
End mills	Total: 500,000 pieces/month
Drills / Non-standard	Total: 500,000 pieces/month
TOTAL	1000,000 pieces/month



*We guarantee strict control over every tool during production, with 100% full inspection.

*Our fully automatic high-speed dimensional inspection equipment enables automated full inspection of each tool in as fast as 13 seconds.

【WS系列】平刀 & 圆角刀 - 切削加工参数表

"WS Series"Table of cutting conditions for flat cutters/fillet cutters

工件材料		Vc m/min	刃径 (mm)	3			4			6			8			10			12			16			20		
P	碳钢合金钢 (<35HRC)	120	转速 (min-1)	12739	ap≤	4.5	9554	ap≤	6	6369	ap≤	9	4777	ap≤	12	3822	ap≤	15	3185	ap≤	18	2389	ap≤	24	1911	ap≤	30
			进给速度 (mm/min)	1121	ae≤	0.3	1223	ae≤	0.4	1146	ae≤	0.6	1146	ae≤	0.8	0	ae≤	1	1083	ae≤	1.2	1051	ae≤	1.6	1070	ae≤	2
	合金钢 (35 ~ 45HRC)	80	转速 (min-1)	8493	ap≤	3	6369	ap≤	4	4246	ap≤	6	3185	ap≤	8	2548	ap≤	10	2123	ap≤	12	1592	ap≤	16	1274	ap≤	20
			进给速度 (mm/min)	679	ae≤	0.18	637	ae≤	0.24	577	ae≤	0.36	713	ae≤	0.48	662	ae≤	0.6	594	ae≤	0.72	497	ae≤	0.96	433	ae≤	1.2
M	不锈钢	75	转速 (min-1)	7962	ap≤	4.5	5971	ap≤	6	3981	ap≤	9	2986	ap≤	12	2389	ap≤	15	1990	ap≤	18	1493	ap≤	24	1194	ap≤	30
			进给速度 (mm/min)	732	ae≤	0.24	717	ae≤	0.32	637	ae≤	0.48	717	ae≤	0.64	669	ae≤	0.8	637	ae≤	0.96	537	ae≤	1.28	478	ae≤	1.6
K	灰铸铁 球墨铸铁 (<32HRC)	120	转速 (min-1)	12739	ap≤	4.5	9554	ap≤	6	6369	ap≤	9	4777	ap≤	12	3822	ap≤	15	3185	ap≤	18	2389	ap≤	24	1911	ap≤	30
			进给速度 (mm/min)	1274	ae≤	0.3	1146	ae≤	0.4	1146	ae≤	0.6	1051	ae≤	0.8	994	ae≤	1	994	ae≤	1.2	860	ae≤	1.6	764	ae≤	2
	高合金铸铁 (35 ~ 45HRC)	80	转速 (min-1)	8493	ap≤	3	6369	ap≤	4	4246	ap≤	6	3185	ap≤	8	2548	ap≤	10	2123	ap≤	12	1592	ap≤	16	1274	ap≤	20
			进给速度 (mm/min)	679	ae≤	0.24	713	ae≤	0.32	679	ae≤	0.48	662	ae≤	0.64	632	ae≤	0.8	594	ae≤	0.96	541	ae≤	1.28	469	ae≤	1.6

【WS系列】球刀 - 切削加工参数表

"WS Series"Table of cutting conditions for flat cutters/fillet cutters

工件材料		VC m/min	刃径 (mm)	4			5			6			8			10			12			16			20		
P	碳钢合金钢 (<35HRC)	120	转速 (min-1)	9554	ap≤	0.08	7643	ap≤	0.1	6369	ap≤	0.12	4777	ap≤	0.16	3822	ap≤	0.2	3185	ap≤	0.24	2389	ap≤	0.32	1911	ap≤	0.4
			进给速度 (mm/min)	688	ae≤	0.1	703	ae≤	0.125	713	ae≤	0.15	745	ae≤	0.2	726	ae≤	0.25	701	ae≤	0.3	573	ae≤	0.4	497	ae≤	0.5
	合金钢 (35-48HRC)	120	转速 (min-1)	9554	ap≤	0.08	7643	ap≤	0.1	6369	ap≤	0.12	4777	ap≤	0.16	3822	ap≤	0.2	3185	ap≤	0.24	2389	ap≤	0.32	1911	ap≤	0.4
			进给速度 (mm/min)	573	ae≤	0.1	459	ae≤	0.125	637	ae≤	0.15	592	ae≤	0.2	596	ae≤	0.25	573	ae≤	0.3	478	ae≤	0.4	382	ae≤	0.5
M	不锈钢	100	转速 (min-1)	7962	ap≤	0.1	6369	ap≤	0.125	5308	ap≤	0.15	3981	ap≤	0.2	3185	ap≤	0.25	2654	ap≤	0.3	1990	ap≤	0.4	1592	ap≤	0.5
			进给速度 (mm/min)	478	ae≤	0.12	535	ae≤	0.15	552	ae≤	0.18	557	ae≤	0.24	541	ae≤	0.3	557	ae≤	0.36	454	ae≤	0.48	392	ae≤	0.6
K	灰铸铁 球墨铸铁 (<32HRC)	120	转速 (min-1)	9554	ap≤	0.2	7643	ap≤	0.25	6369	ap≤	0.3	4777	ap≤	0.4	3822	ap≤	0.5	3185	ap≤	0.6	2389	ap≤	0.8	1911	ap≤	1
			进给速度 (mm/min)	573	ae≤	0.2	642	ae≤	0.25	662	ae≤	0.3	669	ae≤	0.4	650	ae≤	0.5	669	ae≤	0.6	549	ae≤	0.8	459	ae≤	1
	高合金铸铁 (35-45HRC)	120	转速 (min-1)	9554	ap≤	0.08	7643	ap≤	0.1	6369	ap≤	0.12	4777	ap≤	0.16	3822	ap≤	0.2	3185	ap≤	0.24	2389	ap≤	0.32	1911	ap≤	0.4
			进给速度 (mm/min)	535	ae≤	0.1	611	ae≤	0.125	637	ae≤	0.15	640	ae≤	0.2	611	ae≤	0.25	637	ae≤	0.3	525	ae≤	0.4	459	ae≤	0.5

【RS系列】平刀 & 圆角刀 - 切削加工参数表

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			进给速度 (mm/min)	1427	ae≤	0.3	1376	ae≤	0.4	1223	ae≤	0.6	1242	ae≤	0.8	1223	ae≤	1	1146	ae≤	1.2	1146	ae≤	1.6	1146	ae≤	2
	合金钢(35-45HRC)	80	转速 (min-1)	8493	ap≤	3	6369	ap≤	4	4246	ap≤	6	3185	ap≤	8	2548	ap≤	10	2123	ap≤	12	1592	ap≤	16	1274	ap≤	20
			进给速度 (mm/min)	747	ae≤	0.18	713	ae≤	0.24	679	ae≤	0.36	764	ae≤	0.48	693	ae≤	0.6	620	ae≤	0.72	510	ae≤	0.96	464	ae≤	1.2
	合金钢(45-55HRC)	60	转速 (min-1)	6369	ap≤	3	4777	ap≤	4	3185	ap≤	6	2389	ap≤	8	1911	ap≤	10	1592	ap≤	12	1194	ap≤	16	955	ap≤	20
			进给速度 (mm/min)	306	ae≤	0.06	439	ae≤	0.08	510	ae≤	0.12	602	ae≤	0.16	520	ae≤	0.2	478	ae≤	0.24	382	ae≤	0.32	325	ae≤	0.4
M	不锈钢	75	转速 (min-1)	7962	ap≤	4.5	5971	ap≤	6	3981	ap≤	9	2986	ap≤	12	2389	ap≤	15	1990	ap≤	18	1493	ap≤	24	1194	ap≤	30
			进给速度 (mm/min)	796	ae≤	0.24	764	ae≤	0.32	685	ae≤	0.48	752	ae≤	0.64	717	ae≤	0.8	677	ae≤	0.96	567	ae≤	1.28	525	ae≤	1.6
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P	碳钢合金钢 (<35HRC)	120	转速 (min-1)	9554	ap≤	0.08	7643	ap≤	0.1	6369	ap≤	0.12	4777	ap≤	0.16	3822	ap≤	0.2	3185	ap≤	0.24	2389	ap≤	0.32	1911	ap≤	0.4
			进给速度 (mm/min)	688	ae≤	0.1	703	ae≤	0.125	713	ae≤	0.15	745	ae≤	0.2	726	ae≤	0.25	701	ae≤	0.3	573	ae≤	0.4	497	ae≤	0.5
	合金钢 (35-48HRC)	120	转速 (min-1)	9554	ap≤	0.08	7643	ap≤	0.1	6369	ap≤	0.12	4777	ap≤	0.16	3822	ap≤	0.2	3185	ap≤	0.24	2389	ap≤	0.32	1911	ap≤	0.4
			进给速度 (mm/min)	573	ae≤	0.1	459	ae≤	0.125	637	ae≤	0.15	592	ae≤	0.2	596	ae≤	0.25	573	ae≤	0.3	478	ae≤	0.4	382	ae≤	0.5
M	不锈钢	100	转速 (min-1)	7962	ap≤	0.1	6369	ap≤	0.125	5308	ap≤	0.15	3981	ap≤	0.2	3185	ap≤	0.25	2654	ap≤	0.3	1990	ap≤	0.4	1592	ap≤	0.5
			进给速度 (mm/min)	478	ae≤	0.12	535	ae≤	0.15	552	ae≤	0.18	557	ae≤	0.24	541	ae≤	0.3	557	ae≤	0.36	454	ae≤	0.48	392	ae≤	0.6
K	灰铸铁 球墨铸铁 (<32HRC)	120	转速 (min-1)	9554	ap≤	0.2	7643	ap≤	0.25	6369	ap≤	0.3	4777	ap≤	0.4	3822	ap≤	0.5	3185	ap≤	0.6	2389	ap≤	0.8	1911	ap≤	1
			进给速度 (mm/min)	573	ae≤	0.2	642	ae≤	0.25	662	ae≤	0.3	669	ae≤	0.4	650	ae≤	0.5	669	ae≤	0.6	549	ae≤	0.8	459	ae≤	1
	高合金铸铁 (35-45HRC)	120	转速 (min-1)	9554	ap≤	0.08	7643	ap≤	0.1	6369	ap≤	0.12	4777	ap≤	0.16	3822	ap≤	0.2	3185	ap≤	0.24	2389	ap≤	0.32	1911	ap≤	0.4
			进给速度 (mm/min)	535	ae≤	0.1	611	ae≤	0.125	637	ae≤	0.15	640	ae≤	0.2	611	ae≤	0.25	637	ae≤	0.3	525	ae≤	0.4	459	ae≤	0.5

【HS系列】平刀 & 圆角刀 - 切削加工参数表

HS Series Table of cutting conditions for flat cutters/fillet cutters

工件材料		Vc m/min	切削条件	刃径(mm)																				
				1			2			4			6			8			10			12		
H	淬硬钢(<55HRC)	150	转速 (min ⁻¹)	41000	ap≤	1	23885	ap≤	2	11943	ap≤	4	7962	ap≤	6	5971	ap≤	8	4777	ap≤	10	3981	ap≤	12
			进给速度 (mm/min)	1312	ae≤	0.03	1433	ae≤	0.06	2389	ae≤	0.12	1752	ae≤	0.18	1433	ae≤	0.24	1242	ae≤	0.3	1194	ae≤	0.36
	淬硬钢(55-60HRC)	130	转速 (min ⁻¹)	36000	ap≤	1	20701	ap≤	2	10350	ap≤	4	6900	ap≤	6	5175	ap≤	8	4140	ap≤	10	3450	ap≤	12
			进给速度 (mm/min)	1008	ae≤	0.02	1159	ae≤	0.04	2070	ae≤	0.08	1518	ae≤	0.12	1242	ae≤	0.16	1076	ae≤	0.2	1035	ae≤	0.24
	淬硬钢(>60HRC)	100	转速 (min ⁻¹)	22000	ap≤	1	15924	ap≤	2	7962	ap≤	4	5308	ap≤	6	3981	ap≤	8	3185	ap≤	10	2654	ap≤	12
			进给速度 (mm/min)	704	ae≤	0.02	828	ae≤	0.04	1592	ae≤	0.08	1168	ae≤	0.12	955	ae≤	0.16	828	ae≤	0.2	796	ae≤	0.24

【HS系列】球刀 - 切削加工参数表

HS Series Table of cutting conditions for ball cutters/fillet cutters

工件材料		Vc m/min	切削条件	刃径(mm)																				
				1			2			4			6			8			10			12		
H	淬硬钢(<55HRC)	150	转速 (min ⁻¹)	30000	ap≤	0.015	21000	ap≤	0.03	11943	ap≤	0.06	7962	ap≤	0.09	5971	ap≤	0.12	4777	ap≤	0.15	3981	ap≤	0.18
			进给速度 (mm/min)	1200	ae≤	0.02	1680	ae≤	0.04	1672	ae≤	0.08	1592	ae≤	0.12	1433	ae≤	0.16	1146	ae≤	0.2	1115	ae≤	0.24
	淬硬钢(55-60HRC)	120	转速 (min ⁻¹)	29000	ap≤	0.02	19108	ap≤	0.03	9554	ap≤	0.04	6369	ap≤	0.06	4777	ap≤	0.08	3822	ap≤	0.1	3185	ap≤	0.12
			进给速度 (mm/min)	1334	ae≤	0.03	1720	ae≤	0.04	1338	ae≤	0.08	1656	ae≤	0.12	1242	ae≤	0.16	1146	ae≤	0.2	828	ae≤	0.24
	淬硬钢(>60HRC)	100	转速 (min ⁻¹)	23000	ap≤	0.02	15924	ap≤	0.03	7962	ap≤	0.04	5308	ap≤	0.06	3981	ap≤	0.08	3185	ap≤	0.1	2654	ap≤	0.12
			进给速度 (mm/min)	782	ae≤	0.03	1433	ae≤	0.04	1115	ae≤	0.08	1062	ae≤	0.12	796	ae≤	0.16	764	ae≤	0.2	690	ae≤	0.24