齿轮滚刀
GEAR HOBBING CUTTER

PRE-GRIND HOBBING CUTTER

For gears above M5, the use of disposable high-speed Gear hobbing cuttersbing cutters is the most economical and efficient processing method. Its accuracy can reach level 9 or above, and its efficiency can be more than twice that of ordinary high-speed steel hobs.

Our company can design and produce inserts-type high-speed hobs in the module range of M5-M46, and the workpiece accuracy can reach level 9 or above.
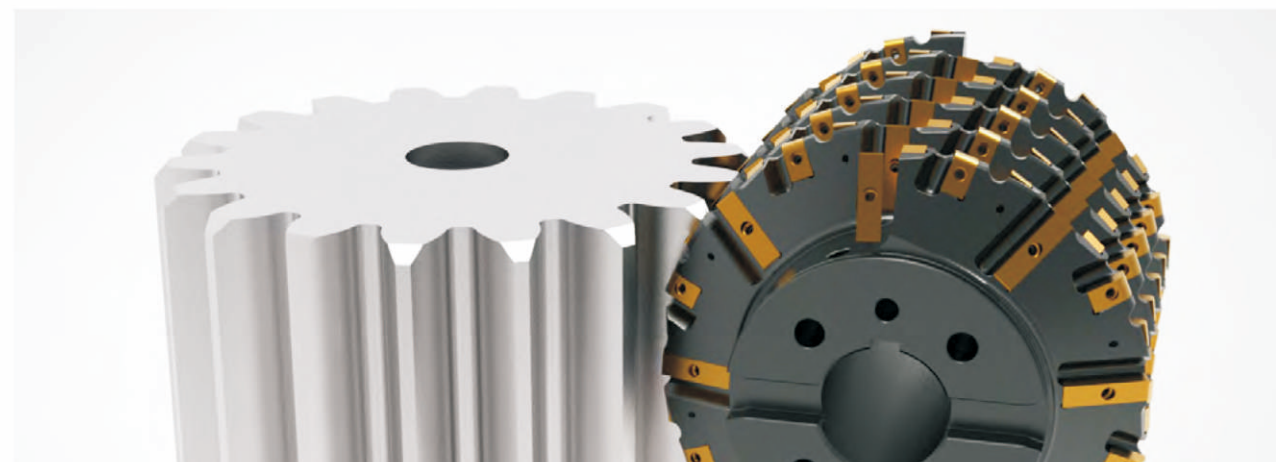
Pre-grind hobbing cutters with different root digging amounts and different tooth root shapes can be designed according to customer needs.

Specifications

Module range: M5—M46
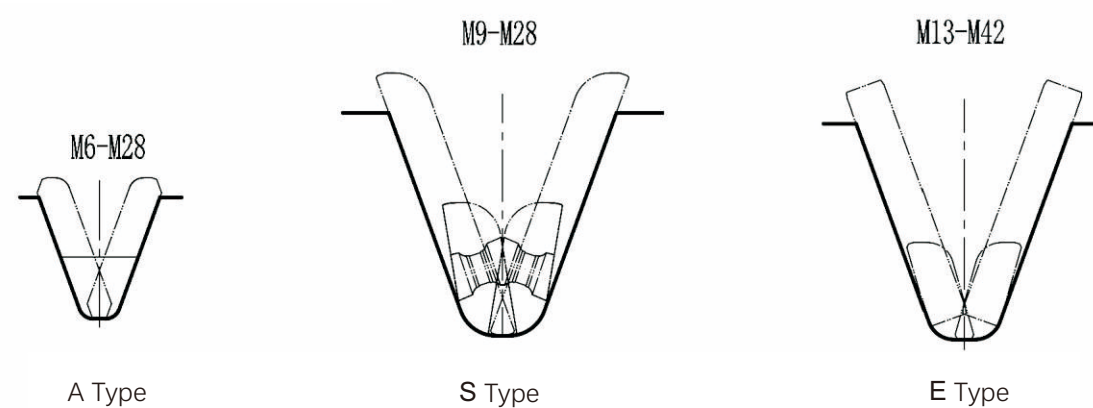Diameter: Φ150-Φ500
Length: 170mm-650mm

PRE-GRIND HOBBING CUTTER

External Ring Gear Processing

Pre-grind Hobbing Cutters Model Examples:GD...E..N..

Planetary Wheel Processing

Pre-grind Hobbing Cutters Model Examples:GD...E..T.

Inserts Array

M6-M28

M9-M28

M13-M42

A Type

S Type

E Type

Display of Insert Types
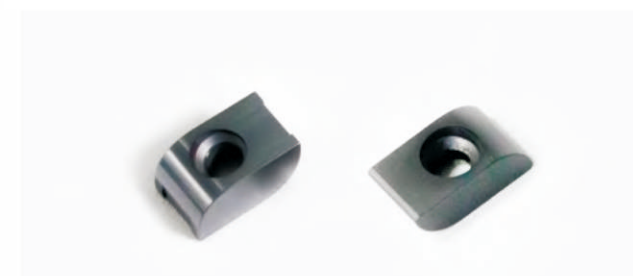
Top Tooth Insert

Side Tooth Insert

Top Side Tooth Insert

Digging the roots without trimming them

Root digging and shaping
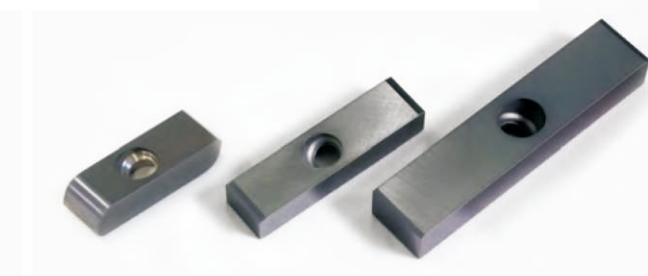
20° Pressure Angle Pre-grind Gear Hobbing Cutters
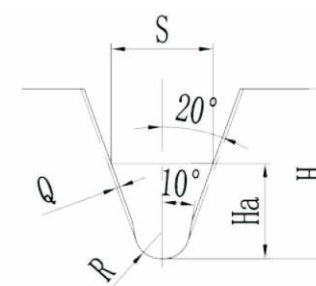
$S = \pi * M/2$
$Ha = 1.4 * M$
$R = 0.4 * M$

q: Reserve grinding allowance

Modulus	S	Q	R	Ha	H
6	9.43	*	2.4	8.85	16
7	11	*	4.8	10.3	19
8	12.57	*	3.2	11.73	22
9	14.14	*	3.6	13.17	24
10	15.7	*	4	14.61	26
12	18.85	*	4.8	17.52	33
14	22	*	5.6	20.45	38
16	25.13	*	6.4	23.37	43
18	28.27	*	7.2	26.3	49
20	31.42	*	8	29.23	58

Note: * Values must be specified by the customer.

PRE-GRIND HOBBING CUTTER

Application Cases

Sun Gear Processing

Module: M20	Number of Teeth: Z34	Pressure Angle: 22.5°
Cutter Diameter: 350mm	Speed: S120	Feed Rate: F3.5
Machine: Gleason	Power: 55KW	Cooling: Oil Cooling

Planetary Wheel Processing

|		
Module: M18	Number of Teeth: Z31	Pressure Angle: 22.5°
Cutter Diameter: 320mm	Speed: S130	Feed Rate: F6.8
Machine: Gleason	Power: 75KW	Cooling: Oil Cooling
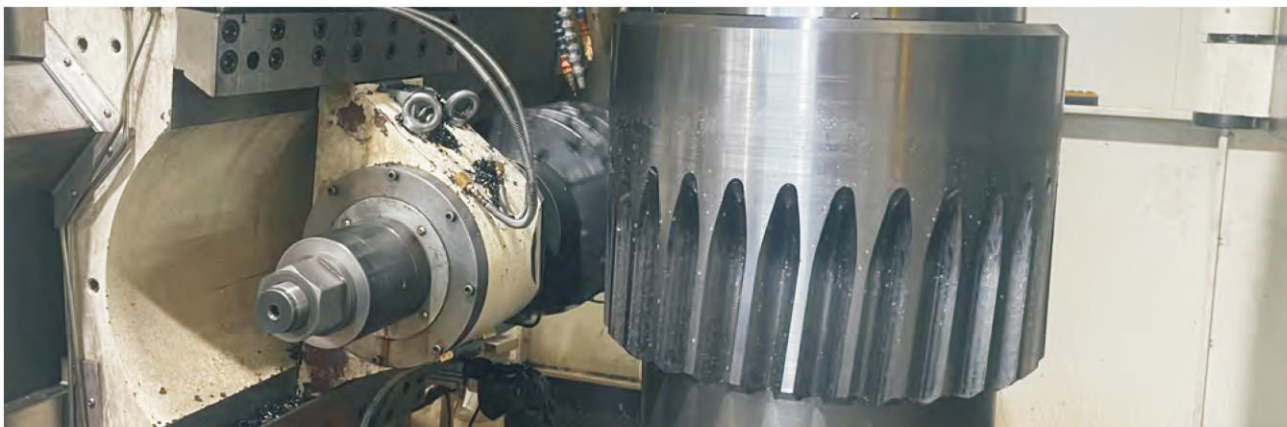
Recommended Cutting Parameters for Pre-grind Hobbing Cutter

Modulus	Order number	D(mm)	ae1(mm) cut 1	ae2(mm) cut 2	Vc1(m/min) Rm>1000N/mm2	Vc2(m/min) Rm<100N/mm2	fa(mm/WU) Z ≤ 50	fa(mm/WU) Z = 50-100	fa(mm/WU) Z ≥ 100
6	GD1S...M6.20.7.T...	180	14,7	-	140-160	160-180	1,2-2,3	2,3-4,0	4,0-5,5
	GD2S...M6.20.7.T...	210	14,7	-	140-160	160-180	1,8-2,7	2,7-4,6	4,6-6,0
	GD3S...M6.20.7.T...	240	14,7	-	140-160	160-180	2,2-3,2	3,2-4,8	4,8-6,0
7	GD1S...M7.20.7.T...	180	17,2	-	140-160	160-180	1,0-1,8	1,8-3,2	3,2-5,0
	GD2S...M7.20.7.T...	210	17,2	-	140-160	160-180	1,3-2,2	2,2-4,2	4,2-6,0
	GD3S...M7.20.7.T...	240	17,2	-	140-160	160-180	1,8-2,8	2,8-4,4	4,4-6,0
8	GD2S...M8.20.6.T...	210	19,6	-	120-140	140-160	1,2-2,0	2,0-3,8	3,8-5,0
	GD3S...M8.20.6.T...	240	19,6	-	120-140	140-160	1,5-2,3	2,3-4,2	4,2-5,5
	GD4S...M8.20.6.T...	270	19,6	-	120-140	140-160	1,8-3,2	3,2-4,6	4,6-6,0
9	GD2S...M9.20.6.T...	210	22,0	-	120-140	140-160	1,0-1,6	1,6-3,2	3,2-5,0
	GD3S...M9.20.6.T...	240	22,0	-	120-140	140-160	1,3-2,0	2,0-4,0	4,0-5,5
	GD4S...M9.20.6.T...	270	22,0	-	120-140	140-160	1,6-2,5	2,5-4,5	4,5-6,0
10	GD2S...M10.20.6.T...	210	24,5	-	120-140	140-160	0,9-1,5	1,5-3,0	3,0-5,0
	GD3S...M10.20.6.T...	240	24,5	-	120-140	140-160	1,2-1,8	1,8-3,8	3,8-5,5
	GD4S...M10.20.6.T...	270	24,5	-	120-140	140-160	1,5-2,4	2,4-4,3	4,3-6,0
12	GD2S...M12.20.6.T...	240	29,4	-	100-120	120-140	0,6-1,1	1,1-2,0	2,0-3,5
	GD3S...M12.20.6.T...	270	29,4	-	100-120	120-140	1,0-1,6	1,6-3,5	3,5-4,5
	GD4S...M12.20.6.T...	350	29,4	-	100-120	120-140	1,4-2,4	2,4-4,0	4,0-5,5
14	GD5S...M14.20.5.T...	270	34,3	-	100-120	120-140	0,8-1,3	1,3-3,0	3,0-4,5
	GD6S...M14.20.5.T...	350	34,3	-	100-120	120-140	1,2-2,0	2,0-3,8	3,8-5,5
16	GD5S...M16.20.5.T...	270	37,2	2*	100-120	120-140	0,8-1,2	1,2-2,5	2,5-4,0
	GD6S...M16.20.5.T...	350	37,2	2*	100-120	120-140	1,2-1,8	1,8-3,5	3,5-5,0
18	GD5S...M18.20.5.T...	270	41,6	2,5*	80-100	100-120	0,7-1,1	1,1-2,2	2,2-3,5
	GD6S...M18.20.5.T...	350	41,6	2,5*	80-100	100-120	1,0-1,6	1,6-3,4	3,4-5,0
20	GD6S...M20.20.5.T...	350	46,0	3*	80-100	100-120	0,6-1,0	1,0-2,0	2,0-3,5
	GD8S...M20.20.5.T...	450	46,0	3*	80-100	100-120	0,9-1,5	1,5-3,2	3,2-5,0

GEAR FINISHING HOBBING CUTTER
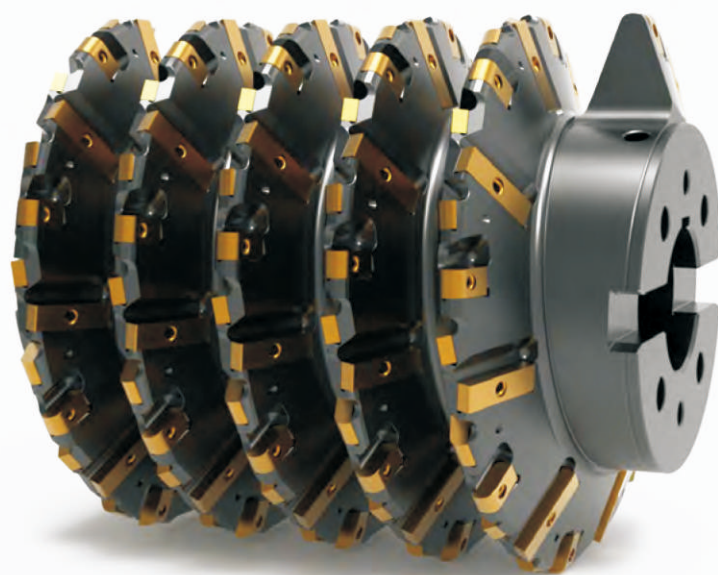
For gears above M5, the use of disposable high-speed Gear hobbing cuttersbing cutters is the most economical and efficient processing method. Its accuracy can reach level 9 or above, and its efficiency can be more than twice that of ordinary high-speed steel hobs.

Our company can design and produce inserts-type high-speed hobs in the module range from M5 to M46.
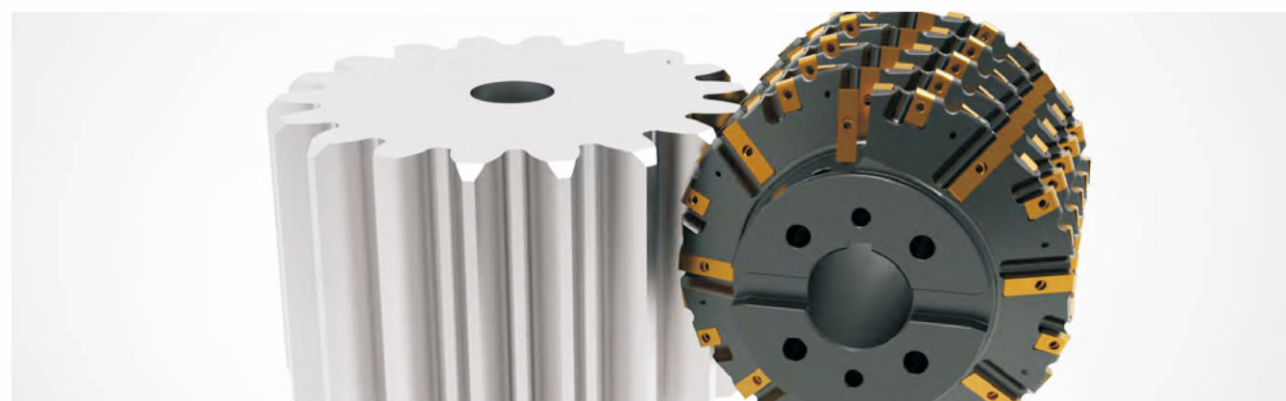
The workpiece accuracy can reach level 9 or above.

Specifications

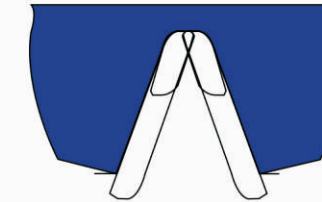Module range: M5−M46
Diameter: Φ150-Φ500
Length: 170mm-650mm

Single Head Finishing Hobbing Cutter Processing

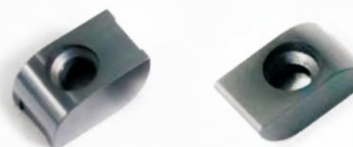Gear finishing hobbing cutter- model example: GD...E..N

Double-Head Finishing Hobbing Cutter Processing

Gear finishing hobbing cutter-mode example: GD...ES..N

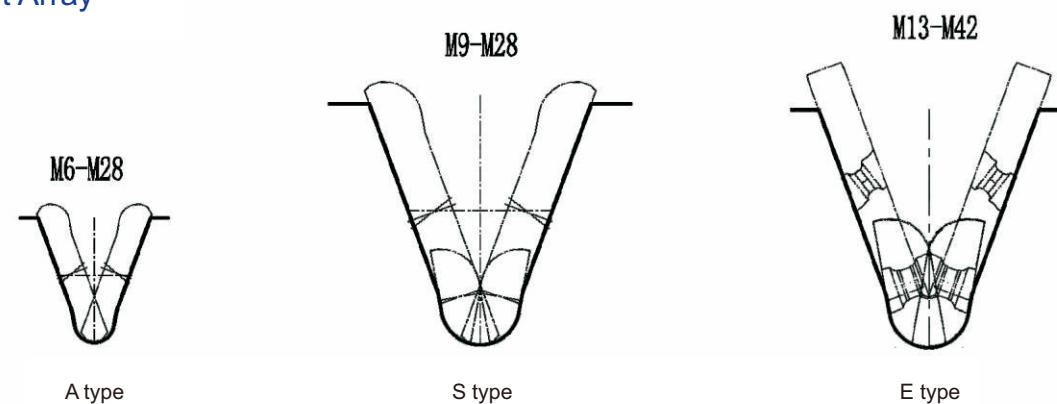## Display of Insert Types
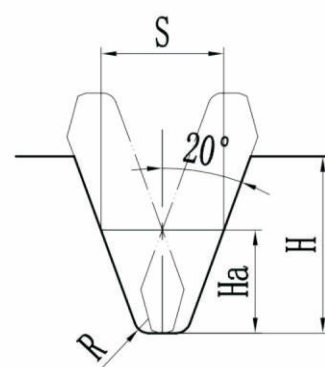
Top Tooth Insert

Side Tooth Inserts

Chamfering Insert

GEAR FINISHING HOBBING CUTTER

Insert Array

M6-M28
A type

M9-M28
S type

M13-M42
E type

20° Pressure Angle Gear Finishing Hobbing Cutters

$S=\pi*M/2$
$Ha=2.25*M$
$R=0.38*M$

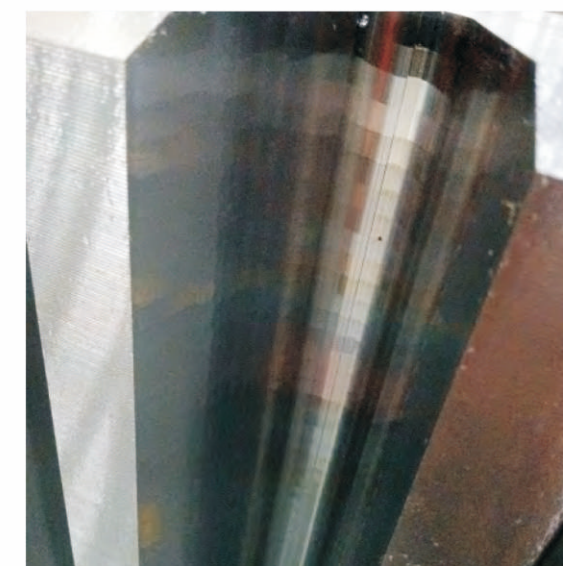| Modulus	S	R	Ha	H
6	9.43	1.2	7.5	14
7	11	1.4	8.75	19
8	12.57	1.6	10	23
9	14.14	1.8	11.25	24
10	15.7	2	12.5	29
12	18.85	2.4	15	32
14	22	2.8	17.5	38
16	25.13	3.2	20	42
18	28.27	3.6	22.5	49
20	31.42	4	25	58

Tool Life

M16, tooth width 200, tool wear condition after one full pass of direct hobbing.
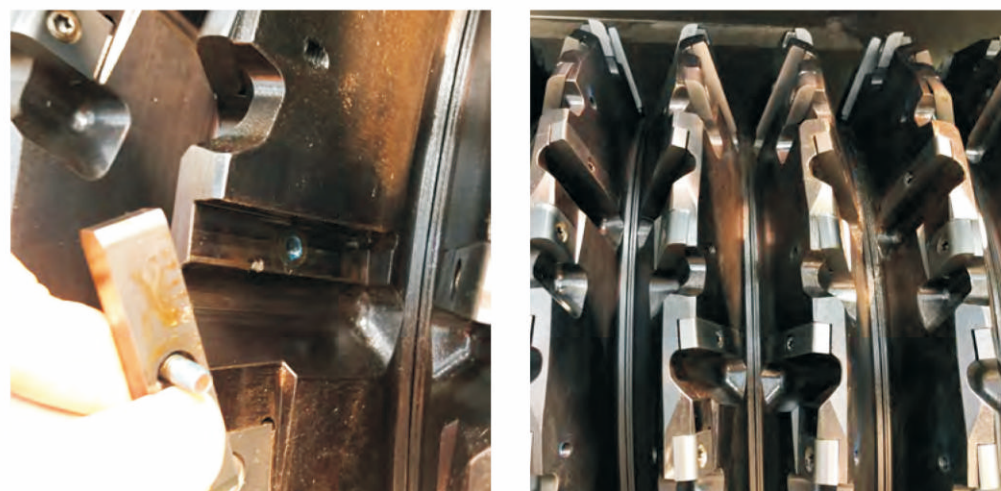
Processing Quality
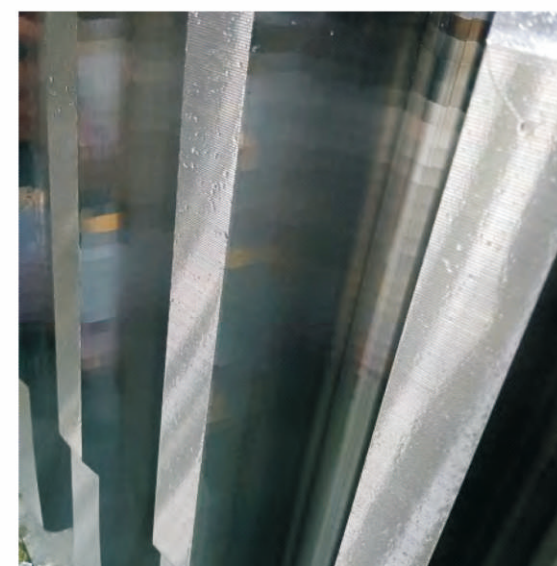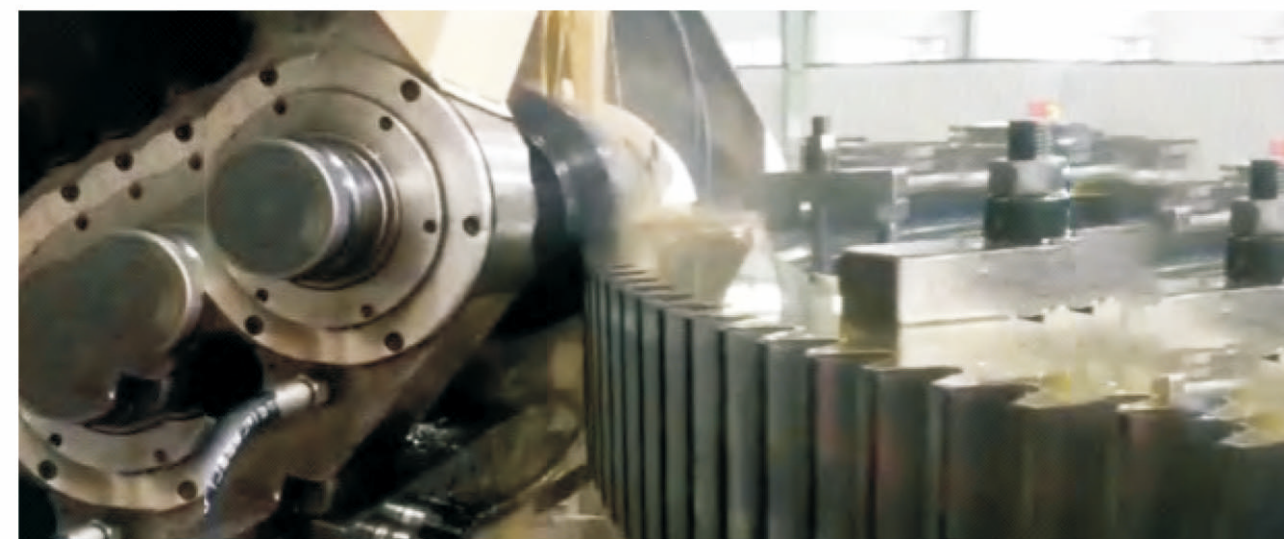
M20 finishing hobbing cutter processing appearance (tooth surface)

M20 finishing hobbing cutter processing appearance (tooth root)

GEAR FINISHING HOBBING CUTTER

Application Cases

Single Head Finishing Hobbing Cutter Processing

Module: M16	Number of Teeth: Z139	Pressure Angle: 20°
Cutter Diameter: 380mm	Speed: S110	Feed Rate: F3.5
Machine: Qizhong Machine Tools	Power: 75KW	Cooling: Air Cooling

Double-head Finishing Hobbing Cutter Processing

|		
Module: M12	Number of Teeth: Z140	Pressure Angle: 20°
Cutter Diameter: 280mm	Speed: S120	Feed Rate: F5
Machine: Domestic Machine Tool	Power: 55KW	Cooling: Water Cooling
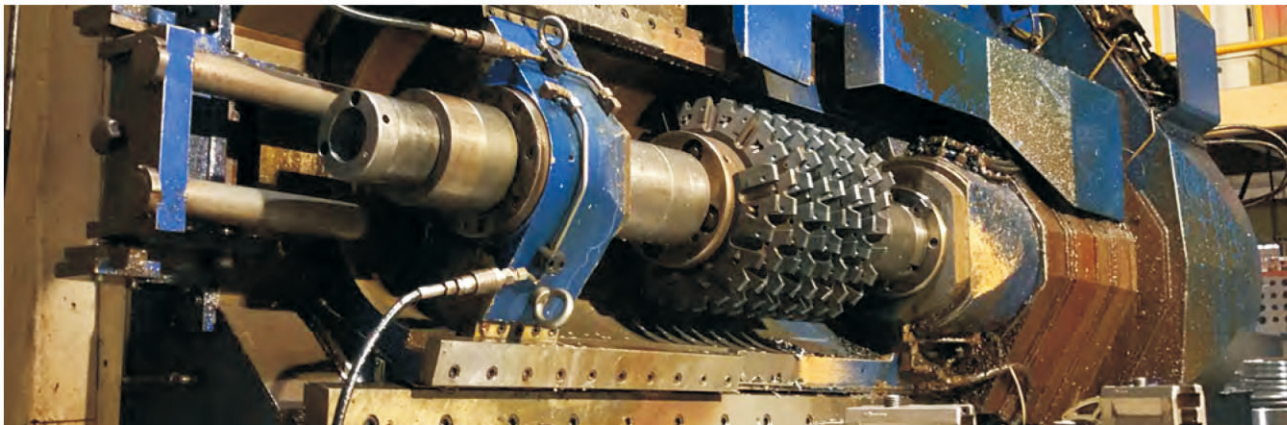
Recommended Cutting Parameters for Gear Finishing Hobbing Cutters

| Modulus	Order number	D(mm)	ae1(mm) cut 1	ae2(mm) cut 2	Vc1(m/min) Rm>1000N/mm2	Vc2(m/min) Rm<1000N/mm2	fa(mm/WU) Z ≤ 50	fa(mm/WU) Z - 50-100	fa(mm/WU) Z ≥ 100
6	GD1S...M6.20.7.N...	180	13,5	-	160-180	180-200	1,5-2,5	2,5-4,5	4,5-6,0
	GD2S...M6.20.7.N...	210	13,5	-	160-180	180-200	2,0-3,0	3,0-5,0	5,0-6,0
	GD3S...M6.20.7.N...	240	13,5	-	160-180	180-200	2,5-3,5	3,5-5,0	5,0-6,0
7	GD1S...M7.20.7.N...	180	15,75	-	160-180	180-200	1,2-2,0	2,0-3,5	3,5-5,0
	GD2S...M7.20.7.N...	210	15,75	-	160-180	180-200	1,5-2,5	2,5-4,5	4,5-6,0
	GD3S...M7.20.7.N...	240	15,75	-	160-180	180-200	2,0-3,0	3,0-5,0	5,0-6,0
8	GD2S...M8.20.6.N...	210	18,00	-	140-160	160-180	1,3-2,2	2,2-4,0	4,0-6,0
	GD3S...M8.20.6.N...	240	18,00	-	140-160	160-180	1,8-2,5	2,5-4,5	4,5-6,0
	GD4S...M8.20.6.N...	270	18,00	-	140-160	160-180	2,0-3,5	3,5-5,0	5,0-6,0
9	GD2S...M9.20.6.N...	210	20,25	-	140-160	160-180	1,2-1,8	1,8-3,5	3,5-5,0
	GD3S...M9.20.6.N...	240	20,25	-	140-160	160-180	1,5-2,3	2,3-4,5	4,5-6,0
	GD4S...M9.20.6.N...	270	20,25	-	140-160	160-180	1,8-2,8	2,8-5,0	5,0-6,0
10	GD2S...M10.20.6.N...	210	22,50	-	140-160	160-180	1,0-1,6	1,6-3,2	3,2-5,0
	GD3S...M10.20.6.N...	240	22,50	-	140-160	160-180	1,3-2,0	2,0-4,0	4,0-5,5
	GD4S...M10.20.6.N...	270	22,50	-	140-160	160-180	1,6-2,5	2,5-4,5	4,5-6,0
12	GD2S...M12.20.6.N...	240	27,00	-	120-140	140-160	0,8-1,3	1,3-2,5	2,5-4,0
	GD3S...M12.20.6.N...	270	27,00	-	120-140	140-160	1,2-2,0	2,0-4,0	4,0-5,5
	GD4S...M12.20.6.N...	350	27,00	-	120-140	140-160	1,8-2,8	2,8-4,5	4,5-6,0
14	GD5S...M14.20.5.N...	270	31,50	-	120-140	140-160	1,0-1,5	1,5-3,2	3,2-4,5
	GD6S...M14.20.5.N...	350	31,50	-	120-140	140-160	1,5-2,3	2,3-4,0	4,0-5,5
16	GD5S...M16.20.5.N...	270	34,00	2*	120-140	140-160	0,9-1,4	1,5-2,8	2,8-4,2
	GD6S...M16.20.5.N...	350	34,00	2*	120-140	140-160	1,4-2,2	2,2-3,8	3,8-5,2
18	GD5S...M18.20.5.N...	270	38,00	2,5*	100-120	120-140	1,2-1,8	1,2-2,5	2,5-4,0
	GD6S...M18.20.5.N...	350	38,00	2,5*	100-120	120-140	1,2-1,8	1,2-2,5	2,5-4,0
20	GD6S...M20.20.5.N...	350	42,00	3*	100-120	120-140	0,7-1,1	1,1-2,2	2,2-3,6
	GD8S...M20.20.5.N...	450	42,00	3*	100-120	120-140	1,0-1,6	1,6-3,4	3,4-4,5
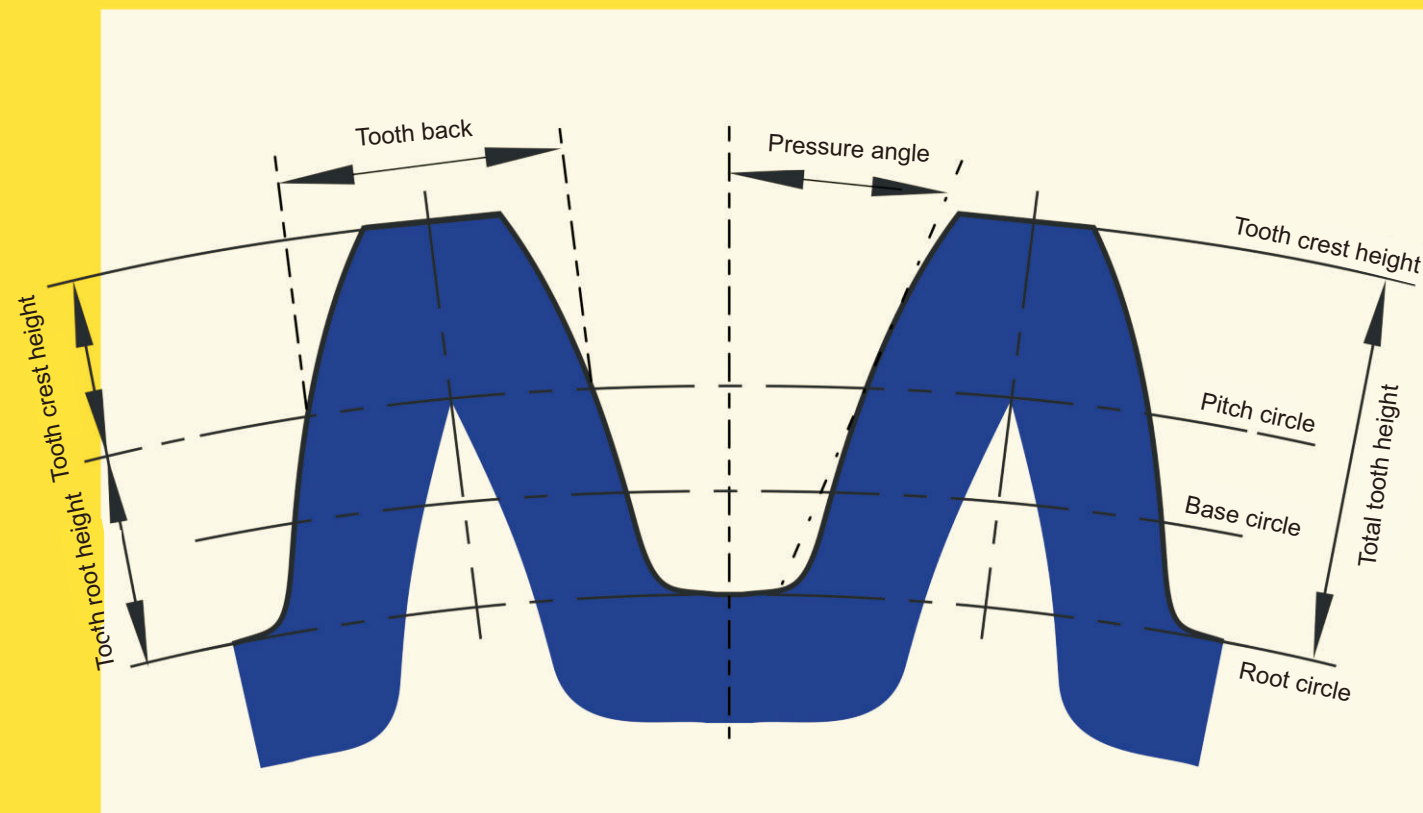
齿轮滚刀技术资料

GEAR HOBBING CUTTER

TECHNICAL DATA

GEAR HOBBING CUTTER TECHNICAL DATA

Insert Design
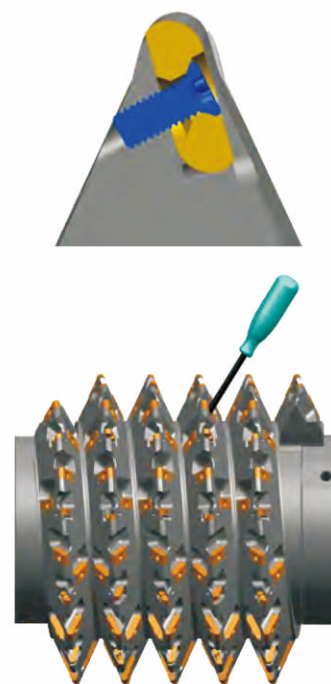
Advantages of insert inclined hole design:

1. During use, it is more convenient to replace the insert.

2. Prevent the insert from being installed backwards, causing quality accidents.

3. The inclined hole design can make the positioning of the blade more reliable, thereby achieving higher installation accuracy.

4. The oblique hole screw hole is longer, the locking force of the screw is greater, and the blade is tightened more firmly.

Spindle Speed n (rev/min)

$$\frac{Vc \cdot 1000}{Dc \cdot \pi} = n$$

Cutting Speed Vc (m/min)

$$\frac{Dc \cdot \pi \cdot n}{1000} = Vc$$

Feed Rate F (mm/min)

$$\frac{n}{Z \cdot Fa} = F$$

Number of Teeth: Z

Spindle Speed: n (rev/min)

Tool Diameter: Dc (mm)

Cutting Speed: Vc (m/min)

Feed Rate: F (mm/min)

Feed per Revolution: Fa (mm/r)

GEAR HOBBING CUTTERS DEMAND LIST

Part data

Job Type

Module(M)

Number of teeth(Z)

Pressure angle(α °)

Helix angle(β °)

Coefficient of displacement

Addendum height factor

Headspace coefficient

Radius coefficient of root circle

Span bar distance or common normal and its deciation

Company:

Date:

Contact Person:

Contact Information:

Measure ball diameter or number of saraddles

Index circle diameter

Root circle diameter

Tip circle diameter

Tip chamfer size

Allowance foe grinding

Digging quantity

Start circle of involute

Coarse finishing cutter

Stock for finishing

Tool data

Module (M)

Mandrel aperture (d)

Hub diameter (d1)

Hob length (H)

Outside diameter (D)
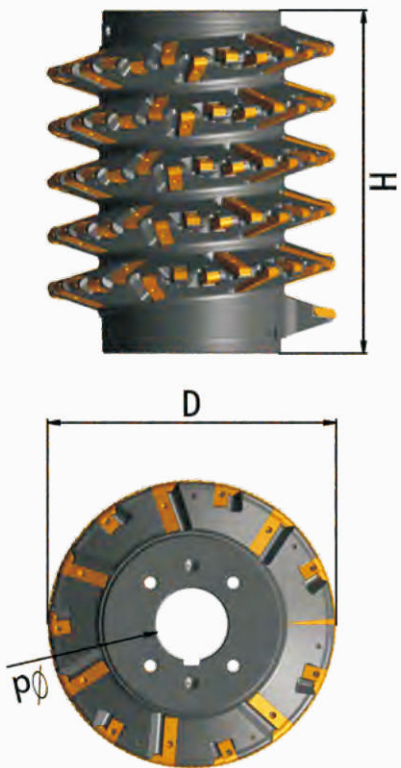
Helix rotation direction (R/L)

Cutting length (L1)

Accuracy grade (GB/T6084)

Machine data

Type of machine

Machine tool brand

Power

Cooling type

Notes