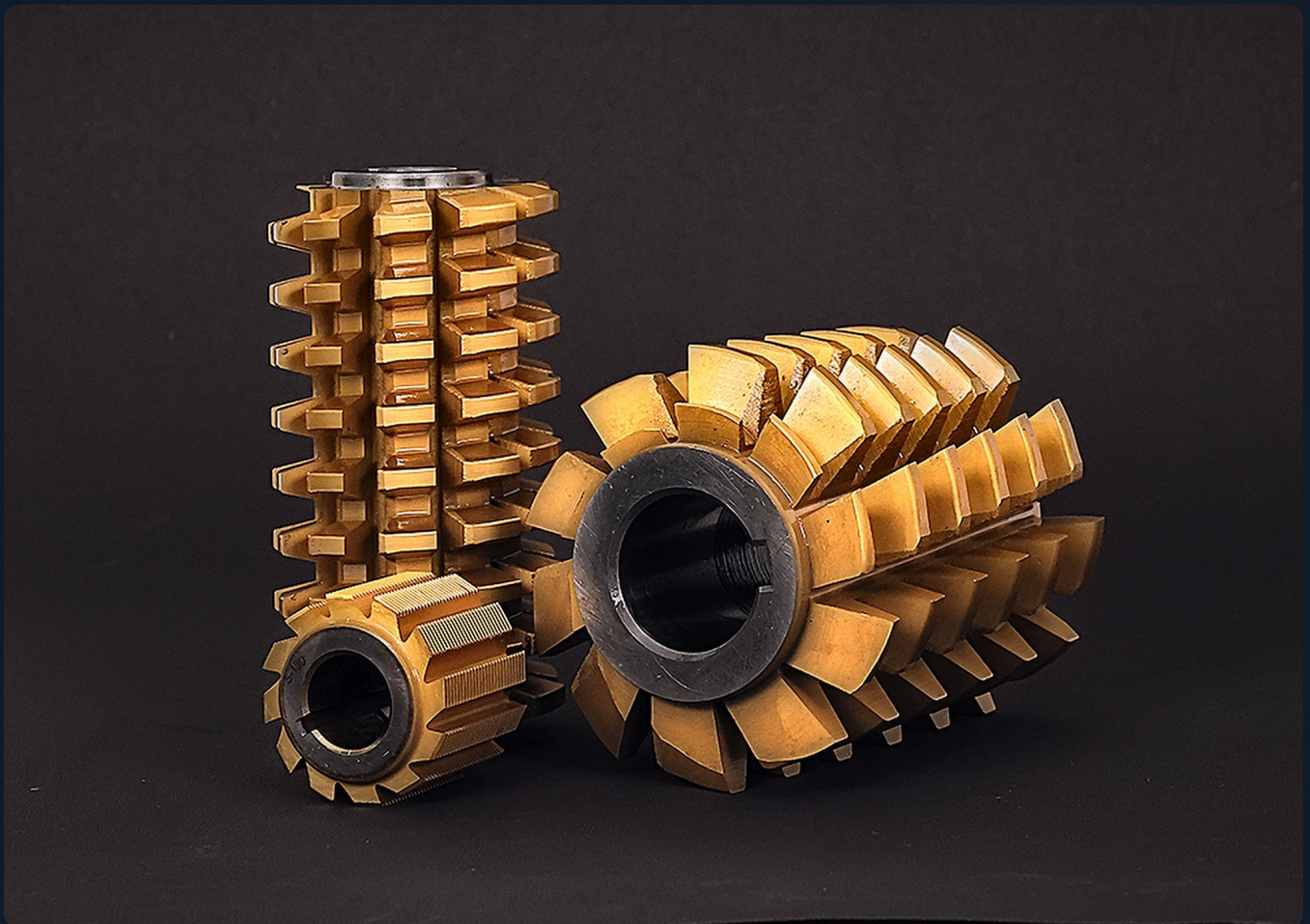


TECHNICAL SPECIFICATION & SELECTION GUIDE

# Gear Hobs

Precision HSS and PM-HSS gear hobs engineered for accuracy, repeatability and long tool life across spur, helical, spline, worm, sprocket and timing-gear applications.



TIN-COATED HSS & PM-HSS GEAR HOBS · SINGLE & MULTI-START

**1976**

ESTABLISHED

**50+**

EXPORT COUNTRIES

**0.5 to 25**

MODULE RANGE

**250 mm**

MAX OUTSIDE DIA.

**AA / A**

DIN 3968 CLASS

## 01 Capability Overview

Maxwell Tools Company manufactures gear hobs to your component data, from fine-pitch instrument gears to coarse-module industrial drives. Tools are relief-ground, heat-treated under controlled conditions and CMM-verified before dispatch. The matrix below defines our standard manufacturing envelope; requirements outside it are reviewed case by case.

Parameter	Specification
Module range	0.5 to 25 m (approx. DP 1 to 50)
Outside diameter	Up to 250 mm
Bore diameter	13 to 100 mm (DIN 138 keyway), or shank design
Overall length	Up to 250 mm
Pressure angle	14.5°, 20°, 30°, or as specified
Thread / starts	Single-start and multi-start (2, 3+ starts)
Hand	Right or left hand
Gashes	Straight or helical, fully relief-ground
Accuracy class	DIN 3968 AA, A, B (relief-ground); C (relief-turned)
Equivalent standards	AGMA 2002, ISO 4468, IS 3338
Substrate	HSS M2, HSS M35, PM-HSS ASP2030, special grades
Coatings	Uncoated, TiN, TiCN, TiAlN, AlCrN
Working hardness	63 to 68 HRC (substrate dependent)
Inspection	CMM-verified (Accurate Spectra); report on request
Aftercare	Regrinding and recoating service

Made to your gear data, not generic catalogue forms

CMM inspection report with every precision order

Regrind & recoat to restore original class

### How to use this document

Sections 02 to 06 let you specify the right hob in four decisions: **type** (the form you need to cut), **material** (production volume and workpiece), **coating** (speed, heat and coolant strategy) and **accuracy class** (the gear quality you must achieve). Section 07 lists exactly what to send us for a firm quotation.

## 02 Gear Hob Range

A single hobbing process produces a wide family of tooth forms. We supply the following hob types in single- or multi-start configurations, with profile modifications such as protuberance, topping, semi-topping and tip relief available on most forms.

#	Hob type	Application / profile	Reference standards
01	Finishing involute (spur & helical)	Final involute tooth form on cylindrical gears	DIN 3968 AA/A, ISO 53 basic rack
02	Roughing involute	High stock removal ahead of finishing	Relief-ground or relief-turned
03	Pre-grind / pre-shave (protuberance)	Leaves root undercut + stock for grind/shave	Protuberance + semi-topping form
04	Topping & semi-topping	Cuts tip dia. / chamfers tooth tip in one pass	Controls OD, deburrs tip
05	Worm wheel	Generates worm gears; plunge or tangential feed	Flank forms ZA, ZN, ZI, ZK, ZC (DIN 3975); lead to 45°
06	Involute spline	Internal & external involute splines	DIN 5480/5482, ANSI B92.1, ISO 4156
07	Straight-sided / parallel spline	Parallel and angular splines	DIN 5471/5472; 30°, 37.5°, 45° PA
08	Serration	Fine serrations on shafts and jaws	Custom form to drawing
09	Sprocket	Roller-chain sprocket teeth	ANSI/ASA, ISO 606, BS, IS; topping/non-topping
10	Timing-belt pulley	Synchronous belt pulleys	MXL, XL, L, H, T, AT, HTD, STD
11	Chamfer / deburr	Tooth-end chamfering and deburring	To component data
12	Special form	Square shafts, ratchets, conjugate forms	Generated at single depth; custom

Standards are cited for identification only. Equivalent national standards (IS, BS, GOST, JIS) are supported on request. Non-standard and fixed-position hobs are produced from component drawings.

## 03 Substrate Materials

The substrate sets the ceiling on cutting speed, tool life and resharpening count. Match the grade to production volume and workpiece, not to the highest spec available. M2 remains the most cost-effective choice for the majority of general gear work.

Grade	Standard	Hardness	Characteristics	Best suited for	Cost
HSS M2	DIN S6-5-2 / 1.3343	63 to 65 HRC	Balanced toughness and wear, economical, easy to regrind	General gears, low-alloy & medium-carbon steels, job work	●
HSS M35	DIN S6-5-2-5 / 1.3243 (5% Co)	64 to 66 HRC	Cobalt-boosted red hardness, runs faster than M2	Alloy & stainless steels, higher productivity	●●
PM-HSS ASP2030	Powder HSS (≈ M3 + 8% Co)	66 to 68 HRC	Uniform fine carbides; red hardness ≈ M42 with superior toughness & wear	High-volume, dry/high-speed coated hobbing, interrupted cuts, tough alloys	●●●

Hardness ranges are typical heat-treated values and depend on tempering. Other grades (M42, ASP2052, solid carbide for dry high-speed or skiving) are available for specialised applications.

## 04 PVD Coatings

A thin PVD coating lowers friction and raises the temperature the cutting edge can survive, which is what enables higher speeds and dry or near-dry hobbing. Coating choice follows your speed, heat and coolant strategy.

Coating	Microhardness	Max. temp.	Colour	Typical application
Uncoated	Substrate	n/a	Steel grey	Brass, aluminium, soft materials; economy & easiest regrind
TiN	~2,300 HV	~600 °C	Gold	Proven all-rounder; wet hobbing of carbon & alloy steels
TiCN	~3,000 HV	~400 °C	Blue-grey	Abrasive materials; harder edge at medium speed
TiAlN	~3,000 to 3,300 HV	~800 °C	Violet-black	Stainless & alloy steels; higher speed, reduced coolant
AlCrN	~3,200 HV	~1,100 °C	Blue-grey	Dry / high-speed hobbing, superalloys; maximum heat resistance

Typical hobbing speeds (material and machine dependent): uncoated HSS 30 to 45 m/min; coated M35 80 to 120 m/min; coated PM-HSS 120 to 180+ m/min. Recoating after each regrind restores the thermal barrier at the edge.

## 05 Accuracy, Quality & Inspection

Hob accuracy is classified to DIN 3968 (with equivalents in AGMA 2002 and ISO 4468). The class fixes the tolerances on the hob's checked elements, which in turn forecasts the gear quality you can achieve. Classes AA and A are the commercially relevant grades for precision work.

Class	Manufacture	Achievable gear quality*	Finishing	Typical use
AA	Precision relief-ground	DIN 6 to 7 / ISO 6 to 7 / AGMA 10 to 11	None, or pre-shave / pre-grind	Aerospace, automotive, quiet high-load gears
A	Precision relief-ground	DIN 7 to 8	Light grind / shave	High-quality industrial gears
B	Relief-ground	DIN 8 to 9	Subsequent finishing	General transmission gears
C	Relief-turned	DIN 9 to 10	Finishing required	Coarse / non-critical, roughing

\*Achievable gear quality also depends on the hobbing machine, setup, workholding, feed and cutting conditions. Relief-ground hobs reach A and AA; relief-turned hobs reach approximately class B to C.

### Inspected elements (DIN 3968 / VDI-VDE 2606)

- ✓ Tooth profile form
- ✓ Tooth-to-tooth and cumulative pitch
- ✓ Gash spacing (indexing)
- ✓ Gash lead and straightness
- ✓ Rake-face radial position
- ✓ Thread lead (helix)
- ✓ Tooth thickness
- ✓ Bore-to-edge radial runout
- ✓ Hub face runout and OD concentricity

### Representative tolerances

Class A, fine pitch: profile and pitch within  $\pm 5 \mu\text{m}$ , radial runout within  $\pm 10 \mu\text{m}$ , lead within  $\pm 6 \mu\text{m per 25 mm}$ . Class AA tightens these to roughly 60 to 75% of class-A values. Full tolerance tables are module-dependent and supplied with the inspection report.

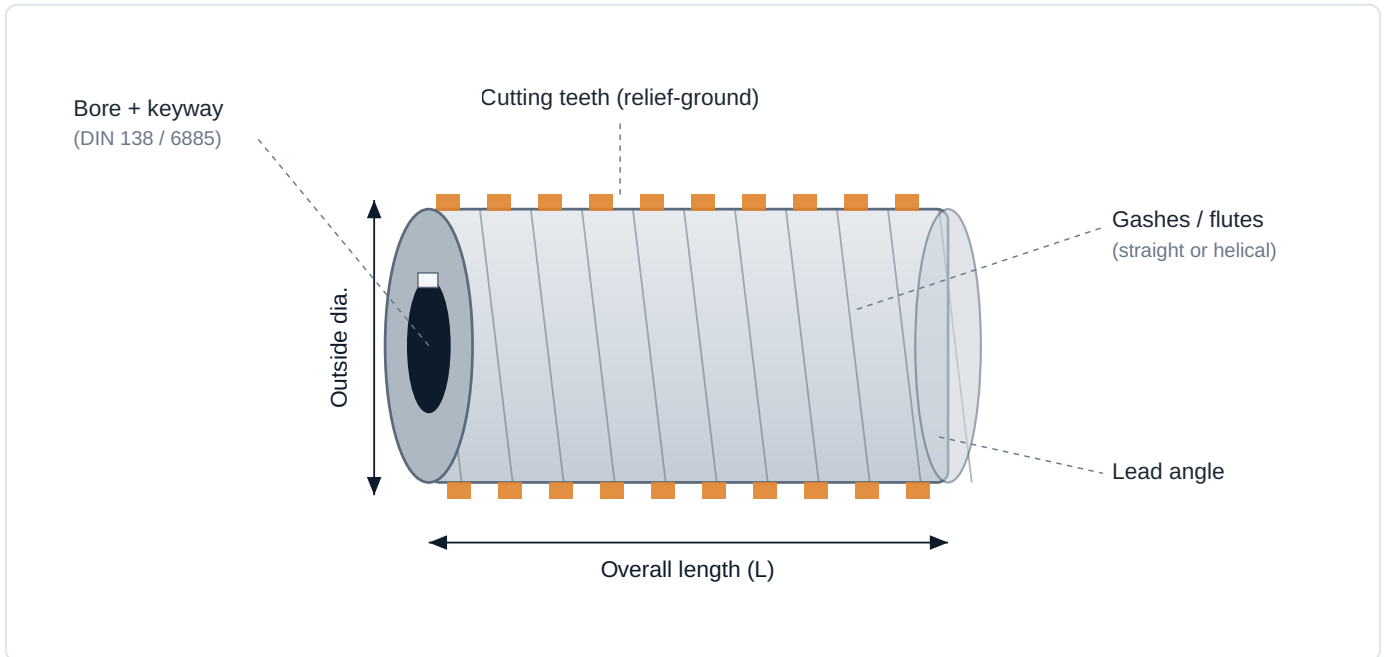


### Inspection & aftercare

Every precision hob is CMM-verified on an Accurate Spectra coordinate measuring machine. A dimensional inspection report is supplied on request, with material test certificates and heat-treatment records available for export orders. HSS hobs are typically resharpenable 10 to 20 times depending on module and flute depth; we offer in-house regrinding and recoating to return tools to their original accuracy class.

## 06 Construction & Standard Dimensions

Shell-type hobs mount on an arbor through a bored, keyed hub; shank-type hobs carry an integral shank for direct fitment. The principal features are shown below.



Bore and keyway to DIN 138 / DIN 6885. Shank designs and end-drive (face-key) hobs available to suit your hobbing machine spindle.

### Representative standard shell-hob dimensions

Typical single-start, 20° pressure angle, class A/AA. Dimensions are confirmed against your gear data at order.

Module	OD (mm)	Bore (mm)	Length (mm)	Gashes
1	50	22	32	14
1.5	56	22	40	14
2	63	27	50	12
2.5	71	27	60	12
3	80	32	70	12
4	90	32	80	12
5	100	40	100	12
6	112	40	112	12
8	125	50	125	11
10	140	50	140	11
12	160	60	160	10
16	180	60	180	10
20	210	70	210	9
25	250	80	250	9

## 07 How to Request a Quotation

---

Send the items below and we will return a firm specification, price and lead time. A component or gear drawing lets us confirm the form precisely and is always preferred.

### Gear / component data

- ✓ Module (or DP) and pressure angle
- ✓ Number of teeth and helix angle / hand
- ✓ Required gear quality (DIN / ISO / AGMA)
- ✓ Profile modifications: protuberance, topping, semi-topping, tip relief, chamfer
- ✓ Tooth form: involute, spline, worm, sprocket, special

### Tool & commercial data

- ✓ Preferred material (M2 / M35 / PM-HSS) and coating
- ✓ Single- or multi-start
- ✓ Bore + keyway or shank, and hobbing machine model
- ✓ Quantity and target delivery date
- ✓ Drawing or sample if available

### Ordering, delivery & export

Custom hobs are manufactured to your component data; popular standard sizes are held or made to short lead times where available. Tools are supplied with protective packaging and, for export, the documentation required across the 50+ countries we serve.

## Maxwell Tools Company

Rajpura, Punjab, India · Precision gear cutting tools since 1976  
maxwelltools.com · sales enquiry & WhatsApp via the website

[Request a  
Free Quote](#)

Figures, tolerances and standard dimensions in this document are representative and provided for selection guidance; final specifications are confirmed against your gear data at the time of order. Cutting-speed and tool-life figures are typical and depend on machine, workpiece and conditions. Standards (DIN, ISO, AGMA, ANSI, BS, IS) are referenced for identification only. ASP is a trademark of Erasteel; all trademarks belong to their respective owners. © 2026 Maxwell Tools Company.