

PRECISION GEAR CUTTING AND MILLING TOOLS

Gear Hobs, Gear Cutters, Shaper Cutters, Broaches and HSS Milling Tools

— SINCE 1976 · FIFTY YEARS



TiN COATED GEAR HOBS · MANUFACTURED AT RAJPURA, PUNJAB

MAXWELL TOOLS COMPANY · SINCE 1976

FIFTY YEARS OF GEAR CUTTING TOOLS

Founded 1976 at Rajpura by the late Mr. K. B. Gupta. 15,000+ standard and special tools across gear cutting, milling, broaching and strip scalping: design, CNC profile grinding, vacuum heat treatment, bore grinding, coating and inspection all in one works. Send a drawing or a sample: we reverse engineer it and quote within days.

1976

ESTABLISHED

50+EXPORT
COUNTRIES**15,000+**

PRODUCTS

DIN 3968CLASS AA / A /
B**100%**

INSPECTED

CMM

METROLOGY

THE RANGE · TWELVE FAMILIES

Page references in orange

 GEAR HOBS P04 Module 0.5 to 25	 GEAR CUTTERS P06 Module 0.5 to 12 standard	 SHAPER CUTTERS P07 Module 0.5 to 20, DIN 1829
 SHAVING CUTTERS P07 Supplied with lead test charts	 BROACHES P08 Push and pull, to component	 SERRATION & FORM P08 Serration and woodruff
 SCALPING CUTTERS P09 50.8 to 304.8 mm diameter	 SIDE & FACE, FORM P09 Angle, T-slot, dovetail, radius	 SAWS P10 Slitting, segmental, paper knives
 END MILLS P10 Square, ball nose, roughing, shell	 REAMERS & DRILLS P10 Hand, machine, chucking, jobber	 CENTRE DRILLS & BITS P10 Types A and B, lathe tool bits

EVERYTHING IN-HOUSE

1 Design and reverse
engineering2 CNC profile
grinding3 Vacuum heat
treatment4 Bore
grinding5 CMM
inspection

6 Coating

Maxwell Tools Company, 3, Industrial Estate, Rajpura, Punjab 140401, India

maxwelltools@gmail.com

HOW TO ORDER

Send this data and the first quote is the right quote

GEAR HOB

- 1 Module or DP
- 2 Pressure angle
- 3 Teeth on the gear
- 4 Helix angle and hand
- 5 Accuracy class
- 6 Hob bore
- 7 Max OD and length
- 8 Topping or protuberance
- 9 Coating

GEAR MILLING CUTTER

- 1 Module or DP
- 2 Teeth, or cutter No.
- 3 Pressure angle
- 4 Bore and thickness
- 5 Single or set of 8 / 15

SHAPER CUTTER

- 1 Module or DP, teeth
- 2 Pressure angle
- 3 Type: disc, counterbore, hub, shank
- 4 Bore
- 5 Machine make and model

SHAVING CUTTER

- 1 Gear drawing
- 2 Module, teeth, helix
- 3 Crowning required
- 4 Pre-finish state: hobbed or shaped
- 5 Machine make and model

BROACH

- 1 Component drawing
- 2 Material and hardness
- 3 Machine make and model
- 4 Holder and pull end
- 5 Push or pull

MILLING CUTTERS

- 1 Parameters on the card, pages 9 and 10
- 2 Material: M2 or M35
- 3 Coating, if any
- 4 Quantity

SCALPING CUTTER

- 1 OD and overall length
- 2 Bore and drive details
- 3 Light or heavy duty, helix
- 4 Strip material and width

COMMERCIAL

Quotations valid 30 days.
EXW Rajpura (Incoterms 2020). FOB and CIF quoted on request.
Export packing: VCI wrapped, individually boxed or tubed.

NO DRAWING? SEND A SAMPLE.

We measure it, reverse engineer the tool, and return the drawing for approval before manufacture.

LEAD TIMES

7 to 10 days

STANDARD STOCK · EXW

3 to 4 weeks

CUSTOM TOOLING TO DRAWING

Express

AVAILABLE ON REQUEST

Complex hobs may need 4 to 6 weeks: see the section tables.

THREE ROUTES TO A QUOTE

PHONE **+91 82646 21011**

WHATSAPP **+91 70876 78450**

EMAIL **maxwelltools@gmail.com**



WHATSAPP QUOTE · SCAN

GEAR HOBS

Single and multi start hobs for spur, helical, spline, worm and timing gears

A hob generates the tooth form in one continuous cut, the fastest route to accurate external gears. Maxwell manufactures bore, shank and hub type hobs at Rajpura, vacuum hardened and verified to DIN 3968 before dispatch.

DIN 3968 · CLASS AA / A / B

Ready stock, or 4 to 6 weeks custom



HSS GEAR HOB · BORE TYPE

SPECIFICATION		GEAR HOBS · DIN 3968
MODULE RANGE	0.5 to 25 module (DP 50 to 1)	
PRESSURE ANGLE	14.5°, 20°, 30°, custom on request	
NUMBER OF STARTS	Single, double, multi start	
PROFILE TYPE	Full form, semi topping, non topping, protuberance	
MATERIAL	HSS M2, M35, M42, PM ASP 2030	
COATINGS	TiN, TiCN, TiAlN, AlCrN	
ACCURACY CLASS	Class AA / A / B as per DIN 3968	
DIRECTION OF CUT	Right hand or left hand	
TYPE	Bore type, shank type, hub type	
OUTSIDE DIAMETER	Up to 250 mm	
FACE WIDTH	Up to 100 mm	
HEAT TREATMENT	Vacuum hardened for dimensional stability	
APPLICATIONS	Spur, helical, spline, worm and timing gears	
LEAD TIME	Ready stock, or 4 to 6 weeks for custom	

SINGLE START OR MULTI START

Single start hobs give higher accuracy and better surface finish. Multi start hobs cut faster for volume work, with slightly lower accuracy. If in doubt, send the gear drawing tolerance.

REGRINDING

Hobs are form relieved: resharpen on the gash face and the tooth form is preserved through service life.

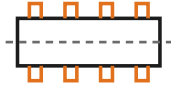
ORDERING DATA REQUIRED

- 1 Module or DP
- 2 Pressure angle
- 3 Number of teeth on the gear
- 4 Helix angle and hand
- 5 Required accuracy class
- 6 Hob bore
- 7 Maximum OD and length your machine accepts
- 8 Topping, non topping or protuberance
- 9 Coating

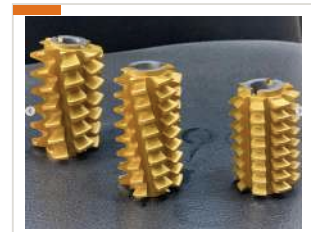
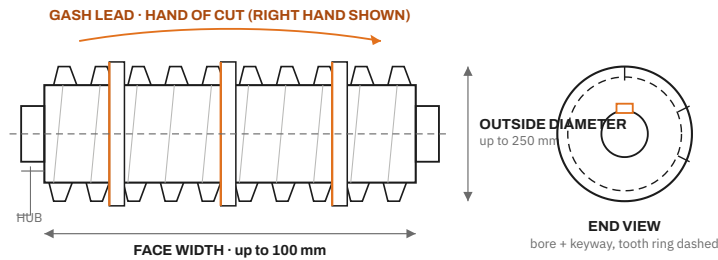
No drawing? Send a sample and we reverse engineer it.

HOB TYPES AND PROCESS

Five standard forms, the nomenclature, and when to hob or shape

 STRAIGHT (SPUR) Axial tooth rows, external spur gears	 HELICAL Gash lead matched to helix and hand	 SPLINE Straight sided teeth, full fillet optional	 WORM WHEEL Barrel form envelops the worm wheel	 TIMING PULLEY Trapezoidal and curvilinear belt profiles
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HOB NOMENCLATURE · state these when ordering



TIN COATED HOBS · BORE TYPE,
KEYWAY DRIVE

HOBGING VS SHAPING	GEAR HOBGING	GEAR SHAPING
MOTION	Continuous generation	Reciprocating stroke
BEST FOR	External gears, splines, worms	Internal gears, shoulders, clusters
OUTPUT	Highest of the generating methods	Moderate
STANDARD	DIN 3968, class AA / A / B	DIN 1829, class AA / A / B
RULE	Hob when the tool passes clear across the part. Shape when a shoulder, cluster step or internal ring blocks the hob path.	

HSS M2	General purpose, medium volumes
HSS M35	Harder workpieces, higher speeds
PM ASP 2030	CNC hobbing, mass production, dry cutting

Full material and coating guides, page 11.

ORDERING DATA REQUIRED

Hob type (this page) plus the nine data points on page 4: module or DP, pressure angle, teeth, helix and hand, class, bore, machine limits, topping form, coating.

GEAR MILLING CUTTERS

Involute cutters for milled gears, module 0.5 to 12 standard

SPECIFICATION	INVOLUTE GEAR CUTTERS
MATERIAL	HSS M2 and M35. No carbide: HSS is chosen for regrindability
HARDNESS	60 to 64 HRC, vacuum heat treated
MODULE RANGE	0.5 to 12 standard, up to 50 module on request
PRESSURE ANGLE	14.5°, 20°, 30°, or custom
COATINGS	TiN, TiAlN optional
FORM	Relievable: sharpen on the face, tooth form preserved. Supplied singly or as sets



HSS GEAR CUTTING AND MILLING TOOLS

CUTTER NUMBER CHART · 8 CUTTER SERIES

1	135 to rack	5	21 to 25
2	55 to 134	6	17 to 20
3	35 to 54	7	14 to 16
4	26 to 34	8	12 to 13

Cutter number = teeth band it cuts. Read your tooth count, order that number.

15 CUTTER SERIES · HIGHER PROFILE ACCURACY

Above roughly 12 module, the range is also supplied as a 15 cutter series: half numbers 1.5 to 7.5 narrow each cutter's tooth count band.

1.5	2.5	3.5	4.5	5.5	6.5	7.5
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INVOLUTE FLANK

PRESSURE ANGLE
at the pitch point

BASE CIRCLE
PITCH CIRCLE

THE INVOLUTE AND THE PRESSURE ANGLE

The flank is the involute of the base circle. The pressure angle is defined where the flank crosses the pitch circle. State module and pressure angle: 14.5 or 20 degrees are stock.

FREE TOOL

SPUR GEAR CALCULATOR

Enter module and tooth count, read back the cutter number, blank OD and whole depth.

maxwelltools.com/spur-gear-calculator



SCAN TO OPEN

ORDERING DATA REQUIRED

- 1 Module or diametral pitch
- 2 Cutter number, or teeth to be cut
- 3 Pressure angle
- 4 Bore and thickness
- 5 Single cutter or set of 8 / 15

SHAPER AND SHAVING CUTTERS

Generate what a hob cannot reach, then finish it quiet

SPECIFICATION	GEAR SHAPER CUTTERS · DIN 1829
MODULE RANGE	0.5 to 20 module (DP 50 to 1.25)
MAXIMUM DIAMETER	300 mm (12 in)
NUMBER OF TEETH	12 to 200, to suit pitch diameter and module
STANDARD BORES	31.75, 44.45, 63.50, 88.90 mm (1¼, 1¾, 2½, 3½ in)
ACCURACY	Class AA, A and B as per DIN 1829
MATERIAL	HSS M35, M4, PM ASP 2030, PM ASP 2052
COATINGS	TiN, TiCN, TiAlN
MODIFICATIONS	Semi topping, protuberance, for pre-shaved and pre-ground gears
MACHINES	Supplied for Lorenz, Fellows, Liebherr, Mitsubishi and equivalents



GEAR SHAPER CUTTER · DISC TYPE

DISC TYPE Dished face, the general case	DEEP COUNTERBORE Screw head sits clear of the cut	HUB TYPE Raised hub clears close shoulders	SHANK TYPE Small internal gears, integral shank
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SPECIFICATION	GEAR SHAVING CUTTERS
TYPES	Conventional, diagonal, underpass (plunge, transverse, internal and external on request)
RANGE	0.8 to 8 module (30 to 3 DP)
PCD RANGE	170 mm to 260 mm
PROFILES	Standard involute, tip relief, profile and lead crowning, special profiles to customer requirement
MATERIAL	HSS M2, M35, PM ASP 2030
SUPPLIED WITH	Lead test charts and inspection



GEAR SHAVING CUTTER · SERRATED FLANKS

As a guide, specify shaving above roughly 8 m/s pitch line velocity, or where there is a noise limit.

PROTUBERANCE AND PRE-FINISH FORMS

A protuberance form leaves a small undercut at the tooth root, so a later grinding or shaving pass finishes the flank without a notch. State whether the gear will be shaved or ground after shaping, and we grind the cutter accordingly.

ONE PASS, ONE CLASS

One shaving pass typically improves the gear by one full accuracy class. Send the gear drawing and the pre-finish state, and we grind the crown to suit.

GEAR SHAVING CUTTERS

Ground for finishing pre-hobbed or pre-shaped gears: removes very small stock to correct index, helix, tooth form and eccentricity, and improves surface finish. Crowned forms remove end load concentration, lowering noise and raising load capacity and life.

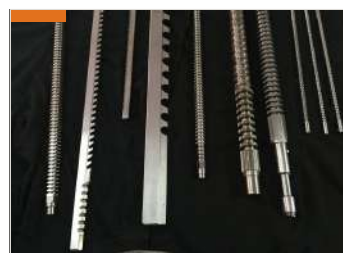
ORDERING DATA REQUIRED

- 1 Shaper: module, teeth, PA, type, bore, machine make and model
- 2 Shaving: gear drawing, module, teeth, helix, crowning, machine
- 3 Both: accuracy class and coating

BROACHES AND FORM CUTTERS

One stroke, one finished profile. Every broach designed from your component.

SPECIFICATION	BROACHES · MADE TO COMPONENT
TYPE	Push type and pull type, internal and surface
PROFILES	Involute, parallel and trapezoidal splines, serration, round, hexagonal, rectangular, ratchet, keyway
MATERIAL	HSS M2, M35, PM ASP 2030 · vacuum heat treated
DESIGN	Rise per tooth, pitch and pull end matched to machine and holder
SIZE & LEAD TIME	Made to the component drawing: send drawing and machine details for size and lead time



ROUND, SPLINE, KEYWAY AND FLAT BROACHES

INTERNAL PROFILES BROACHED · cross sections as cut

								
Involute spline	Parallel spline	Trapezoidal	Serration	Round	Hexagonal	Rectangular	Ratchet	Keyway

Surface broaches for external flats and slots are quoted from the component drawing.

SERRATION AND WOODRUFF CUTTERS

	SERRATION CUTTERS OD · pitch · length · bore	V form serrations for clamping faces
	WOODRUFF CUTTERS key size · shank · OAL	Keyseat cutters, shank type, standard keys

PUSH OR PULL

Push broaches suit short profiles and arbor presses: low cost, short stroke. Pull broaches carry the full profile in one long tool for production machines. State the machine and we design the pull end, shank and follower to fit it.

ORDERING DATA REQUIRED

- 1 Broach: component drawing, material and hardness, machine, holder, push or pull
- 2 Serration: profile standard, pitch, depth and bore
- 3 Woodruff: key size to standard, shank type

SCALPING CUTTERS AND THE MILLING RANGE

Strip mill cutters, then eight more milling families

Scalping removes the cast skin from copper, brass and aluminium strip before rolling. The cutter runs continuously against moving strip, so edge life and balance decide mill uptime. Ground as a speciality in light and heavy duty patterns from imported HSS M2 and M35, then balanced for continuous running.

50.8 to 304.8 mm

DIAMETER · 2 TO 12 IN

50.8 to 1016 mm

LENGTH · 2 TO 40 IN

Light and heavy duty

PLAIN OR SPIRAL TOOTH

Regind service

REGROUND AND
REBALANCED



SCALPING CUTTER · HEAVY DUTY ·
IMPORTED HSS

MILLING RANGE, PART 1 · EIGHT FAMILIES, PHOTOGRAPHED



SIDE & FACE

Slots and shoulders; straight or staggered tooth

OD · width · bore · tooth
type



ANGLE CUTTERS

Single 30/45/60°, double 45/60/90°

OD · thickness · bore · angle



T-SLOT CUTTERS

Machine table T slots; staggered side teeth

slot size · shank



DOVETAIL CUTTERS

Slides and ways, 45/55/60°

angle · OD · shank



CORNER ROUNDING

External radii; single or RH/LH pairs

radius · hand · bore



CONVEX CUTTERS

Mill a half round groove (concave in the work)

circle dia · thickness · bore



CONCAVE CUTTERS

Mill a half round bead (convex on the work)

circle dia · thickness · bore



SERRATION CUTTERS

V form serrations on clamping surfaces

OD · pitch · length · bore

ORDERING DATA REQUIRED · THIS PAGE

Scalping: OD, overall length, bore and drive, duty and helix, strip material and width. Milling cutters: the parameters on the card, plus material (M2 or M35), coating and quantity. Specials from drawing or sample.

SAWS, END MILLS AND ROUND TOOLS

The range concludes: saws, sprockets and the toolroom staples



SPROCKET CUTTERS

Chain sprockets to ANSI, IS and DIN; rounded roller tooth spaces

chain pitch · roller dia · teeth



END MILLS

Square, ball nose, corner radius, roughing; TiN coated

dia · flutes · length · shank



SHELL END MILLS

Face and shoulder milling on arbors, ANSI

OD · OAL · bore · hand



METAL SLITTING SAWS

Plain, side chip clearance, staggered

OD · ID · thickness · form



SEGMENTAL SAWS

Cr-V body, riveted replaceable HSS segments, 250 to 1610 mm

OD · segments · bore



PAPER KNIVES

Circular knives for cigarette and tissue paper, thread cones

OD · ID · thickness



REAMERS

Hand, machine, chucking, shell, taper pin. H7 unless stated

dia · tolerance · shank



HSS DRILLS

Jobber and long series. TiN coated and bright, 1 to 13 mm ex stock

dia · series · quantity



CENTRE DRILLS

Double ended, types A and B

size · type · quantity



TOOL BITS

section · length · grade

Round, square and rectangular HSS blanks, hardened and ground · lathe and planer tooling, ground to your section from stock

HSS M2 standard, M35 on request · vacuum heat treated

IS, DIN and ANSI dimensions · mixed orders ship together

ORDERING DATA REQUIRED · THIS PAGE

The parameters on each card, plus material grade, coating if any, and quantity. For reamers state the fit (H7, H8, or the drawing tolerance). Non-standard forms are quoted from a drawing or sample.

MATERIALS, COATINGS, QUALITY

Pick the steel, pick the coating, and what inspection you get with the tool

GRADE	TYPICAL HRC	CHARACTER	BEST FIT
HSS M2	63 to 65	Balanced toughness and wear resistance	General purpose, medium volumes
HSS M35	65 to 67	Cobalt bearing, higher red hardness	Harder workpieces, higher speeds
HSS M4	64 to 66	High wear resistance with good toughness	Widely used for shaper cutters
HSS M42	67 to 70	High cobalt, hardest conventional grade	Difficult-to-machine materials
PM ASP 2030	67 to 69	Powder metallurgy, superior wear and edge retention	CNC hobbing, mass production, dry machining
PM ASP 2052	68 to 70	Higher alloyed PM grade	Maximum wear in high volume production

Hardness as heat treated at Maxwell, measured at the tooth. PM grades vacuum hardened and triple tempered.

COATING	HARDNESS (HV)	MAX TEMP	BEST APPLICATION
 TiN Gold	2300	600 °C	General purpose: steel, stainless and aluminium; resists built-up edge
 TiCN Bronze grey	3000	400 °C	Abrasive materials and interrupted cuts; more lubricious than TiN
 TiAlN Violet black	3300	800 °C	High speed, dry or MQL, hardened steels
 AlCrN Blue grey	3200	1100 °C	Highest thermal resistance: dry hobbing, high heat



TiN COATED SERRATION CUTTERS · GOLD, AS COATED

Coatings typically extend tool life two to five times, up to ten in favourable applications.

Hardness approximate, in HV (Vickers): not meaningfully expressed in HRC.

THE PATH OF EVERY TOOL

1

DESIGN

From drawing or reverse engineered sample

2

TURN & MILL

Blank, gash and relieve

3

HARDEN

Vacuum, triple temper

4

GRIND

Doimak bore grinding, CNC profile grinding

5

VERIFY

Accurate Spectra CMM: profile and lead to DIN 3968

WHAT ARRIVES WITH THE TOOL

Dimensional inspection report against the ordered class

Profile and lead charts for class AA and A gear tools

Lead test charts with every shaving cutter

PROFILE DEVIATION



LEAD DEVIATION



Class AA tolerance band shown

SAMPLE PROFILE AND LEAD CHART
· SUPPLIED WITH EVERY CLASS AA
AND A TOOL

Full technical data (feeds and speeds, cutter keyways, module to DP conversion, DIN 3968 classes) lives in the separate sheet: **Maxwell Tools Technical Data**, from the downloads page.



MAXWELLTOOLS.COM
DOWNLOADS



PRECISION GEAR CUTTING AND MILLING TOOLS · SINCE 1976

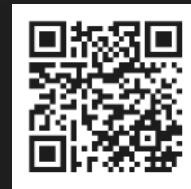
**SEND US YOUR DRAWING.
WE WILL ENGINEER THE TOOL.**



WEBSITE
maxwelltools.com



WHATSAPP QUOTE
+91 70876 78450



GEAR HOB SPEC SHEET
maxwelltools.com/gear-hobs

EXPORTED TO 50+ COUNTRIES

Representative markets, by region

EUROPE

Germany, United Kingdom,
Italy, France, Spain, Poland,
Turkey

AMERICAS

United States, Canada,
Mexico, Brazil

ASIA & MIDDLE EAST

Japan, South Korea,
Thailand, Vietnam,
Indonesia, UAE

AFRICA & OCEANIA

South Africa, Egypt, Australia

Automotive transmission

Aerospace

Power transmission

Wind energy

Robotics

Agricultural machinery

General engineering

GUARANTEE

All material fully guaranteed
against defects in material and
workmanship

SHIPPING

Domestic by reputed surface
and air couriers. Export by DHL
and FedEx

PAYMENT

Advance TT, credit card,
PayPal. Quotations valid 30
days

EXPORT

EXW Rajpura (Incoterms 2020),
FOB and CIF on request. HS
classification and certificate of
origin supplied with every
proforma invoice. Origin: India.
VCI wrapped, boxed or tubed

MAXWELL TOOLS COMPANY

3, Industrial Estate, Rajpura, Punjab 140401, India

Phone **+91 82646 21011** · WhatsApp **+91 70876 78450**

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For rotary slitter knives, shear blades and slitting line spacers, see our sister company Maxwell Slitter Industries, www.maxwellslitters.com. Cutting tools may break or shatter under improper use: Maxwell Tools Company accepts no responsibility for damage or injury arising from improper use, mounting or operation outside recommended parameters. Specifications may change without notice as designs improve.