HUAMIN
SUPERHARD TOOLS

ENGLISH CATALOG

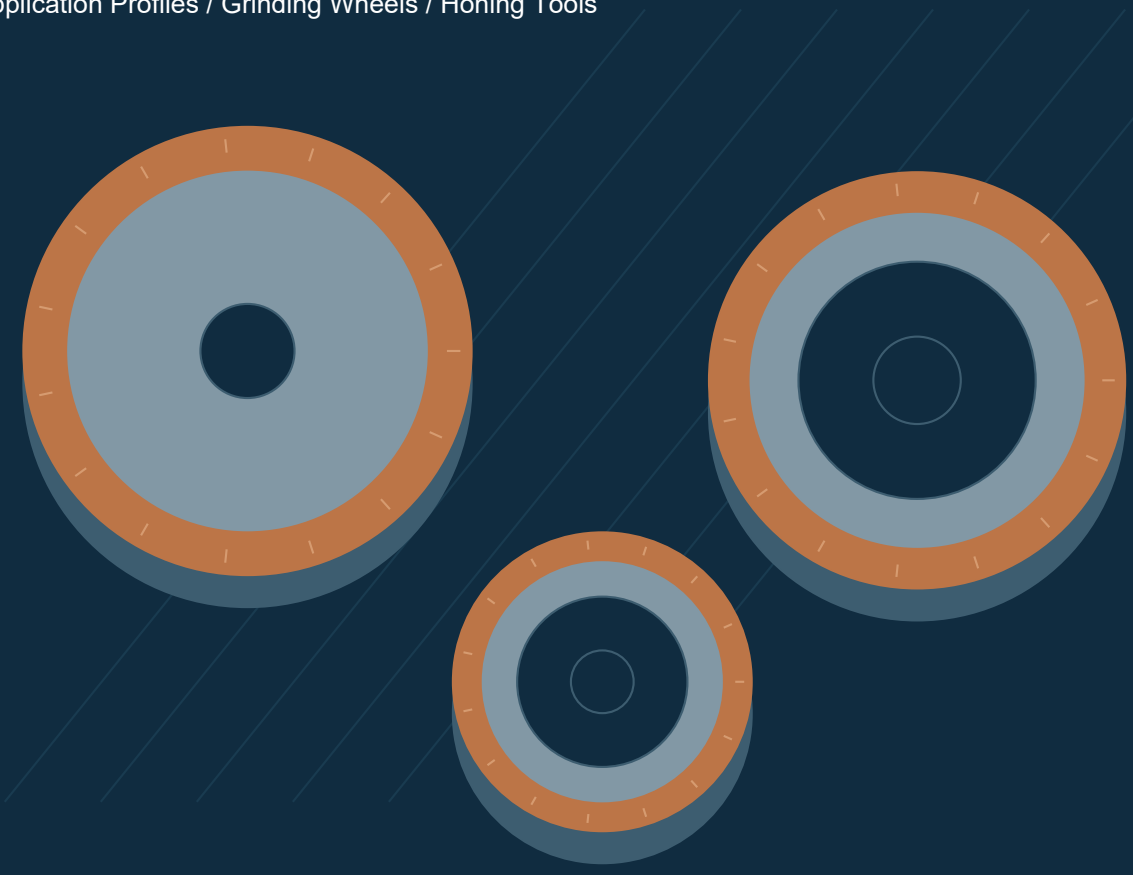
GRINDING & HONING

Diamond & CBN Tools

Tool Manufacturing, Precision Grinding And Bore Finishing

PRODUCT APPLICATION COLLECTION

34 Application Profiles / Grinding Wheels / Honing Tools



HUAMIN TOOLS

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PRODUCT RANGE

One Range. Three Selection Routes.

01 MATERIAL & BOND

Diamond for carbide, ceramics and superhard tool finishing; CBN for compatible hardened ferrous materials. Coordinate resin, vitrified, metal or electroplated bond with the process.

02 GEOMETRY & CONTACT

Choose peripheral, angled, cup, dish or mounted forms around the active surface, machine envelope and approved drawing.

03 APPLICATION & ACCEPTANCE

Use the 34 application sheets to frame a technical inquiry. Define workpiece material, incoming stock, tolerance, surface texture and trial acceptance.

Application configurations are defined through technical review; the identifiers in this collection are editorial references, not stocked SKU numbers.

SELECTION FRAMEWORK

Start With The Workpiece.

Diamond	Carbide, ceramics, glass and PCD / PCBN cutting-edge finishing.
CBN	Hardened steels, HSS and selected compatible ferrous alloys.
Resin	Cutting response and finishing; confirm wet or approved dry use.
Vitrified	Engineered porosity and conditioning; coordinate dresser and coolant.
Metal	Grit retention and form stability; plan a compatible conditioning method.
Electroplated	Single-layer defined profiles; do not assume conventional redressing.

Grit, concentration, dimensions and permissible speed are application-specific. Do not equate C concentration codes with other supplier systems.

HONING APPLICATIONS

HM-H01

Horizontal Honing Mandrels



For controlled finishing of bores with a compact mandrel and an expandable abrasive contact.

APPLICATIONS

Hydraulic bores; sleeves; general precision bores.

SELECTION FOCUS

Coordinate stone contact, guide support and stroke to develop the required bore geometry and crosshatch.

HM-H02

Micro-Bore Honing Mandrels



Slender honing concepts for small bores where tool access and support are critical.

APPLICATIONS

Small sleeves; metering components; precision fluid-control parts.

SELECTION FOCUS

Match tool reach and expansion travel to the bore; limit deflection and evaluate chip evacuation.

HONING APPLICATIONS

HM-H03

Metal-Bond Superabrasive Honing Stones



Diamond or CBN stone configurations for application-specific bore finishing.

APPLICATIONS

Hardened bores; carbide components; wear-resistant parts, subject to material review.

SELECTION FOCUS

Select abrasive and metal-bond behavior together, balancing cutting response with stone wear and geometry.

HM-H04

Horizontal Multi-Stone Honing Heads



Multi-stone contact for supported honing of medium and larger bores.

APPLICATIONS

Sleeves; cylinder components; precision through bores.

SELECTION FOCUS

Review stone count, contact length and expansion mechanism as a complete assembly.

HONING APPLICATIONS

HM-H05

Honing Stones & Inserts



Replaceable abrasive elements selected around the workpiece and the honing platform.

APPLICATIONS

Production honing; tool refurbishment; finishing-process development.

SELECTION FOCUS

Coordinate abrasive, grain size, contact surface and backing before a sample trial.

HM-H06

Precision Vertical Honing Tools



Vertical honing configurations for bore size, form and surface-finish control.

APPLICATIONS

Fuel-system parts; gear bores; hydraulic and precision mechanical components.

SELECTION FOCUS

Align the tool, measuring strategy and finishing sequence to the actual machine and acceptance criteria.

HONING APPLICATIONS

HM-H07

Single-Pass / Sequential Honing Tools



A sequence of preset abrasive tools develops bore size and finish in staged passes.

APPLICATIONS

High-volume bore finishing with consistent incoming stock and stable workholding.

SELECTION FOCUS

Plan progressive stock removal and tool sizing; confirm the complete sequence with workpiece trials.

HM-H08

Single- & Dual-Feed Honing Heads



Head concepts for coordinated rough and finish honing on compatible machines.

APPLICATIONS

Engine bores; production lines with defined feed and in-process measurement.

SELECTION FOCUS

Match the head to the actual feed mechanism; dual-feed capability is machine- and design-dependent.

HONING APPLICATIONS

HM-H09

Engine Bore Honing Stones



Stone selection for staged engine bore and cylinder-liner finishing.

APPLICATIONS

Cylinder blocks; liners; engine bore development.

SELECTION FOCUS

Balance rough honing, finish honing and plateau requirements against liner material and ring-system needs.

HM-H10

Plateau Honing Tooling



Staged abrasive finishing to develop a plateau surface while retaining the specified valley structure.

APPLICATIONS

Engine bores and liners with a defined surface-texture acceptance method.

SELECTION FOCUS

Specify the rough, finish and plateau stages together; a single roughness value does not define the process.

HONING APPLICATIONS

HM-H11

Line-Bore & Main-Bore Honing Tools



Guided tooling concepts for aligned engine bores and related long-bore finishing.

APPLICATIONS

Main-bearing tunnels; camshaft bores; aligned bore assemblies.

SELECTION FOCUS

Review alignment, support and tool span before specifying stock removal or positional correction.

HM-H12

Setting Rings & Gauging Accessories



Setting-ring concepts for establishing a reference in compatible bore-gauging systems.

APPLICATIONS

Air gauging; honing-machine setup; bore measurement.

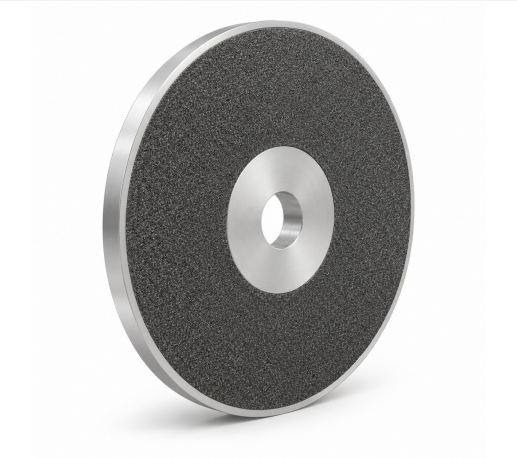
SELECTION FOCUS

Specify the reference size, tolerance, calibration requirement and measuring-system interface.

GRINDING APPLICATIONS

HM-G01

Single- & Double-Disc Face Grinding



Abrasive face-wheel concepts for controlling opposing faces in production grinding.

APPLICATIONS

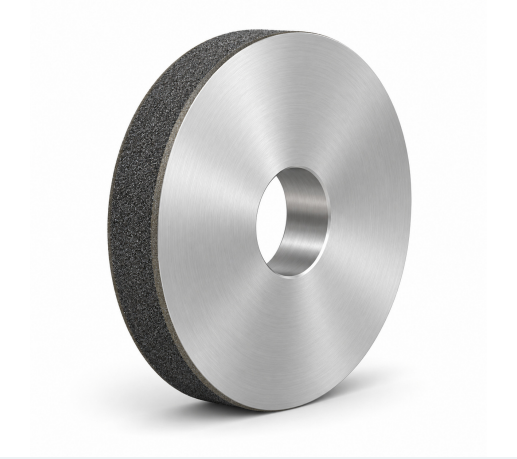
Rings; spacers; precision flat components.

SELECTION FOCUS

Select active-face layout, coolant access and conditioning around flatness and parallelism targets.

HM-G02

Camshaft Grinding Wheels



Vitrified CBN configurations for compatible hardened ferrous camshaft grinding applications.

APPLICATIONS

Cam profiles; camshaft journals; selected pump-cam forms.

SELECTION FOCUS

Coordinate profile, core, bond and dressing with the machine motion and contact conditions.

GRINDING APPLICATIONS

HM-G03

Internal Grinding Wheels



Compact abrasive tools for bore access, form control and internal surface finishing.

APPLICATIONS

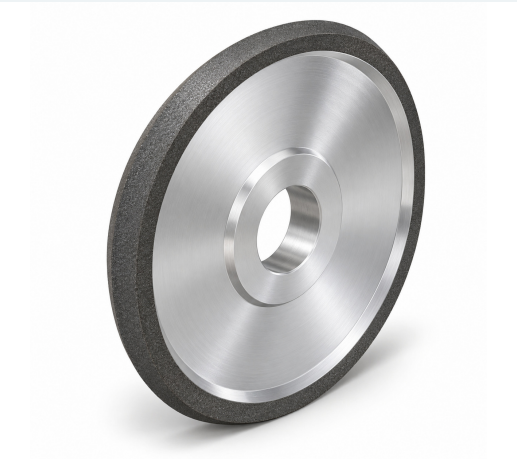
Bearing bores; gear bores; compressor parts; precision sleeves.

SELECTION FOCUS

Choose diamond or CBN according to material; check overhang, runout and coolant access.

HM-G04

Flute & Gash Grinding Wheels



Peripheral wheel concepts for tool flutes, gashes and related stock-removal operations.

APPLICATIONS

Carbide and HSS drills; end mills; reamers.

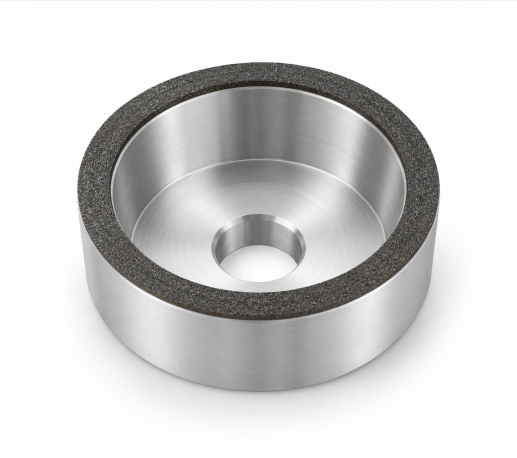
SELECTION FOCUS

Select diamond for carbide and CBN for suitable steels; evaluate power, profile wear and chip space.

GRINDING APPLICATIONS

HM-G05

PCD / PCBN Insert Peripheral Grinding



Diamond-wheel configurations for finishing superhard insert peripheries and clearances.

APPLICATIONS

PCD and PCBN inserts; superhard cutting tips.

SELECTION FOCUS

Review tip, braze and substrate together; balance edge integrity and wheel conditioning.

HM-G06

Threaded Gear Grinding: Application Review



An application pathway for continuous generating gear grinding, requiring a defined abrasive system.

APPLICATIONS

Transmission gears; precision reducers; production gear finishing.

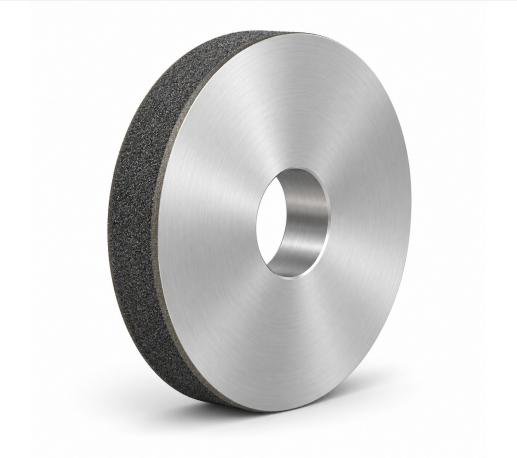
SELECTION FOCUS

Define module, starts, profile and dressing concept before selecting the wheel material system.

GRINDING APPLICATIONS

HM-G07

Cylindrical Grinding: Process Selection



Material-led wheel selection for external diameters, shoulders and related surfaces.

APPLICATIONS

Shafts; sleeves; automotive and general mechanical parts.

SELECTION FOCUS

Define the active surface and contact width; review thermal response and dressing needs.

HM-G08

Internal Grinding: Abrasive-System Review



A process-led route to matching small wheel forms and the workpiece material system.

APPLICATIONS

Compressor bores; bearing components; universal-joint parts.

SELECTION FOCUS

Check internal contact geometry and thermal load before choosing the abrasive and bond.

GRINDING APPLICATIONS

HM-G09

Bevel Gear Grinding: Application Review



Cup-form grinding concepts for bevel gears with geometry defined by the machine and tooth system.

APPLICATIONS

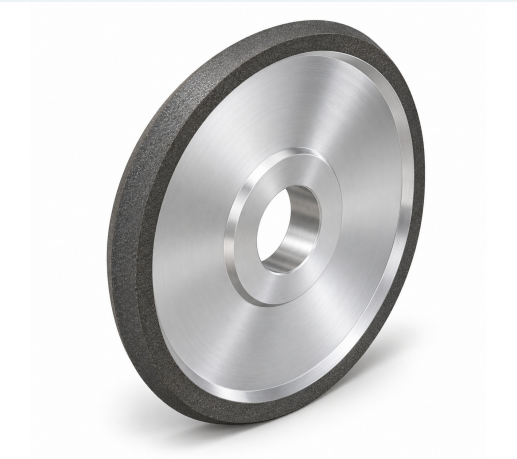
Bevel gears; differential gearing; precision transmission components.

SELECTION FOCUS

Confirm the tooth system and dressing method; do not select from wheel appearance alone.

HM-G10

Gear Form Grinding: Application Review



Profile-wheel concepts for gear teeth, splines and related form-ground components.

APPLICATIONS

External and internal gears; splines; large transmission components.

SELECTION FOCUS

Treat abrasive choice, profile generation and conditioning as one application-specific system.

GRINDING APPLICATIONS

HM-G11

Hob & Broach Rake-Face Grinding



Face-grinding wheel concepts for new-tool production and controlled resharpening.

APPLICATIONS

Carbide and HSS hobs; broaches; selected form tools.

SELECTION FOCUS

Coordinate face geometry and access with abrasive selection and edge-finish targets.

HM-G12

Carbide Insert Peripheral Grinding



Diamond wheel configurations for insert peripheries, radii and relief surfaces.

APPLICATIONS

Carbide and cermet indexable inserts.

SELECTION FOCUS

Balance profile retention, edge breakout and finish for the insert grade and fixture.

GRINDING APPLICATIONS

HM-G13

Tool Clearance & End-Face Grinding



Face and angled wheel forms for cutting-tool clearances and end geometries.

APPLICATIONS

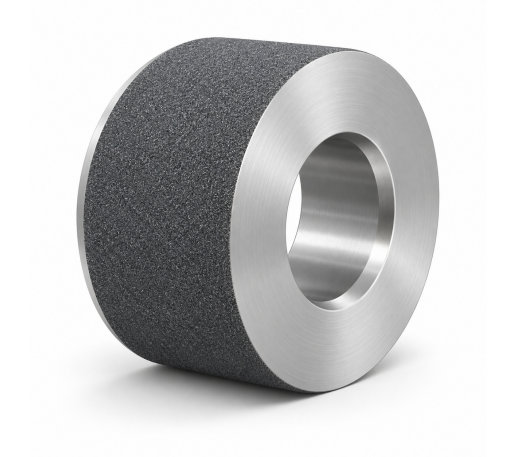
Drills; end mills; reamers; general rotary cutting tools.

SELECTION FOCUS

Choose the abrasive for the tool material and verify wheel access at all programmed orientations.

HM-G14

Centerless Grinding Wheels



Wheel concepts for supported bar and pin grinding, from stock removal to finishing.

APPLICATIONS

Carbide rods; hardened steel pins; rollers and shafts.

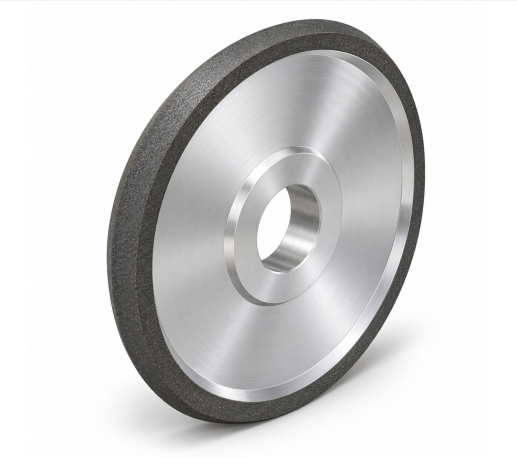
SELECTION FOCUS

Select abrasive by material and coordinate the grinding wheel with regulating wheel and work support.

GRINDING APPLICATIONS

HM-G15

Vitrified CBN Gear Profile Wheels



CBN profile-wheel concepts for suitable hardened ferrous gear components.

APPLICATIONS

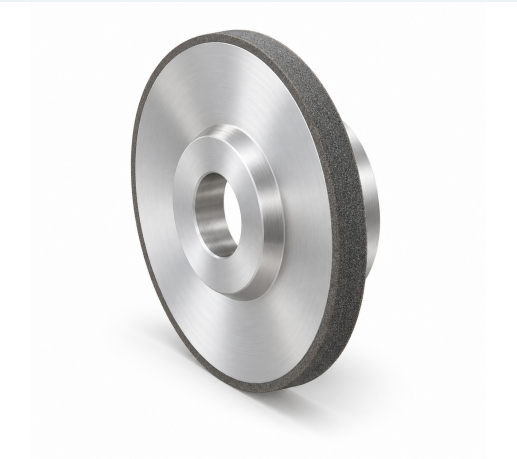
Gear profiles; splines; application-specific hardened forms.

SELECTION FOCUS

Develop the abrasive layer and dressing strategy around the required profile and wheel wear behavior.

HM-G16

Vitrified CBN External & Step Grinding



Peripheral-wheel configurations for hardened diameters, shoulders and formed external surfaces.

APPLICATIONS

Gear shafts; stepped shafts; selected precision external profiles.

SELECTION FOCUS

Check the contact sequence, shoulder geometry and coolant delivery across each active surface.

GRINDING APPLICATIONS

HM-G17

Spherical & Curved-Track Grinding



Formed abrasive tools for application-specific curved internal and external tracks.

APPLICATIONS

Curved raceways; hydraulic stator profiles; selected bearing and drive parts.

SELECTION FOCUS

Confirm the local curvature, active surface and tool path; geometry follows the workpiece drawing.

HM-G18

CV-Joint & Raceway Form Grinding



Profiled tools for controlled grinding of curved raceway features.

APPLICATIONS

CV-joint components; internal and external raceway features.

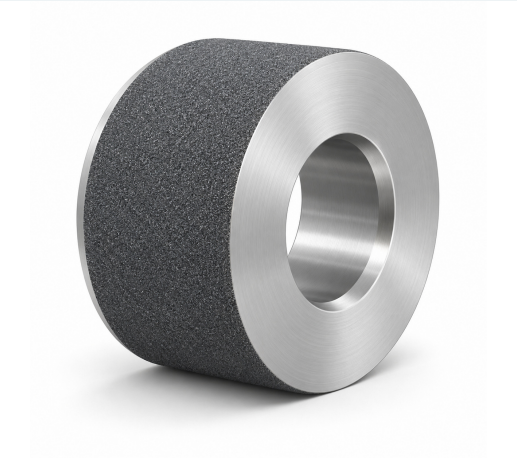
SELECTION FOCUS

Coordinate tool profile, spindle connection and CNC trajectory to the actual component.

GRINDING APPLICATIONS

HM-G19

Vitrified CBN Centerless Grinding



CBN wheel concepts for production grinding of compatible hardened steel parts.

APPLICATIONS

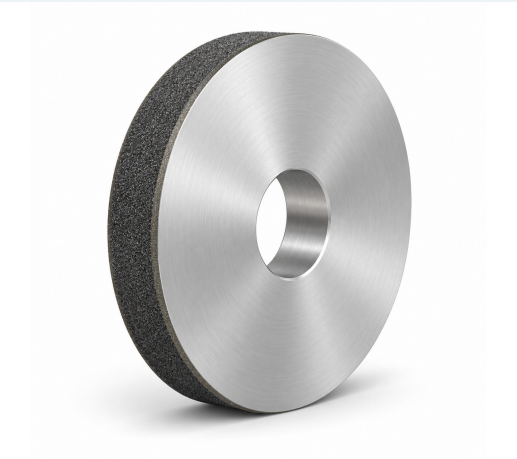
Pins; rollers; hardened shafts and bearing components.

SELECTION FOCUS

Match structure, support and dressing to through-feed or in-feed conditions and surface integrity.

HM-G20

Slot & Rotor-Groove Grinding



Narrow peripheral abrasive forms for slots where width and straightness matter.

APPLICATIONS

Vane-pump rotors; compressor slots; selected groove features.

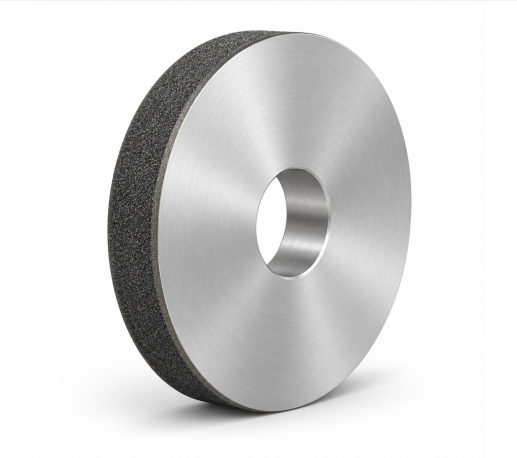
SELECTION FOCUS

Review the wheel thickness, side clearance and cooling together to manage load and form.

GRINDING APPLICATIONS

HM-G21

Crankshaft Grinding Wheels



Vitrified CBN concepts for compatible hardened crankshaft journal and shoulder applications.

APPLICATIONS

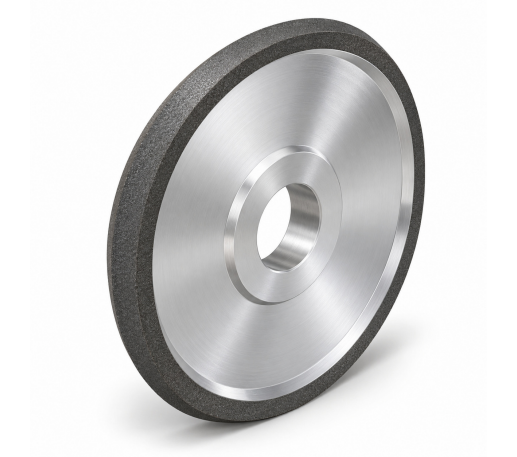
Main journals; crankpins; application-specific thrust surfaces.

SELECTION FOCUS

Coordinate wheel profile and core with intermittent contact, dressing and machine dynamics.

HM-G22

Hob Tooth-Profile Grinding



Profile-wheel concepts for developing and maintaining hob tooth geometries.

APPLICATIONS

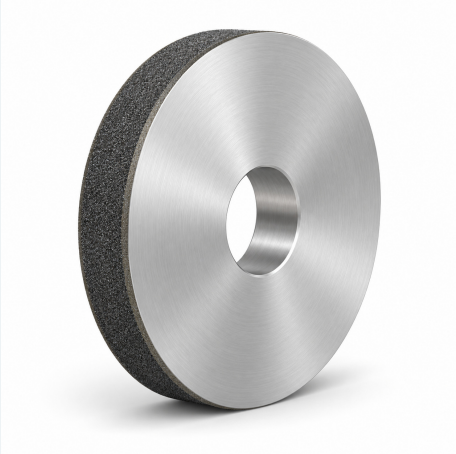
Carbide and HSS hobs; selected gear-cutting tools.

SELECTION FOCUS

Choose the abrasive for the tool grade and coordinate form generation with a repeatable conditioning cycle.

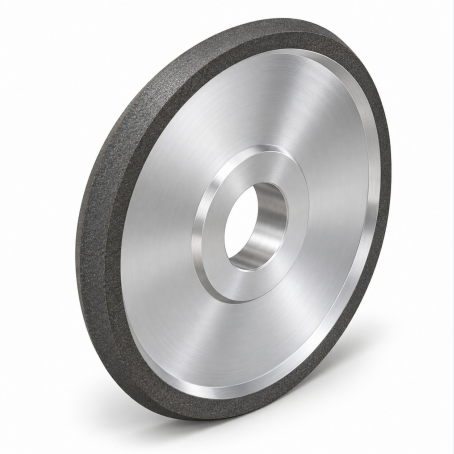
GEOMETRY GUIDE

Wheel Forms At A Glance



1A1

Straight peripheral



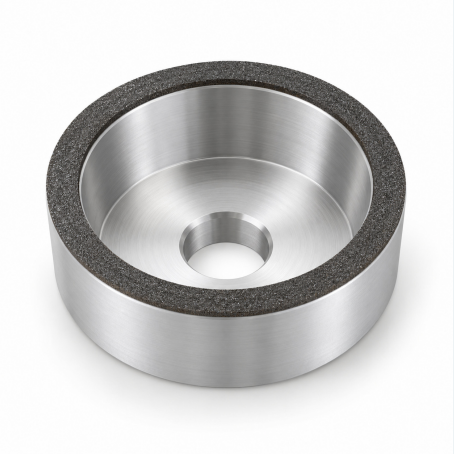
1V1

Angled peripheral



4A2

Dish form



6A2

Straight cup

Family illustrations only. A shared image may represent related forms; recess, angle, boss, active layer and dimensions must follow a controlled drawing.

GEOMETRY GUIDE

Wheel Forms At A Glance



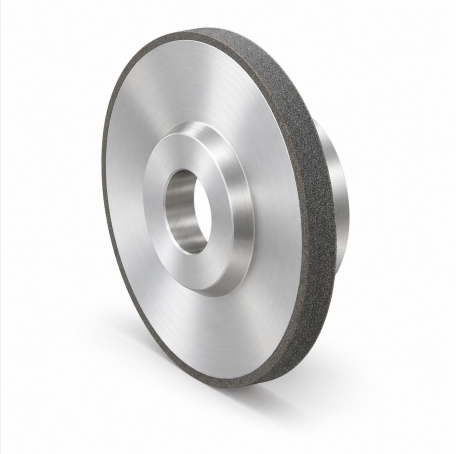
11A2

Flared cup



12A2

Dish-type face



14A1

Double-boss peripheral

Family illustrations only. A shared image may represent related forms; recess, angle, boss, active layer and dimensions must follow a controlled drawing.

GRIT & IDENTIFICATION

Read The Complete Specification.

Illustrative format: 1A1 / D126 / C75 / Resin / Drawing No. Each field describes a different part of the configuration.

FEPA D / B	Approx. Mesh Pair
D181 / B181	80/100
D151 / B151	100/120
D126 / B126	120/140
D107 / B107	140/170
D91 / B91	170/200
D76 / B76	200/230
D64 / B64	230/270
D54 / B54	270/325
D46 / B46	325/400
D39 / B39	400/500
D33 / B33	500/600

D denotes diamond and B denotes CBN within the grit designation. FEPA numbers are designations, not exact average particle diameters. Mesh pairs are approximate cross-references, not acceptance limits.

The example is not a stocked SKU. Microgrits and supplier-specific systems need their own data sheets.

CONCENTRATION & GEOMETRY

Define The Marking System.

C Code	Abrasive Volume	Diamond Ct/Cm3
C50	12.50%	2.2
C75	18.75%	3.3
C100	25.00%	4.4
C125	31.25%	5.5

C100 means 25% abrasive by volume in the conventional C scale. It does not mean 100 vol%. Other supplier concentration systems require their own definitions; this scale is not applied directly to single-layer plated tools.

Field	Definition To Confirm
D	Outside diameter
T	Total width / overall thickness
H	Bore / controlled mounting interface
X / W	Layer depth / active width; confirm drawing symbols

Also define recesses, working angles, corner radii, clamping surfaces and the permitted grinding face.

SPEED & CONDITIONING

Control The Active Contact.

vs = pi x D x n / 60000

n = 60000 x vs / (pi x D)

D: mm | n: rev/min | vs: m/s

For D = 125 mm and vs = 30 m/s, n is approximately 4,584 rev/min. This is a unit-conversion example, not an operating recommendation. Use the lower applicable limit of wheel, machine and mounting system.

Task	Required Result
Truing / profiling	Restore concentricity and the controlled wheel form.
Sharpening	Expose active grains using the approved method.
Cleaning	Remove loading without damaging the abrasive layer.
Electroplated tools	Single-layer treatment must follow the supplier procedure.

Deliver compatible coolant to the actual contact. Verify filtration, nozzle position and flow before increasing load.

TRIAL & ACCEPTANCE

Make The Trial Measurable.

Record	Information
Configuration	Abrasive, grit system, concentration system, bond, geometry and drawing revision.
Machine & setup	Spindle, adaptor, runout, balance requirement, fixture and working clearance.
Process	Stock, actual speed, feed, coolant, dresser and conditioning sequence.
Quality	Size, form, texture, edge condition and the agreed measurement procedure.
Wear & repeatability	Tool wear, cycle time, conditioning interval and repeated-part results.

For burn, glazing or chatter, review coolant, grain exposure, contact, runout and support before changing a single specification field. Separate a setup issue from an abrasive-selection issue using a recorded trial.

Acceptance values are defined for the actual component. This collection does not claim a universal Huamin accuracy, life or speed rating.

APPLICATION INQUIRY

Turn A Requirement Into A Configuration.

01 **Workpiece**

Material, hardness, heat treatment and current condition.

02 **Drawing**

Workpiece and tool geometry, tolerance and mounting interface.

03 **Process**

Machine, speed capability, stock, wet / dry mode and coolant.

04 **Acceptance**

Surface texture, form, edge quality and sample-trial criteria.

05 **Requirement**

Quantity, trial schedule and requested documentation.

HUAMIN TOOLS

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hmcbn.com

HUAMIN
SUPERHARD TOOLS

GRINDING
& HONING

Diamond / CBN Grinding Wheels

Honing Mandrels / Heads / Stones

Application Selection And Technical Guide

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