

MICROABRASIVES FOR HONING & SUPER FINISHING

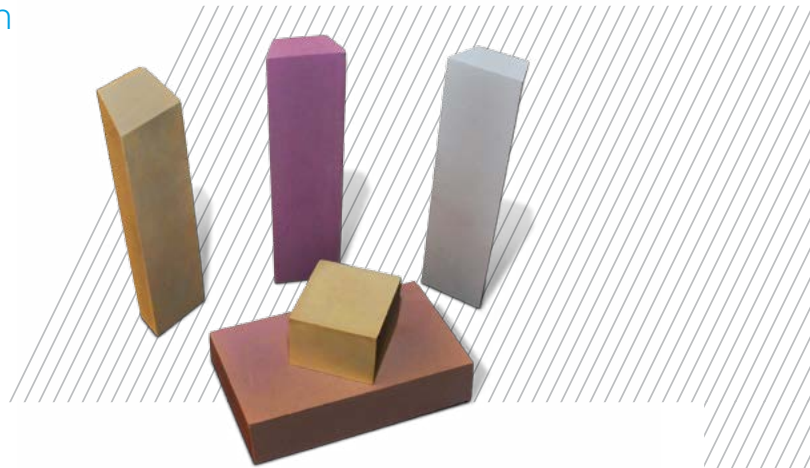


NORTON

SAINT-GOBAIN®

HONING

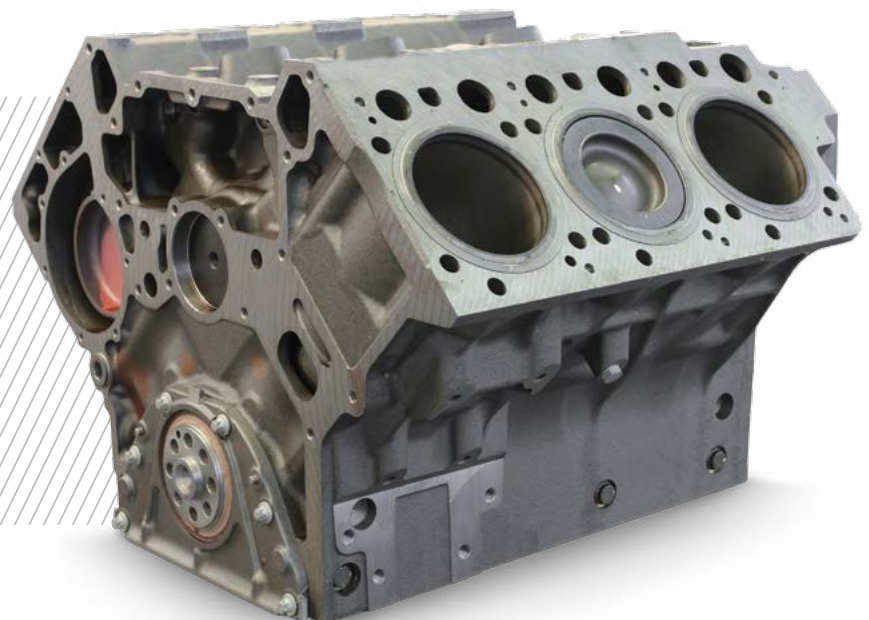
Honing is a material removal operation yielding excellent dimensional accuracy in terms of linearity and roundness for cylinders and tubes in assembled parts. It can be performed after cutting and grinding the part and before or after heat treatment.



Honing process is characterized by the simultaneous rotation and linear stroke of the honing head producing a typical cross-hatch pattern on the surface. This controlled roughness provides lodges for the lubricant during operation.

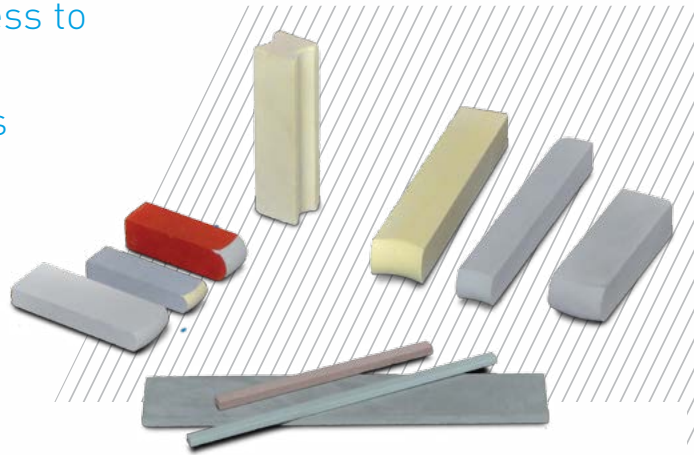
Honing is generally performed on tubes and cylinders used in the lifting, engine, and robotic industries. Examples of applications are hydraulic arms for cranes and hoists, plastic extrusion cylinders, hydraulic jacks and lifting platforms (with hydraulic or oil pistons). This operation is also performed on spherical valves, controlling the flow of gas, oil or water with a simple opening/closing system in pipelines.

Abrasive grains are aluminum oxide in grit size 60-80 for roughing, and down to 800 for finishing.



SUPERFINISHING

Superfinishing is a high precision process to improve the final geometry and surface finish of the part, and to remove defects generated during grinding operations. Microfinishing is characterized by an oscillation of the stone, and the pressure of the abrasive on the rotating workpiece.



Superfinishing are operations most frequently performed with mineral oil to improve the final roughness and avoid loading of the abrasive which might generate scratches and defects on the part.

Depending on the initial and targeted average roughness (Ra) different sequences of abrasives are used. For example, with an initial Ra of $0.30\ \mu\text{m}$, two operations are performed: the roughing process with an aluminum oxide stone grit size 500 to remove $5\text{-}6\ \mu\text{m}$, and the finishing operation with silicon carbide grit size 1000-1200 to remove $2\text{-}3\ \mu\text{m}$. If a final Ra under $0.10\ \mu\text{m}$ is required, a third stone in silicon carbide with finer grit size (1500-1800) can be used for a stock removal lower than $2\ \mu\text{m}$.



MARKING SYSTEM



ABRASIVE

ABRASIVE

SA/CSA	White aluminium oxide
NC	Black silicon carbide
PA	Pink aluminium oxide
VC/31C	Green silicon carbide
MVC	Mix of green SiC and aluminium oxide
VGC	Mix of green and black silicon carbide
30AS	Special aluminium oxide
5SGA	Sintered aluminium oxide type A
5SGG	Sintered aluminium oxide type G

GRIT SIZE

HARDNESS

from A (soft)
to R (hard)

STRUCTURE

from 0 (open)
to 25 (closed)

BOND

Vitrified

TREATMENT

TREATMENT

S5	Sulfur impregnation
W	Wax impregnation
F11	Paraffin impregnation

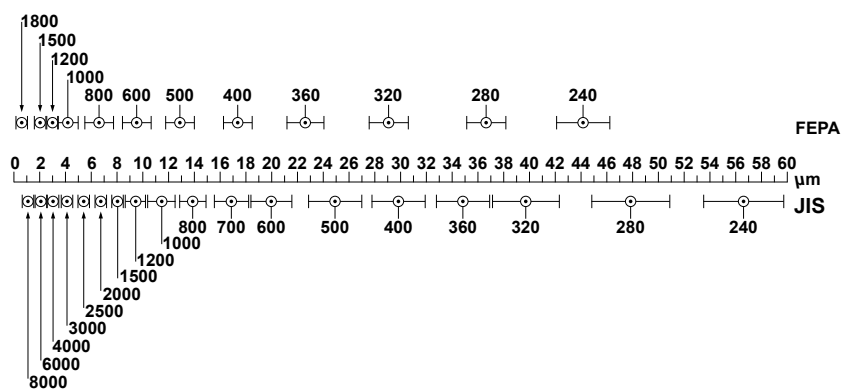
SHAPE 54

Extension AH for square profile
Extension BH for rectangular profile

DIMENSIONS (mm)

Thickness x Width x Length with $T \leq W \leq L$

Conversion of the abrasive
grit size in microns



FINAL TREATMENTS (S5 - W - F11)

Sticks and stones can be impregnated with sulfur, wax or paraffin. The sulfur treatment (S5) improves the cutting ability of the abrasive and improves the final surface roughness. Due to health and environment regulations and industry standards, new treatments based on wax and paraffin (W and F11) are now available.

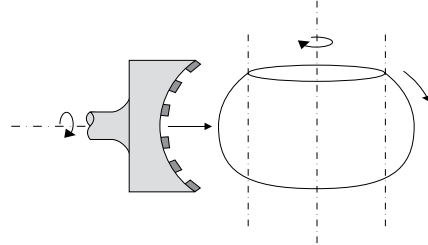
SPHERICAL BALL VALVE HONING



MARKET: Hydraulic, oil and gas
MATERIAL: Mild steel, stainless steel

SPECIFICATION

ROUGH GRINDING	FINISHING	
PA 120 F0 V S5	SA 320 I8 V S5	BETTER ++++
-	SA 320 M2 V F11	BEST +++++



KEY:

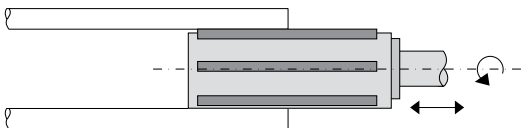
■ Abrasive
 □ Workpiece
 → ↻ Directional movement of abrasive and workpiece

DEEP HORIZONTAL HONING

SPECIFICATION

ROUGH GRINDING	FINISHING	
CSA120 M8 VS5	SA 800 H8 V S5	BETTER ++++
5S GG 120 N10 VEA S5		BEST +++++

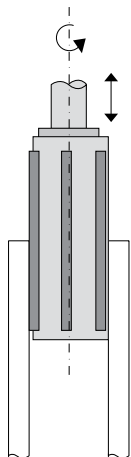
MARKET: Hydraulic, oil and gas
MATERIAL: Mild steel
CHARACTERISTICS: External diameter: 60 - 100mm
 Length: 6000 - 10000 mm



KEY:

■ Abrasive
 □ Workpiece
 → ↻ Directional movement of abrasive

CYLINDER HONING (VERTICAL)



SPECIFICATION

ROUGH GRINDING	FINISHING	
CSA120 M8 VS5	SA 800 H8 V S5	BETTER ++++
5SG 120 N12 VS5		BEST +++++

MARKET: Hydraulic, oil and gas
MATERIAL: Mild steel
CHARACTERISTICS: External diameter: 100 - 350mm
 Length: 100 - 3500mm

KEY:

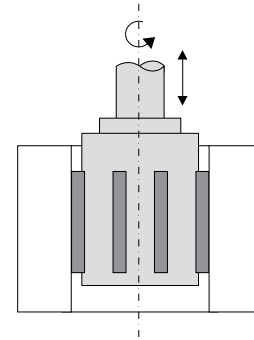
■ Abrasive
 □ Workpiece
 → ↻ Directional movement of abrasive and workpiece

ENGINE BLOCK HONING



SPECIFICATION

ROUGH GRINDING	SEMI-FINISHING	FINISHING	
5SGG 100 O8 VEA S5	5SGG 240 M8 VEA S5	MNC 400 L5 V	BETTER +++++



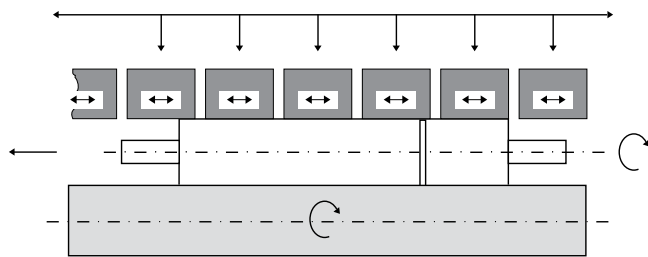
KEY:

■ Abrasive	□ Workpiece
■ Abrasive holder	→ ↻ Directional movement of abrasive

MARKET: Automobile

MATERIAL: Cast iron

SHAFT SUPERFINISHING



KEY:

■ Abrasive	□ Workpiece
■ Feeding wheel	→ ↻ Directional movement of abrasive and workpiece



SPECIFICATION

FINISHING	
MVC 600 H8 VCA S5	BETTER +++++
MVC 800 J8 VCA S5	BEST ++++++

CAMSHAFT SUPERFINISHING

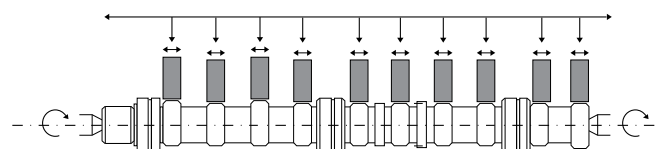


SPECIFICATION

FINISHING	
VGC 1000 P25 VAMX	BETTER +++++

MARKET: Automotive

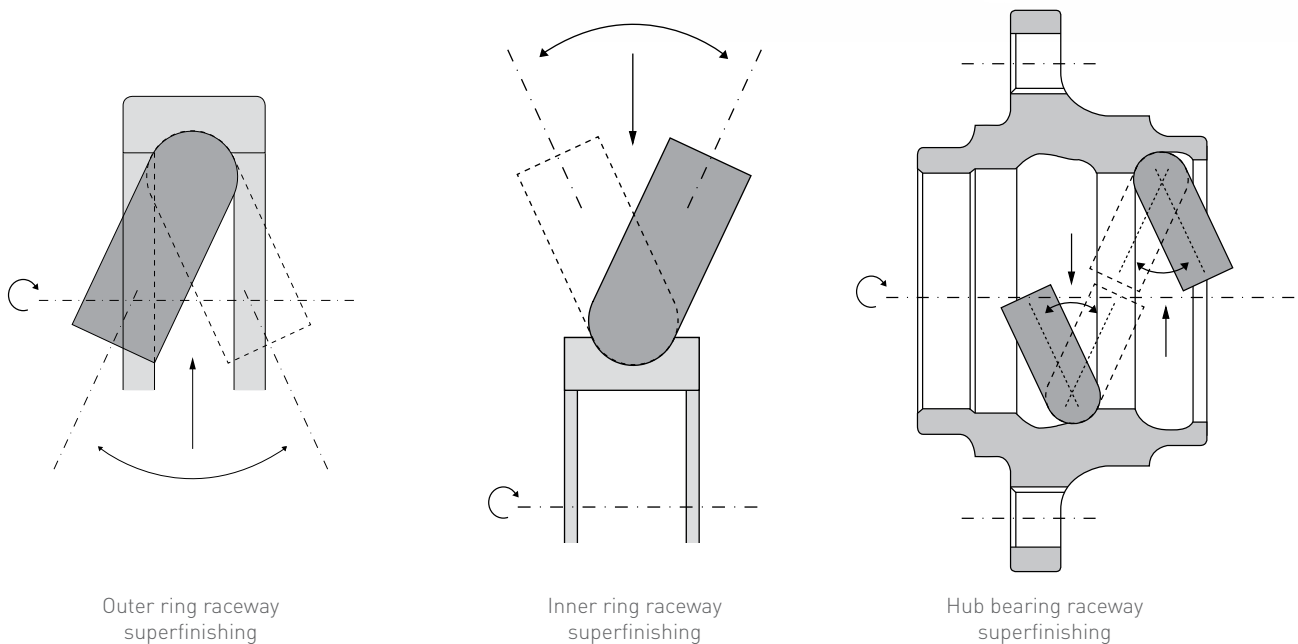
MATERIAL: Case hardened steel



KEY:

■ Abrasive	→ ↻ Directional movement of abrasive and workpiece
□ Workpiece	

SUPERFINISHING INNER / OUTER RING



KEY:

Abrasive
 Workpiece

 → ↻ Directional movement of abrasive and workpiece

MARKET:

Bearing

MATERIAL:

Steel 100Cr6

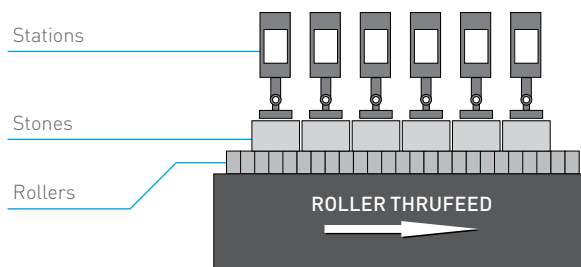
SPECIFICATION FOR SINGLE STATION

	SMALL SIZE RING DIAMETER 20mm - 50mm	MEDIUM SIZE RING DIAMETER 50mm - 100mm
BETTER ++++	SA1000 D5/K10 V S5	SA 600-800 D/L VS5
BEST +++++	30AS 800-1000 L3 V6448 F11	30AS 800-1000 M3 V6448 F11

SPECIFICATION FOR DOUBLE OR MULTIPLE STATION

APPLICATION	SMALL SIZE RING DIAMETER 20mm - 50mm	MEDIUM SIZE RING DIAMETER 50mm - 100mm
Roughing	SA 800 G/J VS5	SA 500-600 D/H V S5
Finishing	MVC15008 H/J V VEAMS5	MVC 800-1200 G/J VEAS5
Polishing	MVC18008 G5 VCAM S5/W	

ROLLS AND ROLLERS SUPERFINISHING



MARKET: Bearing

MATERIAL: Steel 100Cr6

CYLINDRICAL & TAPERED ROLLERS

APPLICATION	SMALL SIZE DIAMETER 3mm - 10mm	LARGE SIZE DIAMETER 11mm - 20mm	
Roughing	30AS 600-500 F8 V6448P15AF11	30AS 400 H6 V6448P15AF11	BEST ★★★★★
	SA 600-500 F/G V S5 or W	SA 320 F/I V S5 or W	BETTER ★★★★
Semi-finishing	30AS 1000-800 F8/H6 V6448P15AF11		BEST ★★★★★
	MVC 1000-800 H/L VM14 S5 or W	SA 600-500 F/G V S5 or W	BETTER ★★★★
Finishing	30AS 1000 F8 V6448P15AF11		BEST ★★★★★
	MVC 1200 H/L VEAMS5 or W	SA 1000-800 D5 V S5 or W	BETTER ★★★★
Polishing	31C500 JB860		BEST ★★★★★

WATER PUMP BEARING SUPERFINISHING

MARKET: Bearing

MATERIAL: Steel 100Cr6

SPECIFICATION

WATER PUMP BEARING	
MVC 800 M8 VEA S5 - 30AS 1000 L/M 3 V6448 F11	BEST ★★★★★



www.norton.eu

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