

HONING ABRASIVES CATALOG



Conventional Vitrified & Metalbond Abrasives for All Major Brands of Bore Finishing Machines

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OHIO TOOL WORKS

Ohio Tool Works is an industry-leading manufacturer of precision Industrial Honing Machines, Tooling, Abrasives, Filtration Systems and Consumables. Our customers, who range from multinational manufacturers to owner-operated machine shops, choose Ohio Tool Works for a number of important reasons:

- Best-in-Class Product Quality & Performance
- Deep Industry & Applications Expertise
- Tailored & Turnkey Honing Solutions
- Unmatched Customer Support

Our complete line of precision Honing Products includes:

- Horizontal & Vertical Honing Machines
- Custom & Replacement Honing Tooling
- Coolant Filtration & Refrigeration Systems
- Vitrified & Metal Bond Abrasives
- Cutting Fluids & Additives
- Service & Application Support



With more than 100 years of in-house expertise, we know that our customers' success depends on delivery of both tailored honing solutions and longterm partnerships. To do so, we not only listen and respond to our customers' immediate application needs, we also support their long-term growth through high-quality consumables, complete process solutions, and unmatched customer service.

Headquartered in Ashland, Ohio, we proudly provide honing products and services to customers from across the global oil and gas, industrial, aerospace, hydraulic cylinder, automotive, plastics, medical device, and metalworking industries.

Whatever your application or industry, our dedicated staff and precision honing equipment will ensure that your products and operations run with maximum precision and efficiency. Give us a call. We're confident that you'll quickly appreciate 'The OTW Difference.'

WHY OHIO TOOL WORKS?

- Extensive Consumables/Abrasives Inventory Available for Same-Day Shipment.
- Industry-Leading Delivery on Non-Standard Items.
- Unmatched Quality Backed by More Than 100 Years of Combined Industry Experience.
- 12 Week Lead Times on Popular Machine Models

ABRASIVES GUIDE

This guide is designed to help determine the right abrasive for your specific application. This guide will quickly direct you to the correct abrasive whether you are rough honing or precision finishing.



| | | ROUG | HING | | FINISHING | | | | | |
|--|--------------------|-------------------|---------|-------|--------------------|-------------------|-----------|-----|--|--|
| | VITR | IFIED | METAL | .BOND | VITR | IFIED | METALBOND | | | |
| MAIEKIAL | SILICON CARBIDE | ALUMINUM OXIDE | DIAMOND | CBN | SILICON CARBIDE | ALUMINUM OXIDE | DIAMOND | CBN | | |
| Aluminum (13,15,17, 440 Series) | • | • | • | | • | • | • | | | |
| Brass | • | | • | | • | | • | | | |
| Bronze | • | | • | | • | | • | | | |
| Carbon | • | • | • | | • | | • | | | |
| Carbide (Tungsten, Titanium, Tantalum) | • | • | • | | • | • | • | | | |
| Cast Iron | • | • | • | | • | • | • | | | |
| Compacted Graphite (CGT) | • | • | • | | • | • | • | | | |
| Nodular Iron | • | • | • | | • | • | • | | | |
| Malleable Iron | • | • | • | | • | • | • | | | |
| Ceramic | • | | • | | • | | • | | | |
| Silicone Nitride | • | | • | | • | | • | | | |
| Aluminum Oxide | • | | • | | • | | • | | | |
| Glass | | | • | | | | • | | | |
| High Nickel Alloys | | | | | | | | | | |
| Inconel-600 Series | | • | | • | • | | | • | | |
| Inconel-700 Series | | | | • | | | | • | | |
| Hastelloy | | • | | • | | | | • | | |
| Incoloy | | • | | • | | | | • | | |
| Nickel | | • | | • | | | | • | | |
| Niobium | | • | | • | | | | • | | |
| Nikasil | | • | • | | | | • | | | |

| | | ROUG | HING | | FINISHING | | | | |
|---|--------------------|-------------------|---------|------|--------------------|-------------------|---------|------|--|
| MATERIAL | VITR | RIFIED | METAI | BOND | VITR | IFIED | METAI | BOND | |
| MAIEKIAL | SILICON CARBIDE | ALUMINUM OXIDE | DIAMOND | CBN | SILICON CARBIDE | ALUMINUM OXIDE | DIAMOND | CBN | |
| Steel - Carbon & Alloy | | • | | • | | | | • | |
| 4000 Series | | • | | • | • | • | | • | |
| 5000 Series | | • | | • | • | • | | • | |
| 6000 Series | | • | | • | • | • | | • | |
| 8000 Series | | • | | • | • | • | | • | |
| Steel-High Speed | | • | | • | | • | | • | |
| M-Series | | • | | • | | • | | • | |
| T-Series | | • | | • | | • | | • | |
| Steel-H-Series Hot Forming & Die Steels | | • | | • | | • | | • | |
| Stainless Steel | | • | | • | | • | | • | |
| 300 Series | | • | | • | | • | | • | |
| 400 Series | | • | | • | | • | | • | |
| High Chrome (ie 13cr., 20cr, 24cr) | | • | | • | | • | | • | |
| Non-Magnetic Material | | • | | • | | • | | • | |
| Tool & Die Steel | | • | | • | | • | | • | |
| A-Series | | • | | • | | • | | • | |
| O-Series | | • | | • | | • | | • | |
| S-Series | | • | | • | | • | | • | |
| H-Series | | • | | • | | • | | • | |
| Hot Forming & Die Steels | | • | | • | | • | | • | |
| Miscellaneous Materials | | • | | • | | • | | • | |
| Chromium | • | • | • | | • | • | • | | |
| Copper (100-Series) | • | • | • | | • | • | • | | |
| Magnesium | | • | | • | | • | | • | |
| Molybdenum | | • | | • | | • | | • | |
| Monel | | • | | • | | • | | • | |
| Stellite | | • | | • | | • | | • | |
| Tungsten | • | | • | | • | | • | | |
| Titanium | | • | | • | | • | | • | |
| Tantalum | | | | • | | | | • | |
| Vanadium | | • | | • | | • | | • | |
| Zirconium | | | • | | | | • | | |

VITRIFIED ABRASIVES

With dedicated in-house production facilities, Ohio Tool Works manufactures the honing industry's highest quality line of standard, custom, and replacement vitrified honing abrasives designed to meet the needs of customers from any industry in the world. Whatever your application or production volume, we offer a complete line of conventional abrasive types, grades, sizes, and mounting configurations.

FEATURES:

- Abrasive Cross-Sections from .06" and Above and Lengths to 8.0"
- Hybrid Ceramic & Related Products
- Impregnated Fiber Sticks
- Conventional & Custom Mountings

ALUMINUM OXIDE / 120 GRIT

ALUMINUM OXIDE / 80 GRIT

ALUMINUM OXIDE / 180 GRIT

ALUMINUM OXIDE / 320 GRIT

ALUMINUM OXIDE / 400 GRIT

ALUMINUM OXIDE / 500 GRIT

ALUMINUM OXIDE WHITE / 120 GRIT

ALUMINUM OXIDE CERAMIC

ALUMINUM OXIDE CERAMIC

ALUMINUM OXIDE RESIN BOND

SILICON CARBIDE BLACK / 80 GRIT

SILICON CARBIDE BLACK / 320 GRIT

SILICON CARBIDE BLACK / 500 GRIT

SILICON CARBIDE GREEN / 120 GRIT

SILICON CARBIDE GREEN / 220 GRIT

SILICON CARBIDE GREEN / 500 GRIT

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ALUMINUM OXIDE

Vitrified Aluminum Oxide is a mined mineral. It is processed to grit sizes 6 to 1200. Aluminum Oxide crystals have sharp-edged block shapes. The cutting surface is constantly renewed keeping it sharp and free of build-up. Aluminum Oxide is the most widely used abrasive material.

SPECIFICATIONS:

• Aluminum Oxide honing abrasives are available in combinations of the specifications listed in the chart below.

ALUMINUM OXIDE SPECIFICATIONS CHART

| GRAIN TYPES | GRIT SIZES | STONE HARDNESSES | STONE SIZES | STONE LENGTHS | MOUNTINGS |
|----------------------|------------|-----------------------|---------------|---------------|-----------|
| Aluminum Oxide | 80 | H (ultra soft) | 1/4″ x 1/4″ | 1″ - 4″ | Mounded |
| Aluminum Oxide White | 120 | l (soft) | 5/16″ x 5/16″ | 1″ - 6″ | Unmounted |
| Ceramic Oxide | 150 | IP (induced porosity) | 3/8″ x 3/8″ | 1″ - 8″ | |
| Resin Bond | 180 | J (soft medium) | 1/2″ x 1/2″ | 1″ - 8″ | |
| | 240 | K (medium) | 5/8″ 5/8″ | 1″ - 8″ | |
| | 320 | L (medium hard) | 3/4″ x 3/4″ | 1″ - 8″ | |
| | 400 | M (hard) | 1″ x 1″ | 1″ - 8″ | |

SILICON CARBIDE

Vitrified Silicon Carbide is a mined material. It is harder and more friable than aluminum oxide. Silicon Carbide has sharp structure and is often used for hard, nonferrous materials and extra fine finishes.

500

SPECIFICATIONS:

• Silicon Carbide honing abrasives are available in combinations of the specifications listed in the chart below.

SILICONE CARBIDE SPECIFICATIONS CHART

| GRAIN TYPES | GRIT SIZES | STONE HARDNESSES | STONE SIZES | STONE LENGTHS | MOUNTINGS |
|-----------------------|------------|-----------------------|---------------|---------------|-----------|
| Silicon Carbide Black | 80 | H (ultra soft) | 1/4″ x 1/4″ | 1″ - 4″ | Mounded |
| Silicon Carbide Green | 120 | l (soft) | 5/16″ x 5/16″ | 1″ - 6″ | Unmounted |
| | 150 | IP (induced porosity) | 3/8″ x 3/8″ | 1″ - 8″ | |
| | 180 | J (soft medium) | 3/8″ x 7/16″ | 1″ - 8″ | |
| | 240 | K (medium) | 1/2″ x 1/2″ | 1″ - 8″ | |
| | 320 | L (medium hard) | .375″ x .375″ | 1″ - 8″ | |
| | 400 | M (hard) | 5/8″ x 5/8″ | 1″ - 8″ | |
| | 500 | | | | |

METALBOND ABRASIVES

We offer several different "Metalbonded" Honing abrasive configurations to fit a variety of applications. We will tailor a bond for your specific application to increase tool life as well as tailor an abrasive to meet your specific surface finish requirements. Metal Bond Abrasive selections include CBN and Diamond.

When utilizing Metalbond as opposed to Vitrified bonds, the life and cutting action of the abrasive increases greatly. Bonds can be modified to give the operator excellent abrasive life and increase productivity.

FEATURES:

- Premium Metalbonds
- Synthetic & Natural Diamond
- Monocrystalline CBN Premium Abrasive
- Conventional & Custom Mountings



METALBOND ABRASIVE STYLES



CBN (CUBIC BORON NITRIDE)

CBN is the second hardest abrasive material. It has a sharp, blocky structure and is the most widely used superabrasive for cost and versatility. CBN is best suited for ferrous materials and certain grades of cast iron.

CBN SPECIFICATIONS CHART



DIAMOND

Diamond is the hardest known abrasive material and comes from both synthetic and natural sources. Diamond is generally best suited for non-ferrous materials except certain cast irons.

DIAMOND SPECIFICATIONS CHART



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REPLACEMENT ABRASIVES

With more than 100 years of honing industry experience, Ohio Tool Works's dedicated staff of customer-facing engineers are fluent with all major honing abrasive manufacturers and systems. As result, we are proud to provide our customers both standard and custom replacement abrasives for tooling of other manufacturers.





MANUFACTURERS:

- Sunnen Products Company
- General Hone
- Barnes
- Micromatic
- Century
- Nagel
- Delapena
- Gehring
- Superior
- Toyo
- Kadia
- Others





VITRIFIED REPLACEMENT ABRASIVES

Ohio Tool Works is proud to offer the popular Sunnen Style "H50 & H70" series abrasive mounts. The "OH" series system replaces Sunnen "H" series abrasive sets and is available in both conventional vitrified as well as metalbonded CBN and diamond.

The "OH" series abrasive sets are completely interchangeable with the Sunnen MPS modular

tooling system. In comparison, OTW's OH Series offers 11% more usable abrasive for longer stone life and sulfur impregnation for cleaner cutting (no loading) at no extra cost.

The direct interchange, competitive price, large selection, off the shelf delivery and more usable abrasive will help to reduce the costs of your honing operation.



METAL BOND REPLACEMENT ABRASIVES

Sunnen Style & Replacement Abrasives – We stock the "K through Y" honing abrasives in all of the most popular abrasive sizes in both diamond and CBN. Our honing abrasives have been proven to out perform our competition for abrasive life and stock removal. Unlike the competition, we will respond quickly to your needs and tailor an abrasive/bond combination for your specific application.

Whether your bore-finishing machine was manufactured by Ohio Tool Works, Sunnen, Barnes, General Hone (or any other major honing brand), you can depend on Ohio Tool Works to provide you the industry's best-performing abrasives.





HONING FLUIDS

Using the right honing oil is an essential part of bore sizing precision, finish and efficiency. OTW makes it easy with our specialty honing lubricants, which are specifically formulated and tested to cool, flush, and optimize your honing operation. OTW's proprietary cutting fluids help customers optimize their material removal rates, extend their abrasive and tooling life, and obtain superior bore finishes.



OTW-8915 HONING FLUID:

OTW-8915 Honing Fluid is a pre-mixed honing oil. Available in 55-gallon drums and 275 gallon totes.

Product Code: OTW-8915 Product Type: Pre-mixed honing oil Container: 55-gallon drum or 275-gallon tote

TYPICAL PROPERTIES:

- Viscosity @ 100 deg. F., SUS: 110
- Flash Point: 370 deg. F.
- A.P.I. Gravity: 29
- Lubricity Additives: Yes
- Extreme Pressure Additives: Yes
- Color: Dark Brown

OTW-ASF-5 HONING FLUID ADDITIVE:

OTW-ASF-5 Honing Fluid is a base oil. Available in 5 gallon & 55 gallon drums.

OTW-PROCUT 78-55 DRILLING OIL:

55 gal. Pre-Mixed Drilling Oil

OTW-8920 HONING FLUID*:

OTW-8920 Honing Fluid is a pre-mixed honing oil. Available in 55 gallon drums and 275 gallon totes.

OTW-8920 is a direct replacement for customers who currently use Sunnen #MB-30.

Product Code: OTW-8920 Product Type: Pre-mixed honing oil Container: 55-gallon drum or 275-gallon tote

TYPICAL PROPERTIES:

- Viscosity @ 100 deg. F., SUS: 230
- Flash Point: 320 deg. F.
- A.P.I. Gravity: 23
- Lubricity Additives: Yes
- Extreme Pressure Additives: Yes
- Color: Dark Brown
- * Specialty honing fluid for fine finish requirements.

OTW-PROCUT 78-275 DRILLING OIL:

275 gal. Tote Pre-Mixed Drilling Oil

CONSUMABLES & ACCESSORIES:

Whether provided as part of a custom tooling package or a just-in-time consumables supply program, OTW's top-quality honing accessories – including filter media, bushings, and epoxies – are designed to keep your honing equipment running as cleanly, efficiently, and accurately as possible.



ABRASIVE CLOTH:

50 Yard Rolls

Grit Sizes:

 80, 100, 120, 150, 180, 220, 240, 280, 320, 400 and 600

Widths:

• 3, 6, 8, 9, 10, 11, 12, 16, 18 and 20 inches

FILTER MEDIA ROLLS:

Widths:

• 15 to 55 inches

Length:

• 100 or 250 yards

Micron Rating:

• 10, 20, 30, 50, 80 or 100

FILTER BAGS / CARTRIDGES:

Available from 20-100 micron rating in most industry-standard sizes.

BORE GAGES:

Ask about our line of precision bore gaging and sizing options.

WOOD BLOCK SILENCERS:

Use in place of abrasive stones to reduce noise during honing. Availble in most sizes.

OHIO TOOL WORKS LINE OF CONSUMABLES ARE AVAILABLE TO SHIP AS EARLY AS TOMORROW!

6-STEPS TO ABRASIVE SELECTION



What materials will you be honing?



STOCK REMOVAL

What is your average amount of stock removal per part?



SURFACE FINISH

What is your desired finish? What is your size tolerance? What type of coolant is being used?



SIZE / MOUNTING

What is the size of abrasives you currently use? (length x width)? How many abrasives per tool are being used?



PRODUCTION RATE

How many pieces are you producing per hour, day, week, month or year?



SURFACE FINISH VS. GRIT SIZE

| APPROXIMATE SURFACE FINISH IN MICRO-INCHES | | | | | | | | | | | |
|--|--------------------------------|-----------|--------|-------|-------|-------|-----|-----|-----|-----|--|
| MATEDIAL | | GRIT SIZE | | | | | | | | | |
| MATERIAL | ADRASIVE ITPE | 80 | 100 | 120 | 240 | 280 | 320 | 400 | 500 | 600 | |
| Hard Steel | Alum-Oxide/ Silicon Carbide | 25 | - | 20 | 18 | 12 | 10 | 5 | 3 | 1 | |
| | CBN | - | 55-80 | 45 | 30 | 28 | - | 20 | - | 7 | |
| Soft Steel | Alum-Oxide/ Silicon Carbide | 80 | - | 35-55 | 25 | 20-35 | 16 | 8.5 | 6 | 2 | |
| | CBN | - | 65-100 | - | 70-80 | - | - | 25 | - | - | |
| Creat Jame | Silicon Carbide | 100 | - | 30-43 | 20 | 12 | 10 | 6 | 5 | 3 | |
| | Diamond | - | - | - | 8- | - | - | 50 | - | 20 | |
| Alum/Brass/Bronze | Silicon Carbide | 170 | - | 80 | 55 | 33 | 27 | 15 | 12 | 2 | |
| Carbide | Diamond | - | - | 30 | 20 | - | - | 7 | - | 3 | |
| Ceramic | Diamond | - | - | 50 | 40 | - | - | 20 | - | 15 | |
| Glass | Diamond | - | - | 95 | 70 | - | - | 30 | - | 15 | |

| APPROXIMATE SURFACE FINISH IN MICROMETERS | | | | | | | | | | | |
|---|--------------------------------|-----------|-----------|-----------|------------|-----------|------|-------------|-----------|------|--|
| MATEDIAL | | GRIT SIZE | | | | | | | | | |
| MATERIAL | ABRASIVE ITPE | 80 | 100 | 120 | 240 | 280 | 320 | 400 | 500 | 600 | |
| Hard Steel | Alum-Oxide/ Silicon Carbide | 0.65 | - | 0.50 | 0.45 | 0.30 | 0.25 | 0.12 | 0.08 | 0.03 | |
| | CBN | - | 1.4 - 2.0 | 1.15 | 0.75 | 0.70 | - | 0.50 | - | 0.18 | |
| Soft Steel | Alum-Oxide/ Silicon Carbide | 2.00 | - | 0.9 - 1.4 | 0.65 | 0.5 - 0.9 | 0.40 | 0.18 - 0.25 | 0.1 - 0.2 | 0.05 | |
| | CBN | - | 1.6 - 2.5 | - | 1.75 - 2.0 | - | - | 0.65 | - | - | |
| Creat Jame | Silicon Carbide | 2.50 | - | 0.75 -1.0 | 0.50 | 0.30 | 0.25 | 0.15 | 0.12 | 0.08 | |
| | Diamond | - | - | - | 2.00 | - | - | 1.27 | - | 0.50 | |
| Alum/Brass/Bronze | Silicon Carbide | 4.30 | - | 2.00 | 1.40 | 0.85 | 0.70 | 0.40 | 0.30 | 0.05 | |
| Carbide | Diamond | - | - | 0.75 | 0.50 | - | - | 0.18 | - | 0.08 | |
| Ceramic | Diamond | - | - | 1.30 | 1.00 | - | - | 0.50 | - | 0.40 | |
| Glass | Diamond | - | - | 2.40 | 1.80 | - | - | 0.75 | - | 0.40 | |

SPEED CONVERSION

SFM to RPM (SURFACE SPEED IN FPM)

ALUMINUM OXIDE 110-130 SFPM DIAMOND / CBN 200-250 SFPM

| BORE DIA. | 70 | 75 | 80 | 85 | 90 | 95 | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 | 250 |
|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1.000 | 276 | 286 | 305 | 325 | 344 | 363 | 382 | 420 | 458 | 497 | 535 | 573 | 612 | 649 | 687 | 726 | 764 | 955 |
| 1.125 | 238 | 255 | 272 | 289 | 306 | 323 | 340 | 374 | 408 | 442 | 476 | 510 | 544 | 578 | 612 | 646 | 680 | 850 |
| 1.250 | 214 | 230 | 249 | 260 | 275 | 291 | 306 | 337 | 367 | 398 | 428 | 459 | 490 | 520 | 551 | 581 | 612 | 765 |
| 1.375 | 195 | 209 | 222 | 236 | 250 | 264 | 278 | 306 | 334 | 361 | 389 | 417 | 445 | 473 | 500 | 528 | 556 | 695 |
| 1.500 | 178 | 191 | 204 | 217 | 230 | 242 | 255 | 281 | 306 | 332 | 358 | 383 | 408 | 435 | 460 | 486 | 512 | 640 |
| 1.625 | 165 | 176 | 188 | 200 | 212 | 223 | 235 | 259 | 282 | 306 | 329 | 353 | 376 | 400 | 423 | 447 | 470 | 587 |
| 1.750 | 153 | 164 | 174 | 185 | 196 | 207 | 218 | 240 | 262 | 283 | 305 | 327 | 349 | 371 | 392 | 414 | 436 | 545 |
| 1.875 | 143 | 153 | 163 | 173 | 184 | 194 | 204 | 224 | 245 | 265 | 287 | 306 | 326 | 347 | 367 | 388 | 408 | 510 |
| 2.000 | 133 | 143 | 153 | 162 | 172 | 182 | 191 | 210 | 229 | 248 | 268 | 287 | 306 | 325 | 344 | 363 | 382 | 477 |
| 2.250 | 119 | 128 | 136 | 145 | 153 | 162 | 170 | 187 | 204 | 221 | 238 | 255 | 272 | 289 | 306 | 323 | 340 | 425 |
| 2.500 | 107 | 115 | 122 | 130 | 138 | 145 | 153 | 168 | 183 | 199 | 214 | 230 | 245 | 260 | 275 | 290 | 306 | 382 |
| 2.750 | 97 | 104 | 111 | 118 | 125 | 132 | 139 | 153 | 167 | 181 | 195 | 209 | 222 | 236 | 250 | 264 | 278 | 347 |
| 3.000 | 89 | 96 | 102 | 108 | 115 | 121 | 128 | 140 | 153 | 166 | 179 | 192 | 204 | 217 | 230 | 243 | 255 | 319 |
| 3.250 | 82 | 88 | 94 | 100 | 106 | 112 | 118 | 129 | 141 | 152 | 165 | 176 | 188 | 200 | 212 | 223 | 235 | 292 |
| 3.500 | 77 | 82 | 88 | 93 | 99 | 104 | 110 | 120 | 131 | 142 | 153 | 164 | 175 | 186 | 197 | 208 | 219 | 274 |
| 3.750 | 71 | 77 | 82 | 88 | 92 | 97 | 102 | 112 | 122 | 133 | 143 | 153 | 163 | 173 | 184 | 194 | 204 | 255 |
| 4.000 | 67 | 72 | 77 | 81 | 86 | 91 | 96 | 105 | 115 | 125 | 134 | 144 | 153 | 163 | 173 | 182 | 191 | 239 |
| 4.250 | 63 | 68 | 72 | 77 | 81 | 86 | 90 | 99 | 108 | 117 | 126 | 135 | 144 | 153 | 162 | 171 | 180 | 225 |
| 4.500 | 60 | 64 | 68 | 72 | 77 | 81 | 85 | 94 | 102 | 111 | 119 | 128 | 136 | 145 | 153 | 162 | 170 | 213 |
| 4.750 | 56 | 60 | 64 | 68 | 72 | 76 | 81 | 89 | 97 | 105 | 113 | 121 | 129 | 137 | 145 | 153 | 161 | 201 |
| 5.000 | 54 | 57 | 61 | 65 | 69 | 73 | 76 | 84 | 92 | 99 | 107 | 117 | 122 | 130 | 137 | 145 | 152 | 190 |
| 5.500 | 49 | 52 | 56 | 59 | 63 | 66 | 70 | 76 | 83 | 90 | 97 | 104 | 111 | 118 | 125 | 132 | 139 | 174 |
| 6.000 | 45 | 48 | 51 | 54 | 57 | 61 | 64 | 70 | 76 | 83 | 89 | 96 | 102 | 108 | 115 | 121 | 127 | 159 |
| 6.500 | 41 | 43 | 47 | 50 | 53 | 56 | 59 | 64 | 70 | 76 | 82 | 87 | 94 | 100 | 106 | 111 | 117 | 147 |
| 7.000 | 38 | 41 | 44 | 46 | 49 | 52 | 55 | 60 | 65 | 71 | 76 | 82 | 87 | 93 | 98 | 103 | 109 | 136 |
| 7.500 | 36 | 38 | 41 | 43 | 46 | 48 | 51 | 56 | 61 | 66 | 71 | 77 | 82 | 87 | 92 | 97 | 102 | 128 |
| 8.000 | 33 | 36 | 38 | 41 | 43 | 45 | 48 | 53 | 57 | 62 | 67 | 72 | 76 | 81 | 86 | 91 | 96 | 120 |
| 8.500 | 32 | 34 | 36 | 38 | 41 | 43 | 45 | 50 | 54 | 59 | 63 | 68 | 72 | 77 | 81 | 86 | 90 | 113 |
| 9.000 | 30 | 32 | 34 | 36 | 38 | 40 | 43 | 47 | 51 | 55 | 60 | 64 | 68 | 72 | 77 | 81 | 85 | 107 |
| 9.500 | 28 | 30 | 32 | 34 | 36 | 38 | 40 | 44 | 48 | 52 | 56 | 60 | 64 | 69 | 73 | 77 | 81 | 102 |
| 10.000 | 27 | 29 | 31 | 32 | 34 | 36 | 38 | 42 | 46 | 50 | 53 | 57 | 61 | 65 | 69 | 73 | 76 | 95 |
| 11.000 | 24 | 26 | 28 | 29 | 31 | 33 | 35 | 38 | 42 | 45 | 49 | 52 | 56 | 59 | 62 | 66 | 69 | 87 |
| 12.000 | 22 | 24 | 26 | 27 | 29 | 30 | 32 | 35 | 38 | 41 | 45 | 48 | 51 | 54 | 57 | 61 | 54 | 80 |
| 13.000 | 21 | 22 | 24 | 25 | 26 | 28 | 29 | 32 | 35 | 38 | 41 | 44 | 47 | 50 | 53 | 56 | 59 | 74 |
| 14.000 | 19 | 20 | 22 | 23 | 25 | 26 | 27 | 30 | 33 | 35 | 38 | 41 | 44 | 46 | 49 | 52 | 55 | 69 |
| 15.000 | 18 | 19 | 20 | 22 | 23 | 24 | 26 | 28 | 31 | 33 | 36 | 38 | 41 | 43 | 46 | 48 | 51 | 64 |
| 16.000 | 17 | 18 | 19 | 20 | 22 | 23 | 24 | 26 | 29 | 31 | 33 | 36 | 38 | 41 | 43 | 45 | 48 | 60 |
| 17.000 | 16 | 17 | 18 | 19 | 20 | 21 | 23 | 25 | 27 | 29 | 32 | 34 | 36 | 38 | 41 | 43 | 45 | 57 |
| 18.000 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 23 | 25 | 28 | 30 | 32 | 34 | 36 | 38 | 40 | 42 | 53 |
| 19.000 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 | 38 | 40 | 50 |
| 20.000 | 13 | 15 | 15 | 16 | 17 | 18 | 19 | 21 | 23 | 25 | 27 | 29 | 31 | 32 | 34 | 36 | 38 | 48 |

HONING REACTIONS

RPM - RECIPROCATION - FEED PRESSURE

| INCREASING REACTIONS | | | | | | | |
|------------------------|--|--|--|--|--|--|--|
| Increase RPM | Makes abrasives act harder Will obtain finer finish Abrasive will stop cutting if increased too much | | | | | | |
| Increase Reciprocation | Makes abrasives act softer Will obtain coarser finish Will decrease abrasive life | | | | | | |
| Increase Feed Pressure | Makes abrasives act softer Will increase abrasives aggressiveness Will remove stock quicker Will increase torque Will generate more heat Will give coarser finish | | | | | | |

| DECREASING REACTIONS | | | | | | | |
|------------------------|---|--|--|--|--|--|--|
| Decrease RPM | Makes abrasives act softer Will obtain coarser finish Will increase abrasives aggressiveness Will increase torque | | | | | | |
| Decrease Reciprocation | Makes abrasives act harder Will give finer surface finish Will decrease abrasive ability to stay sharp Will remove stock slower if too slow | | | | | | |
| Decrease Feed Pressure | Makes abrasives act harder Will decrease abrasive ability to stay sharp Will remove stock more slowly Will decrease torque Will contribute to better geometry Will decrease wear on machine Will generate less heat Will give finer surface finish Will increase cycle time | | | | | | |

HONING TROUBLESHOOTING

| CONDITION | CORRECTIONS | COND | TION | CORRECTIONS | | | | |
|-----------------------------|--|------------------------|-------------------|--|--|--|--|--|
| Abrasive Glazing | Decrease spindle RPM Increase reciprocation Increase feed rate Use softer abrasives Decrease out time | Tapered Stone We | ar | Check spindle to part alignment Check tool for wear Check abrasive grade Use harder abrasive | | | | |
| | 6. Use courser grit abrasives 7. Check coolant for hydraulic oil contamination | Slow Sto | ck | Increase feed rate Increase reciprocation Decrease spindle RPM Decrease coolant's base content | | | | |
| Abrasive Loadina | Decrease spindle RPM Increase reciprocation Use softer abrasives Increase coolant's as content | Removal | | Check coolant for hydraulic oil contamination Use softer abrasives Use courser grit abrasives | | | | |
| Abrasive Loading | Use finer grit abrasive Use less porous abrasives Check coolant for hydraulic oil contamination | Excessive Part Hoat |) | Check refrigeration of coolant Decrease feed rate Decrease coolant's base content Check coolant for hydraulic eil contemination | | | | |
| Abrasive Galling | Decrease spindle RPM Increase reciprocation Increase coolant's as content Use softer abrasives | | I | 5. Use more coolant 6. Use softer abrasives 7. Use more porous abrasives | | | | |
| | Check filtration of coolant Use finer grit abrasive Use less porous abrasives Use more coolant Check coolant for hydraulic oil contamination | Part Out Roundnes | of is | Decrease feed rate Decrease spindle RPM Increase reciprocation Increase run-out time Check spindle to part alignment Use softer abrasives Check fixture is not distorting part | | | | |
| Finish Too Rough | Increase spindle RPM Decrease reciprocation Decrease feed rate Use finer grit abrasives Use harder abrasives Increase content | Part Bell Mouth/Te | aper | Adjust over-run of stroke Increase run-out time Check spindle to part alignment Check fixture is not distorting part | | | | |
| Finish Too Smooth | 7. Increase run-out time 1. Decrease spindle RPM 2. Increase reciprocation | Part Not Axially St | traight | Use longer abrasives Check spindle to part alignment Check fixture is not distorting part Check part accuracy prior to honing | | | | |
| | a. Increase reed rate 4. Use courser grit abrasives 5. Use softer abrasives 6. Decrease coolant's base content | Part Bein Eccentric | g Honed to OD | Check spindle to part alignment Tram part face to check square to spindle Rotate part occasionally while honing | | | | |
| Excessive Abrasive Usage | 7. Decrease run-out time 1. Increase spindle RPM 2. Decrease reciprocation | Bore Not Square to | Face | Tram part face to check square to spindle Check spindle to part alignment Check part accuracy prior to honing | | | | |
| | Decrease feed rate Use harder abrasives Increase coolant's base content | Washout Keyways | Around & Ports | Decrease feed rate Use finer grit abrasives Use fiber clad abrasives | | | | |

MOUNTING OPTIONS



CLAMP-IN MOUNTING



PRESS-IN MOUNTING



GLUE-IN MOUNTING

HONING ABRASIVES

Ohio Tool Works' dedication to customer-focused solutions is what drives our passion for superior honing products. From our experienced engineers, who are fluent with all major honing abrasive manufacturers and honing systems, to our manufacturing team, who intimately understands each component of a quality product, our customer service excellene is unmatched. As a result, we are proud to provide our customers both standard and custom replacement abrasives for tooling of other manufacturers.

MANUFACTURERS:

- Sunnen
- General Hone
- Barnes
- Micromatic
- Century
- Nagel
- Delapena
- Gehring
- Superior
- Others



To discuss how OTW's Quality Honing Products can meet your honing needs, please contact:

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