3M™ Abrasives and Power Tools for Stainless Steel Finishing

Now Includes CUBITRON™ II 3M™ Fibre Disc 987C for Exceptional Life!

Systems for Stainless Steel Finishing

The Efficient and Economical Way to Produce Exceptional Finishes.
Step 1 – Leveling the Weld

Using the following products for weld leveling helps prepare stainless steel for #3 and #4 finishes.

Recommended Starting Points

**3M™ Cubitron™ II Fibre Disc 987C**
(Grade 60; 7" diameter)
- Made with 3M precision-shaped ceramic grain for ultra-fast cut and exceptional life.
- Includes a grinding aid for cooler running temperatures.

**3M™ Fibre Disc 785C**
(Grade 60; 7" diameter)
- Contains 3M™ Ceramic Aluminum Oxide blend abrasive grain.
- An excellent starting point for stainless steel and high nickel alloys.
- Includes a grinding aid for cooler running temperatures.

**Alternative Selections**

**3M™ Flap Disc 947D/747D**
(Grade 60; 7" diameter)
- Contains:
  - 3M™ Ceramic abrasive grain (947D).
  - 3M™ Ceramic Aluminum Oxide blend abrasive grain (747D).
- An excellent option for stainless steel finishing.
- Exceptional cut life on hard metals.
- Available in convenient “Quick Change” option.

**3M™ Cubitron™ II Roloc™ Durable Edge Disc 984F**
(Grade 60+)
- Made with 3M precision-shaped ceramic grain for ultra-fast cut and exceptional life.
- Includes a grinding aid for cooler running temperatures.

**3M™ Roloc™ Disc 777F**
(Grade 60)
- Contains 3M™ Ceramic Aluminum Oxide blend abrasive grain.
- Constructed on a YF-wt., water-resistant polyester cloth backing.
- Includes a grinding aid for cooler running temperatures.

**NEW!**

**3M™ Cubitron™ II Fibre Disc 987C**
(Grade 60; 7" diameter)
- Made with 3M precision-shaped ceramic grain for ultra-fast cut and exceptional life.

**NEW!**

**3M™ Cubitron™ II Roloc™ Durable Edge Disc 984F**
(Grade 60+)
- Made with 3M precision-shaped ceramic grain for ultra-fast cut and exceptional life.

**3M™ Roloc™ Disc 777F**
(Grade 60)
- Contains 3M™ Ceramic Aluminum Oxide blend abrasive grain.

Recommended Tools and Speeds:
- 3M™ Disc Sander (PN20231) — 20,000 RPM (2" dia.)
- 3M™ Disc Sander (PN20232) — 15,000 RPM (3" dia.)
- 3M™ Disc Sander (PN28329) — 12,000 RPM (4" dia.)

**Work Hint:** Use the finest grade of abrasive that gets the job done; finer grind lines are easier to remove. Align the grind line scratches with the grain line direction of the original stock. Perpendicular scratches are more difficult to blend; parallel scratches blend easily during finishing. Use a 7" dia. black ribbed faceplate to level the weld quickly and leave fine grind lines.

**3M Precision-Shaped Grain**

Triangular-shaped grain (top) is electrostatically oriented to form sharp peaks, each acting like individual cutting tools that wear evenly for super long life and consistency at any grinding pressure.
Scotch-Brite™ Multi-Finishing Wheel
(2S Coarse)
• Produces uniform grain finishes on stainless steel and other metals.
• Highly conformable and tough enough to finish edges and welds.
• Works well on large surfaces.
• 6" wheels are available in 1", 2" and 3" widths.
Recommended Tools and Speeds:
3M™ Inline Sander (PN28338) — 1,600 RPM

Work Hint: Finish a small area on the corner of the piece. Examine the finish from several angles. The match, while not exact, will be close. With a little practice you can “feather” in and out of the repair area. A few slow passes should restore the finish. Use the longest stroke that is comfortable. Working with the grain, ease off pressure on both ends of the strokes.

Scotch-Brite™ Multi-Finishing Wheel
(2S Coarse)
• Produces uniform grain finishes on stainless steel and other metals.
• Highly conformable and tough enough to finish edges and welds.
• Works well on large surfaces.
• 6" wheels are available in 1", 2" and 3" widths.
Recommended Tools and Speeds:
3M™ Inline Sander (PN28338) — 1,600 RPM
### Recommended Starting Point for #4 Stainless Steel Finish

**Scotch-Brite™ Surface Conditioning Belt**  
(A Medium)  
- Constructed with a non-woven nylon material.  
- Designed for cleaning, finishing and light deburring.  

**Recommended Tools and Speeds:**  
- 3M™ Inline Sander (PN28338) — 1,600 RPM with 3M™ Expander Wheel (PN28348) 5” dia.  
- 3M™ Inline Sander (PN28339) — 3,500 RPM with 3M™ Expander Wheel (PN28349) 3.4” dia.

### Alternative Selections

**Scotch-Brite™ Surface Conditioning Belt**  
(S Medium)  
- A tough, non-woven nylon abrasive.  
- Impregnated web construction.  
- Silicon carbide mineral provides a bright and sharp finish.  

**Recommended Tools and Speeds:**  
- 3M™ Inline Sander (PN28338) — 1,600 RPM with 3M™ Expander Wheel (PN28348) 5” dia.  
- 3M™ Inline Sander (PN28339) — 3,500 RPM with 3M™ Expander Wheel (PN28349) 3.4” dia.

**Scotch-Brite™ Multi-Finishing Wheel,**  
(2S Medium)  
- Uniform and final finishes on ferrous and non-ferrous metals.  
- Designed for cleaning, finishing and light deburring.  
- Conformable to work surface.  
- Can finish edges and welds as well as large surfaces.  
- 6” wheels are available in 1”, 2”, 3” widths.  

**Recommended Tools and Speeds:**  
- 3M™ Inline Sander (PN28338) — 1,600 RPM

### Recommended Starting Points for #5—#8 Stainless Steel Finishes

**3M™ Trizact™ Abrasive Belts**  
217EA, 237AA, 327DC, 337DC, 347AC  
(Grade A 100)  
- 217EA is a flexible belt for intermediate to final finishing, and is for low to medium pressure applications.  
- 237AA, 327DC, 337DC and 347AC are perfect choices for dry metalworking applications, and are semi-flexible for intermediate to final finishing.  
- All contain a grinding aid to assist in cutting and keeping the workpiece cool.  

**Recommended Tools and Speeds:**  
- 3M™ Inline Sander (PN28339) — 3,500 RPM with 3M™ Expander Wheels (PNs 28348 or 28349)

### 3M™ Trizact™ Abrasive Belts

Trizact abrasives feature three-dimensional structures uniformly distributed over the entire surface of the belt, ensuring consistent performance and the reduction of belt-to-belt variation. Conventional abrasives, which feature randomly arranged minerals, can wear and finish unevenly.

Trizact abrasives were developed with polishing in mind. Trizact belts start sharp and stay sharp, resulting in more predictable finishes and improved, consistent quality in your parts.
Level welds quickly to match #3 and #4 directional mill finishes

In three easy steps, using the 3M finishing system, you can grind and blend welds to match #3 or #4 finishes.

**Step 1: Leveling the Weld**

**Abrasives:** 3M™ Cubitron™ II Fibre Disc 987C, 7”, Grade 60, featuring 3M proprietary precision-shaped ceramic grain.

**Step 2: Setting the Grain**

**Abrasives:** Set directional grain with 3M™ Cloth Belt 777F, Grade P120.

**Tools:**
- 3M™ Inline Sander (28339) 1,600 RPM with 3M™ Expander Wheel, 5” dia. (28348).
- 3M™ Inline Sander (28339) 3,500 RPM with 3M™ Expander Wheel, 3.4” dia. (28349).

**Step 3: Final Finishing**

**Abrasives:** Scotch-Brite™ Surface Conditioning Belt, A MED to blend surface to a #4 finish.

**Tools:**
- 3M™ Inline Sander (28338) 1,600 RPM with 3M™ Expander Wheel, 5” dia. (28348).
- 3M™ Inline Sander (28339) 3,500 RPM with 3M™ Expander Wheel, 3.4” dia. (28349).

**Final Blending and Touch-Up Applications**

Use a Scotch-Brite™ Hand Pad 7446 for final blending and touch-up of stainless steel finishing.

---

**Finishing has never been easier**

A complete system of 3M tools and accessories to make your finishing job simpler.

**3M™ Disc Sanders**

3M got the right angle “right” on these new Disc Sanders for metalworking. A 97° head angle (vs. 90°) allows for more comfortable wrist position and improved ergonomics. The lightweight, compact design generates less vibration and allows for better control. Features adjustable directional exhaust. Hard 3M™ Roloc™ Disc Pad and 1/4-inch collet included.

<table>
<thead>
<tr>
<th>Part #</th>
<th>Diameter</th>
<th>Max RPM</th>
<th>Motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>20231</td>
<td>2”</td>
<td>20,000</td>
<td>.5 HP</td>
</tr>
<tr>
<td>28341</td>
<td>2”</td>
<td>20,000</td>
<td>.3 HP</td>
</tr>
<tr>
<td>20232</td>
<td>3”</td>
<td>15,000</td>
<td>1 HP</td>
</tr>
<tr>
<td>28329*</td>
<td>2”</td>
<td>12,000</td>
<td>.5 HP</td>
</tr>
</tbody>
</table>

*Also supports 3” and 4” backup pads.

**3M™ Inline Sanders**

Generate straight line scratches for finishing stainless steel and other metals. These straight shaft Sanders can be used with inflatable or slotted wheel accessories. 3M recommends 3M™ Rubber Slotted Expander Wheels (PNs 28348 or 28349).

**3M™ Rubber Slotted Expander Wheels**

Internal slotted rubber drum expands with centrifugal force to keep the belt tight while grinding. Designed with a 1/4” radius to help prevent transition marks from edge of belt. Use #3 Wheel Adaptor Kit (PN45038) to mount to a 3M™ Inline Sander.

<table>
<thead>
<tr>
<th>Part #</th>
<th>Dimensions</th>
<th>Belt Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>28348</td>
<td>5” x 3-1/2”</td>
<td>3-1/2” x 15-1/2”</td>
</tr>
<tr>
<td>28349</td>
<td>3.4” x 3”</td>
<td>3” x 10-11/16”</td>
</tr>
</tbody>
</table>

**3M™ File Belt Sander**

Uses coated abrasive and Scotch-Brite™ Belts (1/8”~3/4” x 18”~24”) for a wide variety of metalworking applications. Steel drive wheel attached. Includes standard attachment arm (PN28368) and rubber drive wheel. 24” belts require 3M™ File Belt Sander Extension (PN28376).

<table>
<thead>
<tr>
<th>Part #</th>
<th>Max RPM</th>
<th>Motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>28366</td>
<td>22,000</td>
<td>.6 HP</td>
</tr>
</tbody>
</table>

**3M™ File Belt Sander Attachment Arm — Corners Style**

Sand corners and grooves with contact wheel. Use with coated abrasive and Scotch-Brite™ Belts.

<table>
<thead>
<tr>
<th>Part #</th>
<th>Belt Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>28372</td>
<td>1/8” or 1/4” x 18”</td>
</tr>
</tbody>
</table>

**3M™ File Belt Sander Attachment Arm — Vessel Arm**

Sand with contact wheel. Unique large arm used for blending weld seams. Use with coated abrasive and Scotch-Brite™ Belts. Includes tracking/control knob.

<table>
<thead>
<tr>
<th>Part #</th>
<th>Belt Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>28375</td>
<td>1/4” or 1/2” x 24”</td>
</tr>
</tbody>
</table>

Abrasive and accessory sold separately.
Right Angle Weld Grinding System

3M offers a complete system using coated abrasive and surface conditioning belts for leveling, blending and finishing right angle welds on stainless steel. The advantages of this system are easier access, faster stock removal and less undercutting than other methods such as grinding wheels, cut down wheels, coated abrasive square and cross pads and other products frequently used to finish fittings, manways, frames and bracing.

### Step 1: Weld Cut Down

Begin the process by using a 1/4” x 24” 3M™ Belt 977F, grade 50, for cutting down the weld. This belt contains 3M™ Ceramic Grain and a grinding aid for fast cuts and cooler running on stainless steel.

**Tech Tip:** Keep tool moving to reduce undercuts, work in the center of the weld leaving a slight transition line of material, or witness, on both sides of the weld.

### Step 2: Refinement

Use a 3M™ Belt 777F (Options: 947D and 907EA), grade P120, with a scalloped edge to remove the witness lines and refine the finish. It is critical to leave only a slight transition line during step 1 so the finish can be refined without undercutting.

**Tech Tip:** 777F P120 works better under lower pressure. It is critical to leave only a slight transition line from step 1 as removing too much material in step 2 can lead to undercutting.

### Step 3: Final Finishing

For the final finish, select a Scotch-Brite™ Surface Conditioning Belt.

**Tech Tip:** Grade A Medium is a good starting point.

### Optional Step 4: For Other Finishes

To achieve a pharmaceutical finish, choose 3M™ Trizact™ Belt 237AA in a series of grades A100, A45 and A16. Also to obtain a surface finish of less than 32 micro-inch for dairy applications, refine the repair area after step 2 with a 3M™ Trizact™ 237AA, grade A100, scalloped edge belt followed by a fourth step of Scotch-Brite™ Surface Conditioning Belt in grade A Very Fine.

### Troubleshooting Guide for Stainless Steel Repair

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat or warpage</td>
<td>• Use coarser grade abrasive</td>
</tr>
<tr>
<td></td>
<td>• Reduce speed</td>
</tr>
<tr>
<td></td>
<td>• Use new abrasive</td>
</tr>
<tr>
<td></td>
<td>• Use harder disc pad</td>
</tr>
<tr>
<td>Flap wheel bounce</td>
<td>• Reduce speed and/or pressure</td>
</tr>
<tr>
<td></td>
<td>• Use smaller wheel</td>
</tr>
<tr>
<td>Multi-finishing</td>
<td>• Reduce speed</td>
</tr>
<tr>
<td>wheel bounce</td>
<td>• Dress wheel to round</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Edge cutting</td>
<td>• Use softer disc pad</td>
</tr>
<tr>
<td></td>
<td>• Reduce angle of grinder</td>
</tr>
<tr>
<td>Smearing</td>
<td>• Reduce speed</td>
</tr>
<tr>
<td></td>
<td>• Clean or replace</td>
</tr>
<tr>
<td></td>
<td>contaminated product</td>
</tr>
<tr>
<td>Disc scratches</td>
<td>• Use finer grade leveling disc</td>
</tr>
<tr>
<td>show through</td>
<td>• Increase speed</td>
</tr>
<tr>
<td>Tool stalling</td>
<td>• Check for proper</td>
</tr>
<tr>
<td></td>
<td>air supply at tool</td>
</tr>
<tr>
<td></td>
<td>• Increase torque</td>
</tr>
<tr>
<td></td>
<td>and/or HP of tool</td>
</tr>
<tr>
<td>Chatter</td>
<td>• Reduce speed and/or pressure</td>
</tr>
<tr>
<td>Streaking on</td>
<td>• Use hand pad holder</td>
</tr>
<tr>
<td>final finish</td>
<td></td>
</tr>
</tbody>
</table>

Product Use: Many factors beyond 3M’s control and uniquely within user’s knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for the user’s method of application.

Warranty Limited Remedy and Disclaimer: Unless an additional warranty is specifically stated on the applicable 3M product packaging or product, 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. If the 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M’s option, replacement of the 3M product or refund the purchase price.

Limitation of Liability: Except where prohibited by law, 3M will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including warranty, contract, negligence, or strict liability.

Technical Information: The technical information recommendations and other statements contained in this document are based upon tests or experience that 3M believes to be reliable but the accuracy or completeness of such information is not guaranteed.