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Scratch & Graffiti Removal System Instructions

Equipment & Supplies:

- Glass Marking Pencil or Dry Erase Marker
- Spray Bottle with Alcohol/Distilled Water Mixture
- Safety Goggles & Dust Mask
- Makita Variable Speed Polisher
- 3", 6", 8" Backing Pads
- 3", 6", 8" Interface Pads
- 3", 6", 8" Scratch Removal Discs
- 3", 6", 8" Felt Polishing Pads
- Spray Bottle with Polishing Compound/Distilled Water Mixture
- Metal Rasp
- Plenty of Paper or Terry Towels

Prepare:

1. Examine scratch or graffiti to be removed and determine its reparability. If you can feel the scratch with your fingernail it would generally be considered a deep scratch. From the other (non-damaged) side of the glass, use a colored marking pencil or dry erase pen to draw approximately a 2" outline around the scratch or other damage.
2. Clean surface(s) to be treated with alcohol/water mixture and towel dry. Keeping your work surface and equipment clean and free of contaminants is important for successful scratch and graffiti removal. Consider your surroundings before starting and tape off or put a tarp over anything that could get excess material on it. A little preparation before working will make clean up much faster.
3. Determine which backing pad to attach to the polisher. Start with the 3" backing pad for most singular and linear scratches. For areas with multiple scratches, wide scratches or graffiti, the 6" backing pad will be more effective. Start with the 8" backing pad when stock removal is required for large areas. Although the larger the pad, the less likely the chance of causing distortion, you want to grind as small of an area as possible to avoid creating unnecessary work for yourself.
4. Apply the same sized interface pad to the backer pad.
5. Choose the appropriate scratch removal disk for the severity of the damage. For scratches or damage you can feel with your finger nail, start out with the Stage I disk. For lighter scratches, swirls or other damage, you may start with the Stage II disk. Apply the scratch removal disk to the interface pad.

Grind:

1. Put on safety goggles and dust mask. Always wear eye protection when using the electric polisher. Always wear respiratory protection equipment when using scratch removal pads to avoid breathing glass dust.
2. Turn polisher on, adjust speed accordingly (see reference chart) and apply light pressure to damaged surface. Work the polisher with the pad flat on the glass in systematic up and down and side to side motions. Continue with Stage I disk until scratch or damage is completely gone (usually several minutes). Do not dwell in one area but try to stay within the outline you drew around the scratch to not remove more glass than necessary. After using the Stage I disk, the glass should look very hazy. It's normal to see very fine swirl marks (but none that you can feel with your nail). These will come out with the Stage II disc. Wipe excess material off surface with a dry cloth.
3. Remove the Stage I and apply the Stage II disk. If you started with the 3" Stage I disk go up the up to the 6" size for Stage II. Turn polisher on and adjust speed accordingly. Grind down area with the same up and down and side to side motions, overlapping the previously worked area by a several inches all around. Feathering will help to eliminate distortion. Work the Stage II disk until all swirl marks from the Stage I disk are gone.

Wipe excess material off surface with a dry cloth. Inspect surface very closely to ensure that all fine swirls are gone before proceeding to Stage III (this is very important). After the Stage II disk, the glass should still be cloudy but more transparent than after Stage I and with no swirl marks.

- Repeat this process with the Stage III and IV disks overlapping the previously worked area by several inches. Adjust the speed accordingly (see reference chart). These disks greatly reduce the amount of time required in the final polishing stage. You should notice the haze in the glass becoming slightly more transparent after each step. Closely inspect surface after each stage to ensure there are no swirls or other marks that need to be removed prior to polishing. If any light swirls do become noticeable, go back to appropriately sized Stage II disc and work just the spots required (without going back over entire area) until gone. Repeat Stages III and IV discs as needed.

Grinding Tips:

- You'll likely need to spend more time on Stage II than any other disk. If any pad doesn't appear to be removing enough material, try increasing the RPMs of the polisher in small increments until you get the desired result.
- As the size of the area to be worked increases (especially between Stage I and II), go up in the size of backer/interface pad and scratch removal discs as needed. The larger disks are less likely to cause distortion than the 3" size, especially when using the Stage I and II disks.
- Use caution when working near the edge of the glass as excess heat can cause it to crack. Too much heat can also cause the grinding material to bake onto the glass or can melt/fuse the grinding disc to the interface pad. Keep monitoring the surface temperature of the glass during the repair. It should not get too hot to touch.
- If you notice a swirl, scuff or scratch during Stage III thru the final polish, go back and reuse the appropriately sized Stage II disk until gone then repeat process. Outline any trouble spots with your marking pencil or dry erase pen so you don't have to redo more area than needed.
- When removing glass stock with the grinding disks, it is normal for the pads to become caked over with glass dust. If too much glass dust builds up on the disc to be effective, turn off the polisher. Leave the scratch removal disc on the backer/interface pad and lightly tap (but don't scrape) the disc with the metal rasp to knock (not scrape) the caked dust off the pad. Be careful not to damage the pad or its surface.

Polish

Use marking pencil or dry erase pen to outline entire area from the other side of the glass. Apply felt polishing pad interface pad. Each Polishing Compound pouch should be mixed in a spray bottle with 20 oz of distilled water. The polishing compound consistency should be semi-transparent like nonfat milk. Shake bottle rigorously before each use and spray a several sprays to the center of the felt pad to dampen (but not over-saturate) it. Adjust polisher to approx. 2000 rpm and apply polishing disk to working area. Systematically work entire clouded area until the surface is polished back to a clear luster. Pay extra attention to the outer edge of your worked area; overlapping it by several inches to eliminate the border of the worked vs. non-worked area. Spot polish with the 3" size as needed.

Polishing Tips:

- Run polisher just slow enough that compound does not spay off pad when polishing.
- The surface of the polishing pad needs to be scuffed with the rasp after every 5-10 minutes of use to be most effective. Hold rasp at a 45% angle against the pad while running pad at a low speed, sweeping the rasp across the pad to scuff the entire surface until it is free from clumps of caked polish.

Clean up area.

Use alcohol/water mixture or other cleaner and paper or terry towels to wipe area clean and dry. A clean felt pad and water can help to remove any dried or caked on polishing compound.

Optimal Polishing Machine Settings for Makita 9227

Stage	3" Disc's	6" Disc's	8" Disc's
I	4 (2100 RPM)	3.5 (1800 RPM)	4.5 (2400 RPM)
II	4 (2100 RPM)	4 (2100 RPM)	4.5 (2400 RPM)
III	4 (2100 RPM)	4.25 (2250 RPM)	4.5 (2400 RPM)
IV	4 (2100 RPM)	4.5 (2400 RPM)	4.5 (2400 RPM)

***Settings may vary by glass type