plastic pump spray bottle, while others blend the two in a small container and paint the slurry onto the lap using a brush. The real fun-lovers combine the powder and water directly on the lap surface.

Whichever technique you employ, make sure that the oxide is well mixed and free of any clumps. Agglomerated metal oxide particles can lead to scratches. Smear a small amount of the slurry with your (clean) finger over the entire lap surface, and wipe away any excess with a paper towel. You are ready to begin – just don't forget to use a steady but slow water drip, since over-dry abrasive can produce excess heat and lead to the dreaded agglomeration blues. As with all polishing agents, the usual beginner's mistake is to use too much.

## 8.14.3 Charging Metal Polishing Laps with Diamond

Metal polishing laps enjoy wide popularity, since they work well with most gemstone varieties and produce sharp, flat facets. Charging such laps is also relatively easy, particularly in comparison to ceramics.

Properly prepared, the surface of a metal lap contains countless, partially embedded diamond crystals, whose sharp edges do all of the actual work. The metal of the lap itself is very soft – Mohs hardness 3-5 – and serves only as structural support, allowing the diamonds to do their magic from a firm, flat reference plane. In the ideal case, the metal never touches the gemstone, and in fact, the appearance of metal flakes on partially polished facets is a sure sign that it's time to add more diamond.

Charging a metal lap involves getting the diamond properly embedded into the metal. The exact technique varies somewhat, since you can purchase diamond polishing agent in several different forms. These include loose diamond bort, pre-mixed paste, and diamond spray.

Begin by cleaning and drying the metal lap thoroughly. If you are using loose bort, scatter several drops of extender fluid across the lap. Alternatively, you can apply a thin layer of spray oil such as WD-40. Using a clean fingertip, rub the fluid into the lap until the entire surface is covered uniformly. Place your still-oily finger over the mouth of the vial of diamond powder and invert, allowing a small amount of diamond to adhere to the tip. Smear this diamond onto the lap (Figure 8-25). Repeat this process three or four times, and then begin working the smear marks across the surface of the lap until it is uniformly gray in colour.

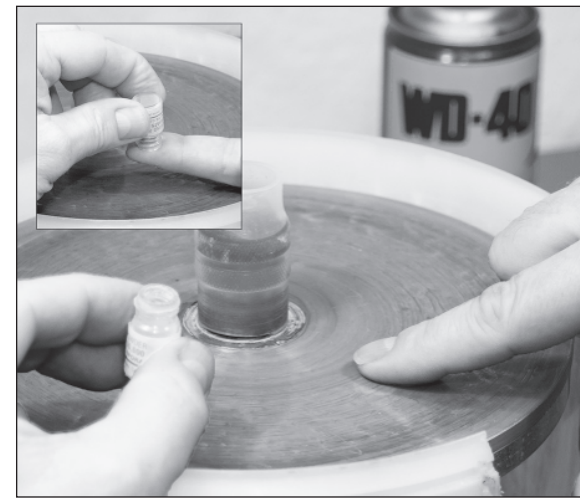


*Figure 8-25 Charging a polishing lap with loose diamond bort. See text for details.*

Diamond paste is a little easier. Place 3-4 beads, each ~0.1 inch (2 mm) in size at several locations on the surface of the clean lap. Using a clean fingertip, spread the paste until the surface is coated uniformly.