



# Instructions for Charging & Use Cast Iron Lap

## GENERAL INFORMATION

Lapping is a fine finishing operation that is used to produce a very flat, accurate surface and an extra fine finish. The lapping process can be quite complex or reasonably simple depending on your desired result and application. There is much lapping information available on the internet, but be aware that some of this technical advice may not apply to your particular needs. The information presented in these instructions generally applies to the subject of fine tool sharpening and polishing, and mainly for gravers and small hand tools used by engravers, stone setters, jewelers and other fine artists.

## SOFT & HARD LAPS

There are two main categories of lapping plates or wheels: “soft” laps and “hard” laps. Typically, a soft lap is made from cast iron, steel, copper, tin, composites, etc while a hard lap is made from an extremely hard material such as a high-grade ceramic. GRS supplies both a soft lap (Cast Iron Lap #002-412) and a hard lap (Ceramic Lap #002-415). The cutting action, characteristics and use of soft laps differ in important ways from hard laps. A basic understanding of this will help you select and use the right lap.

A soft lap works by embedding fine abrasive particles in the surface of the lap before use. This is called “charging” the lap. A hard lap is also “charged” but because of its extreme hardness, the abrasive does not embed itself in the surface like it does in a soft lap. An important goal in using a soft lap is to eliminate loose, non-embedded abrasive particles. But, for a hard lap, loose abrasive particles are normal.

Soft and hard laps each have their advantages and disadvantages. A soft lap can often cut faster and produce a finer finish. It can also be easier to use and more forgiving except in one important way ... a soft lap is much easier to damage or groove with sharp tool edges than a hard lap. A soft lap is usually less expensive than a hard lap.

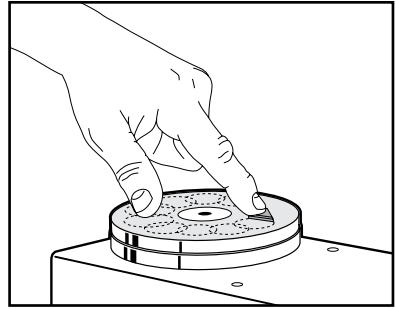
## **LAPPING TIPS**

- A very common mistake when using both soft and hard laps is overcharging by using too much abrasive. Excessive abrasive on a lap will usually cut slower and can even produce a rougher finish than the right abrasive charge. When in doubt, use less abrasive which is usually better than using too much.
- Use light pressure when lapping. Maintain definite contact between the tool/workpiece and the charged lap, but don't press down more than a very light amount.
- Lapping is generally a low speed operation. A good speed for lapping small tools on a 6" lapping wheel is 150 to 300 RPM.
- Use the right abrasive grain size. A finer abrasive may not necessarily lap to a finer finish. It is possible to use too fine of an abrasive size in lapping.
- A soft lap is normally charged with a coarser abrasive size than a hard lap. This is because about half of the abrasive grain gets embedded in a soft lap surface.
- It's usually beneficial to use some type of lubricant on the lapping wheel.

## **CHARGING A NEW GRS CAST IRON LAP**

1. Clean any oil or rust preventative off the new cast iron lap with solvent or a soap base degreaser. Dry the lap thoroughly.
2. Vigorously shake the bottle of diamond spray (#002-754, 1 micron - 14,000 grit size) until the diamond grains are evenly distributed throughout the carrier liquid.
3. Place the lap on the Power Hone and turn it on.
4. Spray the lap surface with a generous coverage of diamond spray (6 to 8 full sprays) and turn the Power Hone off. Let the liquid spray carrier evaporate so the lap is dry.
5. With the Power Hone off, add 2 to 3 drops of light oil (machine oil, household oil or olive oil will work) to the lap surface and use a circular finger motion to spread the oil evenly on the lap surface.

6. With the Power Hone still turned off, use the supplied carbide insert (#023-085) and place it face down on the lap to work the oil and diamond slurry into the lap surface by hand. With a circular burnishing motion, do this for at least one minute evenly across the entire lap surface. Use light hand pressure, you do NOT have to push hard to charge the lap. *Note: you can also use any type of carbide tool you may have, such as round carbide blanks #022-347 or #022-611 just as long as the carbide material has no sharp edges that will gouge the surface of the lap.*



7. Turn the Power Hone on and continue to burnish the oil and diamond slurry into the lap with light to medium hand pressure for about one more minute.

8. Turn the Power Hone off. Using a clean cloth or paper towel, wipe the lap surface to remove all loose abrasive and oil. A thin oil coating will remain although it may be hard to see. To prevent rust on the non-diamond charged lap surfaces, treat it with a thin coating of oil or rust protectant.

9. The lap is now charged and ready to use. Remember, use only light hand pressure with lapping tools, gravers and parts with sharp edges to avoid grooving the lap surface. If the lap surface seems too dry, you can add a drop of oil or even dry graphite powder to maintain the top surface lubricity.

***Remember, the lap is for polishing not shaping!***

## **CHARGING/RECHARGING A USED GRS CAST IRON LAP**

1. Clean the used lap surface with solvent or a soap base degreaser.
2. If the used lap surface is glazed, usually indicated by a shiny almost burnished surface, remove it by surface grinding or using a soft dressing stick (#001-783, Diamond Wheel Cleaning Sticks).
3. Starting with a clean, dry lap, repeat steps 2 through 9 of “Charging a New GRS Cast Iron Lap.”

# GRS PRODUCTS

The following items are recommended for use with the GRS Cast Iron Lap and are available for purchase. For additional information or other products available visit, [www.grstools.com](http://www.grstools.com). To order, call 800-835-3519 or 620-343-1084 and speak with a sales representative.

## #002-415 • CERAMIC LAP

This extremely hard ceramic lap is used for polishing a mirror finish on tools. Requires diamond spray (1/2 micron, #002-753, is normally recommended). Diameter: 6" (152.44mm).

## DIAMOND SPRAY

2 oz. Used with ceramic lap and other surfaces. Also available in non-flammable.

- #002-752      1/4 micron (extra fine)
- #002-753      1/2 micron (fine)
- #002-754      1 micron (medium)
- #002-755      3 micron (coarse)

## #001-783 • DIAMOND WHEEL CLEANING STICKS

Used to remove only cutting debris, dirt, etc., and will increase the longevity of your wheel. Package of 3.

## #001-694 • WHEEL STORAGE RACK

Protect and organize your wheels with this convenient storage rack. Steel construction.

## #022-611 • C-MAX ROUND BLANK

0.125" Diameter, 0.125" x 2"

## #022-347 • ROUND CARBIDE BLANK

This precision round tungsten carbide tool blank is perfect for making special texturing tools and other tools as you need them. Size: 1/8" (3.18mm) diameter x 1.5" (38mm) long; high impact, micro-grain carbide.

## GLENDO CORPORATION

900 Overlander Road  
P.O. Box 1153  
Emporia, KS 66801 USA  
800-835-3519 • 620-343-1084  
Fax: 620-343-9640  
[glendo@glendo.com](mailto:glendo@glendo.com)  
[www.grstools.com](http://www.grstools.com)

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