

Simple Elegance Rock Shop

Simple Elegance Gem & Rock Shop
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8" EZ-CAB LAPIDARY CABBING MACHINE INSTRUCTIONS

DESCRIPTION

The 8" EZ-CAB Lapidary Cabbing Machine is a combination unit designed to grind and polish gemstones. Our lapidary cabbing machines are made with stainless steel and feature an arm rest, space between wheels, all diamond wheels. The cabbing wheels include each of the following: buffing wheel spindle with loose muslin wheel for drying stones, 80-grit hard, 220-grit hard, 360-grit soft, 600-grit soft, 1200-grit soft, 3000-grit soft, and a leather end polisher on an aluminum disk head. The lapidary cabbing machines have a large clean out in front and extra space beneath wheels. The wheels are changeable with a universal base unit for 6 or 8 inch wheels. The machines are designed to run at two speeds with the switch located at the front for easy access. The 1/2 horse motor is pulley driven and water resistant motor. The overall size is 32" x 25" x 12" placed on wood base.

We guarantee all the parts and hard wheels for one year except, due to the nature of the soft wheels we cannot guarantee them however to prolong life and avoid damage to the soft wheels we recommend avoiding heavy pressure. We recommend a dime size contact to eraser tip size contact when grinding any stone. Rotation of the shaft should turn the blade or wheel toward you and down. Removable hood permits quick access to wheels for easy cleaning and wheel change. Water valve takes 1/4" OD plastic tubing for gravity water flow or 1/4" copper tubing for pressure systems. Spray nozzles wet entire wheel or drum face.

SETUP

Prior to using your machine, make sure that you have a clean usable workspace with access to water and an electrical power source. The unit base should be placed on a sturdy, level bench to avoid vibration.

WHEEL INSTALL

If the wheels are already set-up on your arbor, then there is no need to install your wheels. If they aren't, follow the set-up below:

Left <-- [Buff] [80#] [220#] [360#] <center> [600#] [1200#] [3000#] [Disk] --> Right

Install the wheels on the shaft using the flanges and spacers provided with your machine. When installing flanges be sure the concave side is facing toward the grinding wheel. Run your wheels in the proper direction if there is any.

Install the spacers between the wheels. You are provided with a variety of extra spacers to allow you the spacing of your choice. Once you have spaced out your wheels to your needs, tighten the threaded nuts securely.

You may install additional polishing heads on both sides of your arbor but this is your preference.

OPERATING INSTRUCTIONS

- ALWAYS wear eye protection and a dust mask while running your arbor. Do this to prevent serious illness and injury.
- NEVER operate without water. Working on dry wheels can not only damage the wheels but create dust that is harmful to inhale.
- You can either use a gravity feed water system or wheel water spitter to apply water to the wheels while you work.
- Turn on the motor and get your arbor up to speed. Once it is at the speed you want to work at, then apply water to the wheels.
- Once you are done working, turn your water system off and run wheels without water to dry properly.
- Drain your unit to remove contaminated water. Wipe dry and keep your unit clean after use. Be sure to drain all water completely or the machine may rust.

Note: It is normal for the arbor to vibrate and make noise when the motor is tuned on.

MAINTENANCE

Proper care of grinding wheels is essential always follow the manufacturers instructions.

Diamond Grinding Wheels: If the wheels become glazed, dress the wheel by running a coarse silicon carbide dressing stick across the surface of the wheel using heavy pressure and continuous water spray. Flush away all loose grit.

SPEED CHANGE

Faster speeds are best for hard gemstones as cutting time and wheel wear are reduced. For soft, delicate stones, reduce speed. Experiment to find your own preferred speed.

The variable speed motor pulley allows two speed changes. Change speed by moving the switch from up (high speed) to down (low speed). Speed control allows the shaft rotation to vary between 1100rpm and 1725rpm. With an 8" diameter wheel, the surface feet per minute varies between 2290 and 3620.

HELPFUL HINTS & HARMFUL ERRORS

Drain the water pan to ensure the grinding wheels do not stand in water.

Whenever you change from one grit to another, be sure to wash your hands, the stone and the dop stick. This is very important. If a grain of coarser grit is carried to a finer grit cloth, it can scratch the stone.

Aluminum Disc Head: The leather, felt or sanding disc is installed on the rubber face of the head with a tacky adhesive such as "Feathering Disc Adhesive" which permits easy installation and removal of discs.

Cabochon Cutting

HAZARDS

General shop safety should be observed at all times, i.e.; wearing eye protection, no loose clothing, inspecting all blades and grinders for nicks or rust damage. Use caution around electricity as water and other liquid conductors may pose risks. **NEVER GRIND DRY.** Never allow polish or buffer powders, including paste compounds used on the leather buffs, to float as dust allowing it to be breathed in.

Shell pearl, bone, jade, tiger eye and a host of others contain toxic metals and produce chemical or gas emissions. (Shell, bone and fibrous materials may contain asbestoses or highly toxic substances).

DOPPING

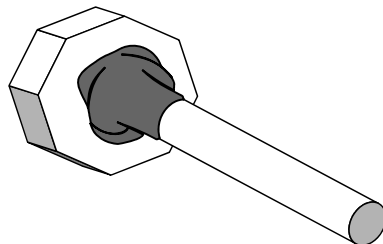
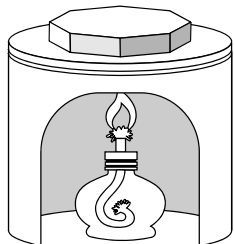
Method 1 - Doping Wax

Heat the wax, the dop stick, and the stone. If all 3 of these are not heated, the wax will not bond properly to the stone and will break off during the grinding steps. Use an alcohol lamp, or candle flame over a tin can oven, which is just as effective as a doping pot.

*Use a chip of wax on the stone to indicate when the stone is at the necessary temperature.

Level the stone carefully, and double check to make sure that the doping stick is centered on the stone.

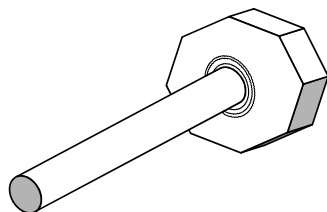
Heat sensitive material, such as opal, may need a cold dop. Paint the stone with shellac mixed with alcohol and allow to dry overnight before hot wax is applied.



Method 2 - Super Glue

Use super glue mixed with baking powder, not soda. You may use corn starch in lieu of the baking powder.

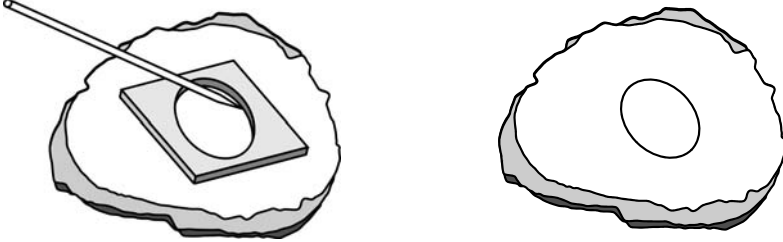
Use a jewelers saw to cut it free. Once free, soak it in acetone (fingernail polish remover) to remove any excess glue. This method will give you a better bond for very small material and heat sensitive stone and gems.



CUTTING CABOCHONS

Step 1

Saw or grind a flat surface on the stone. Place a stencil on the flat surface (this will be the bottom of the stone). Scribe the stone, using a waterproof ink pen, a very sharp brass, copper, or aluminum rod to ensure that you get the line tight at the corner.



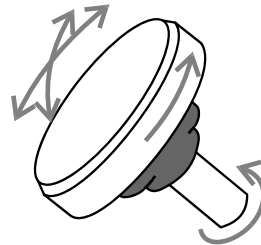
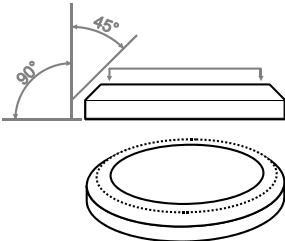
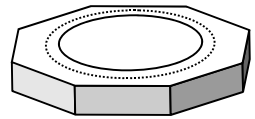
Trim the excess, but leave a few millimeters as a margin for error. (See dopping).



Step 2 - Grinding the Back

*You may skip this step for some stones but not for clear material or any which will show the back.

Grind the corners off. Then grind to a 45° up to within a millimeter or 2 of the line - but not past it.



Grind the edge of the stone at 90° to the bottom (the side up) leaving a bevel of the 45° angle will slightly larger than the stencil.

Dome the base using only the flexible wheels and progressing through each grit and polish stages. Remember, 600 is the lowest stage at which most stone will polish effectively - however some will need extra stages and even finer grinds to polish correctly. Some of these materials are ruby, sapphire, topaz, and others.

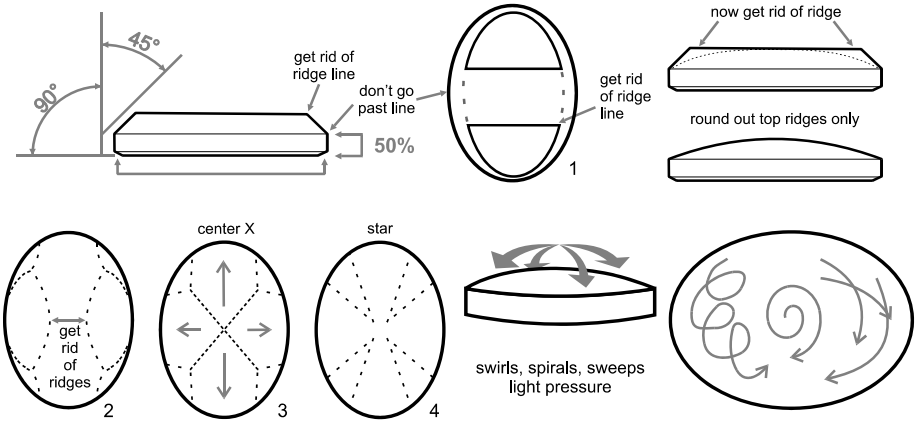
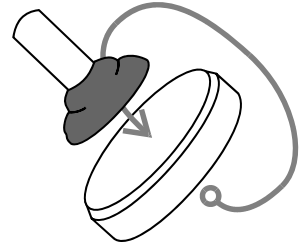
Step 3

Dop the stone on the opposite side.

Grind at a 45° angle to the side of the stone using approximately 50% of the edge.

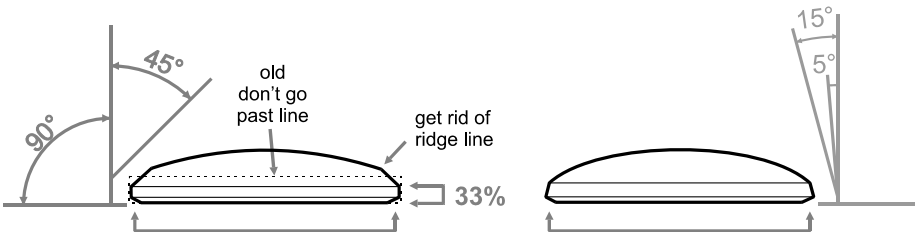
Grind a dome, without exceeding the edge (girdle line) created with your coarse stage.

Grind from the center to the edge, applying pressure only where the material is thickest. Ease off as you reach the girdle line. Grind in sweeps, swirls, and spirals. Note that the actual contact zone for hard wheels is much smaller than for the flexible wheels and creates a flat spot or track.



Step 4

Grind a new 45° angle and lower the girdle line to 1/3 the material height. With your next grit you refine, shape and slightly tilt the edge of the 90° girdle 3°-5° toward the dome. This not only leaves a clearly defined girdle line but insures proper tilt to the top of the stone.



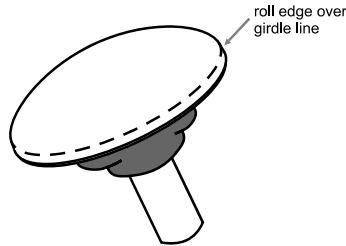
Step 5

Use the flexible wheels to remove the flats, tracks, and deep scratches. With each new grit you will slowly reduce the size and refine the shape of the stone until it passes through the mounting or stencil after the final sanding stages. Use grits in succession; i.e. 200, 350, 400, 600, etc. Skip any grind that is too excessive for the stone type or hardness.

Turquoise and Calcite, for example, will need 350 to 600 only while Sapphire and Zircon will need as many as 6 or more grits to achieve a suitable finish.

*Remember to roll the edge over the girdle line.

After each sanding stage inspect for scratches and proper tilt to the top.



Step 6 - Polish

Method 1

Soft materials, such as marble, turquoise, and limestone can easily reach a shine on the buffer using a small bit of ZAM or rouge applied to the spinning cloth or felt. Amber, on the other hand, should be done with very little pressure on felt. Amber may sometimes benefit from lighter fluid on a piece of felt or cloth held in the hand.

*Remember to work from the center to the lower side of the buffer or the stone may be jerked from your hand.

Method 2

Harder materials often need tin, cerium, aluminum, or chrome oxide, mixed with water or oil as a binding agent, applied to a spinning leather disc with the finger tip. The leather disc should then be moistened periodically with either a spray bottle or drip.

*Often vinyl, wax cloth, Lucite, and a host of other surfaces will hold polish compounds and provide excellent polish results on difficult materials.

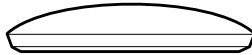
Method 3

Coatings, such as wax, epoxy fills, and lacquers may offer a quick solution or option on bubbled or pitted material and relates to stabilizing and filling fractures on stones. Chip inlay is made in this fashion and the epoxy takes a fairly good polish, if the bubbles are kept to a minimum.

PROBLEMS



knife edge



back bevel



no bevel

persistent center (eye) scratches



persistent scratches, flat spots and ridges

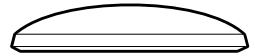
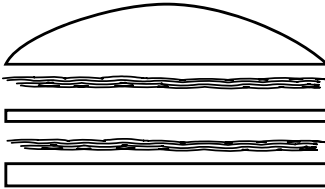


OTHER CABOCHON TYPES

Doublets / Triplets

clear layer and gem or addition of base material to color the gem

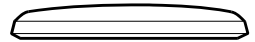
Quartz or other
glue
Gem material
glue
Base material



standard dome
(all materials)

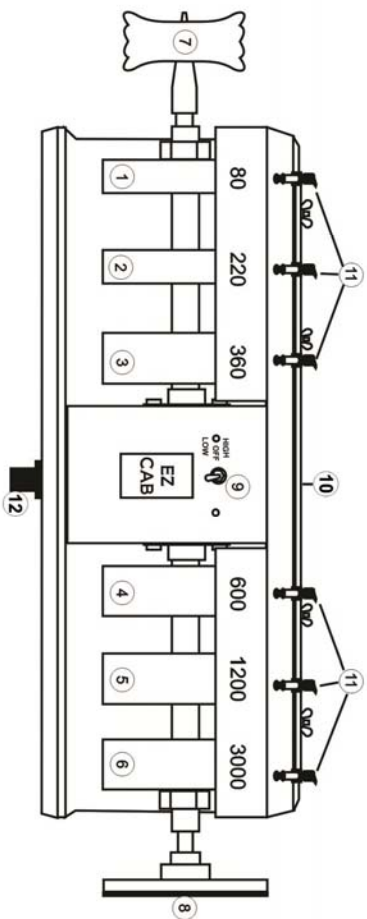


high dome
(star, karat weight, or design)



low dome
(karat weight and layers-opals commonly)

FRONT VIEW



SIDE VIEW

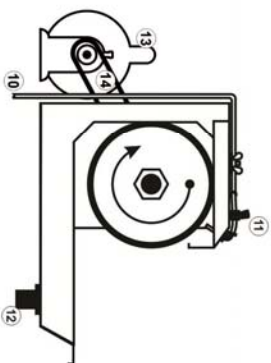


DIAGRAM LEGEND

1. 80 Grit Hard Diamond Grinding Wheel
2. 220 Grit Hard Diamond Grinding Wheel
3. 360 Grit Soft Diamond Polishing Wheel (black)
4. 600 Grit Soft Diamond Polishing Wheel (brown)
5. 1200 Grit Soft Diamond Polishing Wheel (tan)
6. 3000 Grit Soft Diamond Polishing Wheel (pink)
7. Loose Cotton Drying Wheel
8. Flat Polishing Lap Disk
9. Motor Power/Speed Switch
10. Clean Water Flow Lines
11. Water Flow Valves
12. Waste Water Drain
13. Motor
14. Belt

Manufacturer:

SIMPLE ELEGANCE GEM & ROCK SHOP
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Model:

EZ CAB LAPIDARY MACHINE
8" DIAMOND WHEELS

Page:

1

