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## MANUAL GEM DRILL INSTRUCTIONS #605

### INTRODUCTION

The manual gem drill is a multi-speed unit that can be used for drilling, carving, and buffing with appropriate accessories. It is designed for clean, fast, and accurate drilling on medium to soft gemstone material.

### DESCRIPTION

Unit has a 1/15hp, 115V, 60Hz, 5,000rpm motor with foot operated speed control. Drill lever allows a  $\frac{3}{4}$ " stroke. Bracket and motor can be quickly adjusted for height, or removed and mounted horizontally to convert unit into a buffer and carver. Unit comes complete with  $\frac{1}{4}$ " Jacob Chuck, key, and water pan.



### INSTALLATION

Prior to using your machine, make sure that you have a clean, usable workspace and a sturdy, level bench to place the gem drill on. Always secure the drill (or buffer/carver) to the workbench prior to use. Read Covington's Safety Demands before plugging unit into power source.

### PREPARATION

Select a drill bit size and insert one half of its shank length into the chuck and tighten securely. The chuck will hold up to  $\frac{1}{4}$ " diameter shank.

The stone and drill bit must be kept cool. Immerse the stone in a pan of water for drilling. A small Tupperware® dish will suffice as long as the stone can remain submerged. Place a small piece of wood in the bottom of the bowl to hold the stone on. The wood acts as a buffer between the stone and the bowl so the drill bit does not pierce the bowl. Hold the stone on top of the wood with one hand, the lever with the other hand, and have a foot on pedal control. Use an up-and-down hand motion to keep bit and stone cool while drilling.

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## **DRILLING**

Turn on the drill and place your foot on the pedal. To start, run the drill at low speed. Gently lower the drill bit until it contacts the gem. Apply very little pressure until the bit has cut into the surface of the stone. This is especially important if you are drilling a curved surface. After the hole is started, increase pressure slightly. Speed can also be increased. At short intervals, raise the bit so that fresh water can flow into the cut. Until you learn how to use a diamond drill, be very careful with pressure. Reduce the pressure considerably when the hole is almost through. Never run a diamond drill dry.

## **HELPFUL HINTS & HARMFUL ERRORS**

Should the drill chip the edges of the hole, smooth by beveling with a small diamond file.

Drilling jigs: The model #618 bead vise allows drilling of beads and other domed stones. Reversible clamps will hold beads from 1/4" to 3/4" in diameter. To use, clamp a bead in the bead vise, and place bead vise in your Tupperware® dish. Make sure stone and vise are submerged in water. Hold the bead vise so that the drill bit enters the bead through the hole at the top of the clamp. Use this same technique for drilling teardrop or heart shaped stones.

## **CARVING**

Loosen the thumbscrew that locks the motor support to the upright shaft and completely remove assembly. Index the motor support from vertical to horizontal and reinstall. You may now use small diamond grinding wheels, dental burrs, cratex wheels and other accessories in the chuck for carving.

## **POLISHING**

Mount bracket and motor horizontally and install 1/4" I.D. left-hand tapered spindle on the motor shaft opposite from the chuck. Select a 2" muslin buff and charge with polish. For best results, run motor at about half speed and move the work piece constantly to avoid overheating.

## **MAINTENANCE**

Keep upright shaft and lever mechanism well oiled. Oil motor bearings with 3-in-1 oil every six months. Do not over oil the motor.