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MODEL # 350 TWO-SPEED HORIZONTAL LAPIDARY UNIT

INTRODUCTION

The 16" horizontal lap is designed for abrading large flat work pieces of stone or glass. Abrading a flat work piece on a hard surface with silicon carbide grit slurry is known as lapping.

The Covington 16" diameter tapered steel plate turns at 200 RPM and is reversible with a flat side. The tapered side permits large pieces to be abraded with easier control. Pieces larger than 8-inches can be abraded by turning the work piece. The flat side is suitable for abrading small work pieces.

DESCRIPTION

This ruggedly built horizontal lap is made with heavy welded steel chassis and has a galvanized grit catch pan and 16" diameter steel plate (wheel). The removable catch pan permits easy wash and clean-up. The unit has steel 1" shaft and heavy duty ball bearings which are neoprene sealed and greased for life. This unit comes with a two-speed step pulley system to allow for high speed grinding and polishing with the 9" diameter grinding wheel, and the 10" diameter aluminum sanding and polishing heads. Grinding wheel and aluminum heads turn at 1900 RPM. Unit comes with water can, 1/3 HP motor, and guarantee. Size: 22"L X 23"W X 35"H. Shipping weight approximately: 150 lbs.

INSTALLATION

Safety: Before plugging your lap unit into your electrical supply, read the Covington Safety Demand Sheet.

Level: To avoid vibration the lap unit must be placed on a sturdy, level floor, and leveled with leg adjuster.

Caution: The one inch shaft has a coarse 1"- 8 RHT. The shaft **MUST** turn counterclockwise to avoid unscrewing the heavy 16" lap plate. Plate speed is 200 RPM (rounds per minute). **DO NOT run the 16" plate at high speed.**

Grit Feed: Assemble water can, water spout and install on support rod.

PREPARATION

The 16" steel plate comes from the factory with the tapered side face up. There is less chance of a vacuum being created between the work piece and plate by the slurry when a tapered plate is used and thus less chance of the plate grabbing.

Loading Grit: Load the grit chute with either 80 or 120/220 silicon carbide grit. The 120/220 grit is almost twice as fine as 80 grit and will take longer to finish a stone although you will get a smoother surface. Run water into the grit. Remember, it takes a few minutes for the water to soak in. The mixture should be about the consistency of sour cream. The wet grit is called slurry.

PREPARATION CONTINUED:

As you run water into the slurry, it will start to drip onto the lap plate. With the lap unit running, you can control the drip of slurry by increasing or decreasing the water flow. After the plate is thoroughly covered, turn the flow of water down.

The entire surface of the plate should be wet before the work piece to be ground is applied so the plate will not grab. You can reuse the slurry until it is almost a powder. At that time, it is more residue than grit and should be thrown away.

Water Spout: Mix silicon carbide grit with an equal volume of water in a container and brush the slurry mixture onto the steel plate. The entire surface should be wet so the plate will not grab. With the lap unit running, add water slowly so the slurry will not dry out. Brush more slurry onto the plate when necessary to keep the plate thoroughly covered.

OPERATION - SLOW SPEED

To lap, hold the work piece against the turning plate in whatever position is most comfortable. Experiment with pressure on the plate until you discover which amount of pressure brings the fastest results without tiring your arms. Whether you hold the work piece “against” the plate rotation or “with” it does not effect the cutting in anyway. Some lappers like to go with or against the plate depending on the size or shape of the work piece.

It is advantageous to move the work piece back and forth across the surface of the plate. Keep turning the piece as it grinds. Moving the work area from center to rim tends to even wear on the plate over a long period of time.

Watch for silicon carbide build-up on the plate. A build-up can mark the work piece with a line on the surface. Ridges of grit can occur if there is not enough water. It is important for the proper mixture of grit and water to be maintained.

If you begin to hear a sliding sound rather than an abrasive one, it means the slurry surface has become very thin beneath the piece. You may have more water than grit on the plate. Simply re-mix the slurry and brush on a fresh mixture of grit. If the slurry “hardens”, the water may flow over the slurry rather than through it.

FINISHING-SLOW SPEED

After all the low spots have disappeared, and the flat surface has a perfect 80 grit texture all over, it is ready for the 220 grit. This changing of grit requires a **COMPLETE CLEAN-UP**. Should one grain of a coarser grit be carried from one operation to another, a final polish will never be obtained. When the 220 grit texture is obtained over the entire surface of the work piece, clean-up and change to 400 grit. Proceed as before.

After the 400 grit cycle clean-up, carefully examine the work piece. Deep scratches or pits will require the surface to be abraded again. As a general rule, 80 grit abrades twice as fast as 220; which abrades twice as fast as 400. Choose the grit size which will remove the scratch and, after abrading, again make a careful, complete clean-up before changing to a smaller grit size. Each finer grit used should improve the surface texture.

HIGH SPEED

To Change Speed: Remove 16" plate and splash pan. The two-step pulleys mounted on the motor and drive shaft are now in view. Move the belt from the matched slow speed pulleys to the matched fast speed pulleys.

CAUTION: DO NOT RUN THE STEEL LAP PLATE AT HIGH SPEED.

HIGH SPEED-CONTINUED

<u>MATCH PULLEYS</u>	<u>MOTOR</u>	<u>DRIVE</u>
Slow (200 RPM) 1-1/2"		11"
Fast (1900 RPM) 7-1/2"		7"

GRINDING-FAST SPEED

Install the splash guard and drain line to a bucket for prolong grinding. Otherwise, the pan can be emptied of water accumulation periodically. A new grinding wheel will absorb water directly into the wheel at first. After a short time, the wheel will hold water and permit spark-free grinding. If the wheel is grooved, it will need to be dressed before use. To dress, hold a coarse (60 grit) dressing block firmly on the wheel while shaping. Use a hand rest to hold the block steady and lots of water during the dressing process. If necessary, finish the surface with a fine grit dressing block.

SANDING-FAST SPEED

New sand cloth is excellent for sanding sharp edges from flat specimens. The cushion, however, under the sanding paper tends to make the disc sand the edges of the flat and not the center. Use a selective light, brushing stroke in sanding. Keep the work piece in constant motion and avoid over-heating. "Wet" sanding is more desirable than "dry" sanding. All scratches must be removed before the work piece is ready for polishing.

POLISHING-FAST SPEED

The polishing operation does not remove any surface material. Some materials such as glass almost always require both pre-polish and polish steps. Pre-polish usually consists of 600 grit silicon carbide, or in the case of glass 2F or 4F pumice powder used on a cork disc. A good general purpose polish is optical grade cerium oxide powder on a leather or felt disc.

MAINTENANCE

Oil the motor after each 500 hours of use using S.A.E. 20 oil. To oil, lay the unit on its back so oil can get into the bearing wells and wicks.

At this time, it is desirable to unscrew the steel plate (right hand thread) and examine the drive belt for wear and alignment.

The main shaft bearings are double neoprene sealed and greased for the life of the bearings.

Before replacing the steel plate, clean and grease the shaft thread and flange. This is also a good time to thoroughly clean the lap unit. A thorough cleaning of the plate and catch pan must be done any time the roughing grit is changed.