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SMALL SPHERE MACHINE

DESCRIPTION

The Small Sphere Machine makes spheres from 1/4" to 1" in size. This precision-based unit will grind a rough-round shape into a perfect polished sphere. The downward slant of the cutter cups and shafts run the sphere in a continuous bath of grit eliminating the need to constantly dab grit on with a brush and causing the grit slurry to run away from the bearings. Increase the angle of the cutting cups as the rough corners of the sphere grind off; a spring-loaded head makes continuous adjustment unnecessary. Replaceable nylon bearings provide years of trouble-free service.



INSTALLATION

Safety: Before plugging saw unit into an electrical supply read the *Covington Safety Demands sheet*.

Adjustment: All new machines are factory adjusted and ready for use. To adjust:

1. Install 7/8" cutter cups.
2. Using the sphere sample, align the cups making sure both cups close evenly on the sample.
3. Correct vertical alignment by (a) loosening either head and/or (b) loosening the shaft collar and pulley. Move the arbor in to lower the cutter cup; move the arbor out to raise the cup.
4. Correct horizontal alignment by (a) loosening all four retaining screws of either bearing assembly and/or (b) shifting the assembly to bring it in line with its mate.

Cutter Cups: 5/8" and 7/8" cutter cups mount directly onto the main shaft with setscrews. The 5/8" cups mount both the 1/4" and 3/8" cups. Slip the smaller cup inside the 5/8" cup and tighten the setscrew with provided allen wrench.

PREFORMING MATERIAL

Select material that is free of visible fractures or defects. Cut the material into a cube larger than the desired sphere size. Cut corners off the cube. Complete the preforming process by grinding off all corners and sharp edges until the cube is a rough sphere.

OPERATION

Loosen the nylon pencil guide. Spread the cups by turning the adjustment knob clockwise. Insert the rough sphere in the cups and readjust the cup spacing. The sphere should be just free enough to turn by hand. Reset the nylon pencil so that the end contacts the preformed sphere without exerting pressure.

OPERATION CONTINUED

Mix equal parts of 60/90 grit and Covington's Old Miser compound with water to make a creamy paste. Put just enough of this mixture in the grit pan so the sphere picks it up as it spins. Start both motors and then "prime" the sphere by brushing on a small amount of the grit mixture. This enables the sphere to start picking up the grit on its own. Remember to keep the mixture stirred to insure efficient pick-up.

An irregular motion must be maintained to lap properly. To do this: (1) adjust the cutter cups to roll in one direction and (2) adjust the brake by loosening the top thumb screw and moving it in so that enough contact is made to interrupt the regular motion set by the first adjustment.

Important: Adjust tension on cups to maintain cutting action without wearing a groove into the sphere.

FINISHING

After removing all low spots and the sphere has a perfect 80 grit texture, it is ready for the next step. Clean unit completely before changing to 220 grit mixture as any contamination will scratch the work piece. Once a 220 grit texture is obtained, clean unit as before and continue with 400 grit.

POLISHING

After the 400 grit clean up, place a piece of clean canvas over each of the cutter cups. Tie on with string so the canvas revolves with the cups. Brush polishing compound (mixed with water to the consistency of a thick cream) into the canvas pockets. Proceed using the same operation as before.

MAINTENANCE

Keep all moving parts lightly oiled and spray with WD-40 to prevent rust when not in use.

Warning: *The motor normally runs at a temperature to hot to touch.*

