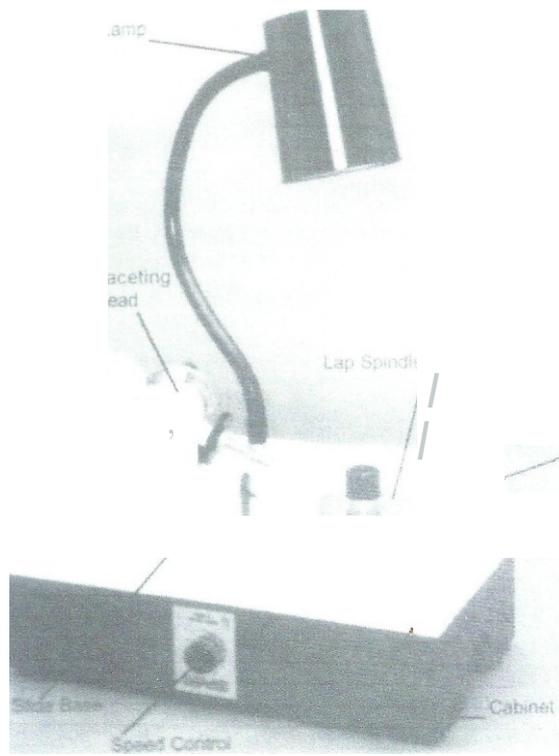


Graves Mark IV

Setup Instructions

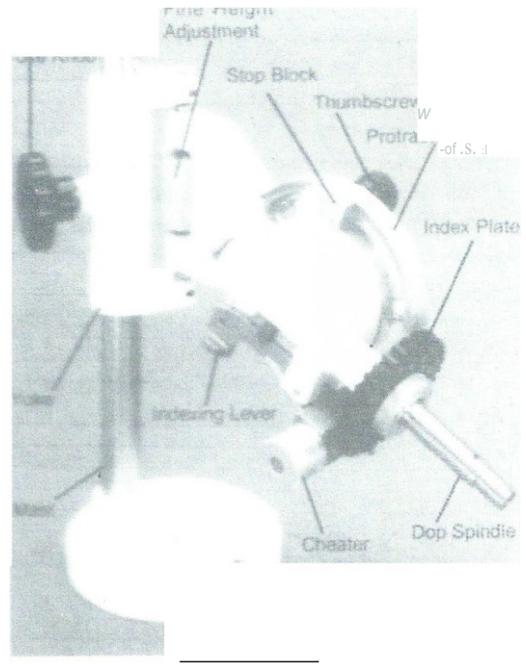
- Position the Mark IV on the table so that working the faceting head can be done comfortably.
- Put the drain line into the catch bottle
- Attach the drip bottle to the support rod
- Close the drip valve and fill the tank with clean tap water
- Remove the lap locking nut from the spindle
- Put the master lap (rigid backing plate) on a flat surface
- Center the grinding lap on top of the master
- Place the laps squarely on the spindle
- Lock the laps down with the spindle nut (thumb tight is enough)
- Spin the lap (by hand) to verify that the laps are centered and will spin evenly
- Close the gate on the front of the splash pan
- Plug the power cord in to a 110-volt receptacle
- Confirm that both the motor and the lamp are functional
- Verify that the mast will slide back and forth
- Verify that the faceting head can be raised and lowered
- Remove the elastic cord holding the faceting head upright
- Check that the faceting head swings freely and moves up and down, without resistance

The Mark IV is now ready to begin faceting.



Jore 6. Mark IV Faceting Machine

Precision Faceting head



The Faceting Head

- a. The precision Graves faceting head is shown in Figure 7.
- b. The yoke or fast height adjustment allows the operator to rapidly position the faceting head up or down on the mast. The yoke knob secures the yoke in the desired position. The mast is not calibrated.
- c. After the faceting head is close to its final cutting or polishing position, precision adjustments can be made using the click micrometer or fine height adjustment. This allows adjustment in increments of $1/1000$ of an inch with a total adjustment of $1/4$ of an inch. Exact repeatable settings are easily made with this device.
- d. Anodized and engraved index plates cut in 32 (standard), 64, 72, 80, 96, and 120 tooth plates are available and allow a wide variety of cuts to be made. Micrometer adjustments of the index plate position are made using the "cheater". This allows precision accuracy for polishing operations.
- e. The angular position of the dop spindle is set by loosening the thumb screw on the stop block and adjusting the indicator line on the stop block to coincide with the desired angle on the protractor scale. Easy-to-read engraved divisions allow settings to $1/10$ degree to be made directly. View from the side for best visibility when setting the angles.
- f. The faceting head can be set to make round, square and rectangular preforms quickly and easily. The sturdy stainless steel dop spindle accepts all standard $1/4$ " dops and holds them

securely in position with a set screw. The dops are keyed so that they can be removed and then reinserted at a later date with complete accuracy.

g. The mast base is precision turned to ensure that the mast is in a perfectly vertical position and perpendicular to the lap. This is necessary to obtain the correct angles on the protractor scale and the index plate settings. The mast, dop spindle, lap spindle, height adjustment spindle and cheater spindle are all made of durable, corrosion resistant stainless steel.

h. The operator should always "hold the stone" when first learning to facet and making the adjustments because the dop spindle may "fall" and damage your stone or lap. It can be locked in a vertical position by a built-in spring-loaded lock.

MACHINE DESCRIPTION

a. The protractor scale and the stop block with its Vernier graduations are used together to obtain the cutting angle calibrated to 1/10 degree.

b. The girdle guard is used to prevent the drip water from being thrown out of the bowl area. Usually its place is to block the bowl opening, except, when cutting the girdle.

c. The Drip Tank is filled with coolant (usually water with a capfull of Dia Cut to improve cutting and minimize rusting). The tube with a wire insert can be adjusted so that the coolant will drip into the cutting or polishing lap in such a position as to provide the spread

of coolant at cutting area. Adjust the flow with the needle valve to about 2 drops per second for cutting and 1 drop per second for polishing.

d. The drain line must be inserted into the drain hole. Put a little liquid detergent or Vaseline on the ferrule end of the hose supplied with the machine. Insert the tube thru the drain hole and press the ferrule end into the hole as far as it will go. A container such as an empty milk jug can be used to collect the drippings from the cutting and polishing operation.

NOTE: Be certain that this line is kept unclogged otherwise the cutting fluid can overflow the bowl allowing drippings to get into the lap spindle bearings.

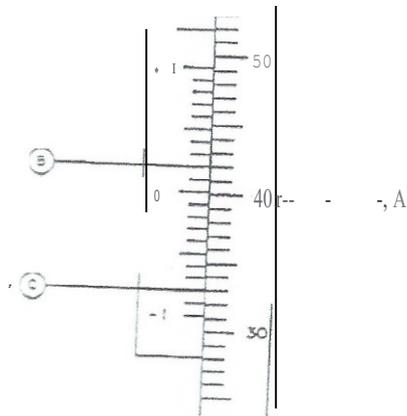
USING THE GRAVES 1/10 DEGREE VERNIER SCALE

Your stop block is embossed with a Vernier scale that reads 1 degree both positive and negative. To read the actual setting in 1/10 degrees note the position (either+ or -) where the next line on the Vernier best matches with any line on the protractor scale. Add or subtract the Vernier reading in 1/10 to the whole degree angle.

Example:

Note position of O on Vernier to protractor scale. between 40 and 41 in the example A.

Example A.



Example A.

NOTE: Many of the older GRAVES Faceting Machines have stop blocks with zero points that are not positioned near the center of the stop block. In these cases the entire + or - degree Vernier scale will not be positioned on the stop block. However, this does not indicate a problem or decrease its accuracy. In these cases the user must use the portion of the Vernier that shows (either the plus or minus scale) and apply the factor as shown in Step 2 & 3 above.