



Operating Instructions

Model #23094R

AV-18 Ultimate Rock Polisher

Grits & Rocks are not included.

Your new Raytech Ultimate Rock Polisher machine is useful for a wide variety of rock finishing operations. The following are a few examples:

- Grinding and polishing “baroque” gemstones from rough chips.
- Smoothing and polishing preformed cabochons and small slabs.
- Polishing seashells.

In addition, it can also be used for the following

- Deburring metal stampings and machined parts.
- Descaling metal castings.
- Cutting radii on sharp edges of metal parts.
- Polishing metal and plastic parts.

Each type of product finishing requires its own sequence of steps with appropriate abrasives, polishes and media. These instructions include a general outline of methods and materials required.

General Instructions

Your new Raytech Ultimate Rock Polisher comes with a motorized base, one bowl and one cover. If the tumbler will be used for polishing as well as for cutting, we recommend the purchase of one extra bowl strictly for the polishing step so that it will be free from embedded cutting grit. **Raytech spare No Drain bowl is part #23076R.**

To install the bowl, place it over the threaded stud in the base and screw on the nut provided.

Note: It is essential that this nut be tightened securely so that the bowl will not vibrate loose.

Maintenance

The following maintenance should be performed after every 500 hours of use:

1. Check tightness of all hardware.
2. Inspect interior of bowl to ascertain any premature wear.

Health & Safety Cautions

1. Do not cover the machine with anything (such as a blanket or a box) to insulate the noise as this could cause over- heating and become a fire hazard.
2. Always connect the machine to a power source that has been properly grounded to prevent any possible electrical shock.
3. The Ultimate Rock Polisher is designed not to “walk” during normal operation. We recommend that the machine be placed on a solid floor away from any combustible materials. If the machine is used on a bench, it should be blocked in to prevent any accidents. Do not bolt or attach these units to a workbench by any means, as this will void warranty.
4. Prior to any adjustments to the eccentric weight assembly, disengage the machine from its electrical power source.
5. Never attempt to operate or experiment with other than recommended media and compounds.
6. Do not dispose of grits down drain. Remove as much grit as possible by straining.
7. Always use ear protection in the work area while the machine is running. Machine noise level at maximum conditions is 82 dB. Noise levels can be less depending on media applications.

Ultimate Rock Polisher Amplitude Adjustment

The amplitude (the amount of movement of the bowl) determines the force with which the tumbling media will act upon the workpieces. The greater the amplitude, the more aggressive the tumbling action will be. The Ultimate Rock Polisher makes it possible to adjust the amplitude of the tumbler to match the job to be done. The adjustable weight system will produce a tumbling action that ranges from mild to aggressive.

To Change Amplitude

Unplug the machine and turn it upside down and remove the cover at the bottom of the base. To change weight position, loosen screws by turning them clockwise. Rotate the adjustable weight to the desired position (see diagram) and turn the screw counterclockwise to lock it in position. After the amplitude is selected, replace the bottom cover, tighten and turn the tumbler to the upright position.

Note: With the adjustable weight in the maximum position, and the bowl empty, the tumbler will jump and walk when operated. It is strongly advised to load the bowl with the media before starting the tumbler when the weight is in the maximum amplitude position.

Parts List

Models AV-18 Ultimate Rock Polisher

Item	Part#	Description	Qty
1	03246R	Washer 3/8 USS STD ZC	1
2	03353R	Nut 3/8-16 Hex Fin Reg ZC	1
3	07358R	Lid Hold Down Nut	1
4	23076R	NO DRAIN B-18 Bowl & Cover	1
5	07362R	Motor Plate Pad	1
6	07986R	AV-18 Base Complete 110V	1
7	07360R	Fixed Eccentric	1
8	07359R	Adjustable Eccentric	1
9	03080R	LH Thumb Screw	1
10	07342R	Rubber Feet	3
11	07325R	Springs	4
12	8094090P	Rubber Well Nuts	4
13	8095570	Bowl Hold-Down Plate	1

When selecting rocks to tumble, remember, the finished product is determined by the quality of rocks with which you start. The rocks you use should be sorted by hardness and roughness. Your rocks may vary in size to include a few up to 1½" in diameter. Vibratory tumblers are most successful on rocks where the shape does not have to be changed a great deal or on rocks which have been previously sawed or shaped. Agates and other hard stones should not be tumbled with soft materials such as opal. If you are planning to tumble beach worn rocks, don't complicate the process by mixing them with hammer-broken rocks.

A Suggested MIX of rocks consisting of a max weight of 40-70 grams per rock. (½" – 1 ½" dia.) All rocks should be a hardness of 6-8 on the Mohs scale.

- Jasper
- Agate
- Quartzite (Rose Quartz, Smokey Quartz, Amethyst)
- Tiger's Eye

❖ **This 12" bowl has a capacity of .18 cubic ft.**

❖ **The capacity weight in this bowl is approx. 16 pounds of rocks.**

The following are only general guidelines for polishing rocks as most people make modifications to fit their specific needs.

- 1 Fill your Ultimate Rock Polisher approximately 3/4 full, no more than 14-16 lbs of rocks. **A mix of rocks consisting of a max weight of 40-70 grams per rock. (1/2" – 1 1/2" dia.)**
- 2 **NOTE: It is also acceptable to add Ceramic Media if you do not have enough rocks to fill the bowl to 3/4 full.**
- 3 Add GRIT (Check chart below for quantity needed for the various size vibratory bowls.) Tighten wing nut in center of barrel securely & turn on tumbler.
- 4 Begin adding water a little at a time until the grit starts to cling to the stones which is what it should do. Too much water will tend to rinse the grit back off the stones. **There should be almost no free-standing water at the bottom of the tumbler bowl.**
- 5 Replace tumbler lid to prevent the water from splashing and evaporating. This will also reduce some of the noise connected with rock polishing.
- 6 The **FINE** grind will be the longest and will vary with the roughness and hardness of the stones. The rocks should be checked two to three times daily because the build-up of "mud" (ground-up rock, grit and water) will cause the action in the tumbler to slow down. A small amount of water may be added to restore the action. This is critical because if the action stops significantly, the bowl could be damaged.
- 7 When desired results in the FINE grind are attained, the rocks and bowl should be rinsed thoroughly. DO NOT wash grit into sink or drainpipe. Make sure all traces of FINE grit are rinsed from the rocks and barrel. The rocks can then be replaced in the bowl, ready for the next phase of polishing.
- 8 Follow steps each of the next - then **PREPOLISH**, and finally, **FINAL POLISH**. Use chart below for correct amount of grit for each step. The stones and bowl should be washed thoroughly between grit changes.
- 9 After the **FINAL POLISH** you may wish to run the stones for a few hours in a solution of laundry detergent and enough water to make a *stiff suds* mix. This will clean off any remaining polish and do a final burnishing job on the stones.

STEP	GRIT	QUANTITY OF GRIT	WATER REQUIRED	CYCLE TIME
(I) Fine Grind : Prepares the rocks for polishing by removing the micro scratches.	Silicon Carbide 120/220	Use 3 level tablespoons of grit into the bowl which has been filled with 14-16 lbs of rocks. Rinse out sludge from the bowl every other time grit is added.	Add just a few splashes (about 3 tablespoons) of water <u>per pound of rock</u> . You only want the abrasive grit and rocks to be slightly damp, not fully submerged. The goal is to create a thick, mud-like slurry paste that adheres to the stones with no free-standing water at the bottom of the bowl.	3-5 days
(II) Pre-Polish : Resurfaces the rocks for a near glossy finish.	Use 500 AO (Aluminum Oxide) for pre-polishing; its rounded particles are excellent for creating a buffer before a final polish..... or use	Use 3 level tablespoons of grit into the bowl which has been filled with 14-16 lbs of rocks. Rinse out sludge from the bowl every other time grit is added.	Add just a few splashes (about 3 tablespoons) of water <u>per pound of rock</u> . You only want the abrasive grit and rocks to be slightly damp, not fully submerged. The goal is to create a thick, mud-like slurry paste that adheres to the stones with no free-standing water at the bottom of the bowl.	1-2 days
<i>(II) Pre-Polish alternative grit option</i>	<i>... 600 SiC (Silicone Carbide) if you need a slightly more aggressive fine-grit cut for harder stones to quickly remove imperfections.</i>			
(III) Final Polish : Buffs the rocks to create a shiny reflective mirror shine	Aluminum Oxide , typically 1-3 micron or generally referred to as 8,000-12,000 grit Aluminum Oxide works beautifully on almost all stones (ie agates, jaspers)... or use insteadCerium Oxide to produce a wet look mirror like shine.	Use 3 level tablespoons of grit into the bowl which has been filled with 14-16 lbs of rocks. Rinse out sludge from the bowl every other time grit is added.	Fine Grits & Final Polish Stages: Use minimal water—just enough to activate the grits. If you add too much, the grit washes off the rocks, the slurry becomes too thin, and you lose the necessary friction. with no free-standing water at the bottom of the bowl.	1-2 days
(IV) Burnishing			After the final polish, tumble the rocks in water with Borax or mild soap flakes to remove leftover polish residue and maximize the gleam.	A few hours up to 1 day

CAUTION, ELECTRICALLY OPERATED PRODUCT. Not recommended for children under 12 years of age. As with all electric products, precautions should be observed during handling and use to prevent electric shock