

INTRODUCTION
to
VIBRATORY TUMBLING
and
OPERATING INSTRUCTIONS
for



VIKING[®]

VIBRASONIC[®]
TUMBLERS

TRIED, TESTED AND PROVEN... VIBRASONIC[®] TUMBLERS

"DELIVER WHAT OTHERS PROMISE"
TAKES LESS THAN 1/10 THE TIME OF ORDINARY TUMBLERS

BREAK THE BARRIER in gem tumbling
FULLY ADJUSTABLE TUMBLING ACTION

GIVES BOTH ROTARY AND VIBRATOR ACTION . . .
Only the stones rotate in the new VIBRASONIC[®]

GEODE INDUSTRIES

106 W. Main, New London, Iowa

INTRODUCTION TO VIBRASONIC® TUMBLING

WARNING: Disconnect power cord prior to making any tumbler adjustments!

Place top plate and hopper section of tumbler **UPSIDE** down so that bottom of plate is exposed. **ATTACH UNIT DRIVE BELTS . . .** by placing over pulleys on top plate and then put unit on the top plate section . . . Be certain that **ALL 4 SPRINGS ARE PROPERLY ENGAGED WITH THE TOP PLATE CIRCLES . . .** Stretch belts over motor pulleys and "roll" onto the pulley by turning motor shaft. Check to be sure that belts are properly aligned in the pulley grooves of the top plate and the motor pulleys. Unit is now ready for operation.

No oiling or lubrication is required prior to operation of the tumbler.

Tumbling by the hobbyist as well as by the professional has always been more or less considered a method to utilize scrap materials or stones too small to be of much value in the lapidary process. Now Vibratory and Vibrasonic tumbling have revolutionized the attitude of both hobbyist and professional alike.

With the invention of the Vibrasonic tumbler by Geode Industries Inc., New London, Iowa, U.S.A., tumbling times have been drastically reduced until it is possible to process, in hours, materials which normally required weeks of tumbling by ordinary methods. Vibratory tumbling is not new, as this method has been used for many years by large industrial firms, but only since the Vibrasonic tumbler has this new and exciting form of processing gem materials been available to the hobbyist and professional lapidary.

Vibrasonic tumbling makes possible the finishing of pre-form cabs and shapes in approximately 30 to 48 hours. Also the finished product retains its original shape, with very little rounding of the edges as with ordinary methods. In addition, it is possible to process even the most delicate materials as the Vibrasonic principle does not employ the 'falling action' of most rotary type machines.

Only the load of materials rotates in the Vibratory tumbling process and this rotation is as a complete 'mass of materials', that is, all materials are turning evenly and at the same time. The Vibrasonic tumbler provides vibrations of over 3,000 per minute which gently and quickly finish the materials. The tumbling hoppers are vibrating and also creating 'sonic waves' which permits the completing of an entire tumbling load in approximately 2 to 5 days, from rough to polished gems.

Complete new tumbling methods are utilized and the ordinary procedures as thought of in rotary tumbling will not prove satisfactory in Vibratory processing. In the Vibrasonic process, materials are tumbled in the almost semi-dry state, using barely enough moisture to mix the stones and abrasives into a 'batter' stage. This type of mixture is used through

the entire process from roughing through to polish and more especially in the final stages of finishing. Ever notice when your cabochons start to polish the best? — just when the buffing wheel and its compound start to 'dry out'. The pull on the stone begins to increase and that mirror shine just seems to 'pop out'.

This is also true, to a certain degree, in Vibrasonic tumbling, and only with this method is it possible to even consider processing precious and semi-precious stones in a semi-dry state.

The Vibrasonic tumbler is constructed with rugged aluminum castings; there is no sheet metal or thin parts to rust, warp or wear. All castings are irridite treated to prevent corrosion in salt air climates. Hammerstone baked enamel finishes are further applied for beauty and ease of cleaning. The tumbling hoppers are lined with pure polyvinyl, for quiet chip-free operation. Hoppers are of the 'open' type and permit instant inspection of the load at any time. Both single and dual hopper models are manufactured. No gas build-up is possible in Vibrasonic operation.

The Vibrasonic is powered by a dependable General Electric motor which is fan-cooled, with sealed ball-bearing construction and is virtually maintenance-free. A choice of motors is available; either 1/3 h.p. 115v. 60 cycles or 1/4 h.p. 230v. 50 cycles.

Compact table top construction on the Vibrasonic permits operation in a space only 18 x 16 x 12 inches and the units feature completely adjustable tumbling actions. The tumblers give both a 'rotary' type of tumbling action as well as full vibratory tumbling action with one single motor.

Vibrasonic tumblers are patented in the U.S.A. and foreign and Australian patents are pending.

In the event that this is your first experience with gem tumbling we suggest that you read the introduction and directions thoroughly, following them carefully. Deviations for special materials and procedures will come after experience is gained in the use of the Vibra-Sonic. For those who are skilled in the use of rotary tumblers and rotary tumbler methods we suggest that all but the most basic concepts of gem tumbling be laid aside.

With the removal of less material, stones retain their natural shapes, less material is "wasted," and more finished stones per pound of rough is realized. Preforms and cabochons may be finished by the "load" and each stone retaining its natural shape and cabochons holding very close to actual size. Many commercial establishments use the Vibra-Sonic units to finish hundreds and thousands of cabochon stones after they have been pre-formed on grinding wheels. Pre-forms such as crosses, hearts, triangles, bars, etc., will process easily in the Vibra-Sonic and even the inside corners will polish to perfection.

VIBRA-SONIC CONSTRUCTION

Your Vibra-Sonic tumbler is constructed from cast aluminum alloy, ruggedly built to exacting specifications and designed for efficient operation. All aluminum castings are iridite treated to prevent corrosion and deterioration, especially in salt water climates. Baked hammertone finish enhances the unit and makes easier cleaning and maintenance. Vibra-Sonic hoppers are rugged one piece aluminum castings, specially treated, and vinyl lined by processes developed by the Viking Equipment Div. The vinyl lining is fused directly to the aluminum casting and is designed to give thousands of hours of service. The hoppers are re-linable and your Viking dealer or the Viking Div. may handle the re-lining of these hoppers should the need arise.

A full $\frac{1}{2}$ h.p. double shaft industrial type sealed ball-bearing motor gives more than ample power to handle even the heaviest of loads. The unique drive system of the Vibra-Sonic allows the unit to be easily disassembled for adjustment of the tumbling action.

THE TUMBLING ACTION . . . Only the stones rotate in the new Vibra-Sonic units. Vibrations in excess of 3000 per minute quickly and gently process the load. This is in direct contrast to Rotary tumbling methods where loads rotate on an average of 20 to 30 times per minute and the entire container is in motion. Vibra-Sonic containers remain practically motionless except for an almost imperceptible "sonic" vibration. The rotation of the load occurs through the transfer of this vibration and motion and serves to keep the abrasives "suspended" and the load evenly coated with abrasives at all times. The Vibra-Sonic method uses little moisture, with only enough to keep the load moist in a semi-batter stage. This again is highly in contrast to ROTARY methods where water is used to practically cover the load.

The tumbling action of the Vibra-Sonic is adjustable from "Zero" action up to full capacity of the unit. This is accomplished by adjustment of the outer Micro-Dial counterbalance weights. These are located on each end of the $\frac{3}{8}$ " stressproof steel shaft which passes through the bearings on the top plate section of the unit. Adjustment of this action is further discussed in the rear section of the instructional manual. Factory settings are for normal operation with most average gem materials and further adjustment is usually not necessary unless special materials are to be processed. Most materials down to a hardness of 5 of the MOH scale may be mixed and processed together.

THE LOAD

Maximum capacity for the VT-8 hopper is 4 lbs., for the V-12 hopper 6 lbs., for the VT-14 hopper 14 lbs., and the VT-35 hopper 25 lbs. This capacity includes rough materials and abrasives. This does not

mean that a full 4 lbs. or 6 lbs., 14 lbs. or 25 lbs. should be loaded in each hopper. It is suggested that hopper be filled to a minimum of 75% full when loading. Weighing of rough materials is not always necessary, but this will help in judging necessary requirements for abrasives and polishing powders. Loads for the hoppers may not always be up to maximum as recommended in pounds. This is due to the varying densities of materials. For instance 4 lbs. of obsidian will not occupy the same "space" as 4 lbs. of garnet. Sizes and shapes of materials will also govern to a certain degree the "poundage" that it is possible to process in the hopper. The important thing to remember and one of the most essential in Vibra-Sonic tumbling is that the load be "balanced."

"Balancing" the load is accomplished by proportioning materials by size. For instance, a load of gem materials which are all $1\frac{1}{2}$ " in size would result only in chipped edges, spalled material and poor final results. Do not attempt to process loads of rough materials which are all the same size. Approximately 20% to 25% of the load (by weight) should consist of smaller materials from $\frac{1}{4}$ " to $\frac{1}{2}$ " in diameter. In the event that smaller stones are not available it is suggested that Vibra-Balls be used as this media.

Vibra-Balls used as this media provides a naturally rounded surface, filling "gaps" between the larger stones. Serving not only as a preventative against chipping and fracturing, but also adding weight to the load, expediting processing cycles. This type of media may be used over and over until practically "worn out." Vibra-Balls is a clean type of media and will not impregnate with abrasives, insuring cleanliness.

Wash load and media prior to placing in the hoppers and drain off ALL excess moisture. *Too much water* will cause rotation to stop, excess splash, and poor tumbling action. It is wise also to carefully select the load.

Remember, your Vibra-Sonic will produce no better quality finished materials, than that which you have selected. It is recommended that you also select one hopper for your roughing operations, and use the other one strictly for pre-polish and polishing operations. This will help to avoid contamination of abrasives and polishing compounds. A balanced load, correct amount of liquid, and consistency of the liquid and abrasives are the most critical items in obtaining good results from your Vibra-Sonic tumbler.

TUMBL-TROL® AND YOUR VIBRA-SONIC

Tumbl-trol is a unique combination of concentrated ingredients. Small amounts of the chemical are capable of making water extremely slippery and thick. Thickened water retains longer in your unit and in addition, abrasives are held in complete suspension in the solution, improving tumbling action. The possibility of fracturing and chip-

ping is drastically reduced. Improvement on the luster obtained on stones will be noted, being especially true on stones of 6 or below on the M.O.H. scale of hardness. Tumb-Trol doesn't replace abrasives or polishing compounds, but serve to compliment the mixtures and greatly facilitate tumbling actions and final results.

Simple Directions for the use of these are: For Grinding operations - Crush 1 tablet and dissolve in 1 Quart Water. Use the stock solution in operation #1-R and #2-S or use Liquid "C."

For Pre-Polishing and Polishing operations—Crush 2 tablets and dissolve in 1 qt. water. Use this stock solution in operations #3-P and #4-P.

Use these concentrations as you would water. When pre-polishing or polishing softer stones (6 or below in hardness) it may be necessary to further thicken the mixture. This may be done by increasing the number of tablets used to make a more concentrated solution.

Here is what one user reports:

"First, let me say I have been using one of the Viking Vibra-Sonic VT-14 tumblers for over a year, operating it 24 hours a day for all processes from rough to polish and have found it to be satisfactory in every way. I have used the Tumb-Trol in all processes, and have materially improved the mirror polish, with all types of stones. I do not separate the rock according to hardness, but throw everything in together. The use of Tumb-Trol is unhesitatingly recommended in your equipment."

Oakland 10, Calif.

Here is what another user reports:

"Two of my customers have reported the use of the Tumb-Trol helps to conserve moisture . . . also increase by 50%, running times without the necessity of adding water, which I have found will give a much better grind. I use the tablets in #600, then in the pre-polish and final polish. Our breakage per 100 pounds of baroques has been cut down 30% since using the tablets. I find that 1 tablet per 1 quart of water is about right and will thicken the water enough so that they don't interfere with the action. Can say that is one of the finest tumbling products to hit the market. Take this for what it is worth, but I would not be without them."

Seal Beach, Calif.

VIBRA-SONIC PROCESSING PROCEDURE

Operation #1-R — 1st Rough Grind

#1. Place "Balanced" load of rough materials in hopper filling to a minimum of $\frac{2}{3}$ to $\frac{3}{4}$ full. When load is approximately 1 to 1 $\frac{1}{2}$ " from top of hopper, optimum capacity has been reached. Less than 50% full will cause poor tumbling action and slow results.

#2. Turn on unit with toggle switch located in the front of base.

#3. If using VIKING pre-packaged charges add 1 package marked #1-R, slowly spreading the abrasive over the load.

#4. Add moisture as follows: 1 Tablespoon or 10 cc of tap water per pound of load.

#5. As soon as load is rotating satisfactorily and stones appear evenly coated place Vinyl Lid on the hopper. For VT-8 and VT-12 press each corner of the lid firmly with heel, or thumb of hand to secure lid to top. For Model VT-14 and VT-35 tighten thumb nuts evenly and slowly until lid is secure. Do not overtighten.

FOR LOOSE ABRASIVES: Use approximately 15 cc or one Tablespoon of Graded Silicon Carbide Grit size; #80 thru #120 or UN-GRADED Silicon Carbide in a 60-90, or similar fine size per pound of load. Too coarse will slow down action.

Tumbling times required for this operation will vary widely in accordance with the surface texture of the rough materials. Harder materials will also require more time than softer materials. Average time required will normally be from 1 to 3 days. Leave stones in this operation until desired surface has been produced. Usually, until stones are free from pits and surface is smooth.

When processing softer material, the load might thicken quite heavily and require additional moisture. This is normal and is due to "stone dust" which occurs from the removal of rough from the load and being absorbed into the mixture. **NORMAL** consistency for this operation should be that of approximately a thin "batter." Should rotation slow down and load appear as a thick "mud" solution, add moisture sparingly to bring solution coating the load back to a thin batter.

It is suggested that load be checked at 12-hour intervals. Moisture will normally last from 18 to 30 hours. Abrasives will normally start to break down after 6 hours and it is from this time that best results start. Abrasives are usually completely broken down after 8 to 12 hours and it is advisable to recharge the container following directions for #1-R after running 24 hours. Remove sludge and wash. **CAUTION:** When tumbling soft material sludge may have to be removed sooner.

Cleanliness from one operation to the next cannot be stressed too highly. Just a few abrasive grits carried over from one operation to the next can contaminate the entire load. **WASH THOROUGHLY!**

Operation #2-S — 2nd Grind

#1. Drain off all excess water from the load and place into same hopper as used for previous operation.

#2. Turn on unit.

#3. Add packaged charge marked #2-S slowly.

#4. Add moisture as follows: Approximately 10 cc per lb. of load.

#5. As soon as load is rotating and stones appear evenly coated, replace vinyl lid as per previous operation.

FOR LOOSE ABRASIVES: Follow all procedures as listed. Use approximately 15 cc Abrasive #320 or 3F per pound of load.

NOTE: Mixture must cover stones with "Batter" like film adhering to the load. If stones are rotating "clean" without coating . . . too much moisture has been used. Normally moisture during this operation will last from 12 to 24 hours, and more if using tumble-tablet solution. Check load every 6 to 10 hours.

AVERAGE RUNNING TIME for this cycle should be from 12 to 24 hours, depending on the hardness and texture of the load. Remove stones as soon as desired texture has been reached. Stones will normally appear hazy over the entire surface and when hand rubbed on piece of felt or similar cloth a semi-gloss will appear. Sort out pitted stones remaining at the end of cycle #2-S and re-run in your next 1-R cycle. Continue with remainder of the load to the next cycle #3-P, cleaning and washing as per previous instructions.

Operation #3-P — Pre-Polish

#1. Drain off ALL excess water from the load and place in hopper. (Change over and use other hopper at this time). If you have more rough materials to process, you may now start a new load through operation #1-R. Note: Only 1 hopper is supplied with model VT-14 and VT-35.

#3. Add packaged charge marked #3-P slowly.

#4. Add moisture as follows: 10 cc per lb. of load. Add water or solution ONLY UNTIL thick "batter" like coating is obtained on the load and all stones are evenly coated. TOO MUCH water will destroy coating action and will greatly increase processing times required.

#5. As soon as load is evenly coated and mixture resembles batter stage, replace lids as previously.

FOR LOOSE POLISHING POWDERS PROCEED AS FOLLOWS: Use 15 cc per lb. of load — Norton E-266 or Alundum #600.

"Batter" stage in this cycle should appear somewhat thicker at the onset, than in previous stages. Too much water to the extent that coating action does not occur and stones seem fairly clean will increase tumbling times required and result in poor final results. Check stones at approximately 8-hour intervals.

AVERAGE RUNNING TIME for this cycle is 8 to 16 hours. Stones are normally completed when semi-polish appears. Wash stones thoroughly before proceeding to next operation.

Viking K-G Filler and other Filler media

Normally on materials of 6½ or more in hardness filler material need not be added. It is advisable to use some type of filler on loads where a portion of the load consists of softer stones such as obsidian or similar materials. Approximately ¼ cup filler per pound of load is a good General Formula for use of this tumbling aid. Fillers may be of most any type of suitable material.

To mention a few; hardwood sawdust, maple pegs, small masonite chips, and the like. Those recommended as working best are VIKING K-G Filler, or Rice Hulls. When using filler material it is well to remember that it is being used for a specific purpose.

Filler material aids in thickening the solution surrounding the stones and in addition cushions the load. This in turn reduces the impact of one stone against the other, reducing fracturing, and spalling. When using filler materials as mentioned above, additional liquid may have to be added to the load to obtain the desired consistency.

Tumbl-Trol may also be used as filler material and means of gaining cushioning effect for the load. This may require the use of additional amounts to gain the desired effect. It is also probable that tumbling times may have to be increased to compensate for the thickened solutions.

When processing loads of extremely soft or intricate materials the use of cushioning agents, fillers and thickened solutions is almost mandatory.

Operation #4-P — Final Polish

#1. Drain off ALL excess water (after washing load thoroughly) and re-place load in same hopper as was used for pre-polish cycle.

#2. Turn on unit.

#3. Add Viking packaged Charge marked #4-P slowly.

#4. Add moisture as follows: 10 cc water per lb. of load.

IMPORTANT: Do not attempt to operate this cycle with mixture too thin. Load must be coated with thickened "batter" like solution in order to obtain optimum results.

#5. As soon as load is evenly coated with the proper consistency solution, replace lids.

FOR LOOSE POLISHING POWDERS PROCEED AS FOLLOWS: Use 10 cc of any of the following compounds. Tin Oxide, Cerium Oxide, or Viking VIIP-100 final polish compound per pound.

AVERAGE RUNNING TIME for this cycle is normally 8 to 24 hours depending on materials. Agate and quartz materials will normally polish more rapidly than softer type stones. It is well to check stones at 8 hour intervals. Should the mixture require the addition of solution or water, add sparingly and slowly only enough to bring the mixture back to a "thick batter" stage.

When using Tumbl-Trol solutions, normal running times may have to be increased. This will depend on the number of tablets used to make stock solutions. Use of 1 to 2 tablets for stock solutions will under normal conditions NOT require increased running times.

It is well to remember that normally, running materials longer will produce far better results than attempting to cut running times short.

When stones have reached the desired polish, remove wash load thoroughly with a final wash in detergent and rinse in clean water. Drying stones and rubbing with terry cloth towel will remove any film left.

PROCESSING PRE-FORMS

If stones come directly from sawing or grinding operations and are free from saw marks or pronounced grinding marks, OPERATION #1-R may be omitted. Begin with operation #2-S. If stones have been sanded then operation #2-S may also be omitted.

Extremely delicate materials or intricate shapes may require reduction in the tumbling action of your Vibra-Sonic unit. This may be accomplished by slight adjustment of the Micro-Dial counterbalance weights located on the top plate section of the unit.

HOW TO PROCESS APACHE TEARS OR ANY SIMILAR MATERIALS

Apache tears are no problem once you face the realization that they require special treatment.

#1. Start to tumble them with a Graded #120 Grit.

#2. Wash, Wash, and Re-wash between each load so that not ONE GRAIN of abrasive is carried over from one operation to the next.

#3. You may mix the stones if you wish but remember when you start the 2nd Grind . . . USE GRADED #320 or Graded #400 Abrasive only. AND START CUSHIONING the loads with about 1/2 cup Rice Hulls to 1 Cup Rice Hulls for a 4 to 5 lb. load . . . This is a must . . . and you must start with the 2nd grind. Use Tumbl-Trol "C" here.

What happens if you do not . . . is that the apache tears or Glass being rather soft and subject to spalling and internal fracturing very easily . . . hit against the other stones . . . beginning in the 2nd Grind . . . This does not show up until you get ready for the polish . . . and you end up with NO POLISH . . . it is then that you begin to wonder what went wrong and it went wrong . . . starting in the 2nd Grind When you failed to cushion the Load . . . The load must also be "balanced" that is enough small stones in proportion to large stones to "FILL IN" the Gaps between the voids between stones.

#4. Be certain that when you go from the 2nd Grind to the Pre-polish that you Wash, Wash and Re-wash . . . any abrasive grains carried over here

will be disastrous to the whole operation . . . you might not be able to see them but if they are clinging in cracks in the stones and get shaken out in the Pre-polish . . . you had best just start all over again so this is why you must take all precautions to see that this does not occur.

ALSO . . . ABOVE ALL DO NOT USE THE SAME HOPPER for Pre-Polish that you used for the Rough and 2nd Grind . . . in fact it is most advisable if you want a top polish . . . that you use a separate hopper for each operation . . . as eventually the hoppers themselves become contaminated with coarse abrasive grains and then no matter what you do . . . you will end up with ZERO results.

Throw away the Rice hulls used in the 2nd grind and use new ones in the pre-polish and here I would suggest a minimum of 1/2 cup per lb. of stones.

About 1/2 Tablespoon of Abrasive (Pre-Polish) per Pound of Stones is about correct . . . and we Strongly suggest that for this you use our VHP-150 or Alundum #600 and Tumbl-Trol "C."

#5. After you have run through the pre-polish and your stones begin to show a little "glow" or semblance of a polish . . . here again be certain to wash thoroughly . . . we advise putting the stones back in the hopper with about 1 cup of water and 1/2 cup of Tide . . . and running for a few minutes and then re-wash them in clean water again before starting to the Polish Stages. Add Tumbl-Trol "C" in Stage #6.

#6. For a polish . . . you may use our VHP-100 Compound . . . about 1/2 Rice Hulls per pound of Stone or possibly even more so that the stone absolutely does not hit "STONE AGAINST STONE" . . . if they do . . . you will never get a polish on soft materials . . . About 1/2 Tablespoon of polish per pound of stone and just enough water to make a THICK BATTER or almost a paste . . . it is not necessary that rotation be fast in the Final state . . . but only that the stones move or rotate slowly . . . and keep them well CUSHIONED with Rice Hulls . . . Check them often to see that they are properly cushioned . . . RUN UNTIL POLISHED . . . usually about 24 to 30 hrs.

As an alternate . . . into the Final Polish State you can Use Dry Method with Vibra-Dry Compounds.

This is used Dry . . . no water and since it is used this way . . . all you have to do to separate the stones from the compound. Use Vibra-Dry instead of the Rice Hulls . . . and run the mixture through or over a Screen . . . The KG filler will pass through . . . (being dry) and the stones remain on top . . . Save the Compound in a Plastic bag and use the mixture over and over until worn out.

ADJUSTING TUMBLING ACTION

Tumbling action on the Vibra-Sonic is fully adjustable. This is accomplished by setting the Outer

Micro-Dial weight on each side. These weights are located on each end of the $\frac{1}{8}$ " steel shaft on the top plate. Use this Micro-Dial adjustment system to vary your tumbling action from light to heavy when desired.

Proceed as follows to adjust tumbling action:

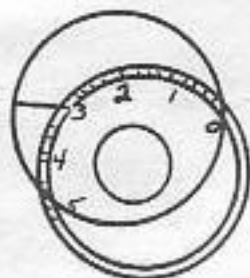
#1. Turn off unit . . . disconnect by pulling plug from electrical outlet.

#2. Remove load from hoppers and turn unit over to expose under side of unit.

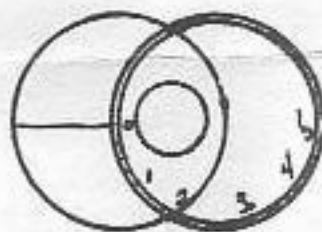
#3. Remove rubber drive belts from motor pulleys by turning motor shaft and angling drive belt so as to slip off pulley to outside end of shaft.

#4. Top plate section will now be free from base and base section may be lifted off.

#5. View each weight from end position and note setting. Outer weight has numbers 1 to 5 on outer face. Inner weight has NO numbers but has guide line through center of weight. Number (or mark in between numbers) is adjusted to fall on guide line of inner weight. This must be done for each OUTER weight. Do not set just one side. Both sides must be adjusted to the same setting. **IMPORTANT:** Set the outer weight on each side only . . . Do NOT adjust or move inner weights.



Micro-Dial set at 3.

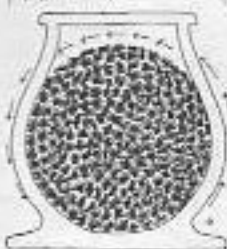


Micro-Dial set at 0.

#6. At setting 0 practically no tumbling action will occur. At setting #5 maximum action of this unit will be obtained.

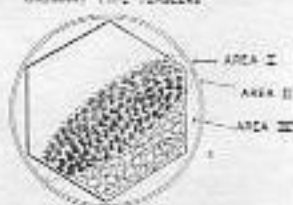
#7. Maximum settings not to be exceeded are: VT-8 (1.2), VT-12 (1.4), VT-14 (1.6), and VT-35 (2.0).

VIBRA-SONIC® TUMBLER



The above illustration shows how the gem material are in constant rotation in the Vibra-Sonic tumbler. In areas of stationary materials not visible falling or tumbling action. The load turns as one complete mass of material, all rotating at the same time. The Vibra-Sonic gently but quickly tumbles gem materials with over 2,000 revolutions per minute. This tumbling action is fully adjustable on the Vibra-Sonic tumbler.

ORDINARY TYPE TUMBLERS



The above illustration shows the areas of different types of action which occur in ordinary type horizontal or round barrel tumblers. Area I is portion of the tumbling load which receives the most aggressive tumbling action. Area II receives only a "limited" amount of tumbling action. Area III is practically void of tumbling action and contains mainly of stationary materials.

WARNING! DO NOT EXCEED THE RECOMMENDED SETTINGS . . . DAMAGE TO YOUR MACHINE MAY RESULT AND WILL VOID THE WARRANTY. CAUTION! SERIOUS INJURY COULD RESULT, FROM EXCEEDING THE RECOMMENDED SETTINGS. BOTH SETTINGS MUST BE EXACTLY THE SAME ON EACH SIDE OF THE UNIT.

#8. When re-placing top plate to base unit be certain all four coil springs are engaged with circles in top plate section and belts are in pulley grooves.

MAKE CERTAIN SET SCREWS IN WEIGHTS have been properly tightened. A loose weight could seriously damage your unit or injure the operator.

MAINTENANCE OF YOUR VIBRA-SONIC TUMBLER

DRIVE BELTS – It is recommended that drive belts be replaced after 6 months continuous use. Should belt become worn prior to this time; check . . . Pulley alignment . . . Contact of coil springs with top plate, spring must fit over circle cast into top plate.

MOTOR – No lubrication of motor is necessary. Motor's interior should be "blown out" by using air hose. This cleans out lint and dirt which collects inside motor. DO NOT obstruct space at bottom of base . . . cool air is drawn in by motor fan through this space . . . In extremely hot weather it may be advisable to slightly elevate the tumbler from the surface of the floor or bench to aid in cooling motor.

Under normal conditions one end of the Vibra-Sonic's base will seem warmer than the other. This is due to motor fan which exhausts hot motor air out this end. Do not block side vents or base of unit so as to prevent free air circulation.

TOP PLATE – Keep top plate wiped clean. Do not allow abrasives or polishing powders to run down top plate or drip into motor.

HOPPER – Wash clean before storing, and before each cycle. Make certain holdown nuts on hopper feet are securely tightened. A loose nut can easily cause a broken hopper foot and damage to your unit.

SET SCREWS – Check all set screws periodically and make certain they are tight. There is one set screw in each motor pulley and shaft pulley. Also one in each weight.

For additional information on the operation of your Vibra-Sonic tumbler contact your nearest Viking dealer or write directly to the Viking Equipment Div., Geode Industries Inc., New London, Iowa, 52645.

WARNING: Keep Hand and Fingers Away From Top of Unit when Operating. Do Not Put Hands Between Top and Base Sections of Tumbler, as Serious Injury Could Result!

REPLACEMENT PARTS

Top plate with bearing	ea.	\$60.00
Center Shaft — Vibra-Sonic	ea.	3.50
Weights — Set of 4	ea.	20.00
4 lb. size hopper — Incl. Vinyl Lid	ea.	18.50
6 lb. size hopper — Incl. Vinyl Lid	ea.	23.50
14 lb. size hopper — Incl. Alum. Vinyl Lid	ea.	57.00
45 lb. size hopper	ea.	78.50
Drive Belts	ea.	1.00
Sealed Ball Bearing Pillow Blocks	ea.	6.00
Stud Bolts for Top Plate	ea.	.50
Drive Pulleys (Specify Motor or Shaft)	ea.	3.00
1/2 HP Ball Bearing G. E. Motor	ea.	32.50
Coil Springs, Vinyl Covered	ea.	4.50
Aluminum Top Plate Casting	ea.	45.00
Aluminum Base Casting	ea.	50.00

TUMBLING SUPPLIES

VIKING packaged Charges for VT-8	ea.	\$ 3.25
VIKING packaged Charges for VT-12	ea.	3.75
VIKING packaged Charges for VT-14	ea.	6.75
VIKING V H P-100 Final Polish Compound (4-P) lb.	lb.	5.00
VIKING V H P-150 Pre-Polish Compound (3-P) lb.	lb.	3.00
VIKING K-G Filler Material	lb.	.50
RICE HULLS Filler Material	lb.	.50
VIBRA-BALLS MEDIA	lb.	6.75
ALUNDUM #500 Flour	lb.	3.00
E-266 Alumina Powder	lb.	2.00
#3-F Norton Silicon carbide (#2-S)	lb.	1.50
#61-20 Fine Ungraded Silicon carbide (#1-R)	lb.	1.00
TUMBL-TROL "B" — Bottle of 60		3.00

TUMBL-TROL® "C" LIQUID CONCENTRATE

GIVES POSITIVE CONTROLLED TUMBLING ACTION
PREVENTS CHIPPING — SPALLING — FRACTURING
IMPROVES TUMBLING ACTION IMPROVES FINAL POLISH
WORKS WONDERS ON SOFTER STONES such as APACHE TEARS,
"THE ANSWER TO A TUMBLER'S PRAYER."
Comes in a handy 1 oz. syringe for both ROTARY AND VIBRATORY
TUMBLERS. ORDER YOUR SUPPLY TODAY.

1 oz. syringe.....\$2.25



ALUMA-SAND

Aluma-Sand's highly uniform, dense structure (9+ hardness Mohs Scale) and specific gravity (3.4+) prevent splitting and surfacing which could clog mill screens.

STANDARD SIZES	
A	8-12 Mesh in Size
B	14-18 Mesh in Size
C	20-26 Mesh in Size
D	28-32 Mesh in Size

CER-1
\$3.50 per lb.

FOR SAPPHIRE AND RUBY . . . USE VIBRA-DRY #9 . . . ESPECIALLY FORMULATED FOR STONES OF OVER 9 in hardness . . .
Contains Pre-polish, Polish and Ultra Polish in pre-mixed sets for Vibra-sonic tumbling . . .

VT-8 or VT-12 size	\$12.50
VT-14 size	\$12.50
VT-35 size	\$44.50

VIKING GEM LUSTRE POLISHING POWDER for materials of 8+ in hardness

VT-137 4 ounces Final Polish

\$6.77

VIBRA-GRIND Pre-Mixed LIQUID COMPOUNDS for SAPPHIRE AND RUBY ETC.

#80 Coarse Grind	\$13.50 per lb.
#320 Medium Grind	\$19.50 per lb.
#500 Fine Grind	\$19.50 per lb.

SILICON CARBIDE GRIT SIZE	+	†	+
	1 lb.	5 lbs.	10 lbs.
60-120	VTS-50 \$1.00	VTS-51 \$2.60	VTS-52 \$4.50
F grit/280 & finer	VTS-56 \$1.45	VTS-57 \$6.50	VTS-58 \$11.00
2 F grit/320 & finer	VTS-62 \$1.45	VTS-63 \$6.50	VTS-64 \$11.00
3 F	VTS-68 \$1.50	VTS-69 \$7.00	VTS-70 \$12.75
4 F	VTS-74 \$1.50	VTS-75 \$7.00	VTS-76 \$12.75
36 grit (Graded Crystalon)	VTS-80 \$1.10	VTS-81 \$4.00	VTS-82 \$7.00
80 grit (Graded Crystalon)	VTS-86 \$1.10	VTS-87 \$4.00	VTS-88 \$7.00
100 grit (Graded Crystalon)	VTS-92 \$1.10	VTS-93 \$4.00	VTS-94 \$7.00
120 grit (Graded Crystalon)	VTS-98 \$1.10	VTS-99 \$4.00	VTS-100 \$7.00
220 grit (Graded Crystalon)	VTS-104 \$1.10	VTS-105 \$4.00	VTS-106 \$7.00
320 grit (Graded Crystalon)	VTS-110 \$1.75	VTS-111 \$6.75	VTS-112 \$11.75
400 grit (Graded Crystalon)	VTS-116 \$1.75	VTS-117 \$6.75	VTS-118 \$11.75
600 grit (Graded Crystalon)	VTS-122 \$2.50	VTS-123 \$10.00	VTS-124 \$17.75
600 Graded Alundum Flour	VTS-128 \$3.00	VTS-129 \$9.50	VTS-130 \$13.00

VIKING TUMBLE PELLETS

3 lbs. . . VTS-29 . . \$3.25
† 1 lb. . . VTS-30 . . \$1.50

TUMBL-TROL® "B" TABLETS

Bottle of 60 tablets . . . only \$3.00

Tumbl-trol "B" tablets, the convenient form of thickening agent for tumbling solutions. Now by merely crushing these handy tablets (2 to 6 tablets) TO MAKE STOCK SOLUTION or by adding crushed tablets to tumbling solution YOU can positively control tumbling action, "It's slippery, man." Reduces tumbling friction.

New Vibra-Dry Process . . . Uses NO WATER . . . Pre-polish & Polish Set . . .
Re-usable . . . over & over Recommended for stones up to 9 in hardness
Per 1# set VT-8 or VT-12 Size . . . \$5.00
Per 2# set VT-14 Size \$9.50
Per 5# Set VT-35 Size \$22.50