

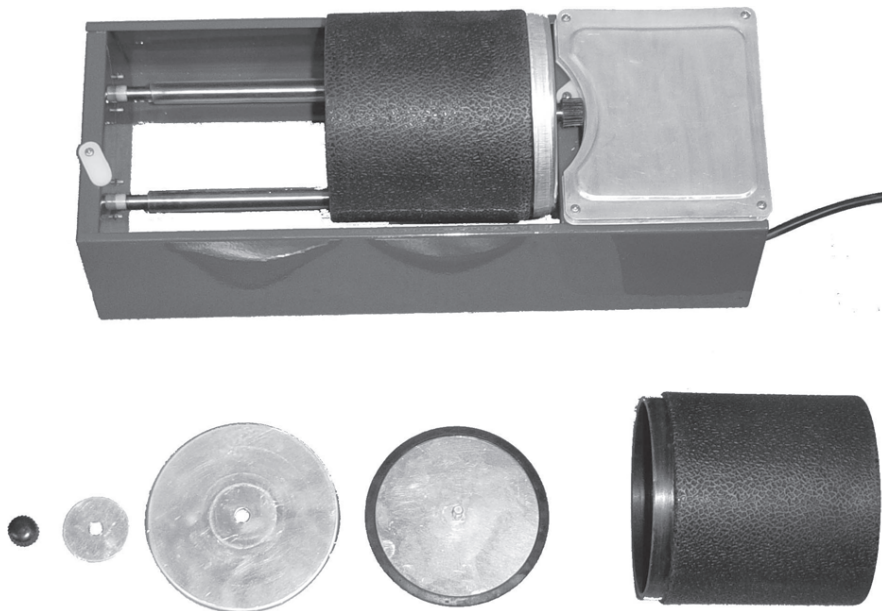
# CHICAGO

## Electric<sup>®</sup> Power Tools

# DUAL DRUM ROTARY TUMBLER

**Model 90979**

## ASSEMBLY AND OPERATING INSTRUCTIONS



3491 Mission Oaks Blvd., Camarillo, CA 93011  
Visit our Web site at <http://www.harborfreight.com>

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**For technical questions and replacement parts, please call 1-800-444-3353**

## Specifications

Overall Dimensions	6-1/2" W x 14-3/4" L x 6-3/4" H
Capacity	3.5 cups each Barrel
Barrel Size	4-3/4" H x 4-1/2" OD
Motor	110V / 60 Hz
Power Cord	18 Gauge / 3-Prong
Weight	8.3 Lbs.
Replacement Belt (37)	Sold as Sku 93835

## Save This Manual

You will need the manual for the safety warnings and precautions, assembly instructions, operating and maintenance procedures, parts list and diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep the manual and invoice in a safe and dry place for future reference.

## Safety Warnings and Precautions

**WARNING: When using tool, basic safety precautions should always be followed to reduce the risk of personal injury and damage to equipment.**

### Read all instructions before using this tool!

1. **Keep work area clean.** Cluttered areas invite injuries.
2. **Observe work area conditions.** Do not use machines or power tools in damp or wet locations. Don't expose to rain. Keep work area well lighted. Do not use electrically powered tools in the presence of flammable gases or liquids.
3. **Keep children away.** Children must never be allowed in the work area. Do not let them handle machines, tools, or extension cords.
4. **Store idle equipment.** When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep out of reach of children.
5. **Do not force tool.** It will do the job better and more safely at the rate for which it was intended. Do not use inappropriate attachments in an attempt to exceed the tool capacity.
6. **Use the right tool for the job.** Do not attempt to force a small Tumbler to do the work of a larger industrial Tumbler. There are certain applications for which this Tumbler was designed. Do not modify this Tumbler and do not use this Tumbler for a purpose for which it was not intended.
7. **Dress properly.** Do not wear loose clothing or jewelry as they can be caught in moving parts. Protective, electrically nonconductive clothes and nonskid footwear are recommended when working. Wear restrictive hair covering to contain long hair.
8. **Use eye, ear, and face protection.** Always wear ANSI approved impact safety goggles. Wear a full face shield if you are producing metal filings or wood chips. Wear an ANSI approved dust mask or respirator when working around metal, wood, and chemical dusts and mists.

9. **Do not overreach.** Keep proper footing and balance at all times. Do not reach over or across running machines.
10. **Maintain tools with care.** Keep tools clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect tool cords periodically and, if damaged, have them repaired by an authorized technician.
11. **Disconnect power.** Unplug Tumbler when not in use.
12. **Avoid unintentional starting.** Be sure the switch is in the Off position when not in use and before plugging in.
13. **Stay alert.** Watch what you are doing, use common sense. Do not operate any tool when you are tired.
14. **Check for damaged parts.** Before using any tool, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment and binding of moving parts; any broken parts or mounting fixtures; and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician. Do not use the tool if any switch does not turn On and Off properly.
15. **Guard against electric shock.** Prevent body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerator enclosures.
16. **Replacement parts and accessories.** When servicing, use only identical replacement parts. Use of any other parts will void the warranty. Only use accessories intended for use with this tool. Approved accessories are available from Harbor Freight Tools.
17. **Do not operate tool if under the influence of alcohol or drugs.** Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not operate the tool.
18. **Use proper size and type extension cord.** If an extension cord is required, it must be of the proper size and type to supply the correct current to the tool without heating up. Otherwise, the extension cord could melt and catch fire, or cause electrical damage to the tool. This tool requires use of an extension cord of **0 to 10 amps** capability (up to 50 feet), with wire size rated at **18 AWG**. Longer extension cords require larger size wire. If you are using the tool outdoors, use an extension cord rated for outdoor use (signified by "WA" on the jacket).
19. **Maintenance.** For your safety, maintenance should be performed regularly by a qualified technician.

**Note: Performance of this tool (if powered by line voltage) may vary depending on variations in local line voltage. Extension cord usage may also affect tool performance.**

**Warning: The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.**

## Unpacking

When unpacking, check to make sure all of the parts on page 8 are included. If any parts are missing or broken, please call Harbor Freight Tools at the number on the cover of this manual as soon as possible.

## How a Rotary Tumbler Works

The motion in the Barrel of a Tumbler simulates the natural action of flowing water or ocean waves. Beaches and riverbeds contain rocks and pebbles smoothed by water and the abrasive sand it carries. As rocks grind upon one another with constant water and sand in the mix, they begin to round and smooth. Although this is a constant process, it does not however, naturally polish the rocks.

The Tumbler uses an abrasive media instead of sand. It is graded by grain size, from fine powder sized grains, up to large sized grains. By changing (usually by weekly intervals) the grain size, rotating from coarse, medium, to fine, the rock or gemstone is smoothed much more quickly than the natural process.

To polish using a Tumbler, you add a metallic oxide compound (see step 4 on page 5). The complete process for a gemstone or rock to go from rough to a smooth, polished finish, usually takes from 4-6 weeks.

## Operation

### I. Location

**Note:** The Tumbler will be working 24 hours a day for several weeks at a time, and needs to be in a convenient and safe location that will not interfere with family activities. It generates a slight humming sound. The motor becomes hot to the touch. This is normal.

1. Make it accessible. You will need to open it daily, in some cases.
2. Locate it near a power outlet. It must be located in an open area that is away from any flammable materials. **Do not use the Rotary Tumbler outdoors.**
3. Do not put the tumbler on a table. The vibration of the unit may cause the tumbler to crawl when placed on a smooth slippery surface.
4. Only use the tumbler in an extremely safe location such as a concrete garage floor.
5. Do not put it in a closet or drawer as it has a fan cooled motor and needs proper ventilation.
6. Do not let it freeze, as the water in either of the **Rubber Barrels (22)** will freeze and become unbalanced, overloading the motor. Avoid extreme temperatures.
7. It is possible for one of the **Rubber Barrels (22)** to break open and spill. Make sure the location is safe for that possibility.

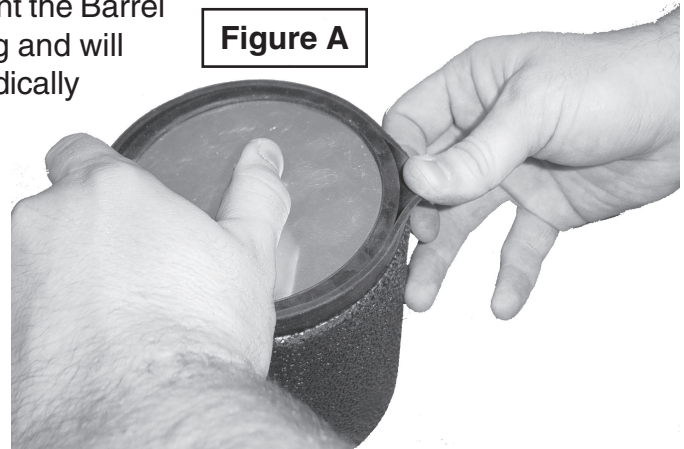
**Caution: Always check on the tumbler on a regular basis to make sure the unit is running properly and is not overheating. Make sure that**

conditions around the tumbler are unchanged, and that the tumbler continues to operate in a safe location.

## II. Before Use

1. Before the first use, and once a month following, put a few drops of oil on the **Shaft Sleeve (14)** bearings.
2. Check the **Belt (37)** tension. It must be kept as loose as possible without allowing it to slip on the **Driving Pulley (35)**. Check before each use.
3. Make sure the exteriors of the **Rubber Barrels (22)** are clean so that they don't slip on the rollers. Wipe them with a soapy cloth, then wipe them clean with a damp cloth, and dry them thoroughly. Do not use liquid cleaners or solvents.
4. Make sure that the **Stops (6)** are lightly touching both **Barrel Lids (28)**. This will prevent the Barrel Lids from rubbing against the housing and will reduce friction. Check the stops periodically during operation.

Figure A



## III. General Use

**Note:** These steps listed are for one barrel. Both barrels should be used together. If only one is to be "charged" (see step 2), use the other barrel on the machine as well to help keep the first in place. The barrels should be mounted with the **Knurled Nuts (24)** facing outward

1. To open one of the **Rubber Barrels (22)**, remove the **Knurled Nut (24)** and the **Washer (26)**. Next, remove the **Barrel Lid (28)**-see **Figure A, right**.

**Note:** It is imperative to load the Tumbler with the proper amount of materials, or the process will not be successful, and the motor could be damaged. An underloaded barrel will not lift rocks up the inner side walls allowing the cascading effect. Also, the abrasive material in an underloaded unit will tend to form a slurry and will not be effective. An overloaded Tumbler will not allow the rocks to cascade. Lastly, too much water will cause the abrasives to float and not do their job.

2. "Charging" a barrel means loading it. Charge your barrel from 1/2 to 3/4 full. More pointed or abrasive rocks or stones will require closer to 3/4 full, leaving a 1/2 full barrel when it comes time to polish.

**Note:** During tumbling, the stones will be reduced approximately 20% in size.

3. Choose stones that have a similar surface condition. They should have a mix of sizes ranging from small (3/16" to 3/8") to large (3/4" to 1"). 25% of the stones should be in the smaller range. Split the remaining volume between medium sized (3/8" to 5/8") and large sized (5/8" to 1") stones.
4. For best results use a four step polish process. First, use a silicon carbide grain, 60-90 grit size. Second, use a fine silicon carbide grain, 220 grit or a little finer. Next, use a 600 grit silicon carbide grain or a pre-polish. Lastly, use a polish of Tin Oxide, Cerium

Oxide, or Titanium Dioxide. When tumbling hard materials, it might be necessary to repeat the steps.

**Note:** More specific instructions for each step are covered under “Specific Instructions”, below.

### Approximate Amounts of Abrasive (for each Barrel)

Coarse Grind 4 Tbsp.	Medium 4 Tbsp.	Pre-polish 6 Tbsp.	Polish 6 Tbsp.	Burnish (soap) 1 Tbsp.
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**Note: An Abrasive Kit (not included) is available through Harbor Freight Tools, Item # 30956.** This kit includes 4 oz. of coarse grit abrasive, 4 oz. of fine grit abrasive, 2 oz. of pre-polish abrasive, and 2 oz. of polish abrasive.

5. Add enough water to reach the bottom of the top layer of rocks.
6. Seal the **Rubber Barrel (22)**, and replace the **Barrel Lid (28)**, **Knurled Nut (24)** and the **Washer (26)**.
7. Set the **Rubber Barrels (22)** on the rollers, set the stops, and turn on the **Power Switch (13)**. Make sure you check during the first ten minutes to make sure both of the tumblers aren't leaking.

**Note:** Although this manual primarily deals with rock/gemstone tumbling, you can use this Tumbler to work with metal and metal jewelry (without gemstones). This Tumbler may be used to take the jagged, sharp edges off of small metal parts. To polish brass, gold, silver, or copper, **Harbor Freight Tools offers Polishing Media, Item # 46377.**

**Note:** For more in-depth information on polishing jewelry, we recommend you purchase a jewelry polishing handbook.

## IV. Specific Instructions

### IV-a. First Grind:

Run the Tumbler for 24 hrs., turn the tumbler off, remove the **Barrel (22)**, and slowly open the **Barrel Lid (28)**, releasing the small amount of gas that builds up during the process. Check the stones, which might show a little rounding, but not much. Clean the seals and close. It is important to release the gas as it will turn the abrasive slurry, into a thick substance. After another 24 hrs. check again. If the slurry is thickening, add a little water. Run for one hour and check again. If it is still thick, add some more water. Let the Tumbler run continuously, but check daily. Continue this process for 7-10 days to remove the sharp edges and rough areas. Be patient. This is the most important step. When all of the edges are rounded you are ready for the next step.

**Note:** Between steps you must clean the **Rubber Barrel (22)** and stones. Pour off the slurry into a disposable container (i.e. a milk carton) and take care that the stones remain in the **Rubber Barrel (22)**.

**Warning!! Never pour the slurry into your home plumbing system.**

Next, remove the stones into a clean container or plastic bag. Finally, fill the **Rubber Barrel (22)** 1/2 full with water and clean out the remaining slurry and grit. Wipe it clean with a wet paper towel and then wipe it dry. To clean the stones, gently slosh them around in clean water and remove them a few at a time checking for breaks or cracks. Discard broken or

cracked stones. Place the stones in a plastic colander, or old nylon sock and rinse them completely off. There should be no slurry or grit remaining on the stones.

#### **IV-b. Second Grind:**

Carefully replace stones into the **Rubber Barrel (22)**. If the **Rubber Barrel (22)** is less than 1/2 full, add plastic pellets (not included) to make up the difference. Add medium grit (according to the measurements shown on the top of page 6) and water to the bottom of the top layer of rocks. Reseal and tumble. Run it for 2-3 days before checking. They will begin to smooth. After seven days they should have a smooth finish. If not, let them go another 2-3 days. Clean again as you did after grind one.

#### **IV-c. Pre-polish:**

Place stones into the **Rubber Barrel (22)** adding the correct amount of pre-polish and plastic pellets (not included) if necessary, and water. Let it run for a week, checking every other day. After a week take out 2-3 stones to test the progress. On a dampened piece of leather, old rug, or towel, sprinkle a small amount of polishing compound, and rub the stone vigorously with it. You should see a definite shine in a few moments. If they shine, clean the **Rubber Barrel (22)** and you are ready for the last step. If not, continue to pre-polish and check again in 24 hrs.

#### **IV-d. Polish:**

Gently set the stones in the **Rubber Barrel (22)**. Charge the tumbler with fresh water, polishing compound, and plastic pellets to help cushion the stones. Make sure the volume is at least 1/2 full, preferably 3/4 full. Tumble for 5 to 7 days. If they look the same dry as they do wet, then they are finished. If they have a slight film, they need to be burnished.

#### **IV-e. Burnishing:**

Remove the stones, clean the **Rubber Barrel (22)** and remove and recover the plastic pellets (set aside). Place the stones back in the **Rubber Barrel (22)** and replace the same pellets. Use powdered soap such as *Ivory<sup>®</sup>* or *White King<sup>®</sup>* (see chart on page 5). Do not use liquid detergents or dishwasher powders that have bleach. Add water as in previous steps and seal the **Rubber Barrel (22)**. Tumble for four days, and clean the barrel.

#### **Notes to remember:**

1. You must clean between steps.
2. When polishing or burnishing you must use plastic pellets (not included).
3. It is recommended to use a log book to keep track of each step.
4. If you start with stream worn or smooth stones, you may be able to eliminate the first step.
5. It is advised that you purchase a mineral book which goes into more detail about selection of stones for tumbling. As you learn about relative hardness of each stone you will achieve greater success by not mixing soft and hard stones.
6. Always dispose of material properly.

## Maintenance

1. Before the first use, and once a month following, put a few drops of oil on the **Shaft Sleeve (14)** bearings.
2. Check the **Belt (37)** tension. It must be kept as loose as possible without allowing it to slip on the **Driving Pulley (35)**. Check periodically.

### To Adjust Belt (37) Tension:

- a. Unplug the **Power Cord (15)** from its outlet.
  - b. Remove the four **Bolts (1)** holding the **Top Cover (2)** on.
  - c. Remove the **Top Cover (2)**, **Middle Plate (5)**, and **Pads (3, 7)**, they should come off as one assembly, and set them aside.
  - d. Loosen all four **Round Cap Nuts (21)** slightly, enough to allow them to move back and forth.
  - e. Slide the **Motor (17)** away from the **Power Switch (13)** to increase tension, or towards the **Power Switch (13)** to reduce tension or even remove the **Belt (37)**.
  - f. Inspect the **Belt (37)** for cracks, tears, or other damage. Replacement **Belts (37)** are sold under Sku **93835**.
  - g. Reinstall the **Middle Plate (5)** and **Top Cover (2)** using the four **Bolts (1)**.
3. Make sure the exterior of the **Rubber Barrel (22)** is clean so that it doesn't slip on the rollers. Wipe it with a soapy cloth, then wipe it clean with a damp cloth, and dry thoroughly. Do not use liquid cleaners or solvents.



## Parts List

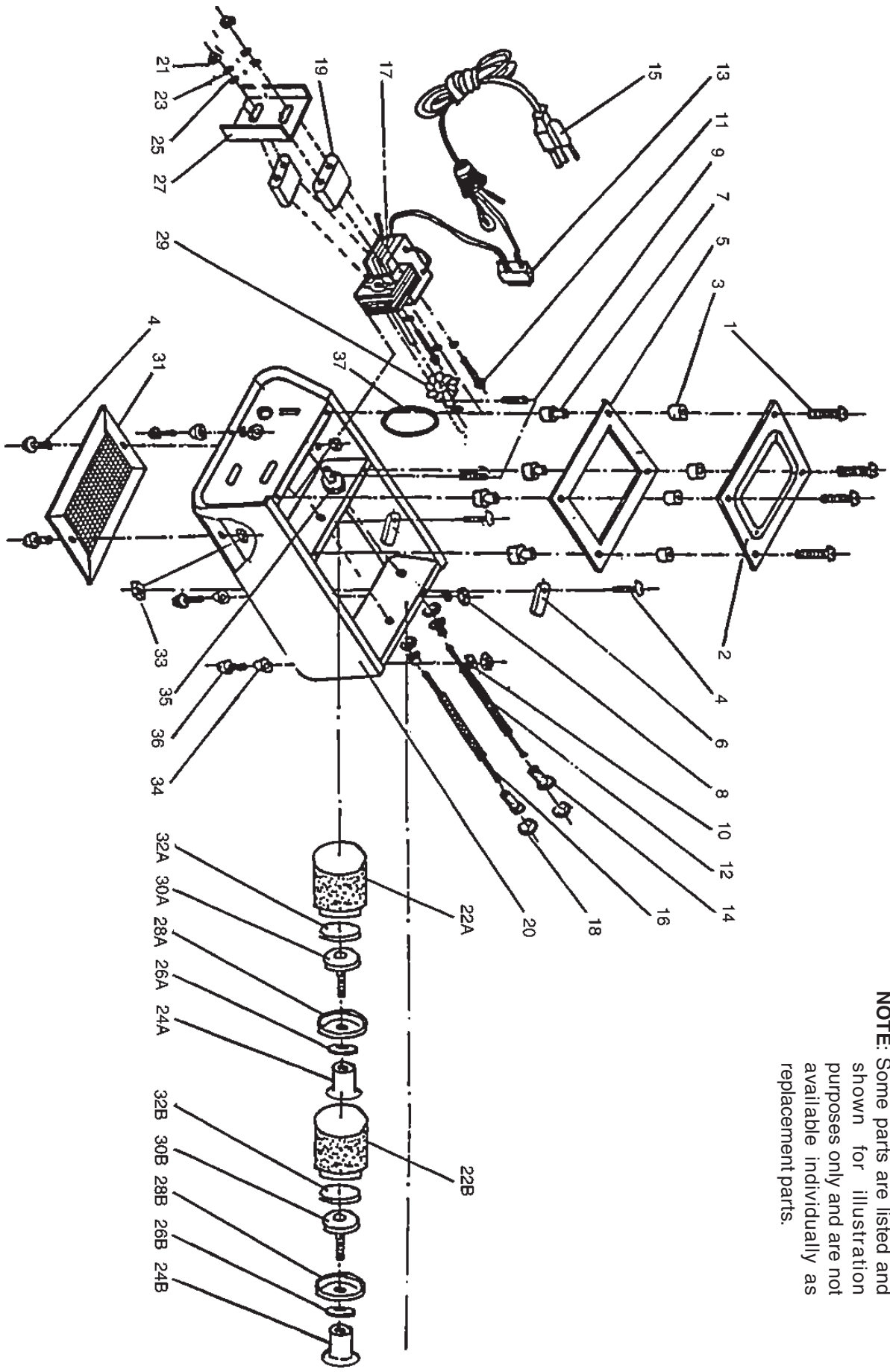
Part No.	Description	Qty.
1	Bolt	4
2	Top Cover	1
3	Upper Pad	4
4	Bolt	4
5	Middle Plate	1
6	Stop	2
7	Lower Pad	4
8	Nut	3
9	Bolt	2
10	Flat Washer	3
11	Bolt	2
12	Driving Shaft Set	1
13	Power Switch	1
14	Shaft Sleeve	4
15	Power Cord & Plug	1
16	Idler Shaft Set	1
17	Motor	1
18	Retaining Clip	4
19	Pad	2
20	Base	1
21	Round Cap Nut	4
22 A	Rubber Barrel A	1
22 B	Rubber Barrel B	1

Part No.	Description	Qty.
23	Flat Washer	4
24 A	Knurled Nut A	1
24 B	Knurled Nut B	1
25	Spring Washer	4
26 A	Washer A	1
26 B	Washer B	1
27	Bracket	1
28 A	Barrel Lid A	1
28 B	Barrel Lid B	1
29	Motor Fan	1
30 A	Boot Gasket A	1
30 B	Boot Gasket B	1
31	Ventilating Cover	1
32 A	Inner Lid A	1
32 B	Inner Lid B	1
33	Nut	2
34	Rubber Foot	3
35	Driving Pulley	1
36	Bolt	3
37	Belt	1

**PLEASE READ THE FOLLOWING CAREFULLY**

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER NOR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

# Assembly Diagram



**NOTE:** Some parts are listed and shown for illustration purposes only and are not available individually as replacement parts.

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