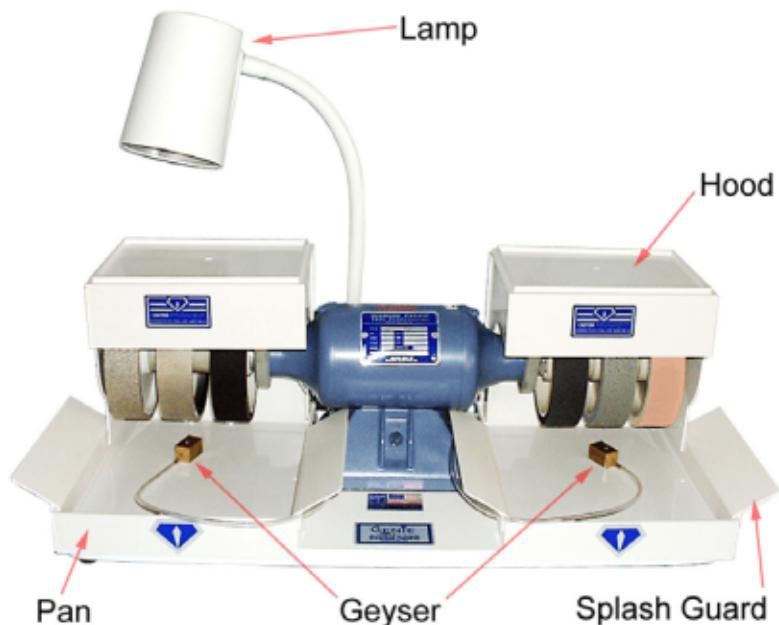


Genie Manual



Assembly Instructions for the Genie



1. Remove strapping from around motor. Remove wooden board under machine baseboard. (Do not leave this board underneath your baseboard as it can cause machine to be unlevel.)
2. Set pans in place. Ease each hood over its aluminum bracket. It will fit snug. Make certain back edge of hood is inside pan to prevent water from running outside pan.
3. Two sets of splash guards are included. They slip down over the outside and inside edges of each pan. They fit tight, and you may have to trim inside groove of guard with a sharp knife if it is too snug for you.
4. Lamp can fit on either button screwed onto the rear of the baseboard. Pull up the quick-connect fitting on stem of lamp and it will slip over the base button and attach.
5. **Please read safety instructions and entire operating instructions in the manual before using machine.**

Important Safety Instructions Please Read Before Operating This Machine

- ✓ Before plugging in this machine, make certain the electrical outlet is properly grounded and of the proper voltage. Since the Genie uses water as a coolant your electrical circuit should also be protected by a Ground Fault Circuit Interrupter (GFCI) to prevent the possibility of electrical shock. If a GFCI protected circuit is not available you may purchase a portable unit from Diamond Pacific or your local hardware store. Also make certain that the machine switch is off and that your hands and the electrical connections are dry.
- ✓ **Do not** use silicon carbide or aluminum oxide wheels on this unit. Such wheels require metal guards as they may break and fly apart while in use. The hood and pan on this unit are designed for use with diamond grinding wheels only, and **should not be used** with silicon carbide or aluminum oxide wheels.
- ✓ Rock dust can be hazardous to one's health. Use sufficient water at all times while grinding and polishing stones so that rock dust does not form.
- ✓ Before grinding and polishing any material, make certain that it will not produce toxic fumes or dust. Sea shells are one of the known hazardous materials of this type. If you should ever have occasion to grind metallic ores or other mineral specimens, be aware of the possibility that they may contain toxic quantities of such substances as uranium, lead, mercury, arsenic, asbestos, copper sulfate, etc.
- ✓ **Use safety glasses** to protect your eyes from flakes of stone or other objects that might be thrown by the wheels.
- ✓ It is possible for a stone to become wedged between adjacent wheels or between wheels and the pan which could result in injury to yourself and/or damage to the machine, such as a bent shaft. Be alert while working to prevent this from occurring.
- ✓ The motor of this unit is sealed to prevent grit contamination and normally runs hot to the touch. Avoid contact with the motor while in use to prevent possible burns.

Introduction

The Genie is a compact cabochon grinding and polishing unit complete with motor, diamond wheels, and coolant system. It requires no attachment or hookups other than a standard 115 volt electrical outlet, (230 volt for export model) making it portable and light weight. Since the grinding and polishing wheels do not require large amounts of water, the Genie is also a clean operating unit, and can be used in any convenient place such as the kitchen.

The Genie comes with two Galaxy metal-bond diamond grinding wheels: one 80 grit for coarse grinding, and one 220 grit for fine grinding. The set of four Nova resin-bond diamond sanding and polishing wheels (grit sizes 280, 600, 1200, and 3000) is an excellent all-around combination that will produce a high polish on most stones. For those stones that may benefit from an additional polishing step, a 14000 grit Nova Disc is included and can be attached to the right hand shaft. With the six wheels mounted at once, the lapidary can quickly and efficiently grind and polish most stones in a matter of minutes, without having to stop to change or charge attachments and wheels.

Flex Stem Lamp and Magnifier

The lamp has a flexible stem for easy adjustability, and a quick-coupler at the base for easy detachment. The extra coupler base on the unit may be used for an extra lamp or optional magnifier (see page 24).

When adjusting the lamp or magnifier, use both hands so you can grasp the base of the flexible stem and bend it from there in order to prevent excessive strain on the base attachment, use care not to cause excessive strain on the lamp shade or magnifier lens rim.

The lamp and magnifier are interchangeable on the metal buttons. To remove either one, raise the plastic ring near the base of the flexible stem, and the unit will lift off. **Use maximum 100 watt bulb.**

Motor

The Genie motor is a heavy-duty, industrially rated, sealed, capacitor start motor made especially for Diamond Pacific Tool Corp. by the Baldor Electric Company. It is unconditionally guaranteed by the manufacturer against defects in workmanship or components for one year from date of purchase.

The domestic motor is 1/4 HP, single phase, 1800 RPM operating on 115 volt, 60 cycle (Hz) AC current.

The export motor is 1/4 HP, single phase, 1450 RPM operating on 230 volt, 50 cycle (Hz) AC current.

Since the motor is totally enclosed to prevent grit contamination of the bearings, it has high temperature insulation which allows it to operate at higher temperatures than fan cooled motors. The motor never needs oiling.

The Genie can be operated with any small generator producing a minimum of 400 watts power. With a generator, you can use your Genie out in the field as well as in your home or shop.

USE CAUTION:

The motor normally runs very hot to the touch. Care should be taken to avoid touching the motor while it is in use in order to avoid possible burns.

Hoods and Pans

The Genie comes equipped with a hood and pan for each side of the unit. Both hood and pan are molded of rigid plastic that is durable, lightweight and easy to clean. A ridge around the top edge of the hood makes it a convenient tray for stones.

To remove either hood from its bracket, grasp it with both hands and rotate it towards you (in same direction that wheels rotate) rather than attempting to lift it straight up and off the bracket. Once the hood has been removed, the pan can be slipped out for cleaning.

To use flat laps on either end of the motor shaft, first remove the hood from its bracket, then unscrew the end plate from the hood. Turn the pan 90 degrees and parallel lengthwise to the shaft. Replace the hood. This arrangement allows easy access to the lap or pad and provides ample drip pan space.

Some flat laps may require more room on the left end of the Genie. This additional room may be acquired by cutting out the special thin section on the right side of the left hood as follows:

1. Use a strong, sharp knife, and be careful not to cut yourself.

2. Cut down each side of the section, then score across the bottom of the inside. Work the piece back and forth to break it across the bottom.
3. You may want to dress the new edges with the knife, and the plastic cuts easily for this.
4. Once this portion has been removed, the hood will slide further from the motor, allowing more room for laps on the end of the motor shaft.

CAUTION: The plastic hoods and pans are designed for use ONLY with diamond grinding wheels. Do not ever use silicon carbide or aluminum oxide wheels on the Genie.

Cab Rest

The odd shaped plastic cab rest has two main purposes, to act as a steady rest for the hands while grinding and polishing a stone, and to provide an easy, accurate way to grind the bezel on cabochons.

The cab rest can be set in the pan in any position that enables you to steady your hands while grinding and polishing. Usually it will be laid flat in the pan.

To grind a uniform bezel on your stones, set the cab rest upright, with the down slope towards you and the upper end close to the grinding wheel. Turn your cab topside down, place on top of cab rest, and proceed to grind the edge. The slope of the cab rest is at an angle that will give you a uniform 12-½ degree bezel.

Spra-Mist Cooling System

Description:

The Spra-Mist coolant system utilizes a piston type air pump to operate two geysers that provide a fine mist to the underside of the grinding and polishing wheels. The pump is located on the left hand side of the machine, under the hood. Air from the pump is supplied through plastic tubing to the two geysers.

The Spra-Mist pump is relatively trouble free because of its unique design. No water flows through the pump itself, so it cannot be damaged or clogged by rock dust or grit. Regular oiling of the leathers and bearings will generally keep the pump operating at maximum

efficiency.

Operation:

1. The pump automatically begins to operate when the motor is turned on. It will not operate if the left hand wheel adaptor is not mounted on the shaft as the wheel adaptor holds the motor shaft pulley in place
2. The geysers should be placed in the water pan with the large hole down, and set towards the rear of the wheels to avoid excess water splash. **Remember to move the geyser from wheel to wheel as you work.**
3. About two cupfuls of water should be placed in each pan, or enough to reach approximately one third the way up the side of the geyser.
4. By attaching the white plastic base to the brass geyser, the geyser sits at an angle that will provide a spray of water to either "No-Hole" metal laps or Nova discs attached to the right hand side of your Genie, or laps having a ½" center hole attached to the left hand side of your Genie. The plastic base should be removed after the lapping process is complete. If left on, it may not properly spray the underside of the wheels. The outside plate of the hood, on the side to be used, must be removed by unscrewing the attaching screws. Turn the water pan 90 degrees so that its long dimension is parallel to the shaft so that the geyser with base can be set to provide water to the lap or Nova Disc. (The geyser spray should not be used on canvas polishing pads with diamond compound as it will wash away the compound. Use a silicon lubricant such as Gem-Lube instead.)
5. Occasionally a geyser will become plugged from the mineral content in the water. This usually can be corrected by boiling the geyser in a solution of vinegar and water. Or if plugged by a small piece of grit, use a needle or paper clip to remove the obstruction.
6. A few drops of Water Aid in the pan will improve the cutting ability of the Galaxy metal-bond diamond grinding wheels. Avoid excess Water Aid as it can cause excessive foam in the pan.

**Galaxy Metal Bond Diamond
Grinding Wheels**

Description:

Galaxy metal-bond diamond grinding wheels are designed to provide the gem-cutter with a smooth, fast cutting, true-running grinding surface ideal for working stones. The diamonds in a Galaxy Wheel are held on a heavy steel ring by an extremely hard nickel alloy plating. The ring is mounted on a tough, glass-filled polyester core, making a smooth, quiet running wheel.

Use and Maintenance:

Galaxy Wheels never need dressing. **Do not** attempt to do so as you may damage or ruin the wheel.

For longer wheel life and to prevent wheel damage, the following practices should be followed when using your Galaxy Wheels:

1. Use a light to medium pressure when grinding stones. Although diamonds are extremely hard, they are also quite brittle and can be easily shattered by excessive pressure or the bumping of a heavy rock. The wheels cut most effectively with a light to medium pressure and will last longer as well.
2. Use a steady rest to avoid uneven wear patterns. Steadying your hand while grinding will help prevent bumping and chattering that causes uneven wear of wheels. It will also help prevent damage to stones.
3. Use a coolant while grinding. Water is best and a small amount will normally do to keep the wheels wet. This prevents the formation of rock dust, keeps your stone cool, and stops the buildup of rock residue on the wheel surface which can slow down cutting action. When grinding soft materials such as onyx or turquoise you can place both geysers under the same wheel as more water is needed in order to keep the wheel clean.
4. Use the entire surface of the wheel as you grind your stone. Avoid using just the center or edge or any one area of the wheel surface as this will cause excessive wear in that area and shorten the effective life of the wheel. When grinding crosses, hearts, fire agate, etc. be certain you grind with the diamond covered surface, not on the bare metal side of the wheel, as this will undermine the diamonds and cause excessive wear of the wheel edge.

5. A few drops of Water Aid in the pan will improve the cutting ability of the Galaxy Wheels.
6. Reverse the wheels occasionally so that the diamonds cut from the opposite direction. The edges of the diamonds will wear with use, and the cutting speed will decrease. By reversing the wheel, the cutting edges of the diamonds are renewed. (The 80 and 220 grit wheels will be interchanged when you reverse the direction of the two wheels.) See instructions for "Remounting and balancing Galaxy Wheels" when reversing them.

Nova Resin-Bond Diamond Sanding and Polishing Wheels

Description:

Nova Wheels are specially designed to produce an excellent finish on stones with a minimum of time and effort. The diamonds in Novas are embedded within a tough, flexible, plastic resin backed by an extra soft, thick, sponge rubber backing. This soft, flexible construction enables the surface of the Nova Wheel to conform to the stone, eliminating flat spots and scratches.

Use and Maintenance:

1. Nova wheels **must** be used with a water lubricant. This fact cannot be stressed too strongly, for if the wheels are run dry for more than a few moments, rapid wear and damage can result. Make certain that the geyser is supplying sufficient water to the Nova Wheel before using it, and remember to move the geyser to the next wheel as you progress through the sanding and polishing procedure.
2. Nova Wheels should be broken in by sanding and polishing a large agate cab prior to working on others. This is necessary in order to remove excess resin coating surfaces of the diamonds. Spend from two to five minutes on each wheel with the first cab, working it over the entire surface of the wheel. The finer grit wheels, especially the 3000 grit wheel and 14000 grit disc, will take longer to remove the excess resin, and will continue to improve in speed and finish as more stones are worked.
3. Use sufficient pressure to cause the surface of the wheel to

depress slightly to conform to your stone. This eliminates the flat spots left by the grinding wheels and will cause fewer scratches than would be produced by pressure that is too light.

4. It is important to hold your stone so that you do not allow the upper or leading edge to act as a plow and dislodge diamonds from the surface of the wheel. The diamonds in Nova Wheels are firmly embedded in the resin and with proper use cannot be dislodged to cause contamination in proceeding from one wheel to the next. But they can be dislodged with the sharp edge of a stone.
5. To prolong the life of your Nova Wheels, be certain to prepare your stone properly on the grinding wheels prior to sanding. Use the metal bond wheels to grind your stone to its final size and shape, and to remove all sharp edges and corners. This leaves only the final sanding and polishing to the Nova Wheels. Similarly, it is important to do a good job of sanding at each stage before going to the next as the finer grit wheels will take much longer to remove scratches than do the coarser wheels.
6. If your stone still has scratches after the final polish, check the following procedures:
 - A. Make certain all deep scratches left by the coarse (80 grit) grinding wheel are removed by the fine (220 grit) grinding wheel.
 - B. Make certain you are using enough pressure on the Nova Wheels. Too light a pressure can cause scratches.
 - C. Make certain your Nova Wheels have been broken in properly, especially the 3000 grit wheel and 14000 grit disc. If any one wheel seems to be causing the scratching, take a large agate cab and work it across the entire surface of the wheel.
 - D. Almost all problems with scratches are caused by improper procedure in the above three areas.

Procedure for Grinding and Polishing Cabochons

Pre-Forming – Preparing Stone for Grinding Wheels:

Since most gem material comes in sizes and shapes larger than desired for a single cabochon, it must be pre-formed. This is usually done by cutting the rock into slabs about 1/4 inch thick with a lapidary or rock saw. The best areas of the slab are then selected and marked with a template for shape and size of desired stones. Excess material is removed with a trim saw or one of the other tools available for this purpose. The more material that can be removed from a pre-formed stone at this step, reducing it to as near its finished size as possible, the less time will be taken in the grinding process. Just as important, the life of the grinding wheels will be increased.

Grinding on the Galaxy Grinding Wheels:

The basic procedure is to grind your stone to proper size and shape on the Galaxy Grinding Wheels. If the stone is properly prepared on the grinding wheels, it is only a matter of minutes more to polish it on the Nova Polishing Wheels.

First grind your cabochon to the approximate size of the template outline using the left hand or coarse (80 grit) Galaxy Wheel. Use light to medium pressure and work the stone over the entire surface of the wheel. Check the stones size as you work, either with the template or the mounting in which it will be set. Leave a small amount of material outside the outline so that the stone is slightly larger than the template or mounting. The balance of the excess material will be removed in fine grinding and some in the sanding process. Using the Cab Rest during the above procedure will make it easy to grind a uniform 12-½ degree bezel angle all around your stone.

Proceed to the fine (220 grit) Galaxy Wheel, making certain that you move the geyser to the wheel you are using. Again, a light to medium pressure is all that is necessary. Finish grinding the bezel of the stone, leaving only a small amount of material that makes the stone just a fraction too large.

Now move back to the coarse grinding wheel to grind the face or dome of the cab to shape. For best results, the stone should be dopped (glued to the end of a dowel with dop wax or other adhesive) to enable you to hold it more easily.

Grind from the edge towards the center of the stone, and then back to the edge using a circular and oscillating motion as you work. The circular component of this motion is accomplished by continually rotating the base of the dop stick using your right hand. At the same time, your left hand is used to move the stone back and forth in an

oscillatory manner so that its point of contact with the wheel spirals from the edge of the stone to the center and back without stopping, since stopping produces a flat spot.

This circular, oscillating motion is the key to well shaped stones and the prevention of flat spots. Check the curvature of your stone frequently to achieve symmetry. The outline should form a smooth arc when viewed in any direction, with no high spots or flats, especially at the top of the dome.

Once you have achieved a uniform shape, move to the finer grit wheel and remove all the scratches left by the coarse wheel. It is important to remove all scratches possible before proceeding to the Nova Wheels.

Sanding and Polishing with the Nova Wheels:

Before using any Nova Wheel, make certain that the geyser is supplying water to that wheel. **NOVA WHEELS MUST NOT BE USED DRY.**

1. Start with the 280 grit Nova Wheel, making certain that the geyser is supplying water to that wheel. Use a firm pressure, depressing the rubber backing so that it conforms to the surface of the cab, and keep moving your stone with a circular and oscillating motion at all times. This firm pressure (in contrast to the light to medium pressure used on the grinding wheels) and the circular and oscillating motion are important procedures in eliminating flat spots and scratches. Using too light a pressure, or allowing the stone to remain in one position, can result in more scratches and flat spots.
2. Spend enough time on the 280 grit Nova Wheel to completely sand away the scratches and facets left by the grinding wheels. This should only take a minute or two, leaving the stone with a uniform finish over its entire surface and reduced to very near its final size.
3. Proceed to the 600 grit Nova Wheel, making certain that you move the geyser first. Continue using firm pressure and the circular and oscillating motion. You should only need to spend a minute or two on each of the 600, 1200, and 3000 grit Nova Wheels to achieve a fine polish on your stone.
4. It is important to do as good a job of sanding and polishing as

possible at each stage before going on to the next, as the finer grit wheels take longer to remove scratches than do the coarser grit wheels

5. Some hard to polish materials, such as Jade, may require a finer grit polish than the 3000 grit Nova Wheel. A 14,000 grit Nova Disc is provided with the machine and will generally give an excellent polish. Other polishes such as cerium and tin oxide can also be used with canvas or leather pads to provide the final polish.

Using Nova Discs:

For stones requiring an additional step to achieve a satisfactory polish (jade and some soft stones, for instance), we recommend using the 14,000 grit Nova Disc that comes with the machine. Other types of fine polishing compound such as cerium and tin oxides also produce excellent results, and canvas and leather pads are available for use with these compounds.

1. Remove the end panel from the right side hood and thread the Nova Disc into the 1/4-20 mounting hole in the right end of the machine (see page 13).
2. Snap the small, white plastic, geyser base that came with your machine onto the bottom of the brass geyser to angle it to spray on the Nova Disc. **NOVA DISCS MUST NOT BE USED DRY.**
3. To allow for working room when using the Nova Disc or other right end attachment rotate the pan so that the front of the pan is on the right end of the machine .
4. Additional Nova Discs are available in seven grits ranging from 280 to 50,000.

Optional Accessories

Although the **Genie** comes complete and ready to operate there are a number of optional accessories available that make it more versatile to better suit your personal needs.

A trim saw attachment is available that can be mounted on the right hand side of the Genie. The saw comes with an eight inch blade and uses water as a coolant, so that it can be used wherever your **Genie** is set up.



Quickly converts your **Genie** into an eight inch trim saw. Just spin off the right hand wheel adaptor with the wheels still attached and spin on the saw adaptor with blade. The whole process takes only a minute and changing back is just as easy!

Right Hand Laps, Pads

6 inch diameter Nova Pads or Magnetic Laps, leather and canvas pads, "No-Hole" metal bond laps or other discs that use a 1/4-20 attachment can be easily attached to the right end of your **Genie**.



Left Hand Laps, Discs

6 inch diameter laps with a 1/2" arbor hole can be fastened on the left hand side with the special lap connector that comes installed on the **Genie**. Use these laps for grinding and polishing flat surfaces.



When using laps on either end of the **Genie** the outside plate of either hood is easily removed by removing the screws which hold it in place. The lap connector on the left hand side has left hand threads. Turn clockwise to remove screw to attach lap, counter-clockwise to tighten. Note that the pads can be rotated to allow more working room on the ends of the machine as shown here.





The Boxer Attachment

Holds your slabs at a 45 degree angle to make perfect miter joints for fabulous looking boxes. Mounts on the left side of your Genie for use with standard flat laps (1/2" center hole), or on the right side for use with "no hole" laps (1/4-20 thread)



Extra right hand adaptors and spacers

Jewelers Buff Kit

This kit contains buffs and jewelers rouge for finishing metals. The wheel adaptor and spacers included allow the buffs to be mounted on the right side of the Genie.

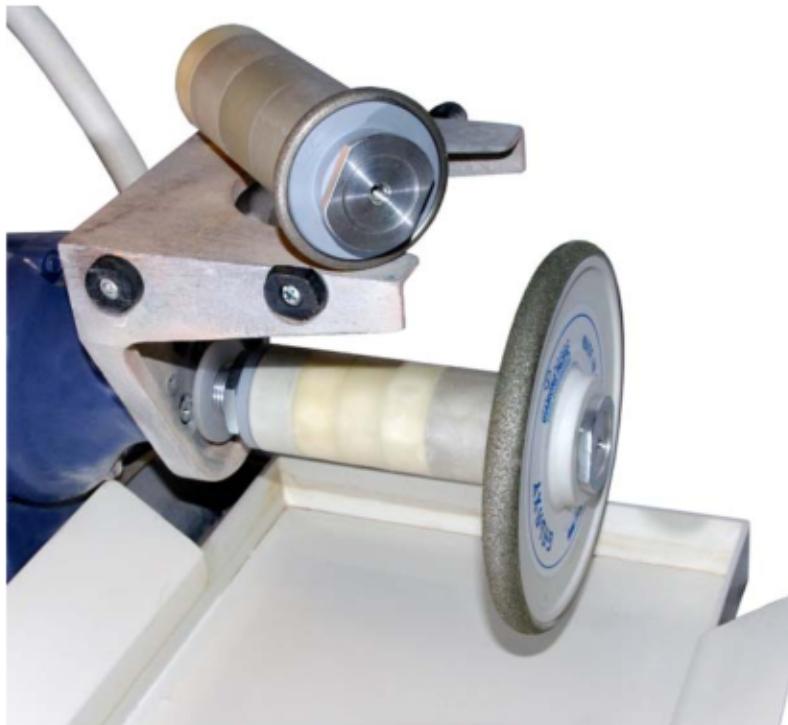


Using an extra right hand adaptor and spacers allows the gem carver to mount the wheels just four at a time as shown below. The two sets of Novas can be interchanged on the right side of the machine in about 20 seconds and the space between wheels will be 3" rather than the usual 3/4" allowing room to carve fancy shapes such as hearts and crosses.



(Adaptor and spacers sold separately or in a kit)

Extra right hand adaptors are also used for mounting extra grits in Nova or Galaxy wheels or special shaped wheels such as our Convex Carving wheels. Wheels can even be mounted one at a time for even more working room.



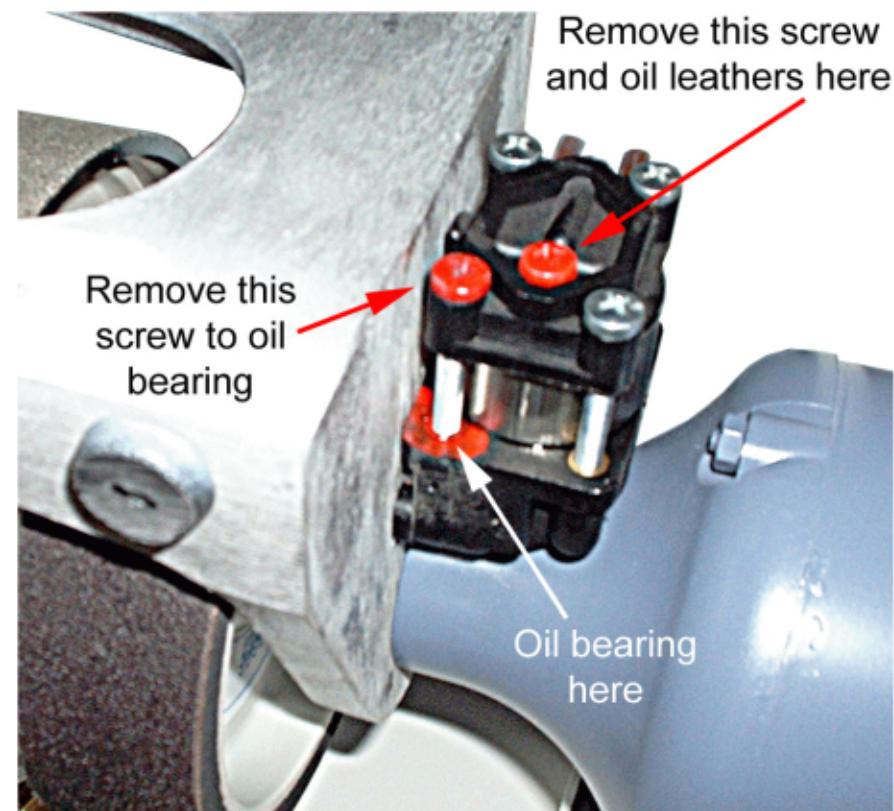
See our current catalog or call us for more information regarding these accessories.

Pump Maintenance

Oiling Pump Leathers and Bearings:

To maintain maximum output, the leathers and bearings in the pump should be lubricated about every forty hours of machine use. Use the following procedure:

1. **UNPLUG THE MACHINE.**
2. To oil the leathers, remove the left hand hood. The pump will then be exposed. Remove the middle screw (see picture) that is painted red. Place one drop of 30 weight motor oil in the hole and replace the screw. This hole oils the leathers, and any excess oil will eventually come out the air outlet tubing and into the water pan.
3. To oil the bearings, remove the corner screw that is painted red (see picture on preceding page) Place one drop of 30 weight motor oil in the screw hole that is painted in the bottom pump block, not in the



top where the screw was removed. Do not use too much oil or allow it to run out of the hole, as excess oil can leak onto the pump belt and cause belt slippage. Replace the screw and hood.

4. Regularly oiling as explained above will normally keep the pump operating properly, but the two usual causes of decreased air output, dried out pump leathers and belt slippage, are easily corrected.

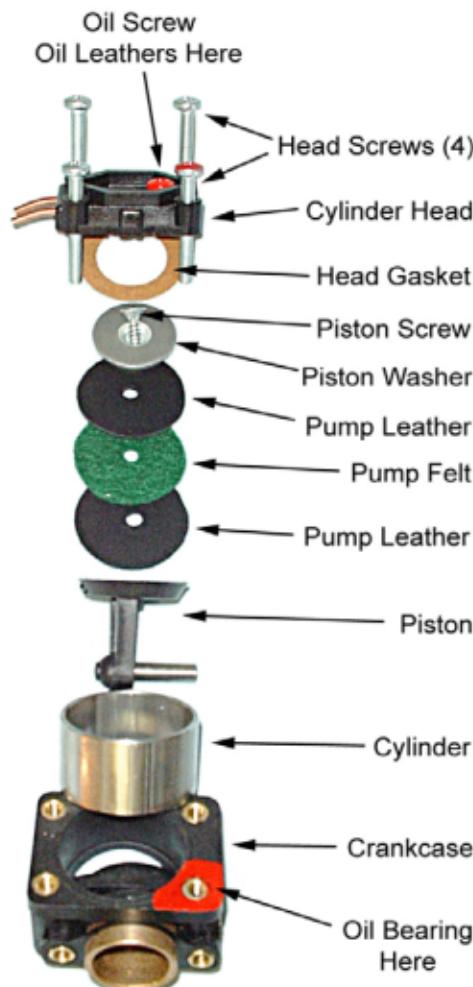
Dried Out Pump Leathers:

Decreased air flow with the pump still operating is usually caused by dried out pump leathers. The leathers should be removed and thoroughly oiled, or replaced.

This can be done by disassembling the pump with a phillips screwdriver as follows:

1. UNPLUG THE MACHINE.

2. Remove the four head screws on the top of the air pump. One is painted red and the other three are unpainted. Once the screws are out, remove the cylinder head and cylinder. The piston will then be exposed.
3. Remove the leathers and felt from the piston by unscrewing the screw in the top of the piston. Stretch the leathers and felt with the fingers, and oil them generously with 30 weight oil.
4. When ready to reassemble the piston, it is important that it be done in the following order: (see photo)



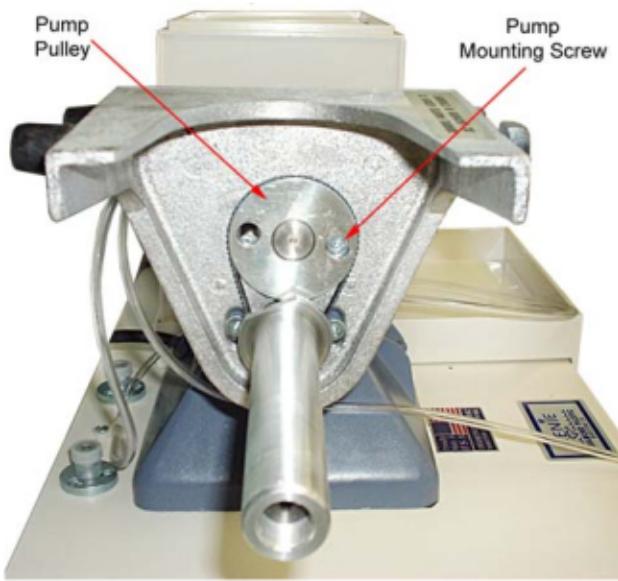
- A. Place the felt between the two leathers. The smooth or shiny side of the leathers should be away from the felt.
- B. Place the piston washer on top of the leathers, countersink side of the washer hole facing up. Center the washer so that the edge of the leathers shows evenly around it.
- C. Slip the screw through the washer and leathers and into the hole of piston top. Tighten the screw securely so that it cannot loosen.
- D. Slip cylinder and head back over the piston with the air outlet tubing to rear of machine
- E. Start the red screw back into the front left hole, then start the other three corner screws before tightening all four evenly and securely. Avoid excessive tightening of these screws as this may distort the main bearing of the pump, causing hard turning and overheating.

Belt Slippage:

Intermittent air output or no air output is caused by a slipping belt. This problem indicates that excess oil from the pump has leaked onto the pulley and belt, and can be corrected by cleaning and tightening (or replacing) the belt as follows:

1. UNPLUG THE MACHINE.
2. Remove the left hand hood and wheels. **IMPORTANT:** See sections on removing and replacing wheels on the left hand side of the machine, and on balancing Galaxy Wheels when you replace the wheels.
3. When the left hand wheels are removed, the pump pulley will be exposed. Rotate the pump pulley by hand until the two holes in the pulley are in a horizontal position and you can see two phillips head pump mounting screws in the pump base behind the pulley. (See picture on following page). Line up one of the holes with one of the screws and loosen the screw with a phillips screwdriver. Do not remove the screw. Then line up the other hole in the pulley with the other screw and loosen it slightly.

- The pump will now slide down and the belt can be removed for inspection. Remove all oil from the belt and pulley grooves. Replace the belt, making certain it fits in the grooves in both the pump and shaft pulleys.



- The belt can be tightened by raising the pump, either by holding it by hand or by using a screwdriver to hold it up from beneath the pump base. Either way, raise the pump until the belt is taut, and tighten the two screws behind the pulley. When the belt is the proper tautness, you will be able to depress it slightly. If it is too tight, the motor may not start or may run slow. If this happens, simply lower the pump base a little using the same procedure.
- Replace the wheels and hood.

Procedure for Replacing Wheels on the Genie

Removing and Replacing Wheels on the Right Side:

Nova resin-bond wheels are normally used on the right hand side of the machine. Because of their soft construction, Novas generally do not need balancing. If you wish to try balancing the Novas, or wish to use a Galaxy metal-bond wheel on the right side, see the instructions for balancing Galaxy Wheels on the left hand side of the machine. The procedures will be similar. To remove or replace wheels on the right hand side, proceed as follows:

- UNPLUG THE MACHINE.** Remove the right hand hood.
- Hold the left hand wheels with your left hand, and turn the right hand wheels **in the same direction they spin while running**. The

wheels will come off in a unit on the right hand adaptor.

- Use an adjustable wrench to remove the nut on the adaptor. (This nut has left hand threads.) Once the nut is removed, the wheels and spacers will slide off the adaptor.
- Clean the adaptor with fine sand paper, and oil with a very small amount of light weight oil.
- Replace wheels and spacers on the adaptor, replace the nut, and tighten. Slide the adaptor over the shaft. Hold the left hand wheels and spin the right hand unit of wheels onto the shaft until the adaptor is tight. **Hand tighten only.**

Removing and Replacing Wheels on the Left Side:

The standard wheels on the left hand side of the Genie are two Galaxy metal-bond wheels (80 and 220 grits) and one 280 grit Nova resin-bond wheel. These three wheels are mounted on an adaptor that slides over the motor shaft. This left hand adaptor is balanced and tightened onto the shaft at the factory, and normally should not be removed to replace or exchange wheels. Follow the procedures below.

- UNPLUG THE MACHINE.** Remove the left hand hood.
- Use an adjustable wrench to remove the brass lap connector (not just the slotted bolt) on the left end of the adaptor. The lap connector has left hand threads. You will have to hold the left hand wheels while turning the lap connector in the same direction that the wheels spin while running.
- Once the lap connector is removed, the wheels and spacers will slide off the adaptor. Note the sequence of wheels and spacers before removing so that you can replace them properly. (If reversing the cutting direction of the 80 and 220 grit wheels, it is necessary to interchange them so that the 220 will be the first wheel and the 80 the second wheel.)
- Clean the adaptor with fine sand paper, and oil with a very small amount of light weight oil before replacing wheels and spacers.
- The Galaxy wheels should be balanced again following the procedures under "Balancing Galaxy Wheels".

The left hand set of wheels can also be removed as a unit while still mounted on the adaptor if necessary. This can be done as follows:

1. Remove the right hand wheels first. Hold the right hand shaft with a pair of visegrips or channel-lock pliers to prevent the motor shaft from turning. Use a piece of leather or thick cloth to protect the shaft from the pliers.
2. While holding the right hand shaft with the pliers, turn the left hand wheels **in the same direction that they turn while running**, as the adaptor has left hand threads.
3. If the shaft is marred by the pliers, clean it with a fine file or sandpaper, removing any burrs. Be careful not to create uneven spots in the shaft. Oil each shaft lightly with lightweight oil. Excess oil will cause belt slippage.

Remounting and Balancing Galaxy Wheels:

Galaxy Wheels are machined to run true, but must be adjusted to the individual adaptor and arbor. This is especially important when wheels are reversed or a new wheel is mounted.

When mounting a wheel, its position should be adjusted so the imperfections tend to cancel rather than add. For example, a high spot on a wheel should not be positioned over a high spot on an arbor shaft. Also, when two wheels are mounted side by side, the heaviest points on their rims should be positioned opposite each other rather than together. Since the imperfections referred to would be measured in thousandths of an inch, or tiny fractions of an ounce, you might think that precision instruments are needed for aligning wheels. Actually, proper adjustment can be simply accomplished by the following procedure:

1. First make certain the spacers, adaptor, and wheel hubs are clean and smooth. Mount the wheels and spacers on the adaptor and thread it onto the shaft.
2. Turn the motor on just long enough to rotate the wheels and observe whether they are running true. If there is a "wobble" or "bounce", you will need to balance all three wheels.

3. Start with the inside wheel which is usually the 280 Nova. Loosen the brass lap connector and rotate the inside wheel about one eighth of a turn. Tighten the lap connector, turn on the motor for a moment and check to see if the wheels are running true. If not, repeat the process. These random displacements of the wheel should eventually place it in a position where it performs satisfactorily. And remember, the Nova Wheels will not necessarily run as true as the Galaxy Wheels, and it is not necessary that they do because of their soft construction.
4. Once the inside wheel is balanced, hold it in place while you loosen the lap connector to rotate and balance the middle wheel. Make certain that any time you loosen the lap connector to turn a wheel, that you hold your balanced wheels in place; otherwise, they may slip and become out of balance again.
5. The first wheel (usually the 80 grit) should be balanced last using the procedure in #3.
6. **When all three wheels are balanced, it is very important that all three be held securely in place while the lap connector is tightened.**
7. A Galaxy Wheel that is not balanced properly will begin to wear prematurely at the "high spot". If such a spot should begin to appear on your wheel, check it once again to make certain it is properly balanced.

Parts and Accessories	
Genie Trim Saw Attachment	100-TSG-105
Replacement Trim Saw Blade	100-TSB-106
Jewelers Buff Kit	100-JBK-G
The Boxer	100-BOXER
Right Hand Adaptor Kit (includes 7 spacers)	101-ADP-GRK
Extra Right Hand Adaptor (spacers not included)	101-ADP-GR
Wheel Spacer, 1/4"	101-GSP-1/4
Wheel Spacer, 1/2"	101-GSP-1/2
Wheel Spacer, 5/8"	101-GSP-5/8
Wheel Spacer, 3/4"	101-GSP-3/4
Wheel Spacer, 1"	101-GSP-1
Wheel Spacer, 1-3/8"	101-GSP-1-3/8
Extra Flex Stem Lamp (18")	117-0618-G
Flex Stem Magnifier (15")	117-MV15
Water Aid, 8 oz bottle (call for other sizes)	410-WA-108
Replacement Brass Geyser	101-GSG-25
Splash Guard (set)	101-GUO-105
Pump Leathers (set)	101-GPL-145
Pump Belt	101-GPB-150
Pump Maintenance Kit	101-GMK
Complete Pump Assembly	101-G-PUMP
Replacement Motor Bearings (each)	101-GBE-148
Replacement Pan	101-GPA-130
Replacement Hood (left hand)	101-GHO-128-L
Replacement Hood (right hand)	101-GHO-128-R

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Orders/Technical Support:

Toll Free: (800)253-2954

Outside US: (760)255-1030

Fax: (760)255-1077

E-mail: info@diamondpacific.com

Website: www.diamondpacific.com

2620 W Main St, Barstow CA USA, 92311

