

**INSTALLATION, OPERATION,  
AND MAINTENANCE MANUAL**  
WITH PARTS LIST



**60 SERIES PUMP**

| <b>MODELS</b>             |
|---------------------------|
| <b>62 1/2A1-GX390 S/2</b> |

Register your new  
Gorman-Rupp pump online at  
**[www.grpumps.com/register](http://www.grpumps.com/register)**.

Valid serial number and e-mail address required.

**RECORD YOUR PUMP MODEL AND SERIAL NUMBER**

Please record your pump model and serial number in the spaces provided below. Your Gorman-Rupp distributor needs this information when you require parts or service.

Pump Model: \_\_\_\_\_

Serial Number: \_\_\_\_\_

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## INTRODUCTION

This Installation, Operation, and Maintenance manual is designed to help you achieve the best performance and longest life from your Gorman-Rupp pump.

This pump is a 60 Series, centrifugal model with an enclosed impeller. The pump is designed for high pressure distribution of clear water in irrigation or

fire fighting service. It is closed coupled to a single cylinder, Honda GX390 gasoline engine and mounted on a common hand-carry base. Standard equipment includes an hand primer system, discharge check valve and discharge pressure gauge. The basic material of pump construction is aluminum with bronze wear ring and a self-lubricated mechanical seal.

If there are any questions regarding the pump or its application which are not covered in this manual or in other literature accompanying this unit, please contact your Gorman-Rupp distributor, or write:

**Gorman-Rupp of Canada Limited**  
**70 Burwell Road**  
**St. Thomas, Ontario N5P 3R7**

The following are used to alert maintenance personnel to procedures which require special attention, to those which could damage equipment, and to those which could be dangerous to personnel:



**Immediate hazards which WILL result in severe personal injury or death. These instructions describe the procedure required and the injury which will result from failure to follow the procedure.**



**Hazards or unsafe practices which COULD result in severe personal injury or death. These instructions describe the procedure required and the injury which could result from failure to follow the procedure.**



Hazards or unsafe practices which COULD result in minor personal injury or product or property damage. These instructions describe the requirements and the possible damage which could result from failure to follow the procedure.

### NOTE

*Instructions to aid in installation, operation, and maintenance, or which clarify a procedure.*

## SAFETY - SECTION A

This information applies to 60 Series engine driven pumps. Refer to the manual accompanying the engine before attempting to begin operation.

This manual will alert personnel to known procedures which require special attention, to those which could damage equipment, and to those which could be dangerous to personnel. However, this manual cannot possibly anticipate and provide detailed instructions and precautions for every situation that might occur during maintenance of the unit. Therefore, it is the responsibility of the owner/maintenance personnel to ensure that only safe, established maintenance procedures are used, and that any procedures not addressed in this manual are performed only after establishing that neither personal safety nor pump integrity are compromised by such practices.



Before attempting to open or service the pump:

1. Familiarize yourself with this manual.
2. Disconnect the spark plug wire to ensure that the pump will remain inoperative.
3. Allow the pump to completely cool if overheated.
4. Check the temperature before opening any covers, plates, or plugs.
5. Close the suction and discharge valves.
6. Vent the pump slowly and cautiously.
7. Drain the pump.



This pump is designed to handle clear water for high pressure distribution. Do not attempt to pump volatile, corrosive, or flammable liquids which may damage the pump or endanger personnel as a result of pump failure.



Do not operate the pump against a closed discharge valve for long periods of time. If operated against a closed discharge valve, pump components will deteriorate, and the liquid could come to a boil, build pressure, and cause the pump casing to rupture or explode.



After the pump has been installed, make certain that the pump and hose connections are tight, properly supported and secure before operation.



Overheated pumps can cause severe burns and injuries. If overheating of the pump occurs:

1. Stop the pump immediately.
2. Ventilate the area.
3. Allow the pump to completely cool.
4. Check the temperature before opening any covers, plates, gauges, or plugs.
5. Vent the pump slowly and cautiously.
6. Refer to instructions in this manual before restarting the pump.

**WARNING!**

Do not remove plates, covers, gauges, pipe plugs, or fittings from an overheated pump. Vapor pressure within the pump can cause parts being disengaged to be ejected with great force. Allow the pump to cool before servicing.

**WARNING!**

Do not operate an internal combustion engine in an explosive atmosphere. When operating internal combustion engines in an enclosed area, make certain that exhaust fumes are piped to the outside. These fumes contain carbon monoxide, a deadly gas that is colorless, tasteless, and odorless.

**WARNING!**

Fuel used by internal combustion engines presents an extreme explosion and fire hazard. Make certain that all fuel lines are securely connected and free of leaks. Never refuel a hot or running engine. Avoid overfilling the fuel tank. Always use the correct type of fuel.

**WARNING!**

Never tamper with the governor to gain more power. The governor establishes safe operating limits that should not be exceeded. Continuous duty performance is limited to 3600 RPM; however the engine may be run at 3800 RPM during intermittent fire fighting service.

## INSTALLATION – SECTION B

### Review all SAFETY information in Section A.

Since pump installations are seldom identical, this section offers only general recommendations and practices required to inspect, position, and arrange the pump and piping.

Most of the information pertains to a standard **static lift** application where the pump is positioned above the free level of liquid to be pumped.

If installed in a **flooded suction application** where the liquid is supplied to the pump under pressure, some of the information such as mounting, line configuration, and priming must be tailored to the

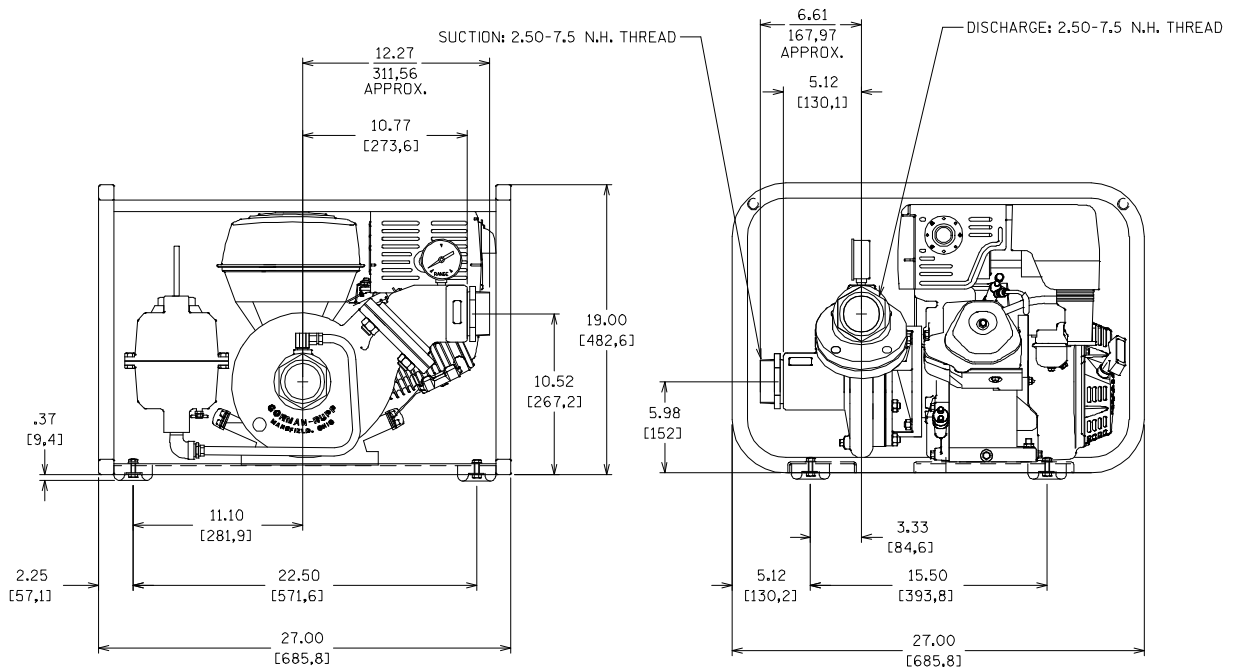
specific application. Since the pressure supplied to the pump is critical to performance and safety, **be sure** to limit the incoming pressure to 50% of the maximum permissible operating pressure as shown on the pump performance curve (see Section E, Page 1).

For further assistance, contact your Gorman-Rupp distributor or the Gorman-Rupp Company.

### Pump Dimensions

See Figure 1 for the approximate physical dimensions of this pump.

### OUTLINE DRAWING



POWERED BY: HONDA GX390 GASOLINE ENGINE

DIMENSIONS:  
INCHES  
[MILLIMETERS]

Figure 1. Pump Model 62 1/2A1-GX390 S/2

### OUTLINE DRAWING



## PREINSTALLATION INSPECTION

The pump assembly was inspected and tested before shipment from the factory. Before installation, inspect the pump for damage which may have occurred during shipment. Check as follows:

- a. Inspect the pump and engine for cracks, dents, damaged threads, and other obvious damage.
- b. Check for and tighten loose attaching hardware. Since gaskets tend to shrink after drying, check for loose hardware at mating surfaces.
- c. Carefully read all tags, decals, and markings on the pump assembly, and perform all duties indicated.
- d. Check levels and lubricate as necessary. Refer to **LUBRICATION** in the **MAINTENANCE AND REPAIR** section of this manual and perform duties as instructed.
- e. If the pump and engine have been stored for more than 12 months, some of the components or lubricants may have exceeded their maximum shelf life. These **must be inspected or replaced** to ensure maximum pump service.
- f. Check to ensure the following standard equipment items are included with the pump assembly:
  - Hand primer assembly.
  - Discharge pressure gauge.

If the maximum shelf life has been exceeded, or if anything appears to be abnormal, contact your Gorman-Rupp distributor or the factory to determine the repair or updating policy. **Do not** put the pump into service until appropriate action has been taken.

## POSITIONING PUMP

### Lifting

This pump is designed to be hand carried. The total pump weight for the pull start unit is approximately **134 pounds (61 kg)** not including accessories. Customer installed equipment such as suction and discharge piping **must** be removed before attempting to lift.

### Mounting

Locate the pump in an accessible place as close as practical to the liquid being pumped. Level mounting is essential for proper operation.

The pump may have to be supported or shimmed to provide for level operation or to eliminate vibration.

To ensure sufficient lubrication and fuel supply to the engine, **do not** position the pump and engine more than 15° off horizontal for continuous operation. The pump and engine may be positioned up to 30° off horizontal for **intermittent operation only**; however, the engine manufacturer should be consulted for continuous operation at angles greater than 15°.

## SUCTION AND DISCHARGE PIPING

Pump performance is adversely effected by increased suction lift, discharge elevation, and friction losses. See the performance curve and recommendations on Page E-1 to be sure your overall application allows pump to operate within the safe operation range.

### Materials

Either pipe or hose maybe used for suction and discharge lines; however, the materials must be compatible with the liquid being pumped. If hose is used in suction lines, it must be the rigid-wall, reinforced type to prevent collapse under suction. Using piping couplings in suction lines is not recommended.

## Line Configuration

Keep suction and discharge lines as straight as possible to minimize friction losses. Make minimum use of elbows and fittings, which substantially increase friction loss. If elbows are necessary, use the long-radius type to minimize friction loss.

## Connections to Pump

Before tightening a connecting flange, align it exactly with the pump port. Never pull a pipe line into place by tightening the flange bolts and/or couplings.

Lines near the pump must be independently supported to avoid strain on the pump which could cause excessive vibration, decreased bearing life, and increased shaft and seal wear. If hose-type lines are used, they should have adequate support to secure them when filled with liquid and under pressure.

## Gauges

Most pumps are drilled and tapped for installing discharge pressure and vacuum suction gauges. If these gauges are desired for pumps that are not tapped, drill and tap the suction and discharge lines not less than 18 inches (457,20 mm) from the suction and discharge ports and install the gauges. Installation closer to the pump may result in erratic readings.

## SUCTION LINES

To avoid air pockets which could affect pump priming, the suction line must be as short and direct as possible. When operation involves a suction lift, the line must always slope upward to the pump from the source of the liquid being pumped; if the line slopes down to the pump at any point along the suction run, air pockets will be created.

## Fittings

Suction lines should be the same size as the pump inlet. If reducers are used in suction lines, they should be the eccentric type, and should be installed with the flat part of the reducers uppermost to avoid creating air pockets. Valves are not normally used in suction lines, but if a valve is used,

install it with the stem horizontal to avoid air pockets.

## Strainers

If a strainer is furnished with the pump, be certain to use it; any spherical solids which pass through a strainer furnished with the pump will also pass through the pump itself.

If a strainer is not furnished with the pump, but is installed by the pump user, make certain that the total area of the openings in the strainer is at least three or four times the cross section of the suction line, and that the openings will not permit passage of solids larger than the solids handling capability of the pump.

This pump is designed to handle up to 5/16-inch (7,9 mm) diameter spherical solids.

## Sealing

Since even a slight leak will affect priming, head, and capacity, especially when operating with a high suction lift, all connections in the suction line should be sealed with pipe dope to ensure an airtight seal. Follow the sealant manufacturer's recommendations when selecting and applying the pipe dope. The pipe dope should be compatible with the liquid being pumped.

## Suction Lines In Sumps

If a single suction line is installed in a sump, it should be positioned away from the wall of the sump at a distance equal to 1-1/2 times the diameter of the suction line.

If there is a liquid flow from an open pipe into the sump, the flow should be kept away from the suction inlet because the inflow will carry air down into the sump, and air entering the suction line will reduce pump efficiency.

If it is necessary to position inflow close to the suction inlet, install a baffle between the inflow and the suction inlet at a distance 1-1/2 times the diameter of the suction pipe. The baffle will allow entrained air to escape from the liquid before it is drawn into the suction inlet.

If two suction lines are installed in a single sump, the flow paths may interact, reducing the efficiency

of one or both pumps. To avoid this, position the suction inlets so that they are separated by a distance equal to at least 3 times the diameter of the suction pipe.

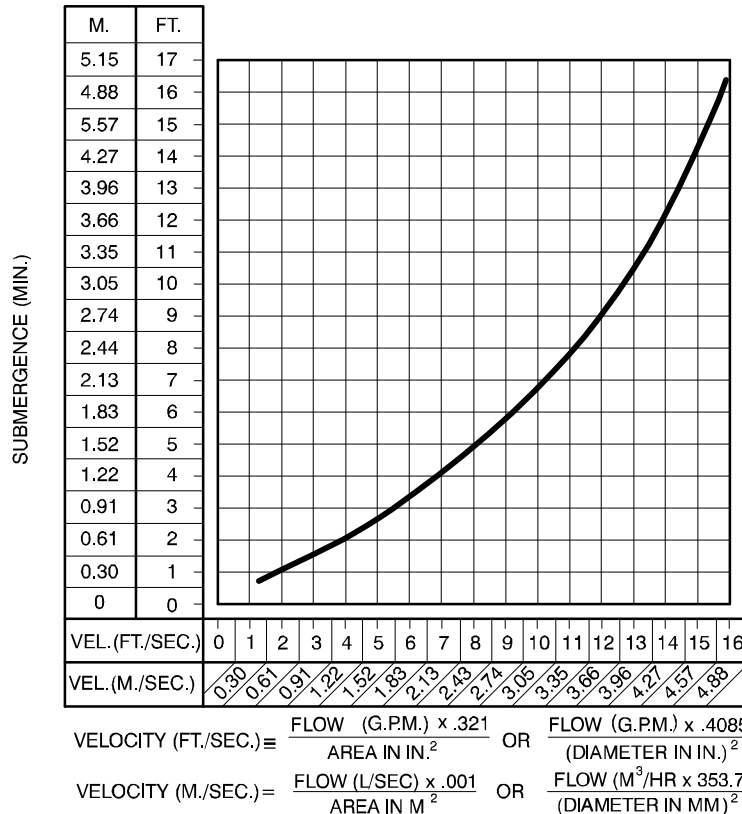
**Suction Line Positioning**

The depth of submergence of the suction line is critical to efficient pump operation. Figure 3 shows

recommended minimum submergence vs. velocity.

**NOTE**

*The pipe submergence required may be reduced by installing a standard pipe increaser fitting at the end of the suction line. The larger opening size will reduce the inlet velocity. Calculate the required submergence using the following formula based on the increased opening size (area or diameter).*



**Figure 3. Recommended Minimum Suction Line Submergence vs. Velocity**

**DISCHARGE LINES**

**Siphoning**

Do not terminate the discharge line at a level lower than that of the liquid being pumped unless a siphon breaker is used in the line. Otherwise, a siphoning action causing damage to the pump could result.

**Valves**

If a throttling valve is desired in the discharge line, use a valve as large as the largest pipe to minimize

friction losses. Never install a throttling valve in a suction line.

With high discharge heads, it is recommended that a throttling valve and a system check valve be installed in the discharge line to protect the pump from excessive shock pressure and reverse rotation when it is stopped.



If the application involves a high discharge head, gradually close the discharge throttling valve before stopping the pump.

## OPERATION – SECTION C

Review all **SAFETY** information in Section A.

Follow the instructions on all tags, labels and decals attached to the pump.



This pump is designed to handle clear water for high pressure distribution. Do not attempt to pump volatile, corrosive, or flammable liquids which may damage the pump or endanger personnel as a result of pump failure.



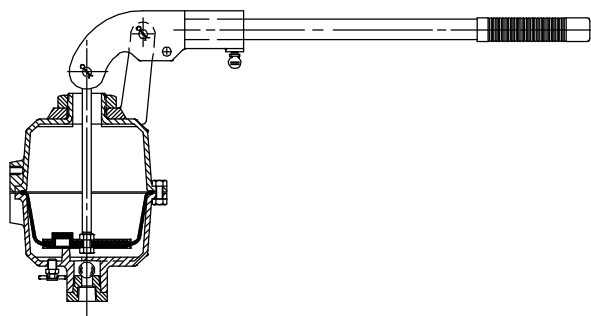
Never tamper with the governor to gain more power. The governor establishes safe operating limits that should not be exceeded. Continuous duty performance is limited to 3600 RPM; however the engine may be run at 3800 RPM during intermittent fire fighting service.

### PRIMING

Install the pump and piping as described in **INSTALLATION**. Make sure that the piping connections are tight, and that the pump is securely mounted. Check that the pump is properly lubricated (see **LUBRICATION** in **MAINTENANCE AND REPAIR**).

#### Hand Primer

Since this pump is not self-priming, it is equipped with an hand-operated vacuum priming pump. (see Figure 1).



**Figure 1. Hand Primer Assembly**

The hand-operated priming pump, connected directly to the pump, is designed to draw air out of the suction line and the volute. The hand-operated priming pump can be used while the pump is either stopped or operating. To prime the pump, close the drain cock in the hand primer. Operate the handle of the pump until liquid flows into the pump and the pump is fully primed. After use, open the drain cock in the hand primer and drain any liquid from the hand primer.

### STARTING

Consult the operations manual furnished with the engine.

### OPERATION

#### Leakage

No leakage should be visible at pump mating surfaces, or at pump connections or fittings. Keep all line connections and fittings tight to maintain maximum pump efficiency.

#### Liquid Temperature And Overheating

The **maximum** liquid temperature for this pump is 160° F (71,1°C). Do not apply it at a higher operating temperature.

Overheating can occur if operated with the valves in the suction or discharge lines closed. Operating against closed valves could bring the liquid to a boil, build pressure, and cause the pump to rupture or explode. If overheating occurs, stop the pump and allow it to cool before servicing it. Refill the pump casing with cool liquid.



**Do not remove plates, covers, gauges, pipe plugs, or fittings from an overheated pump. Vapor pressure within the pump can cause parts being disengaged to be ejected with great force. Allow the pump to cool before servicing.**

#### **Strainer Check**

If a suction strainer has been shipped with the pump or installed by the user, check the strainer regularly, and clean it as necessary. The strainer should also be checked if pump flow rate begins to drop. If a vacuum suction gauge has been installed, monitor and record the readings regularly to detect strainer blockage.

**Never** introduce air or steam pressure into the pump casing or piping to remove a blockage. This could result in personal injury or damage to the equipment. If backflushing is absolutely necessary, **liquid pressure** must be limited to 50% of the maximum permissible operating pressure shown on the pump performance curve. (See Section E, Page 1.)

#### **Pump Vacuum Check**

With the pump inoperative, install a vacuum gauge in the system, using pipe dope on the threads. Block the suction line and start the pump. At operating speed the pump should pull a vacuum of 20 inches (508,0 mm) or more of mercury. If it does not, check for air leaks in the seal, gasket, or discharge valve.

Open the suction line, and read the vacuum gauge with the pump primed and at operation speed. Shut off the pump. The vacuum gauge reading will immediately drop proportionate to static suction

lift, and should then stabilize. If the vacuum reading falls off rapidly after stabilization, an air leak exists. Before checking for the source of the leak, check the point of installation of the vacuum gauge.

#### **STOPPING**

Never halt the flow of liquid suddenly. If the liquid being pumped is stopped abruptly, damaging shock waves can be transmitted to the pump and piping system. Close all connecting valves slowly.

On engine driven pumps, reduce the throttle speed slowly and allow the engine to idle briefly before stopping.



If the application involves a high discharge head, gradually close the discharge throttling valve before stopping the pump.

After stopping the pump, disconnect the spark plug wire to ensure that the pump will remain inoperative.

#### **Cold Weather Preservation**

In below freezing conditions, drain the pump to prevent damage from freezing. Also, clean out any solids by flushing with a hose. Operate the pump for approximately one minute; this will remove any remaining liquid that could freeze the pump rotating parts. If the pump will be idle for more than a few hours, or if it has been pumping liquids containing a large amount of solids, drain the pump, and flush it thoroughly with clean water. To prevent large solids from clogging the drain port and preventing the pump from completely draining, insert a rod or stiff wire in the drain port, and agitate the liquid during the draining process. Clean out any remaining solids by flushing with a hose.

## TROUBLESHOOTING – SECTION D

Review all SAFETY information in Section A.



**Before attempting to open or service the pump:**

1. Familiarize yourself with this manual.
2. Shut down the engine and disconnect the spark plug wire to ensure that the pump will remain inoperative.
3. Allow the pump to completely cool if overheated.
4. Check the temperature before opening any covers, plates, or plugs.
5. Close the suction and discharge valves.
6. Vent the pump slowly and cautiously.
7. Drain the pump.

| TROUBLE   | POSSIBLE CAUSE   | PROBABLE REMEDY  |
|---|--|--|
| PUMP FAILS TO PRIME                                   | <p>Not enough liquid in casing.</p> <p>Air leak in suction line.</p> <p>Lining of suction hose collapsed.</p> <p>Leaking or worn seal or pump gasket.</p> <p>Suction lift or discharge head too high.</p> <p>Strainer clogged (if installed)</p> <p>Auxiliary priming device faulty or improperly installed.</p> <p>Integral discharge check valve clogged or binding.</p> | <p>Add liquid to casing. See <b>PRIMING</b>.</p> <p>Correct leak.</p> <p>Replace suction hose.</p> <p>Check pump vacuum. Replace leaking or worn seal or gasket.</p> <p>Check piping installation and install bypass line if needed. See <b>INSTALLATION</b>.</p> <p>Check strainer and clean if necessary</p> <p>Repair priming device or check installation.</p> <p>Clean valve.</p> |
| PUMP STOPS OR FAILS TO DELIVER RATED FLOW OR PRESSURE | <p>Air leak in suction line.</p> <p>Suction intake not submerged at proper level or sump too small.</p> <p>Lining of suction hose collapsed.</p>   | <p>Correct leak.</p> <p>Check installation and correct submergence as needed.</p> <p>Replace suction hose.</p>   |

| TROUBLE   | POSSIBLE CAUSE   | PROBABLE REMEDY   |
|---|--|---|
| PUMP STOPS OR FAILS TO DELIVER RATED FLOW OR PRESSURE (cont.) | <p>Impeller or other wearing parts worn or damaged.</p> <p>Impeller clogged.</p> <p>Suction lift too high.</p> <p>Pump speed too slow.</p> <p>Leaking or worn seal or pump gasket.</p> | <p>Replace worn or damaged parts. Check that impeller is properly centered and rotates freely.</p> <p>Free impeller of debris.</p> <p>Measure lift w/vacuum gauge. Reduce lift and/or friction losses in suction line.</p> <p>Check engine output; consult engine operation manual.</p> <p>Check pump vacuum. Replace leaking or worn seal or gasket.</p> |
| PUMP REQUIRES TOO MUCH POWER                                  | <p>Pump speed too high.</p> <p>Liquid solution too thick.</p> <p>Exceeding operating limits.</p>   | <p>Check engine output.</p> <p>Dilute if possible.</p> <p>See performance curves in <b>PUMP MAINTENANCE AND REPAIR</b>.</p>   |
| EXCESSIVE NOISE   | <p>Cavitation in pump.</p> <p>Pumping entrained air.</p> <p>Pump or drive not securely mounted.</p> <p>Impeller clogged or damaged.</p>  | <p>Reduce suction lift and/or friction losses in suction line. Record vacuum and pressure gauge readings and consult local representative or factory.</p> <p>Locate and eliminate source of air bubble.</p> <p>Secure mounting hardware.</p> <p>Clean out debris; replace damaged parts.</p>  |

## PREVENTIVE MAINTENANCE

Since pump applications are seldom identical, and pump wear is directly affected by such things as the abrasive qualities, pressure and temperature of the liquid being pumped, this section is intended only to provide general recommendations and practices for preventive maintenance. Regardless of the application however, following a routine preventive maintenance schedule will help assure trouble-free performance and long life from your Gorman-Rupp pump. For specific questions concerning your application, contact your Gorman-Rupp distributor or the Gorman-Rupp Company.

Record keeping is an essential component of a good preventive maintenance program. Changes in suction and discharge gauge readings (if so

equipped) between regularly scheduled inspections can indicate problems that can be corrected before system damage or catastrophic failure occurs. The appearance of wearing parts should also be documented at each inspection for comparison as well. Also, if records indicate that a certain part (such as the seal) fails at approximately the same duty cycle, the part can be checked and replaced before failure occurs, reducing unscheduled down time.

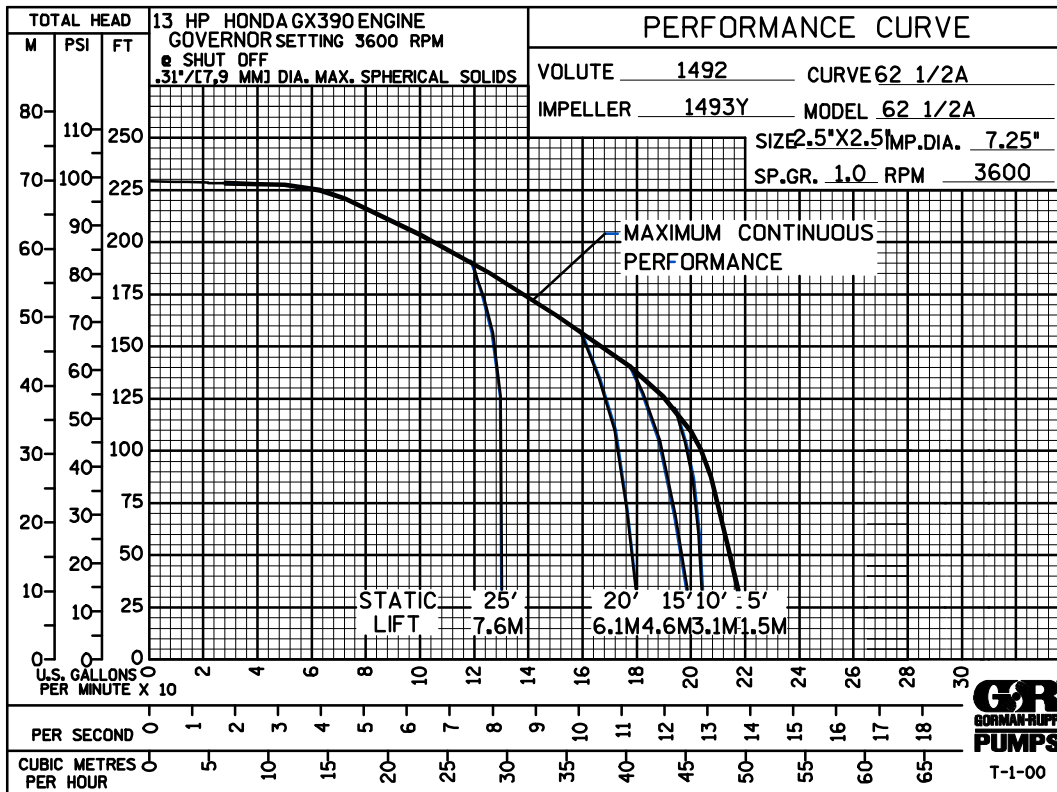
For new applications, a first inspection of wearing parts at 250 hours will give insight into the wear rate for your particular application. Subsequent inspections should be performed at the intervals shown on the chart below. Critical applications should be inspected more frequently.

| <b>Preventive Maintenance Schedule</b>  |                          |               |                |                      |                 |
|---|--------------------------|---------------|----------------|----------------------|-----------------|
| <b>Item</b>   | <b>Service Interval*</b> |               |                |                      |                 |
|   | <b>Daily</b>             | <b>Weekly</b> | <b>Monthly</b> | <b>Semi-Annually</b> | <b>Annually</b> |
| General Condition (Temperature, Unusual Noises or Vibrations, Cracks, Leaks, Loose Hardware, Etc.)  | I                        |               |                |                      |                 |
| Pump Performance (Gauges, Speed, Flow)  | I                        |               |                |                      |                 |
| Bearing Lubrication   |                          | I             |                |                      | R               |
| Seal Lubrication (And Packing Adjustment, If So Equipped)   |                          | I             |                |                      | R               |
| V-Belts (If So Equipped)  |                          |               | I              |                      |                 |
| Air Release Valve Plunger Rod (If So Equipped)  |                          |               | I              | C                    |                 |
| Front Impeller Clearance (Wear Plate)   |                          |               |                | I                    |                 |
| Rear Impeller Clearance (Seal Plate)  |                          |               |                | I                    |                 |
| Check Valve   |                          |               |                |                      | I               |
| Pressure Relief Valve (If So Equipped)  |                          |               |                |                      | C               |
| Pump and Driver Alignment   |                          |               |                |                      | I               |
| Shaft Deflection  |                          |               |                |                      | I               |
| Bearings  |                          |               |                |                      | I               |
| Bearing Housing   |                          |               |                |                      | I               |
| Piping  |                          |               |                |                      | I               |
| Driver Lubrication – See Mfgr's Literature  |                          |               |                |                      | I               |
| <b>Legend:</b><br>I = Inspect, Clean, Adjust, Repair or Replace as Necessary<br>C = Clean<br>R = Replace<br>* Service interval based on an intermittent duty cycle equal to approximately 4000 hours annually. Adjust schedule as required for lower or higher duty cycles or extreme operating conditions. |                          |               |                |                      |                 |



## PUMP MAINTENANCE AND REPAIR – SECTION E

MAINTENANCE AND REPAIR OF THE WEARING PARTS OF THE PUMP WILL MAINTAIN PEAK OPERATING PERFORMANCE.



**\* STANDARD PERFORMANCE FOR PUMP MODELS 62 1/2A1-GX390 S/2**

\* Based on 70° F (21 ° C) clear water at sea level with minimum suction lift. Since pump installations are seldom identical, your performance may be different due to such factors as viscosity, specific gravity, elevation, temperature, and impeller trim.

If your pump serial number is followed by an "N", your pump is **NOT** a standard production model. Contact the Gorman-Rupp Company to verify performance or part numbers.



### WARNING!

**Never tamper with the governor to gain more power. The governor establishes safe operating limits that should not be exceeded. Continuous duty performance is limited to 3600 RPM; however the engine may be run at 3800 RPM during intermittent fire fighting service.**

SECTION DRAWING

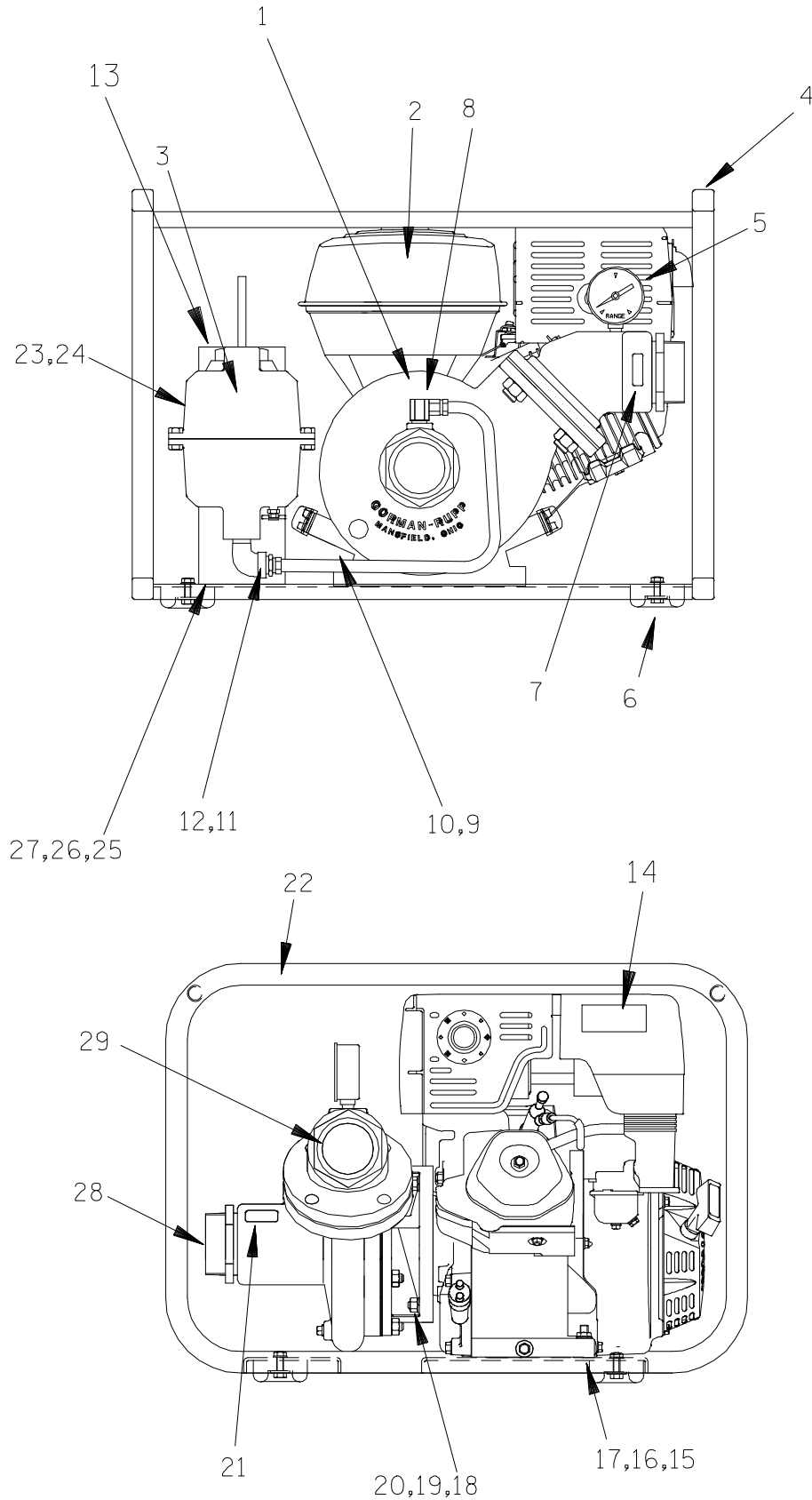


Figure 1. Pump Model 62 1/2A1-GX390 S/2

**PARTS LIST**  
**Pump Model 62 1/2A1-GX390 S/2**  
 (Canadian S/N 106873 and up)

If your pump serial number is followed by an "N", your pump is **NOT** a standard production model. Contact the Gorman-Rupp Company to verify part numbers.

| ITEM NO. | PART NAME           | PART NUMBER      | MAT'L CODE | QTY | ITEM NO.   | PART NAME         | PART NUMBER | MAT'L CODE | QTY |
|----------|---------------------|------------------|------------|-----|------------|-------------------|-------------|------------|-----|
| 1        | PUMP END ASSY       | 62 1/2A1-(GX390) |            | 1   | 18         | STUD              | C0606-1/2   | 15991      | 4   |
| 2        | HONDA GX390 ENG     | 29122-036        | ----       | 1   | 19         | HEX NUT           | D06         | 15991      | 4   |
| 3        | HANDPRIMER          | S1252            | ----       | 1   | 20         | LOCKWASHER        | J06         | 15991      | 4   |
| 4        | HAND CARRY DECAL    | 2613FT           | ----       | 2   | 21         | SUCTION STICKER   | 6588AG      | ----       | 1   |
| 5        | PRESSURE GAUGE      | S180             | ----       | 2   | 22         | ROLLOVER BASE     | 41583-317A  | 24150      | 1   |
| 6        | RUBBER FOOT MTG KIT | 48152-603        | ----       | 1   | 23         | HEX HEAD CAPSCREW | B0604       | 15991      | 4   |
| 7        | DISCHARGE STICKER   | 6588BJ           | ----       | 1   | 24         | LOCKWASHER        | J06         | 15991      | 4   |
| 8        | SWIVEL FITTING      | 26571-002        | ----       | 1   | 25         | HEX HEAD CAPSCREW | B0604       | 15991      | 2   |
| 9        | .38 I.D. X 12" HOSE | 18513-302        | ----       | 1   | 26         | HEX NUT           | D06         | 15991      | 2   |
| 10       | HOSE ADAPTOR        | 26523-334        |            | 2   | 27         | LOCKWASHER        | J06         | 15991      | 2   |
| 11       | PIPE BUSHING        | AP0806           | 15079      | 1   | 28         | COUPLING          | 2469        | 14000      | 1   |
| 12       | STREET ELBOW        | RS08             | 11999      | 1   | 29         | COUPLING          | 2469        | 14000      | 1   |
| 13       | HANDPRIMER BRKT     | 50784            | ----       | 1   | NOT SHOWN: |                   |             |            |     |
| 14       | WARNING DECAL       | 2613FE           | ----       | 1   |            | NAMEPLATE         | 38812-045   | ----       | 1   |
| 15       | HEX HD CAPSCREW     | B0606            | 15991      | 4   |            | ENG. START UP TAG | 38816-269   | ----       | 1   |
| 16       | FLAT WASHER         | K06              | 15991      | 4   |            | INSTRUCTION TAG   | 38817-085   | ----       | 1   |
| 17       | FLANGED HEX NUT     | 21765-314        | ----       | 4   |            |                   |             |            |     |

\* INDICATES PARTS RECOMMENDED FOR STOCK

SECTION DRAWING

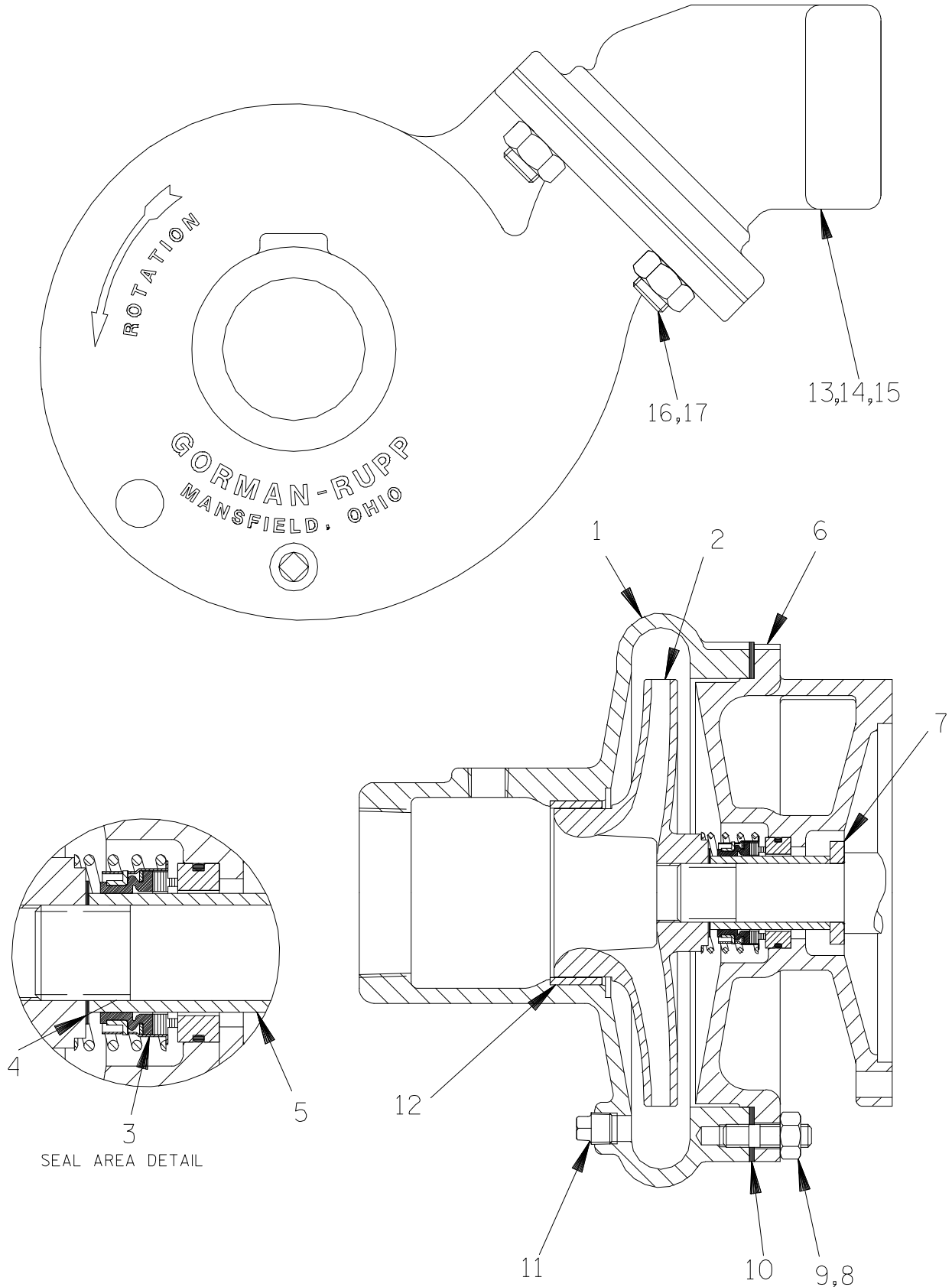


Figure 2. Pump End 62 1/2A1-(GX390)

**PARTS LIST**  
**Pump End 62 1/2A1-(GX390)**

| ITEM NO. |   | PART NAME            | PART NUMBER | MAT'L CODE | QTY |
|----------|---|----------------------|-------------|------------|-----|
| 1        | ▶ | PUMP CASING ASSEMBLY | 1492        | 13040      | 1   |
| 2        | * | IMPELLER             | 1493Y       | 1301C      | 1   |
| 3        | * | SEAL ASSEMBLY        | 25271-192   | ---        | 1   |
| 4        | * | IMPELLER SHIM SET    | 2X          | 17090      | 1   |
| 5        | * | SHAFT SLEEVE         | 2146        | 14000      | 1   |
| 6        |   | INTERMEDIATE         | 38264-305   | 13040      | 1   |
| 7        |   | SEAL RING            | 2A          | 15020      | 1   |
| 8        |   | STUD                 | C0606       | 15991      | 8   |
| 9        |   | HEX NUT              | D06         | 15991      | 8   |
| 10       | * | CASING GASKET SET    | 3G          | 18000      | 1   |
| 11       |   | PIPE PLUG            | P04         | 15079      | 1   |
| 12       | * | WEAR RING            | 1494        | 14000      | 1   |
| 13       |   | CHECK VALVE BODY     | 6323        | 13000      | 1   |
| 14       | * | CHECK VALVE GASKET   | 6323G       | 19060      | 1   |
| 15       |   | CHECK VALVE ARM      | 6324        | 14000      | 1   |
| 16       |   | STUD                 | C1008       | 15991      | 4   |
| 17       |   | HEX NUT              | D10         | 15991      | 4   |

\* INDICATES PARTS RECOMMENDED FOR STOCK

▶ PUMP CASING ASSEMBLY INCLUDES WEAR RING, ITEM 12

## PUMP AND SEAL DISASSEMBLY AND REASSEMBLY

Review all SAFETY information in Section A.

Follow the instructions on all tags, label and decals attached to the pump.

This pump requires little service due to its rugged, minimum-maintenance design. However, if it becomes necessary to inspect or replace the wearing parts, follow these instructions which are keyed to the sectional views (see Figures 1 and 2) and the accompanying parts lists.

As described on the following pages, this manual will alert personnel to known procedures which require special attention, to those which could damage equipment, and to those which could be dangerous to personnel. However, this manual cannot possibly anticipate and provide detailed precautions for every situation that might occur during maintenance of the unit. Therefore, it is the responsibility of the owner/maintenance personnel to ensure that **only** safe, established maintenance procedures are used, and that any procedures not addressed in this manual are performed **only** after establishing that neither personal safety nor pump integrity are compromised by such practices.

Before attempting to service the pump, remove the suction and discharge hoses and disconnect the spark plug wire to ensure that it will remain inoperative. Close all valves in the suction and discharge lines.

For engine disassembly and repair, consult the literature supplied with the engine, or contact your local Honda engine representative.



**Before attempting to open or service the pump:**

1. **Familiarize yourself with this manual.**
2. **Disconnect the spark plug wire to ensure that the pump will remain inoperative.**

3. **Allow the pump to completely cool if overheated.**
4. **Check the temperature before opening any covers, plates, or plugs.**
5. **Close the suction and discharge valves.**
6. **Vent the pump slowly and cautiously.**
7. **Drain the pump.**

### Hand Primer Disassembly

(Figure 1 or 2)

Disconnect the hose connection (11) from the hand primer (3) to the pump sub-assembly. (see Figure 1) Remove hex head capscrews (25), nuts (26), and lockwashers (27) securing the hand primer bracket to the rollover base, and remove the hand primer (see Figure 2)

If no further pump disassembly is required, refer to **Hand Primer Reassembly**.

### Pump Disassembly

(Figure 2)

After disconnecting the rubber priming line, remove the drain plug (11) to drain the pump. Clean and reinstall the plug.

Remove the hardware (9) and separate the pump casing (1) from the intermediate (6). Carefully remove the casing gasket set (10) and clean the contacting surfaces.

Inspect the wear ring (12) for severe erosion or damage. The wear ring is a press fit in the pump casing. To remove the ring, apply heat to the outside of the casing or split the ring. **Be careful** not to damage the pump casing.

To remove the impeller (2), insert a steel bar or drift pin between the vanes and turn it in a counter-clockwise direction (when facing the impeller) while holding the engine crankshaft stationary. **Be careful** not to damage the impeller vanes. Use caution when unscrewing the impeller; tension on the seal spring will be released as the impeller is removed.

## Seal Removal and Disassembly

### (Figure 2)

Remove the impeller adjusting shims (4). Tie and tag the shims or measure and record their thickness for ease of reassembly.

Remove the seal spring and slide the shaft sleeve (5) and rotating portion of the seal off the engine shaft as a unit. Apply oil to the sleeve and work it up under the bellows. Slide the rotating portion of the seal off the sleeve.

Slide two stiff wires with hooked ends along the shaft and pull stationary seat and O-ring from the intermediate bore.

### NOTE

*An alternate method of removing the stationary seat is to remove the hardware (19 and 20, Figure 1 or Figure 2) and separate the intermediate (6) from the engine. Use a dowel to press the stationary seat and O-ring from the intermediate.*

If the seal ring (7) requires replacement, remove the intermediate as described above, and slide the seal ring off the shaft.

If no further disassembly is required, refer to **Seal Reassembly And Installation**.

## Seal Reassembly and Installation

### (Figures 2 and 3)

Clean the seal cavity and shaft with a cloth soaked in fresh cleaning solvent.



**Most cleaning solvents are toxic and flammable. Use them only in a well ventilated area free from excessive heat, sparks, and flame. Read and follow all precautions printed on solvent containers.**

The seal is not normally reused because wear patterns on the finished faces cannot be realigned during reassembly. This could result in premature failure. If necessary to reuse an old seal in an emergency, **carefully** wash all metallic parts in fresh cleaning solvent and allow to dry thoroughly.

Handle the seal parts with extreme care to prevent damage. Be careful not to contaminate precision finished faces; even fingerprints on the faces can shorten seal life. If necessary, clean the faces with a non-oil based solvent and a clean, lint-free tissue. Wipe **lightly** in a concentric pattern to avoid scratching the faces.

Inspect the seal components for wear, scoring, grooves, and other damage that might cause leakage. Clean and polish the shaft sleeve, or replace it if there are nicks or cuts on either end. If any components are worn, replace the complete seal; **never mix old and new seal parts**.

If a replacement seal is being used, remove it from the container and inspect the precision finished faces to ensure that they are free of any foreign matter.

To ease installation of the seal, lubricate the O-rings and shaft sleeve with water or a very **small** amount of oil, and apply a drop of light lubricating oil on the finished faces. Assemble the seal as follows, (see Figure 3).

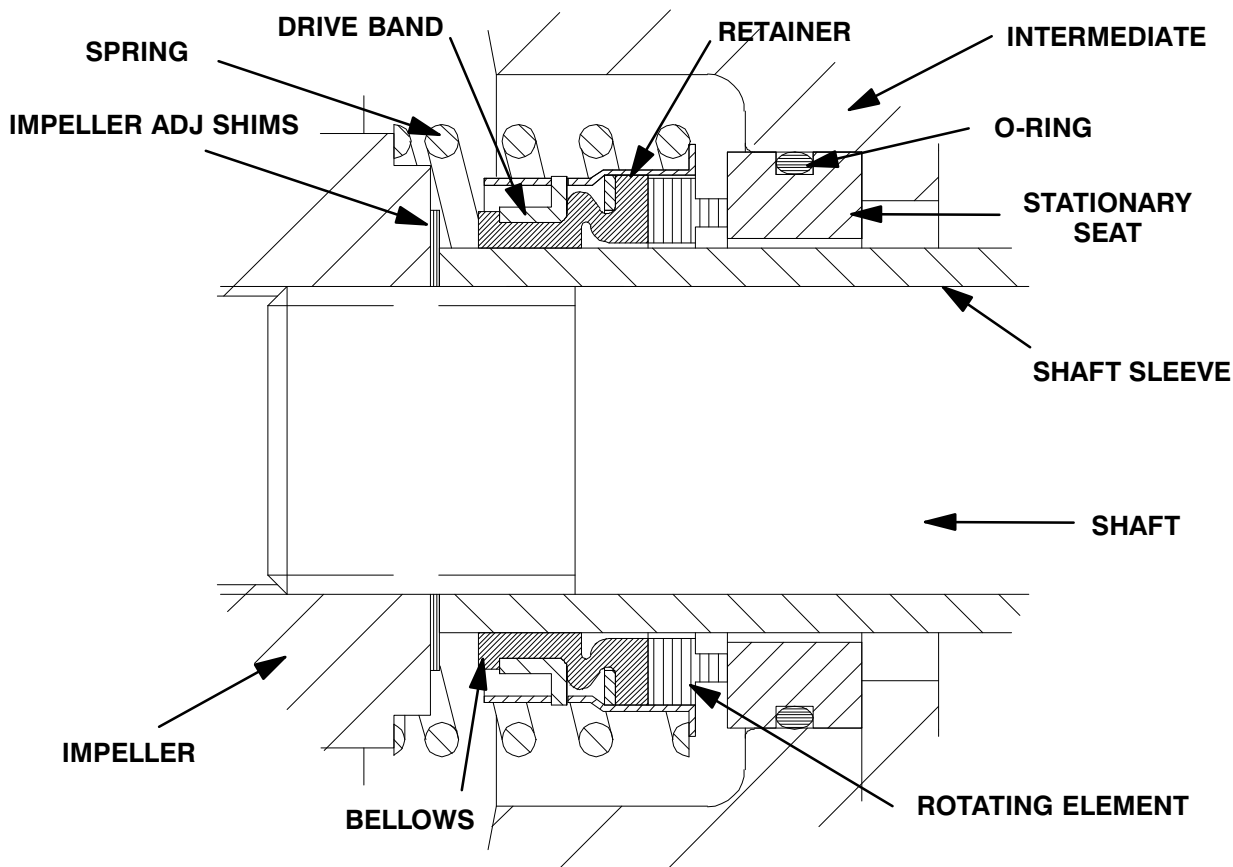


Figure 3. 25271-192 Seal Assembly



This seal is not designed for operation at temperatures above 160° F (71° C). Do not use at higher operating temperatures.

If the intermediate was removed, lay it on a flat surface with the impeller side facing up. Subassemble the O-ring in the stationary seat and press it into the intermediate bore until it seats squarely against the shoulder. Install the seal ring (7) on the shaft and secure the intermediate to the engine with the hardware (19 and 20, Figure 1). **Be careful** not to damage the stationary seat on the shaft threads.

**NOTE**

*If the intermediate was not removed, subassemble the O-ring in the stationary seat and use thumb pressure to press it into the intermediate bore until it seats squarely against the shoulder.*

Subassemble the rotating element in the retainer and bellows, then slide this subassembly onto the

shaft sleeve (5) until the face of the rotating element is **just flush** with the chamfered end of the sleeve. Slide the sleeve onto the shaft until the seal faces contact. Continue to push the sleeve through the seal until it seats against the seal ring (7).

Position the seal spring on the retainer and proceed with **Pump Reassembly**.

**Pump Reassembly**

**(Figure 2)**

If the wear ring (12) was removed, press the replacement ring into the casing bore until fully seated against the casing shoulder.

**NOTE**

*The wear ring **must** seat squarely in the casing bore or binding and/or excessive wear will result.*

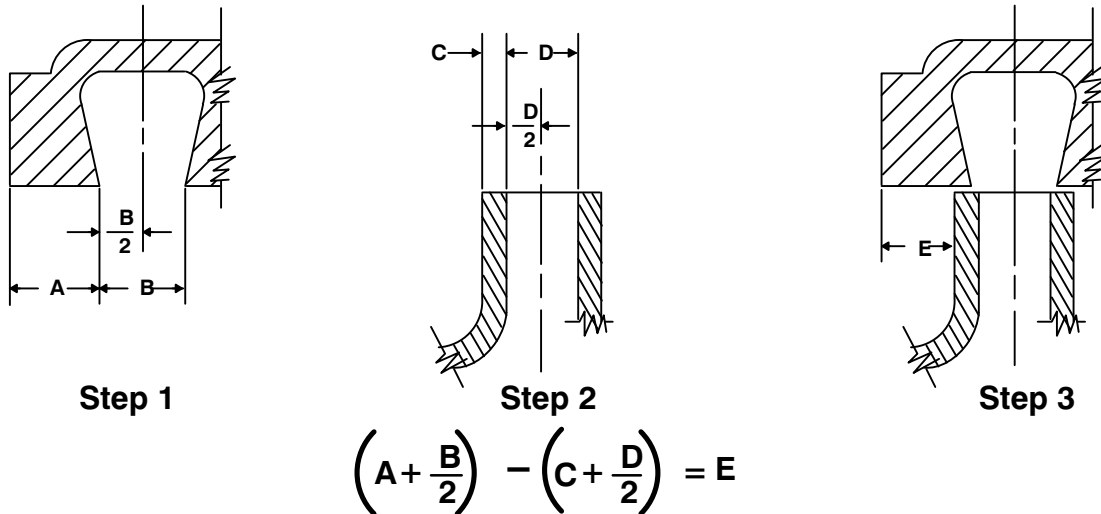
Inspect the impeller and replace it if cracked or badly eroded. Install the same thickness of impeller shims (4) as previously removed and screw the impeller onto the shaft until tight.



For maximum pump efficiency, the impeller should be centered within the volute scroll. Use the casing gaskets (10) and the impeller shims (4) to center the impeller as described below.

To verify the impeller positioning, measure the

pump casing and impeller as shown in Figure 4. Use these measurements to calculate the required impeller location (dimension E). Add or remove impeller adjusting shims until dimension E is obtained.



**Figure 4. Centering Impeller Within Volute Scroll**

**NOTE**

*After the impeller has been properly positioned, check for free rotation. Correct any scraping binding before further reassembly.*

Install the casing gasket set (10). Carefully guide the wear ring into the eye of the impeller and secure the casing to the intermediate with the hardware (9).

**Hand Primer Reassembly**

**(Figure 1 or 2)**

Install the hex head capscrews (25), nuts (26), and

lockwashers (27) securing the hand primer bracket to the rollover base. (Figure 2) Connect the hose connection from the hand primer to the pump sub-assembly. (Figure 1)

**LUBRICATION**

**Seal Assembly**

The shaft seal is lubricated by the liquid being pumped and no additional lubrication is required.

**Engine**

Consult the literature supplied with the engine, or contact your local Honda engine representative.

**For U.S. and International Warranty Information,  
Please Visit [www.grpumps.com/warranty](http://www.grpumps.com/warranty)  
or call:  
U.S.: 419-755-1280  
International: +1-419-755-1011**

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or call:  
519-631-2870**