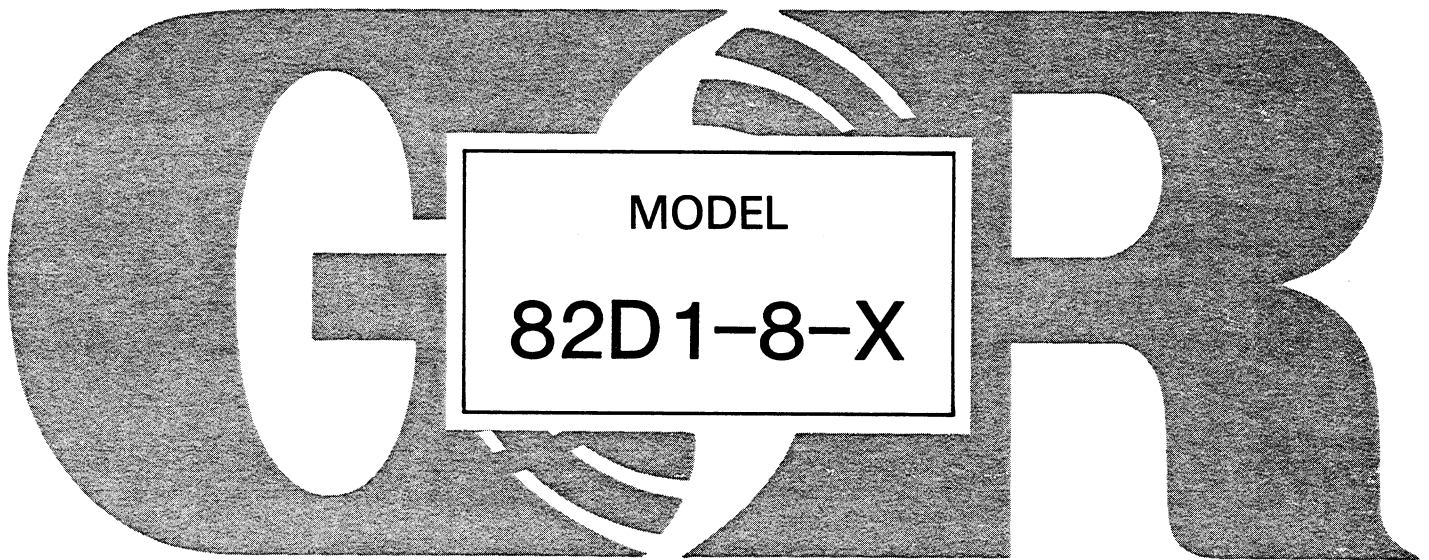

80 SERIES™

INSTALLATION, OPERATION, PARTS LIST, AND MAINTENANCE MANUAL



THE GORMAN-RUPP COMPANY • MANSFIELD, OHIO
GORMAN-RUPP OF CANADA LIMITED • ST. THOMAS, ONTARIO, CANADA

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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 an 80 Series, "Shield-A-Spark", self-priming centrifugal model. It is specially designed for pumping water, gasoline, and other petroleum products in a non-flammable atmosphere. The area must be well ventilated and free of combustible hazards. The engine furnished incorporates such safety features as splash guards, shielded ignition, and spark arresting muffler. The complete model has been U.L. listed and approved by the State Fire Marshal of California.

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

The Gorman-Rupp Company	or	Gorman-Rupp of Canada Limited
P.O. Box 1217		70 Burwell Road
Mansfield, Ohio 44901		St. Thomas, Ontario N5P 3R7

For information or technical assistance on the ENGINE, contact the ENGINE manufacturer's local dealer or representative.

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:

NOTE

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

CAUTION

Instructions which must be followed to avoid causing damage to the product or other equipment incidental to the installation. These instructions describe the requirements and the possible damage which could result from failure to follow the procedures.

WARNING

```

////////////////////////////////////
//
// These instructions must be followed to avoid causing in- //
// jury or death to personnel, and describe the procedure //
// required and the injury which could result from failure //
// to follow the procedure. //
// //
////////////////////////////////////

```

WARNINGS

WARNINGS - SECTION A

THESE WARNINGS APPLY TO 80 SERIES SHIELD-A-SPARK ENGINE DRIVEN PUMPS. REFER TO THE MANUAL ACCOMPANYING THE ENGINE BEFORE ATTEMPTING TO START THE ENGINE.

WARNING

Warning text: The engine used in this pump is not standard. It has been modified for pumping gasoline and other petroleum products in a well ventilated, non-flammable atmosphere free of combustible hazards. It cannot be further modified without affecting performance and safety factors. The shield and spark arresting modifications must be inspected and maintained regularly while the unit is in use. Refer to the manual accompanying the engine before attempting to start the engine.

WARNING

Warning text: Before attempting to open or service the pump: 1. Familiarize yourself with this manual. 2. Disconnect the ENGINE to ensure that the pump will remain inoperative. 3. Allow the pump to cool if overheated. 4. Vent the pump slowly and cautiously. 5. Close the suction and discharge valves. 6. Check the temperature before opening any covers, plates, or plugs. 7. Drain the pump.

WARNING

Warning text: This pump has not been designed to pump corrosive materials. Corrosive liquids could attack pump components resulting in rapid deterioration and failure.

WARNING

Warning text: After the pump has been installed, make certain that the pump and all piping or hose connections are secure before attempting to operate it.

WARNINGS

WARNING

```

////////////////////////////////////
//
// Do not operate the pump against a closed discharge valve //
// for long periods of time. This could bring the liquid //
// to a boil, build pressure, and cause the pump to rupture //
// or explode. //
// //
////////////////////////////////////

```

WARNING

```

////////////////////////////////////
//
// Overheated pumps can cause severe burns and injury. If //
// overheating of the pump casing occurs: //
// //
// 1. Stop the pump immediately. //
// 2. Allow the pump to cool. //
// 3. Refer to instructions in this manual before re- //
// starting 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 servic- //
// ing. //
// //
////////////////////////////////////

```

WARNING

```

////////////////////////////////////
//
// Fuel used by internal combustion engines presents an ex- //
// treme 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. //
// //
////////////////////////////////////

```

INSTALLATION - SECTION B

Seldom are two pump installations identical. The information presented in this section is a summary of the recommended installation practices related to inspection, pump positioning, hardware, suction and discharge piping, and sumps. For further assistance, contact your Gorman-Rupp distributor or the Gorman-Rupp Company.

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

OUTLINE DRAWING

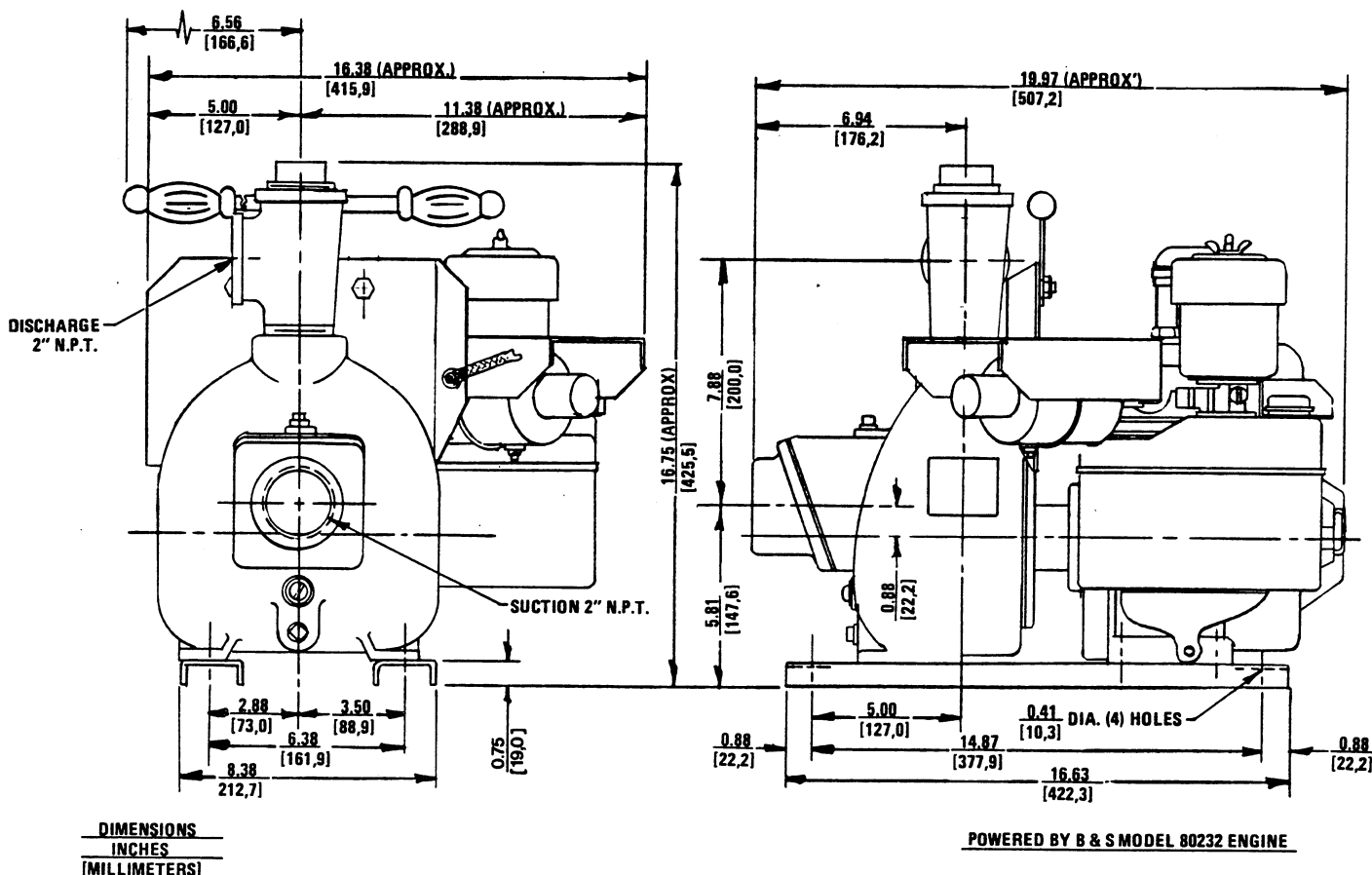


Figure 1. Pump Model 82D1-8-X

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

INSTALLATION

shipment. Check as follows:

- a. Inspect the pump assembly for cracks, dents, damaged threads, and other obvious damage.
- b. Check for and tighten loose bolts, nuts, capscrews, and other attaching hardware. Since gaskets tend to shrink after drying, check for and tighten loose nuts and capscrews securing mating surfaces.
- c. Carefully read all tags, decals, and markings on the pump assembly, and follow the instructions indicated.
- d. Check all lubricant levels and lubricate as necessary. Refer to LUBRICATION in the MAINTENANCE AND REPAIR section of this manual and perform duties as instructed.
- e. In addition check special engine modifications such as spark and splash guards, ignition wiring and spark arresting muffler for damage or loose mounting hardware.

POSITIONING PUMP

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.

Lifting

WARNING

```

////////////////////////////////////
//                               //
// Use lifting and moving equipment in good repair and with //
// adequate capacity to prevent injuries to personnel or //
// damage to equipment. //
//                               //
////////////////////////////////////

```

Make sure that hoists and other lifting equipment are of sufficient capacity to safely handle the pump assembly. If chains and cables are used, make certain that they are positioned so that they will not damage the pump, and so that the load will be balanced.

CAUTION

The pump assembly can be seriously damaged if the cables or chains used to lift and move the unit are improperly wrapped around the pump.

SUCTION AND DISCHARGE PIPING

Materials

Either pipe or hose may be used for suction and discharge lines. Piping 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 close to the pump before installing the lines.

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 entrained 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.

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. In volatile and/or corrosive service, 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 one and one-half 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 one and one-half 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 three 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 2 shows recommended minimum submergence vs. velocity.

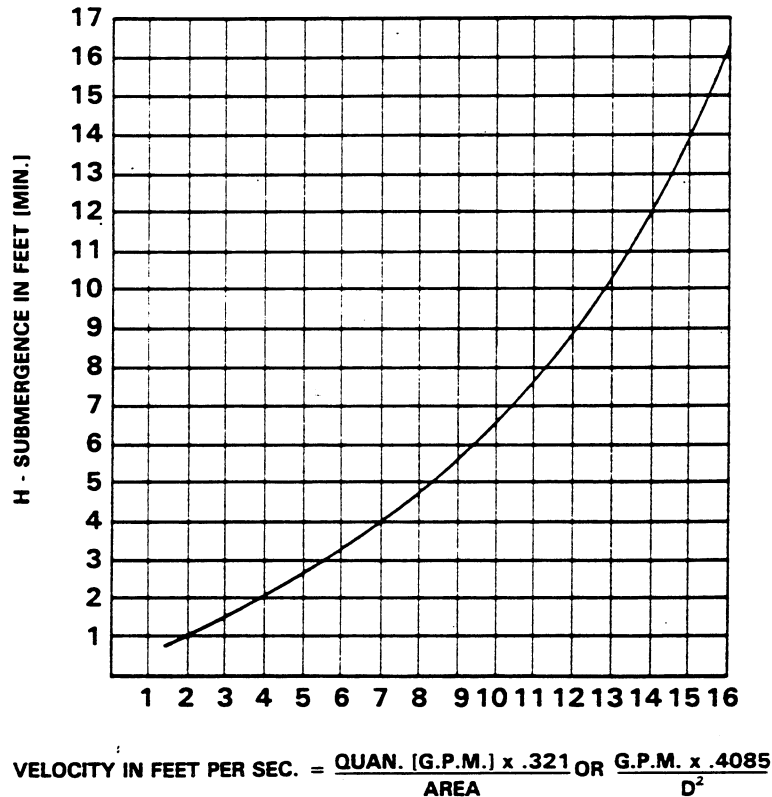


Figure 2. Recommended Minimum Suction Line Submergence Vs. Velocity

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 in the line to minimize friction losses. Never install a throttling valve in a suction line.

A check valve in the discharge line is normally recommended, but is not necessary in low discharge head applications.

INSTALLATION

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

Bypass Lines

If it is necessary to permit the escape of air to atmosphere during initial priming or in the repriming cycle, install a bypass line between the pump and the discharge check valve. The bypass line should be sized so that it does not affect pump discharge capacity.

Either a Gorman-Rupp automatic air release valve - which will automatically open to allow the pump to prime, and automatically close when priming is accomplished - or a hand-operated shutoff valve should be installed in the bypass line.

NOTE

The bypass line may clog frequently, particularly if the valve remains closed. If this condition occurs, either use a larger bypass line or leave the shutoff valve open during the pumping operation.

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 could result, causing damage to the pump.

OPERATION

OPERATION - SECTION C

WARNING

```

////////////////////////////////////
//
// This pump has not been designed to pump corrosive mate- //
// rials. Corrosive liquids could attack pump components //
// resulting in rapid deterioration and failure. //
// //
////////////////////////////////////

```

WARNING

```

////////////////////////////////////
//
// Before operating or servicing the pump, be certain prop- //
// er safety practices are followed. Provide adequate ven- //
// tilation, prohibit smoking, wear static-resistant //
// clothing and shoes. Clean up all fuel spills immediate- //
// ly after occurrence. //
// //
////////////////////////////////////

```

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).

This pump is self-priming, but the pump should never be operated unless there is liquid in the volute.

CAUTION

Never operate a self-priming pump unless there is liquid in the volute. The pump will not prime when dry. Extended operation of a dry pump will destroy the seal assembly.

Add liquid to the volute housing when:

1. The pump is being put into service for the first time.
2. The pump has not been used for a considerable length of time.
3. The liquid in the volute housing has evaporated.

Once the volute housing has been filled, the pump will prime and reprime as necessary.

OPERATION

WARNING

```

////////////////////////////////////
//                               //
// After filling the volute housing, do not attempt to op- //
// erate the pump unless all connecting piping is securely //
// installed. Otherwise, liquid in the pump forced out un- //
// der pressure could cause injury to personnel.           //
//                                                           //
////////////////////////////////////

```

To fill the pump, remove the volute fill cover or fill plug at the top of the casing and add clean liquid until the pump is filled. Replace the fill cover or fill plug before operating the pump.

STARTING

Consult the operations manual furnished with the ENGINE.

Be sure the pump unit is properly grounded before operation. See instructions in **GROUNDING** section.

OPERATION**Lines With a Bypass**

Either a Gorman-Rupp automatic air release valve or a hand operated shutoff valve may be installed in a bypass line.

If a Gorman-Rupp automatic air release valve has been installed, close the throttling valve in the discharge line. The Gorman-Rupp valve will automatically open to allow the pump to prime, and automatically close when priming has been accomplished. After the pump has been primed, and liquid is flowing steadily from the bypass line, open the discharge throttling valve.

If a hand operated shutoff valve has been installed, close the throttling valve in the discharge line, and open the bypass shutoff valve so that the pump will not have to prime against the weight of the liquid in the discharge line. When the pump has been primed, and liquid is flowing steadily from the bypass line, close the bypass shutoff valve and open the discharge throttling valve.

Lines Without a Bypass

Open all valves in the discharge line and start the power source. Priming is indicated by a positive reading on the discharge pressure gauge or by a quieter operation. The pump may not prime immediately because the suction line must first fill with liquid. If the pump fails to prime within five minutes, stop it and check the suction line for leaks.

OPERATION

After the pump has been primed, partially close the discharge line throttling valve in order to fill the line slowly and guard against excessive shock pressure which could damage pipe ends, gaskets, sprinkler heads, and any other fixtures connected to the line. When the discharge line is completely filled, adjust the throttling valve to the required flow rate.

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.

Overheating

Overheating can occur if the valves in the suction or discharge lines are 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 volute housing with cool liquid.

WARNING

Warning text enclosed in a box of slashes: // Overheating may produce dangerous fumes. Use extreme caution when venting the pump, or when removing covers, plates, plugs, or fittings. //

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.

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 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.

OPERATION

STOPPING

After stopping the pump, disconnect the power source to ensure that the pump will remain inoperative.

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.

GROUNDING

To eliminate static build-up of the liquid being dumped, the pump must be grounded by attaching the ground wire assembly to a ground rod. Install the ground rod in accordance with the National Electrical Codes and all local codes. Be sure the clamp or fastener has made a tight electrical connection with the rod.

CAUTION

Inspect and test the ground wire assembly for conductivity. Replace broken or frayed wire before resuming operation.

TROUBLESHOOTING - SECTION D

WARNING

```

////////////////////////////////////
//
// Before attempting to open or service the pump:
//
// 1. Familiarize yourself with this manual.
// 2. Disconnect the ENGINE to ensure that the pump
// will remain inoperative.
// 3. Allow the pump to cool if overheated.
// 4. Vent the pump slowly and cautiously.
// 5. Close the suction and discharge valves.
// 6. Check the temperature before opening any covers,
// plates, or plugs.
// 7. Drain the pump.
//
////////////////////////////////////
    
```

TROUBLE	POSSIBLE CAUSE	PROBABLE REMEDY
PUMP FAILS TO PRIME	Air leak in suction line. Lining of suction hose collapsed. Suction check valve clogged or binding. Leaking or worn seal or pump gasket. Suction lift or discharge head too high.	Correct leak. Replace suction hose. Clean valve. Check pump vacuum. Replace leaking or worn seal or gasket. Check piping installation and install bypass line if needed. See INSTALLATION.
PUMP STOPS OR FAILS TO DELIVER RATED FLOW OR PRESSURE	Air leak in suction line. Suction intake not submerged at proper level or sump too small. Lining of suction hose collapsed. Impeller or other wearing parts worn or damaged.	Correct leak. Check installation and correct as needed. Check submergence chart (Section B). Replace suction hose. Replace worn or damaged parts. Check that impeller is properly centered and rotates freely.

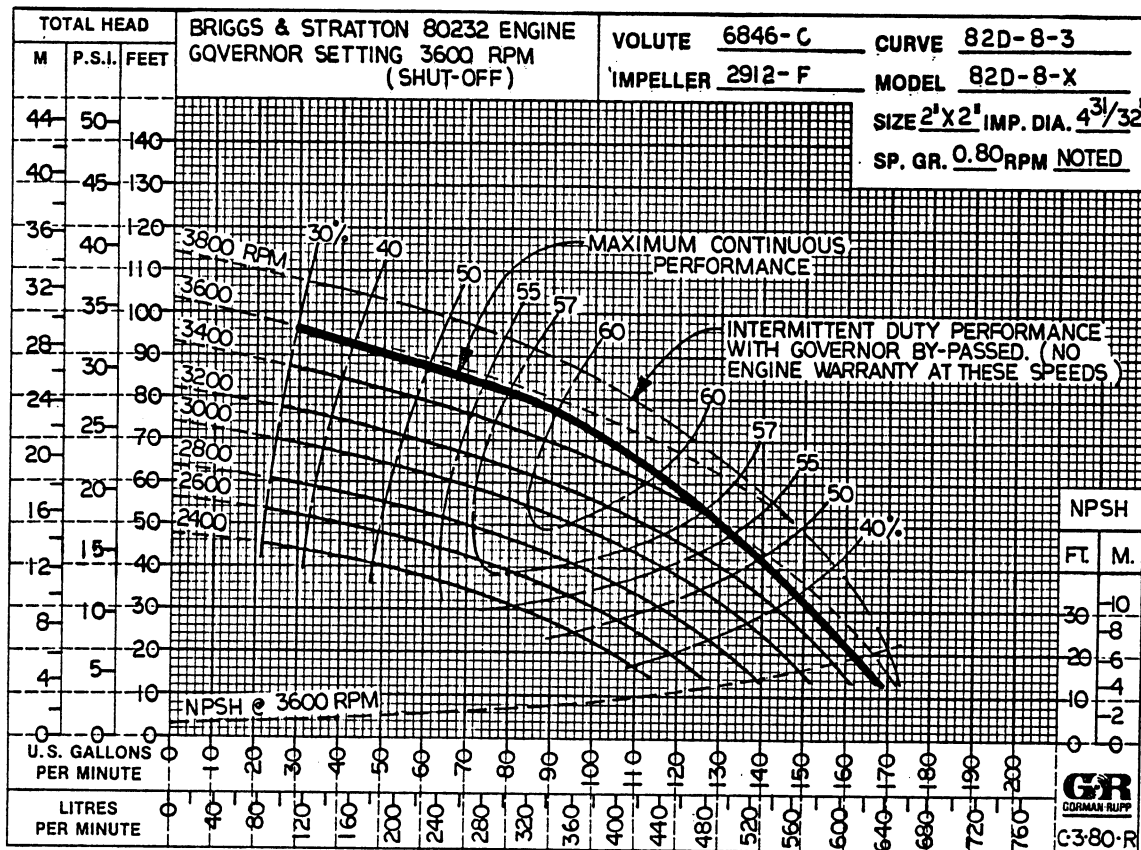
TROUBLESHOOTING

TROUBLE	POSSIBLE CAUSE	PROBABLE REMEDY
PUMP STOPS OR FAILS TO DELIVER RATED FLOW OR PRESSURE(cont.)	<p>Impeller clogged.</p> <p>Pump speed too slow.</p> <p>Discharge head too high.</p> <p>Suction lift too high.</p> <p>Leaking or worn seal or pump gasket.</p>	<p>Free impeller of debris.</p> <p>Check engine output; consult engine operation manual.</p> <p>Install bypass line.</p> <p>Reduce suction lift.</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>Discharge head too low.</p> <p>Liquid solution too thick.</p>	<p>Check engine output.</p> <p>Adjust discharge valve.</p> <p>Dilute if possible.</p>
PUMP CLOGS FREQUENTLY	<p>Discharge flow too slow.</p> <p>Suction check valve clogged or binding.</p>	<p>Open discharge valve fully to increase flow rate, and run engine at maximum governed speed.</p> <p>Clean valve.</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.</p> <p>Locate and eliminate source of air bubble.</p> <p>Secure mounting hardware.</p> <p>Clean out debris; replace damaged parts.</p>

MAINTENANCE AND REPAIR

MAINTENANCE AND REPAIR - SECTION E

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



***STANDARD PERFORMANCE FOR PUMP MODEL 82D1-8-X**

*Based on 70°F clear water at sea level with minimum suction lift, corrected to 0.80 specific gravity. 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" or if you have a question on performance, contact The Gorman-Rupp Company.

SECTIONAL DRAWING

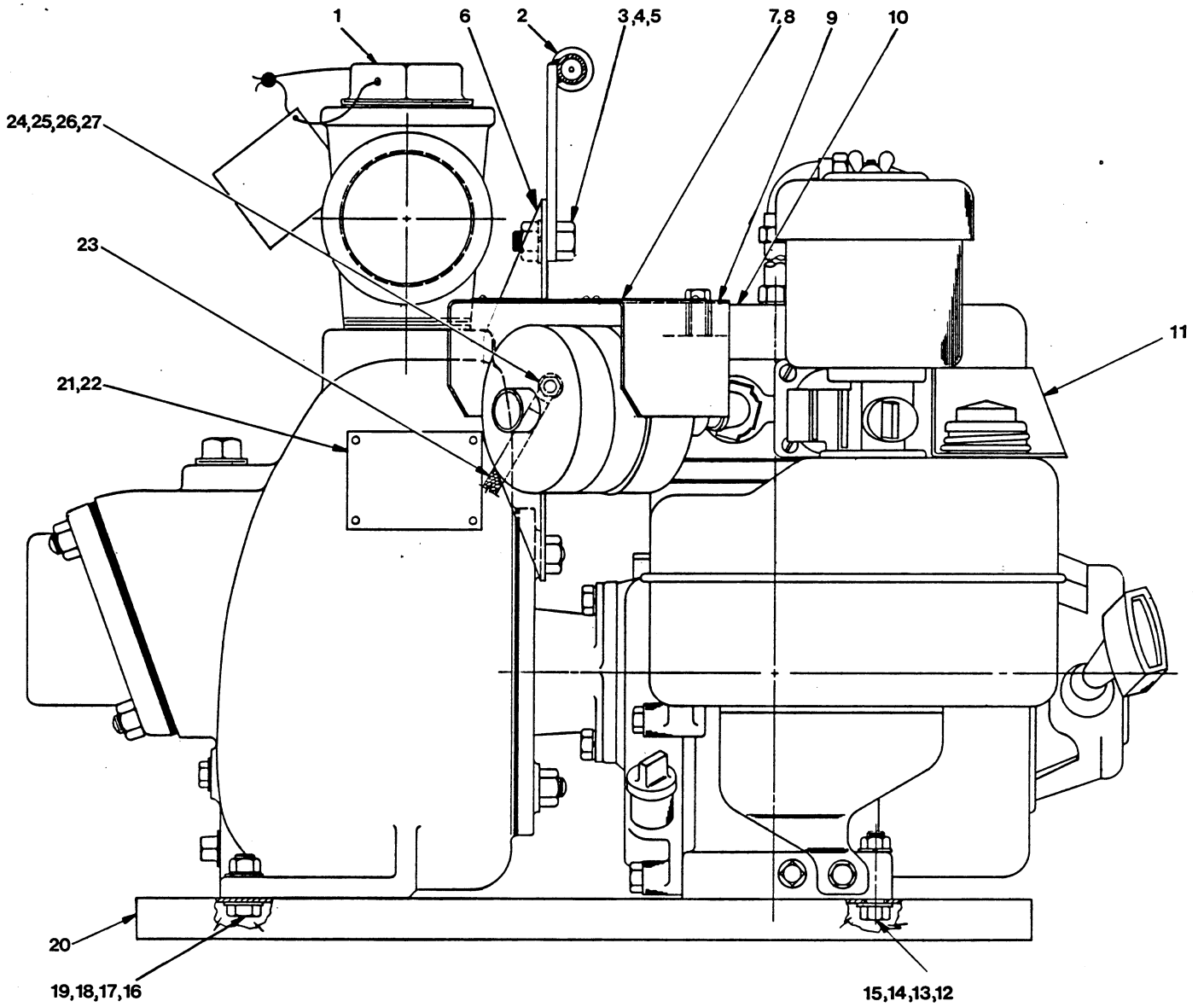


Figure 1. Pump Model 82D1-8-X

MAINTENANCE AND REPAIR

PARTS LIST
Pump Model 82D1-8-X
 (From S/N 773058 up)

ITEM NO.	PART NAME	PART NUMBER	MATL CODE	QTY
1	PUMP END ASSY	82D1-(PEO)	-----	1
2	TWO-MAN HANDLE ASSY	44723-016	24150	1
3	HEX HD CAPSCREW	B00603	15991	2
4	LOCKWASHER	J00006	15991	2
5	HEX NUT	D00006	15991	2
6	ENGINE SHIELD	34165-002	15020	1
7	SHIELD-A-SPARK PLATE	38816-106	13990	1
8	POP RIVET	11703-D	13990	4
9	MUFFLER SHIELD ASSY	42331-008	24150	1
10	MODIFIED ENGINE ASSY	GRP41-09A	-----	1
11	FILL CAP GUARD ASSY	42381-010	24150	1
12	HEX HD CAPSCREW	B00506	15991	2
13	FLAT WASHER	K00005	15991	2
14	LOCKWASHER	J00005	15991	2
15	HEX NUT	D00005	15991	2
16	HEX HD CAPSCREW	B00505	15991	2
17	FLAT WASHER	K00005	15991	4
18	LOCKWASHER	J00005	15991	2
19	HEX NUT	D00005	15991	2
20	BASE CHANNEL	7425	15991	2
21	NAME PLATE	38812-040	13990	1
22	DRIVE SCREW	BM#04-03	15990	4
23	GROUND WIRE ASSY	13830	-----	1
24	HEX HD CAPSCREW	B00402 1/2	15991	1
25	FLAT WASHER	K00004	15991	2
26	LOCKWASHER	J00004	15991	1
27	HEX NUT	D00004	15991	1
NOT SHOWN:				
	ENGINE TAG	6588-Y	00000	1

*INDICATES PARTS RECOMMENDED FOR STOCK

Above Serial Numbers Do Not Apply To Pumps Made In Canada.

CANADIAN SERIAL NO. AND UP

SECTIONAL DRAWING

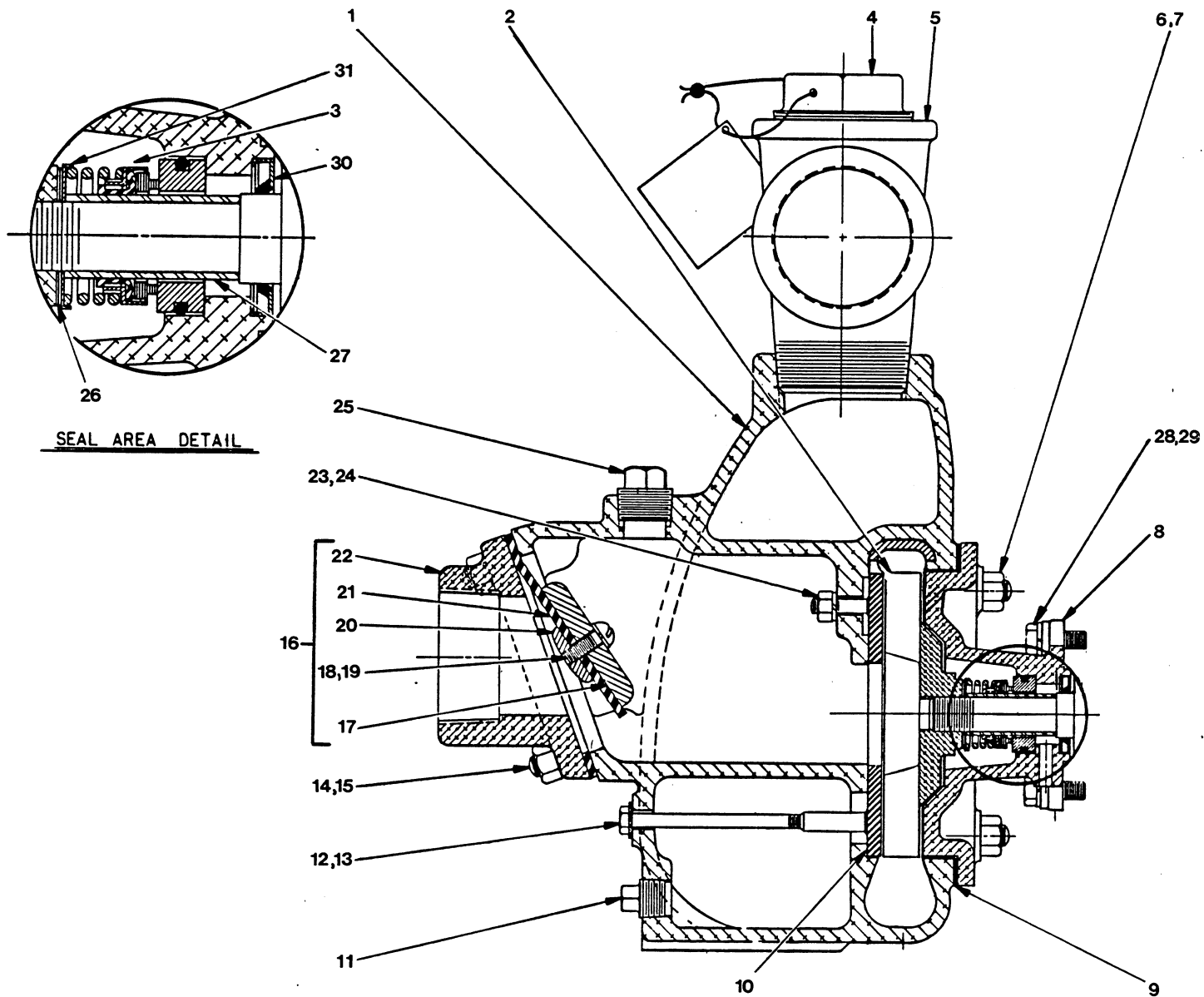


Figure 2. Pump End Assembly 82D1-8-X

PARTS LIST
Pump Model 82D1-8-X

ITEM NO.	PART NAME	PART NUMBER	MATL CODE	QTY
1	VOLUTE CASING	6846-C	13040	1
2	* IMPELLER	2912-F	13040	1
3	* SEAL ASSY	25271-841	-----	1
4	FILL PLUG ASSY	48271-068	-----	1
5	DISCH SERVICE TEE	US00032	11990	1
6	VOLUTE STUD	C00606	15991	4
7	HEX NUT	D00006	15991	4
8	INTERMEDIATE BRACKET	6732-A	13010	1
9	* VOLUTE GSKT SET	504-GA	20000	1
10	* WEAR PLATE ASSY	2643-A	15990	1
11	VOLUTE DRAIN PLUG	P00008	11990	1
12	HEX HD CAPSCREW	B00414	15991	1
13	* FIBER WASHER	KF00004	18040	1
14	SUCT FLANGE STUD	C00606	15991	4
15	HEX NUT	D00006	15991	4
16	CHECK VALVE ASSY	1361-A	-----	1
17	* LARGE VALVE WEIGHT	19-B	10010	1
18	RD HD MACHINE SCREW	X00403	17090	1
19	LOCKWASHER	J00004	17090	1
20	* SMALL VALVE WEIGHT	1354	10010	1
21	* CHECK VALVE GSKT	1361-G	19070	1
22	SUCTION FLANGE	1361	13110	1
23	LOCKWASHER	J00004	15991	1
24	HEX NUT	D00004	15991	1
25	PIPE PLUG	P00012	11990	1
26	* IMPELLER SHIM SET	513-A	17990	1
27	* SHAFT SLEEVE	2353	17020	1
28	HEX HD CAPSCREW	B00503 1/2-S	15991	4
29	LOCKWASHER	J00005	15991	4
30	* OIL SEAL	S01401	-----	1
31	* SPRING CENTERING WASHER	12658	17100	1

*INDICATES PARTS RECOMMENDED FOR STOCK

SECTIONAL DRAWING

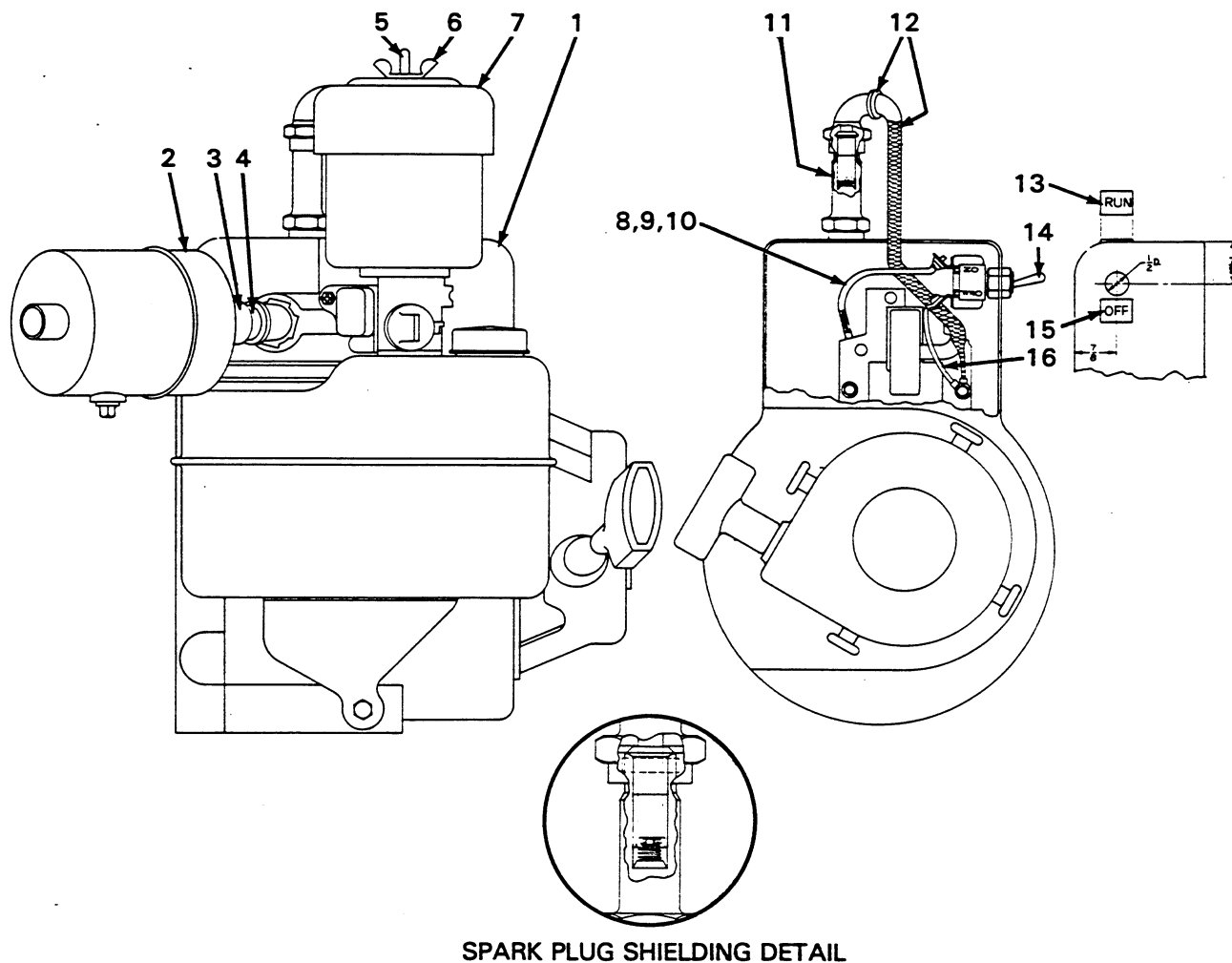


Figure 3. Spark Arresting Modifications To Engine

PARTS LIST
Spark Arresting Modifications To Engine

ITEM NO.	PART NAME	PART NUMBER	MATL CODE	QTY
1	ENGINE	201-B-10	-----	1
2	* SPARK ARRESTING MUFFLER	29334-202	-----	1
3	PIPE COUPLING	AE00008	11990	1
4	PIPE NIPPLE	T00008	15070	1
5	AIR CLEANER MOUNTING STUD	S02229	-----	1
6	WING NUT	S02230	-----	1
7	* AIR CLEANER	S01811	-----	1
8	WIRE	38748-004	-----	1
9	WIRE TERMINAL	S02067	-----	1
10	INSULATING SLEEVE	31411-017	19990	1
11	* SPARK PLUG	S01809	-----	1
12	* SPARK PLUG SHIELDING	S01810	-----	1
13	INSTRUCTION STICKER (RUN)	38816-034	-----	1
14	TOGGLE SWITCH	S01961	-----	1
15	INSTRUCTION STICKER (OFF)	38815-009	-----	1
16	* GROUND WIRE ASSY	47311-052	24040	1

*INDICATES PARTS RECOMMENDED FOR STOCK

MAINTENANCE AND REPAIR

PUMP AND SEAL DISASSEMBLY AND REASSEMBLY

Due to the design and construction of this pump, it requires little service. If it becomes necessary to replace any of the rotating element parts, however, follow these instructions, which are keyed to the sectional views (see figure 1, 2, and 3) and the accompanying parts lists.

Before attempting to service the pump, disconnect the spark plug or take other precautions to ensure that the engine will remain inoperative. Close all connecting valves.

WARNING

Warning text block with multiple slashes and double slashes surrounding the text: The engine used in this pump is not standard. It has been modified for pumping gasoline and other petroleum products in a well ventilated, non-flammable atmosphere free of combustible hazards. It cannot be further modified without affecting performance and safety factors. The shield and spark arresting modifications must be inspected and maintained regularly while the unit is in use. Refer to the manual accompanying the engine before attempting to start the engine.

WARNING

Warning text block with multiple slashes and double slashes surrounding the text: Before operating or servicing the pump, be certain proper safety practices are followed. Provide adequate ventilation, prohibit smoking, wear static-resistant clothing and shoes. Clean up all fuel spills immediately after occurrence.

Suction Check Valve Disassembly

See Figure 2

Drain the pump by removing the drain plug (29). Clean and reinstall the drain plug. Remove the suction piping and separate the suction flange (22) from the volute casing (1) by removing the hex nuts (15).

Disassemble the check valve assembly (16) by removing the machine screw (18) and lockwasher (19). Inspect the valve weights (17 and 20) and check valve gasket (21) for damage or wear. Replace any unserviceable part.

MAINTENANCE AND REPAIR

Pump Disassembly

See Figure 2

Remove the mounting hardware (16, 17, 18, 19, Figure 1) securing the pump to the base channels (20, Figure 1).

Remove the hex nuts (7) securing the volute assembly to the intermediate (8). Remove the two-man handle and engine shield (2 and 6, Figure 1) and separate the volute from the intermediate.

Remove the volute gasket set (9) from the volute studs. Tie and tag the gasket set.

Inspect the wear plate assembly (10), and replace it if badly scored or worn. To remove the wear plate assembly, remove the hex head capscrew (12) and fiber washer (13) located below the suction port. Disengage the hex nut (24) and lockwasher (23) from the wear plate stud. Tap the wear plate assembly free of the volute.

Unscrew the impeller (2) by turning it counterclockwise. It may be necessary to tap the vanes with a soft hammer or block of wood to loosen the impeller. Use caution when unscrewing the impeller from the shaft; tension on the seal spring will be released as the impeller is removed.

Remove the impeller adjusting shims (26). For ease of reassembly, tag and tie the shims.

Seal Disassembly

Remove the spring centering washer (31), and carefully remove the remaining seal parts, using a stiff wire with a hooked end to pry them out if necessary. Remove the shaft sleeve (27).

Inspect the oil seal (30), and replace it as necessary.

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

WARNING

Warning text enclosed in a diamond shape with slashes: // 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.

Seal Reassembly

The seal is not normally reused because of the precision finish on its lapped face, but if it is necessary to reuse the old seal, wash all metallic parts in cleaning solvent and dry thoroughly.

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

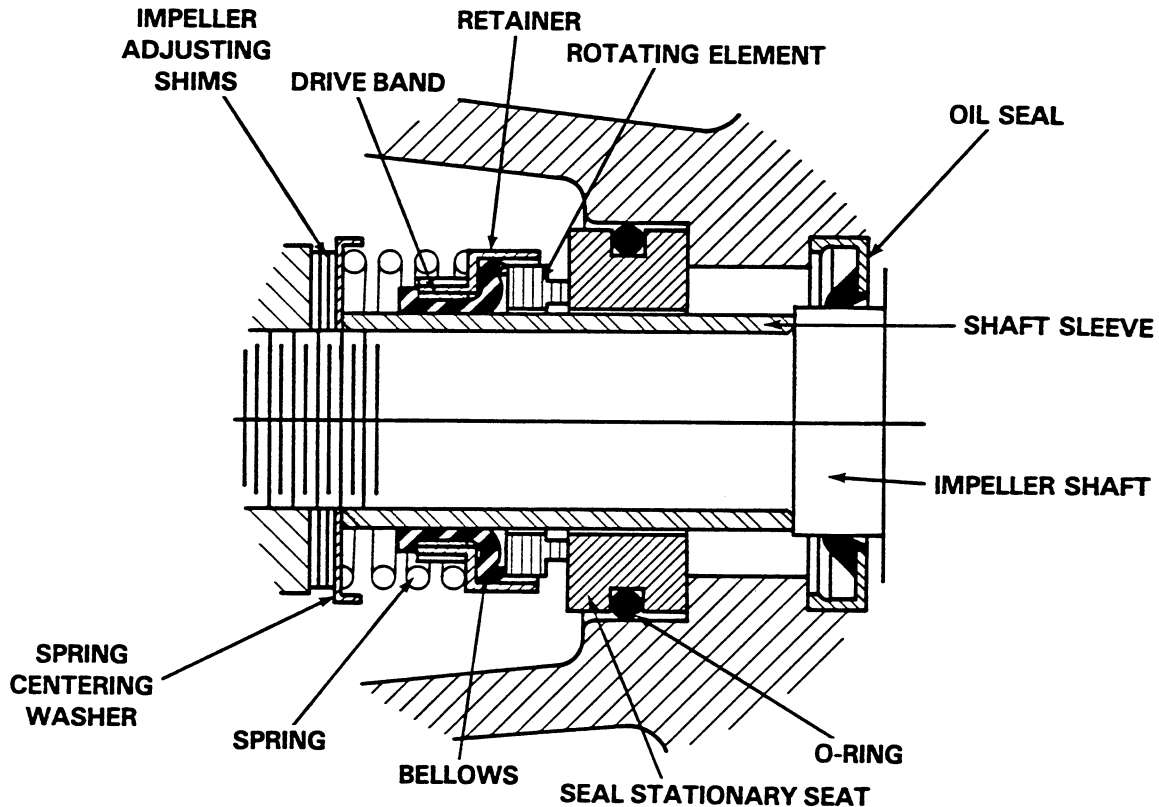


Figure 4. 25271-841 Seal Assembly

CAUTION

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

Reinstall the shaft sleeve, making sure the chamfer on the I.D. faces toward the shaft shoulder.

Lubricate the packing rings with soft grease or oil when installing the seal, and place a drop of light lubricating oil on the lapped faces. Assemble the seal as shown in Figure 4.

Install the replacement seal as a complete unit.

MAINTENANCE AND REPAIR

Pump Reassembly

Inspect the impeller, and replace it if cracked or badly worn.

Reinstall the impeller adjusting shims (26) and the impeller. A clearance of .010 to .020 inch between the impeller and the intermediate is necessary for maximum pump efficiency. Measure this clearance, and add or subtract impeller shims until it is reached.

If the wear plate assembly (10) was removed, be sure that it is positioned squarely against the volute shoulder and secured with its mounting hardware. Replace the fiber washer (13) if badly worn.

Replace the volute gasket set (9), and secure the intermediate and volute casing. A clearance of .008 to .015 inch between the impeller and the wear plate assembly (10) is also recommended for maximum pump efficiency. This clearance can be reached by adding or subtracting gaskets in the volute gasket set until the impeller binds against the wear plate when the shaft is turned. After the impeller binds, add .010 inch of gaskets.

NOTE

When reinstalling the intermediate, make sure the drain hole located behind the seal cavity points downward.

In final pump assembly, reinstall the handle and the engine shield (2 and 6, Figure 1), and reassemble the hardware (16, 17, 18, 19, Figure 1) securing the pump to the base channels.

Suction Check Valve Reassembly

Assemble the valve weights to each side of the check valve gasket (21) and secure the parts together using machine screw (18) and lockwasher (19).

Position the check valve assembly into the suction port with the large weight (17) facing toward the impeller, and the small weight (20) facing toward the suction flange. Install the suction flange and secure the complete assembly with hex nuts (15).

Check the operation of the suction check valve to ensure proper seating and free movement. Reinstall the suction and discharge piping.

Before starting the pump, check that the piping is secure, fill the volute with liquid, open all connecting valves, and install ground cable assembly to grounding rod.

LUBRICATION**Seal Assembly**

This seal is lubricated by the medium being pumped.

Engine

See the engine manufacturer's lubrication recommendations.

ENGINE MODIFICATIONS

The engine used on this pump is not a standard commercial model. It has been specially modified by Gorman-Rupp for pumping gasoline and other petroleum products in a well ventilated, non-flammable atmosphere, free of combustible hazards. Further modifications may not be made without jeopardizing the integrity of the safety features. See Figure 3 for acceptable replacement parts.

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