

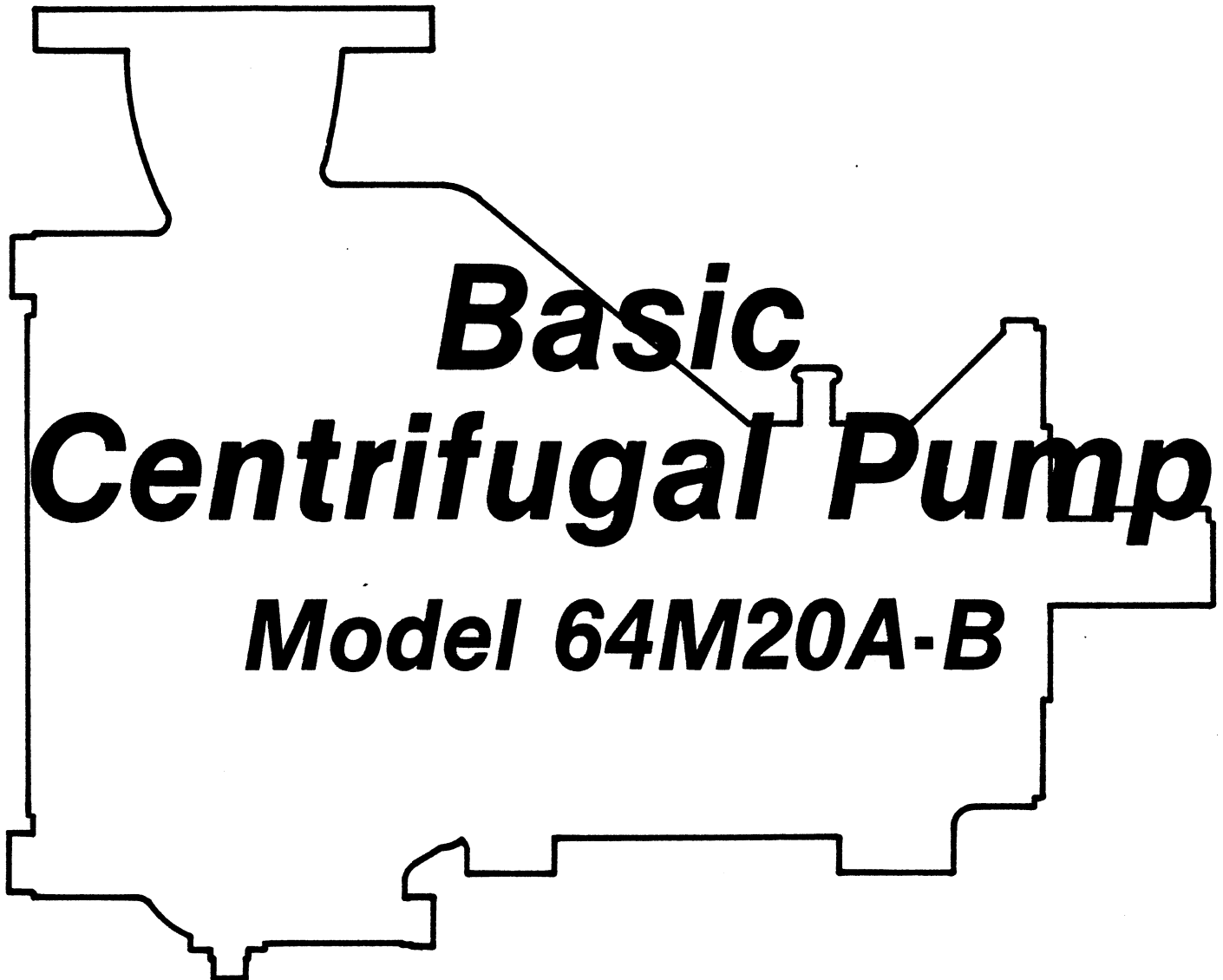
INSTALLATION, OPERATION, PARTS LIST,
AND MAINTENANCE MANUAL

A C E



OM-01786-0B01

January 23, 1981



Basic
Centrifugal Pump
Model 64M20A-B

THE GORMAN-RUPP COMPANY • MANSFIELD, OHIO

GORMAN-RUPP OF CANADA LIMITED • ST. THOMAS, ONTARIO, CANADA Printed in U.S.A.

Copyright by the Gorman-Rupp Company



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

This pump is a 60 Series, enclosed impeller, centrifugal model with straight-in suction without a suction check valve. This pump is designed to pump products with specific gravity as high as 2.0 such as cement or heavy slurry. For specific service, consult your Gorman-Rupp distributor or the Gorman-Rupp Company.

If there are any questions regarding the pump which are not covered in this manual or in other literature accompanying the 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 44902		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:

NOTE

Instructions to aid in installation, operation, or 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 describe the procedure required and the damage which could result from failure to follow the procedure.

WARNING

Instructions which must be followed to avoid causing injury or death to personnel. These describe the procedure required and the injury which could result from failure to follow the procedure.

TABLE OF CONTENTS

WARNINGS	Section A
INSTALLATION	Section B
OPERATION	Section C
TROUBLESHOOTING	Section D
MAINTENANCE AND REPAIR	Section E
WARRANTY	

WARNINGS

THESE WARNINGS APPLY TO 60 SERIES BASIC PUMPS. ALTHOUGH THIS PUMP IS DESIGNED TO BE DRIVEN BY A CLOSE-COUPLED HYDRAULIC MOTOR, IT CAN BE OTHERWISE DRIVEN, AND GORMAN-RUPP HAS NO CONTROL OVER THE POWER SOURCE WHICH WILL BE USED. REFER TO THE MANUAL ACCOMPANYING THE POWER SOURCE BEFORE ATTEMPTING TO START THE POWER SOURCE.

Before attempting to open or service the pump:

1. Familiarize yourself with this manual.
2. Disconnect the power source 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.

Do not attempt to pump any liquids for which this pump has not been designed.

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

Do not operate the pump without shields and/or guards in place over drive shafts, belts and/or couplings, or other rotating parts. Exposed rotating parts can catch clothing, fingers, or tools, causing severe injury to personnel.



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.

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 restarting the pump.

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.

INSTALLATION

Since pump installations vary, this section is intended only to summarize recommended installation practice. If there are any questions concerning a specific installation, contact your Gorman-Rupp distributor or the Gorman-Rupp Company.

PREINSTALLATION INSPECTION

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

- a. Check 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 perform all duties indicated. Note the direction of rotation indicated on the pump. Check that the pump shaft rotates in the required direction.

CAUTION

Only operate this pump in the direction indicated by the arrow on the pump body and on the accompanying decal. Otherwise, the impeller could become loosened from the shaft and seriously damage the pump.

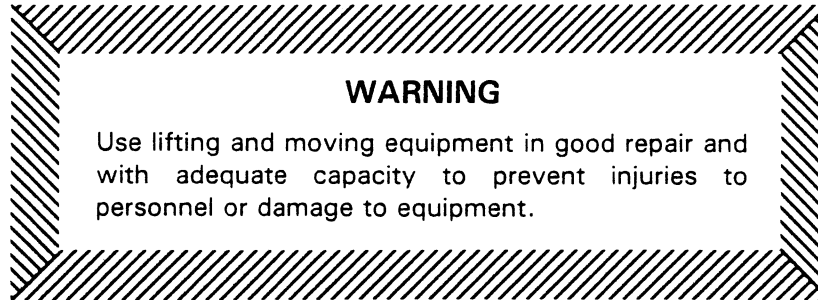
- d. Check all lubricant levels and lubricate as necessary. Refer to the MAINTENANCE AND REPAIR section of this manual.

POSITIONING THE 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. It may be necessary to support or shim the pump for level operation.

Lifting



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 it.

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.

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 pipe.

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.

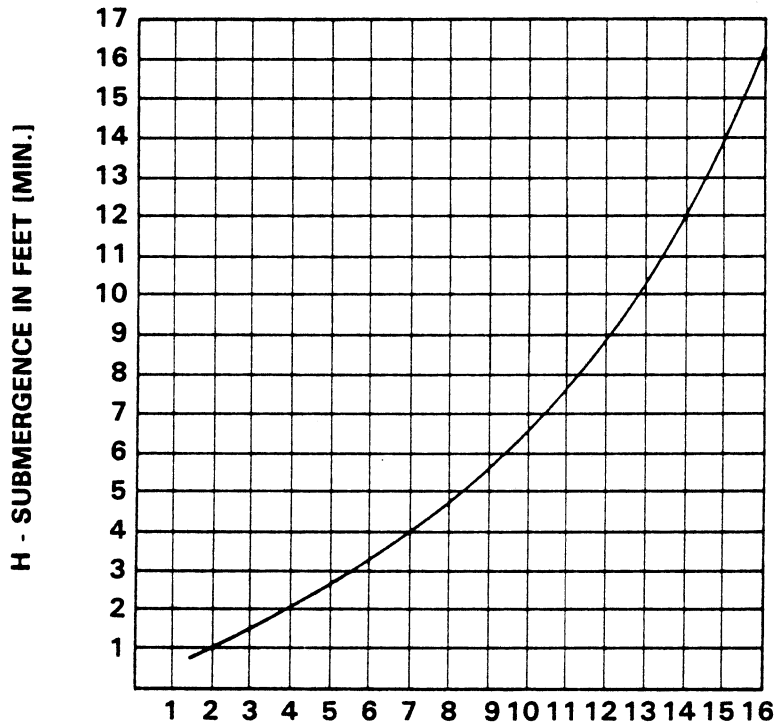
If it is necessary to position inflow close to the suction inlet, install a baffle between the inflow and the suction inlet at a distance one and one-half times the diameter of the suction pipe. The baffle will allow entrained air to escape from the liquid before it is drawn into the suction inlet.

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 1 shows recommended minimum submergence vs. velocity.



$$\text{VELOCITY IN FEET PER SEC.} = \frac{\text{QUAN. [G.P.M.] x .321}}{\text{AREA}} \text{ OR } \frac{\text{G.P.M. x .4085}}{D^2}$$

Figure 1. Recommended Minimum Suction Line Submergence Vs. Velocity

DISCHARGE LINES

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.

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.

ALIGNMENT

Aligning the pump and its power source is critical for trouble-free mechanical operation.

WARNING

When checking alignment, disconnect the power source to ensure that the pump will remain inoperative.

Before checking alignment, tighten the foundation bolts, pump casing and/or pedestal feet, and power source mounting bolts. Make sure that the pump is level.

CAUTION

Adjusting the alignment in one direction may alter the alignment in another direction. Check each procedure after altering alignment.

Drives

The pedestal of this pump has a flange for mounting to a hydraulic motor adapter (not furnished by Gorman-Rupp), and for close coupling by means of a magnalloy No. 500 coupling with urethane spider.

The pump may be otherwise driven and coupled, however.

Coupled Drives

When using couplings, the axis of the power source must be aligned to the axis of the pump shaft in both the horizontal and vertical planes. Most couplings require a specific gap or clearance between the driving and the driven shafts. Refer to the coupling manufacturer's service literature.

Align spider insert type couplings by using calipers to measure the dimensions on the circumference of the outer ends of the coupling hub every 90 degrees. The coupling is in alignment when the hub ends are the same distance apart at all points (see figure 2A).

Align non-spider type couplings by using a feeler gauge or taper gauge between the coupling halves every 90 degrees. The coupling is in alignment when the hubs are the same distance apart at all points (see figure 2B).

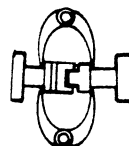


Figure 2A. Aligning Spider-Type Couplings

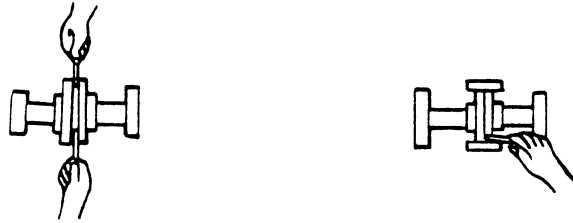
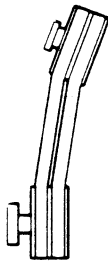


Figure 2B. Aligning Non-Spider Type Couplings

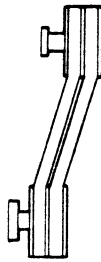
Check parallel adjustment by laying a straightedge across both coupling rims at the top, bottom, and side. When the straightedge rests evenly on both halves of the coupling, the coupling is in horizontal parallel alignment. If the coupling is misaligned, use a feeler gauge between the coupling and the straightedge to measure the amount of misalignment.

V-Belt Drives

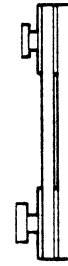
When using V-belt drives, the power source and the pump must be parallel. Use a straightedge along the sides of the pulleys to ensure that the pulleys are properly aligned (see figure 2C). In drive systems using two or more belts, make certain that the belts are a matched set; unmatched sets will cause accelerated belt wear.



MISALIGNED: SHAFTS NOT PARALLEL



MISALIGNED: SHEAVES NOT IN LINE



ALIGNED: SHAFTS PARALLEL AND SHEAVES IN LINE

Figure 2C. Alignment of V-Belt Driven Pumps

Tighten the belts in accordance with the belt manufacturer's instructions. If the belts are too loose, they will slip; if the belts are too tight, there will be excessive power loss and possible bearing failure. Select pulleys that will match the proper speed ratio; overspeeding the pump may damage both pump and power source.

WARNING

Do not operate the pump without a guard over the rotating parts. Exposed rotating parts can catch clothing, fingers, or tools, causing severe injury to personnel.

OPERATION

WARNING

Do not attempt to pump any liquids for which this pump has not been designed.

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 should never be operated unless there is liquid in the volute.

CAUTION

Never operate this pump unless the volute is filled with liquid. Extended operation of a dry pump will destroy the seal assembly.

Add liquid to the volute housing:

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

WARNING

After filling the volute housing, do not attempt to operate the pump unless all connecting piping is securely installed. Otherwise, liquid in the pump forced out under pressure could cause injury to personnel.



STARTING

Rotation

The correct direction of pump rotation is indicated by an arrow on the pump body, and on the accompanying decal. If the pump is operated in the wrong direction, the impeller could become loosened from the shaft and seriously damage the pump.

CAUTION

Only operate this pump in the direction indicated by the arrow on the pump body and on the accompanying decal. Otherwise, the impeller could become loosened from the shaft and seriously damage the pump.

Consult the operating manual furnished with the power source before attempting to start the power source.

If a three-phase electric motor is being used, check rotation by starting the pump for a moment to see if the rotation is correct. If the shaft, coupling, or V-belt is not visible, rotation can usually be determined by observing the motor cooling fan. If the rotation is incorrect, have qualified personnel interchange any two of the three-phase wires to change direction.

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 casing with cool liquid.

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.

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

Since this pump does not have a suction check valve, the discharge line must be fitted with a check valve if a pump vacuum reading is to be taken.

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 or gasket.

Open the suction line, and read the vacuum gauge with the pump primed and at operating speed. Shut off the pump, and read the gauge again to determine if the vacuum remains at the maximum developed by the pump. If the vacuum falls off rapidly, an air leak exists; check to make certain that the air leak is not from the vacuum gauge connection.

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, operate the pump during the draining process. Clean out any remaining solids by flushing with a hose.

BEARING TEMPERATURE CHECK

Bearings normally run at higher than ambient temperatures because of heat generated by friction. Temperatures up to 160°F are considered normal for pedestal bearings, and they can operate safely to at least 180°F.

Checking bearing temperatures by hand is inaccurate. Bearing temperatures can be measured accurately by placing a contact-type thermometer against the housing. Record this temperature for future reference.

A sudden increase in bearing temperatures is a warning that the bearings are at the point of failing to operate properly. Make certain that the bearing lubricant is of the proper viscosity and at the correct level (see LUBRICATION in MAINTENANCE AND REPAIR). Bearing overheating can also be caused by shaft misalignment and/or excessive vibration.

When pumps are first started, the bearings may seem to run at temperatures above normal. Continued operation should bring the temperatures down to normal levels.



TROUBLESHOOTING

WARNING

Before attempting to open or service the pump:

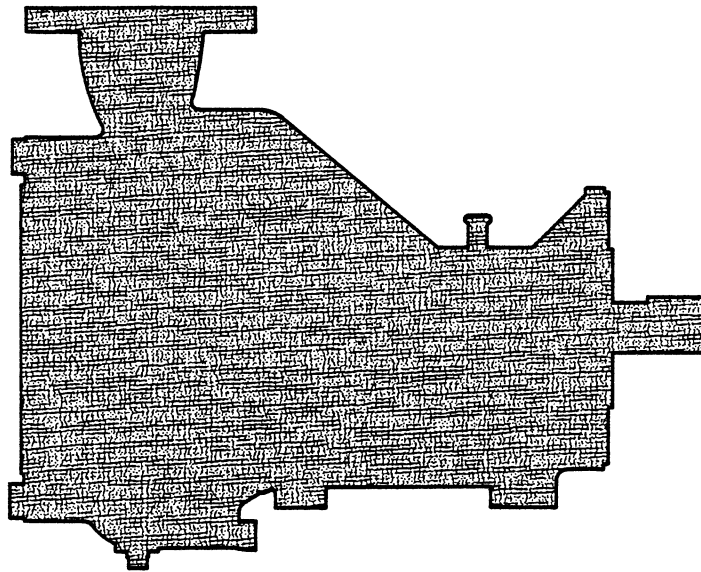
1. Consult pump service manual.
2. Disconnect the power source to ensure that the pump will remain inoperative.
3. Allow pump to cool if overheated.
4. Close suction and discharge valves.
5. Drain pump.

Trouble	Possible Cause	Probable Remedy
PUMP FAILS TO PRIME	<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.</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 INSTALLATION.</p> <p>Check strainer and clean if necessary.</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>Impeller or other wearing parts worn or damaged.</p> <p>Impeller clogged.</p> <p>Pump speed too slow.</p> <p>Discharge head too high.</p> <p>Suction lift too high.</p> <p>Strainer clogged.</p>	<p>Correct leak.</p> <p>Check installation and correct as needed. Check submergence chart (Section B, page 4).</p> <p>Replace suction hose.</p> <p>Replace worn or damaged parts. Check that impeller is properly centered and rotates freely.</p> <p>Free impeller of debris.</p> <p>Check driver output; check belts or couplings for slippage.</p> <p>Install bypass line.</p> <p>Reduce suction lift.</p> <p>Check strainer and clean if necessary.</p>

Trouble	Possible Cause	Probable Remedy
PUMP STOPS OR FAILS TO DELIVER RATED FLOW OR PRESSURE (cont)	Leaking or worn seal or pump gaskets.	Check pump vacuum. Replace leaking or worn seal or pump gaskets.
PUMP REQUIRES TOO MUCH POWER	Pump speed too high. Discharge head too low. Liquid solution too thick.	Check driver output; check that sheaves or couplings are correctly sized. Adjust discharge valve. Dilute if possible.
PUMP CLOGS FREQUENTLY	Discharge flow too slow.	Open discharge valve fully to increase flow rate, and run engine at maximum governed speed.
EXCESSIVE NOISE	Cavitation in pump. Pumping entrained air. Pump or drive not securely mounted. Impeller clogged or damaged.	Reduce suction lift and/or friction losses in suction line. Locate and eliminate source of air bubble. Secure mounting hardware. Clean out debris; replace damaged parts.
BEARINGS RUN TOO HOT	Bearing temperature is high, but within limits. Low or incorrect lubricant. Suction and discharge lines not properly supported. Drive misaligned.	Check bearing temperature frequently to monitor any increase. Check for proper type and level of lubricant. Check piping installation for proper support. Align drive properly.

Basic Centrifugal Pump

Model 64M20A-B



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

SECTIONAL DRAWING

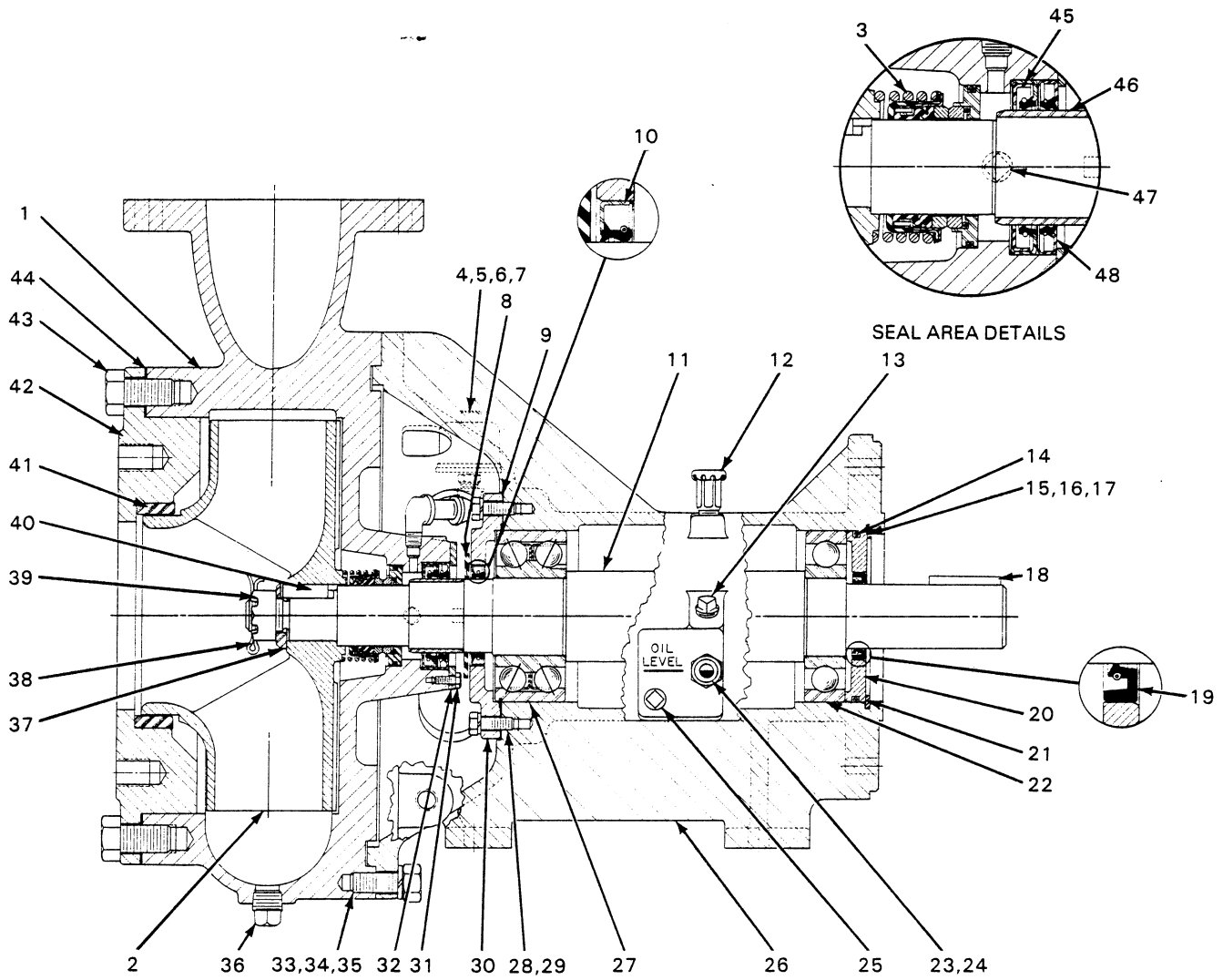


Figure 1. Pump Model 64M20A-B



PARTS LIST

PUMP MODEL 64M20A-B

(From S/N 729783 up)

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

ITEM NO.	PART NAME	PART NUMBER	MATL CODE	QTY	ITEM NO.	PART NAME	PART NUMBER	MATL CODE	QTY
1	VOLUTE CASING	38216-537		1	30	BEARING COVER	38322-408	—	1
2	★IMPELLER	38621-702		1	31	HEX HEAD CAPSCREW	B-0402½	15991	8
3	★SEAL ASSEMBLY	46512-043		1	32	SEAL RETAINER	38329-310	—	1
4	SEAL BOTTLE OILER	26713-003		1	33	STUD	C-1009	15991	12
5	COUPLING	AE-04	11990	1	34	LOCKWASHER	J-10	15991	12
6	PIPE NIPPLE	THA-0430	15070	1	35	HEX NUT	D-10	15991	12
7	DOES NOT APPLY				36	VOLUTE DRAIN PLUG	P-08	11990	3
8	SLINGER RING	31134-067		1	37	IMPELLER WASHER	31177-002	—	1
9	★VOLUTE GASKET	38683-446		1	38	★IMP NUT COTTER PIN	M-0207	17000	1
10	★OIL SEAL	25258-725		1	39	IMPELLER HEX NUT	BN-16-S	17000	1
11	★IMPELLER SHAFT	38515-508		1	40	IMPELLER KEY	N-0605¼	17000	1
12	PEDESTAL AIR VENT	S-1703		1	41	★WEAR RING	38691-351		1
13	PIPE PLUG	P-06	11990	1	42	SUCTION HEAD	38246-603		1
14	★BEARING COVER O-RING	25152-351		1	43	HEX HEAD CAPSCREW	B-1206	15991	6
15	★BEARING SHIM SET	8543	15990	1	44	★SUCTION HEAD GASKET	38674-432		1
16	DOES NOT APPLY				45	★OIL SEAL	25227-734		1
17	DOES NOT APPLY				46	★SHAFT SLEEVE	31185-009		1
18	SHAFT KEY	N-0609	15990	1	47	SEAL CAVITY DRN PLUG	P-04	11990	3
19	★OIL SEAL	25217-601		1	48	★OIL SEAL	25227-733		1
20	BEARING COVER	38322-520		1	NOT SHOWN:				
21	BEARING RETAINING RING	24121-078		1		HAND HOLE COVER	38244-017		1
22	★BALL BEARING	S-1911		1		GASKET	38686-010		1
23	OIL LEVEL SIGHT GAUGE	26714-011		1		HEX HEAD CAPSCREW	B-0804	15991	2
24	PIPE PLUG	P-06	11990	1		NAME PLATE	2613-C	13990	1
25	PEDESTAL DRAIN PLUG	P-06	11990	1		DRIVE SCREW	BM#04-03	15990	4
26	PEDESTAL	38257-510		1		SHIPPING PLUG	11495-A	11990	1
27	★BALL BEARING	23422-613		1	OPTIONAL:				
28	HEX HEAD CAPSCREW	B-0604	15991	6		BOOT INSTALL. TOOL	38838-001		1
29	LOCKWASHER	J-06	15991	6		IMPELLER PULLER	48711-014		1

★ INDICATES PARTS RECOMMENDED FOR STOCK

CANADIAN SERIAL NO. AND UP



PUMP AND SEAL DISASSEMBLY AND REASSEMBLY

This pump requires little service due to its rugged, minimum-maintenance design. If it becomes necessary to inspect or replace components, however, follow these instructions, which are keyed to the sectional view (figure 1) and the accompanying parts list.

Pump And Seal Disassembly

Disconnect the power source to ensure that the pump will remain inoperative, and close all connecting valves.

Drain the pump by removing the volute drain plugs (36). Clean and reinstall the drain plugs.

Disconnect the suction piping.

For access to the impeller (2), disengage the hex head capscrews (43) securing the suction head (42) to the volute casing (1). Remove the suction head.

Drain the seal cavity by removing the seal cavity drain plug (47). Clean and reinstall the drain plug.

Remove the cotter pin (38) securing the impeller hex nut (39), and remove the hex nut and the impeller washer (37).

Slide the impeller off the shaft (11), retaining the impeller key (40). (Gorman-Rupp P/N 48711-014 Impeller Puller is available as an option with this pump.) Use caution when sliding the impeller off the shaft; pressure on the seal spring will be released as the impeller is removed.

Using a stiff wire with a hooked end if necessary, carefully work the seal elements off the shaft.

The wear ring (41), which is a press fit in the suction head, impeller, and seal assembly may be serviced without further disassembling the pump.

To service the inboard oil seals (45 and 48), and the shaft sleeve (46), disengage the hex nuts (35) securing the volute casing to the pedestal (26), and separate the assemblies.

For access to the inboard oil seals, disengage the hex head capscrews (31) securing the seal retainer (32) to the volute casing, and remove the retainer. Remove the inboard oil seals.

Inspect the shaft sleeve, and remove it if worn or nicked.

NOTE

The inside diameter of the shaft sleeve and the outside diameter of the impeller shaft are bonded with Loctite RC-620 at the factory.

Shaft Sleeve and Oil Seal Reassembly

Clean the impeller shaft and the volute casing bores with a soft cloth soaked in cleaning solvent.

WARNING

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.

If the shaft sleeve has been removed, clean the inside and outside diameters of the old sleeve or replacement with a soft cloth soaked in cleaning solvent.

Thoroughly spray the inside diameter of the shaft sleeve and the mating surface of the impeller shaft with Loctite Locquic Primer Grade T, or equivalent, and allow to dry completely (approximately 5 minutes).

Thoroughly coat the inside diameter of the shaft sleeve and the mating surface of the impeller shaft with Loctite RC-620, or equivalent, and install the shaft sleeve with the undercut end facing the pedestal. Make certain that the end of the sleeve seats against the shaft shoulder.

Inspect the inboard oil seals, and replace as necessary.

NOTE

When installing the oil seals, position the lips as shown in figure 1.

Seat the first oil seal squarely in the bore of the volute casing, pack the bore with Lubriplate Marine Lube A, or equivalent grease, and seat the second oil seal in the bore.

Secure the seal retainer to the volute casing, and wipe the retainer clean of excess grease.

Ease the volute casing onto the impeller shaft, taking care not to damage the lips of the oil seals. Secure the volute casing to the pedestal.

Seal Reassembly**CAUTION**

Because a special sealant is applied when this seal is assembled at the Gorman-Rupp factory, it is recommended that a completely new seal unit be installed each time the seal assembly is replaced.

Remove the replacement seal from the container, and inspect the lapped faces to ensure that they are free from any sealant or other matter.

Apply a drop of light lubricating oil to the lapped faces of the seal, and lubricate the inside diameter of the bellows with a soft grease or oil.

Install the seal elements in the volute bore as shown in figure 2, making certain that the O-rings seat properly.

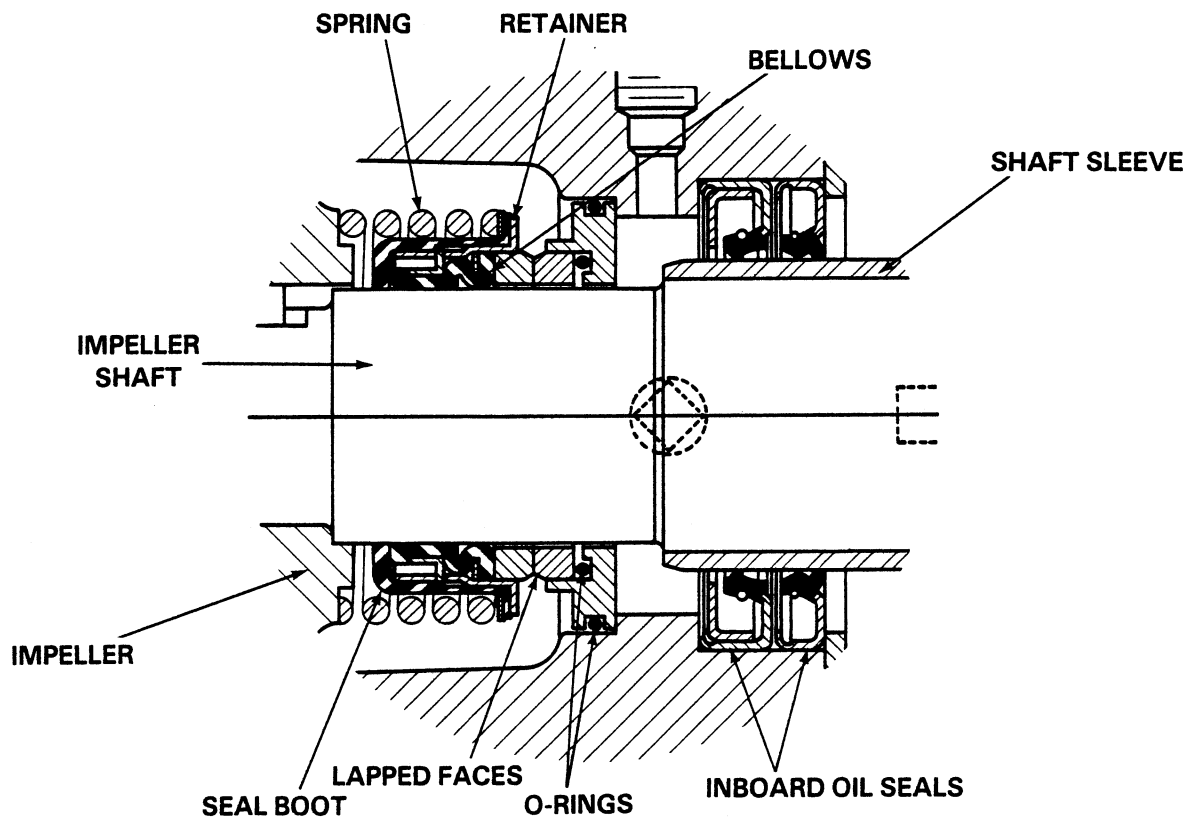


Figure 2. 46512-043 Seal Assembly

Pack the inside of the seal boot with a generous amount of Lubriplate Marine Lube A, or equivalent grease, and pull the boot over the bellows assembly until the lip of the boot is flush against the retainer. (Gorman-Rupp P/N 38838-001 Boot Installation Tool is available as an option with this pump.)

NOTE

There must be sufficient grease inside the seal boot to completely penetrate and shield the bellows area.

Install the seal spring washer. Wipe the seal assembly clean of excess grease, and install the seal spring.

Impeller Reassembly

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

Apply Loctite Keyfit, or equivalent, to the impeller key, and position the key in the shaft keyway. Install the impeller so that it seats against the shoulder of the shaft, and so that the key extends 1/8 inch beyond the front of the impeller hub.

Install the impeller washer. Install and tighten the impeller hex nut, and secure it with the cotter pin.

Shaft end-play should be within .002-.010 inch. Adjust end-play by removing or adding bearing shims (15).

Pump Reassembly

Inspect the wear ring, which is a press fit in the suction head, and replace it if scored or worn.

Replace the suction head gasket (44), and secure the suction head to the volute casing.

Reconnect the suction piping. Fill the volute, and make certain that all piping connections are tight.

Reconnect the power source. Lubricate the pump before putting it into operation.

LUBRICATION

Seal Assembly

Fill the seal bottle oiler (4) with Dextron Automatic Transmission Fluid or equivalent.

Bearings

Remove the vented pedestal plug (12), and add SAE No. 30 non-detergent motor oil to the mid-point of the oil level sight gauge (23). Clean and reinstall the vented plug.

**For U.S. and International Warranty Information,
Please Visit www.grpumps.com/warranty
or call:
U.S.: 419-755-1280
International: +1-419-755-1352**

**For Canadian Warranty Information,
Please Visit www.grcanada.com/warranty
or call:
519-631-2870**