


INSTALLATION, OPERATION, PARTS LIST,
AND MAINTENANCE MANUAL

A C E



November 23, 1979

A technical drawing outline of a centrifugal pump assembly, showing the main body, a top flange, and a bottom flange. The drawing is positioned behind the main title text.

***Engine Driven
Self-Priming
Centrifugal Pump
Model 112A20-B-6031C***

THE GORMAN-RUPP COMPANY • MANSFIELD, OHIO

GORMAN-RUPP OF CANADA LIMITED • ST. THOMAS, ONTARIO, CANADA

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

This pump is a 10 Series, semi-open impeller, self-priming centrifugal model designed for pumping liquids with specified entrained solids.

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

For information or technical assistance on the power source, contact the power source 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, 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.

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WARNINGS

THESE WARNINGS APPLY TO ALL ENGINE DRIVEN PUMPS. REFER TO THE MANUAL ACCOMPANYING THE ENGINE BEFORE ATTEMPTING TO START THE ENGINE.

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 volatile or corrosive materials for which this pump has not been designed.

After the pump has been located in its operating position, make certain that the pump has been secured 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.

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.

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.

Never tamper with the governor to gain more power. The governor establishes safe operating limits that should not be exceeded.

INSTALLATION

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.

PREINSTALLATION INSPECTION

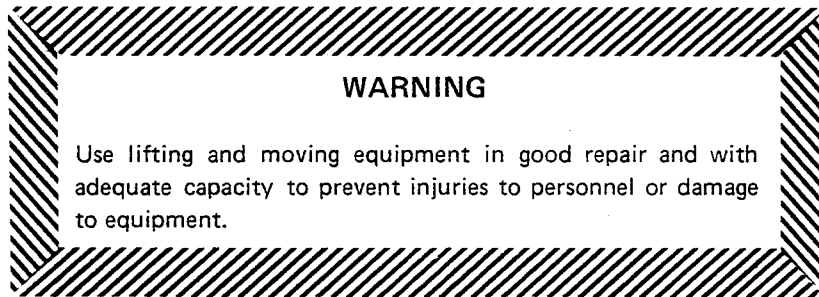
The pump assembly was inspected and tested before it was shipped from the factory. Before installation, inspect the pump for damage which may have occurred during shipment. Check as follows:

- a. Inspect the pump assembly for cracks, dents, damaged threads, and other obvious damage.
- b. Check for and tighten loose bolts, nuts, cap screws, and other attaching hardware. Since gaskets tend to shrink after drying, check for and tighten loose nuts and cap screws 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.
- d. Check all lubricant levels and lubricate as necessary. Refer to the MAINTENANCE AND REPAIR section of this manual.

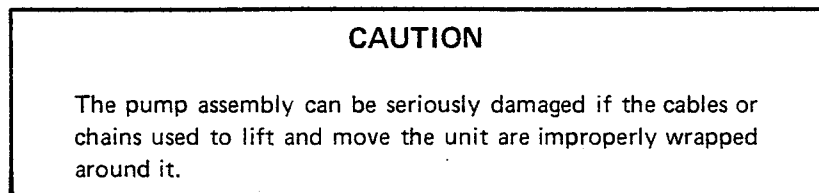
POSITIONING THE PUMP

Mounting

Locate the pump in an accessible place as close as practical to the liquid to be pumped. Level mounting is essential for proper operation. The pump may have to be supported to provide for level operation or to eliminate vibration.

Lifting

Make sure that hoists and other lifting equipment are of sufficient capacity to safely handle the pump assembly. Attach the lifting mechanism to the bail, eye bolt, or other specific lifting device provided on the pump. If no specific lifting device is provided and chains or cables must be used, make certain that they are positioned so that they will not damage the pump, and so that the load will be balanced.

**SUCTION AND DISCHARGE PIPING****Materials**

Either pipe or hose may be used for suction and discharge lines, but hose used in suction lines must be the rigid-wall, reinforced type to prevent collapse under suction. Using pipe 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

Never pull a pipe line into place by tightening the flange bolts. The connecting flange must be aligned exactly with the pump port. Lines near the pump must be independently supported to avoid strain on the pump which could cause serious vibration, decreased bearing life, and increased shaft and seal wear. Hose-type lines should have supports strong enough to secure the line when it is 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 down or to either side to avoid air pockets.

Strainers

Install a strainer at the end of the suction line to avoid possible clogging or damage to the pump. The total area of the openings in the strainer should be at least three or four times the cross section of the suction line, but no opening should be larger than the solids handling capability of the pump. Clean the strainer regularly during operation.

Sealing

All connections in the suction line should be sealed with pipe dope to ensure an airtight seal. Even a slight leak will affect priming, head, and capacity, especially when operating with a high suction lift. After installation, inspect the suction line carefully for potential leaks.

DISCHARGE LINES

Throttling Valves

If a throttling valve is desired, install it 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 the suction line.

Check Valves

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

With high discharge heads, install a throttling valve and a check valve 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.

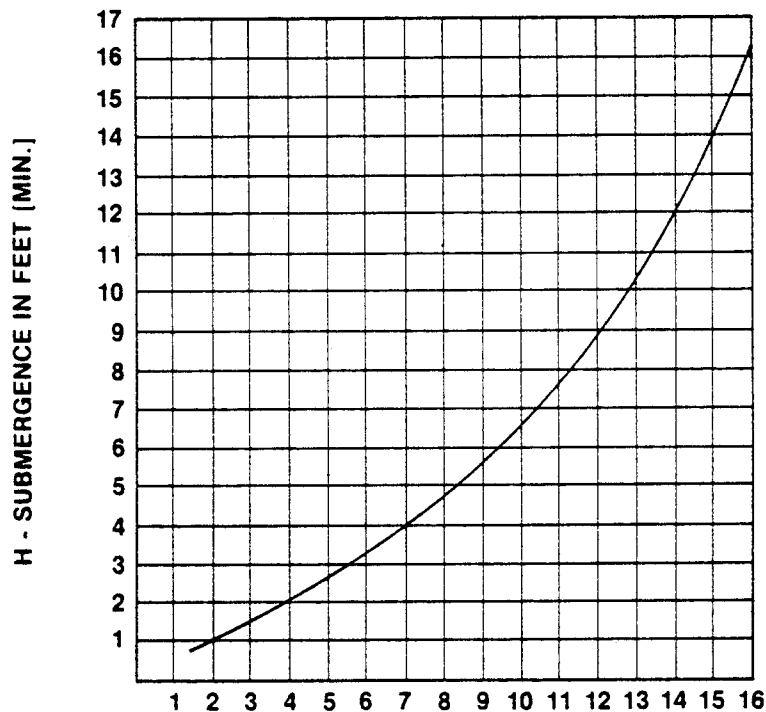
NOTE

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.

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.



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

Figure 1. Recommended Minimum Suction Line Submergence Vs. Velocity

OPERATION

WARNING

Do not attempt to pump volatile or corrosive materials 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 is self priming, but the pump volute casing must first be filled with liquid if:

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 casing has evaporated.

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

CAUTION

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

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 operating manual furnished with the power source.

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.



With the pump primed and at operating speed, and the suction line open, read the vacuum gauge. Shut off the pump, keep the vacuum line open, and read the gauge again to see if the vacuum remains at the maximum developed by the pump. If the vacuum falls off rapidly, an air leak exists. If the liquid level at the source of supply remains at a constant level, 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:

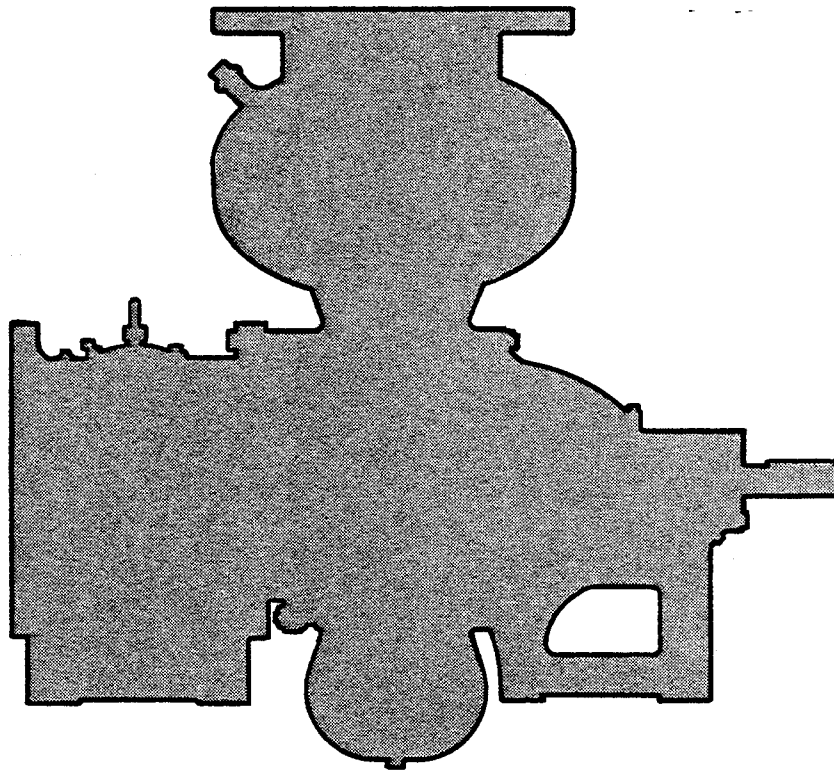
1. Consult pump service manual.
2. Disconnect the power source to ensure that the pump will remain inoperative.
3. Allow pump to cool if overheated.
4. Close suction and discharge valves.
5. Drain pump.

Trouble	Possible Cause	Probable Remedy
PUMP FAILS TO PRIME	<p>Air leak in suction line.</p> <p>Lining of suction hose collapsed.</p> <p>Suction check valve clogged or binding.</p> <p>Leaking or worn seal or pump gasket.</p> <p>Suction lift or discharge head too high.</p> <p>Suction strainer clogged.</p>	<p>Correct leak.</p> <p>Replace suction hose.</p> <p>Clean valve.</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>Clean suction strainer.</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>Correct leak.</p> <p>Check installation and correct as needed. Check submergence chart (Section B, page 4).</p> <p>Replace suction hose.</p> <p>Check impeller clearance. Replace worn parts as needed.</p> <p>Free impeller of debris.</p> <p>Check driver output.</p> <p>Install bypass line.</p> <p>Reduce suction lift.</p>

Trouble	Possible Cause	Probable Remedy
PUMP STOPS OR FAILS TO DELIVER RATED FLOW OR PRESSURE (cont)	<p>Leaking or worn seal or pump gaskets.</p> <p>Suction strainer clogged.</p>	<p>Check pump vacuum. Replace leaking or worn seal or pump gaskets.</p> <p>Clean suction strainer.</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>Reduce speed of power source.</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>Free valve, and clean or replace it.</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>
BEARINGS RUN TOO HOT	<p>Bearing temperature is high, but within limits.</p> <p>Low or incorrect lubricant.</p> <p>Suction and discharge lines not properly supported.</p> <p>Drive misaligned.</p>	<p>Check bearing temperature frequently to monitor any increase.</p> <p>Check for proper type and level of lubricant.</p> <p>Check piping installation for proper support.</p> <p>Align drive properly.</p>

Engine Driven Self-Priming Centrifugal Pump

Model 112A20-B-6031C



The only moving parts of this pump are the impeller, seal rotating elements, and the shaft. The wear plate, impeller, and seal, which receive the most wear, are easily accessible and can be replaced without disturbing the piping. Maintenance and replacement of these three parts will maintain the peak operating efficiency of the pump.

SECTIONAL DRAWING

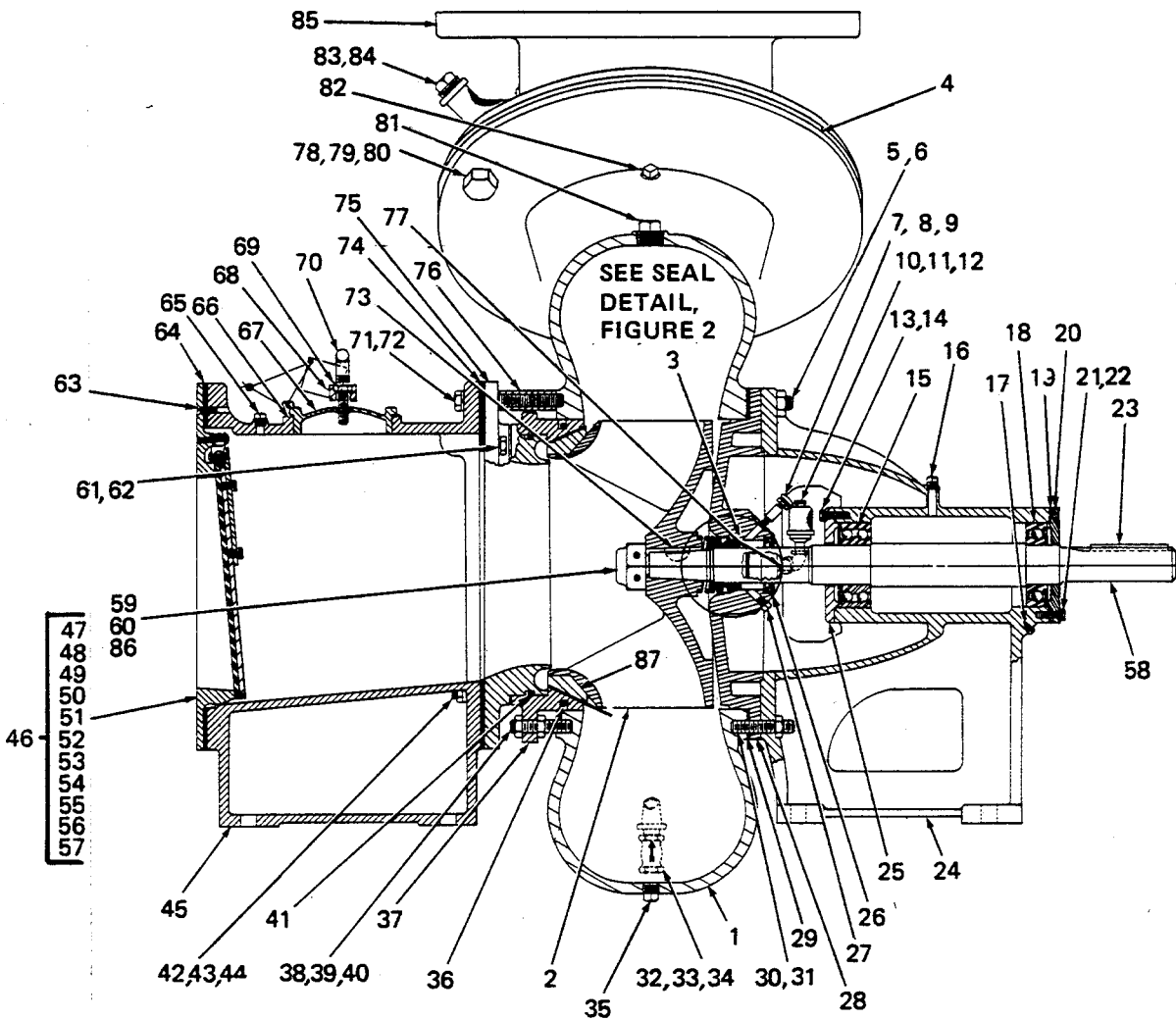


Figure 1. Pump End Only Model 112A20-B-6031C



PARTS LIST

ITEM NO.	MODEL 112A20-B-6031C PART NAME	PART NUMBER	MATL CODE
1	VOLUTE CASING	4178	10010
2	IMPELLER	38628-544	
3	SEAL ASSEMBLY	12590-B	
4	DISCHARGE FLANGE GASKET	4991-G	18000
5	STUD	C-1011	15991
6	HEX NUT	D-10	15991
7	★ SEAL AIR VENT FITTING	S-2162	
8	PIPE COUPLING	AE-02	11990
9	CLOSE NIPPLE	T-02	15070
10	★ SEAL BOTTLE OILER	S-1933	
11	PIPE ELBOW	R-02	11990
12	PIPE NIPPLE	T-0212	15070
13	HEX HD CAP SCREW	B-0605	15991
14	LOCKWASHER	J-06	15991
15	★ BALL BEARING	S-1032	
16	★ VENTED PEDESTAL PLUG	4823	11990
17	PIPE PLUG	P-04	11990
18	★ BALL BEARING	S-616	
19	★ BEARING GASKET	5413-G	18000
20	★ BEARING CAP	4185	10010
21	HEX HD CAP SCREW	B-0605	15991
22	LOCKWASHER	J-06	15991
23	SHAFT KEY	N-0616	15990
24	PEDESTAL	3233-B	10010
25	BEARING CAP	4184	10010
26	OIL SEAL	S-1917	
27	SEAL DRAIN PLUG	P-02	11990
28	SEAL PLATE	4179-E	10010
29	VOLUTE GASKET	4180-G	18000
30	STUD	C-1013	15991
31	HEX NUT	D-10	15991
32	CHECK VALVE	S-2283	
33	PIPE NIPPLE	T-12	15070
34	STREET ELBOW	RS-12	11990
35	VOLUTE DRAIN PLUG	P-12	11990
36	★ WEAR RING O-RING	S-1914	
37	★ ADJ WEAR RING	12736	11010
38	STUD	12739	15010
39	HEX NUT	D-10	15991
40	JAM NUT	AT-10	15991
41	★ SUCTION PLATE O-RING	S-1991	
42	HEX HD CAP SCREW	B-1009	15991
43	LOCKWASHER	J-10	15991
44	HEX NUT	D-10	15991
45	FLAP VALVE FLANGE	14270	10010

ITEM NO.	MODEL 112A20-B-6031C PART NAME	PART NUMBER	MATL CODE
46	FLAP VALVE ASSEMBLY	14284	
47	FLAP VALVE SHAFT	14282	17010
48	BEARING PIVOT	14274	17070
49	DRY SLEEVE BEARING	S-2282	
50	GROOVED PIN	21142-433	
51	FLANGED SEAT	14273-A	10010
52	BUTTON HEAD CAP SCREW	CM-0404	15990
53	BUTTON HEAD CAP SCREW	CM-0403	15990
54	LOCKWASHER	J-04	15991
55	HEX HD CAP SCREW	B-0402	15991
56	VALVE PLATE	14283	15990
57	VALVE ASSEMBLY	14281	24010
58	★ IMPELLER SHAFT	38516-202	
59	★ IMPELLER NUT SET SCREW	GA-0601½	17090
60	★ INSERT	31111-003	
61	HEX HD CAP SCREW	B-1006	15991
62	LOCKWASHER	J-10	15991
63	FLT SCH CAP SCREW	F-0404	15990
64	★ FLAP VALVE FLANGE GASKET	14273-G	20000
65	ACCESSORY PLUG	P-04	11990
66	★ COVER GASKET	12369-G	20000
67	COVER ASSEMBLY	48271-020	
68	COVER CLAMP BAR	12370	11000
69	HEX HD CAP SCREW	B-0808	15991
70	COVER CLAMP SCREW	8618	24000
71	HEX HD CAP SCREW	14432	15990
72	LOCKWASHER	J-10	15991
73	★ IMPELLER SHAFT KEY	AV-1210	15990
74	★ SUCTION PLATE GSKT	4991-G	18000
75	SUCTION PLATE	12737-A	11010
76	SPACER	14278	15020
77	RD HEAD SET SCREW	X-0404	17090
78	HEX HD CAP SCREW	B-1414	15991
79	HEX NUT	D-14	15991
80	LOCKWASHER	J-14	15991
81	PIPE PLUG	P-24	11990
82	PIPE PLUG	P-06	11990
83	STREET ELBOW	AGS-32	11990
84	PIPE PLUG	P-32	11990
85	DISCHARGE ADAPTER FLANGE	14275	10010
86	★ IMPELLER SHAFT NUT	4190-B	10090
87	★ IMPELLER WEAR RING	12734	11010

★ Indicates parts recommended for stock

Note: This parts list applies to pumps from serial no. 599771.

"Above Serial Numbers Do Not Apply to Pumps Made in Canada"



PARTS LIST

ITEM NO.	MODEL 112A20-B-6031C PART NAME	PART NUMBER	MATL CODE	ITEM NO.	MODEL 112A20-B-6031C PART NAME	PART NUMBER	MATL CODE
NOT SHOWN:				NOT SHOWN:			
	NAMEPLATE	2613-D	13990		BATTERY BOX ASSEMBLY CONT.		
	ROTATION DECAL	2613-CU	00000		LOCKWASHER	J-06	15991
	DRIVE SCREW	BM-4-03			FLAT WASHER	K-06	15991
	STRAINER 12 INCH	4990-A			BATTERY	S-978	
	GMC 6031C ENGINE	206-D1			CONNECTOR	26351-082	
	COVER PLATE	3167-A	15990		ELBOW	26357-123	
	AIR ELIM CLIP	6006	15990		HOSE	31412-201	
	STUB SHAFT	7617	24000		CABLE 00 x 40	38741-006	
	FUEL LINE ASSY	9072-R			CABLE 00 x 65	38741-009	
	TACH COUPLING	13295	15990		FUEL TANK STRAP	41121-007	
	BRACKET				FUEL TANK SUPPORT	41441-401	
	SHAFT KEY	N-1016	15990		FUEL TANK SUPPORT	41441-402	
	GAS COCK	S-02			BASE	41565-507	
	TERMINAL	S-1115			COUPLING GUARD	42342-022	
	ELBOW	S-1707			ASSEMBLY		
	SOLDER LUG	S-1725			HOISTING BAIL ASSY	44715-020	
	RED PIPE BUSHING	AP-1206	11990		HOSE ASSEMBLY	46341-739	
	FLANGED ELBOW	RF-192	10990		FUEL TANK ASSY	46711-035	
	STREET ELBOW	RS-04	11990		FUEL TANK	S-562	
	STREET ELBOW	RS-12	11990		HALF COUPLING	AE5-04	
	BATTERY BOX ASSY	GRP40-04			FLEX COUPLING ASSY	48111-009	
	BATT BOX COVER	4896-X	24000		MOUNTING HARDWARE		
	CABLE ASSEMBLY	5795-CR	24000		HEX HD CAP SCREW	B-1207	
	BATTERY BOX	10478	24000		HEX HD CAP SCREW	B-1210	
	HEX HD CAP SCREW	B-0604	15991		HEX HD CAP SCREW	B-1208	
	HEX HD CAP SCREW	B-0605	15991		HEX NUT	D-12	
	HEX HD CAP SCREW	B-0624	15991		LOCKWASHER	J-12	
	HEX NUT	D-06	15991		OPTIONAL WHEEL KIT	GRP30-10A	

PUMP AND SEAL DISASSEMBLY AND REASSEMBLY

This pump requires little service due to its rugged, minimum-maintenance design. If it becomes necessary to inspect and/or replace the wearing parts, however, follow these instructions, which are keyed to the sectional view (see figure 2) and the accompanying parts list.

WARNING

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

Pump Disassembly

Disconnect the power source, and close all connecting valves. Remove the volute drain plug (35) to drain the pump.

Remove the hex head cap screws (71) securing the flap valve flange (45) and suction plate (75) to the volute casing (1), retaining each of the spacers (76) as the cap screws are removed.

Separate the volute casing, removing the suction plate O-ring (41), for access to the adjustable wear ring (37), impeller wear ring (87), impeller (2), and seal assembly (3).

To remove the impeller, loosen the set screws (59) on the shaft nut (86), and unscrew the shaft nut. Slide the impeller off the impeller shaft (58), retaining the shaft woodruff key (73).

Seal Disassembly

Before removing the seal assembly, remove the seal drain plug (27) to drain the seal cavity. Clean and reinstall the seal drain plug.

Carefully remove the spring, retainer, and rotating and stationary seal elements, using a stiff wire with a hooked end if necessary.

Clean the seal cavity and shaft 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.

Seal Reassembly

The seal is not normally reused because of the high polish 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.

CAUTION

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

Install the replacement seal as a complete unit.

Lubricate the bellows and O-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 3.

Before starting the pump, fill the seal bottle oiler (10) with SAE No. 30 non-detergent motor oil. Remove the air vent fitting (7) when filling the seal bottle oiler.

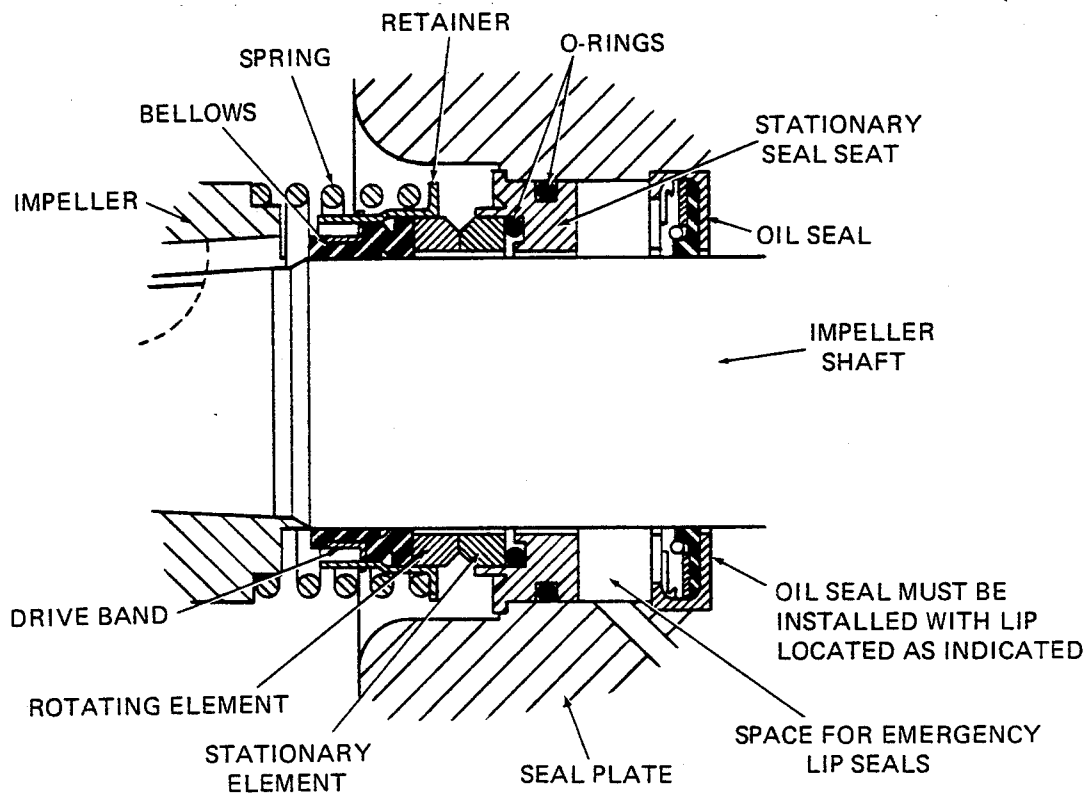


Figure 2. 12590-B Seal Assembly

Pump Reassembly

Before reinstalling the impeller, inspect the adjustable wear ring (37), and replace it if the interior surface is scored or worn. If the adjustable wear ring is replaced, replace the O-ring (36).

Inspect the impeller, and replace it if cracked or badly worn. Replace the impeller wear ring if scored or worn.

Reinstall the impeller shaft woodruff key, and slide the impeller onto the shaft. Use "Never-Seez" or equivalent on the threads of the impeller shaft nut, and torque the nut to 300 ft-lbs. Use "Loctite" No. 35 or equivalent on the impeller nut set screws, and torque the screws to 18 ft-lbs.

Reinstall the hex head cap screws, lockwashers, and spacers to reassemble the check valve flange and suction plate to the volute casing. Replace the suction plate O-ring (41) and gasket (74).

Impeller Face Clearance

A clearance of approximately .015 inch between the impeller wear ring and the adjustable wear ring is necessary for maximum pump efficiency.

If the seal assembly, impeller, or wear rings was not replaced, this clearance should be correct after reassembling the pump.

If the seal assembly, impeller, or wear rings was replaced, this clearance must be reset. Loosen all the adjustable wear ring hex nuts (39). Tighten all the jam nuts (40) until the adjustable wear ring is completely in contact with the suction plate face. Next, tighten all the hex nuts evenly, maintaining each in the same position relative to the others.

To eliminate interference with adjustment, back off the jam nuts until they are in contact with the volute casing. Now tighten all the hex nuts evenly, no more than one-half turn at a time, while rotating the impeller by hand. When the adjustable wear ring makes contact with the impeller wear ring, back off each hex nut one-half turn. This will set the proper clearance. Tighten all the jam nuts to secure the adjustable wear ring.

Before starting the pump, clean and reinstall the volute drain plug, and fill the volute with liquid.

LUBRICATION

Bearings

When shipped from the factory, the pump contains sufficient grease to lubricate the bearings for approximately 5,000 operating hours. Do not lubricate sooner than required. When additional grease is required, remove the vented pedestal plug (16) and fill the cavity with No. 0 pressure gun grease until the cavity is one third full, or just below the shaft. Clean and reinstall the vented pedestal plug.

**For U.S. and International Warranty Information,
Please Visit www.grpumps.com/warranty
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