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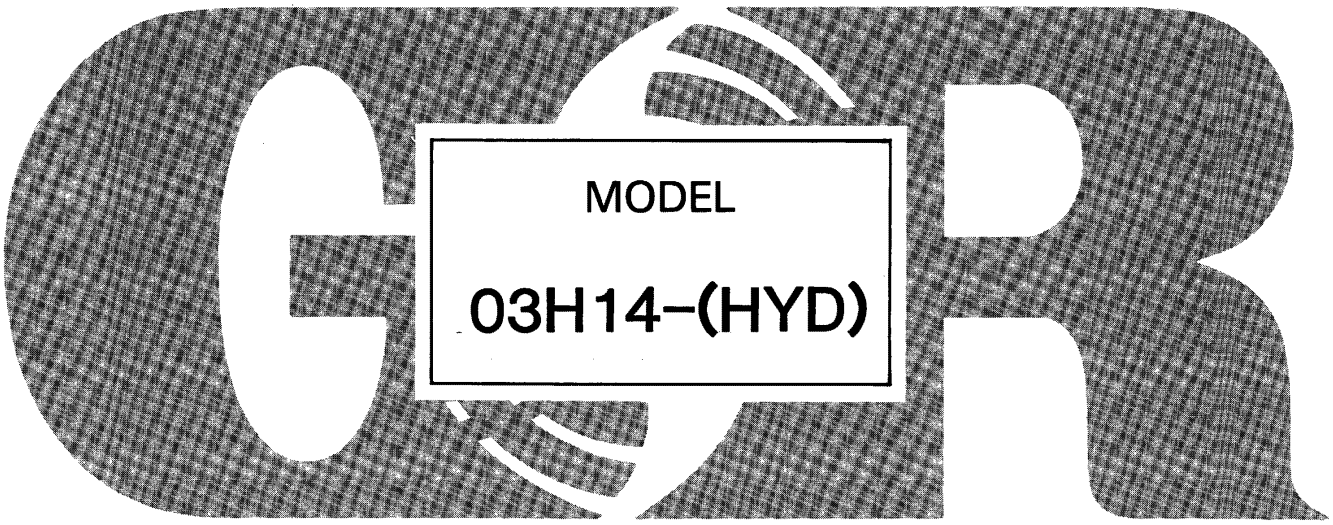
April 12,1982

O SERIES™

INSTALLATION, OPERATION, PARTS LIST, AND MAINTENANCE MANUAL



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

The Model 03H14-(HYD) is a hydraulic motor driven self-priming centrifugal pump end. The pump is designed to pump aircraft and vehicle fuels.

If there are any questions regarding the pump which are not covered in this manual, contact:

The Gorman-Rupp Company
P.O. Box 1217
305 Bowman Street
Mansfield, Ohio 44901

Should there be any question regarding the hydraulic motor not covered in this manual contact the Hydraulic Motor Manufacturer.

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 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.

WARNINGS - SECTION A

THESE WARNINGS APPLY TO THE PUMP ONLY

WARNING

Before attempting to open or service the pump:

1. Familiarize yourself with this manual.
2. Disconnect the hydraulic motor 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

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

WARNING

Do not operate the pump without coupling guards in place over the coupling. An exposed coupling can catch clothing, fingers, or tools, causing severe injury to personnel.

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 servicing.

WARNING

Should the pump become overheated, use extreme caution when venting the pump or removing the:

1. Drain plug.
2. Priming plug.
3. Gauges.
4. Pump fittings.

Overheating may produce explosive fumes.

WARNING

Take precautions to ensure the area surrounding the pump is adequately ventilated and protective clothing is worn when servicing an overheated pump.

INSTALLATION - SECTION B

PREINSTALLATION INSPECTION (keyed to figure 1, Section E)

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 shipping damage.
b. Check for and tighten intermediate housing pipe plugs (15 and 30), volute plugs (7 and 35), loose nuts (10) 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 warning and cautions contained in this manual, and perform all duties indicated. Note the direction of rotation indicated on the pump. Check that the pump shaft rotates counterclockwise facing the pump suction.

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.

See Figure 1 for physical dimensions of this pump.

OUTLINE DRAWING

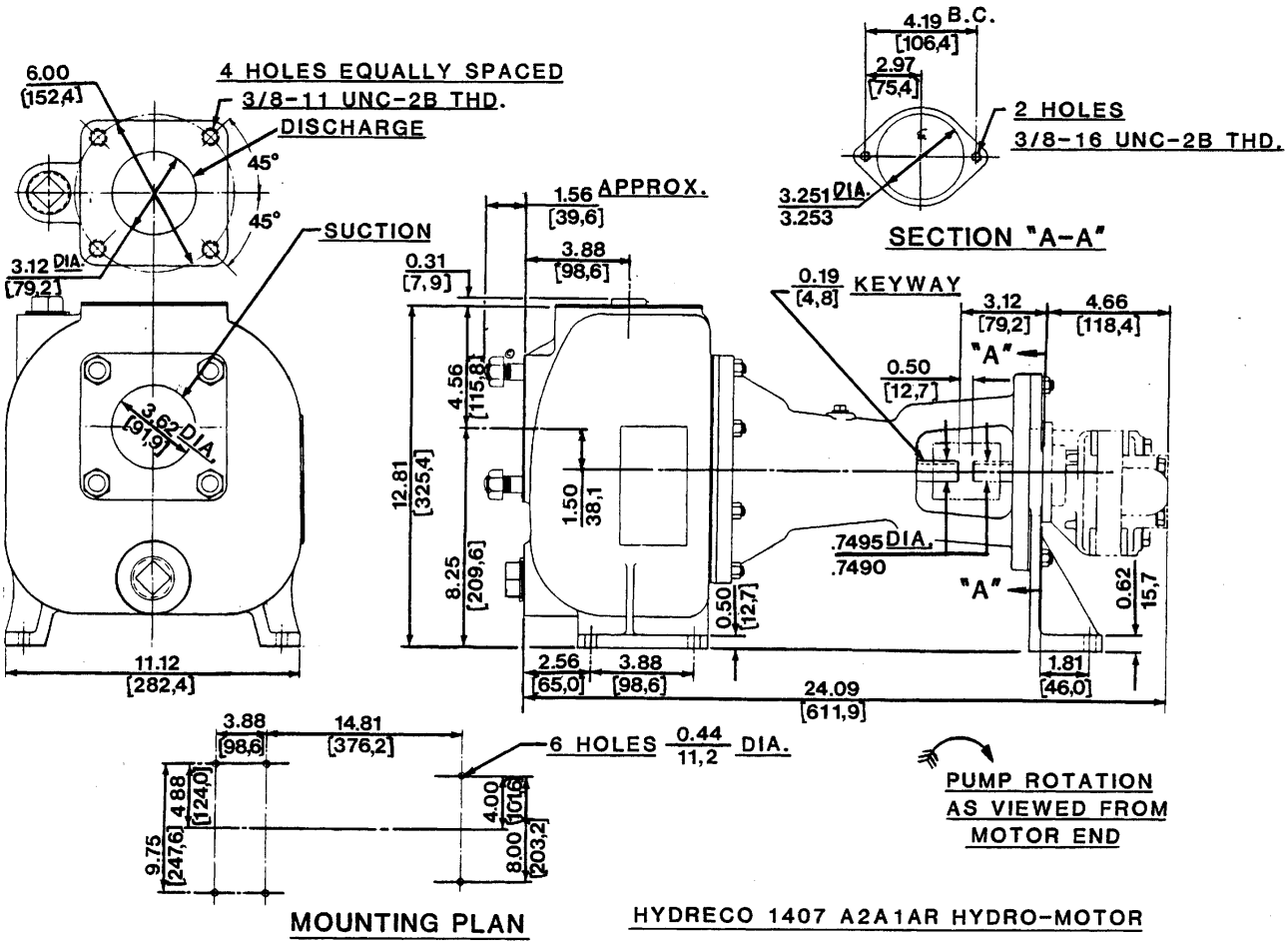


Figure 1. Pump Model 03H14-(HYD)

POSITIONING THE PUMP

Mounting

Level mounting is essential for proper operation. It may be necessary to support or shim the pump for level operation. The pump must be mounted on a rigid vibration free base or platform. The pump should be placed directly over a beam or as near to a main support as possible.

When loading the storage tank, locate the pump in an accessible place as close as practical to the fuel being pumped. Vertical distance (static suction lift) should be kept to a minimum. High static lift and a long suction line results in a longer period of time required to prime the pump. They also tend to limit the maximum amount of liquid pumped.

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 hoists and other lifting equipment are of sufficient capacity to safely handle the pump assembly. If chains or cables are used, make certain they are positioned so they will not damage the pump, and so the load is 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 HOSE OR PIPING

Materials

Either pipe or hose may be used for suction and discharge lines. Piping or hose 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.

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.

Connection to Pump

The position of the pump to its suction and discharge lines is critical. After the pump has been mounted in its final operating position, align the pipe or hose exactly with the pump port. Never pull a pipe into place by putting a strain on the pump.

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

This pump has a 1/4 N.P.T. tap on the suction side for vacuum suction gauge.

Should a discharge pressure gauge be desired, tap the discharge line in a visible location, approximately three pipe diameters away from any fittings or points of turbulant flow. Proper location of the gauge is critical to obtain an accurate reading.

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

This pump is designed primarily for liquids which do not need straining, and a strainer is not furnished with the pump when it is shipped from the factory. Any entrained solids which pass through a strainer 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 7/16" diameter

Sealing

A slight leak in the pump, hose or pipe connections will affect priming, head (TDH) and capacity (GPM), especially when operating with a high suction lift.

All connections in the suction line and disharge line should be sealed to ensure an airtight system.

WARNING

A leak at any point in the system may expel flammable vapors into the atmosphere. Be sure pump and surrounding area are adequately ventilated. Check all connections for leaks and correct any problems immediately.

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 the size 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 size of the suction line. 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 at least three times the diameter of the suction line.

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.

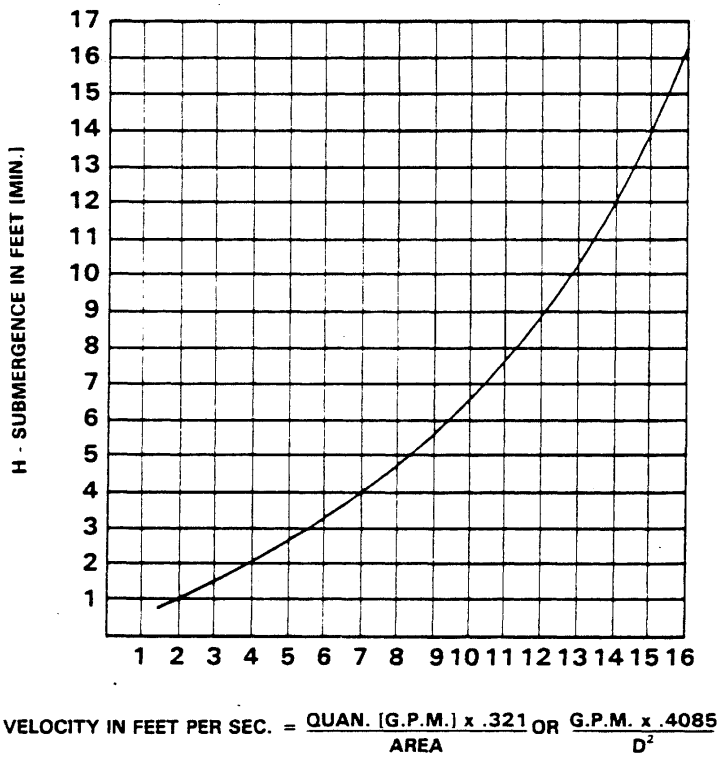


Figure 2. Recommended Minimum Suction Line Submergence Vs. Velocity

DISCHARGE LINES

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.

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 in initial priming or during the repriming cycle, install a bypass line - sized so that it will not affect pump discharge capacity - between the pump and the discharge check valve. Since this pump does not use a suction check valve, the discharge end of the bypass line must be submerged in the liquid being pumped in order to maintain suction.

ALIGNMENT

Aligning the pump and motor is critical for trouble-free mechanical operation.

NOTE

Check **Rotation**, Section C, before final alignment of pump.

WARNING

When checking alignment, disconnect the hydraulic motor to ensure that the pump will remain inoperative.

Before checking alignment, tighten the foundation bolts, pump casing and/or pedestal feet, and motor 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.

Coupling Alignment

When using couplings, the axis of the power source must be aligned to the axis of the pump shaft in both the horizonal and vertical planes. The couplings require a 3/8 inch gap or clearance between the pump and the motor shafts.

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 3).

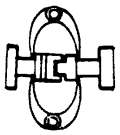


Figure 3. Aligning Spider-Type Couplings

Coupling Guards

The coupling is mounted on the impeller shaft at Gorman-Rupp. The coupling is guarded with a two piece coupling guard, one on each side of the intermediate housing. The guards are supplied for protection of personnel. Do not operate the pump without a guard.

WARNING

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

OPERATION - SECTION C

Introduction To Pump Operation

The pump is designed to produce 300 GPM and functions in the following manner.

During the priming cycle, air from the suction line entering the pump is mixed with fuel at the impeller. Centrifugal force moves the mixture into the pump housing reservoir, where the velocity of the mixture is decreased. Air escapes through the discharge port while air-free fuel, now heavier than air-laden fuel, flows by gravity back down into the impeller and mixes with air which continues to be drawn from the suction line. As this cycle is repeated, all air in the suction line is evacuated, and a vacuum is created. Atmoshperic pressure forces the fuel in the suction line to the impeller, pumping begins. Fuel no longer re-circulates within the pump.

When pumping petroleum-based fuels, fuel temperature is critical to maximum pumping efficiency and performance. The temperature of the fuel must remain below the temperature at which the fuel tends to turn to vapor. If the fuel temperature approaches its vapor pressure, the impeller will tend to atomize the fuel, resulting in vapor or air bubbles. Air bubbles will burst in the eye of the impeller, causing excessive vibration and shortening pump life.

WARNING

This pump is designed primarily to handle specific volatile and/or flammable liquids. Do not attempt to pump any volatile and/or flammable 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.

Although this pump is self-priming, it should never be operated unless the volute is filled with liquid.

CAUTION

Never operate this 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.

Fill the pump with liquid:

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.

When the volute housing is full, the pump will prime and reprime as necessary.

To fill the pump, remove the fill plug at the top of the volute housing, and add clean liquid. Be certain to reinstall the fill plug before operating the pump.

WARNING

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

STARTING

Consult the operations manual furnished with the power source.

Rotation

The correct direction of pump rotation is counter-clockwise when viewed from pump suction. This is indicated by an arrow on the pump volute, 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. Reverse rotation will also cause a reduction in pump performance.

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 motor before attempting to start the motor.

OPERATION

Lines With a Bypass

Since this pump does not have a suction check valve, the discharge end of the bypass line must be submerged in order to maintain suction.

Close the throttling valve in the discharge line, and open the shutoff valve in the bypass line so that the pump will not have to prime against the weight of the liquid in the discharge line. Start the power source. When the pump has been primed and liquid is flowing steadily through 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 motor. Priming is indicated by a positive reading on the discharge pressure gauge or by 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.

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 discharge 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 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.

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 on the suction side of the pump, 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. The vacuum gauge reading will immediately drop proportionate to static suction lift, and should then stabilize. If the vacuum reading falls off rapidly after stabilization, an air leak exists. Before checking for the source of the leak, check the point of installation of the vacuum gauge.

STOPPING

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

Unless they are extremely severe, below-freezing conditions will not affect pump operation in petroleum service. In other service in below-freezing conditions, a stopped pump should be drained, and any solids cleaned out by flushing with a hose, to prevent damage from freezing. After draining and flushing, operate the pump for approximately one minute to remove any remaining liquid that could freeze pump rotating parts.

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. Bearing overheating can 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.

The bearings in this pump are pre-lubricated and permanently sealed. Bearing housing lubrication is not required.

TROUBLESHOOTING - SECTION D

WARNING

Before attempting to open or service the pump:

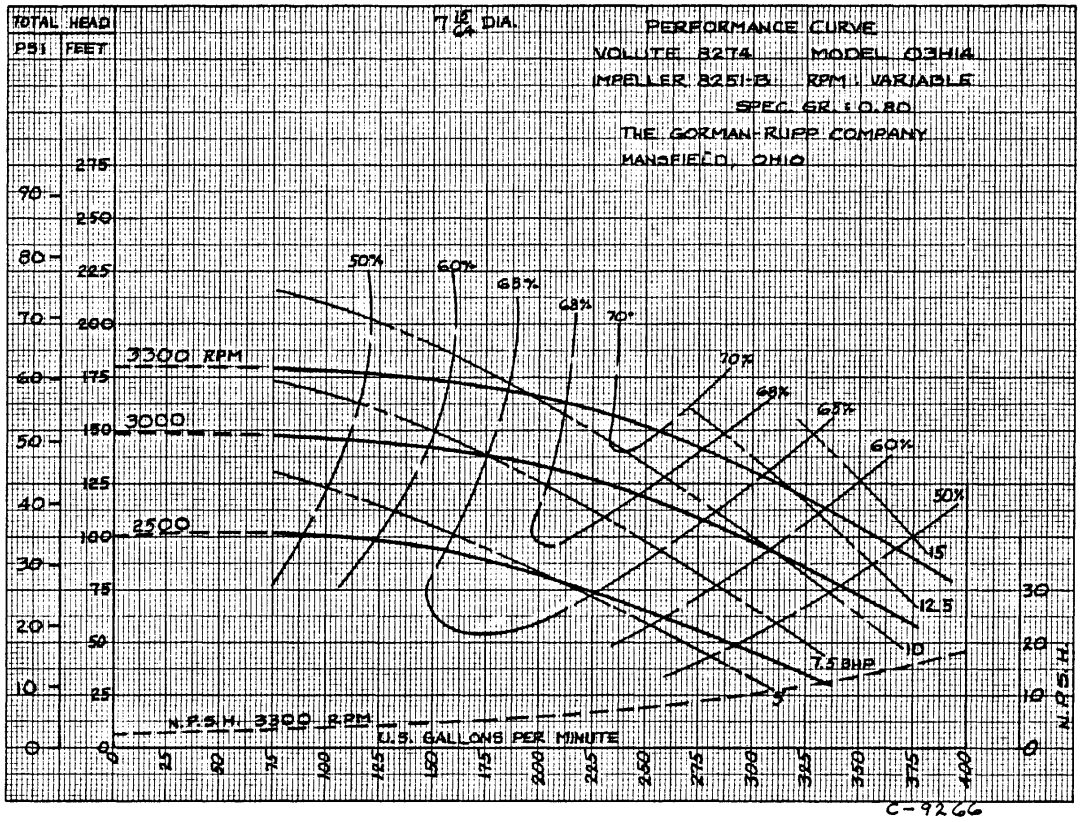
1. Familiarize yourself with this manual.
2. Disconnect the hydraulic motor to ensure that the pump will remain inoperative.
3. Allow the pump to cool if overheated.
4. Vent the pump slowly and cautiously.
5. Close the suction and discharge valves.
6. Check the temperature before opening any covers,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

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

TROUBLE	POSSIBLE CAUSE	PROBABLE REMEDY
PUMP STOPS OR FAILS TO DELIVER RATED FLOW OR PRESSURE (cont.)	Pump speed too slow.	Check driver output; check belts or couplings for slippage.
	Discharge head too high.	Install bypass line.
	Suction lift too high.	Reduce suction lift.
	Strainer clogged.	Check strainer and clean if necessary.
	Leaking or worn seal or pump gasket.	Check pump vacuum. Replace leaking or worn seal or gasket.
PUMP REQUIRES TOO MUCH POWER	Pump speed too high.	Check driver output; check that sheaves or couplings are correctly sized.
	Discharge head too low.	Adjust discharge valve.
	Liquid solution too thick.	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.	Reduce suction lift and/or friction losses in suction line.
	Pumping entrained air.	Locate and eliminate source of air bubble.
	Pump or drive not securely mounted.	Secure mounting hardware.
	Impeller clogged or damaged.	Clean out debris; replace damaged parts.
BEARINGS RUN TOO HOT	Bearing temperature is high, but within limits.	Check bearing temperature regularly to monitor any increase.
	Low or incorrect lubricant.	Check for proper type and level of lubricant.
	Suction and discharge lines not properly supported.	Check piping installation for proper support.
	Drive misaligned.	Align drive properly.

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 03H14-(HYD)

*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.

SECTIONAL DRAWING

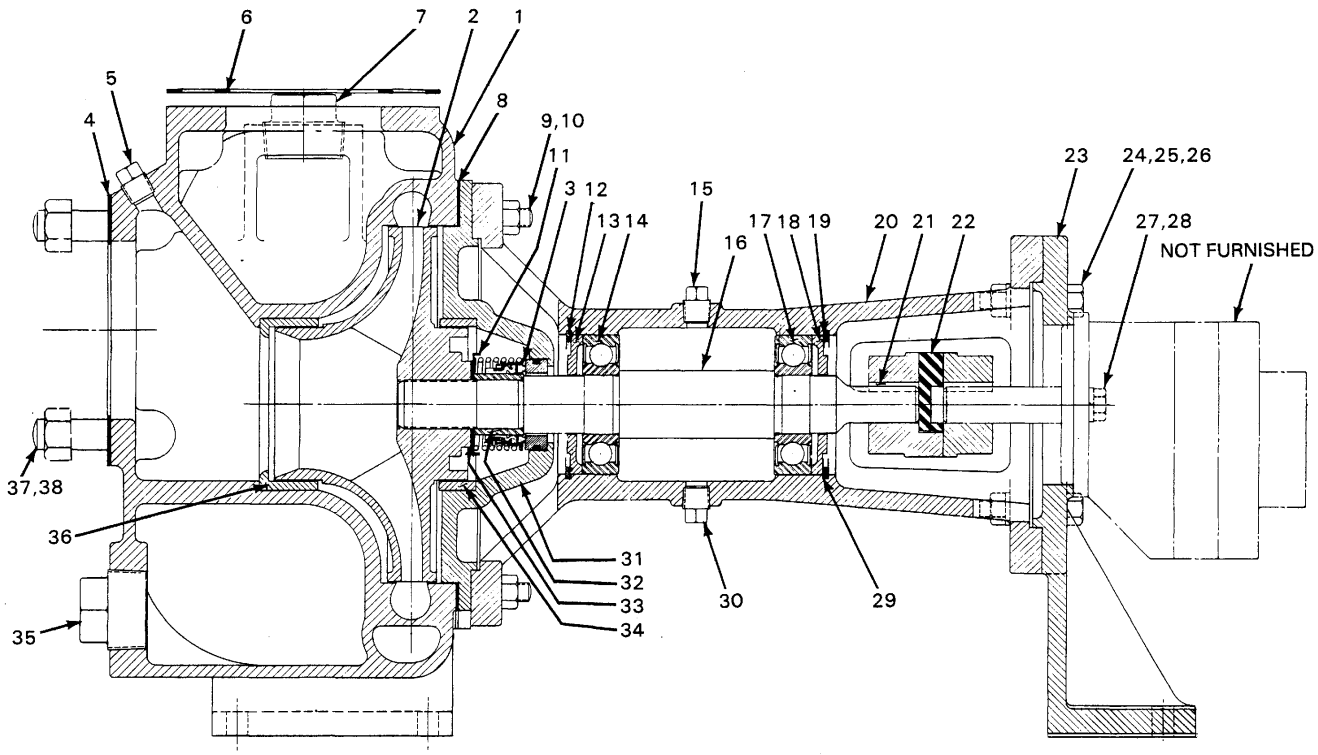


Figure 1. Pump Model 03H14-(HYD)

PARTS LIST
PUMP MODEL 03H14-(HYD)
(From S/N 501188 up)

ITEM NO.	PART NAME	PART NUMBER	MATL CODE	QTY
1	VOLUTE CASING	8274	13045	1
2	*IMPELLER	8251-B	13015	1
3	*SEAL ASSEMBLY	25271-192	-----	1
4	*SUCT FLANGE GSKT	1318-GB	20000	1
5	PIPE PLUG	P00004	11991	1
6	*DISCH FLANGE GSKT	1318-GB	20000	1
7	FILL PLUG	P00020	11991	1
8	*VOL HOUSING GSKT	3-GC	20010	1
9	STUD	C00608	15991	8
10	HEX NUT	D00006	15991	8
11	SPRING CENTERING WASHER	3929-A	17000	1
12	BRG RETAINER RING	S00219	-----	1
13	BRG RETAINER	13217	10010	1
14	*BALL BEARING	S01711	-----	1
15	VENTED PED PLUG	4823-D	11990	1
16	*IMP SHAFT	13187	16040	1
17	*BALL BEARING	S01711	-----	1
18	BRG RETAINER	13217	10010	1
19	BRG RETAINER RING	S00219	-----	1
20	INTERMEDIATE	13188	10010	1
21	SHAFT KEY	N00304	15990	1
22	*FLEXIBLE CPLG	S02081	-----	1
23	FLANGE SUPPORT	13189	10010	1
24	HEX HD CAPSCREW	B00607	15991	4
25	LOCKWASHER	J00006	15991	4
26	HEX NUT	D00006	15991	4
27	LOCKWASHER	J00006	15991	2
28	HEX HD CAPSCREW	B00604	15991	2
29	*BRG SHIM SET	S00464	-----	1
30	PED DRAIN PLUG	P00002	11991	1
31	SEAL PLATE	8260	13015	1
32	SHAFT SLEEVE	13200	17030	1
33	*IMP SHIM SET	2-X	17090	1
34	*BALANCE RING	62ZL6	14000	1
35	VOL DRAIN PLUG	P00020	11991	1
36	*WEAR RING	62ZL5	14000	1
37	STUD	C01009	15991	4
38	HEX NUT	D00010	15991	4
NOT SHOWN:				
	NAME PLATE	2613-C	13990	1
	DIRECTION PLATE	2613-M	00000	1
	INSTR TAG	6588-AB	00000	1
OPTIONAL:				
	VICT SUCT FLANGE	8849	13045	1
	VICT DISCH ELBOW	8280	13045	1

*INDICATES PARTS RECOMMENDED FOR STOCK

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

CANADIAN SERIAL NO ..... AND UP

PUMP AND SEAL DISASSEMBLY AND REASSEMBLY

This pump requires no service due to its rugged, minimum-maintenance design. The mechanical seal is lubricated by the fuel being pumped, the bearings are sealed requiring no additional lubrication. However, if it becomes necessary to inspect or replace components follow these instructions, which are keyed to the sectional view (see figure 1) and the accompanying parts list.

Pump Disassembly

WARNING

Before attempting to open or service the pump:

1. Familiarize yourself with this manual.
2. Disconnect the hydraulic motor 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.

Disconnect the motor, making certain that it will remain inoperative while the pump is being serviced, and close all connecting valves.

Remove the volute housing drain plug (35) to drain the pump. Clean and reinstall the plug after the pump has been drained.

For access to the impeller (2) and seal assembly (3), the pump must be opened at the point where the volute casing (1), seal plate (31), and intermediate housing (20) are joined. Remove the hex nuts (10) securing these assemblies and separate the assemblies.

Prior to removing the impeller (2), immobilize the impeller shaft (16) at the motor end. To remove the impeller (2), place a steel bar (approximtely 1 1/4" wide by 3/16" thick by 14" long) between the vanes as far as possible.

Restrain the bar in the impeller and with a 3 to 4 pound mallet, firmly strike the end of the bar in the clockwise direction while facing the impeller (from the suction side).

Use caution when removing the impeller from the shaft; tension on the seal spring will be released as the impeller is removed.

Remove the impeller adjusting shims (33). For ease of reassembly, tag and tie the shims or measure and record their thickness.

Seal Disassembly

Remove the spring centering washer and spring. Using a stiff wire with a hooked end if necessary, remove the remainder of the seal components and the shaft sleeve (32).

Clean the seal cavity and the 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 faces, 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.

See figure 2 for the correct order of installation of seal components.

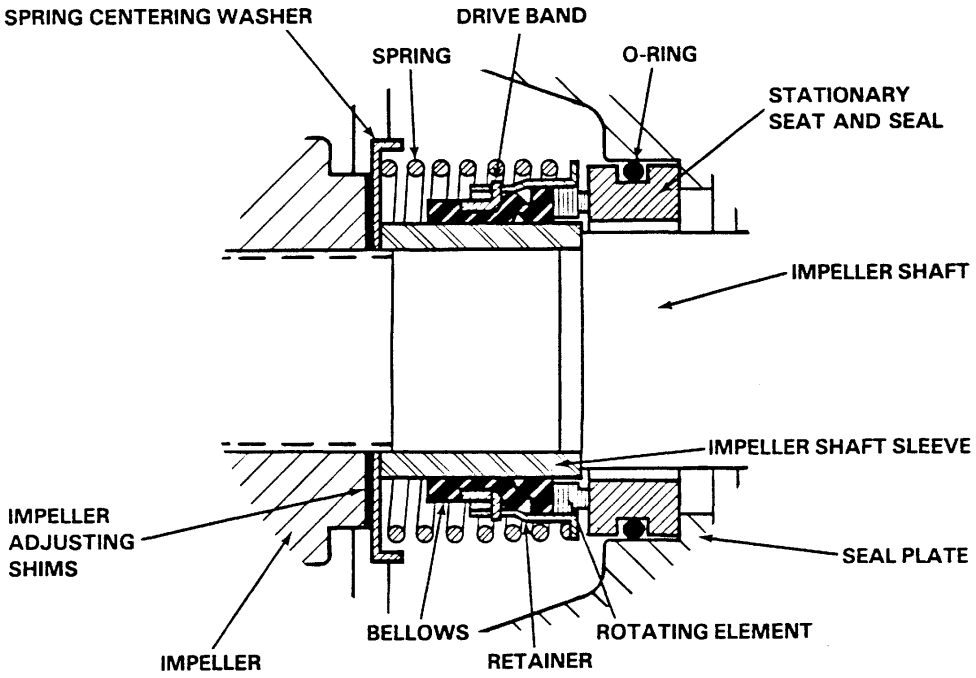


Figure 2. 25271-192 Seal Assembly

Clean and polish the shaft sleeve, or replace it if there are nicks or cuts on the end; reinstall the shaft sleeve.

Place a drop of light lubricating oil on the lapped faces of the seal.

Install the O-ring over the stationary seat. Install stationary seal assembly and rotating element. Lubricate the bellows assembly with soft grease or oil and install the bellows assembly. Install the seal spring and spring centering washer making certain that all components of the seal are seated squarely.

Pump Reassembly

For maximum pump efficiency, the impeller must be centered with the volute scroll.

Install the impeller adjusting shims (33). If the same number and thickness of impeller shims are reinstalled as were removed, the impeller should be centered with the volute scroll.

Inspect the wear ring (36), and the balance ring (34), and replace if scored or worn.

Inspect the impeller, and replace it if cracked or badly worn. Install the impeller by threading it on the impeller shaft (16) in the counter-clockwise direction until secure.

Replace the volute housing gasket set (8) and secure the seal plate (31) and the volute casing to the intermediate housing (20).

Turn the shaft by hand to check that the impeller rotates freely. If it does not, remove additional impeller shims until the impeller rotates freely when the pump is completely assembled.

Remove the fill plug (7), and fill the volute with clean fuel. Clean and reinstall the fill plug. Make certain that the fill plug and all piping are securely tightened before starting the pump.

LUBRICATION

The seal assembly is lubricated by the fuel being pumped.

Bearings

The bearings (14 and 17) are lubricated and permanently sealed at the factory and require no additional lubrication.

SHAFT COUPLING AND MOTOR REMOVAL AND REINSTALLATION

To remove the hydraulic motor (not furnished with this pump) remove the lockwashers (27) and hex head capscrews (28) amd separate the motor and shaft from the pump end, retaining the motor shaft key.

For access to the flexible coupling (22), remove the hex head capscrews (24), lockwashers (25), and hex nuts (26) securing the flange support (23) to the intermediate, and remove the flange support. To remove the coupling, pull it toward the motor end of the pump, retaining the impeller shaft key (21).

To reinstall the shaft coupling, reinstall the impeller shaft key, position the coupling keyway on the key as shown in figure 1, and install the coupling.

To reinstall the motor, secure the flange support to the intermediate, install the motor shaft key in the shaft, and insert the key and shaft in the shaft coupling. Reinstall the hex head capscrews and lockwashers securing the motor to the pump.

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