

Please read and save this Repair Parts Manual. Read this manual and the General Operating Instructions carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. The Safety Instructions are contained in the General Operating Instructions. Failure to comply with the safety instructions accompanying this product could result in personal injury and/or property damage! Retain instructions for future reference. AMT reserves the right to discontinue any model or change specifications at any time without incurring any obligation.

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Periodic maintenance and inspection is required on all pumps to ensure proper operation. Unit must be clear of debris and sediment. Inspect for leaks and loose bolts. Failure to do so voids warranty.

Engine-Driven Centrifugal Pumps



Refer to Specific Information and Repair Parts Manual for product specific information.

SAFETY GUIDELINES

This manual contains information that is very important to know and understand. This information is provided for SAFETY and to PREVENT EQUIPMENT PROBLEMS. To help recognize this information, observe the following symbols:

DANGER

Danger indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.

WARNING

Warning indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.

CAUTION

Caution Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury.

NOTE: Indicates important information that, if not followed, may cause damage to equipment.

UNPACKING

After unpacking the unit, inspect carefully for any damage that may have occurred during transit. Make sure to tighten fittings, bolts, etc., before putting unit into service.

CAUTION

Do not attempt to assemble or operate pump if any parts are missing or damaged. Determine that all parts are properly installed.

GENERAL SAFETY INFORMATION

1. Know the pump application, limitations, and potential hazards. Read all manuals included with this product carefully. Be thoroughly familiar with the pump and the proper use of the equipment.



DANGER

Do not use to pump flammable or explosive fluids such as gasoline, fuel oil, kerosene, etc. Do not use in flammable and/or explosive atmospheres. When pumping hazardous or dangerous materials, use only in room or area designated for that purpose. For your protection, always wear

proper clothing, eye protection, etc. in case of any malfunction. For proper handling techniques and cautions, contact your chemical supplier, insurance company and local agencies (fire dept., etc.). Failure to comply with this warning could result in personal injury and/or property damage.

2. Make certain that the power source (engine) conforms to the requirements of your equipment.
3. Provide adequate protection and guarding around moving parts.
4. Release all pressure within the system before servicing any component.
5. Drain all liquids from the system before servicing.
6. Secure the discharge line before starting the pump. An unsecured discharge line will whip, possibly causing personal injury and/or property damage.
7. Check hoses for weak or worn condition before each use, making certain that all connections are secure.
8. Periodically inspect pump and system components. Perform routine maintenance as required (See Maintenance section).
9. Provide a means of pressure relief for pumps whose discharge line can be shut-off or obstructed.
10. **Personal Safety:**
 - a.. Wear safety glasses at all times when working with pumps.
 - b. Wear a face shield and proper apparel when pumping hazardous chemicals.
 - c. Keep work area clean, uncluttered and properly lighted; replace all unused tools and equipment.
 - d. Keep visitors at a safe distance from the work area.
 - e. Make workshop childproof – with padlocks, master switches, and by removing starter keys.
11. Carefully read instruction manuals supplied by engine manufacturer before attempting to assemble, operate, or service the engine or any part. The WARNING statements indicate potentially hazardous conditions for operator or equipment. TAKE NECESSARY STEPS TO PROTECT PERSONNEL AND EQUIPMENT.

WARNING

Gasoline is a highly combustible fuel. The improper use, handling, or storage of gasoline can be dangerous. Prevent accidents by following these safety rules:

- a. Use gasoline only as fuel, never as a cleaning fluid.
- b. Use only an approved container to hold or store gasoline. Never store gasoline in familiar containers such as milk containers or soda pop bottles.
- c. Store gasoline in a cool location, out of reach of children. Never store gasoline near heat or an open flame.
- d. Add gasoline to a cool engine only. Spilled gasoline on a hot engine may cause fire or an explosion. Fill gasoline tank outdoors and wipe up any spills.
- e. Provide a fire extinguisher nearby when working with gasoline. Be

Engine-Driven Centrifugal Pumps

sure extinguisher is in operating condition – check the pressure gauge or indicator. Be familiar with its proper use. Consult local fire department for the correct type of extinguisher for your application. Extinguishers rated ABC by the National Fire Protection Association are appropriate for most applications.

IMPORTANT: Positively no smoking!

12. DO NOT RUN THE ENGINE IN AN ENCLOSED AREA!! Exhaust fumes contain carbon monoxide, which is an odorless and poisonous gas. If equipment is located in an enclosed area, use an exhaust line to the outside and regularly check the exhaust system for leaks. Be sure the area is well ventilated.
13. Check engine oil and fuel levels before initial startup each day. Stay away from moving parts. Avoid wearing loose jackets, shirts and ties. Make sure all nuts and bolts are secure. Keep power shields and guards in place. If adjustments must be made while the unit is running, use extreme caution around hot manifolds, moving parts, etc.
14. Do not operate this equipment when mentally or physically fatigued.

CAUTION

Be careful not to touch the exterior of the engine, especially the muffler and the surrounding area. The engine is hot enough to be painful or cause injury!

15. Prevent accidental starting by always removing spark plug or by disconnecting and grounding spark plug wire before working on engine or the equipment driven by engine.
16. Familiarize yourself with all controls. Learn how to stop an engine quickly in an emergency.
17. Keep the equipment and surrounding area clean. Remove all oil deposits from equipment and surrounding area. Accumulations of grease and oil may present a fire hazard and can cause engine damage. Cleaning rags and other flammable waste materials must be stored in approved metal containers.
18. All visitors should be kept at a safe distance from the working area. Keep children away from power equipment. Keep work area clean. Cluttered areas invite accidents.
19. When shutting off a gasoline engine, be sure it is completely stopped before leaving the work area.

INSTALLATION

WARNING

The pumps should not be used in flammable or explosive atmospheres. In order to safely use this product, familiarize yourself with this pump and also with the liquid (chemical, etc.) that is going to be pumped through the unit. This pump is not suitable for many liquids.

IMPORTANT: For installations where property damage might result from an inoperative or leaking pump due to power outages, discharge line blockage or any other reason, a back-up system(s) and/or warning system(s) should be used.

1. Locate pump as close to the fluid source as possible, making the suction line as short and direct as possible.

CAUTION

The unit should be placed where the pump/engine is protected from the weather and extremes of heat, cold and humidity.

2. Mount the unit on a solid foundation. On fixed installation, install both a union and a gate valve (not furnished) on the discharge side of the pump for service convenience.

CAUTION

Do not use a globe or other restricting type of valve at the discharge, as this would seriously restrict the capacity of the pump.

3. Attach suction line piping to the suction inlet and discharge line piping to the discharge outlet. The suction line should be positioned such that there is a continual upward slope from the fluid source to the pump. Avoid using loops or sections of pipe or fittings which might permit air to become trapped.

IMPORTANT: If plastic or fabric hose is used for the suction piping, it should be of a reinforced type so as not to collapse under suction. The discharge piping should be at least the same size as the discharge connection. Suction piping should be the same size as the discharge piping or one size larger. Unless long horizontal runs are involved, discharge piping should not be larger than suction piping. Avoid using looped sections of pipe, which might permit air to become entrapped. Assure air-tight pipe connections with the use of a pipe joint sealant.

4. **Fill pump with liquid.** A foot-valve may be used on the suction line to assist in faster pumping. The foot-valve should be installed when the

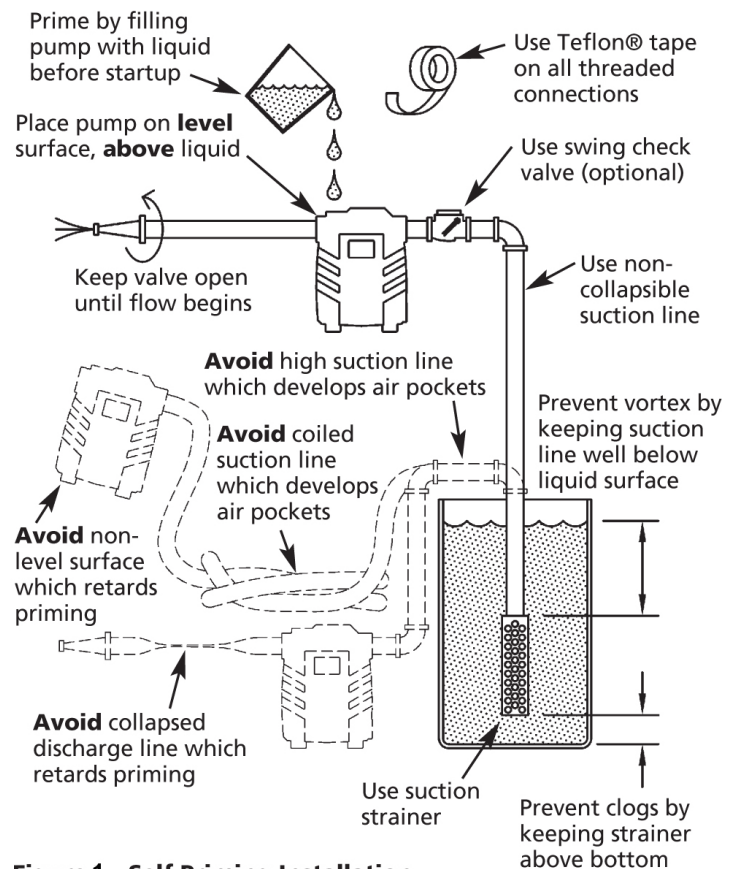


Figure 1 - Self Priming Installation

Engine-Driven Centrifugal Pumps

suction lift is over 10 feet or when the suction line is over 10 feet long.

5. A suitable suction strainer should be attached to the suction line so that large pieces of foreign material are not drawn into the pump. The maximum opening in the suction strainer should not be greater than 25% of the suction inlet size for solid handling pumps and 50% of the suction inlet size for trash pumps.
6. Pumps that have exhaust assist primer or a hand assist prime refer to the units specific Information and Repair Parts Manual for detailed instruction for maintenance and operation.

OPERATION

1. **OIL:** Fill the engine crankcase with oil as specified in the engine manual. Periodically check oil level thereafter and service stated in engine manual.
2. **FUEL:** Fill the fuel tank as required for engines. Refer to engine instruction booklet for proper fuel type.
3. **OTHER:** Fill any other required fluid such as antifreeze, etc. (if required by engine manufacturer).

▲ WARNING

Never add gasoline to a hot engine! See General Safety Information for proper handling of gasoline.

4. Fill the pump with liquid through the pump discharge or the priming port supplied with these units. It may be convenient to screw in a service tee or a tee with a nipple into the discharge, so that the pump can be filled (using the upper leg of the tee) without disconnecting the discharge hose or pipe. The vertical leg must be closed with a pipe plug during pumping. Remember, the pump is self-priming only when the pump casing has been filled. The pump should prime and re-prime without refilling. Refilling is necessary occasionally if an unusual siphoning has occurred, if the fluid has been lost by evaporation, and when the unit is moved to a new location.

▲ CAUTION

Do not run pump dry, as permanent damage to the mechanical seal will result.

5. Start the engine, following instructions in the engine manual.
6. With a suction lift of 5 to 10 feet, the pump should discharge liquid within one or two minutes. A suction lift of 20 feet can take 5 minutes of running time to pick up a prime. If pumping does not start within this time, shut off the engine, let unit cool down about 5 minutes, refill pump casing and retry. If engine does not start, refer to Engine Manual. If pump does not prime after two tries, refer to "Troubleshooting Chart" in this manual.
7. Properly fueled and lubricated, the pump/engine unit will run automatically without attention to the controls. The gasoline engine has a built-in governor and will adjust the speed of the engine automatically depending on the volume of water being delivered.

▲ WARNING

Even though this unit will operate with minimal supervision, it should not be left operating by itself. Depending on the application and area unit is operating (high traffic, people in area, etc.) will dictate the necessity of having someone watching over the unit.

MAINTENANCE

NOTE: Always flush pump thoroughly after use or if unit is not going to be used for any prolonged length of time to prevent crystallization and/or damage to seal and pump.

ROUTINE

1. Pump should be drained when subjected to freezing temperatures. A drain plug is provided on the pump casing.
2. Clean the suction line strainer at regular intervals.
3. If the engine is equipped with a spark arrestor screen in the muffler, it should be inspected for wear periodically and replaced when necessary.

NOTE: For information pertaining to the engine and engine parts, consult the Engine Manual or contact the nearest authorized service representative or the manufacturer.

4. Periodically check nuts and bolts on engine, mounting frame and pump. Since this is a gas engine pump, vibration levels tend to loosen nuts and bolts faster than normal. Use Loctite (thread sealant) on threads or lock washers if necessary.

TROUBLESHOOTING CHART

Problem	Possible Cause(s)	Corrective Action
Little or no discharge and unit will not prime	1 Casing not filled with water.	1 Fill pump casing. Using a foot valve will extend pump life and facilitate immediate priming.
	2 Total head too high.	2 Shorten suction lift and/or discharge head.
	3 Suction head exceeds that for which pump is designed.	3 Shorten suction line and/or vertical distance from liquid to pump, install foot valve and prime.
	4 Impeller partially or completely plugged.	4 Disassemble pump and clean out impeller.
	5 Hole or air leak in suction line.	5 Repair or replace suction line.
	6 Foot valve too small.	6 Match foot valve to piping or install one size larger foot valve.
	7 Impeller damaged.	7 Disassemble pump and replace impeller.
	8 Foot valve or suction line not submerged deep enough in water, pulling air.	8 Submerge lower in water.
	9 Insufficient inlet pressure or suction head.	9 Increase outlet pressure by adding more water to tank or increasing back pressure by turning gate valve on discharge line to partially closed position.
	10 Suction piping too small.	10 Increase pipe size to pump inlet size or larger.
	11 Casing gasket leaking.	11 Replace.
	12 Suction or discharge line valves closed.	12 Open.
	13 Hand prime or exhaust prime models.	13 Reference pump specific Information and Repair Parts Manual for details.
Loss of suction after satisfactory operation	1 Air leak in suction line.	1 Repair or replace suction line.
	2 When unit was last turned off, water syphoned out of pump casing.	2 Refill (reprime) pump casing before restarting.
	3 Suction head exceeds that for which pump was designed.	3 Shorten suction line and/or vertical distance from liquid to pump, install foot valve and prime.
	4 Insufficient inlet pressure or suction head.	4 Increase inlet pressure by adding more water to tank or increasing back pressure by turning gate valve on discharge line to practically closed position.
	5 Clogged foot-valve, strainer or pump.	5 Unclog, clean or replace as necessary.
Pump overloads driver (gas engine shuts off before complete hose fill)	1 Total head lower than pump rating. Unit delivering too much water.	1 Increase back pressure on pumping by turning gate valve on discharge line to practically closed position that will not overload motor.
	2 Specific gravity and viscosity of liquid being pumped different than the pump rating.	2 Pump is designed for water, use only for liquid which have similar characteristics.
	3 Speed too high.	3 Check and correct, lower speed.
Pump vibrates and/or makes excessive noise	1 Mounting plate or foundation not rigid enough.	1 Reinforce.
	2 Foreign matter in pump causing unbalance.	2 Disassemble pump and remove.
	3 Impeller bent.	3 Replace impeller.
	4 Cavitation present.	4 Check suction line for proper size and check valve in suction line if completely open, remove any sharp bends before and shorten suction line.

TROUBLESHOOTING CHART (continued)

Problem	Possible Cause(s)	Corrective Action
Pump runs, but no fluid	1 Faulty suction piping (air leak). 2 Pump located too far from fluid source. 3 Valve closed. 4 Clogged strainer. 5 Fouled foot valve. 6 Discharge height too great.	1 Replace. 2 Relocate. 3 Open. 4 Clean or replace. 5 Clean or replace. 5 Lower the height.
Pump leaks at shaft	1 Worn mechanical seal.	1 Replace.
Engine will not start or run (or when you pull rope to start, it will not move)	1 Stone or foreign object lodged in impeller. 2 No oil in crank case.	1 Disassemble pump and remove stone or foreign object. 2 Fill oil to overflowing, or check dipstick. See engine manual.

NOTES:

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General Information

SALES POLICY: AMT products are sold through our established Distributors. We do not sell direct to the consumer or organization not entitled to trade recognition. Therefore, possession of our catalogs and/or price list(s) does not infer an offer to sell.

MINIMUM ORDER: We appreciate your order, however, all orders are subject to a minimum \$35.00 net invoice charge (excluding freight). This applies to all pump and parts purchase orders.

PRICES: Prices are subject to change without notice. All orders accepted are subject to prices in effect at time of shipment.

PAYMENT TERMS: Terms, upon establishment of credit, are Net 30 days. Past due accounts may be subject to a service charge of 1.5% per month. Domestic or assignable letter of credit is required for all export trade.

PAST DUE ACCOUNTS: AMT reserves the right to withhold open account shipments on any past due account. Invoices are considered past due after thirty (30) days. In the interest of sound business, all orders are subject to approval of the Credit Department.

SHIPPING INSTRUCTIONS: All shipments will be made F.O.B. the factory. Where instructions for shipment do not appear on the order, the shipment will be made according to our best judgment. Full risk of loss (including transportation delays and losses) shall pass to the customer upon delivery of the products to the carrier at the F.O.B. point. When loss or delay occurs, primary responsibility for tracing rests with the customer. When there is LOSS or APPARENT VISIBLE DAMAGE to a shipment, when tendered for delivery, **DO NOT** give the carrier a clear receipt. Note such damage on the carrier's delivery receipt and **HAVE THE DRIVER SIGN THE RECEIPT.**

PRODUCT REVISIONS: AMT reserves the right to discontinue, change or improve its products or any portions thereof without being obligated to provide such a change or improvement for units sold and/or shipped prior to such a change or improvement.

LEAD TIME: Products designated "Quick Ship Product", also referred to as "QSP" will normally be shipped within 24 hours of receipt of a non-cancellable purchase order. Only limited quantities of "QSP" pumps are available.

STANDARD LEAD TIME: Lead time is two weeks for all non "QSP" product. AMT reserves the right to revise lead times as required due to availability of materials and all other causes beyond our control.

VIP SHIPMENT: Select AMT and IPT branded pumps are available for next day shipment for non-QSP (Quick Ship Products) items and subjected to a specific model surcharge per unit noted in the respective price book. Requires calling for availability, confirmation and a non-cancellable purchase order or credit card payment prior to shipment. The expedited shipping charges are an additional cost added separately from the VIP charges per item. AMT reserves the right to revise lead times as required due to availability of materials and all other causes beyond our control. QSP quantities are limited as determined by AMT.

ALL purchase orders must be submitted via hard copy sent to AMT customer service department by fax, EDI or e-mail.

RETURN GOODS POLICY: Goods shall not be returned without a return goods authorization number (RGA) issued by AMT customer service. The RGA number must be listed on the packing list. Only current model and part numbers with a valid date code may be returned (within one year from date of purchase). **A 20% restocking and packaging charge will apply to all returns. All shipping charges must be pre-paid. No exceptions.**

ORDER CHANGES BY CUSTOMER: Orders in process may not be changed except with written consent and may be subject to special charges.

12 Month Limited Warranty

EXTENT AND DURATION OF LIMITED WARRANTY

Coverage: AMT Pump Company (herein "AMT") or IPT Pumps by Gorman-Rupp (herein "IPT") or Gorman-Rupp Industries Division of the The Gorman-Rupp Company, Patterson, or the Gorman-Rupp Company (herein referred to as "G-R Unit") each individually warrants that its products and parts shall be free from defects in material and workmanship for twelve (12) months from the date of purchase by the original end user when installation is made and maintenance is performed in accordance with G-R Unit's recommendations. Wear and tear resulting from use and items normally consumed in use are not covered.

EXCEPTIONS

(A) This Limited Warranty shall not apply to mechanical seals in AMT or IPT pumps and the following products and parts: engines, motors, trade accessories and all other products, components, parts and materials not manufactured by the G-R Units. These items may, however, be covered by the warranties of their respective manufacturers. (B) This warranty does not extend to or apply to any unit which has been repaired or altered at any place other than by a G-R Unit, or by persons not expressly approved by a G-R Unit to make repairs or alterations, nor to any unit the serial number, model number or identification of which has been removed, defaced or altered. (C) This warranty does not extend to any product manufactured by a G-R Unit, which has been subjected to mis-use, neglect, accident, improper installation, or use in violation of instructions furnished by a G-R Unit. (D) Pump Kits: This warranty does not extend to any product sold by a G-R Unit unassembled as a Pump Kit. Pump Kits are warranted against defects in material and workmanship for 60 days from the date of shipment from a G-R Unit. Any Pump Kit parts deemed defective by a G-R Unit will be replaced free of charge within 60 days of shipment. Pump Kits are not returnable for credit.

LIMITATIONS

THE G-R UNITS' SOLE AND EXCLUSIVE WARRANTY WITH RESPECT TO THEIR PRODUCTS AND PARTS IS THIS LIMITED WARRANTY. THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER EXPRESS AND/OR IMPLIED WARRANTIES, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE.

EXCLUSIVE REMEDY AND DAMAGES

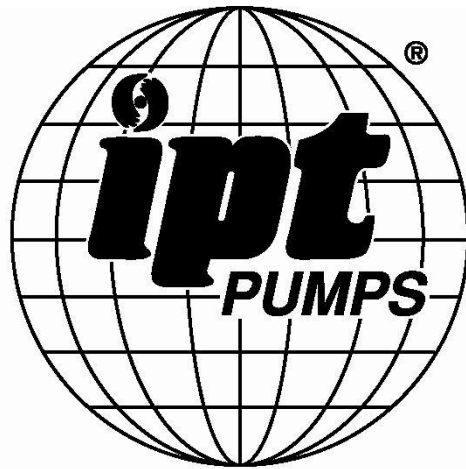
The sole and exclusive remedy for breach of this Warranty by a G-R Unit and the entire extent of its liability for such breach or for damages arising from the use of the products and parts covered under this Limited Warranty, shall be as follows:

1. **Repair or Replacement:** If inspection shows that any G-R Unit product or part covered under this Limited Warranty is defective in materials or workmanship, the G-R Unit shall repair or replace the defective or non-conforming product or part without charge, whichever the G-R Unit chooses. You must have properly maintained and used the product or part claimed to be defective in accordance with the maintenance schedule or manual, which comes with the product. No allowance will be made for labor, installation, removal, transportation or other charges incurred by you in connection with such repair or replacement.
2. To obtain the above remedy:
 - A. Immediately notify the G-R Unit upon discovery of the claimed defect in materials or workmanship and provide the serial number or date code of the product and/or part(s) or provide the G-R Unit with the invoice or bill of sale referencing the product by no later than the expiration date of the warranty period.
 - B. The G-R Unit will advise whether inspection will be necessary and how whether repair or replacement will be made. If inspection by the G-R Unit is necessary, the pump or defective part must be sent freight pre-paid to the G-R Unit. Return shipment will be F.O.B. the G-R Unit's plant.
 - C. **Return Goods Authorization Requirement:** No product will be accepted for return or replacement without the prior written authorization of the G-R Unit. Upon such authorization, and in accordance with instructions from the G-R Unit, the product will be returned to the G-R Unit, shipping charges prepaid by the Buyer.
3. **Damages:** The G-R Unit's liability for damages for breach of this Limited Warranty shall not exceed the amount of the purchase price of the product or part(s) in respect to which Such damages are claimed. **IN NO EVENT SHALL THE G-R UNITS BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES FOR BREACH OF THIS LIMITED WARRANTY.**

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This Limited Warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.



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