

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.

“HY” Self Priming Pump Series

Refer to form 1808-633-00 for General Operating and Safety Instructions.



DESCRIPTION

This is a single stage centrifugal pump designed for agricultural and general dewatering service. It is close coupled to an internal combustion engine and protected by a steel roll frame equipped with four lift/carry handles. Pump construction is rugged and allows for easy maintenance. Unit will self prime to 20' with casing filled with liquid.

Units are designed to handle clean water and water containing small solids. Cast iron suction and discharge flanges are male threaded NPT standard “3HY”=3” male NPT, “4HY”=4” male NPT thread.

Liquid temperature range is 40 F to 180 F maximum (4 C to 80 C). Maximum casing pressure is 95 psi (650 kPa). For use with nonflammable liquids that are chemically compatible with pump component materials.

SPECIFICATIONS

Suction inlet	3HY = 3” Male NPT 4HY = 4” Male NPT
Discharge outlet	3HY = 3” Male NPT 4HY = 4” Male NPT
Dimensions overall (Length x Width x Height)	3HY = 32” x 32” x 25” 4HY = 50” x 32” x 25”
Engine and fuel tank size	3HY13HR = Honda GX390, 6.9 quarts 4HY23HR = Honda GX690, 15 gallons

BASIC CONSTRUCTION

Pump is constructed of sand cast aluminum with a cast iron impeller, volute, and suction/discharge flanges. 3HY13HR is directly built on the engine 1”-14 PTO shaft. 4HY23HR utilizes a ball bearing support stub shaft to connect to engine 1-1/8” keyed PTO shaft. Impeller connects to 1”-14 stub shaft end. Drive shaft is sealed with a mechanical shaft seal, silicon carbide stationary seat, carbon rotating ring, EPDM elastomers, and stainless steel spring and components. All wetted O-rings and flat gaskets are EPDM. Suction utilizes a built in EPDM swing check valve to assist in keeping casing full of liquid for re-priming after initial fill.

UNPACKING

Refer to repair parts illustrations and lists to aid in identifying pump components. Unpack and separate all pump components from shipping/packaging materials, making sure all parts are accounted for. Retain all manuals for future reference.

Package should contain:

- Pump/engine completely assembled and mounted in roll frame.
- 4HY23HR includes fuel tank mounted to roll frame.
- Rubber feet with fasteners in bag.
- Frame handle parts bag.
- Battery tray and hold down parts bag.
- Engine owner's manual.
- Pump general safety manual.
- Specifications, information, and repair parts manual.

ASSEMBLY

Refer to repair parts explosion and repair parts list for reference numbers ().

Roll Frame Handle Assembly:

1. Install pivot bearing (F6) in frame (F1) hole. Ends of bearing must be flush with outside of frame square tube.
2. Hold Handle (F3) perpendicular to frame tube upright.
3. Slide handle end ears over frame tube until handle tube end contacts frame.
4. Align handle ear hole with bearing in frame.
5. Install pivot pin (F5) and pin end cotter (F7).
6. Install lock pin (F4) in other handle ear hole. Secure with cotter (F7).
7. Handle can be locked in the up or down position with lock pin.
8. Repeat procedure for three remaining handles.

Rubber Feet Assembly:

1. Install bolt (F14) through rubber foot (F13) center hole. Slide bolt through hole provided in lower tube of roll frame at engine end.
2. Fix in position with hex nut (F15).
3. Repeat in corresponding hole in other lower frame rail.
4. 3HY13HR; repeat in two holes at pump end of frame.
5. 4HY23HR; repeat in two rear holes of fuel tank rails (F31)
6. 4HY23HR; Remove bolts (F14) holding front of pump mounting bracket (F17) to frame. Install rubber feet on these bolts. Reinstall both with a hex nut.

Battery Tray Assembly:

1. Locate battery tray (F9) on two engine mount frame rails.
2. Install two bolts (F10) flat washers and nuts. Secure to frame rail.
3. Install “J” bolts in tray slots.
4. Install hold down angle on “J” bolt threaded ends, fix with wing nuts.

Install Battery:

1. Maximum battery size is 5-1/4” wide x 7-3/4” long U1/U1R Lawn and Garden battery. Battery 230 CCA (Cold Cranking Amps) or greater.
2. Position battery in tray with (+) terminal towards engine end of frame and (-) battery towards pump end of frame, recommended, or other orientation if needed with battery used. Maintain sufficient clearance between battery terminals and engine, roll frame, and pump end.
3. Hold battery in position with hold down angle and wing nuts on “J” bolts. Tighten wing nuts sufficiently. Do not over tighten.

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- Connect battery cables to proper battery terminal, Red cable is positive connect to threaded stud on engine starter. Black is negative (ground) connect to engine foot and/or roll frame (fasteners not provided).

INSTALLATION

Review all safety information located in safety manual.

Follow the instructions on all tags, labels, and decals attached to the pump.

Since pump installations are seldom identical, this section offers only general recommendations and practices required to inspect, position, and arrange the pump and piping.

Most of the information pertains to a standard static lift application where the pump is positioned above the free level of the liquid pumped.

If installed in a flooded suction application where the liquid is supplied to the pump by gravity or under pressure, some of the information such as mounting, line configuration, and priming must be tailored to the specific application. Be sure to limit the incoming pressure if required, so the maximum casing pressure does not exceed 90 psi (620 kPa).

Pre-Installation Inspection

The pump assembly was inspected before shipment from the factory. Before installation, inspect the pump for damage, which may have occurred during shipment or in storage. Check as follows:

- Inspect pump casing for cracks, damaged threads, and other obvious damage.
- Check for and tighten loose fasteners.
- Carefully read all hang tags, labels, and markings on the unit. Follow the instructions indicated.
- Check engine oil level. Follow manufacturer's recommendations listed in the engine manual.
- If unit has been stored for more than 12 months, replace engine oil. Drain any fuel and replace with fresh fuel.
- Check condition of suction strainer, clean if clogged with debris.

Positioning Pump

Pump/engine is mounted in a roll frame that has (4) four lifting handles built in. Handle has (2) two pins installed. The pivot pin goes through handle end plates and directly through frame tube. Second is the lock pin, it goes through handle end plates only.

To raise and lower handles:

- Remove cotter from lock pin end.
- Remove lock pin.
- Swing handle tube up perpendicular to frame tube.
- Install lock pin, fix with cotter.
- To lower handle remove lock pin, swing handle down, reinstall lock pin. Lift and carry pump/engine/battery only with handles. Remove suction and discharge lines and all accessories from pump before lifting.

Mounting

Locate the pump in an accessible area as close as practical to the liquid being pumped.

Pump should be leveled if possible by shimming under rubber feet. For proper pump/engine operation unit should be within 15° of level. Continuous operation outside this limit may cause engine/pump damage.

System Piping/Hose

Flow through the system is reduced by increased suction lift, increased discharge elevation or discharge nozzle pressure, and increased friction losses.

- Keep suction and discharge lines as short and direct as possible to reduce friction losses. If elbows are necessary in discharge line, use long-radius type, when possible.
- Do not operate with coiled-up suction or discharge hose.
- Do not use valves in the suction line, unless necessary.

Casing HI/IN-LINE Suction Flange Positioning

Pump casing has provisions to install suction flange in the high position for consistent re-priming or in the in-line position for higher flow in flooded suction applications. Pump will prime only if casing is full of liquid. In a lift condition locating the suction flange in the in-line position may allow liquid to leak out of casing down the suction line when pump is not operating. Repriming will require a refill of the casing with liquid. Locating the suction flange in the HI position reduces the likelihood of enough liquid leaking out down the suction line to affect repriming.

To move suction flange:

- Remove four screws (33) holding suction flange (32) to casing (25) front machined face.
- Remove suction flange and swing check valve assembly (35-38) from casing.
- Loosen four screws (29) holding cleanout cover (28) to casing front face. Loosen only until screw disengages from threaded hole in casing. Screws are captive in cover and should not be removed completely from it.
- Remove cleanout cover and gasket from casing.
- Position suction flange and check valve. Install four screws.
- Position cleanout cover and gasket. Tighten four screws.

Suction Lines

The suction line must be as short and direct as possible.

When operating pump under a suction lift condition:

- To avoid air pockets that can affect pump priming, the line must always slope upward to the pump from the liquid source. If the line slopes down at any point along the suction run air pockets will be created.
- Hose or pipe size must match pump suction port size.
- The maximum vertical lift cannot exceed 20 feet (6.1 meters).
- If hose is used for the suction line, it must be the rigid wall reinforced type to prevent collapse.
- Fittings such as elbows or valves are not recommended in the suction line.

When operating pump in a flooded suction gravity feed condition:

- Keep suction line as short and direct as possible. Avoid dips and high spots.
- Hose or pipe size cannot be smaller than suction port size.
- If hose is used it must be non-collapsible.
- Use as few elbows as possible.

Strainers

When pumping liquid that may contain solids use a suction strainer to prevent large solids from entering the pump.

- 3HY pumps can accept a maximum 3/4" spherical diameter solid.
- 4HY a maximum 1" spherical diameter solid.

It is good practice to use a strainer with slightly smaller openings.

Rated solid size is for a spherical diameter, any solid must not be larger than the spherical diameter, smaller diameter but longer cylindrical solids will not pass through pump.

Long and stringy material in the liquid will clog the pump.

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Discharge Lines

- Use hose or piping that is rated above maximum system line pressure.
- To reduce friction head, keep lines as short and direct as possible. Make minimum use of elbows and fittings since those two items substantially increase friction loss in the discharge line.
- Use pressure relief recirculation loop if system allows the pump to run at shutoff for longer than 1 minute or if casing internal pressure exceeds rated 95 psi. There must be a minimum of 20 gallons per minute flow rate after 1 minute at no flow is exceeded.
- Do not terminate the discharge line at a level lower than that of the liquid being pumped unless a siphon break is used in the line. Otherwise a siphoning action causing damage the pump and flooding could result.

Valves

If a check valve is used in the discharge the pump may have difficulty repriming due to an air locked condition. If a check valve is used provisions to prevent an air locked condition at the pump must be incorporated in the system.

If a throttling valve is desired it must be installed in the discharge line never in the suction line. The valve must be at least the same size as the largest discharge line diameter.

Connections to the Pump

Even a slight leak in the suction line connection will adversely affect priming capacity, especially when operated with a high suction lift.

All threaded connections in the suction line must be sealed with pipe sealant to ensure an airtight seal. Check all hose connection gaskets; replace any that are cracked, worn or no longer elastic.

Suction Lines in Sumps/Pits

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 1-1/2 times the nominal diameter of the suction line.

If there is a liquid flow from an open pipe into the sump, the flow should be kept away from the suction inlet. 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 the inflow close to the suction inlet, install a baffle between the inflow and the suction inlet at a distance 1-1/2 times the diameter of the suction line.

Suction Line Positioning

The depth of the suction line is critical to efficient pump operation. Make certain end of suction line is far enough under the liquid surface. If a vortex is noticed at suction line end, submerge end deeper.

OPERATION

Review all **SAFETY** information in the pump General Safety Manual.

Follow the instructions on all tags, labels, and decals attached to pump.

Priming

This is a self-priming pump. Pump will prime to a maximum lift of 20 feet (6.1 meters) if the casing is full of liquid when engine is started. Self priming function of pump relies on a casing filled with liquid. If casing is partially filled or empty pump will not self prime.

Casing (25) fill plug (26) is located on top next to suction boss, and/or fill plug (45) is located on top of discharge manifold (42). Use fill plug to fill casing with liquid to ensure fast and complete priming.

Run engine at full throttle during the priming cycle. Once the pump primes and full flow is accomplished engine throttle may be regulated to produce desired flow rate.

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If pump has not fully primed in approximately 5 minutes stop engine and check for suction connection or line leaks, high spots/air pockets in suction line, insufficient liquid level at end of suction line, insufficient liquid level in pump casing or any other condition that will affect priming. Move pump closer to liquid source.

Let pump cool down completely. Refill casing and retry priming cycle.

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.

Liquid Temperature and Overheating

The maximum liquid temperature for the pump is 180 F (82 C). Do not exceed this liquid temperature.

Overheating can occur if pump is operated against a closed discharge valve or if priming cycle time is extended too long. Both conditions can bring liquid to a boil, build pressure, and cause the pump to rupture or explode. If overheating occurs, stop the pump and allow it to completely cool before servicing it. Refill the pump 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 that are disengaged to be ejected with great force. Allow the pump to completely cool before servicing.

Strainer Check

Check suction strainer regularly and clean it as necessary. The strainer should also be checked if pump flow rate begins to drop.

Stopping

Never halt the flow of liquid suddenly. If the liquid being pumped is stopped abruptly damaging shock waves can be transmitted to the pump and piping system. Close all valves slowly.

If the application involves a high static discharge head, gradually close the discharge throttling valve before stopping the pump. The pump discharge check valve may be damaged if liquid in the discharge piping suddenly reverses direction when the engine is stopped.

Cold Weather Preservation

In below freezing conditions, completely drain the pump and piping system to prevent damage from freezing. If pump will sit idle for more than a few hours remove casing and cleanout cover. Remove any residual liquid to prevent freezing.

MAINTENANCE

Preventative Maintenance

Since pump applications are seldom identical and pump wear is directly affected by such things as the abrasive qualities, pressure and temperature of the liquid being pumped, this section is intended only to provide general recommendations and practices for preventive maintenance. Regardless of the application, following a routine preventive maintenance schedule will help assure trouble free performance and long life from your pump. Keep a log of inspections to better track service part replacement and maintenance intervals.

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For new applications, a first inspection of wearing parts at 250 hours will give insight into the wear rate for your application. Subsequent inspections should be performed at regular intervals. Critical applications should be inspected more frequently.

DAILY:

General condition (temperature, unusual noises or vibrations, cracks, leaks, loose hardware, etc).

Pump performance (gauges, speed, flow).

MONTHLY:

Stub shaft ball bearing check (excessive wear/play, water damage).

Mechanical shaft seal (check for leakage).

SEMI-ANNUALLY:

Impeller to volute running clearance (check for excessive wear affecting performance).

PER ENGINE MANUFACTURER'S SERVICE MANUAL:

Engine lubrication (check level, change oil and filter per manufacturer's recommendations)

PUMP/SEAL DISASSEMBLY & REASSEMBLY

Review all **SAFETY** information in the pump General Safety Manual.

Follow the instructions on all tags, labels, and decals attached to pump.

This pump requires little service. When it becomes necessary to inspect or replace the wearing parts, follow these instructions that are keyed to the repair part lists and repair part explosions.

This manual will alert personnel to known procedures that require special attention, could damage equipment or be dangerous to personnel. However, this manual cannot possibly anticipate and provide detailed precautions for every situation that might occur during maintenance of the unit. Therefore, it is the responsibility of the owner/maintenance personnel to ensure that only safe, established shop procedures are used and that any procedures not addressed in this manual are performed only after establishing that neither personal safety nor pump integrity are compromised by such practices.

▲WARNING

Before attempting to service the pump, switch off the engine ignition and remove the spark plug or take other precautions to ensure that it will remain inoperable. Close all valves in the discharge lines.

Before attempting to service the pump:

- Familiarize yourself with this manual.
- Shut down the engine and remove the spark plug wires to ensure that the pump will remain inoperative.
- Allow the pump to completely cool if overheated.
- Check the temperature before opening any covers, plates, or plugs.
- Close the discharge valve.
- Vent the pump slowly and cautiously.
- Drain the pump.

For engine repair, consult the engine manual or contact your local engine service representative.

PUMP DISASSEMBLY

For access to the impeller (14) and shaft seal assembly (18 & 19) following procedures:

Drain Pump:

1. Remove the casing drain plug (26) located on front bottom of casing (25).
2. Drain all liquid from the pump. Clean plug and install back in casing drain port.

Remove Casing:

1. Remove suction hose/piping from suction flange (32) located on front of casing.
2. Loosen eight bolts (39) holding casing to bracket (22). Slide bolt, washer (40) and nut (41) assemblies from casing and bracket ears. Remove top and bottom bolts first followed by side bolts.
3. Remove casing assembly from bracket.

Remove Volute:

1. Remove two hex nuts (24) on back of bracket towards engine that fasten the volute to the bracket.
2. Slide volute out disengaging studs (21) from bracket uncovering the impeller.

Remove Bracket:

1. Remove discharge hose/piping from flange (32) located on side of discharge manifold (42).
2. Remove four bolts (F19) and nuts (F20) holding casing feet to frame bracket.
3. Remove eight screws (23) holding bracket to bearing housing (6) or adapter (2) depending on model.
4. Slide bracket off seal plate (13), remove from frame (F1) set to the side.

Remove Impeller:

1. Unthread impeller counterclockwise from threaded PTO shaft. Use a piece of wood or aluminum bar and mallet to strike impeller vane tip with a downward force to break impeller thread free.
2. Remove impeller.

Seal Removal and Disassembly:

1. Remove impeller shims (17) if so equipped, not all pumps will require shims. Pumps that do, number of shims will vary from pump to pump. Tie and tag the shims or measure and record their thickness for ease of reassembly.
2. Remove the seal spring from the seal rotating head (18), then slide the shaft sleeve (15) with rotating head attached from the threaded shaft.
3. Mark the position of the seal rotating head face on the shaft sleeve with a marker. Slide the seal head assembly off the sleeve.
4. Remove the seal plate (13) from the bearing housing or adapter. Seal plate is located with a slide fit and should slide straight out of pocket.
5. Remove the stationary seal ring (19) from the seal plate.

PUMP REASSEMBLY

Seal Reassembly and Installation:

The seal should not be reused. Leak free operation cannot be guaranteed if old mechanical seal is reused.

Never mix old and new seal parts. Always replace the shaft seal as a complete unit.

Handle the seal parts with extreme care to avoid damage to the precision lapped sealing faces.

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Clean the shaft sleeve, or replace it if there are cuts or nicks in either end.

Clean the seal stationary seat bore in the seal plate.

Remove replacement seal from its packaging and inspect the precision finished faces to ensure that they are free of any foreign matter. Remove seal spring retainer if replacement seal is so equipped. In this pump the seal spring is centered on the impeller hub. The spring retainer supplied with the replacement seal is not needed and should not be used.

To ease installation of the seal; lubricate the inside of rotating head rubber bellows and the stationary ring o-ring with soapy water.

1. Press a new seal stationary seat into the seal plate bore. Make certain the seal seat is pressed squarely into the bore, that the o-ring isn't damaged during installation, and that the seal seat ring bottoms evenly in bore.
2. Reinstall the seal plate into the bearing housing or adapter depending on model.
3. Slide the rotating portion of the seal onto the sleeve. Position lapped face in the same orientation as old seal and slide on to mark previously made on sleeve at old seal head removal.
4. Slide the sleeve onto the threaded shaft until the seal faces contact. Make sure the end of the shaft sleeve is contacting the shaft collar (16) located on the threaded shaft.
5. Install the seal spring. Make sure that all components of the seal are seated squarely.

Install Impeller:

Install impeller shims previously removed if so equipped. Inspect impeller and replace it if cracked or badly worn.

1. Position impeller on end of threaded shaft. Impeller threads on clockwise. Thread impeller onto shaft until it seats squarely against shaft sleeve or shims. Make certain that the seal spring is centered on the impeller machined hub.

Install Bracket:

Make certain that the seal plate to bracket sealing o-ring (48) is in place on the seal plate machined bracket locating diameter.

1. Position bracket on seal plate diameter. Slide bracket onto seal plate.
2. Install eight screws securing bracket.
3. Install four bolts, washers, and nuts holding bracket mounting foot to the frame.

Install Volute:

Make certain that the two sealing o-rings (49) are in place on the two volute threaded mounting studs (21).

1. Locate threaded studs in holes in bracket. Slide volute over impeller into bracket until it bottoms.
2. Install two hex nuts to secure volute to bracket.

Impeller to Volute clearance:

If all original parts are reassembled when replacing the mechanical shaft seal impeller to volute clearance should remain the same as before disassembly.

If the impeller, shaft sleeve, or volute has been replaced with a new part the impeller to volute clearance must be checked/set.

1. Install 0.02" to 0.04" more shims in addition to the shims originally removed.
2. When tightening the hex nuts (24) securing the volute to the bracket rotate the impeller by periodically bumping over the engine starter. Make sure the impeller spins freely at all times.
3. If impeller contacts or scrapes against the volute disassemble and remove a shim. Repeat until impeller rotates freely when the volute is securely fastened to the bracket.
4. If on initial reassembly the impeller rotates freely all the way up to when

the volute is secured to the bracket disassemble and install another shim. Repeat until impeller hits or scrapes volute disassemble and then remove one shim.

5. Impeller to volute clearance at reassembly should be between 0.01" minimum and 0.03" maximum.

Install Casing:

Make certain that the casing sealing o-ring (47) is in place on the casing. Make certain that the volute nose gasket (50) is in place and not damaged or stretched.

1. Position casing locating boss into the corresponding bore machined into bracket. Slide casing on until the volute nose contacts the volute nose gasket.
2. Install bolt, washer, nut assemblies into casing/bracket ears. For ease of assembly position hex nut onto bolt with minimal thread engagement to expand grip length to its maxim. Install the bolt assemblies into the side ears first alternating from side to side. Tighten bolts slightly to compress the volute nose gasket, tighten alternating side to side to start casing into bracket squarely. Install bolt assemblies in top and bottom ears tighten all bolts by alternating side to side and top to bottom until casing is fully seated.

REPLACING STUB SHAFT BEARING [4HY23HR]

Remove Bearing:

1. Follow PUMP DISASSEMBLY section. Remove all components including seal plate.
2. Loosen set screw (8) in stub shaft (7).
3. Remove nuts (5) holding engine adapter (2) to engine (1).
4. Slide bearing housing/engine adapter/stub shaft assembly off engine shaft. Be sure to keep drive key (11) if it falls out of stub shaft or engine PTO shaft.
5. Remove four screws (12) fastening engine adapter to bearing housing (6).
6. In an arbor press position bearing housing on support with threaded portion of stub shaft facing up.
7. Press down on threaded end of stub shaft dislodging stub shaft and bearing (10) from bearing housing.
8. Remove external retaining ring (9) from stub shaft.
9. Press bearing off stub shaft.

Install New Bearing:

1. Position new 4209 2RS lubricated double sealed ball bearing on threaded end of stub shaft. Press on bearing inner ring until seated against stub shaft shoulder.
2. Install retaining ring.
3. Position bearing in bearing housing bore with threaded end of stub shaft down towards bracket flange. Press on stub shaft until bearing is seated against shoulder at bottom of bore.
4. Locate engine adapter in bearing housing bore. Secure with screws.
5. Reinstall drive key in engine shaft.
6. Align keyway in stub shaft with drive key. Slide assembly onto engine shaft until engine adapter contacts engine mounting face. Use of anti-seize compound between engine shaft and stub shaft bore is recommended.
7. Fasten adapter to engine with nuts.
8. Tighten set screw in stub shaft on drive key.
9. Replace remainder of pump as described in PUMP REASSEMBLY section.

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For Repair Parts contact dealer where pump was purchased.

Please provide following information:

-Model Number

-Serial Number (if any)

Part description and number as shown in parts list

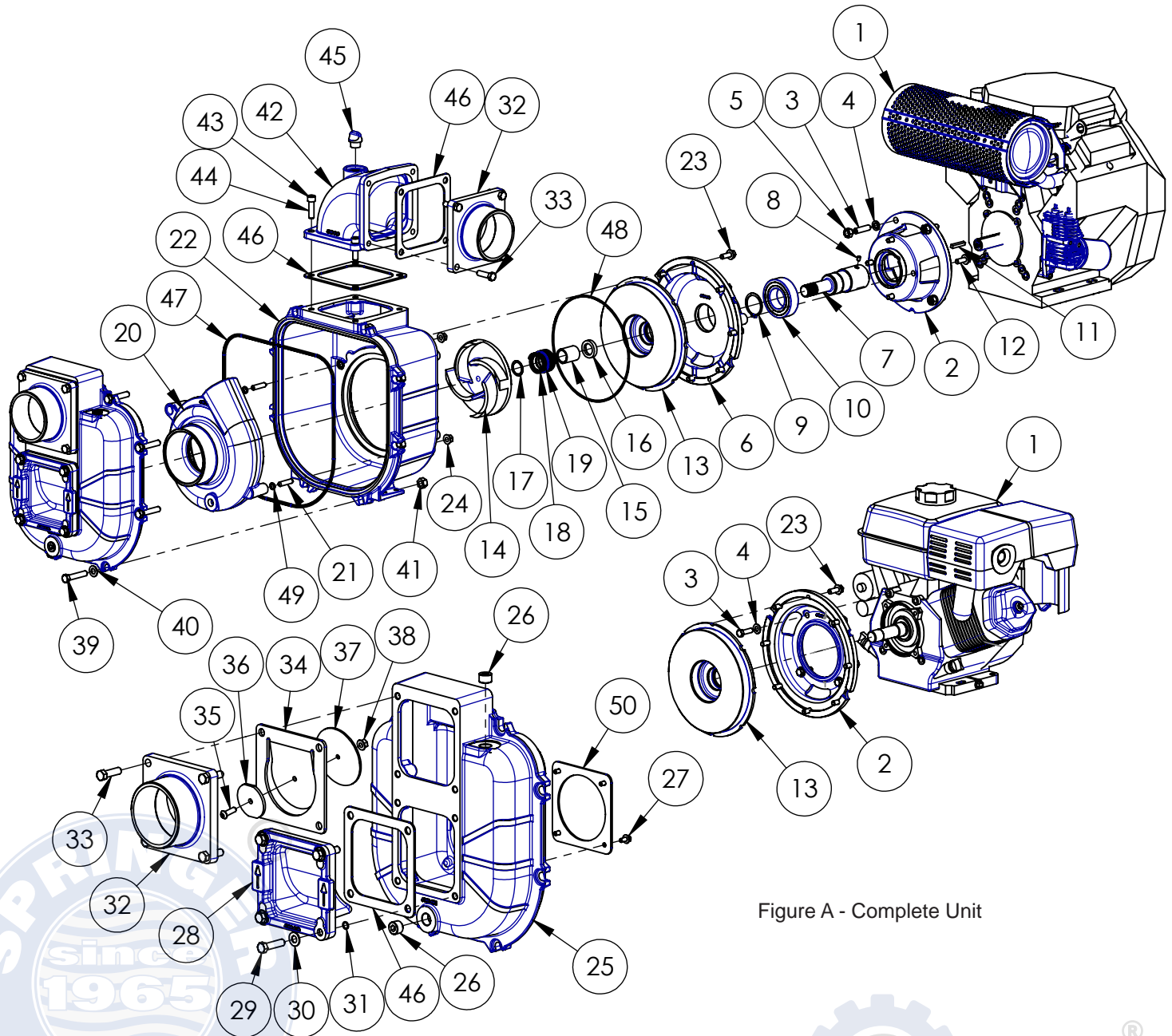


Figure A - Complete Unit



Repair Parts List - Complete Unit (Reference Figure A)

Ref No.	Description	Part Number of Model		Qty
		3HY13HR	4HY23HR	
1	Engine - Honda GX390 + E-Start	1639-031-00	N/A	1
	Engine - Honda GX690 + E-Start	N/A	1639-010-90	1
2	Adapter Kit (includes Ref. Nos. 2, 3, 4 and 5)	6100-030-90	6100-091-91	1
3	Hex Head Screw	Incl. w/2	N/A	4
	Threaded Stud	N/A	Incl. w/2	4
4	SAE Washer	Incl. w/2	N/A	4
	Lock Washer	N/A	Incl. w/2	4
5	Hex Nut	N/A	Incl. w/2	4
6	Bearing Housing Kit (includes Ref. Nos. 6, 7, 8, 9, 10, 11 and 12)	N/A	6100-090-91	1
7	Stub Shaft	N/A	Incl. w/6	1
8	Set Screw	N/A	Incl. w/6	1
9	Retaining Ring	N/A	Incl. w/6	1
10	Sealed Bearing	N/A	Incl. w/6	1
11	Drive Key	N/A	Incl. w/6	1
12	Hex Screw	N/A	Incl. w/6	4
13	Seal Plate	25FP-020-90	25FP-020-90	1
14	Impeller Kit (includes Ref. Nos. 14, 15, 16 and 17)	6100-012-90	6100-011-90	1
15	Shaft Sleeve	Incl. w/A13	Incl. w/A13	1
16	Shaft Collar	Incl. w/A13	Incl. w/A13	1
17	Impeller Shims	Incl. w/A13	Incl. w/A13	4
18 & 19	Shaft Seal Assembly	1646-324-00	1646-324-00	1
20	Volute Kit (includes Ref. Nos. 20 and 21)	6100-152-90	6100-151-90	1
21	Threaded Stud	Incl. w/20	Incl. w/20	2
22	Bracket Kit (includes Ref. Nos. 22, 23 and 24)	6100-040-90	6100-040-90	1
23	Hex Screw	Incl. w/22	Incl. w/22	8
24	Hex Flange Nut	Incl. w/22	Incl. w/22	2
25	Casing Kit (includes Ref. Nos. 25, 26 and 27)	6100-001-90	6100-001-90	1
26	NPT Plug	Incl. w/25	Incl. w/25	2
27	Hex Flange Screw	Incl. w/25	Incl. w/25	4
28	Cleanout Cover Kit (includes Ref. Nos. 28, 29, 30 and 31)	6100-050-90	6100-050-90	1
29	Hex Screw	Incl. w/28	Incl. w/28	4
30	SAE Washer	Incl. w/28	Incl. w/28	4
31	O-ring EPDM	Incl. w/28	Incl. w/28	4
32	Suction Flange Kit (includes Ref. Nos. 32 and 33)	3S13-050-90	3993-050-90	1
33	Hex Screw	Incl. w/32	Incl. w/32	4
34	Check Valve Kit EPDM (includes Ref. Nos. 34, 35, 36, 37 and 38)	399C-076-90	399C-076-90	1
35	Bolt	Incl. w/34 & KIT	Incl. w/34 & KIT	1
36	Weight	Incl. w/34 & KIT	Incl. w/34 & KIT	1
37	Weight	Incl. w/34 & KIT	Incl. w/34 & KIT	1
38	Nut	Incl. w/34 & KIT	Incl. w/34 & KIT	1

Repair Parts List - Complete Unit (Reference Figure A) - CONTINUED

Ref No.	Description	Part Number of Model		Qty
		3HY13HR	4HY23HR	
39	Casing Fastener Kit (includes Ref. Nos. 39, 40 and 41)	6100-110-90	6100-110-90	1
40	SAE Washer	Incl. w/39	Incl. w/39	8
41	Hex Nut	Incl. w/39	Incl. w/39	8
42	Discharge Manifold Kit (includes Ref. Nos. 42, 43, 44 and 45)	6100-080-90	6100-080-90	1
43	Cap Screw	Incl. w/42	Incl. w/42	4
44	SAE Washer	Incl. w/42	Incl. w/42	4
45	NPT Plug	Incl. w/42	Incl. w/42	1
KIT	Gasket Kit (includes Ref. Nos. 46, 47, 48, 49 and 50)	6100-300-90	6100-300-90	1
46	Flange Gasket	Incl. w/KIT	Incl. w/KIT	3
47	Casing O-Ring EPDM	Incl. w/KIT	Incl. w/KIT	1
48	Bracket O-Ring EPDM	Incl. w/KIT	Incl. w/KIT	1
49	Volute O-Ring EPDM	Incl. w/KIT	Incl. w/KIT	2
50	Volute Nose Gasket EPDM	Incl. w/KIT	Incl. w/KIT	1



"HY" Self Priming Pump Series

For Repair Parts contact dealer where pump was purchased.

Please provide following information:

-Model Number

-Serial Number (if any)

Part description and number as shown in parts list

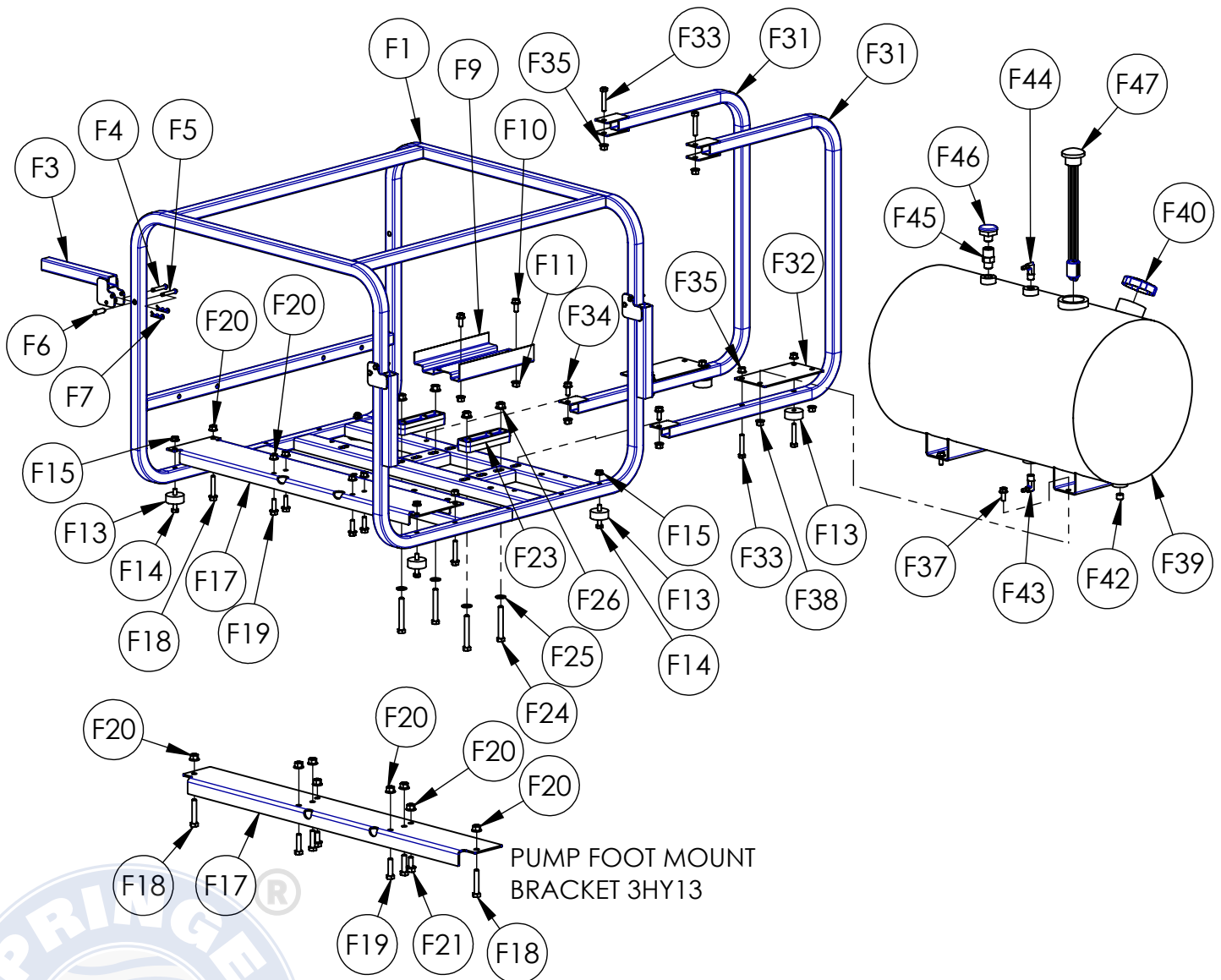
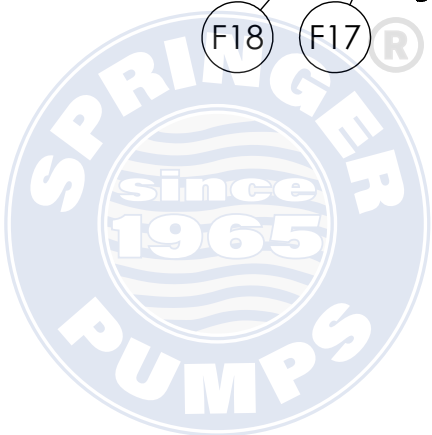


Figure B - Frame



Repair Parts List - Frame (Reference Figure B)

Ref No.	Description	Part Number of Model		Qty
		3HY13HR	4HY23HR	
F1	Roll Frame	C404-100-00	C404-100-00	1
F2	Handle Part Kit	C404-120-90	C404-120-90	1
	(includes Ref. Nos. F2, F3, F4, F5, F6 and F7)			
F3	Handle	Incl. w/F2	Incl. w/F2	4
F4	Lock Pin	Incl. w/F2	Incl. w/F2	4
F5	Pivot Pin	Incl. w/F2	Incl. w/F2	4
F6	Pivot Bearing	Incl. w/F2	Incl. w/F2	4
F7	Cotter Pin	Incl. w/F2	Incl. w/F2	4
F8	Battery Tray Kit	C404-107-90	C404-107-90	1
	(includes Ref. Nos. F9, F10 and F11)			
F9	Battery Tray and Hold Down Parts	Incl. w/F8	Incl. w/F8	1
F10	Bolt	Incl. w/F8	Incl. w/F8	2
F11	Hex Nut	Incl. w/F8	Incl. w/F8	2
F12	Rubber Foot Kit	C400-100-91	C400-100-90	1
	(includes Ref. Nos. F13, F14 and F15)			
F13	Rubber Foot	Incl. w/F12	N/A	4
	Incl. w/F12	N/A	Incl. w/F12	6
F14	Hex Botl	Incl. w/F12	N/A	4
	Hex Bolt	N/A	Incl. w/F12	6
F15	Hex Flange Nut	Incl. w/F12	N/A	4
	Hex Flange Nut	N/A	Incl. w/F12	6
F16	Pump Foot Mounting Bracket Parts Kit	6100-102-90	C404-122-90	1
	(includes Ref. Nos. F17, F18, F19, F20 and F21)			
F17	Pump Foot Mount Bracket	Incl. w/F16	Incl. w/F16	1
F18	Hex Bolt	Incl. w/F16	Incl. w/F16	2
F19	Hex Bolt	Incl. w/F16	Incl. w/F16	4
F20	Hex Flange Nut	Incl. w/F16	Incl. w/F16	8
F21	Hex Bolt	Incl. w/F16	Incl. w/F16	2
F22	Engine Mounting Hardware Parts Kit	6100-400-91	6100-400-90	1
	(includes Ref. Nos. F23, F24, F25, F26, F27, F28 and F29)			
F23	Raising Blocks	Incl. w/F22	Incl. w/F22	2
F24	Hex Bolt	Incl. w/F22	Incl. w/F22	4
F25	Flat Washet	Incl. w/F22	Incl. w/F22	4
F26	Hex Flange Nut	Incl. w/F22	Incl. w/F22	4
F27	Hex Flange Nut (not shown)	N/A	Incl. w/F22	2
F28	Flange Nut (not shown)	N/A	Incl. w/F22	2
F29	Drainzit Extended Oil Drain	N/A	Incl. w/F22	1
F30	Fuel Tank Frame Parts Kit	N/A	C404-110-90	1
	(includes Ref. Nos. F31, F32, F33, F34 and F35)			
F31	Fuel Tank Rail	N/A	Incl. w/F30	2
F32	Tank Frame Mount Plated	N/A	Incl. w/F30	2
F33	Hex Bolt	N/A	Incl. w/F30	6
F34	Hex Flange Bolt	N/A	Incl. w/F30	2
F35	Nex Flange Nut	N/A	Incl. w/F30	8
F36	Fule Tank Mount Hardware Parts Kit	N/A	5585-174-90	1
	(includes Ref. Nos. F37 and F38)			
F37	Hex Bolt	N/A	Incl. w/F36	4
F38	Hex Flange Nut	N/A	Incl. w/F36	4
F39	Fuel Tank	N/A	5585-174-00	1
F40	Fuel Cap Non-Venting	N/A	5585-172-00	1

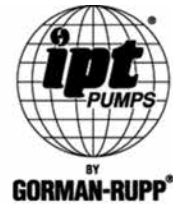
Repair Parts List - Frame (Reference Figure B) - CONTINUED

Ref No.	Description	Part Number of Model		Qty
		3HY13HR	4HY23HR	
F41	Fuel Tank Fittings and Hose Parts Kit (includes Ref. Nos. F42, F43, F44, F45, F46, F47, F48, F49 and F50)	N/A	5585-174-91	1
F42	NPT Plug	N/A	Incl. w/F41	1
F43	1/4 Hose Elbow	N/A	Incl. w/F41	1
F44	3/8 Hose Elbow	N/A	Incl. w/F41	1
F45	Check Valve	N/A	Incl. w/F41	1
F46	Weather Cap	N/A	Incl. w/F41	1
F47	Fuel Level Gauge	N/A	Incl. w/F41	1
F48	1/4" Low-Perm Fuel Hose (not shown)	N/A	Incl. w/F41	1
F49	3/8" Low-Perm Fuel Hose (not shown)	N/A	Incl. w/F41	1
F50	Hose Clamps (not shown)	N/A	Incl. w/F41	4
F51	Positive Battery Cable (not shown)	C401-105-90	C401-105-90	1
F52	Negative Battery Cable (not shown)	C401-104-90	C401-104-90	1
F53	Suction Strainer (not shown)	1680-000-00	1680-000-00	1





AMT Pump Company
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Fax: (610) 948-5300
www.amtpump.com



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.

AMT Pump Company, A Gorman-Rupp Company, 400 Spring Street, Royersford, PA 19468 USA