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Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.



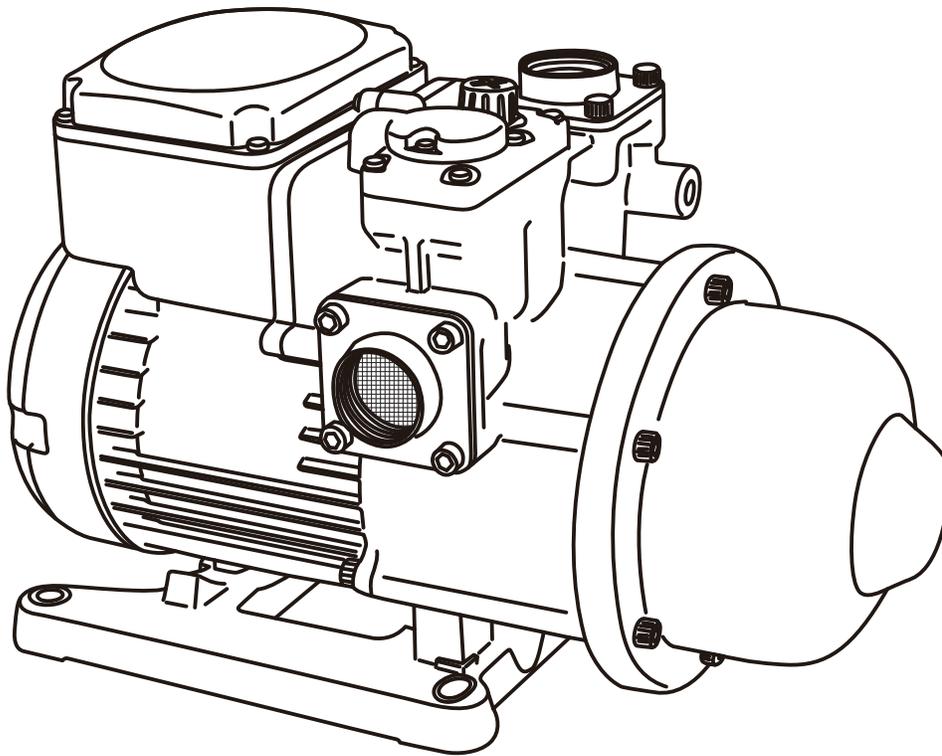
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CITY PRESSURE BOOSTER PUMP INSTRUCTION MANUAL

MODEL #350, 355



IL1962

GENERAL SAFETY INFORMATION

Please read and understand this manual before attempting to assemble, operate, or install this product. For questions, please call customer service at 1-800-742-5044 (7:30am - 5:00pm EST Mon. - Fri.)



This is a **SAFETY ALERT SYMBOL**. When you see this symbol on the pump or in the manual, look for one of the following signal words and be alert to the potential for personal injury or property damage.

⚠ DANGER Warns of hazards that **WILL** cause serious personal injury, death, or major property damage if ignored.

⚠ WARNING Warns of hazards that **CAN** cause serious personal injury or death, if ignored.

⚠ CAUTION Warns of hazards that **MAY** cause minor personal injury, product or property damage if ignored.

IMPORTANT: Indicates factors concerned with operation, installation, assembly, or maintenance which could result in damage to the machine or equipment if ignored.

NOTE: Indicates special instructions which are important, but are not related to hazards.

⚠ CAUTION

Customer Alert on Potential Water Damage: As with any product subject to a continuous supply of incoming water, a water alarm to monitor the pump area is strongly recommended to alert the customer to the potential for water damage which may result from water line failure, product damage, or incorrect installation.

PUMP SAFETY INFORMATION

⚠ WARNING



Hazardous voltage. Can shock, burn or cause death. Ground pump before connecting to power supply.

⚠ WARNING

SHOCK HAZARD

1. Meet United States National Electrical Code and local codes for all wiring.
2. Do not handle a pump or pump motor with wet hands or when standing on a wet or damp surface or in water.
3. Follow wiring instructions in this manual when connecting to power lines.
4. Always disconnect power source before performing any work on or near the motor or its connected load.
5. Risk of electric shock - This pump has not been investigated for use in swimming pool areas or marine areas.
6. Protect electrical cord. Replace or repair damaged or worn cords immediately.
7. To reduce the risk of electric shock, connect only to a properly grounded, grounding-type receptacle.



⚠ WARNING

Do not use to pump flammable or explosive fluids such as gasoline, fuel oil, kerosene, etc. Do not use in flammable and/or explosive environments.



⚠ WARNING

Hazardous pressure! Install pressure relief valve in discharge pipe. Release all pressure on system before working on any component.

⚠ CAUTION

GENERAL SAFETY

1. This pump has been evaluated to work with water only.
2. Wear safety glasses when working with pumps.
3. Periodically inspect pump and system components.
4. Do not insert finger or any object into pump or motor openings.
5. Secure the discharge line before starting the pump. An unsecured discharge line will whip, possibly causing personal injury and/or property damage or puncture.
6. Do not touch an operating motor or engine. They are designed to operate at high temperatures.

1/2 HP PERFORMANCE

See charts below for expected system pressure at various incoming line pressure / flow rates.

Inlet PSI	350 System Pressure (PSI) at Flow Rates (GPM)						
	3	6	9	12	15	18	21
10	43	36	35	31	26		
20	53	46	45	41	36		
30	63	56	55	51	46		

⚠ CAUTION

Do not exceed 30 input PSI for model 350

1 HP PERFORMANCE

Inlet PSI	355 System Pressure (PSI) at Flow Rates (GPM)						
	3	6	9	12	15	18	21
10	72	67	61	56	50	45	39
20	82	77	71	66	60	55	49
30	92	87	81	76	70	65	59
40	102	97	91	86	80	75	69
50	112	107	101	96	90	85	79

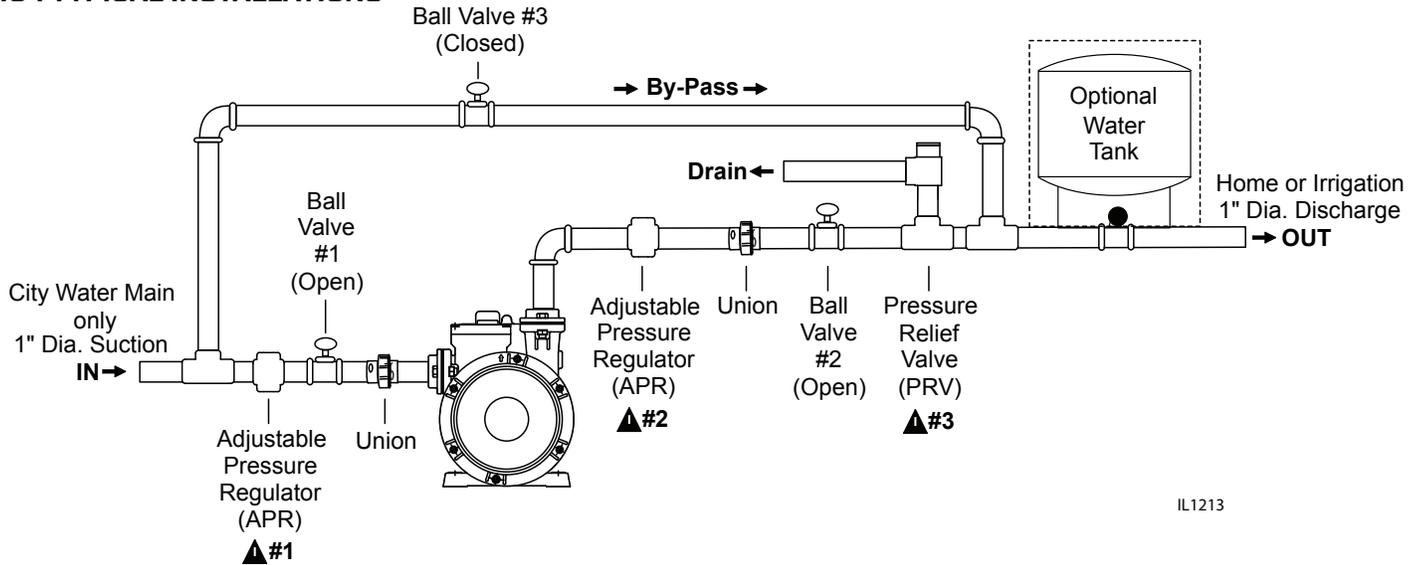
⚠ CAUTION

Do not exceed 50 input PSI for model 355

NAMEPLATE DATA

Model	350	355
HP	1/2	1
Volts	115	115
HZ/Ph	60/1	60/1
Amp	6.0	10.0
Amb	40C	40C
Class	B	B
Rating	Cont	Cont

FIG 1 TYPICAL INSTALLATIONS



GENERAL PUMP INSTALLATION / SETUP (FIG 1)

City booster pump installation is shown per FIG 1. During pump use, ensure ball valves #1 and #2 are open, and ball valve #3 is closed.

▲ WARNING #1 An Adjustable Pressure Regulator (APR#1) is required on the suction side of the pump (see fig 1) if the incoming water pressure can exceed the maximum input pressure.

▲ WARNING #2 An Adjustable Pressure Regulator (APR#2) is required on the Discharge (See fig 1) to ensure maximum water pressure does not exceed local plumbing codes.

▲ WARNING #3 A Pressure Relief Valve (PRV) connected to a drain is required (see fig 1) to safe guard plumbing from exceeding max pressures if the Pressure Regulators fail. Typically the PRV would be set 5 psi higher than the APR#2. NOTE: Optional external water tank can be used to decrease the on/off cycle rate of the pump system, which can extend the life of the pump. (Typical tank 3 gallon draw down.) Set tank PSI equal to pump tank PSI.

▲ CAUTION The entire system must be air and water tight to maintain prime. Use thread tape on all connections to ensure no leaks. Hand tighten all threads and then add additional half turn with wrench.

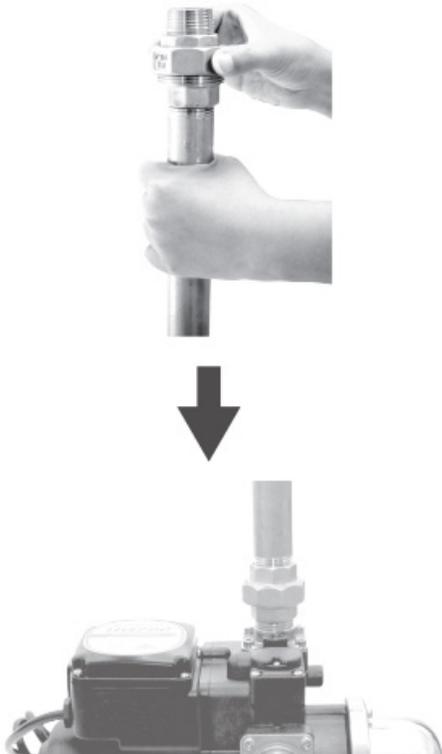
FOR NEW PUMP INSTALLATION

1. The inlet and outlet flanges are tightened to the pump casing before shipment. For new pump installations, do not remove the flanges (FIG 2). Because of the use of self-tapping screws, please use extra care when you have to remove the flanges for future maintenance.
2. Install unions on inlet and outlet piping prior to attaching them to the pump flanges. (FIG 3).
3. The pump foundation should be rigid enough to absorb any vibration from the motor, and the pump should be securely bolted to the foundation.
4. Please provide an adequate draining system to avoid damage in case of leakage, particularly when installed indoors. When the pump is installed outdoors, it should be covered by a weather-proof, well ventilated housing.
5. The pump and all piping must be protected from freezing. When the pump will be exposed to temperatures less than 32°F (0°C), relocate it to a heated area.

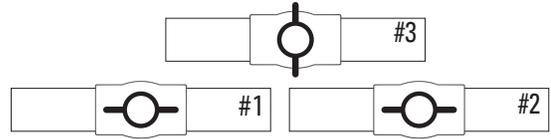
FIG 2 DO NOT REMOVE FLANGES



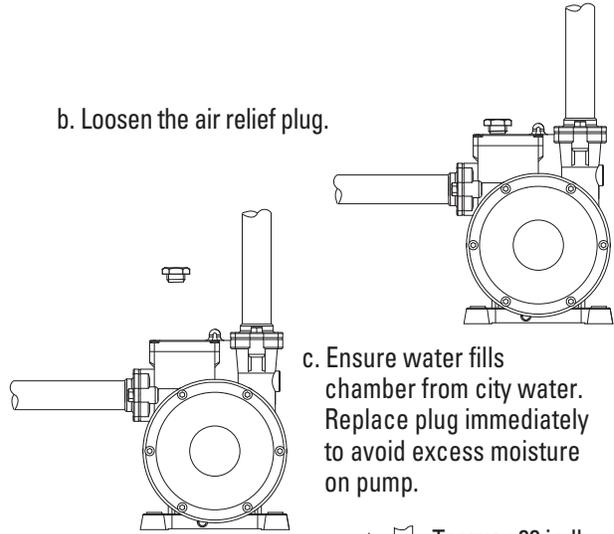
FIG 3 INSTALL UNIONS



a. Open ball valves #1 and #2, close 3.

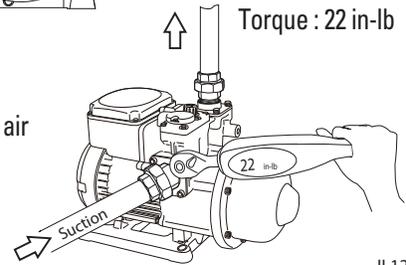


b. Loosen the air relief plug.



c. Ensure water fills chamber from city water. Replace plug immediately to avoid excess moisture on pump.

d. Tighten the air relief plug.



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⚠ CAUTION

Indoor/outdoor area – ensure draining through pressure relief valve is available in order to avoid damage in case of leakage.

Outdoor area – unit should be covered by a weather proof housing, ensure adequate ventilation.

FREEZING (OR REMOVING PUMP FOR MAINTENANCE)

⚠ CAUTION

The pump and all piping must be protected from freezing. If freezing weather is forecast, and the unit will be exposed to temperatures less than 32 °F (0 °C), remove the pump by closing off ball valves #1 and #2, (see FIG 1) and removing the pump using the union connections. Store pump in a heated area. Open ball valve #3 to allow city water to pass forward if desired. Ensure the piping is adequately protected from the cold environment.

OPERATING CONDITIONS

Ambient temperature range 32 °F (0 °C) to 104 °F (40 °C).

PRIMING

After installation (with the pump OFF), open ball valves #1 and #2, and slowly unthread the air relief plug (FIG 4). Allow inlet water pressure to fill the pump cavity and remove in-line air pockets. After the pump cavity fills with water, retighten the air relief plug.

FIG 4 PRIMING ILLUSTRATION

⚠ CAUTION

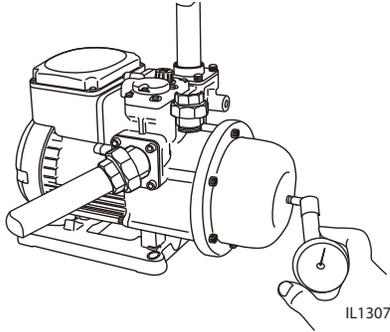
If unit is shut down for an extended period of time or air enters into the system, it may be necessary to repeat the above priming instructions to ensure the internal pump cavity is running with water to avoid dry running damage to the internal seals.

Checking and Setting Tank PSI

Pressure Tank Charge – Pressure tank air charge should be checked at regular intervals of every six months and after the pump has not been used for a prolonged period. To check the tank pressure, turn off power, open the tap on discharge line to release pressure from the pump, unscrew the black plastic cover, and place a pressure gauge on it as shown (FIG 5). Pressure should be adjusted to the original pre-charge as follows:

350 1/2 HP - 25 psi (1.8 Kg/cm²)
 355 1 HP - 35 psi (2.5 Kg/cm²)

FIG 5 SET TANK PRESSURE



NOTE: If using optional water tank (FIG 1), set both tanks to the same pressure.

GENERAL OPERATION GUIDELINES

1. **What Causes The Unit To Start?** – The pump will turn ON when the flow rate is greater than 0.7 GPM or when the pressure output is less than the pump pressure activation point (approximately 25 psi - 1/2hp, 35 psi - 1hp).
2. **Dry Run Protection** - After the unit recognizes a continual low flow of water, the unit will shut down to protect itself from running dry. Hourly, it will turn on to sample the water flow requirements, and return to shut down if running dry. The home owner can fix the run dry issue and return the pump to normal operation by unplugging the pump for 5 seconds.
3. **Dead Head Protection** - If there is no water demand (discharge is shut off), the unit will shut down to protect the pump from damage. Once water flow is restarted, the pump will re-start the power automatically.
4. **Rapid Cycle Protection** – If the unit cycles repeatedly on/off, the unit will shut down to protect the pump life. The optional water tank not maintaining pressure could be a potential cause. Hourly, it will turn on to sample the water flow requirements, and return to shut down if the problem persists. The home owner can fix the concern and return the pump to normal operation by unplugging the pump for 5 seconds.

TROUBLESHOOTING



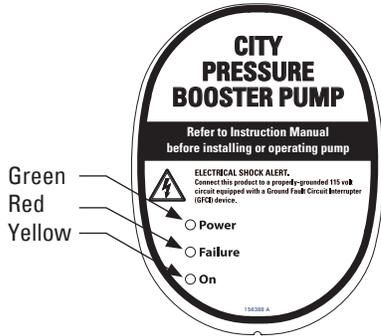
Before ANY work with the pump, SHUT OFF the electrical supply and ball valves #1 and #2 to prevent electrical shock and water damage.

Problem	Cause	Correction
Pump does not start or shuts down.	No power supply.	Connect the electricity supply.
	Incorrect voltage.	Pump is 115 Volt only. It will not start with 230V supply.
	Incorrectly plumbed.	Confirm FIG 1 installation is correct. Confirm ball valves #1 and #2 are open in suction and discharge. Confirm ball valve #3 is closed on bypass.
	Blocked inlet	Check if pump suction inlet screen is blocked. See FIG 10.
	Insufficient water supply	Ensure water source is providing sufficient water.
Pump starts when no water is consumed.	Pipe leaking.	Ensure all threads have 3 wraps of Teflon tape + hand tight + 1/2 turn with wrench.
	Tank pressure is low.	See FIG 5 to check and add air pressure to the tank.
	Air in the system.	Ensure all threads have 3 wraps of teflon tape + hand tight + 1/2 turn with wrench. Re-prime unit.
Pump does not shut down when water is not consumed.	Blocked check valve.	See FIG 8. Confirm check valve is free of debris and functions freely.

OPERATION AND MAINTENANCE REQUIREMENTS

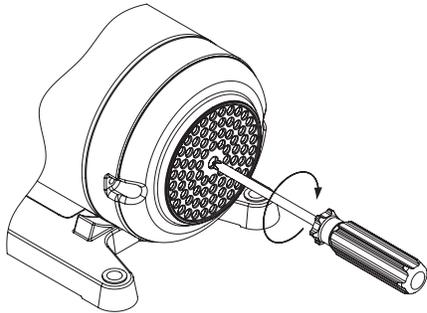
1. **Pump Operation** – There are three indicator lights on the terminal box: Power (Green), Failure (Red), and On (Yellow). Pump operating conditions are indicated as below: (FIG 6)
 - a) Power (Green): It is always on when connected to power.
 - b) On (Yellow): Turns on when tap is open - indicates normal operation.
 - c) Failure (Red): Turns on when tap is open - indicates pump is run dry.
 - d) On (Yellow): Turns on intermittently when tap is closed - indicates pipe leak.

FIG 6 – PUMP OPERATION INDICATORS



2. Periodically check the condition of the check valve and strainer (if used).
3. If the pump is to be inactive for long periods, it should be rinsed thoroughly with clean water, then drained and stored in a dry place.
4. If the pump shaft is seized up after periods of inactivity, place a screwdriver in the motor end to rotate the shaft. This should free the pump shaft. (See FIG 7). If this does not remedy the problem, the pump will need to be dismantled.

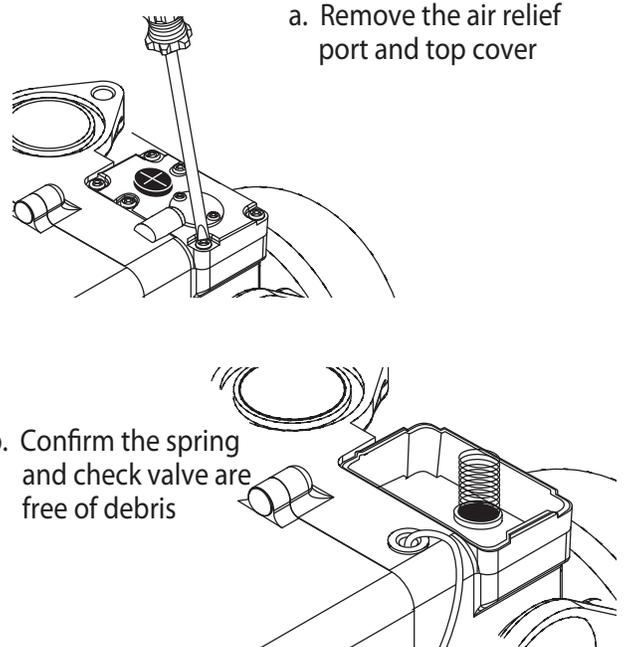
FIG 7 – FREEING UP PUMP SHAFT



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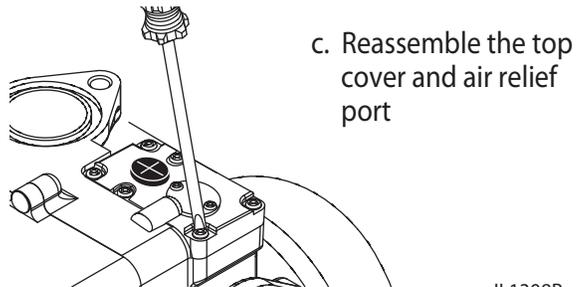
5. **Internal Check Valve** – If Teflon tape or debris enters into the pump cavity, the operation of the internal check valve can be restricted. This may create an erratic or poor performance with the pump. To clean the check valve (FIG 8).

FIG 8 – INTERNAL CHECK VALVE



- a. Remove the air relief port and top cover

- b. Confirm the spring and check valve are free of debris

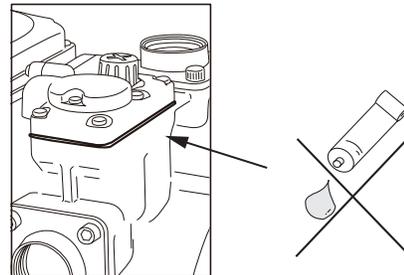


- c. Reassemble the top cover and air relief port

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DO NOT apply any bonding material (such as silicon, glue, etc.) to seal the chamber cover. (FIG 9)

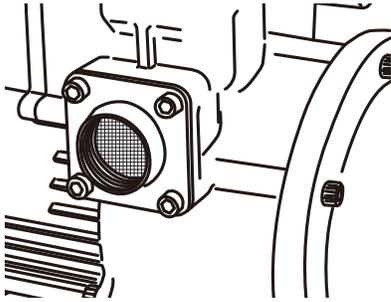
FIG 9 – DO NOT GLUE CHAMBER



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6. Pump Suction Inlet Screen – If internal debris blocks or restricts the inlet suction screen (FIG 10), manually clean with hands.

FIG 10 - INLET SCREEN



7. Flange Installation - When the flanges are removed for maintenance or for any reason, follow the instructions below for replacement: (FIG 11 & 12)

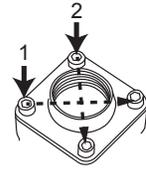
- a. Place the gasket against the flange
- b. Place the 4 screws in the flange. **DO NOT** tighten at this time. When all 4 screws are in place, tighten them diagonally onto the flange. **DO NOT** over-tighten. (Recommended torque is 18~22 in-lbs).

FIG 11 - PLACING GASKET ON FLANGE

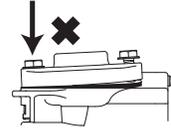


FIG 12 - TIGHTENING FLANGE

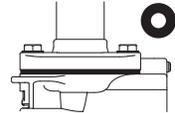
Screws should be tightened diagonally



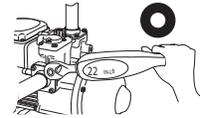
Do not tighten the screws unevenly



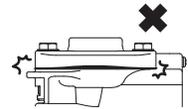
Pipe and flange should be installed in a straight line



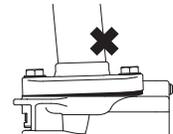
Screw torque is 18~22 in-lb.



Do not over-torque the screws



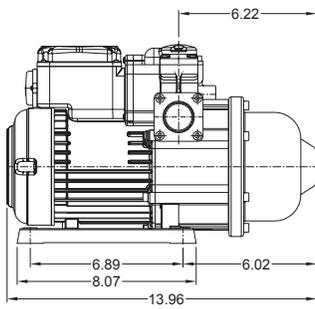
Pipe must be straight



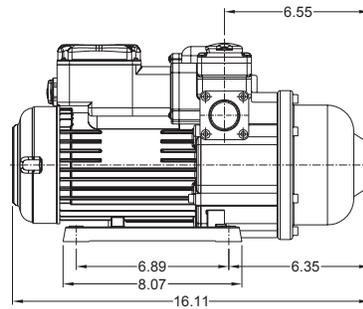
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- c. Install inlet and outlet piping to the unions and then connect them to pump flanges.

OUTLINE / DIMENSIONAL SIZE



350



355

LIMITED WARRANTY

Manufacturer warrants, to the purchaser and subsequent owner during the warranty period, every new product to be free from defects in material and workmanship under normal use and service, when properly used and maintained, for a period of one year from date of purchase. Proof of purchase is required. Parts that fail within the warranty period that inspections determine to be defective in material or workmanship will be repaired, replaced or remanufactured at Manufacturer's option, provided however, that by so doing we will not be obligated to replace an entire assembly, the entire mechanism or the complete unit. No allowance will be made for shipping charges, damages, labor or other charges that may occur due to product failure, repair or replacement.

This warranty does not apply to and there shall be no warranty for any material or product that has been disassembled without prior approval of Manufacturer, subjected to misuse, misapplication, neglect, alteration, accident or uncontrollable act of nature; that has not been installed, operated or maintained in accordance with Manufacturer's installation instructions; that has been exposed to outside substances including but not limited to the following: sand, gravel, cement, mud, tar, hydrocarbons, hydrocarbon derivatives (oil, gasoline, solvents, etc.), or other abrasive or corrosive substances, wash towels or feminine sanitary products, etc. in all pumping applications. The warranty set out in the paragraph above is

in lieu of all other warranties expressed or implied; and we do not authorize any representative or other person to assume for us any other liability in connection with our products.

Contact Manufacturer at, 3649 Cane Run Road, Louisville, Kentucky 40211, Attention: Customer Support Department to obtain any needed repair or replacement of part(s) or additional information pertaining to our warranty.

MANUFACTURER EXPRESSLY DISCLAIMS LIABILITY FOR SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES OR BREACH OF EXPRESSED OR IMPLIED WARRANTY; AND ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND OF MERCHANTABILITY SHALL BE LIMITED TO THE DURATION OF THE EXPRESSED WARRANTY.

Some states do not allow limitations on the duration of an implied warranty, so the above limitation may not apply to you. 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 warranty gives you specific legal rights and you may also have other rights which vary from state to state.

In instances where property damages are incurred as a result of an alleged product failure, the property owner must retain possession of the product for investigation purpose.