

Econo RFP★System

Residential Fire Protection Pump System

Installation, Operation and Maintenance Manual



Installation Date: _____

Contractor Name and Person Installing: _____

For Emergency Service Call: _____

CI-222058-Version 2.0
2/9/2022

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**IMPORTANT: ALL INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE.
Consult factory for the most up to date version of this manual - 1-800-345-8207.**

- Please take the time to complete the forms on the back of this manual.
- Additional information can be found attached to the back of this manual.

Section 1 - Safety & Warnings

1.1 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.



NOTICE

Notice indicates important information, that if not followed may cause damage to equipment.

1.2 Unpacking

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

Do not operate unit if damaged during shipping, handling or use.

1.3 General Safety Information

1. Read all manuals included with this product carefully. Be thoroughly familiar with the controls and the proper use of the equipment
2. Follow all local electrical and safety codes as well as National Electrical Codes (NEC), Occupational Safety and Health Act (OSHA), and National Fire Protection Association (NFPA)
3. Only persons familiar with these rules of safe operation should be allowed to use the equipment.
4. Keep visitors away and NEVER allow children in the work area.
5. Wear safety glasses and use hearing protection when operating the unit.
6. Do not stand on or use the unit as a handhold.
7. Periodic inspection and test of this equipment is required. Consult your installer and local codes to meet all requirements.
8. Check all fasteners at frequent intervals for proper tightness.

Section 1 - Safety & Warnings

1.3 General Safety Information (Continued)



- Motors, Electrical Equipment and Controls can cause electrical arcs that will ignite a flammable gas or vapor.
- Never operate or repair in or near a flammable gas or vapor.
- Never store flammable liquids or gases in the vicinity of the system.



- For up to date fire protection information please consult the National Fire Protection Association at www.nfpa.org.



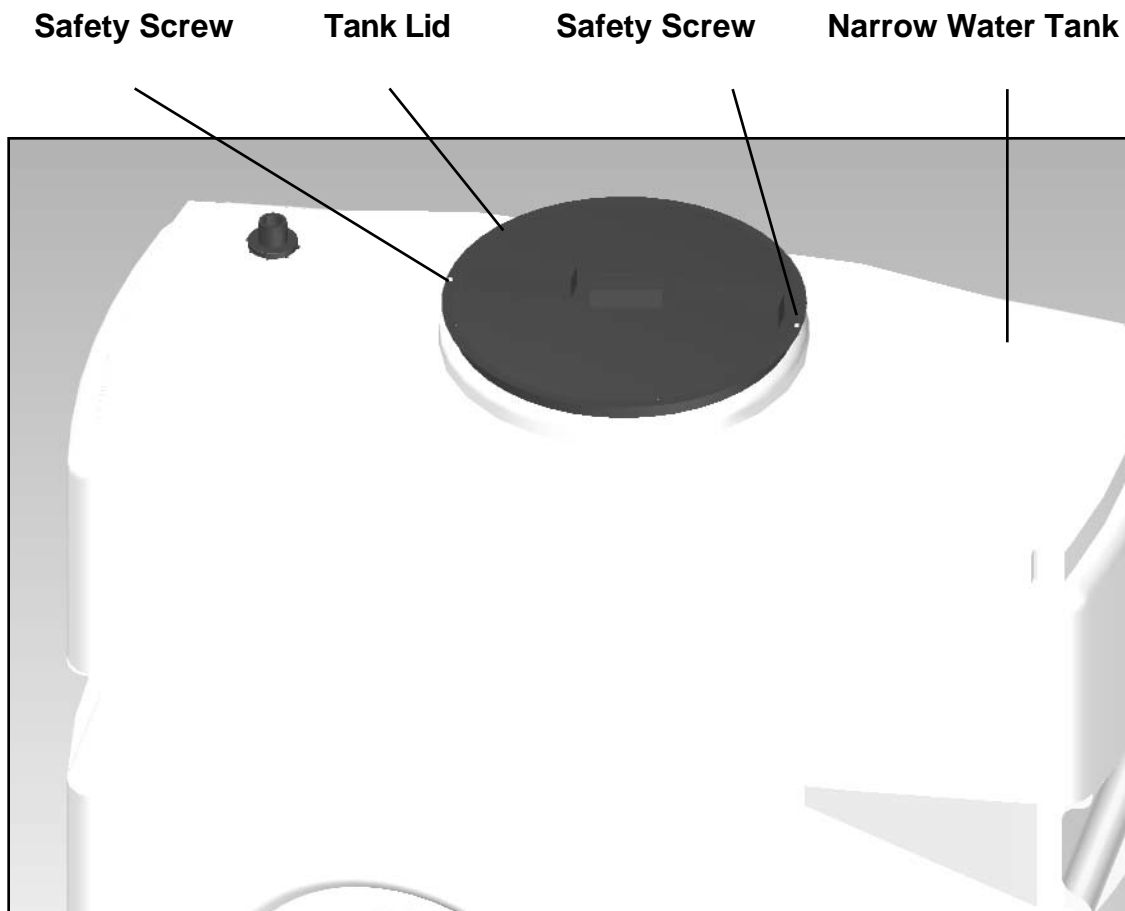
On systems with an optional tank and inlet water piping supplied by General Air Products, use a backup wrench when adjusting the water inlet piping on the tank. There is a float and shutoff valve connected to the inlet piping. Moving the inlet piping without the use of a backup wrench will turn the float and valve out of position. This will cause possible overflow of the tank.

1.4 Optional Narrow Water Tank Safety Information

- Confined spaces must be considered hazardous. DO NOT enter tank at any time.
- Fill tank with water and hold for at least 5 hours PRIOR to use to identify leakage through unsecured fittings, shipping damage or manufacturing defects. The manufacturer's warranty of this tank is void unless upon installation of the tank, the tank is water pre-tested as a final test of suitability. Manufacturer is not responsible for loss of materials. See manufacturer's limited warranty.
- DO NOT use for vacuum or pressure applications. Tank must be properly vented.
- Continuous operating temperatures above 140°F (60°C) are NOT RECOMMENDED. Consult factory for operating temperature above 100°F (38°C).
- Protect tanks from impact (especially sharp blows).
- Installation sites for tanks should be on a reinforced concrete pad. Soil sites for smaller tanks must be solid, stable and compacted. All sites must be level, flat, free of rocks or other objects, and above known flood plains.
- Weight of strainers, valves, hose or pipe must not be carried by the tank outlets.
- User is responsible for determining compatibility of chemicals with tank and fitting materials. TESTING IS RECOMMENDED. Tank should not be used for anything other than water.
- Use expansion joints or other flexible connection methods at all tank fittings to prevent damage from differential expansion and contraction of piping and tank. The use of rigid piping or the failure to provide for the expansion of the tank will void all warranties.
- Observe all local, state and federal codes.
- Rinse tanks well before installation.

Section 1 - Safety & Warnings

1.5 Optional Narrow Water Tank Lid Safety Tie Down Instructions



1 - On Complete RFP Systems, remove narrow water tank lid to remove shipping tie down string on float assembly.

2 - On Basic RFP Systems, remove tank lid to install float assembly.



3 - For safety reasons the tank lid is secured with safety screws. **Before installation is complete, re-install safety screws to tank lid, after the lid has been put back onto the tank.**



This product can expose you to chemicals including Cumene, which is known to the State of California to cause cancer and birth defects or other reproductive harm.

For more information go to
www.P65Warnings.ca.gov

Section 2 - System Description

This unit is a pump/tank or pump only package specifically designed for installation in residential/light commercial installations.



This system is used on the sprinkler system to supplement, or provide, from the tank, a sufficient volume of water to meet the system design limits (at the time of installation). If Code changes are made, you should consult your installer to ensure revisions are incorporated into your system as the code changes take effect.

The tank holds a given volume of water to be supplied to the sprinklers if they activate. The pump will turn on if the pressure, sensed by the pressure switch, drops to the lower set point (consult QC sheet). As long as the water pressure in the fire sprinkler system is above the lower set point the pump will not turn on.

Loose copper tube in water tank is to help prevent algae growth in sitting water



The flow switch is designed to be tied into the alarm and control system. It incorporates an adjustable retard (time delay) to avoid false alarms. The installing technician should tie the flow switch into the system as required by the AHJ or the system designer during initial installation.

This system was custom designed to meet given flow rates and set to activate at given pressures. Consult the design limit sheet or pump curve to verify the design criteria. If the design limit sheet has not been completed, contact your installer for the information.

Section 3 - Installation Instructions

3.1 Initial Inspection

When the equipment and accessories are received, they should be immediately inspected for shortages and damage. If the equipment has been damaged in shipment or shortages are noticed, immediately notify the carrier and file a claim. If hidden damage to the residential pump system is suspected, it is recommended that the system be filled with water as a leak check prior to rigging and/or final placement.

3.2 Rigging & Moving

The exact method of handling and setting the residential pump system depends on the available equipment, the size of the unit, its final location and other variables. It is the rigger's or mover's responsibility to determine the specific method of safely handling each unit.



UNDER NO CIRCUMSTANCES SHOULD THE PIPING BE USED IN LIFTING OR MOVING THE SYSTEMS.

3.3 Location & Installation

Residential pump systems must be mounted indoors unless specifically ordered for special locations



THE SYSTEM MUST BE INSTALLED LEVEL.



THE SYSTEM MUST BE KEPT ABOVE FREEZING (32° F) AT ALL TIMES.

Section 3 - Installation Instructions

3.4 Piping



All fluid piping practices should be in accordance with local codes. The systems are constructed using non-ferrous piping. Whenever components made from different material are piped in a system, use dielectric isolation of the material to help prevent galvanic corrosion. All threaded pipe connections must be sealed.

Correct sizing of pipe is critical to assure proper operation. **The fire protection contractor is responsible for calculation of the piping system attached to this system.** Once all piping and accessory installation has been completed, the system is ready to leak test. Charge the system with air (15 psig maximum) and check around each connection and joint with water/soap solution (or visual check). If no leaks are found, vent the pressured air and fill the system with water.



No Do not use the system pump to fill the fire system with the initial fill of water. Use the domestic water source to fill the system and tank.



No pipe dope allowed on piping from water supply to fill valve connection. WARRANTY VOID if pipe dope is used on fill supply line.



If using copper piping, all soldering must be done away from the plastic tank and bulkhead.



Pressure reducing valve must be used if pressure at the inlet of the auto fill is greater than 70 PSI.



Install a 'backflow prevention device' upstream of the autofill to protect supply water from possible contamination.



Debris, pipe sealant, and other contaminants entering the auto-fill valve will cause the valve to malfunction. Run water through supply line until it runs clear before connecting to fill connection on tank. This will help ensure debris does not enter the auto-fill valve.

Overflow Piping Instructions:

Minimize vertical piping to overflow bulkhead



WARRANTY VOID if overflow is not piped to a drain.

Section 3 - Installation Instructions

3.5 Wiring



The electrical installation should be in accordance with the National Electrical Code and any local codes and regulations. Pumps may have inherent thermal overload protection. Check nameplate voltage to be sure it is in agreement with the power supplied. An approved disconnect switch must be installed for this

system (provided by others in the field). A ground lug is supplied inside the motor housing. All grounding and bonding must follow local and NEC codes for all equipment and controls.

3.6 Start-Up & Maintenance



On start-up, the pump should be checked for proper rotation in accordance with the direction arrow decal located on the motor. Consult factory if rotation is not correct.

The pump must be isolated using the ball valves prior to hydro testing. The motors are direct connected. Motors are permanently lubricated for the life of the motor.

Section 4 - System Testing & Training



Periodic testing of the system is required. We recommend a fire sprinkler system run test be performed monthly. This run test should be conducted annually at a minimum to ensure the fire sprinkler system is operating correctly.

For Testing Requirements and Training Information, consult your installation company.



The test connection between the pump discharge and the top of the (optional) tank is for testing the pump circulation. Never connect the discharge test connection to the pump inlet. This will cause excessive heat and damage to the system.



Rapid turning on and off (short cycling) of the pump must be avoided. Short or rapid cycling of the fire/water pump is an indication there is a system leak present that should be corrected/fixed immediately. Short or rapid cycling can cause damage to the fire/water pump making the system inoperable if not corrected.

Section 5 - Start-Up Checklist

5.1 RFP System Start-Up Checklist - Pump Only Units

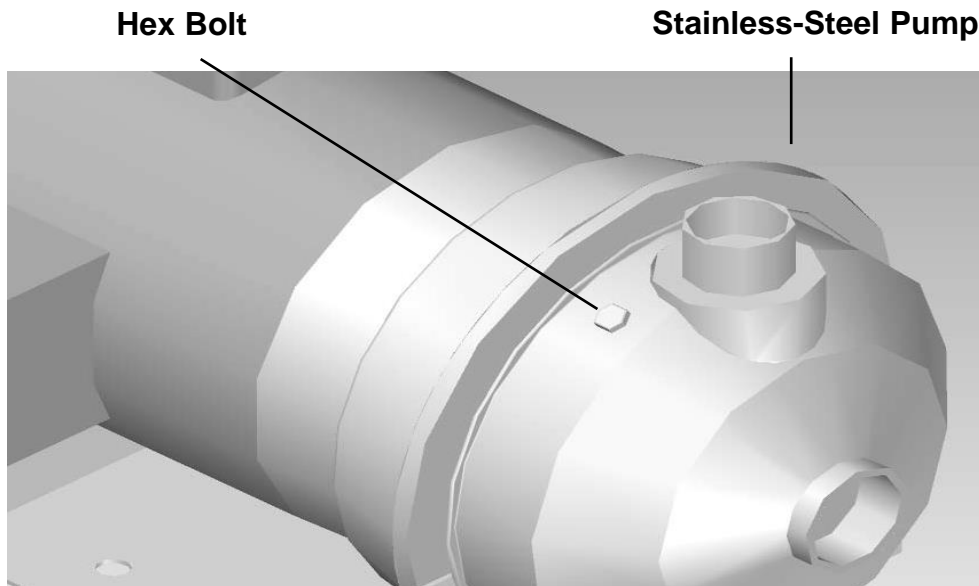
- 1.) System consists of pump, base and control box (optional).
- 2.) Check that the motor is securely fastened to the base.
- 3.) Connect sprinkler piping to customer connection on pump.
- 4.) Connect pump suction connection to water source
- 5.) Wire control power to pump assembly.
- 6.) Ensure correct voltage is applied. See product label for voltage of the system.
- 7.) Check the motor for proper rotation direction, correct as required.
- 8.) Test unit in accordance with local procedures.
- 9.) Verify the setting on the pressure switch is correct.
- 10.) Secure all valves.
- 11.) Post warning signs as required by local codes.

5.2 RFP System Start-Up Checklist - Pump & Tank Units

- 1.) System consists of pump, base, control box (optional) and tank (optional).
- 2.) Check that the motor is securely fastened to the base.
- 3.) Connect sprinkler piping to customer connection on pump/tank assembly.
- 4.) Wire control power to pump/tank assembly.
- 5.) Ensure correct voltage is applied. See product label for voltage of the system.
- 6.) Open the pump suction valve and system valve. Close the test/recirculation valve (optional).
- 7.) Fill the tank with water.
- 8.) Check the motor for proper rotation direction, correct as required.
- 9.) Test unit in accordance with local procedures.
- 10.) Verify the setting on the pressure switch is correct.
- 11.) Secure all valves.
- 12.) Post warning signs as required by local codes.

Section 6 - Filling the System

When first filling up the system, ensure that all of the air is bled out of the pump and piping. Fill system using boiler drain valve on pump discharge. The pump is supplied with a hex bolt on the housing (see below) that allows the pump casing to be vented. Loosen the hex bolt to allow air to escape. Once the pump casing is filled with water, tighten the hex bolt.

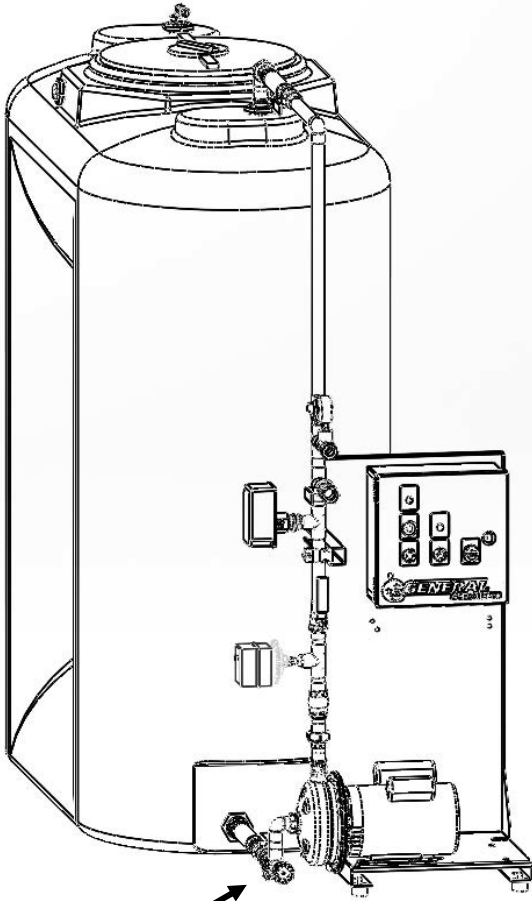




NOTICE

Fill system using domestic water supply. Do not use pump and tank for initial fill of the sprinkler system.

To Fill sprinkler system: (DO NOT use pump for initial fill of sprinkler system)



Boiler drain valve

Step 1) Close the following valves:

- Tank return line valve
- Tank to pump valve(s)
- System test valve

Step 2) Open the following valves:

- System drain valve
- System valve

Step 3) Attach hose to the system drain valve, with the supplied hose coupling, and fill sprinkler system with water from domestic water supply; **do not use pump to fill the sprinkler**



NOTICE

System is full when all air is expelled from the test connection. No air is to remain in system before energizing pump or damage to the pump can occur.

Section 7 - Water Inlet Connection Diagram ~~(for Tank Systems only)~~

7.1 For Systems Supplied with Optional Float Valve Installed

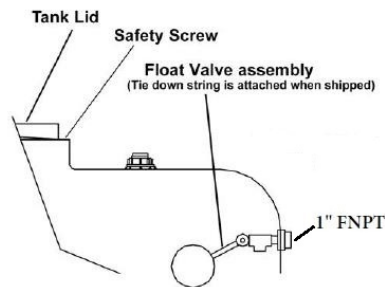


Fig. 1 Side mount float valve

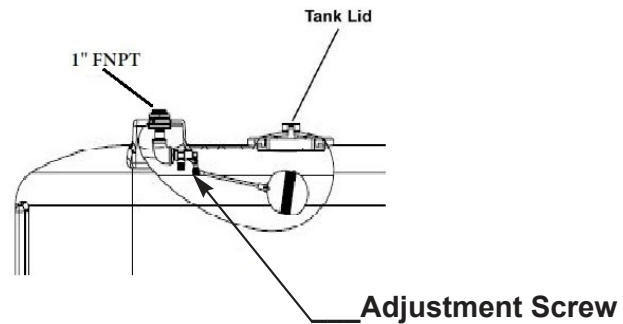


Fig. 2 Top mount float valve

Note: Remove lid and string securing float. Adjust float using adjustment screw to set the proper float angle to achieve proper water level.

7.2 For Systems Supplied with Optional Float Valve Shipped Loose

Please note that on this system the fill valve and float assembly ship loose.

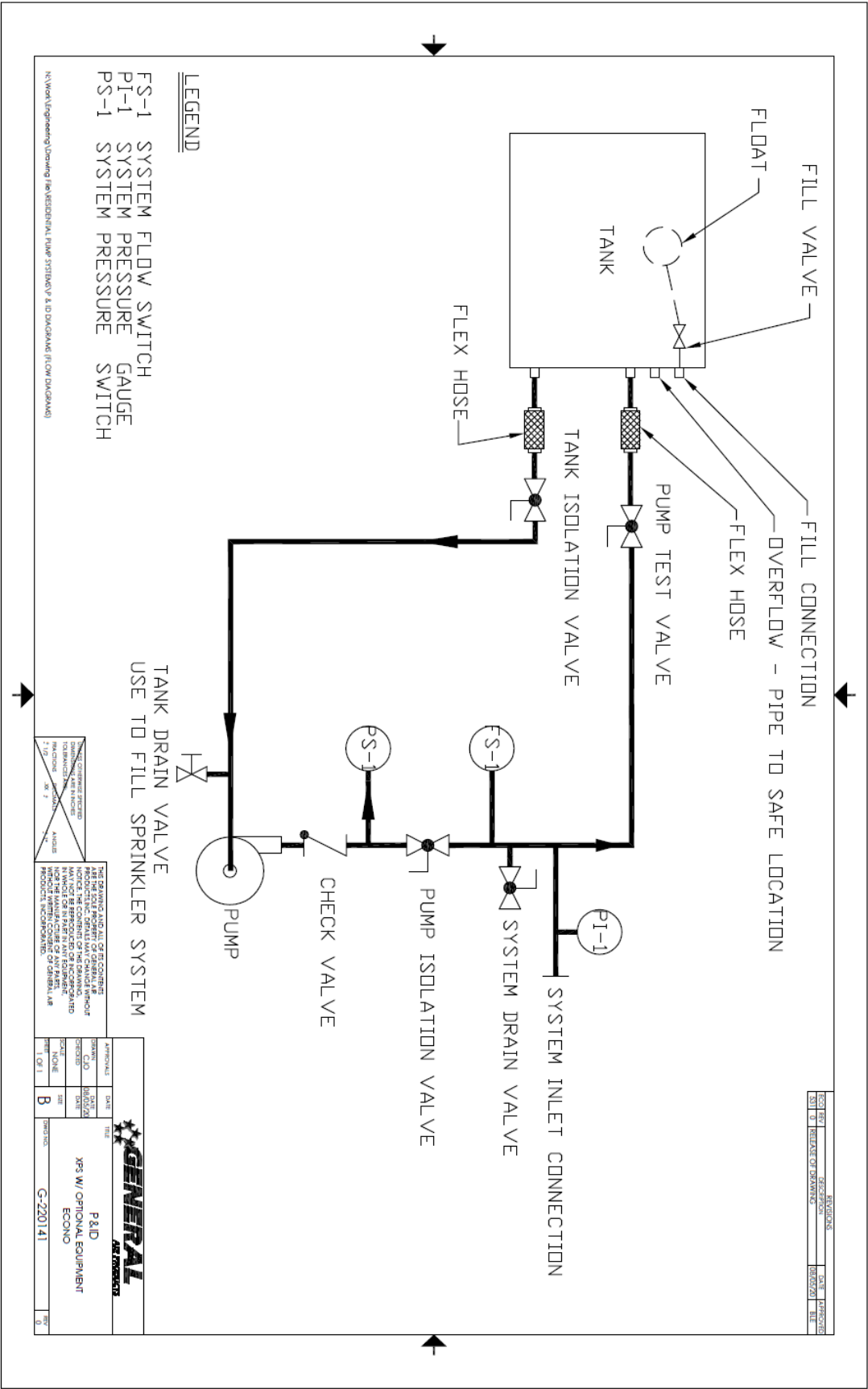


WARNING

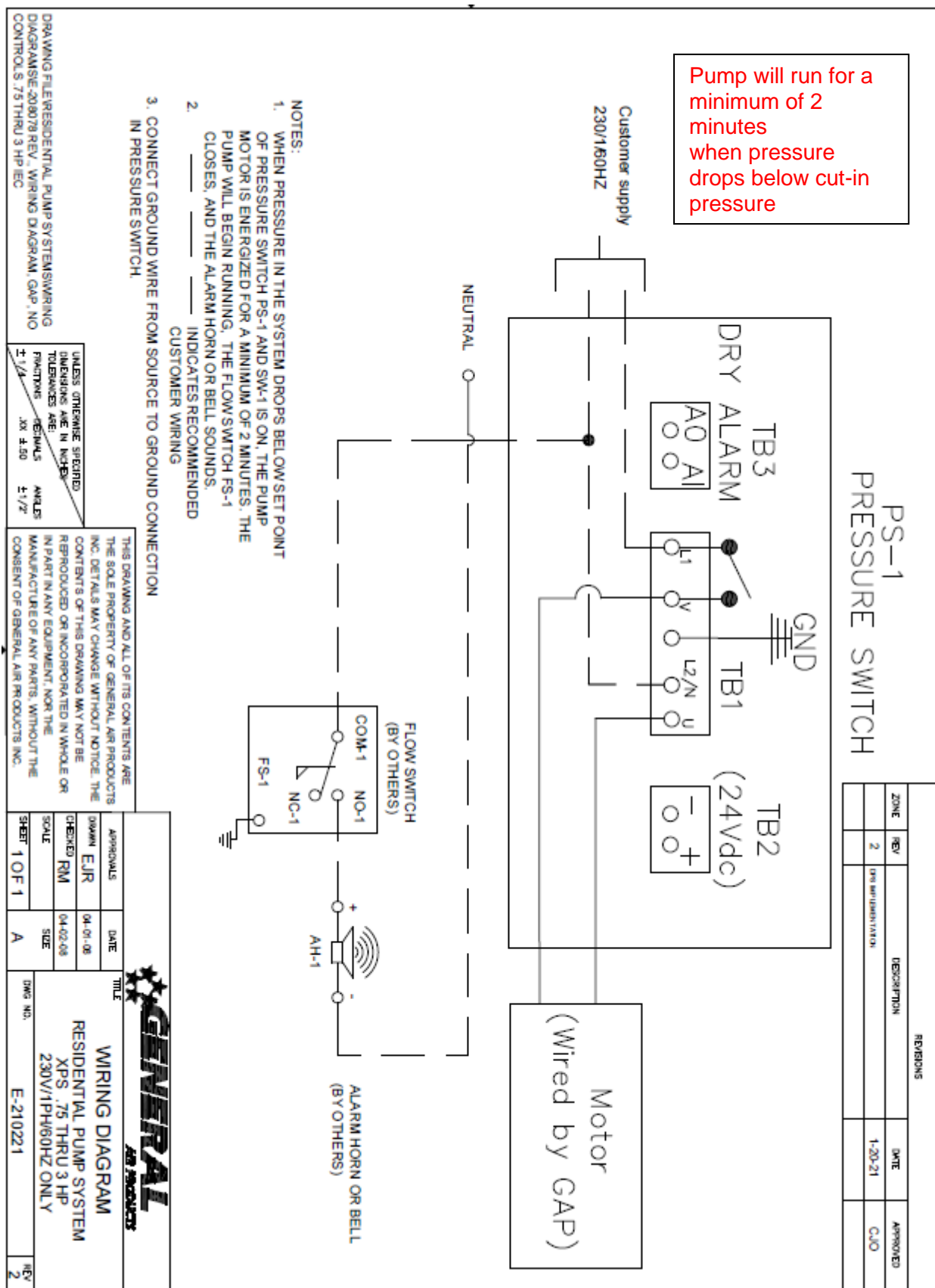
Disconnect piping with a union (not supplied) prior to sweating the connection to prevent heat from damaging tank or inlet bulkhead fitting.

Section 8 - Process & Instrumentation Diagrams (P&ID)

P&ID for Standard Econo RFP System with Optional Equipment



9.1 -3Hp and below: Wiring Diagram

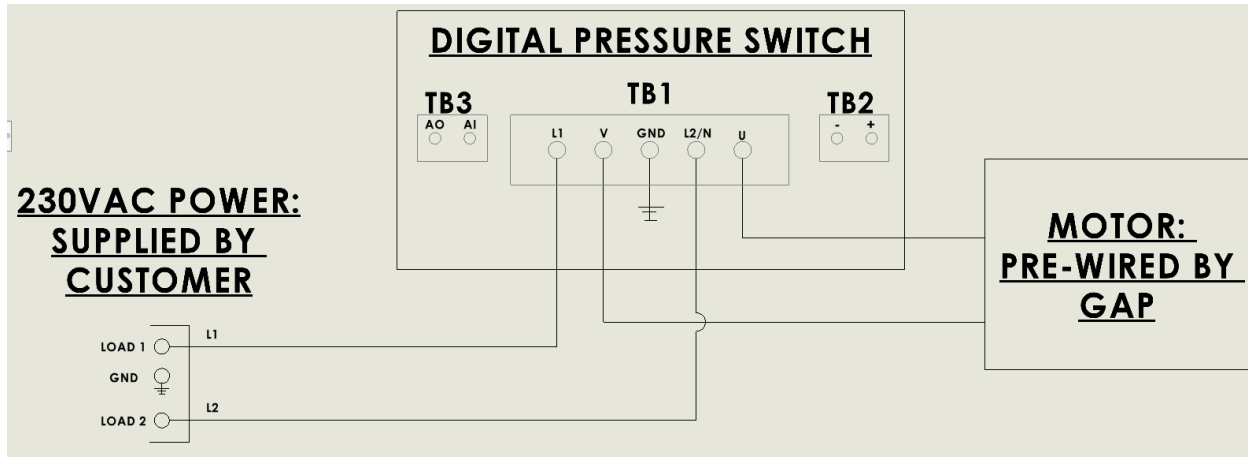


Section 9 - Master Electrical & GA Drawing

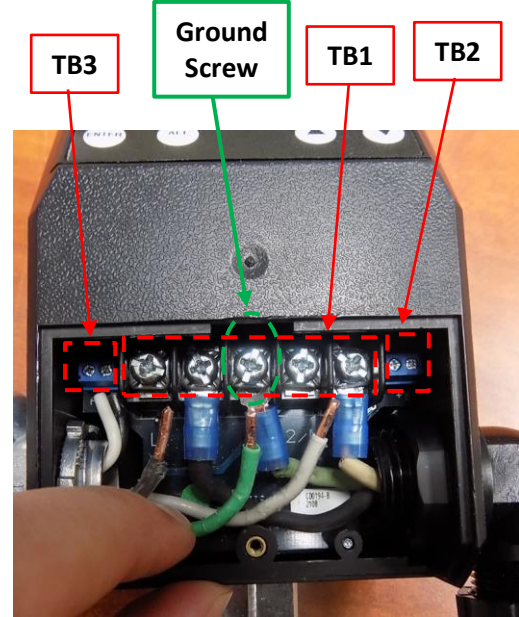
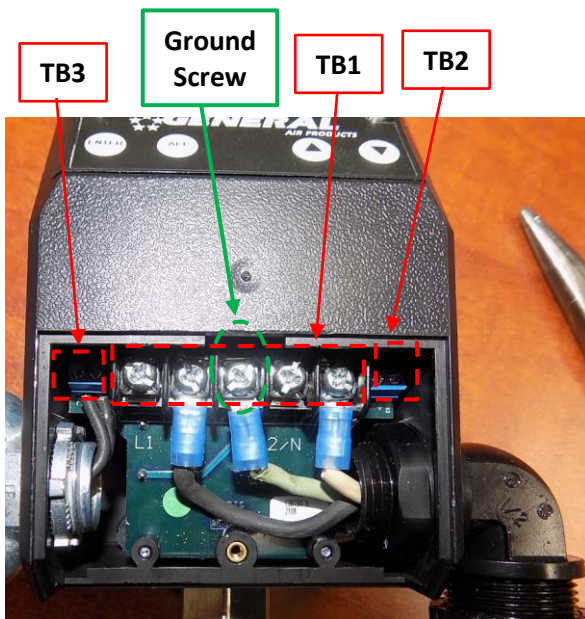
9.1 -3Hp and below: Wiring Diagram

Digital Pressure Switch (DPS)

230Vac Diagram

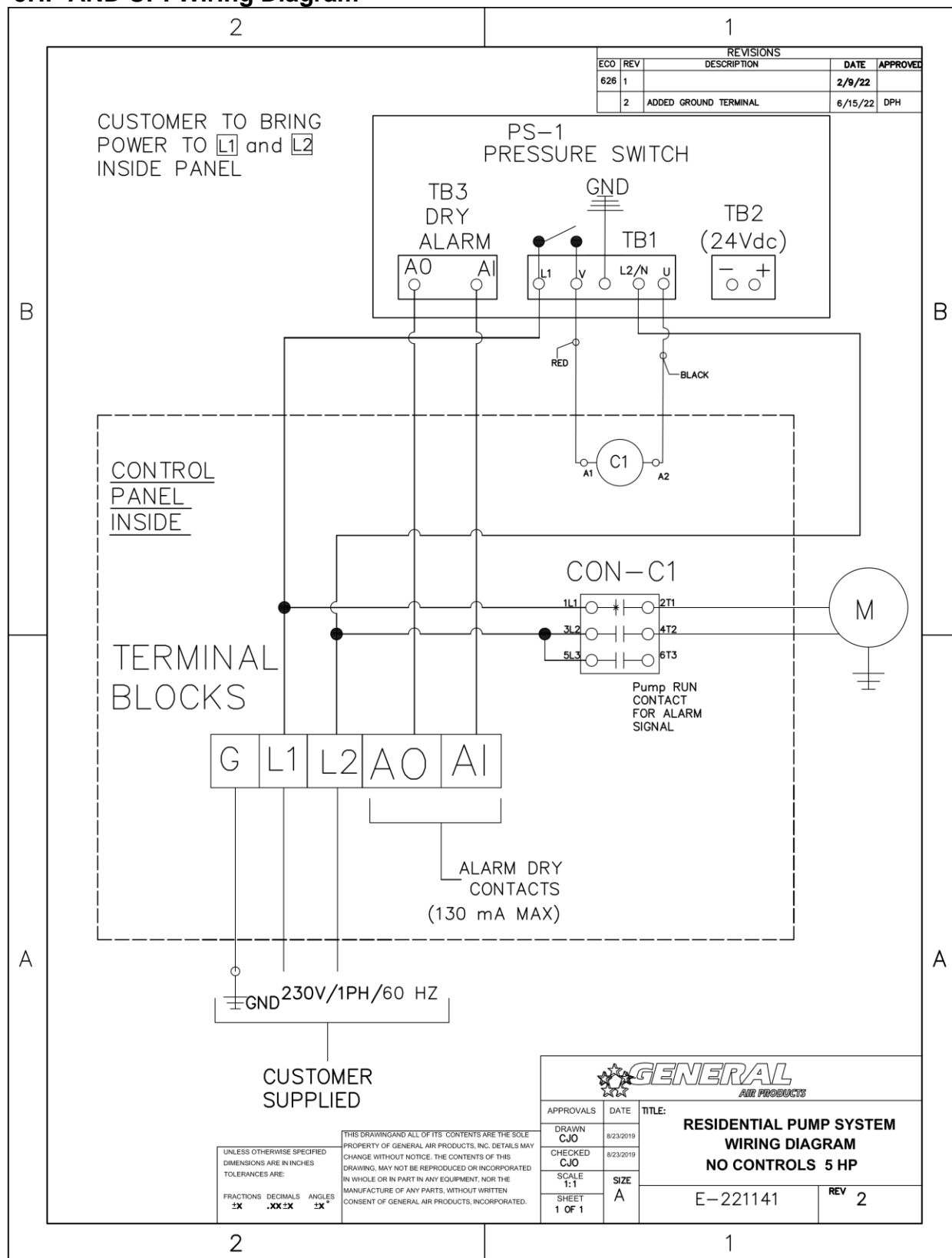


Pump will run for a minimum of 2 minutes when pressure drops below cut-in pressure



Section 9 - Master Electrical & GA Drawing

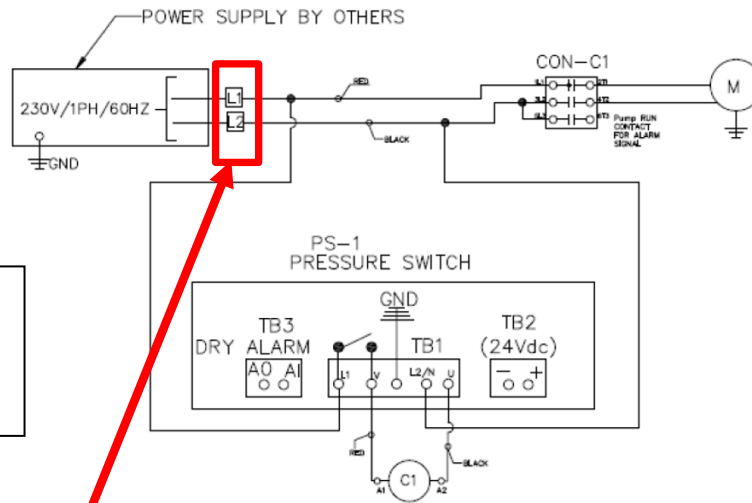
9.2- 5HP AND UP: Wiring Diagram



Section 9 - Master Electrical & GA Drawing

9.2- 5Hp & up: Wiring Diagram

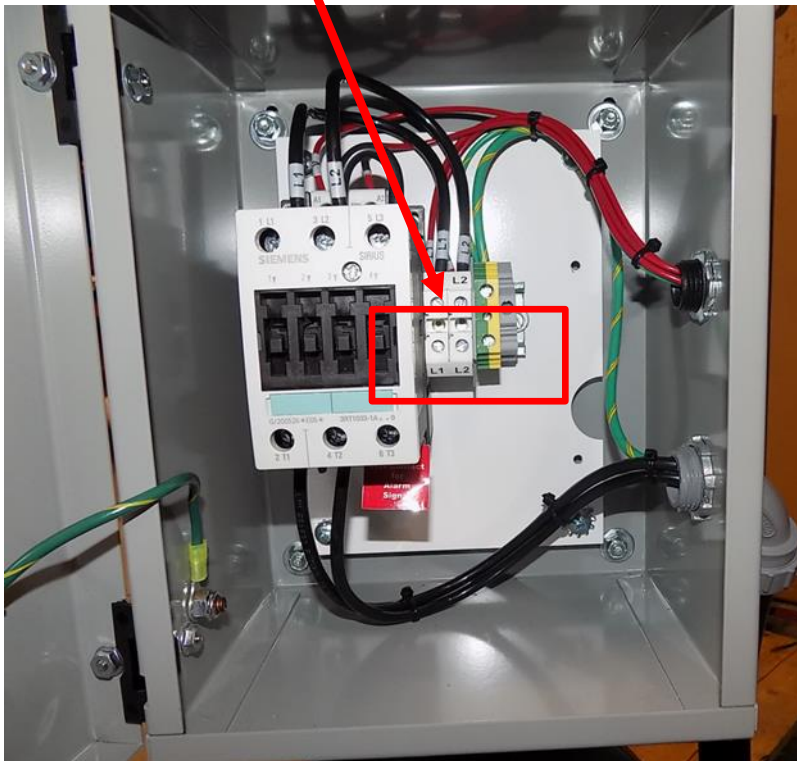
- Customers do not wire power directly into the pressure switch
- Customers will wire power into the terminals found in the control panel



Pump will run for a minimum of 2 minutes when pressure drops below cut-in pressure

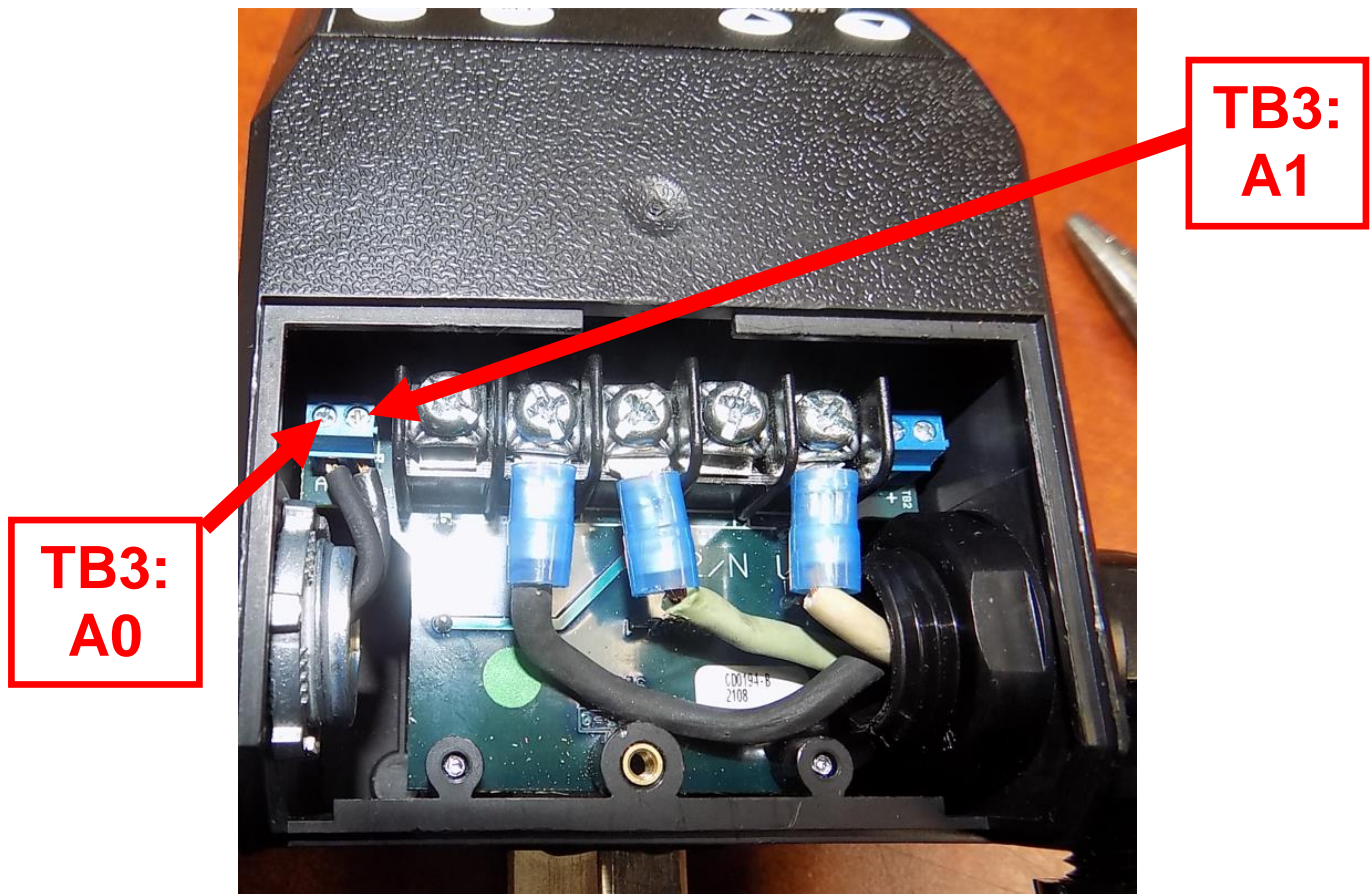
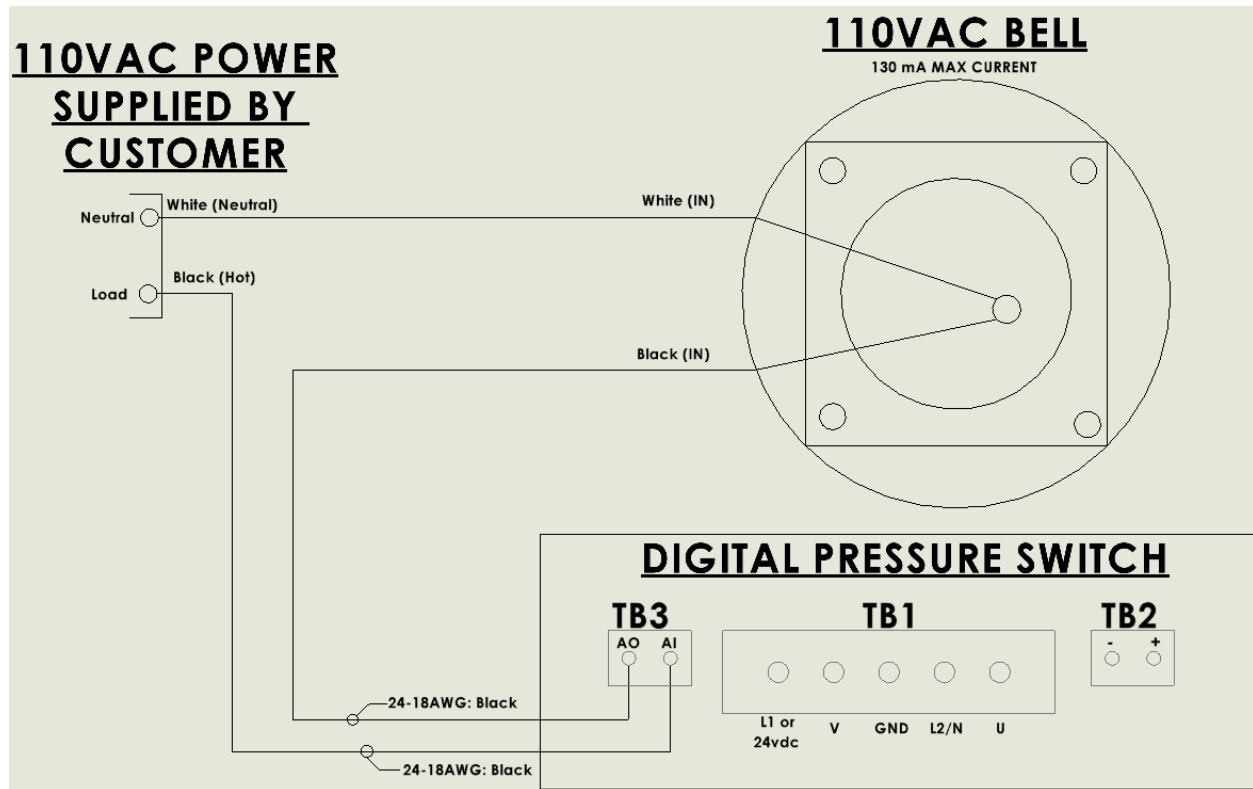
Bring 230Vac/1Phase into

- L1
- L2
- Ground



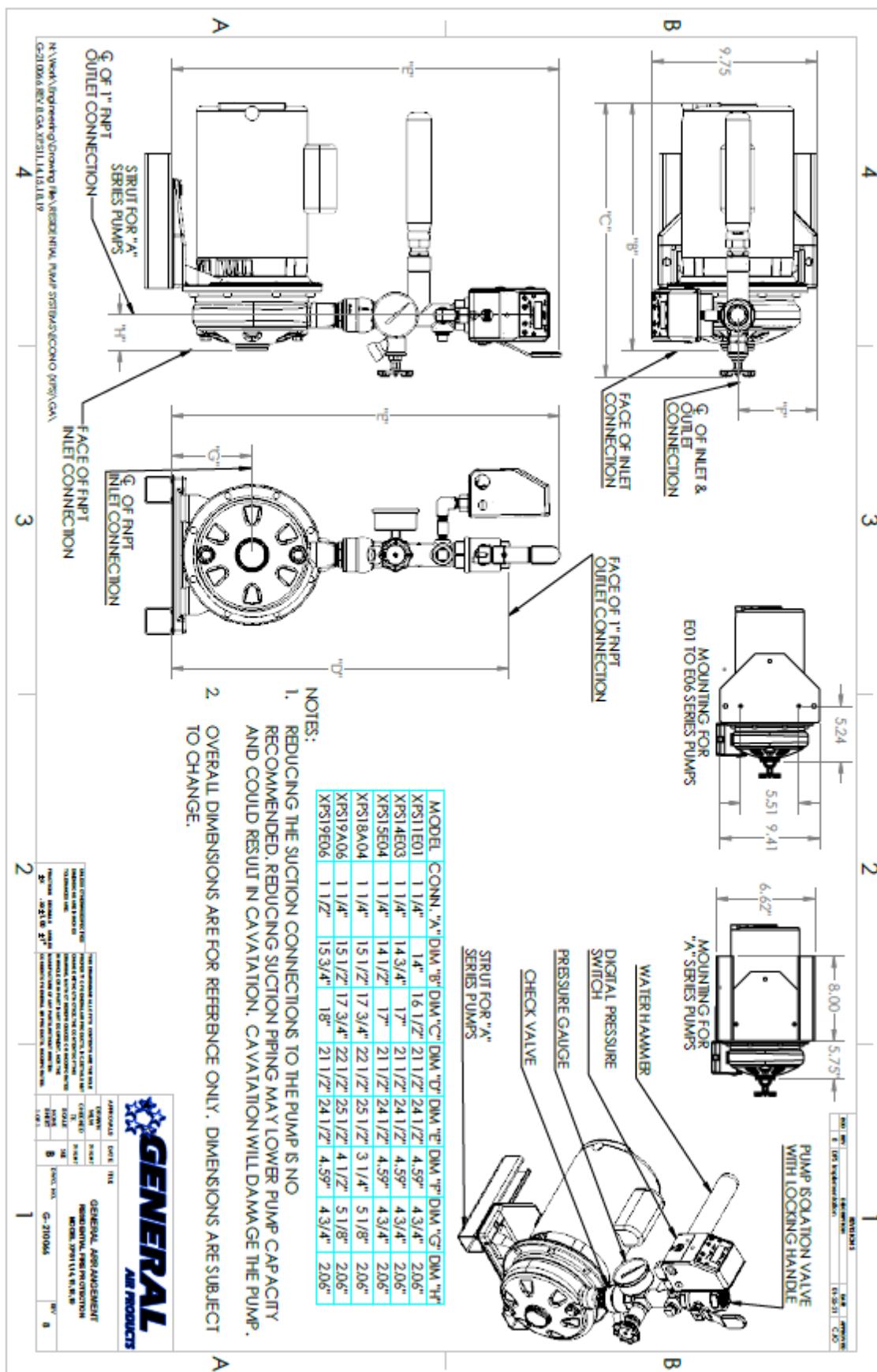
Section 9 - Master Electrical & GA Drawing

9.3 Alarm Wiring Diagram: Dry Contact alarm wiring



Section 9 - Master Electrical & GA Drawing

9.4 General Arrangement Drawing for Standard Econo RFP System

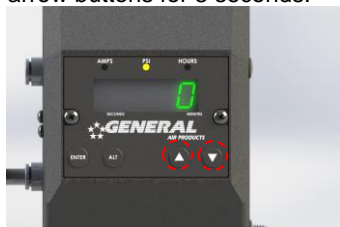


Section 10 – Troubleshooting

Symptom	Possible Cause(s)	Corrective Action
Motor hums and runs slowly or not at all.	<ol style="list-style-type: none"> 1. Low or no voltage 2. Shortened or open motor winding 3. Defective pressure switch - contacts will not close 	<ol style="list-style-type: none"> 1. Check voltage during start. Voltage must be within +/- 10% of nominal voltage to start motor. Increase wire size if necessary to lower voltage drop. 2. Replace motor 3. Repair or replace pressure switch
Pump will not stop running	<ol style="list-style-type: none"> 1. 2-minute minimum run time function engaged (Digital pressure switch) 2. Insufficient voltage to motor 3. Pressure switch set too high 4. Piping too restrictive 5. Power hooked directly into motor or on the 'motor' contacts of pressure switch 	<ol style="list-style-type: none"> 1. Turn system on and wait two minutes to see if pump turns off 2. Check voltage during start. Voltage must be within +/- 10% of nominal voltage to start motor. Increase wire size if necessary to lower voltage drop. 3. Consult factory, adjust or replace 4. Add receiver vessel or increase pipe volume after compressor 5. Rewire to have incoming power into the 'line' contacts of pressure switch
Unit short cycles repeatedly	<ol style="list-style-type: none"> 1. Air pockets in sprinkler piping 2. Piping too restrictive 3. Check Valve has debris stuck in it 	<ol style="list-style-type: none"> 1. Prime sprinkler piping with domestic water source or use digit pressure switch 2. Add pressure relief valve downstream of the check valve 3. Repair or replace the check valve
Pump creates too much pressure	<ol style="list-style-type: none"> 1. 2-minute minimum run time function engaged: Digital pressure switch 2. Cut-out pressure set over pump deadhead (churn pressure): mechanical pressure switch 	<ol style="list-style-type: none"> 1. Install pressure relief valve and line -or replace Digital switch with mechanical switch 2. Consult factory
Alarm on Digital pressure switch display	<ol style="list-style-type: none"> 1. 'AL 4' Alarm but system is at required pressure 2. All other alarms 	<ol style="list-style-type: none"> 1. Hold "Enter" button for 3 seconds to clear 2. Consult factory for instructions

Pump Test

To initiate a pump test, simply hold the UP and DOWN arrow buttons for 3 seconds.



During a pump test, the pump will run for 15 seconds. After 10 seconds of runtime, the low-pressure alarm, AL 4, will turn on.

To reset the alarm, hold the "Enter" button for 3 seconds.

Alternate Displays

To view "AMPS", "PSI", or "CYCLES" simply press the "ALT" button to cycle through the displays.



The "AMPS", "PSI", and "HOURS" LED's will turn on or off to indicate the units displayed.



The display will default back to "PSI" if untouched for 15 seconds.

Alarms

When the device enters alarm mode, the display will flash between the normal display and the alarm code.

The following are the 3 alarm codes:

- AL 1 = Motor failed to start.
- AL 2 = Motor exceeded 45 minutes of constant runtime.
- AL 3 = 6 motor cycles were detected within 1 hour.

AL4 = Low pressure, 10 seconds below cut out pressure

Resetting an Alarm

Hold the "ENTER" button for 3 seconds.

Section 11 - Warranty Policy

GENERAL PROVISIONS & LIMITATIONS

General Air Products, Inc. (the "Company") warrants to each original purchaser ("Purchaser") of its new products from the Company or its Authorized Distributor that such products are, at the time of delivery to the Purchaser, made with good materials and workmanship. No warranty is made with respect to:

1. Any product, which has been repaired or altered in such a way, in the Companies judgment, as to affect the product adversely.
2. Any product, which has, in the Companies judgment been subjected to negligence, accident, improper storage, improper installation or application.
3. Any product, which has not been operated or maintained in accordance with the recommendations of the Company.
4. Components or accessories manufactured, warranted and serviced by others.
5. Any reconditioned or prior owned product.

Claims for items described in 4. above should be submitted directly to the manufacturer.

WARRANTY PERIOD

The Company's obligation under this Warranty is limited to repair or, at its option, replacing during normal business hours at the designated facility of the Company, any part that in its judgment proved not to be as warranted within the applicable Warranty Period as follows.

COMPONENTS

All non-consumable components are warranted for 12 months from the date of purchase. Consumables are not covered under warranty. The unit must have been installed by either a factory authorized distributor or agent in accordance with the factory recommendations taking into account all other local site conditions not originally noted to the factory. The unit must be operated and maintained in accordance with the Factory recommendations and original design conditions. Failure to provide such proof of the above may void warranty.

LABOR TRANSPORTATION & INSPECTION

The Company will repair or replace any product or part thereof which in the Companies judgment is proved to be not as warranted. Labor costs are not covered under warranty.

All costs of transportation of product, labor or parts claimed not to be as warranted and, of repaired or replaced parts to or from factory shall be borne by purchaser. The Company may require the return of any part claimed not to be as warranted to one of its facilities as designated by the Company, transportation prepaid by Purchaser, to establish a claim under this warranty.

Replacement parts provided under the terms of the warranty are warranted for the remainder of the Warranty Period of the product upon which installed to the same extent as if such parts were original components.

DISCLAIMER

THE FOREGOING WARRANTY IS EXCLUSIVE AND IT IS EXPRESSLY AGREED THAT, EXCEPT AS TO TITLE, THE COMPANY MAKES NO OTHER WARRANTIES, EXPRESSED OR IMPLIED OR STATUORY, INCLUDING ANY IMPLIED WARRANTY OR MERCHANTABILITY.

THE REMEDY PROVIDED UNDER THIS WARRANTY SHALL BE THE SOLE, EXCLUSIVE AND ONLY REMEDY AVAILABLE TO THE PURCHASER AND IN NO CASE SHALL THE COMPANY BE SUBJECT TO ANY OTHER OBLIGATIONS OR LIABILITIES. UNDER NO CIRCUMSTANCES SHALL THE COMPANY BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, EXPENSES, LOSSES OR DELAYS HOWSOEVER CAUSED.

No statement, representation, agreement, or understanding, oral or written, made by any agent, distributor, representative or employee of the Company which is not contained in this Warranty will be binding upon the company unless made in writing and executed by an officer of the Company.

This warranty shall not be effective as to any claim which is not presented within 30 days after the date upon which the product is claimed not to have been as warranted. Any action for breach of this warranty must be commenced within one year after the date upon which the cause of action occurred.

Any adjustment made pursuant to this warranty shall not be construed as an admission by the Company that any product was not as warranted.

PROMPT DISPOSITION

The Company will make a good faith effort for prompt correction or other adjustment with respect to any product, which proves to be defective within the warranty period. Before returning any product, write or call the distributor, agent or authorized company from which the product was purchased, describing defect and giving date and number of original invoice, as well as proof of Factory supplied consumables and proof of scheduled maintenance. Title and risk of loss pass to buyer upon delivery to the common carrier.

PRODUCT SUITABILITY

Many States, Localities and Countries have codes and regulations governing sales, construction, installation, and/or use of products for certain purposes, which may vary from those in neighboring areas. While General Air Products, Inc. attempts to assure that its products comply with such codes, it cannot guarantee compliance, and cannot be responsible for how the product is installed or used? Before purchase and use of a product, please review the product application, and national and local codes and regulations, and be sure that the product, installation, and use will comply with them.

REV:5/16/97

General Air Products, Inc.
118 Summit Drive
Exton, PA 19341
P: 610-524-8950
F: 610-524-8965



Design Limits Information	
Flow Rate:	_____
System Pressure:	_____
Pressure Switch Setting:	On _____ Off _____

[illegible]