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IMPORTANT: ALL INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE.
Consult factory for the most up to date version of this manual - 781-279-4344.

- Please take the time to complete the forms on 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.
### 1.3 General Safety Information (Continued)

**WARNING**  
- 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.

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

**WARNING**  
On systems with a tank supplied by Raimondo Fire Systems, use a backup wrench when adjusting the water inlet piping on the tank. 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 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.
1. Remove tank lid to install float assembly

2. 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.**
Section 2 - System Description

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

⚠️ NOTICE

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.

⚠️ NOTICE

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.

⚠️ CAUTION

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

⚠️ CAUTION

THE SYSTEM MUST BE INSTALLED LEVEL.

⚠️ CAUTION

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

Do not use the system pump to fill the fire system with the initial fill of water. Use the domestic water source to prime the system and tank.

3.5 Wiring

The electrical installation should be in accordance with the National Electrical Code and any local codes and regulations. Pumps 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 valve supplied 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. For information on the testing schedule, consult your installation company.

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

The test connection between the pump discharge and the top of the 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.
Section 5 - Start-Up Checklist

5.1 RFS Unit Start-Up Checklist - Pump Only Units

1.) System consists of pump, skid and control box (control box on deluxe systems only).
2.) Check that the motor is securely fastened to the skid.
3.) Connect sprinkler piping to customer connection on pump skid.
4.) Connect pump suction connection to water source.
5.) Wire control power to pump skid.
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 RFS Unit Start-Up Checklist - Pump & Tank Units

1.) System consists of pump, skid, control box (control box on deluxe systems only) and tank. Reconnect the two at the unions provided.
2.) Check that the motor is securely fastened to the skid.
3.) Connect sprinkler piping to customer connection on pump/tank skid.
4.) Wire control power to pump/tank skid.
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.
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. 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. If the pump does not have a hex bolt, crack the union or flange on the pump discharge pipe.

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

7.1 Complete RFS Unit Water Inlet Connection Diagram

WARNING
Disconnect union prior to sweating the connection to prevent heat from damaging tank or inlet bulkhead fitting.
Section 8 - Process & Instrumentation Diagrams (P&ID)

8.1 P&ID for Deluxe RFS Unit

NOTE:

CONSULT FACTORY FOR BOOSTER UNIT P & ID.
NOT TO BE USED AS A BOOSTER SYSTEM

LEGEND

Pump

Tank Connection

Check Valve

System Pressure Switch
System Pressure Gauge
System Flow Switch
Motor Contactor for Pump
Alarm Horn

Pump Isolation Valve

Main Outlet Connection
Customer
Section 8 - Process & Instrumentation Diagrams (P&ID)

8.2 P&ID for Standard Open RFS Unit

NOTE:
NOT TO BE USED AS A BOOSTER SYSTEM
CONSULT FACTORY FOR BOOSTER UNIT P & ID.

LEGEND
FS-1 SYSTEM FLOW SWITCH
PS-1 SYSTEM PRESSURE GAUGE
P-1 SYSTEM PRESSURE SWITCH

CUSTOMER CONNECTION MAIN OUTLET
PUMP ISOLATION VALVE
CHECK VALVE
TANK CONNECTION
PUMP
Section 9 - Master Electrical Drawings

9.2 Master Electrical Drawings for Standard RFS Unit

NOTES:
1) When switch SW 1 is ON and PS-1 drops pressure, the switch closes.
2) The system alarm hornbell indicates that system has operated in other than test mode. As a warning to the fire protection company, giving time delay on alarm indicates customer wiring.

PUMP MOTOR
GROUND
M

SW-1
PS-1

COM-1
NO-1
NC-1

WATER HORN SWITCH OR BELL (BY OTHERS)

A
B
C
D
Section 9 - Master Electrical Drawings

9.3 Master Electrical Drawings for Deluxe RFS Unit with Complete Controls

[Diagram of electrical connections and components related to Deluxe RFS Unit controls]
### Design Limits Information

Flow Rate: _______________

System Pressure: _______________

Pressure Switch Setting: On _____ Off _____

### Service Sheet

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