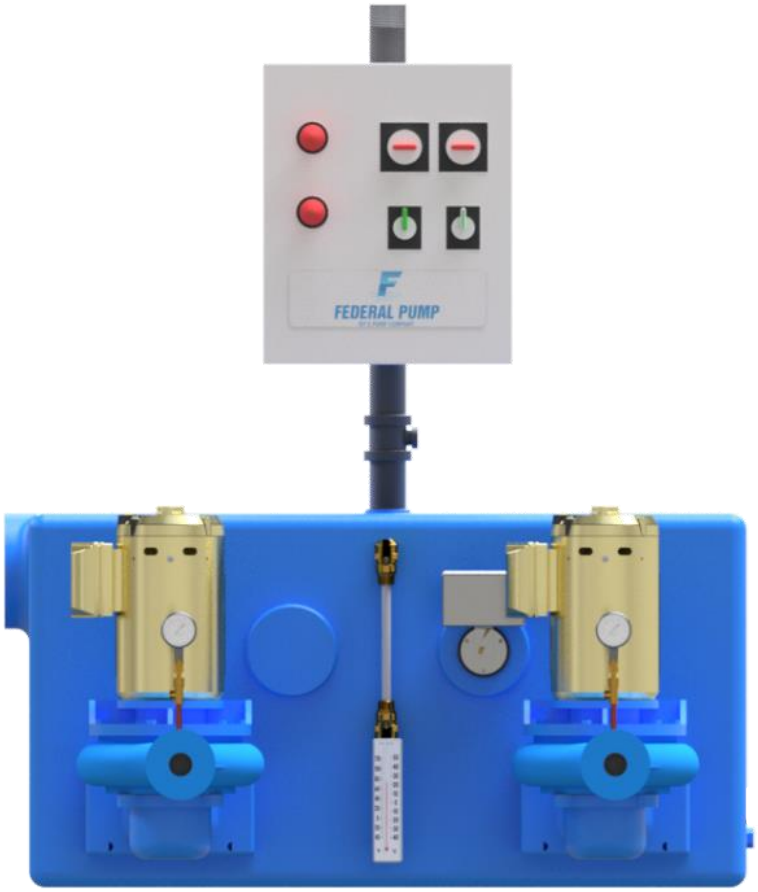
INSTALLATION, OPERATION, AND MAINTENANCE OVERVIEW
SECTION 1: CONDENSATION RETURN UNIT
SERIES CCV



WARNING SYMBOL - This symbol is used throughout the manual to draw the user's attention to certain safety instructions. When shown, the safety warning decal advises: ATTENTION! BE ALERT! YOUR SAFETY IS INVOLVED! Failure to follow these instructions may result in a safety hazard.

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Introduction

These instructions are provided to assist in the installation and maintenance of the Federal Pump Series CCV condensate return units. By following these instructions, the life of the pumping equipment can be extended.

1) Mechanical Components and Installation

1A) Pump System Identification

The CCV unit is provided with a receiver, float switch, pump(s), electric motor(s), and a system-mounted control panel, pre-wired to the float switches and motors. The unit is provided as Simplex (one pump & motor) or Duplex (two pumps & motors). Immediately upon receipt of the CCV unit, inspect and check the unit for any shipment-related damage. If damages are noted, do not put the unit into operation. Report the damage to the transportation shipping agent or your local Federal Pump sales representative for assistance. Electrical connections from the control panel to the motor(s) and float switch are provided standard by the factory prior to shipment. If the connections are stripped, junction boxes damaged, or motor caps bent, **do not install the unit.** Contact your local Federal Pump sales representative for assistance.

Each condensate unit is provided with a nameplate that identifies the system model number and other data specific to each condensate unit. Refer to that model number when requesting service and replacement parts in the future. Once located, verify the model number by cross-checking it with the contractor-assigned project tag number to complete pump system identification.

1B) Equipment Placement

After inspection and verification of the CCV unit, ensure the unit is installed or stored in a dry area with ambient temperature ranging from 60 to 85 degrees F. The condensate unit is to be stored above floor level to ensure the unit is not exposed to ground or floor water or any other potential flooding.

If the unit is planned for immediate installation, ensure the installation point is accessible for inspection and maintenance 360 degrees around the unit and provide sufficient clearance around the unit for free air circulation. Mount the unit on an elevated concrete pad above the floor level (minimum of 3" or 6" as shown in the plans). Ensure the unit is not exposed to any piping or any other source of potential dripping from water lines, to prevent any water from entering the electric motor, controls, or externally-mounted float switches.
Locate the unit as shown in the construction document and ensure the installation is done by a qualified and licensed contractor.

Once the condensate unit is mounted to the elevated pad, the unit should be shimmed to ensure the installation is level - grouted where practical. Once the grouting cement has hardened, tighten down on the hold-down bolts. Hold-down bolts should be sized and located as shown in the plans and outlined in the approved submittals.

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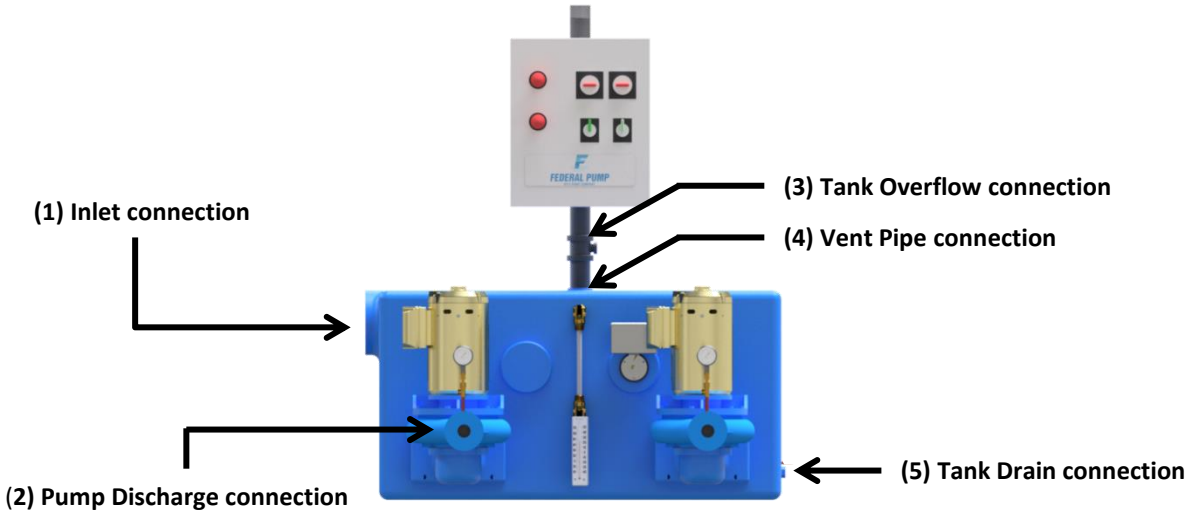
1C) Recommended Piping Connection

Piping connections should be made in accordance with all local building code requirements and by a licensed and certified contractor. Refer to local building codes regarding the installation of steam or boiler related products. Piping connections provided by the installing contractor should be sized accordingly and ensure there is no strain on the pump connections. **Piping should be supported independent of the pump and receiver connections**.

Connections to be made to the CCV unit receiver include:



1. **Inlet connection**: Ensure the inlet connection is sized according to the receiver tapped and threaded opening. For connection to a smaller pipe size, a bushing or reducer may be used. For connection to a larger pipe size, an eccentric reducer must be used, with the flat side oriented to the bottom. Inlet bushings or reducers are **not provided by the manufacturer**. If an inlet strainer is provided, it should be installed at the inlet connection point to ensure solids that may damage the pumps do not enter the tank.

2. **Pump Discharge connections**: These are field piping connections. Ensure each discharge connection includes an isolation valve that allows disassembly of each pump and individual check valves are provided .

3. **Tank Overflow connection**: Ensure the overflow connection is sized according to the overflow size and is connected to an overflow point as specified in the plans to prevent condensate from entering the vent in case the water level in the receiver exceeds capacity.

4. **Vent Pipe connection**: Each condensate receiver is provided with a vent pipe to ensure the unit is vented to atmosphere. **It is critical that each unit is vented** to atmosphere.

5. **Tank Drain connection**: Ensure the drain connection is sized according to the receiver drain size and is connected to a drainage point as specified in the plans.

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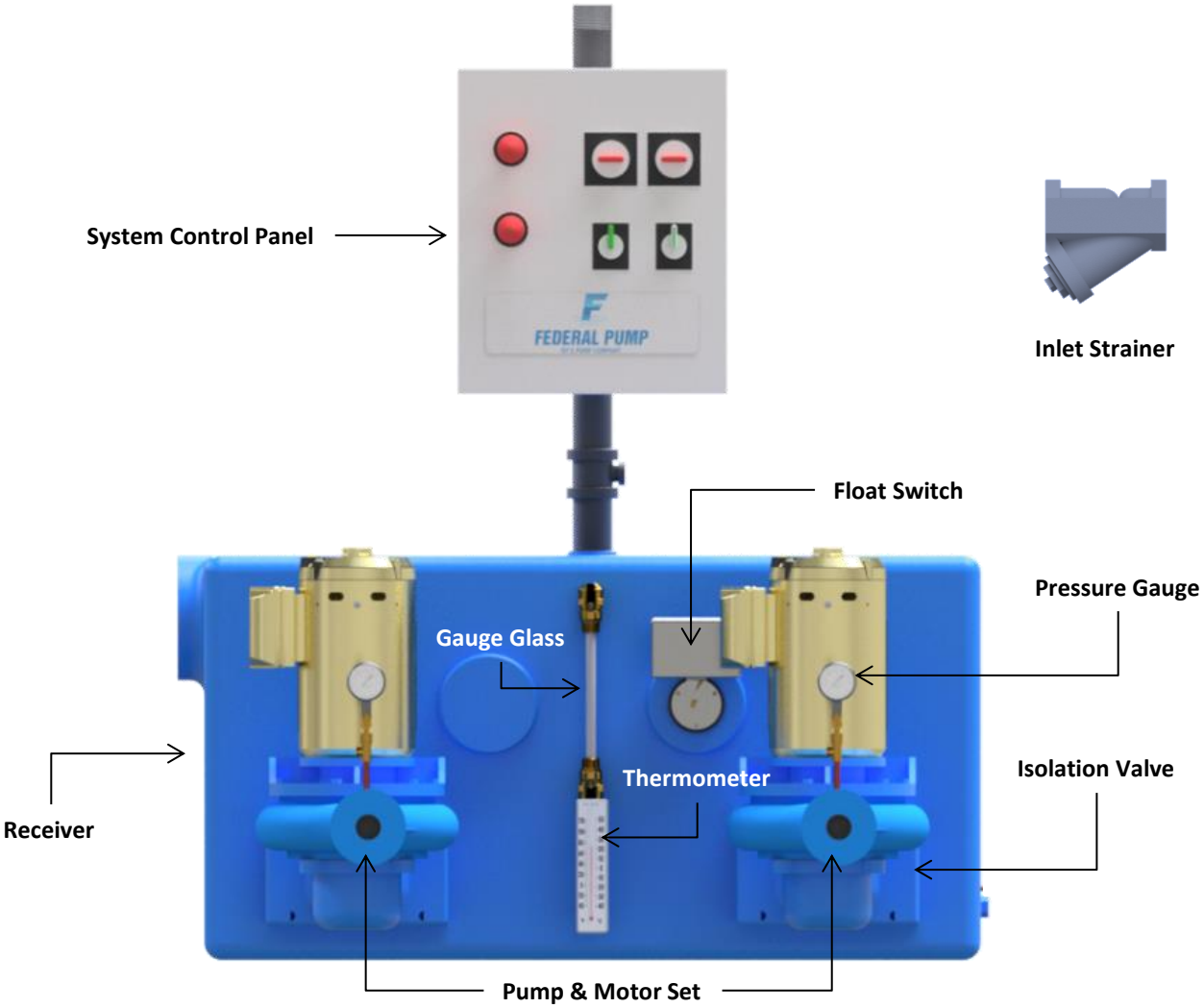
1D) System Components

The CCV unit components may vary according to specifications and requirements. Below are the standard components that come with a simplex / duplex unit. All standard CCV units will include (1) of each control panel, receiver, float switch, gauge glass, thermometer, and temperature label (not shown). Standard Duplex units will include (2) of each pump & motor, isolation valve, and pressure gauge. If an inlet strainer is provided by the manufacturer, it will be shipped loose and not come assembled with the unit. Wired connections between components are not shown.



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2) Electrical Components and Installation

PRIOR to starting the CCV unit, ensure each component is in sound condition and connected properly and tightly! If pre-wired connections are stripped, junction boxes damaged, or motor caps bent, do not start the unit – contact your local Federal Pump sales representative for assistance. Prior to any electric or water connections, the installer needs to verify the electric power source (voltage, cycles, and wire sizes) corresponds with what is on the electric motor nameplate. The installer needs to ensure the pump rotates in the direction of the arrow (cast into the pump casing) once power is provided.

Upon inspection of the condensate unit and verification that the hold down bolts are firmly attached, piping and electrical connections are adequately sized and installed correctly according to local code requirements, the installer is ready to start the unit.

2A) Electrical Components

The CCV unit is provided with a receiver-mounted control panel that requires electrical connections to the electric motor(s) and float switch. Electrical connections from the control panel to the motor(s) and float switch are provided standard by the factory prior to shipment. Check all electrical connections and ensure they are tight and not exposed to any water due to flooding, leaks, or overhead dripping water. Ensure the control panel door has sufficient space to open and close fully and is not blocked by any piping or structural obstacles.

Each control panel is provided with a wiring diagram that communicates where the power leads should be connected. Generally, all electrical connection required for the panel is connected to the power disconnect switch. All internal wiring will have been landed by the factory. Ensure the fuses are sized properly and in working condition. Turn the HOA switch to "OFF" and complete the power connection to the system mounted control panel and engage power to the unit.

2B) Preliminary Start-Up Checklist

- ❑ **Power is Off**. Disconnect switches are in the Off position and HOA in the Off Position.
- ❑ All valves leading to and from the condensate unit are in the closed position.
- ❑ All piping connections have been completed per code and plans.
- ❑ All piping and electrical connections are tight and secured.
- ❑ Pump is installed on elevated pad and bolted in place.
- ❑ Pipes are independently supported and not straining tank or pump connections.
- ❑ No above leaking or dripping water.
- ❑ No construction debris or dust is on the unit or near the electric motor(s) or float switch.
- ❑ No foreign metal materials from the piping connections are in the supply lines to the pump unit.
- ❑ Unit is ready for water and electrical open connections

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2C) Start-Up Checklist

- ❑ Open all valves to the receiver and from the pump discharge.
- ❑ Open all vent line valves and ensure vent connection is open to atmosphere.
- ❑ Close disconnect switch applying power to the unit.
- ❑ "Bump" pumps to ensure correct rotation. If rotation is incorrect, switch the (2) legs in power feed.
- ❑ Re-check pump rotation, and ensure motor is rotating in direction of pump arrow.
- ❑ Allow receiver to fill.
- ❑ Place HOA in "Auto" mode and witness automatic start-and-stop pump cycle.
- ❑ Check amp readings for each motor and compare against motor nameplate.
- ❑ Ensure system does not have any piping or system-related leaks.
- ❑ Ensure receiver drain connections are in place.
- ❑ Check discharge pressure of pump and compare against specified system performance.

3) Maintenance

Annual or semi-annual inspection of the CCV condensate return unit should be completed by the maintenance personnel or with a certified Federal Pump repair service center. Motor amp readings, pump discharge pressure readings, and overall external inspection of the condensate unit will ensure long equipment life. Proper water treatment of the utilized condensate should also be maintained, to avoid prolonged exposure to corrosive carbonic acid, a result of untreated condensed steam. Failure to properly maintain water treatment can cause pump failure due to mechanical seal leaks or accelerated wear and tear.

3A) High Temperature Condensate

Condensate return temperatures should be in the range of 150-180 degrees F. If the temperature of the condensate returned to the unit are in excess of these recommended temperatures, it may indicate that steam traps are malfunctioning and allowing steam to enter the condensate return lines.

3B) Replacement Parts and Kits

Use only authorized Federal Pump replacement parts when servicing or repairing a Federal Pump unit.
Federal Pump maintains an inventory of replacement part kits that include required components for any particular repair issue at hand. Refer to your local Federal Pump sales representative for more information. Include the system model and serial number when inquiring about replacement part kits.