



F003 / F008 / F02 / F04 / F07 / F15 / F30

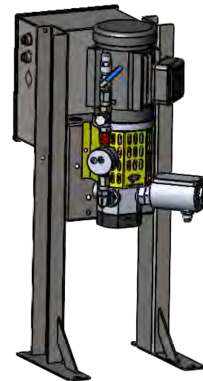
VP System Manual

Vertical F-series pump and metering systems

TECHNICAL MANUAL

Rev G | 2026.09.19

Document BCP-VP-SM



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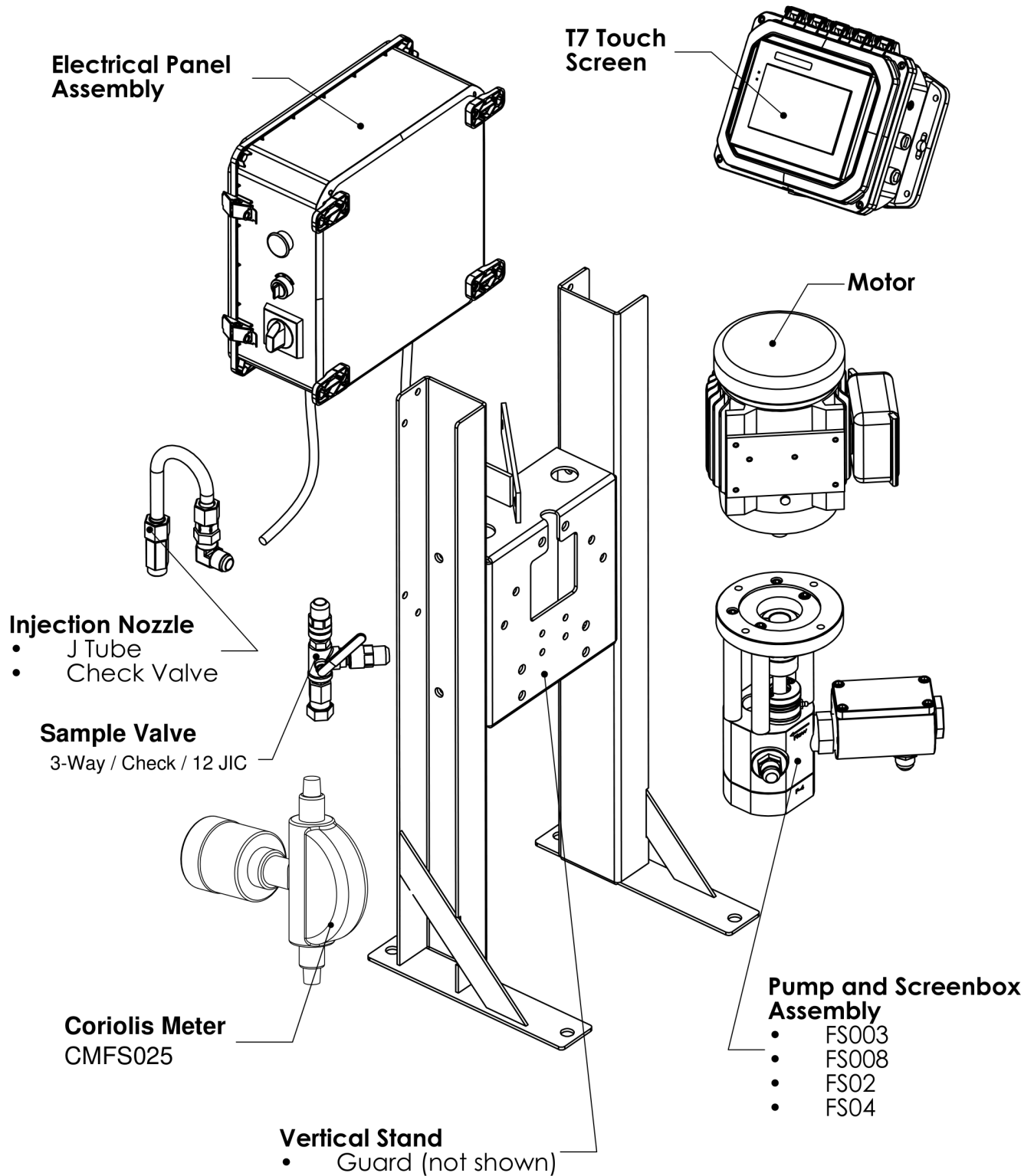
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SCOPE

Vertical systems using F003-F30 pumps. This manual covers the installed system; use the F-Series Pump Manual, Rev E, for pump parts, internal service, dimensions and curves. Installed meters, controls and piping vary by system.

1 Vertical system components

Example F003-F04 additive system with a CMFS025 Coriolis meter.



The motor, coupling and pump share a vertical axis. Guarding is omitted in this exploded view for identification; install all guards before operation.

2 Why the vertical arrangement matters

The installation geometry is part of the system.

Keep liquid at the gears.

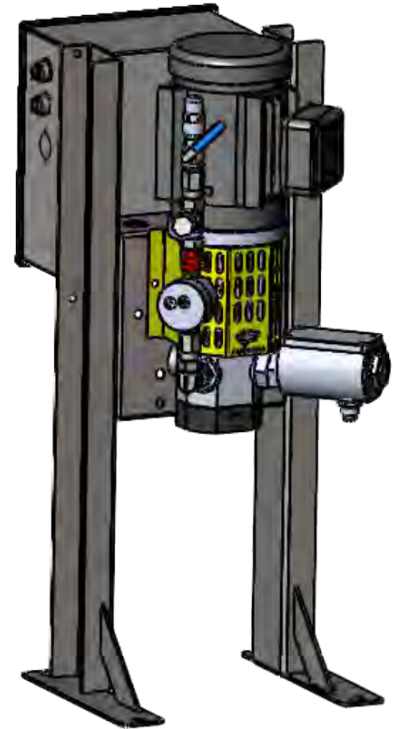
The displacement body sits below the port level. The geometry traps a small liquid charge at the gears, even while reversing to empty the lines. Wet clearances help establish suction at the next start.

Give air a path out.

The vertical displacement section lets air rise toward discharge. Preserve the intended piping arrangement instead of creating a place for air to collect at the pump.

Keep the seal wetted.

The vertical seal chamber retains lubricant above the primary seal. Maintain the installed seal assembly and its specified lubricant.



Preserve the complete arrangement

Keep the motor above the pump, the intended screenbox in place, and the discharge rise shown on page 5.

READY FOR THE NEXT RUN

The trapped charge cannot escape during reversing. No replenishment is required between operating cycles.

3 Installation and motor selection

Install the pump with its shaft vertical and the motor above the pump.

Only qualified personnel may install, wire or service the system. Isolate all energy, prevent restart, relieve trapped pressure and verify the equipment is safe before work. Cool hot equipment and contain product.

Any pump that is heated or pumping hot liquid should be operated with Safety Blankets properly installed.

Standard vertical motors

Pump models	Power	Rated speed
F003 / F008 / F02 / F04 / F07	1 hp	1,150 RPM
F15 / F30	2 hp	1,150 RPM

Keep actual pump speed at or below 1,200 RPM. Verify the installed motor nameplate and configure the drive for that motor and supply.

Mounting and piping

Support the assembly. Secure the stand or beam mount. Support piping independently so it does not load the pump or screenbox. Keep guards and service points accessible.

Keep the inlet clean. Remove construction debris. Fit the screen specified for the material; seal inlet joints and seat the screenbox lid O-ring.

Preserve the retained charge. Turn upward immediately at the pump discharge and provide at least a 4 in vertical rise before routing onward. Preserve the screenbox ledge and port elevations.

Verify the flow path. Confirm supply, discharge, flow direction, valve positions and suitable pressure protection. Install metering and injection hardware in the required orientation.

4 System start, operation and shutdown

Use the installed control manual for start/stop commands, interlocks and metering functions.

Prepare the system

1. Confirm the supply contains the intended material and the inlet path is ready. Verify screenbox lid, seals, fittings and guards are secure.
2. Confirm the discharge route, injection point, sample/three-way valve positions and pressure protection. Bring temperature-sensitive product and equipment to the required operating condition.
3. Confirm the selected control mode, operating target and installed meter. Verify required external permissives and stop controls using the supplied control instructions.
4. Apply the pump start-up checks in the F-Series Pump Manual. Begin at low speed and check measured delivery, pressure and leakage before increasing speed.

During operation

Monitor actual flow, pressure and leakage. Keep guards, lids and required Safety Blankets installed. Keep pump speed at or below 1,200 RPM. Use speed control to match the application; do not use an internal relief valve as a flow-control device.

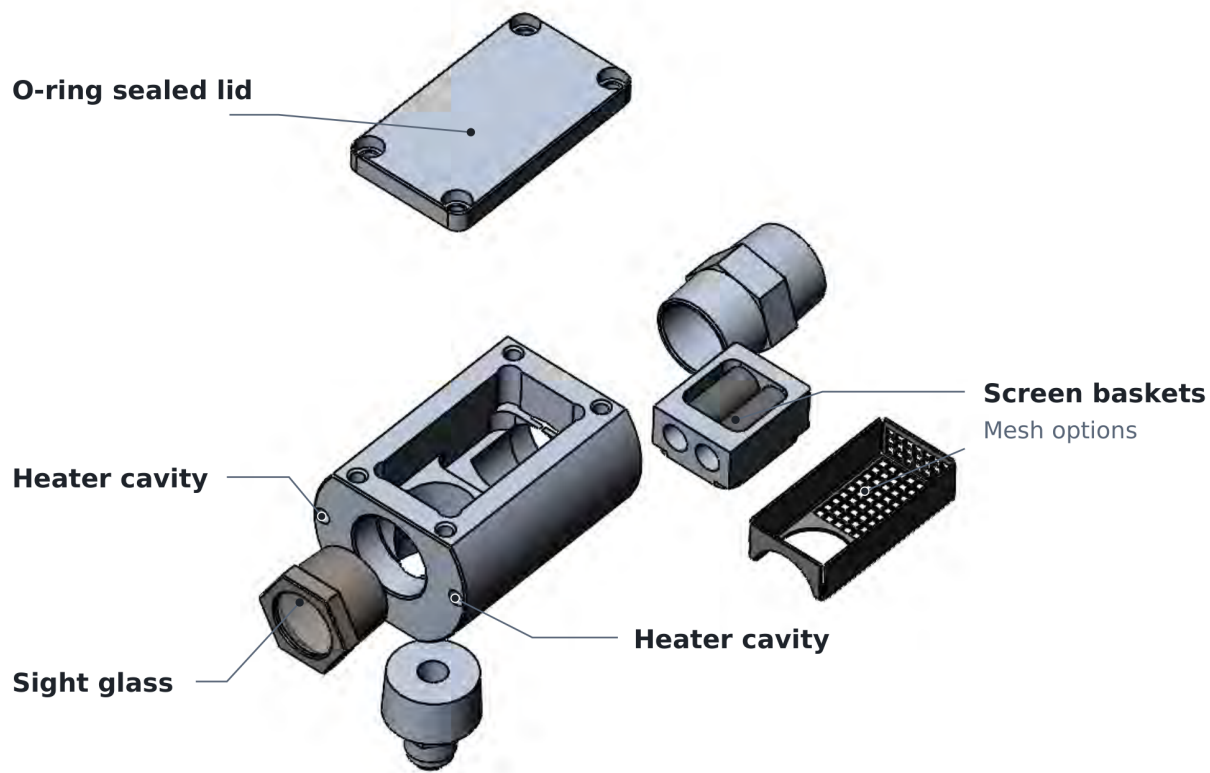
Shutdown and line clearing

Stop through the installed control sequence. When reversing to empty the lines, the liquid charge remains trapped in the pump. Confirm the piping, meter and valve arrangement permits reverse flow; a check valve can block it.

Before disconnecting a hose, opening the screenbox or servicing equipment, isolate the drive and product supply, relieve trapped pressure, and contain the product. Use a material-compatible cleaning method for the installed system.

5 Screenbox service

A clean screen and sealed lid protect the inlet condition.



Two baskets show examples of available mesh options.

Install one basket at a time.

Clean and inspect

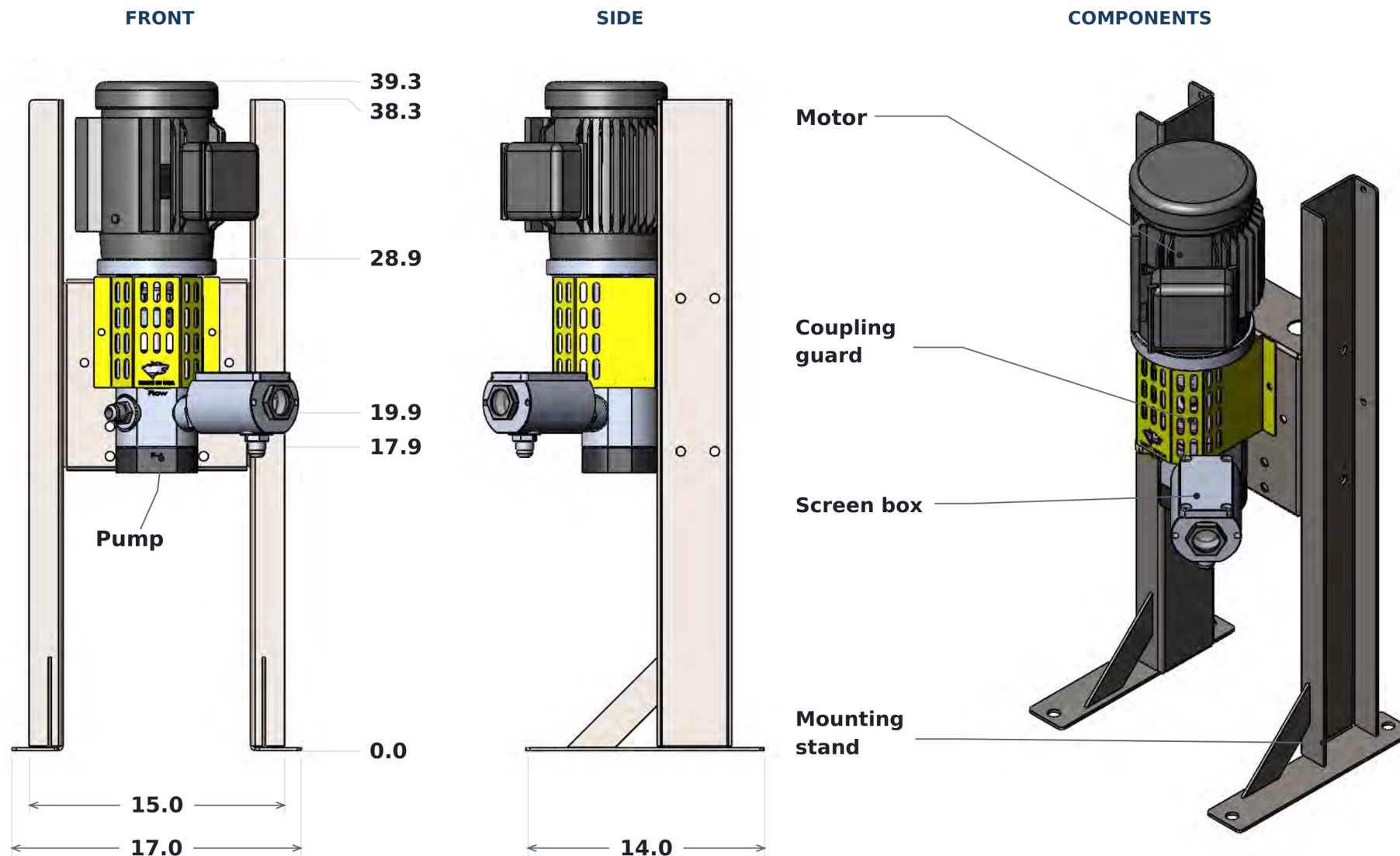
1. Stop, isolate and depressurize before removing the lid. Contain liquid and protect personnel from hot or hazardous product.
2. Remove the basket and clean it using a method compatible with the material and screen. Inspect the basket, lid, O-ring and sealing faces; replace damaged parts.
3. Reinstall the basket and O-ring, secure the lid, and check for leaks during a slow restart.

RETAINED BY THE GEOMETRY

The screenbox ledge and upward discharge retain the charge at the pump. Reversing empties the lines without emptying this charge.

6 Vertical assembly and dimensions

Component identification and dimensional reference for F04-F30. Dimensions in inches.

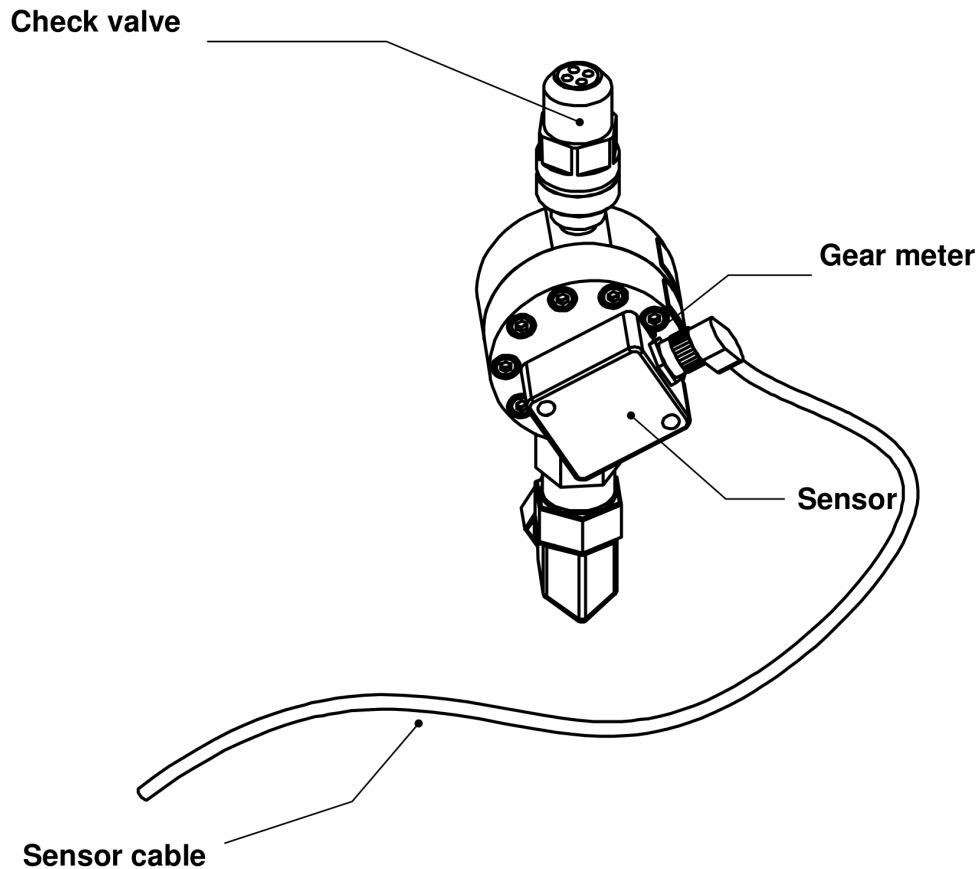


Ports: 1-1/2" FPT; #12 MJIC adapters shown. Confirm the supplied assembly drawing before laying out anchors or piping. This illustrated stand and motor arrangement does not apply to F003-F02.

7 Metering assemblies

Bearing gear meter and Micro Motion Coriolis options.

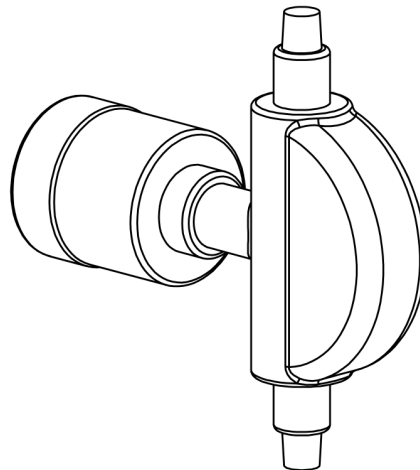
Gear meter assembly



Coriolis option

Micro Motion CMFS025.

Use the meter installed on the system.



Confirm measuring range, materials, flow direction and calibration for the duty. Use the meter and controller instructions for electrical setup.

8 Injection, sampling and gauges

Keep the injection check valve and J-tube in their specified vertical orientation.

Sample Valve Assembly:

- #12 JIC
- SS Valve



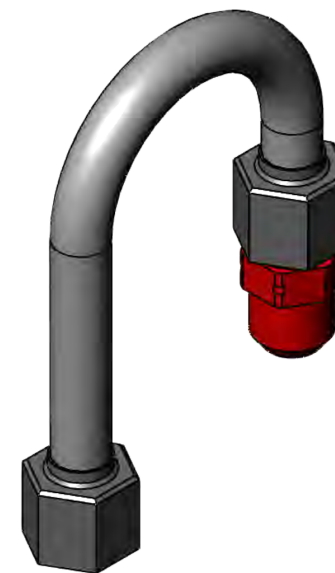
Gauge Assembly:

- #12 JIC
- Pressure or Vacuum available



Injection Assembly:

- #12 JIC
- Vertical Check Valve
- J-Tube Back Flow Seal

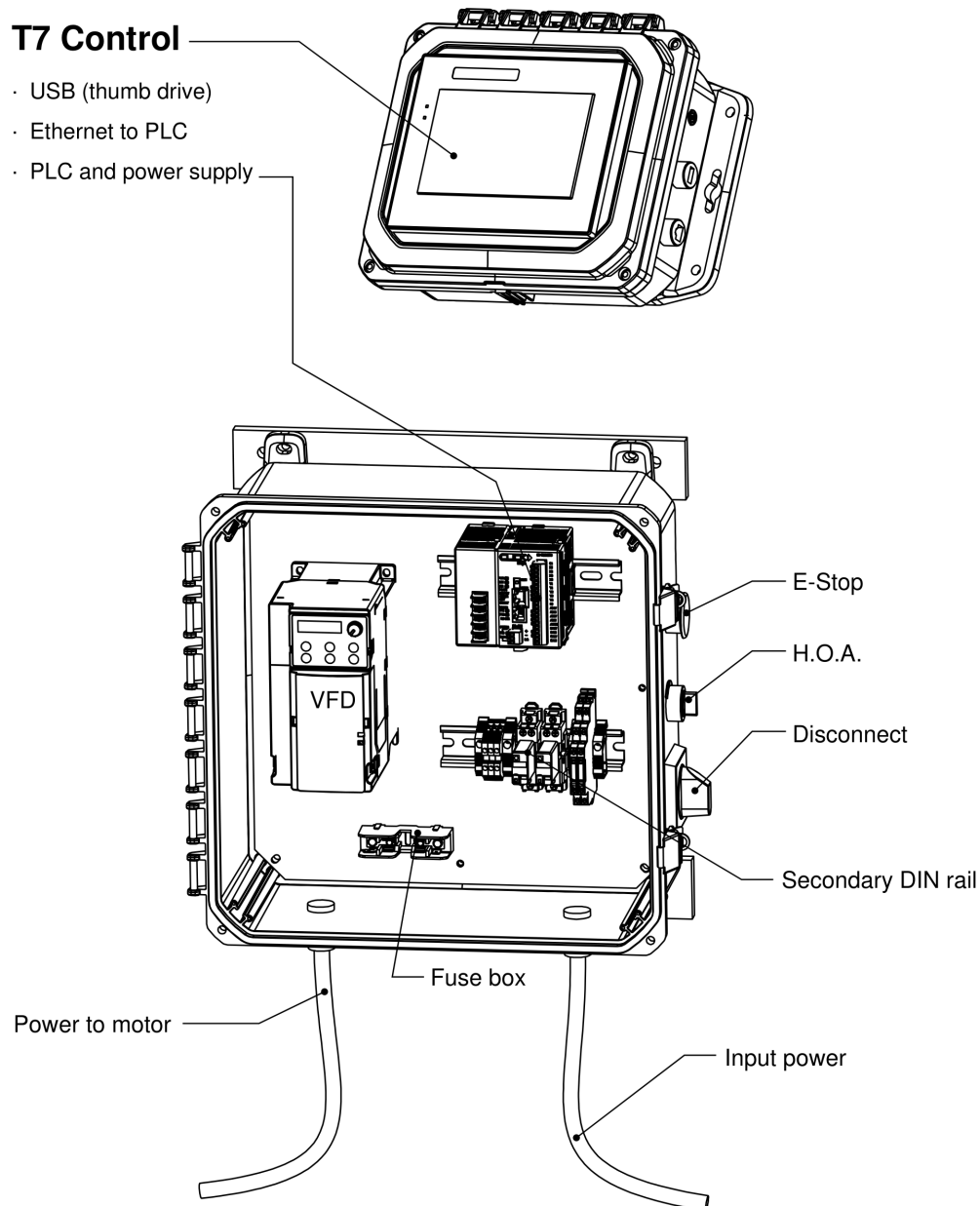


Identify the pressure/vacuum gauge, sample valve and injection assembly before use. Isolate and depressurize before disconnecting fittings; contain product from sampling or service.

9 Controls and electrical interface

Example panel and T7 arrangement; use the supplied electrical drawing for the actual system.

Bring the controls to the pump. The T7 panel can easily move from the control room to the pump for setup and troubleshooting, so the operator can watch the equipment while using the controls.



Verify motor, supply and control ratings before connection. Qualified electrical personnel must use the installed schematic and drive settings. Use the applicable T7 manual for operating modes, calibration and protected setup.

Identify the disconnect, emergency stop and local/remote selector before operation. Keep panels closed and secured during normal operation.

10 System maintenance and support

Keep system inspections separate from internal pump service.

System inspection

Inspect stand fasteners, guards, hoses, fittings and valve positions. Look for leakage and changes in measured delivery.

Keep the screenbox clean and sealed. Preserve the upward discharge rise and the motor-above-pump arrangement.

Check meter and control indications using their supplied instructions. Record the actual settings and readings before requesting help.

Use the common pump reference

[Pump models and operating data - F-Series Pump Manual, page 3](#)

[Pump parts and internal service - F-Series Pump Manual, pages 6-12](#)

[Pump maintenance - F-Series Pump Manual, page 15](#)

[Pump curves - F-Series Pump Manual, pages 16-17](#)

SEND PHOTOS BEFORE CALLING

Send wide, well-lit, high-resolution photos from several angles: the complete pump, drive, piping, valve positions, controls and surrounding installation. Close-ups may supplement the wide views. BearCat can zoom in; it cannot zoom out.

Include model and serial numbers, product and temperature, operating readings, when the issue occurs, what still works, and recent work or replacements. For controlled systems, include HMI/PLC versions and drive indicators.

Rev G - 2026.09.19. Corrects heater-cavity leaders to the two front-face holes. Rev F added the shaded screen-box detail and simplified T7 panel callouts. Rev E improved vertical assembly identification and added the movable-panel note. Rev D simplified service instructions and the gear meter. Reference: F-Series Pump Manual, Rev E. Drawing basis: BearCat F-Pump (2023) and VP (May 2025).