

((This is a Master, Edit for Specific Application))
Pulsafeeder Inc. –Pulsatron MP Series Metering Pumps (for flow rates up to 25 gph)

PART 1 – GENERAL

1.01 GENERAL

This specification covers the supply, installation, and testing of completely functional metering pump feed systems including all necessary accessories and appurtenances as shown on the drawings and described herein. A single chemical metering pump manufacturer shall be responsible for supplying all components of the metering pump feed system.

1.02 QUALITY ASSURANCE

For the purpose of establishing quality assurance, experience, and system reliability, the products described herein are based on those metering pumps manufactured by Pulsafeeder Inc. All pumps shall be shop tested for capacity and pressure with water prior to shipment.

1.03 WARRANTY

The chemical metering pump manufacturer shall provide a two-year warranty on the electronic circuit board and on the mechanical drive.

PART 2 – PRODUCTS

2.01 GENERAL

Manufacturers:

1. Pulsafeeder Inc.
2. Pre-approved equal

2.02 DESCRIPTION

A. The chemical metering pump(s) shall be microprocessor-controlled, simplex, solenoid-driven, reciprocating, mechanically actuated diaphragm style. The pump shall have a temperature compensated 144 x 32 pixel graphical back lit LCD display and indicator lights. Keypad will allow for simple scrolling and display of programmed parameters. To prevent damage to pump from over heating, the solenoid shall have automatic reset thermal overload protection. For overpressure conditions, pump shall automatically stop pulsating when discharge pressure exceeds pump pressure by not more than 35% when pump is set at maximum stroke length.

The pump drive shall be encased in a water resistant housing constructed of a chemically resistant glass filled polyester.

B. The power supply shall be ___ VAC, ___ Hz, single phase. The microprocessor is to automatically compensate for supply voltage variations within 10% of the rated voltage such that the frequency of the pump remains constant.

C. The liquid end shall be physically separated from the drive unit by a back plate with weep hole creating an air gap. An NTR natural rubber seal shall prevent contamination of the solenoid if the primary diaphragm fails. The diaphragm shall be constructed of a Hypalon backing with metal insert, PTFE faced and fabric reinforced.

2.03 LIQUID END ((SELECT ONE))

The liquid end shall be glass filled polypropylene with ((Hypalon/Viton/TFE)) seals, with bleed valve assembly, including return tubing up to 240 gpd. The suction and discharge valves come in either single or double ball check valves dependent on seal selection. ((TFE seal double ball, Hypalon/Viton single ball))

Or

The liquid end shall be PVC with ((Hypalon/Viton/TFE)) seals, with bleed valve assembly (exception 250 psig), including return tubing up to 240 gpd. The suction and discharge valves come in either single or double ball check valves dependent on seal selection. ((TFE seal double ball, Hypalon/Viton single ball)) Bleed Valve is not included for 250 psig selections.

Or

The liquid end shall be Styrene-Acrylonite (SAN) with ((Hypalon/Viton/TFE)) seals, with bleed valve assembly, including return tubing up to 240 gpd. The suction and discharge valves come in either single or double ball check valves dependent on seal selection. ((TFE seal double ball, Hypalon/Viton single ball))

Or

The liquid end shall be Polyvinylidene Fluoride (PVDF) with ((Hypalon/Viton/TFE)) seals, with bleed valve assembly, including return tubing up to 240 gpd. The suction and discharge valves shall be of the double ball check design

Or

The liquid end shall be constructed of 316 stainless steel with ((Hypalon/Viton/TFE)) seals. The suction and discharge valves shall be of the double ball check design.

Or

The liquid end shall be automatically degassing (exception 150 psig or less only, 44 GPD max.), constructed of PVC with ((Hypalon/Viton/TFE)) seals, including return tubing. ((TFE seal double ball, Hypalon/Viton single ball))

2.04 PROGRAMMING AND CONTROL

- A. Stroke length control shall be manually adjusted between 100% and 0% with a stroke adjustment knob with a locking mechanism for desired setting.
- B. Programming shall allow pump to be controlled via an analog signal to proportionally adjust the frequency via a 4-20mA or 20-4mA signal. The input shall be 12 bit and a fully scalable 4-20mA current signal that can also be calibrated to precisely match the current signal reading of the sending device. Frequency can be manually adjusted between 1-125 strokes per minute in 1% increments. Pulse signals can be multiplied or divided by 1 to 999 to meet application requirements. Timed sequences can be set for intervals and rate for repetitive metering. Control cable included with metering pump.
- C. Multiple language capability shall permit the user to program the pump for English, Spanish, German or French.
- D. Stop function allows an external volt free contact closure to cause the pump operation to stop, in either manual or automatic mode, and illuminate a red indicator light on the pump control panel. The pump shall resume normal operation when the contact opens. The pump is to be equipped with a solid state signal level output relay, rated at 24 VDC, 10 Ma maximum, as an option a solid state power level relay rated at 250 VAC, 0.5 Amps maximum can be specified. Relay closure to occur for the alarm or condition selected using the 6-button keypad. Liquid low-level indicator as standard.
- E. Reset button on front face of metering pump to reset the circuit breaker.
- F. The pump shall display the GPH or LPH and GPD and LPD on the pumps LCD. The pump shall be factory preset to the pumps rated output; a manual volume calibration can be performed onsite to fine tune reporting.
- G. An optional (available only on specific models) flow verification system shall permit the pump to detect if chemical output from the pump is present. If a no flow condition occurs the pump will stop pumping and trigger and alarm condition on the display and may also be programmed to activate the signal level or power level output relays if desired.

2.05 ACCESSORIES ((ALL ARE OPTIONAL AND MAY BE INCLUDED AS SEPARATE ITEMS OR AS COMPONENTS OF A METERING PUMP SYSTEM))

- A. The pump should be assembled on a wall mount or floor mount in Polyethylene, Fiberglass or Stainless Steel material. A single pump manufacturer should be responsible for supplying and assembling all components of the metering pump system, in addition to testing the skid mounted metering system for maximum output of metering pump or to maximum pressure of pipe material selected prior to shipment plus fully tested with any instrumentation or control panel that is integrated within the system.
- B. A foot valve and injection valve constructed of materials compatible with chemical being used shall be provided with each pump.
- C. Level wand with selectable 26", 42", 60" to interconnect to the stop function of the MP Series Metering Pump with optional 10' cable connector.

The stand shall include the following accessories, pre-piped:

- D. An adjustable pressure, diaphragm type backpressure/anti-siphon valve, constructed of materials compatible with chemical to be used.
- E. An adjustable pressure relief valve constructed of materials compatible with chemical to be used.
- F. A pump mounted Five Function Valve can be provided for Back Pressure, Anti-Siphon, Pressure Relief, Draining of discharge line and priming.
- G. An air charged bladder-type pulsation dampener, constructed with materials compatible with chemical to be used, should be provided with each pump. The pulsation dampener shall be sized to reduce pulsations by at least 90% at full pump capacity.
- H. A clear PVC calibration column with FNPT fitting on top and bottom shall be provided with each pump. The column shall be sized to provide adequate draw down at pumps maximum pump capacity.
- I. Twelve feet of tubing compatible with chemical to be used shall be provided with each pump where applicable.

- J. The pumps reagent head is facing the open side of system for easy access to wet end and programming. The suction piping is sloped with the low end at the metering pump wet end. Clear PVC piping is used on the system inlet and the pressure relief valve leg.
- K. Standard control interface panels are at a 30-degree mounting angle. Power and signal are integrated in a NEMA 4X FRP enclosure.
- L. Flush valves will be included on the suction and discharge side of the metering pump system
- M. The system features an integral spill containment basin.

2.06 APPLICATION

- A. Quantity:
- B. Chemical Service:
- C. Capacity (US gph):
- D. Backpressure (psig):
- E. Suction Conditions:
- F. Discharge Conditions:

END OF SECTION