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## **Specifications of the V-RAD Chemical Solution Feed System**

Hydro Instruments Vacuum – Revolving Automatic Doser for (0.5, 1.5, 3.5 or 8) Gal/Hr  
Maximum Capacity

### **1.01 GENERAL**

#### **1.01.1 Completeness**

The system shall be complete with all components, equipment, and appurtenances.

#### **1.01.2 Quality Assurance**

All materials and components shall be new and unused of first quality by well-known manufacturers. Inferior materials or components shall not be allowed.

### **1.02 MANUFACTURER**

The manufacturer shall be Hydro Instruments, Perkasie, PA, USA or approved equal. The chemical solution feed system shall be the Hydro Instruments V-RAD.

### **1.03 CHEMICAL SOLUTION FEED SYSTEM**

#### **1.03.1 General**

1. The chemical solution feed system shall be vacuum operated.
2. The system shall have a feed capacity of 0.5, 1.5, 3.5, or 8 gallons per hour.
3. The system shall convey the chemical solution under vacuum from the chemical storage drum to the ejector assembly.
4. The system shall be constructed of materials suitable for the appropriate chemical solution.

#### **1.03.2 Secondary Check Valve**

1. One secondary check valve will be supplied as a safety precaution in the event of failure of the primary check valve that is located in the Ejector.
2. For maximum corrosion resistance, all wetted parts shall be constructed of PTFE (Teflon).
3. This check valve shall be spring loaded and normally closed.
4. The check valve shall require the presence of a vacuum to allow feed of the chemical solution in the appropriate direction only.

### 1.03.3 V-RAD (Feed Rate Controller)

1. Feed rate control shall be accomplished by means of intermittent alignment of a fixed area orifice contained in a rotating stem.
2. The stem shall be completely captured in a PTFE (Teflon) seat.
3. The stem shall be directly coupled to a rotary motor. The motor shall rotate the stem in movements of 90° (ninety degrees) only. Each movement shall be separated by a pause of variable duration.
4. Four (4) LED indicator lights shall be provided as visual indication of stem position.
5. Each pause shall either represent a period of feed or no feed. Control of the overall feed rate is achieved by varying the ratio between the pause times for feed and no feed.
6. Each period of feed shall allow chemical passage through the orifice in the opposite direction to the one previous. This provides regular flushing of the orifice.
7. The device shall allow for intermittent operation by providing an operation (enable / disable) relay input.
8. Manual feed rate control shall be accomplished by means of a pushbutton interface and feed rate setting equal to the percentage of the maximum capacity of the orifice in use.
9. The controller shall accept a 4-20 mA analog input signal for automatic proportional (flow) control.
10. A 4-20 mA output signal representative of chemical feed rate shall be provided.
11. The dosage rate shall be adjustable during automatic control.

### 1.03.4 Ejector

1. The one (1) ejector shall be water operated venturi nozzle type. The ejector shall provide the operating vacuum for the system.
2. The ejector shall incorporate a spring loaded, normally closed check valve to prevent the backflow of water into the chemical storage drum.
3. The check valve shall be suitable for backpressures up to a minimum of 100 psi.
4. Ejector check valve shall automatically close upon the loss of vacuum in the Ejector.