



LYNN Engineered Systems

## VACUUM PRIMING SYSTEM

### PART 1 GENERAL

#### 1.01 SCOPE

Furnish two simplex automatic vacuum priming systems consisting of vacuum pump, control panel, and accessories all mounted on a horizontal receiver. Single point design shall require only one electrical and one mechanical connection for installation.

#### 1.02 OPERATING CONDITIONS AND PERFORMANCE REQUIREMENTS

- A. Number of Vacuum Pumps: 1 per system
- B. Volume: \_\_\_ ACFM open flow
- C. Design Vacuum: \_\_\_ in. Hg absolute
- D. Maximum Pump Speed: 1750 or 3550 rpm

#### 1.03 SUBMITTALS

- A. **SHOP DRAWINGS & SYSTEM COMPONENTS:**  
Contract specific system general arrangement and control schematic drawings for vacuum priming system, together with detailed specifications and data covering materials used, and component parts forming a part of the equipment furnished, shall be submitted for review in accordance with the procedures and requirements set forth in Division 1.
- B. **SERVICE MANUALS:**  
Submit complete service manuals including copies of all drawings, description of operation, maintenance data and schedules, and replacement parts lists. Submit manuals in 3-ring binders including table of contents, and heavy duty tab section dividers.

#### 1.04 QUALITY ASSURANCE

- A. **Standardization:** The entire vacuum priming system, including vacuum pump, and all valves and appurtenances described herein are to be provided by a single vendor.
- B. **Source Quality:** Manufacturer to have a minimum of Ten years experience in the design and manufacture of automatic vacuum priming systems. Prior to shipment, all equipment to be tested at manufacturer's plant to demonstrate suitability of the equipment.



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## PART 2 PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS

Vacuum priming system shall be equal to model APS-\_\_\_RV-\_\_\_H Simplex Automatic Vacuum Priming system as manufactured by Lynn Engineered Systems or approved equal.

### 2.02 VACUUM PRIMING SYSTEM

- A. The vacuum pump shall be mounted on the air receiver.
- B. Vacuum pump shall be a Rietschle (or equal) oil lubricated rotary vane model \_\_\_\_\_ and shall have an open flow (@ 0" HgV) of no less than \_\_\_\_\_ SCFM, and an ultimate vacuum of .075 Torr (29.92" Hg gage). Each pump shall be direct coupled to a \_\_\_ HP, TEFC motor wired for operation on a 230/460V/60Hz three phase power supply. Belt drives shall not be permitted.
- C. Vacuum pump shall be constructed primarily of cast iron with ductile iron rotor and shaft. It shall be equipped with three cast aluminum alloy vanes for maximum life. Multiple stages of liquid and aerosol oil separation shall be integral to the pump to ensure clean discharge air. An oil drain valve shall be piped to the edge of priming system for ease of maintenance. Maximum noise level of vacuum pump shall be \_\_\_ dB(A) or less at 3 ft.
- D. Each pump assembly shall be supplied with the following equipment connected to the inlet: a 5-micron inlet filter; an inlet check valve; isolation valve; and a flexible connector shall be used between vacuum pump and receiver tank for a vibration free attachment.

### 2.03 RECEIVER

The receiver shall have a capacity of \_\_\_\_\_ gallons and be designed to meet ASME code for unfired pressure vessels. The receiver shall be horizontal and have the vacuum pump mounted on top. It shall include the following equipment pre-piped and mounted: a sight gauge for visual inspection of water accumulation within the receiver; a protective high water level switch to shut down the system and provide an alarm during a high water condition; a liquid filled vacuum gauge with gauge valve to monitor system vacuum level; a vacuum relief valve to limit tank vacuum; a vent valve to facilitate draining; a manual drain valve for draining accumulated water and condensation; a vacuum pump isolation ball valve; an inlet ball valve to isolate the priming system from the process vacuum line; and a field adjustable vacuum switch for automatic operation of system between preset vacuum levels. The receiver shall have supports for permanently anchoring to the floor.



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#### 2.04 CONTROL PANEL

Automatic controls shall be housed in a NEMA 4/12 enclosure and shall include: a combination motor starter with thermal, magnetic and short-circuit protection; 120V control transformer; H-O-A control switch for manual or automatic pump operation; pump run light; high-water alarm light with automatic shutdown; and a single thru-the-door disconnect. Form C dry contacts shall be provided for remote annunciation of alarm conditions. Automatic controls shall be utilized for maintaining vacuum levels between the low vacuum and high vacuum set points, and to ensure optimum system operation and safety.

#### 2.05 PRIMING VALVE

Priming valves shall to be Val-Matic model VM-38P. Priming valves to be constructed of cast iron with stainless steel internals with a 2" inlet and ½" vacuum connection. A separate priming valve shall be furnished at each centrifugal pump served by the priming system.

#### 2.06 CONSTRUCTION

All component valves and gauges shall be provided in brass or bronze construction. All interconnecting pipe and fittings shall be schedule 40 class 150, 304/304L stainless steel.

#### 2.07 SHOP PAINTING

Receiver tank exterior is to be primed and finished with manufacturer's standard enamel coating. Vacuum pump and component equipment are to be furnished with manufacturer's standard finish.