



LYNN Engineered Systems

VACUUM PRIMING SYSTEM

PART 1 GENERAL

1.01 SCOPE

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

1.02 OPERATING CONDITIONS AND PERFORMANCE REQUIREMENTS

- A. Number of Vacuum Pumps: 1
- B. Volume: ____ ACFM (each)
- C. Design Vacuum: ____ Hg absolute
- D. Maximum Pump Speed: ____ 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 pumps, and all valves and appurtenances described herein are to be provided by a single vendor.
- B. SOURCE QUALITY:
Manufacturer must 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 a model APD____LR-____H Simplex Automatic Vacuum Priming system as manufactured by Lynn Engineered Systems or approved equal.

2.02 VACUUM PRIMING SYSTEM

- A. The vacuum pumps shall be mounted on the air receiver.
- B. Vacuum pumps shall be liquid ring model _____ and shall have an open flow (@ 0" HgV) of no less than _____ ACFM (saturated air), and an ultimate vacuum of 25 Torr (29" Hg gage). Each pump shall be direct coupled with a _____HP, TEFC motor wired for operation on a 208-230/460V three phase power supply direct coupled to the pump. Belt drives shall not be permitted. Maximum noise level of each pump shall be _____ dB(A) or less.
- C. Vacuum pump shall be constructed primarily of cast iron with bronze impeller. Each pump shall be supplied with a once through service water assembly consisting of the following: isolation ball valve, y-pattern strainer, 2-WAY N.C. solenoid valve, solenoid by-pass isolation valve, and flow control valve.
- D. Vacuum pump assembly shall be supplied with the following equipment connected to the inlet: check valve; isolation valve; and a flexible connector shall be used between vacuum pump and receiver tank for a vibration free attachment.
- E. Vacuum pump assembly shall be supplied with a discharge air / water separator connected to the outlet.

2.03 RECEIVER

The receiver shall have a capacity of _____ gallon and be designed in accordance with ASME code section VIII, Division 1 for unfired pressure vessels and CRN registration. The receiver shall be horizontal and have two vacuum pumps 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 tank high water level switch to shut down the system and provide an alarm when a high water condition occurs; a liquid filled vacuum gauge with gauge valve to monitor system vacuum level; a vacuum relief valve to limit system vacuum; a vent valve to facilitate tank draining; a manual valve for draining accumulated water and



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condensation from tank; separate vacuum pump isolation ball valves; an inlet ball valve to isolate the priming system from the process vacuum line; and field adjustable vacuum switches for automatic operation of system between preset vacuum levels. The receiver shall have supports for permanently anchoring to the floor.

2.04 CONTROL PANEL

Automatic controls shall be housed in a NEMA 4/12 enclosure and shall include: 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; low vacuum and high-water alarm lights with automatic high water 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

A separate priming valve shall be furnished at each centrifugal pump served by the priming system. Priming valves are to be constructed of cast iron with stainless steel internals with a 2" inlet and 1/2" vacuum connection. Priming valves shall be furnished with Nema-4X enclosed water level control switch with DPDT contacts for proof of prime interlock with centrifugal pump start-up and remote alarm annunciation; and a 2" NPT suction isolation and 1/2" NPT vacuum isolation ball valves.

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 T304/304L stainless steel. Service water piping and valves are to be brass or bronze.

2.07 SHOP PAINTING

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