

1. WATER SEALED LIQUID RING PUMPS

A. DUPLEX HORIZONTAL TANK MOUNTED VACUUM SYSTEMS

1. Furnish and install, where shown on the drawings a prefabricated duplex tank mounted water sealed liquid ring vacuum system model _____ as manufactured by EMSE Corporation, Fairfield, NJ (1-800-935-EMSE).
2. The unit furnished shall be a standard catalog item of the supplier regularly engaged in the business of providing packaged systems for hospitals and laboratories and shall meet and exceed the requirements of NFPA 99.
3. The package shall include two water sealed liquid ring vacuum pumps and associated equipment, one ASME tank and one duplex control panel. The only field connections required will be system intake, exhaust and power connection at the control panel. All components shall be completely pre-piped and pre-wired to single-point service connections. All interconnecting piping and wiring shall be completed and operationally tested prior to shipment. Provide liquid tight conduit, fittings and junction boxes for all control and power wiring.
4. The system shall include a field selectable and adjustable amount of partial water recirculation up to 95% without the use of heat exchangers and chilled water.
5. The medical vacuum pumps shall be of the positive displacement, non-pulsating, single stage liquid ring design, capable of passing fluids and soft solids without damage. The pumps shall be of cast iron construction with bronze impellers, stainless steel shafts and mechanical seals.
6. Each vacuum pump shall be driven by a ____ HP, 3 phase, 60 cycle, _____ volt, 1750 RPM, TEFC motor. Each pump shall have a capacity of ____ SCFM at 19"HG.
7. The system shall include the following accessories for each pump: inlet check valve of bronze construction, inlet isolation valve, discharge separator-silencer, thermal malfunction switch, vacuum control switch and a seal water line consisting of isolation valve, Y-strainer, solenoid valve, back-flow preventer, flow control valve and priming valve. Provide flexible connectors on inlet, discharge and seal water supply lines to each pump as well as copper tubing with shut-off cock for gauge and vacuum switches.
8. The system shall include a _____ gallon vacuum storage tank of ASME construction. The tank shall be rated for full vacuum service and shall be equipped with a valved by-pass, vacuum gauge and manual tank drain. The inside of the

tank shall be coated for rust protection with a two component coating which provides a hard, durable lining.

9. Provide vibration mounting per NFPA 99.
10. The system shall include a UL listed control panel in a NEMA 12 enclosure with the following accessories for each pump:
 - a. Externally operable circuit breaker with door interlock, control circuit transformer with fused primary and secondary coils, H-O-A switch, magnetic starter with 3 leg overload protection, hour meter and motor running light.
 - b. Provide the panel with a multiple position selector switch for selection of normal operation (automatic alternation) or manual selection of lead and lag pumps if one of the pumps is taken out of service due to scheduled maintenance.
 - c. Provide audible and visual local alarm (complete with indicating lights and individual sets of auxiliary contacts wired to the terminal strip for remote alarm indication) for the following: vacuum pump thermal malfunction and reserve vacuum pump in use.
 - d. Provide manual reset for thermal malfunction shut-down. All control and alarm functions shall remain energized while any vacuum pump in the system remains electrically on-line. The lag vacuum pump shall be able to start automatically if the lead vacuum pump fails to operate.
11. The vacuum system shall be guaranteed in writing by the manufacturer for a period of 18 months from the date of start-up or 24 months from the date of shipment (whichever comes first) against defects in design, materials, or construction.
12. The service of a factory trained representative shall be made available at the jobsite to check installation, start-up and instruct operating personnel in the proper operation and maintenance.