

**1. RECIPROCATING COMPRESSORS:**

**A. DUPLEX STACK MOUNTED COMPRESSED AIR PLANTS WITH DESICCANT DRYERS**

1. Furnish and install, where shown on the drawings a duplex stack mounted prefabricated medical compressed air plant with desiccant air dryers model \_\_\_\_\_ as manufactured by EMSE Corporation, Fairfield, NJ (1-800-962-5385).
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 oil-less air compressors and associated equipment, one vertical ASME tank and one duplex control panel. The entire system including the receiver shall be mounted on a common structural steel stack base. The system footprint shall not exceed 82" x 60". 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 medical air compressors shall be of the totally oil-less reciprocating air-cooled design. Connecting rod and bearings shall be packed with lifetime lubrication and sealed.
5. Each compressor shall be belt driven by a \_\_\_\_ HP, 3 phase, 60 cycle, \_\_\_\_\_ volt, 1750 RPM, ODP NEMA construction motor. Slide bases for convenient belt tension adjustment and totally enclosed OSHA approved belt guards shall be provided.
6. Each air compressor shall have a capacity of \_\_\_\_\_ SCFM at 100 PSIG.
7. The system shall include individual compressor inline intake filters, discharge check valves of bronze construction, safety relief valves, bronze intake and discharge flexible connectors, solenoid unloaders, isolation valves, air cooled after coolers for each compressor, high discharge temperature shut down switches on each cylinder, pressure control switches, as well as copper tubing with shut-off cock for gauge and switches.
8. The system shall include a 120 gallon pressure storage tank of ASME construction rated for 200 PSI MWP service. The tank shall be equipped with a pressure gauge, safety relief valve, 3 way by-pass, gauge glass and automatic electronic tank drain

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with manual override. The inside of the tank shall be coated for rust protection with a two component coating which provides a hard, durable lining. Provide spring vibration isolators for each compressor.

9. Control System:

- a. The system shall include a UL listed control panel in a NEMA 12 enclosure with the following accessories for each pump:
- b. 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.
- c. 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.
- d. 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: compressor temperature malfunction and reserve compressor in use.
- e. Provide manual reset for thermal malfunction shut-down. All control and alarm functions shall remain energized while any compressor in the system remains electrically on-line. The lag compressor shall be able to start automatically if the lead compressor fails to operate.

10. Air Treatment:

- a. A completely packaged NFPA 99 and NEC compliant assembly featuring dual desiccant air dryers, dual 0.5 micron pre-filters, dual 0.5 micron after-filters, line pressure regulating valves, dew point monitor, CO monitor and other accessories required to meet and exceed the current code requirements shall be mounted on the compressor system base. All components shall be completely pre-piped and pre-wired to single-point service connections.
- b. There shall be two identical banks of air treatment equipment, piped in parallel and provided with valves to by-pass either filter set for element replacement, maintenance and repair work on one of the sets while still treating medical compressed air through the other set without any sacrifice in air quality. Each bank consists of three stages of treatment.

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- i. The first stage is a prime efficiency coalescer with particle removal down to 0.5 micron with 99.9999% retention. This filter removes aerosols and solid particles. The filter is equipped with electronic drain and element change indicator.
    - ii. The second stage is a desiccant heatless air dryer, equipped with purge control. Pressure dew point of +20oF is attained by directing the flow of saturated compressed air over a bed of desiccant which is contained in two separate but identical "twin" towers. Built-in purge saver control will automatically minimize and adjust the amount of purge air to match the variable air flow. The dry compressed air is discharged from the "on line" tower into the third stage.
    - iii. The third stage is a prime efficiency particulate after filter with particle removal down to 0.5 micron. The after filter element is provides high particle retention, low pressure drop and long element life.
  - c. Downstream pressure regulators will maintain constant discharge pressure of 55 PSIG (field adjustable).
  - d. Digital dew point and CO monitors with alarm set points at +390F and 10 PPM are provided with dry contacts for connection to remote alarm panels. A "demand check" for maintenance is included per current NFPA 99 for each instrument.
11. The compressed air system shall be guaranteed in writing by the manufacturer for a period of 12 months from the date of start-up or 18 months from the date of shipment (whichever comes first) against defects in design, materials, or construction. In addition, the compressors are guaranteed for 36 months from the date of shipment.
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.