



Reciprocating Medical Air Compressor System

Rev. 3/27/09

GENERAL

The Powerex Medical Skid Mounted System is designed to provide medical breathing air for hospital and medical institutions. This system meets NFPA 99 requirements for Level 1 breathing air.

MEDICAL AIR COMPRESSOR SYSTEM

The package shall include multiple oil-less air compressors and associated equipment, one ASME tank, one medical desiccant air treatment center, and one medical control panel. The only field connections required will be system intake, exhaust, power connection at the control panel, and between-skid air and power connections. All interconnecting piping and wiring shall be included and operationally tested prior to shipment. Vibration isolation pads are included with the system.

OILLESS COMPRESSOR PUMP

The compressor shall be belt-driven reciprocating, Single-Stage(1-3HP), Two-Stage (5-15 HP), single acting, air-cooled oil-less design with no oil needed for operation. Main bearings shall be permanently sealed and the wrist-pin bearings shall be lip sealed and field serviceable. Pistons shall be constructed of a heat rejecting composite graphite material with PTFE base resin rings. Piston rings shall have a minimum life of 10,000 run hours. Compressor design shall also include stainless steel valves with PTFE coated aluminum die-cast valve plates, precision bore die-cast anodized aluminum cylinders, and anodized inter-stage intercooler(s). Compressors shall utilize a "Dual Cooling System" which consists of a radial flow fan, and flywheel that are attached to the compressor pumps crankshaft. All 7.5, 10, and 15 HP model compressors shall have spring type vibration isolation mounts. Each compressor shall include a discharge check valve of brass construction, an ASME safety relief valve, intake and discharge flexible connectors, a solenoid valve discharge line unloader, an isolation valve, an air cooled aftercooler, a moisture separator with automatic drain, and a high discharge temperature shut down switch on each cylinder.

MOTORS

Each compressor shall be belt driven by a 1750 RPM, ODP NEMA construction motor with a 1.15 service factor rating. OSHA approved belt guards shall be provided.

AIR RECEIVER

The system shall include a ASME rated air receiver rated for 200 PSI MAWP. The tank shall be equipped with a pressure gauge, safety relief valve, block and by-pass valves, and condensate sight gauge and automatic electronic tank drain with manual override. The receiver shall be internally lined with an FDA approved material for corrosion resistance.

CONTROL PANEL

The system shall include a UL508 listed control panel conforming to NEMA ICS-2 in a NEMA 12 enclosure with the following accessories for each pump: H-O-A switch, magnetic starter with 3 leg overload protection, high temperature shutdown with audible and visual alarm, hour meter and compressor run light. Standard features also include a PLC controller, a reserve compressor in-use alarm with visual and audible alarms, an externally operable circuit breaker disconnect, and a redundant control circuit transformers with visual indication of a main transformer failure. All alarms shall have dry contacts on a labeled terminal strip for remote alarms. Provide manual reset for thermal malfunction shutdown. 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.

INTAKE FILTERS

The medical air system shall include a dual inlet filter system with one filter on-line and one filter in reserve to enable servicing of the filter elements without shutting down any of the air compressors units or disrupting service to the facility. The inlet filter system shall be located on the compressor package and plumbed up-stream of the compressor pumps.

AIR PURIFICATION PACKAGE

The air purification package shall be sized in conformance with NFPA 99 specifications and consist of the following: Dual desiccant air dryers, dual filter and regulator bank with sample ports, Dew Point and CO Monitors with alarms, and all bypass piping. Piping to be brass, stainless, or type K copper, and cleaned for medical air use. All components shall be mounted piped and wired to the air receiver.

DESICCANT AIR DRYERS

Each twin-tower desiccant dryer shall be sized for the peak calculated system demand to provide a pressure dew point of Zero degrees F. Controls shall include a re-pressurization cycle to prevent shocking of the desiccant bed prior to switching towers. An integral purge saving control system shall be provided and shall suspend the purge air loss during periods of low demand. When the dryer is in purge control mode, the tower switching valves shall not operate, and only one desiccant tower shall be on-line. Dryers that continue to operate the switching valves on a fixed cycle, while in purge control mode shall not be acceptable.

FILTRATION AND PRESSURE REDUCING STATION

The filtration systems shall consist of 2 stages of filtration, two pressure reducing valves with pressure gauges, a 75 psig final line safety valve, and a sample air port. The first stage of filtration shall include dual .01 micron coalescing pre-filters with element change indicators and automatic condensate drains and installed up-stream of the air dryers. The second stage shall include dual 1 micron particulate filters with element change indicators and installed downstream of the air dryers. A dual set of pressure reducing valves with pressure gauges shall be installed downstream of the final filters and shall be adjusted to an outlet pressure of 55 psig.

Each filter/dryer/regulator assembly shall be plumbed with bypass valves to enable service without disrupting air flow to the facility.

DEW POINT MONITOR

The system-integrated hygrometer shall be equipped with an LCD dewpoint display and high dewpoint alarm with dry contacts for remote monitoring. The dew point sensor (probe) shall be installed so that the monitored airflow is downstream of the pressure regulator assembly. The sensor shall include an auto calibration feature to ensure the accuracy of the dewpoint measurement.

CARBON MONOXIDE MONITOR

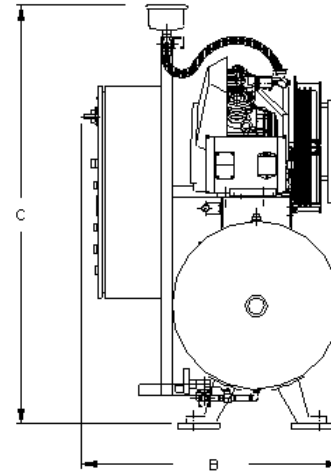
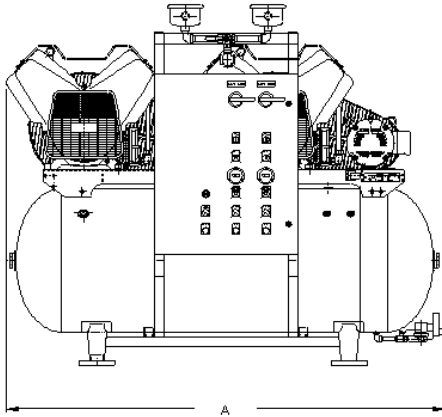
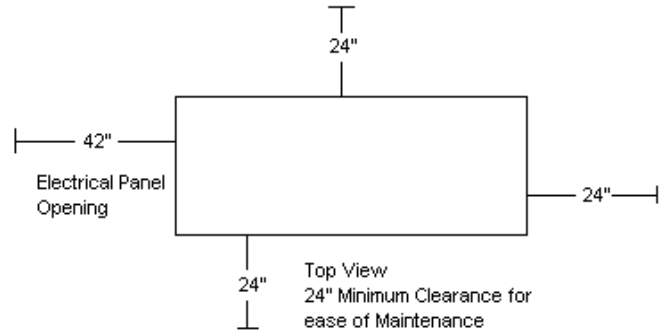
The carbon monoxide (CO) monitor is provided in a enclosure with LCD display of CO concentrations. The monitor shall continuously display the CO content of the discharge air and shall provide audible and visual high CO alarms. High alarm is set at 10 ppm per NFPA99. Dry contacts are provided for remote monitoring of the high CO alarm.



Medical Tankmount Compressor

Rev. 5-8-09

DIMENSIONS					
MODEL	DIM. A	DIM. B	DIM. C	Inlet	Outlet
MTD0103	65"	34"	60"	3/4"	1/2"
MTD0203	68"	35"	60"	3/4"	1/2"
MTD0303	68"	35"	60"	3/4"	1/2"
MTD0304	68"	35"	60"	3/4"	1/2"
MTD0504	73"	37"	60"	1"	1/2"
MTD0505	74"	37"	60"	1"	1/2"
MTD0756	74"	48"	60"	1-1/2"	1/2"
MTD1006	74"	48"	60"	1-1/2"	3/4"
MTD1506	74"	48"	60"	1-1/2"	3/4"



Medical Tankmount Compressor										
MODEL	HP ¹	ICFM @ 50 PSIG ^(1,3)	NFPA System Capacity ¹	TANK SIZE	BTU/HR ²	dB(A) ⁴ LEVEL	SYSTEM F.L.A.			SYSTEM WEIGHT
							208V	230V	460V	
MTD0103	1	4.7	4.7	80 gal.	2,546	73	11	10	6	710
MTD0203	2	6.7	6.7	80 gal.	3,819	74	13	12	7	730
MTD0303	3	9.2	9.2	80 gal.	5,092	72	17	16	9	800
MTD0304	3	11.5	11.5	120 gal.	7,638	74	23	21	11	825
MTD0504	5	20.5	20.5	120 gal.	12,730	78	35	32	15	930
MTD0505	5	20.5	20.5	200 gal.	12,730	78	35	32	15	1,050
MTD0756	7.5	31	31	240 gal.	19,095	78	50	46	24	1,050
MTD1006	10	40.7	40.7	240 gal.	25,460	80	65	58	30	1,150
MTD1506	15	60	60	240 gal.	38,190	81	94	86	44	1,300

- Notes:
- 1 - HP and System Capacity is shown with one or more compressors in reserve per NFPA 99
 - 2 - BTU/HR Levels are shown with reserve compressor(s) on standby
 - 3 - Medical Air Systems should not be sized using ICFM. For comparison purposes only
Powerex recommends using performance ratings in SCFM (Standard Cubic Feet per Minute) when sizing medical air systems.
 - 4 - dB(A) is shown with one compressor in reserve per NFPA99
 - 5 - 3 Year Limited Warranty