

## Specification

### General

The Powerex Instrument Air System provides high pressure clean, dry air for medical support purposes. The system is designed to meet NFPA 99 requirements for Instrument Air systems. Systems are tested before shipment and include:

- Multiple oil-less reciprocating air compressors and associated equipment.
- Corrosion resistant air receiver.
- Redundant medical desiccant air dryers with purge control.
- Medical control panel.
- Dew point monitor.

Due to using oil-less pumps, there is no oil in the process air that must be removed. Other compression technologies that utilize oil in the compression stage have risk of oil contamination in the process air whereas oil-less technologies have no risk.

The only field connections required will be between-platform tubing and wiring, system exhaust, and the power connection at the control panel. All interconnecting piping, wiring, and vibration isolation pads are included with the system.

### Oil-less Reciprocating Piston Compressor Pump

Each compressor shall be a belt-driven, two-stage reciprocating pump with air-cooled construction. No oil is needed for operation.

- Main bearings shall be permanently sealed and the wristpin 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 diecast 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.
- All 7.5, 10, and 15 HP model compressors are rated for a max pressure of 200 PSIG.
- 3 Year Limited Warranty on pumps.

### Motor

Each compressor shall be belt driven by an ODP, NEMA construction motor. Belt guards that meet OSHA requirements shall be provided.

### Air Receiver

The system shall include an ASME air receiver rated for 300 PSI MAWP. The tank shall be equipped with:

- A pressure gauge and a safety relief valve.
- A sight gauge.
- Bypass valves to allow tank isolation without system shutdown.
- An automatic electronic tank drain with manual override.

The receiver shall be internally lined with an FDA approved material for corrosion resistance.

### 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 monitor with alarm incorporated into control panel.
- Bypass plumbing for isolation.

All components shall be mounted piped and wired to the air receiver.

### Desiccant Air Dryers

Each desiccant dryer shall be sized for the peak calculated system demand to provide a pressure dew point to meet NFPA 99 standards.

- Dryer 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 bank shall be on-line. Dryers continue to operate the

switching valves in the fixed cycle.

### Filtration and Pressure Reducing Station

Each filter/dryer/regulator assembly shall be plumbed with bypass valves to enable service without disrupting air flow to the facility. Each assembly also includes a sample air port. The filtration systems shall consist of three stages of filtration. The second and third stages are combined into a single unit in accordance with NFPA99 5.1.13.3.4.8 (5).

- The first stage of filtration shall include dual pre-filters with element change indicators and automatic condensate drains, installed up-stream of the air dryers.
- The second stage of filtration is combined in the same unit as the third stage and shall include dual activated carbon filters.
- The third and final stage of filtration is combined in the same unit as the second stage and shall include .01 micron filtration. The final combined filter units shall be installed downstream of the dryers and include element change indicators and mechanical float drains.

A dual set of pressure-reducing valves with pressure gauges shall be installed downstream of the final filters.

### Premium NFPA Control Panel

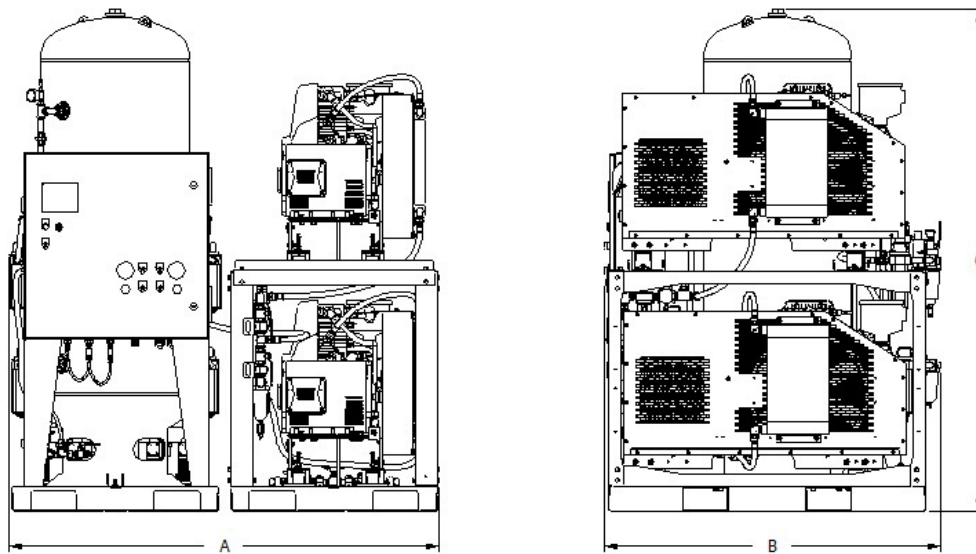
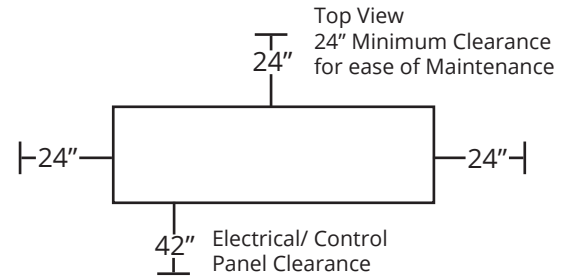
This control system provides automatic lead/lag sequencing and automatic alternation of all compressors in order to equalize the amount of usage among the available compressors. The Premium NFPA Control Panel shall include all features listed below:

- UL508A listed control panel in a NEMA 12 enclosure with the following accessories for each pump: a HOA switch, a magnetic starter with 3 leg overload protection, a high temperature shutdown with audible and visual alarm, an hour meter and a compressor run light.
- A color touch screen panel which displays the operating status of the unit. The touch screen will display pump status, pump faults, pump run hours, system pressure, system alarms and service alert notifications for the pumps, dryers, and dew point monitor.
- Building automation communication gateway with BacNet® protocol.
- Ethernet port for connection to BacNet® server or direct connection to facility Ethernet for viewing of system operations and status via device IP-ad-

dress.

- PLC controller with control logic to start the lag compressor automatically if the lead compressor fails to operate, a reserve compressor in-use alarm with visual and audible alarms, and redundant control circuit transformers with visual indication of a main transformer failure.
- Dry contacts on a labeled terminal strip for remote alarm monitoring and an acknowledge pushbutton for horn silencing.
- Integrated dew point monitor. The touch screen will display the dew point reading and provide an audible and visual high dew point alarm at -22°F.
- Dryer maintenance notifications and service alerts at set run-hour intervals.

Dimensions				
Model	Dim A	Dim B	Dim C	Outlet
IOPD0754XP5	70"	55"	82"	3/4"
IOPD1004XP5	70"	55"	82"	3/4"
IOPD1504XP5	70"	55"	82"	3/4"



Instrument Air Systems*									
Model(1)	HP	SCFM @ 185 PSIG(2)	Tank Size (gal)	BTU/Hr	dB(A) Level	System F.L.A.			System Weight (lbs)
						208V	230V	460V	
IOPD0754XP5	7.5	20.4	120	16,030	76	43.0	39.0	20.5	2210
IOPD1004XP5	10	26.0	120	23,918	76	56.8	51.6	26.8	2316
IOPD1504XP5	15	34.3	120	32,060	79	84.2	76.4	39.2	2407

## Notes:

\* Table specifications are defined at sea level conditions with reserve pump(s) on standby per NFPA 99. Consult factory for installations above 3,000 ft. elevation.

1 - "X" in model number defines system voltage. "2", "3", & "4", signify 208, 230, & 460 volt systems, respectively.

2 - Powerex recommends using performance ratings in SCFM (Standard Cubic Feet per Minute) when sizing medical air systems. The final line pressure will be 160 psi with a system capacity of up to 185 psi.