

## Reciprocating Medical Air Compressor System with Premium NFPA Controls

Rev. 2/27/14

### GENERAL

The Powerex Skid Mount Medical Air System is designed to provide medical breathing air for hospital and medical institutions. This system meets NFPA 99 requirements for Risk Category 1 systems. Each system is completely tested before shipment and includes:

- 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 and CO monitors

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

### OIL-LESS COMPRESSOR PUMP

Each 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 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 200 PSI MAWP. The tank shall be equipped with:

- A pressure gauge and a safety relief valve
- A sight gauge
- By-pass 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.

### INTAKE FILTERS

Duplex systems of 5 HP or below have individual pump filters. Otherwise, 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.

### 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 consist of two stages of filtration.

- 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 shall include dual particulate filters with element change indicators 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.

### 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 a gateway server card and 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. Standard features also include:



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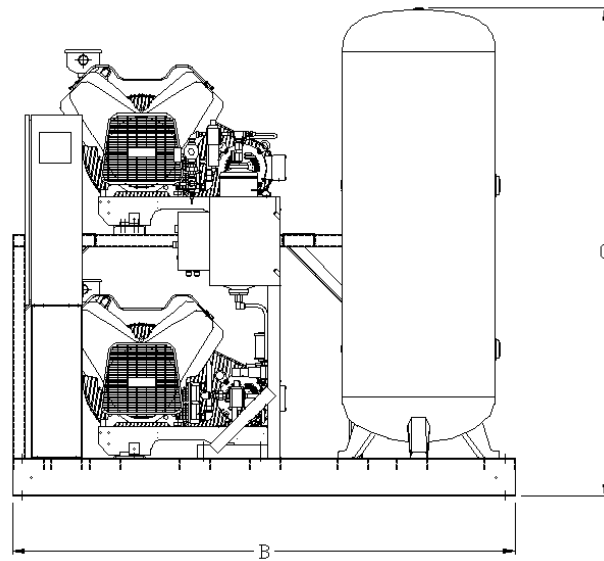
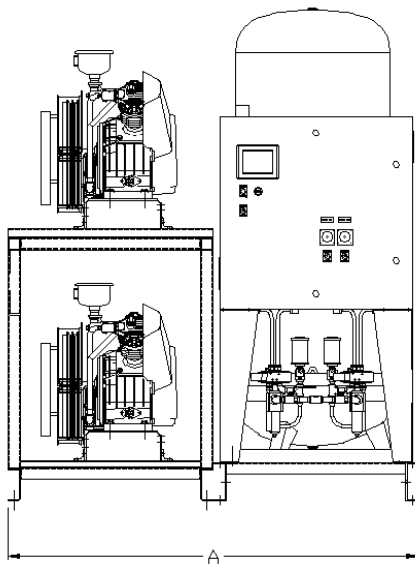
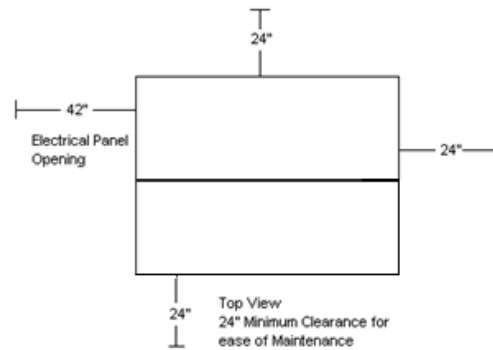
- A color touch screen panel which displays the operating status of the unit. The touch screen will display pump status, pump faults, pump run hours, system pressure, system alarms and service alert notifications for the pumps, dryers, dew point and CO monitors.
- Building automation communication gateway with BacNet<sup>®</sup> protocol and Web server features. Web server features include email notifications in case the system is in alarm or has achieved one of its maintenance intervals and requires service.
- Ethernet port for connection to BacNet<sup>®</sup> server or direct connection to facility Ethernet for viewing of system operations and status via device IP-address
  - 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.
  - Control logic to start the lag compressor automatically if the lead compressor fails to operate.
  - Integrated dew point and carbon monoxide monitors. The touch screen will display dew point and CO readings and provide audible and visual high dew point and CO alarms.
  - Dryer maintenance notifications and service alerts at set run-hour intervals



# Medical Package Duplex with Premium Controls

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MODEL	DIM. A	DIM. B	DIM. C	Inlet	Outlet
MPD0308	64"	79"	60"	3/4"	1/2"
MPD0508	64"	79"	77"	1"	1/2"
MPD0608	67"	81"	78"	1"	3/4"



Medical Package - Duplex - with Premium Controls										
MODEL	HP	ICFM @ 50 PSIG <sup>(1,6)</sup>	SCFM @ 50 PSIG <sup>(1,3)</sup>	TANK SIZE (Gal.)	BTU/HR <sup>2</sup>	dB(A) <sup>4</sup> LEVEL	SYSTEM F.L.A.			SYSTEM WT. (LBS)
							208V	230V	460V	
MPD0308	3 (2)	13.1	11.3	80	7,635	71	20	18.2	10.1	1,100
MPD0508	5 (2)	19.0	18.6	120	12,725	75	30.4	27.6	14.8	1,250
MPD0608	7.5 (2)	21.1	21.4	120	19,088	84	41.6	37.8	19.9	1,400

- Notes:
- 1- ICFM and SCFM values @ 50 PSIG are shown with one compressor in reserve per NFPA 99
  - 2 - BTU/HR Levels are shown with reserve compressor(s) on standby
  - 3 - 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
  - 6 - ICFM as standardly defined within the Medical Air Compressor Industry

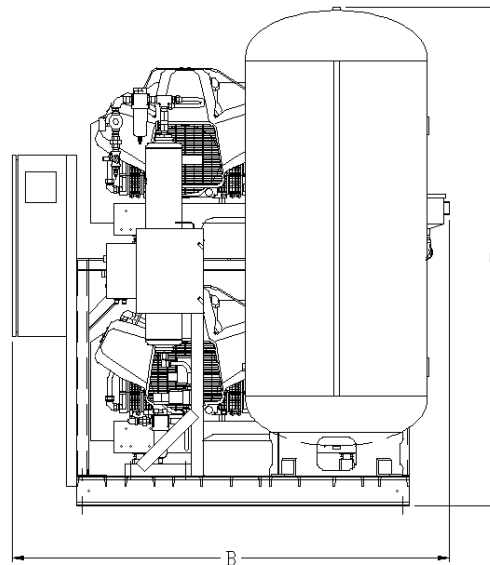
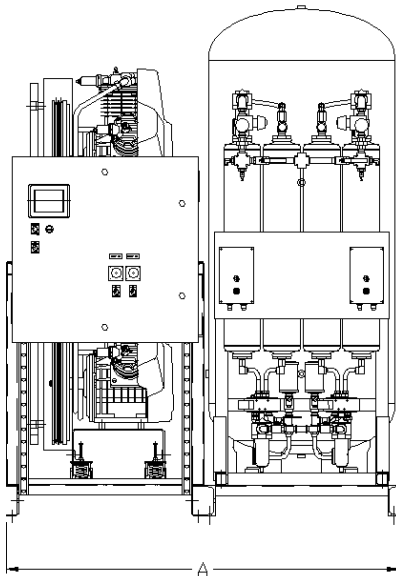
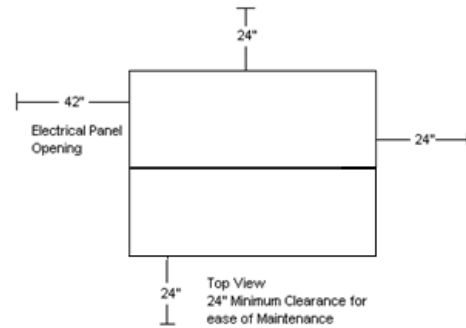
\*\*Dimensions, drawing and system weight are shown with desiccant dryer package. For dimensions, drawing and weight with refrigerated dryer package, please consult factory.



# Medical Package Duplex with Premium Controls

MODEL	DIM. A	DIM. B	DIM. C	Inlet	Outlet
MPD0758	64"	73"	76"	1-1/2"	3/4"
MPD1008	64"	73"	83"	1-1/2"	1"
MPD1508	64"	73"	83"	1-1/2"	1"

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Medical Package - Duplex with Premium Controls										
MODEL	HP	ICFM @ 50 PSIG <sup>(1,6)</sup>	SCFM @ 50 PSIG <sup>(1,3)</sup>	TANK SIZE (Gal.)	BTU/HR <sup>2</sup>	dB(A) <sup>4</sup> LEVEL	SYSTEM F.L.A.			SYSTEM WT. (LBS.)
							208V	230V	460V	
MPD0758	7.5 (2)	29	27.3	120	19,088	76	42	38.2	20.1	2,500
MPD1008	10 (2)	36.2	34.8	200	25,450	76	56	50.8	26.4	2,800
MPD1508	15 (2)	55.4	50.9	200	38,175	79	84.2	76.4	39.2	2,900

- Notes:
- 1 - ICFM and SCFM values @ 50 PSIG are shown with one compressor in reserve per NFPA 99
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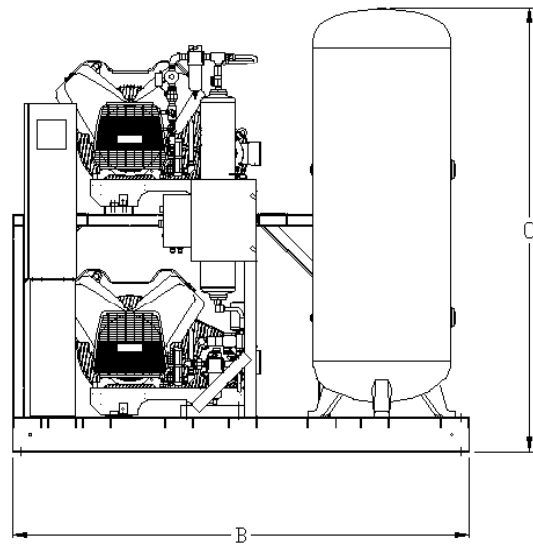
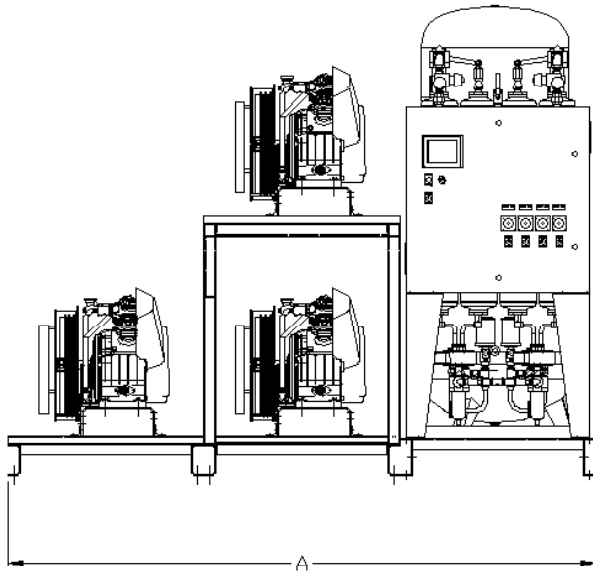
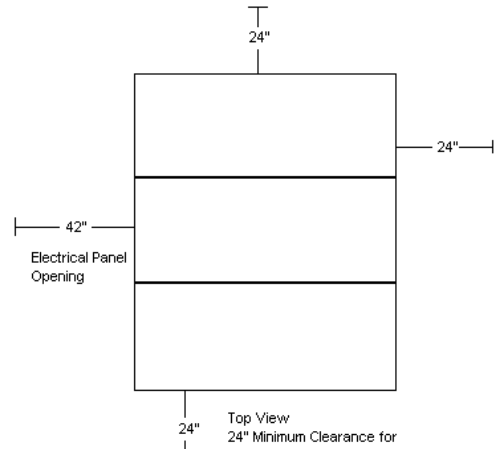
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# Medical Package Triplex with Premium Controls

Rev. 8/23/12

DIMENSIONS**					
MODEL	DIM. A	DIM. B	DIM. C	Inlet	Outlet
MPT0508	95"	79"	77"	1-1/2"	3/4"
MPT0608	103"	79"	77"	1-1/2"	3/4"



Medical Package - Triplex - with Premium Controls										
MODEL	HP	ICFM @ 50 PSIG <sup>(1,6)</sup>	SCFM @ 50 PSIG <sup>(1,3)</sup>	TANK SIZE (Gal.)	BTU/HR <sup>2</sup>	dB(A) <sup>4</sup> LEVEL	SYSTEM F.L.A.			SYSTEM WT. (LBS.)
							208V	230V	460V	
MPT0508	5 (3)	38.0	37.2	200	25,452	78	44.6	40.4	21.2	1,950
MPT0608	7.5 (3)	42.2	42.8	200	38,176	87	61.4	55.7	28.9	2,000

- Notes:
- 1- ICFM and SCFM values @ 50 PSIG are shown with one compressor in reserve per NFPA 99
  - 2 - BTU/HR Levels are shown with reserve compressor(s) on standby
  - 3 - 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 NFPA 99
  - 5 - 3 Year Limited Warranty
  - 6 - ICFM as standardly defined within the Medical Air Compressor Industry

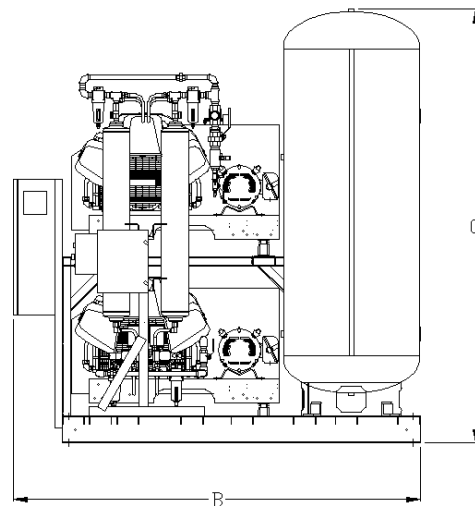
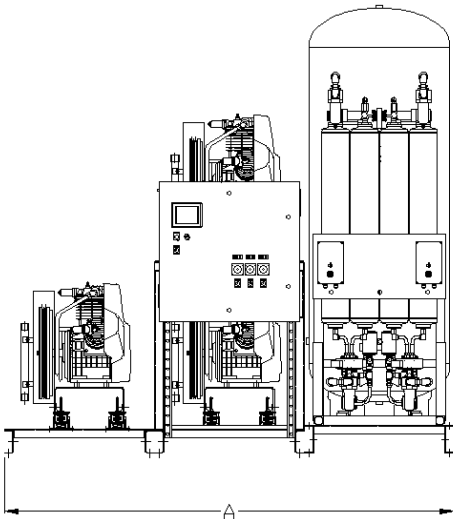
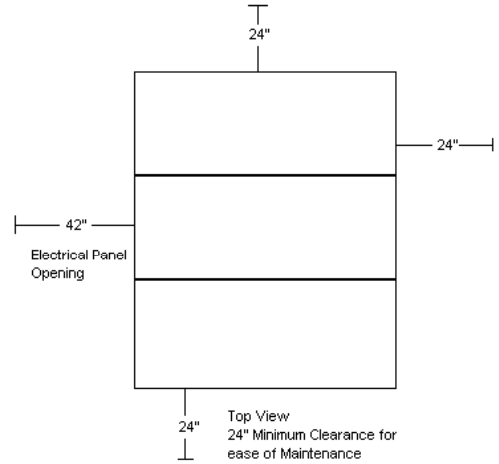
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# Medical Package Triplex with Premium Controls

Rev. 7/25/12

DIMENSIONS**					
MODEL	DIM. A	DIM. B	DIM. C	Inlet	Outlet
MPT0758	96"	73"	83"	1-1/2"	1"
MPT1008	96"	90"	96"	1-1/2"	1"
MPT1508	96"	90"	96"	2"	1-1/2"



Medical Package - Triplex - with Premium Controls										
MODEL	HP	ICFM @ 50 PSIG <sup>(1,6)</sup>	SCFM @ 50 PSIG <sup>(1,3)</sup>	TANK SIZE (Gal.)	BTU/HR <sup>2</sup>	dB(A) <sup>4</sup> LEVEL	SYSTEM F.L.A.			SYSTEM WT. (LBS)
							208V	230V	460V	
MPT0758	7.5 (3)	54.6	58	200	38,176	79	62	56.3	29.1	2,800
MPT1008	10 (3)	69.9	72.4	240	50,900	79	83	75.2	38.6	3,000
MPT1508	15 (3)	110.8	101.8	240	76,350	82	125	114	57.8	4,000

- Notes:
- 1- ICFM and SCFM values @ 50 PSIG are shown with one compressor in reserve per NFPA 99
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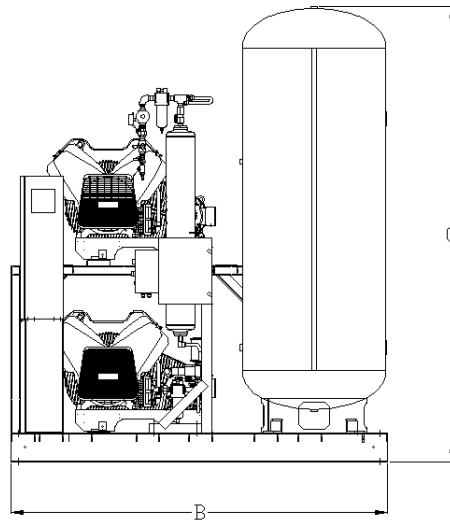
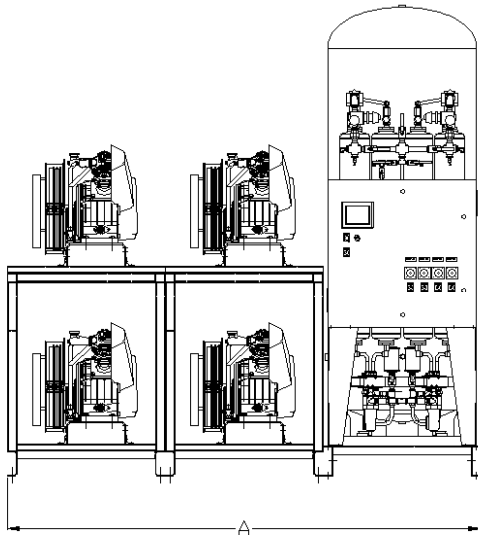
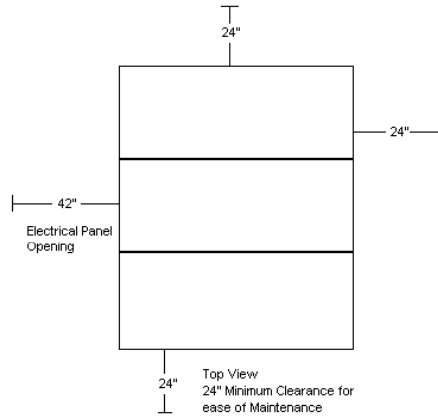
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MODEL	HP	ICFM @ 50 PSIG <sup>(1,6)</sup>	SCFM @ 50 PSIG <sup>(1,3)</sup>	TANK SIZE (Gal.)	BTU/HR <sup>2</sup>	dB(A) <sup>4</sup> LEVEL	SYSTEM F.L.A.			SYSTEM WT. (LBS.)
							208V	230V	460V	
MPQ0508	5 (4)	57	55.8	240	38,175	80	58.8	53.2	27.6	3,200
MPQ0608	7.5 (4)	63.3	64.2	240	57,264	89	81.2	73.6	37.9	3,300

- Notes:
- 1- ICFM and SCFM @ 50 PSIG are shown with one compressor in reserve per NFPA 99
  - 2 - BTU/HR Levels are shown with reserve compressor(s) on standby
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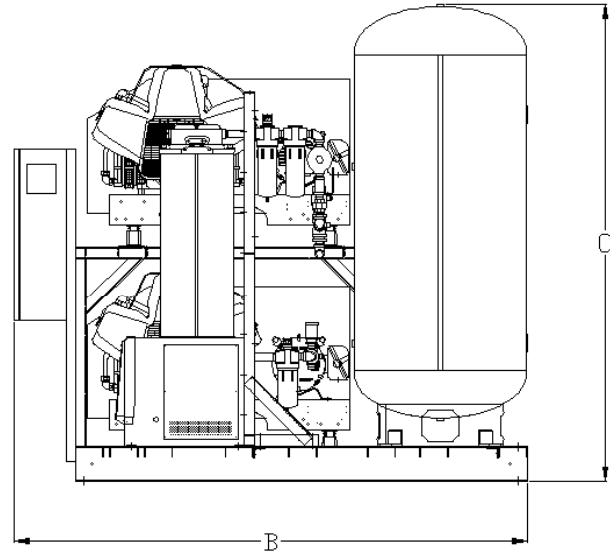
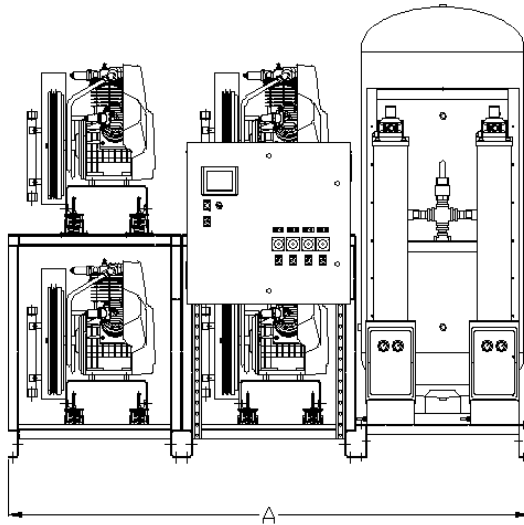
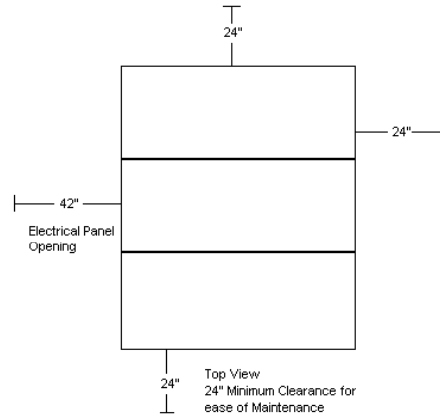
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MPQ1008	96"	90"	96"	2"	1-1/2"
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							208V	230V	460V	
MPQ0758	7.5 (4)	81.9	87.0	240	57,264	81	82	74.4	38.1	4,650
MPQ1008	10 (4)	104.4	108.6	240	76,350	81	110	99.6	50.8	4,750
MPQ1508	15 (4)	166.2	152.7	240	114,525	84	166.4	150.8	76.4	4,500

- Notes:
- 1- ICFM and SCFM values @ 50 PSIG are shown with one compressor in reserve per NFPA 99
  - 2 - BTU/HR Levels are shown with reserve compressor(s) on standby
  - 3 - 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
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  - 6 - ICFM as standardly defined within the Medical Air Industry

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