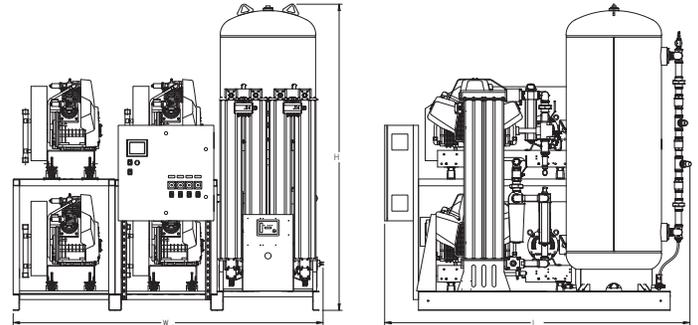


*Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.*

**Description**

The Powerex medical system package is designed to provide medical breathing air for hospital and medical institutes. This system meets NFPA 99 requirements for Level 1 breathing air.

Powerex medical tank mount compressors are designed to be the air compressor and air receiver component of a medical breathing air system for hospitals and medical institutes. When used in conjunction with properly sized dryers that meet dew point and flow specifications, along with an appropriate filter and monitor package, the system can comply with requirements in NFPA 99 for Category 1 applications.



**Safety Guidelines**

**A SEPARATE SAFETY BOOKLET IS PROVIDED ALONG WITH THIS MANUAL. READ AND UNDERSTAND THE SAFETY BOOKLET.** This manual contains information that is very important to know and understand. This information is provided for SAFETY and to PREVENT EQUIPMENT PROBLEMS. To help recognize this information, observe the following symbols. MAKE SURE EVERYONE OPERATING OR SERVICING THE COMPRESSOR READS AND UNDERSTANDS ALL THE INFORMATION PROVIDED.

**⚠ DANGER** *Danger indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.*

**⚠ WARNING** *Warning indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.*

**⚠ CAUTION** *Caution indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury.*

**NOTICE** *Notice indicates important information, that if not followed, may cause damage to equipment.*

**NOTE:** Note indicates information that requires special attention.

**Unpacking**

Immediately upon receipt of the oilless compressor, inspect for any damage which may have occurred during shipment. The compressor nameplate should be checked to verify the correct model and voltage as ordered.

**⚠ WARNING** *Do not operate unit if damaged during shipping, handling or use. Damage could result in bursting and cause injury or property damage.*

**Specifications**

Performance Specifications	See Table 1			
Lubrication:	Grease-filled bearing			
Operating Voltages	3Ø 208 / 230 / 460 Volts, 60 Hz			
Compression Cycle	Oilless Piston Reciprocating			
Motor Overload Protection	Motor protector with adjustable overload			
Overpressure Protection	ASME Safety Valve Factory Set and Sealed			
Outlet Air Connections		MPD	MPT	MPQ
	3	1/2	--	--
	5	1/2	3/4	1
	7.5	3/4	1	1
	10	3/4	1	1-1/2
	15	1	1-1/2	1-1/2
California Ordinance 462 (L) (2)	Meets Requirements of this Ordinance			

**General Safety Information**

**California Proposition 65**

**⚠ WARNING** *This product or its power cord may contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.*

**General Safety**

Since the air compressor and other components (material pump, filters, lubricators, hoses, etc.) used, make up a high pressure pumping system, the following safety precautions must be observed at all times:

1. Read all manuals included with this product carefully. Be thoroughly familiar with the controls and the proper use of the equipment.

## General Safety Information (continued)

2. Follow all local electrical and safety codes as well as the United States National Electrical Codes (NEC) and Occupational Safety and Health Act (OSHA).
3. Only persons well acquainted with these rules of safe operation should be allowed to use the equipment.
4. Keep visitors away and NEVER allow children in the work area.
5. Wear safety glasses and use hearing protection when operating the unit.
6. Do not stand on or use the unit as a handhold.
7. Before each use, inspect compressed air system and electrical components for signs of damage, deterioration, weakness or leakage. Repair or replace defective items before using.
8. Check all fasteners at frequent intervals for proper tightness.

## Performance Specifications – Table 1

### Medical Reciprocating Piston Compressor System – Duplex – Model MPD

Model	HP	Phase	SCFM		RPM	Voltage	Tank Size (gal)	Dimensions (in)		
			@ 100 PSIG*	@ 50 PSIG*				L	W	H
MPD0308	3 (2)	3	10.1	11.3	1115	208 / 230 / 460	80	62	65	60
MPD0508	5 (2)	3	17.2	18.6	800	208 / 230 / 460	120	80	65	78
MPD0608	7.5 (2)	3	21.2	21.4	1040	208 / 230 / 460	120	79	69	78
MPD0758	7.5 (2)	3	26.1	29	855	208 / 230 / 460	120	79	65	78
MPD1008	10 (2)	3	35	36.2	1090	208 / 230 / 460	200	90	67	85
MPD1508	15 (2)	3	45.2	50.9	1140	208 / 230 / 460	200	90	67	85

**NOTE:** For system electrical information (including motor FLA ratings), see the wiring diagram shipped with the unit.

**NOTE:** Dimensions shown with desiccant dryers. For dimensions with refrigerated dryers, please consult factory.

\*SCFM listed with one pump in reserve per NFPA 99.

### Medical Reciprocating Piston Compressor System – Triplex – Model MPT

Model	HP	Phase	SCFM		RPM	Voltage	Tank Size (gal)	Dimensions (in)		
			@ 100 PSIG*	@ 50 PSIG*				L	W	H
MPT0508	5 (3)	3	33.4	37.2	800	208 / 230 / 460	200	80	97	85
MPT0608	7.5 (3)	3	42.4	42.8	1040	208 / 230 / 460	200	90	103	85
MPT0758	7.5 (3)	3	52.2	58	855	208 / 230 / 460	200	90	96	85
MPT1008	10 (3)	3	70.0	72.4	1090	208 / 230 / 460	240	90	99	97
MPT1508	15 (3)	3	90.4	101.8	1140	208 / 230 / 460	240	90	96	97

**NOTE:** For system electrical information (including motor FLA ratings), see the wiring diagram shipped with the unit.

**NOTE:** Dimensions shown with desiccant dryers. For dimensions with refrigerated dryers, please consult factory.

\*SCFM listed with one pump in reserve per NFPA 99.

### Medical Reciprocating Piston Compressor System – Quadplex – Model MPQ

Model	HP	Phase	SCFM		RPM	Voltage	Tank Size (gal)	Dimensions (in)		
			@ 100 PSIG*	@ 50 PSIG*				L	W	H
MPQ0508	5 (4)	3	50.1	55.8	800	208 / 230 / 460	240	90	97	97
MPQ0608	7.5 (4)	3	63.6	64.2	1040	208 / 230 / 460	240	90	106	97
MPQ0758	7.5 (4)	3	78.3	87	855	208 / 230 / 460	240	90	96	97
MPQ1008	10 (4)	3	105	108.6	1090	208 / 230 / 460	240	90	96	97
MPQ1508	15 (4)	3	135.6	152.7	1140	208 / 230 / 460	240	96	98	97

**NOTE:** For system electrical information (including motor FLA ratings), see the wiring diagram shipped with the unit.

**NOTE:** Dimensions shown with desiccant dryers. For dimensions with refrigerated dryers, please consult factory.

\*SCFM listed with one pump in reserve per NFPA 99.

## General Safety Information (continued)

**⚠ WARNING** *Electrical equipment and controls can cause electrical arcs that will ignite a flammable gas or vapor. Never operate or repair in or near a flammable gas or vapor. Never store flammable liquids or gases in the vicinity of the compressor.*

**⚠ WARNING** *An ASME code safety relief valve, with a setting no higher than the tank maximum allowable working pressure, MUST be installed in the air lines or in the tank. The ASME safety valve must have sufficient flow and pressure ratings to protect the pressurized components from bursting. The flow rating can be found in the parts manual.*

**⚠ CAUTION** *Do not operate with pressure switch or pilot valves set higher than the tank maximum allowable working pressure.*

9. Never attempt to adjust ASME safety valve. Keep safety valve free from paint and other accumulations.

**⚠ DANGER** *Never attempt to repair or modify a tank! Welding, drilling or any other modification will weaken the tank resulting in damage from rupture or explosion. Always replace worn, cracked or damaged tanks.*

**NOTICE** *Drain liquid from tank daily.*

10. Tanks rust from moisture build-up, which weakens the tank. Make sure to drain tank regularly and inspect periodically for unsafe conditions such as rust formation and corrosion.
11. Fast moving air will stir up dust and debris which may be harmful. Release air slowly when draining moisture or depressurizing.

## Glossary of Terms

### Oilless OPT / OPS Compressor

The Powerex oilless reciprocating air compressor has advanced compressor technology through the development of a completely oilless compressor. The Powerex reciprocating compressor is provided in duplex, triplex or quadplex configurations with solenoid unloaders to provide start / stop operation. Composite piston technology and continuously lubricating bearings provide oil-free air reliability for years to come.

### Receiver Tank

The ASME, National Board registered air receiver is provided in sizes from 80 to 240 gallons. Each receiver is rated at 200 psig working pressure. Receivers are provided with sight gauge, moisture drain (manual and electric), and internal lining to prevent corrosion.

### Control Panel

The NEMA 12 control panel is provided in duplex, triplex or quadplex configurations and meets NFPA 99 requirements for medical air. Control transformer power is 115 volts and protected by primary and secondary fusing. Pressure control switches signal the compressors on and off cycle and signal lag compressor(s) to come on if air demand increases. This alternator is factory set to alternate the compressors every 10 minutes.

### Air Cooled Aftercooler

Beltguard aftercoolers are sized to provide an approach of 20°F. Constructed of copper tubing and metal headers for a rugged construction.

### Dew Point Monitor

The Powerex dew point monitor provides indication of dew point temperature. It's microprocessor controlled with alarm and self-calibration sensor.

Regen dryers paired with the Powerex dew point monitor may be operated in Econ Mode where the dew point monitor would signal the dryer to cease purge if system dew point is below the set point.

### Carbon Monoxide Monitor / Alarm

The carbon monoxide monitor provides warning to the user of air-supplied respirators alarming and metering the presence of carbon monoxide. The monitor is provided in an enclosure. In addition to audio/visual alarm, the meter displays the concentration of CO in the compressed air. The meter operates from a 110 VAC supply. Alarm point is set at 10ppm.

### Air Dryer (Refrigerated or Desiccant)

The Powerex air drying system provides air at 38°F at 100 psig for refrigerated units and +20°F dew point for desiccant dryer systems. Each system is connected with bypass capability.

The refrigerated compressed air dryer(s) are noncycling, direct expansion type, using R-134A refrigerant, CFC free. A hot gas bypass valve is provided to maintain 38°F evaporator temperature. The dryer is self-regulating for large load swings. Heat exchangers are made of copper tube construction and insulated.

The regenerative desiccant consists of two (dual) towers filled with desiccant. Each tower is switched on and off stream, alternating the air system stream and then being regenerated. Dry purge air pulls moisture from the desiccant and carries the moisture out of the air.

### Medical Filter System

The medical filter system consists of a duplex series of filters and pressure regulators. Air enters the system and is directed to either bank of filters controlled by ball valve. The first stage filter removes solids and liquid particles. The next stage of filters remove submicronic particles and aerosols. The third and optional final filter is carbon activated to remove unpleasant odors. Maximum operating temperature is 125°F and maximum pressure is 150 psig.

### Condensate Drain Valve

A condensate drain valve must be installed on any tank. This valve removes liquid that collects during compressor operation.

Drain liquid from tank daily.

## Installation

**⚠ WARNING** *Disconnect, tag and lock out power source then release all pressure from the system before attempting to install, service, relocate or perform any maintenance.*

**⚠ CAUTION** *Do not lift or move unit without appropriately rated equipment. Be sure the unit is securely attached to lifting device used. Do not lift unit by holding onto tubes or coolers. Do not use unit to lift other attached equipment.*

**⚠ WARNING** *Installation of inlet / outlet air plumbing from the compressor flange and electrical connection must be in accordance with National Fire Protection Association (NFPA99) Code Compliance for Medical Gas Breathing Air (Level 1).*

## Installation Site

1. The compressor system must be located in a clean, well lit and well-ventilated area.
2. The area should be free of excessive dust, toxic or flammable gases and moisture.
3. Never install the system where the surrounding temperature is higher than 104°F or where humidity is high.
4. Clearance must allow for safe, effective inspection and maintenance.

MINIMUM CLEARANCES	
Above	24 inches
Other sides	24 inches
Control Panel side	36 inches

5. If necessary, use metal shims or leveling pads to level the system. Never use wood to shim the unit.

## Ventilation

1. If the oil-less compressor system is located in a totally enclosed room, an exhaust fan with access to outside air make up air must be installed. Room temperature must remain below 104°F. Circulation must be sufficient to prevent local hot spots.
2. Never restrict the cooling fan exhaust air. Maintain a minimum of 24 in. of clearance around the entire unit (36 in. is preferred).
3. Never locate the compressor where hot exhaust air from other heat generating units may be pulled into the system.

## Wiring

All electrical hook-ups must be performed by a qualified electrician. Installations must be in accordance with local and national electric codes. Make sure power supply conductors are sized adequately for full system demand.

Use solder-less terminals to connect the electrical power source.

## Piping

Refer to the general product manual.

4. Make sure the piping is lined up without being strained or twisted when assembling the piping for the system.

5. Appropriate expansion loops or bends should be installed at the system to avoid stresses caused by changes in hot and cold conditions.
6. Piping supports should be anchored separately from the system to reduce noise and vibration.
7. Never use any piping smaller than the system outlet connection.
8. Use flexible hose to connect the outlet of the system to the piping so that the vibration of the system does not transfer to the piping.

## Safety Valves

Medical package systems are shipped from the factory with safety valves installed in the tank assembly. The flow capacity of the safety valve is equal to or greater than the flow capacity of the compressor system. There are also safety valves installed where compressor modules isolate from the system, and safety valves are installed where the air purification system isolates.

1. The pressure setting of the safety valve must be no higher than the maximum working pressure of the tank.
2. Safety valves are placed ahead of any possible blockage point in the system, i.e. shutoff valves.
3. Avoid connecting the safety valve with any tubing or piping.
4. Manually operate each safety valve every six months to avoid sticking or freezing.

## Assembling Modular Medical System

### Modular Placement

1. Unpack each module and discard all wood shipping materials.
2. Locate frame assembly fasteners provided in parts pack [includes: fasteners, filter(s), isolation pads and inlet flex line].
3. Place modules at location designated (see drawings provided with unit for proper arrangement of modules). Provide sufficient clearance around unit for servicing (see minimum clearance section).
4. Install frame assembly fasteners to each frame joining the frames together.
5. Lift corners of each frame assembly and install isolation pads provided.

**NOTE:** Remove shipping brackets painted orange located at the base plate of each compressor module. This will allow spring isolators to free up reducing noise and vibration of the unit.

### Connecting Piping

1. Locate connection for piping at rear of unit for compressors module to receiver tank module.
2. Remove plastic caps that protect piping against contamination.
3. Connect flex joint to frame securely making sure flex line is not pinched or kinked.
4. Follow steps 1 to 3 for flex line from outlet of receiver tank to dryer package.

**NOTE:** All piping is provided and sealed for this portion of installation.

5. Locate and attach intake inline air filter to outside source air or header. Flex line is provided when attaching intake of compressors to rigid piping. Make sure inlet drip legs are installed to prevent moisture from entering the compressor system intake filters.
6. Connect outlet source from filter package located on dryer module to outlet source piping.

**⚠ WARNING** *Attach all inlet and outlet source piping in accordance with NFPA 99 for Medical Gas.*

## Connecting Wiring

**⚠ CAUTION** *Provide electrical power in accordance to NEC and local codes. Connection of wiring should be performed by a qualified electrician.*

1. Connect wiring and flex conduit provided from each motor junction box to correct hole in bottom of control panel and starter.
2. Connect the temperature switch from each compressor to contacts located in the control panel as marked for each temperature switch. Temperature switches shutdown the compressor when the temperature is above 425°F.
3. Connect unloader solenoid to wiring contacts located in the control panel. The unloader solenoid provides loadless starting of each compressor on/off cycle.
4. Connect wiring from CO Monitor. A wire set is provided for power and the other for alarm. Wiring is marked for easy attachment.
5. Connect wiring from Dew Point Monitor. A wire set is provided for power and the other for alarm. Wiring is marked for easy attachment.
6. Refrigerated dryer(s) need a separate properly protected power supply for each dryer. Standard voltage is 110 Volts. Other voltages are available. Check for voltage of dryer supplied and current rating provided on data plate of dryer.

**NOTE:** Units provided with desiccant drying systems are wired directly to the control panel provided.

7. Connect the incoming power to the incoming terminal blocks inside of the main electrical control panel. Make sure this is performed by a qualified electrician, following all NEC, OSHA, and local codes. Make sure the unit ground is secured to the earth ground.

For questions concerning assembling and start-up, contact Powerex at 1-888-769-7979 for technical assistance.

## Operation

Powerex package medical systems operate at a maximum pressure of 115 psig. Compressor RPM's are established by Powerex based on horsepower and operating pressure.

### Before Start Up

1. Make sure all safety warnings, labels and instructions have been read and understood before continuing.
2. Confirm that the electric power source and ground have been firmly connected.
3. Be sure all pressure connections are tight.
4. Check to be certain all safety relief valves, etc., are correctly installed.
5. Check that all fuses, circuit breakers, etc., are the proper size.
6. Make sure the inlet is properly connected.
7. Confirm that the tank drain valve is closed.

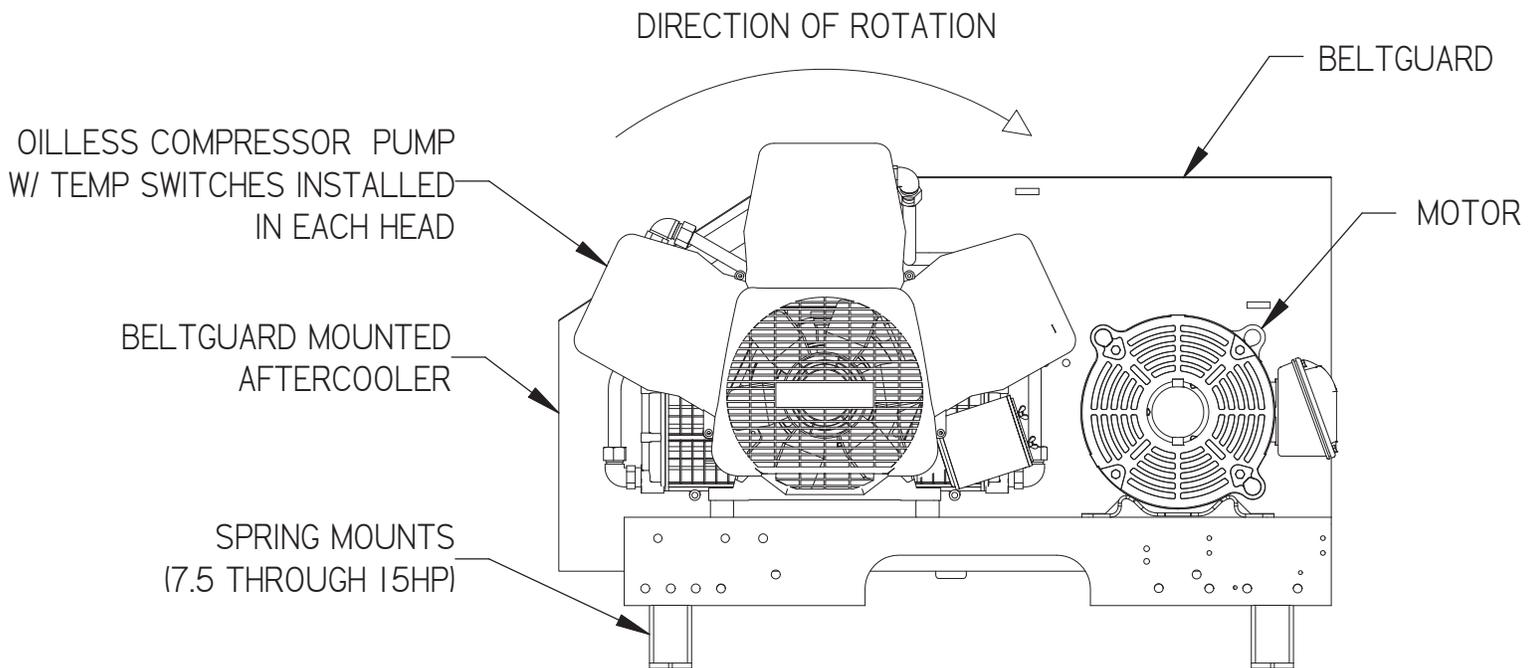
### Start Up and Operation

1. Follow all the procedures under "Before start-up" before attempting operation of the compressor.
2. Switch the electric source breaker on.
3. Both dryers should be plugged in and set at the on position (Refrigerated).
4. Dewpoint & CO Monitors should be on and the sampling valves open. Calibrate CO per enclosed manufacturer's instructions.
5. Ensure water lines are properly installed to water-cooled aftercoolers. Turn on water. **IMPORTANT:** This is not a standard option. Check to see if water-cooled aftercoolers were provided.
6. Compressor unit isolation valves are preset at the factory in the open position except for tank by-pass which must remain closed during normal operation.
7. Dryer and filter isolation valves: Valves should be open to one dryer and one filter bank.
8. Close the valve leading to the Medical Air System from receiver on the compressor unit.
  - a. With all the compressor HOA switches in the OFF position, turn the electric power source to the ON position. The low pressure alarm will sound. Silence the alarm by pushing Alarm Acknowledge button.
  - b. Jog each compressor in the manual position with the HOA switch to check for rotation. (Clockwise if facing the black fan shroud and counterclockwise if facing the compressor flywheel.) Visually check the rotation of each compressor pump. If the rotation is incorrect, have a qualified electrician correct the motor wiring.
  - c. Set all selector switches to the AUTO position. Each compressor will run until the lead pressure setting is met.

- d. Open valve at the air receiver leading to Medical Air System.
- e. Check for air leaks at the connections.
9. Check that the unit operates without excessive vibration, unusual noises or leaks.
10. Check the discharge pressure. Also make sure the air pressure rises to the designated pressure setting by checking the discharge pressure gauge.
11. Check the operation of the pressure switch or the pilot valve for continuous run units by opening the stop valve and confirming the compressor starts or reloads as pressure drops.

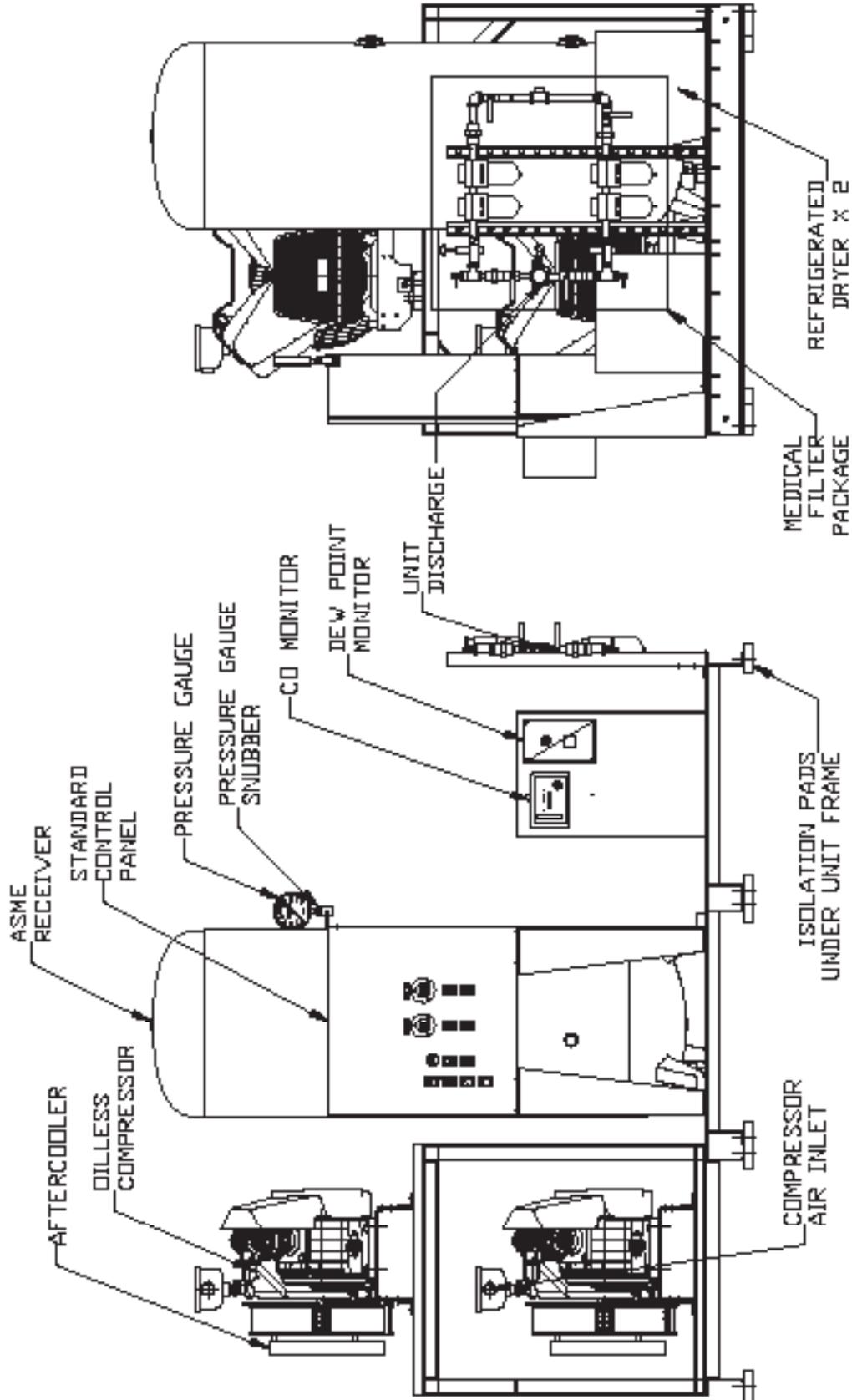
## System Drawings

### Basemount Unit



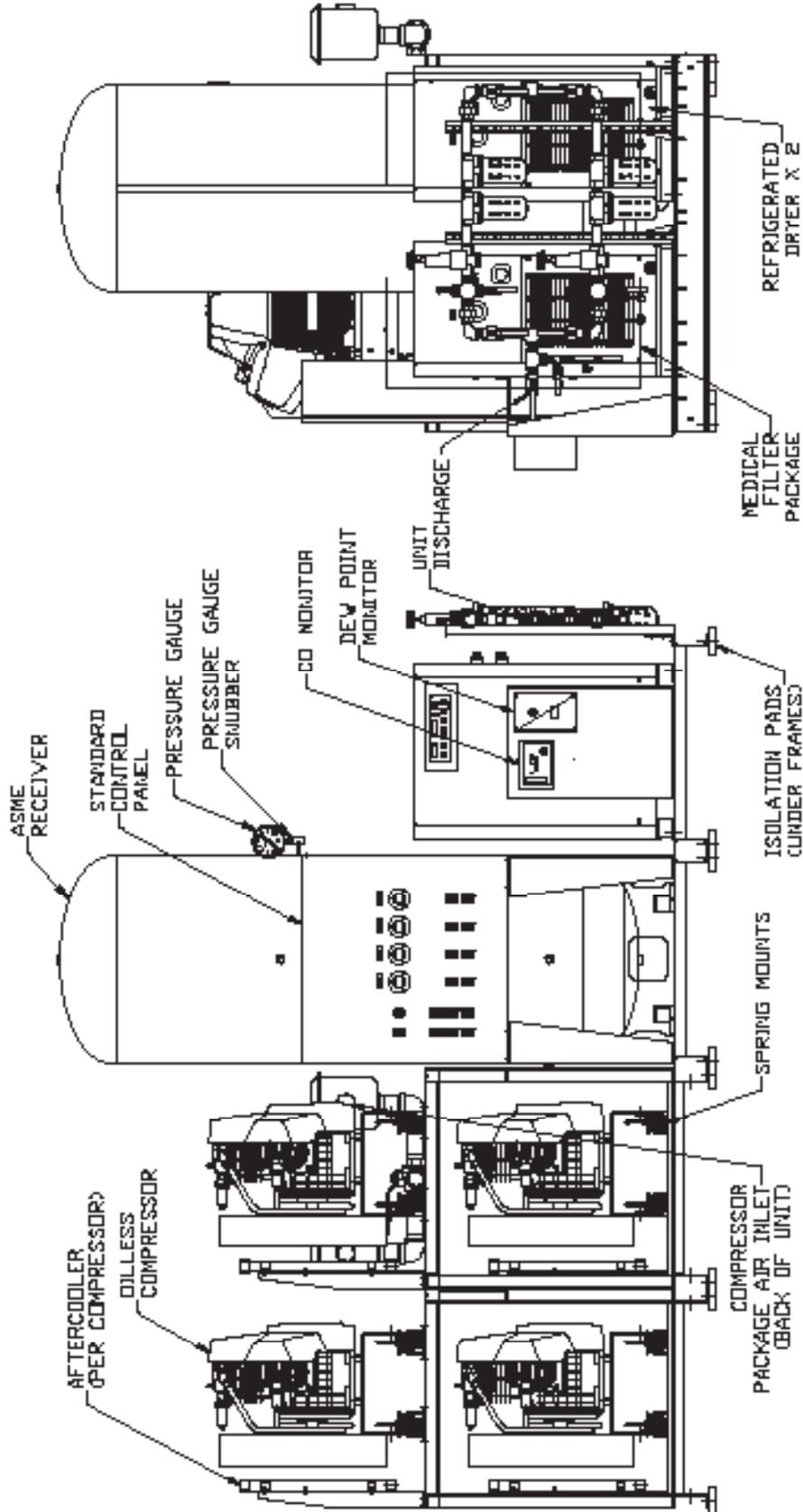
### System Drawings

#### Duplex Medical Unit - Refrigerated Dryers



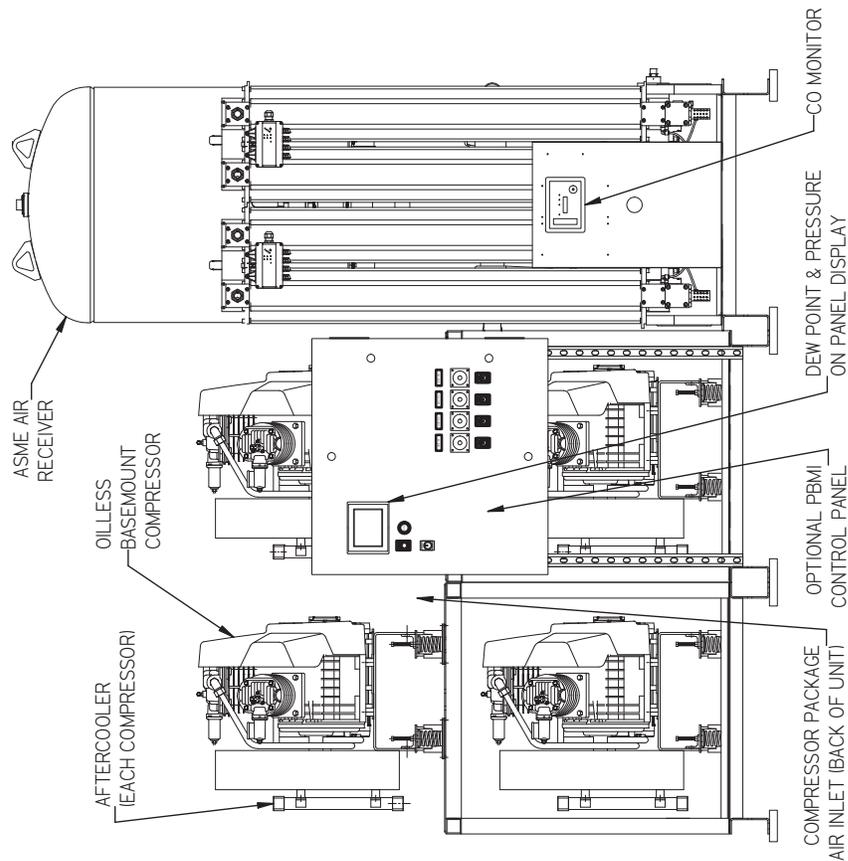
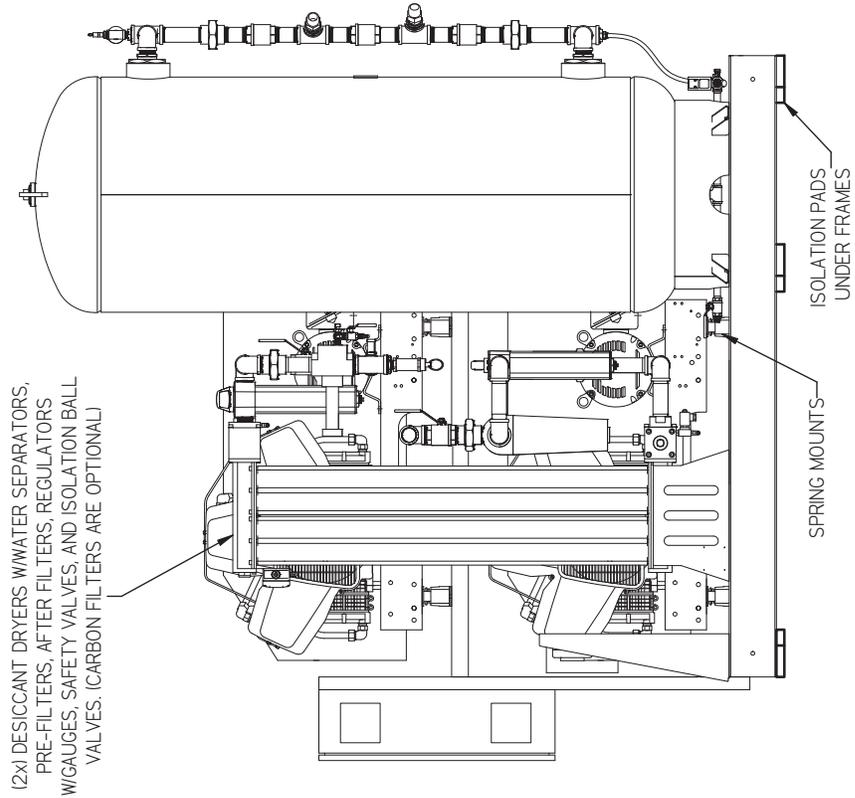
System Drawings

Quadplex Medical Unit - Basic Panel Refrigerated Dryers



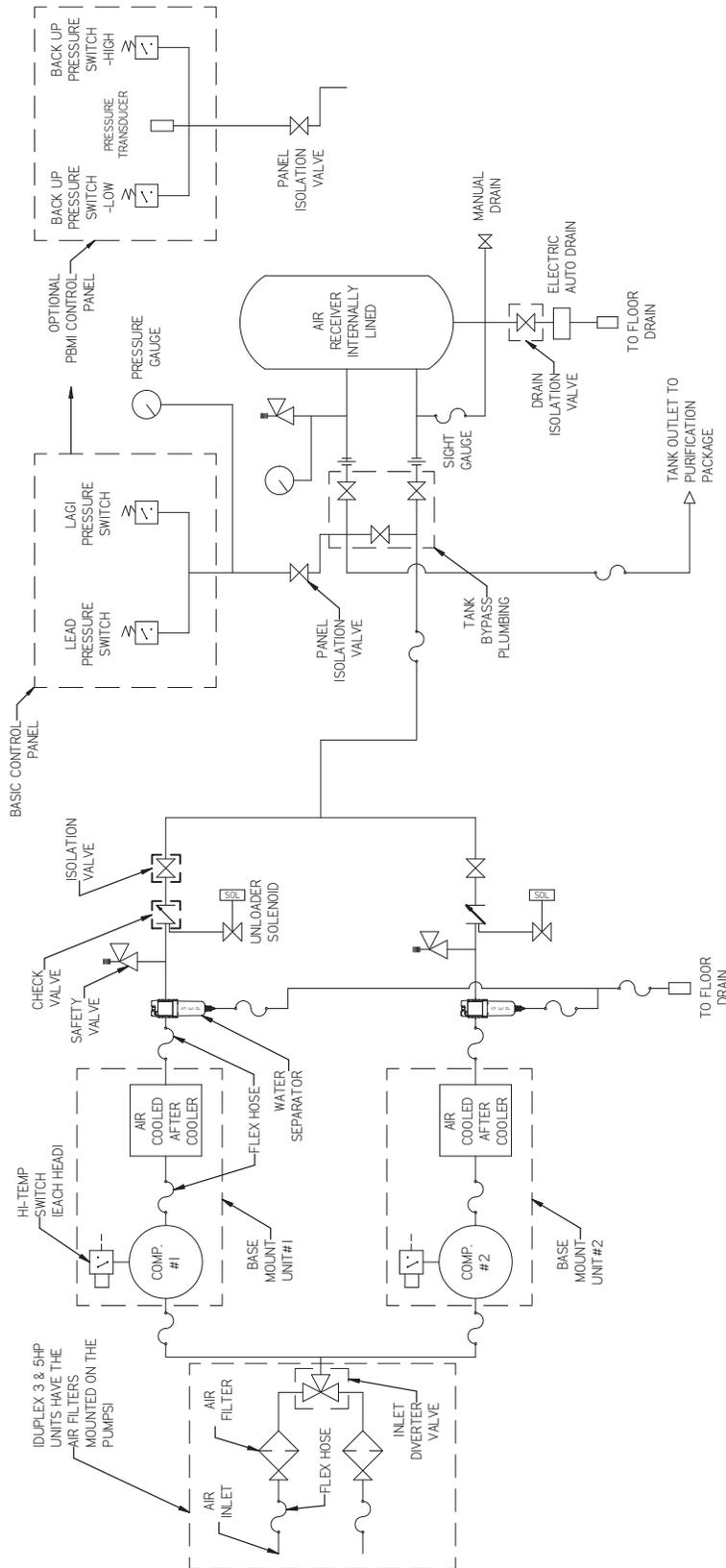
### System Drawings

#### Quadplex Medical Unit - Premium Panel Desiccant Dryers



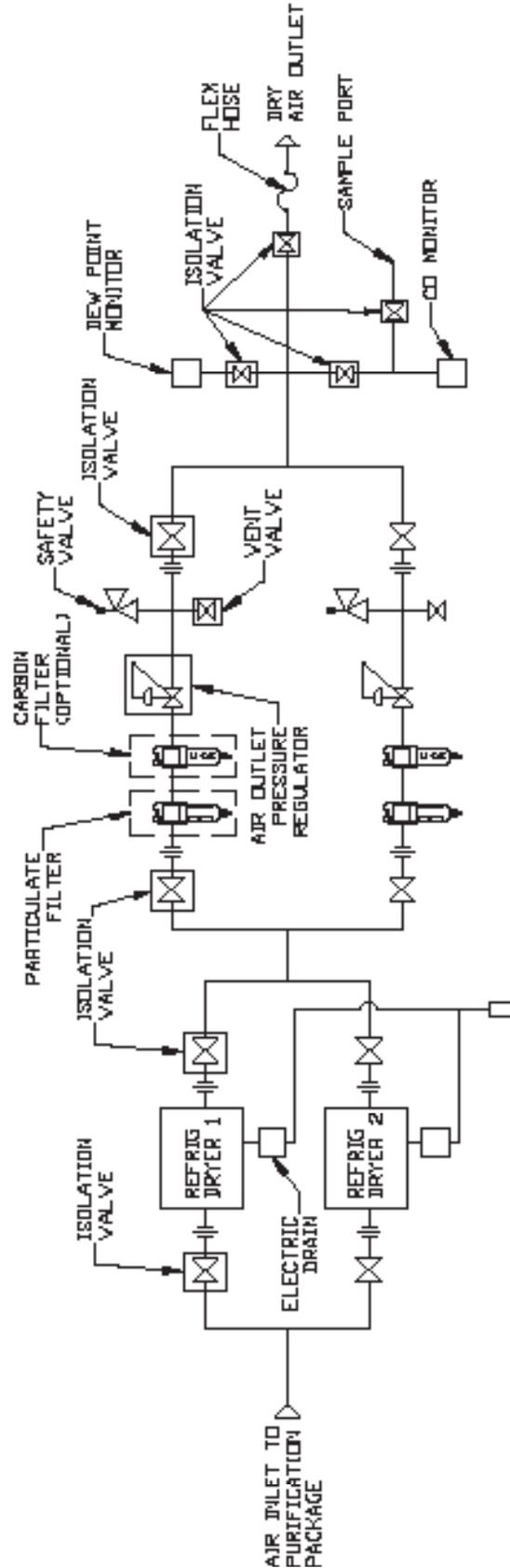
## System Flow Schematics

### Duplex Medical Unit



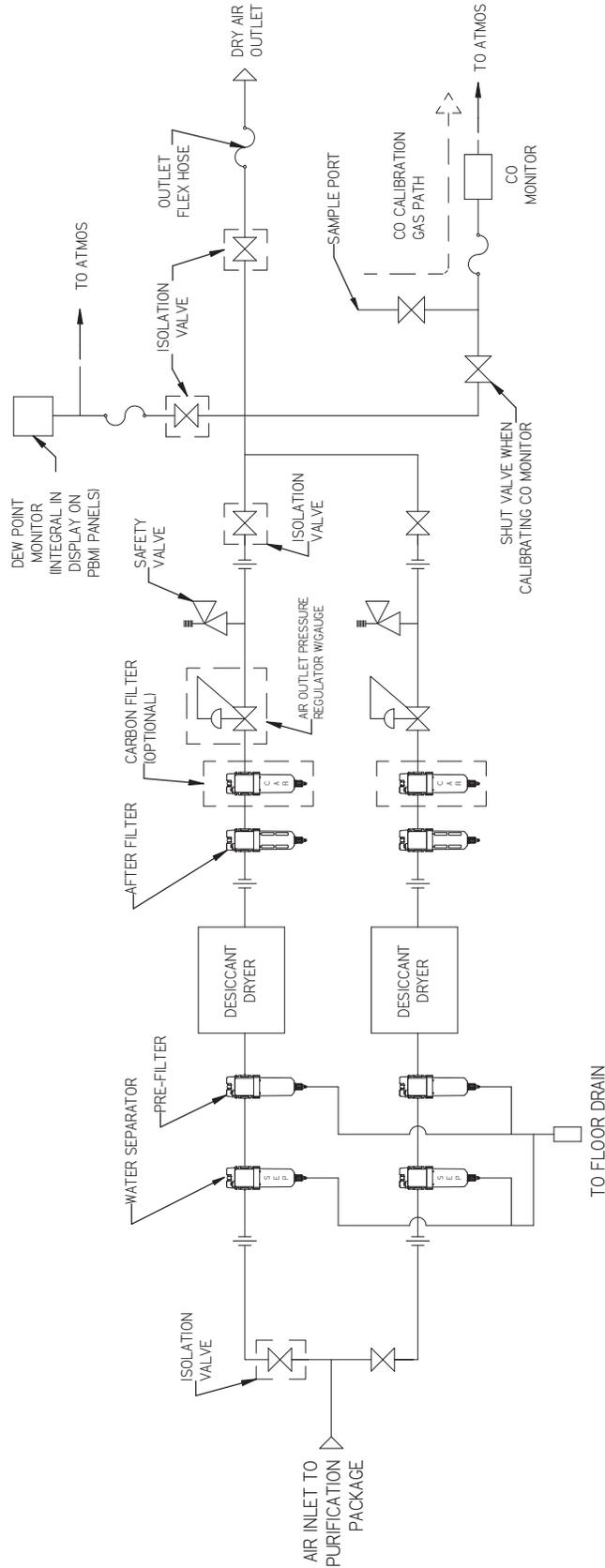
System Flow Schematics

Refrigerated Purification Package



System Flow Schematics

Desiccant Purification Package



**Replacement Parts**
**Compressor**

Description	Part Number	QTY
Compressor Pump:		
3 HP	OPS030	1
5 HP	OPT050	1
7-1/2 HP	OPT050	1
7-1/2 HP	OPT100	1
10 HP	OPT100	1
15 HP	OPT150	1
Corrosion Resistant Vertical Tank:		
80 Gal.	Consult factory for number	1
120 Gal.	Consult factory for number	1
200 Gal.	Consult factory for number	1
240 Gal.	Consult factory for number	1
Dew Point Monitor / Probe (Specify Dryer to be used on):		
Refrigerated	PDPM1001AJ	1
Desiccant	PDPM1001AJ	1
Carbon Monoxide Monitor/Sensor	ACO600105	1
Safety Relief Valve	Consult factory for number	1
Control Panel	Consult factory for parts and availability. Call 1-888-769-7979.	
Pressure Gauge	Consult factory for number	1
Auto Tank Drain:		
Electric	ACO300100	1
Float	ACO400100	1
Isolation Mounts	Consult factory for parts and availability. Call 1-888-769-7979.	

Description	Part Number	QTY
Drive Belts:		
3 HP	BT008500AV	1
5 HP	BT022100AV	2
7-1/2 HP	BT008500AV	2
7-1/2 HP	BT011200AV	2
10 HP	BT009200AV	2
15 HP	BT010200AV	2
Pulley (Motor):		
3 HP	PU009777AV	1
5 HP	PU202634AV	1
7-1/2 HP	PU202631AV	1
7-1/2 HP	PU009775AV	1
10 HP	PU009772AV	1
15 HP	PU009756AV	1
Motor:		
3 HP	MC304201AV	1
5 HP	MC304203AV	1
7-1/2 HP	MC033600AV	1
7-1/2 HP	MC304208AV	1
10 HP	MC304210AV	1
15 HP	MC304212AV	1
Belt Guard (Back):		
3 HP	BG012802AV	1
5 HP	BG012802AV	1
7-1/2 HP	BG012802AV	1
7-1/2 HP	BG218400AV	1
10 HP	BG218400AV	1
15 HP	BG218400AV	1
Belt Guard (Front):		
7-1/2 HP	BG218500AV	1
10 HP	BG218500AV	1
15 HP	BG218500AV	1

**Aftercooler/Drain**

Description	Part Number	QTY
Compressor Pump:		
3 - 5 HP	ACO700015	1
7-1/2 - 10 HP	ACO700020	1
15 HP	ACO700035	1
Drain Trap:		
3 - 15 HP	Consult factory for number	
Piping Braided Flex:		
3 HP - 1/2 inch	Consult factory for size and length	
5 HP - 1/2 inch	Consult factory for size and length	
7-1/2 HP - 1/2 inch	Consult factory for size and length	
10 HP - 3/4 inch	Consult factory for size and length	
15 HP - 3/4 inch	Consult factory for size and length	
Temperature Switches:		
425° N/C Switch	AM003033AV	1

## Dryer/Filter

Description	Part Number	QTY
Refrigerated Dryer:		
25 CFM	ACO013025	1
35 CFM	ACO013035	1
50 CFM	ACO013050	1
75 CFM	ACO013075	1
100 CFM	ACO013100	1
150 CFM	ACO013150	1
200 CFM	ACO013200	1
Filter Packages for Refrigerated Dryers:		
1/2 inch - 40 CFM	MFP-040-342	1
1/2 inch - 50 CFM	MFP-050-342	1
3/4 inch - 60 CFM	MFP-060-362	1
1 inch - 70 CFM	MFP-070-382	1
1 inch - 100 CFM	MFP-070-382	1
1-1/4 inch - 220 CFM	MFP-110-382	1
	MFP-220-3A2	1
<i>See Filter System Manual for details and replacement elements.</i>		

Description	Part Number	QTY
Desiccant Dryer:		
5 CFM	PD297A	2
10 CFM	PD204A	2
20 CFM	PD205A	2
30 CFM	PD206A	2
45 CFM	PD207A	2
60 CFM	PD208A	2
100 CFM	PD209A	2
125 CFM	PD210A	2
200 CFM	PD211A	2
250 CFM	PD212A	2

## Maintenance Schedule

Item	Action Needed	Operating Hours						Remarks
		500	2,500	5,000	10,000	15,000	20,000	
Tank	Drain moisture	Daily						Drain tank daily
Inlet air filter	Inspect, Replace	●	▲	▲	▲	▲	▲	Every 2,500 hours or less
Blower fan	Clean			●	●	●	●	
Fan duct	Clean			●	●	●	●	
Compressor fins	Clean		▲	▲	▲	▲	▲	Every 2,500 hours or less
Bearings – HP Wrist Pin	Inspect, Replace Pin, Regrease		▲	▲	▲	▲	▲	Every 2,500 hours
Compression Rings	Inspect, Replace			▲	▲	▲	▲	Every 2,500 hours
Bearings – LP Wrist Pin	Regrease	Note 4	▲	▲	▲	▲	▲	Every 2,500 hours
Piston Set	Replace				▲		▲	
Cylinder	Inspect, Replace			●	●	●	●	
Unloader Set	Inspect, Replace			●	▲	●	▲	
Gasket Set	Replace				▲		▲	
Bearing Deal Wrist Pin	Replace				▲		▲	
V-Belt	Inspect, Replace	Note 3	●	▲	▲	▲	▲	

● – Inspect

▲ – Replace or perform action

### NOTES:

1. Inspect and perform maintenance periodically according to the maintenance schedule.
2. The maintenance schedule relates to the normal operating conditions. If the circumstances and load condition are adverse, shorten the cycle time and perform maintenance accordingly.
3. The tension of the V-belt should be adjusted during the initial stage and inspected every 1,500 hours afterwards. Proper belt tension for 3 HP units is 12 lbs. / 0.5 inch deflection; for 5 to 15 HP units, 16 lbs. / 1.5 inch deflection.
4. FOR LOW PRESSURE WRIST PIN BEARINGS ONLY: USE Powerex Oilless Reciprocating Grease, 6 Grams, Part # IP634500AJ.



Problem	Cause	Corrective Action
Panel power <b>ON</b> light does not appear	1. Main disconnect is not ON	1. Switch disconnect to <b>ON</b>
	2. Blown fuse or circuit breaker at customer provided power supply	2. Inspect for any fault replace fuse or trip disconnect to <b>ON</b>
	3. Blown fuse at primary side of transformer	3. Replace fuse on primary side be sure use same type and size
Power On light is on but unit will not start	1. Blown fuse on secondary side of transformer	1. Replace fuse on secondary side be sure use same type and size
	2. Motor overload has tripped	2. See last entry of Troubleshooting Guide
	3. Wrong or low voltage	3. Check incoming power supply and unit power rating
	4. Starter has failed	4. Replace contactor assembly
	5. Motor has failed	5. Replace motor
Compressor is running but will not maintain pressure	1. Drive belts came off or too loose	1. Replace drive belts and (or) tighten
	2. Clogged intake filter element	2. Replace intake filter element
	3. Solenoid unloader open	3. Replace solenoid unloader
	4. Electric tank drain is open continuously	4. Replace tank drain
	5. Discharge air is leaking	5. Check discharge piping
Excessive noise or vibration	1. Drive belt has separated or flat spot	1. Replace drive belt
	2. Motor has failed	2. Replace motor
	3. Pump is damaged	3. Fix or replace pump
	4. Cooling air fan is touching fan guard	4. Check air fan daily
Compressor shuts down on high temperature	1. Room temperature is above 104°F	1. Add ventilation or air conditioning to room
	2. Aftercooler fins clogged	2. Clean aftercooler
	3. Intake filter clogged	3. Check intake filter
	4. Compressor is dirty	4. Clean unit
Compressor turns on/off rapidly	1. Receiver tank has high level of water	1. Replace electric tank drain; drain water from tank
	2. Defective pressure switch	2. Replace pressure switch
	3. Tank has been by-passed	3. Open proper ball valve
Safety valve blows off	1. Pressure switch has failed to open	1. Replace pressure switch
	2. Motor starter contacts welded shut	2. Replace motor starter
	3. Pump selector switch in <b>HAND</b> position	3. Move pump selector switch to <b>AUTO</b> position
	4. Pump isolation ball valve is <b>CLOSED</b> position	4. Open ball valve to proper position
Motor Overload has tripped	1. Pump has failed	1. Fix or replace pump
	2. Motor has failed	2. Replace motor
	3. Improper wiring	3. Check wiring
	4. Wrong overload setting	4. Check overload setting
	5. Low voltage	5. Check incoming power supply
	6. Contactor or overload bad	6. Replace contactor or overload
Solenoid unloader constantly bleeds after compressor shuts off	Check valve has failed	Replace check valve
CO monitor in alarm	High CO alarm	Check compressor inlet / route inlet away from CO source
Dew point monitor in alarm	1. High dew point	1. Check dryer operation
	2. Dryer pre-filter drain failure	2. Replace pre-filter drain





## Powerex Limited Warranty – Applicable to Non-OEM Customers in the U.S. & Canada Only

### Warranty and Remedies.

**(a) General.** Powerex warrants each Compressor System, Vacuum System, Vacuum Pump, Compressor Air-End, or Powerex branded Accessory (collectively “Products”, individually each a “Product”) to be free from defects in material and workmanship (“Defects”) at the date of shipment. This warranty shall apply only to Products that are purchased and used in the United States of America and in Canada. EXCEPT AS SET FORTH BELOW, NO OTHER WARRANTY, WHETHER EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, SHALL EXIST IN CONNECTION WITH THE SALE OR USE OF SUCH PRODUCTS. TO THE EXTENT PERMITTED BY LAW, ANY AND ALL IMPLIED WARRANTIES ARE EXCLUDED. All warranty claims must be made in writing and delivered to Powerex in accordance with the procedures set forth on its website ([www.powerexinc.com](http://www.powerexinc.com)), or such claim shall be barred. Upon timely receipt of a warranty claim, Powerex shall inspect the Product claimed to have a Defect, and Powerex shall repair, or, at its option, replace, free of charge, any Product which it determines to have had a Defect; provided, however, that if circumstances are such as to preclude the remedying of Defect by repair or replacement, Powerex shall, upon return of the Product, refund to buyer any part of the purchase price of such Products paid to Powerex. Freight for returning Products to Powerex for inspection shall be paid by buyer. The warranties and remedies herein are the sole and exclusive remedy for any breach of warranty or for any other claim based on any Defect, or non-performance of the Products, whether based upon contract, warranty or negligence.

**(b) (i) Standard Period of Warranty – Parts and Labor.** The purchase of any system includes our standard warranty. Powerex warrants and represents all Products shall be free from Defects for the first eighteen (18) months from the date of shipment by Powerex, or twelve (12) months from the documented date of startup, or five thousand (5,000) hours of use, whichever occurs first. During such warranty period, Powerex shall be fully liable for all Defects in the Products (the “Product Defects”), i.e., all costs of repair or replacement, which may include “in and out” charges, so long as the Products are located in the United States or Canada, and the Products are reasonably located and accessible by service personnel for removal. “In and out” charges include the costs of removing a Product from buyer’s equipment for repair or replacement.

**(ii) Premium Period of Warranty – Parts and Labor.** In order to be eligible for premium warranty coverage, a premium warranty for each system must be purchased when order is placed. Powerex warrants and represents all Products shall be free from Defects for the first thirty (30) months from the date of shipment by Powerex, or twenty-four (24) months from the documented date of startup, or seven thousand five hundred (7,500) hours of use, whichever occurs first. During such warranty period, Powerex shall be fully liable for all Defects in the Products (the “Product Defects”), i.e., all costs of repair or replacement, which may include “in and out” charges, so long as the Products are located in the United States or Canada, and the Products are reasonably located and accessible by service personnel for removal. “In and out” charges include the costs of removing a Product from buyer’s equipment for repair or replacement.

**(c) Additional Period of Warranty – Parts Only (No Labor).** In addition to the above, Powerex warrants each Powerex branded Compressor Air-End and Vacuum Pump shall be free of Defects for a period of forty-two (42) months from the date of shipment by Powerex, or thirty-six (36) months from the documented date of startup, or ten thousand (10,000) hours of use, whichever occurs first. Supplier’s repair or replacement of any Product shall not extend the period of any warranty of any Product. This warranty applies to the exchange of part(s) found to be defective by an Authorized Powerex Service Representative only.

**(d) Replacement Pumps – Parts Only (No Labor).** For any replacement Air-End or Vacuum Pumps installed on a Powerex manufactured system or unit after any initial warranty period has expired or where another warranty does not apply for any reason, Powerex warrants that the Air-End or Vacuum Pumps shall be free of Defects for a period of thirty-six (36) months from the date of shipment by Powerex or ten thousand (10,000) hours of use, whichever comes first. For any replacement Air-End or Vacuum Pumps installed on a system that was not manufactured by Powerex after any initial warranty period has expired or where another warranty does not apply for any reason, Powerex warrants that the Air-End or Vacuum Pumps shall be free of Defects for the first twelve (12) months from the date of shipment by Powerex. Supplier’s repair or replacement of any Product shall not extend the period of any warranty of any Product. This warranty applies to the exchange of part(s) found to be defective by an Authorized Powerex Service Representative only.

**(e) Replacement Motors – Parts Only (No Labor).** For any replacement motor installed on a Powerex manufactured system or unit after any initial warranty period has expired or where another warranty does not apply for any reason, Powerex warrants that the replacement motor shall be free of Defects for the first twelve (12) months from the date of shipment by Powerex. For any replacement motor installed on a system or unit that was not manufactured by Powerex after any initial warranty period has expired or where another warranty does not apply for any reason, Powerex warrants that the replacement motor shall be free of Defects for the first ninety (90) days from the date of shipment by Powerex. Supplier’s repair or replacement of any Product shall not extend the period of any warranty of any Product. This warranty applies to the exchange of part(s) found to be defective by an Authorized Powerex Service Representative only.

**(f) Replacement Parts – Parts Only (No Labor).** For other replacement parts besides motors, Air-End or Vacuum Pumps installed on a Powerex manufactured system or unit after any initial warranty period has expired or where another warranty does not apply for any reason, Powerex warrants that such replacement parts will be free from Defects for the first twelve (12) months from the date of shipment by Powerex. For other replacement parts besides motors, Air-End or Vacuum Pumps installed on a system or unit that was not manufactured by Powerex after any

initial warranty period has expired or where another warranty does not apply for any reason, Powerex warrants that such replacement parts will be free from Defects for the first twelve (12) months from the date of shipment by Powerex. For other replacement parts besides motors, Air-End or Vacuum Pumps installed on a system or unit that was not manufactured by Powerex after any initial warranty period has expired or where another warranty does not apply for any reason, Powerex makes no warranties. Supplier's repair or replacement of any Product shall not extend the period of any warranty of any Product. This warranty applies to the exchange of part(s) found to be defective by an Authorized Powerex Service Representative only.

**(g) Coverage.** The warranty provided herein applies to Powerex manufactured units or systems only.

**(h) Exceptions.** Notwithstanding anything to the contrary herein, Powerex shall have no warranty obligations with respect to Products:

**(i)** That have not been installed in accordance with Powerex's written specifications and instructions;

**(ii)** That have not been maintained in accordance with Powerex's written instructions;

**(iii)** That have been materially modified without the prior written approval of Powerex; or

**(iv)** That experience failures resulting from operation, either intentional or otherwise, in excess of rated capacities or in an otherwise improper manner.

The warranty provided herein shall not apply to: **(i)** any defects arising from corrosion, abrasion, use of insoluble lubricants, or negligent attendance to or faulty operation of the Products; **(ii)** ordinary wear and tear of the Products; or **(iii)** defects arising from abnormal conditions of temperature, dirt or corrosive matter; **(iv)** any OEM component which is shipped by Powerex with the original manufacturer's warranty, which shall be the sole applicable warranty for such component.

**Limitation of Liability.** NOTWITHSTANDING ANYTHING TO THE CONTRARY HEREIN, TO THE EXTENT ALLOWABLE UNDER APPLICABLE LAW, UNDER NO CIRCUMSTANCES SHALL POWEREX BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, PUNITIVE, SPECULATIVE OR INDIRECT LOSSES OR DAMAGES WHATSOEVER ARISING OUT OF OR IN ANY WAY RELATED TO ANY OF THE PRODUCTS OR GOODS SOLD OR AGREED TO BE SOLD BY POWEREX TO BUYER. TO THE EXTENT ALLOWABLE UNDER APPLICABLE LAW, POWEREX'S LIABILITY IN ALL EVENTS IS LIMITED TO, AND SHALL NOT EXCEED, THE PURCHASE PRICE PAID.

**Warranty Disclaimer.** Powerex has made a diligent effort to illustrate and describe the Products in its literature, including its Price Book, accurately; however, such illustrations and descriptions are for the sole purpose of identification, and do not express or imply a warranty that the Products are merchantable, or fit for a particular purpose, or that the Products will necessarily conform to the illustrations or descriptions.

**Product Suitability.** Many jurisdictions have codes and regulations governing sales, construction, installation, and/or use of Products for certain purposes, which may vary from those in neighboring areas. While Powerex attempts to assure that its Products comply with such codes, it cannot guarantee compliance, and cannot be responsible for how the product is installed or used. Before purchase and use of a Product, please review the Product applications, and national and local codes and regulations, and be sure that the Product, installation, and use will comply with them.

**Claims.** Any non-warranty claims pertaining to the Products must be filed with Powerex within 6 months of the invoice date, or they will not be honored. Prices, discounts, and terms are subject to change without notice or as stipulated in specific Product quotations. Powerex shall not be liable for any delay or failure arising out of acts of the public enemy, fire, flood, or any disaster, labor trouble, riot or disorder, delay in the supply of materials or any other cause, whether similar or dissimilar, beyond the control of Company. All shipments are carefully inspected and counted before leaving the factory. Please inspect carefully any receipt of Products noting any discrepancy or damage on the carrier's freight bill at the time of delivery. Discrepancies or damage which obviously occurred in transit are the carrier's responsibility and related claims should be made promptly directly to the carrier. Returned Products will not be accepted without prior written authorization by Powerex and deductions from invoices for shortage or damage claims will not be allowed. **UNLESS OTHERWISE AGREED TO IN WRITING, THE TERMS AND CONDITIONS CONTAINED IN THIS LIMITED WARRANTY WILL CONTROL IN ANY TRANSACTION WITH POWEREX.** Any different or conflicting terms as may appear on any order form now or later submitted by the buyer will not control. All orders are subject to acceptance by Powerex.