

Scroll Medical Air Package

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

Safety Guidelines

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.

⚠ 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

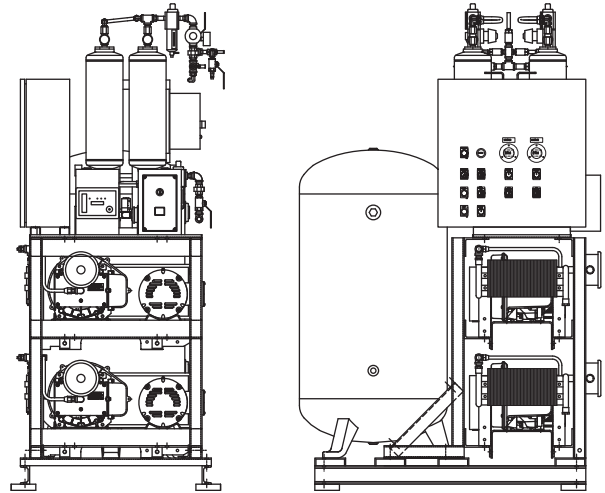
Notice indicates important information, that if not followed, may cause damage to equipment.

Unpacking

Immediately upon receipt of the system, inspect for any damage which may have occurred during shipment. Repair or replace damaged items before use. The name-plate should be checked to verify the correct model and voltage.

⚠ WARNING

Do not operate unit if damaged during shipping, handling or use. Damage may result in unsafe conditions and cause injury or property damage.



Specifications

Product	MS Series Powerex Multiplex Air Compressors
Performance Specifications	See Page 2
Lubrication	Grease-filled Bearing
Operating Voltages	3Ø 208-230 / 460 Volts, 60 Hz
Compression Cycle	Scroll
Motor Overload Protection	IEC Magnetic Starter
Maximum System Pressure	Standard: 116 psi High Pressure: 145 psi
Overpressure Protection	ASME Safety Valve Factory Set and Sealed
Outlet Air Connections	1/2 through 1-1/2 inch NPT
Tank Sizes	80, 120, 200 Gallon ASME Rated 200 psig
California Ordinance 462 (L) (2)	Meets Requirements of this Ordinance
Tank Isolation	Standard All Units
Drive	V Belt
Control Panel	UL508A Listed

Specifications (Continued)

Compressor Performance (per base mount)


HP	Air End	Discharge Pressure (PSIG)	Air Delivery (SCFM)	Motor Voltage
3	SLAE03EB	95 - 115 (125 - 145 optional)	8.8 @ 100 PSIG 7.5 @ 145 PSIG	208 - 230/460
5	SLAE05E		15.2 @ 100 PSIG	
	SLAE05EHP		12.5 @ 145 PSIG	

NOTE: For system electrical information, see wiring diagram shipped with unit.

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

Warning indicates a potentially 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

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

Minimum Clearances	
Above	36 inches
Other sides	36 inches

- If necessary, use metal shims or leveling pads to level the compressor. Never use wood to shim the compressor.

VENTILATION

- If the oilless compressor is located in a totally enclosed room, an exhaust fan and make up vent with access to outside air must be installed.
- Never restrict the cooling fan exhaust air. Maintain a minimum of 3 feet of clearance around entire unit.
- Never locate the compressor where hot exhaust air from other heat generating units may be pulled into the unit.

WIRING

All electrical hook-ups must be performed by a qualified electrician. Installations must be in accordance with local and national electrical codes.

Use solderless terminals to connect the electric power source.

PIPING

General Guidelines

Refer to the general product manual.

- Make sure the piping is lined up without being strained or twisted when assembling the piping for the compressor.
- Appropriate expansion loops or bends should be installed at the compressor to avoid stresses caused by changes in hot and cold conditions.
- Piping supports should be anchored separately from the compressor to reduce noise and vibration.
- Never use any piping smaller than the compressor outlet connection.
- Use flexible hose to connect the outlet of the compressor to the piping so that the vibration of the compressor does not transfer to the piping.

Remote Intake Piping

Powerex Compressor Systems with pipe thread connectors on the intake filters are intended for installation with remote air intake. Piping for the remote intake system must be installed at the final operating site.

Under some conditions, the intake piping may facilitate the condensation of humidity in the intake air stream into liquid water.

NOTICE

The intake filters supplied by Powerex will not stop ingestion of liquid water by the pumps. Liquid water going into the pumps will damage the pumps and void the warranty.

Always install drip legs with sufficient capacity to capture liquid water in the intake piping before the air filters. Drip legs must be sized with low enough air velocity to make sure they are effective at capturing liquid water in the intake air and must be maintained (drained) at frequent intervals to make sure they remain effective.

Installation (Continued)

SAFETY VALVES

Our tanks are shipped from the factory with safety valves installed in the tank. The flow capacity of the safety valve is equal to or greater than the capacity of the compressor system.

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

MODULAR PLACEMENT

1. Unpack each module and discard all wood shipping materials.
2. Locate frame assembly fasteners provided in parts pack [includes: fasteners, isolation pads and inlet flex line].
3. Place modules at location designated. 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.

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 dryer package to outlet of receiver tank.

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.
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.

ELECTRICAL WIRING OF UNIT SHIPPED IN SEPARATE MODULES

⚠ 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 each temperature switch from the compressors to contacts located in control panel as marked for each temperature switch. Temperature switches shutdown the compressor when temperature reaches above a pre-set limit (425°F for high pressure units; 450°F for standard pressure units). Connect dryer power cords, electric drain power cord, dew point and CO monitor power cords, and alarm wiring to the main control panel.

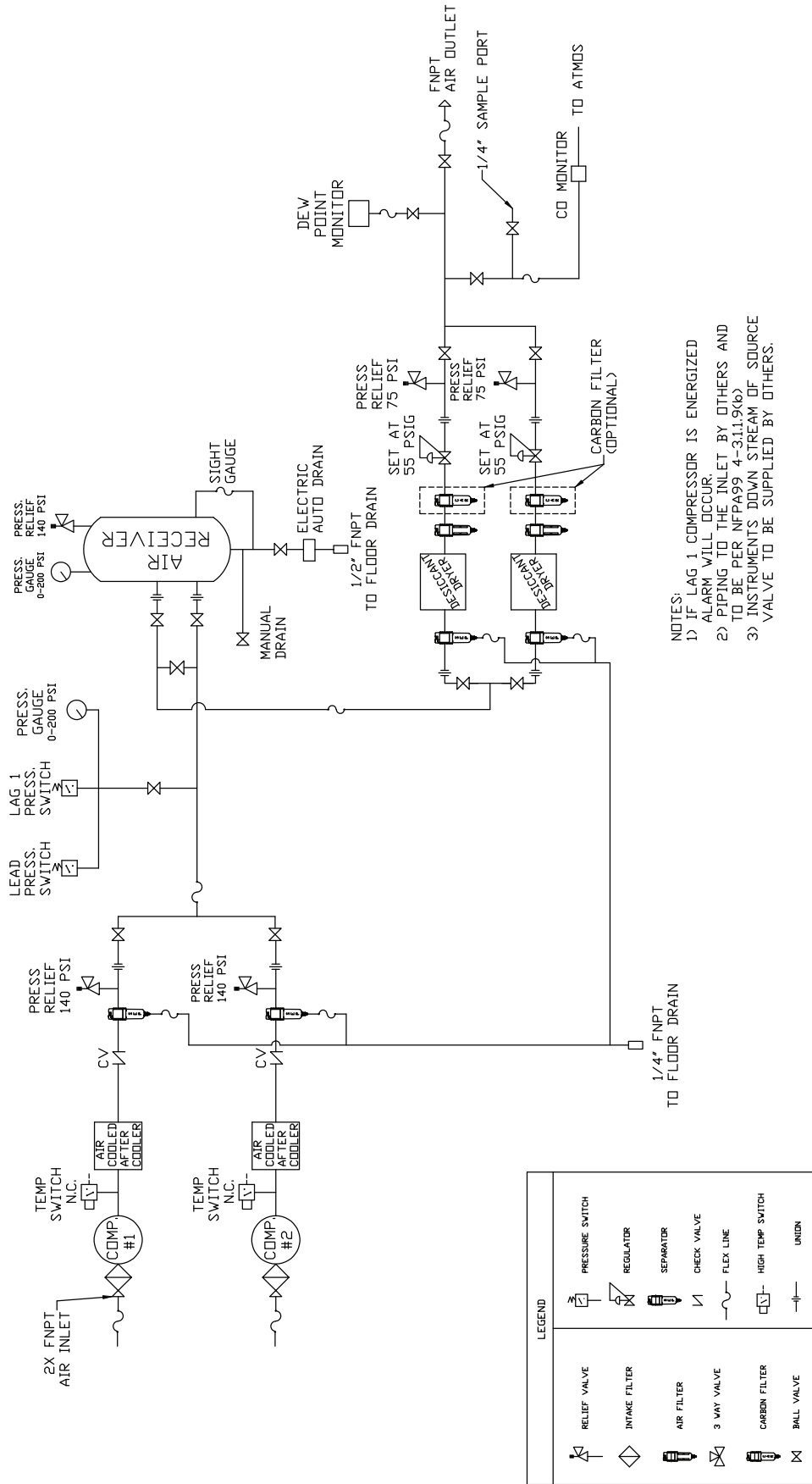
For questions concerning assembling and start-up, contact Powerex at 1-888-769-7979 for technical assistance.

Operation

BEFORE START UP

1. Make sure all safety warnings, labels and instructions have been read and understood before continuing.
2. Remove any shipping materials, brackets, etc.
3. Confirm that the electric power source and ground have been firmly connected.
4. Be sure all pressure connections are tight.
5. Check to be certain all safety relief valves, etc., are correctly installed.
6. Check that all fuses, circuit breakers, etc., are the proper size.
7. Make sure the inlet filter is properly installed.
8. Confirm that the drain valve is closed.
9. Once power is connected to unit, visually check the rotation of the compressor pump. If the rotation is incorrect, have a qualified electrician correct the motor wiring.

MEDICAL AIR SCHEMATIC (THIS IS A REPRESENTATIVE SCHEMATIC DIAGRAM FOR A LOW PRESSURE MULTIPLE SCROLL MEDICAL SYSTEM)



- NOTES:
- 1) IF LAG 1 COMPRESSOR IS ENERGIZED ALARM WILL OCCUR
 - 2) PIPING TO THE INLET BY OTHERS AND TO BE PER NFPA99 4-3.11.9(6)
 - 3) INSTRUMENT'S DOWN STREAM OF SOURCE VALVE TO BE SUPPLIED BY OTHERS.

LEGEND	
	RELIEF VALVE
	INTAKE FILTER
	AIR FILTER
	3 WAY VALVE
	CARBON FILTER
	BALL VALVE
	PRESSURE SWITCH
	REGULATOR
	SEPARATOR
	CHECK VALVE
	FLEX LINE
	HIGH TEMP SWITCH
	UNION

Maintenance Schedule

COMPRESSOR		Operating Hours						
Item	Action needed	500	2500	5000	10,000	15,000	20,000	Remarks
Inlet air filter	Inspect, Replace	●		▲				Replace both at 5000 hours; alternate monthly
Blower fan	Clean			●	●	●	●	
Fan duct	Clean			●	●	●	●	
Compressor fins	Clean		●					Every 2500 hours or less
Bearings	Grease				▲		▲	Service Center ONLY
Bearings (145 psig scroll units)	Grease			▲	▲	▲	▲	Service Center ONLY; EVERY 5000 hours
Tip seal	Replace				▲		▲	
Tip seal (145 psig scroll units)	Replace			▲	▲	▲	▲	EVERY 5000 hours
Dust Seal	Replace				▲		▲	
V-belt	Inspect, Replace	Note 3	●	●	▲	●	▲	
Pressure switch/ Transducer	Confirm operation				●		●	
Magnetic starter	Inspect				●		●	Replace is contact point is deteriorated
Check valve	Replace						●	
Heat Insulation Pipe	Replace				●		●	

PIPING SYSTEM		Operating Hours						
Item	Action needed	500	2500	5000	10,000	15,000	20,000	Remarks
Safety valve	Confirm operation		●					Every 2500 hours or less
Pressure gauge	Inspect		●					Every 2500 hours or less
Tank	Drain moisture	Daily						Verify proper drain operation
Air leaks	Inspect		●		●		●	
Filter element	Replace		▲	▲	▲	▲	▲	
Moisture drain traps	Inspect	●		●		●		View delta pressure indication

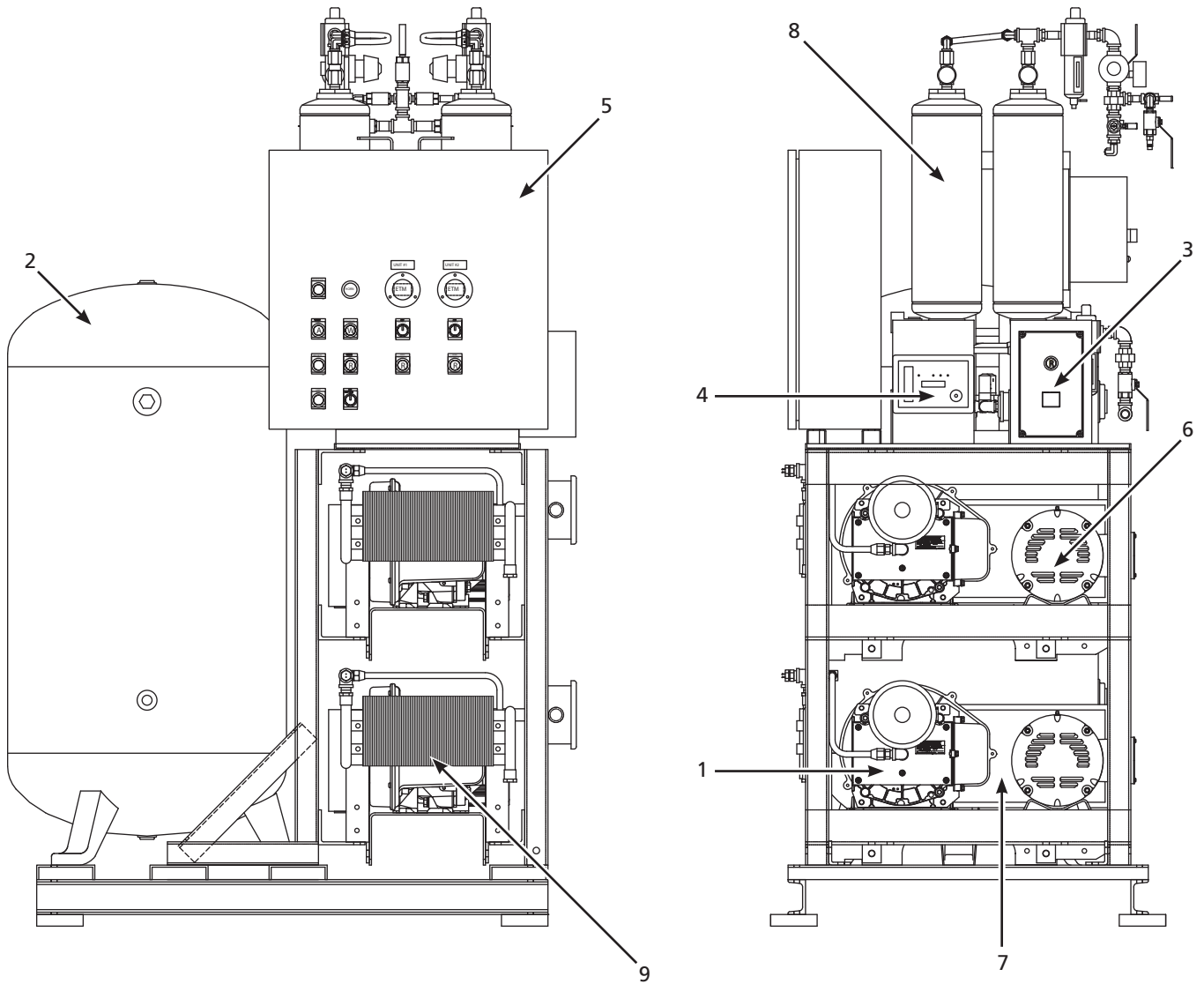
AIR DRYERS		Operating Hours						
Item	Action needed	500	2500	5000	10,000	15,000	20,000	Remarks
Suction pressure (refrigerated)	Inspect	●	●	●	●	●		
Desiccant Dryer	Switch dryer Online/Offline							Each month (See Dryer Manual for Maintenance Instructions)
Heat exchange (refrigerated)	Inspect	●	●	●	●	●		

- Inspect
- ▲ Replace

Notes:

1. Inspect and perform maintenance periodically according to 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 do 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 should be 0.25 inch deflection when 6 pounds of force is applied on the center of the belt span.

Replacement Parts Illustration



Replacement Parts List

Ref. No.	Description	Part Number	Qty.
1	Scroll pump		
	2HP Scroll:	SLAE03EB	2
	3HP Scroll:	SLAE03EB	2
	5HP Scroll:	SLAE05E	1 (per base mount)
	<i>For 145 psig Optional Units</i>		
	5HP Scroll	SLAE05EHP	1 (per base mount)
2	Vertical tank		
	80 Gallon	AR027300ST	1
	120 Gallon	AR027400ST	1
	200 Gallon	AR051201AJ	1
3	Dew point monitor / probe dessicant	PDPM1001AJ	1
4	Carbon monoxide monitor / sensor	ACO600105	1
5	Control panel (Consult factory for parts and availability. Call 1-888-769-7979)	--	1
6	Motor (ODP)		
	2HP Motor:	MC303300AV	2
	3HP Motor:	MC303301AV	2
	5HP Motor:	MC303303AV	1 (per base mount)
7	Belt guard		
	Front (all models)	BG303900AV	1 (per base mount)
	Back (all models)	BG303800AV	1 (per base mount)
8	Dryer		
	MSD0203	PMD07T00AJ	2
	MSD0303, MTSD0303	PMD10T00AJ	2
	MSD0503, MTSD0503	PMD17T00AJ	2
	MST0503, MSD1004	PMD30000AJ	2
	MST1005	PMD55000AJ	2
	MST1505	PMD11100AJ	2
	MSQ1005	ACO20801AV	2
	MSQ0504, MSD1504	PMD45000AJ	2
	MSO0505	ACO20801AV	2
	MSH0504	PMD71000AJ	2
	MSH1506	ACO20905AV	2
	MSN0505, MSQ1505	ACO20802AV	2
	MSL0505	ACO20803AV	2
	MSP1505	ACO20804AV	2
9	Aftercooler (not shown on all models)	SL300100AV	1 (per base mount)
▲	Pressure gauge	GA031400AV	1
▲	Pulley		
	2HP Motor:	PU202606AV	2
	3HP Motor:	PU202625AV	2
	5HP Motor:	PU009754AV	1 (per base mount)
	<i>For 145 psig Optional Units</i>		
	3HP Motor	PU202624AV	1 (per base mount)
	5HP Motor	PU009754AV	1 (per base mount)
▲	Belt		
	2HP Motor:	BT012001AV	4
	3HP Motor:	BT012001AV	4
	5HP Motor:	BT010701AV	1 (per base mount)
▲	Intake filter elements		
	MSD0203, MSD0303, MSD0503, MST0503, MTSD0303, MTSD0503, MSP1505 (2 for small skid)	VP000508AV	2
	MSQ0504, MSH0504, MSD1004, MSD1504, MST1005, MSP1505 (2 for large skid)	VP000509AV	2
	MSN0504, MST1505, MSQ1005, MSQ1505, MSL0505, MSO0505	VP000510AV	2
▲	Check valve	IP087700AV	1 (per base mount)
▲	Moisture separator	ST178515AV	1 (per separator bowl)

▲ = Not shown

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), 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 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.

Scroll Medical Air Package

(i) 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;
- (iii) defects arising from abnormal conditions of temperature, dirt or corrosive matter; or
- (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.