

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.*

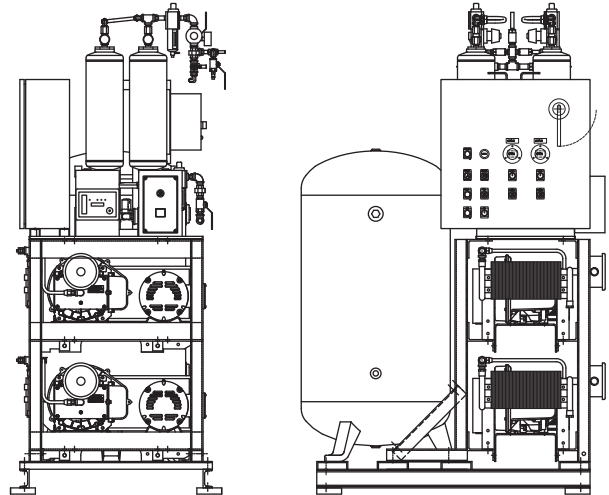
⚠ CAUTION *Caution indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury.*

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
Pressure Settings	Cut-In: 95 psig Cut-Out: 115 psig Cut-In: 125 psig Cut-Out: 145 psig (High Pressure Unit)
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	Dimensions In Inches (L x W x H)	Approximate Weight
3	SLAE03EB	95 - 115 (125 - 145 optional)	8.8 @ 100 PSIG 7.5 @ 145 PSIG	208 - 230/460	29 x 19 x 19	138 lbs.
5	SLAE05E		15.2 @ 100 PSIG			161 lbs.
	SLAE05EHP		12.5 @ 100 PSIG			161 lbs.

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

1. The oilless compressor 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, moisture, water, and direct sunlight.
3. Never install the compressor 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	36 inches
Other sides	36 inches

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

VENTILATION

1. 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.
2. Never restrict the cooling fan exhaust air. Maintain a minimum of 3 feet of clearance around entire unit.
3. 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

Refer to the general product manual.

1. Make sure the piping is lined up without being strained or twisted when assembling the piping for the compressor.
2. Appropriate expansion loops or bends should be installed at the compressor to avoid stresses caused by changes in hot and cold conditions.
3. Piping supports should be anchored separately from the compressor to reduce noise and vibration.
4. Never use any piping smaller than the compressor outlet connection.
5. 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.

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.

Installation (Continued)

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.

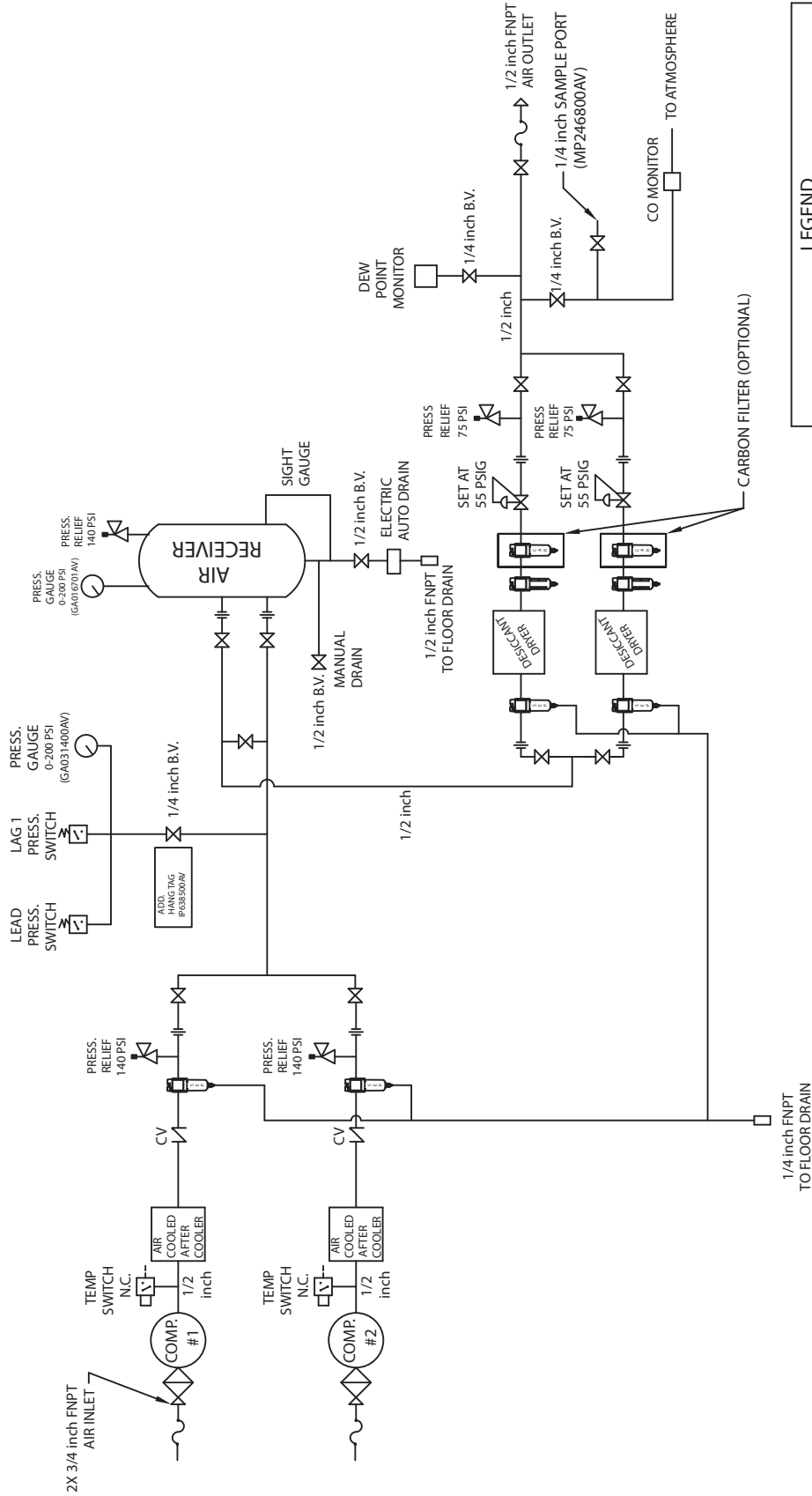
For questions concerning assembling and start-up, contact Powerex at 1-888-769-7979 for technical assistance.

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)



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

- NOTES:
- 1) IF LAG 1 COMPRESSOR IS ENERGIZED ALARM WILL OCCUR.
 - 2) PIPING TO THE INLET BY OTHERS AND TO BE PER NFPA99 4-3.1.1.9(b)
 - 3) INSTRUMENTS DOWN STREAM OF SOURCE VALVE TO BE SUPPLIED BY OTHERS.
 - 4) THIS DRAWING COVERS PART#S -25, -35, AND -45.

Maintenance Schedule

COMPRESSOR		Operating Hours						Remarks
Item	Action needed	500	2500	5000	10,000	15,000	20,000	
Tank	Drain moisture	Daily						Verify proper drain operation
Inlet air filter	Replace	●	▲					Every 2500 hours or less
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	Confirm operation				●		●	
Magnetic starter	Inspect				●		●	Replace is contact point is deteriorated

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

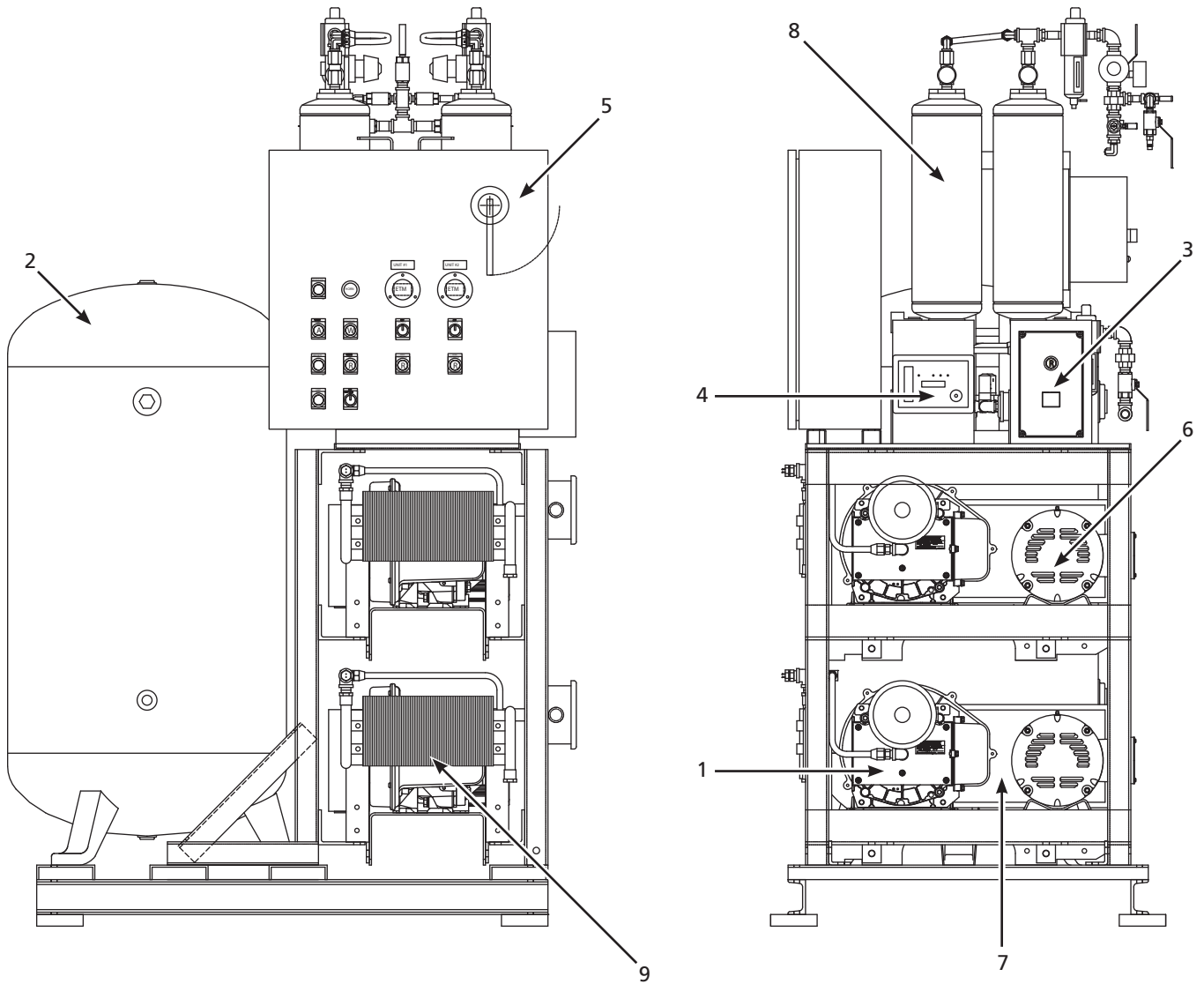
AIR DRYERS		Operating Hours						Remarks
Item	Action needed	500	2500	5000	10,000	15,000	20,000	
Suction pressure (refrigerated)	Inspect	●	●	●	●	●		
Heat exchange	Inspect	●	●	●	●	●		

- 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 3HP Scroll: MSD0303 5HP Scroll: MSD0503, MST0503, MSQ0504, MSH0504, MSN0505, MSL0505 <i>For 145 psig Optional Units</i> 5HP Scroll	SLAE03EB SLAE05E SLAE05EHP	2 2/3/4/6/9/12 1 (per base mount)
2	Vertical tank 80 Gallon 120 Gallon 200 Gallon	AR027300ST AR027400ST AR051201AJ	1 1 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) 3HP Motor: MSD0303 5HP Motor: MSD0503, MST0503, MSQ0504, MSH0504, MSN0505, MSL0505	MC301566AV MC301567AV	2 2/3/4/6/9/12
7	Belt guard Front (all models) Back (all models)	BG303900AV BG303800AV	2/3/4/6/9/12 2/3/4/6/9/12
8	Dryer MSD0303 MSD0503 MST0503 MSQ0504 MSH0504 MSN0505 MSL0505	PMD10000AJ PMD17000AJ PMD30000AJ PMD45000AJ PMD71000AJ ACO20802AV ACO20803AV	2 2 2 2 2 2 2
9	Aftercooler (not shown on all models)	SL300100AV	2/3/4/6/9/12
▲	Pressure gauge	GA031400AV	1
▲	Pulley 3HP Motor: MSD0303 5HP Motor: MSD0503, MST0503, MSQ0504, MSH0504, MSN0504, MSL0505 <i>For 145 psig Optional Units</i> 3HP Motor 5HP Motor	PU202625AV PU009754AV PU202624AV PU009754AV	2 2/3/4/6/9/12 1 (per base mount) 1 (per base mount)
▲	Belt 3HP Motor: MSD0303 5HP Motor: MSD0503, MST0503, MSQ0504, MSH0504, MSN0504, MSL0505	BT012001AV BT010701AV	4 4/6/8/12/18/24
▲	Intake filter elements MSD, MST MSQ, MSH MSN, MSL	VP000508AV VP000509AV VP000510AV	2 2 2
▲	Check valve	IP087700AV	1 (per base mount)
▲	Moisture separator	ST178507AV	1 (per base mount)

▲ = Not shown

Powerex Limited Warranty

Powerex 3 Year / 10,000 Hour Extended Parts Limited Warranty - Powerex warrants each Compressor Pump or Scroll Air-End against defects in material or workmanship from the date of purchase for a period of **Three years or 10,000 hours**, whichever may occur first. This warranty applies to the exchange of part(s) of the compressor pump or air-end found to be defective by an Authorized Powerex Service Center.

Powerex 1 Year / 5,000 Hour Inlet to Outlet Limited Warranty - Powerex warrants each Compressor Unit, System, Pump, or Air-End against defects in material or workmanship from the date of purchase for a period of **One Year or 5,000 Hours**, whichever may occur first. This warranty applies to the exchange of defective component part(s) and labor performed by an Authorized Powerex Service Center.

Coverage. The above mentioned warranty applies to Powerex manufactured units or systems only. Items listed in the operator's manual under routine maintenance are not covered by this or any other warranty. Failure to complete maintenance as stated in the maintenance schedule will void this warranty.

THERE IS NO OTHER EXPRESS WARRANTY. IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO ONE YEAR FROM THE DATE OF PURCHASE: AND TO THE EXTENT PERMITTED BY LAW, ANY AND ALL IMPLIED WARRANTIES ARE EXCLUDED. THIS IS THE EXCLUSIVE REMEDY AND LIABILITY FOR CONSEQUENTIAL DAMAGES UNDER ANY AND ALL WARRANTIES IS EXCLUDED TO THE EXTENT EXCLUSION IS PERMITTED BY LAW.

Limitation of Liability. To the extent allowable under applicable law, Powerex's liability for consequential and incidental damages is expressly disclaimed. 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 this literature 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. Claims pertaining to the merchandise in this schedule, with the exception of warranty claims, 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. All agreements are contingent upon strikes, accidents, or other causes beyond our control. All shipments are carefully inspected and counted before leaving the factory. Please inspect carefully any receipt of merchandise 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 merchandise 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, THESE TERMS AND CONDITIONS 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. All orders are subject to acceptance by POWEREX.