

Medical Tankmount Compressor

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

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.

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 configuration to provide start-stop operation. Composite piston technology and continuously lubricating bearings provide oil-free air for years of service.

RECEIVER TANK

The ASME, National Board registered vertical 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, electric moisture drain, ASME safety valve, pressure gauge, tank bypass, and internally lined to prevent corrosion.

CONTROL PANEL

The NEMA 12 control panel is provided in duplex configuration and meets NFPA 99 requirements for medical air. Control transformer power is 115 volts and protected by secondary fusing. Pressure control switches signal the compressor's on and off cycle and signal the lag compressor to come on if air pressure demand increases. A reserve pressure switch signals a light and audible alarm warning of a reserve pump in use which is factory set at 85 PSIG. The adjustable timer alternator cycles each compressor so equal run time is maintained. This alternator is factory set to alternate the compressors every 10 minutes. The exterior of the control panel is provided with hand/off/auto switches, run lights, power on light, run hourmeters, reserve pump in use light, high temperature light and reserve transformer in use light. This control panel is UL-508-A listed.

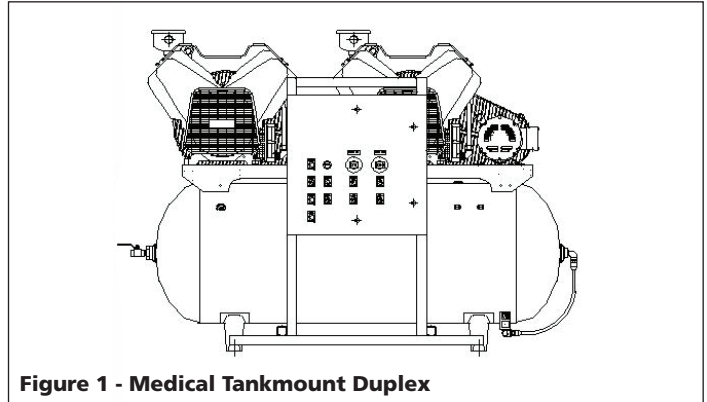


Figure 1 - Medical Tankmount Duplex

Specifications

Product	MTD Series Medical Tankmount	
Performance Specifications	See Page 2	
Lubrication	Oilless/Sealed Bearings	
Operating Voltages	208/230/460	
Compression Cycle	1-3 HP Single Stage 5-15 HP Two Stage	
Motor Overload Protection	IEC Device	
Pressure Settings - MTD	Cut-In: 95	Cut-Out: 115
	Cut-In: 85	Cut-Out: 105
Overpressure Protection	ASME Safety Valve Factory Set and Sealed	
Outlet Air Connections	1-3 HP - 3/4 NPT 5-15 HP - 1 NPT	
Tank Sizes	1HP & 2HP, 80 Gallon 3HP, 80 Gallon or 120 Gallon 5HP, 120 Gallon or 200 Gallon 7.5HP-15HP, 240 Gallon	
California Ordinance 462 (L) (2)	Meets Requirements of this Ordinance	
Tank Isolation	Standard All Units	
Drive	V-Belt	
Control Panel	UL508A Listed	

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Specifications (Continued)

MEDICAL TANKMOUNT DUPLEX - MODEL MTD

Model	HP	Phase	SCFM @ 100 PSIG	RPM	Voltage	Gal. Tank	Dimension (Inches) L x W x H	Shipping Weight (lbs.)
MTD010	1(2)	3	6.8	625	208 / 230 / 460	80	64 x 32 x 46	710
MTD020	2(2)	3	13.0	845	208 / 230 / 460	80	64 x 32 x 46	750
MTD030	3(2)	3	20.2	1115	208 / 230 / 460	80 120	65 x 32 x 48 71 x 36 x 52	775
MTD050	5(2)	3	33.1	720	208 / 230 / 460	120 200	71 x 36 x 56 82 x 40 x 56	930
MTD075	7.5(2)	3	52.2	855	208 / 230 / 460	240	86 x 60 x 75	1350
MTD100	10(2)	3	70	1090	208 / 230 / 460	240	86 x 60 x 75	1490
MTD150	15(2)	3	108.4	1250	208 / 230 / 460	240	86 x 60 x 75	1530

NOTE: See Electrical Diagram Shipped with the Unit for Motor Full Load Amp Ratings

Glossary of Terms (Continued)

ELECTRIC MOTORS

The electric motors are NEMA rated by horsepower. Open drip proof construction is standard. Operating speed of 1725 RPM. Tri-voltage arrangement of 208-230 / 460 volt 60 Hertz. Class B rated insulation minimum. Ambient temperatures to 40°C (104°F). Service factor of 1.15 or higher. Continuous duty rated.

AIR COOLED AFTERCOOLER

There are four models of beltguard aftercoolers sized to provide an approach of 20°F. Each is constructed of copper tubing and metal headers for a rugged construction.

CONDENSATE DRAIN

The electric condensate drain is located at the bottom of the receiver tank. Drain is equipped with adjustable time settings. Drain dwell time is from 0.5 second to 10 seconds and the closed drain function is from 0.5 minutes to 45 minutes. The electric drain is factory set at 3 second open drain and 10 minutes closed drain. In case of high humidity, it may be necessary to increase drain time or decrease the closed time.

SAFETY VALVES

Tank mounted compressors are shipped from the factory with ASME safety valves installed in the tank manifold. The flow capacity of the safety valve is equal to or greater than the flow capacity of the compressor system.

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 minor or moderate injury.

NOTICE

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

NOTE: Information that requires special attention.

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.

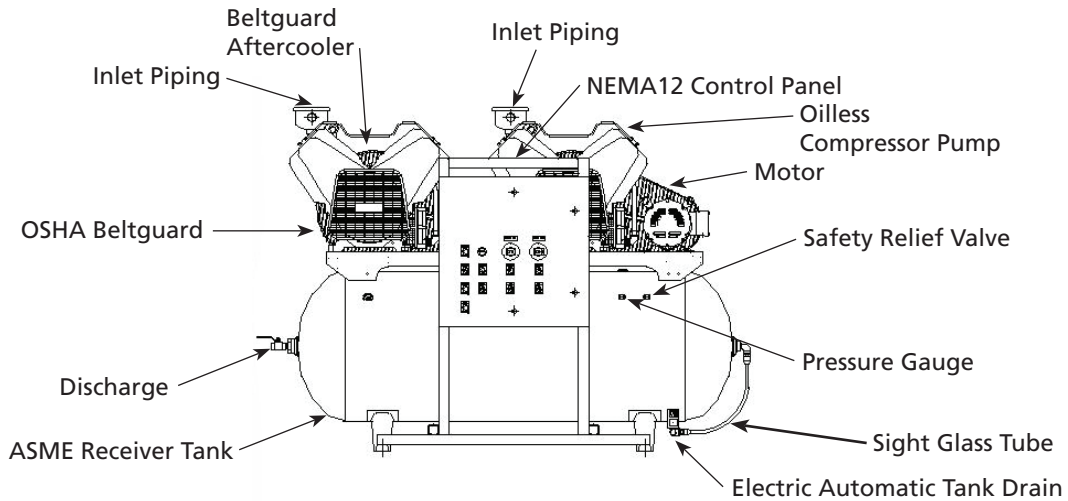


Figure 2

Installation

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, direct sunlight and moisture.
3. Never install the compressor where the ambient 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 inch
Other sides	36 inch

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 with access to outside air must be installed.
2. Never restrict the cooling fan exhaust air. Maintain a minimum of 3 feet 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

General Guidelines

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.

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

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. isolation 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.

Operation

Powerex Medical Tankmount units operate at a maximum pressure of 115 PSIG. Compressor RPMs are established by Powerex based on horsepower and operating pressure(s).

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 each compressor pump. If the rotation is incorrect, have a qualified electrician correct the motor wiring.

DUPLEX MEDICAL TANKMOUNT

Unit alternates between compressors to share the air usage. The alternation of compressors is done by the means of a timer alternator in the control panel. The ON cycle of the Lead compressor is 95 PSIG and OFF at 115 PSIG. A lag pressure switch will activate the lag compressor if the pressure falls below 85 PSIG. The lag pressure switch operates between 85 - 105 PSIG. If the ON cycle of the lead compressor is more than 10 minutes, the alternator will switch to the lag compressor, making it the lead compressor. At any time the pressure falls below 85 PSIG, both compressors will operate. If the lag compressor comes on during normal operations, a lag pump in use alarm will sound.

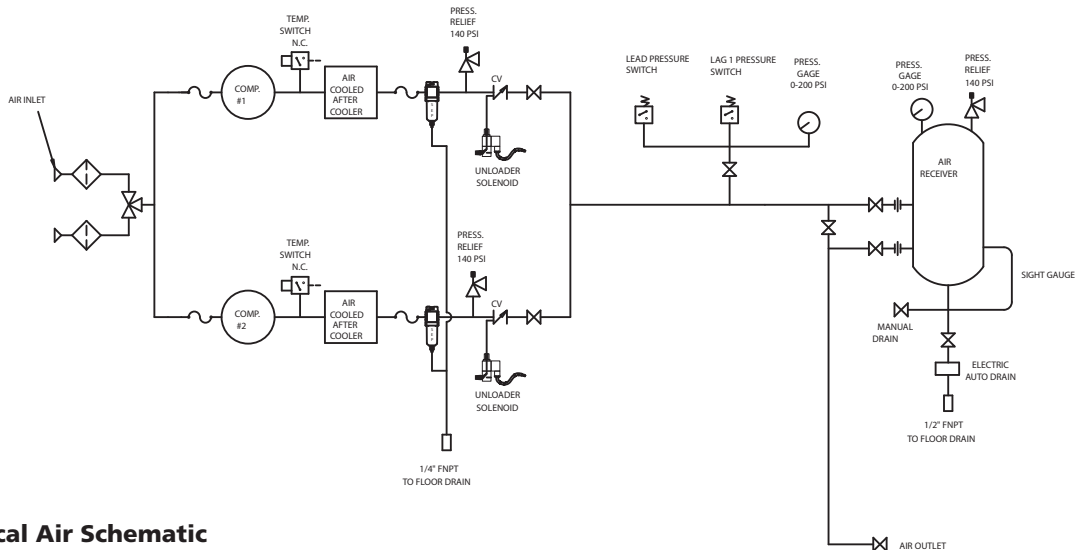


Figure 3 - Medical Air Schematic

Maintenance

Item	Action needed	Operating Hours							Remarks	
		Daily	500	2500	5000	10,000	15,000	20,000		
COMPRESSOR										
Tank	Drain moisture	●								
Inlet air filter	Inspect, Replace		●	▲						Every 2500 hrs or less
V-belt	Inspect, Replace		Note 3	●	▲	▲	▲	▲		
Pump fan	Clean				●	●	●	●		
Fan cover	Clean				●	●	●	●		
Compressor fins	Clean			●						Every 2500 hrs or less
Compression rings	Inspect, Replace				●	▲	●	▲		See pump manual for maintenance/ instructions
Wrist pin bearing	Regrease				▲	▲	▲	▲		
Piston set	Inspect, Replace				●	▲	●	▲		
PIPING SYSTEM										
Safety valve	Confirm operation			●						Every 2500 hrs or less
Pressure gauge	Inspect			●						Every 2500 hrs or less
Air leaks	Inspect			●		●		●		
Filter elements	Replace			▲	▲	▲	▲	▲		View delta pressure indication
Moisture drains traps	Inspect		●		●		●			
AIR DRYERS										
Suction pressure (refrigerated)	Inspect		●	●	●	●	●	●		See dryer manual for maintenance schedule/instructions
Heat exchanger	Inspect, Clean		●	●	●	●	●	●		

● 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 1500 hours afterwards. Proper belt tension for 1 to 3 HP units is 12 lbs./0.5 inch deflection; for 5 to 15 HP units, 16 lbs./1.5 inch deflection.

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Troubleshooting Guide

For Technical Service, call 1-888-769-7979.

PROBLEM	CAUSE	CORRECTIVE ACTION
Power On light does not appear	<ol style="list-style-type: none"> 1. Wrong voltage 2. Main disconnect is not ON 3. Blown fuse or circuit breaker at customer provided power supply 4. Blown fuse at primary side of transformer 5. Power light burnt out 	<ol style="list-style-type: none"> 1. Make sure supply voltage and unit panel voltage are the same 2. Switch disconnect to ON 3. Inspect for any fault replace fuse or trip disconnect to ON 4. Replace fuse on primary side be sure use same type and size 5. Replace bulb/LED
Power On light is on but unit will not start	<ol style="list-style-type: none"> 1. Blown fuse on secondary side of transformer 2. Motor overload has tripped 3. Wrong or low voltage 4. Starter has failed 5. Motor has failed 6. Pressure settings are satisfied 	<ol style="list-style-type: none"> 1. Replace fuse on secondary side be sure use same type and size 2. Reset motor overload 3. Check incoming power supply and unit power rating 4. Replace contactor assembly 5. Replace motor 6. Release unit pressure
Compressor is running but will not make pressure	<ol style="list-style-type: none"> 1. Clogged intake filter element 2. Pressure relief valve has opened 3. Electric tank drain is open continuously 4. Discharge air is leaking 5. Compressor pump problem 	<ol style="list-style-type: none"> 1. Replace intake filter element 2. Pressure switch needs replacing or motor contacts welded shut 3. Replace tank drain 4. Check discharge piping 5. Inspect pump
Excessive noise or vibration	<ol style="list-style-type: none"> 1. Drive belt has separated or flat spot 2. Motor has failed 3. Pump is damaged 4. Cooling air fan is touching fan guard 5. Beltguard touching drive components 6. Shipping brackets not removed 	<ol style="list-style-type: none"> 1. Replace drive belt(s) 2. Replace motor 3. Repair or replace pump 4. Check air fan 5. Make sure flywheel, belt, and/or pulley are not touching guard 6. Remove all shipping brackets
Compressor shuts down on high temperature	<ol style="list-style-type: none"> 1. Room temperature is above 104°F 2. Compressor is dirty 3. Temperature switch failure 4. Compressor altitude causing high temperature 	<ol style="list-style-type: none"> 1. Add ventilation or air conditioning to room 2. Clean unit 3. Check temperature switch continuity 4. Compressor speed/pressure may need adjusting
Compressor turns on/off rapidly	<ol style="list-style-type: none"> 1. Receiver tank has high level of water 2. Compressor check valve has failed 3. Pressure settings incorrect 4. Air receiver is bypassed 	<ol style="list-style-type: none"> 1. Replace electric tank drain/drain water from tank 2. Replace check valve 3. Replace pressure switch 4. Open isolation valves to air receiver
Safety valve blows off	<ol style="list-style-type: none"> 1. Pressure switch has failed to open 2. Motor starter contacts welded shut 3. Pump isolation valve closed 	<ol style="list-style-type: none"> 1. Check/Replace pressure switch 2. Replace motor starter 3. Make sure isolation valves are not closed/no blockage
Motor Overload has tripped	<ol style="list-style-type: none"> 1. Pump has failed 2. Motor has failed 3. Improper wiring/loose connections 4. Wrong overload setting 5. Low voltage 	<ol style="list-style-type: none"> 1. Repair or replace pump 2. Replace motor (replacement must have same HP and electrical ratings) 3. Check wiring size and all connections 4. Check overload setting - max setting 1.15 x FLA motor nameplate amps 5. Check incoming power supply for voltage and amp rating
Solenoid unloader constantly bleeds after compressor shuts off	Check valve has failed	Replace check valve

Powerex Limited Warranty

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. 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 claims under this warranty must be made in writing and delivered to Powerex, or such claim shall be barred. Upon timely receipt of a 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 at the time of shipment from Powerex; 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) Initial Period of Warranty – Parts and Labor. Powerex warrants and represents all Products shall be free from Defects for the first twelve (12) months from the date of shipment by Powerex, 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 continental United States, 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 thirty-six months from the date of shipment of Product, or 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 Center only.

(d) Coverage. The above mentioned warranty applies to Powerex manufactured units or systems only.

(e) 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.

(f) 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. TO THE EXTENT ALLOWABLE UNDER APPLICABLE LAW, NOTWITHSTANDING ANYTHING TO THE CONTRARY HEREIN, 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 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 Products, 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 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, 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.