

## 2 HP - 5 HP Scroll Enclosure Air Compressors

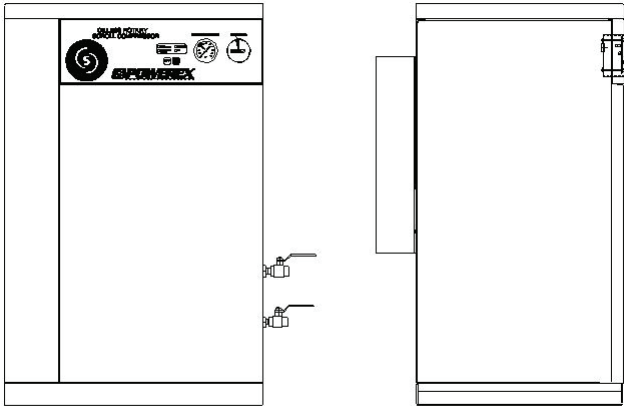
Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain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

### Description

#### GENERAL

The Powerex Oilless Rotary Scroll Air Compressor has advanced scroll compressor technology through the development of a completely oilless compressor. The Powerex Scroll Compressor offers a dynamically balanced air end which insures vibration-free operation. The rotary design permits a continuous 100% duty cycle.

Other standard features on the Powerex Scroll Compressor include: a Magnetic Starter, Motor Overload Protection, a High Temperature Shutdown Switch, an Air Cooled Aftercooler and a Single Phase or Three Phase 4 Pole ODP motor.



### 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 minor or moderate injury.*

### Specifications

Product	SES Series Powerex Simplex Air Compressors	
Performance Specifications	See Page 2	
Lubrication	Grease-filled Bearing	
Operating Voltages	1Ø	230 Volts, 60 Hz
	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	3/8" NPT	
Tank Sizes	10 Gallon ASME Rated 190 psig	
California Ordinance 462 (L) (2)	Meets Requirements of this Ordinance	
Tank Isolation	Standard All Units	
Drive	V Belt	
Control Panel	UL508A Listed	

## 2 HP - 5 HP Scroll Enclosure Air Compressors

### Specifications (Continued)

#### Compressor

Model	HP	Air End	Control System	Discharge Pressure (PSIG)	Air Delivery (CFM)	Compressor Speed (RPM)	Motor FLA	Discharge Temp.	Noise level dB(A) [1.5m from front]	Dimensions In Inches (L x W x H)	Approximate Weight
SES02 / SES12	2	SLAE03E	Pressure Switch	95 - 115 (125 - 145 optional)	8.8 @ 100 PSIG 7.1 @ 145 PSIG	2200 (1850)	9.2/8.4/4.2	Ambient temp. + 30 °F	49	25 x 24 x 39	309 lbs.
SES03 / SES13	3	SLAE03E			8.8 @ 100 PSIG 7.1 @ 145 PSIG	3140 (2770)	14/13.8/6.9		49		309 lbs.
SES05 / SES15	5	SLAE05EHP			15.2 @ 100 PSIG 12.5 @ 145 PSIG	3250 (3250)	23		51		359 lbs.

### Installation

#### INSTALLATION SITE

1. The scroll 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 ambient temperature is higher than 104° F or where humidity is high.
4. Clearance must allow for safe, effective inspection and maintenance. 20" of clearance for sides, 12" clearance for back is recommended.
5. If necessary, use metal shims or leveling pads to level the compressor. Never use wood to shim the compressor.
6. Never install the compressor outside.

#### VENTILATION

1. If the scroll 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.
3. Vent the exhaust air outside to prevent the compressor from operating at high temperatures and shutting down.
4. Never locate the compressor where hot exhaust air from other heat generating units may be pulled into the unit.

#### WIRING

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

1. Use solderless terminals to connect the electric power source.
2. Remove the front panel.
3. Open the lid of the starter box.
4. Pull the electric cable through the electric source inlet and connect to the primary side of the contactor.
5. Since loosening of wires is possible in shipment, tighten all wire terminals prior to starting the unit.

#### PIPING

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

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

1. The pressure setting of the safety valve must be equal or less than the maximum working pressure of the air receiver.
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.

### Operation

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#### 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. Check the belts for tightness.
5. Be sure all pressure connections are tight.
6. Check to be certain all safety relief valves, etc., are correctly installed.
7. Securely mount all panels and guards.
8. Check that all fuses, circuit breakers, etc., are the proper size.
9. Make sure the inlet filter is properly installed.
10. Confirm that the drain valve is closed.
11. Visually check the rotation of the compressor pump. The rotation should be counterclockwise if viewing the compressor from the belt side. If the rotation is incorrect, have a qualified electrician correct the motor wiring.
12. Remove the shipping bracket attached to the front of the tank feet which is for transportation purposes only.

#### 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. Make sure electric source lamp lights up and that the alarm lamp does not light up.

Note: The alarm lamp light will come on if temperature sensor is not connected. If the sensor is not connected, have a qualified service person reconnect the sensor.

4. Open the 3/8" discharge valve completely.
5. Push ON button and check that the compressor operates without excessive vibration, unusual noises or leaks.
6. Close the discharge valve completely.
7. If the pressure does not rise on a three phase unit, turn the unit off. Have a qualified electrician switch the breaker OFF and exchange the L1 and L2 connections (two out of three phases of electric source) inside the starter box.
8. Check the discharge pressure. Also make sure the air pressure rises to the designated pressure setting by checking the discharge pressure gauge.
9. Check the operation of the pressure switch by opening the outlet valve and confirming the compressor starts at approximately 95 psig for low pressure units and 125 psig for high pressure units.

#### DAILY OPERATION

1. Stop the compressor by pushing the OFF button.

NOTE: If the compressor rotates in reverse for more than five seconds, the check valve needs to be cleaned or replaced.

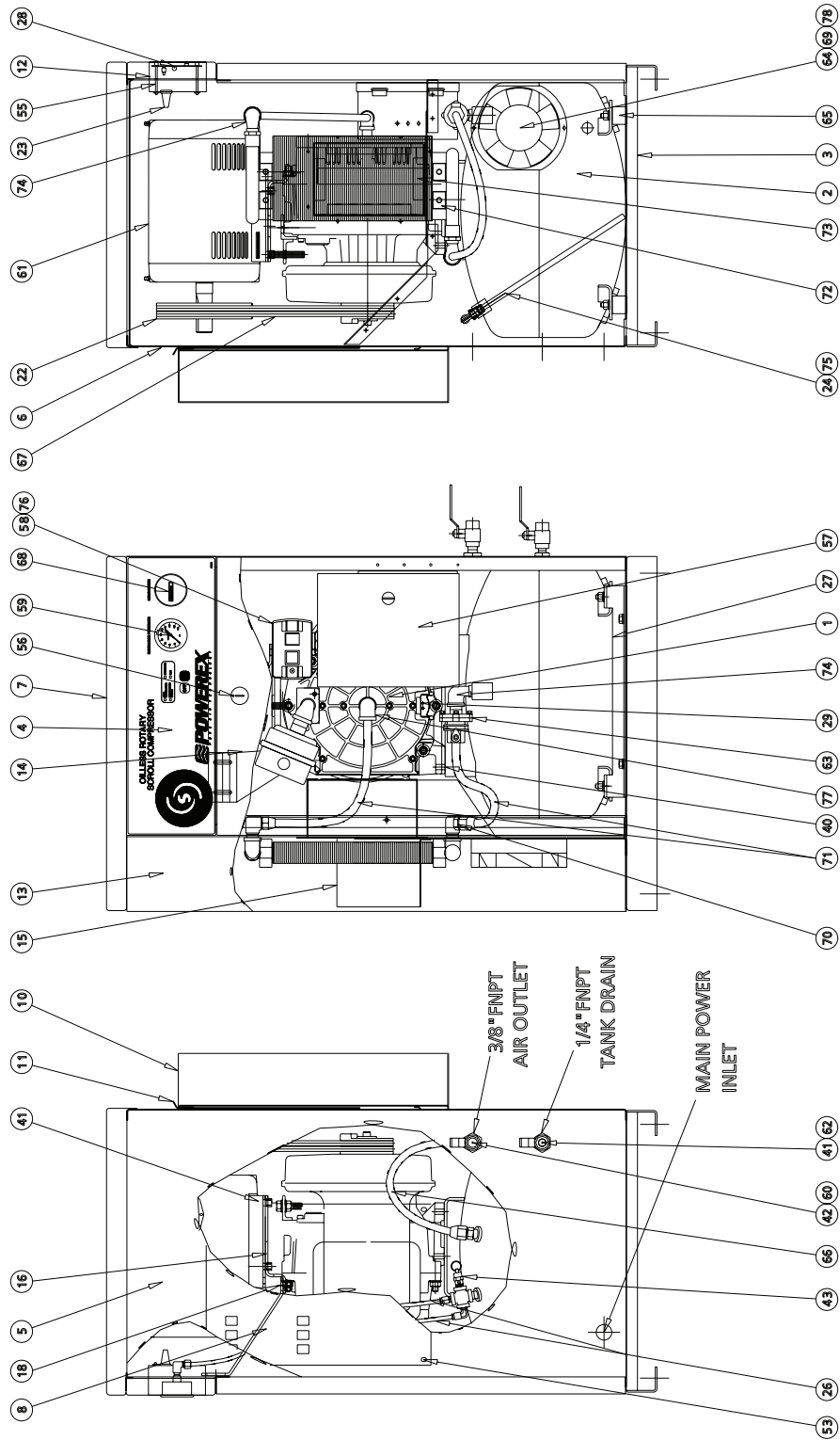
2. Switch the breaker OFF if the compressor is not to be used for a long period of time.

#### STOPPING THE COMPRESSOR DURING NORMAL OPERATION

1. Close the discharge valve.
2. Allow the air pressure to build and the compressor to stop.
3. Turn the compressor off by pushing the OFF button.

## 2 HP - 5 HP Scroll Enclosure Air Compressors

### Scroll Unit Parts Breakdown - Models SES02, SES12, SES03, SES13, SES05 and SES15



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Ref. No.	Description	SES02 / SES12	SES03 / SES13	SES05 / SES15	Qty.
1	Air end (Low Pressure)	SL014002AJ	SL014002AJ	SL016502AJ	1
	(High Pressure)	SL014002AJ	SL014002AJ	SL016511AJ	1
2	Tank	AR033200AJ	AR033200AJ	AR033200AJ	1
3	Base	IP630800AV	IP630800AV	AP603800AV	1
4	Control panel	IP630600AV	IP630600AV	IP630600AV	1
5	Right panel	IP631600AV	IP631600AV	IP631600AV	1
6	Rear panel	IP631400AV	IP631400AV	IP631400AV	1
7	Top panel	IP631200AV	IP631200AV	IP631200AV	1
8	Intake panel	IP631300AV	IP631300AV	IP631300AV	1
10	Exhaust duct	IP630900AV	IP630900AV	IP630900AV	1
11	Metal screen	IP630700AV	IP630700AV	IP630700AV	1
12	Circuit board protector	IP632100AV	IP632100AV	IP632100AV	1
13	Left panel	IP631500AV	IP631500AV	IP631500AV	1
14	Door	IP631100AV	IP631100AV	IP631100AV	1
15	Inside panel	IP631701AV	IP631701AV	IP631701AV	1
16	Motor mount	SL030000AV	SL030000AV	SL050000AV	1
18	Stud bolt	IP606000AV	IP606000AV	IP605900AV	2
22	Motor pulley (Low Pressure, 4.45PD 3V-1)	PU009740AV	—	—	1
	(High Pressure, 3.65PD 3V-1)	PU009739AV	—	—	1
22	Motor pulley (Low Pressure, 6.0PD 3V-1)	—	PU009753AV	—	1
	(High Pressure, 5.3PD 3V-1)	—	PU009793AV	—	1
22	Motor pulley (Low Pressure, 6.9PD 3V-2)	—	—	PU009754AV	1
	(High Pressure, 6.9PD 3V-2)	—	—	PU009754AV	1
23	Special grommet	IP608900AV	IP608900AV	IP608900AV	2
24	Drain tube assembly	ZZ003915AJ	ZZ003915AJ	ZZ003915AJ	1
26	Plastic tubing	PS010300AV	PS010300AV	PS010300AV	1.5 ft.
27	Shipping bracket	IP632200AV	IP632200AV	IP632200AV	1
28	Circuit board	IP087800AV	IP087800AV	IP087800AV	1
29	Thermosensor	IP609600AV	IP609600AV	IP609700AV	1
40	Isolation rubber	RE002600AV	RE002600AV	RE002600AV	4
41	1/4" Drain flange fitting	PS006701AV	PS006701AV	PS006701AV	1
42	3/8" Outlet flange fitting	PS006702AV	PS006702AV	PS006702AV	1
43	Safety valve (Low Pressure)	V-215104AV	V-215104AV	V-215104AV	1
	(High Pressure)	V-215401AV	V-215401AV	V-215401AV	1
53	Pan head machine screw	ST074003AV	ST074003AV	ST074003AV	10
55	Aluminium spacer	IP632900AV	IP632900AV	IP632900AV	2
56	Door latch	IP630200AV	IP630200AV	IP630200AV	1
57	Starter box 3PH	SL020011AV	SL020011AV	SL020011AV	1
57	Starter box 1PH	SL020021AV	SL020021AV	SL020021AV	1
57	Starter box 3PH	—	—	SL020030AV	1

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Ref. No.	Description	SES02 / SES12	SES03 / SES13	SES05 / SES15	Qty.
57	Starter box 1PH	—	—	SL020041AV	1
57-1	Starter brace	SL050200AV	SL050200AV	SL050200AV	—
58	Pressure switch (Low Pressure)	CW207573AV	CW207573AV	CW207573AV	1
	(High Pressure)	CW207595AV	CW207595AV	CW207595AV	1
59	Pressure gauge	IP632600AV	IP632600AV	IP632600AV	1
60	Ball valve 3/8"	ST079802AV	ST079802AV	ST079802AV	1
61	Motor 2HP 1PH 208/230/460V	MC022317AV	—	—	1
61	Motor 2HP 3PH 208/230/460V	MC022373AV	—	—	1
61	Motor 3HP 1PH 230V	—	MC022309AV	—	1
61	Motor 3HP 3PH 208/230/460V	—	MC022374AV	—	1
61	Motor 5HP 1PH 230V	—	—	MC022393AV	1
61	Motor 5HP 3PH 208/230/460V	—	—	MC022307AV	1
62	1/4" Ball valve	ST079806AV	ST079806AV	ST079806AV	1
63	Check valve	IP087700AV	IP087700AV	IP087700AV	1
64	Exhaust fan	IP632400AV	IP632400AV	IP632400AV	1
65	Mounting foot	IP630300AV	IP630300AV	IP630300AV	4
66	Discharge air hose	IP633600AV	IP633600AV	IP633600AV	1
67	V-belt SPZ912 (Low Pressure)	BT012300AV	—	—	1
	3VX-355 (High Pressure)	BT012500AV	—	—	1
67	V-belt 3V-365 (Low Pressure)	—	BT012300AV	—	1
	3V-365 (High Pressure)	—	BT012300AV	—	1
67	V-belt 3V-400 (Low Pressure)	—	—	BT009000AV	2
	SPZ1037 (High Pressure)	—	—	BT012900AV	2
68	Hour meter	IP632700AV	IP632700AV	IP632700AV	1
69	Fan cord	IP632800AV	IP632800AV	IP632800AV	1
70	Brass elbow	ST186402AV	ST186402AV	ST186402AV	2
71	Braided hose	ST186600AV	ST186600AV	ST186600AV	2
72	Silicone isolator	AG007501AV	AG007501AV	AG007501AV	4
73	Aftercooler	SL300100AV	SL300100AV	SL300100AV	1
74	1/2" Brass street elbow	ST071229AV	ST071229AV	ST071229AV	3
75	3/8" Drain tube	PS001800AV	PS001800AV	PS001800AV	1.2 ft
76	Pressure switch cord	IP087900AV	IP087900AV	IP087900AV	1
77	3/8" Brass elbow	ST074217AV	ST074217AV	ST074217AV	1
▲	Power supply cord, circuit board	IP612800AV	IP612800AV	IP612800AV	1

▲ = Not shown

**Maintenance Schedule (see Pump Manual for “How To” Instructions)**

Item	Action needed	Operating Hours					Remarks
		500	2500	5000	10,000	20,000	
Receiver	Drain moisture	Daily					If equipped with an Electric Drain, test daily
Cartridge Filter	Clean, Replace	●	▲				Part # 91348550
Ventilation Screen	Clean	●					
Blower Fan	Clean			●			
Fan Duct	Clean			●			
Compressor Fins	Clean			●			
Compressor	Regrease			▲ (Every 5000 hours for 145 psig units)	▲	▲	Use genuine Powerex grease
Tip Seal Set	Replace			▲ (Every 5000 hours for 145 psig units)	▲	▲	
V-belt	Inspect, Replace		* Readjust ●	▲	▲	▲	
Temperature Sensor	Confirm operation					●	
Pressure Switch	Confirm operation				●		
Magnetic Starter	Inspect				●		Replace is contact point is deteriorated
Safety Valve	Confirm operation				●		
Pressure Gauge	Inspect				●		
Ventilation Fan	Inspect				●		Replace if malfunctions

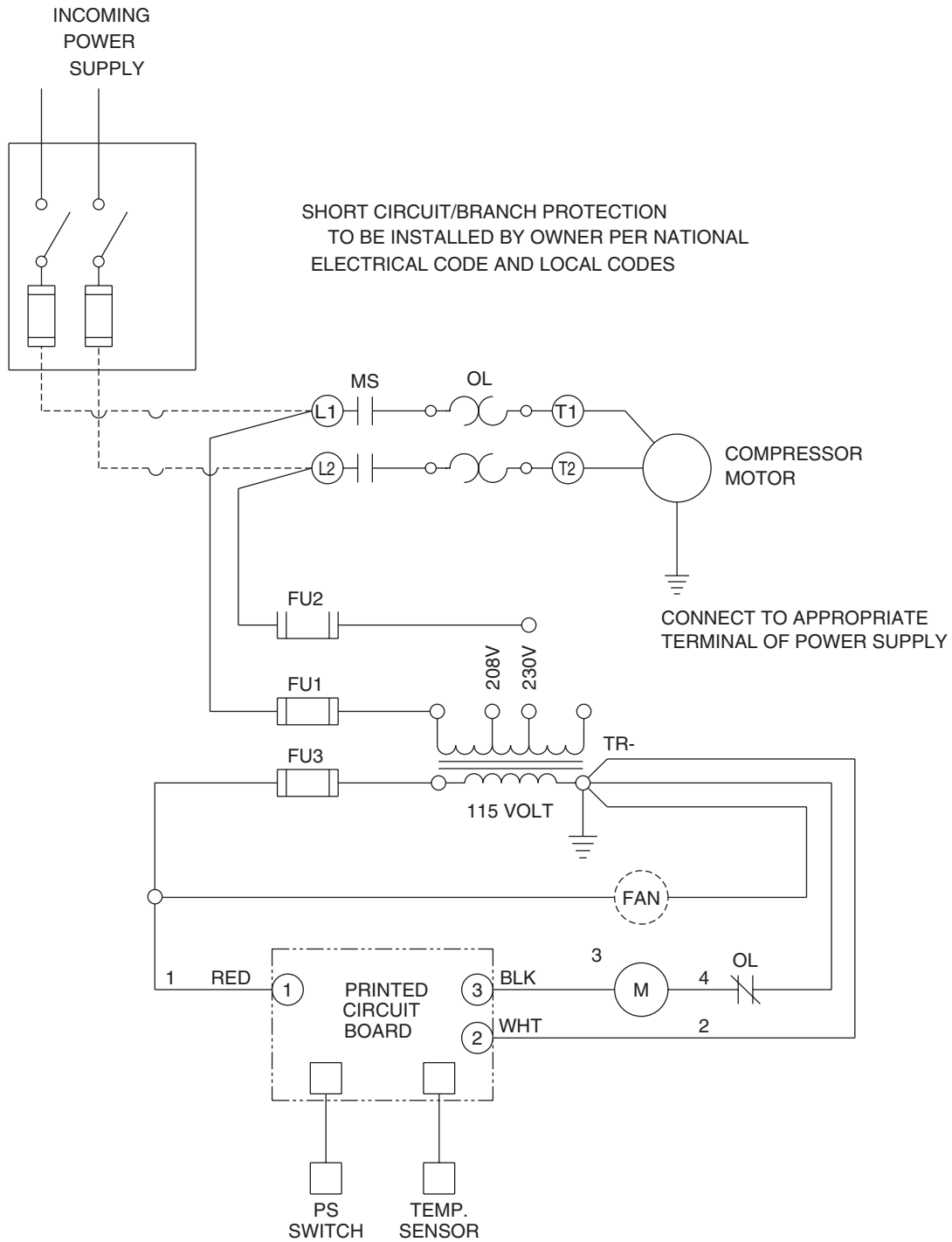
- Inspect
- ▲ Replace

**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 interval time and perform maintenance accordingly.
3. \* Marked “Readjust” means the tension of the V-belt should be adjusted during the initial stage and inspected every 2,500 hours afterwards.

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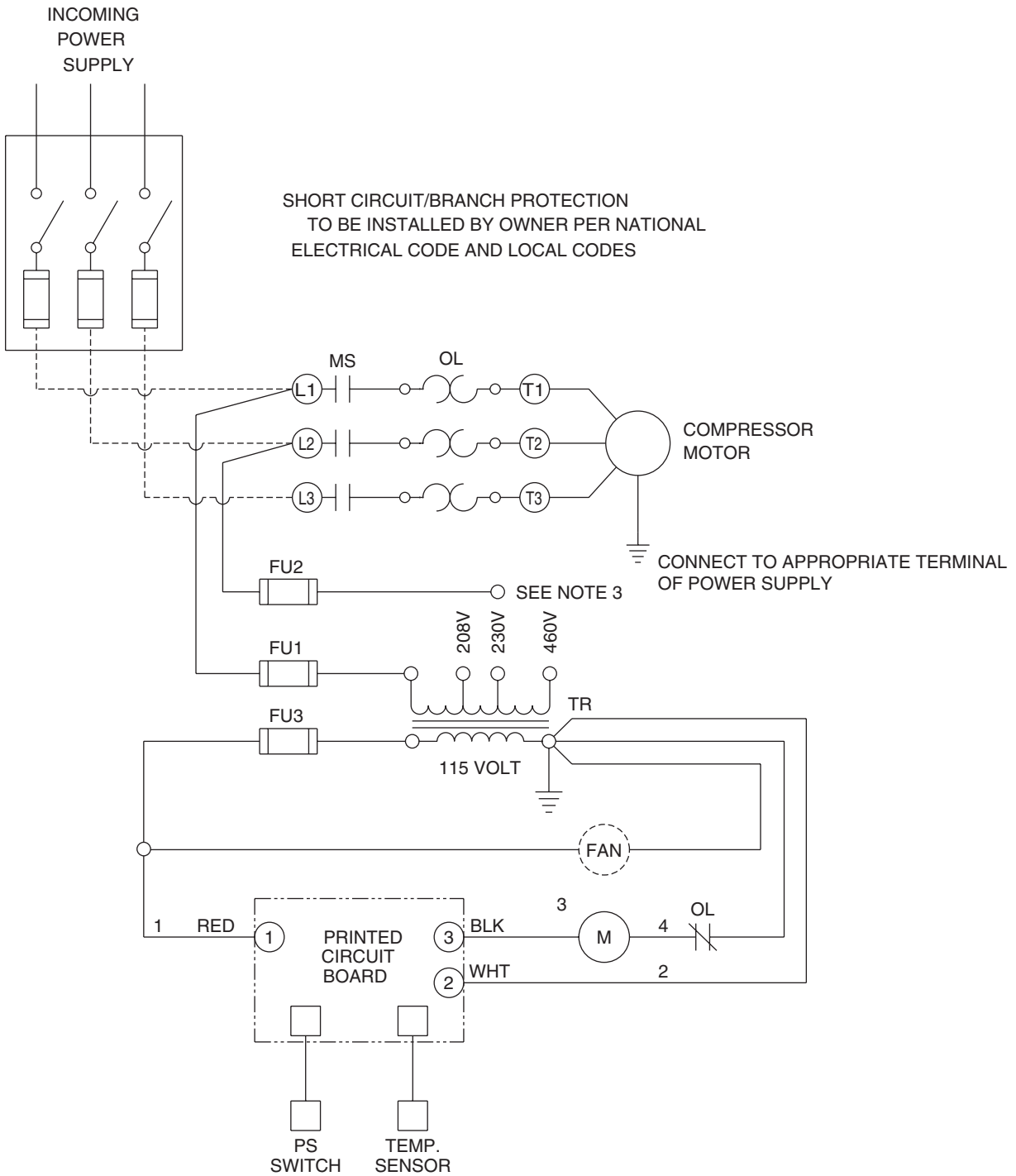
## Electrical Diagram - Single Phase Units 230 Volts





## 2 HP - 5 HP Scroll Enclosure Air Compressors

### Electrical Diagram - Three Phase Units 208 - 230 - 460 Volts



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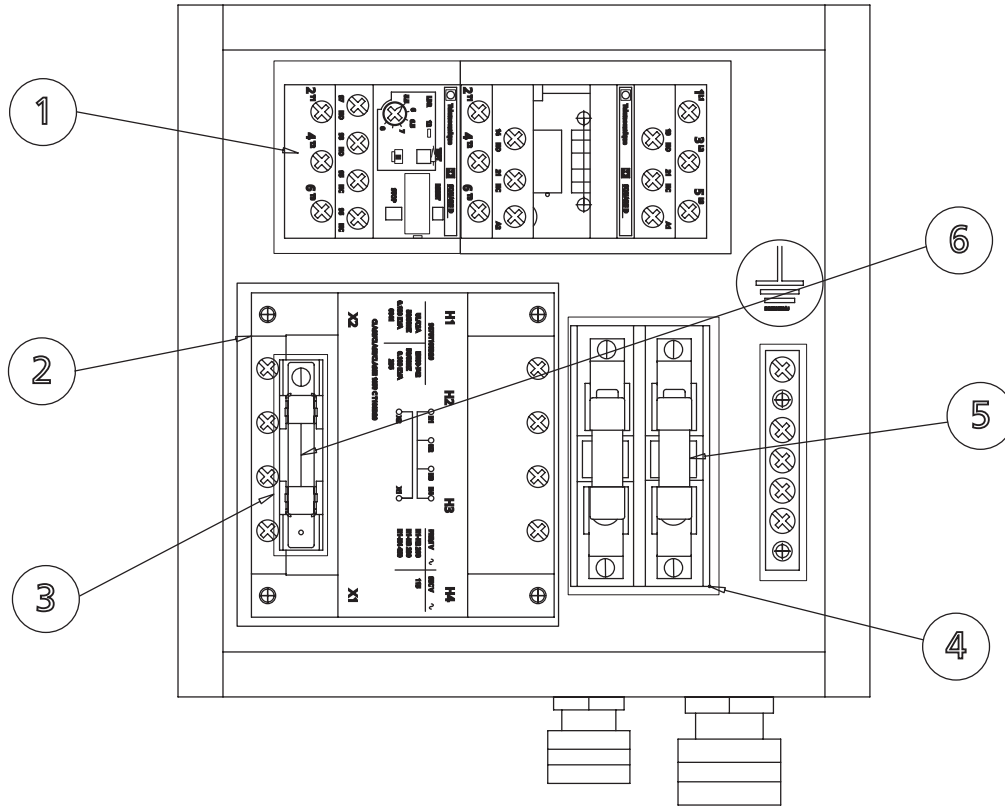


Figure 7

### Scroll Electrical Panel Replacement Parts

Key #		1	2	3	4	5	6
Model	HP	Contactor Assembly	Transformer	Secondary Fuseholder	Primary Fuseblock	Primary Fuses	Secondary Fuse
SES0208 208V, 1P	2	ZZ000745AJ	PS005809AV (ALL MODELS)	PS005812AV (ALL MODELS)	JP007800AV (ALL MODELS)	JP007703AV	JP007706AV (ALL MODELS)
SES03082 208V, 3P	3						
SES03083 230V, 3P							
SES03084 460V, 3P	5	ZZ000746AJ	JP007702AV				
SES13086 208-230, 1P		ZZ000747AJ					
SES05082 208V, 3P		ZZ000748AJ		JP007703AV			
SES05083 230V, 3P		ZZ000749AJ		JP007702AV			
SES05084 460V, 3P		ZZ000750AJ		JP007703AV			
SES15086 208-230, 1P							

## Troubleshooting Guide

<b>PROBLEM</b>	<b>CAUSE</b>	<b>CORRECTIVE ACTION</b>
Power On light does not appear	<ol style="list-style-type: none"> <li>1. Main disconnect is not ON</li> <li>2. Blown fuse or circuit breaker at customer provided power supply</li> <li>3. Blown fuse at primary side of transformer</li> <li>4. LED light has failed</li> <li>5. Circuit board has failed</li> </ol>	<ol style="list-style-type: none"> <li>1. Switch disconnect to ON</li> <li>2. Inspect for any fault replace fuse or trip disconnect to ON</li> <li>3. Replace fuse on primary side be sure use same type and size</li> <li>4. Replace circuit board</li> <li>5. Replace circuit board</li> </ol>
Power On light is on but unit will not start	<ol style="list-style-type: none"> <li>1. Blown fuse on secondary side of transformer</li> <li>2. Failed push button contact on circuit board</li> <li>3. Motor overload has tripped</li> <li>4. Wrong or low voltage</li> <li>5. Circuit board has failed</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace fuse on secondary side be sure use same type and size</li> <li>2. Replace circuit board on back side of gauge panel</li> <li>3. Determine fault and reset overload</li> <li>4. Check incoming power supply and unit power rating</li> <li>5. Replace circuit board</li> </ol>
Compressor is running but will not make pressure	<ol style="list-style-type: none"> <li>1. Drive belts came off or too loose</li> <li>2. Clogged intake filter element</li> <li>3. Pressure relief valve has opened</li> <li>4. Excessive tip seal wear</li> <li>5. Electric tank drain is open continuously</li> <li>6. Unit running in the wrong direction</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace drive belts and (or) tighten</li> <li>2. Replace intake filter element</li> <li>3. Pressure switch needs replaced or motor contacts welded shut</li> <li>4. Replace tip seals per instructions every 5,000 hours</li> <li>5. Replace tank drain</li> <li>6. Correct power connections</li> </ol>
Excessive noise or vibration	<ol style="list-style-type: none"> <li>1. Shipping brackets not removed</li> <li>2. Drive belt has separated or flat spot</li> <li>3. Motor bearing has failed</li> <li>4. Re-greasing procedure not performed at 5,000 hour intervals</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove shipping brackets after installation</li> <li>2. Replace drive belt</li> <li>3. Replace drive motor</li> <li>4. Removal of stationary scroll is required for pump inspection</li> </ol>
Compressor shuts down on high temperature	<ol style="list-style-type: none"> <li>1. Room temperature is above 104F</li> <li>2. Inlet air duct is obstructed</li> <li>3. Cooling air fan not running</li> <li>4. Re-greasing procedure not performed at 5,000 hour intervals</li> <li>5. Excessive tip seal wear</li> </ol>	<ol style="list-style-type: none"> <li>1. Add ventilation or air conditioning to room</li> <li>2. Remove obstruction or reposition unit to allow for cooling air</li> <li>3. Replace cooling air fan</li> <li>4. Re-greasing procedure not performed at 5,000 hour intervals</li> <li>5. Replace tip seals per instructions every 5,000 hours</li> </ol>
Compressor shuts down on temperature malfunction	<ol style="list-style-type: none"> <li>1. Temperature sensor has faulted</li> <li>2. Circuit board has failed</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace temperature sensor</li> <li>2. Replace circuit board on back side of gauge panel</li> </ol>
Compressor turns on / off rapidly	<ol style="list-style-type: none"> <li>1. Receiver tank has high level of water</li> <li>2. Compressor check valve has failed</li> <li>3. Defective pressure switch</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace electric tank drain</li> <li>2. Replace check valve</li> <li>3. Replace pressure switch</li> </ol>
Safety valves blows off	<ol style="list-style-type: none"> <li>1. Pressure switch has failed to open</li> <li>2. Motor starter contacts welded shut</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace pressure switch</li> <li>2. Replace motor starter</li> </ol>

### 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.