

## 10 HP to 20 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.*

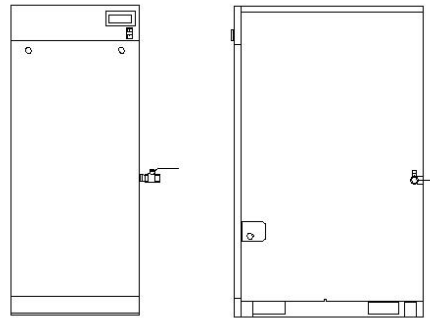
### DESCRIPTION

#### GENERAL

Powerex Scroll Enclosure Air Compressors are designed to supply continuous oil-free air by using the most advanced scroll technology. These turn-key packages are extremely quiet and offer electronic control that will reduce electrical power consumption.

The Powerex Oil-less Rotary Scroll Air Compressor has advanced scroll compressor technology through the development of a completely oil-less unit. The Powerex Scroll Compressor offers a dynamically balanced air end which insures vibration-free operation. The rotary design permits a continuous 100% duty cycle. No oil separation, oil filtration, or inlet valves are required on the Powerex Scroll unit. The compressor is virtually maintenance free.

The Powerex Oil-less Rotary Scroll Air Compressor is based on the theory of scroll compression. A scroll is a free standing, intricate spiral bounded on one side by a solid, flat plane or base. A scroll set, the basic compression element of a scroll compressor, is made up of two identical spirals which form right and left hand parts. One of these scroll components is indexed or phased 180° with respect to the other so the scrolls can mesh. Crescent-shaped gas pockets are formed and bounded by the spirals and the base plate of both scrolls. As the moving scroll is orbited around the fixed scroll, the pockets formed by the meshed scrolls follow the spiral toward the center and diminish in size. The moving scroll is prevented from rotating during this process so the 180° phase relationship of the scrolls is maintained. The compressor's inlet is at the outer boundary of the scrolls. The entering gas is trapped in two completely opposite gas pockets and compressed as the pockets move toward the center. The compressed gas is discharged through the outlet at the center of the fixed scroll so no valves are needed.



### SPECIFICATIONS

Product	SE Series Enclosed Scroll Air Compressor
Lubrication	Grease-filled Bearing
Operating Voltages	3Ø - 208-230/460/575 Volts, 60 Hz
Compression Cycle	Scroll
Motor Overload Protection	Motor Protector/Circuit Breaker
Pressure Settings	Cut in: 90 psig Cut out: 116 psig Cut in: 116 psig Cut out: 145 psig (High Pressure Units)
Overpressure Protection	Safety Valve Factory Set and Sealed
Drive	3V Belt
Control Panel	UL508A Listed for Medical Units

**TROUBLESHOOTING GUIDE**

	<b>Problem</b>	<b>Possible Cause</b>	<b>Corrective Action</b>
Compressor does not operate	No Display on the Operating Panel	<ol style="list-style-type: none"> <li>1. The electric source is not turned on</li> <li>2. Transformer primary or secondary fuse open</li> <li>3. Electric source is not correctly connected</li> <li>4. Failure of display or PLC</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn on electric source</li> <li>2. Replace</li> <li>3. Connect correctly</li> <li>4. Inspect, repair or replace</li> </ol>
	It does not operate despite displays	<ol style="list-style-type: none"> <li>1. Failure or wiring failure of magnetic starter</li> <li>2. Motor failure</li> <li>3. Low voltage</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect, repair or replace</li> <li>2. Inspect, repair or replace</li> <li>3. Check electric source capacity and the size of electric source cable and change to proper one</li> </ol>
	Alarm Screen Active	<ol style="list-style-type: none"> <li>1. High temperature condition</li> <li>2. Motor Overload condition</li> <li>3. High temperature indicated but unit is cool, has never been hot</li> </ol>	<ol style="list-style-type: none"> <li>1. Allow to cool and reset, determine cause</li> <li>2. Reset motor overload, reset alarm and determine root cause of overload</li> <li>3. A temperature switch may be disconnected or defective, check wiring</li> </ol>
Compressor starts but then stops	Alarm Screen High Temperature	<ol style="list-style-type: none"> <li>1. High ambient temperature or bad ventilation</li> <li>2. Clogging of aftercooler fins or intake wire screen</li> <li>3. Failure of ventilating fan</li> <li>4. Damage to intake hose</li> <li>5. Cooling passage of air end clogged</li> <li>6. High exhaust pressure</li> </ol>	<ol style="list-style-type: none"> <li>1. Improve installation environment &amp; ventilation</li> <li>2. Clean</li> <li>3. Replace</li> <li>4. Replace</li> <li>5. Inspect and clean</li> <li>6. Inspect- control malfunction likely</li> </ol>
	Alarm Screen Motor Overload	<ol style="list-style-type: none"> <li>1. Low voltage</li> <li>2. Motor Failure</li> <li>3. Air end failure</li> <li>4. Loosened wiring screw</li> <li>5. High exhaust pressure</li> <li>6. Failure of thermal overload</li> </ol>	<ol style="list-style-type: none"> <li>1. Check electric source capacity, size of electric source cable and change to proper one</li> <li>2. Inspect, repair or replace</li> <li>3. Inspect, repair or replace</li> <li>4. Tighten</li> <li>5. Inspect - control failure likely</li> <li>6. Replace</li> </ol>
	Exhaust pressure does not increase	<ol style="list-style-type: none"> <li>1. Air leaks from exhaust piping</li> <li>2. Air-end rotates backward</li> <li>3. Wrong pressure setting</li> <li>4. Clogged intake filter</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect, repair</li> <li>2. Change phases</li> <li>3. Readjust</li> <li>4. Clean or replace</li> </ol>
	Safety valve activates	<ol style="list-style-type: none"> <li>1. Failure of safety valve</li> <li>2. Failure of pressure setting</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace</li> <li>2. Inspect - control failure likely</li> </ol>
	Abnormal sound	<ol style="list-style-type: none"> <li>1. Air-end rotates backward</li> <li>2. Air end failure</li> <li>3. Belt slips</li> <li>4. Motor failure</li> <li>5. Cooling fan contacting frame</li> <li>6. Loosened bolts</li> </ol>	<ol style="list-style-type: none"> <li>1. Change phases</li> <li>2. Inspect, repair or replace</li> <li>3. Check tension and readjust</li> <li>4. Inspect, repair or replace</li> <li>5. Inspect and repair</li> <li>6. Inspect and tighten</li> </ol>

## 10HP - 20HP Scroll Enclosure Air Compressors

### MAINTANANCE SCHEDULE

Item	Action Needed	Operating Hours					Remarks
		500	2500	5000	10,000	20,000	
Intake Filter	Replace	●	▲				Every 2500 hours or less
Ventilation Screen	Clean	●					Every 500 hours or less
Air End/Blower Fan	Clean			●			Every 5000 hours or less
Fan Duct	Clean			●			Every 5000 hours or less
Compressor Fins	Clean		●				Every 2500 hours or less
Compressor	Grease				▲	Replace Pump ▲	Use genuine Powerex grease (every 5000 hours for High Pressure Models)
Tip Seal	Replace				▲		(every 5000 hours for High Pressure Models)
Dust Seal	Inspect, Replace				▲		(every 5000 hours for High Pressure Models)
V-belt	Inspect, Replace	*	●	▲	▲		*Readjust
Pressure Sensor	Confirm Operation				●		Check touchscreen for pressure rise and fall
Magnetic Starter	Inspect				●		Replace if contact points are deteriorated/excessive arching
Check Valve	Inspect	●			▲		Confirm operation by watching pump and motor shut off and stop turning
Safety Valve	Confirm Operation						Every 500 hours or less. Pull ring to make sure not stuck or closed.
Ventilation Fan	Inspect		●				Confirm ventilation air is exiting cabinet
Motor Pulley	Inspect Groove/ Make sure tight				●		Replace if abnormal wear is detected
Motor	Inspect				●	●	Replace if abnormal noise is detected./ Make sure electrical
Intake Hose	Inspect		●				Replace if damaged or deteriorating
Braided Hose	Inspect, Replace		●				Make sure there are no leaks
Aftercooler	Clean outside			●			Every 5000 hours or less
Operating Panel	Inspect monitor daily						Verify pressure/Check for alarm notification
Piping	Inspect for leaks		●				

- Inspect  
▲ Replace

#### 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. \*Marked "Readjust" means the tension of the V-belt should be adjusted during the initial stage and inspected every 2,500 hours afterwards.

**SCHEDULED MAINTENANCE**

**⚠WARNING** Per OSHA regulations, lockout compressor system from all power sources **BEFORE** performing any maintenance.

**MAINTENANCE INDICATORS**

The PUMP MAINT indicator will activate when the running hours of *any* pump accumulates to a required maintenance interval. The system is designed for multiple pumps to accumulate hours evenly and for maintenance intervals to be approached simultaneously. To prevent nuisance PUMP MAINT indications, all applicable maintenance counters should be reset after the required maintenance actions are performed.

**INTAKE FILTER**

1. Remove the small rear access panel.
2. Remove the wingnut on the filter housing and drop the cover down. Remove the element without removing the cover from the enclosure cavity.
3. Clean the inlet filter element with compressed air or replace with a new element.

**NOTE:** Never clean filter element with solvents or water.

**VENTILATION SCREEN**

1. Remove the ventilation screen located at rear of the unit.
2. Clean with compressed air or soap and water if necessary.

**INSPECT V-BELT TENSION**

1. See page 9 of Operation Manual, IN562802AV.

**GREASE COMPRESSOR BEARINGS (Figure 7)**

1. Remove the plastic dust cap from the airend.
2. Move the compressor pulley until the grease fitting is visible through the dust cap hole.
3. Use a grease gun extension adapter to engage the grease fitting and supply the proper volume of grease as indicated on the grease delivery chart. See chart below.

Model	1st Time	2nd Time
O.S. Bearing	7 times	6 times
Pin Crank Bearing O.S. Side	7 times	7 times

**GREASE PIN CRANK BEARING (Figure 6)**

1. Remove fan duct (2) (Key #5)
2. Remove the nuts and bolts and then the fixed scroll from the air end.
3. Grease all three pin crank bearings as indicated on the grease delivery chart above.

**NOTICE**

Use only Powerex genuine grease. Pump grease gun before feeding to eliminate air from grease passage of the needle adaptor.

**NOTE:** Each pump of the grease gun equals 0.65g of grease. The volume of grease is less after the 2nd pump since some of the grease supply will remain in the grease passage.

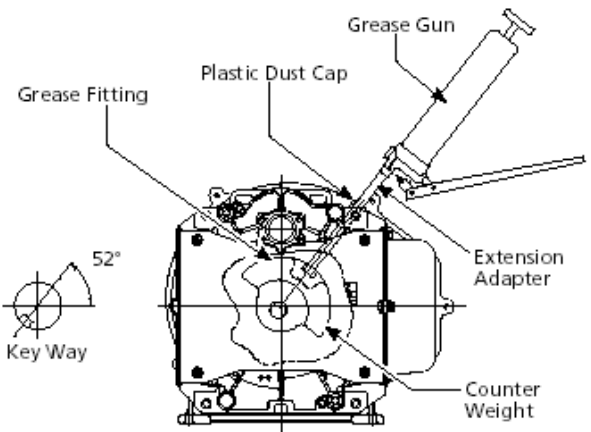
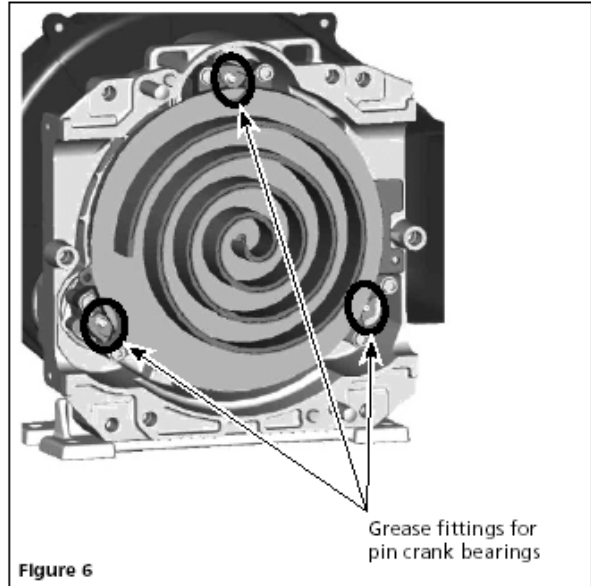


Figure 7 - Airend: to locate the grease fitting on the counter weight, place the key way on the crankshaft as shown.

**SCHEDULED MAINTENANCE (Cont'd)**

**REPLACE TIP SEAL**

1. Remove intake hose
  2. Remove the discharge hose.
  3. Remove nuts and bolts that secure fixed scroll.
  4. Remove the fixed scroll housing.
  5. Take out the old tip seal from the orbiting scroll housing and fixed scroll housing, see Figure 8.
  6. Remove the old dust seals from fixed scroll, see Figure 9.
- Install the new tip seals and dust seals in the stationary and orbiting scroll housings in the following manner:

**NOTE:** Tips seals for Fixed Scroll and Orbit Scroll have opposing seal cut angles (See NOTE and explanatory diagram below).

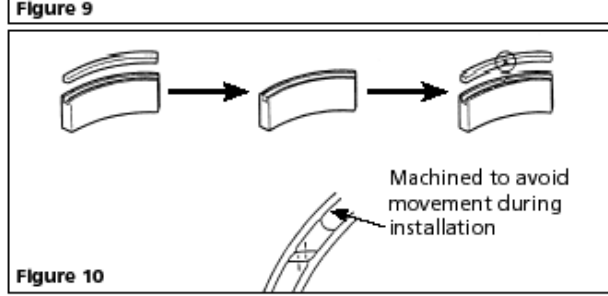
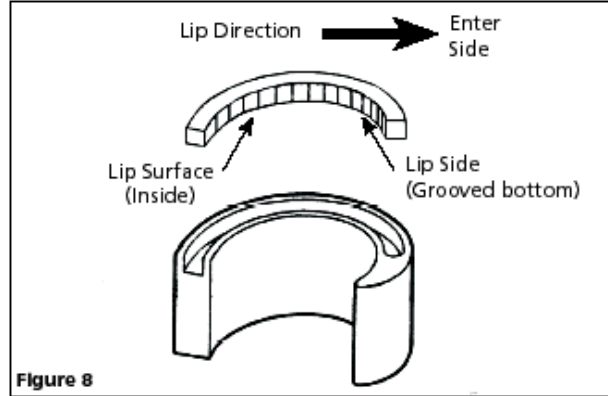
Insert tip seal so that the lip of tip seal is on the bottom of seal groove and inner side of involute and the direction of lip faces the center of involute (curving spiral). See Figure 9. This is to be done for both FS and OS sets.

Use caution not to tear or distort lip.

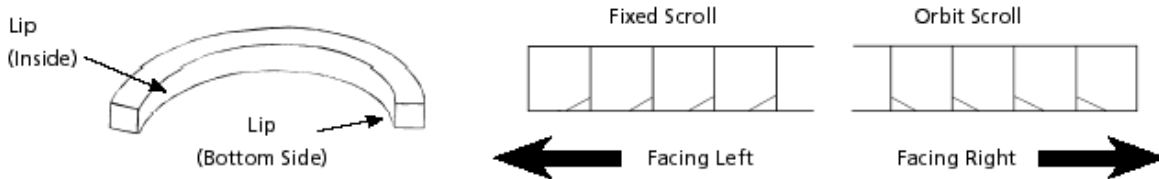
1. Insert new HP tip seal from the center section for OS or Orbit Scroll so that there will be no clearance at the tip (start) section (See Figure 8 and 9).
2. Insert so that new LP tip seal will contact closely with HP tip seal inside Scroll Groove.

**CAUTION** *Insert approximately half of the LP tip seal and remove the tip seal to confirm that a notch in the tip seal has been created. This will prevent movement during installation (See Figure 8).*

3. Repeat the same procedure for FS or Fixed Scroll tip seal set, remove both the dust seal and the backup tube located on outermost side FS set.
4. Insert new backup tube in FS in the 6 o'clock position (See figure 10).



**NOTE:** In order to distinguish between the tip seal for Fixed Scroll and the tip seal for Orbit Scroll place the tip seal as shown below then view from the arrow direction and refer to the figure on the right.

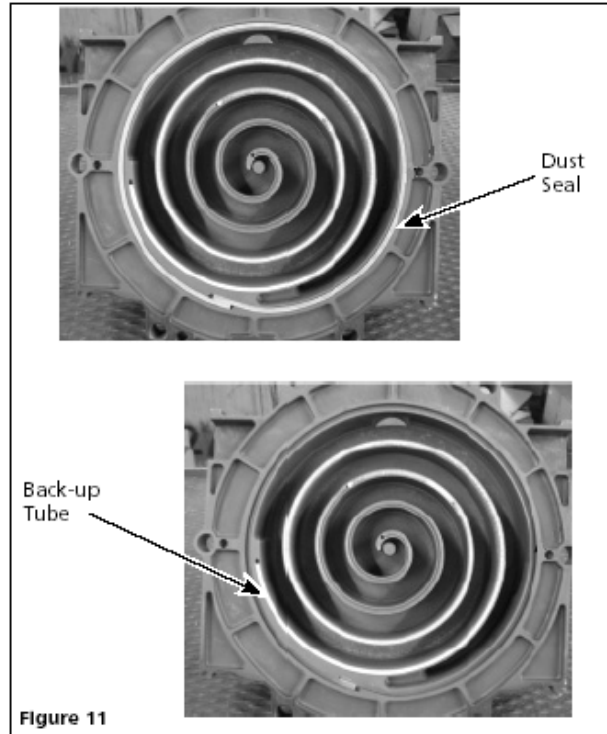


**SCHEDULED MAINTENANCE (Cont'd)**

- 5. Insert new dust seal on the backup tube (See Figure 11).
- 6. After replacing tip seal set, reassemble Fixed Scroll set to the Orbit Scroll. Tighten nuts and bolts temporarily and confirm if pump pulley rotates smoothly by hand and tighten them firmly. Tightening torques are in the chart below:

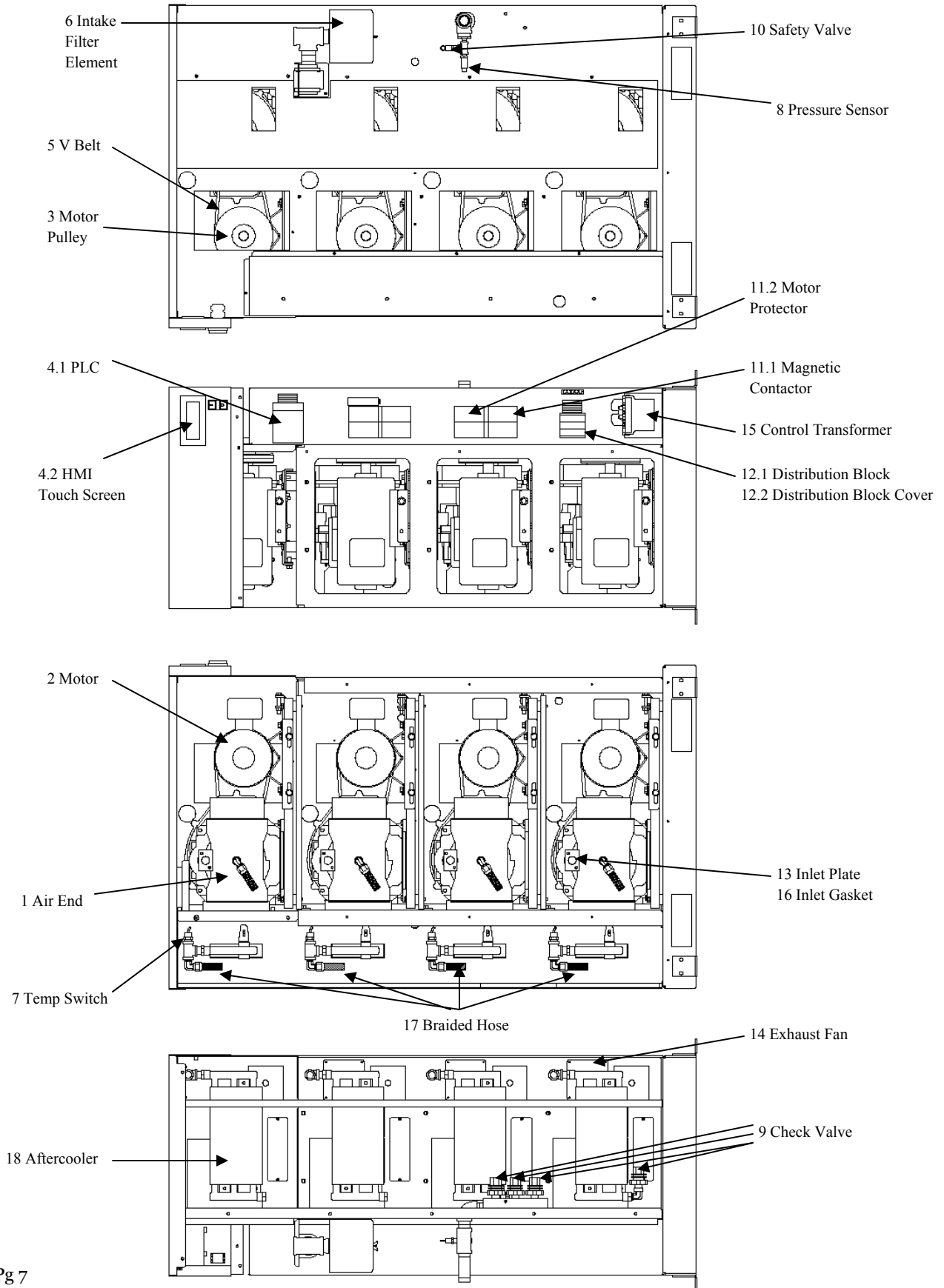
Bolt Torque	
First	Second
175 in lbs.	265 in lbs.

**NOTE:** Assemble so that dust seal and tip seal will not drop between Orbit Scroll set and Fixed Scroll set.



# 10HP - 20HP Scroll Enclosure Air Compressors

## PARTS DIAGRAM



## 10HP - 20HP Scroll Enclosure Air Compressors

### REPLACEMENT PARTS LIST

Ref. No.	Description	10HP		15 HP		20 HP		Qty.
		SED1007E	SED1007EHP	SET1507E	SET1507EHP	SEQ2007E	SEQ2007EHP	
1	Air End	SL016502AJ	SL016511AJ	SL016502AJ	SL016511AJ	SL016502AJ	SL016511AJ	2,3,4
2.1	Motor 208-230/460V				MC303305AV			2,3,4
2.2	Motor 575V				MC303307AV			2,3,4
3	Motor Pulley				PU009754AV			2,3,4
4.1	PLC				PE000420AV			1
4.2	Touch Screen HMI panel				PE000417AV			1
5	3VX-belt				BT012900AV			4,6,8
6	Intake filter element				ST073907AV			1
7	Temp Switch	AM003011AV	AM003012AV	AM003011AV	AM003012AV	AM003011AV	AM003012AV	2,3,4
8	Pressure Sensor				PE000440AV			1
9	Check Valve				IP087700AV			2,3,4
10	Safety Valve	V-215400AV	V-215401AV	V-215400AV	V-215401AV	V-215400AV	V-215401AV	1
11.1	Magnetic Contactor				PE000102AV			2,3,4
11.2	Motor Protector 208-230V				PE000307AV			2,3,4
	Motor Protector 460V/575V				PE000305AV			2,3,4
12.1	Distribution Block				PE000622AV			1
12.2	Distribution Block Cover				PE000640AV			1
13	Inlet Plate				IP088400AV			2,3,4
14	Exhaust fan				SM001301AV			2,3,4
15	Control Transformer				PS005850AV			1
16	Inlet Gasket				IP088200AV			2,3,4
17	Braided Hose				SM001501AV			2,3,4
18	Aftercooler				SL300100AV			2,3,4



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## PARTS DIAGRAM & LIST

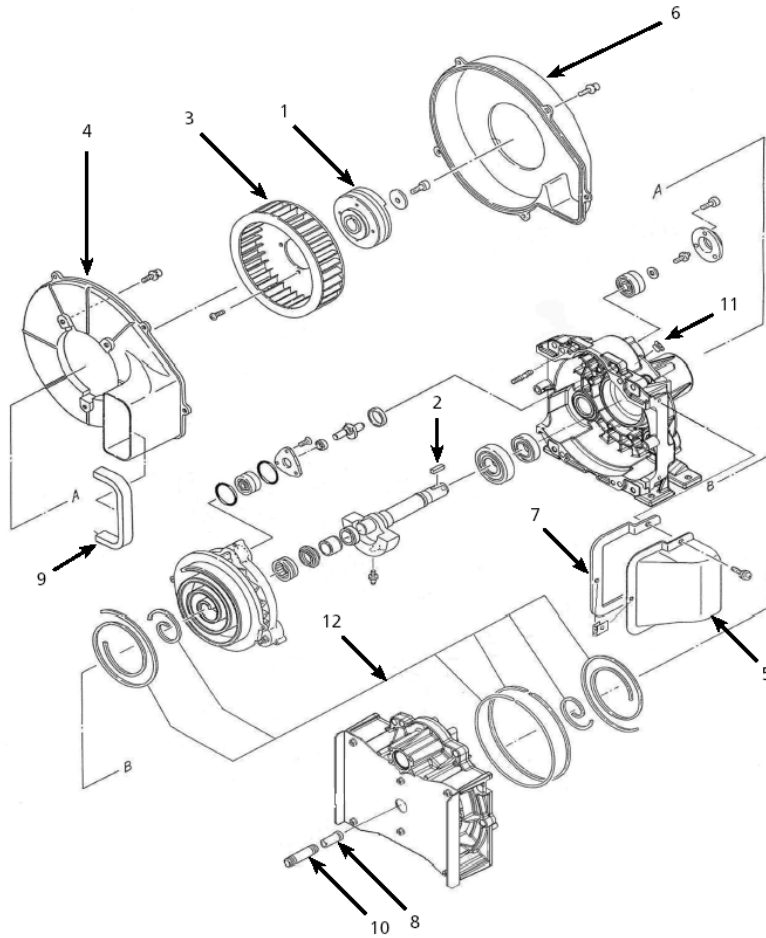


Figure 17

Ref. No.	Description	SLAE05E	SLAE05EHP	Qty.
1	Air End Pulley	02549110		1
2	Key	IP600600AV		1
3	Centrifugal Fan	IP601300AV		1
4	Fan Duct (1)	IP601400AV		1
5	Fan Duct (2)	02519042		1
6	Fan Cover	IP601700AV		1
7	Fan Dust Gasket (1)	IP601900AV		1
8	Heat Insulation Pipe	IP602000AV		1
9	Fan Duct Gasket (2)	IP602400AV		1
10	Long Nipple	96647011		1
11	Dust Cap	IP603500AV		1
12	Tip Seal Set	92832070	92832080	1
*	Grease Gun Kit	IP616201AJ		
*	Grease Gun	IP616101AJ		
*	Grease	IP600000AV		

\* NOT SHOWN





## 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.