

Specification

General

The Powerex Scroll Enclosed Air Compressor System is designed to provide clean, dry air for applications where the quality of the compressed air is critical. The standard unit is rated for a maximum of 116 PSIG. The high pressure unit is rated for a maximum of 145 PSIG.

Air Compressor System

The package shall include multiple oil-less scroll air compressors and associated equipment. The only field connections required will be system intake if remote intake option is chosen, exhaust, and power connection at the control panel.

Oilless Scroll Compressor Pump

Each compressor pump shall be belt driven oil-less rotary scroll single stage, air-cooled with absolutely no oil needed for operation. The rotary design shall not require any inlet or exhaust valves within the compressor pump housing or structure and shall be rated for 100% continuous duty. Direct drive compressors shall not be used. Tip seals shall be of a composite PTFE material and be rated for 8,000 hours operation for standard units, and 4,000 hours operation for high pressure units. Compressor pump bearings shall be external to the air compression chamber and pin crank and moving scroll bearings shall be serviceable for extended compressor life. Bearing maintenance shall not be required until 8,000 run hours for standard units, and 4,000 run hours for high pressure units. Compressor pumps with bearings that are not accessible for service have a limited life span and shall not be accepted. Compressor pumps shall have an integral radial flow fan for cooling. Each compressor pump shall have flexible connectors on intake and discharge. Each compressor pump shall have a non-metallic heat insulating liner for the discharge air pipe where it threads into the compressor housing.

Each compressor pump shall be provided with an electric drive motor, discharge check valve, an air-cooled after-cooler, and a high discharge temperature shut down switch. Auxiliary cooling fans shall operate from 120 volt power provided by the transformer included in the system controls.

Approach Temperatures

The system is designed with 3 stages of internal aftercooling so that the approach temperature shall be no greater than 24°F above ambient at system discharge with the system running at maximum capacity. No additional external aftercooling is required for use with a dryer.

Motor

Each compressor shall be belt driven by a 2 pole, TEFC, NEMA construction motor that run at 3500 RPM. Motors are EISA compliant and premium efficient.

Motor Slide Base

Maintenance feature designed for easy adjustment of belt tension from the motor side on the basemount assembly.

- Robust single screw linear belt tension adjustment.
- Custom compact design.

System Controls

The controls operate the duplex or triplex air compressor modules as needed in response to a pressure signal from a pressure transducer located in the system manifold. An illuminated on/off push button controls power to the motor starters. When the button is in the off position, the system is merely in stand-by mode, not powered off.

The pressure transducer sends a signal to the programmable logic controller (PLC) which is programmed to operate two, three or four compressor modules as needed to maintain the system pressure requirements. An HMI touch screen interface displays system status and alarm conditions. Pressure settings are user adjustable within factory predetermined setting limits.

The PLC will alternate each compressor module based on demand as well as timed alternation. If a compressor module is running longer than ten minutes continuously, the control will alternate to the next available compressor module to equalize run time and synchronize maintenance intervals. On initial startup or if air pressure drops rapidly, simultaneous motor starts are prevented by a programmed three second stagger. One 120VAC control circuit transformer with primary and secondary fuses is installed for control circuit voltage.

Motor circuit breakers with lockable disconnects are provided for each compressor module. Operating hours, high temperature alarms, motor overload alarms, run indication, and hours to scheduled maintenance for each compressor module are displayed on the screen. All alarm history is kept in the alarm log. Easily navigated menus are provided to allow the user to select the display conditions and acknowledge the alarms. Remote alarm contacts are provided as shown on the system wiring diagram.

Inlet Filters

The system includes an inlet filter with a pleated element and a canister with silencing tubes for each pump. The filters are located on each pump inside the sound reducing cabinet protected by a convenient access panel.

Sound Reducing Enclosure

The system is constructed with an internal frame and steel base system with individual vibration isolation mounted compressor modules. The sound reducing enclosure has a front access panel to allow service of the electrical controls. The enclosure has rear cooling air intake and all exhaust air leaves the enclosure from the top.

Optional Desiccant Air Dryer

The twin-tower desiccant dryer(s) shall be sized for the peak calculated system demand to provide a pressure dew point of zero degrees F. Dryer controls shall include a re-pressurization cycle to prevent shocking of the desiccant bed prior to switching towers. An integral purge saving control system shall be provided and shall suspend the purge air loss during periods of low demand. When the dryer is in purge control mode, the tower switching valves shall not operate, and only one desiccant tower shall be on-line. Dryers that continue to operate the switching valves on a fixed cycle, while in purge control mode shall not be acceptable. (Dryers utilizing purge control require the optional dew point monitor listed below.) Each dryer is supplied with two stages of filtration. The pre-filter removes

particulates and liquids and includes an element change indicator and automatic condensate drain. The 0.5 micron after filter includes an element change indicator. Dryers shall be powered through a separate control circuit and not through the compressor controls.

Optional Refrigerant Air Dryer

The refrigerated air dryers are non-cycling, direct expansion type, using R-134 A refrigerant (CFC free). A hot gas by-pass system maintains a consistent temperature at all load conditions. Heat exchangers are made of copper tube construction and fully insulated. Dryers shall have power on and high temperature lights, suction pressure gauge, internal 3-micron filter/separator with stainless steel bowl, and timed electric condensate drain. Refrigerated dryers are to be powered from a separate supply, not through the compressor controls.

Optional Dewpoint Monitor

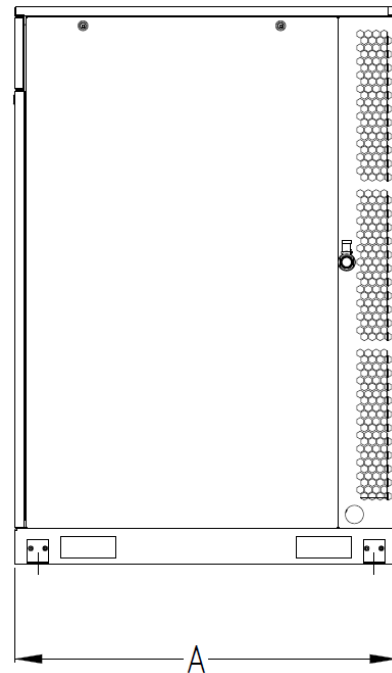
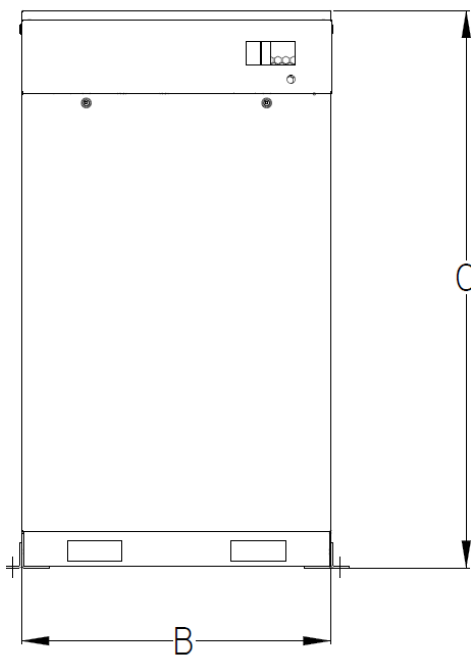
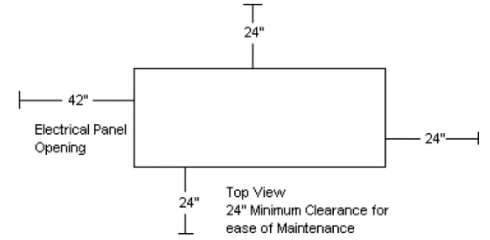
NOTE: Installed on desiccant dryer.

The system-integrated hygrometer shall be equipped with an LCD dewpoint display and high dewpoint alarm with dry contacts for remote monitoring. The sensor shall include an auto calibration feature to ensure the accuracy of the dewpoint measurement.

Optional Moisture Separator

The moisture separator shall be sized for the peak calculated demand and shall include an auto float drain to purge the collected moisture.

| Dimensions | | | | |
|------------|--------|--------|--------|--------|
| Model | Dim. A | Dim. B | Dim. C | Outlet |
| SED15B | 42" | 34" | 62" | 1" |
| SED15BHP | 42" | 34" | 62" | 1" |
| SED20B | 42" | 34" | 62" | 1" |
| SED20BHP | 42" | 34" | 62" | 1" |
| SET225 | 42" | 34" | 62" | 1" |
| SET225HP | 42" | 34" | 62" | 1" |
| SET30B | 42" | 34" | 62" | 1" |
| SET30BHP | 42" | 34" | 62" | 1" |



| Enclosed Scroll Air Compressors | | | | | | | | | | |
|---------------------------------|-----------------|----------------------|------------------------------|-------------------------|--------|-------------|---------------|------|------|---------------------|
| Model ⁴ | Total System HP | Pump HP ¹ | SCFM @ 100 PSIG ⁴ | Maximum Pressure (PSIG) | BTU/Hr | dB(A) Level | System F.L.A. | | | System Weight (lbs) |
| | | | | | | | 208V | 230V | 460V | |
| SED15B | 15 | 7.5 (2) | 46.2 | 116 | 38,200 | 63 | 40.2 | 36.6 | 19.3 | 840 |
| SED15BHP | 15 | 7.5 (2) | 34 | 145 | 38,200 | 63 | 40.2 | 36.6 | 19.3 | 840 |
| SED20B | 20 | 10 (2) | 62.4 | 116 | 50,934 | 64 | 52.8 | 48 | 25 | 840 |
| SED20BHP | 20 | 10 (2) | 49 | 145 | 50,934 | 64 | 52.8 | 48 | 25 | 840 |
| SET225 | 22.5 | 7.5 (3) | 69.3 | 116 | 57,350 | 65 | 59.3 | 53.9 | 27.9 | 1110 |
| SET225HP | 22.5 | 7.5 (3) | 51 | 145 | 57,350 | 65 | 59.3 | 53.9 | 27.9 | 1110 |
| SET30B | 30 | 10 (3) | 93.6 | 116 | 76,401 | 66 | 78.2 | 71 | 36.5 | 1110 |
| SET30BHP | 30 | 10 (3) | 73.5 | 145 | 76,401 | 66 | 78.2 | 71 | 36.5 | 1110 |

Notes:

- 1 – Actual BHP is less than rated name plate. Contact Powerex for BHP rating.
- 2 – 3 Year Limited Warranty
- 3 – UL/CSA Certified
- 4 – HP after a model number indicates high pressure model. SCFM for high pressure units are @ 145 PSIG.