USER MANUAL

ROTARY SCREW AIR COMPRESSOR
ES-8 SERIES MOBILE APPLICATION

PART NUMBER:
02250184-779 R00

KEEP FOR FUTURE REFERENCE

WARRANTY NOTICE

Failure to follow the instructions and procedures in this manual or, misuse of this equipment will VOID its warranty!

The information in this manual is current as of its publication date and applies to compressor serial number :

200903010000

and all subsequent serial numbers.

AIR CARE SEMINAR TRAINING

Sullair Air Care Seminars are courses that provide hands-on instruction for the proper operation, maintenance, and servicing of Sullair products. Individual seminars on Industrial compressors and compressor electrical systems are offered at regular intervals throughout the year at Sullair's corporate headquarters training facility located at Michigan City, Indiana.

Instruction includes training on the function and installation of Sullair service parts, troubleshooting common faults and malfunctions, and actual equipment operation. These seminars are recommended for maintenance, contractor maintenance, and service personnel.

For detailed course outlines, schedule, and cost information contact:

SULLAIR CUSTOMER CARE TRAINING DEPARTMENT

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219-879-5451 (ext. 5623)
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Sullair Corporation
3700 E. Michigan Blvd.
Michigan City, IN 46360
Attn: Service Training Department.

SULLAIR®

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SULLAIR

Section 1

SAFETY

NOTE

OPERATOR IS REQUIRED TO READ ENTIRE INSTRUCTION MANUAL.

1.1 GENERAL

Sullair Corporation and its subsidiaries design and manufacture all of their products so they can be operated safely. However, the responsibility for safe operation rests with those who use and maintain these products. The following safety precautions are offered as a guide which, if conscientiously followed, will minimize the possibility of accidents throughout the useful life of this equipment.

The compressor should be operated only by those who have been trained and delegated to do so, and who have read and understood this Operator's Manual. Failure to follow the instructions, procedures and safety precautions in this manual may result in accidents and injuries. **NEVER** start the compressor unless it is safe to do so. **DO NOT** attempt to operate the compressor with a known unsafe condition. Tag the compressor and render it inoperative by disconnecting and locking out all power at source or otherwise disabling its prime mover so others who may not know of the unsafe condition cannot attempt to operate it until the condition is corrected.

Install, use and operate the compressor only in full compliance with all pertinent OSHA regulations and/or any applicable Federal, State, and Local codes, standards and regulations. **DO NOT** modify the compressor and/or controls in any way except with written factory approval.

While not specifically applicable to all types of compressors with all types of prime movers, most of the precautionary statements contained herein are applicable to most compressors and the concepts behind these statements are generally applicable to all compressors.

1.2 PERSONAL PROTECTIVE EQUIPMENT

A. Prior to installing or operating the compressor, owners, employers and users should become familiar with, and comply with, all applicable OSHA regulations and/or any applicable Federal, State and Local codes, standards, and regulations relative to personal protective equipment, such as eye and face protective equipment, respiratory protective equipment, equipment intended to protect the extremities, protective clothing, protective shields and barriers and electrical protective equipment, as well as noise exposure administrative and/or engineering controls and/or personal hearing protective equipment.

1.3 PRESSURE RELEASE

A. Install an appropriate flow-limiting valve between the service air outlet and the shut-off (throttle) valve, either at the compressor or at any other point along the air line, when an air hose exceeding 1/2" (13mm) inside diameter is to be connected to the shut-off (throttle) valve, to reduce pressure in case of hose failure, per OSHA Standard 29 CFR 1926.302(b)(7) and/or any applicable Federal, State and Local codes, standards and regulations.

B. When the hose is to be used to supply a manifold, install an additional appropriate flow-limiting valve between the manifold and each air hose exceeding 1/2" (13mm) inside diameter that is to be connected to the manifold to reduce pressure in case of hose failure.

C. Provide an appropriate flow-limiting valve at the beginning of each additional 75 feet (23m) of hose in runs of air hose exceeding 1/2" (13mm)

inside diameter to reduce pressure in case of hose failure.

D. Flow-limiting valves are listed by pipe size and flow-rated. Select appropriate valves accordingly, in accordance with their manufacturer's recommendations.

E. **DO NOT** use air tools that are rated below the maximum rating of the compressor. Select air tools, air hoses, pipes, valves, filters and other fittings accordingly. **DO NOT** exceed manufacturer's rated safe operating pressures for these items.

F. Secure all hose connections by wire, chain or other suitable retaining device to prevent tools or hose ends from being accidentally disconnected and expelled.

G. Open fluid filler cap only when compressor is not running and is not pressurized. Shut down the compressor and bleed the receiver tank to zero internal pressure before removing the cap.

H. Vent all internal pressure prior to opening any line, fitting, hose, valve, drain plug, connection or other component, such as filters and line oilers, and before attempting to refill optional air line anti-icer systems with antifreeze compound.

I. Keep personnel out of line with and away from the discharge opening of hoses or tools or other points of compressed air discharge.

J. **DO NOT** use air at pressures higher than 2.1 bar for cleaning purposes, and then only with effective chip guarding and personal protective equipment per OSHA Standard 29 CFR 1910.242 (b) and/or any applicable Federal, State, and Local codes, standards and regulations.

K. **DO NOT** engage in horseplay with air hoses as death or serious injury may result.

1.4 FIRE AND EXPLOSION

A. Clean up spills of lubricant or other combustible substances immediately, if such spills occur.

B. Shut off the compressor and allow it to cool. Then keep sparks, flames and other sources of ignition away and **DO NOT** permit smoking in the vicinity when checking or adding lubricant or when refilling air line anti-icer systems with antifreeze compound.

C. **DO NOT** permit fluids, including air line anti-icer system antifreeze compound or fluid film, to accumulate on, under or around acoustical material, or on any external surfaces of the air compressor. Wipe down using an aqueous industrial cleaner or steam clean as required. If necessary, remove acoustical material, clean all surfaces and then replace acoustical material. Any acoustical material with a protective covering that has been torn or punctured should be replaced immediately to prevent accumulation of liquids or fluid film within the material. **DO NOT** use flammable solvents for cleaning purposes.

D. Disconnect and lock out all power at source prior to attempting any repairs or cleaning of the compressor or of the inside of the enclosure, if any.

E. Keep electrical wiring, including all terminals and pressure connectors in good condition. Replace any wiring that has cracked, cut, abraded or otherwise degraded insulation, or terminals that are worn, discolored or corroded. Keep all terminals and pressure connectors clean and tight.

F. Keep grounded and/or conductive objects such as tools away from exposed live electrical parts such as terminals to avoid arcing which might serve as a source of ignition.

G. Remove any acoustical material or other material that may be damaged by heat or that may support combustion and is in close proximity, prior to attempting weld repairs.

H. Keep suitable fully charged Class BC or ABC fire extinguisher or extinguishers nearby when servicing and operating the compressor.

I. Keep oily rags, trash, leaves, litter or other combustibles out of and away from the compressor.

J. **DO NOT** operate the compressor without proper flow of cooling air or water or with inadequate flow of lubricant or with degraded lubricant.

K. **DO NOT** attempt to operate the compressor in any classification of hazardous environment unless the compressor has been specially designed and manufactured for that duty.

1.5 MOVING PARTS

A. Keep hands, arms and other parts of the body and clothing away from couplings, belts, pulleys, fans and other moving parts.

B. **DO NOT** attempt to operate the compressor with the fan, coupling or other guards removed.

C. Wear snug-fitting clothing and confine long hair when working around this compressor, especially when exposed to hot or moving parts.

D. Keep access doors, if any, closed except when making repairs or adjustments.

E. Make sure all personnel are out of and/or clear of the compressor prior to attempting to start or operate it.

F. Disconnect and lock out all power at source and verify at the compressor that all circuits are de-energized to minimize the possibility of accidental start-up, or operation, prior to attempting repairs or adjustments. This is especially important when compressors are remotely controlled.

G. Keep hands, feet, floors, controls and walking surfaces clean and free of fluid, water or other liquids to minimize the possibility of slips and falls.

1.6 HOT SURFACES, SHARP EDGES AND SHARP CORNERS

A. Avoid bodily contact with hot fluid, hot coolant, hot surfaces and sharp edges and corners.

B. Keep all parts of the body away from all points of air discharge.

C. Wear personal protective equipment including gloves and head covering when working in, on or around the compressor.

D. Keep a first aid kit handy. Seek medical assistance promptly in case of injury. **DO NOT** ignore small cuts and burns as they may lead to infection

1.7 TOXIC AND IRRITATING SUBSTANCES

A. **DO NOT** use air from this compressor for respiration (breathing) except in full compliance with OSHA Standards 29 CFR 1910 and/or any applicable Federal, State or Local codes or regulations.

⚠ DANGER

Death or serious injury can result from inhaling compressed air without using proper safety equipment. See OSHA standards and/or any applicable Federal, State, and Local codes, standards and regulations on safety equipment.

B. **DO NOT** use air line anti-icer systems in air lines supplying respirators or other breathing air utilization equipment and **DO NOT** discharge air from these systems into unventilated or other confined areas.

C. Operate the compressor only in open or adequately ventilated areas.

D. Locate the compressor or provide a remote inlet so that it is not likely to ingest exhaust fumes or other toxic, noxious or corrosive fumes or substances.

E. Coolants and lubricants used in this compressor are typical of the industry. Care should be taken to avoid accidental ingestion and/or skin contact. In the event of ingestion, seek medical treatment promptly. Wash with soap and water in the event of skin contact. Consult Material Safety Data Sheet for information pertaining to fluid of fill.

F. Wear goggles or a full face shield when adding antifreeze compound to air line anti-icer systems.

G. If air line anti-icer system antifreeze compound enters the eyes or if fumes irritate the eyes, they should be washed with large quantities of clean water for fifteen minutes. A physician, preferably an eye specialist, should be contacted immediately.

H. **DO NOT** store air line anti-icer system antifreeze compound in confined areas.

I. The antifreeze compound used in air line antifreeze systems contains methanol and is toxic, harmful or fatal if swallowed. Avoid contact with the skin or eyes and avoid breathing the fumes. If

swallowed, induce vomiting by administering a tablespoon of salt, in each glass of clean, warm water until vomit is clear, then administer two teaspoons of baking soda in a glass of clean water. Have patient lay down and cover eyes to exclude light. Call a physician immediately.

1.8 ELECTRICAL SHOCK

A. This compressor should be installed and maintained in full compliance with all applicable Federal, State and Local codes, standards and regulations, including those of the National Electrical Code, and also including those relative to equipment grounding conductors, and only by personnel that are trained, qualified and delegated to do so.

B. Keep all parts of the body and any hand-held tools or other conductive objects away from exposed live parts of electrical system. Maintain dry footing, stand on insulating surfaces and **DO NOT** contact any other portion of the compressor when making adjustments or repairs to exposed live parts of the electrical system. Make all such adjustments or repairs with one hand only, so as to minimize the possibility of creating a current path through the heart.

C. Attempt repairs in clean, dry and well lighted and ventilated areas only.

D. **DO NOT** leave the compressor unattended with open electrical enclosures. If necessary to do so, then disconnect, lock out and tag all power at source so others will not inadvertently restore power.

E. Disconnect, lock out, and tag all power at source prior to attempting repairs or adjustments to rotating machinery and prior to handling any ungrounded conductors.

⚠ DANGER

All field equipment must be tested for electrostatic fields prior to servicing or making contact with the machine using the following or equivalent test equipment:

- **90-600 VAC: Volt detector such as Fluke Model 1AC-A**
- **600-7000 VAC: Voltage detector such as Fluke Networks Model C9970**

It is the responsibility of each organization to provide/arrange training for all their associates expected to test for electrostatic fields.

1.9 LIFTING

A. If the compressor is provided with a lifting bail, then lift by the bail provided. If no bail is provided, then lift by sling. Compressors to be air-lifted by helicopter must not be supported by the lifting bail but by slings instead. In any event, lift and/or handle only in full compliance with OSHA standards 29 CFR 1910 subpart N and/or any applicable Federal, State, and Local codes, standards and regulations.

B. Inspect points of attachment for cracked welds and for cracked, bent, corroded or otherwise degraded members and for loose bolts or nuts prior to lifting.

C. Make sure entire lifting, rigging and supporting structure has been inspected, is in good condition and has a rated capacity of at least the weight of the compressor. If you are unsure of the weight, then weigh compressor before lifting.

D. Make sure lifting hook has a functional safety latch or equivalent, and is fully engaged and latched on the bail or slings.

E. Use guide ropes or equivalent to prevent twisting or swinging of the compressor once it has been lifted clear of the ground.

F. **DO NOT** attempt to lift in high winds.

G. Keep all personnel out from under and away from the compressor whenever it is suspended.

H. Lift compressor no higher than necessary.

I. Keep lift operator in constant attendance whenever compressor is suspended.

J. Set compressor down only on a level surface capable of safely supporting at least its weight and its loading unit.

K. When moving the compressor by forklift truck, utilize fork pockets if provided. Otherwise, utilize pallet if provided. If neither fork pockets or pallet are provided, then make sure compressor is secure and well balanced on forks before attempting to raise or transport it any significant distance.

L. Make sure forklift truck forks are fully engaged and tipped back prior to lifting or transporting the compressor.

M. Forklift no higher than necessary to clear obstacles at floor level and transport and corner at minimum practical speeds.

N. Make sure pallet-mounted compressors are firmly bolted or otherwise secured to the pallet prior to attempting to forklift or transport them. **NEVER** attempt to forklift a compressor that is not secured to its pallet, as uneven floors or sudden stops may cause the compressor to tumble off, possibly causing serious injury or property damage in the process.

1.10 ENTRAPMENT

A. If the compressor enclosure, if any, is large enough to hold a man and if it is necessary to enter it to perform service adjustments, inform other personnel before doing so, or else secure and tag the access door in the open position to avoid the possibility of others closing and possibly latching the door with personnel inside.

B. Make sure all personnel are out of compressor before closing and latching enclosure doors.

NOTES

Section 2
INSTALLATION

2.1 LOCATION OF COMPRESSOR

The ES-8 Series compressor package may be placed on any level surface able to support its weight. The unit is mounted on vibration mounts and can be bolted to a fixed mounting surface to avoid the possibility of externally applied forces or vibration which would disturb the piping or wiring.

2.2 VENTILATION AND COOLING

Select a location to permit sufficient unobstructed air flow in and out of the compressor to keep the operating temperature stable. **The minimum distance that the machine should be from surrounding walls and ceiling is what is needed for service and three (3) feet (914mm) or more from the compressor fluid cooler.**

2.3 SERVICE AIR PIPING

Service air piping should be installed as shown in *Figure 2-1*. A shut-off valve should be installed to isolate the compressor from the service line. Also notice that the service line should be equipped with water legs and condensate drains throughout the system.

⚠ WARNING

"The Plastic Pipe Institute recommends against the use of thermoplastic pipe to transport compressed air or other compressed gases in exposed above ground locations, e.g. in exposed plant piping." (l)

Sullube 32 should not be used with PVC piping systems. It may affect the bond at cemented joints.Certain other plastic materials may also be affected.

(l) Plastic Pipe Institute, Recommendation B, Adopted January 19, 1972.

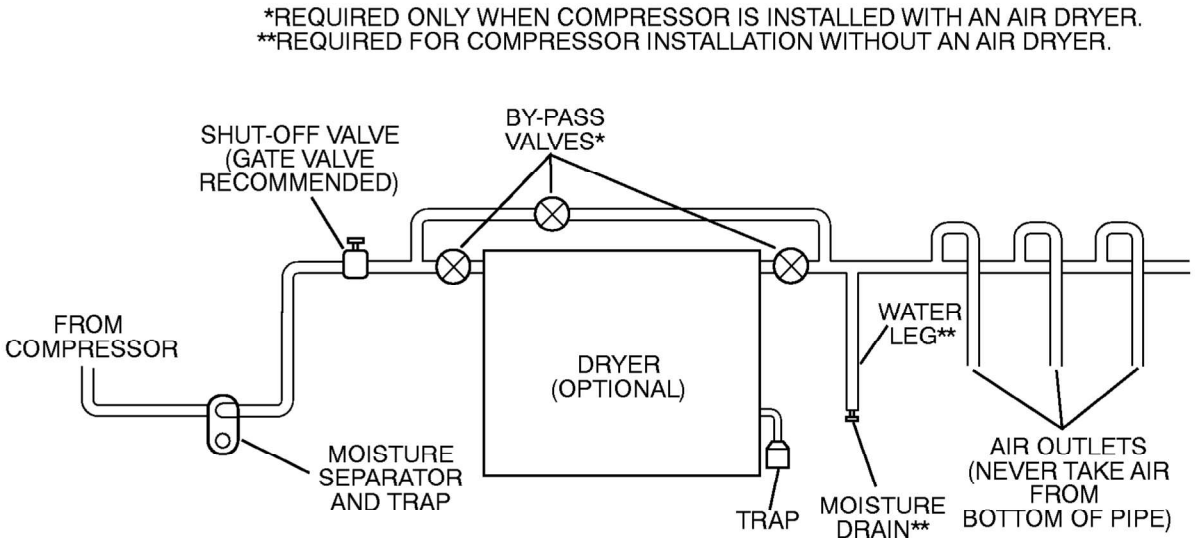


Figure 2-1: Service Air Piping

2.4 COUPLING ALIGNMENT CHECK

With the compressor unit directly flange-mounted to its drive, the coupling supplied with the compressor is always properly aligned for opertion. However, we recommend that you re-check the coupling gap before start-up or when handling the unit. a 1.5 to 3mm axial clearance should be maintained for the coupling gap. See *Section 6.4*.

2.5 FLUID LEVEL CHECK

The Sullair air compressor is equipped with the proper amount of fluid. However, it is necessary to check the fluid level at installation. The level is checked by looking at the fluid level sight tube located on the end bell. If the sump is properly filled, the fluid level should cover 1/4 to 1/2 of the level range during operation. With the compressor shut down, the level should be 3/4 of the sight tube. DO NOT overfill.

2.6 MOTOR ROTATION DIRECTION CHECK

After the electrical wiring has been done, it is necessary to check the direction of the motor rotation.

Pull out the **EMERGENCY STOP** button and press once, quickly and in succession, the **(START) I** and **(STOP) O** pads. This action will bump start the motor for a very short time. When looking at the motor from the control panel side, view the coupling by looking through the air inlet duct on the lower side of the adapter fan housing. The coupling should be turning clockwise. If the reversed rotation is noted, disconnect the power to the starter and exchange any two of the three power input leads, then re-check rotation. A “Direction of Rotation” decal is located on the motor and cooler shroud to show proper motor/compressor rotation.

2.7 ELECTRICAL PREPARATION

Interior electrical wiring is performed at the factory. Required customer wiring is minimal, but should be done by a qualified electrician in compliance with OSHA, National Electrical Code, and/or any other applicable State, Federal and local electrical codes concerning isolation switches, fused disconnects, etc. Sullair provides a wiring diagram for use by the installer.

NOTE

Customer must provide electrical supply power disconnect within sight of machine.

A few electrical checks should be made to help assure that the first start-up will be trouble-free.

⚠ WARNING

Lethal shock hazard inside. Disconnect all power at source before opening or servicing.

1. Check incoming voltage. Be sure that compressor is wired for the correct incoming voltage.
2. Check starter for correct size, proper overload relay, and heaters.
3. Check all electrical connections for tightness.
4. “DRY RUN” the electrical controls by disconnecting the three (3)motor leads from the starter. Pull out the EMERGENCY STOP button on the control panel.
5. Reconnect the motor leads and jog the motor for a direction of rotation check as explained in *Section 2.6*.

NOTE

Wiring diagram for standard compressors is supplied on the inside cover of the Control Center. Optional compressor wiring diagrams will vary.

Section 3

SPECIFICATIONS

3.1 TABLE OF SPECIFICATIONS

60 HZ Model	HP	ACFM	PSIG	DIMENSIONS								
				Length		Width		Height		Weight		dBA (l)
				in	mm	in	mm	in	mm	lbs	kg	w/Encls./ w/o Encls.
30XH	30	95	185	52		32		32		1065		78/85

(l) Ratings for dBA at one meter.

3.2 COMPRESSOR SPECIFICATIONS

COMPRESSOR:	
Type:	SIngle Stage Fluid Injected Screw Compressor
Minimum Full Load Operating Pressure:	60 psig (4.2 bar)
Maximum Full Load Operating Pressure:	Nameplate Pressure
Bearing Type:	Anti-friction
Cooling:	Pressurized Fluid
Lubricant:	see *Section 3.7: Lubrication Change Recommendations & Maintenance Schedule*
Sump Capacity:	3 gallons (11.4 liters)

3.3 MOTOR SPECIFICATIONS

MOTOR:	**60 Hz**
Type:	TEFC, C-flange
Synchronous Speed:	30 HP = 3600 RPM
Voltage:	
Standard All Sizes:	460
Type:	
Insulation Class:	B- (Min.)
Maximum Ambient Temp.:	50ºC (122ºF)

3.4 FLUID FILTER

Fluid Filter	
Type:	Spin on, Sullair Proprietary
Micron:	23 Microns Abs.
Internal Bypass Valve Set at 25 psig (1.7 bar):	

3.5 FLUID SEPARATOR ELEMENT

Fluid Separator Element	
Type:	Push In Cartridge, Sullair Proprietary
Efficiency at Maximum Capacity:	5PPM Maximum

3.6 LUBRICATION GUIDE

For best value and longest uninterrupted service, the ES-8 compressor is factory filled and tested with a long life lubricant.

⚠ WARNING

"The Plastic Pipe Institute recommends against the use of thermoplastic pipe to transport compressed air or other compressed gases in exposed above ground locations, e.g. in exposed plant piping." (I)

Sullube 32 should not be used with PVC piping systems. It may affect the bond at cemented joints. Certain other plastic materials may also be affected.

(I) Plastic Pipe Institute, Recommendation B, Adopted January 19, 1972.

Maintenance of all other components is still recommended as indicated in the Operator's Manual.

For light-duty high-humidity service where condensed moisture and emulsification (mayonnaise) may occur, the fluid change interval must be reduced to 300 hours maximum. A non-detergent fluid with rust, oxidation and foam inhibitors and good water separation characteristics should be used.

DO NOT MIX DIFFERENT TYPES OF FLUIDS. Contamination of non-detergent mineral fluids with traces of ATF or detergent motor fluids may lead to operational problems such as foaming, filter plugging, orifice or line plugging.

NOTE

Flush system when switching lubricant brands.

When ambient conditions exceed those noted or if conditions warrant use of "extended" life lubricants contact Sullair for recommendation.

Sullair encourages the user to participate in a fluid analysis program. This could result in a fluid change interval that is different from those stated in this manual.

3.7 LUBRICATION CHANGE RECOMMENDATIONS & MAINTENANCE SCHEDULE

AMBIENT TEMPERATURE	LUBRICANT	FLUID & FILTER CHANGE PERIOD (HRS.)	SEPARATOR CHANGES PERIOD (HRS.)	AIR FILTER CHANGE PERIOD (HRS.)
-10°F to +90°F (-23°C to +32°C)	Sullube 32	8000	8000	4000 (II)
(I) 8,000 Hours or once a year (II) 4,000 Hours or more frequently if conditions so require.				

Section 4

COMPRESSOR SYSTEMS

4.1 INTRODUCTION

Your new Sullair flood-lubricated rotary screw air compressor will provide you with improved reliability and greatly reduced maintenance.

Compared with other types of compressors, the Sullair rotary screw is unique in mechanical reliability, with “no wear” and “no inspection” required of the working parts within the compressor unit.

Read *Section 6: Maintenance* to keep your compressor in top operating condition. Should any questions arise which cannot be answered in the following text, call your nearest Sullair office or the Sullair Corporation Service Department.

4.2 DESCRIPTION OF COMPONENTS

Refer to *Figure 4-1*. The components and assemblies of the ES-8 Series air compressor are clearly shown. The complete compressor consists of an encapsulated compressor system, inlet system, cooling system, control system and WS control system.

The compact design of the ES-8 Series air compressor provides easy access to all serviceable components.

4.3 ENCAPSULATED COMPRESSOR SYSTEM, FUNCTIONAL DESCRIPTION

Refer to *Figure 4-2*. The encapsulated compressor includes compressor unit, fluid management system, and drive motor. The Sullair compressor unit is a single-stage positive displacement lubricated type compressor. This unit is equipped with tapered roller bearings on the discharge and cylindrical roller bearings on the inlet end for high load carrying capacity. This unit provides continuous pulse-free air compression to meet your needs. With a Sullair compressor there will be no maintenance or internal inspection of the compressor.

⚠ WARNING

DO NOT remove caps, plugs and/or other components when compressor is running or pressurized.

Stop compressor and relieve all internal pressure before doing so.

Fluid is injected into the compressor unit in large quantities and mixes directly with the air as the rotors turn, compressing the air. The fluid flow has three main functions:

1. As coolant, it controls the rise of air temperature normally associated with the heat of compression.
2. It seals the leakage paths between the rotors and the stator and also between the rotors themselves.
3. It acts as a lubricating film between the rotors allowing one rotor to directly drive the other, which is an idler.

The air/fluid mixture discharges directly into the fluid management system.

The fluid cooler bypass valve helps assure proper cooling by directing the fluid to the fluid cooler when discharge temperature reaches the thermostat temperature setting.

During start-up in cool ambient conditions, the cooler pressure drop may cause the filter bypass valve to open up, assuring adequate fluid supply to the compressor.

All fluid entering the compressor unit passes through the replaceable fluid filter element. This replaceable filter element contains a built-in bypass valve. Under conditions of restricted flow through the element, the bypass valve helps ensure adequate compressor fluid flow, as well as helps prevent element failure.

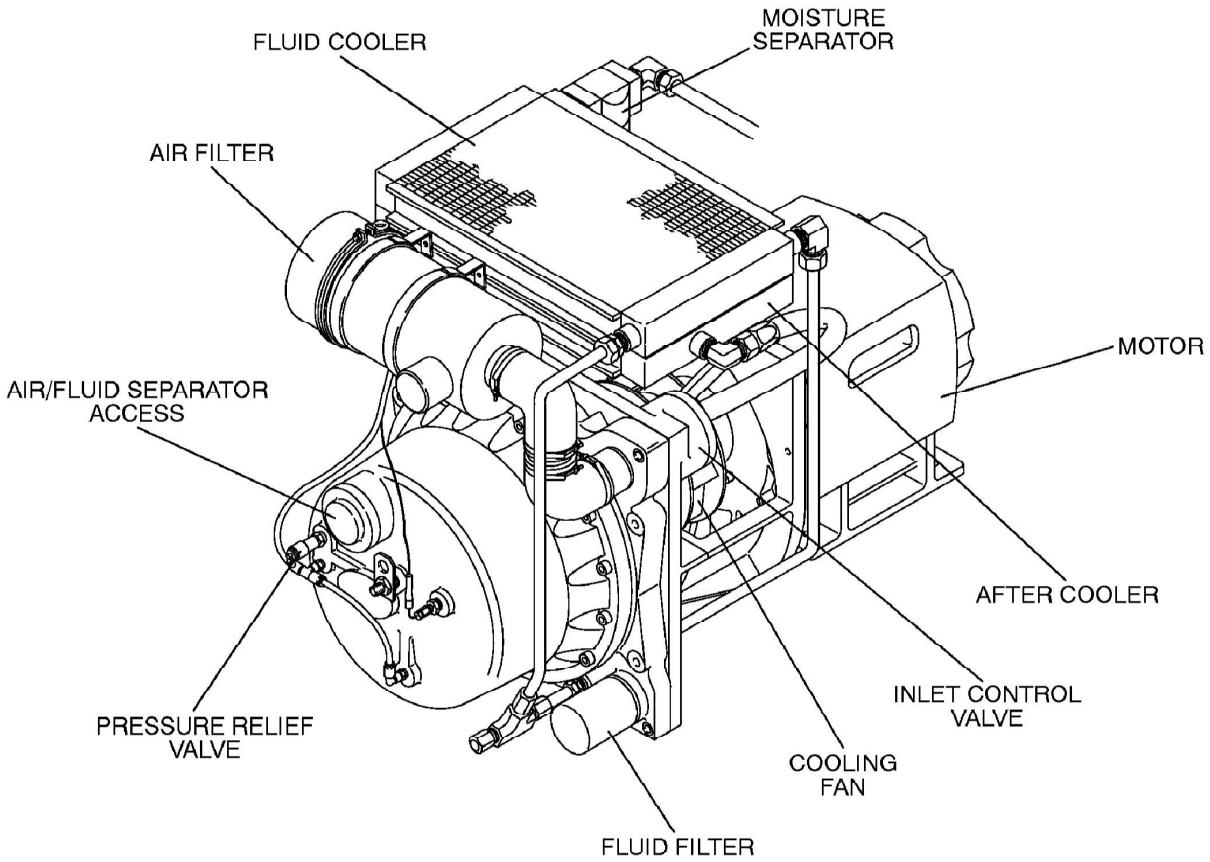


Figure 4-1: Description of Components

FLUID MANAGEMENT SYSTEM

The Fluid Management System consists of a multi--chambered primary/secondary separator, the final air/fluid separator element, cooler bypass and fluid filter.

As compressed air/fluid enters the sump, the first fluid separation takes place due to a reduction of flow speed coupled with a change of direction of the flow within the sump housing. The compressed air reaches the separator and the finest fluid drops and mist are separated.

The minimum pressure/discharge check valve is mounted on the compressor drive housing. Its functions are as follows:

1. Maintains a minimum sump pressure of 60 psig (4.2 bar) under full load operation to help assure adequate fluid pressure.
2. Acts as a check valve to isolate the compressor from the system at shutdown or unload.

DRIVE MOTOR

The Drive Motor consists of a squirrel cage induction motor which is connected to the integrated drive gearing by a drive coupling.

4.4 COMPRESSOR COOLING SYSTEM, FUNCTIONAL DESCRIPTION

The Compressor Cooling System consists of a fluid cooler, fan and cooler shroud. The fan is mounted on the compressor shaft. Air is drawn through the motor adaptor by the fan and exits through the coolers on top of the compressor. The air provides cooling for compressor fluid and cooling of air on units with air aftercoolers.

4.5 AIR INLET SYSTEM, FUNCTIONAL DESCRIPTION

The compressor inlet system consists of a dry-type air filter and an inlet control valve. Reacting on a pressure signal, the valve closes the intake for unloaded operation. The valve also acts as a check valve upon shutdown.

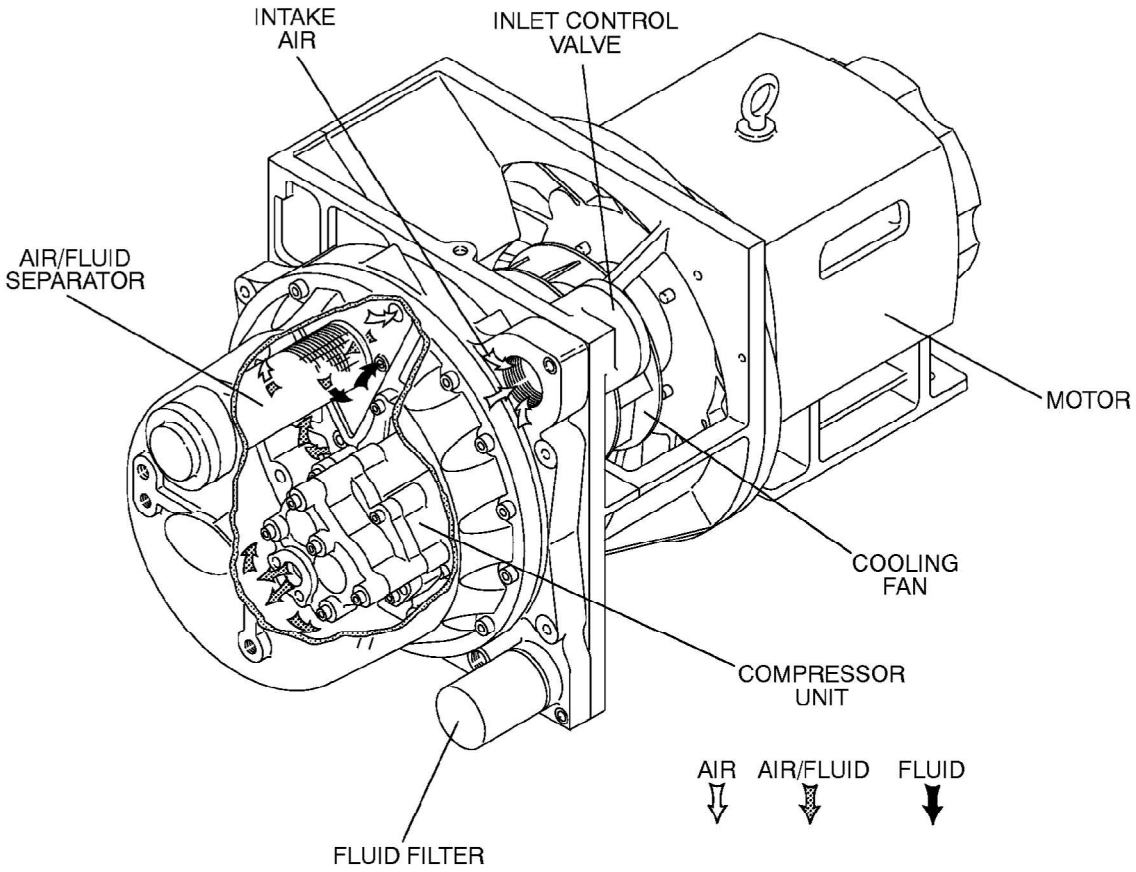


Figure 4-2: Encapsulated Compressor System

4.6 CONTROL SYSTEM, FUNCTIONAL DESCRIPTION

The purpose of the compressor control system is to regulate the amount of air being compressed to match the amount of compressed air being used. The capacity control system consists of a solenoid valve, regulator valve and an inlet valve. The functional description of the control system is described below in 4 distinct phases of operation. The following description text applies to all Series ES-8 compressors. For explanitory purposes, this description will apply to a compressor with an operating range of 100 to 110 psig (6.9 to 7.6 bar). A compressor with any other pressure range would operate in the same manner except stated pressures.

START MODE—0 TO 60 PSIG (0 TO 4.2 BAR)

When the compressor "I" pad is depressed, the sump pressure will quickly rise from 0 to 60 psig (0 - 4.2 bar). During this period, both the pressure regulator and the solenoid valve are closed, the inlet valve is fully open and the compressor pumps at full rated capacity. The rising compressor air pressure is isolated from the service line in this phase by the minimum pressure valve set at approximately 60 psig (4.2 bar).

FULL LOAD MODE—60 TO 100 PSIG (4.2 TO 6.9 BAR)

When the compressed air pressure rises above 60 psig (4.2 bar), the minimum pressure valve opens allowing compressed air to flow into the service line. From this point on, the line air pressure is continually monitored by the Supervisor. The pressure regulator and the solenoid valve remain closed during this phase. The inlet valve is in the fully open position as long as the compressor is running at 100 psig (6.9 bar) or below.

MODULATING MODE—100 TO 110 PSIG (6.9 TO 7.6 BAR)

If less than the rated capacity of compressed air is being used, the service line pressure will rise above

100 psig (6.9 bar). The pressure regulator valve gradually opens, directing air pressure to the inlet control valve, reducing air entering the compressor until it matches the amount of air being used. The control system functions continually in this manner between the limits of 100 to 110 psig (6.9 to 7.6 bar) in response to varying demands from the service line. The pressure regulator has an orifice which vents a small amount of air to the atmosphere when the pressure regulator controls the inlet control valve.

The orifice also bleeds any accumulated moisture from the pressure regulator.

UNLOAD MODE—IN EXCESS OF 110 PSIG (7.6 BAR)

When a relatively small amount or no air is being used, the service line pressure continues to rise. When it exceeds 110 psig (7.6 bar), the Supervisor Control System de--energizes the solenoid valve allowing sump air pressure to be supplied directly to close the inlet valve. Simultaneously, the solenoid valve sends a pneumatic signal to the blowdown valve. The blowdown valve opens the sump to the atmosphere, reducing the sump pressure to approximately 20 to 30 psig (1.4 to 2.1 bar). The check valve in the air service line prevents line pressure from returning to the sump.

When the line pressure drops to the low setting(cut-in pressure; usually 100 psig [6.9 bar] on low pressure [“L”] compressors and 125 psig [8.6 bar] on high pressure [“HH”] compressors, 175 psig [12.1 bar] on [“XH”] compressors), Supervisor energizes the solenoid valve and allows the blowdown valve to close. The re-energized solenoid valve again prevents line pressure from reaching the inlet control valve. Should the pressure begin to rise, the pressure regulator will resume its normal function as previously described.

AUTOMATIC OPERATION

For applications with varied periods of time when there are no air requirements, Supervisor’s AUTOMATIC mode allows the compressor to shutdown (time delayed) when no compressed air requirement is present and restart as compressed air is needed.

Section 5

WS CONTROLLER

5.1 CONTROLLER LAYOUT

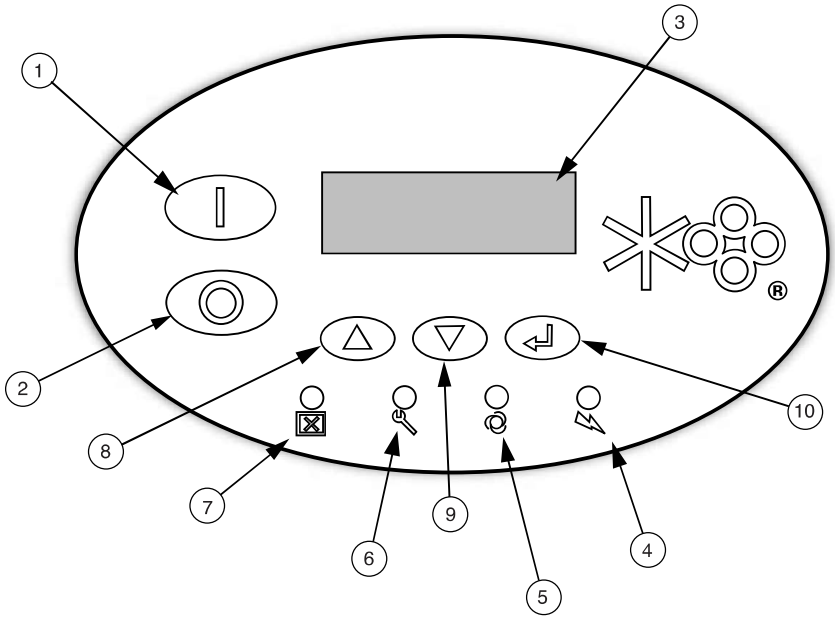


Figure 5-1: WS Controller

1. ON
2. OFF
3. LCD Display
4. Power Indicator
5. Run Mode Indicator
6. Maintenance Indicator
7. Fault Indicator
8. Up Key
9. Down Key
10. Enter Key

5.2 CONTROLLER KEYPAD

See WS Controller manual P/N 02250165-411 for complete operation capabailities. The WS Controller keypad has two main pads for compressor control.

- To start the compressor operation, press the green Start pad "Ⓘ".
- To stop compressor operation, press the red Stop pad "Ⓞ".
- The Run mode indicator "◎" lights up whenever the control is in an operating mode.

5.3 LCD DISPLAY

The display's normal view shows the compressor package's discharge pressure, internal temperature, and the operating mode. The modes are MANUAL, OFF, AUTOMATIC, or FAULTED.

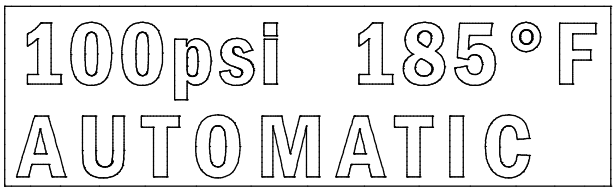


Figure 5-2:

Refer to *Figure 5-2* and *Figure 5-3*. The lower line is occasionally interrupted to describe the compressor package's operating state.

Figure 5-3:

Refer to *Figure 5-4*. If a machine fault occurs, the red fault " " indicator will light up, and the display will indicate that a fault has occurred.

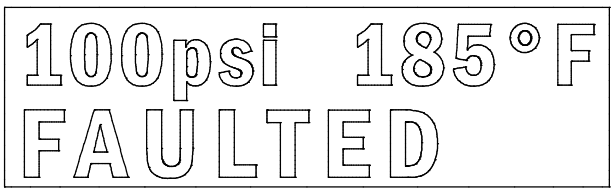


Figure 5-4:

Refer to *Figure 5-5*. The lower line periodically will display the cause of the fault. Refer to service instructions to correct the cause. Press the Stop pad " " to reset the controller.

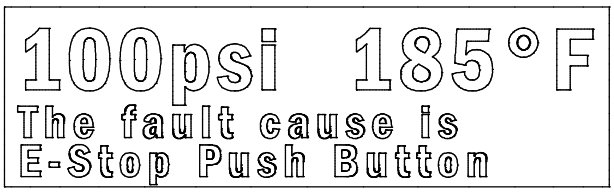


Figure 5-5:

Refer to *Figure 5-6*. Press the Down arrow " " to display additional information about the compressor. The upper line will indicate "Compressor Status" and the name of the temperature, pressure, or other measurement. The lower line indicates the present reading.

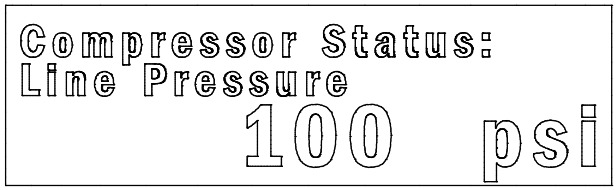


Figure 5-6:

Refer to *Figure 5-7*. When you continue beyond the status information, the display will show a list of control settings. The upper line will indicate "Show Setting" and the name of the setting. The lower line shows the present value.

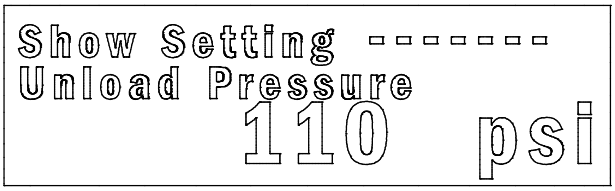


Figure 5-7:

Refer to *Figure 5-8*. To change the setting, press the Enter pad " ". The display indicates that you are in a change mode with reverse characters. Use the Up " " or Down " " arrow keys to change the setting, and press Enter again to save the new setting.

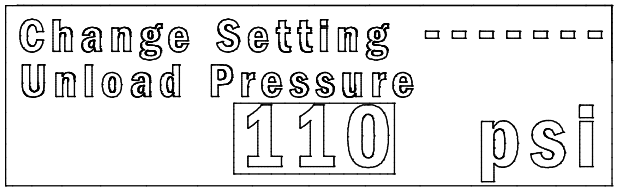


Figure 5-8:

Refer to *Figure 5-8*. If there is no keypad activity, the display will return to normal view in about one minute. If the Start or Stop buttons are pressed, the display also returns to normal view. If either of these occur, the setting will not be altered.

If there are any warnings or recommended service instructions, these will be periodically displayed on the normal view.

The list of displays may be navigated from either direction by using the Up "△" or Down "▽" arrow keys. For example, to change language from normal view, press the Up arrow pad once, press the Enter key "↵", select your language, and press Enter again. The number of displays varies with compressor model, but will follow this pattern.

The large Emergency Stop button located near the controller overrides all electronic functions to turn off the control devices. The controller senses this, and will display E-stop. To reset, twist and pull out the Emergency Stop button, then press the Stop pad to reset the WS Controller.

5.4 LED LIGHTS

The four LED lights indicate the general condition of the machine.

The green Power indicator "  " simply indicates that power is applied to the controller. It will blink very slowly if the WS Controller is set up to automatically restart after power failure.

The green Run mode indicator "  " indicates compressor operation is enabled. It lights steadily if the motor is running. If the motor stops while in Automatic mode, this LED will blink to indicate that the motor may restart.

The yellow Maintenance indicator "  " comes on whenever there is recommended maintenance or a warning. The text display will periodically indicate the recommended actions or the cause of the warning.

The red Fault indicator "  " indicates that a compressor fault has occurred and needs to be repaired before further operation. The text display will indicate the cause of the fault.

The PC support program for the WS controller provides additional information about compressor operation and advanced setup adjustments to optimize operation.

Software part numbers are shown in the display following a power interruption or other interruption of communication with the controller. The P/N remains on the display until satisfactory communications are established with the Input/Output module.

NOTES

Section 6

MAINTENANCE

6.1 INTRODUCTION

⚠ WARNING

Before doing compressor maintenance, disconnect compressor from power source and lock out power source. Isolate compressor from line pressure by closing recommended discharge shut-off valve and releasing all internal pressure from compressor.

As you proceed in reading this section, it will be easy to see that the maintenance program for the air compressor is quite minimal. The Supervisor monitors the status of the separator element. When maintenance to this device is required, the Supervisor will display the appropriate maintenance message and flash the location LED on the graphics map as a visual reminder. See instructions for each item in *Section 6.6: Parts Replacement And Adjustment Procedures* .

⚠ WARNING

DO NOT remove caps, plugs, and/or other components when compressor is running or pressurized. Stop compressor and relieve all internal pressure before doing so.

6.2 DAILY OPERATION

Prior to starting the compressor, it is necessary to check the fluid level in the sump. Should the level be low, simply add the necessary amount. If the addition of fluid becomes too frequent, a minor problem has developed which is causing this excessive loss. See *Troubleshooting* under Excessive Fluid Consumption for a probable cause and remedy.

After a routine start has been made, a general check of the overall compressor should bemade to assure that the compressor is running properly.

6.3 MOTOR BEARING LUBRICATION

⚠ WARNING

Before doing compressor maintenance, disconnect compressor from power source and lock out power source. Isolate compressor from line pressure by closing recommended discharge shut-off valve and releasing all internal pressure from compressor.

See motor manufacturer's lubrication instructions.

6.4 FLUID FILTER MAINTENANCE

⚠ WARNING

Fluid filter has internal bypass. DO NOT SUBSTITUTE.

Replace the fluid filter element under any of the following conditions:

1. As recommended in the Lubrication Guide in the Specification Section, and below.
2. Every year.
3. Every fluid change.

6.5 COOLER MAINTENANCE

If cooler becomes restricted, use standard spray degreaser/cleaner and brush to clean cooler. Use air pressure to blow cooler clean. Care must be taken as not to damage cooler fins.

⚠ WARNING

Before doing compressor maintenance, disconnect compressor from power source and lock out power source. Isolate compressor from line pressure by closing recommended discharge shut-off valve and releasing all internal pressure from compressor.

6.6 PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES

⚠ WARNING

Before doing compressor maintenance, disconnect compressor from power source and lock out power source. Isolate compressor from line pressure by closing recommended discharge shut-off valve and releasing all internal pressure from compressor.

RELIEF VALVE

DO NOT tamper with the preset factory pressure setting of the valve. **DO NOT** plug the valve for any reason; should it leak, have it replaced.

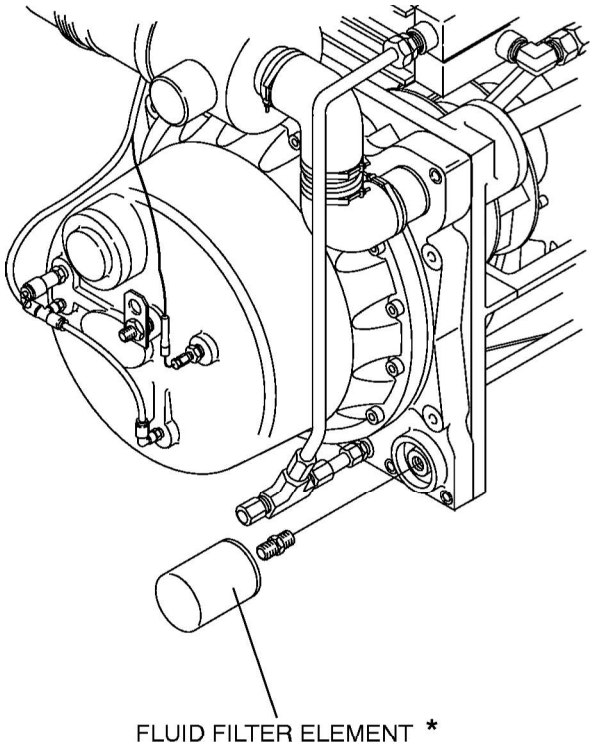


Figure 6-1: Fluid Filter (P/N 250026--982)

* Replacement Element Kit P/N 02250050--602

FLUID FILTER REPLACEMENT

Refer to *Figure 6-1*.

1. To prevent spillage and loss of reusable fluid, place a contaminate-free fluid receptacle beneath fluid drain valve and fluid filter.

2. Drain fluid by removing fluid drain valve cap at tee located beneath compressor (for complete fluid change, drain fluid from cooler).

3. Using a strap wrench, remove the old element and gasket.

4. Clean gasket seating surface.

5. Apply a light film of fluid to the new gasket.

6. Hand tighten new element until gasket is seated.

7. Continue tightening element an additional 1/2 to 3/4 turn.

8. Replace fluid. DO NOT OVERFILL.

9. Restart compressor and check for leaks.

AIR FILTER MAINTENANCE

Refer to *Figure 6-2*. Air filter (P/N 02250125-365) maintenance should be performed every 6 months or more frequent if conditions so require.

⚠ WARNING

Before doing compressor maintenance, disconnect compressor from power source and lock out power source. Isolate compressor from line pressure by closing recommended discharge shut--off valve and releasing all internal pressure from compressor.

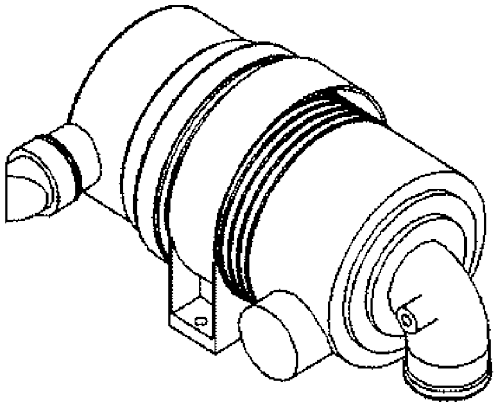


Figure 6-2: Air Filter 02250125-365

* Replacement Element Kit P/N 02250125-370

ELEMENT INSPECTION

1. Place a bright light inside the element to inspect for damage or leak holes. Concentrated light will shine through the element and locate any holes.
2. Inspect all gaskets and gasket contact surfaces of the housing. Should faulty gaskets be evident, correct the condition immediately.
3. If the clean element is to be stored for later use, it must be stored in a clean container.
4. After the element has been installed, inspect and tighten (if necessary) all air inlet connections prior to resuming operation.

SEPARATOR ELEMENT REPLACEMENT

Refer to *Figure 6-3*. The separator should be changed once a year, or as needed. Follow the procedure explained below for element replacement.

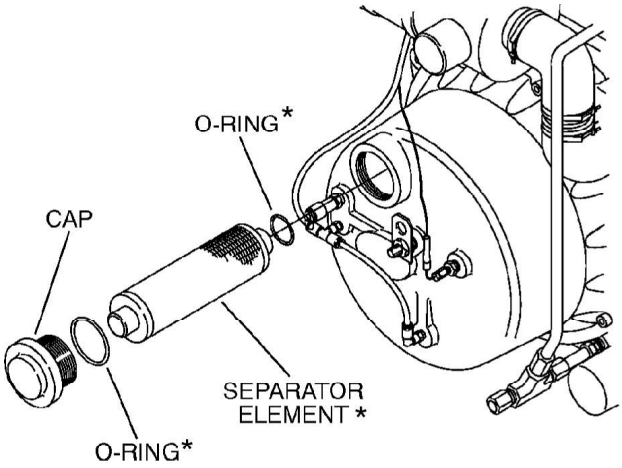


Figure 6-3: Separator Element

* Repair Kit P/N 02250050--604

⚠ WARNING

Before doing compressor maintenance, disconnect compressor from power source and lock out power source. Isolate compressor from line pressure by closing recommended discharge shut-off valve and releasing all internal pressure from compressor.

1. Insert a 100mm maximum length, 6mm diameter pin into the radially drilled hole in the separator cap. Loosen, unscrew counterclockwise and remove the cap.
2. Pull out the old element by gripping the end of the element with channel lock pliers or a similar tool.
3. Install new o-rings on separator cap and separator element filter and oil lightly to make installation easier.
4. Insert and push the new element in place.

5. Reinstall the cap. Hand tighten using a 100mm maximum length, 6mm diameter pin in the radially drilled hole.

DRIVE COUPLING INSTALLATION

Refer to *Figure 6-4*. For coupling installation the tools required will be one set of Allen wrenches. All ES-8 compressors are flange-mounted to the motor making them self-aligning, eliminating the need for alignment procedures. Proper hub separation is s hown in *Figure 6-4*.

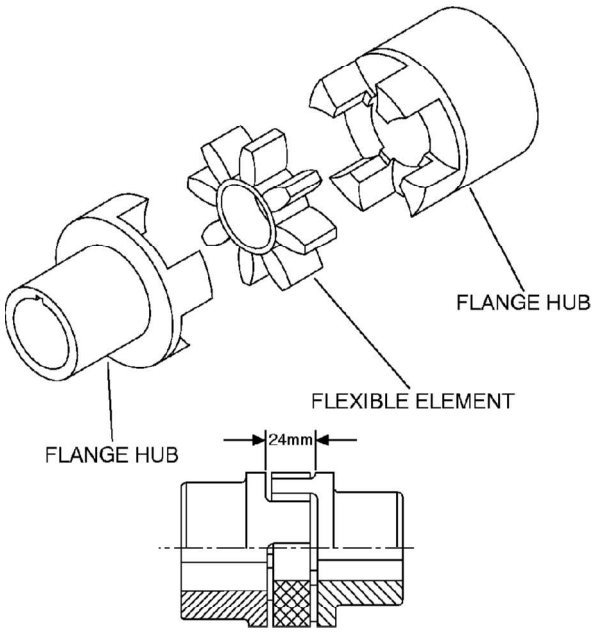


Figure 6-4: Hub Separation

CONTROL SYSTEM ADJUSTMENT

All components in the Control System are designed and manufactured to close tolerances to help eliminate any need for adjustments.

DANGER

DO NOT touch the electrical contacts, terminal or leads with any part of the body or any uninsulated metallic object. Severe electrical shock may occur.

PRESSURE VALVE ADJUSTMENT

If pressure valve adjustment is required the adjustment procedure below should be followed:

1. Start compressor.
2. Lower line pressure (P2) until machine goes on load.
3. Loosen hex nut on the regulator valve to adjust machine modulation. Adjust screw in or out until on load/off load modulation of compressor takes place.
4. Close service valve downstream from receiver tank. The pressure will increase depending on the regulator valve adjustment screw setting. Adjust screw until line pressure (P2) rises to the Supervisor II preprogrammed off load setting. Tighten hex nut.
5. Open service valve and observe correct on load/ off load modulation.

INLET CONTROL VALVE

Refer to *Figure 6-5*. The inlet control valve normal maintenance requires only the replacement of the o-rings. Use repair kit no. 02250050-614 and follow the procedure below for proper disassembly and assembly procedures.

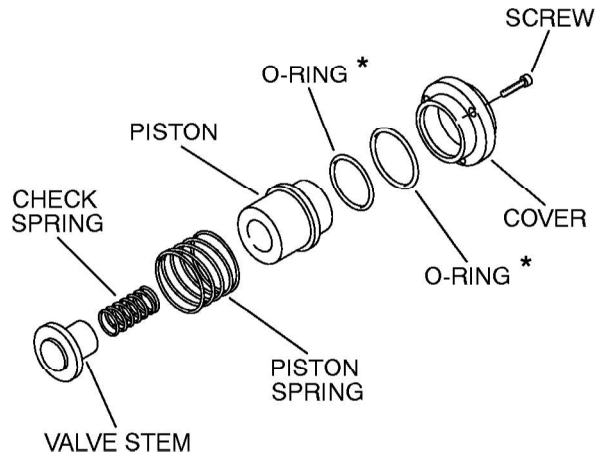


Figure 6-5: Inlet Control Valve

* Repair Kit P/N 02250050--614

Before doing compressor maintenance, disconnect compressor from power source and lock out power source. Isolate compressor from line pressure by closing recommended discharge shut-off valve and releasing all internal pressure from compressor.

⚠ WARNING

Assure that line pressure gauge on compressor indicates "ZERO" pressure before any work is done. Failure to comply can cause injury.

1. Remove the two (2) rear access panels which cover the inlet valve assembly.
2. Identify and tag the hoses connected to the blowdown valve and disconnect.
3. Remove the 3 capscrews from the inlet valve cover.
4. Remove cover (with blowdown valve attached) and o-rings.
5. Remove piston, piston spring, check spring and valve stem.
6. Inspect and clean all parts.
7. Assemble valve stem, check spring, piston spring and piston into inlet valve housing.
8. Lubricate new o-rings and install the inner and outer o-rings onto cover.
9. Position cover in inlet valve housing and install capscrews. Tighten capscrews to 6 ft.-lbs. (8.1Nm).
10. Reconnect the hoses to the appropriate fittings on the valve.
11. Assemble two (2) rear access panels on the compressor.
12. Start compressor and check for leaks.

6.7 MAINTENANCE RECORD

Model No.:			Serial No.	
Date	**Hourmeter**	**Maintenance Performed**	**Work Performed By**	**Authorized By**

Section 7
TROUBLESHOOTING

7.1 INTRODUCTION

The information contained in the Troubleshooting chart is based upon both the actual applied situations and extensive testing at the factory. It contains symptoms and usual causes for the described problems. However DO NOT assume that these are the only problems that may occur. All available data concerning the trouble should be systematically analyzed before undertaking any repair or component replacement procedures.

A detailed visual inspection is worth performing for almost any problems which may prevent unnecessary damage to the compressor. Always remember to:

a. Check for loose wiring.

b. Check for damaged piping.

c. Check for parts damaged by heat or an electrical short circuit, usually apparent by discoloration or a burnt odor.

Should your problem persist after making the recommended check, consult your nearest Sullair representative or the Sullair Corporation factory.

Table 7-1: Controller Troubleshooting Guide

MESSAGE	PROBABLE CAUSE	REMEDY
T1 HI Message	Discharge Temperature Exceeded 225°F (107°C) for Pre-Alarm	
	Discharge Temperature Exceeded 235°F (113°C) for Shutdown	
	Ambient temperature exceeded 105°F (41°C)	Improve local ventilation (i.e., remote intake of process and/or cooling air.
	Fluid Level in Sump is Too Low	Check/correct fluid level.
	Thermal Valve Malfunctioned	Check/replace thermal valve.
	Cooler Fins are Dirty	Clean cooler fins.
	Water Flow is Low (water--cooled packages only)	Check cooling water supply (i.e., closed valves).
	Water Temperature is High (water-cooled packages only)	Increase water flow, lower water temperature.
	Cooler is Plugged (water--cooled packages only)	Clean tubes and/or shell -- if tube plugging persists, provide cleaner water.
	Temperature RTD Malfunction	Check connections from RTD. If adequate, replace RTD.

Table 7-1: Controller Troubleshooting Guide

MESSAGE	PROBABLE CAUSE	REMEDY
P1 HI Message	Discharge Pressure Exceeded Shutdown Level Because:	
	P1 MAX--3psi (0.2 Bar) Exceeded for Pre--Alarm	
	P1 MAX Exceeded for Shutdown	
	Unloading Device (i.e., Blowdown Valve, Inlet Valve) Failed to Operate	Check operation of unloading device.
	Pressure Regulator Maladjusted	Check operation of pressure regulator.
	Solenoid Valve Failed to Operate	Check operation of solenoid valve.
	Control Air Signal Leaks	Check tubework feeding control signal for leaks.
	Control Air Signal Filter Clogged	Service filter assembly.
SEP MNTN Message	Plugged Separator	Replace separator elements.
	dP1 > 10 psi	Check P1 & P2 pressure transducers.
COMPRESSOR DOES NOT BUILD FULL DISCHARGE PRESSURE	Air Demand Exceeds Supply	Check air service lines for open valves or leaks.
	Inlet Air Filter Clogged	Check for maintenance message on Supervisor display. Inspect and/or change element.
	Inlet Valve Not Fully Open	Check actuation and butterfly disc position.
	Pressure Sensor and/or Connections at Fault	Check connections from transducer. If adequate, replace transducer.
LINE PRESSURE RISES ABOVE UNLOAD SETTING	Pressure Sensor P2 at Fault	Check connections from transducer. If adequate, replace transducer.
	Unloading Device (i.e., Blowdown Valve, Inlet Valve) Failed to Operate	Check operation of unloading device.
LINE PRESSURE RISES ABOVE UNLOAD SETTING	Solenoid Valve Failed to Operate	Check operation of solenoid valve.
	Control Air Signal Leaks	Check tubework feeding control signal for leaks.
	Control Air Signal Filter Clogged	Service filter assembly.
EXCESSIVE FLUID CONSUMPTION	Clogged Return Line Strainer or Orifice	Clean strainer -- screen and o--ring replacement kit available. Clean orifice.
	Damaged or Improperly Installed O-rings on Separator Elements	Inspect separator elements and gaskets. Replace if damaged.
	Fluid System Leaks	Check tube/pipework for leaks.
	Fluid Level Too High	Drain excess fluid.
	Excessive Fluid Foaming	Drain and change fluid.

8.1 PROCEDURE FOR ORDERING PARTS

Parts should be ordered from the nearest Sullair Representative or the Representative from whom the compressor was purchased. If for any reason parts cannot be obtained in this manner, contact the factory directly at the address, phone numbers or fax numbers below.

When ordering parts always indicate the Serial Number of the compressor. This can be obtained from the Bill of Lading for the compressor unit or from the Serial Number Plate located on the compressor unit.

The genuine Sullair service parts listed meet or exceed the demands of this compressor. Use of replacement parts other than those approved by Sullair Corporation may lead to hazardous conditions over which Sullair Corporation has no control. Such conditions include, but are not limited to, bodily injury and compressor failure.

SULLAIR CORPORATION	**SULLAIR ASIA, LTD.**	**SULLAIR EUROPE, S.A.**	**CHAMPION COMPRESSORS, LTD.**
3700 East Michigan Boulevard Michigan City, Indiana 46360 U.S.A www.sullair.com Telephone: 1-800-SULLAIR (U.S.A. only) Fax: 219-874-1273 **CUSTOMER CARE for PARTS and SERVICE** 1-888-SULLAIR (785-5247) 219-874-1835	Sullair Road, No. 1 Chiwan, Shekuo Shenzhen, Guangdong PRV. PRC POST CODE 518068 Telephone: 755-6851686 Fax: 755-6853473 www.sullair-asia.com	Zone Des Granges BP 82 42602 Montbrison, France Telephone: 33-477968470 Fax: 33-477968499 www.sullaireurope.com	Princess Highway Hallam, Victoria 3803 Austrailia Telephone: 61-3-9796-4000 Fax: 61-3-9703-8053 www.championcompressors.com.au

8.2 RECOMMENDED SERVICE PARTS LIST

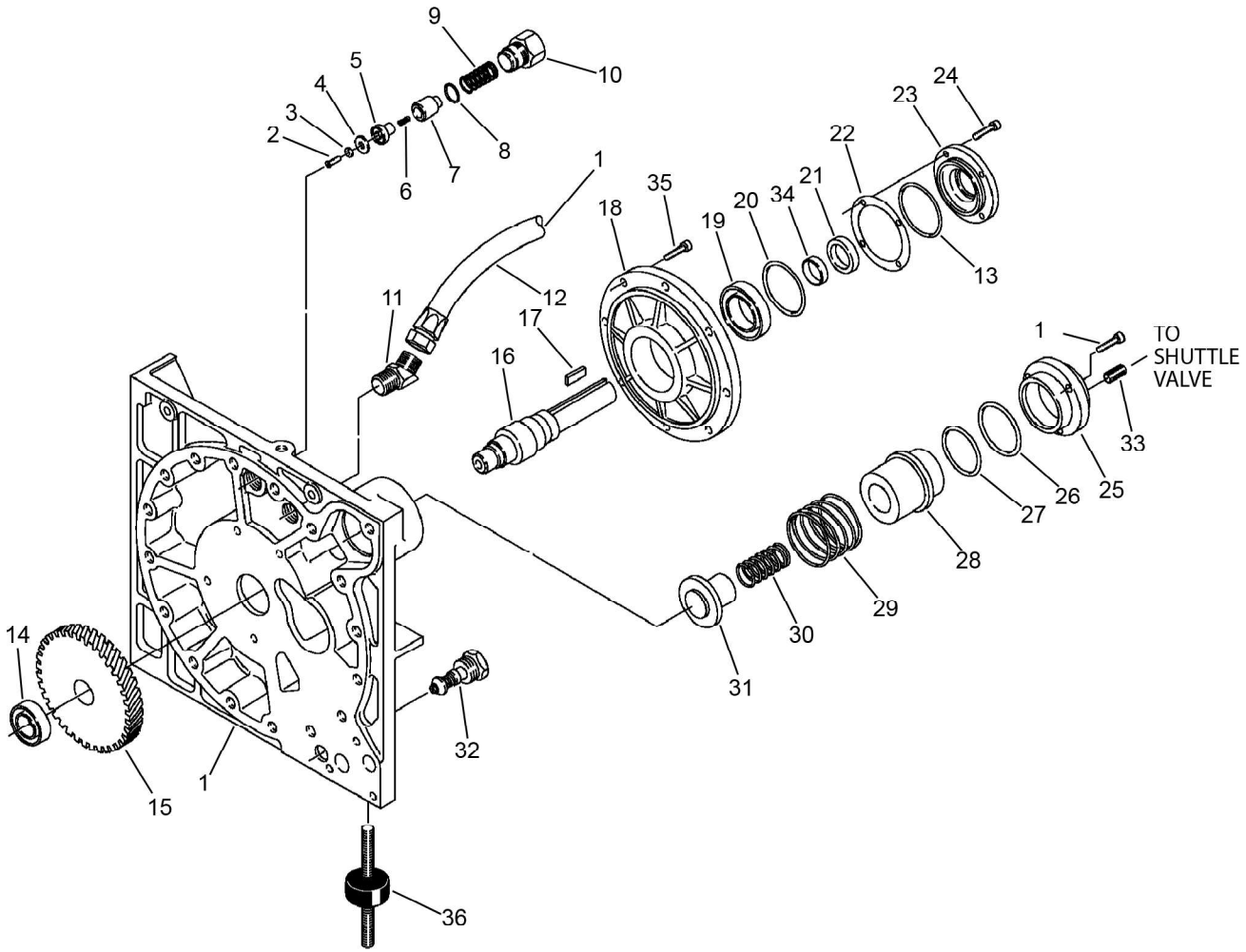
KEY NO.	ORDER PART NO.	QTY	DESCRIPTION	NOTE
			KITS	
1	02250050-602	1	repair kit for fluid filter 250026--982	
2	02250050-604	1	repair kit for air/fluid separator	
3	02250125-370	1	repair kit for air filter 02250125-365	
4	02250061-961	1	repair kit for shaft seal	
5	001932-005	1	tool kit, shaft seal	
6	02250078-204	1	replacement element for thermal valve	
7	02250157-500	1	replacement kit for coil 02250157-502	
8	02250049-634	1	blowdown valve	
9	250019-453	1	repair kit for pressure regulator valve 250017-280	
10	02250050-614	1	repair kit for inlet control valve	
11	02250050-612	1	repair kit for minimum pressure/check valve	
			FLUID	
12	250022-669	1	fluid, Sullube (5 gal./19 liter)	

⚠ CAUTION

Mixing of other lubricants within the compressor unit will void all warranties.

**PLEASE NOTE: WHEN ORDERING PARTS,
ALWAYS INDICATE SERIAL NUMBER OF COMPRESSOR**

8.3 INLET CONTROL, SEAL/DRIVE GEAR AND PARTS



8.3 INLET CONTROL, SEAL/DRIVE GEAR AND PARTS

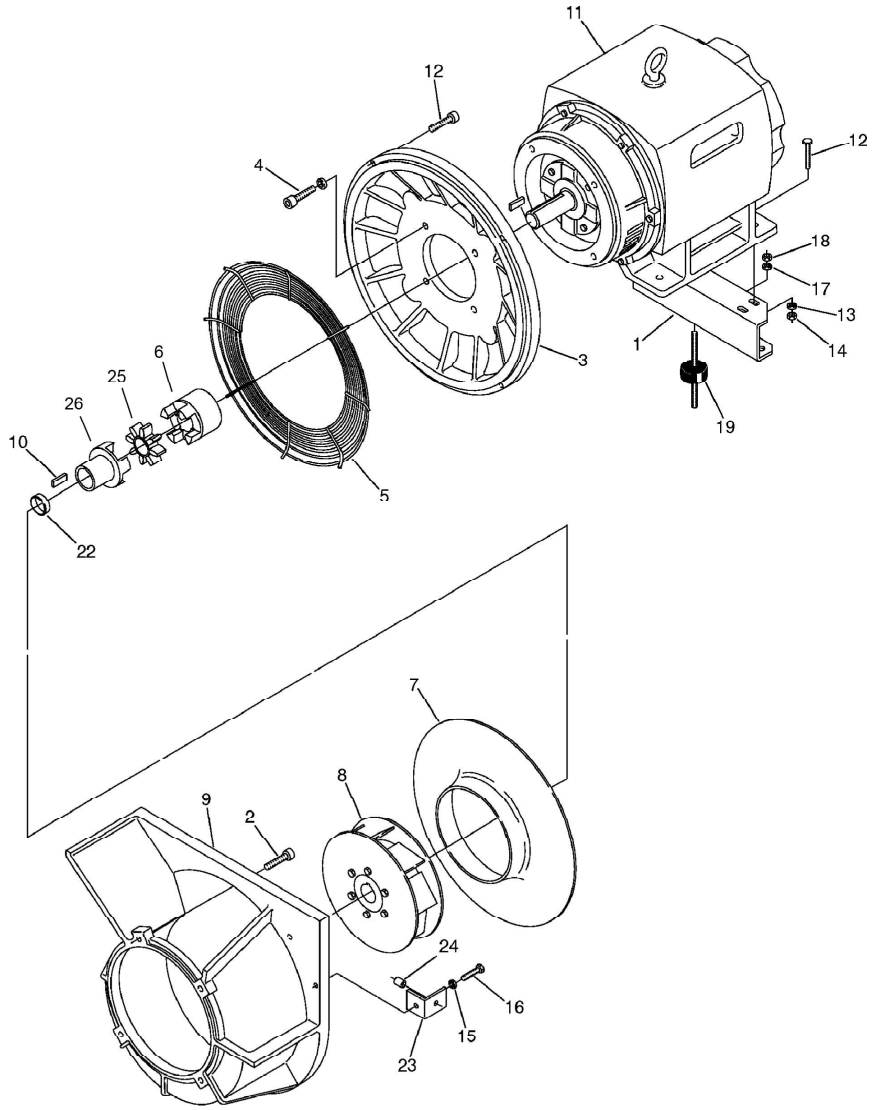
KEY NO.	PART NO.	QTY	DESCRIPTION	NOTE
1	02250152-847	1	housing, drive	
2	865006--012	1	screw, flat hd M6 x 12MM	
3	02250048--229	1	washer	
4	02250047--162	1	seat, minimum pressure valve	(I)
5	02250047--163	1	stem, minimum pressure valve	
6	02250047--296	1	spring, minimum pressure valve	(I)
7	02250048--908	1	piston, minimum pressure valve	
8	826502--124	1	o--ring, viton 1 1/4" x 3/32"	(I)
9	02250047--161	1	spring, minimum pressure valve	
10	250035--587	1	cap, minimum pressure valve	
11	02250046--908	1	elbow, 45 37FL 1.312"	
12	02250107-919	1	hose, medium pressure 1" x 18"	
13	826502--152	1	o--ring viton 3 1/4" x 3/32"	(II)
14	499080--206	1	bearing	
15		1	gear consult factory	
16	02250050--540	1	shaft, input	
17	865210--070	1	key, 10 x 8 x 70	
18	02250055--887	1	housing, cover drive	
19	499080--210	1	bearing	
20	826502--152	1	o--ring, viton 3 1/4" x 3/32"	(II)
21	02250133-494	1	seal	(II)
22	026397	1	shim, set 3.5 x 3.0	
23	250035--254	1	cover, shaft seal	
24	829308--020	7	capscrew, M8 x 20MM	
25	02250119-254	1	cover, inlet control	
26	826502-235	1	o--ring, viton 3" x 3/32"	
27	826502--226	1	o--ring, viton 2" x 1/8"	
28	02250048--909	1	piston, inlet valve	
29	250042--087	1	spring, inlet piston	
30	250042--088	1	spring, inlet check	
31	250035--584	1	stem, inlet valve	
32	02250078-204	1	element, thermal valve	
33	823204--000	1	nipple, pipe 1/4" x close	
34	02250048--317	1	sleeve, wear	(II)
35	829312--030	8	screw, socket M12 x 30MM	
36	02250047--047	2	isolator, vibration (optional)	

(I) Formaintenance on minimum pressure valve, order kit no. 02250050--612 (Note: Items not sold separately).

(II) For maintenance on ES--8 shaft seal, order tool kit part numbers 02250061--961 and 001932--005.

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR

8.4 MOTOR, COUPLING, FAN AND PARTS

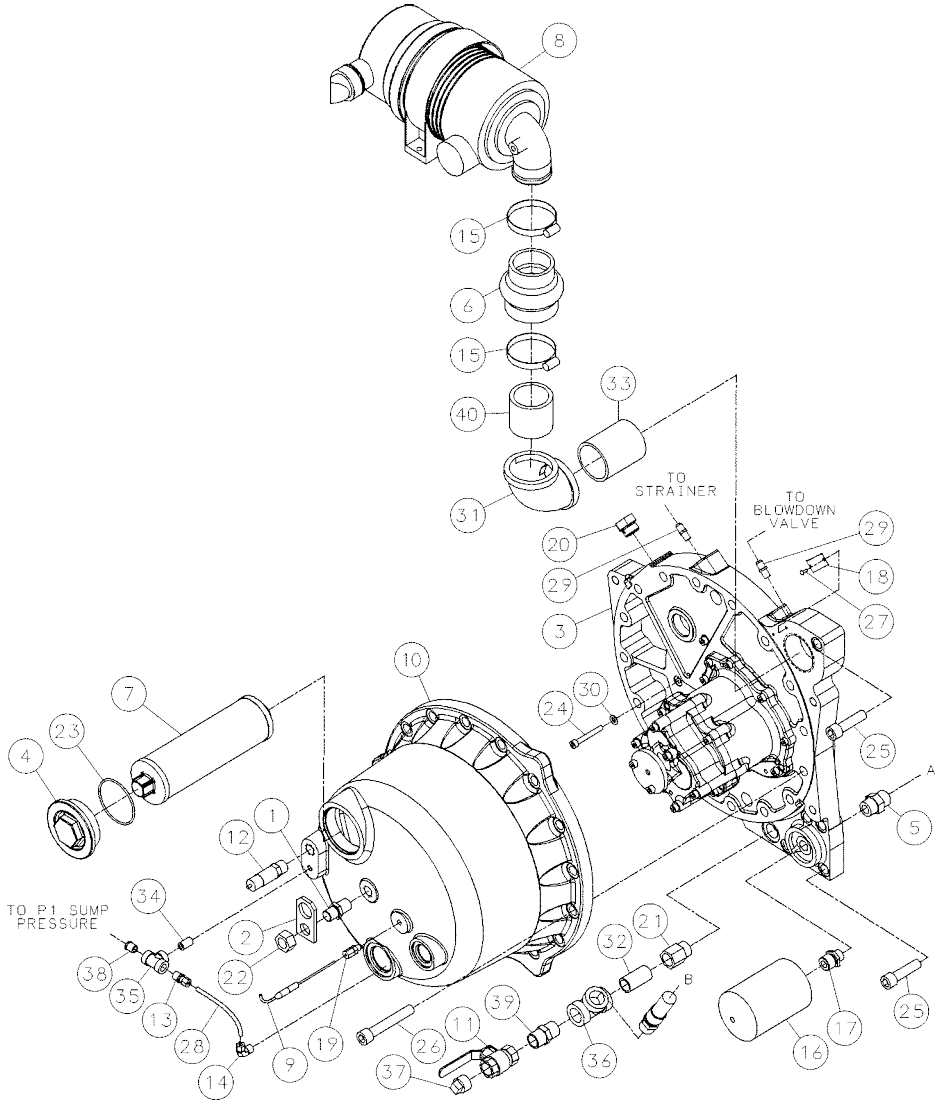


8.4 MOTOR, COUPLING, FAN AND PARTS

KEY NO.	PART NO.	QTY	DESCRIPTION	NOTE
1	02250121-285	1	support, motor (30 HP)	
2	829312--030	4	capscrew, M12 x 30MM	
3	02250045--833	1	housing, adaptor motor (30 HP)	
4	829108-125	4	capscrew, hex GR8 1/2"--13 x 1 1/4"	
5	02250055--600	1	guard, fan	
6	02250077-586	1	coupling, 1 5/8"	(I)
7	02250046--603	1	Sventuri, fan inlet (25,30 HP)	
8	02250050--539	1	fan, backward inclined wheel	(I)
9	02250075-477	1	housing, fan	
10	865210--040	1	key, 10 x 8 x 40	
11	consult factory	1	motor	
12	829312--040	6	screw, socket M12 x 40MM	
13	865712--370	2	washer, 12MM	
14	825912--175	2	nut, M12 x 1.75	
15	865406-125	1	washer, 8MM	
16	828008--016	1	capscrew, 8MM x 16MM	
17	865712--370	1	washer, 12MM	
18	825912--175	1	nut, hex M12 x 1.75	
19	02250047--047	1	isolator, vibration 75MM x 50MM (optional)	
20	846500--125	1	elbow, 45 liq--tite 1 1/4" (not shown)	
21	847006--040	2	washer, conduit red. 1 1/2"--1" (not shown)	
22	02250049--159	1	spacer, shaft (30 HP)	
23	02250121-070	1	angle, support cooler	
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR				

KEY NO.	PART NO.	QTY	DESCRIPTION	NOTE
24	02250047--083	1	insert, 6MM	
25	02250077-588	1	element	
26	02250077-587	1	coupling, 38mm	
(I) Pre--Heating required before assembly.				
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR				

8.5 INLET FILTER, COMPRESSOR HOUSING/SUMP AND PARTS



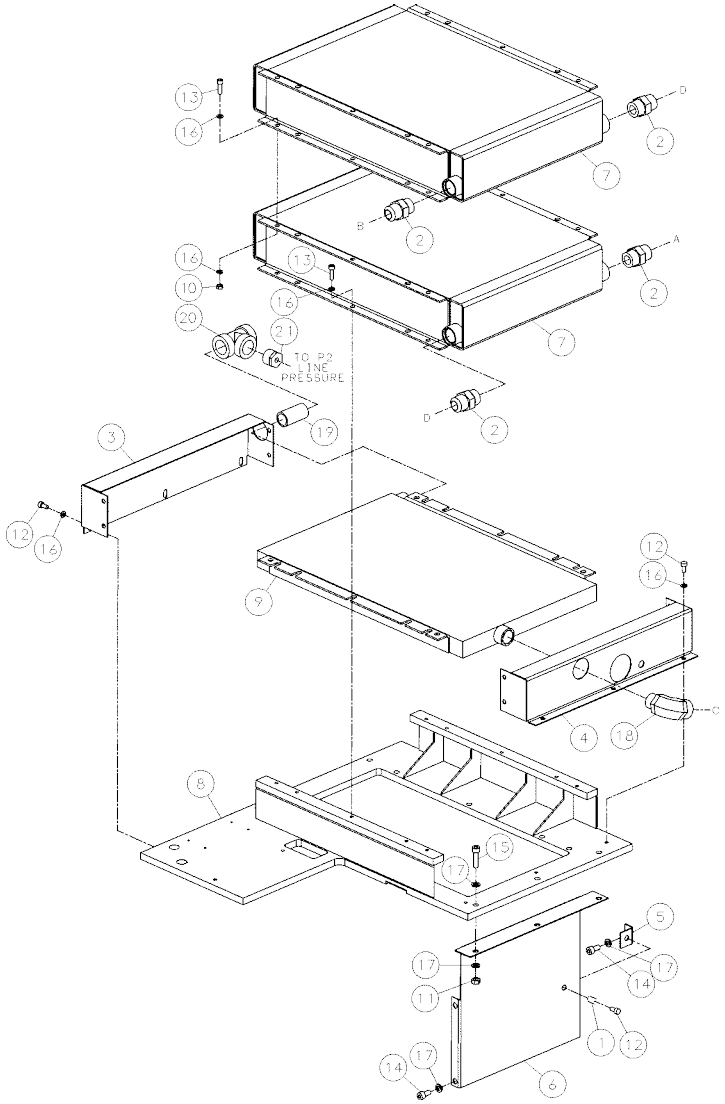
02250170-953

8.5 INLET FILTER, COMPRESSOR HOUSING/SUMP AND PARTS

KEY NO.	PART NO.	QTY	DESCRIPTION
1	02250054-857	1	PLUG,1/2-14 NPT TO M20 THREAD
2	02250054-858	1	BAIL,LIFTING E8E
3	02250055-933	1	UNIT, COMPRESSOR ASSY
4	02250057-182	1	CAP SEPARATOR ELEMENT ES-8
5	02250071-022	1	ADPT, STRT THRD 1-1/16-12M X 1-1/16 37DEG M
6	02250103-227	1	HOSE,HUMP RED 3 X 2.5” X4.25LG
7	02250106-789	1	SEPARATOR, ELEMENT E8E
8	02250125-365	1	FLTR,AIR 6”(PLASTIC) W/MTG &
9	02250155-175	1	P,RTD 100 OHM PLAT 3.5”X 6FT
10	02250169-360	1	HSG, BELL P8 MACH
11	47118	1	VALVE, BALL 3/4” SERVICE
12	250006-938	1	VALVE,PRESSURE RELIEF 200 PSIG
13	250018-428	1	CONN, 1/4T X 1/4 NPT STR
14	250018-430	1	ELBOW, 90 1/4T PLS X 1/4 NPT M
15	250018-550	2	CLAMP, HOSE 2-13/16 TO 3-3/4”
16	250025-524	1	ELEMENT, FLUID FILTER (REF 250025-523 TAB)
17	250025-914	1	ADAPTER, OIL FLTR .970-20 UNEF
18	250026-859	1	NPL,SN-ID
19	250028-635	1	FITTING, COMPRESS ADJ
20	250039-359	1	PLUG, E6E OIL FILL HX HD1 1/16
21	811506-075	1	ADAPTER, FEMALE PIPE 3/4 X 3/4
22	825920-250	1	NUT, HEX METRIC M20 X 2.5
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR			

KEY NO.	PART NO.	QTY	DESCRIPTION
23	826502-235	1	O-RING, VITON 3 1/8 X 1/8”
24	829308-060	3	SCRW, SOC ISO 4762 M8 X 60MM
25	829316-060	4	SCRW, SOC ISO 4762 M16 X 60MM
26	829316-100	16	SCRW, SOC ISO 4762 M16 X 100MM
27	839608-060	2	SCREW, DRIVE RD HD #8 X 3/8
28	842215-004	1	HOSE, NYLON 1/4”
29	860104-012	2	CONN, 37 FL/MPT PLTD 1/4 X 1/8
30	865408-170	3	WASHER, METRIC-ISO7089- 8
31	866215-100	1	ELBOW, PIPE 90 DEG PLT 2 1/2”
32	866312-020	1	NIPPLE, PIPE PLTD 3/4 X 2
33	866340-035	1	NIPPLE, PIPE PLTD 2 1/2 X 3 1/2
34	866404-000	1	NIPPLE, PIPE-XS PLT 1/4 X CL
35	866815-010	1	TEE, PIPE 150# PLT 1/4
36	866815-030	1	TEE, PIPE 150# PLT 3/4
37	866900-030	1	PLUG, PIPE 3/4” 3000# STL PLT
38	867100-005	1	BUSHING, RED PLTD 1/4 X 1/8
39	868512-075	1	NIPPLE, PIPE-HX PLTD 3/4 X 3/4
40	873640-000	1	NIPPLE, HALF-XS 2 1/2 X CL
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR			

8.6 COMPRESSOR COOLER SYSTEM AND PARTS

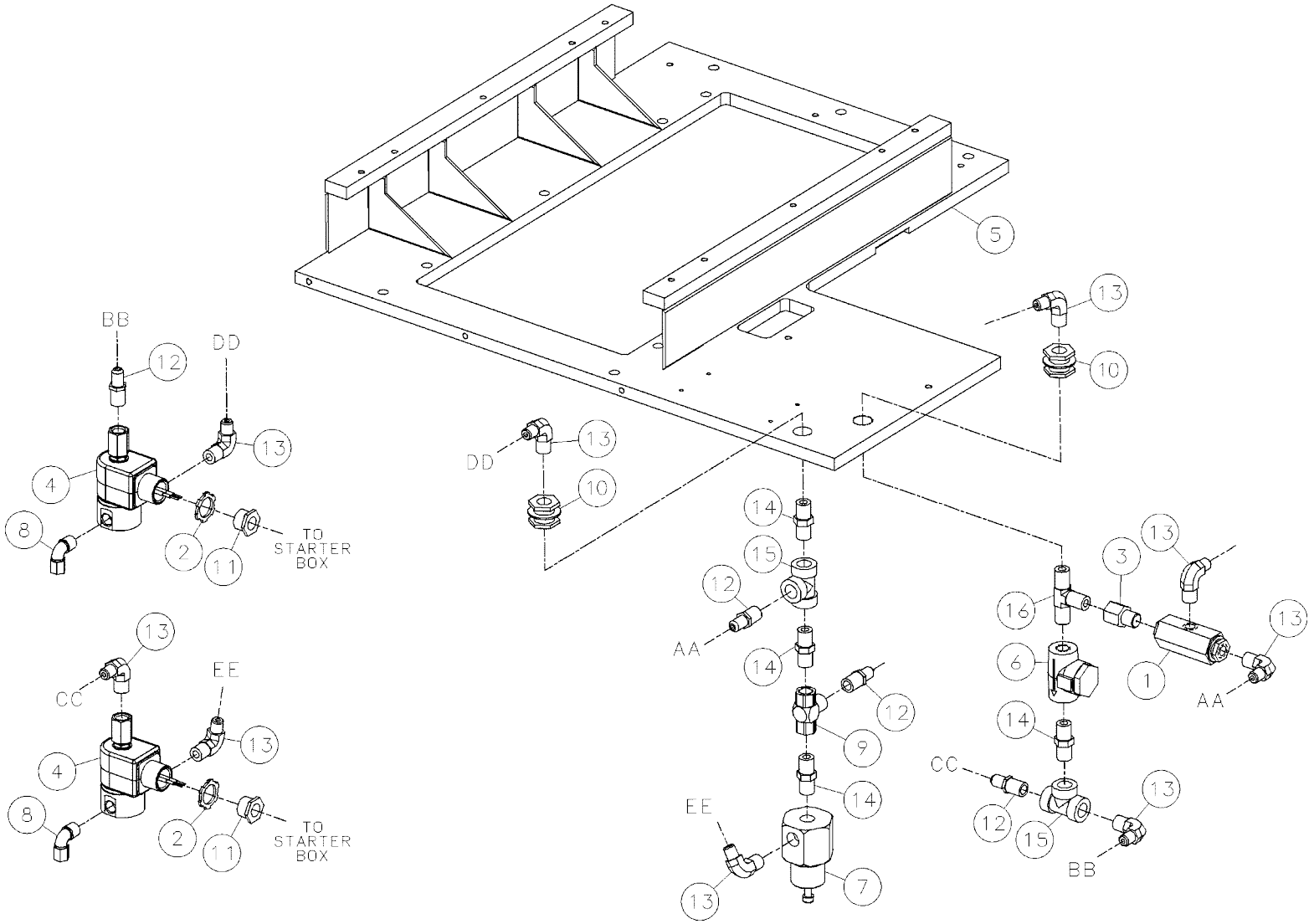


8.6 COMPRESSOR COOLER SYSTEM AND PARTS

KEY NO.	PART NO.	QTY	DESCRIPTION	NOTE
1	02250047-083	1	INSR, MM THRD BLIND	
2	02250071-022	4	ADPT, STRT THRD 1-1/16-12M X 1-1/16 37DEG M	
3	02250075-426	1	MBR, R.H. SHROUD CLR SUPPORT	
4	02250075-427	1	MBR, L.H. SHROUD CLR SUPPORT	
5	02250121-070	1	ANL,SUPT-COOLERS ES8 GE SPCL	
6	02250121-071	1	CVR,ACS-COOLERS ES8-30 GE SPLC	
7	02250149-237	2	CLR,OIL ES8-30HP W/RLF FINS	
8	02250170-956	1	SUPT,CLR ASSY ES8 SHOVEL PKG	
9	250040-092	1	AFTERCOOLER, 8E	
10	825906-100	10	NUT, HEX METRIC M6 X 1.0	
11	825908-125	3	NUT, HEX METRIC M8 X 1.25	
12	829306-012	7	SCRW, SOC ISO 4762 M6 X 12MM	
13	829306-020	20	SCRW, SOC ISO 4762 M6 X 20MM	
14	829308-016	3	SCRW, SOC ISO 4762 M8 X 16MM	
15	829308-030	3	SCRW, SOC ISO 4762 M8 X 30MM	
16	838806-160	36	WASHER, SPR LOCK-METRIC PLTD M6	
17	838808-200	9	WASHER, SPR LOCK-METRIC PLTD M8	
18	860216-075	1	ELBOW, 37FL 90M 1 X 3/4	
19	866312-020	1	NIPPLE, PIPE PLTD 3/4 X 2	
20	866815-030	1	TEE, PIPE 150# PLT 3/4	
21	868903-005	1	BUSHING, RED HEX PLTD 3/4 X 1/8	

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR

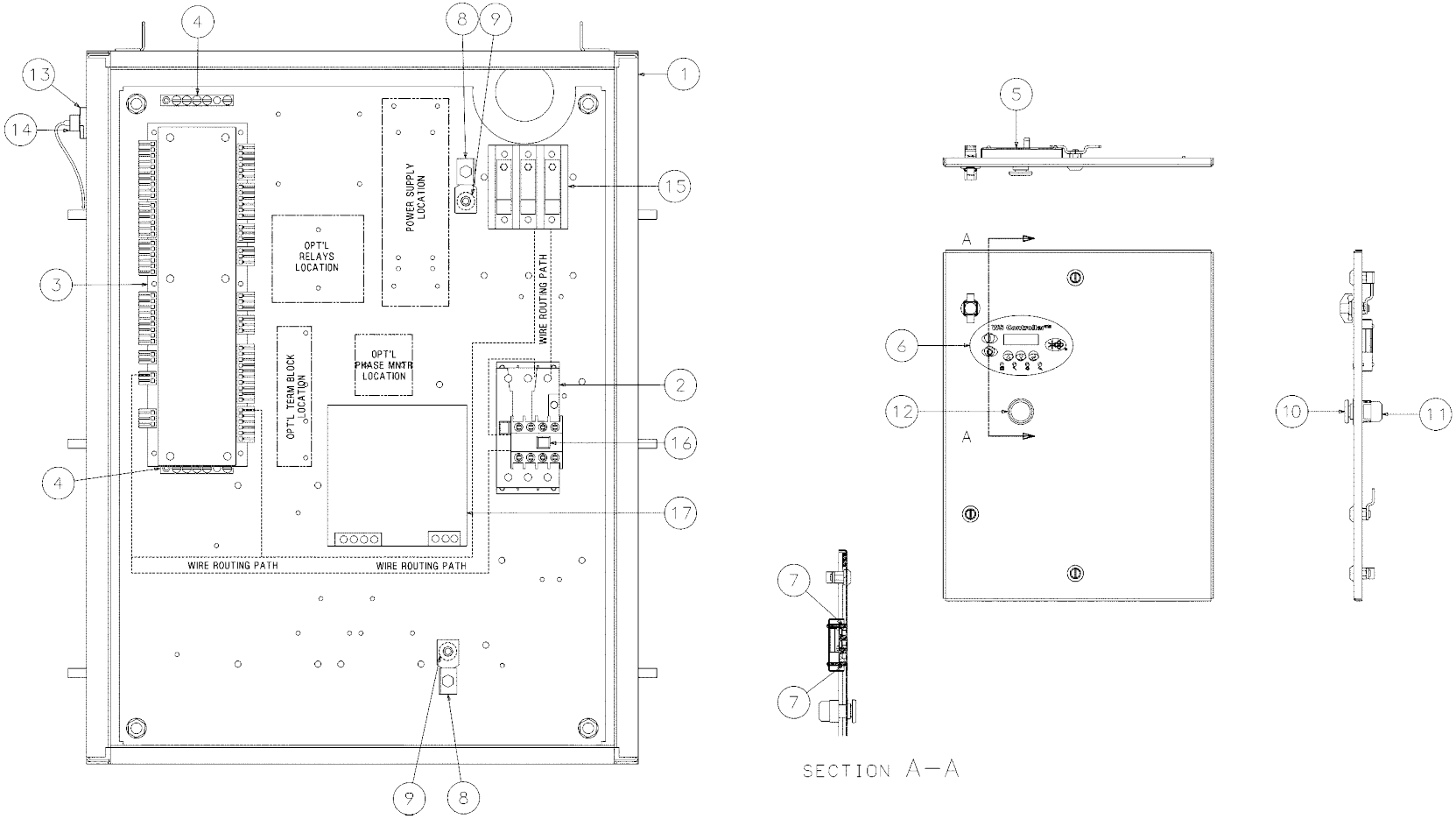
8.7 PNEUMATIC CONTROL SYSTEM AND PARTS



8.7 PNEUMATIC CONTROL SYSTEM AND PARTS

KEY NO.	PART NO.	QTY	DESCRIPTION
1	02250049-634	1	VLV,BLWDN 1/4 NPT HI PRS
2	02250071-362	2	LOCKNUT, N4 CONDUIT SEALING
3	02250118-589	1	ORF, .125 .25 FNPT X .25 MNPT
4	02250155-714	2	VLV,SOL 3WNO 1/4 250# 24VDC
5	02250170-956	1	SUPT,CLR ASSY ES8 SHOVEL PKG
6	241771	1	STRAINER, V-TYPE 300PSIX1/4
7	250017-280	1	VALVE, PRESSURE REGULATOR
8	250018-430	2	ELBOW, 1/4” TUBE X 1/4” NPT
9	408893	1	VALVE, SHUTTLE 1/4” (DBL CHK)
10	841500-004	2	BULKHEAD, PIPE 1/4” NPT
11	847815-050	2	NIPPLE, CHASE COND 1/2
12	860104-025	4	CONN, 37 FL/MPT PLTD 1/4 X 1/4
13	860204-025	9	ELBOW, 37FL 90M 1/4 X 1/4
14	860404-025	4	NIPPLE, PIPE-HEX 1/4 X 1/4
15	866815-010	2	TEE, PIPE 150# PLT 1/4
16	869825-025	1	TEE, MALE PIPE BRASS 1/4
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR			

8.8 CONTROL STARTER—MFV



8.8 CONTROL STARTER—MFV

KEY NO.	PART NO.	C-H P/N	QTY	DESCRIPTION
1	02250169-781	-	1	SPEC, ENCL P8/10 19" X 24.5" X 7
2	02250167-818	XTCE065D00TD	1	CNTOR, 65A 3P 24VDC 1NO XT
3	02250154-052	-	1	CTL, I/O MOD WS 24VDC
4	02250101-721	25-10467	2	BAR, GROUND 5 POST
5	02250154-051	-	1	CTL, DISPLAY WS
6	02250154-359	-	1	DECAL, MICROPROCESSOR OVERLAY
7	02250161-759	-	4	SPACER, 6.35DIA X 10.4 LONG ALUM
8	849215-025	80-3132	8	LUG, GROUND
9	838405-034	-	2	WASHER, LOCK EXTERNAL TOOTH 5/16"
10	02250085-504	E22LLB2	1	SW, PB OPER RED40MM PUSH-TWIST
11	250027-125	E22BF1	1	BLOCK, CONTACT 1 N.C.
12	02250081-473	E22VA2	1	NPL, YELLOW RING 45MM E-STOP
13	02250159-547	-	1	RCPT, S4 PROGRAM PORT NEMA 6P
14	02250159-549	-	1	CAP, S4 PROGRAM PORT NEMA 6P
15	02250145-195	1423553	1	BLK, POWER DISTRIBUTION 175A
16	02250167-849	XTCEXFBG11	1	BLK, AUX CONT 1NO 1NC FRONT
17	02250182-565	-	1	MDL, LINE REACTOR 480V 3.4A

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR

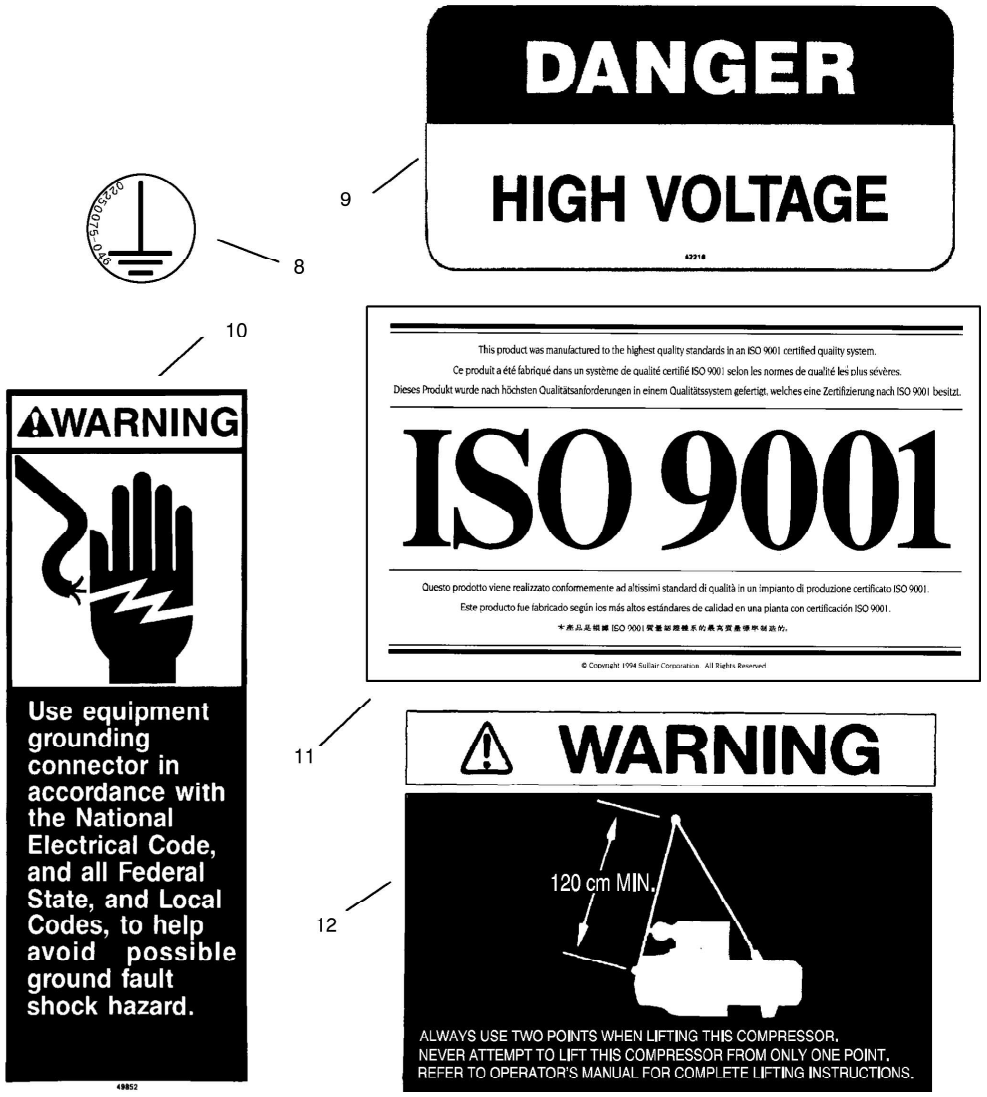
Torque Values (in/lbs)			
SULLAIR P/N	DESCRIPTION	LUG	TERMINALS
02250167-818	CNTOR, 65A 3P 24VAC 1NP XT	29.2	10.6

8.9 DECAL GROUP

8.9 DECAL GROUP (CONTINUED)

KEY NO.	PART NO.	QTY	DESCRIPTION	NOTE
1	49685	1	sign, warning -- compressor fluid fill cap	
2	49850	1	sign, danger electrocution	
3	407408	1	sign, warning -- hot surfaces	
4	41065	1	decal, warning auto start	
5	250027--935	1	decal, danger breath air	
6	250003--144	1	sign, warning “food grade" lube	
7	250021-564	1	decal, rotation direction	
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR				

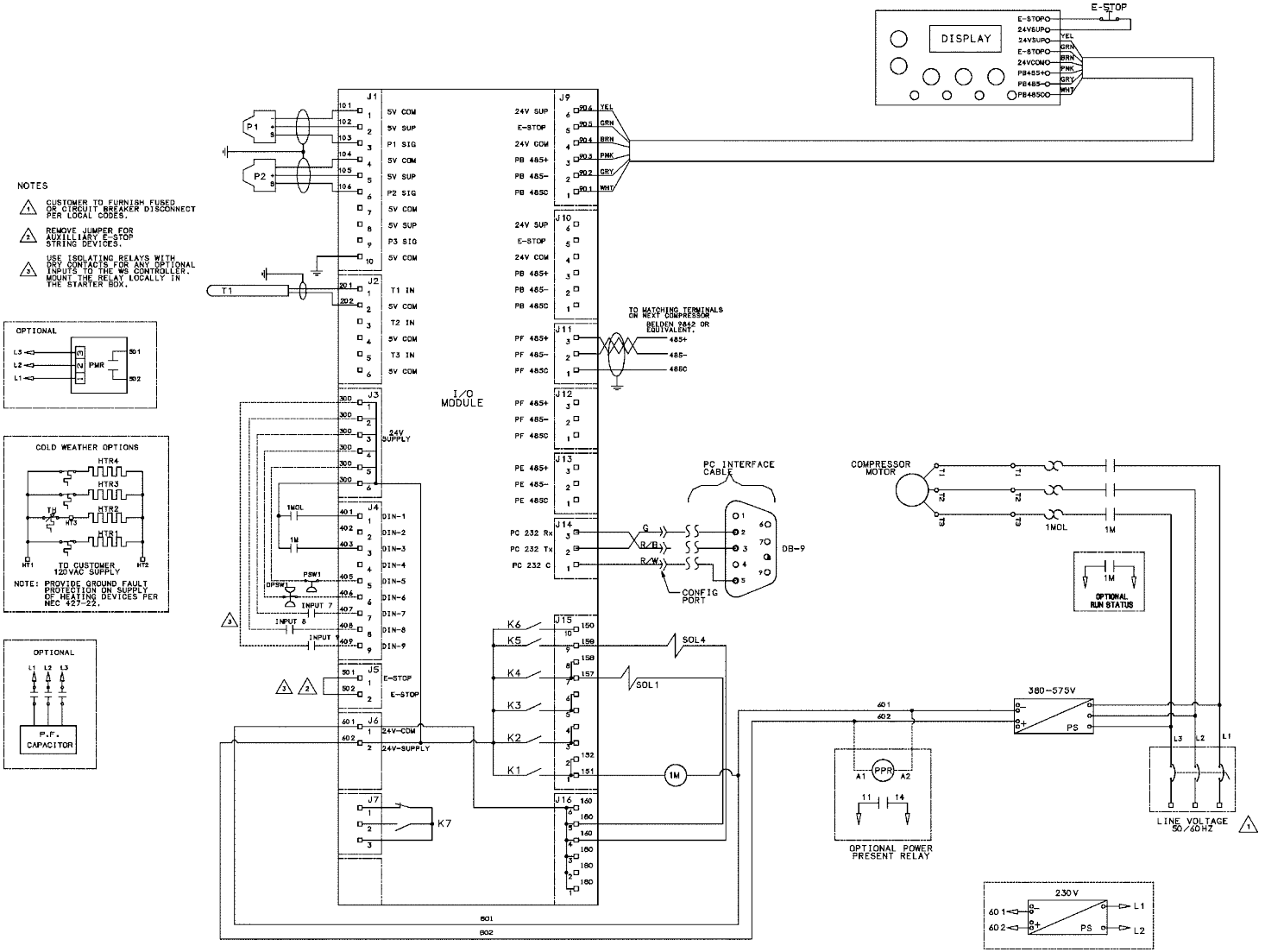
8.9 DECAL GROUP (CONTINUED)



8.9 DECAL GROUP

KEY NO.	PART NO.	QTY	DESCRIPTION	NOTE
8	02250075-046	2	decal, earth ground	
	02250075-045	1	decal, protective earth ground (not shown)	
	02250075-540	1	decal, PE designation (not shown)	
9	42218	1	decal, danger hi voltage	
10	49852	1	sign, warning ground fault	
11	02250059-288	1	decal, ISO 9001	
12	02250055-510	1	decal, warning lift	
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR				

8.10 WIRING DIAGRAM—FULL VOLTAGE (STANDARD)



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Zuo Pao Tai Road, No. 1
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Hallam, Victoria 3803
Australia
Telephone: 61-3-9703-8000
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