SULLAIR

ROTARY SCREW AIR COMPRESSOR

ES–6 Series

SPECIAL

4.1 KW

OPERATOR'S MANUAL AND PARTS LIST

KEEP FOR FUTURE REFERENCE

Part Number 02250111–097

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OPERATOR IS REQUIRED TO READ ENTIRE INSTRUCTION MANUAL

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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

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 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 exceeding13mm 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 23m of hose in runs of air hose exceeding13mm 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 sump (receiver) 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. Use air at pressures less 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 also clothing away from couplings, 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.

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.

2.1 INTRODUCTION

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

Compared to 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.

2.2 DESCRIPTION OF COMPONENTS

Refer to Figure 2–1. The components and assemblies of the ES–6 Series air compressor are clearly shown. The complete compressor consists of an **encapsulated compressor system**, **inlet system**, **cooling system** and **control system**.

The compact design of the ES–6 Series air compressor provides easy access to all serviceable components.

2.3 ENCAPSULATED COMPRESSOR SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 2–2. The encapsulated compressor includes compressor unit, fluid management system, and motor section. 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 will 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.

FLUID MANAGEMENT SYSTEM

The fluid management system consists of a multi–chambered **primary/secondary separator**, **the final air/fluid separator element**, **cooler bypass group** 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. Then the compressed air reaches the separator, where the finest fluid drops and mist are separated.

MOTOR/DRIVE SECTION

The motor/drive section consists of a squirrel cage induction motor and integrated drive gearing which is separated from the motor by a replaceable shaft seal.

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

1. Maintain a minimum sump pressure of 4.1 bar under full load operation to help assure adequate fluid pressure.
2. Act as a check valve to isolate the compressor from the system at shutdown or unload.

2.4 COMPRESSOR COOLING SYSTEM, FUNCTIONAL DESCRIPTION

The compressor cooling system consists of a **fluid cooler**, **fan** and **cooler shroud**.

The fan is mounted on the motor's shaft end opposite the compressor. Air is drawn over the motor as well as through the cooler. The air provides motor cooling and removes compression heat from the fluid.

2.5 AIR INLET SYSTEM, FUNCTIONAL DESCRIPTION

The compressor inlet system consists of a **dry–type air filter** and an **air 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.

Section 2
DESCRIPTION

Figure 2–1 Description of Components

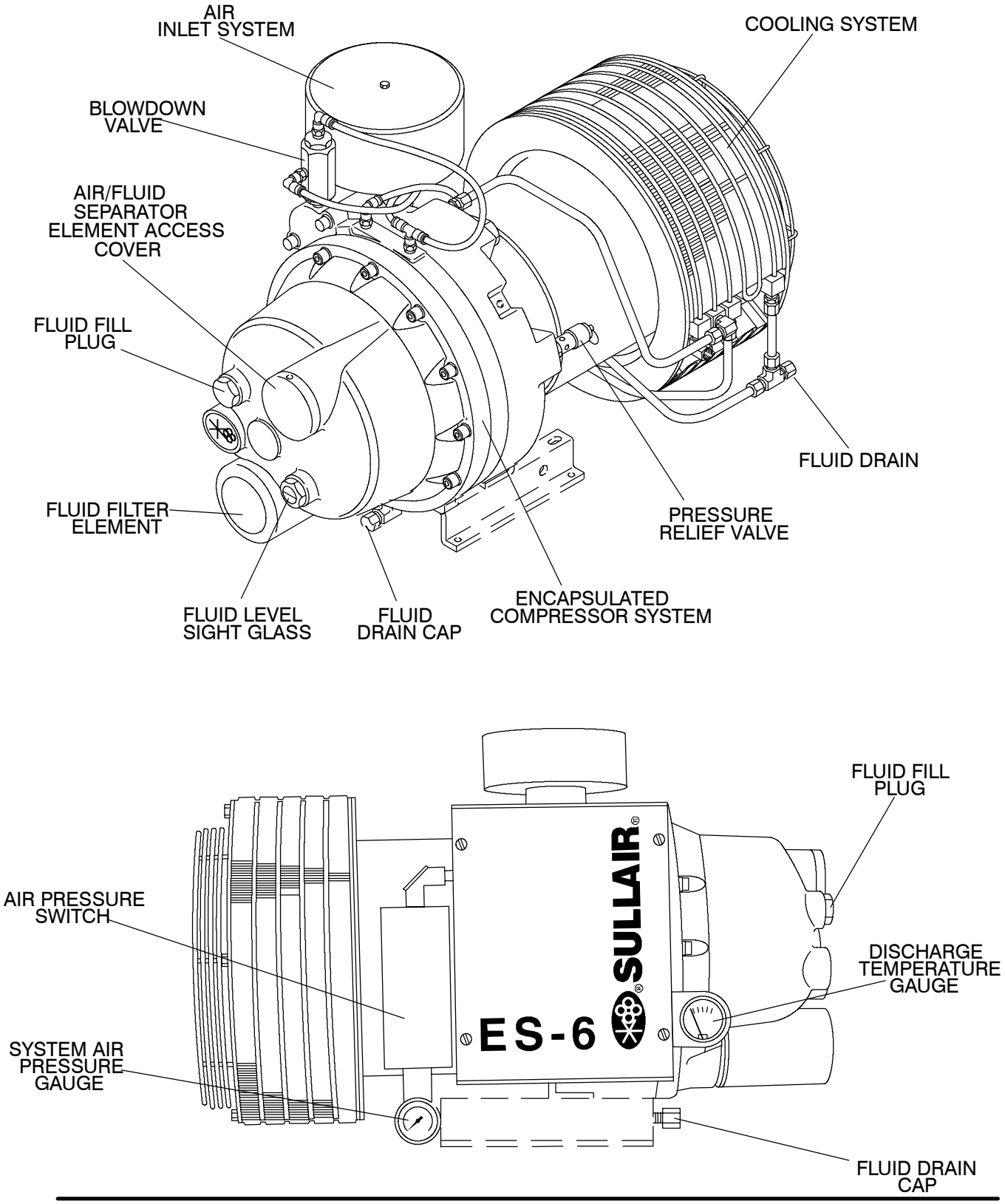
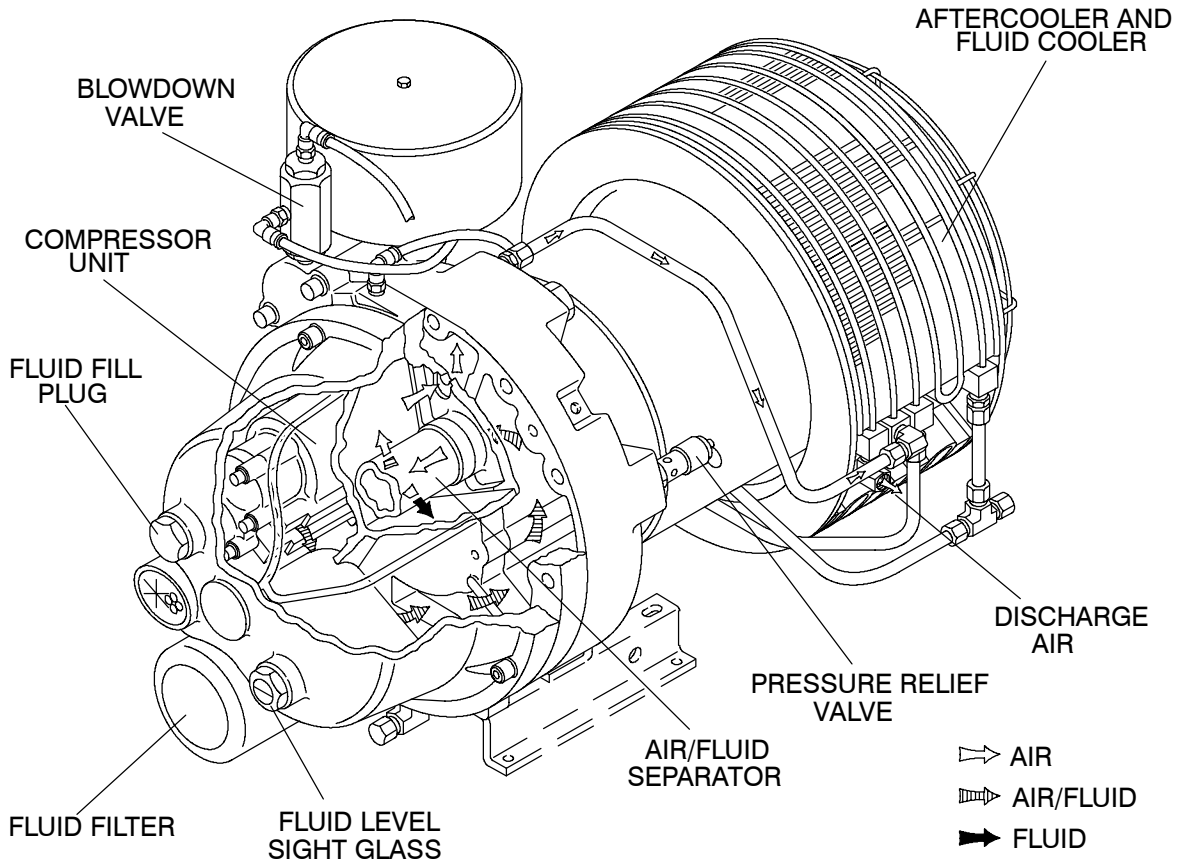


Figure 2–2 Encapsulated Compressor System



2.6 CONTROL SYSTEM, FUNCTIONAL DESCRIPTION

The purpose of the compressor control system is to maintain compressor capacity to meet the system demand.

It consists of an **inlet valve**, **blowdown valve**, and **control lines**.

2.7 INSTRUMENTATION, FUNCTIONAL DESCRIPTION

Due to the simplicity of the ES–6 Series compressor, the only instrumentation necessary is a line pressure gauge which is located on the left side of the electrical control center and a discharge temperature gauge which is located on the right side of the electrical control center. The line pressure gauge reads plant air system pressure only.

NOTE

At compressor shutdown, the sump pressure is released to atmosphere through the solenoid valve. The line pressure gauge will continue to read system pressure.

NOTES

3.1 SPECIFICATIONS– ES–6 (I)

50Hz Model	KW	Capacity M^3/MIN	Maximum Pressure BAR	dBA with canopy/ without canopy	DIMENSIONS			Weight kg
					Length mm	Width mm	Height mm	
ES–6 5.5 HH	4.1	0.49	10	(II)	775	579	518	125

(I) For additional specifications, consult *Figure 3–2 Dimensions* in this Section.

(II) Note: dBA measurements unavailable at time of print. Consult Factory.

COMPRESSOR

Type:	Single Stage Fluid Injected Screen Compressor
Minimum Full Load Operating Pressure:	4.1 bar
Maximum Full Load Operating Pressure:	9.5 bar
Bearing Type:	Anti–friction
Cooling:	Pressurized Fluid
Lubricant:	See Lubrication Guide (Section 3.2)
Sump Capacity:	4.35 liters

MOTOR

Type:	4.1 kw
Synchronous Speed:	1500 RPM for 4.1 kw
Voltage:	380/415 3 Phase
Type:	Totally Enclosed Air Over
Insulation Class:	“F”
Maximum Ambient Temp.:	40°C/ 104°F
Shaft Diameter Fan:	Nominal 5/8”
Key Size Fan:	Nominal 3/16” x 3/16” x 1 1/4”

FLUID FILTER

Type:	Spin on, Sullair Proprietary
Micron:	23 Microns Abs.

Internal Bypass Valve Set at 1.7 bar.

FLUID SEPARATOR ELEMENT

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

3.2 COMPRESSOR LUBRICATION GUIDE

For best value and longest uninterrupted service, the ES–6 compressor is factory filled with Sullube, a long life lubricant, unless a different lubricant is requested.

If, due to availability or other reasons, other fluids are required, follow Table 3–1, Lubrication Guide.

⚠ 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 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 re-

Section 3
SPECIFICATIONS

Table 3–1 Lubrication Guide

AMBIENT TEMPERATURE	LUBRICATION	FLUID CHANGE PERIOD (HRS.)	FILTER CHANGE PERIOD (HRS.)
–23°C to +32°C	Sullube	8000 *	8000 *
	Sullair LLL–4–32	8000 *	8000 *
	SRF 1/4000	4000	4000
	D–A Torque Fluid	1000	1000
	Motor Oil MIL–2104E SPEC API SF CC, CD SAE 10W Class SE	600	600

*8000 hours or once per year.

duced to 300 hours maximum. A non–detergent fluid with rust, oxidation and foam inhibitors and good water separation characteristics should be used.

⚠ WARNING

Mixing of other fluids within the compressor will void all warranties.

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. Flushing is required if changing to a different lubricant.

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.

Figure 3–1 Center of Gravity

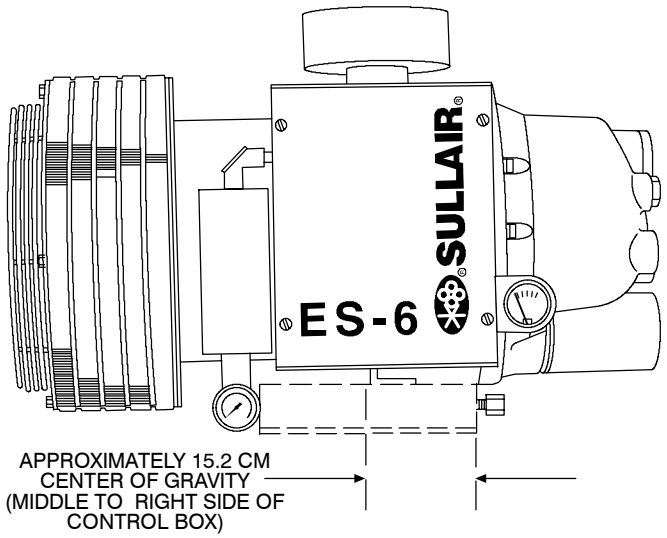
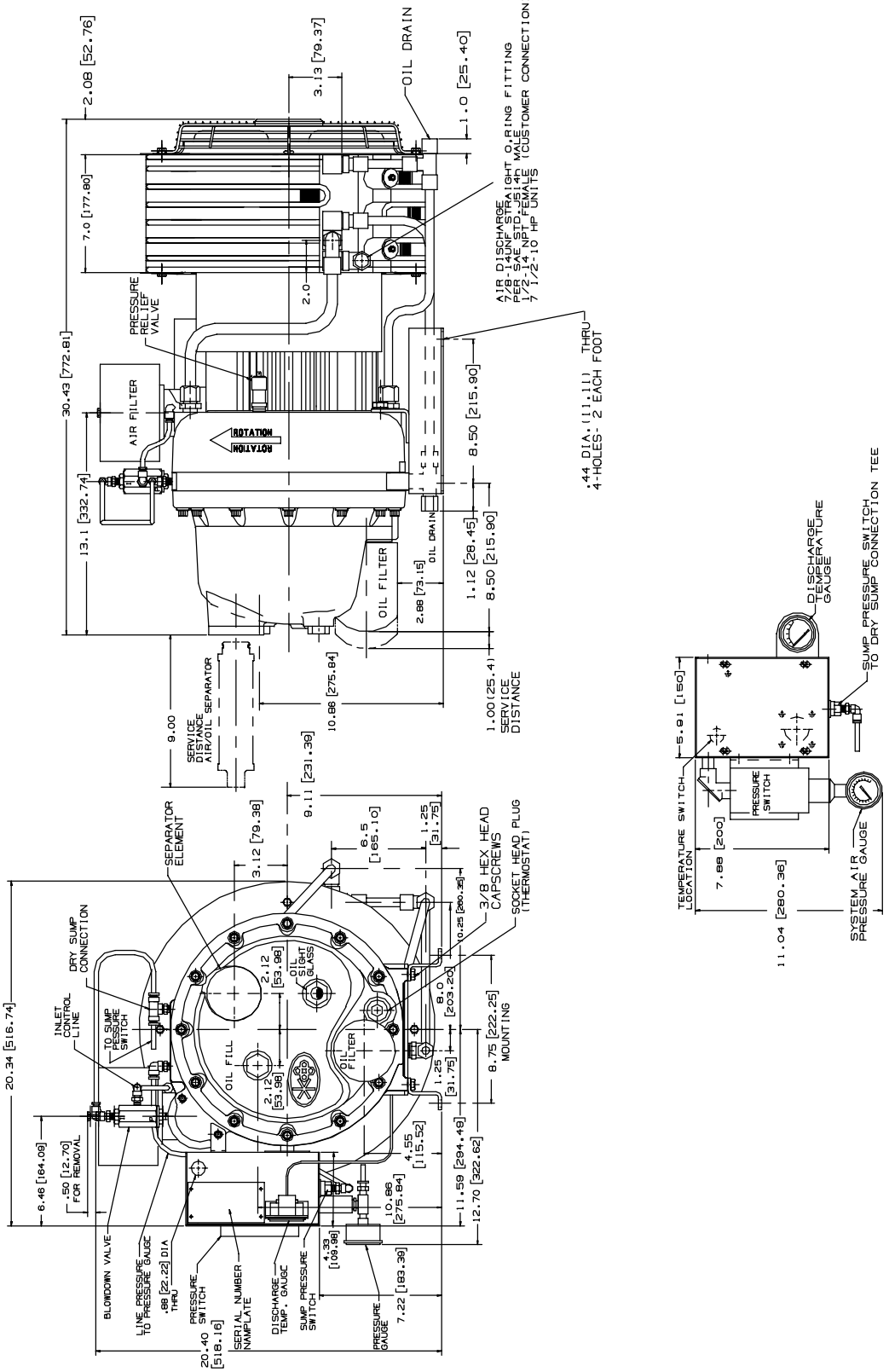


Figure 3–2 Dimensions



NOTES

4.1 LOCATION OF COMPRESSOR

The ES–6 Series compressor package may be placed on any level surface able to support its weight. The unit should be bolted to a fixed mounting surface to avoid the possibility of externally applied forces or vibration which would disturb the piping or wiring.

4.2 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 is what is needed for service and 91.5 cm or more from the fan air discharge end of the compressor.

4.3 SERVICE AIR PIPING

Service air piping should be installed as shown in Figure 4–1. 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." (I)

Sullube 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.

4.4 FLUID LEVEL CHECK AND CHANGE PROCEDURE

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 glass located on the end bell. See Figure 2–1.

If the sump is properly filled, the fluid level should cover 1/4 to 1/2 of the sight glass during operation. **DO NOT OVERFILL**.

⚠ WARNING

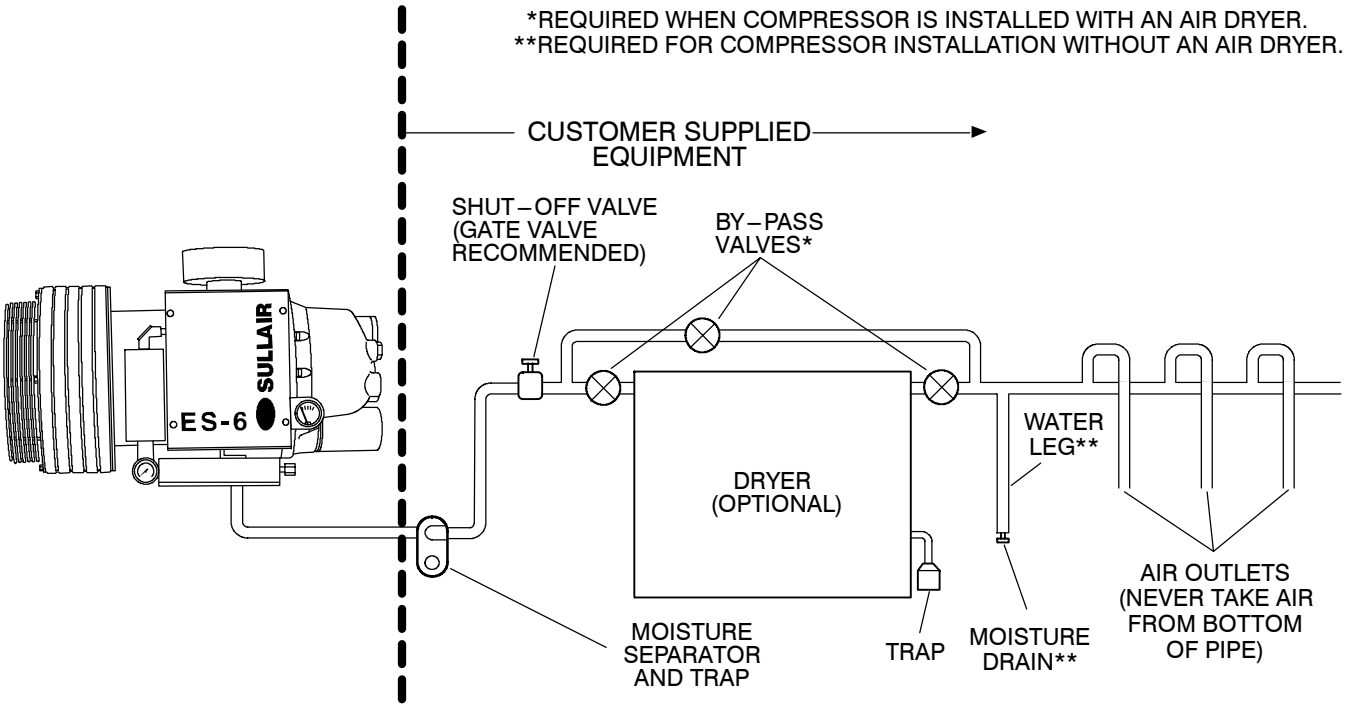
Before attempting compressor maintenance, disconnect compressor from power source and lock out power source. Isolate compressor from line pressure by closing recommended discharge shutoff valve and releasing all internal pressure from compressor.

⚠ WARNING

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

When the compressor fluid is ready to be changed, the compressor needs to be shutdown with the

Figure 4–1 Service Air Piping



power to the compressor disconnected (see Warning above). Drain the fluid from the compressor using the compressor fluid drain cap (See Figure 2–1).

Fluid capacity for the compressor can be found in Section 3, Specifications of this manual.

4.5 MOTOR ROTATION DIRECTION CHECK

After the electrical wiring has been done, it is necessary to check the direction of motor rotation. When looking at the motor from the cooler end of the compressor unit, the cooler fan should be turning clockwise. If the motor is not turning clockwise, disconnect power to the starter and exchange any two of the three power input leads, then check rotation.

A direction of rotation decal is located on the motor shroud, next to the cooler to insure correct motor/compressor rotation.

4.6 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 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.

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.

5.1 GENERAL

While Sullair has built into this compressor a comprehensive array of controls and indicators to assure you that it is operating properly, you will want to recognize and interpret the reading which will call for service or indicate the beginning of a malfunction. Before starting your Sullair compressor, read this section thoroughly and familiarize yourself with the controls and indicators – their purpose, location and use.

5.2 PURPOSE OF CONTROLS

CONTROL OR INDICATOR	PURPOSE
LINE PRESSURE GAUGE	Continually monitors service line air pressure.
FLUID LEVEL SIGHT GLASS	Indicates fluid level. The level is checked by looking at the fluid level sight glass on the end bell. The fluid level should cover 1/2 to1/4 of the sight glass during operation. With the compressor shut down, the level should be 3/4 of the sight glass. **DO NOT OVERFILL.**
COOLER BYPASS VALVE	Regulates fluid flow to and around the cooler. Designed to maintain a minimum operating temperature of 77°C. Used for fast warm–up and start–up.
MINIMUM PRESSURE/CHECK VALVE	Maintains a minimum of 4.1 bar in compressor sump. Valve piston restricts receiver air discharge from receiver/sump when pressure falls to 4.1 bar. Also incorporated in this valve is a terminal check valve which prevents line pressure backflow into the sump during unload conditions and after shutdown.
DISCHARGE TEMPERATURE SWITCH	Shuts the compressor down when the compressor discharge temperature exceeds 93°C.
PRESSURE RELIEF VALVE	Opens sump pressure to the atmosphere should pressure inside the sump become too high. Operation of this valve indicates that the air pressure switch is either faulty or out of adjustment.
AIR PRESSURE SWITCH	Senses service line pressure. When line pressure reaches maximum setting, the pressure switch opens solenoid valve circuit to unload the compressor.
BLOWDOWN VALVE	Vents sump pressure through inlet control valve to the atmosphere during unload conditions and shutdown.
SUMP PRESSURE SWITCH	Senses sump pressure and prevents compressor from starting until sump pressure has fallen below preset pressure of 0.7 bar.
DISCHARGE TEMPERATURE GAUGE	Continually monitors discharge temperature of the compressor.

Section 5
OPERATION

5.3 INITIAL START – UP PROCEDURE

The following procedure should be used to make the initial start – up of the compressor.

1. Read the preceding pages of this manual thoroughly.
2. Jog motor to check for correct rotation of fan (refer to Section 4.5).
3. Be sure that all preparations and checks described in the Installation Section have been made.
4. Open the shut – off valve to the service line.
5. Start the compressor.
6. Check for possible leaks in piping.
7. Slowly close the shut – off valve and check that the pressure switch is set correctly. If set correctly, the compressor will unload at nameplate pressure. If adjustments are necessary, see Control System Adjustment in Section 6, Maintenance of this manual.
8. Observe the operating temperature. If the operating temperature exceeds 93°C, the cooling system and installation environment should be checked.
9. Open shut – off valve to the service line.
10. Reinspect the compressor for temperature and leaks the following day.

6.1 GENERAL

⚠ 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 yet important. See instructions for each item in Section 6.6, Parts Replacement and Adjustment Procedures.

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 the Troubleshooting Section (6.7) 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 be made 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 Table 1, Motor Bearing Lubrication Schedule. If lubrication instructions are shown on the motor or in a separately provided manual, they will supercede this general instruction.

1. Remove the fan guard by removing the four (4) self–tapping screws holding the guard and fan ring to the cooler.
2. Remove the 1/8" NPT plugs in the filler and drain connection for both bearings.
3. Free drain hole of any hard grease (use a piece of wire if necessary).
4. Add grease (I) using a low pressure grease gun.
5. Wipe off any drained grease, and replace filler and drain plugs.
6. Replace fan guard.
7. Motor is now ready for operation.

(I) Use Chevron SRI–2 grease when lubricating motor bearings. Fill the cavity 1/3 to 1/2 full by repacking or use a low pressure grease gun and fill through the lubricating provisions on the motor end bell housing.

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, Table 3–1 in Section 3.
2. Every year.
3. Every fluid change.

6.5 COOLER MAINTENANCE

If cooler becomes restricted, use standard spray de–greaser/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.

Table 1– Motor Bearing Lubrication Schedule

MODEL	STANDARD CONDITIONS (I)	SEVERE CONDITIONS (II)	EXTREME CONDITIONS (III)
4 kw	3 years	1 year	6 months
5.5 kw	2 1/2 years	10 1/2 months	5 1/2 months
7.5 kw	2 1/2 years	10 1/2 months	5 1/2 months
Motors over 1800 RPM	6 months	3 months	3 months

(I) Eight hours per day, normal or light loading, clean 38°C maximum ambient.
(II) Twenty–four hours per day operation or shock loadings, vibration, or in dirt or dust at 38°C to 66°C ambient.
(III) Heavy shock or vibration, dirt or dust at 38°C to 66°C ambient.

6.6 PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES

⚠ WARNING

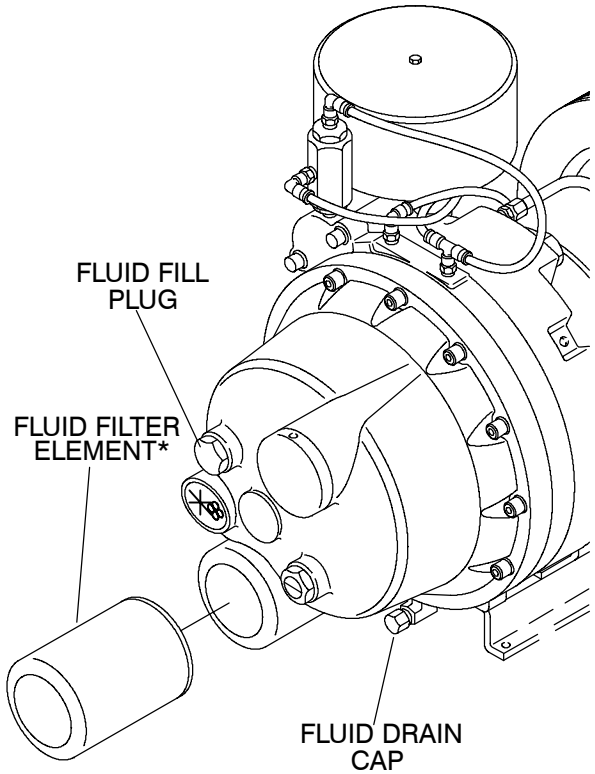
Before doing compressor maintenance, disconnect compressor from power source and lock out power source. Isolate compressor from line pressure by closing recommended discharge shut–off valve and releasing all internal pressure from compressor.

FLUID FILTER REPLACEMENT

Refer to Figure 6–1, and Table 2.

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.

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



* Replacement Element Kit P/N 250028–032

AIR FILTER MAINTENANCE

Refer to Figure 6–2. Air filter (P/N 02250110–591) maintenance should be performed every six 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.

AIR FILTER ELEMENT MAINTENANCE

1. When performing maintenance, care must be taken that no dirt or foreign matter enters intake housing.
2. Remove the air filter cover by loosening the bolt securing the filter.
3. Remove filter and discard.
4. Replace filter.

NOTE

Filter is disposable and recyclable.

SEPARATOR ELEMENT REPLACEMENT

Refer to Figure 6–3. The separator should be changed once a year. Follow the procedure explained below for element replacement.

⚠ WARNING

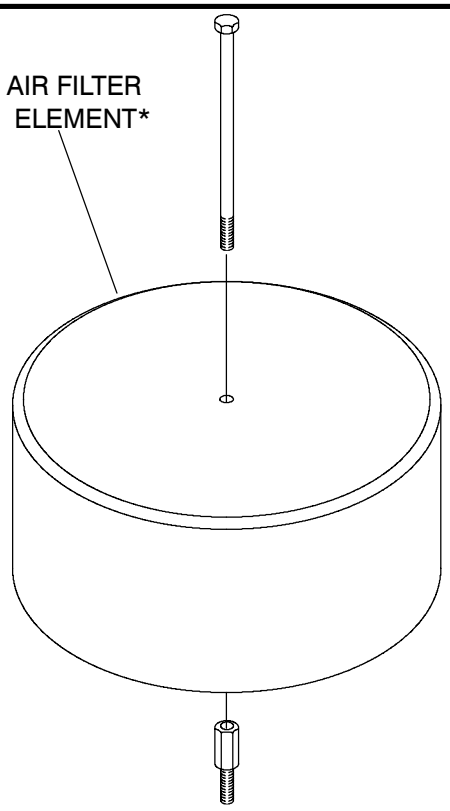
Before doing compressor maintenance, disconnect compressor from power source and lock out power source. Isolate compressor from line pressure by closing recommended discharge shut–off valve and releasing all internal pressure from compressor.

Table 2– Compressor Lubrication Guide And Maintenance Schedule

AMBIENT TEMPERATURE	LUBRICATION	FLUID & FILTER CHANGE PERIOD (HRS.)	SEPARATOR CHANGE PERIOD (HRS.)	AIR FILTER CHANGE PERIOD (HRS.)
–23°C to +32°C	Sullube	8000 *	8000 *	4000 **
	Sullair LLL–4–32	8000 *	8000 *	4000 **
	SRF 1/4000	4000	4000	4000 **
	ATF as per Dextron II	1000	1000	4000 **
	Motor Oil MIL–2104E, SPEC API SF CC, CD SAE 10W Class SE	600	600	4000 **

*8000 hours or once per year.
**4000 hours or more frequently if conditions so require.

Figure 6–2 Air Filter (P/N 02250110–591)



* Replacement Element Kit P/N 02250110–591

1. Insert a 10 cm maximum length, 8 mm 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 10 cm maximum length, 8 mm diameter pin in the radially drilled hole.

MINIMUM PRESSURE/CHECK VALVE MAINTENANCE

Refer to Figure 6–4. Minimum pressure/check valve maintenance is minimal. The only parts which normally require replacement are the o–ring seal around the piston and the valve seat on the check valve. To replace any of the two parts, follow the procedure explained below.

⚠ WARNING

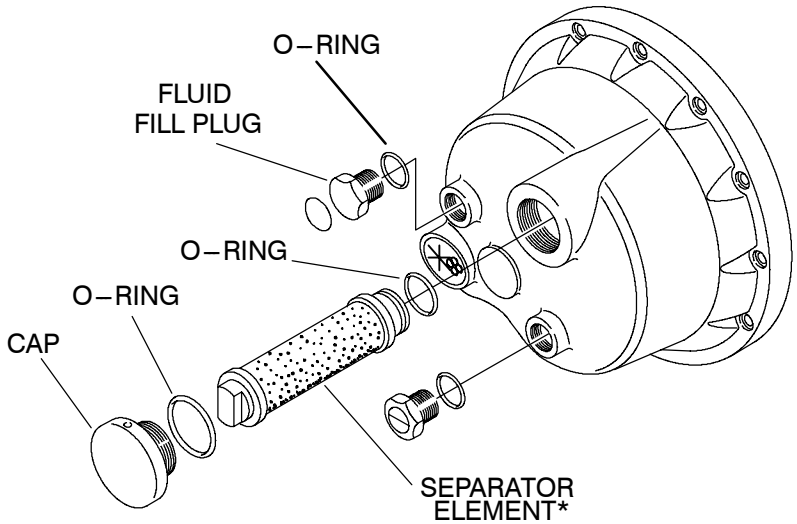
Before doing compressor maintenance, disconnect compressor from power source and lock out power source. Isolate compressor from line pressure by closing recommended discharge shut–off valve and releasing all internal pressure from compressor.

⚠ WARNING

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

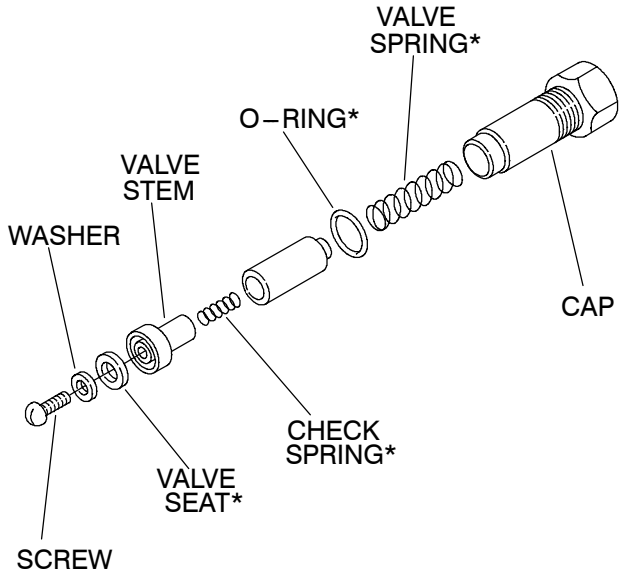
1. Unscrew the minimum pressure valve from the drive housing.
2. Remove all parts.
3. Clean and inspect all parts.

Figure 6–3 Separator Element (P/N 250025–264)



* Replacement Element Kit P/N 250028–033

Figure 6–4 Minimum Pressure/Check Valve (P/N 606058)



* Repair Kit P/N 250030–226

4. Remove the screw holding the check valve seat. Replace valve seat. Reinstall securing with Loctite® #222.
5. Install new o–ring. Before reinstallation, lubricate with Parker Super "O" ring seal or an equivalent grease.
6. Reinstall the whole valve assembly. Tighten and secure.

THERMOSTAT ACTUATOR MAINTENANCE
Refer to Figure 6–5. The only part which would ever need replacement is the thermostat valve actuator. For replacement, follow the procedure explained below.

⚠ 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. To prevent spillage and loss of re–usable fluid, place a contaminate–free fluid receptacle beneath fluid drain valve and fluid filter.
2. Drain fluid by removing fluid drain cap at tee located beneath compressor.
3. Unscrew and remove hollow hex plug.
4. Remove spring and piston.
5. By using long nosed pliers, pull the actuator out.
6. Install new actuator.
7. Install piston and spring with centering guide.
8. Re–install plug.

COIL REPLACEMENT
1. Remove the retaining cap, nameplate and cover.
2. Slip the yoke containing the coil and sleeves off the solenoid base subassembly.
3. Reassemble in reverse order of disassembly.

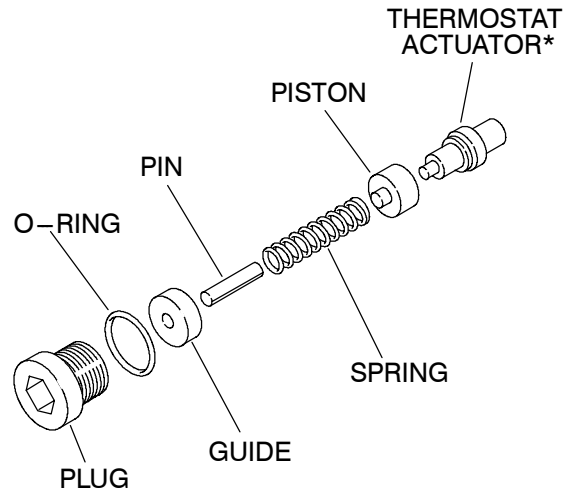
CONTROL SYSTEM ADJUSTMENT
Refer to Figure 6–6. Prior to adjusting the Control System, it is necessary to determine the desired operating pressure range and also the maximum pressure at which your compressor is to operate. The pressure must not exceed the maximum operating pressure which is stamped on the compressor serial number nameplate. The following explanation applies to a typical installation with a desired operating range of 7.9 to 8.6 bar. This information will apply to a compressor with any other operating range excepting the stated pressures.

Remove the cover of the pressure switch. With the shut–off valve closed (or slightly cracked open) start the compressor. Observe the line pressure gauge and pressure switch contacts. When the line pressure reaches 8.6 bar, the pressure switch contacts should open. If the pressure switch contacts do not open or they open prior to the desired pressure, the pressure switch setting will require adjustment (refer to Figure 6–6).

FOR PRESSURE RANGE ADJUSTMENT:
1. Remove cover to pressure switch.
2. Turn the range adjusting screw to the high pressure setting. Turning the screw counterclockwise lowers both the high and low pressure equally.

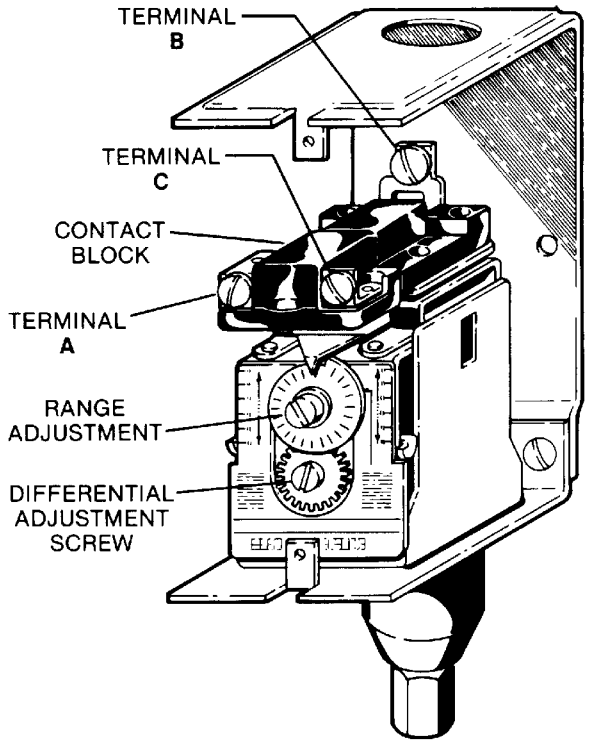
FOR DIFFERENTIAL ADJUSTMENT:
Differential is the difference between the high and low pressure settings; 0.7 bar is typical.

Figure 6–5 Thermostat Actuator (P/N 250025–413)



* Repair Kit P/N 250028–036

Figure 6–6 Pressure Switch (P/N 407778)



1. Turn the differential adjusting screw to the lower (reset) setting. Turning the screw counterclockwise widens the differential by lowering the reset (lower) setting only.
2. When the pressure switch adjustment is complete, the pressure regulator should be adjusted for the pressure at which modulation of air delivery should begin. In this case that pressure will be 8.2 bar. The regulator is adjusted by loosening the jam nut on the end of the cone shaped cover of the pressure regulator. When the jam nut is loose, turn the adjusting screw clockwise to increase or counterclockwise to decrease the setting.
3. To set the regulator, continue closing the service valve, until the line pressure is 8.2 bar. At this point regulator should pass a signal to the inlet valve to start closing it. If the line pressure keeps on rising or if the modulation does not begin, adjust the regulator valve as described above. After adjustment line pressure should be approximately 8.2 bar and 2.5 cm Hg vacuum below the inlet.
4. Now close the service valve, line pressure will start rising. When line pressure reaches 8.6 bar, the inlet valve will be closed to its maximum position. The inlet vacuum at this point will be around 63.5 cm Hg. The machine should unload at this point.
5. Open the service valve so the line pressure is 7.9 bar. Machine is now set for operation. Recheck the unload pressure by closing of the service valve. Machine should unload via the pressure switch at 8.6 bar.

After the control pressures have been adjusted, the "unloaded" sump pressure should be checked. It will be necessary to shut the compressor down, remove the pressure switch cover and disconnect one of the two lead wires that are connected to the micro–switch (contact block). After disconnecting the lead, tape the exposed wire with electricians tape to make sure that it does not come in contact with any metallic surface.

⚠ DANGER

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

With the lead taped, you may start the compressor again. Allow the sump pressure to stabilize.

The sump pressure should read 2.1 to 2.8 bar.

Once this is checked, shut the compressor down once again and reconnect the taped lead and replace the pressure switch cover. At this time, start the compressor and cycle the Control System several times and re–check all pressure settings and adjustments.

⚠ DANGER

DO NOT touch the pressure switch, electrical contacts, terminal board or leads with any part of the body or any non–insulated metallic object. Severe electrical shock may occur.

Cycle the Control System several times and re–check all pressure settings.

⚠ WARNING

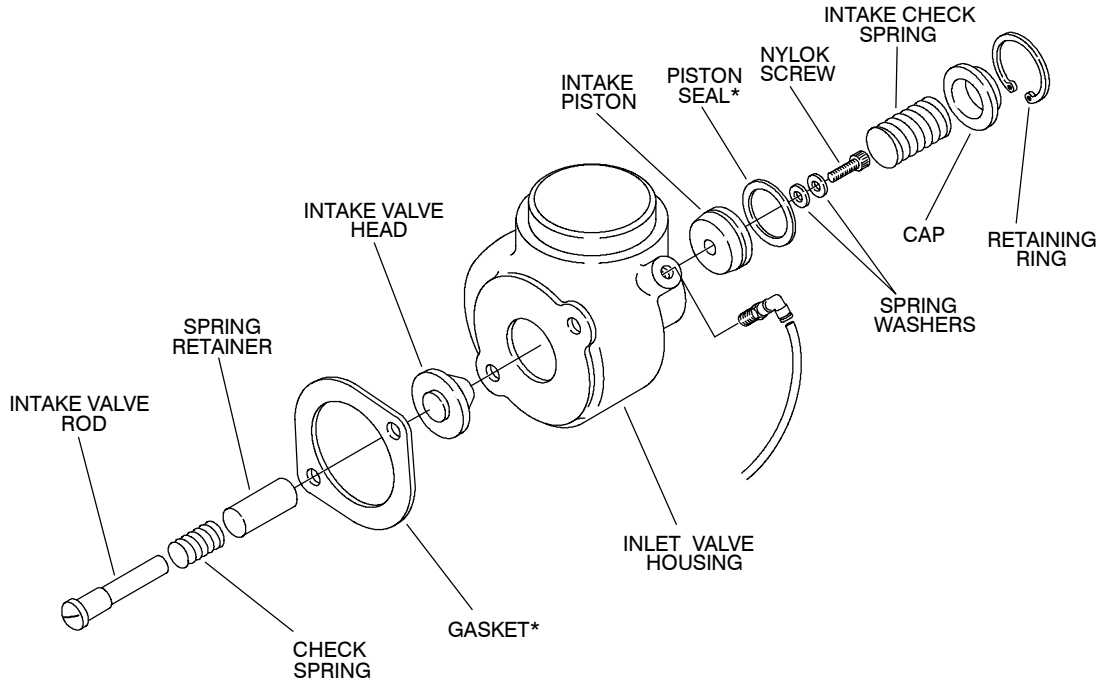
Before doing compressor maintenance, disconnect compressor from power source and lock out power source. Isolate compressor from line pressure by closing recommended discharge shut–off valve and releasing all internal pressure from compressor.

INLET CONTROL VALVE

Refer to Figure 6–7. The only parts which normally require replacement are the piston seal on the intake valve piston and gasket. Follow this procedure for inlet control maintenance.

1. Remove the inlet filter assembly.
2. Disconnect tubing from intake control housing at 90° elbow.
3. Remove the two (2) 3/8" ferry head capscrews securing the intake control housing to the inlet plate.
4. Remove intake control housing assembly and gasket.
5. Remove retaining ring, cap and intake check spring from intake housing bore.

Figure 6–7 Inlet Control Valve



* Repair Kit P/N 02250045–287

6. Remove socket head capscrew, washers, and check spring from intake valve rod.
7. Remove intake valve from valve housing. Remove intake valve rod, check spring, spring retainer and intake valve head.
8. Remove intake piston from intake/inlet control housing. Remove and discard old piston seal from intake piston.
9. Clean intake housing gasket surface and internal piston bore.
10. Lubricate internal piston bore using lubricant supplied with kit.
11. Install new piston seal onto piston.
12. Reinstall intake valve rod, check spring, spring retainer and intake valve head into intake control housing. Install assembled intake piston into intake control bore and onto intake valve rod.
13. Install washers. Apply screw lock adhesive provided in kit to socket head capscrew. Replace socket head capscrew into the valve rod and torque socket head capscrew to 2.0 to 2.7 Nm.
14. Install intake check spring, cap and retaining ring.
15. Replace gasket and reinstall the whole inlet control valve assembly.
16. Apply screw lock adhesive to inlet control housing assembly ferry head capscrews and install. Torque to 40.7 Nm.
17. Reconnect tubing to inlet control valve housing at 90° elbow.
18. Reinstall air inlet filter assembly.

MOTOR SHAFT SEAL REPLACEMENT

Replacement of motor shaft seal requires that the compressor be separated from the drive housing. This operation requires qualified personnel.

Detailed instructions and a list of needed tooling are included in each motor shaft seal replacement kit no. 250028–035.

6.7 TROUBLESHOOTING

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.

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	REMEDY
COMPRESSOR WILL NOT START	Main Disconnect Switch Open	Close switch.
	Line Fuse Blown	Replace fuse.
	Control Transformer Fuse Blown Motor Starter Overloads Tripped	Replace fuse. Reset. Should trouble persist, check whether motor starter contacts are functioning properly.
	Low Incoming Line Voltage	Check voltage. Should voltage check low, consult power company.
COMPRESSOR SHUTS DOWN WITH AIR DEMAND PRESENT	Low Incoming Voltage	Consult power company
	Excessive Operating Pressure	Defect in pressure switch; check pressure at which contact points open.
	Discharge Temperature Switch Open	Cooling air flow restricted; clean cooler and check for proper ventilation.
		Ambient temperature is too high; provide sufficient ventilation.
		Low fluid level; add fluid.
		Clogged filter; change the fluid filter element.
		Thermal valve not functioning; replace element.
		Defective discharge temperature switch; check for a short or open circuit to probe and correct wiring.
COMPRESSOR WILL NOT BUILD UP FULL DISCHARGE PRESSURE	Air Demand Is Too Great	Check service lines for leaks or open valves.
	Dirty Air Filter	Check filter and change element if required.
	Pressure Regulator Out Of Adjustment	Adjust regulator according to control adjustment instructions in Section 6, Maintenance.
	Defective Solenoid Valve	A normally open solenoid must energize to load compressor; check for proper operation.
LINE PRESSURE RISES ABOVE CUT–OUT PRESSURE SETTING ON PRESSURE SWITCH	Defective Solenoid Valve	Repair solenoid valve (see Section 6).
	Leak In Control System Causing Loss Of Pressure Signals	Check for leaks.
	Defective Pressure Switch	Check that diaphragm and contacts are not damaged. Replace if necessary.
	Inlet Valve Stuck Open	Inspect inlet valve and insure free operation (see Section 6).
EXCESSIVE COMPRESSOR FLUID CONSUMPTION	Clogged Return Line	Remove element cover and clean orifice.
	Separator Element Damaged Or Not Functioning Properly	Change separator element.
	Leak In The Lubrication System	Check all pipes, connections and components.
	Excess Fluid Foaming	Drain and change.
	Fluid Level Too High	Drain excess.
	Shaft Seal Failure	Replace shaft seal.

TROUBLESHOOTING (CONTINUED)

SYMPTOM	PROBABLE CAUSE	REMEDY
PRESSURE RELIEF VALVE OPENS REPEATEDLY	Compressor Operating Pressure Too High	See Symptom “Line Pressure Rises Above Cut–out Pressure Setting on Pressure Switch” above
	Defective Pressure Relief Valve	Replace pressure relief valve.
LIQUID WATER IN COMPRESSED AIR LINES	Water Vapor Condensation From Cooling and Compression Occurs Naturally	Remove the water vapor from compressed air prior to distribution through the air system. Check operation of aftercooler and moisture separator. Install a compressed air dryer sized for the flow and dryness level required. (Note: Filters may also be required to remove particulates, liquid oil aerosols or for oil vapor removal. Change cartridges as recommended by the filter manufacturer.) Check all drain traps routinely to insure their proper operation. Maintain them regularly.

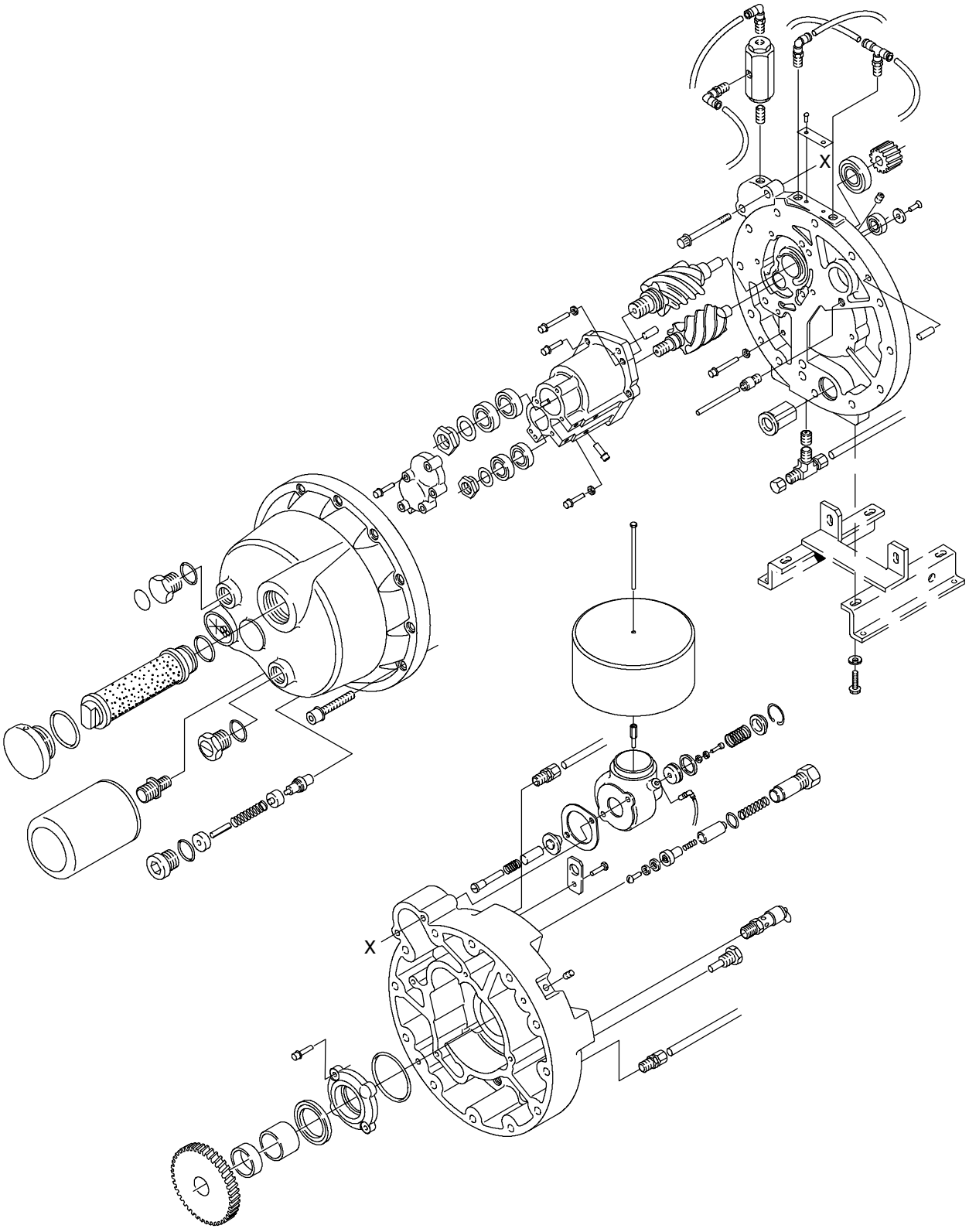
6.8 MAINTENANCE RECORD

MODEL NO. _____ SERIAL NO. _____

DATE	HOURMETER	MAINTENANCE PERFORMED	WORK PERFORMED BY	AUTHORIZED BY

ILLUSTRATIONS AND PARTS LIST

ES–6 COMPRESSOR ASSEMBLY, EXPLODED VIEW



7.1 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 or from the Serial Number Plate located on the compressor.

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 ASIA, LTD.
Sullair Road, No. 1
Chiwan, Shekou
Shenzhen, Guangdong PRV.
PRC POST CODE 518068
Telephone: 755--6851686
Fax: 755--6853473

SULLAIR EUROPE, S.A.
Zone Des Granges BP 82
42602 Montbrison Cedex, France
Telephone: 33--477968470
Fax: 33--477968499

SULLAIR CORPORATION
Subsidiary of Sundstrand Corporation
3700 East Michigan Boulevard
Michigan City, Indiana 46360 U.S.A.
Telephone: 1--800--SULLAIR (U.S.A. Only) or
1--219--879--5451
Fax: (219) 874--1253
Telephone: 1--888--SULLAIR (U.S.A Only)
Fax: (219) 874--1835 (Parts)
Fax: (219) 874--1205 (Service)

7.2 RECOMMENDED SPARE PARTS LIST

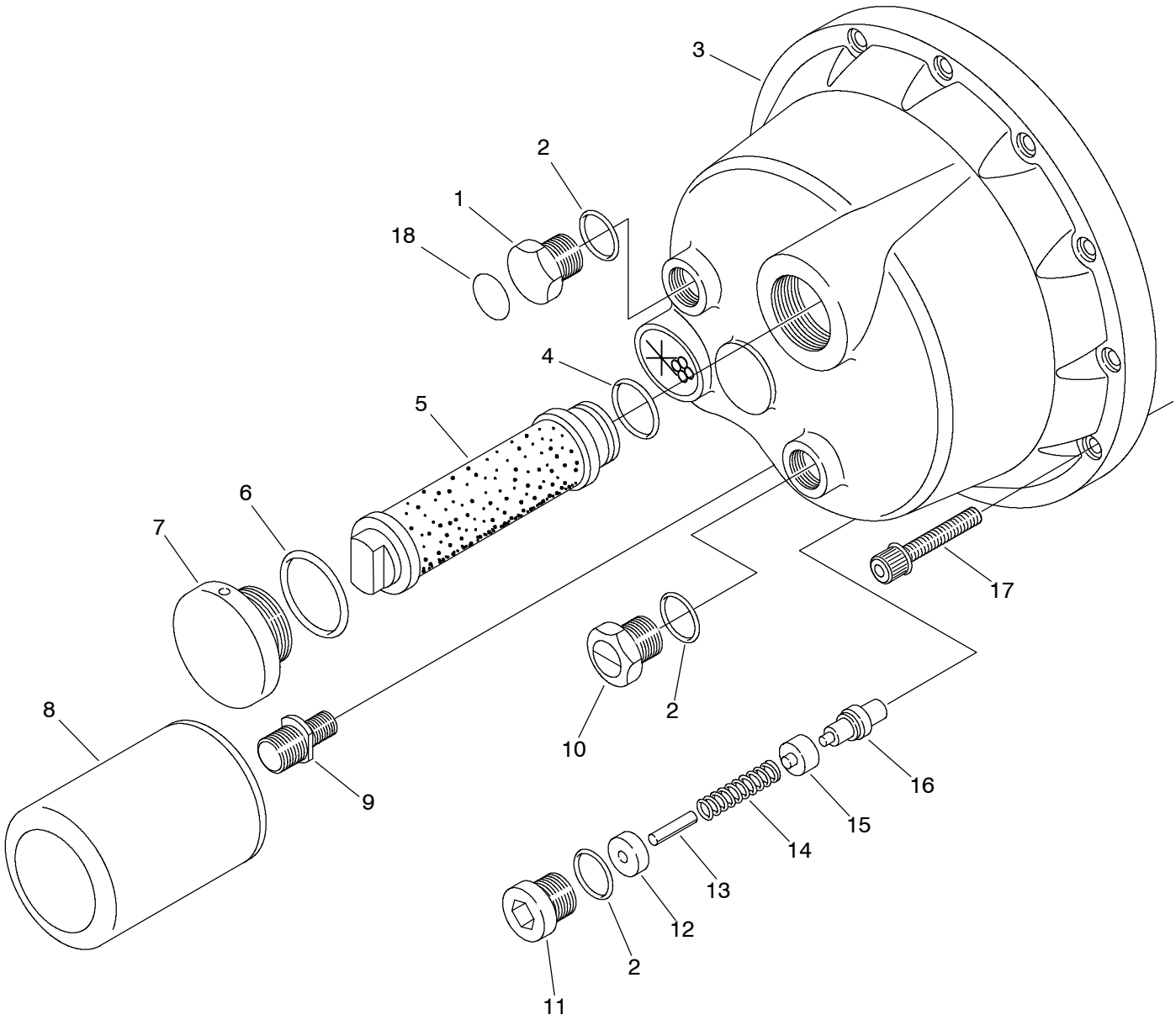
DESCRIPTION	KIT NUMBER	QUANTITY
replacement air filter	**02250110--591**	**1**
repair kit for motor shaft seal 250039--218	**250028--035**	**1**
repair kit, shaft seal installation	**250034--267**	**1**
repair kit for thermostat actuator 250025--413	**250028--036**	**1**
repair kit for fluid filter element no. 250026--982	**250028--032**	**1**
repair kit for minimum pressure/check valve 606058	**250030--226**	**1**
repair kit for air/fluid separator element no. 250025--264	**250028--033**	**1**
repair kit for blowdown valve no. 250025--655	**250031--772**	**1**
repair kit for minimum pressure/check valve 606058	**250030--226**	**1**
replacement piston seal kit for air inlet control valve	**02250045--287**	**1**
replacement piston for inlet control valve	**02250044--811**	**1**
replacement washer for inlet control valve	**250031--269**	**1**
fluid, Sullube (five gallons)	**250022--669**	**1**

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

Section 7

ILLUSTRATIONS AND PARTS LIST

7.3 FLUID MANAGEMENT SYSTEM



7.3 FLUID MANAGEMENT SYSTEM

key number	*description*	*part number*	*quantity*
1	plug, hex head 1 1/16"–12 SAE	250039–359	1
2	o–ring **(I)**	250025–419	3
3	housing, bell	250025–309	1
4	o–ring, 1 7/16" x 1/16"	826502–127	1
5	element, separator air/fluid **(II)**	250025–264	1
6	o–ring, 2 3/16" x 3/32"	826502–139	1
7	cap, separator element	250026–038	1
8	element, fluid filter **(III)**	250026–982	1
9	adapter, fluid filter	250025–914	1
10	glass, sight	250025–420	1
11	plug, thermostat 1 1/16"–12	250025–418	1
12	guide, thermostat spring	250025–417	1
13	pin, roll 1/4" x 1 1/2"	827404–150	1
14	spring, compression	250025–464	1
15	piston, thermostat	250025–415	1
16	actuator, thermostat **(IV)**	250025–413	1
17	capscrew, ferry hd 1/2"–13 x 3"	828408–300	12
	•capscrew, socket ISO4762 m 12 x 80 (metric)	829312–080	12
18	decal, fluid Sullube **(V)**	02250069–389	1

(I) For replacement only.

(II) For maintenance on air/fluid separator element no. 250025–264, order repair kit no. 250028–033.

(III) For maintenance on fluid filter element no. 250026–982, order repair kit no. 250028–032.

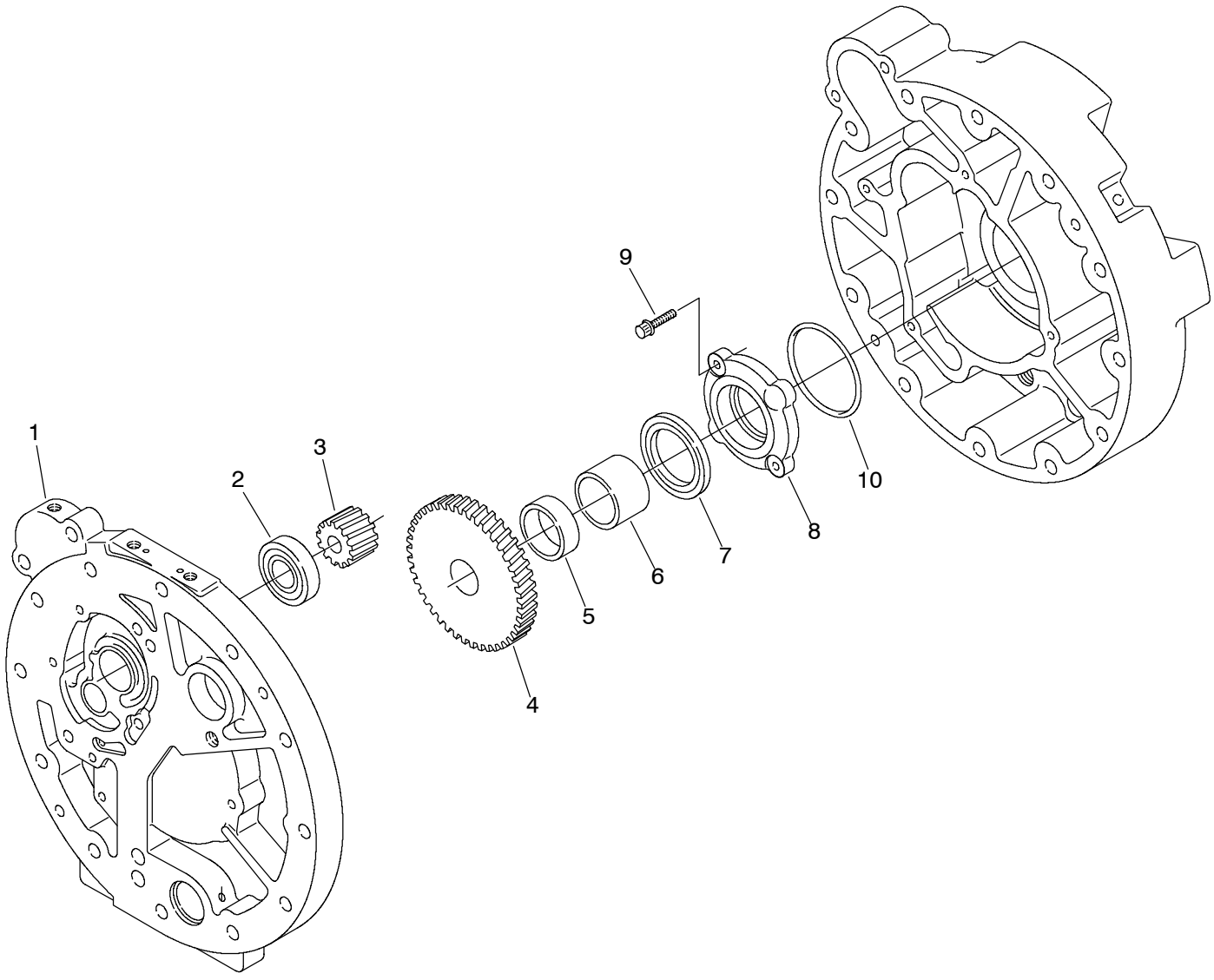
(IV) For maintenance on thermostat actuator no. 250025–413, order repair kit no. 250028–036.

(V) Decal will vary with compressor fluid fill requirement. Factory fill (Sullube) decal part no. is 02250069–389.

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

ILLUSTRATIONS AND PARTS LIST

7.4 SEAL AND DRIVE GEAR



7.4 SEAL AND DRIVE GEAR

key number	*description*	*part number*	*quantity*
1	plate, inlet	250028–339	1
2	bearing, cylinder roll plain	499082–705	1
3	gear, driven	Consult Factory	1
4	gear, drive	Consult Factory	1
5	spacer, gear	250039–600	1
6	sleeve, wear	250025–412	1
7	seal, shaft Teflon/Viton (I)	250039–218	1
8	housing, shaft seal	250025–312	1
9	capscrew, ferry head 1/4” – 20 x 3/4”	828404–075	2
10	o–ring, 2 7/8” x 3/32”	826502–150	1

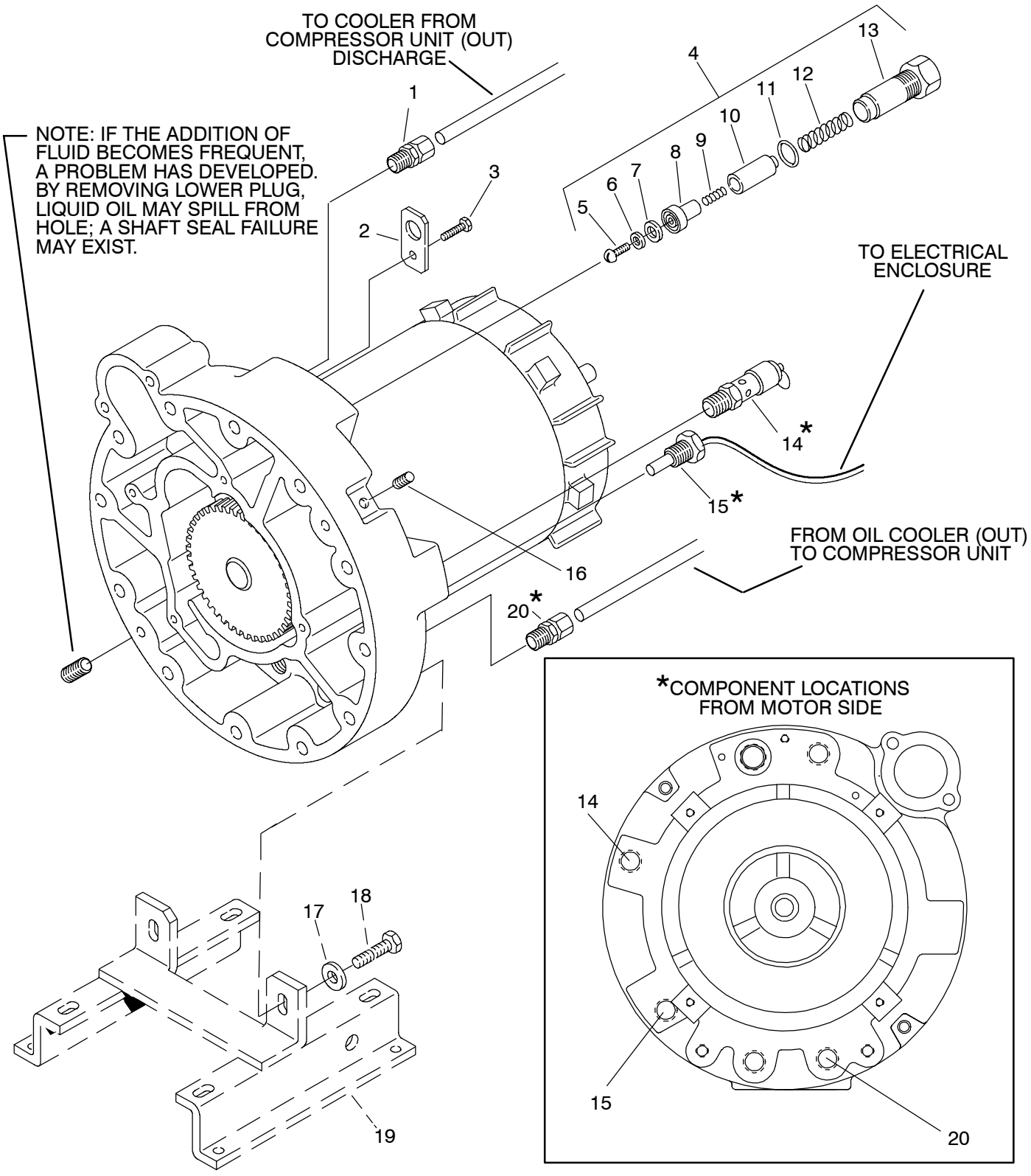
(I) For maintenance on motor shaft seal no. 250039–218, order repair kit no. 250028–035.

NOTE: Requires special tooling for removal/installation.

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

ILLUSTRATIONS AND PARTS LIST

7.5 MOTOR, HOUSING AND PARTS



7.5 MOTOR, HOUSING AND PARTS

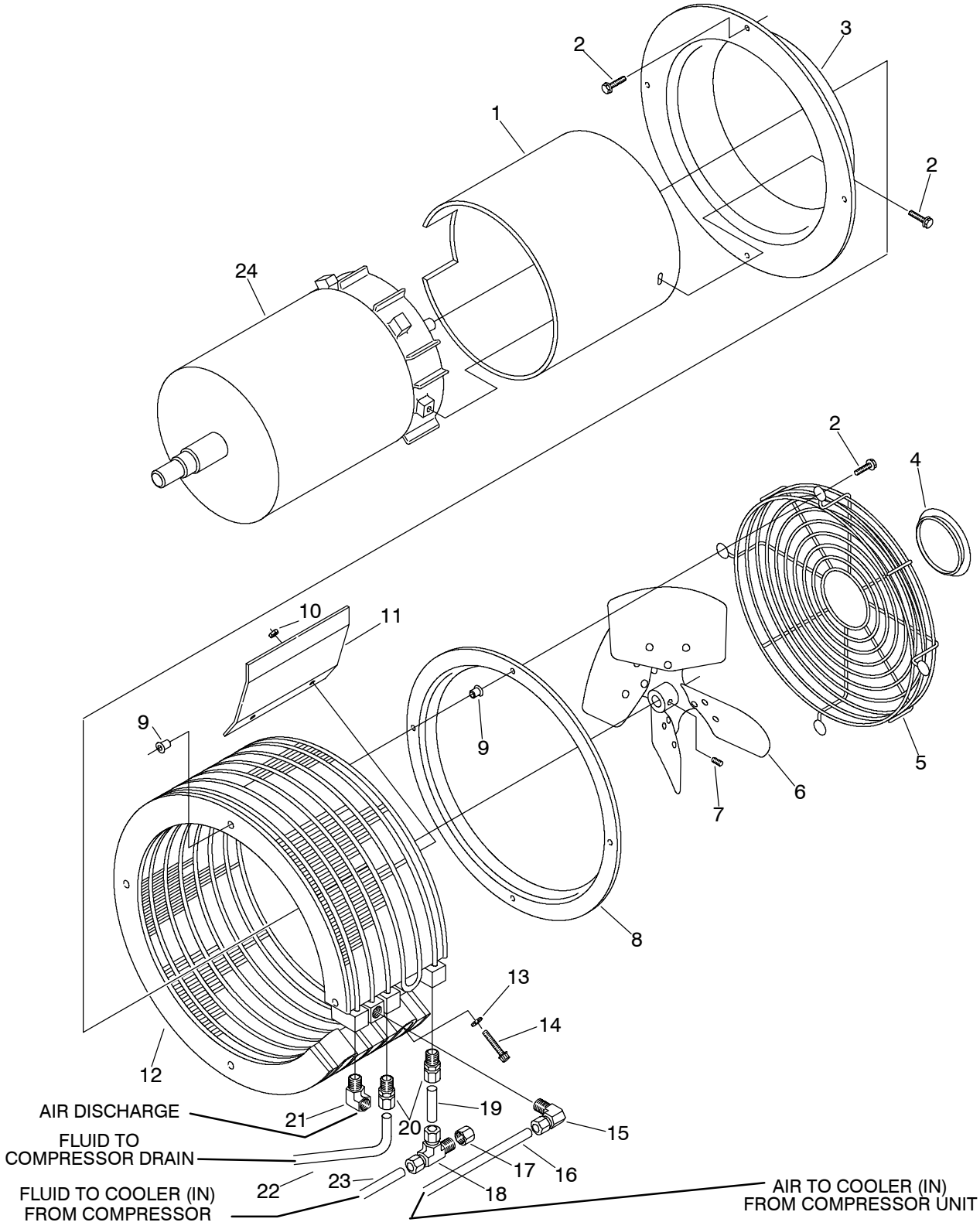
key number	*description*	*part number*	*quantity*
1	connector, tube–M 5/8" x 1/2"	810210–050	1
2	bail, lifting	250039–904	1
3	capscrew, hex 5/16"–18 x 7/8"	827905–088	1
4	valve, minimum pressure/check (I)	606058	1
5	screw, machine rd hd #8–32 x 1/2"	250030–547	1
6	washer, pl–b #8	837201–045	1
7	seat, minimum pressure/check valve	250030–223	1
8	stem, minimum pressure/check valve	250030–502	1
9	spring, minimum pressure/check valve	250033–369	1
10	piston, minimum pressure/check valve	250025–428	1
11	o–ring, 3/32" x 3/4"	826502–116	1
12	spring, minimum pressure/check valve	250025–429	1
13	cap, minimum pressure/check valve	250025–430	1
14	valve, relief (1.4 bar)	68561118	1
15	switch, temp (110˚C)	02250099–448	1
16	plug, pipe hex soc 1/8" NPT	490046–001	2
17	washer, reg 1/2"	838208–112	2
18	capscrew, hex GR8 1/2"–13 x 1"	829108–100	2
19	base, compressor	250026–469	1
20	connector, tube–M 1/2" x 1/2"	810208–050	1

(I) For maintenance on minimum pressure/check valve no. 606058, order repair kit no. 250030–226.

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

ILLUSTRATIONS AND PARTS LIST

7.6 COMPRESSOR COOLER SYSTEM



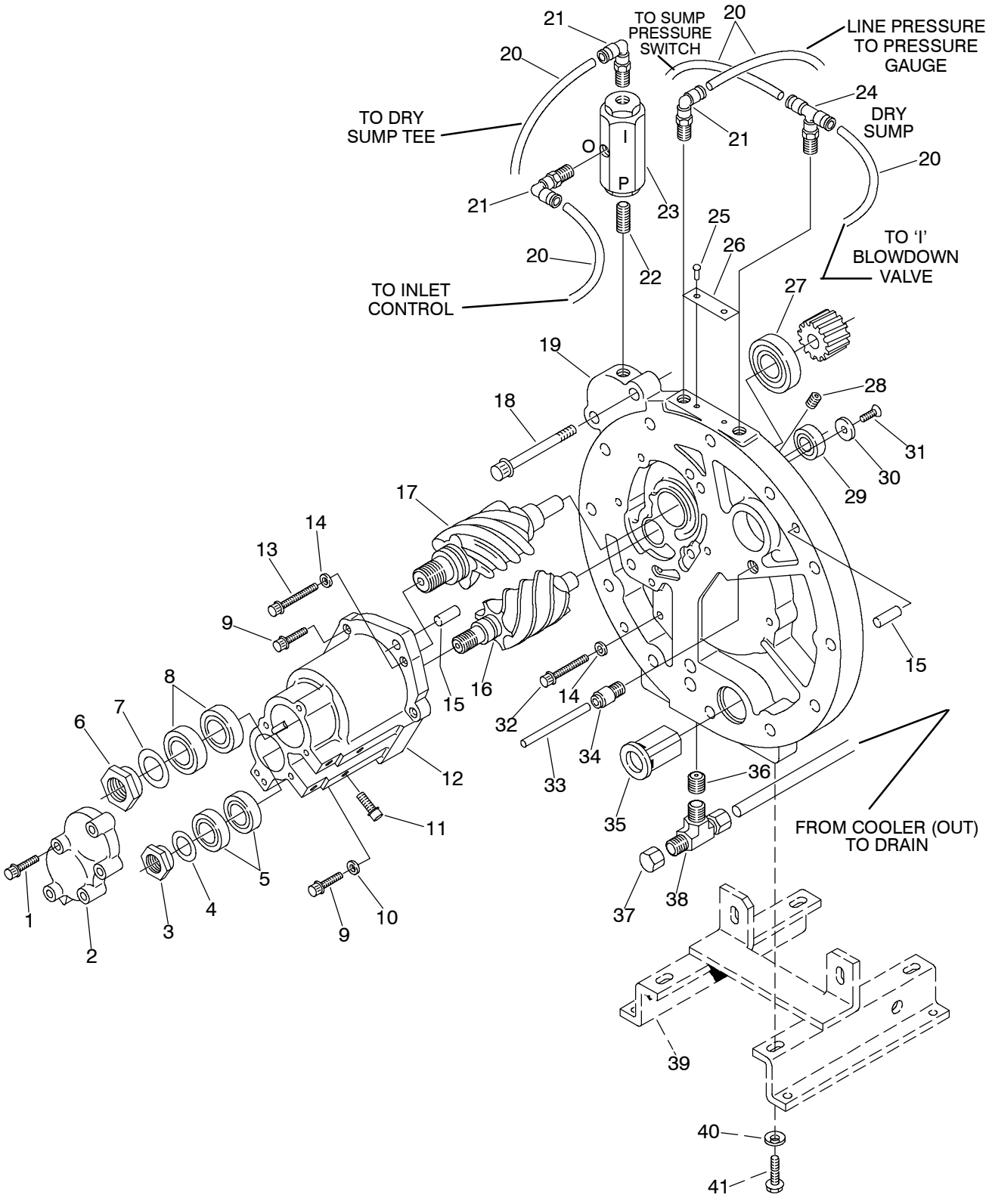
7.6 COMPRESSOR COOLER SYSTEM

key number	*description*	*part number*	*quantity*
1	duct, cooler mount	250026–471	1
2	screw, hex serrated washer 1/4”–20 x 1/2”	829704–050	8
3	ring, cooler	250034–536	1
4	cap, fan guard 4”	250026–591	1
5	guard, fan	02250110–568	1
6	fan, 12” dia 4 blade	250026–254	1
7	screw, brass set	250031–014	1
8	ring, orifice	250034–537	1
9	insert, 1/4”–20 threaded blind	250034–538	8
10	nut, hex 5/16”–18	825305–283	2
11	plate, cooler filler	250026–843	1
12	cooler, fluid/after	250026–066	1
13	washer, flat 5/16” x 1 1/4”	250025–830	2
14	capscrew, ferry hd 5/16”–18 x 2”	828405–200	2
15	elbow, tube straight threaded 5/8” x 7/8”	811615–062	1
16	tubing, aftercooler in	250030–042	1
17	cap, 1/2” x 3/4”	250026–350	1
18	tee, tube union 1/2”	811408–050	1
19	tubing, 1/2” x 3.4”	250030–040	1
20	connector, tube 1/2” x 3/4”	811808–075	2
21	elbow, tube 7/8” x 1/2”	250030–104	1
22	tubing, fluid cooler out	250030–043	1
23	tubing, fluid cooler in	250030–041	1
24	motor	Consult Factory	1

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

ILLUSTRATIONS AND PARTS LIST

7.7 COMPRESSOR SYSTEM



7.7 COMPRESSOR SYSTEM

key number	*description*	*part number*	*quantity*
1	capscrew, ferry hd 1/4"–20 x 1 1/4"	828404–125	5
2	cover, outlet	250025–315	1
3	locknut, female M17 x 1	02250055–135	1
4	wavespring, female	02250055–485	1
5	bearing, taper	499080–203	2
6	locknut, male M25 x 1	02250055–135	1
7	wavespring, male	02250047–887	1
8	bearing, taper	499025–005	2
9	capscrew, ferry hd 5/16"–18 x 1"	828405–100	3
10	washer, metric elt sm 8 x 15	865308–150	1
11	capscrew, socket hd 1/4"–20 x 1/4"	828304–025	2
12	housing, stator	250029–910	1
13	capscrew, ferry hd 5/16"–18 x 2 1/4"	828405–225	2
14	washer, seal	499065–007	2
15	pin, dowel 3/8" x 1"	499045–032	4
16	rotor, female "E" profile	02250055–489	1
17	rotor, male "E" profile	02250055–490	1
18	capscrew, ferry hd 3/8"–16 x 3 3/4"	829106–375	2
19	plate, inlet	250030–828	1
20	hose, nylon 1/4"	842215–004	
21	elbow, tube 90˚M 1/4" x 1/4"	250025–850	3
22	nipple, pipe 1/4"NPT x close	823204–000	1
23	valve, blowdown 1/4"NPT (I)	250025–655	1
24	tee, tube 1/4"	250025–835	1
25	screw, drive rod plated #8 x 3/8"	839608–060	2
26	plate, identification	250026–859	1
27	bearing, cylinder roll plain	499082–705	1
28	orifice, gear spray (mounting location)	250030–545	1
29	bearing, needle roller steel	250023–213	1
30	retainer, inlet bearing	250025–435	1
31	screw, machine flat head 1/4"–20 x 1/2"	831204–050	1

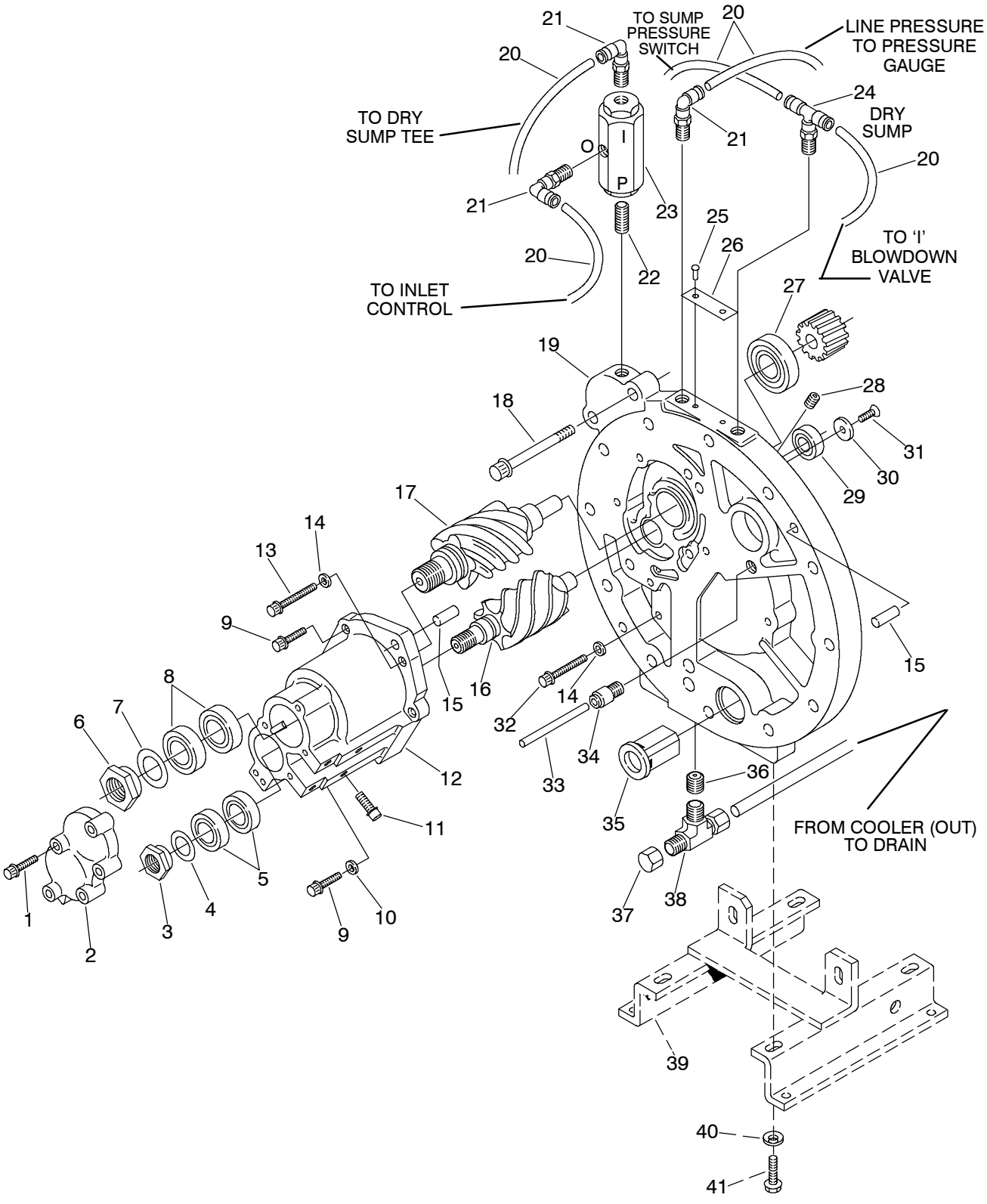
(Continued on page 39)

(I) For maintenance on blowdown valve no. 250025–655, order repair kit no. 250031–772.

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

ILLUSTRATIONS AND PARTS LIST

7.7 COMPRESSOR SYSTEM



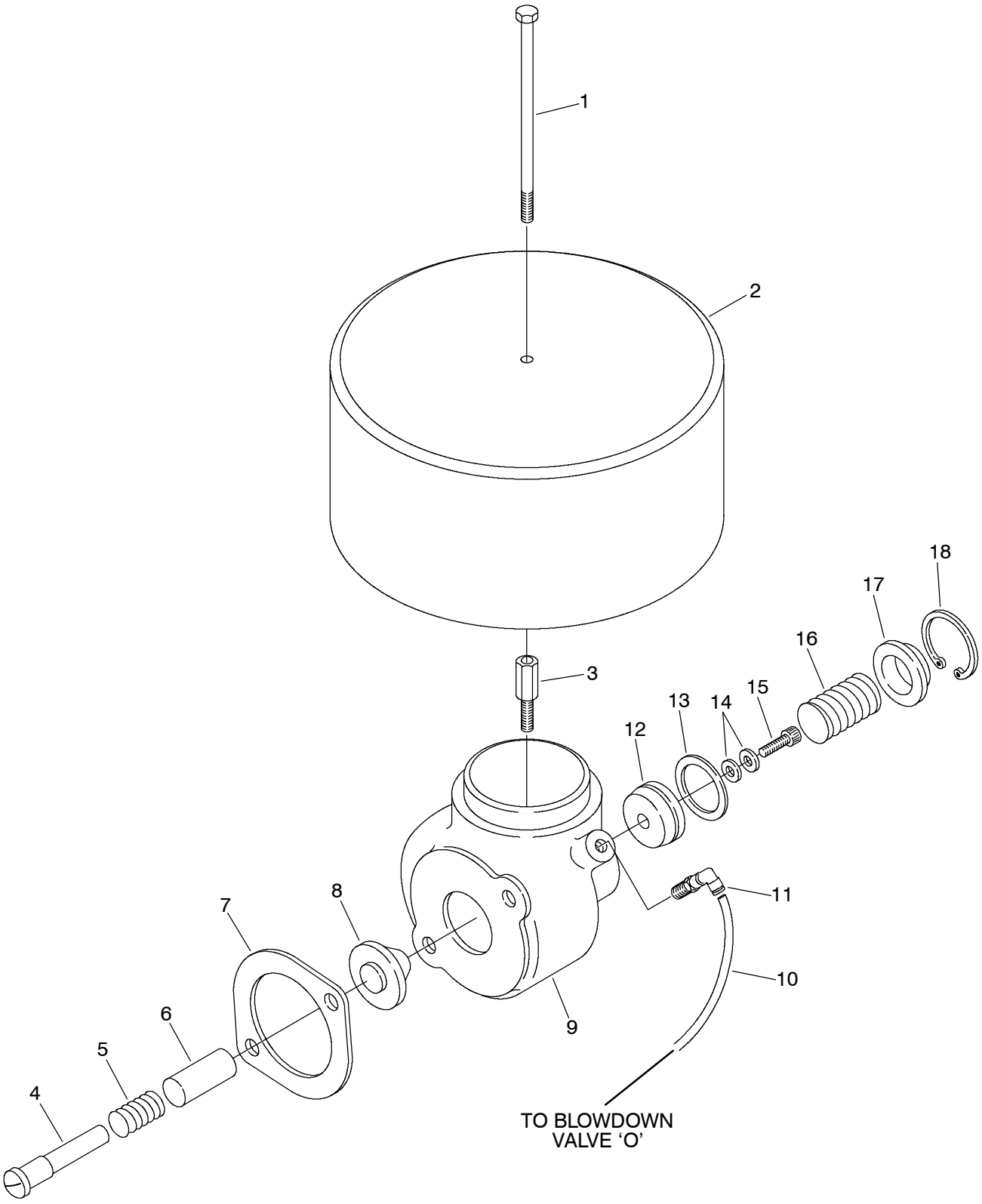
7.7 COMPRESSOR SYSTEM (CONTINUED)

key number	*description*	*part number*	*quantity*
32	capscrew, ferry hd 5/16”–18 x 1 1/2”	828405–150	2
33	tube, separator fluid return	250025–865	1
34	fitting, separator fluid return	250025–870	1
35	valve, body thermostat	250025–414	1
36	screw, set cup 5/8”–11 x 1/2”	250033–368	1
37	cap, 1/2” tube OD 3/4”–16	250026–350	1
38	tee, tube	250041–956	1
39	base, compressor	250034–001	1
40	washer, reg 3/8”	838206–071	2
41	capscrew, ferry hd 3/8”–16 x 3/4”	829106–075	2

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

ILLUSTRATIONS AND PARTS LIST

7.8 INLET FILTER AND INLET CONTROL



7.8 INLET FILTER AND INLET CONTROL

key number	*description*	*part number*	*quantity*
1	capscrew, hex GR5 1/4”–20 x 4”	829104–400	1
2	filter, air **(I)**	02250110–591	1
3	stud, air filter	02250110–929	1
4	rod, intake control valve	02250044–810	1
5	spring, intake check	250034–619	1
6	retainer, intake control valve	02250044–809	1
7	gasket, inlet valve	250025–425	1
8	head, intake control valve	02250044–808	1
9	housing, intake control	250025–310	1
10	hose, nylon 1/4”	842215–004	
11	elbow, 90˚M 1/8”npt x 1/4” tube	250025–849	1
12	piston, intake control valve **(II)**	02250044–811	1
13	seal, intake control piston **(III)**	02250044–671	1
14	washer, Belleville spring **(II)**	250031–269	2
15	capscrew, #10–32 x 1/2” Nylok	02250043–162	1
16	spring, inlet control	02250042–966	1
17	cap, air intake	250029–898	1
18	ring, retaining internal 1 3/8”	836150–137	1

(I) Air filter no. 02250110–591 is disposable. To maintenance filter, order replacement filter no. 02250110–591.

(II) For maintenance on inlet control, order piston no. 02250044–811 and washer no. 250031–269.

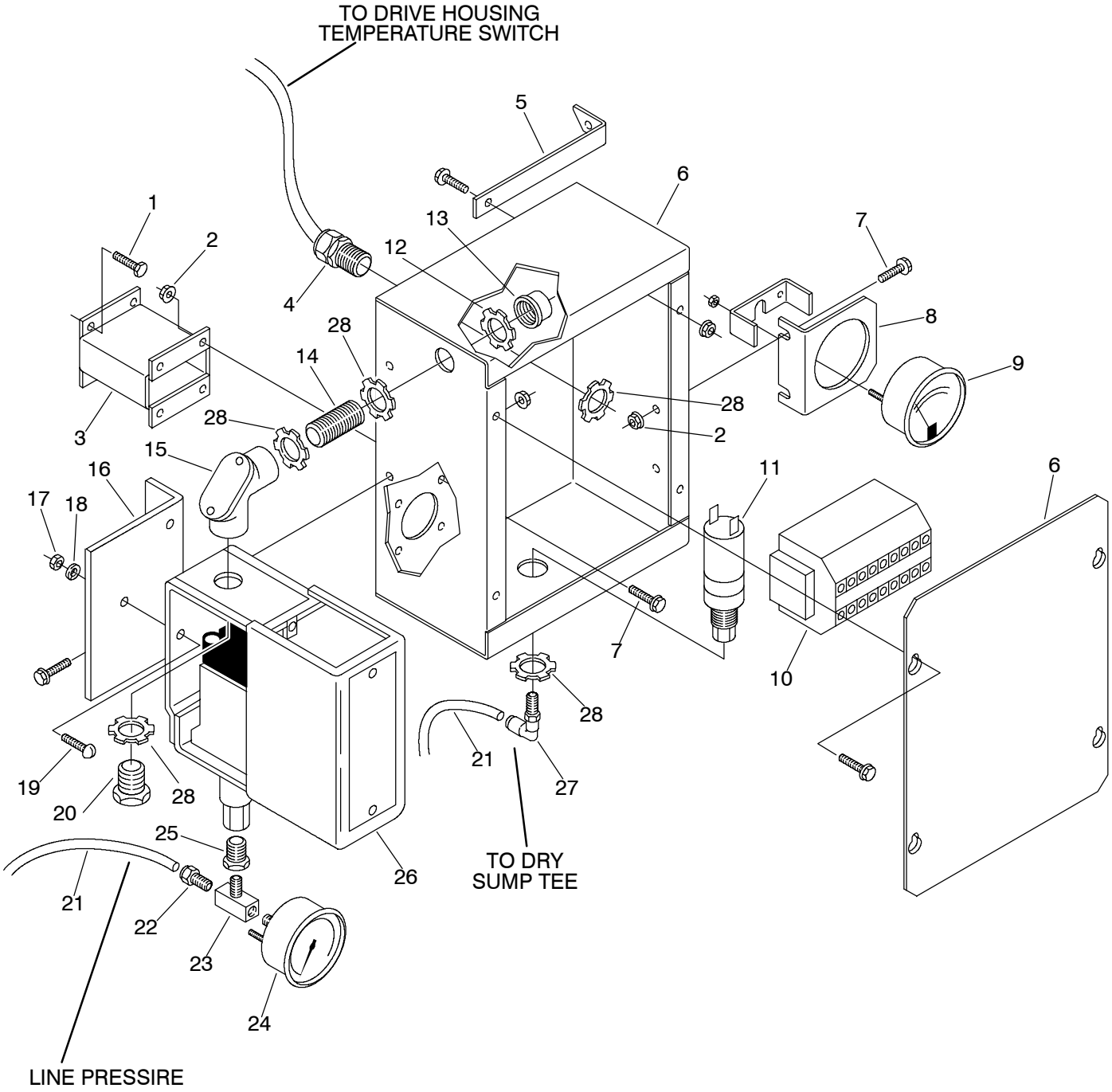
(III) For maintenance on air intake valve piston seal, order repair kit no. 02250045–287.

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

Section 7

ILLUSTRATIONS AND PARTS LIST

7.9 CONTROL BOX



7.9 CONTROL BOX

key number	*description*	*part number*	*quantity*
1	screw, 1/4”–20 x 1/2”	250030–162	4
2	nut, hex flgd 1/4”–20	825304–236	6
3	box, junction	250041–534	1
4	connector, liquid tight	250026–153	1
5	support, starter	02250110–532	1
6	box, electric control	02250110–232	1
7	screw, hex ser washer 1/4” x 1/2”	829704–050	6
8	panel, temp gauge	02250043–320	1
9	gauge, temperature	02250043–291	1
10	block, terminal 45a 600v Europe	02250057–241	1
11	switch, pressure	250032–763	1
12	locknut, conduit 1/2”	847200–050	1
13	bushing, conduit 1/2”	848815–050	1
14	nipple, conduit 1/2” x 1”	250007–169	1
15	elbow, corner pull 90˚ 1/2”	846915–050	1
16	bracket, pressure switch	250018–146	1
17	nut, hex #10–24	825202–130	2
18	washer, springlock #10	837802–047	2
19	screw, rd hd #10–24 x 1/2”	831602–050	2
20	nipple, chase conduit 1/2”	847815–050	1
21	hose, nylon 1/4”	842215–004	1.5 m
22	connector, tube 1/4”T x 1/8”P	250025–858	1
23	tee, male branch	250026–139	1
24	gauge, pressure 0–20.68 bar	02250044–361	1
25	bushing, reducing 3/8” x 1/8”	807601–005	1
26	switch, pressure 0–250#	407778	1
27	elbow, 90˚ swivel 1/4”T x 1/8”P	250025–849	1
28	locknut, conduit seal N4 1/2”	02250071–362	5

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

Section 7

ILLUSTRATIONS AND PARTS LIST

7.10 DECAL GROUP

7.10 DECAL GROUP

key number	*description*	*part number*	*quantity*
1	sign, warning “food grade” lube	250003–144	1
2	sign, danger air breathing	250027–935	1
3	sign, warning – hot surfaces	407408	1
4	decal, warning compressor fluid fill	049685	1
5	decal, compressor fluid Sullube **(I)**	02250069–389	1
6	decal, rotation direction	040745	1
7	decal, voltage international **(II)**	02250069–403	1
8	decal, “voltage” yellow & black glbl	250038–239	1
9	decal, Sullair 2.25 x 18 blk	02250059–052	1

(Continued on page 47)

(I) Decal will change with fluid requirement.

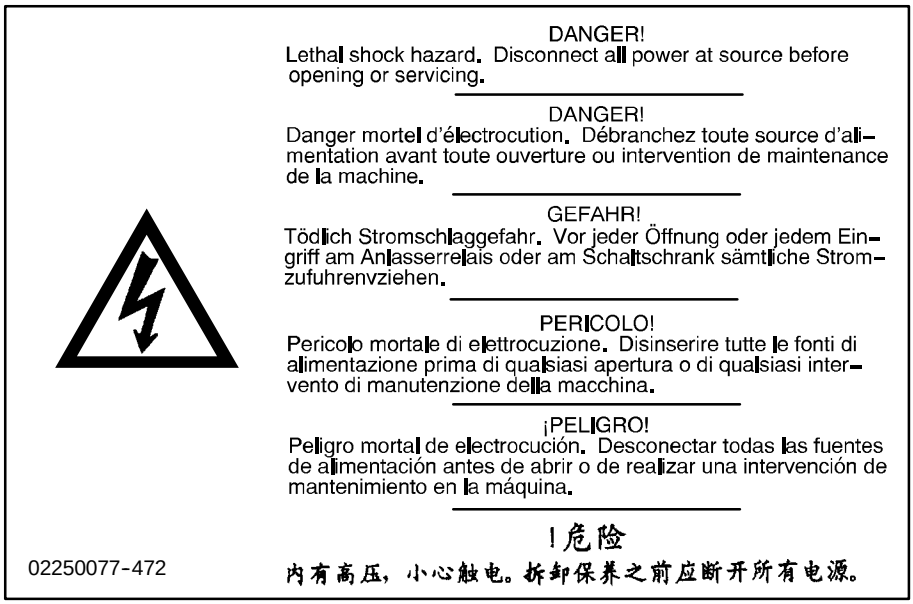
(II) Decal will vary with machine voltage. If voltage is not known, consult factory with serial number of compressor.

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

ILLUSTRATIONS AND PARTS LIST

7.10 DECAL GROUP

10



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12

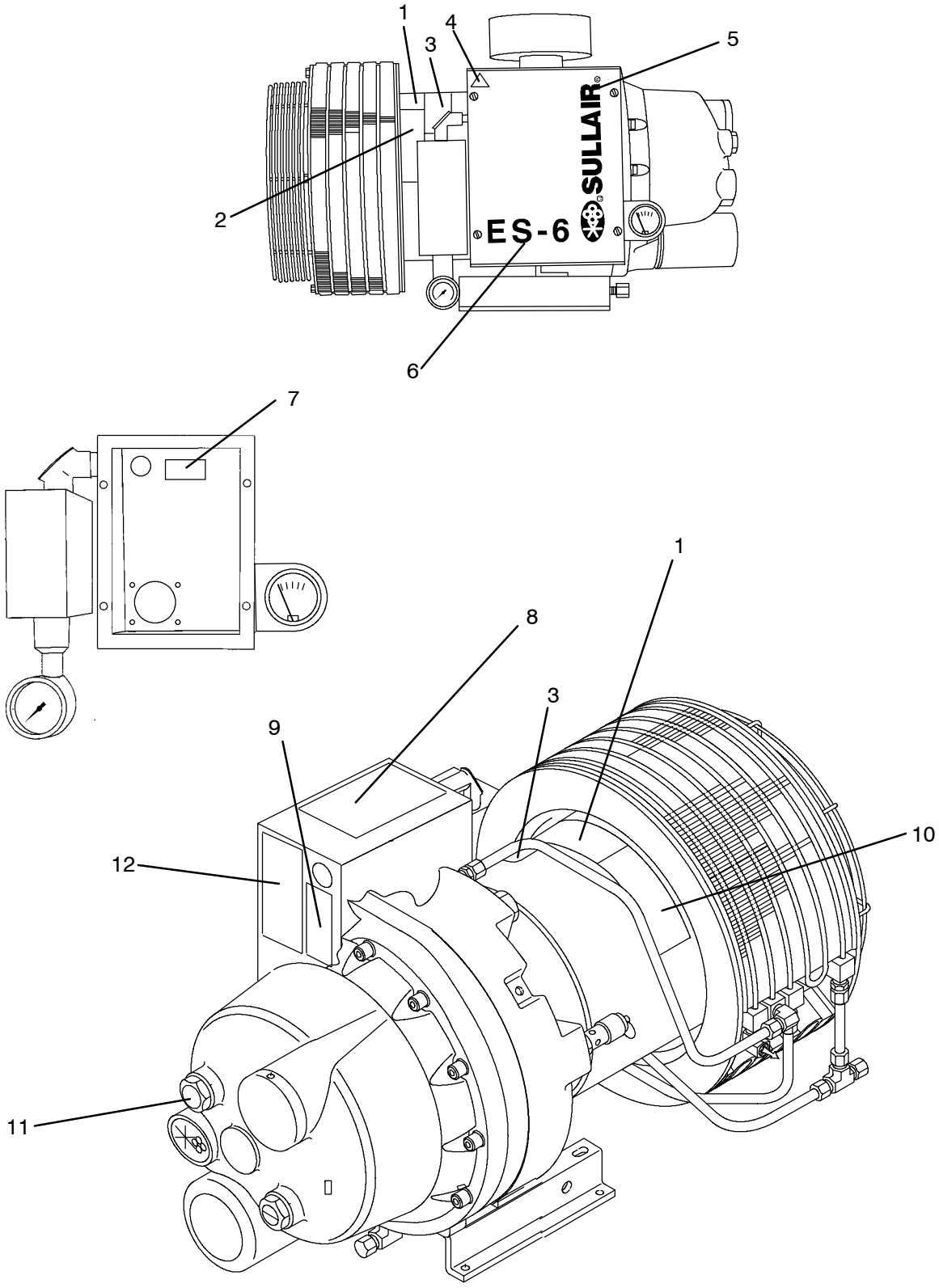
7.10 DECAL GROUP (CONTINUED)

key number	*description*	*part number*	*quantity*
10	decal, electrocution/hazard intnl/glbl	02250077–472	1
11	decal, ISO 9001	02250059–288	1
12	decal, ES–6 Model	02250060–043	1

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

ILLUSTRATIONS AND PARTS LIST

7.11 DECAL LOCATIONS



7.11 DECAL LOCATIONS

key number	*description*	*part number*	*quantity*
1	sign, warning “food grade” lube	250003–144	1
2	sign, danger air breathing	250027–935	1
3	decal, rotation direction	040745	1
4	decal, “voltage” yellow & black glbl	250038–239	1
5	decal, Sullair 2.25 x 18 blk	02250059–052	1
6	decal, ES–6 Model	02250060–043	1
7	decal, voltage international **(I)**	02250069–403	1
8	decal, electrocution/hazard intnl/glbl	02250077–472	1
9	sign, warning – hot surfaces	407408	1
10	decal, warning compressor fluid fill	049685	1
11	decal, fluid **(II)**	02250069–389	1
12	nameplate, SN CE	02250073–457	1

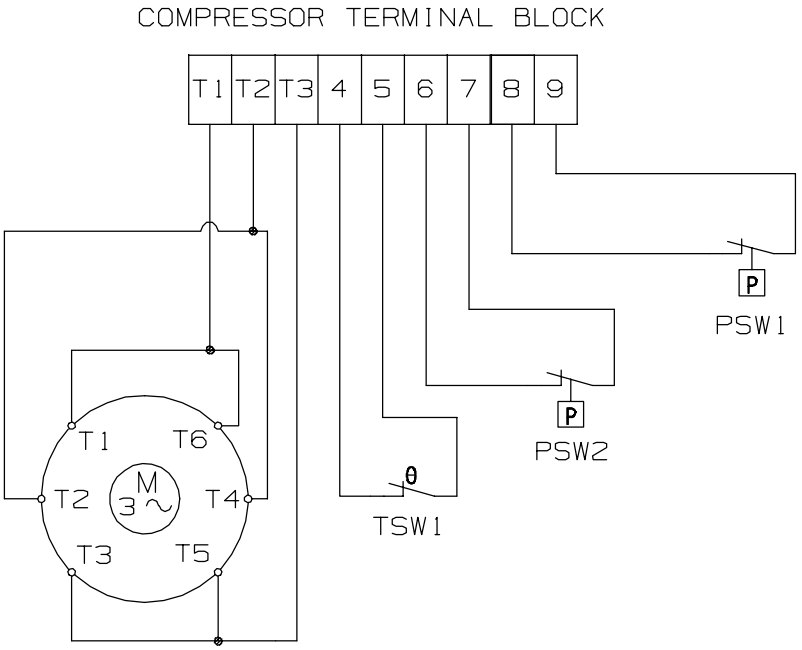
(I) Decal will vary with machine voltage. If voltage is not known, consult factory with serial number of compressor.

(II) Decal will change with fluid requirement.

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

ILLUSTRATIONS AND PARTS LIST

7.12 WIRING DIAGRAM



SYMBOL	DESCRIPTION
M	COMPRESSOR MOTOR 4KW 400V
TSW1	DISCHARGE TEMPERATURE SWITCH - 115.5°C
PSW1	SUMP PRESSURE SWITCH - OPEN 0.6 BAR, CLOSE 0.45 BAR
PSW2	LINE PRESSURE SWITCH - OPEN 8.6 BAR, CLOSE 7.6 BAR

NOTES

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