INDUSTRIAL AIR COMPRESSOR

LS-20S

125-150HP/90-110KW STANDARD AND 24KT

OPERATOR'S MANUAL AND PARTS LIST

KEEP FOR FUTURE REFERENCE

Part Number 02250115-257

AIR CARE
SEMINAR TRAINING

Sullair Air Care Seminars are 3-day courses that provide hands-on instruction in the proper operation, maintenance and service of Sullair equipment. Individual seminars on Industrial compressors and compressor electrical systems are presented at regular intervals throughout the year at a dedicated training facility at Sullair's corporate headquarters in Michigan City, Indiana.

Instruction includes discussion of the function and installation of Sullair service parts, troubleshooting of the most common problems, and actual equipment operation. The seminars are recommended for maintenance and service personnel.

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- Or Write -

Sullair Corporation
3700 E. Michigan Blvd.
Michigan City, IN 46360
Attn: Service Training Department

OPERATOR IS REQUIRED TO READ ENTIRE INSTRUCTION MANUAL

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NOTES

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 can result in accidents and injuries. Read this manual prior to startup.

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 regulations and all 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 regulations and 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 all 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 rated CFM. 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 devices 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 30 psig (2.1 bar) for cleaning purposes, and then only with effective chip guarding and personal protective equipment.

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

L. DO NOT tamper with sump and unit (if provided) relief valves. Check the relief valve as recommended in the Maintenance Section of this manual or at a minimum of at least weekly to make sure it is not blocked, clogged, obstructed or otherwise disabled. **DO NOT** change the factory setting of the relief valve.

M. If the compressor is installed in an enclosed area, it is necessary to vent the relief valve to the outside of the structure or to an area of non-exposure.

1.4 FIRE AND EXPLOSION

⚠WARNING

When installing a Base Load Transfer (BLT) System, remove jumpers between 16-17 & 18-19 (Dual Control Compressors) so the other compressor does not backfeed defeating the shutdown circuitry.

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 or on internal surfaces of the enclosure. 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 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 any Federal, State or Local Codes or regulations.

⚠ DANGER

Death or serious injury can result from inhaling compressed air without using proper 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 in 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 the compressor operator's manual lubrication section for information pertaining to compressor fluid 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 15 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.

F. Dry test all shutdown circuits prior to starting the compressor after installation.

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 Federal, State and Local codes.

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 compressors 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.

O. DO NOT use the lifting eye bolt on the compressor motor, if supplied, to lift the entire compressor package.

1.10 ENTRAPMENT

A. If the compressor enclosure is large enough to hold a person 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 lubricated rotary screw air compressor will provide you with a unique experience in 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 7 (Maintenance) to see how surprisingly easy it is to keep your air compressor in top operating condition. Should any questions arise which cannot be answered in the following text, call your nearest Sullair representative or the Sullair Corporation Service Department (see back cover).

2.2 DESCRIPTION OF COMPONENTS

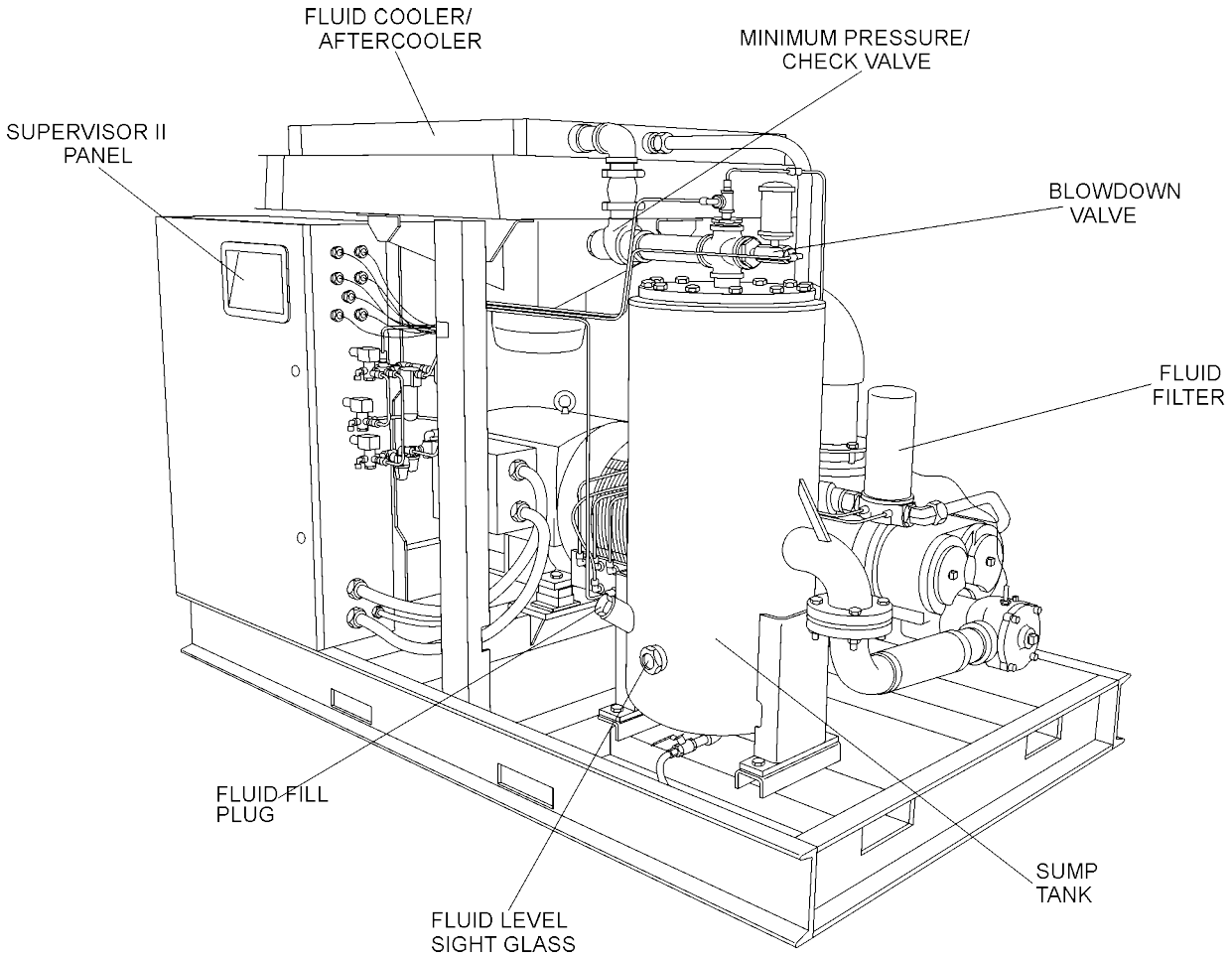
Refer to Figure 2-1. The components and assemblies of the air compressors are clearly shown. The complete package includes **compressor**, **electric motor**, **compressor inlet system**, **compressor discharge system**, **compressor cooling and lubrication system**, **capacity control system**, and **Supervisor control system**, all mounted on a heavy gauge steel frame.

On air-cooled models, a separate motor-driven fan forces air through the cooler/aftercooler assembly, thereby removing the heat of compression from the cooling fluid.

On water-cooled models, fluid is piped into a four-pass exchanger where the heat of compression is removed from the fluid. A fan is used to supply sufficient ventilating air to the compressors equipped with a canopy.

Both air-cooled and water-cooled versions have easily accessible items such as the fluid filters and control valves. The inlet air filters are also mounted for easy access and servicing.

Figure 2-1 Sullair Series LS-20S 150HP/ 110KW Rotary Screw Compressor (Air-cooled version)



2.3 SULLAIR COMPRESSOR UNIT, FUNCTIONAL DESCRIPTION

Sullair air compressors feature the Sullair compressor unit, a single–stage, positive displacement, lubricated–type compressor. This unit provides continuous pulse–free air compression to meet your needs. With a Sullair compressor, there is no maintenance or inspection of the internal parts of the compressor unit permitted in accordance with the terms of the warranty.

Sullair 24KT compressors are filled with a fluid which rarely needs to be changed. In the event a change or make–up fluid is required, use only Sullair 24KT fluid.

⚠ WARNING

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

Sullair recommends that a 24KT sample be taken at the first filter change and sent to the factory for analysis. This is a free service. The sample kit with instruction and self–addressed container is to be supplied by your Sullair representative at start–up. The user will receive an analysis report with recommendations.

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 primary functions:

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

After the air/fluid mixture is discharged from the compressor unit, the fluid is separated from the air. At this time, the air flows to the service line and the fluid is cooled in preparation for re–injection.

The fluid also serves as lubricant for the anti–friction bearings and the drive gear sets.

2.4 COMPRESSOR COOLING AND LUBRICATION SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figures 2–2 and 2–3. The **cooling and lubrication system** (air–cooled version) consists of a **fan**, **radiator–type cooler**/**aftercooler assembly**, **full–flow main line filter**, **thermal valve**, **fluid stop valve** and **interconnecting piping**.

For the water–cooled models, a shell and tube fluid cooler, and aftercooler are substituted for the radiator–type cooler on air–cooled compressors.

The pressure in the receiver/sump causes fluid flow by forcing the fluid from the high pressure area of the sump to an area of lower pressure in the compressor unit.

Fluid flows from the bottom of the receiver/sump to the thermal valve. The thermal valve is fully open to the compressor unit when the fluid temperature is below 180°F (82°C). The fluid passes through the thermal valve, the main filter and directly to the compressor unit where it lubricates, cools and seals the rotors and the compression chamber.

As the discharge temperature rises above 180°F (82°C), due to the heat of compression, the thermal valve begins to close and a portion of the fluid then flows through the cooler. From the cooler, the fluid flows to the main filter and on to the compressor unit.

The filter has a replacement element and an integral pressure bypass valve. When the element pressure drop exceeds 20 psid (1.4 bar), an internal switch contact opens and the Supervisor II module displays a maintenance requirement message.

The fluid stop valve prevents fluid from filling the compressor unit when the compressor is shut down. When the compressor is operating, the fluid stop valve is held open by air pressure from the compressor unit allowing a free flow of fluid from the receiver/sump back to the compressor unit. On shutdown, the compressor unit pressure is reduced, causing the fluid stop valve to close and isolate the compressor unit from the cooling system.

Water-cooled models have a water pressure switch to prevent operation with inadequate water pressure.

2.5 COMPRESSOR DISCHARGE SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figures 2-2, 2-4A and 2-4B. The compressor unit discharges the compressed air/fluid mixture through a discharge check valve into the combination receiver/sump. The discharge check valve prevents air in the receiver from returning to the compression chamber after the compressor has been shut down. The receiver has three functions:

- It acts as a primary fluid separator.
- Serves as the compressor fluid sump.
- Houses the final fluid separator elements.

The compressed air/fluid mixture enters the receiver and is directed against a curved shroud. Its direction of movement is changed and its velocity significantly reduced, thus causing large droplets of fluid to form and fall to the bottom of the receiver/sump. The fractional percentage of fluid remaining in the compressed air collects on the surface of the dual separator elements as the compressed air flows through them. Two return lines (or scavenge tubes) lead from the bottom of each separator element to the inlet region of the compressor unit. Fluid collecting on the bottom of each separator is returned to the compressor by a pressure difference between the receiver and the compressor inlet. Sight glasses are located in the return lines to observe this fluid flow. There are also orifices in these return lines (protected by strainers) to assure proper flow. When the total pressure drop across the ele-

Figure 2-2 Compresor Piping and Instrumentation Diagram

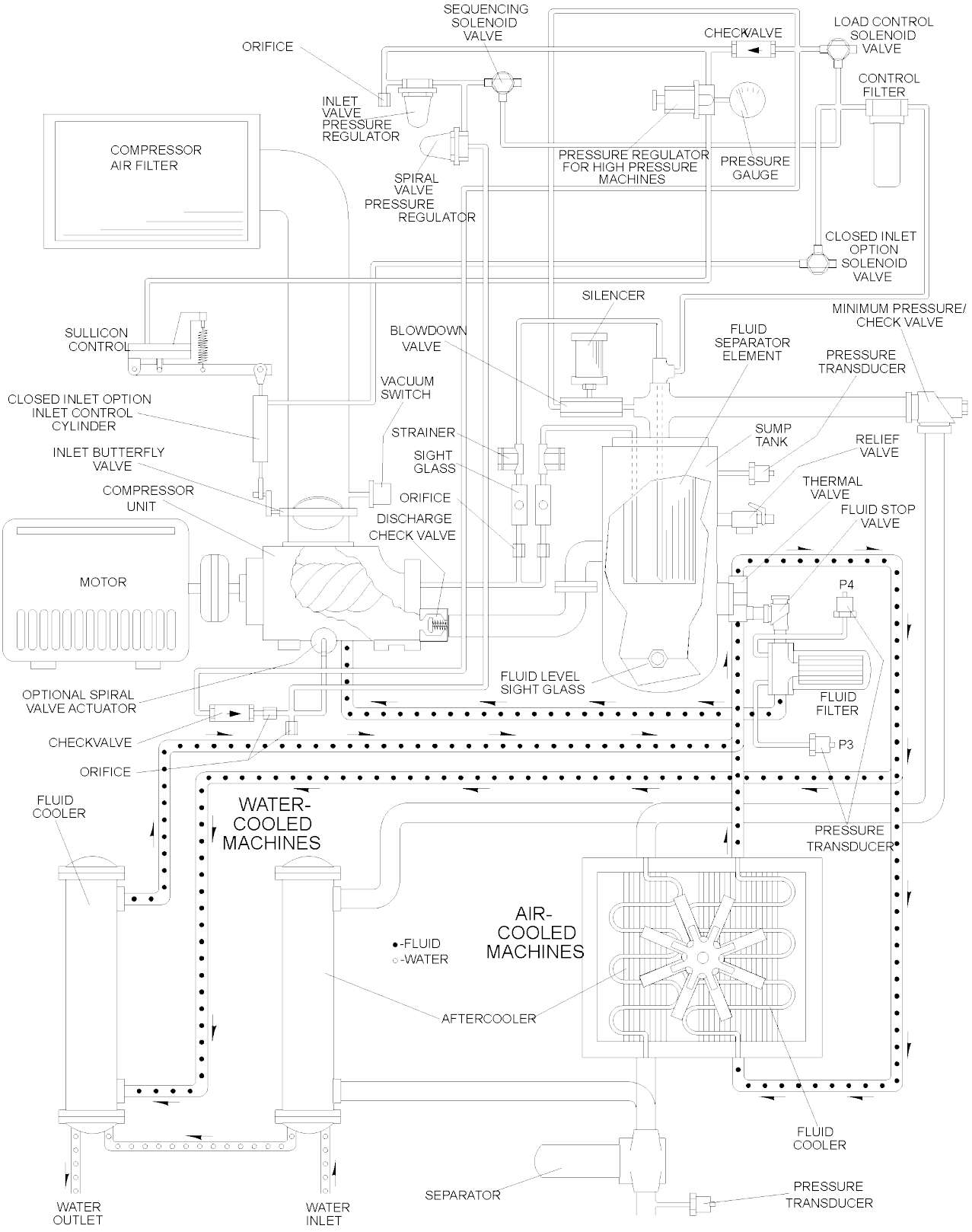
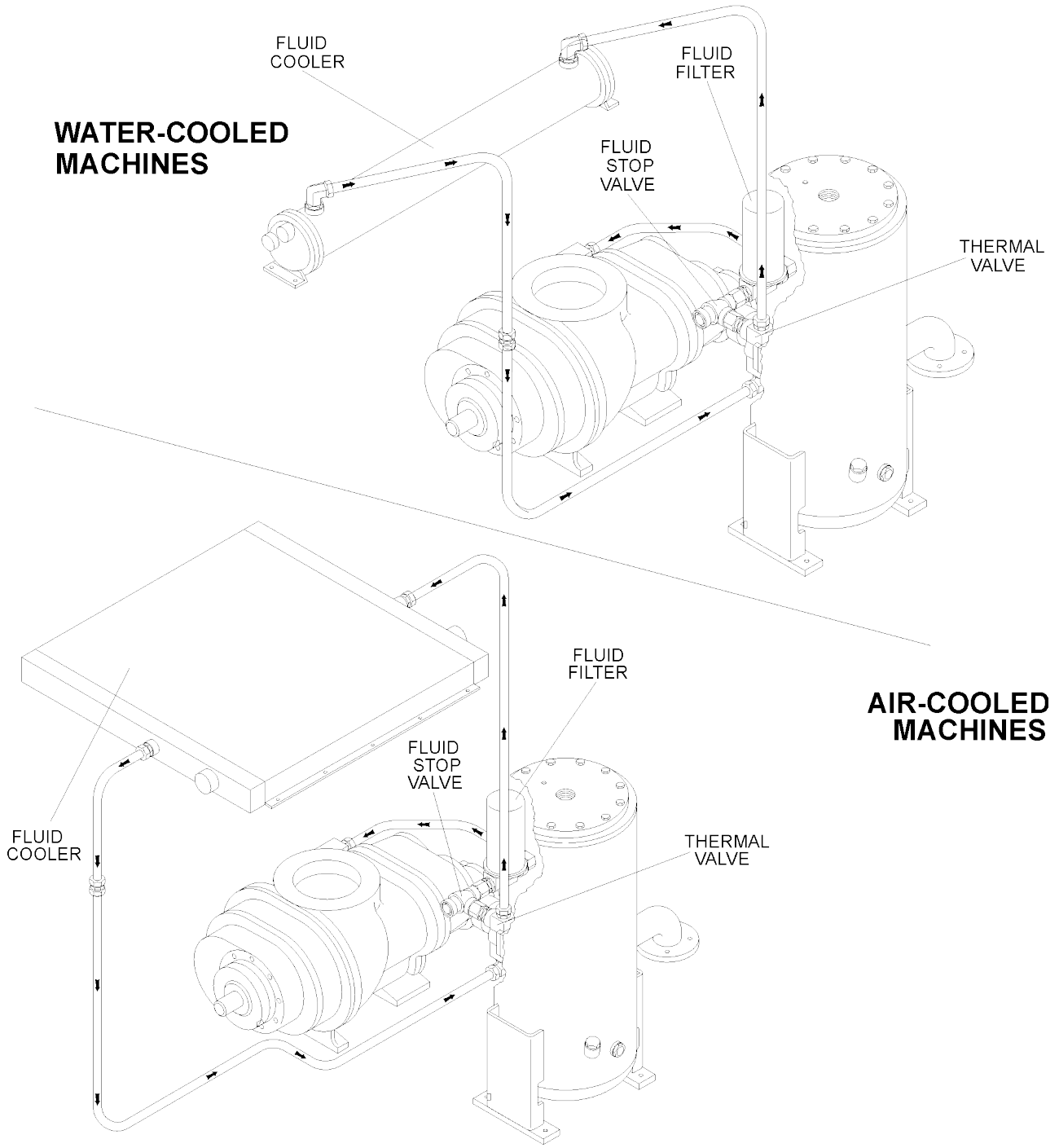


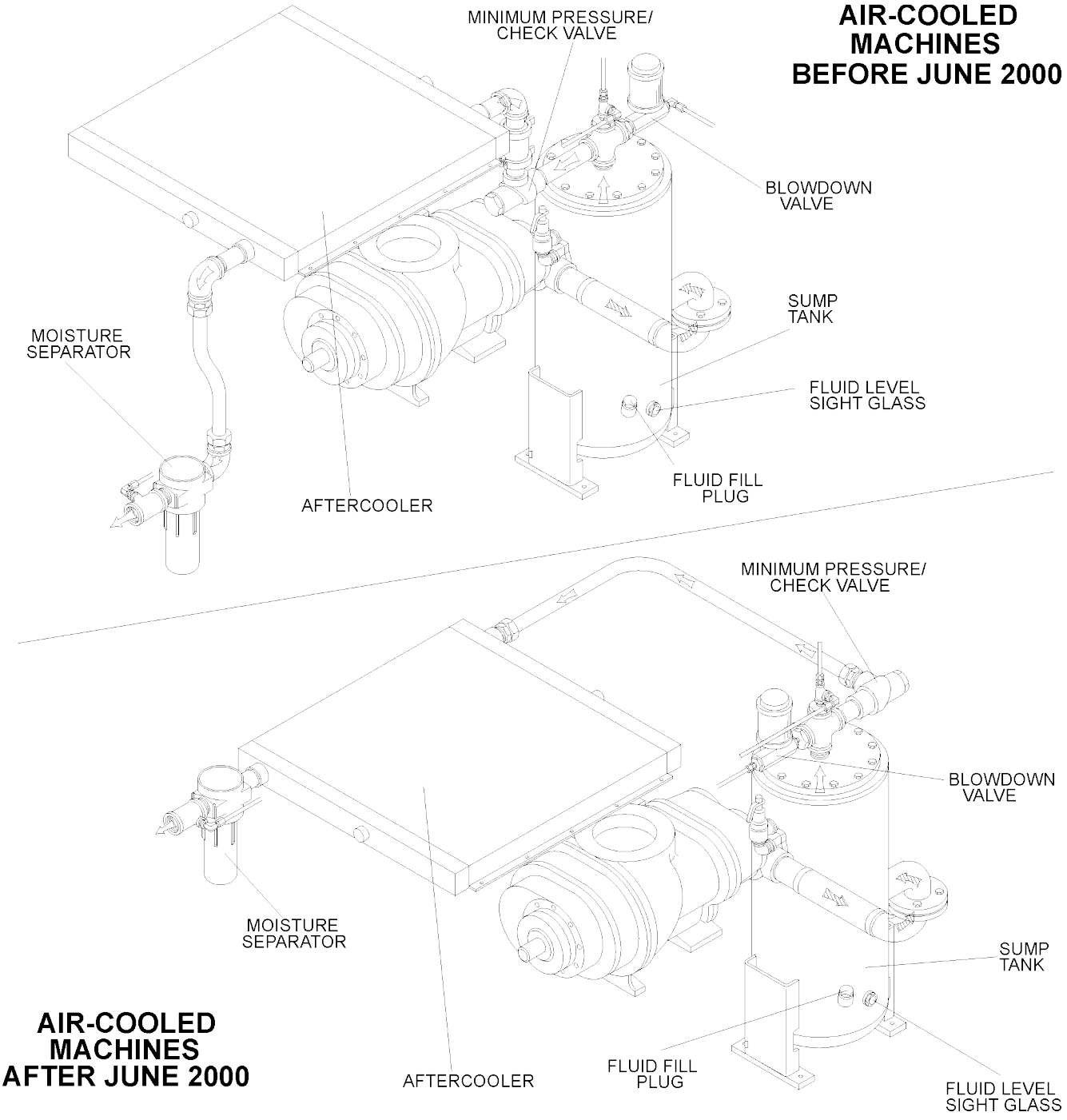
Figure 2-3 Compressor Cooling and Lubrication System Diagram



ments exceeds 10 psid (0.7 bar), the Supervisor II module displays a maintenance requirement message.

The receiver is a pressure vessel designed and built to codes administered by appropriate governing bodies. A combination minimum pressure/check valve, located downstream from the separator, assures a minimum receiver pressure of 50 psig (3.5 bar) during all conditions. This pressure is necessary for proper air/fluid separation and proper fluid circulation while supplying air to the system. This valve also acts as a check valve preventing compressed air in the service line from bleeding back

Figure 2-4A Compressor Discharge System Diagram- Air-cooled Model



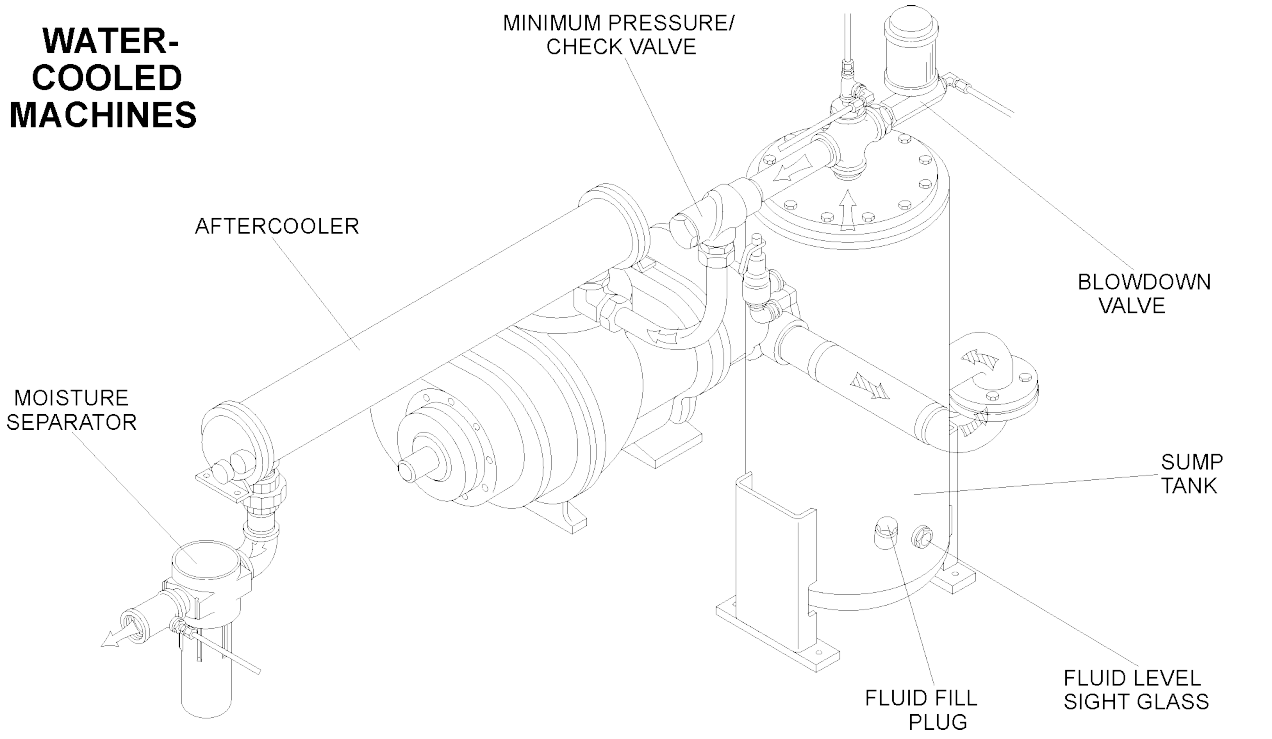
into the receiver on shutdown and during operation on the compressor in an unloaded condition.

A pressure relief valve (located on the wet side of the separator) is set to open if the sump pressure exceeds 200 psi (13.8 bar). For added safety the Supervisor II module is programmed to shutdown the package when:

a) A pressure level, above unload setting but below relief valve setting, is reached.

b) A temperature level exceeding 240°F (116°C) is reached.

Figure 2-4B Compressor Discharge System Diagram- Water-cooled Model



See Supervisor II module functional description for further details on shutdown pressure levels.

All Sullair compressor models are equipped with a high pressure shutdown protection to shut down the compressor at 20 psig (1.4 bar). This prevents the pressure relief valve from opening under routine conditions, thereby preventing fluid loss through the pressure relief valve. A temperature switch will shut down the compressor if the discharge temperature reaches 240°F (115°C).

⚠ 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 added to the sump via a capped fluid filler opening, placed low on the tank to prevent overfilling of the sump. A sight glass enables the operator to visually monitor the sump fluid level

2.6 CONTROL SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figures 2-5A and 2-5B. 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 **Sullicon Control**, a **butterfly valve** (located on the compressor air inlet), a **pressure switch**, **pilot valve pressure regulator(s)** and a **control line filter**. The functional description of the control system is described below in four distinct phases of operation. For explanation 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 50 PSIG (0 TO 3.5 BAR)

When the Supervisor II Module "**I**" or "⏻" pad is depressed, the unit starts and the pressure quickly rises from 0 to 50 psig (0 to 3.5 bar). The pressure regulator(s) and the pilot valve(s) remain closed, and the Sullicon Control and spiral valve are inoperative.The spring on the control holds the butterfly valve fully open via its spring–loaded lever arm. The minimum pressure valve (MPV) isolates the compressed air from reaching the service line while building enough backpressure (40–50 psig [2.8–3.5 bar]) to maintain adequate lubricant fluid flow. If the optional Closed Inlet Start assembly is provided, a spring–loaded, single acting pneumatic cylinder holds the butterfly valve almost fully closed, minimizing the compression load for special drivers (i.e., Wye–Delta electric motors) during the start–up phase. After a pre–determined amount of time, a solenoid valve energizes the pneumatic cylinder and the butterfly valve is thus opened fully. All further Sullicon Control operation takes place with the pneumatic cylinder energized.

Figure 2-5A Control System Diagram- Start and Full Load

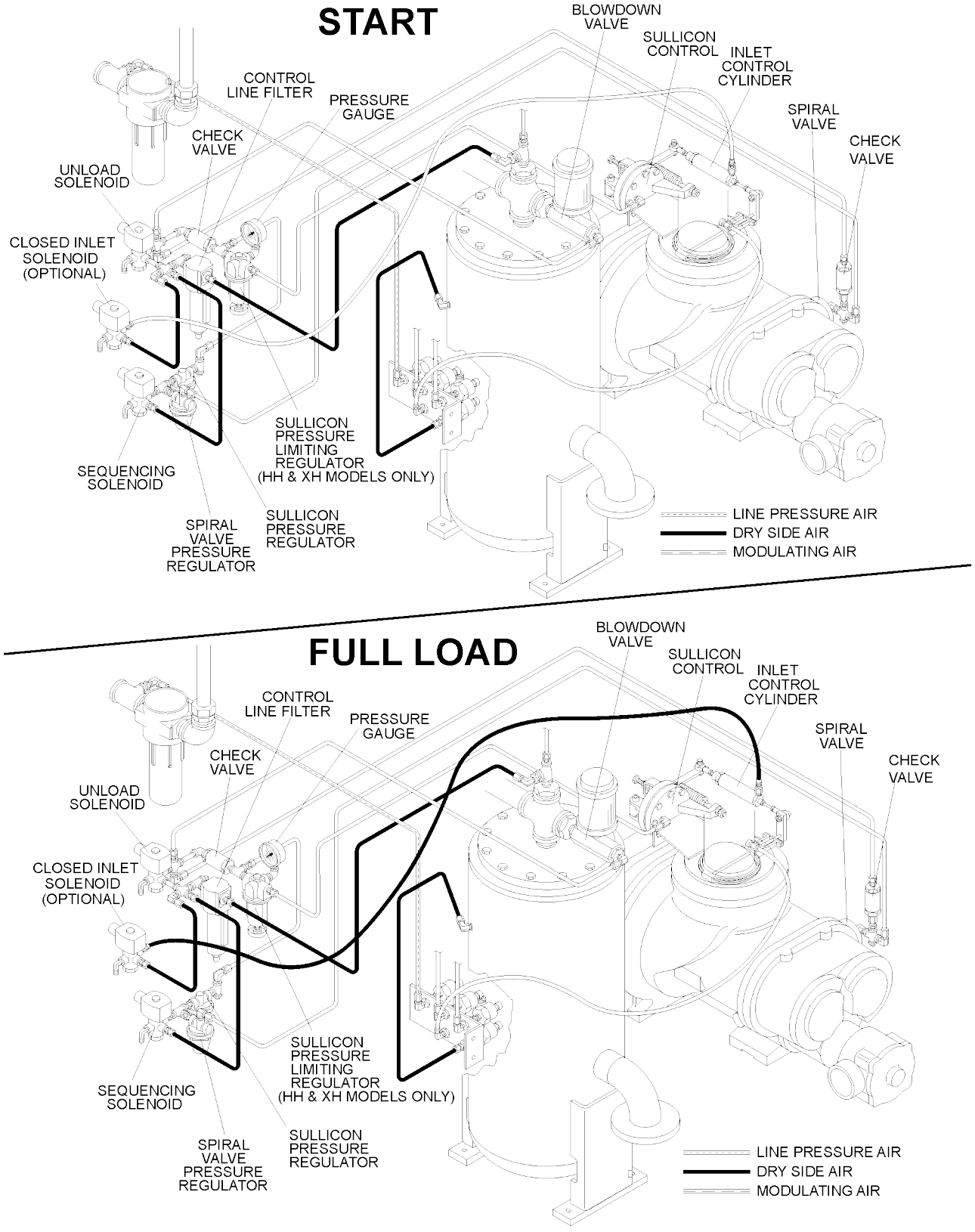
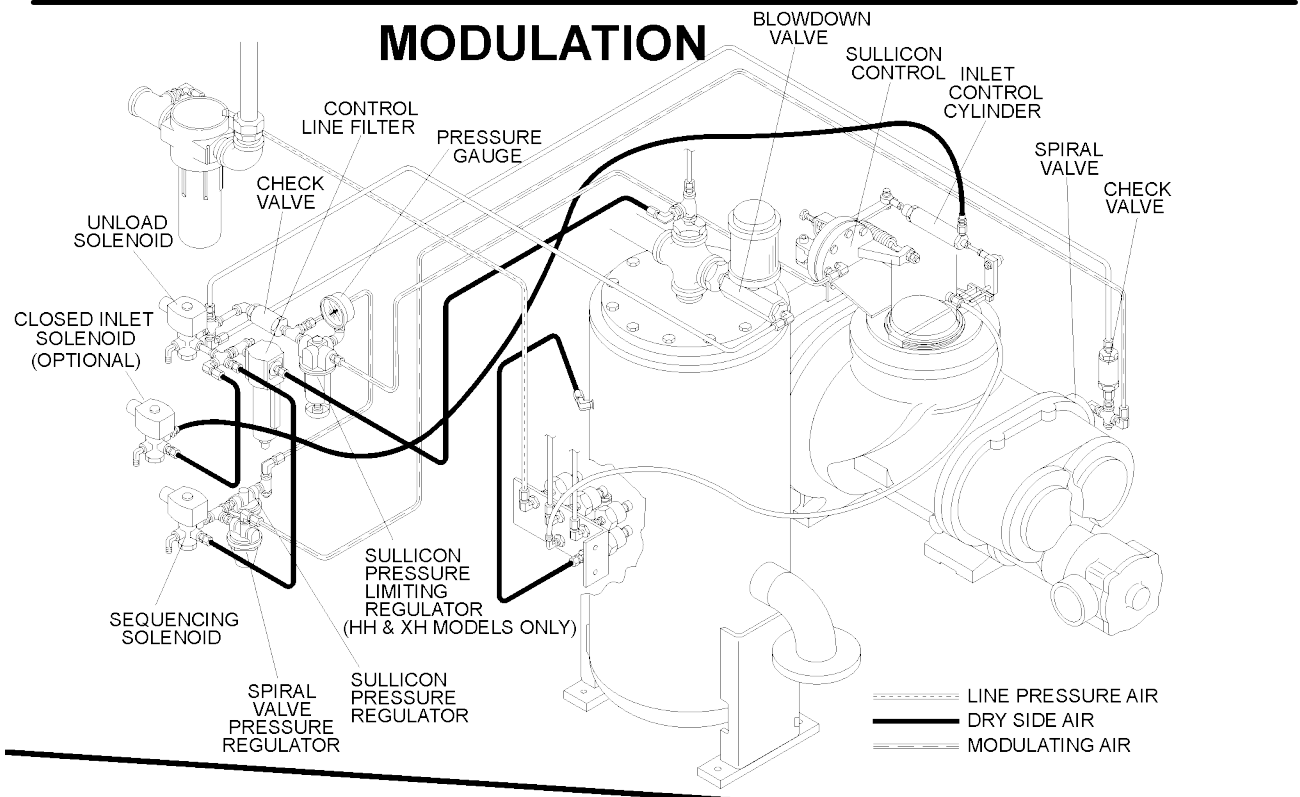
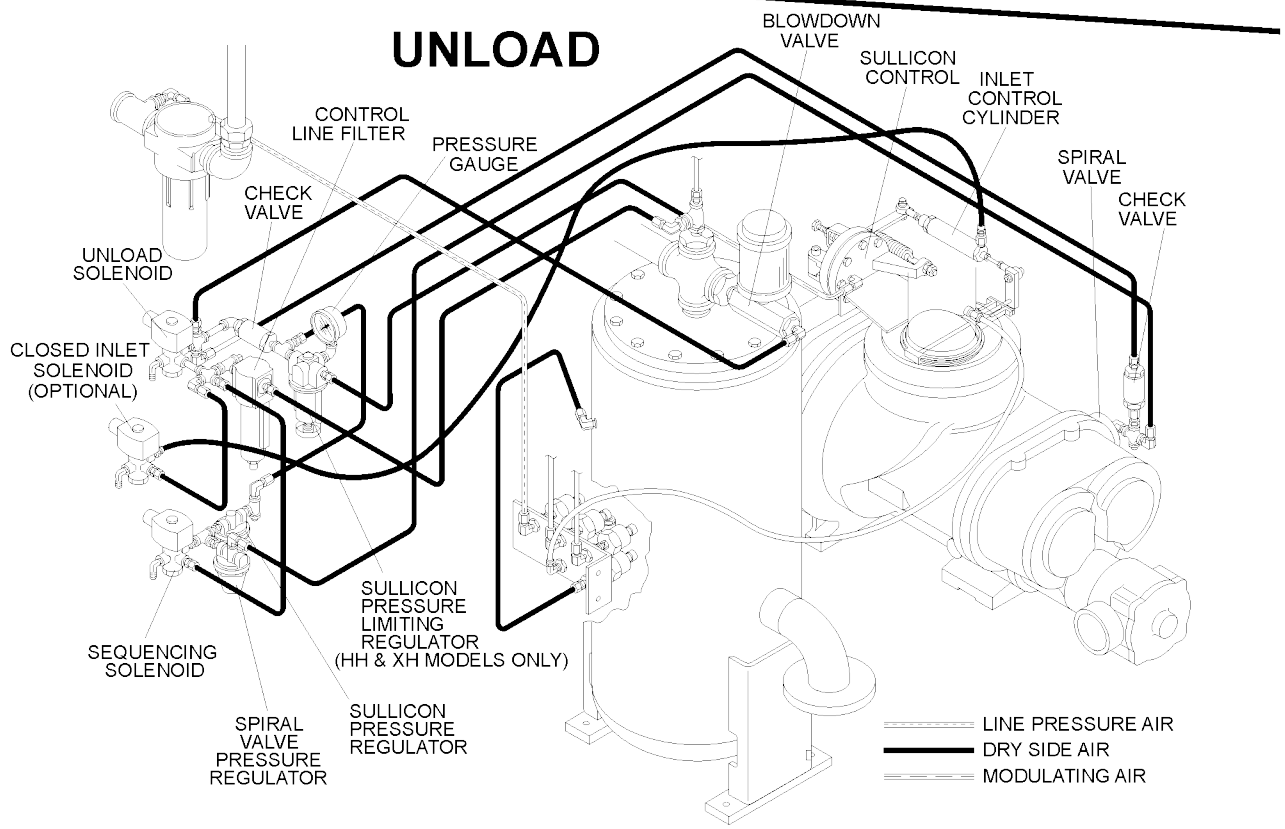


Figure 2-5B Control System Diagram- Modulation and Unload





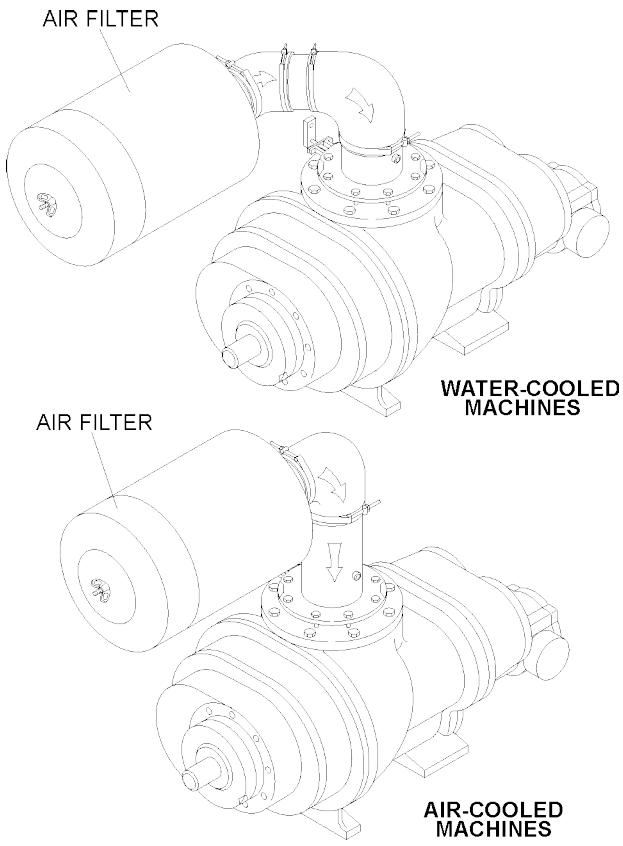
NORMAL OPERATING MODE – 50 TO 100 PSIG (3.5 TO 6.9 BAR)
When the compressed air pressure rises above 50 psig (3.5 bar), the minimum pressure valve opens and delivers compressed air to the service line. From this point on, the line air pressure is continually monitored by the Supervisor II. The pressure regulators and the solenoid valve remain closed during this phase, keeping the Sullicon Control and spiral valve inactive. Both the spiral valve as well as the inlet butterfly valve remain in the full load position as long as the compressor is running at 100 psig (6.9 bar) or below.

MODULATING MODE (STANDARD CONTROL) – 100 TO 110 PSIG (6.9 TO 7.6 BAR)
If less than the rated capacity of compressed air is being used, the line pressure will rise above 100 psig (6.9 bar), and a pressure regulator starts feeding an air signal to the pneumatic Sullicon actuator. The linear action of this device begins to close the butterfly valve via a rod–and–lever linkage, throttling the mass of air entering the compressor and thereby reducing the latter's air delivery. The air throttling of the Sullicon control system increases proportionately with a rise of line pressure from 101 to 110 psig (7 to 7.6 bar).

MODULATING MODE WITH OPTIONAL SPIRAL VALVE – 100 to 110 PSIG (6.9 TO 7.6 bar)
As air demand drops below the rated capacity of the compressor, the line pressure will rise above 100 psig (6.9 bar). As a result, the differential pressure regulator for the spiral valve gradually opens, applying air pressure to the spiral valve actuator. Air pressure at the actuator expands the diaphragm. The rack, in turn, engages with the pinion mounted on the spiral valve shaft assembly. This results in a rotary motion. As the spiral valve rotates, it starts opening the bypass ports gradually. Excess air is then being returned back internally to suction end of the compressor unit. Now the compressor is fully compressing only that amount of air which is being used. As air demand keeps dropping further, the spiral valve keeps opening more and more until all the bypass ports are fully open. At this point, the spiral valve has moved into the unload (minimum) position.

The spiral valve provides a modulation range from 100 to 50%. During this period, the pressure rises approximately from 100 to 105 psig (6.9 to 7.2 bar). As the air pressure exceeds 105 psig (7.2 bar), the differential pressure regulator controlling the Sullicon Control opens. This allows the air pressure to expand the diaphragm chamber of the Sullicon Control, which starts partially closing the inlet butterfly valve. The inlet butterfly valve provides modulation range from 50 to 40%. During this period, the pressure rises approximately from 106 to 110 psig (7.3 to 7.6 bar). During this range, the spiral valve remains in the unload position.

Figure 2-6 Air Inlet System



UNLOAD MODE – IN EXCESS OF 110 PSIG (7.6 BAR) LINE PRESSURE
When little or no air demand is present, the line pressure increases beyond 110 psig (7.6 bar). At this point, the Supervisor II Module energizes a solenoid valve which feeds an air signal to a) directly close the butterfly valve via the Sullicon actuator, and open the spiral valve, and b) open the blowdown valve and de–pressurize the package to its unload level of 40 to 50 psig (2.8 to 3.5 bar). The minimum pressure valve now isolates the sump vessel from the service line.

If the Supervisor II Module is operating on an "**I**" mode, the unit runs unloaded until the line pressure falls below 100 psig (6.9 bar), at which point it proceeds to the Normal Modulating Mode. If on the other hand, the Supervisor II Module is operating in the "⏲" mode, the unit runs unloaded for a pre–set length of time, and unless the line pressure falls below the 100 psig (6.9 bar) level, it stops at the end of this period. Once the line pressure falls below the 100 psig (6.9 bar) level,the compressor automatically restarts, followed by package operation in the Load mode.

When the line pressure drops back to 100 psig (6.9 bar) due to an increase in the air demand, Supervi-

sor II energizes the solenoid valve allowing the air pressure behind the Sullicon Control and the spiral valve actuator to be vented through the solenoid valve exhaust port. The blowdown valve closes, the inlet butterfly valve opens. Also the spiral valve returns to the full load (maximum) position.

2.7 AIR INLET SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 2-6. The compressor inlet system consists of a **two-stage**, **heavy-duty**, **dry-type filter** with inertial dust separation and collection, a **butterfly-type air inlet valve**, and an **adaptor piece** which mounts both devices to the compressor inlet flange.

When the pressure drop across the filter element(s) exceeds a level of 15 in. of water column, a switch contact opens in the Supervisor II module and a filter maintenance annunciation is displayed.

3.1 TABLE OF SPECIFICATIONS

	DIMENSIONS							
Model Series	**Length**		**Width**		**Height (I)**		**Weight (II)**	
	in	mm	**in**	mm	**in**	mm	**lb**	kg
20-125HP/90KW	**100**	2540	**60**	1524	**66.5**	1690	**4694**	2129
20-150HP/110KW	**100**	2540	**60**	1524	**66.5**	1690	**4944**	2243

(I) An additional height of 25in/ 63.5cm is needed to service the separator element.

(II) Weight listed is for an open package. Add 650 lbs./295 kg. to weight and 1.5 in. to height for enclosure package.

NOTE

Noise levels vary with machine and enclosure. For machine dBA output, consult factory with machine serial number.

COMPRESSOR:

Type:	Positive displacement, fluid-lubricated, twin rotary screws
Configuration:	Single-stage geared integral drive
Bearing Type:	Anti-friction
Lubricant:	Pressurized Sullube
Coolant:	See Sections 3.2 and 3.3 on Lubrication
Sump Fluid Capacity:	9 gallons (34 liters)
System Fluid Capacity:	14 gallons (53 liters)
Duty Press:	100-110 psig (6.9-7.6 bar)
Control Type:	Electro-pneumatic
Options:	Higher duty pressures up to 175 psig (12.1 bar), spiral valve, 24KT lubricant

MOTOR (60Hz):

Size:	125-150HP/90-110KW, 4-pole speed
Service:	3 ph, 60 Hz, 460 VAC, 40°C ambient
Type:	ODP enclosure, NEMA frames 405TSC through 445TSC
Options:	TEFC enclosure, various voltages

MOTOR (50Hz):

Size:	125-150HP/90-110KW, 1500 RPM
Service:	3 ph, 50 Hz, 400 VAC, 40°C ambient
Type:	ODP enclosure, NEMA frames 405TSC through 445TSC
Options:	IP23, TEFC enclosure, various voltages

3.2 LUBRICATION GUIDE-STANDARD COMPRESSORS

Sullair standard compressors are filled with Sullube fluid as factory fill.

⚠ WARNING

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

Sullube fluid should be changed every 8000 hours or once a year, whichever comes first. The fluid should be changed more frequently under severe operating conditions, such as high ambient temperatures coupled with high humidity, or when high particulate level, corrosive gases or strong oxidizing gases are present in the air.

Section 3
SPECIFICATIONS

⚠ 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 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.

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

Sullair encourages the user to participate in a fluid analysis program with the fluid suppliers. This could result in a fluid change interval differing from that stated in the manual. Contact your Sullair dealer for details.

3.3 LUBRICATION GUIDE-24KT COMPRESSORS

Sullair 24KT compressors are filled with a lubricant which rarely needs to be changed. In the event a change of fluid is required, use only Sullair 24KT fluid.

⚠ WARNING

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

Sullair recommends that a 24KT sample be taken at the first filter change and sent to the factory for analysis. This is a free service. A sample kit with instructions and self-addressed container is to be supplied by your Sullair Representative at start-up. The user will receive an analysis report with recommendations.

3.4 LUBRICATION GUIDE-OPTIONAL FLUID

Sullair compressors may use SRF 1/4000 fluid as an optional factory fill.

⚠ WARNING

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

SRF 1/4000 fluid should be changed every 4000 hours or once a year, whichever comes first. The fluid should be changed more frequently under severe operating conditions, such as high ambient temperatures coupled with high humidity, or when high particulate level, corrosive gases or strong oxidizing gases are present in the air.

For extended life synthetic lubricants contact the nearest Sullair representative.

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

Figure 3-1A Identification- Air-cooled Model (Prior to June 1, 2000)

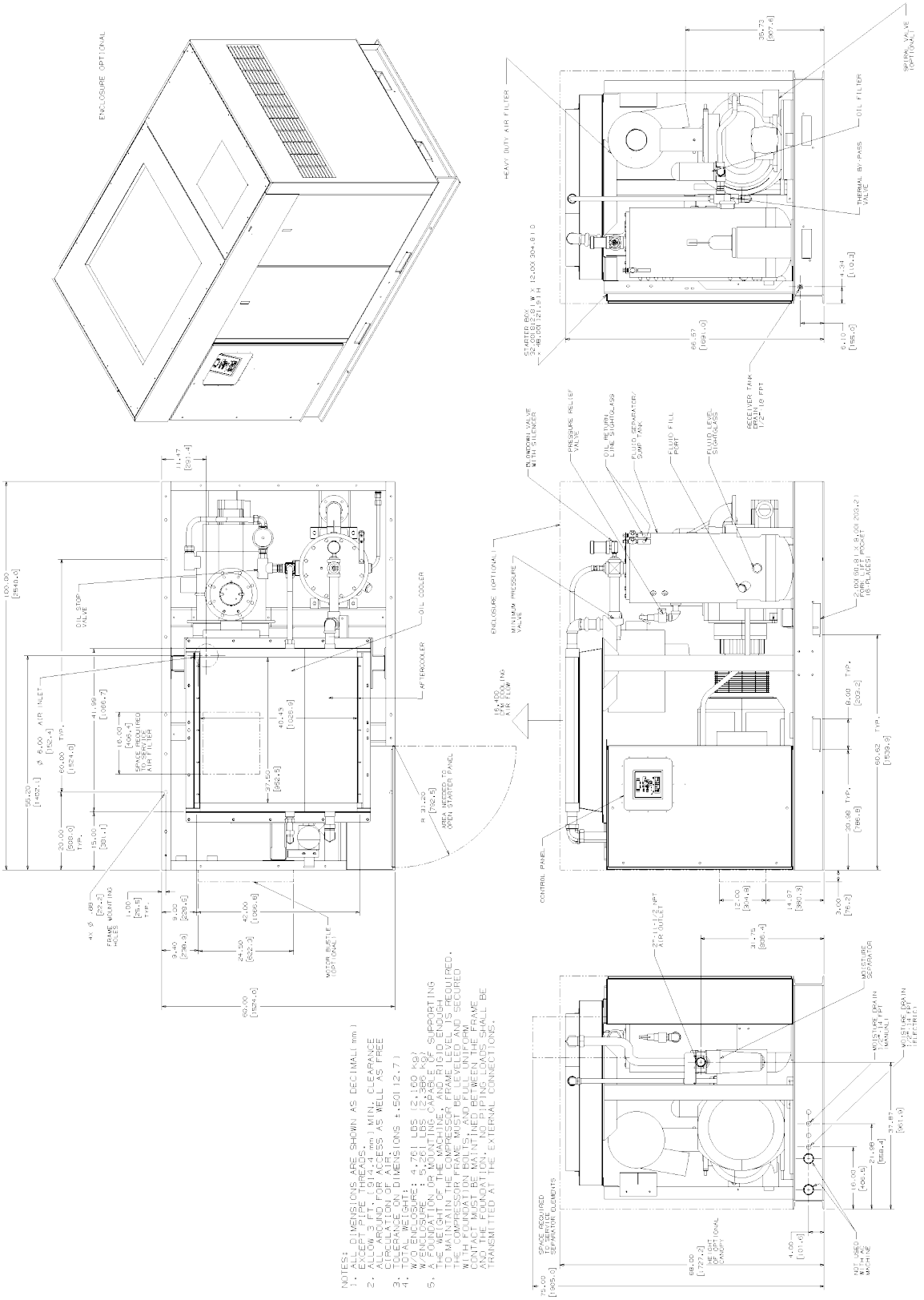
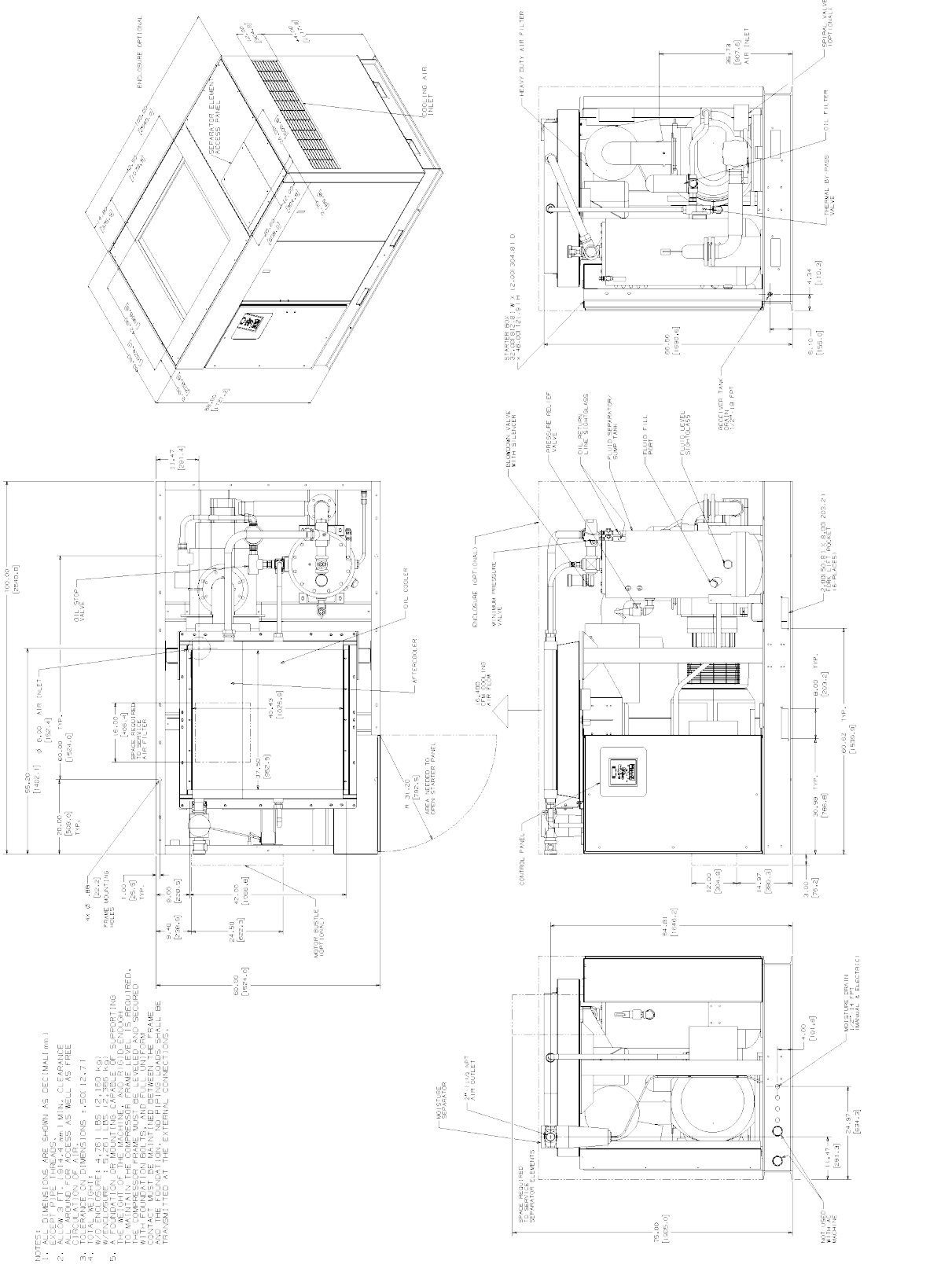
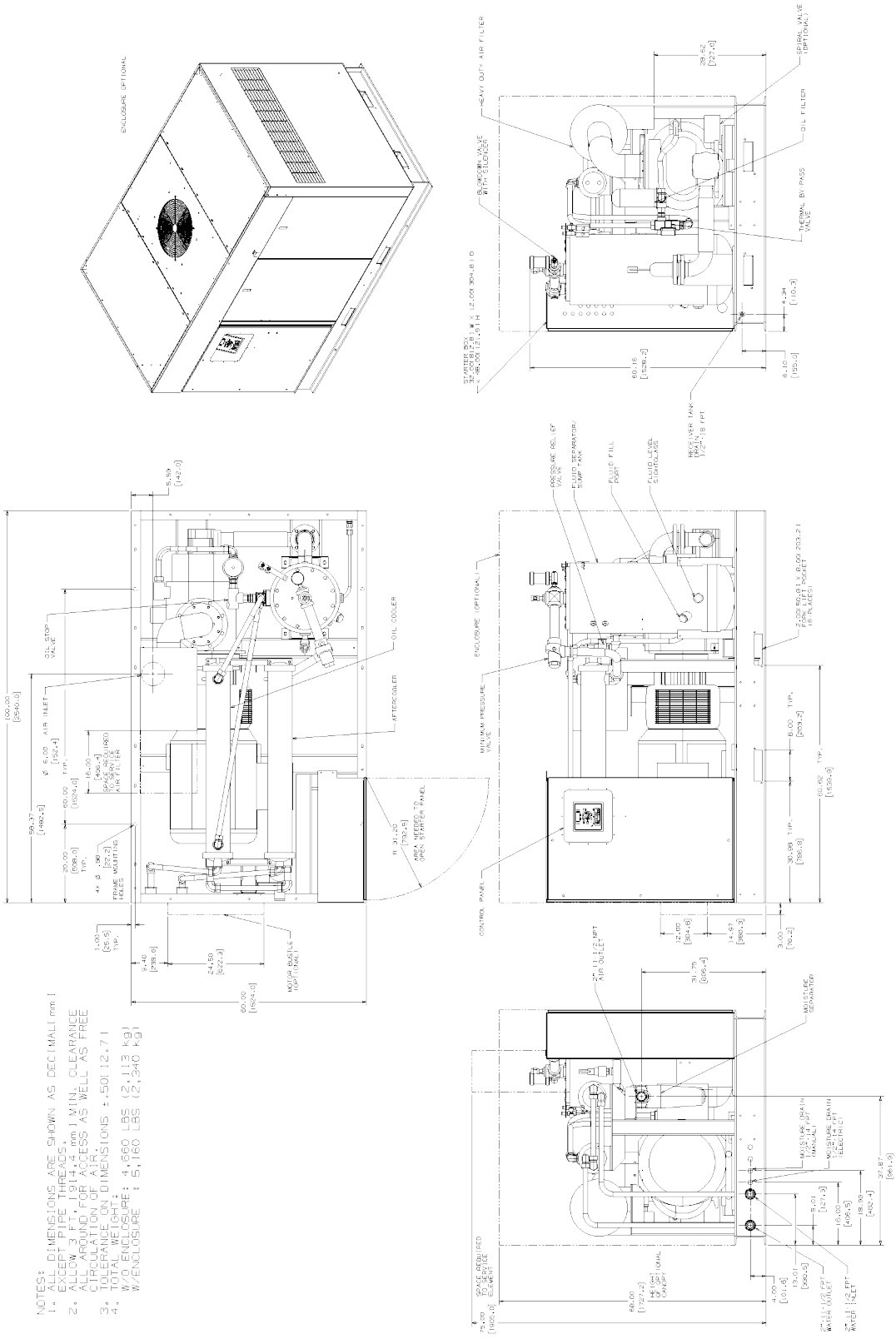


Figure 3-1B Identification- Air-cooled Model (After June 1, 2000)



NOTES:
1. ALL DIMENSIONS ARE SHOWN AS DECIMAL[mm]
2. EXCEPT PIPE THREADS.
3. ALLOW 24" [610mm] MIN. CLEARANCE AROUND FOR SERVICE AS WELL AS FREE CIRCULATION OF AIR.
4. TOLERANCE ON DIMENSIONS ± .50[12.7]
5. W/O ENCLOSURE: 4,760 LBS. (2,160 kg)
W/ENCLOSURE: 5,260 LBS. (2,385 kg)
FOUNDATION OR MOUNTING SURFACE MUST BE SUFFICIENTLY RIGID TO SUPPORT THE WEIGHT OF THE MACHINE AND PROVIDE ENOUGH RIGIDITY TO MAINTAIN THE COMPRESSOR FRAME LEVEL AS REQUIRED. THE COMPRESSOR FRAME MUST BE LEVELED AND SECURED WITH FOUNDATION BOLTS AND FILLED UNIFORM CONTACT MUST BE MAINTAINED BETWEEN THE FRAME AND THE FOUNDATION AT THE FOUR HOLD-DOWN BOLTS.
6. ALL ELECTRICAL CONNECTIONS SHALL BE TRANSMITTED AT THE EXTERNAL CONNECTIONS.

Figure 3-1C Identification- Water-cooled Model



NOTES

4.1 MOUNTING OF COMPRESSOR PACKAGE

The compressor package should be placed over a surface or foundation that is capable of supporting its weight, while remaining level and free of deflections which may affect the driveline mounts or the inboard pipework.

It is recommended that the package frame be leveled and secured to the foundation with adequate anchorage, and that a good grade grouting be used to insure full contact between the load bearing surfaces.

⚠ DANGER

Do not twist frame.

The compressor/motor driveline is self-aligned by the use of a rigid distance piece and supported by flexible vibration isolation mounts. Poor leveling or excessive deflections may adversely affect the operation and longevity of these devices.

No piping loads should be transmitted to the air and water connections provided with the package.

4.2 VENTILATION AND COOLING

For air-cooled compressors, select a location to permit a sufficient unobstructed flow of air through the compressor to keep the operating temperature stable. The minimum distance that the compressor should be from surrounding walls is three (3) feet (0.91m). To prevent excessive ambient temperature rise, it is imperative to provide adequate ventilation. If ductwork is attached to cooler air discharge, the high static fan option should be selected.

For water-cooled compressors, it is necessary to check the cooling water supply. The water system must be capable of supplying the following flows:

WATER TEMP. °F/ °C	WATER FLOW GPM/ LPM	
	125HP/90KW	150HP/110KW
70/ 21	18/ 68	22/ 83
80/ 27	25/ 95	30/ 114

NOTE

Water flow requirements are based on 80°F to 85°F (27°C to 29°C) water inlet temperature.

Recommended water pressure range is 25 to 75 psig (1.7 to 5.2 bar).

The table below indicates the ventilation requirements necessary to keep the compressor running at a normal operating temperature. The fan air requirement is the volume of air which must flow through the compressor for proper ventilation. The specified heat rejection requirement is the amount of heat that is radiated by the compressor. This heat must be removed to assure a normal operating temperature. With air-cooled compressors it is possible to use this heat for space heating, providing no additional pressure drop is created across the fan. Consult a Sullair representative for assistance in utilizing this heat.

DO NOT install a water-cooled or an air-cooled/aftercooled compressor where it will be exposed to temperature less than 32°F(0°C).

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 if required. Also notice that the service line should be equipped with water legs and condensate drains throughout the system.

4.4 SHAFT COUPLING CHECK

The compressor unit and motor are rigidly connected via a cast adaptor piece which maintains the shaft coupling in proper alignment. It is recommended that prior to initial startup, all coupling fasteners are checked for proper tensioning. Refer to the Coupling Service Procedures included in the Maintenance section of this manual.

4.5 FLUID LEVEL CHECK

The air compressor is also supplied 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 sight glass located near the sump. If the sump is properly filled, the fluid level should be visible in the sight glass.

4.6 MOTOR ROTATION CHECK

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

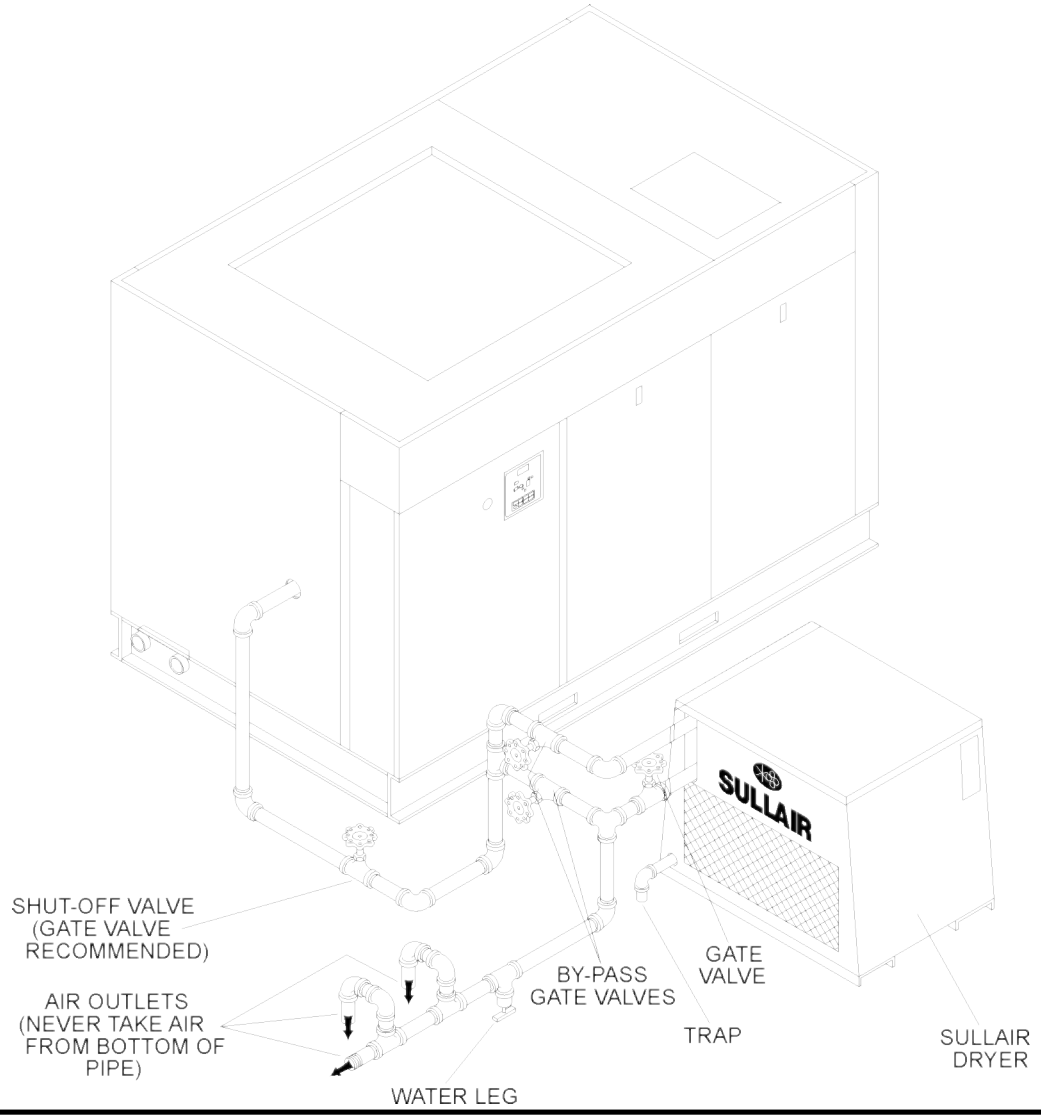
Pull out the **EMERGENCY STOP** button and press once, quickly and in succession, the **(START)** "**I**" and **(STOP)** "**O**" pads. This action will "bump start" the motor for a very short time. When looking at the motor rear end, the driveline should be rotating clockwise. If the reversed rotation is noted, disconnect the power to the starter and exchange any two of the three power input leads, then re-check rota-

VENTILATION REQUIREMENTS

Cooling Type	Air-cooled		Water-cooled	
Motor HP	125	150	125	150
Fan Air CFM **(I)**	16,400	16,400	2,845 **(I)**	2,845 **(I)**
Heat Rejection to ventilating air BTU/min.	6,081	7,527	1,340	1,340
Heat Rejection to water, BTU/min.			6,081	7,527

(I) Applies to compressors with canopy only (vent fan).

Figure 4-1 Service Air Piping (Typical Installation)



tion. A "Direction of Rotation" decal is located on the top of the compressor/motor adaptor piece.

4.7 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 applicable local electrical codes concerning isolation switches, fuse 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.

⚠ DANGER

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

1. Check incoming voltage. Be sure that the incoming voltage is the same voltage that the compressor was wired for. Verify that control transformer primary is wired for correct line voltage.
2. Check starter and overload heater sizes (see electrical parts in Parts Manual).
3. Check all electrical connections for tightness.
4. "DRY RUN" the electrical controls by disconnecting the three (3) motor leads from the starter. Energize the control circuits by pushing the **(START)** "**I**" pad and check all protective devices to be sure that they will de-energize the starter coil when activated.
5. Reconnect the three (3) motor leads and jog the motor for a direction of rotation check, as explained in Section 4.6.

Section 5
COMPRESSOR OPERATION

5.1 INTRODUCTION

While Sullair has built into the LS-20S Series package a comprehensive array of controls and indicators to assure its proper operation, the user should recognize and interpret readings which call for service or indicate the onset of a malfunction. Before starting the unit, the user should become familiar with the controls and indicators-their purpose, location, and use.

5.2 PURPOSE OF CONTROLS

All Supervisor II Module (Supervisor) related functions and indicators are presented in Section 6.2, so please refer to that section for your information. Additional indicators and functions included in the package are as follows:

CONTROL OR INDICATOR	PURPOSE
EMERGENCY STOP SWITCH	Pushing in this switch, found adjacent to the Supervisor, cuts all AC outputs from the latter and de-energizes the starter. A fault message (E STOP) is displayed by the Supervisor until the button is pulled out and the "**O**" pad is depressed.
THERMAL O/L RESET	Momentarily pushing this button, found on the starter's thermal overload element housing, re-closes the latter's contacts after a current overload takes place. Please be aware that the elements must be allowed to cool sufficiently before resetting.
SULLICON ACTUATOR	Actuates the inlet butterfly valve which throttles the air flow to the compressor inlet, in order to match air supply to the demand.
SPIRAL VALVE (OPTIONAL)	Internally bypasses and controls the air flow capacity of the compressor, in order to match air supply to the demand. This device is optional.
PRESSURE REGULATOR (SULLICON)	Opens a pressure line between the sump and Sullicon Control allowing the Sullicon Control to regulate air delivery according to the air demand.
PRESSURE REGULATOR (WITH OPTIONAL SPIRAL VALVE)	Opens a pressure line between the service line and the spiral valve actuator allowing the spiral valve to regulate air delivery according to air demand.
SOLENOID VALVE	Electrically actuated, 3-way valve which controls the flow of pneumatic logic signals. Used throughout package to: •Open the blowdown valve. •Load the Sullicon device/close the inlet butterfly valve during shutdown operation. •Close the spiral valve.
DISCHARGE CHECK VALVE	Blocks the reverse flow of air/fluid through the compressor unit during shutdown.
MINIMUM PRESSURE VALVE	Maintains 50 psig (3.5 bar) pressure in sump vessel. When pressure falls below 40 psig (2.8 bar), it closes and isolates the sump vessel from the air service line, thus preventing compressed air backflow during unloading or shutdown.
PRESSURE RELIEF VALVE	Vents the sump vessel to atmosphere if the compressed air pressure exceeds 200 psig (13.8 bar). Its operation indicates fault with the Supervisor operation or its programming.

Section 5
COMPRESSOR OPERATION

CONTROL OR INDICATOR	PURPOSE
BLOWDOWN VALVE ASSEMBLY	Vents the sump vessel to atmosphere during unloading and shutdown.
THERMAL MIXING VALVE	Bypasses fluid flow around the cooler until the former reaches a temperature of 180°F (82°C). Useful for fast warm-up during start. Maintains a minimum temperature of 180°F (82°C) during periods of low load or low ambient temperatures.
FLUID STOP VALVE	Blocks the flow of fluid to the compressor during shutdown, thus preventing the discharge of fluid through the compressor inlet pipework.
SUMP SIGHT GLASS	Indicates level of lubricant in the sump. Located on the sump side, it should show half-full (compressor stopped) for proper fluid level.
SEPARATOR RETURN LINE SIGHT GLASSES	Indicate fluid flow in the separator return lines. Large flow should be visible during full load operation; little to no flow during unloaded operation. Sluggish flow during full load operation indicates the need to clean the strainers fitted to the return lines.
WATER PRESSURE SWITCH	De-energizes the starter, via the Supervisor, if the water pressure falls below 10 psig (0.7 bar). This switch is not adjustable. Used on water-cooled packages only.
DRAIN VALVES	Lubricant sump drain valve.

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 4.6).
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. Check for possible leaks in piping.
7. Slowly close the shut-off valve to assure proper nameplate pressure unload setting is correct. The compressor will unload at nameplate pressure. If adjustments are necessary, see Control System Adjustments.
7. Observe the operating temperature. If the operating temperature exceeds 200°F (93°C), the cooling system and installation environment should be checked.
8. Open shut-off valve to the service line.
9. Reinspect the compressor for temperature and leaks the following day.

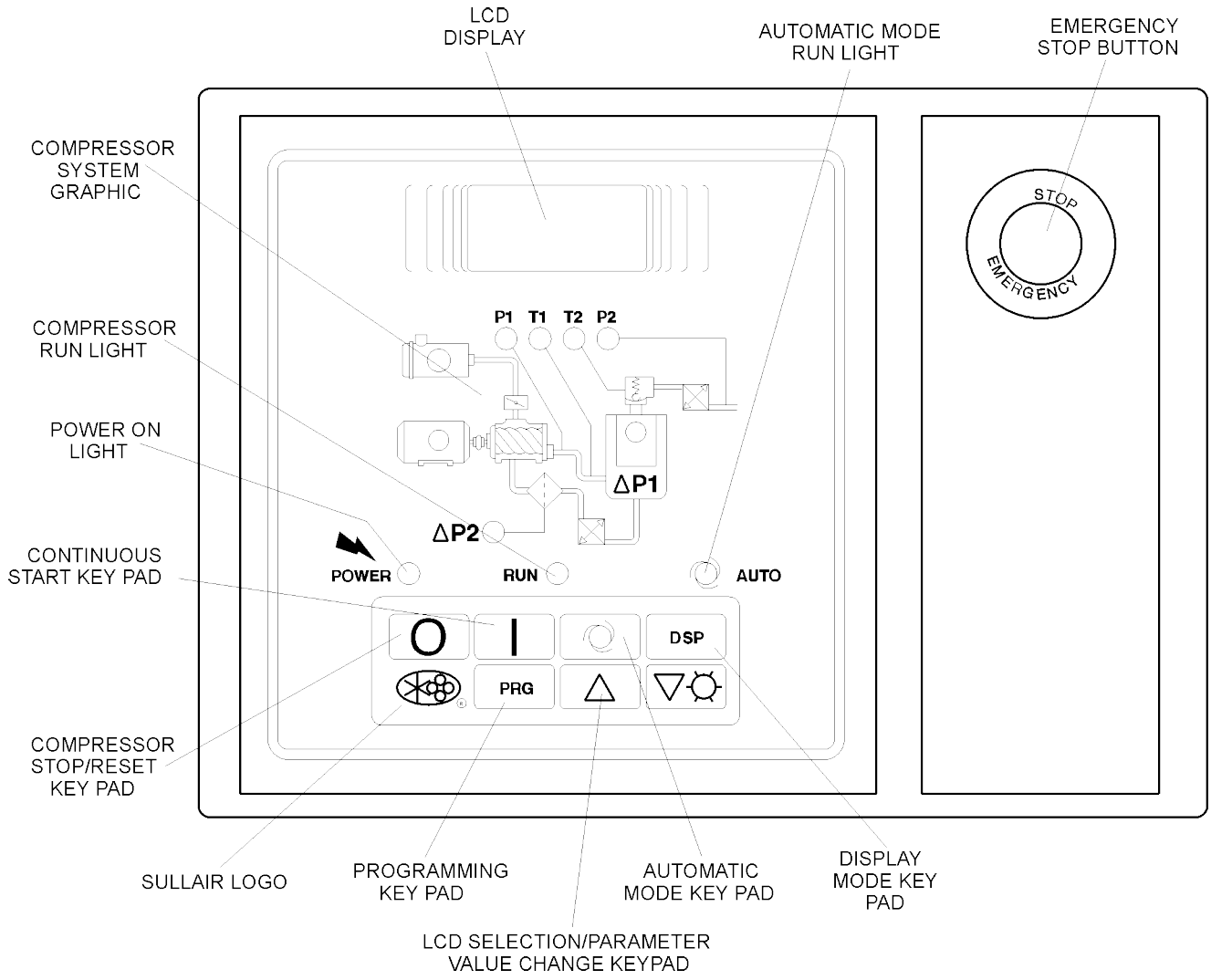
5.4 SUBSEQUENT START-UP PROCEDURE

On subsequent start-ups, check that the proper level is visible in the fluid sight glass and simply press the START button. When the compressor is running, observe the instrument panel and maintenance indicators.

5.5 SHUTDOWN PROCEDURE

To shut the compressor down, simply press the STOP button.

Figure 6-1 Supervisor II Panel



Section 6
SUPERVISOR II

6.1 BASIC INTRODUCTION

Refer to Figure 6–1. The Supervisor II has a two line display to show temperature, pressure and status. It has a keypad for operating the compressor, programming the control points and selecting displays. There is a graphic illustration with lamps that light to show the item being displayed. The lamps flash if that component is in an alarm condition.

6.2 KEYPAD

The keypad is used to control the machine as well as display status and change setpoints. Refer to figure 6–1 for following key descriptions.

- **Stop** – Used to put the machine into manual stop. It is also used to clear alarm conditions.

- **Continuous** – Starts machine if no alarm conditions are present. Also used to clear alarm conditions while machine is running.

- **Auto** – Starts machine and selects auto mode if no alarm conditions are present. Also used to clear alarm conditions while machine is running.

- **Display** – Used to display pressures, temperatures and other status information (See section on STATUS DISPLAYS).

- **Logo** – Used for various functions described in later sections.

- **Program** – Used to enter the parameter change mode where control parameters may be displayed and changed (See PARAMETER SETUP).

- **Up arrow** – Used in status displays to change displays and in parameter setup mode to increment a value.

- **Down arrow, lamp test** – Used in status displays to change displays and in parameter setup mode to increment a value. When in the default display the key will light all the lamps for three seconds.

6.3 STATUS DISPLAYS

By default the line pressure (P2) and discharge temperature (T1) are shown on the bottom line of the display, and machine status on the top line.
The following are the various machine status messages that indicate the state of the compressor:

(Display graphics shown below.)

- **STOP** – Compressor is off.
- **STANDBY** – Compressor is off but armed to start. This state may be entered because of a power up, or the unload timer had expired and stopped the machine. NOTE : The machine may start at any time.
- **STARTING** – Machine is trying to start.
- **OFF LOAD** – Machine is running and off loaded.
- **ON LOAD** – Machine is running and loaded.
- **FULL LD** – Machine is running and fully loaded in SEQUENCE mode.
- **RMT STOP** – Compressor is off but armed to start. The machine will start when the remote start contact is closed. NOTE : the machine may start at any time.
- **SEQ STOP** – Compressor is off but armed to start. The machine will start when the sequencing conditions meet the criteria to start. NOTE : the machine may start at any time.

This default display appears as follows:

STOP
110 180

If there are alarms active they will alternately be shown with the default display. The machine status will be displayed for two seconds then the alarms for two seconds each. For example:

```
T1 HI
110  180
```

To view other status press the **DSP** key. All temperatures and pressures may be displayed as well as other status information. To scroll through the displays press the up arrow or down arrow keys. Up arrow moves to the next display, down arrow the previous display. To return to the default display press the display key.

- Separator differential pressure and the maximum limit. If the limit is exceeded, a separator maintenance warning will be displayed.

```
dP 1   4
MAX 10
```

- Sump pressure and line pressure.

```
P1  113
P2  108
```

- Oil filter differential pressure and the maximum limit. If the limit is exceeded oil maintenance warning will be displayed.

```
dP2  4
MAX 20
```

- Pressure before (P4) and after (P3) oil filter.

```
P3  108
P4  113
```

- Oil differential pressure and the minimum limit. If the pressure goes below the limit a P3 LOW shutdown will occur. Oil differential (dP3) is defined as P3 – P1/2

```
dP3  40
MIN  1
```

- Unit discharge temperature and the maximum limit. If the temperature exceeds the limit a T1 HI shutdown will occur.

```
T1  210
MAX 235
```

- Dry side discharge temperature and the maximum limit. If the temperature exceeds the limit a T2 HI shutdown will occur.

```
T2  210
MAX 235
```

- Total hours that the compressor has been running.

```
HRS RUN
001234.0
```

- Total hours that the compressor has been loaded.

```
HRS LOAD
000987.0
```

- Last fault log. This shows the fault on the first line and the run hours when the fault occurred.

```
T1 HI
@1  234
```

- Next to last fault log. This shows the fault on the first line and the run hours when the fault occurred.

```
T1 HI
@2 204
```

6.4 LAMP INDICATORS

Embedded into the front panel schematic of the compressor are several lamps. Pressing the lamp test key will light all the lamps for 3 seconds. Each LED lamp has the following purpose.

P1 – (Sump and line pressure) If lit steady, signifies that P1 is being displayed, if flashing denotes the presence of an alarm.

P2 – (Sump and line pressure) If lit steady, signifies that P2 is being displayed, if flashing denotes the presence of an alarm.

P3 – (Pressure after oil filter) Same as P1 & P2 except for P3. (Pressure after oil filter)

P4 – (Pressure before oil filter)

dP1 – (Separator differential pressure) If lit steady, signifies that dP1 is being displayed, if flashing denotes replacement of separator is needed.

dP2 – (Oil filter differential pressure)

dP3 – (Oil differential pressure)

T1 – (Dry side discharge temperature) If lit steady, signifies that T1 is being displayed, if flashing denotes the presence of an alarm.

T2 – (Discharge temperature) If lit steady, signifies that T2 is being displayed, if flashing denotes the

presence of an alarm.

MOTOR – If flashing, indicates the motor overload contact has opened.

INLET FILTER – If flashing, indicates that inlet filter maintenance is needed.

OIL FILTER – If flashing, indicates that oil filter maintenance is needed.

POWER ON – Lit if 120VAC power is applied to the Supervisor II.

ON – If lit steady, the compressor is running. If flashing, indicates that the compressor is armed but stopped because of restart timer not expired, remote stop or sequence stop. The compressor may start at any time.

AUTO – If lit steady, the compressor is running and in auto mode. If flashing, indicates that the compressor is armed but stopped because of restart timer not expired, remote stop or sequence stop. The compressor may start at any time.

6.5 SUPERVISOR II OPERATING PARAMETERS – SET UP

Pressing the program key enters parameter display and edit mode. To move to the next parameter press the program key. To increment a parameter press the up arrow key or logo key. The logo key will increment by 10. To decrement the value press the down arrow key.

The parameters are displayed in the following order:

- **Unload pressure** – The pressure where the machine is unloaded. For example if this parameter is set to 110 psi (7.6 bar) the machine will unload when the line pressure is above 110 psi (7.6 bar).

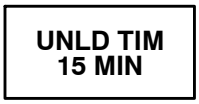
- **Load differential** – The pressure differential below the unload pressure where the machine is loaded. For example if the unload pressure is set to 110 psi (7.6 bar) and the load differential is set to 10 psid (0.7 bar), the machine will load when the line pressure goes below 100 psi (6.9 bar).

- **P1 Max** – Maximum sump pressure. An alarm and shut down will occur when the sump pressure rises above this pressure.

- **Wye to delta transition timer** – For full voltage starters this parameter is set to zero.

- **Restart time** – Time to wait after powerup before starting machine. This parameter is used to keep several machines from starting at the same time after power up, or to delay start until other equipment is started. If disabled the machine will not automatically start after power up.

- **Unload Stop Timer** – If the machine is running in AUTO mode, this parameter specifies the amount of time that the machine will run unloaded before shutting off. If the time is set less than 15 minutes (five minutes, for example), there may be times when the machine will run unloaded for more than five minutes. This is because there is another timer that keeps the machine from being started more than four times an hour.



- **Language select** – English, German, Spanish, Italian and French may be selected for display language.

- **Units** – English or metric units may be selected.

- **Communications ID #** – This is the network address of a machine. If there is more than one machine connected to the network, each machine must have a unique number.

• **Communications Baud Rate** – This should always be selected to 9600 baud for all sequencing modes. It may be lower for slave or monitoring modes.

BAUDRATE
9600

• **Sequence method** – This parameter sets the method used for sequencing. The choices are DISABLED, REMOTE, SLAVE, HOURS, COM ID#. See the Sequencing & Protocol Manual (P/N 02250057-696) for details about these modes.

SEQUENCE
HOURS

• **Drain interval** – The time between actuation of the drain valve.

DRN INTV
10 MIN

• **Drain time** – The amount of time that the drain valve is actuated.

DRN TIM
1 SEC

• **Last Communication Number** – Used only for sequencing, see Sequencing & Protocol Manual for details.

LAST COM
3

• **Lowest Allowable Pressure** – Used only for sequencing, see Sequencing & Protocol Manual for details.

LOWEST
90 PSI

• **Recovery Time** – Used only for sequencing, see Sequencing & Protocol Manual for details.

RECOVER
10 SEC

•**Rotate Time** – Used only for sequencing, see Sequencing & Protocol Manual for details.

ROTATE
50

• **Machine Capacity** – Used only for sequencing, see Sequencing & Protocol Manual for details.

CAPACITY
100

• **Sequence Hours** – Used only for sequencing, see Sequencing & Protocol Manual for details.

SEQ HRS
1000

6.6 OPERATING THE COMPRESSOR

Before operating the compressor the operating parameters must be setup. See the previous section on operating parameter setup.

MANUAL OPERATION MODE

In this mode the compressor will run indefinitely, as long as temperatures and pressure remain within the valid operating ranges, and the motor overload or emergency stop contacts are not tripped. Pressing the "**I**"will turn on the compressor and put it in manual mode. If the compressor is already running, but in automatic mode, pressing "**I**" will switch operation to manual. Pressing "**I**" while already running in manual mode will cause the Supervisor to turn off the common fault relay, if engaged, and clear any maintenance indicators.

To stop the compressor, press "**O**". If the compressor is already off when "**O**" is pressed, the common fault relay will be turned off, if engaged, and it will try to clear the alarm and maintenance indicators. Regardless of what the compressor is doing, pressing "**O**" puts the Supervisor in manual stop mode.

AUTOMATIC OPERATION MODE

In this mode the compressor will start if line pressure (P2) is less than the **LOAD** parameter. It will stop if the compressor runs unloaded for the number of minutes indicated by the **UNLD TIM** parameter . To put the compressor in automatic mode press "⟲ ". If P2 is already less than **LOAD** the compressor will start immediately, otherwise the system status will indicate **STANDBY** and the LED marked **AUTO** will flash.

If the compressor is already running, but in continuous mode, pressing "⟲ " will switch operation to automatic. Pressing "⟲" while already running in automatic mode will cause the Supervisor to turn off the common fault relay, if engaged, and clear any maintenance indicators.

In automatic mode the compressor can be stopped manually by pressing **O**. Stopping the compressor using **O** will put the Supervisor in manual stop mode.

Regardless of whether in "automatic" or "manual" mode, control of the load solenoid will be based on the parameters **UNLD** and **LOAD.** This operation is as follows:

P2 > UNLD --> load solenoid turned off

P2 < LOAD --> load solenoid turned on

POWER FAILURE RESTART
If the restart timer (RST TIME parameter) is disabled the compressor will not try to start after a power up. If this time is set to a value the machine will go into standby after power up. When the line pressure drops below the load setpoint, the restart timer will start timing. When the timer expires the machine will start.

SEQUENCING MODES
The following is a brief description of sequencing modes, for details see the Supervisor II Sequencing & Protocol Manual (P/N 02250057-696).

- **DISABLED** - Responds to status and parameter change messages via the RS485 network but will not respond to start, stop, load or unload messages.
- **REMOTE** - Responds to status and parameter change messages but will not respond to start, stop, load or unload messages. The remote inputs and outputs are enabled (start/stop, load/unload, master/local).
- **SLAVE** - Will respond to all messages, but will not start or load unless commanded to do so by a message. This mode is used to control the machine from a master computer.

NOTE

Slave mode is not recommended for operational usage. Consult Factory for further details.

- **HOURS** - Sends status message about once a second, starts, loads and unloads machines based on sequencing hours.
- **COM ID #** - Sends status message about once a second, starts, loads and unloads machines based on machine Com ID#.

6.7 PURPOSE OF CONTROLS

SWITCH	OPERATION
EMERGENCY STOP SWITCH	Pushing in this switch, found adjacent to the Supervisor, cuts all AC outputs from the latter and de-energizes the starter. A fault message (E STOP) is displayed by the Supervisor until the button is pulled out and the "**O**" pad is depressed.

6.8 SUPERVISOR OUTPUT RELAYS

RELAY	OPERATION
RUN RELAY (K1)	Contact closure energizes the compressor starter.
*-DELTA (K2)	A timed contact used to provide wye-delta transition time.
UNLOAD/LOAD (K3)	Controls ON LOAD/OFF LOAD operation of the load control solenoid valve.
COMMON FAULT (K4)	May be used to provide remote indication of any pre-alarm, maintenance or fault shutdown condition.
DRAIN VALVE (K5)	Deluxe only - controls a solenoid valve to provide automatic condensate removal.
FULL LOAD/MODULATE (K6)	Deluxe only - used with sequencing feature.

NOTE: All output relays will handle 8 amperes at 120/240 VAC.

6.9 MAINTENANCE INTRODUCTION

As you proceed in reading this section, it will be easy to see that Maintenance Program for the air compressor is quite minimal. The Supervisor monitors the status of the air filter, fluid filter, and separator elements. When maintenance to these devices is required, the Supervisor will display the appropriate maintenance message and flash the location LED on the graphics map as a visual reminder.

⚠ 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.

6.10 DAILY OPERATION

Following a routine start, observe the various Supervisor displays to check that normal readings are being made – previous records are very helpful in determining the normalcy of the measurements. These observations should be made during all expected modes of operation (i.e. full load, no–load, different line pressures, cooling water temperatures, etc.).

During the initial start–up or servicing of the package, fluid may have to be added to the sump vessel to restore an adequate level. Frequent fluid additions to maintain said level would be indicative of excessive fluid consumption, and should be investigated – see the Troubleshooting Section of this manual for probable cause and remedy.

NOTES

7.1 GENERAL

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7.3 MAINTENANCE AFTER INITIAL 50 HOURS OF OPERATION

After the initial 50 hours of operation, a few maintenance requirements are needed to rid the system of any foreign materials. Perform the following maintenance operations to prevent unnecessary problems.

1. Clean the return line strainers.
2. Clean the return line orifices.
3. Change the fluid filter element.

7.4 MAINTENANCE EVERY 1000 HOURS OF OPERATION

1. Clean the return line strainers.
2. Lubricate the Sullicon actuator linkage.
3. Change the fluid filter element.

7.5 PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES

Please familiarize yourself with the safety guidelines offered in Section 1 of this manual before attempting any maintenance on the package.

AIR FILTER MAINTENANCE

Refer to Figure 7–1. Air filter maintenance on air filter no. 409264 should be performed when the Supervisor displays AIR MNTN and the LED display flashes, *or* when corresponding maintenance message is displayed by the Supervisor II, or once a year, whichever comes first. If the filter needs to be replaced, order replacement elements (primary replacement element no. 409853, and secondary replacement element no. 409854). Consult the following procedures to replace the air filter elements.

AIR FILTER ELEMENT REMOVAL

1. Clean exterior of air filter housing.
2. Release tension on the retaining clamp and remove.
3. Remove wingnut and washer from cover; remove retaining plate.
4. Remove wingnut and washer securing the primary element; remove element.
5. Remove wingnut and washer securing the secondary element; remove element.
6. Remove element and clean interior of housing using a damp cloth. **DO NOT** blow dirt out with compressed air.
7. At this time replace the elements.
8. Reassemble in the reverse order of the disassembly.

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 disclose 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 all air inlet connections prior to resuming operation.
5. **DO NOT** strike element(s) against a hard surface to dislodge dirt – this may damage the sealing surfaces and/or rupture the element.
6. **DO NOT** oil the element(s).

ELEMENT REPLACEMENT

1. Element replacement is performed by reversing the removal instructions. Make sure that the sealing washers and cover gasket are fully seated by their corresponding nuts.

FLUID FILTER MAINTENANCE

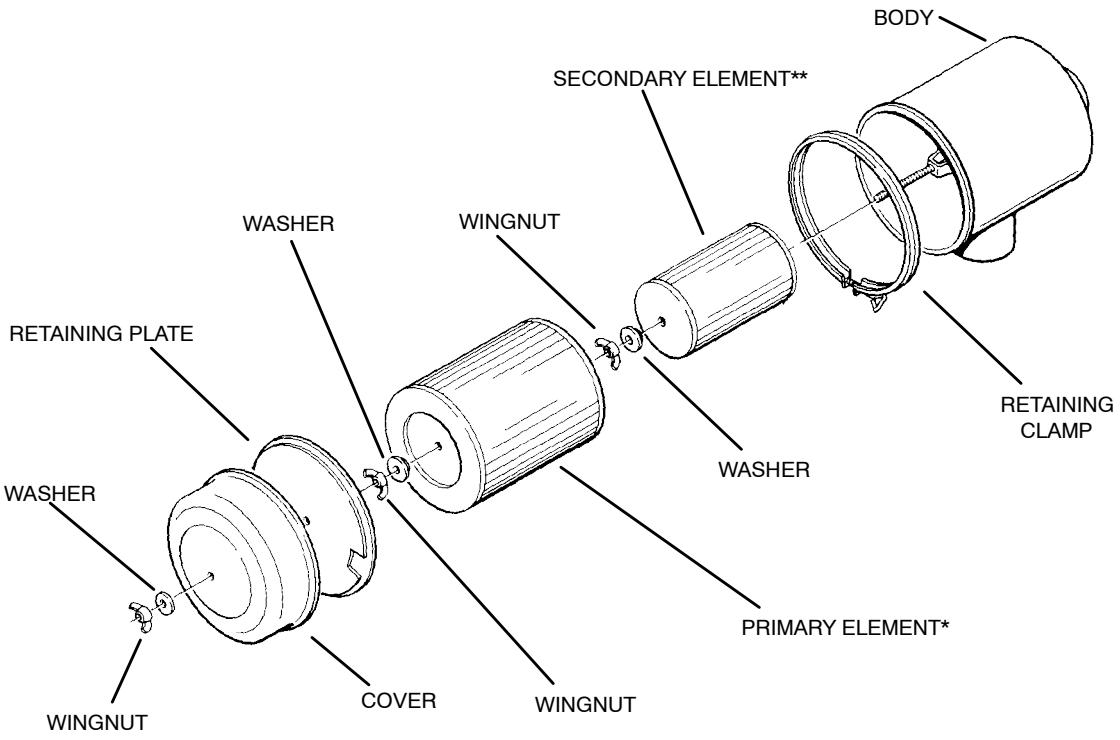
Refer to Figure 7–2. Fluid filter maintenance should be performed when one or more of the following items occurs:

- when corresponding maintenance message is displayed by the Supervisor II – this corresponds to a pressure loss condition across the units of 20 psig (1.4 bar).
- every 1000 hours.
- every 6 months.
- every fluid charge change – STANDARD MACHINES ONLY.

Your fluid filter includes a proprietary replaceable element available solely from Sullair and its agents – **DO NOT** substitute.

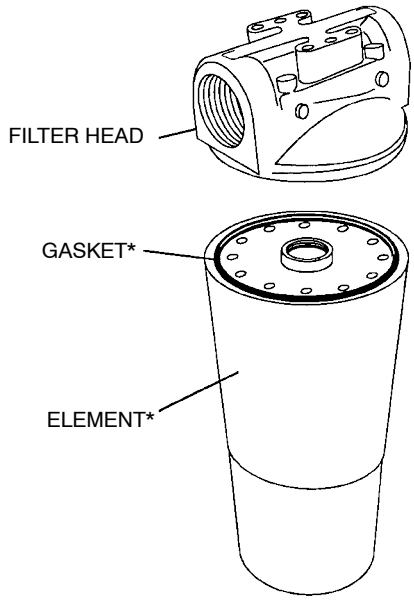
1. Using a strap wrench, remove the old element and gasket.
2. Clean the gasket seating surfaces.

Figure 7-1 Air Filter (P/N 409264)



*Replacement Element (Primary) P/N 409853
**Replacement Element (Secondary) P/N 409854

Figure 7-2 Compressor Fluid Filter (02250054-605)



* Repair Kit P/N 250025-526

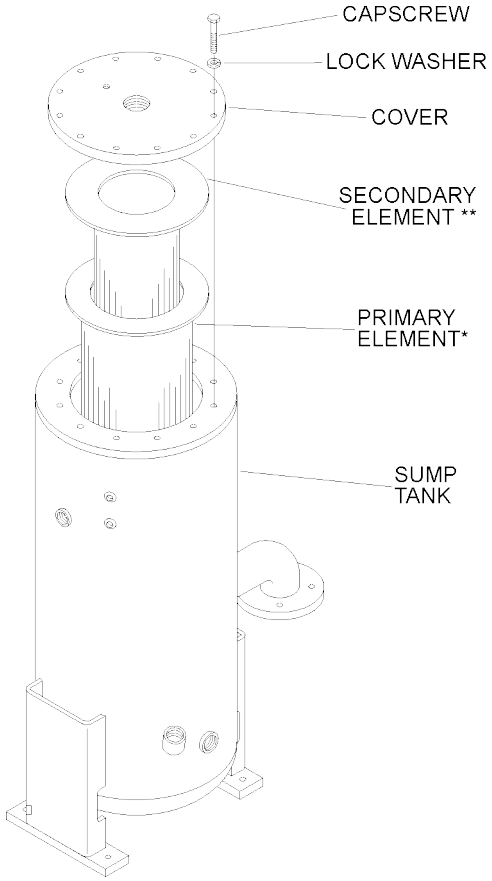
3. Apply a light film of fresh oil to the new gasket and hand tighten new element until gasket contacts the seat.
4. Continue tightening element an additional 1/2 to 3/4 turn.
5. Restart package and check for leaks.

SEPARATOR ELEMENT MAINTENANCE

Refer to Figure 7-3. The Supervisor indicates when the separator elements should be serviced (this happens when the pressure drop across the elements has exceeded 10 psig [0.7 bar]), or once a year, whichever occurs first. Element service can be provided as follows:

1. Relieve all pressure from the sump tank and package pipework.
2. Disconnect all pipework connected to the sump cover.
3. Loosen and remove the twelve (12) hex head capscrews (3/4" x 2 1/2") from the cover plate.
4. Lift the cover plate from the sump.
5. Remove the two (2) nested separator elements.
6. Scrape the old gasket material from the cover and sump flange – avoid dropping any scraps into the sump.
7. Inspect the sump vessel for rust, dirt, etc.
8. **DO NOT** remove grounding staples from the gaskets. **DO NOT** use any type of gasket eliminator.

Figure 7-3 Separator Element Replacement



* Replacement element P/N 250034-085 (primary)

** Replacement element P/N 02250047-734 (secondary)

Reinsert the separator element, with gasket attached, into the sump, taking care not to dent the former against the tank opening.

SULLICON ACTUATOR MAINTENANCE

Refer to Figure 7-4. The Sullicon actuator was adjusted at the factory and should require only periodic lubrication of its links and pivot points to keep operating properly. In general, if the pressure signal (P2) is present and proper lubrication link lubrication is evident, sluggish valve operation or excessive leakage indicates a damaged diaphragm. A replacement diaphragm is available in kit no. 250020-353, and may be installed as follows:

⚠ WARNING

Relieve package pressure before making repairs.

1. Remove adjacent air signal tubework.
2. Loosen/remove cap screw fastening the valve arm link to the Sullicon control lever and let link hang aside.
3. Loosen/remove the two (2) capscrew/nut assemblies securing Sullicon to its mounting bracket and pull Sullicon away.
4. Loosen/remove remaining capscrew/nut assemblies holding Sullicon body, diaphragm and cover together. Note that control stop bracket also comes off; without disturbing the stop screw/nut assembly, put it aside.
5. Loosen/remove screw/washer assembly fastening diaphragm to the yoke – carefully make note of order of parts as they are disassembled. Now the diaphragm may be inspected or replaced.
6. Reassembe in reverse order.

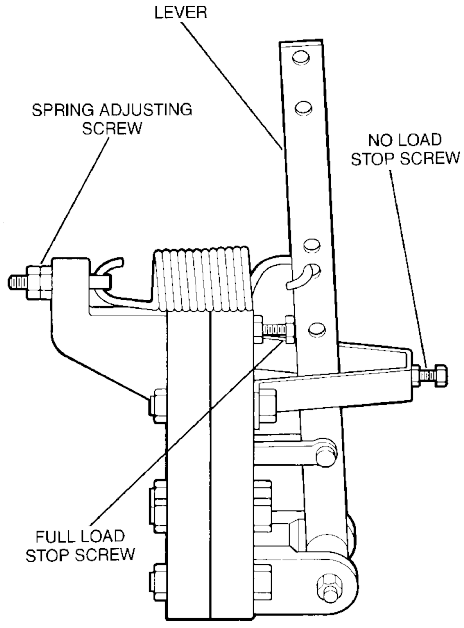
SHAFT COUPLING MAINTENANCE

Refer to Figure 7-5. The compressor unit and motor are rigidly connected via a rigid adaptor piece, thus the shafts are maintained in proper alignment at assembly. For reference only, the allowable angular and parallel shaft misalignments are presented in Figure 7-6. The only component requiring regular inspection or servicing is the coupling flexible element, which may be accessed as follows:

⚠ DANGER

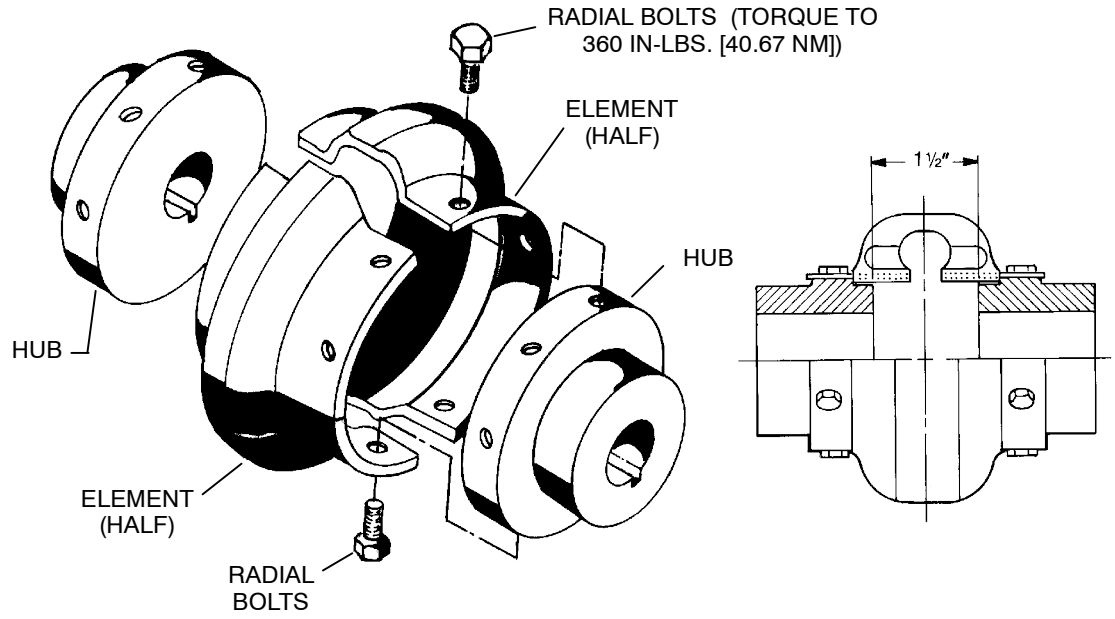
Disconnect all power at source before attempting maintenance or adjustments. Follow lockout procedures (See Safety Section).

Figure 7-4 Sullicon Control (P/N 011682-003)



* Repair Kit P/N 250020-353

Figure 7-5 Drive Coupling



INSPECTION/REMOVAL OF FLEXIBLE ELEMENT

1. Loosen fasteners securing wireform guard to the distance piece and remove to allow access to the coupling assembly.
2. Loosen and remove all capscrews securing each flexible element half to the shaft hubs.
3. Inspect each element body for signs of tears or separation away from the metal flanges – if any faults are found, elements must be replaced and Sullair contacted for further assistance.
4. Reassemble in reverse order. Capscrews must be re-torqued to 30 ft.-lbs. (40.7Nm) (dry). Please note that capscrews have self-locking patches good for two re-uses, but the application of a thread-locking adhesive increases this number.

NOTE

DO NOT lubricate capscrew threads.

Please note that replacement of either shaft hub requires the removal of the motor, an operation best handled by Sullair personnel.

Figure 7-6 Drive Coupling Alignment **(I)**

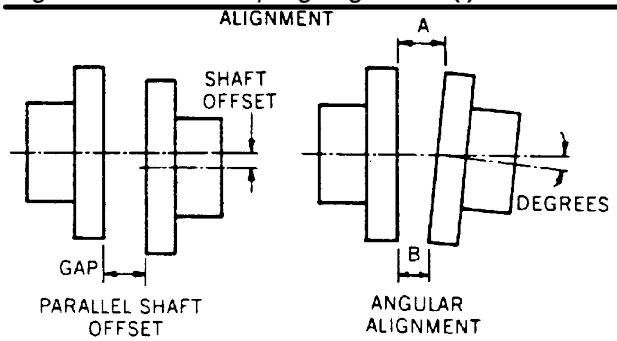


Table 1- Installation Data

Tightening Torque lb.-in.	Gap ± .030 Inches	Max Operating Misalignment Coupling Parallel Offset Inches	Capscrew Angular Degrees	Capscrew Angular Inches **(II)**
360	1.50	T.I.R. .005	.5	.005

(I) Alignment data is shown for reference only. The C-face motor mounting arrangement does not require adjustment for coupling alignment.

(II) Angular mis-alignment in inches equals maximum A minus minimum B. **DO NOT** exceed values in *Table 1- Installation Data.*

7.6 TROUBLESHOOTING

The foregoing information has been compiled from operational experience with your package. It identifies symptoms and diagnosis of SEVERAL probable difficulties, but NOT ALL of those possible.

The systematic collection of operational data cannot be over-emphasized, as it may give evidence of the presence (or not) of a fault before it turns into a serious breakdown – for example, the vibrations signature increase of a damaged bearing, or the efficiency decrease of a dirty heat exchanger.

A detailed visual inspection is worth performing for almost all problems and may avoid unnecessary additional damage to the compressor. Always remember to:

1. Check for loose wiring.
2. Check for damaged piping.
3. 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 toll free at 1-800-SULLAIR.

7.7 TROUBLESHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	REMEDY
COMPRESSOR WILL NOT START: POWER LED OFF	Main Disconnect Switch Open	Close switch.
	Line Fuse Blown	Replace fuse.
	Control Transformer Fuse Blown	Replace fuse.
MOTOR OL MESSAGE	Motor Starter Overloads Tripped	Reset after heater elements cool down. Should trouble persist, check whether motor starter contacts are functioning properly.
	Low Incoming Line Voltage	Check voltage. Should voltage check low, consult power company.
T-1, T-2 FAIL MESSAGE	Temperature Transducer Failure	Check connections from transducer. If adequate, replace transducer.
P-1, P-2, P-3, P-4 FAIL MESSAGE	Pressure Transducer Failure	Check connections from transducer. If adequate, replace transducer.
MOTOR WILL NOT START, E-STOP MESSAGE	Emergency Switch Open (depressed)	Close switch (pull).
LO WATER MESSAGE (Water-cooled packages only)	Water Pressure Feed Below 10 psig (0.7 bar)	Check cooling water supply (i.e., closed valves).
COMPRESSOR SHUTS DOWN WITH AIR DEMAND: MOTOR OL MESSAGE	Motor Starter Overloads Tripped	Reset after heater elements cool down. Should trouble persist, check whether motor starter contacts are functioning properly.
	Low Incoming Line Voltage	Check voltage. Should voltage check low, consult power company.
P1-LO	P1 is Less Than 10 psig (0.7 bar)	First, check starter wiring. If discharge pressure above 10 psig (0.7 bar) was evident, then sensor is at fault - check connections from transducer. If adequate, replace transducer.
P3-LO	Loss of Oil	Check oil level.
	Plugged Oil Filter	Replace filter.
	P3 is Less Than One Half of P1	
HI T1, HI T2 MESSAGE	Discharge Temperature Exceeded 235°F (113°C) Because:	
	Ambient temperature exceeded 105°F (41°C)	Improve local ventilation (i.e., remote intake of process and/or cooling air.

7.7 TROUBLESHOOTING GUIDE (CONTINUED)

SYMPTOM	PROBABLE CAUSE	REMEDY
HI T1, HI T2 MESSAGE (cont.)	Discharge Temperature Exceeded 235°F (113°C) Because:	
	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.
HI P1, HI P2 MESSAGE	Discharge Pressure Exceeded Shutdown Level Because:	
	Unloading Device (i.e., blowdown valve, Sullicon actuator, optional spiral valve) failed to operate	Check operation of unloading device See Section 7.5.
	Pressure Regulator Maladjusted	Check operation of pressure regulator See Section 7.5.
	Solenoid Valve Failed to Operate	Check operation of solenoid valve See Section 7.5.
	Control Air Signal Leaks	Check tubework feeding control signal for leaks.
	Control Air Signal Filter Clogged	Service filter assembly See Section 7.5.
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.
P1 HI MESSAGE	P1 MAX - 3psi (0.2 bar) Exceeded for Pre-Alarm	
	P1 MAX Exceeded for Shutdown	
	Discharge Pressure Exceeded Shutdown Level Because:	
	Unloading Device (i.e., Blowdown Valve, Sullicon Actuator, Optional Spiral Valve) Failed to Operate	Check operation of unloading device.

7.7 TROUBLESHOOTING GUIDE (CONTINUED)

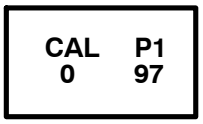
SYMPTOM	PROBABLE CAUSE	REMEDY
P1 HI MESSAGE (continued)	Pressure Regulator Maladjusted	Check operation of pressure regulator.
	Solenoid Valve Failed to Operate	Check operation of solenoid valve.
	Control Air Signal Leaks	Check tubework feeding control signal for leaks.
	Control Air Signal Filter Clogged	Service filter assembly.
SEP MNTN MESSAGE	Plugged Separator dP1 > 10 PSI (0.7 Bar)	Replace separator elements. Check P1 and 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. Clean 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.
	Blowdown Valve Leaking	Replace valve.
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, Sullicon Actuator, Optional Spiral Valve) Failed to Operate	Check operation of unloading device See Section 7.5.
	Pressure Regulator Maladjusted	Check operation of pressure regulator.
	Solenoid Valve Failed to Operate	Check operation of solenoid valve - See Section 7.5.
	Control Air Signal Leaks	Check tubework feeding control signal for leaks.
	Control Air Signal Filter Clogged	Service filter assembly - See Section 7.5.
EXCESSIVE FLUID CONSUMPTION	Clogged Return Line Strainer or Orifice	Clean strainer - screen and o-ring replacement kit available. Clean orifice.
	Damaged or Improperly Gasketed 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.

NOTE ON TRANSDUCERS:
Whenever a sensor is suspected of fault, the recommended cause of action is to measure the signal (pressure, temperature, etc.) with an alternate calibrated instrument and compare readings. If conflicting, the electrical and/or tubing connections should be inspected, and if no faults are evident, then replace the sensor and re-evaluate against the calibrated instrument.

7.8 CALIBRATION

The Supervisor II has software calibration of the pressure and temperature probes. This calibration affects the offset but not the slope of the pressure and temperature calculations. Because of this, the most accurate method is to heat or pressurize the transducer to its operating value. If this is too difficult, room temperature/open atmosphere calibration is adequate. Calibration may only be done while machine is stopped and unarmed.

To enter calibration mode, you must press the following keys in sequence while in the default status display mode: "[DSP]", "▲", **DSP,** "▼ ☼" **, PRG** Once in calibration mode, you will see a screen like the following:



In the above example, "0" refers to the amount of adjustment (in psi or °F, "97" (6.7 bar) refers to the current value of P1).To make adjustments, press the "▲" key to increase the value, press the "▼ ☼" key to decrease the value. The number on the left will increase or decrease always showing the total amount of adjustment. Maximum adjustment is + 7. The **DSP** key exits, wiping out changes to the current item, while saving changes to any previous items. The **PRG** key saves the current item and advances to the next. All temperatures and pressures may be calibrated individually.

7.9 SHUTDOWN SETTINGS

For shutdown settings, warnings and pre-alarms, consult factory.

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 or phone 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.

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
3700 East Michigan Boulevard
Michigan City, Indiana 46360 U.S.A.
Phone: 1-800-SULLAIR (U.S.A. Only) or
1-219-879-5451
Fax: (219) 874-1273
Fax: (219) 874-1835 (Parts)
Fax: (219) 874-1205 (Service)

8.2 RECOMMENDED SPARE PARTS LIST

DESCRIPTION	KIT NUMBER	QUANTITY
element for thermal valve 014512	**02250105-553**	1
repair kit for solenoid valve 250038-674	**250038-673**	1
replacement coil for solenoid valve 250038-674	**250031-738**	1
repair kit for solenoid valve 250031-695	**250031-737**	1
replacement coil for solenoid valve 250031-695	**250031-738**	1
repair kit for solenoid valve 250038-675	**02250055-939**	1
replacement coil for solenoid valve 250038-675	**250038-730**	1
repair kit for solenoid valve 250038-666	**250038-672**	1
replacement coil for solenoid valve 250038-666	**250038-730**	1
repair kit for fluid stop valve 02250113-668	**02250116-697**	1
repair kit for fluid filter 02250054-605	**250025-526**	1
repair kit for Sullicon control 011682-003	**250020-353**	1
repair kit for pressure regulator 406929 (Sullicon)	**041742**	1
repair kit for return line strainer 241771	**241772**	1
replacement filter element for control air filter 02250112-032	**02250112-031**	1
replacement float assembly for control air filter 02250112-032	**02250115-960**	1
repair kit primary separator element w/gaskets	**250034-085**	1
repair kit secondary separator element w/gaskets	**02250048-734**	1
repair kit primary heavy duty filter element	**409853**	1
repair kit secondary heavy duty filter element	**409854**	1
repair kit for compressor shaft seal	**02250057-037**	1
manual, Sequencing & Protocol	**02250057-696**	**1**
document, Protocol **(I)**	**02250050-768**	1
lubricant, 24KT (5 gallon container)	**02250051-153**	1
lubricant, Sullube (5 gallon container) **(II)**	**250022-669**	1
repair kit for pressure regulator 408275 (spiral valve)	**041742**	1
repair kit for minimum pressure/check valve 242405	**001176**	1
replacement spring for check valve 049905	**250003-657**	1
float valve for water separator no. 02250100-365	**250031-245**	1

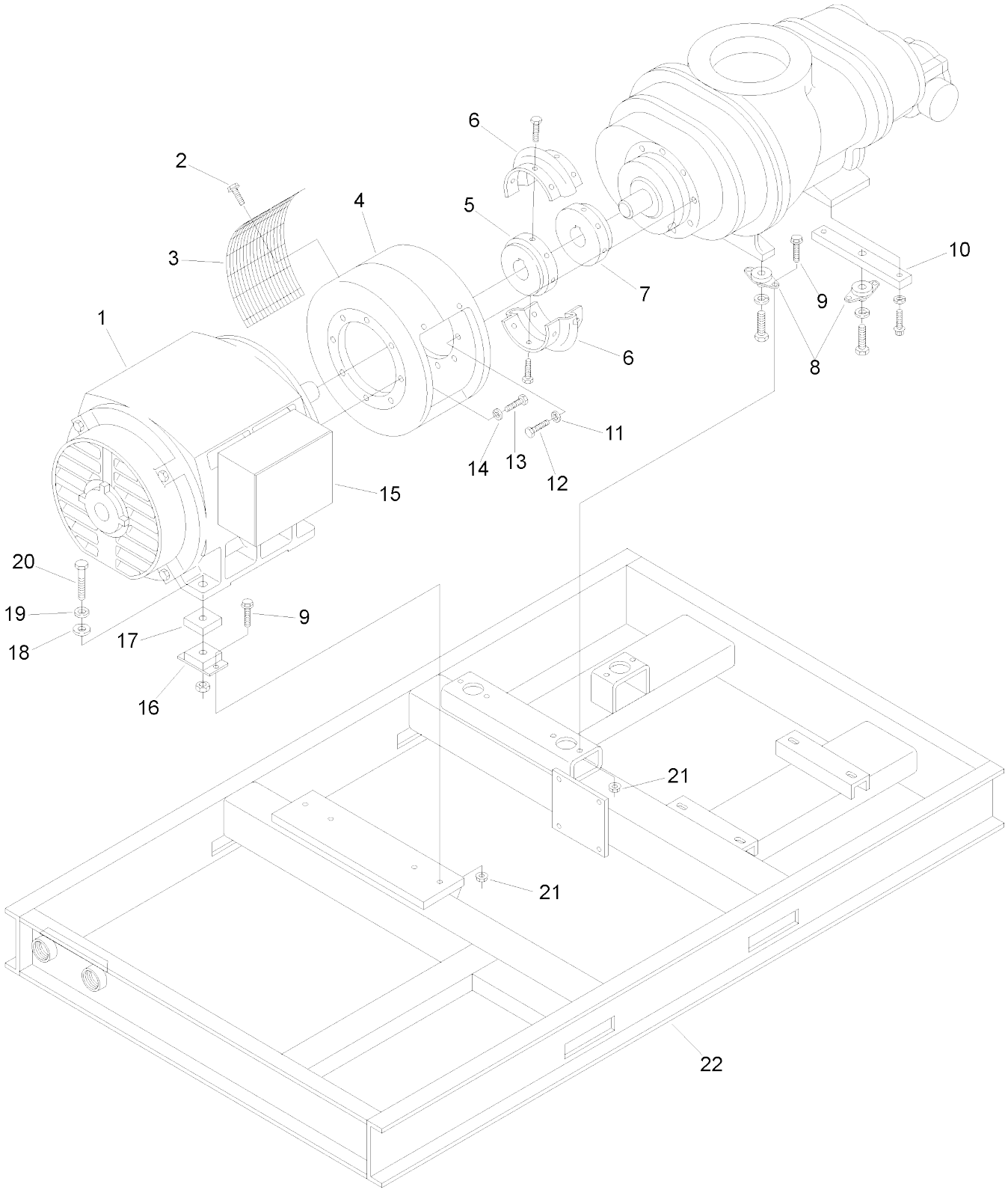
(I) This document is required to program your personal computer to communicate with the Supervisor II panel.

(II) Sullube available in 55 gallon drum (part number) 250022-670.

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

PARTS LIST

8.3 MOTOR, COMPRESSOR AND FRAME



8.3 MOTOR, COMPRESSOR AND FRAME (I)

key number	*description*	*part number*	*quantity*
1	motor	02250116-103	1
2	screw, hex ser washer 5/16" x 3/4"	829705-075	8
3	guard, coupling	02250050-131	1
4	adapter, compressor/motor	250042-486	2
5	hub, coupling motor	407986	1
6	element, coupling	406631	1
7	hub, coupling compressor	407985	1
8	isolator, vibration compressor	250042-541	3
9	screw, hex ser washer 3/8" x 1"	829706-100	10
10	support, compressor	250042-454	1
11	washer, springlock 1/2"	837508-125	9
12	capscrew, hex GR5 1/2"-13 x 2"	829108-200	9
13	capscrew, hex GR5 5/8"-11 x 1 3/4"	829110-175	8
14	washer, springlock 5/8"	837510-156	8
15	enclosure, 12 x 10 x 6	250028-868	1
16	isolator, vibration motor	250042-757	2
17	block, mounting (125HP/90KW only)	224511	2
18	washer, reg 1/2"	838208-112	2
19	washer, springlock 1/2"	837808-125	2
20	capscrew, hex 1/2" x 2 1/4"	829108-225	2
21	nut, hex flanged 3/8"-16	825306-347	10
22	frame	250042-725	1

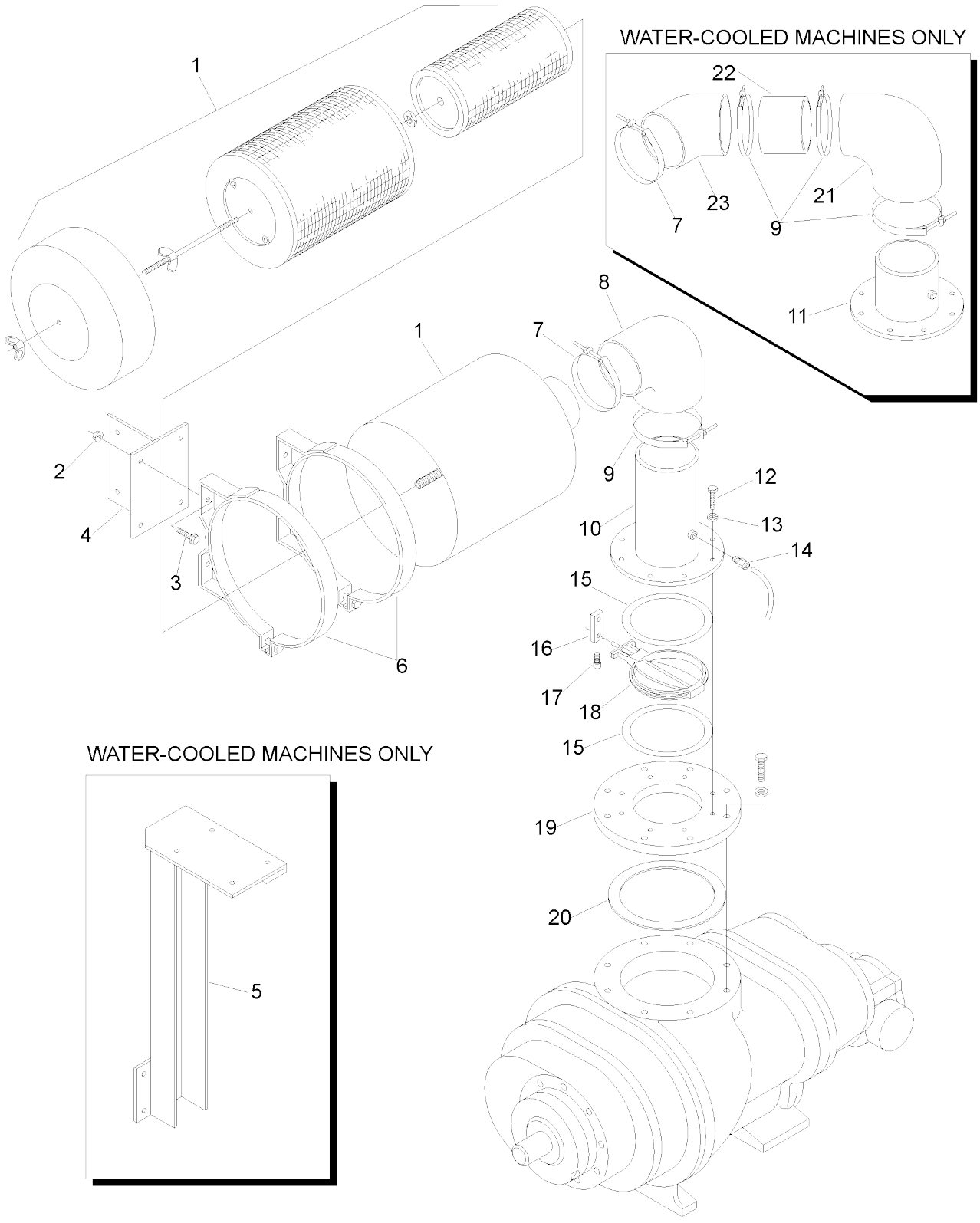
(I) There is an exchange program whereby a remanufactured compressor unit can be obtained from Sullair distributors or the factory at less cost than the owner could repair the unit. For information regarding the unit exchange program, contact your nearest Sullair representative or the Sullair Corporation.

The shaft seal is not considered part of the compressor unit in regard to the two year warranty. The normal Sullair parts warranty applies. For shaft seal repairs consult factory.

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

Section 8
PARTS LIST

8.4 AIR INLET SYSTEM



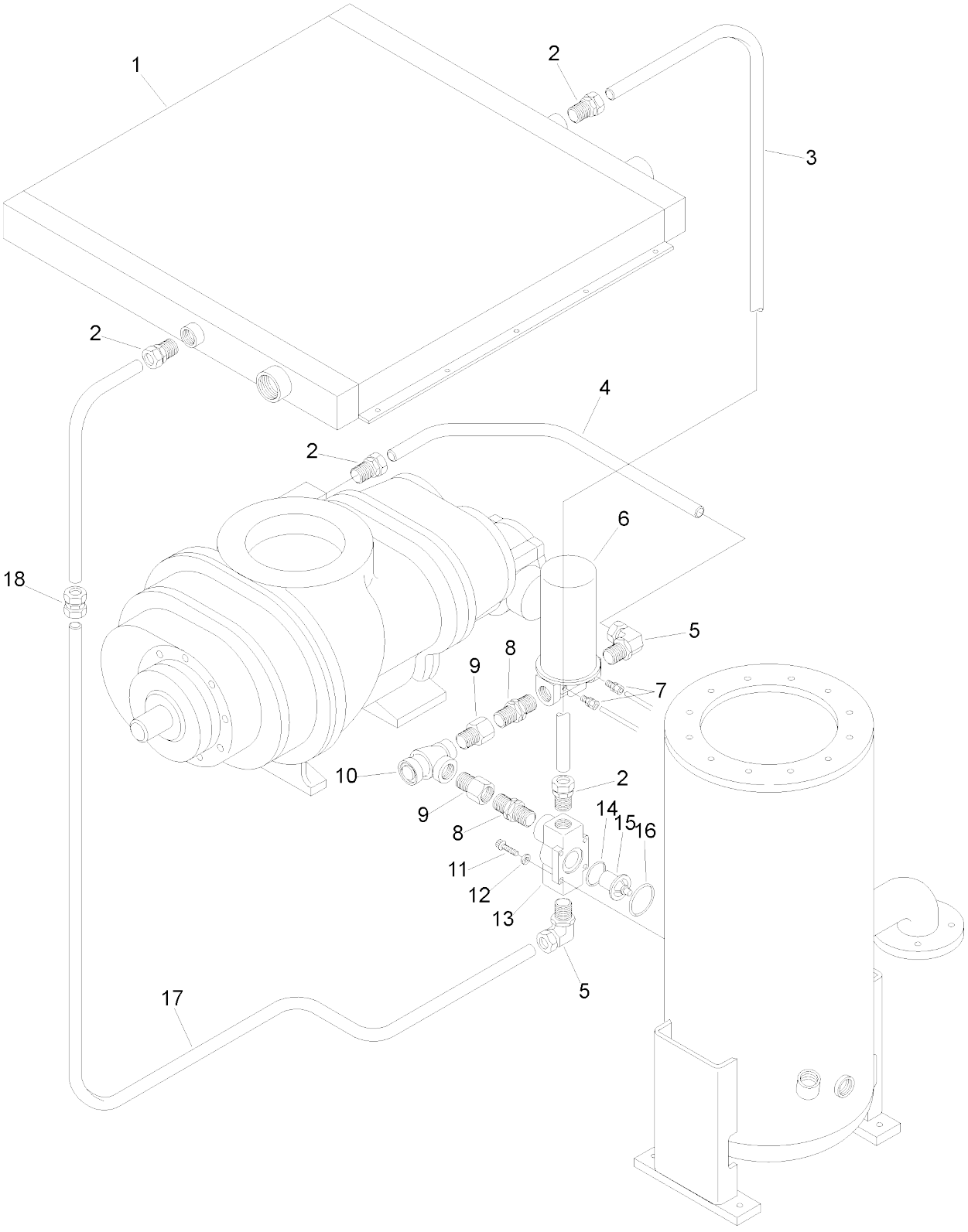
8.4 AIR INLET SYSTEM

key number	*description*	*part number*	*quantity*
1	filter, air **(l)**	409264	1
2	nut, hex flanged 5/16”-18	825305-283	4
3	screw, hex ser washer 5/16” x 3/4”	829705-075	4
4	support, air filter (air-cooled only)	02250047-269	1
5	support, air filter (water-cooled only)	02250056-087	1
6	band, mounting 14”	041062	2
7	clamp, hose 6”	242000	1
8	elbow, rubber reducing 6” to 5 1/2”	407458	1
9	clamp, hose 6 1/2”	040305	1
10	adapter, air inlet (air-cooled only)	02250047-270	1
11	adapter, air inlet (water-cooled only)	02250056-089	1
12	capscrew, hex GR5 3/4”-10 x 2”	829112-200	8
13	washer, springlock 3/4”	837812-188	8
14	connector, tube-M 1/4” x 1/8”	813604-125	1
15	gasket, 6 1/4” x 8 1/4”	040696	2
16	lever, inlet valve	020687	1
17	screw, set sq head 5/16” x 3/4”-18	02250112-197	1
18	valve, butterfly	02250118-520	1
19	adapter, air inlet 8” to 6”	250002-615	1
20	gasket, 8 1/2” x 10 1/2”	040422	1

(l) For maintenance on air filter no. 409264, order primary replacement element no. 409853, and secondary replacement element no. 409854.

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

8.5 COOLING AND LUBRICATION SYSTEM (AIR-COOLED)



8.5 COOLING AND LUBRICATION SYSTEM (AIR-COOLED)

key number	*description*	*part number*	*quantity*
1	cooler, fluid	02250114-969	1
2	connector, tube 1 1/4" x 1 5/8"	811820-163	4
3	tube, by-pass to cooler 1 1/4"	02250115-425	1
4	tube, fluid filter to unit 1 1/4"	02250115-365	1
5	elbow, tube 1 1/4" x 1 5/8"	811620-162	2
6	filter, fluid **(I)**	02250054-605	1
7	connector, tube 1/4" x 1/8"	813604-125	2
8	adapter, 1 5/8" x 1 5/8"	02250055-015	2
9	reducer, threaded viton 1 1/2" x 1 1/4"	870024-020	2
10	valve, fluid stop **(II)**	02250113-668	1
11	capscrew, ferry 3/8"-16 x 1 1/2"	867306-150	4
12	washer, springlock 3/8"	837806-094	4
13	housing, thermal valve	02250092-929	1
14	seal, U-cup viton	02250101-372	1
15	element, thermal valve **(III)**	049542	1
16	O-ring, viton 2 1/2" x 3/32"	826502-144	1
17	tube, by-pass to cooler 1 1/4"	02250115-380	1
18	union, tube hex 1 1/4" x 1 1/4"	811320-125	1

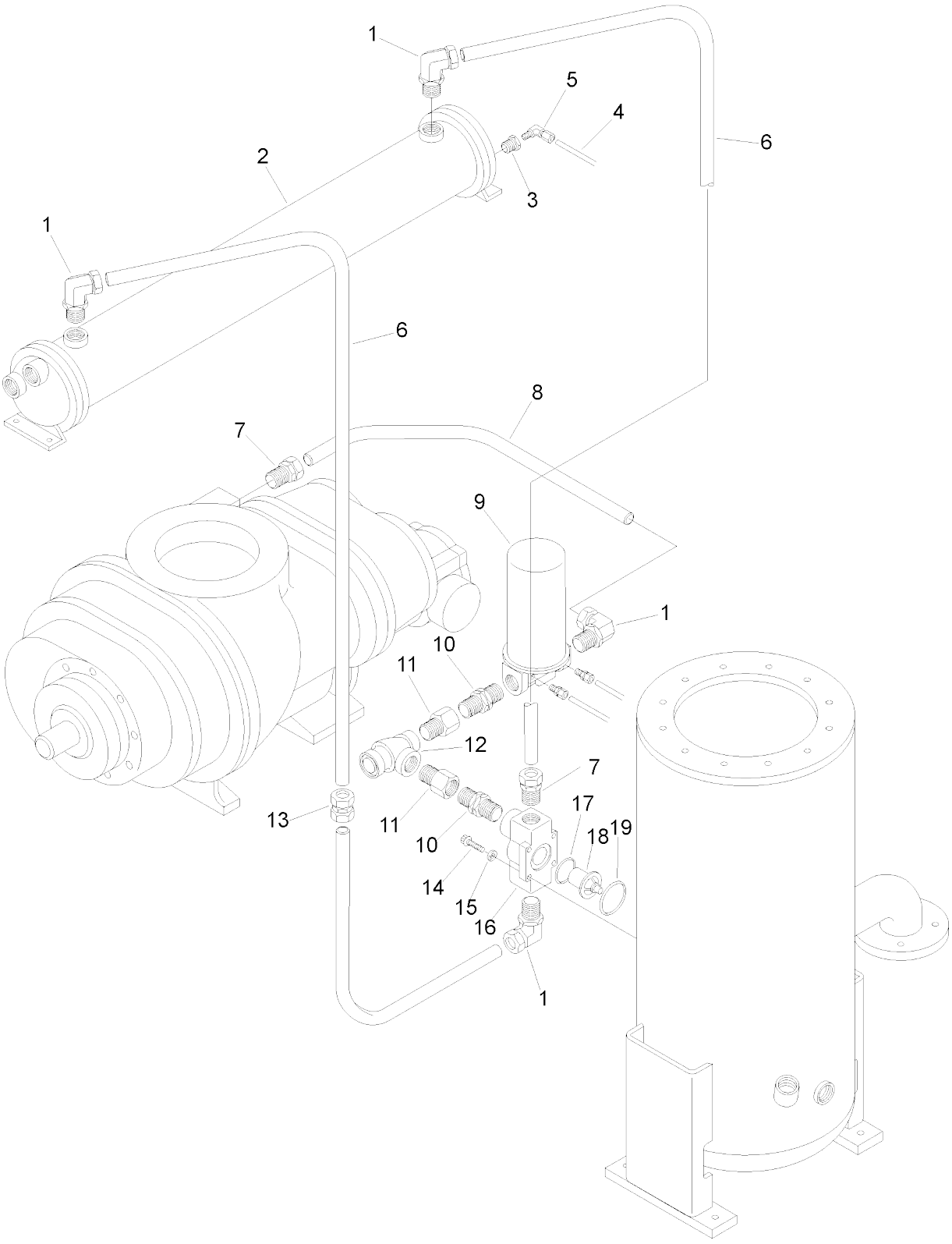
(I) For maintenance on fluid filter no. 02250054-605, order repair kit no. 250025-256.

(II) For maintenance on fluid stop valve no. 02250113-668, order repair kit no. 02250116-697.

(III) For maintenance on thermal valve, order repair kit no. 02250105-553.

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

8.6 COOLING AND LUBRICATION SYSTEM (WATER-COOLED)



8.6 COOLING AND LUBRICATION SYSTEM (WATER-COOLED)

key number	*description*	*part number*	*quantity*
1	elbow, tube 1 1/4" x 1 5/8"	811620-162	4
2	cooler, fluid WC	02250114-977	1
3	bushing, reducing hex 1/2" x 1/4"	807602-010	1
4	tubing, steel 1/4"	841015-004	6 ft
5	elbow, tube-M 1/4" x 1/4"	810504-025	2
6	tube, by-pass 1 1/4"	02250115-461	2
7	connector, tube 1 1/4" x 1 5/8"	811820-163	4
8	tube, fluid filter to unit 1 1/4"	02250115-365	1
9	filter, fluid **(I)**	02250054-605	1
10	adapter, 1 5/8" x 1 5/8"	02250055-015	2
11	reducer, threaded viton 1 1/2" x 1 1/4"	870024-020	2
12	valve, fluid stop **(II)**	02250113-668	1
13	union, tube hex 1 1/4"	811320-125	1
14	capscrew, ferry 3/8"-16 x 1 1/2"	867306-150	4
15	washer, springlock 3/8"	837806-094	4
16	housing, thermal valve	02250092-929	1
17	seal, U-cup viton	02250101-372	1
18	element, thermal valve **(III)**	049542	1
19	O-ring, viton 2 1/2" x 3/32"	826502-144	1

(I) For maintenance on fluid filter no. 02250054-605, order repair kit no. 250025-256.

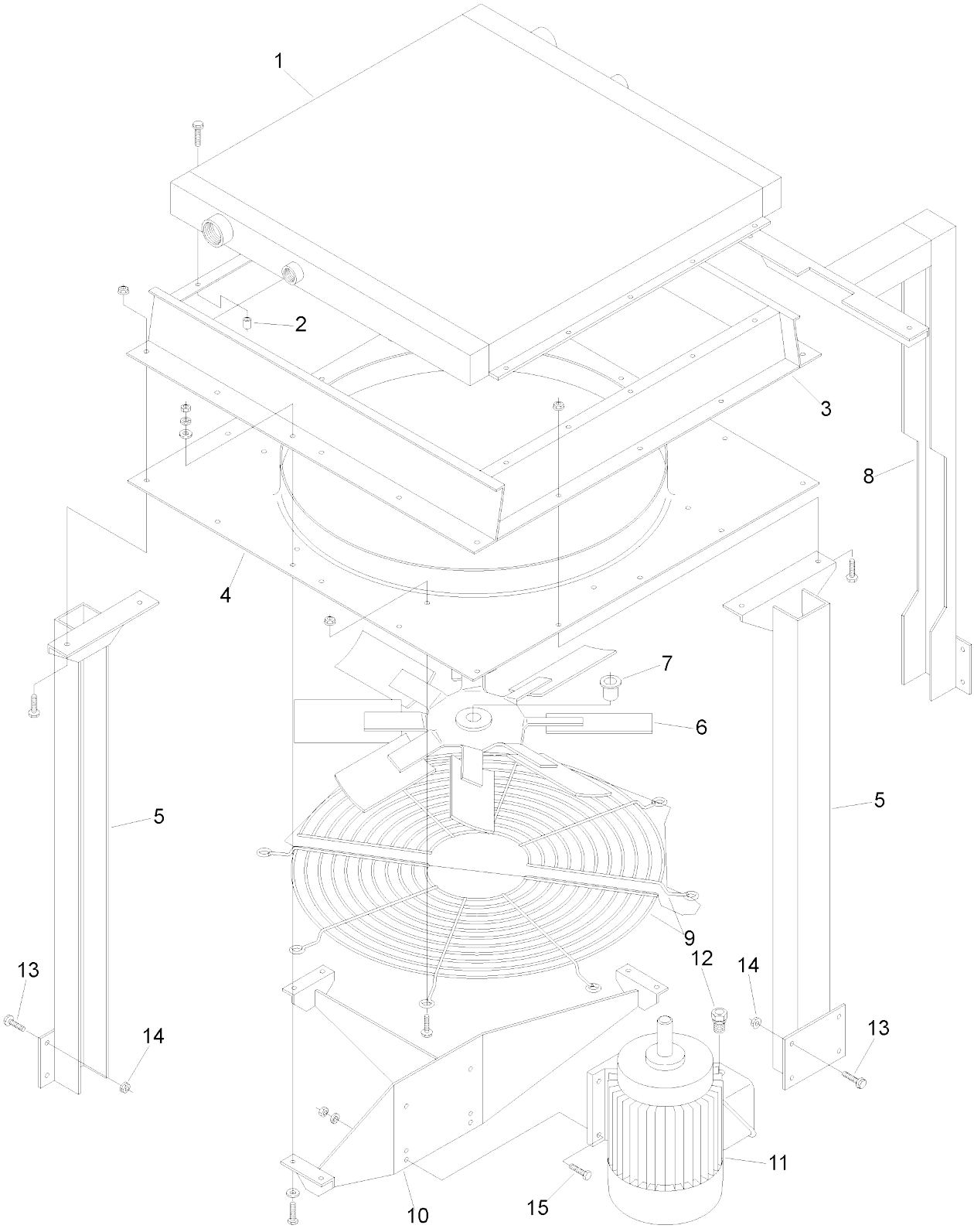
(II) For maintenance on fluid stop valve no. 02250113-668, order repair kit no. 02250116-697.

(III) For maintenance on thermal valve, order repair kit no. 02250105-553.

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

Section 8
PARTS LIST

8.7 COOLER ASSEMBLY (AIR-COOLED)

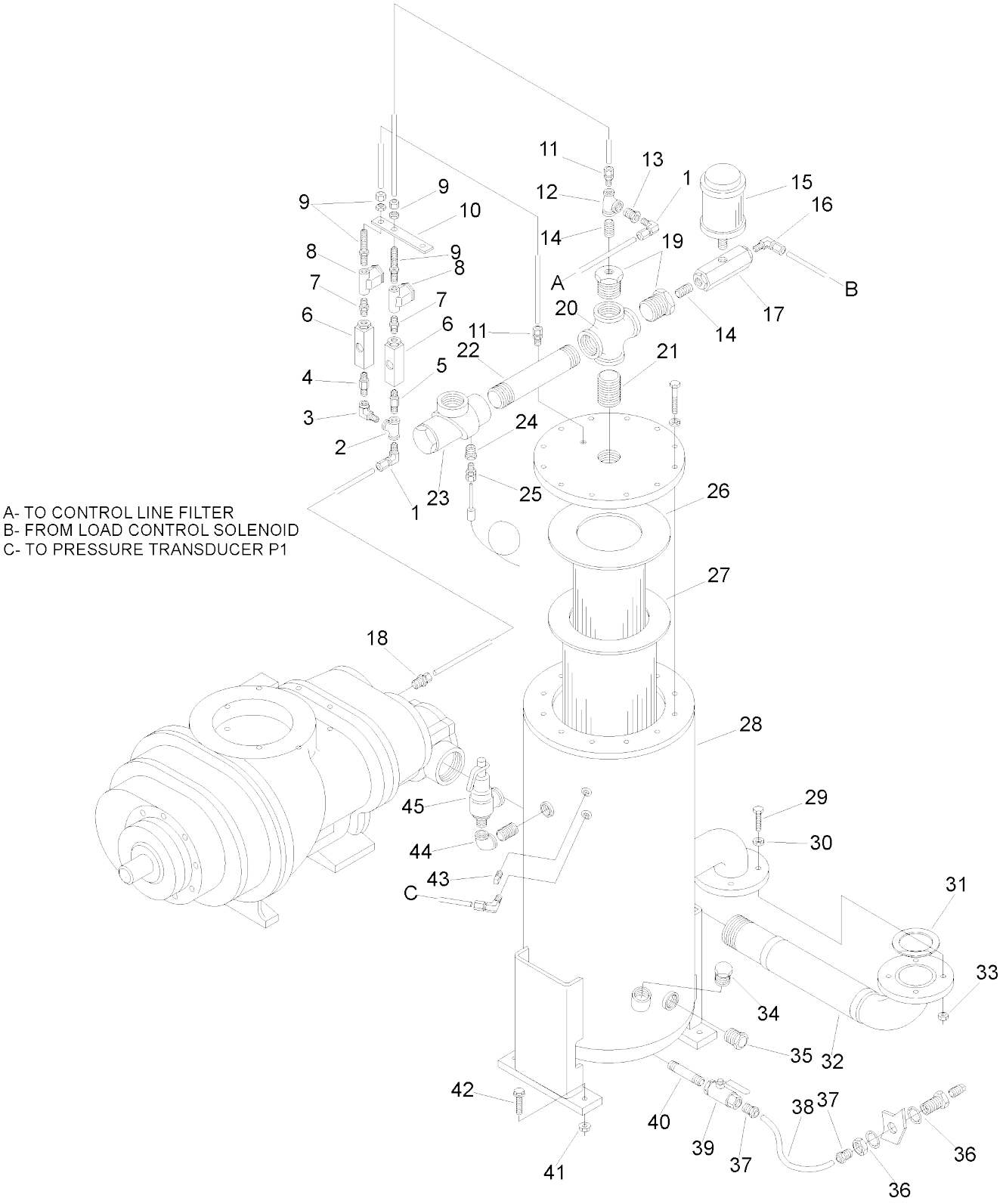


8.7 COOLER ASSEMBLY (AIR-COOLED)

key number	*description*	*part number*	*quantity*
1	cooler, fluid	02250114-969	1
2	insert, threaded blind 5/16"-18	02250043-765	10
3	adapter, venturi panel	02250043-027	1
4	panel, venturi 36"	245579	1
5	support, cooler	02250043-287	2
6	fan, 36" dia	405103	1
7	bushing, split taper	249853	1
8	support, cooler motor end	02250115-733	1
9	guard, fan 38" dia	248744	1
10	support, fan motor	015641	1
11	motor, 5HP	050974	1
12	grip, cord	250018-497	1
13	screw, hex ser washer 3/8" x 1"	829706-100	6
14	nut, hex flanged 3/8"-16	825306-347	6
15	capscrew, hex GR5 3/8"-16 x 1 3/4"	829106-175	4

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

8.8 COMPRESSOR DISCHARGE SYSTEM



8.8 COMPRESSOR DISCHARGE SYSTEM

key number	*description*	*part number*	*quantity*
1	elbow, tube 1/4" x 1/4"	810504-025	3
2	tee, pipe 1/4"	868815-010	1
3	elbow, pipe-M to F 1/4" x 1/4"	860704-025	1
4	orifice	02250101-191	1
5	orifice	022033	1
6	glass, sight 1/4"	046559	2
7	nipple, pipe hex 1/4" x 1/4"	868504-025	2
8	strainer, v-type 1/4" **(I)**	241771	2
9	connector, tube-m bulkhead 1/4"	870204-025	2
10	support, oil return sightglass	02250117-720	1
11	connector, flex 1/4"T x 1/4"P	020169	2
12	tee, pipe	867502-012	1
13	bushing, reducing	868902-010	1
14	nipple, pipe 1/2" x close	823208-000	2
15	silencer, air 1/2"	041006	1
16	elbow, tube-M 1/4" x 1/4"	813704-250	1
17	valve, blowdown 1/2"	02250100-042	1
18	connector, tube 1/2" x 1/4"	250024-695	1
19	bushing, reducing hex 2" x 1/2"	802108-020	2
20	cross, pipe 2"	801315-080	1
21	nipple, pipe 2" x close	822232-000	1
22	nipple, pipe 2" x 10"	822132-100	1
23	valve, minimum pressure/check valve 2" **(II)**	242405	1
24	bushing, reducing hex 1/2" x 1/8"	802102-005	1
25	fitting, compression	250028-635	2
26	element, separator secondary	02250048-734	1
27	element, separator primary	250034-085	1
28	tank, sump/separator **(III)**	02250114-579	1
29	capscrew, hex GR5 5/8"-11 x 3 1/4"	829110-325	4
30	washer, springlock 5/8"	837810-156	4
31	gasket, flange 2 1/2"	240621-007	1
32	joint, expantion unit to tank	02250114-577	1

(Continued on page 55)

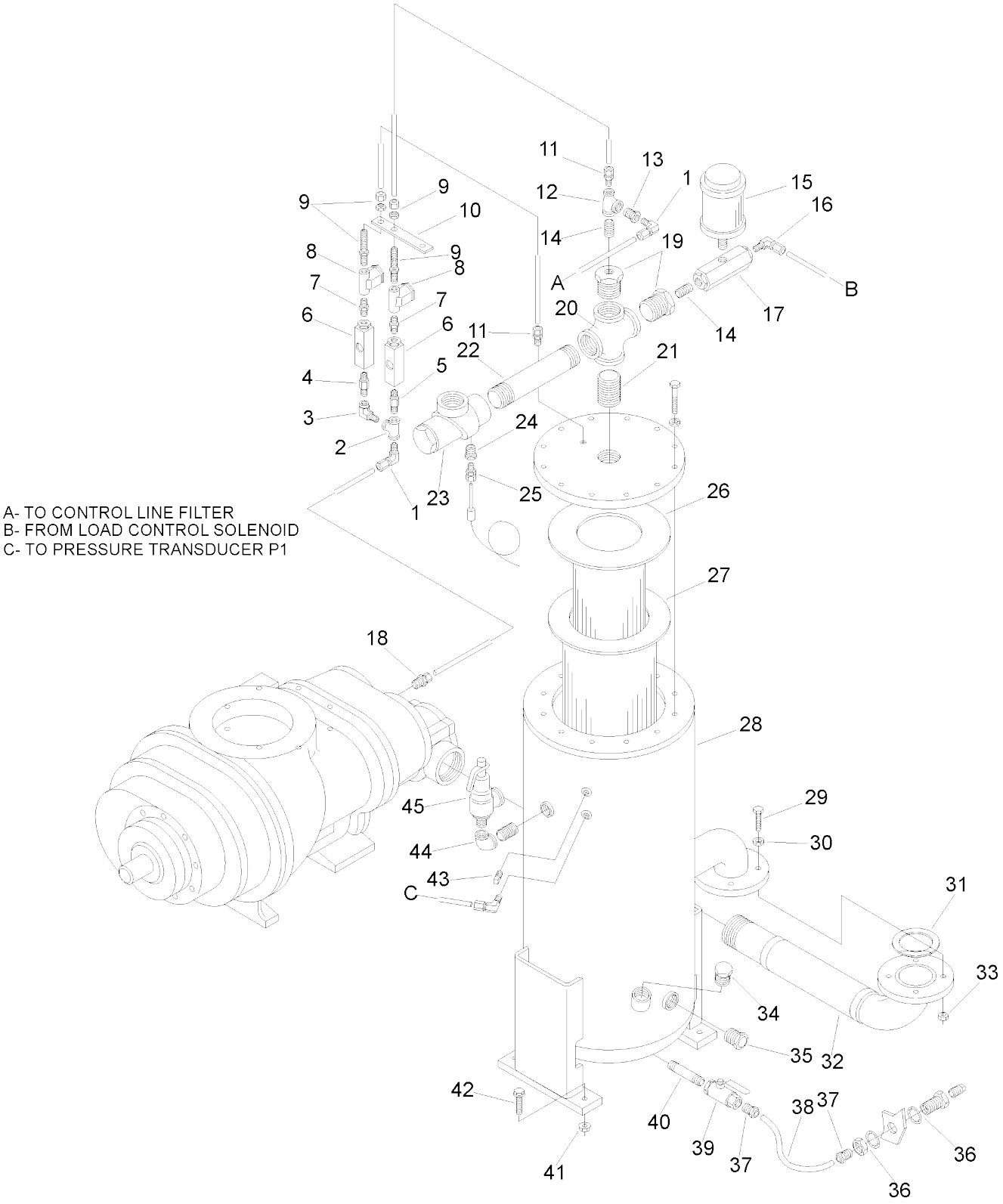
(I) For maintenance on v-type strainer no. 241771, order repair kit no. 241772.

(II) For maintenance on minimum pressure/check valve no. 242405, order repair kit no. 001176.

(III) For maintenance on separator, order primary replacement element (with gaskets) no. 250034-085, and secondary replacement element (with gaskets) no. 02250048-734.

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

8.8 COMPRESSOR DISCHARGE SYSTEM

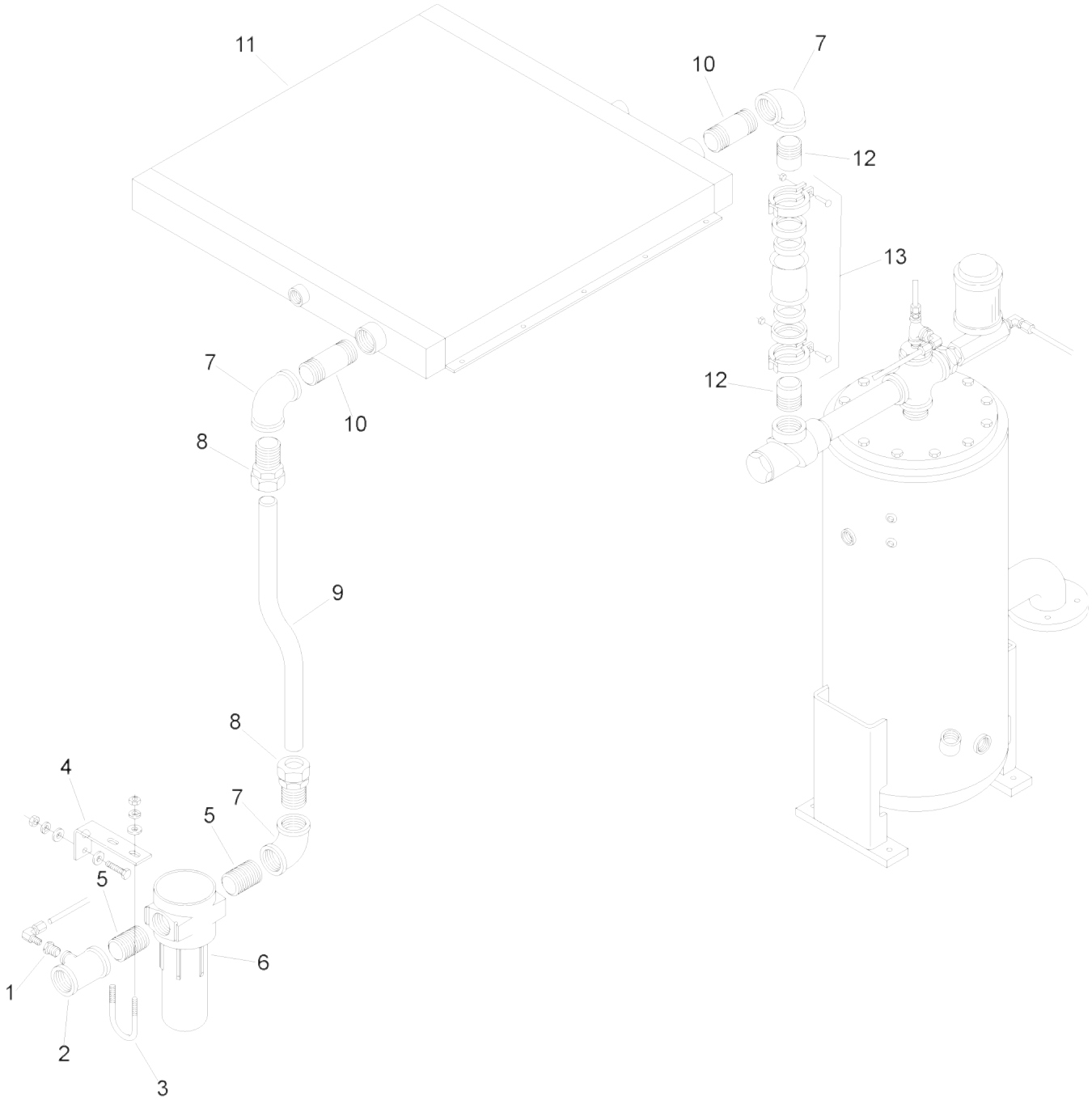


8.8 COMPRESSOR DISCHARGE SYSTEM (CONTINUED)

key number	*description*	*part number*	*quantity*
33	nut, hex 5/8”-11	825210-559	4
34	plug, o-ring boss 1 1/4”	040029	1
35	plug, sight glass 1 7/8”	02250097-611	1
36	bulkhead, pipe 1/2”	841500-008	1
37	connector, tube 1/2” x 1/2”	250024-695	2
38	tube, thermoplastic 1/2”	250030-855	2 ft
39	valve, ball 1/2”	047117	1
40	nipple, pipe	822108-030	1
41	nut, hex flanged 1/2”-13	825308-458	4
42	screw, hex ser washer 1/2” x 1 1/4”	829708-125	4
43	plug, pipe 1/4”	807800-010	1
44	elbow, reducing 1 1/4” x 1”	801605-040	1
45	valve, relief	02250047-679	1

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

8.9 AFTERCOOLER PIPING (AIR-COOLED- BEFORE JUNE 2000)



8.9 AFTERCOOLER PIPING (AIR-COOLED- BEFORE JUNE 2000)

key number	*description*	*part number*	*quantity*
1	bushing, reducing hex 1/2" x 1/4"	802102-010	1
2	tee, reducing 2" x 2" x 1/2"	802208-082	1
3	U-bolt, 3/8" x 2 1/2"	868306-250	1
4	support, moisture separator	02250115-692	1
5	nipple, pipe 2" x close	822232-000	2
6	separator, moisture 2" **(I)**	02250100-365	1
7	elbow, pipe 2"	801515-080	1
8	connector, tube-M 2" x 2"	810232-200	2
9	tubing, moisture separator to cooler 2"	02250115-693	1
10	nipple, pipe 2" x 5"	822232-050	2
11	cooler, fluid	02250114-969	1
12	nipple, half 2" x 3"	822832-030	1
13	coupling, flexmaster 2" **(II)**	040913	1

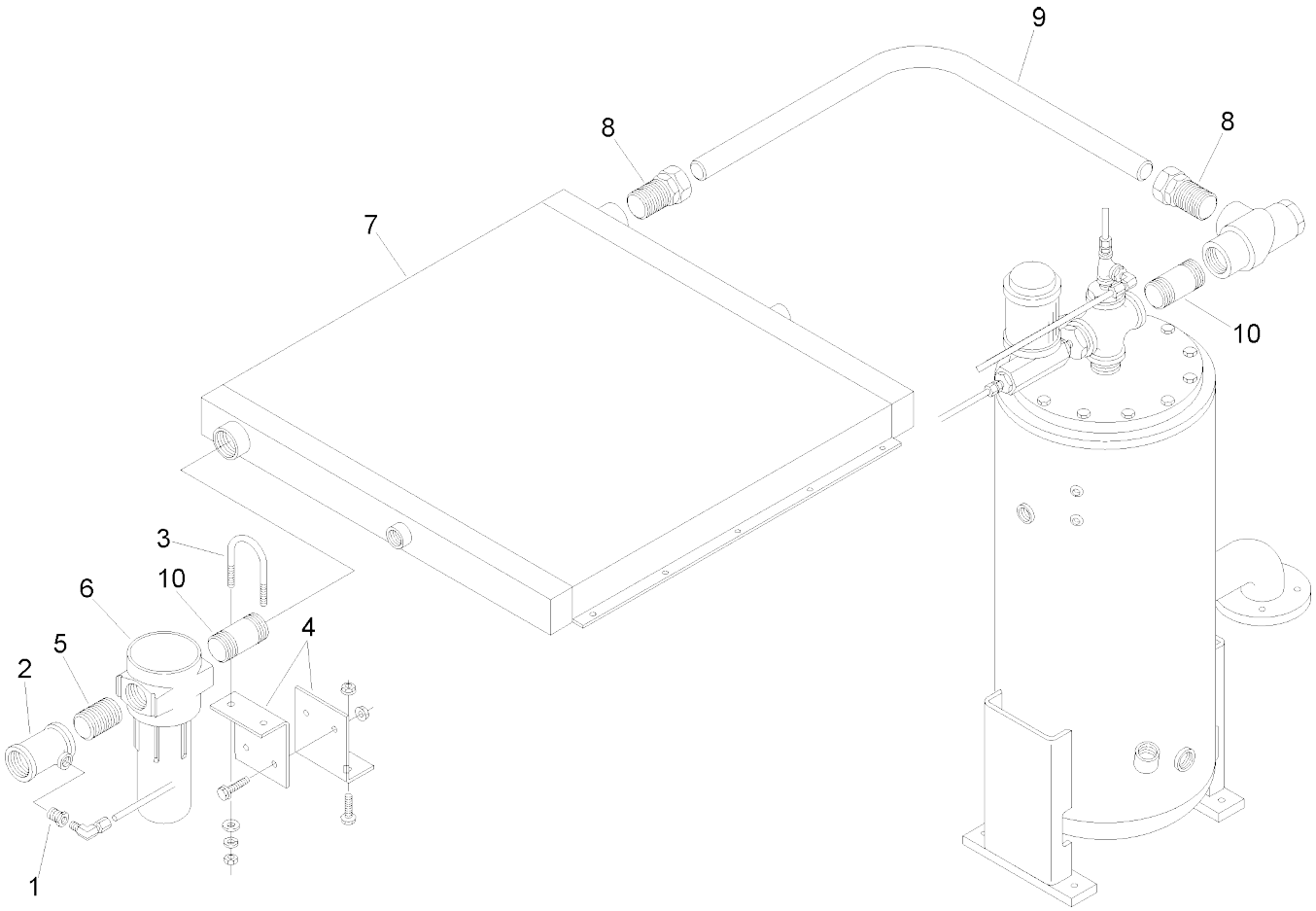
(I) For maintenance on moisture separator no. 02250100-365, order repair kit no. 250031-245.

(II) For maintenance on coupling no. 040913, order replacement gaskets no. 040930 (two required).

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

PARTS LIST

8.10 AFTERCOOLER PIPING (AIR-COOLED- AFTER JUNE 2000)

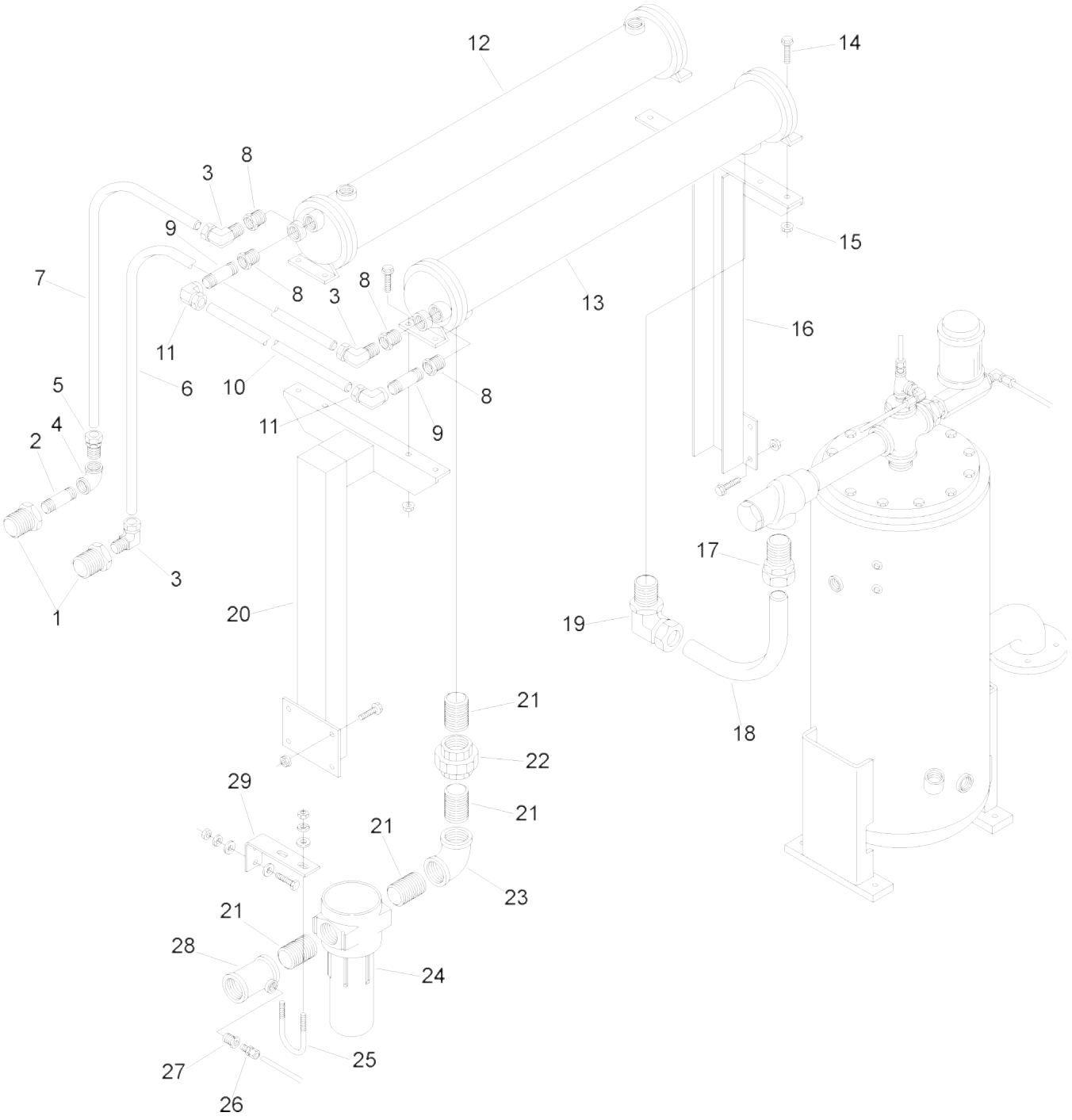


8.10 AFTERCOOLER PIPING (AIR-COOLED- AFTER JUNE 2000)

key number	*description*	*part number*	*quantity*
1	bushing, reducing hex 1/2" x 1/4"	802102-010	1
2	tee, reducing 2" x 2" x 1/2"	802208-082	1
3	U-bolt, 3/8" x 2 1/2"	868306-250	1
4	support, moisture separator	02250119-770	2
5	nipple, pipe 2" x close	822232-000	1
6	separator, moisture 2"	02250100-365	1
7	cooler, fluid	02250119-841	1
8	connector, tube-M 2" x 2"	810232-200	2
9	tubing, min. press. valve to cooler	02250121-275	1
10	nipple, pipe 2" x 4"	822232-040	2

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

8.11 AFTERCOOLER PIPING (WATER-COOLED)



8.11 AFTERCOOLER PIPING (WATER-COOLED)

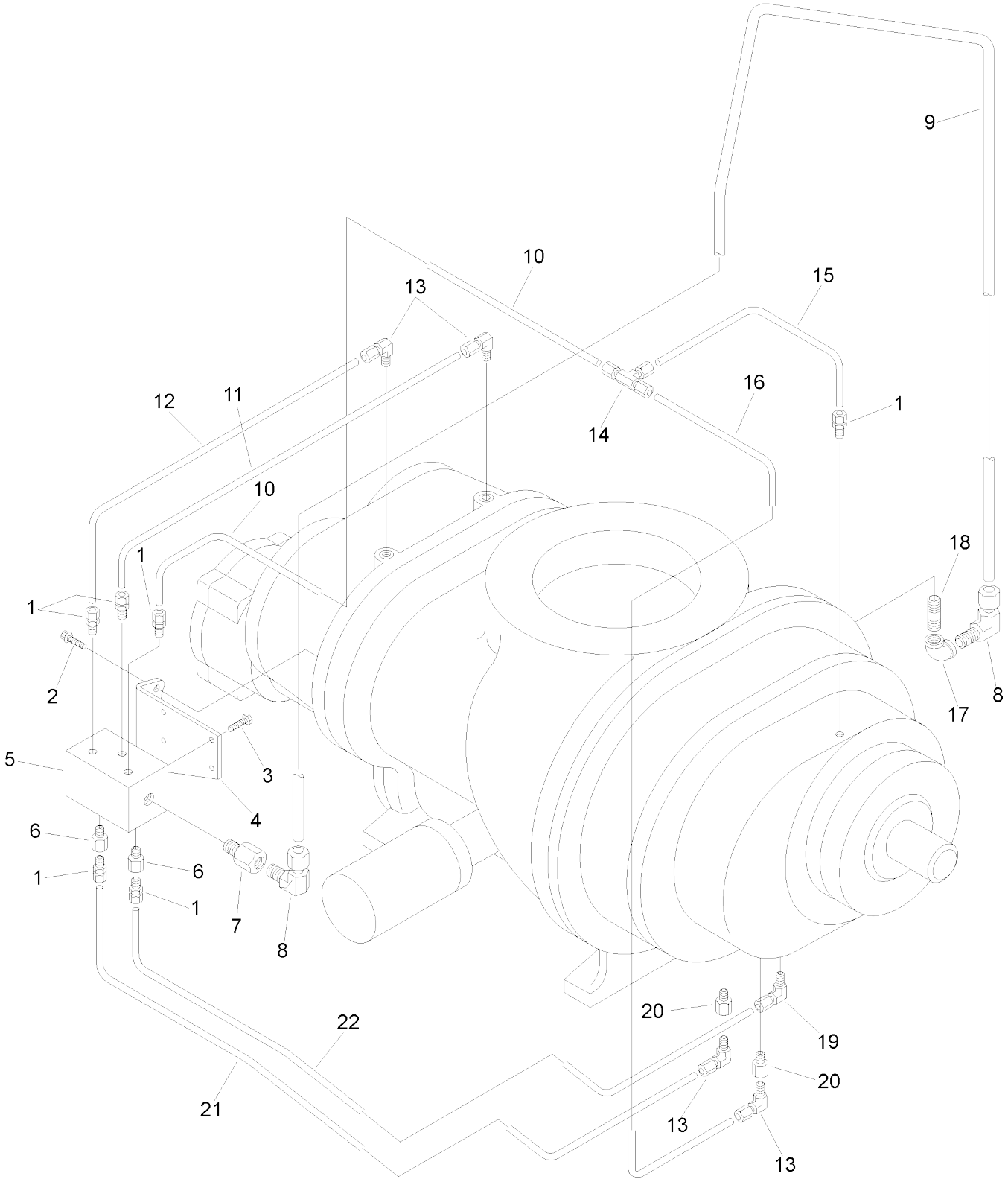
key number	*description*	*part number*	*quantity*
1	bushing, reducing hex 2” x 1 1/4”	802108-050	2
2	nipple, pipe 1 1/4” x 6”	822120-060	1
3	elbow, tube-M 1 1/4” x 1 1/4”	810520-125	3
4	elbow, pipe 1 1/4”	801515-050	1
5	connector, tube 1 1/4” x 1 1/4”	810220-125	1
6	tube, water inlet to cooler 1 1/4”	02250052-330	1
7	tube, water outlet 1 1/4”	02250052-326	1
8	bushing, reducing hex 1 1/2” x 1 1/4”	802106-050	4
9	nipple, pipe 1 1/4” x 4”	822120-040	2
10	tube, aftercooler to fluid cooler 1 1/4”	02250052-328	1
11	elbow, tube-F 1 1/4” x 1 1/4”	810420-125	2
12	cooler, fluid	02250114-977	1
13	aftercooler	043009	1
14	screw, hex ser washer 3/8”-16 x 1”	829706-100	8
15	nut, hex flange 3/8”-16	825306-347	8
16	support, cooler separator end	02250051-862	1
17	connector, tube-M 2” x 2”	810232-200	1
18	tube, minimum pressure valve to cooler 2”	02250052-119	1
19	elbow, tube-M 2” x 2”	810532-200	1
20	support, cooler motor end	02250115-734	1
21	nipple, pipe 2” x close	822232-000	4
22	union, pipe 2”	802515-080	1
23	elbow, pipe 2”	801515-080	1
24	separator, moisture 2” **(I)**	02250100-365	1
25	U-bolt, 3/8” x 2 1/2”	868306-250	1
26	connector, tube-M 1/4” x 1/4”	810204-025	1
27	bushing, reducing hex 1/2” x 1/4”	802102-010	1
28	tee, reducing 2” x 2” x 1/2”	802208-082	1
29	support, moisture separator	02250115-692	1

(I) For maintenance on moisture separator no. 02250100-365, order repair kit no. 250031-245.

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

Section 8
PARTS LIST

8.12 UNIT TUBING



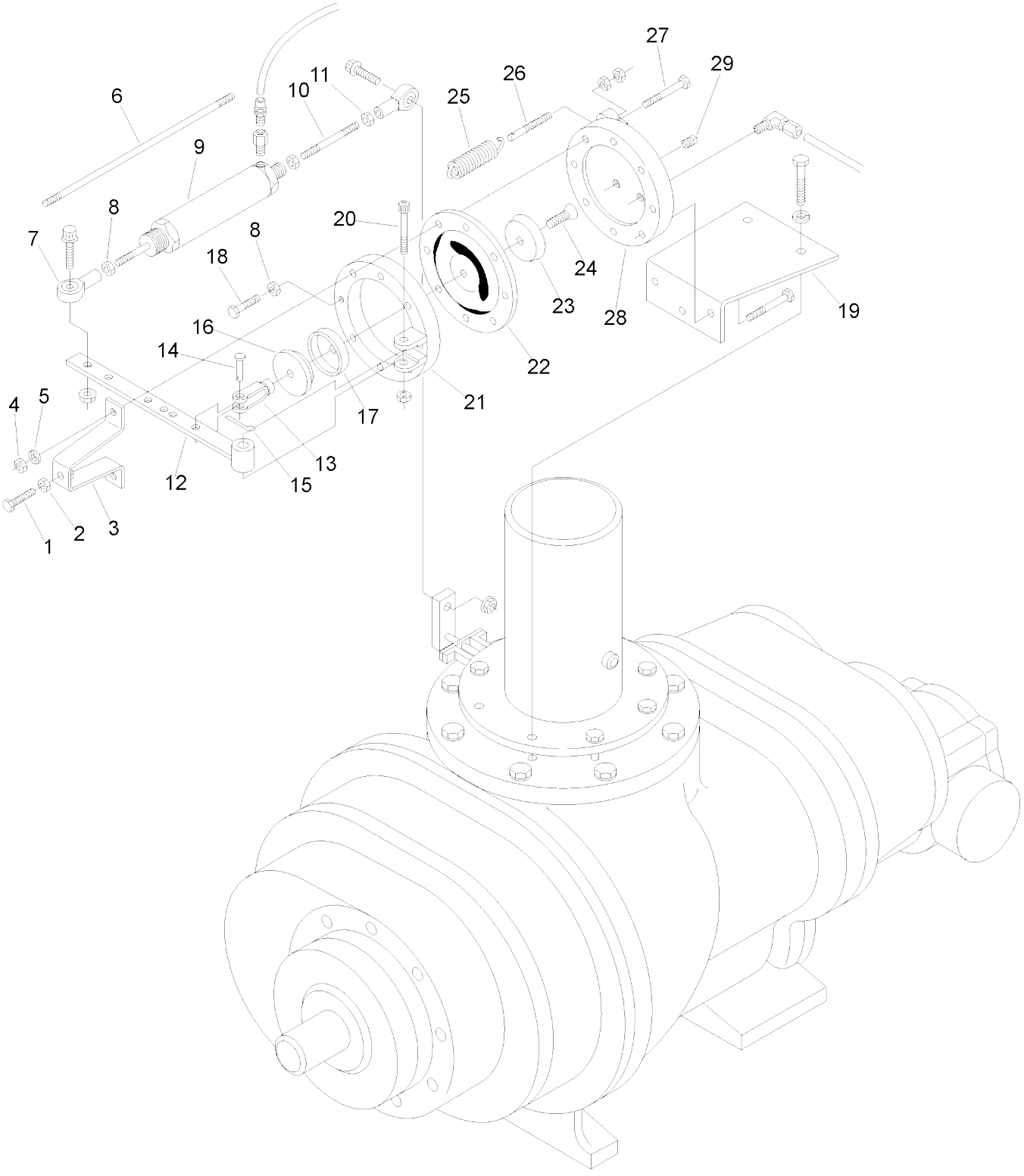
8.12 UNIT TUBING

key number	*description*	*part number*	*quantity*
1	connector, tube-M 3/8" x 1/4"	810206-025	6
2	capscrew, ferry hd 1/2"-13 x 1"	867308-100	2
3	capscrew, hex GR8 5/16"-18 x 3/4"	828205-075	4
4	support, manifold	02250044-911	1
5	manifold, oil 1 5/8" SAE	02250115-094	1
6	orifice, .062" x .25M" x .2"	028831	2
7	orifice, 1/2"M x 1/2"F x .562"	02250044-297	1
8	elbow, tube-M 3/4" x 1/2"	810512-050	2
9	tube, injection 0.75"	02250044-276	1
10	tube, seal-gear .38"	02250045-058	1
11	tube, bearing .38"	02250045-057	1
12	tube, bearing .38"	02250045-056	1
13	elbow, tube-M 3/8" x 1/4"	810506-025	4
14	tee, tube union 3/8"	811406-038	1
15	tube, seal oil .38"	02250044-275	1
16	tube, gear oil .38"	221081	1
17	elbow, pipe 1/2"	806530-020	1
18	nipple, pipe 1/2" x 2"	822208-020	1
19	elbow, tube-M 3/8" x 1/8"	810506-012	1
20	orifice, 1/8"M x 1/4"F	220959	2

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

Section 8
PARTS LIST

8.13 SULLICON CONTROL



8.13 SULLICON CONTROL (I)

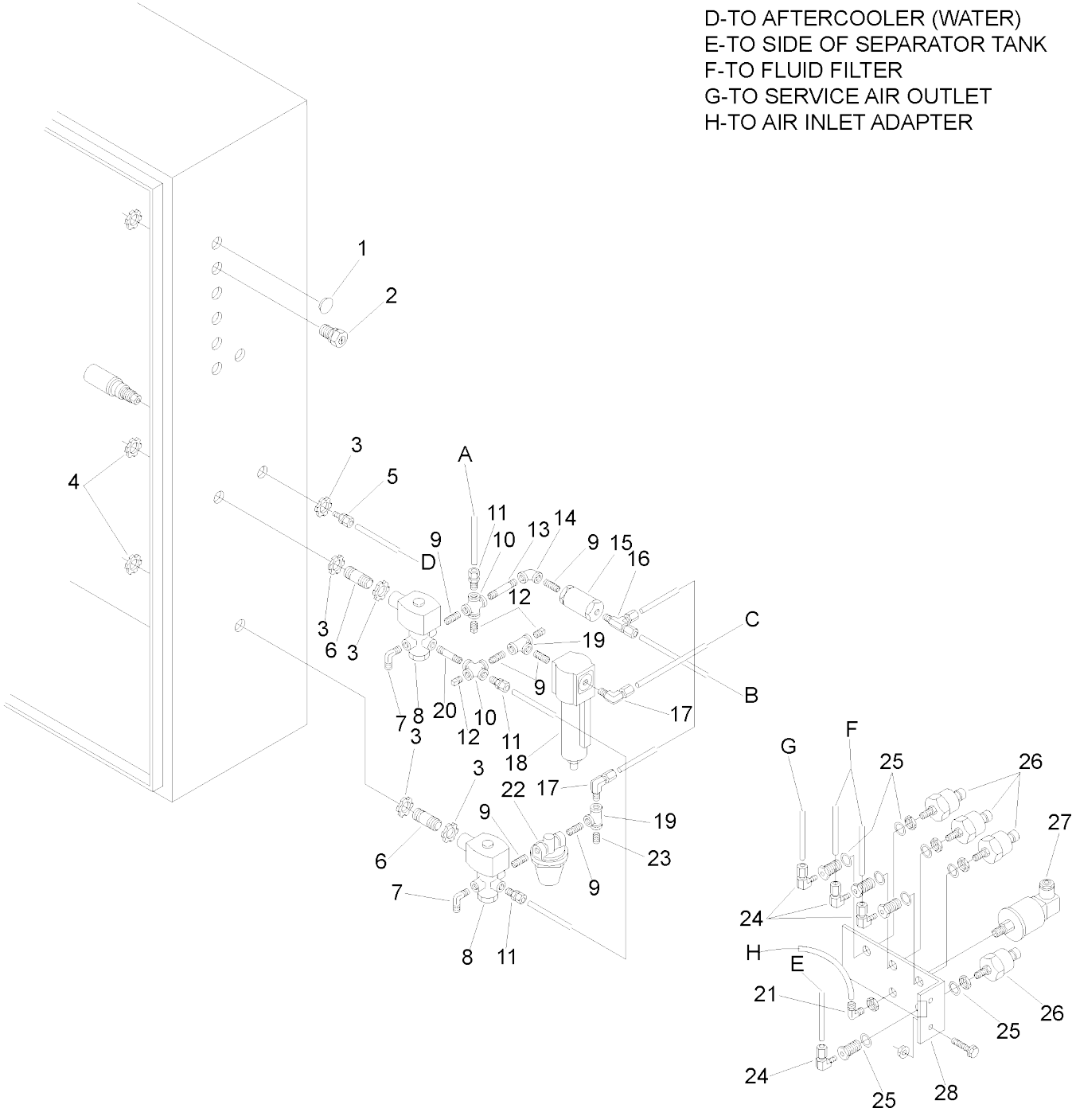
key number	*description*	*part number*	*quantity*
1	screw, machine hex 3/8"-16 x 2"	830106-200	1
2	nut, hex 3/8"-16	824206-337	1
3	bracket, control stop	020864	1
4	nut, hex 5/16"-18	824205-273	3
	•nut, hex 3/8"-16	824206-337	7
5	washer, springlock 5/16"	837505-078	3
	•washer, springlock 3/8"	837506-094	4
6	rod, compressor control	222745	1
7	rod, end spherical RH 5/16"	040136	1
8	hex, jam RH 5/16"-24	868205-195	2
9	cylinder, air control	250016-990	1
10	rod, link 5/16"-24 x 2 1/2"	045854	1
11	nut, hex jam LH 5/16"-24	866605-195	1
12	lever, control	011084	1
13	yoke, rod end 1/4"-28	040138	1
14	pin, yoke 1/4"	040065	1
15	pin, cotter 1/16" x 3/4"	827101-075	1
16	plunger	020094	1
17	seal, cup	042538	1
18	screw, machine hex 5/16"-24 x 2"	831105-200	1
19	bracket, sullicon	250031-765	1
20	screw, machine shoulder 3/8" x 2"	830506-200	1
21	body, control	021635	1
22	diaphragm, sullicon **(I)**	250020-028	1
23	washer, back-up	021172	1
24	screw, sealing 1/4"-28 x 1"	041264	1
25	spring, control	250024-507	1
26	bolt, adjusting sullicon spring	02250112-184	1
27	capscrew, hex GR5 5/16" x 2 1/2"	828605-250	1
	•capscrew, hex GR5 3/8"-16 x 2 1/2"	828606-250	3
	•capscrew, hex GR5 5/16"-18 x 2 1/4"	829105-225	2
	•capscrew, hex GR5 3/8"-16 x 2 1/4"	829106-225	1
28	cover, control	021654	1
29	plug, pipe 1/4"	807800-010	1

(I) For maintenance on Sullicon control, order repair kit no. 250020-353.

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

8.14 PNEUMATIC CONTROLS WITHOUT SPIRIAL VALVE

A-TO BLOWDOWN VALVE
B-TO SULLICON CONTROL
C-TO TOP OF SEPARATOR TANK
D-TO AFTERCOOLER (WATER)
E-TO SIDE OF SEPARATOR TANK
F-TO FLUID FILTER
G-TO SERVICE AIR OUTLET
H-TO AIR INLET ADAPTER



8.14 PNEUMATIC CONTROLS WITHOUT SPIRIAL VALVE

key number	*description*	*part number*	*quantity*
1	plug, hole 1/2”	409918-002	5
2	RTD, 100 OHM	250039-909	2
3	locknut, conduit seal 1/2”	02250071-362	4
4	locknut, conduit 1/2”	847200-050	
5	connector, tube-M 1/4” x 1/8”	810204-012	1
6	conduit	250007-170	2
7	elbow, 1/4”T x 1/4”P	250018-430	2
8	valve, solenoid 3-way 1/4” **(I)**	250038-675	2
9	nipple, pipe 1/4”	868504-025	
10	cross, pipe 1/4”	867615-010	2
11	connector, tube-M 1/4” x 1/4”	810204-025	3
12	plug, pipe 1/4”	866900-010	3
13	nipple, pipe 1/4” x 2”	866304-020	1
14	elbow, pipe 1/4”	866215-010	1
15	valve, check 1/4” **(II)**	049905	2
16	tee, tube-M run 1/4” x 1/4”	810904-025	1
17	elbow, tube-M 1/4” x 1/4”	810504-025	2
18	filter **(III)**	02250112-032	1
19	tee, pipe 1/4”	866815-010	2
20	nipple, pipe 1/4” x 1 1/2”	866304-015	1
21	elbow, tube-M 1/4” x 1/8”	813704-125	1
22	valve, differential press regulator 1/4” **(III)**	406929	1
23	orifice, pipe plug 1/4”	232874	1
24	elbow, tube-M 1/4” x 1/8”	810504-012	4
25	bulkhead, pipe 1/8”	841500-002	4
26	transducer, pressure 0-250psi	02250078-933	4
27	switch, vacuum	02250078-249	1
28	support, press transducer	02250118-566	1

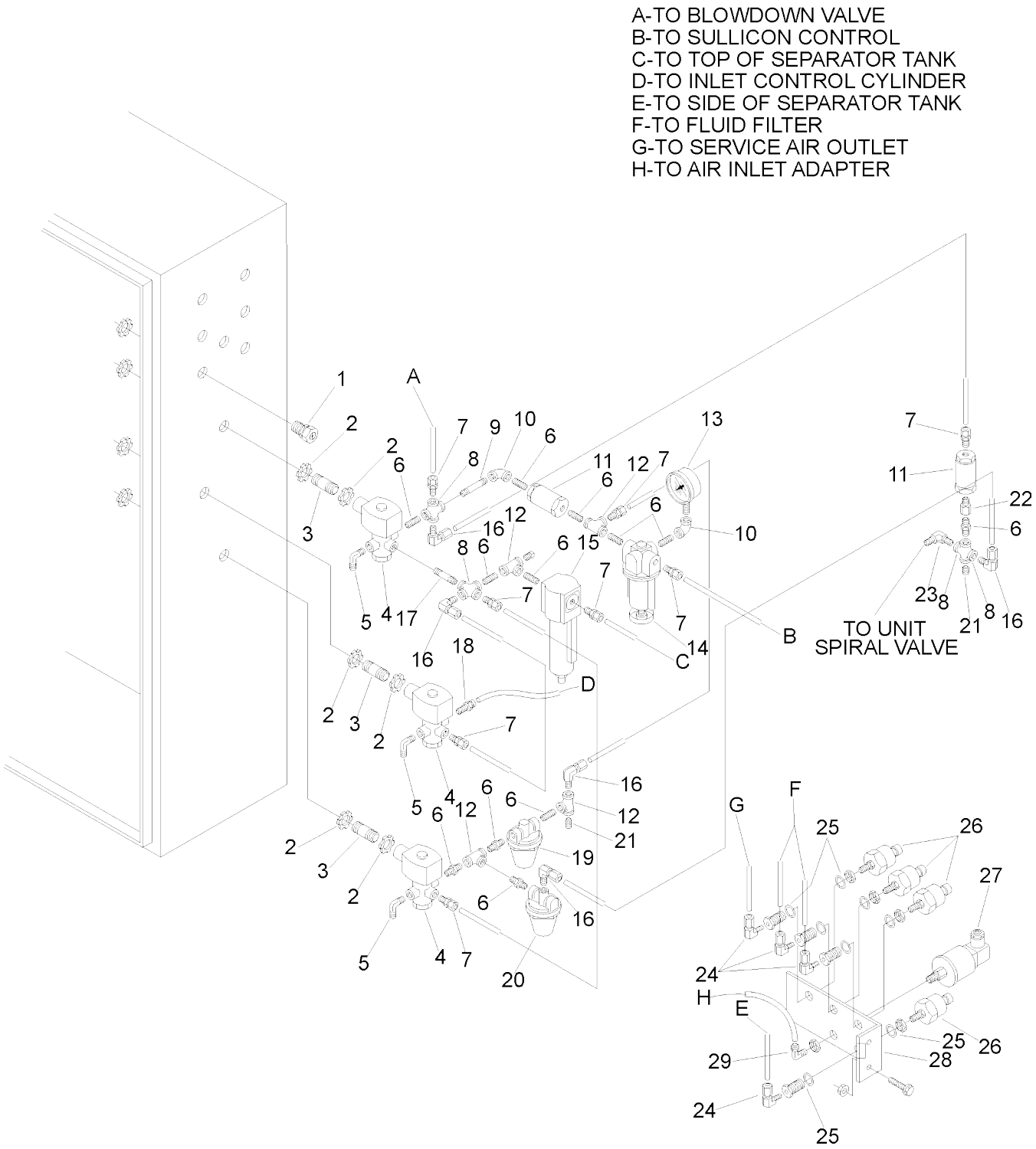
(I) For maintenance on solenoid valve no. 250038-675, order repair kit no. 02250055-939, and replacement coil no. 250038-730.

(II) For maintenance on check valve no. 049905, order replacement spring no. 250003-657.

(III) For maintenance on differential pressure regulator valve no. 406929, order repair kit no. 041742.

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

8.15 PNEUMATIC CONTROLS WITH SPIRIAL VALVE



8.15 PNEUMATIC CONTROLS WITH SPIRIAL VALVE

key number	*description*	*part number*	*quantity*
1	rtd, 100 ohm	250039-909	2
2	locknut, conduit seal 1/2"	02250071-362	6
3	conduit	250007-170	3
4	valve, solenoid 3-way 1/4" **(I)**	250038-675	3
5	elbow, 1/4"T x 1/4"P	250018-430	3
6	nipple, pipe 1/4"	868504-025	10
7	connector, tube-M 1/4" x 1/4"	810204-025	7
8	cross, pipe 1/4"	867615-010	3
9	nipple, pipe 1/4" x 2"	866304-020	1
10	elbow, pipe 1/4"	866215-010	1
11	valve, check 1/4" **(II)**	049905	2
12	tee, pipe 1/4"	866815-010	4
13	gauge, pressure 1/4"	02250117-009	1
14	regulator, pressure 1/4"	046556	1
15	filter, control air 1/4" **(III)**	02250112-032	1
16	elbow, tube-M 1/4" x 1/4"	810504-025	5
17	nipple, pipe 1/4" x 1 1/2"	866304-015	1
18	connector, tube-M 1/4" x 1/4"	813604-250	1
19	valve, press regulator100psi **(IV)**	408275	1
20	valve, press regulator **(V)**	406929	1
21	orifice, pipe plug 1/4"	232874	1
22	orifice	040381	1
23	elbow, pipe 90° M 1/4" x 1/4"	860504-025	1
24	elbow, tube-M 1/4" x 1/8"	810504-012	4
25	bulkhead, pipe 1/8"	841500-002	4
26	transducer, pressure 0-250psi	02250078-933	4
27	switch, vacuum	02250078-249	1
28	support, press transducer	02250118-566	1
29	elbow, tube-M 1/4" x 1/8"	813704-125	1

(I) For maintenance on solenoid valve no. 250038-675, order repair kit no. 02250055-939, and replacement coil no. 250038-730.

(II) For maintenance on check valve no. 049905, order replacement spring no. 250003-657.

(III) For maintenance on control air filter no. 02250112-032, order replacement filter no. 02250112-031, and replacement float assembly no. 02250115-960.

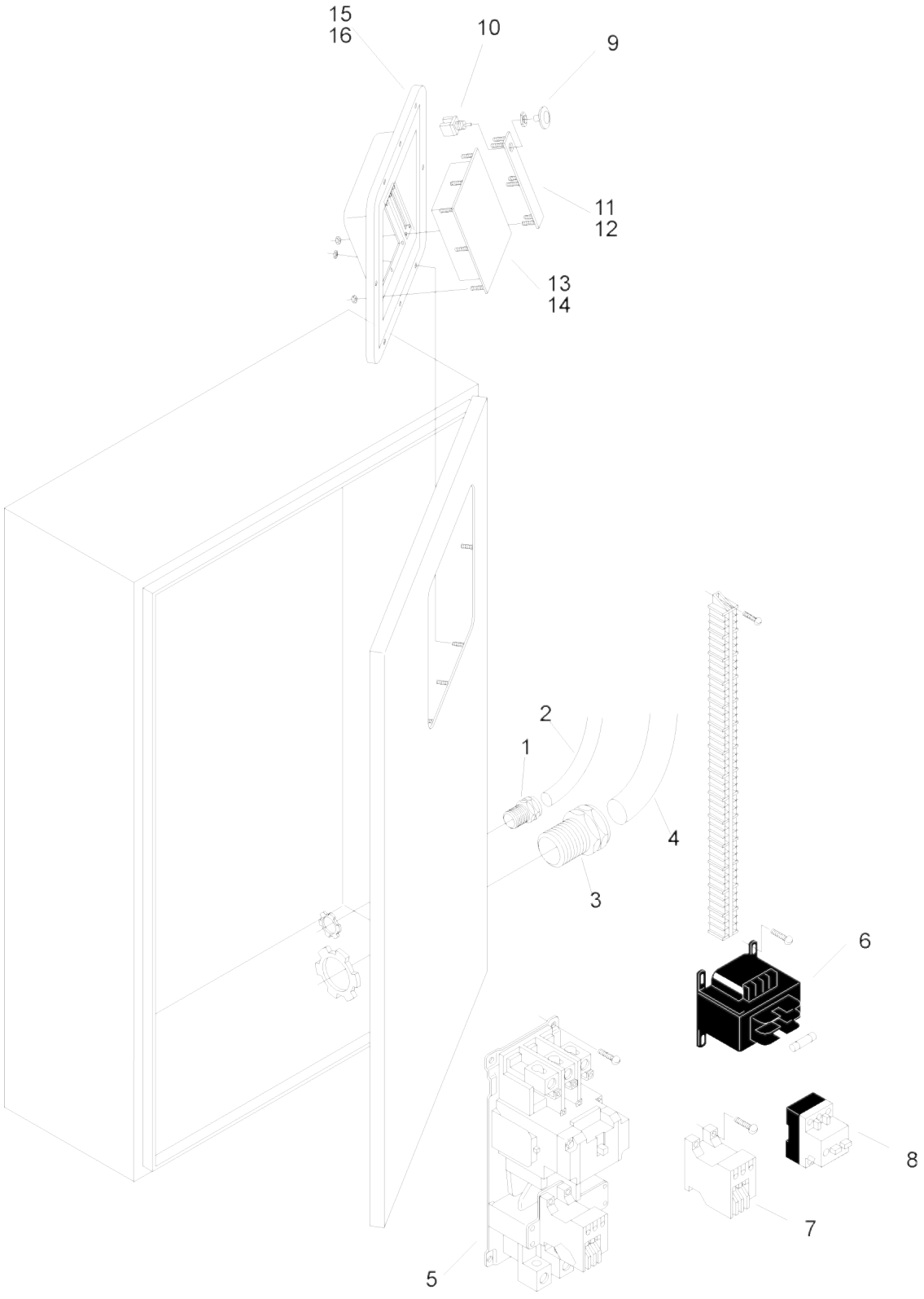
(IV) For maintenance on pressure regulator no. 408275, order repair kit no. 041742.

(V) For maintenance on pressure regulator no. 406929, order repair kit no. 041742.

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

Section 8
PARTS LIST

8.16 ELECTRICAL BOX

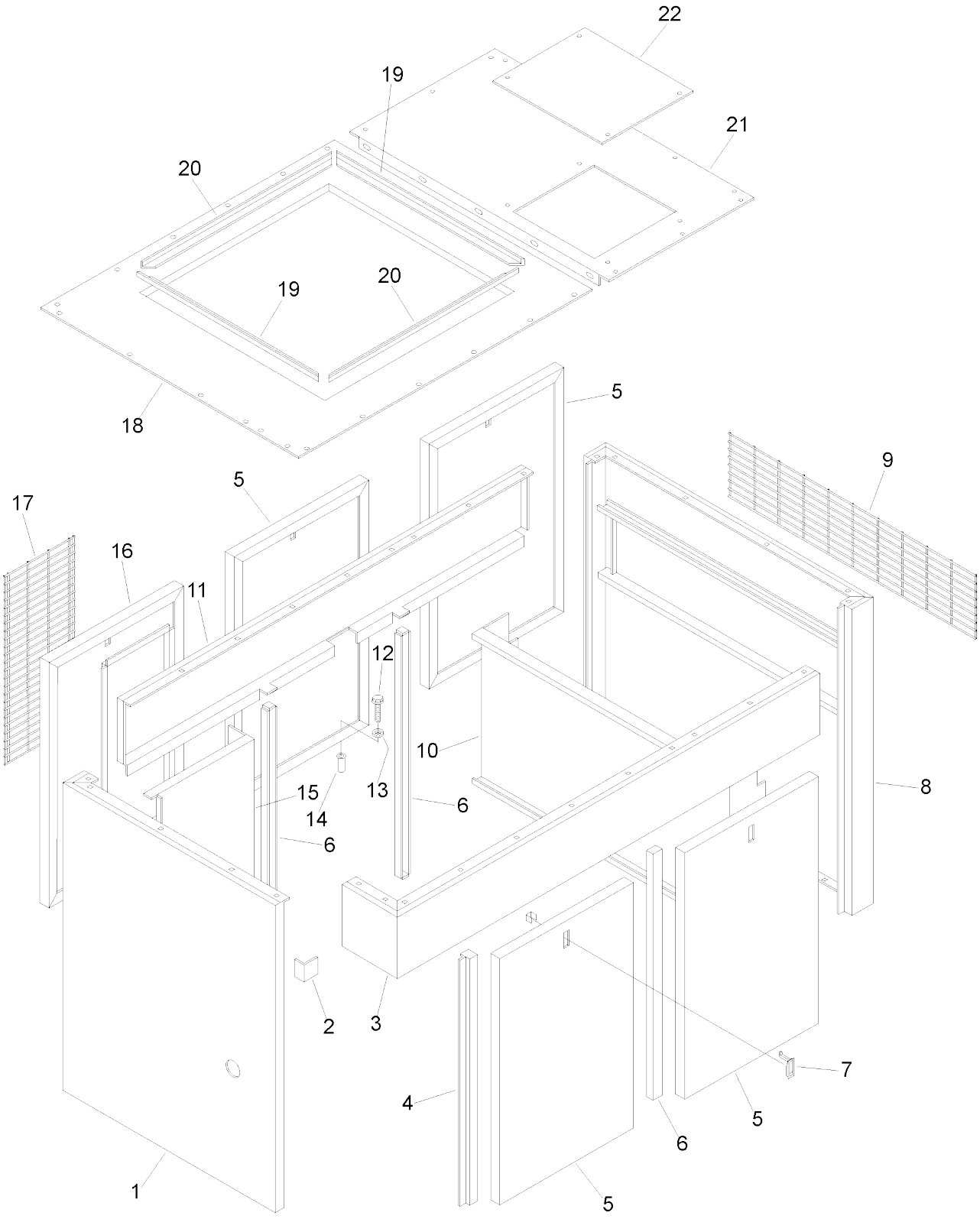


8.16 ELECTRICAL BOX

key number	*description*	*part number*	*quantity*
1	grip, cord 12/4	250018-495	1
2	wire, neoprene #12-4	850604-012	
3	grip, cord 1/0	250014-561	2
4	wire, type G-GC 2/0	250014-311	7 ft
5	starter, compressor	consult factory	1
6	transformer, 350VA universal voltage	02250083-190	1
7	contactor, size F 32A	250025-705	1
8	starter, fan motor protector	consult factory	1
9	switch, push button operator	02250085-504	1
10	block, contact normally closed	250027-125	2
11	plate, aux panel	02250086-265	1
12	gasket, aux cntrl panel	02250086-269	1
13	controller, Supervisor II	02250116-247	1
14	gasket, Supervisor II	02250048-822	1
15	bezel, control panel	02250089-302	1
16	gasket, control panel	02250090-872	1

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

8.17 ENCLOSURE (AIR-COOLED)

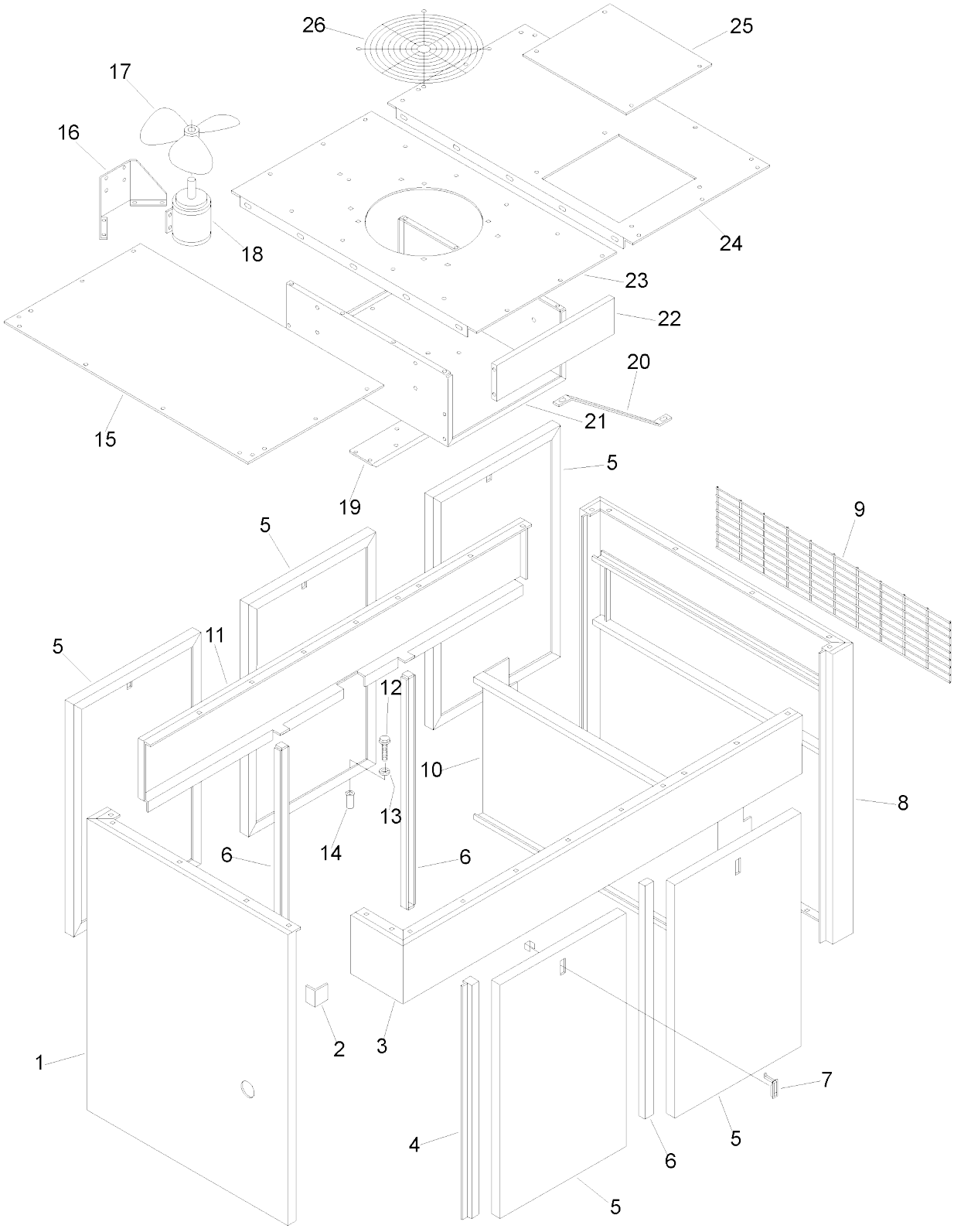


8.17 ENCLOSURE (AIR-COOLED)

key number	*description*	*part number*	*quantity*
1	panel, canopy corner	02250116-305	1
2	support, bracket	02250078-690	1
3	panel, canopy corner	02250119-167	1
4	channel, support	02250116-312	1
5	panel, access	02250118-773	5
6	channel, support	02250116-311	3
7	latch, adjustable trigger	250007-835	5
8	panel, assembly	02250116-306	1
9	grille, air inlet compressor end	02250049-723	1
10	baffle, air inlet	02250046-858	1
11	panel, canopy	02250116-308	1
12	screw, hex ser washer 1/4” x 1”	829704-100	10
13	washer, springlock 1/4”	838504-062	10
14	rivet, tubular 1/4”	049824	10
15	baffle, air inlet motor end	02250049-469	1
16	panel, access cutout	02250116-674	1
17	grille, air inlet motor end	02250049-724	1
18	panel, roof canopy cooler	02250116-416	1
19	angle, cooler seal top/bottom	02250116-994	2
20	angle, cooler seal side	02250116-987	2
21	panel, roof separator access	02250118-554	1
22	cover, separator access panel	017326	1

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

8.18 ENCLOSURE (WATER-COOLED)

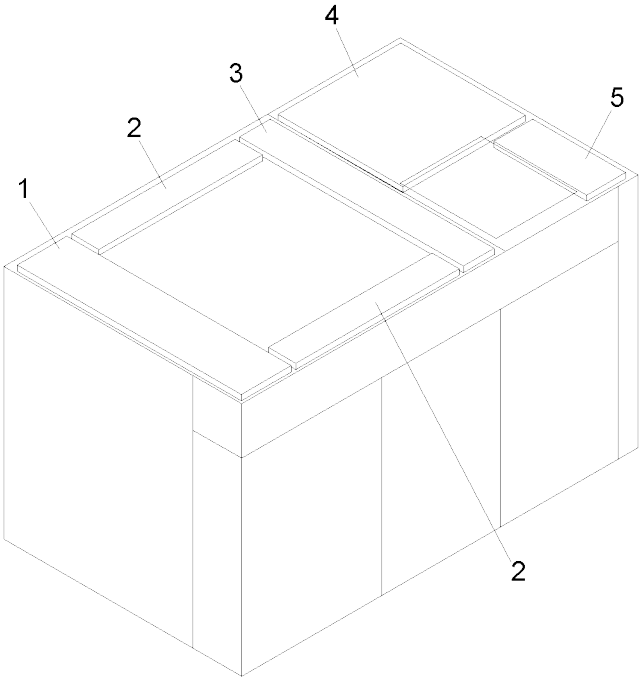


8.18 ENCLOSURE (WATER-COOLED)

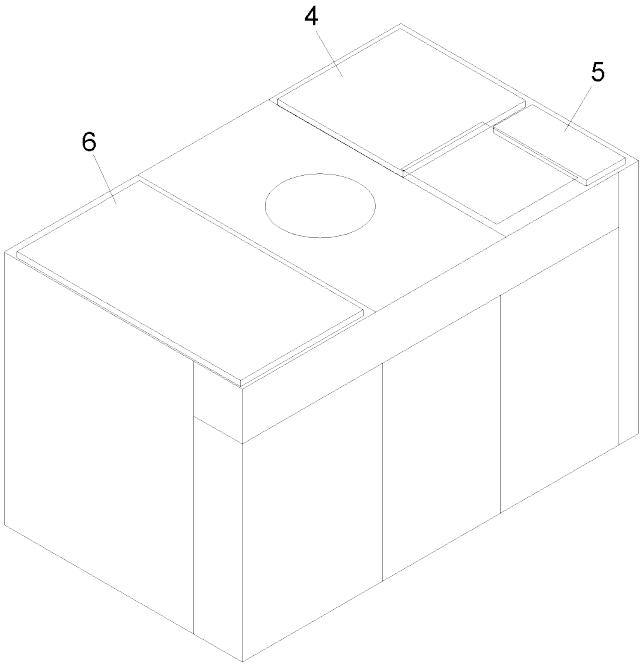
key number	*description*	*part number*	*quantity*
1	panel, canopy corner	02250116-305	1
2	support, bracket	02250078-690	1
3	panel, canopy corner	02250119-167	1
4	channel, support	02250116-312	1
5	panel, access	02250118-773	5
6	channel, support	02250116-311	3
7	latch, adjustable trigger	250007-835	5
8	panel, assembly	02250116-306	1
9	grille, air inlet compressor end	02250049-723	1
10	baffle, air inlet	02250046-858	1
11	panel, canopy	02250116-308	1
12	screw, hex ser washer 1/4” x 1”	829704-100	10
13	washer, springlock 1/4”	838504-062	10
14	rivet, tubular 1/4”	049824	10
15	panel, roof	02250116-309	1
16	support, motor	02250044-854	1
17	fan, 18” 1/2” bore	410358	1
18	motor, .25HP	250000-031	1
19	channel, support	02250044-855	1
20	support, bracket	02250077-590	2
21	housing, baffle	02250044-817	1
22	panel, baffle	02250044-816	4
23	panel, roof	02250116-417	1
24	panel, roof separator access	02250118-554	1
25	cover, separator access panel	017326	1
26	guard, fan 20”	241137	1

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

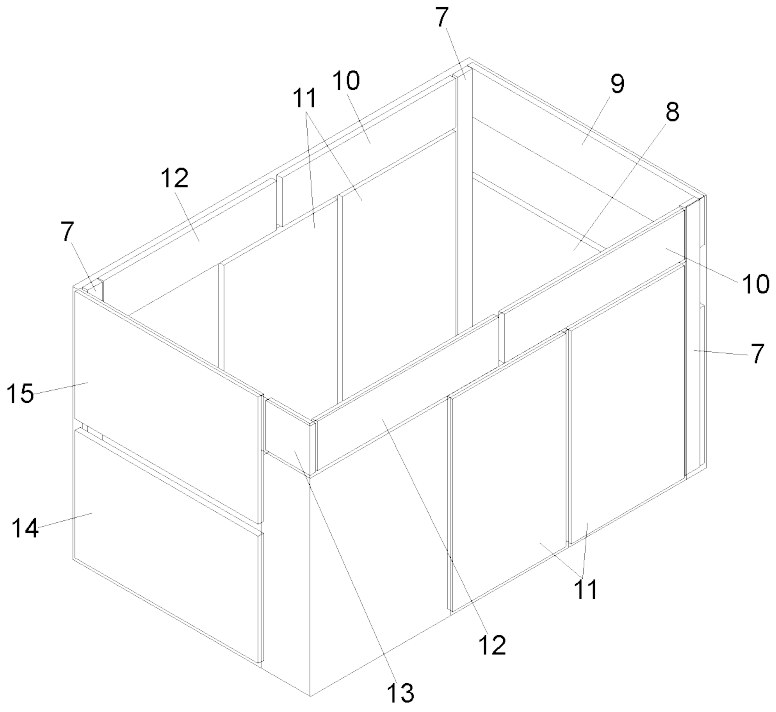
8.19 ACOUSTIC PANELS



AIR-COOLED MACHINES



WATER-COOLED MACHINES



WATER-COOLED &
AIR-COOLED MACHINES

8.19 ACOUSTIC PANELS

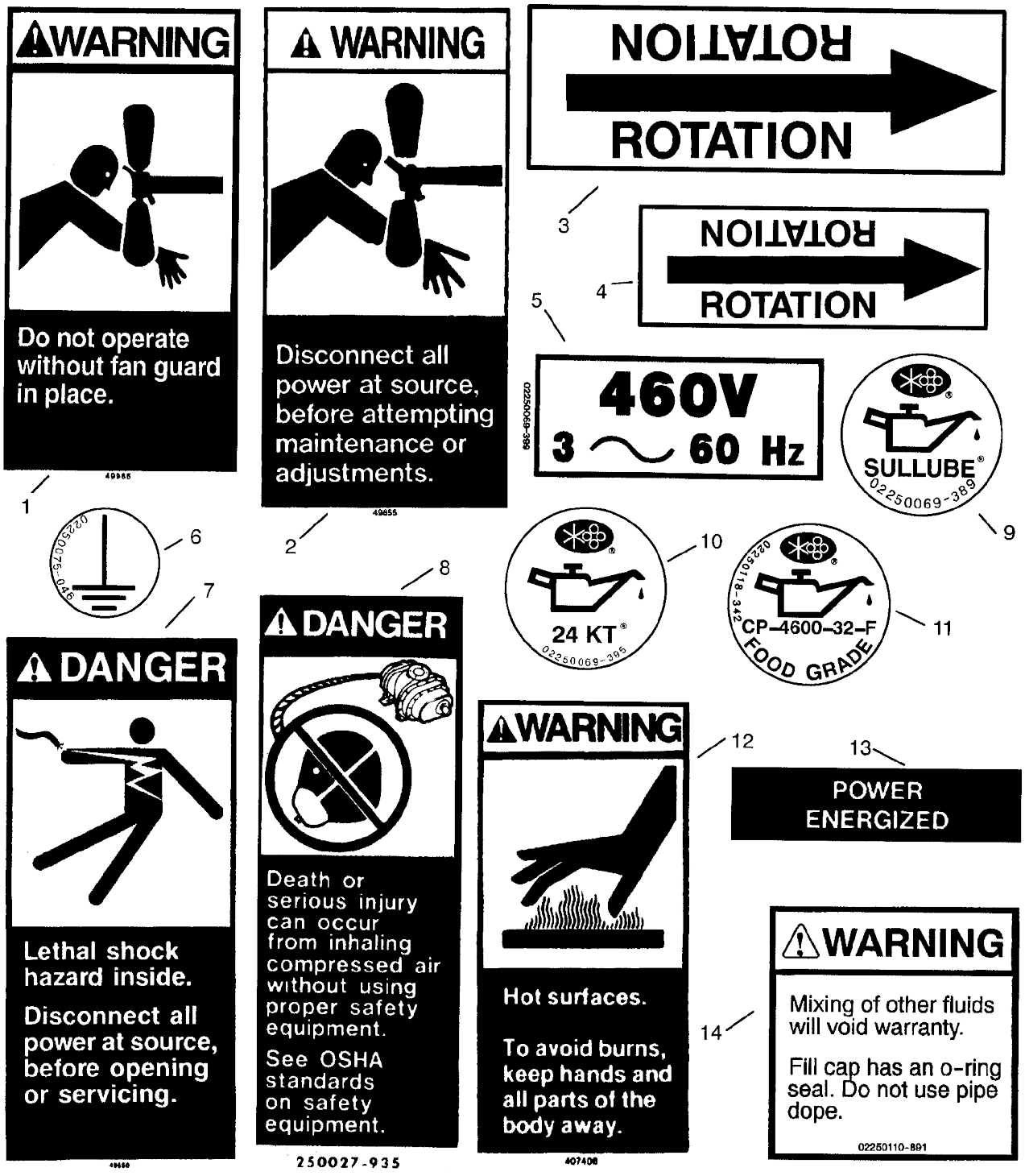
key number	*description*	*part number*	*quantity*
1	panel, fiberglass (air-cooled only)	02250118-822	1
2	panel, fiberglass (air-cooled only)	02250118-824	2
3	panel, fiberglass (air-cooled only)	02250118-823	1
4	panel, fiberglass (water- & air-cooled)	02250118-826	1
5	panel, fiberglass (water- & air-cooled)	02250118-825	1
6	panel, fiberglass (water- & air-cooled)	02250118-827	1
7	panel, fiberglass (water- & air-cooled)	02250118-793	3
8	panel, fiberglass (water- & air-cooled)	02250118-796	1
9	panel, fiberglass (water- & air-cooled)	02250118-797	1
10	panel, fiberglass (water- & air-cooled)	02250060-284	2
11	panel, fiberglass (water- & air-cooled)	02250118-772	4
12	panel, fiberglass (water- & air-cooled)	02250118-794	2
13	panel, fiberglass (water- & air-cooled)	02250118-795	1
14	panel, fiberglass (water- & air-cooled)	02250118-791	1
15	panel, fiberglass (water- & air-cooled)	02250118-792	1

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

Section 8

PARTS LIST

8.20 DECAL GROUP



8.20 DECAL GROUP

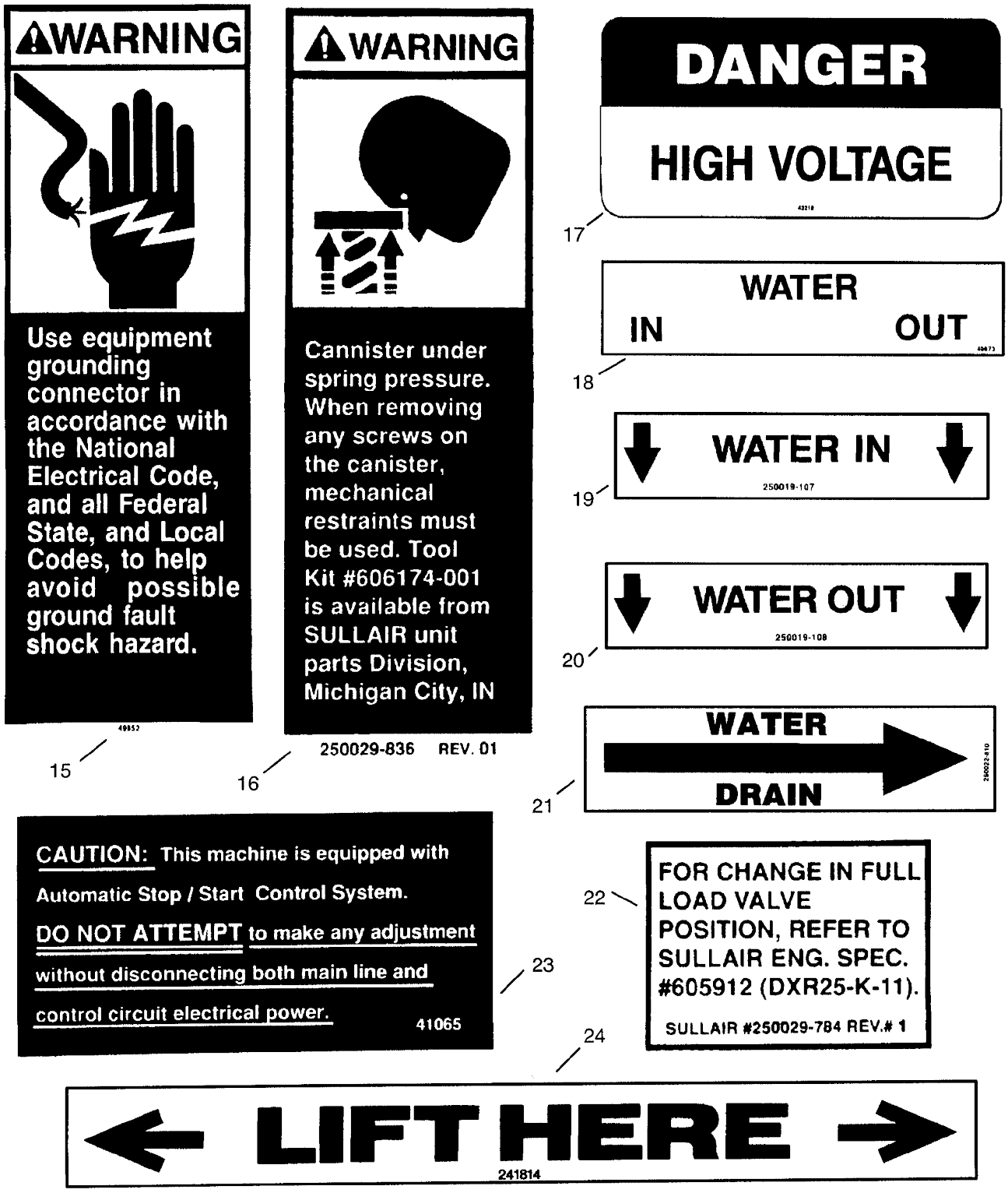
key number	*description*	*part number*	*quantity*
1	sign, warning sever – fan	049855	2
2	sign, warning sever–fan port	049965	1
3	decal, rotation	250021–286	1
4	decal, rotation	250021–564	1
5	decal, voltage 460V/ 60Hz international	02250069–399	1
	•decal, 380–415V/ 50Hz (not shown)	02250069-403	1
	•decal, 525V/ 50Hz (not shown)	02250069-415	1
	•decal, 575V/ 60Hz (not shown)	02250069-400	1
6	decal, earth ground international	02250075–046	1
	•decal, PE designation international (not shown)	0225075–540	1
	•decal, protective earth ground international international (not shown)	0225075–045	1
7	sign, danger electrocution	049850	1
8	sign, air breathing (danger)	250027–935	1
9	decal, fluid Sullube	02250069–389	1
10	decal, fluid 24 KT	02250069–395	1
11	decal, fluid CP–4600–F	02250118–342	1
12	sign, warning hot surfaces	407408	3
13	sign, power energized	249544–049	1
14	decal, warning mixing fluids	02250110–891	1

(Continued on page 81)

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

Section 8
PARTS LIST

8.20 DECAL GROUP



8.20 DECAL GROUP (CONTINUED)

key number	*description*	*part number*	*quantity*
15	sign, warning ground fault	049852	1
16	decal, warning actuator	250029-836	1
17	decal, danger high voltage	042218	1
18	decal, water inlet-outlet	049873	1
19	decal, water in	250019-107	1
20	decal, water out	250019-108	1
21	decal, water drain	250022-810	1
22	decal, actuator valve positioning	250029-784	1
23	decal, autostart	041065	1
24	decal, fork lifting	241814	4

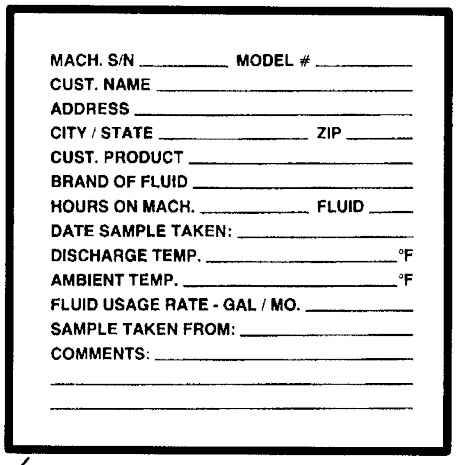
(Continued on page 83)

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

Section 8
PARTS LIST

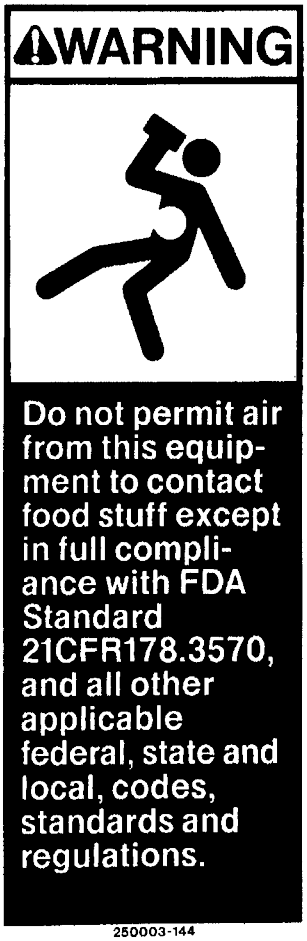
8.20 DECAL GROUP

25



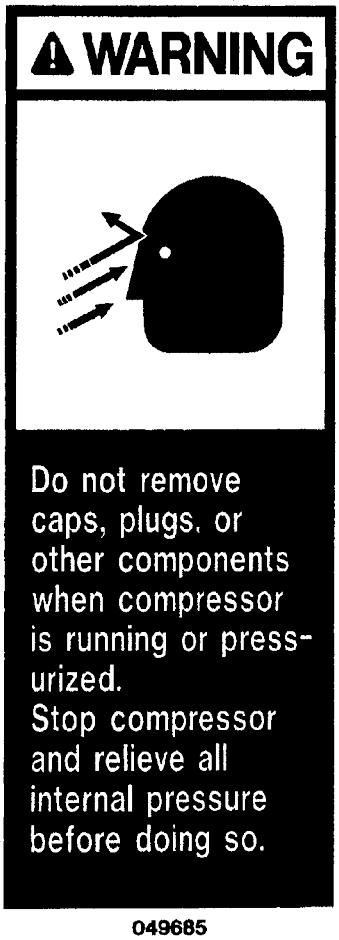
26

27



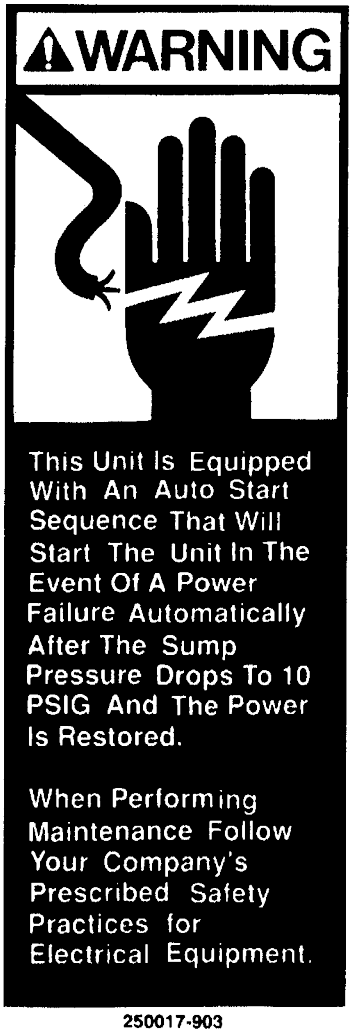
250003-144

28



049685

29



250017-903

8.20 DECAL GROUP (CONTINUED)

key number	*description*	*part number*	*quantity*
25	decal, ISO 9001	02250057-624	1
26	decal, fluid sample	250022-675	1
27	sign, warning “food grade” lube	250003-144	1
28	sign, warning “compressor fluid fill cap”	049685	1
29	decal, warning auto start	250017-903	1

(Continued on page 85)

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

8.20 DECAL GROUP

30

PSW1	4MOL	1FU	6CR	1M	T4
PSW2	5MOL	2FU	MCR	2M	T5
PSW3	SOL1	3FU	SCR	3M	P1
PSW4	SOL2	4FU	HCR	4M	P2
DPSW1	SOL3	1CR	1TR	5M	P3
DPSW2	SOL4	2CR	2TR	T1	P4
1MOL	SOL5	3CR	3TR	T2	CPT
2MOL	1MTR	4CR	4TR	T3	TSW1
3MOL	CB1	5CR	CB2	S	TSW2

02250109-734

31

LS-20S

32

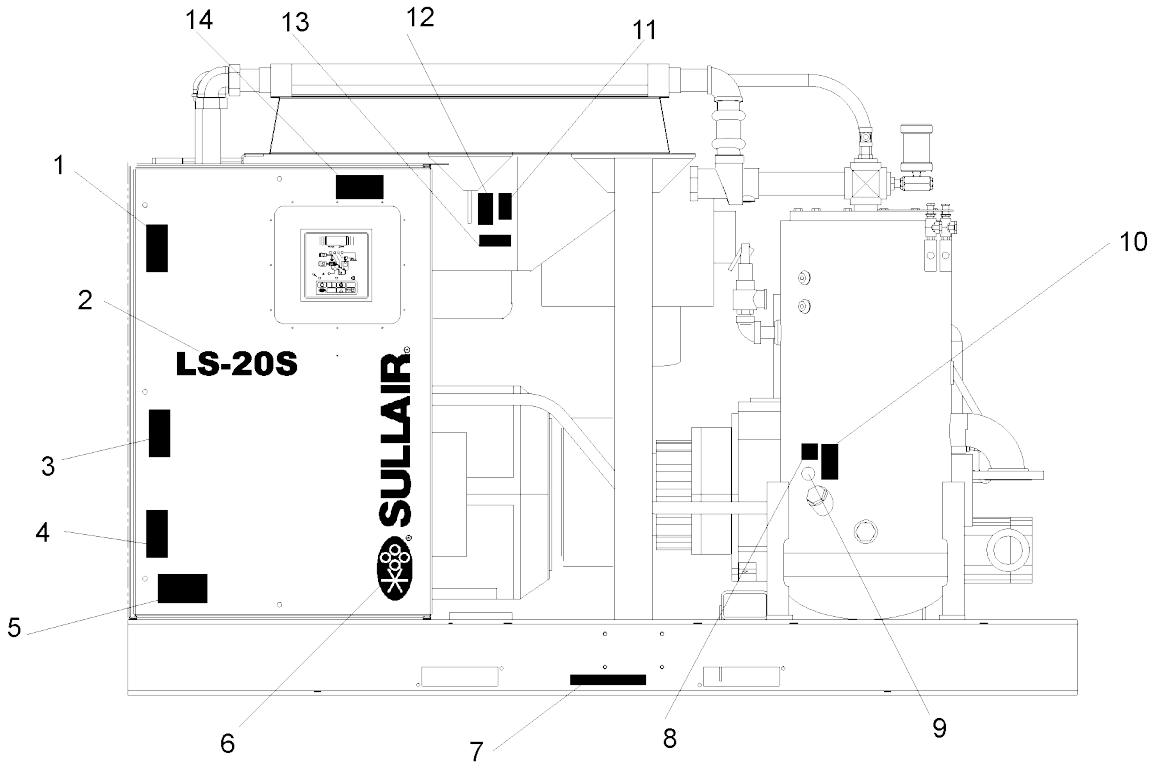
SULLAIR®

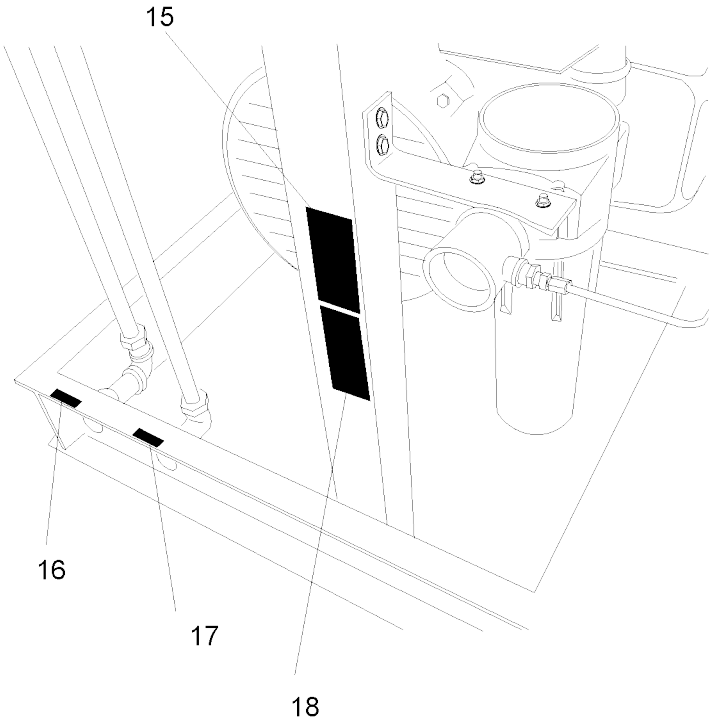
8.20 DECAL GROUP (CONTINUED)

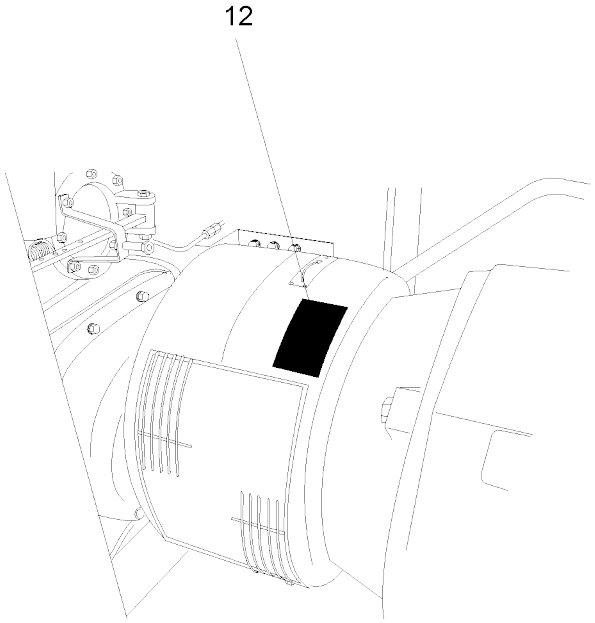
key number	*description*	*part number*	*quantity*
30	decal, electrical component ID	02250109-734	1
31	decal, LS-20S (open)	02250061-058	1
	•decal, LS-20S (canopy)	02250061-161	1
32	decal, Sullair logo (open)	02250059-058	1
	•decal, Sullair logo (canopy)	02250057-603	1

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

8.21 DECAL LOCATIONS







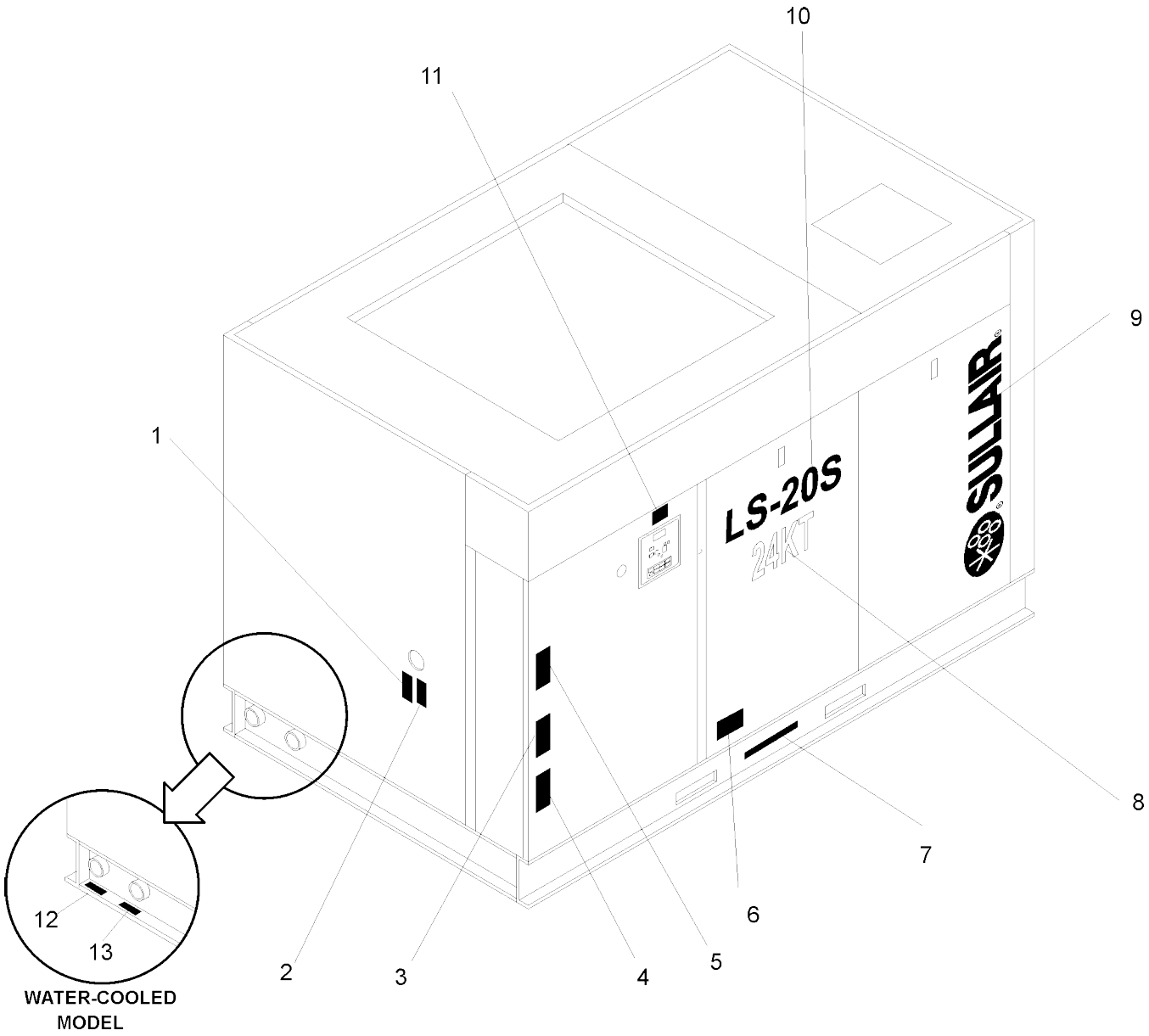
8.21 DECAL LOCATIONS

key number	*description*	*part number*	*quantity*
1	sign, danger electrocution	049850	1
2	decal, LS-20S (open)	02250061-058	1
3	decal, warning auto start	250017-903	1
4	sign, warning sever - fan	049855	2
5	decal, ISO 9001	02250057-624	1
6	decal, Sullair logo (open)	02250059-058	1
7	decal, fork lifting	241814	4
8	decal, warning mixing fluids	02250110-891	1
9	decal, fluid Sullube	02250069-389	1
	•decal, fluid 24 KT	02250069-395	1
	•decal, fluid CP-4600-F	02250118-342	1
10	sign, warning “compressor fluid fill cap”	049685	1
11	sign, warning sever-fan port	049965	1
12	sign, warning sever - fan	049855	2
13	decal, rotation	250021-564	1
14	decal, autostart	041065	1
15	sign, air breathing (danger)	250027-935	1
16	decal, water out	250019-108	1
17	decal, water in	250019-107	1
18	sign, warning “food grade” lube	250003-144	1

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

PARTS LIST

8.21 DECAL LOCATIONS



8.21 DECAL LOCATIONS

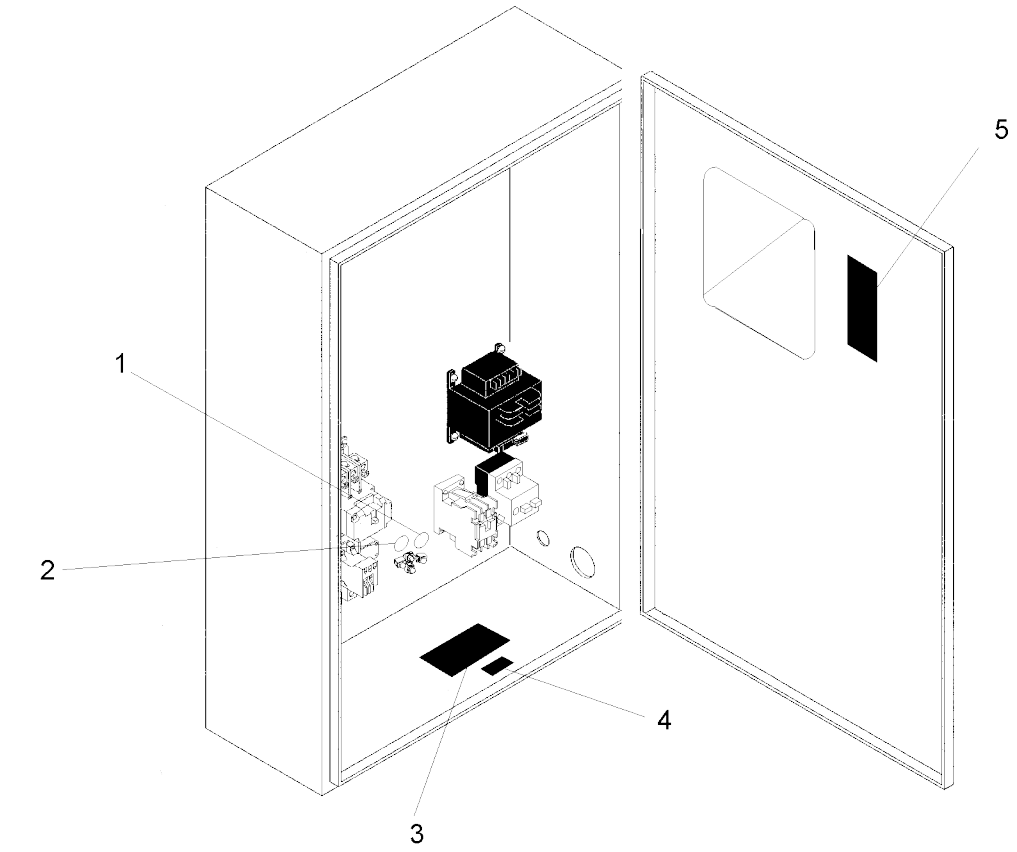
key number	*description*	*part number*	*quantity*
1	sign, warning “food grade” lube	250003-144	1
2	sign, air breathing (danger)	250027-935	1
3	decal, warning auto start	250017-903	1
4	sign, warning sever - fan	049855	2
5	sign, danger electrocution	049850	1
6	decal, ISO 9001	02250057-624	1
7	decal, fork lifting	241814	4
8	decal, fluid 24 KT **(l)**	02250069-395	1
9	decal, Sullair logo (canopy)	02250057-603	1
10	decal, LS-20S (canopy)	02250061-161	1
11	decal, autostart	041065	1
12	decal, water out	250019-108	1
13	decal, water in	250019-107	1

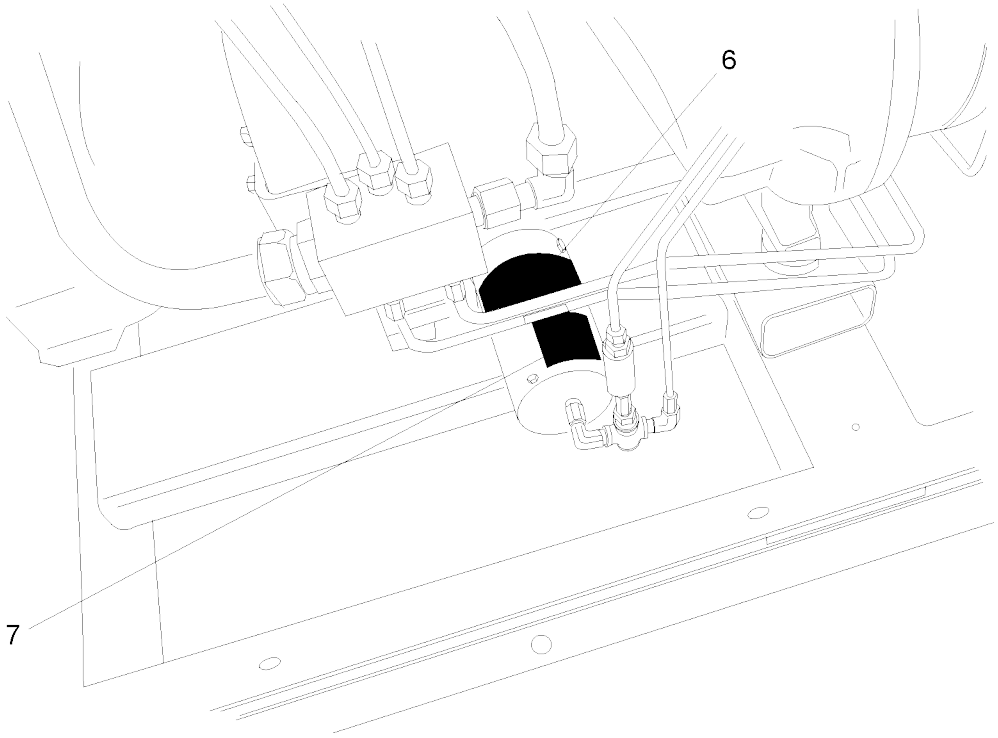
(l) Decal no. 0225069-395 is used only on 24KT fluid compressors.

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

Section 8
PARTS LIST

8.21 DECAL LOCATIONS





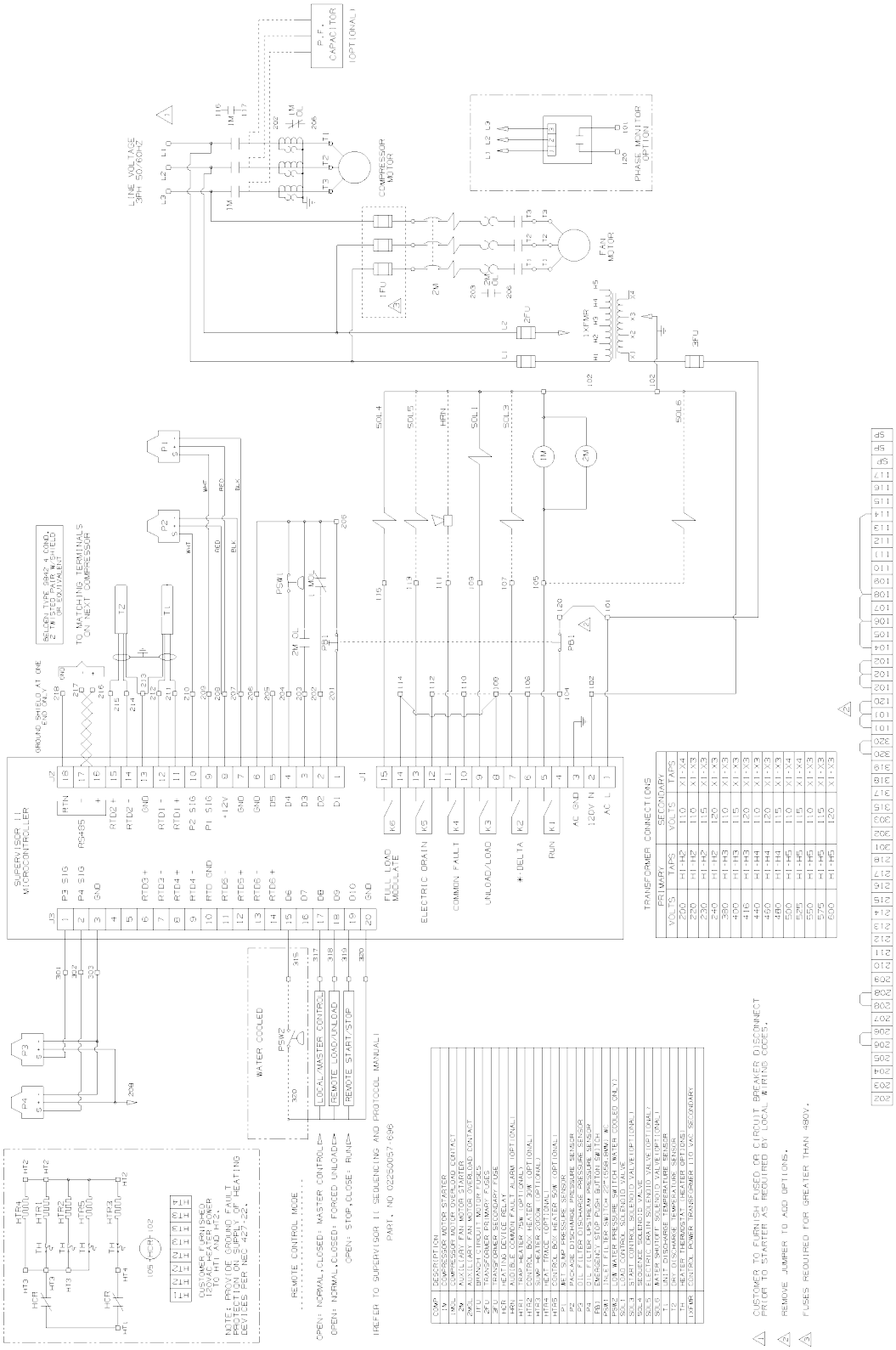
8.21 DECAL LOCATIONS

key number	*description*	*part number*	*quantity*
1	decal, earth ground international	02250075-046	1
2	decal, PE designation international	0225075-540	1
3	decal, danger high voltage	042218	1
4	decal, voltage 460V/ 60Hz international	02250069-399	1
	•decal, 380-415/50Hz (not shown)	02250069-403	1
	•decal, 525V/ 50Hz (not shown)	02250069-415	1
	•decal, 575V/ 60Hz (not shown)	02250069-400	1
5	sign, warning ground fault	049852	1
6	decal, warning actuator	250029-836	1
7	decal, actuator valve positioning	250029-784	1

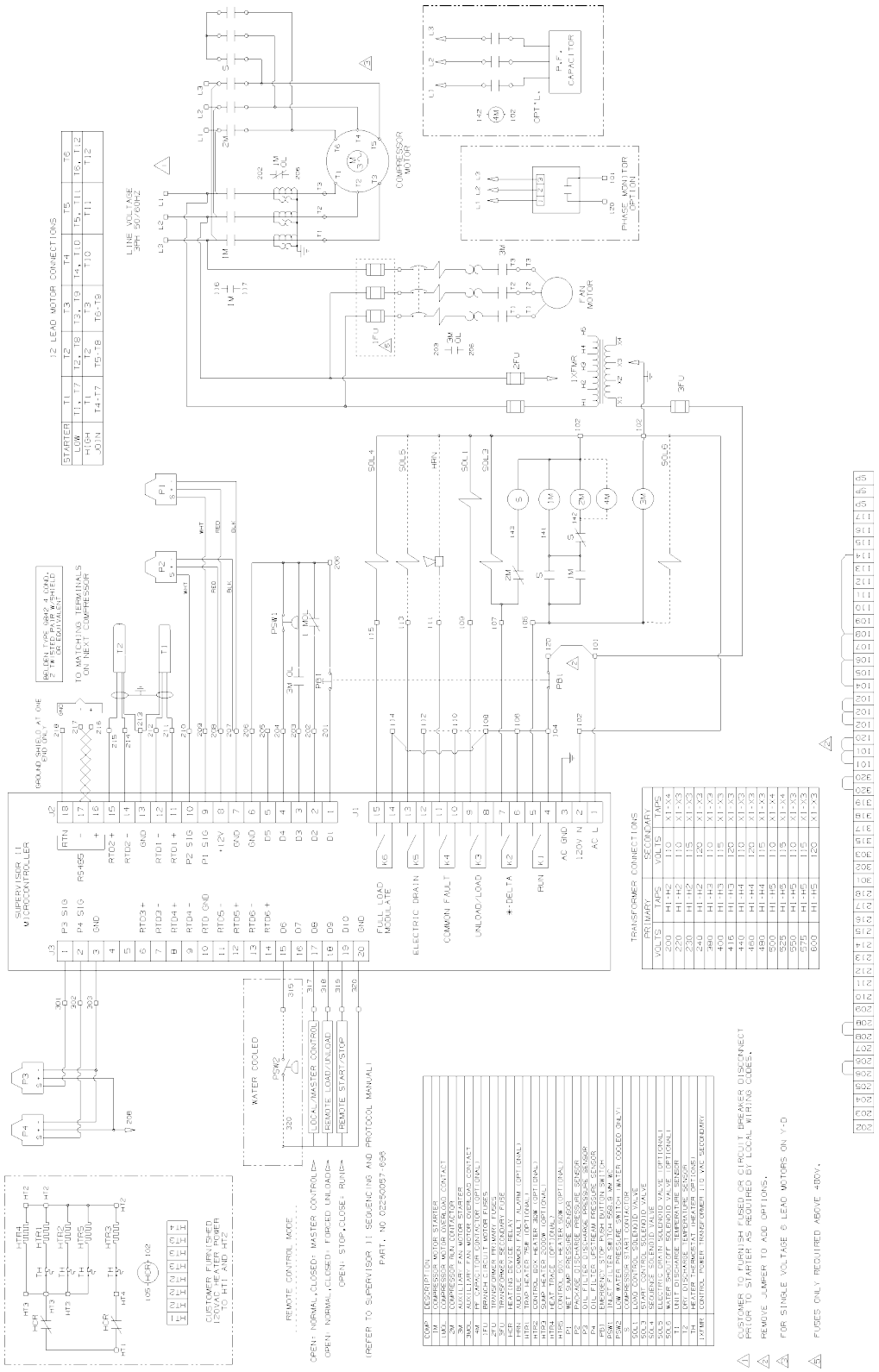
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR

Section 8
PARTS LIST

8.22 WIRING DIAGRAM- STANDARD FULL VOLTAGE SUPERVISOR II DELUXE

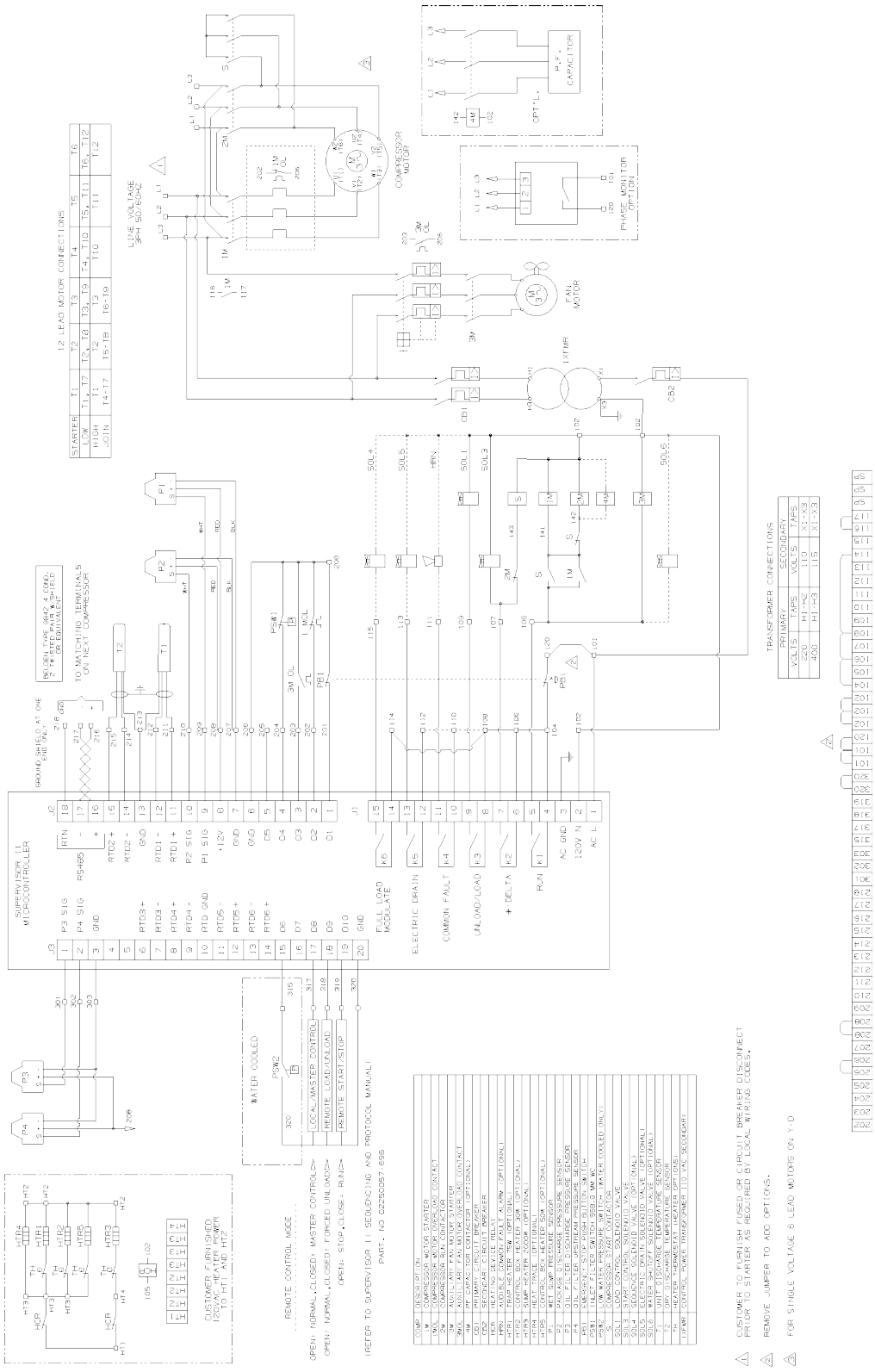


8.23 WIRING DIAGRAM- STANDARD WYE-DELTA SUPERVISOR II DELUXE



Section 8
PARTS LIST

8.24 WIRING DIAGRAM- STANDARD WYE-DELTA SUPERVISOR II DELUXE (EUROPE)



NOTES

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