SULLAIR

INDUSTRIAL AIR COMPRESSOR

LS20T

250-350HP/ 186-261KW

525 PSIG

SUPERVISOR™ CONTROLLER

OPERATOR'S MANUAL AND PARTS LIST

KEEP FOR FUTURE REFERENCE

Part Number 02250139-694

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.

For detailed course outlines, schedule and cost information contact:

Sullair Corporate Training Department
1-888-SULLAIR or 219-879-5451 (ext. 5363)
www.sullair.com

- Or Write -

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

TABLE OF CONTENTS

OPERATOR IS REQUIRED TO READ ENTIRE INSTRUCTION MANUAL

TABLE OF CONTENTS

TABLE OF CONTENTS

Section 9 ILLUSTRATIONS AND PARTS LIST

Section 1
SAFETY

1.1 GENERAL

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

The compressor should be operated only by those who have been trained and delegated to do so, and who have read and understood this Operator's Manual. Failure to follow the instructions, procedures and safety precautions in this manual may result in accidents and injuries.

NEVER start the compressor unless it is safe to do so. **DO NOT** attempt to operate the compressor with a known unsafe condition. Tag the compressor and render it inoperative by disconnecting and locking out all power at source or otherwise disabling its prime mover so others who may not know of the unsafe condition cannot attempt to operate it until the condition is corrected.

Install, use and operate the compressor only in full compliance with all pertinent OSHA regulations and/or any applicable Federal, State, and Local codes, standards and regulations.

DO NOT modify the compressor and/or controls in any way except with written factory approval.

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

1.2 PERSONAL PROTECTIVE EQUIPMENT

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

1.3 PRESSURE RELEASE

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

B. When the hose is to be used to supply a manifold, install an additional appropriate flow-limiting valve between the manifold and each air hose exceeding13mm inside diameter that is to be connected to the manifold to reduce pressure in case of hose failure.

C. Provide an appropriate flow-limiting valve at the beginning of each additional 23m of hose in runs of air hose exceeding13mm inside diameter to reduce pressure in case of hose failure.

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

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

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

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

H. Vent all internal pressure prior to opening any line, fitting, hose, valve, drain plug, connection or other component, such as filters and line oilers, and

before attempting to refill optional air line anti-icer systems with antifreeze compound.

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

J. Use air at pressures less than 2.1 bar for cleaning purposes, and then only with effective chip guarding and personal protective equipment per OSHA Standard 29 CFR 1910.242 (b) and/or any applicable Federal, State, and Local codes, standards and regulations.

K. DO NOT engage in horseplay with air hoses as

death or serious injury may result.

1.4 FIRE AND EXPLOSION

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

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

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

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

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

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

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

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

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

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

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

1.5 MOVING PARTS

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

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

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

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

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

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

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

1.6 HOT SURFACES, SHARP EDGES AND SHARP CORNERS

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

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

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

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

1.7 TOXIC AND IRRITATING SUBSTANCES

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

⚠ DANGER

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

B. DO NOT use air line anti-icer systems in air lines

supplying respirators or other breathing air utilization equipment and **DO NOT** discharge air from these systems into unventilated or other confined areas.

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

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

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

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

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

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

I. The antifreeze compound used in air line antifreeze systems contains methanol and is toxic, harmful or fatal if swallowed. Avoid contact with the skin or eyes and avoid breathing the fumes. If swallowed, induce vomiting by administering a tablespoon of salt, in each glass of clean, warm water until vomit is clear, then administer two teaspoons of baking soda in a glass of clean water. Have patient lay down and cover eyes to exclude light. Call a physician immediately.

1.8 ELECTRICAL SHOCK

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

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

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

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

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

1.9 LIFTING

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

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

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

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

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

F. DO NOT attempt to lift in high winds.

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

H. Lift compressor no higher than necessary.

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

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

K. When moving the compressor by forklift truck, utilize fork pockets if provided. Otherwise, utilize

pallet if provided. If neither fork pockets or pallet are provided, then make sure compressor is secure and well balanced on forks before attempting to raise or transport it any significant distance.

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

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

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

1.10 ENTRAPMENT

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

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

Section 2
DESCRIPTION

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 minimal wear and no inspection required of the working parts within the compressor unit.

Read Section 7 (Maintenance) to see how 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.

2.2 DESCRIPTION OF COMPONENTS

Refer to Figure 2-1. The components and assemblies of the air compressor 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™ Controller**" all mounted on a structural steel frame.

2.3 SULLAIR COMPRESSOR UNIT, FUNCTIONAL DESCRIPTION

Sullair air compressors feature the Sullair compressor unit, a two-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.

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

- As coolant, it controls the rise of air temperature normally associated with the heat of compression.
- Seals 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 reinjection.

2.4 COMPRESSOR COOLING AND LUBRICATION SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figures 2-2, and 2-3. The **cooling and lubrication system** consists of a **fluid cooler**, **aftercooler**, **full flow fluid filter**, **fluid stop valve**, **thermal valve** and **interconnection piping**. Water-cooled models utilize a **shell and tube fluid cooler** and **aftercooler**, which are mounted on the compressor package.

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 bypass is fully open when the discharge temperature is below 250ºF (121.1ºC). The fluid passes through the thermal valve, the main fluid filter and directly to the compressor unit, thus feeding the bearings, seals and rotor area.

As the discharge temperature rises above 250ºF (121.1ºC), due to the heat of compression, the thermal valve bypass 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 fluid filter has a replacement element and an integral pressure bypass valve.

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.

2.5 COMPRESSOR DISCHARGE SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figures 2-2 and 2-3. The compressor unit discharges the compressed air/fluid moisture 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 the ends of the tank. The direction of movement is changed and its velocity

Section 2
DESCRIPTION

Figure 2-1 Sullair Series LS20TS Rotary Screw Compressor- Water-cooled (Typical)

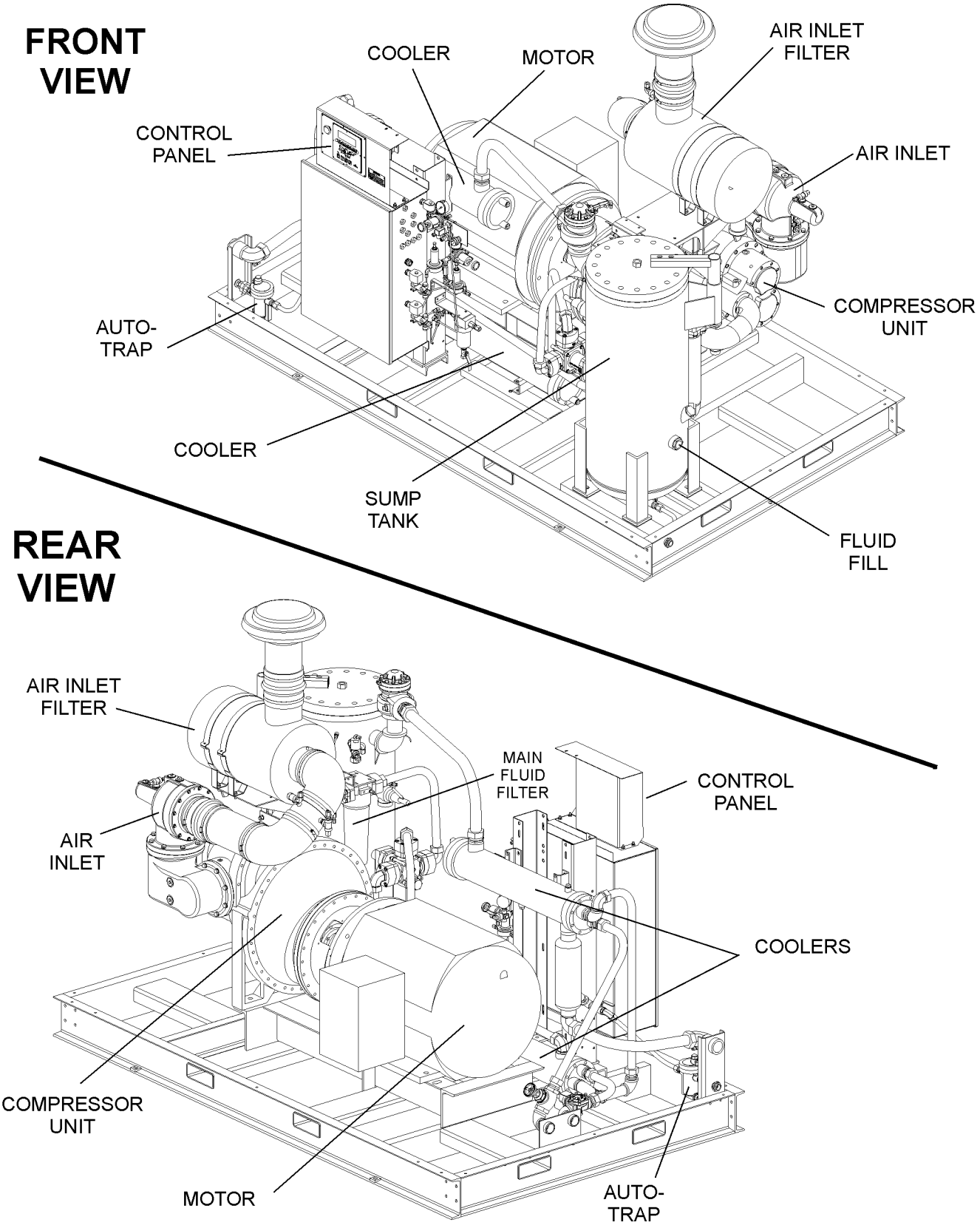
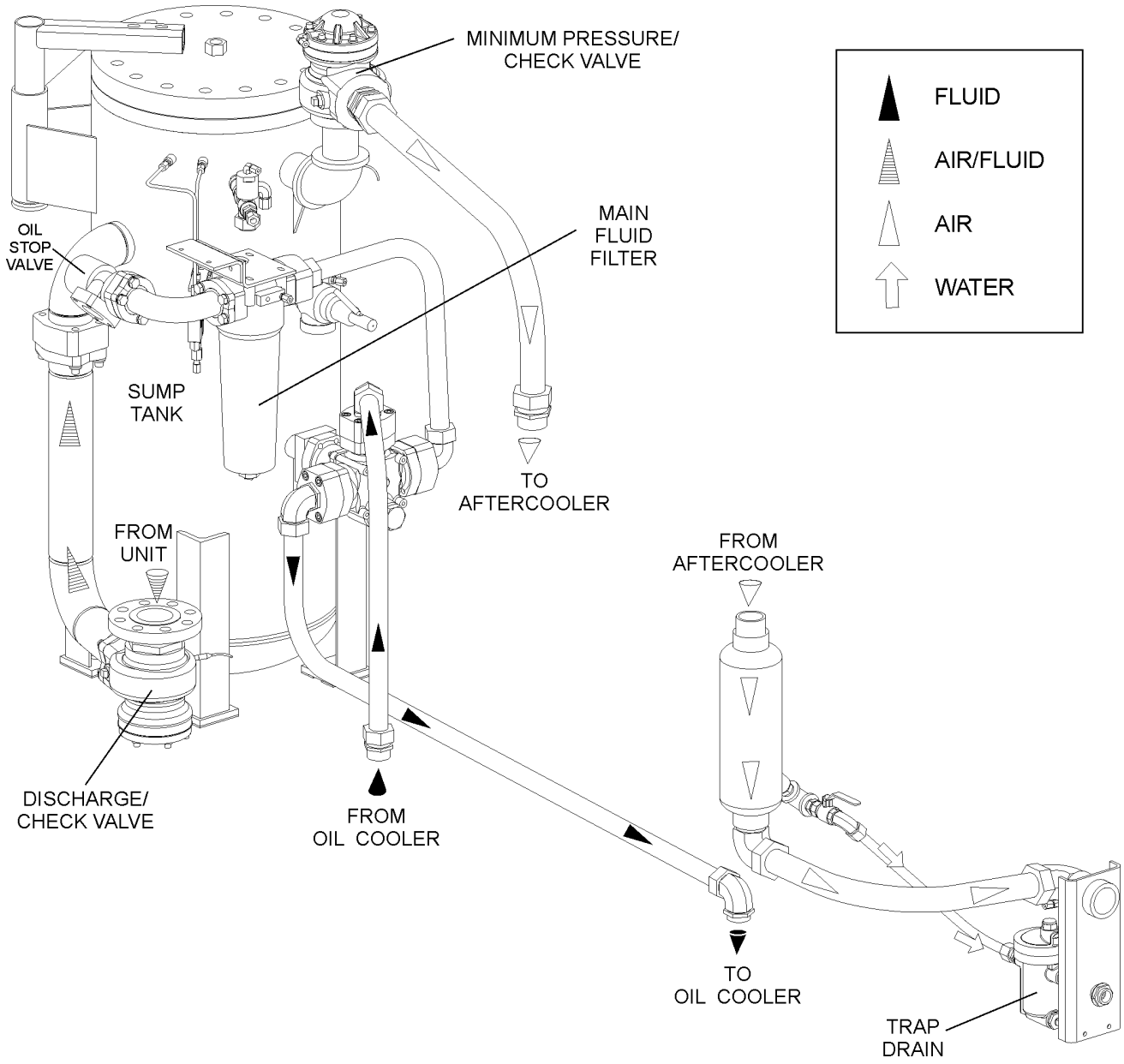


Figure 2-2 Compressor Cooling, Lubrication and Discharge System



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 surfaces 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 interstage 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. Sight glasses are located in the return lines to observe this fluid flow. There are also orifices in this return line (protected by strainers) to assure proper flow. By pressing the ↓ + ↵ pads on the Supervisor Controller, the operator may monitor the condition of the separator elements by reading differential pressure on the digital display. At a differential of 10 psid (0.7 bar) or greater, the operator will be told to service the separator element. At this time, separator element replacement is necessary.

Section 2
DESCRIPTION

The receiver is an ASME pressure vessel. A combination minimum pressure/check valve, located downstream from the separator, assures a minimum receiver pressure of 170 psig (11.7 bar) during full load operation. 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 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 at rated tank pressure.

The compressor is also equipped with high pressure shutdown protection to shut down at high MAX P1 setpoint. This prevents the relief valve from opening. High temperature probes are provided to shut down the compressor.

⚠ WARNING

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

Stop compressor and relieve all internal pressure before doing so.

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

2.6 CAPACITY CONTROL SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figures 2-3, 2-4A, 2-4B, 2-C, 2-4D and 2-4E. The purpose of the compressor control system is to regulate the compressor air intake to match the amount of compressed air being utilized. At 0 to 10 percent air output, the control system will automatically unload the compressor and reduce power consumption. The unload sump pressure can be set using the unload control regulator valve (150 psig/ 10.3 bar).

The **Control System** consists of an **inlet poppet valve**, **startup solenoid valve**, **reference (equalizing) pressure regulator**, **blowdown solenoid valve**, **pneumatic blowdown valve**, **control pressure regulator**, **unload pressure regulator**, **sequencing solenoid valve**, and a **control line filter** located prior to the controls.

The functional description of the Control System is described below in five distinct phases of the compressor operation. For explanation purposes, this description will apply to compressors with an operating range of 525 to 535 psig (36.1 to 36.8 bar). A compressor with any other pressure range would operate in a similar manner except for the stated pressures.

START MODE - TO 170 PSIG (11.7 BAR)

When the compressor start button is depressed, the pressure will rise from 0 to 170 psig (0 to 11.7 bar). During this period, the control inlet solenoid is closed, which keeps the inlet poppet valve closed. The control pressure regulator is also closed at this time. After the startup timer times out, the startup solenoid valve changes state and the reference pressure regulator controls the pressure signal to the poppet valve at a maximum 60 psig (4 bar). The inlet poppet valve opens allowing full airflow to the compressor inlet and the discharge pressure builds to approximately 170 psig (11.7 bar). No air is supplied to the system service line during this phase by the minimum pressure valve. When the discharge pressure exceeds approximately 170 psig (11.7 bar), the minimum pressure valve may start to open and allow air to flow to the system service line.

NORMAL OPERATION MODE - 170 TO 525 PSIG (11.7 TO 36.1 BAR)

When the sump pressure rises above 170 psig (11.7 bar), the minimum pressure valve opens and delivers compressed air to the system service line. From this point on, a line air pressure transducer continually monitors the air pressure. The control pressure regulator valve remains closed during this phase, keeping the inlet poppet valve wide open. The blowdown solenoid valve also remains closed during this phase. Flow will occur when the discharge pressure is higher than the line pressure. The check valve, which is built into the minimum pressure valve, will prevent back flow into the compressor.

MODULATING MODE - 525 TO 535 PSIG (36.1 TO 36.8 BAR)

If less than the rated capacity of compressed air is being used, the system service line pressure will rise above 525 psig (36.1 bar). The control pressure regulator valve gradually opens applying air pressure to the control side of the inlet poppet valve, which modulates the position of the inlet poppet valve. This reduces the amount of air entering the compressor until it matches the amount of air being utilized. The control system functions continually in this manner, between the limits of 525 to 535 psig (36.1 to 36.8 bar) in response to varying demands from system service line. The control pressure regulator valve has an orifice, which vents a small amount of air to the atmosphere when the

control pressure regulator valve modulates the inlet poppet valve.

UNLOAD MODE - EXCESS OF 535 PSIG (36.8 BAR)

As the required air is reduce, the discharge pressure and line pressure rise above the 535 psig (36.8 bar), the Supervisor Controller activates the unload solenoid valve which in turn pressurizes the blowdown valve. This opens the blowdown valve, which allows discharge air to flow back to the compressor inlet. Since the inlet poppet valve is fully closed, the air pressure from the sump tank will be relieved through the blowdown valve, which will reduce the sump pressure. Some of the outgoing air will flow directly into the compressor inlet to avoid cavitation during this time of blowdown. As the sump pressure drops, motor power consumption is also reduced. The unload pressure regulator is set to maintain the unload pressure at the designated value, 170 psig (11.7 bar). At this time, the compressor is in the unload mode.

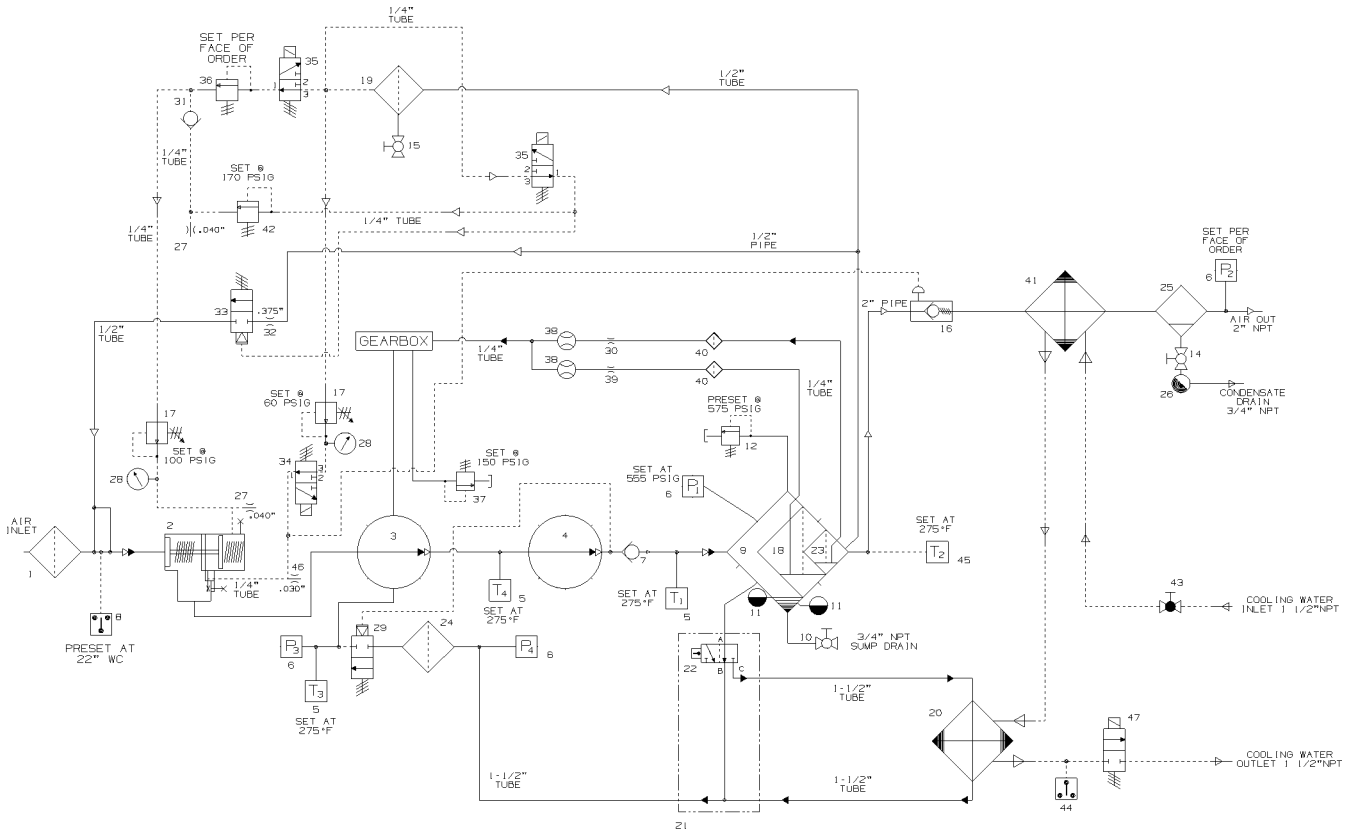
When the line pressure drops back to the load point (cut-in pressure) of the pressure transducer, usually 525 psig (36.1 bar), the compressor will change state back to the modulating mode as discussed earlier. This cycle will repeat itself, maintaining the demand required on the system line supply.

SHUTDOWN MODE

When the compressor is shut down based on a manual shutdown, a safety shutdown or an automatic shutdown from the Supervisor Controller touch pad, the unload solenoid valve is energized allowing air to flow through the check valve and into the poppet valve keeping the inlet poppet valve closed. This also opens the blowdown valve to allow compressed air to vent back above inlet poppet valve through the inlet filter. The control lines are properly sized and routed to allow the compressed air to relieve to atmosphere rather than below the inlet poppet valve.

If the compressor Supervisor Controller is in the automatic mode, the compressor will shut down after running unloaded for a specific amount of time. The reverse also holds true, if the system line pressure requires additional compressed air, the compressor will start automatically to satisfy this demand.

Figure 2-3 Compressor Piping and Instrumentation Diagram- LS20T 250-300 525 PSIG



CUSTOMER FURNISHED LINE
WATER LINE
CONTROL LINE
FLUID LINE
AIR/FLUID LINE
TEMP. CONTROL PROBE

NOTES:

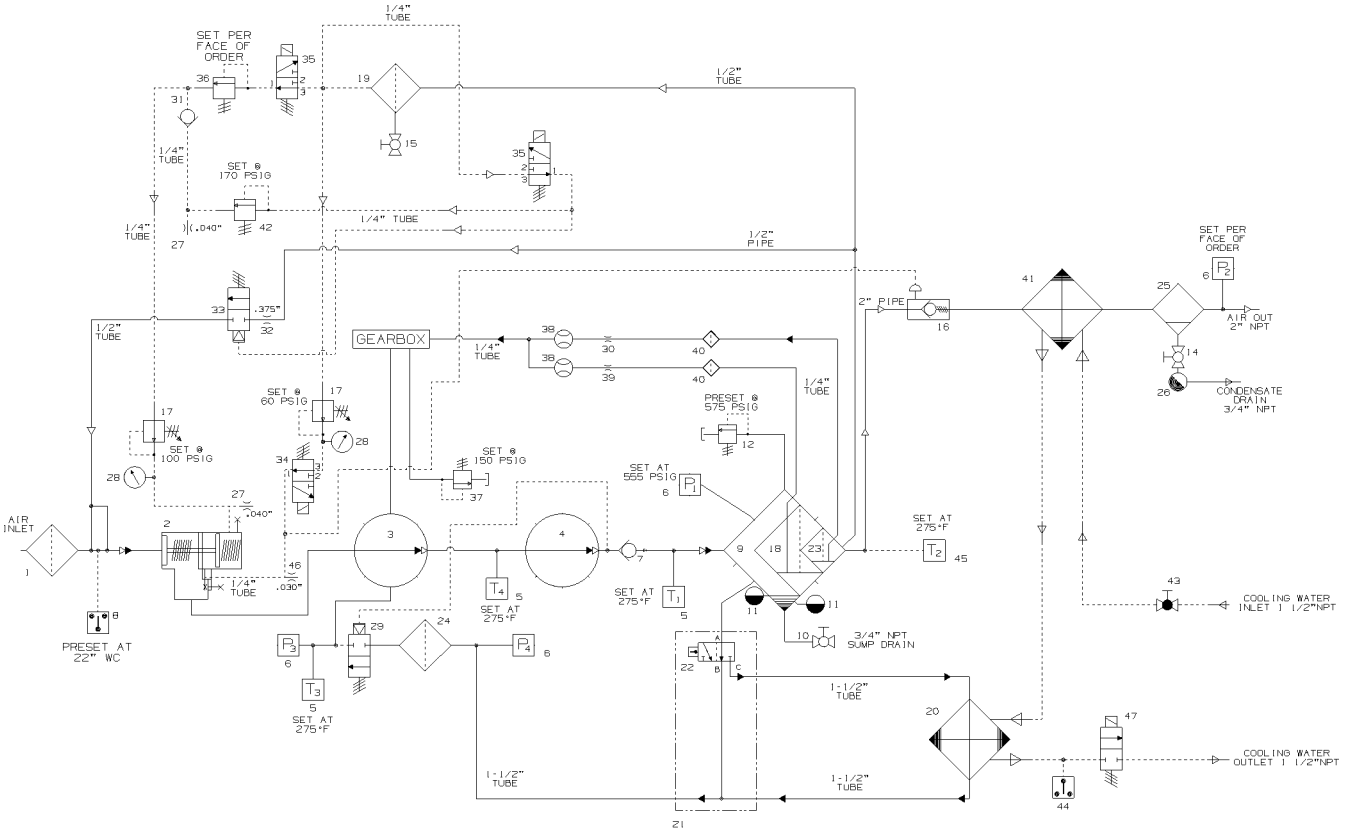
1. PART NUMBERS ARE FOR REFERENCE ONLY, REFER TO BILL OF MATERIAL AND/OR FACE OF ORDER FOR ACTUAL PARTS.

Figure 2-3 Compressor Piping and Instrumentation Diagram- LS20T 250-300 525 PSIG

key number	*description*	*part number*	*quantity*
1	filter, air	048456	1
2	valve, poppet	02250138-707	1
3	compressor, h.p. unit	-	1
4	compressor, h.p. unit 2nd stage	-	1
5	p,rtd 100 ohm	250039-909	3
6	xdcr,press 0-750# 1-5vdc n4	02250134-099	1
7	valve, discharge check	02250125-507	1
8	sw,vac 22”wc n4 6’ cable	02250078-249	1
9	tank, sump	02250137-929	1
10	valve, ball 3/4”	02250125-221	1
11	glass, sight	02250097-611	2
12	valve, relief-575 psi	02250111-922	1
13	switch, high discharge pressure	245753	1
14	valve, ball 3/4”npt	02250117-792	1
15	valve,ball 9/16”	02250116-974	1
16	valve, minimum pressure	250031-852	1
17	regulator, down stream	02250139-030	2
18	element, separator primary	02250100-753	1
19	fltr, coalescing 600#	02250111-923	1
20	cooler, oil	02250138-166	1
21	valve, thermal assy	02250111-620	1
22	element,thermal vlv 250 degf	02250111-619	1
23	element, seperator secondary	02250100-754	1
24	filter,full flow oil	02250111-592	1
25	separator, water	02250138-527	1
26	trap, drain	250006-639	1
27	orifice, .040” 1/4”m x 1/4”f	02250091-395	2
28	gauge, pressure	02250117-009	2
29	valve, oil stop	250041-069	1
30	orifice, 0.032”	02250125-774	1
31	valve, check	02250110-557	1
32	restrictor, pipe .375” dia	866406-000	1
33	valve, running blowdown n.c.	045116	1

(Continued on page 13)

Figure 2-3 Compressor Piping and Instrumentation Diagram- LS20T 250-300 525 PSIG



NOTES:

1. PART NUMBERS ARE FOR REFERENCE ONLY, REFER TO BILL OF MATERIAL AND/OR FACE OF ORDER FOR ACTUAL PARTS.

Figure 2-3 Compressor Piping and Instrumentation Diagram- LS20T 250-300 525 PSIG (continued)

key number	description	part number	quantity
34	valve, solenoid 3-way n.o.	02250125-657	1
35	valve, solenoid 3-way n.o.	407390	2
36	regulator, back pressure	02250139-080	1
37	valve, relief gearbox-150psi	02250107-045	1
38	glass, sight	02250126-129	2
39	orifice, 3/32”	02250125-776	1
40	strainer, oil return	02250117-782	2
41	aftercooler, air	02250138-167	1
42	valve, pressure regulator	02250139-080	1
43	valve,globe 1 1/2”npt	047834	1
44	switch,press no 10 psi	250017-992	1
45	p,rtd 100 ohm	408994	1
46	orifice,.030”	02250132-934	1
47	valve,solenoid 2wnc 1-1/2” 150# n4	02250125-653	1

Figure 2-4A Control System Diagram- Functional Components

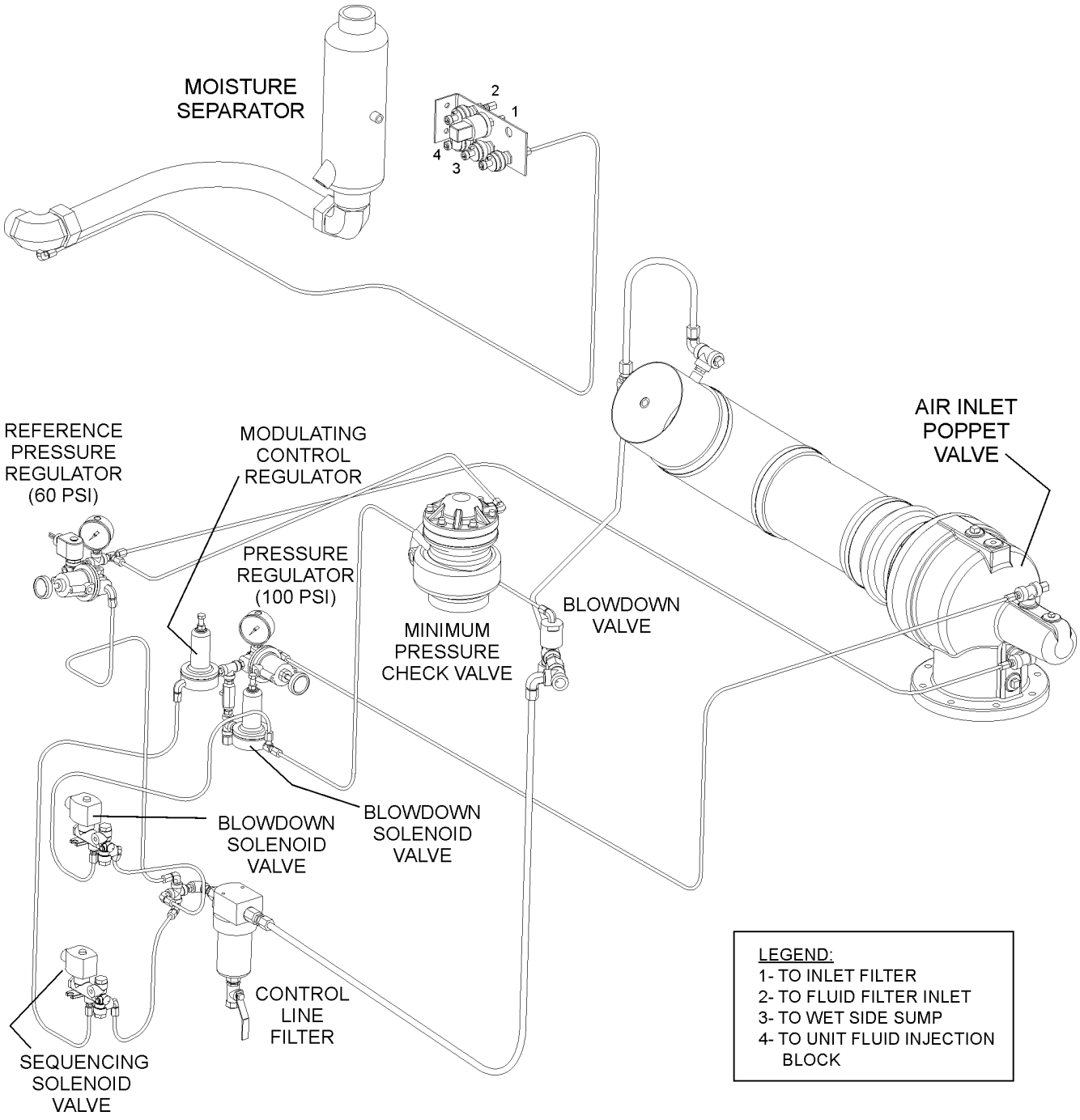


Figure 2-4B Control System Diagram- ***START***

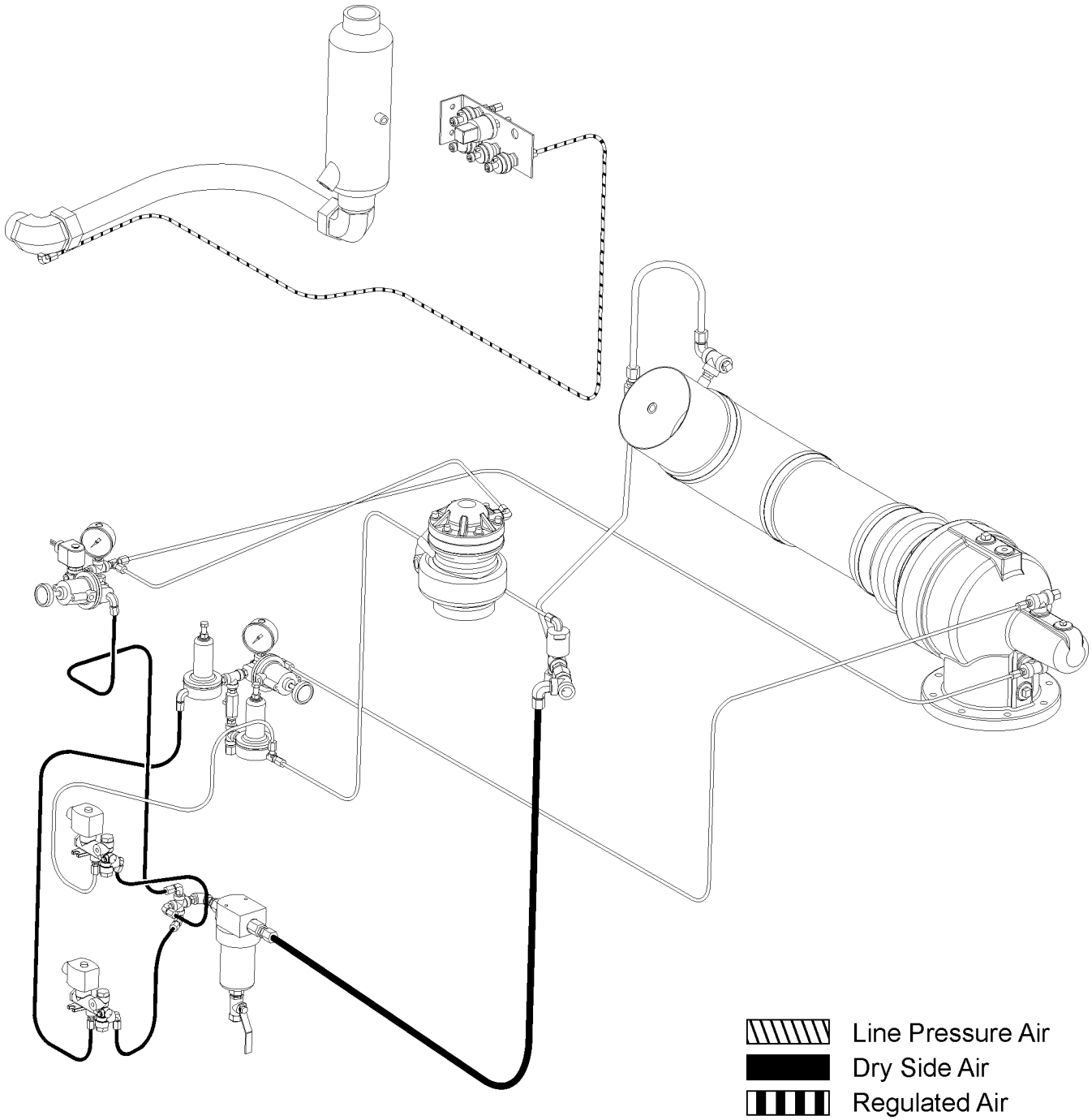


Figure 2-4C Control System Diagram- ***MODULATION***

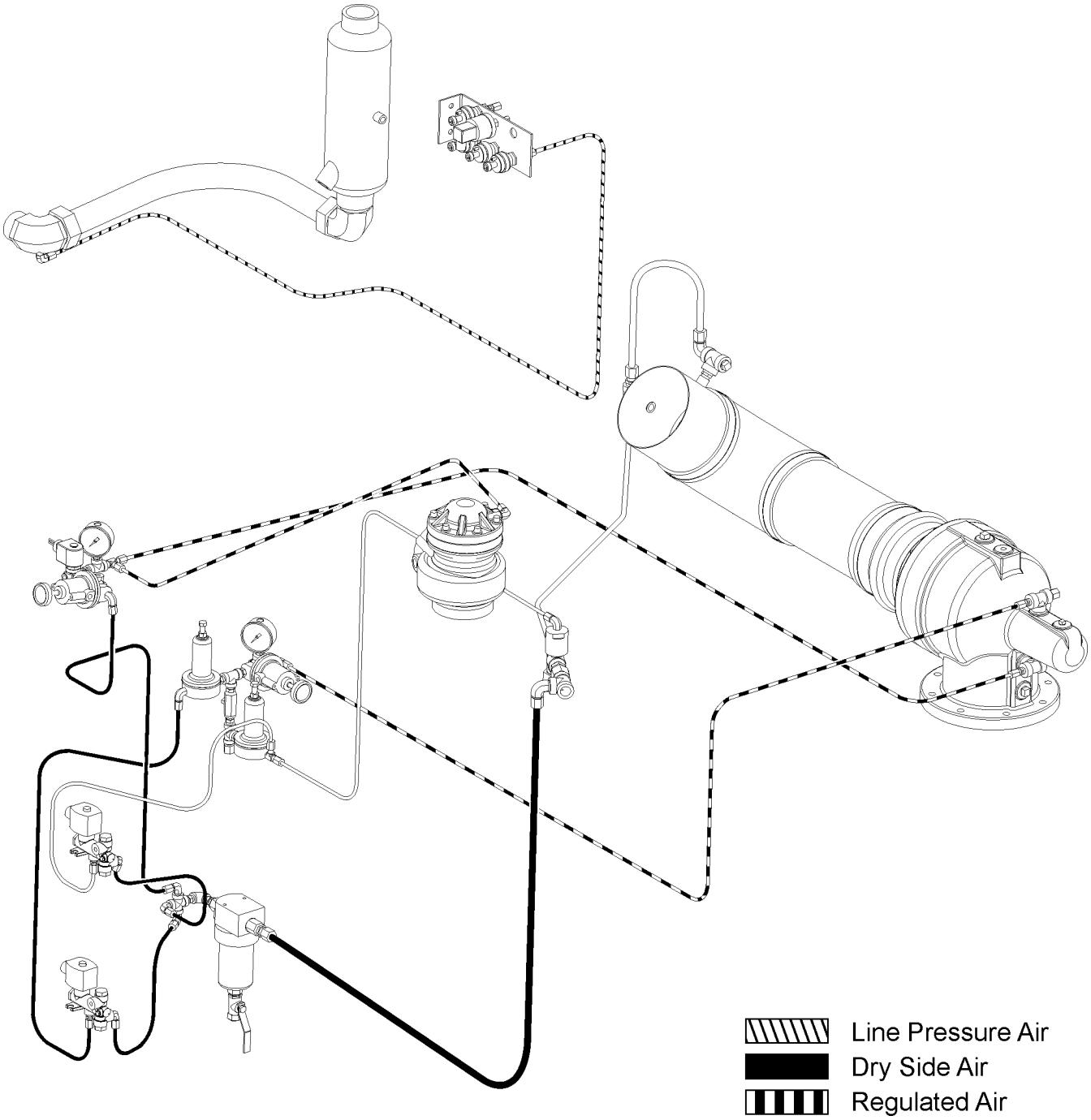


Figure 2-4D Control System Diagram- ***FULL LOAD***

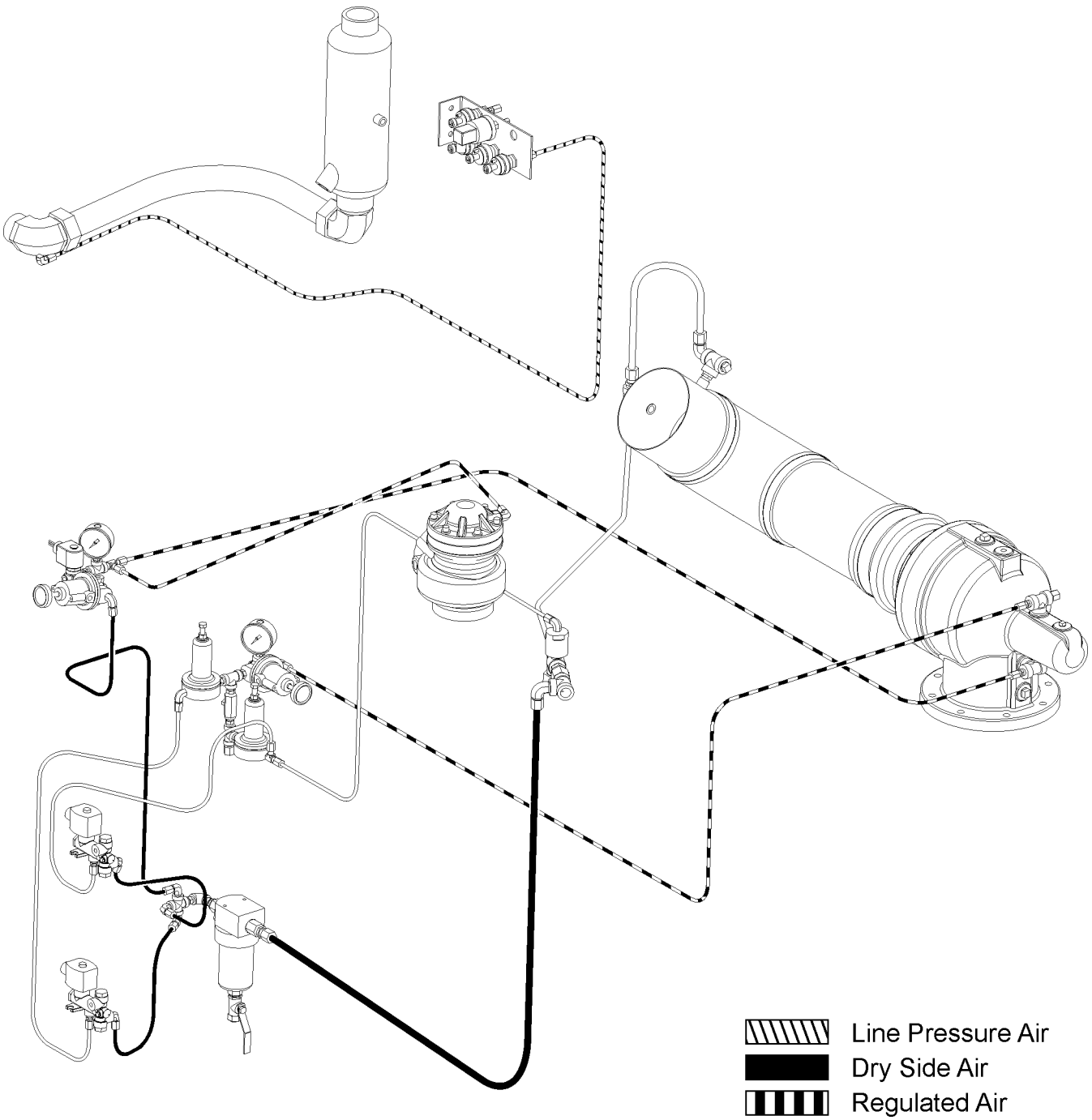
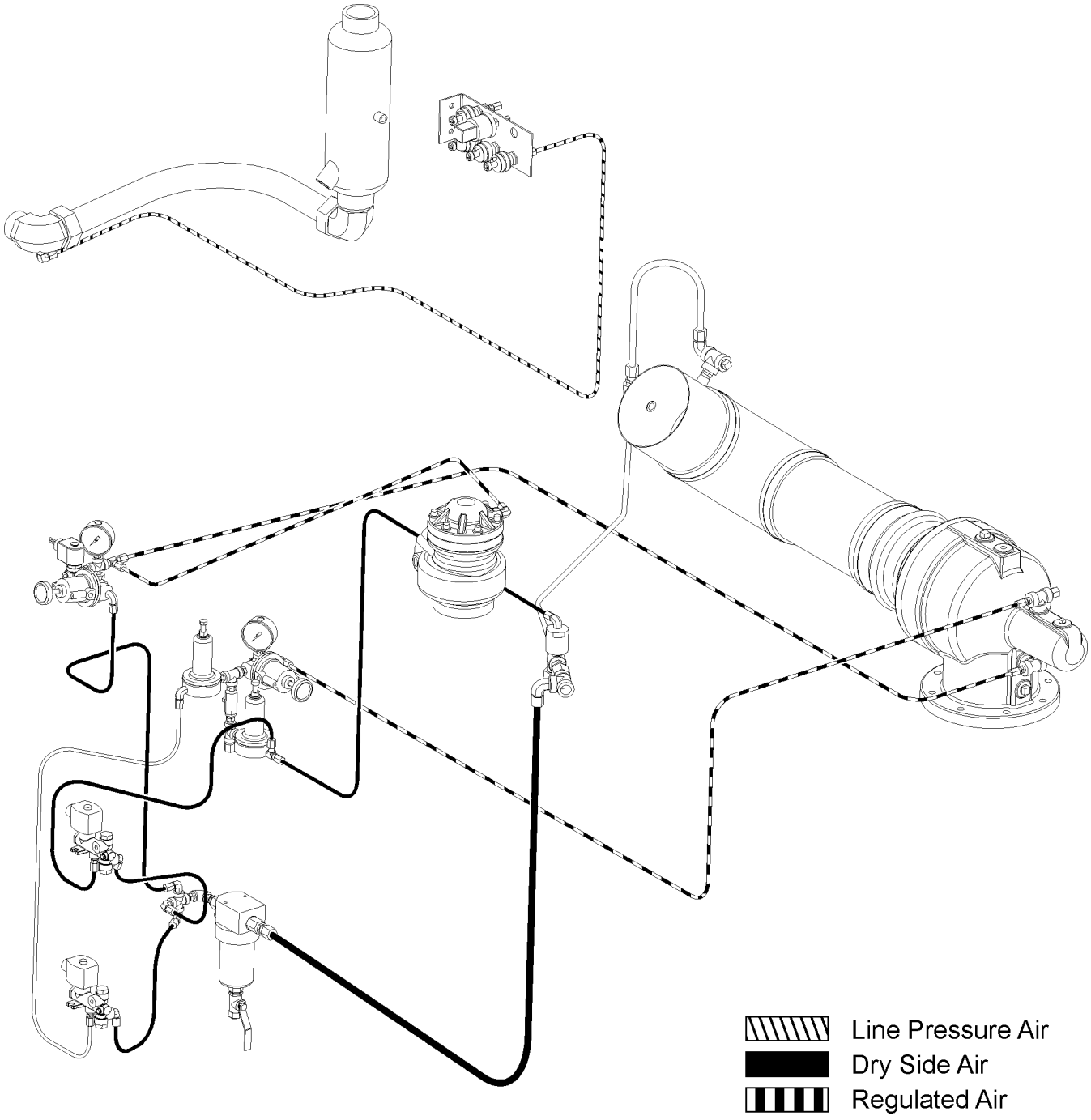


Figure 2-4E Control System Diagram- ***UNLOAD***



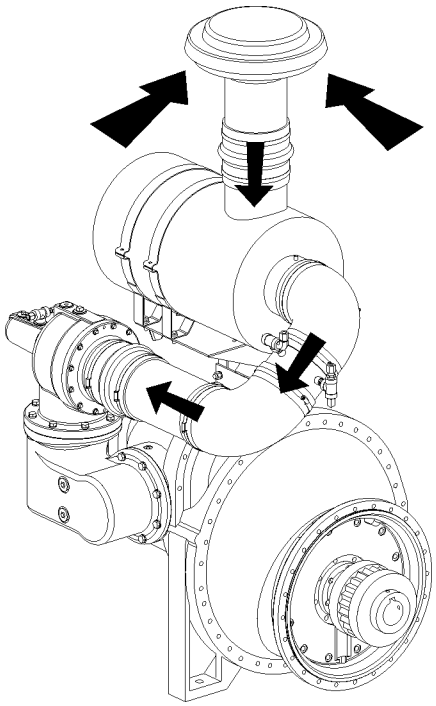
2.7 AIR INLET SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 2-5. The **Compressor Inlet System** consists of a **dry-type air filter**, a **vacuum switch**, and an **air inlet valve**.

At 20” water column the inlet vacuum switch will allow the Supervisor Controller to indicate that “AIR FILTER MAINT” is required.

The poppet-type air inlet valve directly controls the amount of air intake to the compressor in response to the operation of the controls (see Section 2.6, Control System, Functional Description).

Figure 2-5 Air Inlet System



NOTES

Section 3
SPECIFICATIONS

3.1 SPECIFICATIONS- LS20T (525 PSIG)

DIMENSIONS WITHOUT ENCLOSURE (I)

Model Series	Length		Width		Height		Weight	
	in	mm	in	mm	in	mm	lb	kg
LS20T	120.00	3048	71.69	1821	92.09	2339	**(II)**	**(II)**

(I) Enclosure height = 73.87in/ 1876mm.

(II) For information concerning compressor weight, please contact the Sullair Factory Sales Department.

NOTE

For noise level information, please contact the Sullair Factory Service Department.

COMPRESSOR:

Type:	2-Stage Oil Flooded Rotary
Maximum Full Load Operating Pressure:	525 psig (36.1 bar)
Bearing Type:	Anti-Friction
Cooling:	Pressurized Compressor Fluid
Lubricant:	LLL-4-46
System Fluid Capacity (refill):	25 U.S. Gallons (94.6 Liters)
Control:	Supervisor™ Controller
Capacity Range:	500, 630, 750 CFM

MOTOR:

Type:	O.D.P., 460V, A.C., Three Phase, 60 Cycles
Size:	250, 300 and 350HP
Speed:	1800 RPM

3.2 LUBRICATION GUIDE

Refer to Figure 3-1 for fluid fill port location. The Sullair LS20T (525 PSIG) compressor is filled with LLL-4-46 fluid as factory fill.

WARNING

To be sure that you receive the correct fluid for your compressor, when ordering fluid, always confirm your compressor's fluid fill with the parts technician by using your compressor's serial number.

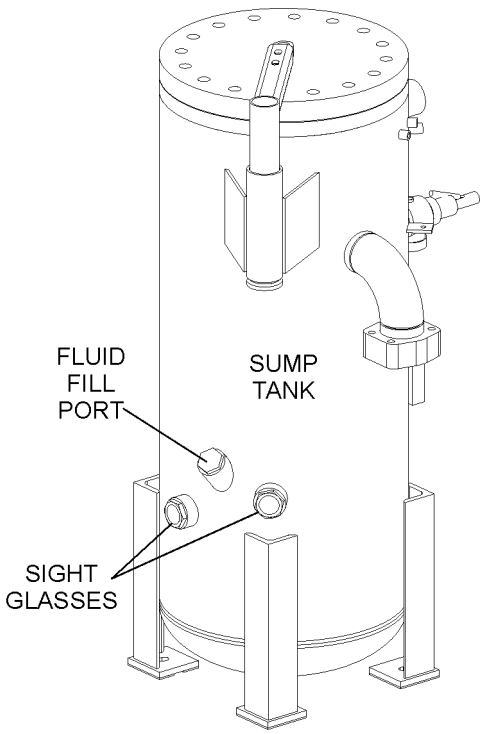
WARNING

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

Fluid should be changed every 1200-1400 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.

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

Figure 3-1 Fluid Fill Port Location



Section 3
SPECIFICATIONS

WARNING

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

"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)

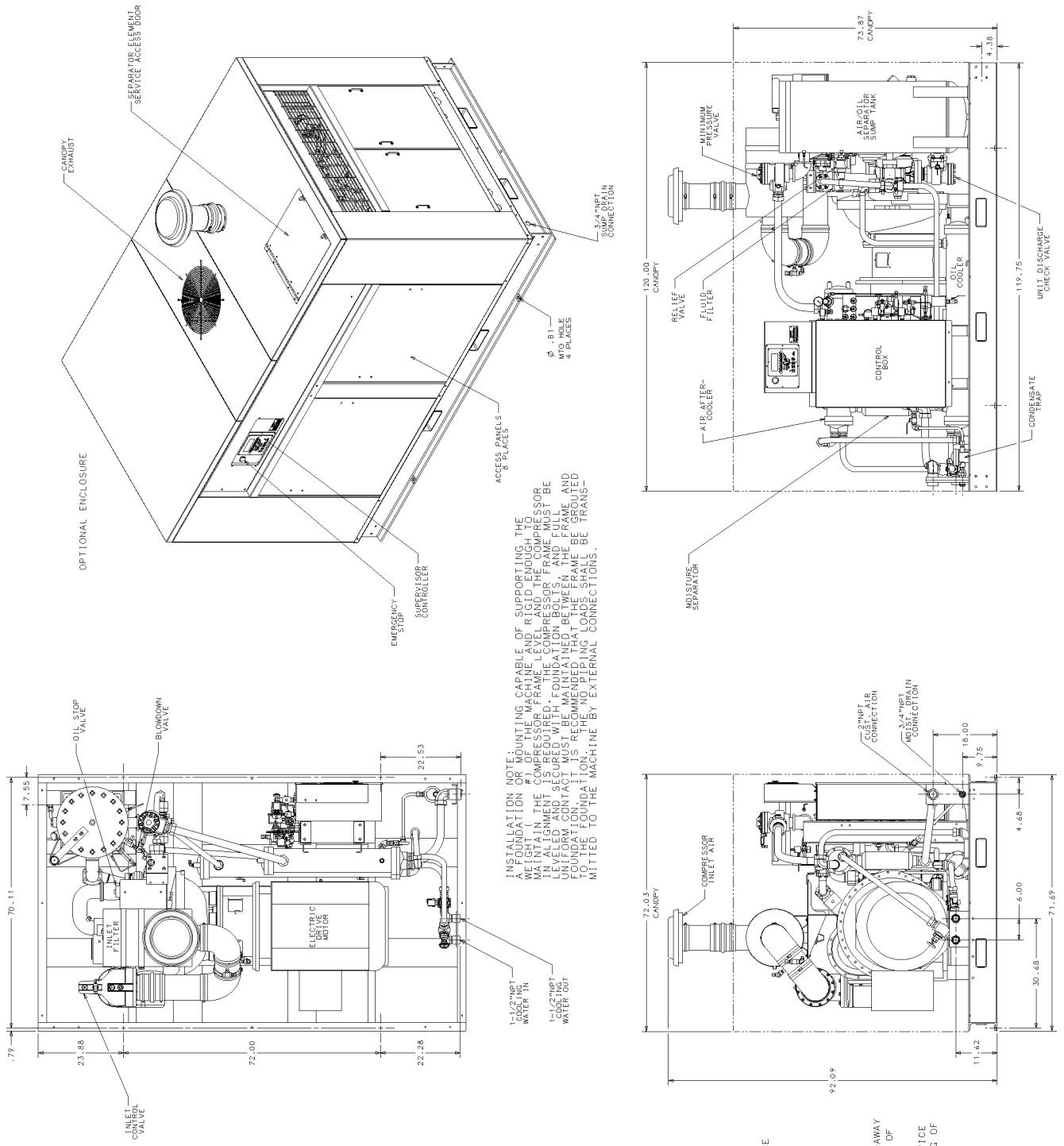
LLL-4-46 fluid should not be used with PVC piping systems. It may affect the bond at cemented joints. Certain other plastic materials may also be affected.

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

3.3 APPLICATION GUIDE

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.

Figure 3-2 Identification- LS20T 250-300 525# Water-cooled with Supervisor Controller



NOTES

Section 4
INSTALLATION

4.1 MOUNTING OF COMPRESSOR

A foundation or mounting capable of supporting the weight of the compressor, and rigid enough to maintain the compressor frame level and the compressor in alignment is required. The compressor frame must be leveled and secured with foundation bolts, and full uniform contact must be maintained between the frame and foundation. It is recommended that the frame be grouted to the foundation. The compressor unit and driver must be aligned after installation as specified in this Operator's Manual. No piping loads shall be transmitted to the compressor or the cooling package at the external connections.

4.2 VENTILATION AND COOLING

For air-cooled compressors, select a location to permit sufficient unobstructed air flow in and out to the compressor to keep the operating temperature stable. The minimum distance that the compressor should be from surrounding walls is 4 feet/1.22m. To prevent excessive ambient temperature rise, it is imperative to provide adequate ventilation.

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

MODEL-HP/KW	WATER FLOW (GPM)
LS20T-250- 250HP/186KW	40
LS20T-300- 300HP/224KW	48
LS20T-350- 350HP/261KW	65

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 40 to 75 psig (2.8 to 5.2 bar). Water flow rates will vary with operating conditions. For rates based on criteria other than that listed, consult your local Sullair representative.

Table 4-1 Ventilation Requirements 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 excessive pressure drop is not created across the fan. Consult a Sullair office for assistance in utilizing this heat.

Table 4-1 Ventilation Requirements

WATER COOLED OR REMOTE COOLED COMPRESSOR PACKAGE			
MODEL	MOTOR HP/KW	HEAT REJECTION BTU/HR	VENT FAN FLOW (II) CFM
LS20T-250	250/186	63,600	2,800
LS20T-300	300/224	84,000	2,800
LS20T-350	350/261	99,000	2,800

(I) Applicable to air-cooled models only.
(II) Applicable to compressors with enclosure.

DO NOT install a water-cooled or an air-cooled/aftercooled compressor without adequate freeze protection where it will be exposed to temperature less than 32ºF(0ºC).

4.3 SERVICE AIR PIPING

Service air piping should be installed as shown in Figure 4-1, which shows a typical arrangement. A shut-off valve should be installed to isolate a 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.

⚠ WARNING

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

LLL-4-46 fluid should not be used with PVC piping systems. It may affect the bond at cemented joints. Certain other plastic materials may also be affected.

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

4.4 COUPLING ALIGNMENT CHECK

In preparation for the factory test, the coupling supplied with your compressor is properly aligned for operation. The motor is flange-mounted to the compressor unit adapter. Therefore, it is not necessary to check this alignment, unless high vibration is noticed.

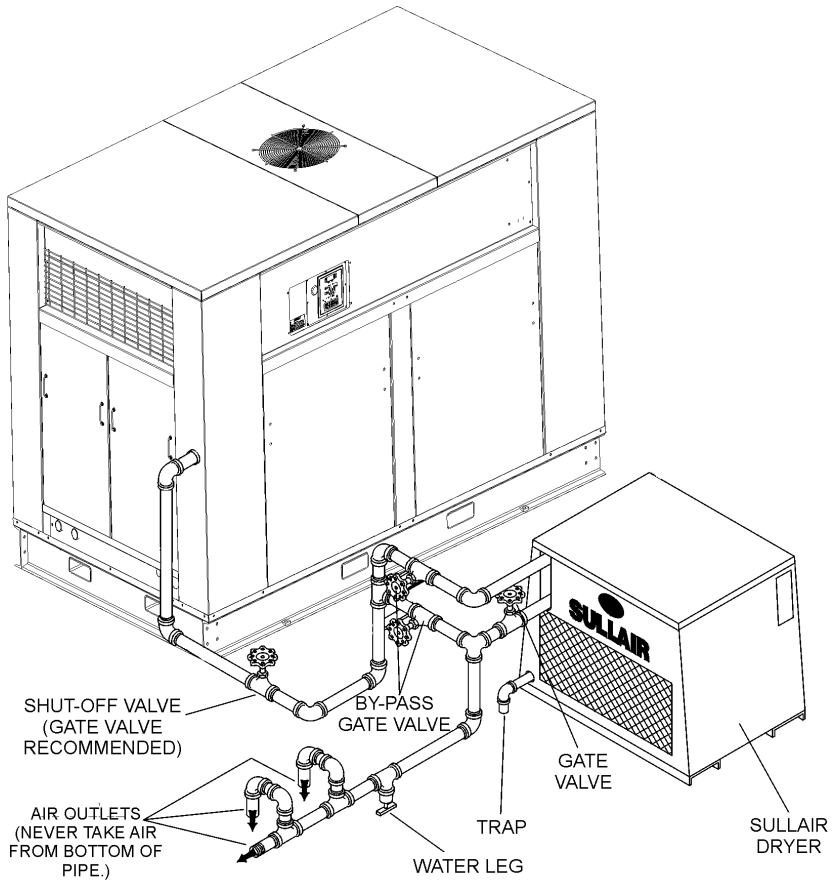
4.5 FLUID LEVEL CHECK

Your 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 on the sump. If the sump is properly filled, the coolant level MAX should fill minimum 1/2 of the bottom sight glass when the compressor is running, or 1/2 top sight glass when compressor is off.

4.6 ELECTRICAL PREPARATION

Interior electrical wiring is performed at the factory. Required customer wiring is minimal, but should be done by a qualified electrician in compliance with

Figure 4-1 Service Air Piping (Typical)



any applicable regional or local electrical code concerning isolation switches, fuse disconnects, etc. Sullair provides a wiring diagram for use by the installer.

⚠ WARNING

Lethal shock hazard inside.

Disconnect all power at source before opening or servicing starter or control panel.

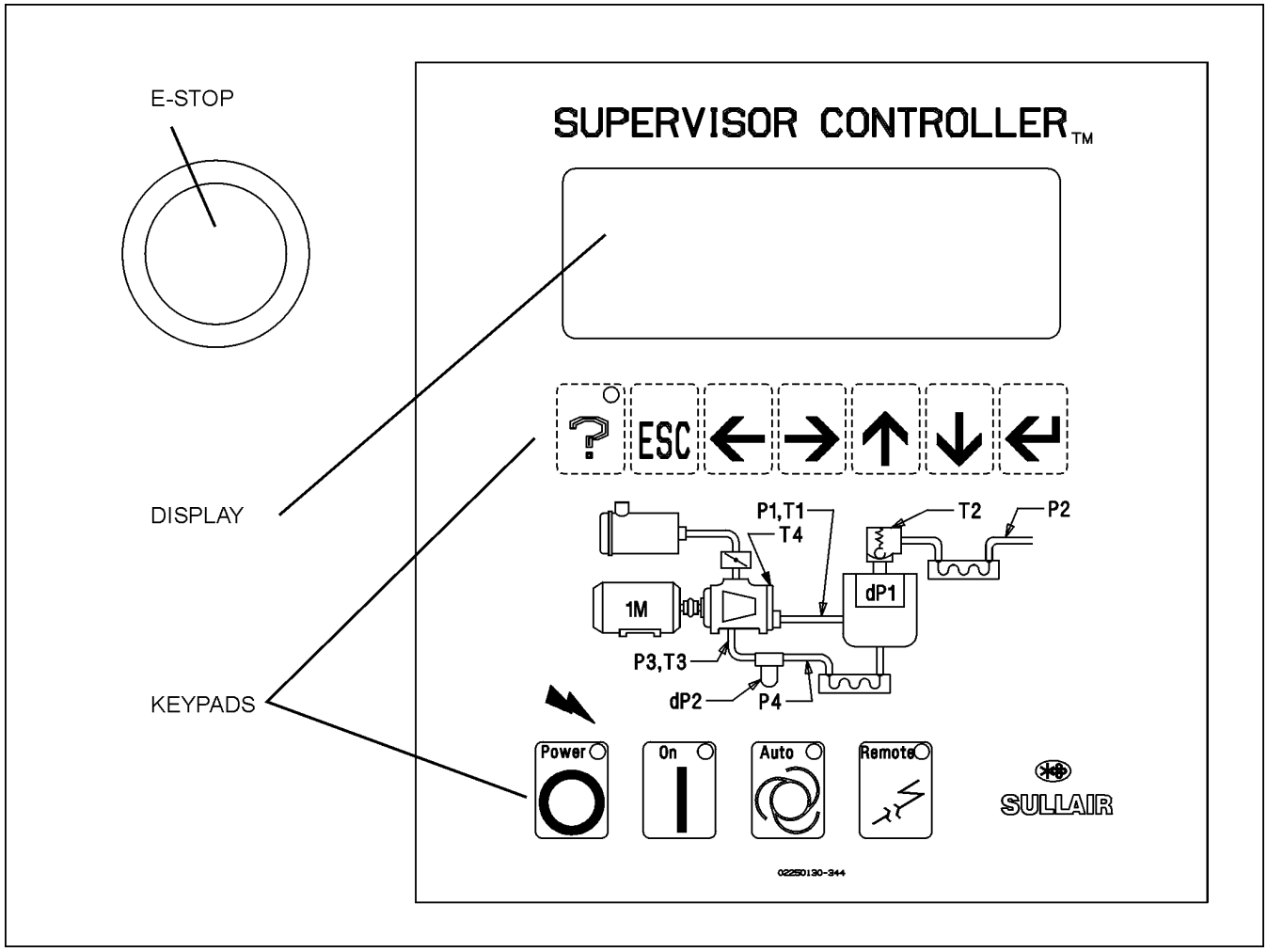
1. Check incoming voltage. Be sure that the incoming voltage is the same voltage that the compressor was wired for.
2. Check starter and overload heater sizes (see electrical parts in Parts Manual).
3. Check all electrical connections for tightness.

4.7 MOTOR ROTATION CHECK

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

With the control system in MANUAL MODE, pull out the **EMERGENCY STOP** button and press once, quickly and in succession, the (**START**) ▮ and (**STOP**) ◯ 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 in the direction indicated by the “Direction of Rotation” decal located on the top of the compressor/motor adapter piece. If the reversed rotation is noted, disconnect the power to the starter and exchange any two of the three power input leads, then re-check rotation. A “Direction of Rotation” decal is located on the top of the compressor/motor adapter piece.

Figure 5-1 Supervisor Controller Panel



NOTE

For information concerning all aspects of the Supervisor Controller, consult the Supervisor Controller manual no. 02250133-517.

NOTES

Section 6
OPERATION

6.1 GENERAL

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

6.2 PURPOSE OF CONTROLS

CONTROL OR INDICATION	PURPOSE
FLUID LEVEL SIGHT GLASS	Monitors fluid level in the sump. Proper level should fill the sight glass. Check level when the compressor is shut down. **DO NOT OVERFILL**.
SEPARATOR RETURN LINE SIGHT GLASS	Used to indicate fluid flow in the return lines. When the compressor is running at full load, fluid flow should be visible in this sight glass. There may be little or no flow when the compressor is running unloaded, but a sluggish flow at full load indicates a need to clean the return line strainer.
FLUID STOP VALVE	Cuts off flow of fluid to compressor unit at compressor shutdown and allows flow of fluid to the unit on startup.
DISCHARGE CHECK VALVE	Cuts off the reverse flow of air/fluid mixture through compressor discharge system at compressor shutdown.
THERMAL VALVE	Regulates flow of fluid to and around the cooler. Designed to maintain a minimum operating temperature of 250ºF (121ºC). Also used for fast warm-up on startup.
MINIMUM PRESSURE/CHECK VALVE	Maintains minimum of 170 psig (11.7 bar) in the compressor sump. Valve piston restricts receiver air discharge from receiver/sump when pressure falls to 160 psig (11 bar). Prevents line pressure backflow into the sump during unload conditions and after shutdown.
PRESSURE RELIEF VALVE (SUMP)	Opens sump pressure to the atmosphere should pressure inside the sump becomes too high (600 psig [41.4 bar]). Operation of this valve indicates that there is a mechanical or electrical malfunction.
PRESSURE RELIEF VALVE (INTERSTAGE)	Opens interstage of compressor to atmosphere should the pressure become too high (200 psig [13.8 bar]). Operation of this valve indicates unit pressurization during shutdown. Causes may be plugged control lines, faulty discharge check valve, or faulty fluid stop valve.
INLET POPPET VALVE	Regulates the amount of air allowed to enter the air inlet valve. This regulation is determined by the amount of air being used at the service line.
PRESSURE REGULATOR (INLET POPPET VALVE)	Opens a pressure line between the sump and inlet poppet valve allowing to regulate air delivery according to the air demand.
PRESSURE REGULATOR (UNLOAD)	Opens a pressure line between the sump and the inlet poppet valve to regulate the unload pressure.

Section 6
OPERATION

6.2 PURPOSE OF CONTROLS (CONTINUED)

CONTROL OR INDICATION	PURPOSE
BLOWDOWN SOLENOID VALVE	Opens when a demand for an unload/shutdown condition exists. When valve is opened, it will supply air to the blow-down valve.
BLOWDOWN VALVE	Vents sump pressure to the atmosphere during unload/shut-down conditions.
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 ○ pad is depressed.

6.3 INITIAL START-UP PROCEDURE

⚠ CAUTION

Do Not attempt to start compressor more than once over a period of thirty minutes.

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

1. Be sure that all preparations and checks described in the Installation Section have been made.
2. Read the preceding pages of this manual thoroughly.
3. Jog motor to check for correct rotation of fan (refer to Section 4.7).
4. Start the compressor in the desired operating mode | or ◎.
5. Slowly open the shut-off valve to the service line.
6. 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, consult *Differential Pressure Regulator Adjustment* in Section 7(Maintenance) of this manual.
8. Observe the operating temperature. Refer to compressor operator's manual for acceptable operating range. If temperature exceeds this range, the cooling system and installation environment should be checked.
9. Open shut-off valve to the service line.
10. Reinspect the compressor for temperature and leaks the following day.

6.4 SUBSEQUENT START-UP PROCEDURE

⚠ CAUTION

Do Not attempt to start compressor more than once over a period of thirty minutes.

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

6.5 SHUTDOWN PROCEDURE

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

Section 7
MAINTENANCE

7.1 MAINTENANCE INTRODUCTION

The Supervisor Controller 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.

7.2 DAILY OPERATION

Following a routine start, observe the various Supervisor Controller 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.

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 which may have accumulated during compressor assembly. 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 elements.
4. Clean the control line filters.

7.4 MAINTENANCE AS REQUIRED BY LUBRICATION GUIDE (SECTION 3)

1. Drain the sump and change the compressor fluid.
2. Replace the main fluid filter element.
3. Clean the return line strainers and orifices.
4. Clean or replace the control line filter element.

7.5 FLUID CHANGE

Standard models are filled with LLL-4-46 fluid. LLL-4-46 fluid should be changed under the following conditions, whichever occur first:

1. Every 1200-1400 hours.
2. As indicated by fluid analysis.

A fluid sample at every 400-500 hours is recommended. For a free LLL-4-46 fluid analysis, send fluid sample to:

Engineering Services, Inc.
Attn: Lubricant Lab
2300 James Savage Road
Midland, MI 48642 U.S.A.

To facilitate this, a sample bottle is included with the compressor.

7.5.1 FLUID CONTAMINATION BASED UPON FLUID ANALYSIS

Under certain conditions fluid may become contaminated. While this may indicate a fluid change, attention must be taken to the potential remaining fluid left inside the system after a change out.

⚠ CAUTION

When performing a fluid change, there is a possibility that fluid may be retained in the oil cooler. There may also be fluid in the unit, the discharge valve and piping. If this fluid is not removed before introducing fresh fluid (as per fluid change out), the fresh fluid may become contaminated.

7.6 SEPARATOR MAINTENANCE INTRODUCTION

Refer to *Separator Maintenance* in Section 7.7. Replace the separator elements when the separator maintenance message is displayed or after one (1) year, whichever comes first. The separator elements must be replaced. **DO NOT** clean the separator elements.

⚠ WARNING

A continuity check is critical to perform when replacing separator elements.

7.7 PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES

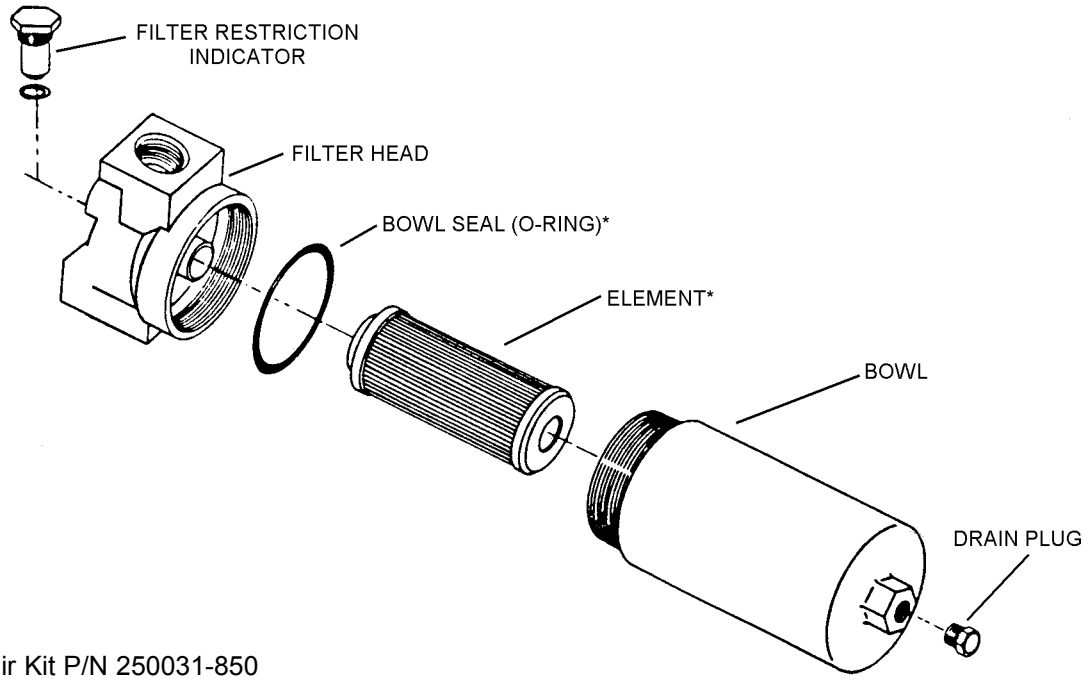
FLUID FILTER MAINTENANCE

Refer to Figure 7-1. The fluid filter (P/N 02250111-592) is located schematically between the thermal valve on the sump and the oil stop valve on the compressor-mounting bracket. When servicing this filter, shut the compressor down, make sure all pressure has been released, then follow the instructions below. For element replacement order kit number 250031-850.

⚠ CAUTION

To minimize the possibility of filter element rup-

Figure 7-1 Main Filter (P/N 02250111-592)



*Repair Kit P/N 250031-850

ture, it is important that ONLY replacement elements identified with the Sullair name, logo and appropriate part numbers be used, and that substitute elements NOT be used, due to the fact that such filters may have inadequate or questionable working pressure ratings.

1. Unthread the filter canister from the head. A hex nut is supplied on the bottom of the canister along with the bottom portion of the canister has a rough textured surface. Either can be used to assist in removal of the canister.
2. Pull the canister away from the filter head. The filter elements will be attached to the filter head.
3. Separate the element from the filter head.
4. Remove the canister seal.
5. Thoroughly clean the filter head and canister in solvent.
6. Lubricate the new seals with the same type of fluid used in the compressor and position each seal in its appropriate place.
7. Carefully push the element into position under the housing/head.
8. Replace the canister by threading back onto the filter head.

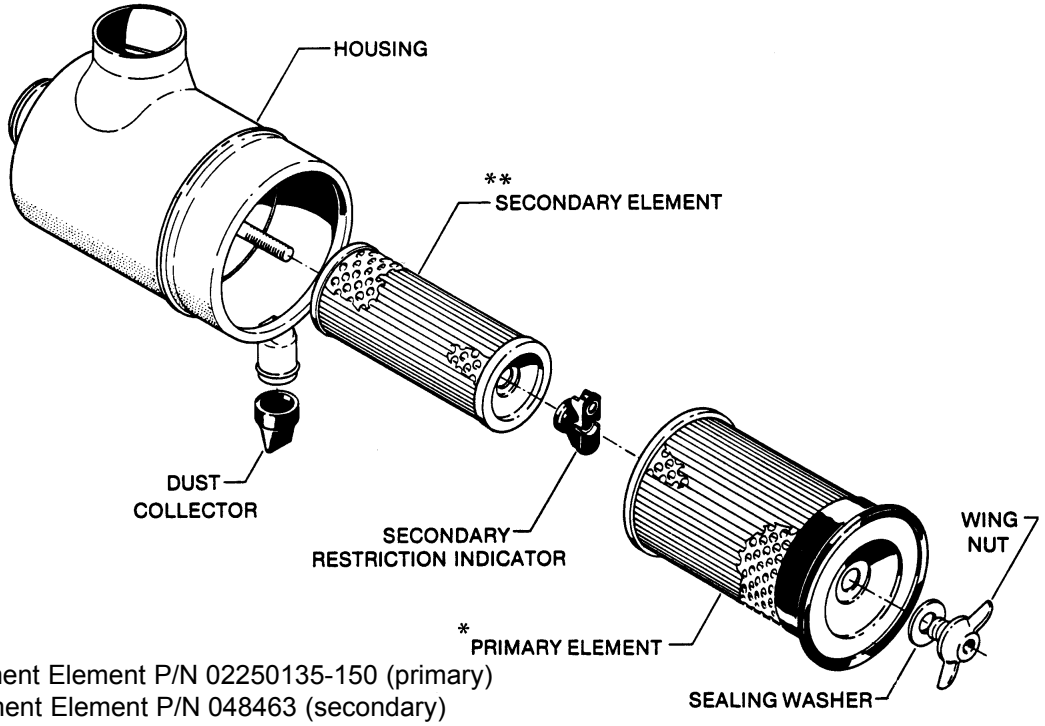
AIR FILTER MAINTENANCE

Refer to Figure 7-2. Air filter maintenance should be performed when the air filter maintenance message is displayed. The air filter is equipped with a primary and a secondary element. As previously stated, the Supervisor Controller will alert you as to when the primary element maintenance is necessary. When removing the primary element, always check the secondary element for visible dirt, grease/oil, or damage. The secondary element must be changed after every sixth primary element inspection. **DO NOT** clean the secondary element.

AIR FILTER ELEMENT REMOVAL

1. Clean exterior of air filter housing.
2. Remove the cover/element assembly by loosening the wing nut securing it.
3. Pull the cover/element assembly out of the housing.
4. On the inside of the element, you will notice a lock ring, which fastens the cover to the element. Remove the lock ring and pull the cover and element apart.
5. Clean the interior of the housing by using a damp cloth. **DO NOT** blow dirt with compressed air.
6. Inspect the secondary element and replace if necessary. This element is **NOT** cleanable.
7. To remove the secondary element, unscrew the secondary restriction indicator from the threaded rod running through the element. Pull the element out of the housing.
8. Install the new secondary element and replace the restriction indicator.

Figure 7-2 Air Filter Replacement (P/N 048456)



*Replacement Element P/N 02250135-150 (primary)
**Replacement Element P/N 048463 (secondary)

9. With the secondary element in place, clean or replace the primary element. Cleaning instructions follow.

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.

PRIMARY ELEMENT REPLACEMENT

1. Place the element in position on the cover and replace the locking to secure the cover and element.
2. Install the cover/element assembly and replace the wing nut. Tighten the wing nut so to seat the element gasket fully.

SEPARATOR MAINTENANCE

Refer to Figure 7-3 . When the need for a separator element replacement is indicated by the Supervisor, use the following procedure for separator replacement.

1. Remove the air receiver/separator tank lid by removing the sixteen (16) hex head capscrews.

NOTE

To assist with the removal of the tank lid, Sullair has provided a 1”-8 nut to the top lid so it can be removed by a 1”-8 eye bolt (which is available from Sullair) or a similar type of lifting device.

Also, tank lid is supplied with a boom. Remove tank lid bolts, position boom and bolt into place (two bolts supplied).

2. Remove the round separator cover plate from the top of the separator element.
3. Remove the old separator element and discard.
4. Scrape the old gasket material from the tank lid mounting surface and the flanges mounting surface on the tank. Be sure to keep all scrapings from falling back inside of the tank.
5. Now install the new separator elements and retaining ring.

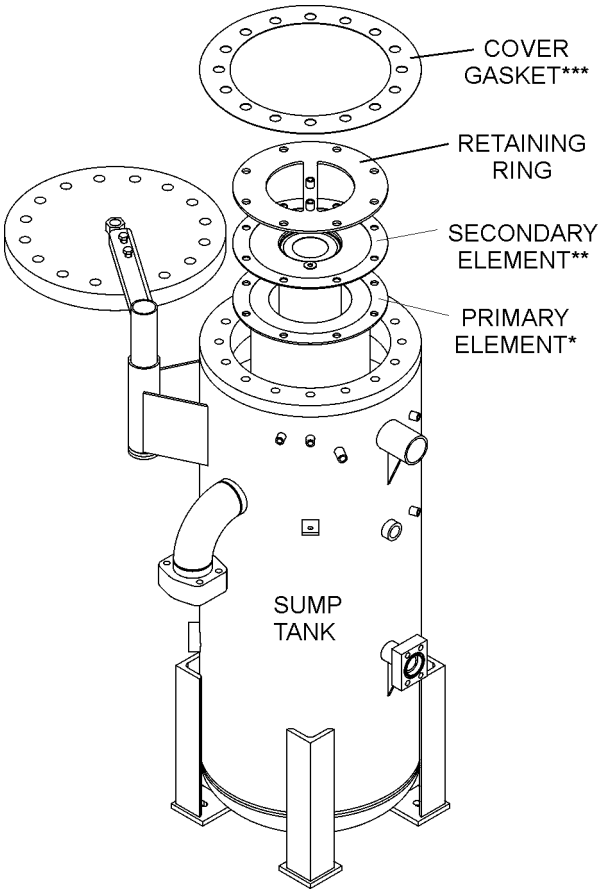
NOTE

USE PROVIDED GASKET(S) ONLY.

DO NOT remove grounding staple(s) from the replacement element’s gasket.

DO NOT use any type of gasket eliminator, as it can insulate the staples causing the element not to

Figure 7-3 Separator Element Replacement



*Primary Replacement Element Kit P/N 02250100-755
**Secondary Replacement Element P/N 02250100-756
***Cover gasket (Tank Lid) P/N 02250138-751

be properly grounded for operation.

Torque the capscrews to 85 to 90 ft.-lbs. (115 to 122 Nm). **DO NOT** over-tighten, as damage to the separator element can result.

⚠ WARNING

A continuity check is critical to perform when replacing separator elements.

Check continuity between the separator and the retaining ring, along with the separator element and tank body.

6. Next, install the tank flange gasket that is provided. Reinstall the tank lid. Install the capscrews finger- tight, then gradually tighten in a criss-cross pattern in 4 to 5 steps. Always tighten the capscrews alternately at opposite sides of the cover. Lubricate the capscrews with compressor fluid, and torque to 200 ft.-lbs. (271Nm).
7. Clean or replace fluid return line strainer.
8. Clean the fluid return line orifice installed in the side of the compressor unit air end.

OIL RETURN/SIGHT GLASS MAINTENANCE

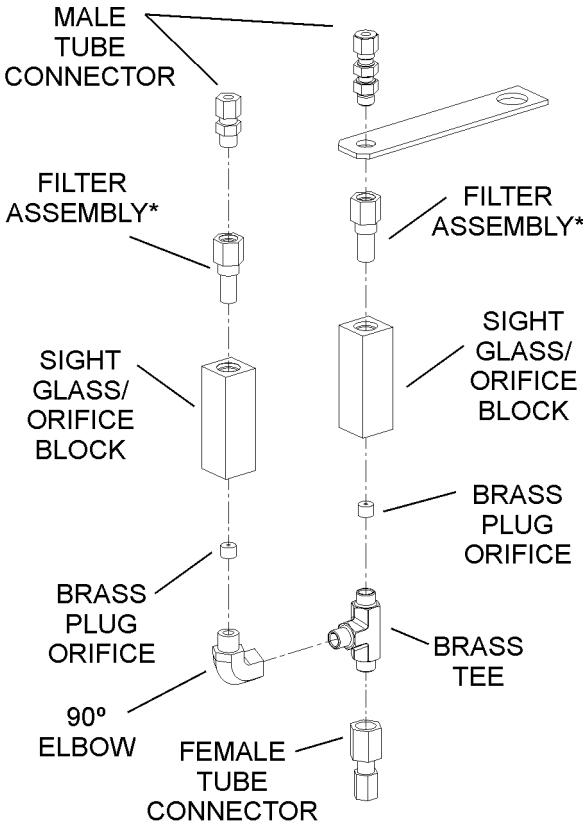
Refer to Figure 7-4. The oil return/sight glass subassembly is attached to the separator tank. Oil return/sight glass maintenance should be performed on a routine basis parallel to that of the fluid filter, or as indicated in the Troubleshooting Section of this manual. The maintenance on an oil return/sight glass is mainly concerned with the condition of the filter assembly. Order filter assembly no. 02250117-782, and use the following instructions as a guide.

NOTE

Always performing maintenance on both oil return/sight glasses at the same time.

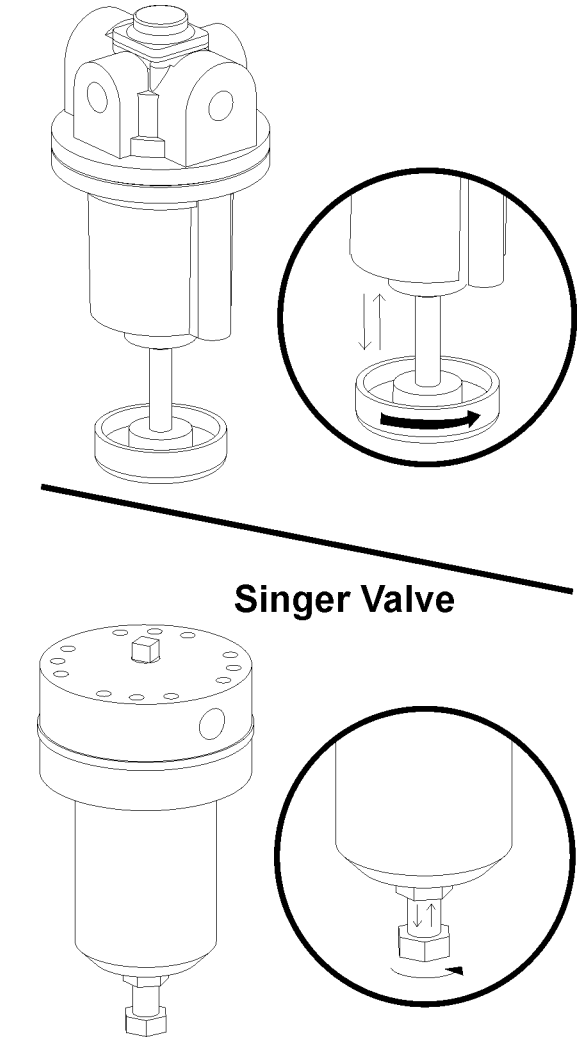
1. Disconnect the tubes at the tops of the sight glass assemblies.
2. Unscrew male connector (for left-side glass), or the straight thread tube connector (for right-side glass) from sight glass/orifice blocks.
3. Remove used filter assembly, and replace with new assembly.

Figure 7-4 Oil Return/Sight Glass



*Replacement Filter Assembly P/N 02250117-782

Figure 7-5 Pressure Regulator Adjustments



4. Coat/lubricate the o-rings with compressor fluid.
5. Reattach the connectors to the sight glass/orifice blocks.

DIFFERENTIAL PRESSURE REGULATOR ADJUSTMENT

Refer to Figure 7-5. The differential pressure regulators are adjusted by loosening the adjusting screw on the end of the cone-shaped cover of the pressure regulator. When the jam nut is loose, turn the adjusting screw clockwise to increase or counter-clockwise to decrease the setting.

The reference pressure regulator should be set to maintain a 60 psig (4.14 bar) downstream pressure to the inlet poppet valve. The unload pressure regulator should be set at 170 psig (11.7 bar) to control the compressor package during unload only. The inlet poppet valve control pressure regulator should be set to control the systems modulation to the service line desired pressure.

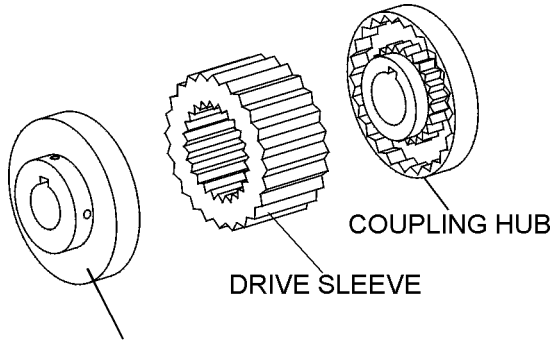
DRIVE COUPLING INSTALLATION AND ALIGNMENT

⚠ WARNING

Units mounted through common housing are self-aligning. If alignment is suspect, consult Service Department.

Figure 7-6 shows layout view of drive sleeve and coupling hubs.

Figure 7-6 Drive Coupling



NOTES

Section 8
TROUBLESHOOTING

8.1 TROUBLESHOOTING

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

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

a. Check for loose wiring.

b. Check for damaged piping.

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

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

8.2 TROUBLESHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	REMEDY
COMPRESSOR WILL NOT START	Main Disconnect Switch Open	Close switch.
	Line Fuse Blown	Replace fuse.
	Control Transformer Fuse Blown	Replace fuse.
	Motor Starter Overloads Tripped	Reset. Should trouble persist, check whether motor starter contacts are functioning properly.
	Low Incoming Line Voltage	Check voltage. Should voltage check low, consult power company.
COMPRESSOR SHUTS DOWN	Loss of Control Voltage	Reset. If trouble persists, check that line pressure does not exceed maximum operating pressure of the compressor (specified on nameplate).
	Low Incoming Voltage	Consult power company.
	Excessive Operating Pressure	Separator requires maintenance; check dP1 under full load conditions.
		Defective blowdown solenoid valve; repair if defective (kit available).
		Defective blowdown valve; blowdown valve should exhaust sump pressure to the atmosphere when maximum operating pressure is reached. Repair or replace as necessary (kit available).
	P1 High Pressure Shutdown Parameter is Adjusted Too Low	Readjust MAX P1 setpoint appropriately.
	High Discharge Temperature	Cooling water temperature too high; increase water flow (water-cooled).
		Cooling water flow insufficient; check water lines and valves. (water-cooled).

Section 8
TROUBLESHOOTING

8.2 TROUBLESHOOTING GUIDE(CONTINUED)

SYMPTOM	PROBABLE CAUSE	REMEDY
COMPRESSOR SHUTS DOWN (CONTINUED)	High Discharge Temperature (Cont.)	Cooler plugged; clean tubes. If plugging persists, install water conditioner. (water-cooled).
		Low fluid level; add fluid.
		Clogged filter; change the fluid filter element if maintenance indicator shows red, and/or dP2 on controller indicates high dP.
		Thermal valve not functioning properly; replace element.
		Cooling air flow restricted; clean cooler and check for proper ventilation (air-cooled).
		Ambient temperature too high; provide sufficient ventilation (air-cooled).
		RTD probe out of calibration, or bad RTD. Replace if necessary.
	Low Fluid Pressure	Clogged filter; replace fluid filter element
	Low Water Pressure	Check water lines and valves (water-cooled).
COMPRESSOR WILL NOT BUILD UP FULL DISCHARGE PRESSURE	Air Demand is Too Great	Check service lines for leaks or open valves.
	Dirty Air Filter	Check the filter indicator and change or clean element if required.
	Defective Pilot Pressure Regulator	Check diaphragm and replace if necessary (kit available).
	Defective Minimum Pressure Valve	Check that the piston is moving freely.
	Defective Control Inlet Solenoid Valve	Repair or replace.
LINE PRESSURE RISES ABOVE P2 PRESSURE	Leak in Control System Causing Loss of Pressure Signals	Check for leaks.
	Defective Blowdown Solenoid Valve	Repair or replace if necessary (kit available).
	Defective Blowdown Valve	Check that sump pressure is exhausted to the atmosphere when the unload pressure setting on Supervisor is met, or repair or replace if necessary (kit available).
EXCESSIVE COMPRESSOR LUBRICANT CONSUMPTION	Clogged Return Line or Orifice	Clean strainer (screen and o-ring replacement kit available).
		Clean orifice.
	Separator Elements Damaged or Not Functioning Properly	Change separator elements.

8.2 TROUBLESHOOTING GUIDE (CONTINUED)

SYMPTOM	PROBABLE CAUSE	REMEDY
EXCESSIVE COMPRESSOR LUBRICANT CONSUMPTION (CONTINUED)	Leak in the Lubrication System	Check all pipes, connections and components.
	Excessive Fluid Foaming	Drain fluid and change.
	Fluid Level Too High	Drain excess fluid.
SUMP PRESSURE RELIEF VALVE OPENS REPEATEDLY	High Pressure Shutdown Parameter is Out of Adjustment	Readjust below pressure relief valve setting.
	Defective Pressure Relief Valve	Replace pressure relief valve.
	Defective Pressure Transducer	Recalibrate or replace.
	Defective Minimum Pressure Valve	Repair or replace.
	High Separator Differential (dP1)	Replace separator elements.
	Defective Blowdown Valve	Repair or replace (kit available).
	Defective Blowdown Solenoid Valve	Repair or replace (kit available).
	Plugged or Frozen Control Lines	Replace or thaw as needed.
INTERSTAGE PRESSURE RELIEF VALVE OPENS REPEATEDLY	Defective Discharge Check Valve	Repair or replace (kit available).
	Defective Oil Stop Valve	Repair or replace (kit available).
	Defective Pressure Relief Valve	Replace pressure relief valve.

NOTES

Section 9
ILLUSTRATIONS AND PARTS LIST

9.1 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 addresses, phone or fax numbers below.When ordering parts always indicate the Serial Number of the compressor. This can be obtained from the Bill of Lading for the compressor or from the Serial Number Plate located on the compressor.

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

SULLAIR CORPORATION
3700 East Michigan Boulevard
Michigan City, Indiana 46360 U.S.A.
www.sullair.com
Telephone: 1-800-SULLAIR (U.S.A. Only)
or 1-219-879-5451
Fax: (219) 874-1273

PARTS DEPARTMENT
Fax: (219) 874-1835
www.sullair.com

SERVICE DEPARTMENT
Fax: (219) 874-1205
www.sullaircompressors.com

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

9.2 SPARE PARTS LIST- LS20T (525 PSIG)

DESCRIPTION	KIT NUMBER	QTY
Replacement element for primary **(I)**	**02250100-755**	**2**
Replacement element for secondary separator **(I)**	**02250100-756**	**2**
Replacement lid gasket (separator) **(I)**	**02250138-751**	**1**
Replacement element for inlet filter 048456 (primary) **(I)**	**02250135-150**	**1**
Replacement element for inlet filter 048456 (secondary) **(I)**	**048463**	**1**
Replacement element for fluid filter 02250111-592 **(I)**	**250031-850**	**2**
Replacement element for control line filter 02250111-923 **(I)**	**02250111-924**	**1**
Repair kit for fluid stop valve 250041-069	**02250051-747**	**1**
Repair kit for minimum pressure valve 250031-852	**consult factory**	**1**
Repair kit for thermal valve 02250111-620	**02250111-622**	**1**
Repair kit for inlet valve 02250138-707	**02250112-533**	**1**
Rebuild kit for inlet valve 02250138-707	**02250112-534**	**1**
Replacement filter assembly for scavenger sight glass sub-assembly	**02250117-782**	**1**
Repair kit for blowdown valve 045116	**047524**	**1**
Repair kit for pressure regulator 02250139-030	**02250139-037**	**1**
Repair kit for pressure regulator 02250139-080	**02250145-534**	**1**
Repair kit for solenoid valve 407390 **(I)**	**02250053-830**	**1**
Replacement coil for solenoid valve 407390	**250031-431**	**1**
Repair kit for solenoid valve 02250125-657 **(I)**	**02250125-829**	**1**
Replacement coil for solenoid valve 02250125-657	**02250125-861**	**1**
Repair kit for solenoid valve 02250125-653 **(I)**	**02250125-843**	**1**
Replacement coil for solenoid valve 02250125-653	**02250125-855**	**1**
Repair kit for discharge check valve assembly 02250127-507	**606208-001**	**1**

(Continued on page 42)

(I) Recommended spare parts (quantities are reference only).

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.2 SPARE PARTS LIST- LS20T (525 PSIG) (CONTINUED)

DESCRIPTION	KIT NUMBER	QTY
Repair kit for shaft seal	**001811A**	**1**
Replacement drive-coupling element (250-300hp/186-224kw) **(I)(II)**	**02250075-399**	**1**
Replacement drive-coupling element (350hp/261kw) **(I)(II)**	**250006-267**	**1**
LLL-4-46 fluid (5-gal can)	**249775-001**	**25-gal**

(I) Recommended spare parts.

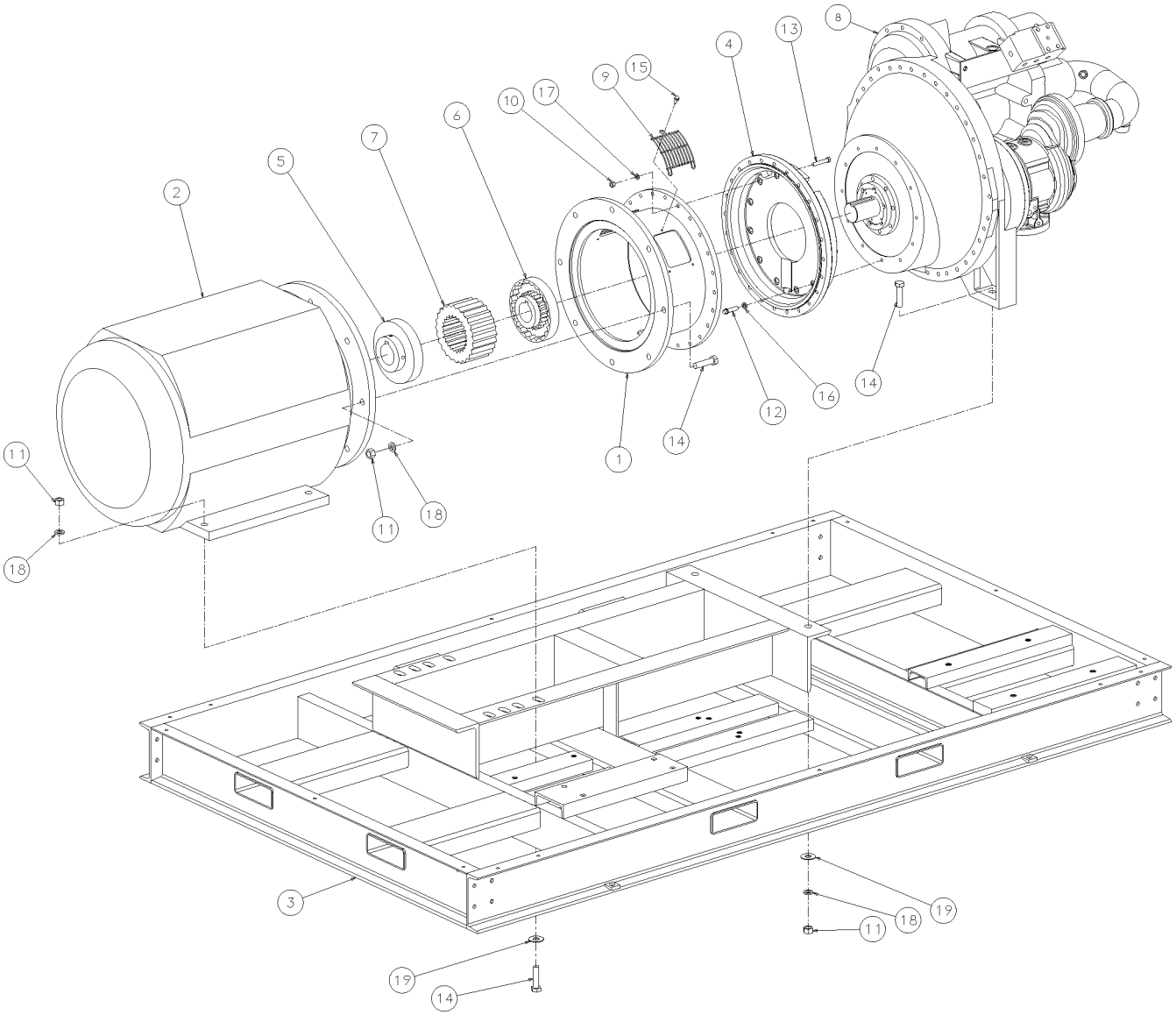
(II) Due to custom motor requests, drive-coupling elements may vary. Consult factory for correct size/component.

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

NOTES

Section 9
ILLUSTRATIONS AND PARTS LIST

9.3 MOTOR, FRAME, COMPRESSOR AND PARTS



02250137-909R00

9.3 MOTOR, FRAME, COMPRESSOR AND PARTS

key number	*description*	*part number*	*quantity*
1	adapter, mtr/compr ls20t spcl	02250051-593	1
2	motor, electric **(I)**	-	1
3	frame, main ls20t 575# 200-350hp	02250138-371	1
4	adapter (231811c) sae 1ddh20	026974	1
5	hub, coupling 2-7/8 - 11su **(II)**	047140	1
6	hub, coupling 2-3/4 - 11su **(II)**	047141	1
7	sleeve, drive 11u	047142	1
8	compr model, 20-12 series unit **(III)**	-	1
9	grille, cplg guard compr/mtr	250040-319	2
10	nut, hex pltd 7/16-14	825207-385	24
11	nut, hex pltd 3/4-10	825212-665	12
12	capscrew, ferry head hd 1/2-13 x 1 3/4	828408-175	12
13	capscr, hex gr5 7/16-14 x 2 1/2	829107-250	24
14	capscr, hex gr5 3/4-10 x 3	829112-300	20
15	screw, hex ser washer 5/16-18 x 3/4	829705-075	6
16	washer, spr lock 1/2	837508-125	12
17	washer, spr lock reg pltd 7/16	837807-112	24
18	washer, spr lock reg pltd 3/4	837812-188	12
19	washer, pl-b reg pltd 3/4	838212-112	4

(I) Due to customized motor variances consult factory for part number.

(II) For maintenance on drive coupling element order:

250-300HP/ 186-224KW: drive coupling replacement no. 02250075-399.

350HP/261KW: drive coupling replacement no. 250006-267.

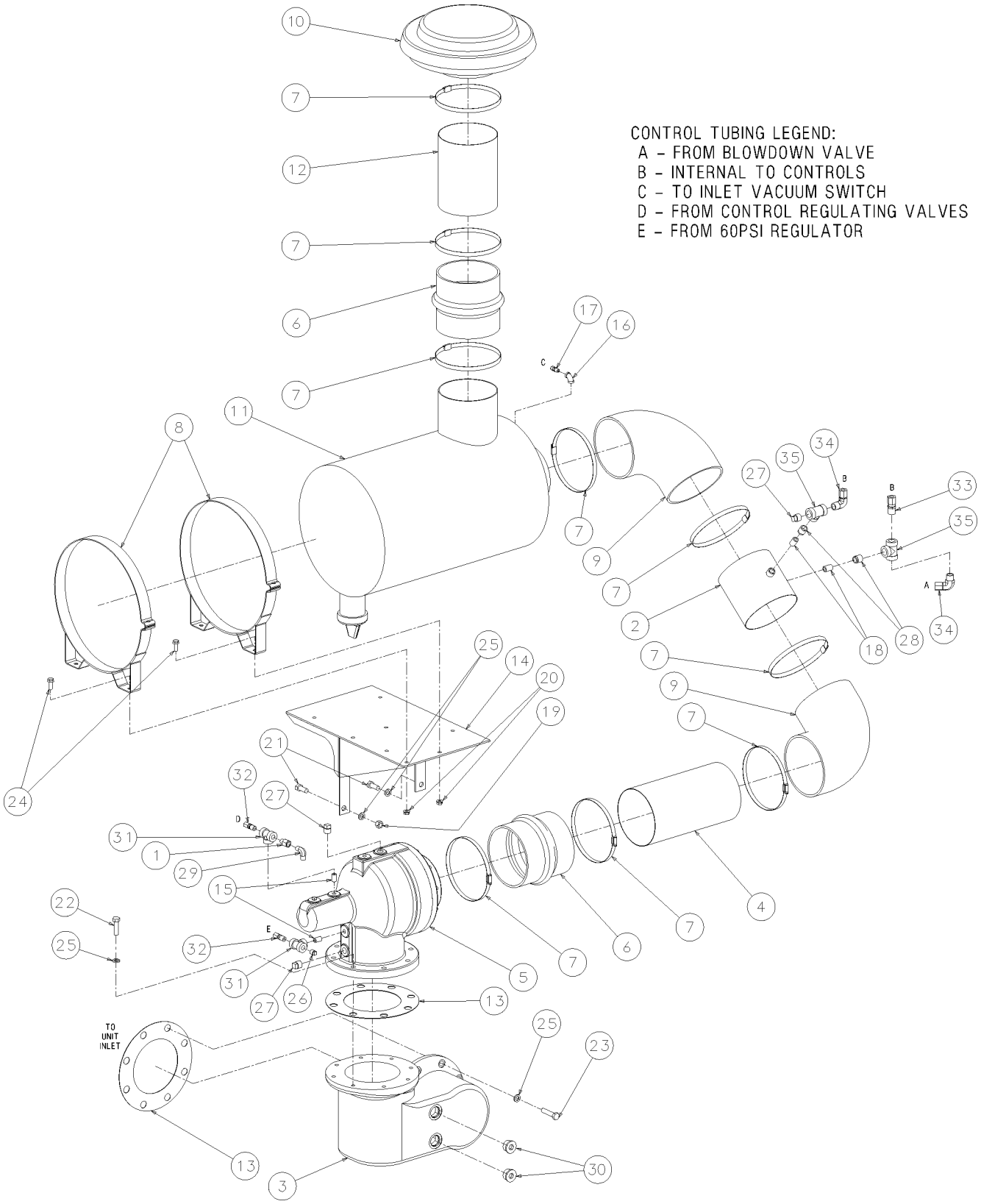
(III) There is an exchange program whereby a remanufactured compressor unit can be obtained from Sullair distributors or the factory at less cost than the owner could repair the unit. For information regarding the unit exchange program, contact your nearest Sullair representative or the Sullair Corporation.

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 order repair kit no. 001811A.

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.4 AIR INLET SYSTEM



02250137-907R03

9.4 AIR INLET SYSTEM

key number	description	*part* number	quantity
1	orifice,.040 1/4fnpt x 1/4mnpt	02250091-395	1
2	tube, 7” x 6.5” w/3/8” conn	02250120-368	1
3	pipe, 6” aluminum 150# (m)	02250126-548	1
4	tube,alum air inlet 7”od x 13”	02250135-629	1
5	sub assembly, 6.50”invlv w/orif 20t 575# **(I)**	02250138-707	1
6	hose, hump 7”	041917	2
7	clamp, hose 7”	041992	9
8	band, mounting 16”	044248	2
9	elbow, rubber 7 i.d. x 90 deg.	046078	2
10	cap, air inlet 7”	046307	1
11	filter, inlet optimalair 16”odx7”inlt **(II)**	048456	1
12	tube, alum air inlet 7”od x 9”lg	232591	1
13	gasket, 6” 125# flg full face	242437-012	2
14	support, air inlet filter	250000-826	1
15	nipple, pipe-xs 316s 1/4 x cl	250019-142	2
16	elbow, pipe 90 deg 1/8”	803515-005	1
17	connector, tube-m 1/4 x 1/8	813604-125	1
18	nipple, pipe-xs galv 3/8 x cl	823206-000	2
19	nut, hex pltd 1/2-13	825208-448	1
20	nut, hex f pltd 3/8-16	825306-347	4
21	capscr, hex gr5 1/2-13 x 1 1/4	829108-125	2
22	capscr, hex gr5 1/2-13 x 1 3/4	829108-175	8
23	capscr, hex gr5 1/2-13 x 2 1/4	829108-225	8
24	screw, hex ser washer 3/8-16 x 1	829706-100	4
25	washer, spr lock reg pltd 1/2	837808-125	18
26	plug, pipe 1/4” 3000# stl plt	866900-010	2
27	plug, pipe 1/2” 3000# stl plt	866900-020	3

(Continued on page 49)

(I) For maintenance on air inlet valve assembly no. 02250138-707, order repair kit no. 02250112-533, or rebuild kit no. 022500112-534. For further details of inlet assembly, consult Section *9.5, Air Inlet Sub-assembly*. **NOTE:** See footnote **(III)** below.

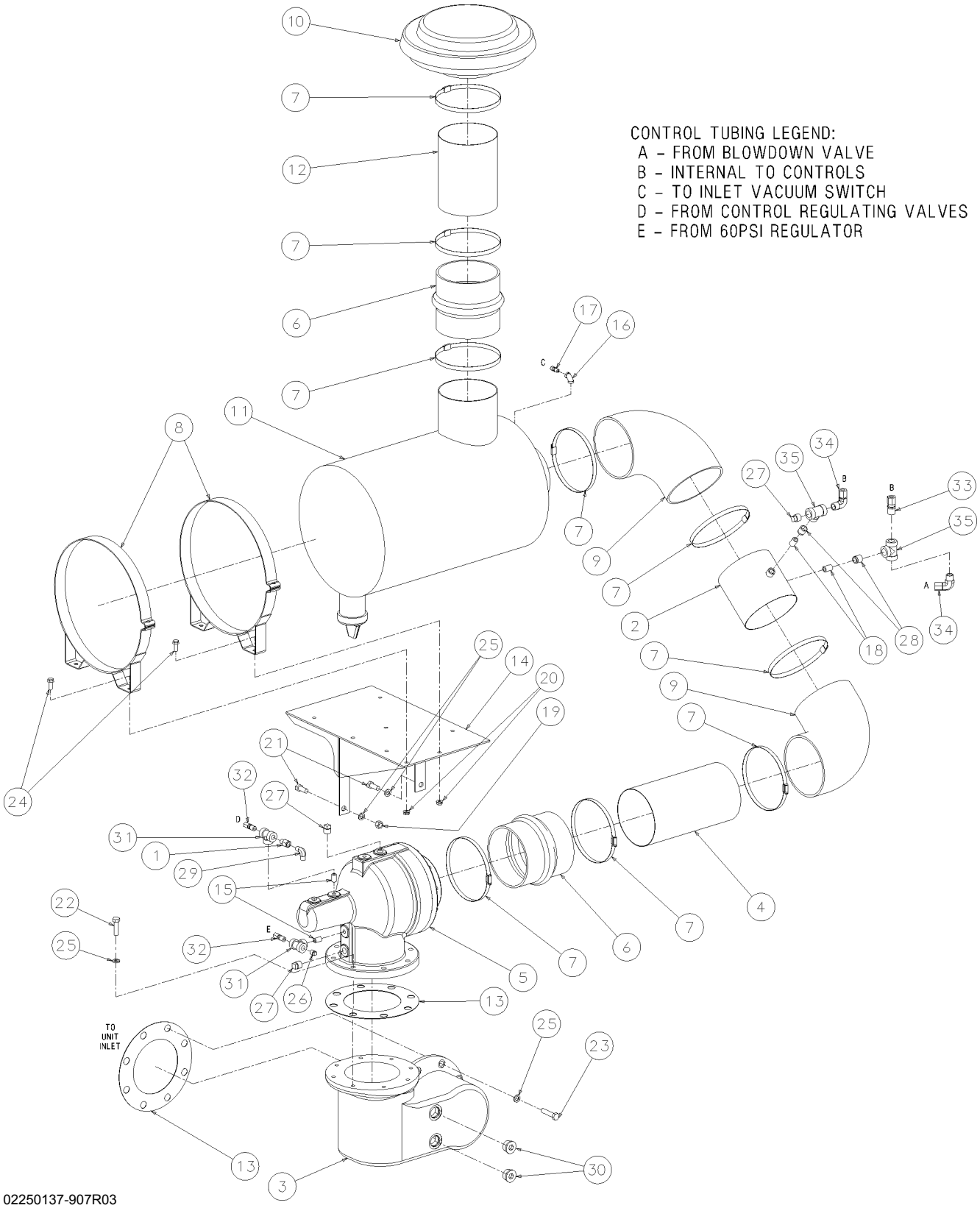
(II) For maintenance on air filter no. 048456, order primary replacement element no. 02250135-150 and secondary replacement element no. 048463.

(III) When performing maintenance on inlet valve, if required, order gasket no. 242437-012.

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.4 AIR INLET SYSTEM



02250137-907R03

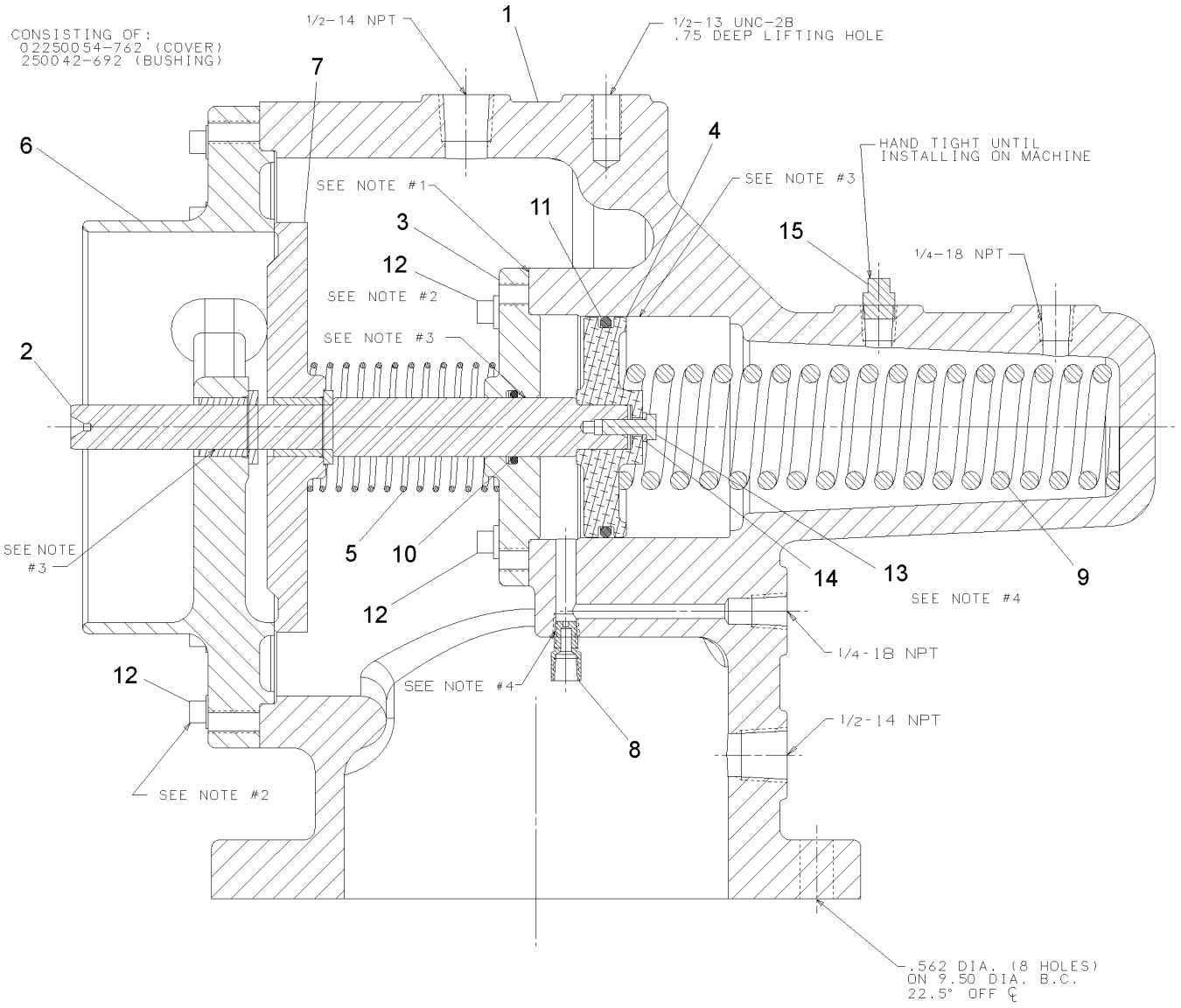
9.4 AIR INLET SYSTEM (CONTINUED)

key number	description	*part* number	quantity
28	bushing, red pltd 1/2 x 3/8	867102-015	2
29	elbow, pipe-90m 1/4 x 1/4 ss	872204-025	1
30	plug, str thd hol hx 1 5/16-12	875716-131	2
31	tee, pipe 300# 1/4 ss	876730-010	2
32	connector, tube-m 1/4 x 1/4 ss	876804-025	2
33	connector, tube-m 1/2 x 1/2 ss	876808-050	1
34	elbow, tube 90 deg m 1/2 x 1/2 ss	877008-050	2
35	tee, pipe 1/2” 2000# ss	878900-020	2

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.5 AIR INLET SUB-ASSEMBLY



NOTES:

1) SEAL WITH SULLAIR GASKET COMPOUND #5910
   COLOR CODE: PURPLE.

2) TORQUE GRADE 5 BOLTS PER SULLAIR SPEC.
   #005848 (A00-P-8) CONDITION B.

BOLT SIZE	TORQUE
1/4-20	7.0 FT-LBS.
3/8-16	27.0 FT-LBS.
1/2-13	65.0 FT-LBS.
5/8-11	130.0 FT-LBS.
3/4-10	230.0 FT-LBS.

3) APPLY ANTI-SEIZE.

4) LOCK WITH SULLAIR ADHESIVE #5910.
   COLOR CODE: PURPLE.

5) REFERENCE BOM 02250138-707.

02250138-702R00

9.5 AIR INLET SUB-ASSEMBLY (I)

key number	description	*part* number	quantity
1	housing, body 6.5” inlet valve	02250054-750	1
2	shaft, 6.50” inlet valve	02250054-756	1
3	cover, inter 6.50”valve	02250054-757	1
4	piston, 6.50 inlet valve	02250054-759	1
5	spring, compresion, 1.50 lbs	02250054-761	1
6	cover, assembly 6.50” inlet valve	02250054-868	1
7	pilot, assembly flow ctl 6.5”vlv spl	02250138-701	1
8	orifice, ctl .094 1/8 fnpt x 1/8 mnpt	250014-060	1
9	spring, com 144#inter	250042-384	1
10	o-ring, viton 1 x 1/8”	826502-214	1
11	o-ring, viton 3 3/8 x 3/16”	826502-340	1
12	capscrew, ferry head hd 3/8-16 x 1 3/4	828406-175	18
13	capscr, hex gr5 1/4-20 x 3/4	828604-075	1
14	washer, spr lock 1/4	837504-062	1
15	plug, pipe 1/4” 3000# stl plt	866900-010	1

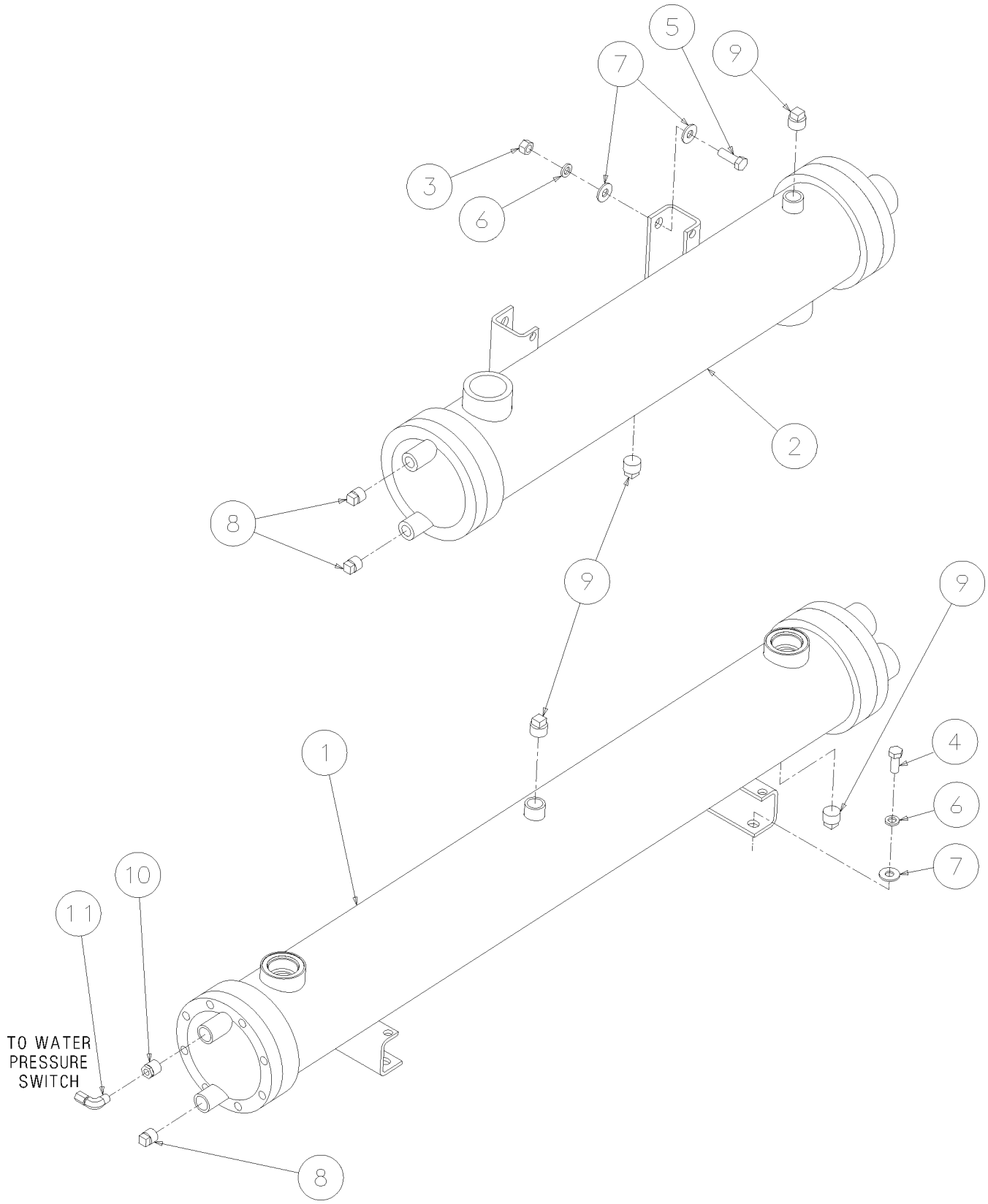
(I) For maintenance on air inlet valve assembly no. 02250138-707, order repair kit no. 02250112-533, or rebuild kit no. 022500112-534. **NOTE:** See footnote **(II)** below.

(II) When performing maintenance on inlet valve, if required, order gasket no. 242437-012 (Refer to Section *9.4, Air Inlet Sytem* for gasket location).

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.6 WATER COOLING SYSTEM



02250137-908R00

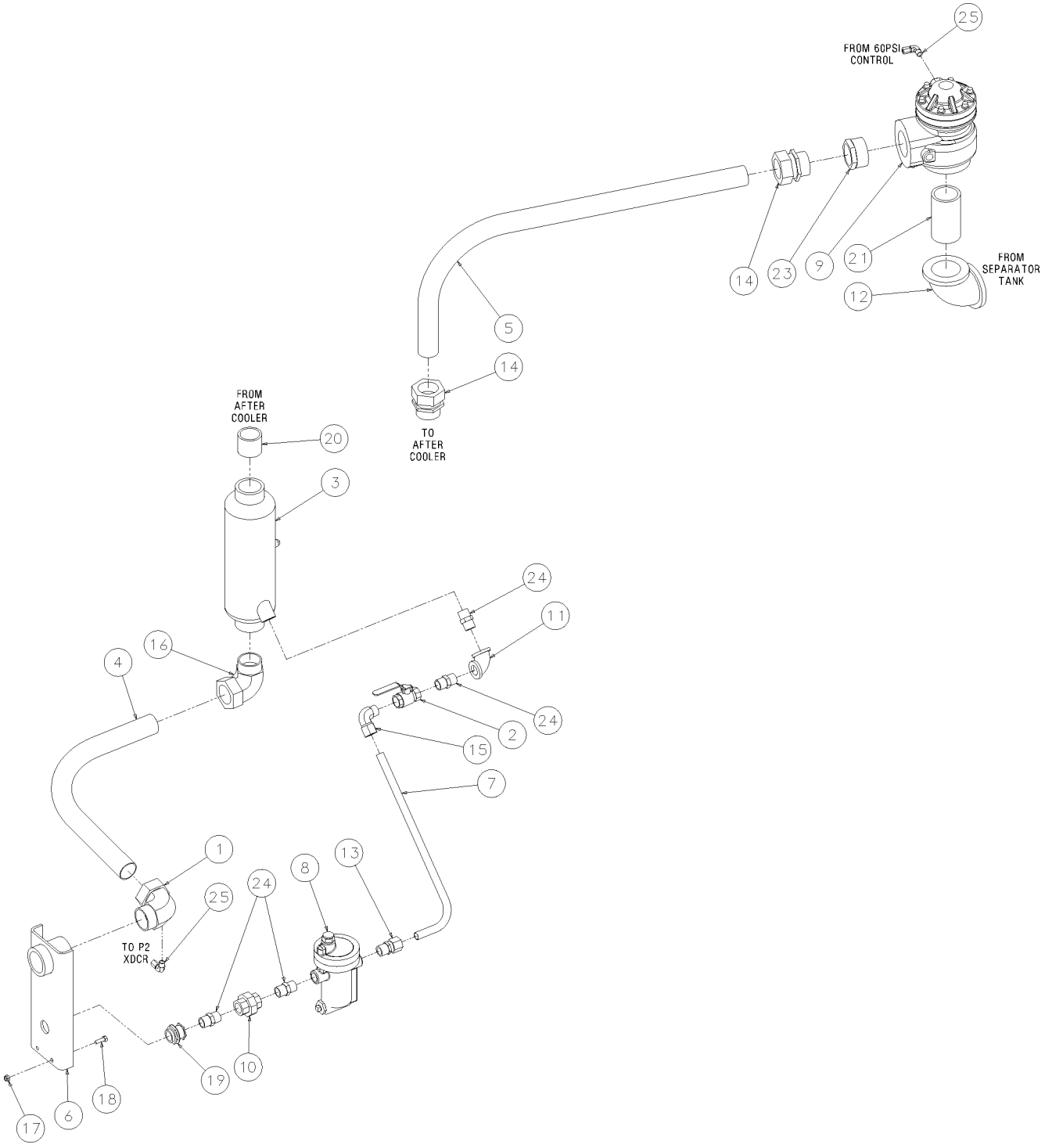
9.6 WATER COOLING SYSTEM

key number	*description*	*part number*	*quantity*
1	cooler, oil/wtr 06054 575# 300hp	02250138-166	1
2	cooler, air/wtr 06036 575# 300hp	02250138-167	1
3	nut, hex pltd 1/2-13	825208-448	4
4	capscr, hex gr5 1/2-13 x 1 1/4	829108-125	4
5	capscr, hex gr5 1/2-13 x 1 1/2	829108-150	4
6	washer, spr lock reg pltd 1/2	837808-125	8
7	washer, pl-b reg pltd 1/2	838208-112	12
8	plug, pipe 1/2” 3000# stl plt	866900-020	3
9	plug, pipe 3/4” 3000# stl plt	866900-030	4
10	bushing, red pltd 1/2 x 1/4	867102-010	1
11	elbow, tube 90 deg m 1/4 x 1/4 ss	877004-025	1

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.7 AIR PIPING SYTEM



02250137-910R01

9.7 AIR PIPING SYTEM

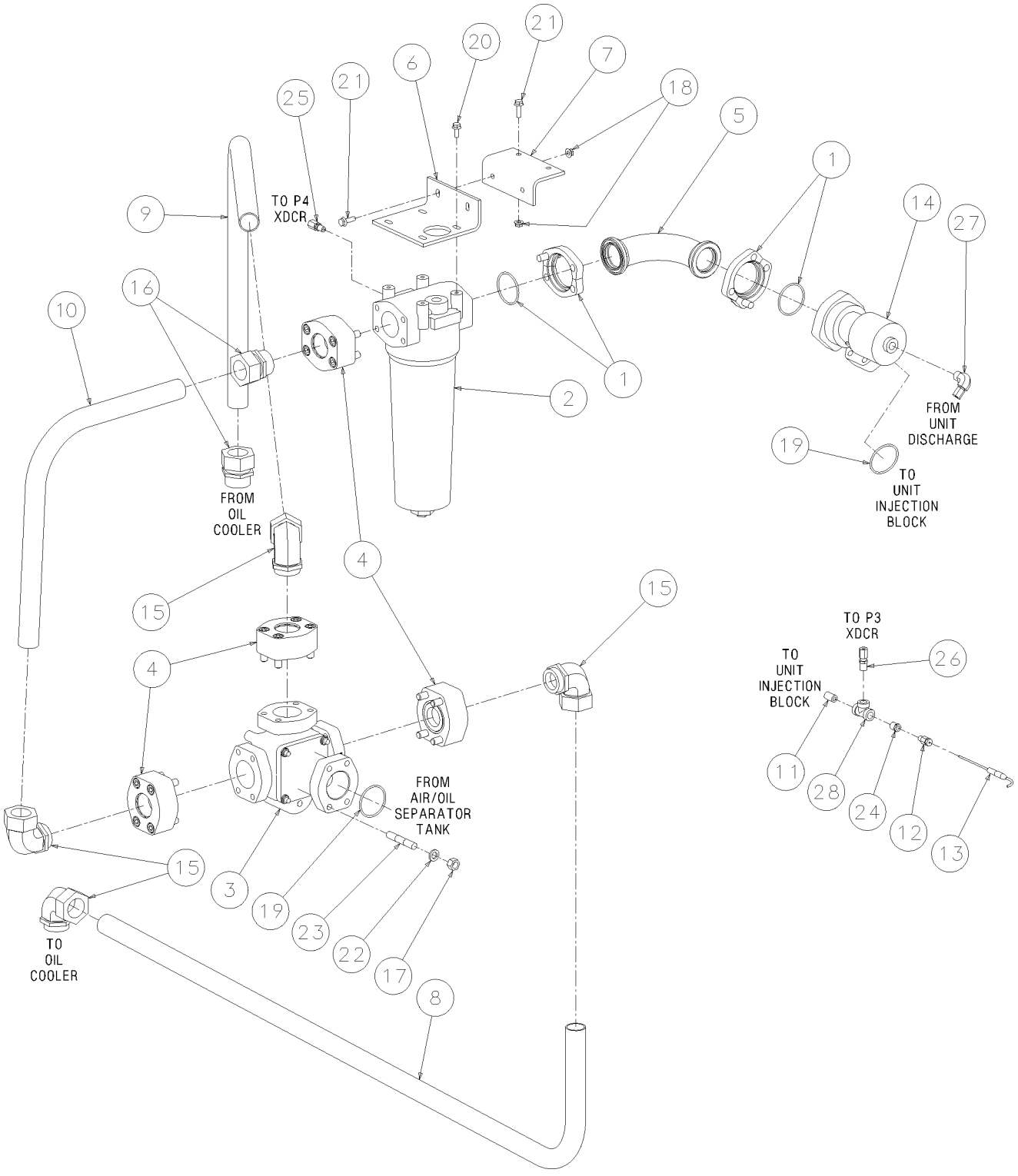
key number	*description*	*part number*	*quantity*
1	elbow, tube m-2 x 2 w/1/4”tap	02250110-165	1
2	valve, ball 3/4” npt apollo	02250117-792	1
3	separator, water vert ls20t 600#	02250138-527	1
4	tube, msep/out ls20t wc 575#	02250138-577	1
5	tube, mpv/clr ls20t wc 575#	02250138-579	1
6	plate, cust conn ls20t 2”npt	02250138-589	1
7	tube, msep/custconn ls20t 575#	02250138-631	1
8	trap, auto 3/4”npt 400# max	250006-639	1
9	sub assembly, vlv min press/chk asm(2.5”) **(I)**	250031-852	1
10	union, pipe-ss seat 3/4 3000#	807100-030	1
11	elbow, pipe 90 deg 3000# 3/4”	807400-030	1
12	elbow, pipe 90 deg 3000# 2 1/2”	807400-100	1
13	connector, tube-m 3/4 x 3/4	810212-075	1
14	connector, tube-m 2 x 2	810232-200	2
15	elbow, tube 90 deg m 3/4 x 3/4	810512-075	1
16	elbow, tube 90 deg m 2 x 2	810532-200	1
17	nut, hex f pltd 5/16-18	825305-283	2
18	capscr, hex gr5 5/16-18 x 1	829105-100	2
19	bulkhead, pipe 3/4” npt	841500-012	1
20	nipple, pipe-xs plt 2 x cl	866432-000	1
21	nipple, pipe-xs plt 2 1/2 x 5	866440-050	1
22	plug, pipe 1/4” 3000# stl plt	866900-010	1
23	bushing, red pltd 2 1/2 x 2	867110-080	1
24	nipple, pipe-hx pltd 3/4 x 3/4	868512-075	4
25	elbow, tube 90 deg m 1/4 x 1/4 ss	877004-025	2

(I) For maintenance on minimum pressure check valve sub-assembly no. 250031-852, please consult factory.

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.8 FLUID PIPING SYSTEM



02250137-912R01

9.8 FLUID PIPING SYSTEM

key number	*description*	*part number*	*quantity*
1	flange, kit sae splt 2” - viton	02250099-415	2
2	filter, oil assy parker **(I)**	02250111-592	1
3	valve assembly, thermo 250 deg 600 psig **(II)**	02250111-620	1
4	flange, adapter 2”split flg/1-7/8”st	02250120-980	4
5	tube, adapter 2”sae flg 90deg 575#	02250138-309	1
6	mt.fltr 80cn full flow 575#	02250138-316	1
7	mount, fltr plt 80cn 575#	02250138-317	1
8	tube, thrmvlv/clr ls20t 575#	02250138-571	1
9	tube, clr/thrmvlv ls20t wc 575#	02250138-573	1
10	tube, thrmvlv/fltr ls20t wc 575#	02250138-575	1
11	nipple, pipe-xs 316s 1/4 x cl	250019-142	1
12	fitting, compress non-adj d	250028-633	1
13	probe, rtd 100 ohm plat 3.5”x 12ft	250039-909	1
14	valve, 2” oil stop 4-bolt flange **(III)**	250041-069	1
15	elbow, tube str thrd 1 1/2 x 1 7/8	811624-188	4
16	connector, tube str thd 1 1/2 x 1 7/8	811824-188	2
17	nut, hex pltd 1/2-13	825208-448	4
18	nut, hex f pltd 5/16-18	825305-283	4
19	o-ring, viton 2 1/4 x 1/8”	826502-228	2
20	screw, hex ser washer 5/16-18 x 3/4	829705-075	4
21	screw, hex ser washer 5/16-18 x 1	829705-100	4
22	washer, spr lock reg pltd 1/2	837808-125	4
23	stud, threaded 1/2-13 x 3	839408-030	4
24	bushing, red pltd 1/4 x 1/8	867100-005	1
25	connector, tube-m 1/4 x 1/8 ss	876804-012	1
26	connector, tube-m 1/4 x 1/4 ss	876804-025	1
27	elbow, tube 90 deg m 1/4 x 3/8 ss	877004-038	1
28	tee, pipe 1/4” 2000# ss	878900-010	1

(I) For maintenance on oil filter assembly no. 02250111-592, order repair kit no. 250031-850.

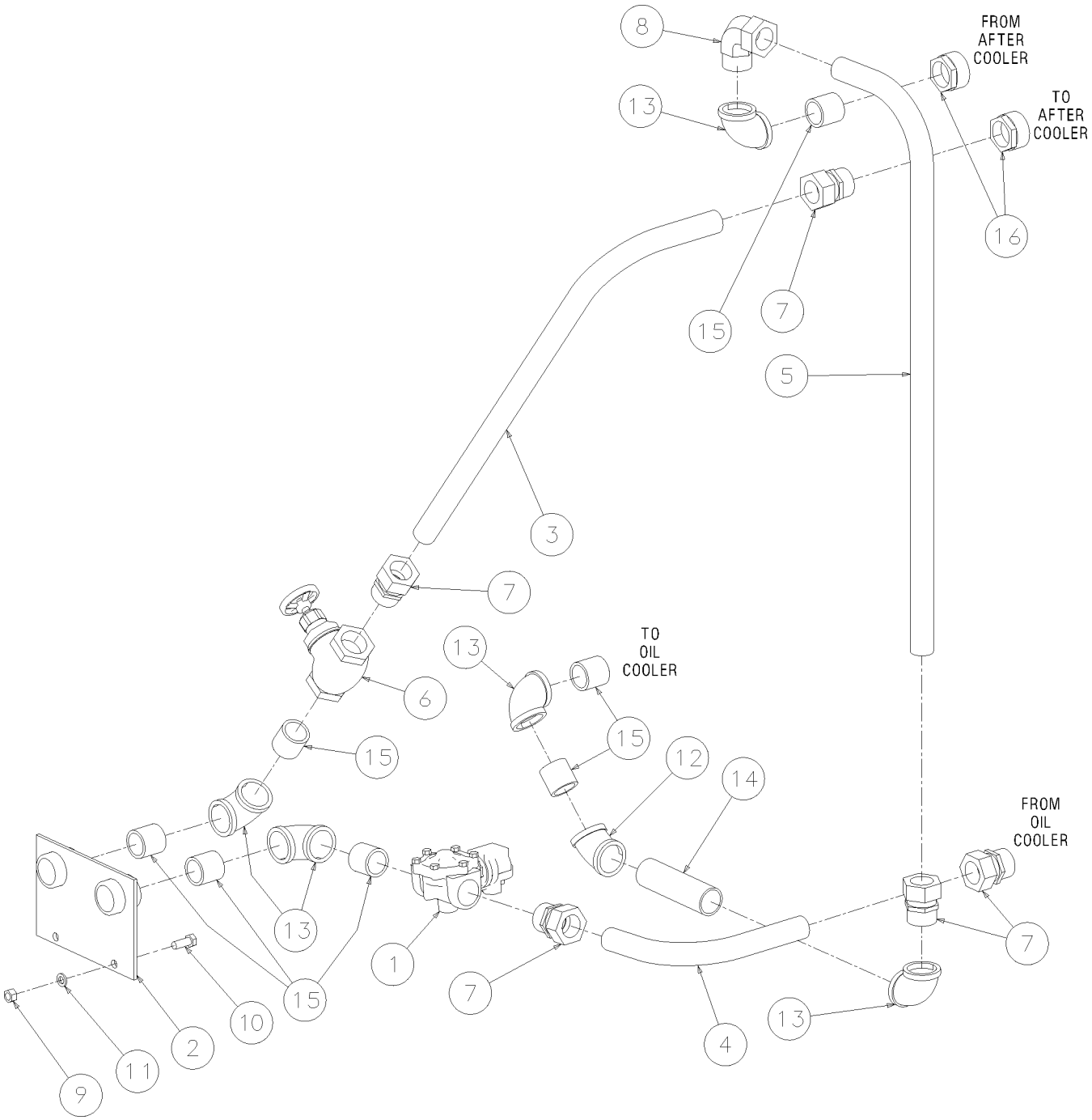
(II) For maintenance on thermal valve assembly no. 02250111-620, order repair kit no. 02250111-622.

(III) for maintenance on fluid stop valve no. 250041-069, order repair kit no. 02250051-747.

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.9 WATER PIPING SYSTEM



02250139-798R00

9.9 WATER PIPING SYSTEM

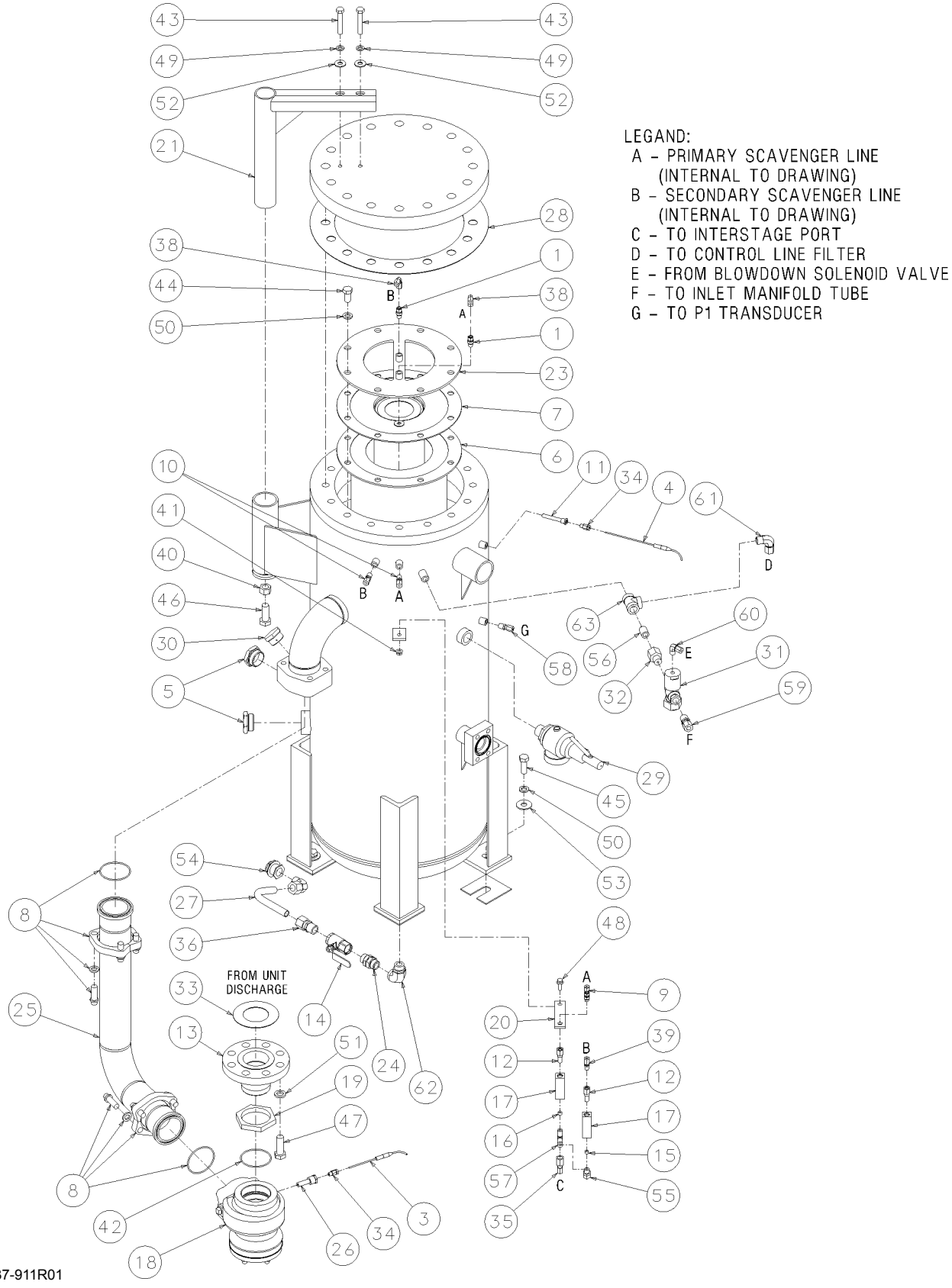
key number	*description*	*part number*	*quantity*
1	valve, solenoid 2w nc 1 1/2” 150#vac n4 **(I)**	02250125-653	1
2	support, water conn 1-1/2”npt	02250138-590	1
3	tube, clg wtr in ls20t-200/300	02250139-805	1
4	tube, clg wtr out ls20-200/300	02250139-807	1
5	tube, clr/clr ls20t-200/300 575	02250139-809	1
6	valve, globe 1-1/2” 125lb	047834	1
7	connector, tube-m 1 1/2 x 1 1/2	810224-150	5
8	elbow, tube 90 deg m 1 1/2 x 1 1/2	810524-150	1
9	nut, hex pltd 1/2-13	825208-448	2
10	capscr, hex gr5 1/2-13 x 1 1/4	829108-125	2
11	washer, spr lock reg pltd 1/2	837808-125	2
12	elbow, pipe 45 deg plt 1 1/2”	866115-060	1
13	elbow, pipe 90 deg plt 1 1/2”	866215-060	5
14	nipple,pipe pltd 1 1/2 x 6 1/2	866324-065	1
15	nipple, pipe-xs plt 1 1/2 x cl	866424-000	7
16	bushing, red pltd 2 x 1 1/2	867108-060	2

(I) For maintenance on solenoid valve no. 02250125-653, order repair kit no. 02250125-843, and replacement coil no. 02250125-855.

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.10 DISCHARGE SYSTEM



02250137-911R01

9.10 DISCHARGE SYSTEM

key number	*description*	*part number*	*quantity*
1	connector, flex 1/4t x 1/4p	020169	2
2	shim, motor mtg 32e .1300	022031-130	4
3	probe, rtd 100 ohm plat 3.5”x 20ft	02250044-985	1
4	probe, rtd 100 ohm plat 6”x 12ft	02250058-087	1
5	plug, sight glass 1-7/8” sae	02250097-611	2
6	separator, air/oil primary ls-12/16 **(I)**	02250100-753	1
7	separator, air/oil secondary ls-12/16 **(I)**	02250100-754	1
8	flange, kit sae splt 3” - viton	02250100-926	2
9	connector, tube male bhd 1/4 x sae	02250101-490	1
10	connector, tube oil return 1/4 x 1/4	02250108-700	2
11	sleeve, rtd ls20-100 out housing	02250116-089	1
12	filter, asembly genisis filter **(II)**	02250117-782	2
13	adapter, discharge vlv m85 ddh204 hp	02250124-030	1
14	valve, ball 3/4”sae x 3/4”npt	02250125-221	1
15	orifice, plug brass 1/8”npt x 1/32”	02250125-774	1
16	orifice, plug brass 1/8”npt x 3/32”	02250125-776	1
17	sightglass, orf block sae	02250126-129	2
18	valve, assy 3”x m85 **(III)**	02250127-507	1
19	nut, hex m85-2 6h	02250130-997	1
20	plate, scav line assy - ls20t	02250132-464	1
21	boom, ls16t sump head lifting	02250135-164	1
22	tank, air-oil separator ls20t 575#	02250137-929	1
23	plate, separator hold down ls20t 575#	02250138-287	1
24	adapter, sae 1 1/16-12 x 1 1/16-12	02250138-372	1
25	pipe, disch/tnk ls20t 575#	02250138-446	1
26	sleeve, rtd 1/2”npt ls20t disch	02250138-457	1
27	tube, tank drn ls20t 575#	02250138-748	1

(Continued on page 63)

(I) For maintenance on separator, order primary replacement element/gasket kit no. 02250122-833, and secondary replacement element no. 02250122-832.

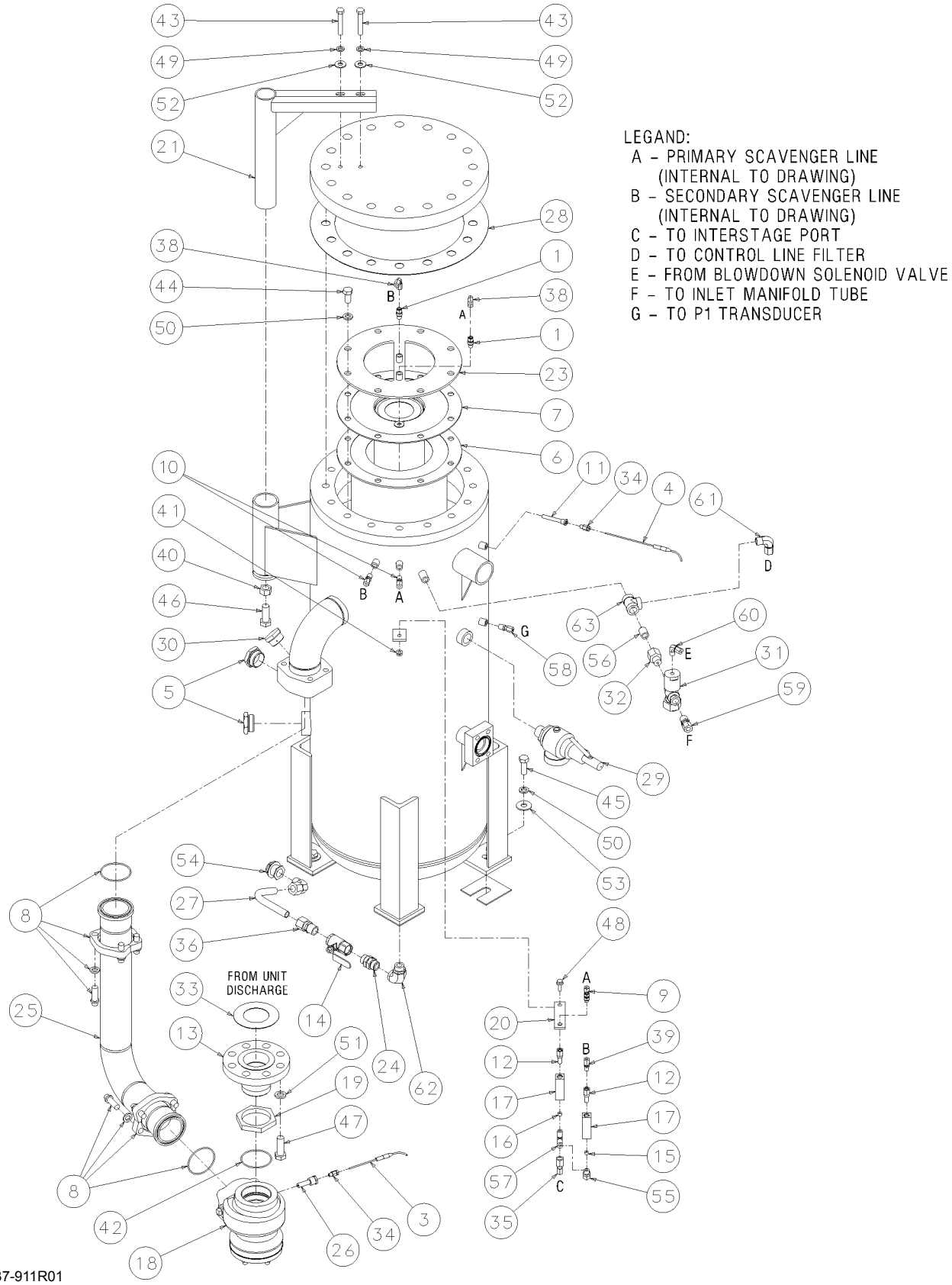
(II) For maintenance on filter assembly no. 02250117-782, order replacement filter assembly no. 02250117-782.

(III) For maintenance on discharge check valve assembly no. 02250127-507, order repair kit no. 606208-001.

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.10 DISCHARGE SYSTEM



02250137-911R01

9.10 DISCHARGE SYSTEM (CONTINUED)

key number	*description*	*part number*	*quantity*
28	gasket, sep tnk ls20t 575#	02250138-751	1
29	valve, relief 1 x 1-1/2 575# ls20t	02250140-330	1
30	plug, o-ring boss sae 1 1/4	040029	1
31	valve, pneu (nc) 500# rn bdv **(IV)**	045116	1
32	orifice, 1/2m x 1/2f x .156	234125-156	1
33	gasket, asa flange 300# 2-1/2”	240620-007	1
34	fitting, compress non-adj d	250028-633	2
35	connector, tube-f 1/4 x 1/4	810104-025	1
36	connector, tube-m 3/4 x 3/4	810212-075	1
37	elbow, tube 90 deg m 3/4 x 3/4	810512-075	1
38	elbow, tube union 1/4	811204-025	2
39	connector, tube str thd 1/4 x 7/16	811804-044	1
40	nut, hex pltd 3/4-10	825212-665	1
41	nut, hex f pltd 3/8-16	825306-347	1
42	o-ring, viton 3 1/4 x 1/8”	826502-236	1
43	capscr, hex gr5 1/2-13 x 3	829108-300	2
44	capscr, hex gr5 5/8-11 x 1 1/4	829110-125	8
45	capscr, hex gr5 5/8-11 x 1 3/4	829110-175	4
46	capscr, hex gr5 3/4-10 x 2	829112-200	1
47	capscr, hex gr5 3/4-10 x 2 1/4	829112-225	8
48	screw, hex ser washer 3/8-16 x 1	829706-100	1
49	washer, spr lock reg pltd 1/2	837808-125	2
50	washer, spr lock reg pltd 5/8	837810-156	12
51	washer, spr lock reg pltd 3/4	837812-188	8
52	washer, pl-b reg pltd 1/2	838208-112	2
53	washer, pl-b reg pltd 5/8	838210-112	4
54	bulkhead, pipe 3/4” npt	841500-012	1
55	elbow, pipe 90m/f 1/4 x 1/4	860704-025	1
56	nipple, pipe-xs plt 1/2 x cl	866408-000	1
57	tee, male pipe brass 1/4	869825-025	1
58	connector, tube-m 1/4 x 1/4 ss	876804-025	1
59	connector, tube-m 1/2 x 1/2 ss	876808-050	1

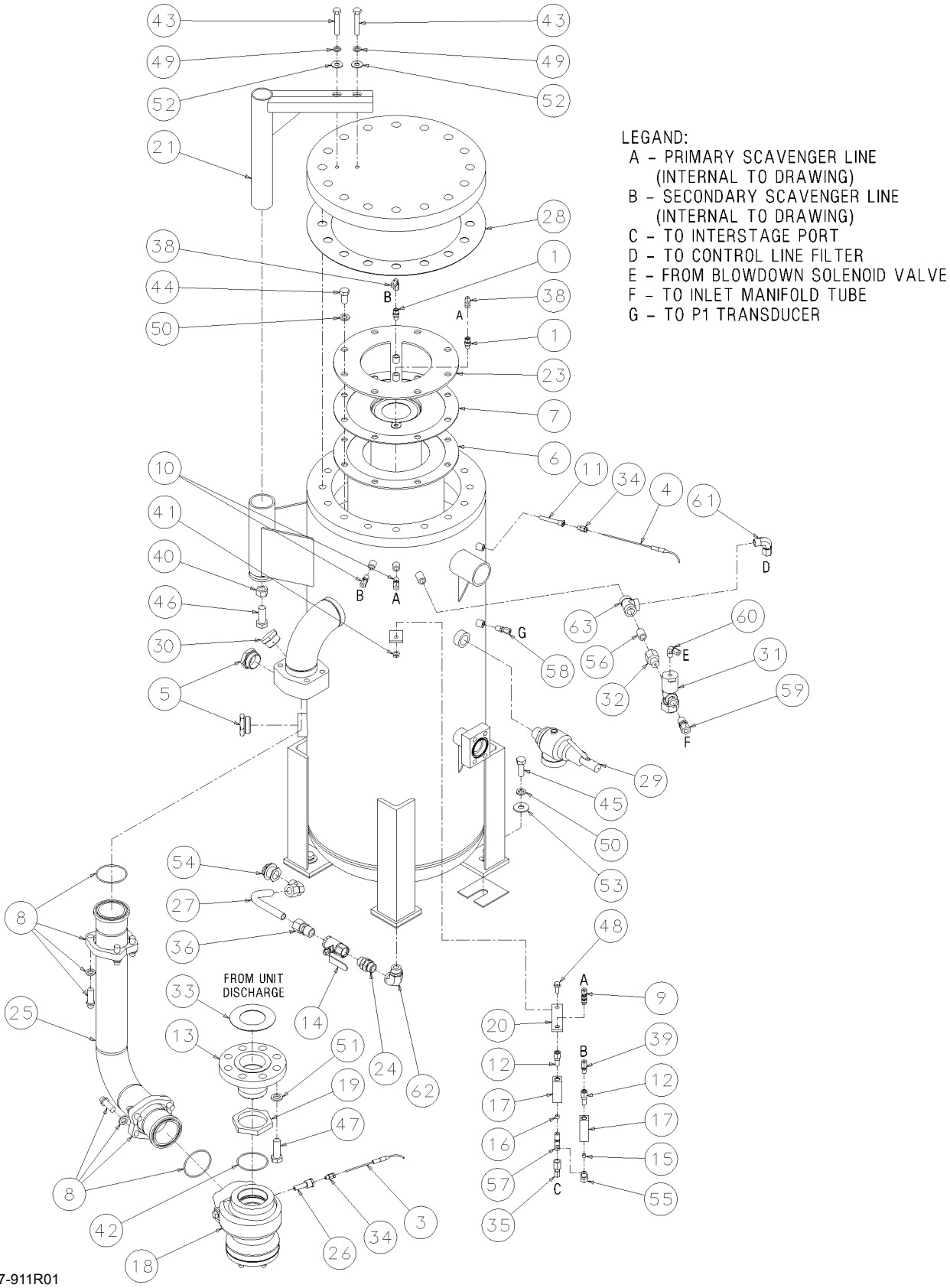
(Continued on page 65)

(IV) For maintenance on pneumatic valve no. 045116, order repair kit no. 047524.

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.10 DISCHARGE SYSTEM



02250137-911R01

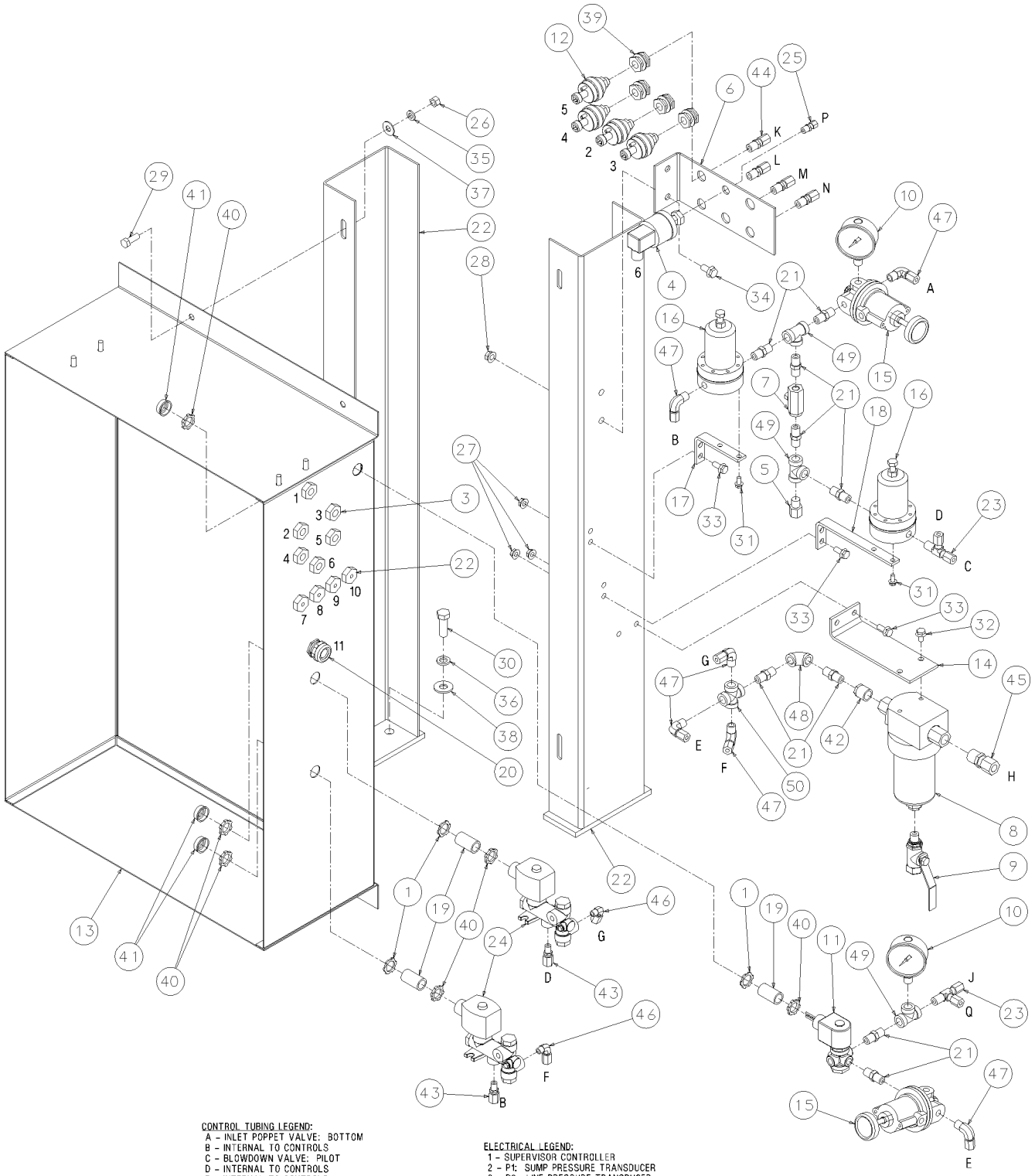
9.10 DISCHARGE SYSTEM (CONTINUED)

key number	*description*	*part number*	*quantity*
60	elbow, tube 90 deg m 1/4 x 1/4 ss	877004-025	1
61	elbow, tube 90 deg m 1/2 x 1/2 ss	877008-050	1
62	elbow, female str thd 1 1/16	878312-106	1
63	tee, pipe 1/2” 2000# ss	878900-020	1

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.11 CONTROL/START SYSTEM



CONTROL TUBING LEGEND:
A - INLET POPPET VALVE: BOTTOM
B - INTERNAL TO CONTROLS
C - BLOWDOWN VALVE: PILOT
D - INTERNAL TO CONTROLS
E - INTERNAL TO CONTROLS
F - INTERNAL TO CONTROLS
G - INTERNAL TO CONTROLS
H - DRY SIDE: AIR/OIL SEPARATOR TANK
J - INLET POPPET VALVE: BACK
K - HIGH OIL PRESSURE: OIL FILTER INLET
L - LOW OIL PRESSURE: UNIT INJECTION BLOCK
M - HIGH SUMP/WET SIDE: AIR/OIL SEPARATOR TANK
N - MOISTURE SEPARATOR OUTLET
P - INLET AIR FILTER
Q - MINIMUM PRESSURE CHECK VALVE PILOT

ELECTRICAL LEGEND:
1 - SUPERVISOR CONTROLLER
2 - P1: SUMP PRESSURE TRANSDUCER
3 - P2: LINE PRESSURE TRANSDUCER
4 - P3: UNIT INJECTION PRESSURE TRANSDUCER
5 - P4: FILTER INJECTION PRESSURE TRANSDUCER
6 - INLET FILTER VACUUM SWITCH
7 - T1 RTD: UNIT DISCHARGE TEMPERATURE
8 - T2 RTD: DRY SIDE SUMP TEMPERATURE
9 - T3 RTD: UNIT INJECTION OIL TEMPERATURE
10 - T4 RTD: UNIT INTERSTAGE TEMPERATURE
11 - AIR COOLED PACKAGE: FAN MOTOR
(WATER COOLED PACKAGE: WATER PRESSURE SWITCH AND TUBE FITTING)

02250137-914R02

9.11 CONTROL/START SYSTEM

key number	*description*	*part number*	*quantity*
1	locknut, n4 conduit sealing	02250071-362	3
2	grip, cord n4 .125-.187 x 1/2”	02250071-379	4
3	grip, cord n4 .250-.375 x 1/2”	02250071-381	6
4	switch, vacuum 22”wc n4 6ft cable 5a	02250078-249	1
5	orifice, .040 1/4fnpt x 1/4mnpt	02250091-395	1
6	support, pressure transducer n4	02250102-631	1
7	valve, check 1/4”nptf viton seat	02250110-557	1
8	filter, coalescing 600 psig 350deg **(I)**	02250111-923	1
9	valve, ball 9/16” sae-m x 9/16”	02250116-974	1
10	gage, air press 2 1/2” 0-200 psi	02250117-009	2
11	valve, solenoid 3wno 1/4 235# n4 **(II)**	02250125-657	1
12	transducer, pressure 0-750psi 1-5vdc n4	02250134-099	4
13	starter assembly	consult factory	1
14	support, bracket fltr assy ls20t 575#	02250138-840	1
15	valve, pressure reducing 1/4” vit 2-150# **(III)**	02250139-030	2
16	valve, pressure regulator 1/4” 200-575#set **(IV)**	02250139-080	2
17	support, bracket vlv assy ls20t 575#	02250139-081	1
18	support, bracket vlv assy ls20t 575#	02250139-082	1
19	nipple, conduit 1/2 x 1.5”	250007-169	3
20	grip, cord so 12/4 st 1/2”	250018-495	1
21	nipple, hx tbe 316s 1/4”	250018-760	9
22	support, starter&clr 200hp	250022-657	2
23	tee, 1/4”t x m-rn 316ss	250041-911	2
24	valve, sol 3wno 1/8 8300 **(V)**	407390	2
25	connector, tube-m 1/4 x 1/8	813604-125	1
26	nut, hex pltd 3/8-16	825206-337	4
27	nut, hex f pltd 5/16-18	825305-283	6

(Continued on page 69)

(I) For maintenance on filter no. 02250111-923, order replacement element no. 02250111-924.

(II) For maintenance on solenoid valve no. 02250125-657, order repair kit no. 02250125-829, and replacement coil no. 02250125-861.

(III) For maintenance on pressure reducing valve no. 02250139-030, order repair kit no. 02250139-037.

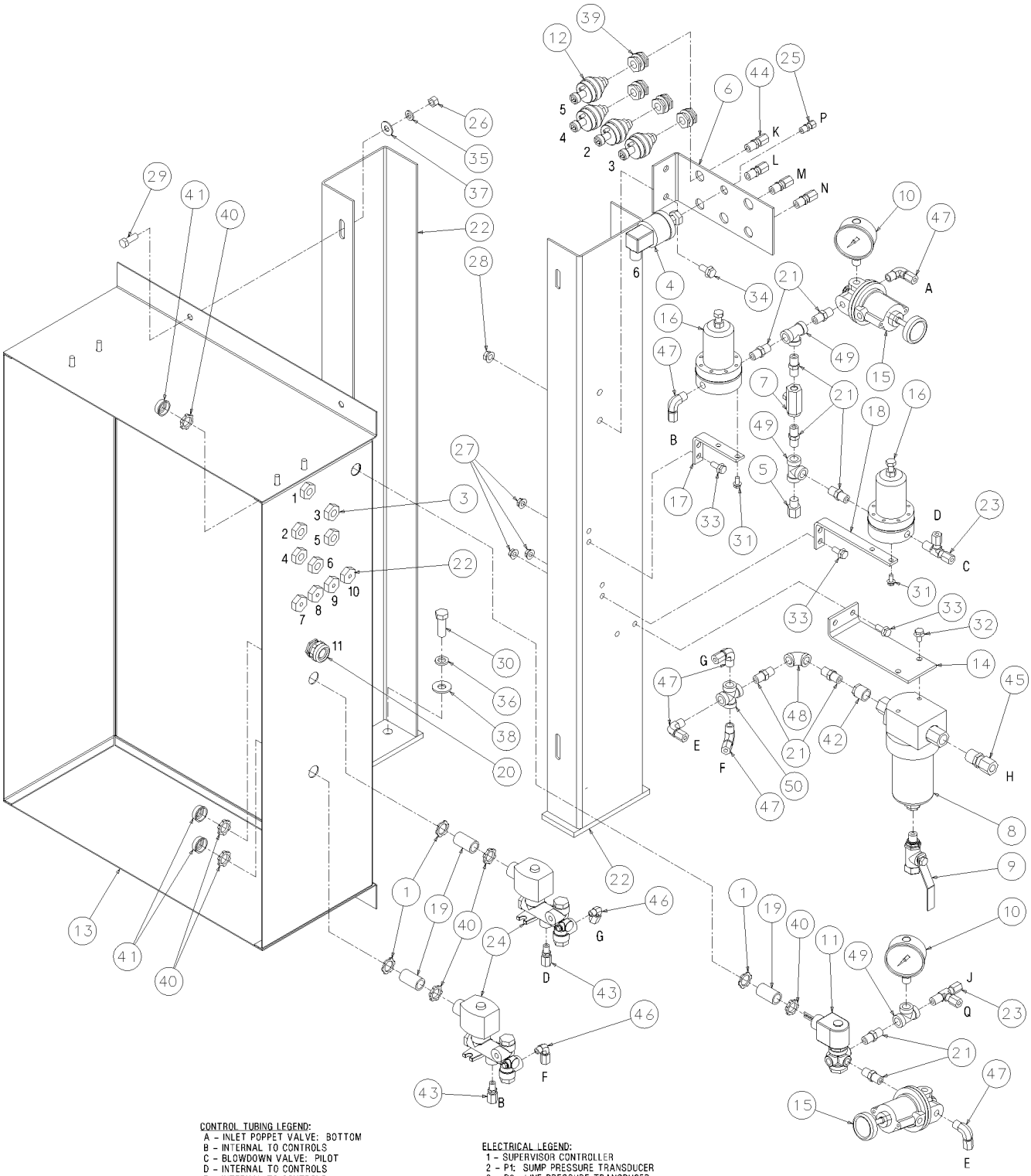
(IV) For maintenance on pressure regulator valve no. 02250139-080, order repair kit no. 02250145-534.

(V) For maintenance on solenoid valve no. 407390, order repair kit no. 02250053-830, and replacement coil no. 250031-431.

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.11 CONTROL/START SYSTEM



CONTROL TUBING LEGEND:
A – INLET POPPET VALVE: BOTTOM
B – INTERNAL TO CONTROLS
C – BLOWDOWN VALVE: PILOT
D – INTERNAL TO CONTROLS
E – INTERNAL TO CONTROLS
F – INTERNAL TO CONTROLS
G – INTERNAL TO CONTROLS
H – DRY SIDE: AIR/OIL SEPARATOR TANK
J – INLET POPPET VALVE: BACK
K – HIGH OIL PRESSURE: OIL FILTER INLET
L – LOW OIL PRESSURE: UNIT INJECTION BLOCK
M – HIGH SUMP/WET SIDE: AIR/OIL SEPARATOR TANK
N – MOISTURE SEPARATOR OUTLET
P – INLET AIR FILTER
Q – MINIMUM PRESSURE CHECK VALVE PILOT

ELECTRICAL LEGEND:
1 – SUPERVISOR CONTROLLER
2 – P1: SUMP PRESSURE TRANSDUCER
3 – P2: LINE PRESSURE TRANSDUCER
4 – P3: UNIT INJECTION PRESSURE TRANSDUCER
5 – P4: FILTER INJECTION PRESSURE TRANSDUCER
6 – INLET FILTER VACUUM SWITCH
7 – T1 RTD: UNIT DISCHARGE TEMPERATURE
8 – T2 RTD: DRY SIDE SUMP TEMPERATURE
9 – T3 RTD: UNIT INJECTION OIL TEMPERATURE
10 – T4 RTD: UNIT INTERSTAGE TEMPERATURE
11 – AIR COOLED PACKAGE: FAN MOTOR
(WATER COOLED PACKAGE: WATER PRESSURE SWITCH AND TUBE FITTING)

02250137-914R02

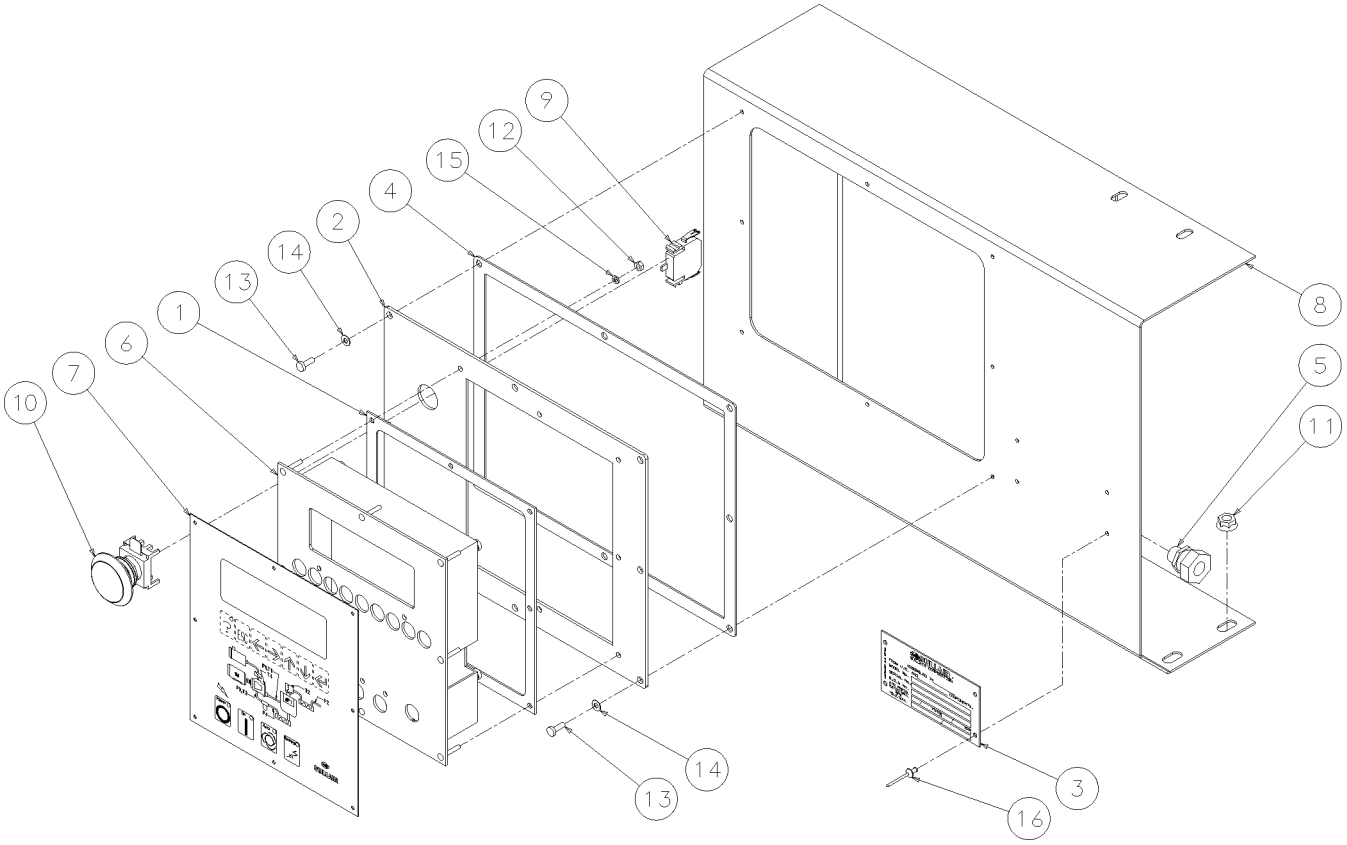
9.11 CONTROL/START SYSTEM (CONTINUED)

key number	*description*	*part number*	*quantity*
28	nut, hex f pltd 3/8-16	825306-347	2
29	capscr, hex gr5 3/8-16 x 1	829106-100	4
30	capscr, hex gr5 1/2-13 x 1 1/2	829108-150	4
31	screw, hex ser washer 1/4-20 x 1/2	829704-050	4
32	screw, hex ser washer 5/16-18 x 1/2	829705-050	2
33	screw, hex ser washer 5/16-18 x 3/4	829705-075	6
34	screw, hex ser washer 3/8-16 x 3/4	829706-075	2
35	washer, spr lock reg pltd 3/8	837806-094	4
36	washer, spr lock reg pltd 1/2	837808-125	4
37	washer, pl-b reg pltd 3/8	838206-071	4
38	washer, pl-b reg pltd 1/2	838208-112	4
39	bulkhead, pipe 1/4” npt	841500-004	4
40	locknut, conduit 1/2	847200-050	6
41	bushing, conduit plastic 1/2	848815-050	3
42	bushing, red pltd 1/2 x 1/4	867102-010	1
43	connector, tube-m 1/4 x 1/8 ss	876804-012	2
44	connector, tube-m 1/4 x 1/4 ss	876804-025	4
45	connector, tube-m 1/2 x 1/2 ss	876808-050	1
46	elbow, tube 90 deg m 1/4 x 1/8 ss	877004-012	2
47	elbow, tube 90 deg m 1/4 x 1/4 ss	877004-025	6
48	elbow, pipe 90 1/4” 2000# ss	878800-010	1
49	tee, pipe 1/4” 2000# ss	878900-010	3
50	cross, pipe 1/4” 2000# ss	879000-010	1

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.12 CONTROL PANEL



02250138-633R00

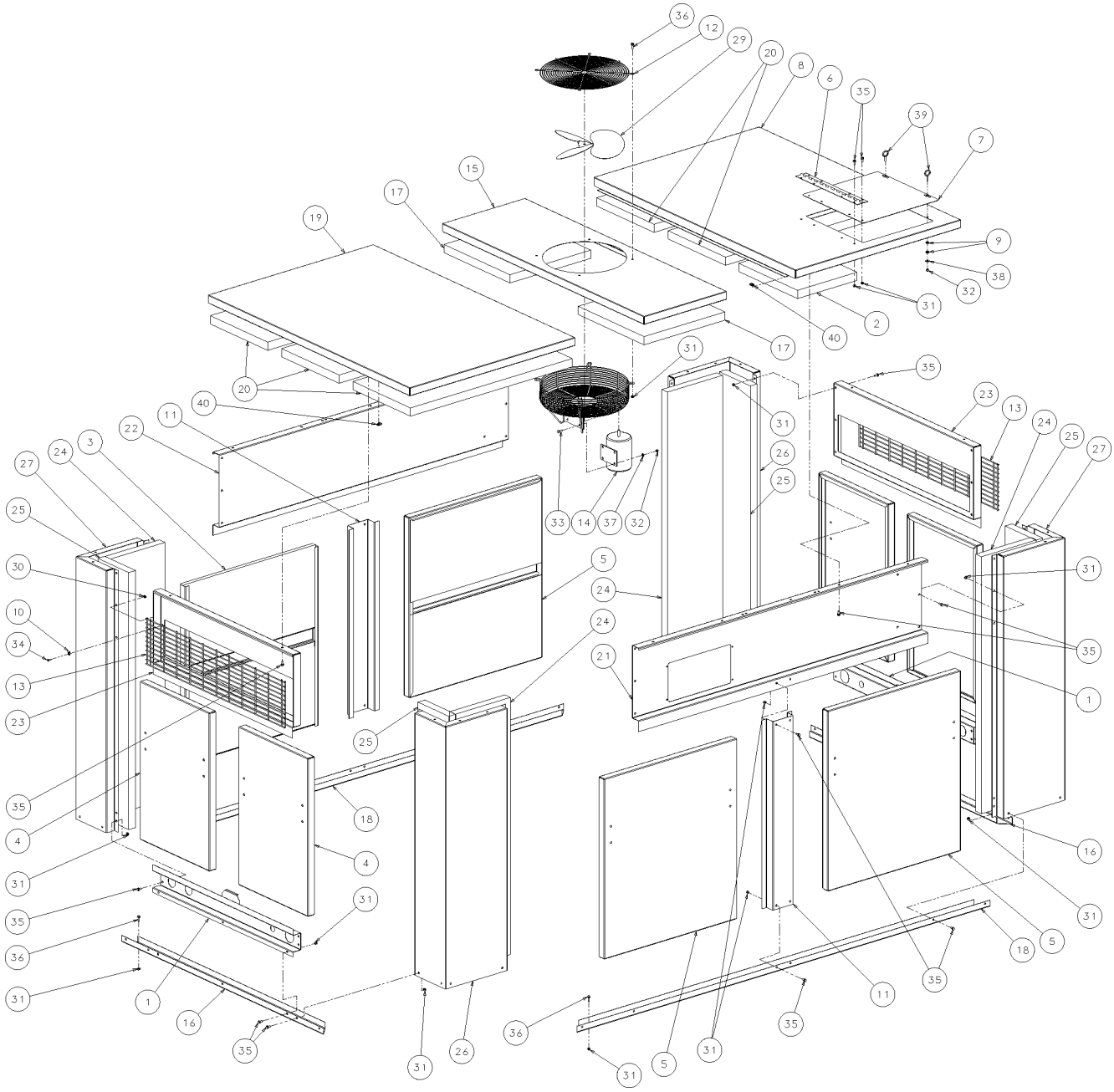
9.12 CONTROL PANEL

key number	*description*	*part number*	*quantity*
1	gasket, panel Supervisor II	02250048-822	1
2	panel, cover Supervisor II	02250054-854	1
3	nameplate, Sullair serial number	02250059-318	1
4	gasket, ctl pnl super II	02250071-093	1
5	grip, cord n4 .250-.375 x 1/2”	02250071-381	1
6	control, Supervisor III display mod	02250119-330	1
7	decal, Supervisor front	02250130-344	1
8	panel, instrument Supervisor	02250134-463	1
9	block, contact 1nc	250027-125	1
10	switch, per red push/pull e22	250028-588	1
11	nut, hex f pltd 5/16-18	825305-283	4
12	nut, hex metric m4 x .7	825904-070	8
13	screw, tc-f pan #8-32 x 1/2	835601-050	8
14	washer, lock ext tooth #8	838401-023	8
15	washer, spr lock-metric pltd m4	838804-090	8
16	rivet, pop 1/8 x 3/8	843102-038	4

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.13 ENCLOSURE



02250138-672R00

9.13 ENCLOSURE

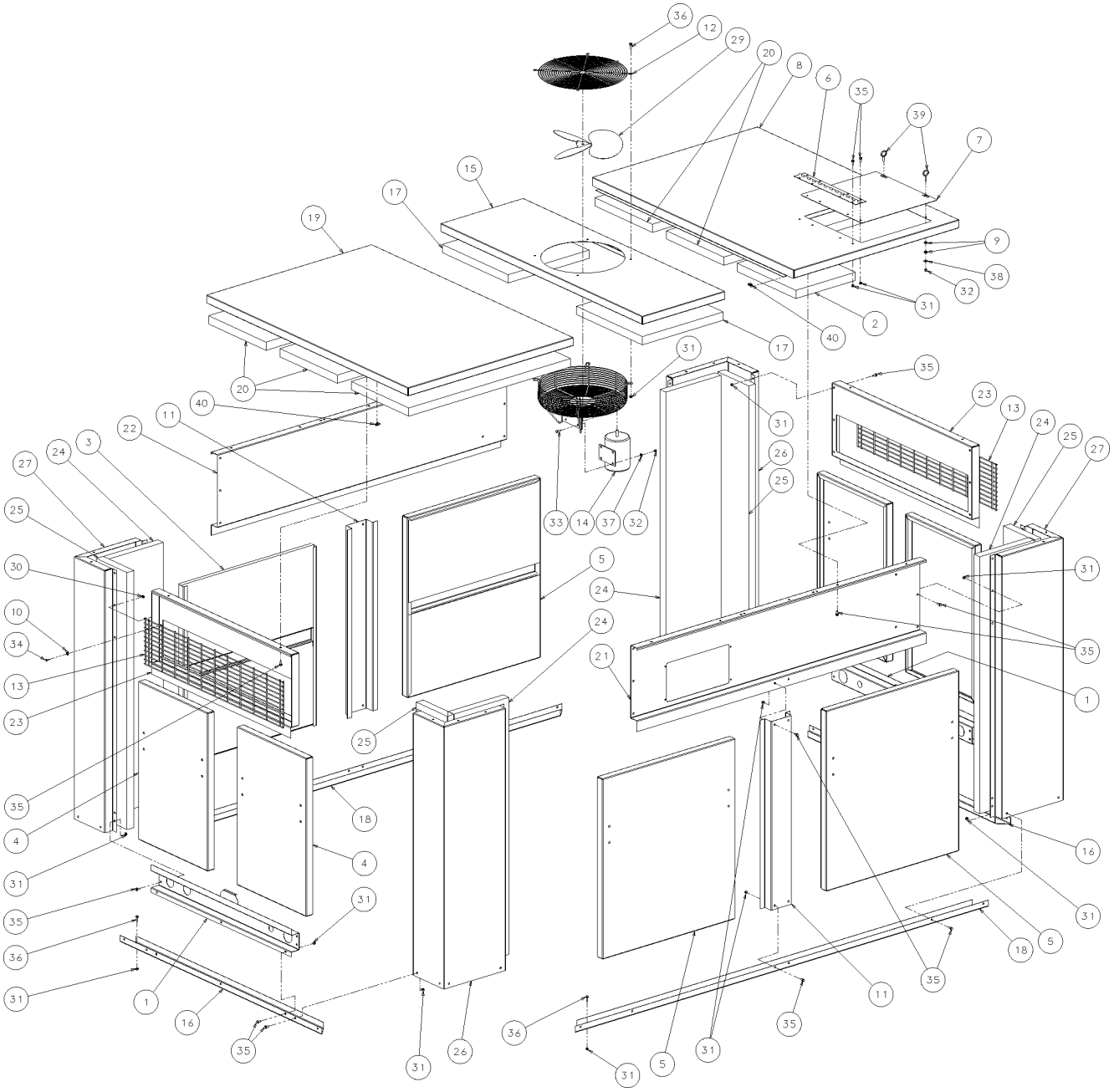
key number	*description*	*part number*	*quantity*
1	channel, assy air/wtr conn.	019603	2
2	panel, fiberglass 17.25 x 21 x 2	02250046-840	1
3	panel, assembly side 20/25 encl w/yd	02250103-203	1
4	panel, assembly end 20/25 enclosure	02250103-205	4
5	panel, assembly side 20/25 enclosure	02250116-349	3
6	hinge, door	02250125-402	1
7	door,can-ts20 elem roof access	02250132-711	1
8	panel, roof enclosure ls20t 575#	02250138-674	1
9	grommet,rubber	040125	4
10	clamp, wire	043194	8
11	support member, 20-25 encl	231516	2
12	guard,fan 20” diameter	241137	1
13	grille, enclosure end	249651	2
14	motor, .25hp 208-230/460	250000-031	1
15	panel, roof w/vent fan cut-out	250022-724	1
16	channel,btm sill ts20&ls25s encl	250022-772	2
17	panel, fiberglass 23.5 x 23.5 x 2	250023-576	2
18	channel,btm sill	250028-543	2
19	panel, roof encl 20/16	250028-574	1
20	panel, fiberglass 20.5 x 47 x 2	250029-247	5
21	panel,upper encl front	250041-072	1
22	panel,upper encl rear	250041-073	1
23	panel,upper encl end	250041-074	2
24	panel, fiberglass 16 x 62.5 x 2	250041-256	4
25	panel, fiberglass 11 x 62.5 x 2	250041-257	4
26	panel, corner encl upper lh	250042-879	2
27	panel, corner encl upper rh	250042-880	2
28	guard, exhaust fan 20”	410179	1
29	fan, 18” vent 1/2”-bore	410358	1
30	nut,hex f pltd 1/4-20	825304-236	8
31	nut,hex f pltd 5/16-18	825305-283	77
32	nut,hex locking 5/16-18	825505-166	6
33	capscr, hex gr5 5/16-18 x 1	829105-100	4

(Continued on page 75)

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.13 ENCLOSURE



02250138-672R00

9.13 ENCLOSURE (CONTINUED)

key number	*description*	*part number*	*quantity*
34	screw, hex ser washer 1/4-20 x 3/4	829704-075	8
35	screw, hex ser washer 5/16-18 x 3/4	829705-075	78
36	screw, hex ser washer 5/16-18 x 1	829705-100	14
37	washer, spr lock reg pltd 3/8	837806-094	4
38	washer, pl-b reg pltd 5/16	838205-071	2
39	eyebolt,5/16-18 x 1 1/8” pltd	839105-112	2
40	nut,retainer u 5/16-18 .140	861505-140	16

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.14 DECAL GROUP

9.14 DECAL GROUP

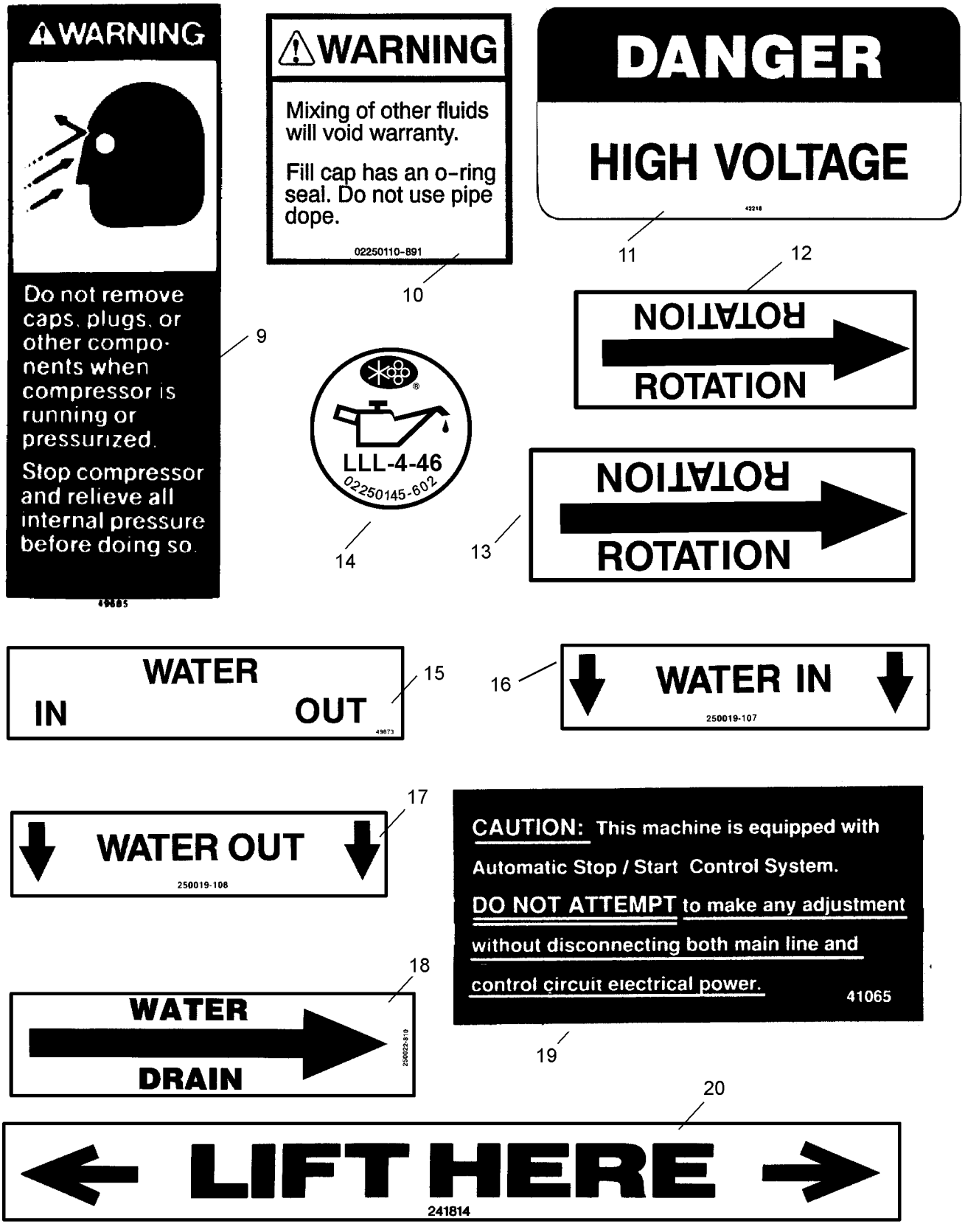
key number	*description*	*part number*	*quantity*
1	sign, air breathing (danger)	250027-935	1
2	sign, warning “food grade” lube	250003-144	1
3	sign, warning ground fault	049852	1
4	decal, warning auto start	250017-903	1
5	sign, danger electrocution	049850	1
6	sign, warning hot surfaces	407408	3
7	sign, warning sever - fan	049855	2
8	sign, warning sever-fan port	049965	2

(Continued on page 79)

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.14 DECAL GROUP



9.14 DECAL GROUP (CONTINUED)

key number	*description*	*part number*	*quantity*
9	sign, warning “compressor fluid fill cap”	049685	1
10	decal, warning mixing fluids	02250110-891	1
11	decal, danger high voltage	042218	1
12	decal, rotation	250021-564	1
13	decal, rotation	250021-286	1
14	decal, fluid LLL-4-46	02250145-602	1
15	decal, water inlet-outlet	049873	1
16	decal, water in	250019-107	1
17	decal, water out	250019-108	1
18	decal, water drain	250022-810	1
19	decal, autostart	041065	1
20	decal, fork lifting	241814	4

(Continued on page 81)

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.14 DECAL GROUP

21

22

This product was manufactured to the highest quality standards in an ISO 9001 certified system.
Ce produit a été fabriqué selon les normes les plus strictes de qualité dans un système ISO 9001 certifié.
Dieses Produkt wurde In einem mit ISO 9001 Zertifikat versehenenSystem hergestellt und entspricht den höchsten Qualitäts normen.
Dette produkt er fremstillet i overensstemmelse med de strengeste kvalitetsnormer i et ISO 9001 - certificeret anlæg.

ISO 9001

Το προϊόν αυτό έχει κατασκευαστεί σύμφωνα με τις πλέον αυστηρές προδιαγραφές ποιότητας σε εγκατάσταση πιστοποιημένη με ISO 9001.
Dit produkt werd volgens de hoogste kwaliteitseisen geproduceerd in een ISO-9001 gecertificeerd kwaliteitssysteem.
Este producto ha sido fabricado según los más altos estándares de calidad en un sistema con la certificación ISO 9001.
Questo prodotto é stato fabbricato secondo i più alti standard qualitativi, in un sistema omologato ISO 9001.
本產品是由取得最高品管水准 ISO 9001 資格之製造廠所生產

23

24

25

250036-457

1 CR	1 TR	LINE PRESS	INLET	P1
2 CR	2 TR	DISCH PRESS	T1	P2
3 CR	3 TR	WATER PRESS	T2	P3
4 CR	4 TR	SEPARATOR	T3	P4
5 CR	1 M	SPIRAL VALVE	T4	CB1
6 CR	2 M	INLET VALVE	T5	CB2
1 FU	3 M	CIS VALVE	T6	MCR
2 FU	4 M	OIL PRESS	ΔP1	SCR
3 FU	HCR	OIL FILTER	ΔP2	4FU

26

27

LS-20T

28

SULLAIR®

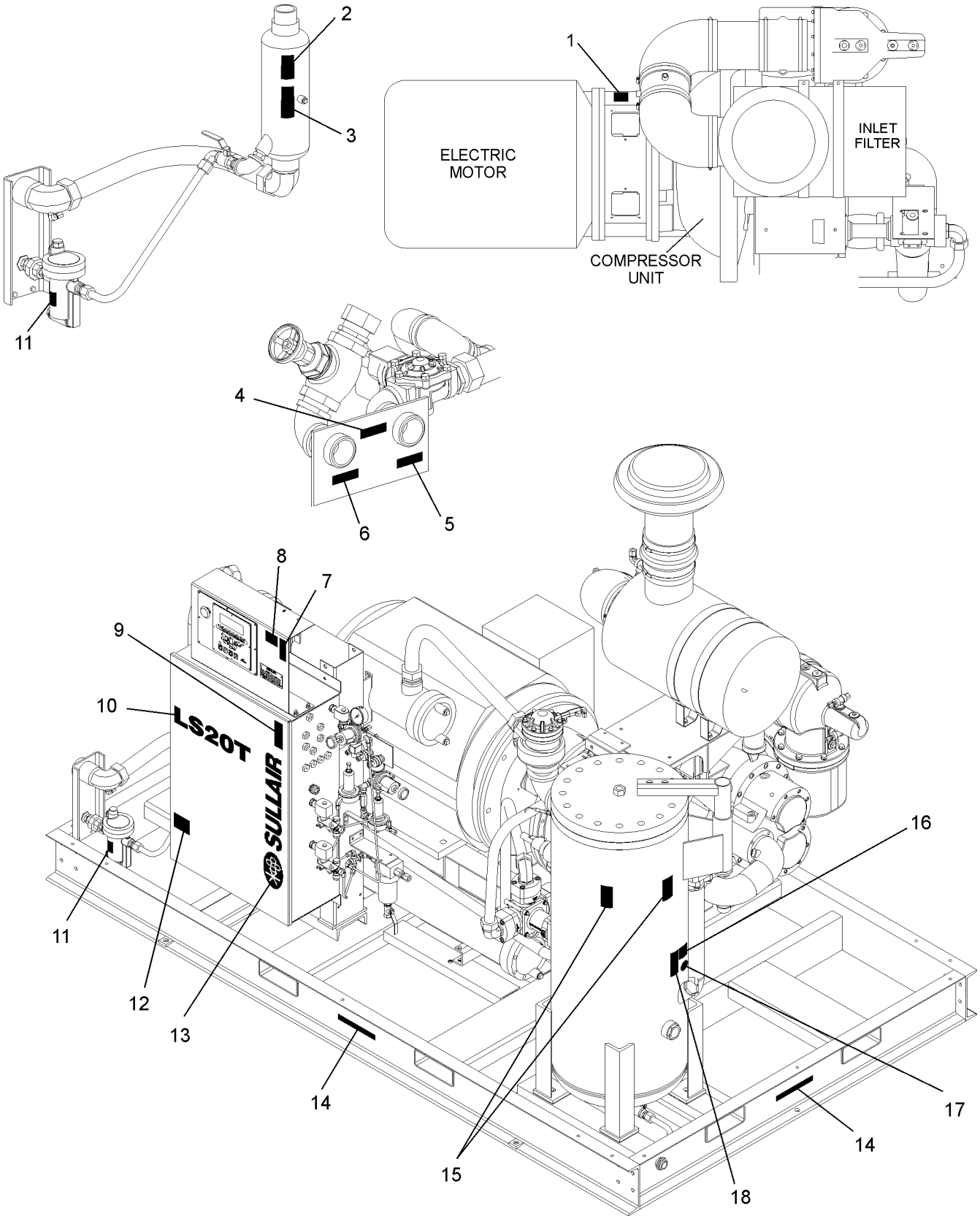
9.14 DECAL GROUP (CONTINUED)

key number	*description*	*part number*	*quantity*
21	decal, V 460/3/60 international	02250069-399	1
22	decal, ISO 9001	02250057-624	1
23	decal, protective earth ground	02250075-045	1
24	decal, earth ground	02250075-046	1
25	decal, PE designation	02250075-540	1
26	decal, electrical component ID	250038-457	1
27	decal, LS-20T black 4” ht.	02250071-287	1
28	decal, Sullair logo 4 x 32” black	02250059-060	1

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.15 DECAL LOCATION- OPEN MODEL



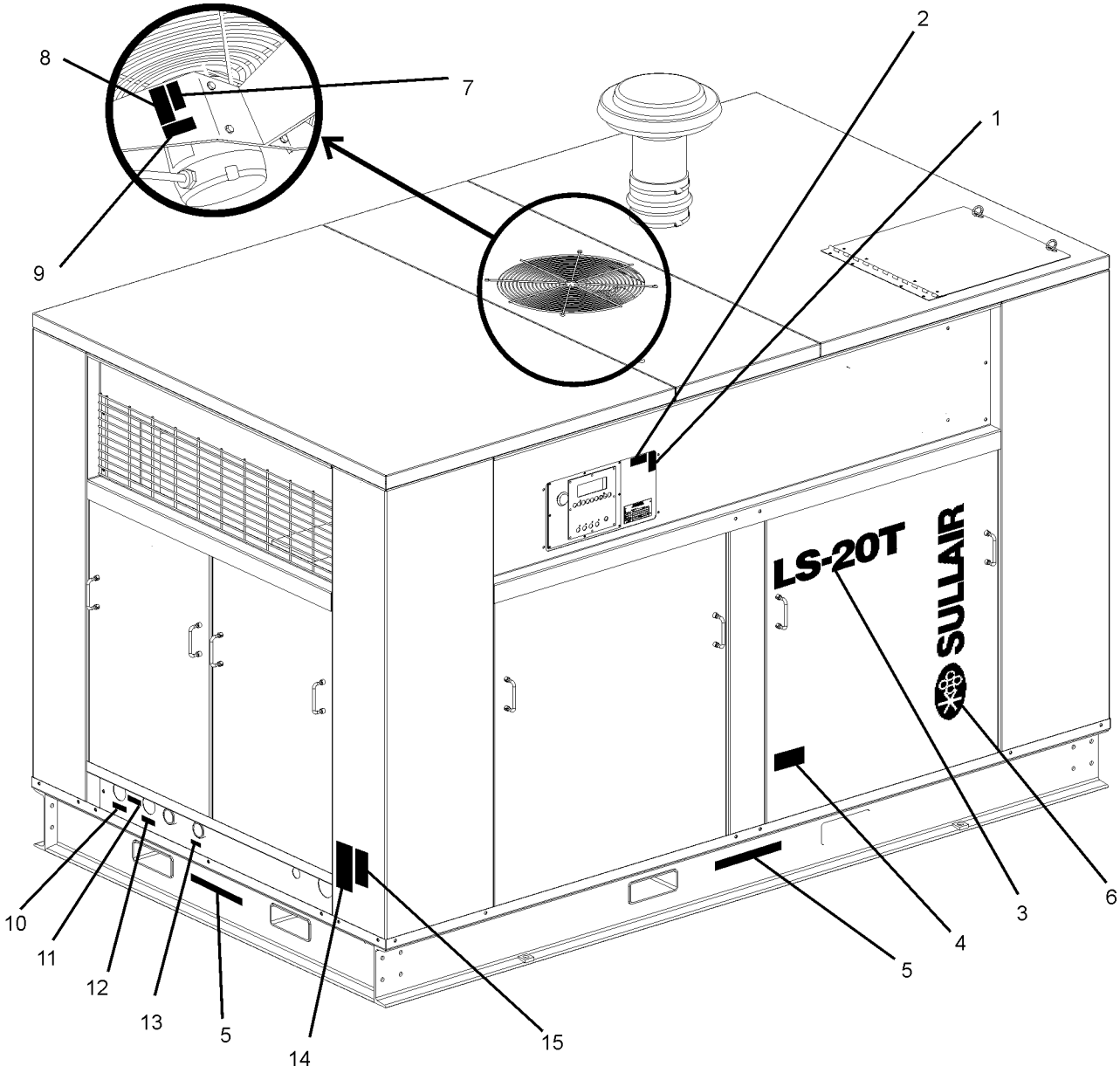
9.15 DECAL LOCATION- OPEN MODEL

key number	*description*	*part number*	*quantity*
1	sign, warning sever-fan port	049965	2
2	sign, air breathing (danger)	250027-935	1
3	sign, warning “food grade” lube	250003-144	1
4	decal, water inlet-outlet	049873	1
5	decal, water out	250019-108	1
6	decal, water in	250019-107	1
7	decal, warning auto start	250017-903	1
8	decal, autostart	041065	1
9	sign, warning sever - fan	049855	2
10	decal, LS20T black 4” ht.	02250071-287	1
11	decal, water drain	250022-810	1
12	decal, ISO 9001	02250057-624	1
13	decal, Sullair logo 4 x 32” black	02250059-060	1
14	decal, fork lifting	241814	4
15	sign, warning hot surfaces	407408	3
16	decal, warning mixing fluids	02250110-891	1
17	decal, fluid LLL-4-46	02250145-602	1
18	sign, warning “compressor fluid fill cap”	049685	1

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.16 DECAL LOCATION- ENCLOSED MODEL



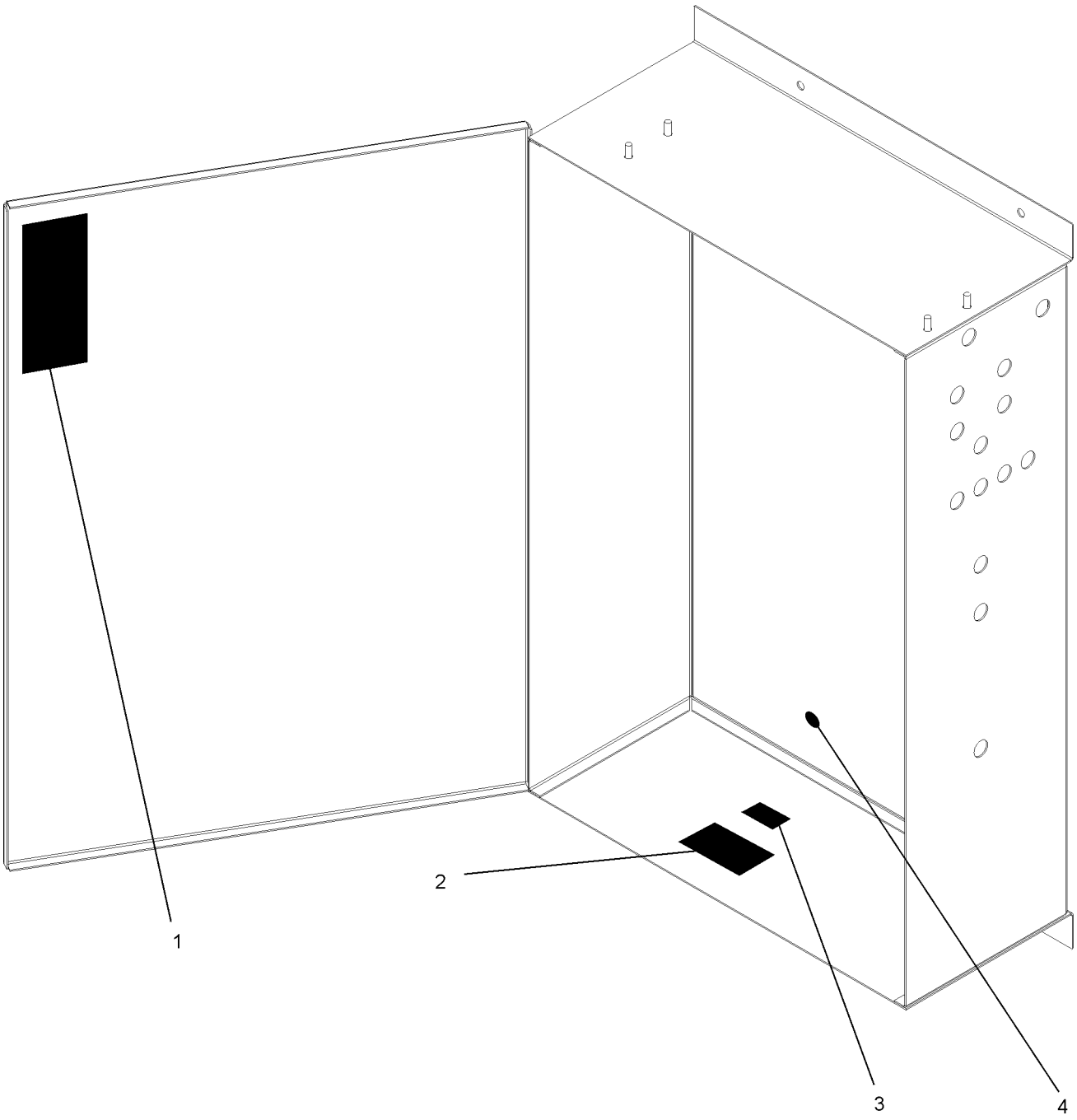
9.16 DECAL LOCATION- ENCLOSED MODEL

key number	*description*	*part number*	*quantity*
1	decal, warning auto start	250017-903	1
2	decal, autostart	041065	1
3	decal, LS20T black 4" ht.	02250071-287	1
4	decal, ISO 9001	02250057-624	1
5	decal, fork lifting	241814	4
6	decal, Sullair logo 4 x 32" black	02250059-060	1
7	sign, warning sever-fan port	049965	2
8	sign, warning "compressor fluid fill cap"	049685	1
9	decal, rotation	250021-564	1
10	decal, water in	250019-107	1
11	decal, water inlet-outlet	049873	1
12	decal, water out	250019-108	1
13	decal, water drain	250022-810	1
14	sign, warning "food grade" lube	250003-144	1
15	sign, air breathing (danger)	250027-935	1

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.17 DECAL LOCATION- CONTROL BOX



9.17 DECAL LOCATION- CONTROL BOX

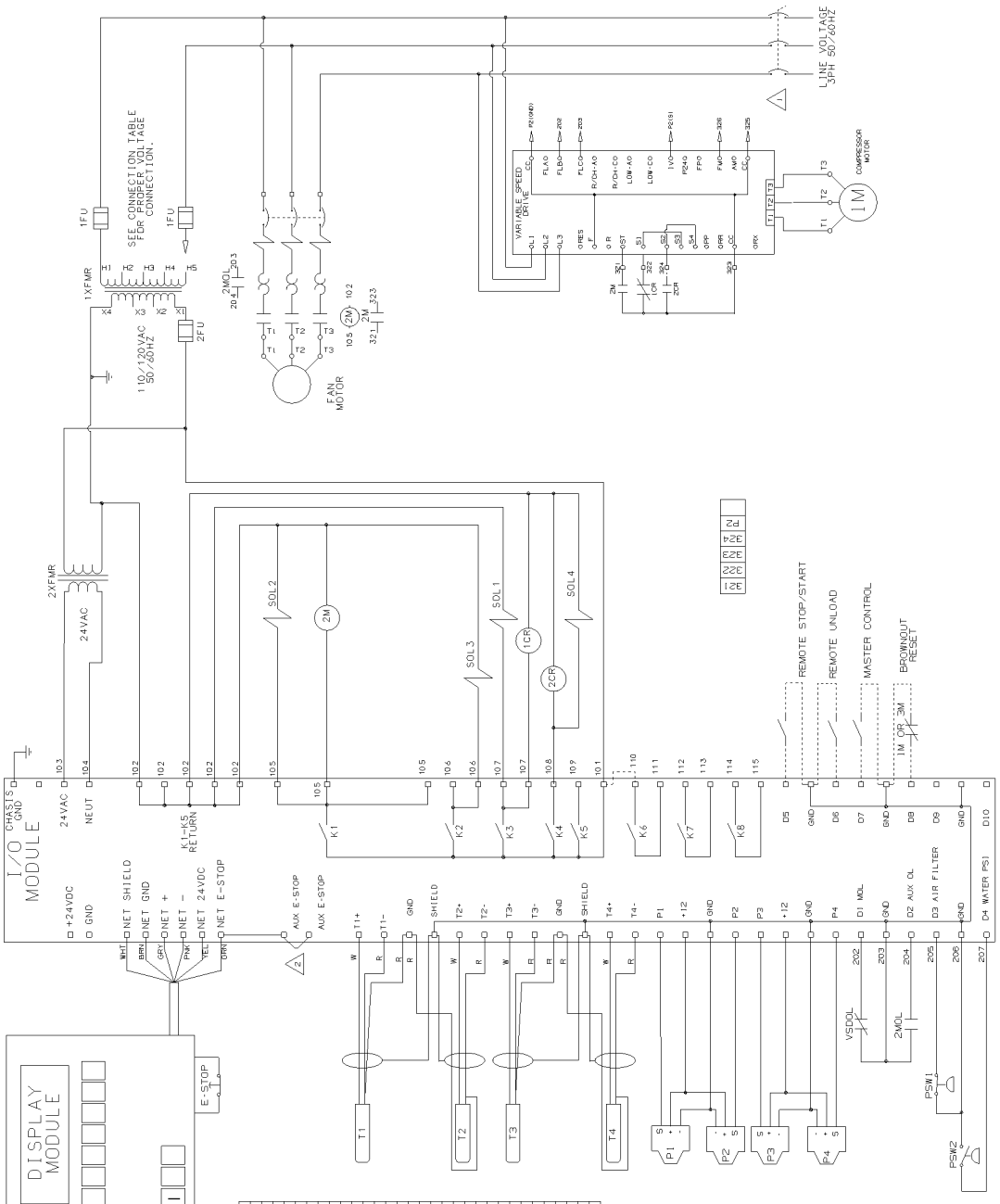
key number	*description*	*part number*	*quantity*
1	sign, warning ground fault	049852	1
2	decal, danger high voltage	042218	1
3	decal, V 460/3/60 international **(I)**	02250069-399	1
4	decal, earth ground	02250075-046	1

(I) Due to custom voltage requests, voltage decal may vary. For positive identification of machine voltage decal, consult Sullair Factory with serial number of compressor.

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

Section 9
ILLUSTRATIONS AND PARTS LIST

9.18 WIRING DIAGRAM- LS20T 525 PSIG



TRANSFORMER CONNECTIONS

PRIMARY VOLTS	PRIMARY TAPS	SECONDARY VOLTS	SECONDARY TAPS
200	H1-H2	110	X1-X4
220	H1-H2	110	X1-X3
230	H1-H2	115	X1-X3
240	H1-H2	120	X1-X3
380	H1-H3	110	X1-X3
400	H1-H3	115	X1-X3
416	H1-H3	120	X1-X3
440	H1-H4	110	X1-X3
460	H1-H4	120	X1-X3
480	H1-H4	115	X1-X3
500	H1-H5	110	X1-X4
525	H1-H5	115	X1-X4
550	H1-H5	110	X1-X3
575	H1-H5	115	X1-X3
600	H1-H5	120	X1-X3

	DESCRIPTION
COMP	COMPRESSOR OVERLOAD
VSDOL	FAN MOTOR STARTER
2MOL	FAN MOTOR OVERLOAD
1FU	TRANSFORMER PRIMARY FUSES
2FU	TRANSFORMER SECONDARY FUSE
3FU	FAN MOTOR BRANCH FUSES
P1	WET SUMP PRESSURE SENSOR
P2	PACKAGE DISCHARGE PRESSURE SENSOR
P3	OIL FILTER DISCHARGE PRESSURE SENSOR
P4	OIL SUMP/SEPARATOR PRESSURE SENSOR
T1	OIL DISCHARGE TEMPERATURE RTD
T2	DRY DISCHARGE TEMPERATURE RTD
T3	INJECTION OIL TEMPERATURE RTD
T4	INTERSTAGE TEMPERATURE RTD
PSW1	INLET AIR FILTER SWITCH 558.9 MM WC - 22 IN WC
PSW2	WATER PRESSURE SWITCH 10PSI WATER COOLED ONLY
SOL1	LOAD CONTROL SOLENOID VALVE
SOL2	UNLOAD CONTROL SOLENOID VALVE
SOL3	SEQUENCE SOLENOID VALVE
SOL4	BLOWDOWN SOLENOID VALVE
1XFMR	CONTROL VOLTAGE TRANSFORMER
2XFMR	SUPERVISOR 3 STEPDOWN TRANSFORMER 24VAC
K1	INTERNAL RUN RELAY CONTACT
K2	INTERNAL Y-DELTA RELAY CONTACT
K3	INTERNAL LOAD CONTROL RELAY CONTACT
K4	INTERNAL SEQUENCE RELAY CONTACT
K5	INTERNAL ELECTRO DRAIN RELAY CONTACT
K6	INTERNAL COMMON FAULT RELAY CONTACT
K7	INTERNAL COMMON WARNING RELAY CONTACT
K8	INTERNAL SPECIAL FUNCTION CONTACT
1CR	MIN. SPEED RELAY
2CR	VSD SEQUENCE RELAY

02250137-917R01

NOTES

1. CUSTOMER TO FURNISH FUSED OR CIRCUIT BREAKER DISCONNECT PER LOCAL CODES.
2. REMOVE JUMPER FOR AUXILLIARY E-STOP STRING DEVICES.

REFER TO SEQUENCING AND PROTOCOL MANUAL P/N 02250139-197. REMOTE STOP/START MUST BE ARMED BY PRESSING THE REMOTE KEY ON THE DISPLAY PANEL. THE REMOTE LED WILL BE ON WHEN ARMED.

NOTES

WORLDWIDE SALES AND SERVICE

SULLAIR ASIA, LTD.

Sullair Road, No. 1
Chiwan, Shekou
Shenzhen, Guangdong PRV.
PRC POST CODE 518068
Telephone: 755-6851686
Fax: 755-6853473
www.sullair-asia.com

SULLAIR EUROPE, S.A.

Zone Des Granges BP 82
42602 Montbrison Cedex, France
Telephone: 33-477968470
Fax: 33-477968499
www.sullaireurope.com

SULLAIR CORPORATION

3700 East Michigan Boulevard
Michigan City, Indiana 46360 U.S.A.
www.sullair.com
Telephone: 1-800-SULLAIR (U.S.A. Only)
or 1-219-879-5451
Fax: (219) 874-1273

PARTS DEPARTMENT

Fax: (219) 874-1835
www.sullair.com

SERVICE DEPARTMENT

Fax: (219) 874-1205
www.sullaircompressors.com

Printed in the U.S.A.

Specifications Subject To
Change Without Prior Notice
E03