SULLAIR

INDUSTRIAL AIR COMPRESSOR LS-25

200HP/150KW

AIR-COOLED AND WATER-COOLED

STANDARD & 24 KT

OPERATOR'S MANUAL AND PARTS LIST

KEEP FOR FUTURE REFERENCE

Part Number 02250115-254

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

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

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

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

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

1.2 PERSONAL PROTECTIVE EQUIPMENT

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

1.3 PRESSURE RELEASE

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

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

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

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

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

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

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

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

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

J. Use air at pressures less than 30 psig (2.1 bar) for cleaning purposes, and then only with effective chip guarding and personal protective equipment.

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

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

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

Section 1
SAFETY

1.4 FIRE AND EXPLOSION

⚠WARNING

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

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

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

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

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

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

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

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

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

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

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

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

1.5 MOVING PARTS

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

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

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

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

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

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

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

1.6 HOT SURFACES, SHARP EDGES AND SHARP CORNERS

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

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

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

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

1.7 TOXIC AND IRRITATING SUBSTANCES

A. DO NOT use air from this compressor for respiration (breathing) except in full compliance with any Federal, State or Local Codes or regulations.

⚠ DANGER

Death or serious injury can result from inhaling compressed air without using proper safety equipment.

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

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

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

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

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

G. If air line anti-icer system antifreeze compound enters the eyes or if fumes irritate the eyes, they should be washed with large quantities of clean water for 15 minutes. A physician, preferably an eye specialist, should be contacted immediately.

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

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

1.8 ELECTRICAL SHOCK

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

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

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

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

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

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

1.9 LIFTING

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

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

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

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

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

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

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

H. Lift compressor no higher than necessary.

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

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

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

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

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

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

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

1.10 ENTRAPMENT

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

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

2.1 INTRODUCTION

Your new Sullair lubricated rotary screw air compressor will provide you with a unique experience in improved reliability and greatly reduced maintenance.

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

Read Section 6 (Maintenance) to see how surprisingly easy it is to keep your air compressor in top operating condition. Should any questions arise which cannot be answered in the following text, call your nearest Sullair representative or the Sullair Corporation Service Department.

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 instrument panel all mounted on a structural steel frame.

On air-cooled models, a fan draws air over the fan motor and forces it through the combined aftercooler and fluid cooler,thereby removing the heat of compression from the cooling fluid.

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

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

2.3 SULLAIR COMPRESSOR UNIT, FUNCTIONAL DESCRIPTION

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

Figure 2-1 Sullair Series 25-200 Rotary Screw Compressor

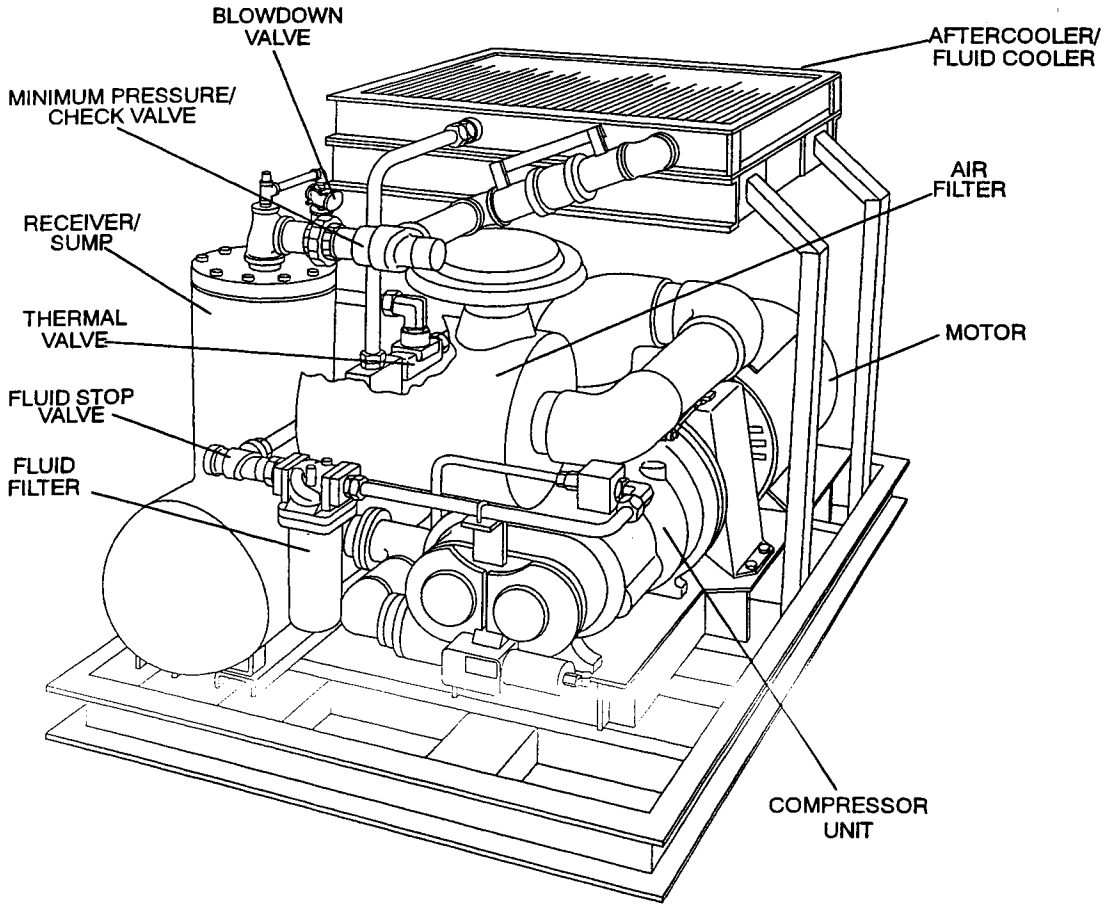
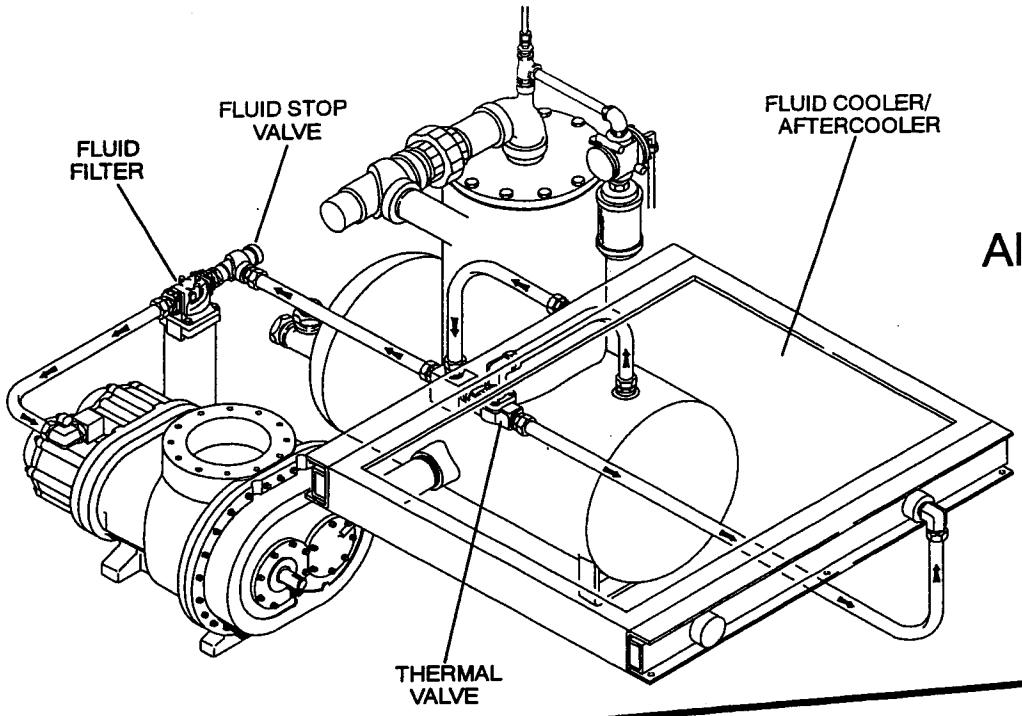


Figure 2–2 Cooling and Lubrication System



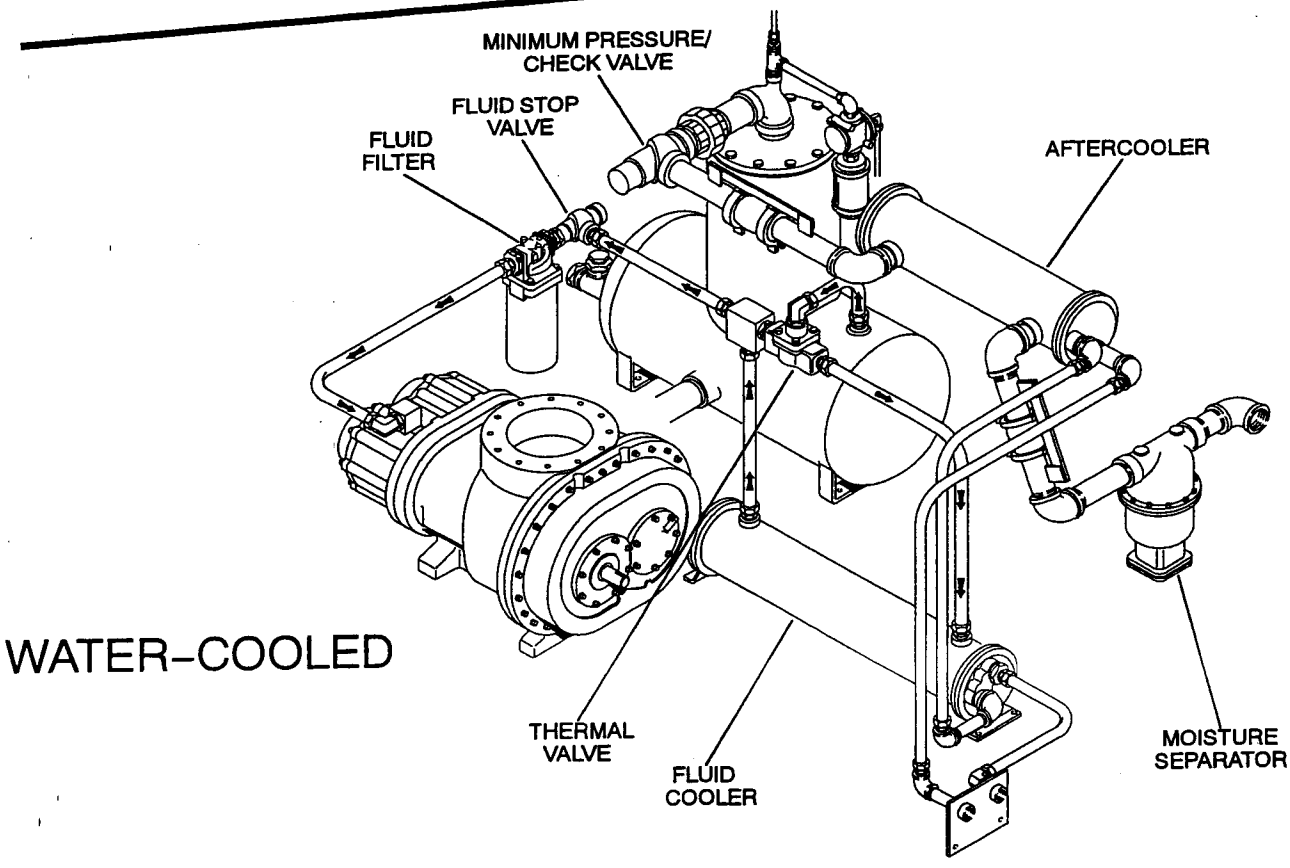


Figure 2-3A Compressor Piping and Instrument Diagram (Supervisor II)

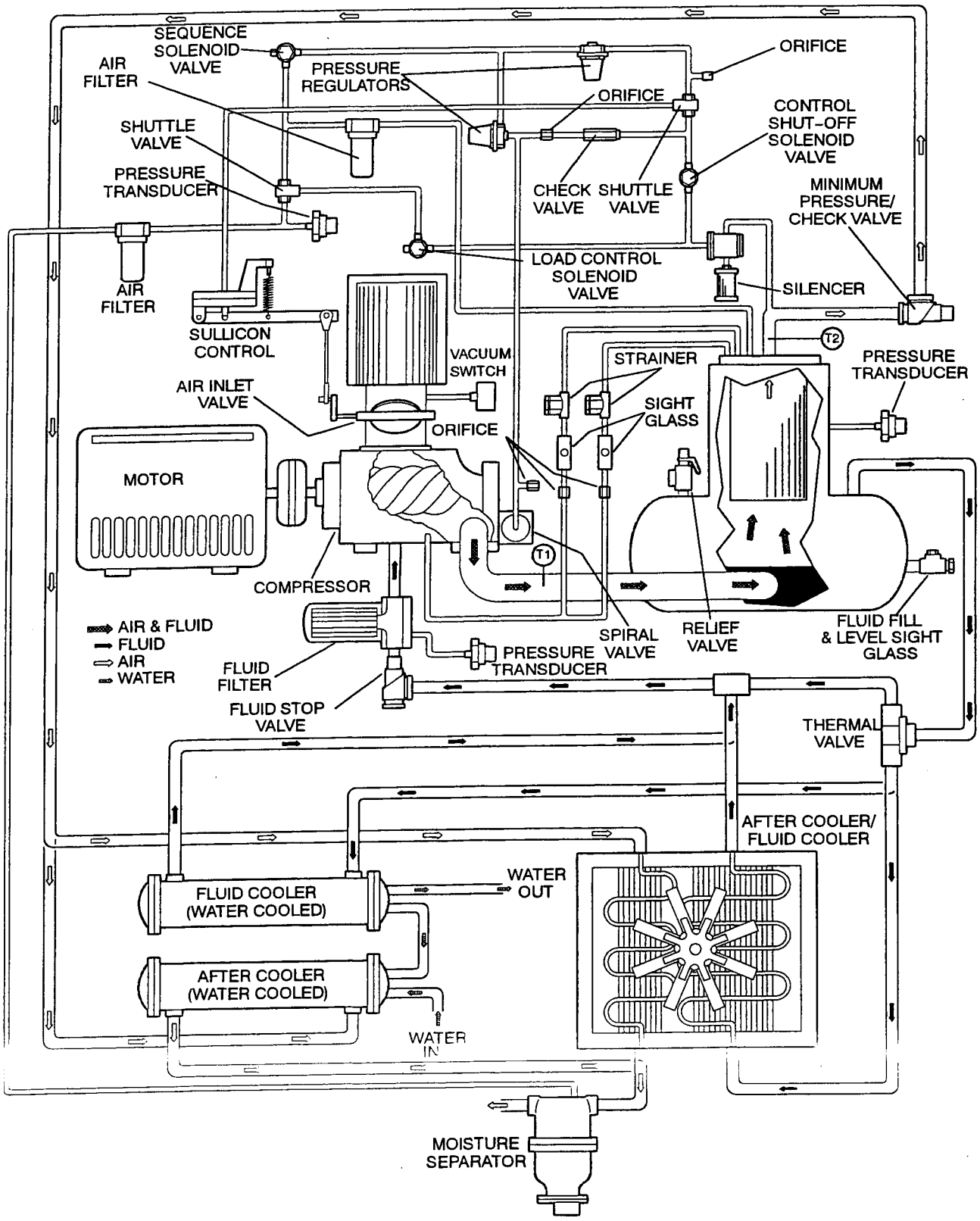
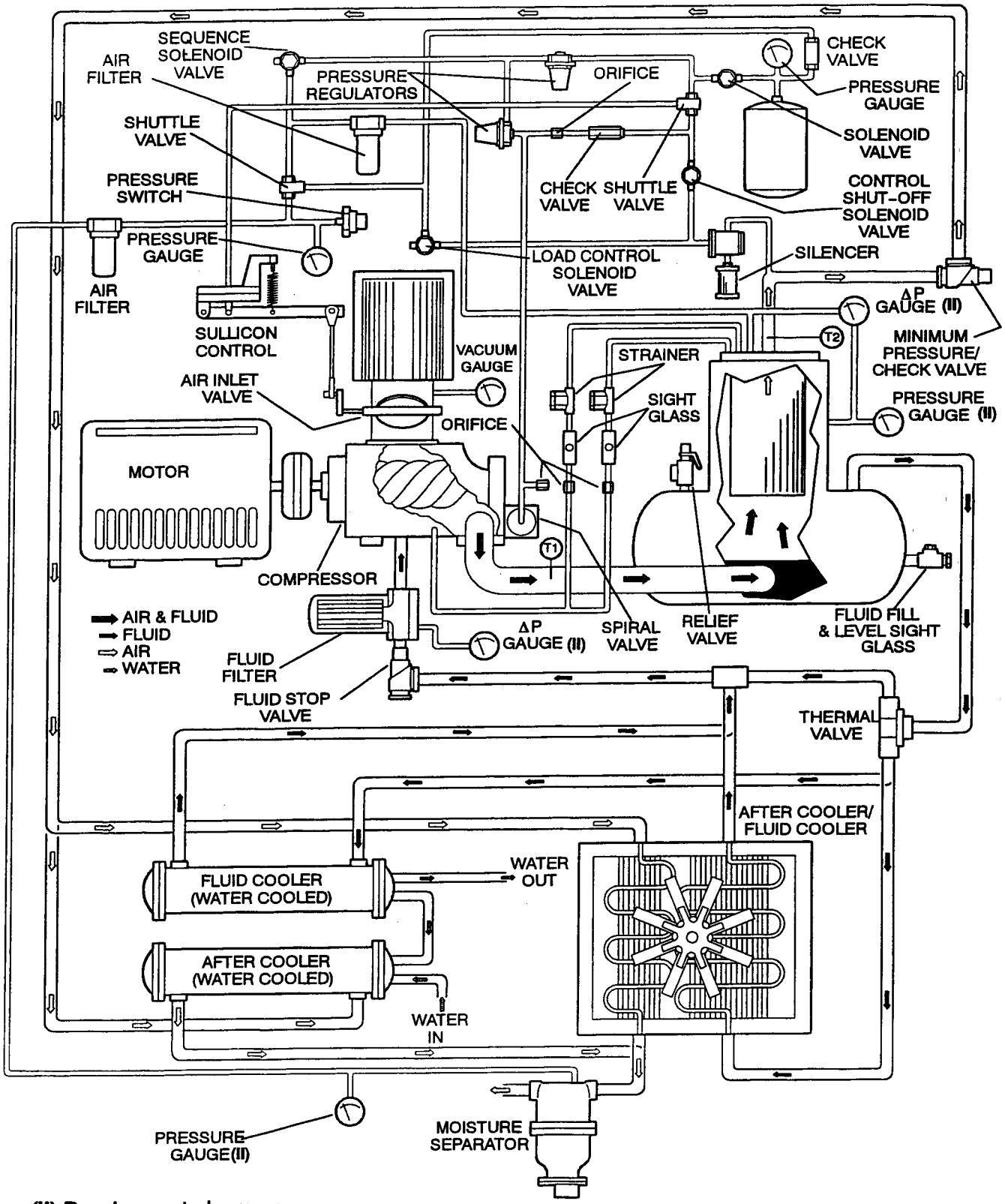


Figure 2-3B Compressor Piping and Instrument Diagram (Electro-Mechanical)



(II) Panel-mounted gauges.

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

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

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

2.4 COMPRESSOR COOLING AND LUBRICATION SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figures 2–2, 2–3A and 2–3B. The cooling and lubrication system consists of a **radiator type aftercooler/fluid cooler, full flow fluid filter, fluid stop valve, thermal valve** and **interconnection piping**. For water–cooled models, a shell and tube fluid cooler, and aftercooler are substituted for the radiator type coolers listed above.

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

Fluid flows from the bottom of the receiver/sump to the thermal valve. The thermal valve is fully open when the fluid temperature is below 180°F/82°C (195°F/91°C for 24KT machines). The fluid passes through the thermal valve, the fluid filter and directly to the compressor unit.

As the discharge temperature rises above 180°F/82°C (195°F/91°C for 24KT machines), due to the heat of compression, the thermal valve begins to close and a portion of the fluid then flows through the cooler. From the cooler, the fluid flows to the filter and on to the compressor unit. The fluid filter has a replaceable 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.

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

2.5 COMPRESSOR DISCHARGE SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 2–4. 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:

1. It acts as a primary fluid separator.
2. It serves as the compressor fluid sump.
3. It houses the final fluid separator elements.

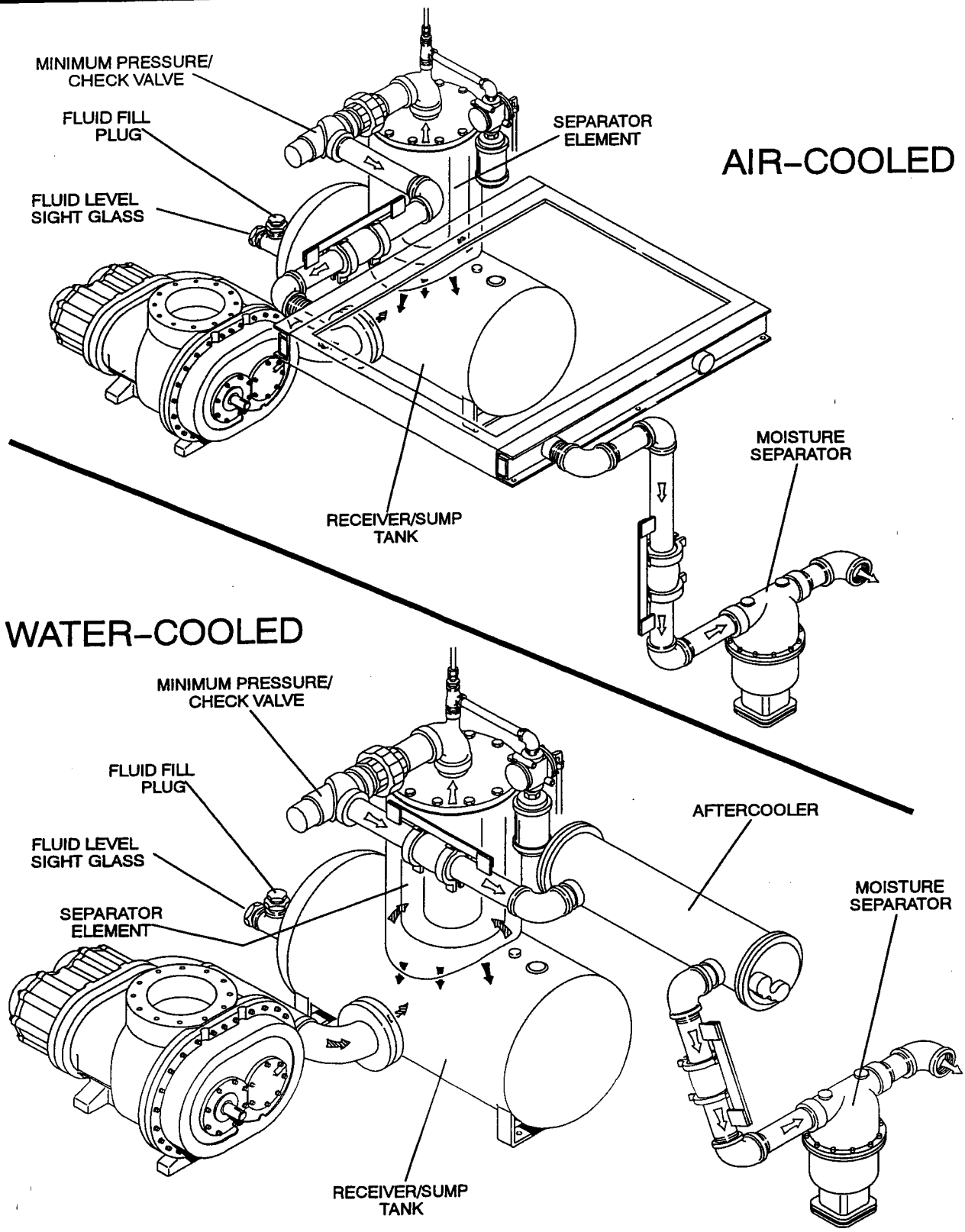
The compressed air/fluid mixture enters the receiver and is directed against the ends of the tank. The direction of movement is changed and its velocity significantly reduced, thus causing the large droplets of fluid to fall to the bottom of the receiver/sump. The fractional percentage of fluid remaining in the compressed air collects on the surface of the dual separator elements as the compressed air flows through them. Two return lines (or scavenge tubes) lead from the bottom of each separator element to the inlet region of the compressor unit. Fluid collecting on the bottom of each separator is returned to the compressor by a pressure difference between the receiver and the compressor inlet. Sight glasses are located in the return lines to observe this fluid flow. There are also orifices in this return line (protected by strainers) to assure proper flow. A gauge, located on the instrument panel, will be in the red zone, or the display on Supervisor with prealarm will show indication, when excessive pressure drop through the separators develops. At this time, separator element replacement is necessary.

The receiver is an ASME pressure vessel. A combination minimum pressure/check valve, located downstream from the separator, assures a minimum receiver pressure of 50 psig (3.5 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 if the sump pressure exceeds 175 psig (12.1 bar). On compressors with Supervisor controller this setting is field programmable.

All compressor models with electro–mechanical control are equipped with a high pressure shutdown switch to shut down the compressor at 25 psi above rated pressure. On compressors with Supervisor controller, this setting is filed programmable. This prevents the pressure relief valve from opening under routine conditions, thereby preventing fluid loss through the pressure relief valve.A temperature switch will shut down the compressor if the discharge temperature reaches 240°F (115°C).

Figure 2-4 Compressor Discharge System



⚠ WARNING

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

Stop compressor and relieve all internal pressure before doing so.

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

2.6 CONTROL SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 2–5. The purpose of the compressor control system is to regulate the amount of air being compressed to match the amount of compressed air being used. The capacity control system consists of a **spiral valve, pressure regulators, pressure switch, pilot valve,** an **inlet butterfly valve** and a **Sullicon Control.** The functional description of the control system is described below in four distinct phases of operation. The following description text applies to all 25–200 compressors. For explanation purposes, this description will apply to a compressor with an operating range of 100 to 110 psig (6.9 to 7.6 bar). A compressor with any other pressure range would operate in the same manner except at stated pressures.

START MODE – 0 TO 50 PSIG (0 TO 3.4 BAR)

When the compressor START button is depressed, the pressure will quickly rise from 0 to 50 psig (0 to 3.4 bar). During this period, the spiral valve is fully closed and the inlet butterfly valve fully open. As a result, the compressor runs at full capacity.

FULL LOAD MODE – 50 TO 100 PSI (3.4 TO 6.9 BAR)

When the compressed air rises above 50 psi (3.4 bar), the minimum pressure valve opens allowing compressed air to flow into the service line. Both the spiral valve as well as the inlet butterfly valve remain in the full load position as long as the compressor is running at 100 psi (7.6 bar) or below.

MODULATION MODE – 100 to 110 PSIG (6.9 TO 7.6 BAR)

As air demand drops below the rated capacity of the compressor, the line pressure will rise above 110 psig (7.6 bar). As a result, the differential pressure regulator for the spiral valve gradually opens applying air pressure to the spiral valve actuator. Air pressure at the actuator diaphragm causes a rack, which is engaged on a pinion, to move linearly. The movement of the rack imparts a rotary motion to the pinion which is attached to the spiral valve, which in turn rotates. As the spiral valve rotates, it starts opening the bypass ports gradually. Excess air is then being returned back to suction. Now the compressor is compressing only that amount of air which is being used. As air demand keeps dropping further, the spiral valve keeps opening more and more until all the bypass ports are fully open. At this point, the spiral valve has moved into the unload position.

The spiral valve provides a modulation range from 100 to 50% capacity. During this period, the pressure rises approximately from 100 to 108 psig (6.9 to 7.4 bar). As the air pressure exceeds 108 psig (7.4 bar), the differential pressure regulator controlling the Sullicon Control opens. This allows the air pressure to the diaphragm chamber of the Sullicon Control which starts partially closing the inlet butterfly valve. The inlet butterfly valve provides modulation range from 50 to 40% capacity. During this period, the pressure rises approximately from 123 to 125 psig (8.5 to 8.6 bar). During this range, the spiral valve remains in the unload position.

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

When a relatively small amount, or no air is being used, the service line pressure keeps on rising. When it exceeds 110 psig (7.6 bar), the air pressure switch opens, or Supervisor "load" contacts open, de–energizing the pilot valve. The line pressure through the pilot valve closes the inlet butterfly, opens the spiral valve, and at the same time opens the blowdown valve. Reduced sump pressure during blowdown results in low unload power consumption. While the compressor is running unloaded, the inlet butterfly valve and spiral valve remain in the unloaded position.

When the line pressure drops back to 100 psig (6.9 bar) due to an increase in the air demand, the air pressure switch or Supervisor "load" contacts close. The pilot is then energized allowing the air pressure behind the Sullicon Control to be vented through the pilot valve exhaust port. The blowdown valve closes, and the inlet butterfly valve opens, and the spiral valve shifts to full load.

For a compressor with varied periods of time when there are not air requirements, an AUTO feature is provided. This feature allows you to set the compressor in an automatic position whereby the compressor will shut down (time delayed) when no compressed air requirement is present and restart as compressed air is needed.

2.7 AIR INLET SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 2–6. The compressor inlet system consists of a **dry–type air filter,** a **maintenance gauge,** or **Supervisor display** and an **air inlet valve.**

The maintenance gauge, located on the compressor instrument panel, indicates the condition on the air filter for the electro–mechanical models. When the pointer reaches the red zone, maintenance is required.

On compressors utilizing the Supervisor II controller, maintenance need is indicated when the LED light, located at the filter icon on the display panel, starts to

Figure 2-5A Control System Diagram for 25-200H (with spiral valve)-Start

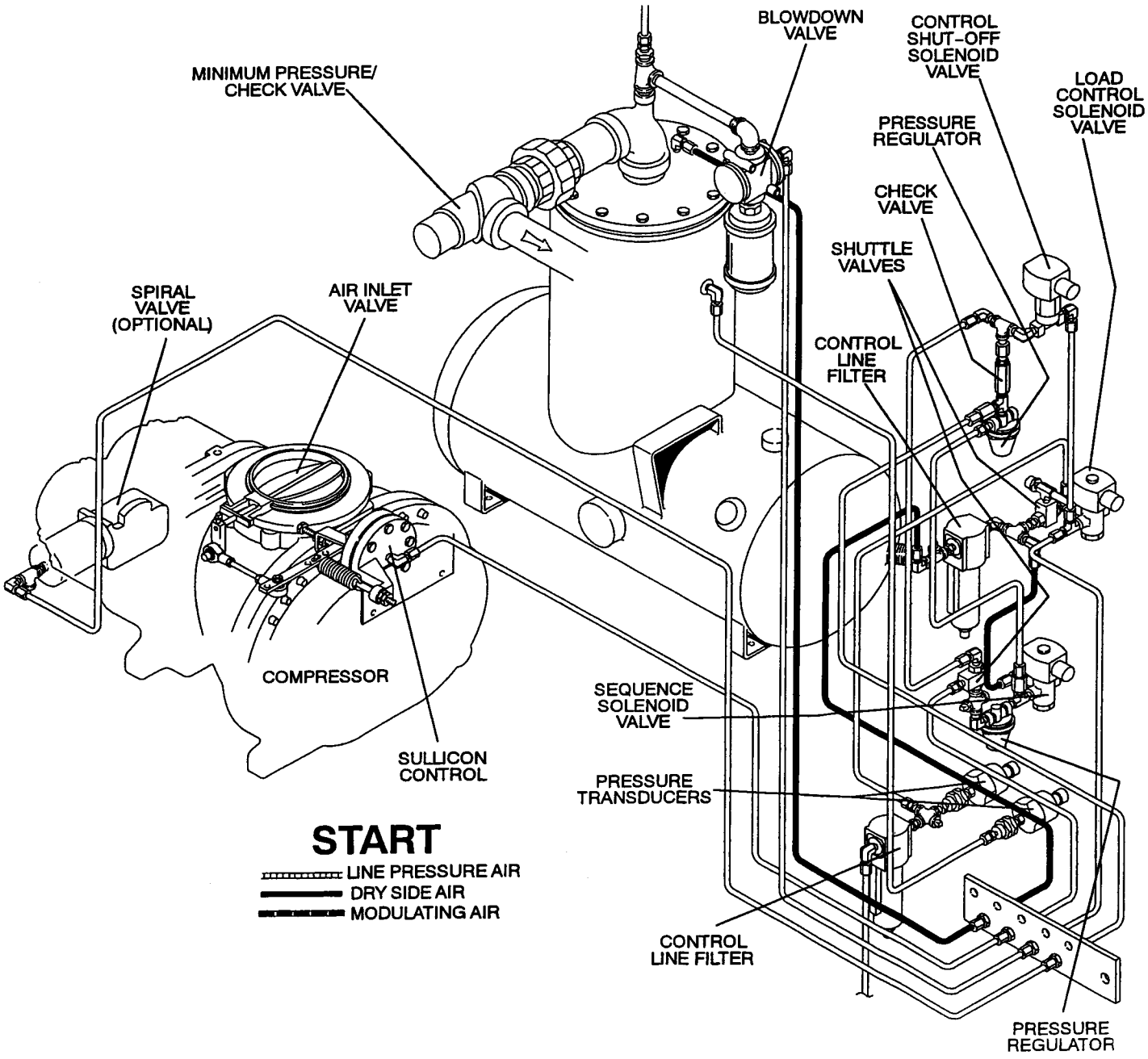


Figure 2–5B Control System Diagram for 25–200H (with spiral valve)– Full Load

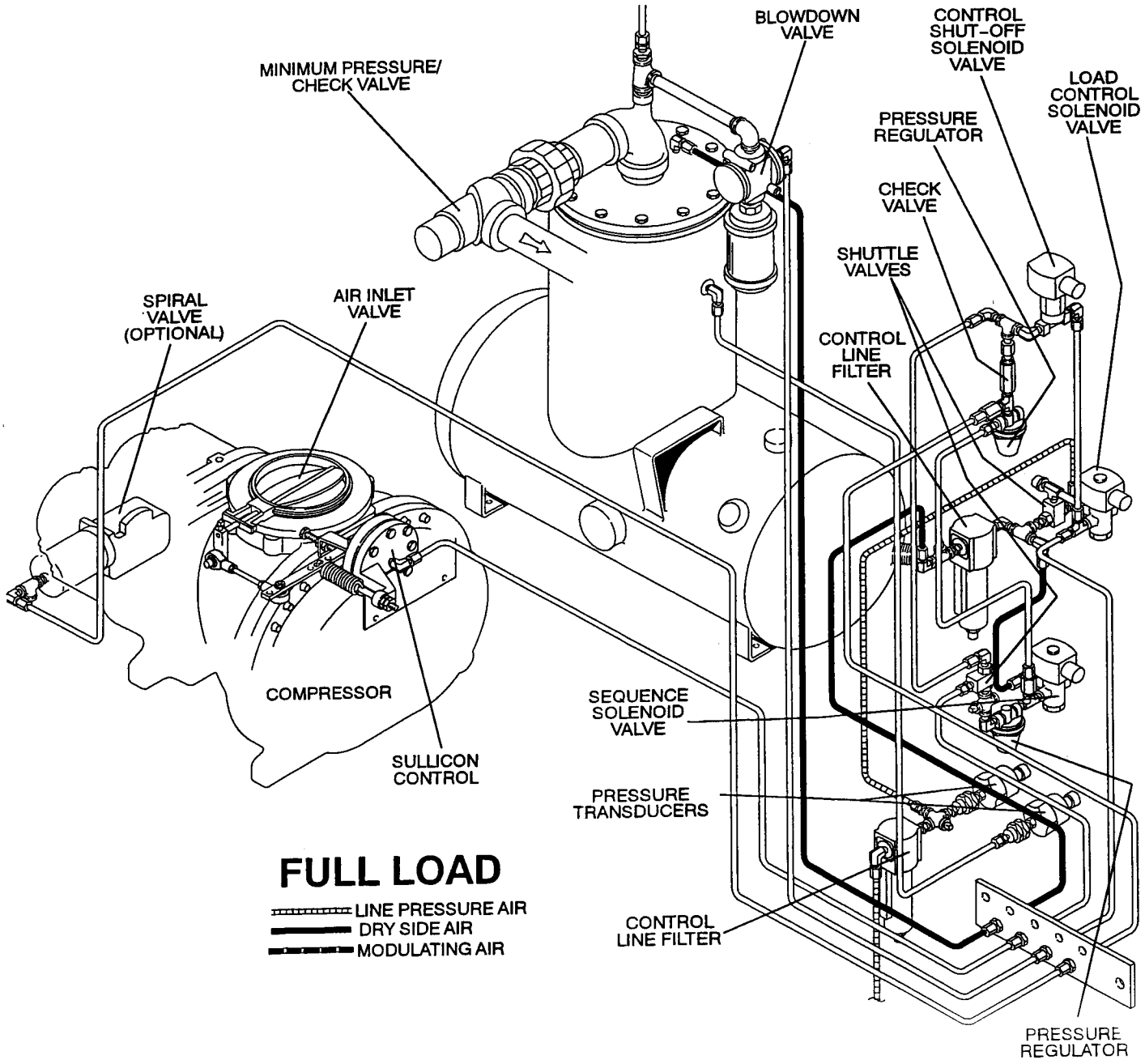


Figure 2-5C Control System Diagram for 25-200H (with spiral valve)- Modulation

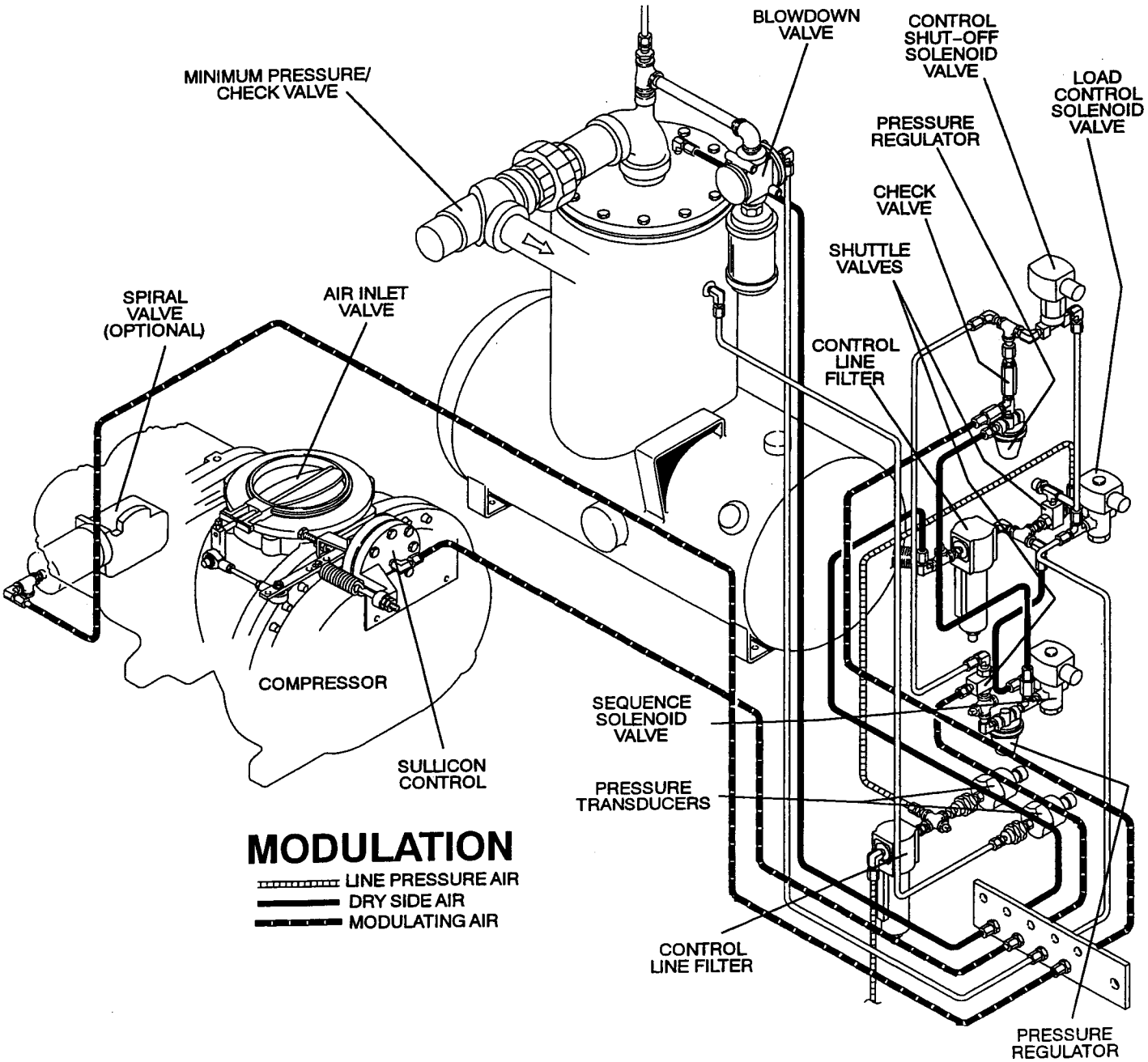
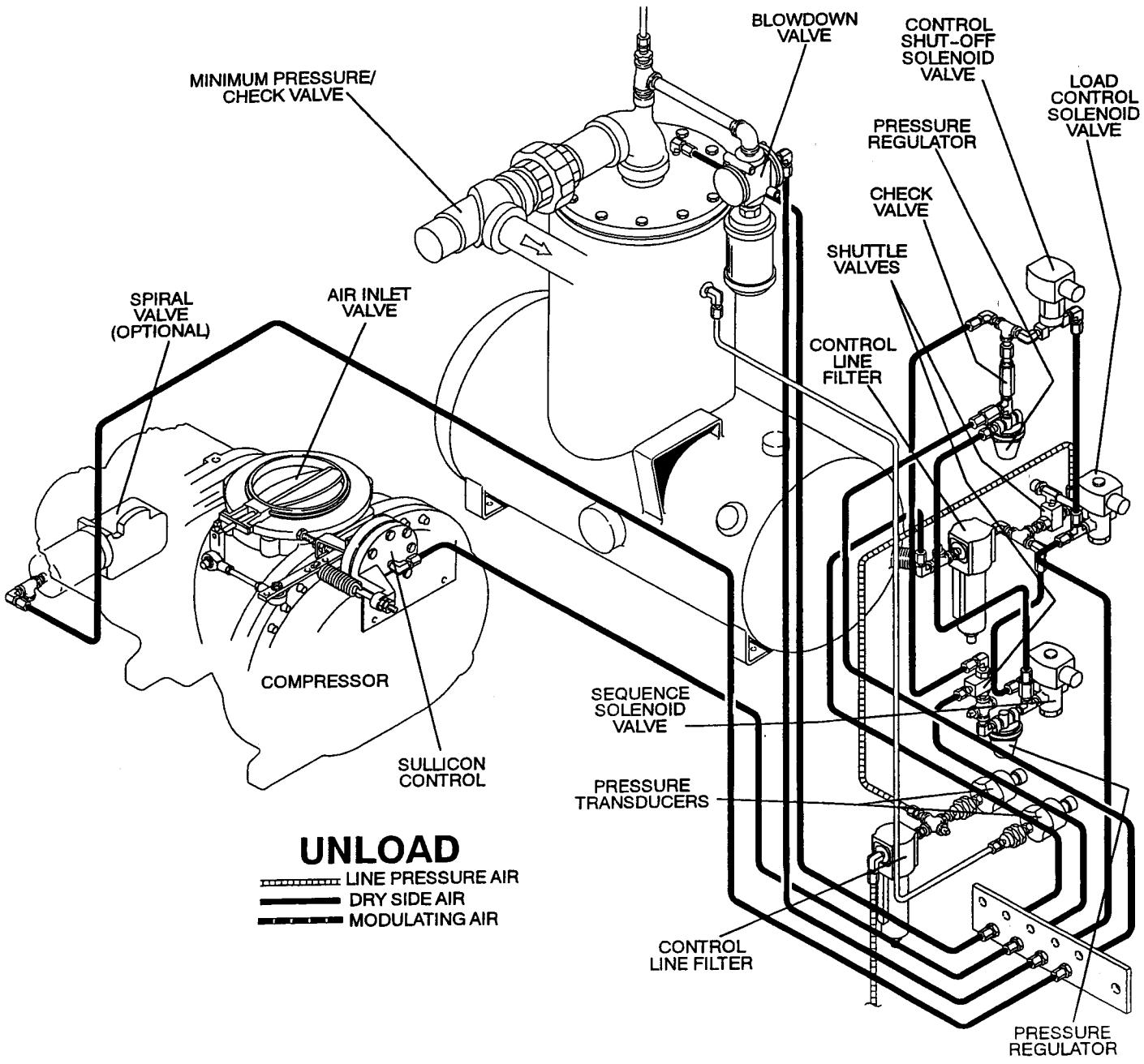
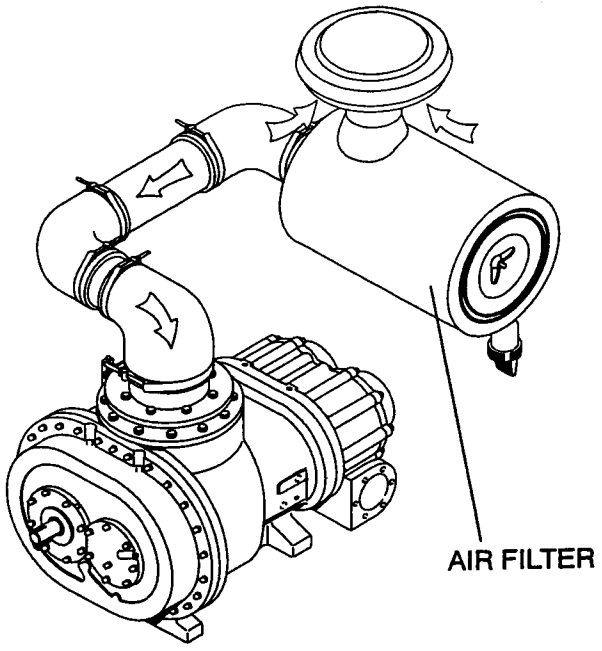


Figure 2-5D Control System Diagram for 25-200H (with spiral valve)-Unload



Section 2
DESCRIPTION

Figure 2–6 Air Inlet System



flash.

The butterfly–type air inlet valve, directly controls the amount of air intake to the compressor in response to the operation of the Sullicon Control (Section 2.6).

2.8 INSTRUMENTATION, FUNCTIONAL DESCRIPTION- ELECTRO-MECHANICAL

NOTE

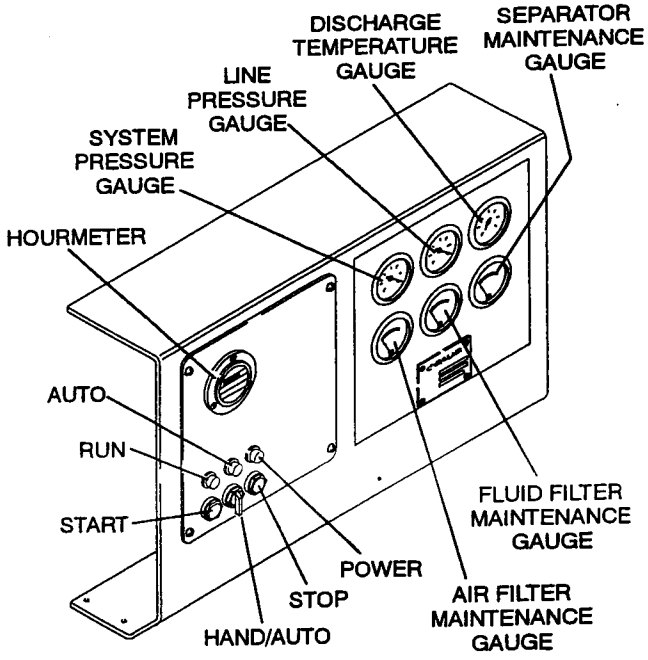
Refer to Section 5, Supervisor II, for Supervisor control descriptions.

Refer to Figure 2–7 for specific location of parts described. The instrumentation consists of a panel group containing **line pressure, sump pressure** and **discharge temperature gauges**, and the **air filter, separator and fluid filter maintenance gauges**, along with **START/STOP buttons** and an **hourmeter.**

Refer to Figure 2–3 for functional locations of the following indicators and controls:

- The **line (terminal) pressure gauge** is connected to the service air outlet, and continually monitors the plant air pressure.
- The **sump pressure gauge** continually monitors the sump pressure at the various load and/or unload conditions.
- The **discharge temperature gauge** monitors the temperature of the air leaving the compressor unit. For both air–cooled and water–cooled compressors the normal reading is approximately 180°F (82°C) for ambient temperatures below 80°F (27°C).
- The **air filter maintenance gauge** monitors the condition of the air intake filter. When pointer reaches the red zone, filter service is required (see Figure 2–3).
- The **START pushbutton** turns the compressor on.
- The **STOP pushbutton** turns the compressor off.
- The **AUTO selector switch** selects between continuous or AUTO modes of operation.
- The **hourmeter** records accumulative hours of operation for the compressor and is useful for planning and logging service operations.
- The **separator maintenance gauge** monitors the condition of the separator elements. Pointer will move into the red zone when the elements should be replaced.
- The **fluid filter maintenance gauge** monitors the condition of the fluid filter element. Pointer will move into the red zone when the element should be replaced (see Figure 2–3).
- The **red light** on the instrument panel indicates when power to the compressor is supplied.
- The **green light** indicates when the compressor is running.
- The **amber light** indicates when controls are in AUTO mode.

Figure 2–7 Instrument Panel Group



3.1 TABLE OF SPECIFICATIONS

Model Series 50 Hz	DIMENSIONS Length in	Length mm	Width in	Width mm	Height (I) in	Height (I) mm	Weight (AC) lb	Weight (AC) kg	Weight (WC) lb	Weight (WC) kg
25–200 HP w/o enclosure	110	2794	72	1829	66	1676	6600	2994	6500	2948
25–200 HP w/ enclosure	110	2794	72	1829	68	1727	7400	3357	7300	2948

Model Series 60 Hz	Length in	Length mm	Width in	Width mm	Height (I) in	Height (I) mm	Weight (AC) lb	Weight (AC) kg	Weight (WC) lb	Weight (WC) kg
25–200 HP w/o enclosure	110	2794	72.75	1848	68.50	1740	6600	2993	6600	2993
25–200 HP w/ enclosure	110	2794	72.75	1848	70.50	1791	7400	3356	7400	3356

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

COMPRESSOR:	STANDARD MODELS	24KT MODELS
Type:	Rotary Screw	Rotary Screw
Standard Operating Pressure (50Hz) (II):	115 psig (7.9 bar) - "H" Model 140 psig (9.7 bar) - "HH" Model	115 psig (7.6 bar) - "H" Model 140 psig (9.7 bar) - "HH" Model
Standard Operating Pressure (60Hz) (II):	100 psig (6.9 bar) -"L" Model 115 psig (7.9 bar) - "H" Model	100 psig (6.9 bar) - "L" Model 115 psig (7.6 bar) - "H" Model
Bearing Type:	Anti–Friction	Anti–Friction
Ambient Temperature (Max.) (III):	105°F (40°C)	105°F (40°C)
Cooling:	Pressurized Fluid	Pressurized Fluid
Compressor Fluid:	Sullube	24KT Fluid
Sump Capacity:	30 U.S. gallons (114 liters)	30 U.S. gallons (114 liters)
Optional Control:	Electro-Mechanical	Electro-Mechanical
Standard Control:	Supervisor II with Deluxe Sequencing	Supervisor II with Deluxe Sequencing

(I) An additional height of 78 in./198 cm is required to service the separator elements.
(II) Special compressors are available for operation at higher pressures.
(III) Special compressors are available for operation in higher ambient temperatures.

Section 3
SPECIFICATIONS

MOTOR: (50 Cycle Compressors)

	STANDARD MODELS	24KT MODELS
Size:	149KW - 380/400/415V	149KW - 380/400/415V
Type:	CE Approved, Open Dripproof with CE guarding, Three Phase, 50 Cycles 40°C Maximum Ambient Temperature, Options Available: Other Voltages TEFC also Available	CE Approved, Open Dripproof with CE guarding, Three Phase, 60 Cycles 40°C Maximum Ambient Temperature, Options Available: Other Voltages TEFC also Available
Speed:	1480 RPM	1480 RPM

MOTOR: (60 Cycle Compressors)

	STANDARD MODELS	24KT MODELS
Size:	200HP – 460V	200HP – 460V
Type:	Open Dripproof, Three Phase, 60 Cycles 40°C Maximum Ambient Temperature, Options Available: Other Voltages TEFC also Available	Open Dripproof, Three Phase, 60 Cycles 40°C Maximum Ambient Temperature, Options Available: Other Voltages TEFC also Available
Speed:	1770 RPM	1780 RPM

3.2 LUBRICATION GUIDE–STANDARD COMPRESSORS

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

⚠ WARNING

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

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

For other extended life synthetic lubricants contact the nearest Sullair representative.

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

3.3 LUBRICATION GUIDE– 24KT COMPRESSORS

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

⚠ WARNING

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

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

NOTE

A 24KT sample should be sent in yearly, after the first year.

3.4 APPLICATION GUIDE

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

3.5 LUBRICATION CHANGE RECOMMENDATIONS AND MAINTENANCE

LUBRICANT	FLUID CHANGE	FLUID FILTER CHANGE	SEPARATOR CHANGE
Sullube	A, E	G, C	A, D
Sullair LLL-4-32	A, E	G, C	A, D
SRF 1/4000	B, E	G, C	B, D
24KT	F, E	G, C	A, D
Sullair CP-4600-32-F	B, E	G, C	B, D

A – 8,000 Hours or once a year.
B – 4,000 Hours or more frequently if conditions so require.
C – When measured pressure loss exceeds 20 psig (1.3 bar).
D – When measured pressure loss exceeds 10 psig (0.7 bar).
E – When required by fluid analysis or known contamination.
F – Does not require replacement during normal service conditions.
G – Every 1000 hours.

Section 3
SPECIFICATIONS

Figure 3–1A Compressor Identification– Air–cooled

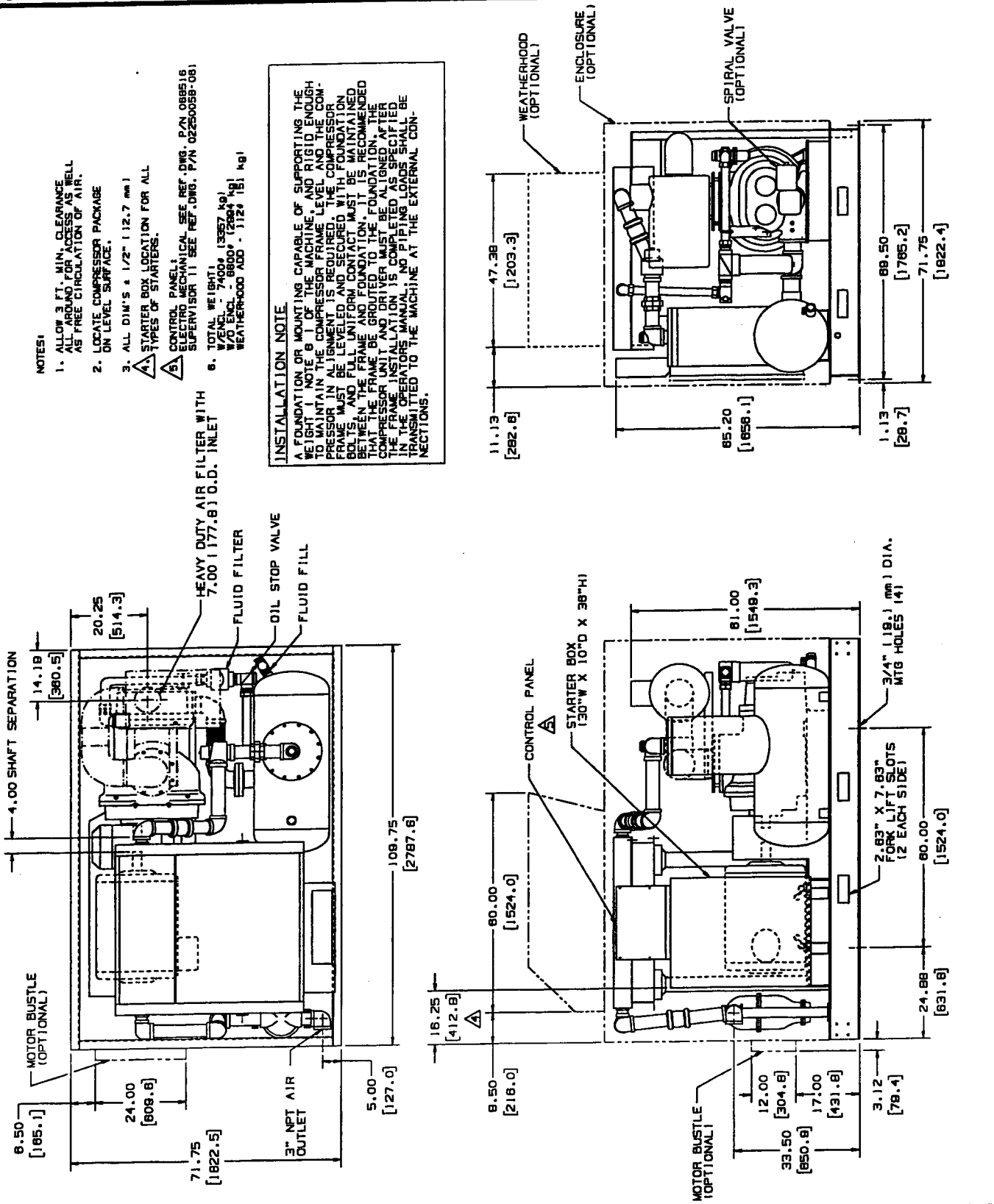
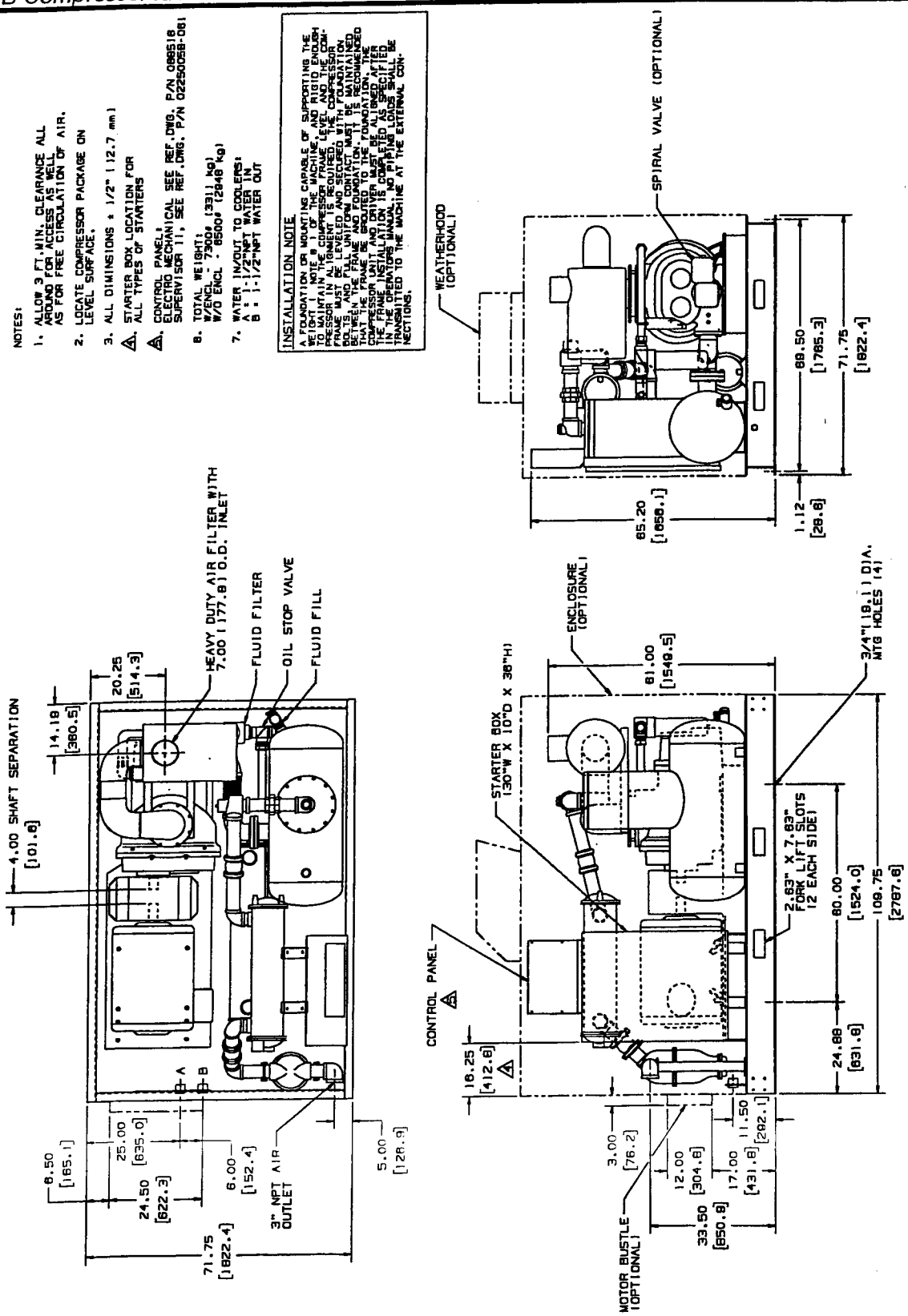


Figure 3–1B Compressor Identification– Water–cooled



NOTES

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 at the external connections.

4.2 VENTILATION AND COOLING

For air-cooled compressors, select a location to permit sufficient unobstructed air flowing in and out to the compressor to keep the operating temperature stable. The minimum distance that the compressor should be from surrounding walls is three (3) feet (914mm). 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	WATER FLOW GPM/ l/min
25-200L (60Hz)	45/ 170
25-200H (50Hz)	45/ 170
25-200HH (50Hz)	45/ 170

NOTE

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

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

The table below indicates the ventilation requirements necessary to keep the compressor running at a normal operating temperature. The fan air requirement is the volume of air which must flow through the compressor for proper ventilation. The specified heat rejection requirement is the amount of heat that is radiated by the compressor. This heat must be removed to assure a normal operating temperature. With air-cooled compressors it is possible to use this heat for space heating, providing excessive pressure drop is not created across the fan. Consult a Sullair office for assistance in utilizing this heat.

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 32°F(0°C).

4.3 SERVICE AIR PIPING

Service air piping should be installed as shown in Figure 4-1. A shut-off valve should be installed to isolate 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.

4.4 COUPLING ALIGNMENT CHECK

In preparation for the factory test, the coupling supplied with your compressor is properly aligned for operation. However, due to shipping and handling, it is necessary to recheck the coupling alignment. Refer to Coupling Alignment procedure explained in the Maintenance section of this manual.

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 should fill 1/2 of the sight glass when shutdown.

4.6 ELECTRICAL PREPARATION

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

⚠ DANGER

Lethal shock hazard inside.

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

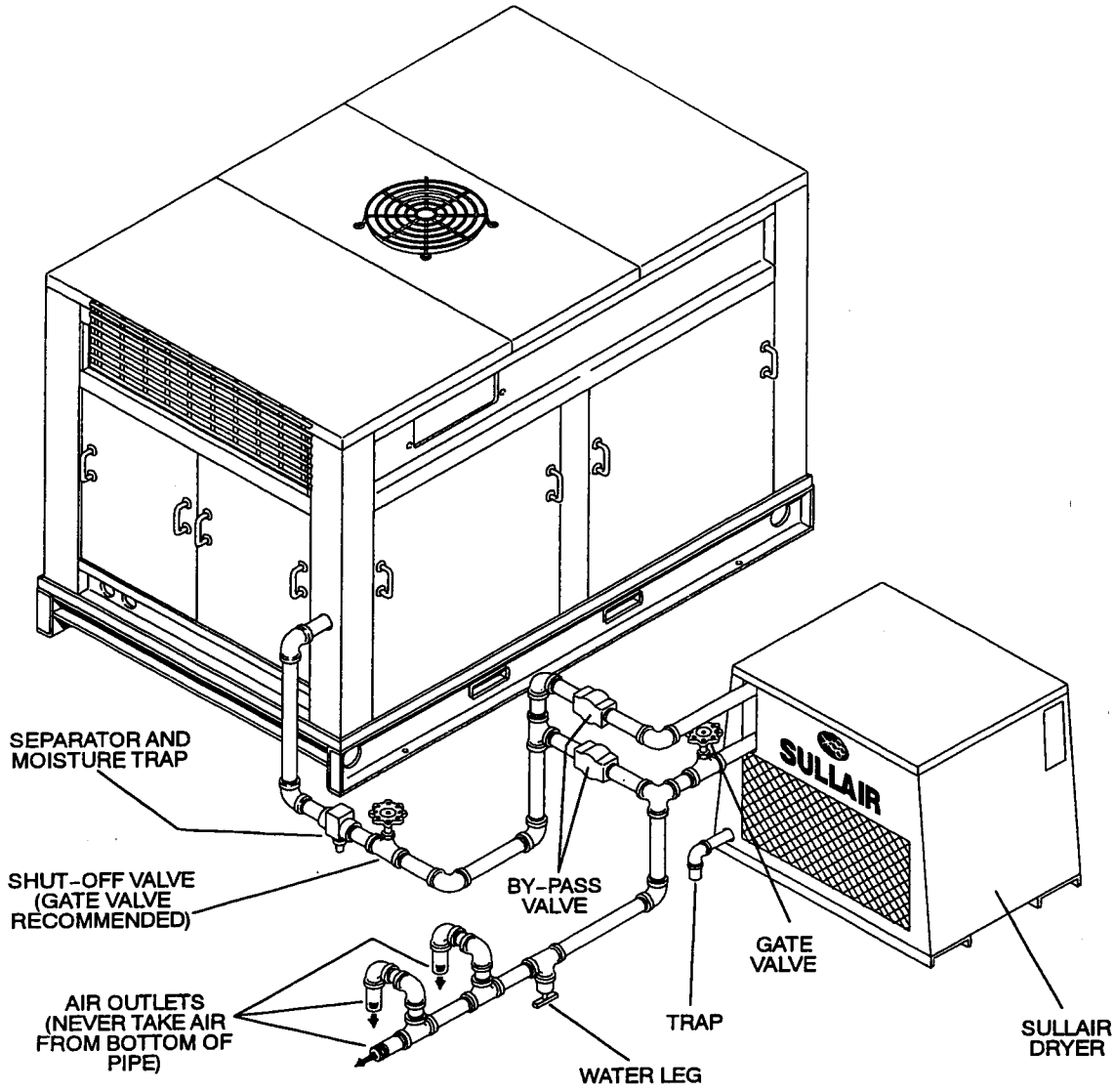
1. Check incoming voltage. Be sure that the incoming voltage is the same voltage that the compressor was wired for.
2. Check starter and overload heater sizes (see electrical parts in Parts Manual).
3. Check all electrical connections for tightness.
4. "DRY RUN" the electrical controls by disconnecting the three (3) motor leads from the starter. Energize the control circuits by pushing the START button and check all protective devices to be sure

VENTILATION REQUIREMENTS

		WATER-COOLED COMPRESSOR PACKAGE		AIR-COOLED COMPRESSOR PACKAGE	
MODEL	MOTOR HP/KW	HEAT REJECTION BTU/HR	VENT FAN FLOW (I) CFM/ M3/HR	HEAT REJECTION BTU/HR	AIR FLOW CFM
25-200L (60hz)	200/150	46320	4150/7051	591240	17000/28900
25-200H (60hz)	200/150	46540	4150/7051	594040	17000/28900

(I) Applicable to compressors with enclosure

Figure 4–1 Service Air Piping (Typical Installation)



that they will de–energize the starter coil when activated.

5. Reconnect the three (3) motor leads and jog the motor for a direction of rotation check, as explained in Section 4.7.

4.7 MOTOR ROTATION DIRECTION CHECK

After the electrical wiring has been done, it is necessary to check the direction of the motor rotation. This can be done by jogging the START and STOP buttons on the instrument panel. When looking at the motor from the end opposite the compressor unit, the shaft should be turning counterclockwise. If the motor shaft is not turning in the proper direction, disconnect the power to the starter and exchange any two of the three power input leads, then re–check rotation. An arrow is welded into the coupling guard indicating proper motor/compressor rotation.

5.1 GENERAL

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

5.2 PURPOSE OF CONTROLS- ELECTRO-MECHANICAL

CONTROL OR INDICATOR	PURPOSE
START PUSHBUTTON	Depress to turn the compressor ON.
STOP PUSHBUTTON	Depress to turn the compressor OFF.
HAND/AUTO SELECTOR SWITCH	Selects between continuous or AUTO modes of operation.
HOURMETER	Records accumulative hours of compressor operation; useful for planning and logging service schedules.
LINE PRESSURE GAUGE	Continually monitors service line air pressure. Located on dry side of receiver downstream from check valve.
SUMP PRESSURE GAUGE	Continually monitors receiver/sump pressure at various load and/or unloaded conditions.
DISCHARGE TEMPERATURE GAUGE	Monitors temperature of the air leaving the compressor unit. For both air and water-cooled compressors, the normal reading should be approximately 180°F to 205°F (82°C to 96°C) depending on the ambient temperature.
FLUID FILTER MAINTENANCE GAUGE	Indicates when a fluid filter element change is required. The pointer will move into the red zone when the pressure drop through the filter is excessive.
AIR FILTER MAINTENANCE GAUGE	Indicates when the air filter element change is required. The pointer will move into the red zone when the pressure drop through the filter is excessive.
SEPARATOR MAINTENANCE GAUGE	Indicates when separator element change is required. The pointer will move into the red zone when pressure drop through the separator is excessive.
"POWER ON" LIGHT (RED)	Indicates when the starter is receiving power.
"RUNNING" LIGHT (GREEN)	Indicates when compressor is in operation.
"AUTO" LIGHT (AMBER)	Indicates when controls are in "AUTO" mode.
FLUID LEVEL SIGHT GLASS	Monitors fluid level in the sump. Proper level should fill the sight glass. Check the 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 the primary sight glass with a very slight film in the secondary 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 start-up.
DISCHARGE CHECK VALVE	Cuts off the reverse flow of air/fluid mixture through compressor discharge system at compressor shutdown.

Section 5
OPERATION

5.2 PURPOSE OF CONTROLS- ELECTRO-MECHANICAL

CONTROL OR INDICATOR	PURPOSE
THERMAL VALVE	Regulates flow of fluid to and around the cooler. Designed to maintain a minimum operating temperature of 170°F (77°C); used for fast warm-up on start-up.
MINIMUM PRESSURE/CHECK VALVE	Maintains minimum of 50 psig (3.4 bar) in the compressor sump. Valve piston restricts receiver air discharge from receiver/sump when pressure falls to 40 psi (2.8 bar). Prevents line pressure backflow into the sump during unload conditions and after shutdown.
COMPRESSOR DISCHARGE TEMPERATURE SWITCH	Designed to shut the compressor down when the discharge temperature reaches 240°F (115°C).
HIGH PRESSURE SHUTDOWN SWITCH	An added protective device designed to shut down the compressor when the pressure becomes too high. This switch is set for shutdown at approximately 135 psig (9.3 bar). When resetting, pressure is 100 psig (6.9 bar) or 25 psi (1.7 bar) above operating pressure.
LOW FLUID PRESSURE SHUTDOWN SWITCH	Protective device designed to shut down the compressor when the fluid pressure becomes too low. This switch is set for shutdown at approximately 15 psig (1.03 bar).
WATER PRESSURE SWITCH (water-cooled compressors only)	Prevents compressor operation if water pressure is too low. Standard setting is 15 psig (1.03 bar).
PRESSURE RELIEF VALVE	Opens sump pressure to the atmosphere should pressure inside the sump become too high (175 psig [12.1]). Operation of this valve indicates that the high pressure switch is either faulty or out of adjustment.
SULLICON CONTROL	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	Opens a pressure line between the sump and Sullicon Control allowing the Sullicon Control to regulate air delivery according to the air demand.
PILOT VALVE #1	Bypasses the pressure regulator valve causing the Sullicon Control to close the inlet valve when the compressor reaches maximum operating pressure.
PILOT VALVE #2 (spiral valve control)	Opens when the compressor starts; closes when the compressor is shut off. This prevents any air system loss when the compressor is shut off.
PRESSURE SWITCH	Senses service line pressure. When line pressure reaches maximum setting the pressure switch signals the pilot valves to unload the compressor.
BLOWDOWN VALVE	Vents sump pressure to the atmosphere during unload conditions and shutdown.

5.3 INITIAL START–UP PROCEDURE

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

1. Read the preceding pages of this manual thoroughly.
2. Be sure that all preparations and checks described in the Installation section have been made.
3. Crack open the shut off valve to the service line.
4. Start the compressor by pushing the START button.
5. Check for possible leaks in piping.
6. Slowly close the shut–off valve and check that the setting on the pressure switch is set correctly. If set correctly, the compressor will unload at the desired unload pressure. If adjustments are necessary, see Control System Adjustments in the Maintenance Section of the manual.
7. Observe the operating temperature. If the operating temperature exceeds 200°F (93°C), the cooling system or installation environment should be checked.
8. Observe return line sight glasses and maintenance indicators.
9. Open shut–off valve to service line.
10. Reinspect the compressor for temperature and leaks the following day.

5.4 SUBSEQUENT START–UP PROCEDURE

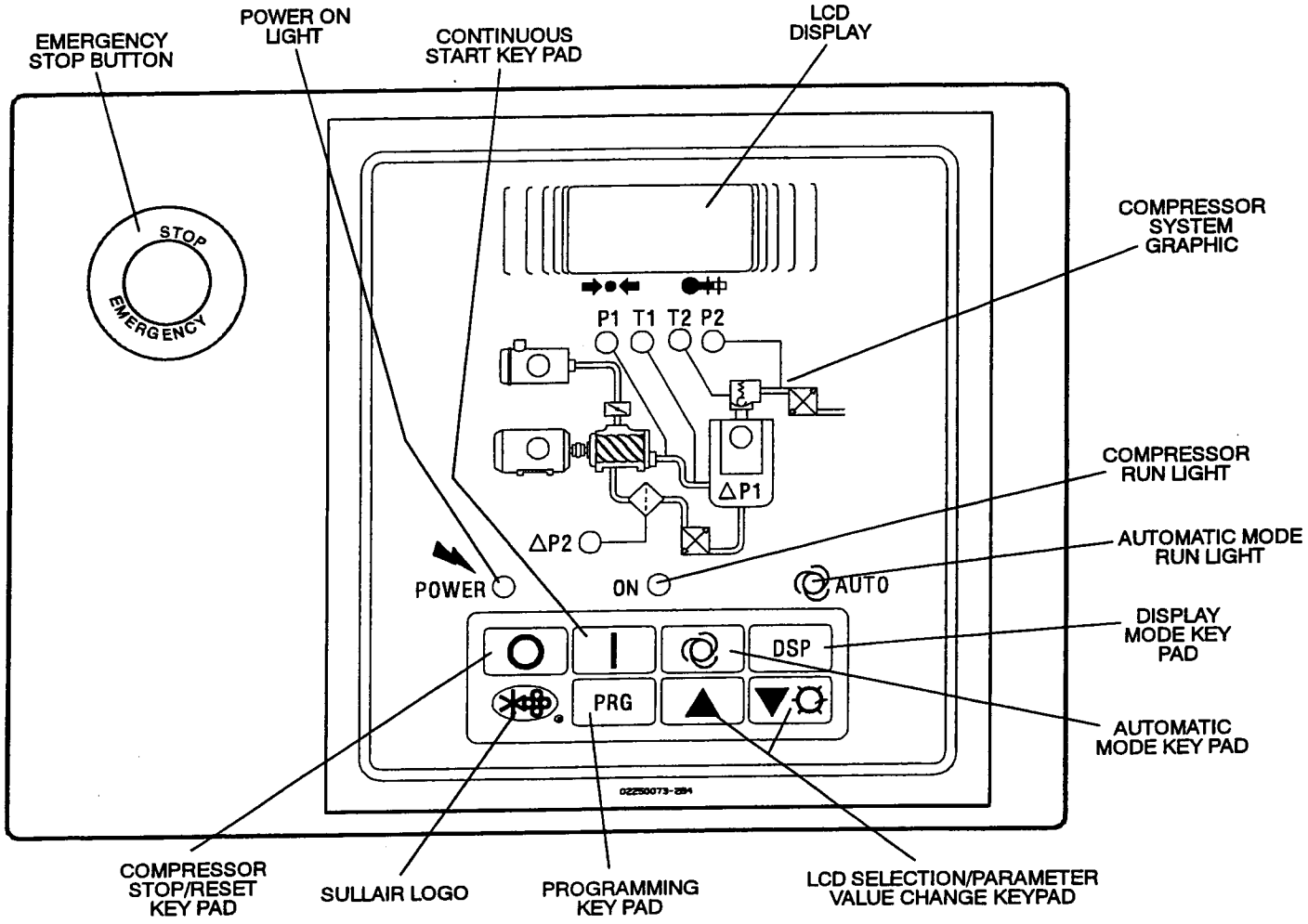
On subsequent start–ups, check that the proper level is visible in the fluid sight glass and simply press the START button. When the compressor is running, observe the instrument panel and maintenance indicators.

5.5 SHUTDOWN PROCEDURE

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

Section 6
SUPERVISOR II

Figure 6–1 Supervisor II Panel



6.1 BASIC INTRODUCTION

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

6.2 KEYPAD

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

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

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

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

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

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

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

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

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

6.3 STATUS DISPLAYS

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

(Display graphics shown below.)

- **STOP** – Compressor is off.

- **STANDBY** – Compressor is off but armed to start. This state may be entered because of a power up, or the unload timer had expired and stopped the machine. NOTE : The machine may start at any time.

- **STARTING** – Machine is trying to start.

- **OFF LOAD** – Machine is running and off loaded.

- **ON LOAD** – Machine is running and loaded.

- **FULL LD** – Machine is running and fully loaded. This state is only displayed if the machine has a full load valve.

- **RMT STOP** – Compressor is off but armed to start. The machine will start when the remote start contact is closed. NOTE : the machine may start at any time.

- **SEQ STOP** – Compressor is off but armed to start. The machine will start when the sequencing conditions meet the criteria to start. NOTE : the machine may start at any time.

This default display appears as follows:

STOP
110 180

Section 6
SUPERVISOR II

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

```
T1 HI
110  180
```

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

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

```
dP 1  4
MAX 10
```

- Sump pressure and line pressure.

```
P1  113
P2  108
```

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

```
dP2  4
MAX 20
```

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

```
P3  108
P4  113
```

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

```
dP3  40
MIN  1
```

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

```
T1  210
MAX 235
```

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

```
T2  210
MAX 235
```

- Total hours that the compressor has been running.

```
HRS RUN
001234.0
```

- Total hours that the compressor has been loaded.

```
HRS LOAD
000987.0
```

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

```
T1 HI
@1  234
```

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

```
T1 HI
@2 204
```

6.4 LAMP INDICATORS

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

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

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

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

P4 – (Pressure before oil filter)

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

dP2 – (Oil filter differential pressure)

dP3 – (Oil differential pressure)

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

T2 – (Discharge temperature) If lit steady, signifies that T2 is being displayed, if flashing denotes the presence of an alarm.

MOTOR – If flashing, indicates the motor overload

contact has opened.

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

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

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

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

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

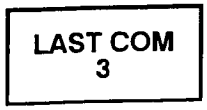
6.5 PARAMETER SETUP

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

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

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

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



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

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

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

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

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

6.6 OPERATING THE COMPRESSOR

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

MANUAL OPERATION MODE

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

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

AUTOMATIC OPERATION MODE

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

If the compressor is already running, but in continuous mode, pressing "⟲ " will switch operation to au-

tomatic. Pressing "⟲" while already running in automatic mode will cause the Supervisor to turn off the common fault relay, if engaged, and clear any maintenance indicators.

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

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

P2 > UNLD --> load solenoid turned off
P2 < LOAD --> load solenoid turned on

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

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

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

NOTE

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

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

6.7 PURPOSE OF CONTROLS

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

6.8 SUPERVISOR II OUTPUT RELAYS

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

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

6.9 MAINTENANCE INTRODUCTION

As you proceed in reading this section, it will be easy to see that Maintenance Program for the air compressor is quite minimal. The Supervisor monitors the status of the air filter, fluid filter, and separator elements. When maintenance to these devices is

required, the Supervisor will display the appropriate maintenance message and flash the location LED on the graphics map as a visual reminder.

⚠ WARNING

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

Stop compressor and relieve all internal pressure before doing so.

6.10 DAILY OPERATION

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

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

6.11 TROUBLESHOOTING INTRODUCTION

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

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

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

1. Check for loose wiring.
2. Check for damaged piping.
3. Check for parts damaged by heat or an electrical short circuit, usually apparent by discoloration or a burnt odor.

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

6.12 TROUBLESHOOTING GUIDE- SUPERVISOR II

SYMPTOM	PROBABLE CAUSE	REMEDY
T1 HI Message	Discharge Temperature Exceeded 225 °F (107 °C) for Pre–Alarm	
	Discharge Temperature Exceeded 235 °F (113 °C) for Shutdown	
	Ambient Temperature Exceeded 105 °F (41 °C)	Improve local ventilation (i.e., remote intake of process and/or cooling air.
	Fluid Level in Sump is Too Low	Check/correct fluid level.
	Thermal Valve Malfunctioned	Check/replace thermal valve.
	Cooler Fins are Dirty	Clean cooler fins.
	Water Flow is Low (water–cooled packages only)	Check cooling water supply (i.e., closed valves).
	Water Temperature is High (water–cooled packages only)	Increase water flow, lower water temperature.
	Cooler is Plugged (water–cooled packages only)	Clean tubes and/or shell – if tube plugging persists, provide cleaner water.
	Temperature RTD Malfunction	Check connections from RTD. If adequate, replace RTD.
P1 HI Message	P1 MAX – 3psi (.2 bar) Exceeded for Pre–Alarm	
	P1 MAX Exceeded for Shutdown	
	Discharge Pressure Exceeded Shutdown Level Because:	
	Unloading Device (i.e., Blowdown Valve, Sullicon Actuator, Optional Spiral Valve) Failed to Operate	Check operation of unloading device.
	Pressure Regulator Maladjusted	Check operation of pressure regulator.

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SUPERVISOR II

6.12 TROUBLESHOOTING GUIDE- SUPERVISOR (CONTINUED)

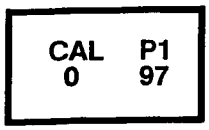
SYMPTOM	PROBABLE CAUSE	REMEDY
P1 HI Message (cont.)	Solenoid Valve Failed to Operate	Check operation of solenoid valve.
	Control Air Signal Leaks	Check tubework feeding control signal for leaks.
	Control Air Signal Filter Clogged	Service filter assembly.
SEP MNTN Message	Plugged separator	Replace separator elements.
	dP1 > 10 psi (0.7 bar)	Check P1 & P2 pressure transducers.
COMPRESSOR DOES NOT BUILD FULL DISCHARGE PRESSURE	Air Demand Exceeds Supply	Check air service lines for open valves or leaks.
	Inlet Air Filter Clogged	Check for maintenance message on Supervisor display. Inspect and/or change element.
	Inlet Valve Not Fully Open	Check actuation and butterfly disc position.
	Pressure Sensor and/or Connections at Fault	Check connections from transducer. If adequate, replace transducer.
OIL MNTN Message	Plugged Oil Filter	Replace oil filter.
	Oil Differential dP2 > 20 psi (1.38 bar)	Check P3 & P4 pressure transducers.
LINE PRESSURE RISES ABOVE UNLOAD SETTING	Pressure Sensor P2 at Fault	Check connections from transducer. If adequate, replace transducer.
	Unloading Device (i.e., Blowdown Valve, Sullicon Actuator, Optional Spiral Valve) Failed to Operate	Check operation of unloading device
	Solenoid Valve Failed to Operate	Check operation of solenoid valve.
	Control Air Signal Leaks	Check tubework feeding control signal for leaks.
	Control Air Signal Filter Clogged	See compressor Operator's Manual for filter assembly service.
EXCESSIVE FLUID CONSUMPTION	Clogged Return Line Strainer or Orifice	Clean strainer-screen and o-ring replacement kit available. Clean orifice.
	Damaged or Improperly Set Gaskets on Separator Elements	Inspect separator elements and gaskets. Replace if damaged.
	Fluid System Leaks	Check tube/pipework for leaks.
	Fluid Level Too High	Drain excess fluid.
	Excessive Fluid Foaming	Drain and change fluid.

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

6.13 CALIBRATION

The Supervisor II has software calibration of the pressure and temperature probes. This calibration affects the offset but not the slope of the pressure and temperature calculations. Because of this, the most accurate method is to heat or pressurize the transducer to its operating value. If this is too difficult, room temperature/open atmosphere calibration is adequate. Calibration may only be done while machine is stopped and unarmed.
To enter calibration mode, you must press the following keys in sequence while in the default status display mode: " ", "▲", DSP, "▼ ☼" , PRG
Once in calibration mode, you will see a screen like the following:

¬ In the above example, "0" refers to the amount of adjustment (in psi or °F, "97" (6.7 bar) refers to the current value of P1).To make adjustments, Press



the "▲" (UP ARROW) key to increase the value, press the "▼ ☼" (DOWN ARROW / LAMP TEST) key to decrease the value. The number on the left will increase or decrease always showing the total amount of adjustment. Maximum adjustment is ± 7. The **DSP** key exits, wiping out changes to the current item, while saving changes to any previous items. The **PRG** key saves the current item and advances to the next. All temperatures and pressures may be calibrated individually.

6.14 SHUTDOWN SETTINGS

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

NOTES

7.1 GENERAL

As you proceed in reading this section, it will be easy to see that the Maintenance Program for the air compressor is quite minimal. The use of the service indicators provided for the fluid filter, air filter and fluid separator, will alert you when service maintenance is required. When the maintenance gauge shows red, maintenance for that specific item is required. See instructions for each item in Section 6.7, Parts Replacement and Adjustment procedures.

7.2 DAILY OPERATION

Prior to starting the compressor, it is necessary to check the fluid level in the sump. Should the level be low, simply add the necessary amount. If the addition of fluid becomes too frequent, a simple problem has developed which is causing this excessive loss. See the Troubleshooting Section (7.8) under Excessive Fluid Consumption for a probable cause and remedy.

After a routine start has been made, observe the instrument panel gauges and be sure they monitor the correct readings for that particular phase of operation. After the compressor has warmed up, it is recommended that a general check of the overall compressor and instrument panel be made to assure that the compressor is running properly.

⚠ 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.

7.3 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 EVERY 1000 HOURS

After 1000 hours of operation, it will be necessary to perform the following:

1. Clean the return line strainers.
2. Lubricate the Sullicon Control linkage.
3. Replace the fluid filter elements.

7.5 FLUID FILTER MAINTENANCE

Fluid should be changed under the following conditions, whichever occurs first:

1. Every 8000 hours.
2. Once a year.
3. As indicated by fluid analysis.

A fluid sample at every 4000 hours is recommended. Return fluid to Sullair Corporation in Michigan City for free analysis. To facilitate this, a sample bottle is included with the compressor.

7.6 SEPARATOR MAINTENANCE

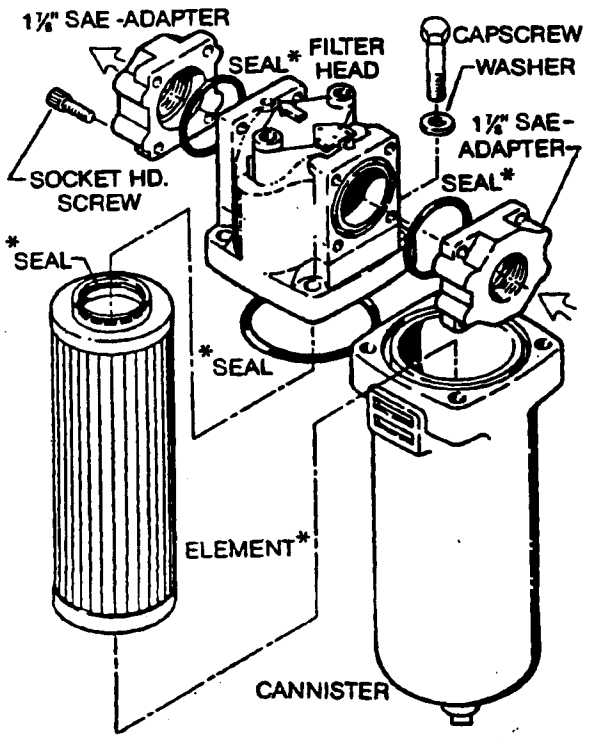
Replace the separator elements when your separator maintenance gauges shows red or after one (1) year, whichever comes first. The separator elements must be replaced. **DO NOT** clean the separator elements.

7.7 PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES

MAIN FILTER MAINTENANCE

Refer to Figure 7-1. The main filter (P/N 250007-219) is located schematically between the compressor cooler and the fluid stop valve. When servicing the main filter, shut the compressor down and follow the instructions below. For element replacement order kit no. 250008-956.

Figure 7-1 Main Filter (P/N 250007-219)



* Replacement Element Kit P/N 250008-956

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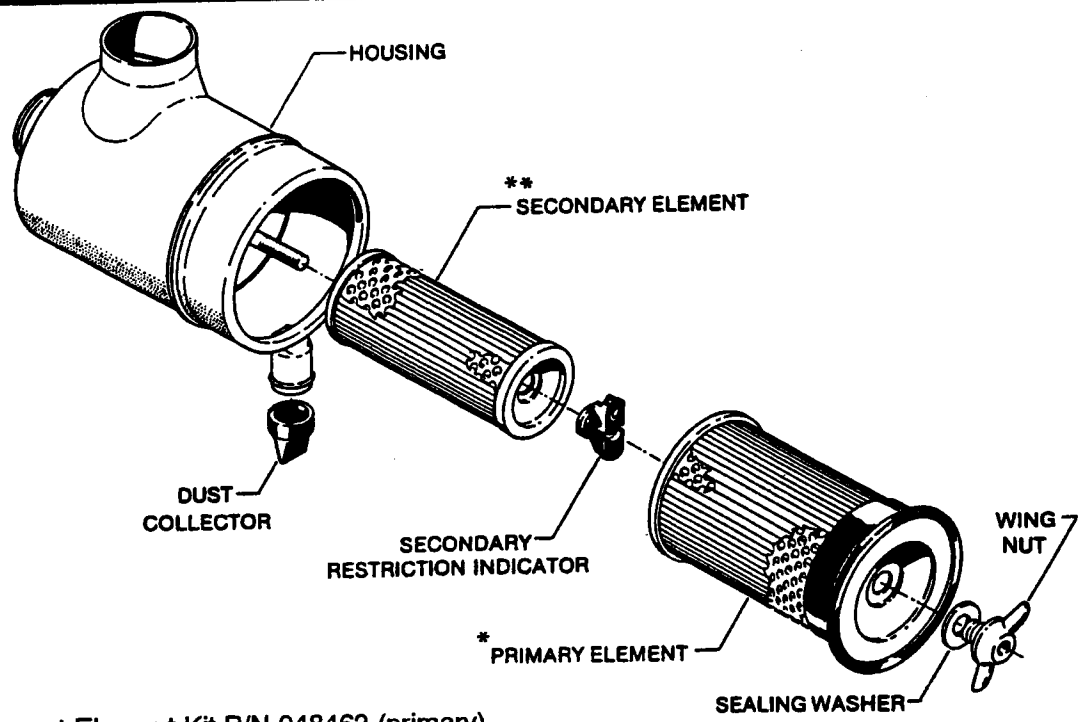
Figure 7–2 Air Filter (P/N 048456)



* Replacement Element Kit P/N 048462 (primary)
** Replacement Element Kit P/N 048463 (secondary)

1. Remove the four (4) capscrews which secure the filter head to the canister.
2. Pull the canister away from the filter head. The filter elements will be attached to the head.
3. Remove the canister seal.
4. Thoroughly clean the filter head and canister in solvent.
5. Lubricate the new seals with the same type of oil used in the compressor and position each seal in its appropriate place.
6. Carefully push the element back in position on the filter head.
7. Hold the canister in position under the housing and replace the capscrews, securing the canister and filter head.

AIR FILTER MAINTENANCE

Refer to Figure 7–2. Air filter (P/N 048456) maintenance should be performed when the air filter maintenance indicator shows red. The maintenance indicator is located on the filter outlet on electro-mechanically- controlled compressors, and on the instrument panel on Supervisor II controlled compressors. The air filter is equipped with a primary element and a secondary element. As previously stated, the restriction indicator will alert you as to when primary element maintenance is necessary. When removing the primary element, always check the secondary element for visible dirt, grease or damage. The secondary element must be changed after every third element change or once a year, whichever comes first.

DO NOT reconnect the secondary element once it is removed.

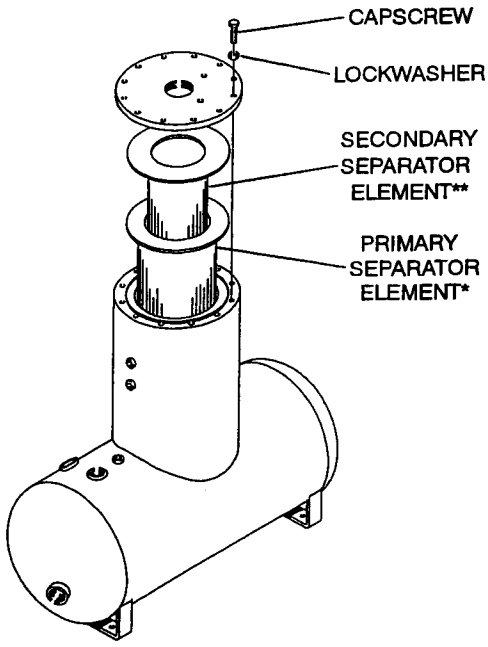
ELEMENT REMOVAL

1. Clean the exterior of the air filter housing.
2. Remove the cover assembly by loosening the wingnut securing the cover clamp.
3. Remove the element assembly from the housing by unscrewing the wingnut.
4. Clean the interior of the housing by using a damp cloth. **DO NOT** blow dirt with compressed air as this may introduce dust downstream.
5. Inspect the secondary element restriction indicator. Replacement element if necessary.
6. 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.
7. Install the new secondary element and replace the restriction indicator.
8. With the secondary element in place, replace the primary element.

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 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.

Figure 7–3 Separator Element Replacement

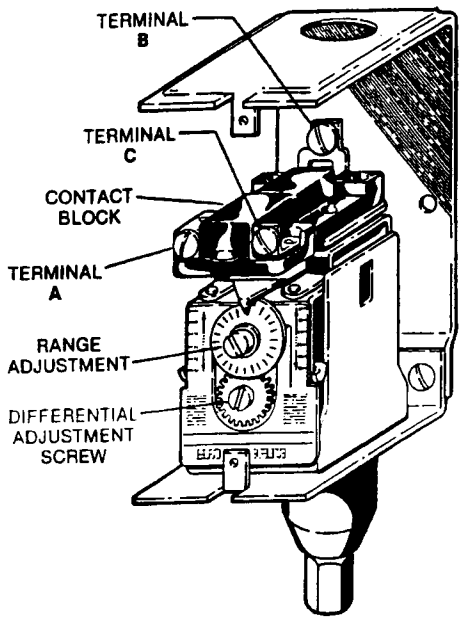


*Replacement Element P/N 250034–122 (primary)
** Replacement Element P/N 0250034–134 (secondary)

4. After the element has been installed, inspect and tighten all air inlet connections prior to resuming operation.

PRIMARY ELEMENT REPLACEMENT

Figure 7–4 Pressure Switch (P/N 040694)



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

SEPARATOR ELEMENT REPLACEMENT

Refer to Figure 7–3. The separator elements must be changed when the maintenance gauge pointer moves into the red zone, or Supervisor indicates 10 psid ΔP, or once a year whichever occurs first. Order separator elements no. 250034–122 (primary), and no. 250034–134 (secondary). Follow the procedure explained below for separator element replacement.

1. Relieve all pressure from the separator and all compressor lines.
2. Disconnect all piping connected to the separator cover to allow removal (return lines, service lines, etc.).
3. Loosen and remove the twelve (12) 3/4" x 3" hex head capscrews from the cover plate.
4. Lift the cover plate from the separator.
5. Remove the primary and secondary separator elements.
6. Scrape the old gasket material from the cover and flange on the sump being careful not to let the scraps fall in the sump.
7. Inspect the receiver/sump tank for rust, dirt, etc.
8. Reinsert the separator elements with gaskets attached into the sump taking care not to dent it against the tank opening.
9. Clean the underside of the separator tank cover and remove any rust. **DO NOT** remove the staples from the gaskets.
10. Replace the cover plate, washers and capscrews. Torque to 155 ft.–lbs (211 Nm).
11. Reconnect all piping making sure return line tubes extend to the bottom or 1/4" above the bottom of the separator element. This will assure proper fluid return flow to the compressor.
12. Check the return line strainer before restarting the compressor.

CONTROL SYSTEM ADJUSTMENT

Refer to Figures 7–4 and 7–5. Prior to adjusting the control system, it is necessary to determine the desired operating pressure range and also the maximum pressure at which your compressor is to operate. The pressure must not exceed the maximum operating pressure which is stamped on the compressor serial number nameplate. The following explanation applies to a typical installation with a desired operating range of 100 to 110 psi (6.9 to 7.6 bar). This information will apply to a compressor with any other operating range excepting the stated pressures.

Remove the cover of the pressure switch. With the shut–off valve closed (or slightly cracked open) start the compressor. Observe the line pressure gauge and pressure switch contacts. When the line pressure reaches the desired unload (maximum) pressure, the pressure switch contacts should open. If the pressure switch contacts do not open or they

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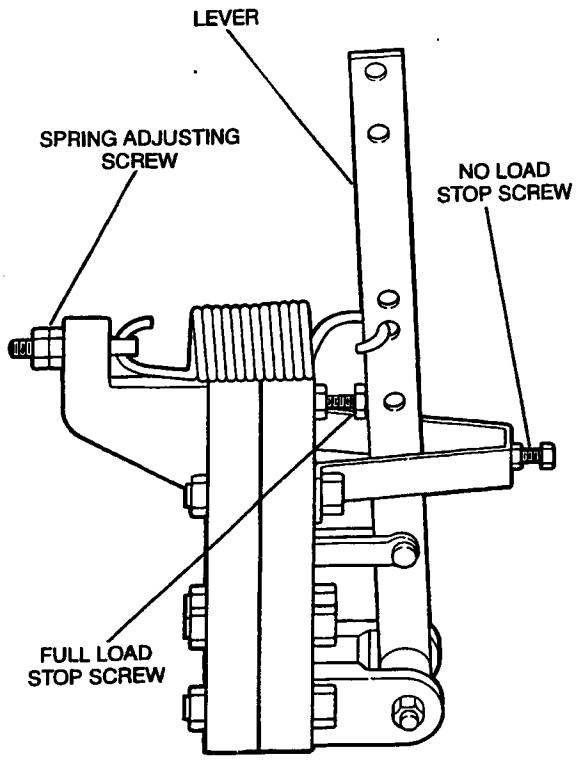
Figure 7–5 Sullicon Control (P/N 011682–003)



* Repair Kit P/N 250020–353

open prior to the desired pressure, the pressure switch setting will require adjustment (refer to Figure 7–4).

⚠ DANGER

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

FOR PRESSURE RANGE ADJUSTMENT:

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

FOR DIFFERENTIAL ADJUSTMENT:

Differential is the difference between the high and low pressure settings 10 psi (0.7 bar) typical.

Turn the differential adjusting screw to the lower (reset) setting. Turning the screw counterclockwise widens the differential by lowering the reset (lower) setting only.

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

Above 100 psi (6.9 bar), the regulator should allow pressure to flow into the control chamber of the Sullicon Control. The Sullicon Control lever should start to move at this time. Cycle the control system several times and recheck all pressure settings.

DRIVE COUPLING INSTALLATION AND MAINTENANCE

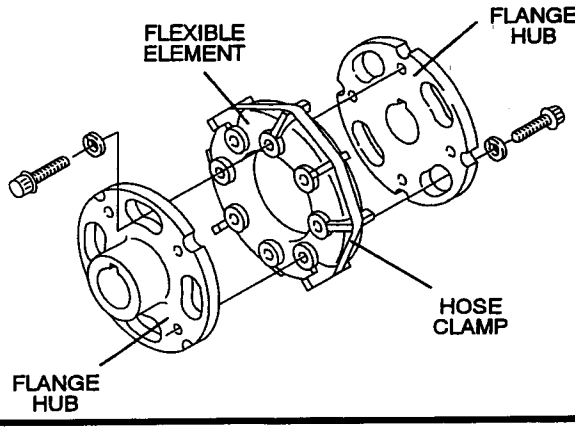
Refer to Figures 7–6, 7–7 and 7–8. When installing and aligning the dirve coupling, utilization of a laser or dial indicator arrangement is recommended. For coupling installation and alignment, the tools required are a straight edge, a measuring scale, one set of feeler gauges, a set of standard Allen wrenches and one set of standard socket wrenches.

⚠ WARNING

Disconnect all power at source, before attempting maintenance or adjustments.

For installation and maintenance of the drive coupling, follow the steps explained below.

Figure 7–6 Drive Coupling

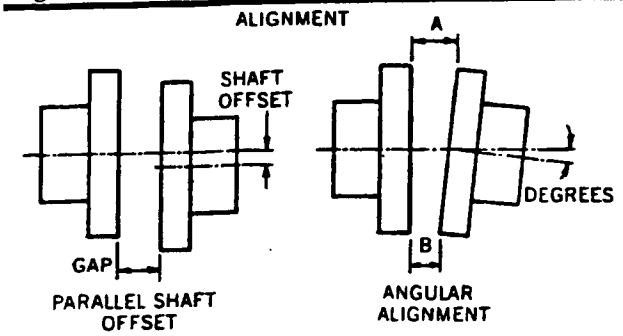


STEP 1 MOUNT HUBS – Mount the motor hub and the compressor hub on its respective shaft. Position the hubs to establish the correct gap specified in Table 1. Secure each hub with a setscrew.

STEP 2 OFFSET ALIGNMENT – Clean any oil, grease, dirt or paint from coupling faces and the other surfaces of the drive flanges. Rotate shafts so that a straight edge will rest squarely (or within the maximum limit shown in Table 1) on both flanges and at a point 90° away. The vertical offset alignment is adjusted by the addition or removal of motor mounting shims. Loosen the motor mounting bolts and slide the motor sideways to correct the horizontal offset.

STEP 3 COUPLING GAP AND ANGULAR ALIGNMENT – Position the hubs to establish the proper gap and angular alignment as indicated in Table 1. To determine the angular misalignment in inches, measure the maximum space between the hub flanges

Figure 7–7 Drive Coupling Alignment



and the minimum space 180° away, and then subtract. To adjust the horizontal angular misalignment, loosen the motor mounting bolts and adjust the motor position until the angular alignment is within tolerance.

⚠ WARNING

DO NOT upset the offset alignment or hub gap when adjusting motor position.

When within the limits specified in Table 1, tighten the motor mounting bolts and recheck the offset and angular alignment. If the vertical angular alignment is not within .010 tolerance, shim the front or rear of the motor separately to correct. Recheck the vertical offset.

TABLE 1
INSTALLATION DATA

Tightening Torque ft.-lbs.	Coupling Gap inches	Max. Operating Misalignment: Parallel Offset inches	Max. Operating Misalignment: Angular inches (I)
200	2.969 + .300 −.000	.010	.010

(I) Angular misalignment in inches equals maximum A minus minimum B as shown in Figure 7–7. **DO NOT** exceed values in Table above.

STEP 4 INSTALL THE FLEXIBLE ELEMENT– Position the motor and compressor key ways 180° apart. Insert the flexible element between the two hubs. The element should be compressed prior to insertion. The element can be compressed by tightening a suitable sized radiator hose clamp around the outer edge of the element as shown in Figure 7–7. Slide the ferry head capscrews with lockwashers through the holes in the hubs and element. Tighten the bolts to 200 ft.–lbs. (272 Nm).

NOTE

Bolts are 3/4–10 x 4" NAS 144 black oxide coated. DO NOT substitute with any other bolts.

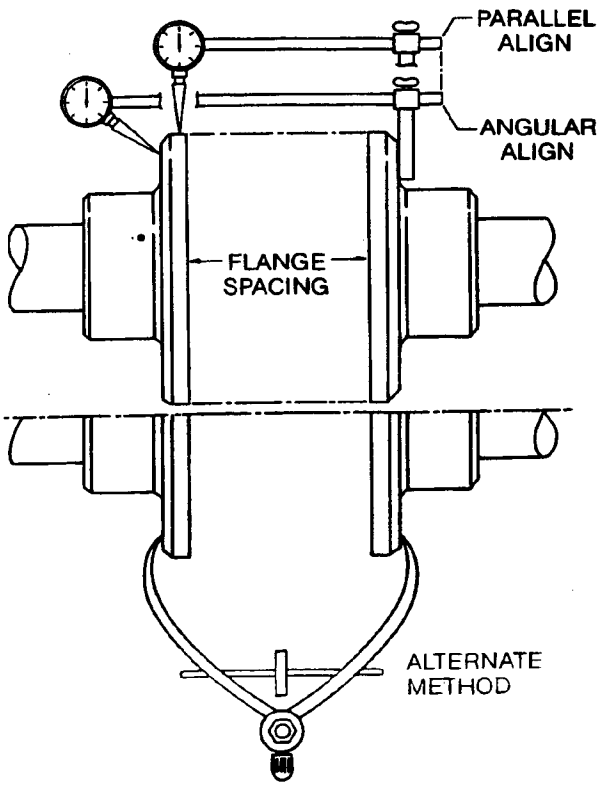
After tightening the hex bolts, tighten the shaft setscrews and remove the hose clamp from the flexible element. At this time, the coupling is ready for operation.

DRIVE COUPLING DISASSEMBLY AND REMOVAL

Disassembly and removal of the drive coupling is done in the following manner:

1. Place a suitable sized radiator hose clamp over the flexible element as show in Figure 7–6 and tighten a sufficient amount to compress the rubber.
2. Remove the ferry head bolts from the hubs and element.
3. Rotate the element until the studs clear the hubs.
4. Remove the element from the hubs with the hose clamp still in place.
5. Loosen the shaft setscrews and remove the hubs.

Figure 7–8 Parallel/Angular Offset Alignment



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7.8 TROUBLESHOOTING

The information contained in the Troubleshooting chart has been compiled from field report data and factory experience. 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 repairs or component replacement procedures.

A detailed visual inspection is worth performing for almost all problems and may avoid unnecessary additional 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 Distributor or the Sullair Corporation factory Service Department.

7.9 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 WITH AIR DEMAND PRESENT	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	Defect in pressure switch; check pressure at which contact points open.
		Separator requires maintenance; check maintenance indicator under full load conditions.
		High pressure shutdown switch is adjusted too low; readjust to 135 psig (9.3 bar).
		Defective pilot valve; pilot valve should cause control lever to move to unload stop when the pressure switch contacts open. Repair if defective.
		Defective blowdown valve; blowdown valve should exhaust sump pressure to 40 to 55 psig (2.8 to 3.8 bar) when maximum operating pressure is reached. Repair if defective.
	Discharge Temperature Switch Open	Cooling water temperature too high; increase water flow (water-cooled only).
		Cooling water flow insufficient; check water lines and valves (water-cooled only).
		Cooler plugged; clean tubes. If plugging persists, install water conditioner (water-cooled only).
		Cooling air flow restricted; clean cooler and check for proper ventilation.
		Ambient temperature is too high; provide sufficient ventilation.
		Low fluid level; add fluid.
		Clogged filter; change the fluid filter element and change the bearing filter element if maintenance indicator shows red.
		Thermal valve not functioning properly; replace element (air-cooled only).
		Water flow regulating valve not functioning properly; change (water-cooled only).

7.9 TROUBLESHOOTING GUIDE (CONTINUED)

SYMPTOM	PROBABLE CAUSE	REMEDY
COMPRESSOR SHUTS DOWN WITH AIR DEMAND PRESENT (cont.)		Defective discharge temperature switch; check for a short or open circuit to probe and correct wiring.
		Low fluid pressure
		Low water pressure
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.
	Pressure Regulator Out of Adjustment	Adjust regulator according to control adjustment instructions in the Maintenance section.
	Defective pressure regulator	Check diaphragm and replace if necessary (kit available).
LINE PRESSURE RISES ABOVE CUT-OUT PRESSURE SETTING ON PRESSURE SWITCH	Leak in Control System Causing Loss of Pressure Signals	Check for leaks.
	Defective Pressure Switch	Check that diaphragm and contacts are functioning properly and are not damaged. Replace if necessary.
	Defective Pilot Valve	Check that Sullicon Control lever is moved to unload stop when the pressure switch contacts open. Repair or replace if necessary (kit available).
	Defective Blowdown Valve	Check that sump pressure is exhausted to the atmosphere when the pressure switch contacts open. Repair or replace if necessary (kit available).
	High Pressure Shutdown is Defective or Adjustment is Incorrect	Readjust or replace.
	Plugged Control Line Filter	Clean or repair if necessary.
EXCESSIVE COMPRESSOR FLUID CONSUMPTION	Clogged Return Line or Orifice	Clean strainer (screen and o-ring replacement kit available).
		Clean orifice.
	Separator Element Damaged or Not Functioning Properly	Change separator.
	Leak in the Lubrication System	Check all pipes, connections and components.
	Excess Fluid Foaming	Drain and change.
	Fluid Level Too High	Drain excess.
PRESSURE RELIEF VALVE OPEN REPEATEDLY	High Pressure Shutdown Switch is Defective or Out of Adjustment (135 psig [9.3 bar]).	Readjust below pressure relief valve setting of 150 psig (10.3 bar) or replace.
	Defective Pressure Relief Valve	Replace pressure relief valve.
	High Separator Element Pressure Differential	Change separator elements.

NOTES

RECOMMENDED SPARE PARTS LIST

8.1 PROCEDURE FOR ORDERING PARTS

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

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

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

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

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

8.2 RECOMMENDED SPARE PARTS LIST

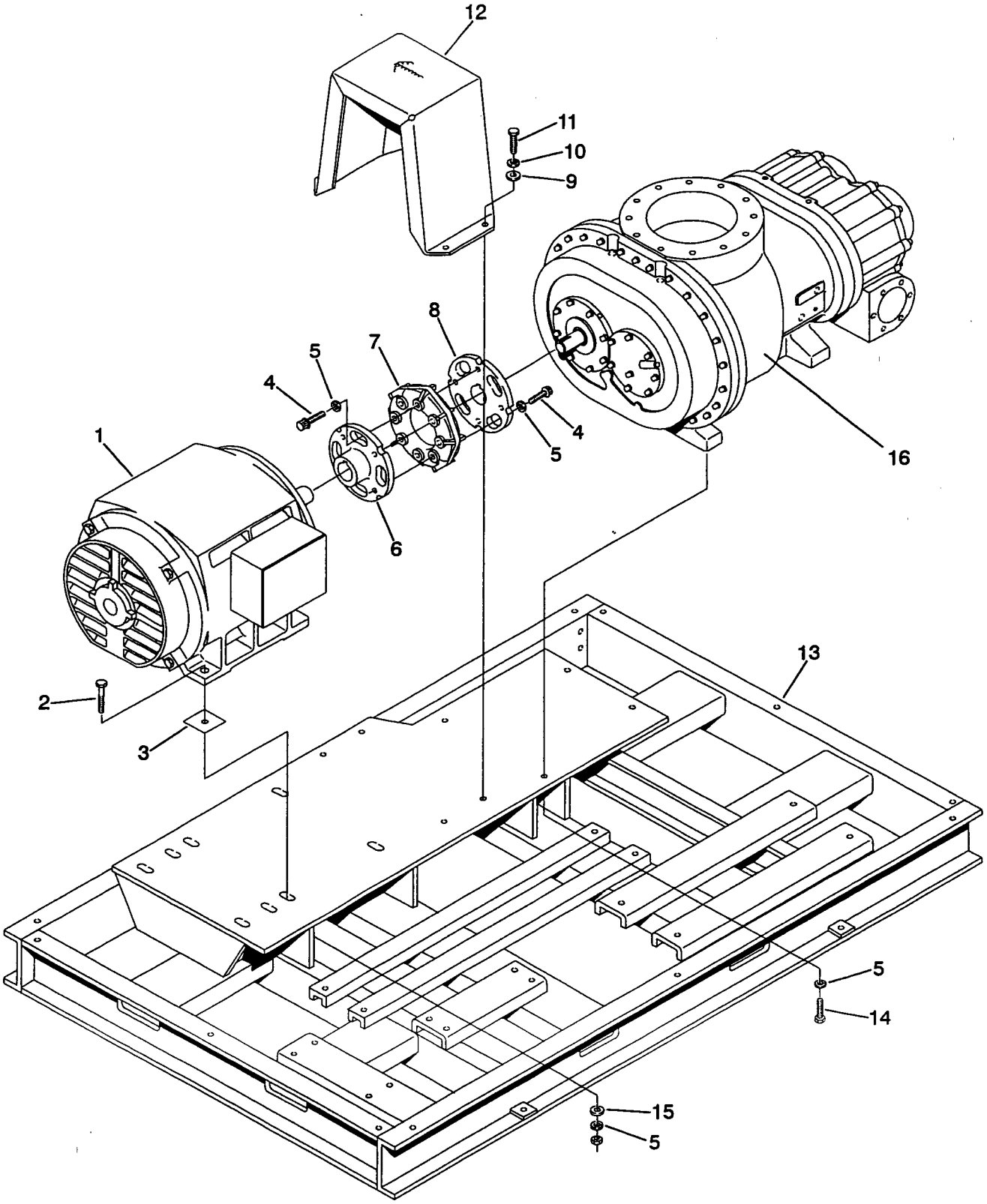
DESCRIPTION	KIT NUMBER	QUANTITY
replacement element for air filter 048456 (primary)	048462	1
replacement element for air filter 048456 (secondary)	048463	1
repair parts for thermal valve 02250113-627 (element)	049542	1
repair parts for thermal valve 02250113-627 (viton seal)	02250101-372	1
replacement element for separator w/gaskets (primary)	250034-122	1
replacement element for separator w/gaskets (secondary)	250034-134	1
repair kit for regulator valve (Sullicon) 406929	041742	1
repair kit for regulator valve 408275	250028-693	1
repair kit for blowdown valve 044912	046782	1
repair kit for solenoid valve 250038-674	02250055-940	1
replacement coil for solenoid valve 250038-674	250031-738	1
repair kit for solenoid valve 250038-666	250038-672	1
replacement coil for solenoid valve 250038-666	250038-730	1
repair kit for solenoid valve 02250114-601	02250044-391	1
replacement coil for solenoid valve 02250114-601	250031-738	1
repair kit for control filter 02250112-032	02250112-031	1
repair kit for Sullicon Control 011682-003	250020-353	1
repair kit for fluid return strainer 241771	241772	1
replacement kit for fluid filter 250007-219	250008-956	1
repair kit for fluid stop valve 02250113-668	02250116-697	1
repair kit for combination trap/separator 250007-787	250033-036	1
repair kit for 3" coupling 040327	040523	2
repair kit minimum pressure/check valve 250033-821	250018-262	1
diaphragm repair kit for actuator valve	608311-001	1
replacement rack for actuator valve	02250096-726	1
repair kit shaft seal	600889-001	1
compressor Sullube fluid (5 gallons)	250022-669	5 gal
compressor 24KT fluid (5 gallons)	02250051-153	5 gal
compressor CP-4600-32-F fluid (5 gallons)	250029-008	1 gal

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

Section 8

ILLUSTRATIONS AND PARTS LIST

8.3 MOTOR, COMPRESSOR, FRAME AND PARTS



8.3 MOTOR, COMPRESSOR, FRAME AND PARTS

key number	*description*	*part number*	*quantity*
1	motor, 200HP	(I)	1
2	capscrew, hex GR5 3/4"–10 x 2 1/2"	828612–250	4
3	shim, set	020293	4
4	capscrew, ferry hd 3/4"–10 x 4"	828412–400	8
5	washer, springlock 3/4"	837512–188	16
6	hub, coupling 2 3/8"	250004–635	1
7	element, drive coupling	046999	1
8	hub, coupling 2 1/4"	250007–875	1
9	washer, reg 1/2"	838212–112	4
10	washer, springlock 1/2"	837508–125	4
11	capscrew, hex GR5 1/2"–13 x 1 1/2"	829108–150	4
12	guard, coupling	250007–304	1
13	frame	250022–971	1
14	capscrew, hex GR5 3/4"–10 x 1 1/2"	828612–150	4
15	washer, reg 3/4"	837212–112	8
16	unit, compressor	(II)	1

(I) Motor may vary. Consult factory with machine serial number.

(II) 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.

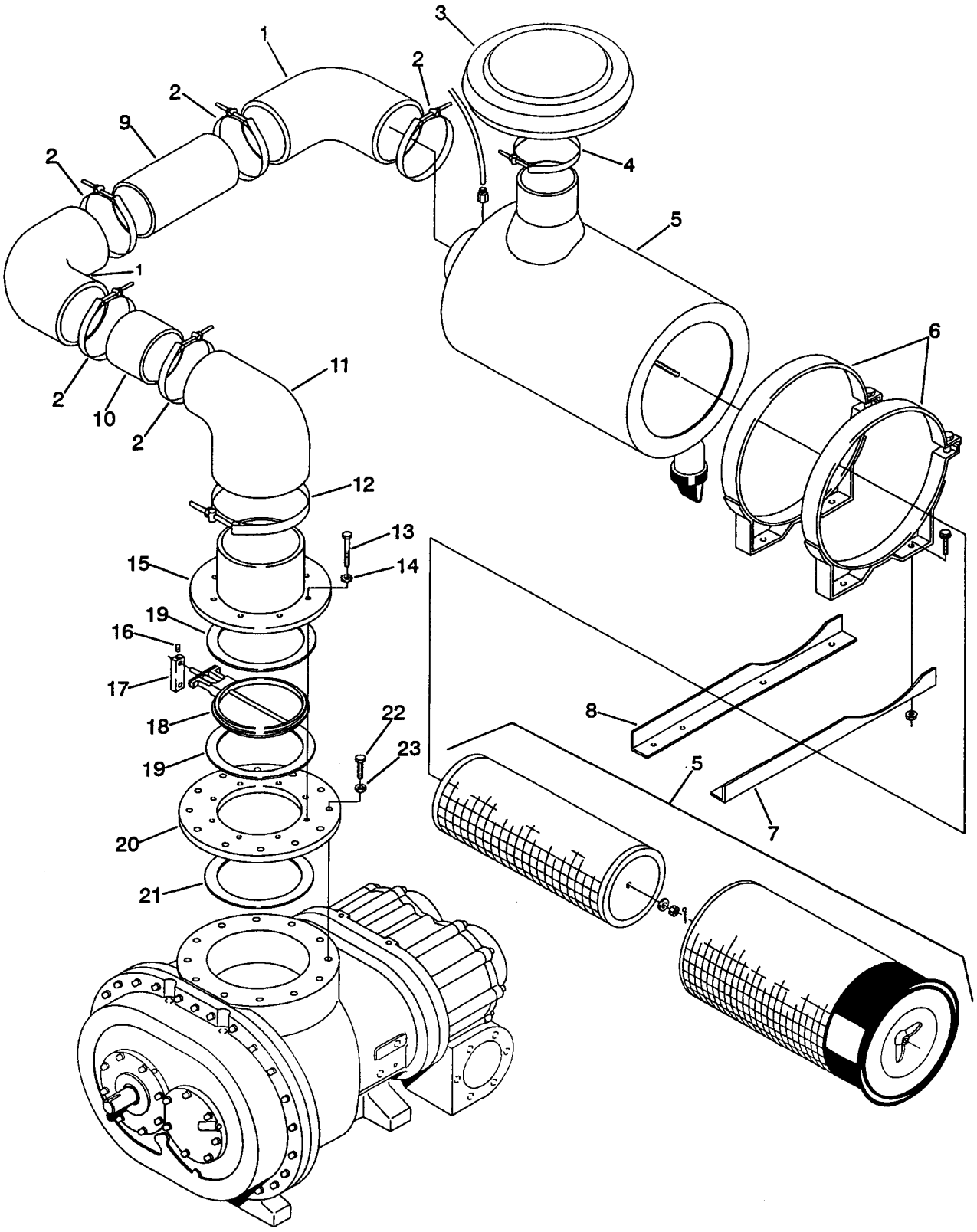
The shaft seal is not considered part of the compressor unit in regard to the two year warranty. The normal Sullair parts warranty applies. For shaft seal repairs order repair kit no. 600889–001.

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

Section 8

ILLUSTRATIONS AND PARTS LIST

8.4 AIR INLET SYSTEM



8.4 AIR INLET SYSTEM

key number	*description*	*part number*	*quantity*
1	elbow, rubber 90° 7"	046078	2
2	clamp, hose 7"	041992	5
3	cover, air inlet	046307	1
4	clamp, hose 7 3/4"	250031-260	1
5	filter, air (I)	048456	1
6	band, mounting 16"	044248	2
7	angle, air filter support LH	250023-752	1
8	angle, air filter support RH	250023-751	1
9	duct, air inlet 7" x 10"	250002-781	1
10	duct, air inlet 7" x 5"	250002-801	1
11	elbow, rubber reducing 90° 7" x 8"	245796	1
12	clamp, hose 8"	043598	1
13	capscrew, hex GR5 5/8" x 2 3/4"	829110-275	8
14	washer, springlock 5/8"	837510-156	8
15	adapter, air inlet 8"	013127	1
16	screw, set sq hd 5/16" x 3/4"	02250112-197	1
17	lever, inlet valve	020687	1
18	valve, butterfly 8"	040338	1
19	gasket	040422	2
20	adapter, air inlet	250022-606	1
21	gasket	041079	1
22	capscrew, hex GR5 7/8" x 2"	829114-200	10
23	washer, springlock 7/8"	837814-219	10

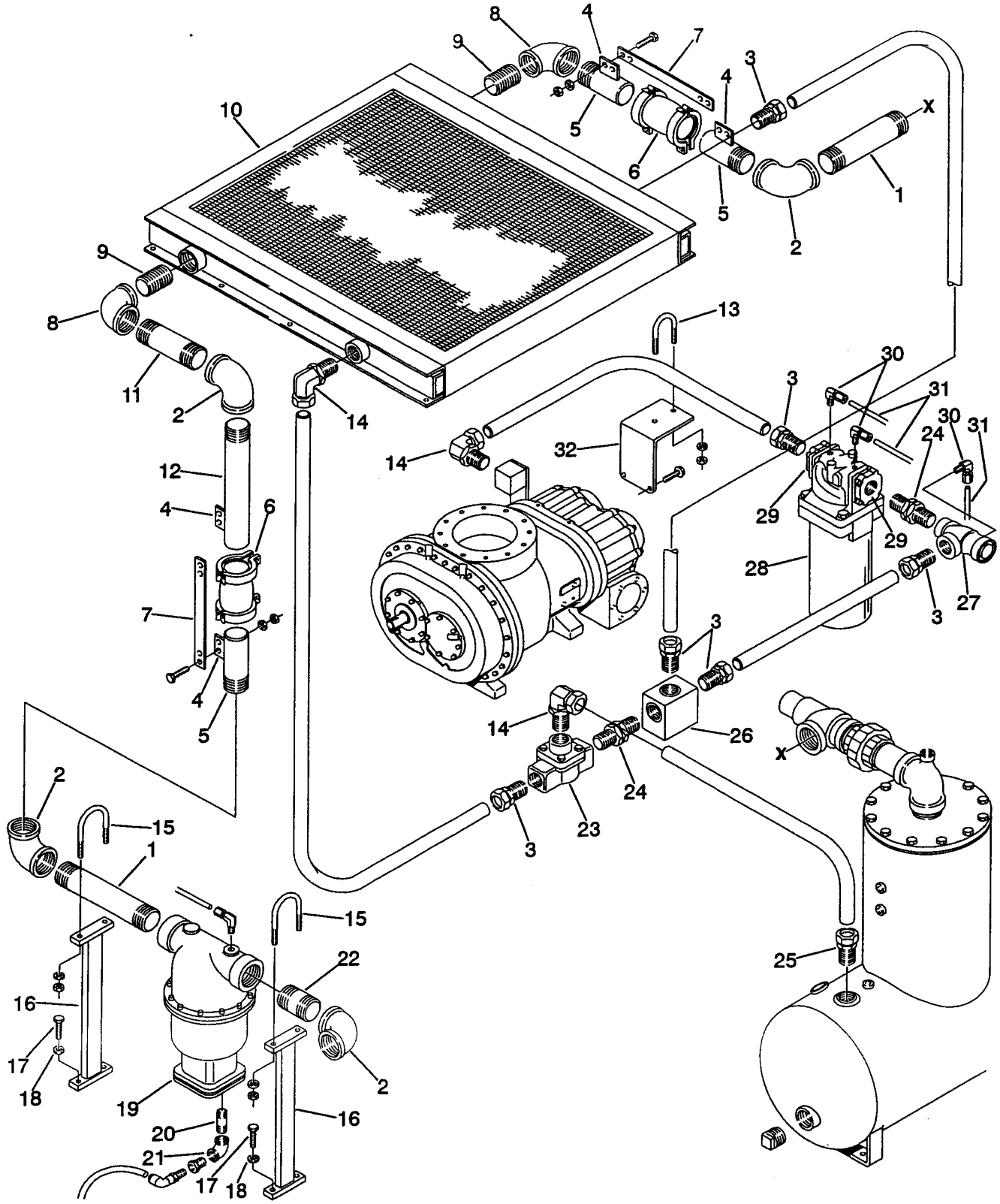
(I) For maintenance on air filter no. 048456, order primary replacement element no. 048462, and secondary replacement element no. 048463.

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

Section 8

ILLUSTRATIONS AND PARTS LIST

8.5 COOLING AND LUBRICATION SYSTEM– AIR–COOLED



8.5 COOLING AND LUBRICATION SYSTEM– AIR–COOLED

key number	*description*	*part number*	*quantity*
1	nipple, pipe 3" x 15"	822148–150	2
2	elbow, pipe 3"	801515–120	3
3	connector, tube 1 1/2" x 1 7/8"	811824–188	6
4	reinforcement, flexmaster	250036–136	4
5	nipple, half 3" x 9"	822848–090	3
6	coupling, 3" **(I)**	040327	2
7	reinforcement, flexmaster	250035–138	2
8	elbow, reducing 3" x 2 1/2"	801612–100	2
9	nipple, pipe 2 1/2" x close	822240–000	1
10	cooler, combination fluid/after	02250112–715	1
11	nipple, pipe 3" x 9"	822148–090	1
12	nipple, half 3" x 15"	822848–150	1
13	clamp, exhaust	040155	1
14	elbow, tube	811624–188	3
15	clamp, exhaust 3 1/2"	040284	2
16	support, moisture separator	250023–077	2
17	capscrew, hex GR5 1/2"–13 x 1 1/2"	829108–150	4
18	washer, springlock 1/2"	837508–125	4
19	separator, combination trap **(II)**	250007–787	1
20	nipple, pipe 3/4" x 3"	822112–030	1
21	elbow, pipe 3/4"	801515–030	1
22	nipple, pipe 3" x 5 1/2"	822148–055	1
23	valve, thermal **(III)**	02250113–627	1
24	connector	02250055–014	2
25	connector, tube–M 1 1/2" x 1 1/2"	810224–150	1
26	manifold, block	02250113–549	1
27	valve, fluid stop **(IV)**	02250113–668	1

(Continued on page 53)

(I) For maintenance on coupling no. 040327, order repair kit no. 040523.

(II) For maintenance on combination trap/separator no. 250007–787, order repair kit no. 250033–036.

(III) For maintenance on thermal valve no. 02250113–627, order the following parts:

element, thermal valve 175	049542	1
seal, U–cup viton therm vlv	02250101–372	1

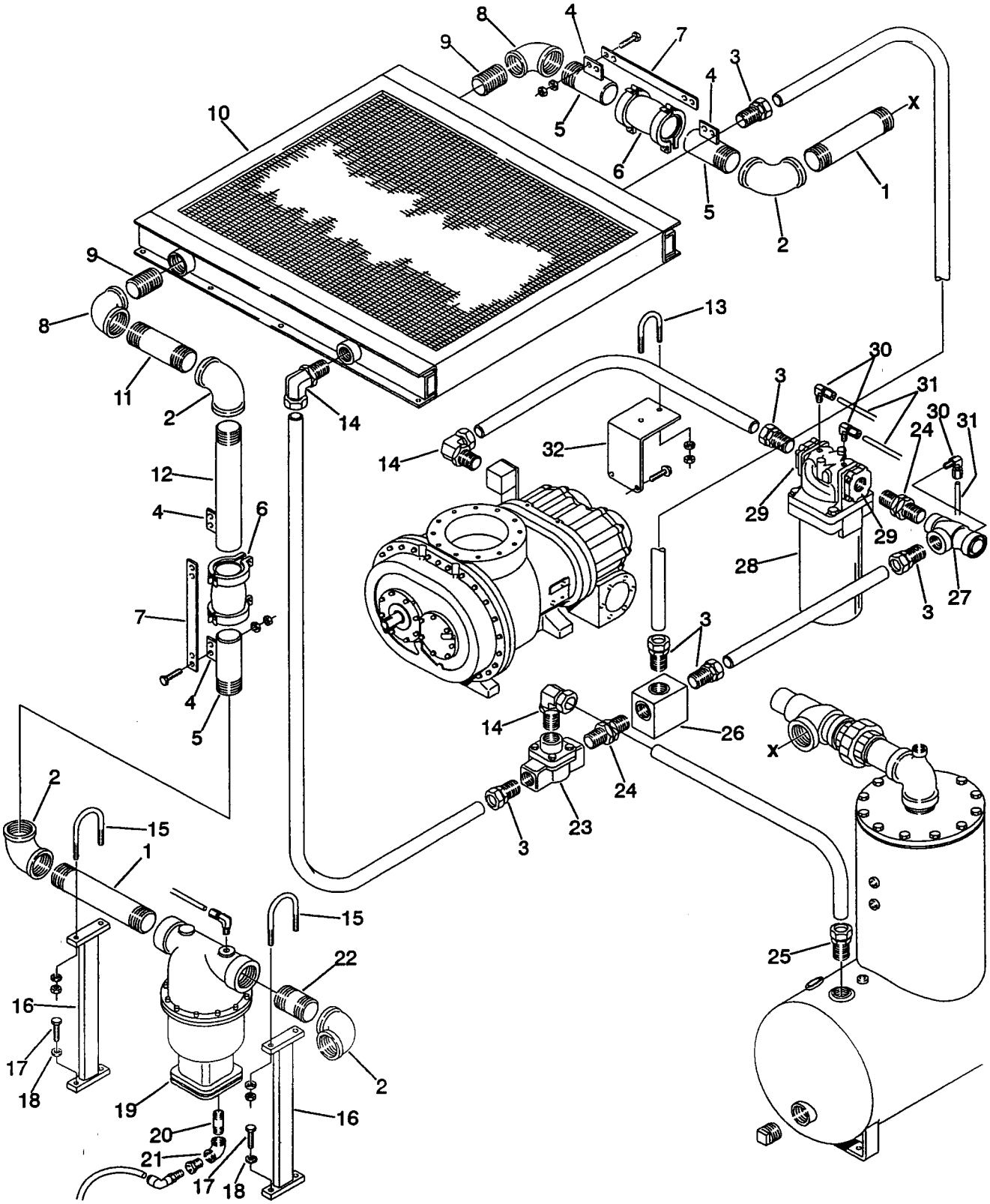
(IV) For maintenance on fluid stop valve no. 02250113–668, order repair kit no. 02250116–697.

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

Section 8

ILLUSTRATIONS AND PARTS LIST

8.5 COOLING AND LUBRICATION SYSTEM- AIR-COOLED



8.5 COOLING AND LUBRICATION SYSTEM- AIR-COOLED (CONTINUED)

key number	*description*	*part number*	*quantity*
28	filter, fluid (V)	250007-219	1
29	adapter, port	02250113-650	2
30	elbow, tube-M 90° 1/4" x 1/4"	810504-025	4
31	tube, 1/4"	841015-004	
32	bracket, filter support	02250113-656	1

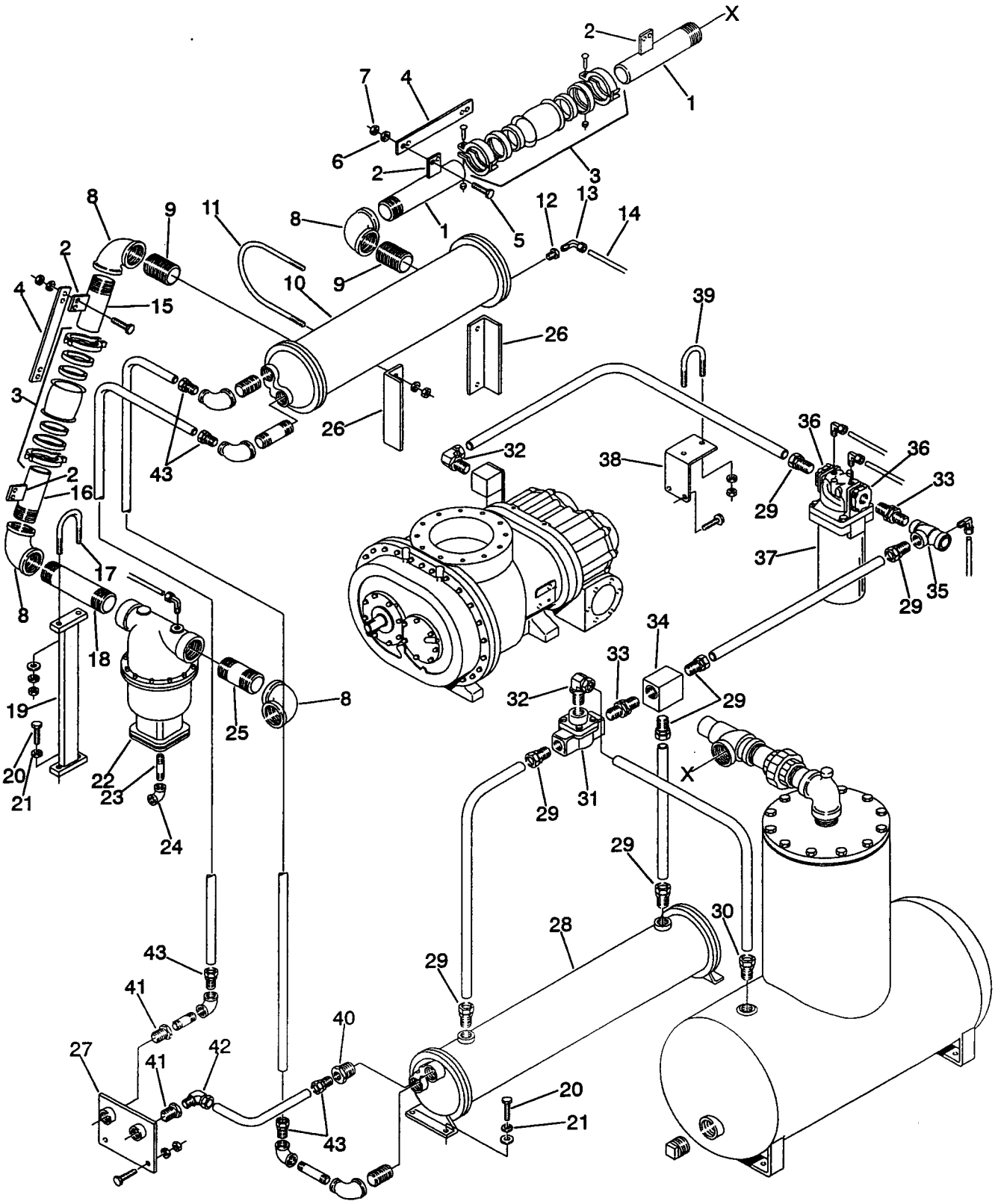
(V) For maintenance on fluid filter no. 250007-219, order repair kit no. 250008-956.

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

Section 8

ILLUSTRATIONS AND PARTS LIST

8.6 COOLING AND LUBRICATION SYSTEM– WATER–COOLED



8.6 COOLING AND LUBRICATION SYSTEM– WATER–COOLED

key number	*description*	*part number*	*quantity*
1	nipple, half 3" x12"	822848–120	2
2	reinforcement, flexmaster	250035–136	4
3	coupling, flexmaster 3" **(I)**	040327	2
4	reinforcement, flexmaster	250035–138	2
5	capscrew, hex GR5 3/8"–16 x 1 1/4"	828606–125	8
6	washer, springlock 3/8"	837506–094	12
7	nut, hex 3/8"–16	824206–337	8
8	elbow, pipe 90° 3"	801515–120	4
9	nipple, pipe 3" x close	822248–000	3
10	aftercooler, WC	042541	1
11	u–bolt, 1/2" x 8" pipe	829008–800	2
12	bushing, reducing 1/2" x 1/4"	807602–010	1
13	elbow, tube–M 1/4" x 1/4"	810504–025	1
14	tubing, steel 1/4"	841015–004	5
15	nipple, half 3" x 7"	822848–070	1
16	nipple, half 3" x 8"	822848–080	1
17	clamp, exhaust 3 1/2"	040284	2
18	nipple, pipe 3" x 9"	822148–070	1
19	support, moisture separator	250023–077	2
20	capscrew, hex GR5 1/2"–13 x 1 1/2"	829108–150	4
21	washer, springlock 1/2"	837508–125	4
22	separator, combination trap **(II)**	250007–787	1
23	nipple, pipe 3/4" x 3"	822112–030	1
24	elbow, pipe 3/4"	801515–030	1
25	nipple, pipe 3" x 5 1/2"	822148–055	1
26	brace, cooler support	250031–749	2
27	bracket, water connection	250027–022	1
28	cooler, fluid WC	02250113–281	1
29	connector, tube–M 1 1/2" x 1 7/8"	811824–188	7
30	connector, tube–M 1 1/2" x 1 1/2"	810224–150	1

(Continued on page 57)

(I) For maintenance on coupling no. 040327, order repair kit no. 040523.

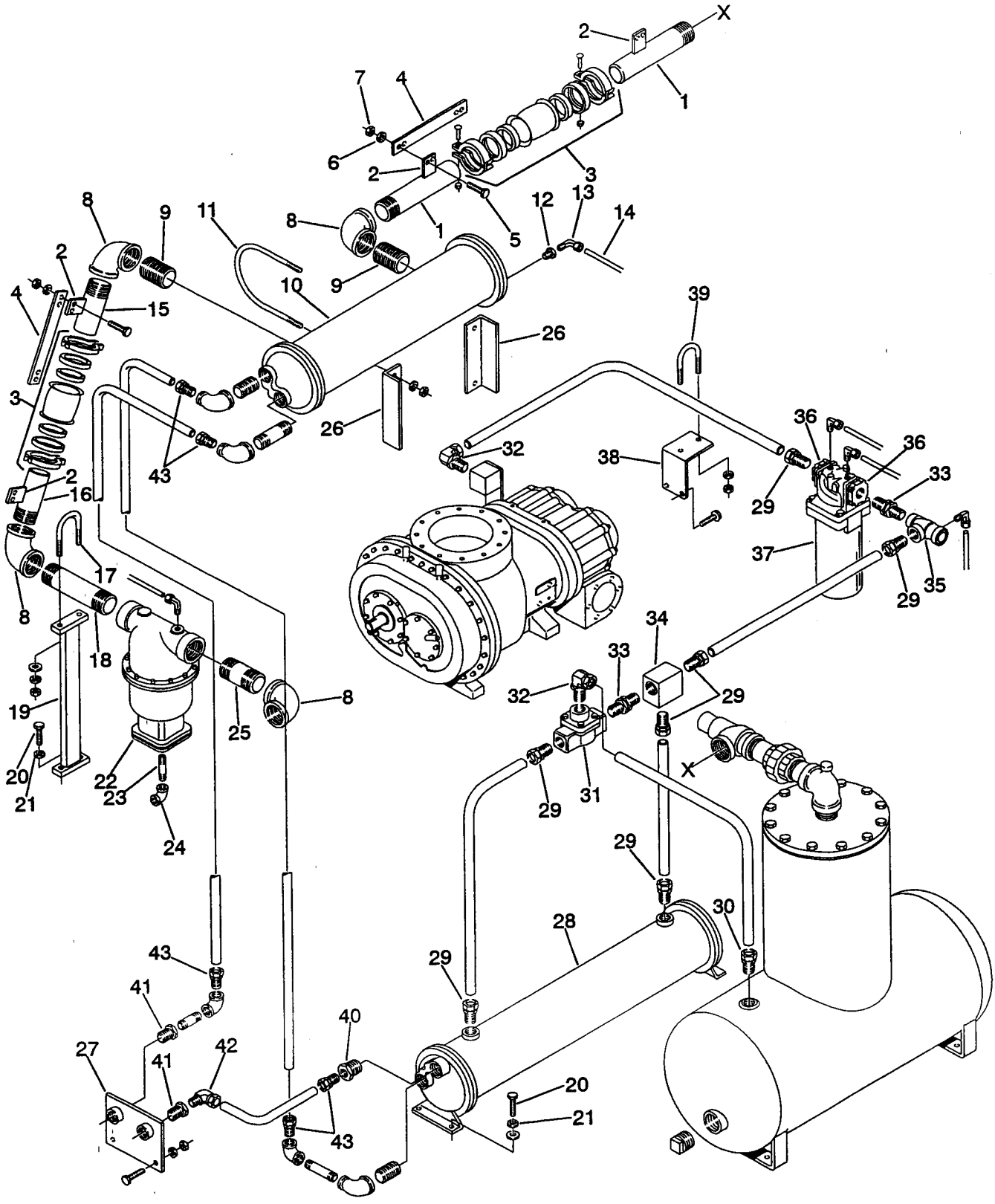
(II) For maintenance on combination trap/separator no. 250007–787, order repair kit no. 250033–036.

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

Section 8

ILLUSTRATIONS AND PARTS LIST

8.6 COOLING AND LUBRICATION SYSTEM- WATER-COOLED



8.6 COOLING AND LUBRICATION SYSTEM- WATER-COOLED (CONTINUED)

key number	*description*	*part number*	*quantity*
31	valve, thermal (III)	02250113–627	1
32	elbow, tube	811624–188	2
33	connector	02250055–014	2
34	manifold, block	02250113–549	1
35	valve, fluid stop (IV)	02250113–668	1
36	adapter, port	02250113–650	2
37	filter, fluid (V)	250007–219	1
38	bracket, filter support	02250113–656	1
39	clamp, exhaust	040155	1
40	bushing, reducing hex 2" x 1 1/4"	802108–050	1
41	bushing, reducing hex 1 1/2" x 1 1/4"	802106–050	2
42	elbow, tube 1 1/4"	810520–125	1
43	connector, tube 1 1/4"	810220–125	5

(III) For maintenance on thermal valve no. 02250113–627, order the following parts:

element, thermal valve 175	049542	1
seal, U–cup viton therm vlv	02250101–372	1

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

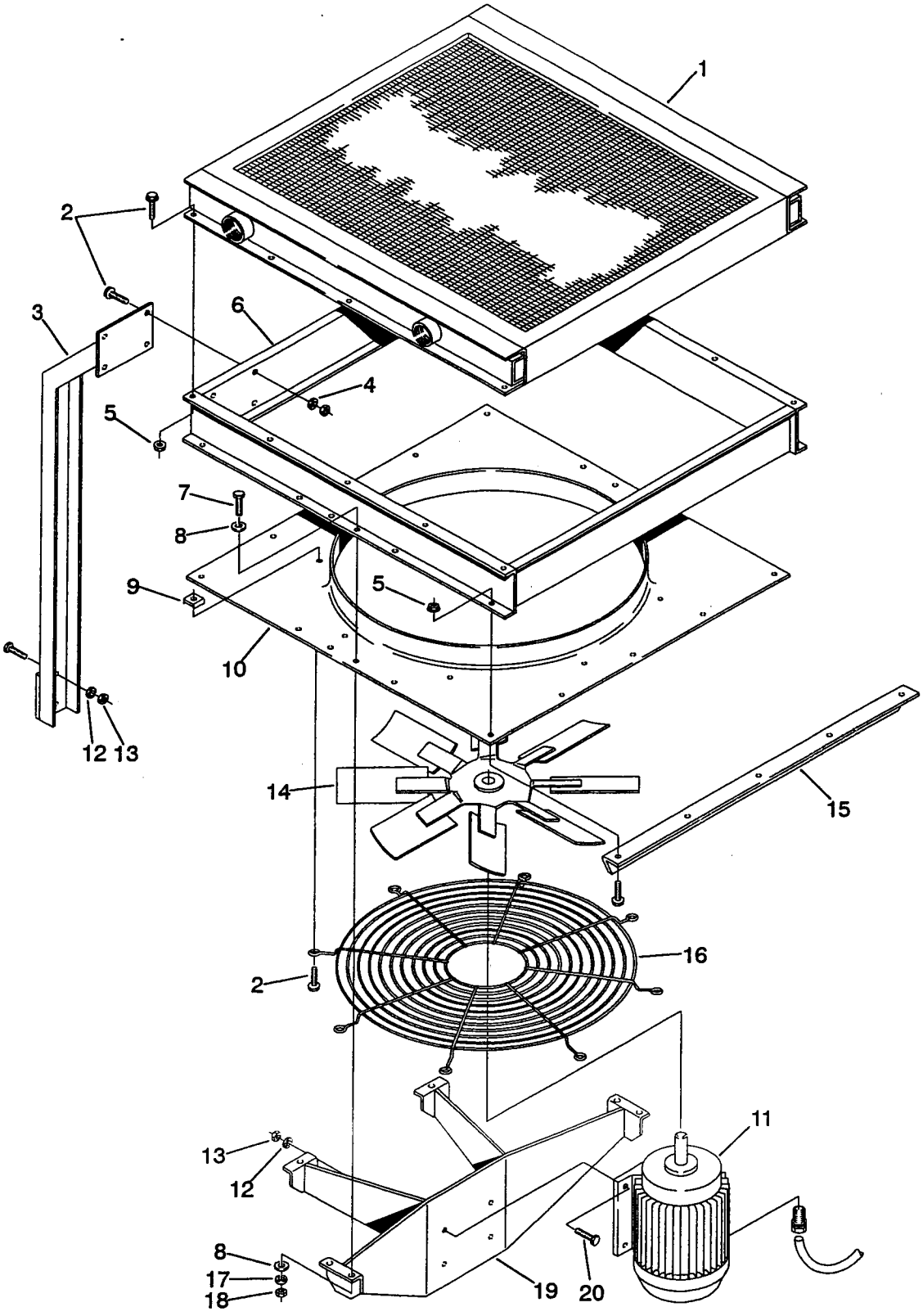
(V) For maintenance on fluid filter no. 250007–219, order repair kit no. 250008–956.

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

Section 8

ILLUSTRATIONS AND PARTS LIST

8.7 COOLER ASSEMBLY



8.7 COOLER ASSEMBLY

key number	*description*	*part number*	*quantity*
1	cooler, combination fluid/after	02250112–715	1
2	screw, hex ser washer 5/16" x 3/4"	829705–075	32
3	support, cooler	250027–038	2
4	washer, springlock 5/16"	837505–078	2
5	nut, hex flgd 5/16"	825305–283	17
6	adapter, venturi	250022–715	1
7	capscrew, hex GR5 3/8"–16 x 1 1/4"	828606–125	6
8	washer, reg 3/8"	838206–071	8
9	nut, retainer 5/16"–18	861405–092	23
10	panel, venturi 36"	245579	1
11	motor, 7 1/2 HP	(I)	1
12	washer, springlock 1/2"	837508–125	4
13	nut, hex 1/2"–13	824208–448	4
14	fan, 36"	02250048–551	1
15	angle	250022–720	1
16	guard, fan 38"	248744	1
17	washer, springlock 3/8"	837506–094	4
18	nut, hex locking 3/8"	825506–198	4
19	support, fan motor	015641	1
20	capscrew, hex GR5 1/2"–13 x 2"	828608–200	4

(I) Motor may vary. Consult factory with machine serial number.

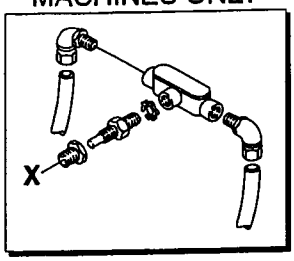
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR

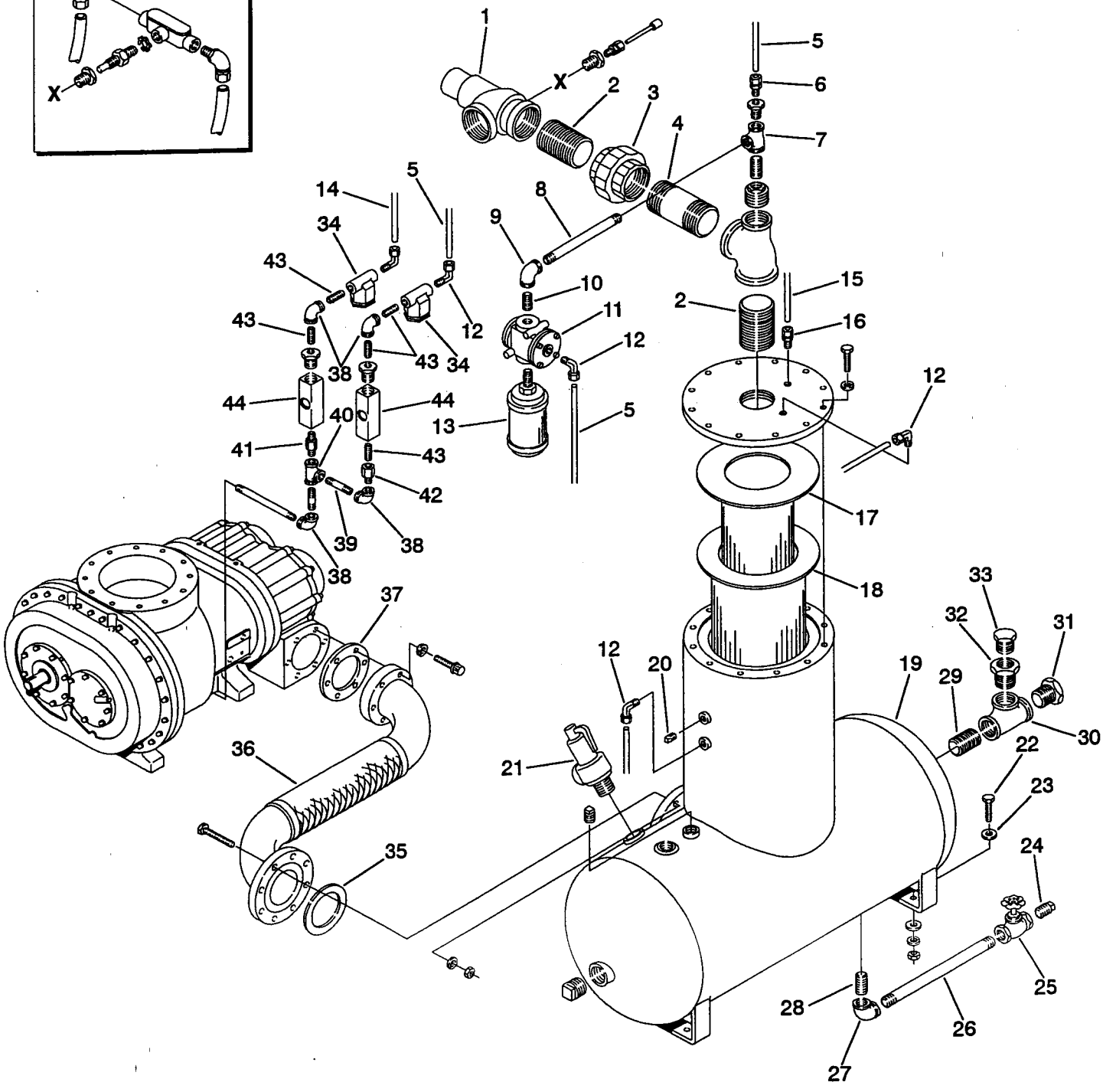
Section 8

ILLUSTRATIONS AND PARTS LIST

8.8 DISCHARGE SYSTEM

ELECTRO-MECHANICAL
MACHINES ONLY





8.8 DISCHARGE SYSTEM

key number	*description*	*part number*	*quantity*
1	valve, minimum pressure/check 3" **(I)**	250033-821	1
2	nipple, pipe 3" x close	822248-000	3
3	union, pipe 3"	802515-200	1
4	nipple, pipe 3" x 5 1/2"	822148-055	1
5	tubing, stainless steel 1/4"	841215-004	3.33 ft
6	connector, flex 1/4" x 1/4"	020169	1
7	tee, reducing 3/4" x 1/2" x 1/2"	802203-022	1
8	nipple, pipe 1/2" x 8 1/2"	822108-085	1
9	elbow, pipe 1/2"	801515-020	1
10	nipple, pipe 1/2" x close	822208-000	1
11	valve, blowdown **(II)**	044912	1
12	elbow, tube-M 1/4" x 1/4"	810504-025	3
13	silencer, air 1/2"	041006	1
14	tubing, stainless steel 5/16"	841215-005	3.042 ft
15	tube, 5/16" x 36 1/2"	02250053-387	1
16	fitting, flex 5/16" x 1/4"	020501	1
17	element, separator secondary **(III)**	250034-133	1
18	element, separator primary **(IV)**	250034-121	1
19	tank, separator/sump	02250108-073	1
20	plug, pipe 1/4"	807800-010	1
21	valve, relief 1 1/2"	250014-428	1
22	capscrew, hex GR5 1/2"-13 x 1 1/2"	828608-150	4
23	washer, reg 1/2"	838208-112	4
24	plug, pipé 3/4"	807800-030	1
25	valve, globe 3/4"	040520	1
26	nipple, pipe 3/4" x 13 1/2"	822112-135	1
27	elbow, pipe 90° 3/4"	801515-030	1
28	nipple, pipe 3/4" x 1 1/2"	822112-015	1
29	nipple, pipe 1 1/2" x close	822224-000	1

(Continued on page 63)

(I) For maintenance on minimum pressure/check valve no. 250033-821, order repair kit no. 250018-062.

(II) For maintenance on blowdown valve no. 0044912, order repair kit no. 046782.

(III) For maintenance on secondary separator element no. 250034-133, order replacement kit no. 250034-134.

(IV) For maintenance on primary separator element no. 250034-121, order replacement kit no. 250034-122.

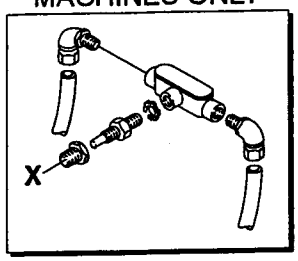
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR

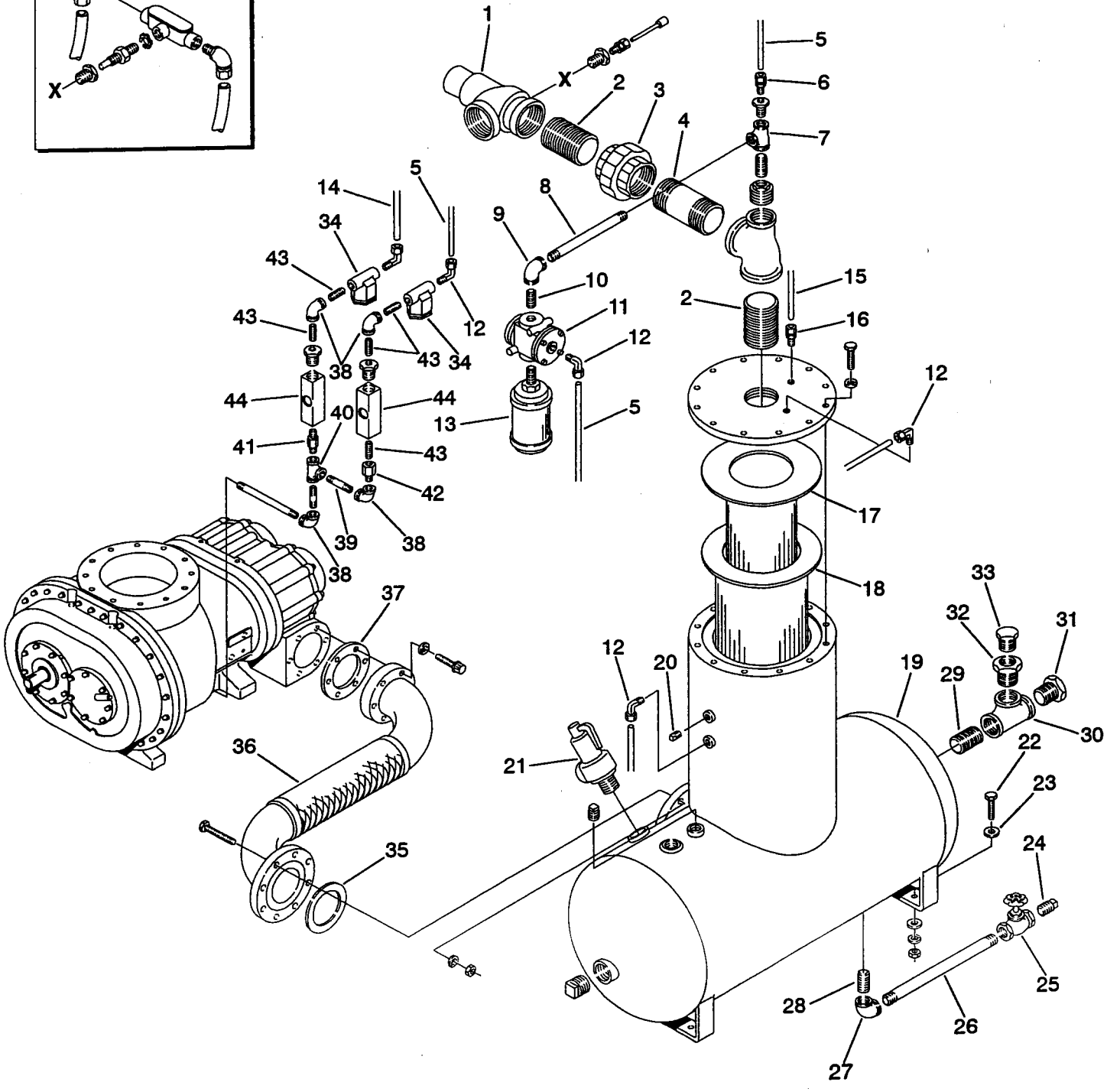
Section 8

ILLUSTRATIONS AND PARTS LIST

8.8 DISCHARGE SYSTEM

ELECTRO-MECHANICAL
MACHINES ONLY





8.8 DISCHARGE SYSTEM (CONTINUED)

key number	*description*	*part number*	*quantity*
30	tee, pipe 1 1/2"	802415–060	1
31	glass, fluid level 1 1/2"	040279	1
32	adapter, filler	020044	1
33	plug, o–ring	040029	1
34	strainer, v–type 1/4" (V)	241771	2
35	gasket	240621–010	1
36	pipe, flexible discharge	02250107–975	1
37	gasket	250002–379	1
38	elbow, pipe 1/4"	803515–010	4
39	nipple, pipe 1/4" x 1 1/2"	823104–015	3
40	tee, pipe 1/4"	804415–010	1
41	orifice, 1/4"M x 1/4"M	027443	1
42	orifice, 1/32"	040381	1
43	nipple, pipe 1/4" x close	823204–000	5
44	glass, sight 1/4"	046559	2

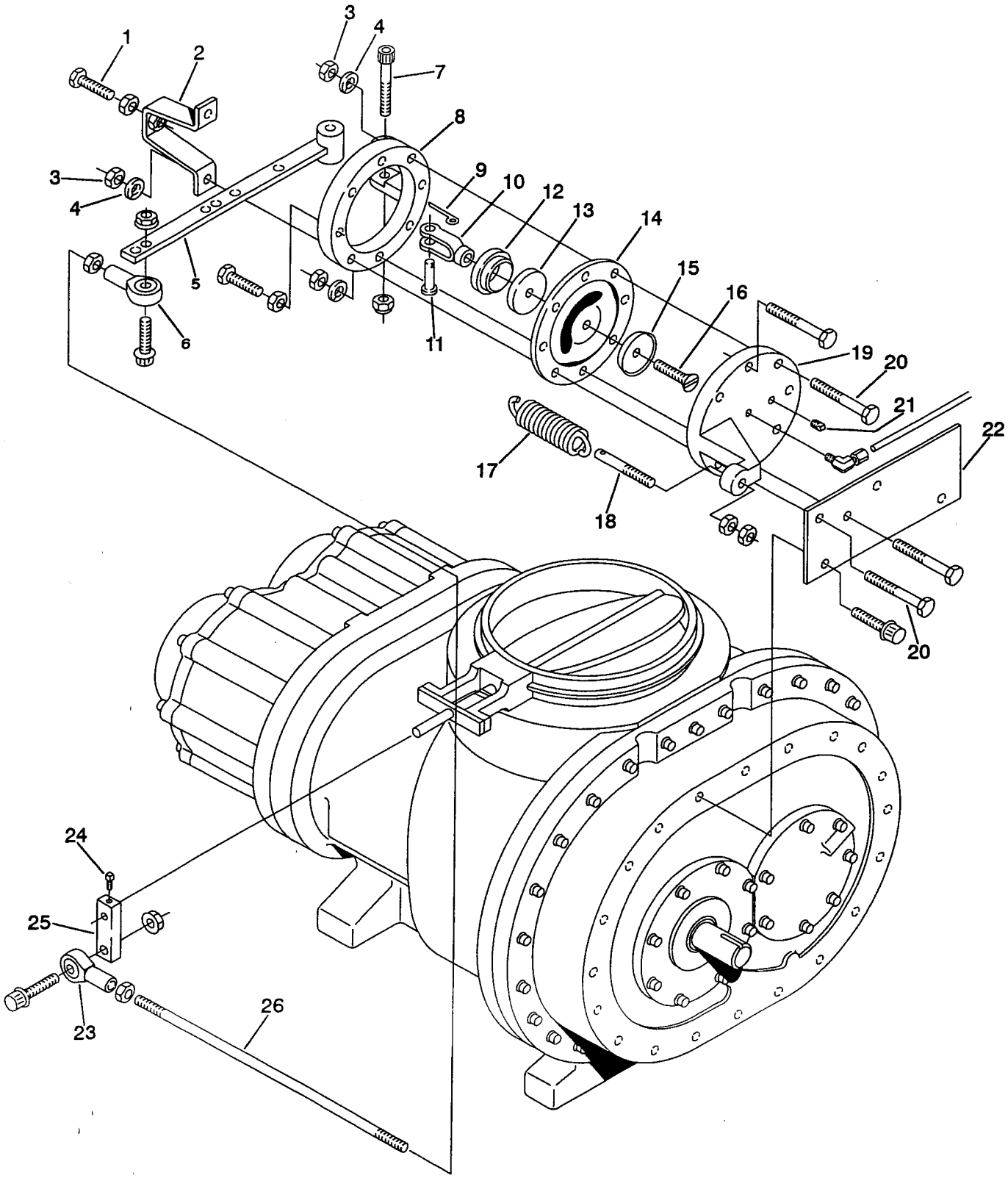
(V) For maintenance on strainer no. 241771, order repair kit no. 241772.

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

Section 8

ILLUSTRATIONS AND PARTS LIST

8.9 SULLICON CONTROL



8.9 SULLICON CONTROL

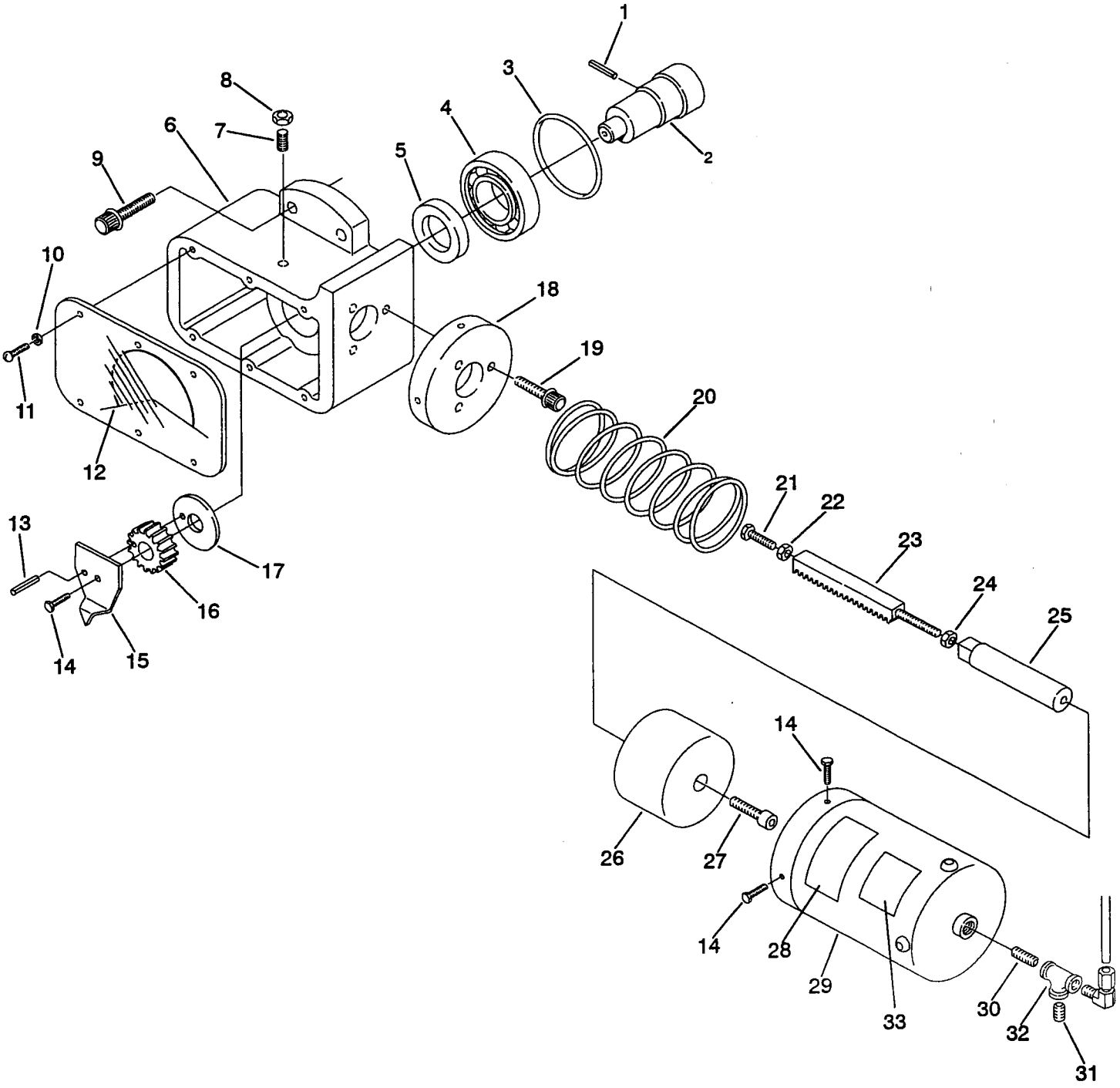
key number	*description*	*part number*	*quantity*
1	screw, machine hex 3/8"–16 x 2"	830106–200	1
2	bracket, control stop	020864	1
3	nut, hex 3/8"–16	824206–337	7
4	washer, springlock 3/8"	837506–094	4
5	lever, control	011084	1
6	rod end, spherical RH 5/16"	040136	1
7	screw, machine shoulder 3/8" x 2"	830506–200	1
8	body, control	021635	1
9	pin, cotter 1/16" x 3/4"	827101–075	1
10	yoke, rod end 1/4"–28	040138	1
11	pin, yoke 1/4"	040065	1
12	plunger	020094	1
13	seal, cup (I)	042538	1
14	diaphragm, Sullicon (I)	250020–028	1
15	washer, back–up (I)	021172	1
16	screw, sealing 1/4"–28 (I)	041264	1
17	spring, control light	260006–526	1
18	bolt, spring adjusting	02250112–184	1
19	cover, control	021654	1
20	capscrew, hex GR5 3/8"–16 x 2 1/2"	828606–250	3
21	plug, pipe 1/4"	807800–010	1
22	bracket, Sullicon	233402	1
23	rod end, spherical LH 5/16"	042004	1
24	screw, set sq hd 5/16" x 3/4"	02250112–197	1
25	lever, inlet valve	020687	1
26	rod, 5/16"–28 x 8 3/4"	020863	1

(I) This part is included with the Sullicon Control maintenance kit. For maintenance on Sullicon Control, order repair kit no. 250020–353.

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

Section 8
ILLUSTRATIONS AND PARTS LIST

8.10 COMPRESSOR ACTUATOR



8.10 COMPRESSOR ACTUATOR (I)

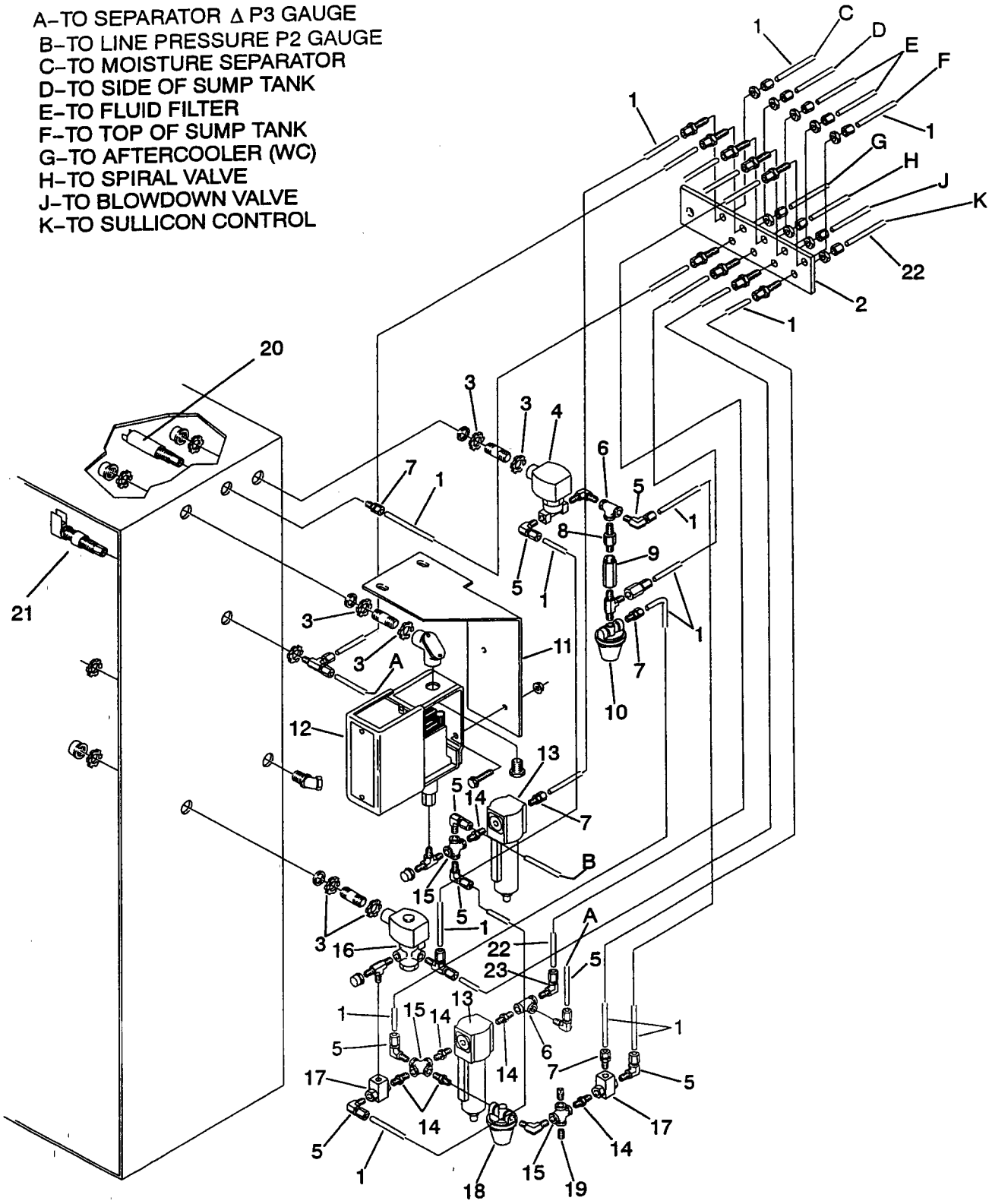
key number	*description*	*part number*	*quantity*
1	pin, roll 1/8" x 1/2"	827402-050	1
2	shaft	250030-979	1
3	o-ring, viton 3 1/4" x 1/8"	826502-236	1
4	bearing	499002-207	1
5	seal	250016-200	1
6	base	250016-725	1
7	screw, actuator adjustment	02250094-568	1
8	nut, hex 1/2"-13	824208-448	1
9	capscrew, ferry hd 1/2"-13 x 2 3/4"	828408-275	3
10	washer, regular #8	838201-045	6
11	screw, machine rd hd #8-32 x 1/2"	831601-050	6
12	decal, valve position	250029-784	1
13	pin, roll 1/4" x 1"	827404-100	1
14	capscrew, hex GR8 1/4"-20 x 1/2"	828204-050	4
15	indicator, actuator	250030-983	1
16	gear	250016-196	1
17	guide, rack actuator	250016-199	1
18	mount, air cylinder	250016-188	1
19	capscrew, ferry hd 5/16"-18 x 1 1/4"	828405-125	3
20	spring	250016-394	1
21	screw, machine hex 1/4"-20 x 1 3/4"	830104-175	1
22	nut, hex jam RH 1/4"-20	824904-164	1
23	rack, gear	250016-197	1
24	nut, hex jam RH 3/8"-16	824906-227	1
25	shaft, air cylinder	250016-194	1
26	cylinder, air	250016-183	1
27	capscrew, socket hd nylok 3/8"-16 x 1"	828906-100	1
28	decal, warning actuator	250029-836	1
29	cylinder, air	250016-183	1
30	nipple, pipe 1/4" x close	823204-000	1
31	orifice	232874	1
32	tee, pipe	866815-010	1
33	decal, actuator valve positioning	250029-784	1

(I) For maintenance on actuator valve, order diaphragm repair kit no. 608311-001, and replacement rack no. 02250096-726.

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

Section 8
ILLUSTRATIONS AND PARTS LIST

8.11 PNEUMATIC CONTROL SYSTEM (ELECTRO-MECHANICAL)



8.11 PNEUMATIC CONTROL SYSTEM (ELECTRO-MECHANICAL)

key number	*description*	*part number*	*quantity*
1	tubing, stn stl 1/4"	841215-004	58 ft
2	bracket, tubing manifold	250014-757	1
3	locknut, conduit 1/2"	847200-050	9
4	valve, solenoid (I)	02250114-601	1
5	elbow, tube-M 1/4" x 1/4"	810504-025	8
6	tee, straight 1/4"	804415-010	2
7	connector, tube 1/4" x 1/4"	810204-025	3
8	orifice	02250101-191	1
9	check, valve 1/4"	02250110-557	1
10	valve, regulator (II)	408275	1
11	bracket, pressure switch	02250114-780	1
12	switch, pressure NEMA 12	040694	1
13	filter, control 1/4" (III)	02250112-032	2
14	nipple, pipe hex 1/4" x 1/4"	860404-025	6
15	cross, pipe 1/4"	803315-010	3
16	valve, solenoid (IV)	250038-674	1
17	valve, shuttle	408893	2
18	valve, regulator (V)	406929	1
19	orifice, pipe plug 1/4"	232874	1
20	switch, water pressure	250017-992	1
21	switch, pressure 10-250# spdt open	046344	1
22	tubing, stn stl 5/16"	841215-005	4.25 ft
23	elbow, tube-m 5/16" x 1/4"	810505-025	1
24	control, temperature (not shown)	409270	1

(I) For maintenance on solenoid valve no. 02250114-601, order repair kit no. 02250044-391, and replacement coil no. 250031-738.

(II) For maintenance on regulator valve no. 408275, order repair kit no. 250028-693.

(III) For maintenance on control filter no. 02250112-032, order repair kit no. 022500112-031.

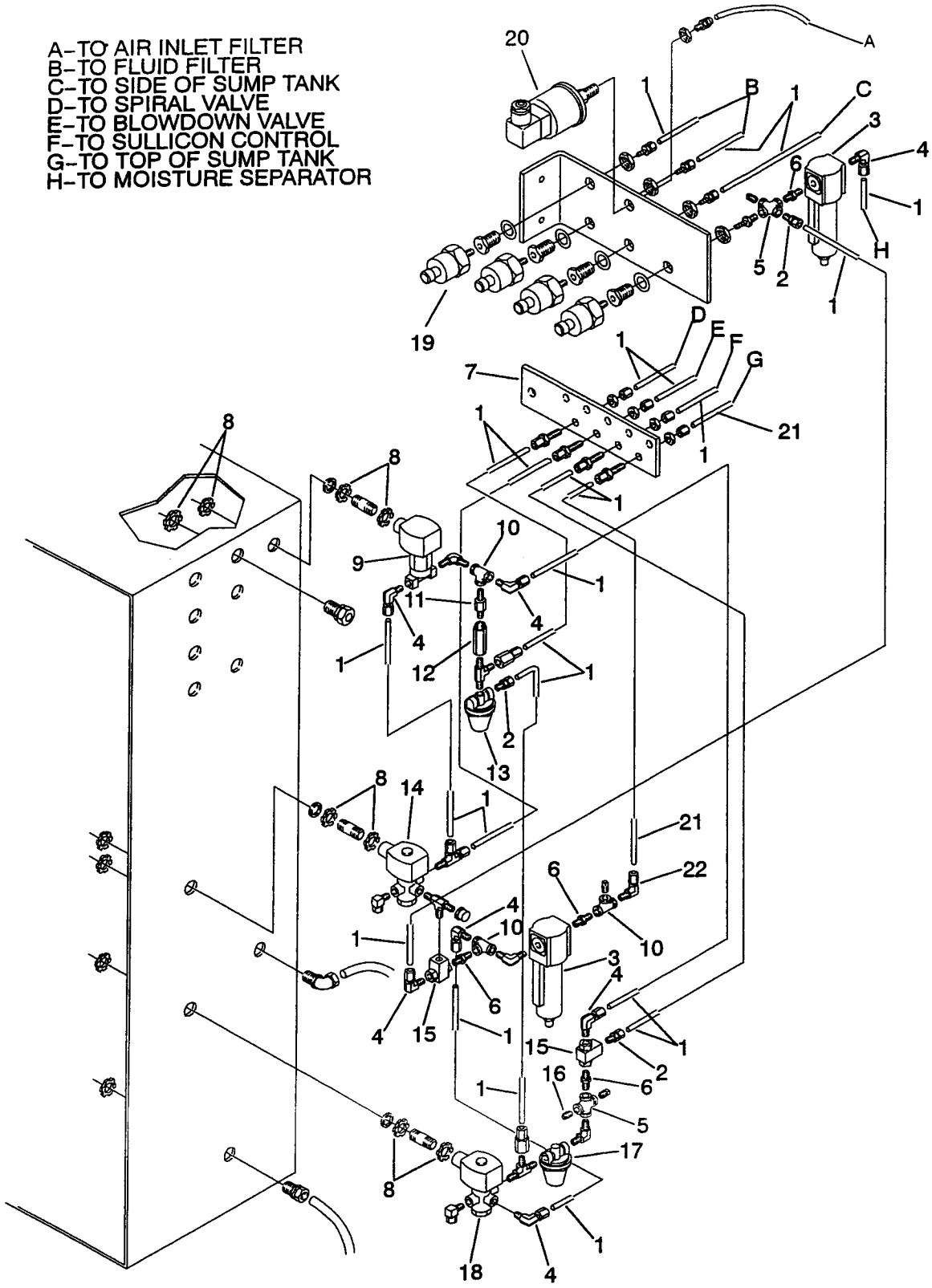
(IV) For maintenance on solenoid valve no. 250038-674, order repair kit no. 02250055-940, and replacement coil no. 250031-738.

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

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

ILLUSTRATIONS AND PARTS LIST

8.12 PNEUMATIC CONTROL SYSTEM (SUPERVISOR II WITH SPIRAL VALVE CONTROL)



8.12 PNEUMATIC CONTROL SYSTEM (SUPERVISOR II WITH SPIRAL VALVE CONTROL)

key number	*description*	*part number*	*quantity*
1	tubing, stn stl 1/4"	841215-004	46 ft
2	connector, tube 1/4" x 1/4"	810204-025	3
3	filter, control 1/4"(I)	02250112-032	2
4	elbow, tube-M 1/4" x 1/4"	810504-025	7
5	cross, pipe 1/4"	803315-010	2
6	nipple, pipe hex 1/4" x1/4"	860404-025	4
7	bracket, tubing manifold	250014-757	1
8	locknut, conduit 1/2"	847200-050	9
9	valve, solenoid (II)	02250114-601	1
10	tee, straight 1/4"	804415-010	3
11	orifice	02250101-191	1
12	check valve, 1/4"	02250110-557	1
13	valve, regulator (III)	408275	1
14	valve, solenoid (IV)	250038-674	1
15	valve, shuttle 1/4"	408893	1
16	orifice, pipe plug 1/4"	232874	1
17	valve, regulator (V)	406929	1
18	valve, solenoid (VI)	250038-666	1
19	transducer, pressure 250#	02250078-933	4
20	switch, vacuum	02250078-249	1
21	tubing, stn stl 5/16"	841215-005	7 ft
22	elbow, tube-m 5/16" x 1/4"	810505-025	1

(I) For maintenance on control filter no. 02250112-032, order repair kit no. 022500112-031.

(II) For maintenance on solenoid valve no. 02250114-601, order repair kit no. 02250044-391, and replacement coil no. 250031-738.

(III) For maintenance on regulator valve no. 408275, order repair kit no. 250028-693.

(IV) For maintenance on solenoid valve no. 250038-674, order repair kit no. 02250055-940, and replacement coil no. 250031-738.

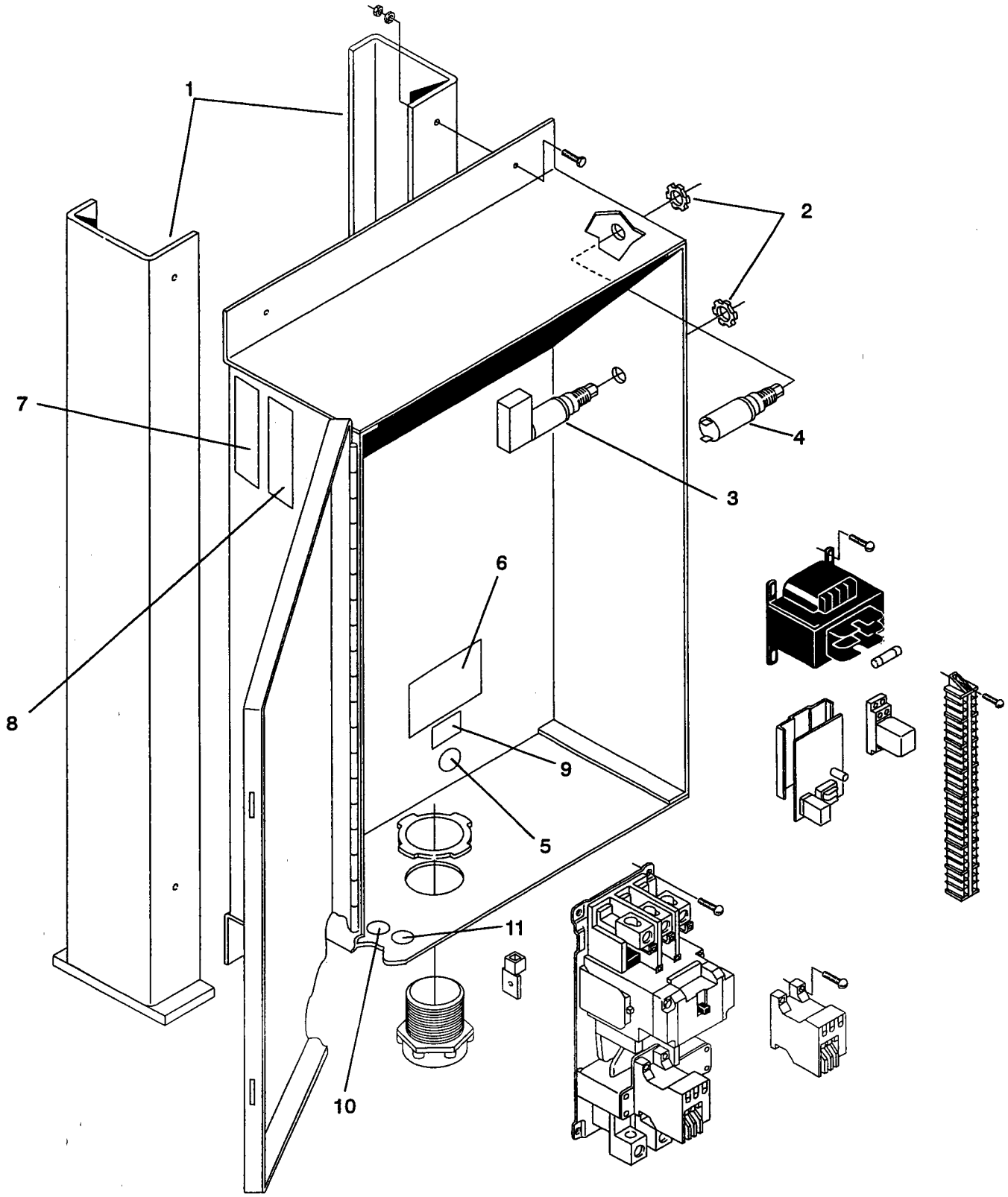
(V) For maintenance on regulator valve no. 406929, order repair kit no. 041742.

(VI) For maintenance on solenoid valve no. 250038-666, order repair kit no.250038-672, and replacement coil no. 250038-730.

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

Section 8
ILLUSTRATIONS AND PARTS LIST

8.13 ELECTRICAL BOX (ELECTRO-MECHANICAL)



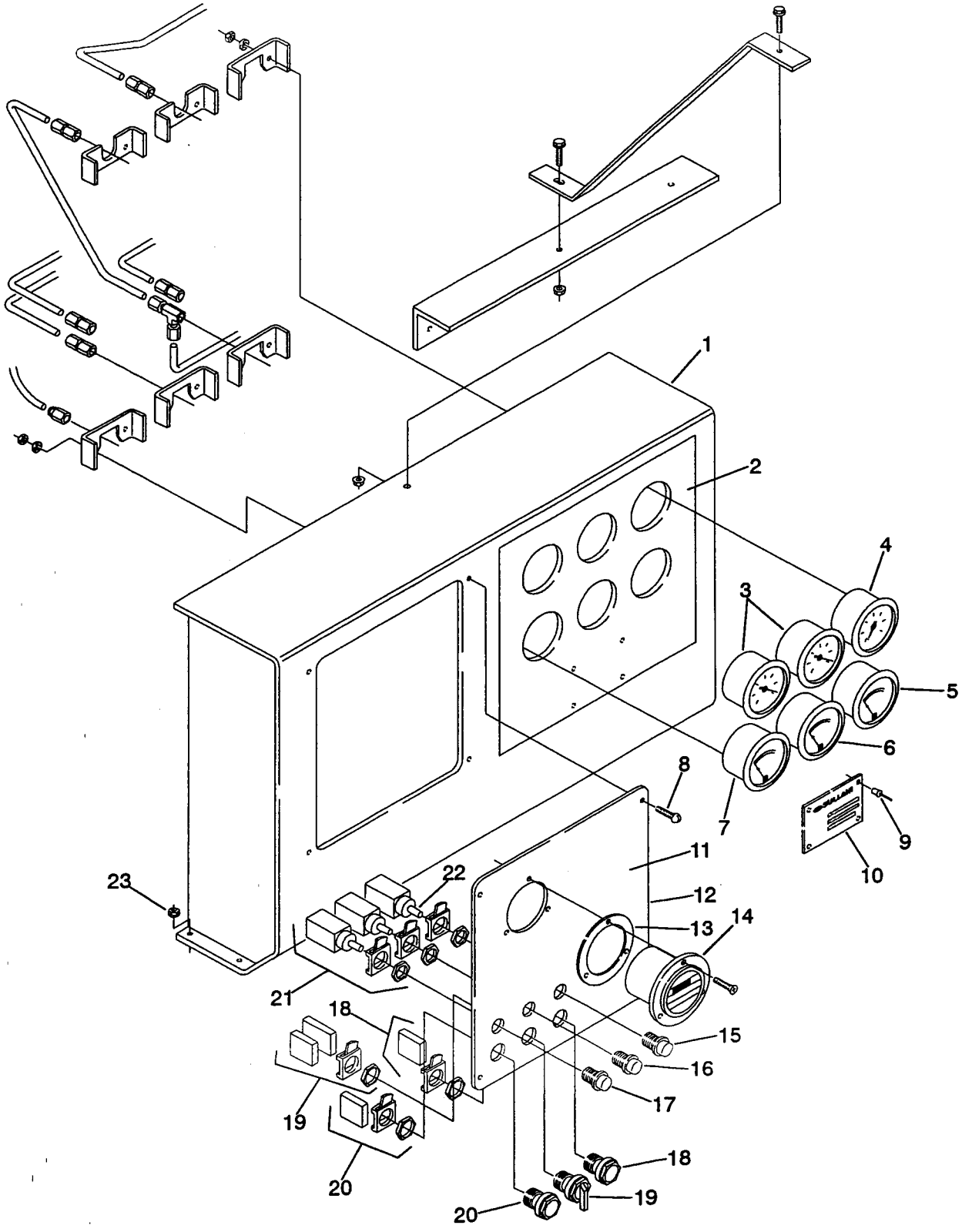
8.13 ELECTRICAL BOX (ELECTRO-MECHANICAL)

key number	*description*	*part number*	*quantity*
1	support, electric box	250022-657	2
2	locknut, conduit	02250071-362	2
3	switch	046344	1
4	switch	250017-992	1
5	decal, earth ground	02250075-046	1
	•decal, protective earth ground (not shown)	02250075-045	1
	•decal, PE designation (not shown)	02250075-540	1
6	decal, danger high voltage	042218	1
7	sign, warning food grade lube	250003-144	1
8	sign, danger air breathing	250027-935	1
9	decal, voltage international (460/60)	02250106-956	1
	•decal, voltage international (380-415/50) (not shown)	02250069-403	1
	•decal, voltage international (230/50) (not shown)	02250069-397	1
	•decal, voltage international (575/60) (not shown)	02250069-400	1
10	decal, protective earth ground	02250075-045	1
11	decal PE designation	02250075-540	1

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

Section 8
ILLUSTRATIONS AND PARTS LIST

8.14 INSTRUMENT PANEL (ELECTRO-MECHANICAL)



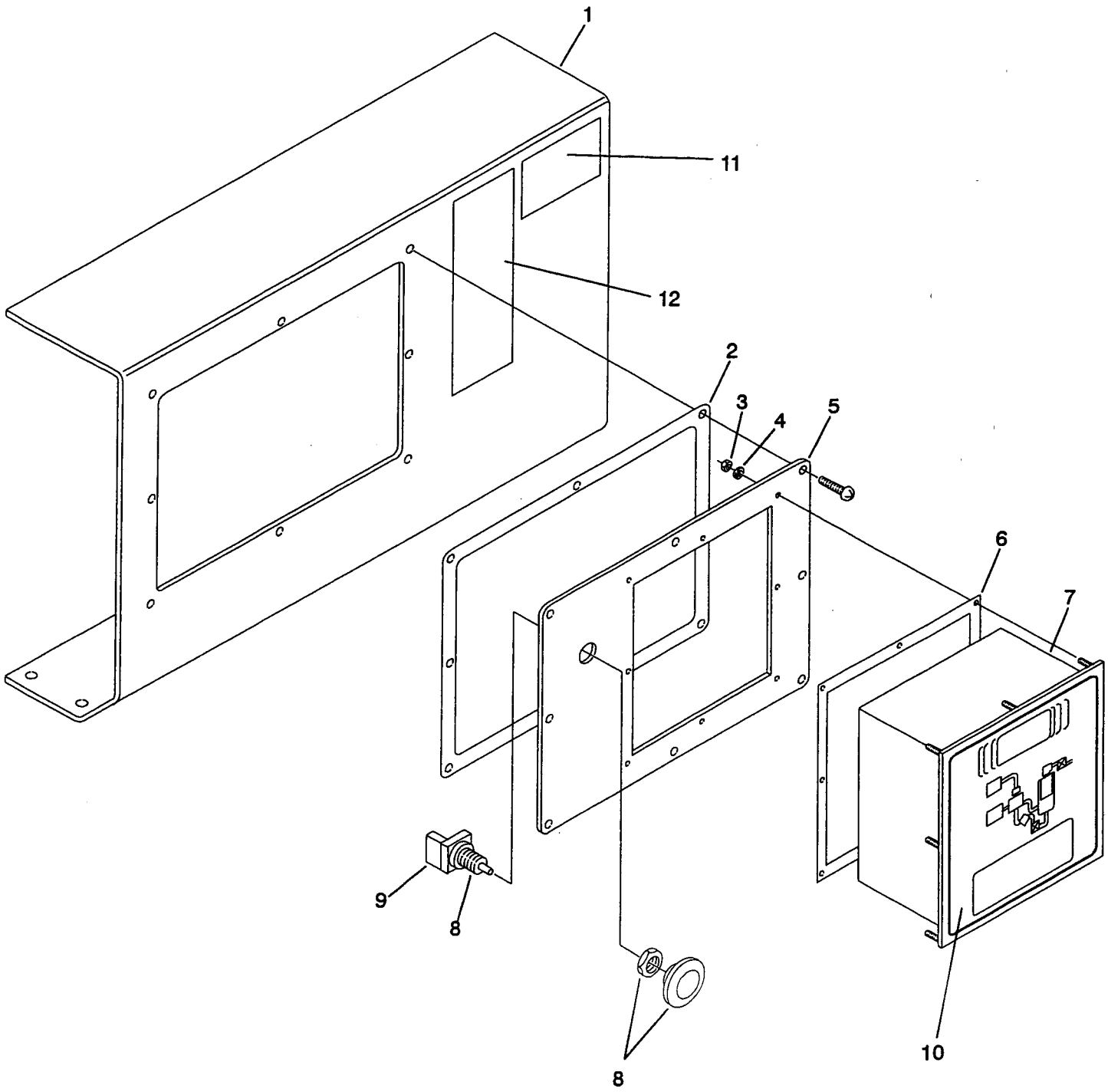
8.14 INSTRUMENT PANEL (ELECTRO-MECHANICAL)

key number	*description*	*part number*	*quantity*
1	panel, instrument E/M	02250100-299	1
2	decal, instrument panel	02250051-301	1
3	gauge, pressure 2"	250005-185	2
4	gauge, temperature	042582	1
5	gauge, differential pressure 0-15psi	250003-798	1
6	gauge, differential pressure 0-30psi	250003-799	1
7	gauge, vacuum 0-30"	250003-797	1
8	screw, TC-F round hd #8-32 x 1/2"	835701-050	4
9	plate, ID	02250059-318	1
10	rivet, pop 1/8" x 1/2"	843102-050	4
11	decal, electrical panel	02250096-821	1
12	panel, electrical	02250096-993	1
13	gasket	410353	1
14	hourmeter, 2 1/2"	042988	1
15	lens, red	250028-128	1
16	lens, yellow	250028-130	1
17	lens, green	250028-129	1
18	switch, pushbutton red	250016-350	1
19	switch, selector 2 position	250016-352	1
20	switch, pushbutton green	250016-351	1
21	light, assembly	250027-122	3
22	bulb, replacement	02250103-796	3
23	nut, hex washer 5/16"	825305-283	4

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

Section 8
ILLUSTRATIONS AND PARTS LIST

8.15 INSTRUMENT PANEL (SUPERVISOR II)



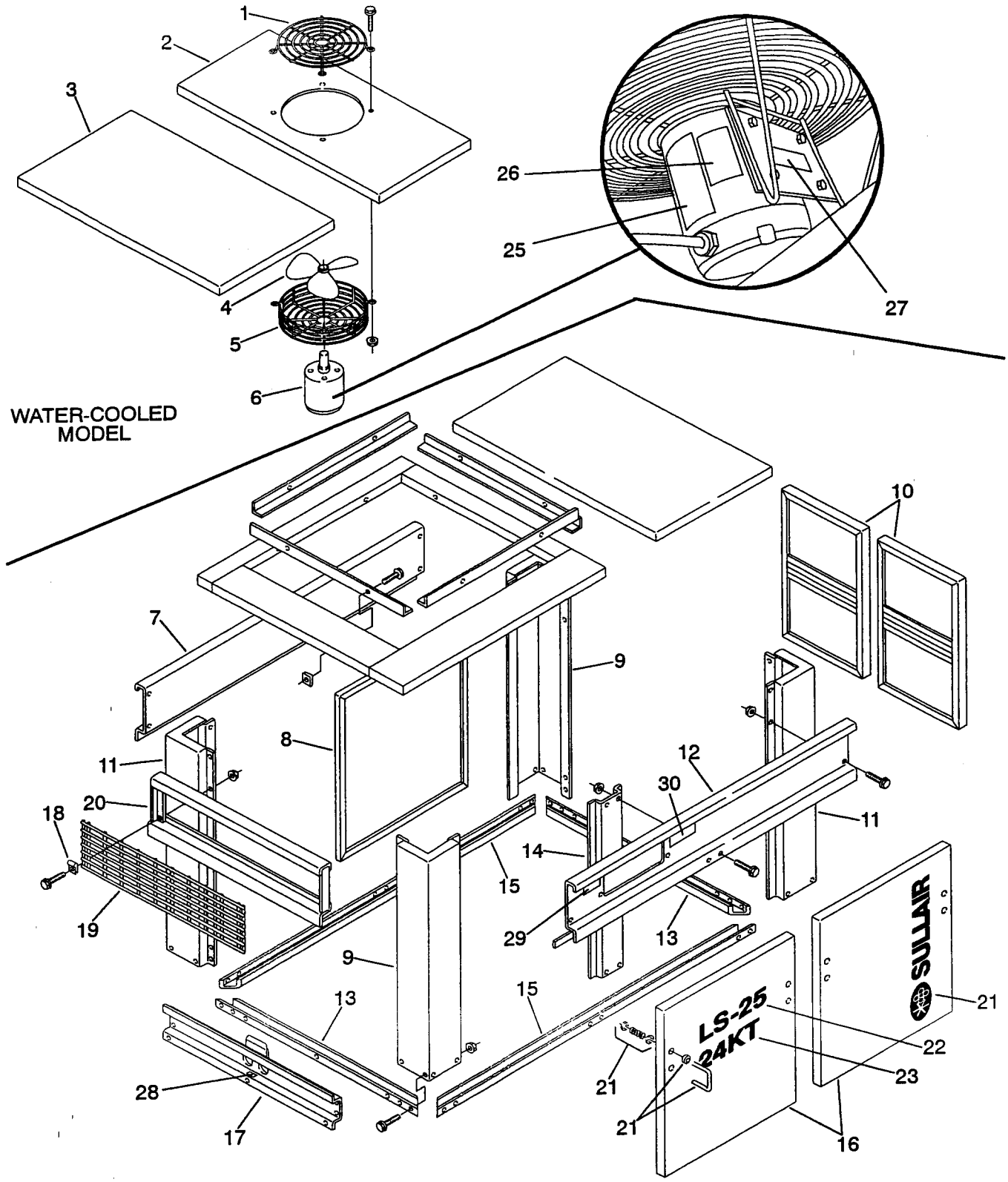
8.15 INSTRUMENT PANEL (SUPERVISOR II)

key number	*description*	*part number*	*quantity*
1	panel, instrument	02250100-298	1
2	gasket	02250071-093	1
3	nut, hex #10-24	825202-130	8
4	washer, springlock #10	837802-047	8
5	panel, Supervisor II	02250054-854	1
6	gasket	02250048-822	1
7	Supervisor II	02250116-247	1
8	switch, operator emergency stop	250028-588	1
9	block, contact	250027-125	1
10	decal, Supervisor II front	02250116-245	1
11	decal autostart	041065	1
12	decal warning auto start	250017-903	1

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

Section 8
ILLUSTRATIONS AND PARTS LIST

8.16 ENCLOSURE



8.16 ENCLOSURE

key number	description	part number	quantity
1	guard, fan upper 20" (WC only)	241137	1
2	panel, roof (WC only)	02250116-275	1
3	panel, roof (WC only)	02250116-265	1
4	fan, 18"	410358	1
5	guard, fan lower 20"	410179	1
6	motor, .25HP	(I)	1
7	panel, enclosure	230485	1
8	panel, side	02250103-203	1
9	panel, corner RH	250022-771	2
10	panel, end	02250103-205	4
11	panel, corner LH	250022-770	2
12	panel	02250113-686	1
13	channel, sill	250022-772	2
14	support, member	231516	2
15	channel, sill	250022-773	2
16	panel, side	02250116-349	3
17	channel, air/water connect	019603	2
18	clamp, wire	043194	8
19	grille, enclosure	249651	2
20	panel, end	016887	2
21	handle, retractable	405087	16
22	decal, Sullair logo	02250059-048	2
23	decal, LS-25	02250061-091	1
24	decal, black 24KT (II)	02250061-018	1
25	sign, warning sever fan	049855	1
26	sign, warning sever fan	049965	1
27	decal, rotation	250021-564	1
28	decal, water inlet-outlet	049873	1
29	decal, warning auto start	041065	1
30	decal, 12/16 universal	02250051-303	1

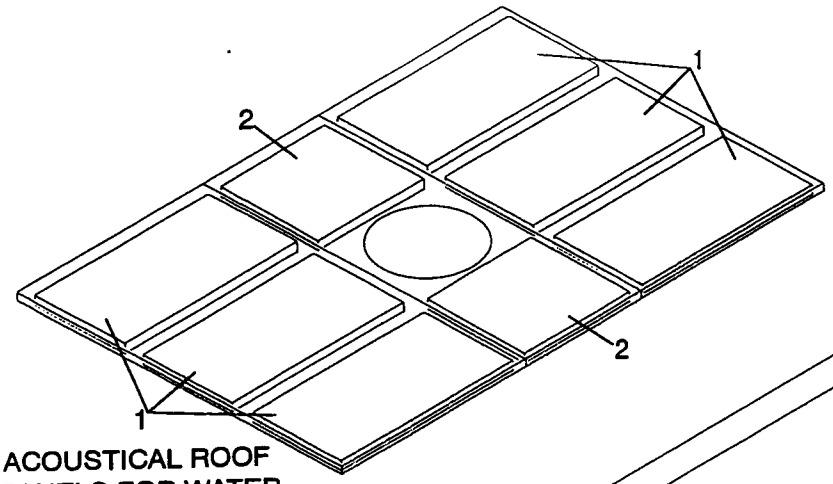
(I) Motor may vary. Consult factory with machine serial number.

(II) Decal no. 02250061-018 is used with optional 24KT fluid only.

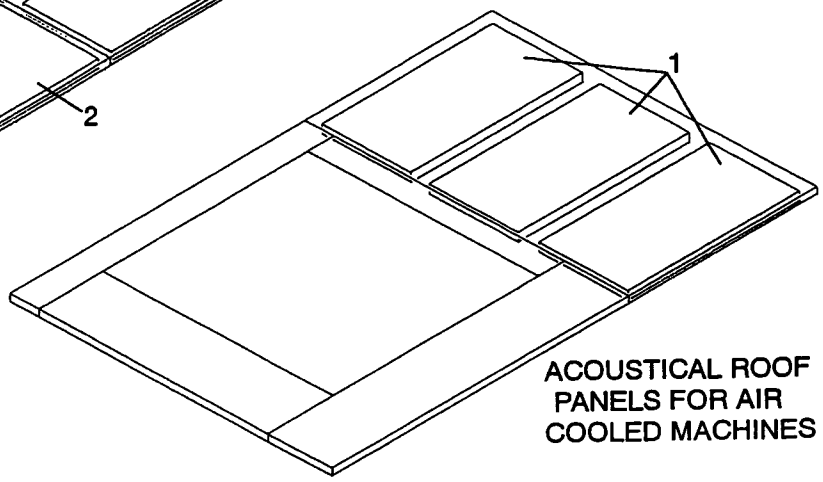
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR

Section 8
ILLUSTRATIONS AND PARTS LIST

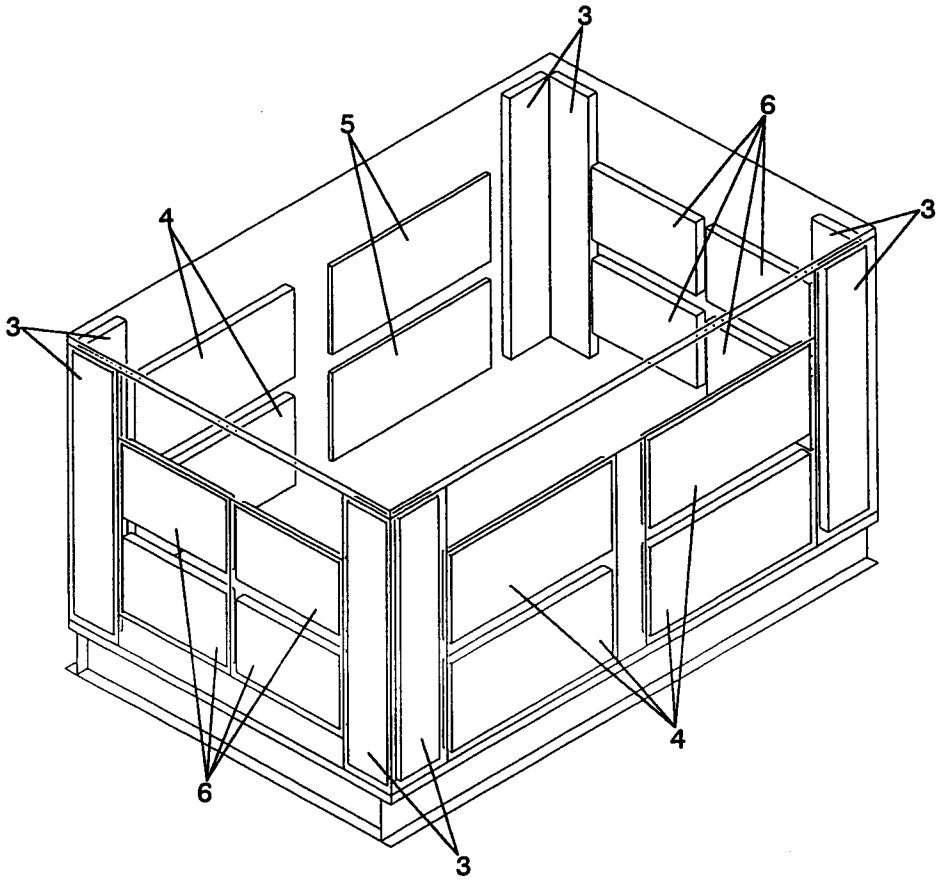
8.17 ACOUSTICS



ACOUSTICAL ROOF PANELS FOR WATER COOLED MACHINES



ACOUSTICAL ROOF PANELS FOR AIR COOLED MACHINES



8.17 ACOUSTICS

key number	*description*	*part number*	*quantity*
1	panel, fiberglass 20 1/2" x 42" (AC)	250023-577	3
	•panel, fiberglass 20 1/2" x 42" (WC)	250023-577	6
2	panel, fiberglass 23 1/2" x 23"	250023-576	2
3	panel, fiberglass 11" x 57"	250023-578	8
4	panel, fiberglass 20" x 38 1/4"	250020-062	6
5	panel, fiberglass	250026-875	2
6	panel, fiberglass	250020-064	8

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

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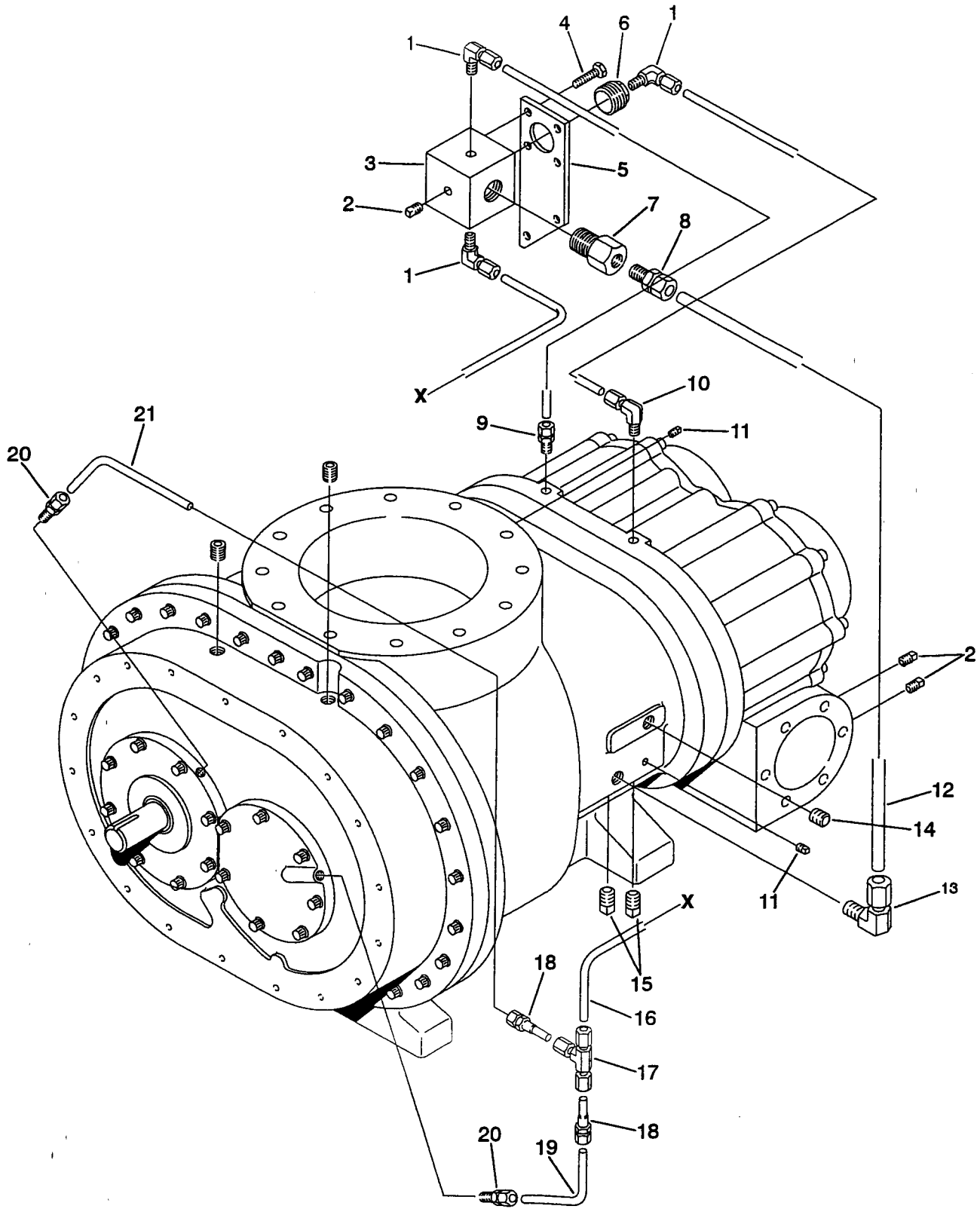
8.18 UNIT TUBING



8.18 UNIT TUBING

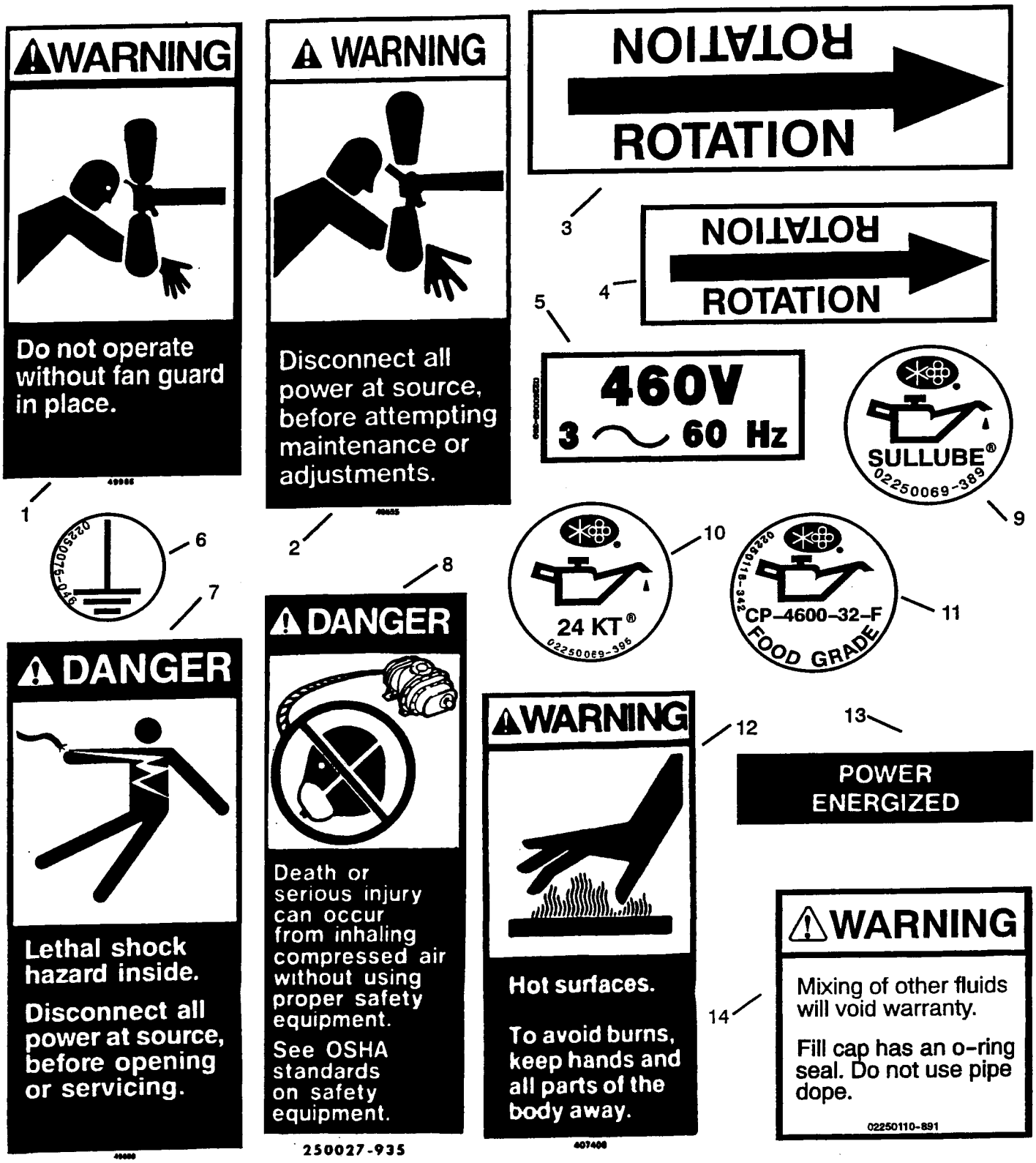
key number	*description*	*part number*	*quantity*
1	elbow, tube–M 1/2" x 1/2"	810508–050	3
2	plug, pipe 1/2"	807800–020	3
3	manifold	02250112–819	1
4	capscrew, hex GR8 3/8"–16 x 1"	828206–100	4
5	bracket, manifold	02250112–819	1
6	bushing, reducing hex 1 1/4" x 1/2"	802105–020	1
7	orifice, 1" x 1" x .4"	250008–663	1
8	connector, tube–M 1" x 1"	810216–100	1
9	connector, tube–M 1/2" x 3/8"	810208–038	1
10	elbow, tube–M 1/2" x 3/8"	810508–038	1
11	plug, pipe 1/4"	807800–010	1
12	tube	250024–176	1
13	elbow, tube–F 1" x 1"	810416–100	1
14	plug, pipe hex socket 3/4"	499046–005	1
15	plug, pipe 3/4"	807800–030	2
16	tube, inlet supply	250024–175	1
17	tee, tube union 1/2"	811408–050	1
18	reducer, tube 1/2" x 3/8"	810608–038	2
19	tube	250008–621	1
20	connector, tube 3/8" x 1/4"	810206–025	2
21	tube, seal oil	250008–620	1

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

Section 8

ILLUSTRATIONS AND PARTS LIST

8.19 DECAL GROUP



8.19 DECAL GROUP

key number	*description*	*part number*	*quantity*
1	sign, warning sever–fan port	049965	1
2	sign, warning sever – fan	049855	2
3	decal, rotation	250021–286	1
4	decal, rotation	250021–564	1
5	decal, voltage 460/3/60 international	02250069–399	1
	•decal, voltage 575/3/60 international (not shown)	02250069–400	1
	•decal, voltage 380–415/3/50 international (not shown)	02250069–403	1
	•decal, voltage 525/3/50 international (not shown)	02250069–415	1
6	decal, earth ground international	02250075–046	1
7	sign, danger electrocution	049850	1
8	sign, air breathing (danger)	250027–935	1
9	decal, fluid Sullube	02250069–389	1
10	decal, fluid 24 KT	02250069–395	1
11	decal, fluid CP-4600-32-F	02250118–842	1
12	sign, warning hot surfaces	407408	3
13	sign, power energized	249544–049	1
14	decal, warning mixing fluids	02250110–891	1

(Continued on page 87)

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

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8.19 DECAL GROUP

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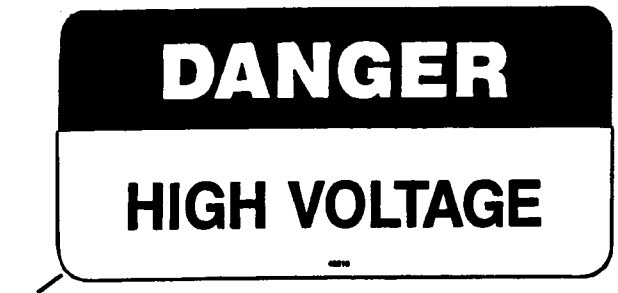

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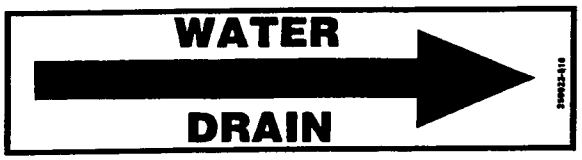

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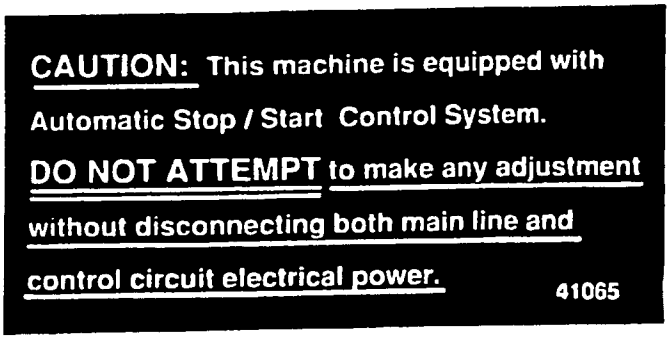

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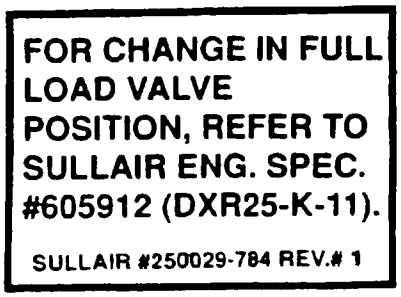

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24

8.19 DECAL GROUP (CONTINUED)

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

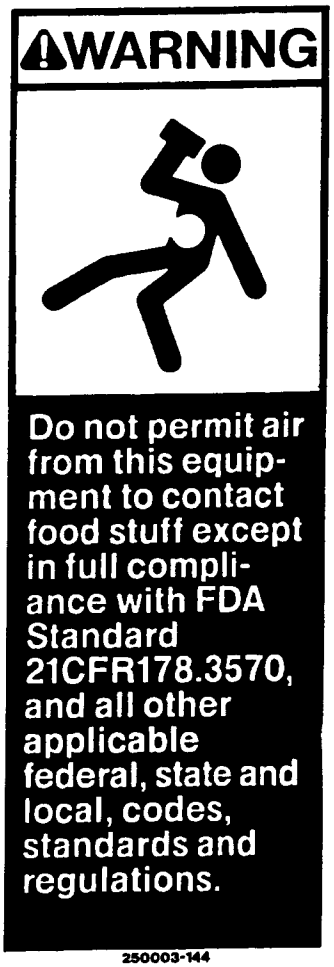
(Continued on page 89)

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

Section 8
ILLUSTRATIONS AND PARTS LIST

8.19 DECAL GROUP

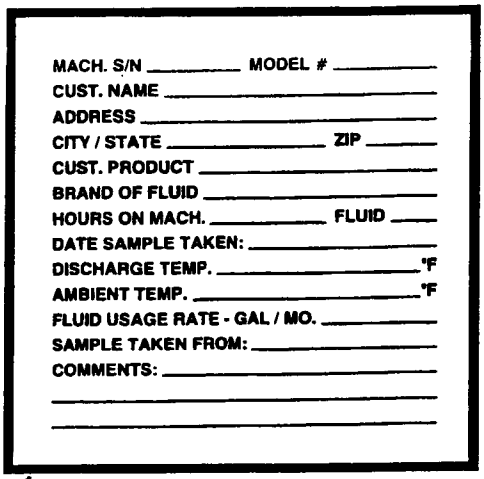
25



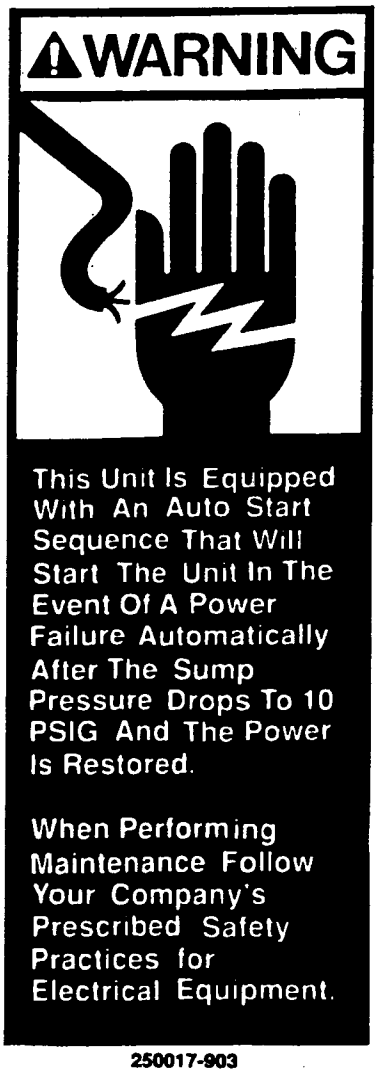
27

250003-144

28



26



29

250017-903

8.19 DECAL GROUP (CONTINUED)

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

(Continued on page 91)

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

8.19 DECAL GROUP

30

250038-457

1 CR	1 TR	LINE PRESS	INLET
2 CR	2 TR	DISCH PRESS	T1
3 CR	3 TR	WATER PRESS	T2
4 CR	4 TR	SEPARATOR	T3
5 CR	1 M	SPIRAL VALVE	T4
6 CR	2 M	INLET VALVE	T5
1 FU	3 M	CIS VALVE	T6
2 FU	4 M	OIL PRESS	T3
3 FU	HCR	OIL FILTER	T4

31

LS-25

32

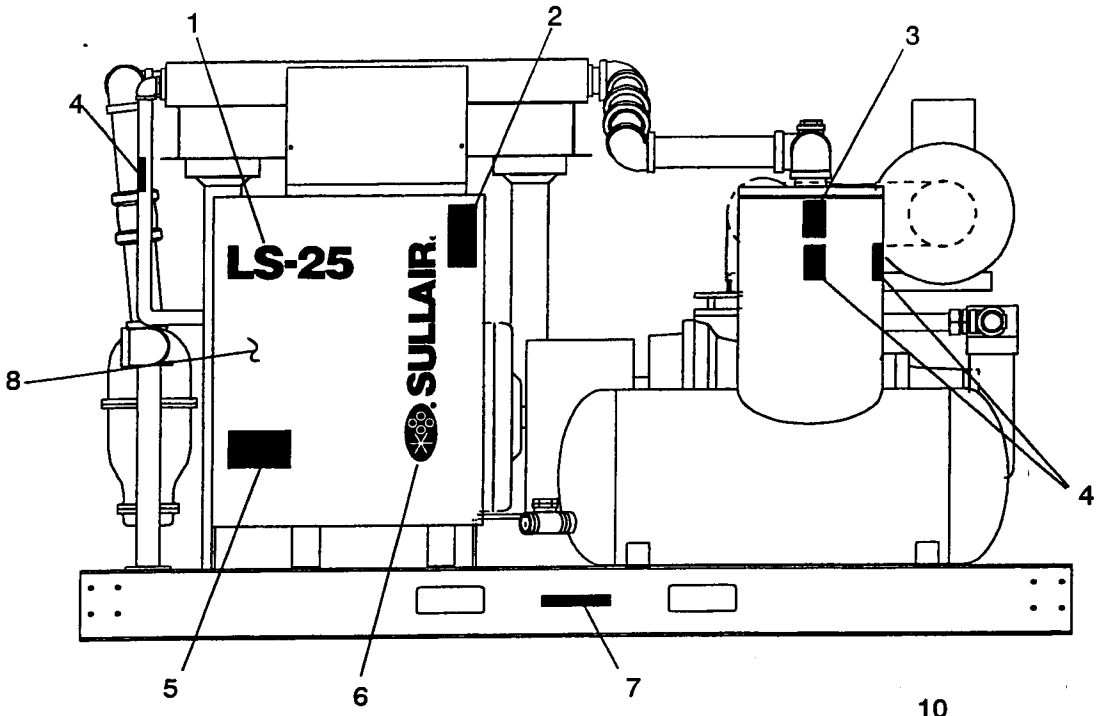
SULLAIR®

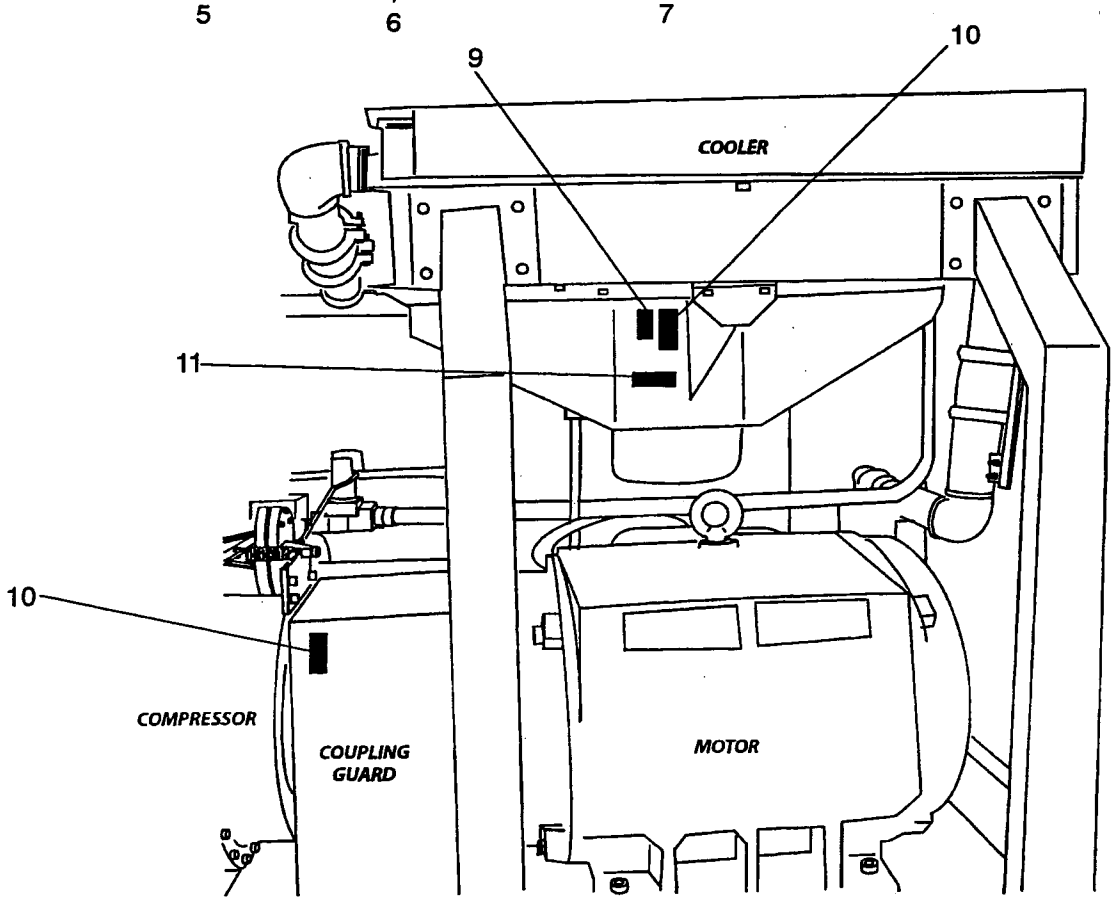
8.19 DECAL GROUP (CONTINUED)

key number	*description*	*part number*	*quantity*
30	decal, electrical component ID	250038–457	1
31	decal, LS–25	02250061–091	1
32	decal, Sullair logo	02250059–048	2

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

8.20 DECAL LOCATION REFERENCE- AIR-COOLED/LESS ENCLOSURE





8.20 DECAL LOCATION REFERENCE- AIR-COOLED/LESS ENCLOSURE

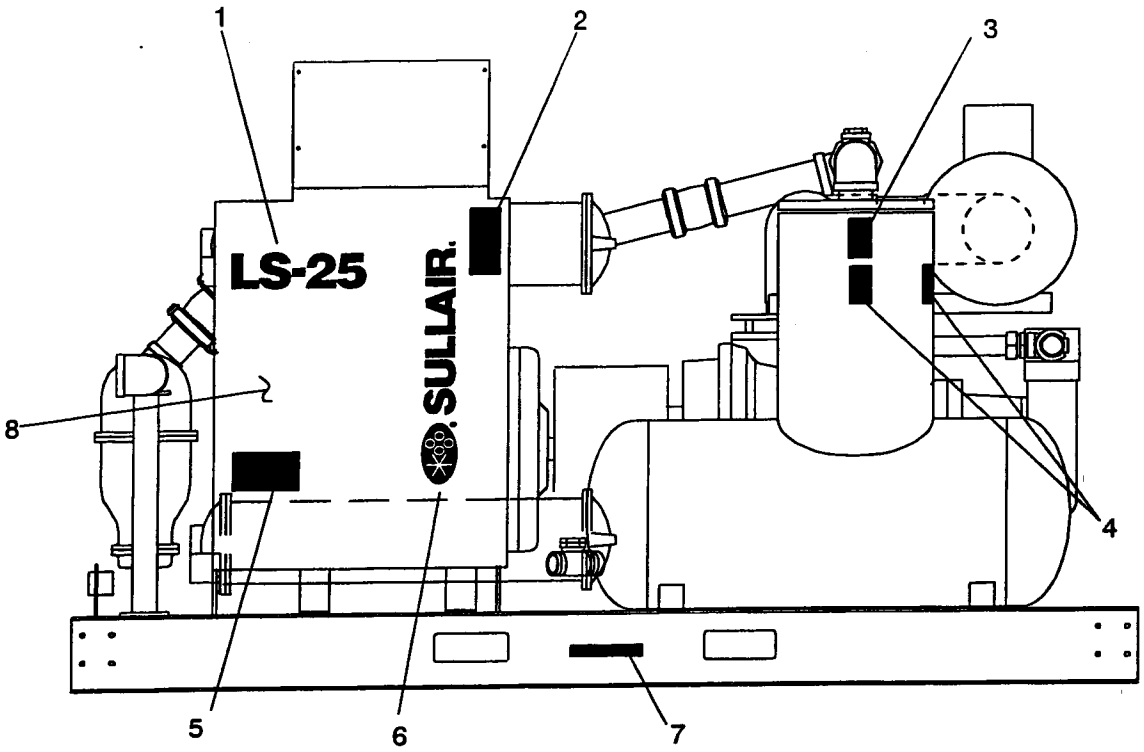
key number	*description*	*part number*	*quantity*
1	decal, LS-25	02250061-091	1
2	sign, warning "food grade" lube	250003-144	1
3	sign, danger electrocution	049850	1
4	sign, warning hot surfaces	407408	3
5	decal, ISO 9001	02250057-624	1
6	decal, Sullair logo	02250059-048	2
7	decal, fork lifting (I)	241814	4
8	control box	(II)	-
9	sign, warning sever-fan port	049965	1
10	sign, warning sever - fan	049855	2
11	decal, rotation	250021-564	1

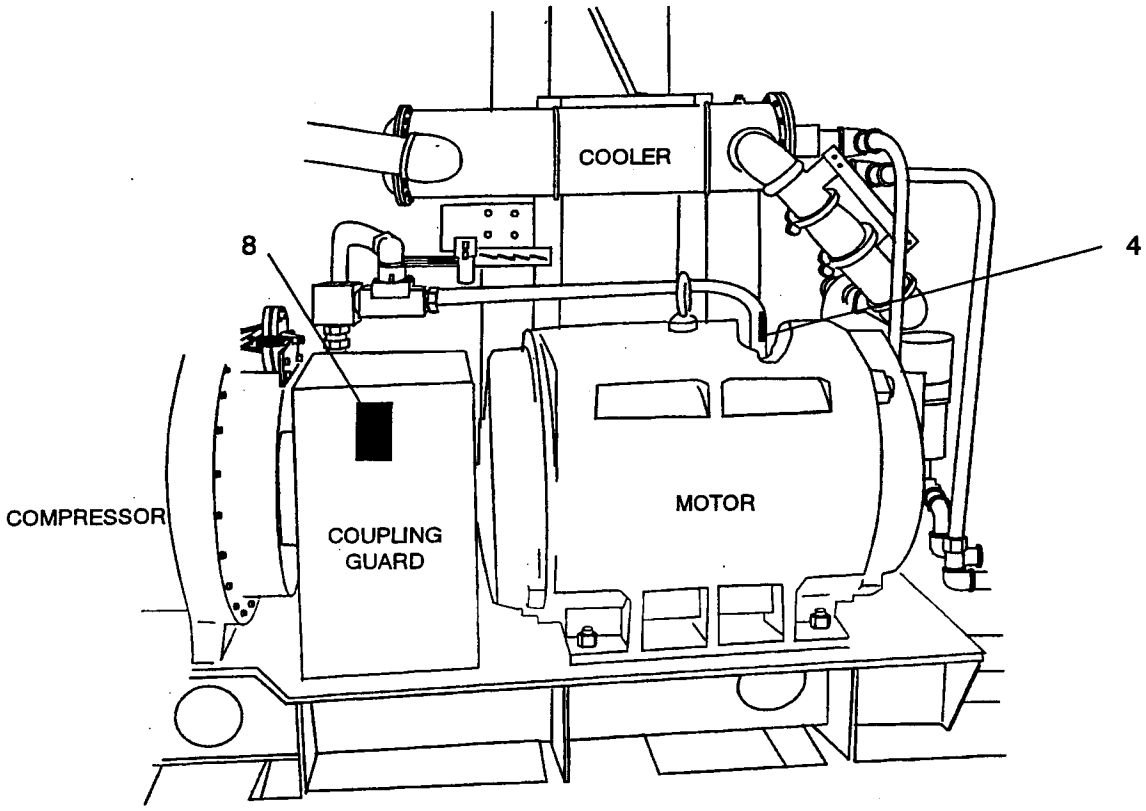
(I) This decal is found on each side of the mounting frame between the fork lift holes, as shown in the illustration.

(II) For additional control box decal locations, consult sections *8.13, Control Box*; *8.14, Instrument Panel (Electro-Mechanical)*; *and/or 8.15, Instrument Panel (Supervisor II)*.

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

8.21 DECAL LOCATION REFERENCE– WATER-COOLED/LESS ENCLOSURE





8.21 DECAL LOCATION REFERENCE- WATER-COOLED/LESS ENCLOSURE

key number	*description*	*part number*	*quantity*
1	decal, LS-25	02250061-091	1
2	sign, warning "food grade" lube	250003-144	1
3	sign, danger electrocution	049850	1
4	sign, warning hot surfaces	407408	3
5	decal, ISO 9001	02250057-624	1
6	decal, Sullair logo	02250059-048	2
7	decal, fork lifting (I)	241814	4
8	sign, warning sever-fan port	049855	1
9	control box	(II)	-

(I) This decal is found on each side of the mounting frame between the fork lift holes, as shown in the illustration.

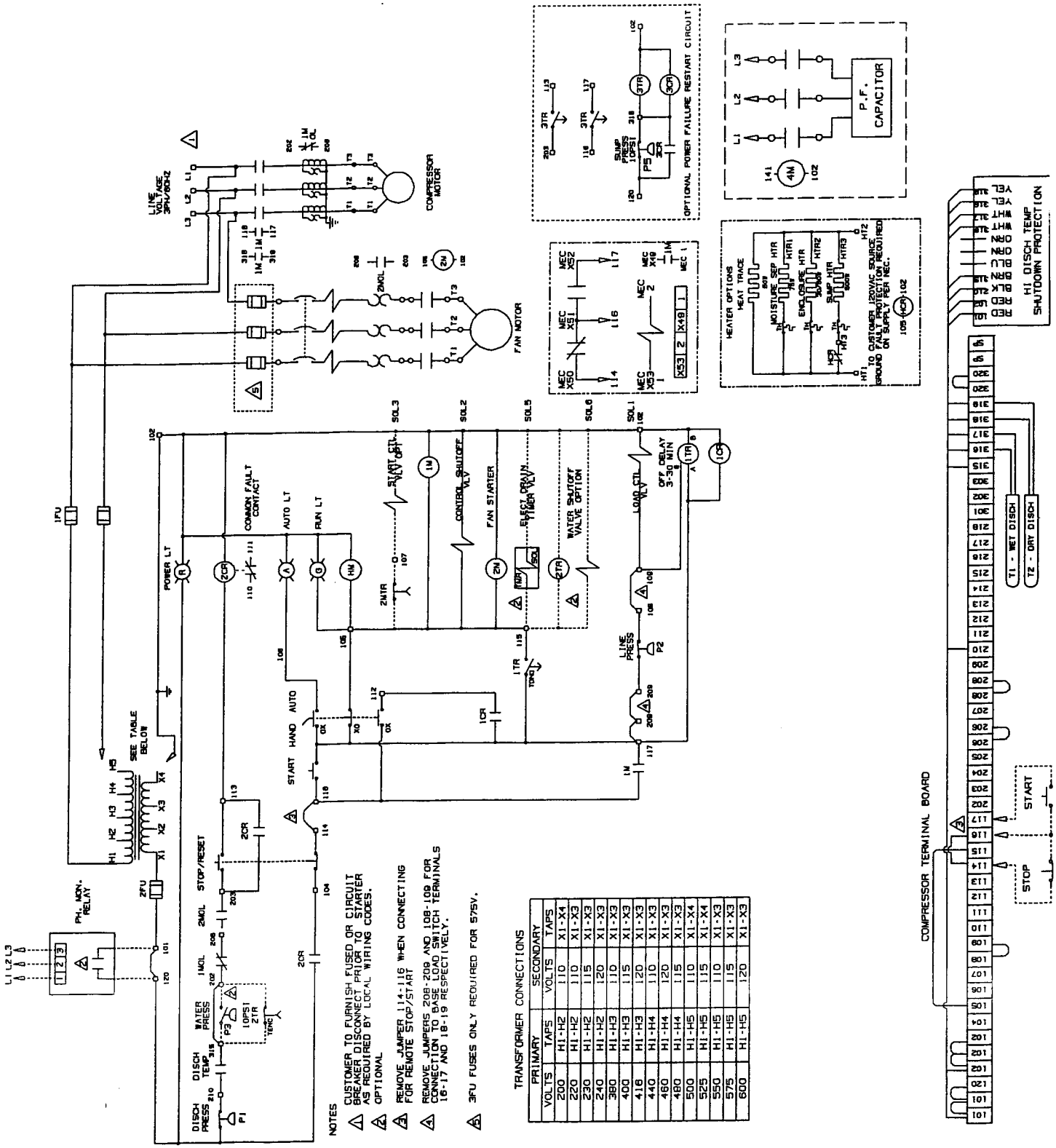
(II) For additional control box decal locations, consult sections *8.13, Control Box*; *8.14, Instrument Panel (Electro-Mechanical)*; *and/or 8.15, Instrument Panel (Supervisor II)*.

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

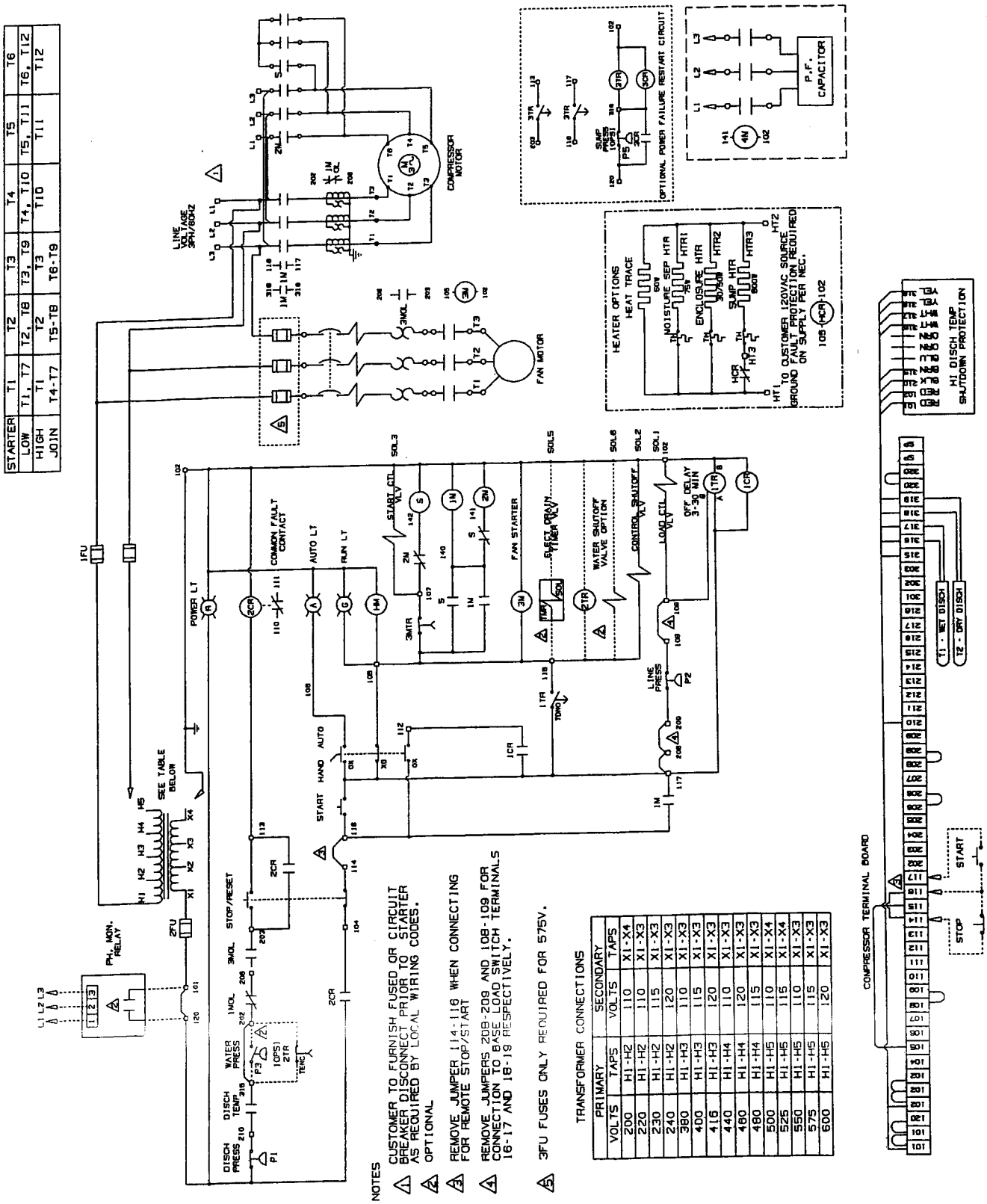
Section 8

ILLUSTRATIONS AND PARTS LIST

8.22 WIRING DIAGRAM– STANDARD FULL VOLTAGE (ELECTRO–MECHANICAL)



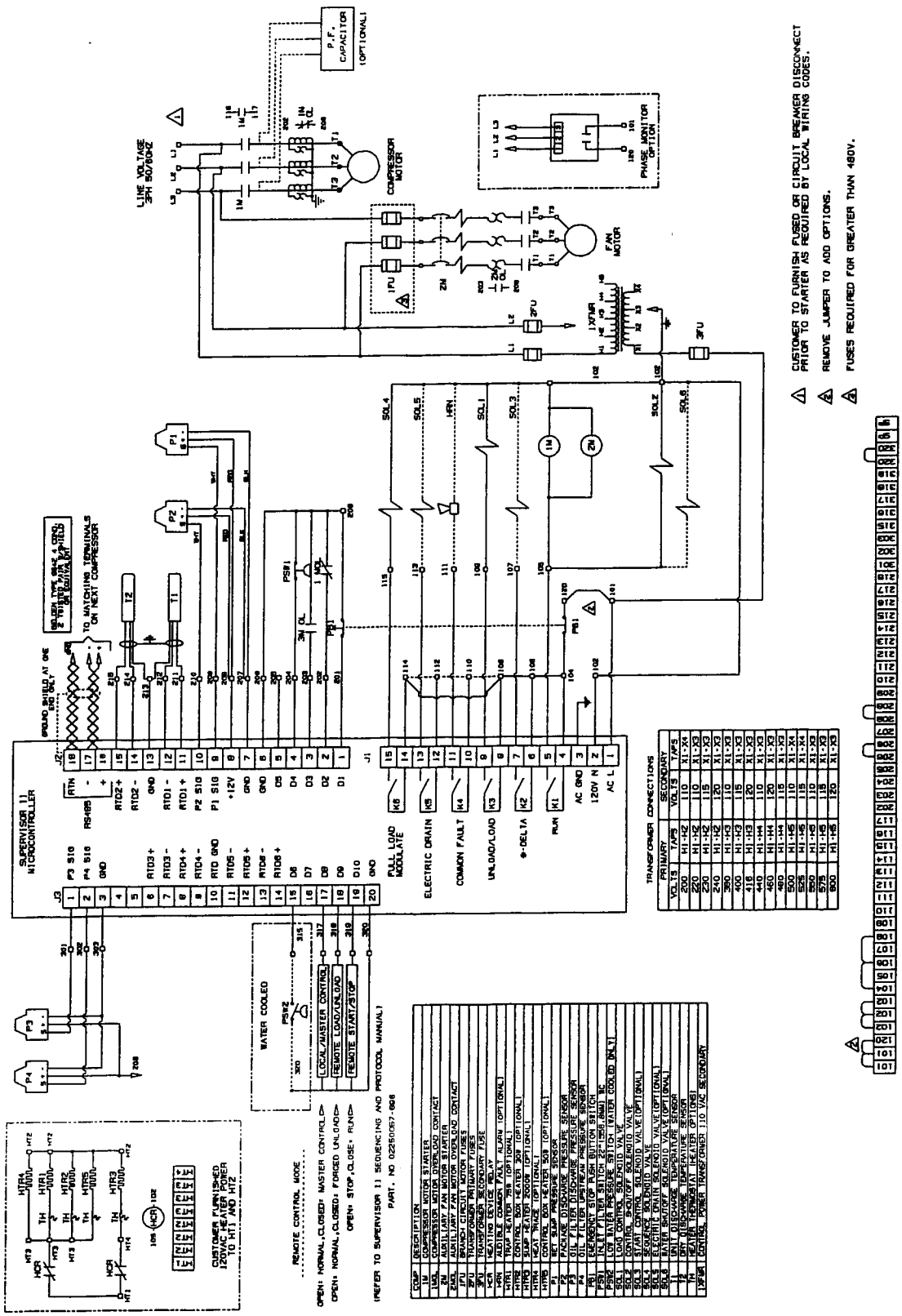
8.23 WIRING DIAGRAM- WYE DELTA (ELECTRO-MECHANICAL)



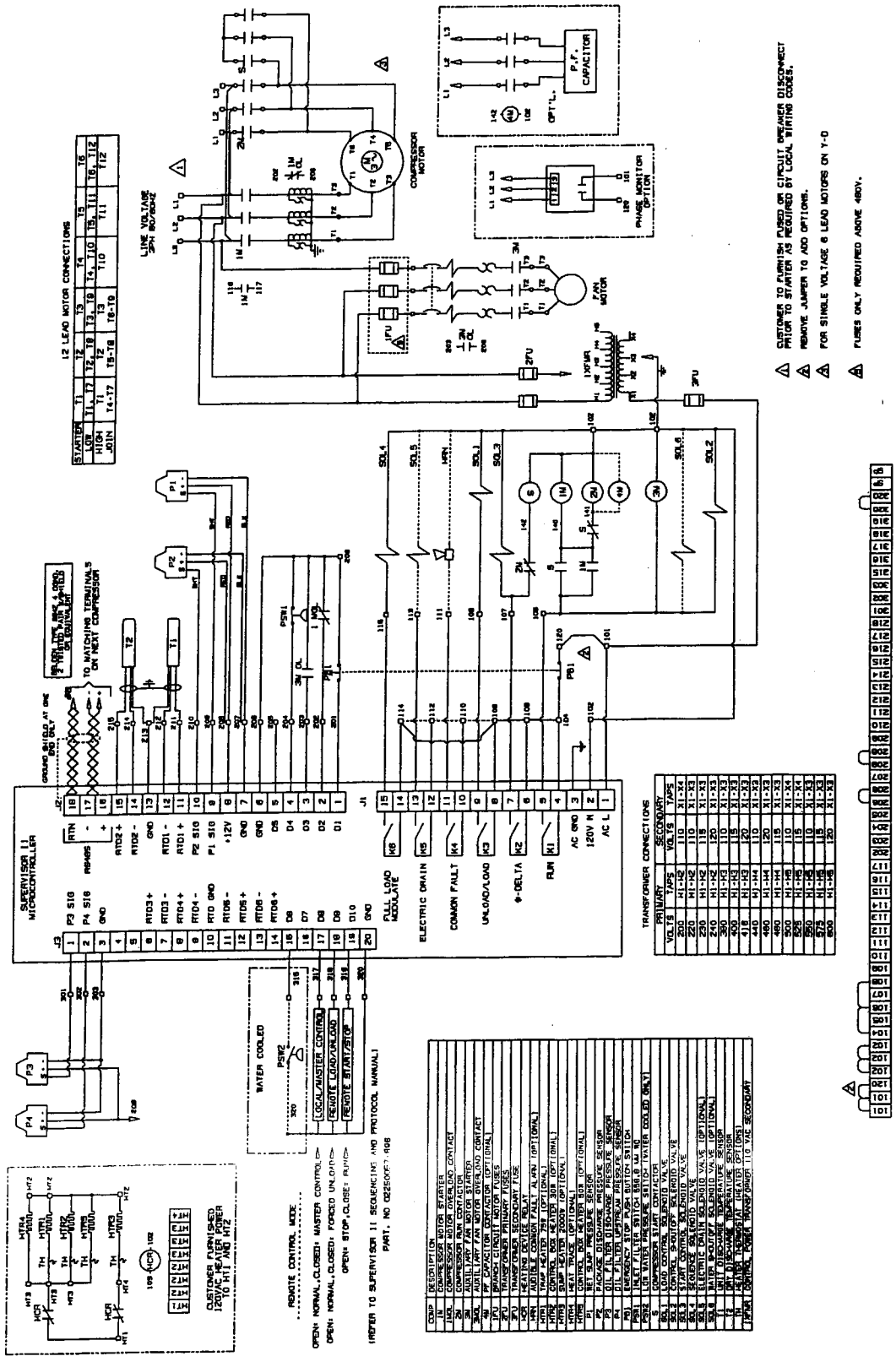
Section 8

ILLUSTRATIONS AND PARTS LIST

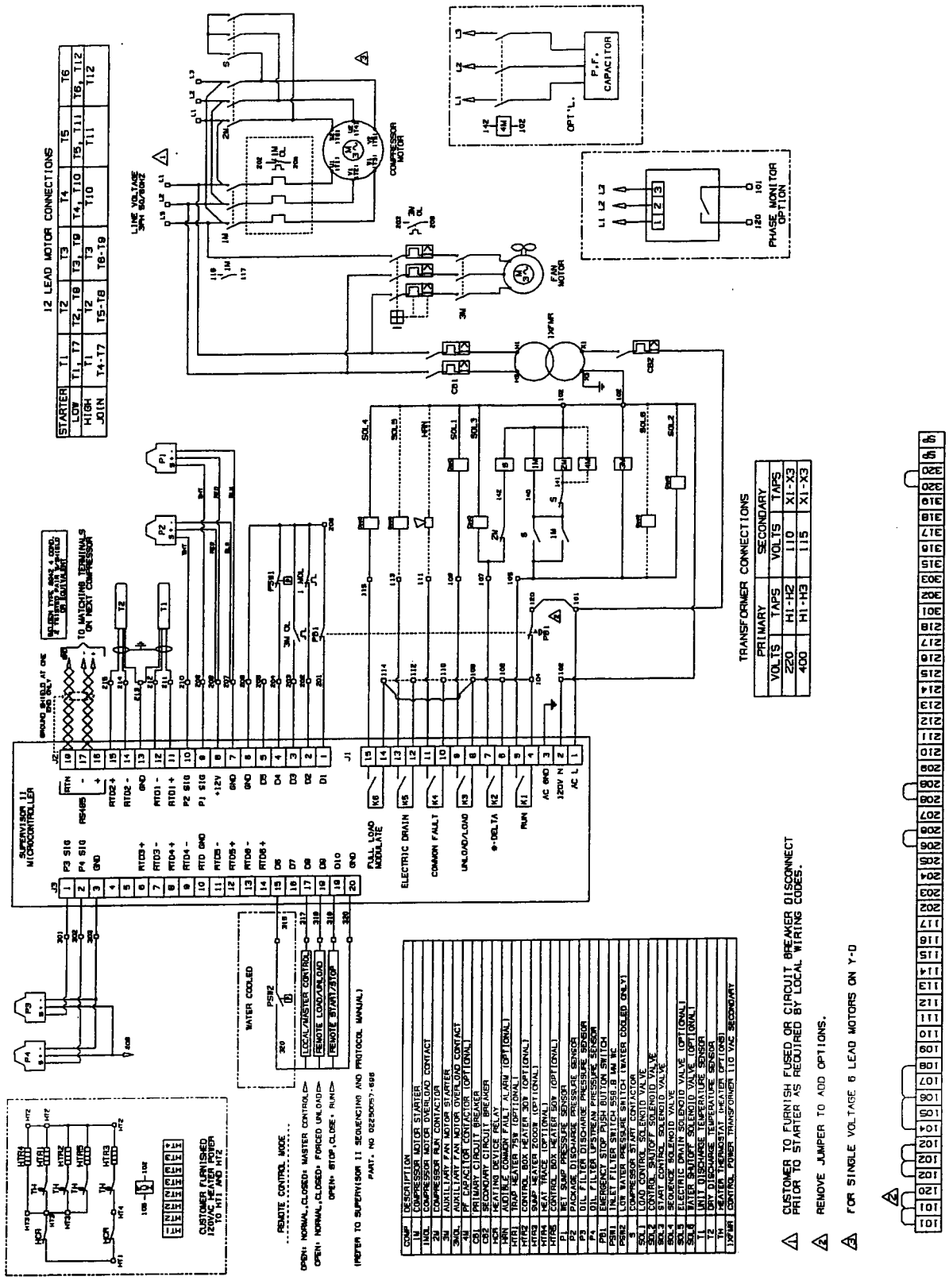
8.24 WIRING DIAGRAM– STANDARD FULL VOLTAGE (SUPERVISOR II)



8.25 WIRING DIAGRAM– WYE DELTA (SUPERVISOR II)



8.26 WIRING DIAGRAM– WYE DELTA EUROPEAN (SUPERVISOR II)



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