SULLAIR

INDUSTRIAL ROTARY SCREW AIR COMPRESSOR

LS–25S

200–350HP/150–261KW AND 24KT

SUPERVISOR I

OPERATOR'S MANUAL AND PARTS LIST

Part Number 02250059–710

Effective 11/94

AIR CARE
SEMINAR TRAINING

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

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

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Attn: Service Training Department

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Section 7
ILLUSTRATIONS AND PARTS LIST
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1.1 GENERAL

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

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

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

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

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

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

1.2 PERSONAL PROTECTIVE EQUIPMENT

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

1.3 PRESSURE RELEASE

A. Install an appropriate flow–limiting valve between the service air outlet and the shut–off (throttle) valve, either at the compressor or at any other point along the air line, when an air hose exceeding ½" (13mm) inside diameter is to be connected to the shut–off (throttle) valve, to reduce pressure in case of hose failure, per OSHA Standard 29 CFR 1926.302(b)(7) and/or any applicable Federal, State and Local codes, standards and regulations.

B. When the hose is to be used to supply a manifold, install an additional appropriate flow–limiting valve between the manifold and each air hose exceeding ½" (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 ½" (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 device to prevent tools or hose ends from being accidentally disconnected and expelled.

G. Open fluid filter 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 bar) for cleaning purposes, and then only with effective chip guarding and personal protective equipment per OSHA Standard 29 CFR 1910.242 (b) and/or any applicable Federal, State, and Local codes, standards and regulations.

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

1.4 FIRE AND EXPLOSION

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

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

C. DO NOT permit fluids, including air line anti–icer system antifreeze compound or fluid film to accumulate on, under, or around acoustical material, or on any external surfaces of the air compressor 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 Class BC or ABC fire extinguisher or extinguishers nearby when servicing and operating the compressor.

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

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

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

1.5 MOVING PARTS

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

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

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

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

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

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

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

1.6 HOT SURFACES, SHARP EDGES AND SHARP CORNERS

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

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

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

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

1.7 TOXIC AND IRRITATING SUBSTANCES

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

⚠ DANGER

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

B. DO NOT use air line anti–icer systems in air lines supplying respirators or other breathing air utilization equipment and **DO NOT** discharge air from these systems 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 Material Safety Data Sheet for information pertaining to fluid of fill.

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

G. If air line anti–icer system antifreeze compound enters the eyes or if fumes irritate the eyes, they should be washed with large quantities of clean water for 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.

1.9 LIFTING

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

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

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

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

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

F. DO NOT attempt to lift in high winds.

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

H. Lift compressor no higher than necessary.

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

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

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

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

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

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

1.10 ENTRAPMENT

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

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

Section 2
DESCRIPTION

2.1 INTRODUCTION

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

Compared to other types of compressors, the Sullair rotary screw is unique in mechanical reliability, with “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

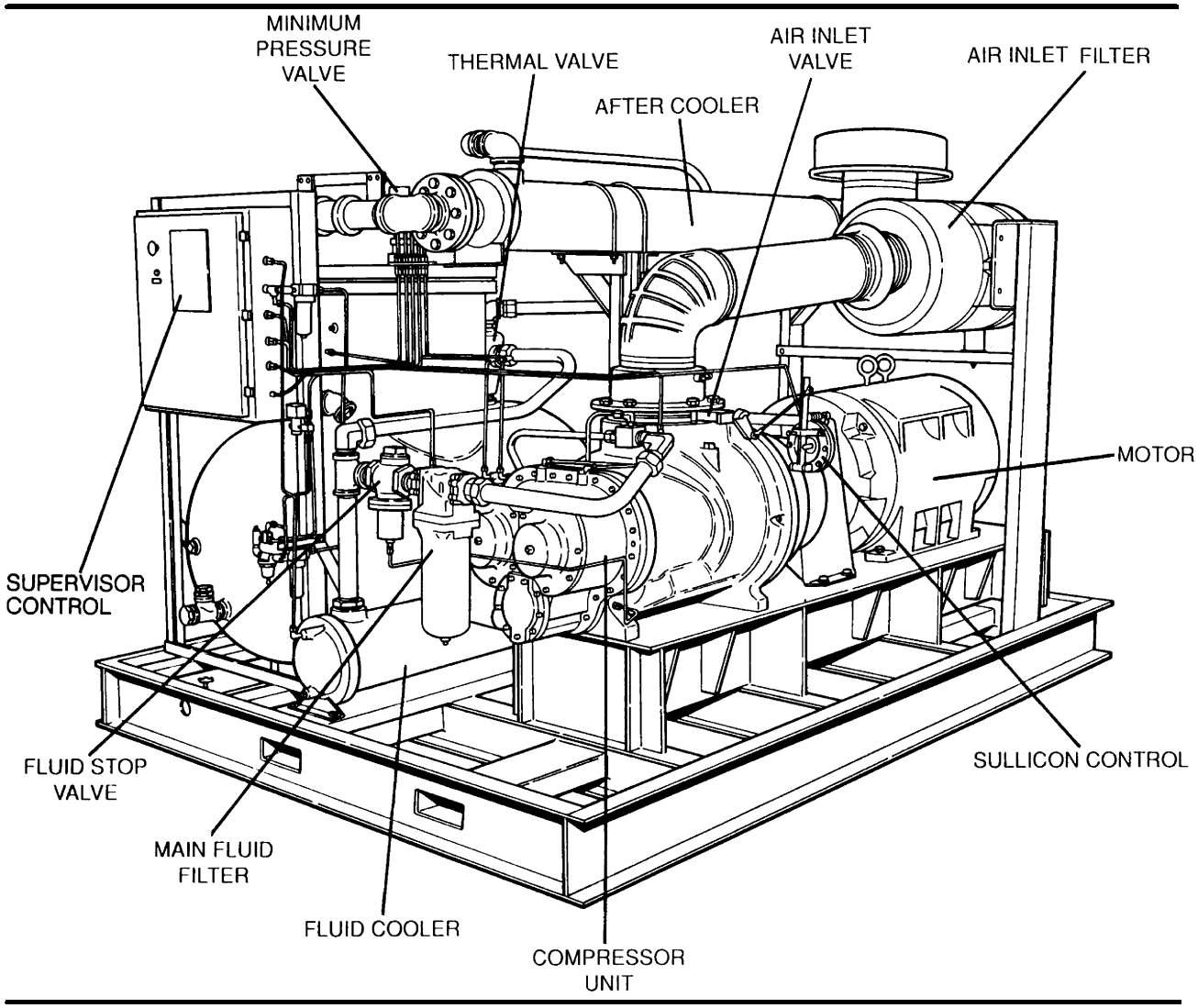
Refer to Figure 2–1. The components and assemblies of the air compressor are clearly shown. The complete package includes **compressor**, **electric motor**, **compressor inlet system**, **compressor discharge system**, **compressor cooling** and **lubrication system**, **capacity control system** and **“Supervisor I Control System”** all mounted on a structural steel frame.

On air–cooled models, the cooling package is remote–mounted and shipped as a separate unit. The separate motor–driven fan cooling package forces air through the coolers, which removes 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

Figure 2–1 Sullair Series LS–25S 200HP/150KW Rotary Screw Compressor



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 2–2 Cooling and Lubrication System – Typical (Water–cooled)

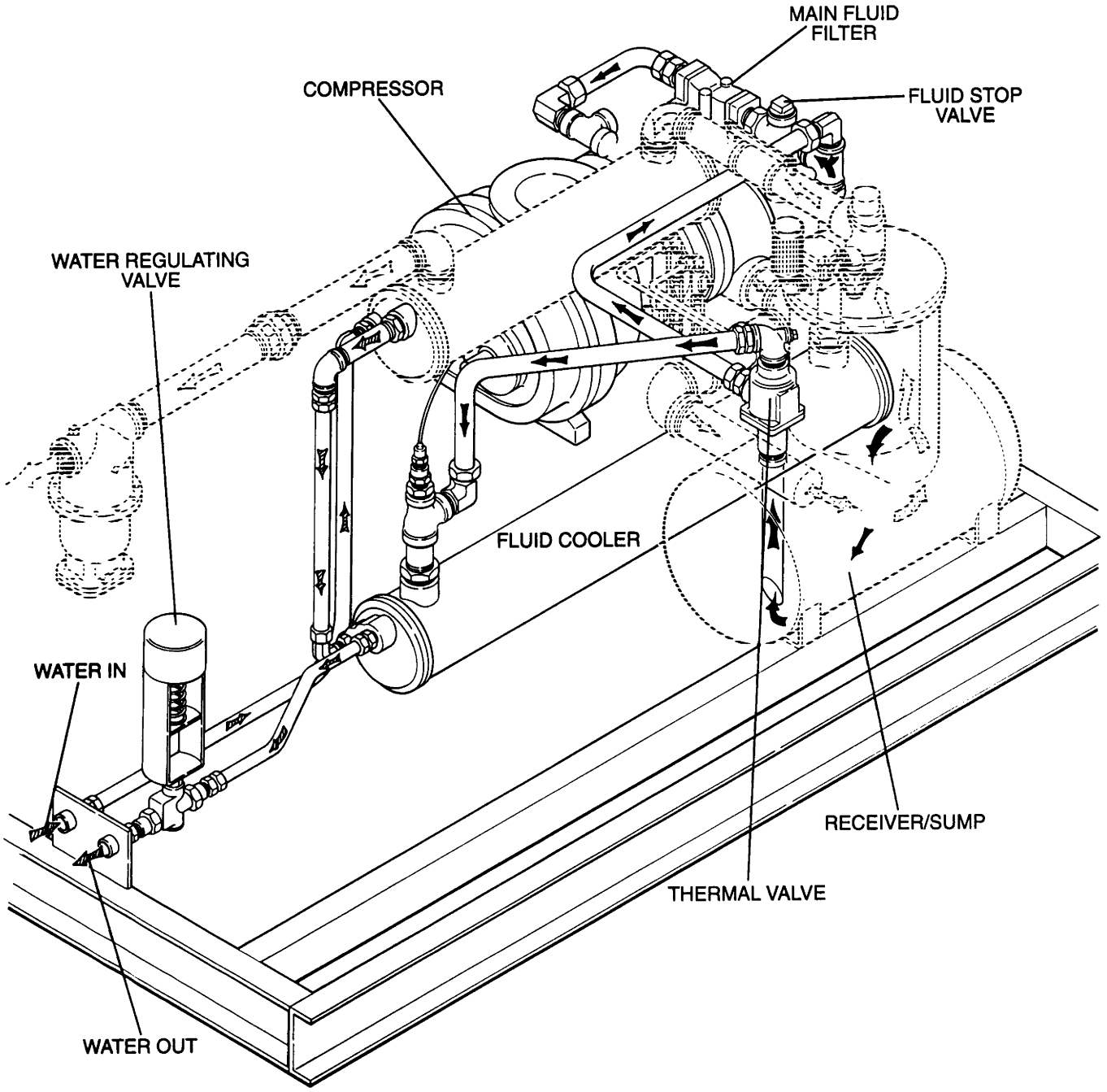
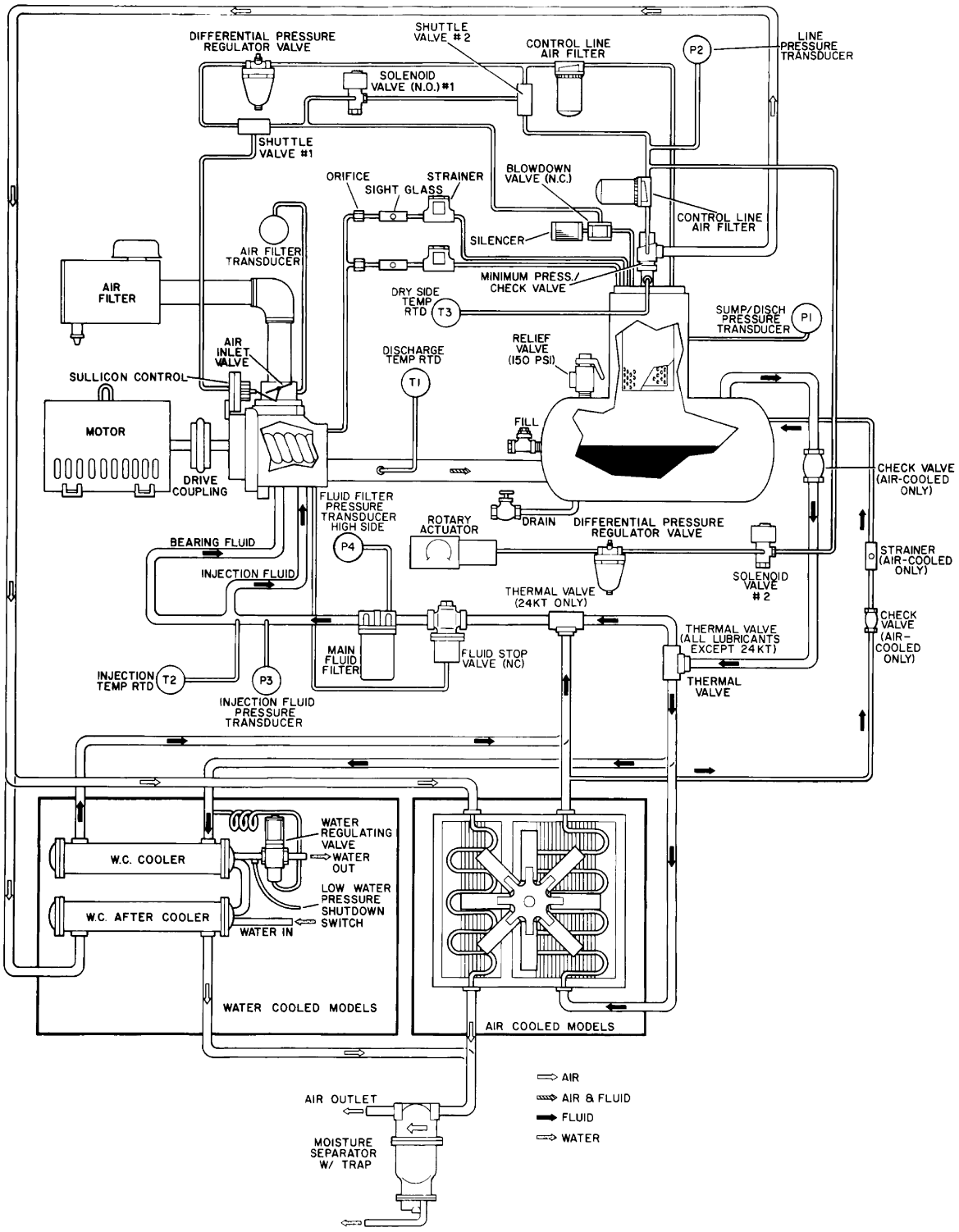


Figure 2–3 Compressor Piping and /nstrument Diagram



Section 2
DESCRIPTION

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:

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

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

2.4 COMPRESSOR COOLING AND LUBRICATION SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figures 2–2 and 2–3. The cooling and lubrication system consists of a **fluid cooler**, **aftercooler**, **full flow fluid filters**, **fluid stop valve**, **thermal valve** and **interconnection piping**. For water–cooled models, a shell and tube fluid cooler and aftercooler are mounted on the compressor package. For air–cooled models, they are radiator–type coolers which are mounted on separate cooling packages.

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 discharge temperature is below 170°F (77°C). In the case of 24KT compressors, the thermal valve is fully open when the fluid temperature is below 140°F (60°C). The fluid passes through the thermal valve, the main fluid filter and directly to the compressor unit.

As the discharge temperature rises above 170°F (77°C), due to the heat of compression, the thermal valve begins to close and a portion of the fluid then flows through the cooler. In the case of 24KT compressors, as the injection fluid temperature rises above 140°F (60°C), the thermal valve begins to close and a portion of the fluid begins to flow through the cooler. From the cooler, the fluid flows to the main filter and on to the compressor unit. The fluid filter has a replacement element and an integral pressure bypass valve.

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

Water–cooled versions of the compressor have a water–flow regulating valve (not shown) which operates to conserve water during periods of varying load on the compressor. This same valve automatically shuts off the water supply when the compressor is shut down. In addition, 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:

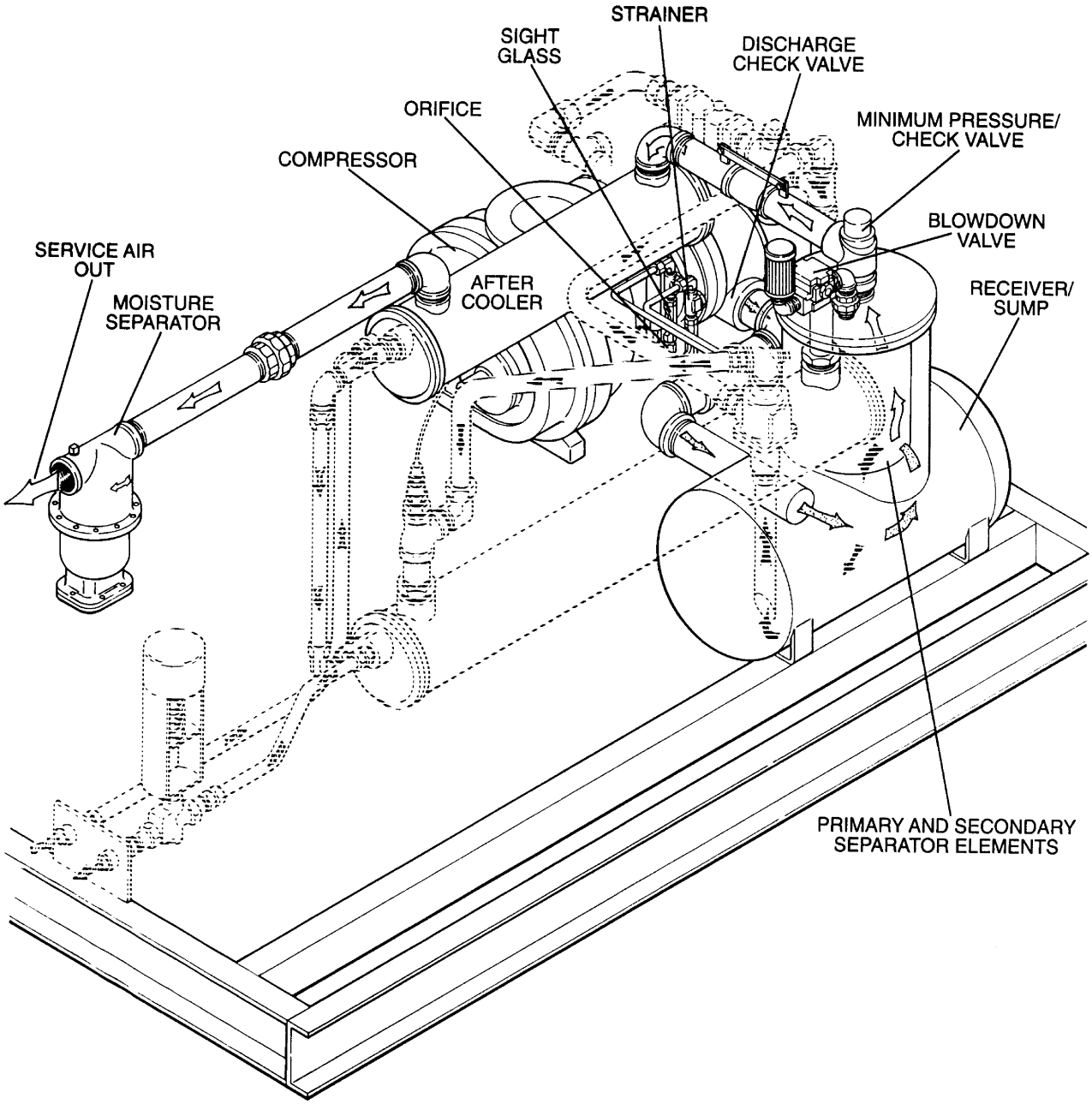
- It acts as a primary fluid separator.
- Serves as the compressor fluid sump.
- Houses the final fluid separator elements.

The compressed air/fluid mixture enters the receiver and is directed against the ends of the tank. The direction of movement is changed and its velocity significantly reduced, thus causing large droplets of fluid to form and fall to the bottom of the receiver/sump. The fractional percentage of fluid remaining in the compressed air collects on the surfaces of the dual separator elements as the compressed air flows through them. Two return lines (or scavenge tubes) lead from the bottom of each separator element to the 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. By pressing the ΔP1 pad on the Supervisor, the operator may monitor the condition of the separator elements by reading differential pressure on the digital display. At a differential of 10 psid (0.7 bar) or greater, the operator will be told to service the separator element. At this time, separator element replacement is necessary.

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 (3.4 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 150 psig (10.3 bar).

Figure 2–4 Compressor Discharge System – Typical (Water–cooled)



The compressor is also equipped with high pressure shutdown protection to shut down the compressor at 135 psig (9.3 bar). This prevents the relief valve from opening and dumping fluid under normal conditions. Also, a high discharge temperature control with three (3) sensing probes is provided to shut down the compressor if the discharge temperature reaches 235°F (113°C).

⚠ WARNING

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

Stop compressor and relieve all internal pressure before doing so.

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

2.6 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 and an inlet butterfly valve. The functional description of the control system is described below in four distinct phases of operation. The following description text applies to all LS–25S Series compressors ranging from 200 – 350 HP/150 – 261 KW models. For explanatory 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 ON/OFF pad is depressed, the sump pressure will quickly rise from 0 to 50 psig (0 to 3.4 bar). During this period, both the pressure regulator and the solenoid valve are closed and the Sullicon Control is inoperative. The spring on the control holds the butterfly valve fully open while the spiral valve is fully closed (maximum) position and the compressor pumps at full rated capacity. The rising compressor air pressure is isolated from the service line in this phase by the minimum pressure valve set at approximately 50 psig (3.4 bar).

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

When the compressed air pressure in the sump rises above 50 psig (3.4 bar), the minimum pressure valve opens, allowing compressed air to flow into the service line. From this point on, the line air pressure is continually monitored by the Supervisor. The pressure regulator and the solenoid valve remain closed during this phase, keeping the Sullicon Control inactive. Both the spiral valve, as well as the inlet butterfly valve, remain in the full load position as long as the compressor is running at 100 psig (6.9 bar) or below.

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

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

The spiral valve provides a modulation range from 100 to 50%. During this period, the pressure rises approximately from 100 to 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 expand the diaphragm chamber of the Sullicon Control, which starts partially closing the inlet butterfly valve. The inlet butterfly valve provides modulation range from 50 to 40%. During this period, the pressure rises approximately from 108 to 110 psig (7.4 to 7.6 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 continues to rise. When it exceeds 110 psig (7.6 bar), Supervisor de–energizes the solenoid valve allowing line pressure to be supplied directly to the Sullicon diaphragm keeping the inlet butterfly closed; the spiral valve is fully open (minimum) position. Simultateously, the solenoid valve sends a pneumatic signal to the blowdown valve. The blowdown valve opens the sump to the atmosphere. This reduces the sump pressure to approximately 30 to 50 psig (2.1 to 3.4 bar) which results in low horsepower consumption. The check valve in the air service line prevents line pressure from returning to sump while the compressor is running in the unloaded mode. Both the spiral valve and the butterfly valve remain in the unload position.

When the line pressure drops back to 100 psig (6.9 bar) due to an increase in the air demand, the Supervisor energizes the solenoid valve allowing the air pressure behind the Sullicon Control to be vented through the solenoid valve exhaust port. The blowdown valve closes, and the inlet butterfly valve opens. Also the air pressure at the spiral valve actuator diaphragm is reduced through a vent hole at the spiral valve differential pressure regulator, and a spring in the actuator causes the spiral valve to return to the full load (maximum) position.

AUTOMATIC OPERATION

For applications with varied periods of time when there are no air requirements, Supervisor's Automatic mode allows the compressor to shut down (time delayed) when no compressed air requirement is present, and restart as compressed air is needed. AUTOMATIC also incorporates the 60 second unloaded STOP MODE feature which allows the motor to stop from an unloaded condition when the ON/OFF pad is pressed or after the timed stop period. If immediate stop is required when operat-

Figure 2–5A Control System Diagram (Start/Full Load)

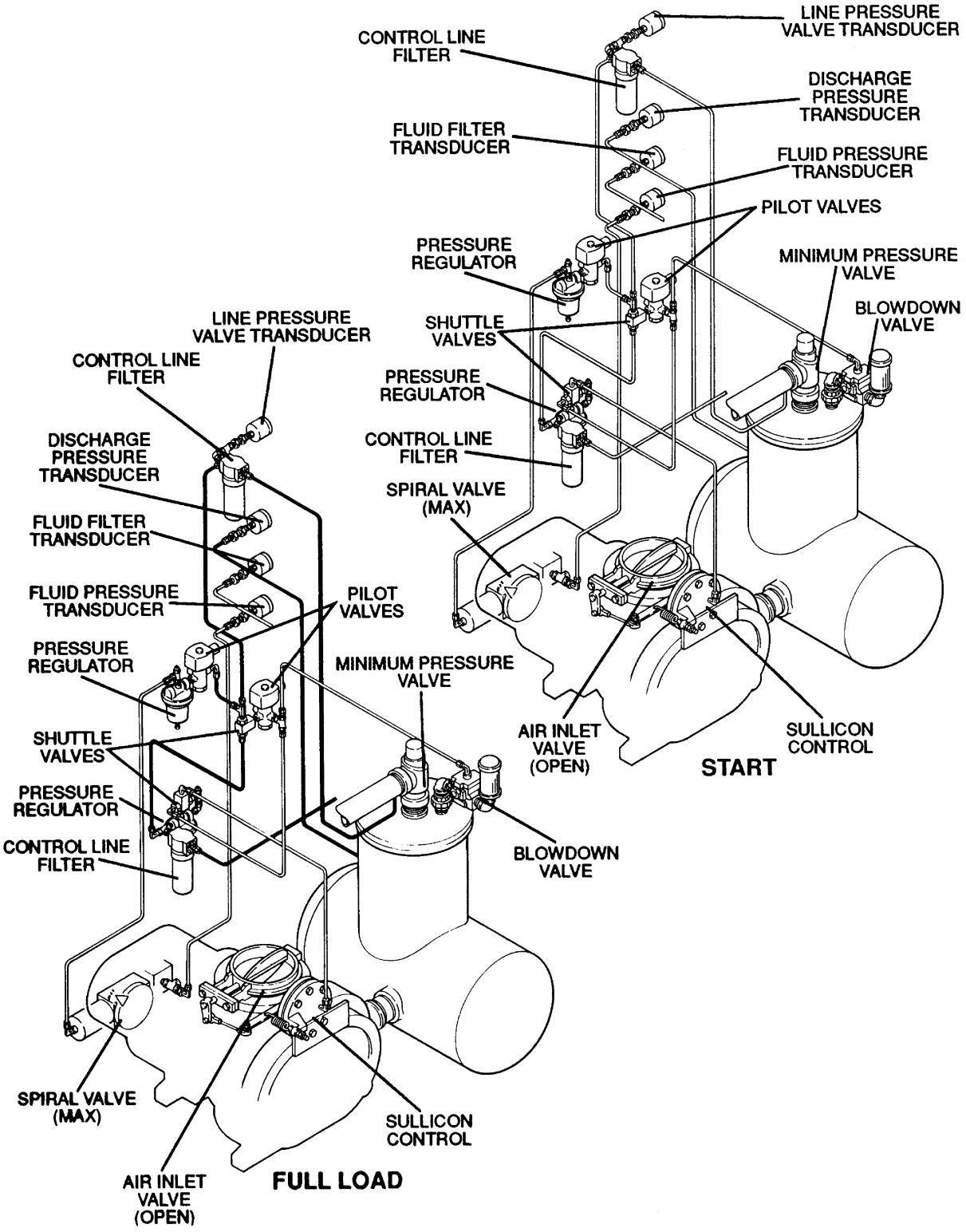


Figure 2–5B Control System Diagram (Modulation/Unload)

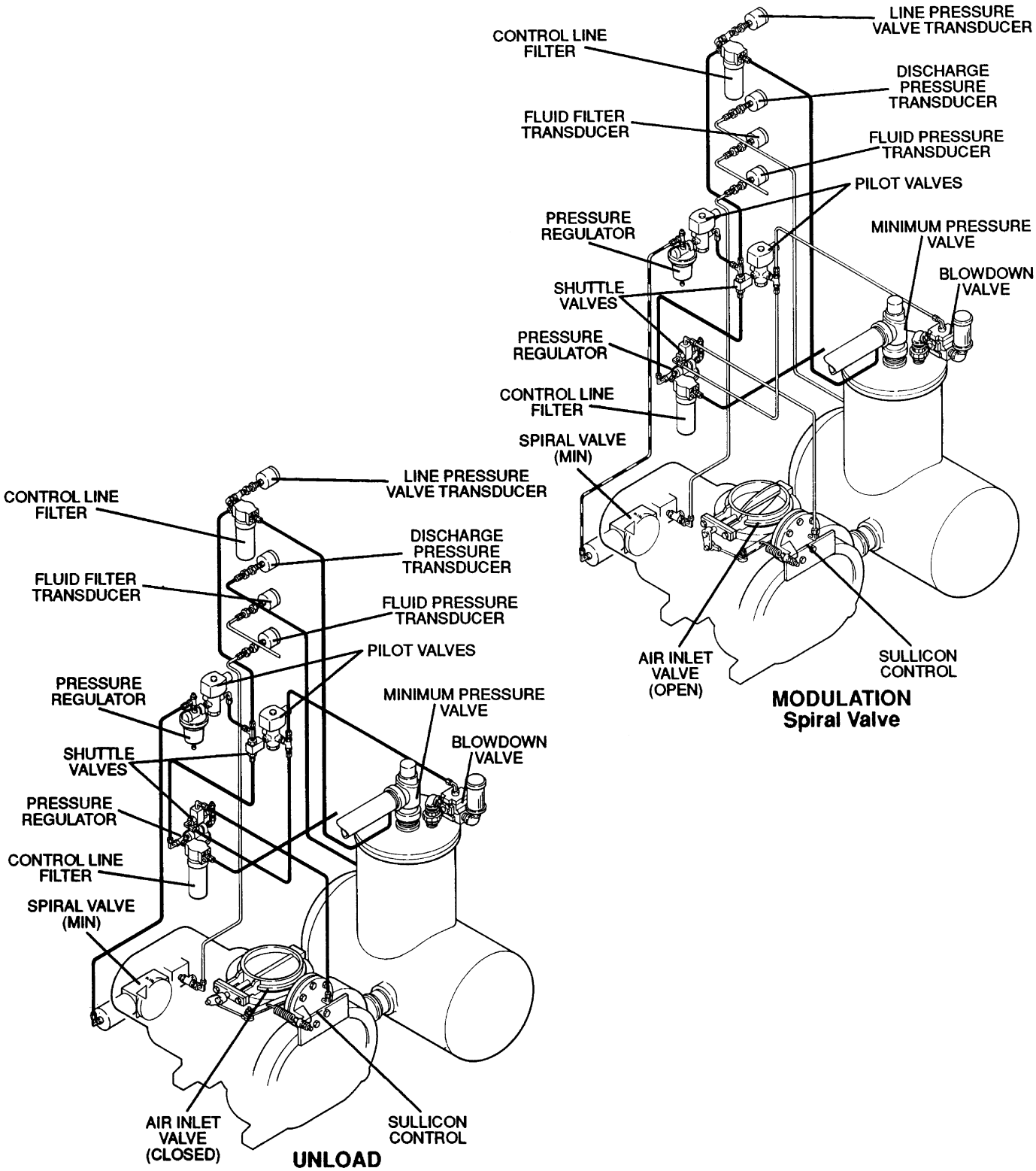
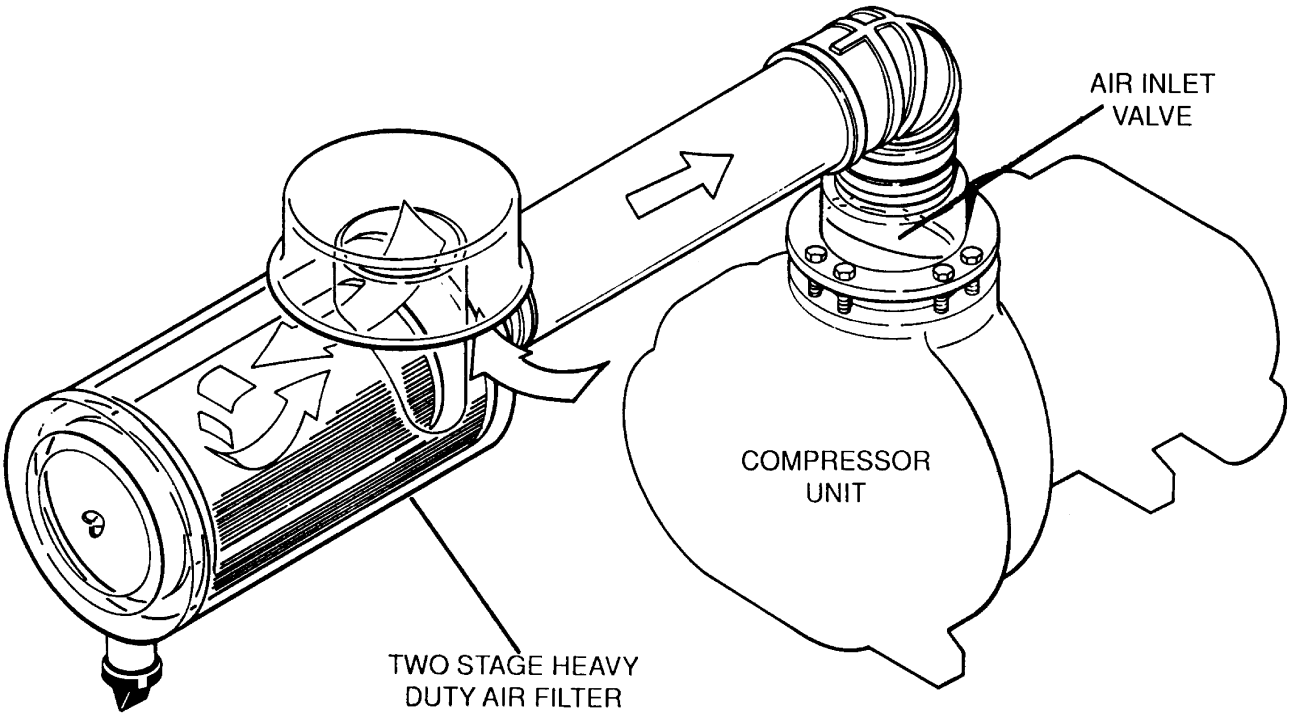


Figure 2–6 Air Inlet System



ing in AUTOMATIC mode, press the EMERGENCY STOP button on the control panel.

2.7 AIR INLET SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 2–6. The compressor inlet systems consists of a **dry–type air filter**, a **vacuum switch**, and an **air inlet valve**.

The vacuum switch, located on the compressor Supervisor Control System, indicates the condition of the air filter. When the message “AIR FILTER MAINT RQD” is displayed,maintenance is required.

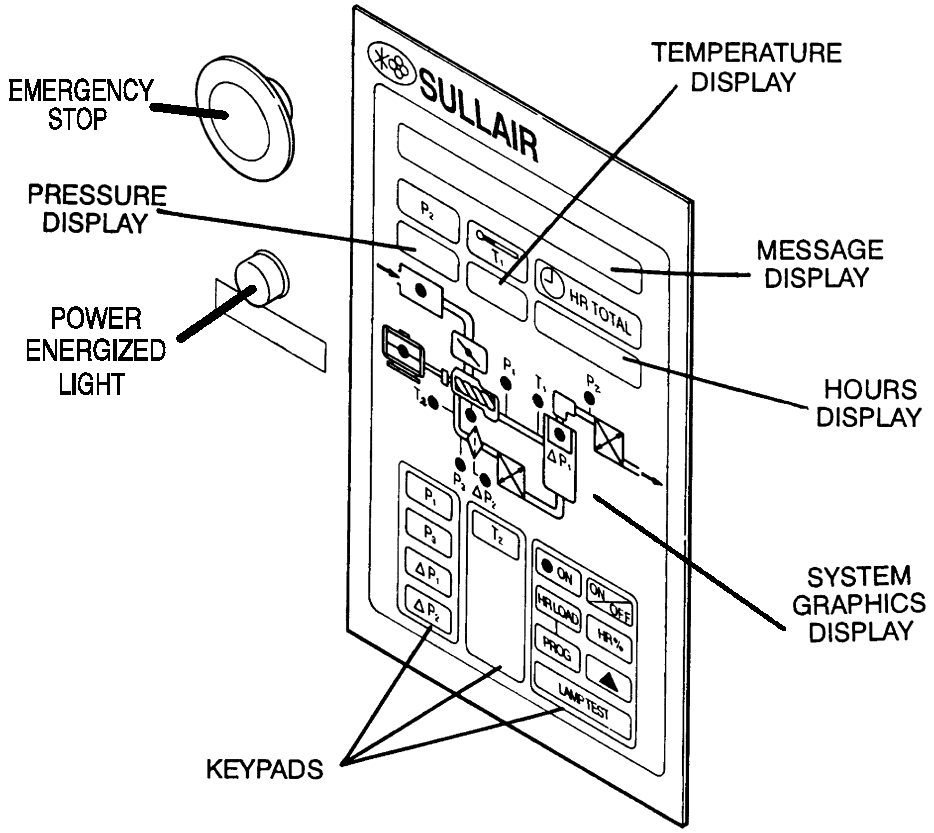
The butterfly–type air inlet valve directly controls the amount of air intake to the compressor in response to the operation of the Sullicon Control (see Section 2.6, Control System, Functional Description).

2.8 INSTRUMENTATION, FUNCTIONAL DESCRIPTION

Refer to Figure 2–7. The Supervisor I control panel consists of displays for pressure, temperature and time, as well as a status message display. Default pressure is line pressure (P2) which is normally displayed with pad selections for sump pressure, fluid pressure, separator differential and fluid filter differential. Default temperature is unit discharge temperature (T1) which is normally displayed with a pad selection for injection fluid temperature. An LED map provides a graphic illustration of the points being monitored. Operator controls consist of EMERGENCY STOP, ON/OFF, monitor display pads and programming pads. All compressor control and pressure and temperature displays are provided in the Supervisor.

- The **line (terminal) pressure transducer** (P2) is connected to the dry side of the receiver downstream from the check valve and continually monitors the plant air pressure.
- The **sump pressure transducer** (P1) monitors

Figure 2–7 Supervisor I Control Panel



the sump pressure at the various load and/or off–load conditions.

- The **discharge temperature probe** (T1) 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) based on 80°F (27°C) ambient temperature.
- The **injection temperature probe** (T2) monitors the temperature of the fluid just before it is injected into the unit.
- The **air filter maintenance switch** monitors the condition of the air intake filter. When the Supervisor displays the message "AIR FILTER MAINT RQD", filter service is required (see Figure 2–3).
- The **ON/OFF pad** turns the compressor on and off.
- The **hour display** records cumulative hours of operation for the compressor and is useful for planning and logging service operations. A selectable display of "load" hours or "load" as a percent of "run" hours is available by pressing "HR LOAD" or "HR%" respectively.
- **Separator differential pressure** can be displayed by pressing the "**ΔP1" pad**. When a differential of 10 psid (0.7 bar) is reached, the message "SEPARATOR MAINT RQD" is displayed and the ΔP1 LED will flash.
- **Oil filter differential pressure** can be displayed by pressing the "**ΔP2" pad**. When a differential of 20 psid (1.4 bar) is reached, the message "OIL FILTER MAINT RQD" will be displayed and the ΔP2 LED will flash.
- The **"ON" LED** indicates when the compressor is running.
- The **amber light** on the control panel indicates when power to the compressor is supplied.
- The **green message display** indicates the status of the compressor.

2.9 SUPERVISOR I MICROCONTROLLER PROGRAMMING

Several display and operational functions are user programmable from the Supervisor keypad. Repeatedly pressing the "PROG" pad will scroll the message display through the various programmable parameters. The cursor pad (Δ) is used to change parameter values. A built–in timed delay feature returns the message display to operation mode after 5 seconds of inactivity.

PROGRAMMABLE PARAMETERS

PARAMETER	OPERATION
LANGUAGE	Press the cursor pad for 2 seconds to change to next language for the message display. Languages in order are: French, German, Italian, Spanish and English.
AUTOMATIC/MANUAL	The controller default state is AUTOMATIC operation. If line pressure is adequate and/or the sump pressure is greater than 5 to 10 psig (0.3 to 0.7 bar), pressing the ON/OFF pad will put the control in STANDBY mode until line pressure drops to the programmed differential value and the sump pressure is low enough to permit a START. AUTOMATIC mode provides a timed STOP with automatic restart operation. Automatic restart after power failure is also included in AUTOMATIC mode. MANUAL mode ignores the line pressure permissive of AUTOMATIC and starts the compressor with ON/OFF as long as the minimum sump pressure and other fault conditions are satisfied. The compressor is only stopped manually with no time stop and no automatic restart after power failure.
PRESSURE UNITS	Selects bar or psig; use cursor key to select. 1 bar = 14.5 psig.
TEMPERATURE UNITS	°C OR °F; use cursor key to select.
MAXIMUM PRESSURE P2A	Use the cursor key to set the OFF LOAD pressure setting. Depressing the cursor pad for more than two seconds will initiate a fast scrolling mode to quickly reach the desired setpoint for all programmable setpoints. A wraparound feature (on all functions) returns the value to its lowest limit if scrolling exceeds the high limit. Typically set for 110 psig (7.6 bar).
PRESSURE DIFFERENTIAL P2A	Selects the OFF LOAD setting by subtracting the differential from P2A. Normally set for 10 psid (0.7 bar).
MAXIMUM PRESSURE P2B	Same as P2A, but provides a second OFF LOAD setting for base/load operation.
PRESSURE DIFFERENTIAL P2B	Same as P2A, but provides a second ON LOAD setting for base/load operation.
UNLOAD TIME	Adjusts timed stop function if compressor is running in OFF LOAD mode. Adjustment range is 1 to 60 minutes.
WYE TO DELTA TIME	Adjusts transitions timer for Wye–Delta starters from 0 to 30 seconds. ON LOAD function is delayed by the value of Wye to Delta time. A separate relay contact is provided with this function.
DRAIN TIME AND DRAIN INTERVAL (OPTIONAL)	A timed contact is furnished to control a condensate removal solenoid valve. Both the drain duration time (1 to10 seconds) and the time interval between drains (1 to 10 minutes) may be set from these modes.

SUPERVISOR I SPECIAL FUNCTION INPUTS

PARAMETER	OPERATION
REMOTE STOP/START (J1/1–2)	Closing this contact initiates the STOP mode. Opening this contact permits a compressor start if permissives are satisfied. Please note that AUTOMATIC/MANUAL mode characteristics are maintained even though remote STOP/START is used. The RUN LED will flash if stopped with remote contact.
PARAMETERS SELECT (J1/15–16)	With this contact open, compressor operates within pressure range P2A. With this contact closed, compressor operates within pressure range P2B. Suitable for 2 compressor base/load sequencing.
RS 232 SERIAL PORT (J4)	Full 2–way communication and control that provides analog display transmission, signal status and compressor status indication, as well as remote STOP/START via computer. A great tool for preventive maintenance programs and customer DCS management packages. Baud rates are factory settable from 150 to 4800. Consult factory for communication protocol.

SUPERVISOR I AUXILIARY DIGITAL INPUTS

PARAMETERS	OPERATION
MOTOR/OVERLOAD (J1/7–8)	Monitors normally closed compressor motor overload contact. Will initiate compressor shutdown, flash the motor LED on the graphic map and display the message “MOTOR OVERLOAD” if the contact opens.
COOLING SYSTEM MONITOR (J1/9–10)	Monitors cooler fan overload (AC), water pressure switch (WC), and/or canopy fan motor overload. Normally closed signal when opened will initiate compressor shutdown and display the message “FAN OL/LOW WATER”
DRY–SIDE DISCHARGE TEMPERATURE (J1/11–12) (T3)	Separate electronic switch monitors discharge temperature on the dry side of the separator and will initiate a shutdown if greater than 235°F (113°C). Message display is “HIGH TEMP T3”.
INTERSTAGE TEMPERATURE (J1/13–14) (T4)	Only used on tandem compressors. Parameters are same as T3. Message display is “HIGH TEMP T4”.

SUPERVISOR OUTPUT RELAYS

PARAMETERS	OPERATION
COMPRESSOR RUN	Initiates starter controls and all auxiliary contacts that operate simultaneously with the main starter. Supervisor assumes compressor is running if contact is closed and P1 discharge pressure is at a satisfactory level.
LOAD/UNLOAD SOLENOID VALVE	Controls regulator bypass solenoid valve to load or unload the compressor as demand varies.
COMMON FAULT ALARM	Initiates to provide a common signal for remote indication of a fault shutdown.
WYE–DELTA TRANSITION	Contact is used to control Wye–Delta starter transitions logic. This contact is controlled by the Wye to Delta timing function.
DRAIN SOLENOID VALVE	Controlled by the drain time and drain interval timers, this contact is used to control an optional condensate drain solenoid valve.

Section 3
SPECIFICATIONS

SULLAIR SERIES LS–25S SPECIFICATIONS

(50 Hz)

MODEL	HP/KW	COOLING	CAPACITY (ACFM/M^3/MIN)	LENGTH (IN/MM)	WIDTH (IN/MM)	HEIGHT (V) (IN/MM)	WEIGHT (VI) (LB/KG)
L (I)	200/150	Air	1000/28.3	134/3404	87/2210	76/1930	7845/3561
	250/187		1200/33.9	134/3404	87/2210	76/1930	9395/4281
	300/225		1500/41.7	134/3404	87/2210	76/1930	9395/4281
H (II)	300/225	Air	1300/36.8	134/3404	87/2210	76/1930	9395/4281
HH (III)	200/150	Air	812/23.0	134/3404	87/2210	76/1930	7845/3561
	250/187		975/27.6	134/3404	87/2210	76/1930	9395/4281
	350/261		1325/37.5	134/3404	87/2210	76/1930	9920/4504
L (I)	200/150	Water	1000/28.3	134/3404	87/2210	76/1930	8555/3884
	250/187		1200/33.9	134/3404	87/2210	76/1930	10282/4664
	300/225		1500/41.7	134/3404	87/2210	76/1930	10318/4684
H (II)	300/225	Water	1300/36.8	134/3404	87/2210	76/1930	10318/4684
HH (III)	200/150	Water	812/23.0	134/3404	87/2210	76/1930	8555/3884
	250/187		975/27.6	134/3404	87/2210	76/1930	10282/4664
	350/261		1325/37.5	134/3404	87/2210	76/1930	10318/4684

(60 Hz) (IV)

L (I)	200/150	Air	1000/28.3	134/3404	87/2210	76/1930	7845/3561
	250/187		1200/33.9	134/3404	87/2210	76/1930	9395/4281
	300/225		1500/41.7	134/3404	87/2210	76/1930	9395/4281
H (II)	200/150	Air	900/25.5	134/3404	87/2210	76/1930	7845/3561
	300/225		1300/36.8	134/3404	87/2210	76/1930	9395/4281

(I) Model L Maximum Pressure: 110 psig/7.6 bar
(II) Model H Maximum Pressure: 125 psig/8.6 bar
(III) Model HH Maximum Pressure: 145 psig/10 bar
(IV) Includes standard and 24KT. New series pressure range designations appearing after model number are as follows:
"L" - 7.0 to 7.5 bar "H" - 8.0 to 8.5 bar "HH" - 9.0 to 10.0 bar
(V) An additional length of 4 in./102mm is needed for servicing the separator; 9 in./229mm for enclosure models.
(VI) Add 1450 lbs/658 Kg for enclosure models.

COMPRESSOR:	STANDARD MODELS	24KT MODELS
Type	Rotary Screw	Rotary Screw
Standard Operating Pressure (VII)	100 psig (6.9 bar)	100 psig (6.9 bar)
Bearing Type	Anti–Friction	Anti–Friction
Ambient Temperature (Max.) (VIII)	105°F (41°C)	105°F (41°C)
Cooling	Pressurized Fluid	Pressurized Fluid
Compressor Fluid	Sullube 32 or Equivalent (IX)	24KT Fluid
Sump Capacity	50 U.S. gallons/189 liters	50 U.S. gallons/189 liters
Control	Electro–Pneumatic	Electro–Pneumatic

(VII) Special compressors are available for operating at higher pressures.
(VIII) Special compressors are available for operating at higher ambient temperatures.
(IX) Other long life lubricants such as LLL–4–32 are available as optional fill.

Section 3
SPECIFICATIONS

MOTOR: (60 Cycle Compressors)

	STANDARD MODELS	24KT MODELS
Size	200HP/150KW – 350HP/261KW, 460V	200HP/150KW – 350HP/261KW, 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	1770 RPM

MOTOR: (50 Cycle Compressors)

	STANDARD MODELS	24KT MODELS
Size	200HP/150KW – 350HP/261KW, 380V	200HP/150KW – 350HP/261KW, 380V
Type	Open Dripproof, Three Phase, 50 Cycles 40°C Maximum Ambient Temperature Options Available: Other Voltages TEFC also Available	Open Dripproof, Three Phase, 50 Cycles 40°C Maximum Ambient Temperature, Options Available: Other Voltages TEFC also Available
Speed	1500 RPM	1500 RPM

LUBRICATION GUIDE – STANDARD COMPRESSORS

Sullair standard compressors are filled with Sullube 32 fluid as factory fill. **MIXING OF OTHER FLUIDS WITHIN THE COMPRESSOR WILL VOID ALL WARRANTIES.**

⚠ WARNING

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

Sullube 32 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.

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

⚠ WARNING

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

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

⚠ WARNING

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

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

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

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

Maintenance of all other components is still recommended as indicated in the Maintenance section of this manual.

LUBRICATION GUIDE – 24KT COMPRESSORS

Sullair 24KT compressors are filled with a lubricant which rarely needs to be changed. In the event a change of fluid or make–up fluid is required, use only Sullair 24KT fluid. **MIXING OF OTHER FLUIDS WITHIN THE COMPRESSOR WILL VOID ALL WARRANTIES.**

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

APPLICATION GUIDE

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

Section 4
INSTALLATION

4.1 MOUNTING OF COMPRESSOR

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

4.2 VENTILATION AND COOLING

For air–cooled compressors, select a location to permit sufficient unobstructed air flow in and out to the compressor to keep the operating temperature stable. The minimum distance that the compressor should be from surrounding walls is 3 feet/0.9m. 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:

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).

50 Hz MODEL	WATER FLOW (GPM / L/MIN)
LS–25S–200HP/150KW (L)	47/178
LS–25S–200HP/150KW (H)	45/170
LS–25S–250HP/187KW (L)	58/220
LS–25S–300HP/225KW (L)	70/265
LS–25S–300HP/225KW (H)	68/257
LS–25S–350HP/261KW (HH)	73/276

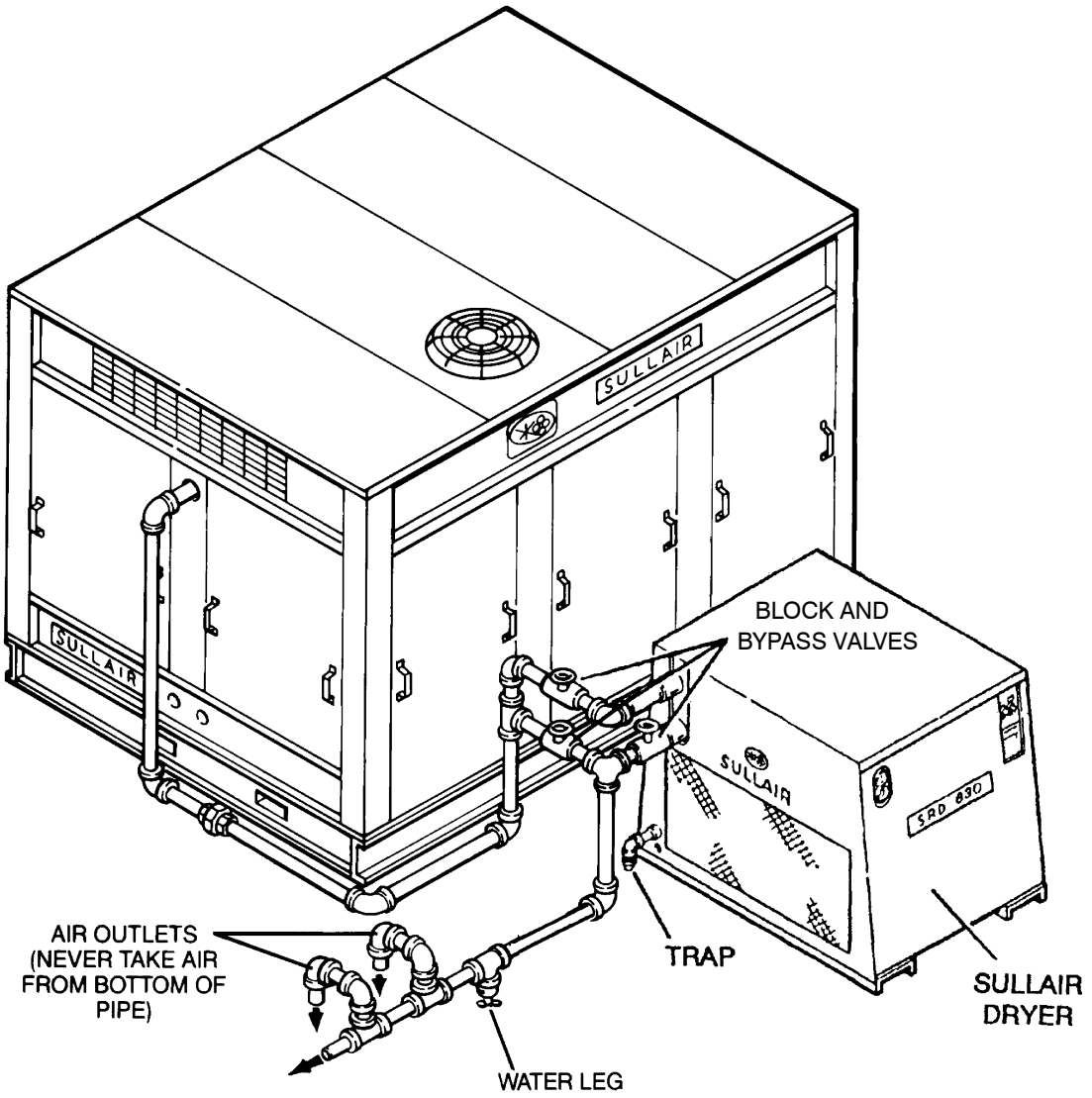
60 Hz MODEL	WATER FLOW (GPM / L/MIN)
LS–25S–200HP/150KW (L)	44/166
LS–25S–200HP/150KW (H)	44/166
LS–25S–250HP/187KW (L)	55/208
LS–25S–300HP/225KW (L)	65/246
LS–25S–300HP/225KW (H)	67/254
LS–25S–350HP/261KW (H)	73/276
LS–25S–350HP/261KW (HH)	73/276

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.

50 Hz MODEL	MOTOR/KW	COMPRESSOR PACKAGE HEAT REJECTION BTY/HR	KCAL/HR	VENT FAN FLOW (II) CFM / M^3/MIN	REMOTE AIR-COOLED COOLING PKG (I) HEAT REJECTED BTU / KCAL/HR	AIR FLOW CFM / M^3/MIN
(L)	200/150	46,320	11673	4150/117.5	593,500/149,562	21,500/609
(HH)	200/150	47,570	11,988	4150/117.5	560,100/141,145	21,500/609
(L)	250/187	57,790	14,563	4150/117.5	730,800/184,162	21,500/609
(HH)	250/187	57,790	14,563	4150/117.5	730,800/184,162	21,500/609
(L)	300/225	67,230	16,942	4150/117.5	883,100/222,541	32,500/920
(H)	300/225	65,190	16,428	4150/117.5	848,100/213,721	32,500/920
(HH)	350/261	65,190	16,428	4150/117.5	914,400/230,438	32,500/920
60 Hz						
(L)	200/150	46,320	11,673	4150/117.5	547,500/137,968	21,500/609
(H)	200/150	46,540	11,705	4150/117.5	547,500/137,968	21,500/609
(L)	250/187	57,790	14,563	4150/117.5	679,900/171,335	21,500/609
(L)	300/225	67,230	16,942	4150/117.5	840,300/211,756	32,500/920
(H)	300/225	65,190	16,428	4150/117.5	814,900/205,330	32,500/920
(H)	350/261	72,320	18,225	4150/117.5	904,000/227,808	32,500/920

(I) Applicable to air–cooled models only.
(II) Applicable to compressors with enclosures.

Figure 4–1 Service Air Piping (Typical Installation)



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.

⚠ WARNING

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

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

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

4.4 FLUID PIPING (AIR–COOLED ONLY)

To allow depressurization of the cooling package and connecting piping between the compressor and the cooling package upon shutdown of the compressor, a 1/2 in./13mm depressurization line must be installed between the top of the fluid cooler and the sump tank connection, which is located on the fluid supply and return line connection bracket. This line must be maintained at a higher level than the supply and return piping for the fluid cooler.

The supply and return piping for the fluid cooler must be adequately sized to prevent excessive pressure drop. The total pressure drop in the supply and return piping and associated fittings and valves shall not exceed 10 psig (0.7 bar). If the pressure drop is excessive, a pump may be installed. Consult the Sullair Service Department for recommendations.

It is recommended that shutoff valves be installed in the supply and return piping to facilitate compressor components maintenance.

Because of the variability in installations, the fluid necessary to fill the supply and return piping for the fluid cooler is not part of the standard scope of supply for the compressor. The fluid necessary to fill the piping may be ordered from the nearest Sullair representative or the representative from whom the compressor was purchased. To assist in determining the amount of fluid necessary to fill the piping, the following chart may be used.

PIPE SIZE	GALLONS OF FLUID PER FOOT OF PIPE
2”	.1635
2 1/2”	.2555
3”	.368
4”	.6542
6”	1.4719

4.5 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.

4.6 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 the compressor is shutdown.

4.7 ELECTRICAL PREPARATION

Interior electrical wiring is performed at the factory. Required customer wiring is minimal, but should be done by a qualified electrician in compliance with any applicable regional or 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. Pull out the EMERGENCY STOP button on the control panel. Depress the PROG pad twice to get to AUTOMATIC/MANUAL mode selection and use the cursor pad to change to MANUAL mode.
5. Reconnect the three (3) motor leads and jog the motor for a direction of rotation check, as explained in Section 4.8.

4.8 MOTOR ROTATION DIRECTION CHECK

After the electrical wiring has been done, it is necessary to check the direction of the motor rotation. With the control system in MANUAL mode, press the ON/OFF pad twice in succession to bump start the compressor. When looking at the motor from the end opposite the compressor unit, the shaft should be turning counterclockwise for 200HP/150KW (direct drive) packages and clockwise for 250 – 350HP/150 – 261KW (gear drive) packages. 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. A “Direction of Rotation” decal is located on the coupling guard between the motor and compressor to show 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

CONTROL OR INDICATOR	PURPOSE
ON/OFF PAD	Depress to turn compressor ON. Depress again to turn compressor OFF. If a fault shutdown occurs, or EMERGENCY STOP, the ON/OFF button must be pressed once to acknowledge the fault and silence the alarm. Once the fault has been cleared, ON/OFF must be pressed once to return to MANUAL SHUTDOWN in preparation for start.
HOUR DISPLAY	Displays cumulated hours of compressor operation; useful for planning and logging service schedules. Alternate displays by use of their respective touchpads are – hours ON LOAD and percentage of hours running when ON LOAD.
PRESSURE DISPLAY	Continuously monitors service line air pressure (P2). Located on dry side of receiver downstream of minimum pressure/check valve. Selectable alternate displays via touchpad include: **SUMP PRESSURE** (P1) displays receiver/sump pressure at various ON LOAD and/or OFF LOAD conditions. **SEPARATOR DIFFERENTIAL** (ΔP1) displays the differential pressure across the separator element/s. A preset limit of 10 psid (0.7 bar) will trigger the ΔP1 LED and a message will warn that a separator change is required. **OIL FILTER DIFFERENTIAL** (ΔP2) displays the differential pressure across the fluid filter. A preset limit of 20 psid (1.4 bar) will trigger the ΔP2 LED and a message will warn that a filter change is required.
TEMPERATURE DISPLAY	Continuously monitors the temperature of the air leaving the compressor unit (T1). The normal readings should be approximately 180°F to 205°F (82°C to 96°C). An alternate display of injection fluid temperature (T2) is available from the touchpad. Normal readings should be approximately 130°F to 160°F (54°C to 71°C).
AIR FILTER MAINTENANCE	Indicates when the air filter change is required. The LED shown on the air filter of the graphic map will flash and a message of “AIR FILTER MAINT RQD” will be displayed.
“POWER ENERGIZED” LIGHT	Indicates when the control panel is receiving power.
“ON” LED	Indicates when the compressor is running. If the ON LED is flashing while the compressor is stopped, it is indicating that the compressor was stopped by a remote START/STOP contact and could be restarted without notice.

5.2 PURPOSE OF CONTROLS

CONTROL OR INDICATOR	PURPOSE
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 line. When the compressor is running at full load, fluid flow should be visible in this sight glass. There may be little or no flow when the compressor is running unloaded, but a sluggish flow at full load indicates a need to clean the return line strainer.
FLUID STOP VALVE	Cuts off flow of fluid to compressor unit at compressor shutdown and allows flow of fluid to the unit on start–up.
DISCHARGE CHECK VALVE	Cuts off the reverse flow of air/fluid mixture through compressor discharge system at compressor shutdown.
THERMAL VALVE	Regulates flow of fluid to and around the cooler. Designed to maintain a minimum operating temperature of 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 psig (2.8 bar). Prevents line pressure backflow into the sump during unload conditions and after shutdown.
COMPRESSOR DISCHARGE TEMPERATURE PROBE (T1) The message displays “HIGH TEMP T1”.	The Supervisor will shut the compressor down when the discharge temperature reaches 235°F (113°C).
SUMP PRESSURE TRANSDUCER (P1)	The Supervisor will shut the compressor down if the sump pressure becomes too high. This valve is factory set per the designed operating range of the compressor; normally 135 psig (9.3 bar). P1 status in conjunction with the status of the “compressor run” output contact determines if compressor is running. If the run contact is closed, the compressor is ON LOAD, and P1 is below 14.5 psig (1bar), the Supervisor will initiate a shutdown and display a “Pressure Loss” message.
INJECTION FLUID PRESSURE TRANSDUCER (P3)	The Supervisor will initiate a protective shutdown and display a “Low Pressure P3” message if the fluid pressure goes below a factory set minimum value; approximately 10 psig (0.7 bar).
FLUID FILTER TRANSDUCER (P4)	Used in conjunction with P3 to calculate fluid filter differential pressure and warn of need for filter replacement.
WATER PRESSURE SWITCH (water–cooled compressors only)	Prevents compressor operation if water pressure is too low. Standard setting is 10 psig (0.7 bar). The message “FAN OL/LO WATER” will be displayed if pressure is too low.

5.2 PURPOSE OF CONTROLS

CONTROL OR INDICATOR	PURPOSE
PRESSURE RELIEF VALVE	Opens sump pressure to the atmosphere should pressure inside the sump become too high (150 psig [10.3 bar]). 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 – SULLICON	Opens a pressure line between the sump and Sullicon Control allowing the Sullicon Control to regulate air delivery according to the air demand.
PRESSURE REGULATOR– SPIRAL VALVE	Opens a pressure line between the service line and the spiral valve actuator allowing the spiral valve to regulate air delivery according to air demand.
SOLENOID VALVE #1	Bypasses the pressure regulator valve causing the Sullicon Control to close the inlet valve when the compressor reaches maximum operating pressure.
SOLENOID 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.
LINE PRESSURE TRANSDUCER (P2)	Senses service line pressure. When line pressure reaches maximum setting, the Supervisor signals the solenoid valve to OFF LOAD the compressor. The message “ON LOAD” or “OFF LOAD” will be displayed to indicate the status of the control. P2 is also used to calculate separator differential pressure ΔP1.
BLOWDOWN VALVE	Vents sump pressure to the atmosphere during unload conditions and shutdown.
WATER REGULATING VALVE (water–cooled only)	Regulates the amount of cooling water used in the cooler to keep the compressor running at a normal operating temperature.

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.

⚠ WARNING

Be sure that the depressurization line between the sump and the air–cooled cooler package is connected as explained in Section 4 (Paragraph 4.4).

4. Set the compressor in MANUAL mode and start the compressor by pressing the ON/OFF pad.
5. Check for possible leaks in piping.
6. Slowly close the shut–off valve and check that the maximum pressure (P2) and pressure differential (P2) are correctly programmed.
7. Observe the operating temperature. If the operating temperature exceeds 205°F (96°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.

Section 5
OPERATION

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 ON/OFF pad. When the compressor is running, observe the control panel for maintenance indications.

5.5 SHUTDOWN PROCEDURE

To shut the compressor down, simply press the ON/OFF pad. On MANUAL operation shutdown is immediate; on AUTOMATIC operation, shutdown is preceded by a 10 second UNLOAD mode.

6.1 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. The Supervisor monitors the status of the fluid filter, air filter and fluid separator. When maintenance is required, a message will be displayed indicating the particular maintenance to be performed as well as a flashing LED on the graphic map as a visual reminder of the device needing attention.See instructions for each item in Section 6.7, Parts Replacement and Adjustment procedures.

6.2 DAILY OPERATION

Prior to starting the compressor, it is necessary to check the fluid level in the sump. Should the level be low, simply add the necessary amount. If the addition of fluid becomes too frequent, a simple problem has developed which is causing this excessive loss. See the Troubleshooting Section (6.8) under Excessive Fluid Consumption for a probable cause and remedy.

After a routine start has been made, observe the various displays 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 control 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.

6.3 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.

6.4 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 element.

6.5 FLUID CHANGE

Standard models are filled with the long life lubricant Sullube 32.

Sullube 32 should be changed under the following conditions, whichever occurs first:

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

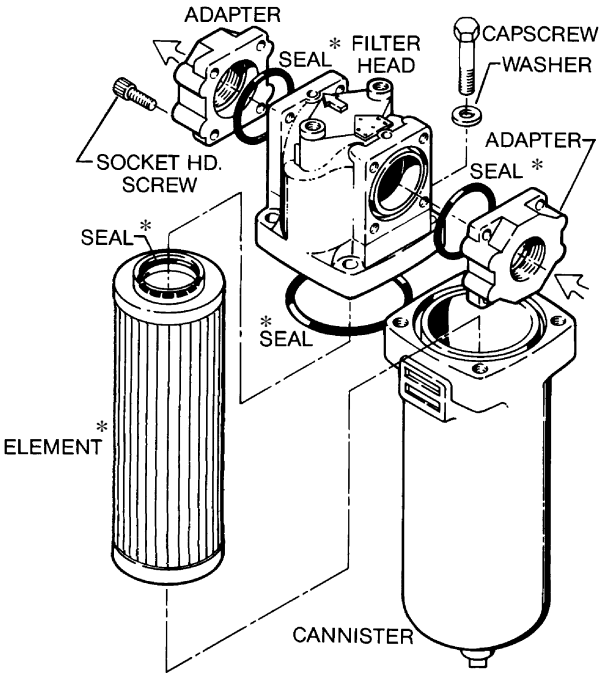
For compressors filled with 24KT, the fluid needs to be changed only when indicated by fluid analysis or if the fluid has been contaminated.

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.

6.6 SEPARATOR MAINTENANCE

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

Figure 6–1 Main Filter (P/N 250007–219)



* Repair Kit P/N 250008–956

6.7 PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES

MAIN FILTER MAINTENANCE

Refer to Figure 6--1. The main filter (P/N 250007–219) is located schematically between the compressor cooler and the compressor injection port. When servicing the main filter, shut the compressor down, make sure all pressure has been released, then follow the instructions below. For element replacement order kit number 250008–956.

⚠ CAUTION

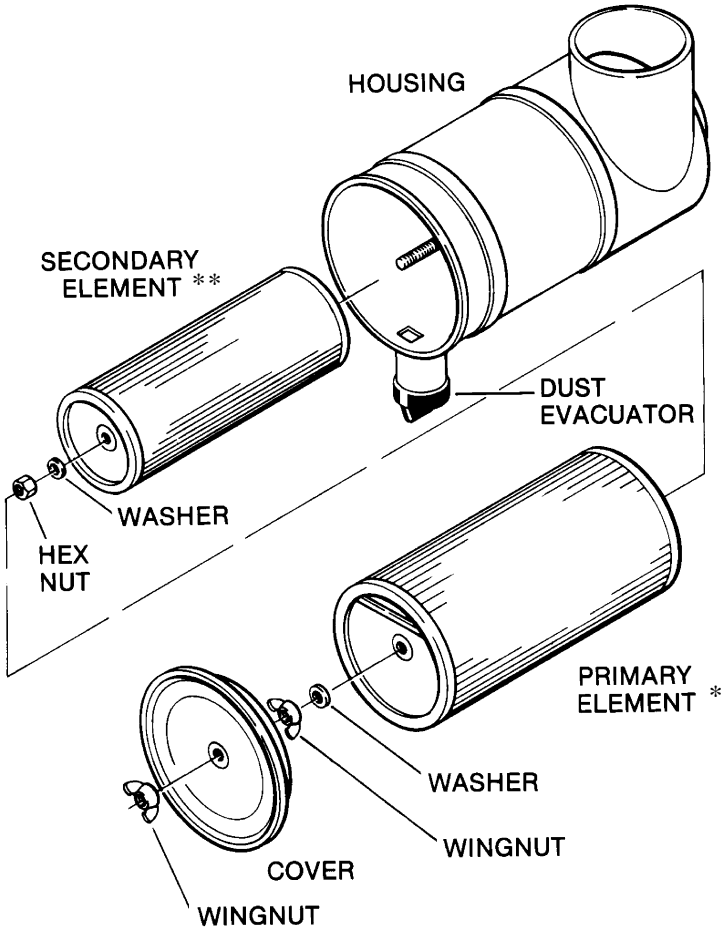
To minimize the possibility of filter element rupture, it is important that ONLY replacement elements identified with the Sullair name, logo and appropriate part numbers be used, and that substitute elements NOT be used, due to the fact that such filters may have inadequate or questionable working pressure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

1. 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. Separate the element from the filter head.
4. Remove the canister seal.
5. Thoroughly clean the filter head and canister in solvent.
6. Lubricate the new seals with the same type of fluid used in the compressor and position each seal in its appropriate place.
7. Carefully push the element into position under the housing and replace the capscrews, securing the canister and filter head.

AIR FILTER MAINTENANCE

Refer to Figure 6–2. Air filter maintenance should be performed when the air filter maintenance message is displayed. The air filter is equipped with a primary element and a secondary element. As previously stated, the Supervisor will alert you as to when the primary element maintenance is necessary. When removing the primary element, always

Figure 6–2 Air Filter Replacement (P/N 250006–718)



* Replacement element P/N 250007–838 (primary)
** Replacement element P/N 250007–839 (secondary)

check the secondary element for visible dirt, grease or damage. The secondary element must be changed after every sixth primary element inspection. **DO NOT** clean the secondary element.

ELEMENT REMOVAL

1. Clean the exterior of the air filter housing.
2. Remove the cover assembly by loosening the wingnut securing it.
3. Pull the element assembly out of the housing.
4. Clean the interior of the housing by using a damp cloth. **DO NOT** blow dirt out with compressed air.
5. Inspect the secondary element and replace if necessary. This element is not cleanable.
6. To remove the secondary element, remove the hex nut and sealing washer from the threaded rod running through the element and pull the element out of the housing.
7. Install the new secondary element and replace the sealing washer and hex nut.
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 contact surfaces of the housing. Should faulty gaskets be evident, correct the condition immediately.
3. If the clean element is to be stored for later use, it must be stored in a clean container.
4. After the element has been installed, inspect and tighten all air inlet connections prior to resuming operation.

PRIMARY ELEMENT REPLACEMENT

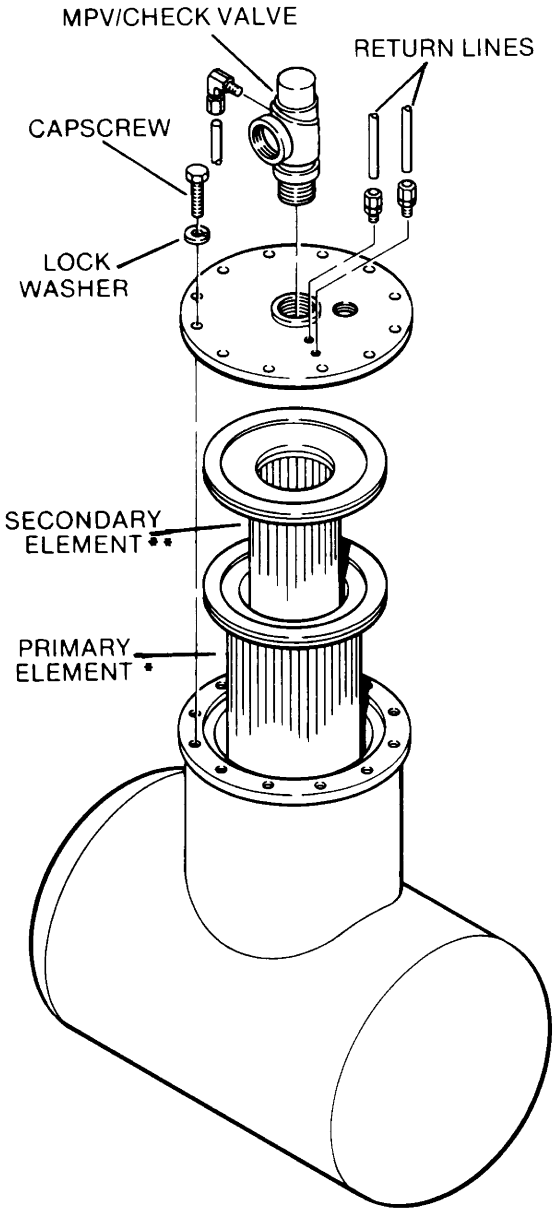
1. Place the element in position over secondary element. Replace the sealing washer and wingnut. Tighten the wingnut so as to fully seat the element gasket.
2. Install the cover/element assembly and replace the wingnut.

SEPARATOR ELEMENTS REPLACEMENT

Refer to Figure 6–3. The separator elements must be changed when "Separator Maintenance Required" message is displayed, or once a year whichever occurs first. Order separator elements, number 250034–124 (primary) and number 250034–130 (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 (return lines, service lines, etc.) to allow removal.
3. Loosen and remove the twelve (12) ¾" 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 into the sump.
7. Inspect the receiver/sump tank for rust, dirt, etc.

Figure 6–3 Separator Element Replacement
(P/N 250034–123 – primary)
(P/N 250034–129 – secondary)



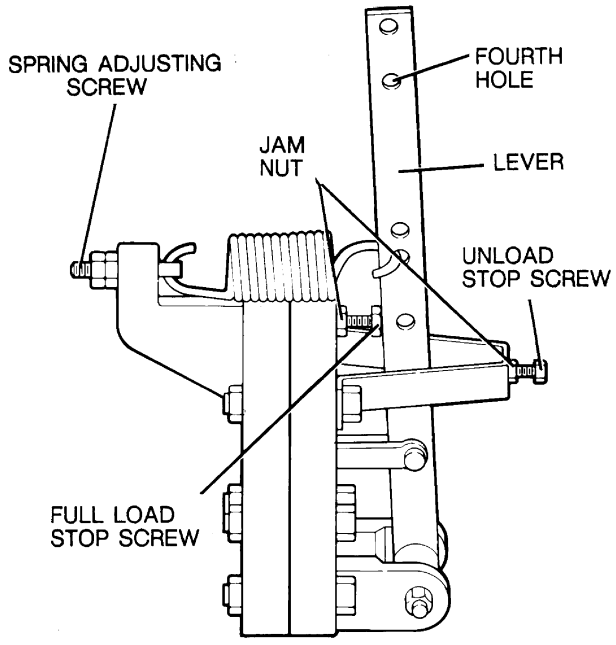
* Replacement element P/N 250034–124 – primary
** Replacement element P/N 250034–130 – secondary

8. Reinsert the separator elements with gaskets attached into the sump taking care not to dent it against the tank opening. **DO NOT** remove grounding staples.
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 200 ft.–lbs. (271 Nm).
11. Reconnect all piping making sure return line tubes extend to the bottom or ¼ in./6mm 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 (order replacement kit number 241772 if required).

CONTROL SYSTEM ADJUSTMENT

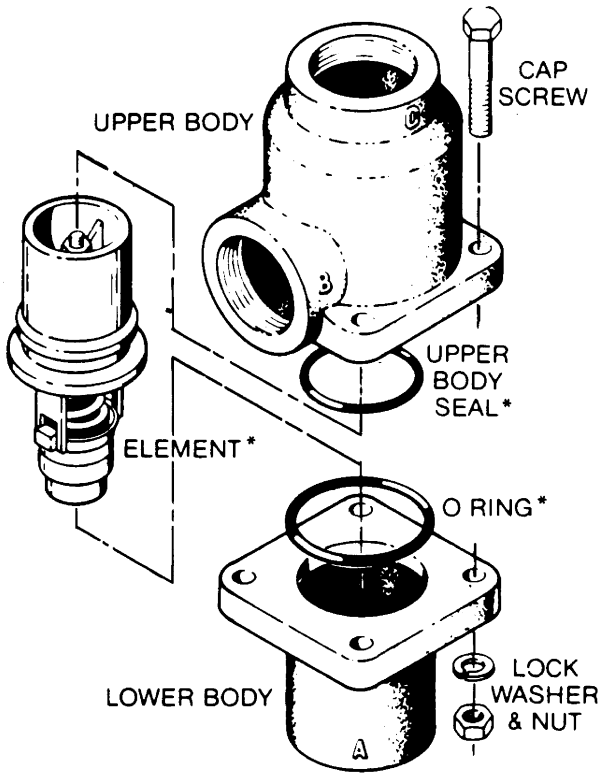
Refer to Figure 6–4. Before starting the compressor, but with power applied, press the PROG pad on the Supervisor panel three times to enter the PROGRAMMING mode. Continue pressing the PROG pad until "MAX PRESS P2A" is displayed. Use the cursor (UP arrow) pad to set the desired UNLOAD pressure (110 psig [7.6 bar]). Note that pressing the pad for over 2 seconds will initiate fast scrolling of the value being set.

Figure 6–4 Sullicon Control (P/N 011682–003)



* Repair Kit P/N 250020–353

Figure 6–5 Standard Thermal Valve (P/N 041299)
24KT Thermal Valve (P/N 02250043–433)



* Repair Kit P/N 001084 – Standard
* Repair Kit P/N 001149 – 24KT

Once the correct value is selected, press the PROG pad to proceed to the display "PRES DIF P2A". This value is used to set the LOAD pressure where the compressor will begin building pressure (10 psid [0.7 bar]). This will provide LOAD/UNLOAD operation at 100 to 110 psig [6.7 to 7.6 bar]). These values will be entered when the display is returned to operating mode condition by continuing to press PROG through the end of the PROGRAMMING menu or allowing the display to automatically return to operating mode status after 5 seconds of inactivity. While scrolling with the PROG pad, all existing user programmable values will be displayed.

FOR DIFFERENTIAL PRESSURE REGULATOR ADJUSTMENT:

The differential pressure regulators are adjusted by loosening the adjusting screw on the end of the cone shaped cover of the pressure regulator (refer

to Figure 6–11 for the location). When the jam nut is loose, turn the adjusting screw clockwise to increase or counterclockwise to decrease the setting.

Above 100 psig (6.9 bar), the spiral valve regulator should allow pressure to flow into the chamber of the spiral valve actuator. The spiral valve should start to rotate at this time.

At approximately 108 psig (7.4 bar), the Sullicon regulator should allow pressure to flow into the control chamber of the Sullicon Control. The Sullicon Control level should start to move at this time. Cycle the Control System several times and recheck all pressure settings.

THERMAL VALVE MAINTENANCE

Refer to Figure 6–5. For thermal valve maintenance, use repair kit number 001084 for standard compressors and number 001149 for 24KT compressors and follow the procedure explained below for installation.

1. Remove appropriate piping for disassembly of the thermal housing.
2. Remove the four (4) capscrews which hold the housing together and pull the upper housing away from the lower housing.
3. Remove element.
4. Remove and replace the element seal in the upper housing.

Figure 6–6 Drive Coupling

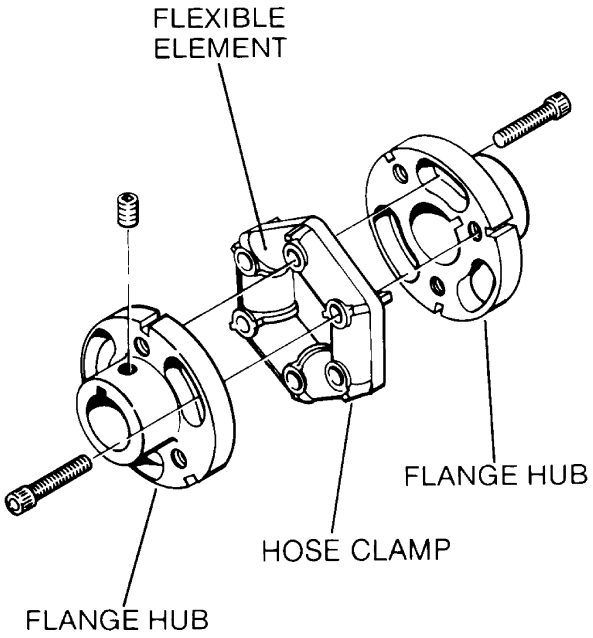
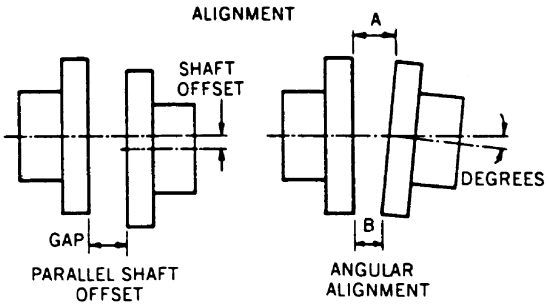


Figure 6–7 Drive Coupling Alignment



5. Remove and replace the o–rings between the upper and lower housings.
6. Replace element.
7. Reassemble the housing.

DRIVE COUPLING INSTALLATION AND MAINTENANCE

Refer to Figures 6–16, 6–17 and 6–18. 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.

STEP 1 MOUNT HUBS – Mount the motor hub and the compressor hub onto the 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 fluid, grease, dirt or paint from coupling hubs. 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 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

		Max. Operating Misalignment	
Tightening Torque ft.–lbs.	Coupling Gap inches	Parallel Offset inches	Angular inches (I)
200 (271NM)	2.969 + .300 – .000 (75.4mm + .076) – .000	.010 (.254mm)	.010 (.254mm)

(I) Angular misalignment in inches equals maximum A minus minimum B as shown in Figure 6–7. **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 suitably sized radiator hose clamp around the outer edge of the element as shown in Figure 6–6. Slide the ferry head capscrews with lockwashers through the holes in the hubs and element. Tighten the bolts to 200 ft.–lbs. (271 Nm).

NOTE

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

After tightening the capscrews, 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 suitably sized radiator hose clamp over the flexible element as shown in Figure 6–6 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.

FLUID STOP VALVE MAINTENANCE
Refer to Figure 6–9 when servicing fluid stop valve number 016742 and order repair kit number 001684. The following instructions are in accordance with seal replacement kit number 001684.

1. **DO NOT** attempt to service valve without first turning off compressor, disconnecting power and relieving all pressure in sump.
2. Disassemble ¼" pilot tube and remove the six (6) ¼"–20 capscrews that secure the cylinder to the valve body. Carefully slide cylinder off of piston.

Figure 6–8 Parallel / Angular Offset Alignment

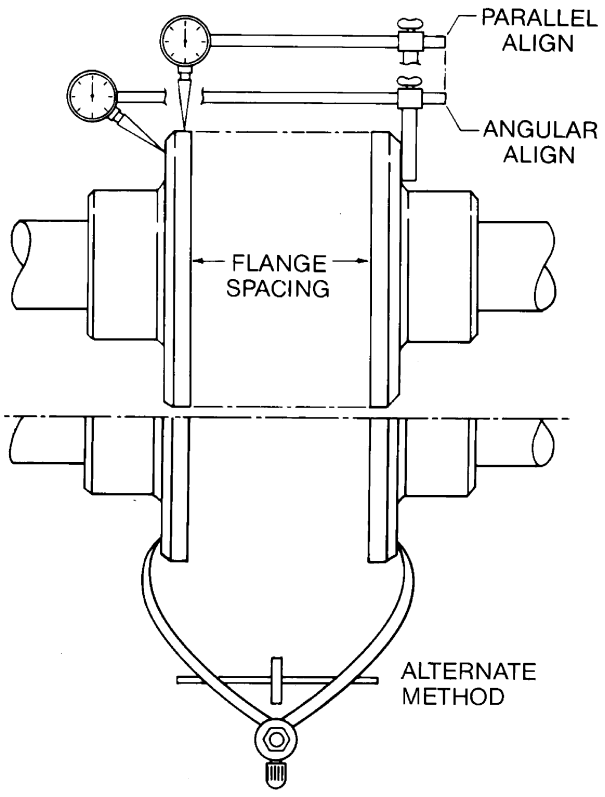
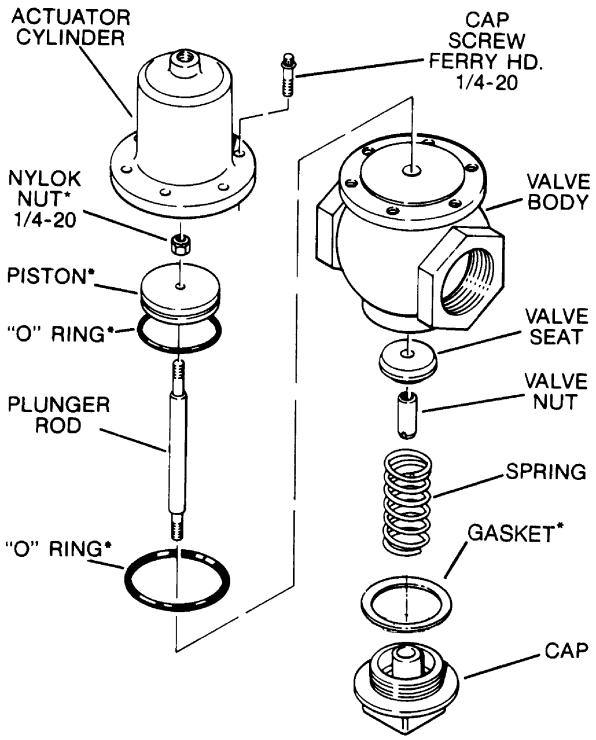


Figure 6–9 Fluid Stop Valve (P/N 016742)



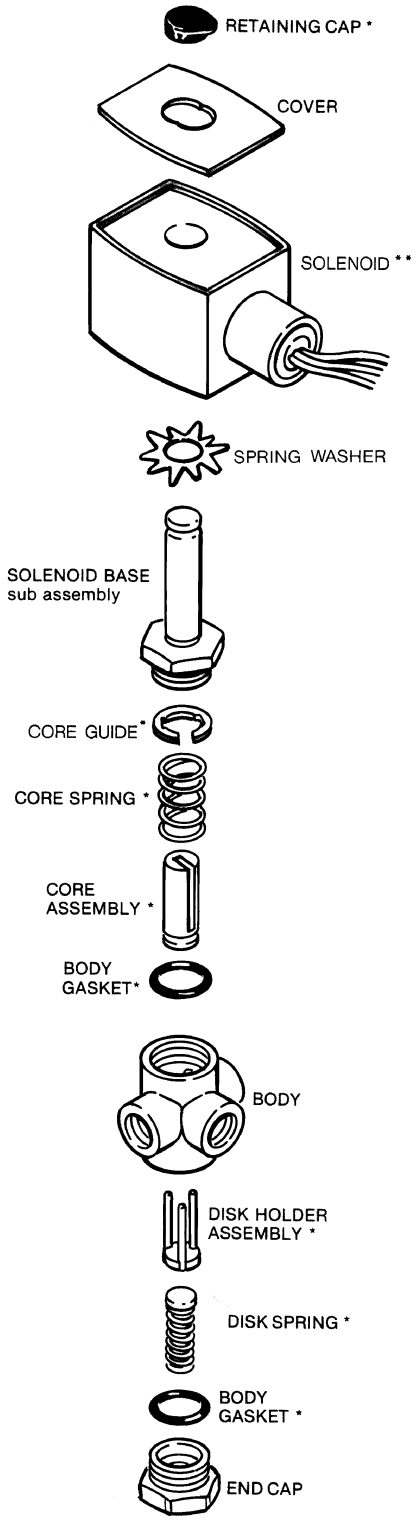
* Repair Kit P/N 001684

3. Remove o–ring from piston and discard. Remove quad ring from cylinder and discard.
4. Place new o–ring over piston and apply light coating of compressor lubricant to o–ring and inside wall of cylinder. Position quad ring in cylinder flange recess.
5. Carefully slide cylinder over piston and secure to housing with six (6) capscrews (4 to 5 ft.–lbs. [5 to 7 Nm]).
6. Reconnect pilot tubing and make sure all joints are properly tightened before starting compressor.

SOLENOID VALVE MAINTENANCE

Refer to Figure 6–10. Solenoid valve (P/N 250038–668) maintenance is quite minimal but a periodic cleaning is desirable. The time between cleanings will vary depending on operating conditions. In general, if the voltage to the coils is correct, sluggish valve operation or excessive leakage will indicate that cleaning is required. If parts replacement is required, order repair kit number

Figure 6–10 Solenoid Valve (P/N 250038–668)



* Repair Kit P/N 250038–673 (valve)
** Repair Kit P/N 250031–738 (coil)

250038–673 (valve) and number 250031–738 (coil) and follow the procedure explained below.

⚠ WARNING

Turn off all power, relieve line pressure, and disconnect coil lead wires to the valve before making repairs.

It is not necessary to remove the valve from the pipe line for repairs.

DISASSEMBLY AND REASSEMBLY

1. Remove the retaining cap and slip the entire solenoid off the solenoid base subassembly.
2. Unscrew the solenoid base assembly. Remove the core assembly, core spring and body gasket.
3. Next, remove the end cap, body gasket, disc spring, and disc holder assembly.
4. All parts are now accessible for cleaning or replacement. Replace worn or damaged parts with repair kit number 250038–673 for best results.
5. Reassemble in reverse order of disassembly.

COIL REPLACEMENT KIT

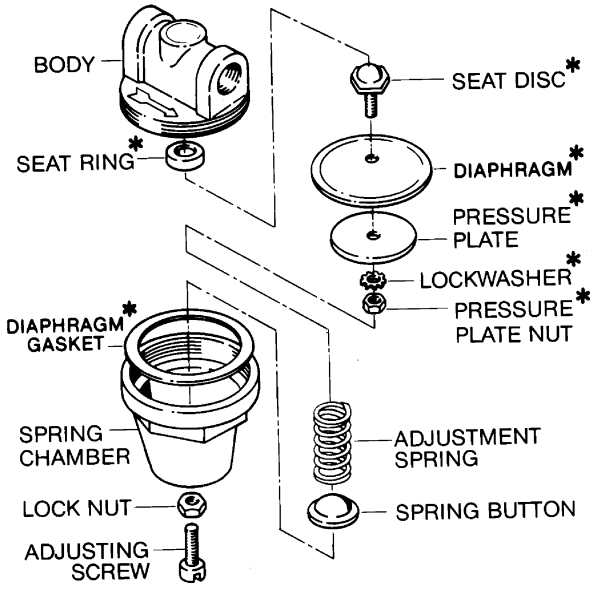
1. Remove the retaining cap, nameplate and cover.
2. Slip the yoke containing the coil and sleeves off the solenoid base sub–assembly.
3. Replace with coil replacement number 250031–738.
4. Reassemble in reverse order of disassembly.

PRESSURE REGULATOR VALVE MAINTENANCE

Refer to Figure 6–11. Pressure regulator valve (P/N 408275) maintenance normally requires the replacement of the internal diaphragm. Use repair kit number 250028–693 and follow the procedure below for proper installation.

1. Loosen the locknut and turn the adjusting screw counterclockwise until the inner spring tension is relieved. The adjusting screw should turn freely when the spring tension is relieved.
2. Remove the spring housing from the body to allow access to internal parts.
3. Next, remove the spring button and the spring. The dampener will stay inside the spring as it is removed. Leave the dampener inside the spring as there is no need to remove it.
4. After removing the spring, remove the gasket stop and brass gasket.
5. At this time, remove the pressure plate nut and disassemble the pressure plate, diaphragm, diaphragm gasket (rubberized asbestos), seat disc and seat gasket.
6. Remove and discard the seat ring.
7. The next step is to reassemble the regulator using the new parts provided in your repair kit.
8. Reassemble the diaphragm, pressure plate, gasket, seat disc and seat disc gasket and tighten the nut. All of these parts with the exception of the pressure plate are provided in the repair kit.
9. Replace the seat ring with the new seat ring provided.
10. Replace the existing brass gasket and diaphragm gasket stop.
11. Next, place these parts in their proper place on the body and replace the spring as it was prior to disassembly.
12. Place the spring button over the spring as shown.
13. With all parts in order, replace the spring chamber and tighten.
14. Tighten the adjusting screw until tension is realized.
15. At this time, refer to Control System Adjustment Procedure to readjust the control regulator.

Figure 6–11 Pressure Regulator Valve (P/N 408275)



* Repair Kit P/N 250028–693

MINIMUM PRESSURE/CHECK VALVE MAINTENANCE

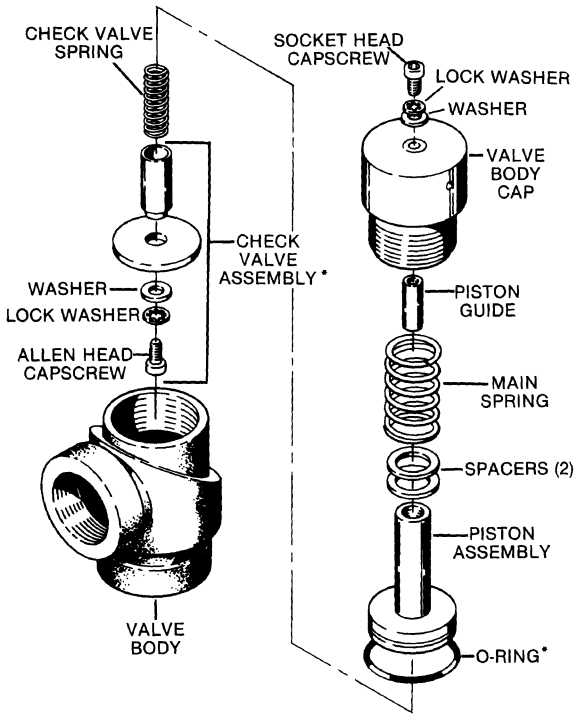
Refer to Figure 6–12. Minimum pressure/check valve (P/N 250033–821) maintenance is quite minimal. The only part which normally requires replacement is the seal ring on the piston. To replace this ring, order seal repair kit number 250018–262 and follow the procedure explained below.

⚠ WARNING

Before performing maintenance on the valve, be sure that all pressure has been relieved in the compressor sump, and all downstream pressure has been vented to the atmosphere. Also be sure that the components of the compressor are cool to the touch.

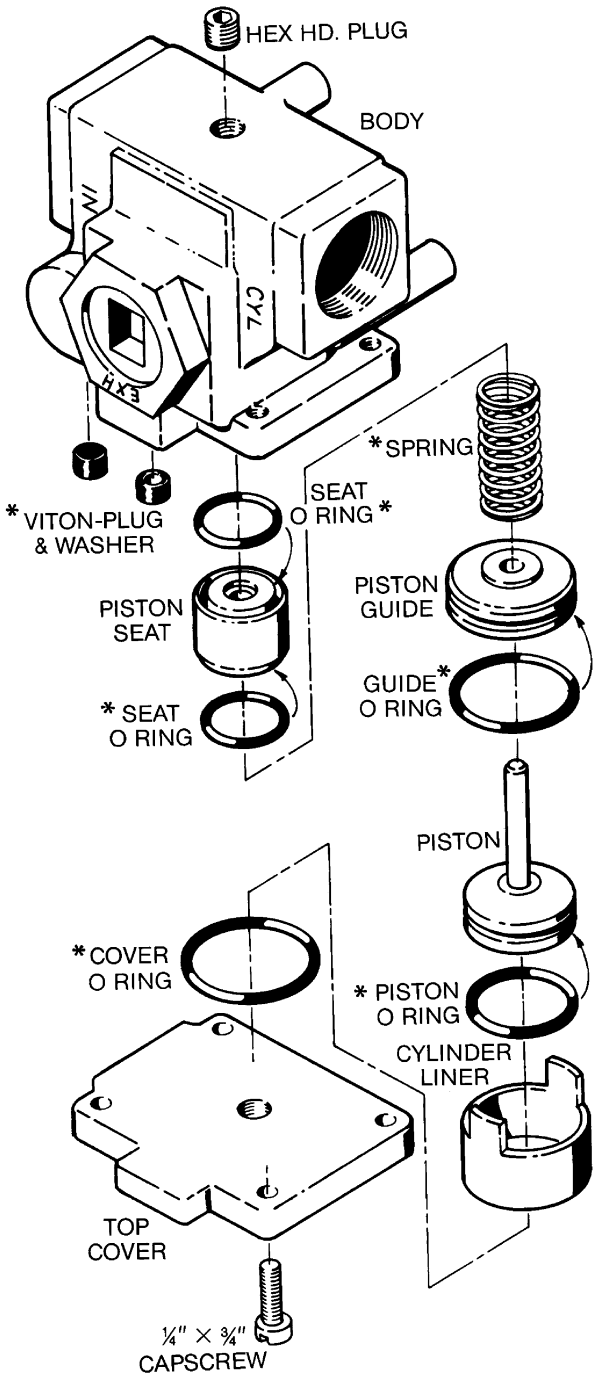
1. Unscrew the minimum pressure/check valve from the receiver cover.
2. Remove round retaining cover from the main body.
3. Remove the flat washer and heavy spring from the main body.
4. Tap the piston assembly (with a screwdriver) from the bottom of the main body and remove. The o–ring will now be seen easily.
5. Remove the seal ring and discard.
6. Clean piston assembly and valve thoroughly.
7. Replace seal ring and coat the piston and seal with Parker Super "O" Ring Seal or an equivalent quality grease.

Figure 6–12 Minimum Pressure / Check Valve (P/N 250033–821)



* Repair Kit P/N 250018–262

Figure 6–13 Blowdown Valve (P/N 409783)



* Repair Kit P/N 001667

⚠ WARNING

Extreme caution should be used when removing the cap from the body because there is spring tension on the cap.

8. Reset piston assembly into the main body and reposition spring and flat washer.
9. Replace retaining cover with Locktite® on threads.
10. Reattach valve to receiver cover and reconnect all piping.

BLOWDOWN VALVE MAINTENANCE

Refer to Figure 6–13. When it becomes necessary to make repairs on running blowdown valve number 409783, use repair kit number 001667, and follow the instructions provided below.

1. Unscrew the four (4) ¼" x ¾" capscrews securing the top cover and remove.
2. Remove the two (2) Viton washers from the top of the main body and discard.
3. Remove the cover o–ring, cylinder liner, piston, piston guide and piston seat.
4. Discard the cover o–ring, piston o–ring, piston guide o–rings, and the piston seat o–rings. Replace with o–rings provided in the repair kit.
5. Reassemble in reverse order of disassembly.

CONTROL LINE FILTER MAINTENANCE

Refer to Figure 6–14. Control line filter (P/N 408389) maintenance normally requires replacement of the filter element, strainer gasket and o–rings. Use repair kit number 001692 and follow the procedure explained below for proper installation.

1. Loosen the body from the bowl and unscrew the two assemblies.
2. At this time, unscrew the baffle, holding the filter element in place. Remove the element, louver and o–ring.
3. Discard the o–ring and element.
4. Replace the o–ring on the louver and reinsert into the body.
5. Insert the filter element and baffle and tighten.
6. Loosen and remove the nut on the bottom of the body.
7. Remove the automatic drain assembly and replace the internal gasket.
8. Replace the body o–ring at this time.
9. Reassemble the automatic drain assembly and place it back in the body. Tighten the nut.
10. Reconnect the body and bowl assemblies. Tighten 2½ turns.

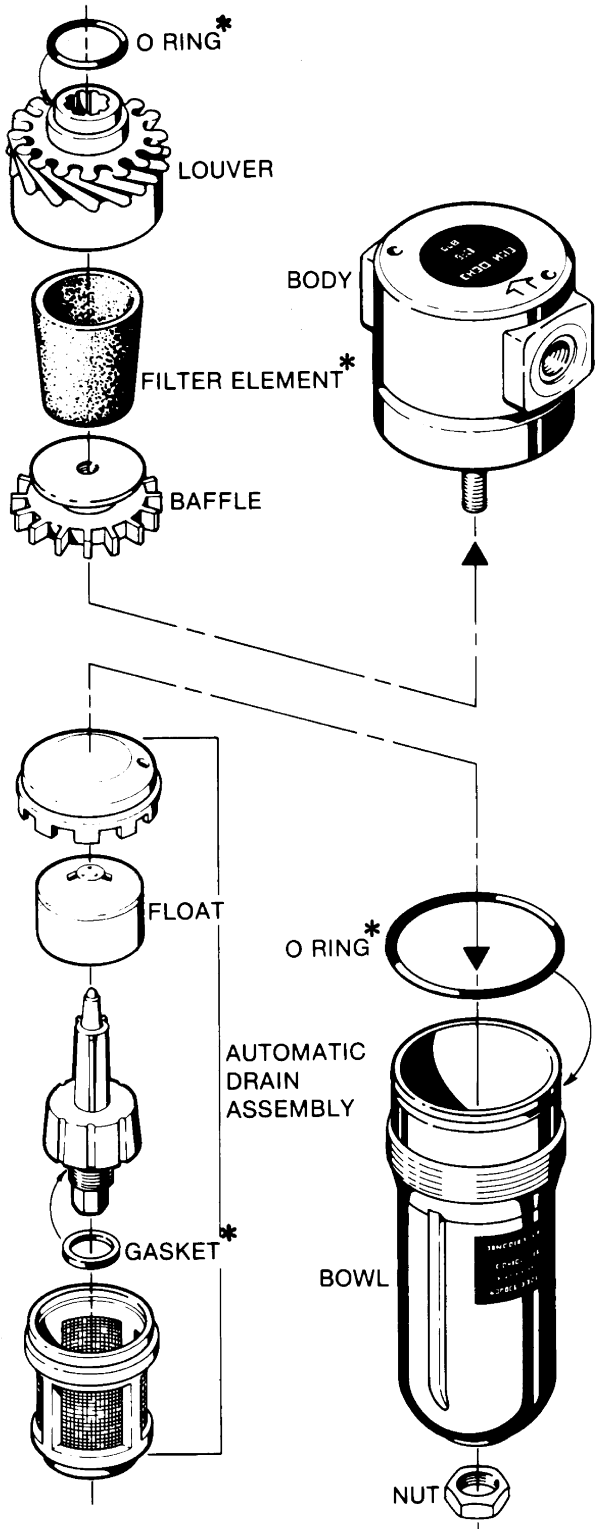
FLEXIBLE COUPLING MAINTENANCE

Refer to Figure 6–15. Flexible coupling maintenance normally requires the replacement of the (two) 2 gasket rings on the coupling. Select appropriate gasket rings from Table 3 and follow the procedure below for proper installation.

PIPE END PREPARATION

1. Deburr and clean the pipe ends.

Figure 6–14 Control Line Filter (P/N 408389)



* Repair Kit P/N 001692

Figure 6–15 Flexible Coupling

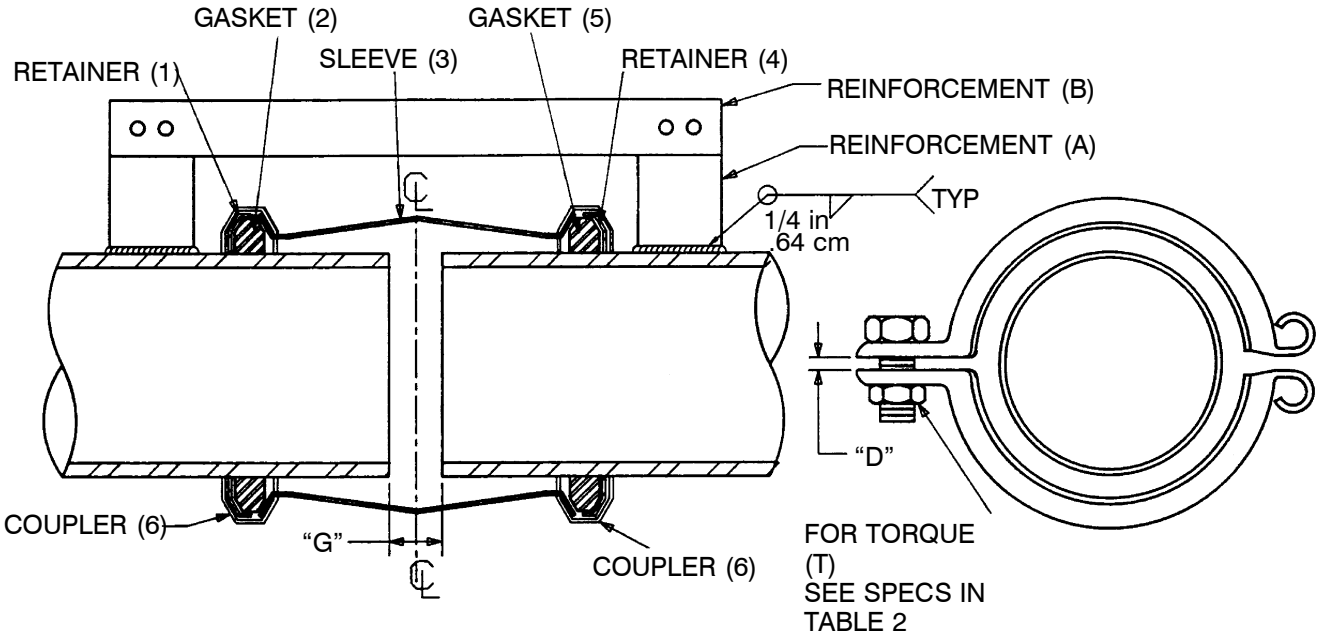


TABLE 1 INSERTION DEPTH

Pipe Size	"D" Coupling Gag Max.	"G" Nipple Gap Min.	Max.
3" (76.2mm)	0.5" (12.7mm)	2" (50.8mm)	1.70" (43.2mm)
4" (101.6mm)	0.5" (12.7mm)	2" (50.8mm)	1.62" (41.2mm)

TABLE 2 ASSEMBLY TORQUE (I)

Size	Standard
3" (76.2mm)	18.5 ft.–lbs. (25.1 Nm)
4" (101.6mm)	23.5 ft.–lbs. (31.9 Nm)

(I) Tighten as shown in chart or a minimum of 1/16" (1.5mm) clearance between coupling lugs, whichever comes first.

TABLE 3 GASKET RING SELECTION

Size	Part Number (BUNA–N (Std)	VITON (24KT)
3" (76.2mm)	040523	241732
4" (101.6mm)	041353	046291

2. The pipe ends should be free of surface scratches, gouges, dents, etc. A special finish is not required.

JOINT INSTALLATION FOR 1 1/2" – 4" PIPE

1. Install the retainer (1), gasket (2), and sleeve (3) on one side of the pipe in sequence.
2. Install the remaining retainer (4) and gasket (5) on the other pipe end.
3. Position the retainer (4) and gasket (5) to proper pipe gap "G" as shown.
4. Slide the sleeve (3) to the gasket (5) and move gasket (2) and retainer (1) into position as shown. The pipe **MUST** be inserted to the proper depth into both gaskets, to obtain required gap "G".

COUPLER INSTALLATION

1. Install both V couplings, encompassing the retainer, gasket and sleeve. **DO NOT** tighten either coupling until the entire joint has been assembled. Tighten nuts as shown in Table 2. Retightening of the coupler (6) will be necessary if leakage occurs.
2. Tighten the nuts to the torque value shown in Table 2. **RECOMMENDED ASSEMBLY TORQUE MUST BE MAINTAINED.** Retightening of the coupler will be necessary if leakage occurs.

SPECIAL NOTES

1. Assembly of the gaskets can be made easier by dipping the gaskets in the fluid to be sealed. The use of other rubber lubricants can be detrimental to the life of the gaskets. **NEVER LUBRICATE THE METAL PARTS.**
2. Flexible joints are not intended to support end loads caused by internal pressure or other forces causing pipe separation.

MOTOR CONNECTION INSTRUCTIONS

1. Once a year while the equipment is disconnected from the power source and locked out for maintenance, remove the cover to the motor conduit box.
2. Inspect the rubber boots' or connections' insulating materials covering the motor connections for signs of thermal damage.
3. If boots or insulating material remain pliable and there is no sign of damage, connections are satisfactory.
4. If boot or insulating material show distress as mentioned above, then investigate to determine the source of thermal damage and repair the connection as necessary.
5. Replace the damaged boot(s) with new boot(s) as required or retape connections per National, State or Local codes.
6. Replace the conduit cover prior to reconnecting the power source.

⚠ WARNING

Electrical shock hazard. Disconnect all power at the source before attempting maintenance.

6.8 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.

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.

TROUBLESHOOTING

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.
	Supervisor Panel Fuse is Blown	Replace fuse.
		Replace Supervisor controller if no display or erratic display.
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. The Sullair Supervisor will provide indication of most maintenance problems if control power has not been lost. Shutdowns will occur upon a faulty condition or a bad sender condition.
	Excessive Operating Pressure	Check maximum P2 pressure setting.
		“High Press P1” display; Max P1 pressure may be set too low. Consult factory for recalibration.
		Defective solenoid valve; solenoid 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 50 psig (2.8 bar to 3.4 bar) when maximum operating pressure is reached. Repair if defective.
		Open or shorted P1, P2, P3 or P4 sender message; replace sender indicated.
	“High Temp T1“ or “T3” Message Displayed	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 as indicated by Supervisor control.
		Thermal valve not functioning properly; replace element (air−cooled only).
		Water flow regulating valve not functioning properly; change (water−cooled only).
		Open or shorted T1 or T2 sender; check for a short or open circuit to probe and correct wiring.

TROUBLESHOOTING (continued)

SYMPTOM	PROBABLE CAUSE	REMEDY
COMPRESSOR SHUTS DOWN WITH AIR DEMAND PRESENT (cont'd.)	Low Fluid Pressure ("Low Pressure P3" display)	Check fluid level.
	Low Water Pressure ("Fan OL/Low Water" display)	Check the cooling fan motor or water flow system.
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 for filter maintenance message on Supervisor panel and change 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 UNLOAD P2 PRESSURE SETTING ON THE SUPERVISOR	Leak in Control System Causing Loss of Pressure Signals	Check for leaks.
	Defective Solenoid Valve	Check that Sullicon Control lever is moved to unload stop when Supervisor is in NO LOAD mode. Repair or replace if necessary (kit available).
	Defective Blowdown Valve	Check that sump pressure is exhausted to the atmosphere when in the OFF LOAD mode. Repair or replace if necessary (kit available).
	Plugged Control Line Filter	Clean or repair if necessary.
EXCESSIVE FLUID CONSUMPTION	Clogged Return Line Strainer or Orifice	Clean strainer (replacement kit available). Clean orifice.
	Separator Element Damaged or Not Functioning Properly	Change separator element(s).
	Leak in the Lubrication System	Check all pipes, connections and compo– nents.
	Excess Fluid Foaming	Drain and change.
	Fluid Level Too High	Drain excess fluid.
PRESSURE RELIEF VALVE OPENS REPEATEDLY	Defective Pressure Relief Valve	Replace pressure relief valve. Check Separator Differential (plugged) $\Delta P1$.
LIQUID WATER IN COMPRESSED AIR LINES	Water Vapor Condensation From Cooling and Compression Occurs Naturally	Remove the water vapor from compressed air prior to distribution through the air system. Check operation of aftercooler and moisture separator. Install a compressed air dryer sized for the flow and dryness level required. (Note: Filters may also be required to remove particulates, liquid oil aerosols or for oil vapor removal. Change cartridges as recommended by the filter manufacturer.) Check all drain traps routinely to insure their proper operation. Maintain them regularly.

7.1 PROCEDURE FOR ORDERING PARTS

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

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

SULLAIR CORPORATION
Subsidiary of Sundstrand Corporation
3700 East Michigan Boulevard
Michigan City, Indiana 46360 U.S.A.
Telephone: 1–800–SULLAIR (U.S. Only) or
1–219–879–5451
FAX: (219) 874–1273
FAX: (219) 874–1835 (Parts)
FAX: (219) 874–1805 (Service)

SULLAIR ASIA, LTD.
ROOM 2304A
Shartex Plaza Ctr.
No. 88 Zun Yi Nan Rd.
Shanghai, P.R.C.
Telephone: 21–2192066
FAX: 21–2196568

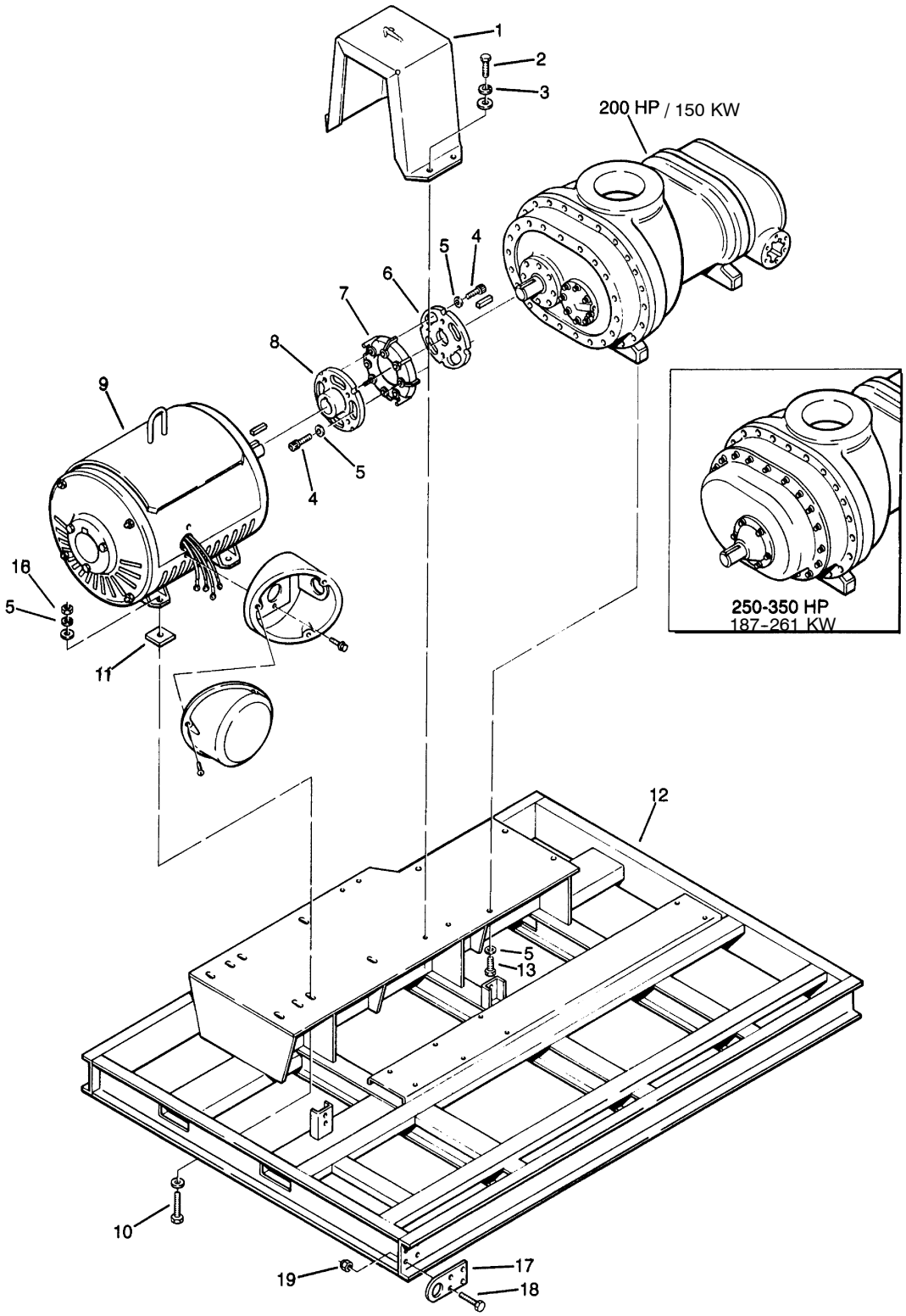
SULLAIR EUROPE, S.A.
Chemin de Genas BP 639
69800 Saint Priest, France
Telephone: 33–72232425
FAX: 33–78907168

7.2 RECOMMENDED SPARE PARTS LIST

DESCRIPTION	KIT NUMBER	QUANTITY
repair kit for fluid stop valve 016742	**001684**	**1**
repair kit for thermal valve 041299 (Std.)	**001084**	**1**
repair kit for thermal valve 02250043–433 (24KT)	**001149**	**1**
element for separator with gaskets 250034–123 (primary)	**250034–124**	**1**
element for separator with gaskets 250034–129 (secondary)	**250034–130**	**1**
repair kit for regulator valve 406929	**041742**	**1**
repair kit for blowdown valve 409783	**001667**	**1**
repair kit for Sullicon Control 011682–003	**250020–353**	**1**
repair kit for control line filter 408389	**001692**	**1**
repair kit for fluid return strainer 241771	**241772**	**1**
element for 18” diameter air filter 250006–718 (primary)	**250007–838**	**1**
element for 18” diameter air filter 250006–718 (secondary)	**250007–839**	**1**
replacement kit for fluid filter 250007–219	**250008–956**	**1**
repair kit for 3” Buna flexible coupling 040327	**040523**	**1**
repair kit for 3” Viton flexible coupling 241731 (24 KT only)	**241732**	**1**
repair kit for 4” Viton flexible coupling 046273 (24KT only)	**046291**	**1**
repair kit for 4” Buna flexible coupling 041085	**041353**	**1**
repair kit for solenoid valve 250038–668	**250038–673 (valve)**	**1**
	250031–738 (coil)	**1**
repair kit for solenoid valve 409067	**250010–377 (valve)**	**1**
	250034–010 (coil)	**1**
repair kit for regulator 408275	**250028–693**	**1**
repair kit for minimum pressure/check valve 250033–821	**250018–262**	**1**
Sullube 32 fluid (5 gallons)	**250022–669**	**1**
Sullube 32 fluid (55 gallons)	**250022–670**	**1**
24KT fluid (5 gallons)	**046850–001**	**1**
24KT fluid (55 gallons)	**046850–002**	**1**
repair kit for moisture trap 250000–596	**250033–036**	**1**
repair kit for combination trap w/heater separator 250004–597	**250033–036**	**1**
repair kit for shaft seal	**600893–001**	**1**
repair kit for combination trap separator 250007–787	**250033–036**	**1**
repair kit (diaphragm) for air cylinder 250016–183	**608311–001**	**1**

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

7.3 MOTOR, COMPRESSOR, FRAME AND PARTS



Section 7
ILLUSTRATIONS AND PARTS LIST

7.3 MOTOR, COMPRESSOR, FRAME AND PARTS

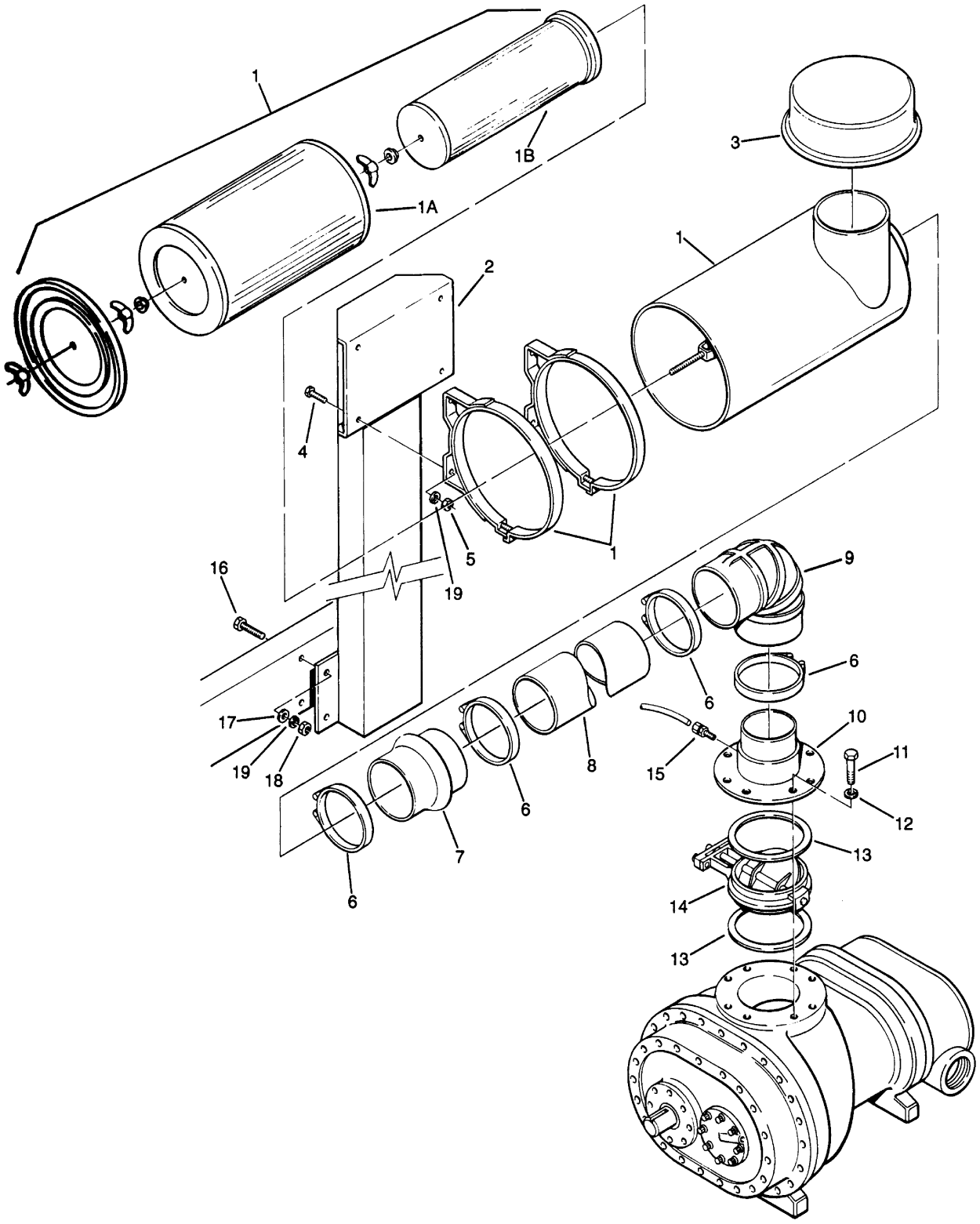
key number	*description*	*part number*	*quantity*
1	guard, coupling	250007–304	1
2	capscrew, hex gr5 1/2”–13 x 1 1/4”	828608–125	4
3	washer, regular unfinished 1/2”	837208–112	4
4	capscrew, ferry 3/4”–10 x 4”	828412–400	8
5	washer, springlock 3/4” regular	837512–188	16
6	hub, coupling 2 1/4” x 5/8”id (200HP/150KW)	250007–875	1
	• hub, coupling 2 3/4” x 5/8” id (250HP/187KW)	250004–636	1
	• hub, coupling 2 3/4” x 5/8”id (300HP/225KW)	250004–636	1
	• hub, coupling 2 3/4” x 5/8””id (350HP/261KW)	250004–636	1
7	element, drive coupling	046999	1
8	hub, coupling 2 3/4” x 5/8”	250004–635	1
9	motor, 200HP/150KW	050982	1
	• motor, 250HP/187KW	050401	1
	• motor, 300HP/225KW	250007–820	1
	• motor, 350HP/261KW	250007–903	1
10	capscrew, hex gr5 3/4”–10 x 3”	828612–300	4
11	shim set, motor mounting	020293	4
12	frame, 200HP/150KW	250007–796	1
	• frame, 250HP/187KW	250006–714	1
	• frame, 300HP/225KW	250006–714	1
	• frame, 350HP/261KW	250006–714	1
13	capscrew, hex gr5 3/4”–10 x 1 1/2”	828612–150	4
14	washer, springlock regular 1/2”	837508–125	4
15	nut, hex 1/2”–13	824208–448	16
16	nut, hex 3/4”–10 unfinished	824212–665	8
17	lug, lifting	250008–361	4
18	capscrew, hex gr5 1/2”–13 x 2”	828608–200	16
19	nut, hex 1/2”–13	824208–448	16
20	compressor unit **(I)**	–	–

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

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

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

7.4 COMPRESSOR AIR INTAKE SYSTEM



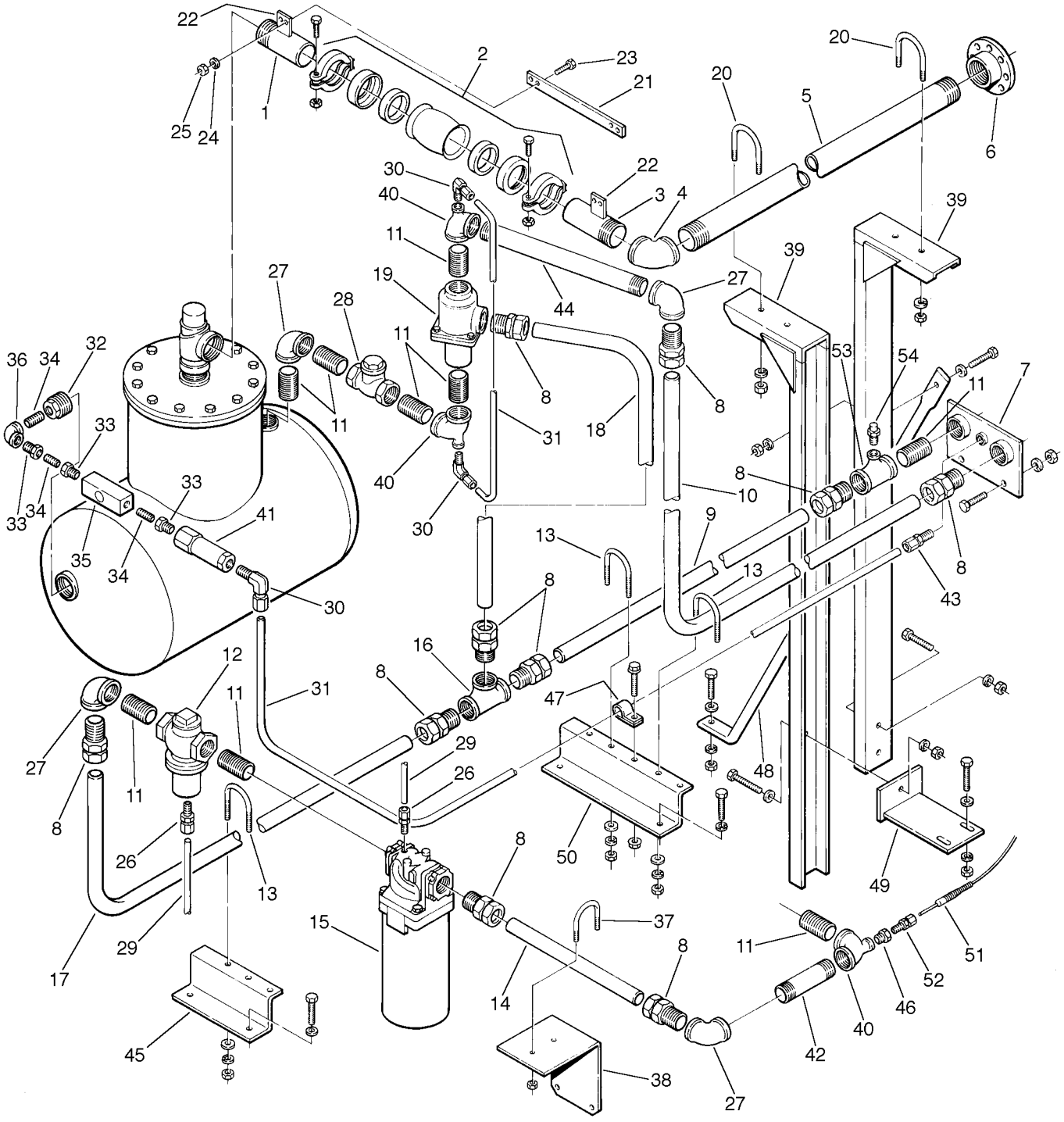
7.4 COMPRESSOR AIR INTAKE SYSTEM

key number	*description*	*part number*	*quantity*
1	filter, air 18" diameter (I)	250006–718	1
1A	• element, air filter 18" – primary	250007–838	1
1B	• element, air filter 18" – secondary	250007–839	1
2	support, 18" head air filter	250007–788	1
3	cap, air inlet 10"	250007–712	1
4	capscrew, hex gr5 3/8"–16 x 1"	828606–100	4
5	nut, hex unfinished 3/8"–16	824206–337	4
6	clamp, hose 8"	043598	4
7	hose, hump 8" x 8"	044733	1
8	duct, 8" od aluminum 64W x 30"	250007–690	1
9	elbow, rubber 90° 8"	043406	1
10	adpater, compressor inlet 10" to 8"	250003–378	1
11	capscrew, hex gr5 7/8"–9 x 3 1/2"	828614–350	8
12	washer, springlock regular 7/8"	837514–219	8
13	gasket, 1/16" x 10 1/2"id x 13 1/4" od gasket	041079	2
14	valve, butterfly 10"	041110	1
15	connector, tube 1/4" x 1/8"	813604–125	1
16	capscrew, hex gr5 1/2"–13 x 1 1/4"	828608–125	4
17	washer, plain regular unfinished 1/2"	837208–112	4
18	nut, hex unfinished 1/2"	824208–448	4
19	washer, springlock regular 1/2"	837508–125	8

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

(I) For maintenance on air filter 250006–718, order primary replacement element no. 250007–838, and secondary replacement element no. 250007–839.

7.5 FLUID COOLING PIPING SYSTEM – AIR–COOLED REMOTE COOLER



7.5 FLUID COOLING PIPING SYSTEM – AIR–COOLED REMOTE COOLER

key number	*description*	*part number*	*quantity*
1	nipple, half 3" x 8"	822848–080	1
2	coupling, flexible 3" Buna–N (std.) **(I)**	040327	1
	• coupling, flexible 3" Viton (24KT) **(II)**	241731	1
3	nipple, half 3" x 12"	822848–120	1
4	elbow, pipe 90° x 3" 150#	801515–120	1
5	nipple, pipe 3" x 72"	822148–720	1
6	flange, threaded 3" 150#	819315–048	1
7	bracket, fluid connection 2" npt	250007–794	1
8	connector, tube–m 2" x 2"	810232–200	8
9	tube, cooler connection/bypass tee 2"	250008–379	1
10	tube, tv/cooler connector 2"	250008–378	1
11	nipple, pipe 2" x close	822232–000	4
12	valve, fluid stop 2" npt **(III)**	016742	1
13	clamp	829006–150	3
14	tube, filter fluid injection port 2"	250008–382	1
15	filter, fluid **(IV)**	250007–219	1
16	tee, pipe 2" 150#	802415–080	1
17	tube, bypass tee filter 2"	250008–381	1
18	tube, tv/bypass tee 2"	250008–380	1
19	valve, thermal 2" (std.) **(V)**	041299	1
	• valve, thermal 2" (24KT) **(VI)**	02250043–433	1
20	clamp, exhaust	040284	2
21	reinforcement, flexible 13"	250035–138	1
22	reinforcement, flexible 3"	250035–136	2
23	capscrew, 3/8"–16 x 1 1/2"	828606–150	2
24	washer, springlock 3/8"	837506–094	2
25	nut, hex 3/8"	824206–337	2
26	connector, tube–m 1/4" x 1/4"	810204–025	3
27	elbow, pipe 10° x 2"	801515–080	2

(continued on Page 49)

(I) For maintenance on flexible coupling (std.) no. 040327, order replacement seal no. 040523.

(II) For maintenance on flexible coupling (24KT) no. 241731, order repair kit no. 241732.

(III) For maintenance on fluid stop valve no. 016742, order repair kit no. 001684.

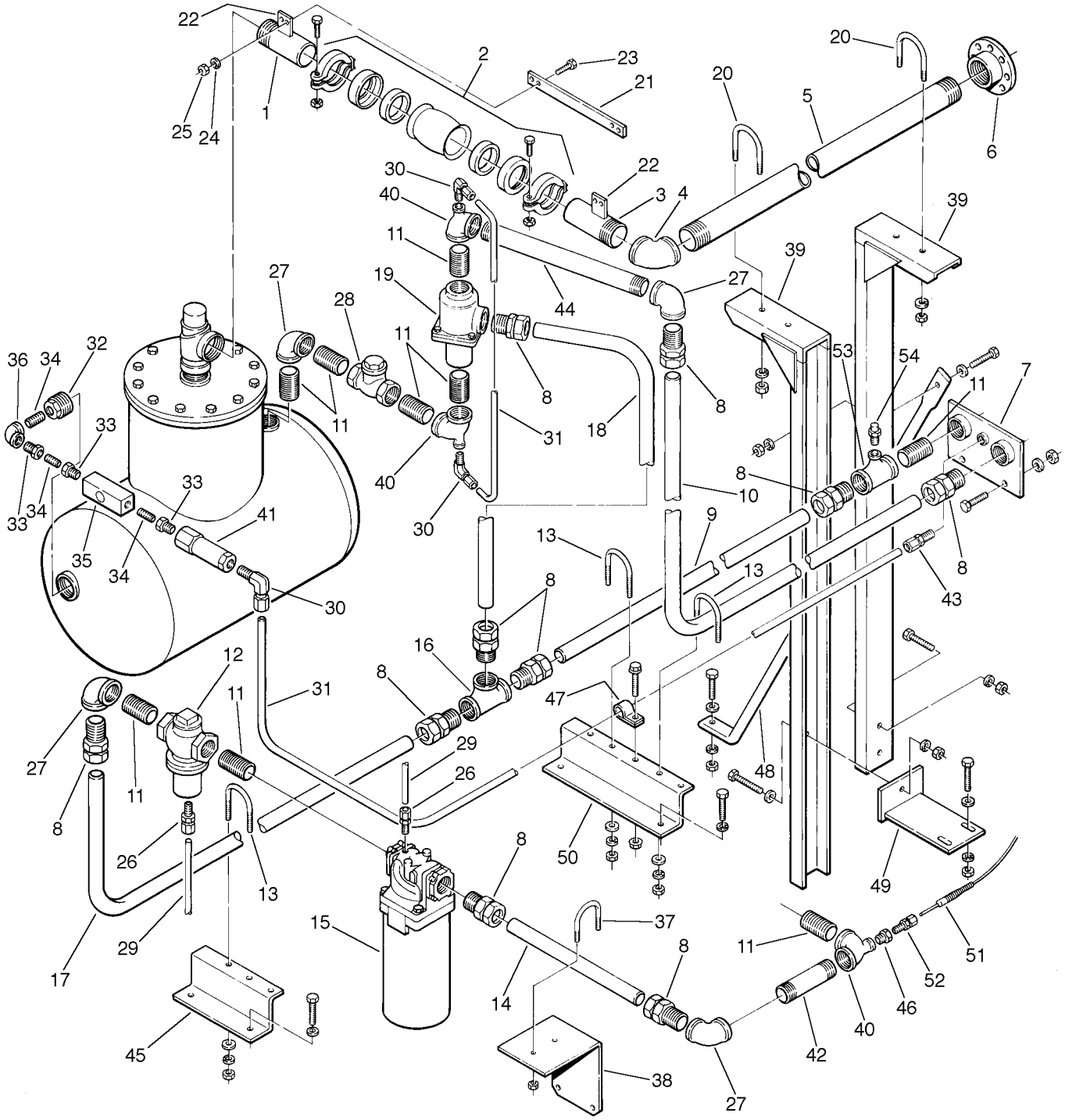
(IV) For maintenance on fluid filter no. 250007–219, order replacement kit no. 250008–956.

(V) For maintenance on thermal valve no. 041299, order repair kit no. 001084.

(VI) For maintenance on thermal valve no. 02250043–433, order repair kit no. 001149.

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

7.5 FLUID COOLING PIPING SYSTEM – AIR–COOLED REMOTE COOLER

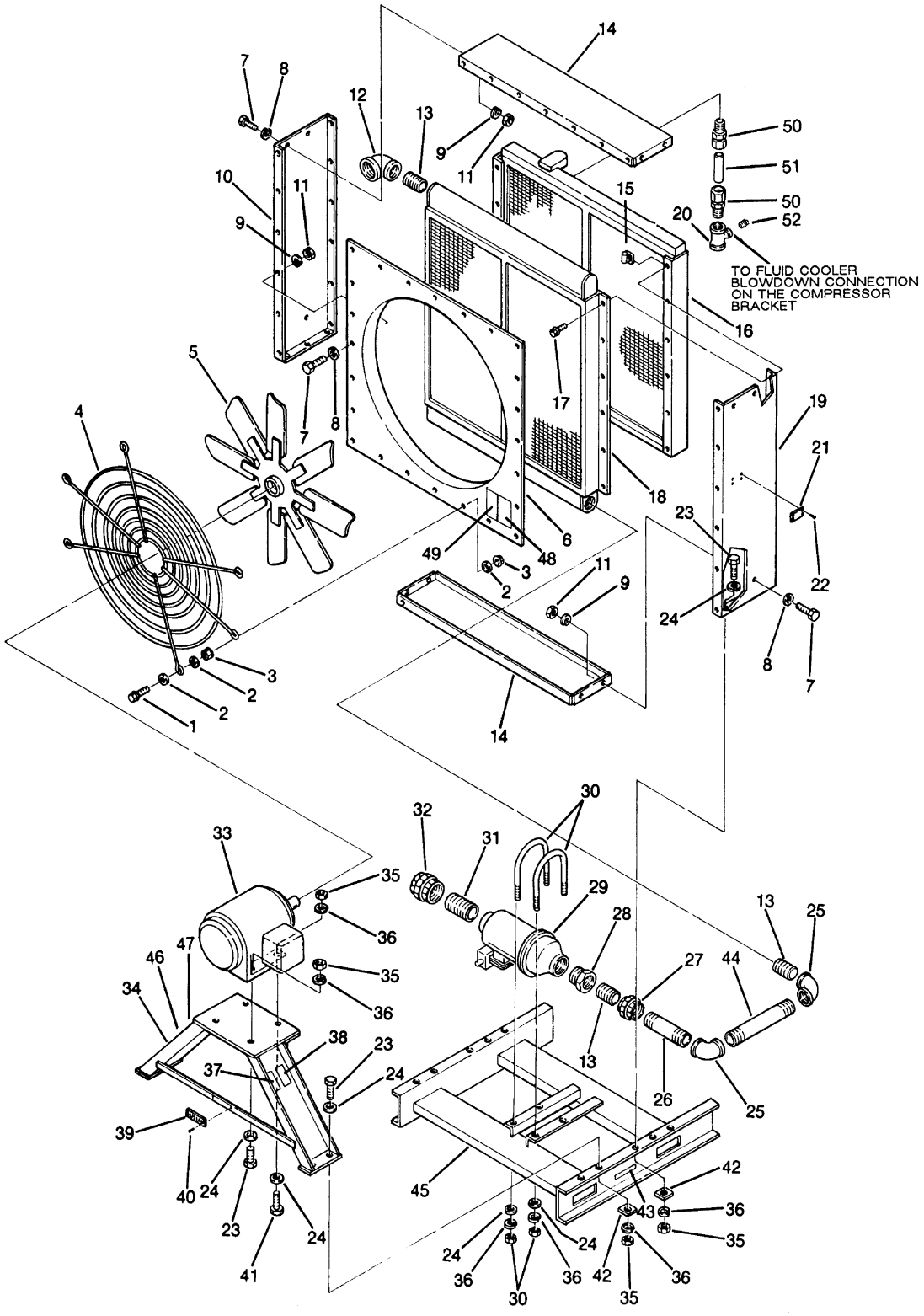


7.5 FLUID COOLING PIPING SYSTEM – AIR–COOLED REMOTE COOLER (continued)

key number	*description*	*part number*	*quantity*
28	valve, check	040671	1
29	tubing, steel 1/4”	841115–004	16 ft.
30	elbow, tube 1/2”t x 1/2”p	810508–050	3
31	tubing, steel 1/2”	841115–008	13.5 ft.
32	bushing, reducing hex 1 1/2” x 1/2”	802106–020	1
33	bushing, reducing hex 1/2” x 1/4”	802102–010	2
34	nipple pipe 1/4” x close	822204–000	3
35	glass, sight	046559	1
36	elbow, pipe 90° 1/4”	803515–015	1
37	clamp, exhaust	044135	1
38	bracket	250026–878	1
39	support	250007–791	2
40	tee, reducing 2” x 1/2” x 2”	802208–028	2
41	valve, check 1/2”	042694	1
42	nipple, pipe 2” x 7”	822132–070	1
43	connector, tube–m 1/2” x 1/2”	810208–050	2
44	nipple, pipe 2” x 24”	822132–240	1
45	support, single tube	250010–895	1
46	bushing reducer 1/2” x 1/8” npt	802102–005	3
47	clamp, tube 3/8”	250025–633	2
48	support	024497	1
49	bracket	250008–815	1
50	support, double tube	250010–896	1
51	probe, RTD	250039–909	3
52	fitting, compression	250028–633	3
53	tee, reducing 2” x 2” x 1/2”	802208–082	1
54	switch, temp	043239	1

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

7.6 FLUID COOLING SYSTEM AIR–COOLED REMOTE COOLER (200–250HP/150–187KW)



7.6 FLUID COOLING SYSTEM AIR–COOLED REMOTE COOLER (200–250HP/150–187KW)

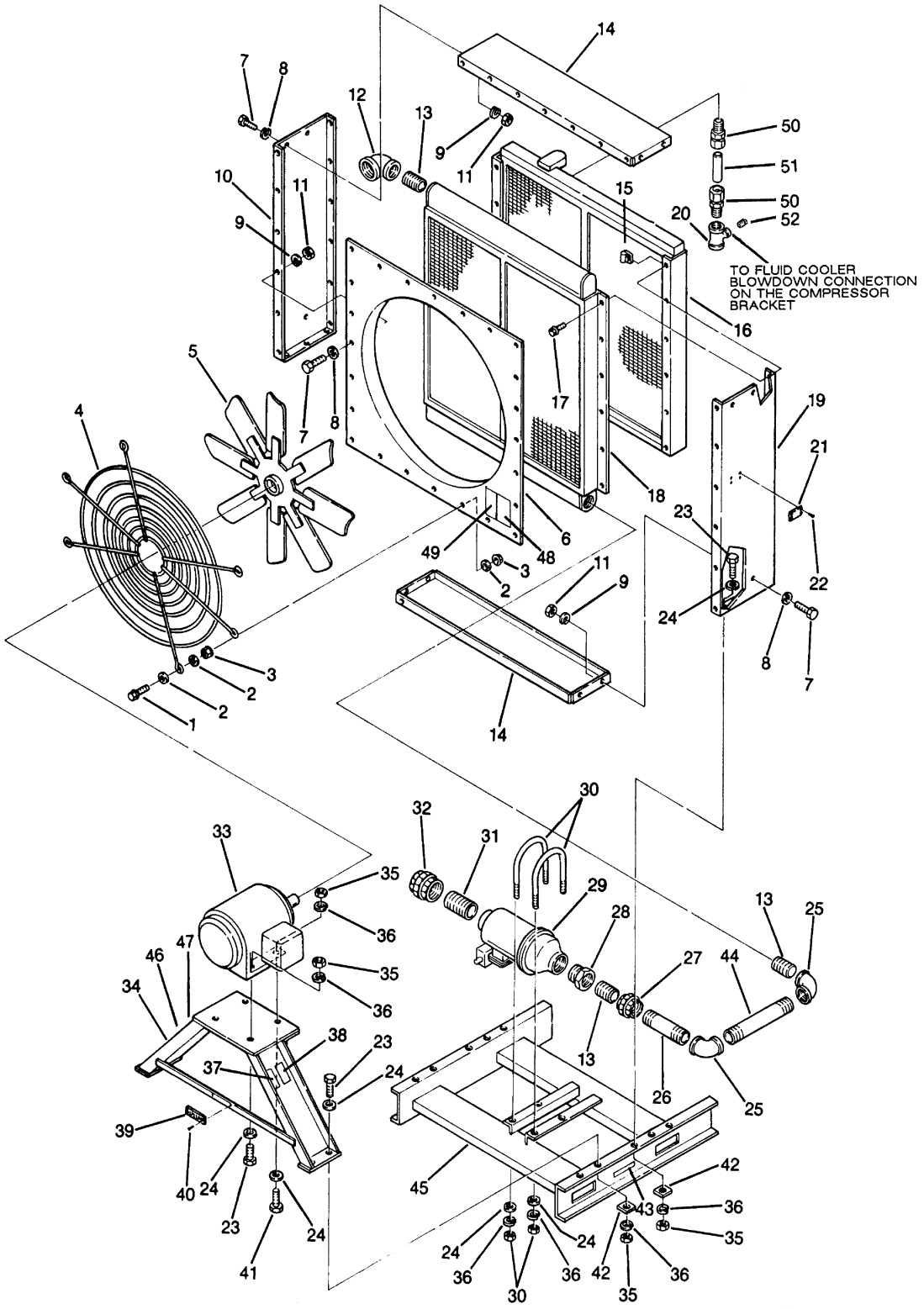
key number	*description*	*part number*	*quantity*
1	capscrew, hex serrated washer 5/16" x 1 1/4"	829705–125	6
2	washer, pl–b regular unfinished 5/16"	837205–071	18
3	nut, hex flanged plated 5/16"–18	825305–283	12
4	guard, fan 42"	241283	1
5	fan, 42" diameter	406966	1
6	panel, Venturi 42"	250001–202	1
7	capscrew, hex gr5 3/8"–16 x 1"	828606–100	26
8	washer, pl–b regular unfinished	837206–071	52
9	washer, springlock regular 3/8"	837506–094	26
10	panel, left hand	250001–207	1
11	nut, hex unfinished 3/8"–16	824206–337	26
12	elbow, reducing 3" x 2"	801612–080	1
13	nipple, pipe xs 2" x close 150#	822232–000	3
14	panel, top and bottom	250001–209	2
15	nut, retainer 5/16"–18	860905–163	12
16	cooler, fluid – mod	040961	1
17	screw, hex serrated washer 5/16" x 1"	829705–100	12
18	aftercooler, air to air	041807	1
19	panel, right side	250001–203	1
20	tee, reducing 2" x 1/2" x 2"	802208–028	1
21	nameplate, Sullair w/serial number	040052	1
22	rivet, pop 1/8" x 3/8"ad	843102–038	4
23	capscrew, hex gr5 1/2"–13 x 2"	828608–200	12
24	washer, flat pl–b regular unfinished 1/2"	837208–112	18
25	elbow, pipe 90° 2" 150#	801515–080	2
26	nipple, pipe 2" x 10"	822132–100	1
27	union, pipe brs seat 2" 150#	802515–080	1
28	bushing, reducing hex 3" x 2"	802112–080	1
29	separator, moisture w/trap 3" npt (I)	250004–596	1
30	u–bolt, 1/2"–8" pipe	829008–800	2
31	nipple, pipe xs 3" x close	822248–000	1
32	union, pipe brs seat 3" 150#	802515–120	1
33	motor, 7.5HP 230/460–60	050795	1
34	support, motor	250001–197	1

(continued on Page 53)

(I) For maintenance on moisture trap no. 250004–596, order repair kit no. 250033–036.

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

7.6 FLUID COOLING SYSTEM AIR–COOLED REMOTE COOLER (200–250HP/150–187KW)



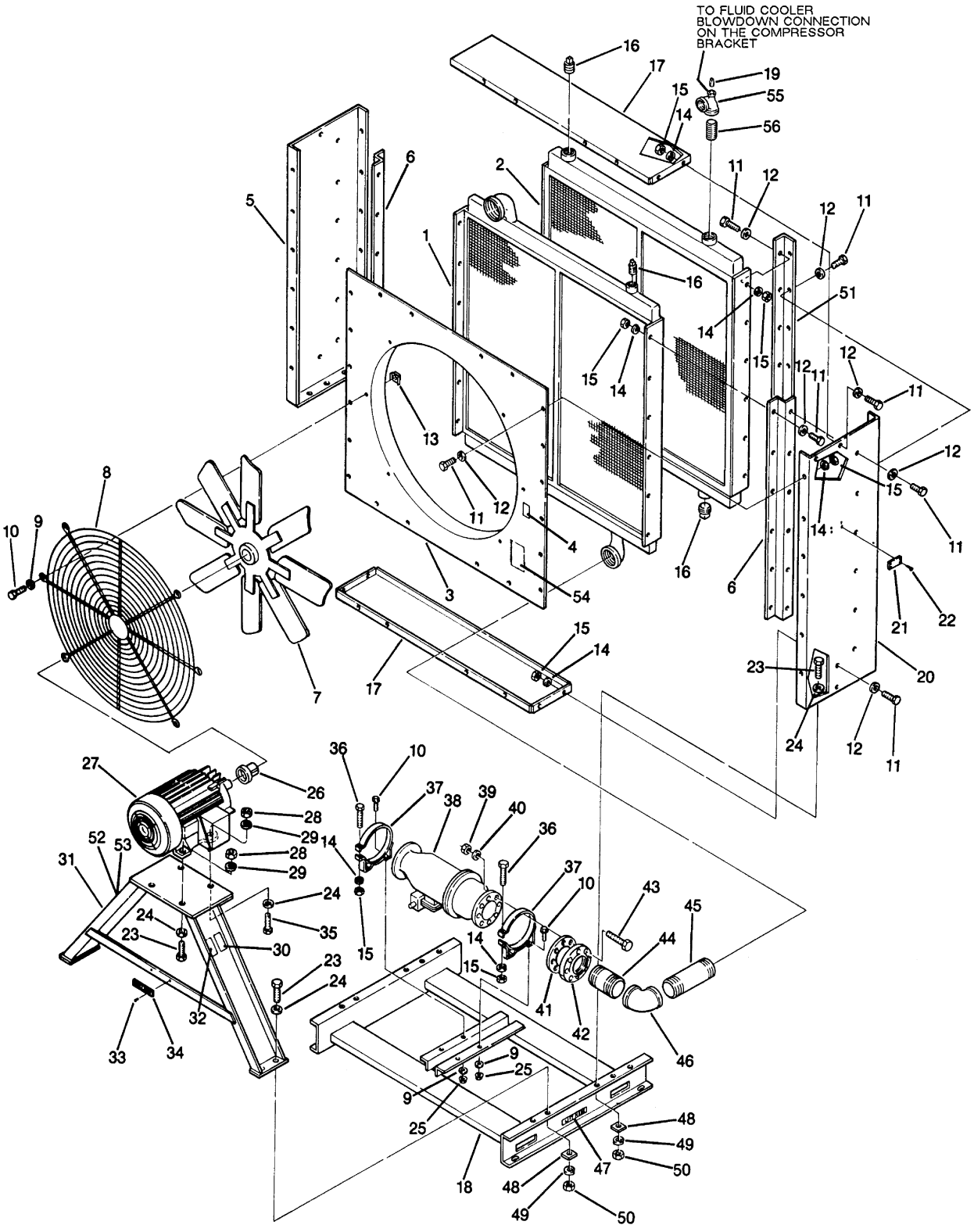
7.6 FLUID COOLING SYSTEM AIR–COOLED REMOTE COOLER (200–250HP/150/187KW) (continued)

key number	*description*	*part number*	*quantity*
35	nut, hex unfinished 1/2”–13	824208–448	14
36	washer, springlock regular 1/2”	837508–125	18
37	decal, danger electrocution **(II)**	–	1
38	decal, warning “compressor fluid fill cap” **(II)**	–	1
39	nameplate, Sullair 1” x 6”	041043	1
40	fastener, suregrip	041516	2
41	capscrew, hex gr5 1/2”–13 x 2”	828608–200	12
42	washer, bevel 1/2”	837008–125	10
43	decal, fork lifting	241814	2
44	nipple, pipe 2” x 16”	822132–160	1
45	frame, base	250001–191	1
46	decal, warning “food grade” lube **(II)**	–	1
47	decal, danger breath air **(II)**	–	1
48	decal, warning sever (fan) **(II)**	–	1
49	decal, warning sever fan port **(II)**	–	1
50	connector, tube 2”	810232–200	2
51	nipple, pipe 2” x close	822232–000	1
52	plug, 1/2”	807800–020	1
53	decal, Sullair (not shown)	Consult Factory	1

(II) Consult decal section in this manual.

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

7.7 FLUID COOLING SYSTEM – AIR–COOLED REMOTE COOLER (300–350HP/225–261KW)



7.7 FLUID COOLING SYSTEM – AIR–COOLED REMOTE COOLER (300–350HP225–261KW)

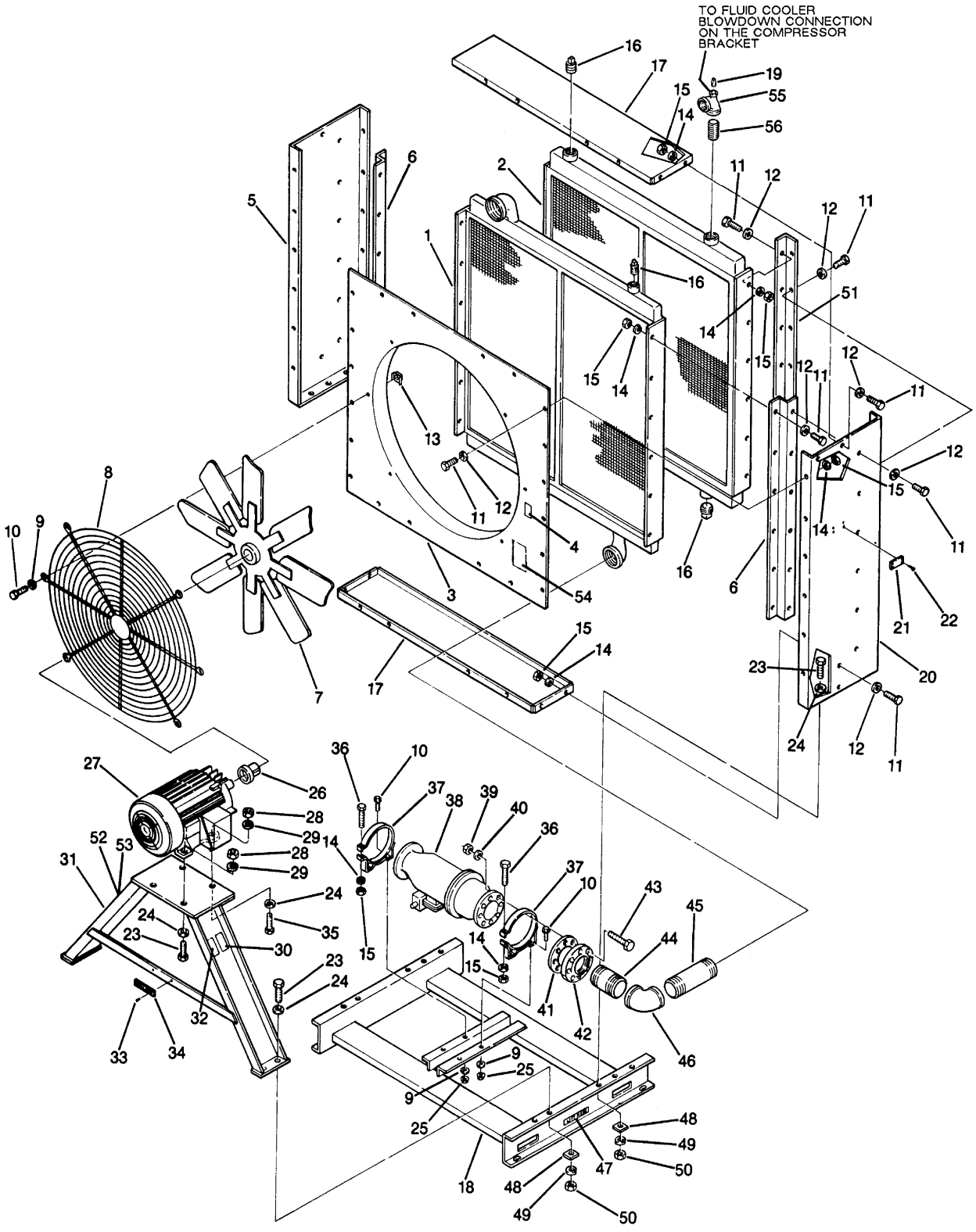
key number	*description*	*part number*	*quantity*
1	core, aftercooler	049984	1
2	core, aftercooler/fluid cooler	250004–201	1
3	panel, venturi 48”	250000–467	1
4	sign, “warning” sever (fan) (I)	–	1
5	panel, left hand	250000–468	1
6	bracket, aftercooler	250000–475	2
7	fan, 48” 8 blade 35° pitch	049986	1
8	guard, fan	241347	1
9	washer, plain broad regular unfinished 5/16”	837205–071	10
10	screw, hex serrated washer 5/16” x 3/4”	829705–075	10
11	capscrew, hex gr5 3/8”–16 x 1”	828606–100	76
12	washer, plain broad regular unfinished 3/8”	837206–071	96
13	nut, retainer 5/16”–18 .092	861405–092	6
14	washer, springlock regular 3/8”	837506–094	78
15	nut, hex unfinished 3/8”–16	824206–337	54
16	plug, pipe 2” 150#	802815–080	4
17	panel, top and bottom	250000–474	2
18	frame, aftercooled base	250000–454	1
19	plug, 1/2”	807800–020	1
20	panel, right side	250000–472	1
21	nameplate, Sullair with serial number	040052	1
22	rivet, pop 1/8” x 3/8”	843102–038	4
23	capscrew, hex gr5 1/2”–13 x 2”	828608–200	12
24	washer, plain broad regular unfinished 1/2”	837208–112	12
25	nut, hex flanged plated 5/16”–18	825305–283	4
26	bushing, taper	042520	1
27	motor, 15HP/11KW (230/460)	050387	1
28	nut, hex unfinished 1/2”–13	824208–448	14
29	washer, springlock regular 1/2”	837508–125	14
30	decal, warning compressor fluid fill cap (I)	–	1
31	support, ac motor	250000–461	1
32	decal, “danger” – electrocution (I)	–	1
33	fasteners, suregrip	041516	2
34	nameplate, “Sullair” 1” x 6”	041043	1

(continued on Page 57)

(I) For part numbers, consult decal section of this manual.

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

7.7 FLUID COOLING SYSTEM – AIR–COOLED REMOTE COOLER (300–350HP/225–261KW)



7.7 FLUID COOLING SYSTEM – AIR–COOLED REMOTE COOLER (300–350HP/225–261KW) (continued)

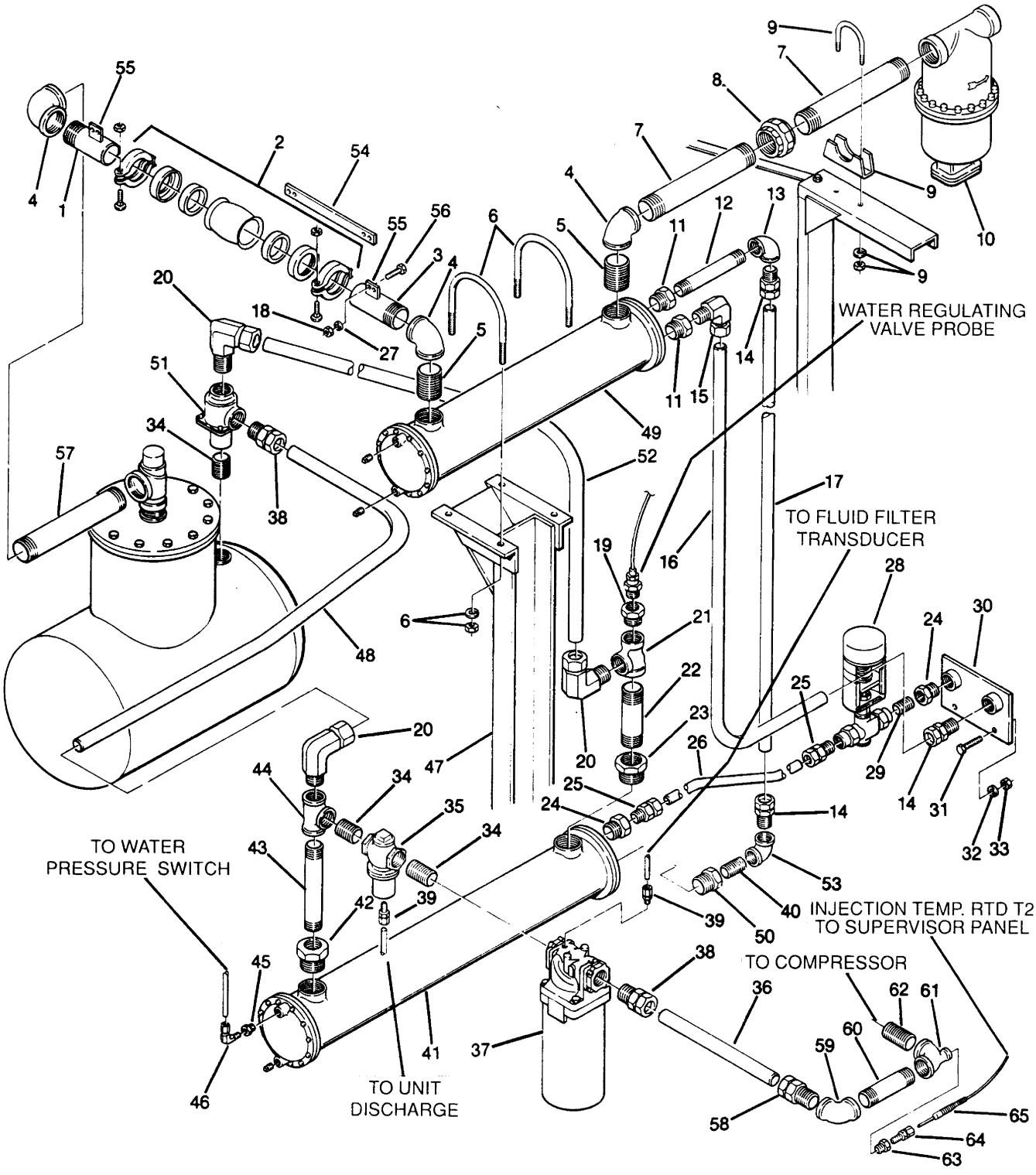
key number	*description*	*part number*	*quantity*
35	capscrew, hex gr5 1/2"–13 x 2 1/2"	828608–250	2
36	capscrew, hex gr5 3/8"–16 x 4"	828606–400	2
37	band, air filter 9"	049104	2
38	separator, moisture with trap 4" flange (I)	250004–597	1
39	nut, hex unfinished 5/8"–11	824210–559	8
40	washer, springlock regular 5/8"	837510–156	8
41	gasket, 4" 125# flange full face	242437–010	1
42	flange, threaded 4" 125# full face	818312–064	1
43	capscrew, hex gr5 5/8"–11 x 3"	828610–300	8
44	nipple, pipe 4" x 8"	822164–080	1
45	nipple, pipe 4" x 14"	822164–140	1
46	elbow, pipe 4", 90° 150#	801515–160	1
47	decal, fork lifting (II)	–	2
48	washer, bevel 1/2"	837008–125	10
49	washer, springlock regular 1/2"	837508–125	14
50	nut, hex unfinished 1/2"–13	824208–448	14
51	angle, 2" x 1 1/4" x 58"	250001–565	2
52	decal, warning "food grade" lube (II)	–	1
53	decal, danger breath air (II)	–	1
54	decal, warning–sever–fan–port (II)	–	1
55	tee, reducing 2" x 1/2" x 2"	802208–028	1
56	nipple, pipe 2" x close	822232–000	1
57	decal, Sullair (not shown)	Consult Factory	1

(I) For maintenance on combination trap with heater separator no. 250004–597, order repair kit no. 250033–036.

(II) For part number of decal, consult decal section in this manual.

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

7.8 FLUID COOLING SYSTEM – WATER–COOLED (200–250HP/150–187KW)



7.8 FLUID COOLING SYSTEM – WATER–COOLED (200–250HP/150–187KW)

key number	*description*	*part number*	*quantity*
1	nipple, half 3" x 8"	822848–080	1
2	coupling, flexible 3" Buna–n (std.) **(I)**	040327	1
	• coupling, flexible 3" Viton (24KT) **(II)**	241731	1
3	nipple, half 3" x 12"	822848–120	1
4	elbow, pipe 90° 3" 150#	801515–120	2
5	nipple, pipe 3" x 3"	822148–030	2
6	u–bolt, 1/2" x 8" pipe	829008–800	2
7	nipple, pipe 3" x 18"	822148–180	2
8	union, pipe brass seat 3" 150#	802515–120	1
9	clamp, exhaust 3 1/2"	040284	1
10	separator, combination trap 3" **(III)**	250007–787	1
11	bushing, reducing hex 2" x 1 1/2"	802108–060	2
12	nipple, pipe 1 1/2" x 10 1/2"	822124–105	1
13	elbow, pipe 90° 1 1/2" 150#	801515–060	1
14	connector, tube–m 1 1/2" x 1 1/2"	810224–150	2
15	elbow, tube–m 1 1/2" x 1 1/2"	810524–150	2
16	tube, water connector/aftercooler (200HP/150KW)	250009–332	1
	• tube, water connector/aftercooler (250HP/187KW)	250009–333	1
17	tube, aftercooler/fluid cooler water (200HP/150KW)	250009–335	1
	• tube, aftercooler/fluid cooler water (250HP/187KW)	250009–336	1
18	nut, hex 3/8"	824206–337	2
19	bushing, reducing hex 2" x 1"	802108–040	1
20	elbow, tube–m 2" x 2"	810532–200	3
21	tee, reducing 2" x 2" x 2 1/2"	802210–088	1
22	nipple, pipe 2 1/2" x 8"	822140–080	1
23	bushing, reducing hex 3" x 2 1/2"	802112–100	1
24	bushing, reducing hex 1 1/2" x 1 1/4"	802106–050	1
25	connector, tube–m 1 1/4" x 1 1/4"	810220–125	2
26	tube, water regulating valve (200HP/150KW)	250009–338	1
	•tube, water regulating valve (250HP/187KW)	250009–330	1
27	washer, springlock 3/8" regular	837506–094	2
28	valve, water regulator 1 1/4"	248743	1
29	nipple, pipe 1 1/4" x close	822220–000	1

(continued on Page 61)

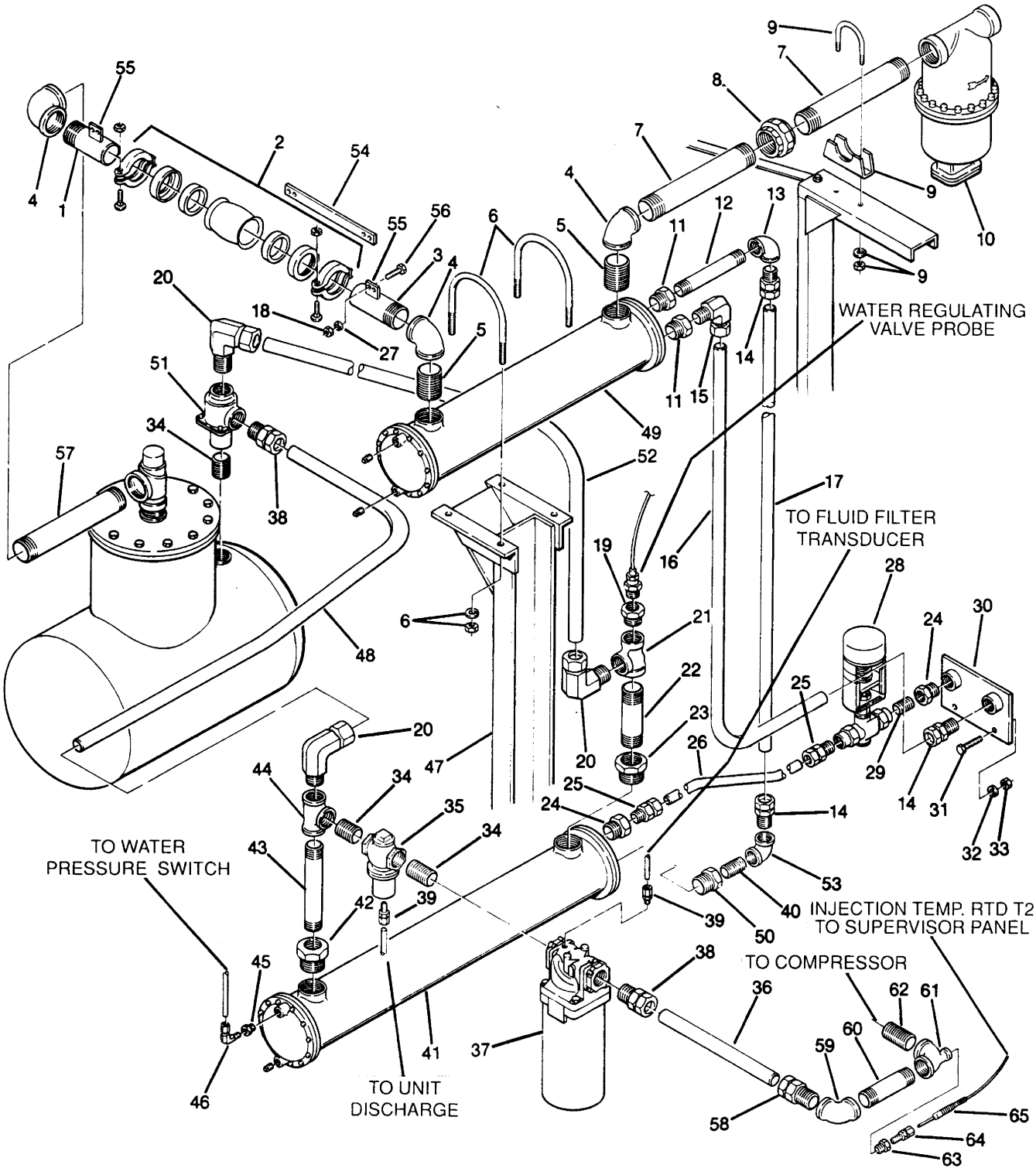
(I) For maintenance on flexible coupling (std.) no. 040327, order repair kit no. 040523.

(II) For maintenance on flexible coupling (24KT) no. 241731, order repair kit no. 241732.

(III) 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

7.8 FLUID COOLING SYSTEM – WATER–COOLED (200–250HP/150–187KW)



7.8 FLUID COOLING SYSTEM – WATER–COOLED (200–250HP/150–187KW) (continued)

key number	*description*	*part number*	*quantity*
30	bracket, water connector 1 1/2" npt	250007–795	1
31	capscrew, 1/2" x 1 1/2"	828608–150	6
32	washer, springlock 1/2" regular	837508–125	6
33	nut, hex unfinished 1/2"–13	824208–448	6
34	nipple, pipe 2" x close	822232–000	4
35	valve, fluid stop 2" npt **(IV)**	016742	1
36	tube, filter 2" fluid stop valve	250023–480	1
37	filter, fluid **(V)**	250007–219	1
38	connector, tube–m 2" x 2"	810232–200	3
39	connector, tube–m 1/4" x 1/4"	810204–025	1
40	nipple, pipe close 1 1/2"	822224–000	1
41	heat exchanger, 8" x 48" (200HP/150KW) • heat exchanger, 8" x 48" (250HP/187KW)	043031 043864	1 1
42	bushing, reducing hex 3" x 2"	802112–080	1
43	nipple, pipe 2" x 12"	822132–120	1
44	tee, pipe 2" 150#	802415–080	1
45	bushing, hex reducing 1/2" x 1/4"	807602–010	1
46	elbow, tube–m 1/4" x 1/4"	810504–025	1
47	support, aftercooler (200HP/150KW) • support aftercooler (250HP/187KW)	250007–792 250007–793	1 1
48	tube, tv/bypass tee water–cooled 2"	250009–328	1
49	aftercooler, 8" x 36" (200HP/150KW) • aftercooler, 8" x 60" (250HP/187KW)	042541 042950	1 1
50	bushing, reducing hex 1 1/2" x 2"	802108–060	1
51	valve, thermal **(VI)**	041299	1
52	tube, 2" fluid cooler to t–valve	250023–073	1
53	elbow, pipe 90° 1 1/2"	801515–060	1
54	reinforcement, flexible 13"	227154	1
55	reinforcement, flexible 3"	227152	4
56	capscrew, 3/8"–16 x 1 1/2"	828606–150	2
57	nipple, ppie 3" x 15"	822148–150	1
58	connector, tube–m 2" x 2"	810232–200	8
59	elbow, pipe 10° x 2"	801515–080	2
60	nipple, pipe 2" x 7"	822132–070	1
61	tee, reducing 2" x 1/2" x 2"	802208–028	2
62	nipple, pipe 2" x close	822232–000	3
63	bushing, reducer 1/2" x 1/8" npt	802102–005	3
64	fitting, compression	250028–633	3
65	probe, RTD	250039–909	3

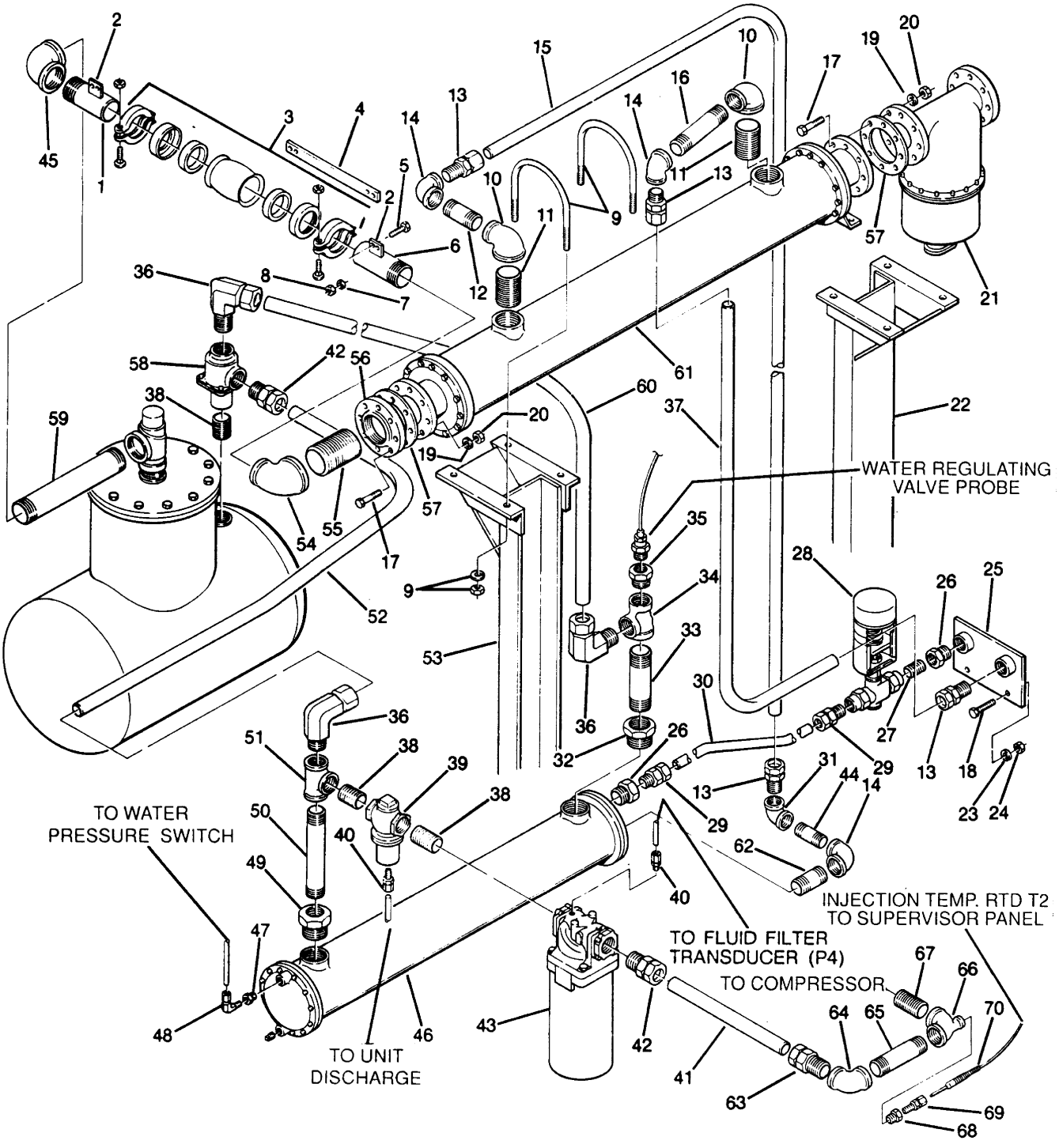
(IV) For maintenance on fluid stop valve no. 016742, order repair kit no. 001684.

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

(VI) For maintenance on thermal valve no. 041299, order repair kit no. 001084.

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

7.9 FLUID COOLING SYSTEM – WATER–COOLED (300–350HP/225–261KW)



7.9 FLUID COOLING SYSTEM – WATER–COOLED (300–350HP/225–261KW)

key number	description	part number	quantity
1	nipple, half 3" x 8"	822848–080	1
2	reinforcement, flexible 3"	227152	4
3	coupling, flexible 3" Buna–n (std.) **(I)**	040327	1
	• coupling, flexible 3" Viton (24kt) **(II)**	241731	1
4	reinforcement, flexible 13"	227154	1
5	capscrew, hex gr5 3/8"–16 x 1 1/2"	828606–150	2
6	nipple half 3" x 12"	822848–120	1
7	washer, springlock regular 3/8"	837506–094	2
8	nut, hex unfinished 3/8"	824206–337	2
9	u–bolt, pipe 1/2" x 8"	829008–800	2
10	elbow, pipe reducing 90° 3" x 2"	801612–080	2
11	nipple, pipe 3" x close	822248–000	2
12	nipple, pipe 2" x 4"	822132–040	1
13	connector, tube–m 1 1/2" x 1 1/2"	810224–150	3
14	elbow, pipe reducing 90° 2" x 1/2" 150#	801608–060	1
15	tube, aftercooler/fluid cooler	250009–337	1
16	nipple, pipe 2" x 7 1/2"	822132–075	1
17	capscrew, hex head gr5 5/8"–11 x 3"	828610–300	8
18	capscrew, hex head gr5 1/2"–13 x 1 1/2"	828608–150	4
19	washer, springlock regular 5/8"	837510–156	8
20	nut, hex 5/8"–11 unfinished	824210–559	8
21	separator, 4" combination trap **(III)**	250000–511	1
22	support, aftercooler	250018–015	1
23	washer, springlock regular 1/2"	837508–125	4
24	nut, hex unfinished 1/2"–13	824208–448	4
25	bracket, water connector 1 1/2"npt	250007–795	1
26	bushing, reducing hex 1 1/2" x 1 1/4"	802106–050	2
27	nipple, pipe 1 1/4" x close	822220–000	1
28	valve, water regulating 1 1/4"	248743	1
29	connector, tube–m 1 1/4" x 1 1/4"	810220–125	2
30	tube, water connector/cooler	250009–331	1
31	elbow, pipe 1 1/2"	801515–060	1
32	bushing, reducing hex 3" x 2 1/2"	802112–100	1

(continued on Page 65)

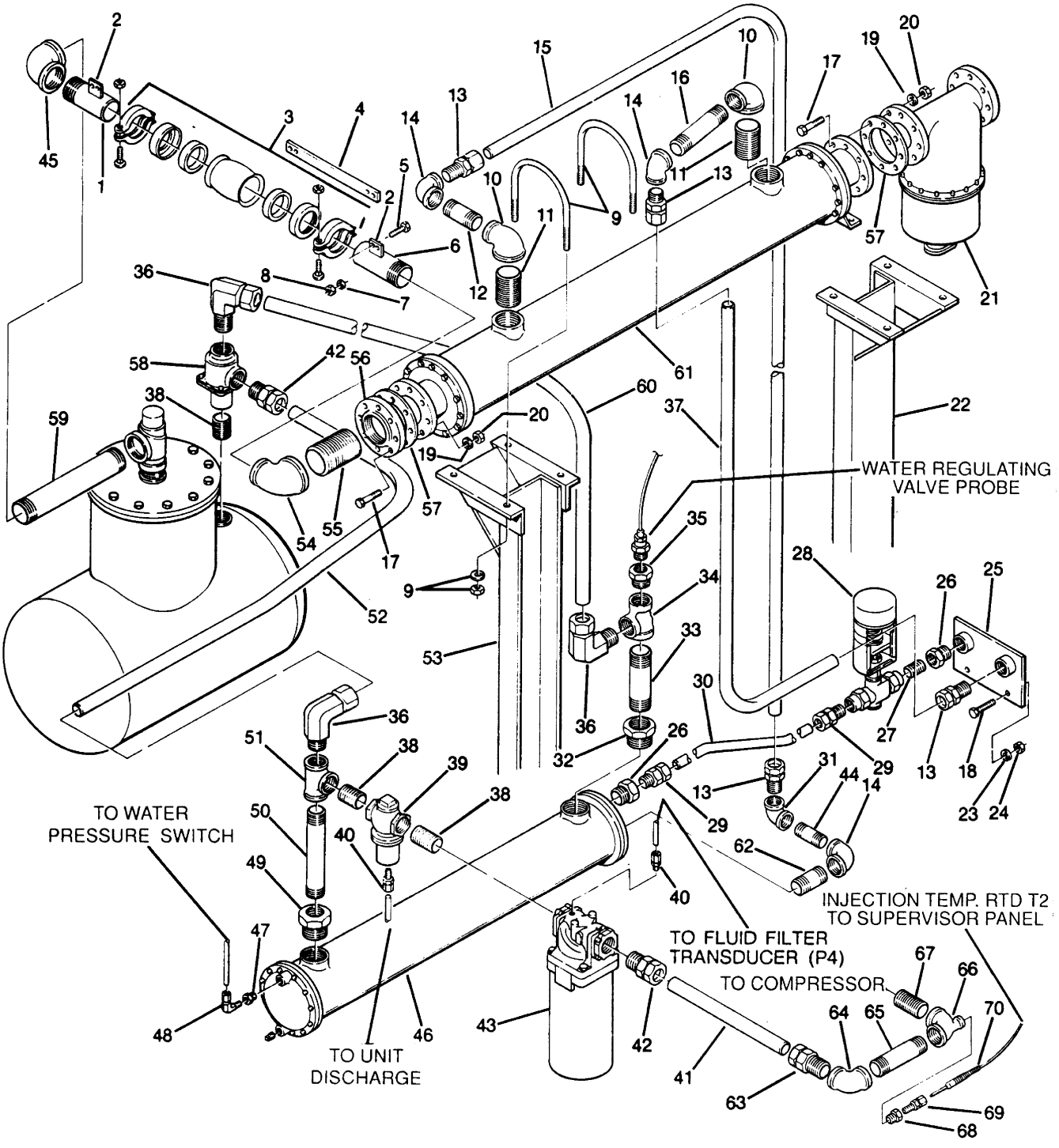
(I) For maintenance on flexible coupling (std.) no. 040327, order repair kit no. 040523.

(II) For maintenance on flexible coupling (24KT) no. 241731, order repair kit no. 241732.

(III) For maintenance on combination trap separator no. 250000–511, order repair kit no. 250033–036.

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

7.9 FLUID COOLING SYSTEM – WATER–COOLED (300–350HP/225–261KW)



7.9 FLUID COOLING SYSTEM – WATER–COOLED (300–350HP/225–261KW) (continued)

key number	*description*	*part number*	*quantity*
33	nipple, pipe 2 1/2" x 8"	822140–080	1
34	tee, reducing 2" x 2" x 2 1/2" 150#	802210–088	1
35	bushing, reducing hex 2" x 1"	802108–040	1
36	elbow, tube–m 2" x 2"	801532–200	2
37	tube, water connector/aftercooler	250009–334	1
38	nipple, pipe 2" x close	822232–000	4
39	valve, fluid stop 2"npt **(IV)**	016742	1
40	connector, tube–m 1/4" x 1/4"	810204–025	3
41	tube, filter fluid stop valve 2"	250008–382	1
42	connector, tube–m 2" x 2"	810232–200	3
43	filter, fluid **(V)**	250007–219	1
44	nipple, pipe 1 1/2" x 4"	822124–040	1
45	elbow, pipe 90° 3"	810515–120	1
46	heat exchanger 8" x 72"	041664	1
47	bushing, reducing hex 1/2" x 1/4"	807602–010	1
48	elbow, tube–m 1/4" x 1/4"	810504–025	1
49	bushing, reducing hex 3" x 2"	802112–080	1
50	nipple, pipe 2" x 12"	822132–120	1
51	tee, pipe 2" 150#	802415–080	1
52	tube, bypass tee water–cooled 2"	250023–074	1
53	support, aftercooler	250007–793	1
54	elbow, pipe reducing 4" x 3" 90°	801616–120	1
55	nipple, pipe 4" x close	822264–000	1
56	flange, threaded 4" 150#	819315–064	1
57	gasket, flange 4" 150#	240621–010	2
58	valve, thermal 2" **(VI)**	041299	1
59	nipple, pipe 3" x 15"	822148–150	1
60	tube, fluid cooler to valve	250023–073	1
61	aftercooler, water–cooled	042950	1
62	nipple, pipe 1 1/2" x 2"	822124–020	1
63	connector, tube–m 2" x 2"	810232–200	8
64	elbow, pipe 10° x 2"	810515–080	2
65	nipple, pipe 2" x 7"	822132–070	1
66	tee, reducing 2" x 1/2" x 2"	802208–028	2
67	nipple, pipe 2" x close	822232–000	3
68	bushing, reducer 1/2" x 1/8" npt	802102–005	3
69	fitting, compression	250028–633	3
70	probe, RTD	250039–909	3

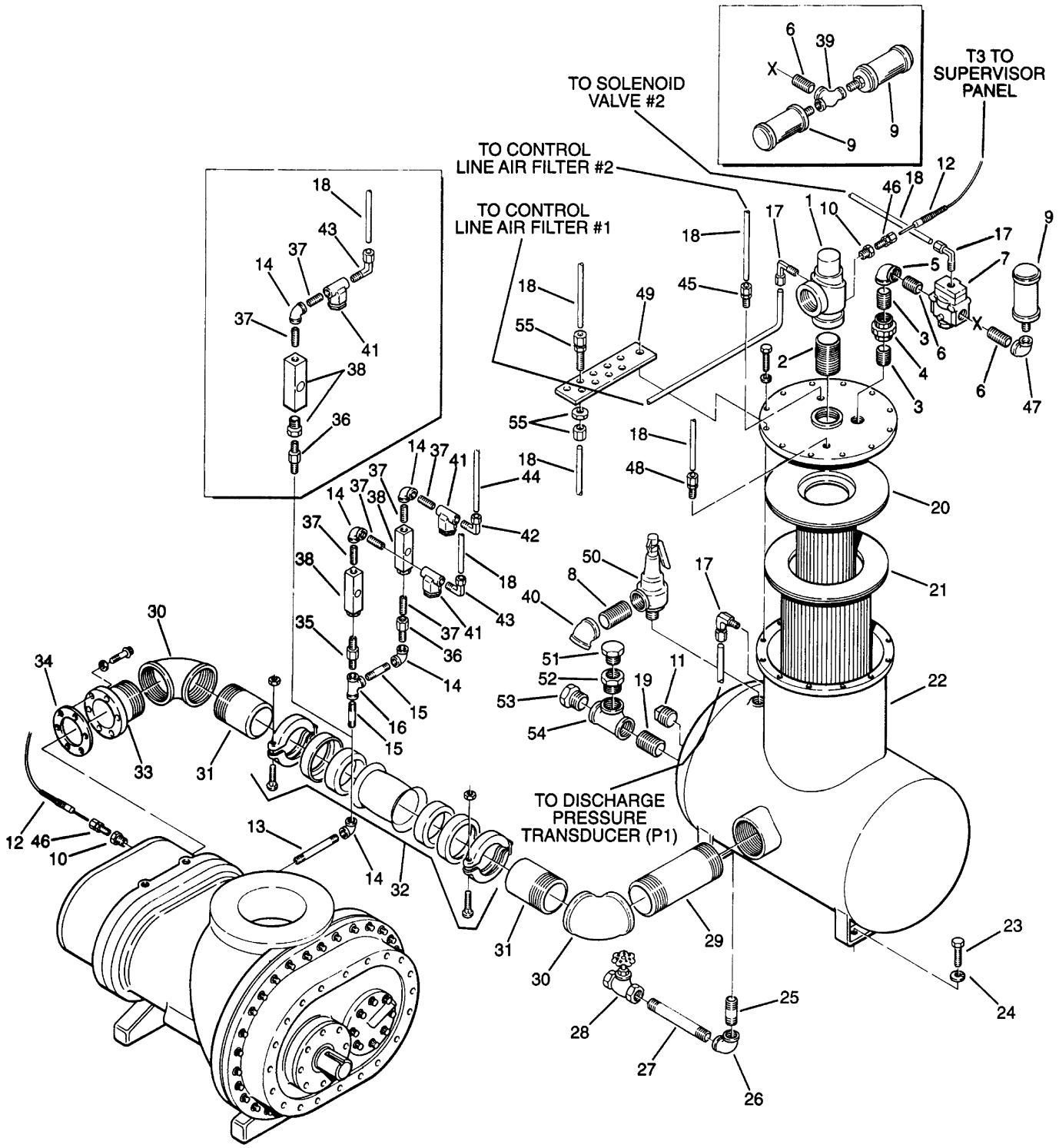
(IV) For maintenance on fluid stop valve no. 016742, order repair kit no. 001684.

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

(VI) For maintenance on thermal valve no. 041299, order repair kit no. 001084.

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

7.10 COMPRESSOR DISCHARGE SYSTEM



7.10 COMPRESSOR 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	1
3	nipple, pipe 1 1/4" x close	822220–000	2
4	union, pipe brass seat 1 1/4"	802515–050	1
5	elbow, reducing 1 1/4" x 1" 150#	801605–040	1
6	nipple, pipe 1" x close	822216–000	2
7	valve, blowdown 2–way normally closed **(II)**	409783	1
8	nipple, pipe 2" x close	822232–000	1
9	silencer, air 3/4"	040758	1
10	bushing, reducing hex 3/4" x 1/2"	802103–020	1
11	plug, pipe 1 1/2"	802815–060	2
12	probe, thermistor	250039–909	3
13	nipple, pipe 1/4" x 4"	823104–040	1
14	elbow, pipe 90° 1/4"	803515–015	4
15	nipple, pipe 1/4" x 1 1/2"	823104–015	2
16	tee, pipe 1/4"	804415–010	1
17	elbow, tube–m 1/4" x 1/4"	810504–025	1
18	tubing, steel double braze 1/4"	841015–004	10 ft.
19	nipple, pipe 1 1/2" x close	822224–000	1
20	element, separator (secondary) **(III)**	250034–129	1
21	element, plated (primary) **(IV)**	250034–123	1
22	tank, fluid separator 30" diameter	250002–038	1
23	capscrew, hex gr5 3/4"–10 x 2"	828612–200	4
24	washer, springlock regular 3/4"	837512–188	4
25	nipple, 3/4" x 3"	822212–030	1
26	elbow, pipe 3/4" 90° 150#	801515–030	1
27	nipple, 3/4" x 9"	822112–090	1
28	valve, globe 3/4" 125#	040520	1

(continued on Page 69)

(I) For maintenance on minimum pressure/check valve no. 250033–821,order repair kit no. 250018–262.

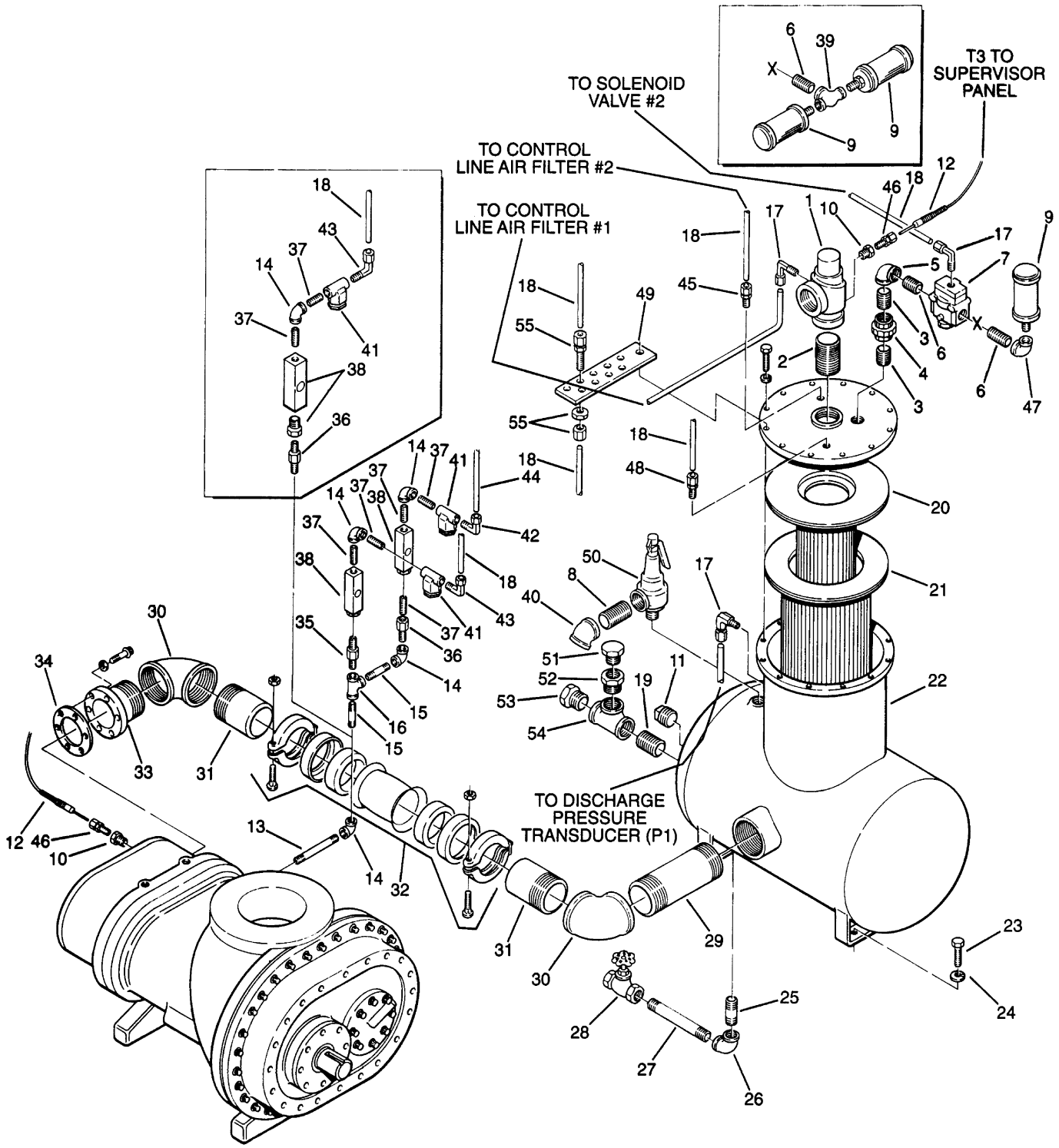
(II) For maintenance blowdown valve no. 409783, order repair kit no. 001667.

(III) For maintenance on separator element (secondary) no. 250034–129, order repair kit no. 250034–130.

(IV) For maintenance on separator element (primary) no. 250034–123, order repair kit no. 250034–124.

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

7.10 COMPRESSOR DISCHARGE SYSTEM



7.10 COMPRESSOR DISCHARGE SYSTEM (continued)

key number	*description*	*part number*	*quantity*
29	nipple, pipe 4” x 10”	822164–100	1
30	elbow, pipe 4” 90° 150#	801515–160	2
31	nipple, half 4” x 6”	822864–070	1
32	coupling, flexible 4” (std.) **(V)**	041085	1
	• coupling, flexible 4” (24KT) **(VI)**	046273	1
33	flange, threaded 4”	250001–462	1
34	gasket, discharge flange 4” npt	250002–379	1
35	orifice, 1/4”m x 1/4”m x .062	027443	1
36	orifice, restrictor 1/32”	040381	1
37	nipple, pipe 1/4” x close	823204–000	5
38	glass, sight	046559	2
39	tee, reducing 3/4” x 3/4” x 1”	802203–034	1
40	elbow, 45° 2”	801515–080	4
41	strainer, v–type 1” x 1 1/4” 300 psig (20.1 bar) **(VII)**	241771	2
42	elbow, tube 90°–m 5/16” x 1/4”	810505–025	1
43	elbow, tube 90°–m 1/4” x 1/4”	810504–025	1
44	tubing, steel double bronze 5/16”	841015–005	10 ft.
45	connector, tube 1/4” x 1/4”	810204–025	1
46	fitting, compression	250028–635	1
47	elbow, reducing 1” x 3/4”	801604–030	1
48	connector, flex 1/4”t x 1/4”p	020169	1
49	plate, bulkhead mounting	250014–757	1
50	valve, relief 1 1/2” 150#	407003	1
51	plug, o–ring boss 1 1/4”	040029	1
52	adapter, filler	020044	1
53	glass, fluid level sight 1 1/2”	040279	1
54	tee, pipe 1 1/2” 150#	802415–060	1
55	bulkhead 5/16”	811104–031	3
	•bulkhead 1/4”	811104–025	2

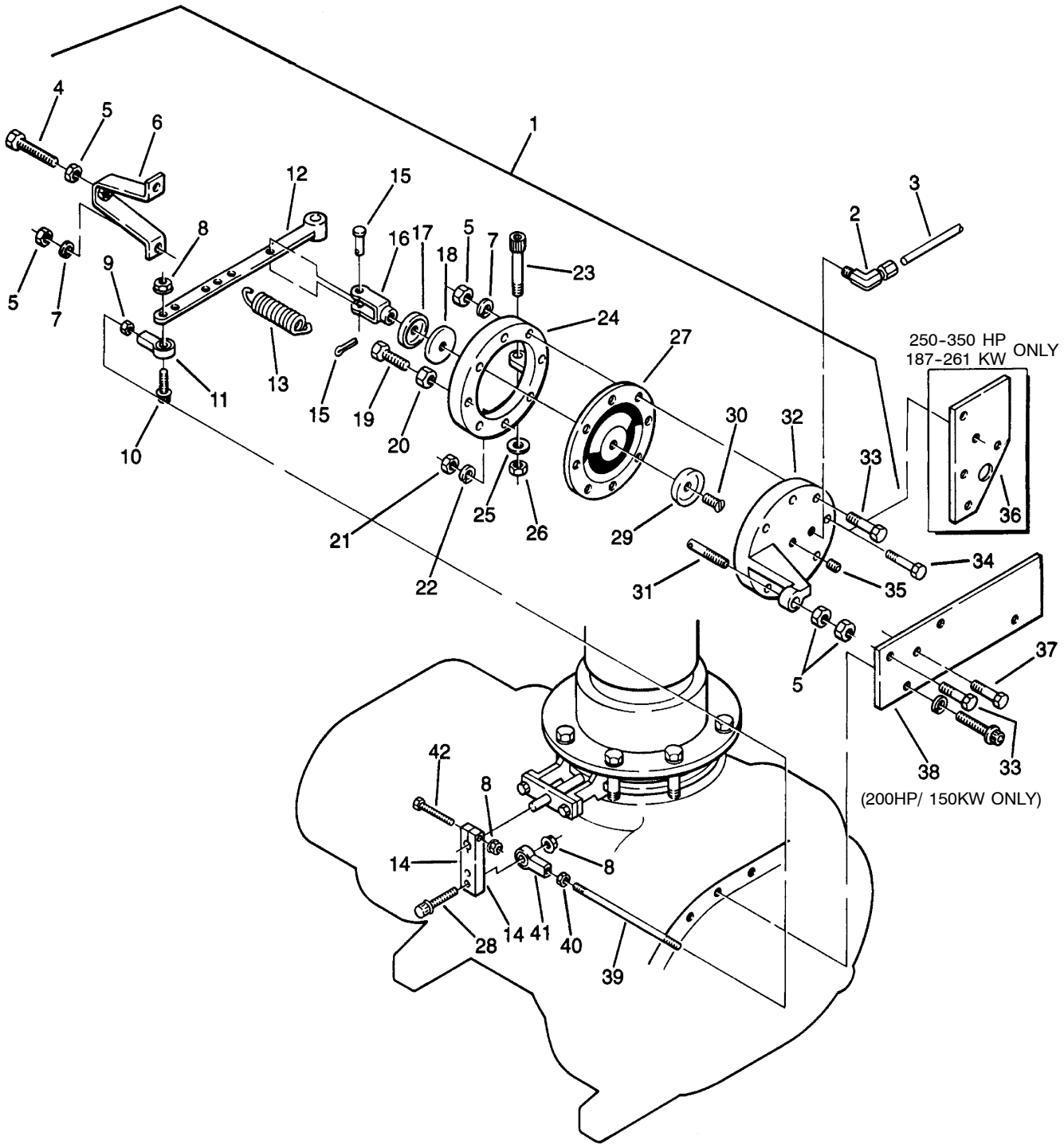
(V) For maintenance on flexible coupling (std.) no. 041085, order repair kit no. 041353.

(IV) For maintenance on flexible coupling (24KT) no. 046273, order repair kit no. 046291.

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

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

7.11 SULLICON CONTROL



7.11 SULLICON CONTROL

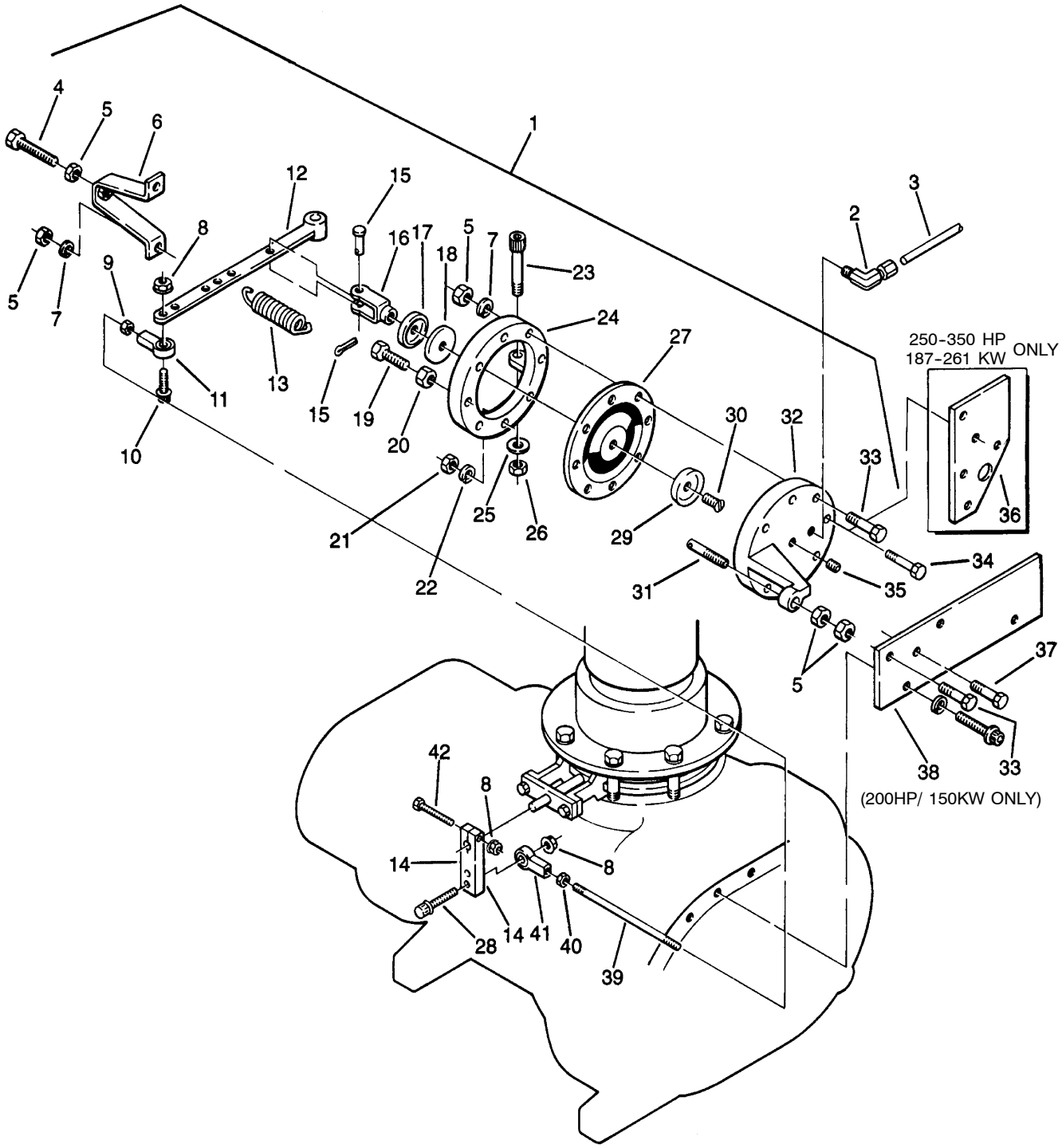
key number	*description*	*part number*	*quantity*
1	control, Sullicon (I)	011682–003	1
2	elbow, tube–m 1/4" x 1/4"	810504–025	12
3	tubing, steel double bronze 1/4"	841015–004	62 ft.
4	capscrew, hex head 3/8"–16 x 2 1/4"	828606–225	1
5	nut, hex unfinished 3/8"–16	824206–337	7
6	bracket, control stop	020864	1
7	washer, springlock regular 3/8"	837506–094	8
8	nut, hex flanged plated 5/16"–18	825305–283	3
9	nut, hex jam unfinished 5/16"–24–right hand	824605–195	1
10	capscrew, ferry head 5/16"–18 x 1 1/4"	828405–125	1
11	rod end, spherical 5/16"–right hand	040136	1
12	lever, control	011084	1
13	spring, control light 3 7/8"	250006–526	1
14	arm, control	250019–036	1
15	pin, yoke 1/4" with cotter pin	040065	1
16	yoke, rod end 1/4"–28	040138	1
17	plunger	020094	1
18	seal, cup	042538	1
19	screw, hex unmachined 5/16"–24 x 2"	831105–200	1
20	nut, hex jam unfinished 5/16"–24 –right hand	824605–195	1
21	nut, hex unfinished 5/16"–18	824205–273	1
22	washer, springlock regular 5/16"	837506–200	1
23	screw, machine shoulder 3/8" x 2"	830506–200	1
24	body, control	021635	1
25	washer, regular 3/8"	838206–071	1
26	nut, hex locking plated 5/16"–18	825505–166	1
27	diaphragm, Sullicon	250020–028	1
28	capscrew, ferry head 5/16" x 1 1/2"	828405–150	1
29	washer, back–up	021172	1
30	screw, sealing 1/4"–28 x 3/4"	041264	1
31	bolt, adjustable Sullicon spring	250009–134	1
32	cover, control	021654	1
33	capscrew, hex gr5 3/8"–16 x 2 1/2"	828606–250	4
34	capscrew, hex gr5 5/16"–18 x 2 1/2"	828605–250	3
35	plug, pipe 1/4" 3000#	807800–010	1

(continued on Page 73)

(I) For maintenance on Sullicon Control no. 011682–003, order repair kit no. 250020–353.

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

7.11 SULLICON CONTROL

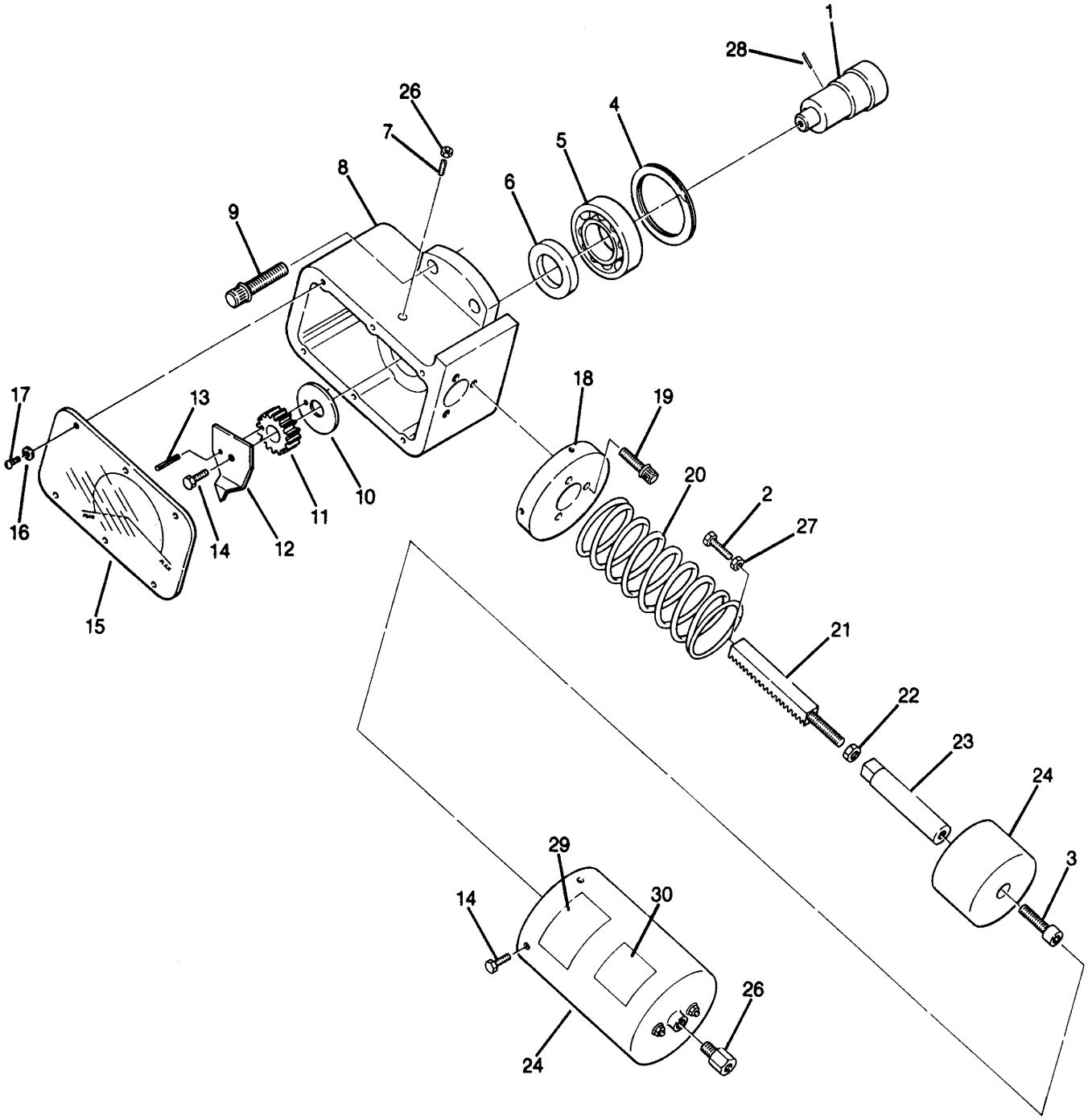


7.11 SULLICON CONTROL

key number	*description*	*part number*	*quantity*
36	bracket, Sullicon (250, 300, 350HP/187, 225, 261KW)	250007–789	1
37	capscrew, hex gr5 1/2"–13 x 1 1/4"	828608–125	2
38	bracket, Sullicon (200HP/150KW)	233402	1
39	rod, link 5/16"–24 x 8 3/4"	020863	1
	• rod, link 5/16"–24 x 9 1/2"	021287	1
40	nut, hex jam unfinished 5/16"–24	824705–195	1
41	rod end, spherical 5/16" – left hand	042004	1
42	capscrew, hex gr5 5/16"–18 x 1 3/4"	828605–175	1

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

7.12 COMPRESSOR ACTUATOR



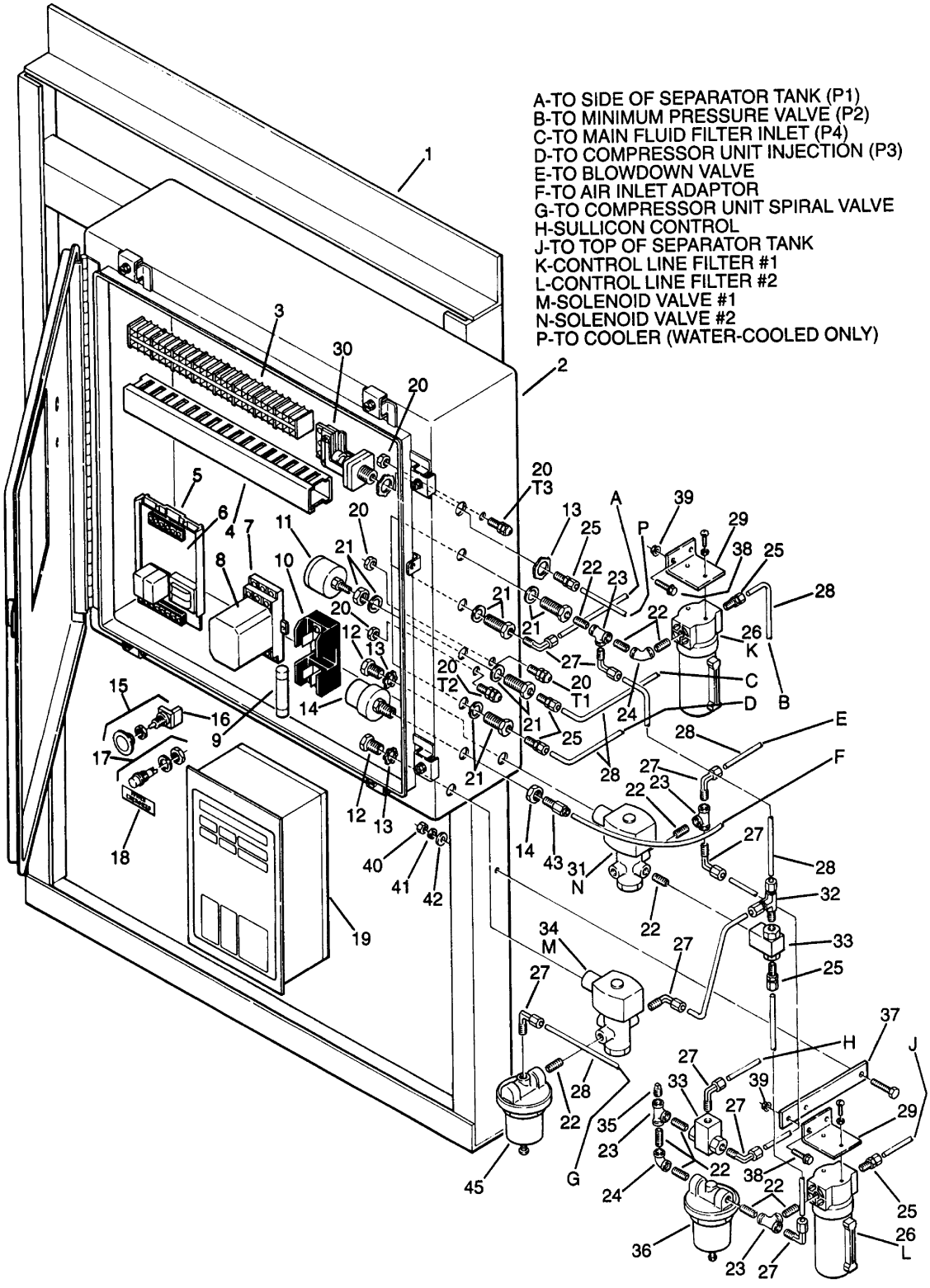
7.12 COMPRESSOR ACTUATOR

key number	*description*	*part number*	*quantity*
1	shaft, indicator	250030–979	1
2	screw, machine hex 1/4"–20 x 1 3/4"	830104–175	1
3	capscrew, socket 3/8"–16 x 1"	828906–100	1
4	ring, retaining Viton	826502–236	1
5	bearing, ball	499002–207	1
6	seal, lip	250016–200	1
7	set, screw 1/2"–13 x 1.62	250024–465	1
8	base, air cylinder	250016–725	1
9	capscrew, ferry head 1/2"–13 x 2 3/4"	828408–275	3
10	guide, rack	250016–199	1
11	gear, pinion	250016–196	1
12	indicator, actuator	250030–983	1
13	pin, roll	827404–100	1
14	capscrew, hex head gr8 1/4"–20 x 1/2"	828204–050	4
15	cover, adapter	250021–510	1
16	washer, regular #18	838201–045	6
17	screw, machine rod #8–32 x 1/2"	831601–050	6
18	mount, air cylinder	250016–188	1
19	capscrew, ferry head 5/16"–18 x 1 1/4"	828404–125	3
20	spring, seal 2 1/4"	250016–394	1
21	rack, gear	250016–197	1
22	nut, hex jam 3/8"–16	824906–227	1
23	shaft, air cylinder	250016–194	1
24	cylinder, air (I)	250016–183	1
25	orifice, .062 x .25m x .25f	028831	1
26	nut, hex unfinished 1/2"–13	824208–448	1
27	nut, hex jam 1/4"–20	824904–164	1
28	pin, roll unfinished 1/8" x 1/2"	827402–050	1
29	decal, warning actuator	250029–836	1
30	decal, actuator valve positioning	250029–784	1

(I) For maintenance on air cylinder no. 250016–183, order diaphragm repair kit no. 608311–001.

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

7.13 ELECTRO–PNEUMATIC CONTROL SYSTEM



7.13 ELECTRO–PNEUMATIC CONTROL SYSTEM

key number	*description*	*part number*	*quantity*
1	frame, control box support	250042–499	1
2	box, control	250038–777	1
3	block, terminal and track	041493	9
4	panduit	047322	1
5	track, snap mounting	250024–522	1
6	control, temperature dual	250039–911	1
7	pin, socket for 120V plug–in relay	045497	1
8	relay, control 120V 10A 3PDT	045496	1
9	fuse, non 5	241957	1
10	fuseholder	041147	1
11	transducer, pressure	250039–910	4
12	nipple, chase – conduit 1/2”	847815–050	2
13	locknut, conduit 1/2”	847200–050	11
14	switch, vacuum 22” wc	250014–656	1
15	switch, emergency stop	250028–588	1
16	block, control – normally closed	250027–125	1
17	light, power energized	250000–105	1
18	decal, power energized **(I)**	–	1
19	control, supervisor micro cntrlr **(II)**	250038–779	1
20	cord, grip	250023–496	3
21	bulkhead pipe 1/8”	841500–002	4
22	nipple, pipe 1/4” x close	822204–000	12
23	tee, pipe 1/4”	804415–010	5
24	elbow, pipe 90° x 1/4”	801515–010	2
25	connector, tube–m 1/4” x 1/4”	810204–025	9
26	filter, control line air 1/4” **(III)**	408389	2
27	elbow, tube–m 1/4” x 1/4”	810504–025	5
28	tubing, steel 1/4”	841015–004	62 ft.
29	angle, pressure switch	230452	1
30	switch, water pressure (w/c only)	043428	1
31	valve, solenoid 1/4” 3–way 115V **(IV)**	250038–668	1
32	tee, tube 1/4”	810904–025	1
33	valve, shuttle	408893	2

(continued on Page 79)

(I) For power energized decal part number, consult decal section in this manual.

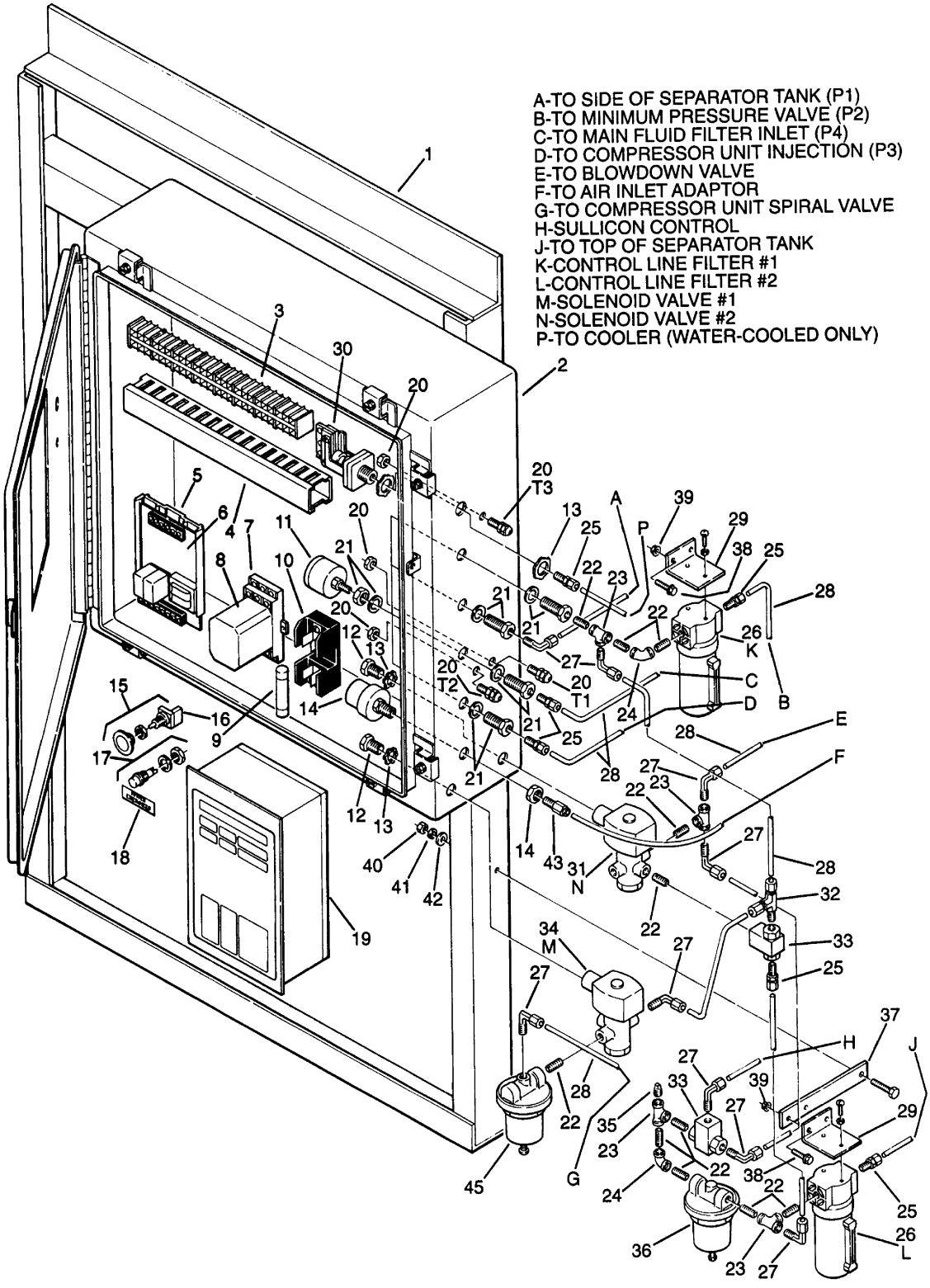
(II) Special control option per order may require different controller.

(III) For maintenance on control air filter no. 408389, order repair kit no. 001692.

(IV) For maintenance on solenoid valve no. 250038–668, order repair kit no. 250038–673 (valve) and repair kit no. 250031–738 (coil).

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

7.13 ELECTRO–PNEUMATIC CONTROL SYSTEM



7.13 ELECTRO–PNEUMATIC CONTROL SYSTEM (continued)

key number	*description*	*part number*	*quantity*
34	valve, solenoid 1/4" 3–way 115V **(V)**	409067	1
35	plug, pipe 1/4"	807800–010	2
36	valve, differential pressure regulator **(VI)**	406929	1
37	bracket, fluid stop valve	231584	1
38	screw, hex serrated washer 5/16" x 3/4"	829705–075	2
39	nut, hex plated 5/16"	824815–005	2
40	nut, hex unfinished 1/2"–13	824208–448	1
41	washer, springlock regular 1/2"	837508–125	1
42	washer, pl–b regular unfinished 1/2"	837308–112	1
43	connector, tube–m 1/4" x 1/8"	813604–125	1
44	tubing plastic 1/4"	250024–745	16 ft.
45	valve, differential pressure regulator (spiral valve) **(VII)**	408275	1

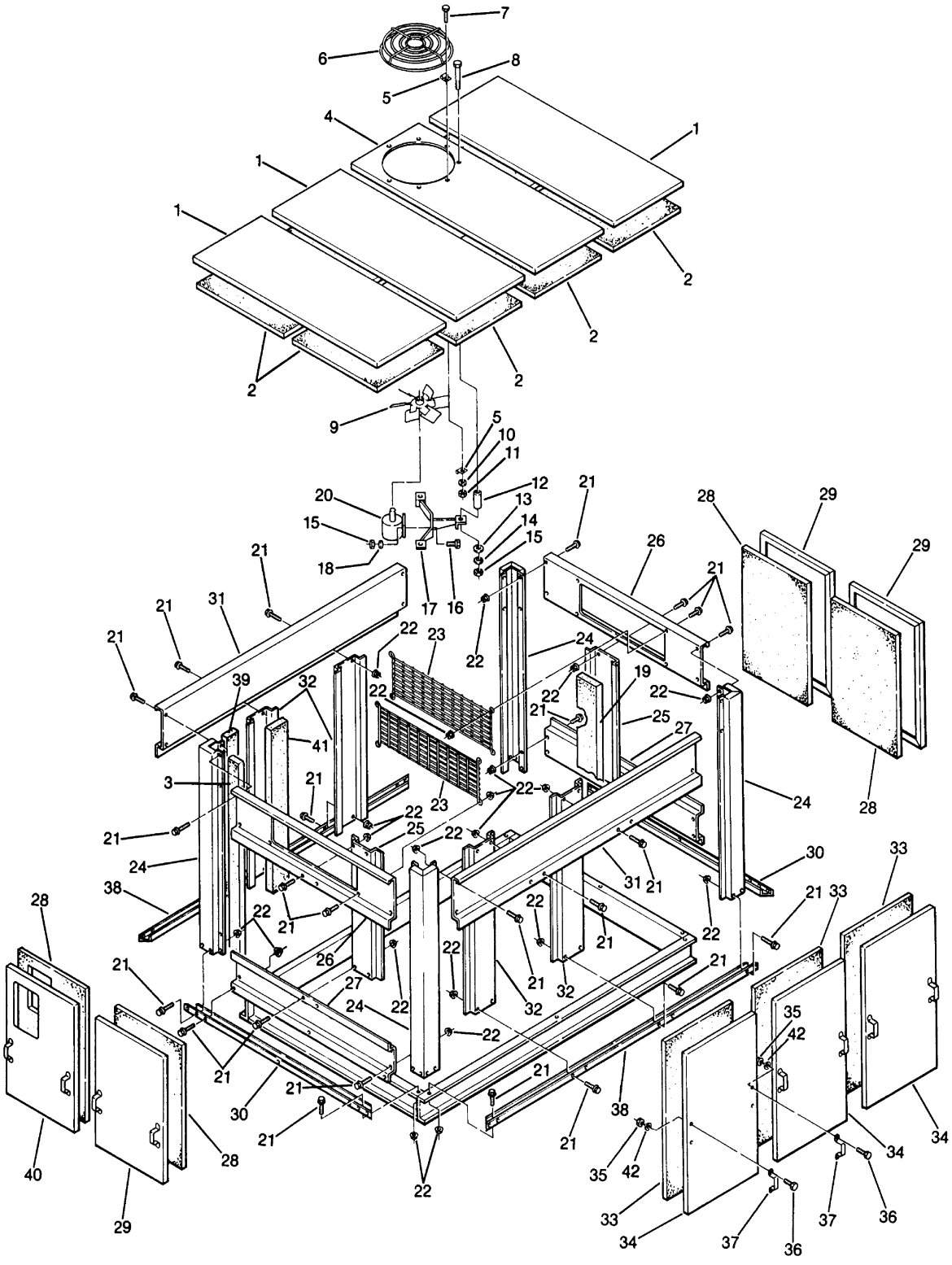
(V) For maintenance on solenoid valve no. 409067, orer repair kit no. 250010–377 (valve) and repair kit no. 250034–010 (coil).

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

(VII) For maintenance on differential pressure regulator valve no. 408275, order repair kit no. 250028–693.

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

7.14 ENCLOSURE



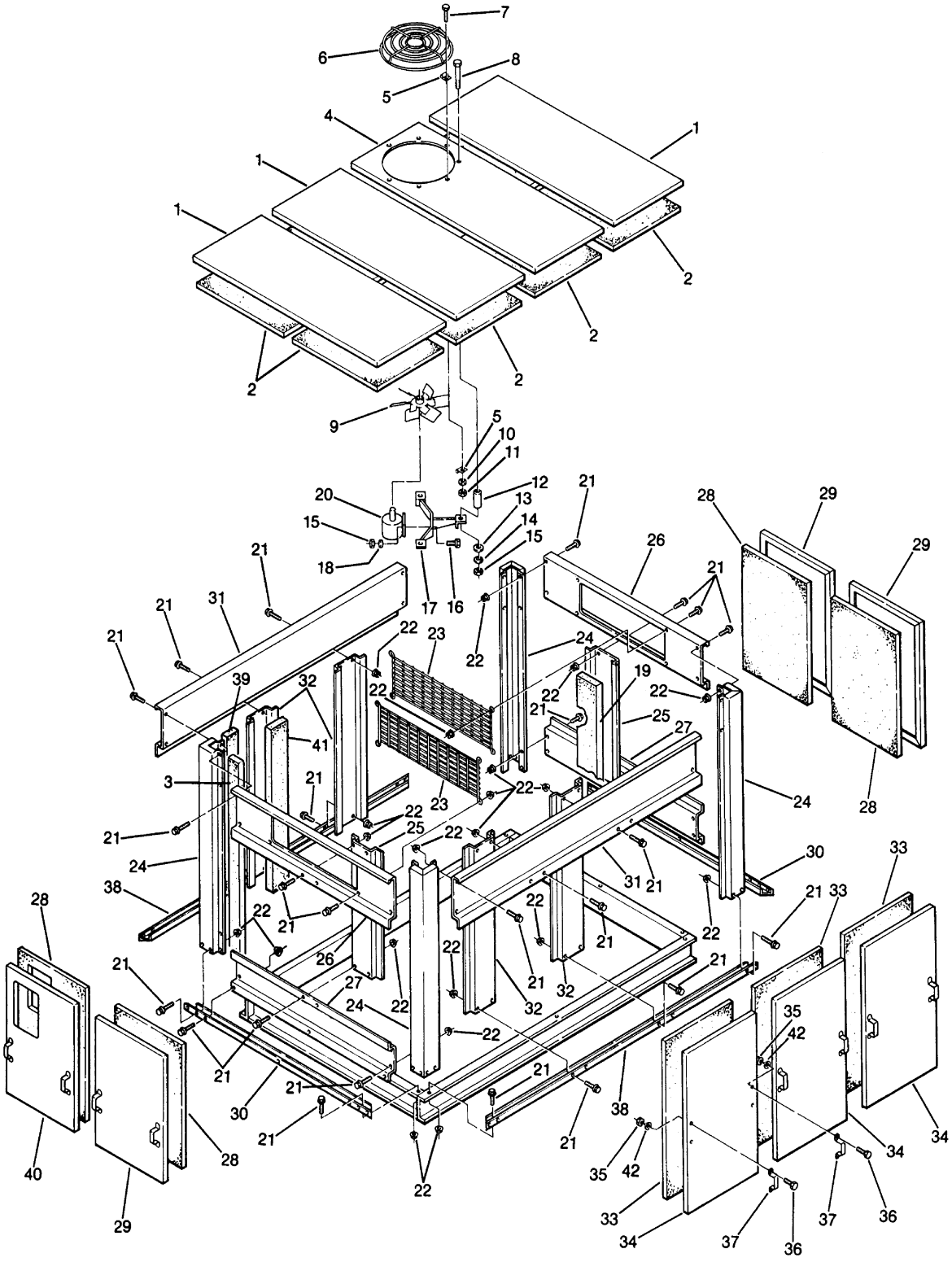
7.14 ENCLOSURE

key number	*description*	*part number*	*quantity*
1	panel, roof 30” x 87”	250007–112	3
2	panel, fiberglass 29 1/2” x 41”	047823–157	7
3	panel, fiberglass 4 1/2” x 74”	047823–180	4
4	panel, roof 30” x 87”	250007–113	1
5	clamp, speed tube 1/4”	043357	4
6	guard, fan 24”	041765	1
7	capscrew, hex gr5 5/16”–18 x 1”	828605–100	4
8	capscrew,hex gr5 3/8”–16 x 4”	828606–400	3
9	fan, 20”	245748	1
10	washer, springlock 5/16”	837505–078	4
11	nut, hex unfinished 5/16”–18	824205–273	4
12	spacer, fan support	227267	3
13	washer, regular unfinished 3/8”	837206–071	3
14	washer, springlock regular 3/8”	837506–094	3
15	nut, hex unfinished 3/8”–16	824206–337	3
16	capscrew, hex gr5 3/8”–16 x 1 1/4”	828606–125	4
17	support, fan motor	014613	1
18	washer, unfinished regular 3/8”	837206–071	4
19	panel, fiberglass 8 1/2” x 52”	047823–162	2
20	motor, .75HP/.56KW	050288	1
21	screw, hex serrated washer 5/16” x 3/4”	829705–075	116
22	nut, hex flange plated 5/16”–18 3/4”	825305–283	116
23	grille, enclosure end	249651	2
24	post, corner 6”	250007–117	4
25	support, end 8 5/8”	250007–124	2
26	panel, end header	250007–126	2
27	panel, bottom end	250007–122	2
28	panel, fiberglass 32 1/2” x 49”	047823–158	4
29	panel, access 33” x 50”	250007–123	3
30	channel, end sill	250007–121	2
31	panel, side header	250007–115	2
32	support, side 8 5/8”	250007–118	4
33	panel, fiberglass 29 1/2” x 60”	047823–154	6
34	panel, access	014661	6
35	nut, hex plated 1/4”–20	825204–226	44
36	capscrew, hex gr5 1/4”–20 x 1/2”	829104–050	44
37	handle, canopy	042262	22
38	channel, side sill	250007–119	2

(continued on Page 83)

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

7.14 ENCLOSURE

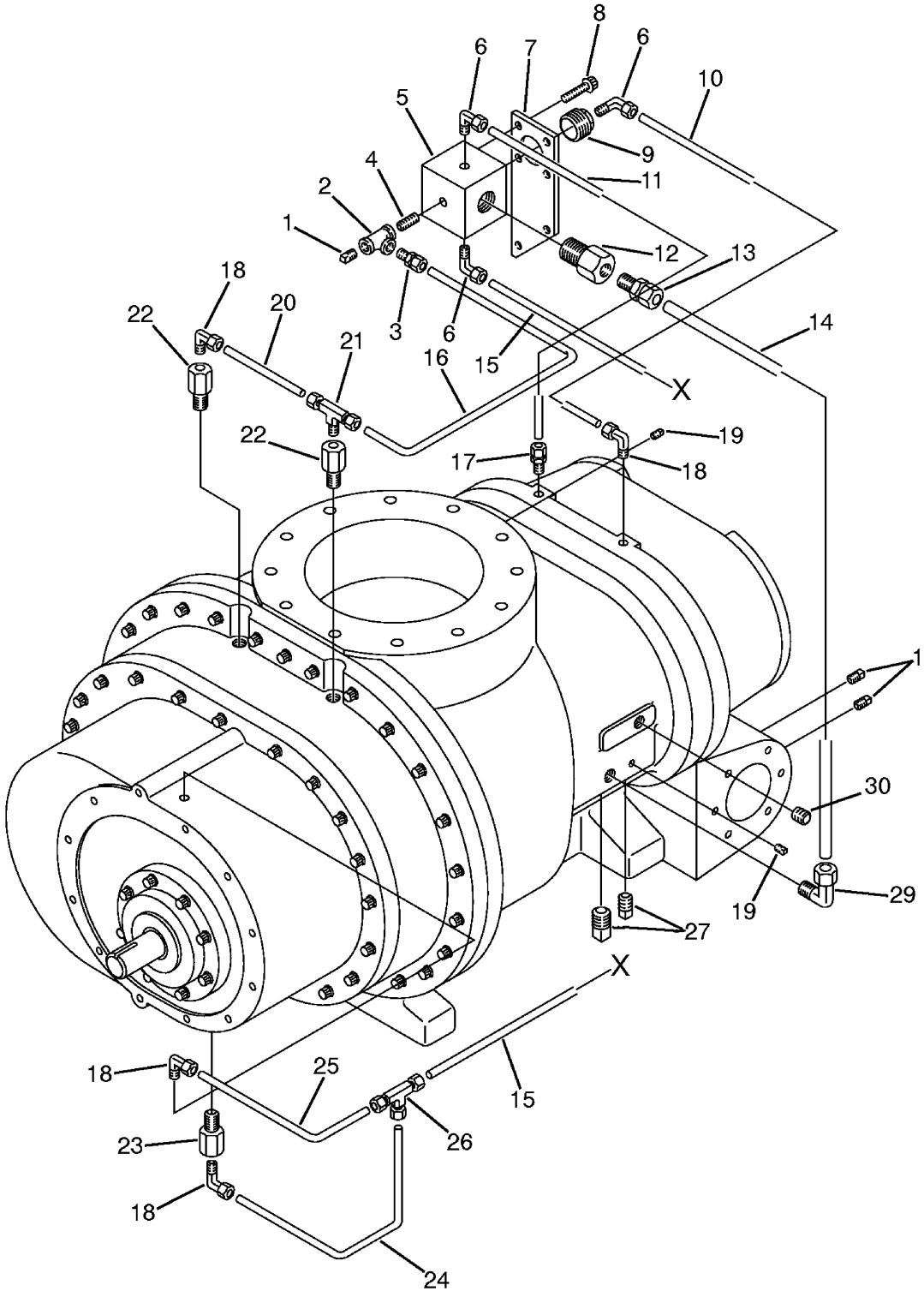


7.14 ENCLOSURE (continued)

key number	*description*	*part number*	*quantity*
39	panel, fiberglass 6” x 74”	047823–179	4
40	panel, access 33” x 50” – Supervisor	02250058–224	1
41	panel, fiberglass 8 1/2” x 62”	047823–161	6
42	washer, springlock 1/4”	837504–062	44

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

7.15 UNIT TUBING



ILLUSTRATIONS AND PARTS LIST

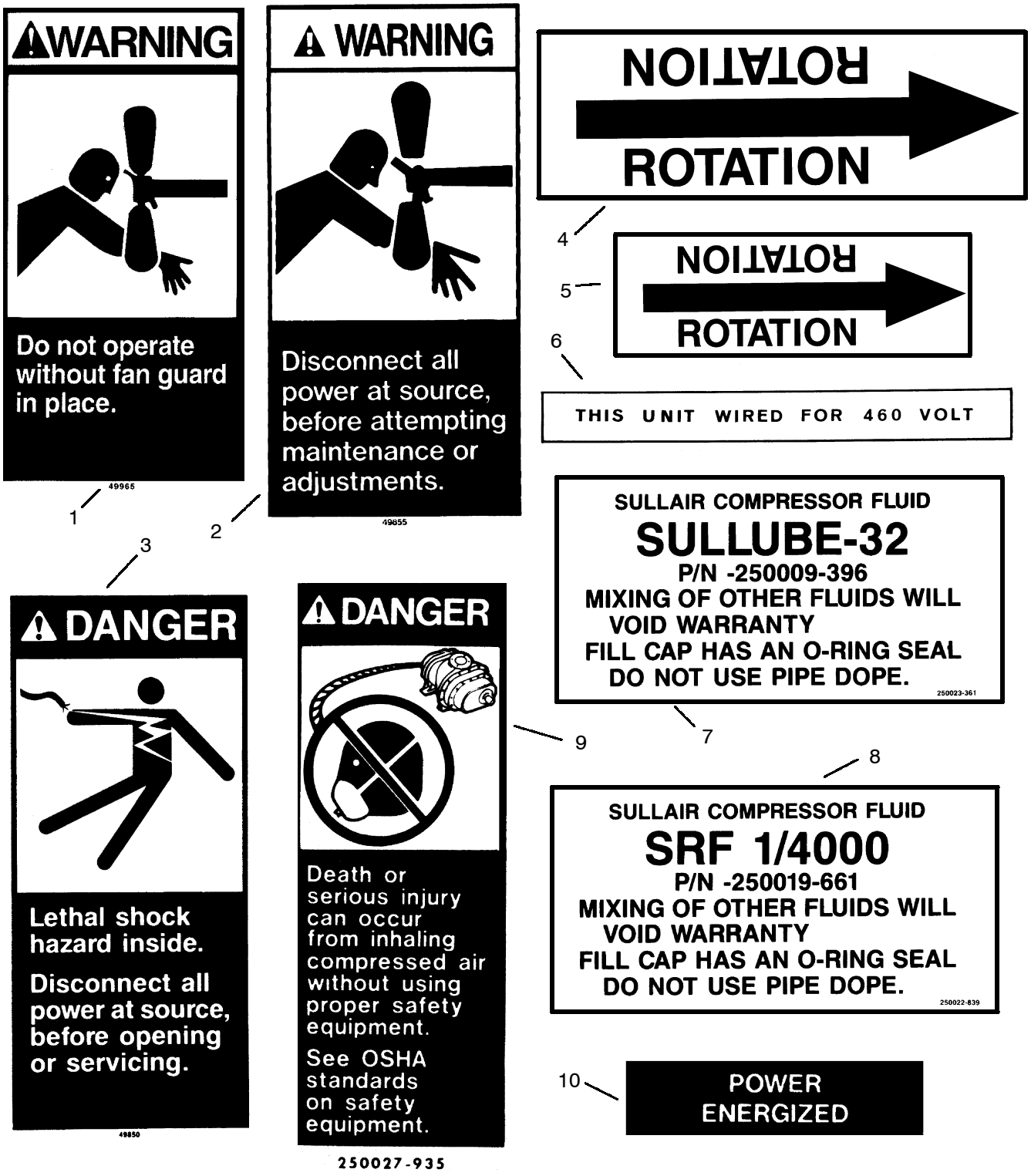
7.15 UNIT TUBING

key number	*description*	*part number*	*quantity*
1	plug, pipe 1/2”	807800–020	3
2	tee, pipe 1/2”	802415–020	1
3	connector, tube–M 1/2” x 1/2”	810208–050	1
4	nipple, pipe 1/2” x close	822208–000	1
5	manifold, 2” in x .5” out	250023–950	1
6	elbow, tube–M 1/2” x 1/2”	810508–050	3
7	bracket, manifold	250023–965	1
8	capscrew, hex GR8 3/8”–16 x 1”	828206–100	4
9	bushing, reducing hex 1 1/4” x 1/2”	802105–020	1
10	tube	250024–178	1
11	tube	250024–177	1
12	orifice, 1”M x 1”F x .562 (I)	250008–665	1
13	connector, tube–M 1” x 1”	810216–100	1
14	tube	250024–176	1
15	tube	250024–179	1
16	tube	250024–180	1
17	connector, tube–M 1/2” x 3/8”	810208–038	1
18	elbow, tube–M 1/2” x 3/8”	810508–038	4
19	plug, pipe 1/4”	807800–010	2
20	tube	250009–459	1
21	tee, tube–M 1/2” x 3/8”	810808–038	1
22	orifice, 3/8”m x 3/8”f x .094	250009–384	2
23	orifice, 3/8”M x 3/8”F x .375”	250009–460	1
24	tube	250009–456	1
25	tube	250009–455	1
26	tee, tube union 1/2”	811408–050	1
27	plug, pipe 1”	807800–040	1
28	plug, pipe 3/4”	807800–030	1
29	elbow, tube–F 1” x 1”	810416–100	1
30	plug, pipe hex socket 3/4”	499046–005	1

(I) This orifice can vary from 0.156 to 0.625 depending on unit. Consult factory with serial number of your compressor.

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

7.16 DECAL GROUP



7.16 DECAL GROUP

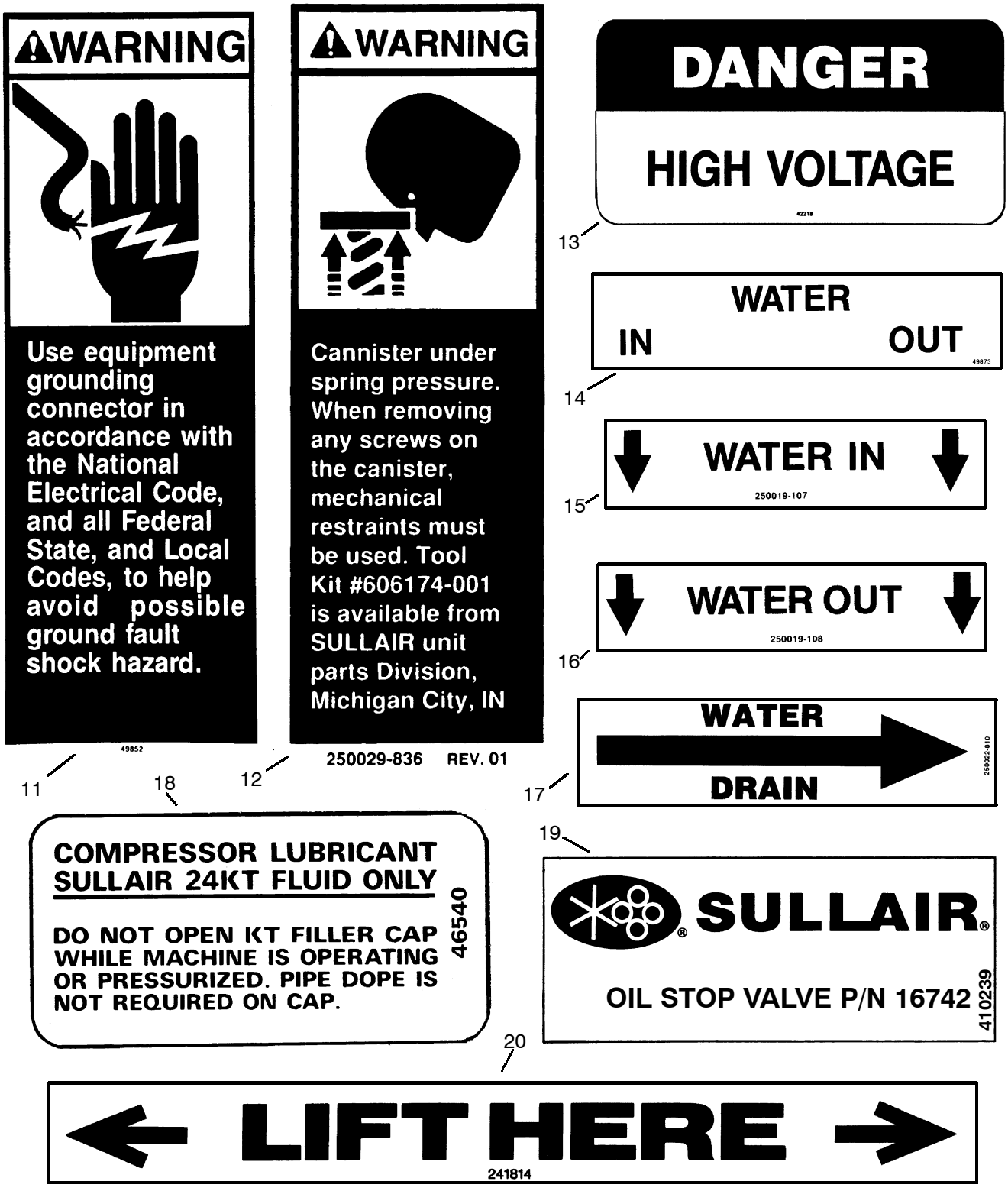
key number	*description*	*part number*	*quantity*
1	sign, warning sever – fan	049855	2
2	sign, warning sever–fan port	049965	1
3	sign, danger electrocution	049850	1
4	decal, rotation	250021–286	1
5	decal, rotation	250021–564	1
6	decal, 460 volt	040631	1
	•decal, 380 volt (**I**)	241926	1
	•decal, 415 volt (**I**)	241927	1
	•decal, 525 volt (**I**)	02250047–898	1
	•decal, 575 volt (**I**)	041124	1
7	decal, compressor fluid Sullube–32	250023–361	1
8	decal, compressor fluid SRF 1/4000	250022–839	1
9	sign, air breathing (danger)	250027–935	1
10	sign, power energized	249544–049	1

(Continued on Page 89)

(**I**) Decal is for optional voltage (not shown).

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

7.16 DECAL GROUP



7.16 DECAL GROUP (Continued)

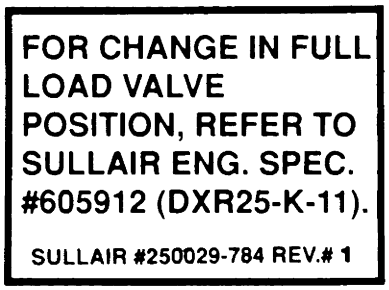
key number	*description*	*part number*	*quantity*
11	sign, warning ground fault	049852	1
12	decal, warning actuator	250029–836	1
13	decal, danger high voltage	042218	1
14	decal, water inlet–outlet	049873	1
15	decal, water in	250019–107	1
16	decal, water out	250019–108	1
17	decal, water drain	250022–810	1
18	decal, compressor fluid 24KT	046540	1
19	decal, fluid stop valve P/N 016742	410239	1
20	decal, fork lifting	241814	4

(Continued on Page 91)

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

7.16 DECAL GROUP

21



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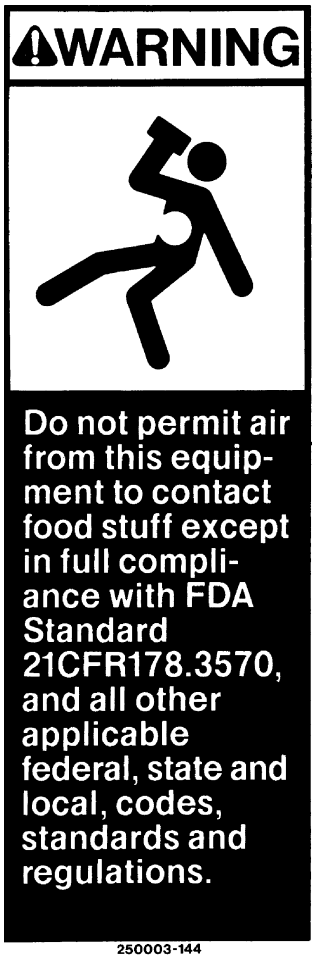
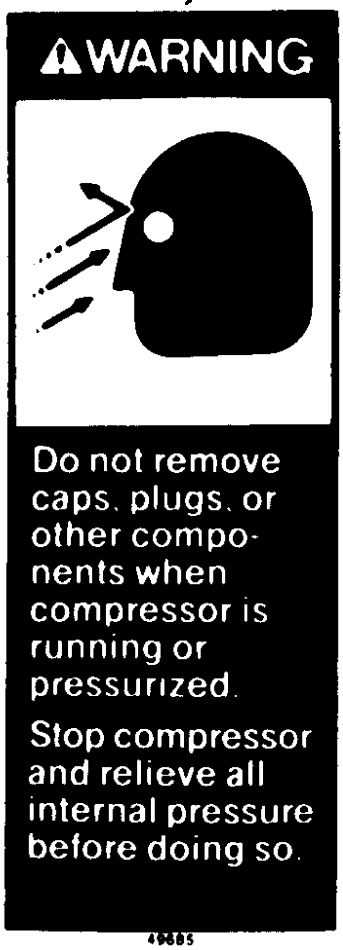


250003-144

24



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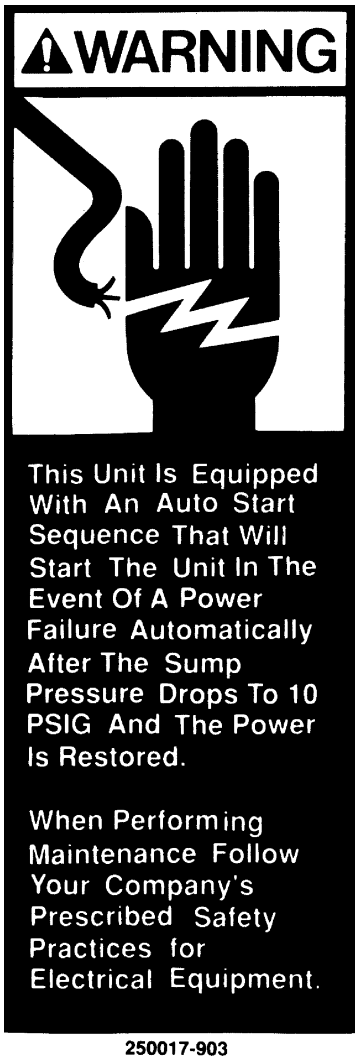


250017-903

7.16 DECAL GROUP (Continued)

key number	*description*	*part number*	*quantity*
21	decal, ISO 9001	02250057–624	1
22	decal, actuator valve positioning	250029–784	1
23	sign, warning “food grade” lube	250003–144	1
24	sign, warning “compressor fluid fill cap”	049685	1
25	decal, warning auto start	250017–903	1

(Continued on Page 93)

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

7.16 DECAL GROUP

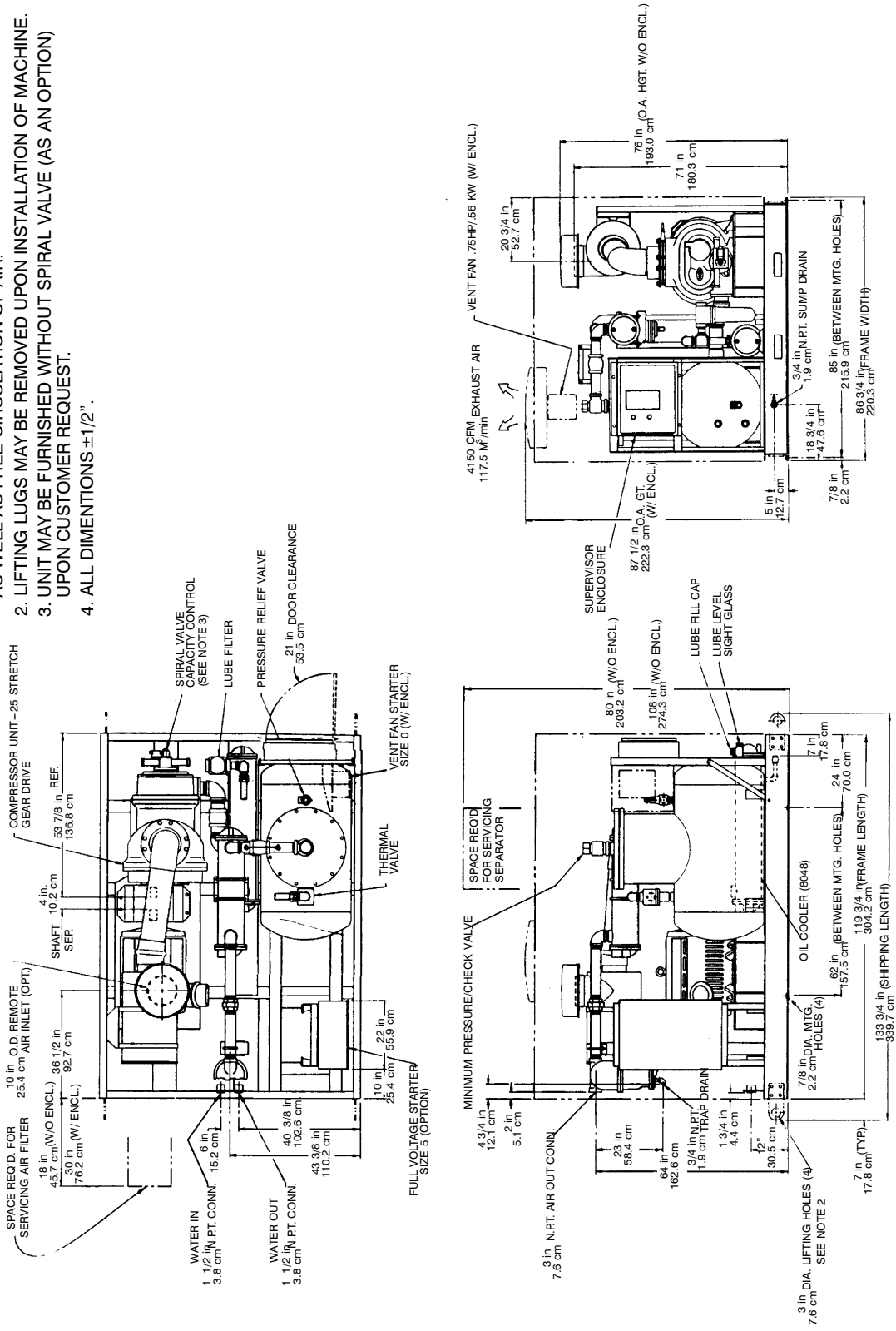
7.16 DECAL GROUP (Continued)

key number	*description*	*part number*	*quantity*
26	decal, logo SRF 1/4000	250021–483	1
27	decal, 24KT (not shown)	02250061–022	1
28	decal, autostart	041065	1
29	decal, LS–25S	02250061–361	1
30	decal, fluid sample	250022–675	1
31	decal, Sullair logo	02250059–048	2

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

7.17 DIMENSIONS – 200HP/150KW (WATER–COOLED)

NOTES:
1. ALLOW 4 FT/1.2 M CLEARANCE ALL AOUND FOR ACCESS AS WELL AS FREE CIRCULATION OF AIR.
2. LIFTING LUGS MAY BE REMOVED UPON INSTALLATION OF MACHINE.
3. UNIT MAY BE FURNISHED WITHOUT SPIRAL VALVE (AS AN OPTION) UPON CUSTOMER REQUEST.
4. ALL DIMENTIONS ±1/2".

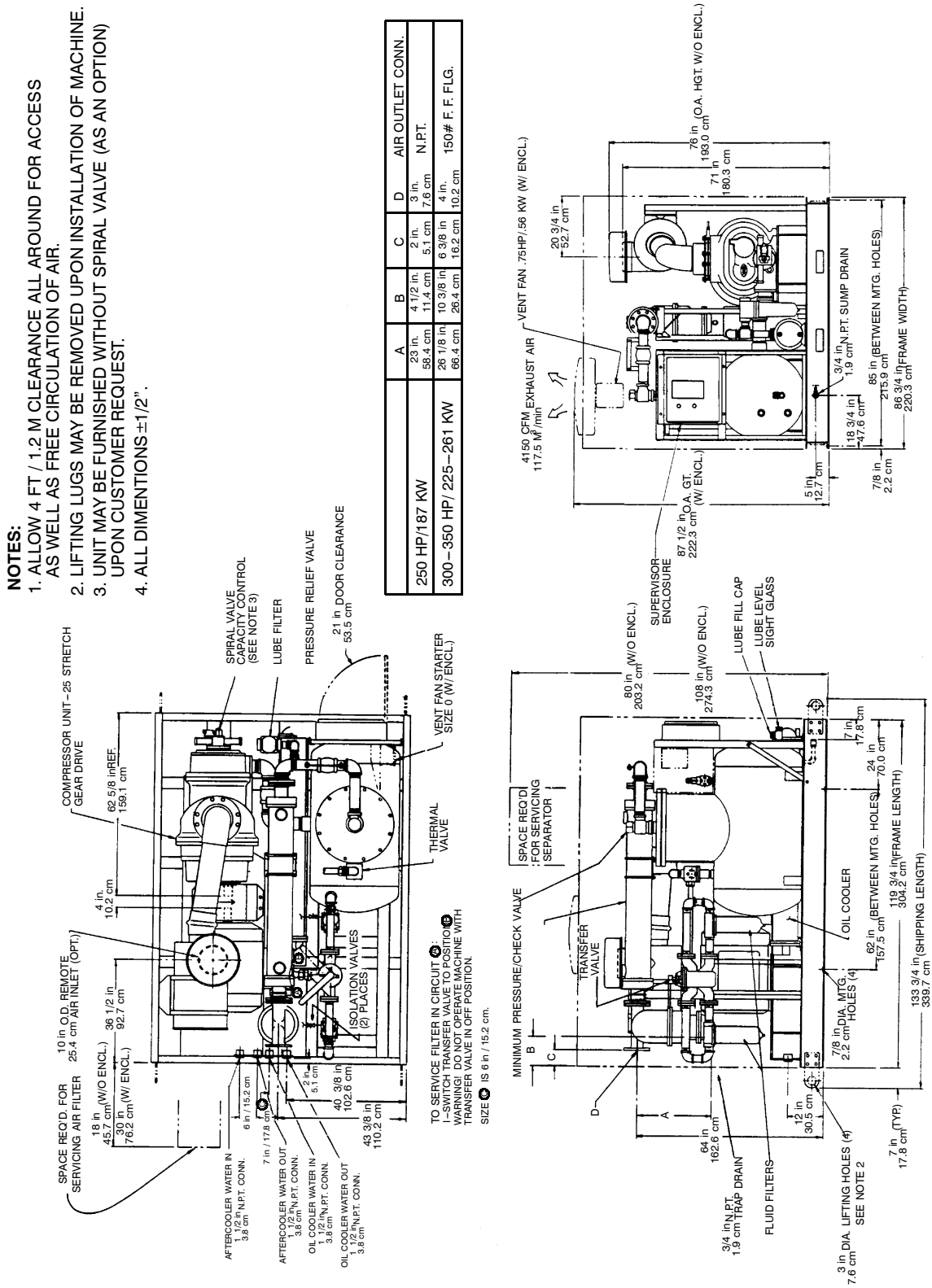


ILLUSTRATIONS AND PARTS LIST

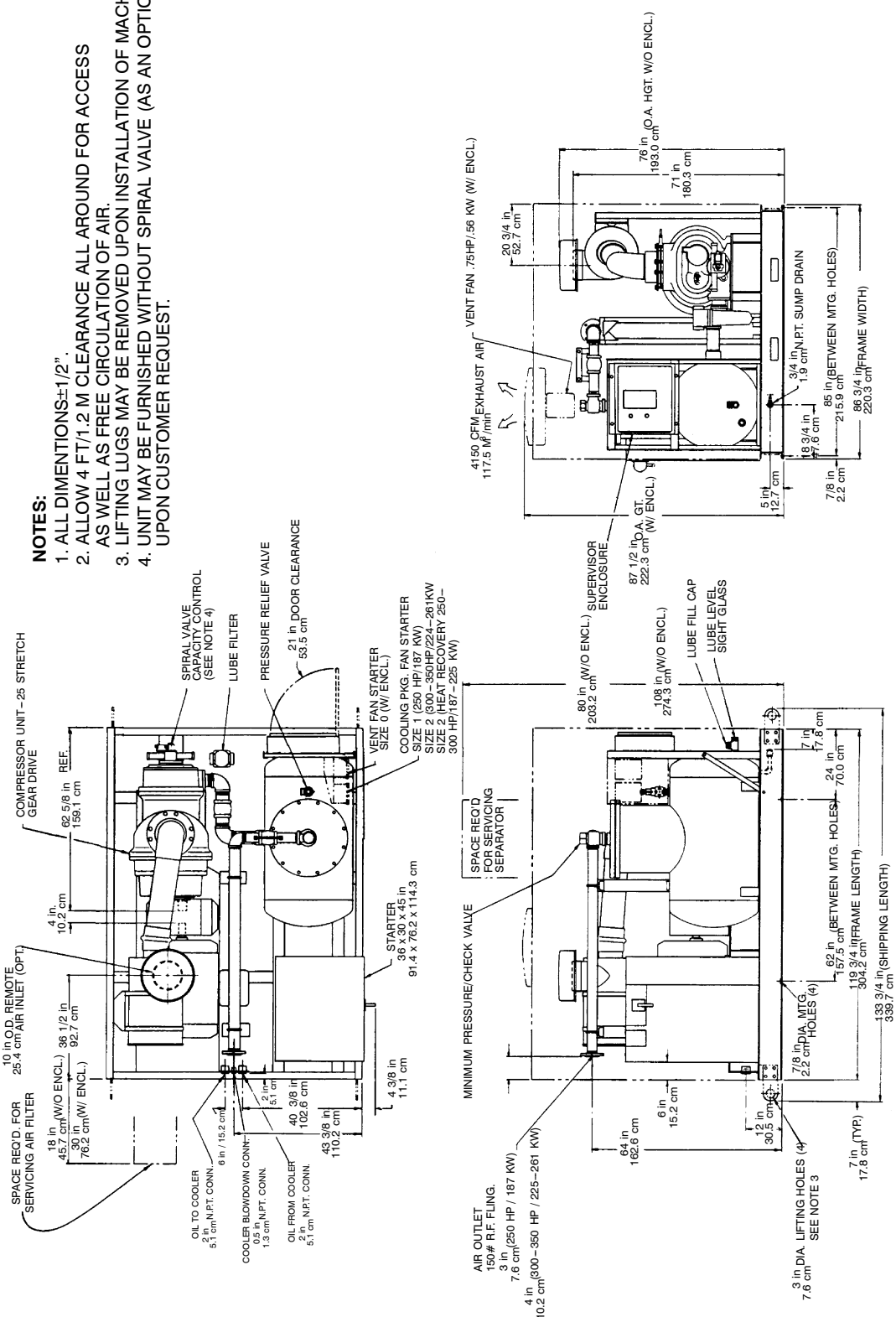
7.18 DIMENSIONS – 250 – 350HP/187 – 261KW (WATER–COOLED)

NOTES:
1. ALLOW 4 FT / 1.2 M CLEARANCE ALL AROUND FOR ACCESS AS WELL AS FREE CIRCULATION OF AIR.
2. LIFTING LUGS MAY BE REMOVED UPON INSTALLATION OF MACHINE.
3. UNIT MAY BE FURNISHED WITHOUT SPIRAL VALVE (AS AN OPTION) UPON CUSTOMER REQUEST.
4. ALL DIMENTIONS ±1/2".

	A	B	C	D	AIR OUTLET CONN.
250 HP/187 KW	23 in. 58.4 cm	4 1/2 in. 11.4 cm	2 in. 5.1 cm	3 in. 7.6 cm	N.P.T.
300–350 HP/ 225–261 KW	26 1/8 in. 66.4 cm	10 3/8 in. 26.4 cm	6 3/8 in 16.2 cm	4 in. 10.2 cm	150# F. F. FLG.

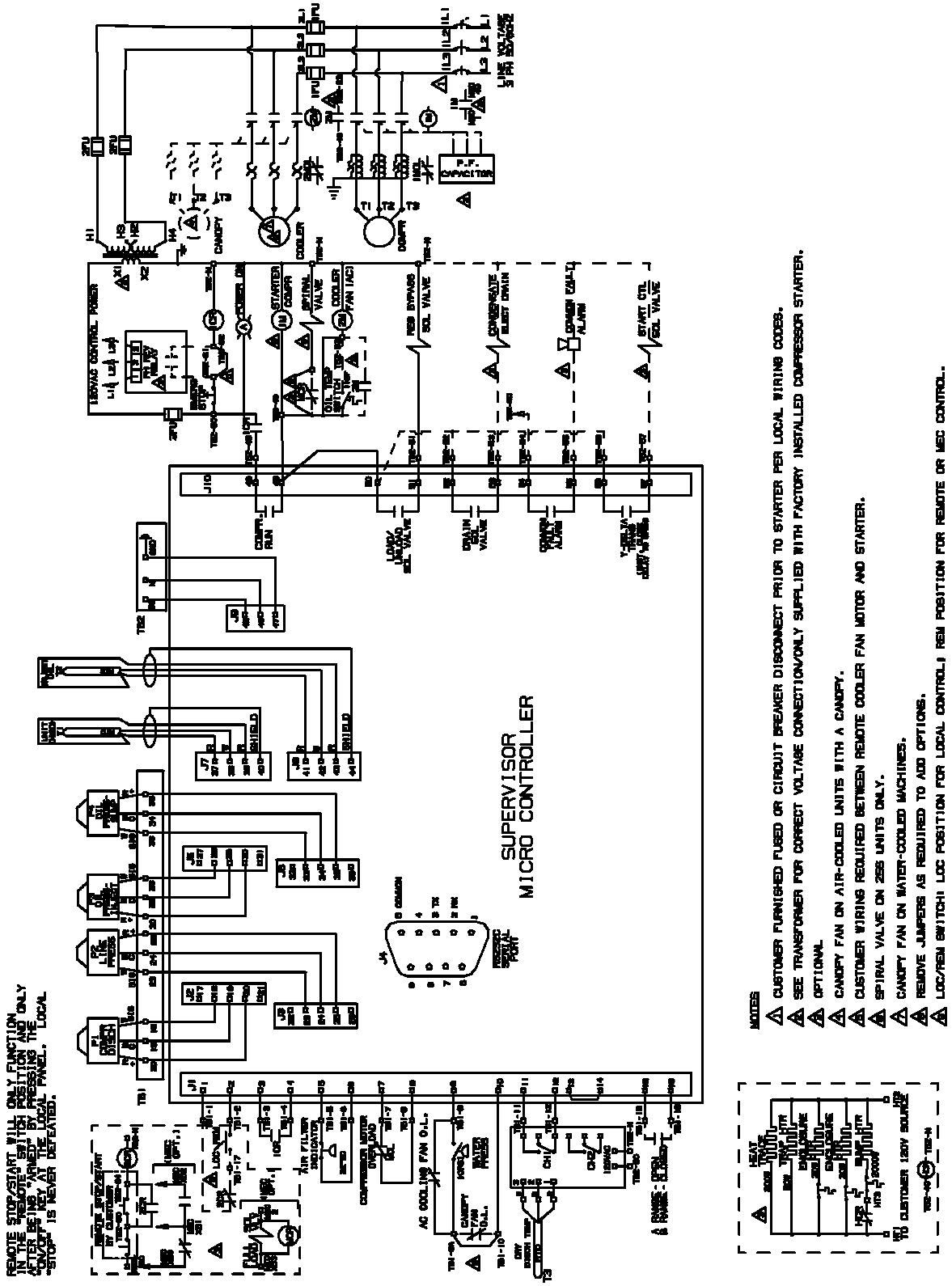


7.19 DIMENSIONS – 300HP/225KW (AIR–COOLED)

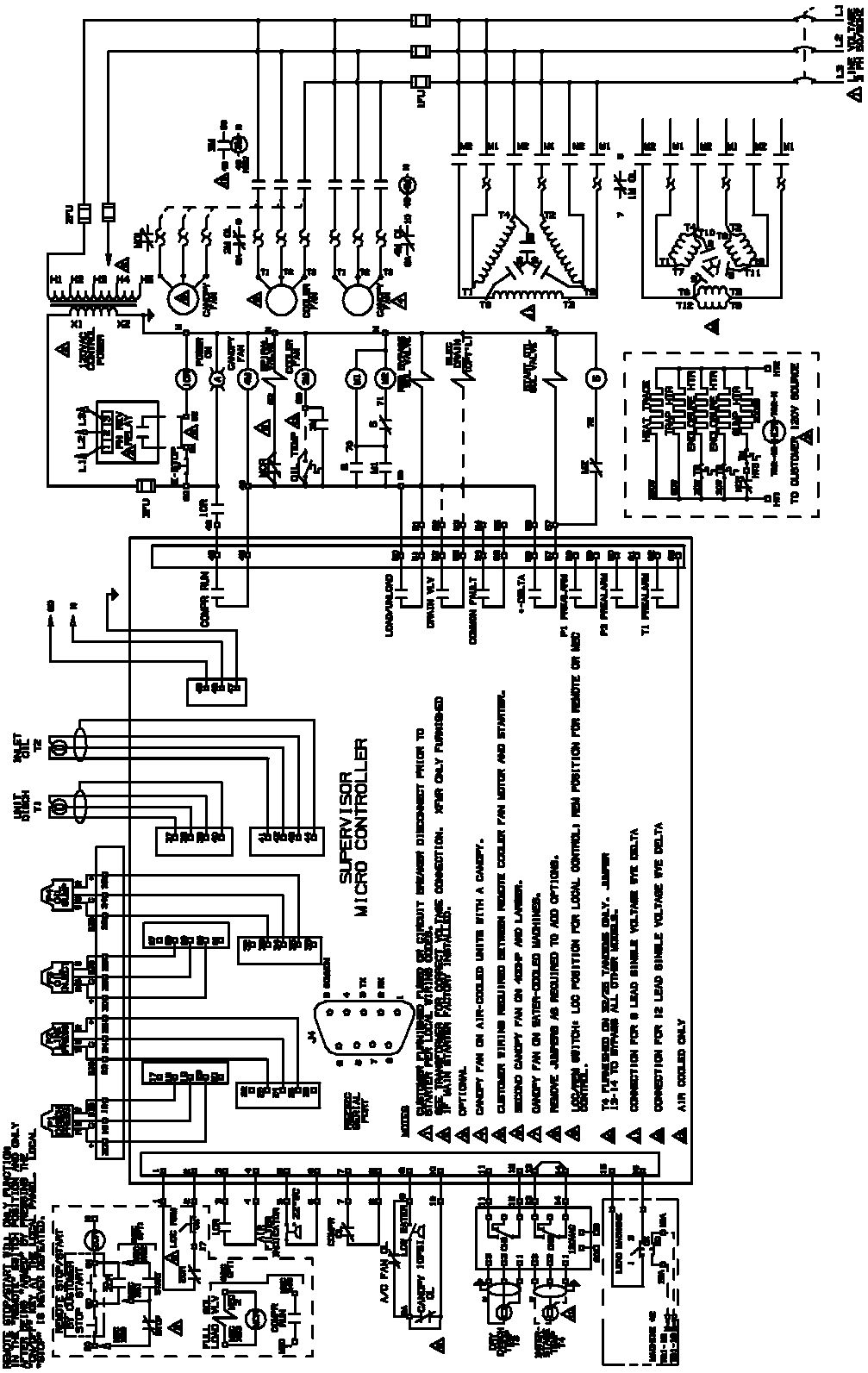


ILLUSTRATIONS AND PARTS LIST

7.20 WIRING DIAGRAM



7.21 WIRING DIAGRAM – WYE–DELTA



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