SULLAIR

INDUSTRIAL AIR COMPRESSOR

LS-200

V-200

VCC-200

100HP/ 75KW

AIR-COOLED AND WATER-COOELD

STANDARD AND 24KT

OPERATOR'S MANUAL AND PARTS LIST

KEEP FOR FUTURE REFERENCE

SERIES MODEL DESIGNATIONS:

LS ***L**ubricated **S**crew Compressor*

V ***V**ariable Speed Drive Compressor*

VCC ***V**ariable **C**apacity **C**ompressor*

Part Number
02250145-907

AIR CARE
SEMINAR TRAINING

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

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

For detailed course outlines, schedule and cost information contact:

Sullair Corporate Training Department

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219-879-5451 (ext. 5363)
www.sullair.com

- Or Write -

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

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NOTES

Section 1
SAFETY

1.1 GENERAL

OPERATOR IS REQUIRED TO READ ENTIRE INSTRUCTION MANUAL

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

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

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

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

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

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

1.2 PERSONAL PROTECTIVE EQUIPMENT

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

1.3 PRESSURE RELEASE

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

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

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

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

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

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

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

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

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

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

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

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

1.4 FIRE AND EXPLOSION

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

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

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

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

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

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

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

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

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

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

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

1.5 MOVING PARTS

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

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

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

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

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

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

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

1.6 HOT SURFACES, SHARP EDGES AND SHARP CORNERS

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

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

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

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

1.7 TOXIC AND IRRITATING SUBSTANCES

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

⚠ DANGER

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

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

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

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

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

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

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

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

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

1.8 ELECTRICAL SHOCK

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

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

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

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

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

1.9 LIFTING

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

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

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

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

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

F. DO NOT attempt to lift in high winds.

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

H. Lift compressor no higher than necessary.

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

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

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

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

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

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

1.10 ENTRAPMENT

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

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

Section 2
DESCRIPTION

2.1 INTRODUCTION

Your new Sullair flood-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 8 (Maintenance) to see how to keep your air compressor in top operating condition. Should any questions arise which cannot be answered in the following text, call your nearest Sullair representative or the Sullair Corporation Service Department.

2.2 DESCRIPTION OF COMPONENTS

Refer to Figure 2-1A or 2-1B. The components and assemblies of the air compressor are clearly shown. The complete package includes compressor, electric motor, starter, compressor inlet system, compressor discharge system, compressor lubrication and cooling system, capacity control system, instrument panel, aftercooler, a combination separator and trap, all mounted on a heavy gauge steel frame.

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

On water-cooled models, a shell and tube heat exchanger is mounted on the compressor frame. Fluid is piped into the heat exchanger where compression heat is removed from the fluid. Another similar heat exchanger cools the compressed air.

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

2.3 SULLAIR COMPRESSOR UNIT, FUNCTIONAL DESCRIPTION

Sullair air compressors feature the Sullair compressor unit, a single-stage, positive displacement, flood lubricated-type compressor. This unit provides continuous compression to meet your needs.

NOTE

With a Sullair compressor, there is no maintenance or inspection of the internal parts of the compressor unit permitted in accordance with the terms of the warranty.

Sullair 24KT compressors are filled with a long life lubricant. In the event a change of fluid is required, use only Sullair 24KT fluid.

NOTE

Mixing, changing or adding other lubricants within the compressor unit may void the air-end warranty.

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

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

1. As coolant, it controls the rise of air temperature normally associated with the heat of compression.
2. Seals between the rotors and the stator and also between the rotors themselves.
3. 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 through an aftercooler and separator then to your service line while the fluid is being cooled in preparation for reinjection.

2.4 COMPRESSOR COOLING AND LUBRICATION SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figures 2-2A, 2-2B, 2-3A, 2-3B and 2-3C. The **Cooling and Lubrication System** (air-cooled version) consists of a **fan**, **fan motor**, **radiator-type after-cooler/fluid cooler**, **full flow fluid filter**, **thermal valve**, and **interconnecting piping** and **tubing**.

NOTE

Standard thermal valve temperature is 175ºF (79ºC). Thermal valve temperature is 190ºF (88ºC) for HH, XH and 24KT machines.

For water-cooled models, two **shell and tube heat exchangers** are substituted for the radiator-type cooler listed above.

The pressure in the receiver/sump causes fluid flow by forcing the fluid from the high pressure area of the sump to an area of lower pressure in the com-

Section 2
DESCRIPTION

Figure 2-1A Sullair Rotary Screw Air Compressor- Air-cooled (typical component layout)

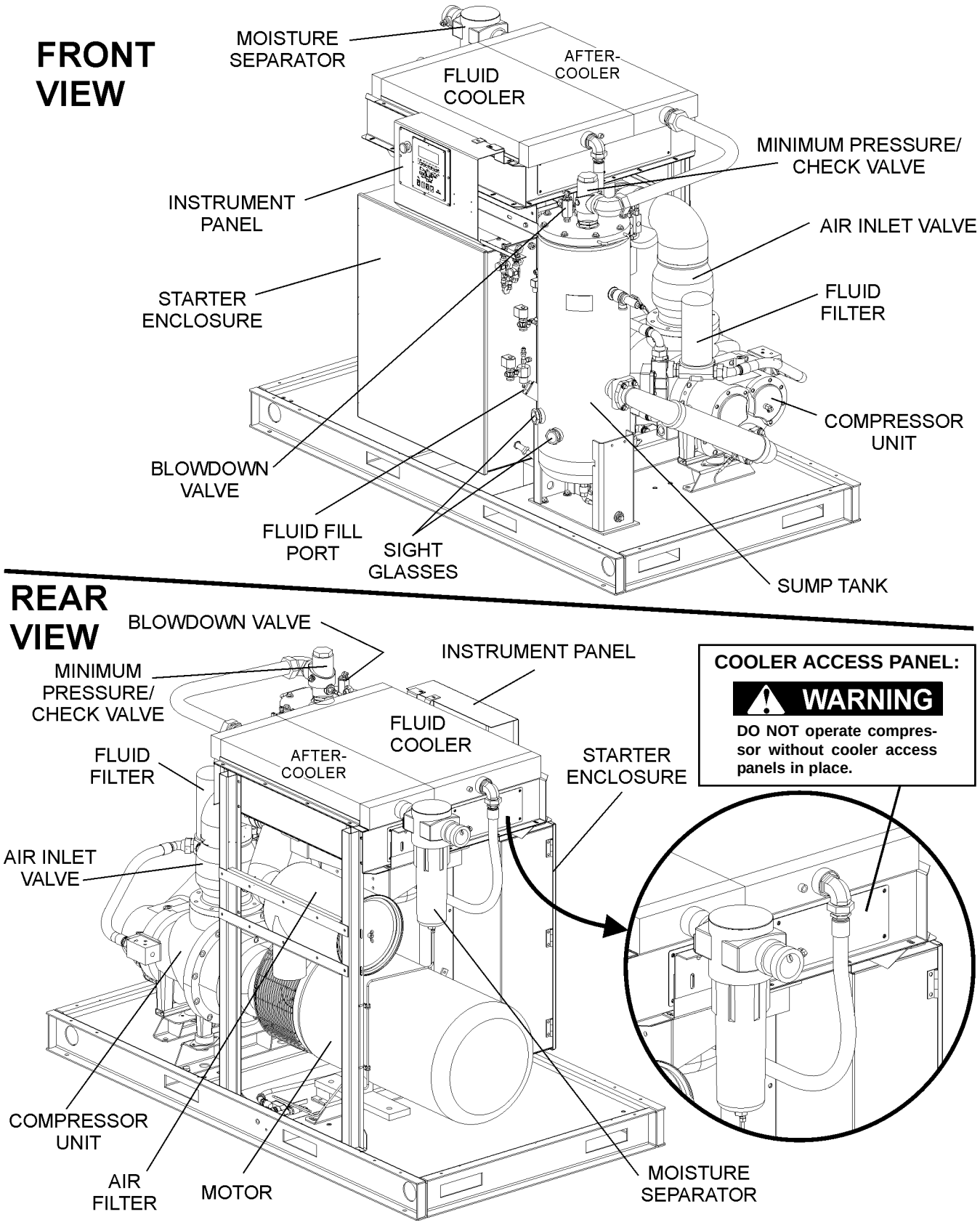
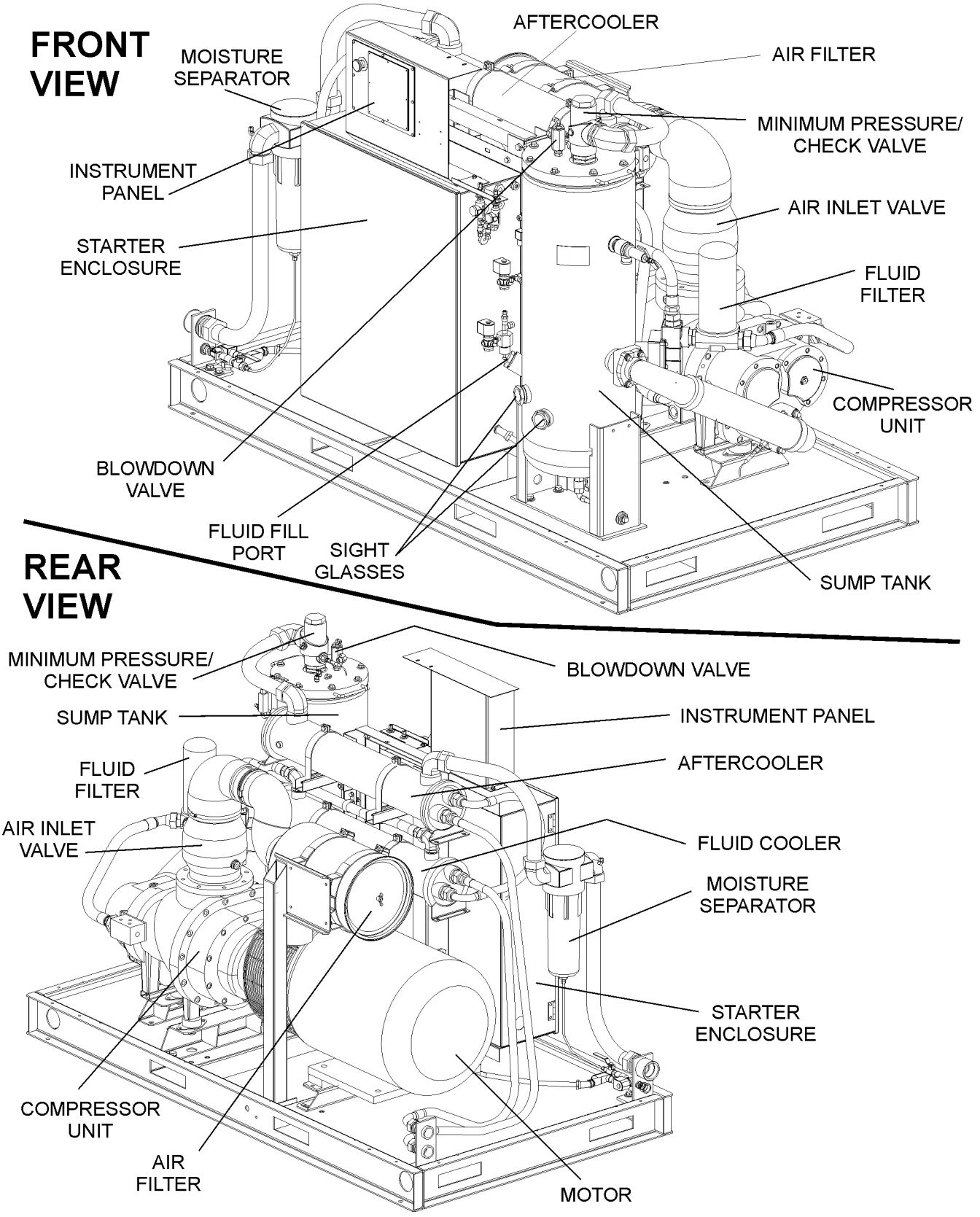


Figure 2-1B Sullair Rotary Screw Air Compressor- Water-cooled (typical component layout)



pressor unit.

Fluid flows from the bottom of the receiver/sump to the thermal valve. The thermal valve is fully open when the fluid temperature is below 175ºF (79ºC).

The fluid passes through the thermal valve, the main filter and directly to the compressor unit where it lubricates, cools and seals the rotors and the compression chamber.

As the discharge temperature rises above 175ºF (79ºC), due to the heat of compression, the thermal valve begins to close and a portion of the fluid then flows through the cooler. From the cooler the fluid flows to the main filter and then on to the compressor unit.

A portion of the fluid flowing to the compressor is routed to the anti-friction bearings which support the rotors inside the compressor unit. Prior to entering the compressor unit, this fluid is taken through the fluid filter, thus assuring properly filtered lubricant for bearing supply.

The fluid filter has a replacement element and an integral pressure bypass valve. An indicator on the instrument panel shows when the filter needs servicing. This indicator has a pressure setting lower than that of the bypass valve. The indicator should be checked with compressor running at full system pressure.

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

2.5 COMPRESSOR DISCHARGE SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figures 2-2A and 2-2B. The compressor unit discharges the compressed air/fluid mixture into the combination receiver/sump.

The receiver has three basic functions:

1. It acts as a primary fluid separator.
2. Serves as the compressor fluid sump.
3. Houses the final fluid separator.

The compressed air/fluid mixture enters the receiver and is directed against the internal baffle. 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 surface of the separator element as the compressed air flows through the separator. A return line (or scavenge tube) leads from the bottom of the separator element to the inlet region of the compressor unit. Fluid collecting on the bottom of the separator is returned to the compressor by a pressure differential between the receiver and the compressor inlet. A visual sight glass is located on the return line to observe this fluid flow. There is also an orifice in this return line (protected by a strainer) to assure proper flow. A secondary separator element with a separate return line, strainer, sight glass and orifice further reduce the fluid carry-over to less than 2 ppm (parts per million). An indicator, located on the instrument panel, shows if abnormal pressure drop through the separator develops. At this time, separator element replacement is necessary. This indicator must be checked with the compressor running fully loaded.

A minimum pressure/check valve, located downstream from the separator, assures a minimum receiver pressure of 50 psig (3.5 bar) during loaded conditions. This pressure is necessary for proper air/fluid separation and proper fluid circulation.

A terminal check valve is incorporated into the minimum pressure/check valve to prevent compressed air in the service line from bleeding back into the receiver on shutdown and during operation of 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 the sump tank rating. A temperature switch will shut down the compressor if the discharge temperature reaches 235ºF (113ºC).

⚠ WARNING

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

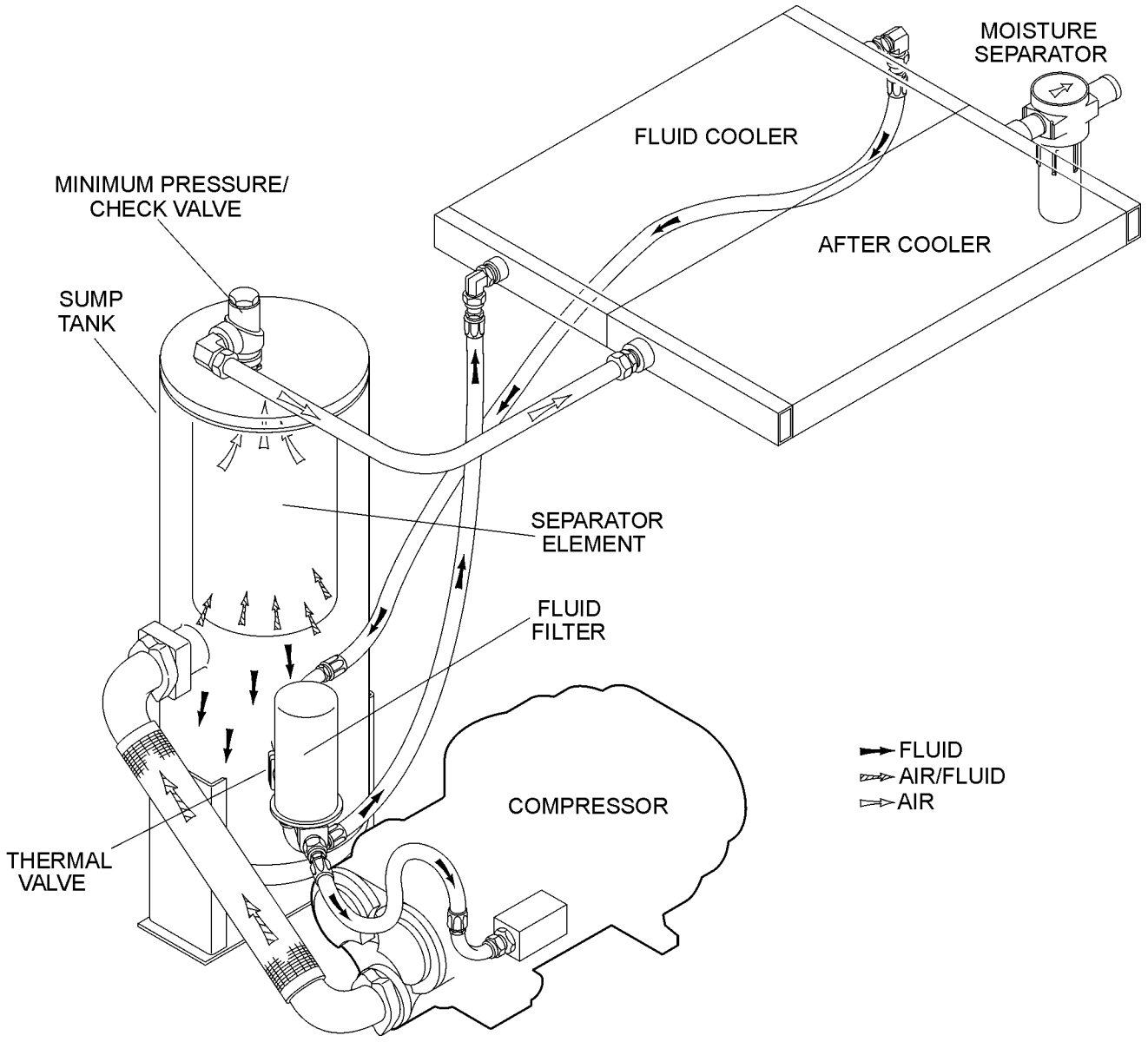
Stop compressor and relieve all internal pressure before doing so.

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

2.6 CONTROL SYSTEM, FUNCTIONAL DESCRIPTION- SUPERVISOR CONTROLLER™

Refer to Figures 2-3A (without spiral valve) or 2-3B (with spiral valve). 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 **solenoid valve**, **regulator valve** and an **inlet valve**. The functional description of the Control System is described below in four distinct phases of operation. The following description text applies to all 200 Series compressors with optional Supervisor Controller. For explanatory pur-

Figure 2-2A Compressor Fluid Cooling/Lubrication and Discharge System- Air-cooled



poses, this description will apply to a compressor with an operating range of 100 to 110 psig (6.9 to 7.6 bar). A compressor with any other pressure range would operate in the same manner except stated pressures.

NOTE

Always refer to the machine nameplate for designed operating pressure.

START MODE - 0 TO 50 PSIG (0 TO 3.5 BAR)

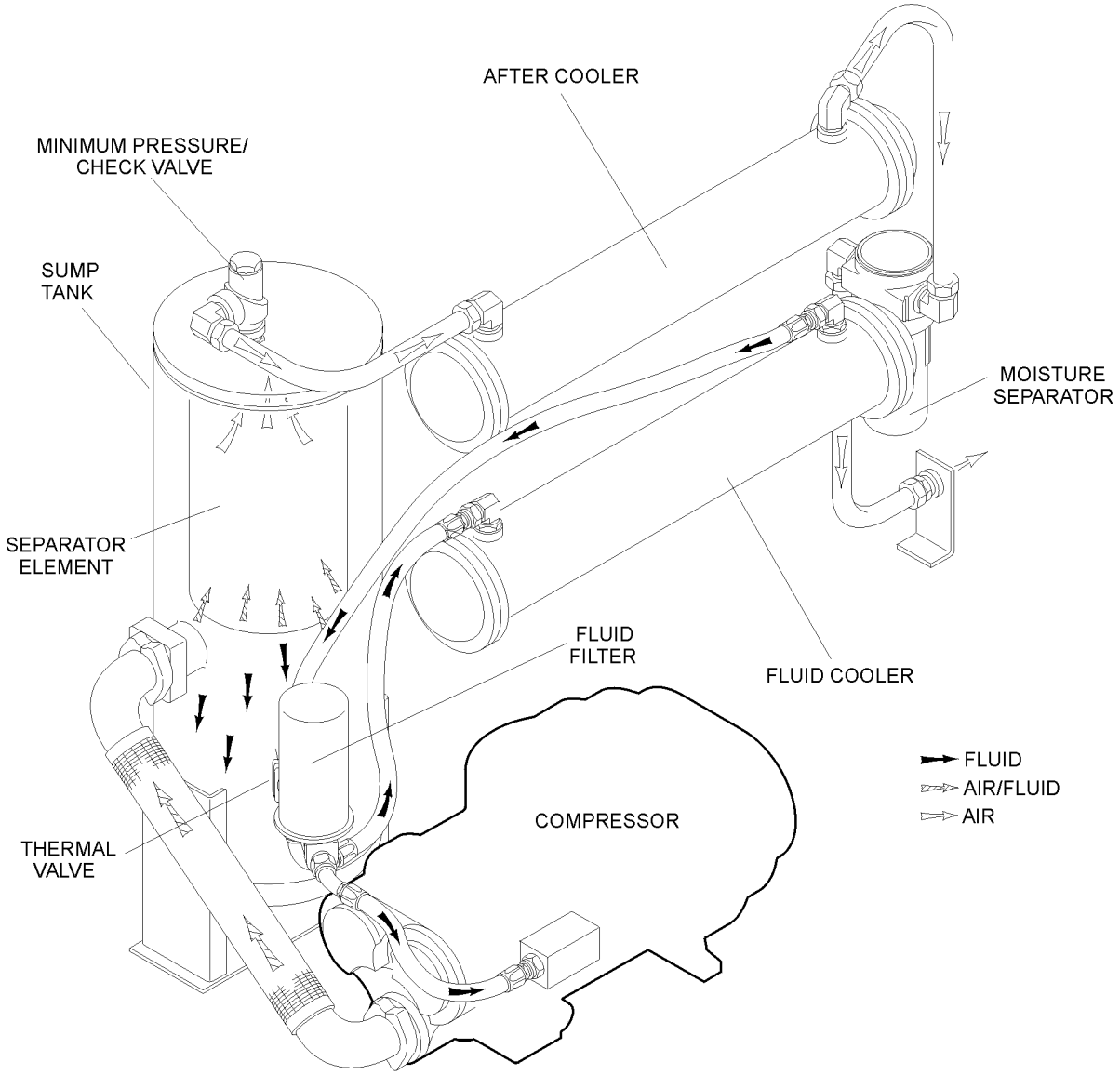
When the compressor ▮ (**START**) pad is depressed, the sump pressure will quickly rise from 0 to 50 psig (0 - 3.4 bar). During this period, both the pressure regulator and the solenoid valve are closed, the inlet valve is fully open and the compressor pumps at full rated capacity. The rising compressor air pressure is isolated from the service line in this phase by the minimum pressure valve set at approximately 50 psig (3.4 bar).

Closed Inlet Start- For wye-delta starting, the unload solenoid valve allows control pressure to keep the inlet valve closed until the wye-delta transfer is made (6-10 seconds).

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

When the compressed air pressure rises above 50 psig (3.4 bar), the minimum pressure valve opens

Figure 2-2B Compressor Fluid Cooling/Lubrication and Discharge System- Water-cooled



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. The inlet valve is in the fully open position as long as the compressor is running at 100 psig (6.9 bar) or below.

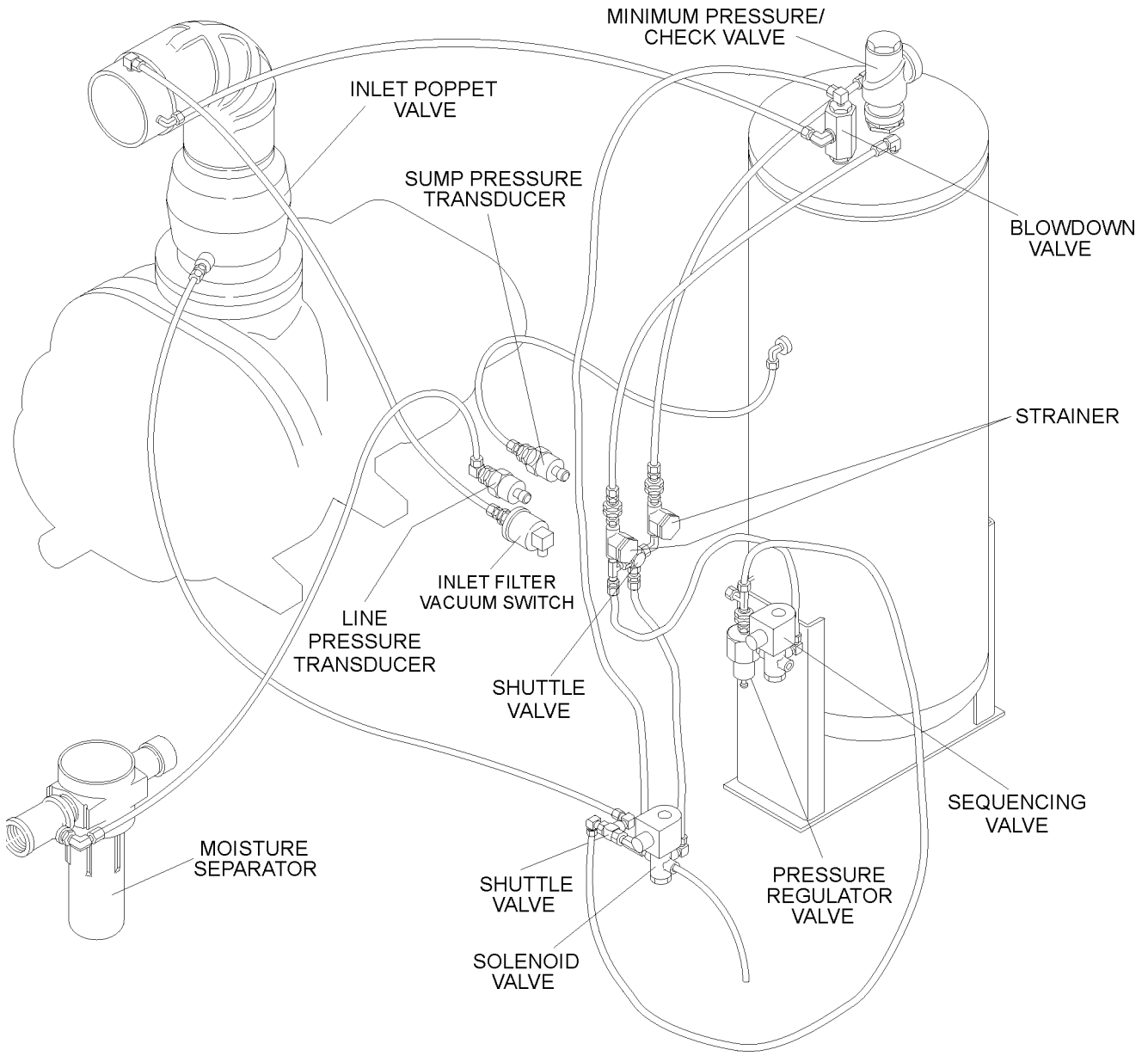
MODULATING MODE (STANDARD CONTROL) - 100 TO 110 PSIG (6.9 TO 7.6 BAR)

If less than the rated capacity of compressed air is being used, the line pressure will rise above 100 psig (6.9 bar), and a pressure regulator starts feeding an air signal to close the inlet poppet valve, throttling the mass of air entering the compressor and thereby reducing the latter's air delivery. The air throttling of the inlet poppet valve system increases proportionately with a rise of line pressure from 101 to 110 psig (7 to 7.6 bar).

MODULATING MODE WITH OPTIONAL SPIRAL VALVE - 100 TO 110 PSIG (6.9 TO 7.6 BAR)

As air demand drops below the rated capacity of the compressor, the line pressure will rise above 100 psig (6.9 bar). As a result, the differential pressure regulator for the spiral valve gradually opens, applying air pressure to the spiral valve actuator. Air pressure at the actuator expands the diaphragm. The rack, in turn, engages with the pinion mounted on the spiral valve shaft assembly. This results in a rotary motion. As the spiral valve rotates, it starts opening the bypass ports gradually. Excess air is

Figure 2-3A Control System with Supervisor Controller (without Spiral Valve)



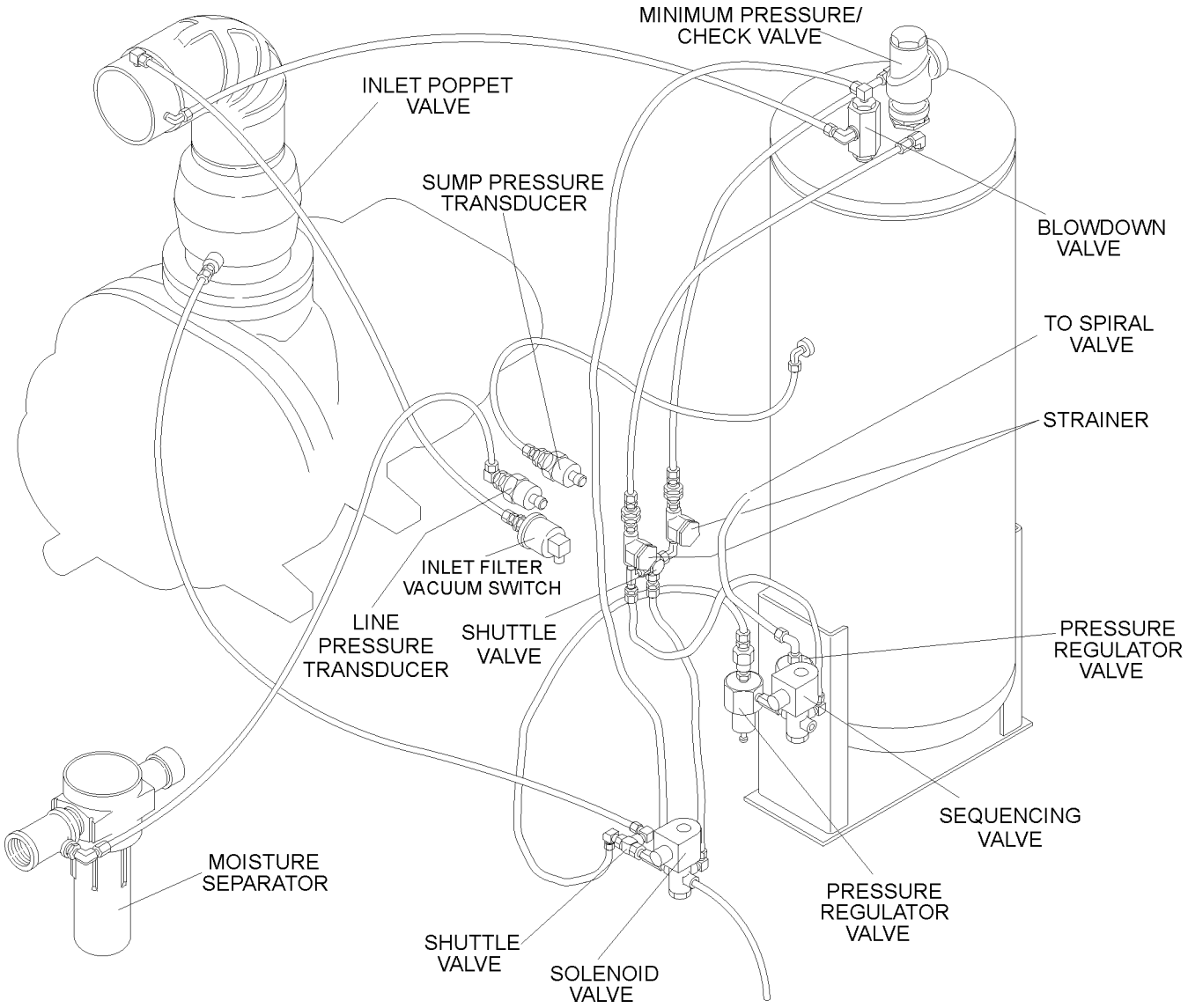
then being returned back internally to the suction end of the compressor unit. Now the compressor is fully compressing only that amount of air, which is being used. As air demand keeps dropping further, the spiral valve keeps opening more and more until all the bypass ports are fully open. At this point, the spiral valve has moved into the unload (minimum) position.

The spiral valve provides a modulation range from 100 to 50%. During this period, the pressure rises approximately from 100 to 105 psig (6.9 to 7.2 bar). As the air pressure exceeds 105 psig (7.2 bar), the differential pressure regulator controlling the inlet poppet valve starts opening and forcing the poppet closed, thus throttling inlet air flow to the compressor. The inlet poppet valve provides a modulation range from 50 to 40%. During this period, the pressure rises approximately from 106 to 110 psig (7.3 to 7.6 bar). During this range, the spiral valve remains in the unload position.

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), the Supervisor Control System de-energizes the solenoid valve allowing sump air pressure to be supplied directly to close the inlet valve. Simultaneously, the sole-

Figure 2-3B Control System with Supervisor Controller (with Spiral Valve)



noid valve sends a pneumatic signal to the blowdown valve. The blowdown valve opens to the atmosphere, reducing the sump pressure to approximately 20 to 30 psig (1.4 to 2.1 bar). The minimum pressure check valve prevents line pressure from returning to the sump.

When the line pressure drops to the low setting (cut-in pressure; usually 100 psig [6.9 bar] on low pressure [“L”] compressors; 125 psig [8.6 bar] on high pressure [“H”] compressors; 150 psig [10.3 bar] on [“HH”] compressors; and 175 psig [12.0 bar] [“XH”]. Supervisor energizes the solenoid valve and allows the blowdown valve to close. The re-energized solenoid valve again prevents line pressure from reaching the inlet control valve. Should the pressure begin to rise, the pressure regulator will resume its normal function as previously described.

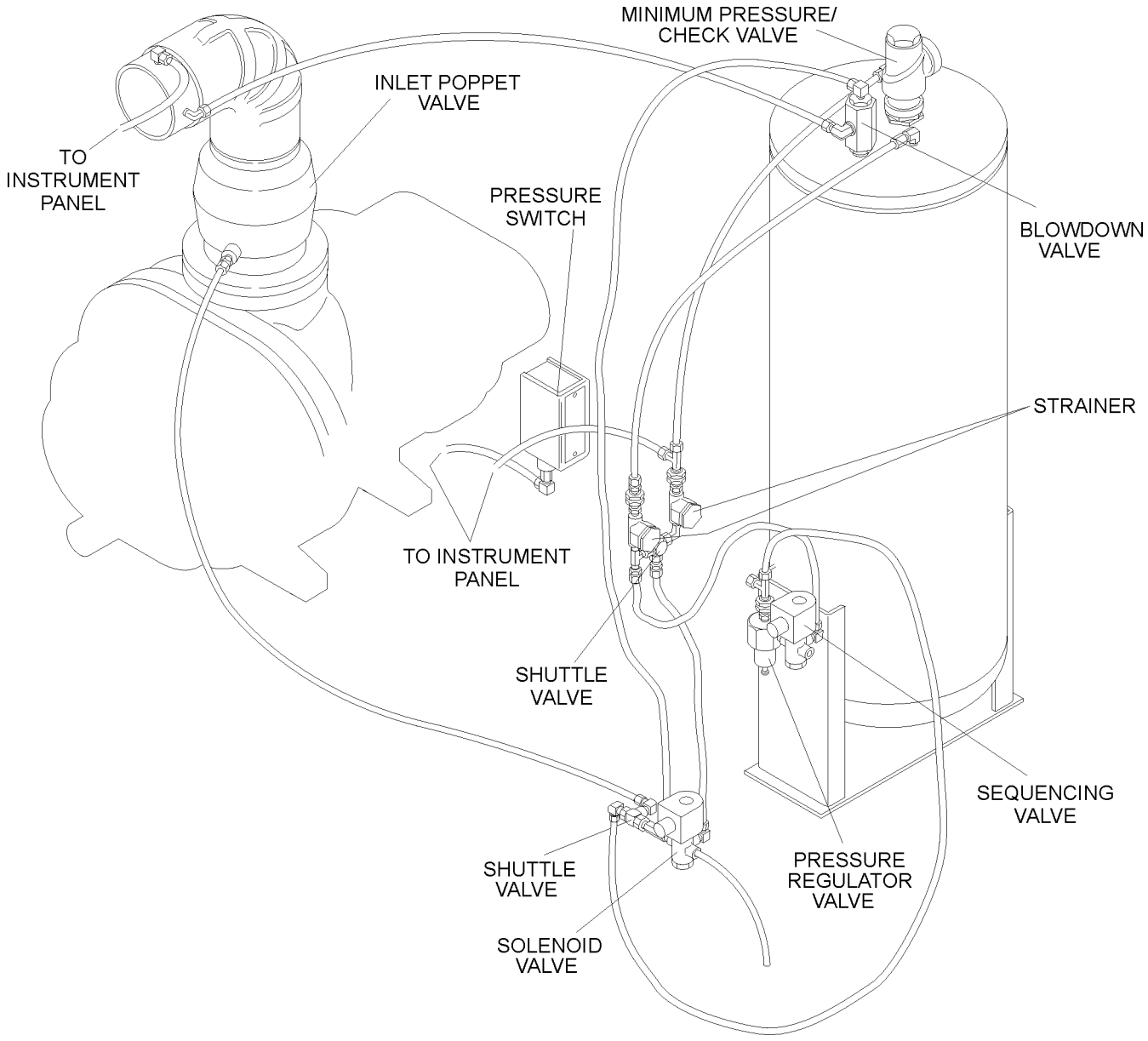
AUTOMATIC OPERATION

For applications with varied periods of time when there are no air requirements, Supervisor’s AUTOMATIC mode allows the compressor to shutdown (time delayed) when no compressed air requirement is present and restart as compressed air is needed.

2.7 CONTROL SYSTEM, FUNCTIONAL DESCRIPTION- ELECTRO-MECHANICAL

Refer to Figure 2-3C. The purpose of the compressor Control System is to regulate the compressor air intake to match the amount of compressed air

Figure 2-3C Control System with Electro-Mechanical Controller



being used. At approximately 10 psig (0.7 bar) air line over-pressure, the control system will automatically blow down the compressor and greatly reduce the unload power consumption. The **Control System** consists of an **inlet valve**, (located on the compressor air inlet), **blowdown valve**, **solenoid valve**, **pressure switch**, and a **pressure regulator**. The functional descriptions of the Control System are given below in four distinct phases of compressor operation. The following guidelines apply to all 200 Series compressors. For explanatory purposes this description will apply to a compressor with an operating pressure 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 excepting stated pressures.

START - 0 TO 50 PSIG (0 TO 3.5 BAR)

When the compressor START button is depressed, the sump pressure will quickly rise from 0 to 50 psig (0 to 3.5 bar). During this period both the pressure regulator and the solenoid valve are closed, the inlet valve is fully open due to inlet air flow, 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 (3.5 bar).

Closed Inlet Start- For wye-delta starting, the unload solenoid valve allows control pressure to keep the inlet valve closed until the wye-delta transfer is made (6-10 seconds).

NORMAL OPERATING MODE - 50 TO 100 PSIG (3.5 TO 6.9 BAR)

When the pressure air rises above 50 psig (3.5 bar), the minimum pressure/check valve opens and delivers compressed air to the service line. From this point on, the line air pressure is continually monitored by a line pressure gauge and a pressure switch usually set at 100 psig (6.9 bar). The pressure regulator and the solenoid valve remain closed during this phase. The inlet valve remains fully open for maximum capacity.

MODULATING MODE LS-200 (STANDARD CONTROL) - 100 TO 110 PSIG (6.9 TO 7.6 BAR)

If less than the rated capacity of compressed air is being used, the line pressure will rise above 100 psig (6.9 bar), and a pressure regulator starts feeding an air signal to close the inlet poppet valve, throttling the mass of air entering the compressor and thereby reducing the latter's air delivery. The air throttling of the inlet poppet valve system increases proportionately with a rise of line pressure from 101 to 110 psig (7 to 7.6 bar).

MODULATING MODE WITH VCC-200 SPIRAL VALVE - 100 TO 110 PSIG (6.9 TO 7.6 bar)

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

The spiral valve provides a modulation range from 100 to 50%. During this period, the pressure rises approximately from 100 to 105 psig (6.9 to 7.2 bar). As the air pressure exceeds 105 psig (7.2 bar), the differential pressure regulator controlling the inlet poppet valve starts opening and forcing the poppet closed, thus throttling inlet air flow to the compressor. The inlet poppet valve provides a modulation range from 50 to 40%. During this period, the pressure rises approximately from 106 to 110 psig (7.3 to 7.6 bar). During this range, the spiral valve remains in the unload position.

UNLOAD - IN EXCESS OF 110 PSIG (7.6 BAR) LINE PRESSURE

When no air is being used,the service line pressure rises to the setting (cut-out pressure) of the pressure switch. the pressure switch opens, interrupting the electrical power to the solenoid valve. At this time, the solenoid valve allows dry sump tank air pressure or service air pressure through a shuttle valve to be applied directly to the inlet valve piston and keep it closed. Simultaneously, the solenoid valve sends a pneumatic signal to the blowdown valve. The blowdown valve opens the sump to the compressor intake reducing the sump pressure to approximately 20 to 30 psig (1.4 to 2.1 bar). The check valve in the air service line pressure prevents line pressure from returning to the sump.

When the line pressure drops to the low setting (cut-in pressure) of the pressure switch (usually 100 psig [6.9 bar]), the pressure switch closes, re-energizing the 3-way solenoid valve and allowing the blowdown valve to close. The re-energized solenoid valve again prevents pre sure from reaching the inlet valve. The inlet valve is fully open and the compressor delivers full rated capacity. Should the pressure begin to rise, the pressure regulator will resume its normal function as previously described.

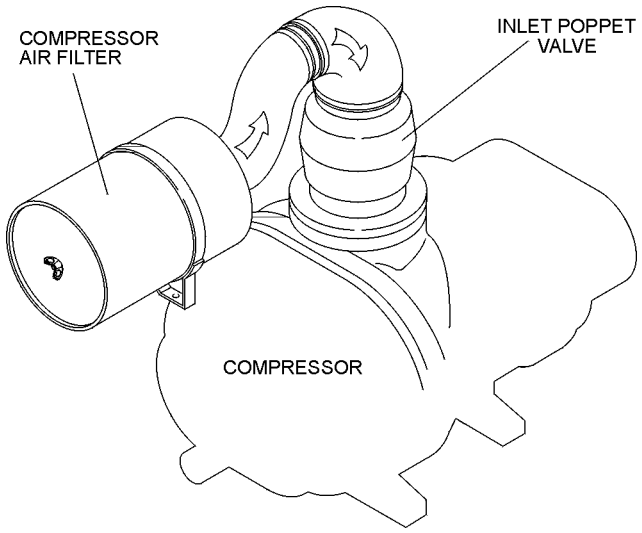
To accommodate varied periods of time when there are not any air requirements, "Dual-Control" is utilized. This feature allows you to set the compressor in an automatic position whereby the compressor will shut down when no compressed air requirement is present and restart as compressed air is needed.

2.8 AIR INLET SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 2-4. The **Compressor Inlet System** consists of a **dry-type air filter** and an **air inlet valve**.

The poppet-type modulating air inlet valve directly controls the amount of air intake to the compressor in response to the operation of the pressure regulator (see Modulating Mode, Section 2.6 [Supervisor Controller] or Section 2.7 [Electro-Mechanical]). The inlet valve also acts as a check valve, thus preventing reverse rotation when the compressor is shut down.

Figure 2-4 Air Inlet System



⚠ CAUTION

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

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

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

2.9 INSTRUMENT PANEL GROUP, FUNCTIONAL DESCRIPTION- ELECTRO-MECHANICAL CONTROLLER

Refer to Figure 2-5 for specific location of parts described. For information on Supervisor Controller panel group, see Section 5, Supervisor Controller.

The Electro-mechanical Controller Instrument Panel Group consists of a panel containing the line pressure, sump pressure and discharge temperature gauges, the air filter, the separator element and the fluid filter, restriction gauges, along with START and STOP push buttons and an hourmeter.

Refer to Figure 2-5 for locations of the following indicators and controls:

• The **line (terminal) pressure gauge** is connected to the dry side of the receiver downstream from the check valve and continually monitors the air pressure.

• The **sump pressure gauge** continually monitors the sump pressure at the various load and/or unload conditions.

• The **discharge temperature gauge** monitors the temperature of the air leaving the compressor unit. For both air-cooled and water-cooled compressors the normal reading is approximately 180°F to 205°F (82°C to 96°C).

• The **air filter restriction gauge** monitors the condition of the air intake filter and shows in the red zone (20 to 30" water [51 to 76 cm]) when filter service is required. The compressor must be running fully loaded for an accurate indication.

• The **START** ▮ pad turns the compressor on.

• The **STOP** ◉ pad turns the compressor off.

• The **hourmeter** records accumulative hours of operation for the compressor and is useful for planning and logging service operations.

• The **POWER ON (**↯**)** LED on the instrument panel indicates when power to the compressor is supplied.

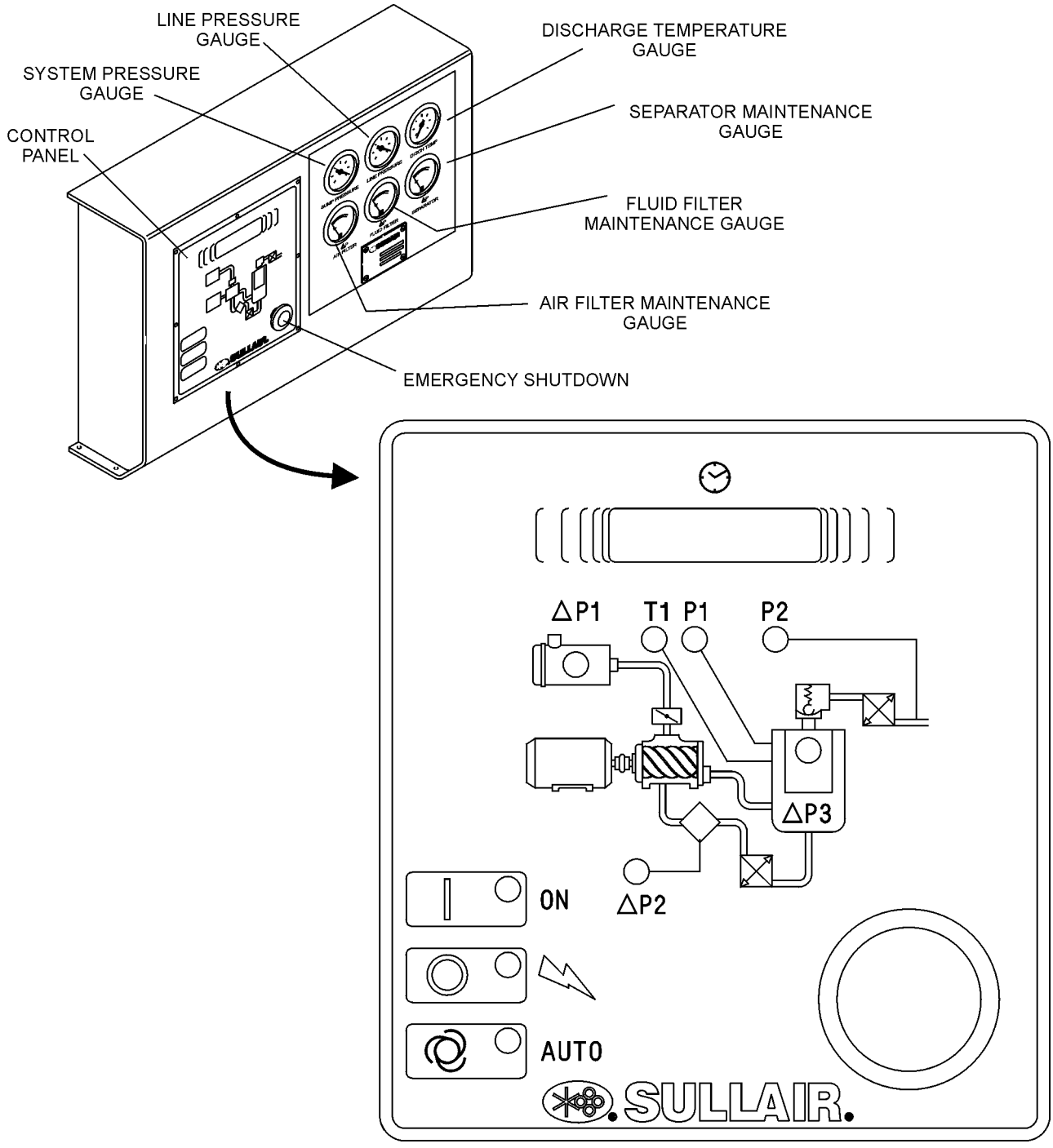
• The **ON** LED indicates when the compressor is running.

• The **AUTO** ◉ pad is used to enable automatic control.

• The **separator maintenance gauge** monitors condition of the separator element and shows in the red zone when the element restriction is excessive.

• The **fluid filter maintenance gauge** monitors the condition of the bearing lube filter element and shows in the red zone when the element should be changed.

Figure 2-5 Instrument Panel Group (Electro-mechanical Control) **(I)**



(I) Refer to Section 5 and the Supervisor Controller Manual for Supervisor Controller panel details.

Section 3
SPECIFICATIONS

3.1 TABLE OF SPECIFICATIONS

60 Hz:

Model (I)	HP	CAPACITY CFM LS	CAPACITY CFM VCC	LENGTH IN	WIDTH IN	HEIGHT (II) IN OPEN/ENCL	WEIGHT (III) LB AC/WC
100-L	100	500	511	88	48	60/61.5	3590/3660
100-H	100	477	468	88	48	60/61.5	3590/3660
100-HH	100	418		88	48	60/61.5	3590/3660
100-XH	100	383		88	48	60/61.5	3590/3660

50 Hz:

Model (I)	KW	CAPACITY M^3/MIN LS	CAPACITY M^3/MIN VCC	LENGTH MM	WIDTH MM OPEN/ENCL	HEIGHT (II) MM AC/WC	WEIGHT (III) KG
100-L	75	14.2	14.8	2235	1219	1524/1562	1628/1660
100-H	75	13.0	13.4	2235	1219	1524/1562	1628/1660
100-HH	75	12.0		2235	1219	1524/1562	1628/1660
100-XH	75	10.7		2235	1219	1524/1562	1628/1660

(I) Includes standard and 24KT. Rated pressure designations appearing after model number are as follows:

"**L**" - 100 psig / 6.9 bar; "**H**" - 125 psig / 7.9 bar; "**HH**" - 150 psig / 9.7 bar; "**XH**" - 175 psig / 12 bar

(II) Add an additional height for servicing the separator as follows:

a) Open: 9 in. / 229 mm
b) Enclosed: 31.5 in. / 610 mm

(III) Add 500 lbs. / 228 kg for enclosure.

NOTE

For latest sound test data, consult Sullair factory.

COMPRESSOR:

Type: Positive displacement, fluid-lubricated, twin rotary screws
Configuration: Single-stage geared integral drive
Bearing Type: Anti-friction
Fluid: Sullube as standard fill. See Sections 3.2, 3.3 and 3.4 on Lubricant
Sump Capacity: 10 gallons (38 liters)
Control Type: Electro-pneumatic
VCC: Spiral valve (direct-drive)

MOTOR:

Size: 100 HP / 75 KW
Type: C-flanged, Open-dripproof enclosure, Premium Efficiency, 3-phase, 230/460V 60 Hz, 380-415V 50Hz, 104 deg. F / 40 deg. C Maximum Ambient Temperature
Options: Various voltages, TEFC enclosure: CE approved.
Speed: 4-pole (60 Hz - 1770 RPM, 50 Hz - 1475 RPM)
Starter: Full-voltage, Wye-delta, or Solid State; various voltages.

Section 3
SPECIFICATIONS

3.2 LUBRICATION GUIDE- STANDARD COMPRESSORS

NOTE

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

Mixing, changing or adding other lubricants within the compressor unit may void the air-end warranty.

Refer to Figure 3-1 for fluid fill port location. Sullube fluid should be changed every 8000 hours or once a year, whichever comes first. The fluid should be changed more frequently under severe operating conditions, such as high ambient temperatures coupled with high humidity, or when high particulate level, corrosive gases or strong oxidizing gases are present in the air.

⚠ WARNING

Before changing or recharging system fluid always relieve all pressure from the sump tank and all compressor lines.

⚠ CAUTION

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

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

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

NOTE

Mixing, changing or adding other lubricants within the compressor unit may void the air-end warranty.

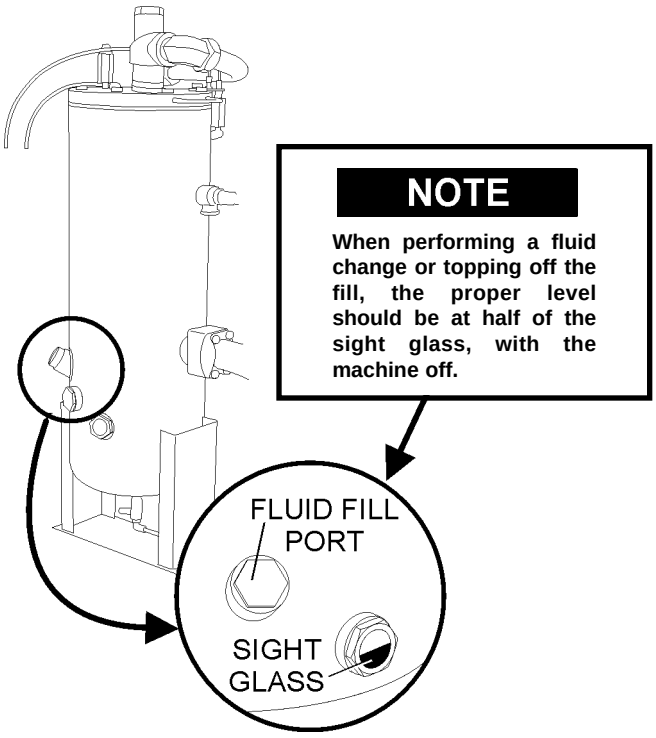
Maintenance of all other components is still recommended as indicated in the Operator's Manual.

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

3.3 LUBRICATION GUIDE- 24KT COMPRESSORS

Refer to Figure 3-1 for fluid fill port location. Sullair 24KT compressors are filled with a lubricant which rarely needs to be changed. In the event a change of fluid is required, use only Sullair 24KT fluid.

Figure 3-1 Fluid Fill Port Location



⚠ WARNING

Before changing or recharging system fluid always relieve all pressure from the sump tank and all compressor lines.

NOTE

Mixing, changing or adding other lubricants within the compressor unit may void the air-end warranty.

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

3.4 LUBRICATION GUIDE- OPTIONAL FLUID

Refer to Figure 3-1 for fluid fill port location. Sullair compressors may use SRF 1/4000 fluid as an optional factory fill.

⚠ WARNING

Before changing or recharging system fluid always relieve all pressure from the sump tank and all compressor lines.

NOTE

Mixing, changing or adding other lubricants within the compressor unit may void the air-end warranty.

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

For extended life synthetic lubricants contact the nearest Sullair representative.

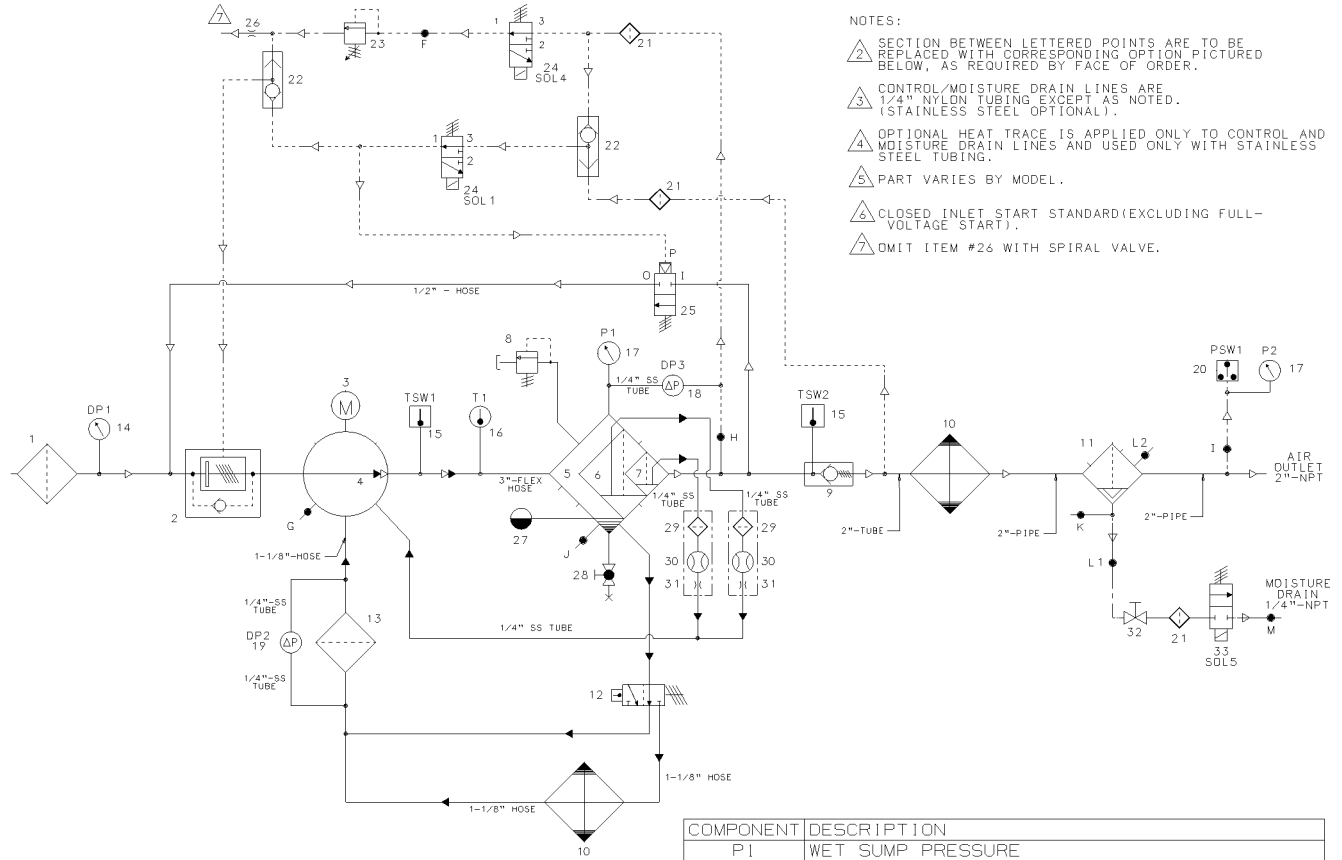
Maintenance of all other components is still recommended as indicated in the Operator's Manual.

3.5 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 3
SPECIFICATIONS

Figure 3-2A Piping and Instrumentation- LS-200 and VCC-200 Air-cooled with Electro-mechanical Controller



COMPONENT	DESCRIPTION
P1	WET SUMP PRESSURE
P2	LINE PRESSURE GAUGE
DP1	AIR FILTER VACUUM INDICATOR
DP2	FLUID FILTER DIFFERENTIAL PRESSURE
DP3	SEPARATOR DIFFERENTIAL PRESSURE
PSW1	LINE PRESSURE SWITCH
PSW3	HIGH-PRESSURE SHUT DOWN SWITCH (OPTIONAL)
PSW4	SUMP PRESSURE SWITCH(OPTIONAL)
SOL1	LOAD/UNLOAD SOLENOID VALVE
SOL4	MEC/SEQUENCING/FULL LOAD SOLENOID VALVE
SOL5	ELECTRIC DRAIN/SCD DRAIN SOLENOID VALVE
SOL7	EES SOLENOID VALVE(OPTIONAL)
T1	UNIT DISCHARGE TEMPERATURE GAUGE
TSW1	UNIT DISCHARGE TEMPERATURE SWITCH
TSW2	DRY SUMP DISCHARGE TEMPERATURE SWITCH

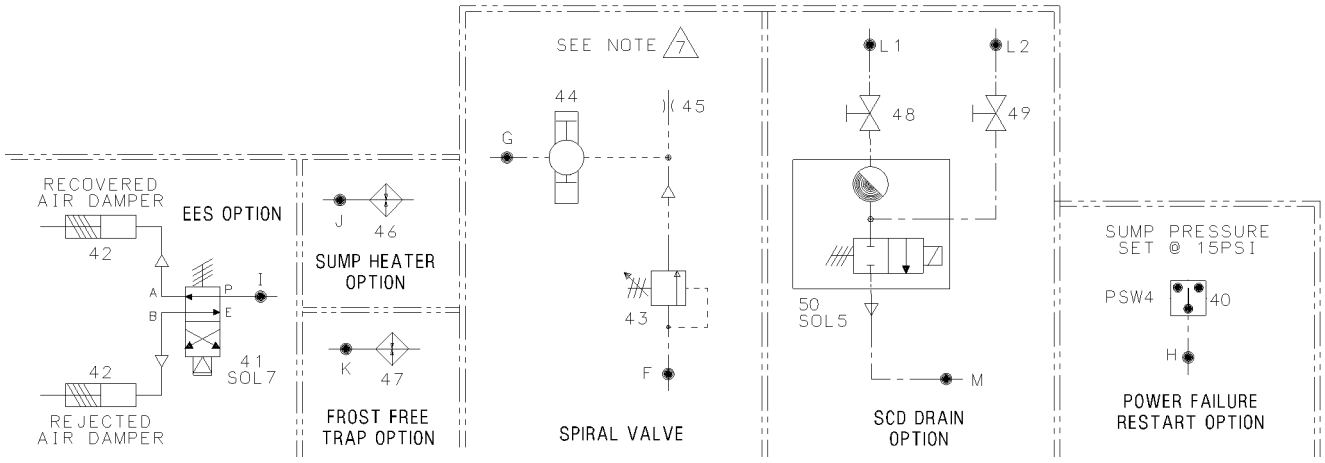


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Figure 3-2A Piping and Instrumentation- LS-200 and VCC-200 Air-cooled with Electro-mechanical Controller

key number	description	part number	quantity
1	fltr, air h.d.inlet 12"	02250059-096	1
2	vlv, air inlet 6" 20-100	02250145-632	1
3	motor	-	1
4	compressor unit	-	1
5	tnk,sep ls20 leak-free	02250125-995	1
6	sep, air/oil primary LS-200	02250146-962	1
7	sep, air/oil secondary LS-200	02250146-963	1
8	vlv, rlf 3/4" 200# 550scfm	02250097-349	1
9	vlv, min press 2-1/2"sae	02250129-374	1
10	clr, comb oil/air 100hp	02250145-278	1
11	sep, wtr d-h 2"fnpt 1/4"drn	02250144-632	1
△5 12	element, thermal valve 175ºF	049542	1
	•element, thermal valve 190ºF	250028-762	1
13	fltr, fl 1-5/8"sae str thrd con	02250054-605	1
14	gauge, vacuum 0-30" water	250003-797	1
15	sw, htm 240 deg f-3/4"sae	02250100-095	2
16	ga, temp 100-250 deg f-3/4"sae	02250100-096	1
17	gauge, press 2"dia 0-230#	250005-185	2
18	gauge, diff press 0-15 psi	250003-798	1
19	gauge, diff press 0-30 psi	250003-799	1
△5 20	switch, press 0-150# spdt n1	040694	1
	•switch, press 10-250# spdt open	046344	1
21	strainer, v-type 300psi x 1/4	241771	3
22	valve,shuttle 1/4"(dbl chk)	408893	2
23	valve, pressure regulator	250017-280	1
24	valve,sol 3wno 1/4" 235# n4	02250125-657	2
25	valve, 2-way pneumatic 1/2"npt	02250100-042	1
△7 26	orifice, .031"	02250132-934	1
27	plug, sight glass 1-7/8"sae	02250097-611	2
28	vlv, ball 3/4"sae-m x 1/2"nptf	02250098-303	1
29	fltr, assembly genisis filter	02250117-782	2
30	glass, sight/orf blk sae	02250126-129	2
31	orf, plug brass 1/8"npt x 1/16"	02250125-775	2
32	valve, ball 1/4"npt	047115	1
33	vlv, sol 2wnc mo 1/4 200# n4	02250125-674	1
	POWER FAILURE RESTART (OPTIONAL):		
40	switch, press no close @ 15#	043428	1
	EES (OPTIONAL):		
41	vlv, sol 4way 1/4 150# n4	02250125-673	1
42	cylinder, pneumatic 7/8, 4"str	241906	2

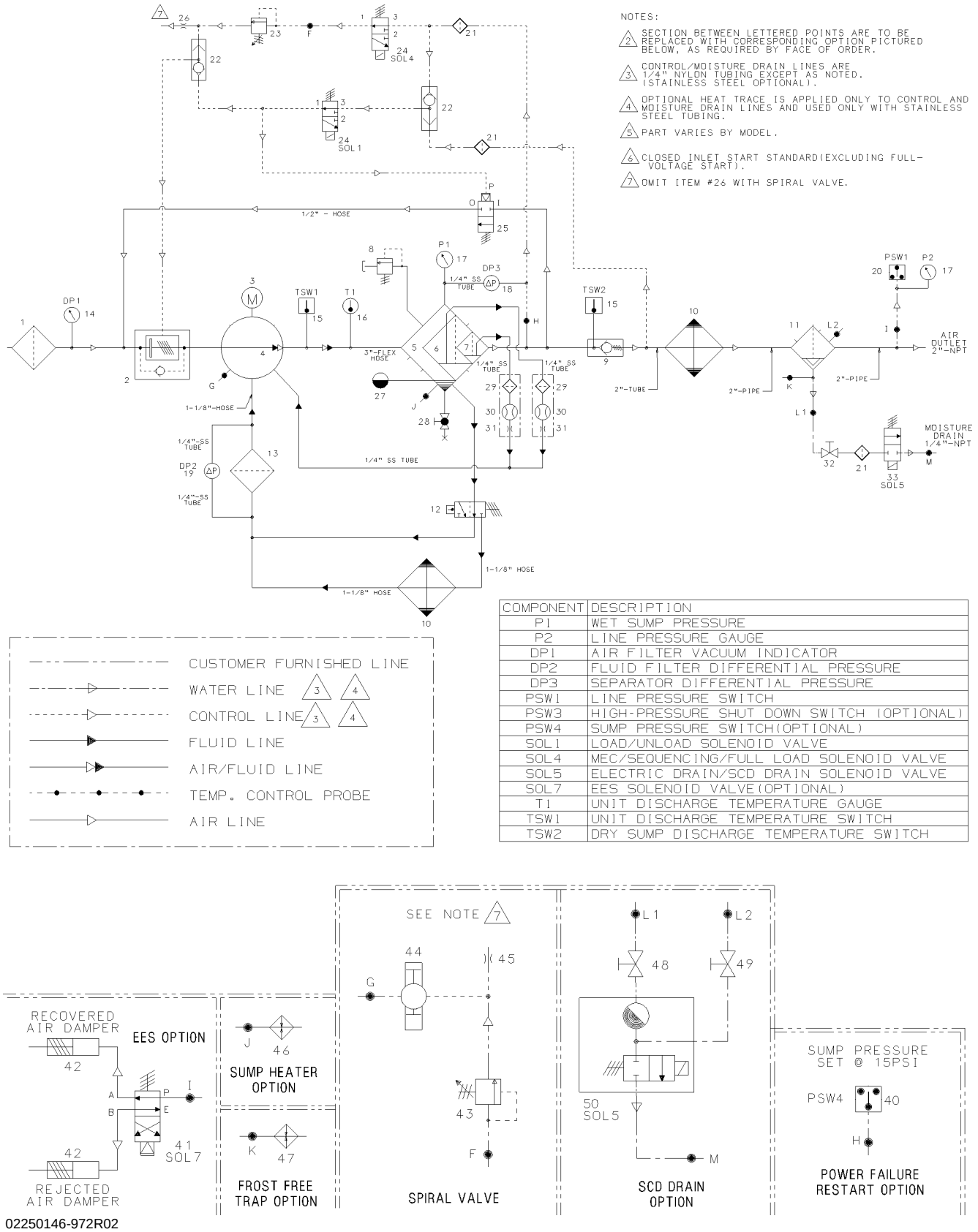
Continued on page 23

△5 Part varies by model.

△7 Omit item #26 with VCC-200 model.

Section 3
SPECIFICATIONS

Figure 3-2A Piping and Instrumentation- LS-200 and VCC-200 Air-cooled with Electro-mechanical Controller



COMPONENT	DESCRIPTION
P1	WET SUMP PRESSURE
P2	LINE PRESSURE GAUGE
DP1	AIR FILTER VACUUM INDICATOR
DP2	FLUID FILTER DIFFERENTIAL PRESSURE
DP3	SEPARATOR DIFFERENTIAL PRESSURE
PSW1	LINE PRESSURE SWITCH
PSW3	HIGH-PRESSURE SHUT DOWN SWITCH (OPTIONAL)
PSW4	SUMP PRESSURE SWITCH(OPTIONAL)
SOL1	LOAD/UNLOAD SOLENOID VALVE
SOL4	MEC/SEQUENCING/FULL LOAD SOLENOID VALVE
SOL5	ELECTRIC DRAIN/SCD DRAIN SOLENOID VALVE
SOL7	EES SOLENOID VALVE(OPTIONAL)
T1	UNIT DISCHARGE TEMPERATURE GAUGE
TSW1	UNIT DISCHARGE TEMPERATURE SWITCH
TSW2	DRY SUMP DISCHARGE TEMPERATURE SWITCH

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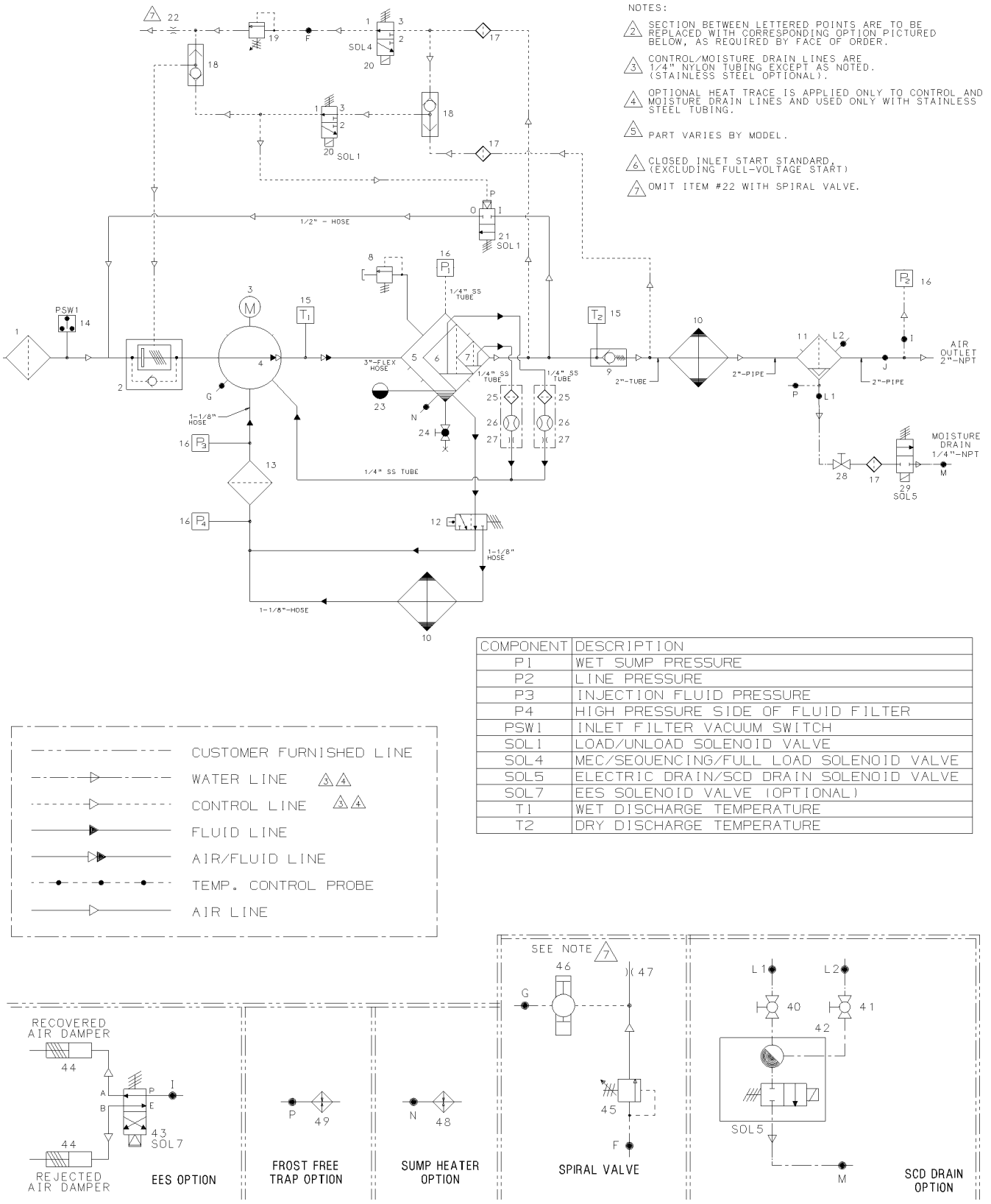
Figure 3-2A Piping and Instrumentation- LS-200 and VCC-200 Air-cooled with Electro-mechanical Controller ***(continued)***

key number	***description***	***part number***	***quantity***
	VCC-200 MODEL:		
43	valve, pressure regulator	250017-280	1
44	spiral valve	-	1
45	orifice, .031"	02250132-934	1
	SUMP HEATER (OPTIONAL):		
46	htr, sump ls-20 1250w 120v	02250069-938	1
	MOISTURE SEPARATOR HEATER (OPTIONAL):		
47	htr, scd400/500 wrap 50w	02250114-171	1
	SCD DRAIN (OPTIONAL):		
48	valve, ball 1/2"npt	047117	1
49	valve, ball 1/4"npt	047115	1
50	htr, scd400/500 wrap 50w	02250130-866	1

Figure 3-2-B Piping and Instrumentation- LS-200 and VCC-200 Air-cooled with Supervisor Controller



COMPONENT	DESCRIPTION
P1	WET SUMP PRESSURE
P2	LINE PRESSURE
P3	INJECTION FLUID PRESSURE
P4	HIGH PRESSURE SIDE OF FLUID FILTER
PSW1	INLET FILTER VACUUM SWITCH
SOL1	LOAD/UNLOAD SOLENOID VALVE
SOL4	MEC/SEQUENCING/FULL LOAD SOLENOID VALVE
SOL5	ELECTRIC DRAIN/SCD DRAIN SOLENOID VALVE
SOL7	EES SOLENOID VALVE (OPTIONAL)
T1	WET DISCHARGE TEMPERATURE
T2	DRY DISCHARGE TEMPERATURE

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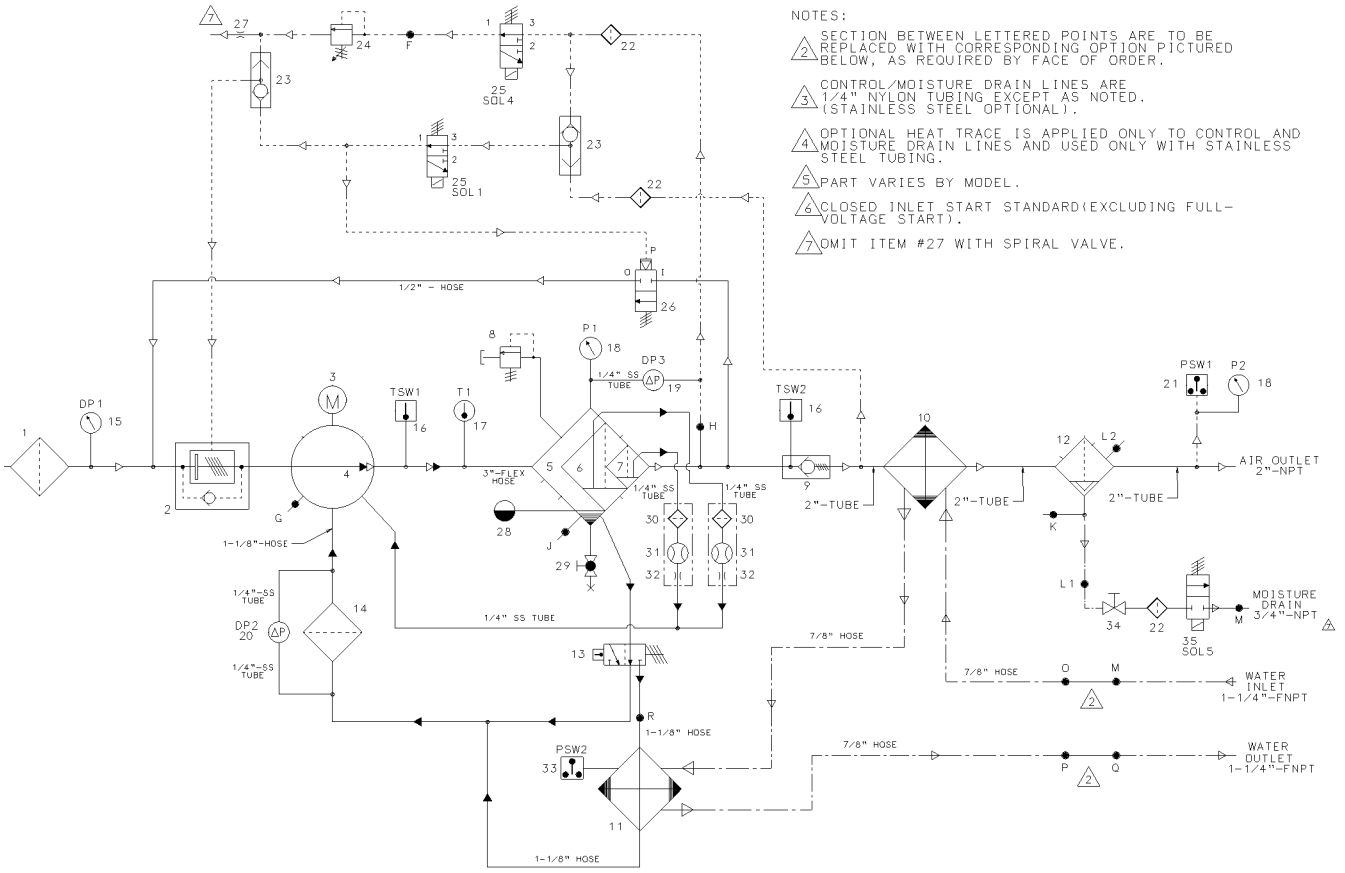
Figure 3-2B Piping and Instrumentation- LS-200 and VCC-200 Air-cooled with Supervisor Controller

key number	description	part number	quantity
1	filter, air h.d. inlet 12"	02250059-096	1
2	vlv, air inlet 6" 20-100	02250145-632	1
3	motor	-	1
4	compressor unit	-	1
5	tnk, sep ls20 leak-free	02250125-995	1
6	sep, air/oil primary LS-200	02250146-962	1
7	sep, air/oil secondary LS-200	02250146-963	1
8	vlv ,rlf 3/4" 200# 550scfm	02250097-349	1
9	vlv, min press 2-1/2" sae	02250129-374	1
10	clr,comb oil/air 100hp	02250145-278	1
11	sep, wtr d-h 2" fnpt 1/4" drn	02250144-632	1
△5 12	element. thermal valve 175ºF	049542	1
	•element. thermal valve 190ºF	250028-762	1
13	fltr, fl 1-5/8" sae str thrd con	02250054-605	1
14	sw, vac 22"wc n4 6ft cable 5a	02250078-249	1
15	p, rtd 100 ohm platinum 12ft	250039-909	2
16	xdcr, press 0-250psi 1-5vdc n4	02250078-933	4
17	strainer, v-type 300psi x 1/4	241771	3
18	valve, shuttle 1/4" (dbl chk)	408893	2
19	valve, pressure regulator	250017-280	1
20	valve, sol 3wno 1/4" 235# n4	02250125-657	2
21	valve, 2-way pneumatic 1/2"npt	02250100-042	1
△7 22	orifice, .031"	02250132-934	1
23	plug, sight glass 1-7/8" sae	02250097-611	2
24	vlv, ball 3/4"sae-m x 1/2"npt-f	02250098-303	1
25	fltr, assembly genisis filter	02250117-782	2
26	glass, sight/orf blk-sae	02250126-129	2
27	orf, plug brass 1/8"npt x 1/32"	02250125-774	2
28	valve, ball 1/4"npt	047115	1
29	vlv, sol 2wnc mo 1/4 200# n4	02250125-674	1
	SCD DRAIN (OPTIONAL):		
40	valve, ball 1/2"npt	047117	1
41	valve, ball 1/4"npt	047115	1
42	drn, electric condensate-scd400	02250130-866	1
	EES (OPTIONAL):		
43	vlv, sol 4way 1/4 150# n4	02250125-673	1
44	cylinder, pneumatic 7/8, 4"str	241906	2
	VCC-200 MODEL:		
45	valve, pressure reg	250017-280	1
46	spiral valve	-	1
47	orifice, .031	02250132-934	1
	SUMP HEATER (OPTIONAL):		
48	htr, sump ls-20 1250w 120v	02250069-938	1
	MOISTURE SEPARATOR (OPTIONAL):		
49	htr, s cd400/500 wrap 50w	02250114-171	1

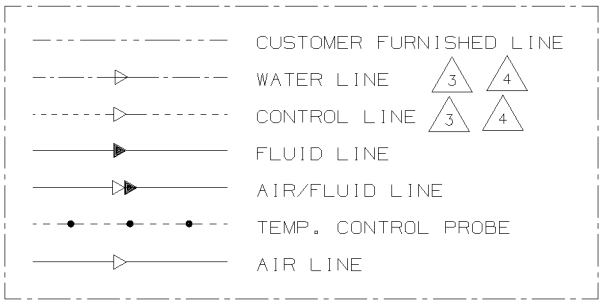
△5 Part varies by model.

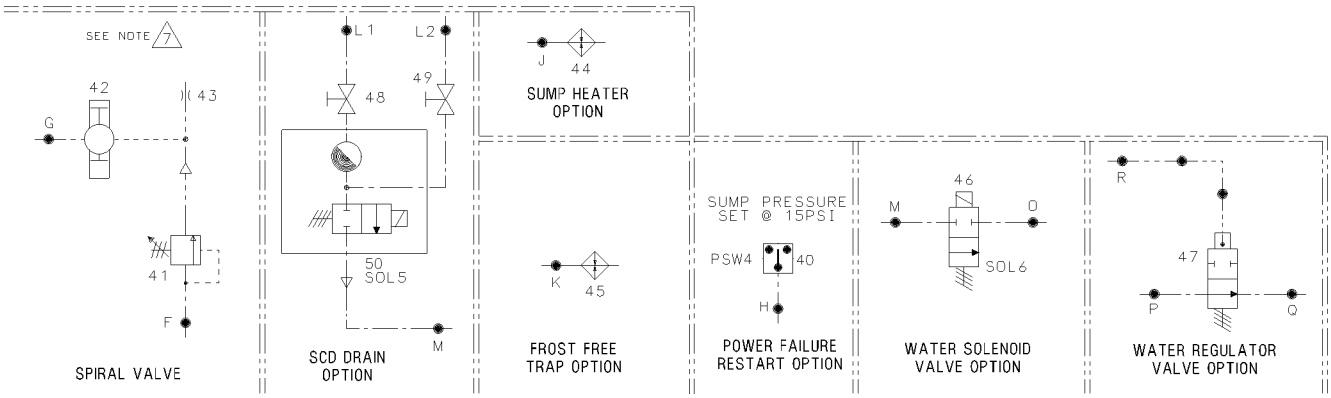
△7 Omit item #22 with VCC-200 model.

Figure 3-2C Piping and Instrumentation- LS-200 and VCC-200 Water-cooled with Electro-mechanical Controller



COMPONENT	DESCRIPTION
P1	WET SUMP PRESSURE
P2	LINE PRESSURE GAUGE
DP1	AIR FILTER VACUUM INDICATOR
DP2	FLUID FILTER DIFFERENTIAL PRESSURE
DP3	SEPARATOR DIFFERENTIAL PRESSURE
PSW1	LINE PRESSURE SWITCH
PSW2	WATER PRESSURE SWITCH
PSW3	HIGH-PRESSURE SHUT DOWN SWITCH (OPTIONAL)
PSW4	SUMP PRESSURE SWITCH (OPTIONAL)
SOL1	LOAD/UNLOAD SOLENOID VALVE
SOL4	MEC/SECQUENCING/FULL LOAD SOLENOID VALVE
SOL5	ELECTRIC DRAIN/SCD DRAIN SOLENOID VALVE
SOL6	WATER SHUTOFF SOLENOID VALVE (OPTIONAL)
T1	UNIT DISCHARGE TEMPERATURE GAUGE
TSW1	UNIT DISCHARGE TEMPERATURE SWITCH
TSW2	DRY SUMP DISCHARGE TEMPERATURE SWITCH





02250146-981R02

Figure 3-2C Piping and Instrumentation- LS-200 and VCC-200 Water-cooled with Electro-mechanical Controller

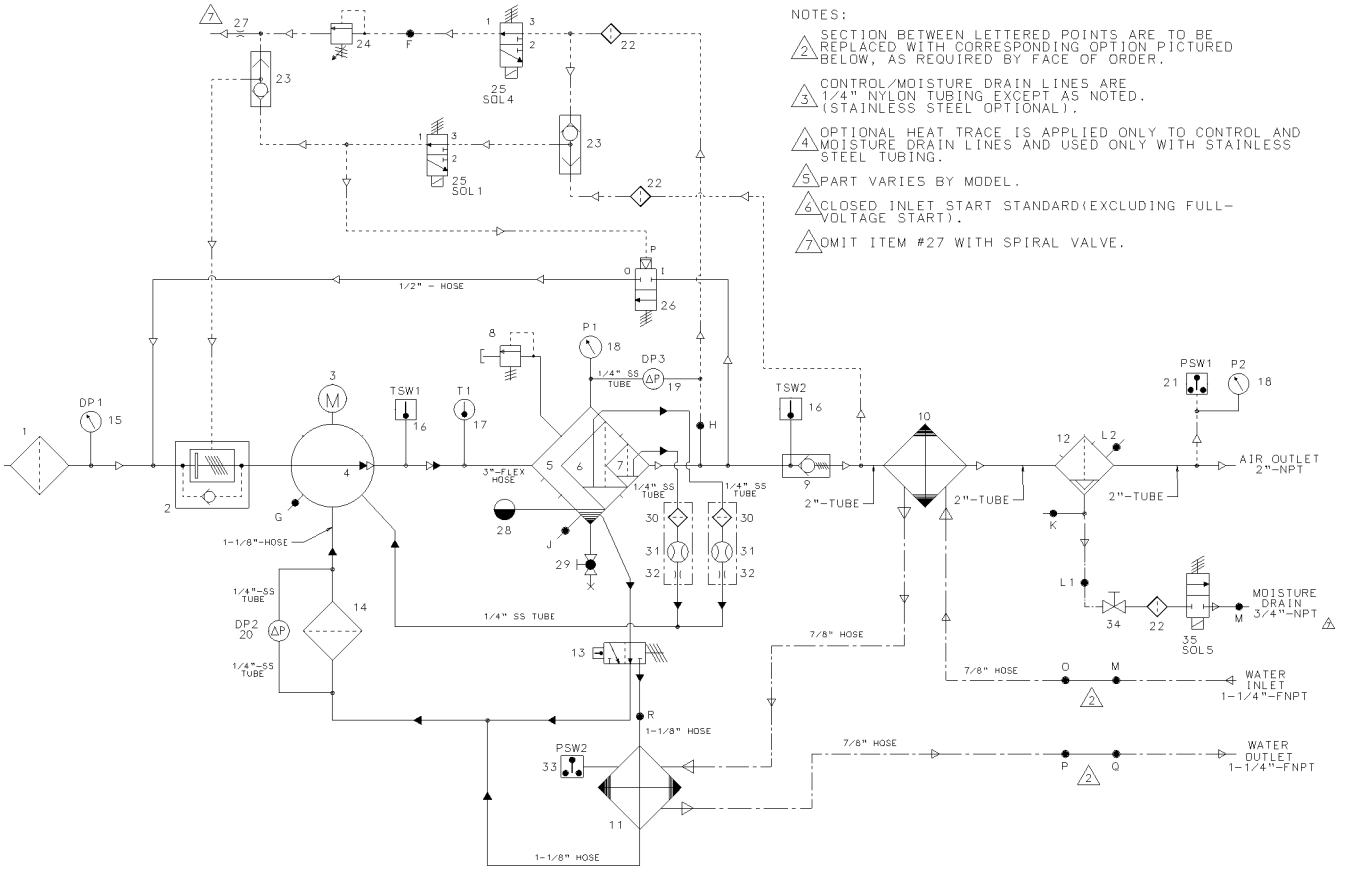
key number	description	part number	quantity
1	fltr, air h.d.inlet 12"	02250059-096	1
2	vlv, inl 6" pop w/bypass LS-200S	02250145-632	1
3	motor	-	1
4	compressor unit	-	1
5	tnk, sep ls20 leak-free	02250125-995	1
6	sep, air/oil primary LS-200	02250146-962	1
7	sep, air/oil secondary LS-200	02250146-963	1
8	vlv, rlf 3/4" 200# 550scfm	02250097-349	1
9	vlv, min press 2-1/2"sae	02250129-374	1
10	aftercooler, wc 6" x 36"	043008	1
11	clr, oil/water 6x36 1-5/8"sae	02250120-863	1
12	sep, wtr d-h 2"fnpt 1/4" drain	02250144-632	1
△5 13	element, thermal valve 175ºF	049542	1
	•element, thermal valve 190ºF	250028-762	1
14	fltr, fl 1-5/8"sae str thrd con	02250054-605	1
15	gauge, vacuum 0-30" water	250003-797	1
16	sw, htm 240 deg f-3/4"sae	02250100-095	2
17	ga, temp 100-250 deg f-3/4"sae	02250100-096	1
18	gauge, press 2"dia 0-230#	250005-185	2
19	gauge, diff press 0-15psi	250003-798	1
20	valve, sol 3wno 1/4" 235# n4	250003-799	1
21	switch, press 0-150#spdt n1	040694	1
21	switch, press 10-250#spdt open	046344	1
22	strainer, v-type 300psi x 1/4	241771	3
23	valve, shuttle 1/4" (dbl chk)	408893	2
24	valve, pressure regulator	250017-280	1
25	vlv, sol 3wno 1/4 235# n4	02250125-657	2
26	valve, 2-way pneuctl 1/2"npt	02250100-042	1
△7 27	orifice, .031	02250132-934	1
28	plug, sight glass 1-7/8"sae	02250097-611	2
29	vlv, ball 3/4"sae-m x 1/2"npt-f	02250098-303	1
30	fltr, assembly genisis fltr	02250117-782	2
31	glass, sight/orf blk-sae	02250126-129	2
32	orf, plug brass 1/8"npt x 1/16"	02250125-775	2
33	switch, press no 10psi	250017-992	1
34	valve, ball 1/4"npt	047115	1
35	vlv, sol 2wnc mo 1/4 200# n4	02250125-674	1
	POWER FAILURE RESTART (OPTIONAL):		
40	switch, press no close @ 15#	043428	1
	VCC-200 MODEL:		
41	valve, pressure reg	250017-280	1
42	spiral valve	-	1
43	orifice, .031	02250132-934	1

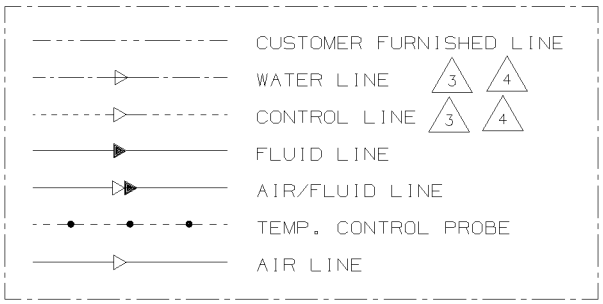
Continued on page 29

△5 Part varies by model.

△7 Omit item #27 with VCC-200 model.

Figure 3-2C Piping and Instrumentation- LS-200 and VCC-200 Water-cooled with Electro-mechanical Controller





COMPONENT	DESCRIPTION
P1	WET SUMP PRESSURE
P2	LINE PRESSURE GAUGE
DP1	AIR FILTER VACUUM INDICATOR
DP2	FLUID FILTER DIFFERENTIAL PRESSURE
DP3	SEPARATOR DIFFERENTIAL PRESSURE
PSW1	LINE PRESSURE SWITCH
PSW2	WATER PRESSURE SWITCH
PSW3	HIGH-PRESSURE SHUT DOWN SWITCH (OPTIONAL)
PSW4	SUMP PRESSURE SWITCH (OPTIONAL)
SOL1	LOAD/UNLOAD SOLENOID VALVE
SOL4	MEC/SECQUENCING/FULL LOAD SOLENOID VALVE
SOL5	ELECTRIC DRAIN/SCD DRAIN SOLENOID VALVE
SOL6	WATER SHUTOFF SOLENOID VALVE (OPTIONAL)
T1	UNIT DISCHARGE TEMPERATURE GAUGE
TSW1	UNIT DISCHARGE TEMPERATURE SWITCH
TSW2	DRY SUMP DISCHARGE TEMPERATURE SWITCH

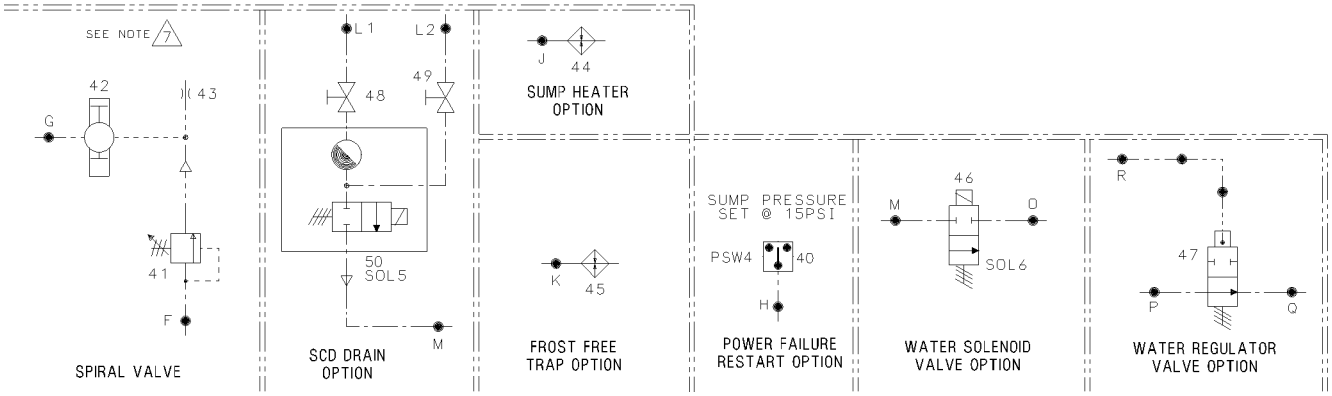


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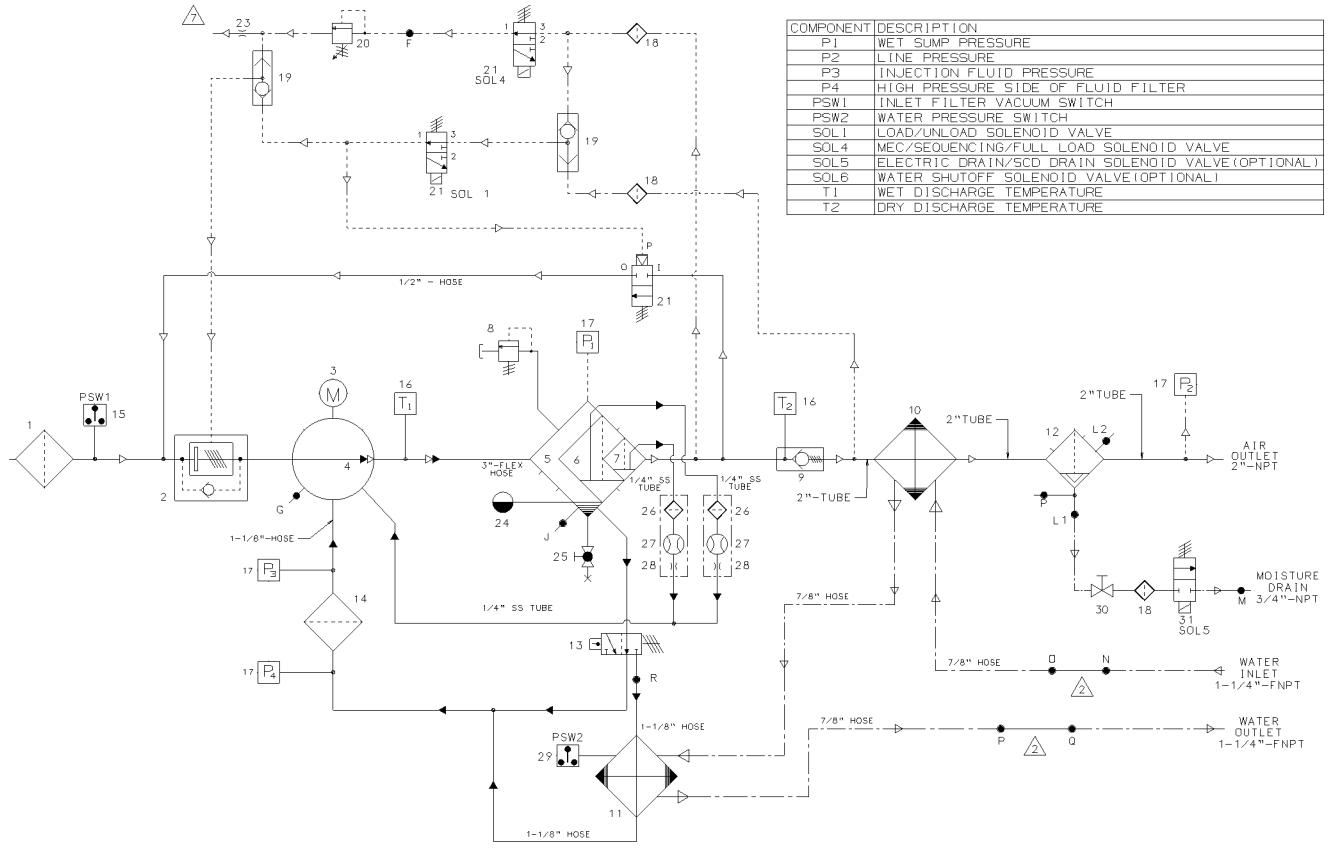
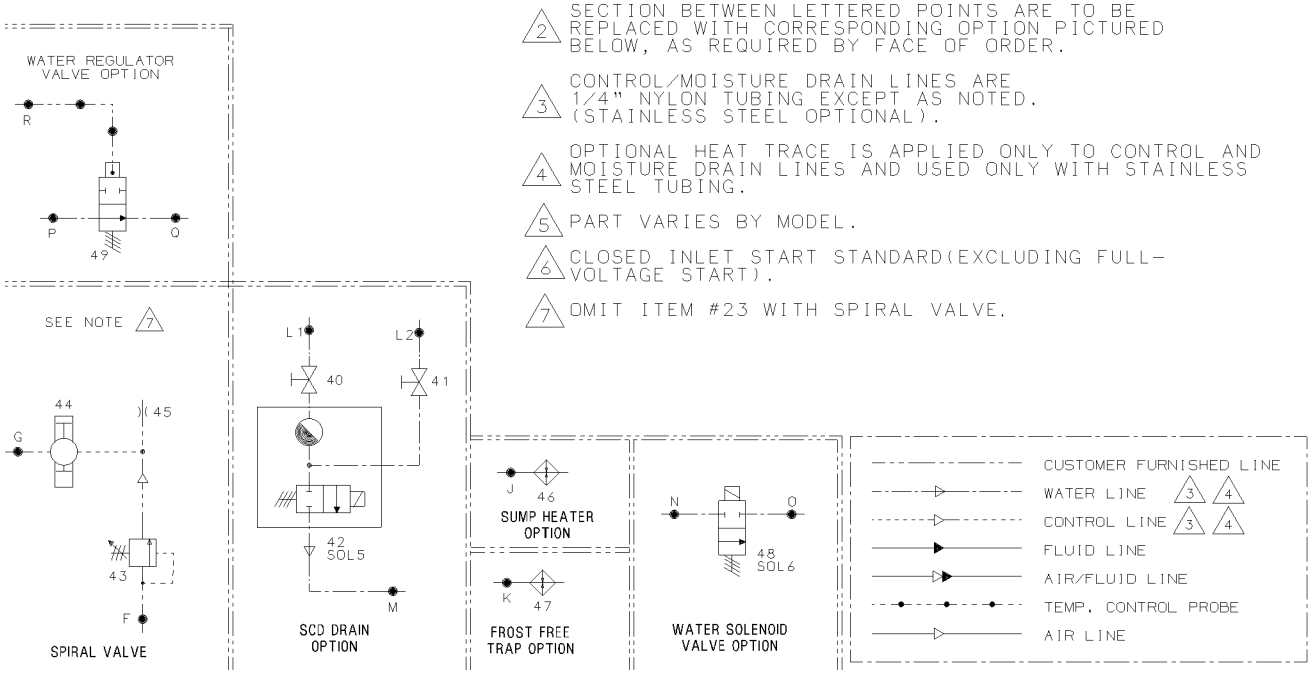
Figure 3-2C Piping and Instrumentation- LS-200 and VCC-200 Water-cooled with Electro-mechanical Controller ***(continued)***

key number	***description***	***part number***	***quantity***
	SUMP HEATER (OPTIONAL):		
44	htr, sump ls-20 1250w 120v	02250069-938	1
	MOISTURE SEPARATOR HEATER (OPTIONAL):		
45	htr, scd400/500 wrap 50w	02250114-171	1
	WATER SOLENOID VALVE (OPTIONAL):		
46	valve, sol 2wnc 1-1/4 8210g8	250035-291	1
	WATER REGULATING VALVE (OPTIONAL):		
47	valve, water regulating 1-1/4"	049474	1
	SCD DRAIN (OPTIONAL):		
48	valve, ball 1/2"npt	047117	1
49	valve, ball 1/4"npt	047115	1
50	drn, electric condensate - scd400	02250130-866	1

Figure 3-2D Piping and Instrumentation- LS-200 and VCC-200 Water-cooled with Supervisor Controller





02250146-961R02

Figure 3-2D Piping and Instrumentation- LS-200 and VCC-200 Water-cooled with Supervisor Controller

key number	description	part number	quantity
01	fltr, air h.d.inlet 12"	02250059-096	1
02	vlv ,inl 6" pop w/bypass LS-200S	02250145-632	1
03	motor	-	1
04	compressor unit	-	1
05	tnk,sep ls20 leak-free	02250125-995	1
06	sep, air/oil primary LS-200	02250146-962	1
07	sep, air/oil secondary LS-200	02250146-963	1
08	vlv, rlf 3/4" 200# 550scfm	02250097-349	1
09	vlv, min press 2-1/2"sae	02250129-374	1
10	aftercooler, wc 6" x 36"	043008	1
11	clr, oil/water 6x36 1-5/8"sae	02250120-863	1
12	sep, wtr d-h 2"fnpt 1/4" drain	02250144-632	1
△5 13	element, thermal valve 175ºF	049542	1
	•element, thermal valve 190ºF	250028-762	1
14	fltr, fl 1-5/8"sae str thrd con	02250054-605	1
15	sw, vac 22"wc n4 6ft cable 5a	02250078-249	1
16	p, rtd 100ohm platinum 12ft	250039-909	2
17	xdcr, press 0-250psi 1-5vdc n4	02250078-933	4
18	strainer, v-type 300psi x 1/4	241771	3
19	valve, shuttle 1/4"(dbl chk)	408893	2
20	valve, pressure regulator	250017-280	1
21	vlv, sol 32no 1/4 235# n4	02250125-657	2
22	valve 2-way pneuctl 1/2"npt	02250100-042	1
△7 23	orifice, .031	02250132-934	1
24	plug, sight glass 1-7/8"sae	02250097-611	2
25	vlv, ball 3/4"sae-m x 1/2"npt-f	02250098-303	1
26	fltr, assembly genisis fltr	02250117-782	2
27	glass, sight/orf blk-sae	02250126-129	2
28	orf, plug brass 1/8"npt x 1/32"	02250125-774	2
29	switch, press no 10psi	250017-992	1
30	valve, ball 1/4"npt	047115	1
31	vlv, sol 2wnc mo 1/4 200# n4	02250125-674	1
	SCD DRAIN (OPTIONAL):		
40	valve, ball 1/2"npt	047117	1
41	valve, ball 1/4"npt	047115	1
42	drn, electric condensate-scd400	02250130-866	1
	VCC-200 MODEL:		
43	valve, pressure reg	250017-280	1
44	spiral valve	-	1
45	orifice,.031	02250132-934	1
	SUMP HEATER (OPTIONAL):		
46	htr, sump ls-20 1250w 120v	02250069-938	1

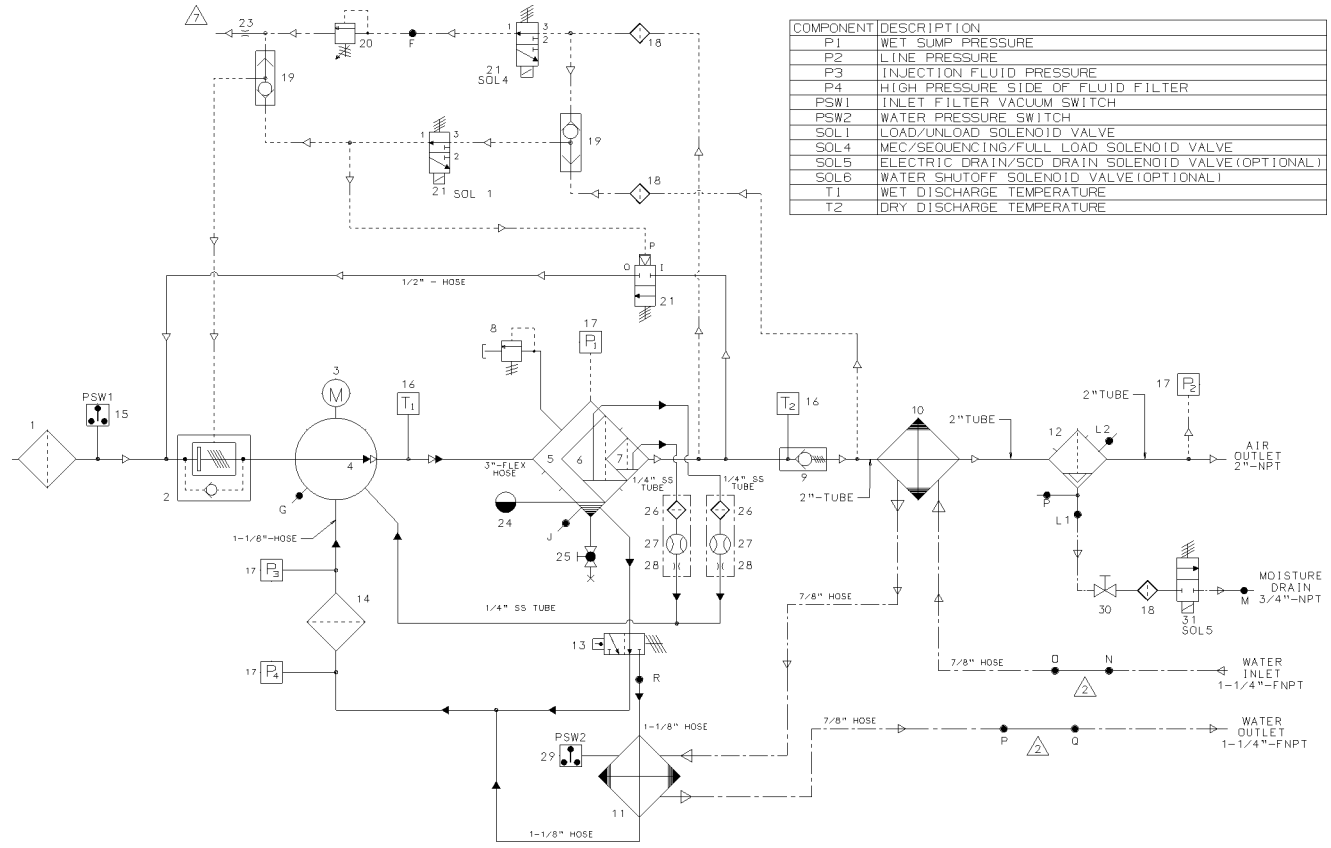
Continued on page 33

△5 Part varies by model.

△7 Omit item #23 with VCC-200 model.

Section 3
SPECIFICATIONS

Figure 3-2D Piping and Instrumentation- LS-200 and VCC-200 Water-cooled with Supervisor Controller



NOTES:

2. SECTION BETWEEN LETTERED POINTS ARE TO BE REPLACED WITH CORRESPONDING OPTION PICTURED BELOW, AS REQUIRED BY FACE OF ORDER.
3. CONTROL/MOISTURE DRAIN LINES ARE 1/4" NYLON TUBING EXCEPT AS NOTED. (STAINLESS STEEL OPTIONAL).
4. OPTIONAL HEAT TRACE IS APPLIED ONLY TO CONTROL AND MOISTURE DRAIN LINES AND USED ONLY WITH STAINLESS STEEL TUBING.
5. PART VARIES BY MODEL.
6. CLOSED INLET START STANDARD(EXCLUDING FULL-VOLTAGE START).
7. OMIT ITEM #23 WITH SPIRAL VALVE.

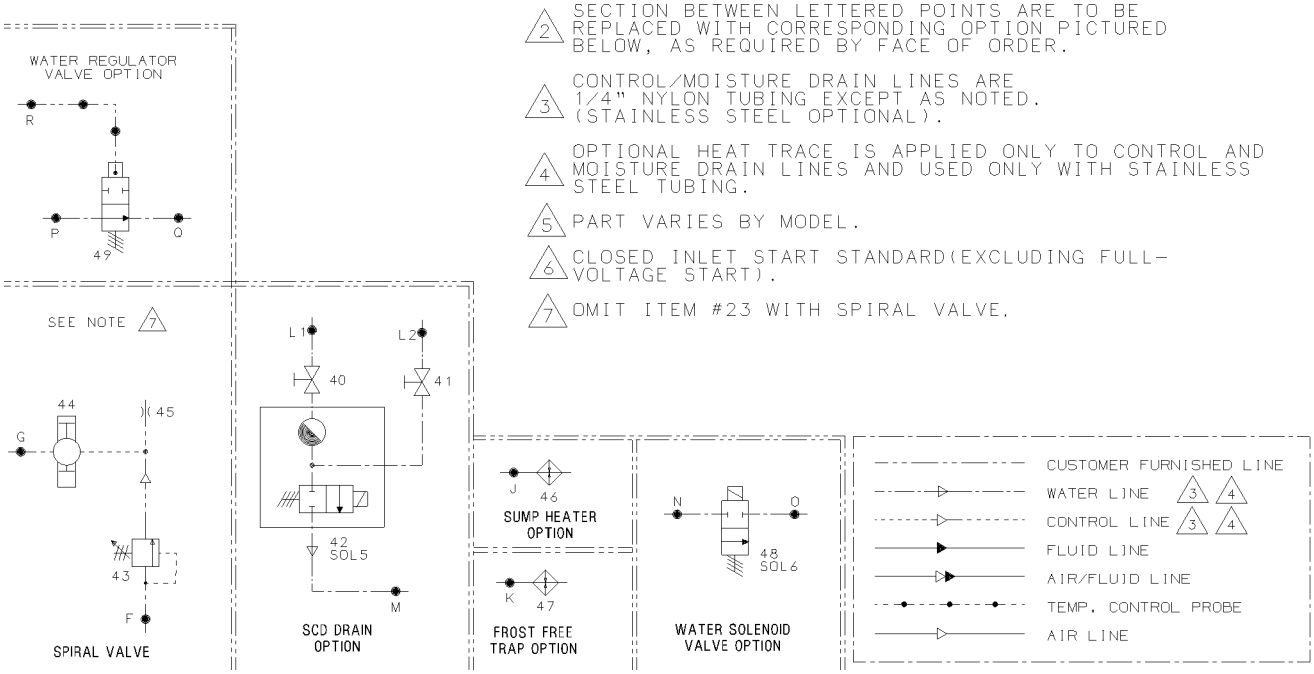


Figure 3-2D Piping and Instrumentation- LS-200 and VCC-200 Water-cooled with Supervisor Controller ***(continued)***

key number	***description***	***part number***	***quantity***
	SUMP HEATER (OPTIONAL):		
46	htr, sump ls-20 1250w 120v	02250069-938	1
	MOISTURE SEPARATOR HEATER (OPTIONAL):		
47	htr, scd400/500 wrap 50w	02250114-171	1
	WATER SOLENOID (OPTIONAL):		
48	valve, sol 2wnc 1-1/4 8210g8	250035-291	1
	WATER REGULATING VALVE (OPTIONAL):		
49	valve, water regulating 1-1/4"	049474	1

Section 3
SPECIFICATIONS

Figure 3-3A Identification- LS-200 & VCC-200 Air-cooled with Supervisor Controller (and Optional Enclosure)

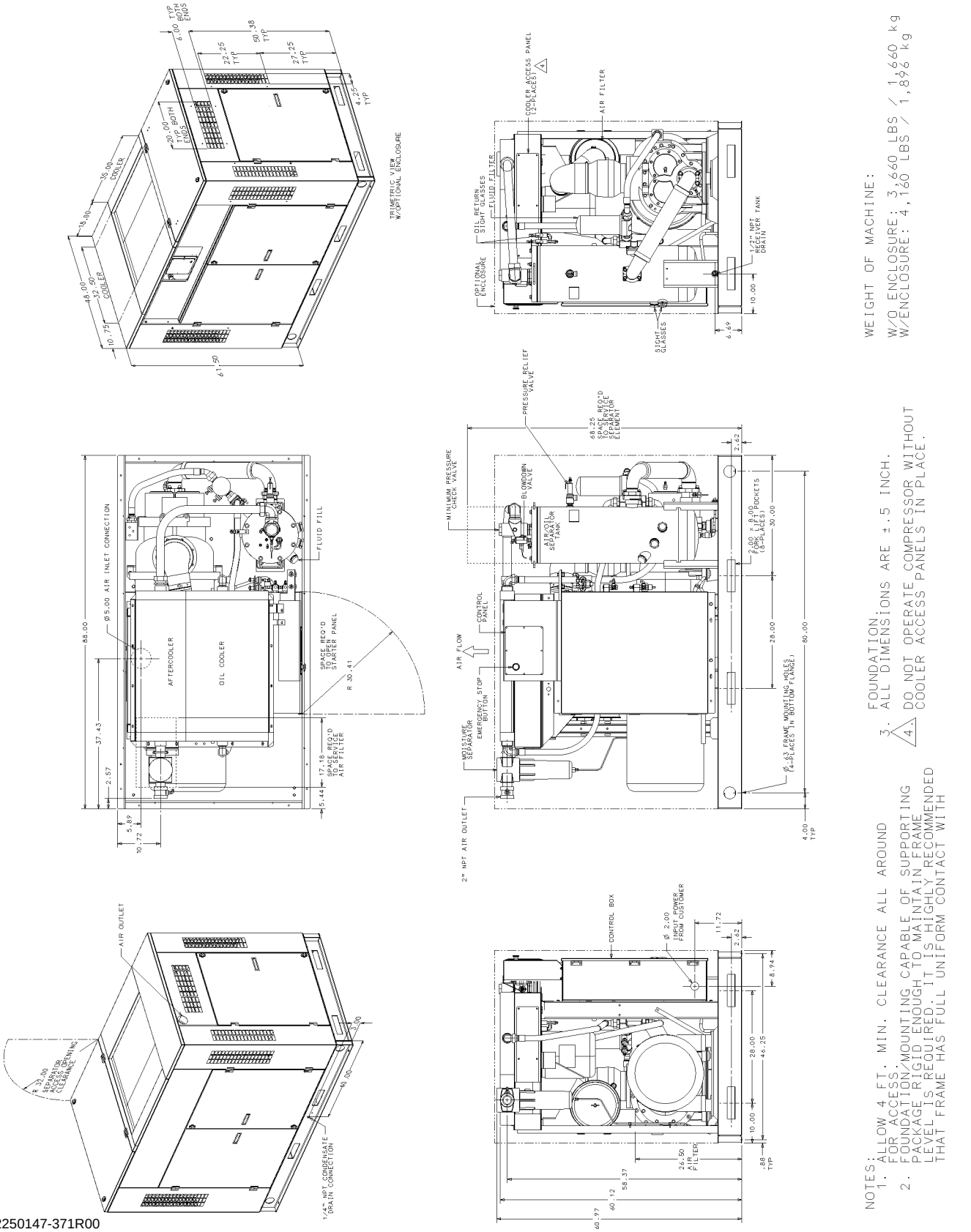


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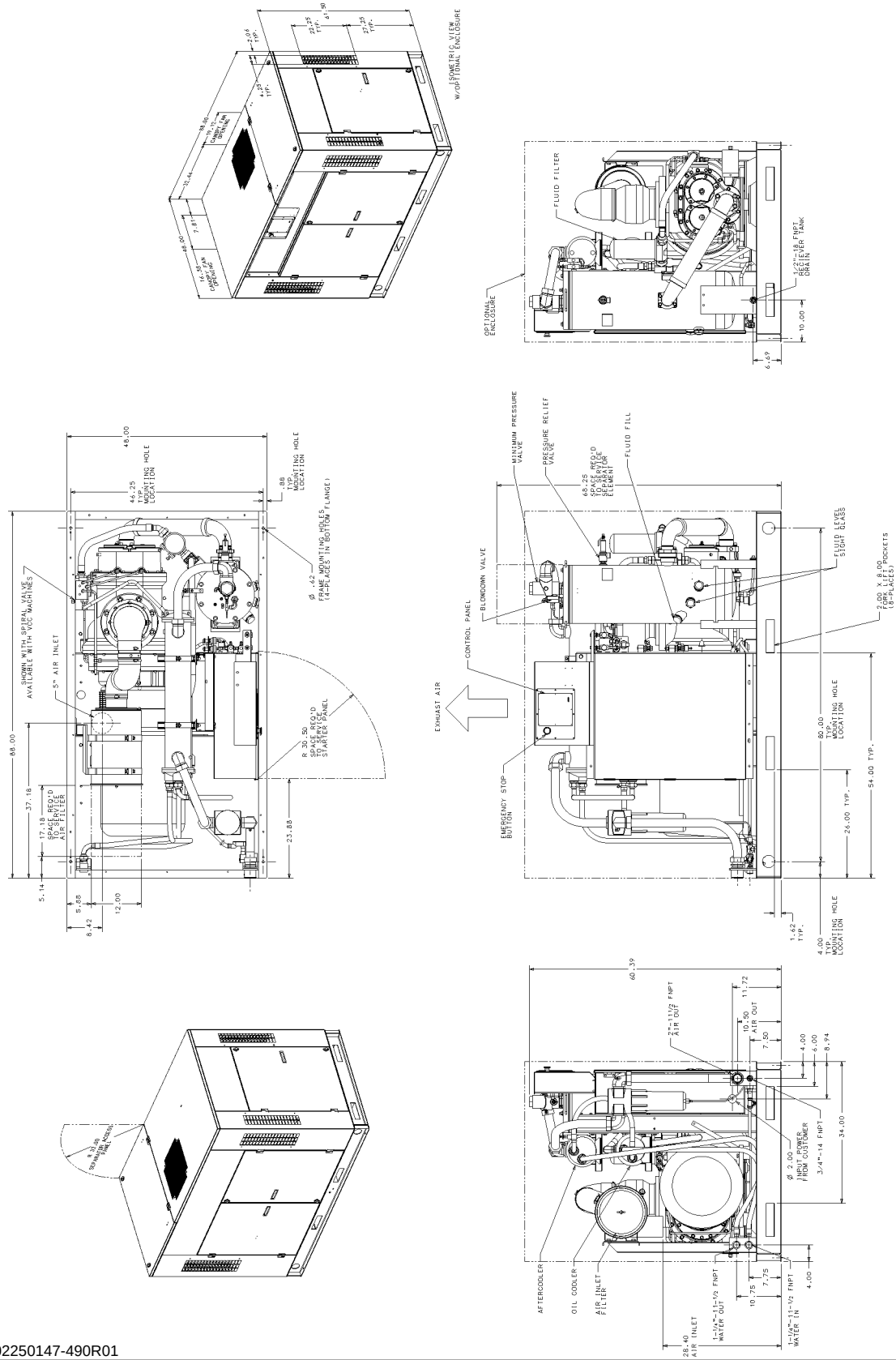
Figure 3-3B Identification- LS-200 & VCC-200 Water-cooled with Supervisor Controller (and Optional Enclosure)



02250147-490R01

NOTES

4.1 MOUNTING OF COMPRESSOR

A foundation or mounting capable of supporting the weight of the compressor, and rigid enough to maintain the compressor frame level and the compressor 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. No piping loads shall be transmitted to the compressor at the external connections.

4.2 VENTILATION AND COOLING

For air-cooled compressors, select a location to permit sufficient unobstructed air flowing in and out to the compressor to keep the operating temperature stable. The minimum distance that the compressor should be from surrounding walls is three (3) feet (1m). 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 flows shown in **Table 4-I Water Supply Requirements** (Water-cooled), and must be maintained at all times. These figures apply to a compressor running at full load with an aftercooler. For cooler water or a partially loaded compressor, slightly less water is required. However, for hotter water the flow requirements are significantly greater.

Table 4-2 Ventilation Requirements indicates the ventilation requirements necessary to keep the compressor running at a normal operating temperature. The fan air requirement is the volume of air which must flow through the compressor for proper ventilation. The specified heat rejection requirement is the amount of heat that is radiated by the compressor. This heat must be removed to assure a normal operating temperature. With air-cooled compressors it is possible to use this heat for space heating, providing no additional pressure drop is created across the fan. Consult a Sullair office for assistance in utilizing this heat.

NOTE

Consult factory for machine operation in ambient temperature less than 32ºF (0ºC).

TABLE 4-1 WATER SUPPLY REQUIREMENTS

WATER TEMP. ºF (ºC)	WATER FLOW GPM (LPM) 100HP/75KW
70 (21)	14.9 (56.4)
80 (27)	19.9 (75.3)

(I) Water pressure should be between 25 and 75 psig (1.7 and 5.2 bar).

4.3 SERVICE AIR PIPING

Service air piping should be installed as shown in Figure 4-1. A shut-off valve should be installed to isolate the compressor from the service line if required. Also notice that the service line should be equipped with water legs and condensate drains throughout the system.

NOTE

"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)

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

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

4.4 COUPLING ALIGNMENT CHECK

No coupling alignment is required.

4.5 FLUID LEVEL CHECK

The air compressor is supplied with the proper amount of fluid. However, it is necessary to check the fluid level at installation and subsequently during the operation of the compressor. The maximum oil level is at the top of the highest sight-glass on the sump when the compressor has been stopped for at least 15 minutes. The minimum oil level is one-half of the lower sight-glass, while the machine is running fully loaded.

When a complete oil change is performed, fill the sump to the maximum allowable fluid level (up to the bottom of the fluid fill port.).

NOTE

DO NOT overfill.

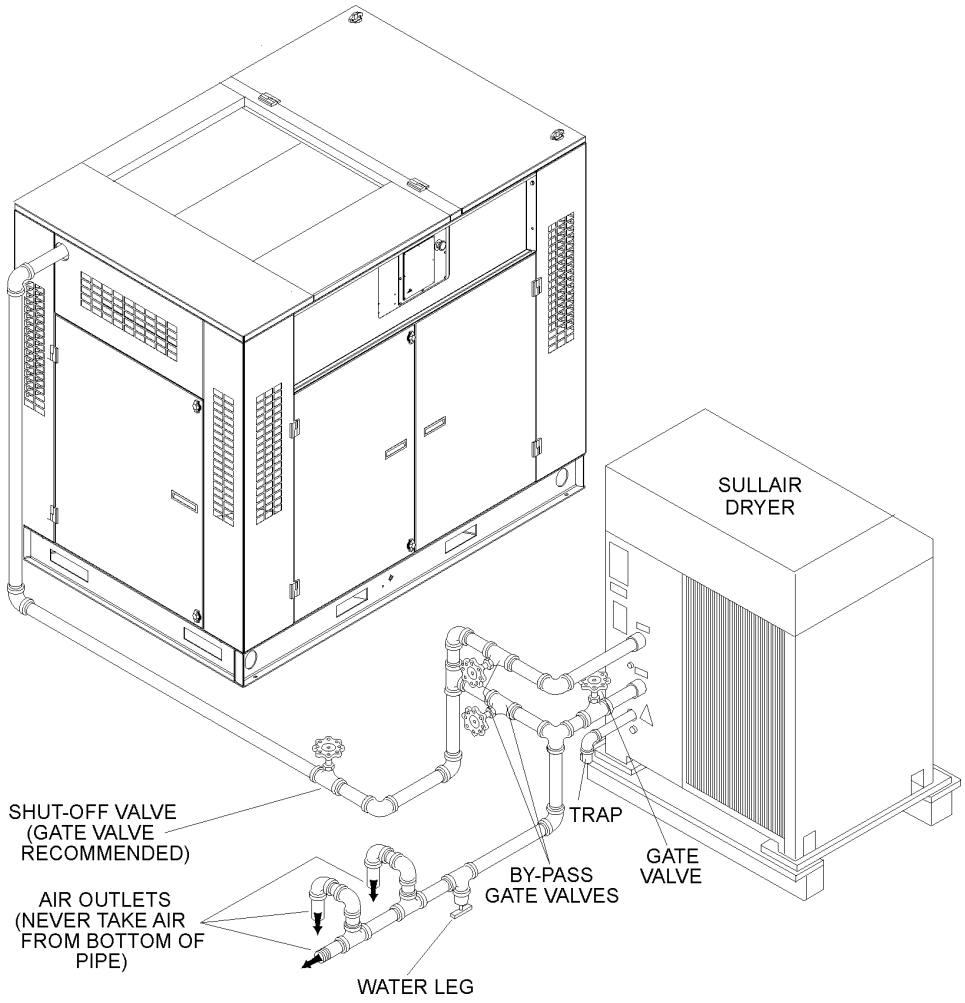
TABLE 4-2 VENTILATION REQUIREMENTS

Cooling Type	Air-Cooled w/Aftercooler	Water-Cooled
Motor HP/ KW	100/75	100/75
Fan Air CFM/ M^3/min	8,000/227	2,977/84 **(I)**
Heat Rejection BTU/hr/ Kcal/hr	298,080/75,116	18,000/4536

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

Section 4
INSTALLATION

Figure 4-1 Service Air Piping- Typical Installation



4.6 ELECTRICAL PREPARATION- ELECTRO-MECHANICAL

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

A few electrical checks should be made to help assure that the first start-up will be trouble-free.

NOTE

Customer must provide electrical supply power disconnect within sight of machine.

⚠ DANGER

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

1. Check incoming voltage. Be sure that compressor is wired for the correct incoming voltage.
2. Check starter for correct size, proper overload relay, and heaters.
3. Check all electrical connections for tightness.
4. “DRY RUN” the electrical controls by disconnecting the three (3) motor leads from the starter.

   Energize the control circuits by pressing the **START** push button and check all protective devices to be sure that they will de-energize the starter coil when tripped.
5. Reconnect the motor leads and jog the motor for a direction of rotation check as explained in Section 4.8.

NOTE

Wiring diagram for standard compressors is supplied with the machine. Optional compressor wiring diagrams will vary.

4.7 ELECTRICAL PREPARATION- SUPERVISOR

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

An electrical check should be made to help assure that the first start-up will be trouble-free.

⚠ DANGER

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

1. Check incoming voltage. Be sure that the incoming voltage is the same voltage that the compressor was wired for.
2. Check starter and overload heater sizes.
3. Check all electrical connections for tightness.
4. "DRY RUN" the electrical controls by disconnecting the three (3) motor leads from the starter.

   Energize the control circuits by pushing the ▮▮ (**START**) pad and check all protective devices to be sure that they will de-energize the starter coil when tripped.
5. Reconnect the three (3) motor leads and jog the motor for a direction of rotation check, as explained in Section 4.9.

4.8 MOTOR ROTATION DIRECTION CHECK- STANDARD ELECTRO-MECHANICAL

NOTE

Motor rotation check must be made at compressor start-up. Remove compressor panel as needed to view motor rotation.

After the electrical wiring has been done, it is necessary to check the direction of the motor rotation. This can be accomplished by toggling between the ▮▮ (**START**) and ◯ (**STOP**) push buttons on the control panel. Verify proper rotation by observing the motor shaft during start-up. The shaft should rotate in the same direction as indicated by the rotation decal located on the motor adapter. If the motor shaft is not turning in the proper direction, disconnect power to the compressor and exchange any two of the three power-input leads, then recheck rotation.

An alternative to this procedure is to monitor the sump pressure gauge when pressing the ▮▮ (**START**) push button. If immediate pressure is shown on the sump pressure gauge when the compressor is started, then the proper motor rotation has been achieved. If no pressure is indicated, press the ◯ (**STOP**) push button immediately. This indicates improper motor rotation. Disconnect the power to the starter and exchange any two of the three power input leads. Recheck rotation as outlined above.

4.9 MOTOR ROTATION DIRECTION CHECK- SUPERVISOR CONTROLLER

NOTE

Motor rotation check must be made at compressor start-up. Remove compressor panel as needed to view motor rotation.

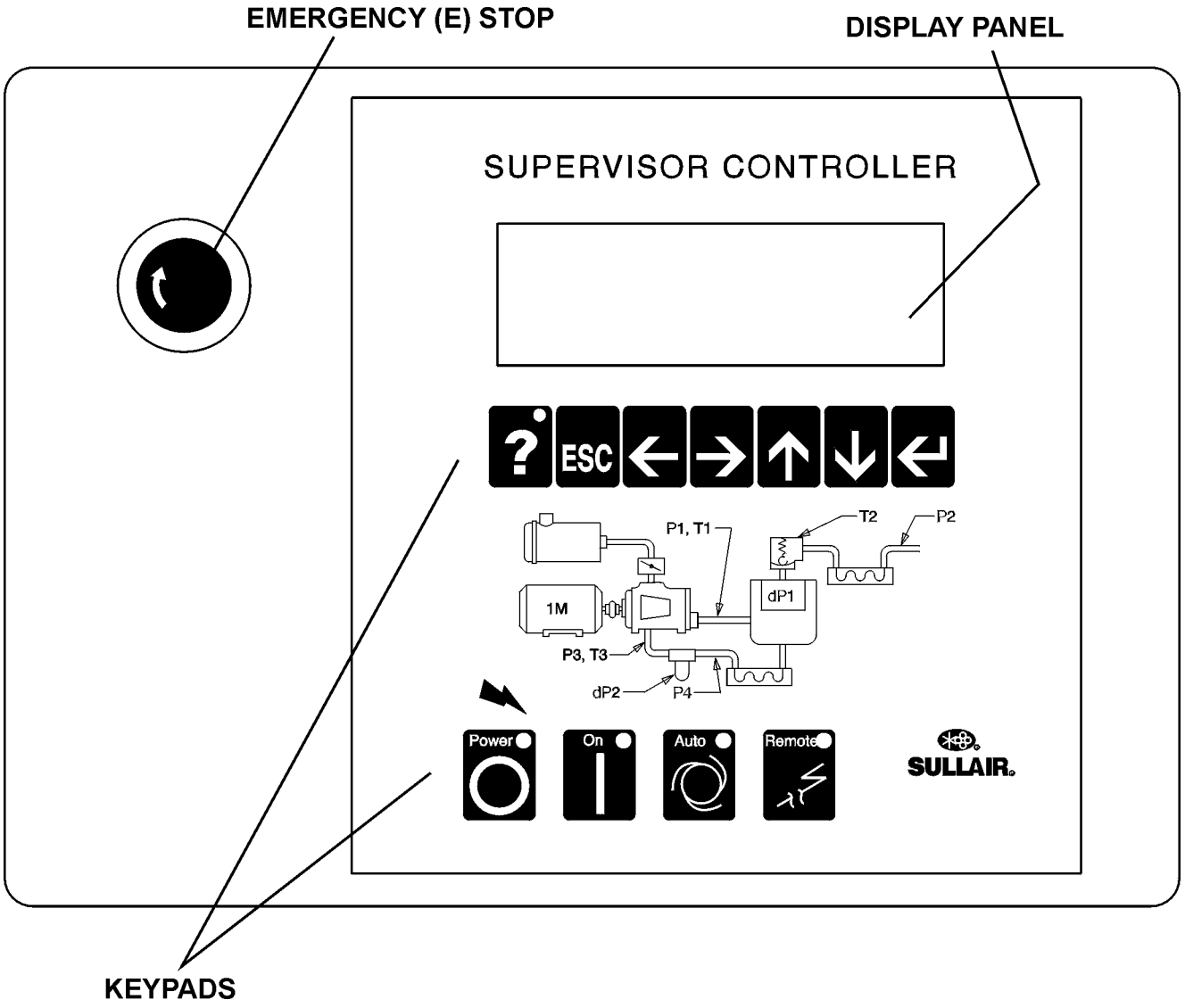
After the electrical wiring has been done, it is necessary to check the direction of the motor rotation.

Pull out the **EMERGENCY STOP** button and press once, quickly and in succession, the ▮▮ (**START**) and ◯ (**STOP**) pads. This action will bump start the motor for a very short time. Verify proper rotation by observing the motor shaft during start-up. The shaft should rotate in the same direction as indicated by the rotation decal located on the motor adapter. If the motor shaft is not turning in the proper direction, disconnect power to the compressor and exchange any two of the three power-input leads, then recheck rotation.

An alternative to this procedure is to set the Supervisor to display P1. Pull out the **EMERGENCY STOP** button and press once, quickly and in succession, the ▮▮ (**START**) and ◯ (**STOP**) pads. This action will bump start the motor for a very short time. If motor rotation is correct there will be immediate pressure shown. If no pressure is present, reverse rotation is occurring. Disconnect the power to the starter and exchange any two of the three power input leads. Recheck rotation as outlined above.

Section 5
SUPERVISOR CONTROLLER

Figure 5-1 Supervisor Controller™ Control Panel



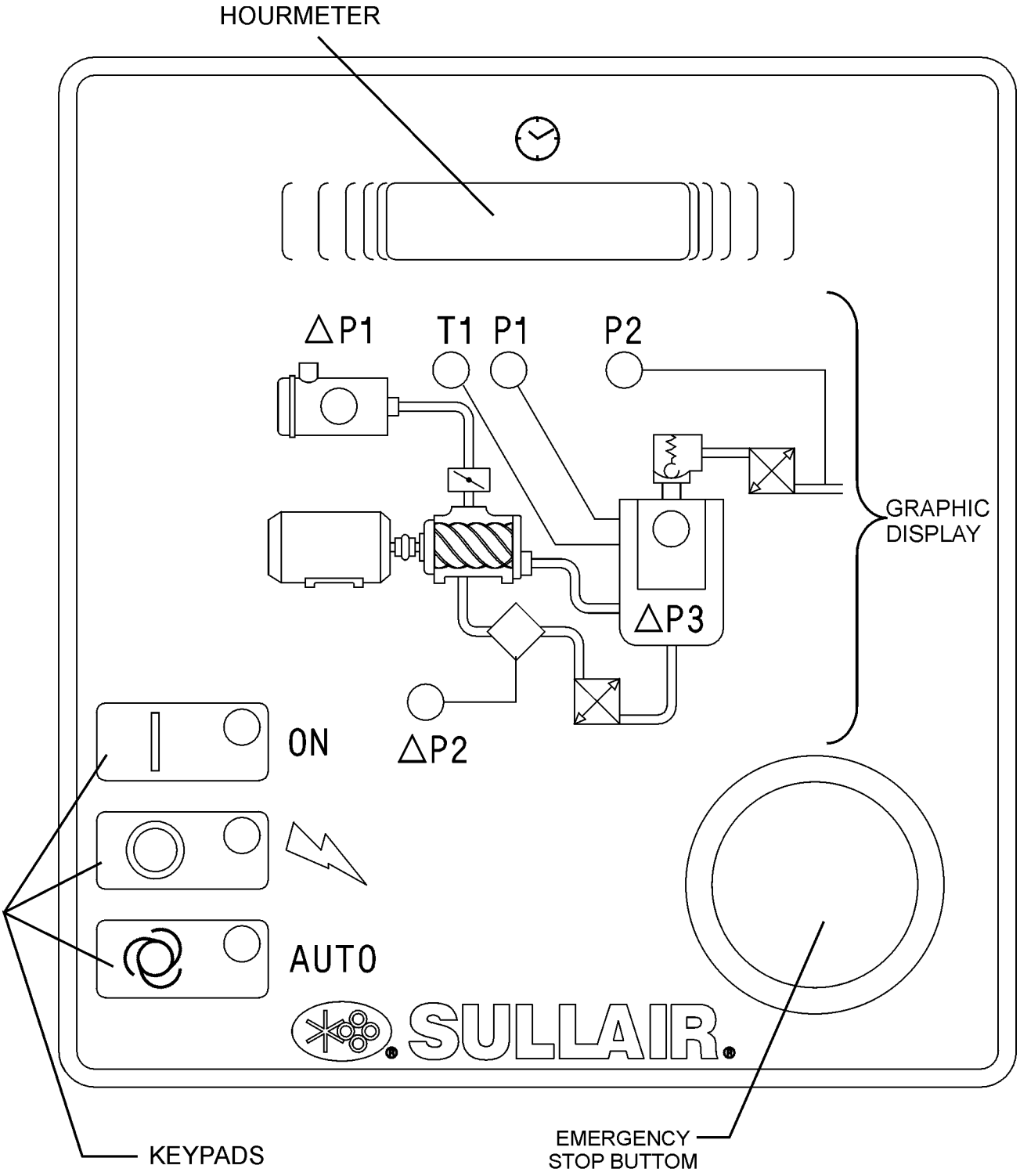
NOTE

For information concerning all aspects of the Supervisor Controller, consult the Supervisor Controller manual.

NOTES

Section 6
OPERATION- ELECTRO-MECHANICAL

Figure 6-1 Instrument Panel- Electro-mechanical Controller



Section 6
OPERATION- ELECTRO-MECHANICAL

6.1 GENERAL INTRODUCTION- ELECTRO-MECHANICAL

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

6.2 PURPOSE OF CONTROLS GUIDE- ELECTRO-MECHANICAL

CONTROL OR INDICATOR	PURPOSE
EMERGENCY STOP SWITCH	Pushing in this switch, found adjacent to the controller, cuts all AC outputs from the latter and de-energizes the starter.
START ▮ PAD	Depress to turn the compressor ON.
STOP ◯ PAD	Depress to turn the compressor OFF and reset the common fault circuit.
AUTO ◯ PAD	To select between continuos (HAND) operation and automatic stop/start (AUTO) operation. Shuts off compressor automatically after the compressor runs unloaded for a specified time (ranging from 3-60 minutes [T1]). Restarts compressor when the pressure switch closes to the load setting. Dual control is enabled by pressing the “AUTO” pad.
HOURMETER	Records cumulative hours of compressor operation; useful for planning and logging service schedules.
LINE PRESSURE GAUGE	Continually monitors service line air pressure. It is located on dry side of receiver downstream from check valve.
SUMP PRESSURE GAUGE	Continually monitors receiver/sump pressure at various load and/or unloaded conditions.
DISCHARGE TEMPERATURE GAUGE	Monitors temperature of the air leaving the compressor unit. For both air and water-cooled compressors, the normal reading should be approximately 180ºF to 205ºF (82ºC to 96ºC).
AIR FILTER RESTRICTION GAUGE	Indicates when the air filter element change is required. The gauge shows the red zone when drop through the filter is excessive. The compressor must be running full load for an accurate indication.
FLUID FILTER MAINTENANCE GAUGE	Indicates when a fluid filter element change is required. It shows red when the pressure drop through the filter is excessive.
SEPARATOR MAINTENANCE GAUGE	Indicates when separator element change is required. Shows red when the pressure drop through the filter is excessive. The compressor must be running full load for an accurate indication.
POWER ON (↘) LED	Indicates when the starter is receiving power.

Continued ...

6.2 PURPOSE OF CONTROLS GUIDE- ELECTRO-MECHANICAL (CONTINUED)

CONTROL OR INDICATOR	PURPOSE
ON LED	Indicates when compressor is in operation:
-SOLID (CONTINUOUS) LIGHT	Indicates that machine is running.
-BLINKING LIGHT	Indicates that machine is in `standby' mode, and may start at any moment without any more user intervention.
AUTO LED	Indicates when compressor is in auto mode.
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.
THERMAL VALVE	Regulates flow of fluid to and around the cooler. It is designed to maintain a minimum operating temperature of 180ºF (82ºC); use for fast warm-up on start-up.
MINIMUM PRESSURE/CHECK VALVE	Maintains minimum of 55 psig (3.8 bar) in the compressor sump. Valve piston restricts receiver air discharge from receiver/sump when pressure falls to 55 psig (3.8 bar). Also prevents backflow into the sump during unload conditions and after shutdown.
COMPRESSOR DISCHARGE TEMPERATURE SWITCH	Designed to shut the compressor down when the discharge temperature reaches 235ºF (113ºC).
WATER PRESSURE SWITCH (water-cooled compressors only)	It prevents operation when water pressure of compressor is inadequate.
PRESSURE RELIEF VALVE	Opens sump pressure to the atmosphere should pressure inside the sump become too high. Operation of this valve indicates that the high pressure switch is either faulty or out of adjustment.
MODULATING INLET VALVE	Regulates the amount of air allowed to enter the air compressor. This regulation is determined by the amount of air being used at the service line. Also acts as a check valve to prevent reverse compressor rotation at shut down.
SPIRAL VALVE (VCC)	Internally bypasses and controls the air flow capacity of the compressor, in order to match air supply to the demand.
PRESSURE REGULATOR	Allows a pressure signal to reach the air inlet valve or spiral valve to control air delivery according to demand.
SOLENOID VALVE	Bypasses the pressure regulator valve causing the inlet valve to close when the compressor reaches maximum operating pressure. Also activates blow-down valve.

Continued ...

6.2 PURPOSE OF CONTROLS GUIDE- ELECTRO-MECHANICAL (CONTINUED)

CONTROL OR INDICATOR	PURPOSE
PRESSURE SWITCH	Senses service line pressure. When line pressure reaches maximum setting the pressure switch signals the pilot valves to unload the compressor.
BLOWDOWN VALVE	Vents sump pressure to the atmosphere during unload conditions and shutdown.

6.3 INITIAL START-UP PROCEDURE

Refer to Figure 6-1. The following procedure should be used to make the initial start-up of the compressor.

1. Be sure that all preparations and checks described in the Installation Section have been made.

NOTE

Before initial start up check that fluid is at proper level in the sight glass (see Figure 3-1).

Grease motor per manufacturer's recommendations.

2. Read the preceding pages of this manual thoroughly.
3. Jog motor to check for correct rotation of main motor or fan motor (refer to Section 4.8).
4. Start the compressor in the desired operating mode | or ○.
5. Slowly open the shut-off valve to the service line.
6. Check for possible leaks in piping.
7. Slowly close the shut-off valve to assure proper nameplate pressure unload setting is correct. The compressor will unload at nameplate pressure. If adjustments are necessary, see Control System Adjustment section in the compressor operator's manual.
8. Observe the operating temperature. Refer to compressor operator's manual for acceptable operating range. If temperature exceeds this range, the cooling system and installation environment should be checked.
9. Open shut-off valve to the service line.
10. Reinspect the compressor for temperature and leaks the following day.

6.4 SUBSEQUENT START-UP PROCEDURE

Refer to Figure 6-1. On subsequent start-ups, check that the proper level is visible in the fluid sight glass and simply press the START | or AUTO MODE ○ button. When the compressor is running, observe the instrument panel and maintenance indicators.

6.5 SHUTDOWN PROCEDURE

Refer to Figure 6-1. To shut the compressor down, press the STOP ○ button.

NOTES

Section 7
OPERATION- SUPERVISOR CONTROLLER

7.1 INTRODUCTION

While Sullair has built into the 200 Series package a comprehensive array of controls and indicators to assure its proper operation, the user should recognize and interpret readings which call for service or indicate the onset of a malfunction. Before starting the unit, the user should become familiar with the controls and indicators-their purpose, location, and use.

Indicators and functions included in the package are listed in the following guide. However, all Supervisor Controller-related functions and indicators are presented in the Supervisor Controller Manual, so please refer to that document for additional information.

7.2 PURPOSE OF CONTROLS GUIDE- SUPERVISOR CONTROLLER

CONTROL	PURPOSE
EMERGENCY STOP SWITCH	Pushing in this switch, found adjacent to the Supervisor, cuts all AC outputs from the latter and de-energizes the starter. A fault message (E STOP) is displayed by the Supervisor until the button is pulled out and the ◯ pad is depressed.
THERMAL O/L RESET	Momentarily pushing this button, found on the starter's thermal overload element housing, re-closes the latter's contacts after a current overload takes place. Please be aware that the elements must be allowed to cool sufficiently before resetting.
MODULATING INLET VALVE	Regulates the amount of air allowed to enter the air compressor. This regulation is determined by the amount of air being used at the service line. Also acts as a check valve to prevent reverse compressor rotation at shut down.
SPIRAL VALVE	Internally bypasses and controls the air flow capacity of the compressor, in order to match air supply to the demand. This device is standard on VCC-200 models.
PRESSURE REGULATOR	Allows a pressure signal to reach the air inlet valve to control air delivery according to demand.
PRESSURE REGULATOR (WITH SPIRAL VALVE)	Opens a pressure signal to the spiral valve actuator allowing the spiral valve to regulate air delivery according to air demand.
SOLENOID VALVE	Bypasses the pressure regulator valve causing the inlet valve to close when the compressor reaches maximum operating pressure. Also activates blow-down valve.
MINIMUM PRESSURE/ CHECK VALVE	Maintains minimum of 50 psig (3.5 bar) in the compressor sump. Valve piston restricts receiver air discharge from receiver/ sump when pressure falls to 40 psig (2.8 bar). Also prevents backflow into the sump during unload conditions and after shutdown.
PRESSURE RELIEF VALVE	Vents the sump vessel to atmosphere if the compressed air pressure exceeds 200 psig (13.8 bar). Its operation indicates fault with the Supervisor operation or its programming.
BLOWDOWN VALVE ASSEMBLY	Vents the sump vessel to atmosphere during unloading and shutdown.

Continued...

Section 7
OPERATION- SUPERVISOR CONTROLLER

7.2 PURPOSE OF CONTROLS GUIDE- SUPERVISOR CONTROLLER (CONTINUED)

CONTROL	PURPOSE
THERMAL MIXING VALVE	Bypasses fluid flow around the cooler until the fluid reaches a temperature of 180ºF (82ºC). Useful for fast warm-up during start. Maintains a minimum temperature of 180ºF (82ºC) during periods of low load or low ambient temperatures. **NOTE:** Standard thermal valve temperature is 175ºF/79ºC (operating temperature of 180ºF/ 82ºC). Thermal valve temperature is 190ºF/88ºC (operating temperature of 195ºF/ 91ºC) for HH, XH and 24KT machines.
SUMP SIGHT GLASS	Indicates level of lubricant in the sump. Located on the sump side, it should show half-full (compressor stopped) for proper fluid level.
SEPARATOR RETURN LINE SIGHT GLASSES	Indicate fluid flow in the separator return lines. Large flow should be visible during full load operation; little to no flow during unloaded operation. Sluggish flow during full load operation indicates the need to clean the strainers fitted to the sight glasses.
WATER PRESSURE SWITCH	De-energizes the starter, via the Supervisor, if the water pressure falls below 10 psig (0.7 bar). This switch is not adjustable. Used on water-cooled packages only.
DRAIN VALVES	Lubricant sump drain valve.

7.3 INITIAL START-UP PROCEDURE

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

NOTE

Before initial start up check that fluid is at proper level in the sight glass (see Figure 3-1).

Grease motor per manufacturer's recommendations.

1. Read the preceding pages of this manual thoroughly.
2. Jog motor to check for correct rotation of main motor and fan (refer to Section 4.9).
3. Be sure that all preparations and checks described in the Installation Section have been made.
4. Start the compressor (**manual** mode I, or **AUTO** mode ◯)
5. Open the shut-off valve to the service line.
6. Check for possible leaks in piping.
7. Slowly close the shut-off valve to assure proper nameplate pressure unload setting is correct. The compressor will unload at nameplate pressure. If adjustments are necessary, see Control System Adjustments.
8. Observe the operating temperature. Refer to Section 2.4 for proper operating temperature range. If temperature exceeds this range, the cooling system and installation environment should be checked.
9. Open shut-off valve to the service line.
10. Reinspect the compressor for temperature and leaks the following day.

7.4 SUBSEQUENT START-UP PROCEDURE

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

7.5 SHUTDOWN PROCEDURE

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

8.1 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. See instructions for each item in Section 8.7, Parts Replacement and Adjustment procedures.

8.2 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 under Excessive Fluid Consumption for a probable cause and remedy.

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

⚠ WARNING

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

Stop compressor and relieve all internal pressure before doing so.

8.3 MAINTENANCE AFTER INITIAL 50 HOURS OF OPERATION

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

1. Clean the return line strainer.
2. Clean the return line orifice.

8.4 MAINTENANCE AFTER FIRST 1000 HOURS

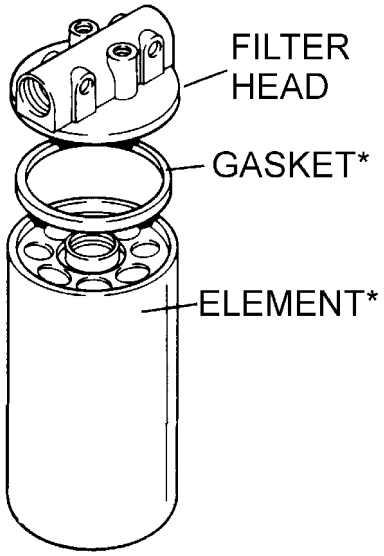
After 1000 hours of operation, it will be necessary to perform the following:

1. Clean the return line strainer.
2. Replace the fluid filter element and gasket.

8.5 MOTOR BEARINGS

Grease motor per manufacturer's recommendations.

Figure 8-1 Fluid Filter (P/N 02250054-605)



*Repair Kit P/N 250025-526

8.6 FLUID MAINTENANCE

Drain the sump and change the compressor fluid per recommendations in *Section 3, Specifications*.

Standard models are filled with Sullube. Sullube should be changed under the following conditions, whichever occur first:

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

A fluid sample at every 1000 hours is recommended. For a free Sullube analysis, send fluid to:

Dow Chemical
Lubricant Technology Center
Building B-1605
Freeport, TX 77541

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

8.7 PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES

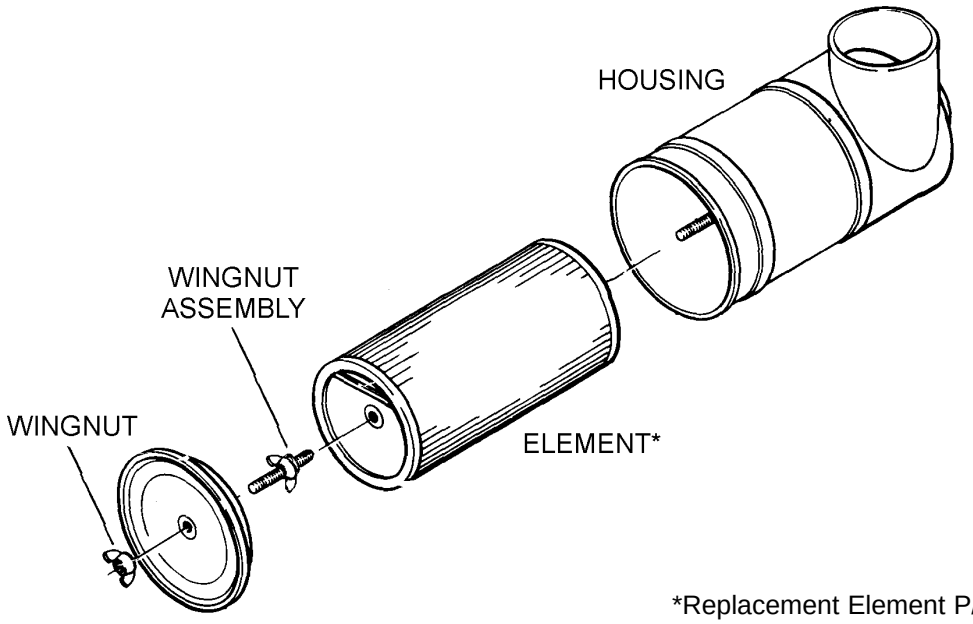
Please familiarize yourself with the safety guidelines offered in *Section 1, Safety* of this manual before attempting any maintenance on the package.

FLUID FILTER MAINTENANCE

Refer to Figure 8-1. Replace your fluid filter element and the gasket under any of the following conditions, whichever occurs first:

1. As indicated by the maintenance indicator.
2. Every 1000 hours of operation.

Figure 8-2 Air Filter Replacement (P/N 02250059-096)



*Replacement Element P/N 02250145-731

To replace the fluid filter element, follow these steps:

NOTE

To ensure proper filter ratings vital for system cleanliness it is important that ONLY a replacement fluid filter identified with the Sullair name, logo and appropriate part number be used, and that substituted filters not be used, due to the fact that such filters may have inadequate or questionable ratings.

1. Using a strap wrench, remove the old element and gasket.
2. Clean gasket seating surface.
3. Apply a light film of fluid to the new gasket.
4. Hand tighten new element until new gasket is seated in the gasket groove. Avoid any nicks, cuts or pinches to the gasket.
5. Continue tightening element by hand an additional 1/2 to 3/4 turn.
6. Restart compressor and check for leaks.

AIR FILTER MAINTENANCE

Air filter maintenance should be performed when indicated by the maintenance display/gauge when running full load, or once a year, whichever comes first. If the filter needs to be replaced, order replacement element. Following you will find procedures on how to replace the air filter element.

AIR FILTER ELEMENT REPLACEMENT

Refer to Figure 8-2.

1. Clean exterior of air filter housing.
2. Unscrew the wing nut securing the cover.
3. Unscrew the wingnut assembly securing the primary element in place.
4. Carefully remove the element from the housing.
5. Replace with new element, making sure that it rests correctly in position.
6. Replace the wingnut assembly and tighten to secure element in place.
7. Replace the cover.
8. Secure the cover by tightening the wingnut.

SEPARATOR MAINTENANCE

Replace the separator elements when indicated by the maintenance display/gauge or after one (1) year, whichever comes first.

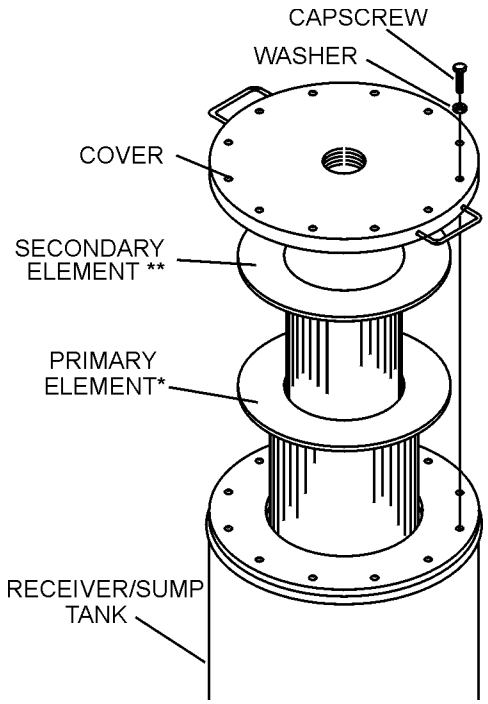
⚠ WARNING

Relieve all pressure from the sump tank and all compressor lines.

NOTE

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

Figure 8-3 Separator Element Replacement



*Replacement Kit for Primary Element P/N 02250146-964
**Replacement Kit for Secondary Element P/N 02250146-965

Refer to Figure 8-3. Follow the procedure explained below for separator element replacement.

NOTE

The separator elements must be replaced. DO NOT clean the separator elements.

1. Disconnect all piping connected to the sump cover to allow removal (return lines, service lines, etc.).
2. Loosen and remove the eight (8) hex head cap-screws (5/8 x 2") from the cover plate.
3. Lift the cover plate from the sump.
4. Remove the separator elements.
5. Inspect the receiver/sump tank for rust, dirt, etc.
6. Scrape the old gasket material from the cover and flange on the sump. Be careful not to let the scraps fall in the sump.
7. Reinsert the separator elements into the sump taking care not to dent them against the tank opening.
8. Clean the underside of the receiver/sump tank cover and remove any rust.
9. Replace the cover plate, washers and cap-screws. Torque to 55 ft-lbs. (75 Nm).
10. Reconnect all piping making sure return line tubes extend to the bottom or 1/4" (6mm) above the bottom of the separator element. This will insure proper fluid return flow to the compressor.
11. Clean the return line strainers before restarting the compressor.

OIL RETURN/SIGHT GLASS MAINTENANCE

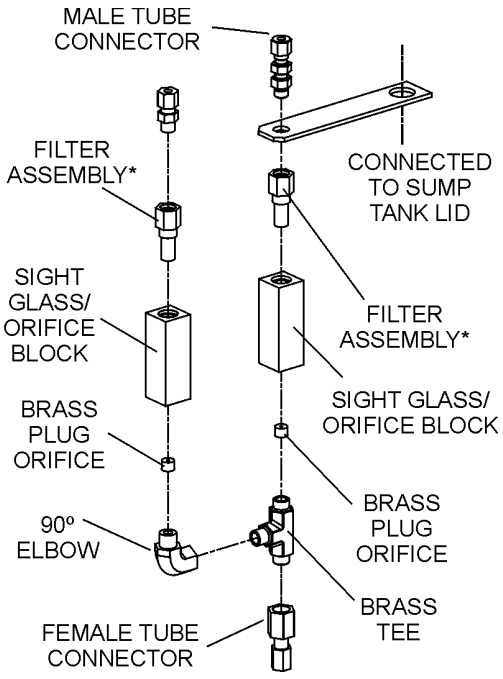
Refer to Figure 8-4. The oil return/sight glass sub-assembly is attached to the separator tank lid. Oil return/sight glass maintenance should be performed on a routine basis parallel to that of the fluid filter, or as indicated in the troubleshooting sections of this and the Supervisor Controller manuals. The maintenance on an oil return/sight glass is mainly concerned with the condition of the filter assembly. Order filter assembly no. 02250117-782, and use the following instructions as a guide.

NOTE

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

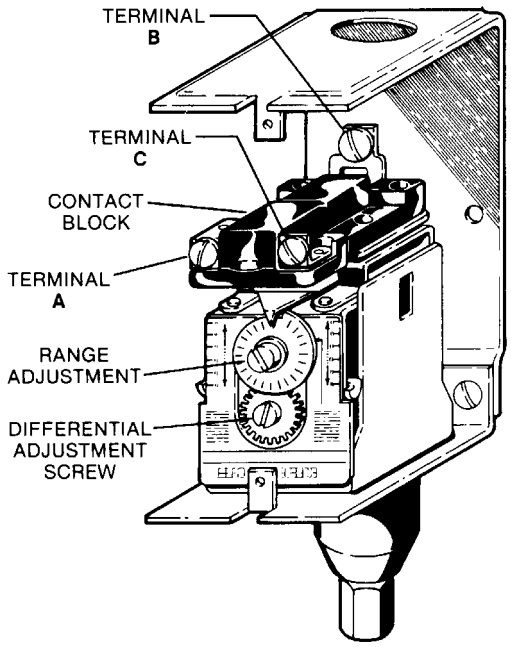
1. Disconnect the tubes at the tops of the sight glass assemblies.
2. Unscrew male connector (for left-side glass), or the straight thread tube connector (for right-side glass) from sight glass/orifice blocks.

Figure 8-4 Oil Return/ Sight Glass



*Replacement Filter P/N 02250117-782

Figure 8-5 Pressure Switch (P/N 040694)



3. Remove used filter assembly, and replace with new assembly.
4. Coat/lubricate the o-rings will silicone grease.
5. Reattach the connectors to the sight glass/orifice blocks.

CONTROL SYSTEM ADJUSTMENT

Refer to Figure 8-5. Prior to adjusting the Control System, it is necessary to determine the desired operating pressure range and also the maximum pressure at which your compressor is to operate. The pressure must not exceed the maximum operating pressure which is stamped on the compressor serial number nameplate. The following explanation applies to a typical installation with a desired operating range of 100 to 110 psig (6.9 to 7.6 bar). This information will apply to a compressor with any other operating range excepting the stated pressures.

Remove the cover of the pressure switch. With the shut-off valve closed (or slightly cracked open) start the compressor. Observe the line pressure gauge and pressure switch contacts. When the line pressure reaches 110 psig (7.6 bar), the pressure switch contacts should open. If the pressure switch contacts do not open or they open prior to the desired pressure, the pressure switch setting will require adjustment (refer to Figure 8-5).

FOR PRESSURE RANGE ADJUSTMENT:

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

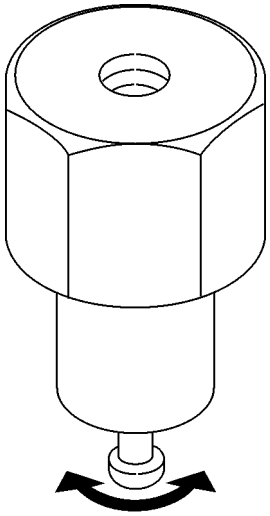
FOR DIFFERENTIAL ADJUSTMENT:

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

1. Turn the differential adjusting screw to the lower (reset) setting. Turning the screw counterclockwise widens the differential by lowering the reset (lower) setting only.
2. When the pressure switch adjustment is complete, the pressure regulator should be adjusted for the pressure at which modulation of air delivery should begin. In this case that pressure will be 102 psig (7.0 bar). The regulator is adjusted by loosening the jam nut on the end of the cone shaped cover of the pressure regulator. When the jam nut is loose, turn the adjusting screw clockwise to increase or counterclockwise to decrease the setting.
3. To set the regulator, continue closing the service valve until the line pressure is 102 psig (7.0 bar). At this point regulator should pass a signal to the inlet valve to start closing it. If the line pressure keeps on rising or if the modulation does not begin, adjust the regulator as described above. After adjustment, line pressure should be approximately 102 psig (7.0 bar) and 1.00 in. Hg (2.54 cm Hg.) vacuum below the inlet.
4. Next, close the service valve; line pressure will start rising. When line pressure reaches 110 psig (7.6 bar), the inlet valve will be closed to its maximum position. The inlet vacuum at this point will be around 25 in. Hg (63.5 cm Hg.). The machine should unload at this point.
5. Open the service valve so the line pressure is 100 psig (6.9 bar). Machine is now set for operation. Recheck the unload pressure by closing of the service valve. Machine should unload via the pressure switch at 110 psig (7.6 bar).

After the control pressures have been adjusted, the “unloaded” sump pressure should be checked. It will be necessary to shut the compressor down, remove the pressure switch cover, and disconnect one of the two lead wires that are connected to the micro-switch (contact block). In order to have a correct reading, the air system to which the compressor is connected must be pressurized to at least 80 psig (5.5 bar). After disconnecting the lead, tape the exposed wire with electrician’s tape to make sure that it does not come in contact with any metallic surface.

Figure 8-6 Regulator Adjustment



DANGER

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

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

The sump pressure should read 20 to 30 psig (1.4 to 2.1 bar).

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

DANGER

DO NOT touch the pressure switch, electrical con with any part of the body or any un-insulated metallic object. Severe electrical shock may occur.

PRESSURE REGULATOR ADJUSTMENT

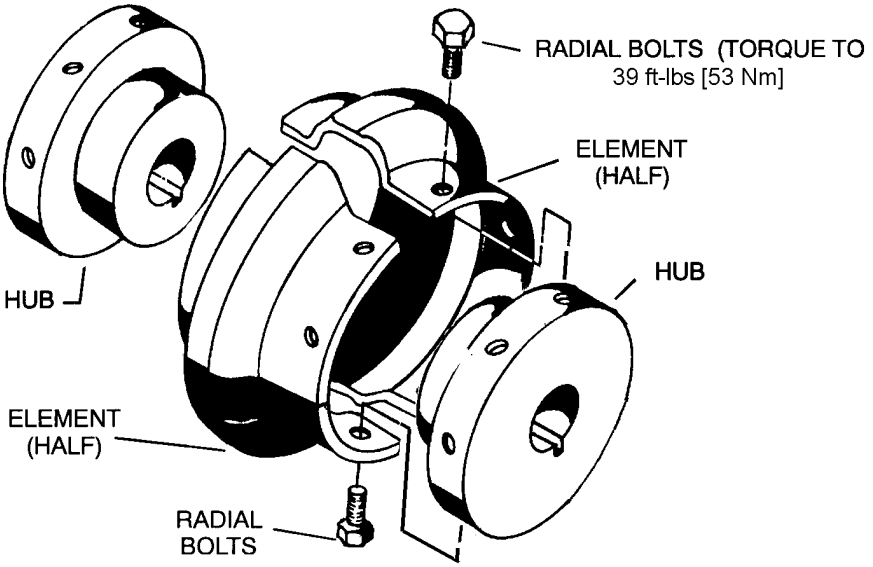
Start the compressor and adjust the service valve to maintain service air pressure approximately at five (5) psi over rated pressure. Turn the inlet valve regulator adjusting screw until air just begins to escape from the control air orifice (located at the bottom of the regulator; refer to Figure 8-6). Lock the adjusting screw in place with the locknut. The regulator is now properly set.

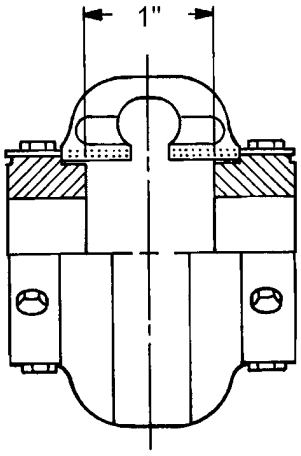
COMPRESSORS WITH SPIRAL VALVE

Start the compressor and adjust the service valve to maintain service air pressure approximately at five (5) psi over rated pressure. Turn the inlet valve regulator adjusting screw until air just begins to escape from the control air orifice (located at the bottom of the regulator). Lock the adjusting screw in place with the locknut.

Readjust the service valve to maintain service air pressure approximately one (1) psi over rated pressure. Turn the spiral valve regulator adjusting screw until air just begins to escape from the control air

Figure 8-7 Drive Coupling





orifice (located at the bottom of the regulator; refer to Figure 8-6). Lock the adjusting screw in place with the locknut. The regulators are now properly set.

SHAFT COUPLING MAINTENANCE

Refer to Figure 8-7. The compressor unit and motor are rigidly connected via a rigid adapter piece, thus the shafts are maintained in proper alignment at assembly. The only component requiring regular inspection or servicing is the coupling flexible element, which may be accessed as follows:

DANGER

Disconnect all power at source before attempting maintenance or adjustments. Follow lockout procedures (Refer to Section 1, Safety).

INSPECTION/REMOVAL OF FLEXIBLE ELEMENT

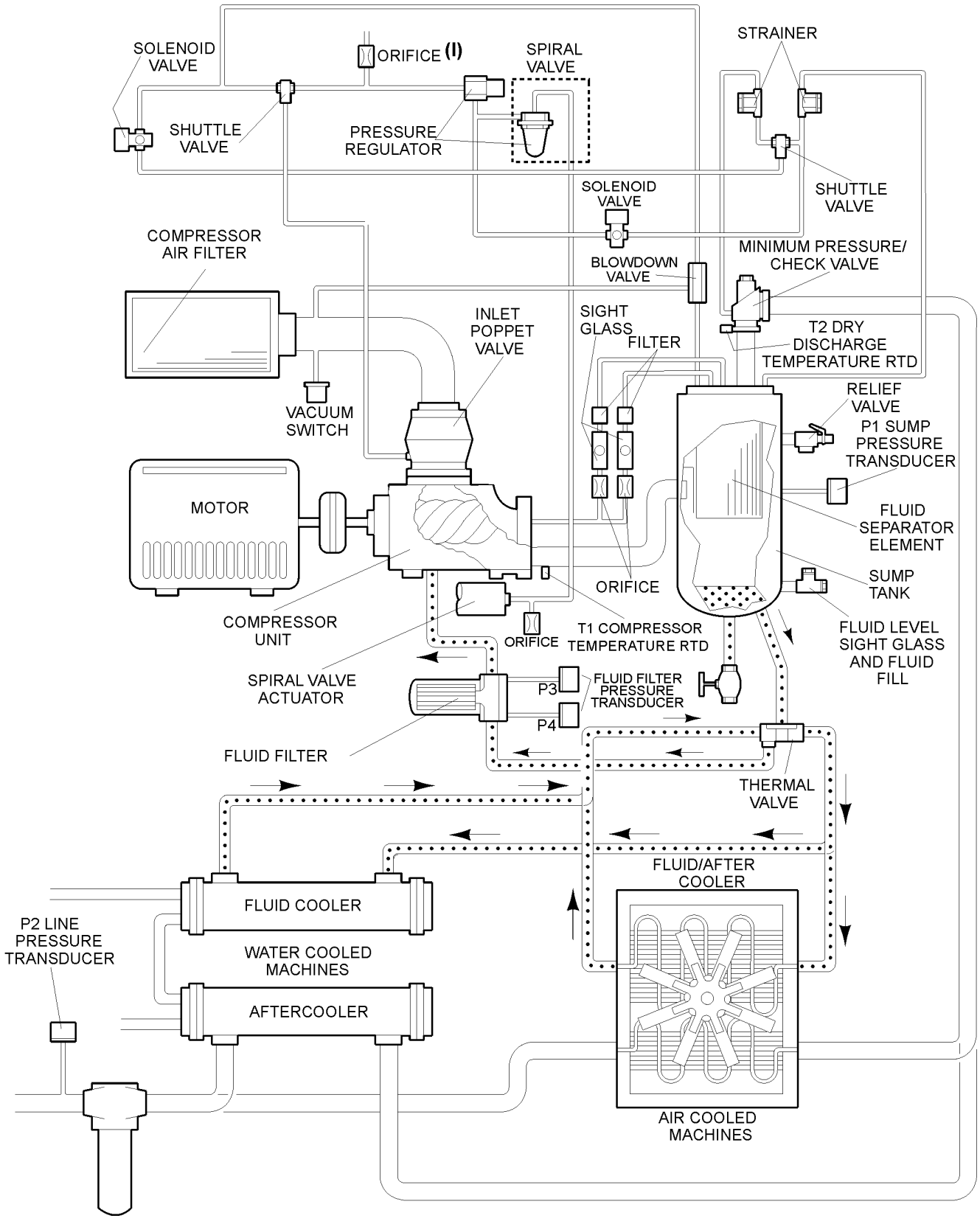
1. Loosen fasteners securing wireform guard to the distance piece and remove to allow access to the coupling assembly.
2. Loosen and remove all capscrews securing each flexible element half to the shaft hubs.
3. Inspect each element body for signs of tears or separation away from the metal flanges - if any faults are found, elements must be replaced and Sullair contacted for further assistance.
4. Reassemble in reverse order. Capscrews must be re-torqued to 39 ft.-lbs. (53 Nm) (dry). Please note that capscrews have self-locking patches good for two re-uses, but the application of a thread-locking adhesive increases this number.

NOTE

DO NOT lubricate capscrew threads.

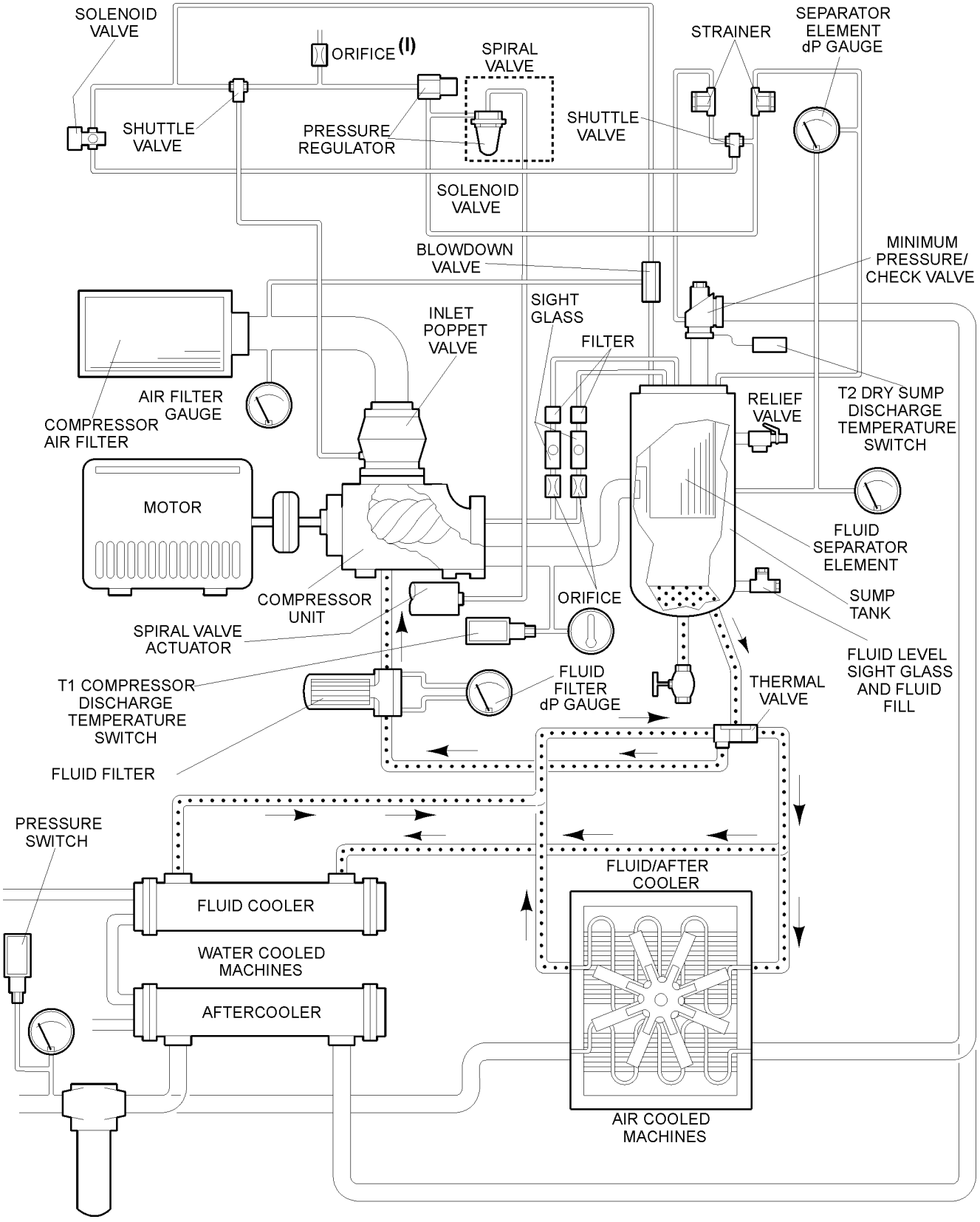
Please note that replacement of either shaft hub requires the removal of the motor, an operation best handled by Sullair personnel.

Figure 8-8 Piping and Instrumentation Diagram- Supervisor



(I) Not for use with spiral valve.

Figure 8-9 Piping and Instrumentation Diagram- Electro-Mechanical



(I) Not for use with spiral valve.

Section 9
TROUBLESHOOTING

9.1 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 a problem should be systematically analyzed before undertaking any repairs or component replacement procedures.

In addition to the Troubleshooting Guide, consult the Supervisor Controller manual for additional troubleshooting guidelines pertaining to the Supervisor Controller.

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

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

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

9.2 TROUBLESHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	REMEDY
COMPRESSOR WILL NOT START	Main Disconnect Switch Open	Close switch.
	Line Fuse Blown	Replace fuse.
	Control Transformer Fuse Blown	Replace fuse.
	Motor Starter Overloads Tripped	Reset. Should trouble persist, check whether motor starter contacts are functioning properly.
	Low Incoming Line Voltage	Check voltage. Should voltage check low, consult power company.
COMPRESSOR SHUTS DOWN WITH AIR DEMAND PRESENT	Loss of Control Voltage	Reset. If trouble persists, check that line pressure does not exceed maximum operating pressure of the compressor (specified on nameplate).
	Low Incoming Voltage	Consult power company.
	Excessive Operating Pressure	Defect in line pressure switch; check pressure at which contact points open.
		Separator requires maintenance; check maintenance indicator under full load conditions.
		High pressure shutdown switch is defective; replace.
		Defective valve; regulator valve should cause inlet valve to close when operating pressure is met. Repair if defective.
		Defective blowdown valve; blowdown valve should exhaust sump pressure to 20 to 30 psig (1.4 to 2.1 bar) when maximum operating pressure is reached. Repair if defective.

Continued ...

9.2 TROUBLESHOOTING GUIDE (CONTINUED)

SYMPTOM	PROBABLE CAUSE	REMEDY
COMPRESSOR SHUTS DOWN WITH AIR DEMAND PRESENT (CONT.)	Discharge Temperature Switch Open	Cooling water temperature too high; increase water flow (water-cooled only).
		Cooling water flow insufficient; check water lines and valves (water-cooled only).
		Cooler plugged; clean tubes. If plugging persists, install water conditioner (water-cooled only).
		Cooling air flow restricted; clean cooler and check for proper ventilation.
		Ambient temperature is too high; provide sufficient ventilation.
		Low fluid level; add fluid.
		Clogged filter; change the fluid filter element and change the bearing filter element if maintenance indicator shows red.
		Thermal valve not functioning properly; replace element.
		Water flow regulating valve not functioning properly; change (water-cooled only).
		Defective discharge temperature switch; check for a short or open circuit to probe and correct wiring.
COMPRESSOR WILL NOT BUILD FULL DISCHARGE PRESSURE	Air Demand is Too Great	Check service lines for leaks or open valves up.
	Dirty Air Filter	Check the filter indicator and inspect and/or 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 CUT-OUT PRESSURE SETTING ON PRESSURE SWITCH	Leak in Control System Causing Loss of Pressure Signals	Check for leaks.
	Defective Pressure Switch	Check that diaphragm and contacts are not damaged. Replace if necessary. Check that air bleeds from control orifice when the pressure switch contacts open.
	Defective Regulator Valve	Readjust; Repair or replace it if necessary (kit available).

Continued ...

9.2 TROUBLESHOOTING GUIDE (CONTINUED)

SYMPTOM	PROBABLE CAUSE	REMEDY
LINE PRESSURE RISES ABOVE CUT-OUT PRESSURE SETTING ON PRESSURE SWITCH (CONT.)	Plugged Control Line Strainer	Clean strainer (screen and o-ring replacement kit available).
	Defective Blowdown Valve	Check that sump pressure is exhausted to the atmosphere when the pressure switch contacts open. Repair or replace if necessary (kit available).
EXCESSIVE COMPRESSOR FLUID CONSUMPTION	Clogged Return Line or Orifice	Clean strainer (screen and o-ring replacement kit available). Clean orifice.
	Separator Element Damaged or Not Functioning Properly	Change separator **(l)**.
	Leak in the Lubrication System Excess Fluid Foaming	Check all pipes, connections and components **(l)**.
	Excess Fluid Foaming	Drain and change **(l)**.
	Fluid Level Too High	Drain and change **(l)**.
PRESSURE RELIEF VALVE OPEN REPEATEDLY	Defective Pressure Relief Valve	Replace.
	Plugged Separator	Check separator differential.
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 a 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.

⚠ WARNING

(l) Mixing, changing or adding other lubricants within the compressor unit may void the air-end warranty.

NOTES

Section 10
VARIABLE SPEED DRIVE

10.1 DESCRIPTION OF COMPONENTS

Refer to Figures 2-1A and 2-1B. The components and assemblies of the air compressor are clearly shown. The complete package includes **compressor**, **electric motor**, **variable speed drive, Supervisor™ Controller**, **compressor inlet system**, **compressor discharge system**, **compressor lubrication and cooling system**, **capacity control system**, **instrument panel**, **aftercooler**, and **combination separator and trap**, all mounted on a heavy gauge steel frame.

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

On water-cooled models, a shell and tube heat exchanger is mounted on the compressor frame. Fluid is piped into the heat exchanger where compression heat is removed from the fluid. Another similar heat exchanger cools the compressed air.

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

10.2 CONTROL SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figures 2-3A or 2-3B (with spiral valve). The purpose of the compressor control system is to regulate the amount of the air being compressed to match the amount of compressed air being used. The **Capacity Control System** consist of **variable speed drive**, **solenoid valve**, **regulating valve**, and the **inlet valve**. The functional description of the control system is described below in six distinct phases of operation. The following description text applies to V-200 series variable speed drive compressors with Supervisor Controller. **Depending on the model, the compressor can be operated at a setpoint pressure from 60 to 175 psig (4.1 to 12.1 bar). Refer to the nameplate for operating pressure range. The Supervisor Controller will automatically set the frequency range based on the selected pressure.** For explanatory purposes, this description will apply to a compressor with an operating pressure of 100 psig (6.9 bar). A compressor with any other pressure range would operate in the same manner except stated pressures.

START MODE- 0 – 50 PSIG (0 TO 3.5 BAR)

When the Supervisor Controller ▮▮ (**START**) button is depressed, the VSD ramps the motor to full speed and the sump pressure will quickly rise from 0 to 50 psig (0-3.4 bar). During this period, both the regulator and solenoid valves are closed, the inlet valve is fully open and the air-end delivers full capacity to the sump tank. 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 rises over 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 pressure is continually monitored by the Supervisor Controller, which controls the variable speed drive. The pressure regulator and solenoid valve remain closed with the inlet valve fully open running at 100 psig (6.9 bar) or below.

VARIABLE SPEED DRIVE PART LOAD CONTROL

If less than rated capacity of compressed air is being used, the service line pressure will rise above 100 psig (6.9 bar). Consequently, the Variable Speed Drive will begin to decelerate the motor, thereby reducing the output capacity to match demand. The drive will continuously adjust the motor speed (accelerate or decelerate) to maintain a line pressure of 100 psig (6.9 bar). In this mode the VSD will operate within the appropriate frequency range determined by the Supervisor Controller.

MODULATING MODE- 100 (6.9 BAR) PSIG TO 106 PSIG (7.3 BAR)

During low demand periods and with the Variable Speed Drive at minimum speed, the line pressure can continue to rise. When the line pressure reaches 101-102 psig (approximately 7 bar), the regulator valve gradually opens, directing air pressure to the inlet control valve piston. This action causes the inlet valve to partially close, thereby reducing the air entering the compressor until it matches the amount of air being used. The control system functions continually in this manner between the limits of > 101 psig (7.0 bar) to 106 psig (7.3 bar), in response to varying flow demand.

The pressure regulator has an orifice which vents a small amount of air to the atmosphere when the pressure regulator controls the inlet valve. The orifice also bleeds any accumulated moisture from the control line. When the discharge pressure rises above 106 psig (7.3 bar), or alternatively set unload

pressure the compressor unloads.

MODULATING MODE WITH OPTIONAL SPIRAL VALVE:

NOTE

This option does not have inlet modulation.

As demand decreases, the variable speed drive reduces motor speed to maintain the set point pressure. When the speed approaches the minimum setting, a solenoid valve opens feeding air pressure to the spiral valve actuator. This in turn expands the diaphragm and engages the pinion mounted on the spiral valve shaft assembly, resulting in a rotary motion and full opening of the spiral valve, effectively reducing the rotor length by 50%. Excess air will be returned back internally to the suction side of the compressor unit. In this mode, the VSD will modulate the motor speed within a specified range to maintain the set point pressure as follows:

Increasing demand condition:
If demand increases, the VSD increases the motor speed until the set point pressure is achieved. If set point pressure is not achieved while at maximum speed, the controller will close the spiral valve, thereby eliminating internal air bypass. Consequently, the VSD will regulate the motor speed to achieve the set point pressure.

Decreasing demand condition:
While the spiral valve is open, if demand continues to decrease the VSD will reduce the motor speed until the set point pressure is achieved. This action will continue until the minimum speed is reached. When the system pressure reaches 106 psig (7.3 bar), or alternatively set unload pressure, the compressor unloads, or turns off.

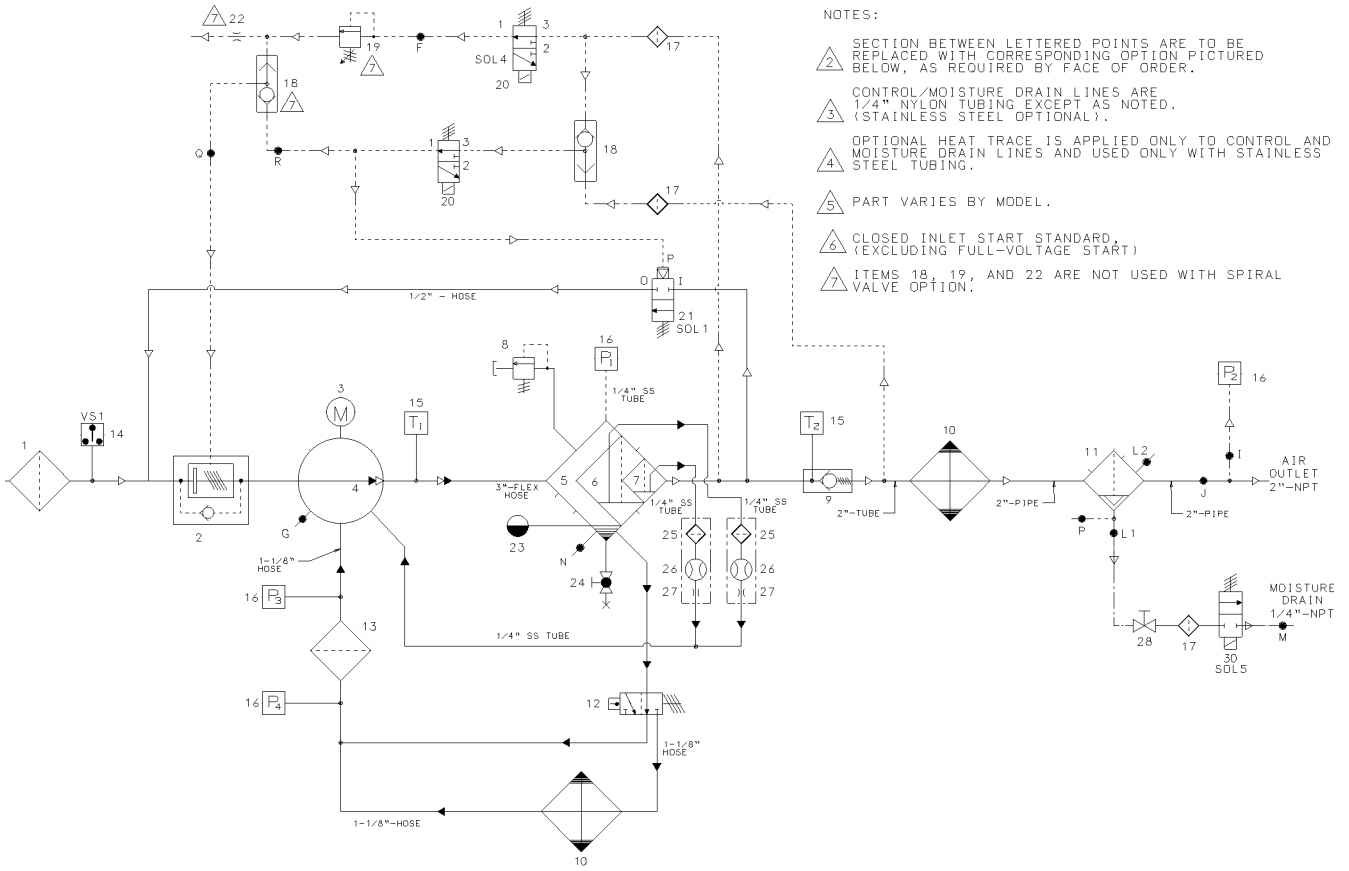
UNLOAD MODE- IN EXCESS OF 106 PSIG (7.3 BAR)
When a relatively small amount or no air is being used, the service line pressure continues to rise. When it exceeds 106 psig (7.3 bar), or alternatively set unload pressure, the Supervisor control system de-energizes the solenoid valve allowing sump air pressure to be supplied directly to close the inlet valve. Simultaneously, the solenoid valve sends a pneumatic signal to the blow down valve. The blow-down valve opens to the atmosphere, reducing the sump pressure. The check valve in the air service line prevents line pressure from returning to the sump. The compressor will shut down after the unload time setting expires if programmed (the default setting is zero [0] seconds for an immediate shutdown upon unload).

When the line pressure drops to the low setting pressure of 100 psig (6.9 bar) The Supervisor Controller starts the motor and energizes the solenoid valve which closes the blow down valve. The re-energized solenoid valve prevents line pressure from reaching the inlet control valve, thereby allowing it to fully open.

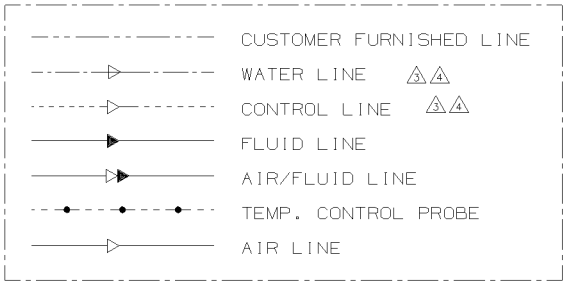
AUTOMATIC OPERATION
For VSD applications, the Supervisor Controller should be set in the “Automatic” mode. This mode allows the compressor to shutdown when no compressed air requirement is present and restarts when compressed air is needed.

NOTES

Figure 10-1A V-200 Piping and Instrumentation- Air-cooled



COMPONENT	DESCRIPTION
P1	WET SUMP PRESSURE
P2	LINE PRESSURE
P3	INJECTION FLUID PRESSURE
P4	HIGH PRESSURE SIDE OF FLUID FILTER
PSW1	INLET FILTER VACUUM SWITCH
SOL1	LOAD/UNLOAD SOLENOID VALVE
SOL4	MEC/SEQUENCING/FULL LOAD SOLENOID VALVE (OPTIONAL)
SOL5	ELECTRIC DRAIN/SCD DRAIN SOLENOID VALVE
SOL7	EES SOLENOID VALVE (OPTIONAL)
T1	WET DISCHARGE TEMPERATURE
T2	DRY DISCHARGE TEMPERATURE



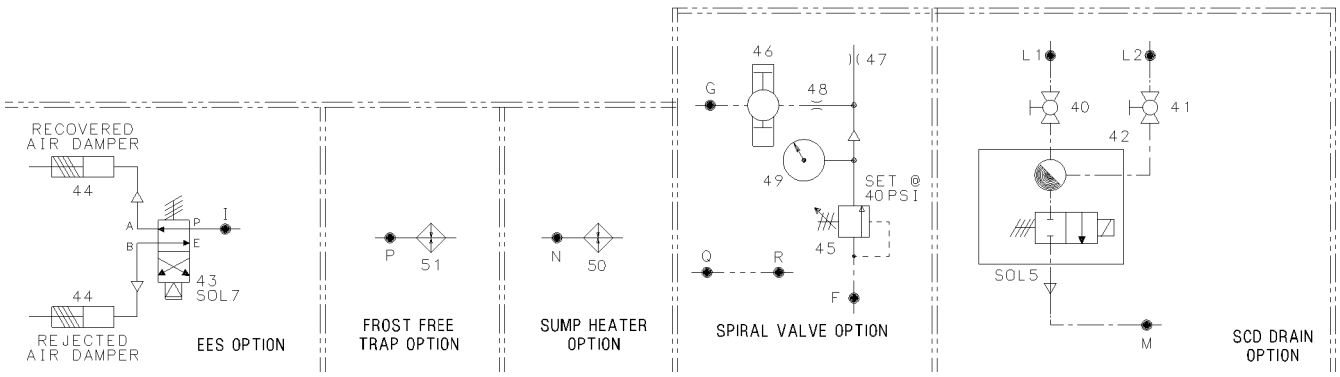


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Figure 10-1A V-200 Piping and Instrumentation- Air-cooled

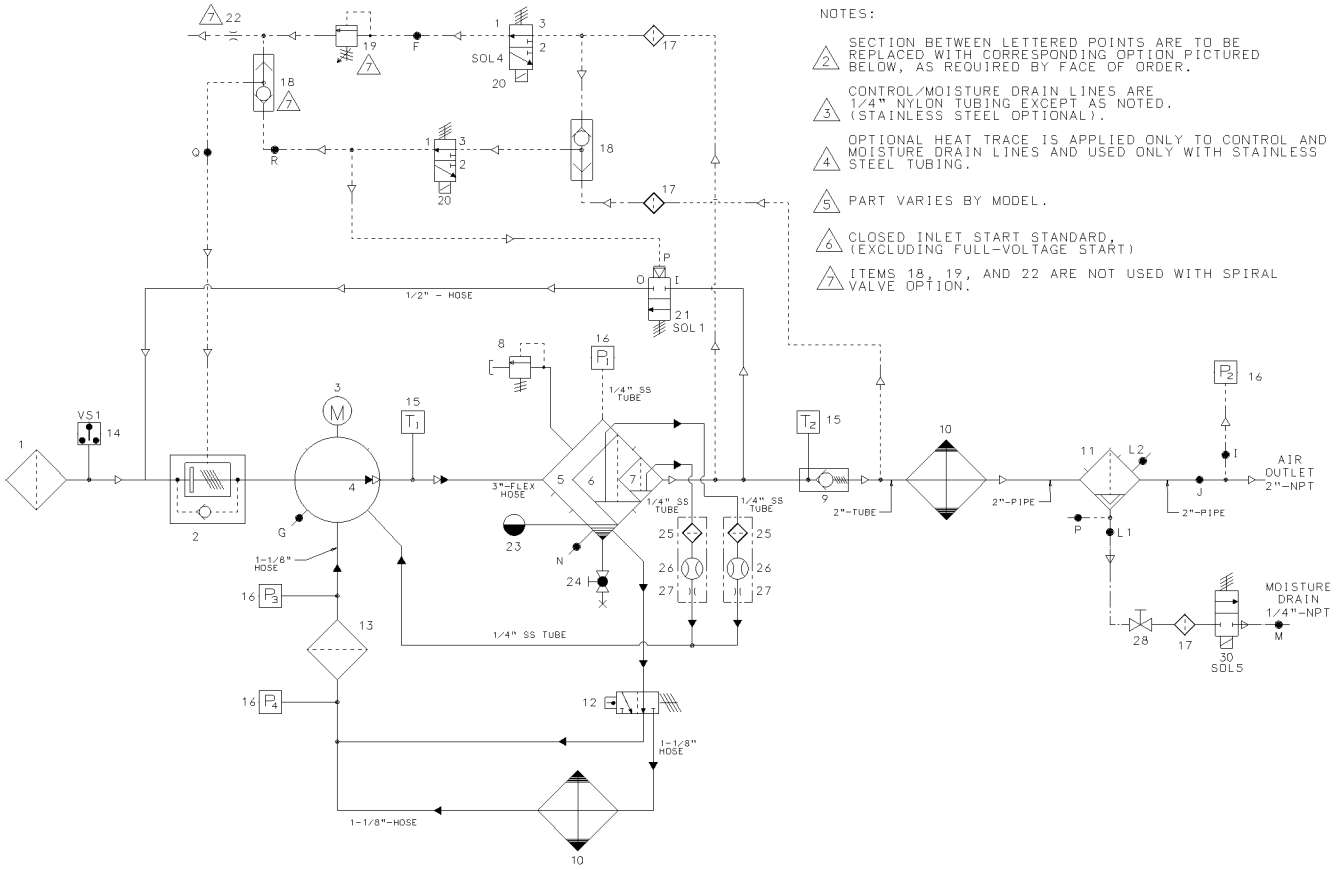
key number	description	part number	quantity
01	filter, air h.d. inlet 12”	02250059-096	1
02	vlv, air inlet 6” 20-100	02250145-632	1
03	motor	-	1
04	compressor unit	-	1
05	tnk,sep ls20 leak-free	02250125-995	1
06	sep, air/oil primary LS-200	02250146-962	1
07	sep, air/oil secondary LS-200	02250146-963	1
08	vlv, rlf 3/4” 200# 550scfm	02250097-349	1
09	vlv, min press 2-1/2” sae	02250129-374	1
10	clr, comb oil/air 100hp	02250145-278	1
11	sep, wtr d-h 2” fnpt 1/4” drn	02250144-632	1
△5 12	element. thermal valve 175ºF	049542	1
	•element. thermal valve 190ºF	250028-762	1
13	fltr, fl 1-5/8” sae str thrd con	02250054-605	1
14	sw, vac 22”wc n4 6ft cable 5a	02250078-249	1
15	p, rtd 100 ohm platinum 12ft	250039-909	2
16	xdcr, press 0-250psi 1-5vdc n4	02250078-933	4
17	strainer, v-type 300psi x 1/4	241771	3
△7 18	valve, shuttle 1/4” (dbl chk)	408893	2
△7 19	valve, pressure regulator	250017-280	1
20	valve, sol 3wno 1/4” 235# n4	02250125-657	2
21	valve, 2-way pneumatic 1/2”npt	02250100-042	1
△7 22	orifice, .031”	02250132-934	1
23	plug, sight glass 1-7/8” sae	02250097-611	2
24	vlv, ball 3/4”sae-m x 1/2”npt-f	02250098-303	1
25	fltr, assembly genisis filter	02250117-782	2
26	glass,sight/orf blk-sae	02250126-129	2
27	orf, plug brass 1/8”npt x 1/16”	02250125-775	2
28	valve, ball 1/4”npt	047115	1
30	vlv, sol 2wnc mo 1/4 200# n4	02250125-674	1
	SCD DRAIN (OPTIONAL):		
40	valve, ball 1/2” npt	047117	1
41	valve, ball 1/4” npt	047115	1
42	drn, electric condensate- scd400	02250130-866	1
	EES (OPTIONAL):		
43	vlv, sol 4way 1/4 150# n4	0250125-673	1
44	clylinder, pneumatic 7/8, 4”str	241906	2

Continued on page 67

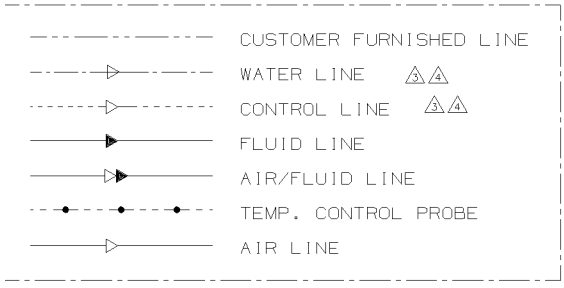
△5 Part varies by model.

△7 Omit items #18, #19 and #22 with spiral valve option.

Figure 10-1A V-200 Piping and Instrumentation- Air-cooled (continued)



COMPONENT	DESCRIPTION
P1	WET SUMP PRESSURE
P2	LINE PRESSURE
P3	INJECTION FLUID PRESSURE
P4	HIGH PRESSURE SIDE OF FLUID FILTER
PSW1	INLET FILTER VACUUM SWITCH
SOL1	LOAD/UNLOAD SOLENOID VALVE
SOL4	MEC/SEQUENCING/FULL LOAD SOLENOID VALVE (OPTIONAL)
SOL5	ELECTRIC DRAIN/SCD DRAIN SOLENOID VALVE
SOL7	EES SOLENOID VALVE (OPTIONAL)
T1	WET DISCHARGE TEMPERATURE
T2	DRY DISCHARGE TEMPERATURE



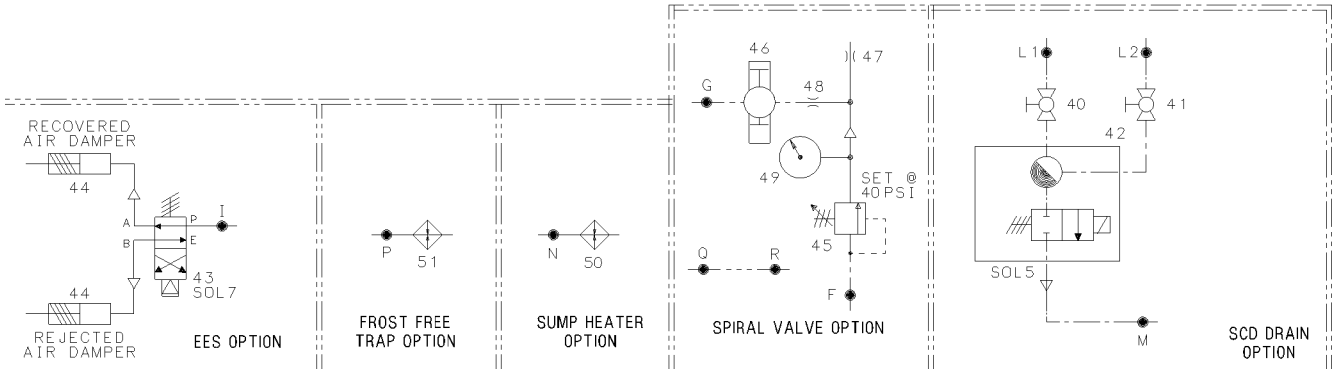


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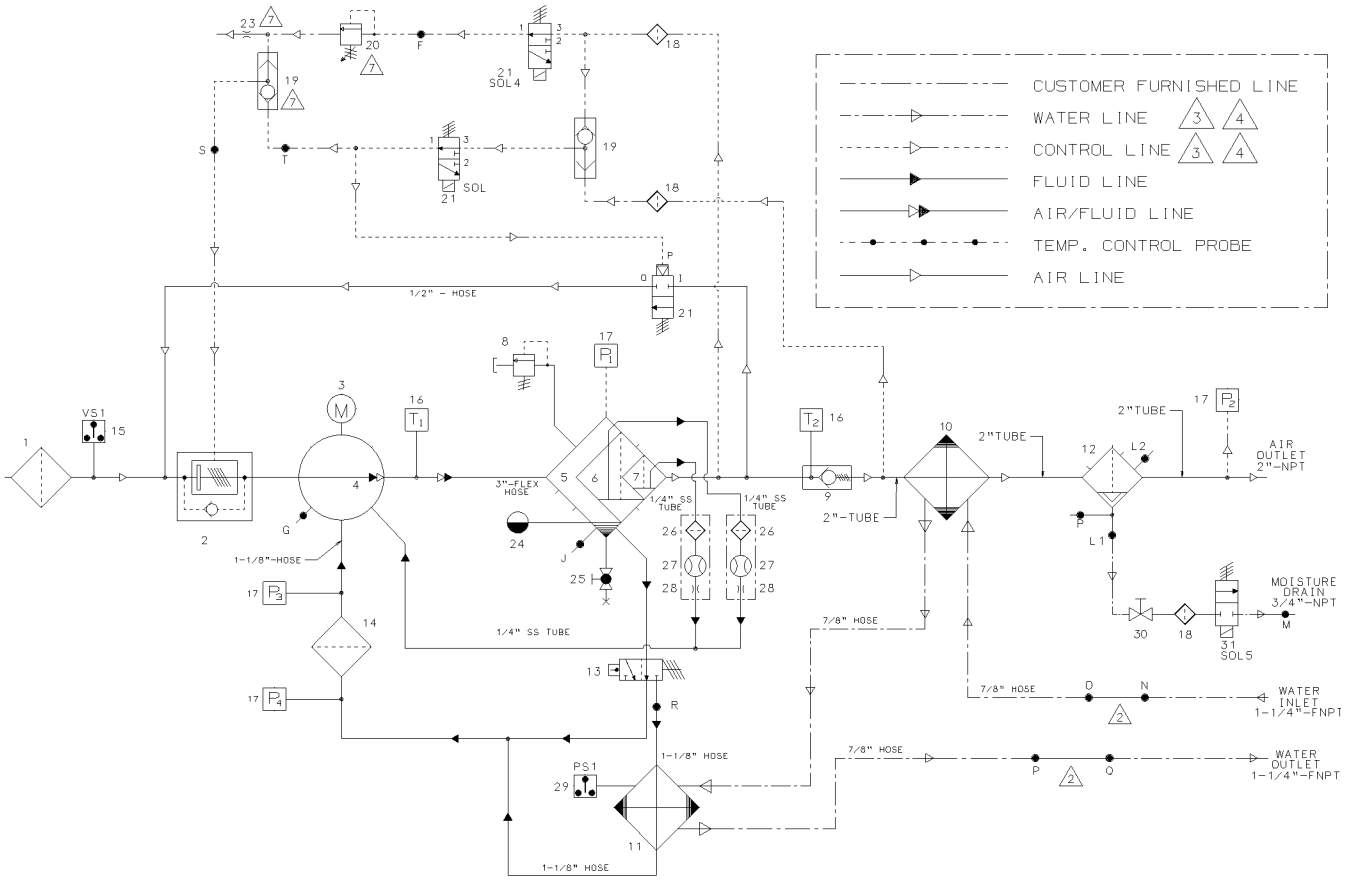
Figure 10-1A V-200 Piping and Instrumentation- Air-cooled ***(continued)***

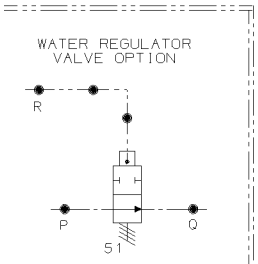
key number	***description***	***part number***	***quantity***
	SPIRAL VALVE (OPTIONAL):		
45	regulator, press - 1/4” npt 2-150#	02250046-568	1
46	spiral valve	-	1
47	orifice, .031	02250132-934	1
48	orifice, .062” .25fnpt x .25mnpt	0250118-585	1
49	ga, air press 2-1/2” 0-200 psi	02250117-009	1
	SUMP HEATER (OPTIONAL):		
50	htr, sump ls-20 1250w 120v	02250069-938	1
	MOISTURE SEPARTOR HEATER (OPTIONAL):		
51	htr, scd400/500 wrap 50w	02250114-171	1

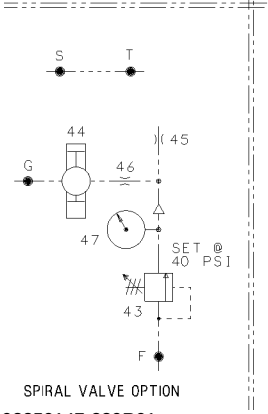
Section 10
VARIABLE SPEED DRIVE

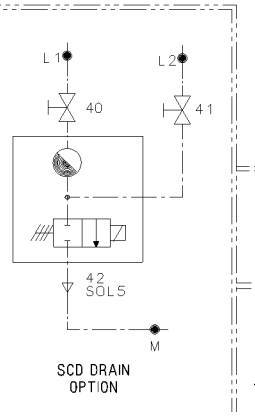
Figure 10-1B V-200 Piping and Instrumentation- Water-cooled

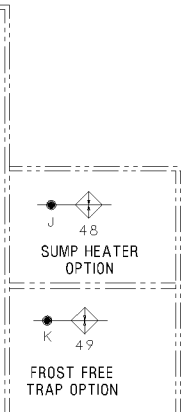


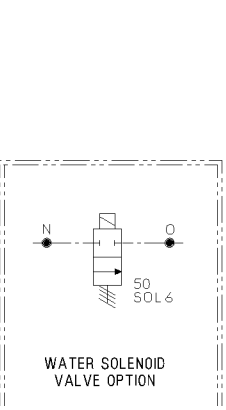
COMPONENT	DESCRIPTION
P1	WET SUMP PRESSURE
P2	LINE PRESSURE
P3	INJECTION FLUID PRESSURE
P4	HIGH PRESSURE SIDE OF FLUID FILTER
PSW1	INLET FILTER VACUUM SWITCH
PSW2	WATER PRESSURE SWITCH
SOL1	LOAD/UNLOAD SOLENOID VALVE
SOL4	MEC/SEQUENCING/FULL LOAD SOLENOID VALVE(OPTIONAL)
SOL5	ELECTRIC DRAIN/SCD DRAIN SOLENOID VALVE(OPTIONAL)
SOL6	WATER SHUTOFF SOLENOID VALVE(OPTIONAL)
T1	WET DISCHARGE TEMPERATURE
T2	DRY DISCHARGE TEMPERATURE











NOTES:

2. SECTION BETWEEN LETTERED POINTS ARE TO BE REPLACED WITH CORRESPONDING OPTION PICTURED BELOW, AS REQUIRED BY FACE OF ORDER.
3. CONTROL/MOISTURE DRAIN LINES ARE 1/4" NYLON TUBING EXCEPT AS NOTED. (STAINLESS STEEL OPTIONAL).
4. OPTIONAL HEAT TRACE IS APPLIED ONLY TO CONTROL AND MOISTURE DRAIN LINES AND USED ONLY WITH STAINLESS STEEL TUBING.
5. PART VARIES BY MODEL.
6. CLOSED INLET START STANDARD, (EXCLUDING FULL-VOLTAGE START)
7. ITEMS 18, 19, AND 22 ARE NOT USED WITH SPIRAL VALVE OPTION.

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Figure 10-1B V-200 Piping and Instrumentation- Water-cooled

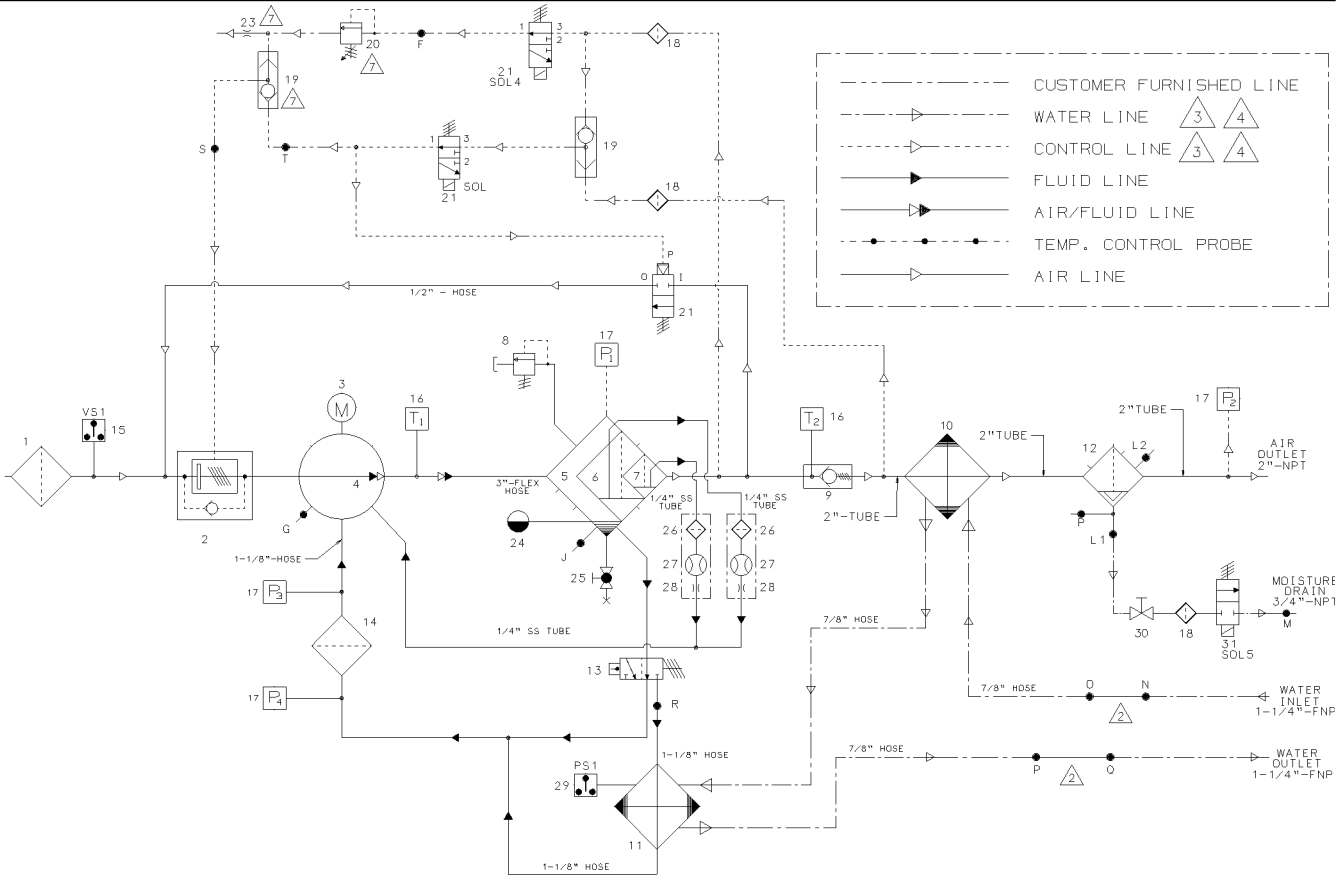
key number	description	part number	quantity
01	fltr, air h.d.inlet 12”	02250059-096	1
02	vlv, inl 6” pop w/bypass LS-200S	02250145-632	1
03	motor	-	1
04	compressor unit	-	1
05	tnk, sep ls20 leak-free	02250125-995	1
06	sep, air/oil primary LS-200	02250146-962	1
07	sep,air/oil secondary LS-200	02250146-963	1
08	vlv, rlf 3/4” 200# 550scfm	02250097-349	1
09	vlv, min press 2-1/2”sae	02250129-374	1
10	aftercooler, wc 6” x 36”	043008	1
11	clr, oil/water 6x36 1-5/8”sae	02250120-863	1
12	sep, wtr d-h 2”fnpt 1/4” drain	02250144-632	1
△5 13	element, thermal valve 175ºf	049542	1
	•element, thermal valve 190ºf	250028-762	1
14	fltr, fl 1-5/8”sae str thrd con	02250054-605	1
15	sw, vac 22”wc n4 6ft cable 5a	02250078-249	1
16	p, rtd 100ohm platinum 12ft	250039-909	2
17	xdcr, press 0-250psi 1-5vdc n4	02250078-933	4
△7 18	strainer, v-type 300psi x 1/4	241771	3
△7 19	valve, shuttle 1/4”(dbl chk)	408893	2
20	valve, pressure regulator	250017-280	1
21	vlv, sol 32no 1/4 235# n4	02250125-657	2
△7 22	valve, 2-way pneuctl 1/2”npt	02250100-042	1
23	orifice, .031	02250132-934	1
24	plug, sight glass 1-7/8”sae	02250097-611	2
25	vlv, ball 3/4”sae-m x 1/2”npt-f	02250098-303	1
26	fltr, assembly genisis fltr	02250117-782	2
27	glass, sight/orf blk-sae	02250126-129	2
28	orf, plug brass 1/8”npt x 1/16”	02250125-775	2
29	switch, press no 10psi	250017-992	1
30	valve, ball 1/4”npt	047115	1
31	vlv, sol 2wnc mo 1/4 200# n4	02250125-674	1
	SCD DRAIN (OPTIONAL):		
40	valve, ball 1/2” npt	047117	1
41	valve, ball 1/4” npt	047115	1
42	drn, electric condensate- scd400	02250130-866	1

Continued on page 71

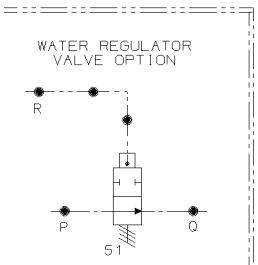
△5 Part varies by model.

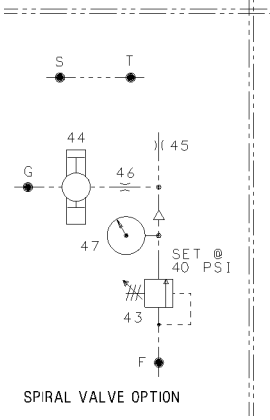
△7 Omit items #18, #19 and #22 with spiral valve option.

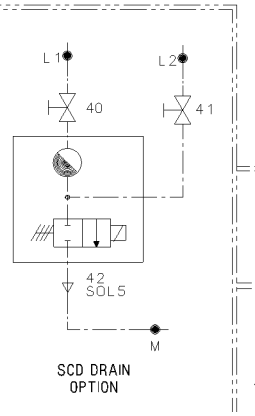
Figure 10-1B V-200 Piping and Instrumentation- Water-cooled (continued)

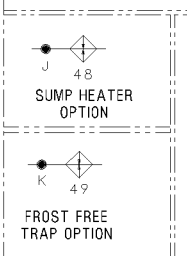


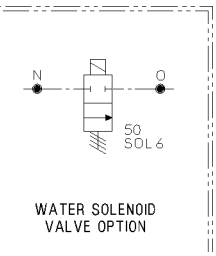
COMPONENT	DESCRIPTION
P1	WET SUMP PRESSURE
P2	LINE PRESSURE
P3	INJECTION FLUID PRESSURE
P4	HIGH PRESSURE SIDE OF FLUID FILTER
PSW1	INLET FILTER VACUUM SWITCH
PSW2	WATER PRESSURE SWITCH
SOL1	LOAD/UNLOAD SOLENOID VALVE
SOL4	MEC/SEQUENCING/FULL LOAD SOLENOID VALVE(OPTIONAL)
SOL5	ELECTRIC DRAIN/SCD DRAIN SOLENOID VALVE(OPTIONAL)
SOL6	WATER SHUTOFF SOLENOID VALVE(OPTIONAL)
T1	WET DISCHARGE TEMPERATURE
T2	DRY DISCHARGE TEMPERATURE











NOTES:

2. SECTION BETWEEN LETTERED POINTS ARE TO BE REPLACED WITH CORRESPONDING OPTION PICTURED BELOW, AS REQUIRED BY FACE OF ORDER.
3. CONTROL/MOISTURE DRAIN LINES ARE 1/4" NYLON TUBING EXCEPT AS NOTED. (STAINLESS STEEL OPTIONAL).
4. OPTIONAL HEAT TRACE IS APPLIED ONLY TO CONTROL AND MOISTURE DRAIN LINES AND USED ONLY WITH STAINLESS STEEL TUBING.
5. PART VARIES BY MODEL.
6. CLOSED INLET START STANDARD, (EXCLUDING FULL-VOLTAGE START)
7. ITEMS 18, 19, AND 22 ARE NOT USED WITH SPIRAL VALVE OPTION.

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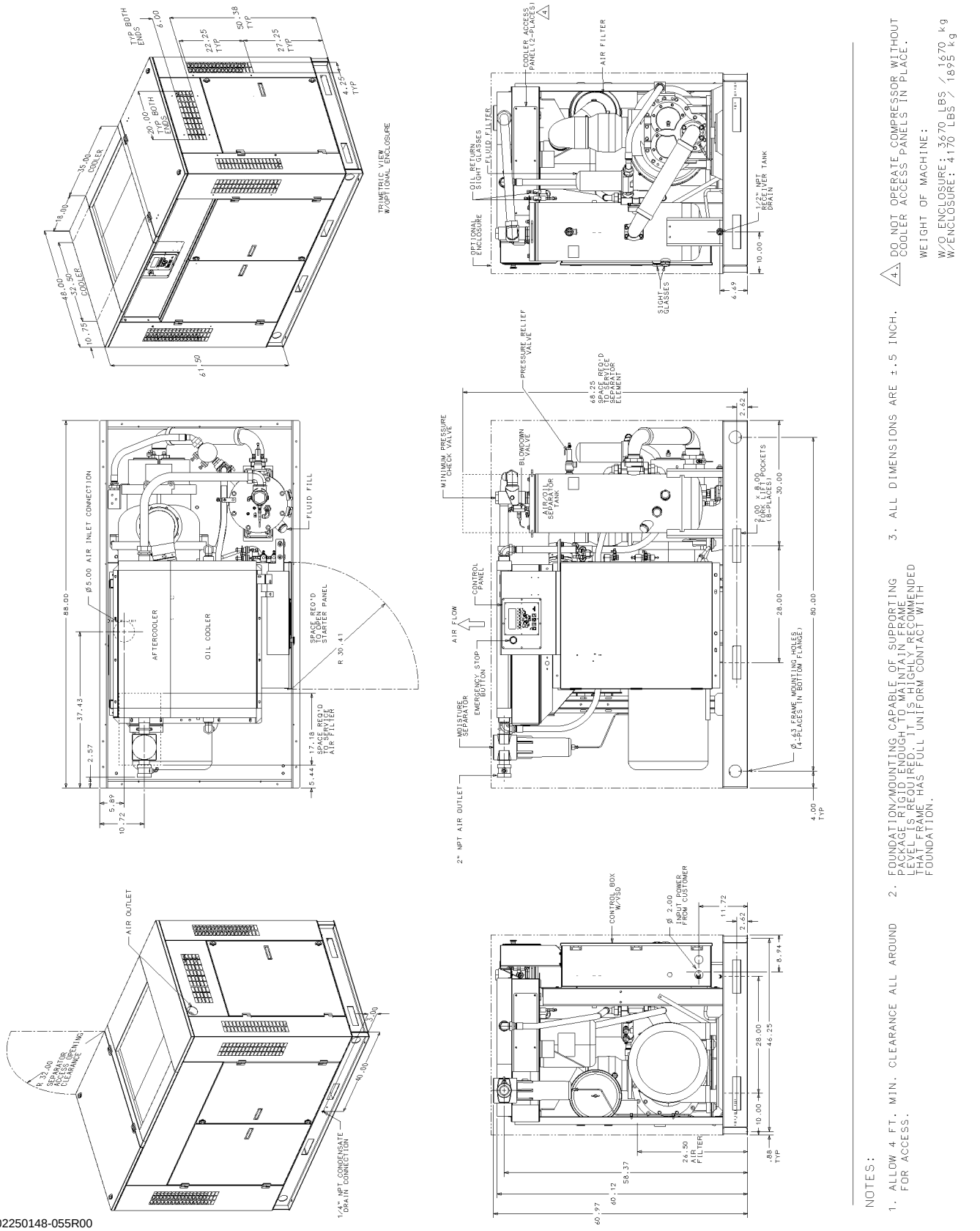
Figure 10-1B V-200 Piping and Instrumentation- Water-cooled ***(continued)***

key number	***description***	***part number***	***quantity***
	SPIRAL VALVE (OPTIONAL):		
43	regulator, press - 1/4” npt 2-150#	02250046-568	1
44	spiral valve	-	1
45	orifice, .031	02250132-934	1
46	orifice, .062” .25fnpt x .25mnpt	0250118-585	1
47	ga, air press 2-1/2” 0-200 psi	02250117-009	1
	SUMP HEATER (OPTIONAL):		
48	htr, sump ls-20 1250w 120v	02250069-938	1
	MOISTURE SEPARTOR HEATER (OPTIONAL):		
49	htr, scd400/500 wrap 50w	02250114-171	1

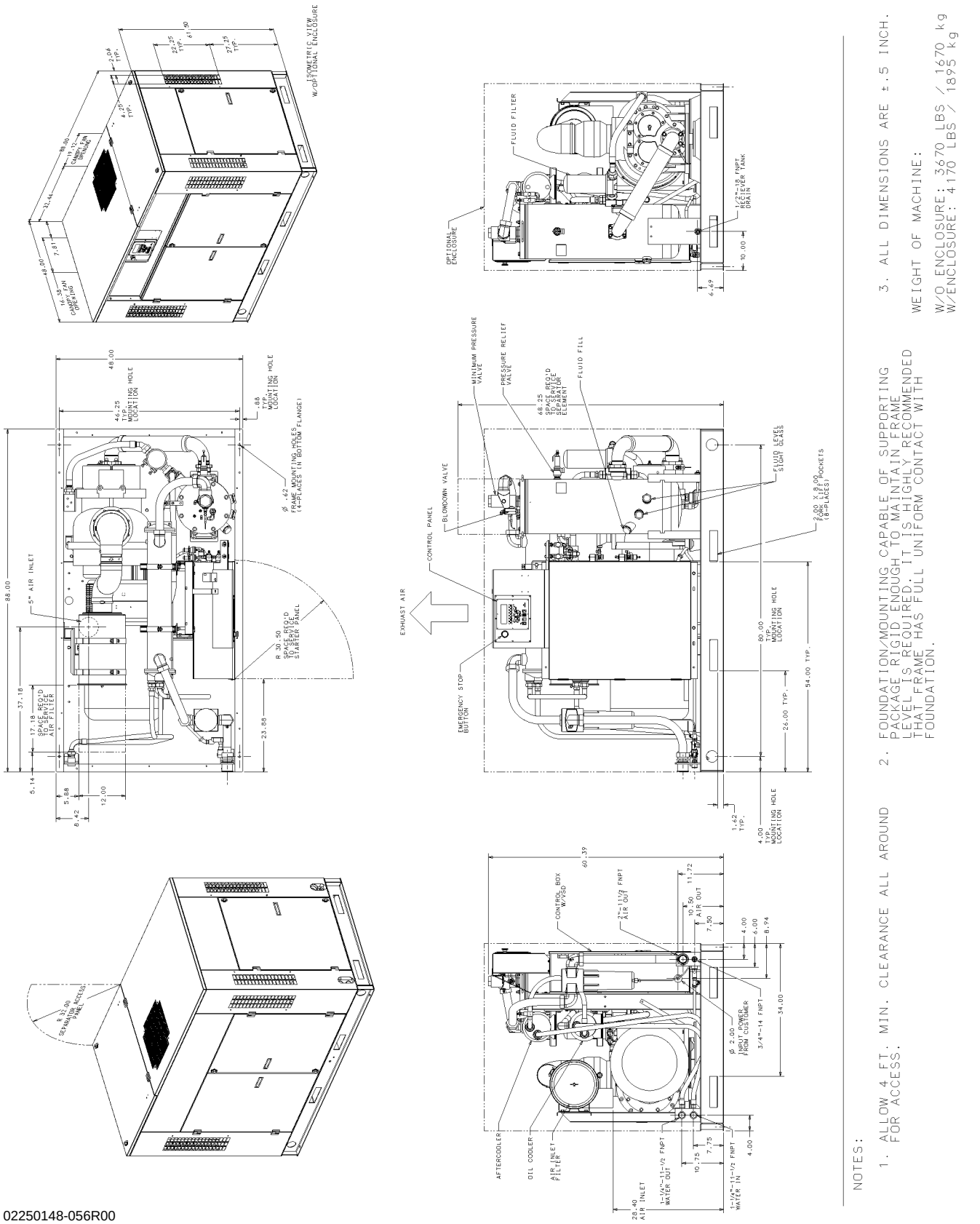
Section 10
VARIABLE SPEED DRIVE

Figure 10-2A Identification- V-200 Air-cooled



02250148-055R00

Figure 10-2B Identification- V-200 Water-cooled



02250148-056R00

NOTES

Section 11
ILLUSTRATIONS AND PARTS LIST

11.1 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, fax or phone numbers below.

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

NOTE: For future convenience, write the machine serial number below:

SERIAL NO: _____

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

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

PARTS DEPARTMENT
☎: 1-888-SULLAIR
Fax: (219) 874-1835
www.sullair.com

SERVICE DEPARTMENT
☎: 1-888-775-1604 (U.S.A. & Canada Only)
Fax: (219) 874-1205
www.sullaircompressors.com

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

11.2 RECOMMENDED SPARE PARTS LIST

DESCRIPTION	KIT NUMBER	QTY
element, compressor fluid filter 02250054-605	**250025-526**	**1**
element, heavy duty air filter 02250059-096	**02250145-731**	**1**
element, primary replacement for separator 02250146-962	**02250146-964**	**1**
element, secondary replacement for separator 02250146-963	**02250146-965**	**1**
kit repair for minimum pressure valve 02250129-374	**250018-456**	**1**
•kit, cap for minimum pressure check valve 02250129-374	**02250044-355**	**1**
•kit, o-ring for minimum pressure check valve 02250129-374	**02250048-365**	**1**
•kit, piston for minimum pressure check valve 02250129-374	**02250051-336**	**1**
kit, repair for thermal valve 049542 (175ºF/ 79ºC)**(I)**	**02250105-553**	**1**
kit, repair for thermal valve 250028-762 (190ºF/ 88ºC) **(II)**	**02250112-709**	**1**
kit, repair for air inlet valve 02250145-632	**02250053-273**	**1**

Continued on page 76

(I) Used on standard compressors, and compressors < 150 psi/ 10.3 bar.

(II) Used on all 24KT and high pressure compressors ≥ 150 psi/ 10.3 bar.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.2 RECOMMENDED SPARE PARTS LIST (CONTINUED)

DESCRIPTION	KIT NUMBER	QTY
KITS, REPAIR FOR COMPRESSOR SHAFT SEAL (STANDARD & SPIRAL VALVE):		
•kit, seal repl d20c dbl tfe lip	**02250057-037**	**1**
•kit, tool-d20c gd lip seal repl	**02250078-694**	**1**
kit, repair for pressure regulator 250017-280 **(III)**	**250019-453**	**1**
kit, repair for blowdown valve 02250100-042	**02250045-132**	**1**
kit, repair for solenoid valve 02250125-657	**02250125-829**	**1**
•kit, replacement for solenoid valve coil 02250125-657	**02250125-861**	**1**
kit, repair for solenoid drain valve 02250125-674	**02250125-823**	**1**
•kit, replacement coil for solenoid drain valve 02250125-674	**02250125-861**	**1**
repair kit for reducing regulator valve 02250046-568	**02250055-911**	**1**
kit, repair for moisture separator 02250144-632	**02250144-732**	**1**
filter, scavenge line 02250117-782	**02250117-782**	**2**
kit, repair for v-type strainer 241771	**241772**	**1**
replacement element for drive coupling	**02250129-707**	**1**
kit, spiral valve actuator	**608311-001**	**1**
kit, spiral valve tool	**02250052-625**	**1**
kit, sump heater LS-200	**02250148-903**	**1**
kit, frost free trap LS-200	**02250148-904**	**1**
kit, enclosure ac VCC-200 w/odp, LS-200	**02250148-905**	**1**
kit, enclosure ac VCC-200 w/tefc	**02250148-906**	**1**
kit, enclosure wc VCC-200 w/odp, LS-200	**02250148-907**	**1**
kit, enclosure wc VCC-200 w/tefc 460v	**02250148-908**	**1**
kit, enclosure wc VCC-200 w/odp, LS-200	**02250148-909**	**1**
kit, enclosure wc VCC-200 w/tefc 575v	**02250148-910**	**1**
kit, scd drain LS-200/VCC-200 ac	**02250148-911**	**1**
kit, scd drain LS-200/VCC-200 wc	**02250148-912**	**1**
kit, scd frost free trap LS-200	**02250148-913**	**1**
manual, Sequencing & Protocol **(IV)**	**-**	**1**

Continued on page 77

(III) Two regulators are used with spiral valve option.

(IV) This document is required to program your personal computer to communicate with the Supervisor panel. For latest release, consult factory.

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

11.2 RECOMMENDED SPARE PARTS LIST (CONTINUED)

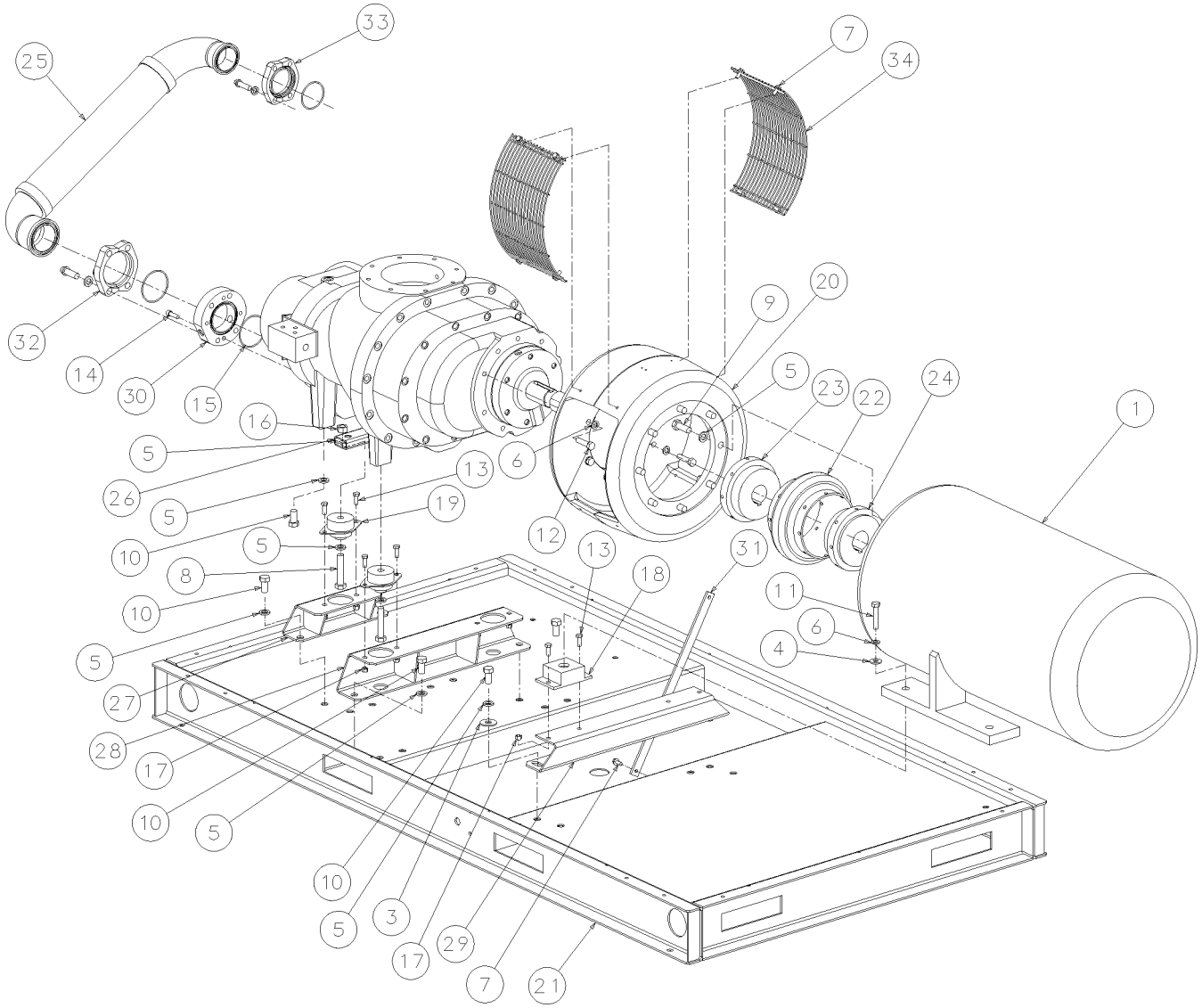
DESCRIPTION	KIT NUMBER	QTY
FLUIDS:		
NOTE Mixing, changing or adding other lubricants within the compressor unit may void the air-end warranty.		
lubricant, Sullube (Std.) (5 gal/ 19l)	**250022-669**	**(V)**
lubricant, 24 KT (5 gal/ 19l)	**02250051-053**	**(V)**
fluid, SRF 1/4000 (5 gal/ 19l)	**250019-662**	**(V)**

(V) Fluid capacity is 10 gallons.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.3 MOTOR, COMPRESSOR, FRAME AND PARTS



02250145-285R01

11.3 MOTOR, COMPRESSOR, FRAME AND PARTS

key number	*description*	*part number*	*quantity*
1	motor **(I)**	-	1
2	unit, compressor **(II)**	-	1
3	washer, pl-b reg pltd 5/8	838210-112	2
4	washer, pl-b reg pltd 1/2	838208-112	2
5	washer, spr lock reg pltd 5/8	837810-156	20
6	washer, spr lock reg pltd 1/2	837808-125	11
7	screw, hex ser washer 5/16-18 x 3/4	829705-075	10
8	capscr, hex gr5 5/8-11 x 3 1/4	829110-325	3
9	capscr, hex gr5 5/8-11 x 1 3/4	829110-175	8
10	capscr, hex gr5 5/8-11 x 1 1/4	829110-125	8
11	capscr, hex gr5 1/2-13 x 2 1/2	829108-250	2
12	capscr, hex gr5 1/2-13 x 2	829108-200	9
13	capscr, hex gr5 3/8-16 x 1	828606-100	10
14	capscrew, socket hd 3/8-16 x 1 1/4	828306-125	4
15	o-ring, viton 3 1/4 x 1/8”	826502-236	1
16	nut, hex pltd 5/8-11	825210-559	1
17	nut, hex pltd 3/8-16	825206-337	10
18	isolator, vibration 670-7	250042-756	2
19	isolator, vibration compr. - dxr20	250042-541	3
20	adapter, motor	250042-486	1
21	frame, base LS-200 black	02250145-299	1
22	element, coupling viva 245 **(III)**	02250129-707	1
23	hub, coupling rex viva 2”	02250129-706	1

Continued on page 81

(I) This part may vary per machine design. Consult factory with machine serial number to determine the proper part number.

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

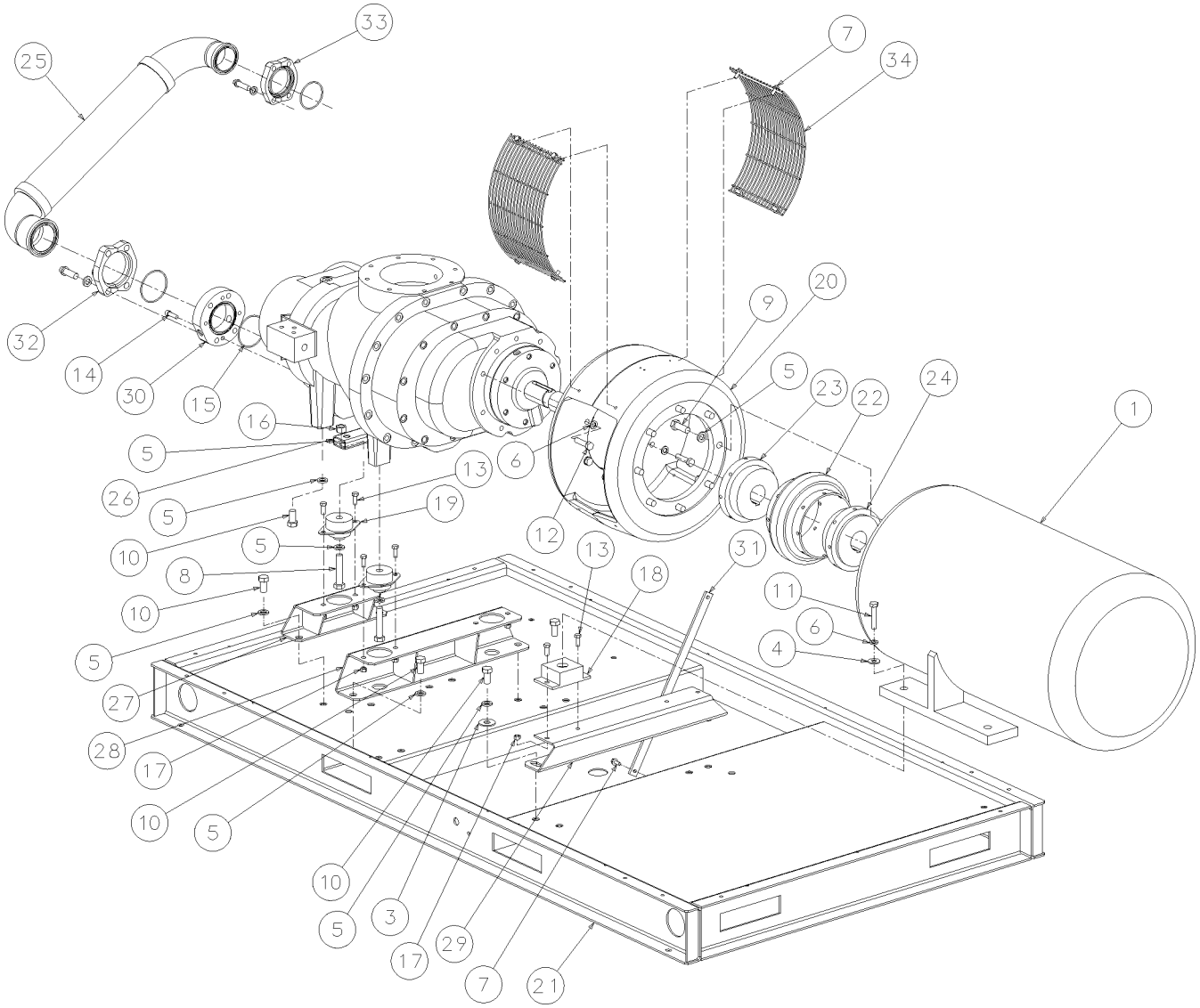
The shaft seal is not considered part of the compressor unit in regard to the two year warranty. The normal Sullair parts warranty applies. For shaft seal repairs, refer to *Section 11.2, Recommended Spare Parts List*.

(III) For maintenance on drive coupling element, order replacement element no. 02250129-707.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.3 MOTOR, COMPRESSOR, FRAME AND PARTS



02250145-285R01

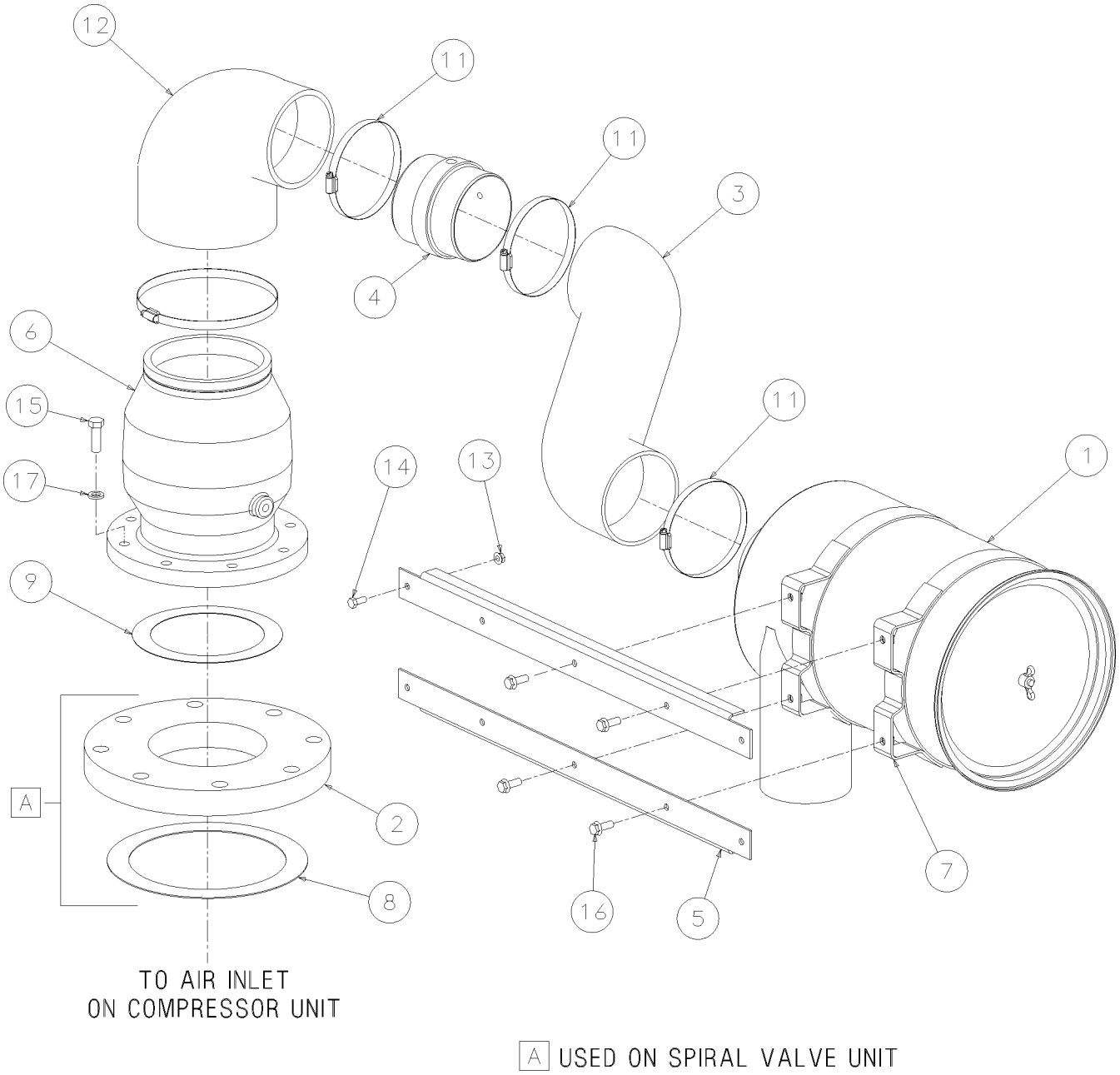
11.3 MOTOR, COMPRESSOR, FRAME AND PARTS (CONTINUED)

key number	*description*	*part number*	*quantity*
24	hub, coupling rex viva 2-1/8”	02250129-705	1
25	joint, expansion ls20-100 std	02250127-905	1
26	support, compr rear foot	02250127-748	1
27	support, compr rear	02250127-742	1
28	support, compr front	02250127-741	1
29	support, motor	02250127-740	1
30	adapter, discharge 3”	02250127-557	1
31	support, start-frame plate 12/16wc	02250108-490	1
32	flange, kit sae splt 3” - viton	02250100-926	1
33	flange, kit sae splt 2.5” - viton	02250099-416	1
34	guard, cplg	02250050-131	2

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.4 AIR INLET SYSTEM- AIR-COOLED



02250146-273R00

11.4 AIR INLET SYSTEM- AIR-COOLED

key number	*description*	*part number*	*quantity*
1	filter, air inlet **(I)**	02250059-096	1
2	adapter, air inl ls20 dir drv	02250065-044	1
3	hose, flexable 5"id vacuum rated	02250093-920	1
4	tube, air inlet adapt 5"	02250126-730	1
5	support, air filter LS-200 100hp	02250145-486	2
6	valve, inlet 6" w/bypass **(II)**	02250145-632	1
7	band, receiver 12.0" dia.	040081	2
8	gasket, 8 5/8 x 11 x 1/16	040422	1
9	gasket, 1/32 x 6 1/4id x 8 1/4od	040696	1
10	clamp, hose 7"	041992	1
11	clamp, hose 5"	047263	3
12	elbow, 90 deg rubber	250002-802	1
13	nut, hex f pltd 5/16-18	825305-283	4
14	capscr, hex gr8 5/16-18 x 3/4	827905-075	4
15	capscr, hex gr5 1/2-13 x 1 1/2	829108-150	8
16	screw, hex ser washer 3/8-16 x 1	829706-100	4
17	washer, spr lock reg pltd 1/2	837808-125	8

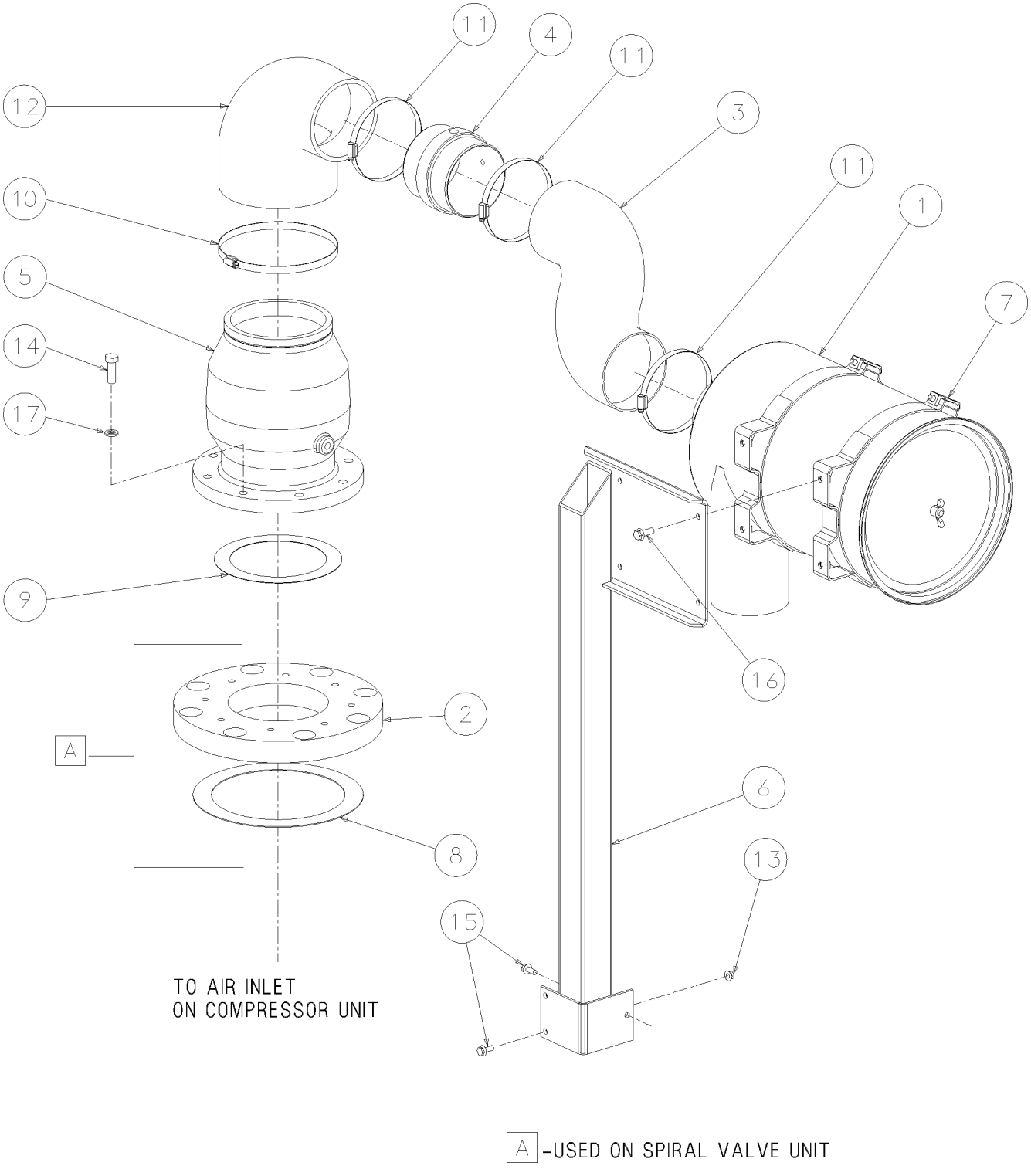
(I) For maintenance on air inlet filter no. 02250059-096, order primary replacement element no. 02250046-012, and secondary replacement element no. 02250046-013.

(II) For maintenance on inlet air valve no. 02250145-632, order repair kit no. 02250053-273.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.5 AIR INLET SYSTEM- WATER-COOLED



02250146-274R00

11.5 AIR INLET SYSTEM- WATER-COOLED

key number	*description*	*part number*	*quantity*
1	filter, air inlet **(I)**	02250059-096	1
2	adapter, air inl ls20 dir drv	02250065-044	1
3	hose, flexable 5"id vacuum rated	02250093-920	1
4	tube, air inlet adapt 5"	02250126-730	1
5	valve, inlet 6" w/bypass **(II)**	02250145-632	1
6	support, air filter LS-200wc	02250146-698	1
7	band, receiver 12.0" dia.	040081	2
8	gasket, 8 5/8 x 11 x 1/16	040422	1
9	gasket, 1/32 x 6 1/4id x 8 1/4od	040696	1
10	clamp, hose 7"	041992	1
11	clamp, hose 5"	047263	3
12	elbow, 90 deg rubber	250002-802	1
13	nut, hex f pltd 5/16-18	825305-283	2
14	capscr, hex gr5 1/2-13 x 1 1/2	829108-150	8
15	screw, hex ser washer 5/16-18 x 3/4	829705-075	3
16	screw, hex ser washer 3/8-16 x 1	829706-100	4
17	washer, spr lock reg pltd 1/2	837808-125	8

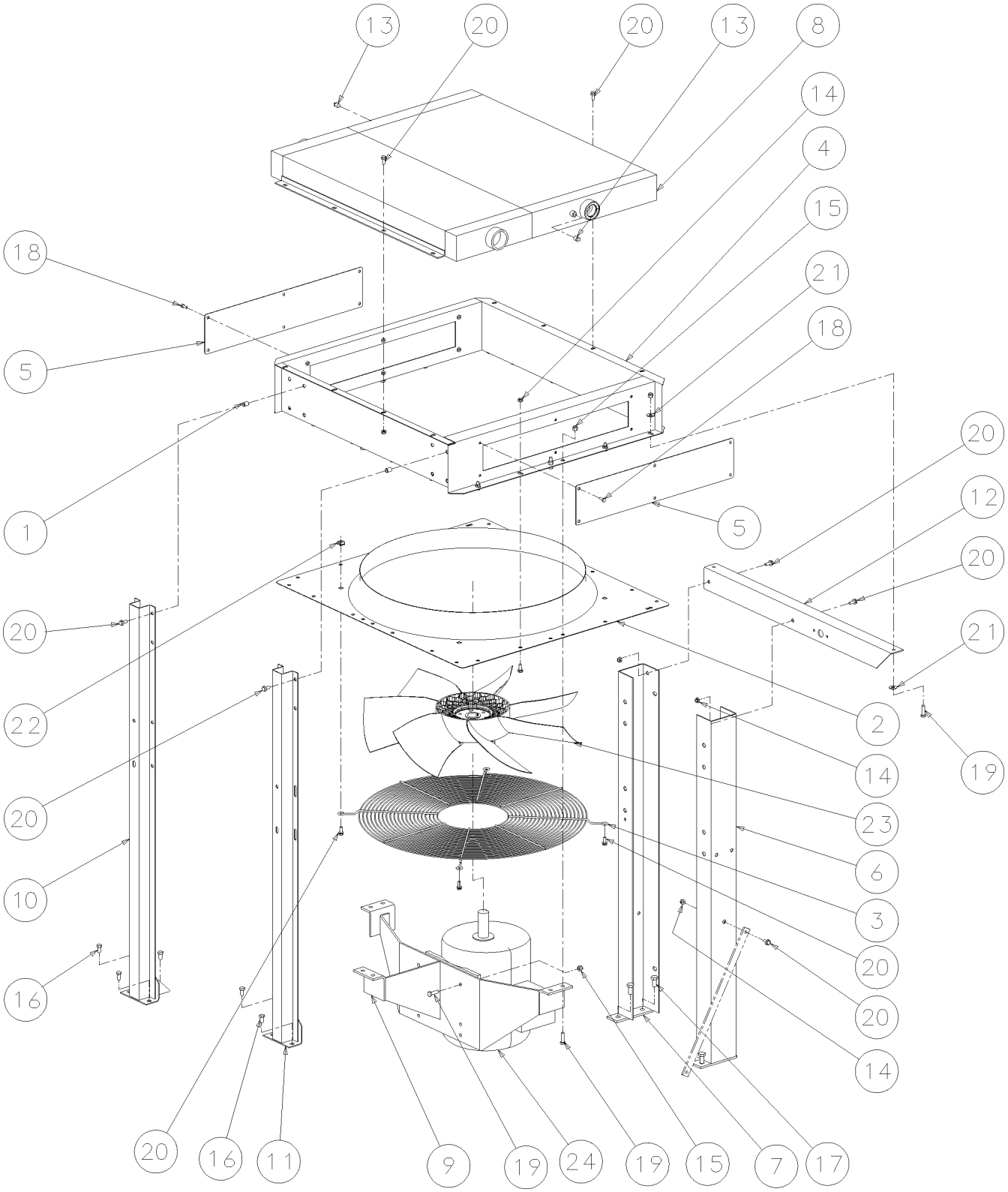
(I) For maintenance on air inlet filter no. 02250059-096, order primary replacement element no. 02250046-012, and secondary replacement element no. 02250046-013.

(II) For maintenance on inlet air valve no. 02250145-632, order repair kit no. 02250053-273.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.6 FLUID COOLING SYSTEM- AIR-COOLED



02250145-297R01

11.6 FLUID COOLING SYSTEM- AIR-COOLED

key number	*description*	*part number*	*quantity*
1	insert, 5/16"-18 thrd blind	02250043-765	1
2	panel, venturi 28.75 i.d.	02250075-402	8
3	gd, fan 28" ls20 50hz	02250075-404	1
4	venturi, cooler w/access hole	02250127-771	1
5	cover, access venturi **(I)**	02250127-774	1
6	support, starter lh ls20 wc	02250128-680	2
7	support, starter rh ls20 w/c	02250128-681	1
8	cooler,comb 100hp ls-160/LS-200	02250145-278	1
9	supt, fan mtr LS-200 213t mtr	02250145-488	1
10	support, a.c. ls12/16 54-1/4"	250017-630	1
11	support, a.c. ls12/16 51-1/4"	250017-631	1
12	angle, cooler support ls16-75	250017-996	1
13	plug, pipe 1/4" 3000# stl	807800-010	1
14	nut, hex f pltd 5/16-18	825305-283	2
15	nut, hex locking 3/8-16	825506-198	30
16	capscr, hex gr8 3/8-16 x 3/4	827906-075	12
17	capscr, hex gr8 1/2-13 x 1	827908-100	5
18	capscr, hex gr5 1/4-20 x 3/4	829104-075	4
19	capscr, hex gr5 3/8-16 x 1 1/4	829106-125	12
20	screw, hex ser washer 5/16-18 x 3/4	829705-075	12
21	washer, pl-b reg unfin 3/8	837206-071	41
22	nut, retainer 5/16-18 .092	861405-092	4
23	fan **(II)**	-	4
24	fan motor **(II)**	-	1

NOTE

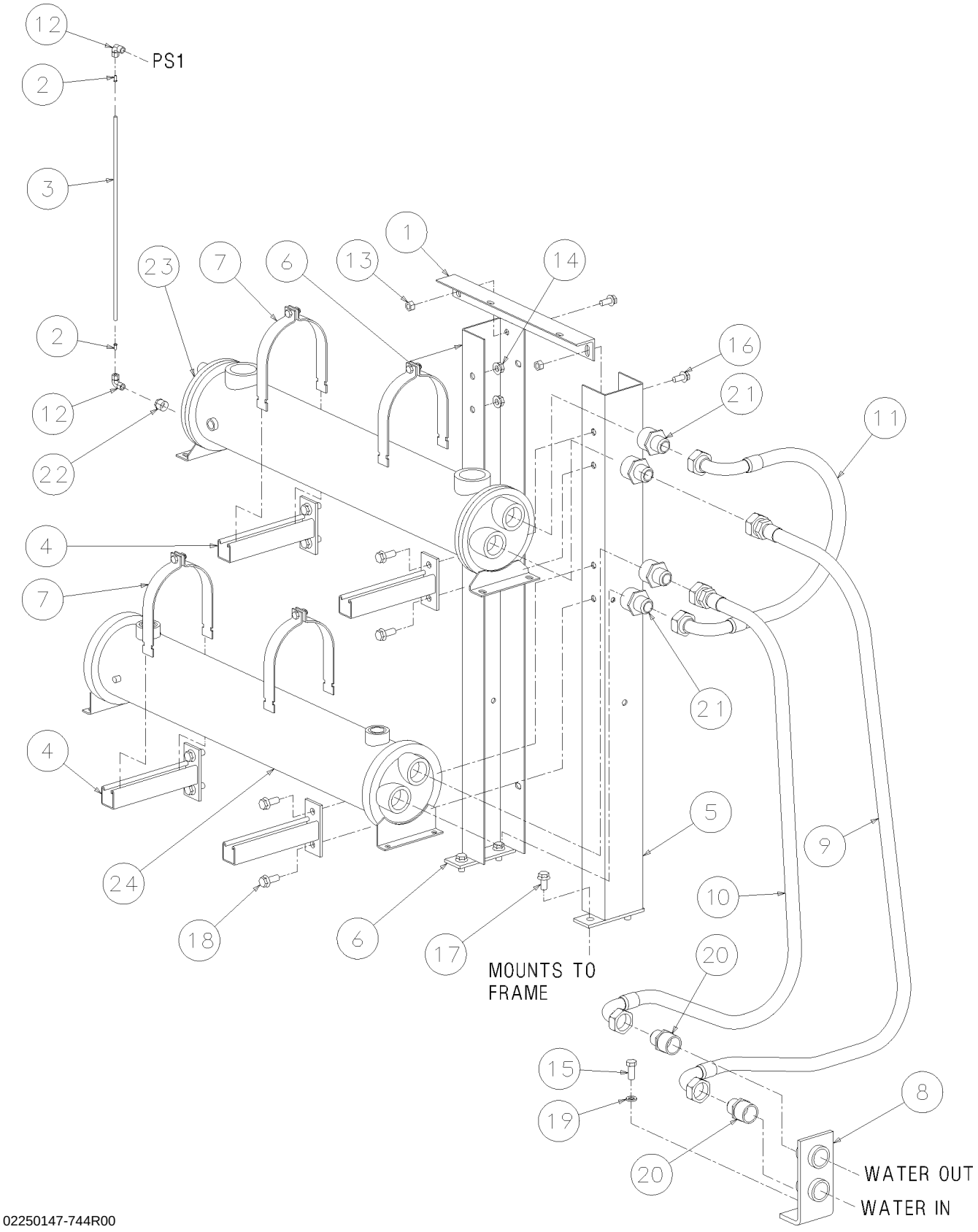
(I) DO NOT operate compressor without cooler access panels in place.

(II) This part may vary in accordance with compressor package. Consult factory with serial number to determine part number.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.7 FLUID COOLING SYSTEM- WATER-COOLED



02250147-744R00

11.7 FLUID COOLING SYSTEM- WATER-COOLED

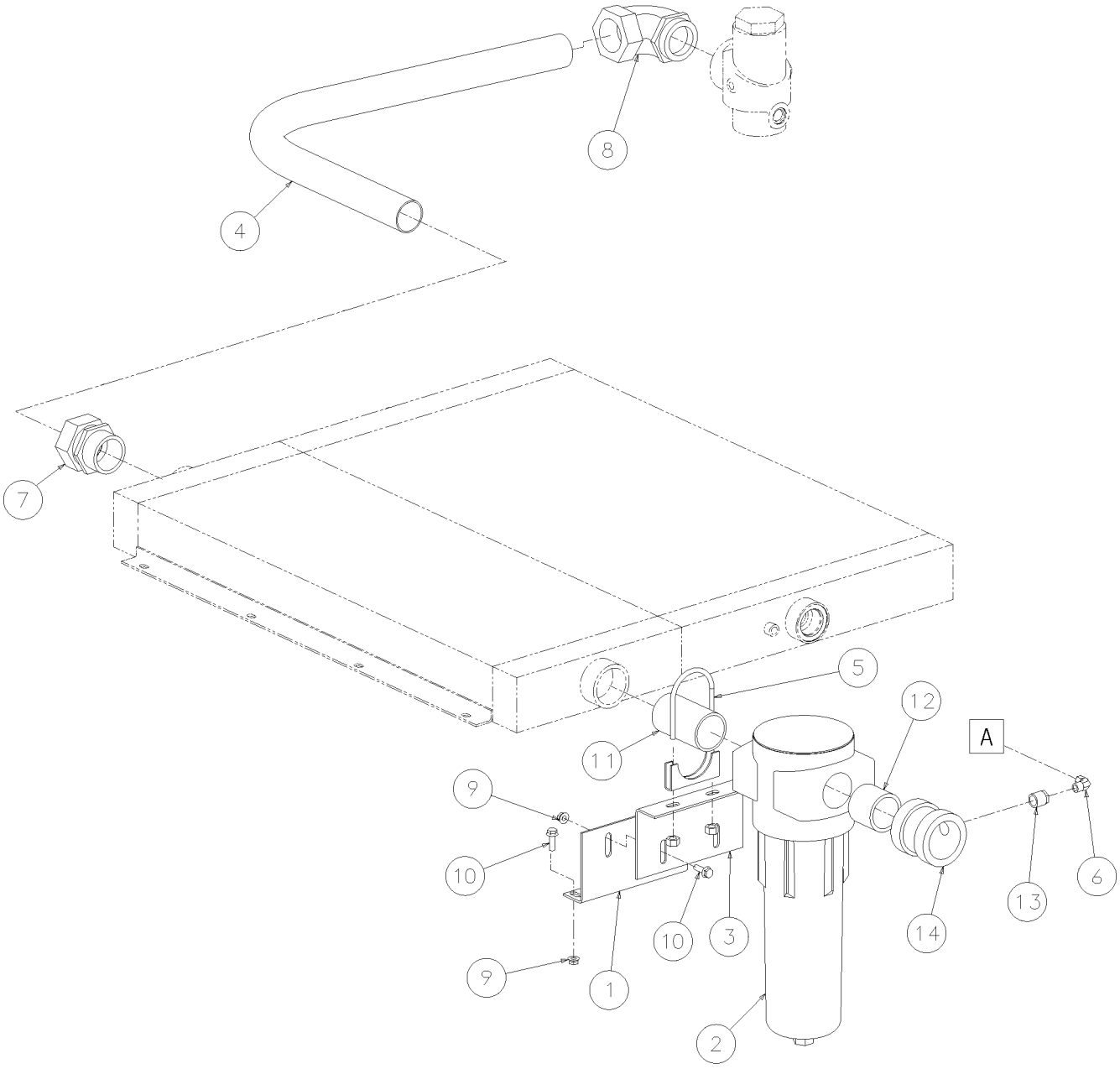
key number	*description*	*part number*	*quantity*
1	angle, supt instr panel	02250044-407	1
2	insert, nylon tubing 1/4"od	02250052-841	2
3	tube, nyl .25od x 040w blk	02250054-861	1
4	support, bracket de18 b-line b409-9	02250121-484	4
5	support, starter lh ls20 wc	02250128-680	1
6	support, starter rh ls20 w/c	02250128-681	1
7	clamp, pipe 6"	02250128-716	4
8	support, water conn 1-1/4"	02250131-777	1
9	hose, hydraulic parkrimp 1" x 73"	02250135-624	1
10	hose, hydraulic parkrimp 1" x 60"	02250135-625	1
11	hose, hydraulic parkrimp 1" x 28"	02250135-626	1
12	elbow, 90 1/4t pls x 1/4 npt m	250018-430	2
13	nut, hex f pltd 7/16-14	825307-394	2
14	nut, hex f pltd 1/2-13	825308-458	8
15	capscr, hex gr5 1/2-13 x 1 1/4	829108-125	1
16	screw, hex ser washer 7/16-14 x 1	829707-100	2
17	screw, hex ser washer 1/2-13 x 1	829708-100	4
18	screw, hex ser washer 1/2-13 x 1 1/4	829708-125	8
19	washer, spr lock reg pltd 1/2	837808-125	1
20	connector, 37 fl/mpt pltd 1 x 1 1/4	860116-125	2
21	connector, 37 fl/mpt pltd 1 x 1 1/2	860116-150	4
22	bushing, red hex pltd 1/2 x 1/4	868902-010	1
23	aftercooler **(I)**	-	1
24	cooler **(I)**	-	1

(I) This part may vary in accordance with compressor package. Consult factory with serial number to determine part number.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.8 AIR PIPING SYSTEM- AIR-COOLED



A – TO PRESSURE TRANSDUCER P2 (SUPERVISOR)
OR LINE PRESSURE SWITCH PSW1 (E/M)

02250145-295R01

11.8 AIR PIPING SYSTEM- AIR-COOLED

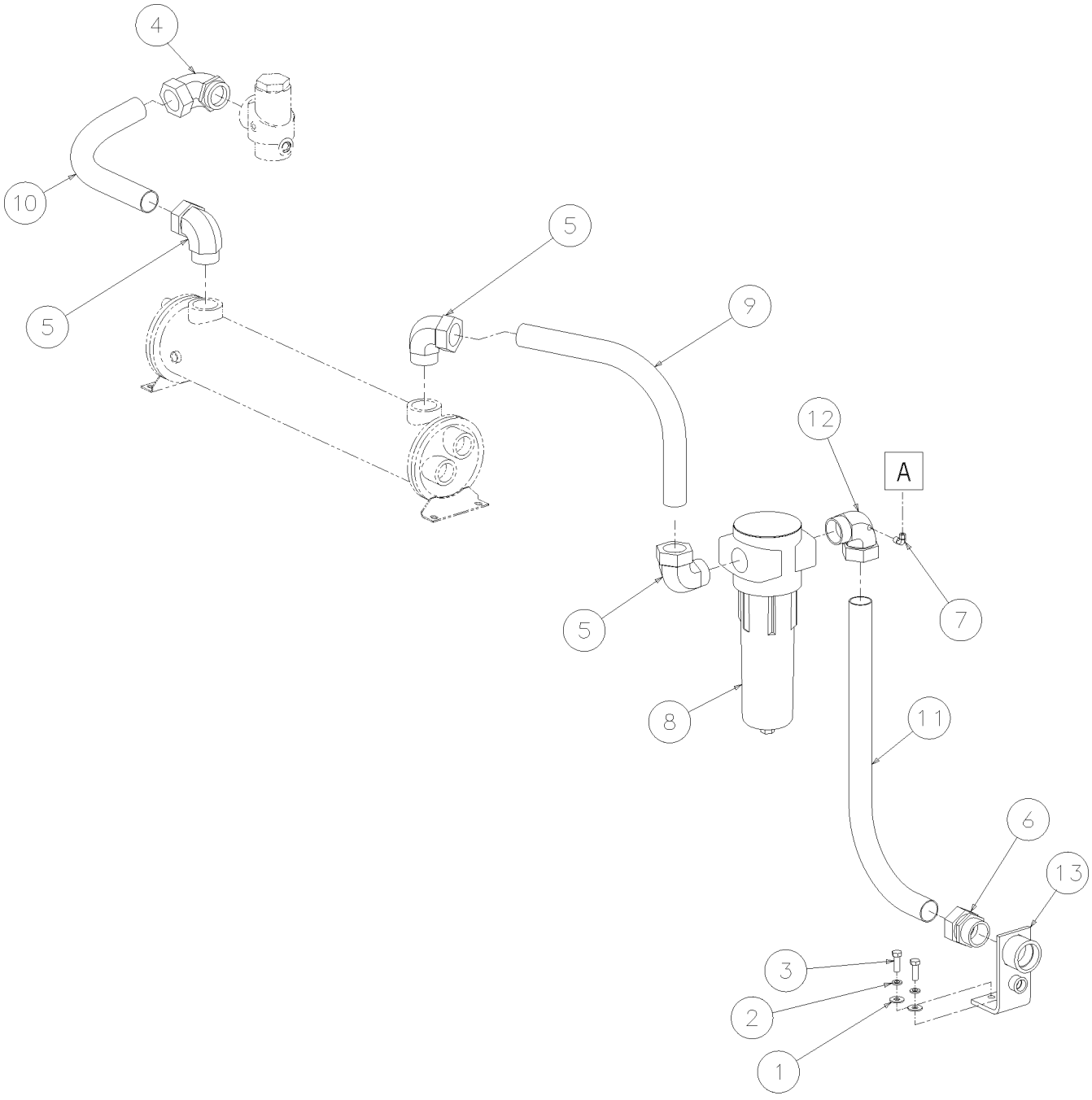
key number	*description*	*part number*	*quantity*
1	support, water sep ls16-100 btm	02250142-629	1
2	separator, water d-h 2” npt 1/4”drn **(I)**	02250144-632	1
3	support, water sep top ls160-100/LS-200	02250145-301	1
4	tube, 2” mpv-aftclr LS-200	02250145-405	1
5	clmp, exhaust 2-1/2” hd ylw zinc	02250145-419	1
6	elbow, 90 1/4t pls x 1/4 npt m	250018-430	1
7	connector, tube-m 2 x 2	810232-200	1
8	elbow, tube str thrd 2 x 2 1/2	811632-250	1
9	nut, hex f pltd 5/16-18	825305-283	4
10	screw, hex ser washer 5/16-18 x 1	829705-100	4
11	nipple, pipe pltd 2 x 4	866332-040	1
12	nipple, pipe-xs plt 2 x cl	866432-000	1
13	bushing, red pltd 1/2 x 1/4	867102-010	1
14	tee, reducing pltd 2 x 2 x 1/2	867508-082	1

(I) For maintenance on water separator no. 02250144-632, order repair kit no. 02250144-732.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.9 AIR PIPING SYSTEM- WATER-COOLED



A – TO PRESSURE TRANSDUCER P2 (SUPERVISOR)
OR LINE PRESSURE SWITCH PSW1 (E/M)

02250146-275R00

11.9 AIR PIPING SYSTEM- WATER-COOLED

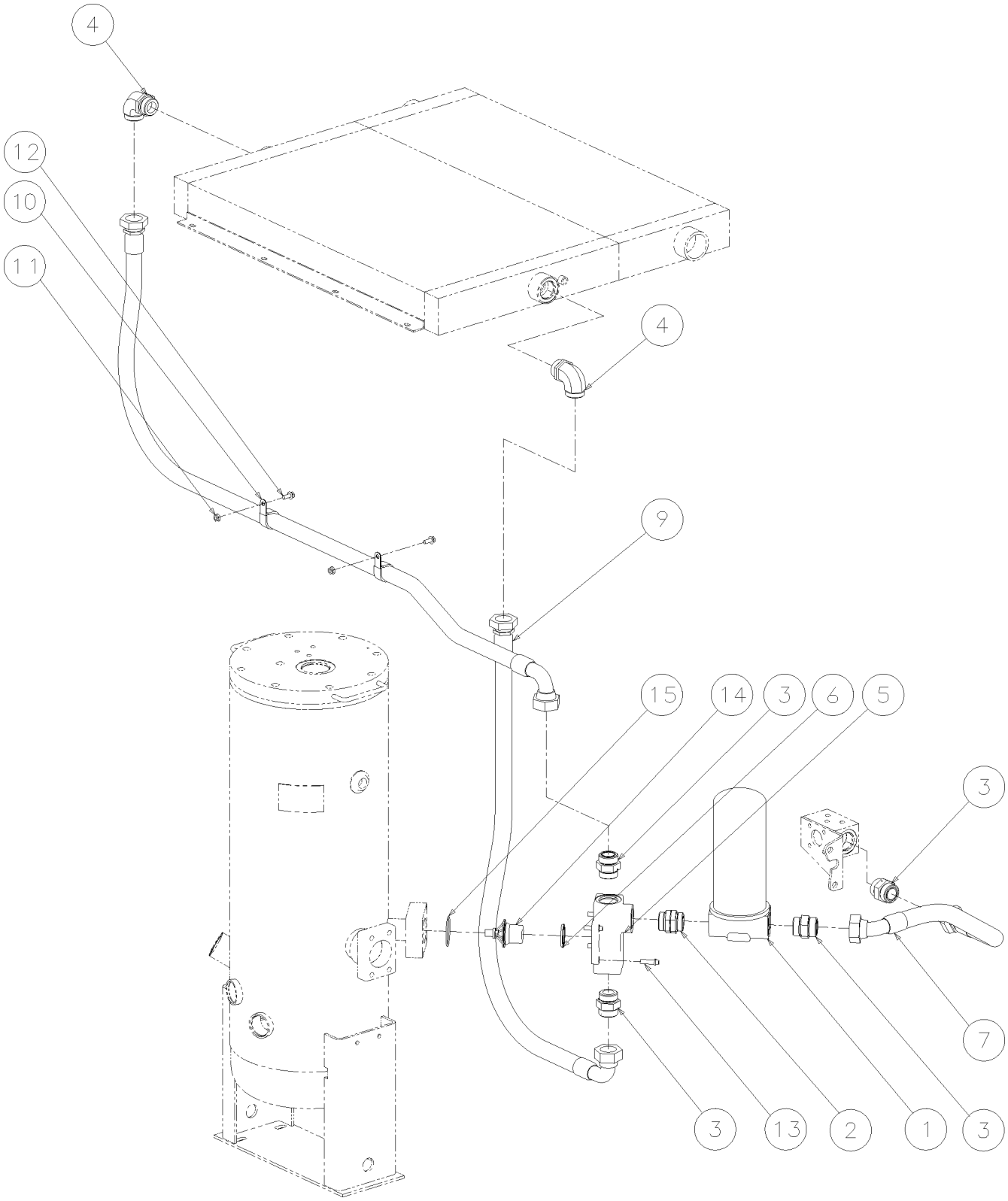
key number	*description*	*part number*	*quantity*
1	washer, pl-b reg pltd 1/2	838208-112	2
2	washer, spr lock reg pltd 1/2	837808-125	2
3	capscr, hex gr5 1/2-13 x 1 1/2	829108-150	2
4	elbow, tube str thrd 2 x 2 1/2	811632-250	1
5	elbow, tube 90 deg m 2 x 2	810532-200	3
6	connector, tube-m 2 x 2	810232-200	1
7	elbow, 90 1/4t pls x 1/4 npt m	250018-430	1
8	separator, water d-h 2” npt 1/4”drn **(I)**	02250144-632	1
9	tube,wcaftclr to moistsep 2”	02250129-734	1
10	tube, mpv to wcaftclr 2”	02250129-733	1
11	tube, separator disch top 2”	02250129-728	1
12	elbow, tube m-2 x 2 w/1/4”tap	02250110-165	1
13	support, air conn and cond drn	02250045-613	1

(I) For maintenance on water separator no. 02250144-632, order replacement seal kit no. 0250144-732.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.10 FLUID PIPING SYSTEM- AIR-COOLED



02250147-611R01

11.10 FLUID PIPING SYSTEM- AIR-COOLED

key number	*description*	*part number*	*quantity*
1	filter, fluid 1 5/8"sae str thrd con **(I)**	02250054-605	1
2	adapter, sae 1 5/8-12 x 1 5/8-12	02250055-015	1
3	connector,sae x orfs 1.25"	02250087-068	4
4	elbow, 90 sae x orfs 1.25"	02250087-071	2
5	hsg, therm vlv 1 5/8" conn w/ extra 1 5/8" port	02250092-929	1
6	seal, u-cup therm vlv	02250101-372	1
7	hose, lp f-orfs 1.125 x 30"	02250136-958	1
8	hose, lp f-orfs 1.125 x 79"	02250136-961	1
9	hose, lp f-orfs 1.125 x 55"	02250136-962	1
10	clamp, tube rubr ctd 1-3/8" dia	250025-638	2
11	nut, hex f pltd 5/16-18	825305-283	2
12	screw, hex ser washer 5/16-18 x 3/4	829705-075	2
13	capscrew, ferry head hd pltd 3/8-16 x 1 1/4	867306-125	4
14	element, thermal valve **(II)**	-	1
15	o-ring, viton **(III)**	-	1

(I) For maintenance on fluid filter no. 02250054-605, order replacement element no. 250025-526.

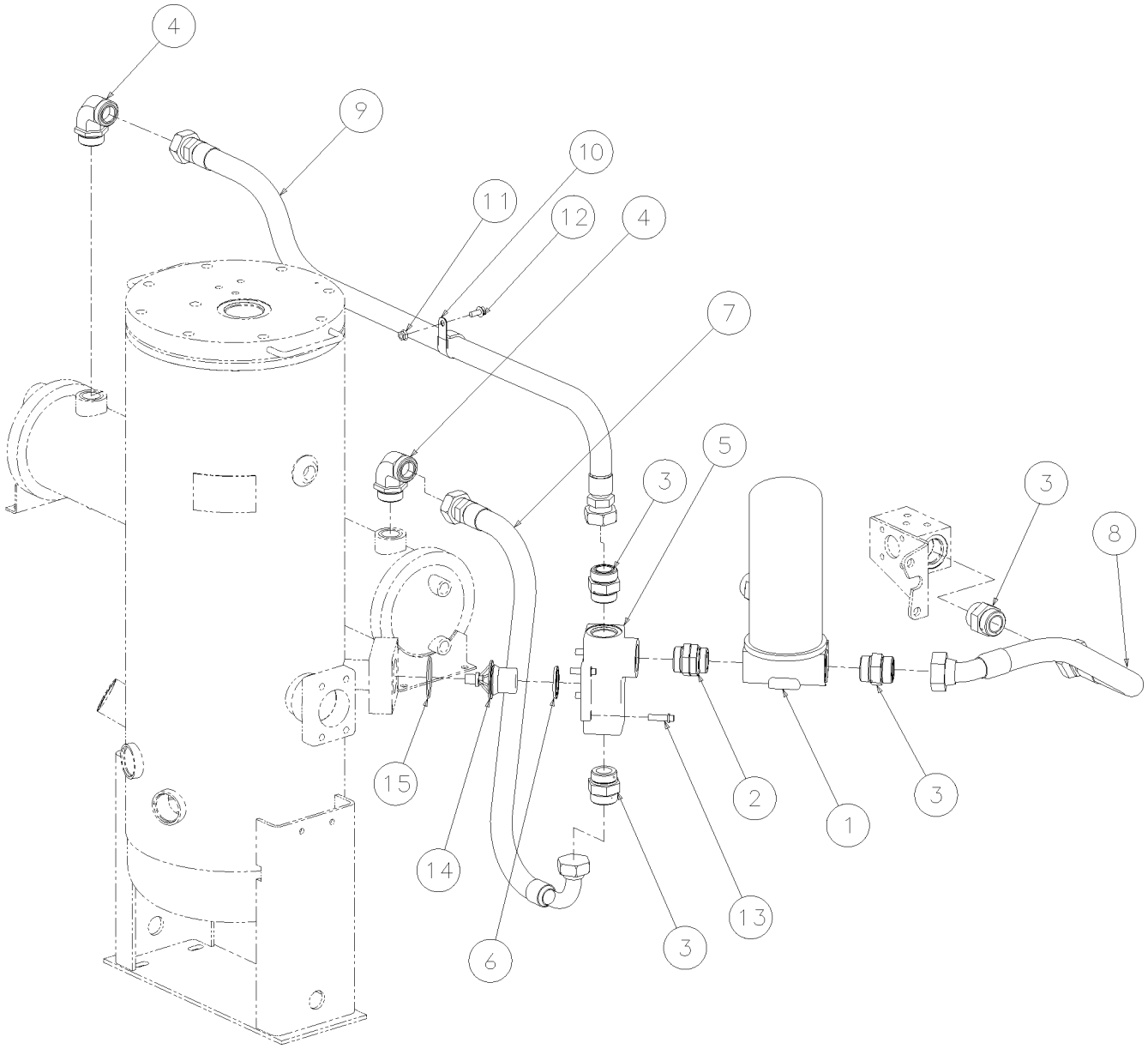
(II) For maintenance on thermal valve no. 049542 (175ºF/79ºC), order repair kit no. 02250105-553. For maintenance on thermal valve no. 250028-762, (190ºF/88ºC), order repair kit no. 02250112-709.

(III) This part may vary in accordance with compressor package. Consult factory with serial number to determine part number.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.11 FLUID PIPING SYSTEM- WATER-COOLED



02250147-612R00

11.11 FLUID PIPING SYSTEM- WATER-COOLED

key number	*description*	*part number*	*quantity*
1	filter, fluid 1 5/8"sae str thrd con **(I)**	02250054-605	1
2	adapter, sae 1 5/8-12 x 1 5/8-12	02250055-015	1
3	connector, sae x orfs 1.25"	02250087-068	4
4	elbow, 90 sae x orfs 1.25"	02250087-071	2
5	housing, therm vlv 1 5/8" conn w/ extra **(II)**	02250092-929	1
6	seal, u-cup therm vlv	02250101-372	1
7	hose, lp f-orfs 1.125 x 38"	02250136-957	1
8	hose, lp f-orfs 1.125 x 30"	02250136-958	1
9	hose, lp f-orfs 1.125 x 53"	02250136-960	1
10	clamp, tube rubr ctd 1-3/8" dia	250025-638	1
11	nut, hex f pltd 5/16-18	825305-283	1
12	screw, hex ser washer 5/16-18 x 3/4	829705-075	1
13	capscrew, ferry head hd pltd 3/8-16 x 1 1/4	867306-125	4
14	element **(III)**	-	1
15	o-ring **(III)**	-	1

(I) For maintenance on fluid filter no. 02250054-605, order replacement element no. 250025-526.

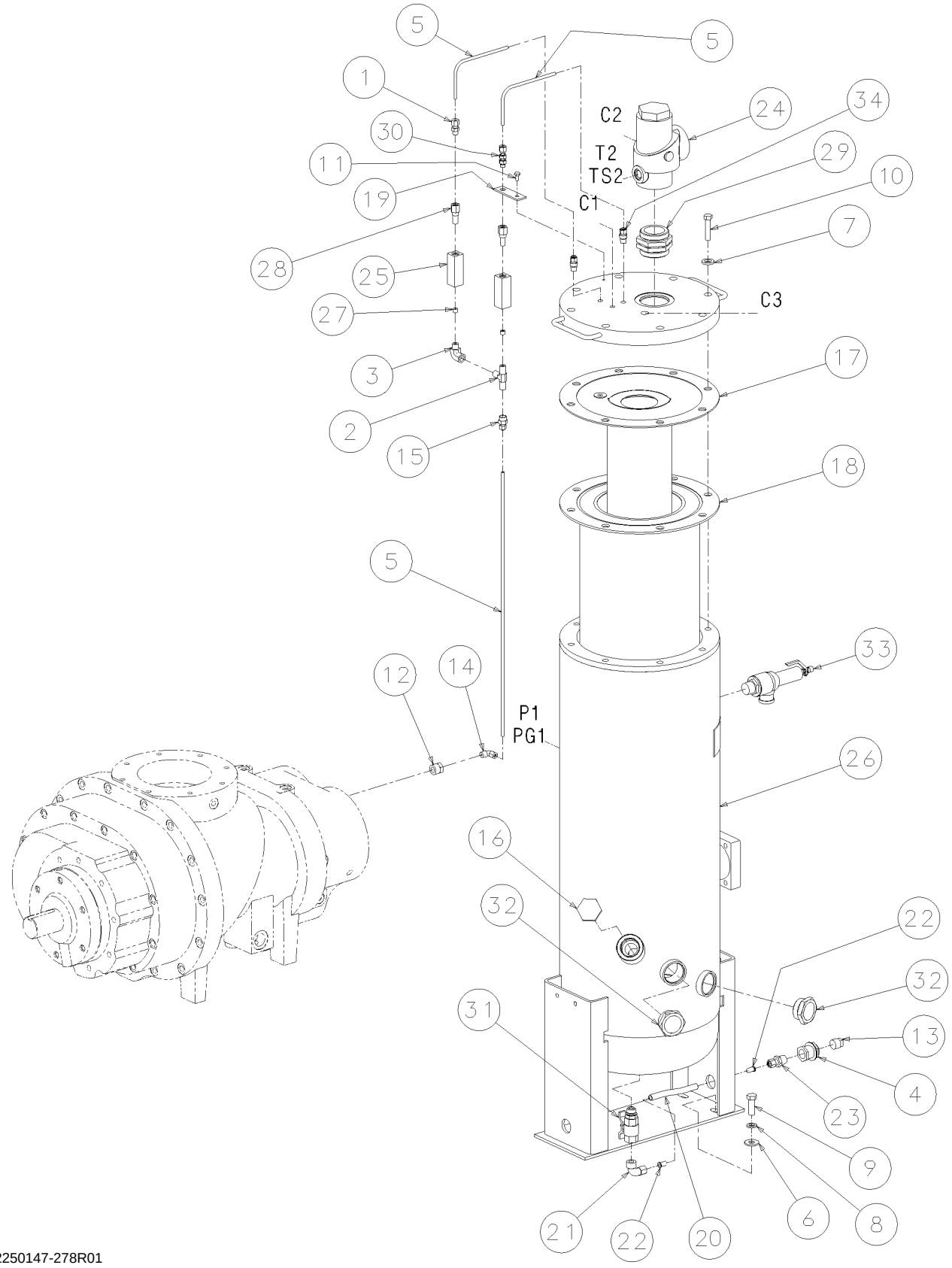
(II) For maintenance on thermal valve no. 049542 (175ºF/79ºC), order repair kit no. 02250105-553. For maintenance on thermal valve no. 250028-762, (190ºF/88ºC), order repair kit no. 02250112-709.

(III) This part may vary in accordance with compressor package. Consult factory with serial number to determine part number.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.12 SUMP AND PARTS



02250147-278R01

11.12 SUMP AND PARTS

key number	*description*	*part number*	*quantity*
1	connector, tb-m str thd ss 1/4 x 7/16	870904-044	1
2	tee, male pipe brass 1/4	869825-025	1
3	elbow, pipe 90m/f 1/4 x 1/4	860704-025	1
4	bulkhead, pipe 1/2” npt	841500-008	1
5	tubing, stnls stl 1/4” 20 ga	841215-004	3
6	washer, pl-b reg pltd 1/2	838208-112	4
7	washer, spr lock reg pltd 5/8	837810-156	8
8	washer, spr lock reg pltd 1/2	837808-125	4
9	capscr, hex gr5 1/2-13 x 1 1/2	829108-150	4
10	capscr, hex gr5 7/16-14 x 2	829107-200	8
11	capscr, hex gr5 1/4-20 x 1/2	829104-050	1
12	adapter, female pipe 5/8 x 1/4	811505-025	2
13	plug, pipe 1/2” 3000# stl	807800-020	1
14	elbow, tube-m 1/4” swglk ss	250211-005	2
15	connector, tube-f 1/4” swglk ss	250139-044	1
16	plug, o-ring boss sae 1 1/4	040029	1
17	separator, air/oil secondary LS-200 **(I)**	02250146-963	1
18	separator, air/oil primary LS-200 **(I)**	02250146-962	1
19	support, sight glass	02250134-697	1
20	tube, nylon 1/2” o.d.	02250134-505	1
21	elbow, tube-m 1/2” compr	02250134-504	1
22	insert, nyl tbg 1/2 od x .062 w	02250134-503	2
23	connector, tube 1/2tube x 1/2npt	02250134-500	1
24	valve, min pressure 2-1/2”-sae **(II)**	02250129-374	1
25	sightglass, orf block sae	02250126-129	2
26	tank, air/oil separator	02250125-995	1
27	orifice, plug brass 1/8”npt x 1/32”	02250125-774	2
28	filter, asembly genisis filter **(III)**	02250117-782	2

Continued on page 101

(I) For maintenance on air/fluid separator, order primary replacement element kit no. 022250146-964, and secondary replacement element kit no. 02250146-965.

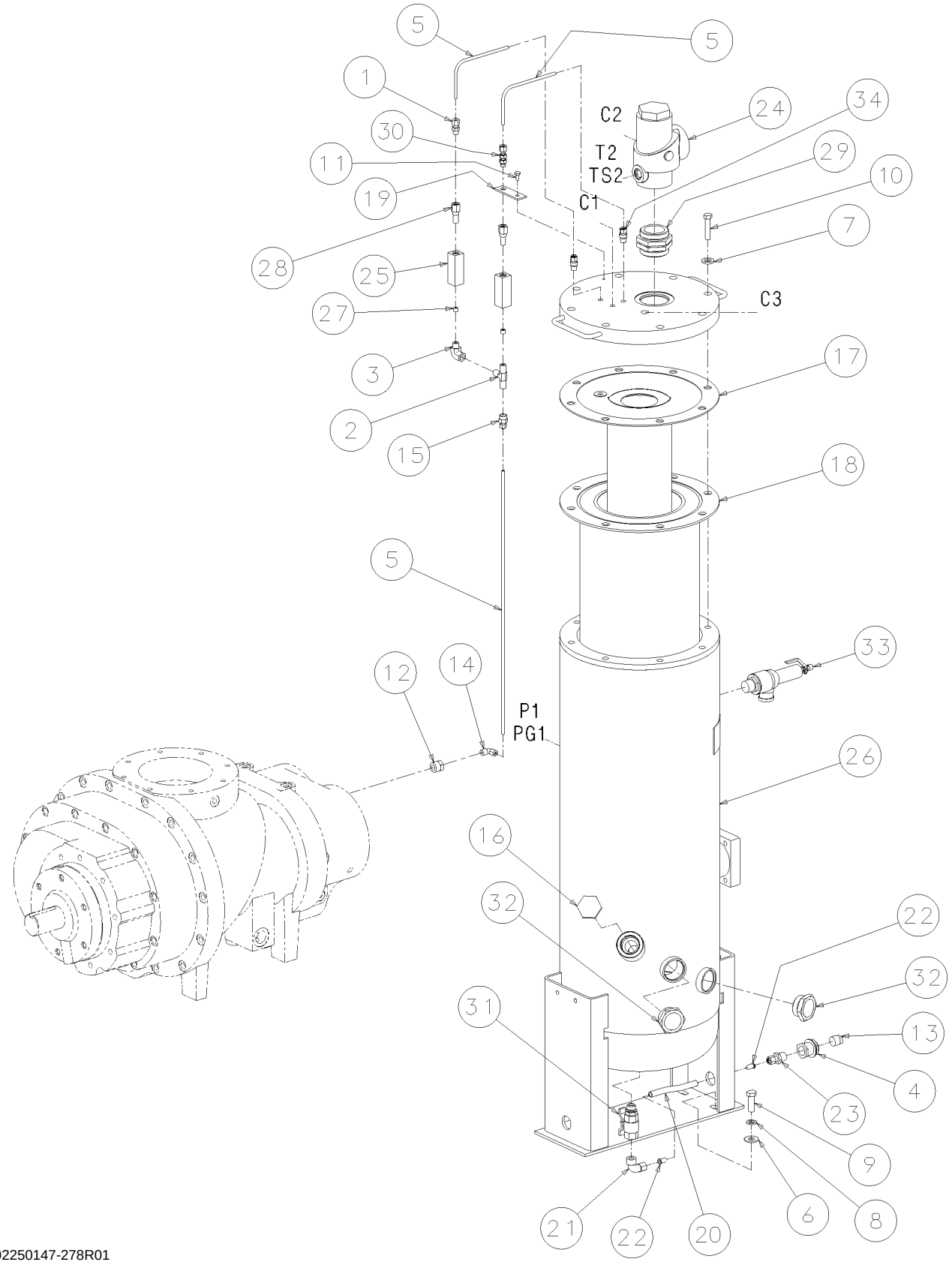
(II) For maintenance on minimum pressure valve no. 02250129-374, order repair kit no. 250018-456, or piston kit no. 02250051-336, or cap kit no. 02250044-355.

(III) For maintenance on genesis filter assembly no. 02250117-782, order replacemenet filter no. 02250117-782.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.12 SUMP AND PARTS



02250147-278R01

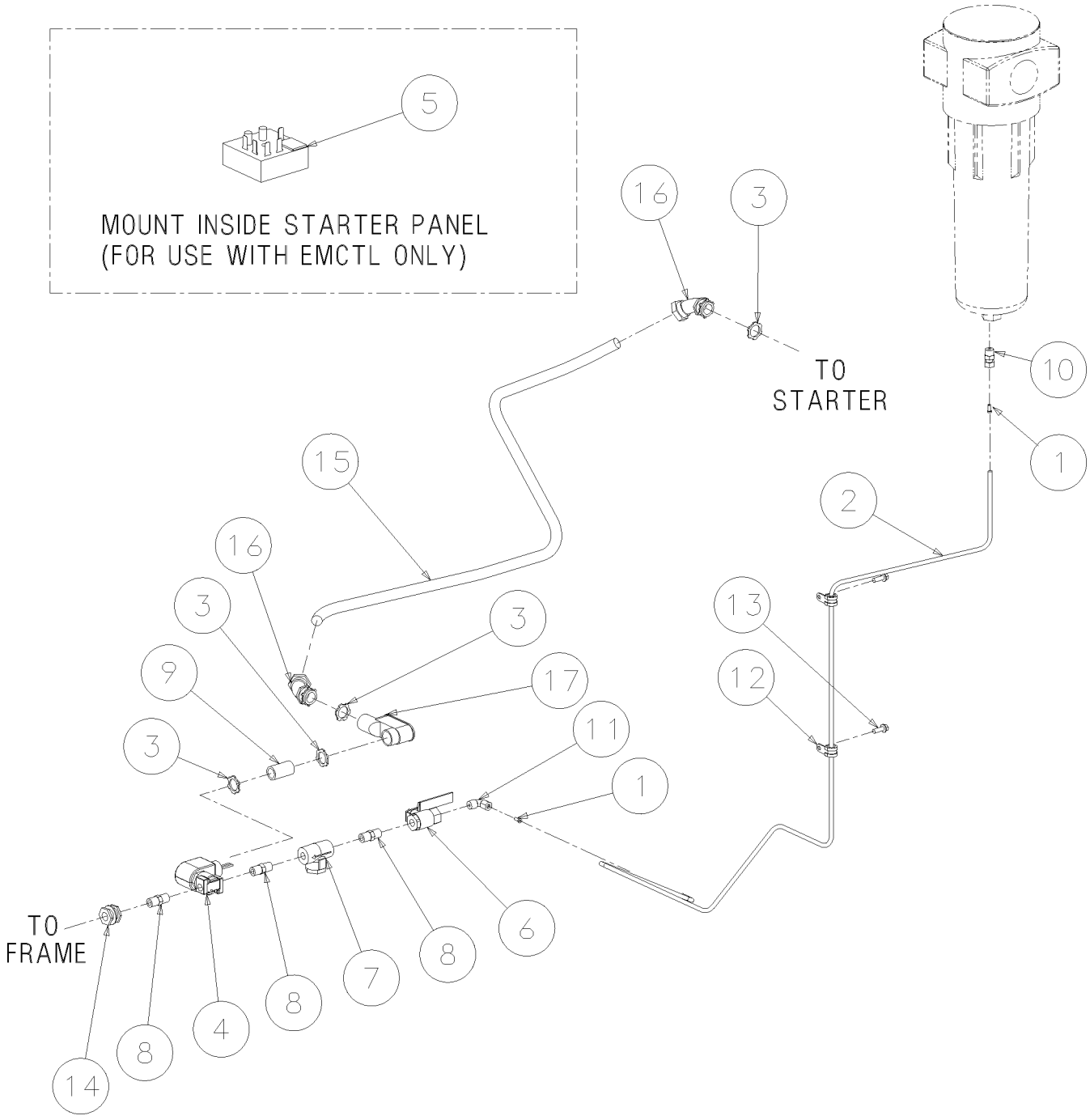
11.12 SUMP AND PARTS (CONTINUED)

key number	*description*	*part number*	*quantity*
29	adapter, sae 2-1/2-12 x 2-1/2-12	02250110-661	1
30	connector, tube male bhd 1/4 x sae	02250101-490	1
31	valve, ball 3/4”sae-m x 1/2”npt-f	02250098-303	1
32	plug, sight glass 1-7/8” sae	02250097-611	2
33	valve, relief 200#	02250097-349	1
34	connector, flex 1/4t x 1/4p	020169	2

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.13 MOISTURE DRAIN ASSEMBLY- AIR-COOLED



02250146-911R00

11.13 MOISTURE DRAIN ASSEMBLY- AIR-COOLED

key number	*description*	*part number*	*quantity*
1	insert, nylon tubing 1/4"od	02250052-841	2
2	tube, nyl .25od x .040" w	02250054-861	1
3	locknut, n4 conduit sealing	02250071-362	4
4	valve, solenoid 2wnc mo 1/4 200# n4 **(I)**	02250125-674	1
5	timer, rep cyc 120vac	02250144-630	1
6	valve, ball 1/4" npt	047115	1
7	strainer, v-type 300psix1/4 **(II)**	241771	1
8	nipple, brass hex 1/4"-npt	249537	3
9	nipple, conduit 1/2 x 1.5"	250007-169	1
10	connector, 1/4"tube x 1/4"npt	250018-428	1
11	elbow, 1/4" tube x 1/4" npt	250018-430	1
12	clamp, tube 1/2"	250025-633	2
13	screw, self-drill 1/4 x 3/4	834504-075	2
14	bulkhead, pipe 1/4" npt	841500-004	1
15	conduit, csa flex 1/2"	846315-050	1
16	elbow, 45deg lq-tite 1/2	846500-050	2
17	elbow, entrance 1/2	847715-050	1

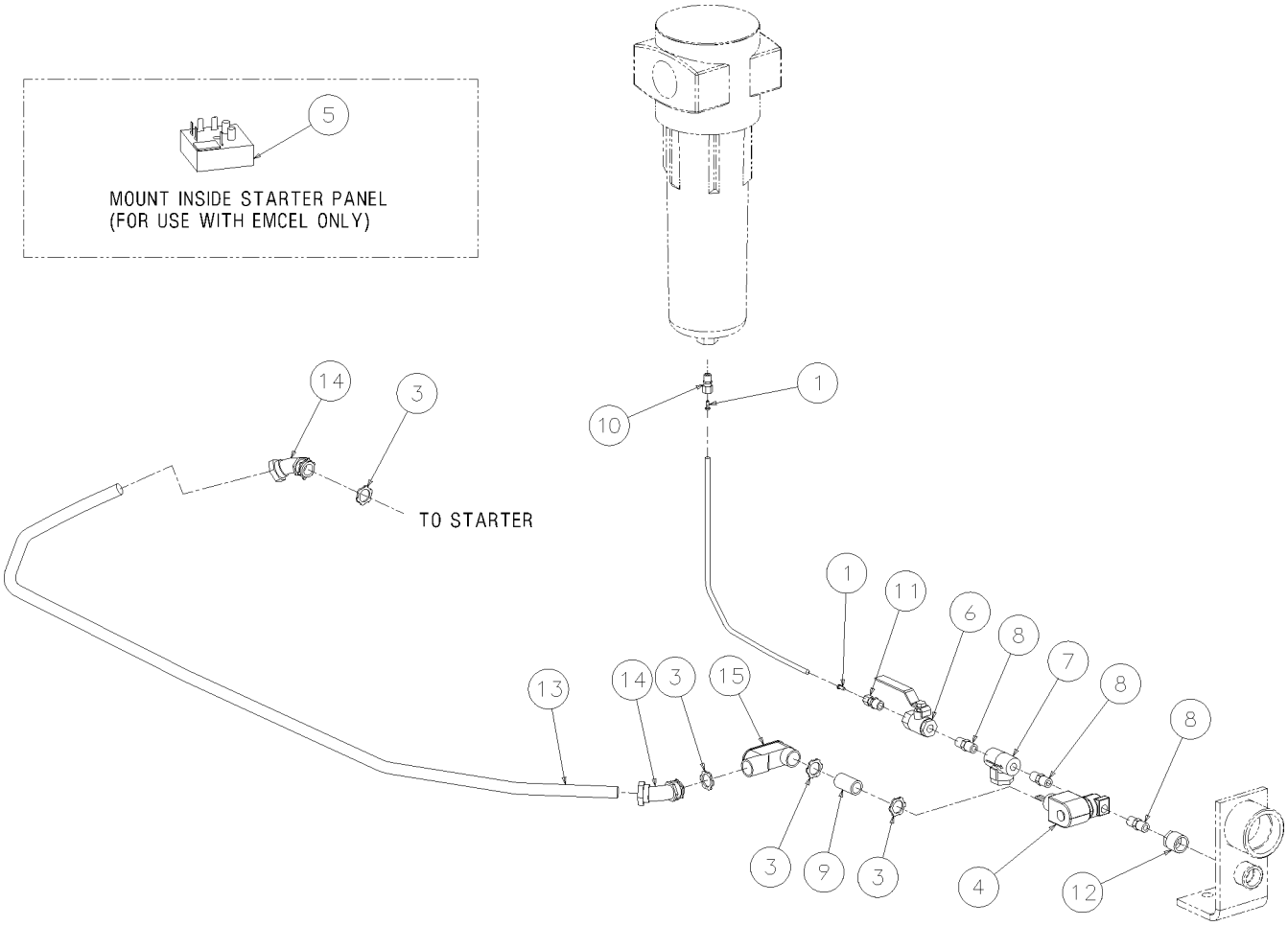
(I) For maintenance on solenoid valve no. 02250125-674, order repair kit no. 02250125-823, and replacement coil no. 0250125-861.

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

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.14 MOISTURE DRAIN ASSEMBLY- WATER-COOLED



02250146-278R00

11.14 MOISTURE DRAIN ASSEMBLY- WATER-COOLED

key number	*description*	*part number*	*quantity*
1	insert, nylon tubing 1/4"od	02250052-841	2
2	tube, nyl .25 od x .040" w	02250054-861	1
3	locknut, n4 conduit sealing	02250071-362	4
4	valve, solenoid 2wnc mo 1/4 200# n4 **(I)**	02250125-674	1
5	timer, rep cyc 120vac	02250144-630	1
6	valve, ball 1/4" npt	047115	1
7	strainer, v-type 300psix1/4 **(II)**	241771	1
8	nipple, brass hex 1/4"-npt	249537	3
9	nipple, conduit 1/2 x 1.5"	250007-169	1
10	connector, 1/4t x 1/8 npt str	250018-427	1
11	connector, 1/4t x 1/4 npt str	250018-428	1
12	bushing, red stl 3/4 x 1/4	807603-010	1
13	conduit, csa flex 1/2"	846315-050	1
14	elbow, 45deg lq-tite 1/2	846500-050	2
15	elbow, entrance 1/2	847715-050	1

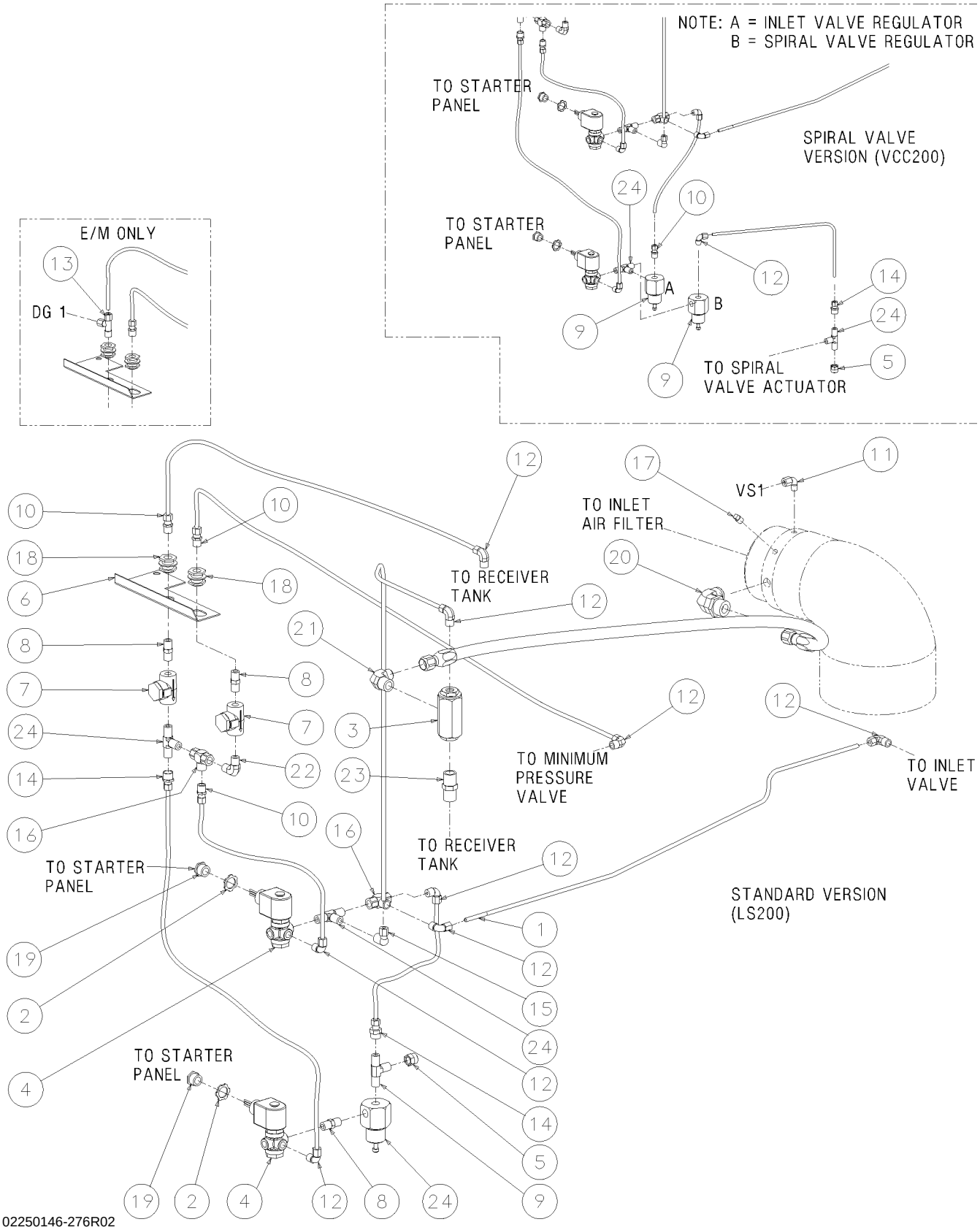
(I) For maintenance on solenoid valve no. 02250125-674, order repair kit no. 02250125-823, and replacement coil no. 0250125-861.

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

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.15 PNEUMATIC CONTROLS- LS-200 AND VCC-200



11.15 PNEUMATIC CONTROLS- LS-200 AND VCC-200

key number	*description*	*part number*	*quantity*
1	tube, nyl .25 od x .040w blk	02250054-861	21 ft.
2	locknut, n4 conduit sealing	02250071-362	2
3	vlv, 1/2 bldwn 1.8:1 250 psig **(I)**	02250100-042	1
4	vlv, sol 3wno 1/4 235# n4 **(II)**	02250125-657	2
5	orifice, cap .031" x 1/4" npt	02250132-934	2
6	supt, brkt strainer	02250134-380	1
7	strainer, v-type 300psix1/4 **(III)**	241771	2
8	nipple, brass hex 1/4"-npt	249537	3
9	valve, pressure regulator **(IV)**	250017-280	3
10	conn, 1/4t x 1/4 npt str	250018-428	4
11	elbow, 90 1/4"tube x 1/8"npt	250018-429	1
12	elbow, 1/4" tube x 1/4" npt	250018-430	9
13	tee, male run 1/4 tube x 1/4 npt	250038-059	1
14	conn, fem 1/4t x 1/4 npt	250041-084	3
15	elbow, 90d 1/4" tube x 1/4"fnpt	250041-287	1
16	valve, shuttle 1/4" npt (dbl chk)	408893	2
17	plug, pipe 1/8" 3000# stl	807800-005	1
18	bulkhead, pipe 1/4" npt	841500-004	2
19	nipple, chase cond 1/2	847815-050	2
20	elbow, 37fl 90m 1/2 x 3/8	860208-038	1
21	elbow, 37fl 90m 1/2 x 1/2	860208-050	1
22	elbow, pipe-90m 1/4 x 1/4	860504-025	1
23	nipple, pipe-hx pltd 1/2 x 1/2	868508-050	1
24	tee, male pipe brass 1/4	869825-025	5

(I) For maintenance on blowdown valve no. 02250100-042, order repair kit no. 02250045-132**.**

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

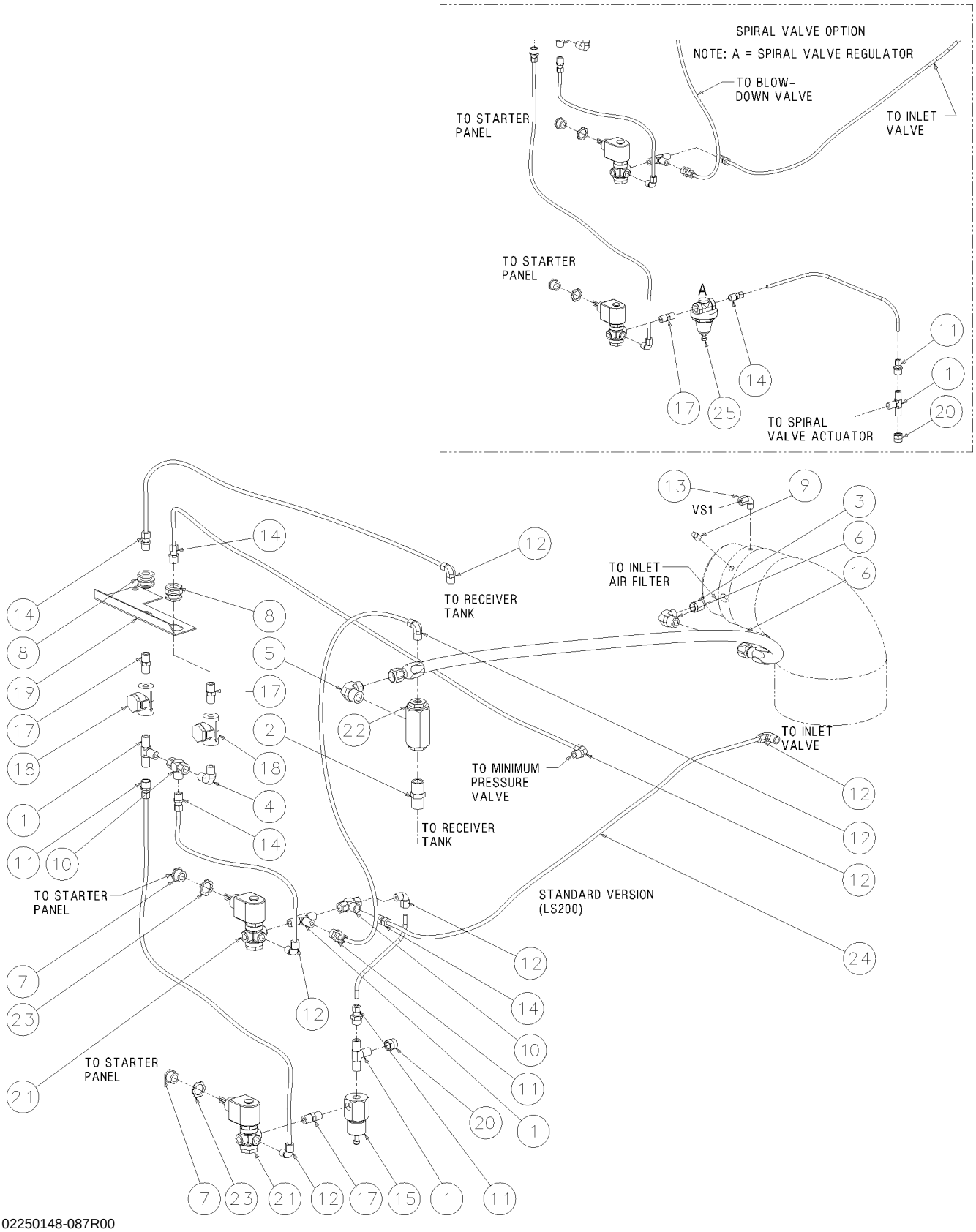
(III) For maintenance on strainer no. 241771, order repair kit no. 241772.

(IV) For maintenance on pressure regulator valve no. 250017-280, order repair kit no. 250019-453.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.16 PNEUMATIC CONTROLS- V-200



02250148-087R00

11.16 PNEUMATIC CONTROLS- V-200

key number	*description*	*part number*	*quantity*
1	tee, male pipe brass 1/4	869825-025	5
2	nipple, pipe-hx pltd 1/2 x 1/2	868508-050	1
3	bushing, red pltd 3/8 x 1/4	867101-010	1
4	elbow, pipe-90m 1/4 x 1/4	860504-025	1
5	elbow, 37fl 90m 1/2 x 1/2	860208-050	1
6	elbow, 37fl 90m 1/2 x 1/4	860208-025	1
7	nipple, chase cond 1/2	847815-050	2
8	bulkhead, pipe 1/4” npt	841500-004	2
9	plug, pipe 1/8” 3000# stl	807800-005	1
10	valve, shuttle 1/4” npt (dbl chk)	408893	2
11	connector, straight 1/4t plsx 1/4npt f	250041-084	4
12	elbow, 90 1/4t pls x 1/4 npt m	250018-430	7
13	elbow, 90 1/4”tube x 1/8”npt	250018-429	1
14	connector,1/4”tube x 1/4”npt	250018-428	5
15	valve, pressure regulator **(I)**	250017-280	1
16	hose, med press 0.50 x 032”	249608-008	1
17	nipple, brass hex 1/4”-npt	249537	4
18	strainer, v-type 300psi x 1/4 **(II)**	241771	2
19	support, bracket strainer	02250134-380	1
20	orifice, cap .031” x 1/4” npt	02250132-934	2
21	valve, solenoid 3wno 1/4 235# n4**(III)**	02250125-657	2
22	valve, 1/2 bldwn 1.8:1 250 psig **(IV)**	02250100-042	1
23	locknut, n4 conduit sealing	02250071-362	2
24	tube, nyl .25od x 040w blk	02250054-861	1 ft.
25	regulator, reducing 1/4 npt **(V)**	02250046-568	1

(I) For maintenance on pressure regulator valve no. 250017-280, order repair kit no. 250019-453.

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

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

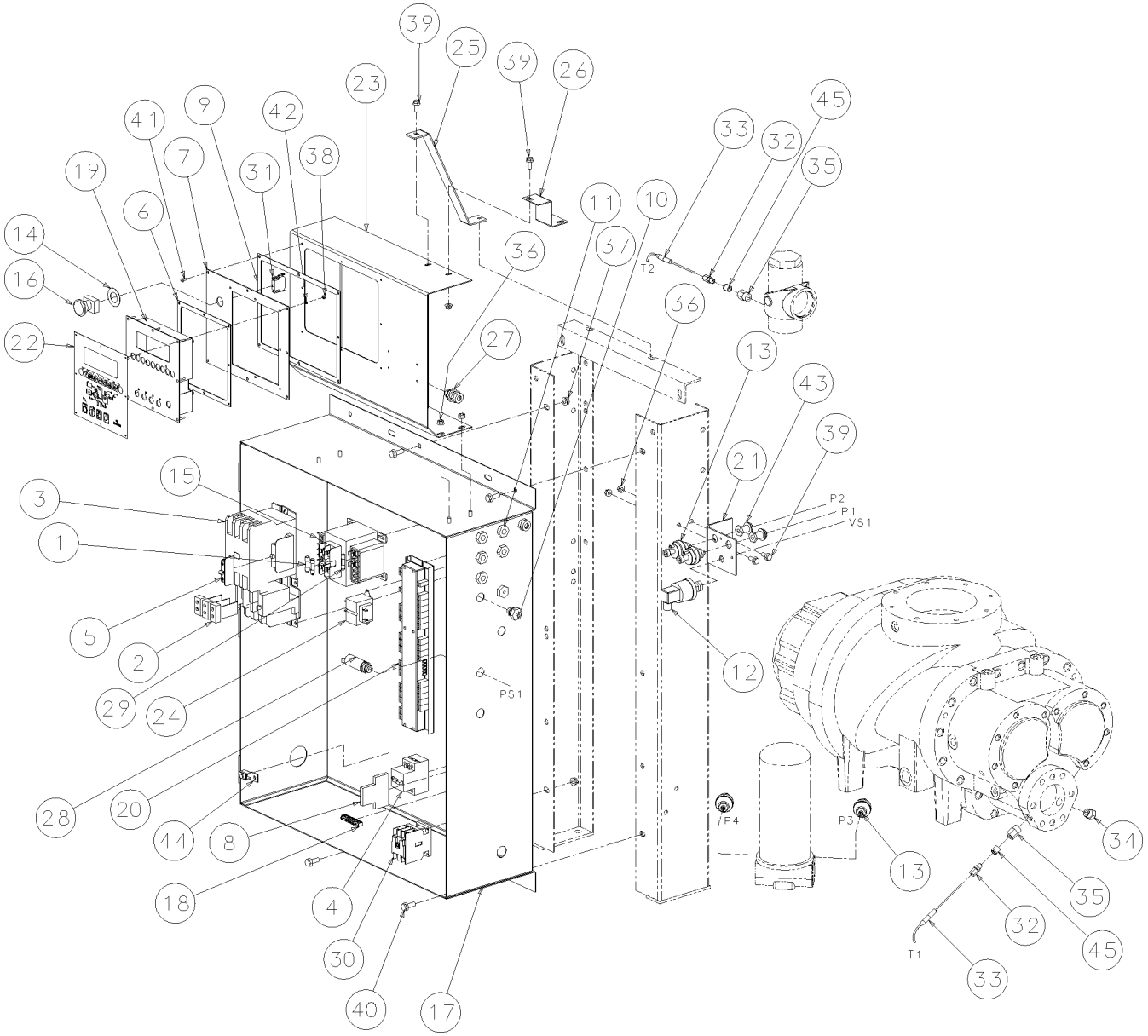
(IV) For maintenance on blowdown valve no. 02250100-042, order repair kit no. 02250045-132.

(V) For maintenance on reducing regulator no. 02250046-568, order repair kit no. 02250055-911.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.17 CONTROL BOX- LS-200 AND VCC-200 SUPERVISOR CONTROLLER



02250128-581R00

11.17 CONTROL BOX- LS-200 AND VCC-200 SUPERVISOR CONTROLLER

key number	*description*	*part number*	*quantity*
1	fuse, kldr **(I)**	-	2
2	heater, o.l. pack **(I)**	-	1
3	starter, 3ph 120v chf open **(I)**	-	1
4	starter, man mtr prot	-	1
5	block, contact chf lrg aux 1 no	02250048-396	1
6	gasket, panel Supervisor II	02250048-822	1
7	panel, cover Supervisor II	02250054-854	1
8	block, aux contac 1no-1nc mot/prot	02250057-765	1
9	gasket, ctl pnl Supervisor II	02250071-093	1
10	grip, cord n4 .125-.187 x 1/2”	02250071-379	2
11	grip, cord n4 .250-.375 x 1/2”	02250071-381	5
12	switch, vacuum 22”wc n4 6ft cable 5a	02250078-249	1
13	transducer, pressure 0-250 psi 1-5vdc n4	02250078-933	4
14	nameplate, E-stop 45mm yellow	02250081-473	1
15	transformer, control 250va univ w/pri fh	02250083-188	1
16	switch, push-button operator e22 40m	02250085-504	1
17	specification, encl ls-12/16 30w x 10d x 36lg	02250099-482	1
18	bar, ground 5 post cutler hammer	02250101-721	1
19	control, Supervisor III display mod	02250119-330	1
20	control, Supervisor III io mod	02250119-331	1
21	support, bracket xdcr/press sw	02250129-880	1
22	decal, Supervisor front	02250130-344	1
23	panel, instrument Supervisor	02250134-463	1
24	transformer, control 50va 120-24 50/60	02250135-283	1
25	support, control panel	02250136-227	1
26	bracket, control panel	02250136-474	1
27	connector, cord .312 cable x 1/2” hu	241585	2
28	switch, pressure n.o. 10 psi	250017-992	1
29	fuse, limitron ktk-r 2.00	250019-756	1
30	contactor, ac 3p 18v 120v chf	250025-703	1
31	block, contact 1nc	250027-125	1

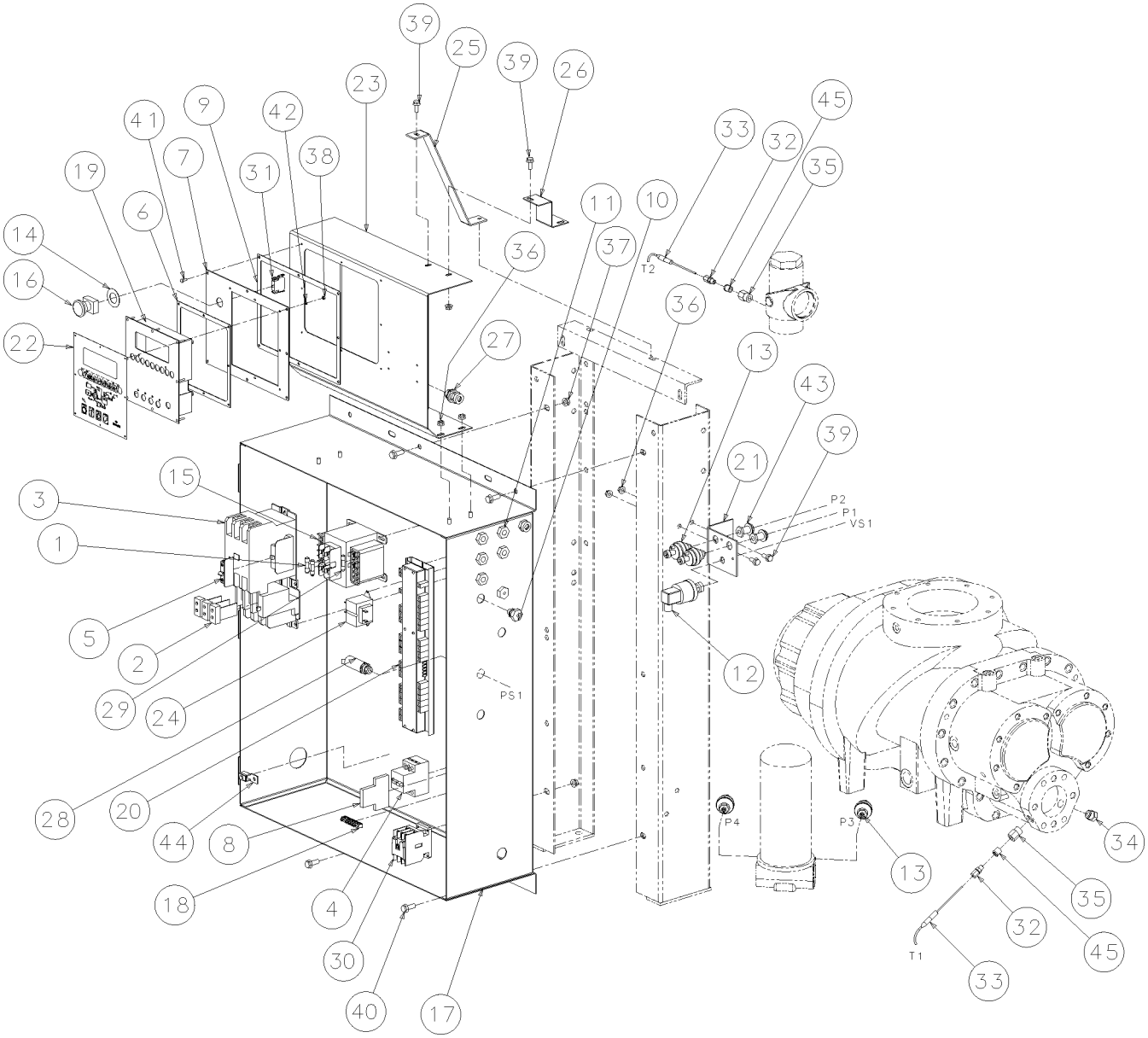
Continued on page 113

(I) This part may vary per machine design. Consult factory with machine serial number to determine the proper part number.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.17 CONTROL BOX- LS-200 AND VCC-200 SUPERVISOR CONTROLLER



02250128-581R00

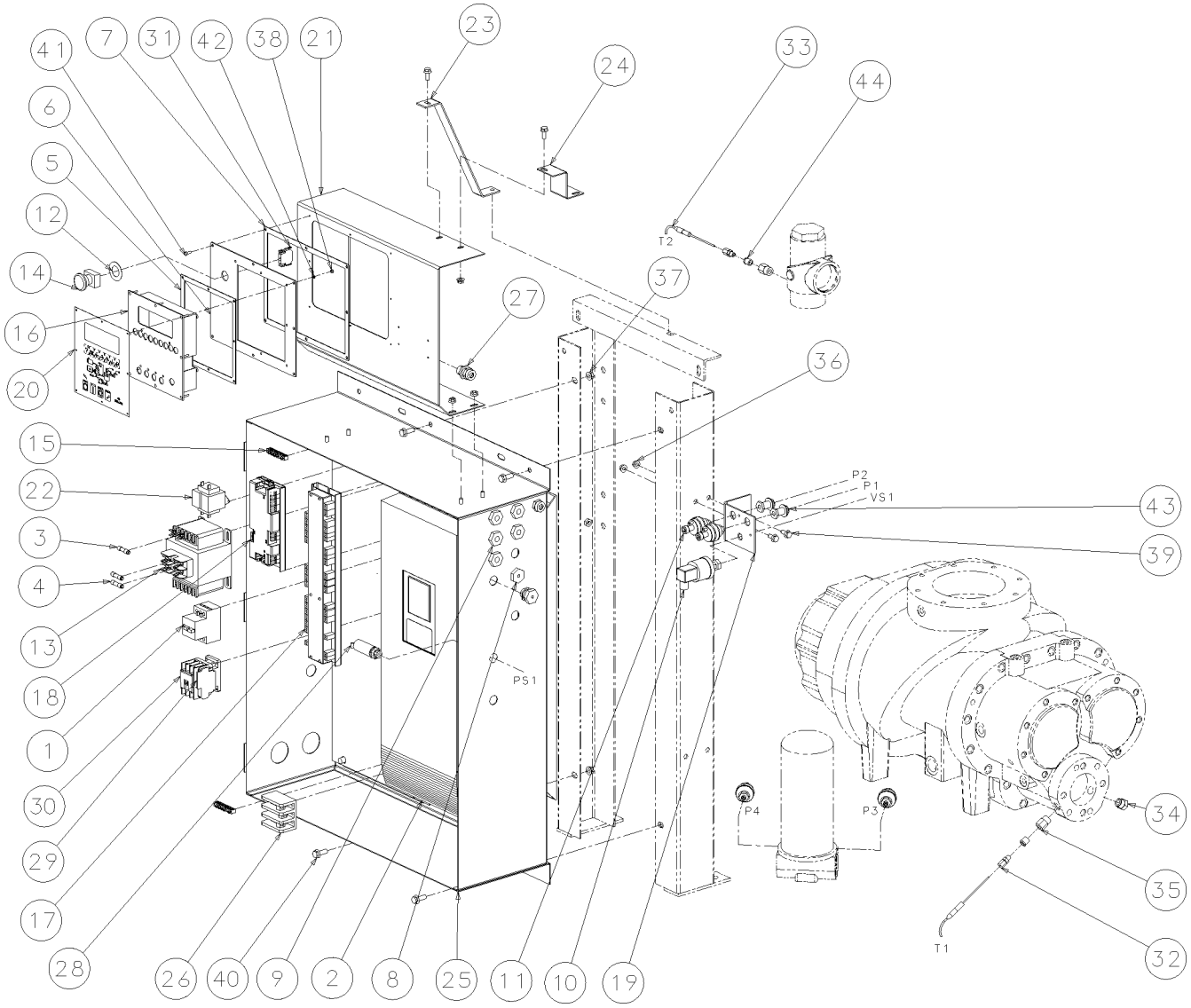
11.17 CONTROL BOX- LS-200 AND VCC-200 SUPERVISOR CONTROLLER (CONTINUED)

key number	*description*	*part number*	*quantity*
32	fitting, compress adj	250028-635	2
33	probe, rtd 100 ohm plat 3.5”x 12ft	250039-909	2
34	plug, straight thread 3/4-16 viton	250042-623	1
35	adapter, female pipe 1/2 x 1/4	811504-025	2
36	nut, hex f pltd 5/16-18	825305-283	8
37	nut, hex f pltd 3/8-16	825306-347	4
38	nut, hex metric m4 x .7	825904-070	8
39	screw, hex ser washer 5/16-18 x 3/4	829705-075	4
40	screw, hex ser washer 3/8-16 x 1	829706-100	4
41	screw, tc-f pan #8-32 x 1/2	835601-050	8
42	washer, spr lock-metric pltd m4	838804-090	8
43	bulkhead, pipe 1/8” npt	841500-002	2
44	lug, scrulug kpa-25 4-1/0	849215-025	1
45	bushing, red pltd 1/4 x 1/8	867100-005	2

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.18 CONTROL BOX- V-200 SUPERVISOR CONTROLLER



02250148-057R00

11.18 CONTROL BOX- V-200 SUPERVISOR CONTROLLER

key number	*description*	*part number*	*quantity*
1	start, man mtr prot 1.0 -1.6 **(I)**	-	1
2	dr, vsd ch 380/460v 140a **(I)**	-	1
3	fuse, limitron ktk-r **(I)**	-	1
4	fuse, limitron ktk-r **(I)**	-	2
5	gskt, panel Supervisor II	02250048-822	1
6	panel, cover Supervisor II	02250054-854	1
7	gskt, ctl pnl Super II	02250071-093	1
8	grip, cd n4 .125-.187 x 1/2"	02250071-379	2
9	grip, cd n4 .250-.375 x 1/2"	02250071-381	5
10	sw, vac 22"wc n4 6ft cable 5a	02250078-249	1
11	xdcr, press 0-250 psi 1-5vdc n4	02250078-933	4
12	npl, E-stop 45mm yellow	02250081-473	1
13	xfmr, pt 150va univ w/pri fh	02250083-186	1
14	switch, push-button operator e22 40mm	02250085-504	1
15	bar, ground 5 post cutler hammer	02250101-721	2
16	ctl, Supervisor III display mod	02250119-330	1
17	ctl, Supervisor III io mod	02250119-331	1
18	ctl, Supervisor III comm module	02250128-157	1
19	supt, brkt xdcr/press sw	02250129-880	1
20	decal, Supervisor front	02250130-344	1
21	panel, instrument Supervisor	02250134-463	1
22	xfmr, pt 50va 120-24 50/60	02250135-283	1
23	support, control panel **(II)**	02250136-227	1
24	bracket, control panel	02250136-474	1
25	spec, encl vsd s3 LS-200/160	02250145-037	1
26	blk, pwr distr 600a	02250145-195	1
27	connector, cord .312 cable x 1/2" hub	241585	2
28	switch, press no 10psi **(II)**	250017-992	1
29	contact, aux 1 no	250023-370	1
30	contactor, ac 3p 18v 120v chf	250025-703	1

Continued on page 117

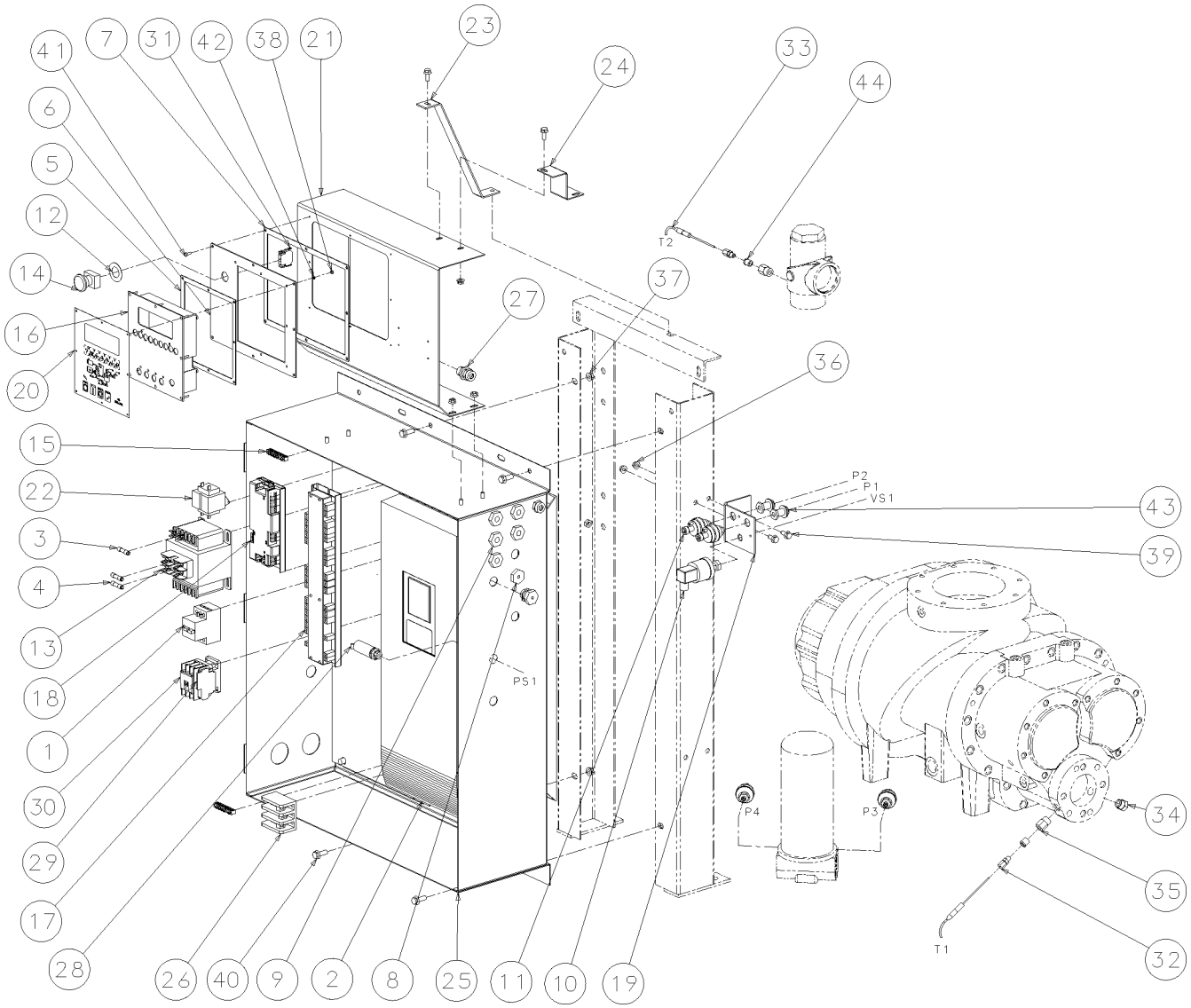
(I) This part may vary per machine design. Consult factory with machine serial number to determine the proper part number.

(II) This part used on water-cooled machines only.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.18 CONTROL BOX- V-200 SUPERVISOR CONTROLLER



02250148-057R00

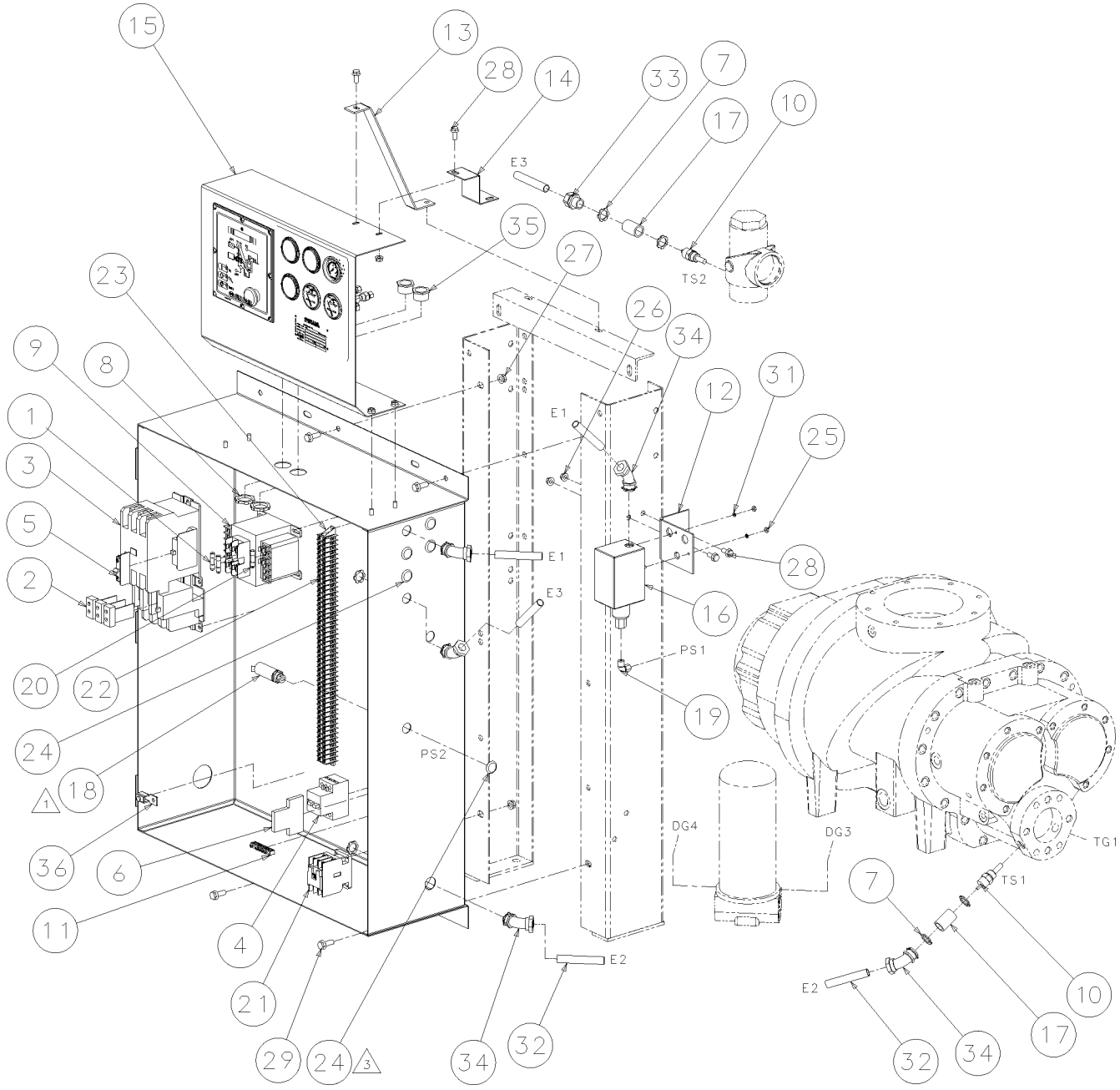
11.18 CONTROL BOX- V-200 SUPERVISOR CONTROLLER (CONTINUED)

key number	*description*	*part number*	*quantity*
31	block, contact 1nc	250027-125	1
32	fitting, compress adj	250028-635	2
33	p, rtd 100 ohm plat 3.5"x 12ft	250039-909	2
34	plug, straight thread 3/4-16 viton	250042-623	1
35	adapter, female pipe 1/2 x 1/4	811504-025	2
36	nut, hex f pltd 5/16-18	825305-283	8
37	nut, hex f pltd 3/8-16	825306-347	4
38	nut, hex metric m4 x .7	825904-070	8
39	screw, hex ser washer 5/16-18 x 3/4	829705-075	4
40	screw, hex ser washer 3/8-16 x 1	829706-100	4
41	screw, tc-f pan #8-32 x 1/2	835601-050	8
42	washer, spr lock-metric pltd m4	838804-090	8
43	bulkhead, pipe 1/8" npt	841500-002	2
44	bushing, red pltd 1/4 x 1/8	867100-005	2

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.19 CONTROL BOX- ELECTRO-MECHANICAL



02250128-582R00

11.19 CONTROL BOX- ELECTRO-MECHANICAL

key number	*description*	*part number*	*quantity*
1	fuse, kldr **(I)**	-	2
2	heater, o.l. pack **(I)**	-	1
3	starter, 3ph 120v chf open **(I)**	-	1
4	starter, man mtr prot **(I)**	-	1
5	block, contact chf lrg aux 1 no	02250048-396	1
6	block, aux contac 1no-1nc mot/prot	02250057-765	1
7	locknut, n4 conduit sealing	02250071-362	8
8	locknut, cond seal n4 1”	02250071-365	2
9	transformer, control 250va univ w/pri fh	02250083-188	1
10	switch, high temperature 240 deg f - 3/4” sae	02250100-095	2
11	bar, ground 5 post cutler hammer	02250101-721	1
12	support, bracket xdcr/press sw	02250129-880	1
13	support, control panel	02250136-227	1
14	bracket, control panel	02250136-474	1
15	sub assembly, ctlpnl emd ls20	02250136-851	1
16	switch, pres 0-150# spdt n-1	040694	1
17	coupling, conduit rigid	250007-179	2
18	switch, pressure n.o. 10 psi	250017-992	1
19	elbow, 1/4” tube x 1/4” npt	250018-430	1
20	fuse, limitron ktk-r 2.00	250019-756	1
21	contactor, ac 3p 18v 120v chf	250025-703	1
22	block, terminal kt3	250041-102	16
23	block, term adapter kad	250041-103	1
24	plug, hole n4 1/2” cond	409918-002	5
25	nut, hex pltd #10-24	825202-130	2
26	nut, hex f pltd 5/16-18	825305-283	4
27	nut, hex f pltd 3/8-16	825306-347	4
28	screw, hex ser washer 5/16-18 x 3/4	829705-075	4
29	screw, hex ser washer 3/8-16 x 1	829706-100	4
30	screw, mach-rd hd #10-24 x 1/2	831602-050	2
31	washer, spr lock reg pltd #10	837802-047	2
32	conduit, csa flex 1/2”	846315-050	6

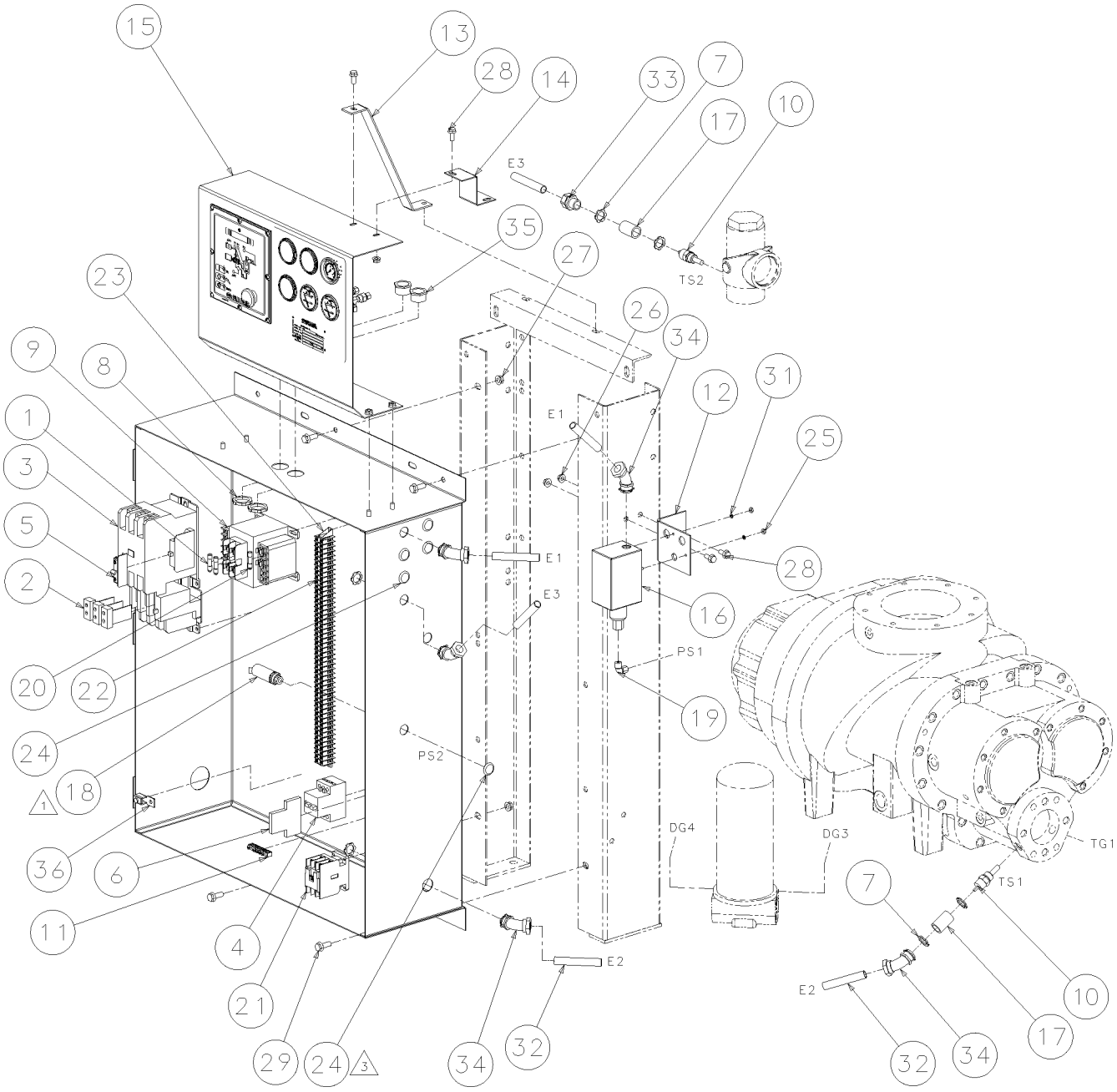
Continued on page 121

(I) This part may vary per machine design. Consult factory with machine serial number to determine the proper part number.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.19 CONTROL BOX- ELECTRO-MECHANICAL



02250128-582R00

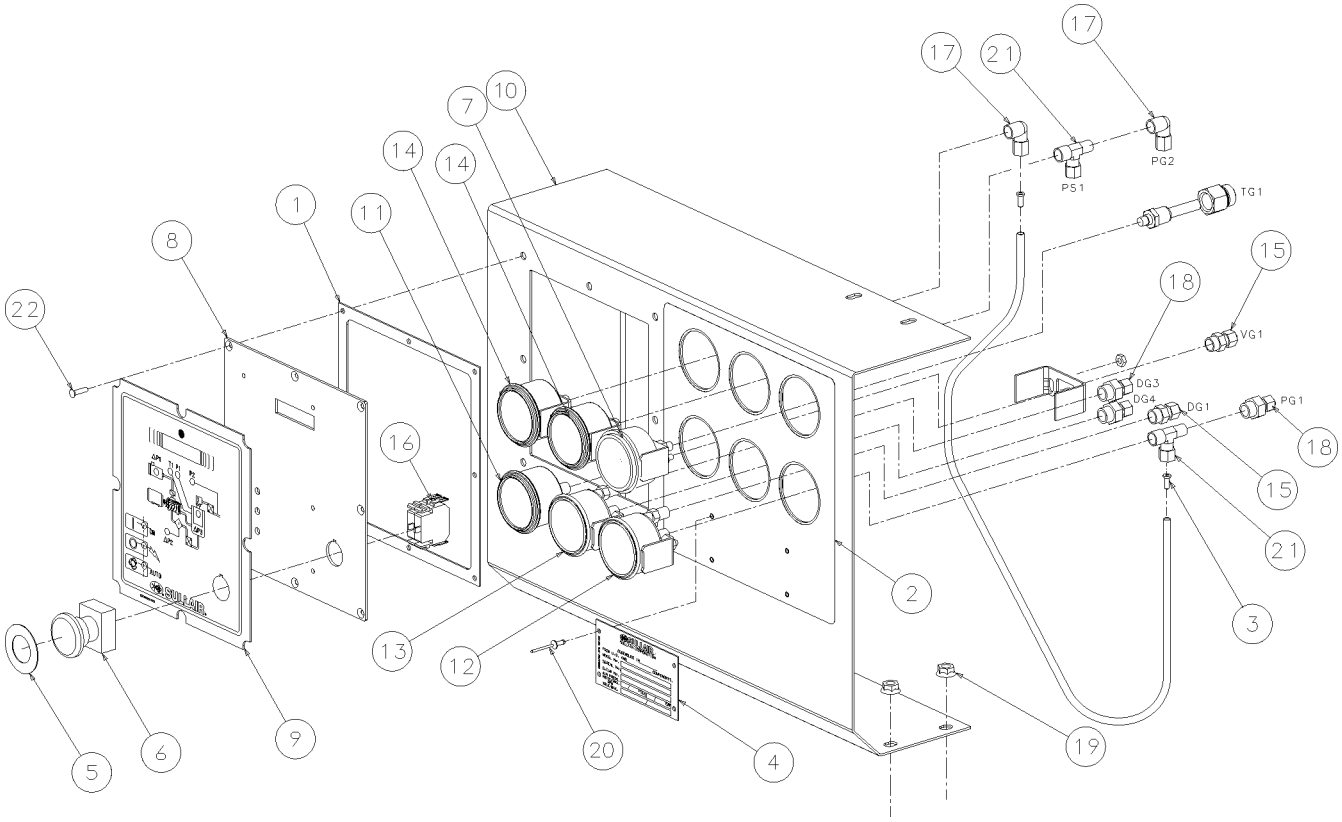
11.19 CONTROL BOX- ELECTRO-MECHANICAL (CONTINUED)

key number	*description*	*part number*	*quantity*
33	connector, straight lq-tite 1/2	846400-050	1
34	elbow, 45deg lq-tite 1/2	846500-050	5
35	nipple, chase cond 1	847815-100	2
36	lug, scrulug kpa-25 4-1/0	849215-025	1

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.20 CONTROL PANEL- ELECTRO-MECHANICAL



02250136-851R00

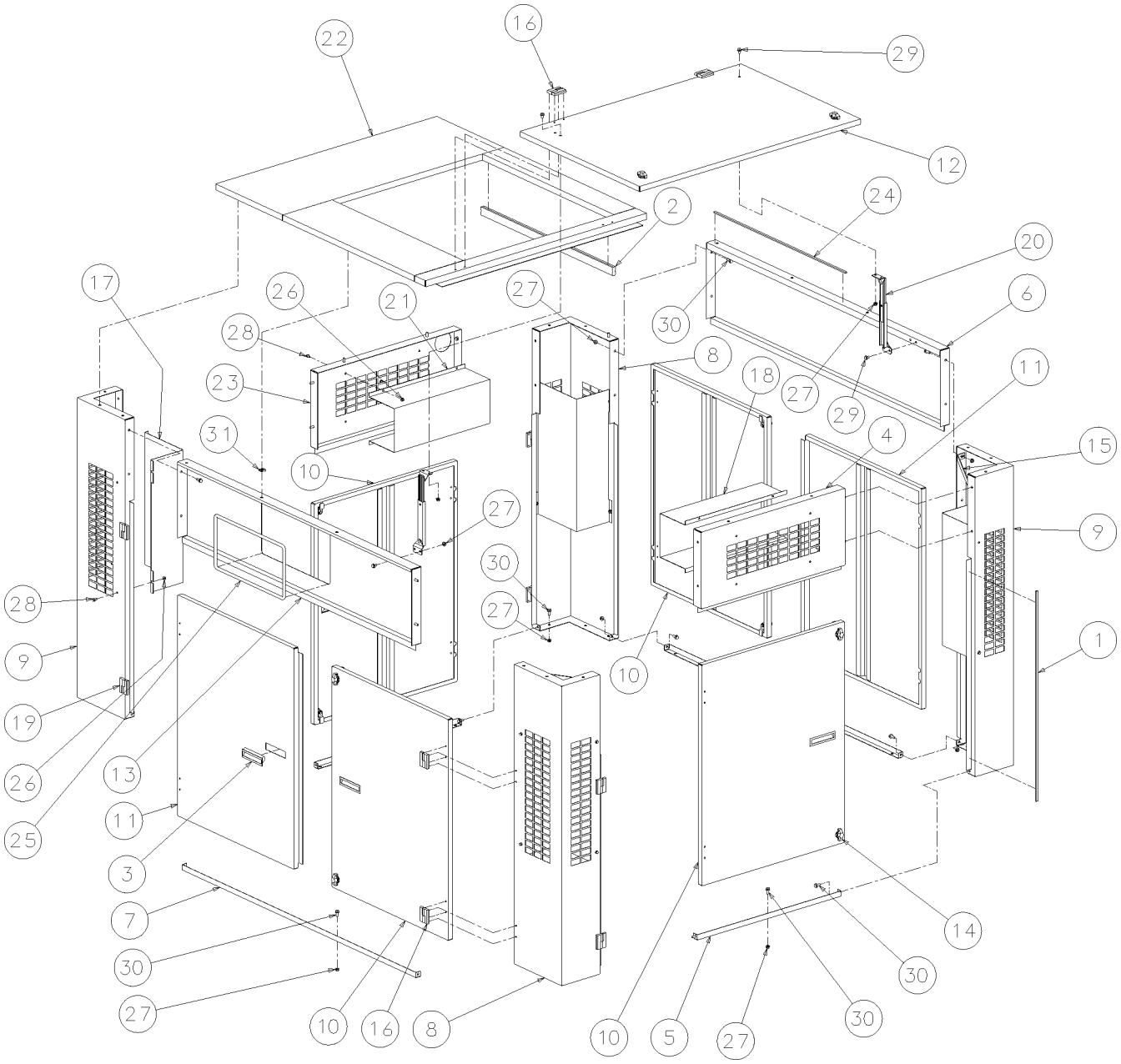
11.20 CONTROL PANEL- ELECTRO-MECHANICAL

key number	*description*	*part number*	*quantity*
1	gskt, panel Supervisor II	02250048-822	1
2	decal, instr panel	02250051-301	1
3	insert, nylon tubing 1/4"od	02250052-841	2
4	npl, Sullair serial number	02250059-318	1
5	npl, E-stop 45mm yellow	02250081-473	1
6	switch, push-button operator e22 40mm	02250085-504	1
7	gauge, temp 100-250 deg 3/4" sae	02250100-096	1
8	cont, LS 12/16 emctl	02250119-824	1
9	decal, emctl front l/E-stop	02250120-361	1
10	pnl, inst e/m ls 12/16 n12/4	02250125-351	1
11	gauge, vacuum 2"	250003-797	1
12	gauge, diff press 0-15 psi	250003-798	1
13	gauge, diff press 0-30 psi	250003-799	1
14	gauge, pressure 2"	250005-185	2
15	conn, str 1/4t pls 1/8 npt f	250021-379	2
16	block, contact 1 nc	250027-125	2
17	elbow, 90º 1/4" tube x 1/8" fnpt	250041-286	2
18	conn, tube f-1/4"t x 1/8"p 316ss	250139-050	3
19	nut, hex f pltd 5/16-18	825305-283	4
20	rivet, pop 1/8 x 1/2	843102-050	4
21	tee, adapter 1/4 x 1/8 x 1/8	869704-012	2
22	scrw, sch hex csk m4 x 14	874404-014	8

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.21 ENCLOSURE- AIR-COOLED (WITHOUT TEFC MOTOR)



02250145-296R01

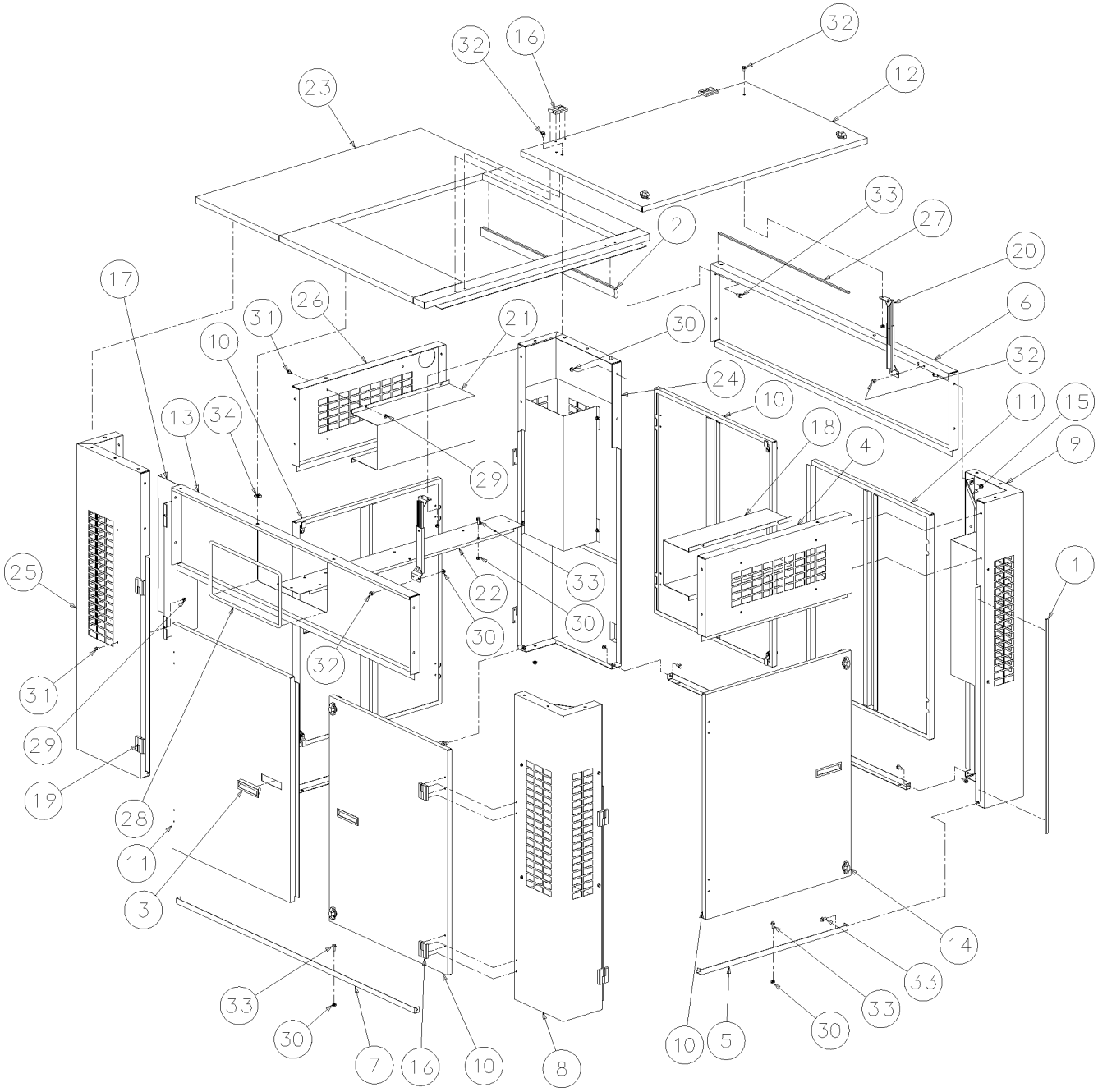
11.21 ENCLOSURE- AIR-COOLED (WITHOUT TEFC MOTOR)

key number	*description*	*part number*	*quantity*
1	strip, weather 1" x 1/8"	02250058-345	65 ft.
2	seal, dust	02250105-900	11
3	handle, pocket	02250126-149	6
4	panel, canopy end	02250127-777	1
5	panel, canopy door bottom	02250127-778	2
6	panel, canopy rear	02250127-779	1
7	panel, canopy door bottom	02250127-780	2
8	panel, canopy corner	02250127-786	2
9	panel, canopy corner	02250127-788	2
10	panel, canopy door	02250127-790	4
11	panel, canopy door flg'd	02250127-792	2
12	panel, canopy top hinged	02250127-793	1
13	panel, canopy front	02250128-912	1
14	latch, door compr type	02250129-399	10
15	supt, can corn pnl	02250129-487	2
16	hinge, 180deg. screw-on lift-off rh	02250129-863	5
17	baffle, canopy crnr	02250133-089	4
18	baffle, canopy end panel	02250133-090	1
19	hinge, 180deg. screw-on lift-off lh	02250134-279	9
20	support, door latching	02250136-333	2
21	baffle, canopy end panel LS-200	02250145-298	1
22	panel, canopy top ac LS-200	02250145-384	1
23	pnl, assy LS-200 air out end	02250148-542	1
24	weatherstrip, 3/16" x 3/8"	250022-436	54 ft.
25	trim, canopy edge	250034-157	5
26	nut, hex f pltd 1/4-20	825304-236	24
27	nut, hex f pltd 5/16-18	825305-283	58
28	screw, hex ser washer 1/4-20 x 1/2	829704-050	24
29	screw, hex ser washer 5/16-18 x 1/2	829705-050	8
30	screw, hex ser washer 5/16-18 x 3/4	829705-075	64
31	nut, retainer u 5/16-18 .140	861505-140	14

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.22 ENCLOSURE- AIR-COOLED (WITH TEFC MOTOR)



02250146-824R01

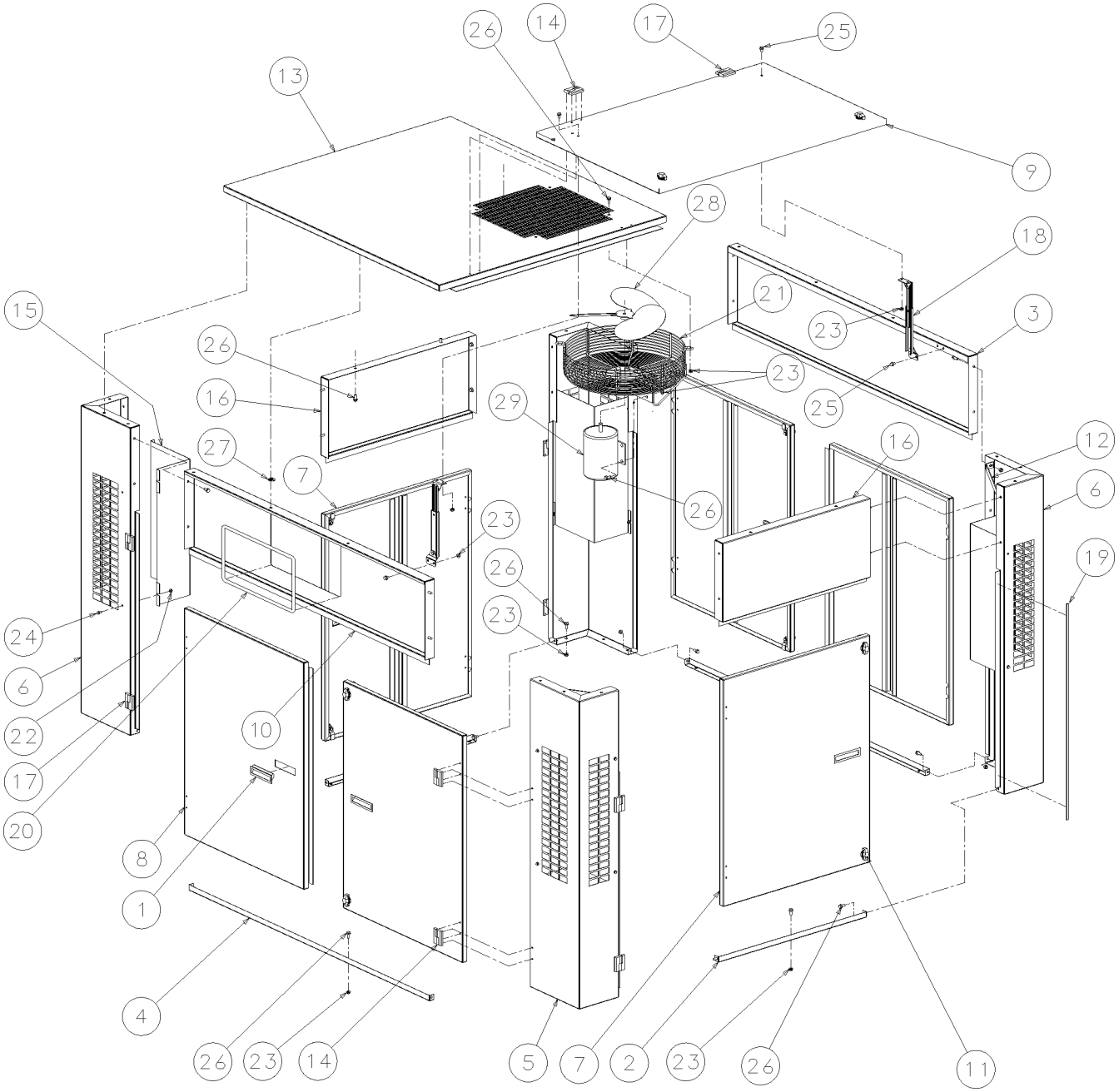
11.22 ENCLOSURE- AIR-COOLED (WITH TEFC MOTOR)

key number	*description*	*part number*	*quantity*
1	strip, weather 1" x 1/8" foam	02250058-345	65 ft.
2	seal, dust	02250105-900	11
3	handle, pocket	02250126-149	6
4	panel, canopy end	02250127-777	1
5	panel, canopy door bottom	02250127-778	2
6	panel, canopy rear	02250127-779	1
7	panel, canopy door bottom	02250127-780	2
8	panel, canopy corner	02250127-786	1
9	panel, canopy corner	02250127-788	1
10	panel, canopy door	02250127-790	4
11	panel, canopy door flg'd	02250127-792	2
12	panel, canopy top hinged	02250127-793	1
13	panel, canopy front	02250128-912	1
14	latch, door compr type	02250129-399	10
15	supt, can corn pnl	02250129-487	2
16	hinge, 180deg. screw-on lift-off rh	02250129-863	5
17	baffle, canopy crnr	02250133-089	4
18	baffle, canopy end panel	02250133-090	1
19	hinge, 180deg. screw-on lift-off lh	02250134-279	9
20	support, door latching	02250136-333	2
21	baffle, canopy end panel LS-200	02250145-298	1
22	panel, ext canopy floor filler	02250146-796	1
23	panel, ext canopy roof LS-200 ac	02250146-797	1
24	panel, can ext corner r/h LS-200	02250146-799	1
25	panel, can ext corner l/h LS-200	02250146-800	1
26	pnl, assy LS-200 air out end	02250148-542	1
27	weatherstrip, 3/16" x 3/8"	250022-436	54 ft.
28	trim, canopy edge	250034-157	5
29	nut, hex f pltd 1/4-20	825304-236	24
30	nut, hex f pltd 5/16-18	825305-283	66
31	screw, hex ser washer 1/4-20 x 1/2	829704-050	24
32	screw, hex ser washer 5/16-18 x 1/2	829705-050	8
33	screw, hex ser washer 5/16-18 x 3/4	829705-075	73
34	nut, retainer u 5/16-18 .140	861505-140	16

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.23 ENCLOSURE- WATER-COOLED ODP & TEFC MOTORS (VCC-200 ODP ONLY)



02250146-857R00

11.23 ENCLOSURE- WATER-COOLED ODP & TEFC MOTORS (VCC-200 ODP ONLY)

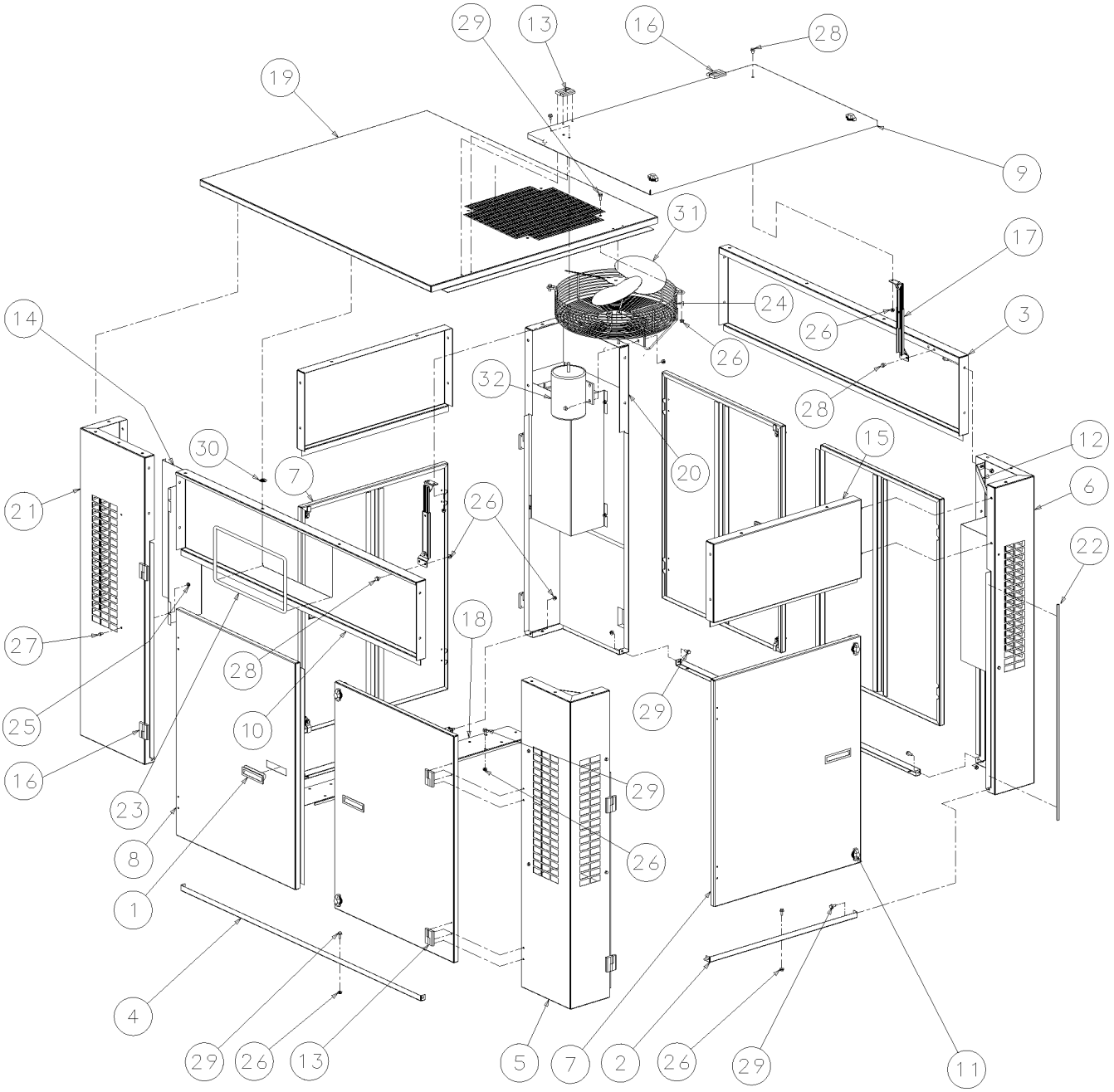
key number	*description*	*part number*	*quantity*
1	handle, pocket	02250126-149	6
2	panel, canopy door bottom	02250127-778	2
3	panel, canopy rear	02250127-779	1
4	panel, canopy door bottom	02250127-780	2
5	panel, canopy corner	02250127-786	2
6	panel, canopy corner	02250127-788	2
7	panel, canopy door	02250127-790	4
8	panel, canopy door flg'd	02250127-792	2
9	panel, canopy top hinged	02250127-793	1
10	panel, canopy front	02250128-912	1
11	catch, door compr type	02250129-399	10
12	support, canopy corn pnl	02250129-487	2
13	panel, canopy top w/c	02250129-513	1
14	hinge, 180deg. screw-on lift-off rh	02250129-863	5
15	baffle, canopy crnr	02250133-089	4
16	panel, canopy end ees	02250133-093	2
17	hinge, 180deg. screw-on lift-off lh	02250134-279	9
18	support, door latching	02250136-333	2
19	weatherstrip, 3/16" x 3/8"	250022-436	96 ft.
20	trim, canopy edge	250034-157	5
21	guard, exhaust fan 20"	410179	1
22	nut, hex f pltd 1/4-20	825304-236	16
23	nut, hex f pltd 5/16-18	825305-283	66
24	screw, hex ser washer 1/4-20 x 1/2	829704-050	16
25	screw, hex ser washer 5/16-18 x 1/2	829705-050	8
26	screw, hex ser washer 5/16-18 x 3/4	829705-075	72
27	nut, retainer u 5/16-18 .140	861505-140	14
28	fan **(I)**	-	1
29	fan motor **(I)**	-	1

(I) This part may vary per machine design. Consult factory with machine serial number to determine the proper part number.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.24 ENCLOSURE- WATER-COOLED (WITH TEFC MOTOR)



02250146-856R00

11.24 ENCLOSURE- WATER-COOLED (WITH TEFC MOTOR)

key number	*description*	*part number*	*quantity*
1	handle, pocket	02250126-149	6
2	panel, canopy door bottom	02250127-778	2
3	panel, canopy rear	02250127-779	1
4	panel, canopy door bottom	02250127-780	2
5	panel, canopy corner	02250127-786	1
6	panel, canopy corner	02250127-788	1
7	panel, canopy door	02250127-790	4
8	panel, canopy door flg'd	02250127-792	2
9	panel, canopy top hinged	02250127-793	1
10	panel, canopy front	02250128-912	1
11	catch, door compr type	02250129-399	10
12	support, canopy corn pnl	02250129-487	2
13	hinge, 180deg. screw-on lift-off rh	02250129-863	5
14	baffle, canopy crnr	02250133-089	4
15	panel, canopy end ees	02250133-093	2
16	hinge, 180deg. screw-on lift-off lh	02250134-279	9
17	support, door latching	02250136-333	2
18	panel, ext canopy floor filler	02250146-796	1
19	panel, ext canopy top LS-200 wc	02250146-798	1
20	panel, can ext corner r/h LS-200	02250146-799	1
21	panel, can ext corner l/h LS-200	02250146-800	1
22	weatherstrip, 3/16" x 3/8"	250022-436	96 ft.
23	trim, canopy edge	250034-157	5
24	guard, exhaust fan 20"	410179	1
25	nut, hex f pltd 1/4-20	825304-236	16
26	nut, hex f pltd 5/16-18	825305-283	73
27	screw, hex ser washer 1/4-20 x 1/2	829704-050	16
28	screw, hex ser washer 5/16-18 x 1/2	829705-050	8
29	screw, hex ser washer 5/16-18 x 3/4	829705-075	81
30	nut, retainer u 5/16-18 .140	861505-140	16
31	fan **(I)**	-	1
32	fan motor **(I)**	-	1

(I) This part may vary per machine design. Consult factory with machine serial number to determine the proper part number.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.25 DECAL GROUP

11.25 DECAL GROUP

key number	*description*	*part number*	*quantity*
1	sign, warning sever - fan	049855	2
2	sign, warning sever-fan port	049965	2
3	sign, warning “compressor fluid fill cap”	049685	1
4	decal, water in	250019-107	1
5	decal, water out	250019-108	1
6	decal, water inlet-outlet	049873	1
7	decal, water drain	250022-810	1
8	decal, rotation	250021-286	1
9	decal, danger breath air	250027-935	1
10	sign, warning hot surfaces	407408	3
11	decal, voltage 460/3/60 international **(I)**	02250069-399	1
	•decal, voltage 400/3/50 international (not shown) **(I)**	02250069-405	1
	•decal, voltage 575/3/60 international (not shown) **(I)**	02250069-400	1
12	decal, rotation	250021-564	1
13	decal, auto start	041065	1
14A	decal, protective earth ground	02250075-045	2
14B	decal, earth ground international	02250075-046	1
14C	decal, PE designation	02250075-540	1
15	sign, danger electrocution	049850	1
16	decal, warning mixing fluids	02250110-891	1
17	decal, actuator valve positioning	250029-784	1
18	decal, Sullair logo	02250059-060	2

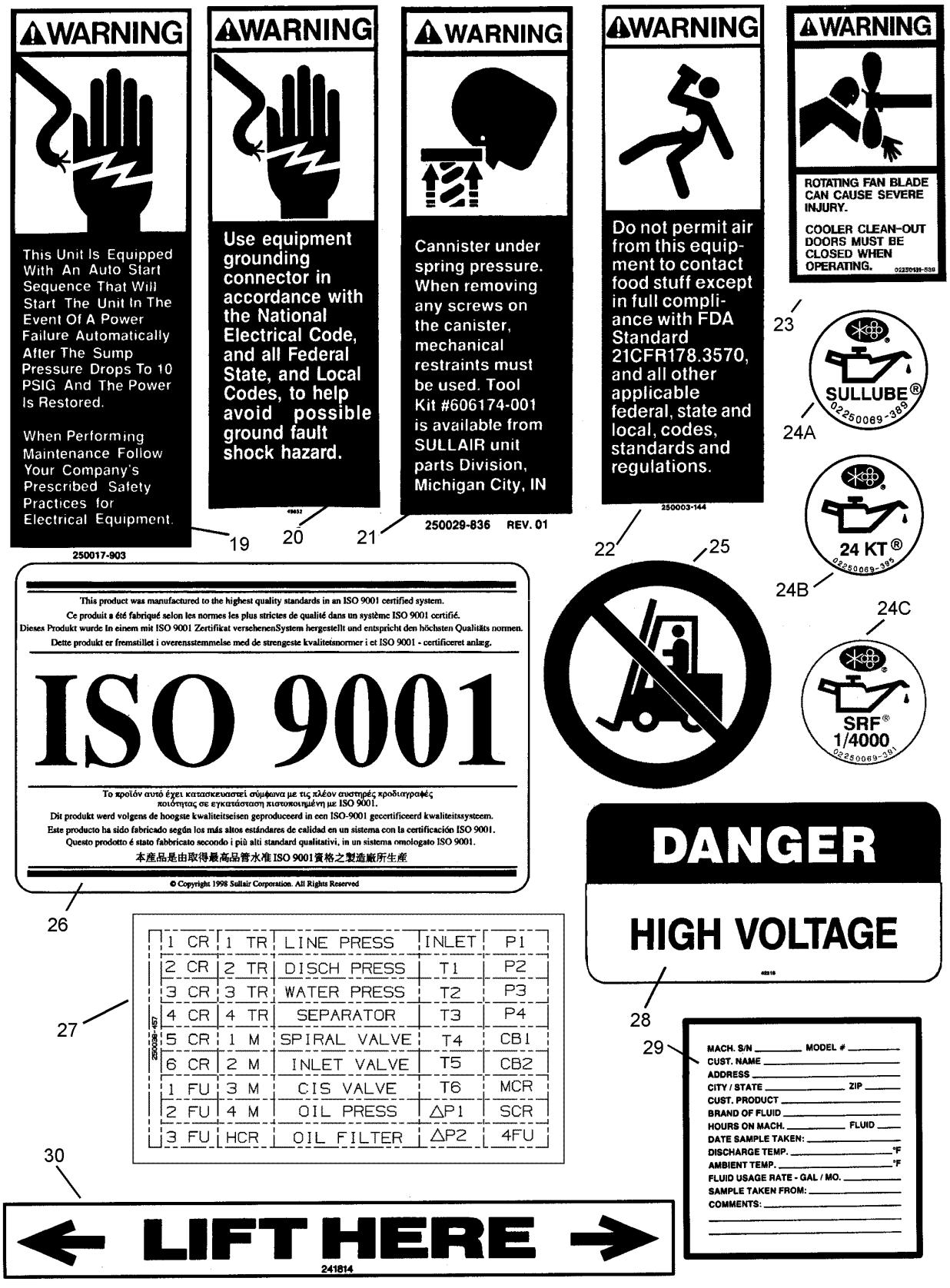
Continued on page 135

(I) Voltage may vary in accordance with your machine requirements. To confirm proper decal, consult factory with serial number of compressor.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.25 DECAL GROUP



11.25 DECAL GROUP (CONTINUED)

key number	*description*	*part number*	*quantity*
19	decal, warning auto start	250017-903	1
20	sign, warning ground fault	049852	1
21	decal, warning actuator	250029-836	1
22	sign, warning “food grade” lube	250003-144	1
23	sign, warning sever fan door closed	02250131-539	4
24A	decal, fluid Sullube **(II)**	02250069-389	1
24B	decal, fluid 24KT **(II)**	02250069-395	1
24C	decal, fluid SRF 1/4000 **(II)**	02250069-391	1
25	decal, do not forklift- international	02250108-615	1
26	decal, ISO 9001	02250057-624	1
27	decal, electrical component ID	250038-457	1
28	decal, danger high voltage	042218	1
29	decal, fluid sample	250025-675	1
30	decal, fork lifting	241814	4

Continued on page 137

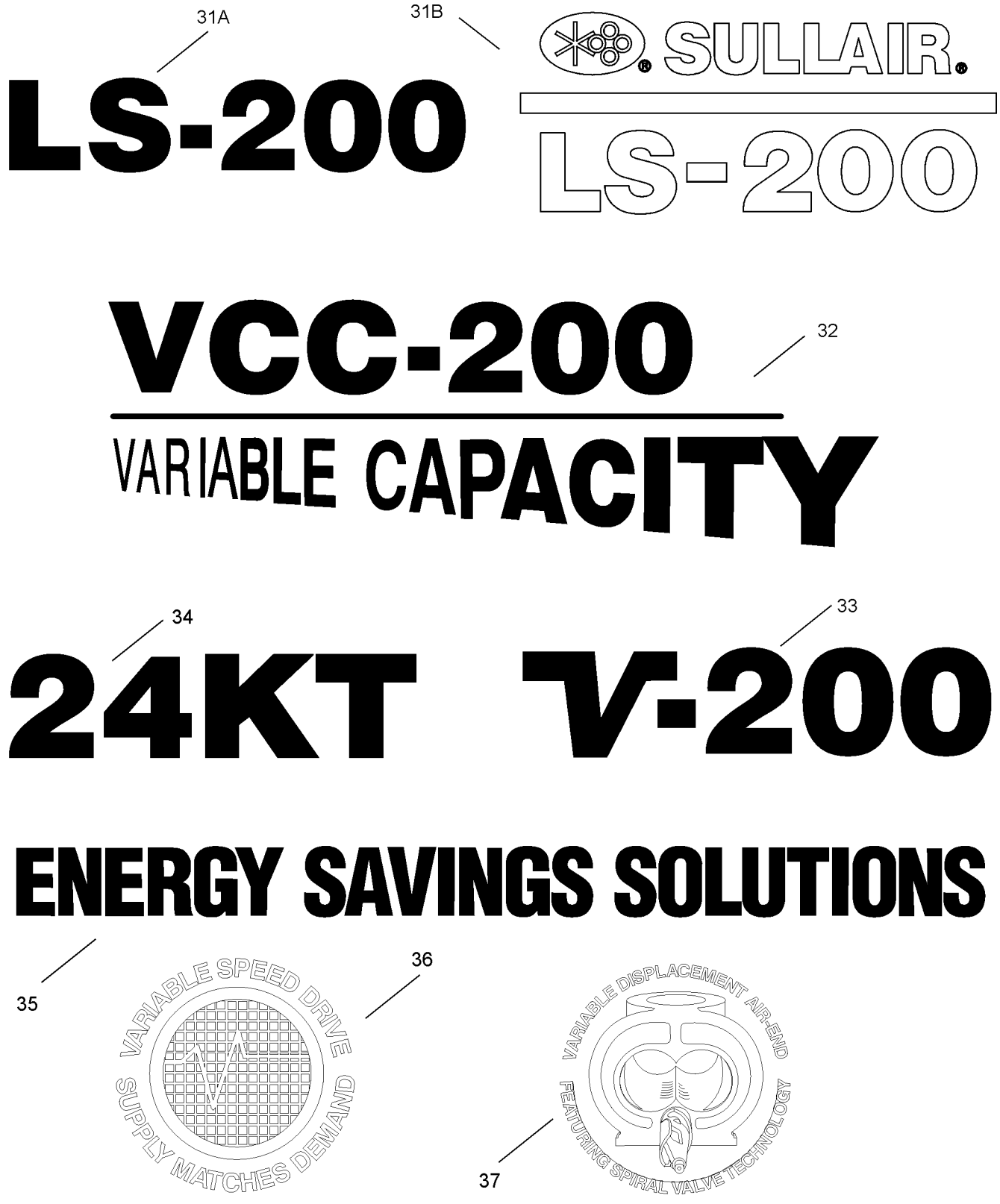
(II) Fluid fill may vary in accordance with machine requirements. To confirm proper fill for your compressor, consult Sullair Factory.

NOTE

Mixing, changing or adding other lubricants within the compressor unit may void the air-end warranty.

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

11.25 DECAL GROUP



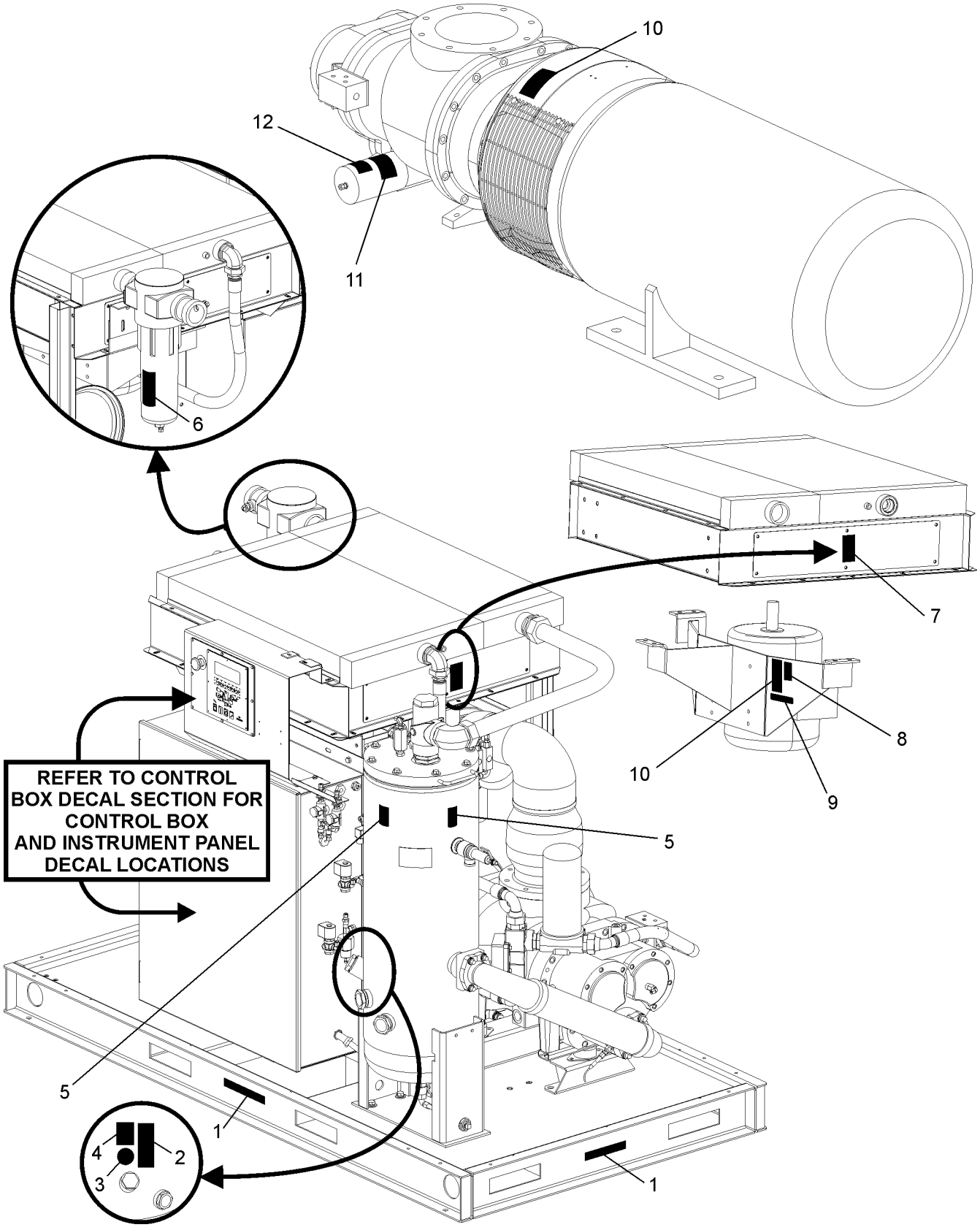
11.25 DECAL GROUP (CONTINUED)

key number	*description*	*part number*	*quantity*
31A	decal, LS-200 black 2.50" open	02250146-022	1
31B	decal, LS-200 encl Sullair & stripe	02250146-024	1
32	decal, VCC-200 encl 3-1/2”	02250146-017	1
	•decal, VCC-200 open 2-1/2”	02250146-016	1
33	decal, V-200 blk 3.77” can	02250146-002	1
	•decal, V-200 blk 2.50” open	02250146-003	1
34	decal, 24KT (blk) 1.75” x 4” ht (encl)	02250061-022	1
	•decal, 24KT (blk) 1.75” x 3” ht (open)	02250061-024	1
35	decal, energy savings solutions	02250146-267	1
36	decal, VSD supply matches demand	02250146-359	1
37	decal, variable displacement	02250146-268	1

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.26 DECAL LOCATIONS- LS-200 AND VCC-200 OPEN AIR-COOLED



11.26 DECAL LOCATIONS- LS-200 AND VCC-200 OPEN AIR-COOLED

key number	*description*	*part number*	*quantity*
1	decal, fork lifting	241814	4
2	sign, warning “compressor fluid fill cap”	049685	1
3	decal, fluid Sullube **(I)**	02250069-389	1
4	decal, warning mixing fluids	02250110-891	1
5	sign, warning hot surfaces	407408	3
6	decal, water drain	250022-810	1
7	sign, warning sever fan door closed	02250131-539	2
8	sign, warning sever-fan port	049965	2
9	decal, rotation	250021-564	1
10	sign, warning sever - fan	049855	1
11	decal, warning actuator **(II)**	250029-836	1
12	decal, actuator valve positioning **(II)**	250029-784	1

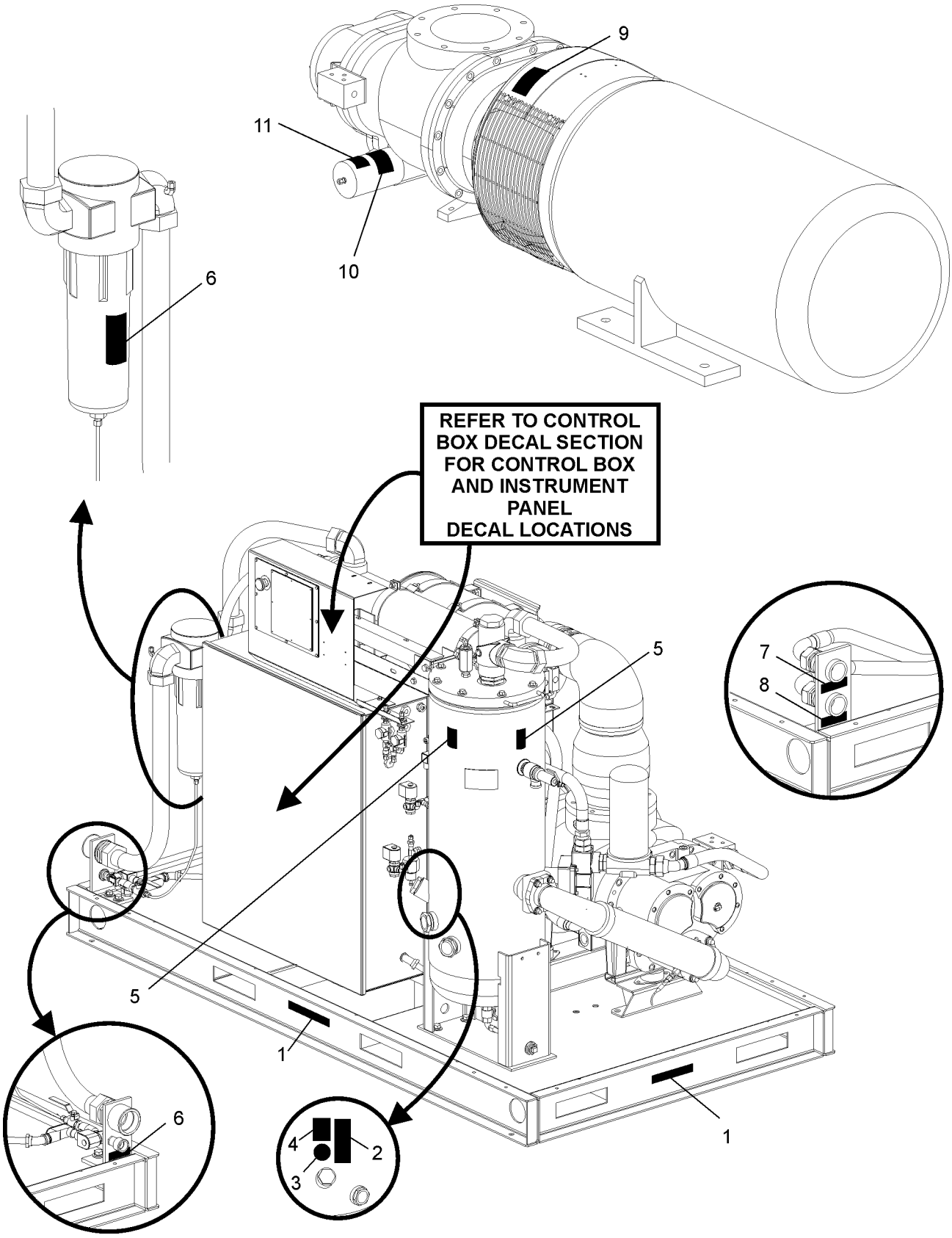
(I) Fluid fill may vary in accordance with machine requirements. To confirm proper fill for your compressor, consult Sullair factory.

(II) Decal used with spiral valve only.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.27 DECAL LOCATIONS- LS-200 AND VCC-200 OPEN WATER-COOLED



11.27 DECAL LOCATIONS- OPEN WATER-COOLED

key number	*description*	*part number*	*quantity*
1	decal, fork lifting	241814	4
2	sign, warning “compressor fluid fill cap”	049685	1
3	decal, fluid Sullube **(I)**	02250069-389	1
4	decal, warning mixing fluids	02250110-891	1
5	sing, warning hot surfaces	407408	3
6	decal, water drain	250022-810	2
7	decal, water in	250019-107	1
8	decal, water out	250019-108	1
9	sign, warning sever - fan	049855	1
10	decal, warning actuator **(II)**	250029-836	1
11	decal, actuator valve positioning **(II)**	250029-784	1

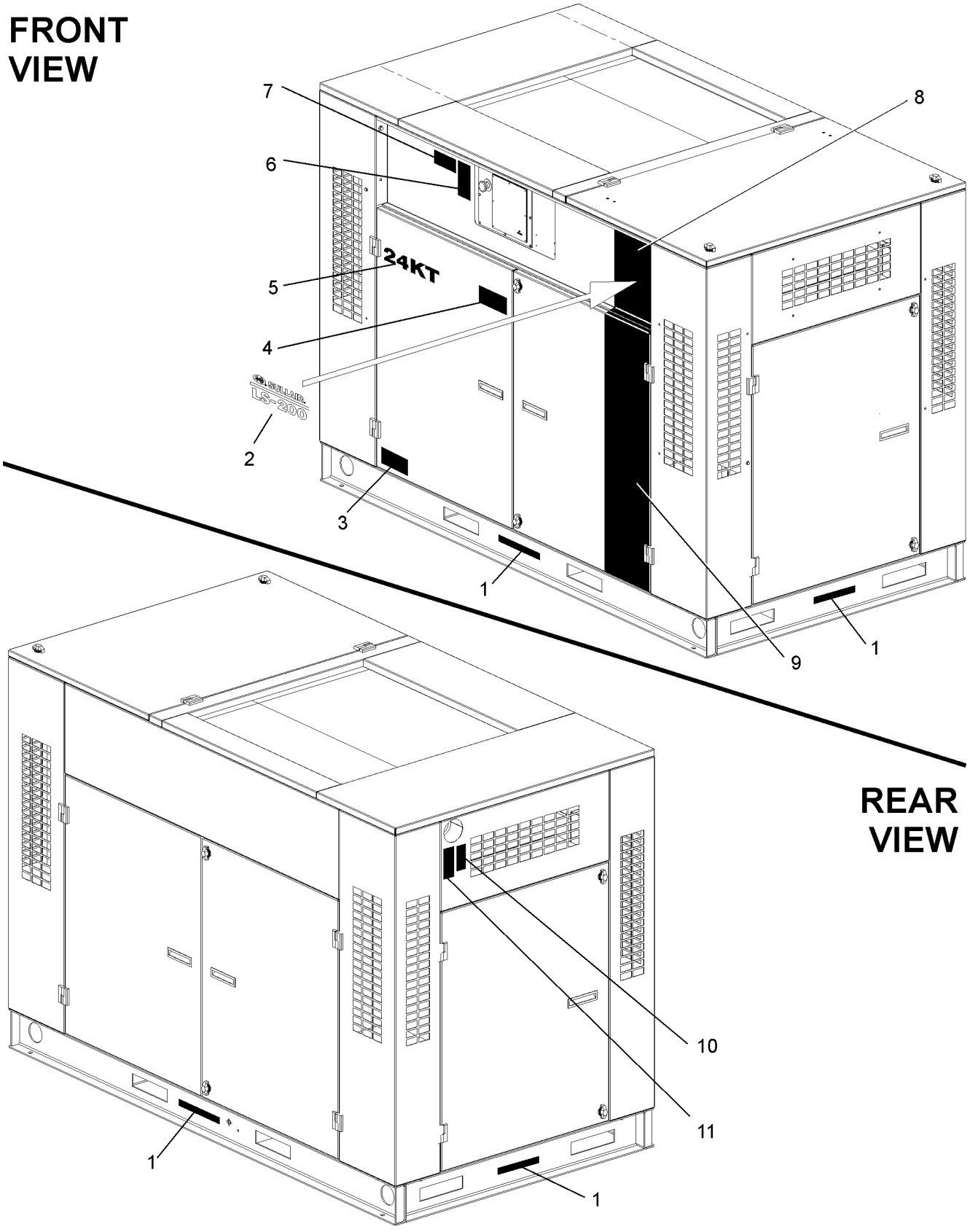
(I) Fluid fill may vary in accordance with machine requirements. To confirm proper fill for your compressor, consult Sullair Factory.

(II) Decal used with spiral valve only.

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.28 DECAL LOCATIONS- LS-200 ENCLOSED AIR-COOLED



11.28 DECAL LOCATIONS- LS-200 ENCLOSED AIR-COOLED

key number	*description*	*part number*	*quantity*
1	decal, fork lifting	241814	4
2	decal, LS-200 encl Sullair and stripe	02250146-024	1
3	decal, ISO 9001 black 3.44 x 5.75	02250057-624	1
4	decal, electrocution hazard	02250077-742	1
5	decal, 24KT gold metalic	02250145-206	1
6	decal, warning auto start	250017-903	1
7	decal, warning auto start	041065	1
8	decal, black 12 x 14	02250144-239	1
9	decal, black 12 x 43.5	02250144-240	1
10	decal, danger breath air	250027-935	1
11	sign, warning “food grade” lube	250003-144	1

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

Section 11
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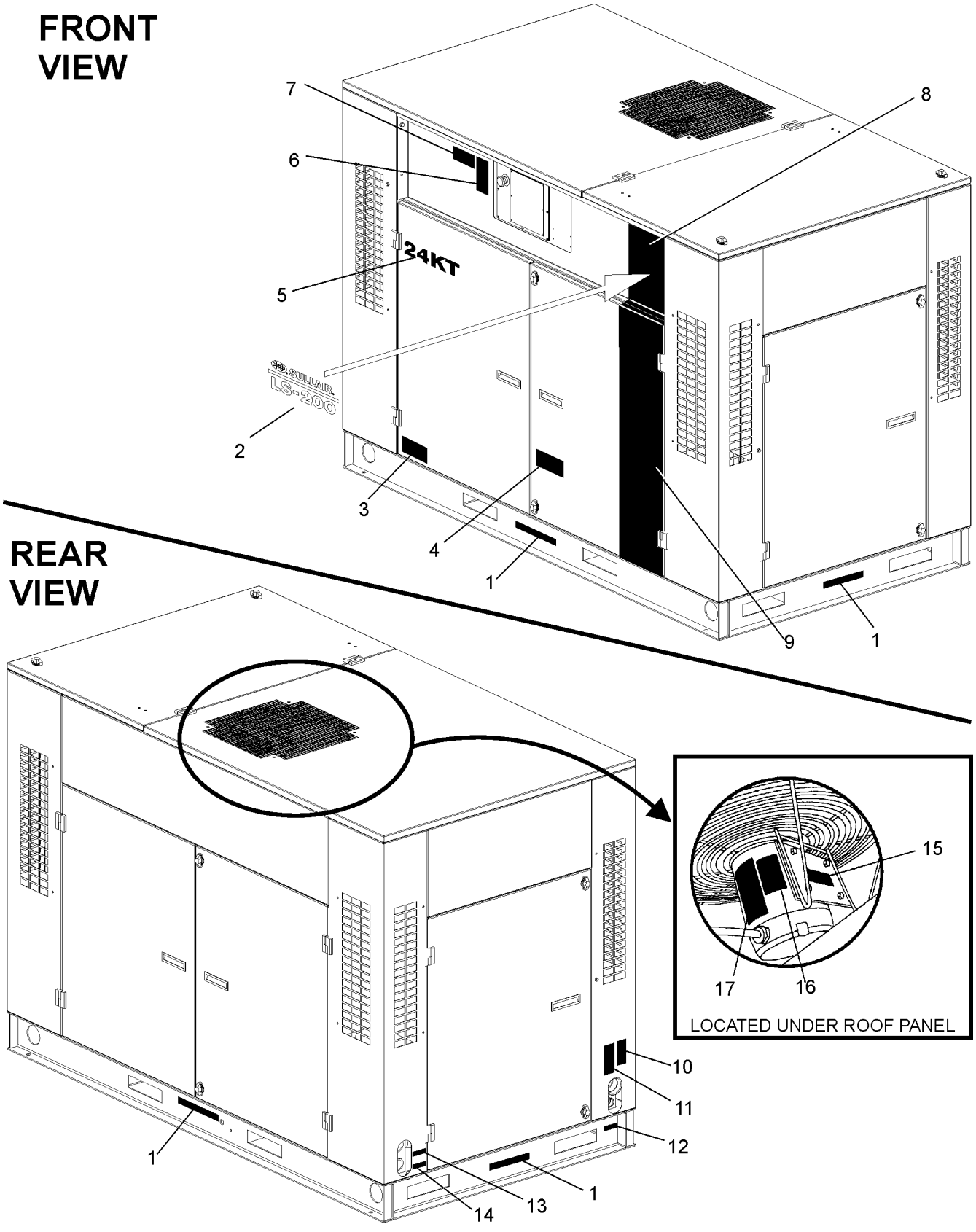
11.29 DECAL LOCATIONS- LS-200 ENCLOSED WATER-COOLED



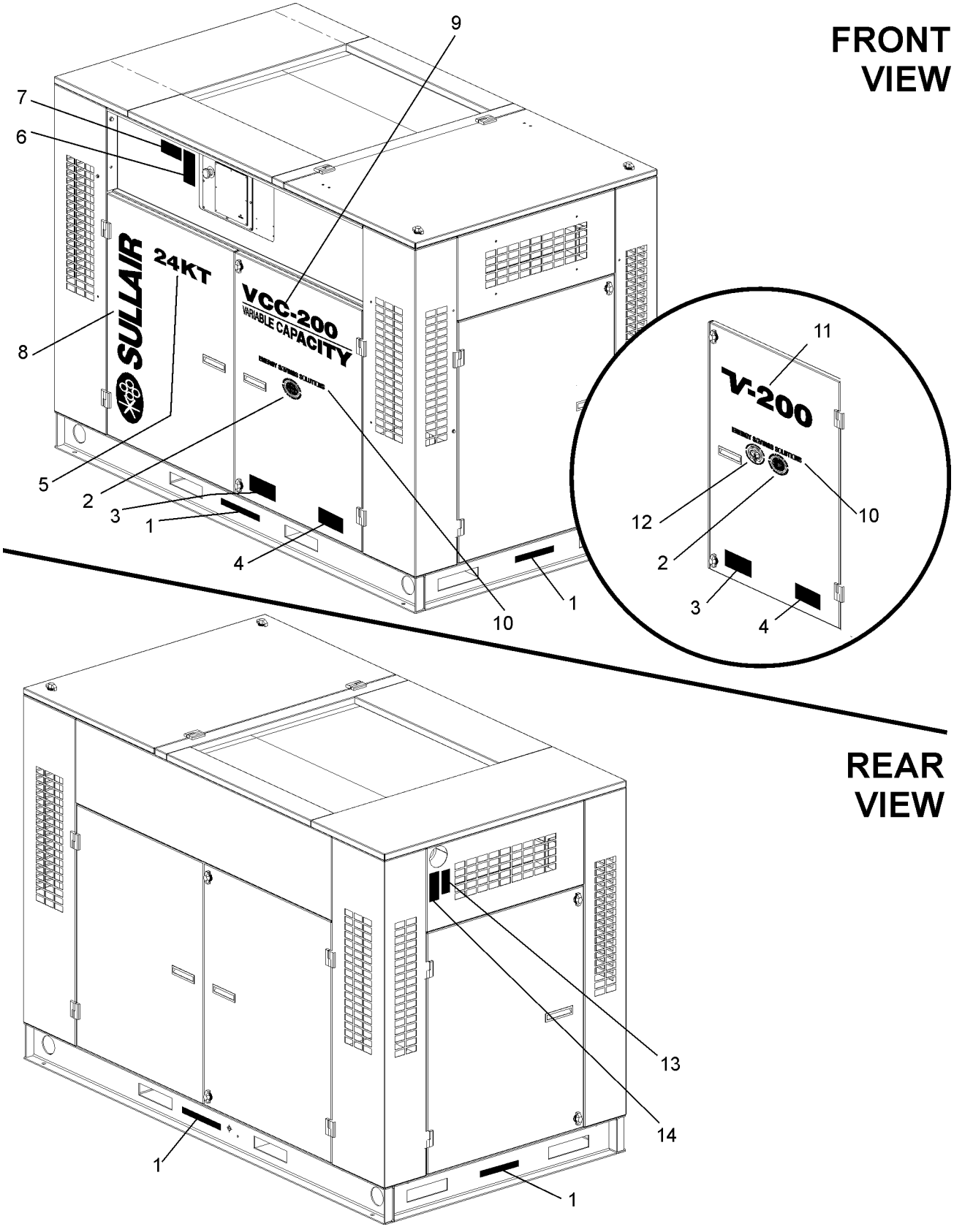
11.29 DECAL LOCATIONS- LS-200 ENCLOSED WATER-COOLED

key number	*description*	*part number*	*quantity*
1	decal, fork lifting	241814	4
2	decal, LS-200 encl Sullair and stripe	02250146-024	1
3	decal, ISO 9001 black 3.44 x 5.75	02250057-624	1
4	decal, electrocution hazard	02250077-742	1
5	decal, 24KT gold metalic	02250145-206	1
6	decal, warning auto start	250017-903	1
7	decal, warning auto start	041065	1
8	decal, black 12 x 14	02250144-239	1
9	decal, black 12 x 43.5	02250144-240	1
10	decal, danger breath air	250027-935	1
11	sign, warning “food grade” lube	250003-144	1
12	decal, water drain	250022-810	2
13	decal, water in	250019-107	1
14	decal, water out	250019-108	1
15	decal, rotation	250021-564	1
16	sign, warning sever-fan port	049965	2
17	sign, warning sever - fan	049855	1

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.30 DECAL LOCATION- V-200 AND VCC-200 ENCLOSED AIR-COOLED



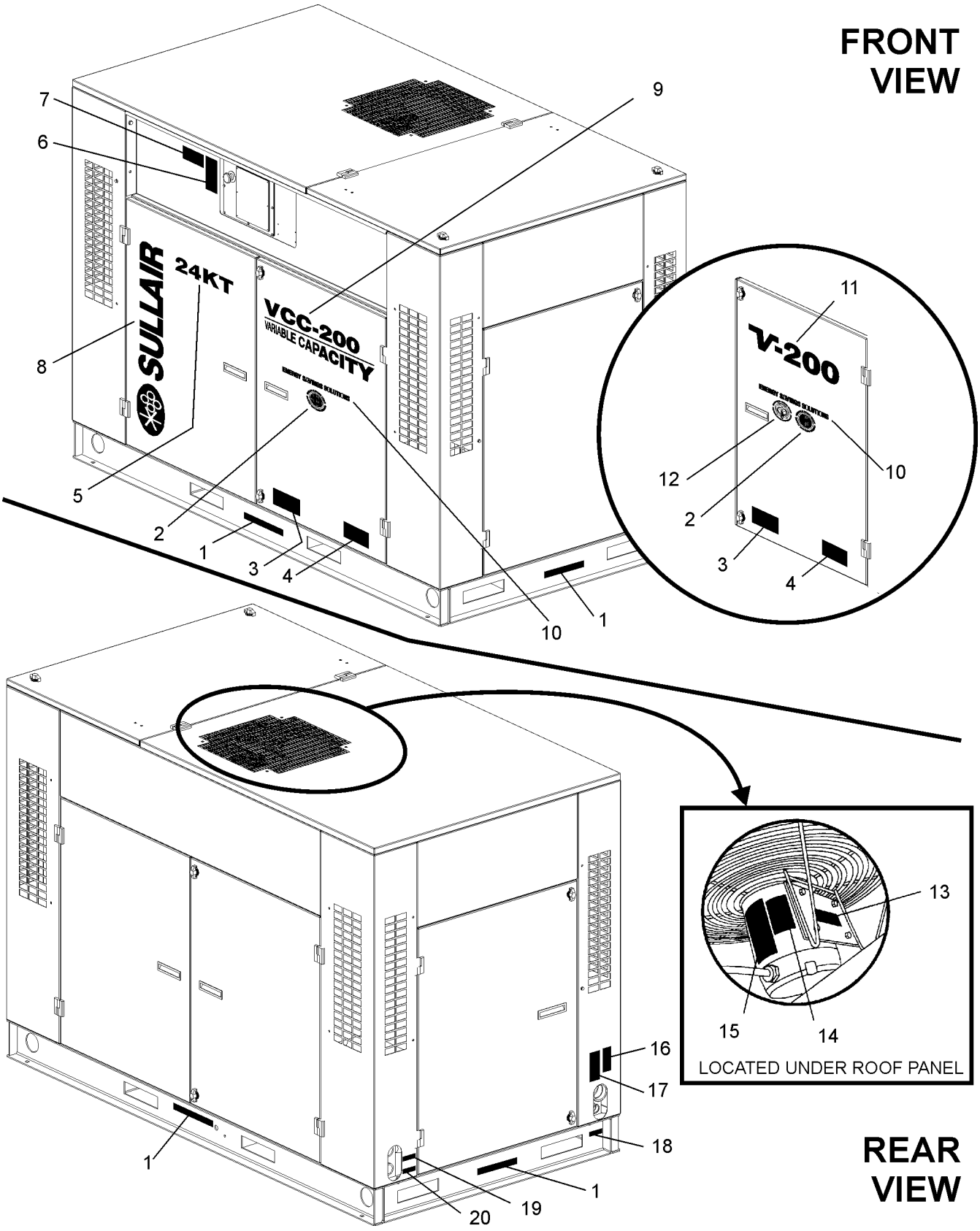
11.30 DECAL LOCATIONS- V-200 AND VCC-200 ENCLOSED AIR-COOLED

key number	*description*	*part number*	*quantity*
1	decal, fork lifting	241814	4
2	decal, VSD supply matches demand	02250146-359	1
3	decal, ISO 9001 black 3.44 x 5.75	02250057-624	1
4	decal, electrocution hazard	02250077-742	1
5	decal, 24KT gold metalic	02250145-206	1
6	decal, warning auto start	250017-903	1
7	decal, warning auto start	041065	1
8	decal, Sullair 4 x 32	02250059-060	1
9	decal, VCC-200 encl 3-1/2”	02250146-017	1
10	decal, energy savings solutions	02250146-267	1
11	decal, V-200 black 3.77”	0250146-002	1
12	decal, variable displacement	02250146-268	1
13	decal, danger breath air	250027-935	1
14	sign, warning “food grade” lube	250003-144	1

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

Section 11
ILLUSTRATIONS AND PARTS LIST

11.31 DECAL LOCATIONS- V-200 AND VCC-200 ENCLOSED WATER-COOLED



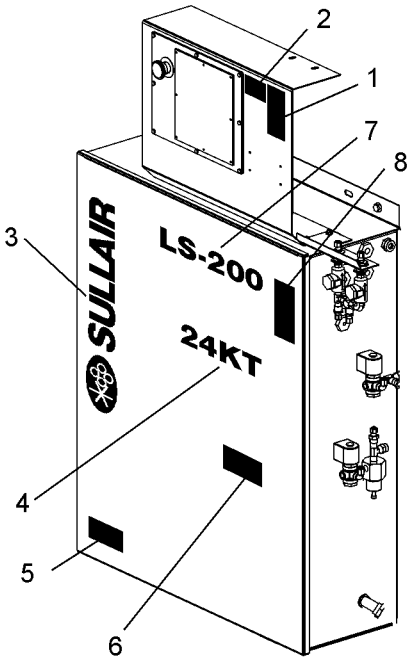
11.31 DECAL LOCATIONS- V-200 AND VCC-200 ENCLOSED WATER-COOLED

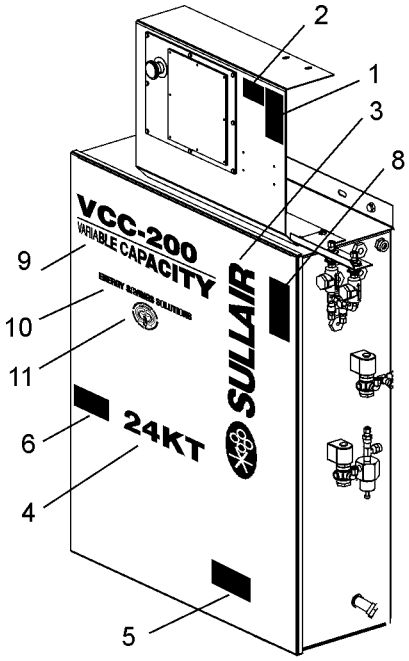
key number	*description*	*part number*	*quantity*
1	decal, fork lifting	241814	4
2	decal, VSD supply matches demand	02250146-359	1
3	decal, ISO 9001 black 3.44 x 5.75	02250057-624	1
4	decal, electrocution hazard	02250077-742	1
5	decal, 24KT gold metalic	02250145-206	1
6	decal, warning auto start	250017-903	1
7	decal, warning auto start	041065	1
8	decal, Sullair 4 x 32	02250059-060	1
9	decal, VCC-200 encl 3-1/2”	02250146-017	1
10	decal, energy savings solutions	02250146-267	1
11	decal, V-200 black 3.77”	0250146-002	1
12	decal, variable displacement	02250146-268	1
13	decal, rotation	250021-564	1
14	sign, warning sever-fan port	049965	2
15	sign, warning sever - fan	049855	1
16	decal, danger breath air	250027-935	1
17	sign, warning “food grade” lube	250003-144	1
18	decal, water drain	250022-810	1
19	decal, water in	250019-107	1
20	decal, water out	250016-108	1

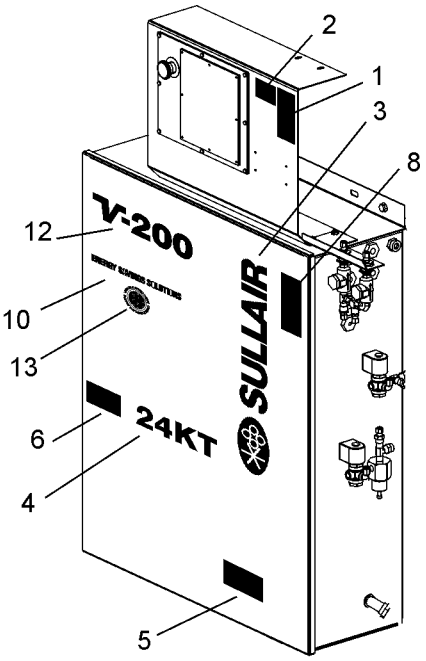
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE THE SERIAL NUMBER OF COMPRESSOR

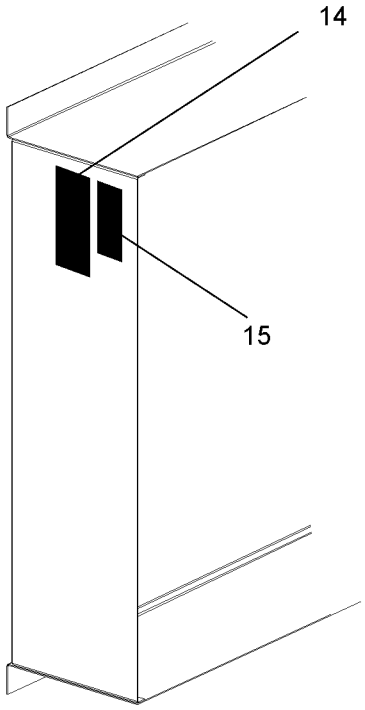
Section 11
ILLUSTRATIONS AND PARTS LIST

11.32 DECAL LOCATIONS- CONTROL BOX

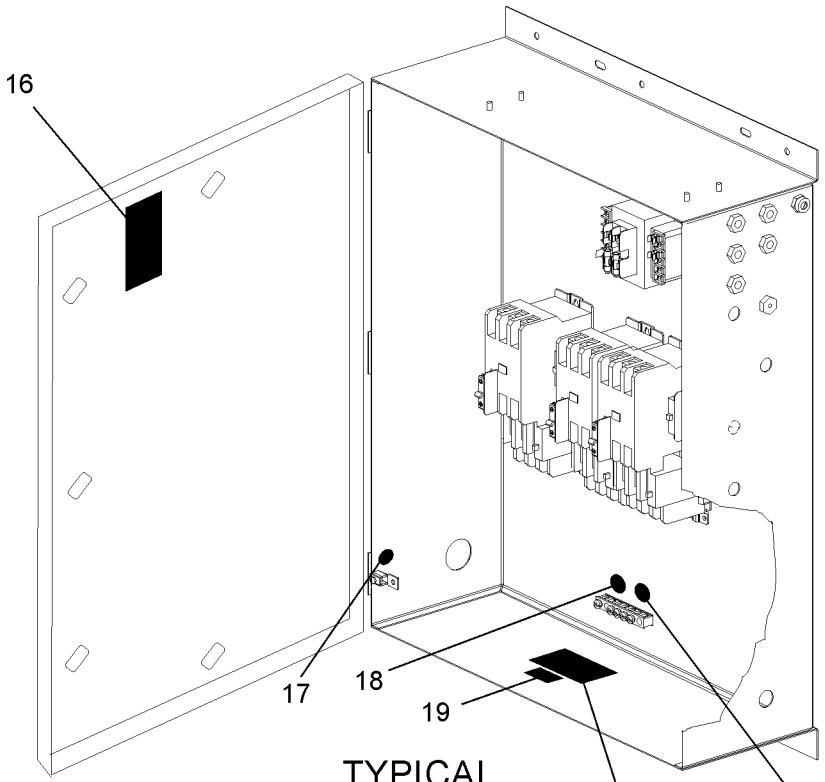








LEFT SIDE OF BOX FACING CONTROL PANEL FRONT



TYPICAL CONTROL BOX INTERIOR

11.32 DECAL LOCATIONS- CONTROL BOX

key number	*description*	*part number*	*quantity*
1	decal, warning auto start	250017-903	1
2	decal, auto start	041065	1
3	decal, Sullair 3 x 24 black	02250059-056	1
4	decal, 24KT black 1.75” x 3” **(I)**	02250061-024	1
5	decal, electrocution hazard international	02250077-742	1
6	decal, ISO 9001	02250057-624	1
7	decal, LS-200 black 2.50" open	02250146-022	1
8	sign, danger electrocution	049850	1
9	VCC-200 open 2-1/2" high	02250146-016	1
10	decal, energy savings solutions	02250146-267	1
11	decal, variable displacement	02250146-268	1
12	decal, V-200 black 2.50” open	02250146-003	1
13	decal, VSD supply matches demand	02250146-359	1
14	sign, warning “food grade” lube	250003-144	1
15	decal, danger breath air	250027-935	1
16	sign, warning ground fault	049852	1
17	decal, earth ground	02250075-046	1
18	decal, PE designation	02250075-540	1
19	decal, voltage international **(II)**	-	1
20	decal, danger high voltage	042218	1
21	decal, protective earth ground	02250075-045	1

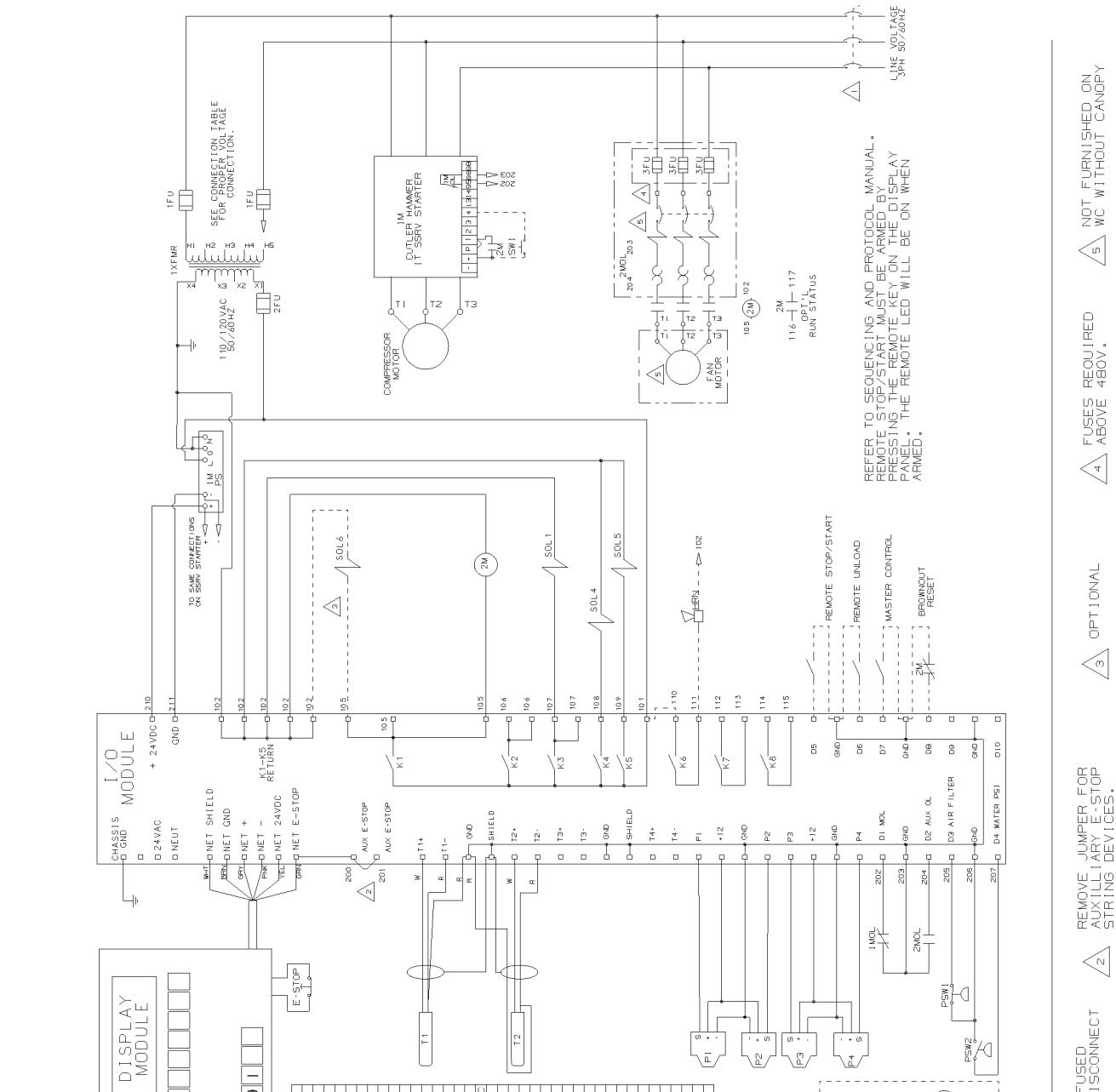
(I) Decal used for 24KT machines only.

(II) Voltage may vary in accordance with your machine requirements. To confirm proper decal, consult factory with serial number of compressor.

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

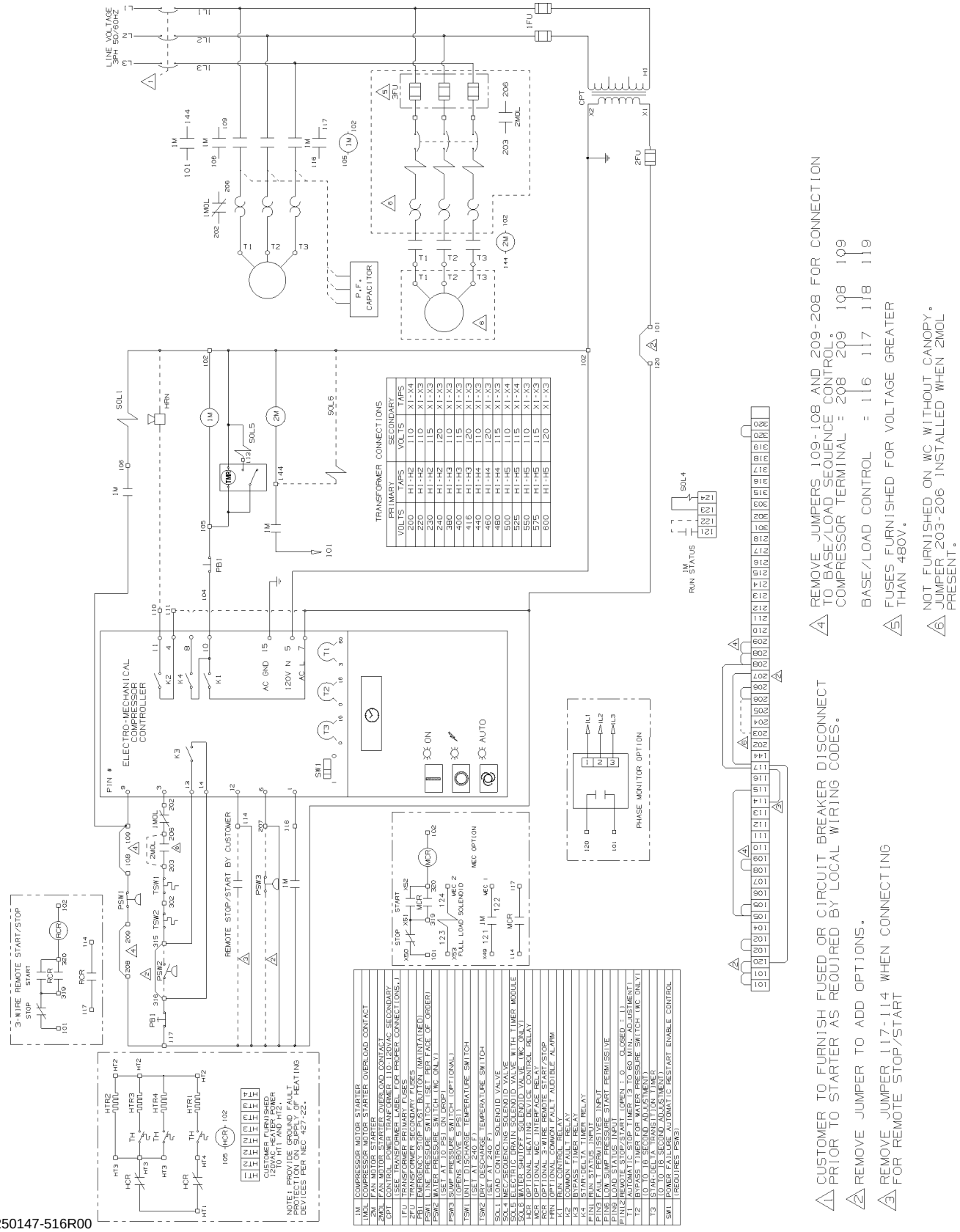
Section 11
ILLUSTRATIONS AND PARTS LIST

11.33 WIRING DIAGRAM- LS-200 AND VCC-200 SUPERVISOR CONTROLLER



02250147-508R00

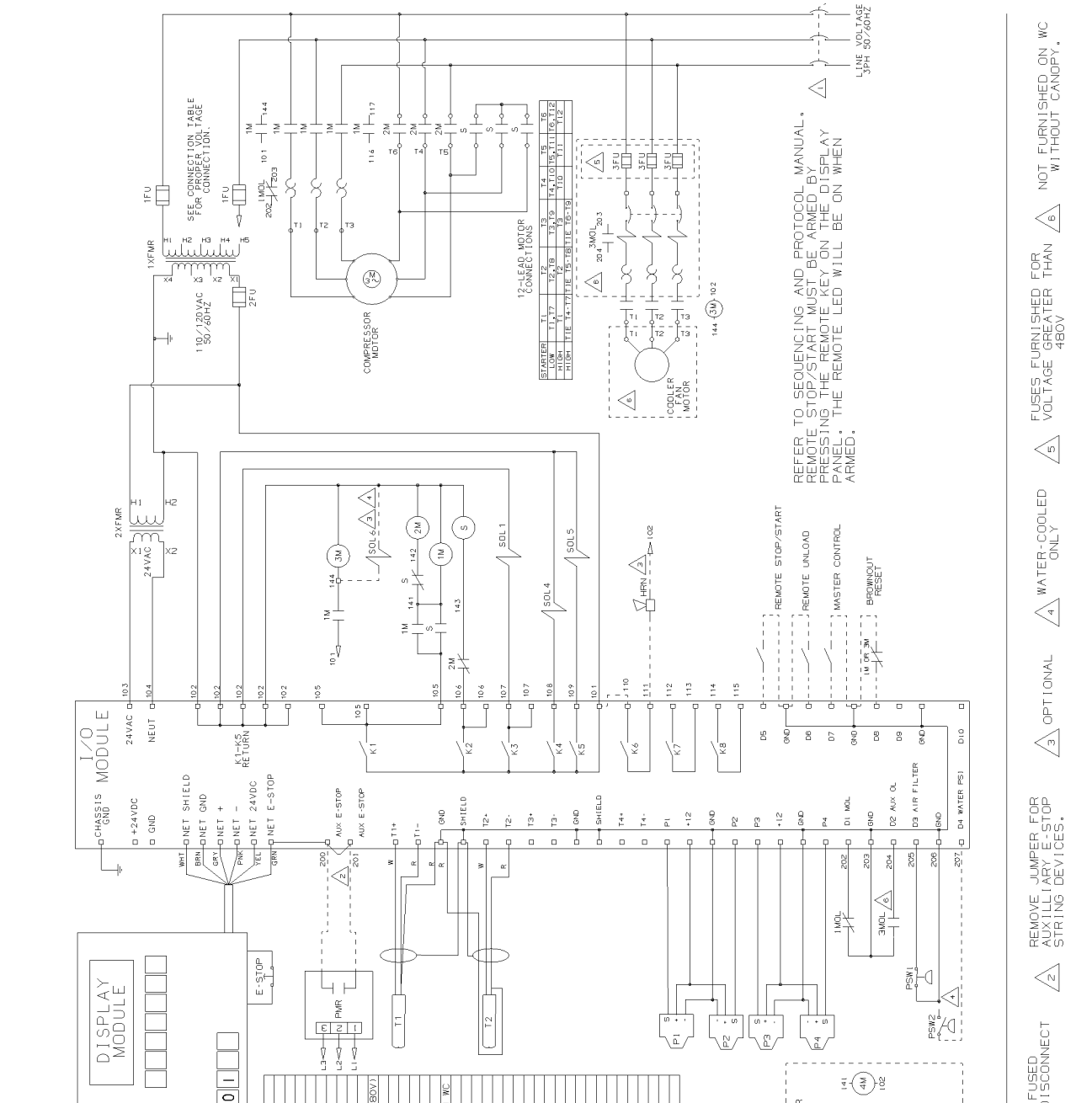
11.34 WIRING DIAGRAM- LS-200 AND VCC-200 FULL VOLTAGE ELECTRO-MECHANICAL CONTROLLER



02250147-516R00

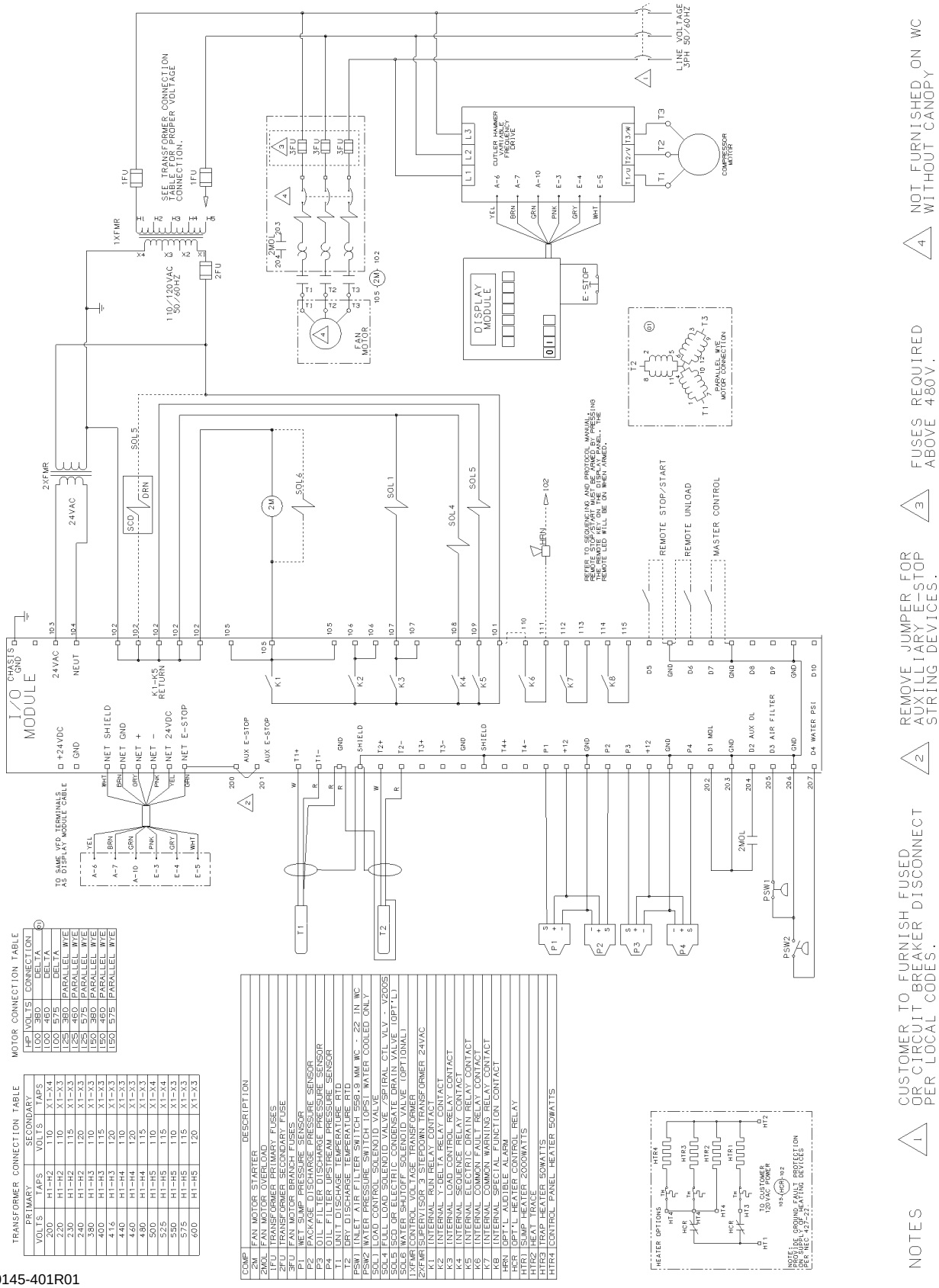
Section 11
ILLUSTRATIONS AND PARTS LIST

11.35 WIRING DIAGRAM- LS-200 AND VCC-200 WYE-DELTA SUPERVISOR CONTROLLER



02250147-513R00

11.36 WIRING DIAGRAM- V-200 WITH SUPERVISOR CONTROLLER (NON-CE)



TRANSFORMER CONNECTION TABLE

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

MOTOR CONNECTION TABLE

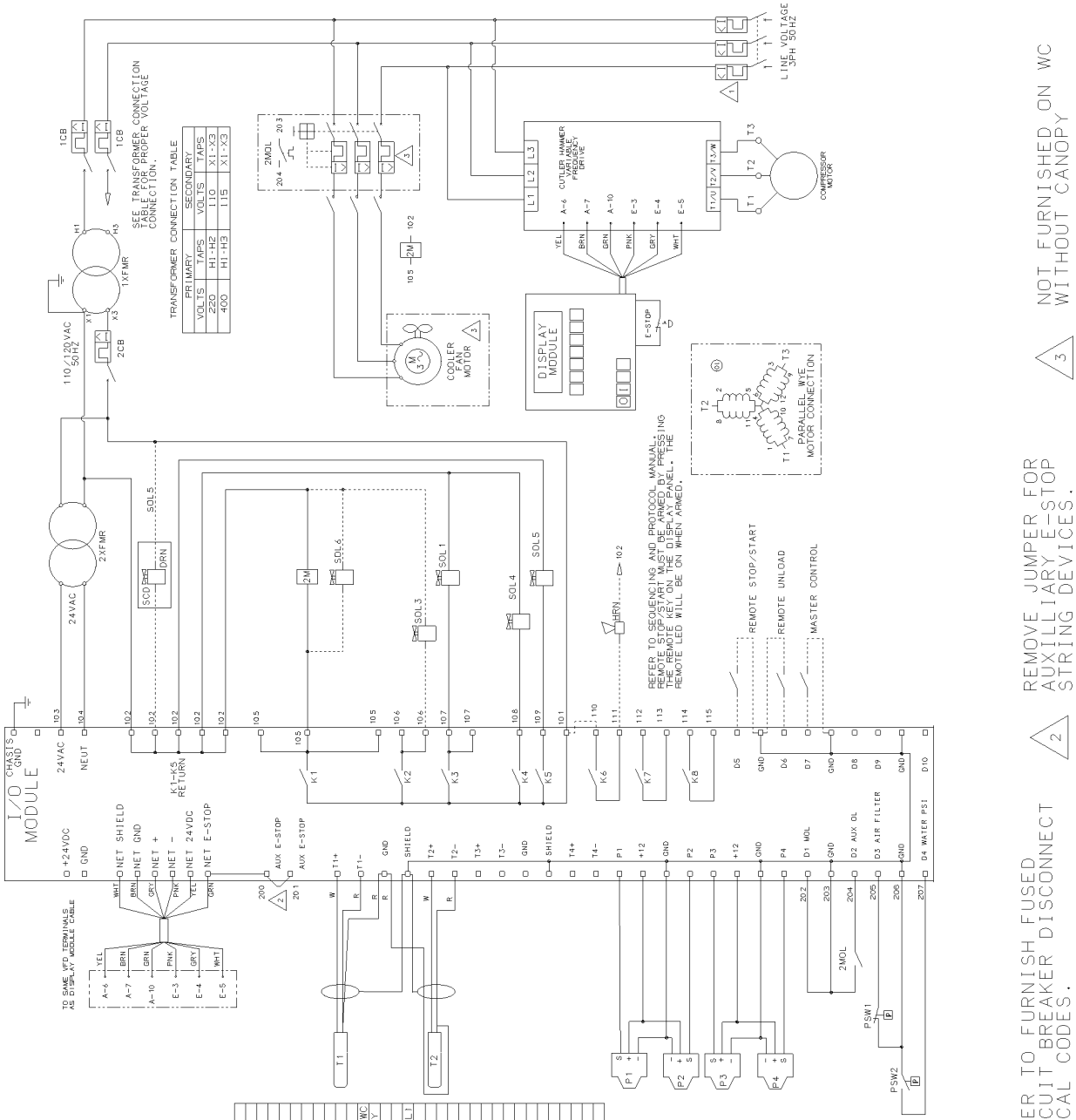
HP	VOLTS	CONNECTION (T1)
100	380	DELTA
100	460	DELTA
100	575	DELTA
125	380	PARALLEL WYE
125	460	PARALLEL WYE
125	575	PARALLEL WYE
150	380	PARALLEL WYE
150	460	PARALLEL WYE
150	575	PARALLEL WYE

COMP	DESCRIPTION
2M	FAN MOTOR STARTER
2MOL	FAN MOTOR OVERLOAD
1FU	TRANSFORMER PRIMARY FUSES
2FU	TRANSFORMER SECONDARY FUSE
3FU	FAN MOTOR BRANCH FUSES
PI	WET SUMP PRESSURE SENSOR
P2	PACKAGE DISCHARGE PRESSURE SENSOR
P3	PACKAGE DISCHARGE TEMPERATURE SENSOR
P4	OIL FILTER UPSTREAM PRESSURE SENSOR
T1	UNIT DISCHAGE TEMPERATURE RTD
T2	DRY DISCHARGE TEMPERATURE RTD
PSW1	INLET AIR FILTER SWITCH 558.9 MM WC - 22 IN WC
PSW2	WATER PRESSURE SWITCH (OPST WATER COOLED ONLY
SOL1	LOAD CONTROL SOLENOID VALVE
SOL4	COOL LOAD SOLENOID VALVE (SPIRAL CTL VLV - V200S
SOL5	WATER SHUTOFF SOLENOID VALVE (OPTIONAL)
SOL6	WATER SHUTOFF SOLENOID VALVE (OPTIONAL)
1XFMR	CONTROL VOLTAGE TRANSFORMER
2XFMR	SUPERVISOR 3 STEPDOWN TRANSFORMER 24VAC
K1	INTERNAL RUN RELAY CONTACT
K2	INTERNAL Y-DELTA RELAY CONTACT
K3	INTERNAL LOAD CONTROL RELAY CONTACT
K4	INTERNAL SOLENOID DRAIN VALVE CONTACT
K6	INTERNAL COMMON FAULT RELAY CONTACT
K7	INTERNAL COMMON WARNING RELAY CONTACT
K8	INTERNAL SPECIAL FUNCTION CONTACT
HRN	OPT'L AUDIBLE ALARM
HCR	OPT'L HEATER CONTROL RELAY
HTR1	SUMP HEATER 2000WATTS
HTR2	HEAT TAPE
HTR3	TRAP HEATER 50WATTS
HTR4	CONTROL PANEL HEATER 50WATTS

02250145-401R01

Section 11
ILLUSTRATIONS AND PARTS LIST

11.37 WIRING DIAGRAM- V-200 WITH SUPERVISOR CONTROLLER (CE)



COMP	DESCRIPTION
2M	FAN MOTOR STARTER
2MOL	FAN MOTOR OVERLOAD
1CB	TRANSFORMER PRIMARY CIRCUIT BREAKERS
2CB	TRANSFORMER SECONDARY CIRCUIT BREAKER
P1	WET SUMP PRESSURE SENSOR
P2	PACKAGE DISCHARGE PRESSURE SENSOR
P3	OIL FILTER DISCHARGE PRESSURE SENSOR
P4	UNIT DISCHAGE PRESSURE SENSOR
T1	UNIT DISCHAGE TEMPERATURE RTD
T2	DRY DISCHARGE TEMPERATURE RTD
PSW1	INLET AIR FILTER SWITCH 55B-9 MM WC - 22 IN WC
PSW2	WATER PRESSURE SWITCH 10PSI WATER COOLED ONLY
SOL1	LOAD CONTROL SOLENOID VALVE
SOL4	FULL LOAD SOLENOID VALVE
SOL5	SCD OR ELECTRIC CONDENSATE DRAIN VALVE (OPT'LI
SOL6	WATER SHUTOFF SOLENOID VALVE (OPTIONAL)
1XFMR	CONTROL VOLTAGE TRANSFORMER
2XFMR	SUPERVISOR 3 STEPDOWN TRANSFORMER 24VAC
K1	INTERNAL RUN RELAY CONTACT
K2	INTERNAL VALVE RELAY CONTACT
K3	INTERNAL LOAD CONTROL RELAY CONTACT
K4	INTERNAL SEQUENCE RELAY CONTACT
K5	INTERNAL ELECTRIC DRAIN RELAY CONTACT
K6	INTERNAL COMMON FAULT RELAY CONTACT
K7	INTERNAL COMMON WARNING RELAY CONTACT
K8	INTERNAL SPECIAL FUNCTION CONTACT
HRN	OPT'L AUDIBLE ALARM
HCR	OPT'L HEATER CONTROL RELAY
HTR1	SUMP HEATER 200WATTS
HTR2	HEAT TRACE
HTR3	TRAP HEATER 50WATTS
HTR4	CONTROL PANEL HEATER 50WATTS

HP	VOLTS	CONNECTION
100	380	DELTA
125	380	PARALLEL WYE
150	380	PARALLEL WYE

02250145-402R01

NOTES

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