SULLAIR

INDUSTRIAL AIR COMPRESSOR

LS-20 100HP (75KW) STANDARD AND 24KT

OPERATOR'S MANUAL AND PARTS LIST

KEEP FOR FUTURE REFERENCE

Part Number 02250075-727

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

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Section 9
PARTS LIST

NOTES

1.1 GENERAL

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

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

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

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

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

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

1.2 PERSONAL PROTECTIVE EQUIPMENT

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

1.3 PRESSURE RELEASE

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

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

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

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

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

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

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

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

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

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

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

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

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

1.4 FIRE AND EXPLOSION

⚠WARNING

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

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

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

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

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

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

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

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

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

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

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

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

1.5 MOVING PARTS

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

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

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

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

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

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

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

1.6 HOT SURFACES, SHARP EDGES AND SHARP CORNERS

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

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

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

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

1.7 TOXIC AND IRRITATING SUBSTANCES

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

⚠ DANGER

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

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

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

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

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

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

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

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

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

1.8 ELECTRICAL SHOCK

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

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

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

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

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

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

1.9 LIFTING

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

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

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

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

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

F. DO NOT attempt to lift in high winds.

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

H. Lift compressor no higher than necessary.

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

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

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

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

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

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

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

1.10 ENTRAPMENT

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

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

2.1 MOUNTING OF COMPRESSOR PACKAGE

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

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

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

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

2.2 VENTILATION AND COOLING

For air-cooled compressors, select a location to permit a sufficient unobstructed flow of air through the compressor to keep the operating temperature stable. The minimum distance that the compressor should be from surrounding walls is three (3) feet (91.4 cm). 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 flow requirements listed in Table 1.

TABLE 1- WATER FLOW REQUIREMENTS

WATER TEMP. °F (°C)	WATER FLOW GPM (LPM)
	100HP
70 (21)	14.9 (56.4)
80 (27)	19.9 (75.3)

(water pressure should be between 25 and 75 psig [1.7 and 5.2 bar]).

NOTE

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

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

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

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

2.3 SERVICE AIR PIPING

Service air piping should be installed as shown in Figure 2-1. 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.

⚠ WARNING

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

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

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

2.4 SHAFT COUPLING CHECK

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

2.5 FLUID LEVEL CHECK

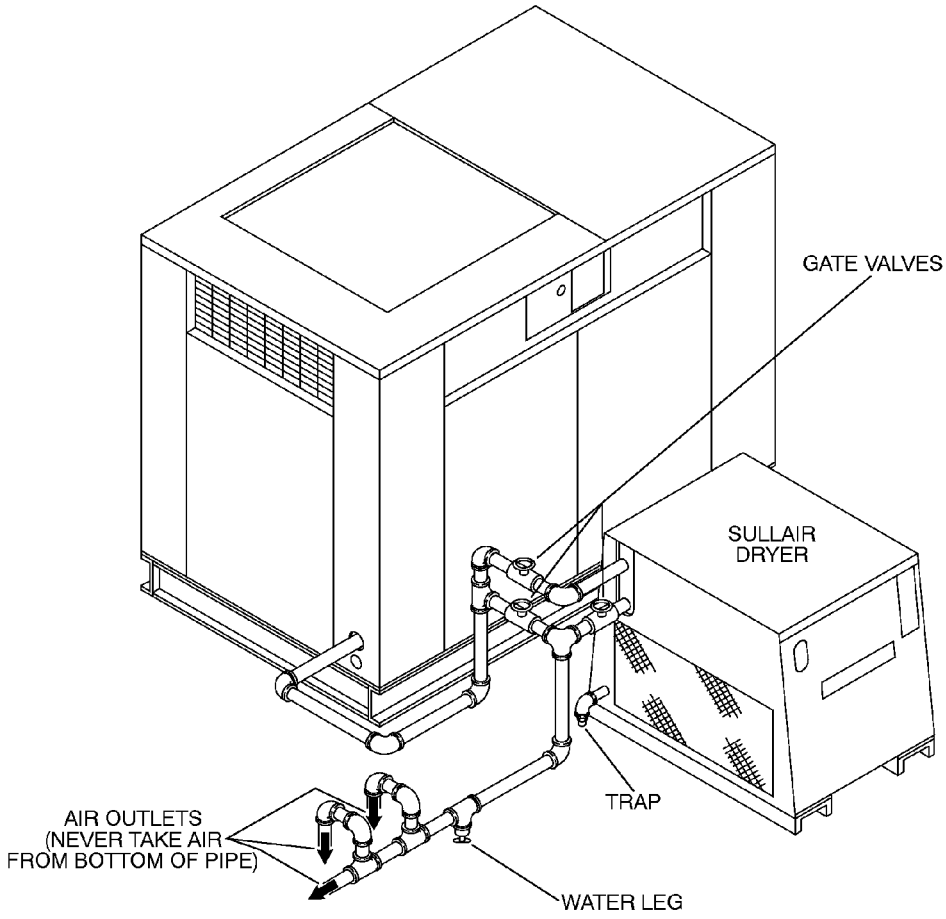
The air compressor is also supplied with the proper amount of fluid. However, it is necessary to check the fluid level at installation. The level is checked by looking at the sight glass located near the sump. If the sump is properly filled, the fluid level should be visible in the sight glass.

TABLE 2- VENTILATION REQUIREMENTS

Cooling Type	Air-cooled	Water-cooled
Motor HP/KW	100/75	100/75
Fan Air CFM/ M^3/min **(l)**	8,000/227	2,977/84
Heat Rejection BTU/hr / Kcal/hr	298,080/75,116	18,000/4,536

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

Figure 2-1 Service Air Piping (Typical Installation)



2.6 MOTOR ROTATION CHECK

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

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

2.7 ELECTRICAL PREPARATION

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

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

⚠ DANGER

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

NOTE

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

1. Check incoming voltage. Be sure that the incoming voltage is the same voltage that the compressor was wired for.
2. Check starter and overload heater sizes (see electrical parts in Parts Manual).
3. Check all electrical connections for tightness.
4. "DRY RUN" the electrical controls by disconnecting the three (3) motor leads from the starter. Energize the control circuits by pushing the **(START)** "**I**" pad and checking all protective devices to be sure that they will de-energize the starter coil when activated.
5. Reconnect the three (3) motor leads and jog the motor for a direction of rotation check, as explained in Section 2.6.

3.1 TABLE OF SPECIFICATIONS

(50 Hz)

MODEL	KW	COOLING	CAPACITY (M^3/MIN)	DIMENSIONS (IV) LENGTH (MM)	WIDTH (MM)	HEIGHT (V) (MM)	WEIGHT (VI) (KG)
100-H (ENCL.) (I)	75	AIR	13.45	2398	1219	1886	1483
100-H (W/O ENCL.) (I)	75	AIR	13.45	2002	1219	1525	1197
100-H (ENCL.) (I)	75	WATER	13.45	2398	1219	1886	1483
100-H (W/O ENCL.) (I)	75	WATER	13.45	2002	1219	1525	1197

(60 Hz) (III)

MODEL	HP	COOLING	CAPACITY (ACFM)	LENGTH (IN)	WIDTH (IN)	HEIGHT (V) (IN)	WEIGHT (VI) (LB)
100-L (ENCL.) (II)	100	AIR	500	94	48	74 1/4	3270
100-L (W/O ENCL.) (II)	100	AIR	500	79	48	60	2640
100-L (ENCL.) (II)	100	WATER	500	94	48	74 1/4	3270
100-L (W/O ENCL.) (II)	100	WATER	500	79	48	60	2640
100-H (ENCL.) (I)	100	AIR	460	94	48	74 1/4	3270
100-H (W/O ENCL.) (I)	100	WATER	460	79	48	60	2640
100-H (ENCL.) (I)	100	AIR	460	94	48	74 1/4	3270
100-H (W/O ENCL.) (I)	100	WATER	460	79	48	60	2640

(I) Model H Maximum Pressure: 125 psig/8.6 bar
(II) Model L Maximum Pressure: 110 psig/7.6 bar
(III) Includes standard and 24KT. New series pressure range designations appearing after model number are as follows:
"L" - 7.0 to 7.5 bar "H" - 8.0 to 8.5 bar.
(IV) The minimum distance that the compressor should be from surrounding walls and ceilings is 3 ft/915 mm, and preferably 6 ft/1829 mm or more from the fan air discharge end of the compressor.
(V) The minimum height allowance needed to service the separator elements is 6 ft, 3 in/1905 mm.
(VI) Weight includes enclosure.

NOTE: dBA RATINGS FREE FIELD NOISE LEVELS: 75 dBA (ENCLOSED), 85 dBA (OPEN).

COMPRESSOR:

Type:	Positive displacement, fluid-lubricated, twin rotary screws
Configuration:	Single-stage geared integral drive
Bearing Type:	Anti-friction
Lubricant:	Pressurized Sullube 32
Coolant:	See Sections 3.2 and 3.3 on Lubrication
Sump Capacity:	9 gallons (34 liters)

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Section 3
SPECIFICATIONS

Duty Press:	100–110 psig (6.9–7.6 bar)
Control Type:	Electro–pneumatic
Options:	Higher duty pressures up to 175 psig (12.1 bar), spiral valve, 24KT lubricant

50 Hz MOTOR:

Size:	100 HP/ 75 KW, 4–pole speed
Service:	3 ph, 50 Hz, 400 VAC, 104°F/40°C ambient
Type:	Frame: IP23, P250SP–P250MP, Mounting: IM1001 (Foot)
Options:	IP55 enclosure, various voltages

60 Hz MOTOR:

Size:	100 HP, 4–pole speed
Service:	3 ph, 60 Hz, 460 VAC, 104°F/40°C ambient rise
Type:	ODP enclosure, NEMA frame 404TSC
Options:	TEFC enclosure, various voltages

3.2 LUBRICATION GUIDE–STANDARD COMPRESSORS

Sullair standard compressors are filled with Sullube 32 fluid as factory fill.

⚠ WARNING

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

Sullube 32 fluid should be changed every 8000 hours or once a year, whichever comes first. The fluid should be changed more frequently under severe operating conditions, such as high ambient temperatures coupled with high humidity, or when high particulate level, corrosive gases or strong oxidizing gases are present in the air.

⚠ WARNING

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

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

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

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

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.

3.3 LUBRICATION GUIDE–24KT COMPRESSORS

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

⚠ WARNING

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

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

3.4 LUBRICATION GUIDE–OPTIONAL FLUID

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

⚠ WARNING

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

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

For extended life synthetic lubricants contact the nearest Sullair representative.

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

SUPERVISOR II DESCRIPTION

4.1 BASIC INTRODUCTION

Refer to Figure 4-1. The Supervisor II has a two line display to show temperature, pressure and status. It has a keypad for operating the compressor, programming the control points and selecting displays. There is a graphic illustration with lamps that light to show the item being displayed. The lamps flash if that component is in an alarm condition.

4.2 KEYPAD–ALL MODELS

The keypad is used to control the machine as well as display status and change setpoints. Refer to Figure 4-1 for following key descriptions.

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

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

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

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

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

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

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

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

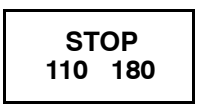
4.3 STATUS DISPLAYS

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

(Display graphics shown below.)

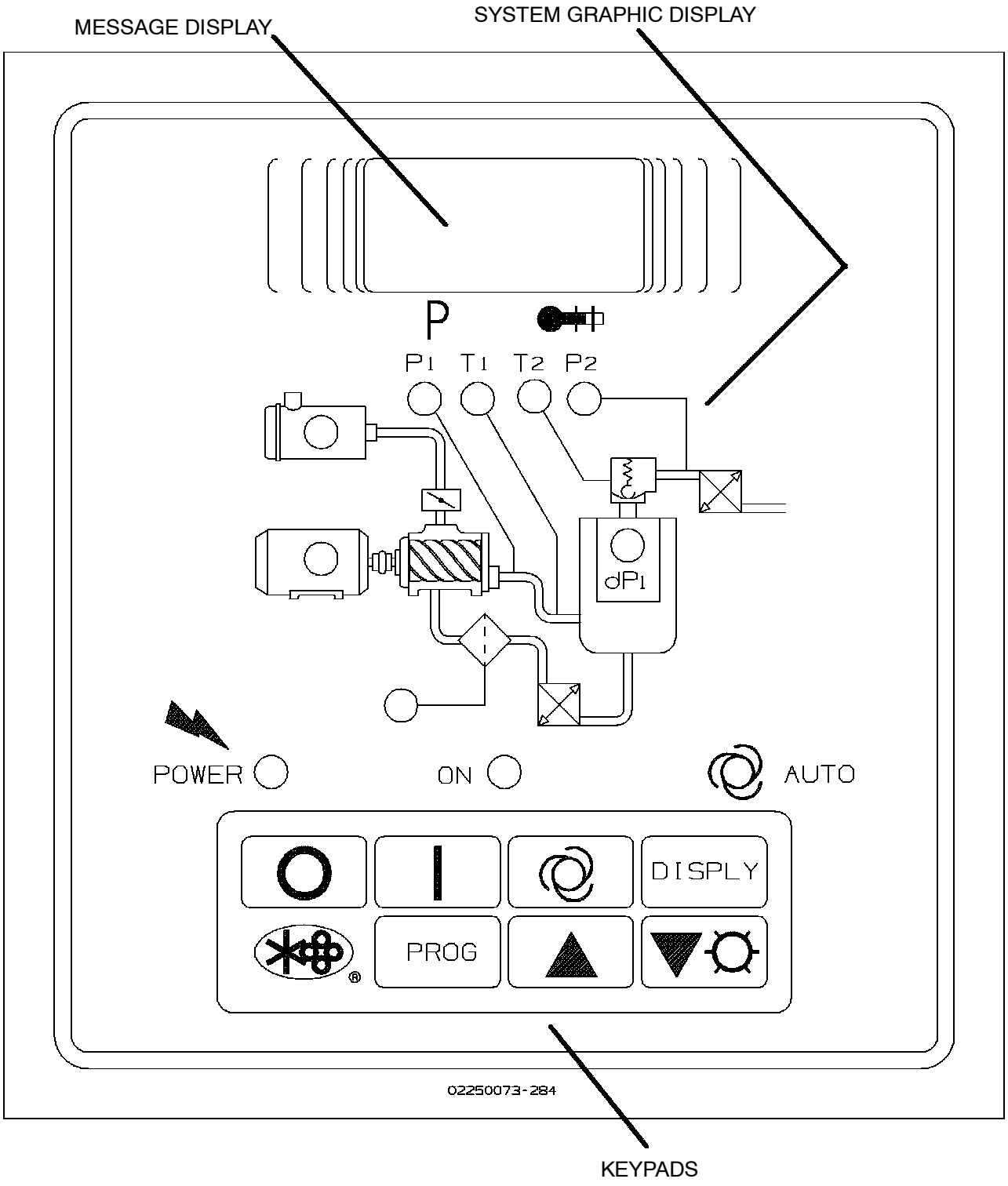
- **STOP** – Compressor is off.
- **STANDBY** – Compressor is off but armed to start. This state may be entered because of a power up, or the unload timer had expired and stopped the machine. NOTE : The machine may start at any time.
- **STARTING** – Machine is trying to start.
- **OFF LOAD** – Machine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

This default display appears as follows:



Section 4
SUPERVISOR II DESCRIPTION

Figure 4-1 Supervisor II Panel



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

```
T1 HI
110  180
```

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

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

```
dP 1   4
MAX 10
```

- Sump pressure and line pressure.

```
P1  113
P2  108
```

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

```
T1  210
MAX 235
```

- Total hours that the compressor has been running.

```
HRS RUN
001234.0
```

- Total hours that the compressor has been loaded.

```
HRS LOAD
000987.0
```

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

```
T1 HI
@1  234
```

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

```
T1 HI
@2 204
```

4.4 LAMP INDICATORS - ALL MODELS

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

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

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

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

P4 – (Pressure before oil filter)

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

dP2 – (Oil filter differential pressure)

dP3 – (Oil differential pressure)

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

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

T3 – (Oil temperature) If lit steady, signifies that T3 is being displayed, if flashing denotes the presence of an alarm.

T4 – (Interstage temperature) If lit steady, signifies that T4 is being displayed, if flashing denotes the presence of an alarm.

T5 – (Package discharge temperature)

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

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

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

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

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

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

5.1 INTRODUCTION

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

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

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

5.2 DESCRIPTION OF COMPONENTS

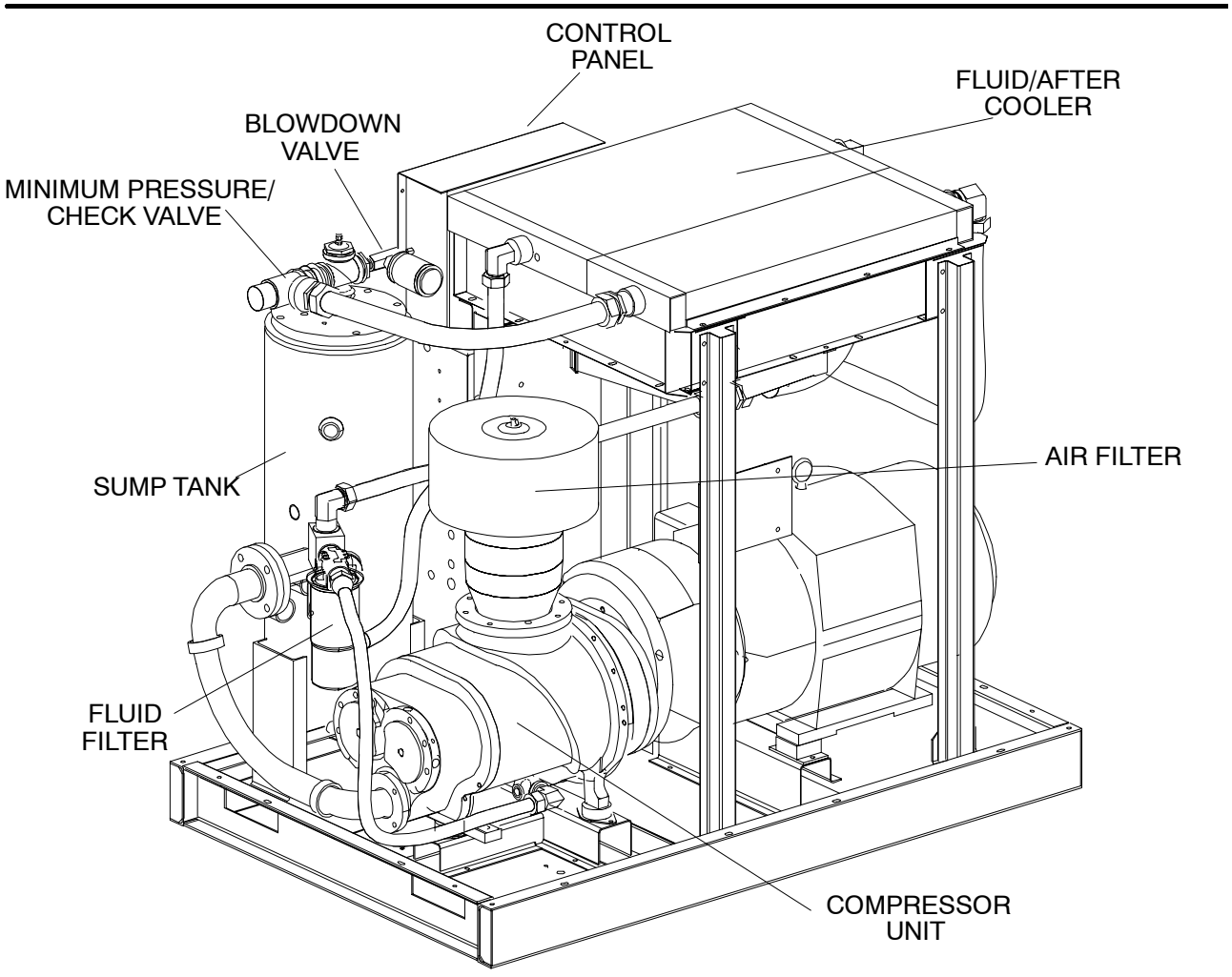
Refer to Figure 5-1. The components and assemblies of the air compressors are clearly shown. The complete package includes **compressor**, **electric motor**, **compressor inlet system**, **compressor discharge system**, **compressor cooling and lubrication system**, **capacity control system**, and **Supervisor II control system**, all mounted on a heavy gauge steel frame.

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

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

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

Figure 5-1 Sullair Series LS-20 100HP/ 75KW Rotary Screw Compressor (Air-cooled)



5.3 SULLAIR COMPRESSOR UNIT, FUNCTIONAL DESCRIPTION

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

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

⚠ WARNING

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

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

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

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

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

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

5.4 COMPRESSOR COOLING AND LUBRICATION SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figures 5–2 and 5–3. The **cooling and lubrication system** (air–cooled version) consists of a **fan**, **radiator–type cooler**/**aftercooler assembly**, **full–flow main line filter**, **thermal valve** and **interconnecting piping**.

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

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

Fluid flows from the bottom of the receiver/sump to the thermal valve. The thermal valve is fully open to the compressor unit when the fluid temperature is below 170°F (77°C). The fluid passes through the thermal valve, the main filter and directly to the compressor unit where it lubricates, cools and seals the rotors and the compression chamber.

As the discharge temperature rises above 170°F (77°C), due to the heat of compression, the thermal valve begins to close and a portion of the fluid then flows through the cooler. From the cooler, the fluid flows to the main filter and on to the compressor unit.

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

Water–cooled versions of the compressor have a water–flow regulating valve. This valve automatically shuts off the water supply when the compressor is shut down. In addition, water–cooled models have a water pressure switch to prevent operation with inadequate water pressure.

5.5 COMPRESSOR DISCHARGE SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 5–3. The compressor unit discharges the compressed air/fluid moisture into the combination receiver/sump. The receiver has three functions:

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

The compressed air/fluid mixture enters the receiver and is directed against a curved shroud. Its direction of movement is changed and its velocity significantly reduced, thus causing large droplets of fluid to form and fall to the bottom of the receiver/sump. The fractional percentage of fluid remaining in the compressed air collects on the surface of the dual separator elements as the compressed air flows through them. Two return lines (or scavenge tubes) lead from the bottom of each separator element to the inlet region of the compressor unit. Fluid collecting on the bottom of each separator is returned to the compressor by a pressure difference between the receiver and the compressor inlet. Sight glasses are located in the return lines to observe this fluid flow. There are also orifices in these return lines (protected by strainers) to assure proper flow. When the total pressure drop across the elements exceeds 10 psid (0.7 bar), the Supervisor II module displays a maintenance requirement message.

The receiver is an ASME pressure vessel. A combination minimum pressure/check valve, located downstream from the separator, assures a minimum receiver pressure of 50 psig (3.5 bar) during all conditions. This pressure is necessary for proper air/fluid separation and proper fluid circulation while supplying air to the system. This valve also acts as a

Figure 5-2 Compressor Piping and Instrumentation Diagram

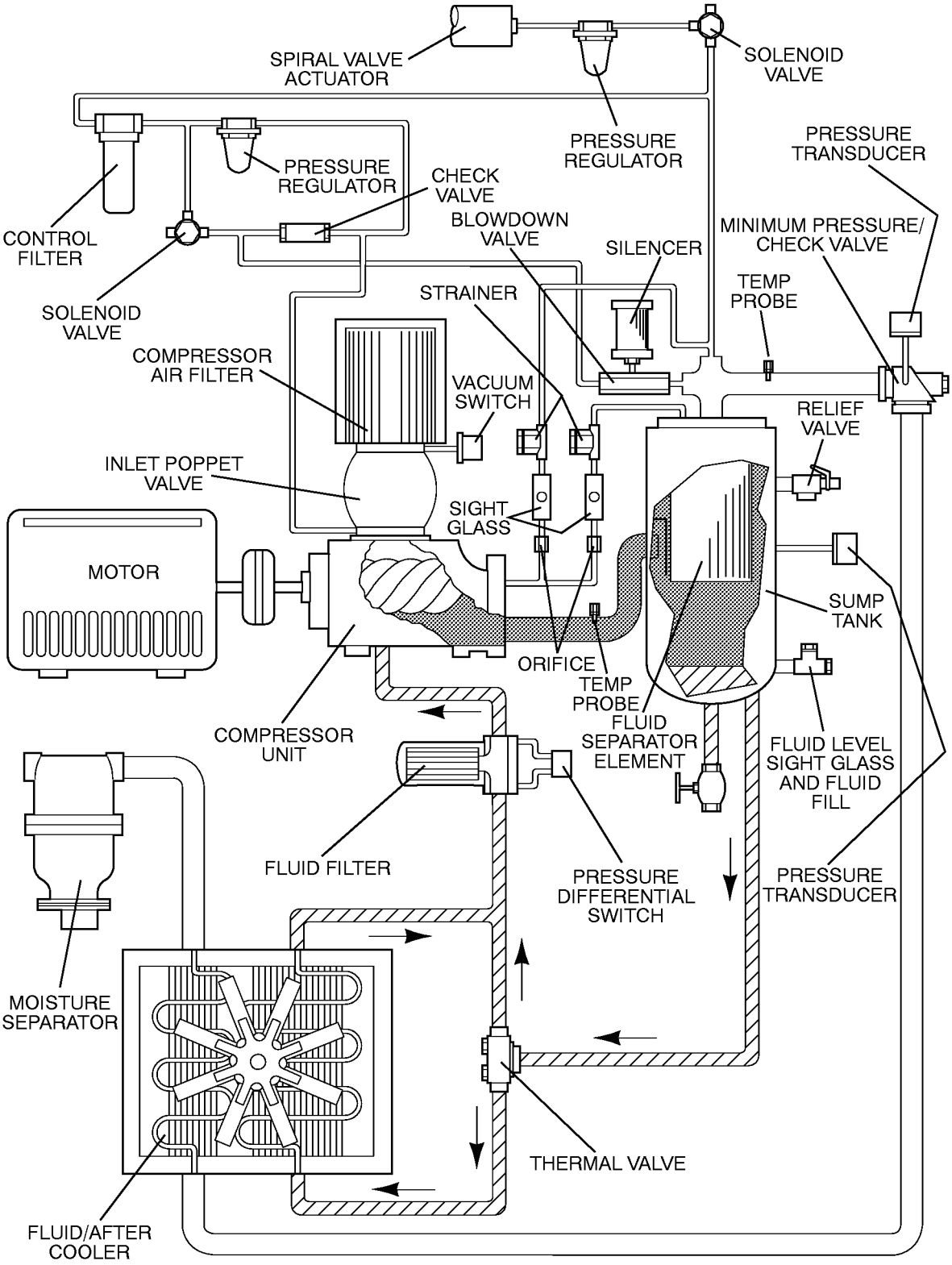
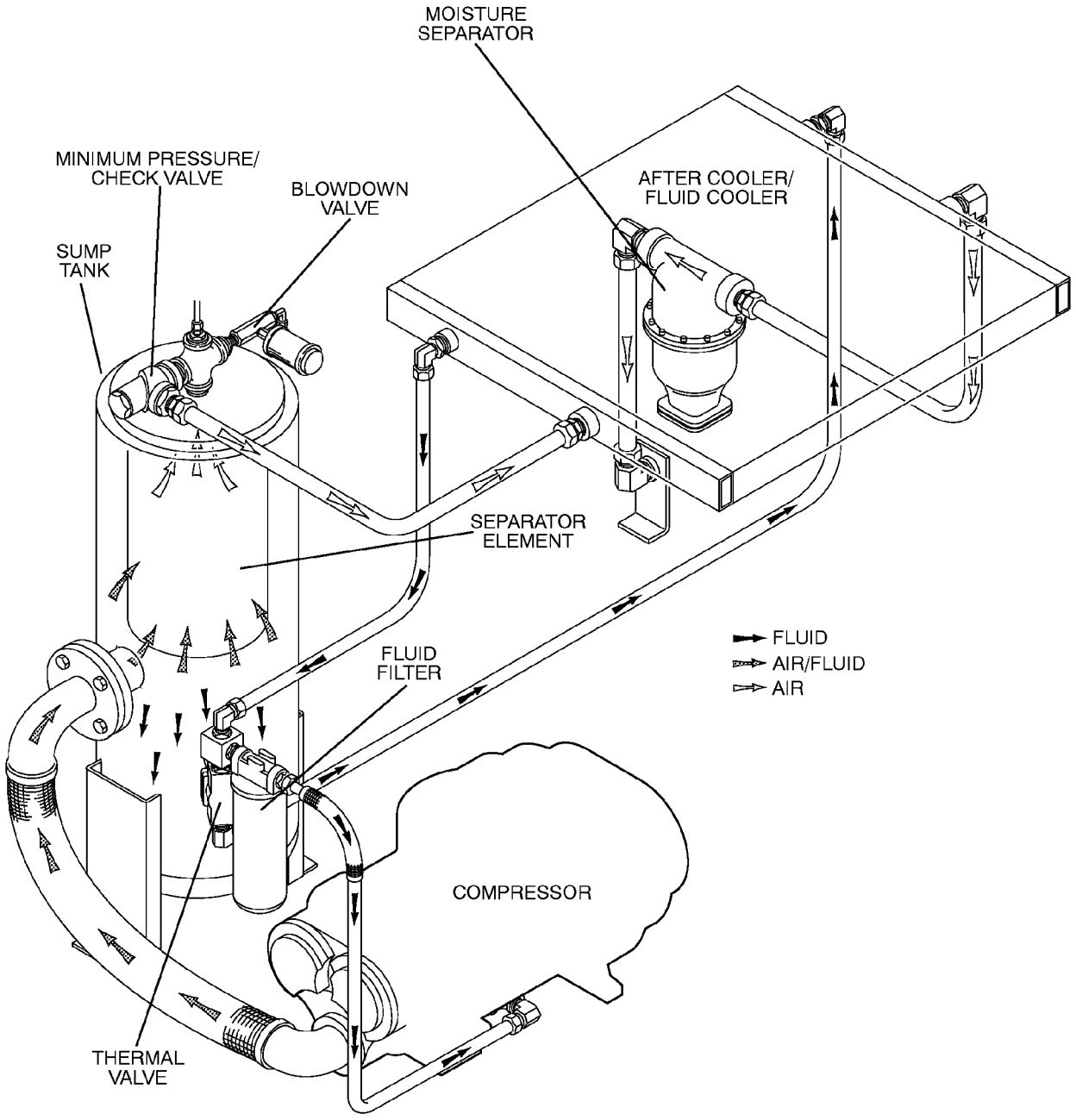


Figure 5-3 Compressor Cooling, Lubrication and Discharge Systems Diagram



check valve preventing compressed air in the service line from bleeding back into the receiver on shutdown and during operation on the compressor in an unloaded condition.

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

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

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

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

All Sullair compressor models are equipped with a high pressure shutdown protection to shut down the compressor at 190 psig (13.1 bar). This prevents the pressure relief valve from opening under routine conditions, thereby preventing fluid loss through the pressure relief valve. A temperature switch will shut down the compressor if the discharge temperature reaches 240°F (115°C).

⚠ WARNING

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

Stop compressor and relieve all internal pressure before doing so.

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

5.6 CONTROL SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figures 5-4A through 5-4D. 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 **pressure switch**, **solenoid valve pressure regulator(s)** and a **control line filter**. The functional description of the control system is described below in four distinct phases of operation. For explanatory purposes, this description will apply to a compressor with an operating range of 100 to 110 psig (6.9 to 7.6 bar). A compressor with any other pressure range would operate in the same manner except stated pressures.

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

When the Supervisor II module "**I**" or "**A**" pad is depressed, the unit starts and the pressure quickly rises from 0 to 50 psig (0 to 3.5 bar). The pressure regulator(s) and the solenoid valve(s) remain closed, and the inlet poppet valve and spiral valve are inoperative. The spring loaded poppet is forced open by the intake air flow. The minimum pressure valve (MPV) isolates the compressed air from reaching the service line while building enough backpressure (40-50 psig [2.8-3.5 bar]) to maintain adequate lubricant fluid flow. If the optional Closed Inlet Start assembly is provided, an accumulated air signal is used to maintain the inlet poppet valve fully closed, minimizing the compression load for special drivers (i.e., Wye-Delta electric motors) during the start-up phase. After a pre-determined amount of time, the accumulated air signal is removed and the poppet is allowed to open by the air flow.

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

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

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

If less than the rated capacity of compressed air is being used, the line pressure will rise above 100 psig (6.9 bar), and a pressure regulator starts feeding an air signal to 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 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) LINE PRESSURE

When little or no air demand is present, the line pressure increases beyond 110 psig (7.6 bar). At this point, the Supervisor II module energizes a solenoid valve which feeds an air signal to a) directly close the inlet poppet valve, and b) open the blowdown valve and depressurize the package to its unload level of 40 to 50 psig (2.8 to 3.5 bar). The minimum

Figure 5-4A Control System Diagram

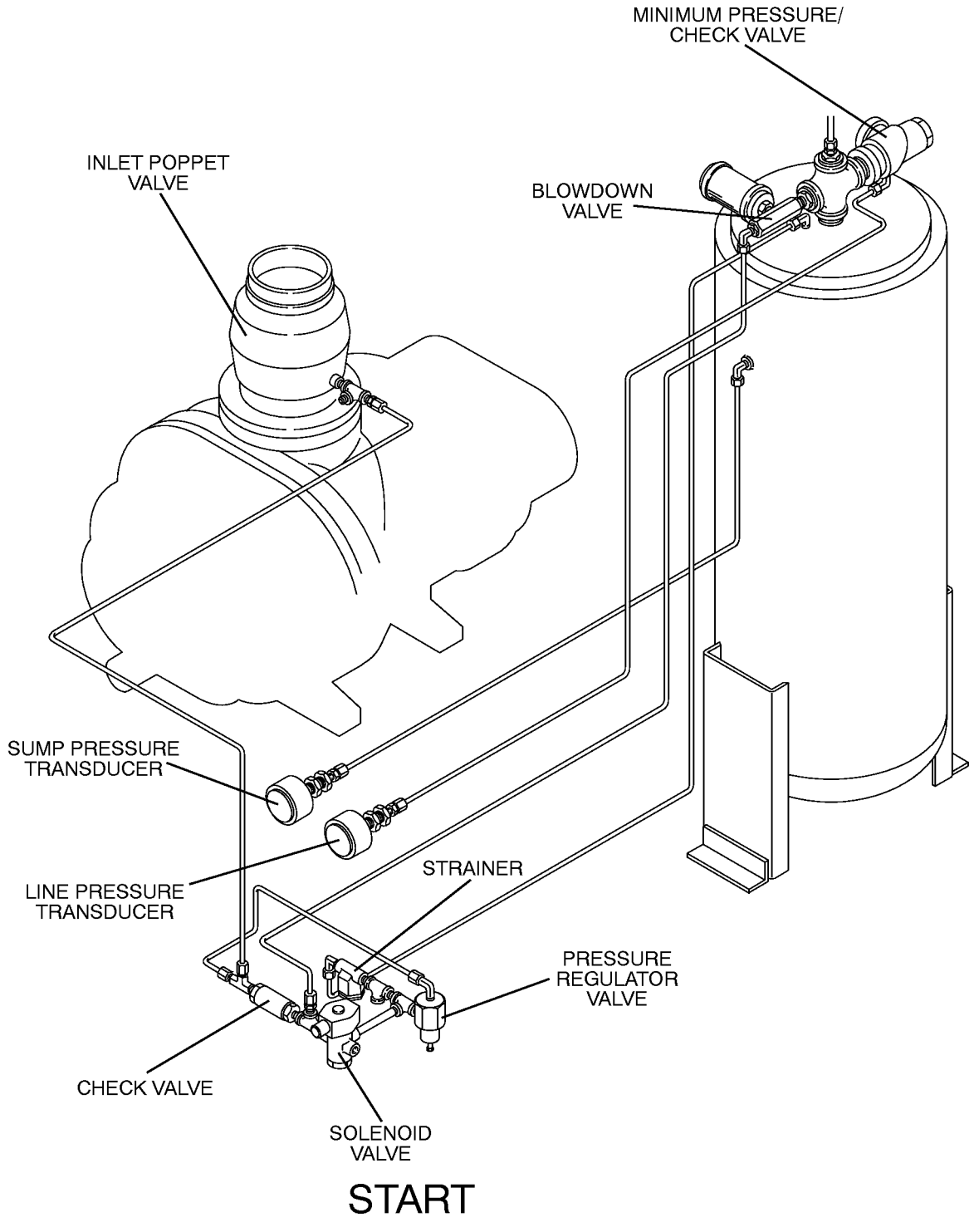


Figure 5-4B Control System Diagram

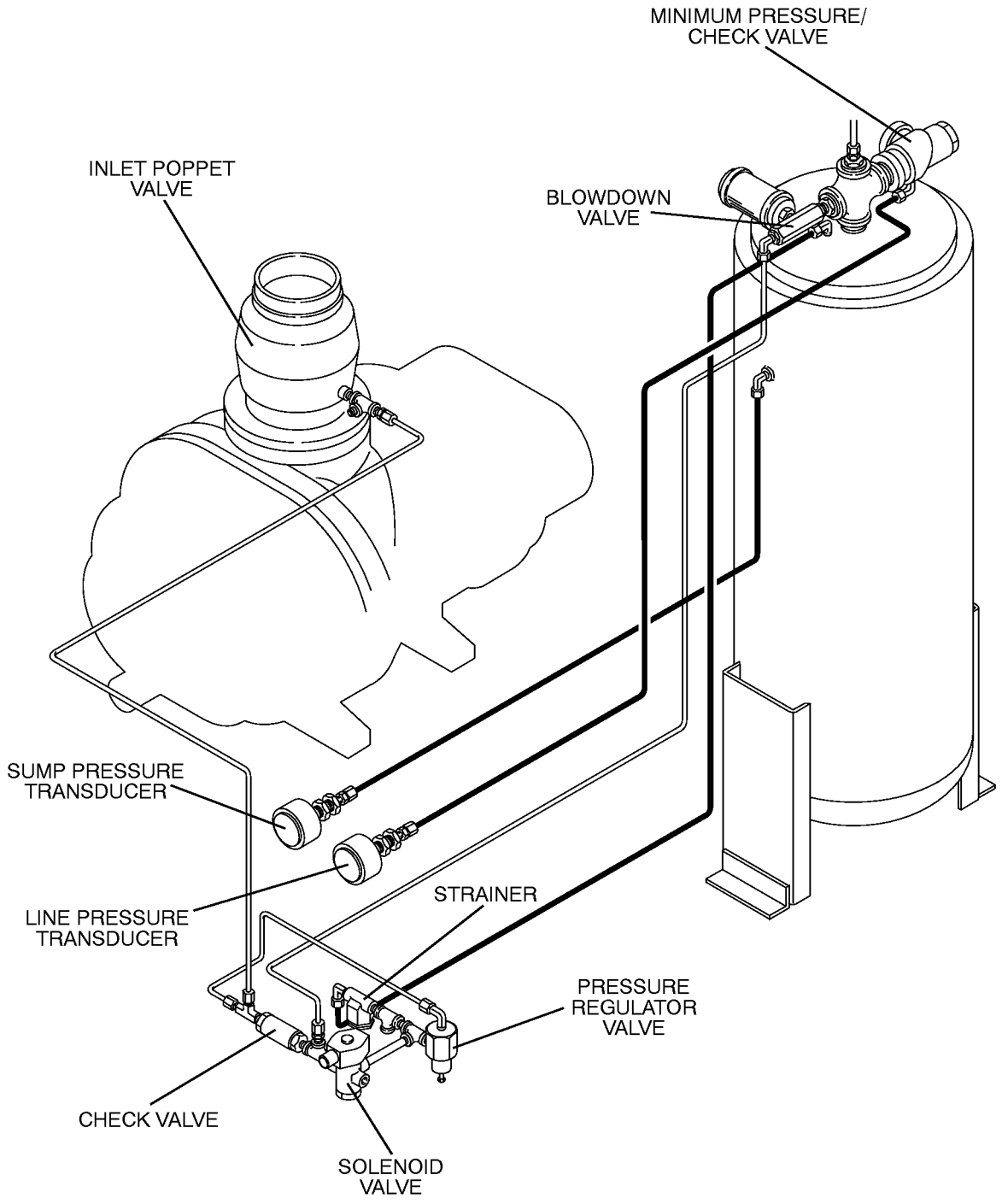


Figure 5-4C Control System Diagram

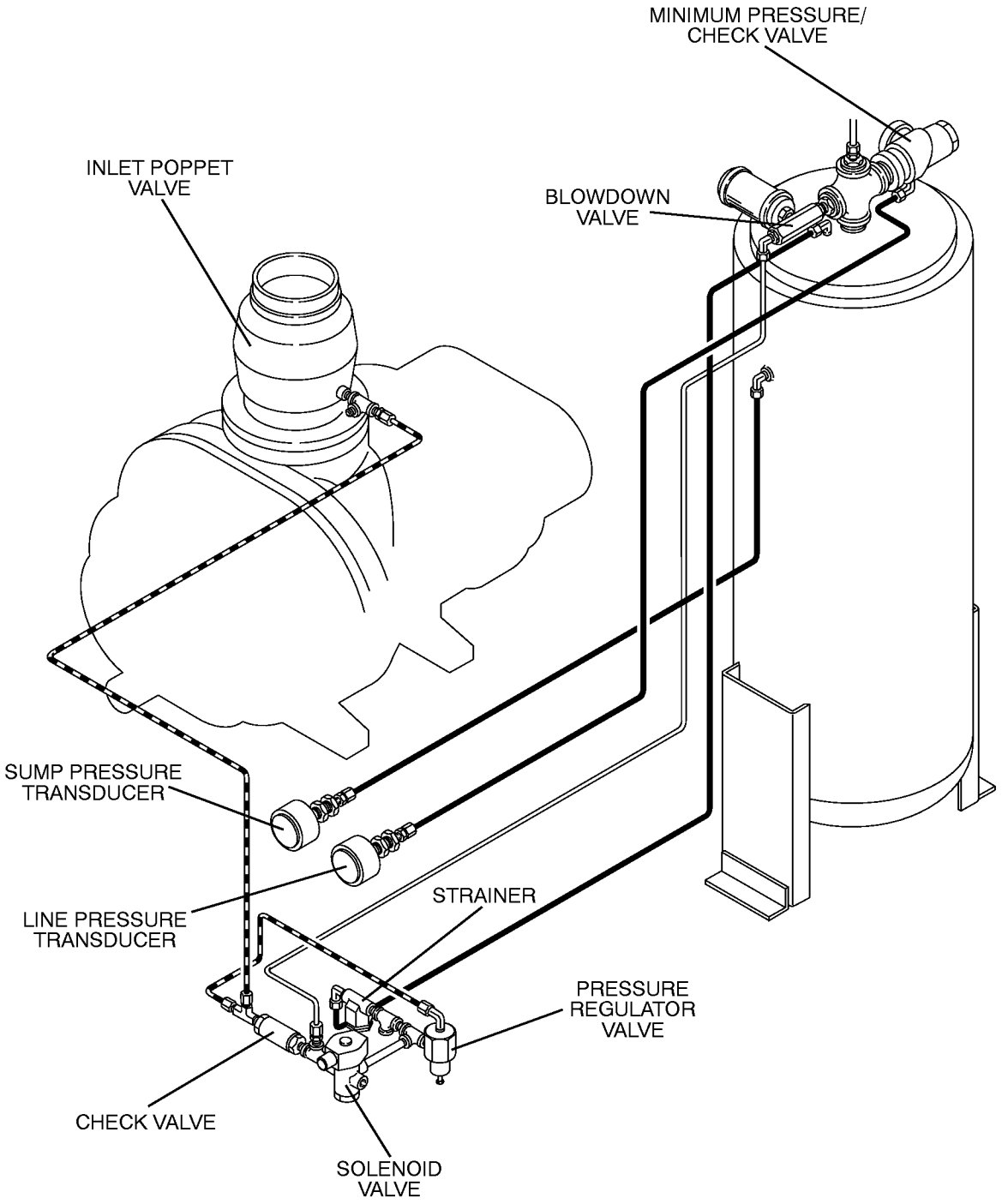


Figure 5-4D Control System Diagarm

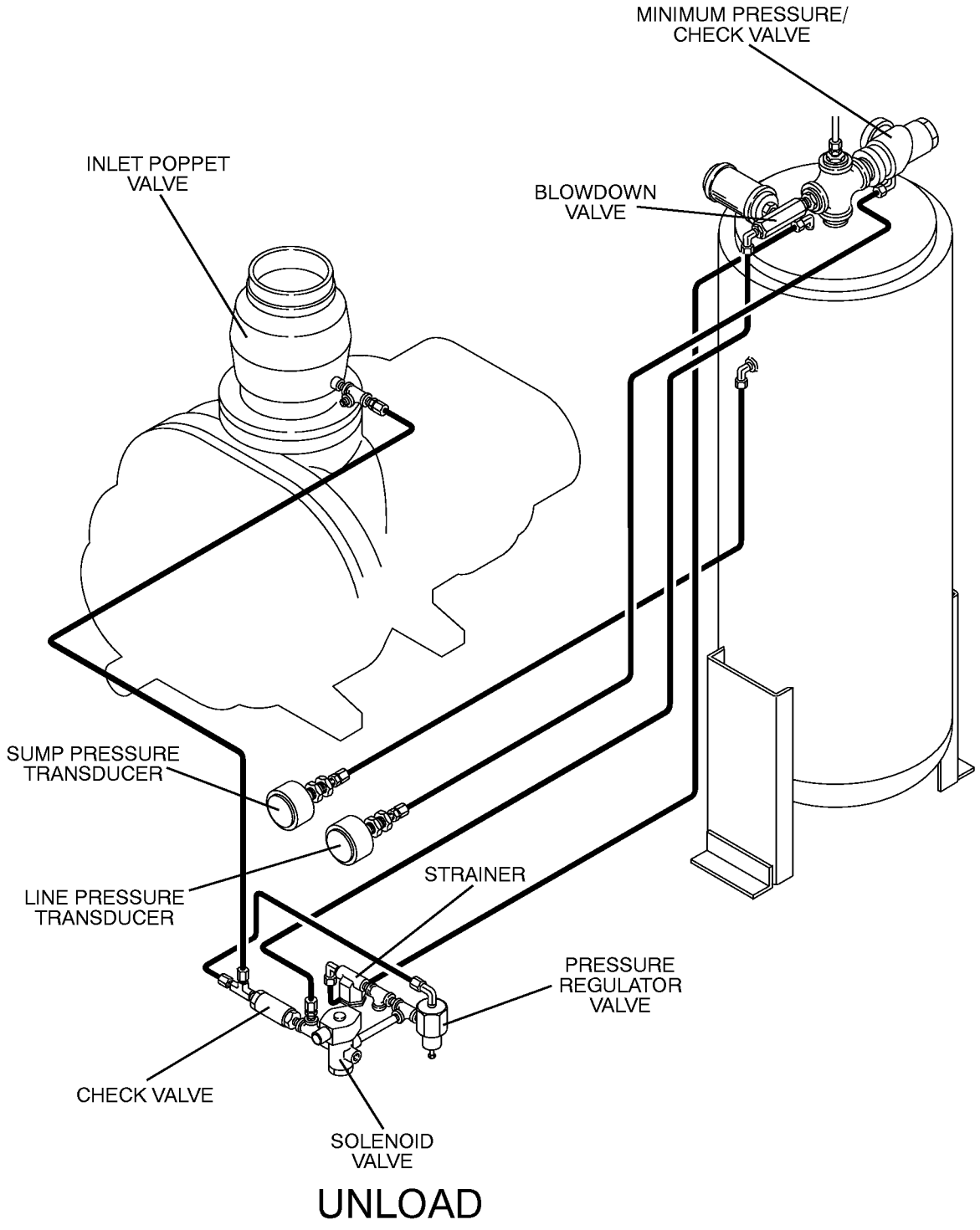
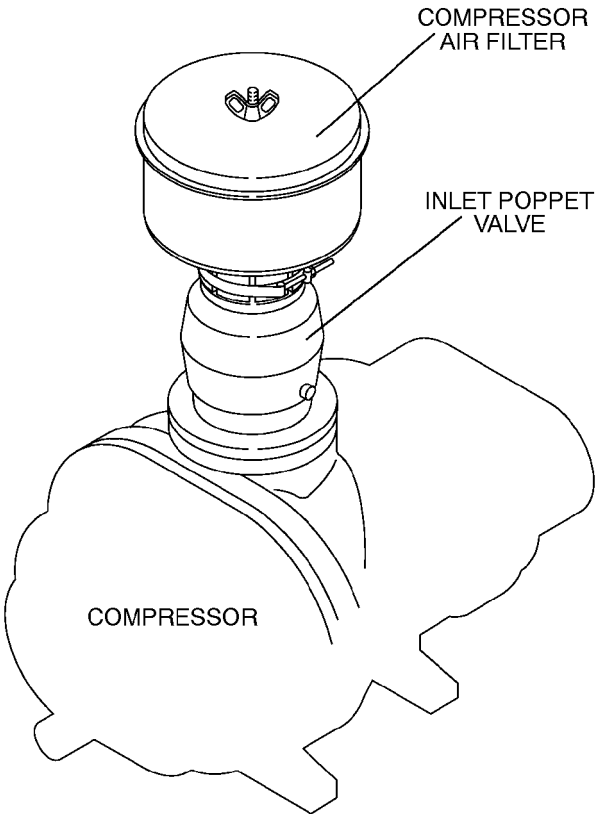


Figure 5-5 Air Inlet System



pressure valve now isolates the sump vessel from the service line.

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

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

5.7 AIR INLET SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 5-5. The compressor inlet system consists of a **single-stage, dry-type air filter**, an **inlet poppet valve**, and an **adaptor piece** which mounts both devices to the compressor inlet flange. Optionally, a two-stage, heavy-duty, dry-type filter with inertial dust separation and collection, is available for added air filtration and sound attenuation.

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

COMPRESSOR OPERATION

6.1 INTRODUCTION

While Sullair has built into the 20 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.

6.2 PURPOSE OF CONTROLS

All Supervisor II module (Supervisor) related functions and indicators are presented in Section 4.2, so please refer to that section for your information. Additional indicators and functions included in the package are as follows:

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

CONTROL OR INDICATOR	PURPOSE
THERMAL MIXING VALVE	Bypasses fluid flow around the cooler until the former reaches a temperature of 170°F (77°C). Useful for fast warm-up during start. Maintains a minimum temperature of 180°F (82°C) during periods of low load or low ambient temperatures.
SUMP SIGHT GLASS	Indicates level of lubricant in the sump. Located on the sump side, it should show half-full (compressor stopped) for proper fluid level.
SEPARATOR RETURN LINE SIGHT GLASSES	Indicate fluid flow in the separator return lines. Large flow should be visible during full load operation; little to no flow during unloaded operation. Sluggish flow during full load operation indicates the need to clean the strainers fitted to the return lines.
WATER PRESSURE SWITCH	De-energizes the starter, via the Supervisor II, if the water pressure falls below 10 psig (0.7 bar). This switch is not adjustable. Used on water-cooled packages only.
WATER REGULATOR VALVE	Regulates the amount of water used, as well as shuts the water flow off when the package is not running. Used on water-cooled packages only.
DRAIN GLOBE VALVES	Furnished as manual backup and bypass for the automatic (float-type) drain valve used in the condensate separator vessel. Also used as lubricant sump drain valve.

6.3 SUPERVISOR II OPERATING PARAMETERS-SET UP

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

The parameters are displayed in the following order:

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

UNLOAD
100 PSI

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

LOAD
10 PSI

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

P1 MAX
135 PSI

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

WYE DELT
10 SEC

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

ly start after power up.

RST TIME
10 SEC

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

UNLD TIM
15 MIN

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

LANGUAGE
ENGLISH

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

UNITS
ENGLISH

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

COM ID #
1

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

BAUDRATE
9600

6.4 DELUXE PARAMETER SETUP

The following parameters are only available on deluxe model Supervisor II.

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

SEQUENCE
HOURS

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

DRN INTV
10 MIN

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

DRN TIM
1 SEC

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

LAST COM
3

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

LOWEST
90 PSI

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

RECOVER
10 SEC

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

ROTATE
50

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

CAPACITY
100

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

Section 6
COMPRESSOR OPERATION

Manual for details.

SEQ HRS
1000

6.5 OPERATING THE COMPRESSOR

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

MANUAL OPERATION MODE

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

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

AUTOMATIC OPERATION MODE

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

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

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

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

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

POWER FAILURE RESTART

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

SEQUENCING MODES

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

- **DISABLED** - Responds to status and parameter change messages via the RS485 network but will not respond to start, stop, load or unload messages.
- **REMOTE** - Responds to status and parameter change messages but will not respond to start, stop, load or unload messages. The remote inputs and outputs are enabled (start/stop, load/unload, master/local).
- **SLAVE** - Will respond to all messages, but will not start or load unless commanded to do so by a message. This mode is used to control the machine from a master computer.
- **HOURS** - Sends status message about once a second, starts, loads and unloads machines based on sequencing hours.
- **COM ID #** - Sends status message about once a second, starts, loads and unloads machines based on machine Com ID#.

6.6 PURPOSE OF CONTROLS

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

6.7 SUPERVISOR II OUTPUT RELAYS

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

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

6.8 MOTOR ROTATION CHECK

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

Pull out the **EMERGENCY STOP** button and press once, quickly and in succession, the **(START)** "**I**" and **(STOP)** "**O**" pads. This action will bump start the motor for a very short time. When looking at the motor rear end, the driveline should be rotating in the direction indicated by the "Direction of Rotation" decal located on the top of the compressor/motor adapter piece. If the reversed rotation is noted, disconnect the power to the starter and exchange any two of the three power input leads, then re–check rotation. A "Direction of Rotation" decal is located on the top of the compressor/motor adaptor piece.

6.9 INITIAL START–UP PROCEDURE

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

1. Read the preceding pages of this manual thoroughly.
2. Jog motor to check for correct rotation of fan.
3. Be sure that all preparations and checks described in the Installation Section have been made.
4. Open the shut–off valve to the service line.
5. Check for possible leaks in piping.
6. Slowly close the shut–off valve to assure proper nameplate pressure unload setting is correct. The compressor will unload at nameplate pressure. If adjustments are necessary, see Control System Adjustments.
7. Observe the operating temperature. If the operating temperature exceeds 200°F (93°C), the cooling system and installation environment should be checked.
8. Open shut–off valve to the service line.
9. Reinspect the compressor for temperature and leaks the following day.

6.10 SUBSEQUENT START–UP PROCEDURE

On subsequent start–ups, check that the proper level is visible in the fluid level sight glass and simply press "**I**" for manual or "⏲" for automatic operation. When the compressor is running, observe the various parameter displays.

6.11 SHUTDOWN PROCEDURE

To shut the compressor down, push "**O**" pad.

NOTES

7.1 GENERAL

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

⚠ WARNING

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

Stop compressor and relieve all internal pressure before doing so.

7.2 DAILY OPERATION

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

During the initial start–up or servicing of the package, fluid may have to be added to the sump vessel to restore to an adequate level. Frequent fluid additions to maintain said level would be indicative of excessive fluid consumption, and should be investigated – see the Troubleshooting Section 8 of this manual for probable cause and remedy.

7.3 MAINTENANCE AFTER INITIAL 50 HOURS OF OPERATION

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

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

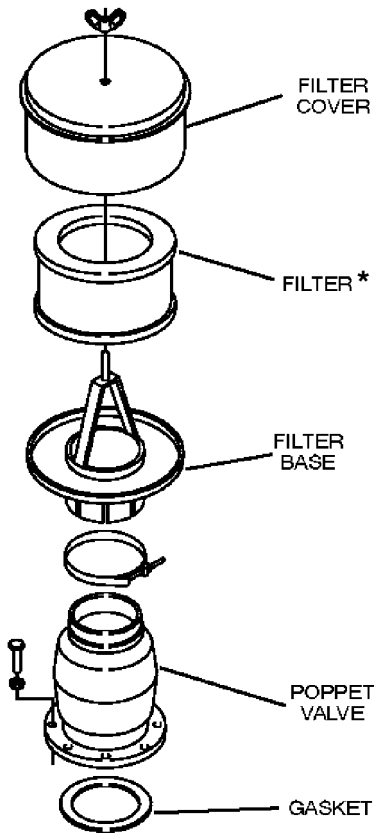
7.4 MAINTENANCE EVERY 1000 HOURS OF OPERATION

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

7.5 PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES

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

Figure 7-1 Air Filter (Std.) (P/N 02250060-554)



* Element Kit P/N 040899

AIR FILTER MAINTENANCE

Refer to Figure 7-1. Air filter maintenance should be performed when the corresponding maintenance message is displayed by the Supervisor II – this corresponds to a pressure loss condition across the unit of 15 in. of water column. Your filter assembly includes a single element – the optional heavy–duty filter adds a secondary element.

ELEMENT REMOVAL

1. Clean the exterior of the filter housing.
2. Remove the cover assembly by loosening the wingnut securing it.
3. Loosen the corresponding nut and sealing washer assemblies and pull the element(s) from the housing.
4. Clean the interior of the housing with a damp cloth. **DO NOT** blow dirt out with compressed air.

ELEMENT INSPECTION

1. Place a bright light inside the element to inspect for damage or leak holes. Concentrated light will shine through the element and disclose any holes.
2. Inspect all gaskets and gasket contact surfaces of the housing. Should faulty gaskets be evident, correct the condition immediately.
3. If the clean element is to be stored for later use, it must be stored in a clean container.

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

ELEMENT REPLACEMENT

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

FLUID FILTER MAINTENANCE

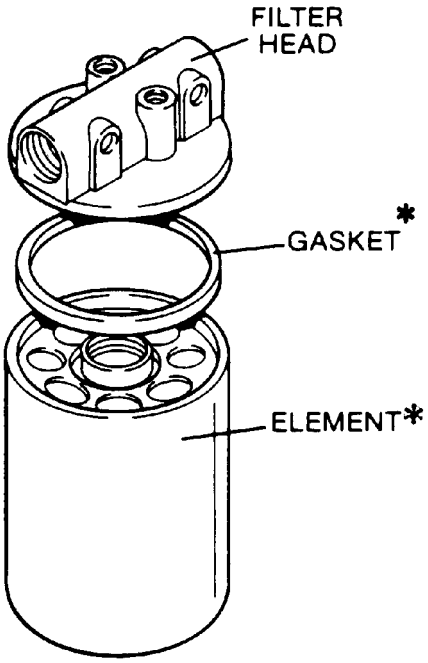
Refer to Figure 7-2. Fluid filter maintenance should be performed when one or more of the following items occurs:

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

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

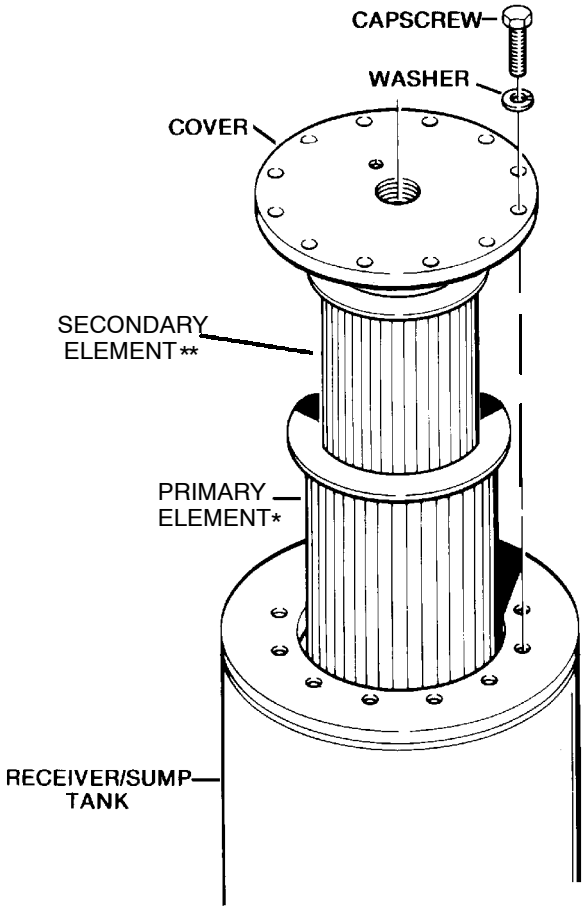
1. Using a strap wrench, remove the old element and gasket.
2. Clean the gasket seating surfaces.

Figure 7-2 Compressor Fluid Filter (P/N 02250054-605)



* Repair Kit P/N 250025-526

Figure 7-3 Separator Element Replacement



* Replacement element P/N 02250061-137 (primary)

** Replacement element P/N 02250061-138 (secondary)

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

SEPARATOR ELEMENT MAINTENANCE

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

1. Relieve all pressure from the sump tank and package pipework.
2. Disconnect all pipework connected to the sump cover.
3. Loosen and remove the twelve (12) hex head capscrews (3/4" x 2 1/2") from the cover plate.

4. Lift the cover plate from the sump.
5. Remove the two (2) nested separator elements.
6. Scrape the old gasket material from the cover and sump flange – avoid dropping any scraps into the sump.
7. Inspect the sump vessel for rust, dirt, etc.
8.

⚠ WARNING

DO NOT remove grounding staples from the gaskets. DO NOT use any type of gasket eliminator. Doing so will interfere with grounding circuit and may cause severe shock.

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

9. Replace the cover plate and re-fasten washer/capscrew assemblies to 155 ft.-lbs. (211Nm).
10. Re-connect all pipework, making sure the return lines extend within 1/4" (6.4mm) from the bottom of each element. This will insure proper fluid return during operation.
11. Clean the return line strainers.

SHAFT COUPLING MAINTENANCE

Refer to Figure 7-4. The compressor unit and motor are rigidly connected via a rigid adaptor piece, thus the shafts are maintained in proper alignment at assembly. For reference only, the allowable angular and parallel shaft misalignments are presented in Figure 7-5. 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.

INSPECTION/REMOVAL OF FLEXIBLE ELEMENT

1. Loosen fasteners securing wireform guard to the distance piece and remove to allow access to the coupling assembly.
2. Loosen and remove all capscrews securing each flexible element half to the shaft hubs.
3. Inspect each element body for signs of tears or separation away from the metal flanges – if any faults are found, elements must be replaced and Sullair contacted for further assistance.
4. Reassemble in reverse order. Capscrews must be re-torqued to 30 ft.-lbs. (40.7Nm) (dry). Please note that capscrews have self-locking patches good for two re-uses, but the application of a thread-locking adhesive increases this number. **DO NOT LUBRICATE CAPSCREW THREADS!**

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

Figure 7-4 Drive Coupling

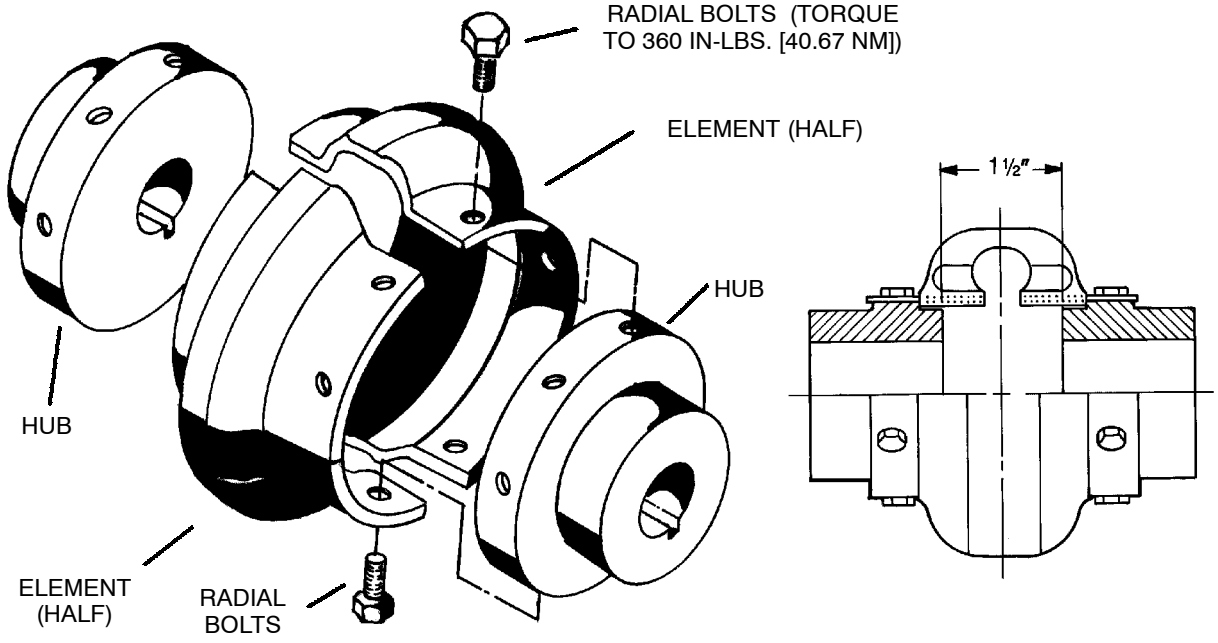


Figure 7-5 Drive Coupling Alignment

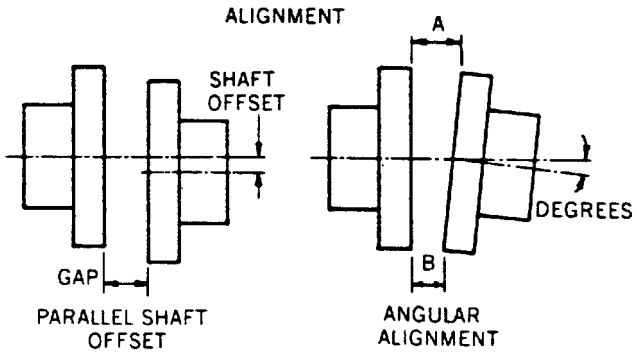


Table 1 - Installation Data

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

(l) Angular misalignment in inches equals maximum A minus minimum B. DO NOT exceed values in table above.

8.1 INTRODUCTION

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

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

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

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

Should your problem persist after making the recommended check, consult your nearest Sullair representative or the Sullair Corporation factory toll free at 1-800-SULLAIR.

8.2 TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	REMEDY
T1 HI Message	Discharge Temperature Exceeded 225° F (107 ° C) for Pre-Alarm	
	Discharge Temperature Exceeded 235° F (113°C) for Shutdown	
	Ambient Temperature Exceeded 105° F (41 °C)	Improve local ventilation (i.e., remote intake of process and/or cooling air.
	Fluid Level in Sump is Too Low	Check/correct fluid level.
	Thermal Valve Malfunctioned	Check/replace thermal valve.
	Cooler Fins are Dirty	Clean cooler fins.
	Water Flow is Low (water-cooled packages only)	Check cooling water supply (i.e., closed valves).
	Water Temperature is High (water-cooled packages only)	Increase water flow, lower water temperature.
	Cooler is Plugged (water-cooled packages only)	Clean tubes and/or shell - if tube plugging persists, provide cleaner water.
	Temperature RTD Malfunction	Check connections from RTD. If adequate, replace RTD.
P1 HI Message	P1 MAX - 3psi (.2 bar) Exceeded for Pre-Alarm	
	P1 MAX Exceeded for Shutdown	
	Discharge Pressure Exceeded	
	Shutdown Level Because:	
	Unloading Device (i.e., Blowdown Valve, Inlet Poppet Valve, Optional Spiral Valve) Failed to Operate	Check operation of unloading device.
	Pressure Regulator Maladjusted	Check operation of pressure regulator.
	Solenoid Valve Failed to Operate	Check operation of solenoid valve.
	Control Air Signal Leaks	Check tubework feeding control signal for leaks.
	Control Air Signal Filter Clogged	Service filter assembly.
SEP MNTN Message	Plugged Separator	Replace separator elements.
	dP1 > 10 psi (0.7 bar)	Check P1 & P2 pressure transducers.
COMPRESSOR DOES NOT BUILD FULL DISCHARGE PRESSURE	Air Demand Exceeds Supply	Check air service lines for open valves or leaks.

8.2 TROUBLESHOOTING (Continued)

SYMPTOM	PROBABLE CAUSE	REMEDY
COMPRESSOR DOES NOT BUILD FULL DISCHARGE PRESSURE (CONT.)	Inlet Air Filter Clogged	Check for maintenance message on Supervisor II display. Inspect and/ or change element.
	Inlet Valve Not Fully Open	Check actuation of inlet poppet valve.
	Pressure Sensor and/or Connections at Fault	Check connections from transducer. If adequate, replace transducer.
OIL MNTN Message	Plugged Oil Filter	Replace oil filter.
	Oil Differential dP2 > 20 psi (1.4 bar)	Check oil differential switch, switch open or if machine has P3 & P4 pressure transducer, check transducers.
LINE PRESSURE RISES ABOVE UNLOAD SETTING	Pressure Sensor P2 at Fault	Check connections from transducer. If adequate, replace transducer.
	Unloading Device (i.e., Blowdown Valve, Inlet Poppet Valve, Optional Spiral Valve) Failed to Operate	Check operation of unloading device
	Solenoid Valve Failed to Operate	Check operation of solenoid valve.
	Control Air Signal Leaks	Check tubework feeding control signal for leaks.
	Control Air Signal Filter Clogged filter assembly service.	See compressor Operator's Manual for
EXCESSIVE FLUID CONSUMPTION	Clogged Return Line Strainer or Orifice placement kit available. Clean orifice.	Clean strainer screen and o - ring. Re-
	Damaged or Improperly Gasketed Separator Elements	Inspect separator elements and gaskets. Replace if damaged.
	Fluid System Leaks	Check tube/pipework for leaks.
	Fluid Level Too High	Drain excess fluid.
	Excessive Fluid Foaming	Drain and change fluid.

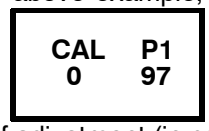
NOTE ON TRANSDUCERS:

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

8.3 CALIBRATION

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

To enter calibration mode, you must press the following keys in sequence while in the default status display mode: " ⚙ ", "▲","▼ ☼" **, PROG.** Once in calibration mode, you will see a screen like the following:In the above example, "0" refers to the



amount of adjustment (in psi or °F, "97" (6.7 bar) refers to the current value of P1).To make adjustments, Press the "▲" (UP ARROW) key to increase the value, press the "▼ ☼" (DOWN ARROW / LAMP TEST) key to decrease the value. The number on the left will increase or decrease always showing the total amount of adjustment. Maximum adjustment is ± 7. The **DISPLY** key exits, wiping out changes to the current item, while saving changes to any previous items. The **PROG** key saves the current item and advances to the next. All temperatures and pressures may be calibrated individually.

9.1 PROCEDURE FOR ORDERING PARTS

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

The genuine Sullair service parts listed meet or exceed the demands of this compressor. Use of replacement parts other than those approved by Sullair Corporation may lead to hazardous conditions over which Sullair Corporation has no control. Such conditions include, but are not limited to, bodily injury and compressor failure.

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

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

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

9.2 RECOMMENDED SPARE PARTS LIST

DESCRIPTION	KIT NUMBER	QUANTITY
element for air filter 02250060-554	**040899**	1
repair kit for blowdown valve 250030-276	**02250045-132**	1
repair kit for thermal valve	**001168**	1
repair kit for solenoid valve 250035-291	**250038-848**	1
replacement coil for solenoid valve 250035-291	**250035-292**	1
repair kit for solenoid valve 250038-674	**250038-673**	1
replacement coil for solenoid valve 250038-674	**250031-738**	1
repair kit for solenoid valve 250031-695	**250031-737**	1
replacement coil for solenoid valve 250031-695	**250031-738**	1
repair kit for solenoid valve 250038-675	**250038-672**	1
replacement coil for solenoid valve 250038-675	**250038-730**	1
repair kit for solenoid valve 250038-755	**250038-676**	1
replacement coil for solenoid valve 250038-755	**250038-730**	1
replacement solenoid for solenoid valve 250038-163	**250031-322**	1
replacement valve for solenoid valve 250038-163	**250031-278**	1
replacement timer for solenoid valve 250038-163	**250038-164**	1
repair kit for separator/trap 410143	**250033-038**	1
repair kit for fluid filter 02250054-605	**250025-526**	1
repair kit for air inlet valve 02250060-988	**02250053-273**	1
repair kit for pressure regulator 250017-280	**250019-453**	1
repair kit for return line strainer 241771	**241772**	1
repair kit primary separator element w/gaskets	**02250061-137**	1
repair kit secondary separator element w/gaskets	**02250061-138**	1

(Continued on page 36)

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

9.2 RECOMMENDED SPARE PARTS LIST (CONTINUED)

DESCRIPTION	KIT NUMBER	QUANTITY
replacement element for heavy duty filter (primary)	**409853**	1
replacement element for heavy duty filter (secondary)	**409854**	1
repair kit for air cylinder removal	**606174-001**	1
repair kit for compressor shaft seal	**02250045-161**	1
lubricant, 24KT (5 gallon container)	**046850-001**	1
lubricant, Sullube 32 (5 gallon container)	**250022-669**	1
lubricant, Sullube 32 (55 gallon drum)	**250022-670**	1
repair kit for pressure regulator 408275 (spiral valve)	**250028-693**	1
repair kit for minimum pressure/check valve 242405	**001176**	1
document, Protocol **(I)**	**02250057-696**	1

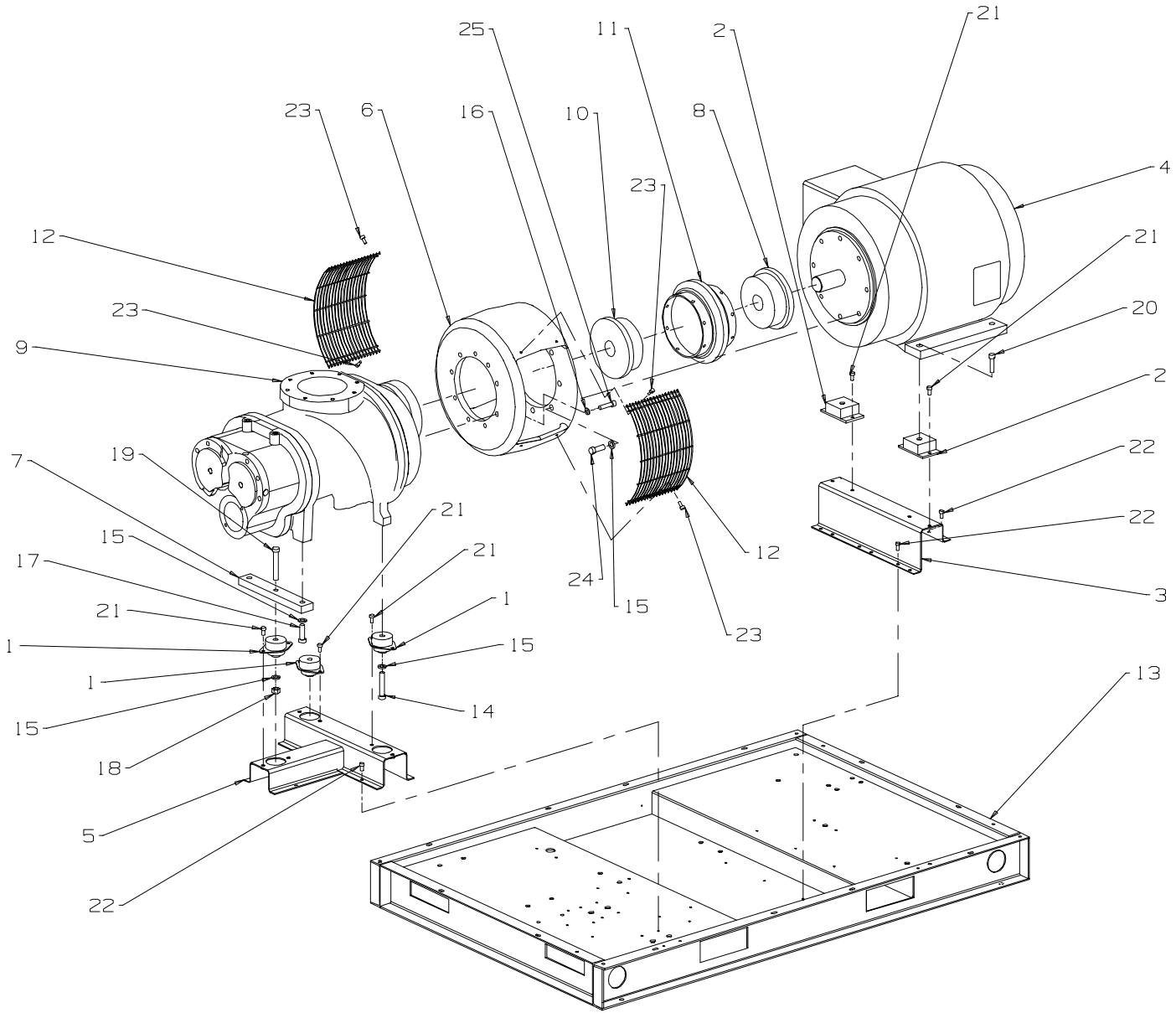
(I) This document is required to program your personal computer to communicate with the Supervisor II panel.

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

NOTES

ILLUSTRATIONS AND PARTS LIST

9.3 FRAME, MOTOR, COMPRESSOR AND PARTS



9.3 FRAME, MOTOR, COMPRESSOR AND PARTS

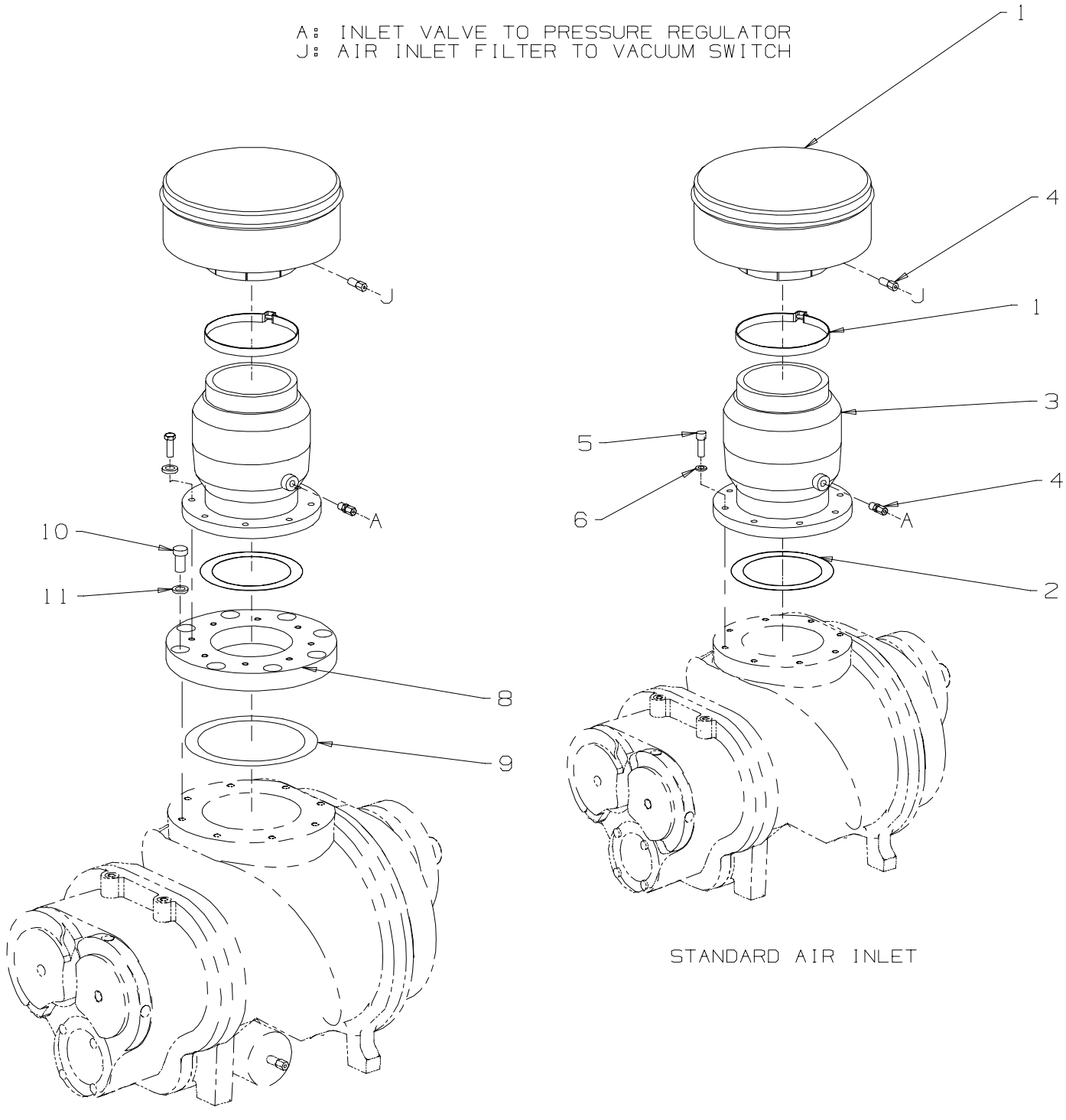
key number	*description*	*part number*	*quantity*
1	isolator, vibration compr	250042-541	3
2	isolator, vibration 670-7	250042-756	2
3	support, motor 20-100	02250052-233	1
4	motor, 100hp 460/3/60 odp	consult factory	1
5	support, unit	02250052-232	1
6	adapter, compr/motor	250042-486	1
7	support, unit 20-100 back foot	250042-454	1
8	hub, coupling 2 1/8" e50	407986	1
9	unit, tdx-2-04170 **(I)**	consult factory	1
10	hub, coupling 2" e50	407985	1
11	element, coupling e50	406631	1
12	guard, coupling	02250050-131	2
13	frame, main 12/16	250015-817	1
14	capscrew, hex gr5 5/8"-11 x 3 1/4"	828610-325	2
15	washer, lock reg 5/8"	837510-156	13
16	washer, lock reg 1/2"	837508-125	9
17	capscr, hex gr5 5/8"-11 x 2"	828610-200	2
18	nut, hex 5/8"	824210-559	1
19	capscr, hex gr5 5/8"-11 x 4"	828610-400	1
20	screw, hex ser wash 1/2" x 2"	829706-200	2
21	screw, hex ser wash 3/8" x 3/4"	829706-075	10
22	screw, tc-hex 3/8"-16 x 3/4"	834206-075	12
23	screw, ser wash 5/16" x 3/4"	829705-075	8
24	capscr, hex gr5 5/8"-11 x 1 3/4"	828610-175	8
25	capscrew, hex gr5 1/2"-13 x 2"	828608-200	9

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

The shaft seal is not considered part of the compressor unit in regard to the 2 year warranty. The normal Sullair parts warranty applies. For shaft seal repairs, order shaft seal repair kit no. 02250045-161.

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

9.4 AIR INLET ASSEMBLY



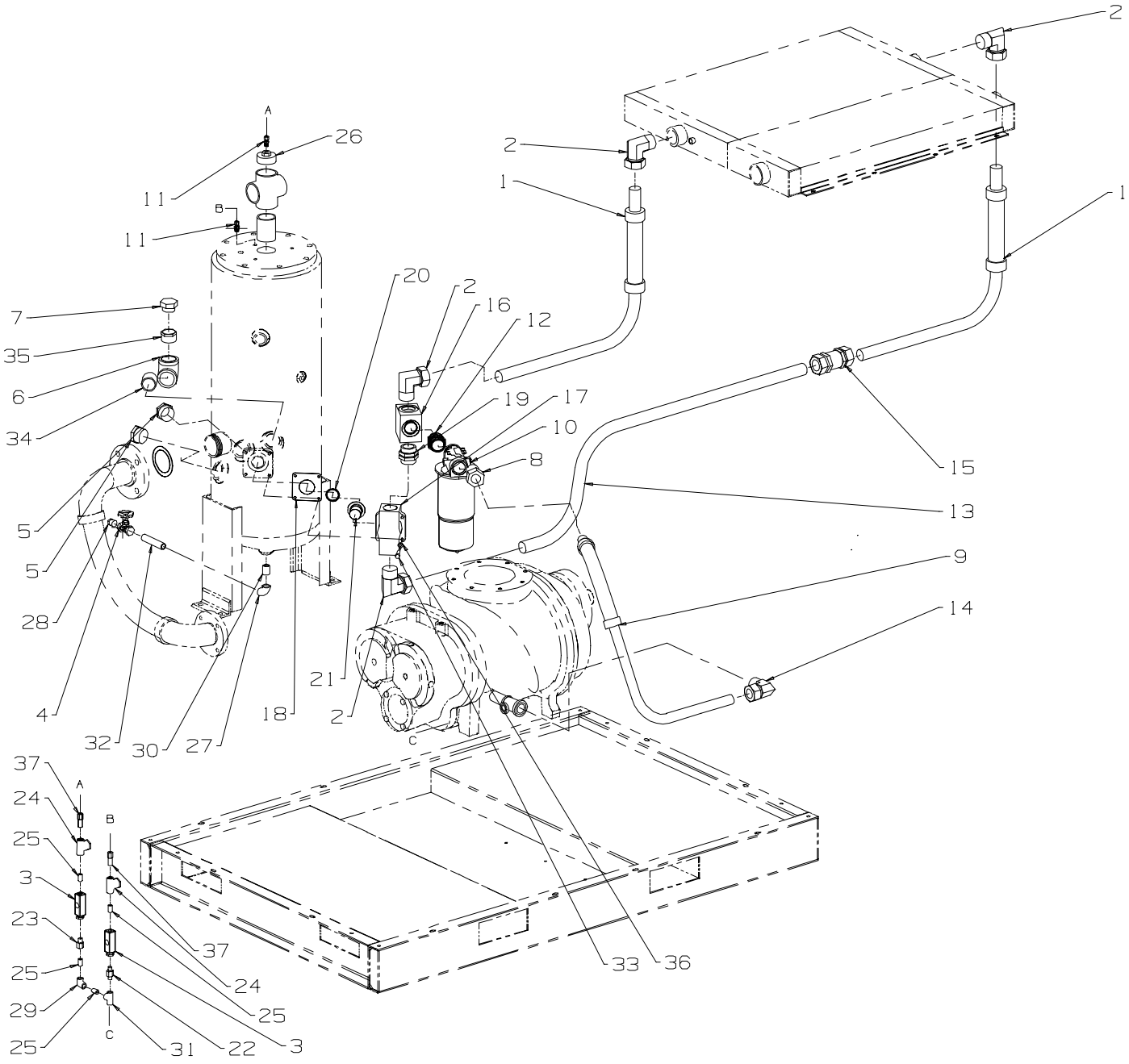
9.4 AIR INLET ASSEMBLY

key number	*description*	*part number*	*quantity*
1	filter, air inlet 20–100 **(I)**	02250060–554	1
2	gasket, 1/32" x 6 1/2" x 8 1/4"	040696	1
3	valve, air inlet 20–100 **(II)**	02250060–988	1
4	connector, tube m 1/4" x 1/4"	810204–025	3
5	capscrew, hex gr 5 1/2" x 1 1/2"	828608–150	8
6	washer, lock reg 1/2"	837508–125	8
7	valve, spiral (option) **(III)**	–	1
8	adapter, air inlet ls–20	02250065–044	1
9	gasket, 8" inlet valve	040422	1
10	capscrew, ferry head hd 3/4"–10 x 1 1/2"	828412–150	8
11	washer, lock reg 3/4"	837512–188	8

(I) For maintenance on air inlet filter no. 02250060–554, order replacement element no. 040899.
(II) For maintenance on air linlet valve no. 02250060–988, order repair kit no. 02250053–273.
(III) Spiral valve option includes parts' key no.'s 8–11.

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

9.5 COMPRESSOR LUBRICATION SYSTEM (AIR-COOLED)



9.5 COMPRESSOR LUBRICATION SYSTEM (AIR-COOLED)

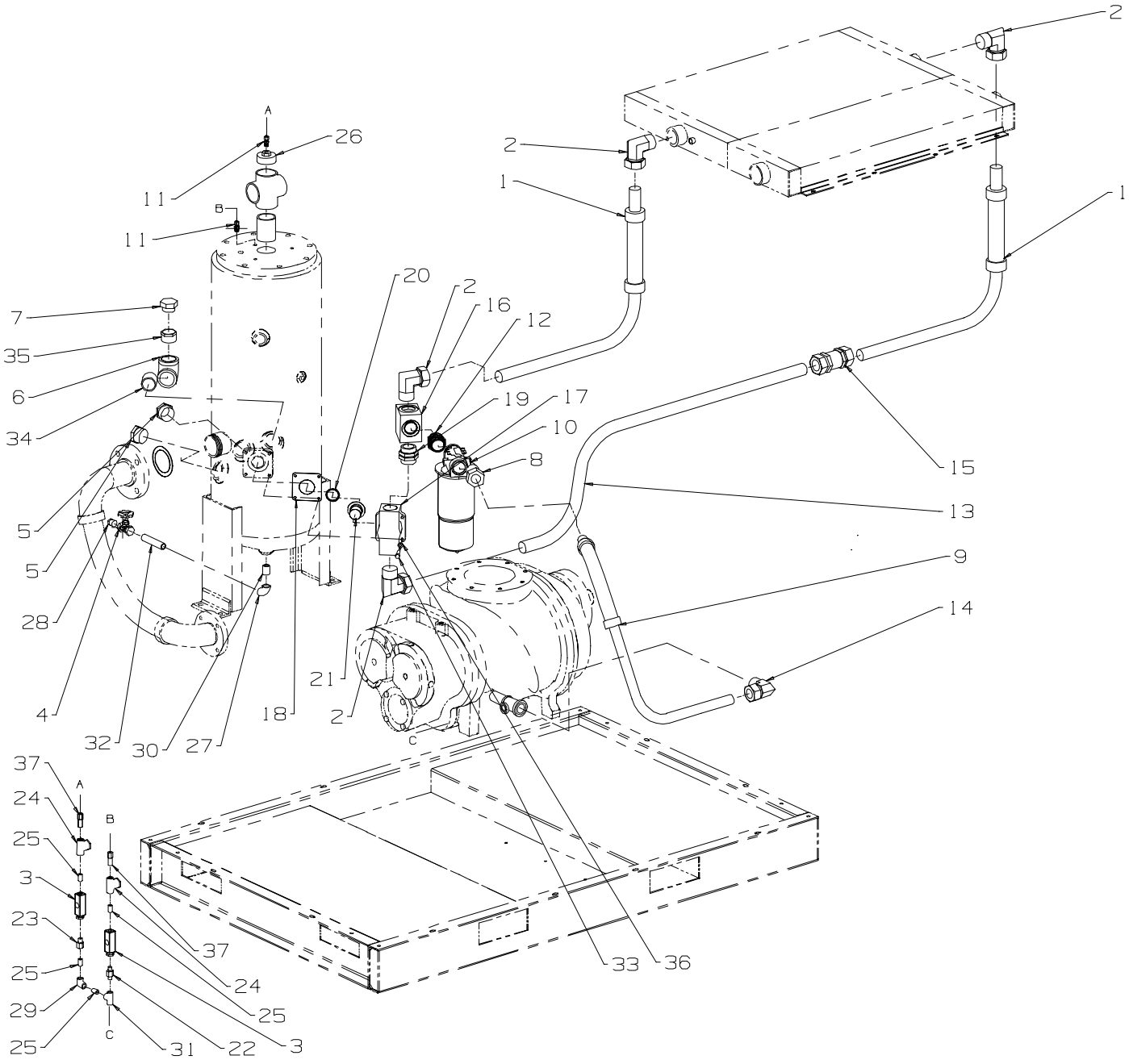
key number	*description*	*part number*	*quantity*
1	hose, corrugated 1 1/2" stl st	02250053-884	2
2	elbow, tube str thred 1 1/2"	811615-150	4
3	glass, sight	046559	5
4	valve, 1/2"	041007	1
5	glass, fluid level sight	040279	2
6	elbow, pipe 90° 1 1/2"	801515-060	1
7	plug, o-ring boss sae	040029	1
8	connector, tube 1 5/8"-12 x 1 1/4"	811820-125	1
9	hose,assy corrugated	02250055-088	1
10	filter, fluid 1 5/8"-12 **(I)**	02250054-605	1
11	connector, flex 1/4" x 1/4"	020169	4
12	adapter, sae 1 5/8"-12	02250055-015	1
13	tube,1 1/2" therm vlv/ fluid cool	02250054-019	1
14	elbow, tube 1 1/4"	810520-125	1
15	union, tube 1 1/2"	811324-150	1
16	tee,1 7/8" x 1 7/8" x 1 5/8"	02250055-013	1
17	housing, thermal valve **(II)**	02250054-601	1
18	gasket, thermal valve	049812	1
19	adapter, sae 1 7/8"-12 x 1 7/8"-12	02250055-014	1
20	o-ring, quad	046425	1
21	element, thermal valve	049542	1
22	orifice, 3/32"	022033	1
23	orifice, 1/32"	040381	1
24	strainer, v-type **(III)**	241771	4
25	nipple,pipe 1/4" x cl sc 80	822204-000	4
26	bushing,red 2" x 1/4" 150#	802108-010	1
27	elbow, pipe 1/2"	801515-020	1
28	plug, pipe 1/2" steel	807800-020	1
29	elbow, pipe 1/4"	801515-010	1
30	nipple, pipe 1/2" x cl sc 80	822208-000	1
31	tee, straight 1/4" galv	804415-010	1

(Continued on page 45)

(I) For maintenance on flulid filter no. 02250054-605, order replacement element no. 250024-520.
(II) For maintenance on thermal valve, order repair kit no. 001168.
(III) For maintenance on strainer no 241771, order repair kit no. 241772.

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

9.5 COMPRESSOR LUBRICATION SYSTEM (AIR-COOLED)

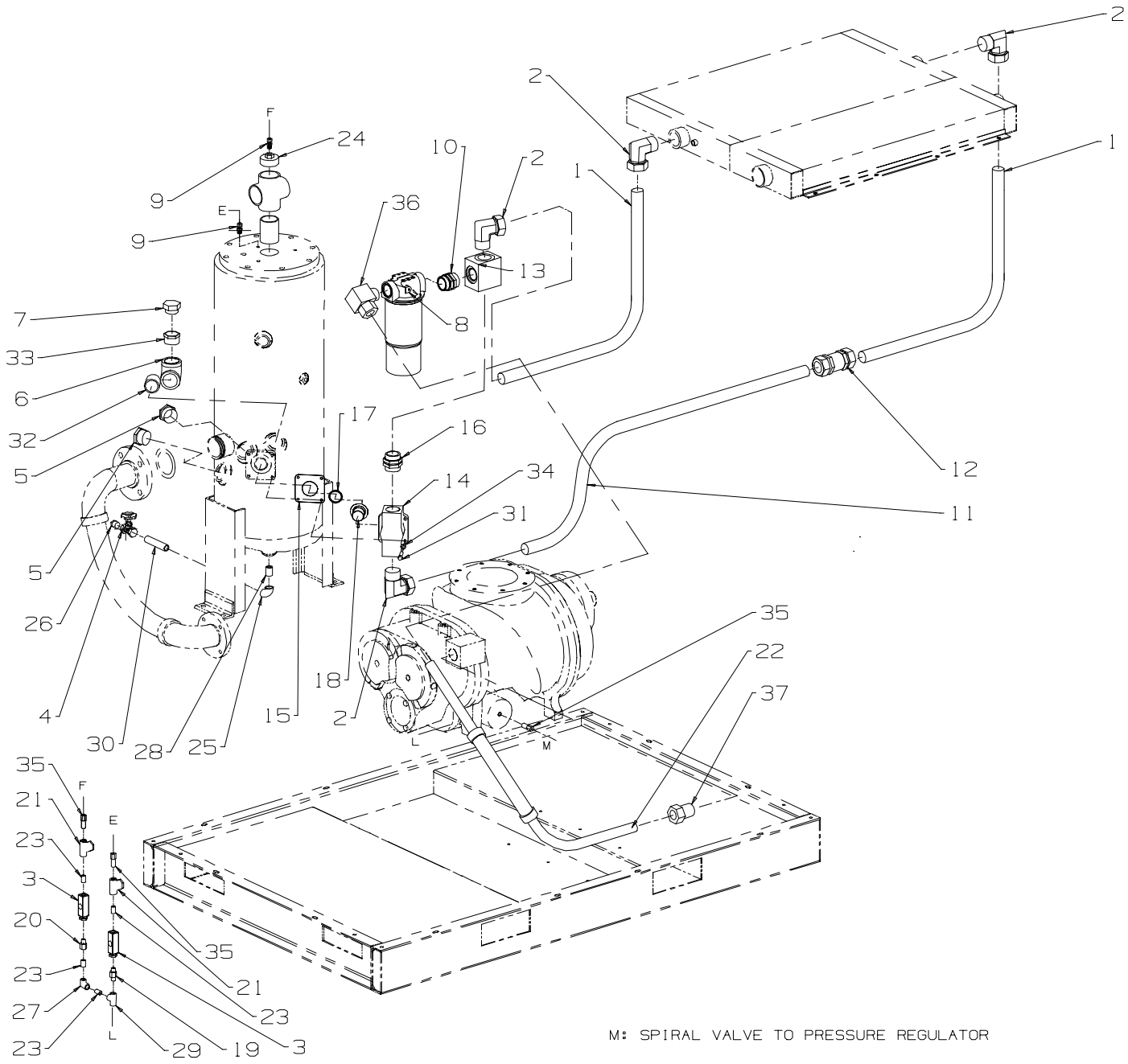


9.5 COMPRESSOR LUBRICATION SYSTEM (AIR-COOLED) (CONTINUED)

key number	*description*	*part number*	*quantity*
32	nipple, pipe 1/2” x 4.0” sc 40	822108-040	1
33	capscrew, hex gr5 3/8”-16 x 1 1/2”	828606-150	4
34	nipple, pipe 1-1/2” x cl sc 40	822124-000	1
35	adapter, filler	020044	1
36	washer, lock reg 3/8”	837506-094	4
37	connector, tube m 1/4” x 1/4”	810204-025	2

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

9.6 COMPRESSOR LUBRICATION SYSTEM WITH SPIRAL VALVE (AIR-COOLED)



9.6 COMPRESSOR LUBRICATION SYSTEM WITH SPIRAL VALVE (AIR-COOLED)

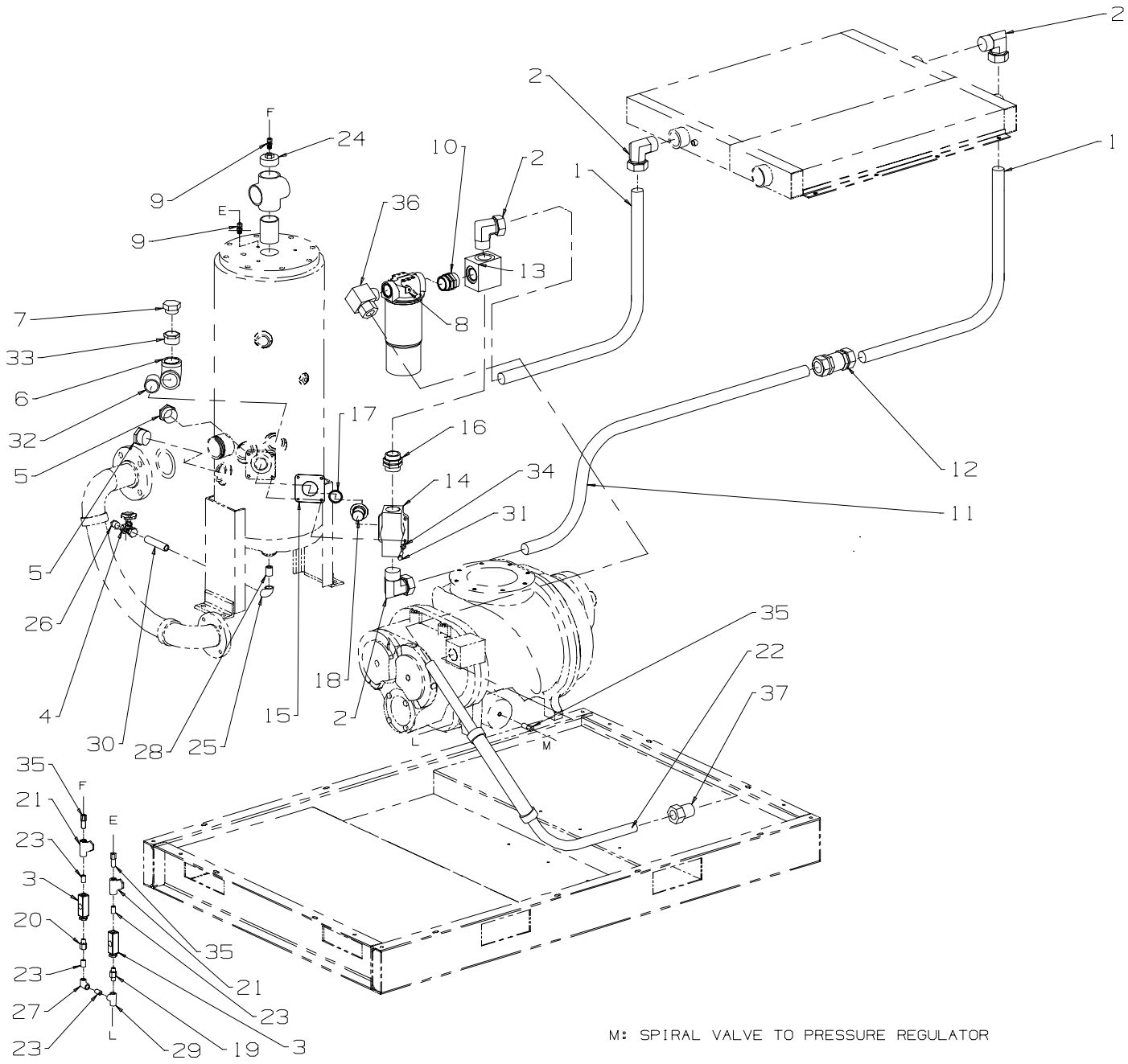
key number	*description*	*part number*	*quantity*
1	tube, tv to cooler ac 1 1/2”	02250060-571	2
2	elbow, tube str thrd 1 1/2”	811615-150	4
3	glass, sight	046559	2
4	valve, 1/2”	041007	1
5	glass, fluid level sight	040279	2
6	elbow, pipe 90° 1 1/2”	801515-060	1
7	plug, o-ring boss sae	040029	1
8	filter, fluid 1 5/8”-12 **(I)**	02250054-605	1
9	connector, flex 1/4” x 1/4”	020169	2
10	adapter, sae 1 5/8”-12	02250055-015	1
11	tube,1 1/2” therm vlv/oilcool	02250054-019	1
12	union, tube 1 1/2”	811324-150	1
13	tee, 1 7/8” x 1 7/8” x 1 5/8”	02250055-013	1
14	housing, thermal valve **(II)**	02250054-601	1
15	gasket, thermal valve	049812	1
16	adapter, sae 1 7/8”-12	02250055-014	1
17	o-ring, quad	046425	1
18	element, thermal valve	049542	1
19	orifice, 3/32”	022033	1
20	orifice, 1/32”	040381	1
21	strainer, v-type **(III)**	241771	2
22	hose, assy corrugated st stl 1	02250064-784	1
23	nipple, pipe 1/4” x cl sc 80	822204-000	4
24	bushing, red 2” x 1/4” 150#	802108-010	1
25	elbow, pipe 1/2”	801515-020	1
26	plug, pipe 1/2” steel	807800-020	1
27	elbow, pipe 1/4”	801515-010	1
28	nipple, pipe 1/2” x cl sc 80	822208-000	1
29	tee, straight 1/4” galv	804415-010	1
30	nipple, pipe 1/2” x 4.0” sc 40	822108-040	1
31	capscrew, hex gr5 3/8”-16 x 1 1/2”	828606-150	4

(Continued on page 49)

(I) For maintenance on flulid filter no. 02250054-605, order replacement element no. 250024-520.
(II) For maintenance on thermal valve, order repair kit no. 001168.
(III) For maintenance on strainer no 241771, order repair kit no. 241772.

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

9.6 COMPRESSOR LUBRICATION SYSTEM WITH SPIRAL VALVE (AIR-COOLED)

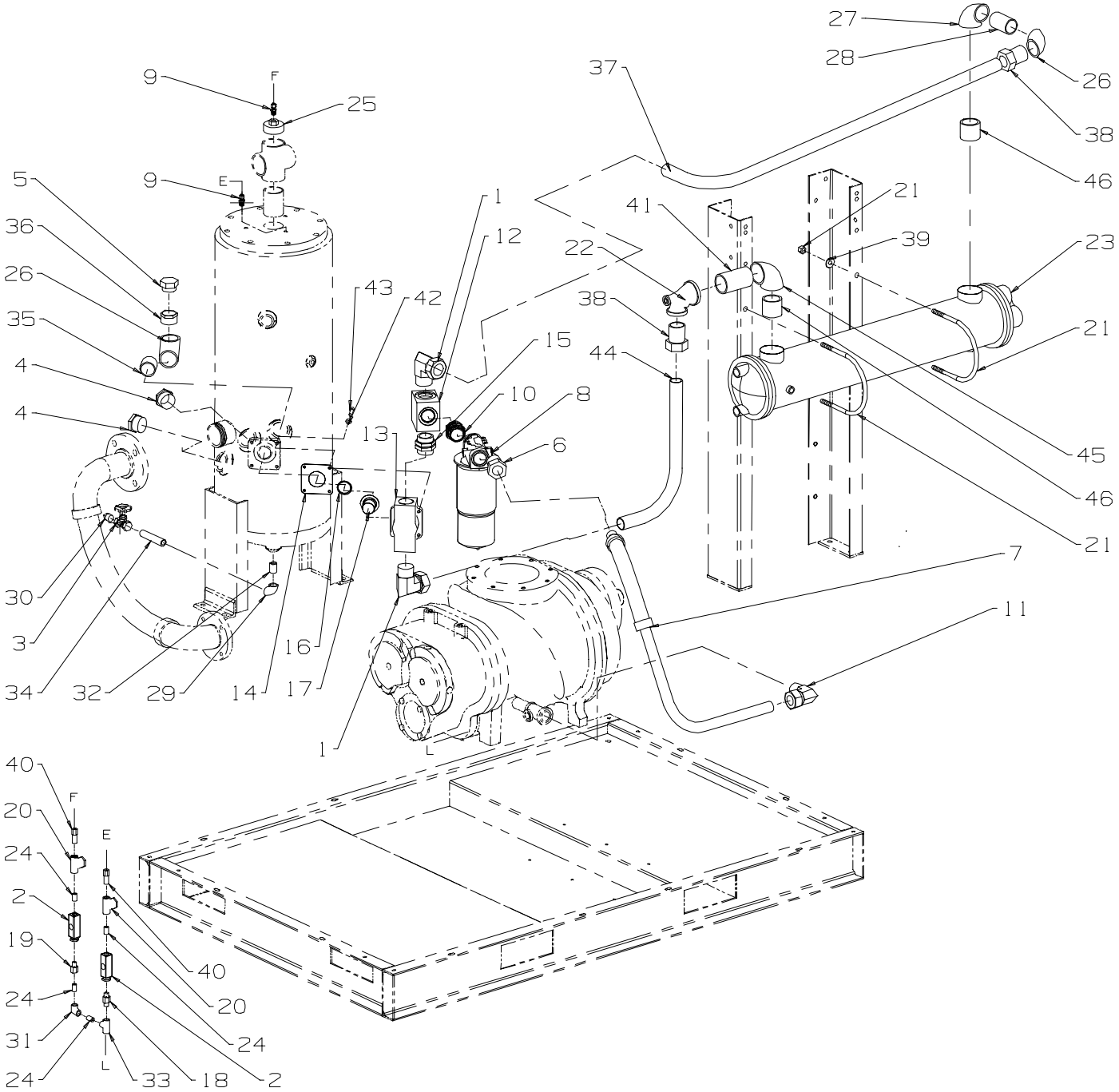


9.6 COMPRESSOR LUBRICATION SYSTEM WITH SPIRAL VALVE (AIR-COOLED) (CONTINUED)

key number	*description*	*part number*	*quantity*
32	nipple, pipe 1 1/2” x cl sc 40	822124-000	1
33	adapter, filler	020044	1
34	washer, lock reg 3/8”	837506-094	4
35	connector, tube m 1/4” x 1/4”	810204-025	3
36	elbow, tube str thrd 1 1/4”	811615-125	1
37	connector, tube m 1 1/4” x 1 1/4”	810220-125	1

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

9.7 COMPRESSOR LUBRICATION SYSTEM (WATER-COOLED)



9.7 COMPRESSOR LUBRICATION SYSTEM (WATER-COOLED)

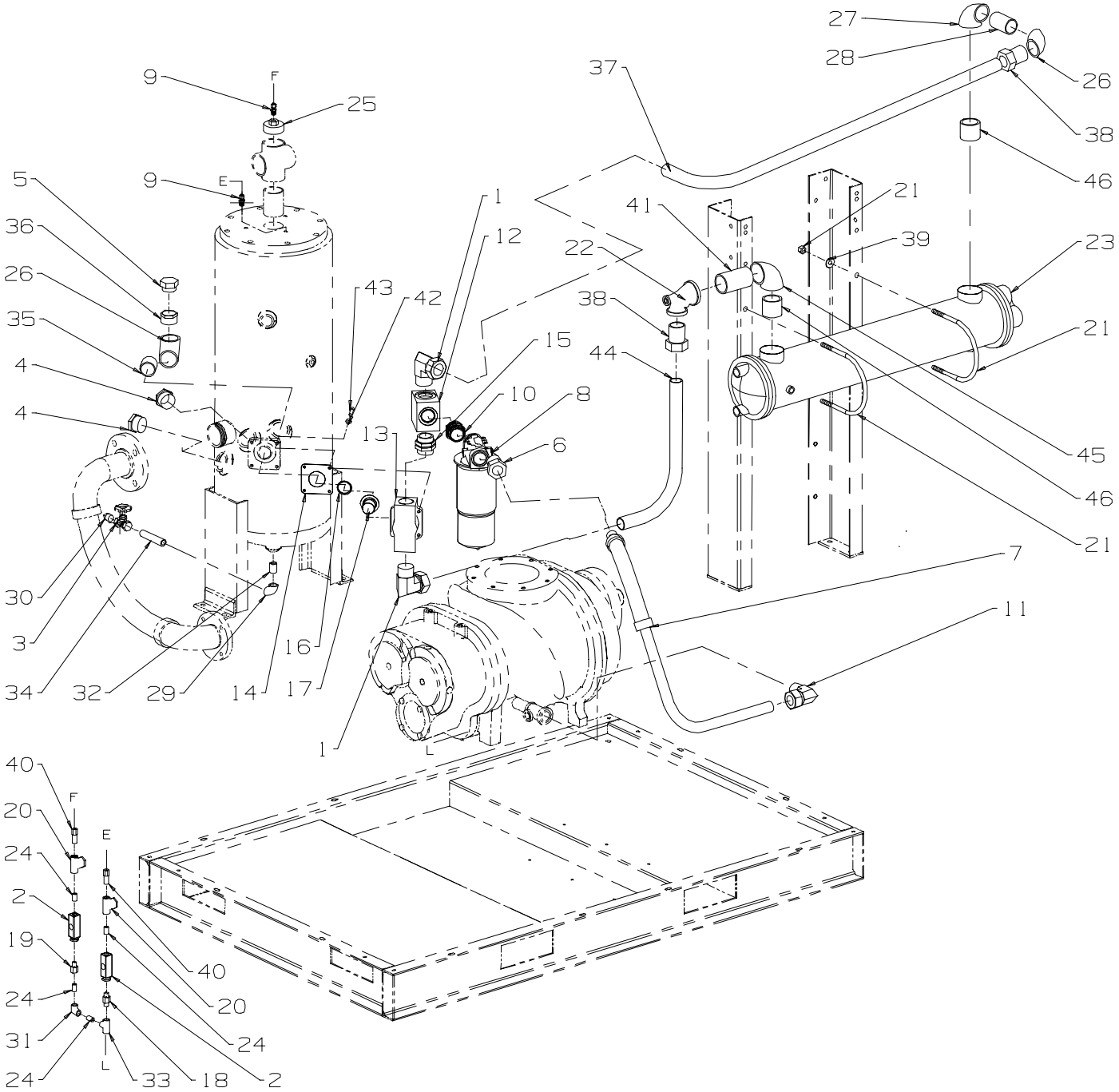
key number	*description*	*part number*	*quantity*
1	elbow, tube str thrd 1 1/2”	811615-150	2
2	glass, sight	046559	2
3	valve, 1/2”	041007	1
4	glass, fluid level sight	040279	2
5	plug, o-ring boss sae	040029	1
6	connector, tube 1 5/8”-12 x 1 1/4”	811820-125	1
7	hose, assy corrugated	02250055-088	1
8	filter, fluid 1 5/8”-12 **(I)**	02250054-605	1
9	connector, flex 1/4” x 1/4”	020169	2
10	adapter, sae 1 5/8”-12	02250055-015	1
11	elbow, tube 1 1/4”	810520-125	1
12	tee, 1 7/8” x 1 7/8” x 1 5/8”	02250055-013	1
13	housing, thermal valve **(II)**	02250054-601	1
14	gasket, thermal valve	049812	1
15	adapter, sae 1 7/8”-12	02250055-014	1
16	o-ring, quad	046425	1
17	element, thermal valve	049542	1
18	orifice, 3/32”	022033	1
19	orifice, 1/32”	040381	1
20	strainer, v-type **(III)**	241771	2
21	u-bolt, 6” pipe	829008-600	2
22	tee, reducing 2” x 1/2” x 1 1/2”	802208-026	1
23	exchanger, heat (fluid)	250018-411	1
24	nipple, pipe 1/4” x cl sc 80	822204-000	4
25	bushing, red 2” x1/4” 150#	802108-010	1
26	elbow, pipe 1 1/2”	801515-060	2
27	elbow, red 2” x1 1/2” 150#	801608-060	1
28	nipple,pipe 1 1/2” x 3.0” sc 40	822124-030	1
29	elbow, pipe 1/2”	801515-020	1
30	plug, pipe 1/2” steel	807800-020	1
31	elbow, pipe 1/4”	801515-010	1

(Continued on page 53)

(I) For maintenance on flulid filter no. 02250054-605, order replacement element no. 250024-520.
(II) For maintenance on thermal valve, order repair kit no. 001168.
(III) For maintenance on strainer no 241771, order repair kit no. 241772.

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

9.7 COMPRESSOR LUBRICATION SYSTEM (WATER-COOLED)

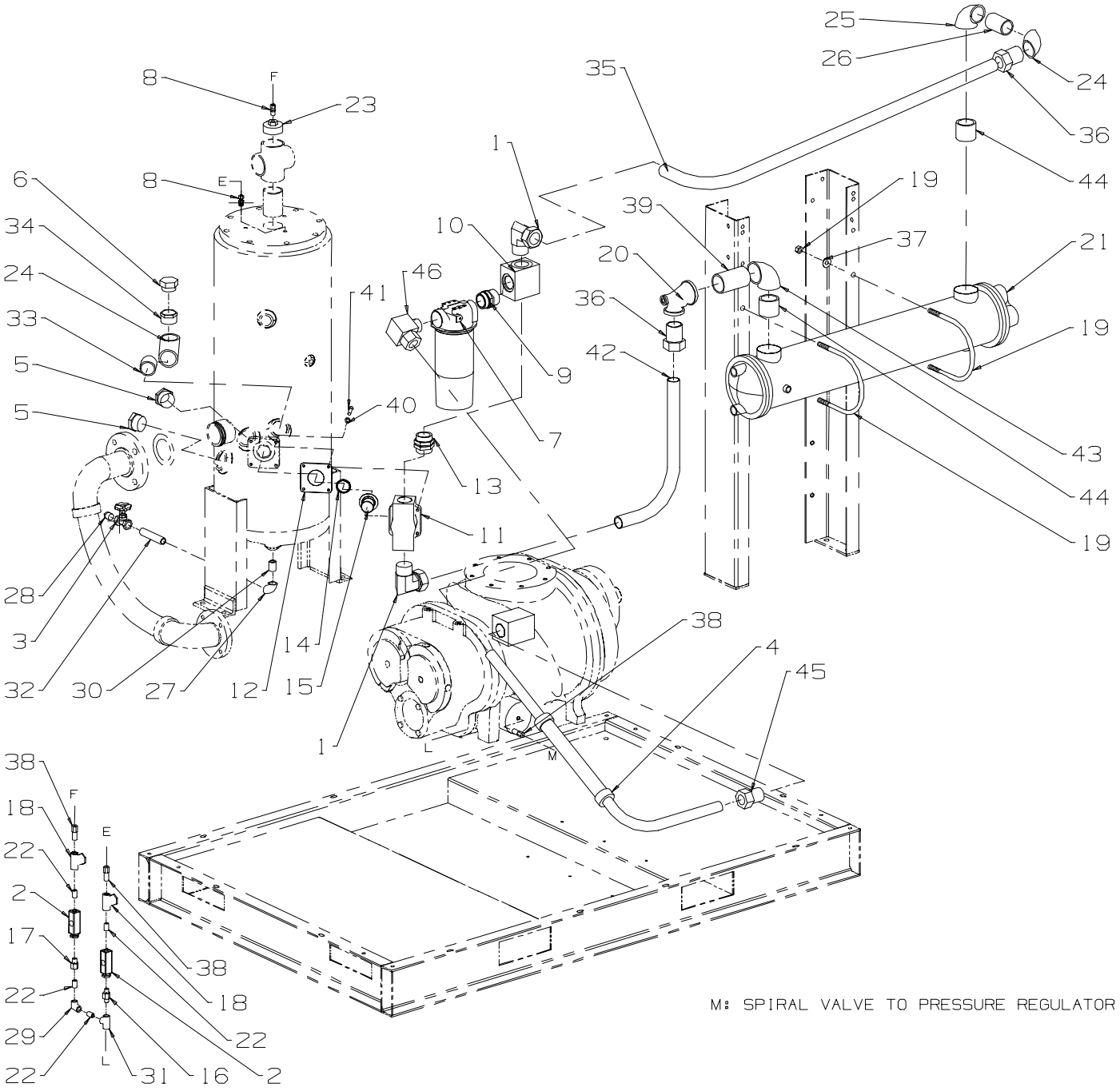


9.7 COMPRESSOR LUBRICATION SYSTEM (WATER-COOLED) (CONTINUED)

key number	*description*	*part number*	*quantity*
32	nipple,pipe 1/2” x cl sc 80	822208-000	1
33	tee, straight 1/4” galv	804415-010	1
34	nipple, pipe 1/2” x 4.0” sc 40	822108-040	1
35	nipple, pipe 1 1/2” x cl sc 40	822124-000	1
36	adapter, filler	020044	1
37	tube, fluid cooler to by pass tee	02250061-579	1
38	connector, tube m 1 1/2” x 1 1/2”	810224-150	2
39	washer, pl, b r 1/2”	837208-112	4
40	connector, tube m 1/4” x 1/4”	810204-025	2
41	nipple, pipe 2 x 4.0 sc 40	822132-040	1
42	washer, lock reg 3/8”	837506-094	4
43	capscrew, hex gr5 3/8”-16 x 1 1/2”	828606-150	4
44	tube, fluid therm vlv to fluid clr	02250061-577	1
45	elbow, pipe 2”	801515-080	1
46	nipple, pipe 2” x cl sc 80	822232-000	2

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

9.8 COMPRESSOR LUBRICATION SYSTEM WITH SPIRAL VALVE (WATER-COOLED)



9.8 COMPRESSOR LUBRICATION SYSTEM WITH SPIRAL VALVE (WATER-COOLED)

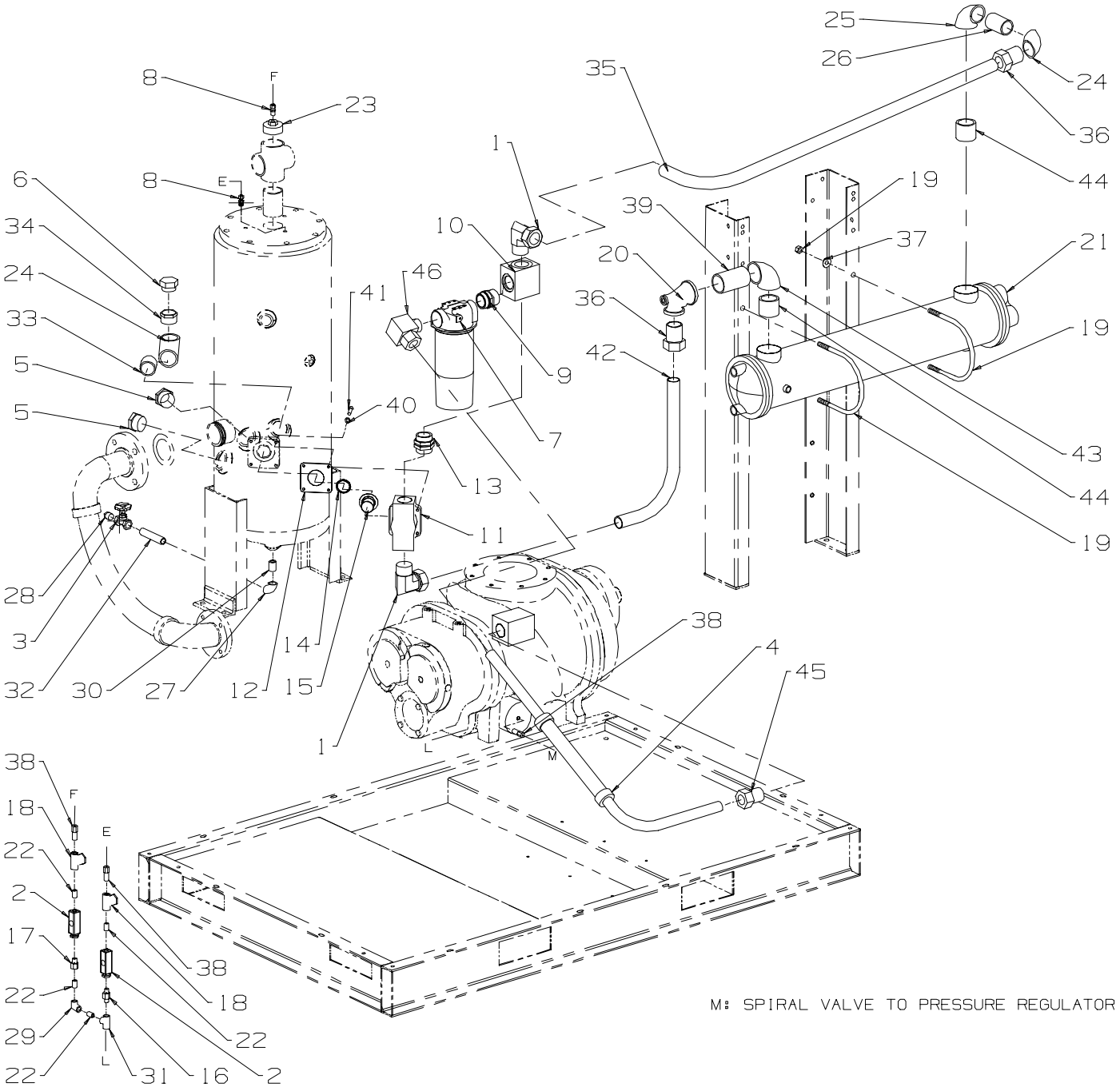
key number	*description*	*part number*	*quantity*
1	elbow, tube str thrd 1 1/2”	811615-150	2
2	glass, sight	046559	2
3	valve, 1/2”	041007	1
4	hose, corrugated 1 1/4” st. st	02250064-784	1
5	glass, fluid level sight	040279	2
6	plug, o-ring boss sae	040029	1
7	filter, fluid 1 5/8”-12 **(I)**	02250054-605	1
8	connector, flex 1/4” x 1/4”	020169	2
9	adapter, sae 1 5/8”-12	02250055-015	1
10	tee,1 7/8” x 1 7/8” x 1 5/8”	02250055-013	1
11	housing, thermal valve **(II)**	02250054-601	1
12	gasket, thermal valve	049812	1
13	adapter, sae 1 7/8”-12	02250055-014	1
14	o-ring, quad	046425	1
15	element, thermal valve	049542	1
16	orifice, 3/32”	022033	1
17	orifice, 1/32”	040381	1
18	strainer, v-type **(III)**	241771	2
19	u-bolt, 6” pipe	829008-600	2
20	tee, reducing 2” x 1/2” x 1 1/2”	802208-026	1
21	heat exchanger (fluid)	250018-411	1
22	nipple, pipe 1/4” x cl sc 80	822204-000	4
23	bushing, red 2” x 1/4” 150#	802108-010	1
24	elbow, pipe 1 1/2”	801515-060	2
25	elbow, red 2” x1 1/2” 150#	801608-060	1
26	nipple, pipe 1 1/2” x 3.0” sc 40	822124-030	1
27	elbow, pipe 1/2”	801515-020	1
28	plug, pipe 1/2” steel	807800-020	1
29	elbow, pipe 1/4”	801515-010	1
30	nipple, pipe 1/2” x cl sc 80	822208-000	1
31	tee, straight 1/4” galv	804415-010	1

(Continued on page 57)

(I) For maintenance on flulid filter no. 02250054-605, order replacement element no. 250025-526.
(II) For maintenance on thermal valve, order repair kit no. 001168.
(III) For maintenance on strainer no 241771, order repair kit no. 241772.

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

9.8 COMPRESSOR LUBRICATION SYSTEM WITH SPIRAL VALVE (WATER-COOLED)

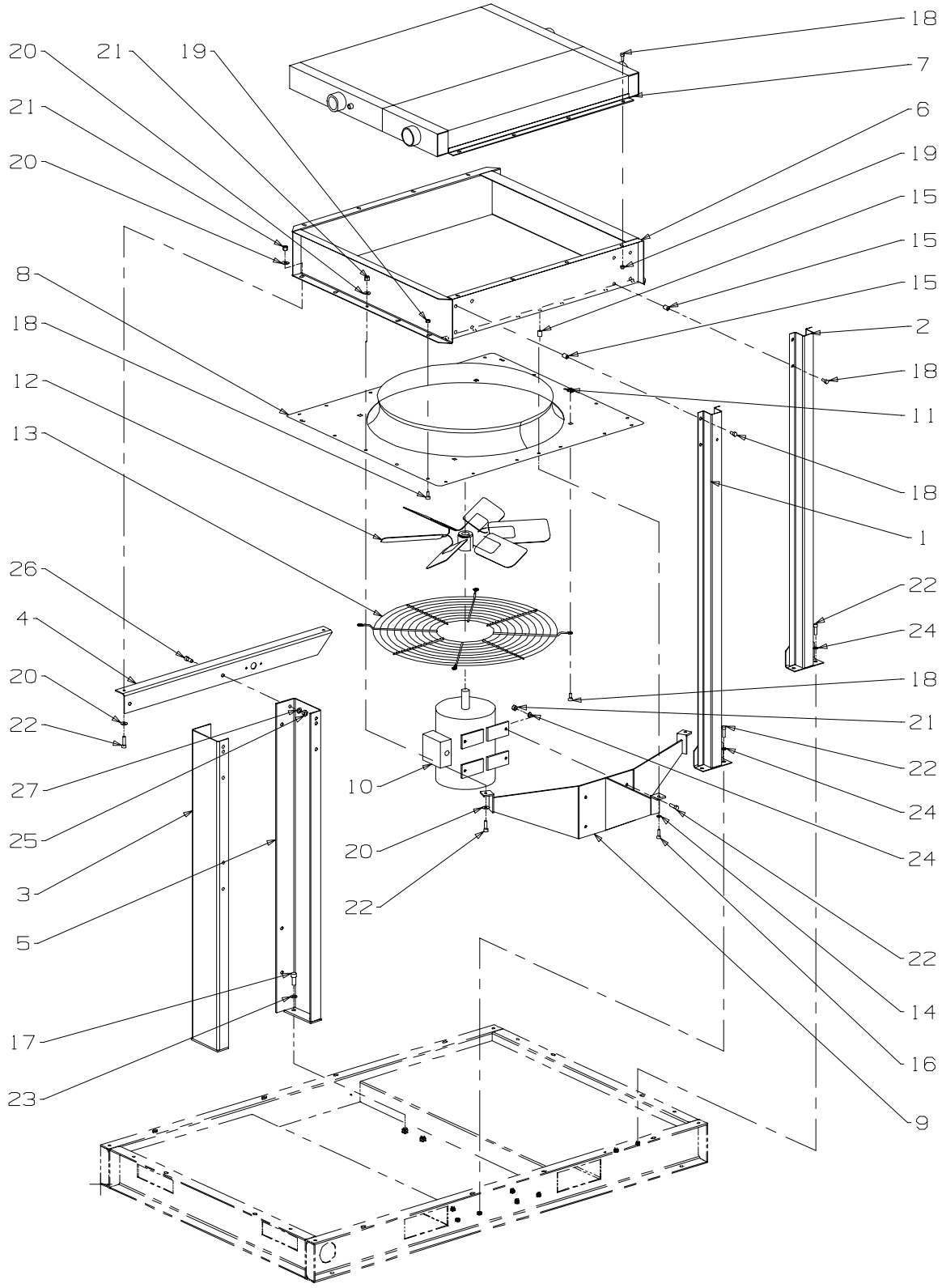


9.8 COMPRESSOR LUBRICATION SYSTEM WITH SPIRAL VALVE (WATER-COOLED) (CONTINUED)

key number	*description*	*part number*	*quantity*
32	nipple, pipe 1/2" x 4.0" sc 40	822108-040	1
33	nipple, pipe 1 1/2" x cl sc 40	822124-000	1
34	adapter, filler	020044	1
35	tube, fluid cooler to by pass tee	02250061-579	1
36	connector, tube m 1 1/2" x 1 1/2"	810224-150	2
37	washer, pl, b r 1/2"	837208-112	4
38	connector, tube m 1/4" x 1/4"	810204-025	3
39	nipple, pipe 2" x 4.0" sc 40	822132-040	1
40	washer, lock reg 3/8"	837506-094	4
41	capscrew, hex gr5 3/8"-16 x 1 1/2"	828606-150	4
42	tube, fluid therm vlv to fluid clr	02250061-577	1
43	elbow, pipe 2"	801515-080	1
44	nipple, pipe 2" x cl sc 80	822232-000	2
45	connector, tube m 1 1/4" x 1 1/4"	810220-125	1
46	elbow, tube str thrd 1 1/4"	811615-125	1

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

9.9 COMPRESSOR COOLER ASSEMBLY (AIR-COOLED)

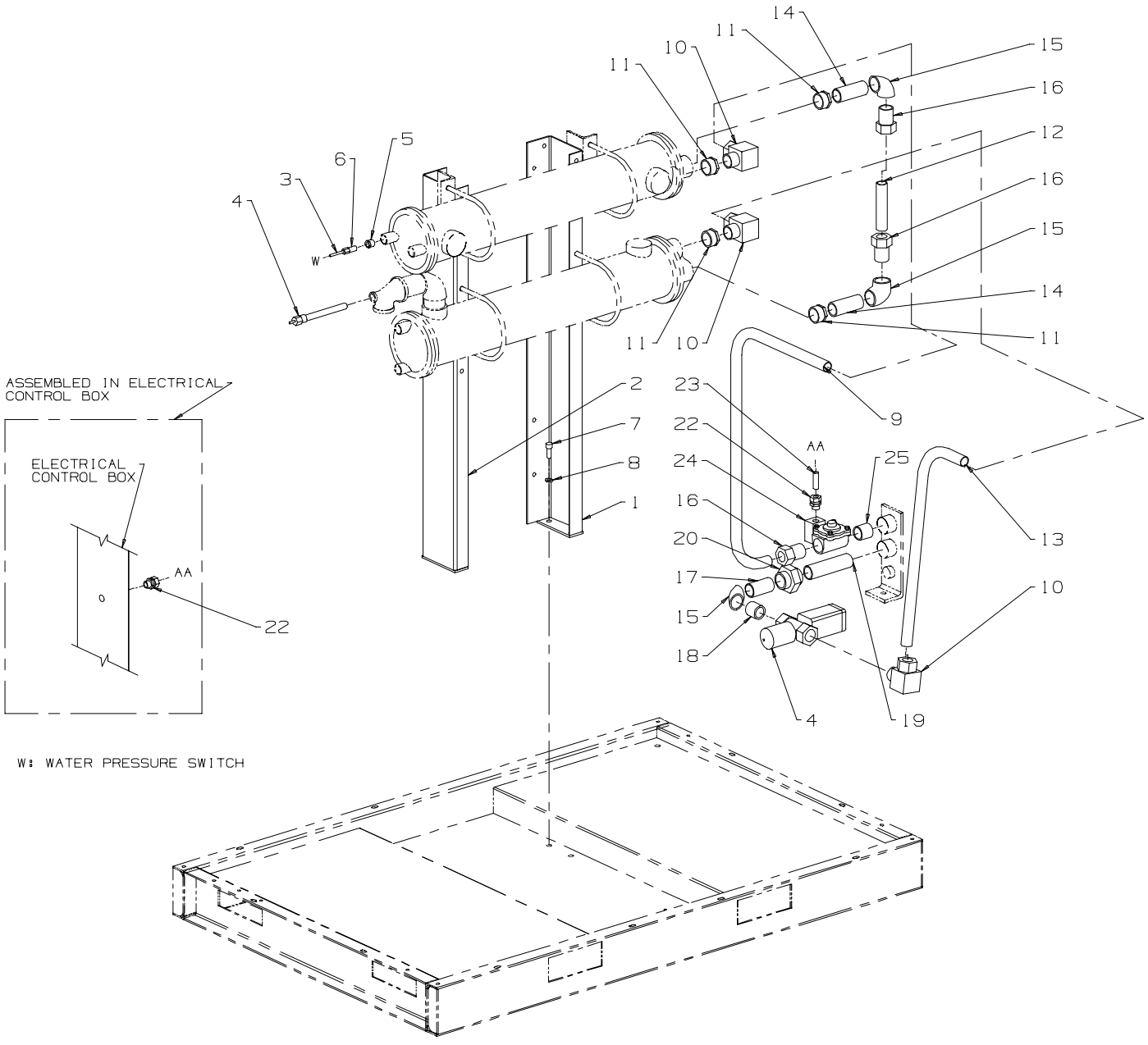


9.9 COMPRESSOR COOLER ASSEMBLY (AIR-COOLED)

key number	*description*	*part number*	*quantity*
1	support, cooler 20-100	250017-630	1
2	support, cooler 20-100	250017-631	1
3	support, starter r.h.	250017-977	1
4	angle, support cooler	250017-996	1
5	support, starter l.h.	250017-978	1
6	adapter, venturi /cooler	02250062-046	1
7	cooler, air/fluid comb 20-100	02250053-915	1
8	panel, ventur	consult factory	1
9	support, fan motor	consult factory	1
10	motor	consult factory	1
11	nut, retainer 5/16”-18	861405-092	4
12	fan	consult factory	1
13	guard, fan 26” dia blade	250006-220	1
14	washer, lock reg 5/16”	837505-078	1
15	insert, 5/16”-18 unc-2b thrd. blind	02250043-765	15
16	capscrew, hx gr5 5/16”-18 x 1”	828605-100	1
17	capscrew, hex gr5 1/2”-13 x 1 1/4” lg	828608-125	4
18	screw, ser wash 5/16”-18 x 3/4”	829705-075	38
19	nut, hex flanged 5/16”	825305-283	20
20	washer, pl b r 3/8”	837206-071	8
21	nut, hex locking 3/8”	825506-198	8
22	capscrew, hx gr5 3/8”-16 x 1 1/4”	828606-125	13
23	washer, lock reg 1/2”	837508-125	4
24	washer, lock reg 3/8”	837506-094	9
25	nut, hex 7/16”	824207-385	2
26	capscrew, hex gr5 7/16”-14 x 1”	828607-100	2
27	washer, lock reg 7/16”	837507-109	2

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

9.10 COMPRESSOR WATER SYSTEM (WATER-COOLED)



9.10 COMPRESSOR WATER SYSTEM (WATER-COOLED)

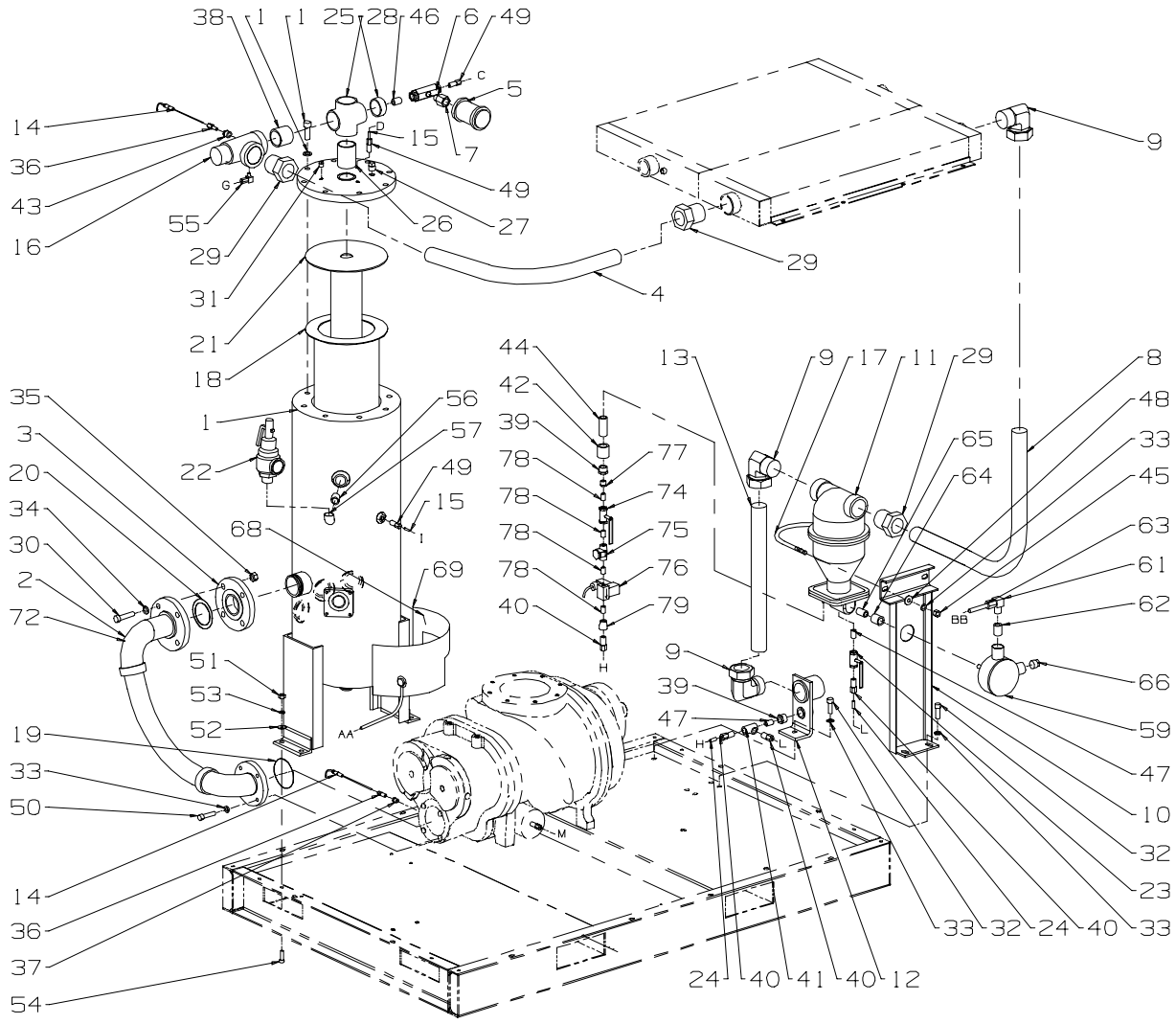
key number	*description*	*part number*	*quantity*
1	support, starter l.h.	250017-978	1
2	support, starter r.h.	250017-977	1
3	tubing, 1/4" s.s.	841215-004	1 ft.
4	valve, water reg 1 1/4"	049474	1
5	bushing, red 1/2" x 1/4" 150#	802102-010	1
6	connector, tube m 1/4 x 1/4	810204-025	1
7	capscrew, hex gr5 1/2"-13 x 1 1/4" lg	828608-125	4
8	washer, lock reg 1/2"	837508-125	4
9	tube, water inlet ls-20 1 1/4"	02250061-567	1
10	elbow, tube-m 1 1/4" x 1 1/4"	810520-125	3
11	bushing, red 1 1/2"x 1 1/4" 150#	802106-050	4
12	tube, water aftclr to fluid clr ls-20	02250061-569	1
13	tube, water flulid clr to wtr reg ls-20	02250061-572	1
14	nipple, pipe 1 1/4" x 4.0 sc 40	822120-040	2
15	elbow, pipe 1 1/4"	801515-050	3
16	connector, tube m 1 1/4" x 1 1/4"	810220-125	3
17	nipple, pipe 1 1/4" x 3.0" sc 40	822120-030	1
18	nipple, pipe 1 1/4" x cl sc 80	822220-000	1
19	nipple, pipe 1 1/4" x 6.0" sc 40	822120-060	1
20	union, pipe 1 1/4" 150#	802515-050	1
21	valve, solenoid shut-off (option) **(I)**	-	1
22	connector, conduit strt-1/2"	846400-050	2
23	conduit, flex-1/2"	846315-050	4
24	valve, sol 2-way nc 1 1/4" **(II)**	250035-291	1
25	nipple, pipe 1 1/4" x cl sc 40	822120-000	1

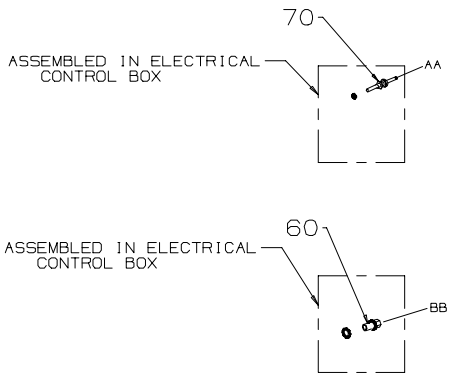
(I) Solenoid valve option includes parts' key no.'s 22-25.

(II) For maintenance on solenoid valve no. 250035-291, order repair kit no. 250038-848, and replacement coil no. 250035-292.

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

9.11 COMPRESSOR DISCHARGE SYSTEM (AIR-COOLED)





C: BLOWDOWN VALVE TO SOL. VALVE
D: DRY SIDE SUMP TO CONTROL SYSTEM STRAINER
G: LINE PRESSURE TO PRESSURE TRANSDUCER
I: WET SIDE SUMP PRESSURE TO PRESSURE TRANSDUCER
M: SPIRAL VALVE TO PRESSURE REGULATOR
V: LINE PRESSURE TO SPIRAL VALVE OPTION STRAINER

9.11 COMPRESSOR DISCHARGE SYSTEM (AIR-COOLED)

key number	*description*	*part number*	*quantity*
1	tank, air fluid sep 14”	02250054-125	1
2	hose, corrugated st stl 3”	02250059-184	1
3	flange, threaded 2 1/2”	819315-040	1
4	tube, 2” mpv to cooler	02250053-700	1
5	silencer, air 1/2”	041006	1
6	valve, blowdown 2-way pneu **(I)**	250030-276	1
7	orifice, 1/2”m x 1/2”f .156	234125-156	1
8	tube, air clr/sep 2”	02250053-698	1
9	elbow, tube 2” x 2” 90°	810532-200	3
10	support, sep./trap combination	02250053-355	1
11	sep/trap, combination **(II)**	410143	1
12	support, brk cust. conn.	02250054-613	1
13	tube, sep/trap 2” to cust. conn.	02250053-869	1
14	probe, rtd 100ohm	250039-909	2
15	tubing, stl steel 1/4”	841215-004	15 ft.
16	valve, 2” npt min press check	242405	1
17	u-bolt 6”	829008-600	1
18	separator, air/fluid prim **(III)**	02250060-462	1
19	o-ring, viton 3/4” x 1/8”	826502-240	1
20	gasket, asa 2 1/2” 150#	240621-7	1
21	separator, air/flulid second **(III)**	02250060-463	1
22	valve, relief 500 cfm	02250055-464	1
23	valve, ball 3/8”	047116	1
24	tubing, thermoplastic 3/8” 0d	250024-746	4
25	cross, pipe 150# 2”	801315-080	1
26	nipple, pipe 2” x 2 1/2” sc 40	822132-025	1
27	plug, pipe 1/2” steel	807800-020	1
28	bushing, red 2” x 1/2” 150#	802108-020	1
29	connector, tube m 2” x 2”	810232-200	3
30	capscr, hex gr5 5/8”-11 x 2 3/4”	828610-275	4
31	plug, pipe 1/4” steel	807800-010	1

(Continued on page 65)

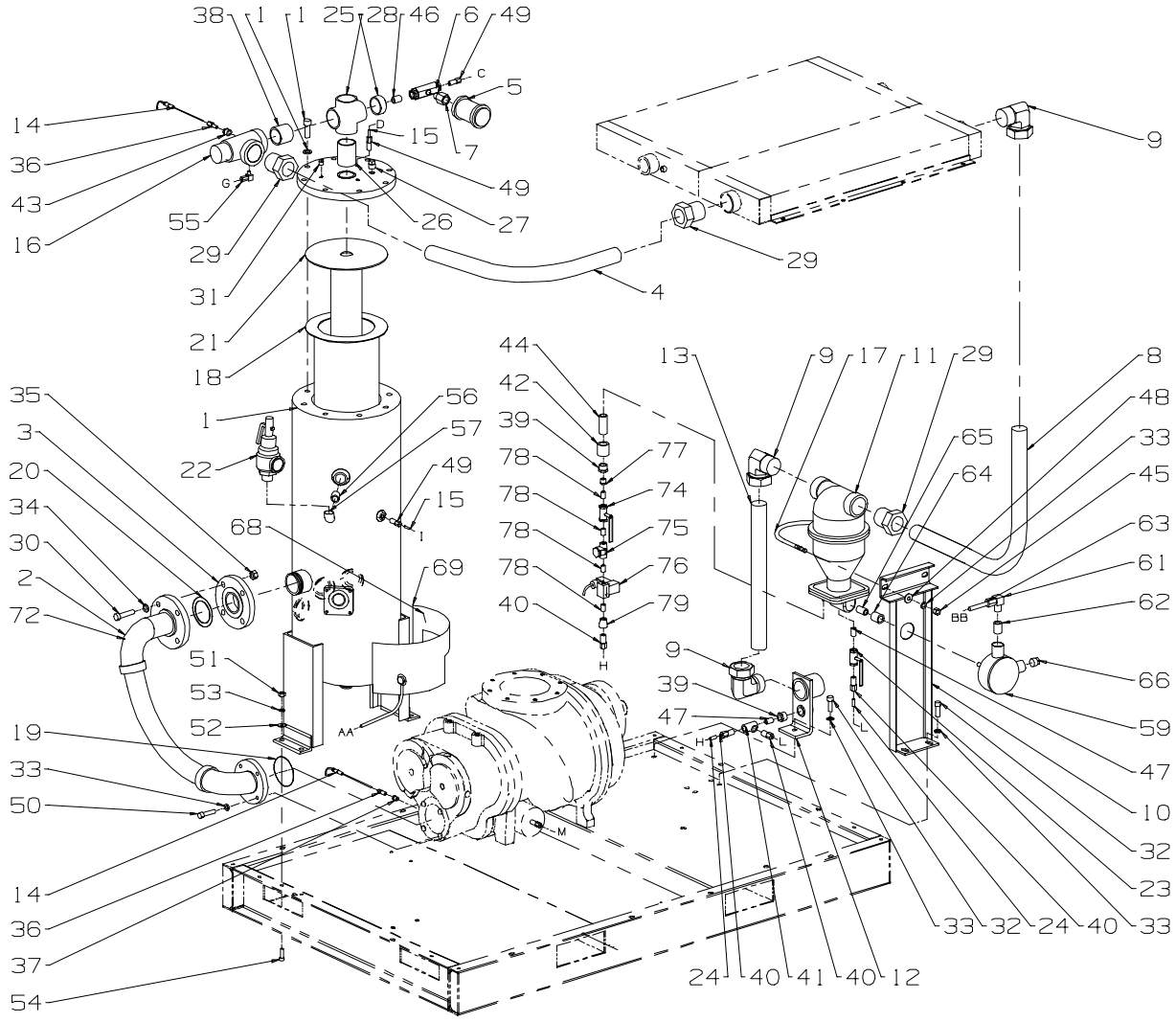
(I) For maintenance on blowdown valve no. 250030-276, order repair kit no. 02250045-132.

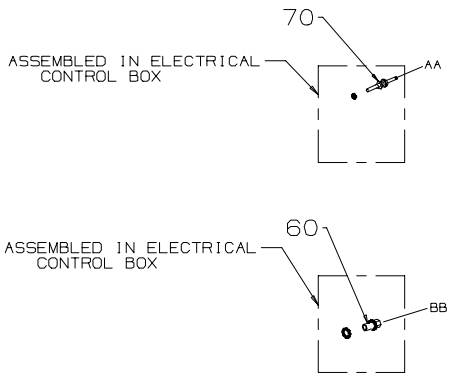
(II) For maintenance on separator/trap no. 410143, order repair kit no. 250033-038.

(III) For separator maintenance, order replacement element kits no. 02250061-137 (primary), and no. 02250061-138 (secondary).

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

9.11 COMPRESSOR DISCHARGE SYSTEM (AIR-COOLED)





C: BLOWDOWN VALVE TO SOL. VALVE
D: DRY SIDE SUMP TO CONTROL SYSTEM STRAINER
G: LINE PRESSURE TO PRESSURE TRANSDUCER
I: WET SIDE SUMP PRESSURE TO PRESSURE TRANSDUCER
M: SPIRAL VALVE TO PRESSURE REGULATOR
V: LINE PRESSURE TO SPIRAL VALVE OPTION STRAINER

9.11 COMPRESSOR DISCHARGE SYSTEM (AIR-COOLED) (CONTINUED)

key number	*description*	*part number*	*quantity*
32	capscrew, hex gr 5 1/2" x 1 1/2"	828608-150	3
33	washer, lock reg 1/2"	837508-125	9
34	washer, lock reg 5/8"	837510-156	4
35	nut, hex 5/8"	824210-559	4
36	fitting, compression probe	250028-635	2
37	bushing, red 1/4" x 1/8" 150#	802100-005	1
38	nipple, pipe 2" x cl sc 80	822232-000	1
39	bushing, red 3/4" x 3/8" 150#	802103-015	2
40	connector, tube m 3/8" x 3/8"	813606-375	4
41	tee, straight 3/8"	802415-015	1
42	coupling, pipe 3/4" steel	801215-030	1
43	bushing, red 1/2" x 1/8" 150#	802102-005	1
44	nipple, pipe 3/4" x 2 1/2" sc 40	822112-025	1
45	nut, hex 1/2"	824208-448	2
46	nipple, pipe 1/2" x cl sc 80	822208-000	1
47	nipple, pipe 3/8" x cl sc 80	822206-000	2
48	washer, pl, b r 1/2"	837208-112	2
49	connector, tube m 1/4" x 1/4"	810204-025	3
50	capscrew, hex gr5 1/2"-13 x 2"	828608-200	4
51	nut, hex 7/16"	824207-385	4
52	washer, pl b r 7/16"	837207-071	4
53	washer, lock reg 7/16"	837507-109	4
54	capscrew, hex gr5 7/16"-14 x 1 1/4"	828607-125	4
55	elbow, tube-m 1/4" x 1/8"	810504-012	1
56	nipple, pipe 3/4" x cl sc 80	822212-000	1
57	elbow, pipe 3/4"	801515-030	1
58	heater, trap (option) **(IV)**	-	1
59	heater, trap 50 watt 120v	245572	1
60	connector, straight lq-tite 1/2"	846400-050	1
61	elbow, 90° lq-tite 1/2"	846600-050	1
62	bushing, red cond 3/4" x 1/2"	847303-050	1
63	conduit, csa flex 1/2"	846315-050	3
64	coupling, pipe 1/2" steel	801215-020	1
65	nipple, pipe 1/2" x 1 1/2" sc 40	822108-015	1
66	plug, pipe 3/4" steel	807800-030	1

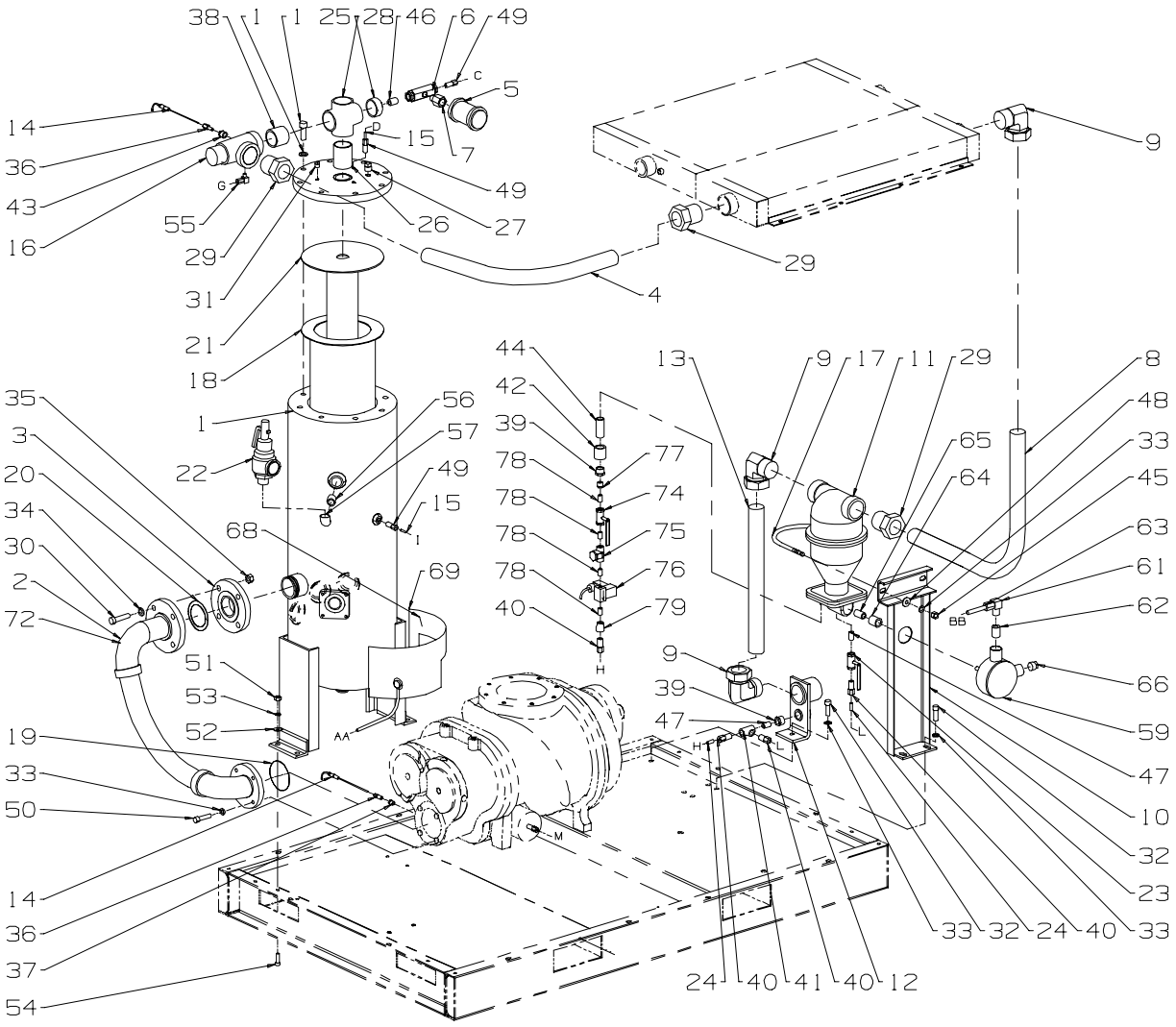
(Continued on page 67)

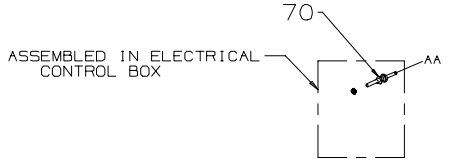
(IV) Trap heater option includes parts' key no.'s 59-66.

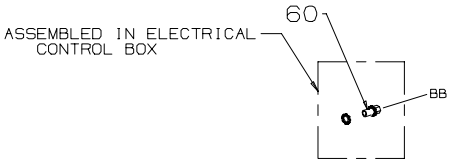
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE SERIAL NUMBER OF COMPRESSOR

ILLUSTRATIONS AND PARTS LIST

9.11 COMPRESSOR DISCHARGE SYSTEM (AIR-COOLED)







C: BLOWDOWN VALVE TO SOL. VALVE
D: DRY SIDE SUMP TO CONTROL SYSTEM STRAINER
G: LINE PRESSURE TO PRESSURE TRANSDUCER
I: WET SIDE SUMP PRESSURE TO PRESSURE TRANSDUCER
M: SPIRAL VALVE TO PRESSURE REGULATOR
V: LINE PRESSURE TO SPIRAL VALVE OPTION STRAINER

9.11 COMPRESSOR DISCHARGE SYSTEM (AIR-COOLED) (CONTINUED)

key number	*description*	*part number*	*quantity*
67	heater, sump (option) **(V)**	-	1
68	adhesive, rtv108 4.7 oz tube **(VI)**	02250054-398	1
69	heater, sump 120v	02250069-938	1
70	connector, cord .31 cable	241585	1
71	valve, spiral (option) **(VII)**	-	1
72	hose, corrugated st stl 3"	02250064-754	1
73	drain, electric condensate (option) **(VIII)**	-	1
74	valve, ball 1/4"	047115	1
75	strainer, v-type 300psi **(IX)**	241771	1
76	valve, sol-1/4" w/ timer 120v **(X)**	250038-163	1
77	bushing, red 3/8" x1/4" 150#	802101-010	1
78	nipple, pipe 1/4" x cl sc 80	822204-000	4
79	coupling, red 3/8" x 1/4" 150#	801003-002	1

(V) Sump heater option includes parts' key no.'s 68-70.

(VI) Apply adhesive to mating surface of heater before installing on tank.

(VII) Spiral valve option includes parts' key no.'s 72 and 73.

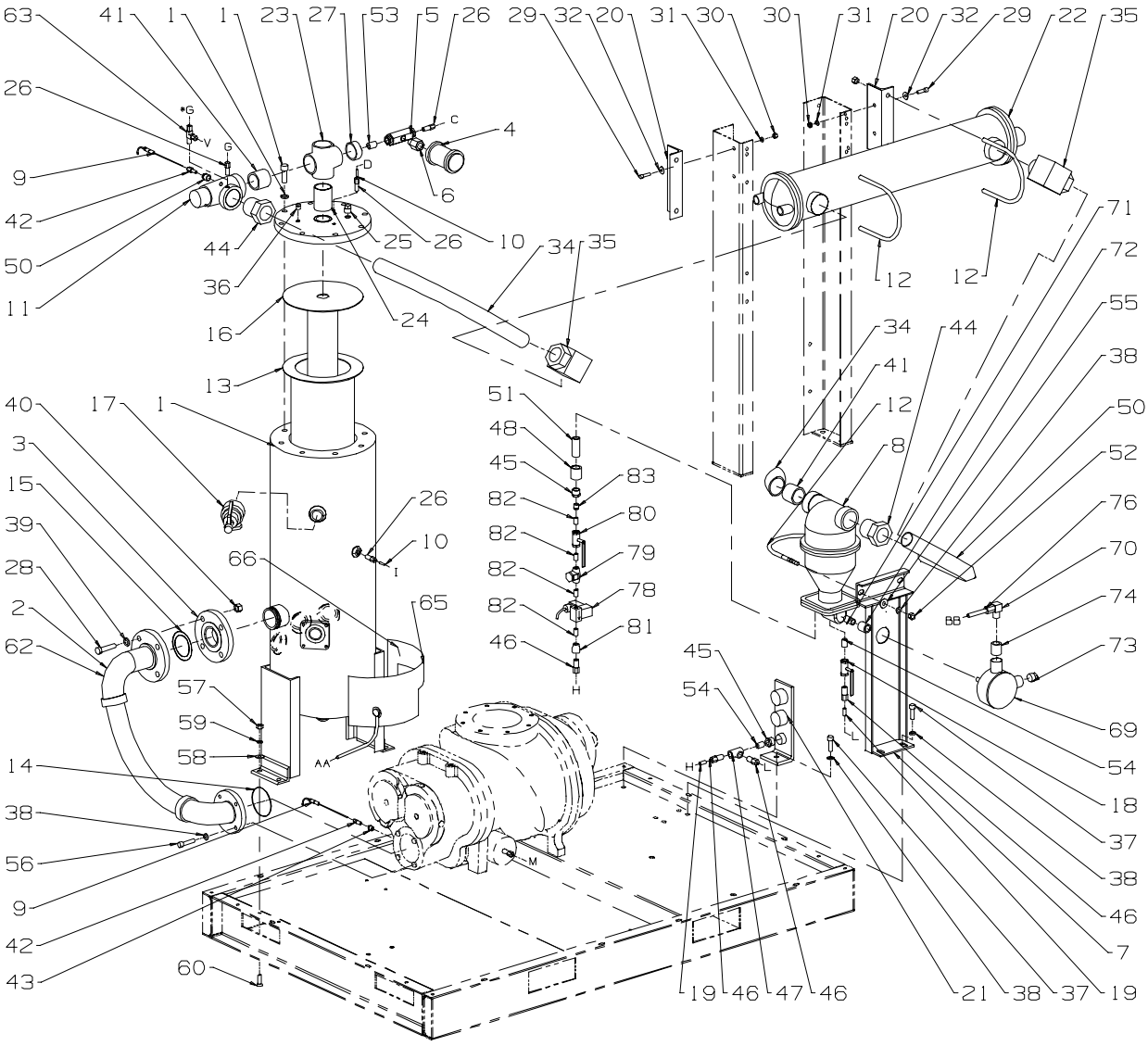
(VIII) Electric condensate drain option includes parts' key no.'s 74-79.

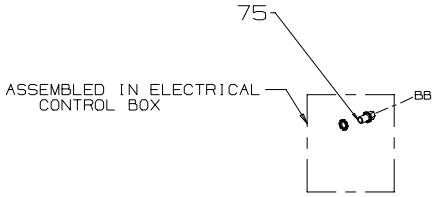
(IX) For maintenance on strainer no. 241771, order repair kit no. 241772.

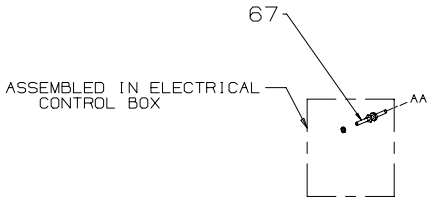
(X) For maintenance on solenoid valve no. 250038-163, order replacement solenoid no. 250031-322, replacement valve no. 250031-278, and replacement timer 250038-164.

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

9.12 COMPRESSOR DISCHARGE SYSTEM (WATER-COOLED)







C: BLOWDOWN VALVE TO SOL. VALVE

D: DRY SIDE SUMP TO CONTROL SYSTEM STRAINER

G: LINE PRESSURE TO PRESSURE TRANSDUCER

I: WET SIDE SUMP PRESSURE TO PRESSURE TRANSDUCER

M: SPIRAL VALVE TO PRESSURE REGULATOR

V: LINE PRESSURE TO SPIRAL VALVE OPTION STRAINER

9.12 COMPRESSOR DISCHARGE SYSTEM (WATER-COOLED)

key number	*description*	*part number*	*quantity*
1	tank, air fluid sep 14”	02250054-125	1
2	hose, corrugated st stl 3”	02250059-184	1
3	flange, threaded 2 1/2”	819315-040	1
4	silencer, air 1/2”	041006	1
5	valve, blowdown 2-way pneu **(I)**	250030-276	1
6	orifice, 1/2”m x 1/2”f .156	234125-156	1
7	support, sep/trap combo	02250053-355	1
8	sep/trap, combination **(II)**	410143	1
9	probe, rtd 100ohm	250039-909	2
10	tubing, stl steel 1/4”	841215-004	15 ft.
11	valve, 2” npt min press check	242405	1
12	u-bolt 6”	829008-600	3
13	separator, air/fluid prim **(III)**	02250060-462	1
14	o-ring, 3 3/4” x 1/8”	826502-240	1
15	gasket, asa 2 1/2” 150#	240621-7	1
16	separator, air/fluid second **(III)**	02250060-463	1
17	valve, relief 500cfm	02250055-464	1
18	valve, ball 3/8”	047116	1
19	tubing, thermoplastic 3/8” od	250024-746	4
20	support, bracket aftclr ls-20	02250061-876	2
21	support, bracket water in/out cust con	02250061-758	1
22	heat exchanger, aftercooler	043008	1
23	cross, pipe 150# 2”	801315-080	1
24	nipple, pipe 2” x 2 1/2” sc 40	822132-025	1
25	plug, pipe 1/2” steel	807800-020	1
26	connector, tube m 1/4” x 1/4”	810204-025	4
27	bushing, red 2” x 1/2” 150#	802108-020	1
28	capscr, hex gr5 5/8”-11 x 2 3/4”	828610-275	4
29	capscrew, hx gr 5 3/8” x 1 1/4”	828606-125	4
30	nut, hex 3/8”	824206-337	4
31	washer, lock reg 3/8”	837506-094	4

(Continued on page 71)

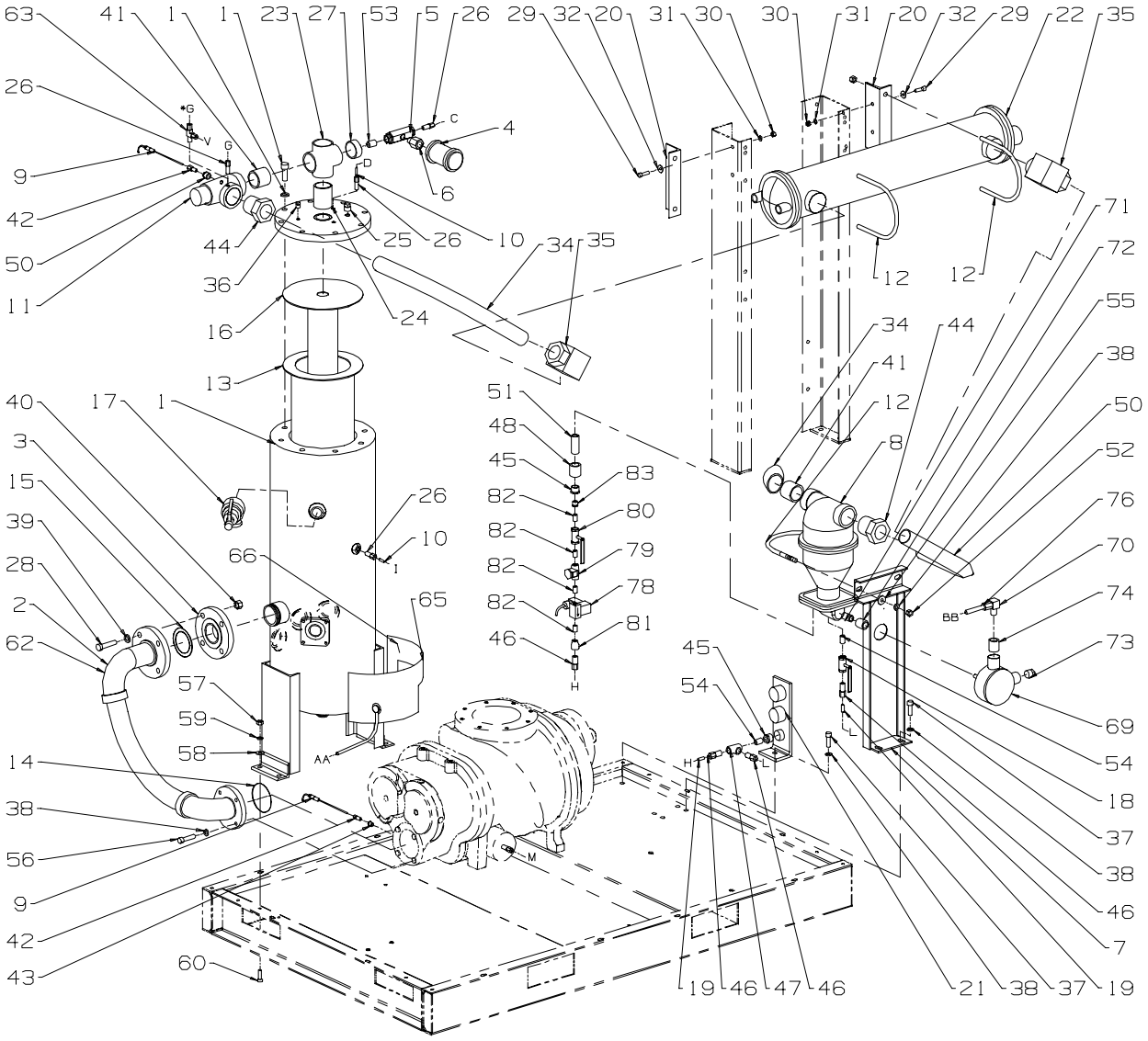
(I) For maintenance on blowdown valve no. 250030-276, order repair kit no. 02250045-132.

(II) For maintenance on separator/trap no. 410143, order repair kit no. 250033-038.

(III) For separator maintenance, order replacement element kits no. 02250061-137 (primary), and no. 02250061-138 (secondary).

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

9.12 COMPRESSOR DISCHARGE SYSTEM (WATER-COOLED)



C: BLOWDOWN VALVE TO SOL. VALVE
D: DRY SIDE SUMP TO CONTROL SYSTEM STRAINER
G: LINE PRESSURE TO PRESSURE TRANSDUCER
I: WET SIDE SUMP PRESSURE TO PRESSURE TRANSDUCER
M: SPIRAL VALVE TO PRESSURE REGULATOR
V: LINE PRESSURE TO SPIRAL VALVE OPTION STRAINER

9.12 COMPRESSOR DISCHARGE SYSTEM (WATER-COOLED) (CONTINUED)

key number	*description*	*part number*	*quantity*
32	washer, pl b r 3/8”	837206-071	4
33	tube, mpv to aftclr ls-20 2”	02250061-573	1
34	elbow, pipe 2”	801515-080	1
35	elbow, tube-m 2” x 2”	810532-200	2
36	plug, pipe 1/4” steel	807800-010	1
37	capscrew, hex gr 5 1/2” x 1 1/2”	828608-150	3
38	washer, lock reg 1/2”	837508-125	9
39	washer, lock reg 5/8”	837510-156	4
40	nut, hex 5/8”	824210-559	4
41	nipple, pipe 2 x cl sc 80	822232-000	2
42	fitting, compression probe	250028-635	2
43	bushing, red 1/4” x1/8” 150#	802100-005	1
44	connector, tube m 2” x 2”	810232-200	2
45	bushing, red 3/4” x 3/8” 150#	802103-015	2
46	connector, tube m 3/8” x 3/8”	813606-375	4
47	tee, straight 3/8”	802415-015	1
48	coupling, pipe 3/4” steel	801215-030	1
49	tube, aftercooler to sep. ls-20 2”	02250061-575	1
50	bushing, red 1/2” x 1/8” 150#	802102-005	1
51	nipple, pipe 3/4” x 2 1/2” sc 40	822112-025	1
52	nut, hex 1/2”	824208-448	2
53	nipple, pipe 1/2” x cl sc 80	822208-000	1
54	nipple, pipe 3/8” x cl sc 80	822206-000	2
55	washer, pl, b r 1/2”	837208-112	2
56	capscrew, hex gr5 1/2”-13 x 2”	828608-200	4
57	nut, hex 7/16”	824207-385	4
58	washer, pl b r 7/16”	837207-071	4
59	washer, lock reg 7/16”	837507-109	4
60	capscrew, hex gr5 7/16”-14 x 1 1/4”	828607-125	4
61	option, spiral valve **(IV)**	-	1
62	hose, assy corrugated st stl.	02250064-754	1
63	tee, tube-male run 1/4” x 1/4”	810904-025	1
64	option, sump heater **(V)**	-	1

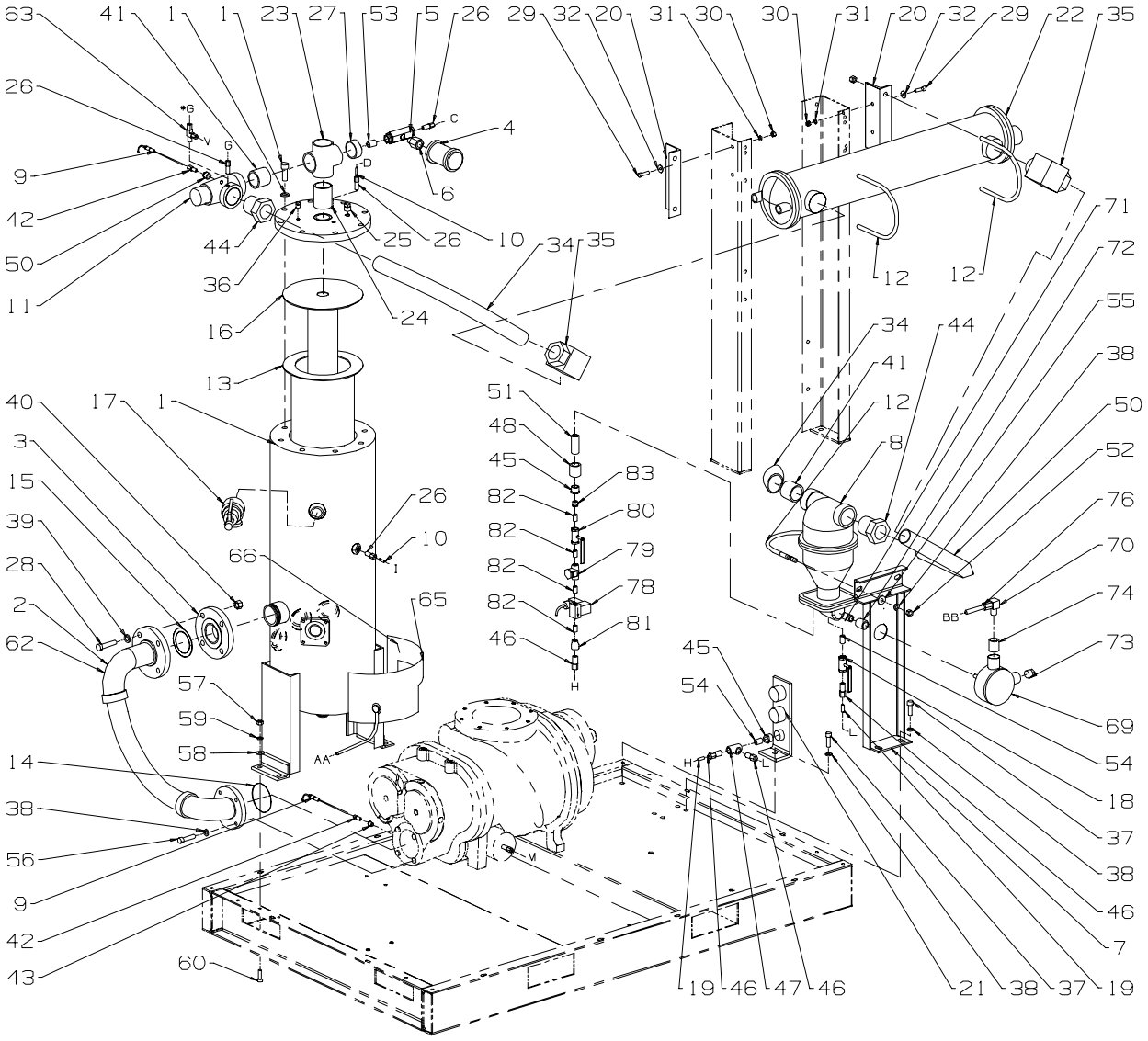
(Continued on page 73)

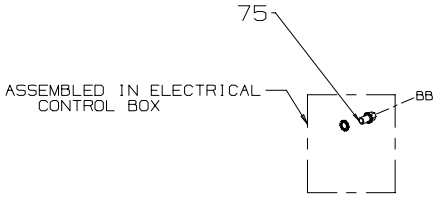
(IV) Spiral valve option includes items 62 and 63.

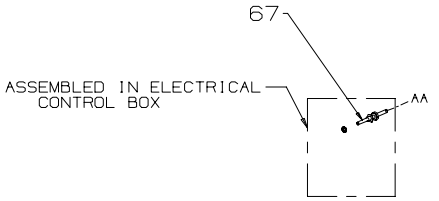
(V) Sump heater option includes items 65, 66 and 67.

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

9.12 COMPRESSOR DISCHARGE SYSTEM (WATER-COOLED)







C: BLOWDOWN VALVE TO SOL. VALVE
D: DRY SIDE SUMP TO CONTROL SYSTEM STRAINER
G: LINE PRESSURE TO PRESSURE TRANSDUCER
I: WET SIDE SUMP PRESSURE TO PRESSURE TRANSDUCER
M: SPIRAL VALVE TO PRESSURE REGULATOR
V: LINE PRESSURE TO SPIRAL VALVE OPTION STRAINER

9.12 COMPRESSOR DISCHARGE SYSTEM (WATER-COOLED) (CONTINUED)

key number	*description*	*part number*	*quantity*
65	heater, sump 120vac	02250069-938	1
66	adhesive, rtv108 4.7 oz tube **(VI)**	02250054-398	1
67	conector, cord .31 cable	241585	1
68	option, trap heater **(VII)**	-	1
69	heater, trap 50 watt 120v	245572	1
70	elbow, 90° lq-tite 1/2	846600-050	1
71	nipple, pipe 1/2" x 1 1/2" sc 40	822108-015	1
72	coupling, pipe 1/2" steel	801215-020	1
73	plug, pipe 3/4" steel	807800-030	1
74	bushing, red cond 3/4" x 1/2"	847303-050	1
75	connector, straight lq-tite 1/2"	846400-050	1
76	conduit, csa flex 1/2"	846315-050	3
77	option, electric cond drain **(VIII)**	-	1
78	valve, sol-1/4"w/ timer 120v **(IX)**	250038-163	1
79	strainer, v-type 300psi 1/4" **(X)**	241771	1
80	valve, ball 1/4"	047115	1
81	coupling, red 3/8" x 1/4" 150#	801003-002	1
82	nipple, pipe 1/4" x cl sc 80	822204-000	4
83	bushing, red 3/8" x 1/4" 150#	802101-010	1

(VI) Apply adhesive to mating surface of heater before installing on tank.

(VII) Trap heater option includes items 69-76.

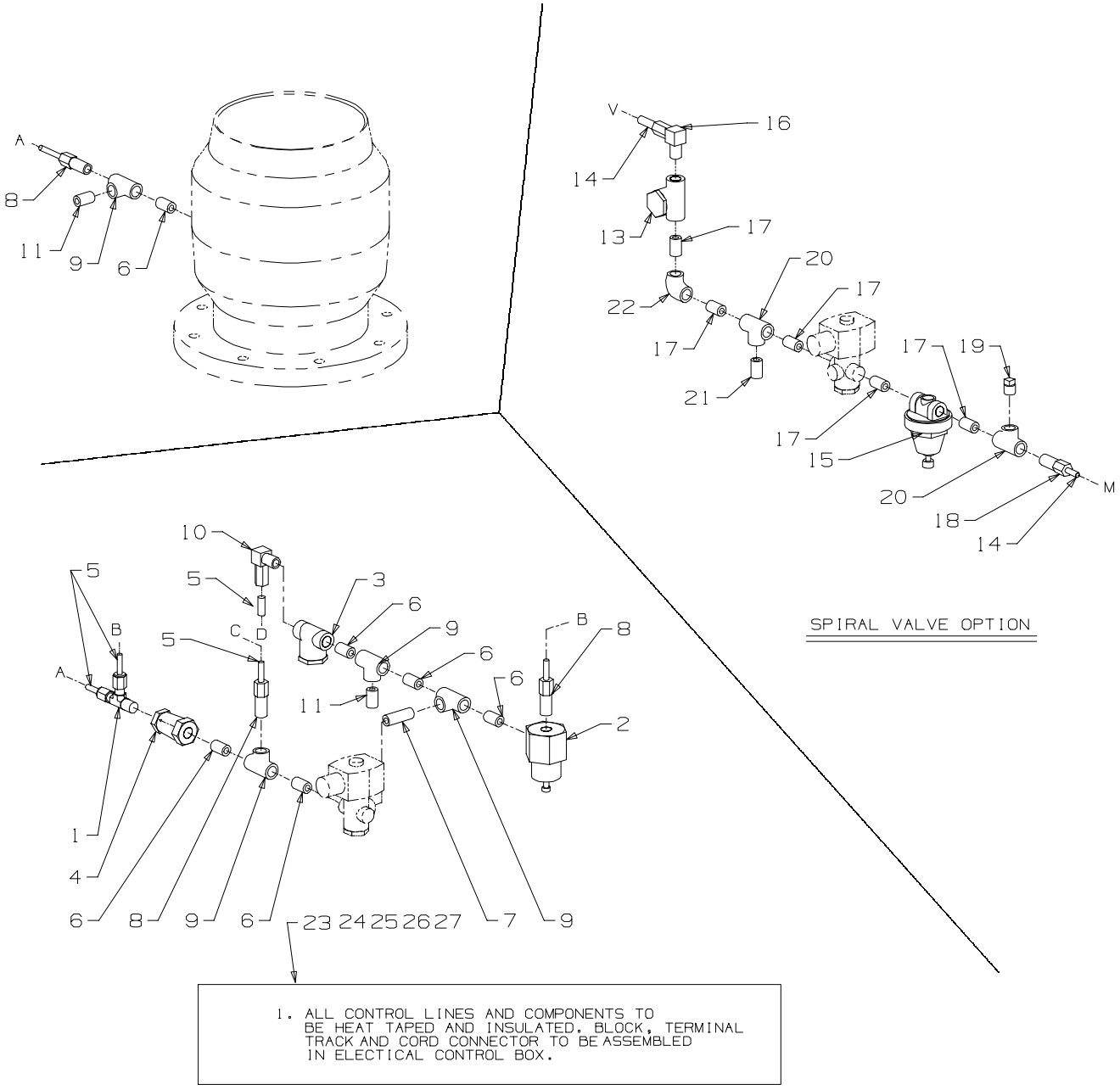
(VIIII) Electric condensate drain option includes items 78-83.

(IX) For maintenance on solenoid valve no. 250038-163, order replacement solenoid no. 250031-322, replacement valve no. 250031-278, and replacement timer 250038-164.

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

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

9.13 CONTROLS



C: SOLENOID VALVE TO BLOWDOWN VALVE
D: PRESSURE REGULATOR TO DRY SIDE REC. TANK
M: SPIRAL VALVE OPTION REGULATOR TO SPIRAL VALVE
V: SPIRAL VALVE OPTION STRAINER TO LINE PRESSURE

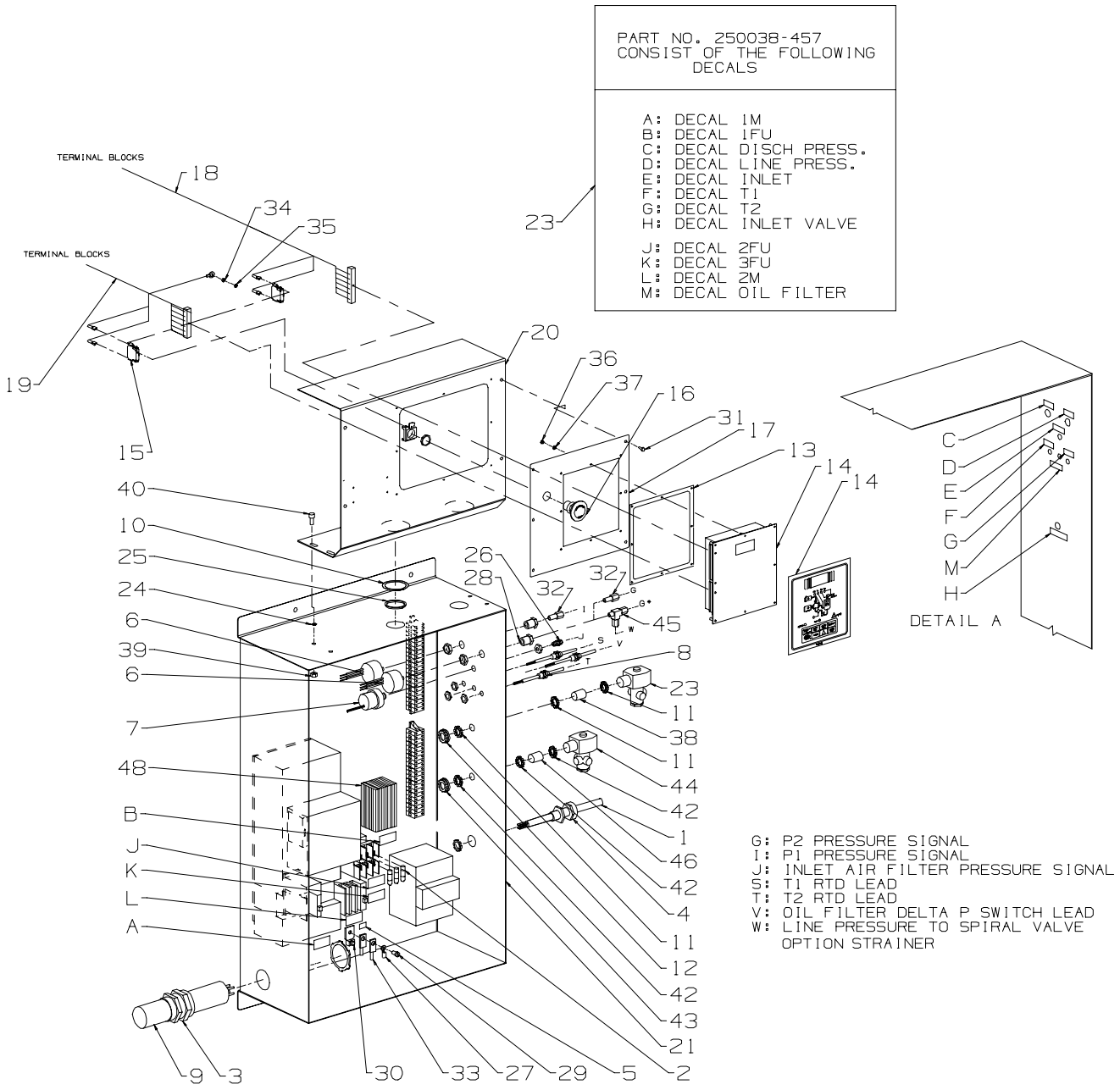
9.13 CONTROLS

key number	*description*	*part number*	*quantity*
1	tee, tube m-run 1/4”	810904-025	1
2	valve, pressure regulator **(I)**	250017-280	1
3	strainer, v-type **(II)**	241771	1
4	valve, check 1/4”	049905	1
5	tubing, stainless steel 1/4”	841215-004	12
6	nipple, pipe 1/4” x cl s.s.	02250052-363	6
7	nipple, pipe 1/4” x 1 1/2” s.s.	250019-143	1
8	connector, tube m 1/4” x 1/4”	810204-025	3
9	tee, straight 1/4” s.s.	250000-060	4
10	elbow, tube-m 1/4” x 1/4”	810504-025	1
11	orifice, pipe plug 1/32”	232874	2
12	valve, spiral (option) **(III)**	-	1
13	strainer, v-type **(II)**	241771	1
14	tubing, stainless steel 1/4”	841215-004	8
15	valve, pressure regulator **(IV)**	408275	1
16	elbow, tube-m 1/4” x 1/4”	810504-025	1
17	nipple, pipe 1/4” x cl s.s.	02250052-363	5
18	connector, tube m 1/4” x 1/4”	810204-025	1
19	plug, pipe 1/4” steel	807800-010	1
20	tee, straight 1/4” s.s.	250000-060	2
21	orifice, pipe plug 1/32”	232874	1
22	elbow, pipe 1/4” swaglock 316s	250209-007	1
23	option, heat tracing **(V)**	-	1
24	connector, cord .31 cable	241585	1
25	insulation, pipe 7/8”	250022-693	50
26	tape, heat self lim 120v	407403	25
27	block, terminal & track	041493	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) Spiral valve option includes parts’ key no.’s 13-22.
(IV) For maintenance on pressure regulator valve no. 408275, order repair kit no. 250028-693.
(V) Heat tracing option includes parts’ key no.’s 24-27.

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

9.14 ELECTRIC CONTROL SYSTEM (AIR-COOLED)



9.14 ELECTRIC CONTROL SYSTEM (AIR-COOLED)

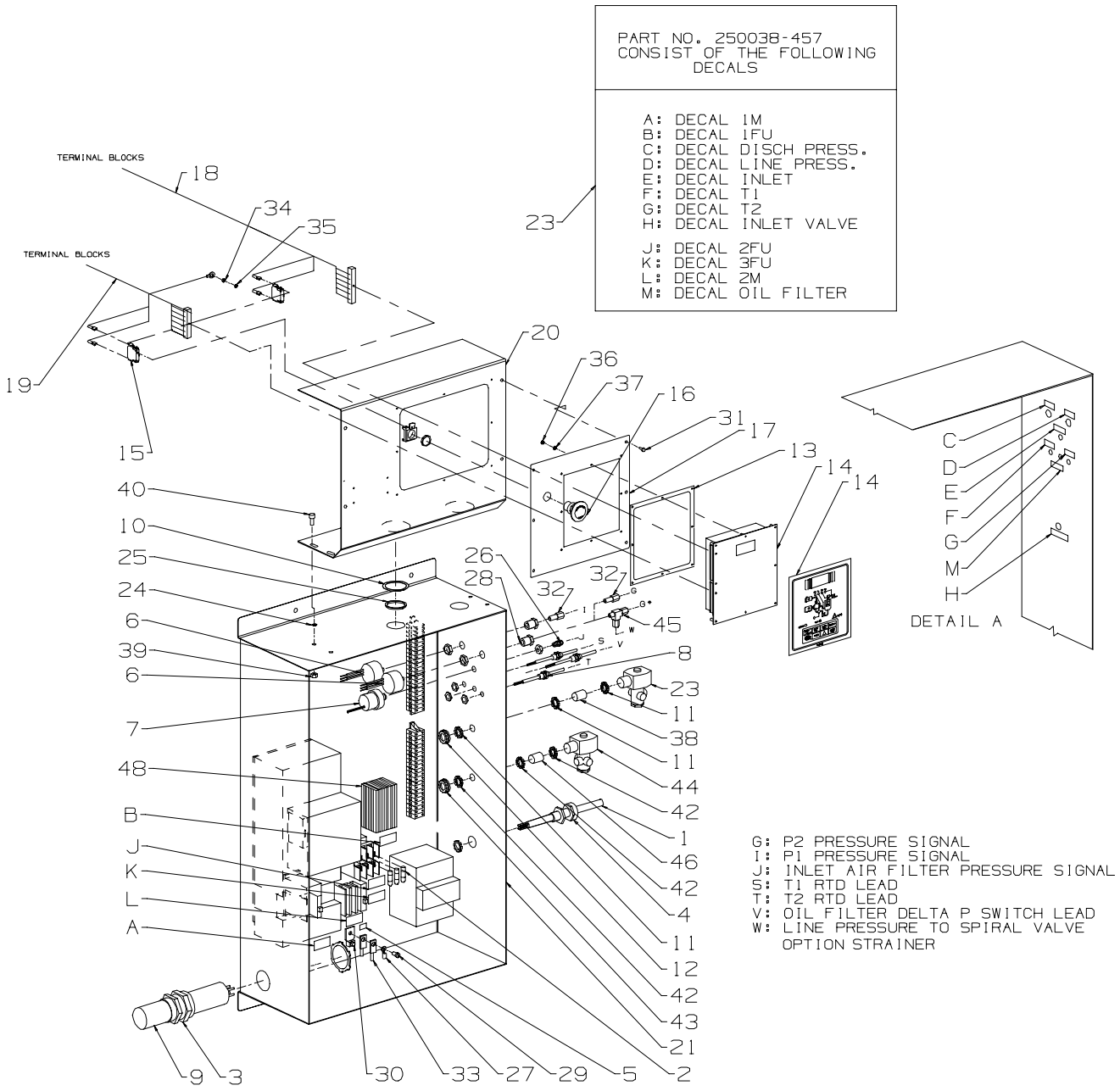
key number	*description*	*part number*	*quantity*
1	wire, neoprene #12-4 so	850604-012	6
2	fuse, cc 10 600v ac **(I)**	consult factory	3
3	grip, cord g-gc **(I)**	consult factory	1
4	grip, cord for so 12/4 str 3/4”	250018-497	1
5	decal, ground lug **(II)**	-	1
6	transducer, pressure 1-5v **(I)**	consult factory	2
7	switch, vac 22” wc n4	250014-656	1
8	connector, cord grip .09-.26	250023-496	3
9	wire, 1w de g-gc **(I)**	consult factory	5
10	gasket, washer	250019-557	2
11	locknut, conduit-1/2”	847200-050	3
12	bushing, conduit plastic-1/2”	848815-050	1
13	gasket, panel Supervisor II	02250048-822	1
14	controller, assy, Supervisor II **(I)**	consult factory	1
15	block, contact 1 nc	250027-125	2
16	switch, oper red push/pull e22	250028-588	1
17	panel, electrical Supervisor II	02250053-117	1
18	harness, wire dx ctl reg	02250054-329	1
19	harness, wire dx pwr reg	02250054-328	1
20	panel, instrument Supervisor II	02250054-853	1
21	assembly, starter **(I)**	consult factory	1
22	assembly, decal **(II)**	-	1
23	valve, sol 3-way no **(I)**	consult factory	1
24	gasket, washer 5/16	250021-176	4
25	bushing, snap 1 3/4” id	250042-243	2
26	connector, tube-m 1/4” x 1/8”	813604-125	1
27	terminal, ring	849303-010	1
28	bulkhead, pipe 1/8” npt	841500-002	2
29	screw, tc-f rd 5/16” x 1/2”	835705-050	1
30	lug, scrulug kpa-25 4-1/0	849215-025	1
31	screw, tc-f pan #8-32 x1/2”	835601-050	4

(Continued on page 79)

(I) To determine the proper part number for your compressor, consult factory.
(II) For decal part number, consult electrical component decal listing in the Decal Section.

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

9.14 ELECTRIC CONTROL SYSTEM (AIR-COOLED)



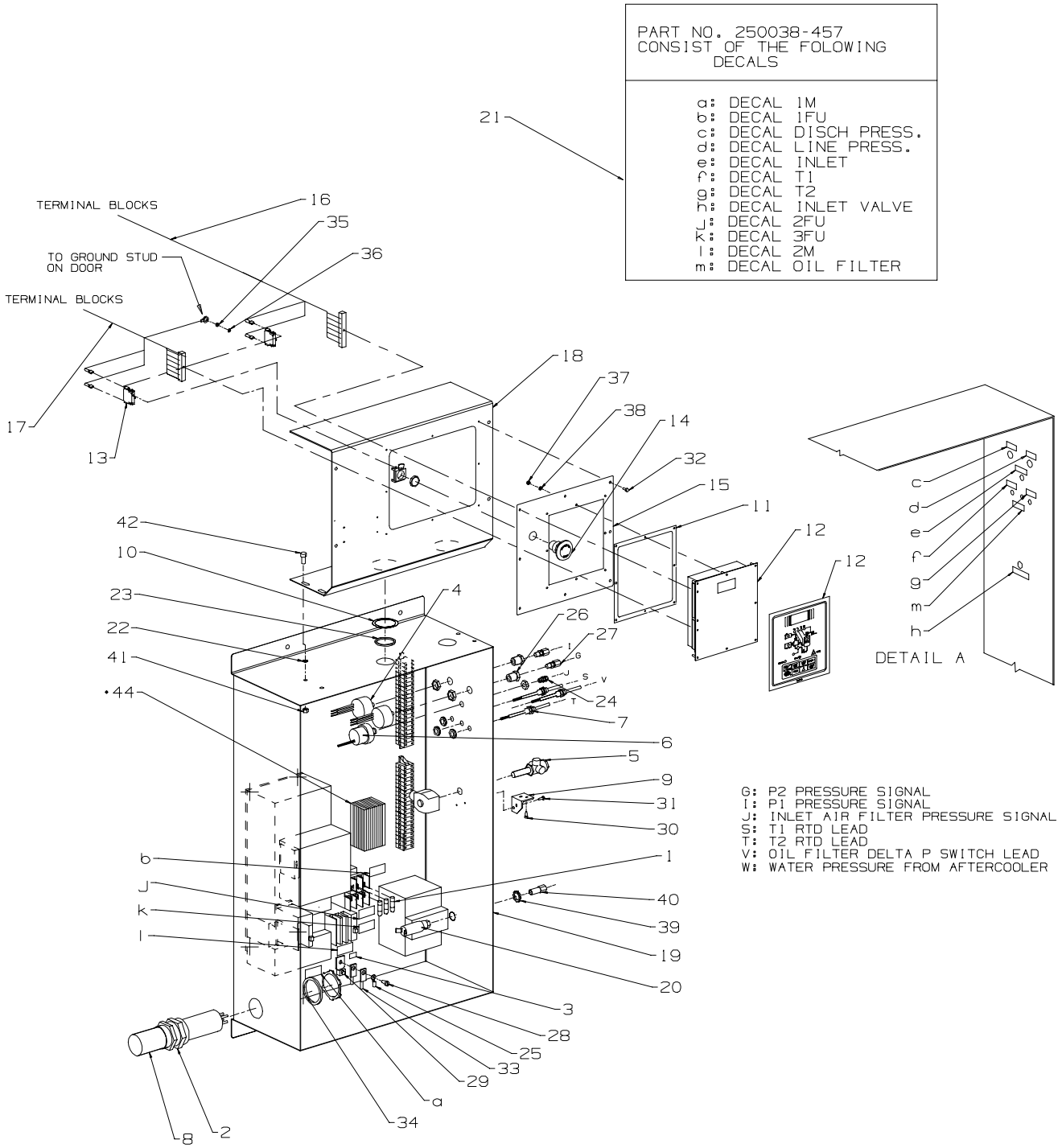
9.14 ELECTRIC CONTROL SYSTEM (AIR-COOLED) (CONTINUED)

key number	*description*	*part number*	*quantity*
32	connector, tube m 1/4" x 1/8"	810204-012	2
33	lug, hylug	849106-002	2
34	nut, plated 5/16"-18	825205-273	1
35	washer, lock ext 5/16"	838405-034	1
36	nut, hex metric m4 x .7	825904-070	8
37	washer, springlck reg m4	838804-090	8
38	nipple, conduit 1/2" x close	250007-168	1
39	nut, hex flanged 5/16"	825305-283	4
40	screw, ser wash 5/16" x 3/4"	829705-075	4
41	valve, spiral (option) **(III)**	-	1
42	locknut, conduit-1/2"	847200-050	3
43	bushing, conduit plastic-1/2"	848815-050	1
44	valve, sol 3-way no	consult factory	1
45	tee, tube-male run 1/4" x 1/8"	810904-012	1
46	nipple, conduit 1/2" x close	250007-168	1
47	option, heater enclosure	htr_encl_opt	1
48	heater, enclosure 120v 30w	250010-253	1

(III) Spiral valve option includes parts' key no.'s 42-48.

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

9.15 ELECTRIC CONTROL SYSTEM (WATER-COOLED)



9.15 ELECTRIC CONTROL SYSTEM (WATER-COOLED)

key number	*description*	*part number*	*quantity*
1	fuse, cc td 2a 600ac **(I)**	various	3
2	grip, cord #1 **(I)**	various	1
3	decal, ground lug	045433	1
4	transducer, pressure 0-200# 1-5v **(I)**	various	2
5	valve, sol 3-way no 150p **(II)**	250038-674	1
6	switch, vac 22" wc n4	250014-656	1
7	connector, cord grip .09-.26	250023-496	3
8	wire, type g-gc 1ga **(I)**	various	5
9	bracket, sol valve supt	250030-037	1
10	gasket, washer	250019-557	2
11	gasket, panel Supervisor II	02250048-822	1
12	controller, assy Supervisor II basic **(I)**	various	1
13	block, contact 1 nc	250027-125	2
14	switch, oper red push/pull e22	250028-588	1
15	panel, electrical Supervisor II	02250054-854	1
16	harness, wire dx ctl reg	02250054-329	1
17	harness, wire dx pwr reg	02250054-328	1
18	panel, instrument Supervisor II	02250054-853	1
19	assembly, starter n4 mfv nc n12 sup **(I)**	various	1
20	switch, low water pressure	250017-992	1
21	assembly, decal **(III)**	-	1
22	gasket, washer 5/16"	250021-176	4
23	bushing, snap 1 3/4" id	250042-243	2
24	connector, tube-m 1/4" x 1/8"	813604-125	1
25	terminal, ring	849303-010	1
26	bulkhead, pipe 1/8" npt	841500-002	2
27	connector, tube-m 1/4 x 1/8	810204-012	2
28	screw, tc-f rd 5/16" x 1/2"	835705-050	1
29	lug, scrulug kpa-25 4-1/0	849215-025	1
30	screw, tc-f pan 8"-32 x 3/8"	835601-038	2
31	screw, self tap 10-24 x 1/2"	835602-050	2
32	screw, tc-f pan #8-32 x1/2"	835601-050	8

(Continued on page 83)

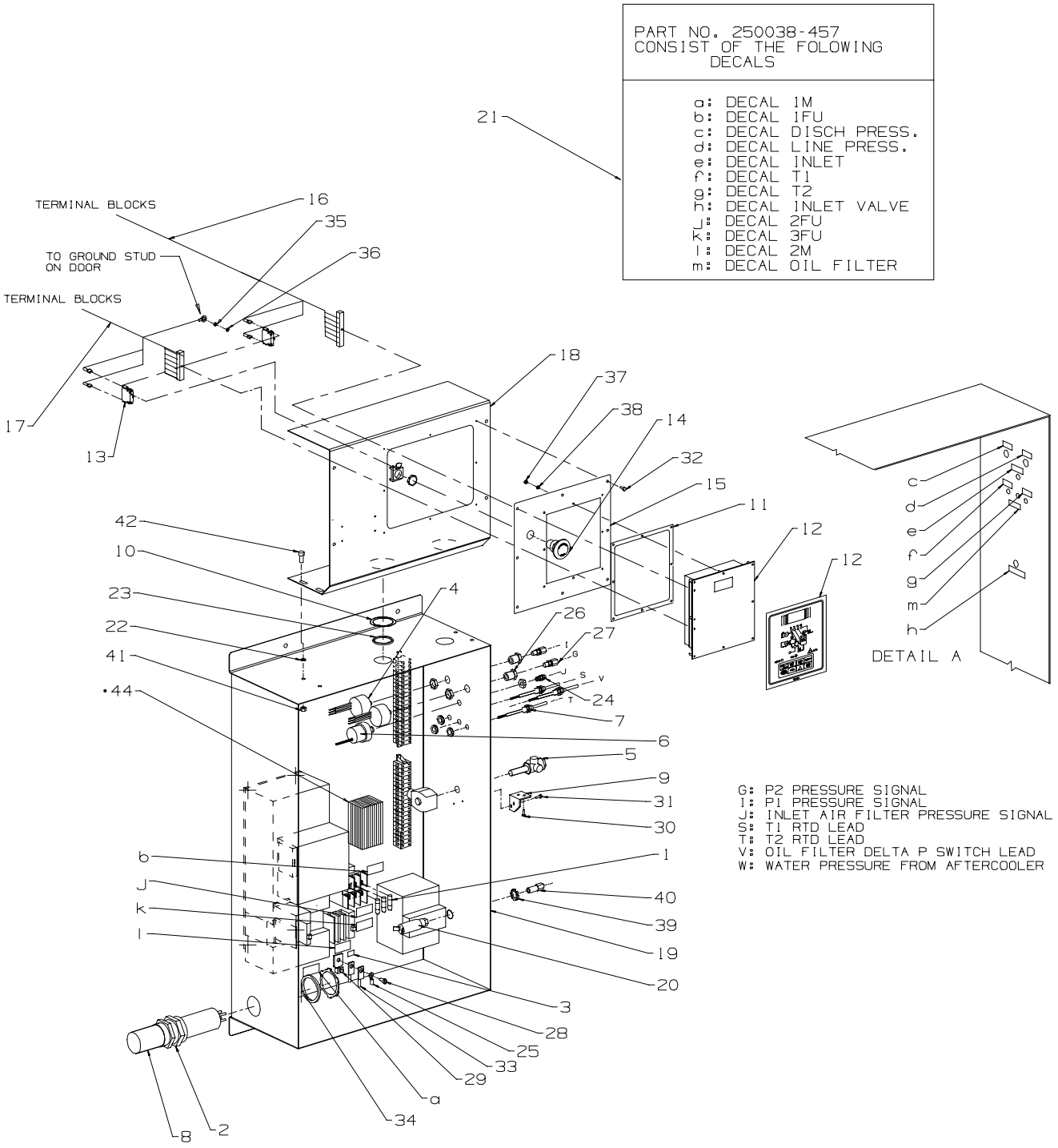
(I) To determine the proper part number for your compressor, consult factory.

(II) For maintenance on solenoid valve no. 250038-674, order repair kit no. 250038-673, and replacement coil no. 250031-738.

(III) For decal part number, consult electrical component decal listing in the Decal Section.

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

9.15 ELECTRIC CONTROL SYSTEM (WATER-COOLED)



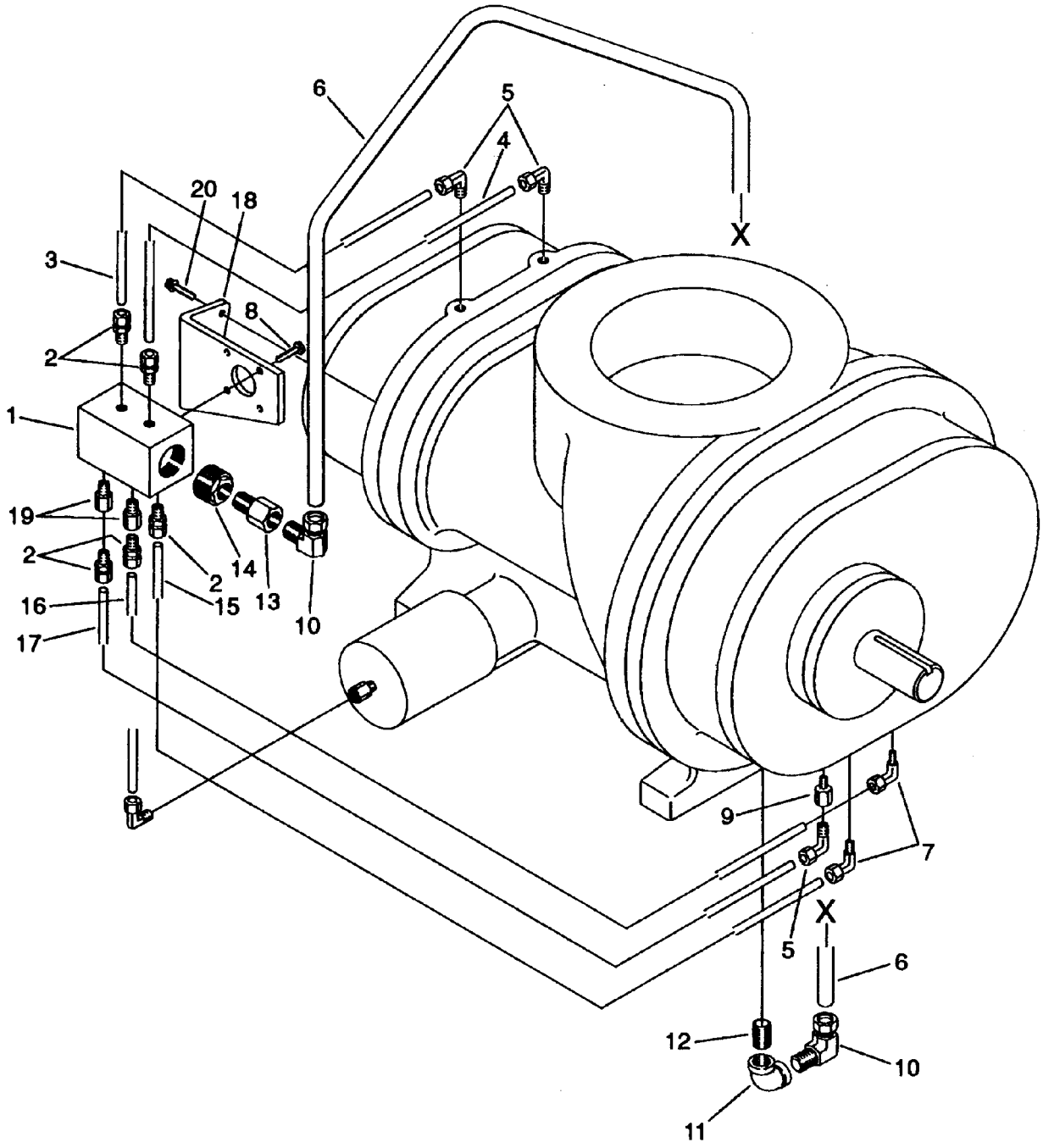
9.15 ELECTRIC CONTROL SYSTEM (WATER-COOLED) (CONTINUED)

key number	*description*	*part number*	*quantity*
33	lug, hylug	849106-002	2
34	washer, conduit red	847008-000	1
35	nut, plated 5/16"-18	825205-273	1
36	washer, lock ext 5/16"	838405-034	1
37	nut,hex metric m4 x .7	825904-070	8
38	washer, springlck reg m4	838804-090	8
39	locknut, conduit 1/2"	847200-050	1
40	connector, tube m 1/4" x 1/4"	810204-025	1
41	nut, hex flanged 5/16"	825305-283	4
42	screw, ser wash 5/16" x 3/4"	829705-075	4
43	option, heater enclosure **(IV)**	-	1
44	heater, enclosure 120v 30w	250010-253	1

(IV) Heat enclosure option includes item 44.

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

9.16 UNIT TUBING

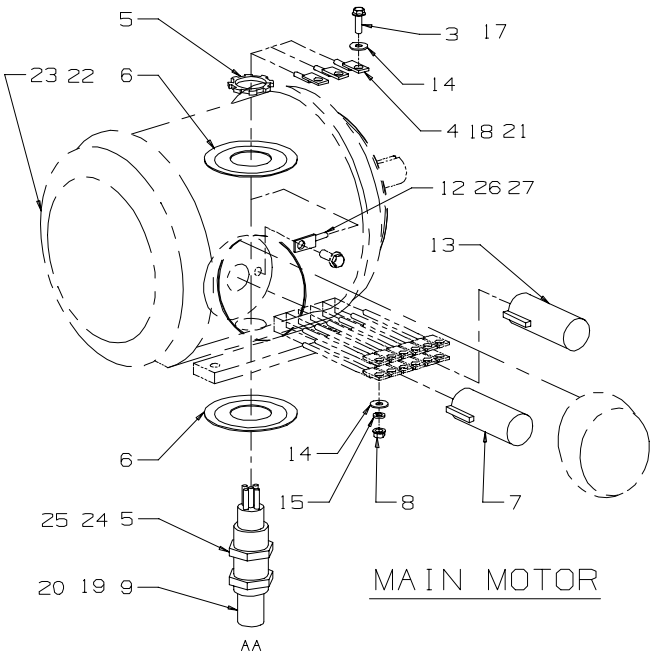


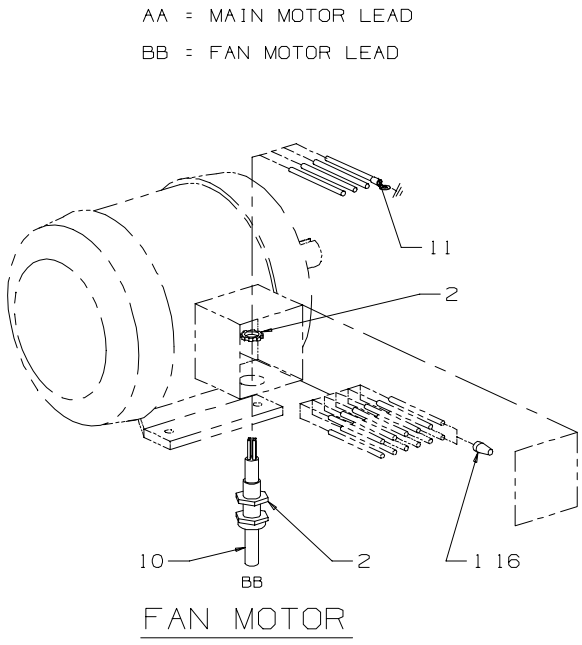
9.16 UNIT TUBING

key number	*description*	*part number*	*quantity*
1	manifold, 1.25” x 1.25” out	02250045-432	1
2	connector, tube-M 3/8” x 1/4”	810206-025	5
3	tube, .38”	02250045-056	1
4	tube, .38”	02250045-057	1
5	elbow, tube-M 3/8” x 1/4”	810506-025	3
6	tube, .38”	02250044-276	1
7	elbow, tube-M 3/8” x 1/8”	810506-012	2
8	capscrew, hex gr 8 5/16”-18 x 3/4”	828205-705	4
9	orifice, 1/8”M x 1/4”F x .188”	220959	1
10	elbow, tube-M 3/4” x 1/2”	810512-050	2
11	elbow, pipe 90° 1/2”	806530-020	1
12	nipple, pipe 1/2” x 2”	822208-020	1
13	orifice, 1/2” x 1/2”F x .313”	234125-313	1
14	bushing, reducing hex 1 1/4” x 1/2”	802105-020	1
15	tube, .38”	02250045-279	1
16	tube, .38”	02250045-060	1
17	tube, .38”	02250045-059	1
18	support	02250044-911	1
19	orifice, .062” x .25”M x .25”F	028831	2
20	capscrew, ferry hd 1/2”-13 x 1	828408-100	2

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

9.17 MOTOR ASSEMBLY





NOTE: SEE VOLTAGE NAMEPLATE ON MOTORS FOR WIRE CONNECTIONS.

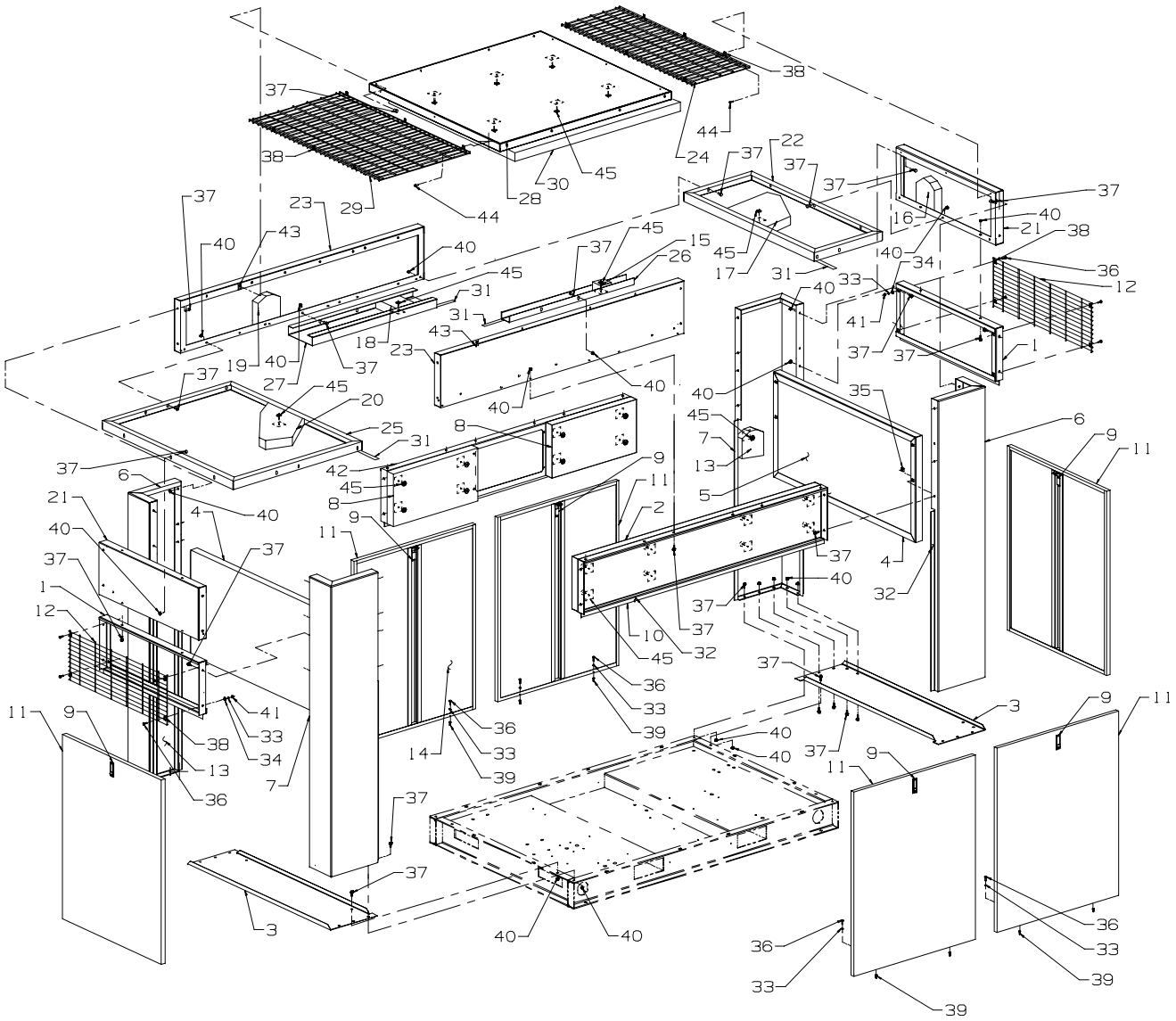
CABLE / LEAD CONNECTIONS				
VOLTAGES		230V	460V	575V
STARTER TERMINAL	CABLE COLOR	12 LEAD MOTOR CONNECTION	12 LEAD MOTOR CONNECTION	6 LEAD MOTOR CONNECTION
T1	1-BLACK	1,6,7,12	1,12	1,6
T2	1-RED	2,4,8,10	2,10	2,4
T3	1-WHITE	3,5,9,11	3,11	3,5
			4 TO 7	
			5 TO 8	
			6 TO 9	

9.17 MOTOR ASSEMBLY

key number	*description*	*part number*	*quantity*
1	connector, wire yellow (460V)	851000-074	6
	•connector, wire yellow (575V)	851000-074	3
2	grip, cord for so 12/4 st	250018-495	1
3	screw, hex 5/16" x 1" (460V & 575V)	828605-100	6
4	lug, burndy 1/0 x 3/8" (460V)	849106-100	3
5	grip, cord #1 (460V)	250014-560	2
6	washer, conduit red 3 1/2" x 2" (460V)	847014-080	2
7	insulator, splice t & b msc	250006-113	3
8	nut, hex plated 5/16"-18 (230V)	824205-273	3
	•nut, hex plated 5/16"-18 (460V & 575V)	824205-273	6
9	wire, type g-gc 1ga (460V)	250014-309	7
10	wire, neoprene #12-4 so	850604-012	6
11	terminal, ring 1/4" x 12ga	849304-010	1
12	lug, burndy ya2c-l #2-3/8" (575V)	849106-002	1
13	insulator, splice t & b msc (460V & 575V)	250006-112	3
14	washer, pl-b plated 5/16" (230V)	838205-071	6
	•washer, pl-b plated 5/16" (460V & 575V)	838205-071	12
15	washer, springlock unfin 5/16" (230V)	837505-078	3
	•washer, springlock unfin 5/16" (460V & 575V)	837505-078	6
16	connector, wire red (230V)	891000-076	3
17	screw, hex 5/16" x 1 1/4" (230V)	828605-125	3
18	lug, burndy-hylug 350mcm x 1/2" (230V)	849108-035	3
19	wire, type g-gc 3ga (575V)	250014-307	7
20	wire, type g-gc 250mcm (230V)	250014-314	7
21	lug, burndy ya2c-l #2-5/16" (575V)	849105-002	3
22	washer, conduit reducing 3" x 1 1/2" (575V)	847012-060	2
23	washer, conduit reducing 3 1/2" x 2 1/2" (230V)	847014-100	2
24	grip, cord #2 (575V)	250014-559	2
25	grip, cord #250mcm (230V)	250014-565	2
26	lug, burndy ya4-L4-4-3/8" (460V)	849106-004	1
27	lug, burndy ya2c-l #2-3/8" (230V)	849106-002	1

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

9.18 ENCLOSURE ASSEMBLY (AIR-COOLED)



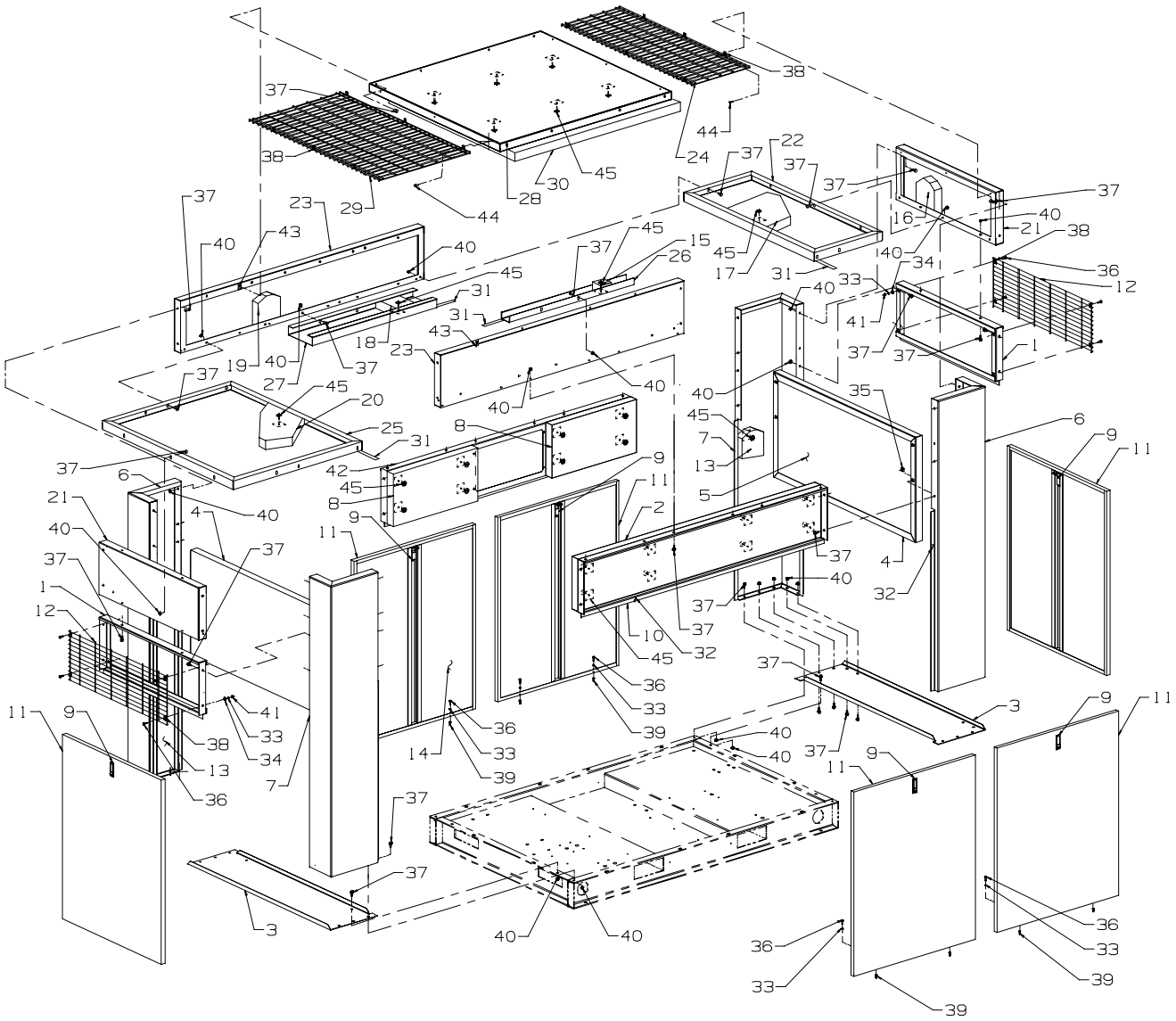
9.18 ENCLOSURE ASSEMBLY (AIR-COOLED)

key number	*description*	*part number*	*quantity*
1	panel, end 12/16	250018-646	2
2	panel, fibgs 2” x 66.00” x 12.00”	02250060-284	1
3	panel, bottom end	02250053-970	2
4	panel, baffle sound	02250053-969	2
5	panel, fibgls 2” x 46.5” x 23”	02250059-926	2
6	panel, corner lh	02250062-531	2
7	panel, corner rh	02250062-530	2
8	panel, fibgs 2” x 12” x 23”	02250060-287	2
9	catch, adj trigger lock 1”	049764	6
10	panel, encl back side	250017-312	1
11	panel, access side	250017-310	6
12	grille, encl end 12/16	250018-667	2
13	panel, fibgls 2” x 16.00” x 68.00”	02250064-130	4
14	panel, fibgls 1” x 15.5” x 41.5”	250020-015	12
15	panel, fibgs 2” x 33.75” x 2.50”	02250064-012	1
16	panel, fibgs 2” x 33.00” x 13.5”	02250064-009	2
17	panel, fibgs 2” x 43.00” x 18.00”	02250064-007	1
18	panel, fibgs 2” x 33.75” x 7.75”	02250064-006	1
19	panel, fibgs 2” x 66.00” x 13.50”	02250064-010	2
20	panel, fibgs 2” x 43.00” x 34.50”	02250064-005	1
21	panel, end assy	02250062-532	2
22	panel, motor end seal	02250062-535	1
23	panel, front/back assy	02250062-533	2
24	grille, roof ls-20	02250064-278	1
25	panel, compr. end seal	02250062-534	1
26	panel, back seal	02250062-537	1
27	panel, front seal	02250062-536	1
28	panel, roof center ac	02250064-340	1
29	grille, roof ls-20 unit side	02250069-602	1
30	panel, fibgs 2” x 55.25” x 43.25”	02250064-408	1
31	weatherstrip, felt 1/8” x 1”	043502	13 ft.

(Continued on page 91)

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

9.18 ENCLOSURE ASSEMBLY (AIR-COOLED)

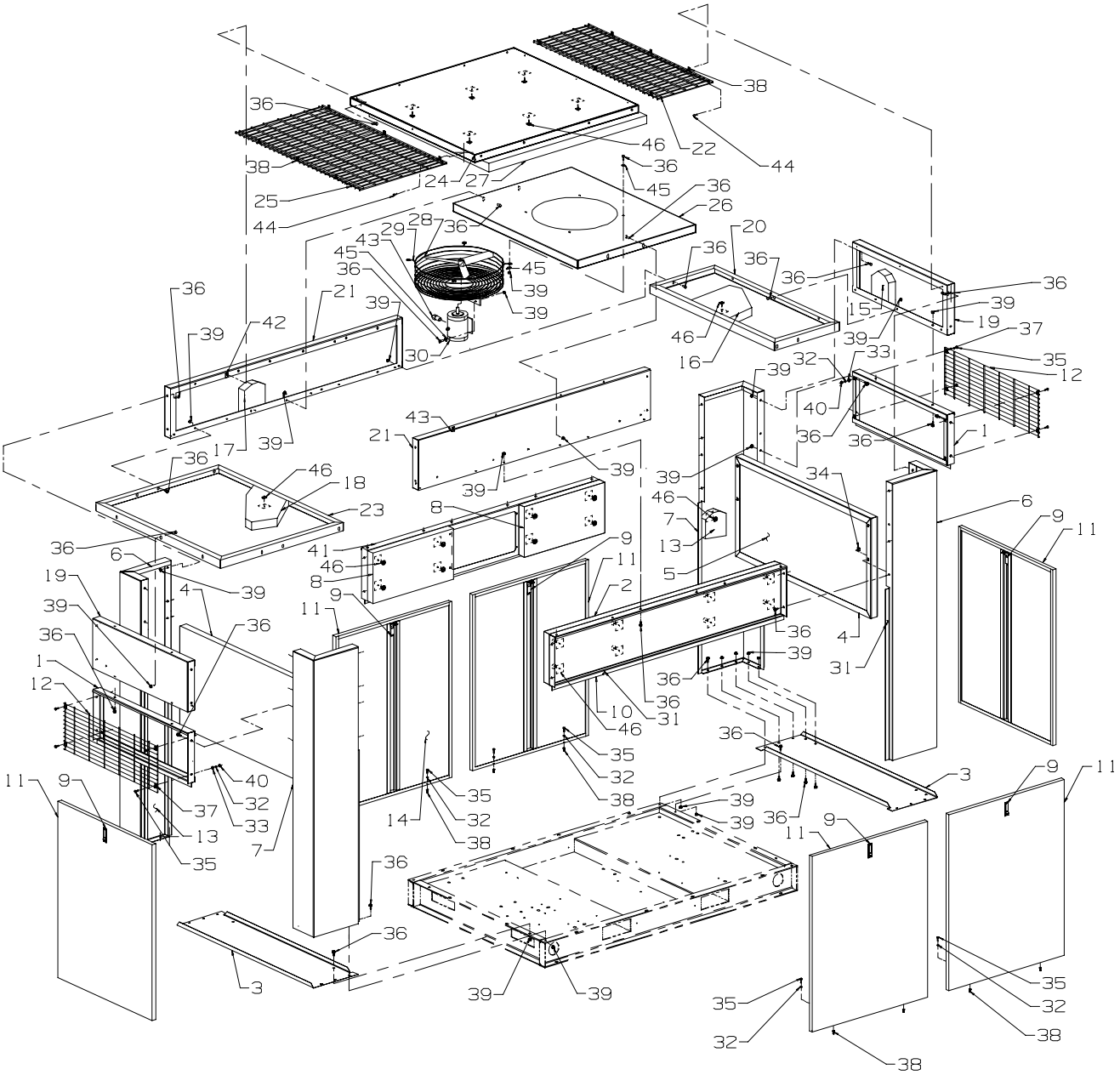


9.18 ENCLOSURE ASSEMBLY (AIR-COOLED) (CONTINUED)

key number	*description*	*part number*	*quantity*
32	weatherstrip, 3/16” x 3/8”	250022-436	76 ft.
33	washer, sprlock reg pltd 1/4”	838504-062	16
34	washer, pl b r pltd 1/4”	838204-071	8
35	nut, retainer 5/16”-18	861405-092	8
36	capscrew, hex gr5 1/4”-20 x 1”	829104-100	16
37	screw, hx ser wash 5/16” x 3/4”	829705-075	96
38	clamp, wire	043194	20
39	rivet, tubular int tap 1/4”-20	049824	8
40	nut, hex flanged plated 5/16”-18	825305-283	82
41	nut, hex unfinished 1/4”-20	824204-226	8
42	panel, encl front side	250017-311	1
43	nut, retainer 5/16”-18	861505-140	8
44	screw, self drill 1/4” x 3/4”	834504-075	12
45	hanger, insulation	02250054-281	61

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

9.19 ENCLOSURE ASSEMBLY (WATER-COOLED)



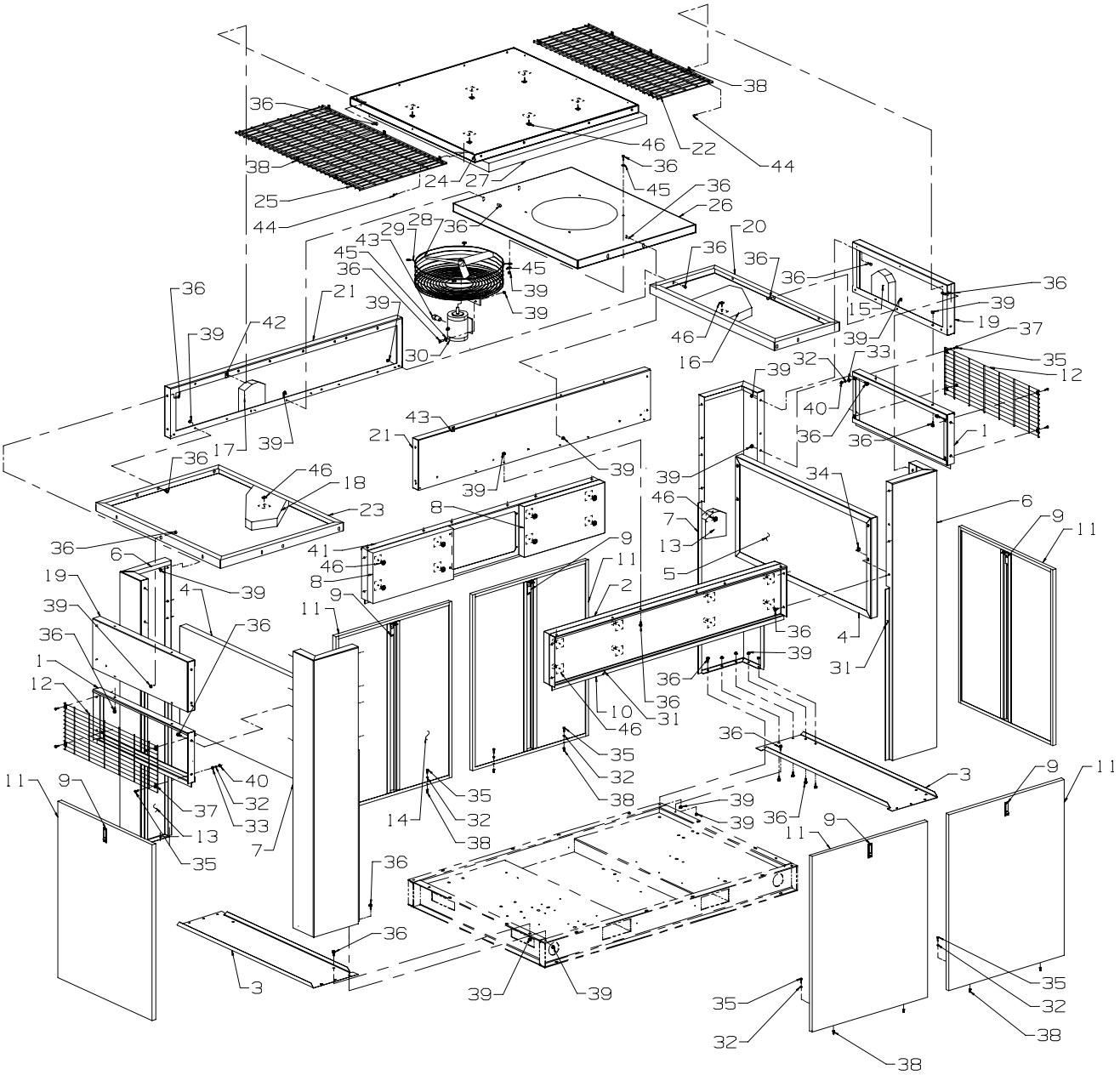
9.19 ENCLOSURE ASSEMBLY (WATER-COOLED)

key number	*description*	*part number*	*quantity*
1	panel, end 12/16	250018-646	2
2	panel, fibgs 2" x 66.00" x 12.00"	02250060-284	1
3	panel, bottom end	02250053-970	2
4	panel, baffle sound	02250053-969	2
5	panel, fibgls 2" x 46.5" x 23"	02250059-926	2
6	panel, corner lh	02250062-531	2
7	panel, corner rh	02250062-530	2
8	panel, fibgs 2" x 12" x 23"	02250060-287	2
9	catch, adj trigger lock 1"	049764	6
10	panel, encl back side	250017-312	1
11	panel, access side	250017-310	6
12	grille, encl end 12/16	250018-667	2
13	panel, fibgls 2" x 16.00" x 68.00"	02250064-130	4
14	panel, fibgls 1" x 15.5" x 41.5"	250020-015	12
15	panel, fibgs 2" x 33.00" x 13.5"	02250064-009	2
16	panel, fibgs 2" x 43.00" x 18.00"	02250064-007	1
17	panel, fibgs 2" x 66.00" x 13.50"	02250064-010	2
18	panel, fibgs 2" x 43.00" x 34.50"	02250064-005	1
19	panel, end assy	02250062-532	2
20	panel, motor end seal	02250062-535	1
21	panel, front/back assy	02250062-533	2
22	grille, roof ls-20	02250064-278	1
23	panel, compr. end seal	02250062-534	1
24	panel, roof center ac	02250064-340	1
25	grille, roof ls-20 unit side	02250069-602	1
26	panel, fan support ls-20,100wc	02250073-906	1
27	panel, fibgs 2" x 55.25" x 43.25"	02250064-408	1
28	fan, vent 18"	410358	1
29	guard, exhaust fan	410179	1
30	motor, .25 hp	consult factory	1
31	weatherstrip, 3/16" x 3/8"	250022-436	76 ft.

(Continued on page 95)

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

9.19 ENCLOSURE ASSEMBLY (WATER-COOLED)

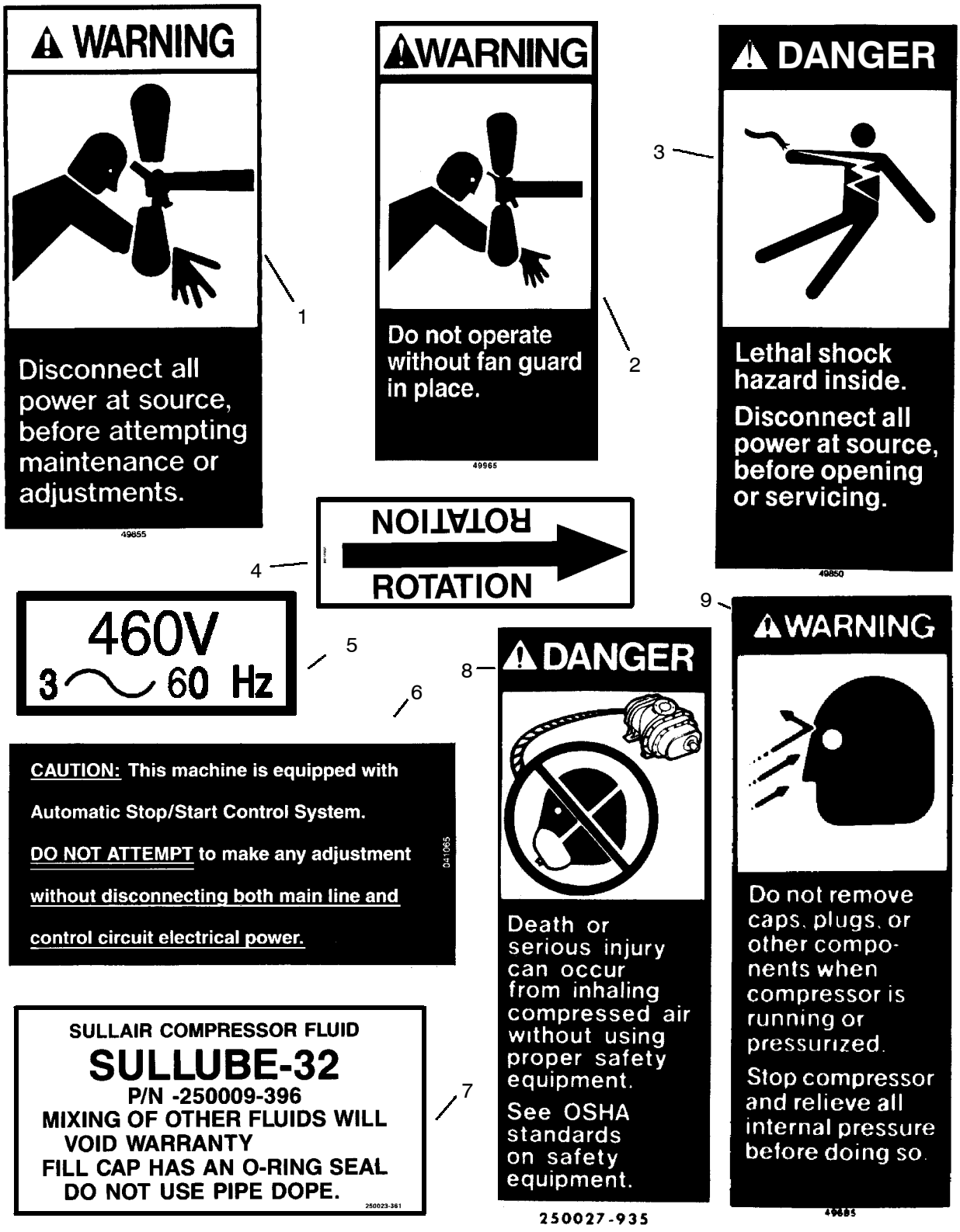


9.19 ENCLOSURE ASSEMBLY (WATER-COOLED) (CONTINUED)

key number	*description*	*part number*	*quantity*
32	washer, sprlock reg pltd 1/4”	838504-062	16
33	washer, pl b r pltd 1/4”	838204-071	8
34	nut, retainer 5/16”-18	861405-092	8
35	capscrew, hex gr5 1/4”-20 x 1”	829104-100	16
36	screw, hx ser wash 5/16” x 3/4”	829705-075	104
37	clamp, wire	043194	20
38	rivet, tubular int tap 1/4-20	049824	8
39	nut, hex flanged plated 5/16”-18	825305-283	90
40	nut, hex unfinished 1/4”-20	824204-226	8
41	panel, encl front side	250017-311	1
42	nut, retainer 5/16”-18	861505-140	8
43	grip, cord 1/2”	250018-497	1
44	screw, self drill 1/4” x 3/4”	834504-075	12
45	washer, pl b r 5/16”	837205-071	12
46	hanger, insulation	02250054-281	56

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

9.20 DECAL GROUP



9.20 DECAL GROUP

key number	*description*	*part number*	*quantity*
1	sign, warning sever fan	049855	1
2	sign, warning sever fan port	049965	1
3	sign, danger electrocution	049850	1
4	decal, rotation 7”	250021-286	1
5	decal, voltage international (460V) **(I)**	02250069-399	1
6	decal, caution auto start/stop	041065	1
7	decal, compressor fluid Sullube 32	250023-361	1
8	sign, danger air breathing	250027-935	1
9	sign, warning compressor fluid fill	049685	1

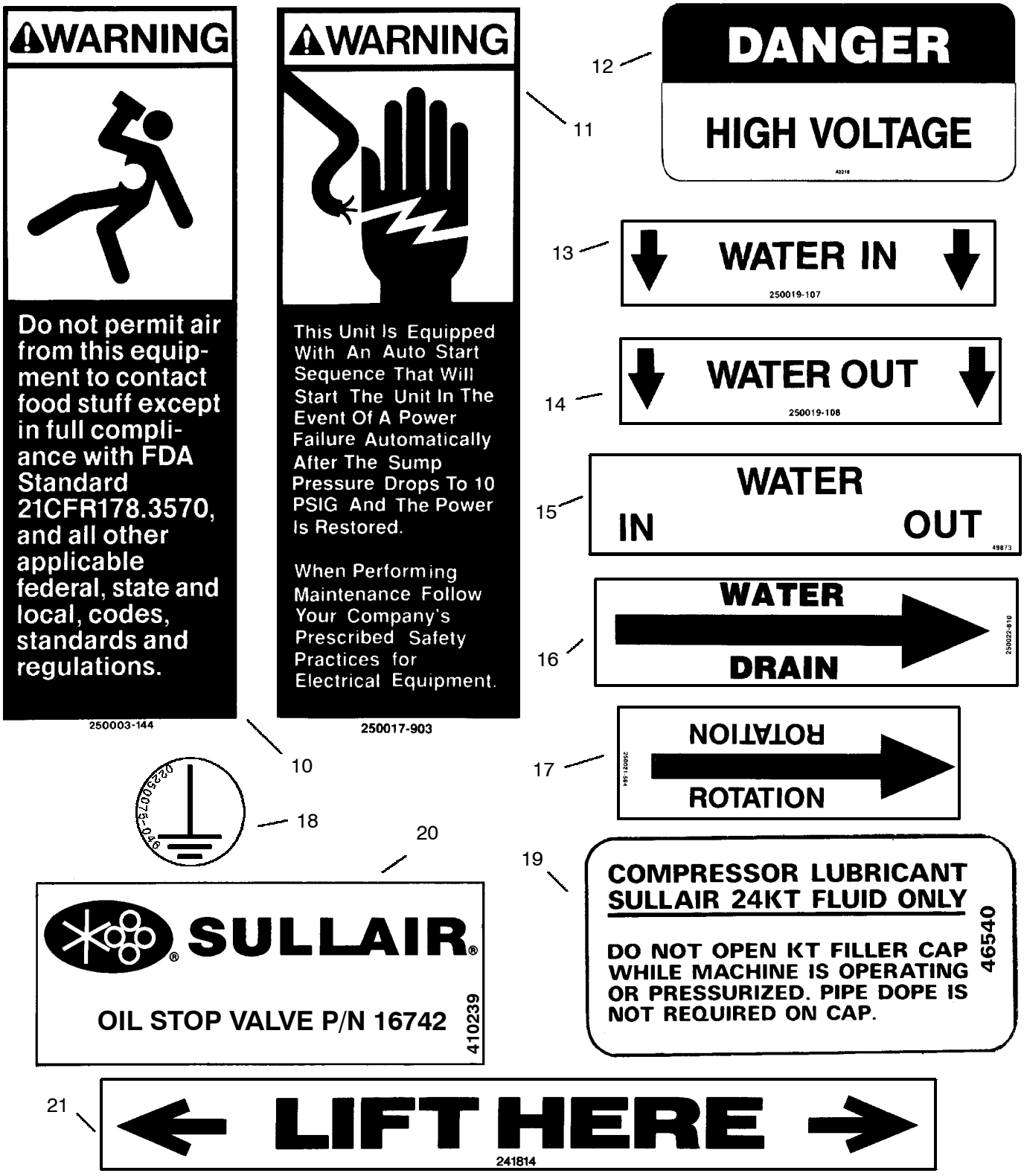
(Continued on page 99)

(I) For machine with voltage other than 460V, consult factory for decal part number.

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

ILLUSTRATIONS AND PARTS LIST

9.20 DECAL GROUP



9.20 DECAL GROUP (CONTINUED)

key number	*description*	*part number*	*quantity*
10	sign, warning food grade	250003-144	1
11	decal, warning auto start	250017-903	1
12	decal, danger high voltage	042218	1
13	decal, water in **(I)**	250019-107	1
14	decal, water out **(I)**	250019-108	1
15	decal, water in/out **(I)**	049873	1
16	decal, water drain	250022-810	1
17	decal, rotation 3 1/2”	250021-564	1
18	decal, earth ground	02250075-046	2
	•decal, protective earth ground (not shown)	02250075-045	1
	•decal, PE designation (not shown)	02250075-540	1
19	decal, compressor lubrication	046540	1
20	decal, fluid stop valve	410239	1
21	decal, fork lifting	241814	2

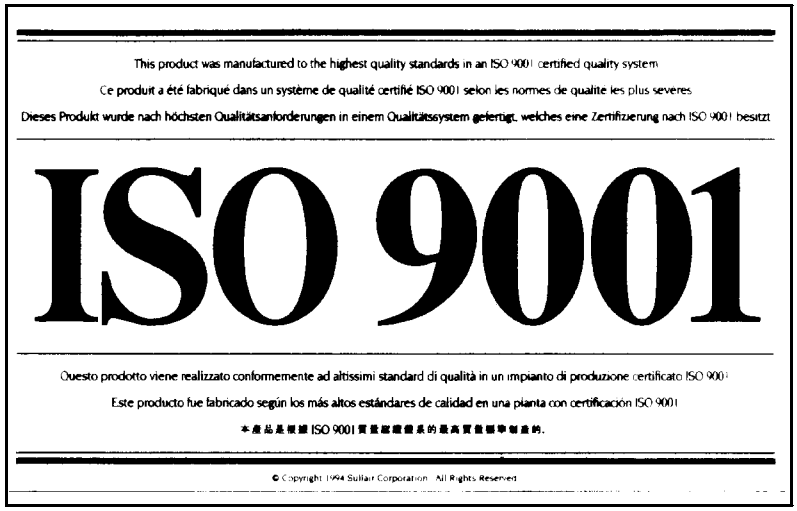
(Continued on page101)

(I) For water-cooled compressors only.

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

ILLUSTRATIONS AND PARTS LIST

9.20 DECAL GROUP



22

24

23

26

SULLAIR®

27

LS-20

28

SULLAIR COMPRESSOR FLUID
SRF 1/4000
P/N -250019-661
MIXING OF OTHER FLUIDS WILL VOID WARRANTY
FILL CAP HAS AN O-RING SEAL DO NOT USE PIPE DOPE.
250022-839

9.20 DECAL GROUP (CONTINUED)

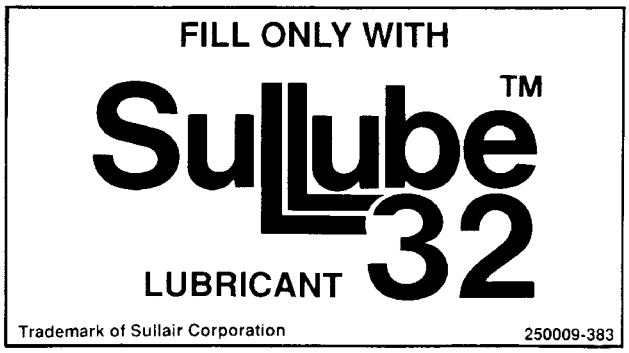
key number	*description*	*part number*	*quantity*
22	decal, ISO 9001	02250057-624	1
23	decal, 24 KT	046415	2
24	decal, actuator	250029-836	1
25	decal, LS Supervisor II front **(II)**	02250073-284	1
26	decal, Sullair	02250059-054	1
27	decal, LS-20	02250061-085	1
28	decal, SRF 1/4000 fluid	250022-839	1

(Continued on page 103)

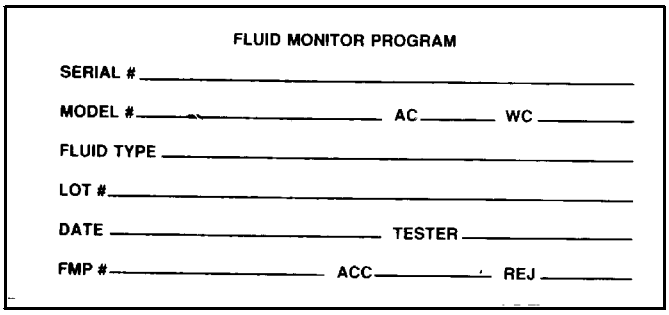
(II) See Section 4, Supervisor **II** Description, Figure 4-1.

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

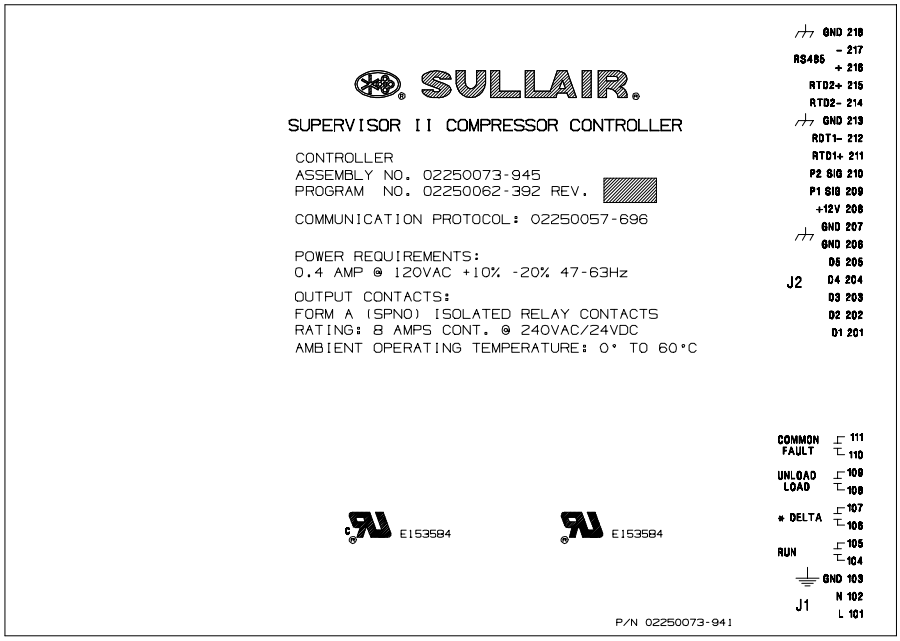
9.20 DECAL GROUP



29



30



31

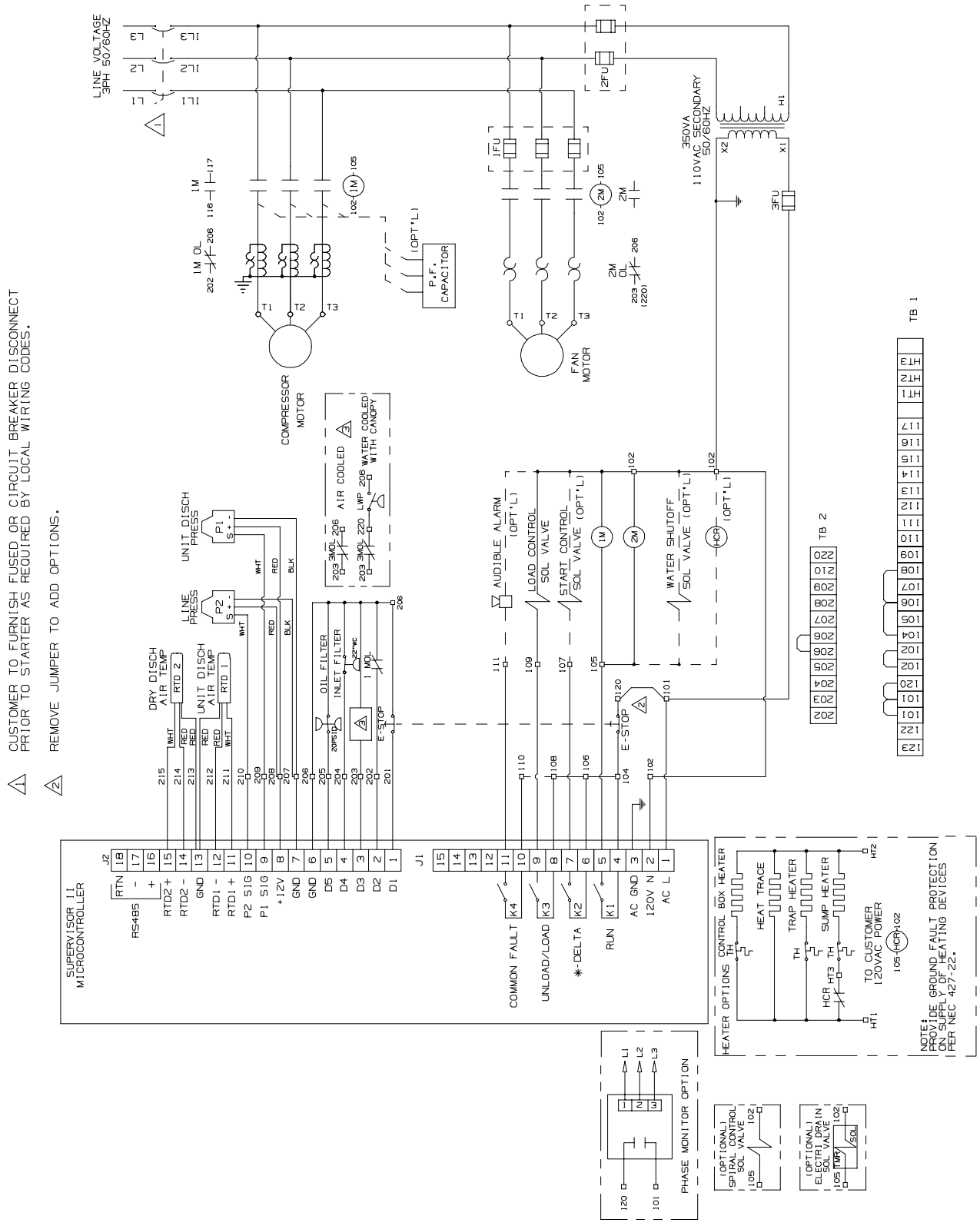
32

9.20 DECAL GROUP (CONTINUED)

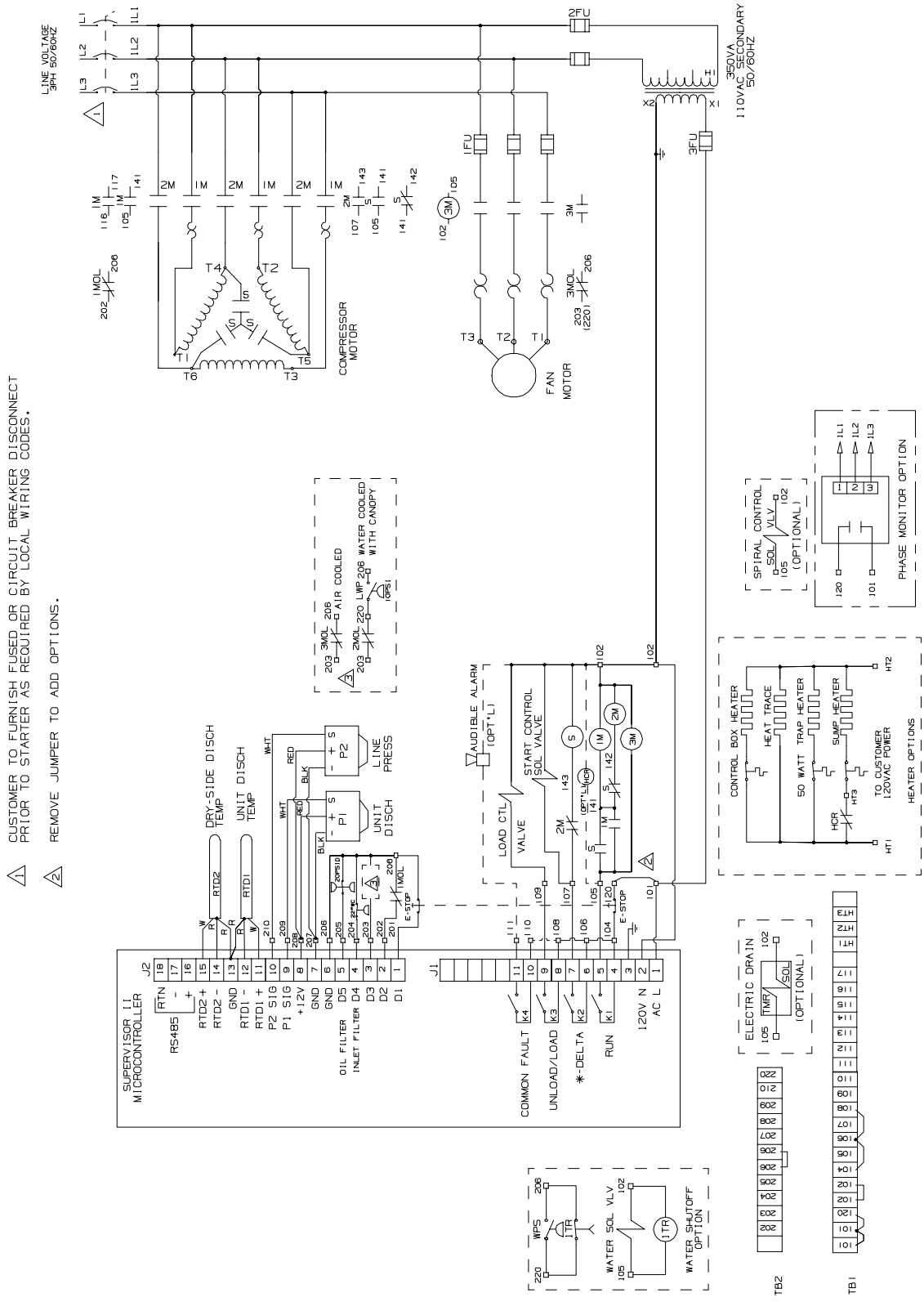
key number	*description*	*part number*	*quantity*
29	decal, Sullube	250009-383	1
30	label, fluid monitor program	250022-725	1
31	decal, LS std Supervisor II information	02250073-941	1
32	decal, logo SRF 1/4000	250021-483	1
33	decal, electrical component (not shown)	250038-457	1

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

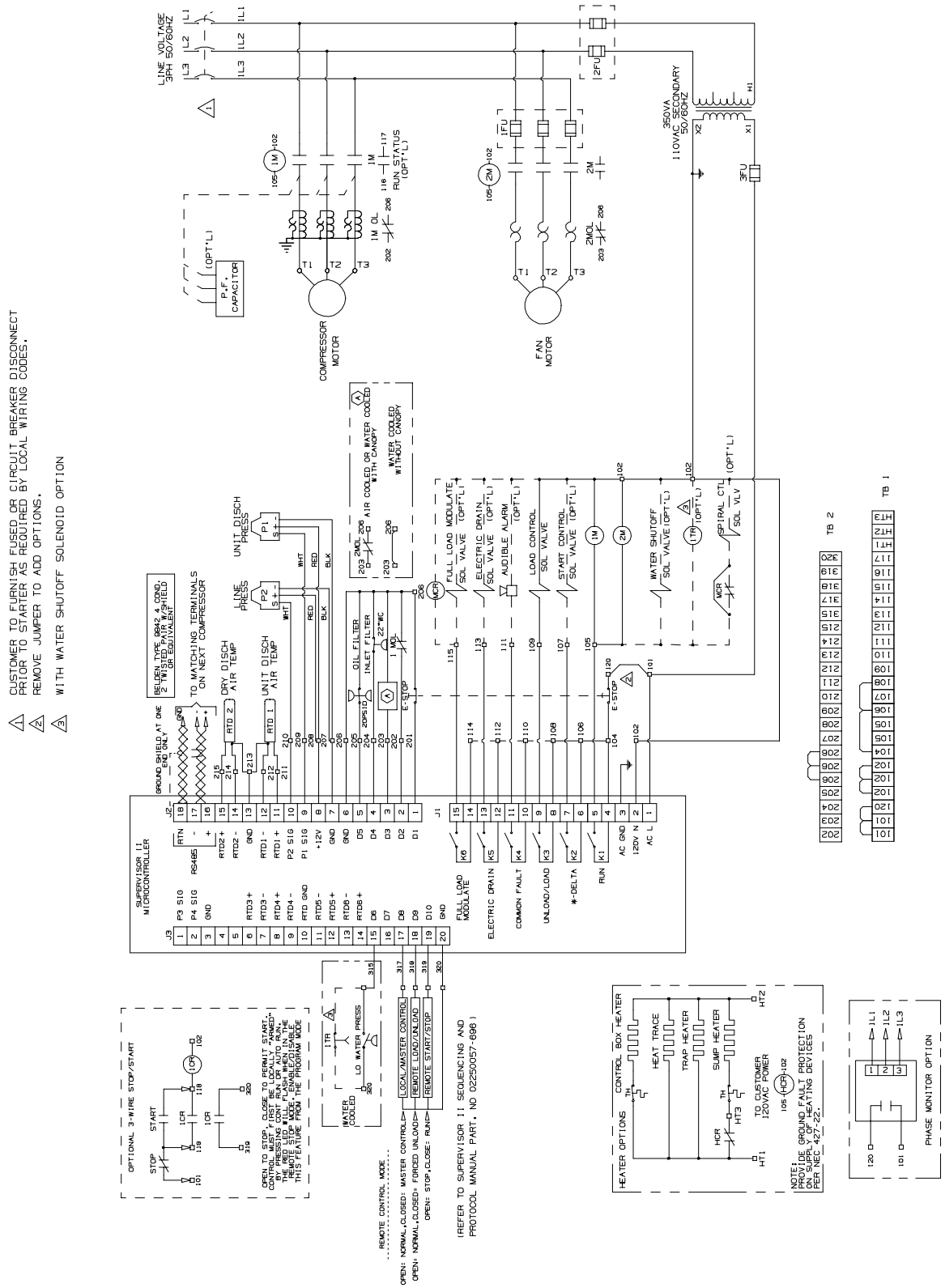
9.21 WIRING DIAGRAM LS-20 STANDARD



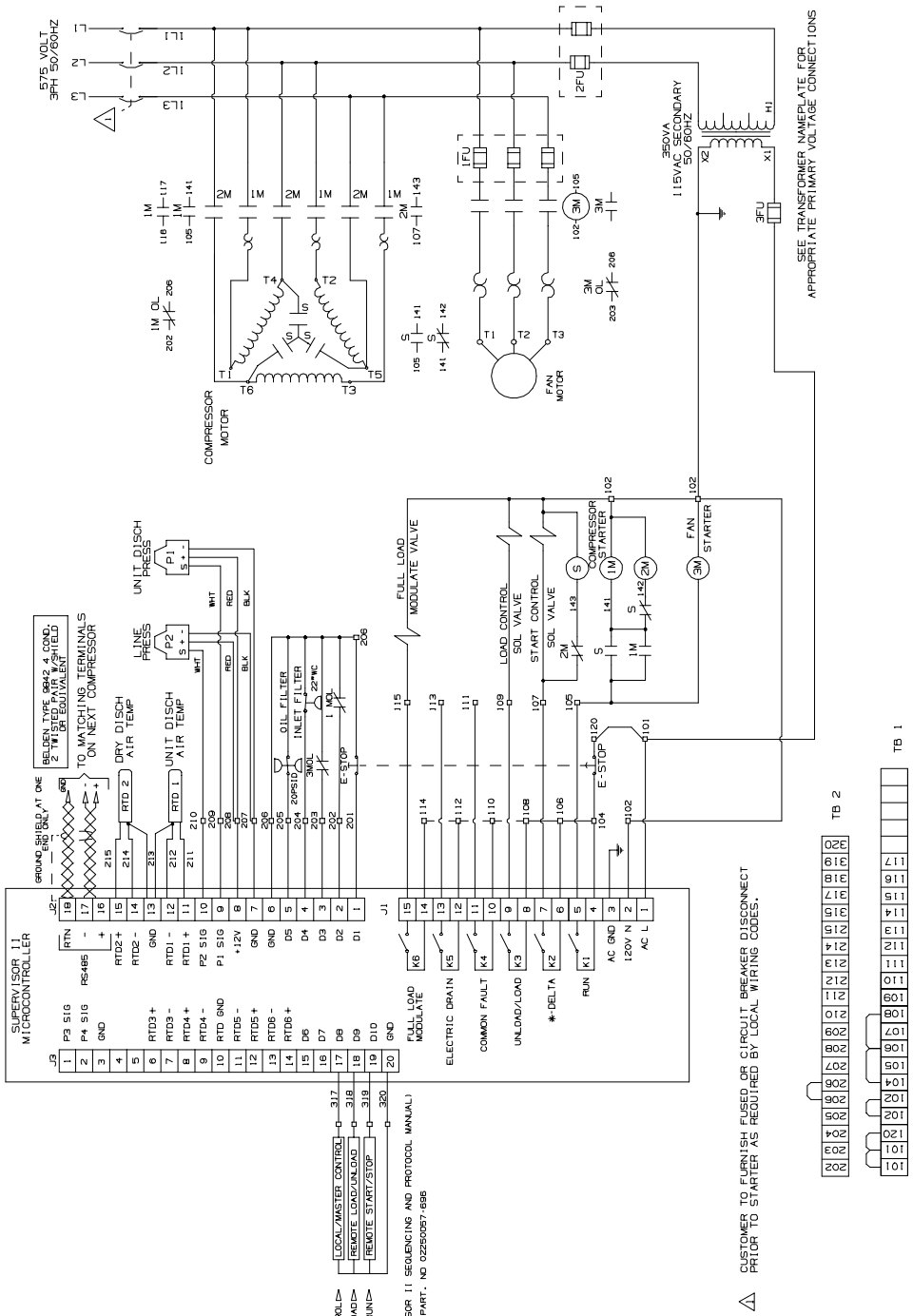
9.22 WIRING DIAGRAM WYE-DELTA STANDARD



9.23 WIRING DIAGRAM DELUXE STANDARD



9.24 WIRING DIAGRAM WYE-DELTA DELUXE



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