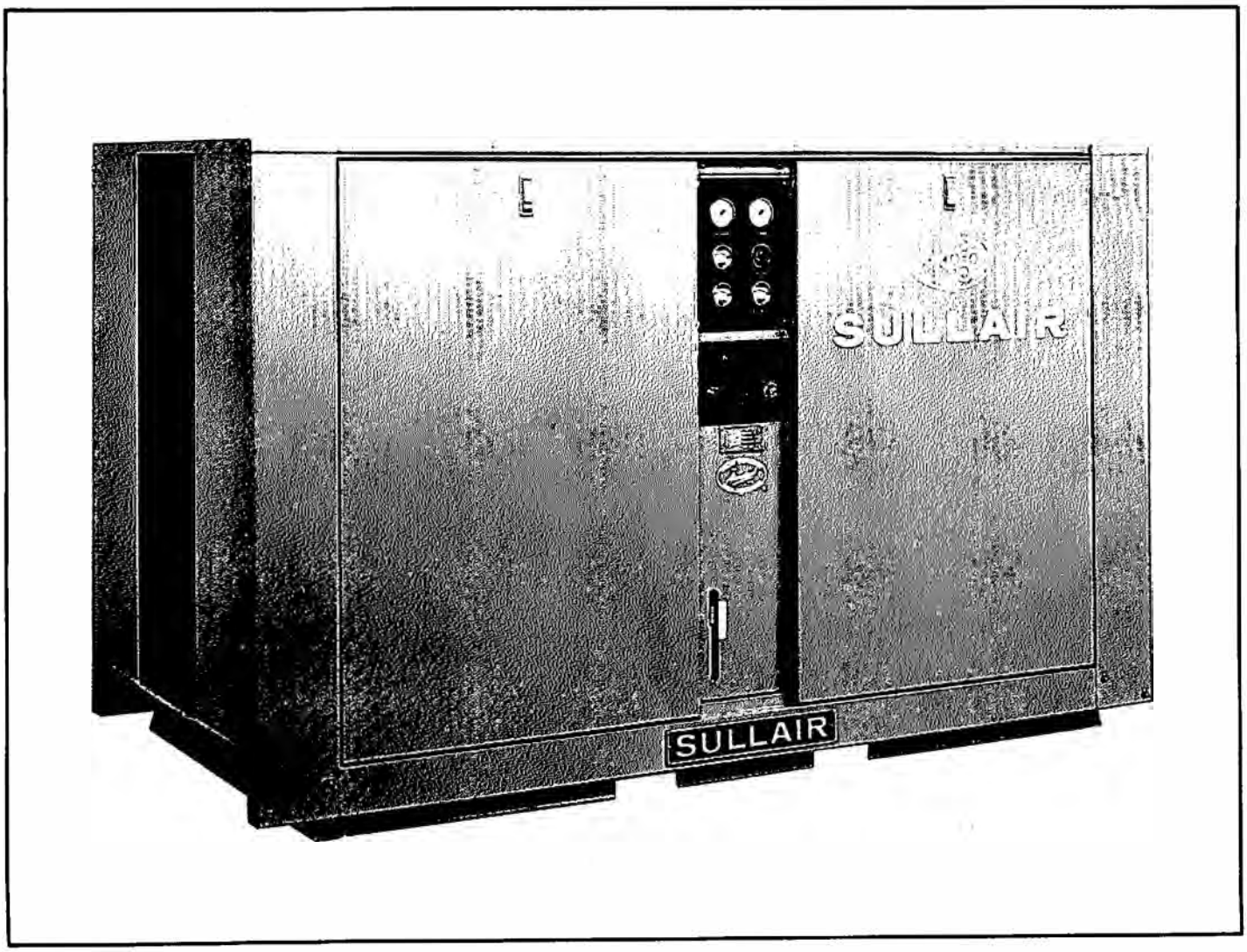
Operators Manual and Parts List

SULLAIR®
COMPRESSOR

Series 16B 60 & 75 HP Standard & 24 KT
Industrial Rotary Screw Air Compressor



WARRANTY

WARRANTY PERIOD COMMENCES THIRTY (30) DAYS AFTER DATE OF SHIPMENT FROM FACTORY UNLESS REGISTRATION CARD IS RETURNED WITHIN 10 DAYS OF MACHINE START-UP.

The Sullair compressor unit, if used in accordance with manufacturer's instructions, is warranted for two years (the Sullair 24KT air compressor unit, if continuously charged with 24KT coolant and used in accordance with manufacturer's instructions is warranted for ten years) against defects in materials and workmanship – and against loss of capacity due to wear. The unit will be replaced or repaired as a result of such defects. Disassembly of the air compressor unit will void this warranty and the unit exchange policy. This warranty does not apply to any unit damaged by accident, misuse or negligence.

The two year (ten year for 24KT machines) warranty extends only to the Sullair air compressor unit. The company's warranty obligation with regard to equipment not of its own manufacture, including the driver, whether electric motor, engine or turbine and the tires and batteries is limited to the warranty actually extended to the company by its supplier. All other parts including the shaft seal are warranted by Sullair for twelve months against defects in materials and workmanship.

THIS STATEMENT OF WARRANTY IS EXPRESSLY IN LIEU OF AND DISCLAIMS ALL OTHER EXPRESS WARRANTIES, IMPLIED WARRANTIES OF MERCHANTABILITY AND ALL OTHER IMPLIED WARRANTIES. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THIS WARRANTY DOES NOT INCLUDE LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

All claims under this warranty should be made by contacting your local Sullair Representative.

The above policy is printed on a Warranty Registration Card that is sent with every machine shipped by Sullair Corporation. The lower section of this card must be completed and returned to Sullair to make warranty valid.

SULLAIR CORPORATION

3700 E. MICHIGAN BLVD.
MICHIGAN CITY, INDIANA 46360

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Section 1
DESCRIPTION

1.1 INTRODUCTION

Your new Sullair® lubricated, rotary screw air compressor will provide you with improved reliability and greatly reduced maintenance.

Compared to other compressors, the Sullair Rotary Screw is unique in mechanical reliability and compressor unit wear. No inspection is required of the working parts within the compressor unit.

Read Section 5 (Maintenance) to keep your air compressor in top operating condition.

1.2 DESCRIPTION OF COMPONENTS

Refer to Figure 1-1.

The components and assemblies of the Series 16 air compressors are clearly shown.

The complete package includes compressor, electric motor, starter, compressor inlet system, compressor discharge system, compressor lubrication and cooling system, capacity control system and instrument panel. Optional equipment, such as a heavy gauge steel enclosure in also normally factory-installed.

On Series 16 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.

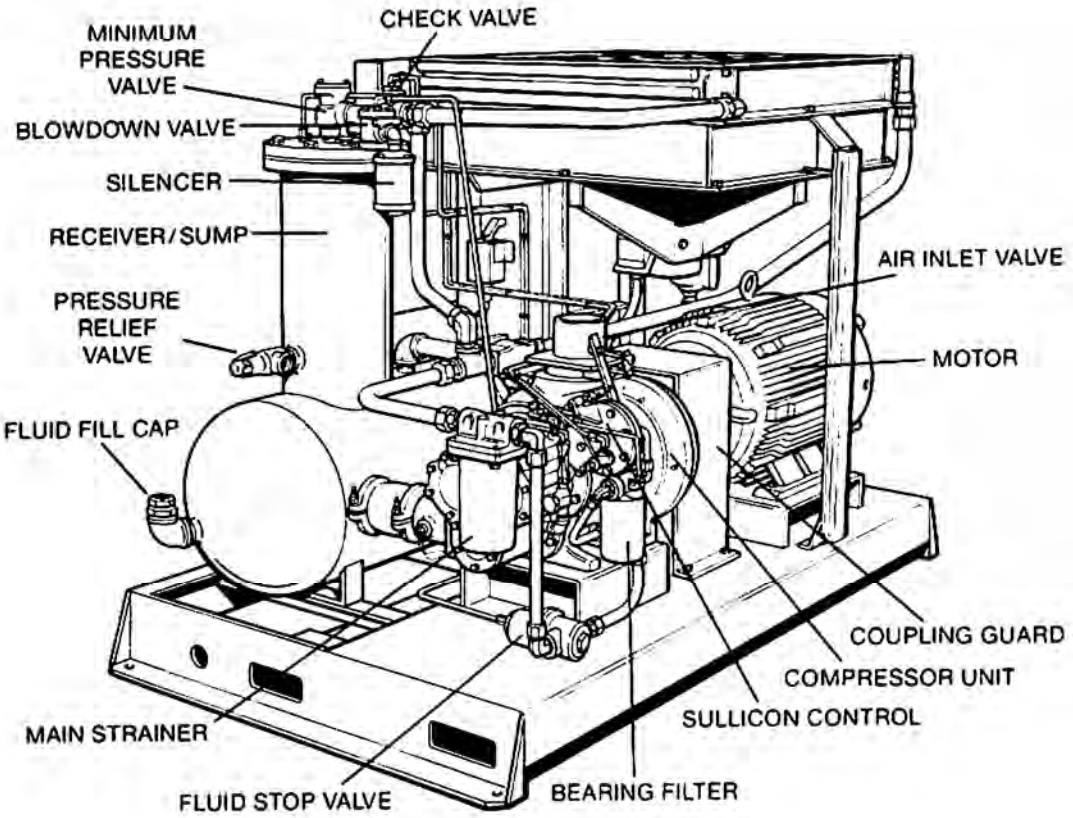
On water-cooled models, fluid is piped into a four-pass exchanger where the heat of compression is removed from the fluid. A fan is used to supply sufficient ventilating air to the electric motor on machines equipped with a canopy.

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

1.3 SULLISCREW® COMPRESSOR UNIT, FUNCTIONAL DESCRIPTION

Sullair Air Compressors feature the Sulliscrew 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 machine there is no maintenance or internal inspection of the internal parts of the compressor unit permitted in accordance with the terms of the warranty.

Figure 1-1 Sullair Series 16 Rotary Screw Compressor



Section 1
DESCRIPTION

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

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

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

1.4 COMPRESSOR COOLING AND LUBRICATION SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 1-2.
The cooling and lubrication system (air-cooled version) consists of a fan, radiator-type cooler/aftercooler assembly, full-flow main line strainer and extra-fine bearing filter, thermal valve, fluid stop valve and interconnecting piping.

Sullair 24KT compressors are filled with a fluid which rarely needs to be changed. In the event a change of fluid is required, use only Sullair 24KT fluid. 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 contained is to be supplied by your Sullair dealer at start-up. The user will receive an analysis report with recommendations.

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

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

Fluid flows from the bottom of the receiver/sump to the thermal valve. The thermal valve is fully open when the oil temperature is below 170°F. (76.7°C). The fluid passes through the thermal valve, the main strainer 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. (76.7°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 to the main strainer and on to the compressor unit.

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

The bearing filter has a replacement element and an integral pressure by-pass valve. An associated service indicator shows red when the filter needs servicing. This indicator has a pressure setting lower than that of the bypass valve. After the initial 50 hour filter change, the indicator will rarely show red under normal operating conditions.

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

Water-cooled versions of the compressor have a water-flow regulating valve which operates to conserve water during periods of varying load on the compressor. This same valve automatically shuts off the water supply when the compressor is shut down. In addition, water-cooled models have a water pressure switch to prevent operation with inadequate water pressure.

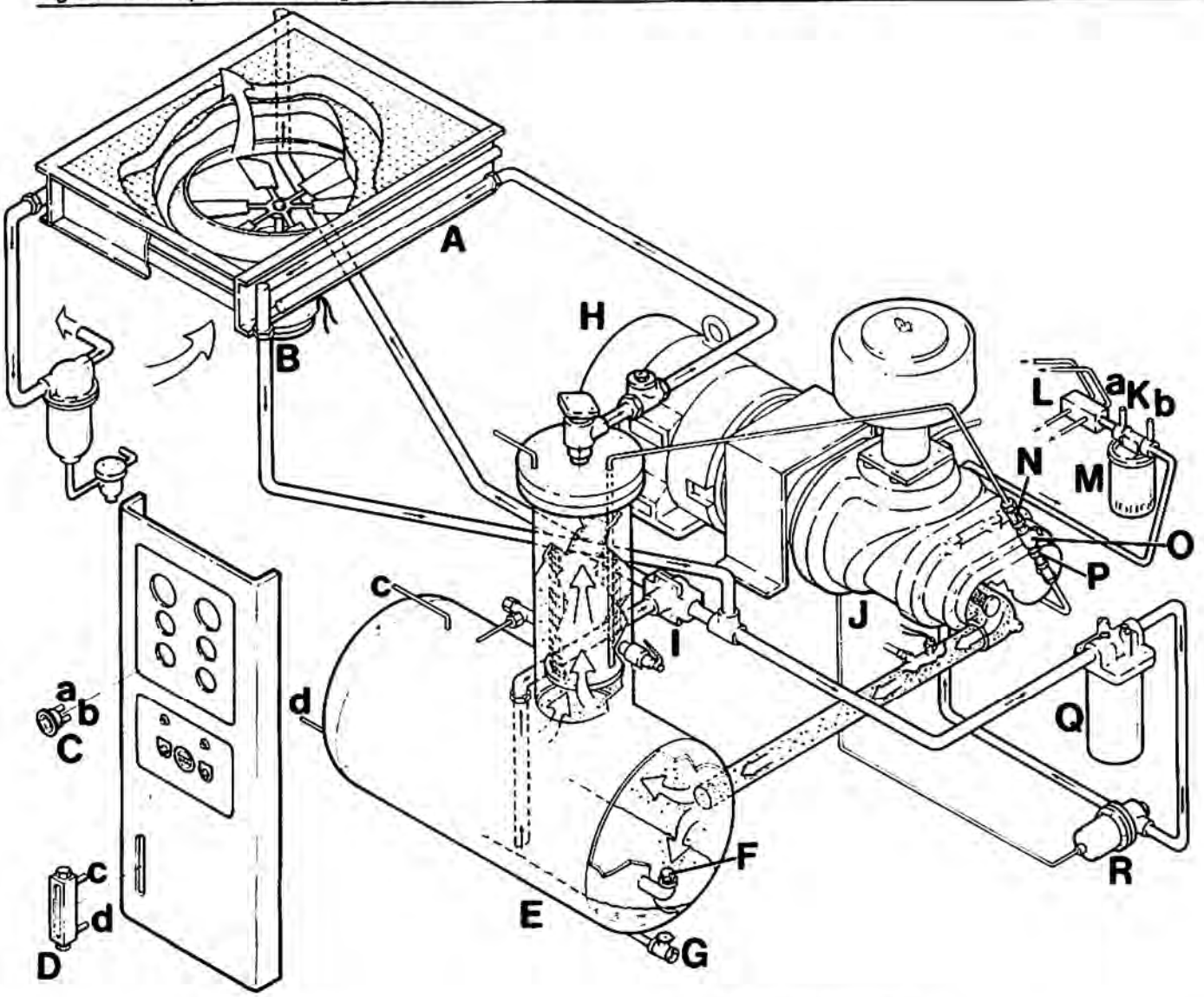
1.5 COMPRESSOR DISCHARGE SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 1-3. The compressor unit discharges the compressed air/fluid mixture through a discharge check valve into the combination receiver/sump. The discharge check valve prevents air in the receiver from returning to the compression chamber after the machine has been shut down.

The receiver has three main functions:
- Acts as the primary fluid separator
- Serves as the compressor fluid sump
- Houses the final fluid separator element.

The compressed air/fluid mixture enters the receiver and is directed against the far side of the tank. Its direction of movement is changed and its velocity significantly reduced, thus causing the large droplets of fluid to fall to the bottom of the receiver/sump. The fractional percentage of fluid remaining in the compressed air collects on the surface of the separator element as the compressed air flows through the separator. A return line (or scavenge tube) leads from the bottom of the separator element to the inlet region of the compressor unit. Fluid collecting on the bottom of the separator is returned to the compressor by a pressure difference between the receiver and the compressor inlet. A sight glass is located in the return line to observe this fluid flow. There is also an orifice in this return line (protected by a strainer) to assure proper flow. An indicator, located adjacent to the instrument

Figure 1-2 Compressor Cooling and Lubrication System Diagram (Air-Cooled Version)



A – FLUID COOLER (TOP)

B – FAN MOTOR

C – BEARING FILTER MAINTENANCE INDICATOR

D – FLUID LEVEL SIGHT GLASS

E – RECEIVER SUMP

F – FLUID FILL CAP

G – FLUID DRAIN

H – MOTOR

I – THERMAL VALVE

J – COMPRESSOR UNIT

K – TO BEARING FILTER MAINTENANCE INDICATOR

L – FLUID MANIFOLD TO COMPRESSOR BEARINGS

M – BEARING FLUID FILTER

N – FLUID RETURN LINE SIGHT GLASS

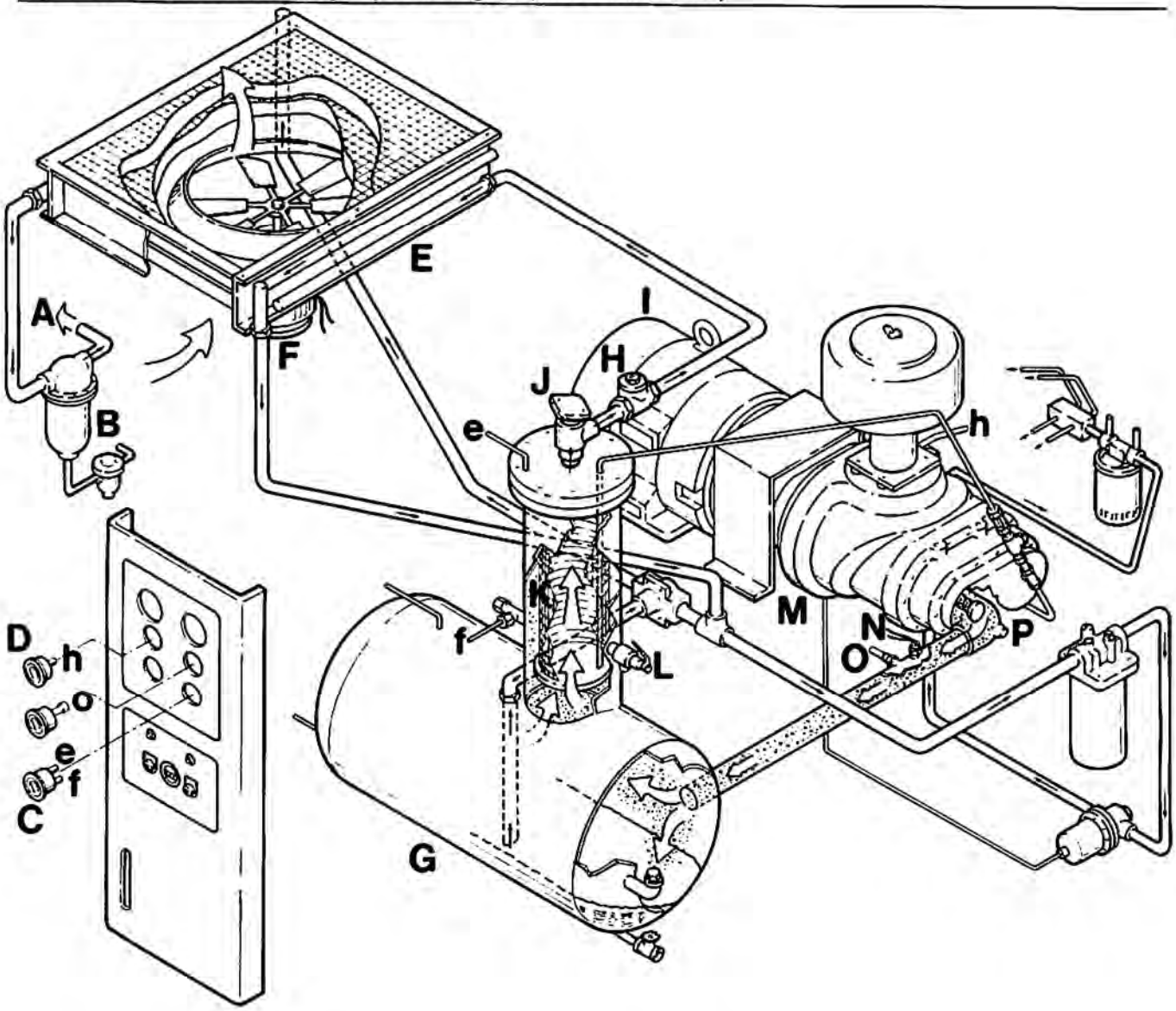
O – RETURN LINE STRAINER

P – ORIFICE

Q – MAIN FLUID FILTER

R – FLUID STOP VALVE

Figure 1-3 Compressor Discharge System Diagram (Air-Cooled Version)



A – SERVICE AIR

B – MOISTURE SEPARATOR AND TRAP

C – SEPARATOR MAINTENANCE INDICATOR

D – COMPRESSOR AIR FILTER MAINTENANCE INDICATOR

E – AFTERCOOLER (BOTTOM)

F – FAN MOTOR

G – RECEIVER SUMP

H – SERVICE AIR CHECK VALVE

I – MOTOR

J – MINIMUM PRESSURE VALVE

K – SEPARATOR ELEMENT

L – PRESSURE RELIEF VALVE

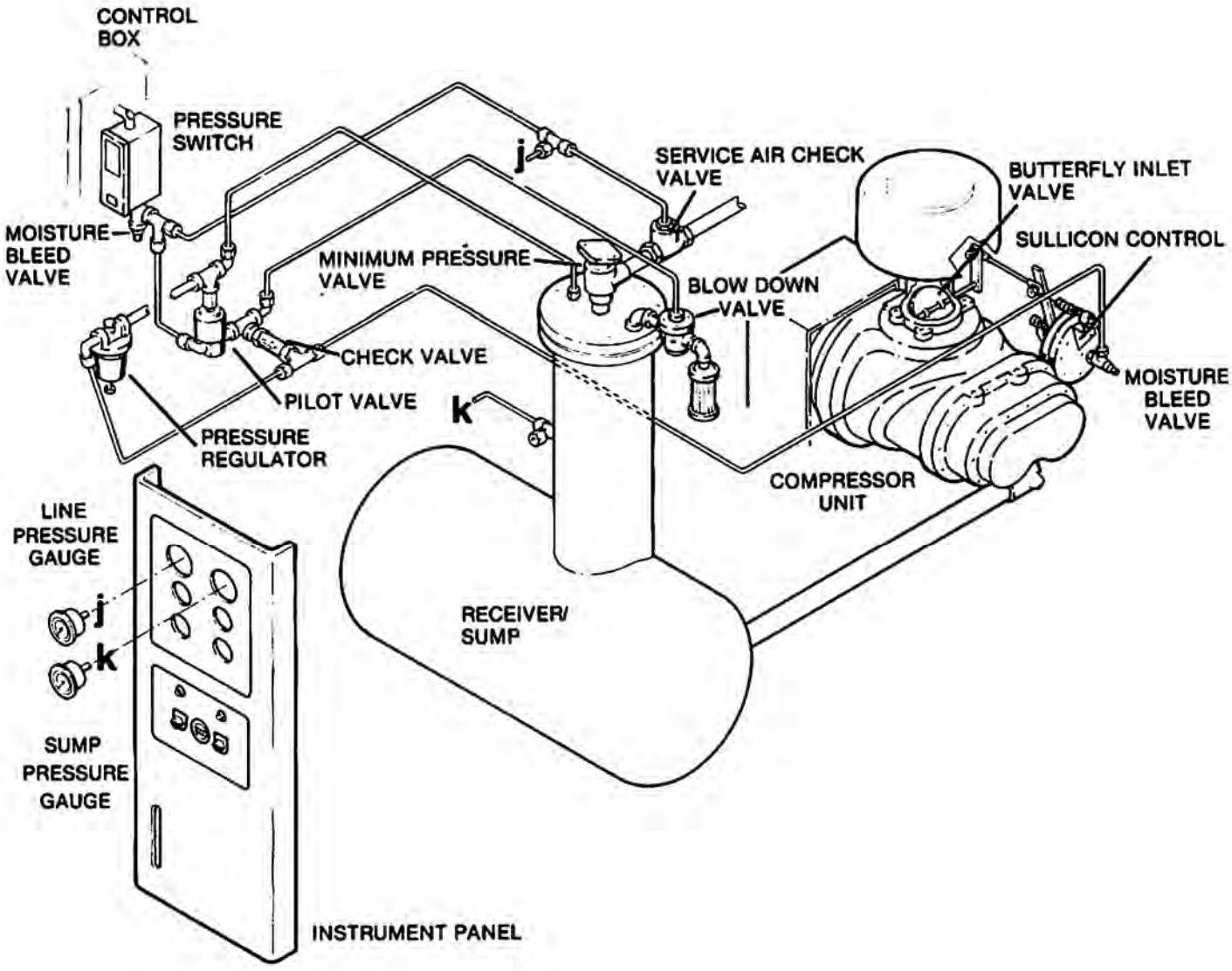
M – COMPRESSOR UNIT

N – TO DISCHARGE TEMP. SWITCH (CONTROL BOX)

O – TO DISCHARGE TEMP. GAUGE (INSTRUMENT PANEL)

P – DISCHARGE CHECK VALVE

Figure 1-4 Control System, Diagram



panel, shows red if abnormal pressure drop through the separator develops. At this time, separator element replacement is necessary.

The receiver is ASME coded. A minimum pressure valve, located downstream from the separator, assures a minimum receiver pressure of 50 PSIG (344.5 kPa) during all conditions. This pressure is necessary for proper air/fluid separation and to assure proper fluid circulation while supplying air to the system.

A terminal check valve at the outlet of the receiver prevents compressed air in the service line from bleeding back into the receiver on shutdown and during operation of the compressor in an unloaded condition.

A pressure relief valve (located on the wet side of the separator) is set to open if the sump pressure exceeds 140 PSIG (964.6 kPa). All Sullair Compressor models are equipped with a high pressure shutdown switch to shut down the compressor at 135 PSIG (931 kPa). 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, 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 fill opening, placed low on the tank to prevent overfilling the sump. A sight-glass enables the operator to visually monitor the sump fluid level.

1.6 CONTROL SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 1-4.

The purpose of the compressor control system is to regulate the compressor air intake to match the amount of compressed air being used. The Capacity Control system consists of a Sullicon control, a butterfly valve (located on the compressor air inlet) and a pressure regulator. The functional description of the control system is described below in four distinct phases of compressor operation. The following descriptive text applies to all 16 Series machines. For explanation purposes this description will apply to a machine with an operating pressure range of 100-110 PSI (689-758 kPa). A machine with any other pressure range would operate in the same manner excepting stated pressures.

START MODE – 0 to 50 PSI (0 to 344.5 kPa)
When the compressor START button is depressed, the pressure will quickly rise from 0 to 50 PSI (0 to 344.5 kPa). During this period both the pressure regulator and the pilot valve are closed and the Sullicon Control is inoperative. The spring on the control holds the butterfly valve fully open and the compressor pumps at full rated capacity. The rising compressor air pressure is isolated from the service line in this phase by the minimum pressure valve, set at approximately 50 PSI (344.5 kPa).

NORMAL OPERATING MODE – 50 TO 100 PSI (344.5 TO 689 kPa)
When the compressed air pressure rises above 50 PSI (344.5 kPa), 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 a line pressure gauge. The pressure regulator and the pilot valve remain closed during this phase, keeping the Sullicon control inactive.

MODULATING MODE – 100 TO 110 PSI (689 TO 758 kPa)
If less than the rated capacity of compressed air is being used, the service line pressure will rise above 100 PSI (689 kPa). The pressure regulator valve gradually opens, applying air pressure to the diaphragm chamber of the Sullicon control which partially closes the butterfly valve on the compressor air inlet; reducing the amount of air entering the compressor until it matches the amount of air being used. The control system functions continually in this manner, between the limits of 100-110 PSI (689-758 kPa), in response to varying demands from the service line.

The pressure regulator has an orifice which vents a small amount of air to the atmosphere when the pressure regulator controls the butterfly valve. The orifice also bleeds any accumulated moisture from the Sullicon control.

UNLOAD – IN EXCESS OF 110 PSI (758 kPa) LINE PRESSURE
When a relatively small amount or no air is being used, the service line pressure rises to the setting (cut-out pressure) of the pressure switch. The pressure switch opens, interrupting the electrical power to the solenoid type pilot valve. At this time, the pilot valve allows dry sump tank air pressure to be applied directly to the control diaphragm, keeping the butterfly valve closed. Simultaneously, the pilot valve sends a pneumatic signal to the blowdown valve. The blowdown valve opens the sump to the atmosphere, reducing the sump pressure to approximately 50-55 PSI (344.5-379 kPa). The check valve in the air service line prevents line pressure from returning to the sump.

When the line pressure drops to the low setting (cut-in pressure) of the pressure switch (usually 100 PSI [689 kPa]) the pressure switch closes, re-energizing the three-way pilot valve and allowing the blowdown valve to close. The re-energized pilot valve again prevents line pressure from reaching the Sullicon control. Should the pressure begin to rise, the pressure regulator will resume its normal function as previously described.

For a machine with varied periods of time when there are no air requirements, a "Dual-Control" option is available. This option allows you to set the machine in an automatic position whereby the machine will shut down when no

compressed air requirement is present and restart as compressed air is needed. The machine must run in the unload position for a preset period of time before it will shut down.

1.7 AIR INLET SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 1-5.
The compressor inlet system consists of a dry-type air filter, a restriction gauge and an air inlet valve.

The restriction gauge, located on the compressor instrument panel, indicates the condition of the air filter by showing red when filter maintenance is required.

The butterfly-type air inlet valve directly controls the amount of air intake to the compressor in response to the operation of the Sullicon control (par. 1.6).

When using dual control, the machine must run for a preset period of time in the unload position before it will shut down.

1.8 INSTRUMENTATION, FUNCTIONAL DESCRIPTION

Refer to Figure 1-6 for specific location of parts described. The instrumentation consists of a panel containing line pressure, sump pressure and discharge temperature gauges and the air filter restriction gauge, along with START and STOP buttons and an hourmeter. Mounted behind the instrument panel are two maintenance indicators for the separator element and the bearing filter.

Refer to Figure 1-3 for functional locations of the following controls and indicators:

- The line (terminal) pressure gauge is connected to the dry side of the receiver downstream from the check valve and continually monitors your air pressure.
- The sump pressure gauge continually monitors the sump pressure at the various load and/or unload conditions.
- The discharge temperature gauge monitors the temperature of the air leaving the compressor unit. For both air-cooled and water-cooled compressors the normal reading is approximately 180°F. (82°C).
- The air filter restriction gauge monitors the condition of the air intake filter and shows red when filter service is required. This restriction gauge must be reset manually (See Figure 1-5)
- The START pushbutton turns the compressor on. (See Figure 1-6).
- The STOP pushbutton turns the compressor off. (See Figure 1-6).
- The hourmeter records accumulative hours of operation for the compressor and is useful for planning and logging service operations (See Figure 1-6).
- The separator maintenance indicator monitors condition of the separator element and shows red when the element restriction is excessive. This indicator is automatically reset after the element has been charged.
- The bearing filter maintenance indicator monitors the condition of the bearing lube filter element and shows red when the element should be changed. This indicator is also automatically reset (See Figure 1-2).
- The red light on the instrument panel indicates when power to the compressor is supplied.
- The green light indicates when the machine is running.

Figure 1-5 Compressor Air Inlet System

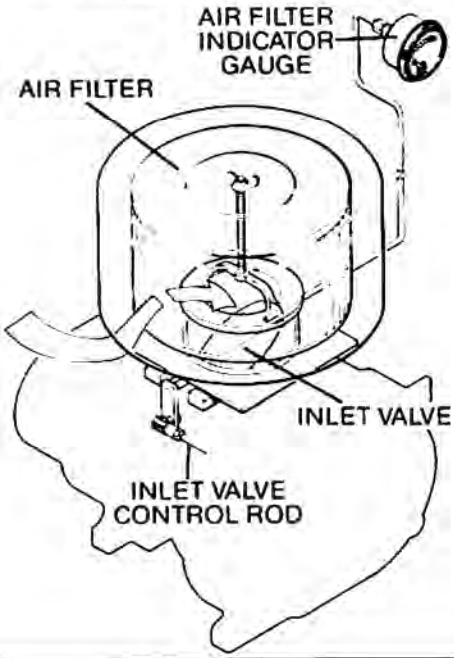
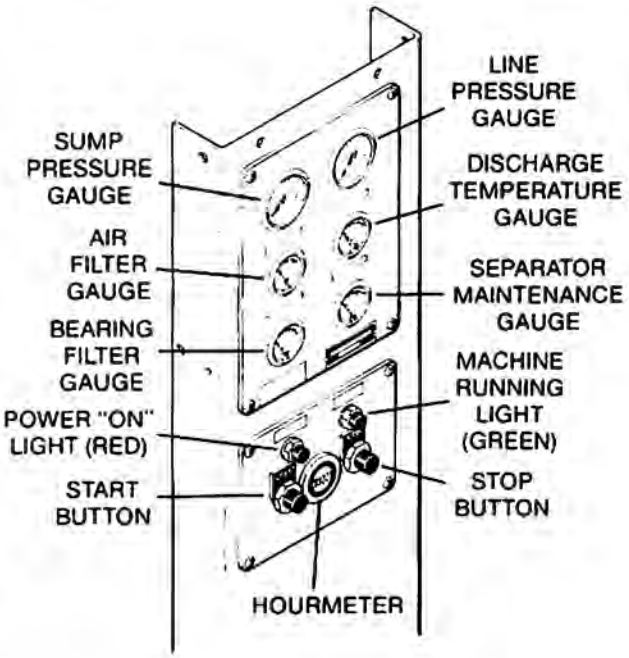


Figure 1-6 Instrumentation



Section 2
SPECIFICATIONS

SULLAIR SERIES 16 SPECIFICATIONS

DIMENSIONAL:

Model Series	Length		Width		Height		Weight	
	in	mm	in	mm	in	mm	lb	kg
16-60 HP (STD & KT)	80	2032	45	1143	54	1372	2640	1200
16-75 HP (STD & KT)	80	2032	45	1143	54	1372	2700	1227
16-75 HP (STD & KT)	*90	2286	48	1219	56	1422	3040	1382
16-75 HP (STD & KT)	*90	2286	48	1219	56	1422	3100	1409

* With Enclosure

COMPRESSOR:	24KT	STANDARD
Type	– Rotary Screw –	– Rotary Screw –
Maximum Operating Pressure*	– 110 PSI (750 kPa) (L), 125 PSI (860 kPa) (H)	– 110 PSI (750 kPa) (L), 125 PSI (860 kPa) (H)
Bearing Type	– Anti-Friction –	– Anti-Friction –
Ambient Temperature (Max)**	– 105°F – (40°C)	– 105°F – (40°C)
Cooling	– Pressurized Fluid –	– Pressurized Fluid –
Lubricant	– 24KT Coolant Fluid –	D.A. Torque Fluid or Equivalent
Sump Capacity	– 14 Gal. – (53 Liters)	– 14 Gal. – (53 Liters)
Control	– Electro-Pneumatic –	– Electro-Pneumatic –

MOTOR: (60 Cycle Machines)

	24KT	STANDARD
Size	60HP or 75HP	60 HP or 75HP
Type	Open Dripproof, 460V, A.C., Three Phase, 60 Cycles, 40°C Maximum Ambient Temperature Options available: 200-230 and 575 volt/ T.E.F.C. also available.	Open Dripproof, 460V, A.C., Three Phase, 60 Cycles, 40°C Maximum Ambient Temperature Options available: 200-230 and 575 volt/ T.E.F.C. also available.
Starter	460V full Voltage Magnetic Options available: 200; 230 and 575 volt.	460V full Voltage Magnetic Options available: 200; 230 and 575 volt.
Speed	1770 RPM	1770 RPM
Shaft Diameter	2⅜" (60.5mm)	2⅜" (60.5mm)

MOTOR: (50 Cycle Machines)

	24 KT	STANDARD
Size	60HP or 75HP	60HP or 75HP
Type	Open Dripproof, three phase, 50 cycle, A.C., 40°C Max. Ambient Temp. 380/415V	Open Dripproof, three phase, 50 cycle, A.C., 40°C Max. Ambient Temp. 380/415V
Starter	460/575W MFV NEMA4	460/575V MFV NEMA4
Speed	1500 RPM	1500 RPM
Shaft Diameter	2⅜" (60.5mm)	2⅜" (60.5mm)

* Special machines are available for operating at higher pressures.
** Special machines are available for operation in higher ambient temperatures.

Section 2
SPECIFICATIONS

LUBRICATION GUIDE – STANDARD COMPRESSORS
Compressor oil should conform to the following specifications:

Ambient Temp.	Lubrication
-10°F to +90°F -23°C to +32°C	D-A Torque Fluid or Automatic Transmission Fluid as per Dexron II Spec. or SAE 10W Motor Oil (Detergent) as per MIL L-2104B Spec. (Latest Revision) API, SE, CC, CD
Above 90°F Above 32°C	D-A Torque Fluid or SAE 20W Motor Oil (Detergent) as per MIL L-2104B Spec. (Latest Revision) API, SE, CC, DC

"NORMAL" Oil Change Period – 1000 Hours

APPLICATION GUIDE - STANDARD COMPRESSORS
Sullair Air Compressors are supplied complete with D-A Torque Fluid which is suitable for heavy duty, high temperature conditions. Detergent motor oils SAE 10W Class SE* or Automatic Transmission Fluid (Dexron II or equivalent) can also be used. Any of these oils are suitable under conditions where severe oil oxidation can occur.

For light-duty, high-humidity service where condensed mositure and emulsification (mayonnaise) may occur, the oil change interval must be reduced to 300 hours maximum. A non-detergent oil with rust, oxidation and foam inhibitors and good water separation characteristics should be used. Water must be drained from the receiver periodically.

DO NOT MIX DIFFERENT TYPES OF OILS. Contamination of non-detergent mineral oils with traces of ATF or detergent motor oils may lead to operational problems such as foaming, filter plugging, orifice or line plugging.

When ambient conditions exceed those noted or if conditions warrant use of "extended" life lubricants, contact Sullair for recommendation.

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

D-A Lubricant* Company, Inc. offers an analysis program for users of D-A products. Contact your D-A lubricant supplier or Sullair dealer for details.

LUBRICATION GUIDE – 24 KT COMPRESSORS
Sullair 24KT compressors are filled with a lubricant which usually never needs changing. In the event a change of fluid is required, use only Sullair 24KT fluid. 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 Dealer at start-up. The user will receive an analysis report with recommendations.

Section 3
INSTALLATION

3.1 LOCATION OF COMPRESSOR

The compressor package may be placed on any level surface able to support its weight. It is not necessary to bolt the unit down unless there is a possibility of externally applied forces or vibration which could disturb the piping or wiring.

3.2 VENTILATION AND COOLING

For air-cooled compressors, select a location to permit sufficient unobstructed air flow in and out of the compressor to keep the operating temperature stable. The minimum distance that the machine should be from surrounding walls is three (3) feet (914mm). It is imperative to provide adequate ventilation to prevent excessive ambient temperature rise.

For water cooled machines it is necessary to check the cooling water supply. The proper water flow should be as follows:

WATER TEMP. (0°F)	WATER FLOW (GPM)	
	60HP	75HP
70	9	11.25
80	12	15

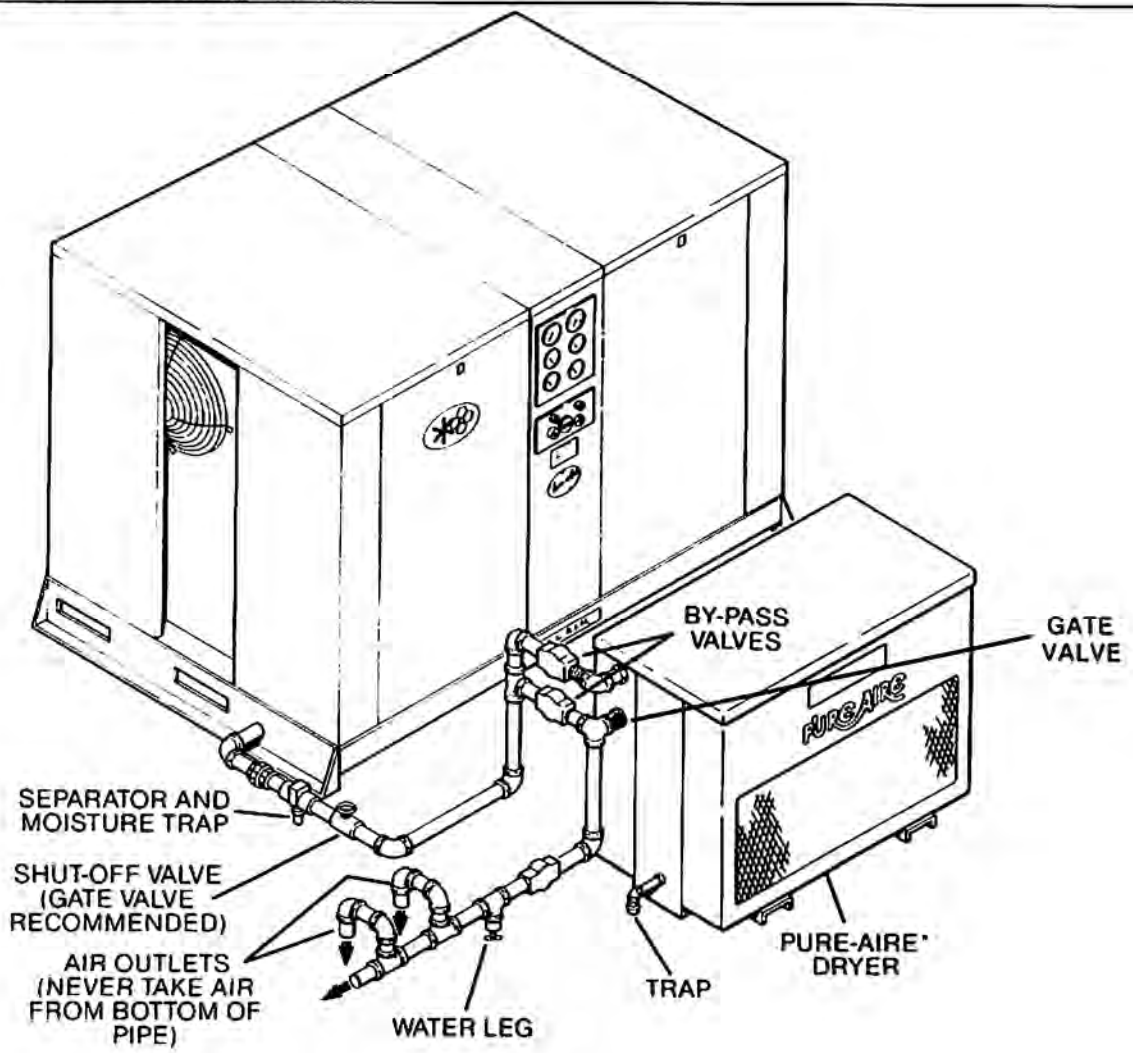
The table below indicates the ventilation requirements necessary to keep the machine running at a normal operating temperature. The fan air requirement is the volume of air which must flow through the machine for proper ventilation. The specified heat rejection requirement is the amount of heat that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

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

3.3 SERVICE AIR PIPING

Service air piping should be installed as shown in Figure 3-1. A shut-off valve should be installed to isolate a machine from the service line if required. Also notice that the service line should be equipped with water legs and condensate drains throughout the system.

Figure 3-1 Service Air Piping (Typical)



Section 3
INSTALLATION

VENTILATION REQUIREMENTS

Cooling Type	Air-Cooled		Air-Cooled w/Aftercooler		Water-Cooled	
Motor H.P.	60	75	60	75	60	75
Fan Air C.F.M.	7,500*	7,500*	7,500*	7,500*	2,845*	2,845*
Heat Rejection B.T.U./Hr.	144,200	179,800	168,000	210,000	15,800	19,800

* Applies to machines with canopy only.

3.4 COUPLING ALIGNMENT CHECK

In preparation for the factory test, the coupling supplied with your machine is properly aligned for operation. However, due to shipping and handling, it is necessary to re-check the coupling alignment. Refer to coupling alignment procedure explained in the maintenance section of this manual.

3.5 FLUID LEVEL CHECK

Your air compressor is also supplied with the proper amount of fluid. However, it is necessary to check the fluid level at installation. The level is checked by looking at the sight glass located on the instrument panel. If the sump is properly filled, the fluid level should fall between the FULL and ADD marks on the side of the sight glass.

3.6 MOTOR ROTATION DIRECTION CHECK

After the electrical wiring has been done, it is necessary to check the direction of the motor rotation. This can be done by jogging the start-stop button on the instrument panel. When looking at the motor from the end opposite the compressor unit, the shaft should be turning clockwise. If your motor shaft is not turning clockwise, disconnect the power to the starter and exchange any two of the three power input leads, then re-check rotation. A "Direction of Rotation" decal is located on the coupling guard between the motor and compressor to insure proper motor/compressor rotation.

3.7 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 any other applicable local electrical code concerning isolation switches, fused disconnects, etc. Sullair provided 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.

1. Check incoming voltage. Be sure that the incoming voltage is the same voltage that the machine was wired for.
2. Check starter and overload heater sizes. (See instrument panel and electrical parts in Section 6).
3. Check all electrical connections for tightness.
4. "DRY RUN" the electrical controls by disconnecting the three (3) motor leads from the starter. Energize the control circuits by pushing the start button and check all protective devices to be sure 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 3.6.

Section 4
OPERATION

4.1 GENERAL

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

4.2 PURPOSE OF CONTROLS

Control or Indicator	*Purpose*
START PUSHBUTTON	Depress to turn the compressor ON.
STOP PUSHBUTTON	Depress to turn the compressor OFF.
HOURMETER	Records accumulative hours of compressor operation; useful for planning and logging service schedules.
LINE PRESSURE GAUGE	Continually monitors service line air presure. Located on dry side of receiver downstream from check valve.
SUMP PRESSURE GAUGE	Continually monitors receiver/sump pressure at various load and/or unloaded conditions.
DISCHARGE TEMPERATURE GAUGE	Monitors temperature of air leaving the compressor unit. For both air and water-cooled compressors, the normal reading is approximately 180°-205°F (82.2-96.1°C).
BEARING FILTER MAINTENANCE INDICATOR	Indicates when a bearing filter element change is required. Shows red when the pressure drop through the filter is excessive.
SEPARATOR MAINTENANCE INDICATOR	Indicates when separator element change is required. Shows red when pressure drop through the separator is excessive.
"POWER ON" LIGHT (RED)	Indicates when the starter is receiving power.
"RUNNING" LIGHT (GREEN)	Indicates when machine is in operation.
FLUID LEVEL SIGHT GLASS	Monitors fluid level in the sump. Proper level is to fall between the FULL and ADD marks located on the side of the sight glass. Check the level when the machine is shut down. DO NOT OVER FILL.
SEPARATOR RETURN LINE SIGHT GLASS	Used to indicate fluid flow in the return line. When the compressor is running at full load, fluid flow should be visible in this sight glass. There may be little or no flow when the compressor is running unloaded, but a sluggish flow at full load indicates a need to clean the return line strainer.
FLUID STOP VALVE	Cuts off flow of fluid to compressor unit at machine shutdown, and allows flow of fluid to unit on start-up.
DISCHARGE CHECK VALVE	Cuts off the reverse flow of air/fluid mixture through compressor discharge system at compressor shutdown.
THERMAL VALVE	Regulates flow of fluid to and around the cooler. Designed to maintain a minimum operating temperature (170°F) (76.7°C); used for fast warm-up on start-up.
MINIMUM PRESSURE/CHECK VALVE	Maintains minimum of 50 PSI (344.5 kPa) in compressor sump. Valve piston restricts receiver air discharge from receiver/sump when pressure falls to 40 PSI (276 kPa).

Section 4
OPERATION

4.2 PURPOSE OF CONTROLS (continued)

Control or Indicator	*Purpose*
COMPRESSOR DISCHARGE TEMPERATURE SWITCH	Designed to shut the machine down when the discharge temperature reaches 240°F (115°C).
HIGH PRESSURE SHUTDOWN SWITCH	An added protective device designed to shut down the machine when the pressure becomes too high. This switch is set for shutdown at approx. 135 PSI (931 kPa).
WATER PRESSURE SWITCH (Water-cooled machines only)	Prevents operation when water pressure of machine is insignificant.
PRESSURE RELIEF VALVE	Opens sump pressure to the atmosphere should pressure inside the sump become too high. (140 PSI) (965 kPa). Operation of this valve indicates that the high pressure switch is either faulty or out of adjustment.
CHECK VALVE	Prevents line pressure backflow into the sump during unload conditions and after shutdown.
SULLICON CONTROL	Regulates the amount of air allowed to enter the air inlet valve. This regulation is determined by the amount of air being used at the service line.
PRESSURE REGULATOR	Opens a pressure line between the sump and Sullicon Control allowing the Sullicon Control to regulate air delivery according to air demand.
PILOT VALVE	Bypasses the pressure regulator valve causing the Sullicon control to close the inlet valve when the machine reaches maximum operating pressure.
PRESSURE SWITCH	Senses service line pressure. When line pressure reaches maximum setting the pressure switch signals the pilot valve to unload the machine.
BLOWDOWN VALVE	Vents sump pressure to the atmosphere during unload conditions and shutdown.
WATER REGULATING VALVE (Water-cooled only)	Regulates the amount of cooling water used in the cooler to keep the machine running at a normal operating temperature.

4.3 INITIAL START-UP PROCEDURE

The following procedure is to be used to make the initial start-up of the machine:

1. Read the preceding pages of this manual thoroughly.
2. Be sure that all preparations and checks described in the INSTALLATION section have been made.
3. Crack open the shut off valve to your service line.
4. Start the machine by pushing the start button.
5. Check for possible leaks in piping.
6. Slowly close the shut-off valve and check that the setting on the pressure switch is set correctly. If set correctly, the machine will unload at your desired unload pressure. If adjustments are necessary, see Control System Adjustments in the Maintenance Section of the manual.
7. Observe the operating temperature. If the operating temperature exceeds 200°F (93.3°C), your cooling system or installation environment should be checked.
8. Observe return line sight glass and maintenance indicators.
9. Open shut-off valve to service line.
10. Reinspect the machine for temperature and leaks the following day.

4.4 SUBSEQUENT START-UP PROCEDURE

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

4.5 SHUTDOWN PROCEDURE

To shut the machine down, simply press the stop button.

Section 5
MAINTENANCE

5.1 GENERAL

As you proceed in reading this Section, it will be easy to see that the Maintenance Program for your Air Compressor is quite minimal, but important! The use of the service indicators provided for the bearing filter, air filter and fluid separator, will alert you when service maintenance is required. When a maintenance indicatorshows red, maintenance for that specific item is required. See instructions for each item in Section 5.7 for Parts Replacement and Adjustment procedures.

⚠WARNING

Do not remove caps, plugs, or other components when compressor is running or pressurized.

Stop compressor and relieve all internal pressure before doing so.

5.2 DAILY OPERATION

Prior to starting your machine, it is necessary to check the fluid level in the sump. Should the level be low, add the necessary amount. If the addition of coolant becomes too frequent, a problem has developed which is causing this excessive loss. See the Troubleshooting Section (5.7) under excessive coolant consumption for a probable cause and remedy.

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

5.3 MAINTENANCE AFTER INITIAL 50 HOURS OF OPERATION

After the initial 50 hours of operation a few maintenance requirements are needed to rid the system of any foreign materials which may have accumulated during machine assembly. Perform the following maintenance operations to prevent unnecessary problems:

1. Clean the return line strainer.
2. Clean the return line orifice.
3. Clean the compressor unit gear housing, bearing and shaft seal orifices.
4. Change the bearing filter element.
5. Clean the main strainer.

5.4 MAINTENANCE EVERY 1000 HOURS

1. Clean the return line strainer.
2. Lubricate the Sullicon Control linkage.
3. Replace the bearing filter element and clean or replace the main strainer element.
4. **STANDARD MACHINES ONLY!** Drain the sump and change the compressor fluid.

5.5 FILTER MAINTENANCE

Replace your bearing filter and clean or replace your main strainer element under any of the following conditions, whichever occur first:

1. As indicated by the maintenance indicator.
2. Every 1000 hours.
3. Every 6 months.
4. **STANDARD MACHINES ONLY!** Every fluid change.

5.6 SEPARATOR MAINTENANCE

Replace your separator element when your separator maintenance indicator shows red or after 1 year, whichever comes first. The separator element must be replaced. Do not clean the separator element.

5.7 PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES

BEARING FILTER ELEMENT REPLACEMENT

Refer to Figure 5-1.

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

⚠CAUTION

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

Figure 5-1 Bearing Filter

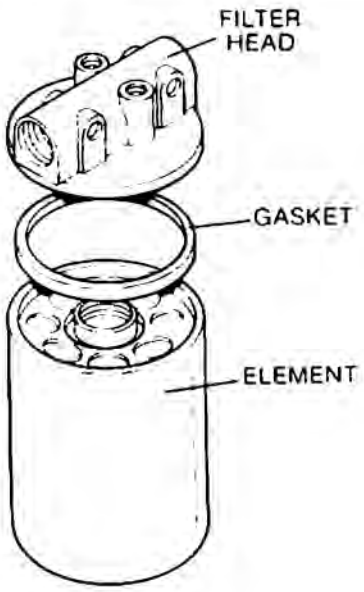
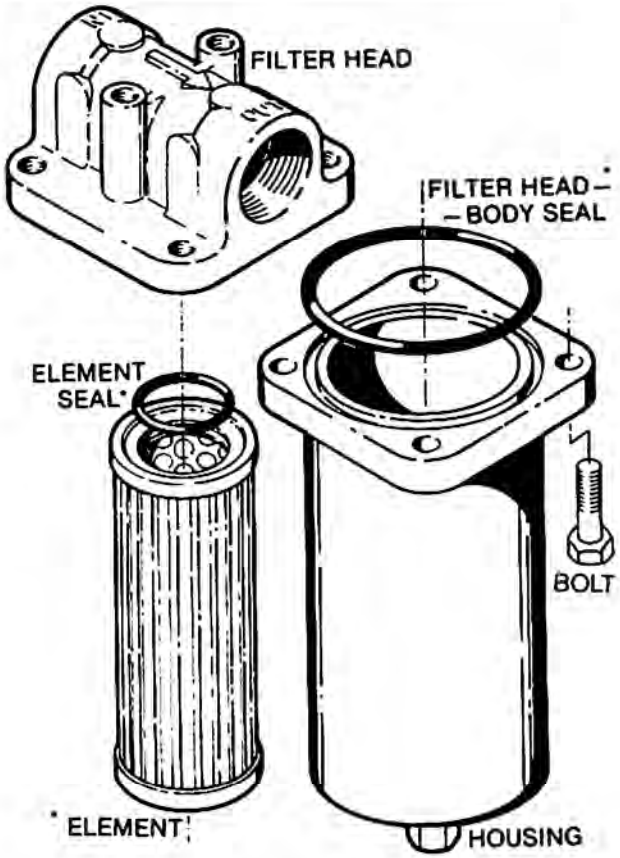


Figure 5-2 Main Strainer



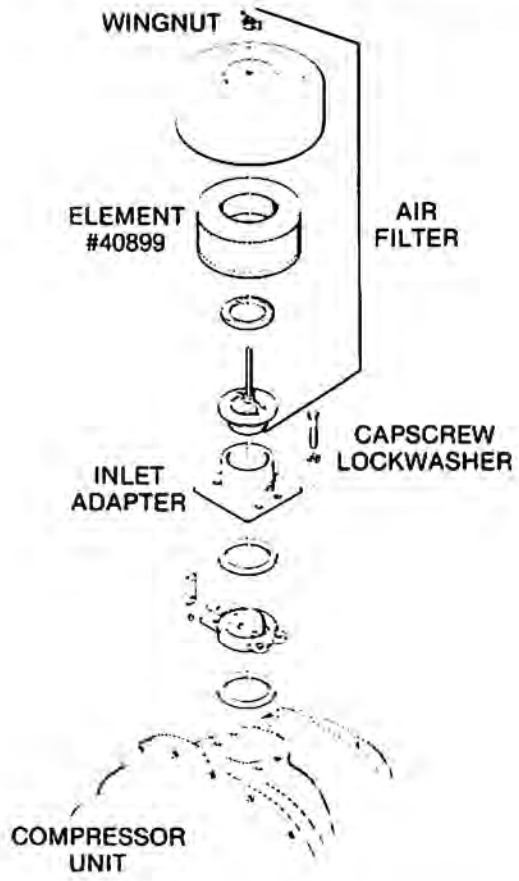
*REPAIR KIT 1158
(SEAL KIT 1175 INCLUDES SEALS ONLY!)

SERVICING MAIN STRAINER
Refer to Figure 5-2.
The strainer is located in the compressor cooling and lubrication system between the receiver/sump and compressor unit. This is a full-flow strainer with a stainless steel element. For servicing of this strainer, order repair kit 1158 or seal kit 1175 for seals only. The procedure for complete service of the main strainer is explained below.

Disassembly
1. Disassemble the strainer housing by removing the 4 capscrews holding the head assembly to the main body.
2. Remove the head assembly and attached element from the main body.
3. Remove the bowl seal from the main body.
4. Dislodge the element from the head assembly and wash thoroughly with: 1) trichloroethylene; 2) Stoddard solvent; or 3) acetone; or replace if uncleanable.
5. Clean the head assembly and housing thoroughly.

Reassembly
1. Lubricate the new bowl seal and reposition in main housing.
2. Reinstall element on to the head assembly.
3. Place head assembly with attached filter back into housing.
4. Retighten the four capscrews.

Figure 5-3 Air Filter Replacement



AIR FILTER MAINTENANCE
Refer to Figure 5-3.
Air filter maintenance should be performed when the maintenance gauge shows red or once a year, whichever comes first. The air filter supplied with your machine has a cleanable type element. If the filter needs to be replaced, order element 40899. Below you will find procedures on how to replace and how to clean the air filter element:

Air Filter Element Replacement
1. Clean exterior of air filter housing.
2. Remove the air filter cover by loosening the wing bolt securing the cover.
3. Remove element and clean interior of housing using a damp cloth. Do not blow dirt out with compressed air.
4. At this time clean or replace the element.
5. Reassemble in the reverse order of the disassembly.
6. If indicator shows red, reset manually by pushing in button on the base of the indicator.

Section 5
MAINTENANCE

Air Filter Element Cleaning.
The air filter element is cleanable by using compressed air. The maximum amount of times that an element should be cleaned is six (6) times. However, the element should be used no longer than a period of one (1) year without changing.

Prior to cleaning an element, check the element for damage. Damaged elements are to be replaced.

Compressed air shall be used for cleaning purposes except in full compliance with OSHA Std. 29CFR 1910.242(b).

Do not strike the element against any hard surface to dislodge dust. This will damage the sealing surfaces and possibly rupture the element.

Never "blow" dirt out of the interior of the filter housing. This may introduce dust downstream of the filter. Instead, use a clean damp cloth.

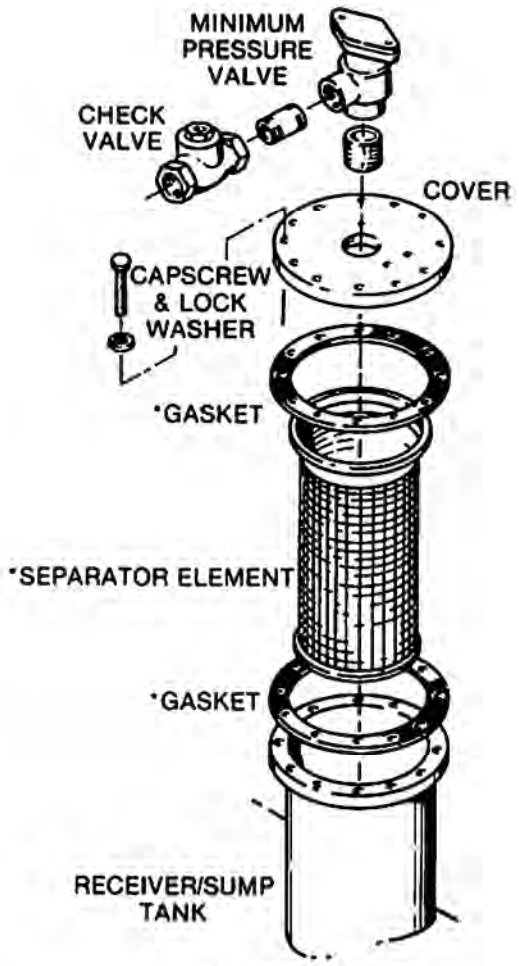
Do not oil the element.

Method 1: Cleaning the Element with Compressor Air. When cleaning the element with compressed air, never let the air pressure exceed 30 PSI (207 kPa). Reverse flush the element by directing the compressed air up and down the pleats in the filter media from the "clean side" of the element. Continue reverse flushing until all dust is removed. Should any oil or greasy dirt remain on the filter surface, the element should then be replaced. When the element is satisfactorily cleaned, inspect thoroughly prior to installation. (See element inspection.)

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, if necessary, all air inlet connections prior to resuming operation.

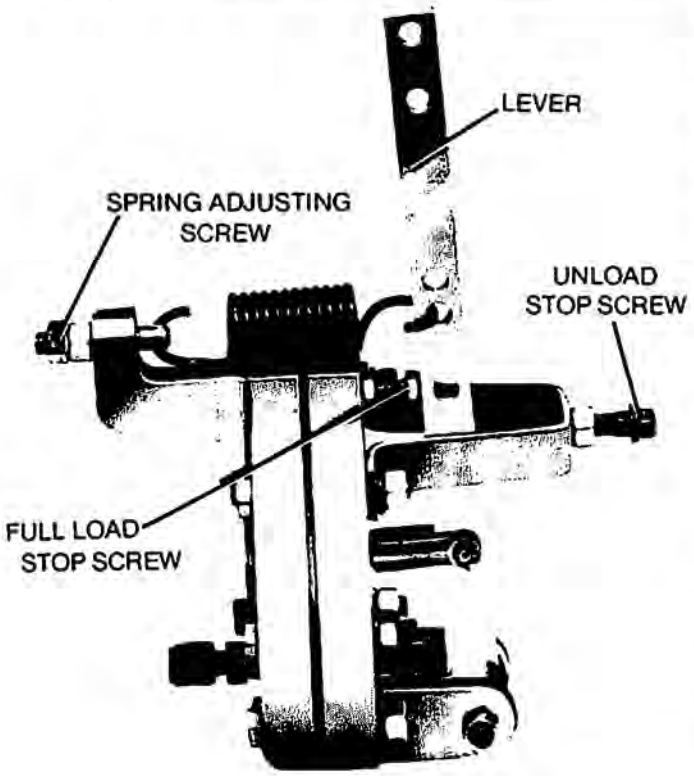
SEPARATOR REPLACEMENT
Refer to Figure 5-4.
The separator must be changed when the maintenance gauge shows red, or once a year, whichever occurs first. Order separator element repair kit 1074. Follow the procedure explained below for separator replacement.
1. Relieve all pressure from the sump tank and all compressor lines.
2. Disconnect all piping connected to the sump cover to allow removal (return lines, service lines, etc.).
3. Loosen and remove the 8 hex head capscrews (5/8" x 2") from the cover plate.
4. Lift the cover plate from the sump.
5. Remove the separator element.

Figure 5-4 Separator Element Replacement



6. Scrape the old gasket material from the cover and flange on the sump being careful not to let the scraps fall in the sump.
7. Inspect the receiver/sump tank for rust, dirt, etc..
8. Install the new gaskets (Part #45636); one on the sump tank and one on top of the element. Make sure gaskets have grounding staples.
9. Reinsert the separator element (Part #47054) into the sump taking care not to dent it against the tank opening.
10. Clean the underside of the receiver/sump tank cover and remove any rust. Paint surface with an epoxy paint.
11. Replace the cover plate, washers and capscrews. Torque to 55 ft. lbs.
12. Reconnect all piping making sure the return line tube extends to the bottom or 1/4" above the bottom of the separator element. This will assure proper fluid return flow to the compressor.
13. Clean the return line strainer before restarting the machine.

Figure 5-5 Sullicon Control



CONTROL SYSTEM ADJUSTMENT
Refer to Figures 5-5, 5-6 and 5-7.
Prior to adjusting the control system, it is necessary to determine the desired operating pressure range and also the maximum pressure at which your machine is to operate. (This pressure must not exceed the maximum operating pressure which is stamped on the machine serial number nameplate). The following explanation applies to a typical installation with a desired operating range of 100-110 PSI (689 to 758 kPa). This information will apply to a machine with any other operating range excepting the stated pressures.

Remove the appropriate panels and covers to the pressure switch, pilot valve, and pressure regulator. With the shut off valve closed (or slightly cracked open) start the machine. Observe the line pressure gauge and pressure switch contacts. When the line pressure reaches the desired pressure, the pressure switch contacts should open. If the pressure switch contacts do not open or they open prior to the desired pressure, the pressure switch setting will require adjustment. (Refer to Figure 5-6.)

⚠ DANGER

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

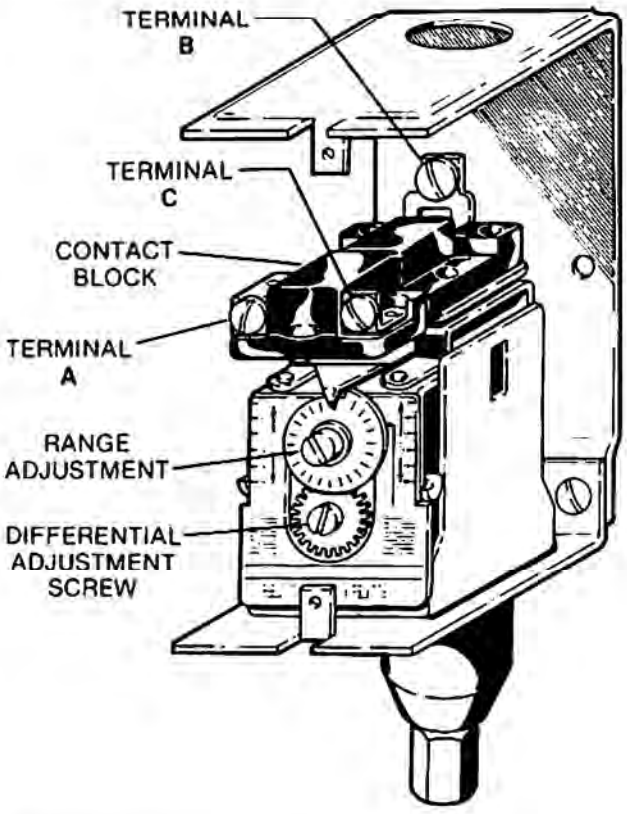
For Pressure Range Adjustment:
1. Remove cover to pressure switch.
2. Turn the range adjusting screw to the high pressure setting. Turning the screw counterclockwise lowers both the high and low pressure setting equally.

For Differential Adjustment:
Differential is the difference between the high and low pressure settings (10 PSI typical).
1. Turn the differential adjusting screw to the lower (reset) setting. Turning the screw counterclockwise widens the differential by lowering the reset (lower) setting only.

When the pressure switch adjustment is complete, the pressure regulator should be adjusted for the pressure at which modulation of air delivery should begin. In this case, that pressure will be 100 PSI (689 kPa). The regulator is adjusted by loosening the jam nut on the end of the cone shaped cover of the pressure regulator. (Refer to Figure 5-15 for the location.) When the jam nut is loose, turn the adjusting screw clockwise to increase or counterclockwise to decrease the setting.

Above 100 PSI (689 kPa), the regular should allow pressure to flow into the control chamber of the Sullicon Control. The Sullicon Control lever should start to move at this time.

Figure 5-6 Allen Bradley® Pressure Switch 40694



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Cycle the control system several times and recheck all pressure settings.

MINIMUM PRESSURE VALVE MAINTENANCE
Refer to Figure 5-8.
Minimum pressure valve maintenance is quite minimal. The only part which normally requires replacement is the seal ring on the piston.

⚠ DANGER

Minimum pressure valve cover is under heavy spring tension. Loosen the cover bolts alternately each turn to relieve spring tension!

To replace this seal ring, follow the procedure explained below:
1. Evenly remove the two cover bolts to relieve the spring tension.
2. Remove the cover and spring.
3. Remove the piston.
4. Remove the seal ring and discard.
5. Clean the piston.
6. Replace the seal ring. (#46425)
7. Coat the piston and seal with Parker Super "O" ring seal or an equivalent quality grease.
8. Replace the piston.
9. Replace the spring and cover tightening the bolts alternately.

Figure 5-7 Barksdale® Pressure Switch (OBSOLETE)

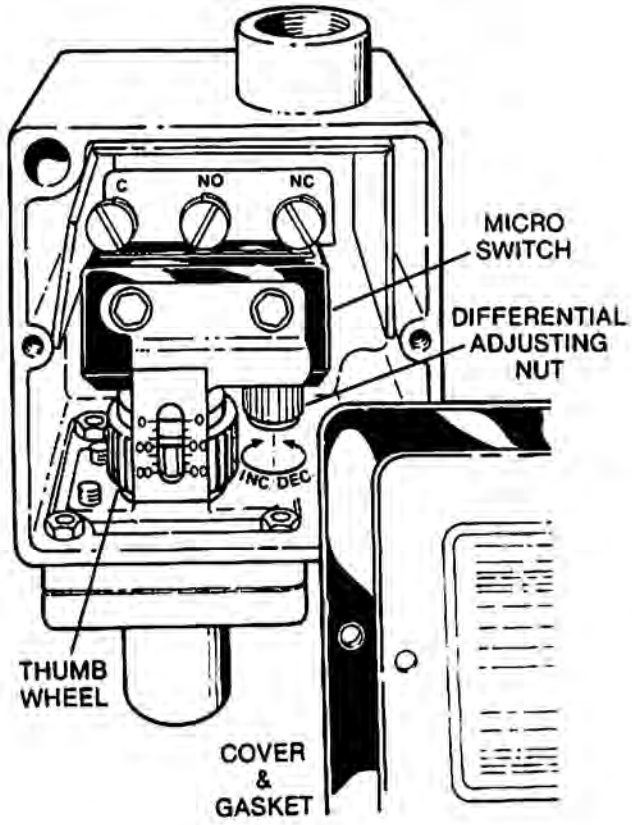
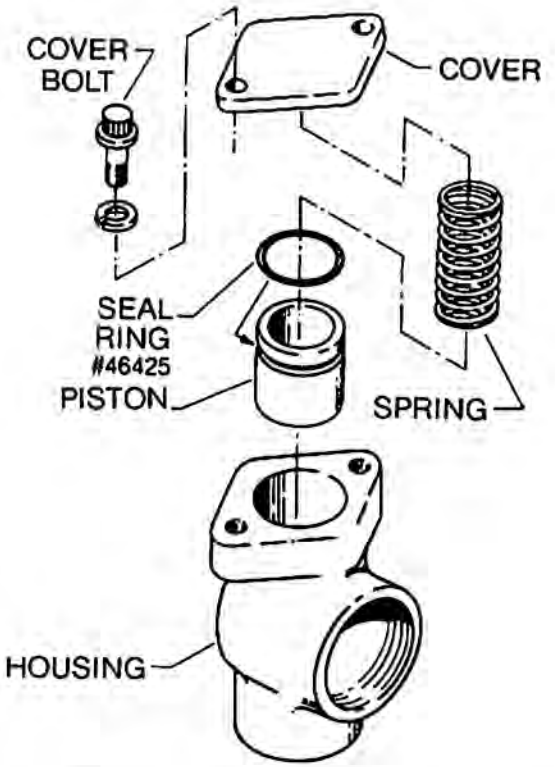


Figure 5-8 Minimum Pressure Valve



THERMAL VALVE MAINTENANCE
Refer to Figure 5-9.
For thermal valve element maintenance, order Sullair Repair Kit 1168. Follow the procedure explained below for installation.

Disassembly
1. Remove the appropriate piping from the thermal valve before starting disassembly.
2. Remove the four (4) capscrews holding the body together and separate the upper body from the lower body.
3. Remove the gasket from between the bodies.
4. Pull firmly on the thermal element and remove.

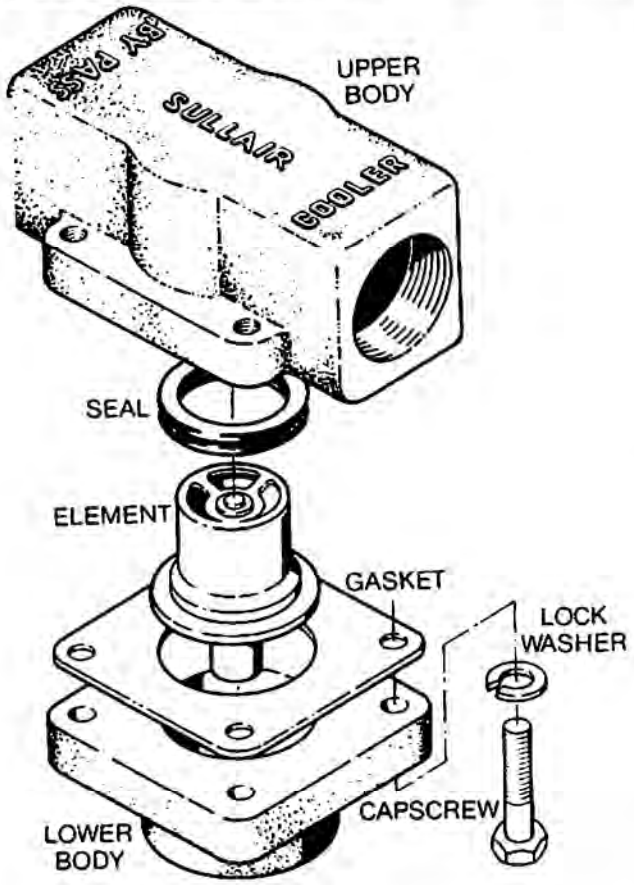
NOTE

There will be a slight resistance from the seal ring centered in the lower housing.

Reassembly
1. Grease and replace the seal ring on the element.
2. Reinsert the thermal element pushing down until the brass ring is flush with the surface of the lower housing.
3. Position the gasket on the lower body making sure holes are properly aligned.
4. Place the upper body on the lower body and retighten the capscrews.
5. Replace all piping connected to the thermal valve.

Section 5
MAINTENANCE

Figure 5-9 Thermal Valve



DRIVE COUPLING INSTALLATION AND ALIGNMENT
Refer to Figures 5-10 and 5-11.
For coupling installation and alignment, the tools required will be a straight edge, a measuring scale, one set of feeler gauges, one set of standard allen wrenches, and one set of standard socket wrenches.

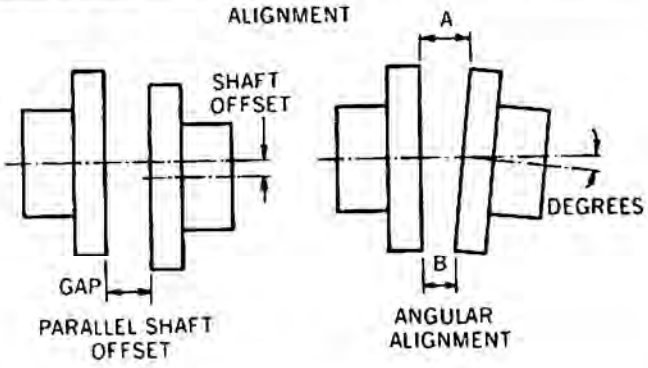
The first step in coupling installation is assembling the taper lock bushings to each hub. Proceed according to the following instructions for assembly of the bushings and hubs:

⚠WARNING

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

1. Clean the shafts, bores, keys and keyseats. Be sure the keys fit properly – file if necessary.
2. Place the bushing in the hub and match the half holes of the bushing with the half holes of the hub.
3. Oil the threads and points on the setscrews. Place the setscrews in the holes loosely.
4. Be sure the bushing is in the hub loosely and then slip the assembly onto the shaft.

Figure 5-10. Drive Coupling Alignment



5. Tighten the setscrews alternately and evenly until they are pulled up securely. (Torque to 410 in.-lbs.)
6. Hammer against the large end of the bushing, using sleeve or block to avoid damage. Turn set screws slightly. Repeat this procedure until the screws will no longer turn. (Do not exceed 410 in.-lbs.)

Removal of Bushing
1. Remove the 4 setscrews and oil the threads and points.
2. Insert the setscrews on the opposite side of the bushing. Tighten the screws evenly until the bushing is loose. If the bushing does not loosen immediately, tap on the hub with a rubber or brass hammer.

For installation and alignment of the Thomas' Rexnord elastomer coupling, follow the steps explained below.

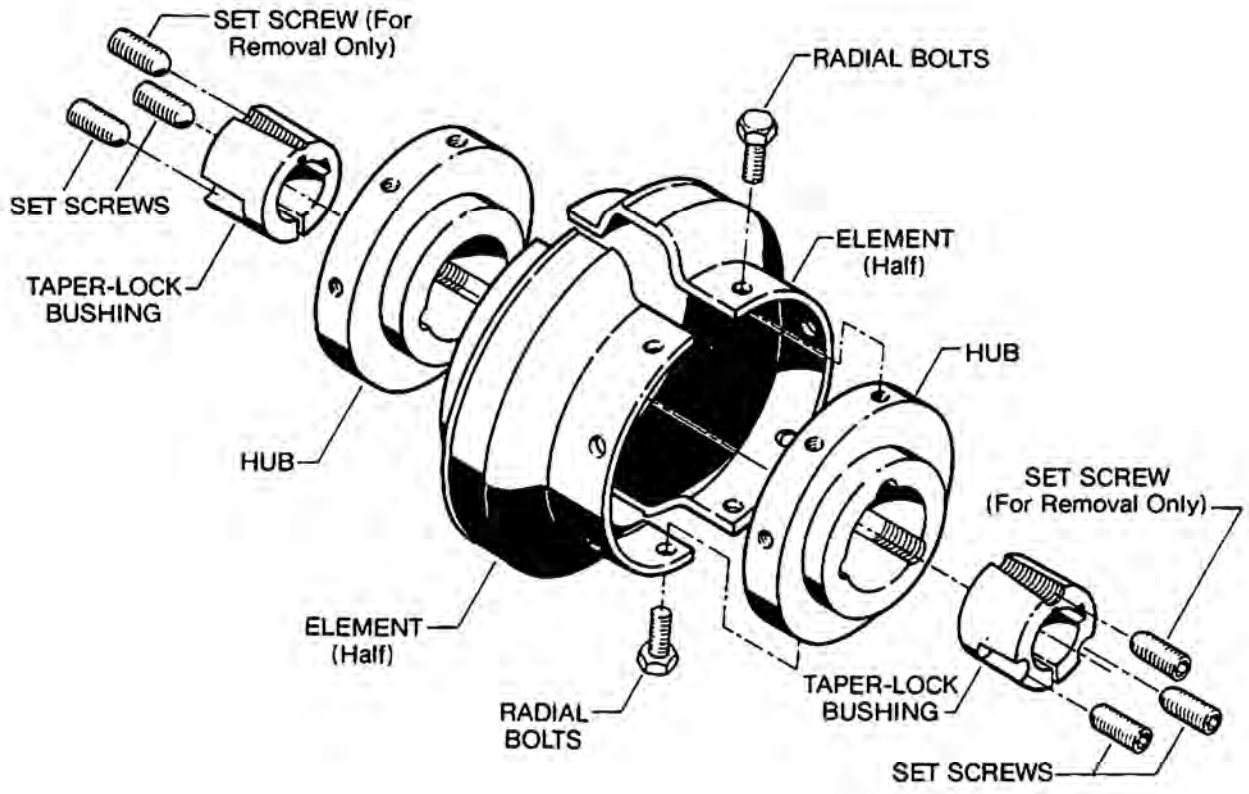
Refer to Figure 5-11.

STEP 1 Mount the hubs – Flush mount each hub on its respective shaft.

STEP 2 Offset alignment – Position equipment for coupling gap (approx. 2½" [63.5mm]). Align the shafts so that a straight edge will rest squarely (or within the offset limits specified in Table 1) on both flanges and at a point 90° away. Vertical offset alignment is adjusted by the addition or removal of motor mounting shims. Loosen motor mounting bolts and slide the motor sideways to correct the horizontal offset.

STEP 3 Gap and angular alignment – Align shafts within the angular limits and to the coupling gap specified in Table 1. To determine angular misalignment in inches, measure the maximum space between flanges and the minimum space 180° away, then subtract. To adjust the horizontal angular alignment, loosen the motor mounting bolts and adjust the motor position until the angular alignment is within tolerance. NOTE: DO NOT upset the offset alignment or hub gap when adjusting motor position. Tighten the mounting bolts and recheck offset and angular alignment (within the limits specified in Table 1). If the vertical angular alignment is not within the specified tolerence, shim the front or rear of the motor separately to correct. Recheck the vertical offset.

Figure 5-11 Drive Coupling



STEP 4 Placement of the urethane flexible element – Position each urethane element half on the previously aligned hubs and tighten the 8 radial bolts to 370 in-lbs. After completing the alignment, start the machine and watch for excessive vibration. If excessive vibration occurs, this indicates a misalignment possibility. Stop the machine and recheck all alignment specifications.

TABLE 1
INSTALLATION DATA – Series 16 Coupling

Cap Screw Tightening Torque lb-in.	Coupling Gap ± .030 Inches	Max Operating Misalignment Parallel Offset Inches	Angular Degrees	Angular Inches*
370	1.50	T.I.R. .005	.5	.005

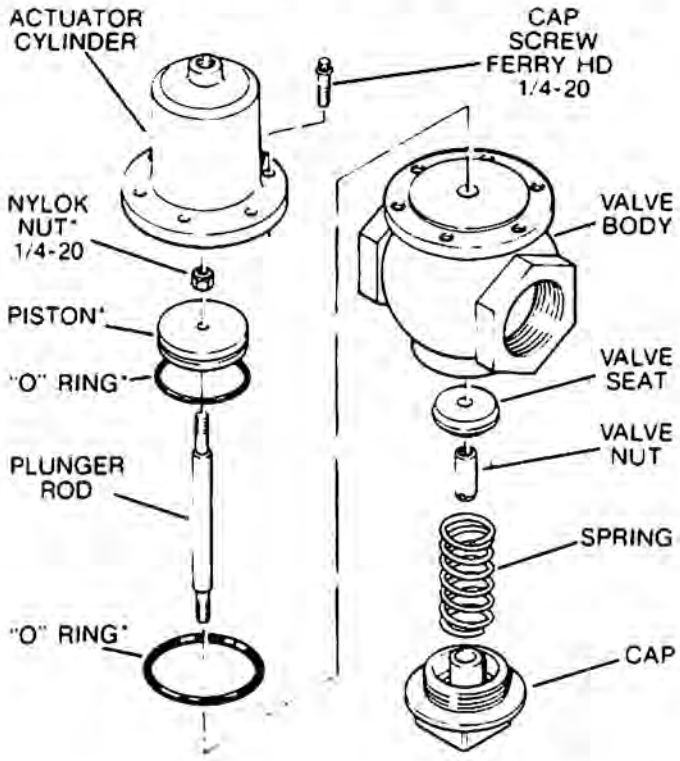
* Angular misalignment in inches equals maximum A minus minimum B as shown in Figure 5-10. Do not exceed values in table above.

FLUID STOP VALVE MAINTENANCE
Refer to Figure 5-12.
When servicing valve no. 16741, order repair kit no. 1684.

The following instructions are in accordance with repair kit no. 1684.
1. Remove the capscrews securing the cylinder to the valve body and remove the cylinder. Inspect for scratches, scuffing, etc..
2. Disassemble the o-ring from the piston.
3. Discard the old o-ring. Replace the o-ring with the new one provided in the kit.
4. Remove and replace the valve body o-ring and reassemble the cylinder to the valve body.

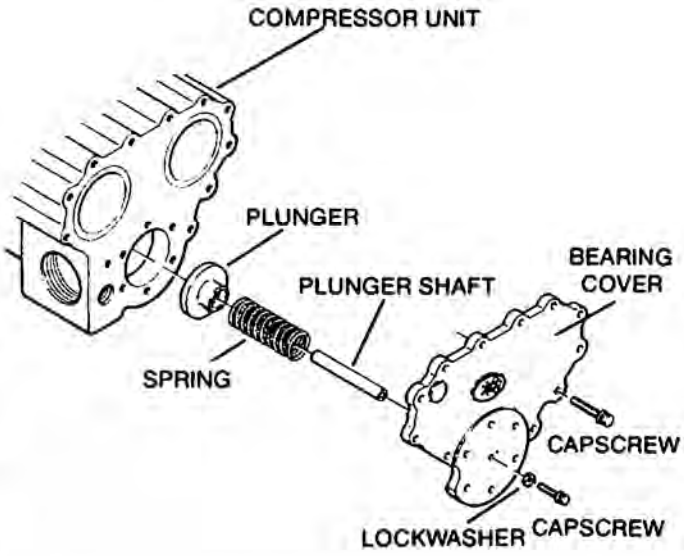
DISCHARGE CHECK VALVE REMOVAL
Refer to Figure 5-13.
The discharge check valve is removed from the compressor unit as follows:
1. Disassemble the flexible coupling on the discharge piping between the compressor unit and the sump.
2. Remove the 12 capscrews holding the bearing cover to the unit.
3. Firmly tap the bearing cover with a brass or rubber hammer to break the gasket seal to the unit.
4. Should scoreing, polishing or wear be evident replace the plunger and spring.
5. Always clean all surfaces and replace gaskets when reinstalling the discharge valve.

Figure 5-12 Fluid Stop Valve 16741



*REPAIR KIT #1684

Figure 5-13 Discharge Check Valve



PRESSURE REGULATOR VALVE MAINTENANCE

Refer to Figure 5-14.

Pressure regulator valve maintenance normally requires the replacement of the internal diaphragm. Use repair kit No. 41742 and follow the procedure below for proper installation.

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

BLOWDOWN VALVE MAINTENANCE

Refer to Figure 5-15. Blowdown Valve Maintenance is limited to replacement of the cover gasket and internal o rings and seat. Using repair kit no. 46782, follow the instructions below for proper installation:

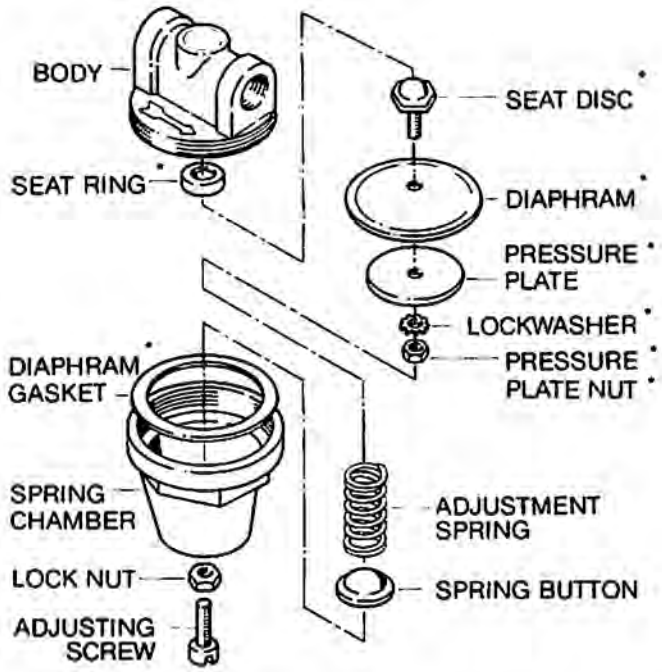
1. Remove the four screws which hold the assembly together.
2. Pull the top cover away from the body.
3. Remove the old gasket and elastometer and replace with the new ones.
4. Align the top cover with the body, replace the four screws and tighten.
5. To replace the valve seat, loosen and remove the 2 socket head screws in the bottom cover.
6. Pull the bottom cover from the main body.
7. Remove the cover o ring, spring, seat cup and seat. Discard the seat and o ring; replace with the new ones in the kit.
8. Reassemble the bottom cover.

FLEXIBLE COUPLING MAINTENANCE

Refer to Figure 5-16.

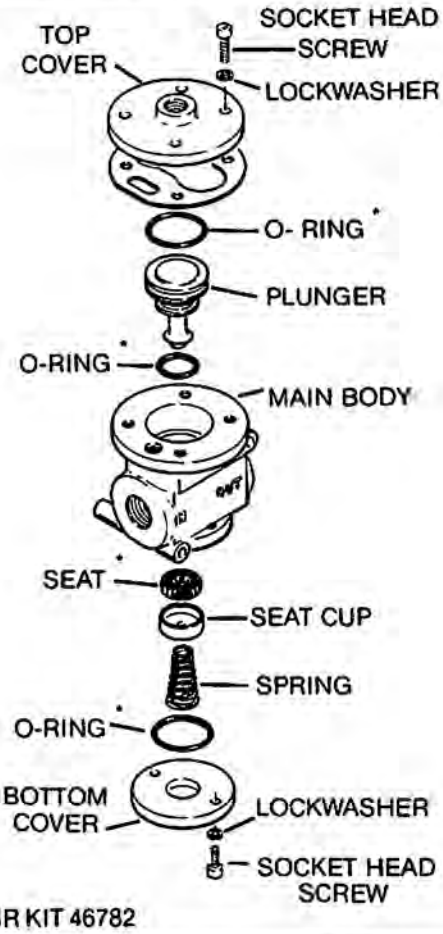
Flexible coupling maintenance normally requires the replacement of the 2 gasket rings on the coupling. Select appropriate gasket rings from Table 3 and follow the procedure below for proper installation.

Figure 5-14 Pressure Regulator Valve



*REPAIR KIT 41742

Figure 5-15 Blowdown Valve



*REPAIR KIT 46782

PIPE END PREPARATION
1. Deburr and clean the pipe ends.
2. The pipe ends should be free of all deep scratches, gouges, dents, etc. A special finish is not required.

JOINT INSTALLATION
1. Install the retainer (1), gasket (2), and sleeve on one side of the pipe as shown in Step 1.
2. Install the remaining retainer (4) and gasket (5) on the other pipe end.
3. Position the retainer (4) and gasket to proper pipe insertion depth ("D") as shown in Table 1.
4. Slide the sleeve (3) to the gasket (5) and move gasket (2) and retainer (1) into position as shown in Step 2. The pipe *must be* inserted to the proper depth ("D") into both gaskets.

COUPLER INSTALLATION
1. Install both V couplings as shown in Step 3, encompassing the retainer, gasket and sleeve. DO NOT tighten either coupling until the entire joint has been assembled.
2. Tighten the nuts to the torque valves shown in Table 2. RECOMMENDED ASSEMBLY TORQUE MUST BE MAINTAINED. Retightening of the coupler will be necessary if leakage occurs.

SPECIAL NOTES
1. Assembly of the gaskets can be made easier by dipping the gaskets in water or the oil to be sealed. Do not use other rubber lubricants.
2. Flexmaster joints are not intended to support end loads caused by internal pressure or other forces causing pipe separation.

5.8 TROUBLESHOOTING

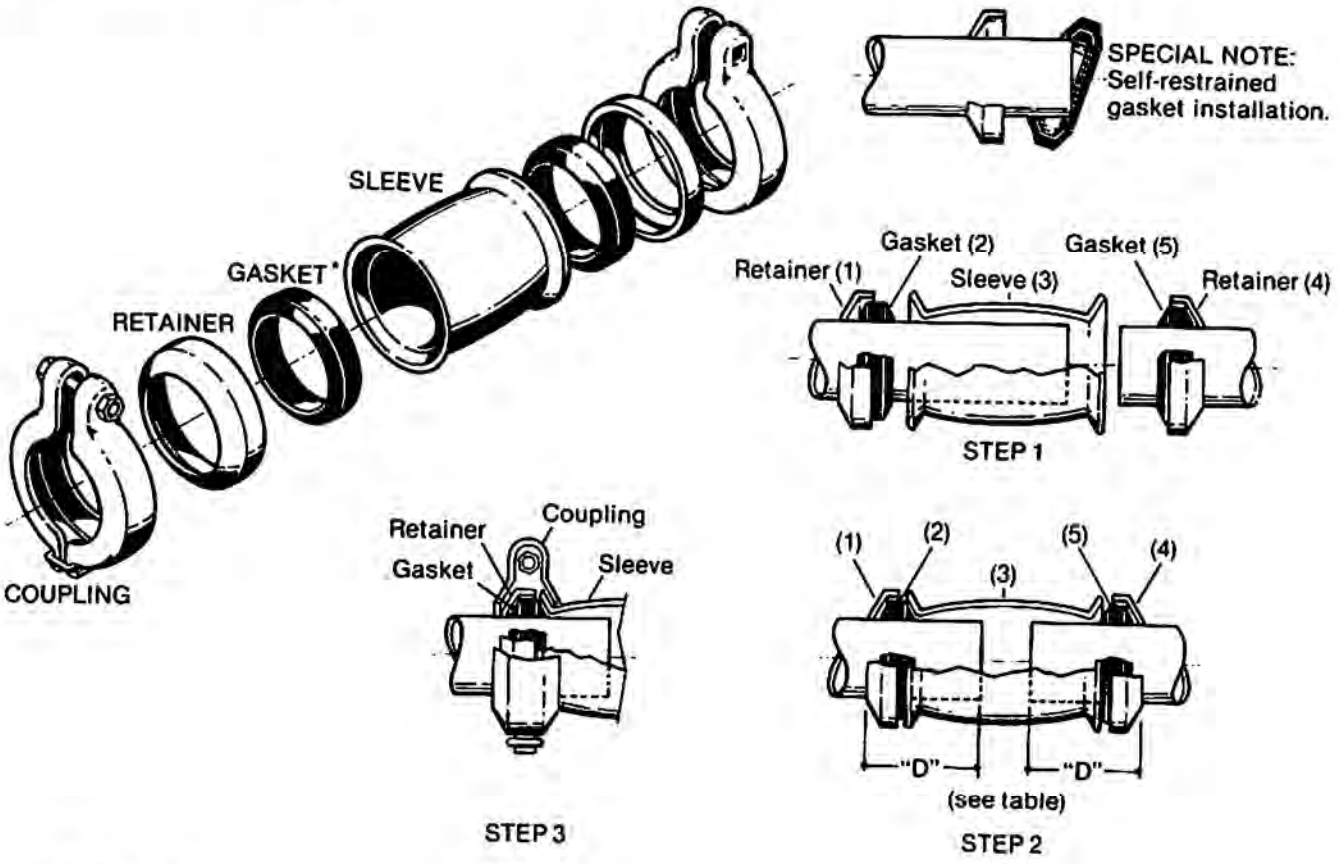
The information contained in the troubleshooting chart has been compiled from data gathered from field service reports and factory experience. It contains symptoms and usual causes for the service problems described, however, DO NOT assume that these are the only problems that may occur. All available data concerning the trouble should be systematically analyzed before undertaking any repairs or component replacement procedures.

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

1. Check for loose wiring.
2. Check for damaged piping.
3. Check for parts damaged by heat or high electrical power. Usually apparent by discoloration or burned odor.

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

Figure 5-16 Flexible Coupling



*SEE TABLE 3

TABLE 1 INSERTION DEPTH

PIPE SIZE	"D" Min.	"D" Max.
2 1/2"	1.68"	2.38"
63.5mm	42.7mm	62.5mm

TABLE 2 ASSEMBLY TORQUE*

Size	
2 1/2" (63.5mm)	180-200 in.-lbs. (20.27-22.52Nm)

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

TABLE 3 GASKET RING SELECTION

Size	Part Number Standard	Part Number 24KT
2 1/2"	40649	46989

Section 5
MAINTENANCE

TROUBLESHOOTING

SYMPTOM	*PROBABLE CAUSE AND REMEDY*
1. Machine will not start.	1. Main disconnect switch open. a. Close switch. 2. a. Line fuse blown. Replace fuse. 3. Control transformer fuse blown. a. Replace fuse. 4. Motor starter overloads tripped. a. Reset. Should trouble persist, check whether motor starter contacts are functioning properly. 5. Low incoming line voltage. a. Check voltage. Should voltage check low, consult local power company.
2. Machine shuts down with air demand present.	1. Loss of control voltage. a. Reset. If trouble persists, check that line pressure does not exceed max. operating pressure of your machine (specified on nameplate). 2. Low incoming voltage. a. Consult power company. 3. Excessive operating pressure. a. Defect in pressure switch: check pressure at which contact points open. b. Separator requires maintenance: check maintenance indicator under full load conditions. c. High pressure shutdown switch is adjusted too low: readjust to 135 PSIG (930 kPa). d. Defective pilot valve: pilot valve should cause control lever to move to unload stop when the pressure switch contacts open. Repair if defective. e. Defective Blowdown valve: blowdown valve should exhaust sump pressure to 40-55 PSI (276-379 kPa) when maximum operating pressure is reached. Repair if defective. 4. Discharge temperature switch open. a. Cooling water temperature too high: increase water flow (water-cooled only). b. Cooling water flow insufficient: check water lines and valves (water-cooled only). c. Cooler plugged: clean tubes. If plugging persists, install water conditioner (water-cooled only). d. Cooling air flow restricted: clean cooler and check for proper ventilation. e. Ambient temperature is too high: provide sufficient ventilation. f. Low fluid level: add correct fluid. g. Clogged filter: change the filter element and change the bearing filter element if maintenance indicator shows red. h. Thermal valve not functioning properly: change (air-cooled only). i. Water-flow regulating valve not functioning properly: change (water-cooled only). j. Defective discharge temperature switch, check for a short or open circuit to probe and correct wiring.

Section 5
MAINTENANCE

TROUBLESHOOTING

SYMPTOM	*PROBABLE CAUSE AND REMEDY*
3. Machine will not build up full discharge pressure.	1. Air demand too great. a. Check service lines for leak or open valves. 2. Dirty air filter. a. Check filter indicator and change or clean element if required. 3. Pressure Regulator out of adjustment. a. Adjust regulator according to control adjustment instructions in the Maintenance Section. 4. Defective Pressure Regulator. a. Check diaphragms and replace if necessary (kit available).
4. Line pressure rises above cut-out pressure setting on pressure switch.	1. Leak in control system causing loss of pressure signals. a. Check for leaks. 2. Defective pressure switch. a. Check that diaphragm and contacts are functioning properly and are not damaged. Replace if necessary. 3. Defective Pilot Valve. a. Check that Sullicon Control lever is moved to unload stop when the Pressure Switch contacts open. Repair or replace if necessary (kit available). 4. Defective Blowdown Valve. a. Check that sump pressure is exhausted to the atmosphere when the pressure switch contacts open or repair or replace if necessary (kit available). 5. High Pressure Shutdown is defective or adjustment is incorrect. a. Re-adjust or replace.
5. Excessive fluid consumption.	1. Clogged return line strainer or orifice: a. Clean strainer (screen and o-ring replacement kit available). b. Clean orifice. 2. Separator element damaged or not functioning properly. a. Change separator. 3. Leak in lubrication system. a. Check all pipes, connections and components. 4. Excess fluid foaming, drain and change. 5. Fluid level too high.
6. Pressure Relief valve opens repeatedly.	1. High pressure shutdown switch is defective or out of adjustment (135 PSIG) (930 kPa): Re-adjust below pressure relief valve setting (140 PSIG) (965 kPa) or replace. 2. Defective Pressure Relief Valve: Replace Pressure Relief Valve 3. Also check separator differential (plugged).

– NOTES –

Section 6
ILLUSTRATIONS AND PARTS LIST

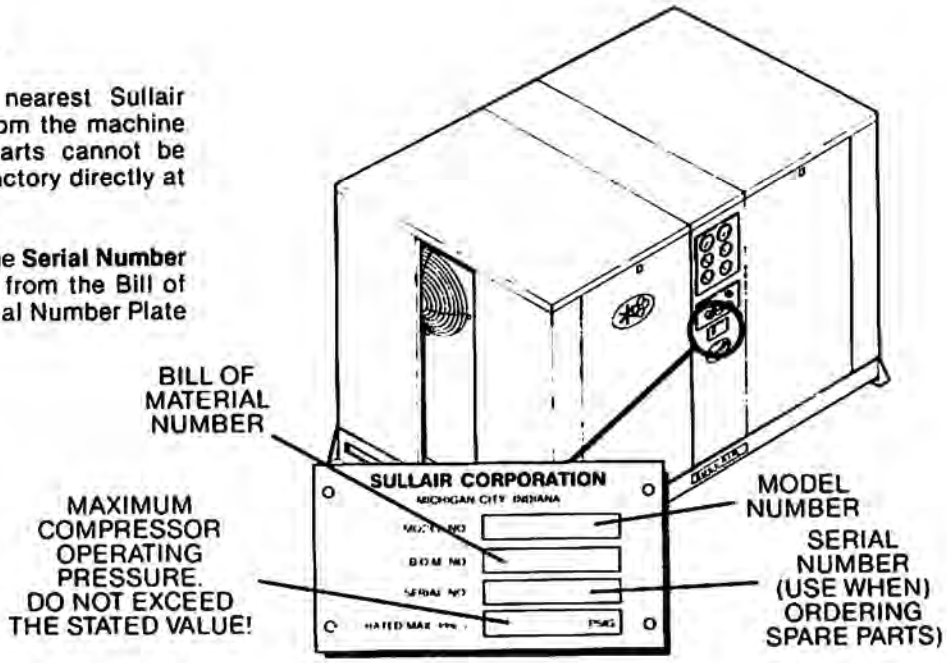
PROCEDURE FOR ORDERING PARTS

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

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

SULLAIR CORPORATION
3700 East Michigan Boulevard
Michigan City, Indiana 46360

Telephone (219) 879-5451
Telex: 258318



6.1 RECOMMENDED SPARE PARTS LIST

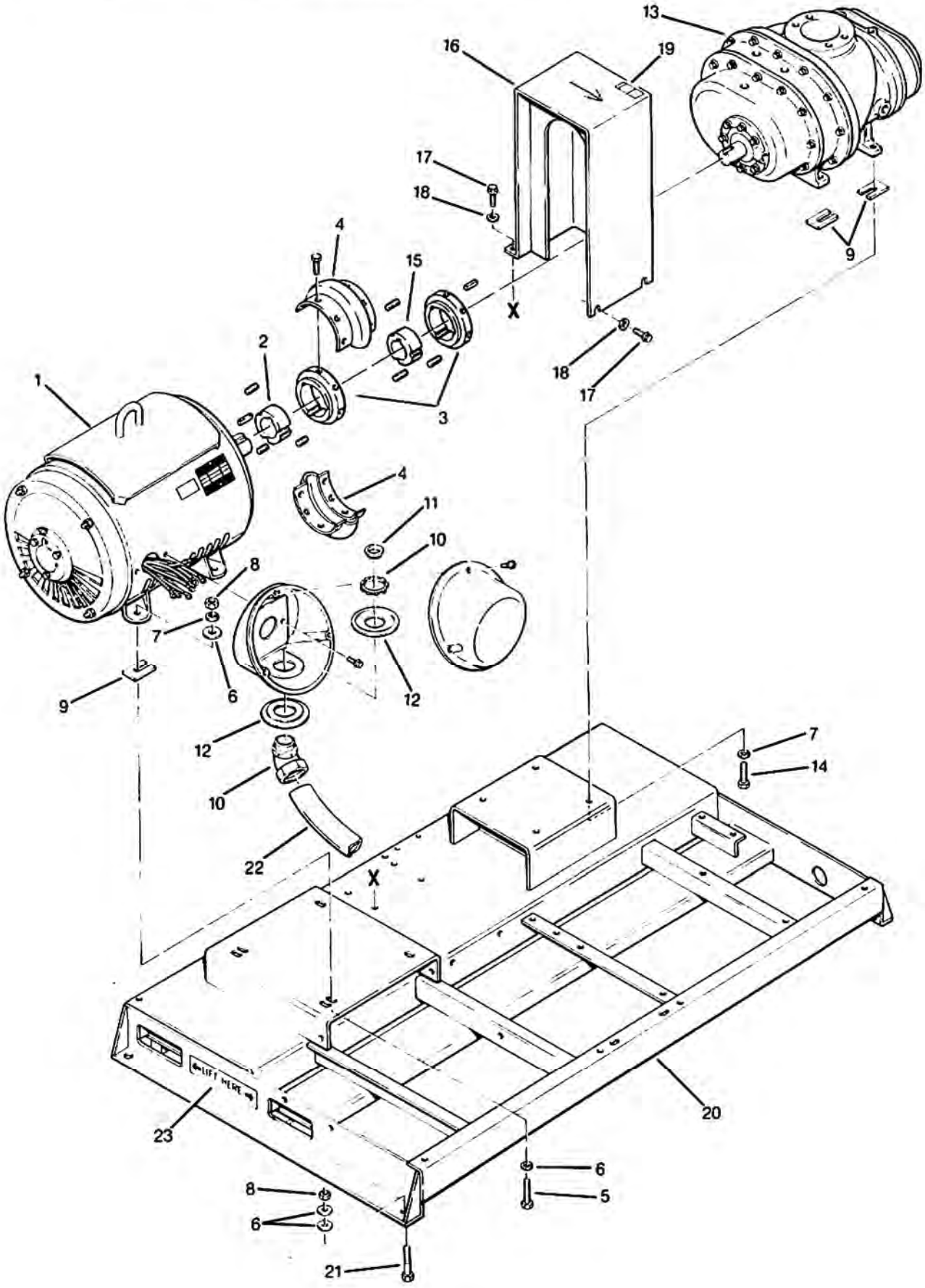
DESCRIPTION	*PART NO. STANDARD*	*24KT*	*QTY.*
Element, Air Filter	40899	40899	1
Repair Kit, Blowdown Valve	46782	46782	1
Repair Kit, Thermal Valve	1168	1168	1
Repair Kit, Main Strainer	1158	1158	1
Seal Kit, Main Strainer	1175	1175	1
Repair Kit, Fluid Stop Valve	1684	1684	1
Element, Bearing Filter	408107	408107	1
Repair Kit, Sullicon Control	11579	11579	1
Repair Kit, Pressure Regulator	41742	41742	1
Element, Primary Heavy-duty Air Filter (Optional)	47542	47542	1
Element, Secondary Heavy-duty Air Filter (Optional)	47543	47543	1
Gasket, Flex Coupling	40649	46989	2
Repair Kit, Separator Element	1074	1074	1
Repair Kit, Return Line Strainer	1884A	1884A	1
Repair Kit, Pilot Valve	1128	1128	1
24KT Fluid	–	46850	5 Gal.
Oil, DA Torque Fluid	49405	–	5 Gal.

WHEN ORDERING PARTS ALWAYS INDICATE SERIAL NUMBER OF MACHINE.

Section 6

ILLUSTRATIONS AND PARTS LIST

FIGURE 6.2 MOTOR, FRAME, COMPRESSOR, AND PARTS



6.2 MOTOR, FRAME, COMPRESSOR, AND PARTS

key number	*description*	*part number*	*quantity*
1	motor, 60 hp 230/460-60 4P ODP	40860	1
	motor, 75 hp 230/460-60 4P ODP	40875	1
2	bushing, taper 2517 2 3/8" x 1/2"	46431	1
3	hub, coupling EC-40 taper lock	49795	2
4	element, coupling EC-40 with screws	49796	1
5	capscrew, hex 1/2 x 2" gr5	828608-250	4
6	washer, plain B reg 1/2"	837208-112	20
7	washer, springlock-reg 1/2"	837508-125	8
8	nut, hex 1/2"-13	824208-448	4
9	shim set, motor mounting	20293	1
10	elbow, 45° Sealtite 1-1/4"	846500-125	2
11	bushing, conduit plastic 1-1/4"	848815-125	1
12	washer, conduit red 3" x 1-1/4"	847012-050	2
13	compressor unit*	–	1
14	capscrew, hex 1/2" x 1 1/2" gr5	828608-150	4
15	bushing, taper 2527 1-15/16" x .5	41735	1
16	guard, coupling	14082	1
17	screw, thrd form type C 3/8" x 3/4"	49821	4
18	washer, plain flat 3/8"	837206-071	4
19	sign, Warning-Sever (fan)	49855	1
20	frame, assembly 16-Open	14076	1
21	capscrew, hex 1/2" x 2-1/2" gr2	828108-250	4
22	conduit, UA Lq-Tite 1-1/4"	846215-125	2'
23	decal, "Lift Here"	241814	2

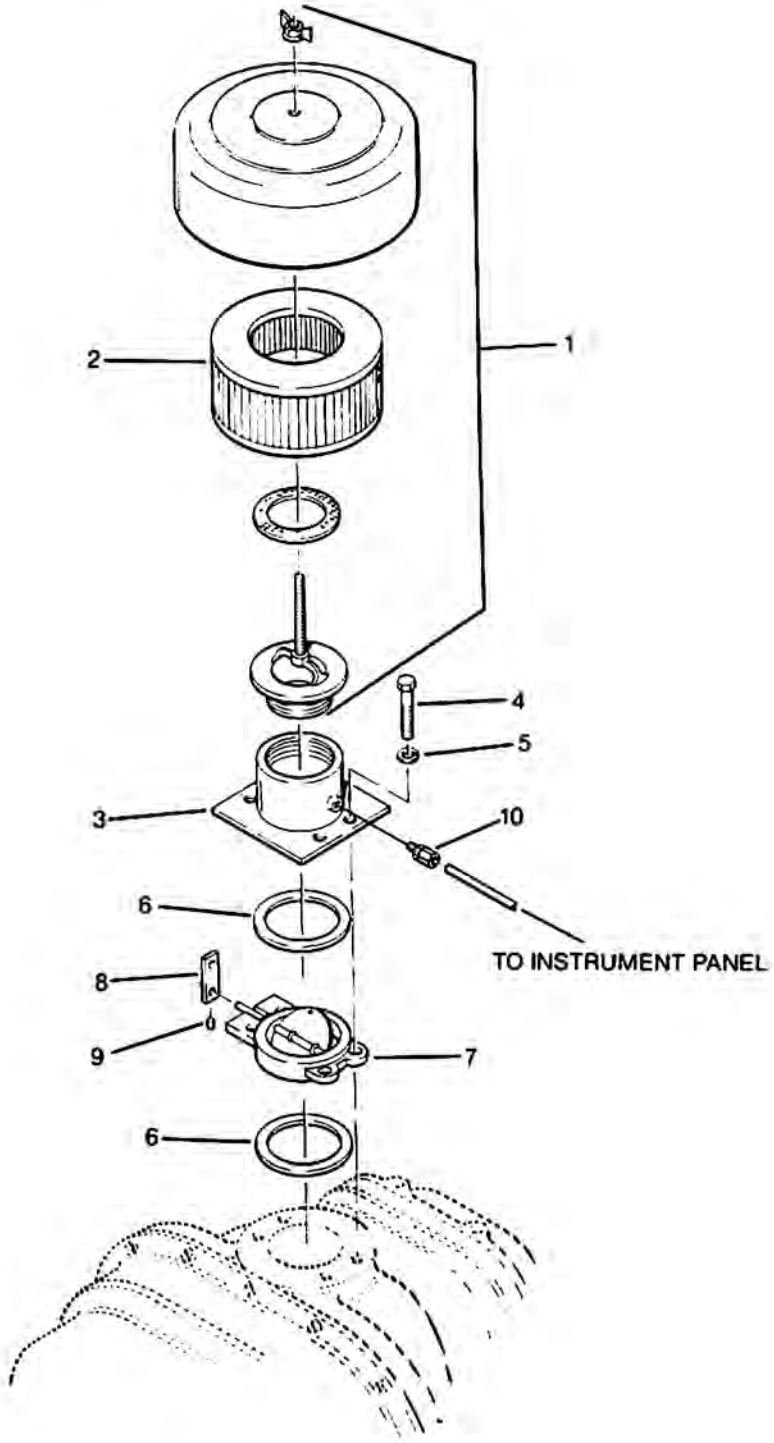
* It is Sullair's policy not to sell or replace repair parts on the compressor unit. There is an exchange policy whereby a reconditioned compressor unit can be obtained from Sullair distributors or the factory at less cost than the owner could repair the unit. For information regarding the unit exchange program, contact your nearest Sullair distributor or the Sullair Corporation.

The shaft seal is not considered part of the compressor unit in regard to the 10 yr (24KT) or 2 yr (Standard) warranty. The normal Sullair parts warranty applies. Consult the factory for shaft seal replacement.

WHEN ORDERING PARTS, ALWAYS INDICATE SERIAL NUMBER OF MACHINE

Section 6
ILLUSTRATIONS AND PARTS LIST

FIGURE 6.3 AIR INLET SYSTEM



6.3 AIR INLET SYSTEM

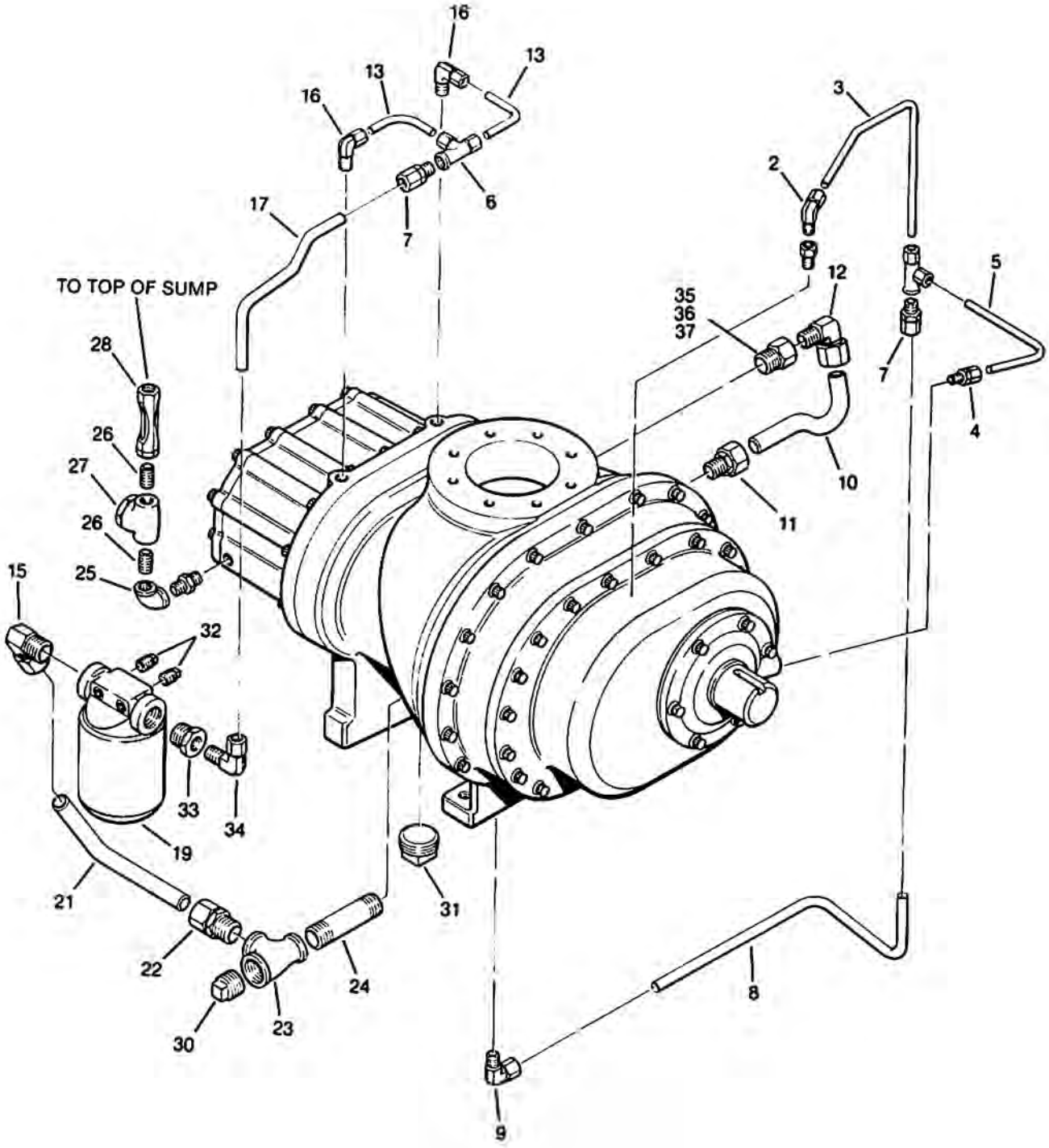
key number	*description*	*part number*	*quantity*
1	filter, air	49543	1
	Includes:		
	• cover, filter		1
	• ring, sealing		1
	• screw post, air inlet adapter		1
	• nut, butterfly		1
2	element, filter	40899	1
3	adaptor, air inlet	14083	1
4	capscrew, hex 1/2" x 2-1/2" gr2	828608-250	4
5	washer, springlock-reg. 1/2"	837508-125	4
6	gasket, 1/32" x 5-1/4" od x 4-1/2" id	40708	2
7	valve, inlet butterfly 4"	40640	1
8	lever, inlet valve	20687	1
9	screw, set cup point 5/16" x 3/4"-18	408383	1
10	connector, tube 1/4" x 1/8"	810204-012	1

WHEN ORDERING PARTS, ALWAYS INDICATE SERIAL NUMBER OF MACHINE

Section 6

ILLUSTRATIONS AND PARTS LIST

FIGURE 6.4 COMPRESSOR UNIT TUBING – "B" VERSION



6.4 COMPRESSOR UNIT TUBING – "B" VERSION

key number	*description*	*part number*	*quantity*
1	compressor unit – 16 B series		1
2	elbow, tube 3/8" x 1/8"	810506-012	1
3	tube, gear spray	234090	1
4	connector, tee 3/8" x 1/8"	810206-012	1
5	tube, shaft seal	234089	1
6	tee, tube 3/8" x 1/4"	811006-025	2
7	connector, tube 1/2" x 1/4"	810208-025	2
8	tube, gear supply	234091	1
9	elbow, tube 1/2" x 1/4"	810508-025	1
10	tube, female injection	234092	1
11	orifice 1/2" x 1/2" x .313	234125-313	1
12	elbow, tube 3/4" x 1/2"	810512-050	1
13	tube, outlet bearing	234094	2
14	connector, tube 3/4" x 1/2"	810212-050	1
15	elbow, tube 3/4" x 3/4"	810512-075	1
16	elbow, tube 3/8" x 1/4"	810506-025	2
17	tube, outlet supply	234093	1
18	elbow, tube 1/2" x 1/2"	810508-050	1
19	filter, bearing*	408106	1
20	bushing, reducing 3/4" x 1/2"	807603-020	1
21	tube, filter supply	234130	1
22	connector, tube 3/4" x 3/4"	810212-075	1
23	tee, reducing 1" x 3/4" x 3/4" 150#	802204-033	1
24	nipple, pipe 3/4" x 3"	822122-030	1
25	elbow, pipe 90° 1/4" 150#	801515-010	1
26	nipple, close 1/4"	822104-000	2
27	strainer, return line**	241771	1
28	glass, sight***	46559	1
29	plug, pipe 2"	807800-080	1
30	plug, pipe 1"	807800-040	1
31	plug, pipe 1/4"	807800-010	2

* For maintenance on filter 408106, order replacement element 408107.

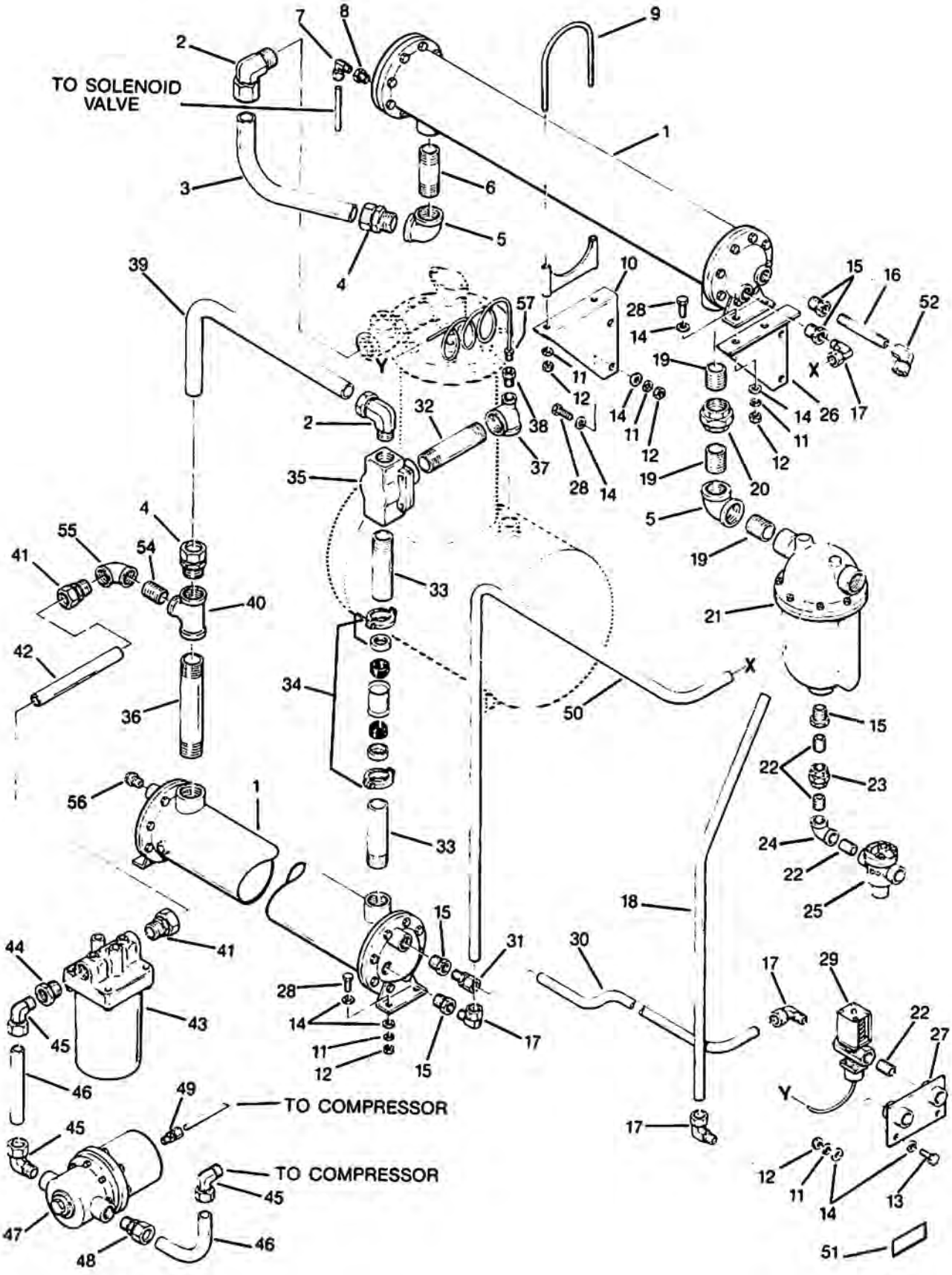
** For maintenance on strainer 241771, order repair kit 1884A.

*** For maintenance on sight glass 46559, order repair kit 1140.

Section 6

ILLUSTRATIONS AND PARTS LIST

FIGURE 6.5 COMPRESSOR COOLING AND LUBRICATION SYSTEM – WATER-COOLED



6.5 COMPRESSOR COOLING AND LUBRICATION SYSTEM – WATER-COOLED

key number	description	part number	quantity
1	cooler fluid (75 hp only)	41015	1
	cooler, fluid (60 hp only)	40680	2
2	elbow, tube 1-1/2" x 1-1/2"	810524-150	2
3	tube, check valve to aftercooler 1-1/2' od	222937	1
4	connector, tube 1-1/2" x 1-1/2"	810224-150	2
5	elbow, pipe 90° 1-1/2"	801515-060	2
6	nipple, pipe 1-1/2" x 4-1/2"	822124-045	1
7	elbow, tube 1/4" x 1/4"	810504-025	2
8	bushing, red. hex 3/8 x 1/4"	807601-010	1
9	clamp, 5"	43364	1
10	bracket, aftercooler support	222573	1
11	washer, springlock-reg. 3/8"	837506-094	12
12	nut, hex 3/8"-16	824206-337	12
13	capscrew, hex 3/8" x 1-1/4" gr5	828606-125	12
14	washer, plain B reg. 3/8"	837206-071	24
15	bushing, red. hex 1" x 3/4"	802104-030	4
16	nipple, pipe 3/4" x 4-1/2"	822112-045	1
17	elbow, tube 3/4" x 3/4"	810512-075	4
18	tube, water in/aftercooler 3/4" od	222931	1
19	nipple, pipe 1-1/2" x 2"	822224-020	3
20	union, pipe 1-1/2"	802515-060	1
21	separator, moisture 1-1/2"	45668	1
22	nipple, close 3/4"	822212-000	4
23	union, pipe 3/4"	802515-030	1
24	elbow, pipe 90° 3/4"	801515-030	1
25	trap, moisture 3/4"	42034	1
26	bracket, aftercooler support	222572	1
27	bracket, water connection	14301	1
28	capscrew, hex 3/8" x 1" gr5	828606-125	12
29	valve, water reg. 3/4"	47398	1
30	tube, cooler water reg. valve 3/4" od	222932	1
31	connector, tube 3/4" x 3/4"	810212-075	1

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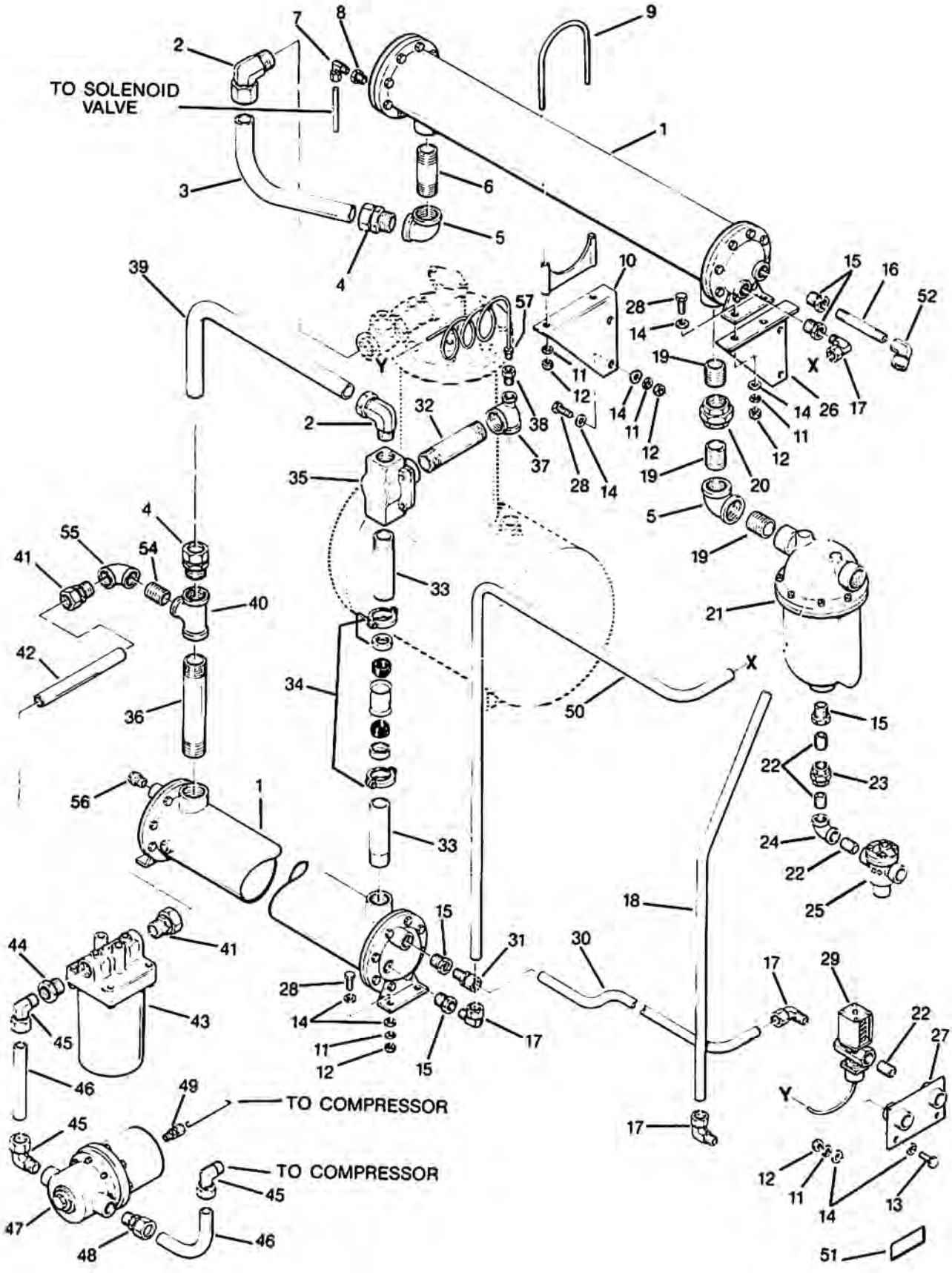
Section 6

ILLUSTRATIONS AND PARTS LIST

FIGURE 6.5 COMPRESSOR COOLING AND LUBRICATION SYSTEM – WATER-COOLED



6.5 COMPRESSOR COOLING AND LUBRICATION SYSTEM – WATER-COOLED

key number	*description*	*part number*	*quantity*
32	nipple, pipe 1-1/2" x 7"	822124-070	1
33	nipple, half 1-1/2" x 5-1/2"	822824-055	2
34	coupling, flex 1-1/2"	45752	1
35	valve, thermal**	14512	1
36	nipple, pipe 1-1/2" x 8"	822124-080	1
37	tee, red, 1-1/2" x 1/2" x 1-1/2"	802206-026	1
38	bushing, red. hex galv. 1/2" x 1/4"	802102-005	1
39	tube, thermal valve bypass 1-1/2"	222936	1
40	tee, reducing 1-1/2" x 1-1/2" x 1-1/4"	802206-065	1
41	connector, tube 1-1/4" x 1-1/4"	810220-125	2
42	tubing, 1/4" steel	841115-004	5
43	strainer, main 1-1/4"***	242311	1
44	bushing, red. hex 1-1/4" x 1"	802105-040	1
45	elbow, tube 1" x 1"	810516-100	3
46	tube, filter to fluid stop	234155	1
47	valve, fluid stop†	16741	1
48	connector, tube 1" x 1"	810216-100	1
49	connector, tube 1/4" x 1/4"	810204-025	1
50	tube, aftercooler fluid cooler 3/4" od	222933	1
51	decal, Water Inlet-Outlet	49873	1
52	elbow, tube to pipe 3/4" x 3/4"	810412-075	1
53	tube, fluid stop	234154	1
54	nipple, close	822220-000	1
55	elbow 90° 1-1/4"	801515-050	1
56	plug, pipe 1/4"x 3000#	807800-010	1
57	connector, tube 1/4" x 1/8"	810204-012	1

* For maintenance on Flexcoupling 40033, order gasket no. 40146 (Standard) or 46987 (24KT) (2 required).

** For maintenance on thermal valve no. 14512, order repair kit no. 1168.

*** For maintenance on strainer no. 242311, order repair kit no. 1158 for element & housing seals, or kit no. 1175 for seals only.

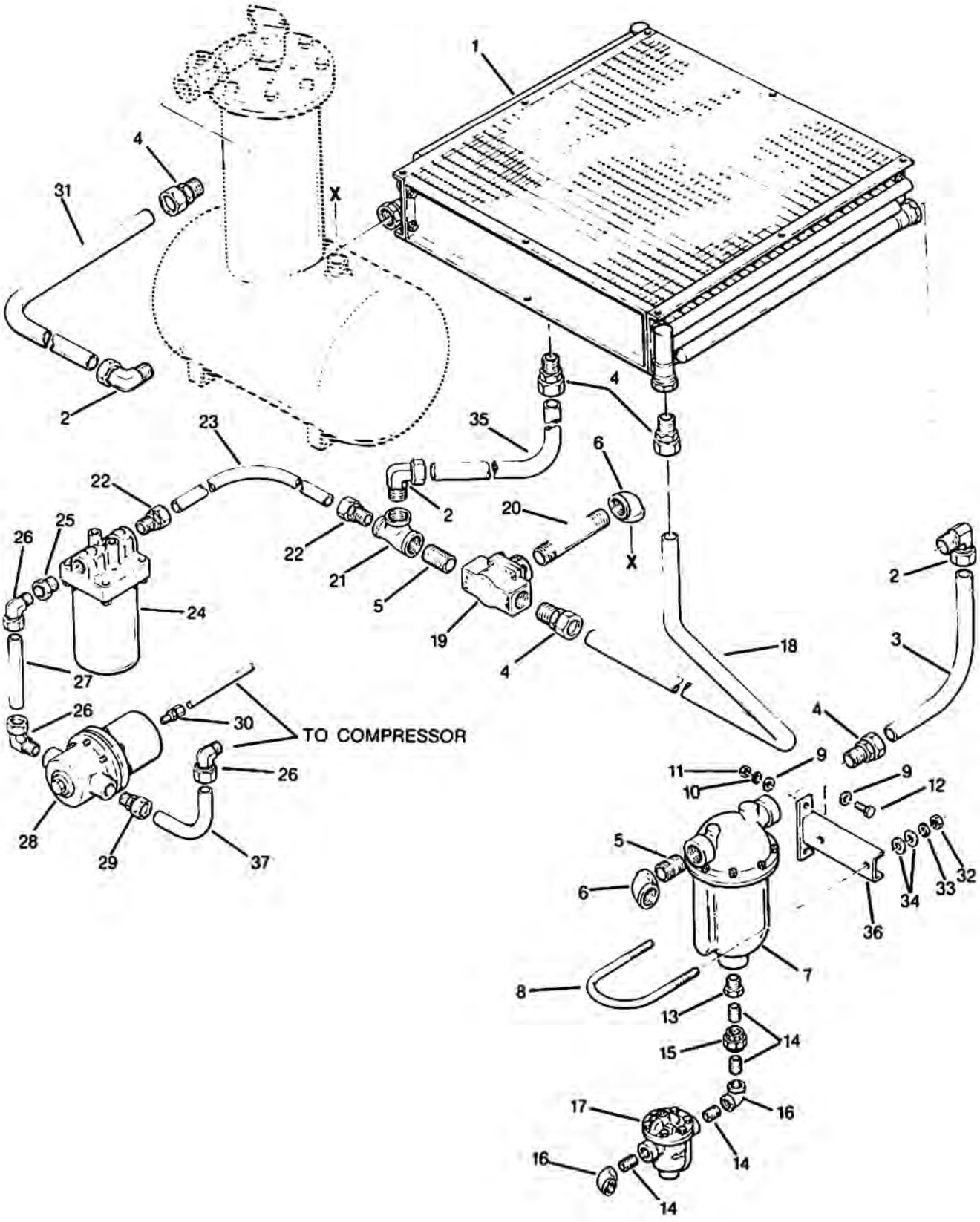
† For maintenance on fluid stop valve no. 16741, order repair kit no. 1684.

WHEN ORDERING PARTS, ALWAYS INDICATE SERIAL NUMBER OF MACHINE

Section 6

ILLUSTRATIONS AND PARTS LIST

FIGURE 6.6 COMPRESSOR COOLING AND LUBRICATION SYSTEM – AIR COOLED



6.6 COMPRESSOR COOLING AND LUBRICATION SYSTEM – AIR COOLED

key number	*description*	*part number*	*quantity*
1	cooler, comb. aftercooler & fluid	241188	1
2	elbow, tube 1-1/2" x 1-1/2"	810524-150	3
3	tube, aftercooler to separator	223291	1
4	connector, tube 1-1/2" x 1-1/2"	810224-150	5
5	nipple, close 1-1/2"	822224-000	2
6	elbow, pipe 90° 1-1/2"	801515-060	2
7	separator, moisture 1-1/2"	45668	1
8	u-bolt, 1/2" x 5"	829008-500	1
9	washer, plain B reg 3/8"	837206-071	20
10	washer, springlock-reg. 3/8"	837506-094	6
11	nut, hex 3/8"-16	825206-337	2
12	capscrew, hex 3/8" x 1-1/4" gr2	828106-125	2
13	bushing, red. hex 1" x 3/4"	802104-030	1
14	nipple, close 3/4"	822212-000	4
15	union, pipe 3/4"	802515-030	1
16	elbow, pipe 90° 3/4"	801515-030	2
17	trap, moisture 3/4"	42034	1
18	tube, thermal valve to cooler	223292	1
19	valve, thermal*	14512	1
20	nipple, pipe 1-1/2" x 8"	822124-080	1
21	tee, red. 1-1/2" x 1-1/2" x 1-1/4"	802206-056	1
22	connector, tube 1-1/4" x 1-1/4"	810220-125	2
23	tube, bypass tee to filter 1-1/4"	223288	1
24	strainer, main 1-1/4"**	242311	1
25	bushing, red. hex 1-1/4" x 1"	802105-040	1
26	elbow, tube 1" x 1"	810516-100	3
27	tube, filter to fluid stop 1"	234154	1
28	valve, fluid stop***	16741	1
29	connector, tube 1" x 1"	810216-100	1
30	connector, tube 1/4" x 1/4"	810204-025	1

(Continued on next page)

* For maintenance on thermal valve no. 14512, order repair kit 1168.

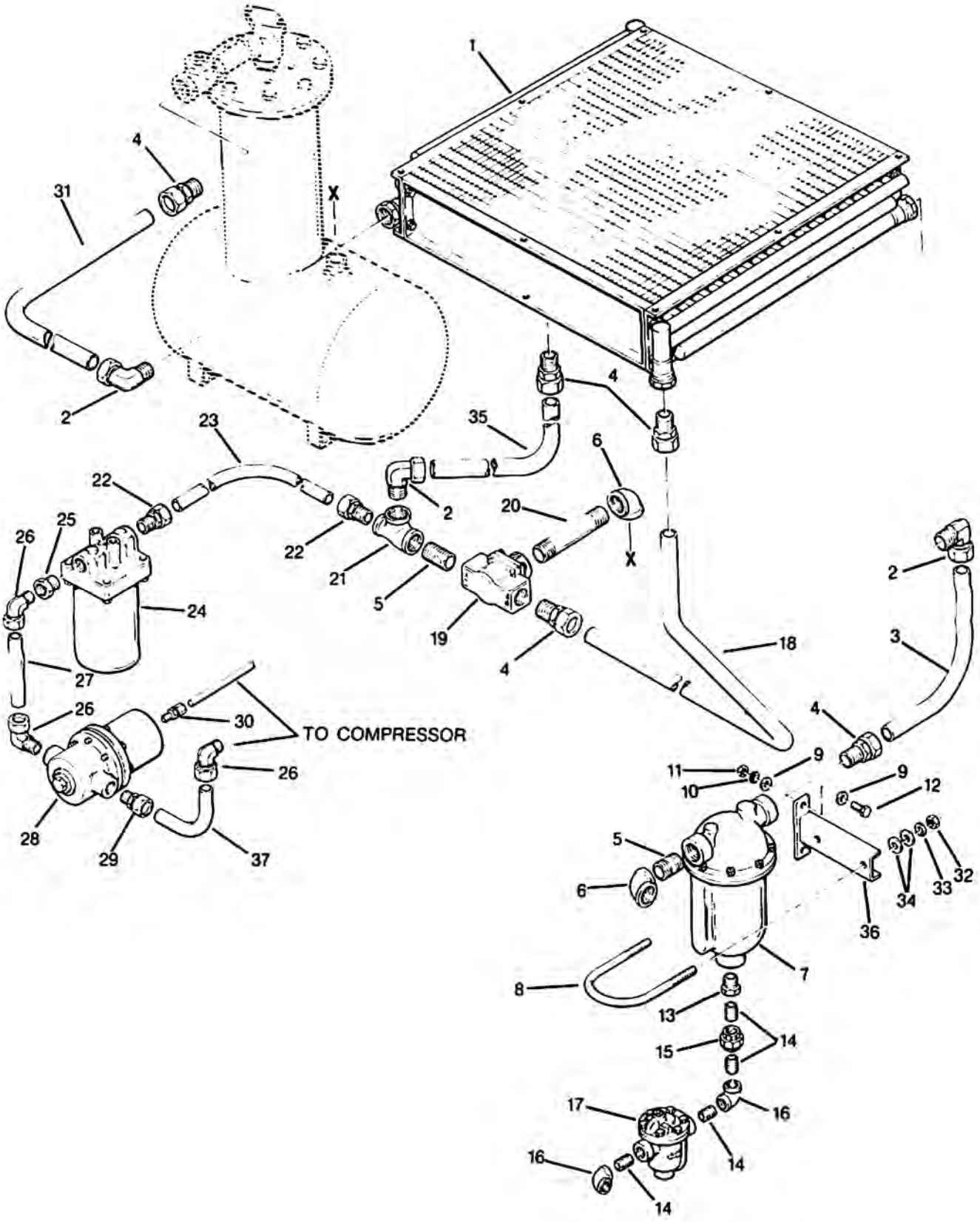
** For maintenance on strainer no. 242311, order repair kit no. 1158 for element & housing seal or kit no. 1175 for seals only.

*** For maintenance on fluid stop valve 16741, order repair kit no. 1684.

Section 6

ILLUSTRATIONS AND PARTS LIST

FIGURE 6.6 COMPRESSOR COOLING AND LUBRICATION SYSTEM – AIR COOLED



6.6 COMPRESSOR COOLING AND LUBRICATION SYSTEM – AIR COOLED

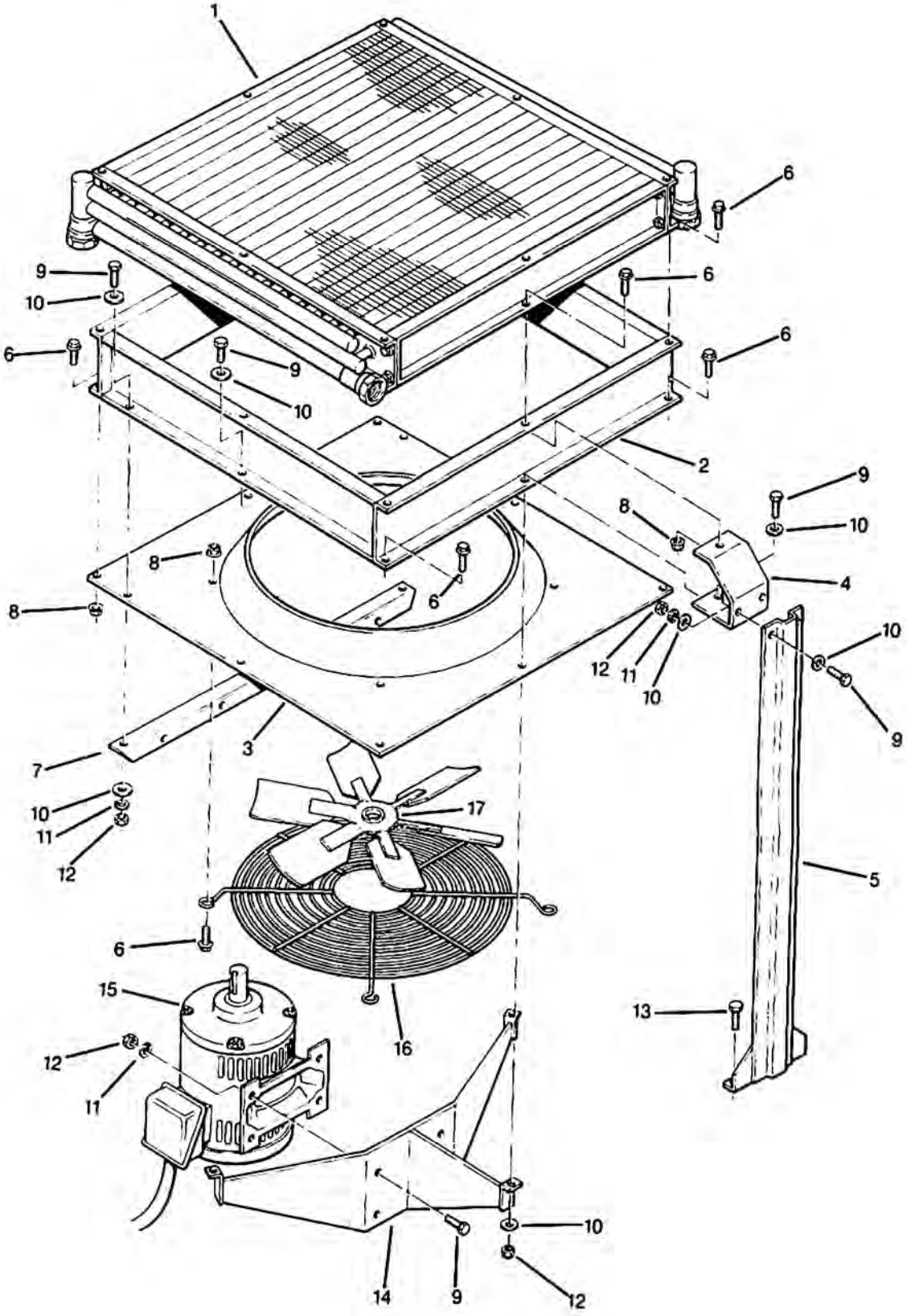
key number	*description*	*part number*	*quantity*
31	tube, check valve to aftercooler 1-1/2"	223290	1
32	nut, hex 1/2"-13	825208-448	2
33	washer, springlock-reg. 1/2"	837508-125	2
34	washer, plain B reg. 1/2"	837208-112	2
35	tube, cooler to bypass tee	223293	1
36	bracket, separator support	14395	1
37	tube, oil stop valve to unit	234155	1

WHEN ORDERING PARTS, ALWAYS INDICATE SERIAL NUMBER OF MACHINE

Section 6

ILLUSTRATIONS AND PARTS LIST

FIGURE 6.7 AIR COOLED COOLER ASSEMBLY



6.7 AIR COOLED COOLER ASSEMBLY

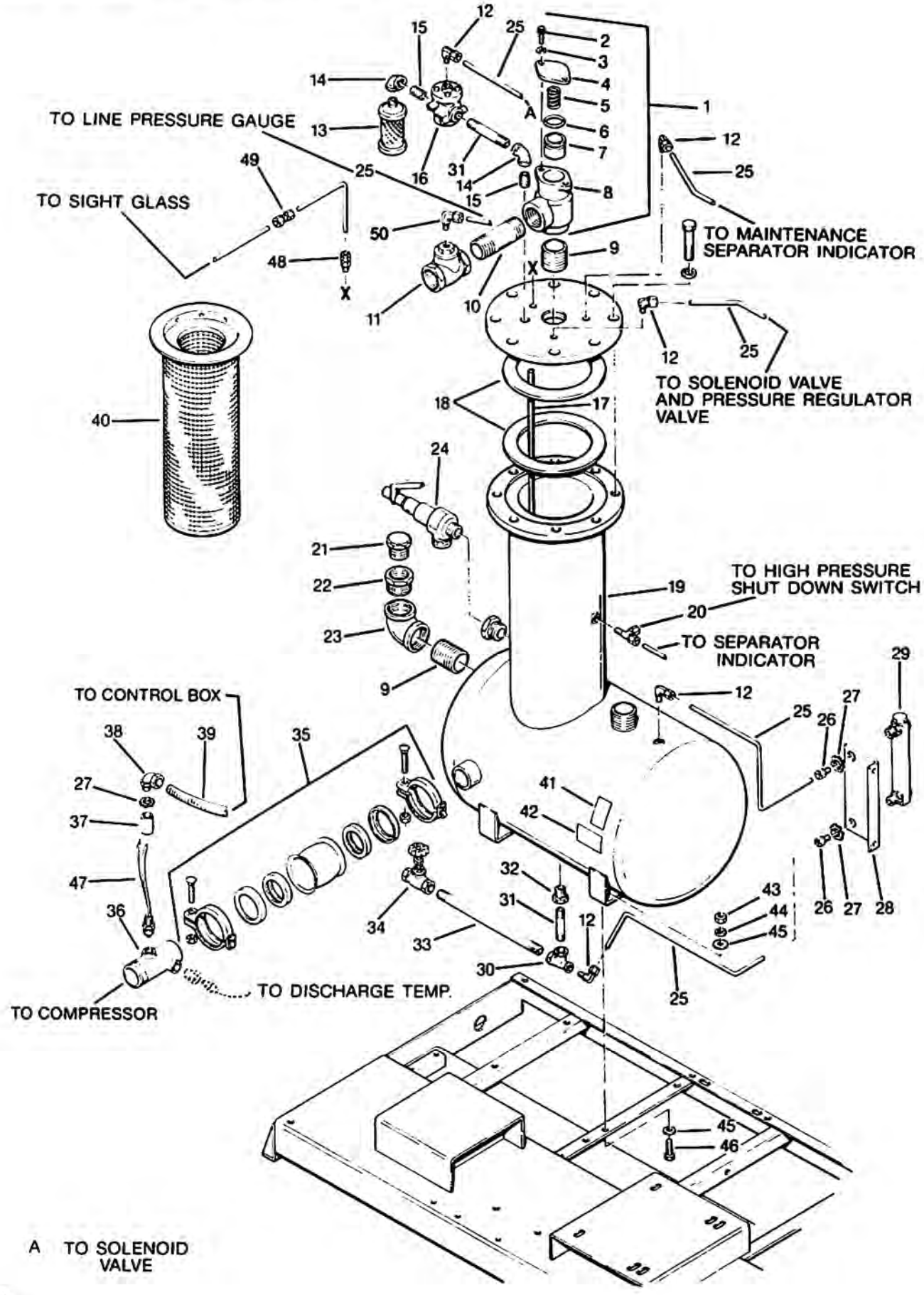
key number	*description*	*part number*	*quantity*
1	cooler, comb. aftercooler & fluid	241188	1
2	adapter, venturi to cooler	14376	1
3	panel, venturi	49970	1
4	bracket, cooler	14390	1
5	support, cooler	14389	1
6	screw, hex ser washer 5/16" x 3/4"	829705-075	17
7	angle, 2" x 2" x 1/4" x 35-1/4"	223199	1
8	nut, hex ser washer pltd 5/16"-18	825305-283	13
9	screw, hex 3/8" x 1" gr5	828606-100	8
10	washer, plain flat 3/8"	837206-071	14
11	washer, springlock-reg. 3/8"	837506-094	7
12	nut, hex 3/8"-16	825506-198	7
13	screw, thrd form type C 3/8"-16	49821	2
14	support, fan motor	14383	1
15	motor 3 hp 230/460-60 4P ODP	50560	1
16	guard, fan 26" dia	241079	1
17	fan, 24"	49971	1

WHEN ORDERING PARTS, ALWAYS INDICATE SERIAL NUMBER OF MACHINE

Section 6

ILLUSTRATIONS AND PARTS LIST

FIGURE 6.8 COMPRESSOR DISCHARGE SYSTEM



6.8 COMPRESSOR DISCHARGE SYSTEM

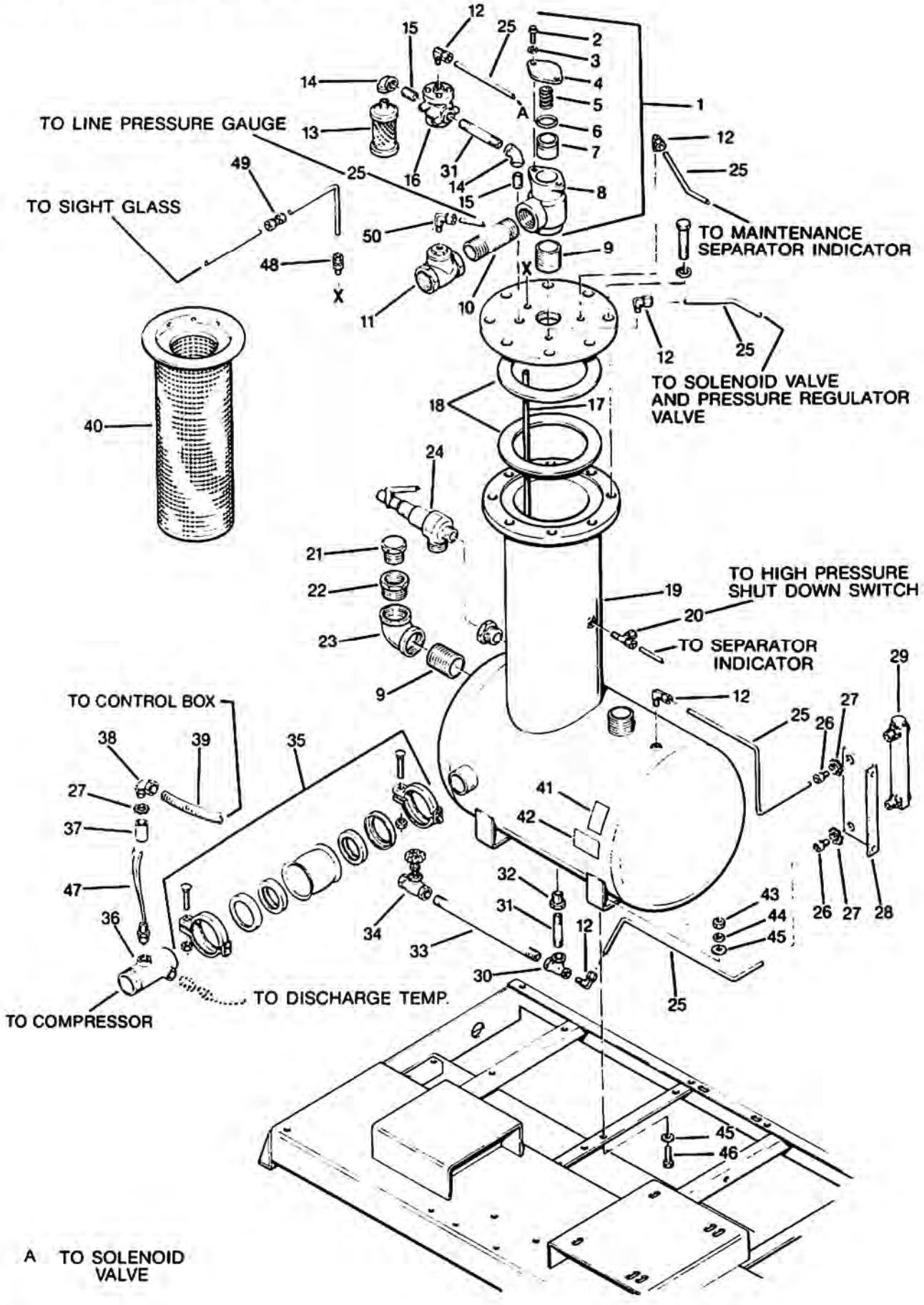
key number	description	part number	quantity
1	valve, minimum pressure (includes items 2 thru 8)	–	1
2	• capscrew, hex hd 3/8-16 x 1/4"	828406-125	2
3	• washer, lock 3/8"	837506-094	2
4	• cap, MPV	20499	1
5	• spring, MPV 1.250D x 4	40241	1
6	• ring, quad	46425	1
7	• piston, MPV	28675	1
8	• housing, MPV 1-1/2"	28147	1
9	nipple, close 1-1/2"	822224-000	2
10	nipple, pipe 1-1/2" x 4"	822224-040	1
11	valve, check 1-1/2"	28839	1
	valve, check 1-1/2" 125#	46349	1
12	elbow, tube 1/4" x 1/4"	810504-025	4
13	silencer, air 1/2"	41006	1
14	elbow, 1/2"	801515-020	2
15	nipple, close 1/2"	822208-000	2
16	valve, blowdown*	44912	1
17	tube, oil return 1/4" x 20"	21790	1
18	gasket, 1/16" x 9" x 10"	45636	2
19	tank, receiver/sump	49765	1
20	tee, tube 1/4" x 1/4"	810904-025	1
21	cap, fluid fill	40029	1
22	adaptor, fill cap	20044	1
23	elbow, pipe 90° 1-1/2"	801515-060	1
24	valve, pressure relief 140PSI	40871	1
25	tubing, steel 1/4"	840115-004	9
26	connector, tube 1/4" x 1/4"	810204-025	2
27	locknut, conduit 1/2"	847200-050	3
28	bracket, liquid level gauge	222354	1
29	gauge, fl level w/o ball check	46558	1
30	tee, red. 1/2" x 1/4" x 1/2"	802202-012	1
31	nipple, pipe 1/2" x 2-1/2"	822208-025	2
32	bushing, red. 3/4" x 1/2"	802103-020	1

* For maintenance on blowdown valve no. 44912, order repair kit no. 46782.

(Continued on next page)

ILLUSTRATIONS AND PARTS LIST

FIGURE 6.8 COMPRESSOR DISCHARGE SYSTEM



6.8 COMPRESSOR DISCHARGE SYSTEM (Continued)

key number	*description*	*part number*	*quantity*
33	nipple, pipe 1/2" x 12"	822208-120	1
34	valve, globe 1/2"	41007	1
35	coupling, flex**	45638	1
36	pipe w/coupling 2-1/2" x 9"	14183	1
37	coupling, pipe 1/2"	801215-020	1
38	elbow, 90° Sealtite 1/2"	846600-050	1
39	conduit, UA Lq-Tite 1/2"	846215-050	6'
40	element, separator***	47054	1
41	sign, Warning-Comp Oil Cap	49685	1
42	decal, "Comp Lub D-A Torque Fluid" (Standard only)	406849	1
43	nut, hex 1/2"-13	824208-448	4
44	washer, springlock-red. 1/2"	837508-125	4
45	washer, plain B Reg. 1/2"	837208-112	8
46	capscrew, hex 1/2" x 1-1/4" gr5	828608-125	4
47	switch, temp 240°F NC	40588	1
48	connector, flex 1/4" x 1/4"	20169	1
49	union, tube-hex 1/4"	811304-025	1
50	elbow, tube-M 1/4" x 1/8"	810504-012	1

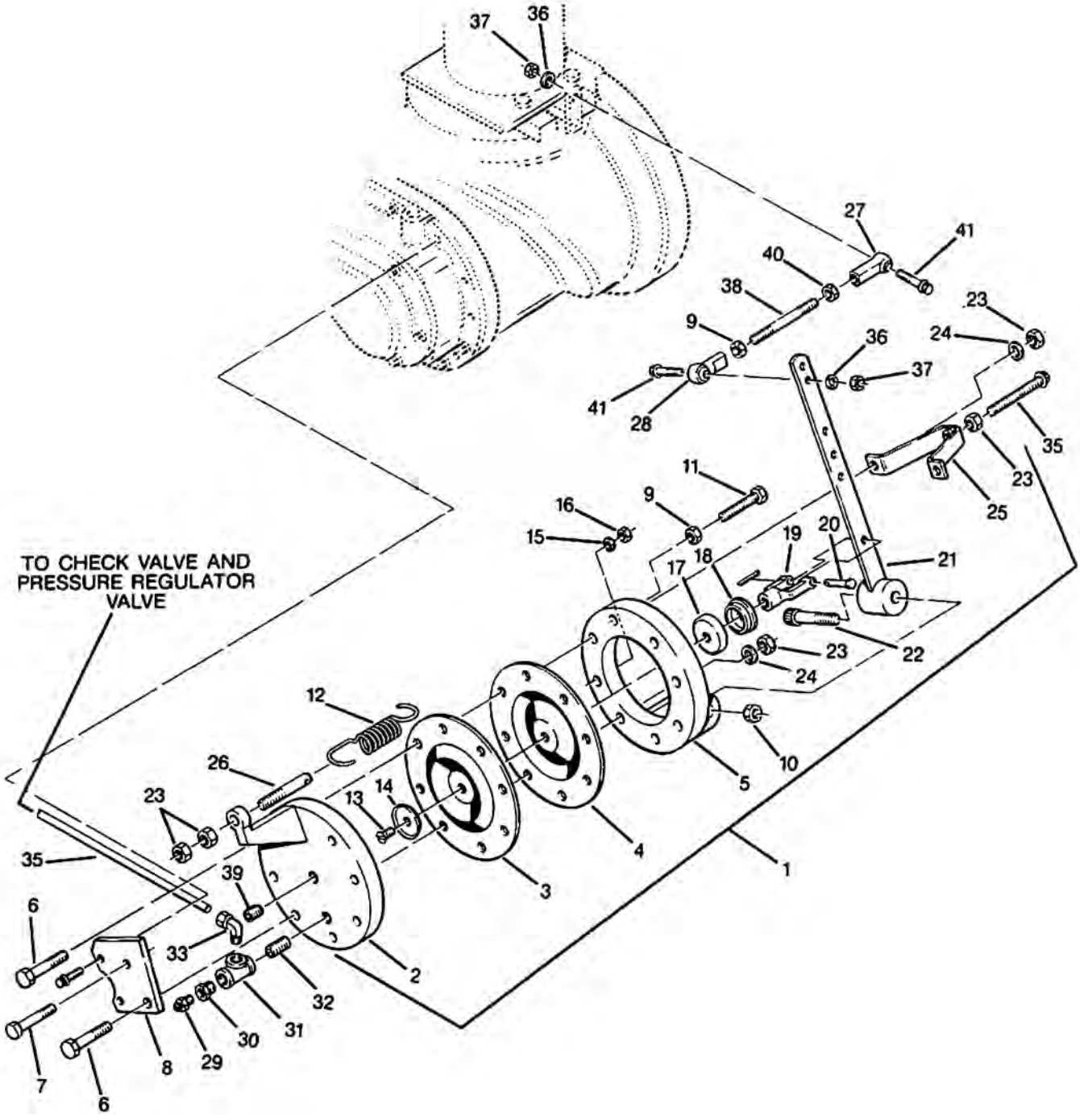
** For maintenance on coupling no. 45638, order gaskets 40649 (Standard) or no. 46989 (24KT) (2 required).

*** For maintenance on separator element no. 47054, order repair kit no. 1074.

WHEN ORDERING PARTS, ALWAYS INDICATE SERIAL NUMBER OF MACHINE

Section 6
ILLUSTRATIONS AND PARTS LIST

FIGURE 6.9 CAPACITY CONTROL SYSTEM



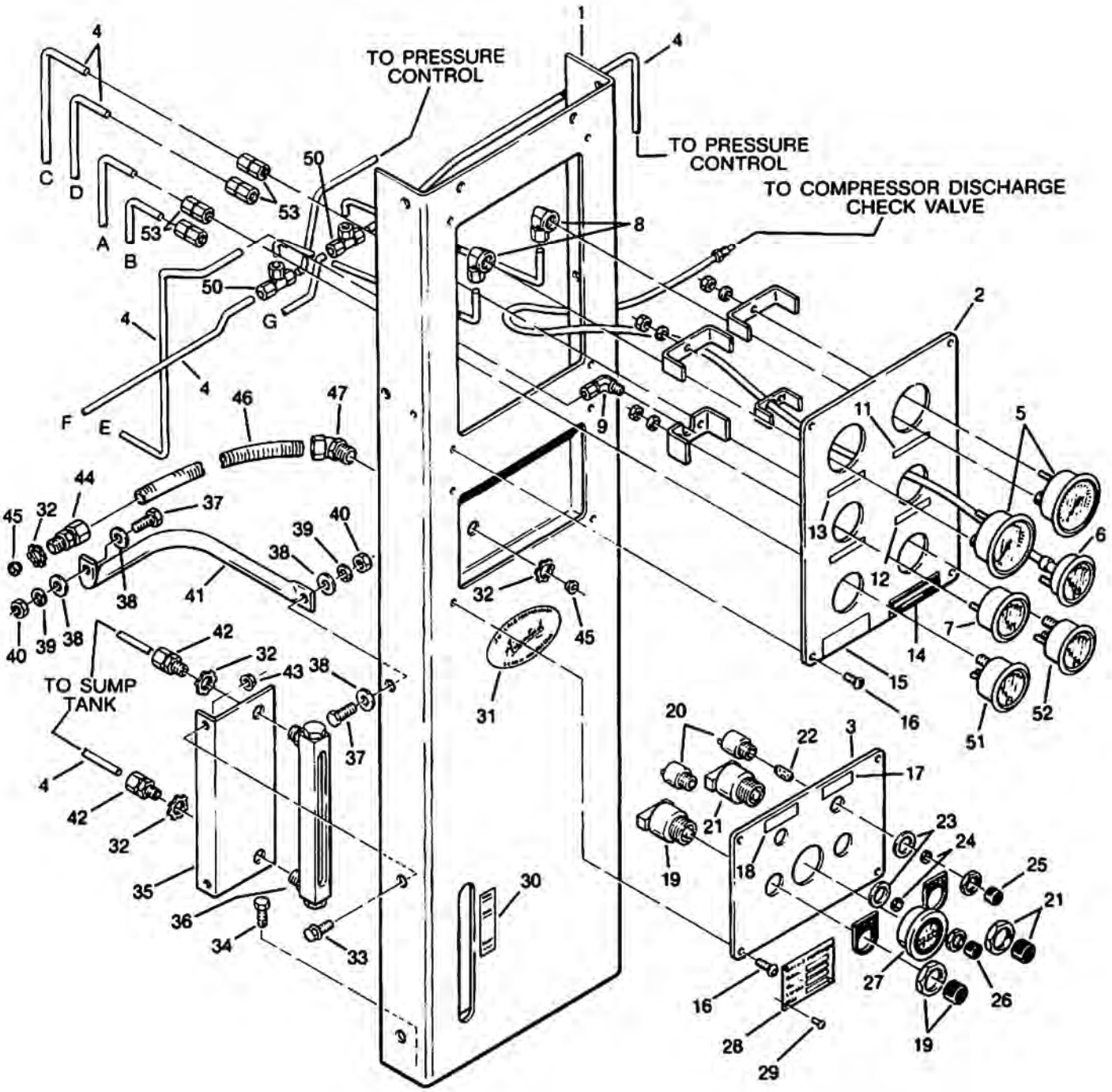
6.9 CAPACITY CONTROL SYSTEM

key number	description	part number	quantity
1	control, Sullicon*		
	(includes items 2 thru 25)	11682	1
2	• cover, control	21654	1
3	• diaphragm, internal	41270	1
4	• diaphragm, external	41269	1
5	• body, control	21635	1
6	• capscrew, hex 3/8" x 2-1/2" gr2	828106-250	4
7	• capscrew, hex 5/16" x 2-1/2" gr2	828105-250	3
8	• bracket, control	234217	1
9	• nut, hex-jam rh pltd 5/16"-24	824605-195	2
10	• nut, hex locking pltd 5/16"-18	825505-166	1
11	• screw, mach-hex 5/16"-24 x 2"	831105-200	1
12	• spring, control-light 3-7/8"	41273	1
13	• screw, fh 1/4"-28NF x 3/4"	41264	1
14	• washer, back up	21172	1
15	• washer, springlock reg 5/16"	837505-078	3
16	• nut, hex 5/16"-18	824205-273	3
17	• seal, cup	42538	1
18	• plunger	20094	1
19	• yoke, rod end 1/4"-28	40138	1
20	• pin, yoke 1/4" with cotter pin	40065	1
21	• lever, control	11084	1
22	• screw, mach shoulder 3/8" x 2"	830506-200	1
23	• nut, hex 3/8"-16	824206-337	6
24	• washer, springlock-reg 3/8"	837506-094	4
25	• bracket, cont stop	20864	1
26	screw, 3/8"-16 NC x 2"	21636	1
27	rod end, spherical lh 5/16"	42004	1
28	rod end, spherical rh 5/16"	40136	1
29	valve, drain-self close 1/8"	41111	1
30	bushing, red. hx-galv 1/4" x 1/8"	804100-005	1
31	tee, pipe - galv 1/4"	804415-010	1
32	nipple, close - galv 1/4"	823204-000	1
33	elbow, tube 1/4" x 1/4"	810504-025	1
34	tubing, steel 1/4"	840115-004	22'
35	capscrew, ferry hd 3/8"-16 x 2	828406-200	1
36	washer, springlock 5/16"	837505-078	2
37	nut, hex 5/16"-24	824605-195	2
38	rod, 5/16"-24 x 3-3/8"	20685	1
39	plug	807800-010	1
40	nut, hex-jam lh pltd 5/16"-24	824705-195	1
41	capscrew, 5/16"-24 x 1-1/2" gr5	828805-150	2

* For maintenance on Sullicon Control no. 11682, order repair kit no. 11579.

Section 6
ILLUSTRATIONS AND PARTS LIST

FIGURE 6.10 INSTRUMENT PANEL AND PARTS



A TO BEARING FILTER

B TO COMPRESSOR MANIFOLD

C TO TOP OF SUMP TANK

D TO SIDE OF SUMP TANK TOWER

E TO COMPRESSOR AIR INLET

F TO AFTERCOOLER

G TO SOLENOID CHECK VALVE

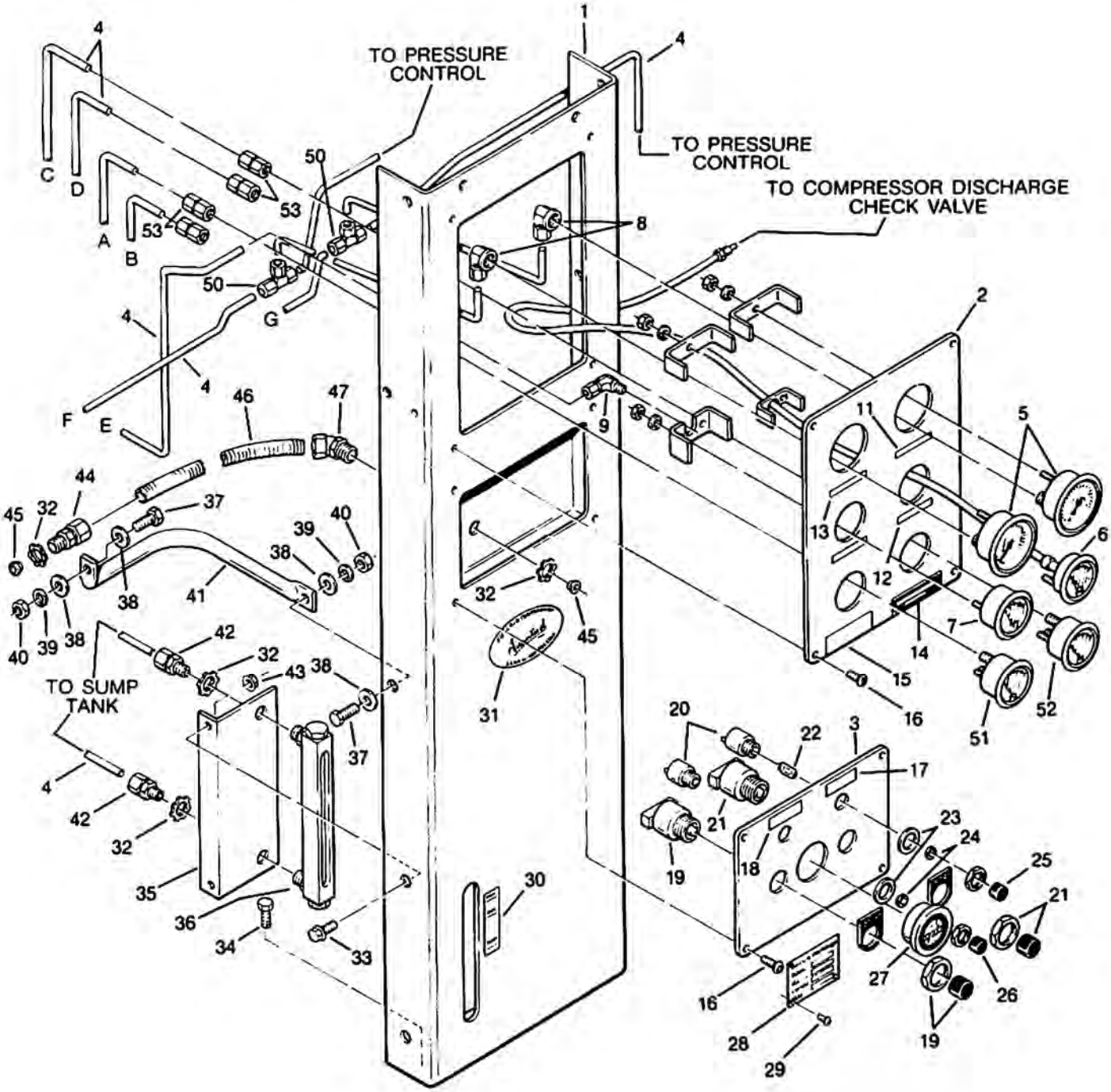
6.10 INSTRUMENT PANEL AND PARTS

key number	description	part number	quantity
1	panel, instrument support	14300	1
2	panel, instrument	250003-875	1
3	panel, electrical	222565	1
4	tubing, copper 1/4"	840115-004	11'
5	gauge, pressure 2-1/2"	49544	2
6	gauge, temperature 2"	42582	1
7	gauge, air restriction	250003-797	1
8	elbow, 90° tube - F 1/4" x 1/4"	812304-012	2
9	elbow, tube 1/4" x 1/4"	810404-025	1
10	connector, tube 1/4" x 1/4"	810204-025	2
11	decal, line pressure	40928	1
12	decal, discharge temp.	49814	1
13	decal, sump pressure	49816	1
14	decal, separator indicator	49838	1
	decal, separator indicator (24KT only)	46608	1
15	decal, bearing filter indicator	49837	1
	decal, bearing filter indicator (24KT only)	46607	1
16	screw, tapping rd hd #10 x 1/2"	835702-050	4
17	decal, machine running	49840	1
18	decal, power energized	49839	1
19	button, push-start	41967	1
20	holder, lamp	43383	2
21	button, push-stop	42235	1
22	bulb	43386	2
23	gasket, lamp holder	241808	2
24	gasket, lens	241809	2
25	lens, red	43384	1
26	lens, green	43385	1
27	hourmeter 2-1/2" 120V 60HZ	42988	1
	gasket, hourmeter	410353	1
28	nameplate, serial #-alum	40052	1
29	rivet, pop 1/8" x 3/8"	843102-038	1
30	decal, fluid level	47451	1
31	decal, "Airanteed" (White)	43067	1
	decal, "Airanteed" (Gold) 24KT only)	46420	1
32	locknut, conduit 1/2"	847200-050	2
33	screw, hex ser wash 5/16" x 3/4"	829705-075	3

(Continued on next page)

ILLUSTRATIONS AND PARTS LIST

FIGURE 6.10 INSTRUMENT PANEL AND PARTS



A TO BEARING FILTER

B TO COMPRESSOR MANIFOLD

C TO TOP OF SUMP TANK

D TO SIDE OF SUMP TANK TOWER

E TO COMPRESSOR AIR INLET

F TO AFTERCOOLER

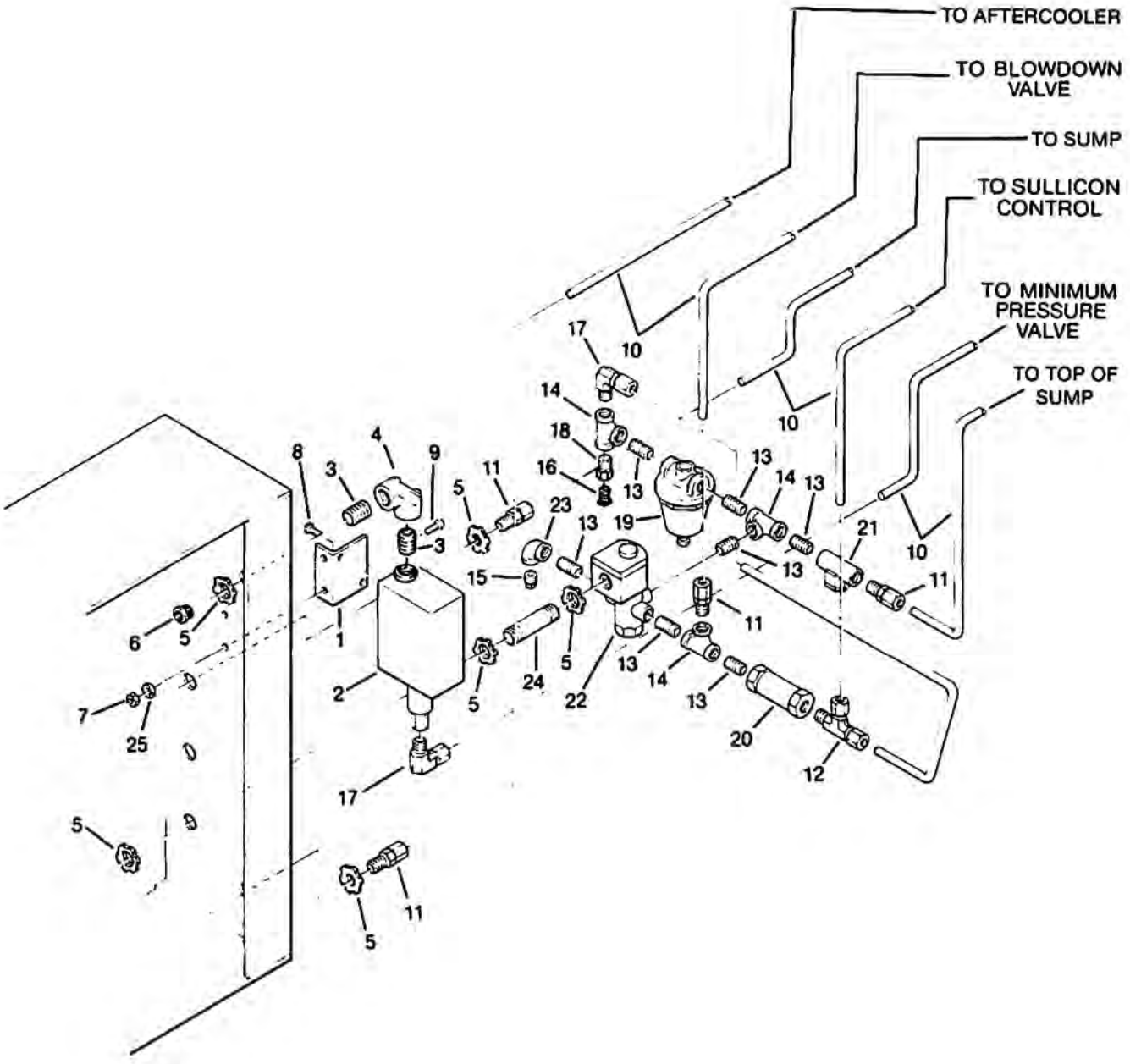
G TO SOLENOID CHECK VALVE

6.10 INSTRUMENT PANEL AND PARTS (Continued)

key number	*description*	*part number*	*quantity*
34	screw, thrd form Type C 3/8" x 3/4"	49821	2
35	bracket, mtg liq level gauge	222354	1
36	gauge, fl level w/o ball chk	46558	1
37	capscrew, hex 3/8" x 1-1/4" gr5	828606-125	10
38	washer, flat 3/8"	837206-071	5
39	washer, springlock-reg. 3/8"	837506-094	10
40	nut, hex 3/8"-16	824206-337	10
41	brace, instrument panel	222567	1
42	connector, tube 5/16" x 1/4"	810205-025	2
43	nut, hex ser wash pltd 5/16"-18	825305-283	3
44	connector, Strt Lq-Tite 1/2"	846400-050	5
45	bushing, conduit plastic 1/2"	848815-050	1
46	conduit, UA Lq-Tite 1/2"	846215-050	8'
47	elbow, 45° Lq-Tite 1/2"	846500-050	1
48	screw, mach-rd #10-32 x 3/8"	831702-038	2
49	washer, lock ext tooth CP #10	838403-025	2
50	tee, tube-union 1/4"	811404-025	1
51	gauge, bearing filter maintenance	250003-798	1
52	gauge, separator maintenance	250003-799	1

WHEN ORDERING PARTS, ALWAYS INDICATE SERIAL NUMBER OF MACHINE

FIGURE 6.11 ELECTRO-PNEUMATIC CONTROL SYSTEM



6.11 ELECTRO-PNEUMATIC CONTROL SYSTEM

key number	*description*	*part number*	*quantity*
1	bracket, pressure switch	230452	1
2	switch, pressure 0-150# SPDT NI	40694	1
3	nipple, close 1/2"	822208-000	2
4	elbow, entrance 1/2"	847715-050	1
5	locknut, conduit 1/2"	847200-050	9
6	bushing, conduit plastic 1/2"	848815-050	2
7	nut, hex 1/4-20	824204-226	2
8	nut, hex 1/4"-20	824204-226	2
9	screw, hex 1/4-20 x 1/2"	828104-050	2
10	tubing, steel 1/4"	840115-004	2'
11	connector, tube 1/4" x 1/4"	810204-025	2
12	tee, tube 1/4" x 1/4"	810904-025	1
13	nipple, close galv. 1/4"	823204-000	5
14	tee, pipe galv. 1/4"	804415-010	3
15	orifice, pipe plug 1/4"	232874	1
16	valve, drain-self close 1/8"	041111	1
17	elbow, tube 1/4" x 1/4"	810504-025	4
18	bushing, red. hx-galv. 1/4" x 1/8"	804100-005	1
19	valve, regulator* 1/4" NPT	406929	1
20	valve, check 1/4"	049905	1
21	strainer, v-type	241771	1
22	valve, pilot 1/4" 3 way N1 150 psi**	040528	1
23	elbow, pipe 90° 1/4" 150 psi	801515-010	1
24	nipple, pipe 1/2 x 4"	822108-040	1
25	washer, springlock 1/4"	837504-062	2

* For maintenance on regulator valve no. 406929, order repair kit no. 41742.

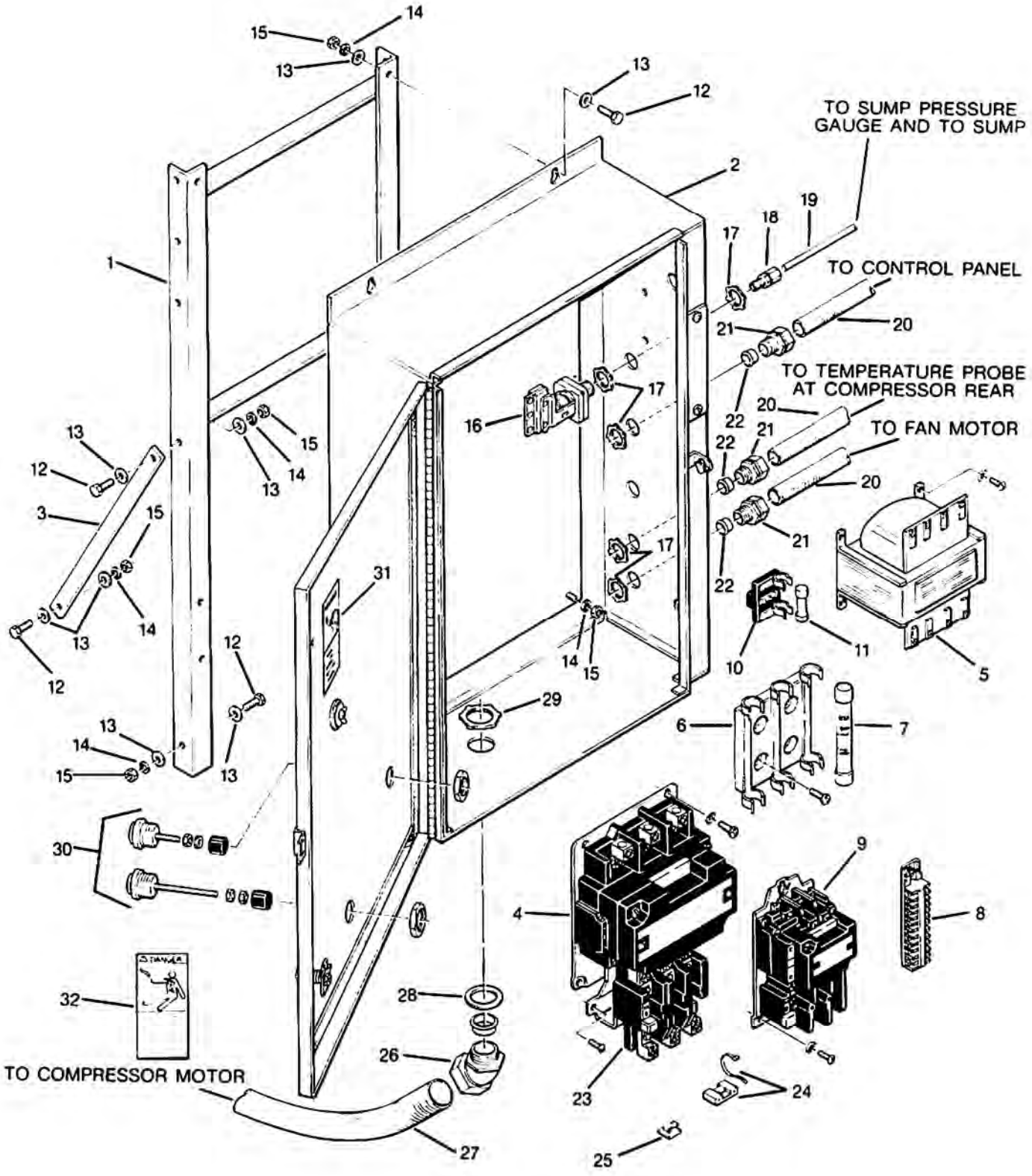
** For maintenance on pilot valve no. 49827, order repair no. 1128.

WHEN ORDERING PARTS, ALWAYS INDICATE SERIAL NUMBER OF MACHINE

Section 6

ILLUSTRATIONS AND PARTS LIST

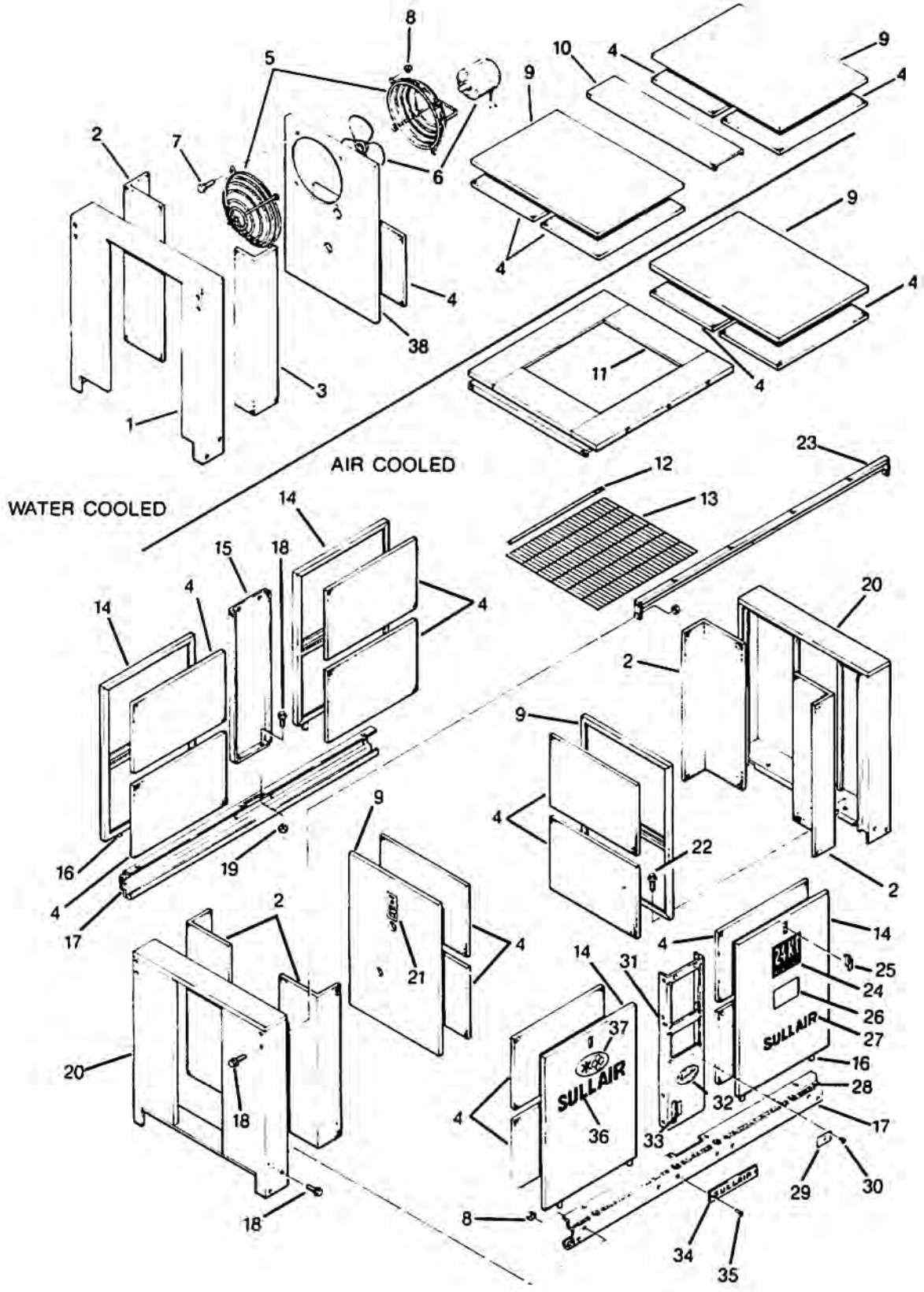
FIGURE 6.12 ELECTRIC CONTROL BOX ASSEMBLY



6.12 ELECTRIC CONTROL BOX ASSEMBLY

key number	description	part number	quantity
1	support, starter	14084	1
2	starter, MFV NC AC NIZ (COMPLETE)	52404	1
3	brace, starter support	222566	2
4	starter, N4 (included in Item 2) CH	52036	1
	starter, N4 (included in Item 2) W	41143	1
5	transformer, 200VA Tri-Rater 230/460/575	42889	1
6	fuse holder	41158	3
7	fuse	42763	3
8	terminal, block & track	41493	6
9	starter, fan (N.O. included in item #2) CH	52538	1
	starter, fan (N.O. included in item #2) W	40426	1
10	fuse holder	41147	1
11	fuse, NON3	41148	2
12	capscrew, hex 3/8" x 1-1/4 gr2	828106-125	6
13	washer, plain 3/8"	837206-071	20
14	washer, springlock 3/8"	837506-094	10
15	nut, hex 3/8" x 16	824206-337	10
16	switch, pressure 10-250 SPDT open	46344	1
17	locknut, conduit 1/2"	847200-050	5
18	connector, tube 1/4" x 1/4"	810204-025	1
19	tubing, steel 1/4"	841115-004	19'
20	conduit, UA Lq-Tite 1/2"	846215-050	8'
21	connector, Strt Lq-Tite 1/2"	846400-050	5
22	bushing, conduit plastic 1/2"	848815-050	1
23	heater, O.L. H1054 CH 60H, 60L	241304	3
	heater, O.L. H1055 CH 75H, 75L	241305	3
	heater, O.L. H87 60H, 60L	41135	3
	heater, O.L. H90 75H, 75L	41155	3
24	tie & anchor, wiring harness tie	843200-025	6
25	clip, wiring harness	41632	6
26	elbow, 45 deg. Sealtite 1-1/4"	846500-125	1
27	conduit, US Lq Tite 1-1/4"	846215-125	3'
28	washer, 1-1/4	847012-050	1
29	locknut, conduit 1-1/4"	847200-125	1
30	button, reset kit W	43200	2
	button, reset kit, CH	249518	2
31	sign, Warning, Ground Fault	49852	1
32	sign, Danger, Electrocution	49850	1
33	busing, conduit 1-1/4"	848815-125	2
34	heater, O.L. H-1029 C 3hp	241637	3
	heater, O.L. H-34 W 3hp	45676	3
NON ILLUSTRATED ITEMS:			
	relay, 600V (dual ctl only)	42090	1
	timer (dual ctl only)	40836	1

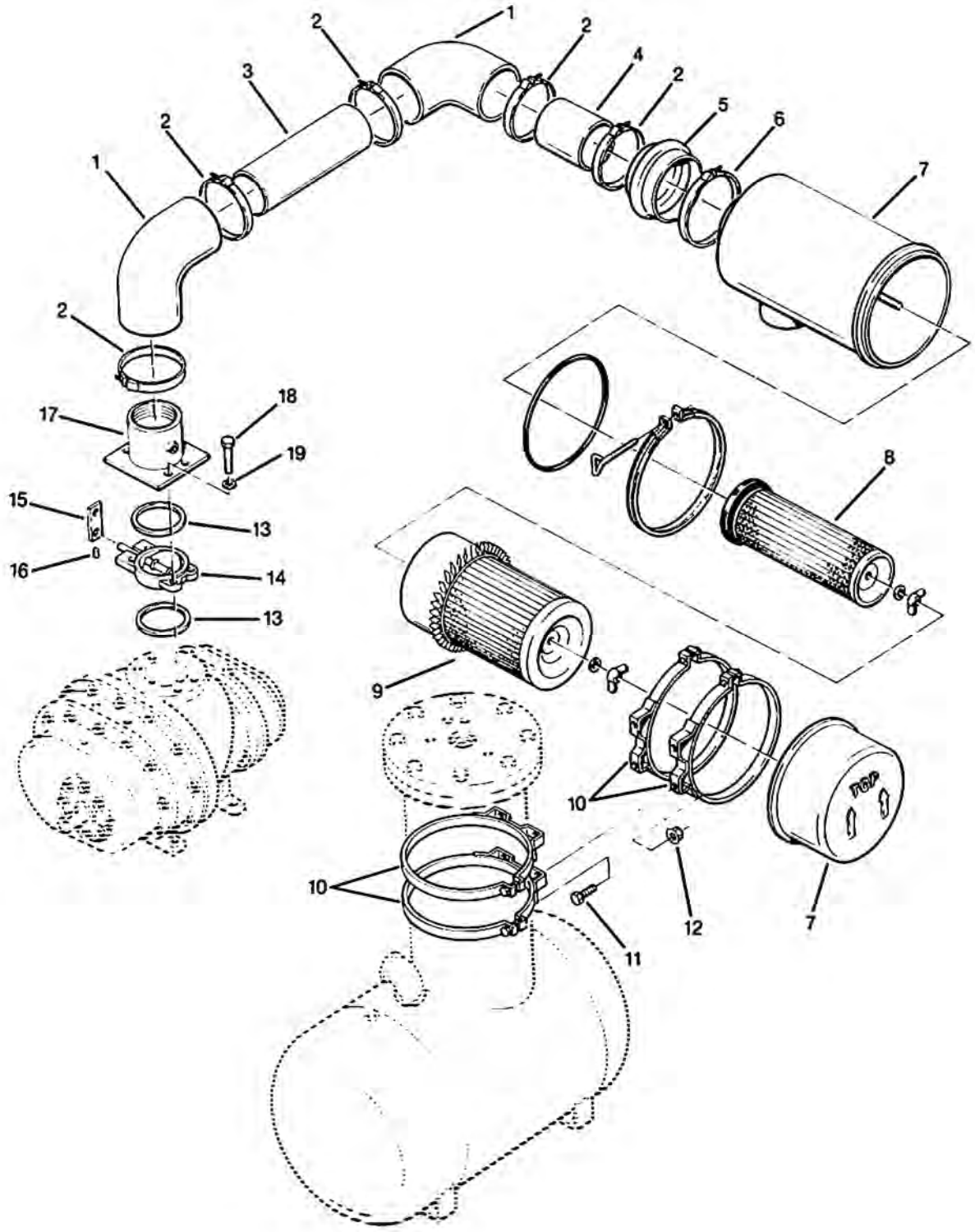
Section 6
ILLUSTRATIONS AND PARTS LIST
FIGURE 6.13 ENCLOSURE AND PARTS



6.13 ENCLOSURE AND PARTS

key number	description	air-cooled part no.	water-cooled part no.	air-cooled quantity	water-cooled quantity
1	panel, end	–	14341	–	1
2	panel, fiberglass 21-1/2" x 47-1/2"	49889-002	49889-002	4	3
3	panel, fiberglass 8" x 47-1/2"	–	49889-004	–	1
4	panel, fiberglass 22-1/2" x 32-1/2"	49889-001	49889-001	14	16
5	guard, fan 20" diameter	–	241137	–	1
6	fan, enclosure	–	49845	–	1
7	screw, hex ser wash 5/16" x 1-1/2"	–	829705-150	–	4
8	nut, hex ser wash pltd 5/16"-18	825305-283	825305-283	65	65
9	panel, access top	14326	14326	1	2
10	panel, top center	–	222159	–	1
11	panel, roof	14392	–	1	–
12	weatherstrip 1/4" x 1"	43505	–	12'	–
13	grill, cooler	241232	–	1	–
14	panel, access	14282	–	4	–
15	panel, center-side	14299	–	1	–
16	rivet, tubular int. tap 1/4"-20	49824	49824	8	8
17	panel, side-sill member	222530	222530	2	2
18	screw, hex ser wash 5/16" x 3/4"	829705-075	829705-075	42	42
19	nut, hex ser wash pltd 5/16"-18	825305-283	825305-283	34	34
20	panel, end	14283	14283	2	1
21	sign, Air Breathing (Warning)	49346	49346	1	1
22	screw, self drill 1/4"-14 x 3/4"	834504-075	834504-075	8	8
23	channel, top-side member	14281	–	2	–
24	decal, 24KT (24KT only)	46415	46415	1	1
25	latch, adjust. trigger-lock	49764	49764	4	4
26	decal, "Logo" 24KT (24KT only)	46414	46414	1	1
27	decal, Sullair	46422	46422	1	1
28	weatherstrip, felt 1/8" x 1"	43502	43502	112'	112'
29	nameplate, Serial #24KT (24KT only)	46413	46413	1	1
30	nameplate serial # Alum	40052	40252	1	1
31	rivet, pop 1/8" x 3/8" AD 46BS	843102-038	843102-038	4	4
32	panel, instrument support	14300	14300	1	1
33	decal, "Airanteed" (24KT)	46420	46420	1	1
	decal, "Airanteed" (White)	43067	43067	1	1
34	decal, Oil Level (standard only)	47451	47451	1	1
35	nameplate, Sullair 2-7/8" x 17 1/4"	40040	40040	1	1
	nameplate, Sullair 27" (24KT only)	46470	46470	1	1
36	rivet, pop 3/16" x 5/8"	843103-062	843103-062	2	2
37	decal, "Sullair"	40358A	40358A	2	2
37	decal, "Trademark" (White)	40087A	40087A	2	2
38	panel, baffle	014532	–	2	–

FIGURE 6.14 HEAVY DUTY FILTER

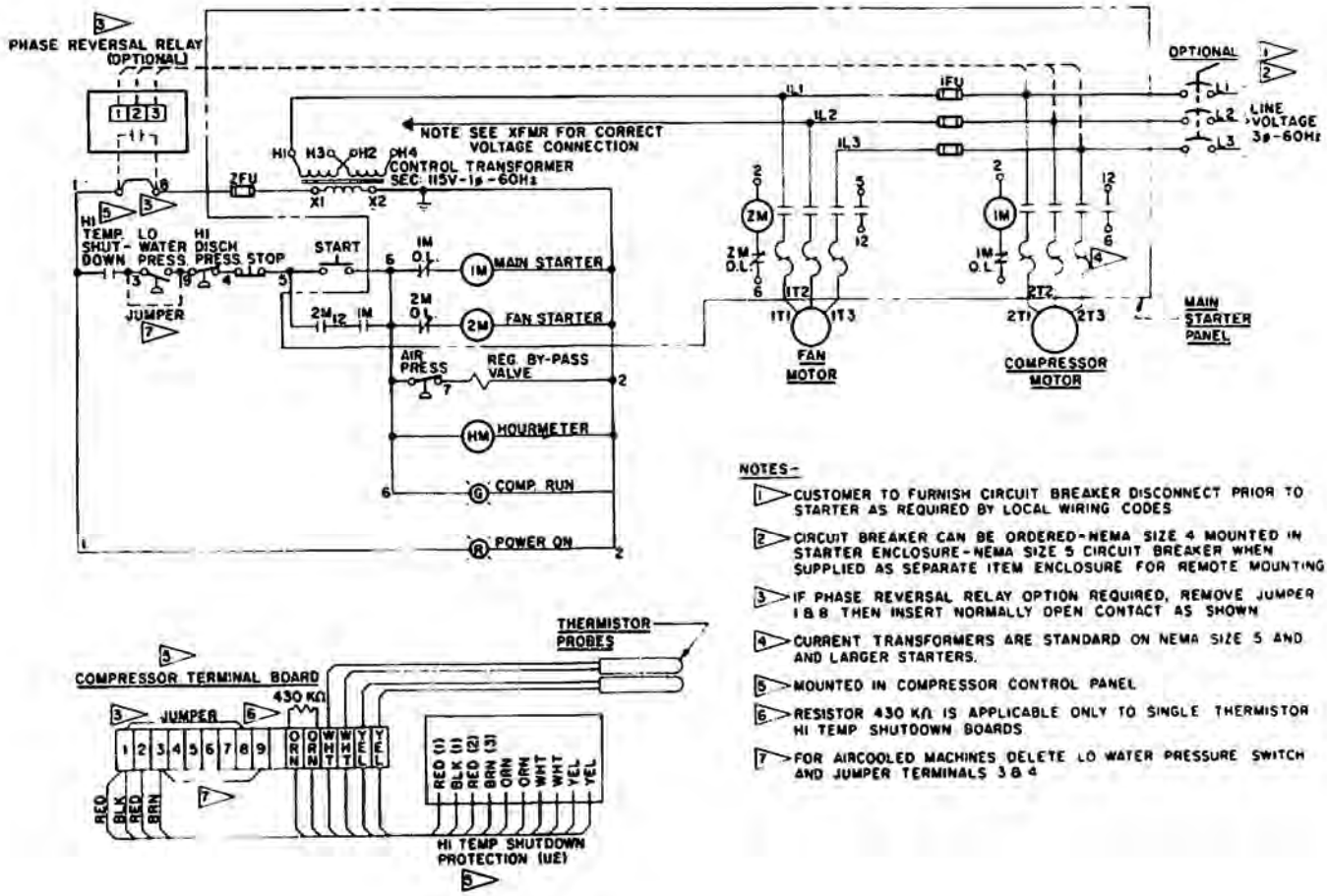


6.14 HEAVY DUTY FILTER

key number	description	part number	quantity
1	elbow, rubber 90°	40550	4
2	clamp, hose 4.28/4.59	40642	5
3	tube, 4" od x 10"	222701	1
4	tube, 4" od x 5"	222702	1
5	hose, reducing hump 5" x 4"	241796	1
6	clamp, hose 6"	408153	1
7	filter, air	47274	1
	Includes:		
	• ring, sealing		1
	• clamp, sealing		1
	• nut, butterfly		1
	• disc, inner sealing		1
	• cover, filter housing end		1
	• filter, vane air deflector		1
	• filter, butterfly with washer		2
8	filter, air-secondary	49543	1
9	filter, air-main	47542	1
10	band, mounting 10"	40194	4
11	screw, hex ser wash 5/16" x 3/4"	829705-075	4
12	nut, hex ser wash pltd 5/16"-18	825305-283	4
13	gasket, 1/32" x 5-1/4" od x 4-1/8" id	40708	2
14	valve, butterfly 4" RP	40640	1
15	lever control, inlet valve	61429	1
16	screw, set cup point 5/16" x 3/8"	408383	1
17	adaptor, air inlet	14083	1
18	capscrew, hex 1/2" x 2-1/2" gr2	828108-250	4
19	washer, springlock-reg 1/2"	837508-150	4

WHEN ORDERING PARTS, ALWAYS INDICATE SERIAL NUMBER OF MACHINE

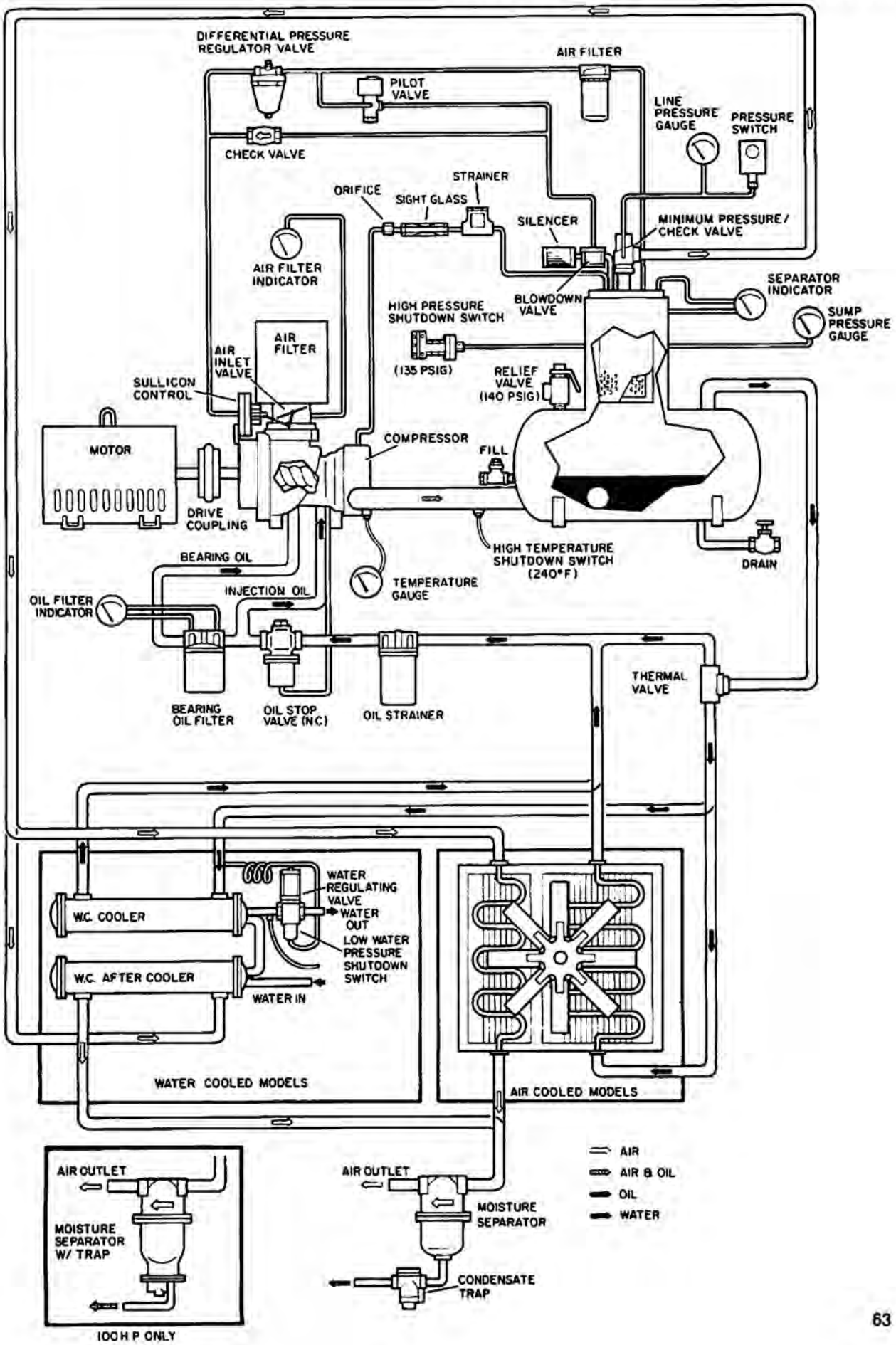
Section 6
ILLUSTRATIONS AND PARTS LIST
FIGURE 6.15 ELECTRICAL SCHMATIC



NOTES-

1. CUSTOMER TO FURNISH CIRCUIT BREAKER DISCONNECT PRIOR TO STARTER AS REQUIRED BY LOCAL WIRING CODES
2. CIRCUIT BREAKER CAN BE ORDERED-NEMA SIZE 4 MOUNTED IN STARTER ENCLOSURE-NEMA SIZE 5 CIRCUIT BREAKER WHEN SUPPLIED AS SEPARATE ITEM ENCLOSURE FOR REMOTE MOUNTING
3. IF PHASE REVERSAL RELAY OPTION REQUIRED, REMOVE JUMPER 1 & 8 THEN INSERT NORMALLY OPEN CONTACT AS SHOWN
4. CURRENT TRANSFORMERS ARE STANDARD ON NEMA SIZE 5 AND AND LARGER STARTERS.
5. MOUNTED IN COMPRESSOR CONTROL PANEL
6. RESISTOR 430 KΩ IS APPLICABLE ONLY TO SINGLE THERMISTOR HI TEMP SHUTDOWN BOARDS
7. FOR AIRCOOLED MACHINES DELETE LO WATER PRESSURE SWITCH AND JUMPER TERMINALS 3 & 4

FIGURE 6.16 PIPING & INSTRUMENTATION DIAGRAM



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Worldwide Sales and Service

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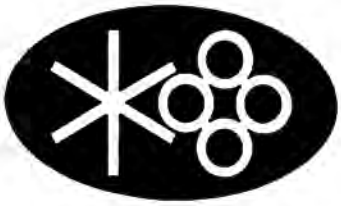

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without prior notice
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