# SULLAIR COMPRESSOR

Series 20 100–150HP, Series 25 150HP Standard & 24KT Industrial Rotary Screw Air Compressor



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1.1 GENERAL

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

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

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

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

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

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

#### **1.2 PERSONAL PROTECTIVE EQUIPMENT**

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

#### **1.3 PRESSURE RELEASE**

A. Install an appropriate flow limiting valve between the service air outlet and the shut-off (throttle) valve, either at the compressor or at any other point along the air line, when an air hose exceeding  $\frac{1}{2}$ " inside diameter is to be connected to the shut-off (throttle) valve, to reduce pressure in case of hose failure, per OSHA Standard 29 CFR 1926.302(b)(7).

**B.** When the hose is to be used to supply a manifold, install an additional appropriate flow limiting valve between the manifold and each air hose exceeding  $\frac{1}{2}$ " inside diameter that is to be connected to the manifold to reduce pressure in case of hose failure.

C. Provide an appropriate flow limiting value at the beginning of each additional 75 feet of hose in runs of air hose exceeding  $\frac{1}{2}$ " inside diameter to reduce pressure in case of hose failure.

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

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

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

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

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

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

J. Use air at pressures less than 30 PSIG (207kPa) for cleaning purposes, and then only with effective chip guarding and personal protective equipment per OSHA Standard 29 CFR 1910.242 (b).

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

#### 1.4 FIRE AND EXPLOSION

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

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

C. DO NOT permit fluids, including air line antiicer system antifreeze compound or fluid film to

## Section 1 SAFETY

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

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

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

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

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

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

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

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

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

#### 1.5 MOVING PARTS

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

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

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

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

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

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

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

#### 1.6 HOT SURFACES, SHARP EDGES AND SHARP CORNERS

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

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

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

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

#### 1.7 TOXIC AND IRRITATING SUBSTANCES

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

#### A DANGER

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

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

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

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

E. Coolants and lubricants used in this compressor are typical of the industry. Care should be taken to avoid accidental ingestion and/or skin contact. In the event of ingestion, seek medical treatment promptly. Wash with soap and water in the event of skin contact. F. Wear goggles or a full face shield when adding antifreeze compound to air line anti-icer systems.

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

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

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

#### **1.8 ELECTRICAL SHOCK**

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

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

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

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

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

#### 1.9 LIFTING

A. If the compressor is provided with a lifting bail, then lift by the bail provided. If no bail is provided,

then lift by sling. Compressors to be air lifted by helicopter must not be supported by the lifting bail but by slings instead. In any event, lift and/or handle only in full compliance with OSHA standards 29 CFR 1910 subpart N.

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

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

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

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

F. DO NOT attempt to lift in high winds.

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

H. Lift compressor no higher than necessary.

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

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

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

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

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

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



#### 1.10 ENTRAPMENT

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

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

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#### 2.1 INTRODUCTION

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

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

Read Section 6 (Maintenance) to see how surprisingly easy it is to keep your air compressor in top operating condition. Should any questions arise which cannot be answered in the following text, call your nearest Sullair representative or the Sullair Corporation Service Department toll free at 1–800–348–2722.

#### 2.2 DESCRIPTION OF COMPONENTS

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

On air-cooled models, a separate motor-driven fan forces air through the cooler/aftercooler assembly, thereby removing the head 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 compressors equipped with a canopy.

Both air-cooled and water-cooled versions have easily accessible items such as the fluid filters

Figure 2-1 Sullair Series 25/150 Rotary Screw Compressor (Air-Cooled version)



and control valves. The inlet air filters are also mounted for easy access and servicing.

#### 2.3 SULLAIR COMPRESSOR UNIT, FUNCTIONAL DESCRIPTION

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

Sullair 24KT compressors are filled with a fluid which rarely need to be changed. In the event a change of or make-up fluid are required, use only Sullair 24KT fluid. MIXING OF OTHER LUBRI-CANTS WITHIN THE COMPRESSOR UNIT WILL VOID ALL WARRANTIES!

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

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

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

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

2.4 COMPRESSOR COOLING AND LUBRICATION SYSTEM, FUNCTIONAL DESCRIPTION Refer to Figures 2–2 and 2–3. The cooling and lubrication system (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 interconnection piping.

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

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

Fluid flows from the bottom of the receiver/sump to the thermal valve. The thermal valve is fully open when the fluid temperature is below 170°F (77°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 (77°C), due to the heat of compression, the thermal valve begins to close and a portion of the fluid then flows through the cooler. From the cooler, the fluid flows to the main filter and on to the compressor unit.

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 bypass valve. An associated service gauge shows red when the filter needs servicing. This gauge has a pressure setting lower than that of the bypass valve. After the initial 50 hour filter change the gauge 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 (not shown) which operates to conserve water during periods of varying load on the compressor. This same valve automatically shuts off the water supply when the compressor is shut down. In addition, watercooled models have a water pressure switch to prevent operation with inadequate water pressure.

#### 2.5 COMPRESSOR DISCHARGE SYSTEM, FUNC-TIONAL DESCRIPTION

Refer to Figure 2–4. The compressor unit discharges the compressed air/fluid moisture through a discharge check valve into the combination receiver/sump. The discharge check valve prevents air in the receiver from returning to the compression chamber after the compressor has been shut down. The receiver has three functions:

It acts as a primary fluid separator.

Serves as the compressor fluid sump.



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· Houses the final fluid separator elements.

The compressed air/fluid mixture enters the receiver and is directed against the ends of the tank. The direction of movement is changed and its velocity significantly reduced, thus causing the large droplets of fluid to fall to the bottom of the receiver/sump. The fractional percentage of fluid remaining in the compressed air collects on the surface of the dual separator elements as the compressed air flows through them. Two return lines (or scavenge tubes) lead from the bottom of each separator element to the inlet region of the compressor unit. Fluid collecting on the bottom of



Figure 2-3 Piping and Instrument Diagram

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each separator is returned to the compressor by a pressure difference between the receiver and the compressor inlet. Sight glasses are located in the return lines to observe this fluid flow. There are also orifices in this return line (protected by strainers) to assure proper flow. A gauge, located on the instrument panel, will be in the red zone when excessive pressure drop through the separators develops. At this time, separator element replacement is necessary.

The receiver is an ASME pressure vessel. A combination minimum pressure/check valve, located downstream from the separator, assures a minimum receiver pressure of 50 PSIG (345kPa) during full load operation. This pressure is necessary for proper air/fluid separation and proper fluid circulation while supplying air to the system. This valve also acts as a check valve preventing compressed air in the service line from bleeding back into the receiver on shutdown and during operation on the compressor in an unloaded condition.

A pressure relief valve (located on the wet side of the separator) is set to open if the sump pressure exceeds 175 PSIG (1206kPa).

All Sullair compressor models are equipped with a high pressure shutdown switch to shut down the compressor at 135 PSIG (930kPa). 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).

#### A 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 filler opening, placed low on the tank to prevent overfilling of the sump. A sight glass enables the operator to visually monitor the sump fluid level

#### 2.6 CONTROL SYSTEM, FUNCTIONAL DESCRIP-TION

Refer to Figure 2-5. The purpose of the compressor control system is to regulate the amount of air being compressed to match the amount of compressed air being used. The capacity control system consists of a Sullicon Control, a butterfly valve (located on the compressor air inlet), a pressure switch, pilot valve pressure regulator and a control line filter. The functional description of the control system is described below in 4 distinct phases of operation. The following description text applies to all 20 and 25 Series compressors. For explanation purposes, this description will apply to a compressor with an operating range of 100 to 110 PSIG (689 to 758kPa). A compressor with any other pressure range would operate in the same manner except stated pressures.

START MODE - 0 TO 50 PSIG (0 TO 345kPa) When the compressor START button is depressed, the pressure will quickly rise from 0 to 55 PSIG (0 to 345kPa). 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 pumps at full rated capacity. The rising compressor air pressure is isolated from the service line in this phase by the minimum pressure/check valve, set at approximately 50 PSIG (345kPa).

#### NORMAL OPERATING MODE - 50 TO 100 PSIG (345 TO 689kPa)

When the compressed air pressure rises above 50 PSIG (345kPa), the minimum pressure/check valve opens and delivers compressed air to the service line. From this point on, the line air pressure is continually monitored by a line pressure gauge. The pressure regulator and the pilot valve remain close during this phase, keeping the Sullicon Control inactive.

## MODULATING MODE - 100 TO 110 PSIG (689 TO 758kPa)

If less than the rated capacity of compressed air is being used, the service line pressure will rise above 100 PSIG (689kPa). 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 th limits of 100 to 110 PSIG (689 to 758kPa), in re sponse 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 MODE - IN EXCESS OF 110 PSIG (758kPa) 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 to 55 PSIG (345 to 379kPa).

The check value in the air service line prevents the pressure from returning to the sump.

When the line pressure drops back to the low setting (cut-in pressure) of the pressure switch (usually 100 PSIG [689kPa]), 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



Figure 2-6 Air Inlet System



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

2.8 INSTRUMENTATION, FUNCTIONAL DESCRIP-TION

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

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

- The line (terminal) pressure gauge is connected to the dry side of the receiver downstream from the check valve and continually monitors the air pressure.
- The sump pressure gauge continually monitors the sump pressure at the various load and/or unload conditions.
- The discharge temperature gauge monitors the temperature of the air leaving the compressor

Figure 2-7 Instrument Panel Group



pressure begin to rise, the pressure regulator will resume its normal function as previously described.

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

2.7 AIR INLET SYSTEM, FUNCTIONAL DESCRIP-TION

Refer to Figure 2-6. The compressor inlet systems consists of a dry-type air filter, a maintenance gauge, and an air inlet valve.

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

unit. For both air-cooled and water-cooled compressors the normal reading is approximately 180°F (82°C).

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- The air filter restriction gauge monitors the condition of the air intake filter. When pointer reaches the red zone, filter service is required (see Figure 2–6).
- The START pushbutton turns the compressor on.
- The STOP pushbutton turns the compressor off.
- The hourmeter records accumulative hours of operation for the compressor and is useful for planning and logging service operations.

- The separator maintenance gauge monitors the condition of the separator elements and shows red when the element restriction is excessive. This gauge is automatically reset after the element has been changed.
- The bearing filter maintenance gauge monitors the condition of the bearing lube filter element and shows red when the element should be changed. This gauge is also automatically reset (see Figure 2-2).
- The red light on the instrument panel indicates when power to the compressor is supplied.
- The green light indicates when the compressor is running.

## Section 3 **SPECIFICATIONS**

#### SULLAIR SERIES 20 AND 25 SPECIFICATIONS

	, <b></b>		DIME	NSIONS				
Model Series	Ler	igth	Wi	dth	He	ight	Weigh	n <u>t (1)</u>
	in	mm	<u>in</u>	mm	in	mm	lb	kg
20-100HP 20-150HP 20-150HP 25-150HP	96 96 96 96	2438 2438 2438 2438	62 62 62 62	1575 1575 1575 1575 1575	68 68 68 68	1727 1727 1727 1727	5660 5760 6000 6600	2567 2612 2721 2993

(I)\_with enclosure

#### COMPRESSOR:

#### 24KT MODELS

Туре Standard Operating Pressure (II)

Bearing Type Ambient Temperature (Max.) (III) Cooling Lubricant Sump Capacity Control

Rotary Screw 100 PSIG (689kPa) (L) 115 PSIG (792kPa) (R) Anti-Friction 105°F (41°C) Pressurized Fluid Sullair 24KT Coolant Fluid 30 gallons (114 liters) Electro-Pneumatic

#### STANDARD MODELS

Rotary Screw 100 PSIG (689kPa) (L) 115 PSIG (792kPa) (A) Anti-Friction 105°F (41°C) Pressurized Fluid Sullube 32 30 gallons (114 liters) Electro-Pneumatic

C-Flanged, Open Dripproof, 460V, A.C., Three Phase, 60 Cycles 105°F (41°C) Maximum Ambient Temp. Options Available: 200V-230V and 575V

Options Available 200V, 230V and 575V

STANDARD MODELS

T.E.F.C. Also Available 460V Full Voltage Magnetic

100-150 HP

1770RPM

#### MOTOR: (60 Cycle Compressors)

#### 24KT MODELS

Size	100-150 HP
Туре	Open Dripproof, 460V, A.C.,
	Three Phase, 60 Cycles,
	105°F (41°C) Maximum Ambient Temp.
	Options Available: 200V-230V and 575V
	T.E.F.C. Also Available
Starter	460V Full Voltage Magnetic
	Options Available: 200V, 230V and 575V
Speed	1770 RPM

#### MOTOR: (50 Cycle Compressors)

#### 24KT MODELS

	24KT MODELS	STANDARD MODELS
Size	100150 HP	100-150 HP
Туре	Open Dripproof, 380/415V, A.C., Three Phase, 50 Cycles, 105°F (41°C) Maximum Ambient Temp.	C-Flanged, Open Dripproof, 460V, A.C., Three Phase, 60 Cycles 105°F (41°C) Maximum Ambient Temp.
Starter Speed	460V Full Voltage Magnetic 1500 RPM	460V Full Voltage Magnetic 1500 RPM

(II) Special compressors are available for operating at higher pressures. (III) Special compressors are available for operation in higher ambient temperature,

## Section 3 SPECIFICATIONS

#### LUBRICATION GUIDE-STANDARD COMPRES-SORS

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

Sullube 32 fluid should be changed every **8**000 hours or once a year, whichever comes first. The fluid should be changed more frequently under severe operating conditions, such as high ambient temperatures coupled with high humidity, or when high particulate level, corrosive gases or strong oxidizing gases are present in the air.

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

LUBRICATION GUIDE-24KT COMPRESSORS Sullair 24KT compressors are filled with a lubricant which rarely needs to be changed. In the event a change of fluid is required, use only Sullair 24KT fluid. MIXING OF OTHER LUBRICANTS WITHIN THE COMPRESSOR UNIT WILL VOID ALL WARRAN TIES!

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

#### APPLICATION GUIDE

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

## Section 4 INSTALLATION

#### 4.1 MOUNTING OF COMPRESSOR

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

#### 4.2 VENTILATION AND COOLING

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

For water-cooled compressors, it is necessary to check the cooling water supply. The water system must be capable of supplying the following flows:

WATER TEMP. (0°F)	WA	WATER FLOW (GPM)		
	100HP	125HP	150HP	
70	14.0	17.5	21.0	
80	18.75	23.5	28.0	

(water pressure should be between 25 and 75 PSIG (172 and 517kPa).

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

#### VENTILATION REQUIREMENTS

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

#### 4.3 SERVICE AIR PIPING

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

#### 4.4 COUPLING ALIGNMENT CHECK

In preparation for the factory test, the coupling supplied with your machine is properly aligned for operation. However, due to shipping and handling, it is necessary to recheck the coupling alignment. Refer to coupling alignment procedure explained in Section 6, Maintenance of this manual.

#### 4.5 FLUID LEVEL CHECK

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

#### **4.6 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 and STOP buttons on the instrument panel. When looking at the motor form the end opposite the compressor unit, the shaft should be turning clockwise. If the 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 adapter between the motor and compressor to show proper motor/compressor rotation.

#### 4.7 ELECTRICAL PREPARATION

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

Cooling Type		Air-Cooled		Water-Cooled		
Motor HP	100	125	150	100	125	150
Fan Air CFM (I)	13,000	13.000	14,500	2,370*	2,370*	2,370*
Heat Rejection BTU/Hour	285,100	353,940	412,500	22,410	28,110	33,610

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

## Section 4 INSTALLATION



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



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

1. Check incoming voltage. Be sure that the incoming voltage is the same voltage that the compressor was wired for.

- 2. Check starter and overload heater sizes (see electrical parts in Parts Manual).
- 3. Check all electrical connections for tightness.
- 4. "DRY RUN" the electrical controls by disconnecting the three (3) motor leads from the starter. Energize the control circuits by pushing the START button and check all protective devices to be sure that they will de-energize the starter coil when activated.
- 5. Reconnect the three (3) motor leads and jog the motor for a direction of rotation check, as explained in Section 4.6.

## Section 5 OPERATION

5.1 GENERAL

While Sullair has built into this compressor a comprehensive array of controls and indicators to assure you that it is operating properly, you will want to recognize and interpret the reading which will

#### 5.2 PURPOSE OF CONTROLS

call for service or indicate the beginning of a malfunction. Before starting your Sullair compressor, read this section thoroughly and familiarize yourself with the controls and indicators – their purpose, location and use.

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 opera- tion; useful for planning and logging service sched- ules.
LINE PRESSURE GAUGE	Continually monitors service line air pressure. Lo- cated on dry side of receiver downstream from check valve.
SUMP PRESSURE GAUGE	Continually monitors receiver/sump pressure at various load and/or unloaded conditions.
DISCHARGE TEMPERATURE GAUGE	Monitors temperature of the air leaving the com- pressor unit. For both air and water-cooled com- pressors, the normal reading should be approxi- mately 190°F to 205°F (87°C to 96°C).
AIR FILTER RESTRICTION GAUGE	Indicates when the air filter element change is re- quired. The gauge shows the red zone when drop through the filter is excessive.
FLUID FILTER MAINTENANCE GAUGE	Indicates when a fluid filter element change is re- quired. Shows red when the pressure drop through the filter is excessive.
SEPARATOR MAINTENANCE GAUGE	Indicates when separator element change is re- quired. Shows red when the pressure drop through the filter is excessive.
"POWER ON" LIGHT (RED)	Indicates when the starter is receiving power.
"RUNNING" LIGHT (GREEN)	Indicates when compressor is in operation.
FLUID LEVEL SIGHT GLASS	Monitors fluid level in the sump. The fluid must be visible between the indicated portion of the glass. Check the level when the compressor is shout done. DO NOT OVERFILL.
SEPARATOR RETURN LINE SIGHT GLASS	Used to indicate fluid flow in the return line. When the compressor is running at full load, fluid flow should be visible in this sight glass. There may be little or no flow when the compressor is running un- loaded, 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 compres- sor 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 shut- down.

5.2 PURPOSE OF CONTROLS

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CONTROL OR INDICATOR	PURPOSE
THERMAL VALVE	Regulates flow of fluid to and around the cooler. De- signed to maintain a minimum operating tempera- ture of 180°F (82°C); use for fast warm-up on start-up.
MINIMUM PRESSURE/CHECK VALVE	Maintains minimum of 50 PSIG (345kPa) in the com- pressor sump. Valve piston restricts receiver air dis- charge from receiver/sump when pressure falls to 40 PSIG (276kPa). Also prevents backflow into the sump during unload conditions and after shutdown.
COMPRESSOR DISCHARGE TEMPERATURE SWITCH	Designed to shut the compressor down when the discharge temperature reaches 240°F (115°C).
HIGH PRESSURE SHUTDOWN SWITCH	An added protective device designed to shut down the compressor when the pressure becomes too high. This switch is set for shutdown at approxi- mately 135 PSIG (931kPa).
WATER PRESSURE SWITCH (water-cooled compressors only)	Prevents operation when water pressure of compressor is insignificant.
PRESSURE RELIEF VALVE	Opens sump pressure to the atmosphere should pressure inside the sump become too high (175 PSIG [1206kPa]). Operation of this valve indicates that the high pressure switch is either faulty or out of adjustment.
SULLICON CONTROL	Regulates the amount of air allowed to enter the air inlet valve. This regulation is determined by the amount of air being used at the service line.
PRESSURE REGULATOR	Allows a pressure signal to reach the engine speed control cylinder and the air inlet valve to control air delivery according to demand.
PILOT VALVE	Bypasses the pressure regulator value causing the Sullicon Control to close the inlet value when the compressor reaches maximum operating pressure.
PRESSURE SWITCH	Senses service line pressure. When line pressure reaches maximum setting the pressure switch signals the pilot valves to unload the compressor.
BLOWDOWN VALVE	Vents sump pressure to the atmosphere during un- load conditions and shutdown.
WATER REGULATING VALVE cooler (water-cooled only)	Regulates the amount of cooling water used in the to keep the compressor running at a normal operat- ing temperature.

#### 5.3 INITIAL START-UP PROCEDURE

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

- 1. Read the preceding pages of this manual thoroughly.
- 2. Be sure that all preparations and checks described in the Installation section have been made.
- 3. Crack open the shut off valve to the service line.
- Start the compressor by pushing the START button.
- 5. Check for possible leaks in piping.
- 6. Slowly close the shut-off valve and check that the setting on the pressure switch in set correctly. If set correctly, the compressor will unload at the desired unload pressure. If adjust-

## Section 5 OPERATION

ments are necessary, see Control System Adjustments in the Maintenance Section of the manual.

- 7. Observe the operating temperature. If the operating temperature exceeds 200°F (93°C), the cooling system or installation environment should be checked.
- 8. Observe return line sight glass and maintenance indicators.
- 9. Open shut-off valve to service line.
- 10. Reinspect the compressor for temperature and leaks the following day.

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

#### 5.5 SHUTDOWN PROCEDURE

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

#### 6.1 GENERAL

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

#### 6.2 DAILY OPERATION

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

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

#### A 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.

#### 6.3 MAINTENANCE AFTER INITIAL 50 HOURS OF OPERATION

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

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

#### 1000 EVERY 6.4 MAINTENANCE HOURS

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

- 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.

#### 6.5 FILTER MAINTENANCE

Replace your bearing filter under any of the following conditions:

- 1. As indicated by the maintenance gauge.
- Every 1000 hours.
   Every 6 months.
- 4. STANDARD COMPRESSORS ONLY! Every fluid change.

#### 6.6 SEPARATOR MAINTENANCE

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

6.7 PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES

BEARING FILTER ELEMENT REPLACEMENT Refer to Figure 6-1.

- 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.

Figure 6-1 Compressor Fluid Filter (PIN 250025-520 -20 Series) (PIN 250025–521 – 25 "A" Series) (PIN 408241 - 25 "B" Series)



- Repair Kit P/N 250025-524 20 Series Repair Kit P/N 250025-525 25 "A" Series
- Repair Kit P/N 408242 25 "B" Series

- 4. Hand tighten new element until new gasket is seated in the gasket groove. Avoid any nick, cuts or pinches to the gasket.
- 5. Continue tightening element by hand an additional ½ to ¾ turn.
- 6. Restart compressor and check for leaks.



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

SERVICING THE MAIN STRAINER Refer to Figure 6-2. The main strainer (P/N 407464) is located schematically in the compres-

Figure 6-2 Main Strainer (P/N 407464)



Repair Kit P/N 001175 (seals) Repair Kit P/N 001158 (element and housing seals)

sor cooling and lubrication system between the receiver/sump and the compressor unit. This is a full-flow strainer with stainless steel element. For servicing of this strainer, order repair kit number 001158 or seal kit number 001175 for seals only. The procedure for complete service of the main strainer is explained below.

#### DISASSEMBLY

- 1. Disassemble the strainer housing by removing the four (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.
- Dislodge the element from the head assembly and wash thoroughly with trichloroethylene; 2) Stoddard solvent; or 3) acetone. 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 onto the head assembly.
- 3. Place head assembly with attached filter back into housing.
- 4. Retighten the four (4) capscrews.

#### AIR FILTER MAINTENANCE

Refer to Figure 6-3. Air filter maintenance should be performed when the maintenance gauge shows red or once a year, whichever comes first. The air filter (P/N 408399) supplied with your compressor has a cleanable-type element. If the filter needs to be replaced, order element number 405158. 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.

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

Figure 6-3 Air Filter (P/N 408399)

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\* Element Repair Kit P/N 405158

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

**DO NOT** 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.

## CLEANING THE ELEMENT WITH COMPRESSOR AIR

When cleaning the element with compressed air, never let the air pressure exceed 30 PSIG (207kPa). 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 fluid 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.
- 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.
- After the element has been installed, inspect and tighten all air inlet connections prior to resuming operation.

#### SEPARATOR ELEMENT REPLACEMENT

Refer to Figure 6–4. The separator elements must be changed when the maintenance gauge shows red, or once a year whichever occurs first. Order

Figure 6-4 Separator Element



separator element number 250034-120 (primary) and 250034-128 (secondary). Follow the procedure explained below for separator element 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 twelve (12) hex head capscrews  $(\frac{3}{4}$ " x  $2\frac{1}{4}$ ") from the cover plate. 4. Lift the cover plate from the sump.
- 5. Remove the primary element (408167-001) and secondary element (408167-002).
- 6. Scrape the old gasket material from the cover and flange on the sump. Be careful not to let the scraps fall in the sump.
- 7. Inspect the receiver/sump tank for rust, dirt, etc.
- 8. DO NOT remove grounding staples from the gaskets. DO NOT use any type of gasket eliminator. Reinsert the separator element (P/N 408167-00 [primary] and 408167-002 [secondary]) with gaskets attached into the sump taking care not to dent it against the tank openina.
- 9. Clean the underside of the receiver/sump tank cover and remove any rust. Paint surface with
- an epoxy paint as required. 10. Replace the cover plate, washers and capscrews. Torque to 155 ft./lbs. (211 Nm).
  - 11. Reconnect all piping making sure return line tubes extend to the bottom or  $\frac{1}{4}$ " above the bottom of the separator element. This will assure proper fluid return flow to the compressor.
  - 12. Clean both return line strainers before restarting the compressor.

#### CONTROL SYSTEM ADJUSTMENT

Refer to Figures 6-5 and 6-6. Prior to adjusting the control system, it is necessary to determine the desired operating pressure range and also the maximum pressure at which your compressor is to operate. The pressure must not exceed the maximum operating pressure which is stamped on the compressor serial number nameplate. The following explanation applies to a typical installation with a desired operating range of 100 to 110 PSIG (689 to 758kPa). This information will apply to a compressor 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 compressor. 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 Figure 6-5 Pressure Switch (P/N 40694)



pressure switch setting will require adjustment (refer to Figure 6-5).

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

#### FOR PRESSURE RANGE ADJUSTMENT:

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

#### FOR DIFFERENTIAL ADJUSTMENT:

Differential is the difference between the high and low pressure settings 10 PSIG (7kPa) 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 deliv-



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ery should begin. In this case, that pressure will be 100 PSIG (689kPa). The regulator is adjusted by loosening the jam nut on the end of the cone shaped cover of the pressure regulator (refer to Figure 6-13 for the location). When the jam nut loose, turn the adjusting screw clockwise to increase or counterclockwise to decrease the setting.

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

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

#### MINIMUM PRESSURE/CHECK VALVE MAINTE-NANCE

Refer to Figure 6-7. Minimum pressure/check valve (P/N 242405) maintenance is quite minimal. The only part which normally requires replacement is the seal ring on the piston. To replace this ring, order seal repair kit No. 250018-456 and follow the procedure explained below.

#### A WARNING

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

- 1. Unscrew the minimum pressure/check valve (P/N 241581) from the receiver cover.
- 2. Remove the hexagonal retaining cover from the main body.
- 3. Remove the flat washer and heavy spring from the main body.
- 4. Tap the piston assembly (with a screwdriver) from the bottom of the main body and remove. The seal ring will now be seen easily.
- 5. Remove the seal ring and discard.
- 6. Clean piston assembly and valve thoroughly.
- Replace seal ring and coat the piston and seal with Parker Super "O" Ring Seal or an equivalent quality grease.

Figure 6–7 Minimum Pressure/Check Valve (P/N 242405)



\* Repair Kit P/N 250018-456

#### Figure 6-8 Thermal Valve (P/N 014512)



\* Repair Kit P/N 001168

#### A WARNING

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

- 8. Reset piston assembly into the main body and reposition spring and flat washer.
- 9. Replace retaining cap.
- 10. Reattach value to receiver cover and reconnect all piping.

#### THERMAL VALVE MAINTENANCE

Refer to Figure 6–8. For thermal valve (P/N 014512) maintenance, order repair kit number 001168 and 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 housing together and separate the upper housing from the lower housing.
- 3. Remove the gasket from between the housings.
- 4. Pull firmly on the thermal element and remove.



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

5. Remove the seal ring from the lower housing and discard.

#### REASSEMBLY

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

## DRIVE COUPLING INSTALLATION AND MAINTENANCE

Refer to Figures 6–9 and 6–10. For coupling installation and maintenance 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.

Figure 6-9 Drive Coupling Alignment





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:

#### A WARNING

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

- 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 into the shaft.
- 5. Tighten the setscrews alternately and evenly until they are pulled up securely (torque to 410 in./lbs. [46.1 Nm]).

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. [46.1 Nm]).

#### **REMOVAL OF BUSHING**

- 1. Remove the four (4) setscrews and oil the threads and points.
- 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.

**STEP 1 MOUNT HUBS** – Flush mount each hub on its respective shaft.

STEP 2 OFFSET ALIGNMENT – Position equipment for coupling gap (approximately 3" (76.2mm) for 100 and 125 HP, 4" [101.6mm] for 150 HP). 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

#### TABLE 1 INSTALLATION DATA

		Max. Operating Misalignment			
		Coupling	Сар	Screw	
TighteningCouplingTorque <u>+</u> .030ft./lbsinches	Coupling	Parallel	Angular		
	Offset inches	Degrees	inches (I)		
370	1.50	T.I.R. .005	.5	.005	

(I) Angular misalignment in inches equals maximum A minus minimum B as shown in Figure 6-9. DO NOT exceed values in Table above.

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.

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 tolerance, shim the front or rear of the motor separately to correct. Recheck the vertical offset.

#### FLUID STOP VALVE

Refer to Figure 6-11. When servicing fluid stop valve (P/N 016742), order repair kit number 001684 and follow the instructions below.

- 1. DO NOT attempt to service valve without first turning off machine, disconnecting power and relieving all pressure in sump.
- Disassemble the ¼" pilot tube and remove the six (6) ¼"-20 capscrews that secure the cylinder to the valve body. Carefully slide cylinder off of piston.
- 3. Remove o-ring from piston and discard. Remove quad ring from cylinder and discard.
- Place new o-ring over piston, apply light coating of compressor lubricant to o-ring and inside wall of cylinder. Position quad ring in cylinder flange recess.
- 5. Carefully slide cylinder over piston and secure to housing with six (6) capscrews. Torque to 4 to 5 ft./lbs. (5 to 7 Nm).
- 6. Reconnect pilot tubing and make sure all joints are properly tightened before starting compressor.

Figure 6-11 Fluid Stop Valve (P/N 016742)



\* Repair Kit P/N 001684

#### SOLENOID VALVE MAINTENANCE

Refer to Figure 6-12. Solenoid valve (P/N 250038-674) maintenance is quite minimal but a periodic cleaning is desirable. The time between cleanings will vary depending on operating conditions. In general, if the voltage to the solenoid is correct, sluggish valve operation or excessive leakage will indicate that cleaning is required. If parts replacement is required, order repair kit No. 250038-673 (valve), and 250031-738 (coil) and follow the procedure explained below:

#### **A** WARNING

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

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



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

#### DISASSEMBLY AND REASSEMBLY

- 1. Remove the retaining cap and slip the cover and the entire solenoid off the solenoid base subassembly.
- Unscrew the solenoid base assembly. Remove the core assembly, core guide, core spring, and body gasket.
- 3. Next, remove the end cap, body gasket, disc spring, and disc holder assembly.
- All parts are now accessible for cleaning or replacement. Replace worn or damaged parts with repair kit number 250038-673 for best results.
- 5. Reassemble in reverse order of disassembly.
- COIL REPLACEMENT KIT (P/N 250018-971) 1. Remove the retaining clip.

- 2. Slip the yoke containing the coil and sleeves off the solenoid base sub-assembly.
- 3. Reassemble in reverse order of disassembly.

#### PRESSURE REGULATING VALVE MAINTE-NANCE ,

Refer to Figure 6–13. Pressure regulator maintenance normally requires the replacement of the internal diaphragm. Use repair kit No. 041742 and follow the procedure below for proper installation.

- 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 plat, diaphragm,

Figure 6–13 Pressure Regulator Valve (PIN 406929)



\* Repair Kit P/N 041742

diaphragm gasket (rubberized asbestos), seat disc and seat gasket.

- 6. Remove and discard the seat ring.
- The next step is to reassemble the regulator using the new parts provided in the repair kit.
- 8. Reassemble the diaphragm, pressure plate, gasket, seat disc and seat disc gasket and tighten the nut. All of the 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.
- 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 over the spring button as shown.
- 13. With all parts in order, replace the spring chamber and tighten.
- Tighten the adjusting screw until tension is realized.
- At this time, refer to Control System Adjustment Procedure to readjust the control regulator.

#### PNEUMATIC VALVE MAINTENANCE

Refer to Figure 6-14. Pneumatic valve (P/N 044912) maintenance is limited to replacement of the internal diaphragm. Use replacement diaphragm kit number 046782, and follow the instructions below for proper installation.

- 1. Remove the four (4) screw which hold the assembly together.
- 2. Pull the top cover away from the body.
- 3. Remove the old gasket and o-ring and replace with the new ones.
- 4. Align the top cover with the body, replace the four (4) screw and tighten.
- 5. To replace the valve seat, loosen and remove the two (92) socket head screws in the bottom cover.
- 6. Pull the bottom cover from the main body.
- Remove the cover o-ring and replace with the new one in the kit.
- 8. Reassemble the bottom cover.

#### FLEXIBLE COUPLING MAINTENANCE

Refer to Figure 6–15. 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.

#### 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. Figure 6-14 Pneumatic Valve (PIN 044912)



- \* Repair Kit P/N 046782
  - 2. Install the remaining retainer (4) and gasket (5) on the other pipe end.
- Position the retainer (4) and gasket to proper pipe insertion depth ("D") as show in Table 1.
   Slide the sleeve (3) to the gasket (5) and move
- 4. Slide the sleeve (3) to the gasket (5) and move gasket (2) and retainer (1) into position as show in Step 2... The pipe MUST be inserted to the proper depth ("D") into both gaskets.

#### COUPLER INSTALLATION

- 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.
- Tighten the nuts to the torque valve shown in Table 2. RECOMMENDED ASSEMBLY TORQUE MUST BE MAINTAINED. Retightening of the coupler will be necessary if leakage occurs.

#### SPECIAL NOTES

 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.

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TABLE 1 - INSERTION DEPTH	Pipe	"D"	"D"
	Size	Min.	Max.
	3"	1.70 <b>"</b>	2.40 <b>"</b>
	(76.2mm)	(43.2mm)	61mm)

TABLE 2 - ASSEMBLY TORQUE (I)	Size	Standard
	3" (76.2mm)	180 to 200 in./lbs. (20.27 to 22.52 Nm)

(I)Tighten as shown in chart or a minimum of  $\gamma_6$ " (1.5mm) clearance between coupling lugs, whichever comes first.

TABLE 3	- GASKET	RING S	ELECTION
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Size	Part Number	Part Number
3"	(Standard) 040523	(24KT) 241732
(76.2 mm)		

Figure 6–16 Control Line Filter (PIN 408389)



 Flexmaster joints are not intended to support end loads caused by internal pressure or other forces causing pipe separation.

#### CONTROL LINE FILTER MAINTENANCE

Refer to Figure 6–16. Control line filter (P/N 408389) maintenance normally requires replacement of the filter element strainer gasket and o-rings. Use repair kit number 001692 and follow the procedure below for proper installation.

- 1. Loosen the body from the bowl and unscrew the two assemblies.
- 2. At this time, unscrew the baffle, holding the filter element in place. Remove the element, louver and o-ring.
- 3. Discard the o-ring and element.
- Replace the o-ring on the louver and reinsert into the body.
- 5. Insert the filter element and baffle and tighten.
- 6. Loosen and remove the nut on the bottom of the body.
- 7. Remove the automatic drain assembly and replace its internal gasket.
- 8. Replace the body o-ring at this time.
- 9. Reassemble the automatic drain assembly and place it back in the body. Tighten the nut.
- 10. Reconnect the body and bowl assemblies. Tighten 21/2 turns.

#### 6.8 TROUBLESHOOTING

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

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

- · Check for loose wiring.
- · Check for damaged piping.
- Check for parts damaged by head or an electrical short circuit, usually apparent by discoloration or a burnt order.

Should you problem persist after making the recommended check, consult you nearest Sullair representative or the Sullair Corporation factory toll free at 1–800–348–2722.

#### TROUBLESHOOTING

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<b>ЗҮМРТОМ</b>	PROBABLE CAUSE	REMEDY
COMPRESSOR WILL NOT START	Main Disconnect Switch Open	Close switch.
	Line Fuse Blown	Replace fuse.
	Control Transformer Fuse Blown	Replace fuse.
	Motor Starter Overloads Tripped	Reset. Should trouble persist, check whether motor starter contacts are functioning properly.
	Low Incoming Line Voltage	Check voltage. Should voltage check low, consult power company.
COMPRESSOR SHUTS DOWN WITH AIR DEMAND PRESENT	Loss of Control Voitage	Reset; if trouble persists, check that line pressure does not exceed maximum operating pressure of your compressor (specified on nameplate).
	Low Incoming Voltage	Consult power company.
	Excessive Operating Pressure	Defect in pressure switch; check pressure at which contact points open.
		Separator requires maintenance; check maintenance indicator under full load conditions.
		High pressure shutdown switch is adjusted too low; readjust to 135 PSIG (931kPa).
		Defective pilot valve; pilot valve should cause control lever to move to unload stop when the pressure switch contacts open. Repair if defective.
		Defective blowdown valve; blowdown valve should exhaust sump pressure to 40 to 55 PSIG (276 to 379kPa) when maximum operating pressure is reached. Repair if defective.
	Discharge Temperature Switch Open	Cooling water temperature too high; Increase water flow (water-cooled only).
		Cooling water flow insufficient; check water lines and valves (water-cooled only).
		Cooler plugged; clean tubes. If plugging persists, install water conditioner (water-cooled only).
		Cooling air flow restricted; clean cooler and check for proper ventilation.
		Ambient temperature is too high; provide sufficient ventilation.
		Low fluid level: add fluid.
		Clogged filter; change the fluid filter element and change the bearing filter element if maintenance indicator shows red.
		Thermal valve not functioning properly; replace element (air-cooled only).
		Water flow regulating valve not functioning properly; change (water-cooled only).
		Defective discharge temperature switch; check for a short or open circuit to probe and correct wiring.
### Section 6 MAINTENANCE

#### TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	REMEDY
COMPRESSOR WILL NOT BUILD UP FULL DISCHARGE PRESSURE	Air Demand is Too Great	Check service lines for leaks or open vaives.
	Dirty Alr Filter	Check the filter indicator and change or clean element if required.
	Pressure Regulator Out of Adjustment	Adjust regulator according to control adjustment instructions in the Maintenance section.
	Defective Pressure Regulator	Check diaphragm and replace if necessary (kit available).
ON PRESSURE SWITCH	Leak in Control System Causing Loss of Pressure Signais	Check for leaks.
	Defective Pressure Switch	Check that diaphragm and contacts are not damaged. Replace if necessary.
	Defective Pilot Vaive	Check that Sullicon Control lever is moved to unload stop when the pressure switch contacts open. Repair or replace if necessary (kit available).
	Defective Blowdown Valve	Check that sump pressure is exhausted to the atmosphere when the pressure switch contacts open; repair or replace if necessary (kit available).
	High Pressure Shutdown is Defective or Adjustment is Incorrect	Readjust or replace.
	Plugged Control Line Filter	Clean or repair if necessary.
EXCESSIVE COMPRESSOR	Clogged Return Line Strainer or Orlfice	Clean strainer (screen and o-ring replace- ment kit available). Clean orifice.
	Separator Element Damaged or Not Functioning Property	Change separator.
	Leak in the Lubrication System	Check all pipes, connections and components.
	Excess Fluid Foaming	Drain and change.
	Fluid Level Too High	
PRESSURE RELIEF VALVE OPENS REPEATEDLY	High Pressure Shutdown Switch is Defective or Out of Adjustment (135 PSIG [932kPa])	Readjust below pressure relief valve setting (175 PSIG (1205kPa)) or replace.
	Defective Pressure Relief Valve	Replace pressure relief valve.
	Check Separator Differential (plugged)	

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#### 7.1 PROCEDURE FOR ORDERING PARTS

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

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

#### SULLAIR CORPORATION

Subsidiary of Sundstrand Corporation 3700 East Michigan Boulevard Michigan City, Indiana 46360

Telephone: (219) 879-5451

FAX: (219) 874-1273

#### SULLAIR CORPORATION

Parts Distribution Division and Service Department 1625 E. Second Street Michigan City, Indiana 46360

Telephone: (219) 879-5451

FAX: (219) 874-1835 (Parts) FAX: (219) 874-1805 (Service)

#### 7.2 RECOMMENDED SPARE PARTS LIST

DESCRIPTION	KIT NUMBER	QUANTITY
repair kit for air filter element 408399	405158	1
repair kit for pneumatic valve 044912	046782	1
replacement element for thermal valve 014512	001168	i
repair kit for main strainer 407464	001158	1
repair kit for main strainer 407464	001175 (seal)	1
repair kit for fluid stop valve 016742	001684	1
repair kit for fluid filter 250025-520 (20 Series)	250025-524	1
repair kit for fluid filter 250025-521 (25 "A" Series)	250025-525	1
repair kit for fluid filter 408241 (25 "B" Series)	408242	1
repair kit for Sullicon Control 011682-003	250020-353	1
repair kit for pressure regulator 406929	041742	1
repair kit for flexible coupling 040327 (std.)	040523	2
repair kit for flexible coupling 241731 (24KT)	241732	2
repair kit for return line strainer 241771	241772	1
repair kit for solenoid valve 250038-674	250038-673 (valve)	1
repair kit for solenoid valve 250038-674	250031-738 (coil)	1
repair kit for control line filter 408389	001692	1
repair kit for minimum pressure check valve 242405	250018-456	1
replacement element for primary separator 250034-119		_
(includes bonded gaskets)	250034-120	1
replacement element for secondary separator 250034-127		
(includes bonded gaskets)	250034-128	1
replacement element for primary heavy-duty		
air filter (optional)	409853	1
replacement element for secondary neavy-duty	400054	
air filter (optional)	409854	1
repair kit for shaft seal (20 Series)	013498	]
repair kit for shaft seal (25 Series)	600889-001	1
		5 gallons
Sullube 32 fluid	250022-009	5 gallons
SUIRDA 25 IRIG	200022-0/0	oo ganons

### 7.3 MOTOR, COMPRESSOR, FRAME AND PARTS - SERIES 20, 100 AND 125HP



#### 7.3 MOTOR, COMPRESSOR, FRAME AND PARTS - SERIES 20, 100 AND 125 HP

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key		part	
number	description	number	quantity
1	compressor unit (I)	-	1
2	guard, coupling	225907	1
3	capscrew, hex gr5 %"-16 x 1½"	828606-150	3
4	washer, pl-b regular unfinished %"	837206-071	3
5	hub, coupling	406632	2
6 <sup>.</sup>	bushing, taper 2" x 1/2"	044763	1
7	bushing, taperlock 21/3" x 1/2"	046389	1
8	element, coupling	406631	1
9	motor, 100HP • motor, 125HP	250002-763 250028-059	1 1
10	nut, hex unfinished	824212-665	4
11	washer, springlock regular ¾"	837512-188	4
12	<ul> <li>shim set motor mounting</li> <li>shim, motor mounting</li> <li>shim, motor mounting</li> </ul>	020293 020293-006 020293-015	4 2 2
13	grip, cord #1 (100HP) • grip, cord #1/0 (125HP)	250014-560 250014-560	2 2
14	wire, g-gc #1ga (100HP) • wire, g-gc #1/0 (125HP)	250014-309 250014-310	4 4
15	frame	015726	1
16	washer, springlock regular 🔏 "	837506-094	3
17	nut, hex unfinished %"-16	824206-337	3
18	capscrew, hex gr5 %"-11 x 1½"	828610-150	4
19	washer, pl-b wide unfinished ¾"	837312-174	4
20	capscrew, hex gr5 ¾"-10 x 3"	828612-300	4
21	bar, compressor support - front (100HP)	227291	1
22	bar, compressor support - rear (100HP)	227293	1
23	capscrew, ferry head %"-11 x 1%"	828410175	4

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

The shaft seal is not considered part of the compressor unit in regard to the 2 year warranty. The normal Sullair parts warranty applies. For shaft seal repairs, order repair kit no. 013498 (20 Series).

7.4 MOTOR, COMPRESSOR, FRAME AND PARTS - SERIES 20 AND 25 - 150HP



#### 7.4 MOTOR, COMPRESSOR, FRAME AND PARTS - SERIES 20 AND 25 - 150 HP

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key		part	
number	description	number	quantity
1	compressor unit (I)	-	1
2	guard, coupling	225907	1
3	capscrew, hex gr5 ¾"-16 x 1½"	828606-150	3
4	washer, pl-b regular unfinished %"	837206–0 <b>7</b> 1	3
5	hub, coupling 23%" motor	407988	1
6	hub, coupling 2¼" compressor • hub, coupling 2" compressor (II)	407987 407985	1 1
7	bar, compressor support - rear (150HP) (II)	227294	1
8	element, coupling	406631	1
9	motor, 150HP	050915	1
10	nut, hex unfinished ¾"-10	824212-665	4
11	washer, springlock regular 34"	83751 <b>2</b> -188	8
12	shim set, motor mounting • shim set, motor mounting • shim set, motor mounting	020293 020293-006 020293-015	4 2 2
13	grip, cord #1/0	250014-561	2
14	wire, type g-gc 2/0	250014-311	5
15	frame	015726	1
16	washer, springlock regular 🔏"	837506-094	3
17	nut, hex unfinished 34"-16	824206337	3
18	capscrew, hex gr5 ¾"-10 x 1½"	828612-150	4
19	washer, pl-b wide unfinished $\%$ "	837312-174	4
20	capscrew, hex gr5 ¾"-10 x 3"	828612-300	4
21	bar, compressor support-front (150HP) (II)	227 <b>2</b> 92	1
22	capscrew, ferry %"-11 x 2½"	828410-225	4
23	capscrew, hex gr5 % "-11 x 2"	828610-200	4
24	washer, springlock regular %"	837510-156	4

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

The shaft seal is not considered part of the compressor unit in regard to the 2 year warranty. The normal Sullair parts warranty applies. For shaft seal repairs, order repair kit no. 013498 (20 Series) and repair kit no. 600889-001 (25 Series).

(II) Used on 20 Series compressors only.

#### 7.5 AIR INLET SYSTEM

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#### 7.5 AIR INLET SYSTEM

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	part	
description	number	quantity
filter, air assembly (I) • element, air filter	408399 405158	- 1 1
capscrew, hex gr5 ½"-13 x 2½"	828608-250	8
washer, springlock regular ½"	83 <b>7</b> 508-125	13
connector, (hose brass) tube-m 1/4" x 1/8"	813604-125	1
tubing, nylon ¼" (ft.)	840115-004	6
gasket, 1/2" x 61/4"id x 81/4"od	040696	2
valve, butterfly 6"	040336	1
adapter, air inlet (25 series only)	020286	1
gasket, compressor 10" x 8" x 1/32" (25 Series only)	250007-809	1
capscrew, ferry ½"−13 x 1¾" (25 Series only)	828408-175	5
Items 11 thru 23 are part of the optional heavy-duty air filter		
<ul> <li>adapter, air filter (25 Series only)</li> <li>adapter, air inlet (20 Series only)</li> </ul>	016572 012064	1 1
• clamp, hose 6½"	040305	3
<ul> <li>elbow, rubber 90° 6"</li> </ul>	040304	1
<ul> <li>duct, 6"od x .058"w x 26" aluminum (25 Series only)</li> <li>duct, aluminum 6"od x 30" (20 Series on</li> <li>hose, reducing hump 6" x 5½"</li> </ul>	026507 ly) 234367 049727	1 1 1
<ul> <li>band, mounting 14"</li> </ul>	041062	2
• screw, hex serrated washer $5_{6}$ " x $\%$ "	829705-075	6
<ul> <li>nut, hex flanged plated \$\frac{5}{16}"-18</li> </ul>	825305-283	6
<ul> <li>bracket, filter support</li> </ul>	231836	1
<ul> <li>filter, air head 750cfm</li> </ul>	409264	1
<ul> <li>filter, element primary 750cfm</li> </ul>	409853	1
<ul> <li>filter, element secondary 750cfm</li> </ul>	409854	1
<ul> <li>clamp, hose 6"</li> </ul>	242000	1
	description filter, air assembly (I) • element, air filter capscrew, hex gr5 $\frac{1}{2}$ -13 x 2 $\frac{1}{2}$ " washer, springlock regular $\frac{1}{2}$ " connector, (hose brass) tube-m $\frac{1}{4}$ " x $\frac{1}{4}$ " tubing, nylon $\frac{1}{4}$ " (ft.) gasket, $\frac{1}{42}$ " x 6 $\frac{1}{4}$ "id x 8 $\frac{1}{4}$ "od valve, butterfly 6" adapter, air inlet (25 series only) gasket, compressor 10" x 8" x $\frac{1}{42}$ " (25 Series only) capscrew, ferry $\frac{1}{2}$ -13 x 1 $\frac{3}{4}$ " (25 Series only) tems 11 thru 23 are part of the optional heavy-duty air filter • adapter, air inlet (20 Series only) • adapter, air inlet (20 Series only) • clamp, hose 6 $\frac{1}{2}$ " • elbow, rubber 90° 6" • duct, 6"od x .058" w x 26" aluminum (25 Series only) • duct, aluminum 6"od x 30" (20 Series on • hose, reducing hump 6" x 5 $\frac{1}{2}$ " • band, mounting 14" • screw, hex serrated washer $\frac{1}{18}$ " x $\frac{3}{4}$ " • nut, hex flanged plated $\frac{5}{16}$ "-18 • bracket, filter support • filter, element primary 750cfm • filter, element secondary 750cfm • clamp, hose 6"	part numberdescriptionfilter, air assembly (I)408399 • element, air filterelement, air filter405158 405158capscrew, hex gr5 $\chi$ "-13 x 2 $\chi$ "828608-250 837508-125washer, springlock regular $\chi$ "837508-125 840115-004connector, (hose brass) tube-m $\chi$ " x $\chi$ "813604-125 840115-004ubing, nylon $\chi$ " (ft.)840115-004gasket, $\chi_2$ " x $6\chi$ "id x $8\chi$ "od040696 vaive, butterfly 6"vaive, butterfly 6"040336 adapter, air inlet (25 series only)020286gasket, compressor 10" x $8" \times \chi_2$ " (25 Series only)capscrew, ferry $\chi$ "-13 x $1\chi$ " (25 Series only)250007-809 capscrew, ferry $\chi$ "-13 x $1\chi$ " (25 Series only)items 11 thru 23 are part of the optional heavy-duty air filter016572 • adapter, air inlet (20 Series only)• adapter, air inlet (20 Series only)012064 • clamp, hose $6\chi$ "• duct, 6"od x .058"w x 26" aluminum (25 Series only)026507 • 040304• duct, 6"od x .058"w x 26" aluminum (25 Series only)026507 • 040304• duct, 6"od x .058"w x 26" aluminum (25 Series only)026507 • 049727• band, mounting 14"041062 • screw, hex serrated washer $\chi_e$ " x $\chi$ " 825305-283• bracket, filter support231836 • filter, air head 750cfm• filter, element primary 750cfm409853 • filter, element primary 750cfm• clamp, hose 6"242000

(I) For maintenance on air filter no. 408399, order replacement element no. 405158.

#### 7.6 SERIES 20 UNIT TUBING



#### 7.6 SERIES 20 UNIT TUBING

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key		part	
number	description	number	quantity
1	filter, fluid (I)	250025520	1
2	elbow, tube-m ¾" × ¾"	810512-075	2
3	plug, pipe ¼" 3000# steel	807800-010	7
4	nipple, pipe xs ¾" x close	822212-000	1
5	connector, tubem ¾" × ¼"	810206025	4
6	tube, outer bearing - male	221077	1
7	elbow, tube-m ¾" × ¼"	810506-025	6
8	tube, outer bearing - female	221078	1
9	orifice, .062" x .25"m x .25"f	028831	2
10	manifold, .75"inlet. x .25" outlet	220945	1
11	tube, seal/gear 0.38	221079	1
12	tee, tube union 🔏"	811406-038	1
13	tube, gear fluid 0.38	221081	1
14	tube, seal fluid 0.38	221080	1
15	tube, injection 0.75	231746	1
16	connector, tube-m ¾" × ¾"	810212-075	2
17	plug, pipe ½* 3000# steel	807800-005	1
18	connector, tube-m ½" x ¼"	810208-025	1
19	plug, pipe 2½" 150#	802815-100	1
20	orifice, ¼"m x ¼"f x .188"	220959	2
21	elbow, tube~m ¾" × ¼"	810506-012	1
22	tube, inlet bearing 0.38 - female	221083	1
23	tube, inlet bearing 0.38 - male	221082	1
24	tube, bearing drain 0.50	221084	1
25	tee, reducing 1¼" x 1" x ¾"	802205-043	1
26	nipple, pipe 1 " x 3"	822116-030	1
27	tube, filter inlet 0.75	221086	1
28	tee, tubem ½" × ½"	810808-050	1
29	orifice, ¼"m x ½"t x .125"	220956-125	1

(I) For maintenance on fluid filter no. 250025-520, order replacement element no. 250025-524.

7.7 SERIES 25 UNIT TUBING - "A" VERSION



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#### 7.7 SERIES 25 UNIT TUBING - "A" VERSION

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key number	description	part number	quantity
1	filter, fluid (D	250025-521	1
2	canscrew, hex or $2\%$ "-18 x $\%$ "	828105-075	2
3	washer, pl-b regular unfinished %"	837205-071	2
4	bracket, bearing filter	233305	1
5	bushing, reducing hex 1%" x 1"	802105-040	1
6	elbow, tube-m 1" x 1"	810516-100	2
7	plug, pipe 1/3" 3000# steel	807800-020	3
8	manifold, 1" inlet x .50" outlet	222915	1
9	tube, filter outlet	233302	1
10	plug, pipe 1/2" steel	807800010	2
11	coupling, pipe 1" 150#	801215-040	1
12	nipple, pipe 1" x close	822116-000	1
13	connector, tube-m %" x %"	810208-050	2
14	plug, pipe 3/3 3000# steel	807800-015	2
15	tube, outlet bearing - female	225822	1
16	tube, outlet bearing - male	225821	1
17	elbow, tube-m ½" x ¾"	810508-038	2
18	elbow, tube-m ¾" x ¼"	810506-025	1
19	tube, seal fluid	230465	1
20	tube, inlet bearing 0.38	230467	1
21	connector, tube-m %" x ¼"	810206-025	3
22	tee, tube union ¾"	811406-038	1
23	tube, inlet bearing 0.38 - female	230466	1
24	tube, seal fluid	230468	1
25	connector, tube-m 1¼" x 1¼"	810220125	4
26	tube, fluid stop valve/unit 1¼"od	233606	1
27	elbow, pipe 90° ¼″ 150#	801515-050	1
28	elbow, tube-m ¾" ×¾"	810512075	1
29	tube, female injection	233301	1
30	elbow, tube-m ¾" x ½"	810512-050	2
31	nipple, pipe ¾* × close	822112-000	1
32	elbow, tube-f ¾" ×¾"	810412075	1
33	bushing, reducing hex 1½" x 1¼"	802106050	2
34	tee, reducing 1½" x ¾" x 1½" 150#	802206036	1

(continued on Page 47)

(I) For maintenance on fluid filter no. 250025-521, order replacement element no. 250025-525.

7.7 SERIES 25 UNIT TUBING - "A" VERSION



#### 7.7 SERIES 25 UNIT TUBING - "A" VERSION (continued)

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key number	description	part number	quantity
35	elbow, tube-m 1¼" x 1¼"	810520-125	2
36	tube, filter inlet	233303	1
37	tube, bearing return	225824	1
38	nipple, pipe ¼" x 3"	822104-030	1
39	elbow, reducing ¼" x ¾" 150#	801601-015	1
40	nipple, pipe ¼" x 5½"	822104-055	1
41	elbow, tube-m ¼" x ¼"	810504-025	1
42	nipple, pipe ¼" x 4"	822104-040	1

7.8 SERIES 25 UNIT TUBING - "B" VERSION



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#### 7.8 SERIES 25 UNIT TUBING - "B" VERSION

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key		part number	quantity
numper	description	number	quantity
1	filter, fluid (I)	408241	1
2	capscrew, hex gr5 ⅔e″−18 x ¾″	828605-075	2
3	washer, pl-b regular unfinished 5/18"	837205-071	2
4	bracket, bearing filter	233305	1
5	bushing, reducing 1¼" x 1" steel	807605-040	3
6	nipple, pipe xs 1 " x close	822216-000	2
7	plug, pipe ½" 3000# steel	807800-020	3
8	manifold, 1" inlet x .50" outlet	222915	1
9	connector, tube-m ½" × ½"	810208050	2
10	tube, outlet bearing - female	233581	1
11	tube, outlet bearing - male	233580	1
12	elbow, tube-m ½" × ¾"	810508-038	2
13	plug, pipe 🔏" 3000# steel	807800-015	1
14	elbow, tube-m ¾" x ¼"	810506-025	1
15	tube, inlet bearing	234095	1
16	tee, tube union ¾"	811406-038	1
17	tube, inlet bearing – female	230466	1
18	connector, tube-m %" × ¼"	810206-025	3
19	tube, seal fluid	230465	1
20	tube, seal fluid	230468	1
21	connector, tube-m 1¼" x 1¼"	810220-125	1
22	tube, fluid stop valve/unit 1¼"od	233678	1
23	elbow,tube-m 1¼" x 1¼"	810520-125	1
24	tee, reducing 1¼" x 1¼" x 1" 300#	806705054	1
25	nipple, close ¾"	822206-000	1
26	elbow, pipe 45° 1" 300#	806430040	1
27	nipple, pipe xs 1 " x 3 "	822216-030	1
28	elbow, pipe 90° 1" 300#	806530-040	1
29	orifice, .312" x 1"mpt x ¾"mpt	234159-312	1
30	tube, filter inlet 1.00	250001-759	1
31	nipple, pipe xs ¾" x close	822212-000	1
32	elbow, tube-f ¾" x ¾"	810412-075	1
33	tube, bearing return	234235	1
34	plug, pipe ¼" 3000# steel	807800010	2

(continued on Page 51)

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(I) For maintenance on fluid filter no. 408241, order replacement element no. 408242.

7.8 SERIES 25 UNIT TUBING - "B" VERSION



#### 7.8 SERIES 25 UNIT TUBING - "B" VERSION

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key number	description	part number	quantity
35	elbow, reducing ¼" x ¾" 150#	801601-015	1
36	nipple, pipe ¼" x 5½"	822104-055	1
37	elbow, tube-m ¼" x ¼"	810504-025	1
38	nipple, pipe ¼" x 4"	822104-040	1
39	elbow, tube-m ¾" × ½"	810512-050	2
40	compressor unit (I)	_	1

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

The shaft seal is not considered part of the compressor unit in regard to the 2 year warranty. The normal Sullair parts warranty applies. For shaft seal repairs, order shaft seal repair kit No. 600889-001 (25 Series).

### 7.9 COMPRESSOR COOLING AND LUBRICATION SYSTEM - 100HP (WATER-COOLED)



#### 7.9 COMPRESSOR COOLING AND LUBRICATION SYSTEM - 100HP (WATER-COOLED)

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kev		part	
number	description	number	quantity
1	nipple, pipe 2" x 3"	822132-030	1
2	elbow, pipe 90° 2″ 150#	801515-080	4
3	nipple, pipe 2" x 8"	822132-080	1
4	tubing, minimum pressure/check valve aftercooler 2"od	233409	1
5	bushing, reducing hex 2" x $1$ //"	803108050	1
6	valve, fluid stop 2" npt (I)	016742	1
7	aftercooler, water-cooled 6" x 36"	043008	1
8	nipple, pipe 2" x 4"	822132-040	1
9	bracket, fluid stop valve	231584	1
10	elbow, reducing 2" x 1½" 150#	801608-060	1
11	connector, tube 1½" x 1½"	810224-150	4
12	clamp, exhaust 21/2"	043203	2
13	tube, filter fluid stop valve 1½"	233376	1
14	elbow, tube-m 1%" x 1%"	810524-150	2
15	strainer, 1%"npt (II)	407464	1
16	tube, tee/strainer 1%"	233645	1
17	tee, pipe 1½" 150#	802415-060	1
18	nipple, pipe xs 1%" x close	822224-000	3
19	valve, thermal (III)	014512	1
20	nipple, pipe 1½" x 4"	822124-040	1
21	tee, reducing 1½" x ½" x 1½" 150#	802206-026	1
22	nipple, half 1½" x 7½"	822824-075	2
23	coupling, Flexmaster 1½" buna-n (IV) • coupling, Flexmaster 1½" viton (V)	040327 241731	2 2
24	tube, fluid cooler/tee 1½"	233644	1
25	u-bolt, ½" x 5" pipe	829008-500	2

(continued on Page 55)

(I) For maintenance on fluid stop valve no. 16742, order repair kit no. 001684.

- (II) For maintenance on strainer no. 407464, order repair kit no. 001158 or seal kit no 001175 for seals only.
- (III) For maintenance on thermal valve no. 014512, order repair kit no. 001168.
- (IV) For maintenance on Flexmaster coupling no. 040327, order repair kit no. 040523 (std) (2 required).
- (V) For for maintenance on Flexmaster coupling no. 241731, order repair kit no. 241732 (24KT) (2 required).

7.9 COMPRESSOR COOLING AND LUBRICATION SYSTEM - 100HP (WATER-COOLED)



#### 7.9 COMPRESSOR COOLING AND LUBRICATION SYSTEM - 100HP (WATER-COOLED) (continued)

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key Turnhar	description	part oumber	quantity
number	description	nomber	quantity
26	heat exchanger, 5" x 36"	041015	1
27	support, cooler - right hand	250000-648	1
28	capscrew, hex gr5 ½"-13 x 1½"	82860 <b>8</b> -150	7
29	washer, springlock regular ½"	837508125	15
30	nut, hex unfinished ½"-13	824208-448	15
31	washer, springlock regular ¾"	837506-094	3
32	nut, hex unfinished %"-16	824206-337	3
33	capscrew, hex gr5 <b>¾</b> "−16 x 1½"	828606-150	3
34	bracket, separator	019610	1
35	support, cooler - left hand	250000-647	1
36	nipple, pipe 2" x 5½"	822132055	1
37	union, pipe 2" 150#	802515-080	1
38	bracket, control tubing	250005-068	1
39	bracket, air connection	016900	1
40	tube, aftercooler/cooler (100HP)	250017-877	1
41	tube, drain ½"	250017-855	1
42	elbow, reducing ¾" x ½" 150#	801603-020	1
43	nipple, pipe ¾" × 6"	822112-060	1
44	separator, water 2"	410143	1
45	plug, pipe ¼" 3000# steel	807800-010	1
46	bushing, reducing hex $1\frac{1}{4}$ " x 1"	802105-040	1
47	connector, tube-m 2" x 2"	810232-200	4
48	tube, aftercooler/trap 2"od	233410	1
49	bracket, water connection	016901	1
5 <u>0</u>	nipple, pipe xs 1¼" x close	822220-000	3
51	elbow, pipe 90° 1″ 150#	801515040	2
52	elbow, tube-m 1¼" x 1¼"	810520-125	2
53	tube, water in/aftercooler 1¼"	250011-973	1
54	tube, water regulating valve/cooler out 1" (100HP)	250017-878	1
55	union, pipe 1¼" 150#	802515-050	1
56	bushing, reducing hex 1%" x 1%"	802106-050	1
57	valve, water regulating 11/2"	049474	1
58	connector, tube-m 1" x 1"	810216-100	2
59	bushing, reducing hex 1%" x 1"	802106-040	1
60	elbow, tube-m 1" x 1"	810516-100	2
61	nipple, pipe xs 1" x close	822216-000	1

(continued on Page 57)

### 7.9 COMPRESSOR COOLING AND LUBRICATION SYSTEM - 100HP (WATER-COOLED)



#### 7.9 COMPRESSOR COOLING AND LUBRICATION SYSTEM - 100HP (WATER-COOLED) (continued)

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key number	description	part number	quantity
62	elbow, tube-m ½" x ½"	810508-050	1
63	connector, tube-m ½" × ½"	810208-050	1
64	nipple, pipe 2" x 4½"	822132-045	1
65	elbow, pipe 90° 1¼″ 150#	801515-050	1
66	nipple, pipe 2" x 4"	822132-040	1
67	u-bolt, ½" x 6" pipe	829008600	2
68	capscrew, hex gr5 %"-16 x %"	828606-075	2

7.10 COMPRESSOR COOLING AND LUBRICATION SYSTEM - 125HP & 150HP (WATER-COOLED)



#### 7.10 COMPRESSOR COOLING AND LUBRICATION SYSTEM - 125HP & 150HP (WATER-COOLED)

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key number	description	part number	quantity
1	nipple, pipe 2" x 3"	822132-030	1
2	elbow, pipe 90° 2″ 150#	801515-080	4
3	nipple, pipe 2" x 4½"	822132-045	1
4	connector, tube-m ¾" x ¾"	810212-075	1
5	bushing, reducing hex 2" x 1¼"	802108-050	1
6	valve, fluid stop 2"npt (I)	016742	1
7	aftercooler, 6" x 48" (125, 150HP)	043009	1
8	nipple, pipe 2" x 4"	822132-040	1
9	bracket, fluid stop valve	231584	1
10	elbow, reducing 2" x 1½" 150#	801608-060	1
11	connector, tube-m 1½" x 1½"	810224-150	4
12	clamp, exhaust 2½"	043203	1
13	tube, filter fluid stop valve 1½"	233376	1
14	elbow, tube-m 1½" x 1½"	810524-150	2
15	strainer, 1½"npt (II)	407464	1
16	tube, tee strainer 1½"	233645	1
17	tee, pipe 1½" 150#	802415-060	1
18	nipple, pipe xs 1½" x close	822224-000	3
19	valve, thermal (III)	014512	1
20	bushing, reducing hex 2" x 1½"	802108060	2
21	nipple, pipe 1½" × 4"	822124-040	1
22	tee, reducing 1½" x ½" x 1½" 150#	802206026	1
23	nipple, half 1½" x 6"	822824-060	2
24	capscrew, hex gr5 ¾"-16 x 1"	828606-100	2
25	washer, pl-b regular unfinished %"	837206-071	2
26	coupling, Flexmaster 1½" (IV)	040033	1
27	washer, springlock regular 🔏"	837506-094	5
28	nut, hex unfinished ¾"-16	824206~337	5
29	tube,cooler/tee 1½"	233644	1

(continued on Page 61)

- (I) For maintenance on fluid stop valve no. 16742, order repair kit no. 001684.
- (II) For maintenance on strainer no. 407464, order repair kit no. 001158 or seal kit no 001175 for seals only.
- (III) For maintenance on thermal valve no. 014512, order repair kit no. 001168.
- (IV) For maintenance on Flexmaster coupling no. 040033, order repair kit no. 040146 (std) (2 required).

7.10 COMPRESSOR COOLING AND LUBRICATION SYSTEM - 125HP & 150HP (WATER-COOLED)

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### 7.10 COMPRESSOR COOLING AND LUBRICATION SYSTEM - 125HP & 150HP (WATER-COOLED) (continued)

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key	description	part number	quantity
number	description	nginiber	quantity
30	u-bolt, ½" x 6″ pipe	829008-600	3
31	heat exchanger (125, 150HP)	040751	1
32	bracket, aftercooler support	250009-653	2
33	bracket, aftercooler support	231664	1
34	tube, aftercooler/fluid cooler $1\frac{1}{4}$ "	233647	1
35	capscrew, hex gr5 ½"-13 x 1½"	828608-150	6
36	washer, springlock regular ½"	837508-125	12
37	put, hex unfinished ½"-13	824208-448	12
38	support, aftercooler	016881	2
39	bracket, separator support	019610	1
40	capscrew, hex gr5 🔏 ~-16 x 1½"	828606-150	3
41	nipple, pipe 2½" x 4½"	822140-045	2
42	clamp, exhaust 3"	043713	1
43	elbow, reducing 2½" x 2" 150#	801610-080	2
44	nipple, pipe 2" x 3"	822132-030	2
45	union, pipe 2″ 150#	802515-080	2
46	nipple, pipe 2" × 4"	822132-040	1
47	bracket, air connection	016900	1
48	elbow, tube-m ¾" × ¾"	810512-075	2
49	nipple, pipe xs 1 " x close	822216-000	1
50	elbow, reducing 1" x ¾" 150#	801604-030	1
51	nipple, pipe xs ¾" x close	822212-000	1
52	trap, automatic ¾"	042034	1
53	nipple, pipe xs 2" x close	822232-000	1
54	tube, drain ¾" (125, 150HP)	250017856	1
55	separator, water 2½*	043089	1
56	connector, tube-m 2" x 2"	810232-200	2
57	tubing, steel 2"13 ga (ft.)	841115-032	2 feet
58	bracket, water connection	016901	1
59	nipple, pipe 1¼" × 4"	822120-040	1
60	elbow, pipe 90° 1¼″ 150#	801515-050	1
61	elbow, tube-m 1¼" x 1¼"	810520-125	4
62	tube, water regulator/cooler out	233648	1
63	connector, tube-m 1¼" x 1¼"	810220-125	2
64	tube, water aftercooler/water in $1\frac{1}{4}$ "	233646	1
65	valve, water regulating 1¼"	049474	1

(continued on Page 63)

7.10 COMPRESSOR COOLING AND LUBRICATION SYSTEM - 125HP & 150HP (WATER-COOLED)



#### 7.10 COMPRESSOR COOLING AND LUBRICATION SYSTEM - 125HP & 150HP (WATER-COOLED) (continued)

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key number	description	part number	quantity
66	nipple, pipe xs 1¼" x close	822220-000	2
67	union, pipe 1¼" x close	822220-000	2
68	nipple, pipe 1¼" x 3"	822120-030	1
69	elbow, reducing 1½" x 1¼" 150#	801606050	1
70	nipple, pipe 1%" x 3"	822124-030	1
71	bushing, reducing hex $1\frac{1}{2}$ " x $1\frac{1}{4}$ "	802106-050	3

#### 7.11 COMPRESSOR COOLING AND LUBRICATION SYSTEM (AIR-COOLED)



#### 7.11 COMPRESSOR COOLING AND LUBRICATION SYSTEM (AIR-COOLED)

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kəy numbər	description	part number	quantity
1	aftercooler (150, 200HP) combination <ul> <li>cooler, combination aftercooler/fluid</li> </ul>	250022-529	1
	(100HP)	250038020	1
2	capscrew, hex gr5 ¾"-16 x 1½"	828606-150	3
3	washer, springlock regular %"	837506094	8
4	elbow, tube-m 2" x 2"	810533-200	1
5	connector, tube-m 2" x 2"	810232-200	3
6	tube, minimum pressure/check valve/ aftercooler 2°od • tube, minimum pressure/check valve/	233409	1
	aftercooler 2"od (100HP only)	250040-071	1 -
7	elbow, pipe 90° 2″ 150#	801515080	2
8	elbow, reducing 2" x 1½" 150#	801608060	3
9	connector, tube-m 1½" × 1½"	810224-150	6
10	tee, pipe 1½" 150#	802415060	1
11	nipple, pipe xs 1½" x close	822224-000	1
12	strainer, 1½" npt (I)	407464	1
13	elbow, tube-m 1½" x 1½"	810524150	2
14	tube, filter/fluid stop valve 1½"	233376	1
15	eibow, tube-m ¼" × ¼"	810504-025	3
16	nipple, pipe xs 2" x close	822232-000	2
17	nut, hex unfinished 34"-16	824206-337	8
18	bracket, fluid stop valve support	231584	1
19	nipple, pipe 2" x 3½"	822132-035	1
20	tube, aftercooler/moist separator 2"od • tube, aftercooler/moist separator 2"od	233410	1
	(100HP only)	250040-069	1
21	valve, fluid stop 2"npt (II)	016742	1
22	bushing, reducing hex $2" \times 1$ %"	802108-050	1
23	clamp, exhaust 2½"	043203	1
24	tube, thermal valve filter 1½"	233375	1
25	tube, cooler/thermal valve bypass 1½" • tube, cooler/thermal valve bypass 1½" (1004B colu)	233379 250040-072	1
		200040 072	•

(continued on Page 67)

- (I) For maintenance on strainer no. 407464, order repair kit no. 001158 or seal kit no. 001175 for seal replacement only.
- (II) For maintenance on fluid stop valve no. 016742, order repair kit no. 001684.

#### 7.11 COMPRESSOR COOLING AND LUBRICATION SYSTEM (AIR-COOLED)



#### 7.11 COMPRESSOR COOLING AND LUBRICATION SYSTEM (AIR-COOLED) (continued)

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key number	description	part number	quantity
26	nipple, pipe 2" x 7½"	822132075	1
27	tank fluid 20* diameter	248585	1
28	capscrew, hex gr5 ½"-13 x 1¼"	828608-125	6
29	washer, springlock regular ½"	837508-125	10
30	nut, hex unfinished ½"-13	824208-448	6
31	nipple, pipe 2" x 4"	822132-040	1
32	bracket, air connection	016900	1
33	tube, drain ½"	250017-855	1
34	nipple, pipe 2" x 5½"	822132-055	1
35	union, pipe 2"	802515-080	1
36	connector, tube-m ½" x ½"	810208-050	1
37	elbow, tubem ½" x ½"	810508-050	1
38	elbow, reducing ¾" × ½"	801603-020	1
39	nipple, pipe ¾" x 6" (100HP) • nipple, pipe ¾" x 2½" (125, 150HP)	822112-060 822112-025	1 1
40	separator, water w/trap (100HP) • separator, water w/trap (125, 150HP)	410143 410144	1 1
41	valve, thermal (III)	014512	1
42	tube, thermal valve/cooler 1½" • tube, thermal valve/cooler 1½"	233378	1
	(100HP only)	250040-070	1
43	nipple, pipe 2" x 6"	822132-060	1
44	u~bolt, % x 2½ pipe	829006-250	1
45	nipple, pipe 2½" x 4"	822140-040	1
46	elbow, reducing 2½" x 2"	801610-080	2
47	nipple, pipe 1½" x 5"	822124-050	1
48	elbow, pipe 90° 1½"	801515-060	1
49	nipple, pipe 1½" x 8"	822124-080	1
50	bracket, separator support	019610	1
51	nipple, pipe xs 2½" x close	822240-000	1
52	bushing, reducing hex 2½" x 2"	802110-080	2

(III) For maintenance on thermal valve no. 014512, order repair kit no. 001168.

7.12 COOLER ASSEMBLY



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#### 7.12 COOLER ASSEMBLY

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key number	description	part number	quantity
1	screw, hex serrated washer $5_{6}$ " x $\%$ "	829705-075	22
2	clamp, speed tube ¼"	043357	14
3	weatherstrip, felt 1/3" × 1" (ft.)	043502	200
4	nut, hex flanged plated 5/18"-18	825305-283	52
5	grille, cooler	249749	1
6	adapter, Venturi panel	018909	1
7	panel, Venturi 36"	245579	1
8	fan, 36" (150HP) •fan, 36" (100, 125HP)	405103 410126	1 1
9	guard, fan 38" diameter	248744	1
10	nut, hex locking %"16	825506-198	10
11	washer, pl-b regular unfinished 💥"	837206-071	12
12	capscrew, hex gr5 ¾" x 1¼"	828606125	12
13	support, fan motor	015641	1
14	'nut, retainer 5/18 -18 .092	861405-092	16
15	capscrew, hex gr5 ½"-13 x 1¼"	828608125	4
16	washer, springlock regular ½"	837508-448	4
17	nut, hex unfinished ½"-13	824208-448	4
18	support, cooler assembly	017225	2
19	motor, 3HP TEFC (100, 125HP) • motor, 5HP TEFC (150HP)	050257 050774	1 1
20	angle, cooler support (150HP)	233285	1


#### 7.13 COMPRESSOR DISCHARGE SYSTEM

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key		part	
number	description	number	quantity
1	valve, minimum pressure/check 2"npt (I)	242405	1
2	o-ring, viton 21/16" x 3/2"	826502-137	1
3	valve, check assembly 2"mpv	248302	1
4	connector, tube-m 5/16" x 1/2"	810205-025	3
5	nipple, pipe 2" x 4"	822132-040	1
6	nipple pipe xs %" x close	822208000	2
7	elbow, tube-m ¼" x ¼"	810504025	4
8	capscrew, hex gr5 3/ "-10 x 21/2"	828612-250	12
9	washer, springlock regular 3/	837512-188	12
10	elbow, pipe 90° ½"	801515-020	1
11	valve, 2-way pneumatic (II)	044912	1
12	silencer, air ½"	041006	1
13	tubing, steel 1/4" 20ga (ft.)	841115-004	16 feet
14	element, separator - secondary (III)	250034-127	1
15	element, separator - primary (IV)	250034-119	1
16	plug, pipe ¼″ 3000# steel	807800-010	1
17 .	valve, relief 1¼" 175# 1175cfm	410103	1
18	tank, fluid 20" diameter	248585	1
19	plug, o-ring boss sae 1¼"	040029	1
20	adapter, filler	020044	1
21	tee, pipe 1½"	802415-060	1
22	glass, fluid level sight 1½"	040279	1
23	nipple, pipe 3" x 3"	822148030	1
24	valve, globe ¾"	040520	1
25	nipple, pipe ¾" x 9"	822112-090	1
26	elbow, pipe 90° ¾"	801515–030	1
27	nipple, pipe xs ¾" x 3"	822212-030	1
28	elbow, pipe 90° 3″	801515-120	1

(continued on Page 73)

- (I) For maintenance on minimum pressure/check valve no. 242405, order repair kit no. 250018-456.
- (II) For maintenance on pneumatic valve no. 044912, order repair kit no. 046782.
- (III) For maintenance on separator element no. 250034-119 (primary), order repair kit no. 250034-120.
- (IV) For maintenance on separator element no. 250034-127 (secondary), order repair kit no. 250034-128.



#### 7.13 COMPRESSOR DISCHARGE SYSTEM (continued)

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kay number	description	part number	quantity
29	nipple, half 3" x 9" (20 Series)	822848-090	2
	<ul> <li>nipple, nair 3" x 5" (25 Series)</li> <li>nipple, half 3" x 7" (25 Series)</li> </ul>	822848-050	1
30	coupling, flexible 3" buna-n (V)	040327	1
	<ul> <li>coupling, flexible 3<sup>*</sup> viton (VI)</li> </ul>	241731	1
31	elbow, reducing 4" x 3"	801616-120	1
32	discharge, connector assembly	250001-462	1
33	gasket, discharge flange 4"npt	250002-379	1
34	capscrew, ferry ½"-13 x 1¾"	828408-175	6
35	washer, springlock regular ½"	837508-125	10
36	plug, pipe ½" 3000# steel	807800-020	1
37	union, tube hex ¼"	811304-025	1
38	connector, flex 5/16" x 1/4" npt	020501	1
39	connector, flex ¼" x ¼"p	020169	1
40	nipple, pipe 3" x 10" (20 Series)	822148-100	1
41	tubing, copper ¼" (ft.)	840115-004	9 feet
42	probe, thermistor	046867	2
43	locknut, conduit ½"	847200-050	.7
44	coupling, pipe ½"	801215020	1
45	elbow, 90° conduit ½"	846600050	1
46	bushing, conduit plastic ½"	848815050	2
47	conduit, ½" (ft.)	846215-050	10 feet
48	tee, pipe ¼"	802415-010	1
49	tubing, steel 5/16" 20ga (ft.)	841115-005	8 feet
50	connector, tube-m $\frac{5}{16}$ " x $\frac{1}{4}$ "	810205-025	3
51	orifice, restrictor 1/32"	040381	1
52	nipple, pipe ¼" × 3"	822104-030	1
53	elbow, tube-m $\frac{1}{4}$ " x $\frac{1}{4}$ "	810504-025	3
54	orifice, 0.62	027443	1
55	glass, sight – 24KT	046559	2
56	nipple, pipe ¼" x close	822204-000	2
57	strainer, v-type (VII)	241771	2
58	connector, tube-m $\chi$ " × $\chi$ "	810204025	2
59	union, tube hex ۶ "	811305-031	1
60	nipple, pipe ½" x 8"lg	822108-080	1

- (V) For maintenance on Flexmaster coupling no. 040327, order replacement no. 040523 (2 required).
- (VI) For maintenance on Flexmaster coupling no. 241731, order replacement no. 241732 (2 required).
- (VII) For maintenance on v-type strainer no. 241771, order repair kit no. 241772.

7.14 CAPACITY CONTROL SYSTEM



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#### 7.14 CAPACITY CONTROL SYSTEM

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key		part	
number	description	number	quantity
1	control, Sullicon (I) (includes Items 2 thru 23)	011682-003	1
2	<ul> <li>nut, hex unfinished <sup>5</sup>/<sub>16</sub>"-24 - right hand</li> </ul>	824605-195	2
3	• lever, control	011084	1
4	<ul> <li>spring, control light</li> </ul>	250006-526	1
5	• pin, yoke ¼"	040065	1
6	• yoke, rod end ¼"-28	040138	1
7	• plunger	020094	1
8	• seal, cup	042538	1
9	• screw, machine hex 5/16"-24 x 2"	831105-200	1
10	<ul> <li>nut, hex unfinished %"-16</li> </ul>	824206-337	6
11	• washer, springlock regular %"	837506-094	6
12	• screw, machine shoulder $\%$ " x 2"	830506-200	1
13	<ul> <li>body, control</li> </ul>	021635	1
14	• nut, hex <del>%</del> <sub>16</sub> "–18	824205-273	3
15	• washer, springlock regular 5/18"	837505-078	3
16	<ul> <li>nut, hex locking plated %"-16</li> </ul>	825506198	1
17	<ul> <li>diaphragm, Sullicon</li> </ul>	250020028	1
18	• capscrew, ferry %/"-16 x 2"	828406-200	1
19	<ul> <li>washer, back-up</li> </ul>	021172	1
20	<ul> <li>screw, sealing ¼"-28 × ¾"</li> </ul>	041264	1
21	• screw, ¾"-16 x 2"	021636	1
22	<ul> <li>cover, control</li> </ul>	021654	1
23	• capscrew, hex gr5 ⅔"-16 x 2½"	828606-250	4
24	elbow, tube-m ¼" x ¼"	810504-025	1
25	capscrew, hex gr5 ⅔ <sub>16</sub> "-18 x 2½"	828605-250	3
26	bracket, control (25 Series) • bracket, control (20 Series)	233402 026862	1 1
27	tubing, steel ¼" 20ga (ft.)	841115-004	16
28	union, tube-m ¼" x ¼"	811304-025	1
29	rod, link (25 Series) • rod ⅔ <sub>16</sub> "-24 x 6¼" (20 Series)	222571 026861	1 1
30	nut, hex unfinished 5/16"-24 - left hand	824605~195	2
31	rod end, spherical 5/18" - left hand	042004	1
32	lever, inlet valve	020687	1

(continued on Page 77)

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

7.14 CAPACITY CONTROL SYSTEM



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#### 7.14 CAPACITY CONTROL SYSTEM (continued)

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key number	description	part number	quantity
33	screw, set square head 5/16" x 3/2"-18	408383	1
34	rod end, spherical <del>%</del> e" - right hand	040136	1
35	washer, pi-b regular unfinished %"	837206-071	2
36	bracket, control stop	020864	1
37	nut, hex unfinished %"-16	824206-337	1
38	capscrew, ferry head %"-18 x 11/2"	828405-150	2
39	capscrew, ferry head %"-16 x 1"	828406-100	2

#### 7.15 INSTRUMENT PANEL AND PARTS



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#### 7.15 INSTRUMENT PANEL AND PARTS

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key number	description	part number	quantity
1	union, pipe ¼" x ¼"	811104-025	5
2	capscrew, tc-f pan #8-32 x 1/3"	835601-050	4
3	tubing, steel double bronze 1/2" (ft.)	841015004	10 feet
4	connector, tube-f 1/2" x 1/2"	810104-012	7
5	tee, tube-f ¼" x ¼"	811004-012	1
6	fitting, pipe coupling galvanized 1/4"	803215005	1
7	connector, hose brass tube-m 1/4" x 1/4"	813604-125	1
8	hose, nylon ¼" (ft.)	842215-004	6
9	panel, instrument	250019-481	1
10	decal, instrument panel	250015500	1
11	gauge, differential pressure	250003798	1
12	gauge, vacuum	250003-797	1
13	gauge, differential pressure	250003-799	1
14	gauge, pressure	250005-185	2
15	gauge, temperature	042582	1
16	switch, start	250016-351	1
17	switch, stop	250016-350	1
18	panel, electrical	250015-471	1
19	gasket, hourmeter	410353	1
20	hourmeter	042988	1
21	holder, pilot lamp	043383	1
	• lens, red	043384	1
~~	• DUID, PIIOT IAMP	043300	1
22	decal, label	250015-483	1
23	nolder, pilot lamp	043383	1
	• bulb, pilot lamp	043386	1

7.16 ELECTRO-PNEUMATIC CONTROL SYSTEM



#### 7.16 ELECTRO-PNEUMATIC CONTROL SYSTEM

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key		part	augatity
number	description	number	quantity
1	bushing conduit plastic ½"	848815-050	3
2	locknut, conduit ½"	847200-050	7
3	nipple, chase conduit ½"	847815-050	2
4	elbow, 90° ½"	846915-050	2
5	switch, pressure	040694	1
6	capscrew, hex ¼"-20 x ½"	827905-050	2
7	nut, hex #10-24	826002-130	2
8	washer, springlock #10	837502-047	2
9	bracket, pressure switch support	250018-146	1
10	screw, machine rod head #10-24 x ½"	831602~050	2
11	tubing, ¼" (ft.)	841015004	60 feet
12	tee, tube-m ¼" × ¼" × ¼"	810904-025	2
13	tee, straight ¼"	804415-010	4
14	bushing, reducing 🔏 " x 🎉 "	807600-005	2
15	valve, moisture drain	041111	1
16	valve, check ¼"	049905	1
17	nipple, pipe galvanized ¼" x close	832204-000	7
18	elbow, pipe 90° ¼"	803515-010	2
19	elbow, tube-m ¼" × ¼"	810504025	3
20	valve, solenoid 3-way ¼" (I)	250038-674	1
21	filter, air ¼" (II)	408389	1
22	valve, differential pressure regulator 🄏 (III)	406929	1
23	plug, ¼"	807800-010	2
24	connector, starter $\chi$ " × $\chi$ "	810204012	1
25	nut, hex ¼"-20	824204226	2
26	conduit, flexible ½"	846315-050	1
27	connector, straight ½"	846400-050	1
28	switch, pressure	250017-991	1
29	bracket, air filter support	230452	1

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

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

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

#### 7.17 ELECTRIC CONTROL BOX ASSEMBLY



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#### 7.17 ELECTRIC CONTROL BOX ASSEMBLY

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key number	description	part number	quantity
1	support, starter	017217	1
2	washer, plain ¾"	837206-071	4
3	washer, springlock	837506094	1
4	nut, hex %"-16	824206-337	4
5	capscrew, hex gr5 🔏"-16 x 1¼"	828606-125	4
6	nipple, chase 1¼"	847815-125	1
7	gasket	250019-557	1
8	starter, assembly size 4 • starter, assembly size 5 • starter, assembly size 6	250023-677 250023-678 052418	1 1 1
9	conduit, csa flex ½" (ft.)	846315-050	2 feet
10	elbow, 90° liquid tite	846600-050	1
11	locknut, conduit 1¼"	847200-125	2
12	bushing, conduit $1\frac{1}{4}$ "	848815-125	2
13	grip, cord	250018-498	2
14	wire, neoprene (ft.)	850604-012	7 feet
15	fuse, 208V • fuse, 230 to 460V • fuse, 575V	250026652 250026649 250026647	2 2 2
16	fuse	042539	1
17	transformer, 240/480-120-380va • transformer, 208V x fmr • transformer, 380V to 415V • transformer, 575V	250028-722 250028-873 250028-879 250028-885	1 1 1 1
18	holder, fuse	250019773	1
19	fuse, 20 amp	25001 <b>9</b> 759	3
20	terminal block	041493	1
21	starter, size 0 • starter, size 1	250021-835 250021-836	1 1
22	starter, size 4 • starter, size 5 • coil, size 4 and 5 120V • coil, size 4 and 5 240/480V	052438 052438 250003-423 250023-623	1 1 1 1
23	locknut, conduit ½"	847200-050	10
24	bushing, ½"	848815-050	3
25	bushing, 2"	848815-200	2
26	locknut, 2"	847200-200	2
27	grip, cord for g-gc #1	250014557	2
28	cord, type g-gc 12#1 ga (ft.) • cord, type g-gc 16#2 ga (ft.)	250014309 250014308	5 feet 5 feet

(continued on Page 85)

7.17 ELECTRIC CONTROL BOX ASSEMBLY



#### 7.17 ELECTRIC CONTROL BOX ASSEMBLY (continued)

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key number	description	part number	quantity
29	brace, starter support	230428	2
30	capscrew, hex head gr5 ½" x 1½"	828608-150	6
31	washer, plain b regular ½"	837508125	6
32	washer, springlock regular ½"	837508-125	6
33	nut, hex ½"-13	824208-448	6
34	control, temperature 2-input	409170	1
35	probe, temperature (not shown)	046867	2

#### 7.18 FRAME, ENCLOSURE AND PARTS



#### 7.18 FRAME, ENCLOSURE AND PARTS

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key number	description	part number	quantity
			4
1	screw, hex serrated washer	829705-150	4
2	guard, fan 20" diameter	241137	2
3	fan, vent 18" diameter	410358	1
4	nut, hex flanged plated 5/16"-18	825303-146	1
5	panel, fiberglass 27.5" x 61.5" x 2"m	047823-146	1
6	weatherstrip, felt 1/8" x 1" (ft.)	043502	153 feet
7	panel, fiberglass 2" × 33½" × 61½"	047823-144	2
8	nut, retainer u-type 5/18"-18 .140	861505-140	12
9	panel, roof	017223	1
10	panel, end	016887	2
11	panel, fiberglass 2" x 23½" x 57"	047823-148	2
12	panel, sound baffle	231595	2
13	nut, retainer <del>5/</del> 6"-18	861405092	52
14	panel, end access	018922	34
15	nameplate, Sullair 17"	046469	1
16	rivet, pop ¼" x ¾"	843102-038	4
17	panel, fiberglass 2" x 17¼" x 24½"	047823-147	8
18	corner, member enclosure	230458	4
19	channel, bottom 60"	230456	2
20	panel, fiberglass 2" x 20" x 39¼"	047823-145	8
21	decal, 24KT (24KT only)	046415	2
22	decal, logo (24KT only) • decal, "trademark" - white	046414 040087A	2 1
23	decal, "Sullair"	046422	1
24	panel, side access	017231	4
25	handle, retractable	405087	16
26	grommet, rubber	040125	32
27	capscrew, hex gr2 ¼"20 x ¾"	828104075	24
28	support, member enclosure	231516	2
29	channel, bottom 96"	230457	2
30	panel, enclosure 84"	230485	1
31	decal, fork lifting	241814	3
32	channel, air/water connection	019603	2
33	screw, hex serrated washer $\frac{5}{16}$ " x $\frac{3}{4}$ "	829705-075	76
34	clamp, wire	043194	12
35	grille, enclosure end	249651	2
36	motor, ¼"HP 230/460	250000-031	1

(continued on page 89)

#### 7.18 FRAME, ENCLOSURE AND PARTS



#### 7.18 FRAME, ENCLOSURE AND PARTS (continued)

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key number	description	part number	quantity
37	panel, enclosure	231568	1
38	roof, canopy (150HP)	018927	1
39	angle, 1¼" x 2¼" x 47¾"	232876	4
40	panel, roof	017238	1
41	guard, exhaust fan 20" diameter	410179	1

7.19 COMPRESSOR ACTUATOR - 25-150HP



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#### 7.19 COMPRESSOR ACTUATOR - 25-150HP

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key		part	
number	description	number	quantity
1	shaft, indicator	250030-979	1
2	screw, machine hex ¼"-20 × 1¾"	830104-175	1
3	capscrew, socket %"-16 x 1"	8289906-100	1
4	ring, retaining Viton	826502-236	1
5	bearing, ball	499002-207	1
6	seal, lip	250016-200	1
7	screw set ½"-13 x 1.62	250024-465	1
8	base, air cylinder	250016-725	1
9	capscrew, ferry head 1/2"-13 x 11/2"	828408150	6
10	guide, rack	250016-199	1
11	gear, pinion	250016-196	1
12	indicator, actuator	250016-198	1
13	pin, roll	827404-100	1
14	capscrew, hex head gr8 ¼"-20 x ½"	828204-050	4
15	cover, adapter	250021-509	1
16	washer, regular #18	838201-045	6
17	screw, machine rod #8-32 x ½"	831601-050	6
18	mount, air cylinder	250027-168	1
19	capscrew, ferry head %s"-18 x 1"	828405-100	3
20	spring, seal 2¼"	250029-297	1
21	rack, gear	250016-197	1
22	nut, hex jam %"-16	824906-194	1
23	shaft, air cylinder	250016-194	1
24	cylinder, air	250016-183	1
25	orifice, .062 x .25m x .25f	027443	1
26	nut, hex unfinished ½"-13	824208-448	1
27	nut, hex jam ¼"-20	824904-164	1

7.20 DECAL GROUP



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#### 7.20 DECAL GROUP

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key		part	
number	description	number	quantity
1	sign, warning sever fan	049855	1
2	sign, warning sever fan port	049965	1
3	sign, danger electrocution	049850	1
4	decal, rotation	250021-286	1
5	decal, 460 volt	040631	1
6	decal, grounding lug	045433	1
7	decal, compressor fluid Sullube 32	250023-361	1
8	decal, SRF 1/4000 fluid	250022-839	1
9	sign, warning compressor fluid fill cap	049685	1
10	sign, danger air breathing	250027–935	1
11	sign, warning "food grade" lube	250003-144	1
12	sign, warning ground fault	049852	1
13	decal, danger high voltage	042218	1
14	decal, water in	250019-107	1
15	decal, water out	250019-108	1
16	decal, rotation	250021-564	1
17	decal, water drain	250022-810	1
18	decal, airanteed 2 year - white	043067	1
19	decal, water inlet/outlet	049873	1
20	decal, fork lifting	241814	4
21	decal, fluid stop valve P/N 016742	410239	1

#### NOTES

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