



**OIL-FREE
AIR COMPRESSOR
DE-18 Tier II Series
1550 cfm**

**OPERATOR'S
MANUAL AND
PARTS LIST**

**KEEP FOR
FUTURE
REFERENCE**

Part Number 02250136-361
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AIR CARE SEMINAR TRAINING

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

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

For detailed course outlines, schedule and cost information contact:

Sullair Corporate Training Department
1-800-SULLAIR or 219-879-5451 (ext. 5630)
- Or Write -
Sullair Corporation
3700 E. Michigan Blvd.
Michigan City, IN 46360
Attn: Service Training Department

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NOTES

1.1 GENERAL

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

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

NEVER start the compressor unless it is safe to do so. **DO NOT** attempt to operate the compressor with a known unsafe condition. Tag the compressor and render it inoperative by disconnecting the battery so others who may not know of the unsafe condition will not attempt to operate it until the condition is corrected.

Use and operate the compressor only in full compliance with all pertinent OSHA requirements and/or all pertinent Federal, State, and Local codes or requirements.

DO NOT modify the compressor except with written factory approval.

Each day walk around the air compressor and inspect for leaks, loose or missing parts, damaged parts or parts out of adjustment. Perform all recommended daily maintenance.

Inspect for torn, frayed, blistered or otherwise deteriorated and degraded hoses. Replace as required.

NOTE

Estimated hose life based on a 5-day 8-hour work week is 3 years. These conditions exist on an 8-hour shift only. Any other operation of the equipment other than 8-hour shifts would shorten the hose life base on hours of operation.

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 TOWING (I)

A. PREPARING TO TOW

WARNING

DO NOT tow the compressor should its weight exceed the rated limit of the tow vehicle, as the vehicle may not brake safely with excess weight. See rated limit in tow vehicle Operator's Manual and review its instructions and other requirements for safe towing.

1. Prior to hitching the air compressor to the tow vehicle, inspect all attachment parts and equipment checking for (i) signs of excessive wear or corrosion, (ii) parts that are cracked, bent, ended or otherwise deformed or degraded, and (iii) loose nuts, bolts or other fasteners. Should any such condition be present **DO NOT TOW** until the problem is corrected.
2. Back the tow vehicle to the compressor and position it in preparation for coupling the compressor.
3. If the compressor is provided with a drawbar latched in the vertical upright position carefully unlatch drawbar and lower it to engage the coupling device or otherwise couple the compressor to the towing vehicle. Keep hands and fingers clear of the coupling device and all other pinch points.

WARNING

This equipment may be tongue heavy. **DO NOT** attempt to raise or lower the drawbar by hand if the weight is more than you can safely handle.

WARNING

This equipment can build speed rapidly. Use only a hitch with a captured ball and lock to avoid decoupling.

Keep feet clear of drawbar to avoid injury in case it should slip from your hands.

4. Make sure the coupling device is fully engaged, closed and locked.
5. Make sure that the coupling device and adjacent structures on the towing vehicle **DO NOT** interfere with or restrict motion of any part of the compressor, including its coupling device, with respect to the towing vehicle when maneuvering over any anticipated terrain.
6. **DO NOT** change the tire size or type. Also make sure wheel bolts, lugs or nuts are tightened to the specified torques.
7. Make sure all service air hoses (not air brake

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hoses) are disconnected or are fully stowed and secured on hose reels, if provided.

8. Make sure all access doors and tool box covers are closed and latched. If the compressor is large enough to hold a man, make sure all personnel are out before closing and latching access doors.

9. Make sure parking brakes in towing vehicle are set, or that its wheels are chocked or blocked, or that it is otherwise restrained from moving. Then release the compressor parking brakes, if provided.

10. Make sure the compressor wheels are not chocked or blocked, and that all tie-downs, if any, are free.

11. **DO NOT** carry loose or inappropriate tools, equipment or supplies on or in the compressor.

12. **DO NOT** load this equipment with accessories or tools such that it is unbalanced from side to side or front to back. Such unbalance will reduce the towability of this equipment and may increase the possibility of tipping, rolling over, jackknifing, etc. Loss of control of the towing vehicle may result.

B. TOWING

WARNING

DO NOT tow compressor on roads. For yard use only. Tow only on pavement capable of supporting package weight plus 10% allowance for weight of snow, ice, mud or stored tools and equipment

1. Remember that the air compressor may approach or exceed the weight of the towing vehicle. Maintain increased stopping distances accordingly. **DO NOT** make sudden lane changes, U-turns, or other maneuvers. Such maneuvers can cause the compressor to tip, roll over, jackknife or slide and cause loss of control of the towing vehicle. Tipping, rolling over, etc. can occur suddenly without warning. U-turns especially should be made slowly and carefully.

2. Avoid grades in excess of 15° (27%).

3. Avoid potholes, rocks and other obstructions, and soft shoulders or unstable terrain.

4. Maneuver in a manner that will not exceed the freedom of motion of the compressor's drawbar and/or coupling device in or on the towing vehicle's coupling device and/or adjacent structure whether towing forward or backing up, regardless of the terrain being traversed.

5. **DO NOT** permit personnel to ride in or on the compressor.

6. Make sure the area behind, in front of, and under the compressor is clear of all personnel and obstructions prior to towing in any direction.

7. **DO NOT** permit personnel to stand or ride on the drawbar, or to stand or walk between the compressor and the towing vehicle.

C. PARKING OR LOCATING COMPRESSOR

1. Park or locate compressor on a level surface, if possible. If not, park or locate compressor across grade so the compressor does not tend to roll downhill. **DO NOT** park or locate compressor on grades exceeding 15° (27%).

2. Make sure compressor is parked or located on a firm surface that can support its weight.

3. Park or locate compressor so the wind, if any, tends to carry the exhaust fumes and radiator heat away from the compressor air inlet openings, and also where the compressor will not be exposed to excessive dust from the work site.

4. Block or chock both sides of all wheels.

5. If provided, unhook chains and remove them from the points of chain attachment on the towing vehicle, then hook chains to bail on drawbar or wrap chains around the drawbar and hook them to themselves to keep chains off the ground which might accelerate rusting.

6. Disconnect coupling device, keeping hands and fingers clear of all pinch points. If the compressor is provided with a drawbar **DO NOT** attempt to lift the drawbar or if hinged to raise it to the upright position, by hand, if the weight is more than you can safely handle. Use a screw-jack or chain fall if you cannot lift or raise the drawbar without avoiding injury to yourself or others.

7. When possible, stow hinged drawbar in the vertical upright position. Make certain it is securely latched in the vertical upright position. Keep feet clear of drawbar at all times to avoid crushing accidents in case it should slip from your hands or otherwise fall to the ground.

8. Move the towing vehicle well clear of the parked compressor and erect hazard indicators, barricades and/or flares (if at night) if compressor is parked on or adjacent to public roads. Park so as not to interfere with traffic.

(I) While not towed in the usual sense of the word, many of these instructions are directly

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applicable to skid-mounted portable air compressors as well.

1.3 PRESSURE RELEASE

A. Open the pressure relief valve at least weekly to make sure it is not blocked, closed, or obstructed or otherwise disabled.

B. Install an appropriate flow-limiting valve between the compressor service air outlet and the shut-off (throttle) valve, when an air hose exceeding 1/2" (13mm) inside diameter is to be connected to the shut-off (throttle) valve, to reduce pressure in case of hose failure, per OSHA Standard 29 CFR 1926.302(b)(7) and/or any applicable Federal, State and Local codes, standards and regulations.

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

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

E. Flow-limiting valves are listed by pipe size and rated CFM. Select appropriate valve accordingly.

F. 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.

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

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

I. 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.

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

K. DO NOT use air at pressures higher than 30 psig (2.1 bar) for cleaning purposes, and then only with effective chip guarding and personal protective

equipment per OSHA Standard 29 CFR 1910.242 (b) and/or any applicable Federal, State, and Local codes, standards and regulations.

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

M. This equipment is supplied with an ASME designed pressure vessel protected by an ASME rated relief valve. Lift the handle once a week to make sure the valve is functional. **DO NOT** lift the handle while machine is under pressure.

N. If the machine is installed in an enclosed area it is necessary to vent the relief valve to the outside of the structure or to an area of non-exposure.

O. DO NOT remove radiator filler cap until the coolant temperature is below its boiling point. Then loosen cap slowly to its stop to relieve any excess pressure and make sure coolant is not boiling before removing cap completely. Remove radiator filler cap only when cool enough to touch with a bare hand.

P. The ethyl ether in the replaceable cylinders used in diesel ether starting aid systems (optional) is under pressure. **DO NOT** puncture or incinerate those cylinders. **DO NOT** attempt to remove the center valve core or side pressure relief valve from these cylinders regardless of whether they are full or empty.

Q. If a manual blowdown valve is provided on the receiver, open the valve to insure all internal pressure has been vented prior to servicing any pressurized component of the compressor air/fluid system.

1.4 FIRE AND EXPLOSION

A. Refuel at a service station or from a fuel tank designed for its intended purpose. If this is not possible, ground the compressor to the dispenser prior to refueling.

B. Clean up spills of fuel, fluid, battery electrolyte or coolant immediately if such spills occur.

C. 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 adding fuel, or when checking or adding electrolyte to batteries, or when checking or adding fluid, or when checking diesel engine ether starting aid systems or replacing cylinders, or when refilling air line anti-icer systems antifreeze compound.

D. DO NOT permit fluids, including air line anti-icer system antifreeze compound or fluid film to accumulate on, under, or around acoustical material, or

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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.

E. Disconnect the grounded (negative) battery connection prior to attempting any repairs or cleaning inside the enclosure. Tag the battery connections so others will not unexpectedly reconnect it.

F. Keep electrical wiring, including the battery terminals and other terminals, 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 clean and tight.

G. Turn off battery charger before making or breaking connections to the battery.

H. Keep grounded 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.

I. Replace damaged fuel tanks or lines immediately rather than attempt to weld or otherwise repair them. **DO NOT** store or attempt to operate the compressor with any known leaks in the fuel system. Tag the compressor and render it inoperative until repair can be made.

J. Remove any acoustical material or other material that may be damaged by heat or that may support combustion prior to attempting weld repairs. Remove diesel engine ether starting aid cylinders and air line anti-icer system components containing antifreeze compound, prior to attempting weld repairs in any place other than the fuel system. **DO NOT** weld on or near the fuel system.

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

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

M. Open all access doors and allow the enclosure to ventilate thoroughly prior to attempting to start the engine.

N. **DO NOT** operate compressor under low overhanging leaves or permit such leaves to contact hot exhaust system surfaces when operating the com-

pressor in forested areas.

O. Ethyl ether used in diesel engine ether starting aid systems is extremely flammable. Change cylinders, or maintain or troubleshoot these systems only in well-ventilated areas away from heat, open flame or sparks. **DO NOT** install, store or otherwise expose ether cylinders to temperatures above 160°F (71°C). Remove ether cylinder from the compressor when operating in ambient temperatures above 60°F (16°C).

P. **DO NOT** attempt to use ether as a starting aid in gasoline engines or diesel engines with glow plugs as serious personnel injury or property damage may result.

Q. **DO NOT** spray ether into compressor air filter or into an air filter that serves both the engine and the compressor as serious damage to the compressor or personal injury may result.

R. Antifreeze compound used in air line anti-icer systems contains methanol which is flammable. Use systems and refill with compound only in well-ventilated areas away from heat, open flames or sparks. **DO NOT** expose any part of these systems or the antifreeze compound to temperatures above 150°F (66°C). Vapors from the antifreeze compound are heavier than air. **DO NOT** store compound or discharge treated air in confined or unventilated areas. **DO NOT** store containers or antifreeze compound in direct sunlight.

S. Store flammable fluids and materials away from your work area. Know where fire extinguishers are and how to use them, and for what type of fire they are intended. Check readiness of fire suppression systems and detectors if so equipped.

1.5 MOVING PARTS

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

B. **DO NOT** attempt to operate the compressor with the fan 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 inside the enclosure.

D. Keep access doors closed except when making repairs or adjustments, performing service or when starting or stopping the compressor

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

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F. Shut off engine before adding fuel, fluid, coolant lubricants, air line antifreeze compound or battery electrolyte, or before replacing ether starting aid cylinders.

G. Disconnect the grounded negative battery connection to prevent accidental engine operation prior to attempting repairs or adjustments. Tag the battery connection so others will not unexpectedly reconnect it.

H. When adjusting the controls, it may require operation of the equipment during adjustment. **DO NOT** come in contact with any moving parts while adjusting the control regulator and setting the engine RPM. Make all other adjustments with the engine shut off. When necessary, make adjustment, other than setting control regulator and engine RPM, with the engine shut off. If necessary, start the engine and check adjustment. If adjustment is incorrect, shut engine off, readjust, then restart the engine to recheck adjustment.

I. Keep hands, feet, floors, controls and walking surfaces clean and free of fluid, water, antifreeze or other liquids to minimize 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 and away from hot exhaust gases.

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

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

1.7 TOXIC AND IRRITATING SUBSTANCES

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

DANGER

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

B. **DO NOT** use air line anti-icer systems in air lines supplying respirators or other breathing air utiliza-

tion equipment and **DO NOT** discharge air from these systems into unventilated or other confined areas.

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

D. If the compressor is operated indoors, discharge engine exhaust fumes outdoors.

E. Locate the compressor so that exhaust fumes are not apt to be carried towards personnel, air intakes servicing personnel areas or towards the air intake of any portable or stationary compressor.

F. Fuels, fluids, coolants, lubricants and battery electrolyte used in the compressor are typical of the industry. Care should be taken to avoid accidental ingestions and/or skin contact. In the event of ingestion seek medical treatment promptly. **DO NOT** induce vomiting if fuel is ingested. Wash with soap and water in the event of skin contact.

G. Wear an acid-resistant apron and a face shield or goggles when servicing the battery. If electrolyte is spilled on skin or clothing, immediately flush with large quantities of water.

H. Ethyl ether used in diesel engine ether starting aid systems is toxic, harmful or fatal if swallowed. Avoid contact with the skin or eyes and avoid breathing the fumes. If swallowed, **DO NOT** induce vomiting, but call a physician immediately.

I. Wear goggles or a full face shield when testing ether starting aid systems or when adding antifreeze compound to air line anti-icer systems. Keep openings of valve or atomizer tube of ether starting aid system pointed away from yourself and other personnel.

J. If ethyl ether or 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 any eye specialist, should be contacted immediately.

K. **DO NOT** store ether cylinders or air line anti-icer system antifreeze compound in operator's cabs or in other similar confined areas.

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

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Call a physician immediately.

1.8 ELECTRICAL SHOCK

A. Keep the towing vehicle or equipment carrier, compressor hoses, tools and all personnel at least 10 feet (3 meters) from power lines and buried cables.

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.

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

D. Stay clear of the compressor during electrical storms! It can attract lightning.

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 only in full compliance with OSHA standards 29 CFR 1910 subpart N or any other Local, State, Military and Federal regulations that may apply.

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

C. Make sure entire lifting, rigging and supporting structure has been inspected, is in good condition and has a rated capacity of at least the net weight of the compressor plus an additional 10% allowance for weight of snow, ice, mud or stored tools and equipment. 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.

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

F. DO NOT attempt to lift in high winds.

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

H. Lift compressor no higher than necessary.

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

J. Set compressor down only on a level surface capable of supporting at least its net weight plus an additional 10% allowance for the weight of snow, ice, mud or stored tools and equipment.

K. If the compressor is provided with parking brakes, make sure they are set, and in any event, block or chock both sides of all running wheels before disengaging the lifting hook.

1.10 ENTRAPMENT

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

B. If the compressor 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.

1.11 JUMP STARTING

A. Observe all safety precautions mentioned elsewhere in this manual.

B. Batteries may contain hydrogen gas which is flammable and explosive. Keep flames, sparks and other sources of ignition away.

C. Batteries contain acid which is corrosive and poisonous. **DO NOT** allow battery acid to contact eyes, skin, fabrics or painted surfaces as serious personal injury or property damage could result. Flush any contacted areas thoroughly with water immediately. Always wear an acid-resistant apron and face shield when attempting to jump start the compressor.

D. Remove all vent caps (if so equipped) from the battery or batteries in the compressor. **DO NOT** permit dirt or foreign matter to enter the open cells.

E. Check fluid level. If low, bring fluid to proper level before attempting to jump start (not applicable to maintenance-free batteries).

F. DO NOT attempt to jump start if fluid is frozen or slushy. Bring batteries up to at least 60°F (16°C) before attempting to jump start or it may explode.

G. Cover open cells of all compressor batteries with clean dampened cloths before attempting to jump start.

H. Attempt to jump start only with a vehicle having a negative ground electrical system with the same voltage, and is also equipped with a battery or batteries of comparable size or larger than supplied in the compressor. **DO NOT** attempt to jump start using motor generator sets, welders or other

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sources of DC power as serious damage may result.

I. Bring the starting vehicle alongside the compressor, but **DO NOT** permit metal to metal contact between the compressor and the starting vehicle.

J. Set the parking brakes of both the compressor (if provided) and the starting vehicle or otherwise block both sides of all wheels.

K. Place the starting vehicle in neutral or park, turn off all non-essential accessory electrical loads and start its engine.

L. Use only jumper cables that are clean, in good condition and are heavy enough to handle the starting current.

M. Avoid accidental contact between jumper cable terminal clips or clamps and any metallic portion of either the compressor or the starting vehicle to minimize the possibility of uncontrolled arcing which might serve as a source of ignition.

N. Positive battery terminals are usually identified by a plus (+) sign on the terminal and the letters POS adjacent to the terminal. Negative battery terminals are usually identified by the letters NEG adjacent to the terminal or a negative (-) sign.

O. Connect one end of a jumper cable to the positive (POS) (+) battery terminal in the starting vehicle. When jump starting 24V compressors and if the starting vehicle is provided with two (2) 12V batteries connected in series, connect the jumper cable to the positive (POS) (+) terminal of the ungrounded battery.

P. Connect the other end of the same jumper cable to the positive (POS) (+) terminal of the starter motor battery in the compressor, or when jump starting 24V compressor, to the positive (POS) (+) terminal of the ungrounded battery in the compressor.

Q. Connect one end of the other jumper cable to the grounded negative (NEG) (-) terminal of the battery in the starting vehicle. When jump starting 24V compressors and if the starting vehicle is provided with two (2) 12V batteries connected in series, connect the jumper cable to the negative (NEG) (-) terminal of the grounded battery.

R. Check your connections. **DO NOT** attempt to start a 24V compressor with one 12V battery in the starting vehicle. **DO NOT** apply 24V to one 12V battery in the compressor.

S. Connect the other end of this same jumper cable to a clean portion of the compressor engine block away from fuel lines, the crank case breather opening and the battery.

T. Start the compressor in accordance with normal procedure. Avoid prolonged cranking.

U. Allow the compressor to warm up. When the compressor is warm and operating smoothly at normal idle RPM, disconnect the jumper cable from the engine block in the compressor, then disconnect the other end of this same cable from the grounded negative (NEG) (-) terminal of the battery in the starting vehicle. Then disconnect the other jumper cable from the positive (POS) (+) terminal of the battery in the compressor, or if provided with two (2) 12V batteries connected in series, from the ungrounded battery in the compressor, and finally, disconnect the other end of this same jumper cable from the positive (POS) (+) terminal of the battery in the starting vehicle or from the positive (POS) (+) terminal of the ungrounded battery in the starting vehicle, if it is provided with two (2) 12V batteries connected in series.

V. Remove and carefully dispose of the dampened cloths, as they may now be contaminated with acid, then replace all vent caps.

Section 2

INSTALLATION

2.1 PARKING OR MOUNTING OF COMPRESSOR

Park or mount compressor on a level surface, if possible. If unable to park or locate the compressor on a level surface position the compressor on a grade surface which will not allow the compressor to roll downhill.

DO NOT park or mount compressor on surface grades exceeding 15 degrees.

The compressor package should be placed on a surface or foundation capable of supporting 10% more than only the compressor weight. Make foundation weight allowance for snow, ice, mud and stored tools.

No piping loads or moments should be transmitted to the air and fuel connections provided with the package.

Park or locate compressor so the wind, if any, will help carry the exhaust fumes and radiator heat away from the compressor air inlet openings. The compressor should not be exposed to excessive dust from the worksite.

If compressor is equipped with the optional wheel package, park compressor with the front wheels in a straight ahead position. Set the parking brakes and block or chock both sides of all wheels. Disconnect coupling device, keeping hands and fingers clear of all pinch points. Raise the drawbar and lock it in the upright position. Keep feet clear of drawbar at all times to avoid crushing accidents while positioning the drawbar in case it should slip from your hands or otherwise fall to the ground.

2.2 VENTILATION AND COOLING

Select a location that allows an unrestricted flow of free ventilation air through the package, (approximately 48,000 CFM [1358 m³/min]). The maximum allowable ambient temperature is 115°F (46°C). Heat rejection to the surrounding environment can be up to 32,000 BTU/min.

Avoid any recirculation or ingestion of heated gases.

Compressor and engine/intake is located next to package controller.

Package discharge (cooling air) is located on top of package.

Package intake (cooling air) is located on end of package.

Maintain a 6 ft. (1.8 m) minimum separation between the package and any surrounding walls.

If ductwork is installed, the total restriction on intake must not exceed 0.1 inches H₂O (25 Pascals). The total restriction on the outlet must not exceed 0.1 inches H₂O (25 Pascals).

Elevation: As with all two-stage Oil-Free Compressors, package rating must be reduced above 4000 ft. sea level.

2.3 SERVICE AIR CONDENSATE PIPING

A shut-off valve is included to isolate the package from the supply line as required.

No piping loads or moments should be transmitted to the air connections provided with the package.

Condensate drains shall be connected to a non-pressurized gravity feed drain. If the compressor drains are manifolded together, care should be taken to insure that this drain is not pressurized when the machine condensate drains (both automatic or manual) are in operation.

All condensate should be disposed of in accordance with local governing laws.

2.4 FLUID LEVEL CHECK

The compressor lube circuit is supplied with the proper charge of Sullair AWF lube oil. Two sight glasses, located at the sump end, indicate the level of lubricant in the sump. The following guideline for oil level should be used:

Compressor stopped: Oil level should reach 25-100% of the upper sight glass.

Compressor operating: Oil level should be between the upper and lower sight glasses. The compressor should not be operated with an oil level below the lower sight glass.

The engine dipstick should be checked and the proper level should be visible prior to operation.

Check engine radiator coolant level and make up reservoir for correct coolant level.

Section 3

SPECIFICATIONS

3.1 DE-18 SERIES COMPRESSOR PACKAGE

TYPE	ENGINE HP	DIMENSIONS			WEIGHT LB/KG WET	MAXIMUM PRESSURE PSIG
		LENGTH IN/CM	WIDTH IN/CM	HEIGHT IN/CM		
DE-18	550	228/579	88/224	97/247	24,000/10,886	135

COMPRESSOR:

Type:	Positive Displacement, Oil-Free, Twin Rotary Screws
Configuration:	Two-stages, Driven by Single Increaser Gear Box
Bearing Type:	Anti-Friction
Lubrication:	Pressurize System for Bearings, Gears and Cooling Jackets
Sump Capacity:	28 gallons (76 liters)
Ambient Temperature:	115°F (46°C) Max.
Control:	Electro-hydro-pneumatic
Discharge Pressure:	Maximum (see Table 3.1); Minimum 70 psig (4.8 barg)

ENGINE:

Type:	Inline, 6 Cylinder, 4 Stroke, Turbo-charged Diesel with Electronic Fuel System, meets EPA Tier 2 Off Highway Emissions Regulations
Size:	Caterpillar C-16 AT ACC, 550 HP, 966 in ³
Operating Speed:	1400-1840 RPM
Oil:	9 Gallons- Caterpillar CH-4
Fuel Capacity:	245 Gallons

3.2 LUBRICATION GUIDE

DE-18 Series compressors are factory filled with Sullair AWF oil.

WARNING

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

Lubricant should be checked/changed every 1,500 hours or once a year, whichever comes first. The fluid should be changed more frequently under

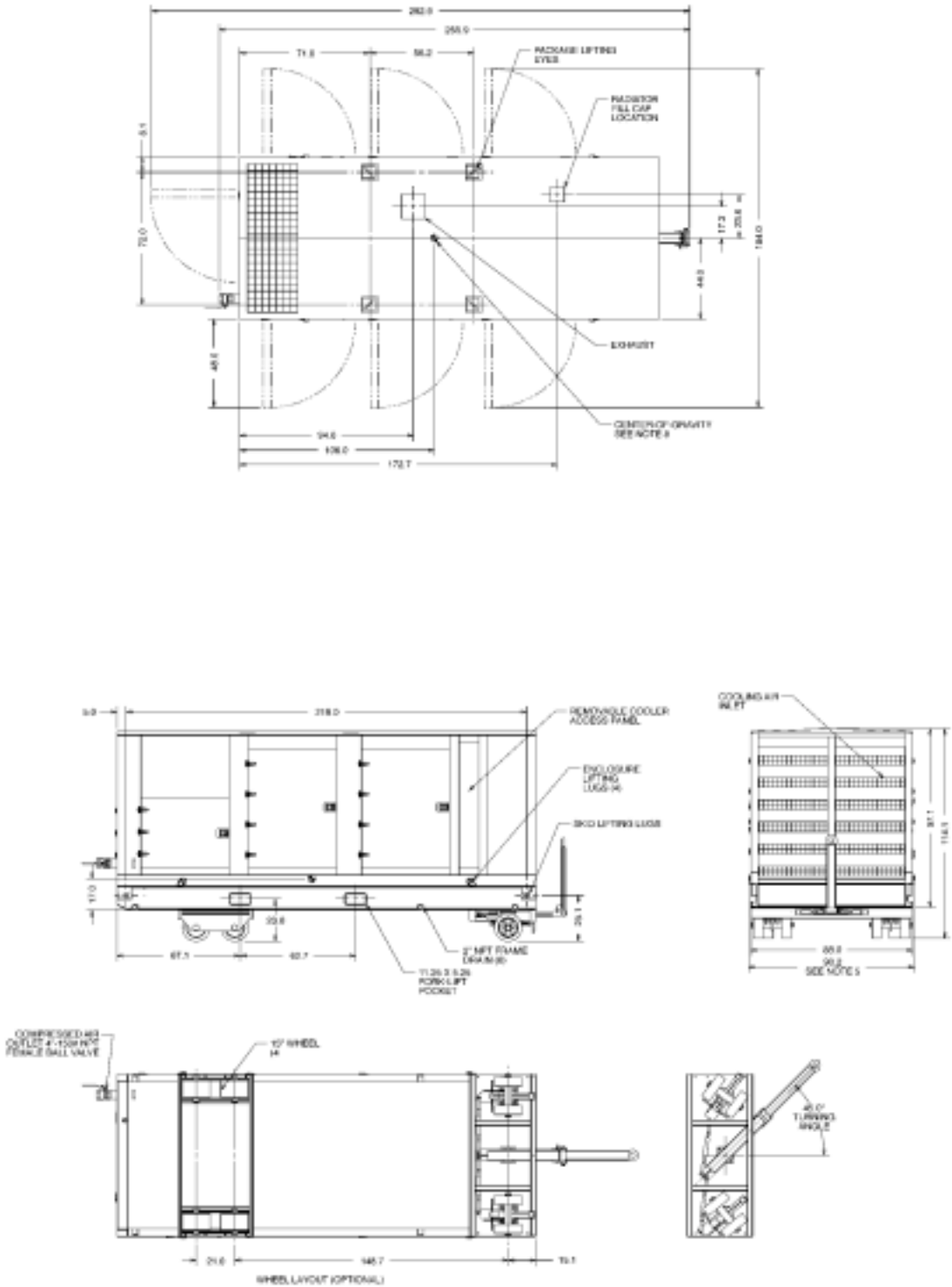
severe operating conditions, such as high ambient temperatures coupled with high humidity or when high particulate level, corrosive gases or strong oxidizing gases are present in the air.

Please refer to the Caterpillar Engine Operator's Manual for maintenance requirements.

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

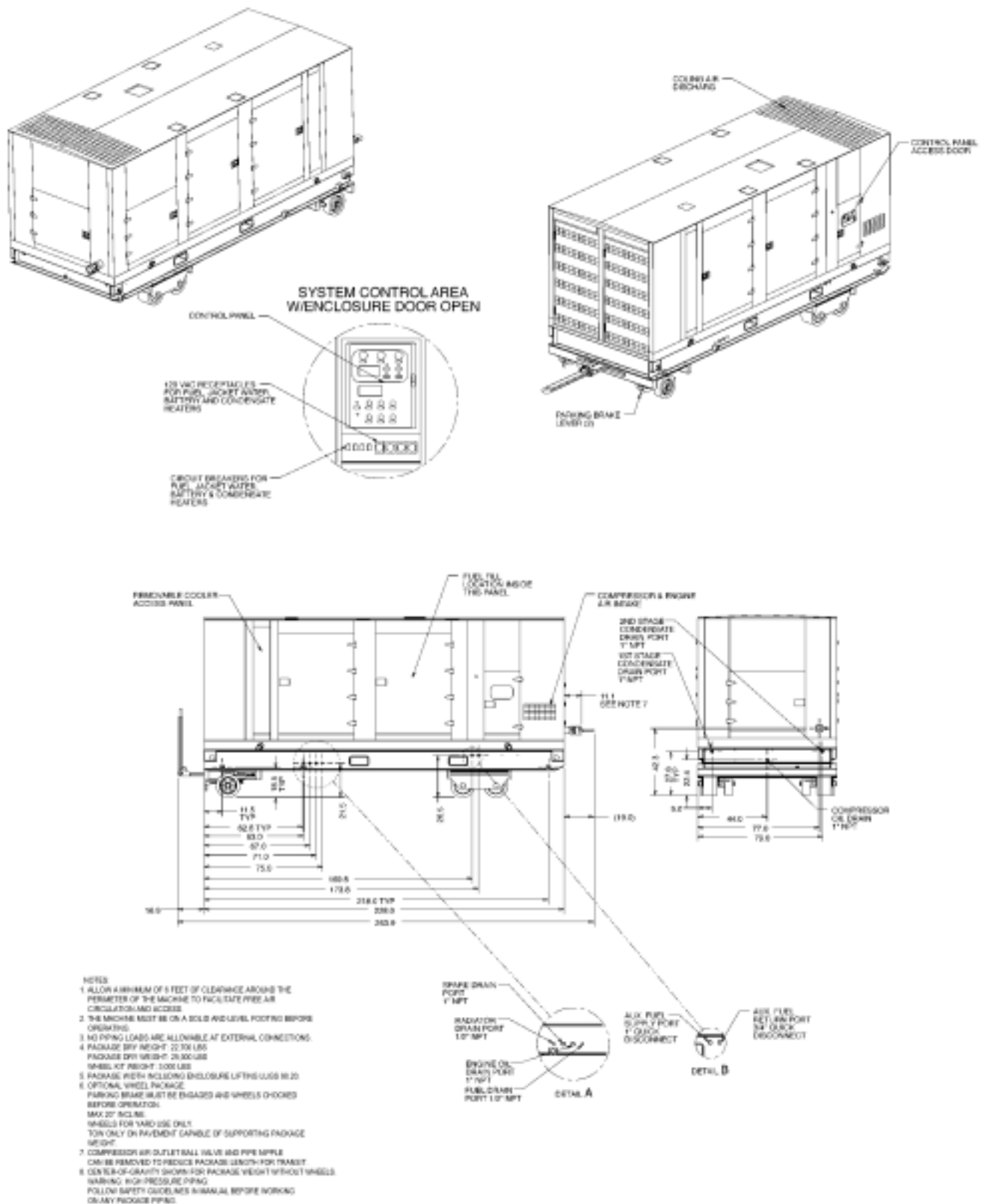
Section 3 SPECIFICATIONS

Figure 3-1, Part 1 of 2 Typical Identification (See Figure 3-1A for Part 2)

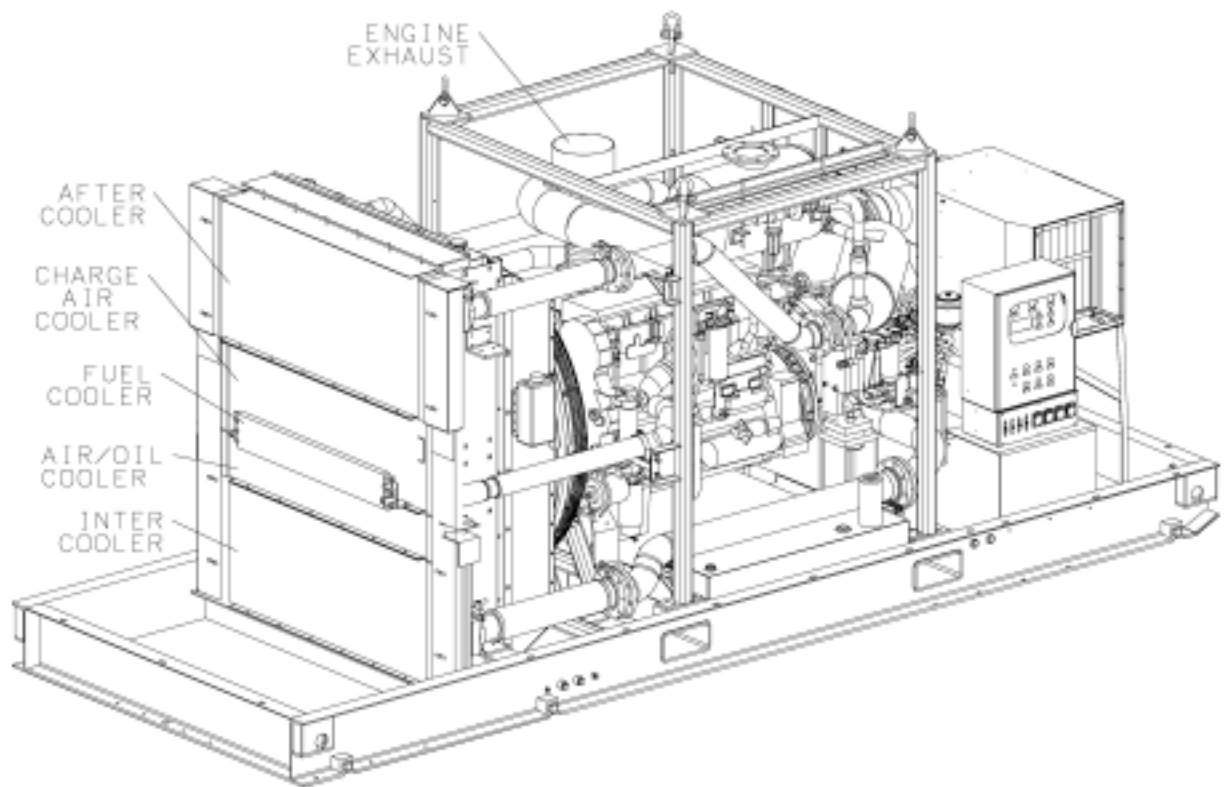
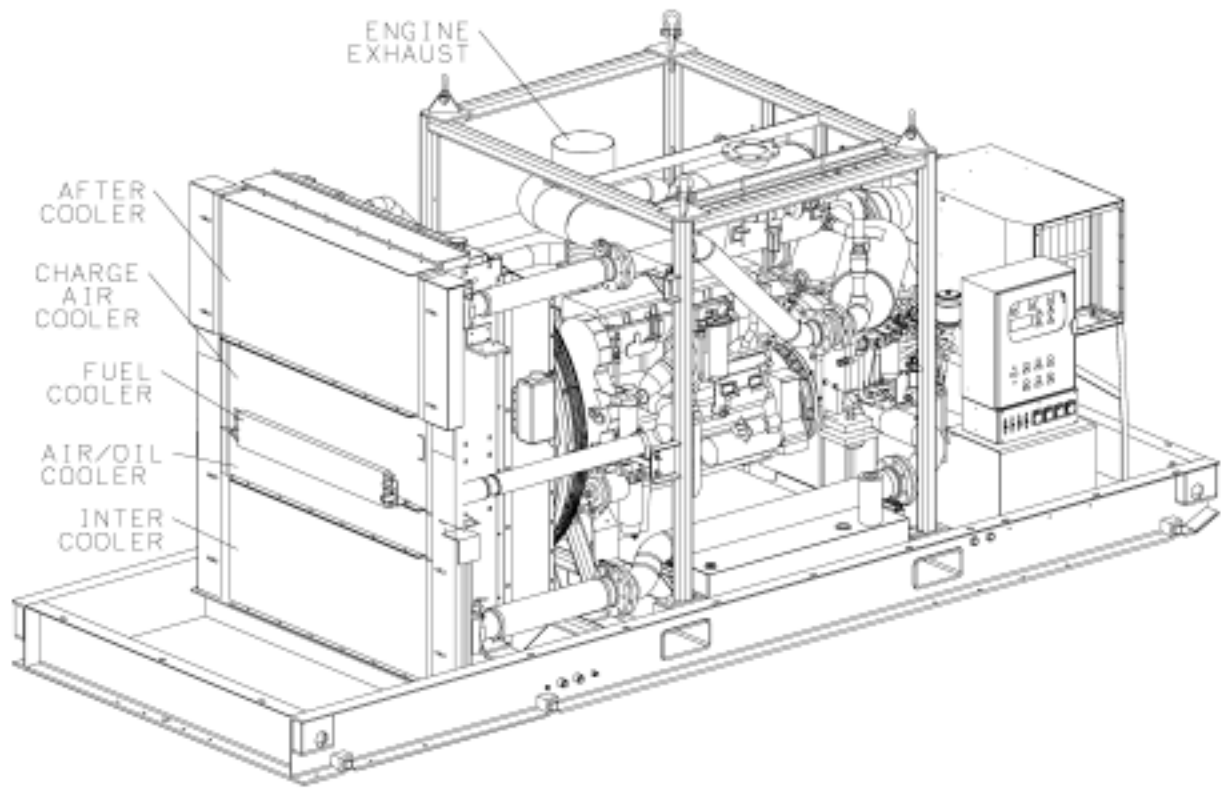


Section 3 SPECIFICATIONS

Figure 3-1A, Part 2 of 2 Typical Identification (See Also Figure 3-1)



Section 4 COMPRESSOR SYSTEMS



Section 4

COMPRESSOR SYSTEMS

4.1 INTRODUCTION

The Sullair DE-18 Series Rotary Screw Air Compressor offers superior performance and reliability while requiring only minimal maintenance.

The compressor is equipped with a Sullair rotary screw compressor unit. Compared to other compressors, the Sullair is unique in mechanical reliability and compressor durability. No inspection is required of the working parts within the compressor unit.

As you continue reading this manual and come to learn how the compressor operates and is cared for, you will see how surprisingly easy it is to keep a Sullair compressor in top condition.

Read Section 7 (Maintenance) to keep your compressor in top operating condition. Should any questions arise which cannot be answered in the following text, call the Sullair Corporation Service Department.

NOTE

Your DE-18 Series compressor package utilizes a simple to operate yet sophisticated computerized controller. All pertinent use of this device is covered herein. Carefully familiarize yourself with it before attempting to operate the machinery.

4.2 DESCRIPTION OF COMPONENTS

The standard package includes a two-stage compressor and gear box assembly, a diesel engine, driveline system, a control assembly, an inlet air system, low pressure (LP) and high pressure (HP) silencing/discharge air systems, air cooling system, a load/unload control system, an oil lubrication and cooling system, and a sound attenuating enclosure, all mounted on a fabricated steel frame.

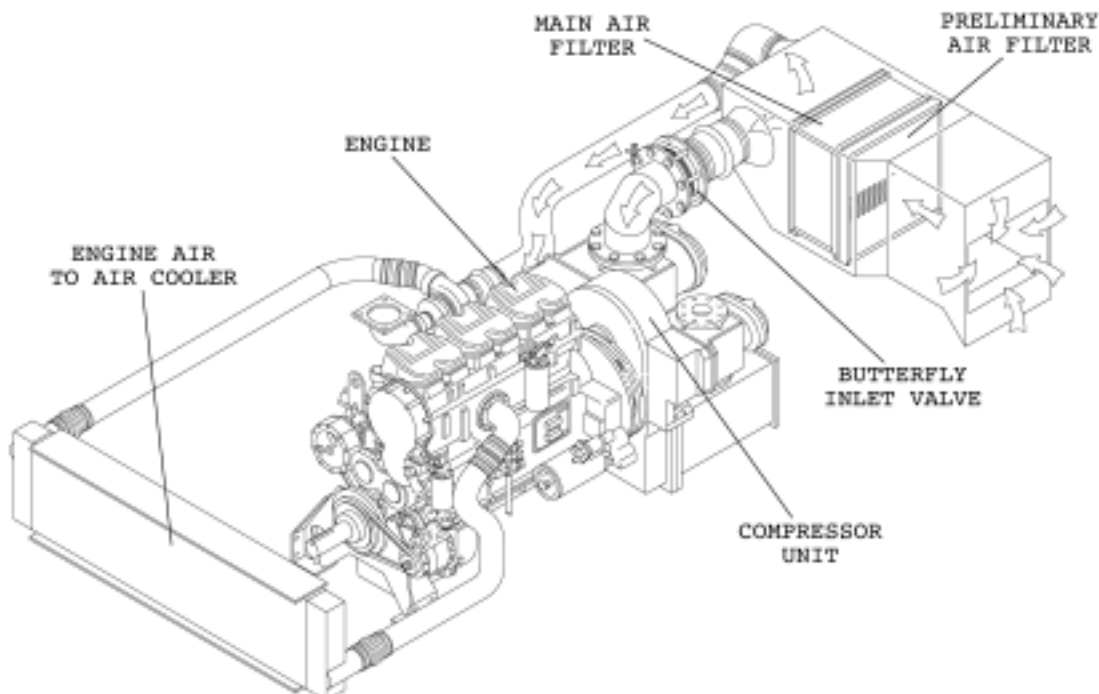
The Sullair compressor unit is driven by an industrial diesel engine designed to provide enough horsepower for more than adequate reserve at rated conditions. Refer to Engine Operator's Manual for a more detailed description of the engine.

Air-cooled heat exchangers are used on all models. An engine-driven fan is used to ventilate the interior of the sound attenuating enclosure. The controller assembly is easily accessible for servicing behind a hinged and locked separate enclosure panel door.

The engine cooling system is comprised of a radiator, high capacity fan, and thermostats. The high capacity fan draws air through the radiator, keeping the engine at the proper operating temperature.

The same fan also cools the compressed air after each stage of compression and the compressor

Figure 4-1 Compressor Inlet System



Section 4

COMPRESSOR SYSTEMS

lubrication system. Prior to passing through the radiator, the fan air also passes through the inter-cooler, aftercooler and compressor fluid cooler (which are mounted adjacent to the radiator).

The same fan also cools the engines intake air supply and fuel. Prior to passing through the radiator, the fan air passes through the engines turbo intake air cooler and fuel cooler. The engine intake air passes through the air cooler, which helps remove the heat which was introduced by the engine's turbocharger. The fuel air-cooler helps cool the diesel fuel for optimum combustion.

The engine is coupled to the compressor with a non-lubricated vulcanized rubber disc and drive flange-type coupling. The package is supplied with a fuel tank large enough to keep the compressor running at full load through a full shift. Also supplied are auxiliary fuel supply and return connections for longer periods of operation.

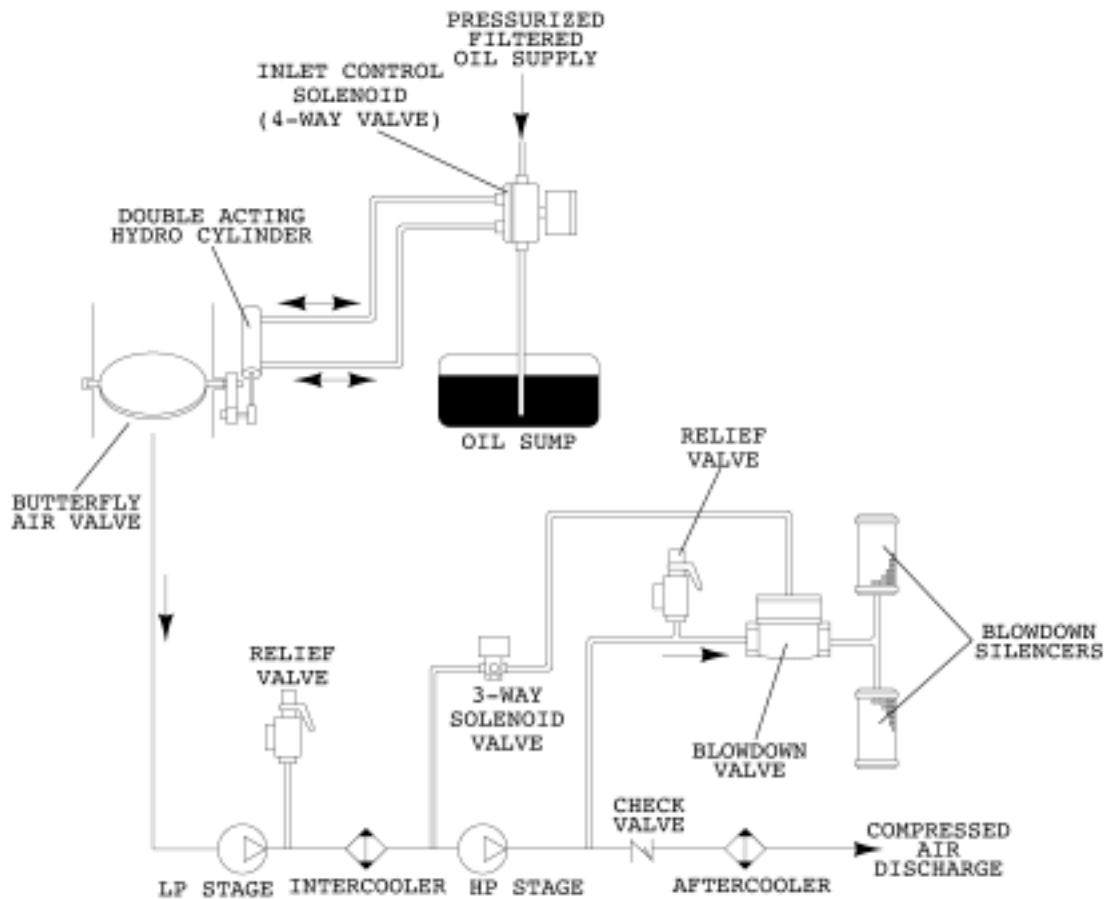
4.3 COMPRESSOR UNIT, FUNCTIONAL DESCRIPTION

DE-18 Series compressors feature a two-stage, oil free, rotary screw design. The rotor profiles and stators, some of which are protected with anti-corrosion coating, deliver near pulse-free compressed air to meet your demands. The rotor shafts are mounted on anti-friction bearings and are sealed by floating carbon ring/stainless steel cage assemblies. Both stages are driven by a common bull gear and speed optimized individual pinions, and are precisely mounted to the rigid gear box. Timing gears synchronize each male/female rotor pair for contact-free operation.

A gear-type pump, coupled to the main drive shaft, supplies the required lubricating oil to the gears, anti-friction bearings and cooling to compressor jacket. An all-metal tank, integrally mounted to the compressor, serves as the sump for the lubrication system.

The compressor/gear box assembly is driven by the engine via a torsionally soft, flexible shaft coupling.

Figure 4-2 Load/Unload Capacity Control System



COMPRESSOR SYSTEMS

The engine is mounted to the gear box through a rigid adapter which maintains the gear box and engine shafts in optimum alignment and allows the driveline assembly to be supported by soft, vibration isolating rubberized mounts.

4.4 AIR INLET SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 4-1. The compressor inlet system consists of a heavy duty two-stage, dry type air filter mounted inside the canopy and connected to the compressor and engine inlets via tubing and flexible hose. In addition, stainless steel tubing from the air filter housing to the control panel restriction switches is provided.

A decrease in compressor inlet pressure, caused by the collected airborne dirt, is sensed by the controller and a filter maintenance announcement is displayed.

4.5 COMPRESSOR LOAD/UNLOAD CAPACITY CONTROL SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 4-2. The purpose of the capacity control system is to regulate the compressed air supply to the demand. It consists of the inlet throttling valve and blowdown subsystems integrated with the controller. Primary modes of operation are described below (for illustration purposes, 100 psig

service operation will be used):

DEFAULT STATES

Default states for the inlet valve and blowdown subsystems are closed and fully open respectively. The inlet control and blowdown control solenoids are both de-energized in the closed state and energized in the open state.

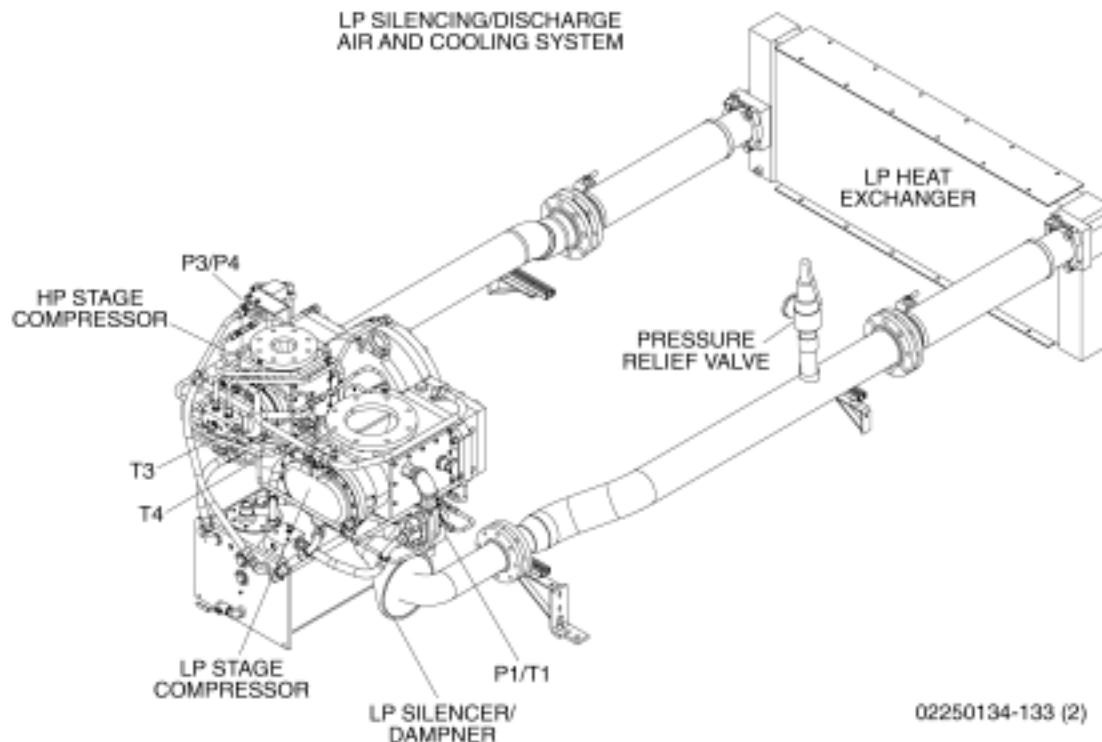
For the inlet valve subsystem, a closed or de-energized inlet control solenoid, results in no pressurized oil being applied to the hydraulic actuator, and therefore the inlet butterfly valve is closed, allowing a minimum amount of inlet air to enter the compressor.

NOTE

Some minimum volume of air must be allowed to enter the compressor when running in order to avoid excessive inlet depression.

For the blowdown subsystem, a closed or de-energized blowdown solenoid valve, means no pilot air pressure is being routed to the pneumatic blowdown valve, and therefore the blowdown valve is open. The pneumatic blowdown valve uses a mechanical spring to keep the valve open if pilot air is not routed to the valve's diaphragm chamber. Once the controller signals the blowdown solenoid

Figure 4-3A Silencing/Discharge Air and Cooling Systems

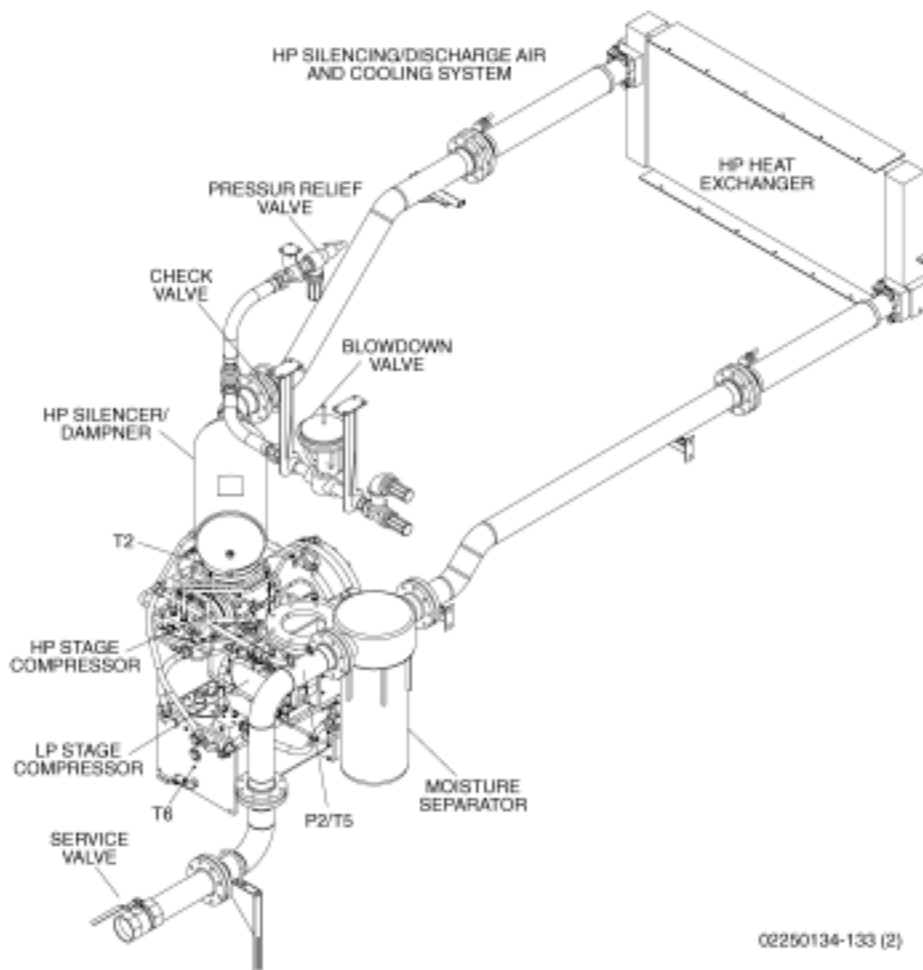


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COMPRESSOR SYSTEMS

Figure 4-3B Silencing/Discharge Air and Cooling Systems



to close, LP pilot air is routed to the blowdown valve. Pilot air pressure of 10 psig exceeds the mechanical spring force, closing off the flow of HP discharge process air to the blowdown silencer and atmosphere.

This combined inlet/blowdown configuration ensures the air compressor defaults to a safe unloaded condition in the unlikely event of control signal loss, a component failure, or loss of power. A closed inlet and open blowdown state are also the conditions for these subsystems during the UNLOAD MODE.

START MODE: 0 TO 30 PSIG (0 TO 2.1 BARG)

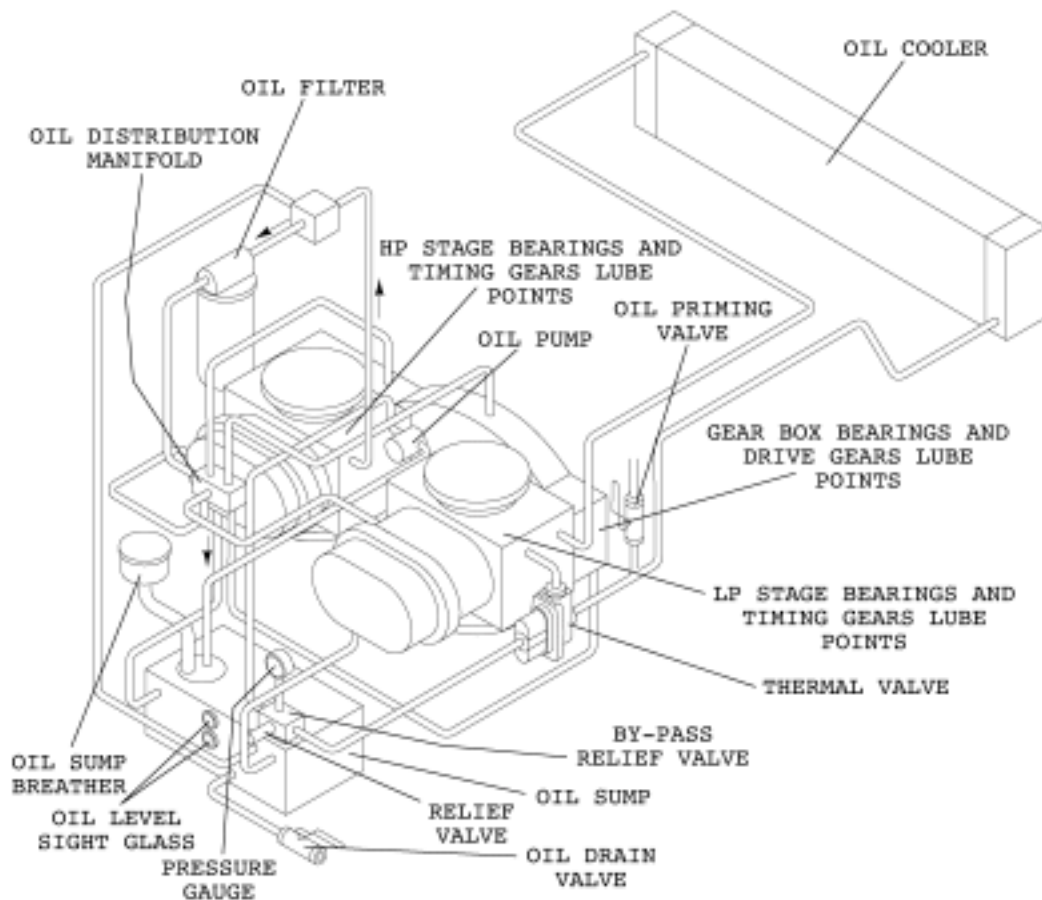
When the start button on the control panel is depressed, the unit starts and ramps up to 1400 RPM. During this mode, the controller maintains its default closed (de-energized) signal to the inlet control solenoid valve, keeping the inlet butterfly valve

closed. The same controller signal maintains its default closed (de-energized) signal to the blowdown subsystem solenoid valve, resulting in the pneumatic blowdown valve staying open.

FULL LOAD MODE: 70 TO 135 PSIG (4.8-9.2 BARG)

After five minutes at 1400 RPM, or the coolant temperature reaches 130°F, the controller will modulate the engine speed between 1400-1840 RPM until the system set pressure is reached. Simultaneously, the controller sends a signal to the inlet control solenoid, opening (energizing) the solenoid valve. The valve directs pressurized oil to the actuator, which extends its control rod opening the butterfly valve to ingest air. The same controller signal is sent to the blowdown solenoid valve, opening (energizing) the solenoid and allowing LP pilot air to be routed to the pneumatic blowdown valve diaphragm. The pneumatic force overcomes the

Figure 4-4 Lubrication System



spring force and closes the blowdown.

UNLOAD MODE: ≥ 135 PSIG (≥ 6.9 BARG)

If the demand for compressed air falls below supply, system line pressure (P2) should increase as the discharge check valve closes. When P2 exceeds set point pressure (100 psig) the controller will signal the engine to reduce speed and the inlet control solenoid to close (de-energizing), routing oil pressure to the actuator retract position and closing the inlet butterfly valve. The same signal will close (de-energize) the blowdown solenoid, removing LP pilot air pressure from the pneumatic blowdown valve, opening the valve so that process air will be evacuated to the silencer.

4.6 COMPRESSOR COOLING AND SILENCING SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 4-3A, 4-3B and 4-5. As air is discharged by each compressor stage, it is sequentially routed to:

- a silencer/dampener to reduce noise and pressure

pulsations caused by the compressor.

- heat exchangers to cool the compression process.
- combination separator/drains to remove liquids condensed in the heat exchangers.

The LP stage silencer is a reactive pipework sized to dampen lower frequency air pulses, while the HP stage silencer is a reactive vessel sized to dampen higher frequency pulses.

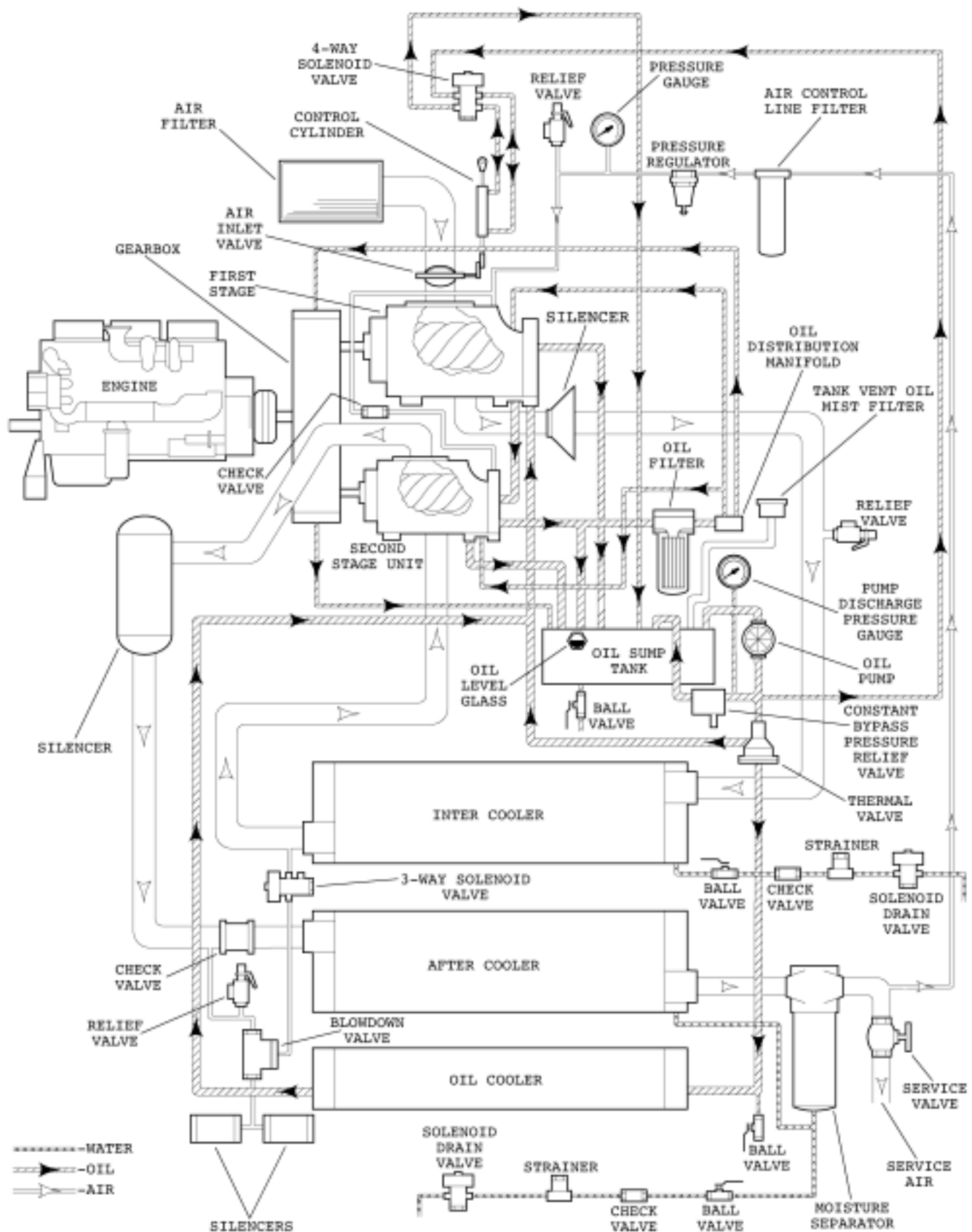
4.7 COMPRESSOR LUBRICATION SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figures 4-4 and 4-5. The DE-18 Series Compressor delivers oil-free compressed air, but it requires lubricant to maintain its high speed bearings and gears in running order.

A gear-type pump draws lube oil from the integral sump and delivers it at a rate of 25gpm (79Lpm), and a pressure equal to approximately 100 psig (7.6 barg). An external bypass valve maintains the set flow, while protecting the pump against undesir-

Section 4 COMPRESSOR SYSTEMS

Figure 4-5 Piping and Instrumentation Diagram



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COMPRESSOR SYSTEMS

able over-pressures. A thermal mixing valve, set to open at 85°F (29°C) ensures fast oil warm-up by bypassing oil around the heat exchanger. The lube oil is sequentially pumped through a heat exchanger, the first and second stage compressor cooling jackets, a high efficiency, replaceable element filter, and a multi-port manifold, where the 100°F (38°C) filtered outflow is distributed to bearing and gear lubrication points on the compressor and the gear box. Filtered oil is also used to actuate the hydro actuator linked to the inlet control valve.

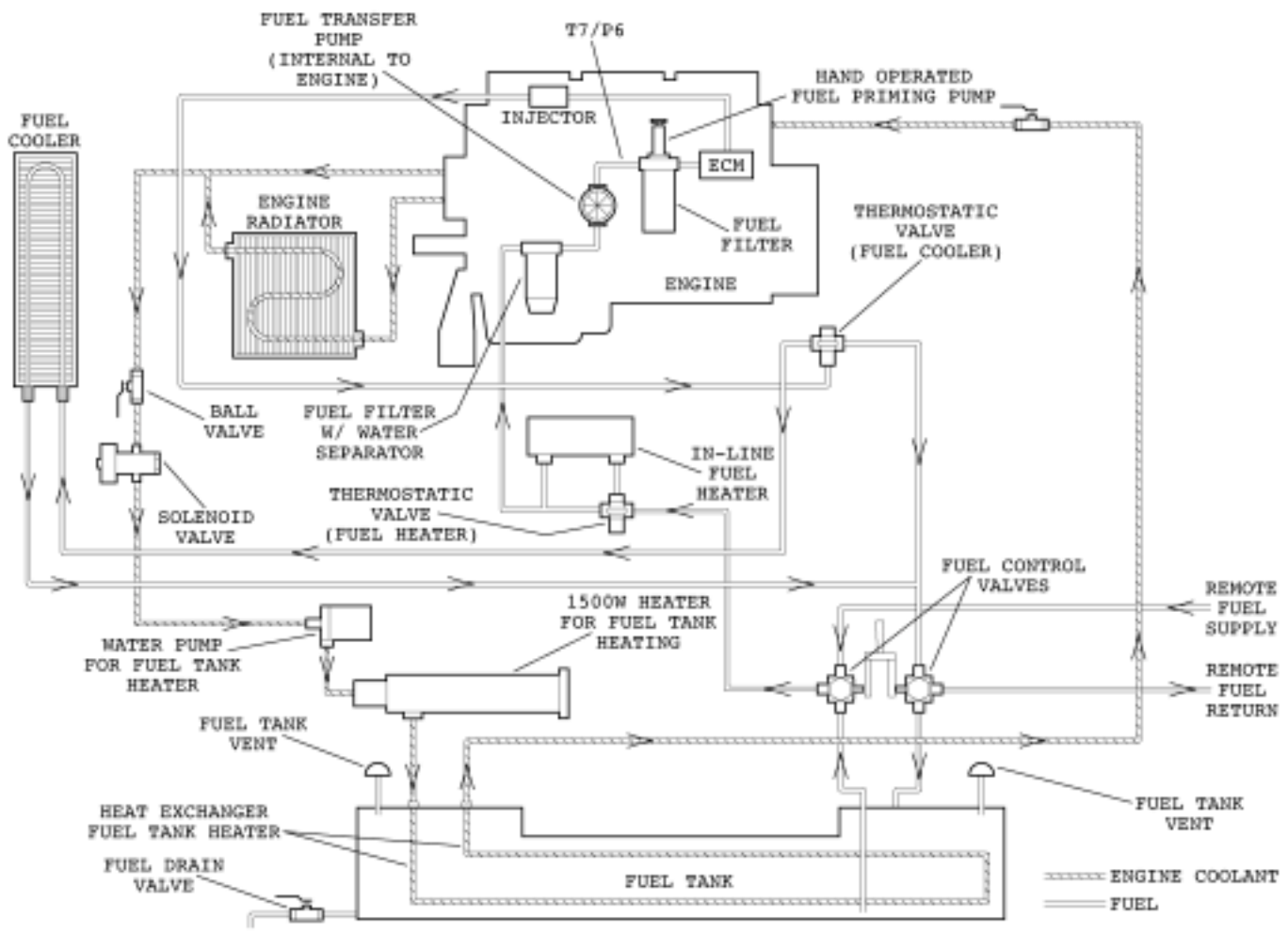
The controller senses and displays the filter outlet pressure and temperature. As a safety measure, unless oil pressure builds up to 30 psig (2.1 barg) within 15 seconds after startup, the controller shuts down the unit. In addition, if the pressure drop across the filter ports exceeds 20 psi (1.4 bar), the controller displays a maintenance requirement message.

All lubricated points return the oil to the sump by gravity. Vents on the compressor timing gear covers and the gear box are also piped into the sump, to avoid releasing oil vapor. The sump is vented to atmosphere via a breather which includes an oil vapor trap.

4.8 BUFFER AIR SYSTEM, FUNCTIONAL DESCRIPTION

A small supply of cooled, compressed air is taken downstream of the aftercooler moisture separator, and used to feed the buffer air system. This compressed air goes through a control air filter, and then through a pressure regulator, where the pressure is reduced from the compressor operating pressure to 2-4 psig (0.14-0.28 barg) unloaded (read from locally-mounted pressure gauge). This clean, compressed air supply is fed to both first and second compression stages. This air provides a positive pressure buffer to the seals between the compression air and oil sides of the stages, assuring oil-free air. The buffer air is then drained from

Figure 4-6 Fuel and Coolant System



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each stage.

4.9 ENGINE FUEL SYSTEM, FUNCTIONAL DESCRIPTION

Refer to Figure 4-6. Fuel can be supplied to the engine by either the on board tank or through the auxilliary connections on the outside of the base frame. The onboard tank is capable of holding enough fuel for an eight hour shift. The electronic fuel gauge on the controller senses fuel level and will announce a low fuel warning and shutdown the compressor package before the fuel system loses its prime. When using the auxillary fuel connections the fuel control valve handle must be in the down position to allow fuel to be routed properly. Auxillary fuel must be supplied at a height above the fuel control valve to ensure adequate gravity feed.

Fuel drawn to the fuel control valves is directed to the fuel heater thermostat which helps ensure proper fuel temperature by directing fuel to the in-line fuel heater, if necessary. From here the fuel enters the engine. Refer to the engine manual for details. Fuel returning from the engine is routed to a fuel cooler , if required, and then back to the fuel

control valves before returning to the fuel tank. Fuel inside the tank is warmed by a separate engine coolant system for cold weather applications. When power is supplied to the fuel warmer receptacle, a water pump circulates coolant through the fuel tank after being heated by a 1500 watt heater.

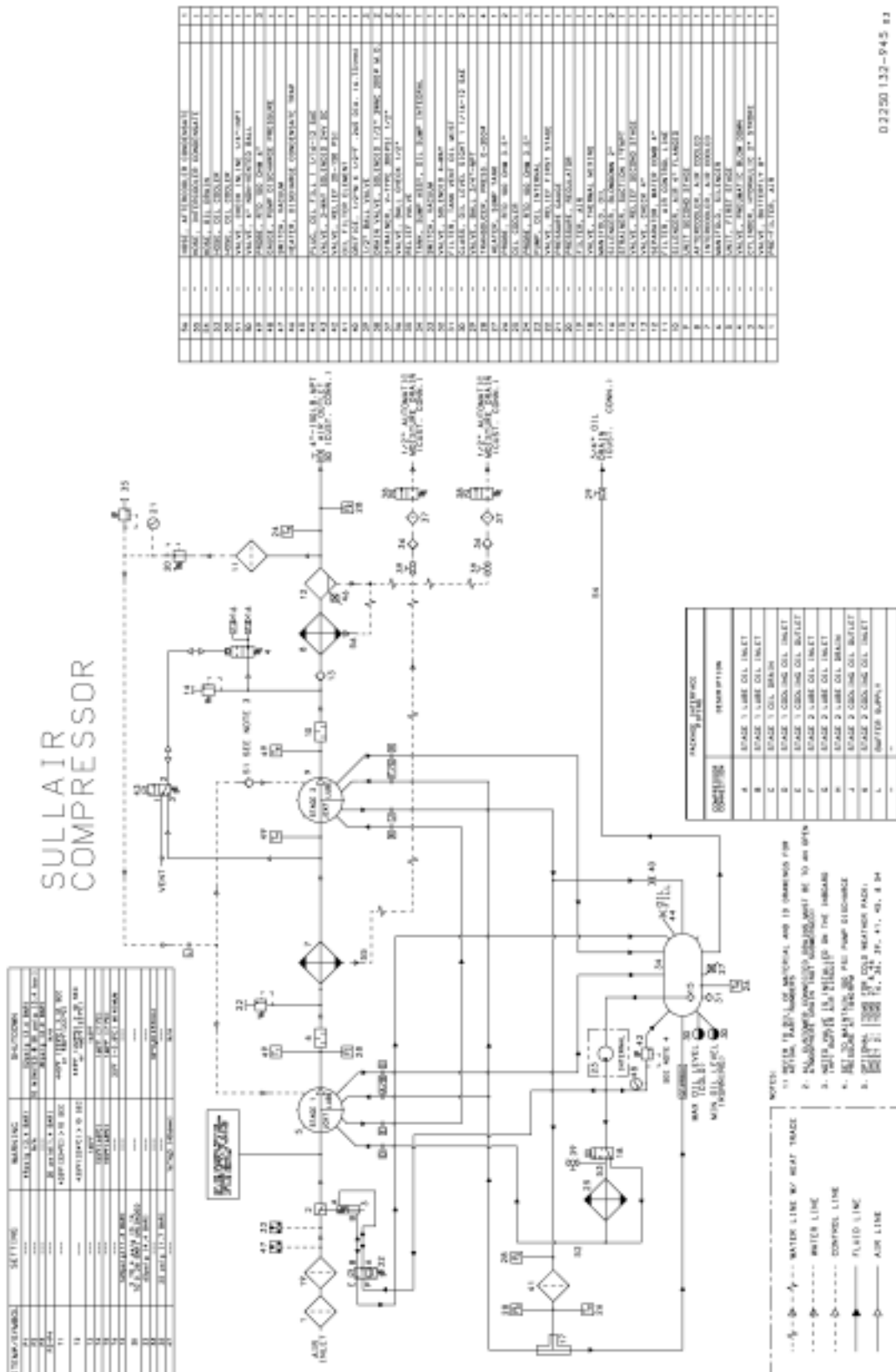
4.10 SYSTEM DIAGRAMS

Refer to Figure 4-7 & 4-8. The system wiring diagram is shown on Figure 4-8 and includes instrumentation and controller connection. The system P&I diagram is shown in Figure 4-7A (compressor) and 4-7B (engine). This diagram provides an understanding of how the various components are connected hydraulically and pneumatically.

4.11 OPTIONAL COLD WEATHER PACKAGE, FUNCTIONAL DESCRIPTION

Refer to Figure 5-1. DE-18 series compressors are capable of reliable operation in ambient conditions from -40°F (-40 °C) to 115°F (46°C). To prevent line freezing and other system issues the compressor package heater system must be energized at temperatures below 55°F (12°C). Power is supplied through four 120V AC - 15 AMP connections below the control panel. Engine and compresor thermostats regulate the individual heaters to help keep

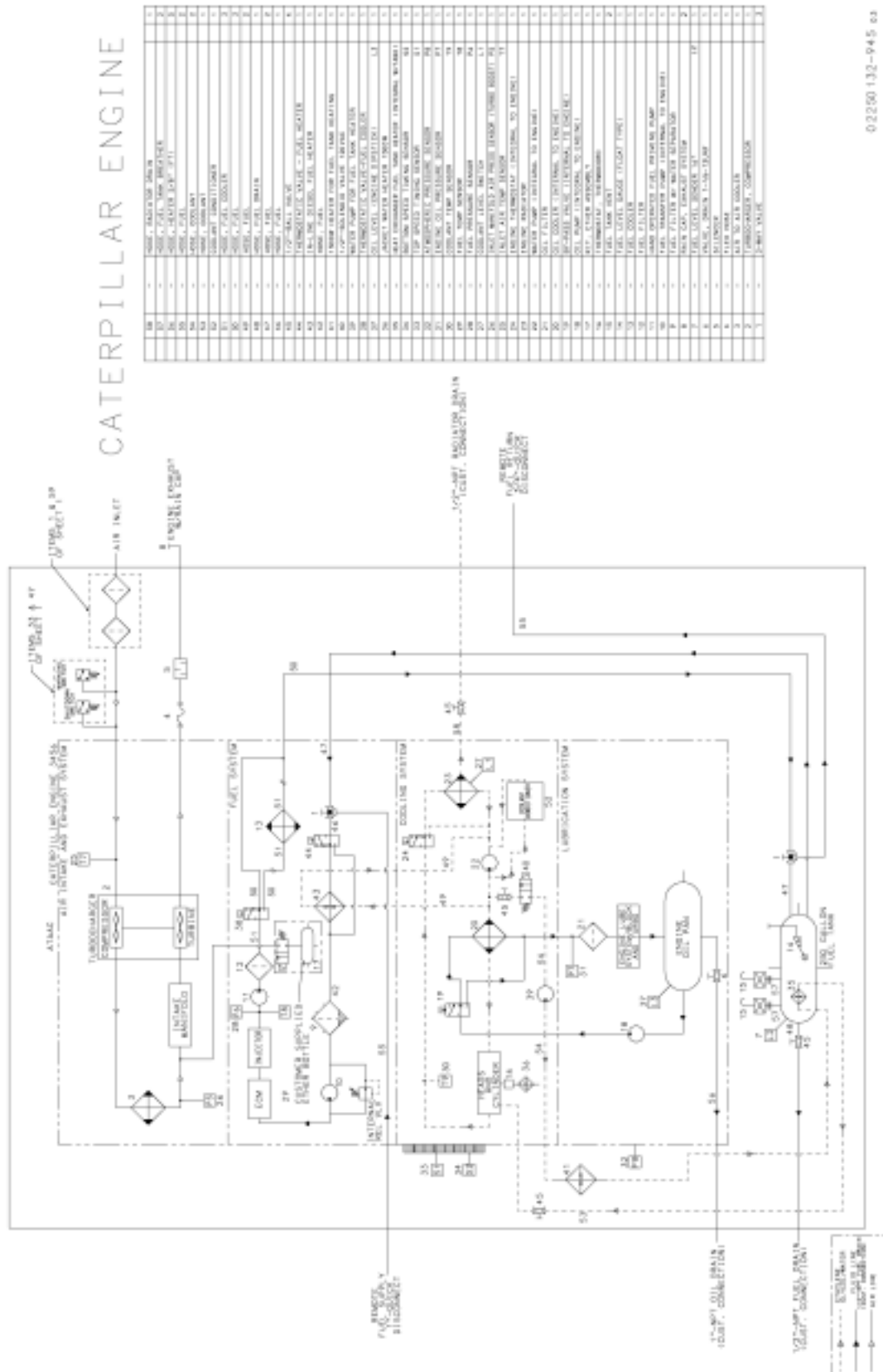
Figure 4-7A Compressor Wiring Diagram



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Figure 4-7B Engine Wiring Diagram



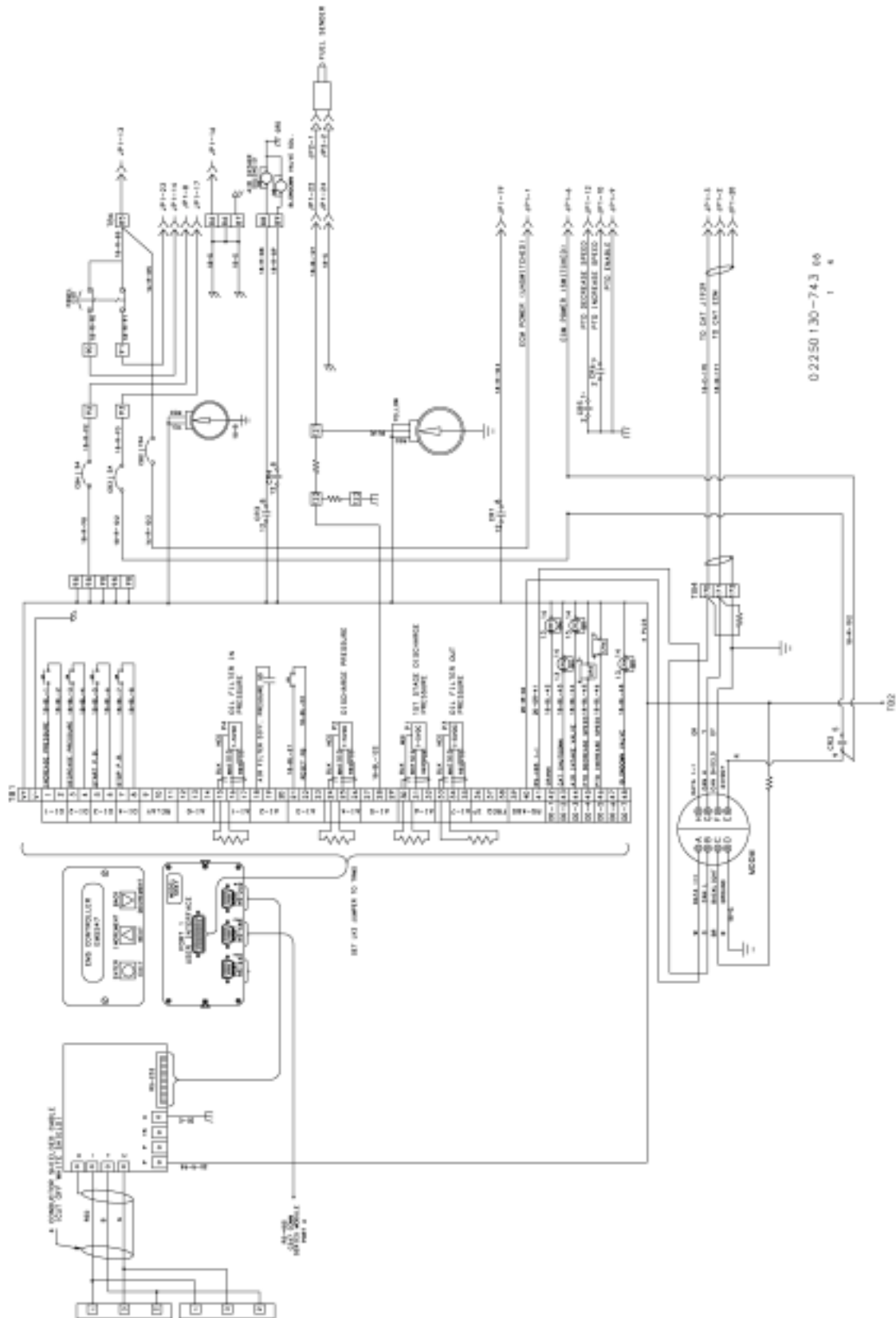
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NOTES

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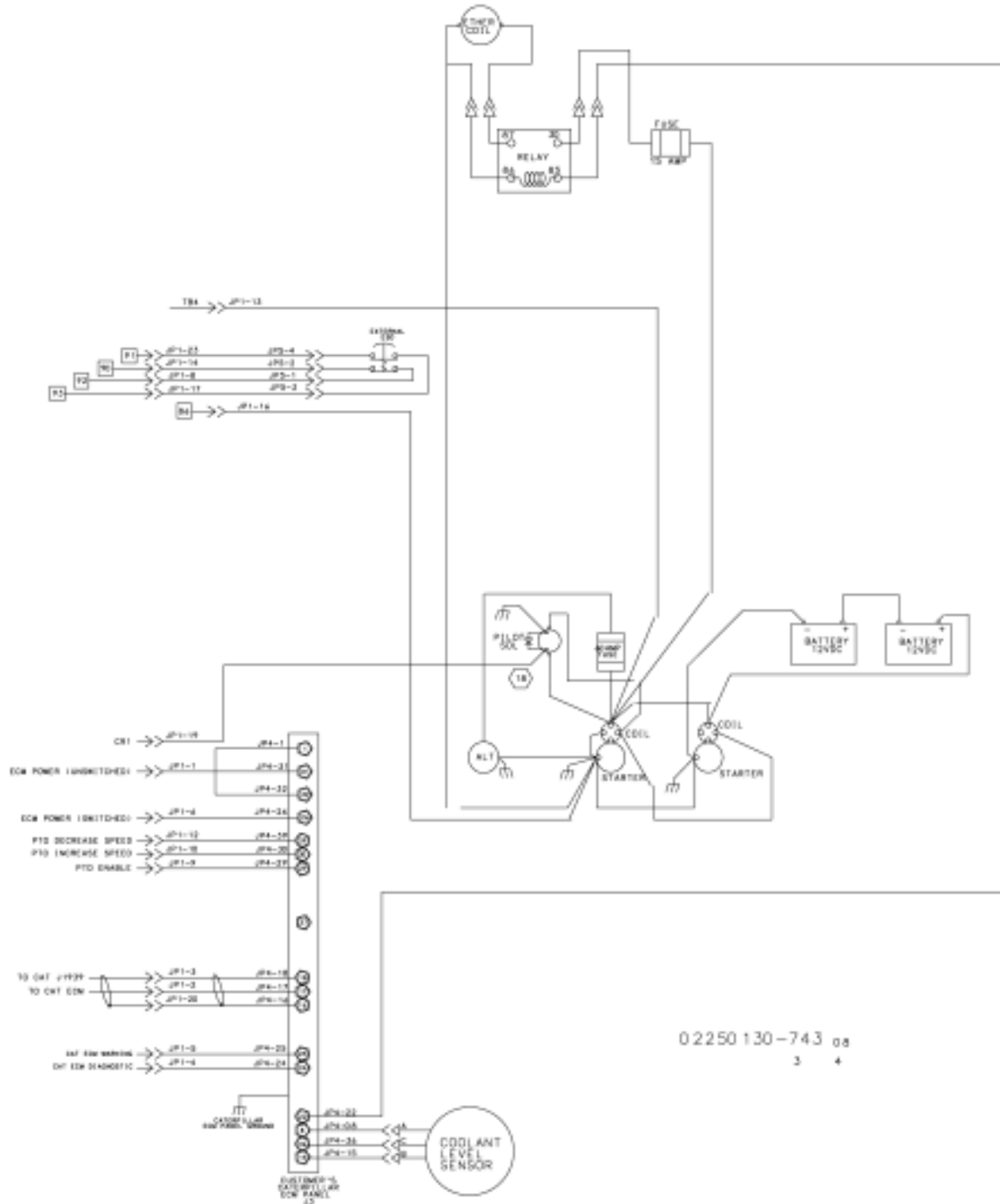
COMPRESSOR SYSTEMS

Figure 4-8 System Wiring Diagram



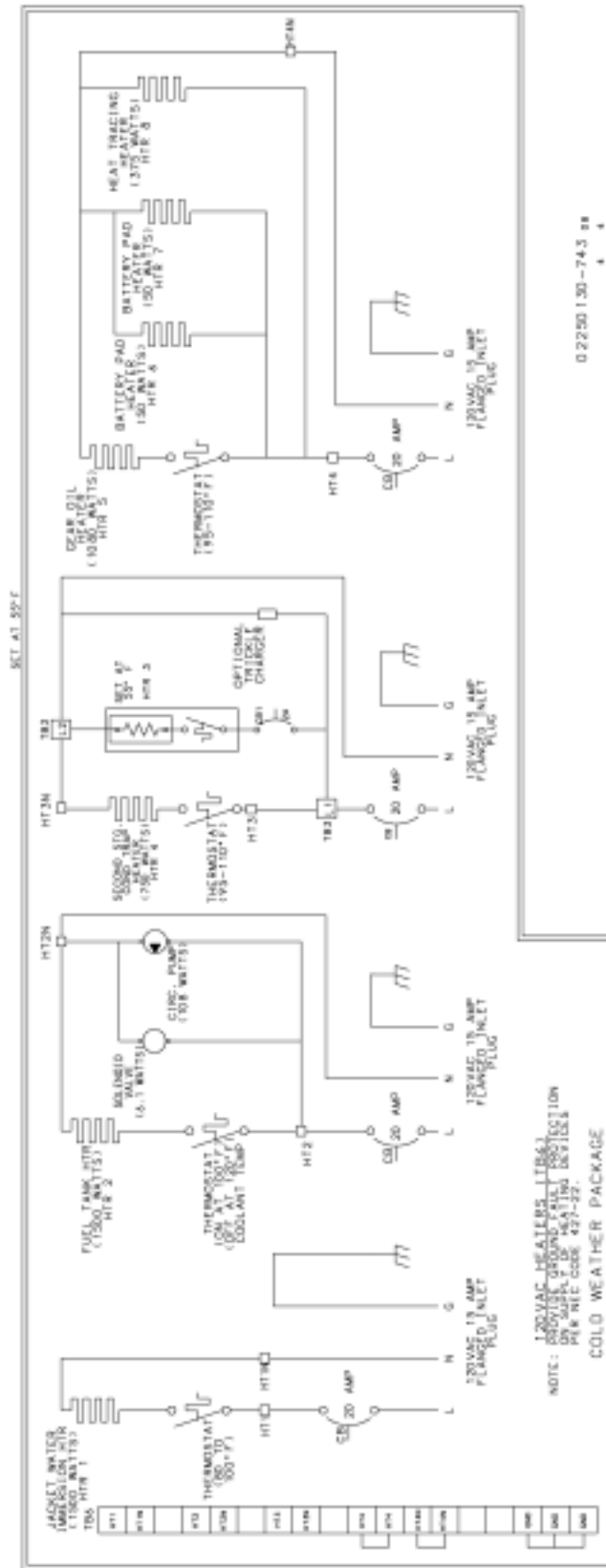
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Figure 4-8 System Wiring Diagram



Section 4 COMPRESSOR SYSTEMS

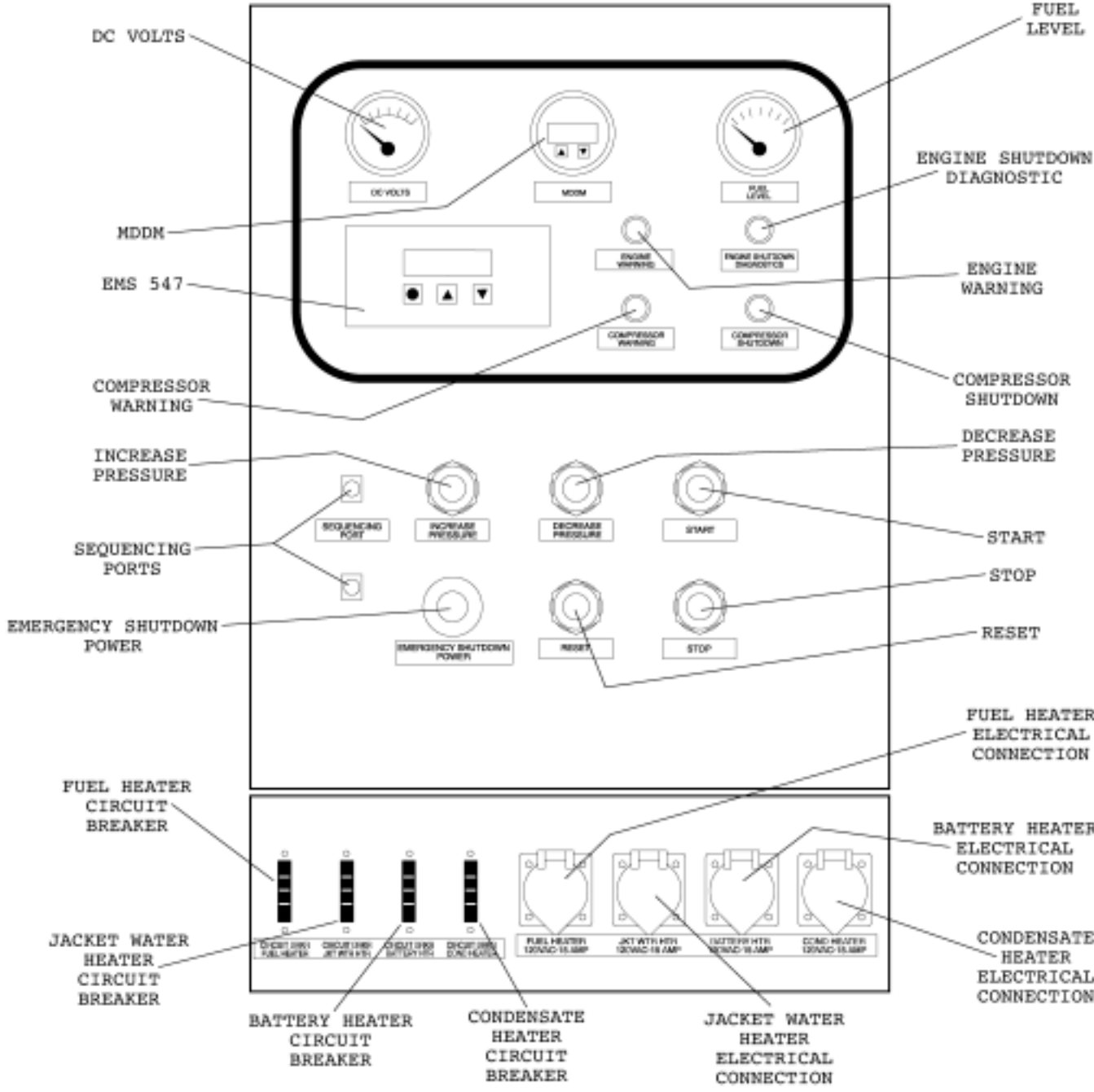
Figure 4-8 System Wiring Diagram



NOTES

Section 5 CONTROLLER

Figure 5-1 Control Panel



Section 5

CONTROLLER

5.1 DESCRIPTION

The control system consists of a Murphy EMS 547 engine controller and an MDDM that receives data from a CAT C-16 diesel engine. The panel also includes analog gauges for voltage, and fuel level. The system is powered by the main 24VDC battery. The controller will enable outputs at the appropriate times for starting, running, stopping and controlling the speed based on the discharge pressure.

5.2 FEATURES:

Refer to Figure 5-1 for identifying the following features, which are located on the control panel.

5.2.1 EMS 547

The EMS 547 contains the following keys:

Enter- Used to enter the "PROGRAM SELECT MODE" by entering a code number, which provides access to examine and change certain set points. Refer to the controller sequence of operation for details.

Up Arrow- Used to scroll through the display in an ascending order and in parameter set point change mode to increment a value.

Down Arrow- Used to scroll through the display in a descending order and in parameter set point change mode to decrement a value.

5.2.2 MDDM

The MDDM is the primary interface between the EMS 547 and the engine ECM, and has the following features:

Up Arrow- Used to scroll through the display in an ascending order.

Down Arrow- Used to scroll through the display in a descending order.

5.2.3 BUTTONS/INDICATORS

CONTROL PANEL

The control panel contains six buttons as follows:

Increase Pressure- Used to increase the package operating pressure set point. This parameter can be set to a maximum pressure of 135 psig.

Decrease Pressure- Used to decrease the package operating pressure set point. This parameter can be set to a minimum pressure of 70 psig.

Start- Used to start the compressor package.

Stop- Used to stop the compressor package.

Reset- Used to clear a warning or shutdown condition.

E-Stop- Used to immediately shut down the compressor package. A second E-Stop button, which serves the same function, is located on the outside

of the package.

LAMP INDICATORS

Embedded into the front of the panel are four lamps. Each lamp has the following purpose:

Engine Warning- The yellow light will flash a code to announce a violation of an engine warning set point. A decal describing these codes is attached to the panel door. For additional code description, refer to the Engine Operator's Manual.

Engine Shutdown- The red light will flash a code to announce a violation of an engine shut down set point. A decal describing these codes is attached to the panel door. For additional code description, refer to the Engine Operator's Manual.

Compressor Warning- The yellow light will turn on to announce a violation of a compressor warning set point. A message describing the warning will be displayed on the EMS.

Compressor Shutdown- The red light will turn on to announce a violation of a compressor shut down set point. A message describing the shutdown will be displayed on the EMS.

ANALOG GAUGES

Voltage- Indicates battery voltage

Fuel- Indicates the fuel level in the tank. The tank capacity is 245 gallons.

5.2.4 CONNECTORS

Two 3-pin connectors located on the front of the panel can be used for sequencing multiple unit operation.

5.3 PARAMETER/ STATUS DISPLAY

5.3.1 EMS 547

PARAMETER

By default the actual line pressure (P2) and the set point pressure will be displayed. Other parameters can be viewed by pressing the "UP" or "DOWN" arrows. The following parameters can be viewed:

- Interstage Pressure, P1 xxx psi
- Discharge Pressure, P2 xxx psi
- Oil Filter Discharge Pressure, P3 xxx psi
- Oil Filter Inlet Pressure, P4 xxx psi
- Oil Filter Differential Pressure, P4-P3 xxx psid
- 1st Stage Discharge Temperature, T1 xxx °F
- Second Stage Discharge Temperature, T2 xxx °F
- Oil Temperature at Bearing Manifold, T3 xxx °F
- Second Stage Inlet Temperature, T4 xxx °F
- Package Discharge Temperature, T5 xxx °F

- Sump Oil Temperature, T6 xxx
- Engine Speed, xxx RPM
- Fuel Level, xxx %
- Battery, xxx VDC
- Engine Coolant, xxx °F
- Engine Oil, xxx psi
- Load, xxx %
- CAT Status, Normal, Alarming or Shutdown

STATUS DISPLAY

The following are the various status messages that indicate the state of the compressor:

PWRUP DLY- This message will be displayed for five (5) seconds when the power is applied to the panel. The purpose of this mode is to block false shutdowns, until five (5) seconds have passed. The purpose of the delay is for the analog instrumentation to have a chance to come up to their proper readings.

STANDBY- This message indicates that no class "A" shutdowns exist, and the engine is ready for starting.

RESETTING- This message will be displayed while a shutdown or an alarm is being reset.

CRANK ON- This message will be displayed while the Crank is engaged during the cranking cycle.

CRANK OFF- This message will be displayed while the Crank is dis-engaged during the cranking cycle.

WARMUP- This message will be displayed while the five (5) minute Warmup Delay has not expired, or the engine coolant temperature has not reached the Warm up temperature setpoint.

RUNNING- This message will be displayed while the compressor is operating.

COOLDOWN- This message will be displayed while the Cooldown Delay is timing.

SHUTDOWN- This message will be displayed while the system is shutdown.

The following are the status messages that indicate the state of the engine:

NORMAL- Ready to run or running properly.

ALARMING- Engine warning is present.

SHUTDOWN- Engine shutdown is present.

5.3.2 MDDM

The following engine parameters can be viewed by pressing the "UP" or "DOWN" arrows:

- Engine RPM, xxx RPM

- Coolant Temperature, xxx °F
- Oil Pressure , xxx psi
- Engine Load, xxx %
- Fuel Pressure, xxx psi
- Engine Load, xxx %
- System Volts, xx v
- Manifold Temperature, xx °F
- Boost Pressure, xx psi
- Fuel Rate, xx gph
- Fuel Temperature, xx °F
- Engine Hours, xx hr

5.4 EMS 547 SEQUENCE OF OPERATION AND PARAMETER SET-UP.

Reference the Murphy Sequence of Operation Manual which accompanies this compressor package for details.

NOTE

Parameter adjustments are for qualified personnel only. Changing these adjustments could affect operation of the compressor package and should be considered dangerous or damaging to equipment and personnel.

TYPE OF SYSTEM

The control system for this project is one Murphy EMS 547 engine controller, communicating to a Murphy C267 I/O expansion module and a Murphy MDDM that receives engine data including the Engine RPM over the SAE J1939 data bus from a CAT 3456E or C16 diesel engine. The system is powered by the 24VDC cranking battery. The CAT 3456E or C16 diesel engine is driving a Sullair 2 stage oil free screw air compressor. The controller will enable outputs at the appropriate times for starting, running, stopping and controlling the load as measured by the discharge pressure. The engine speed will be varied in order to maintain the discharge pressure. Set points and other adjustable factors are stored in non-volatile EEPROM memory.

At any time, there is a shutdown or alarm condition, the reset button must be pressed to reset the system. In the case of an alarm, when the reset push button is pressed, if the alarm condition has already cleared itself, then the alarm display and compressor warning / shutdown light will be cleared. If the alarm condition is still present, then the alarm display and the compressor warning / shutdown light

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will remain on. In the case of a shutdown, the unit will be locked out from running or being restarted until the reset push button is pressed. Once the reset push button is pressed, and the shutdown condition has been cleared, the compressor warning / shutdown light will be turned off, and the unit will go into standby mode to be ready to start. Note: The reset push button does not reset the MDDM.

The engine warning and engine shutdown / diagnostics lights are controlled by the CAT ECM.

The Emergency Stop push button must be pulled out to power the controller.

The maintained discharge pressure setpoint is stored when a normal stop takes place. When powered up, the controller will reset the setpoint pressure to the last stored maintained discharge pressure setpoint. After installing a new chip, before starting for the first time, the maintained discharge pressure setpoint should be inspected on the front display of the EMS547. (Its factory default is 125 psi)

There is a 10-second delay when the unit is started up, during this time the program name and the "MAX PRS@ x PSI" is displayed. When the 10 seconds expires it goes to the top of the front displays, displaying the P2 pressure and the current set pressure at this point the user may navigate freely.

When changing the MAX PRS@ (P-65 adjustment) to a different mode nothing happens until the user presses the enter key once. If a change was made the unit will do a factory default with the new pressure mode defaults and then it will reboot. Do not keep the enter key depressed.

5.4.1 STARTING SEQUENCE

If no class A shutdown conditions exist, then the controller will be in the STANDBY state. 10 seconds later the Cat ECM power relay will be energized. The controller must be in the STANDBY state before the engine can be started. The controller will wait for a start signal from the start push button while in the STANDBY state.

When the controller receives the signal to start from the push button, the following will occur:

The crank relay are energized. When the engine RPM rises above the Crank Disconnect setpoint the cranking cycle will cease, the controller will enter the RUNNING state. The Air Intake Valve relay and the Blowdown relay are energized when the engine rpm reaches the MIN RPM setpoint and the Discharge Pressure P2 is less than the Setpoint Pressure.

The Crank Cycle begins by energizing the Crank Output for the Crank Delay time period (P-8 adjustment). Then it will de-energize the Crank Output for the Rest Delay time period (P-9 adjustment). This Crank Cycle will repeat for Crank Attempts times (P-3 adjustment). If the engine fails to start, the controller will shutdown on an OVERCRANK Failure.

5.4.2 RUNNING SEQUENCE

The Internal Hourmeter begins to record engine running hours. The Class B lockout time delay (P-6 adjustment) will begin. A warm-up timer (P-10 adjustment) starts.

When the adjustable preset Class B Lockout delay expires, all class B shutdowns and alarms become activated. When the warm-up timer expires, or the engine temperature is read to be greater than the warm-up setpoint (P-11 adjustment), the unit is ready for loading.

When the compressor first loads, the throttle will stay at Minimum RPM until the discharge pressure stops increasing. The increase is measured by the discharge pressure increasing by the amount of the Increase Pressure Setpoint (P-50 adjustment) within the Increase Pressure Delay Setpoint (P-49 adjustment) time. This adjustment combination allows us the most flexibility for detecting the pressure increase.

Once the discharge pressure stops increasing, the pressure will then throttle the engine between the minimum RPM setpoint (P-13 adjustment) and the maximum RPM setpoint (P-14 adjustment) of the Caterpillar Engine.

The engine speed will be controlled by the PTO increase and PTO decreases speed outputs to maintain the discharge pressure at the setpoint pressure.

The PTO speed control outputs are tuned by the following Adjustments.

The RPM Deadband (P-15 adjustment) setting is used to create a deadband (an inactive area) of throttling around the Minimum RPM (P-13 adjustment). The engine speed is inherently an unstable signal and will drift back and forth across the true speed setpoint. This is further agitated with valves opening and closing. This deadband minimizes the instability's effect on the load sequencing.

The Upper and Lower Deadband settings (P-52 & P-51 adjustment) are used to create a deadband (an inactive area) of throttling around the Setpoint

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Pressure. When the discharge pressure is below the Setpoint Pressure minus the Lower Deadband Pressure (P-51 adjustment), the Engine speed will be increased. When the discharge pressure is above the Setpoint Pressure plus the Upper Deadband Pressure (P-52 adjustment), the Engine speed will be decreased.

Load Pressure (S-14 adjustment) is the pressure relative to the Setpoint Pressure where that the compressor will be loaded. When the discharge pressure drops to the Setpoint Pressure minus the Load Pressure Setpoint the air intake solenoid will be energized to open, loading the compressor.

Unload Pressure (S-13 adjustment) is the pressure relative to the Setpoint Pressure where that the compressor will be unloaded. When the discharge pressure rises to the Setpoint Pressure plus the Unload Pressure Setpoint the air intake solenoid will be de-energized to close, unloading the compressor.

The Throttle Minimum Pulse setting (P-16 adjustment) is used to adjust the minimum pulse detectable by the throttling system.

The Throttle Maximum Pulse setting (P-17 adjustment) is used to adjust the maximum pulse sent to the throttling system.

The Throttle Sensitivity setting (P-19 adjustment) is used to adjust the overall gain or speed of the throttling system.

The Throttle Feedback Delay (P-18 adjustment) is used to delay further action by turning the increase and decrease outputs OFF for this amount of time. This gives the engine a chance to respond and the pressures a chance to settle for a proper sampling value.

The Speed Control PID's Proportional Setpoint (P-59 adjustment) calculates the ON time for the increase and decrease outputs. This proportional setpoint influences the PID directly, the farther the controlled value is away from the setpoint the longer the ON time period towards the setpoint by the weight of this factor. This function is most useful for normal PID applications.

The Speed Control PID's Integral Setpoint (P-60 adjustment) influences the PID accumulatively, the longer the controlled value is away from the setpoint the longer the ON time period towards the setpoint by the weight of this factor. Also this function may produce oscillation if the value is too high.

The Speed Control PID's Derivative Setpoint (P-61 adjustment) influences the PID's acceleration; this

controls the compensation to acceleration in order to hit the setpoint faster by the weight of this factor. This function is used with fast controls that tend to overshoot their setpoint and may also produce oscillation if the value is too high.

The Unload Gain Speed (P-62 adjustment) controls the unload time versus load time. This function is used with a control that you wish the unload time to be longer or shorter than load time (a setting of 1.0 being the same time).

While running, the drain solenoid valves will be energized to open for 3 seconds (S-4 adjustment), and de-energized to close for 2 minutes (S-5 adjustment). This will happen the entire time the compressor is running after the engine has warmed-up, and before the engine is in a cooldown stop.

At any time the controller is powered-up, the setpoint pressure can be changed by pressing the increase setpoint pressure push button, or by pressing the decrease setpoint pressure push button.

5.4.3 MASTER / SLAVE COMMUNICATIONS AND CONTROLS

WARNING

NEVER WORK ON THIS EQUIPMENT UNLESS THE ESD BUTTON IS PUSHED IN. THESE UNITS ARE SUBJECT TO AUTOMATIC STARTS THAT MAY BE LIFE THREATING.

CAUTION

READ THIS ENTIRE SECTION BEFORE ATTEMPTING TO SETUP ANY UNITS FOR SEQUENCING. THE OPERATOR MUST HAVE A THOROUGH UNDERSTANDING OF THESE UNITS, ESPECIALLY SECTION THIS SECTION, PRIOR TO SETTING UP ANY UNITS TO SEQUENCE.

5.4.3.1 Sequencing Set-up Procedure

(It is important to follow steps in specific order)

1. Determine the desired pressure setting (135/150 mode) and which unit will be the Master and determine the number of slave units. Note: The Master

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should always be at one end of the line of units and the slaves should be numbered sequentially starting with #1 from the Master. (Example: "master, Slave 1, Slave 2, etc.)

- Starting with the master, change the "setup lockout (S-7) to "YES".
- Set slave # (S-8) on the master to number of slaves that will be controlled (example: 5 units total so there will be 4 slaves (SLV4) and one master.)
- Set master communications enable (S-9) to "YES"
- Verify that the pressure mode is correctly set (P-65) (135/150).
- Set the desired discharge pressure using the "increase/decrease" buttons on the front door.
- Leave unit powered, but "DO NOT" disable the setup lockout feature (S-7).
- SLAVE UNIT SETUP
- Go to slave #1 and change the "setup lockout (S-7) to "YES".
- Set slave # (S-8) to SLV1 (SLV1 is the first slave, SLV2 is the second slave, etc.)
- Verify that the master communications enable (S-9) is set to "NO"
- Verify that the pressure mode is set the same as the master (P-65) (135/150).
- Tune the desired discharge pressure using the "increase/decrease" buttons on the front door to read the same as the master.
- Leave unit powered, but "DO NOT" disable the setup lockout feature (S-7).
- CAUTION: When the unit is set as a slave and the discharge pressure is below the P2 override pressure (S-15 adjustable setpoint), the unit will start if the setup lockout is disabled.**
- REPEAT STEPS 0 through 0 for all slaves in the series.
- Return to the master and connect a communications cable between each unit. Caution: Do not connect a complete loop, a cable should go from the master to slave 1, 2, 3, etc., but there should not be a cable from the last slave back to the master.
- Once all the cables are installed, push in the ESD on "ALL" units. Finally, beginning at the last slave, power the units by turning the ESD. **CAUTION:** Once the ESD is turned and the unit powers up, the controller will have a short delay showing the program number and pressure mode. When the screen changes to Standby the unit may start

immediately.

- Continue powering all remaining units, powering the master unit last.
- Check each unit's P2 pressure reading and tune the setpoint pressure accordingly if P2 is less than the P2 override setpoint (S-15 adjustable setpoint). (Note: The way in which the piping and hoses are connected, and whether a unit is running or not will affect the P2 pressure reading from unit to unit. Ideally with a unit running, the setpoints should be adjusted so that the units are tuned to maintain the same pressure.)

This documentation describes the intercommunications of multiple units hooked together through their EMS547's Port 4 (RS232)(Converted to RS485 and accessible on the front of the panel via two special connectors labeled "Sequencing Ports"). A customer-supplied cable connects the Master and Slave units.

5.4.3.2 Slave Communications Operations

The Unit's Slave Operations are valid while the Master Communications Enable (S-9 adjustment) select is set to "NO".

When a Unit's Slave Communications Address (S-8 adjustment) is set to "Independent" the unit will not follow remote commands given to it by the master. This being said it is still a good idea to power down the unit before working on the equipment.

When the Unit's Slave Communications Address (S-8 adjustment) is set to Slave #X the Master will treat this unit as it's Slave #X. Each Slave must be set to a sequentially unique address.

5.4.3.3 Master Communications Operations

The Unit's Slave Operations are disabled when the Master Communications Enable (S-9 adjustment) select is set to "YES".

WARNING

ONLY ONE UNIT SHOULD BE SELECTED AS MASTER FOR CORRECT OPERATION.

The Master Unit's Slave Communications Address (S-9 adjustment) will be set to the number of Slaves it will control, not including itself. The Master Unit's will be addressed as the last Unit.

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Example: If there is one Master Unit and 3 Slave Units, set the Master's Slave Communications Address (S-8 adjustment) to SLV#3. This will cause the Master Unit to be treated as the 4th Slave Unit.

The Master will control all of the slaves that have not been locally started by the Start Pushbutton, and it will regain control when the unit is locally stopped by the Stop Pushbutton.

5.4.3.4 Master / Slave Start/Stop Operations.

All Units may still be started and stopped via each panel's pushbuttons. This will start and stop the local control of the unit. If a Unit is setup as a Slave with the Slave Communications Address (S-8 adjustment) set to "Independent" this is also the only way to start and stop the unit. Also, while a Unit is under local control the Master may not start and stop the unit.

The P2 Pressure being below the Load Pressure setpoint (S-14 adjustment) will start the first unit. After one unit is loaded, additional units may be started if the Load RPM% of all of the loaded units rises above the Increase Demand% set-point (S-10 adjustment) for the Demand "+" Delay time (S-11 adjustment). The units are added indirectly by P2 as the demand effects the Load RPM%.

Until only one unit is loaded additional units may be stopped if the Load RPM% of all of the loaded units fall below the Decrease Demand% setpoint (S-10 adjustment) for a fixed 120 seconds. The P2 Pressure being above the Unload Pressure setpoint (S-13 adjustment) for a fixed 120 seconds will stop the first unit. The units are subtracted indirectly by P2 as the demand affects the Load RPM%.

Special condition, if a Slave loses communications, not configured for Independent operation, it will subject to an override start. If the P2 pressure drops below the P2 OVRD STRT setpoint (S-15 adjustment) a start will be initiated. The stop button can stop this override start unless the P2 pressure is still below the override pressure in which case the unit may start when you release the stop button. If stop is desired you may enter the S-#'s to change the "Slave" to "Independent" and then press the stop button. If a unit must remain off while being used as a Slave press the ESD button or disable the remote starting of the Slave by changing the Slave address to "Independent" and cycling the ESD button (in and then out).

The Master Unit controls an internal sequencing list that arranges the order of the units that are called to

run. As units are made available, they are added to the end of the sequencing list. As units are made unavailable through shutdowns or being locally started, they are removed from the sequencing list and the other units shift towards the first (Lead Unit) position. When the Master first powers up, the units are arrange in the sequence list as the Master communicates to each Slave. As this is happening, the availability from the slaves will not have been read yet and for this reason the Master will insert itself at the top of the list, then the slaves will be appended to the end of the list as they are recognized as being available. As the last unit is stopped, the sequencing list is modified to even out the wear on the units. The first (Lead Unit) position is put on the end of the sequencing list and the other units shift towards the first (Lead Unit) position.

There are diagnostic displays in the Line 1 Selection of the P-#'s (P-1). It is near the end of the list before the I/O displays.

"D1: 1234•5678•90T"

The numbers are that of the Units being called to run. The "T" means that this Unit is being called to run. The uncalled Units will have "0"s in their respective place. Only in the Master will starting and stopping of Units be apparent. The characters of the uncalled units will be displayed with "+"s when the master is planning on starting another Unit. And "-"s when the master is planning on stopping another Unit. If all available Units are running ignore the "+"s and if only one Unit is running ignore the "-"s.

This display lets you know the percentage of the Loaded RPM. RPM LD xx.x%"

5.4.4 STOPPING SEQUENCE

When the stop push button is pressed, the engine will be brought to minimum RPM, the blowdown relay will be de-energized. After the air intake delay (P-54 adjustment) has timed out, the intake solenoid valve (4-way valve) will be de-energized to close. The cool-down timer (P-12 adjustment) will start. The timing of the cool-down will appear on the second line of the display and count down ("COOLDOWN X SEC").

The controller will go to the COOLDOWN state for the COOLDOWN duration.

After the COOLDOWN timer expires the CAT ECM relay is de-energized to stop the engine. The drain solenoid valves are energized for 60 seconds, the drain on stop delay (S-6 adjustment), for a final drain.

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The controller will return to the STANDBY state to wait for the next start signal.

5.4.5 SHUTDOWN SEQUENCE

Upon a compressor / EMS generated shutdown, the shutdown output to the RUN ENABLE (CAT ECM and MDDM) will be de-energized to shutdown the engine, and the compressor warning / shutdown light will be turned on. If the CAT ECM shuts down the engine, the EMS will sense that by the input tied to the Warn light driven by the CAT ECM.

In the case of an EMS generated shutdown, the cause of the shutdown will be displayed on the second line of the EMS547 display.

The EMS controller can be RESET by pressing and momentarily holding the RESET push button. After the shutdown has been RESET the RUN ENABLE (CAT ECM and MDDM) relay is re-energized.

If the CAT ECM causes the engine to shutdown the status line will read "STS: CAT SD", the RUN ENABLE (CAT ECM and MDDM) relay will remain ON until the user does a RESET

NOTE

Only on a CAT generated shutdown will the CAT ECU and the MDDM stay powered. When the reset button is pressed, power is broken to the CAT ECU and the MDDM.

On all other shutdowns, power is cut to the CAT ECU and the MDDM and power will remain "off" until the reset button is pressed and released. Once the reset button is released, there will be a delay of several seconds before the CAT ECM and the MDDM regain power.

5.4.6 ALARM SEQUENCE

Unlike a shutdown, an alarm condition will alert an operator but will not shutdown the engine.

When an alarm condition exists, the cause of alarm will be displayed on the EMS547 screen. The compressor warning light will be turned on. This is a common warning light.

The operator can press the reset push button to reset the alarm if the alarm condition has been cleared.

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CONTROLLER INPUTS AND OUTPUTS

EMS547 Inputs and Outputs

547 PIN	547 Pin Capability	Input Use	Signal Type	Description
1	Analog Input #4	Analog	1-5 VDC	Discharge Pressure P2
2	Analog Input #0	Analog	Internal to S547	Battery voltage
3	Analog Input #7	Analog	1-5 VDC	Oil filter out Pressure P3
4	Analog Input #1	Analog	1-5 VDC	Oil filter in Pressure P4
5	Digital Input #1	Digital	Switch	Increase pressure setpoint push button
6	Digital Input #2	Digital	Switch	Decrease pressure setpoint push button
7	Output #1	Digital	Transistor	Crank relay
8	Battery+			
9	Battery+			
10	Output #2	Digital	Transistor	ECM power relay
11	Battery-			
12	Output #3	Digital	Transistor	Air intake valve relay
13	Frequency Input		Mag Pickup	Engine speed (for test only)
14	Analog Input #6	Analog	1-5 VDC	1st stage discharge pressure P1
15	Analog Input #5	Analog	0-5 VDC	Fuel level sensed from EG2F & EGF21
16	Analog Input #3	Digital	Switch	Reset push button
17	Analog Input #2	Digital	Switch	Engine air filter differential pressure
18	Digital Input #3	Digital	Switch	Start push button
19	Digital Input #4	Digital	Switch	Stop push button
20	Digital Output #4	Digital	Transistor	PTO decrease speed
21	Digital Output #5	Digital	Transistor	PTO increase speed
22	Digital Output #6	Digital	Transistor	PTO enable
23	Digital Output #7	Digital	Transistor	Blowdown valve relay
24	RS485-			MDDM
25	RS485+			MDDM

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C267 INPUTS AND OUTPUTS

247 PIN	247 Pin Capability	Input Use	Signal Type	Description
J1-1	Output #7	Digital	Transistor	Spare
J1-2	Output #5	Digital	Transistor	Compressor fault light
J1-3	Output #3	Digital	Transistor	Compressor alarm light
J1-4	Output #1	Digital	Transistor	Not used
J1-5	Power 2	Power	Power	
J1-6	Output #8	Digital	Transistor	Spare
J1-7	Output #6	Digital	Transistor	Spare
J1-8	Output #4	Digital	Transistor	Spare
J1-9	Output #2	Digital	Transistor	Drain #1/#2
J1-10	Power 2	Power	Power	
J2-1	Analog 6	Analog	4 - 20mA	Oil filter out temperature T3
J2-2	Analog 4	Analog	4 - 20mA	2nd stage discharge temp. T2
J2-3	Analog 2	Analog	4 - 20mA	1st stage discharge temp. T1
J2-4	Input 8	Digital	Switch	Spare
J2-5	Input 6	Digital	Switch	Spare
J2-6	Input 4	Digital	Switch	Spare
J2-7	Input 2	Digital	Switch	CADP1 compressor air differential pressure switch #1
J2-8	Frequency input	Frequency		Not used
J2-9	Power ground			
J2-10	Analog 7	Analog	0 - 5 VDC	Spare
J2-11	Analog 5	Analog	4 - 20mA	T6 comp. oil temperature
J2-12	Analog 3	Analog	4 - 20mA	T5 discharge temperature
J2-13	Analog 1	Analog	4 - 20mA	T4 2nd stage inlet temperature
J2-14	Input 7	Digital	Switch	Spare
J2-15	Input 5	Digital	Switch	Not used
J2-16	Input 3	Digital	Switch	CAT ECM diagnostic
J2-17	Input 1	Digital	Switch	CAT ECM warning
J2-18	Power 1			

P1 = Interstage Discharge Pressure

P2 = Discharge Pressure

P3 = Oil Filter Out Pressure

P4 = Oil Filter In Pressure

T1 = 1st Stage Discharge Temperature

T2 = 2nd Stage Discharge Temperature

T3 = Oil Filter Out Temperature

T4 = 2nd Stage Inlet Temperature

T5 = Discharge Temperature

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5.4.7 SETPOINT ADJUSTMENTS

Access to the System variables: An ENTRY CODE NUMBER is necessary to set the Micro-Controller to the PROGRAM SELECT MODE. In this Mode, Field-Programmable System variables may be examined and Set.

ENTRY CODE: Press the DOWN ARROW KEY on the front panel until the "TITLE PAGE" message appears. Then press the Center, "CIRCLE" Key to display the message, "PROGRAM ENTRY ACTIVE, ENTER CODE #:0". The UP ARROW and DOWN ARROW Keys are then used to cause the display to show the Entry Code Number.

Program Numbers (P #'s) and System Numbers (S #'s) are user variables within the program.

YOUR MICRO-CONTROLLER USES CODE# 61 for P-numbers.

YOUR MICRO-CONTROLLER USES CODE# 64 for S-numbers.

The Center, "CIRCLE" Key is pressed to enter the Code Number and to place the Micro-Controller into the PROGRAM SELECT MODE. The letter "P" followed by "-1" and a written indication of the Set Point (i.e. "LINE 1 SELECTION") will be displayed.

If an incorrect Number is entered or if the Entry is not completed within Ten (10) seconds, the display will indicate "PROGRAM ENTRY ATTEMPT FAILED". Pressing any key will clear the message and re-display the "TITLE PAGE" to allow another attempt to enter the Entry Code. The center "CIRCLE" key will cause the "PROGRAM ENTRY ACTIVE, ENTER CODE #:_____" message to again be displayed allowing for a new entry attempt.

SELECTING A VARIABLE NUMBER: Each Field-Programmable and System generated variable has been assigned a Unique "PROGRAM NUMBER". First refer to the Program Number Assignment List to determine the Number of the desired variable to be examined, set or altered. Then set the Micro-controller into the "PROGRAM SELECT MODE" as

described above. You may then press the UP ARROW and DOWN ARROW keys as necessary to advance forward or backward through the Program Numbers until the desired Program position has been reached.

When the desired Program is displayed, press the center, "CIRCLE" key a second time will cause the display to again show the Program Number and allow another variable to be selected.

NOTE: Once the Micro-Controller is in the "PROGRAM SELECT MODE", the center "CIRCLE" Key is used to "TOGGLE" between the Program Numbers and their associated, stored values. Each time the center "CIRCLE" Key is pressed the alphanumeric display will alternate between the Program Number and the value stored in its location.

CHANGING SYSTEM VALUES: After the desired Program Number has been selected and the variable has been displayed, the variable may be increased or decreased by operating the UP ARROW key or the DOWN ARROW key on the front panel.

NOTE: When the UP ARROW key or DOWN ARROW key is first pressed the value displayed will change by a count of One (1): If the Button is held down continuously, the Value will approximately double each .5 seconds until released.

RETURNING TO NORMAL DISPLAY FROM PROGRAM SELECT MODE: If no Buttons are pressed for two (2) minutes, the display will automatically revert to the "TITLE PAGE" display and the Micro-Controller will exit from the Program Select Mode. The ENTRY CODE NUMBER must be reentered to allow access to the Set Points.

If immediate return to normal display is desired, the DOWN ARROW key is pressed until position P-O (or S-O) is reached with the message, "CIRCLE TO EXIT" is displayed. When the center "CIRCLE" key is pressed the Controller will exit the Program Select Mode to the "TITLE PAGE" display.

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P NUMBER SETTINGS (CODE 61)

Note: Where a setting has an x/y values, the value of x refers to the 135 PSI mode and the value of y refers to the 150 PSI mode, see the Pressure selected in P-65 for its current value.

"P" NUMBER	DESCRIPTION	RANGE	DEFAULT SETTING
P-0	CIRCLE = EXIT		
P-1	LINE 1 SELECT	D1: XXXX•XXXX•XXX RPM LD XXX.X % P2 XXX PSI SET PRS XXX PSI *ENG XXX RPM STS: P1 XXX PSI P4 XXX PSI P3 XXX PSI P4-P3 XXX PSI T1 XXX F T2 XXX F T3 XXX F T4 XXX F T5 XXX F T6 XXX F TGT SPD XXX RPM *ENG OIL XXX PSI *LOAD XX.X % *CAT STS: FUEL LVL XXX % BATTERY XX.X VDC CTL ERR X (X=0 NO CTRL X=POS LOADING X=NEG UNLOADING) (Over-ride NO CTRL THRTL CTRL DISCH CTRL) I1-4 XXXX I5-12 XXXX XXXX O1-7 XXXX XXX	
P-2	LAST FAILURE		
P-3	CRNK ATTEMPTS	0 - 6	4
P-4	CRANK DSC RPM	300 - 500 RPM	500
P-5	CAT SD < RPM	500 - 1400 RPM	1100
P-6	B LOCKOUT DLY	0 - 120 SEC	15
P-7	SENDER DLY	0 - 999 SEC	30
P-8	CRANK DLY	0 - 30 SEC	15
P-9	REST DLY	15 - 120 SEC	30
P-10	WARMUP DLY	0 - 600 SEC	300
P-11	WARMUP SETPT	0 - 500 F	130
P-12	COOLDN DLY	0 - 600 SEC	300 / 480
P-13	MIN RPM	0 - 2000 RPM	1400

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P-14	MAX RPM	0 – 2000 RPM	1840
P-15	MIN RPM DB	0 – 100 RPM	30
P-16	THR MIN PULS	1 – 100	1
P-17	THR MAX PULS	1 – 100	5
P-18	THR FDBK DLY	1 – 100	3
P-19	THR SENSITVY	1 – 1000	25
P-20	SP RATE +	0 – 100 PSI	2
P-21	SP RATE -	0 – 100 PSI	2
P-22	HI P1 AL	0 – 100 PSI	49
P-23	HI P1 SD	0 – 100 PSI	52
P-24	LO P3 SD	0 – 50 PSI	30
P-25	HI P4-P3 AL	0 – 100 PSI	20
P-26	HI T1 AL	0 – 500 F	435 / 443
P-27	HI T1 AL DLY	0 – 100 SEC	10
P-28	HI T1 DLY SD	0 – 500 F	445
P-29	HI T1 SD DLY	0 – 100 SEC	10
P-30	HI T1 IMM SD	0 – 500 F	460
P-31	HI T2 AL	0 – 500 F	435 / 443
P-32	HI T2 AL DLY	0 – 100 SEC	10
P-33	HI T2 DLY SD	0 – 500 F	445
P-34	HI T2 SD DLY	0 – 100 SEC	10
P-35	HI T2 IMM SD	0 – 500 F	460
P-36	HI T3 AL	0 – 200 F	160
P-37	HI T3 SD	0 – 200F	165
P-38	HI T4 AL	0 – 500 F	155
P-39	HI T4 SD	0 – 500 F	160
P-40	HI T5 AL	0 – 500 F	155
P-41	HI T5 SD	0 – 500 F	160
P-42	LO P2 SD	-100 – 500 PSI	50
P-43	LO P2 DLY This shutdown is a Class "P" Shutdown and will begin timing when the unit is loaded.	0 – 900 SEC	600
P-44	T6 PERM Compressor Oil Temperature must rise above this setpoint to start the Compressor.	-150 – 200 F	25
P-45	LO FUEL L AL (-1000 = alarm disable)	-1000 – 100 %	15
P-46	LO FUEL L SD (-1000 =shutdown disable)	-1000 – 100 %	6
P-47	MIN SP P	75 – 100 PSI	75
P-48	MAX SP P	75 – (135 / 150) PSI	135 / 150
P-49	INC P DLY This is the time that is given to see the Discharge Pressure increase.	0 – 10 SEC	3
P-50	INC PRS This is the Increase in Discharge Pressure that must be seen before the Discharge Pressure is considered to be increasing.	0 – 100 PSI	1
P-51	LWR DB PRS Lower Deadband Pressure for the Setpoint Pressure.	0 – 500 PSI	1
P-52	UPR DB PRS Upper Deadband Pressure for the Setpoint Pressure.	0 – 500 PSI	1

Section 5

CONTROLLER

P-53	LOAD INC DLY The delay before the ramping up the RPM after opening the Air Intake Valve	0 – 100 SEC	2
P-54	AIR INTK DLY	0 – 10 SEC	5
P-55	UNLD DRN DLY	0 – 30 SEC	1
P-56	DRN PRS	0 – 500 PSI	25
P-57	STRT DLY This is the delay before a remote start is acknowledged.	0 – 1000 SEC	0
P-58	FUEL L GA (Resistance of Gauge)	0 – 1000 Ω	372
P-59	SPD PRP COEF Speed PID Proportional Coefficient	0.00 – 3.99	0.8
P-60	SPD INT COEF Speed PID Integral Coefficient	0.00 – 99.99	1.00
P-61	SPD DRV COEF Speed PID Derivative Coefficient	0.00 – 99.99	1.00
P-62	UNLOAD GAIN	0.5 – 2.0	2.0
P-63	MDDM CM FAIL (0=Disabled)	0 – 1000 SEC	120
P-64	C267 CM FAIL (0=Disabled)	0 – 1000 SEC	120
P-65	MAX PRS@ Only change pressure mode when the engine is not running. Change the "setup lockout (S-7) to "YES". (135 PSI mode or 150 PSI mode selected press enter key once, to confirm change.) When a change is confirmed the unit will do a factory default with the new pressure mode defaults and then it will reboot. The reboot will automatically reset the "setup lockout (S-7) to "NO"..	135 PSI / 150 PSI	
P-66	LST STOP TM (Used only when sequencing multiple units.) This feature allows the user to always keep a unit running or shutdown all units once the pressure exceeds the setpoint pressure + the unload pressure. -1 setting: This only works on the "master unit" and causes the last unit to continue to run. 0, 1, 2, 3, ...: Last unit will shutdown after cool down timer + _ MIN expire. This feature is functional with any unit and responds to that specific unit only.	-1 – 3000 MIN	0 MIN
P-67	UNLATCH PRS (Used only when sequencing multiple units.) Once the unit exceeds the setpoint pressure + the unload pressure, the unit is latched in stop mode. If the pressure drops below the unlatch pressure a unit will be started.	75 – 135 PSI	90 PSI

Section 5 CONTROLLER

S NUMBER SETTINGS (CODE 64)

"S" NUMBER	DESCRIPTION	RANGE	DEFAULT SETTING
S-0	CIRCLE = EXIT		
S-1	LINE 1 SELECT	11-4 XXXX 15-12 XXXX XXXX 01-7 XXXX XXX	
S-2	P2 OFFSET	-100 – 300 PSI	0
S-3	P2 MAX	0 – 500 PSI	200
S-4	DRAIN OPEN	0 – 20 SEC	3
S-5	DRAIN CLOSE	0 – 600 SEC	120
S-6	DRAIN ON STP	0 – 999 SEC	60
S-7	SETUP LKOUT Setting this to YES will prevent starting while making Sequencing Setups. It will default to NO on power-down and power-up.	NO / YES	-
S-8	SLV COM SEL The Slave's Address or the Master's # of Slaves.	INDEPENDENT / SLV1 / SLV2 / ... / SLV9	INDEPENDENT
S-9	MASTR COM EN The Master of Slaves Enable	NO / YES	NO
S-10	DEMAND INCR	-10.0 – 110.0 %	80.0
S-11	DEMAND "+" D This is the Delay observed between starting the next unit.	0 – 1000 SEC	60
S-12	DEMAND DECR	-10.0 – 110.0 %	20.0
S-13	R UNLD PRS This is the pressure that is relative to the Setpoint Pressure where the Unload is allowed. For operation see body of the sequence.	0 – 20 PSI	5
S-14	R LOAD PRS This is the pressure that is relative to the Setpoint Pressure where the Load is allowed. For operation see body of the sequence.	0 – 20 PSI	5
S-15	P2 OVRD STRT This is the pressure during a slave communications failure that a Slave will automatically start at.	75 – 135 PSI	75

Note: Items with the * reflect that their data is retrieved by MDDM connection.

Section 5 CONTROLLER

DISPLAYS

MAIN DISPLAYS

P2 xxx PSI
SET PRS xxx PSI
*ENG xxxx RPM
STS:

STATUS
PWRUP DLY
RESET
STANDBY
CRNK ON
CRNK OFF
WARMUP
RUNNING
COOLDWN
SHUTDWN

P1 xxx PSI
P3 xxx PSI
P4 xxx PSI
P4-P3 xxx PSI
T1 xxx F
T2 xxx F
T3 xxx F
T4 xxx F
T5 xxx F
T6 xxx F
*ENG OIL xxx PSI
*LOAD xxx.x %

*CAT STS

CAT STATUS
NORMAL
ALARMING
SHUTDOWN

FUEL LVL xxx %
RPM LD xxx %
BATTERY xx.x VDC
MURPHY EMS S547
PROG #40--33--2470
MAX PRS@ x PSI

PRESSURE MODES
135 PSI
150 PSI

Note: Items with the * reflect that their data is retrieved by MDDM connection.

Section 5 CONTROLLER

SHUTDOWN/ALARM LIST

CLASS	SD/AL	DESCRIPTION
A	SD	OVERCRANK
B	SD	NO SPEED SIGNAL
A	AL	HI P1 AL
A	SD	HI P1 SD
B	SD	LO P3 SD
B	AL	HI P3-P4 AL
S	AL	HI T1 AL
A/S	SD	HI T1 IMM SD
S	SD	HI T1 DLY SD
S	AL	HI T2 AL
A/S	SD	HI T2 IMM SD
S	SD	HI T2 DLY SD
A	AL	HI T3 AL
A	SD	HI T3 SD
A	AL	HI T4 AL
A	SD	HI T4 SD
A	AL	HI T5 AL
A	SD	HI T5 SD
S	SD	LO P2 SD
A	AL	LO FUEL LVL AL
A	SD	LO FUEL LVL SD
S	AL	LOST FUEL SENDER
B	AL	AIR FLTR DP AL
B	SD	AIR FLTR DP SD
B	SD	CAT ECM WARN
A	SD	COMP AIR FILTER DP
B	AL	CAT ECM DIAGNSTC
A	AL	CAT SD
S	SD	C267 COMM FAIL
S	SD	MDDM COMM FAIL
A	SD	LST ANLG P1 SD (Trip point fixed @ <0.63V or 32 counts)
A	SD	LST ANLG P2 SD (Trip point fixed @ <0.63V or 32 counts)
A	SD	LST ANLG P3 SD (Trip point fixed @ <0.63V or 32 counts)
A	SD	LST ANLG P4 SD (Trip point fixed @ <0.63V or 32 counts)
A	SD	LST ANLG T1 SD (Trip point fixed @ <2.5mA or 32 counts)
A	SD	LST ANLG T2 SD (Trip point fixed @ <2.5mA or 32 counts)
A	SD	LST ANLG T3 SD (Trip point fixed @ <2.5mA or 32 counts)
A	SD	LST ANLG T4 SD (Trip point fixed @ <2.5mA or 32 counts)
A	SD	LST ANLG T5 SD (Trip point fixed @ <2.5mA or 32 counts)
S(60 Sec)	AL	S#1 COM (Slave #X Communications Failure)
S(60 Sec)	AL	S#2 COM
S(60 Sec)	AL	S#3 COM
S(60 Sec)	AL	S#4 COM
S(60 Sec)	AL	S#5 COM
S(60 Sec)	AL	S#6 COM
S(60 Sec)	AL	S#7 COM
S(60 Sec)	AL	S#8 COM
S(60 Sec)	AL	S#9 COM

CLASS SHUTDOWNS

- A - ALWAYS ARMED
- B - ARMED WHEN THE LOCKOUT DELAY TIMER EXPIRES
- S - ARMED WHEN IT'S OWN LOCKOUT DELAY TIMER EXPIRES
- P - ARMED WHEN UNIT LOADED AND CLASS "P" TIMER EXPIRES

Section 6

COMPRESSOR OPERATION

6.1 GENERAL

While Sullair has built into the DE-18 Series compressor package a comprehensive array of controls and indicators to help assure proper operation, the user should recognize and interpret readings which call for service or indicate the onset of a malfunction. Before starting the unit, the user should become familiar with the controls and indicators - their purpose, location, and use.

WARNING

The minimum continuous operating pressure is 70 psig (4.8 barg). the compressor should not be operated below this pressure except for short periods. The controller will shut the machine down if it is operated continuously below 70 psig (4.8 barg) for ten minutes.

6.2 PURPOSE OF CONTROLS

CONTROL OR INDICATOR	PURPOSE
EMERGENCY STOP SWITCH	Pushing in this switch, found on the control panel and on the outside of the package, cuts power to the controller and stops the engine.
DISCHARGE CHECK VALVE	Isolates compressor from field pipework when shut down. Located between the HP silencer/dampener and the after-cooler.
PRESSURE RELIEF VALVES	Found on the discharge pipework of both LP and HP stages, they vent the compressed air to atmosphere in case of an over pressure condition - 65 and 165 psig (4.5 and 11.4 barg), respectively.
INLET VALVE CYLINDER AND CONTROL VALVE ASSEMBLY	The hydraulically operated butterfly valve throttles the air-flow entering the unit inlet flange - LP stage. A 4-way electric solenoid valve loads and unloads the hydraulic actuator, in response to controller commands.
BLOWDOWN SOLENOID AND PNEUMATIC BLOWDOWN VALVE ASSEMBLY	The 3-way solenoid valve and pneumatic blowdown valve vents compressed air (HP discharge) to atmosphere through a muffler.
DRAIN VALVES	Furnished are manual backups and automatic drain valves used in the condensate separator drain lines.
OIL PRESSURE BYPASS VALVE	To maintain desired oil flow and to protect oil pump from over pressure situations.
THERMAL VALVE	This thermal valve automatically opens/closes to bypass cold oil around the heat exchanger to ensure fast oil warmup and optimize operating temperature.
SUMP SIGHT GLASS	Two sight glasses, located at the sump end, indicate the level of lubricant in the sump. The following guideline for oil level should be used: Compressor stopped: Oil level should reach 25-100% of the upper sight glass.

Section 6

COMPRESSOR OPERATION

6.2 PURPOSE OF CONTROLS

CONTROL OR INDICATOR	PURPOSE
SUMP SIGHT GLASS (CONT.)	Compressor operating: Oil level should be between the upper and lower sight glasses. The compressor should not be operated with an oil level below the lower sight glass.
ENGINE OIL DIPSTICK	Indicates the oil level in the engine. The level should be between "full" and "add".
COOLANT OVERFLOW RESERVOIR	A plastic reservoir located on the side of the radiator to indicate the engine coolant level. With the engine cold, the level should be between "LOW" and "FULL".

6.3 STARTING SEQUENCE

If no class "A" shutdown conditions exist, then the controller will be in the "STANDBY" state. The controller must be in the "STANDBY" state before the engine can be started.

1. Close the package service valve.
2. Close the manual operator on the interstage and high pressure stage condensate drain valves.
3. Pull out both E-Stop buttons located on the outside of the package, and on the control panel. This action will power the control panel and P2 will be preset at the factory default of 125 psi.
4. Press the START button.
5. After a short delay, engine cranking begins.
6. Engine cranking is terminated when:
 - Engine speed rises above 500 RPM
 - Cranking for longer than 15 seconds
 - After four start attempts have been completed, the controller will shutdown on "OVERCRANK".
 - If engine start is successful, cranking is terminated and the controller will enter the "RUNNING" state. Subsequently, the engine will accelerate and hold at a speed of 1400 rpm unloaded.

6.4 WARM-UP CYCLE

This cycle consists of the engine operating for five minutes or until the engine coolant temperature reaches 130°F. Subsequently, the compressor will load by opening the intake valve and the engine will accelerate to meet the desired set point system pressure (P2). When the compressor loads, the service valve should be immediately opened.

6.5 RUNNING SEQUENCE

The engine speed will modulate between 1400 and

1840 rpm and stabilize until the system set pressure is reached.

The compressor unloads when system pressure increases by 5 psi above the set point, and the engine speed is at 1400 rpm.

The compressor loads when system pressure decreases by 5 psi below the set point.

At any time the controller is powered up, the set point pressure (P2) can be changed by pressing the "INCR PRESS" or "DECR PRESS" buttons. During operation the drain solenoid valves (two) will be energized to open for three (3) seconds every two (2) minutes. The duration and interval are adjustable.

6.6 NORMAL STOPPING SEQUENCE

Press the stop button and close the service valve.

The controller will go to the "COOLDOWN" state. The compressor unloads immediately and the engine speed reduces to 1400 rpm for a cool down duration of 5 minutes.

After the cool down period expires, the drain solenoid valves are energized for 10 seconds and the power to the CAT ECM is turned off.

The engine PTO enable is turned off.

The controller will return to the "STANDBY" state.

Open the interstage and the aftercooler drain solenoid manual levers. Press E-Stop button.

6.7 EMERGENCY SHUTDOWN

Pressing either E-Stop button will immediately stop the unit and turn off the power.

Section 6

COMPRESSOR OPERATION

6.8 WARNING SEQUENCE

ENGINE WARNING:

ENGINE WARNING: If any of the warning settings are violated, the "ENG WARNING" light (yellow) on the panel will flash a code. A decal describing certain flashcodes is attached to the panel door. For additional flash code description, refer to the Engine Operator's manual.

COMPRESSOR WARNING:

If any of the warning settings are violated, the "COMP WARNING" light (yellow) will turn on and the EMS will display a message

6.9 SHUTDOWN SEQUENCE

ENGINE SHUTDOWN:

If the CAT ECM shuts down the engine, the message "CAT ECM SD" will be displayed on the first line of the EMS. In addition, the "ENGINE SHUT-

DOWN" light located on the panel will flash a code. A decal describing certain flash codes is attached to the panel door. For additional flash code description, refer to the Engine Operator's manual.

COMPRESSOR SHUTDOWN:

If any of the compressor shutdown settings are violated, the EMS will de-energize the CAT ECM and shut down the engine. The cause of the shut down will be displayed on the second line of the EMS display, and the "COMPRESSOR SHUTDOWN" light will come on.

NOTE

Shutdown/ fault will be displayed on EMS 547 display.

The controller can be reset by pressing and momentarily holding the RESET pushbutton.

7.1 GENERAL

A good maintenance program is the key to long compressor life. Below is a program that when adhered to, should keep the compressor in top operating condition. For engine maintenance requirements, refer to the Engine Operator's Manual for a detailed description of service instructions. See Parts Replacement and Adjustment Procedures for a detailed description of specific compressor system components.

⚠ WARNING

DO NOT remove caps, plugs, and/or other components when compressor is running or pressurized. Stop compressor and relieve all internal pressure before doing so.

7.2 DAILY OPERATION

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 problem has developed which is causing this excessive loss. See the Troubleshooting Section (9.2) under Excessive Fluid Consumption for a probable cause and remedy. Also check the engine oil level and the radiator coolant level prior to starting.

After a routine start has been made, observe the controller display and local gauges and be sure they monitor the correct readings for their particular phase of operation - previous records are very helpful in determining the normalcy of the measurements. After the compressor has warmed up, it is recommended that a general check on the overall compressor and control panel be made to assure that the compressor is running properly. Also check the air filter restriction gauges. Should they indicate restriction, replace the elements immediately (see Air Filter Maintenance in Section 7.15.1)

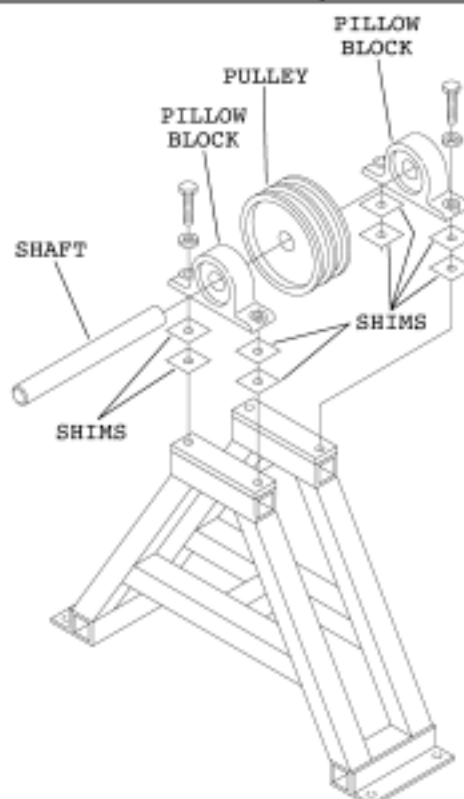
7.3 INITIAL MAINTENANCE AFTER 50 HOURS OF OPERATION

Upon completion of the first 50 hours of operation, a few maintenance requirements are needed to rid the system of any foreign materials which may have accumulated during assembly:

1. Change the compressor oil filter element.
2. Clean the control line filter element.
3. Check/replace the sump breather element.
4. Check/clean condensate drain valves and screens. Verify auto-drain function.
5. Check/clean the blowdown valve control line screen.

7.4 MAINTENANCE EVERY 250 HOURS

Figure 7-1 Pillow Block Assembly



*Use the same shims to maintain alignment of fan. Fan must be centered into shroud.

Perform the following after every 250 hours of operation:

1. Check the battery level and fill with water if necessary.
2. Change the engine oil and oil filter.
3. Check fan belt tension.
4. Clean the heat exchangers and radiator exterior. Depending on how contaminated the atmosphere may be, more frequent cooler and radiator cleaning may be necessary. To allow easier access to the heat exchangers, remove the two long access doors located on each side of the package. Replace the access doors when complete.
5. Check the Engine Operator's Manual for additional service requirements.
6. Check/clean condensate drain valves and screens. Verify auto-drain function.
7. Check/clean the blowdown valve control line screen.
8. Refer to Figure 7-1. Grease pan shaft pillow block bearings. **DO NOT** over-lubricate. Lubricate only until a thin bead of fresh grease is visible at seal lip.

Section 7

MAINTENANCE

9. When using fluids other than Sullair AWF, change the compressor fluid and replace the fluid filter element (See maintenance procedure in Section 7.15.2).

7.5 MAINTENANCE EVERY 500 HOURS

When using fluids other than Sullair AWF, replace the fluid filter element only (See maintenance procedure in Section 7.10.2).

7.6 MAINTENANCE EVERY 1500 HOURS

When using Sullair AWF, change the compressor fluid and replace the fluid filter element (See maintenance procedures in Section 7.10.2)

7.7 MAINTENANCE EVERY 7500 HOURS OR ONE YEAR OF OPERATION

The following items should be checked every 7500 hours of operation or one year, whichever comes first, although service conditions such as relative cleanliness of process air or quality of cooling medium may require shorter inspection intervals.

1. Replace compressor oil and filter element.
2. Replace control line filter element.
3. Replace sump breather filter element.
4. Replace air filter element.
5. Check/clean condensate drain valves and screens. Verify auto-drain function.
6. Check/clean blowdown valve control line screen.
7. Measure and record vibration signatures on compressor and gear box- optional.
8. Check the fastener tightness of the adapter connecting the engine to the compressor.

NOTE

Please refer to the engine manufacturer's documentation for recommended maintenance.

7.8 MAINTENANCE EVERY 5000 HOURS

1. Replace front shaft pillow block bearings.

NOTE

Beware to maintain proper alignment and height.

7.9 MAINTENANCE EVERY 15000 HOURS OR TWO YEARS OF OPERATION

In addition to those items covered by the 7500 hour or one year maintenance interval, the following items must also be checked every 15000 hours of operation or two years, depending upon conditions of service:

1. Operate/test all safety devices.
3. Check/clean blowdown valve.
4. Check/clean check valves.
5. Check condition of isolation mounts under compressor unit and engine.
6. Check/clean strainer included in oil pump suction line, inside oil sump.
7. Drain and flush the radiator and engine cooling system. Replace the coolant with a solution of 50% ethylene glycol and 50% water, or as required for your geographic location. DO NOT use a leak sealing type of anti-freeze. Should a 100% water solution be used, a non-chromatic rust inhibitor must be added.

7.9.1 DIAGNOSTIC SERVICE (OPTIONAL)

Sullair and its representatives offer a diagnostic service to check the condition of your compressor unit. The service, which is recommended at 7500 hour intervals, performs the following:

1. Tri-axial vibration measurements at the gearbox and the compressor stages.
2. Package performance data collection and analysis.
3. Examination of shaft coupling assembly.
4. Operational check of protective equipment.
5. Final discussion with maintenance engineer.

This service, when supplemented by properly recorded package operational performance and vibrations trends, is most helpful in identifying the presence (or absence) of equipment damage which can be repaired or replaced before a catastrophic breakdown occurs.

7.9.2 MAINTENANCE FOR OPTIONAL WHEEL PACKAGE

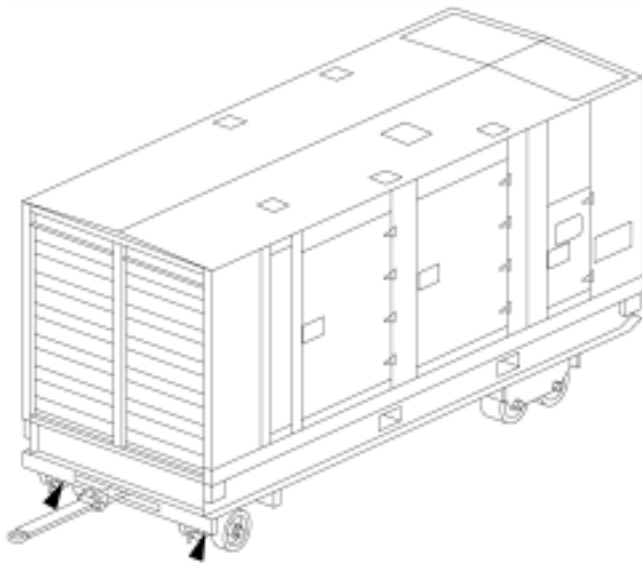
Refer to figure 7-2. Inspect for loose bolts or nuts, caster damage or misalignment and worn bearings. Caster axel bearings are sealed and require no lubrication. Top thrust bearings should be lubricated at the grease zerks shown, with a high quality grease.

NOTE

Thrust bearings should be lubricated at least once every 12 months or more frequently depending on usage. Proper lubrication is essential for proper functioning and reliability of the wheel package.

Section 7 MAINTENANCE

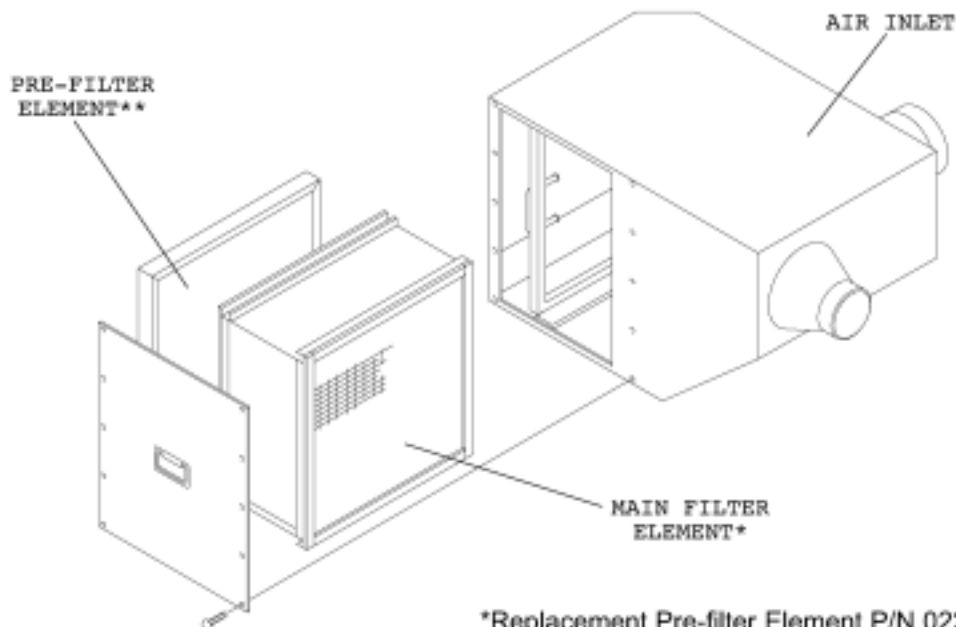
Figure 7-2 Optional Wheel Package Lubrication



7.10 PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES

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

Figure 7-3 Air Filter (P/N



*Replacement Pre-filter Element P/N 02250119-338

**Replacement Main Filter Element P/N 02250119-339

7.10.1 AIR FILTER INSPECTION/MAINTENANCE

ELEMENT INSPECTION

Refer to Figure 7-3.

1. Place a bright light on one side of each element to inspect for damage or leak holes.
2. Inspect gaskets and matching sealing surfaces on the housing. It should be smooth or replace in case of damage.
3. **DO NOT** strike elements against a hard surface to dislodge dirt - this may damage the sealing surfaces and/or rupture the element.

AIR FILTER MAINTENANCE

Refer to Figure 7-3. Air filter maintenance should be performed at 7500 hours, one year or when the corresponding maintenance message is displayed by the controller. This corresponds to a pressure loss condition across the filter of 12 in. of water. Your filter assembly includes a pre-filter element and a main element.

1. Loosen screws and remove access panel.
 2. Remove the pre-filter and main filter elements.
 3. Clean interior of housing with a damp cloth.
 4. Replace the pre-filter element with new element.
- NOTE: pre-filter can be cleaned by washing with water.

Section 7 MAINTENANCE

5. Replace the main element with new element.
6. Replace access door and tighten retaining screws.

7.10.2 OIL FILTER MAINTENANCE

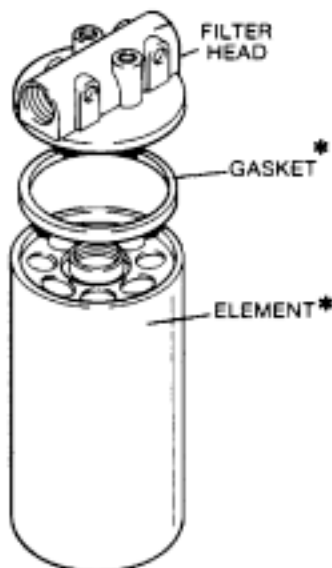
Refer to Figure 7-4. Oil filter maintenance (using repair kit P/N 02250049-820) should be performed at 7500 hours, one year or when the corresponding maintenance message is displayed by the controller - this corresponds to a pressure loss condition across the unit of 20 psi (1.4 bar). Your oil filter includes a proprietary replaceable element (P/N 02250049-821) available solely from Sullair and its agents - **DO NOT** substitute.

1. Using a strap wrench, remove the old element and gasket.
2. Clean the gasket seating surfaces.
3. Apply a light film of fresh oil to the new gasket and hand-tighten new element until gasket contacts the seat.
4. Continue tightening element by hand, an additional 1/2 to 3/4 turn.
5. Restart package and check for leaks.

7.10.3 CONTROL LINE FILTER MAINTENANCE

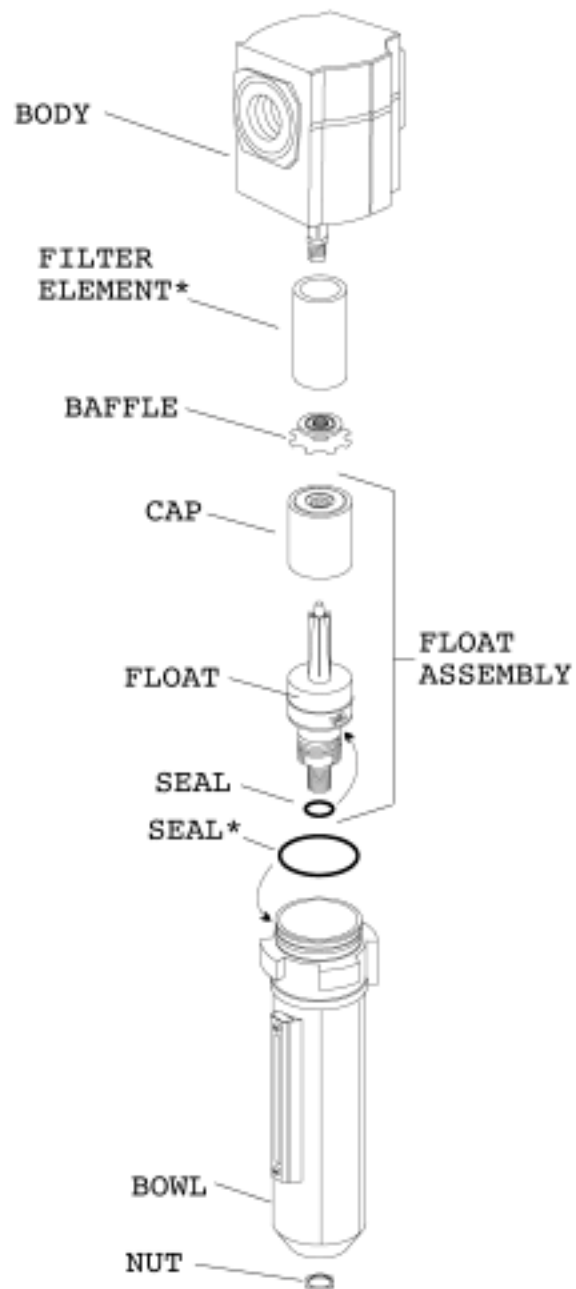
Refer to Figure 7-5. Control line filter (P/N 02250112-032) maintenance normally requires replacement of the filter element, float assembly and seals. Use repair kit no. 02250112-031 (filter element and seal), and repair kit no. 02250115-960 (float assembly and seals).

Figure 7-4 Oil Filter (P/N 02250049-820)



*Replacement Element P/N 02250049-821

Figure 7-5 Control Line Filter (P/N 02250112-032)



*Repair Kit P/N 02250112-031

⚠ WARNING

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

Stop compressor and relieve all internal pressure before doing so.

Section 7 MAINTENANCE

1. Detach the body from the bowl by twisting the body about the bowl as far as it can go (approximately 1/8 turn), and pulling apart.
2. At this time, unscrew the baffle from the body. Remove the element.
3. Discard the element.
4. Replace the element with the new one found in the repair kit, and reinstate into position on the body stem. Replace baffle and tighten.
5. Loosen and remove the nut on the bottom of the bowl.
6. Remove the float assembly and seals.
7. Replace the seals with those found in the repair kit.

NOTE

Coat seals with same fluid as used in compressor fill before installation to promote proper sealing.

8. Replace those items in the float assembly with those found in the repair kit.
9. Replace the float assembly into the bowl. Tighten the nut.
10. Re-connect the body and bowl assemblies.

7.10.4 CONDENSATE DRAIN SOLENOID VALVE (P/N 02250125-805) MAINTENANCE

Refer to Figure 7-6. Solenoid valve (P/N 02250125-805) maintenance is quite minimal but a periodic cleaning of strainer (P/N 02250117-912) is desirable. The time between cleanings will vary depending on operating conditions. In general, if the voltage to the coils is correct, sluggish valve operation or excessive leakage will indicate that cleaning is required. If parts replacement is required, order rebuild kit no. 02250125-840 (valve) and no. 02250125-854 (coil), and follow the procedure explained below.

WARNING

Turn off all power, relieve package pressure, and disconnect coil lead wires to the valve before making repairs. It is not necessary to remove the valve from pipework for repairs.

COIL REPLACEMENT

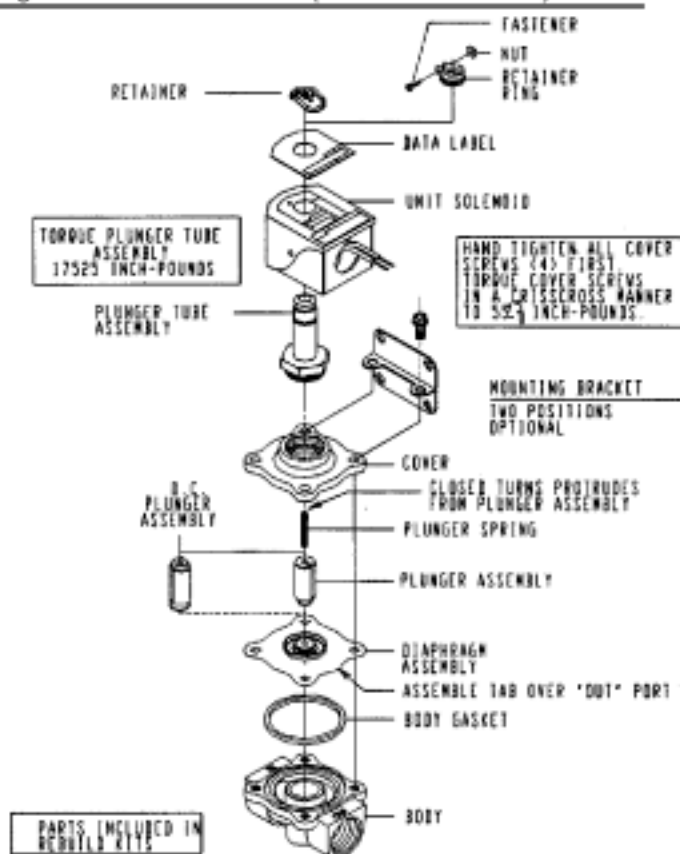
1. Remove the retaining clip from top of solenoid.

CAUTION

When metal retaining clip disengages it will spring upward.

2. Remove data label.

Figure 7-6 Solenoid Valve (P/N 02250125-805)



*Repair Kit P/N 02250125-840

**Replacement Coil P/N 02250125-854

3. Coil is now accessible for replacement.
4. Reassemble in reverse order of assembly.

CAUTION

Solenoid must be fully reassembled because the housing and internal parts complete the magnetic circuit. Place an insulating washer at each end of the non-molded coil.

VALVE DISASSEMBLY MAINTENANCE

WARNING

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

1. Remove retaining clip and pull entire solenoid enclosure off solenoid base sub-assembly.

CAUTION

When metal retaining clip disengages it will spring upward.

Section 7

MAINTENANCE

2. For normally closed valves, unscrew bonnet of plunger tube assembly and remove plunger, spring and body gasket. In some valves the plunger tube assembly is permanently staked into plunger tube and cover assembly. (FIGURE 7-5).

3. Remove cover bolts, cover and plunger-diaphragm assembly. Care should be taken to avoid distorting or stretching the hanger spring between the plunger and diaphragm assembly.

4. Remove cover bolts, cover, (or plunger tube & cover assembly) and all internal parts.

5. All parts are now accessible for cleaning or replacement. Replace worn or damaged parts. Use all parts for best results.

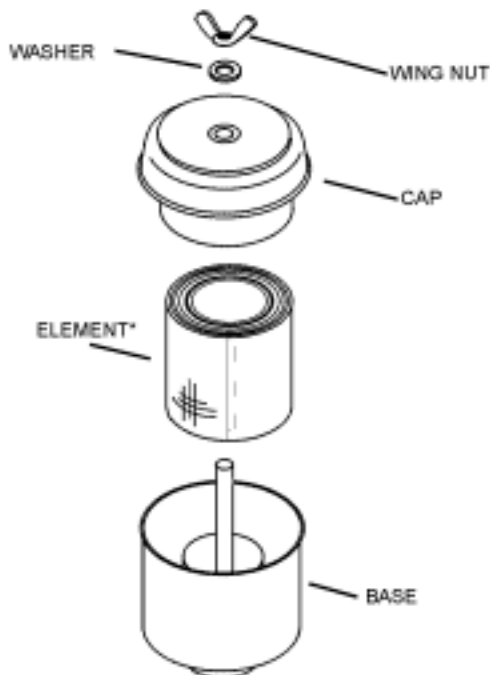
6. Inspect valve body seat for scratches, nicks, dents or other blemishes. Replace if damaged.

7. Reassemble in reverse order of disassembly, paying careful attention to exploded view provided. Apply 175±25 inch pounds of torque to the bonnet and 55-60 inch pounds of torque to the cover screw in a crisscross pattern. Lubricate all gaskets with Dow Corning®.

7.10.5 SUMP BREATHER FILTER MAINTENANCE

Refer to Figure 7-7. This filter (P/N 02250124-860) prevents sump pressure build-up and traps oil aerosol emanating from the compressor stages and gear box. It uses a fine, replaceable element P/N

Figure 7-7 Sump Breather Filter
(P/N 02250120-860)



*Replacement Element P/N 02250118-258

02250118-258, which may be accessed as follows:

INSPECTION/REPLACEMENT OF ELEMENT

1. Unscrew filter from vent line.
2. Inspect or replace the element with the new filter.

REPLACEMENT OF ELEMENT

1. Unscrew filter from vent line.
2. Replace with a new filter.

7.10.6 OIL SUMP STRAINER MAINTENANCE

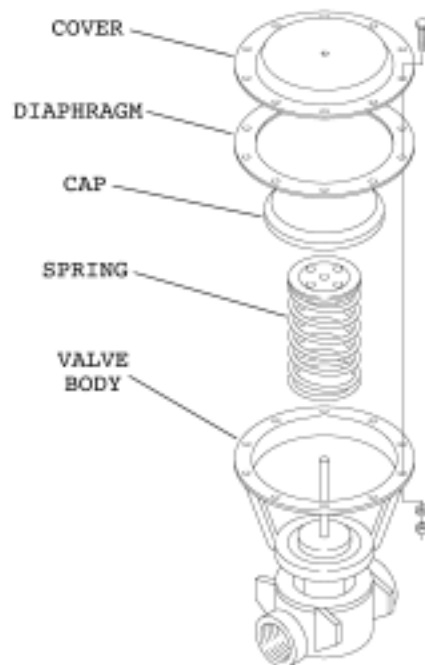
The suction line of the oil pump is fitted with a 100 mesh, stainless steel strainer to protect its internals from foreign matter. To service the cleanable strainer, proceed as follows:

1. With the power turned off, remove sump-to-oil pump hose and disconnect oil bypass hose.
2. Loosen/remove bolts/washers securing circular cover plate to sump tank.
3. Remove cover plate and gasket away from sump tank- some 1/4" control tubing may have to be removed to provide clearance.
4. Inspect, clean, and/or replace strainer.
5. Reassemble in reverse order.

7.10.7 BLOWDOWN VALVE MAINTENANCE

Refer to Figure 7-8. The blowdown valve (P/N 02250119-351) vents air to atmosphere in unload mode. To maintenance the blowdown valve, follow

Figure 7-8 Blowdown Valve (P/N 02250119-351)



*Repair Kit P/N 02250122-080

Section 7 MAINTENANCE

these directions:

1. Loosen/remove bolts/washers and nuts securing cover to valve body.
2. Remove cover.
3. Remove diaphragm.
4. Replace diaphragm with new diaphragm.

7.10.8 DRIVE COUPLING MAINTENANCE

Refer to Figure 7-9. The compressor unit and motor are rigidly connected via a rigid adapter piece. Thus the shafts are maintained in proper alignment at assembly. Verify that the bolts connecting the adapter to the engine are torqued to 120 ft.-lbs., (163 Nm).

Figure 7-9 Drive Coupling

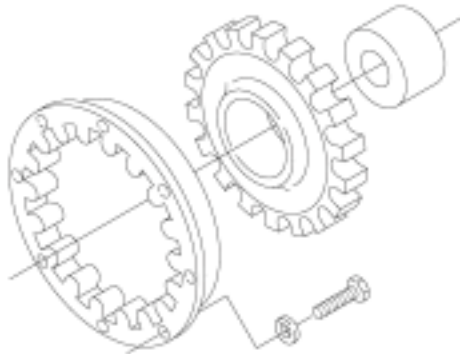
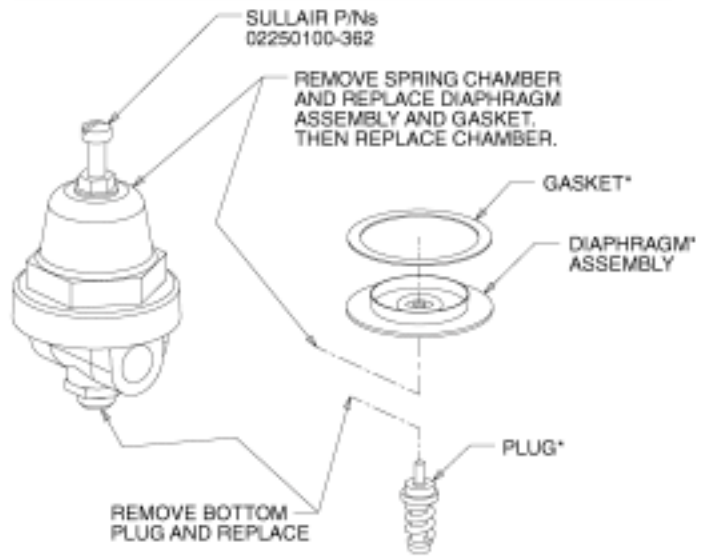


Figure 7-10 Reducing Regulator



02250122-621 - KIT, REPAIR REDUCING REG VALVE*

NOTE: KIT TO BE USED TO REPAIR
SULLAIR P/N 02250100-362

Section 8

NOISE CONTROL

8.1 NOISE EMISSION WARRANTY

Sullair Corporation warrants to the ultimate purchaser and each subsequent purchaser that this air compressor was designed, built and equipped to conform at the time of sale to the first retail purchaser, with all applicable U.S. E.P.A. and/or any Federal State, or Local noise control regulations.

This warranty is not limited to any particular part, component or system of the air compressor. Defects in the design, assembly, or in any part, component, or system of the compressor which, at the time of sale to the first retail purchaser, caused noise emissions to exceed Federal standards are covered by this warranty for the life of the air compressor.

8.2 TAMPERING WITH NOISE CONTROL SYSTEM PROHIBITED

Federal Law prohibits the following acts or the causing thereof:

1. The removal or rendering inoperative by any persons, other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new compressor for the purpose of noise control prior to its sale or

delivery to the ultimate purchaser or while it is in use.

2. The use of the compressor after such device or element of design has been removed or rendered inoperative by any person.

Among those acts included in the prohibition against tampering are the acts listed below:

1. Removal or redering inoperative any of the following:
 - a. Engine's exhaust system or parts thereof.
 - b. Compressor air intake system or part thereof.
 - c. Enclosure or part thereof.
2. Removal of any of the following:
 - a. Vibration isolators.
 - b. Control silencer.
 - c. Floor panel.
 - d. Fan shroud.
 - e. Acoustical materials including fiberglass foam or foam tape.
3. Operation with canopy doors open for any purpose other than starting, stopping, adjustment, repair, replacement of parts or maintenance.

Figure 8-1 Noise Emission Maintenance and Maintenance Record Log

1. ANNUAL MUFFLER AND EXHAUST SYSTEM INSPECTION

At least annually inspect muffler(s) and engine exhaust system to make sure all parts are securely mounted, that all joints and connections are tight, and that the muffler is in good condition. DO NOT operate compressor with defective exhaust system. Remove and replace any defective parts by ordering with part numbers indicated in the Parts List.

Maintenance
Performed

By

Location

Date

Maintenance
Performed

By

Location

Date



2. ANNUAL AIR FILTER(S) AND AIR INLET SYSTEM INSPECTION

In addition to the instructions in the Maintenance section of the Operator's Manual, the air filter(s) and entire air inlet system should be inspected at least annually to make sure all parts are securely mounted, that all joints and connections are tight, that there are no other leaks in the system, and that the filter element(s) are intact. DO NOT operate compressor with defective air inlet system. Remove and replace defective parts by ordering with part numbers indicated in the Parts List.

Maintenance Performed

By

Location

Date

Maintenance Performed

By

Location

Date



3. ANNUAL ENGINE VIBRATION MOUNT INSPECTION

At least annually inspect engine vibration mounts for security of attachment and to make sure the resilient parts are intact. DO NOT operate compressor with defective engine mounting system. Remove and replace defective parts by ordering with part numbers indicated in Parts List.

Maintenance Performed

By

Location

Date

Maintenance Performed

By

Location

Date



Section 8

NOISE CONTROL

4. ANNUAL FRAME, CANOPY, AND PARTS INSPECTION

At least annually inspect frame, canopy and parts, for security of attachment to make sure there are no missing members, and to make sure there are no deformed members, including all hinged doors and covers and their fastening devices. DO NOT operate compressor with defective frame, canopy and parts. Remove and replace defective parts by ordering with part numbers indicated in Parts List.

Maintenance
Performed

By

Location

Date

Maintenance
Performed

By

Location

Date



5. ANNUAL ACOUSTICAL MATERIALS INSPECTION

At least annually inspect all acoustical materials, if any, for security of attachment and to make sure no material is missing or damaged (refer to Parts List). Clean or replace, if necessary. DO NOT operate compressor with defective acoustical material. Remove and replace defective parts by ordering with part numbers indicated in the Parts List.

Maintenance
Performed

By

Location

Date

Maintenance
Performed

By

Location

Date



Section 8
NOISE CONTROL

6. ANNUAL INSPECTIONS FOR PROPER OPERATION OF ALL SYSTEMS

In addition to other instructions in the Operator's Manual, at least annually, operate copressor and inspect to make sure all systems are operating properly and that engine runs at rated speed and pressure. DO NOT operate malfunctioning or improperly adjusted compressor. Repair or adjust, per instructions in Operators Manual, as required.

Maintenance
Performed _____

By _____

Location _____

Date _____

Maintenance
Performed _____

By _____

Location _____

Date _____



NOTES

Section 9

TROUBLESHOOTING

9.1 INTRODUCTION

The following information has been compiled from operational experience with your package. It identifies symptoms and describes probable causes for 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.

The collection of operational data concerning possible trouble should be analyzed to prevent complete compressor breakdown. An example of this would be the vibrations signature increase of a damaged

bearing or the efficiency decrease of a dirty heat exchanger.

A detailed visual inspection should be performed for all problems. Always remember to:

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

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

9.2 TROUBLESHOOTING GUIDE

SYMPTOM/MESSAGE	PROBABLE CAUSE	REMEDY
BUS ERROR ON MDDM	Lost Data Link From Engine	Consult Sullair Service Department.
COMPRESSOR WILL NOT START: LOST FUEL SENDER	Low Fuel	Check fuel level and add if necessary.
	Bad Fuel Sender	Replace fuel sender.
ENGINE WARNING/SHUTDOWN FLASHING- CAT SHUTDOWN- READ MDDM	Engine Problem May Have Developed	Observe flashing code and refer to the Engine Operator's Manual.
T-1, T-2, T-3, T-4, T-5, LST ANALOG XX SD	Temperature RTD Failure	Check connections from RTD. If adequate, replace RTD.
	RTD Transmitter Failure	Verify transmitter output is 4-20 MA.
P-1, P-2, P-3, P-4, LST ANALOG XX SD	Pressure Transducer Failure	Check connections from transducer. If adequate, replace transducer.
E-STOP	Emergency Switch Open (Depressed)	Close switch (pull).
MDDM COMM FAIL		
TRIPPED CIRCUIT BREAKER INSIDE CONTROL PANEL	Diode Installed in Reverse	Install properly.
	Short Circuit	Check and reset if necessary.
COMPRESSOR SHUTS DOWN WITH AIR DEMAND: LOST FUEL SENDER	Low Fuel	Check and add if necessary.
LO P2 SD	The Machine Ran at a Final Discharge Pressure Below 50 psig (3.4 barg) for Ten Minutes	Adjust valve downstream of package to hold minimum 70 psig (4.8 barg) line pressure.
LO P3 SD	Oil Pressure Falls Below 30 psig (2.1 barg) While Package is Running Because:	
	Oil Pump Malfunctioned	Consult Sullair Service Department.
	Oil Filter Dirty	Replace filter element.
	Oil Temperature Too Low	Check state of thermal valve feeding oil cooler.
	Sump Oil Heater Malfunctions	Replace heater.
Sump Oil Level Too Low	Replenish oil level.	

Section 9

TROUBLESHOOTING

9.2 TROUBLESHOOTING GUIDE

SYMPTOM/MESSAGE	PROBABLE CAUSE	REMEDY
LO P3 SD (CONT.)	Sump Strainer Clogged	Refer to Section 7.8.6 for oil sump strainer maintenance.
	Oil Bypass Valve Setting Changed	Reset valve.
HI T1 SD	Compressor Inlet Air Temperature Above 115°F (46°C)	Maintain inlet air temperature below 115°F (46°C).
	High Interstage Pressure (Loaded)	Defective HP stage.
	High Interstage Pressure (Unloaded)	Clogged blowdown silencer. Clean/replace.
	Temperature Transducer Failure	Check connections from transducer. If adequate, replace transducer.
	RTD Transmitter Problem	Check transmitter output is 4-20 MA.
	Blowdown Valve Failed to Open or Operated Sluggishly During Unload	Refer to Section 7.9.7 for blowdown valve maintenance.
HI T2 SD	Intercooler Core Fouled	Clean finning.
	Discharge Check Valve Leaking During Unloaded Operation	Refer to compressor's Operators Manual for check valve maintenance.
	Inlet Throttling Valve Not Fully Open During Loaded Operation	See inlet valve adjustment. Low oil pressure defective control solenoid valve.
	Inlet Air Filter Clogged	See Section 7.7.1 for air filter maintenance.
	Line Pressure is Too High	Reset Supervisor unload pressure.
	Temperature Transducer Failure	Check connection from transducer. If adequate, replace transducer.
	RTD Transmitter Problem	Check transmitter output is 4-20 MA.
	Blowdown Valve Failed to Open or Operated Sluggishly	Refer to Section 7.9.7 for blowdown valve maintenance.
	Low Fan Speed	Re-tension fan belt or replace if damaged.
	HI P1 SD	Defective HP Stage
Pressure Transducer Failure		Check connection from transducer. If adequate, replace transducer.
HI T3 SD	Temperature Transducer Failure	Check connections from transducer. If adequate, replace transducer.
	RTD Transmitter Problem	Check transmitter output is 4-20 MA.
	Oil Cooler Fouled	Clean fins.
	Low Fan Speed	Re-tension fan belt or replace if necessary.
HI T4 SD	Temperature Transducer Failure	Check connections from transducer. If adequate, replace transducer.
	RTD Transmitter Problem	Check transmitter output is 4-20 MA.
	Intercooler Core Fouled	Clean fins.

Section 9

TROUBLESHOOTING

9.2 TROUBLESHOOTING GUIDE

SYMPTOM/MESSAGE	PROBABLE CAUSE	REMEDY
HI T4 SD (CONT.)	Compressor Air Inlet Temperature Above 115°F (46°C)	Maintain air inlet temperature below 115°F (46°C).
	High Interstage Pressure (Loaded)	Insufficient coolant flow to jackets. Defective HP stage.
	High Interstage Pressure (Unloaded)	Clogged blowdown silencer- clean and replace.
	Blowdown Valve Failed to Open During Unload	Refer to Section 7.9.7 for blowdown valve maintenance.
	Low Fan Speed	Re-tension fan belt or replace if damaged.
HI T5 SD	Temperature Transducer Failure	Check connections from transducer. If adequate, replace transducer.
	Aftercooler Core Fouled	Clean fins.
	Inlet Throttling Valve Not Fully Open During Loaded Operation	See inlet valve adjustment, or low oil pressure, defective 4-way solenoid valve, or defective hydraulic cylinder.
	Blowdown Valve Failed to Open or Opened Sluggishly	Refer to Section 7.9.7 for valve maintenance.
	Low Fan Speed	Re-tension fan belt or replace if damaged.
AIR FLTR DP SD	Dirty Air Intake Filter and Bad Switch	Clean pre-filter with water. Replace both filter elements. If necessary, check switch.
COMPRESSOR DOES NOT BUILD FULL DISCHARGE PRESSURE	Air Demand Exceeds Supply	Check air service lines for open valves or leaks.
	Inlet Air Filter Clogged	Check for maintenance message on Supervisor display. Change element.
	Inlet Air Valve Not Fully Open	Check actuation and butterfly disc position. Low oil pressure defective control solenoid valve.
	Transducer P2 Malfunction	Check connections from transducer. If adequate, replace transducer.
	Blowdown Valve Leaking or Sluggish	Refer to Section 7.7.11 for blowdown valve maintenance.
	Defective LP Stage	Consult Sullair Service Department.
ENGINE OVERHEATING	Loose or Broken Fan Belt	Tighten or change belt. Refer to the Engine Operator's Manual for details.
	Dirty Radiator Core	Clean thoroughly. Refer to the Engine Operator's Manual for details.
	Dirty Charger Cooler	Clean thoroughly. Refer to the Engine Operator's Manual for details.
	Low Oil Level	Refill. Refer to the Engine Operator's Manual for details.
	Faulty Water Pump	Change pump. Refer to the Engine Operator's Manual for details.

Section 9

TROUBLESHOOTING

9.2 TROUBLESHOOTING GUIDE

SYMPTOM/MESSAGE	PROBABLE CAUSE	REMEDY
ENGINE OVERHEATING (CONT.)	Faulty Low Coolant Sensor	Check for leaks in coolant system.
	Plugged Radiator	Replace engine thermostat. Refer to the Engine Operator's Manual for details.
	Defective Engine Thermostat	Replace engine thermostat.

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

9.3 CALIBRATION

The controller has software calibration of the pressure and temperature probes. Calibration is required when a transmitter, transducer or a probe has been changed. This calibration affects the offset but not the slope of the pressure and tempera-

ture calculations. Because of this, the most accurate method is to heat or pressurize the transducer to its operating value. If this is too difficult, room temperature/open atmosphere calibration is adequate. Calibration may only be done while machine is stopped and unarmed.

To enter calibration mode, follow the directions in section 5 to access the "S" code number system.

To make adjustments, Press the "▼" key or the "▲" key to scroll through the variable.

Section 9

TROUBLESHOOTING

9.4 EMS547 INPUTS/OUTPUTS

547 PIN	547 PIN CAPABILITY	INPUT USE	SIGNAL TYPE	DESCRIPTION
1	ANALOG INPUT #4	ANALOG	1-5 VDC	DISCHARGE PRESSURE P2
2	ANALOG INPUT #0	ANALOG	INTERNAL TO S547	BATTERY VOLTAGE
3	ANALOG INPUT #7	ANALOG	1-5 VDC P3	OIL FILTER OUT PRESSURE
4	ANALOG INPUT #1	ANALOG	1-5 VDC	OIL FILTER IN PRESSURE P4
5	DIGITAL INPUT #1	DIGITAL	SWITCH	INCREASE PRESSURE SET POINT PUSH BUTTON
6	DIGITAL INPUT #2	DIGITAL	SWITCH	DECREASE PRESSURE SET POINT PUSH BUTTON
7	OUTPUT #1	DIGITAL	TRANSISTOR	CRANK RELAY
8	BATTERY +			
9	BATTERY +			
10	OUTPUT #2	DIGITAL	TRANSISTOR	ECM POWER RELAY
11	BATTERY -			
12	OUTPUT #3	DIGITAL	TRANSISTOR	AIR INTAKE VALVE RELAY
13	FREQUENCY INPUT		MAG PICKUP	ENGINE SPEED (for test purposes only)
14	ANALOG INPUT #6	ANALOG	1-5 VDC	1ST STAGE DISCHARGE PRESSURE P1
15	ANALOG INPUT #5	ANALOG	0-5 VDC	FUEL LEVEL SENSED FROM EG2F & EGF21
16	ANALOG INPUT #3	DIGITAL	SWITCH	RESET PUSH BUTTON
17	ANALOG INPUT #2	DIGITAL	SWITCH	ENGINE AIRA FILTER DIFFERENTIAL PRESSURE
18	DIGITAL INPUT #3	DIGITAL	SWITCH	START PUSH BUTTON
19	DIGITAL INPUT #4	DIGITAL	SWITCH	STOP PUSH BUTTON
20	DIGITAL OUTPUT #4	DIGITAL	TRANSISTOR	PTO DECREASE SPEED
21	DIGITAL OUTPUT #5	DIGITAL	TRANSISTOR	PTO INCREASE SPEED
22	DIGITAL OUTPUT #6	DIGITAL	TRANSISTOR	PTO ENABLE
23	DIGITAL OUTPUT #7	DIGITAL	TRANSISTOR	BLOWDOWN VALVE RELAY
24	RS485-			MDDM
25	RS485+			MDDM

Section 9

TROUBLESHOOTING

9.5 C267 INPUTS/OUTPUTS

267 PIN	267 PIN CAPABILITY	INPUT USE	SIGNAL TYPE	DESCRIPTION
J1-1	OUTPUT #7	DIGITAL	TRANSISTOR	NOT USED
J1-2	OUTPUT #5	DIGITAL	TRANSISTOR	COMPRESSOR FAULT LIGHT
J1-3	OUTPUT #3	DIGITAL	TRANSISTOR	COMPRESSOR ALARM LIGHT
J1-4	OUTPUT #1	DIGITAL	TRANSISTOR	NOT USED
J1-5	POWER 2	POWER	POWER	
J1-6	OUTPUT #8	DIGITAL	TRANSISTOR	SPARE
J1-7	OUTPUT #6	DIGITAL	TRANSISTOR	SPARE
J1-8	OUTPUT #4	DIGITAL	TRANSISTOR	SPARE
J1-9	OUTPUT #2	DIGITAL	TRANSISTOR	DRAIN #1/#2
J1-10	POWER 2	POWER	POWER	
J2-1	ANALOG 6	ANALOG	4-20 mA	OIL FILTER OUT TEMPERATURE T3
J2-2	ANALOG 4	ANALOG	4-20 mA	2ND STAGE DISCHARGE TEMPERATURE T2
J2-3	ANALOG 2	ANALOG	4-20 mA	1ST STAGE DISCHARGE TEMPERATURE T1
J2-4	INPUT 8	DIGITAL	SWITCH	NOT USED
J2-5	INPUT 6	DIGITAL	SWITCH	NOT USED
J2-6	INPUT 4	DIGITAL	SWITCH	SPARE
J2-7	INPUT 2	DIGITAL	SWITCH	CADP1 COMPRESSOR AIR DIFFERENTIAL PRESSURE SWITCH #1
J2-8	FREQUENCY INPUT	FREQUENCY		NOT USED
J2-9	POWER GROUND			
J2-10	ANALOG 7	ANALOG	0-5 VDC	NOT USED
J2-11	ANALOG 5	ANALOG	0-5 DC	T6 COMP OIL TEMPERATURE
J2-12	ANALOG 3	ANALOG	4-20 mA	T5 DISCHARGE TEMPERATURE
J2-13	ANALOG 1	ANALOG	4-20 mA	T4 2ND STAGE INLET TEMPERATURE
J2-14	INPUT 7	DIGITAL	SWITCH	NOT USED
J2-15	INPUT 5	DIGITAL	SWITCH	NOT USED
J2-16	INPUT 3	DIGITAL	SWITCH	CAT ECM DIAGNOSTIC
J2-17	INPUT 1	DIGITAL	SWITCH	CAT ECM WARNING
J2-18	POWER 1			

RECOMMENDED SPARE PARTS LIST

10.1 PROCEDURE FOR ORDERING PARTS

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

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

SULLAIR ASIA, LTD.
Sullair Road, No. 1
Chiwan, Shekou
Shenzhen, Guangdong PRV.
PRC POST CODE 518068
Telephone: 86-755-26851686
Fax: 86-755-26853473
www.sullair-asia.com

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

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

Parts Department
Telephone: 1-888-SULLAIR
Fax: (219) 874-1835
www.sullair.com

Service Department
Telephone: 1-888-775-1604 (U.S.A. & Canada)
Fax: (219) 874-1205
www.sullaircompressors.com

10.2 RECOMMENDED SPARE PARTS LIST

DESCRIPTION	KIT NUMBER	QUANTITY
filter, main replacement	02250119-339	1
filter, pre-filter replacement	02250119-338	1
element, replacement for oil filter 02250049-820	02250049-821	1
kit, filter element and seal for control line filter 02250112-032	02250112-031	1
kit, float assembly replacement for control line filter 02250112-032	02250115-960	1
element, replacement for sump breather 02250124-860	02250118-258	1
replacement kit for pressure regulator 02250100-362	N/A	1
kit, replacement for 4-way solenoid valve 02250118-013	02250118-064	1
replacement coil for 4-way solenoid valve 02250118-013	02250118-016	1
kit, replacement for 3-way solenoid valve 02250133-689	02250125-834	1
replacement coil for 3-way solenoid valve 02250133-689	02250125-853	1
kit, replacement for 2-way solenoid valve 02250125-805	02250125-840	1
replacement coil for 2-way solenoid valve 02250125-805	02250125-854	1
kit, replacement for 2-way solenoid valve 02250125-806	02250125-916	1
replacement coil for 2-way solenoid valve 02250125-806	Consult Factory	1
kit, replacement for blowdown valve 02250119-351	02250122-080	1
kit, replacement for thermal valve 02250124-110	02250124-111	1
replacement coupling for drive (various)	Consult Factory	-
replacement for strainer 02250117-912	02250125-796	1

(Cont. on page 66)

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

Section 10

RECOMMENDED SPARE PARTS LIST

10.2 RECOMMENDED SPARE PARTS LIST (CONT.)

DESCRIPTION	KIT NUMBER	QUANTITY
replacement for pillow block 02250120-842	02250120-842	2
replacement transducer (0-200 psig) 1-5 VDC 11 ft.	02250048-336	1
replacement probe, RTD 100 ohm plat 8" x 12 ft. (T1, T2, T4)	02250124-649	1
replacement probe, RTD 100 ohm plat 3.5" x 20 ft. (T5)	02250044-985	1
replacement probe, RTD 100 ohm plat 3.5" x 12 ft. (T3, T6)	250039-909	1
replacement probe, RTD 100 ohm plat 6"	02250058-087	1
lubricant, AWF	250030-757	5 gal.
lubricant, AWF	250030-758	55 gal.
CONTROLLER ACCESSORIES:		
relay, solid state	02250128-692	1
relay, IDEC	02250128-695	1
relay, socket	02250128-696	1
diode, 1N4005, 1 amp	02250128-697	1
transmitter, temp	02250128-704	1
controller, ems547-50341735	02250128-705	1
module, diagnostic data	02250128-706	1
voltmeter, EG21VM-24	02250128-707	1
breaker, circuit 2 amp	02250128-708	1
breaker, circuit 5 amp	02250128-709	1
breaker, circuit 15 amp	02250128-710	1
heater, panel	02250128-711	1
module, expansion	02250128-712	1
converter, control parts	02250128-713	1
ic, microprocessor DE-18	02250134-900	1
adapter, RJ45 to DB9	02250148-677	1
cable, ribbon	02250145-945	1
pushbutton, E-stop	02250148-038	1
block, contact N.C.	02250148-039	1
block, contact N.O.	02250148-040	1

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

CALIFORNIA

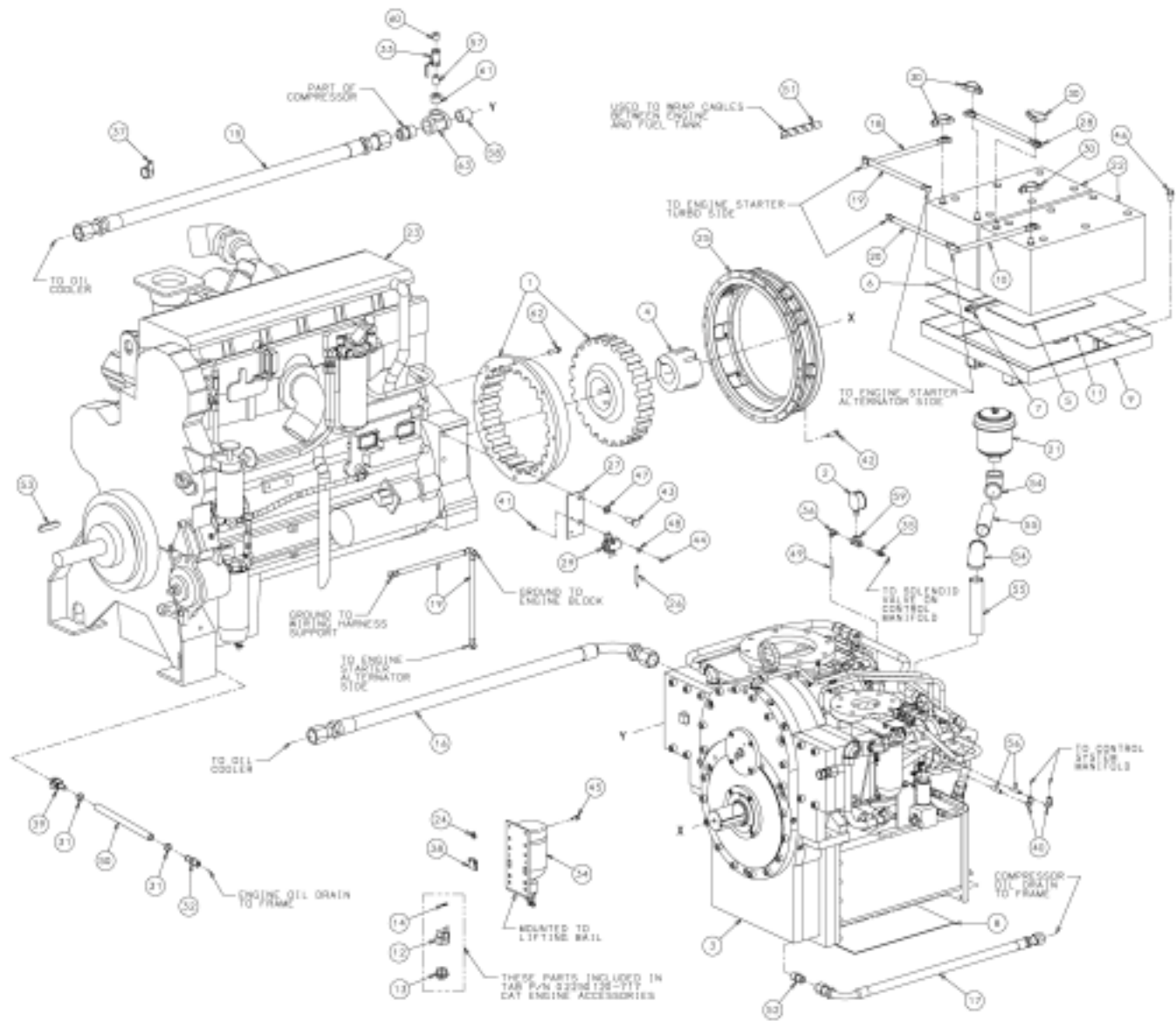
Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and

Section 11

ILLUSTRATIONS AND PARTS LIST

11.1 ENGINE, COMPRESSOR AND PARTS



02250131-691 00

Section 11

ILLUSTRATIONS AND PARTS LIST

11.1 ENGINE, COMPRESSOR AND PARTS

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
1	coupling, drive act-6 1350/350	02250069-601	1
2	gage, air press 2 1/2" 0-200 psi	02250117-009	1
3	compressor & part,dds18150a153e46vh	02250118-147	1
4	bushing, taper de18 drive cplg	02250119-343	1
5	heater,battery pad 120v 50 watt	02250119-352	1
6	heater,battery pad 12v 50 watt	02250121-028	1
7	cord,pwr supply batt heat pad	02250121-029	1
8	heater, oil res 12" x 18" pad de18	02250121-045	1
9	battery tray	02250122-119	1
10	cable,battery 2/0 x 85" lg	02250122-199	1
11	plate,bottom battery tray	02250122-284	1
12	relay,ether control cat de-18	02250123-142	1
13	connector,relay plug de-18 cat	02250123-574	1
14	terminal,blade receptacle de-18 cat	02250123-575	4
15	hose,compr/oil clr lh de18	02250123-958	1
16	hose,compr/oil clr rh de18	02250123-959	1
17	hose,compr/oil drain to skid	02250124-010	1
18	cable,battery 2/0 x 72" lg	02250124-054	1
19	cable,battery 2/0 x 36" lg	02250124-055	3
20	cable,battery 2/0 x 42" lg	02250124-056	1
21	filter,ump brthr 1-1/2" de18	02250124-860	1
22	battery,24v 8d top post 1550cca	02250125-414	2
23	engine, diesel cat c16 550 bhp tier ii	02250125-441	1
24	connector,wire slf-strip tap 16-14	02250125-493	1
25	adapter,compressor de18	02250126-188	1
26	diode,assembly	02250126-233	1
27	support, bracket relay contactor de18	02250137-648	1
28	cable,battery 1/0 x 12" lg	040318	1
29	relay, contactor 24vdc	041088	1
30	boot,battery terminal	041561	4
31	clamp, hose 1/2"	043197	2
32	fitting, hose end m 5/8 x 1/2	044408	1
33	valve,ball 1/2"npt	047117	1
34	aid, starting elec 24v 1600cat	250017-204	1
35	connector,1/4t x 1/4 npt str	250018-428	1
36	elbow, 90 1/4t pls x 1/4 npt m	250018-430	1
37	clamp, tube rubr ctd 1-3/8" dia	250025-638	1
38	block,contact 1nc	250027-125	1
39	valve, drain 1-1/8-12unf	250031-046	1
40	elbow, tube -f 1/4 x 1/8	810404-012	2
41	nut,hex f pltd 1/4-20	825304-236	2
42	capscr, hex gr8 7/16-14 x 1 1/2	827907-150	24
43	capscr, hex gr5 5/8-11 x 1 3/4	829110-175	2
44	screw, hex ser washer 1/4-20 x 3/4	829704-075	2
45	screw, hex ser washer 5/16-18 x 3/4	829705-075	2
46	screw, hex ser washer 1/2-13 x 1	829708-100	4
47	washer, spr lock reg pltd 5/8	837810-156	2
48	washer, pl-b reg pltd 1/4	838204-071	2
49	tubing, stnls stl 1/4 20ga ft	841215-004	1
50	hose,heater 5/8 (ft)	842115-062	5
51	wrap,spiral wire 1 (ft)	848700-100	2
52	connector,37 fl/mpt pltd 3/4 x 3/4	860112-075	1
53	key,paral iso r773 20x12x100	865220-100	1

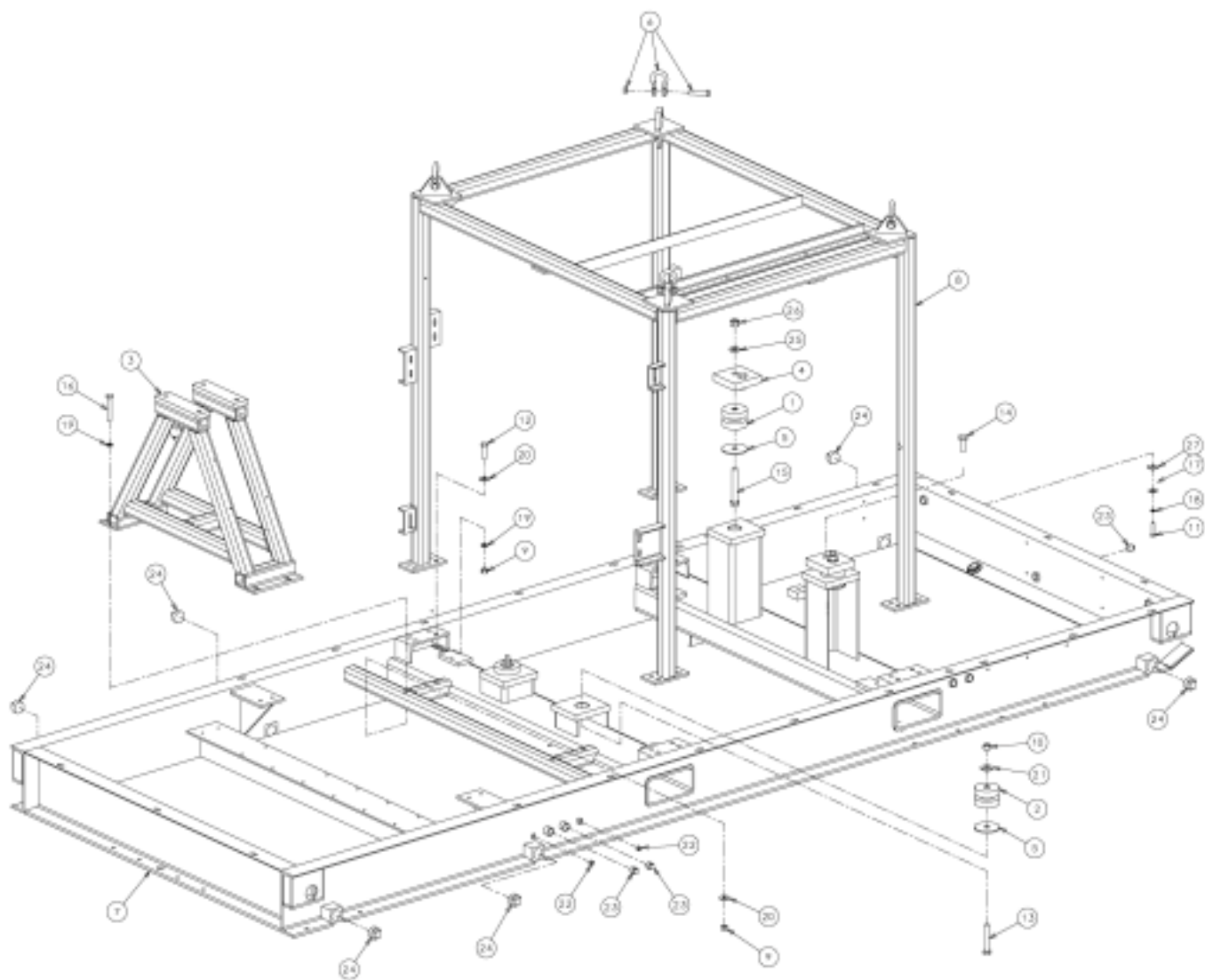
Section 11

ILLUSTRATIONS AND PARTS LIST

11.1 ENGINE, COMPRESSOR AND PARTS

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
54	elbow, pipe 90 deg plt 1 1/2"	866215-060	2
55	nipple,pipe pltd 1 1/2 x 8	866324-080	2
56	nipple,pipe-xs plt 1/8 x 2	866402-020	2
57	nipple,pipe-xs plt 1/2 x cl	866408-000	1
58	nipple,pipe-xs plt 1 1/4 x cl	866420-000	1
59	tee, pipe 150# plt 1/4	866815-010	1
60	plug, pipe 1/2" 3000# stl plt	866900-020	1
61	bushing,red pltd 1 x 1/2	867104-020	1
62	capscrew, ferry head hd pltd 1/2-13 x 1 1/2	867308-150	8
63	tee, reducing pltd 1 1/4 x 1 1/4 x 1	867505-054	1

Section 11
ILLUSTRATIONS AND PARTS LIST
11.2 FRAME AND PARTS



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Section 11

ILLUSTRATIONS AND PARTS LIST

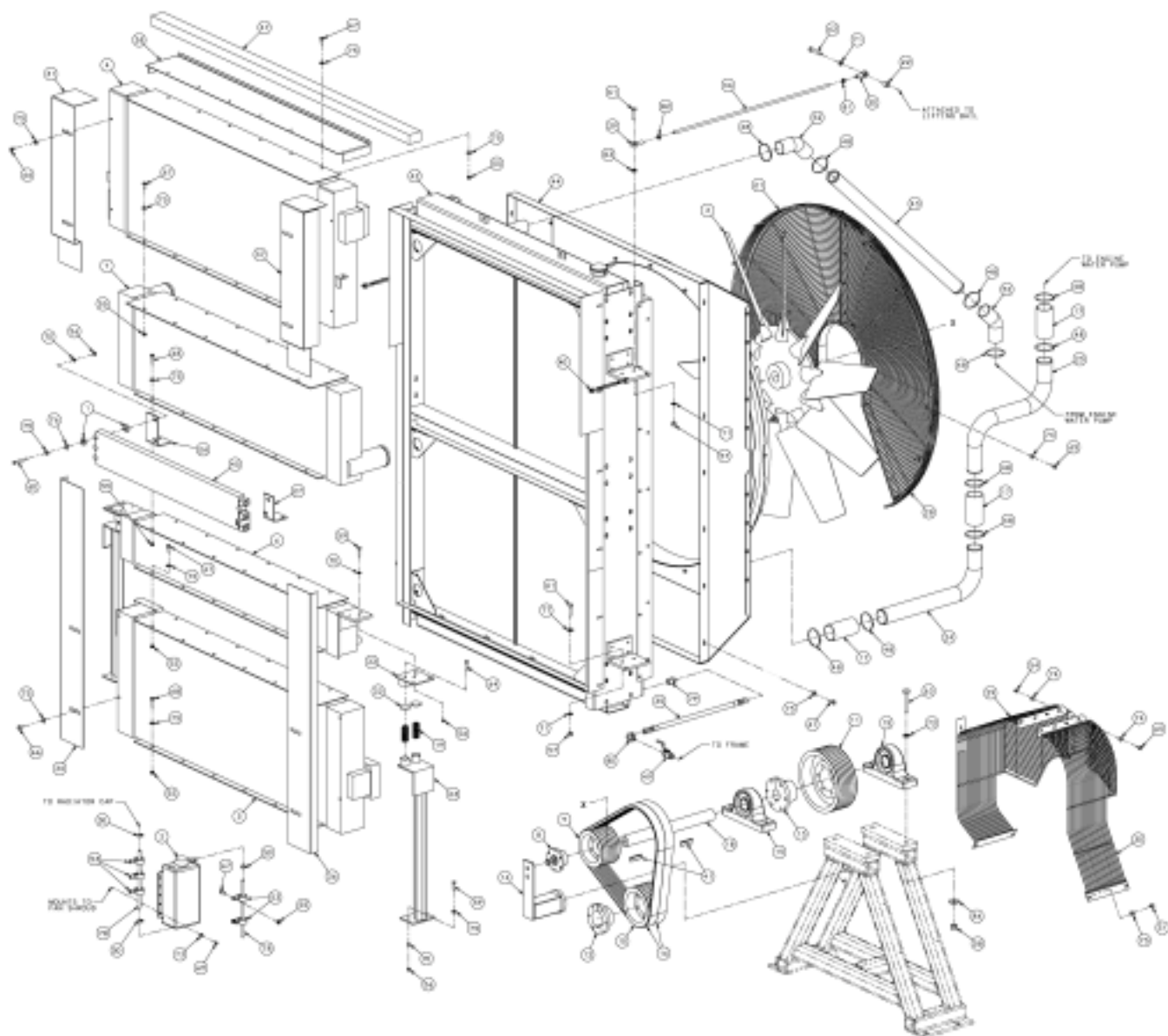
11.2 FRAME AND PARTS

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
1	isolator, vibration 600lbs	02250120-153	2
2	isolator, vibration 1400lbs	02250120-154	2
3	support, fan pulley pillow block	02250120-864	1
4	block, spacer compr foot de18	02250120-940	2
5	washer, snubbing vib iso de18	02250121-447	4
6	shackle,blt type 3/4" 4.7 tons de18	02250121-678	4
7	frame assy, de18 tier ii	02250131-663	1
8	baill, lifting de-18 skid new	02250136-704	1
9	nut,hex pltd 3/4-10	826012-665	20
10	nut,hex pltd 7/8-9	826014-776	2
11	capscr, hex gr8 1/2-13 x 2 1/2	827908-250	22
12	capscr, hex gr8 3/4-10 x 2 3/4	827912-275	16
13	capscr, hex gr8 7/8-9 x 5 1/2	827914-550	2
14	capscr, hex gr8 1-8 x 2 1/2	827916-250	2
15	capscr, hex gr8 1-8 x 7	827916-700	2
16	capscr, hex gr5 3/4-10 x 5	829112-500	4
17	washer, bevel 1/2	837008-125	22
18	washer, spr lock reg pltd 1/2	837808-125	22
19	washer, spr lock reg pltd 3/4	837812-188	20
20	washer, pl-b reg pltd 3/4	838212-112	20
21	washer, pl-b reg pltd 1	838216-174	2
22	plug, pipe 1/2" 3000# stl plt	866900-020	2
23	plug, pipe 1" 3000# stl plt	866900-040	3
24	plug, pipe 2" 3000# stl plt	866900-080	6
25	washer, extra thk pltd 1	870716-210	2
26	nut,hex locking 1-8 gr8	874616-513	2
27	wash, chnl 1/2" zinc pltd	878108-162	22

Section 11

ILLUSTRATIONS AND PARTS LIST

11.3 RADIATOR AND COOLERS



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Section 11

ILLUSTRATIONS AND PARTS LIST

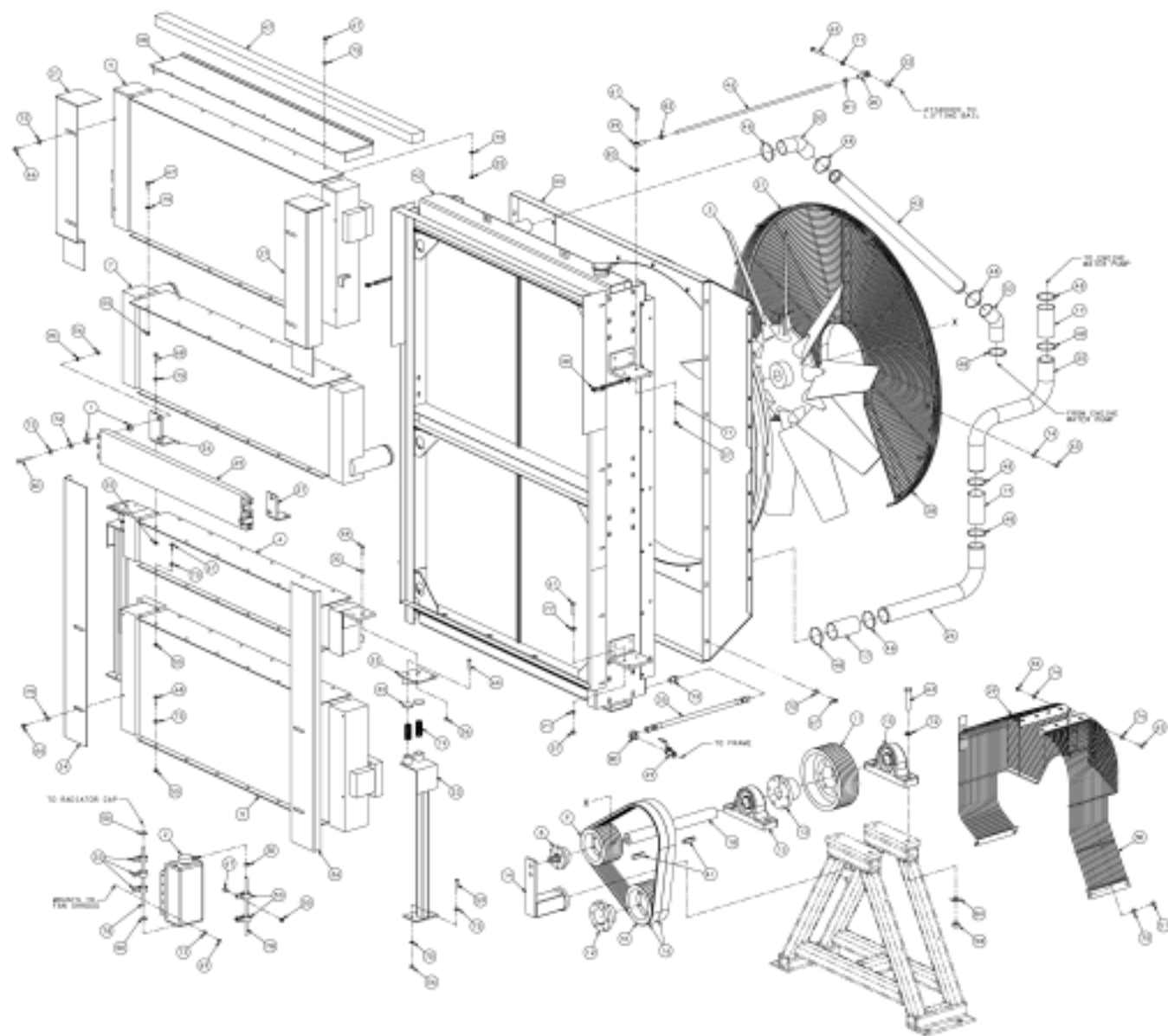
11.3 RADIATOR AND COOLERS

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
1	grommet, rubber mtg 35 lbs	02250094-185	4
2	bottle,rad fluid recovery 5qt	02250108-230	1
3	fan,cooling 60° suction de-18	02250119-554	1
4	cooler, air/air-after-clr de-18	02250119-668	1
5	cooler, air/air inter	02250119-669	1
6	cooler, air/oil de18	02250119-670	1
7	cooler, charge air de18	02250119-671	1
8	bearing,idler pulley qd-type bshg de18	02250120-589	1
9	sheave, qd 7.5"-od	02250120-607	1
10	sheave, qd 8"-od	02250120-608	1
11	sheave, qd 12.5"-od	02250120-609	1
12	bushing,qd size e 3 3/8" bore	02250120-818	1
13	bushing,qd size f 2-3/16" bore	02250120-819	1
14	tensioner,elastomeric lvjy se45 de18	02250120-838	1
15	block,pillow 2 3/16" bore de-18	02250120-842	2
16	belt, v gates super hc 35vx710	02250120-933	2
17	hose,rad cat 3" id x 6" lg	02250121-239	3
18	shaft, fan drive 2-3/16" - dia de18	02250121-241	1
19	spring,compr 1.25" x 3" x .148" ss	02250121-291	4
20	rod,end ball joint 1/2-20 unf	02250121-517	2
21	guard, fan 60° rh de-18	02250121-687	1
22	spacer, shld radiator de18	02250121-690	2
23	support, oil cooler mtg de-18	02250121-691	2
24	tube, radiator 2-7/8 eng disch de18	02250121-860	1
25	tube, radiator 2-7/8 outlet de18	02250121-861	1
26	support,fuel cooler rh de18	02250121-863	1
27	support,fuel cooler lh de18	02250121-864	1
28	guard, fan 60: lh de-18	02250121-933	1
29	guard, fan belt rh de-18	02250121-936	1
30	grd,fan belt lh de18	02250121-937	1
31	shroud,clrpk side/up r.h. de18	02250122-273	1
32	plate, thrust spring	02250122-526	4
33	support, spring w/clmp brkt	02250122-548	2
34	shroud, cover lower side r.h.	02250122-604	1
35	hose,radiator drain to skid	02250124-003	1
36	shroud,clr pk side lwr de18 lh	02250124-375	1
37	shrd; clrpk side/up l.h de18	02250124-376	1
38	shroud, cover radiator top de18	02250124-752	1
39	rod,end ball joint 1/2-20 unf	02250124-988	2
40	turnbuckle,3/8" jaw-jaw	02250128-069	2
41	key,sqkey square class 2	02250129-026	2
42	radiator,eng c16	02250130-792	1
43	tube, aluminum 2.50 od x 45" lg	02250130-798	1
44	shroud, assembly de-18 tier ii	02250131-910	1
45	cooler, fuel de-18	02250134-501	1
46	rod, threaded bail to airoc 38.75"	02250136-760	2
47	insulation,foam accoust 3"x2"x79.75"	02250136-863	2
48	clamp, hose 3"	040343	10
49	valve,ball 1/2"npt	047117	1
50	clamp, hose 3/8"	047235	3
51	screw,thrd form type c 3/8 x 3/4	049821	4
52	elbow, rad 45deg 2-1/2" id	250016-938	2
53	clamp, tube rubr ctd 1-3/8" dia	250025-638	5

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ILLUSTRATIONS AND PARTS LIST

11.3 RADIATOR AND COOLERS



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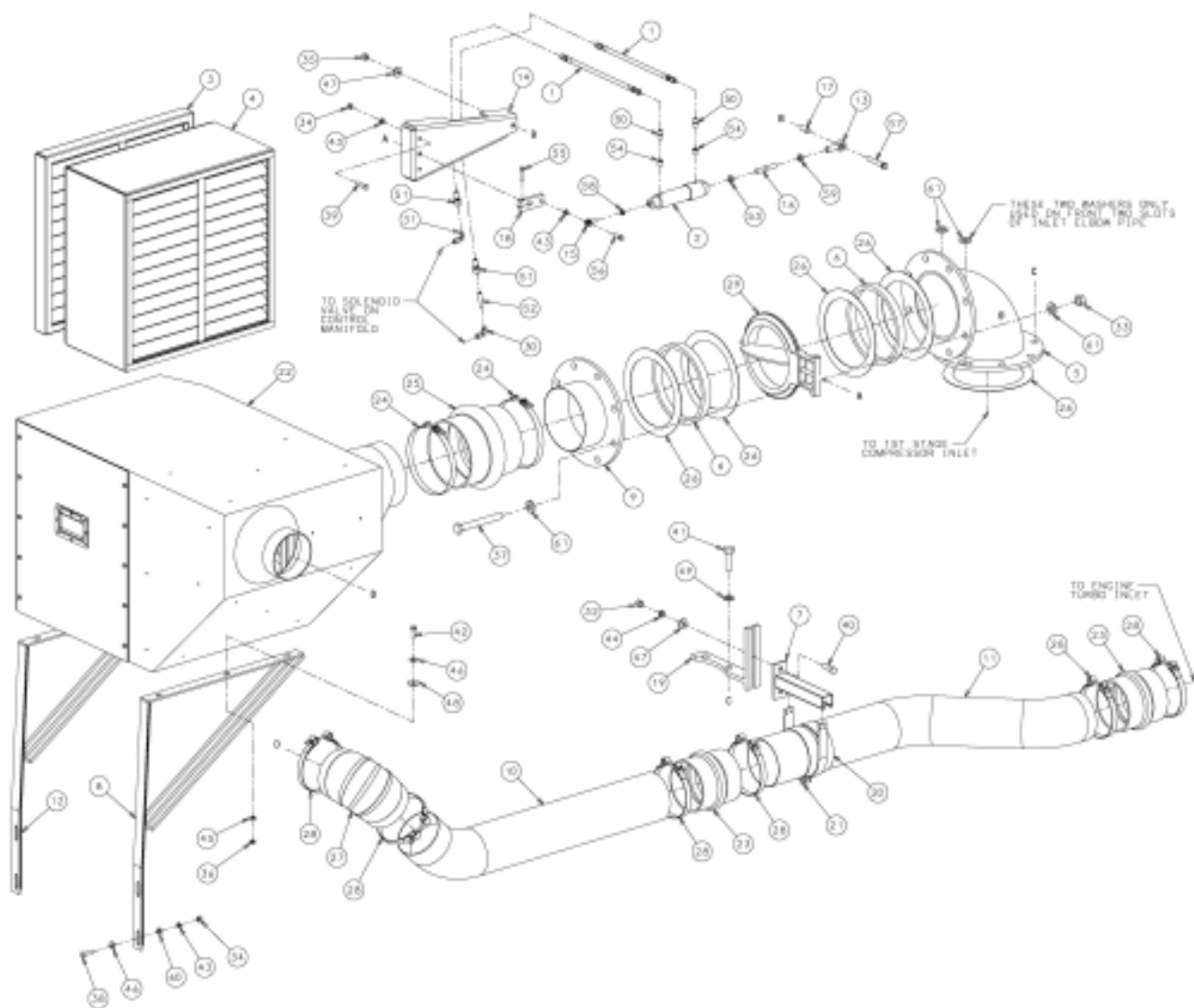
Section 11

ILLUSTRATIONS AND PARTS LIST

11.3 RADIATOR AND COOLERS

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
54	nut,hex f pltd 5/16-18	825305-283	10
55	nut,hex f pltd 3/8-16	825306-347	56
56	nut,hex pltd 3/8-16	826006-337	10
57	nut,hex pltd 1/2-13	826008-448	5
58	nut,hex pltd 3/4-10	826012-665	4
59	capscr, hex gr8 3/8-16 x 1 1/2	827906-150	6
60	capscr, hex gr8 3/8-16 x 3	827906-300	4
61	capscr, hex gr8 1/2-13 x 2	827908-200	6
62	capscr, hex gr8 1/2-13 x 3	827908-300	2
63	capscr, hex gr8 3/4-10 x 4	827912-400	4
64	capscr, hex gr5 3/8-16 x 1 3/4	829106-175	4
65	screw, hex ser washer 5/16-18 x 1	829705-100	20
66	screw, hex ser washer 3/8-16 x 3/4	829706-075	8
67	screw, hex ser washer 3/8-16 x 1	829706-100	56
68	screw, hex ser washer 3/8-16 x 1 1/2	829706-150	14
69	screw, self-drill 1/4 x 1/2	834504-050	4
70	washer, spr lock reg pltd 3/8	837806-094	10
71	washer, spr lock reg pltd 1/2	837808-125	8
72	washer, spr lock reg pltd 3/4	837812-188	4
73	washer, pl-b reg pltd 1/4	838204-071	4
74	washer, pl-b reg pltd 5/16	838205-071	30
75	washer, pl-b reg pltd 3/8	838206-071	94
76	washer, pl-b reg pltd 7/16	838207-071	4
77	washer, pl-b reg pltd 1/2	838208-112	4
78	hose,fuel line 1/4 (ft)	842315-025	6
79	connector,37 fl/mpt pltd 1/2 x 3/4	860108-075	1
80	elbow, 37fl 90m 1/2 x 3/4	860208-075	1
81	nut, hex jam lh pltd 1/2-20	866608-323	2
82	nut, hex jam rh pltd 1/2-20	868208-323	2
83	washer, extra thk pltd 1/2	870708-153	2
84	washer, pl-b hardened pltd 3/4	875112-112	4

Section 11
ILLUSTRATIONS AND PARTS LIST
11.4 AIR INLET SYSTEM



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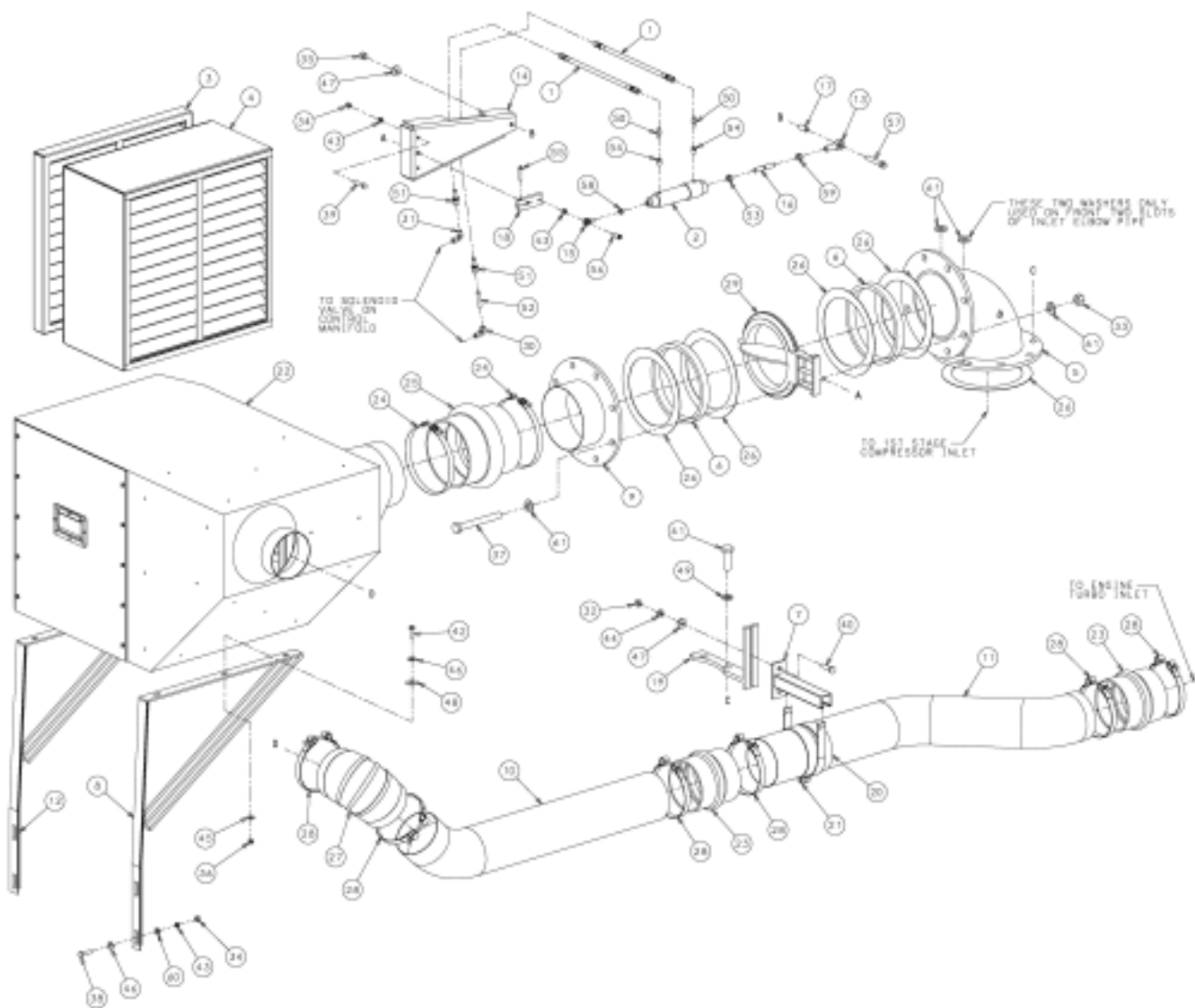
Section 11

ILLUSTRATIONS AND PARTS LIST

11.4 AIR INLET SYSTEM

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
1	hose,hydrocyl to feed ds13 ac	02250107-882	2
2	cylinder, hydraulic	02250118-194	1
3	filter, air de-18	02250119-338	1
4	filter, air de-18	02250119-339	1
5	pipe,elbow inlet 8" cs de-18	02250120-547	1
6	spacer,inlet 9" cs tubing	02250121-083	2
7	support, bracket de18 b-line b409-9	02250121-484	1
8	support, air filter de18	02250121-609	1
9	adapter, compressor air inlet	02250121-610	1
10	pipe,turbo inlet 6"	02250121-617	1
11	pipe,turbo inlet 6"	02250121-618	1
12	support, air filter de-18 lh	02250124-127	1
13	rod,end ball joint 1/2-20 unf	02250124-988	1
14	support,inlet control valve	02250125-053	1
15	bearing,spherical rod end 3/8"-24	02250126-494	1
16	rod, control 1/2" x 2.7"	02250126-545	1
17	spacer,tube 1/2" x 1 3/16"	02250126-579	1
18	lever, inlet valve de18	02250126-602	1
19	support, pipe brkt	02250127-576	1
20	isolator, vibration 1-5/8 x 18"	02250129-240	2
21	clamp, pipe 6-3/8"b-line b2112 de	02250130-825	1
22	assy,air inlet flr de18 tier 2	02250134-510	1
23	connector, hump hose 6" id	040302	2
24	clamp, t-bolt ss band 8.75" id	043598	2
25	hose, hump 8 x 8"	044733	1
26	gasket, asa flange 150# 8"	240621-013	5
27	elbow, 6" 90\$ rubber	242317	1
28	clamp, hose 6-9/16" to 6-1/4"	250020-159	6
29	valve, butterfly 8"	40338	1
30	elbow, tube -f 1/4 x 1/8	810404-012	1
31	elbow, tube 90 deg m 1/4 x 1/8	810504-012	1
32	nut,hex pltd 1/2-13	825108-448	2
33	nut,hex pltd 3/4-10	825112-665	8
34	nut,hex pltd 3/8-16	825206-337	6
35	nut,hex pltd 1/2-13	825208-448	1
36	nut,hex f pltd 5/16-18	825305-283	6
37	capscr, hex gr8 3/4-10 x 6 1/2	827912-650	8
38	capscr, hex gr5 3/8-16 x 1 1/2	829106-150	4
39	capscr, hex gr5 3/8-16 x 1 3/4	829106-175	2
40	capscr, hex gr5 1/2-13 x 1 3/4	829108-175	2
41	capscr, hex 10.9 m20 x 60mm	829220-060	8
42	screw, hex ser washer 5/16-18 x 1 1/2	829705-125	6
43	washer, spr lock reg pltd 3/8	837806-094	7
44	washer, spr lock reg pltd 1/2	837808-125	2
45	washer, pl-b reg pltd 5/16	838205-071	6
46	washer, pl-b reg pltd 3/8	838206-071	10
47	washer, pl-b reg pltd 1/2	838208-112	3
48	washer, pl-b wide pltd 7/16	838307-112	6
49	washer, spr lock-metric pltd m20	838820-400	8
50	connector,37 fl/mpt pltd 1/4 x 1/8	860104-012	2
51	connector, 37fl f bhd 1/4 x 1/8	862004-012	2
52	nipple,pipe-xs plt 1/8 x 2	866402-020	1
53	nut, hex jam lh pltd 1/2-20	866608-323	1

Section 11
ILLUSTRATIONS AND PARTS LIST
 11.4 AIR INLET SYSTEM



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Section 11
ILLUSTRATIONS AND PARTS LIST

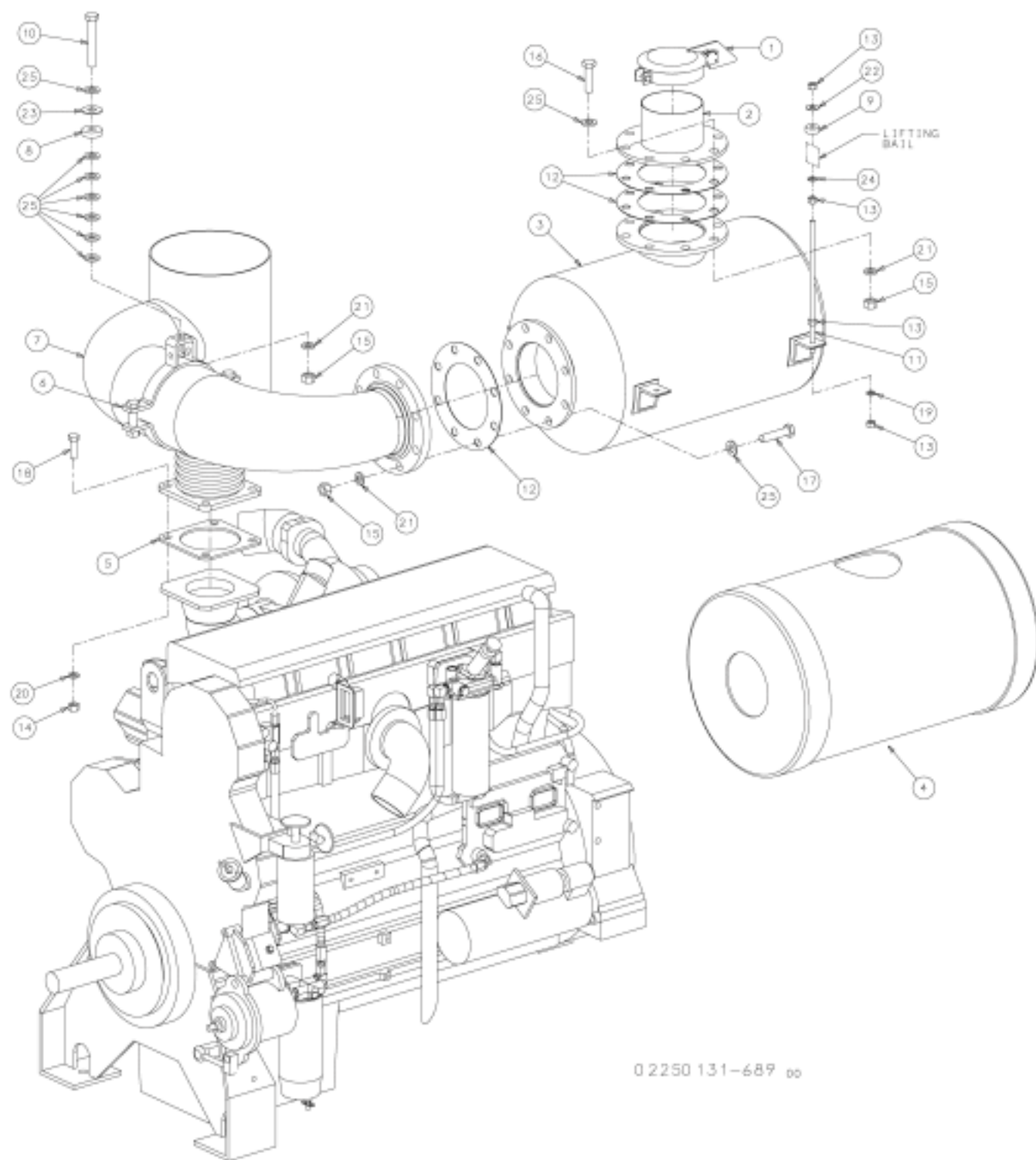
11.4 AIR INLET SYSTEM

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
54	bushing, red pltd 1/4 x 1/8	867100-005	2
55	capscrew, ferry head hd pltd 5/16-18 x 1 1/4	867305-150	1
56	capscrew, ferry head hd pltd 3/8-16 x 1 1/4	867306-125	1
57	capscrew, ferry head hd pltd 1/2-13 x 3	867308-300	1
58	nut, hex jam rh pltd 3/8-24	868206-227	1
59	nut, hex jam rh pltd 1/2-20	868208-323	1
60	washer, extra thk pltd 3/8	870706-108	4
61	washer, extra thk pltd 3/4	870712-178	18

Section 11

ILLUSTRATIONS AND PARTS LIST

11.5 ENGINE EXHAUST SYSTEM



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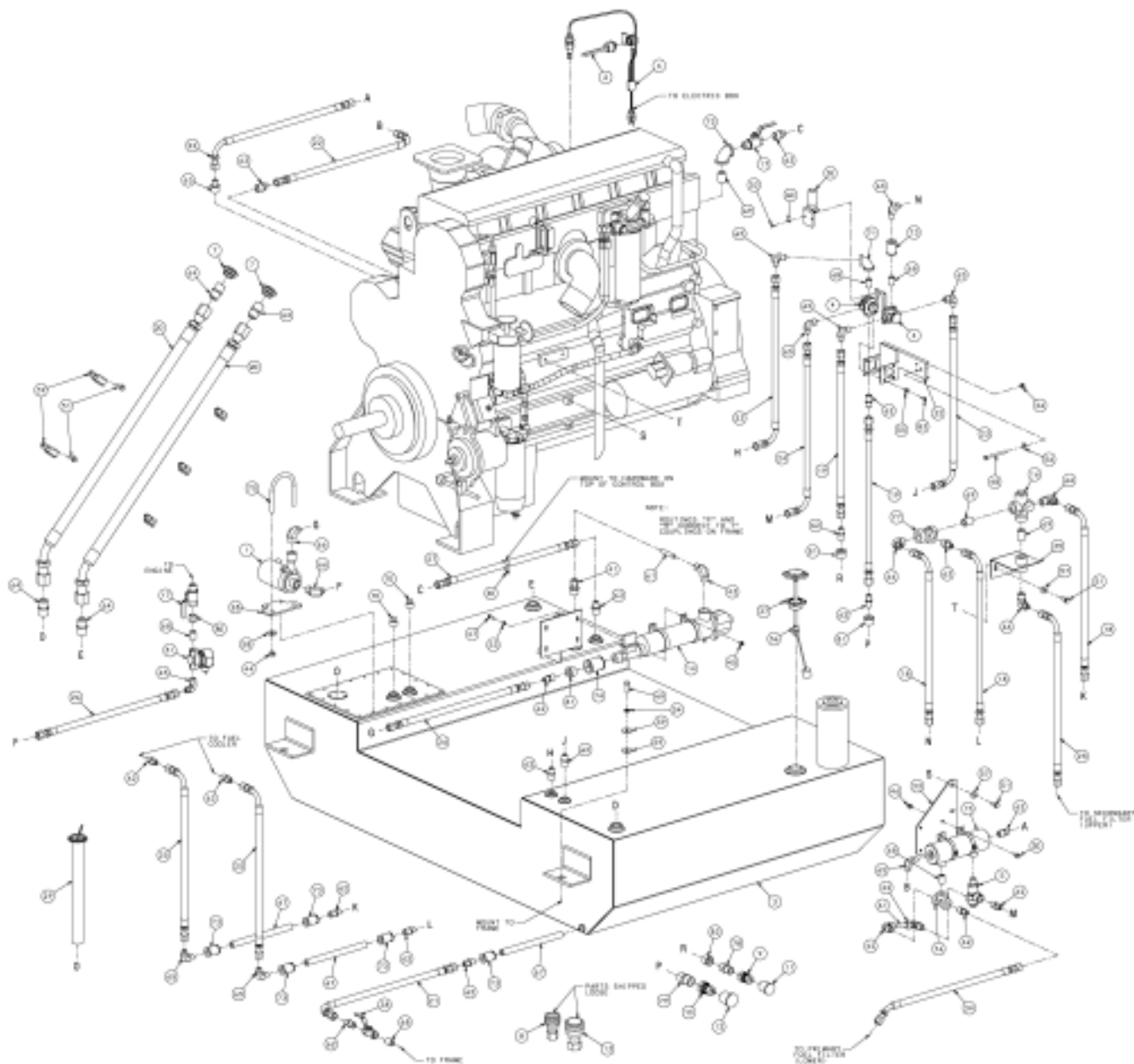
Section 11

ILLUSTRATIONS AND PARTS LIST

11.5 ENGINE EXHAUST SYSTEM

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
1	rain-cap, exhaust 5.75" to 6.35" dia	02250051-589	1
2	adapter, inlet assy sds	02250105-687	1
3	silencer, exhaust engine de-18 em compact	02250120-096	1
4	insulation,thrm1 blnkt exh sil de-18	02250121-015	1
5	gasket, exhaust laminated	02250122-285	1
6	support, pipe exhaust de-18	02250124-711	1
7	pipe,asy eng exh de18	02250125-445	1
8	washer, sealing rub 3/4 x 2 x 1/2	02250125-530	1
9	washer, sealing rub 1/2 x 1-3/8 x 1/2	02250125-631	4
10	bolt, tap hex gr8 3/4-10 x 5 lg	02250131-911	1
11	rod, threaded exh muff 14" lg de18	02250136-759	4
12	gasket,full face 125# 6"	250028-741	3
13	nut,hex pltd 1/2-13	825108-448	16
14	nut,hex pltd 5/8-11	825110-559	4
15	nut,hex pltd 3/4-10	825112-665	17
16	capscr, hex gr8 3/4-10 x 2 3/4	827912-275	8
17	capscr, hex gr8 3/4-10 x 3 1/4	827912-325	8
18	capscr, hex gr5 5/8-11 x 2	829110-200	4
19	washer, spr lock reg pltd 1/2	837808-125	4
20	washer, spr lock reg pltd 5/8	837810-156	4
21	washer, spr lock reg pltd 3/4	837812-188	17
22	washer, pl-b reg pltd 1/2	838208-112	4
23	washer, pl-b reg pltd 3/4	838212-112	1
24	washer, extra thk pltd 7/16	870707-108	4
25	washer, extra thk pltd 3/4	870712-178	23

Section 11
ILLUSTRATIONS AND PARTS LIST
11.6 ENGINE FUEL SYSTEM



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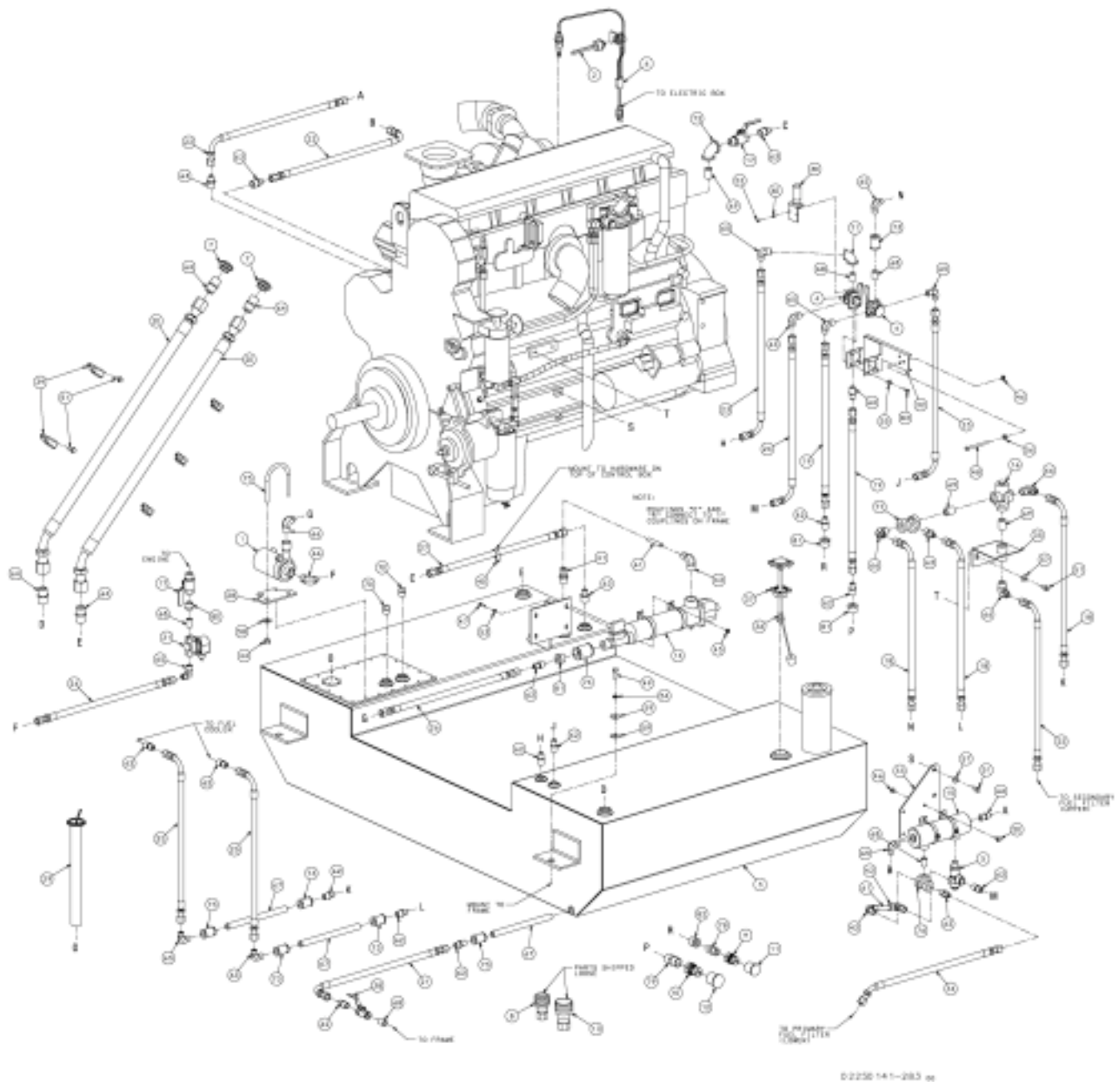
Section 11

ILLUSTRATIONS AND PARTS LIST

11.6 ENGINE FUEL SYSTEM

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
1	pump, coolant 1/50 hp 115/1/60	02250119-344	1
2	heater,immersion jckt wtr	02250119-353	1
3	tank, fuel 250gal de18	02250120-095	1
4	valve,plug 3-way 1/2" npt brass	02250120-146	2
5	valve, thermostat 1/2" fuel htr	02250121-024	1
6	cord,thermo 120v 80-100 deg f	02250121-036	1
7	ventilator,1"-npt fuel tank de18	02250121-093	2
8	coupling, quick disc fem x 3/4" fnpt	02250121-344	1
9	coupling, quick disc male x 3/4" fnpt	02250121-345	1
10	coupling, quick disc male x 1" fnpt	02250121-346	1
11	cap, dust 3/4" parker santo	02250121-349	1
12	cap, dust 1" parker santo	02250121-351	1
13	coupling, quick disc fem x 1" fnpt	02250121-352	1
14	heater,tank w/thermostat 1500w	02250121-451	1
15	heater,diesel fuel de18 1/2" npt	02250122-115	1
16	valve, thermal bypass 3/4" npt de18	02250123-806	1
17	valve, ball 3/4"m x 3/4" f npt brs	02250123-888	2
18	hose,amot to clr pack bulkhead	02250123-962	3
19	hose,auxiliary fuel supply	02250123-963	2
20	hose,breathe rt/lt front de18	02250123-965	2
21	hose,fuel drain to skid	02250123-979	1
22	hose,3-way fuel vlv to therm vlv	02250123-981	2
23	hose,fuel wmr right clr line	02250123-982	2
24	hose,right vlv blk to tank	02250123-983	1
25	hose,fuel clr out to clr pk	02250124-007	3
26	hose,pump/bv pump/htstart de18	02250124-020	2
27	hose,ball vlv eng to tank de18	02250124-022	1
28	support,circ pump fuel htr	02250124-203	1
29	sender, fuel level tubular 16" de18	02250124-669	1
30	handle, assembly fuel source selector	02250124-852	1
31	valve, solenoid 2wnc 1/2 125# 110/120+	02250125-806	1
32	support, bracket fuel valve de-18	02250125-933	1
33	mounting,bracket engine	02250127-450	1
34	hose,fuel warm to fuel sep	02250127-958	1
35	support,brk amot de18 tier ii	02250136-348	1
36	gauge,fuel tank level de18 tier ii	02250136-908	1
37	adapter, fuel gag 136-908	02250136-919	1
38	valve,ball 1/2"npt	047117	1
39	clamp, tube rubr ctd 1-3/8" dia	250025-638	5
40	clamp, hose 5/8" i.d.	408300-005	1
41	connector, tube-m 1/2 x 3/4	810208-075	1
42	elbow, tube 90 deg m 1/2 x 1/2	810508-050	2
43	elbow, tube 90 deg m 1/2 x 3/4	810508-075	1
44	nut,hex pltd 1/2-13	825208-448	2
45	nut,hex f pltd 1/4-20	825304-236	4
46	nut,hex f pltd 5/16-18	825305-283	7
47	capscr, hex gr5 1/4-20 x 1	829104-100	4
48	capscr, hex gr5 5/16-18 x 3 3/4	829105-375	3
49	capscr, hex gr5 7/16-14 x 1 1/4	829107-125	4
50	screw, hex ser washer 5/16-18 x 3/4	829705-075	4
51	screw, hex ser washer 3/8-16 x 1	829706-100	9
52	screw, to-f pan #8-32 x 1/2	835601-050	2
53	washer, spr lock reg pltd 1/4	837804-062	4

Section 11
ILLUSTRATIONS AND PARTS LIST
11.6 ENGINE FUEL SYSTEM



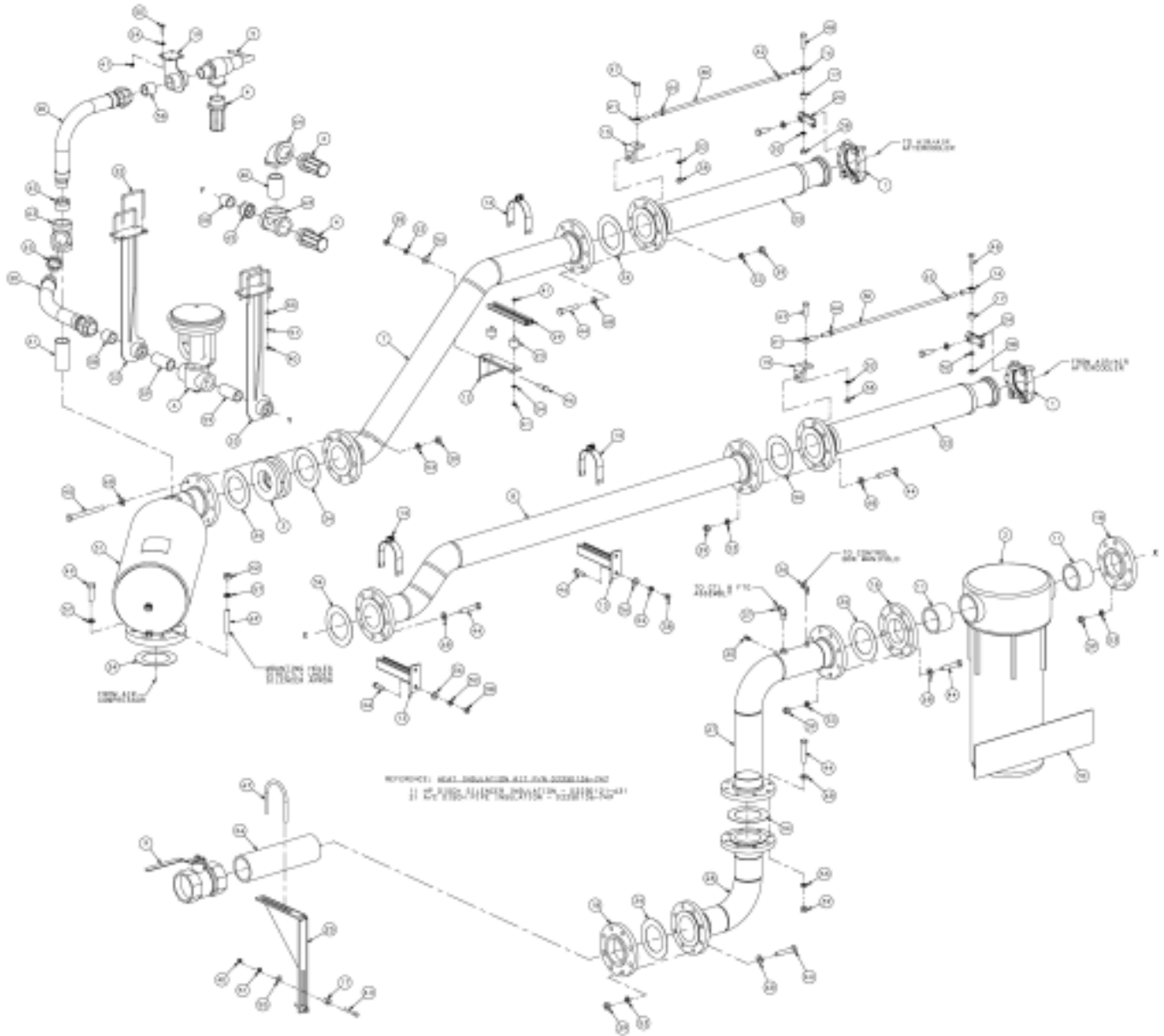
Section 11

ILLUSTRATIONS AND PARTS LIST

11.6 ENGINE FUEL SYSTEM

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
54	washer, spr lock reg pltd 7/16	837807-112	4
55	washer, pl-b reg pltd 1/4	838204-071	8
56	washer, pl-b reg pltd 5/16	838205-071	3
57	washer, pl-b reg pltd 3/8	838206-071	4
58	washer, pl-b reg pltd 1/2	838208-112	2
59	washer, pl-b wide pltd 7/16	838307-112	8
60	washer, lock ext tooth #10	838402-025	2
61	tubing, stnl stl 1/2 20ga ft	841215-008	2
62	connector,37 fl/mpt pltd 1/2 x 1/2	860108-050	15
63	connector,37 fl/mpt pltd 1/2 x 3/4	860108-075	5
64	connector,37 fl/mpt pltd 1 x 1	860116-100	4
65	elbow, 37fl 90m 1/2 x 1/2	860208-050	9
66	elbow, 37fl 90m 1/2 x 3/4	860208-075	5
67	nipple,pipe pltd 1/2 x 11	866308-110	3
68	nipple,pipe-xs plt 1/2 x cl	866408-000	5
69	nipple,pipe-xs plt 3/4 x cl	866412-000	3
70	plug, pipe 3/4" 3000# stl plt	866900-030	2
71	elbow, pipe 90 deg 300# plt 1/2"	867030-020	1
72	elbow, pipe 90 deg 300# plt 3/4"	867030-030	1
73	coupling,pipe 1/2 300# plt	867430-020	6
74	coupling,pipe 1 300# plt	867430-040	1
75	u-bolt, 1/2" x 3" pipe pltd	868308-300	1
76	tee, pipe pltd 1/2	868430-020	1
77	tee, pipe pltd 3/4	868430-030	1
78	nipple,pipe-hx pltd 3/4 x 3/4	868512-075	1
79	nipple,pipe-hx pltd 1 x 1	868516-100	1
80	bushing,red hex pltd 3/4 x 1/2	868903-020	1
81	bushing,red hex pltd 1 x 1/2	868904-020	3
82	bushing,red hex pltd 1 x 3/4	868904-030	1
83	screw, socket iso m6 x 16mm pc 12.9	874506-016	8

Section 11
ILLUSTRATIONS AND PARTS LIST
11.7 HP STAGE PIPING AND COOLING



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ILLUSTRATIONS AND PARTS LIST

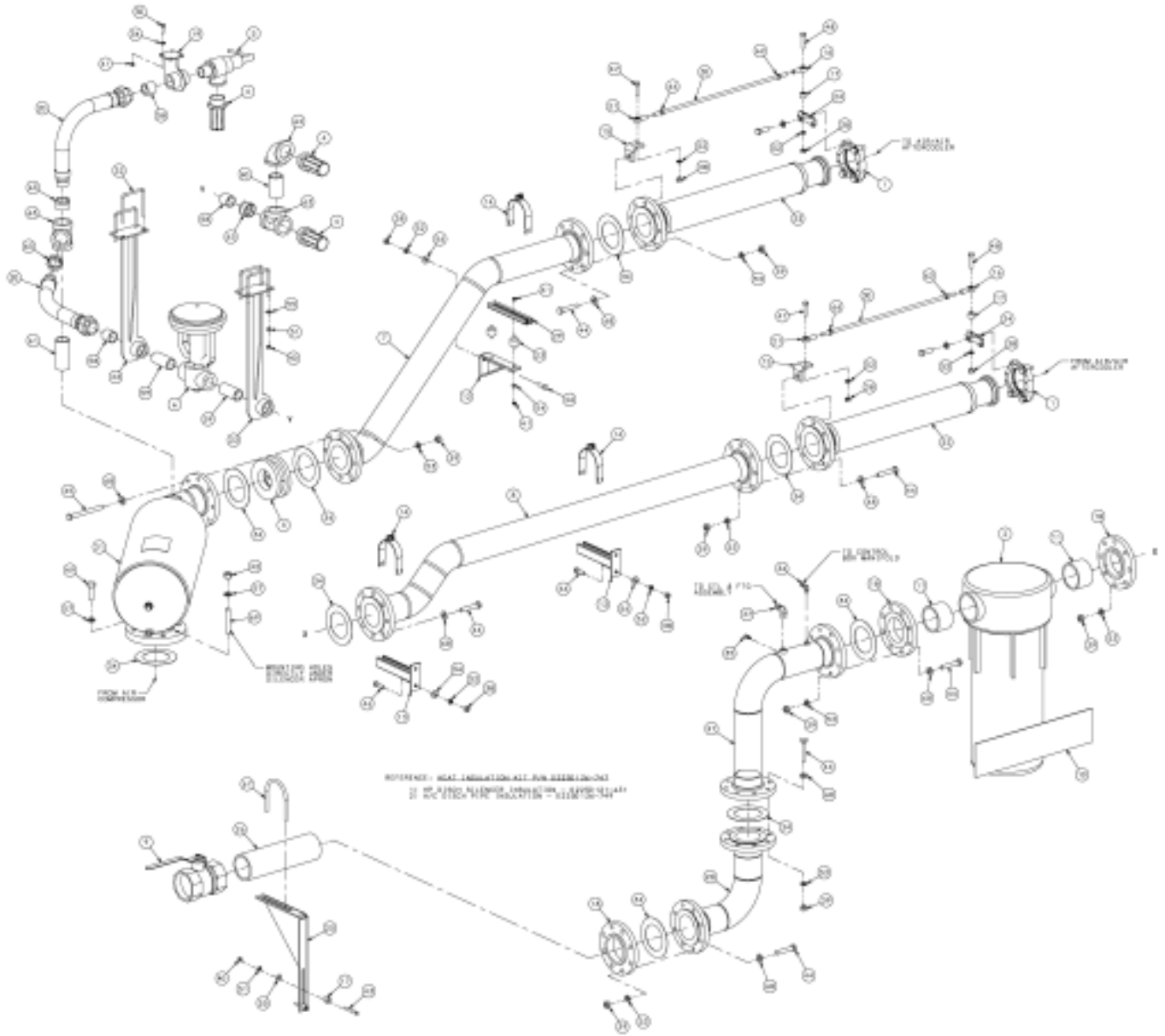
11.7 HP STAGE PIPING AND COOLING

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
1	flange, split 4" sae j518	02250105-533	2
2	separator, water d-h ws1000 4"npt l/autodrain	02250111-106	1
3	valve, check 4"	02250116-231	1
4	muffler, 2"-blowdown	02250118-040	3
5	valve, relief 1 1/2" x 2"fnpt 165psi	02250118-045	1
6	valve, blowdown 2wno 1 1/2"npt	02250119-351	1
7	pipe,a/c disch 4"	02250120-613	1
8	pipe,4" aftercooler discharge	02250120-641	1
9	valve, ball 4"npt	02250120-932	1
10	heater,cond trap 6" x 25" disch	02250121-044	1
11	nipple, pipe 304ss sch 40 4" x 4" cls	02250121-261	2
12	support, pipe de18 b-line b187	02250121-481	1
13	support, bracket de18 b-line b409-9	02250121-484	2
14	clamp, pipe 4.5" b-line b2017	02250121-487	3
15	support, angle intercooler	02250121-502	2
16	rod,end ball joint 1/2-20 unf	02250121-517	2
17	spacer, shld radiator de18	02250121-690	4
18	flange,thr'd 150# 4" ss	02250122-804	3
19	support,hp rll vlv	02250123-767	1
20	hose, flexible 1-1/2" x 24"	02250123-867	2
21	rod,end ball joint 1/2-20 unf	02250124-988	2
22	hose, flexible 4"x 38"ss braid de18	02250126-803	2
23	isolator, vibration silicone de18 1.5"dia	02250130-927	2
24	support,affrcr thrml adj de18	02250131-028	2
25	support, bracket hp 4"disch pipe de18	02250131-611	1
26	nipple, pipe 304ss sch 40 4" x 15" lg	02250133-313	1
27	pipe, discharge upper 4" de18 tier ii	02250133-349	1
28	pipe, discharge lower 4" de18 tier ii	02250133-350	1
29	chnl,b-line 10"lg de18	02250136-757	1
30	rod, threaded hpp 28.25"lg de18	02250136-761	2
31	silencer,hp disch 12.75 dia de-18	02250144-922	1
32	u-bolt,square 3/8-16 5" x 4"	02250144-925	4
33	support,blowdown vlv assy de18	02250144-931	2
34	gasket,flg carbon 4" pipe 150#	02250147-695	9
35	fitting, compress adj	250028-635	1
36	elbow, tube 90 deg m 1/4 x 1/4	810504-025	1
37	elbow, tube 90 deg m 1/2 x 1/2	810508-050	1
38	nut,hex pltd 1/2-13	825108-448	9
39	nut,hex pltd 5/8-11	825110-559	56
40	nut,hex pltd 3/8-16	825206-337	10
41	nut,hex f pltd 5/16-18	825305-283	8
42	capscr, hex gr8 3/8-16 x 3	827906-300	2
43	capscr, hex gr8 5/8-11 x 3 1/2	827910-350	48
44	capscr, hex gr8 5/8-11 x 7	827910-700	8
45	capscr, hex gr5 1/2-13 x 1 3/4	829108-175	5
46	capscr, hex gr5 1/2-13 x 2	829108-200	2
47	capscr, hex gr5 1/2-13 x 2 1/4	829108-225	2
48	capscr, hex 10.9 m20 x 60mm	829220-060	8
49	screw, hex ser washer 5/16-18 x 1 1/2	829705-125	4
50	washer, spr lock reg pltd 3/8	837806-094	10
51	washer, spr lock reg pltd 1/2	837808-125	9
52	washer, spr lock reg pltd 5/8	837810-156	56
53	washer, pl-b reg pltd 5/16	838205-071	6

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ILLUSTRATIONS AND PARTS LIST

11.7 HP STAGE PIPING AND COOLING



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ILLUSTRATIONS AND PARTS LIST

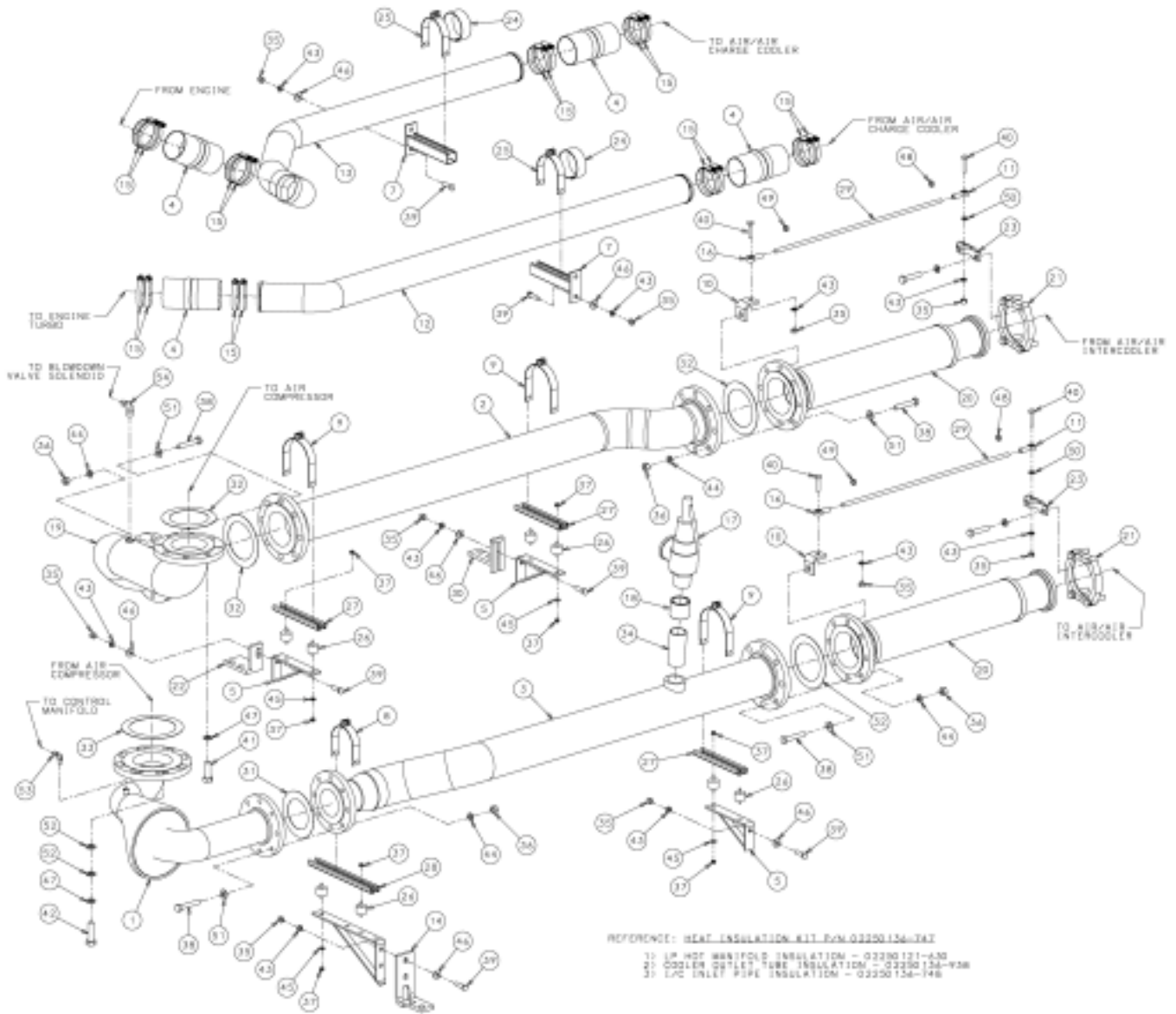
11.7 HP STAGE PIPING AND COOLING

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
54	washer, pl-b reg pltd 3/8	838206-071	10
55	washer, pl-b reg pltd 1/2	838208-112	5
56	washer, spr lock-metric pltd m20	838820-400	8
57	nipple,pipe-xs plt 1 1/2 x cl	866424-000	3
58	nipple,pipe-xs plt 1 1/2 x 4	866424-040	2
59	nipple,pipe-xs plt 2 x 3 1/2	866432-035	1
60	nipple,pipe-xs plt 2 x 5	866432-050	1
61	nut, hex jam lh pltd 1/2-20	866608-323	2
62	tee, pipe 150# plt 2	866815-080	2
63	elbow, pipe 90 deg 300# plt 2"	867030-080	1
64	bushing,red pltd 2 x 1 1/2	867108-060	3
65	nut, hex jam rh pltd 1/2-20	868208-323	2
66	u-bolt, 1/2" x 4" pipe pltd	868308-400	1
67	washer, extra thk pltd 5/8	870710-178	56

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ILLUSTRATIONS AND PARTS LIST

11.8 LP STAGE PIPING AND COOLING



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ILLUSTRATIONS AND PARTS LIST

11.8 LP STAGE PIPING AND COOLING

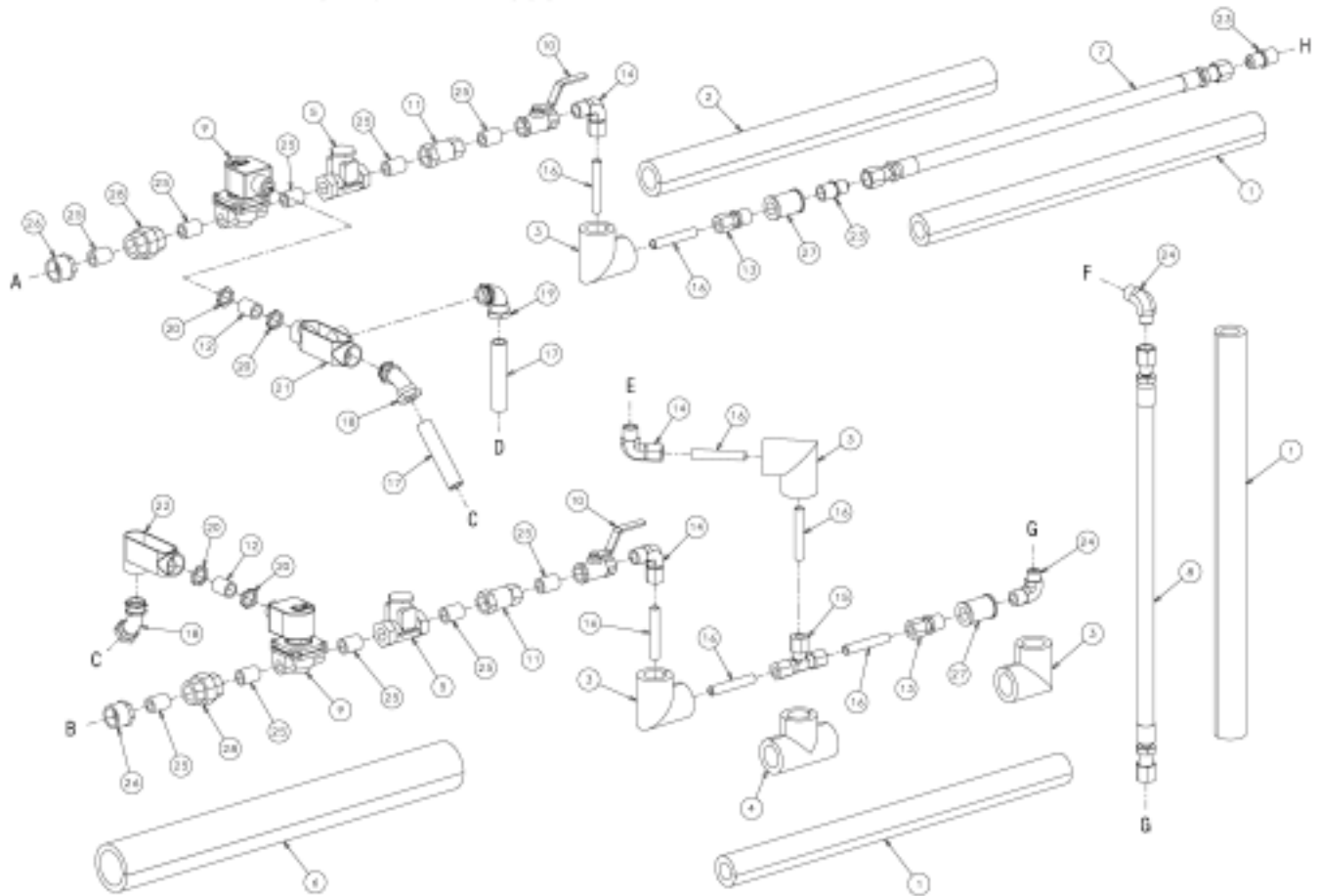
<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
1	manifold,asy lp hot ds18 c/d gear	02250115-909	1
2	pipe,i/c disch 5"	02250120-615	1
3	pipe,i/c inlet 5"x 4"	02250120-616	1
4	hose, hump 4"x 6"turbo de18	02250121-353	4
5	support, pipe de18 b-line b187	02250121-481	3
6	support, bracket de18 b-line b289-14	02250121-483	1
7	support, bracket de18 b-line b409-9	02250121-484	2
8	clamp, pipe 4.5" b-line b2017	02250121-487	1
9	clamp, pipe 5.6" b-line b2019	02250121-489	3
10	support, angle intercooler	02250121-502	2
11	rod,end ball joint 1/2-20 unf	02250121-517	2
12	tube,4" inlet turbo cooler	02250121-714	1
13	tube,4" turbo cooler outlet	02250121-715	1
14	support, pipe lppp de18 first stg	02250122-131	1
15	clamp, hose uniform load w/liner	02250122-298	16
16	rod,end ball joint 1/2-20 unf	02250124-988	2
17	valve, relief 2" x 2 1/2"fnpt 65psig	02250125-400	1
18	coupling, pipe 2"-150# 316ss	02250125-416	1
19	pipe,5" short lp cold side de18	02250126-259	1
20	hose, flexible 5" x 36" ss braid	02250126-804	2
21	flange, split 5" sae j518	02250126-808	2
22	mounting,pipe brkt	02250128-374	1
23	support,tensioner intercooler	02250128-455	2
24	isolator, vibration 1-5/8 x 12"	02250129-242	2
25	clamp, pipe 4-3/8"b-line b2056 de	02250130-824	2
26	isolator, vibration silicone de18 1.5"dia	02250130-927	8
27	chnl,b-line 10"lg de18	02250136-757	3
28	chnl, b-line 14" lg de18	02250136-758	1
29	rod, threaded lpp 30.35"lg de18	02250136-762	2
30	support,lppp de18	02250136-805	1
31	gasket,flg carbon 4" pipe 150#	02250147-695	1
32	gasket,flg carbon 5" pipe 150#	02250147-696	4
33	gasket,flg carbon 6" pipe 150#	02250147-697	1
34	nipple,pipe 316s 2x5"sch40	250019-228	1
35	nut,hex pltd 1/2-13	825108-448	13
36	nut,hex pltd 5/8-11	825110-559	32
37	nut,hex f pltd 5/16-18	825305-283	16
38	capscr, hex gr8 5/8-11 x 3 1/2	827910-350	32
39	capscr, hex gr5 1/2-13 x 1 3/4	829108-175	9
40	capscr, hex gr5 1/2-13 x 2	829108-200	4
41	capscr, hex 10.9 m20 x 60mm	829220-060	8
42	capscr, hex 10.9 m20 x 70mm	829220-070	8
43	washer, spr lock reg pltd 1/2	837808-125	13
44	washer, spr lock reg pltd 5/8	837810-156	32
45	washer, pl-b reg pltd 5/16	838205-071	8
46	washer, pl-b reg pltd 1/2	838208-112	9
47	washer, spr lock-metric pltd m20	838820-400	16
48	nut, hex jam lh pltd 1/2-20	866608-323	2
49	nut, hex jam rh pltd 1/2-20	868208-323	2
50	washer, extra thk pltd 7/16	870707-108	2
51	washer, extra thk pltd 5/8	870710-178	32
52	washer, extra thick pltd m20	875520-350	16
53	elbow, tube 90 deg m 1/4 x 1/4 ss	877004-025	1
54	elbow, tube 90 deg m 3/8 x 1/2 ss	877006-050	1

ILLUSTRATIONS AND PARTS LIST

11.9 CONDENSATE DRAINS

CONNECTION ROUTINGS

- A - TO FIRST STAGE CONDENSATION DRAIN PORT ON FRAME
- B - TO SECOND STAGE CONDENSATION DRAIN PORT ON FRAME
- C - AS SHOWN
- D - TO BREAKER ENCLOSURE BELOW CONTROL BOX
- E - TO WATER SEPARATOR PORT
- F - TO AIR/AIR AFTER COOLER PORT
- G - AS SHOWN
- H - TO AIR/AIR INTER COOLER



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ILLUSTRATIONS AND PARTS LIST

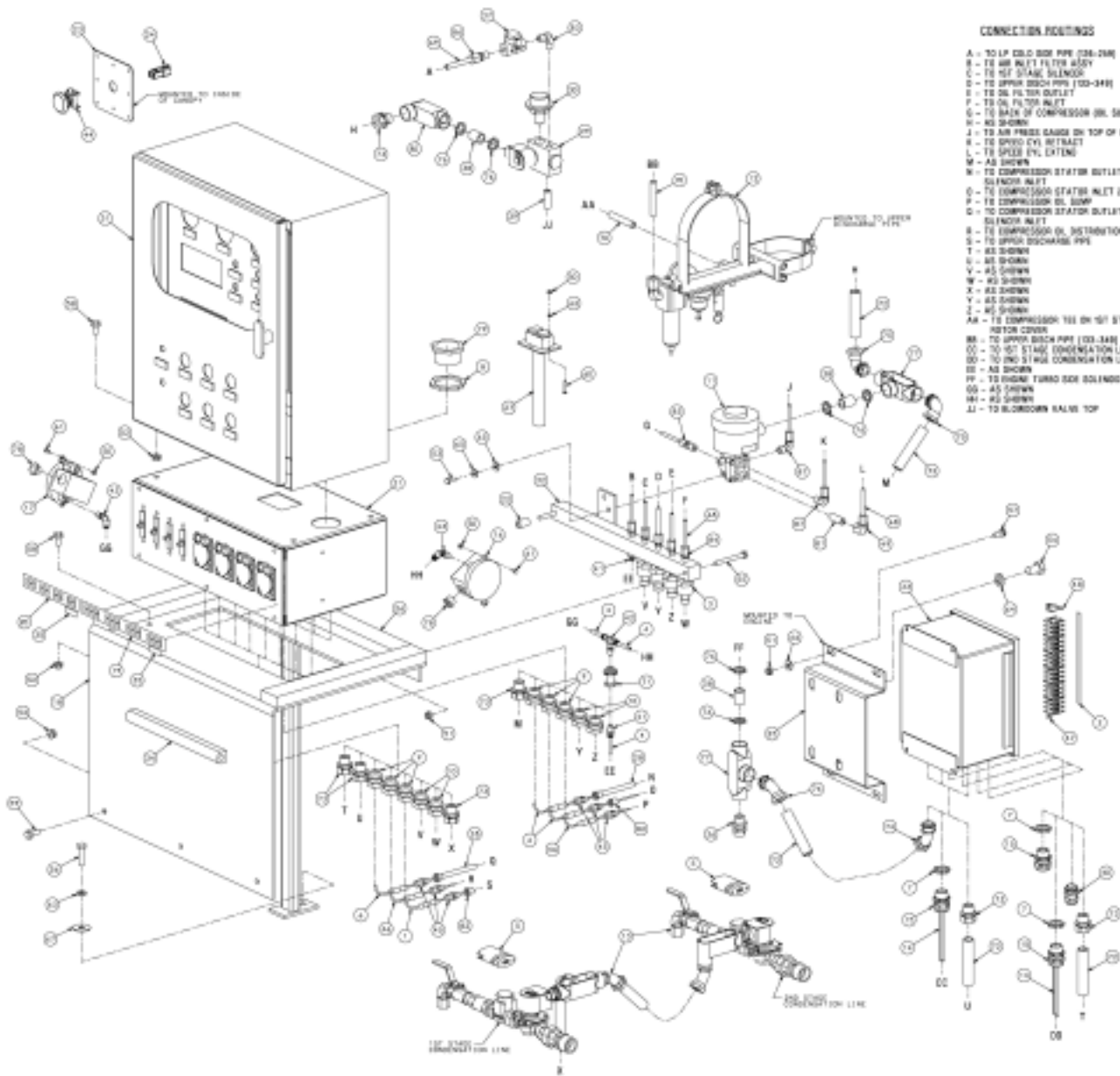
11.9 CONDENSATE DRAINS

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
1	insulation, tubing 7/8" x 6' preslit	02250116-844	7
2	insulation, tubing 1-1/8" x 6' preslit	02250116-846	1
3	insulation, tubing 1-1/8" elbow	02250116-848	4
4	insulation, tubing 1-1/8" tee	02250116-849	1
5	strainer,v-type 250# 1/2" npt	02250117-912	2
6	insulation, tubing 1-7/8" x 6' preslit	02250122-632	1
7	hose,compr oil clr/tube de18	02250124-019	1
8	hose,condensate on aftclr de18	02250124-024	1
9	valve, solenoid 2wnc mo 1/2 135# 24vdc	02250125-805	2
10	valve,ball 1/2"npt	047117	2
11	valve, ball check 1/2"	248200-003	2
12	nipple,conduit 1/2 x 1.125"	250007-168	2
13	connector, tube-m 1/2 x 1/2	810208-050	2
14	elbow, tube 90 deg m 1/2 x 1/2	810508-050	3
15	tee, tube union 1/2	811408-050	1
16	tubing, stnls stl 1/2 20ga ft	841215-008	33
17	conduit, csa flex 1/2" (ft)	846315-050	10
18	elbow, 45deg lq-tite 1/2	846500-050	2
19	elbow, 90deg lq-tite 1/2	846600-050	1
20	locknut, conduit 1/2	847200-050	4
21	unilet, type t 1/2	847615-050	1
22	unilet, type lb 1/2	847915-050	1
23	connector,37 fl/mpt pltd 1/2 x 1/2	860108-050	2
24	elbow, 37fl 90m 1/2 x 1/2	860208-050	2
25	nipple,pipe-xs plt 1/2 x cl	866408-000	10
26	bushing,red pltd 1 x 1/2	867104-020	2
27	coupling,pipe 1/2 300# plt	867430-020	2
28	union,pipe-brs seat 1/2 300# plt	868030-020	2

Section 11

ILLUSTRATIONS AND PARTS LIST

11.10 CONTROL BOX AND PARTS



CONNECTION FOOTINGS

- A - TO LP COIL SIDE PIP (26-234)
- B - TO AIR MFLT FILTER ASST
- C - TO 1ST STAGE BLENDER
- D - TO UPPER DISCH PIP (100-349)
- E - TO OIL FILTER OUTLET
- F - TO OIL FILTER INLET
- G - TO BACK OF COMPRESSOR OIL SUMP
- H - AS SHOWN
- J - TO AIR PRESS GAUGE ON TOP OF COMP
- K - TO SPOOD CYL RETRACT
- L - TO SPEED CYL EXTEND
- M - AS SHOWN
- N - TO COMPRESSOR STATOR INLET 2ND STAGE
- O - TO COMPRESSOR STATOR INLET 1ST STAGE
- P - TO COMPRESSOR OIL SUMP
- Q - TO COMPRESSOR STATOR OUTLET 1ST STAGE
- R - TO COMPRESSOR OIL DISTRIBUTION MANIFOLD
- S - TO UPPER DISCHARGE PIP
- T - AS SHOWN
- V - AS SHOWN
- W - AS SHOWN
- X - AS SHOWN
- Y - AS SHOWN
- Z - AS SHOWN
- AA - TO COMPRESSOR TIE ON 1ST STAGE
- BB - MOTOR COVER
- CC - TO UPPER DISCH PIP (100-349)
- DD - TO 1ST STAGE CONDENSATION LINE
- EE - TO 2ND STAGE CONDENSATION LINE
- FF - AS SHOWN
- GG - TO MAIN TURBO OIL SOLIDIO VALVE
- HH - AS SHOWN
- II - AS SHOWN
- JJ - TO BLOWDOWN VALVE TOP

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ILLUSTRATIONS AND PARTS LIST

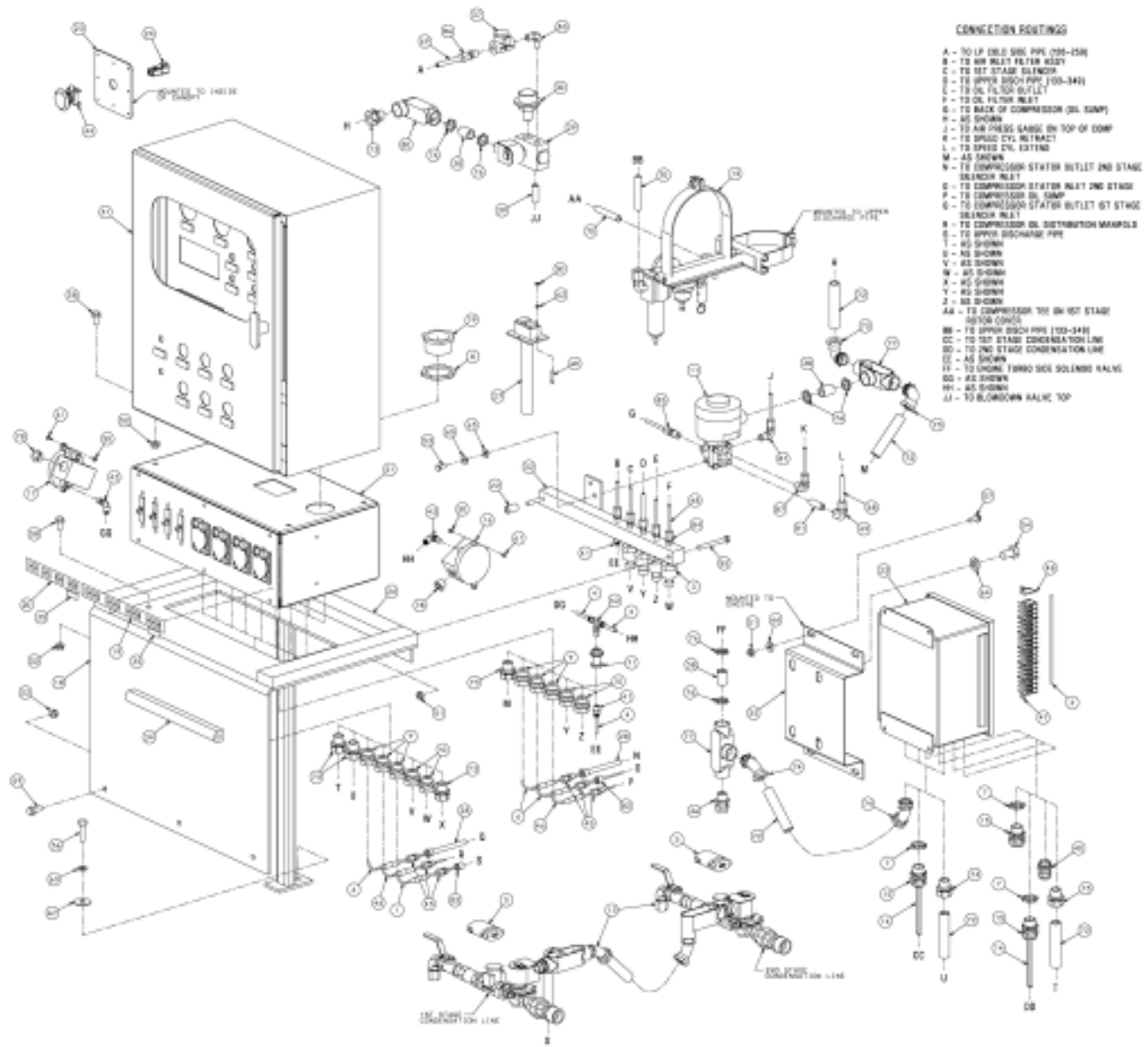
11.10 CONTROL BOX AND PARTS

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
1	probe, rtd 100 ohm plat 3.5"x 20ft (T5)	02250044-985	1
2	label, marker tape for kt3 block	02250046-750	1
3	transducer, pressure 0-200 psig 1-5 vdc	02250048-336	4
4	tube, nyl .25 od x .040w blk (ft)	02250054-861	3
5	seal, heat trace end raychem	02250056-337	2
6	probe, rtd 100 ohm plat 6"x 12ft (T1, T2, T4)	02250058-087	3
7	locknut, cond seal n4 3/4"	02250071-363	3
8	locknut, cond seal n4 2"	02250071-369	1
9	grip, cord n4 .125-.187 x 1/2"	02250071-379	6
10	grip, cord n4 .250-.375 x 1/2"	02250071-381	4
11	valve, solenoid 4w 1/4 ef8344ci 24vdc	02250118-013	1
12	sub assembly, ctl & ftg assy de18 tier ii	02250119-061	1
13	sub assembly, moisture drop assy de18 tier ii	02250119-062	1
14	tape, heat self-reg 10w/ft (ft)	02250119-595	80
15	grip; cd ul 3/4" 10/3 - 14/3	02250120-463	3
16	switch, differential pressure 16" h20 de18	02250120-475	1
17	switch, differential pressure 18" h20 de18	02250120-617	1
18	support, cntrl pnl	02250121-895	1
19	label, htr recepticle	02250122-148	1
20	label, htr circuit brkr de18	02250122-152	1
21	enclosure, brkr and recpt de18	02250122-476	1
22	spacer, xdcr manifold de18	02250123-946	2
23	plate, e switch mounting	02250126-895	1
24	receptacle, 4 position	02250127-032	1
25	support, bracket 110 v elec box mtg	02250127-501	1
26	gasket, neoprene 1" x 2" x 5/4"	02250130-653	5
27	harness, eng/compr de18 tier ii	02250130-742	1
28	sleeve, temp probe de18	02250131-098	2
29	valve, solenoid 3wnc 1/4" 200# exh 1/2	02250133-689	1
30	strainer, suction 30 mesh 1/2 mnpt	02250133-777	1
31	controller, eng/compr de-18 tier i &	02250134-897	1
32	manifold, control syst de18	02250136-992	1
33	enclosure, n12 10 x 8 x 6 de18	02250137-040	1
34	gasket, extrusion "d" style (ft)	02250141-280	2
35	decal, opt baty chgr	02250148-051	2
36	connector, cord .312 cable x 1/2" hu	241585	1
37	strainer, v-type 300psix1/4	241771	1
38	nipple, conduit 1/2 x 1.125"	250007-168	3
39	nipple, pipe 316s 1/4 x 1 1/2	250019-143	1
40	grip, cord so16/45 str 1/2"	250021-321	1
41	connector, tube-str 1/8mnpt x1/4"t	250024-684	2
42	tee, male branch swiv 1/4 tube x 1/8 npt	250025-834	1
43	elbow, 90deg m swvl 1/4t x 1/8npt	250025-849	2
44	switch, per red push/pull e22	250028-588	1
45	fitting, compress adj	250028-635	6
46	probe, rtd 100 ohm plat 3.5"x 12ft (T3, T6)	250039-909	2
47	block, terminal kt3	250041-102	6
48	block, term adapter kad	250041-103	1
49	elbow, tube -f 1/4 x 1/4	810404-025	1
50	nut, hex pltd #8-32	825201-130	8
51	nut, hex f pltd 5/16-18	825305-283	6
52	nut, hex f pltd 3/8-16	825306-347	11
53	capscr, hex gr8 1/4-20 x 3/4	827904-075	2

Section 11

ILLUSTRATIONS AND PARTS LIST

11.10 CONTROL BOX AND PARTS



- CONNECTION ROUTINGS**
- A - TO LP OIL SIE PPS (100-150)
 - B - TO HR MLET FILTER BODY
 - C - TO 1ST STAGE SUCTION
 - E - TO UPPER DISCH PPS (100-140)
 - G - TO OIL FILTER OUTLET
 - F - TO OIL FILTER INLET
 - D - TO BACK OF COMPRESSOR (OIL SUMP)
 - P - AS SHOWN
 - J - TO AIR PRESS GAUGE ON TOP OF COMP
 - K - TO SPUD CYL INTRACT
 - L - TO SPEED OIL EXTING
 - M - AS SHOWN
 - N - TO COMPRESSOR STATOR OUTLET 2ND STAGE
 - Q - TO COMPRESSOR STATOR INLET 2ND STAGE
 - R - TO COMPRESSOR OIL SUMP
 - G - TO COMPRESSOR STATOR OUTLET 1ST STAGE
 - SENDER RELAY
 - H - TO COMPRESSOR OIL DISTRIBUTION MANIFOLD
 - E - TO UPPER DISCHAGE PPS
 - T - AS SHOWN
 - U - AS SHOWN
 - V - AS SHOWN
 - W - AS SHOWN
 - X - AS SHOWN
 - Y - AS SHOWN
 - Z - AS SHOWN
 - AA - TO COMPRESSOR TOP ON 1ST STAGE MOTOR COVER
 - BB - TO UPPER DISCH PPS (100-140)
 - CC - TO 1ST STAGE CONDENSATION LINE
 - DD - TO 2ND STAGE CONDENSATION LINE
 - EE - AS SHOWN
 - FF - TO LOWER 1/800 SIE SOLINUS VALVE
 - GG - AS SHOWN
 - HH - AS SHOWN
 - II - TO BLOWDOWN VALVE TOP

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ILLUSTRATIONS AND PARTS LIST

11.10 CONTROL BOX AND PARTS

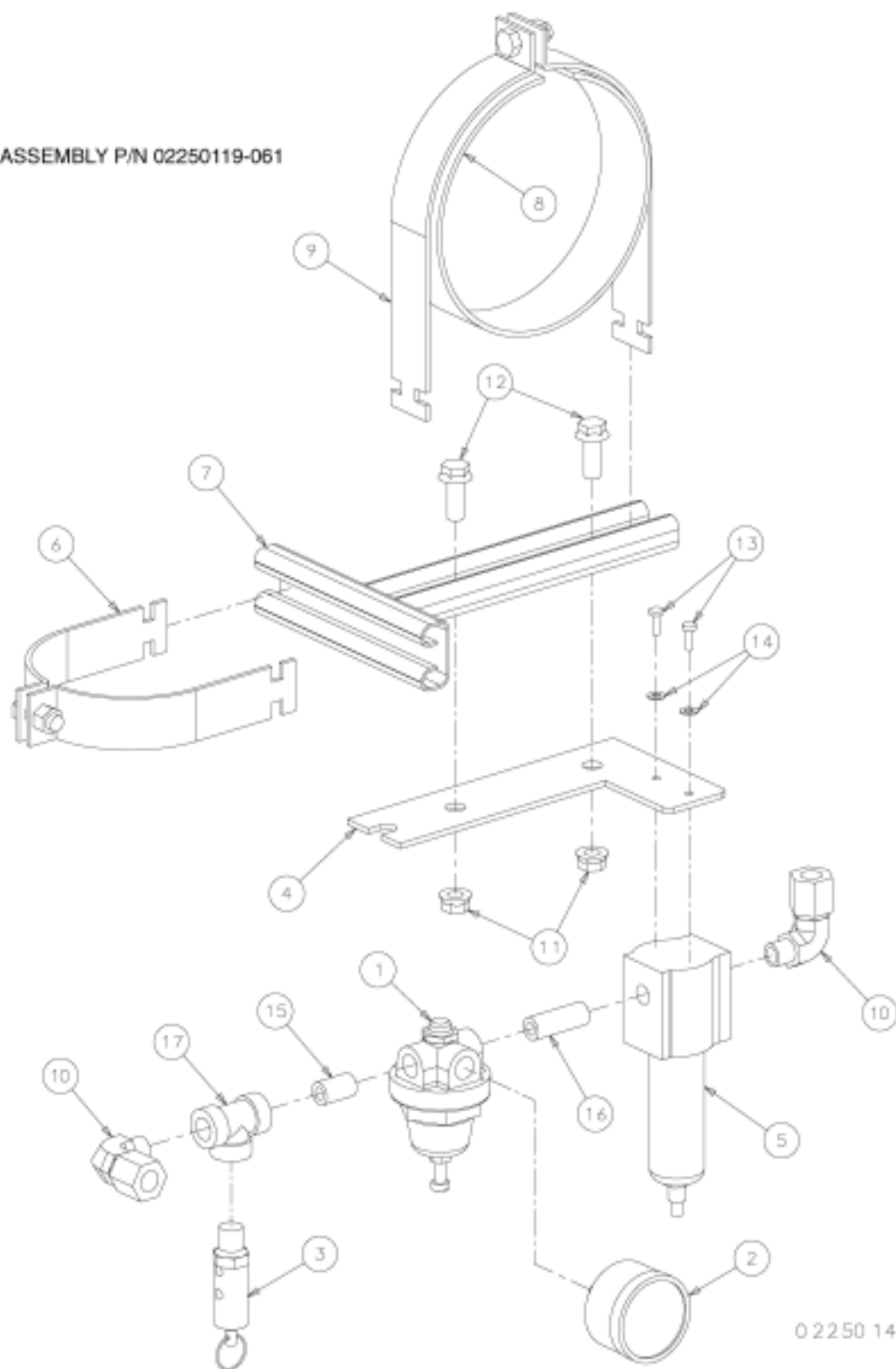
<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
54	capscr, hex gr8 5/8-11 x 1	827910-100	4
55	capscr, hex gr5 5/16-18 x 3	829105-300	2
56	capscr, hex gr5 7/16-14 x 1 1/2	829107-150	1
57	screw, hex ser washer 5/16-18 x 3/4	829705-075	4
58	screw, hex ser washer 3/8-16 x 3/4	829706-075	8
59	screw, hex ser washer 3/8-16 x 1	829706-100	3
60	screw, mach-rd hd #8-32 x 1	831601-100	4
61	screw, tc-f pan #8-32 x 3/8	835601-038	4
62	washer, spr lock reg pltd #10	837802-047	4
63	washer, spr lock reg pltd 7/16	837807-112	1
64	washer, spr lock reg pltd 5/8	837810-156	4
65	washer, pl-b reg pltd 1/4	838204-071	4
66	washer, pl-b reg pltd 5/16	838205-071	4
67	washer, pl-b wide pltd 7/16	838307-112	1
68	tubing, stnls stl 1/4 20ga ft	841215-004	51
69	tubing, stnls stl 3/8 20ga ft	841215-006	8
70	tubing, stnls stl 1/2 20ga ft	841215-008	4
71	bulkhead, pipe 1/8" npt	841500-002	1
72	conduit, csa flex 1/2" (ft)	846315-050	34
73	connector, straight lq-tite 1/2	846400-050	7
74	elbow, 45deg lq-tite 1/2	846500-050	2
75	elbow, 90deg lq-tite 1/2	846600-050	2
76	locknut, conduit 1/2	847200-050	6
77	unilet, type t 1/2	847615-050	2
78	nipple, chase cond 1/2	847815-050	2
79	nipple, chase cond 2	847815-200	1
80	unilet, type lb 1/2	847915-050	1
81	nipple, pipe-xs plt 1/4 x 1 1/2	866404-015	1
82	bushing, red pltd 1/4 x 1/8	867100-005	2
83	elbow, pipe-90m 1/4 x 1/4 ss	872204-025	1
84	connector, tube-m 1/4 x 1/8 ss	876804-012	5
85	connector, tube-m 1/4 x 1/4 ss	876804-025	1
86	connector, tube-m 3/8 x 1/4 ss	876806-025	1
87	elbow, tube 90 deg m 1/4 x 1/4 ss	877004-025	2

Section 11

ILLUSTRATIONS AND PARTS LIST

11.11 CONTROL REGULATOR AND FILTER

SUB-ASSEMBLY P/N 02250119-061



02250 141-275 00

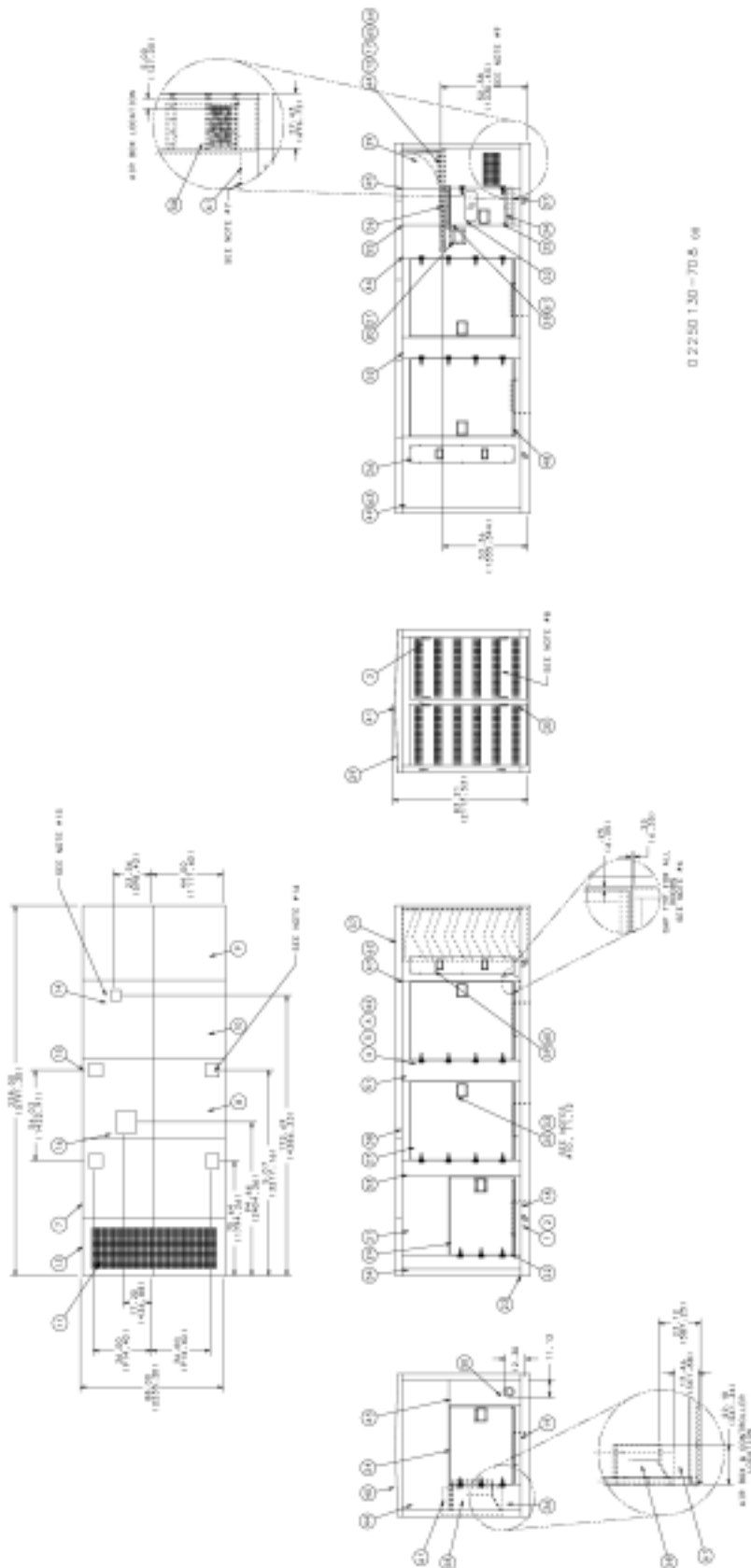
Section 11

ILLUSTRATIONS AND PARTS LIST

11.11 CONTROL REGULATOR AND FILTER

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
1	regulator, press 100-150 psig	02250100-362	1
2	gauge, 0 to 30 bkm 1/4" npt 2" dia	02250100-643	1
3	valve, relief 1/4 npt 25# 43 cfm	02250100-731	1
4	support, bracket pneu cntls ds13/de18	02250110-131	1
5	filter, control air 1/4" npt	02250112-032	1
6	clamp, pipe 4.5" b-line b2017	02250121-487	1
7	support, buffer instruments de18	02250127-562	1
8	isolator, vibration 1-5/8 x 18"	02250129-240	1
9	clamp, pipe 6-3/8" b-line b2112 de	02250130-825	1
10	elbow, tube 90 deg m 1/2 x 1/4	810508-025	2
11	nut, hex f pltd 3/8-16	825306-347	2
12	screw, hex ser washer 3/8-16 x 1	829706-100	2
13	screw, tc-f pan #8-32 x 1/2	835601-050	2
14	washer, lock ext tooth #10	838402-025	2
15	nipple, pipe-xs plt 1/4 x cl	866404-000	1
16	nipple, pipe-xs plt 1/4 x 1 1/2	866404-015	1
17	tee, pipe 150# plt 1/4	866815-010	1

Section 11
ILLUSTRATIONS AND PARTS LIST
 11.12 CANOPY



0 2250 130 - 70 & 08

Section 11

ILLUSTRATIONS AND PARTS LIST

11.12 CANOPY

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
1	hoist, ring 5000lb cl-50-hr	02250125-183	4
2	screw, cap socket head 1/2-13 x 2 plt	02250125-032	8
3	handle, adjustable clamping 3/8-16	02250125-165	8
4	hinge, door altered de 18	02250125-036	24
5	screw, flat head 1/4-20 x 1/2 sstl	02250125-025	144
6	gasket, hinge-wall	02250120-359	24
7	roof, panel rear 2 hatches	02250133-730	1
8	roof, panel front 3 hatches	02250133-731	1
9	roof, panel intake end	02250133-732	1
10	roof, panel 1 hatch	02250133-733	1
11	screen, roof discharge	02250133-735	1
12	angle, silencer r.h.	02250133-805	1
13	roof, panel discharge	02250133-734	1
14	cover, hatch 6 x 6 rad fill	02250125-167	1
15	cover, hatch 8 x 8 lift lug	02250125-174	4
16	adapter, exhaust muffler	02250125-193	1
17	angle, silencer l.h.	02250133-804	1
18	rod, door stop long	02250125-197	6
19	rod, door stop w/bend	02250131-553	1
20	box, e-stop exterior mount	02250127-356	1
21	gasket, e-stop panel	02250133-742	1
22	strip, slip resistant 4" wide (shur step)	02250116-141	7
23	frame, enclosure de18 tier ii	02250133-738	1
24	door, encl 40" x 48"	02250133-729	2
25	latch, door w/pad lock hasp	02250133-796	7
26	panel, cooler access	02250133-741	2
27	door, asy 48 x 64	02250133-728	4
28	door, controller	02250133-740	1
29	damper, slide gate air in	02250133-748	2
30	chanel, slide gate mount	02250133-747	1
31	panel, wall rear 48.25"	02250133-786	1
32	window, asy 3/16" w/gasket	02250125-004	1
33	gasket, latch 120-349	02250125-357	7
34	sheet, rubber cntrl door sweep	02250125-202	1
35	plate, rubber door mounting brkt	02250125-201	1
36	panel, wall rt rear	02250133-755	1
37	baffle, air intake	02250133-746	1
38	panel, above doors 48.25"	02250133-785	4
39	silencer, exhaust shelf asy	02250133-781	1
40	roof, closeout plate	02250133-736	1
41	roof, intake closeout plate	02250133-737	1
42	gasket, hinge door	02250120-358	24
43	panel, wall air out	02250133-750	1
44	panel, wall end 80" wide	02250133-759	1
45	panel, wall sect air in	02250133-749	1
46	panel, wall sect e-stop	02250133-751	1
47	panel, wall air in rear	02250133-745	1
48	panel, below doors 48.25"	02250133-784	6
49	panel, wall air in front	02250133-744	1
50	grommet, compressed air out	purchased	1
51	panel, wall rear 13.25"	02250133-789	1
52	panel, wall front 13.25"	02250133-788	1
53	panel, wall rear 10.25"	02250133-791	1

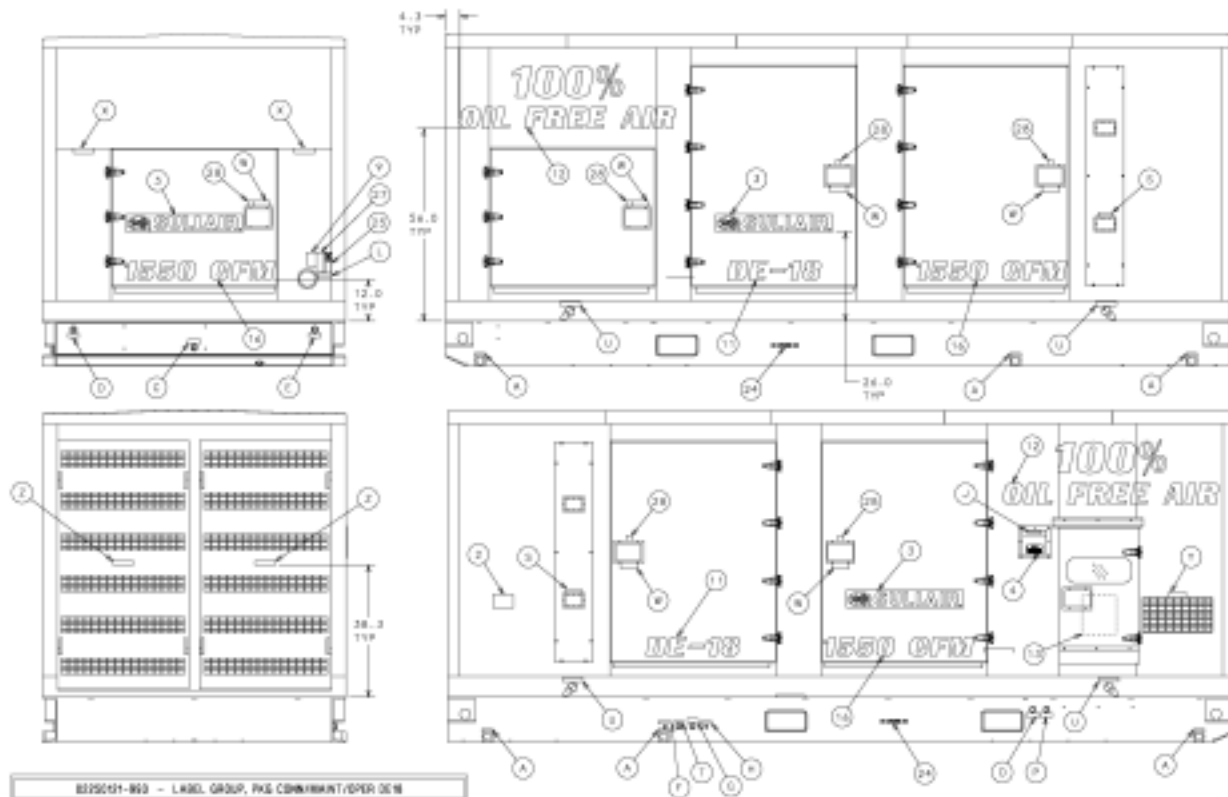
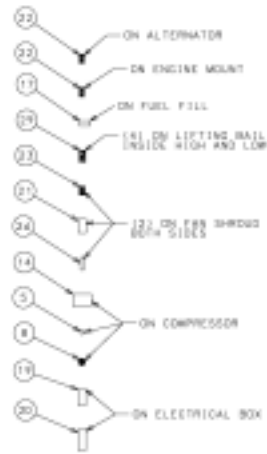
Section 11

ILLUSTRATIONS AND PARTS LIST

11.12 CANOPY

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
54	panel, wall rt rear 12.75"	02250133-790	1
55	panel, wall above ctl door	02250133-787	1
56	panel, drip control door	02250133-743	1
57	panel, below ctl door	02250133-782	1
58	baffle, air box intake compr/eng	02250124-383	1
59	handle, grab	02250123-166	4
60	gasket, grab handle	02250123-017	4
61	enclosure, controller shroud	02250127-338	1
62	panel, closeout 133-745	02250133-779	1
63	panel, closeout 133-744	02250133-780	1
64	cover, guide silencer	02250133-800	2
65	guide, silencer	02250133-802	2
66	angle, silencer end mounting	02250133-803	1

Section 11
ILLUSTRATIONS AND PARTS LIST
 11.13 DECALS



8225011-803 - LABEL GROUP, PWS COMM/INT/OPER/DEM				
NO.	P/N	LABEL DESCRIPTION	QTY	LOCATION
1	8225011-803	DECAL KIT	1	ON UNIT
2	8225011-803	DECAL KIT	1	ON UNIT
3	8225011-803	DECAL KIT	1	ON UNIT
4	8225011-803	DECAL KIT	1	ON UNIT
5	8225011-803	DECAL KIT	1	ON UNIT
6	8225011-803	DECAL KIT	1	ON UNIT
7	8225011-803	DECAL KIT	1	ON UNIT
8	8225011-803	DECAL KIT	1	ON UNIT
9	8225011-803	DECAL KIT	1	ON UNIT
10	8225011-803	DECAL KIT	1	ON UNIT
11	8225011-803	DECAL KIT	1	ON UNIT
12	8225011-803	DECAL KIT	1	ON UNIT
13	8225011-803	DECAL KIT	1	ON UNIT
14	8225011-803	DECAL KIT	1	ON UNIT
15	8225011-803	DECAL KIT	1	ON UNIT
16	8225011-803	DECAL KIT	1	ON UNIT
17	8225011-803	DECAL KIT	1	ON UNIT
18	8225011-803	DECAL KIT	1	ON UNIT
19	8225011-803	DECAL KIT	1	ON UNIT
20	8225011-803	DECAL KIT	1	ON UNIT
21	8225011-803	DECAL KIT	1	ON UNIT
22	8225011-803	DECAL KIT	1	ON UNIT
23	8225011-803	DECAL KIT	1	ON UNIT
24	8225011-803	DECAL KIT	1	ON UNIT
25	8225011-803	DECAL KIT	1	ON UNIT



NOTES:
 1) DECAL LABEL KIT P/N 82250-125-455

Section 11 ILLUSTRATIONS AND PARTS LIST

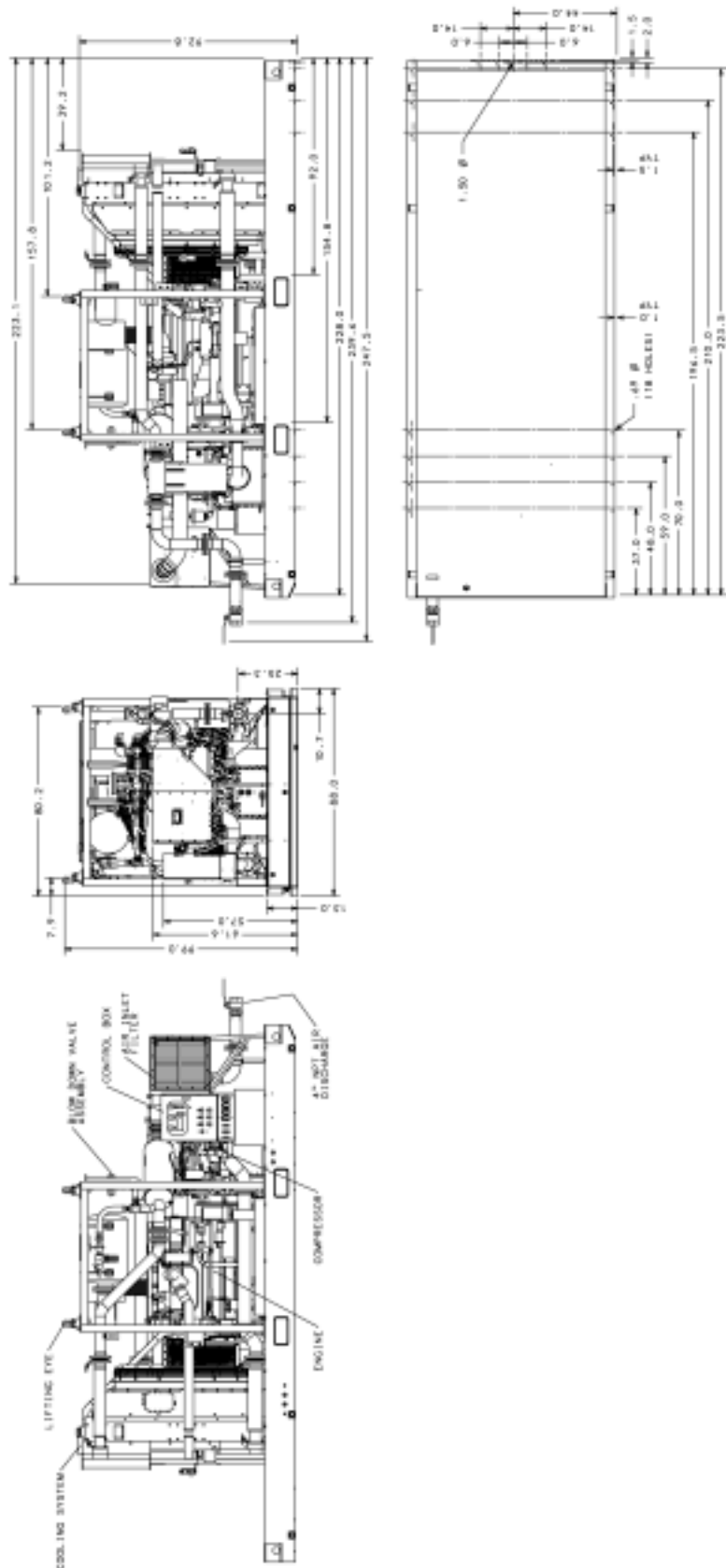
11.13 DECALS

<i>key number</i>	<i>description</i>	<i>part number</i>	<i>quantity</i>
1	decal,warning cooling system	02250051-826	1
2	decal,iso 9001 blk 3.44x5.75	02250057-624	1
3	decal,"sullair" 4.0 x 32.0	02250059-060	3
4	nameplate, sullair serial number	02250059-318	1
5	decal,fluid sullair awf	02250069-645	2
6	decal,earth ground	02250075-046	2
7	decal,pe designation	02250075-540	1
8	decal,oil fill cap ds13 ac/wc	02250115-652	1
9	decal,lead warning proposition 65	02250118-638	1
10	label group, pkg conn/maint/oper de18	02250121-993	1
11	decal,"de-18"	02250122-182	2
12	decal,"100% oil free air"	02250122-274	2
13	decal,de-18 start up procedure	02250123-174	1
14	decal,awf oil free	02250123-639	1
15	decal,"do not fill cold" de18	02250124-385	1
16	decal,"1550 cfm"	02250133-382	3
17	decal diesel fuel	040248	1
18	sign,warning-comp oil fil cap	049685	2
19	decal,danger electrocution	049850	1
20	decal,warning ground fault	049852	1
21	decal,warning-sever-fan-indus	049855	2
22	sign,warning-sever-belt drive	049964	2
23	sign,warning-sever-fan-port.	049965	2
24	decal,fork lifting	241814	2
25	decal,warn "food grade" lube	250003-144	1
26	decal,rotation 3.5" lg	250021-564	2
27	decal,danger inhaling comp air	250027-935	1
28	decal, caution doors closed 750-1050	250038-030	6
29	sign,warning-hot surfaces	407408	4

Section 11

ILLUSTRATIONS AND PARTS LIST

11.14 PACKAGE DIMENSIONS



02230 134-133 85

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