

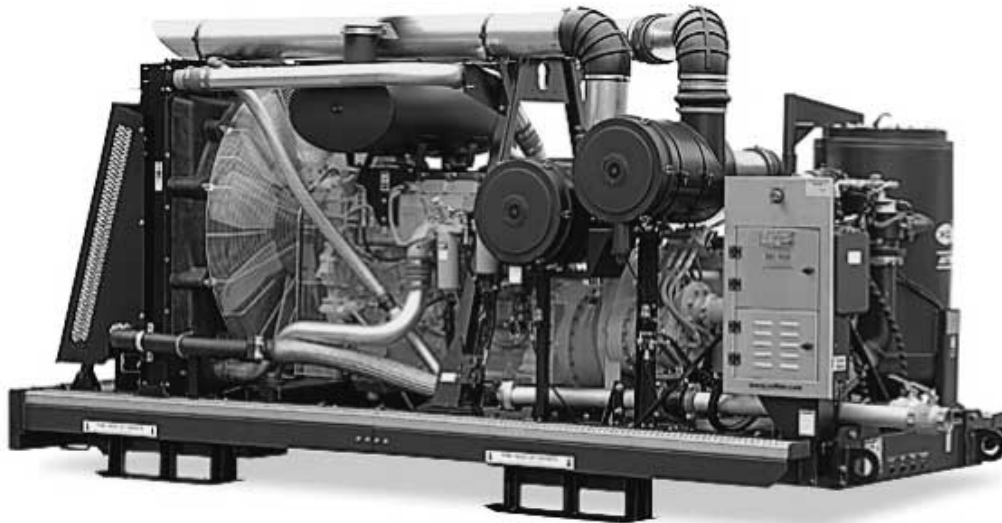


# **OPEN FRAME AIR COMPRESSOR 750XHH / 900XH (A) 900XHH / 1150XH (A) 1150XHH / 1350XH (A)**

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**XHH = 500 PSIG, XH = 350 PSIG  
(A) = Aftercooled Models  
Caterpillar 475-630 HP**



**PART NUMBER:  
02250167-328 Rev03**

**KEEP FOR  
FUTURE  
REFERENCE**

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The information in this document is correct at the time of printing for portable compressor serial number **20070920 000** and all subsequent serial numbers.



## **AIR CARE SEMINAR TRAINING**

Sullair Air Care Seminars are courses that provide hands-on instruction in the proper operation, maintenance and service of Sullair equipment. Individual seminars on Portable compressors 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 Rental House, Contractor Maintenance and Service Personnel.

For detailed course outlines, schedule and cost information contact:

### **Sullair Customer Care Training Department**

 : 1-888-SULLAIR or  
219-879-5451 (ext. 5363)  
[www.sullair.com](http://www.sullair.com)

- Or Write -

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



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# Section 1

# SAFETY

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<b>NOTE</b>

<b>OPERATOR IS REQUIRED TO READ ENTIRE INSTRUCTION MANUAL.</b>

**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.

<b>⚠ CAUTION</b>
<p><b>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 based on hours of operation.</b></p>

## 1.1 GENERAL

Sullair Corporation 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. **Read the CIMA Safety Manual prior to compressor operation and towing, if applicable in your area.**

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 can result in accidents and injuries.

**NEVER** start the air compressor unless it is safe to do so. **DO NOT** attempt to operate the air compressor with a known unsafe condition. Tag the air 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 air compressor only in full compliance with all pertinent OSHA requirements and/or all pertinent Federal, State and Local codes or requirements.

## 1.2 TOWING (I)

### Preparing To Tow

<b>⚠ WARNING</b>
<p><b>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.</b></p>

(I) WHILE NOT TOWED IN THE USUAL SENSE OF THE WORD, MANY OF THESE INSTRUCTIONS ARE DIRECTLY APPLICABLE TO SKID-MOUNTED PORTABLE AIR COMPRESSORS AS WELL.

## SECTION 1

- A. 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, dented 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.
- B. Back the tow vehicle to the compressor and position it in preparation for coupling the compressor.
- C. 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. If not, raise drawbar to engage coupling device or otherwise couple the compressor to the towing vehicle.

### 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.

Use the screw jack provided or a chain fall if you cannot lift or lower it without avoiding injury to yourself or others. Keep hands and fingers clear of the coupling device and all other pinch points. Keep feet clear of drawbar to avoid injury in case it should slip from your hands.

- D. Make sure the coupling device is fully engaged, closed and locked.
- E. If chains are provided, pass each chain through its point of attachment on the towing vehicle; then hook each chain to itself by passing the grab hook over (not through) a link. Cross chains under front of drawbar before passing them through points of attachment on towing vehicle to support front of drawbar in case it should accidentally become uncoupled.
- F. Make sure that the coupling device and adjacent structures on the towing vehicle (and also, if utilized, chain adjustment, brake and/or electrical interconnections) **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.

- G. If provided, make sure chain length, brake and electrical interconnections provide sufficient slack to prevent strain when cornering and maneuvering, yet are supported so they cannot drag or rub on road, terrain or towing vehicle surfaces which might cause wear that could render them inoperative.

### 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.

### CAUTION

Retract the front screw jack only after attaching the compressor to the tow vehicle. Raise the screw jack to its full up position and pull the pin connecting the jack to the drawbar. Rotate the screw jack to its stowed position, parallel to the drawbar, and reinsert the pin. Make sure the jack is secured in place prior to towing.

If a caster wheel is provided on the screw jack it is part of the screw jack and can not be removed. Follow the same procedure for stowing away the wheeled jack as you would for the standard screw jack. Pull the pin connecting the jack to the drawbar and raise the screw jack to its full up position. Rotate the screw jack to its stowed position, parallel to the drawbar, and reinsert the pin. Make sure the jack is secured in place prior to towing.

- H. On two-wheeled models, fully retract front screw jack and any rear stabilizer legs. If a caster wheel is provided on the screw jack it is part of the screw jack, and can not be removed. Follow the same procedure for stowing away the wheeled jack as you would for the standard screw jack. Pull the pin connecting the jack to the drawbar and raise the screw jack to its full upright position. Rotate the screw jack to its stowed position, parallel to the drawbar, and reinsert the pin. Make sure the jack is secured in place prior to towing.
- I. Make sure tires are in good condition and are the size (load range) specified and are inflated to the specified pressures. **DO NOT** change the tire size or type. Also, make sure wheel bolts, lugs or nuts are tightened to the specified torques.

- J. If provided, make sure all dual stop, tail directional and clearance lights are operating properly and that their lenses are clean and functional. Also, make sure all reflectors and reflecting surfaces, including the slow moving vehicle emblem on compressors provided with same, are clean and functional.
  - K. Make sure all service air hoses (not air brake hoses) are disconnected or are fully stowed and secured on hose reels, if provided.
  - L. 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.
  - M. 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.
  - N. Make sure the compressor wheels are not chocked or blocked, and that all tie-downs, if any, are free.
  - O. Test running brake operation, including breakaway switch operation if provided, before attempting to tow the compressor at its rated speed or less when conditions prevail.
  - P. **DO NOT** carry loose or inappropriate tools, equipment or supplies on or in the compressor.
  - Q. **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.
- F. 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.
  - G. **DO NOT** permit personnel to ride in or on the compressor.
  - H. 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.
  - I. **DO NOT** permit personnel to stand or ride on the drawbar, or to stand or walk between the compressor and the towing vehicle.

### Parking Or Locating Compressor

- A. 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%).
- B. Make sure compressor is parked or located on a firm surface that can support its weight.
- C. 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.
- D. On steerable models, park compressor with front wheels in straight-ahead position.
- E. Set parking brakes and disconnect breakaway switch cable and all other interconnecting electrical and/or brake connections, if provided.
- F. Block or chock both sides of all wheels.
- G. 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.

### Towing

- A. Observe all Federal, State, and Local laws while towing this equipment (including those specifying minimum speed).
- B. **DO NOT** exceed the towing speeds listed below under ideal conditions. Reduce your speed according to posted speed limits, weather, traffic, road or terrain conditions:
  1. Two axle four-wheel or three axle six-wheel steerable models: 15 MPH (24 km/h).
  2. All other models: 55 MPH (88 km/h).
- C. Remember that the portable 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.
- D. Avoid grades in excess of 15° (27%).
- E. Avoid potholes, rocks and other obstructions, and soft shoulders or unstable terrain.

- H. Lower front screw jack and/or any front and rear stabilizer legs. Make sure the surface they contact has sufficient load bearing capability to support the weight of the compressor.

**⚠ 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.**

**⚠ CAUTION**

**Retract the front screw jack only after attaching the compressor to the tow vehicle. Raise the screw jack to its full up position and pull the pin connecting the jack to the drawbar. Rotate the screw jack to its stowed position, parallel to the drawbar, and reinsert the pin. Make sure the jack is secured in place prior to towing.**

**On two-wheeled models, fully retract front screw jack and any rear stabilizer legs. If a caster wheel is provided on the screw jack it is part of the screw jack and can not be removed. Follow the same procedure for stowing away the wheeled jack as you would for the standard screw jack. Pull the pin connecting the jack to the drawbar and raise the screw jack to its full up position. Rotate the screw jack to its stowed position, parallel to the drawbar, and reinsert the pin. Make sure the jack is secured in place prior to towing.**

- I. If a caster wheel is provided on the screw jack, it is part of the screw jack and cannot be removed. Follow the same procedure for stowing away the wheeled jack as you would for the standard screw jack. Raise the screw jack to its full upright position and pull the pin connecting the jack to the drawbar. Rotate the screw jack to its stowed position, parallel to the drawbar and reinsert the pin. Make sure the jack is secured in place prior to towing.
- J. 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 screwjack or chain fall if you cannot lift or raise the drawbar without avoiding injury to yourself or others.

- K. 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.
- L. 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.

**NOTE**

**While not towed in the usual sense of the word, many of these instructions are directly 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, obstructed or otherwise disabled.
- B. Install an appropriate flow-limiting valve between the compressor service air outlet and the shutoff (throttle) valve, when an air hose exceeding 1/2" (13 mm) inside diameter is to be connected to the shutoff (throttle) valve, to reduce pressure in case of hose failure, per OSHA Standard 29 CFR 1926.302 (b) (7) 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" (13 mm) 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 (23 m) of hose in runs of air hose exceeding 1/2" (13 mm) 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 tools that are rated below the maximum rating of this compressor. Select 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 (receiver) 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, 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) 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 ensure all internal pressure has been vented prior to servicing any pressurized component of the compressor air/fluid system.
- B. Clean up spills of fuel, fluid, battery electrolyte or coolant immediately if such spills occur.
- C. Shut off air 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 liquids, including air line anti-icer system antifreeze compound or fluid film, to accumulate on bottom covers or on, under or around acoustical material, or on any external or internal surfaces of the air compressor. Wipe down using an aqueous industrial cleaner or steam clean as required. If necessary, remove acoustical material, clean all surfaces and then replace acoustical material. Any acoustical material with a protective covering that has been torn or punctured should be replaced immediately to prevent accumulation of liquids or fluid film within the material. **DO NOT** use flammable solvents for cleaning purposes.
- 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 a suitable, fully charged class BC or ABC fire extinguisher or extinguishers nearby when servicing and operating the compressor.

## 1.4 FIRE AND EXPLOSION

### WARNING

**Do not attempt to operate the compressor in any classification of hazardous environment or potentially explosive atmosphere unless the compressor has been specially designed and manufactured for that duty.**

- 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.



## SECTION 1

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- 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 compressor 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 of 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.
- 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.

### 1.5 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.

## 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 1920 and any other Federal, State or Local codes or regulations.

<b>⚠ DANGER</b>

<p style="text-align: center;"><b>INHALATION HAZARD!</b></p> <p><b>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></p>

- B. **DO NOT** use air line anti-icer systems in air lines supplying respirators or other breathing air utilization equipment and **DO NOT** discharge air from these systems into unventilated or other confined areas.
- C. Operate the compressor only in open or well-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 anti-icer 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 tablespoons of baking soda in a glass of clean water. Have patient lay down and cover eyes to exclude light. Call a physician immediately.

## 1.8 ELECTRICAL SHOCK

- A. Keep the towing vehicle or equipment carrier, compressor hoses, tools and all personnel at least 10 feet (3 m) 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 only in clean, dry and well-lighted and ventilated areas.
- 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.

## SECTION 1

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- 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.
- 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 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.

### 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 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.
- 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.
- A. The established procedures for the application of energy control shall cover the following elements and actions and shall be initiated only by Authorized Persons and done in the following sequence:
    1. Review the equipment or machine to be locked and tagged out.
    2. Alert operator and supervisor of which machine is to be worked on, and that power and utilities will be turned off.
    3. Check to make certain no one is operating the machine before turning off the power.
    4. Turn off the equipment using normal shutdown procedure.
    5. Disconnect the energy sources:
      - a. Air and hydraulic lines should be bled, drained and cleaned out. There should be no pressure in these lines or in the reservoir tanks. Lock out or tag lines or valves.
      - b. Any mechanism under tension or pressure, such as springs, should be released and locked out or tagged.
      - c. Block any load or machine part prior to working under it.
      - d. Electrical circuits should be checked with calibrated electrical testing equipment, and stored energy and electrical capacitors should be safely discharged.
    6. Lock out and/or tag out each energy source using the proper energy isolating devices and tags. Place lockout hasp and padlock or tag at the point of power disconnect where lockout is required by each person performing work. Each person shall be provided with their own padlock and have possession of the only key. If more than one person is working on a machine each person shall affix personal lock and tag using a multi-lock device.
    7. Tagout devices shall be used only when power sources are not capable of being locked out by use of padlocks and lockout hasp devices. Name of person affixing tag to power source must be on tag along with date tag was placed on power source.
    8. Release stored energy and bring the equipment to a "zero mechanical state."
    9. Verify Isolation: Before work is started, test equipment to ensure power is disconnected.

## 1.12 IMPLEMENTATION OF LOCKOUT/TAGOUT

The energy control procedure defines actions necessary to lock out a power source of any machine to be repaired, serviced or set up, where unexpected motion, or an electrical or other energy source, would cause personal injury or equipment damage. The power source of any machine shall be locked out by each employee doing the work except when motion is necessary during set up, adjustment or troubleshooting.

### B. General Security

1. The lock shall be removed by the “Authorized” person who put the lock on the energy-isolating device. No one other than the person/persons placing padlock and lockout hasp on power shall remove padlock and lock out hasps and restore power. However, when the authorized person who applied the lock is unavailable to remove it his/her Supervisor may remove padlock/padlocks and lock out hasps and restore power only if it is first:
  - a. verified that no person will be exposed to danger.
  - b. verified that the “Authorized” person who applied the device is not in the facility.
  - c. noted that all reasonable efforts to contact the “Authorized” person have been made to inform him or her that the lockout or tagout device has been removed.
  - d. ensured that the “Authorized” person is notified of lock removal before returning to work.
2. Tagout System - Tags are warning devices affixed at points of power disconnect and are not to be removed by anyone other than the person placing tag on power lockout. Tags shall never be bypassed, ignored or otherwise defeated.

### 1.13 CALIFORNIA PROPOSITION 65

#### **WARNING**
































##### **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 other reproductive harm.**

**Battery posts, terminals and related accessories contain lead and other compounds known to the State of California to cause cancer and birth defects and other reproductive harm.  
Wash hands after handling.**





















## 1.14 SYMBOLS AND REFERENCES





















The symbols below may or may not be used. Please refer to the decals set forth on the machine for applicable symbols.

	DIESEL FUEL		ENGINE
	FUEL LEVEL		ENGINE COOLANT
	INTERNAL FUEL		ENGINE COOLANT TEMPERATURE
	EXTERNAL FUEL		ENGINE ECM
	BATTERY		ENGINE INTAKE AIR FILTER
	BATTERY DISCONNECT		ENGINE OIL
	SHUT-OFF VALVE WITH SAFETY		ENGINE OIL PRESSURE
	OPERATE WITH FAN GUARDS IN PLACE		ENGINE PREHEAT/LOW TEMPERATURE AID
	OPERATE WITH BELT GUARDS IN PLACE		ENGINE RPM
	READ/WRITE DATA		ENGINE START
	INTAKE AIR		ENGINE WARNING
	EXHAUST GAS		ROTARY COMPRESSOR
	SERVICE POINT		COMPRESSOR
			COMPRESSOR AIR PRESSURE
			COMPRESSOR TEMPERATURE
			INLET VALVE SPING OIL (AWF)
			ENGINE SHUTDOWN
			COMPRESSOR SHUTDOWN


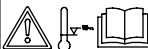



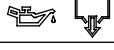
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# SECTION 1












	READ MANUAL
	HOUR METER
	START
	ON
	OFF
	RESET
	NO
	EXAMINE, CHECK
	FORK LIFT HERE
	NO FORK LIFT
	FUSE
	CLOSED, MECHANICAL
	WATER
	OIL
	FUNCTIONAL ARROW
	FILTER
	RADIATOR
	STRAINER
	AFTERCOOLED AIR
	STANDARD AIR

	DIRECTION OF ROTATION
	PRESSURE
	LIFT POINT
	TIE DOWN
	AIR COOLED OIL COOLER
	LIQUID COOLED OIL COOLER
	CONTROL
	BELOW TEMPERATURE
	AIR-CIRCULATING FAN
	TEST SWITCH
	BELTS
	24 HOURS
	PRESSURE CONTROL
	LOW PRESSURE
	HIGH PRESSURE
	LUBRICATION
	TRAILER TOWING MODE
	AXEL
	LUBRICANT GREASE
	DRAIN

SU\_0000702

	SERVICE EVERY 24 HOURS
	WARNING, FOR BELOW 0°C (32°F) READ MANUAL
	WATER CONDENSATE (DO NOT PLUG)
	COMPRESSOR OIL DRAIN
	ENGINE COOLANT DRAIN
	ENGINE OIL DRAIN

	DO NOT
	DO NOT BREATH COMPRESSOR AIR
	DO NOT REMOVE MANUAL
	DO NOT STAND ON SERVICE VALVE
	DO NOT OPERATE COMPRESSOR WITH DOORS OPEN
	DO NOT OPEN AIR VALVES WITHOUT CONNECTED HOSES
	DO NOT STACK
	DO NOT MAINTENANCE
	DO NOT TOW
	SIDE DOOR T-LATCH
	BRAKES

	WARNING
	WARNING, ELECTRICAL SHOCK
	WARNING, AIR FLOW
	WARNING, HOT SURFACE
	WARNING, PRESSURISED VESSEL
	WARNING, PRESSURISED COMPONENT
	WARNING, DANGEROUS OUTLET
	WARNING, REMOTELY CONTROLLED
	WARNING, LOW TEMPERATURE
	WARNING, CRUSH/PINCH POINT
	CORROSIVE

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## Section 2

# DESCRIPTION

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### 2.1 INTRODUCTION

The Sullair Portable Open Frame Air Compressor models offer 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 operating condition.

Read “*Maintenance*” on page 43 to keep your compressor in top operating condition. Should any problem or question arise which cannot be answered in this text, contact your nearest Sullair representative or the Sullair Corporation Service Department.

### 2.2 DESCRIPTION OF COMPONENTS

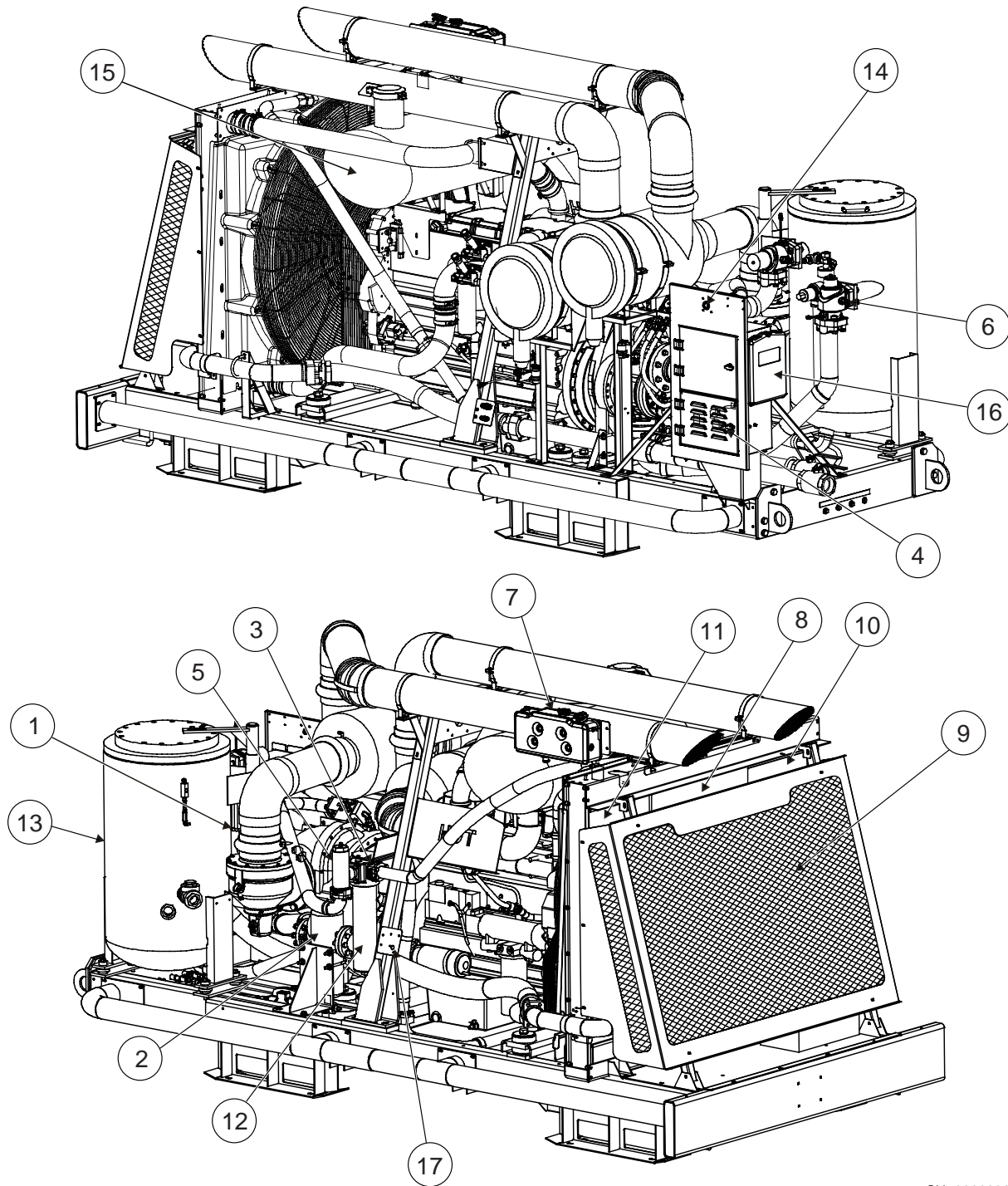
Refer to *Figure 2-1*. The components and assemblies of the Sullair Portable Open Frame Air Compressor models are clearly shown. The package includes a compressor,

diesel engine, compressor inlet system, compressor cooling and lubrication system, compressor discharge system, capacity control system, instrument panel and electrical system. The Sullair compressor unit is driven by an industrial 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.

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 fluid in the compressor cooling and lubrication system. While passing through the radiator, the fan air also passes through the compressor fluid cooler (which is mounted adjacent to the radiator). As air passes through the cooler, the heat of compression is removed from the fluid.

The same fan also cools the engine intake air supply. While passing through the radiator and oil cooler, the fan air passes through an air to air aftercooler. As air passes through the air to air aftercooler heat is removed which was introduced by the engine's turbo charger.



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- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>1. Blowdown Valve (attached to inlet valve)</li> <li>2. Moisture Separator (if equipped)</li> <li>3. Thermal Valve</li> <li>4. Regulator Valves</li> <li>5. Fluid Stop Valve</li> <li>6. Discharge Check Valve</li> <li>7. Engine Coolant Fill</li> <li>8. Fluid Cooler</li> <li>9. After Cooler (if equipped)</li> </ul> | <ul style="list-style-type: none"> <li>10. Engine Charge Air Cooler</li> <li>11. Engine Radiator</li> <li>12. Compressor Fluid Filter</li> <li>13. Receiver Tank</li> <li>14. E-Stop</li> <li>15. Engine Muffler</li> <li>16. Manual Enclosure</li> <li>17. Battery Disconnect Switch</li> </ul> |
|--|--|

**Figure 2-1: Main Component Locations**



## 2.3 SULLAIR COMPRESSOR UNIT, FUNCTIONAL DESCRIPTION

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

### NOTE

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

Sullair compressors are factory-filled with Sullair AWF lubricant. For more information on fluid fill, refer to *SPECIFICATIONS* on page 33.

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

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

After the air/fluid mixture is discharged from the compressor unit, the fluid is separated from the air. At this time, the air flows through an aftercooler and separator then to your service line while the fluid is being cooled in preparation for reinjection.

## 2.4 COMPRESSOR COOLING AND LUBRICATION SYSTEM, FUNCTIONAL DESCRIPTION

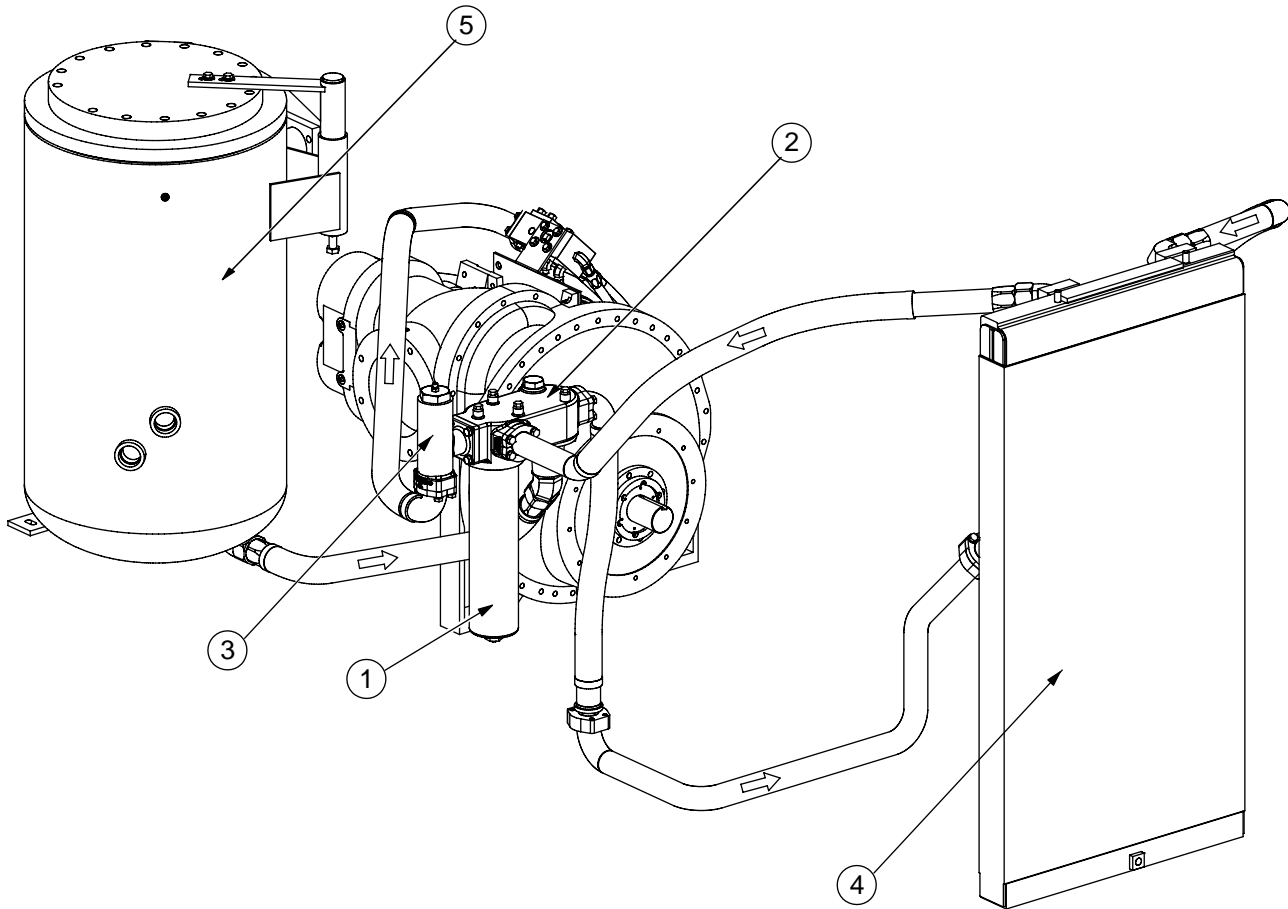
Refer to *Figure 2-2*. The compressor cooling and lubrication system is designed to provide adequate lubrication as well as maintain the proper operating

temperature of the compressor. In addition to the cooler and fan, the system consists of a main filter, fluid stop valve and thermal valve.

Fluid is used in the system as a coolant and a lubricant. The fluid is housed in the receiver tank. Upon start-up, the temperature of the fluid is cool and routing to the fluid cooler is not necessary. The fluid, taking the path of least resistance, flows to the thermal valve.

As previously stated, upon start-up, the fluid temperature is cool, and routing to the cooler is not required. The fluid first enters the thermal valve and then flows to the compressor unit, bypassing the cooler. As the compressor continues to operate, the temperature of the fluid rises and the thermal valve element begins to shift. This forces a portion of the fluid to the fluid cooler. The cooler is a radiator-type that works in conjunction with the engine fan. The fan draws air through the cooler removing the heat of compression from the fluid. From the cooler, the fluid is routed back to the thermal valve. Before the temperature of the fluid reaches the valve set point, cooled fluid is mixed with warmer fluid. When the temperature of the fluid reaches 230°F (110°C), the thermal element shifts completely causing all fluid to flow to the cooler. The thermal valve incorporates a pressure relief valve, which allows fluid to bypass the cooler, if the cooler becomes plugged or frozen. This helps assure that fluid will continue to be provided to the compressor for lubrication. After the fluid passes through the thermal valve it is then directed through the main fluid filter. There, the fluid is filtered in preparation for injection into the compression chamber and bearings of the compressor unit. The filter has a replaceable element and a built-in bypass valve which allows the fluid to flow even when the filter element becomes plugged and requires changing or when the viscosity of the fluid is too high for adequate flow. After the fluid is properly filtered, it then flows on to the compressor unit where it lubricates, seals and cools the compression chamber as well as lubricates the bearings and gears.

The fluid stop valve functions on shutdown when it shuts off the fluid supply to the compressor unit. The fluid stop valve is held open by a pressure signal from the compressor discharge. At shutdown, the pressure signal is lost and the fluid stop valve closes, isolating the compressor unit from the cooling system.



SU\_000037

- 1. Compressor Fluid Filter
- 2. Thermal Valve
- 3. Stop Valve
- 4. Cooler
- 5. Separator Tank

**Figure 2-2: Cooling and Lubrication System**

**NOTE**

Arrows indicate direction of fluid flow within the Cooling and Lubrication System.

## 2.5 COMPRESSOR DISCHARGE SYSTEM, FUNCTIONAL DESCRIPTION

Refer to *Figure 2-3*. The Sullair compressor unit discharges compressed air/fluid mixture into the receiver tank.

The receiver tank has three functions:

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

The compressor unit discharges compressed air/fluid mixture through a discharge check valve into the receiver tank. The discharge check valve is located on the inlet port of the receiver tank. The discharge check valve prevents discharged air from returning to the compression chamber after shutdown.

The compressed air/fluid mixture enters the receiver tank and is directed against the tank side wall. By change of direction and reduction of velocity, large droplets of fluid separate and fall to the bottom of the receiver tank. The fractional percentage of fluid remaining in the compressed air collects on the surface of the final separator element as the compressed air flows through the separator. As more and more fluid collects on the element's surface, the fluid descends to the bottom of the separator. A return line (or scavenge tube) leads from the bottom of the separator element to the inlet region of the compressor unit. Fluid collecting on the bottom of the separator element is

returned to the compressor by the pressure difference between the area surrounding the separator element and the compressor inlet. An orifice (protected by a strainer) is included in this return line to help assure proper flow.

The receiver tank is code rated. A minimum pressure/check valve, located downstream from the separator, helps assure a minimum receiver pressure of 200 psig (13.8 bar) during all conditions. This pressure is necessary for proper air/fluid separation and proper fluid circulation.

The minimum pressure/check valve is also used to prevent compressed air in the service line from bleeding back into the receiver on shutdown when the compressor is being run in parallel with other compressors tied to a large air system.

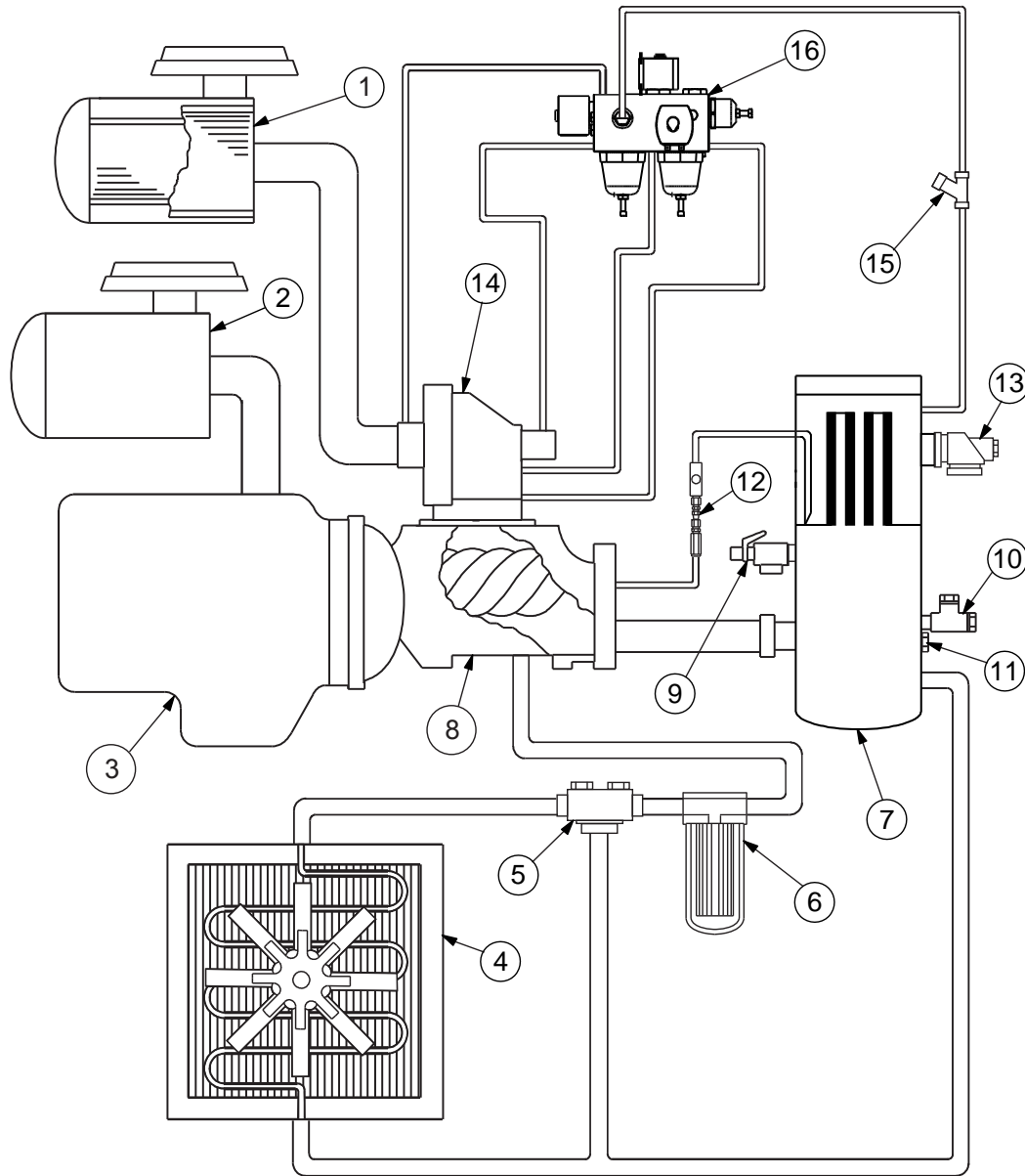
A pressure relief valve (located on the wet side of the separator) is set to open if the receiver tank pressure exceeds 600 psig (41.4 bar). A temperature switch will shut down the compressor if the discharge temperature reaches 300°F (149°C) or 280°F (138°C) at the interstage.

Fluid is added to the receiver tank via a capped fluid filler. A fluid level sight glass enables the operator to visually monitor the receiver tank fluid level.

### 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.**



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- |                            |                                       |
|----------------------------|---------------------------------------|
| 1. Unit Air Filter         | 9. Relief Valve                       |
| 2. Engine Air Filter       | 10. Fluid Fill/Upper Sight Glass      |
| 3. Engine                  | 11. Lower Sight Glass                 |
| 4. Compressor Fluid Cooler | 12. Fluid Return/Sight Glass Assembly |
| 5. Thermal Valve           | 13. Minimum Pressure Check Valve      |
| 6. Compressor Fluid Filter | 14. Inlet Valve                       |
| 7. Receiver Tank           | 15. Strainer                          |
| 8. Unit                    | 16. Control Manifold Block            |

**Figure 2-3: Discharge System**

## 2.6 CAPACITY CONTROL SYSTEM, FUNCTIONAL DESCRIPTION

Refer to *Compressor System 750 - 1350 XHH/XH* on page 58 and *Engine System 750 XHH - 1350 XH* on page 60. The purpose of the control system is to regulate the amount of air intake in accordance with the amount of compressed air demand. The control system consist of an inlet valve, the high and low pressure regulators, the pressure reducing regulator, the blowdown/running blowdown valve, the Compass Controller, a START/RUN selector switch, and the HIGH/LOW selector switch.

### Start Mode - 0 to 200 PSIG (0 to 13.8 BAR)

Push OFF/ON/START switch to "ON" position to initialize the Compass Controller. Once the Compass Controller says "READY" on LCD, press OFF/ON/START switch to the "START" position. In the "START" position, the inlet valve is held closed by the springs in the inlet valve. The valve is cracked open by vacuum in the compressor and is allowed to build up to 200 psig (13.8 bar). The reason for keeping the valve closed during start is to allow the engine to warm up without being loaded by the compressor. Air pressure is contained in the receiver tank by the minimum pressure valve which has a set point of 200 psig (13.8 bar). At this point the valve opens allowing the air to pass to the service valve. After engine has warmed up the machine automatically transfers to "RUN" mode.

### Low Pressure Mode - 200 to 350 PSIG (13.8 to 24.1 BAR)

With the HIGH/LOW switch in the "LOW" position, and the controller in "RUN" mode, the service valve can now be opened. Pressure from the 60 psig (4.1 bar) reducing

regulator opens up the inlet valve and the Compass Controller increases the engine speed to full load (1800 rpm). As the demand for air decreases, the Compass Controller commands the engine to reduce speed to idle (1400 rpm) and the inlet valve closes, where it stabilizes until the air demand is required again.

### High Pressure Mode - 200 to 500 PSIG (13.8 to 34.5 BAR)

When the HIGH/LOW switch is switched to the "HIGH" position, the low pressure regulator is blocked off allowing the high pressure regulator to take over control of the machine. The 60 psi (4.1 bar) reducing regulator fully opens the inlet valve and the Compass Controller commands maximum speed (1800 rpm) from the engine. As the pressure reaches the set point of the system the high pressure regulator cracks open and closes the inlet valve and the Compass Controller returns the engine back to idle, until a demand for air is seen.

### Shutdown

The blowdown valve is normally closed. When the compressor is shutdown, system pressure backs up to the inlet valve causing the check spring in the inlet valve to close the air inlet valve. This sends a pressure signal to the blowdown valve causing it to open and vent the pressure in the system. After the pressure is vented, the blowdown valve spring returns the blowdown valve to the closed position.

### 2.7 AIR INLET SYSTEM, FUNCTIONAL DESCRIPTION

The inlet system consists of two air filters, a compressor air inlet valve and interconnecting piping to the engine and compressor. Also, nylon tubing and air filter restriction indicator gauges are provided.

The air filters are a 2-stage unit with a safety element dry element-type filter. This filter is capable of cleaning extremely dirty air. However, in such cases, frequent checks of the air filter will be required. Referring to the instrument panel, the engine air filter restriction gauge or the compressor air filter restriction gauge will indicate when restriction of the air passing through the filter becomes too high.

At this time, change the air filter element. Refer to *Air Filter Maintenance on page 45*. These indicators should be checked daily, after start-up under normal conditions.

The compressor air inlet valve controls the amount of air intake of the compressor in response to the air demand.

### 2.8 INSTRUMENT PANEL GROUP, FUNCTIONAL DESCRIPTION

Refer to **Compass Controller Manual**, Sullair Part No. 02250167-454

### 2.9 ENGINE CONTROL MODULE, FUNCTIONAL DESCRIPTION

Diagnostic fault codes are provided to indicate a problem has been detected by the ECM (Engine Control Module). In some cases, the engine performance can be affected when the condition causing the code exists. More frequently, however, the operator cannot detect any difference in the engine performance.

The Compass Controller indicates a performance problem has occurred whenever the engine warning lamp is flashing. The diagnostic code may indicate the cause of the problem, and should be corrected.

If the Compass Controller does not indicate a problem with the engine performance but a diagnostic code is logged by the ECM, the ECM detected an abnormal condition that did not affect performance.

If this is the case, unless there are several occurrences of the code in a very short period of time, or, the ECM is indicating an Active Code at the present time, there is most likely nothing wrong with the system.

The diagnostic FLASH CODE may be retrieved using this lamp.

The lamp is not required for engine operation, however, it can be useful to determine Active diagnostic codes. The lamp will illuminate (ON) at initial ECM power-up to test the lamp operation (self test).

Count the first sequence of flashes to determine the first digit. After a two-second pause, count the second sequence of flashes to determine the second digit. Any additional flash code diagnostics will follow (after a pause) and will be displayed in the same manner.

In addition to the flash codes described above, the Compass Controller should display a brief verbal message in the LCD of the master gauge. This message helps to pinpoint the source of the problem and aid in troubleshooting the compressor.

#### NOTE

**Only Active diagnostic codes can be read in this manner. Logged diagnostic codes must be retrieved with an Electronic Service Tool.**

Refer to *Table 2-1 on page 23* for possible performance of active diagnostic codes.

TABLE 2-1 POSSIBLE PERFORMANCE OF ACTIVE DIAGNOSTIC CODES

Flash Code	Description Of Code	CID-FMI Code	SPN-FMI Code	Engine Misfires	Low Power	Reduced Engine Speed	Engine Shutdown
12	Incorrect crank-without-inject inputs	266-02	266-02				
13	Fuel temperature open/short to +batt	174-03	174-03				
	Fuel temperature short to ground	174-04	174-04				
21	5-Volt sensor DC power supply short to +batt	262-03	620-03				
	5-Volt sensor DC power supply short to ground	262-04	620-04				
	Digital sensor supply short to +batt	262-03	678-03				
	Digital sensor supply short to ground	263-04	678-04				
24	Engine oil pressure open/short to +batt	100-03	100-03				
	Engine oil pressure open/short to ground	100-04	100-04				
25	Turbo outlet pressure above normal	273-00	102-00		x		
	Turbo outlet pressure open/short to +batt	273-03	102-03		x		
	Turbo outlet pressure short to ground	273-04	102-04		x		
26	Atmospheric pressure open/short to +batt	274-03	108-03				
	Atmospheric pressure short to ground	274-04	108-04				
27	Engine coolant temperature open/short to +batt	110-03	110-03	x	x	x	
	Engine coolant temperature short to ground	110-04	110-04	x	x	x	
28	Throttle position calibration required	91-13	91-03		x	x	
32	Throttle position signal abnormal	91-08	91-08		x	x	
34	Speed/timing sensor loss of signal	320-02	190-02	x			x (I)
	Speed/timing sensor mechanical failure	320-11	190-11	x			x (I)
	Loss of secondary engine speed signal	342-02	723-02	x			x (I)
	Secondary engine speed sensor mechanical failure	342-11	723-11	x			x (I)
35	Engine overspeed shutdown	004	0190-16				
	Engine overspeed warning	190	0190-00				
37	Fuel pressure open/short to +batt	94-03	94-03				
	Fuel pressure short to ground	94-04	94-04				
	Engine oil temperature open/short to +batt	175-03	175-03				
	Engine oil temperature short to ground	175-04	175-04				
38	Intake manifold air temp open/short to +batt	172-03	172-03	x	x	x	
	Intake manifold air temp short to ground	172-04	172-04	x	x	x	
42	Engine timing calibration required	261-13	228-13	x	x	x	x
46	Low engine oil pressure warning	100	0100-17				
	Low engine oil pressure derate	039	0100-18				
	Low engine oil pressure shutdown	040	0100-01		x (I)	x (I)	x (I)
51	System voltage intermittent/erratic	168-02	168-02	x	x		x
53	Electronic Control Module error	254-12	No code	x	x	x	x
56	Personality Module mismatch	253-02	234-02				x (II)
	Check programmable parameters	268-02	111-02		x	x	

(I) The engine will shut down if both speed/timing sensors are lost.

(II) Fuel injection will not occur and the engine will not start. NOTE: Sullair engines are programmed to shut down.

CID = Component Identifier SPN = Suspect Parameter Number FMI = Failure Mode Identifier

## SECTION 2

Flash Code	Description Of Code	CID-FMI Code	SPN-FMI Code	Engine Misfires	Low Power	Reduced Engine Speed	Engine Shutdown
58	J1939 Data Link communications	247-09	639-09				
61	High engine coolant temperature derate	015	0110-16				
	High engine coolant temperature shutdown	016	0110-00				
	High engine coolant warning	017	0110-15				
62	Fuel filter restriction derate	005	0094-15				
	Fuel filter restriction shutdown	006	0094-16				
	Fuel filter restriction warning	095	0094-00				
	High fuel pressure	096	0094-00				
64	High inlet temperature derate	025	0172-16				
	High inlet temperature warning	027	0172-15				
65	High fuel temperature derate	054	0174-16				
	High fuel temperature shutdown	055	0174-00				
	High fuel temperature warning	056	0174-15				
72	Injector cylinder #1 fault	1-11	651-11	x	x		
	Injector cylinder #2 fault	2-11	652-11	x	x		
73	Injector cylinder #3 fault	3-11	653-11	x	x		
	Injector cylinder #4 fault	4-11	654-11	x	x		
74	Injector cylinder #5 fault	5-11	655-11	x	x		
	Injector cylinder #6 fault	6-11	656-11	x	x		
00	Either start relay open/short to +batt	545-05	545-05				
	Either start relay short to ground	545-06	545-06				
(I) The engine will shut down if both speed/timing sensors are lost. (II) Fuel injection will not occur and the engine will not start. NOTE: Sullair engines are programmed to shut down. CID = Component Identifier SPN = Suspect Parameter Number FMI = Failure Mode Identifier							

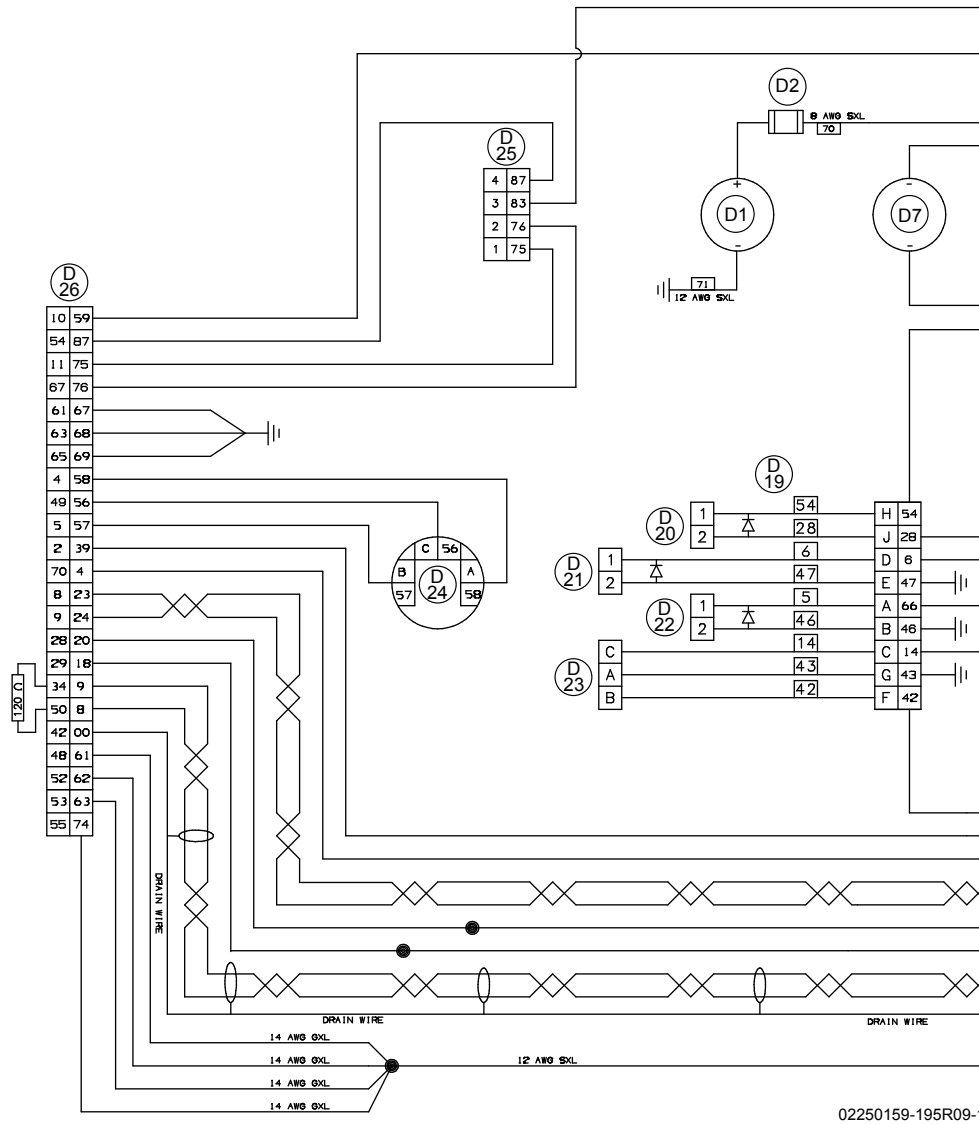


## 2.10 ELECTRICAL SYSTEM, FUNCTIONAL DESCRIPTION

Refer to *Figure 2-4*. The electrical system is comprised of not only the necessary equipment required to operate the compressor, but also a system to shut it down in the event of a malfunction. The components of the electrical system are an engine starter (with an integral solenoid), battery, an alternator with a built-in voltage regulator, a compressor discharge temperature switch (which will shut down the compressor should the compressor temperature exceed

300°F [149°C]), a low coolant shutdown switch and low fuel shutdown protection. The engine coolant level detector is located in the overflow tank near the top of engine radiator. It will shut the compressor down or prevent it from being started if the engine coolant level drops too low. In addition, there is a starter protection relay which prevents accidental starter engagement after the engine is running or whenever there is pressure in the receiver tank.

2.10 ELECTRICAL SYSTEM, FUNCTIONAL DESCRIPTION (CONTINUED)



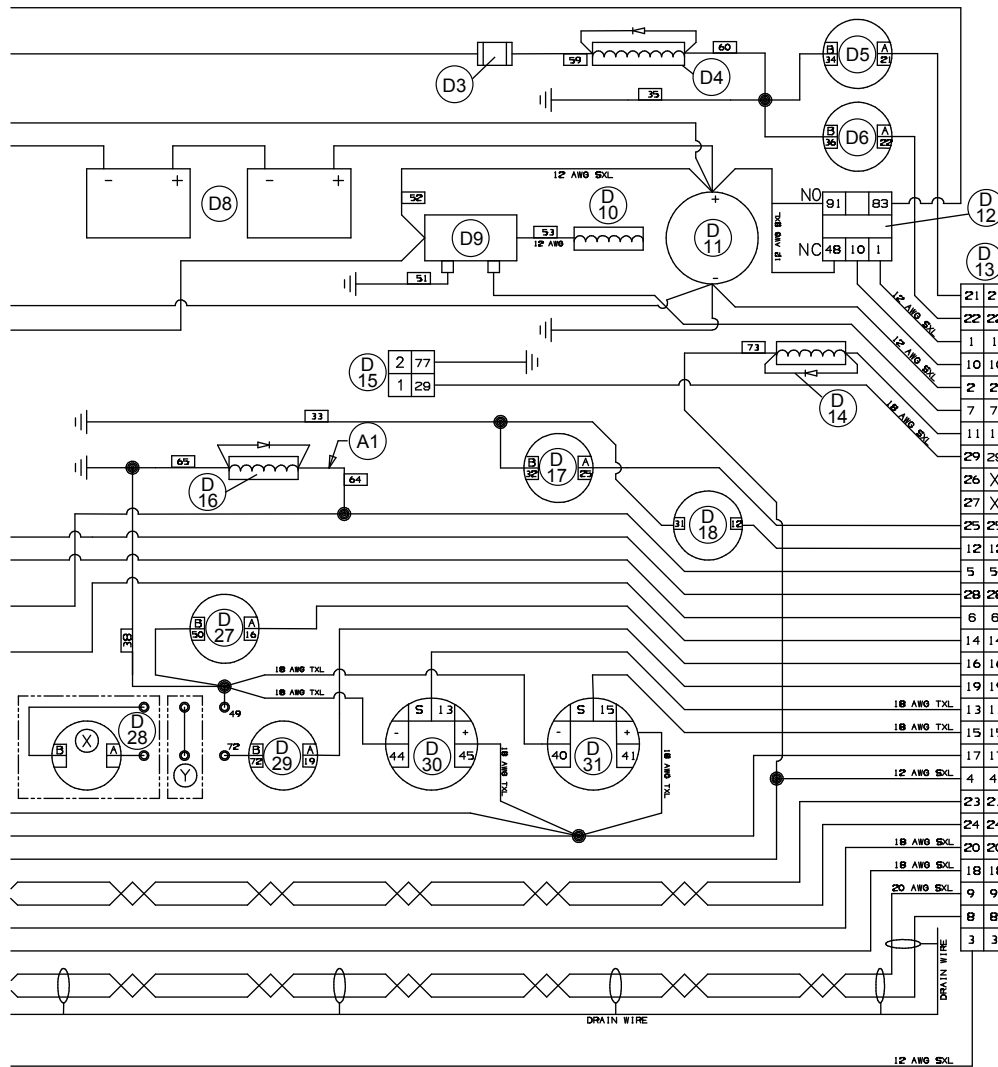
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Figure 2-4: Wiring Diagram, part one

Key	Description	Note
D1	Alternator	
D2	60A Fuse	
D3	2A Fuse	
D4	Ether Start Solenoid	
D5	Filter Minder Engine	
D6	Filter Minder Compressor	
D7	Battery Disconnect Switch	
D8	12V Battery	
D9	Starter Relay	
D10	Starter Solenoid	

Key	Description	Note
D11	Starter	
D12	E-Stop	
D13	Compass Controller	See Compass Controller Table on page 28.
D14	Louver Solenoid	
D15	Remote Start Input	
D16	Spring Valve Solenoid	
D17	Ambient Temperature Sensor	
D18	Fuel Sender	

2.10 ELECTRICAL SYSTEM, FUNCTIONAL DESCRIPTION (CONTINUED)



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Figure 2-4: Wiring Diagram, part two

Key	Description	Note
D19	Manifold Block	
D20	Recirculation	
D21	Start/Run	
D22	Relay HI/LO	
D23	P2	
D24	Engine Coolant Level	
D25	Air Stop	
D26	Engine ECM	See Engine ECM Table on page 28.
D27	Compressor Discharge Temperature	

Key	Description	Note
D28	Interstage Temperature (H.P. Only)	
D29	Receiver Tank Temperature	
D30	Receiver Tank Pressure (Dry)	
D31	Receiver Tank Pressure (Wet)	
A1	Required for XXH/XH Only	

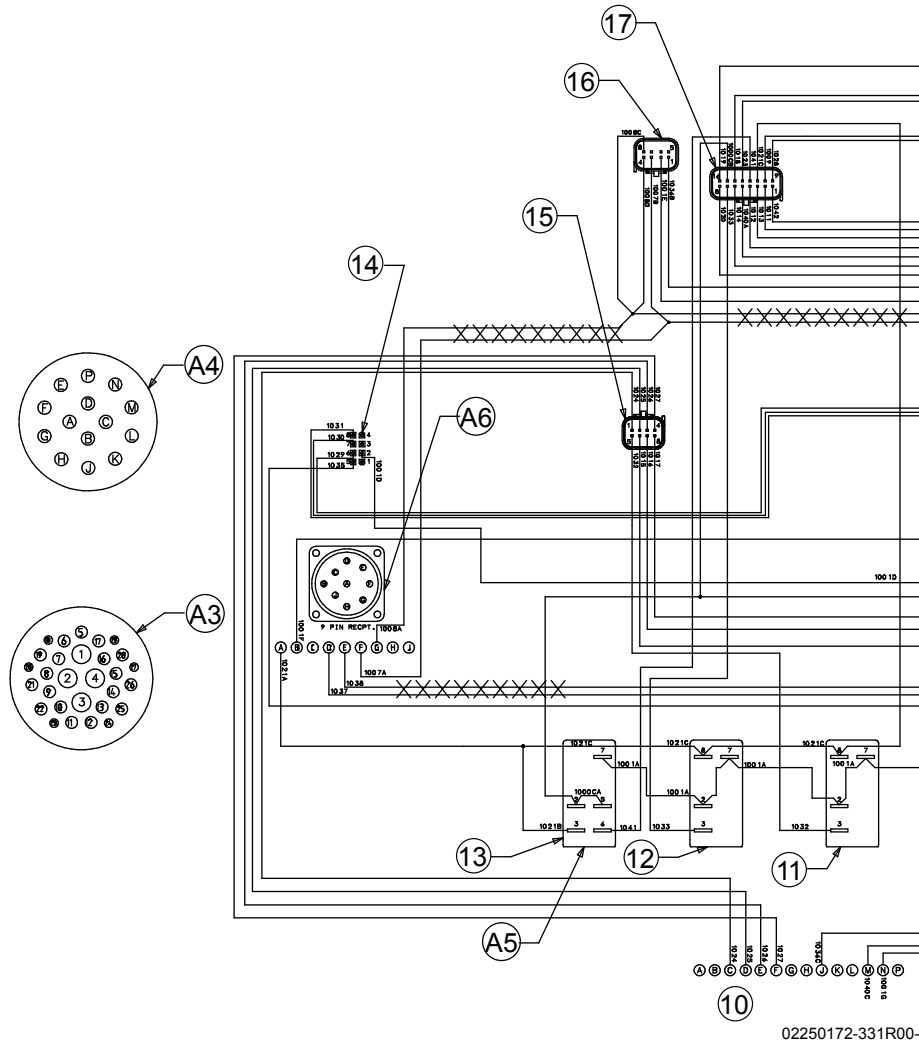
## 2.10 ELECTRICAL SYSTEM, FUNCTIONAL DESCRIPTION (CONTINUED)

Engine ECM	
PIN	Description
10	Ether Start Sol.
54	Air Stop Switch
11	Air Stop Module
67	Air Stop Common
61	Batt. -
63	Batt. -
65	Batt. -
4	Dig. Sensor +8V
49	Coolant LVL SW.
5	Dig. Sensor Ret.
2	Analog SNSR +5V
70	Switch Batt. +
8	Data Link +
9	Data Link -
28	Diagnostic Lamp
29	Warning Lamp
34	J1939 -
50	J1939 +
42	J1939 Shield
48	Unswitch Batt. +
52	Unswitch Batt. +
53	Unswitch Batt. +
55	Unswitch Batt. +

Compass Controller	
PIN	Description
21	Filtr Restrict Eng.
22	Filtr Rstr. Compr.
1	E-Stop (+24V)
10	+ Batt E-Stop
2	- Ground
7	Starter Relay
11	- Louver
29	Remote Start
25	Amb Temp Sensor
12	Fuel Sender
5	HI/LO Switch
28	- Recirc. Sol.
6	Start/Run Swtch
14	P2 Control Press.
16	CDT Sensor
19	RTT Sensor
13	P1 Dryside Press.
15	P3 Wetside Press.
17	+ 5 Volt DC
4	+ Batt. Switch
23	+ Cat Data Link
24	- Cat Data Link
20	Diagnostic LP. Eng.
18	Warning Lamp Eng.
9	- Can (J1939)
8	+ Can (J1939)
3	+ Batt. Unsw.

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2.10 ELECTRICAL SYSTEM, FUNCTIONAL DESCRIPTION (CONTINUED)



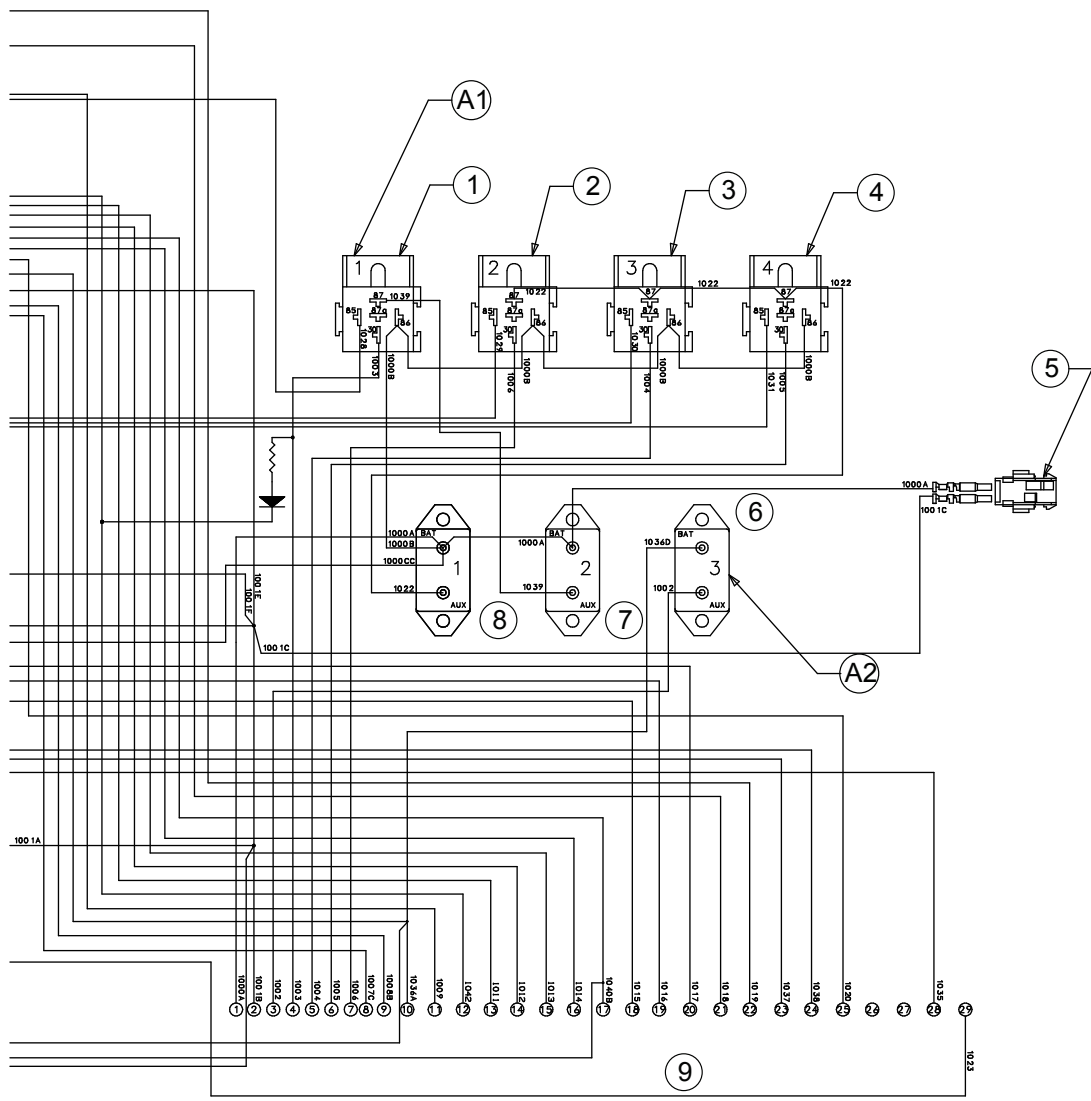
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Figure 2-5: Wiring Diagram, part two

Key	Description
1	Relay Switch Power
2	Relay Engine Crank
3	Relay HI LO
4	Relay Start/Run
5	AMP 770024-1, 2-Pos Mate-N-Lock (PIN #'s not crucial) uses AMP 770008-3
6	Auto Reset Breaker 3
7	Auto Reset Breaker 2
8	Auto Reset Breaker 1
9	Connector #2
10	Connector #1

Key	Description
11	HI/LO
12	Reset
13	Start/On/Off
14	AMP 770579-1, 8-POS Mini Mate-N-Lock, AMP Term 171637-1
15	Tyco 1411001-1, 8-Pos Sealed Housing, uses Tyco 1393366-1
16	Tyco 1411001-1, 8-Pos Sealed Housing, Label "Master", uses Tyco 1393366-1
17	Tyco 1438031-1, 16-Pos Sealed Housing, uses Tyco 1393366-1

2.10 ELECTRICAL SYSTEM, FUNCTIONAL DESCRIPTION (CONTINUED)



02250172-331R00-2

Figure 2-6: Wiring Diagram, part two

Key	Description
A1	Tyco 4-1419106-0, Bracket Mountable Relay Socket, 4 places, Interlock sockets together in this order, uses Packard 1201-5865
A2	Bussman 124B15-B2M-01-KA, 15A 24V Circuit Breaker, 3 places, uses AMP 2-34146-1 or equiv #10 Ring Term
A3	Connector #2, Deutsch, HDP24-24-29PE, 29-Pin Receptacle, Deutsch PINS PINS 1-4: 0460-204-12141, PINS 5-17, 19, 21, 22, 25 & 28: 0480-202-16141, PINS 18, 20, 23, 24, & 28: 0460-202-20141 Seals Pos. 26 with Deutsch 114017, Seal Pos. 27 with Deutsch 0413-204-2005

Key	Description
A4	Connector #1, Deutsch HDP24-18-14PN, 14-Pin Receptacle, uses PINS 0460-202-16141, Seal unused positions with Deutsch 114017
A5	Carling 'VCH' Switch Block w/AMP Fastin-Faston 250 series terminals
A6	Deutsch HD 10-9-96P-B009, 9-Pin Receptacle, uses PINS 1060-16-01222, Seal unused Pos. with Deutsch 114017

## 2.11 AFTERCOOLER AIR SYSTEM, FUNCTIONAL DESCRIPTION

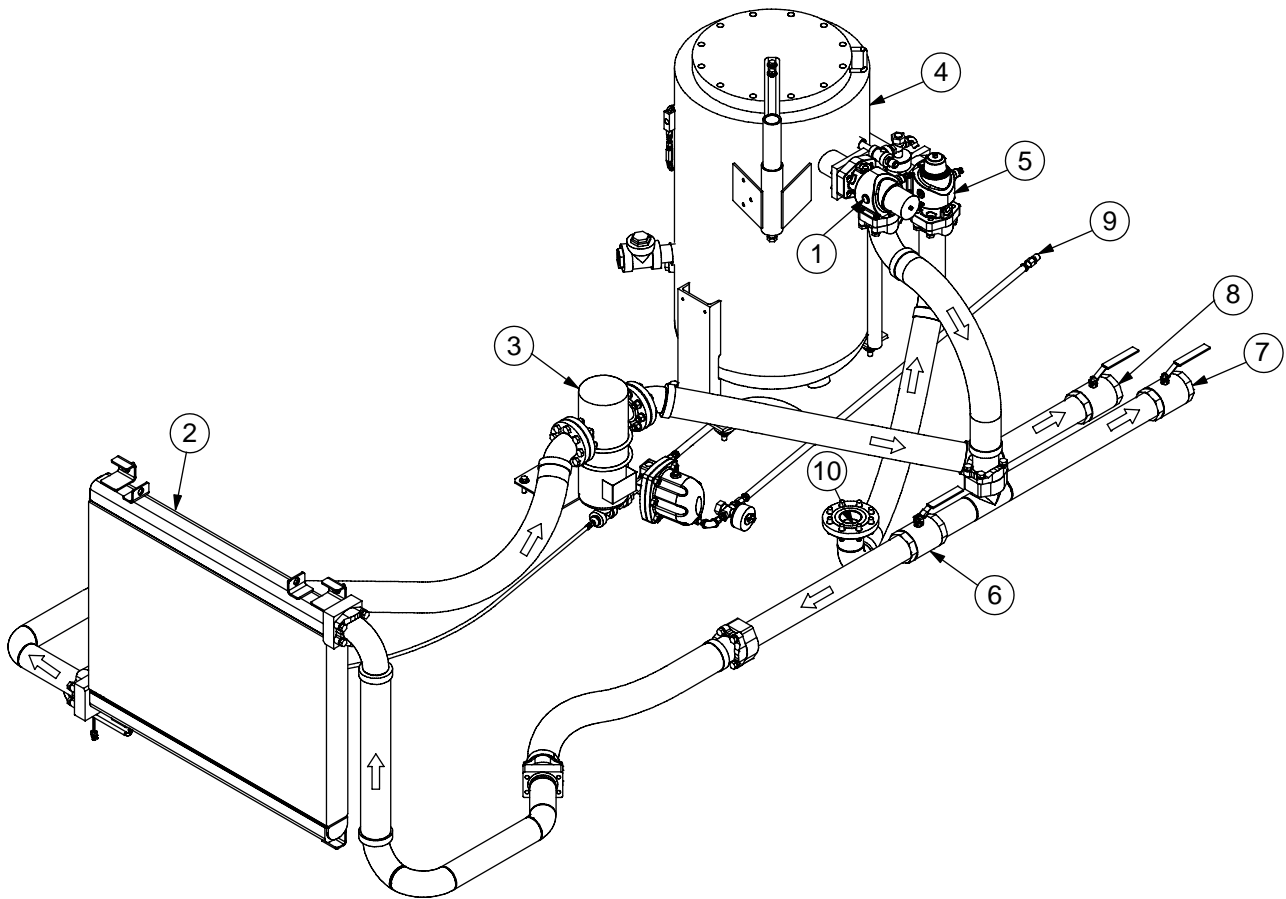
Refer to *Figure 2-7*. The purpose of the aftercooler air system is to operate the air compressor in conditions when compressed air temperatures are required to be 10 to 25°F (5 to 13°C) over ambient temperature. Two discharge valves are provided on all aftercooled compressor models. One valve is labeled standard air and one valve is labeled aftercooled air. Closing the standard air (non-aftercooled) valve completely forces the air flow from the receiver tank to the aftercooler. The ambient air, which is drawn through the aftercooler by the engine fan, cools the compressed air as it passes through the aftercooler core. Cooled air enters the moisture separator where condensation is removed and discharged. This condensation does carry some oil and it should be

disposed of properly in accordance with local regulations. From the moisture separator the compressed air goes to the compressor service valve.

### NOTE

**Aftercooler system should not be operated in ambient conditions below 32°F (0°C). If it is necessary to operate in these conditions, Sullair can supply optional equipment to accommodate this requirement.**

**To operate in the non-aftercooled mode, close the aftercooler service valve completely and open non-aftercooler valve.**



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- |                                 |                              |
|---------------------------------|------------------------------|
| 1. Minimum Pressure/Check Valve | 6. Air Valve (Std To AC Air) |
| 2. Air Aftercooler              | 7. Standard Air              |
| 3. Air/Water Separator          | 8. Aftercooled Air           |
| 4. Receiver Tank                | 9. Water Drain               |
| 5. Discharge Check Valve        | 10. From Unit Discharge      |

**Figure 2-7: Aftercooler Air System**





## Section 3

# SPECIFICATIONS

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### 3.1 TABLE OF SPECIFICATIONS

**TABLE 3-1 OVERALL SPECIFICATIONS**

Model Series	Length in (mm)	Width in (mm)	Height in (mm)	Weight (wet) lbs (kg) (l)
OPEN FRAME (ALL)	181.6 (4613)	86.0 (2184)	89.7 (2278)	13000 (5897)
(l) Aftercooled add 500 lbs / 227 kg				

**TABLE 3-2 COMPRESSOR SPECIFICATIONS**

COMPRESSOR	750XHH / 900XH	900XHH / 1150XH	1150XHH / 1350XH
Type	Rotary Screw	Rotary Screw	Rotary Screw
Maximum Operating Pressure	500 psig (34.5 bar)	500 psig (34.5 bar)	500 psig (34.5 bar)
Rated Pressure	500 / 350 psig (34.5 / 24.1 bar)	500 / 350 psig (34.5 / 24.1 bar)	500 / 350 psig (34.5 / 24.1 bar)
Delivery at 500 psig (34.5 bar)	750 / 900 Free CFM	900 / 1150 Free CFM	1150 / 1350 Free CFM
Cooling	Pressurized Compressor Fluid	Pressurized Compressor Fluid	Pressurized Compressor Fluid
Lubricating Compressor	Consult <i>Lubrication Guide</i>	Consult <i>Lubrication Guide</i>	Consult <i>Lubrication Guide</i>
Receiver Tank Capacity	35 U.S. Gallons (170 liters)	35 U.S. Gallons (170 liters)	35 U.S. Gallons (170 liters)
Electrical System	Engine – 24 Volt	Engine – 24 Volt	Engine – 24 Volt
	Instrument System – 24 Volt	Instrument System – 24 Volt	Instrument System – 24 Volt
Battery (2)	1550 CCA @ 32°F (0°C)	1550 CCA @ 32°F (0°C)	1550 CCA @ 32°F (0°C)
	(8D) 1125 CCA @ 0°F (-18°C)	(8D) 1125 CCA @ 0°F (-18°C)	(8D) 1125 CCA @ 0°F (-18°C)
Alternator	60 amp	60 amp	60 amp
Service Valves	3" npt	3" npt	3" npt

TABLE 3-3 ENGINE SPECIFICATIONS

ENGINE	750XHH / 900XH	900XHH / 1150XH	1150XHH / 1350XH
Make	Caterpillar	Caterpillar	Caterpillar
Type	Cat C15 ATAAC TIER III (I)	Cat C15 ATAAC TIER III (I)	Cat C18 ATAAC TIER III (I)
Rated Speed	1800 RPM	1800 RPM	1800 RPM
Horsepower, SAE	475 HP (354 kw)	540 HP (403 kw)	630 HP (470 kw)
Cylinders	6	6	6
Cycles	4-cycle	4-cycle	4-cycle
Bore x Stroke	5.4 x 6.7 in (137 x 170 mm)	5.4 x 6.7 in (137 x 170 mm)	5.7 x 7.2 in (145 x 183 mm)
Displacement	923 cubic inches (15.1 liters)	923 cubic inches (15.1 liters)	1106 cubic inches (18.1 liters)
Lubricating System	Full Pressure Fluid	Full Pressure Fluid	Full Pressure Fluid
Type of Motor Oil	See <b>Engine Operator's Manual</b>	See <b>Engine Operator's Manual</b>	See <b>Engine Operator's Manual</b>
Engine Cooling System Capacity	12.6 U.S. gallons (48 liters)	12.6 U.S. gallons (48 liters)	12.6 U.S. gallons (48 liters)
Idle Speed	1400 RPM	1400 RPM	1400 RPM
(I) Air to air aftercooled			

### 3.2 LUBRICATION GUIDE – COMPRESSOR

Fluid Type	Change Period, Hours	Ambient Temperature Range °F (°C)
Sullair AWF (I)	300	-20 to 120 (-29 to 49)
Mobil Rarus SHC 1026600	600	50 to 125 (10 to 52)
Mobil Rarus SHC 1024	800	-20 to 100 (-29 to 38)
(I) Sullair part numbers for multi-viscosity lubricants are 250030-757 (5 gallons/18.9 liters), 250030-758 (55 gallons/208 liter drum)		

### 3.3 APPLICATION GUIDE

Refer to *Figure 3-1* Sullair Air Compressors are supplied with Sullair AWF which is heavy duty multi-viscosity, all-weather fluid. Sullair AWF also allows an extended change interval.

The fluids in the *Lubrication Guide – Compressor* can be used. Any of these oils are suitable under conditions where severe oil oxidations can occur.

Water must be drained from the receiver periodically. In high ambient temperature and high humidity conditions, condensed moisture may emulsify with the oil forming a "milky" color. The fluid should be changed if this condition develops.

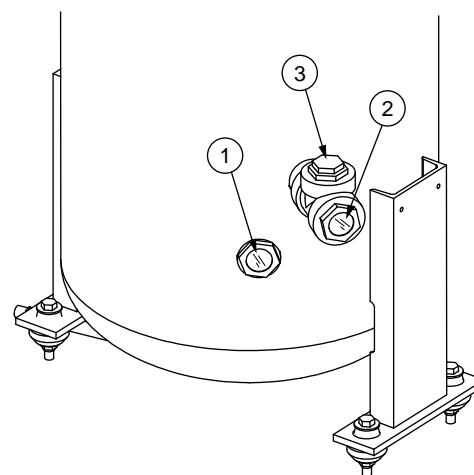
#### CAUTION

**DO NOT mix types of fluids. Combinations of different fluids may lead to operational problems such as foaming, filter plugging, orifice or line plugging.**

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

Sullair encourages the user to participate in a fluid analysis program. This could result in a fluid change interval differing from that stated in the manual. Sullair Corporation offers a fluid analysis program for Sullair AWF. Contact your local Sullair representative for details.

D-A Lubricant® Company Inc. offers an analysis program for users of D-A products and Sullair AWF. Contact your D-A Lubricant® supplier or Sullair representative for details.



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1. Lower Sight Glass (I)
2. Upper Sight Glass (II)
3. Fluid Fill Port

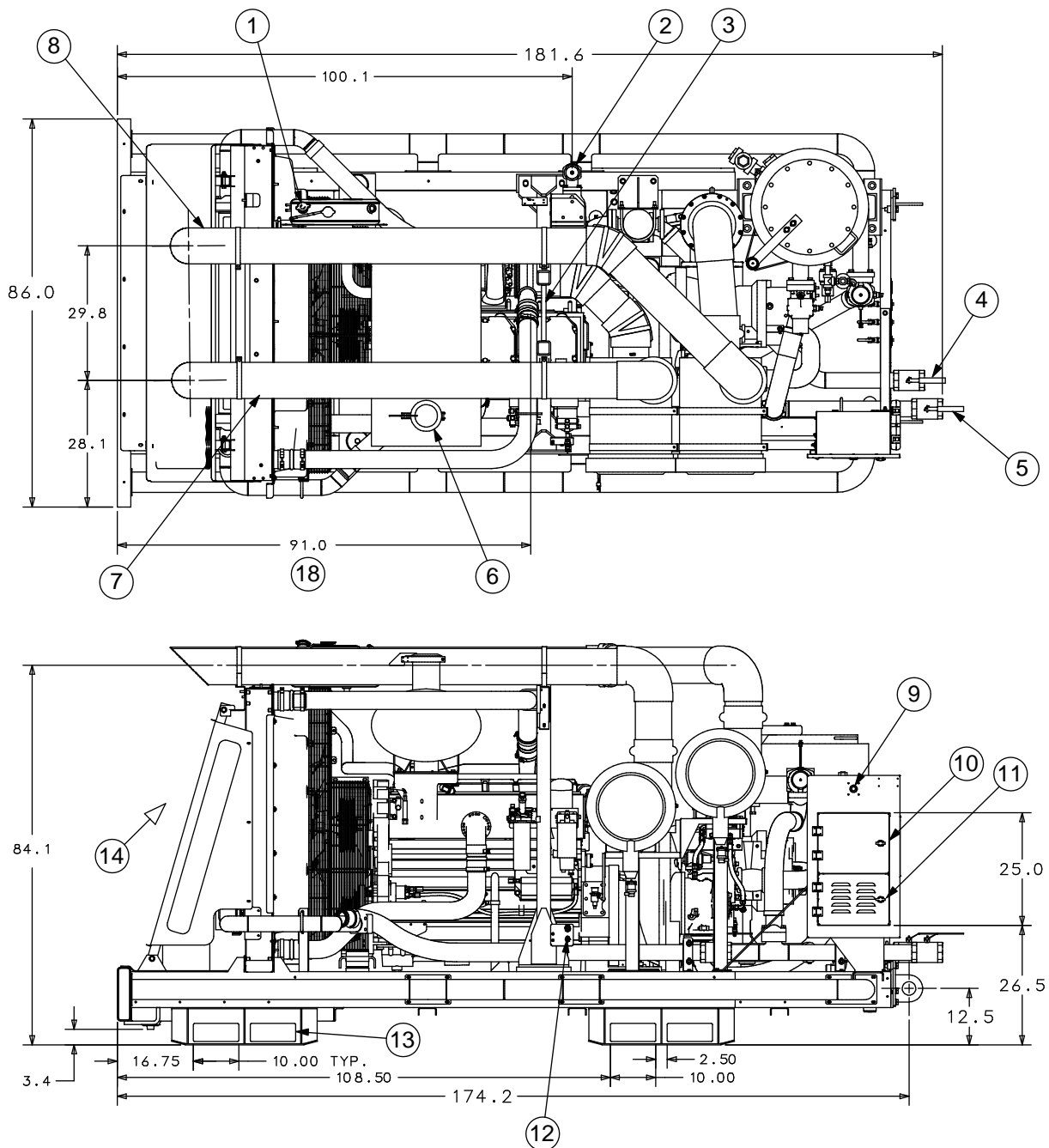
**Figure 3-1: Fluid Fill Location**

(I) If fluid level is seen in the lower sight glass when the machine is not running, add Sullair AWF until level is seen in upper sight glass.

(II) If fluid is seen in the upper sight glass when the machine is NOT running, no fluid is needed.

### 3.4 LUBRICATION GUIDE, ENGINE

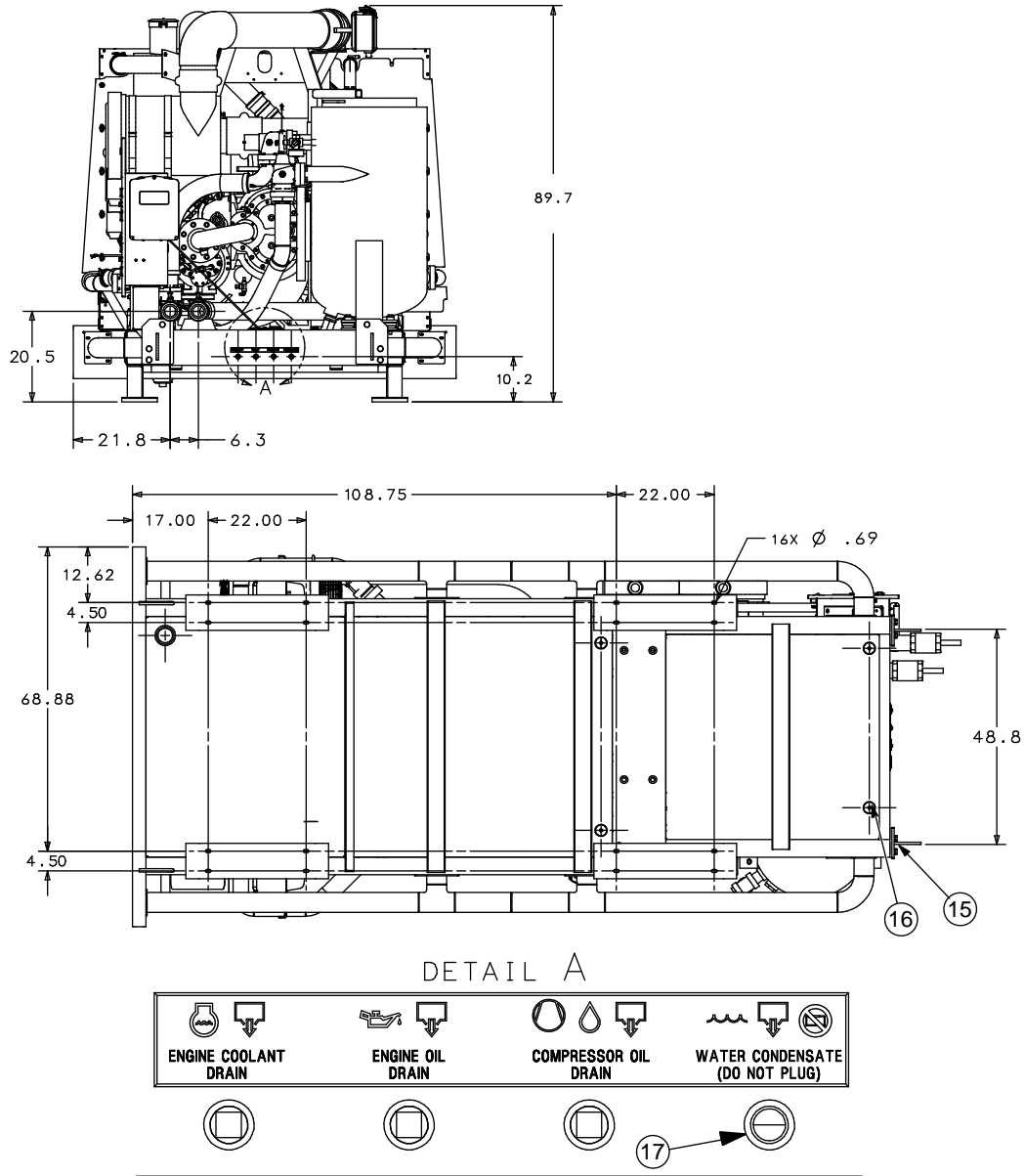
For engine oil specifications, refer to the **Engine Operator's Manual**.



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**Figure 3-2: Functional Description, part one**

- |   |                                  |
|---|----------------------------------|
| 1. Engine Radiator Fill                         | 9. E-Stop                        |
| 2. Oil Filter Manifold Block                    | 10. Instrument Panel Door        |
| 3. Lifting Bail Eye                             | 11. Air Controls Door            |
| 4. 3" NPT After-Cooled Air Discharge (Optional) | 12. Remote Fuel Connections      |
| 5. 3" NPT Standard Air Discharge                | 13. Fork Lift Pockets (4 Places) |
| 6. 6" Engine Exhaust                            | 14. Cooling Air Inlet            |
| 7. Engine Air Intake                            | 18. Approx. Center of Gravity    |
| 8. H.P. Unit Air Intake                         |                                  |



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Figure 3-2: Functional Description, part two

- 15. Pulling Eye (2 Places)
- 16. 2.5" Drain Plug (5 Places)

- 17. 1/2" NPT Drains (4 Places)

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## Section 4

# OPERATION

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### 4.1 GENERAL

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

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

### 4.2 PURPOSE OF CONTROLS

CONTROL OR INDICATOR	PURPOSE
OFF/ON/START Switch (Start Up)	<p>The engine switch is used to both energize the compressor's electrical system and engage the engine/starter. It also has a built-in anti-restart device that protects the starter from engaging while the engine is running. The switch must be turned back to the "OFF" position before the engine can be re-started.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: 80%;"> <p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;"><b>When re-starting the compressor, the Compass Controller will not allow restart until system pressure falls below 10 psig (0.7 bar) or less. More than 10 psig (0.7 bar) can put extra load on the starter.</b></p> </div>
OFF/ON/START Switch (Shut Down)	Allows the engine to run at unload speed (lower pressure) until properly cooled down. Controls start up, run and shutdown procedures. Refer to <b>Compass Controller Manual</b> , Sullair Part No. 02250167-454 for further details.
LCD Display	Refer to <b>Compass Controller Manual</b> , Sullair Part No. 02250167-454 for further detail.
Air Pressure Gauge	Continually monitors the pressure inside the receiver tank at various load and unload conditions.
Engine Water Temperature Gauge	Monitors the temperature of the engine water. The normal operating temperature should read approximately 160°F to 210°F (71°C to 99°C).
Compressor Discharge Temperature Gauge	Monitors the temperature of the air/fluid mixture leaving the compressor unit. The normal reading should be approximately 210°F to 250°F (99°C to 121°C).
Fluid Level Sight Glass	Monitors the fluid level in the receiver tank. Proper level is always visible in the sight glass. Check the level when the compressor is shutdown.

## SECTION 4

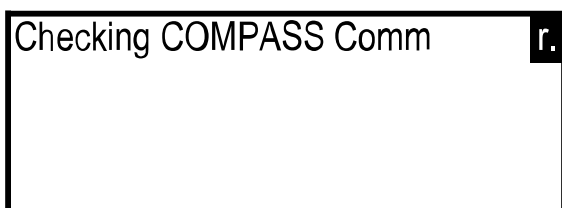
CONTROL OR INDICATOR	PURPOSE
Reducing Regulator Valve	Provides regulated air pressure to the inlet valve and engine speed control to open the inlet valve and move engine governor to full speed with warm-up valve in the "RUN" position.
Control Regulating Valve	Provides an air signal to the inlet valve and engine speed controller to close the inlet valve and reduce engine speed to control air delivery according to demand.
Minimum Pressure/Check Valve	Maintains a minimum of 200 psig (13.8 bar) in the compressor receiver tank. This valve restricts receiver air discharge from receiver/receiver tank when pressure falls to 200 psig (13.8 bar). Also prevents back flow into the receiver tank during unload conditions and after shutdown.
HI/LO Selector Switch	Select high pressure 500 psig (34.5 bar) or low pressure 350 psig (24.1 bar) at instrument panel to correspond to operator's needs.
Pressure Relief Valve	Opens receiver tank pressure to the atmosphere should pressure inside the receiver tank exceed 600 psig (41.4 bar).
Air Inlet Valve	Regulates the amount of air allowed to enter the air inlet valve. This regulation is determined by the amount of air being used at the service line.
Blowdown Valve	Vents receiver tank pressure to the atmosphere at shutdown. Vents surplus receiver tank pressure to the atmosphere during operation.
Thermal Valve	Regulates flow of fluid to and around the fluid cooler. Designed to maintain a minimum operating temperature; used for fast warm-up at start-up and to eliminate condensation during operation.
Recirculation Valve	Provides limited air supply back to inlet valve during unload/no load conditions to prevent cavitation in the unit.



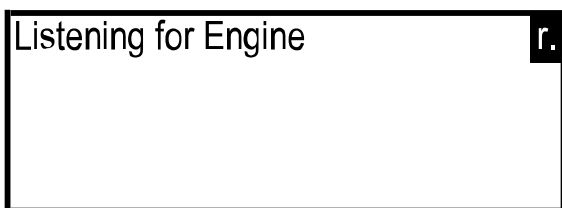
### 4.3 COMPRESSOR START-UP PROCEDURE

For more detailed instruction and useful information regarding machine operation and the Compass Control System, refer to the Sullair Compass Controller User's Manual (Sullair P/N: 02250167-454).

1. Turn the ON/OFF/START switch, located on the Compass Controller, to the "ON" position. The controller will power up and a self-diagnostic program will be initiated. During the initiation process, the gauges will wag (the needles on each gauge will sweep through its full scale) to verify all relevant sensors are operational. Also, a communication link will be established with the engine ECU. During this time, several messages will be displayed on the panel. Some of these messages may not be noticed by the operator because the controller steps through the initialization phase rather quickly. However, the operator should see the following messages during this step:

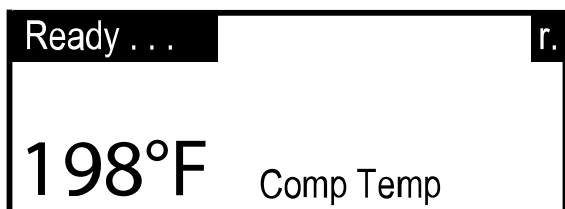


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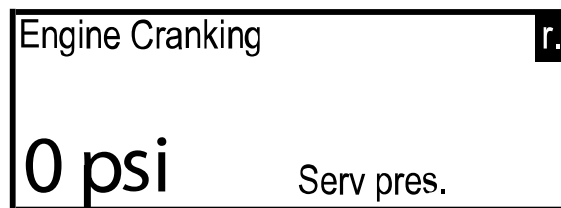
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When the system has successfully initialized, the following message will be displayed in the upper left corner on the LCD Graphic Display:



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2. Turn the OFF/ON/START switch to the "START" position. You do not have to hold the switch in the "START" position. The LCD panel will show the following message:

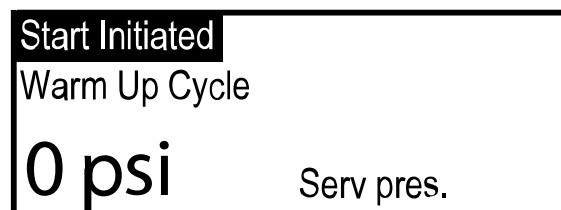


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**⚠ WARNING**

**If machine does not start successfully when starter disengages, the starter will automatically engage up to four more times after brief pauses to try and start the machine.**

Once the compressor has started, the unit will enter a warm-up phase. At this point, the unit is not producing usable compressed air and the service valve should still be closed. The following message will be displayed on the LCD panel:



SU\_0000047

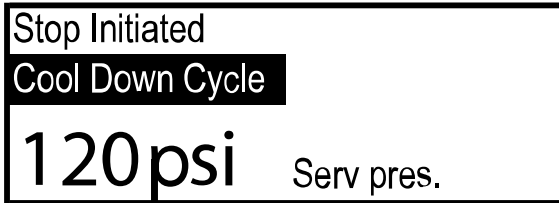
Once the proper operating conditions are met, the machine will automatically switch into run mode and provide pressurized service air.

**NOTE**

**Below 40°F (4°C) use starting aid (per instructions printed on starting aid device).**

## 4.4 SHUTDOWN PROCEDURE

1. Close the service valve.
2. Turn the OFF/ON/START switch to the “OFF” position. The following message will be displayed in the LCD Graphic Display:



SU\_000048

3. The unit will continue to run, though it will not produce usable air. At the end of the cool down, the engine will be shut down. The controller will stay powered up, and a new message will be displayed:



SU\_000049

The controller will continue to monitor the system pressures and will not power down until all pressures drop below 10 PSI (0.7 bar). This final process may take 2 to 5 minutes. Operator interaction is not necessary during this time as the controller will automatically disconnect power to all systems so that the battery is not inadvertently drained after shutdown.

### **WARNING**

**The E-Stop (emergency stop switch) should be used only in the event of an emergency. Refrain from using the E-Stop to shut the machine down during normal operations. All usage of the E-Stop is logged in permanent memory for use by service technicians when troubleshooting a machine. Non-emergency use of E-Stop is considered equipment abuse and could void the manufacturer's warranty.**

## Section 5

# MAINTENANCE

---

### 5.1 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. Refer to *Parts Replacement and Adjustment Procedures* for a detailed description of specific compressor system components. Prior to performing maintenance, read the **CIMA Safety Manual**, if applicable.

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

### 5.2 DAILY OPERATION

Prior to starting the compressor, it is necessary to perform a daily inspection. Perform the following maintenance operations to prevent unnecessary problems.

1. Check the fluid level in the compressor receiver tank. Should the level be low, simply add the necessary amount. If the addition of fluid becomes too frequent, a simple problem has developed which is causing this excessive loss. Refer to *Troubleshooting Guide on page 49* under Excessive Compressor Fluid Consumption for a probable cause and remedy.
2. Drain water from the fuel/water separator.
3. Check the fuel level in the fuel tank.
4. Check the engine oil level.
5. Check the engine coolant level.

<b>CAUTION</b>
<p><b>The radiator and engine cooling system must be drained and flushed periodically. The required change interval is determined by the following table. Refer to the OEM Engine Manual for more information. 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-chromate rust inhibitor must be added.</b></p>

<b>NOTE</b>
<p><b>Dispose of fluids in accordance with applicable federal, state and local regulations.</b></p>

<b>Coolant Service Life</b>	
<b>Coolant Type</b>	<b>Service Life</b>
Caterpillar ELC	Six Years / 12,000 Hours
Caterpillar DEAC	Three Years / 3,000 Hours
Commercial Heavy-Duty Coolant/Antifreeze that meets "ASTM D5345"	Two Years / 3,000 Hours
Commercial Heavy-Duty Coolant/Antifreeze that meets "ASTM D4985"	One Year / 3,000 Hours

**NOTE**

**Caterpillar DEAC DOES NOT require a treatment with an SCA at the initial fill. Commercial heavy-duty coolant/antifreeze that meets "ASTM D4985" or "ASTM D5345" specifications MAY require a treatment with an SCA at the initial fill. Read the label or the instructions that are provided by the OEM of the product.**

After a routine start has been made, it is necessary to perform an inspection to ensure all operations are performing correctly. Perform the following inspections to prevent unnecessary problems. .

1. Observe the instrument panel gauges and be sure they monitor the correct readings for their particular phase of operation.
2. After the compressor has warmed up, it is recommended that a general check on the overall compressor and instrument panel be made to assure that the compressor is running properly.
3. Check the air filter restriction gauges. Should they indicate restriction, replace the elements immediately. Refer to *Air Filter Maintenance on page 45*.

### 5.3 MAINTENANCE AFTER INITIAL 50 HOURS OF OPERATION

After the initial 50 hours of operation, a few simple maintenance routines can rid the system of any possible foreign materials, if any. Perform the following maintenance operations to prevent unnecessary problems.

1. Clean the return line orifice and strainer
2. Change compressor fluid filter.
3. Check **Engine Operator's Manual** for required service.

### 5.4 MAINTENANCE EVERY 300 HOURS

When using Sullair AWF, change the compressor fluid and replace the fluid filter element. Refer to *Main Fluid Filter Servicing on page 44*.

Perform the following after every 300 hours of operation:

1. Clean the return line orifice and strainer.
2. Inspect and check fan belt tension. If necessary, adjust the tension to 160 lbs while cold.
3. Clean the radiator, oil cooler and aftercooler exterior. Depending on how contaminated the atmosphere may be, more frequent cooler and radiator cleaning may be necessary in dusty conditions.

4. Check the battery level and fill with water if necessary.
5. Check **Engine Operator's Manual** for required service.

## 5.5 PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES

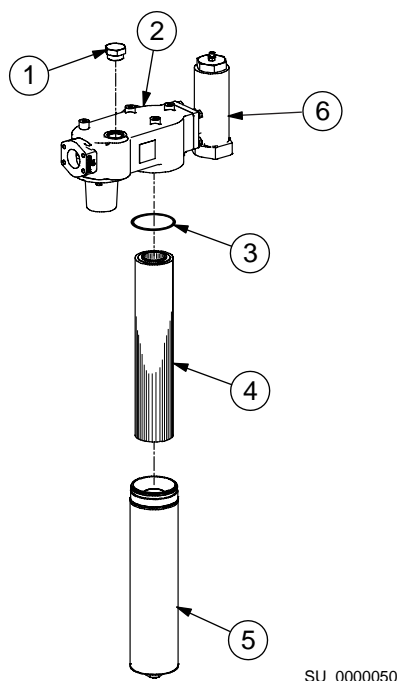
### Compressor Fluid Change Procedure

Warm-up the compressor for 5 to 10 minutes to warm the fluid. Shut the compressor off and relieve all internal pressure before proceeding. Drain the fluid by opening the valve that is bulkhead mounted to the frame (see *Figure 3-2 on page 37* for location of drain port). Change the compressor fluid and replace the fluid filter element. For element replacement see procedure for servicing the fluid filter in this section. Fill the receiver tank with fluid according to *SPECIFICATIONS on page 33*.

### Main Fluid Filter Servicing

Refer to *Figure 5-1*. The main fluid filter is located schematically in the coolant line between the receiver tank and the compressor unit. The main filter element is replaceable. For installation of the filter element, follow the procedure explained below.

1. The compressor **MUST** be shut off and system pressure **MUST** be relieved.
2. Drain by removing drain plug at bottom of bowl and catching drainage in a container.
3. Rotate bowl counterclockwise and remove.
4. Remove element and O-ring from housing and discard. This element is **NOT** cleanable.
5. Make sure mounting surface of filter head is clean.
6. Apply a light film of AWF to O-ring and place it in its proper position.
7. Place new, clean element in bowl, over center-perforated tub.
8. Inspect bowl seal and replace if necessary.
9. Replace bowl. Rotate clockwise and hand-tighten.
10. Replace drain plug.  
Torque to 15 to 20 ft-lbs. (20 to 27 N·m).



1. Fluid Filter Bypass
2. Filter Head\*
3. Bowl Seal (O-ring)
4. Element\*\*
5. Bowl
6. Fluid Stop Valve

**Figure 5-1: Main Fluid Filter Assembly**

\* Repair kit for thermostat element, P/N 02250167-366;  
Service kit for fluid stop valve, 02250167-369

\*\* Replacement filter element, P/N 02250139-996

### Air Filter Maintenance

Refer to *Figure 5-2*. Maintenance should be performed when indicated on the instrument panel located by the engine air filter restriction gauges. Both air filters are two-stage with a primary element and secondary element each.

#### Primary Element Removal

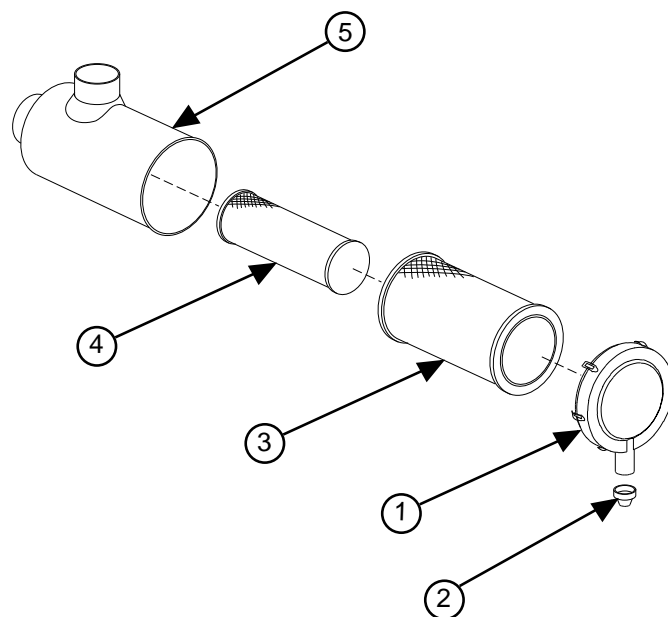
1. Clean the exterior of the air filter housing.
2. Unlatch and remove the service cover. Make certain the latches are folded back.

3. Remove the primary filter from the housing.
4. Clean the interior of the housing by using a damp cloth. **DO NOT** blow out dirt with compressed air as this may introduce dust downstream of the filter.

#### Secondary Element Removal

The secondary element serves as a safety element. The secondary element must be replaced after every third primary element change.

1. Gently pull the element off the outlet tube and out of the housing.
2. Carefully wipe the inside of the outlet tube with a clean cloth.



1. Access Cover
2. Vacuator™ Valve
3. Primary Filter Element\*
4. Secondary Element\*\*
5. Air Cleaner Housing

**Figure 5-2: Air Filter Assembly**

\* Primary replacement element, P/N 02250155-691 (qty 2)

\*\* Secondary replacement element, P/N 02250155-692 (qty 2)

### Element Replacement

1. Insert the secondary element carefully over the outer tube. Seat the new element by hand while making certain it is completely on.
2. Insert the primary filter element over the secondary element by hand. Push on the outside edge until it is completely into the housing.
3. Install the cover with the vacuator installed at the bottom. If the cover hits the element before it is fully in place, remove the cover and push the filter into the housing and try again.

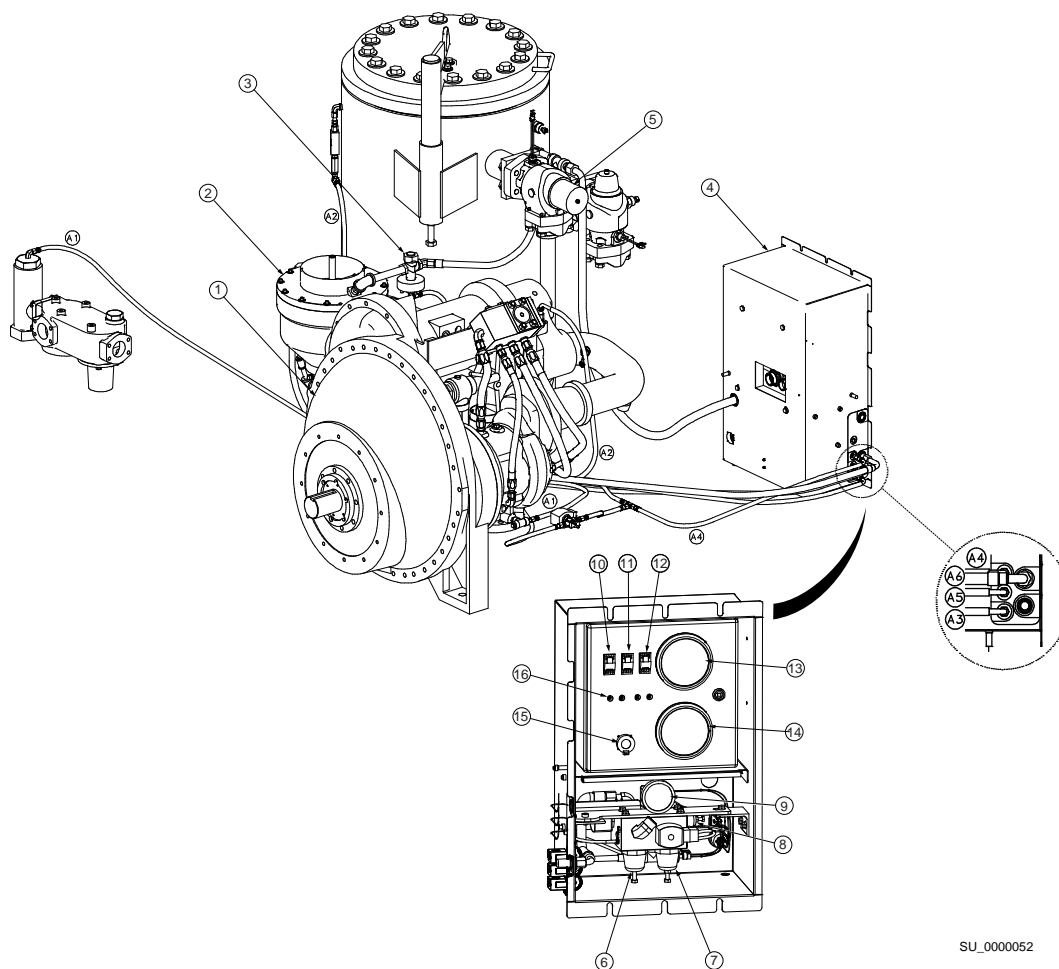
NOTE
<p><b>Never use the latches on the cover to force the element into the housing. Using the latches to push the element in could cause damage to the housing and will void the warranty.</b></p>

### Control System Adjustment

Refer to *Figure 5-3*. Prior to adjusting the control system, it is necessary to determine the desired operating pressure range as well as the maximum pressure at which the machine is to operate. This pressure must not exceed the maximum operating pressure which is stamped on the machine serial number plate. The following explanation

applies to a typical machine with a desired operating range of 350 to 500 psig (24.1 to 34.5 bar). This information will apply to a machine with any other operating range except for the stated operating pressure. For high-pressure machines, adjustment pressures are shown in parenthesis.

1. Start the machine and let it warm-up and enter full "RUN" mode.
2. Open service valve slightly until engine tries to speed up. Slowly close the service valve. With service valve closed, check and adjust the pressure at the reducing regulator to a minimum of 60 psig (4.1 bar) and not to exceed 75 psig (5.2 bar). With service valve still closed, and the "HI/LO" switch in the "LO" position, adjust the low-pressure back-pressure regulator so the service pressure is between 360 to 375 psig (24.8 to 25.9 bar) with the engine at 1400 rpm. Open the service valve to load the compressor to maintain 350 psig (24.1 bar) discharge pressure. Operating speed should be 1800 RPM on the instrument panel. If not, repeat step, but adjust the unload service pressure up or down as needed until 350 psig (24.1 bar) is maintained when engine speed is 1800 rpm.
3. For 500 psig (34.5 bar), turn the "HI/LO" switch to "HI" position. Close the service valve and set the "HI" pressure control regulator to maintain 520 to 535 psig (35.8 to 36.9 bar) discharge pressure. Open the service valve to maintain 500 psig (34.5 bar) and check for 1800 RPM full-load speed. If lower speed is observed, raise the setting of the low pressure control regulator until rated speed is achieved.



SU\_0000052

**Figure 5-3: Control System Assembly**

- |                                 |                             |
|---------------------------------|-----------------------------|
| 1. Unit                         | 12. START/ON/OFF Switch     |
| 2. Air Inlet Valve              | 13. Main Pressure Gauge     |
| 3. Running Blowdown Valve       | 14. Temp/Tach/Fuel Gauge    |
| 4. Enclosure                    | 15. Diagnostic Service Port |
| 5. Minimum Pressure Check Valve | 16. Instrument Warning Bank |
| 6. High Pressure Regulator      | A1. Green Line              |
| 7. Low Pressure Regulator       | A2. Orange Line             |
| 8. Reducing Pressure Regulator  | A3. Red Line                |
| 9. Control Pressure Gauge       | A4. Yellow Line             |
| 10. HI/LOW Switch               | A5. White Line              |
| 11. Reset Switch                | A6. Blue Line               |

**NOTE**

**For a breakdown of part kits reorder numbers, consult *Air Control Manifold* on page 96 in this manual.**



## Separator Element Replacement

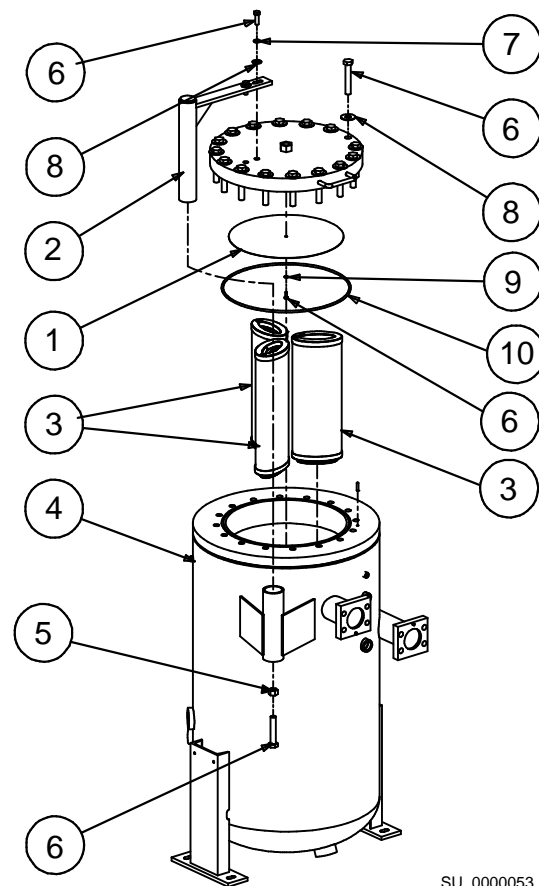
Refer to *Figure 5-4*. When the need for a separator element replacement is indicated by the Compass Controller, use the following procedure for separator replacement.

1. Remove the air receiver tank lid by removing the hex head capscrews and washers.

### CAUTION

To assist with the removal of the tank lid, Sullair has provided a jack bolt at the bottom of the lid pivot shaft. Simply jack the lid up until it will clear the dowel pin located on the top tank flange underneath the lid. Rotate out of the way.

2. Remove the elements from the separator chamber by gently rocking back and forth and pulling upward and discarding.
3. Before installing the new separator elements, make sure to lubricate the sealing O-ring on each element with a lubricating compound (i.e. Silglyde). Then install the new separator elements by firmly pressing downward until the element is fully seated on the baffle plate inside the tank.
4. Next, inspect the tank flange O-ring and replace if necessary. Before installing lid, relubricate the O-ring (i.e. Silglyde). Reinstall the tank lid. Install the capscrews and washers finger tight, then gradually tighten in a crisscross pattern in 4 to 5 steps. Always tighten the capscrews alternately at opposite sides of the cover. Torque lubricated capscrews to 322 ft-lbs. (440 N·m).
5. Clean or replace fluid return line strainer.
6. Clean the fluid return line orifice installed in the side of the compressor unit air end.



SU\_0000053

1. Grounding Plate
2. Davit Assembly Support
3. Separator Elements (3)\*
4. Receiver Tank
5. Hex Nut
6. Capscrew
7. Spring Lock Washer
8. Washer
9. Lockwasher
10. O-ring

**Figure 5-4: Separator Element Assembly**

\* Replacement kit p/n 02250167-378 (contains three elements)



## 5.6 TROUBLESHOOTING GUIDE

The following Troubleshooting Chart is based on both the data obtained from actual tests conducted at our factory and real applied situations. It contains symptoms and usual causes for the described problems. However, DO NOT assume that these are the only problems that may occur. All available data concerning the trouble should be systematically analyzed before undertaking any repairs or component replacement procedures.

- Check for loose wiring.
- Check for damaged piping.
- 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.

SYMPTOM	PROBABLE CAUSE	REMEDY
Instrument panel will not power up	Battery voltage low	Check battery voltage, check electrolyte levels. Top off batteries with distilled water and recharge as needed.
	Battery disconnect switch in "OFF" position	Turn switch to "ON" position
Compressor will not start	No fuel / plugged fuel filter	Check fuel level and add fuel if necessary. Replace the fuel filter element.
	Battery	Check electrolyte level and add distilled water and recharge if necessary.
		Loose battery cables; tighten cables.
		Dirty battery cables; clean thoroughly.
	Plugged air filter	Replace the air filter element.
	Engine problems may have developed	Refer to <b>Engine Operator's Manual</b> .
Instrument panel problems may have developed	Refer to <b>Compass Controller Manual</b> , Sullair Part No. 02250167-454.	
Compressor shuts down with air demand present	No fuel	Check fuel gauge and add fuel if necessary.
	Compressor discharge temperature switch is open	Cooling air flow is insufficient; clean cooler and check for proper ventilation.
		Low fluid sump level; add fluid.
		Dirty compressor fluid filter; change element.
		Thermostatic element is not functioning properly; change the thermostatic element.
Defective discharge temperature switch; check for a short or open circuit to the engine fuel solenoid. Should this checkout normal, it could be possible that the temperature switch itself is defective.		
Instrument panel problems may have developed	Refer to <b>Compass Controller Manual</b> , Sullair Part No. 02250167-454.	
Compressor will not build up full discharge pressure	Air demand is too great	Check service lines for leaks or open valves.
	Dirty air filter	Check the filter gauges near filters or for fault messages at controller and change element if required.
	Pressure regulator out of adjustment	Adjust regulator according to control adjustment instructions in the MAINTENANCE section.
	Defective pressure regulator	Check diaphragm and replace if necessary (kit available).

## SECTION 5

SYMPTOM	PROBABLE CAUSE	REMEDY
Improper unloading with an excessive pressure build-up causing pressure relief valve to open	Fluid charge lost from spring chamber on inlet valve pressure regulating valve is set too high	Add fluid to inlet valve spring chamber by removing plugs in the top of the spring chamber and filling with compressor fluid. Some fluid may leak from the control regulator at first but will stop leaking when fluid level in the spring chamber equalizes.
	Running blowdown valve pressure regulating valve set too high	Readjust.
	Leak in control system causing loss of pressure signal. Inlet valve jammed	Check control lines.
		Worn seals in inlet valve. Replace seals (kit available).
		Defective pressure regulating valves; repair valves (kits available).
	Free or replace valve.	
Restriction in the control system	Check all control lines and components. Ice and other contaminants could cause restrictions.	
Defective pressure relief valve	Replace pressure relief valve.	
Insufficient air delivery	Plugged air filter	Replace.
	Plugged air/fluid separator	Replace separator element and also change compressor fluid and fluid filter at this time.
	Defective pressure regulator	Adjust or repair.
	Engine speed too low	Check control pressure settings and adjust if necessary.
Excessive compressor fluid consumption	Clogged return line	Clear orifice and mesh screen.
	Leak in the lubrication system	Check all pipes, connections and components.
	Separator element damaged or not functioning properly	Change separator element.
	Defective minimum pressure/check valve	Repair or replace.
	Fluid receiver tank overfilled	Drain to proper level.
Compressor overheating	Loose or broken fan belt	Tighten or change belt.
	Dirty fluid cooler core	Clean core thoroughly.
	Dirty aftercooler	Clean core thoroughly.
	Faulty thermostat element	Change thermostat element.
	Plugged fluid cooler tube (internal)	Clean tube thoroughly.
	Low receiver tank fluid level	Refill.
	Plugged compressor fluid filter	Change element.
Engine overheating	Loose or broken fan belt	Tighten or change belt.
	Dirty radiator core	Clean thoroughly.
	Low water level	Refill.
	Dirty aftercooler	Clean thoroughly.
	Low fluid level	Refill.
	Faulty water pump	Change pump.
	Plugged radiator (internal)	Clean and flush thoroughly.
	Defective engine thermostat	Replace engine thermostat.
Shutdown panel lights	Faulty switch indicated by light	Replace the switch.
Check engine light	Engine safety switch (low coolant) fault	Replace the switch (Caterpillar part)

<b>SYMPTOM</b>	<b>PROBABLE CAUSE</b>	<b>REMEDY</b>
Engine warning flashing light	Count number of flashes. This will flash trouble code.	Determine trouble code and call Caterpillar Service Representative to correct problem.

**NOTE**

**Additional troubleshooting tips are available in the Compass Controller Manual, Sullair Part No. 02250167-454.**

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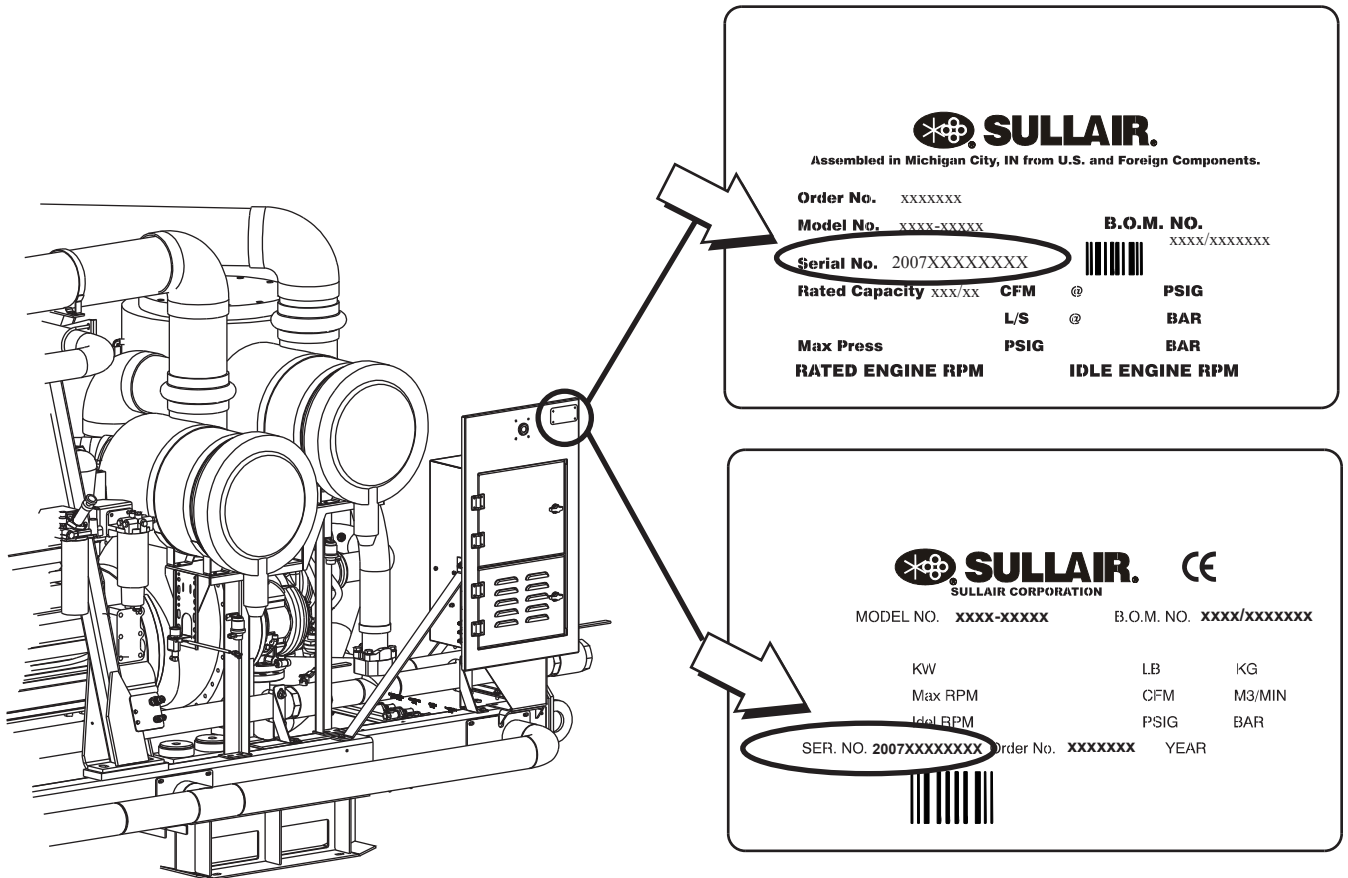
## Section 6

# PARTS LISTS

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### 6.1 PROCEDURE FOR ORDERING PARTS

When ordering parts, always indicate the **Serial Number** of the compressor. This can be obtained from the Bill of Lading for the compressor or from the Serial Number Plate located on the compressor. Refer to *Figure 6-1*.



SU\_000054

**Figure 6-1: Serial Plate - Serial Number Location**

## SECTION 6

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

**SULLAIR ASIA, LTD.**

Sullair Road, No. 1  
Chiwan, Shekou  
Shenzhen, Guangdong PRV.  
PRC POST CODE 518068  
Telephone: 755-6851686  
Fax: 755-6853473  
[www.sullair-asia.com](http://www.sullair-asia.com)

**SULLAIR CORPORATION**

3700 East Michigan Boulevard  
Michigan City, Indiana 46360 U.S.A.  
[www.sullair.com](http://www.sullair.com)  
Telephone: 1-800-SULLAIR (U.S.A. Only)  
or 1-219-879-5451  
Fax: (219) 874-1273

**CUSTOMER CARE PARTS**

1-888-SULLAIR (785-5247)  
Fax: (219) 874-1835  
[www.sullair.com](http://www.sullair.com)

**SERVICE**

1-888-775-1604 (U.S.A. & Canada Only)  
Fax: (219) 874-1205  
[www.sullair.com](http://www.sullair.com)

**SULLAIR EUROPE, S.A.**

Zone Des Granges BP 82  
42602 Montbrison Cedex, France  
Telephone: 33-477968470  
Fax: 33-477968499  
[www.sullaireurope.com](http://www.sullaireurope.com)

**CHAMPION COMPRESSORS, LTD.**

Princess Highway  
Hallam, Victoria 3803  
Australia  
1800-810-015  
(for Australia wide branch network only)  
Telephone: 61-3-9796-4000  
Fax: 61-3-9703-8053  
[www.championcompressors.com.au](http://www.championcompressors.com.au)

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## 6.2 RECOMMENDED SPARE PARTS LIST

Key	Description	Part Number	Note	Quantity
1	replacement for air filter element - primary	02250155-691		2
2	replacement for air filter element - secondary (safety)	02250155-692		2
3	replacement for compressor oil filter	02250139-996		1
4	replacement for engine (CAT) oil filter - 1R1808	02250154-063	(I)	1
5	replacement for engine (CAT) fuel filter - primary: 1R0771	02250154-066		1
6	replacement for engine (CAT) fuel filter - secondary: 1R0749	02250154-065		1
7	replacement for primary afterfilter element (AF machines only)	02250153-297		1
<b>KITS</b>				
8	replacement kit for receiver tank separator elements (3 element pack)	02250167-378		1
9	replacement for starter solenoid	02250051-629		1
10	repair kit for inlet valve (springs included)	02250112-531		1
11	repair kit for inlet valve (no springs included)	02250056-278		1
12	repair kit for recirculation solenoid - air control manifold	02250166-773		1
13	repair kit for start/run solenoid - air control manifold	02250166-774		1
14	master repair kit for air control manifold (XH & XHH machines only)	02250166-770		1
15	repair kit for hi/lo solenoid - air control manifold	02250166-775		1
16	replacement for air control manifold solenoid (coil only)	02250166-777		3
17	repair kit for blowdown valve 02250069-820	02250077-469		1
18	repair kit for pressure differential valve 02250115-269	02250163-466		1
19	repair kit for control pressure reducing regulator	02250166-779		1
20	repair kit for internal check valve - air control manifold	02250166-782		1
21	repair kit for back pressure regulator	02250166-784		2
22	repair kit for spiral valve solenoid	02250166-921		1
23	repair kit for compressor oil thermostat (230°F [110°C])	02250167-366		1
24	rebuild kit for compressor oil stop valve	02250167-369		1
25	master maintenance kit - 50 Hour	02250166-379		1
	filter element	02250139-996		1
	filter	02250117-782		1
26	master maintenance kit - 250 Hour	02250166-380		1
	replacement for engine (CAT) oil filter - 1R1808	02250154-063		1
	replacement for engine (CAT) fuel filter - primary: 1R0771	02250154-066		1
	replacement for engine (CAT) fuel filter - secondary: 1R0749	02250154-065		1
	filter element	02250139-996		1
	replacement for air filter element - primary	02250155-691		2
	replacement for air filter element - secondary (safety)	02250155-692		1
	filter	02250117-782		1



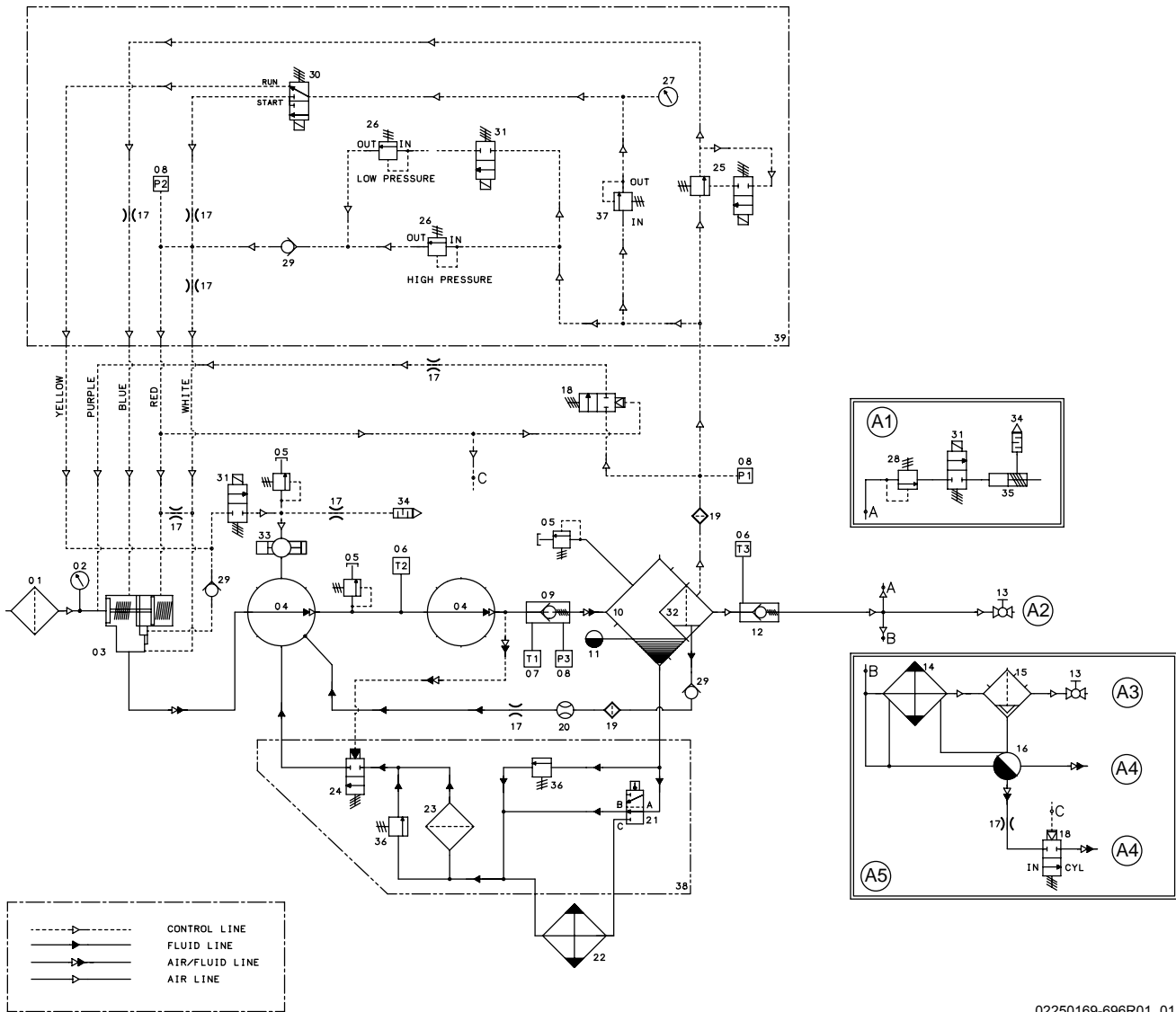
Key	Description	Part Number	Note	Quantity
<b>MISCELLANEOUS</b>				
27	replacement for engine/compressor drive coupling	02250069-601		1
28	replacement for 2" SAE split-flange w/viton o-ring	02250099-415		2
29	replacement for 3" SAE split-flange w/viton o-ring	02250100-926		2
30	replacement for compressor intake filter restriction switch	02250141-305		1
31	replacement for engine intake filter restriction switch	02250143-881		1
32	replacement for afterfilter auto drain (AF machines only)	02250153-280		2
33	replacement for exhaust muffler	02250155-693		1
34	replacement for engine coolant radiator	02250157-344		1
35	replacement for compressor oil cooler	02250157-345		1
36	replacement for engine charge air cooler	02250157-346		1
37	replacement for compressor discharge aftercooler (AC machines only)	02250157-346		1
38	replacement for fuel level sender (if equipped with on board fuel tank)	02250158-368		1
39	replacement for compressor interstage temperature (IT) switch	02250163-929		1
40	replacement for receiver tank temperature (RTT) switch	02250159-105		1
41	replacement for Compass Controller	02250159-205		1
42	replacement for Compass Controller enclosure access key	02250159-425		1
43	replacement for containment frame adjustable drain plug	02250160-013		4
44	replacement for fuel supply quick disconnect - male	02250160-020		1
45	replacement for fuel return quick disconnect - male	02250160-023		1
46	replacement for battery disconnect switch	02250160-837		1
47	replacement for ambient temperature sensor	02250161-276		1
48	replacement for compressor discharge temperature sensor	02250161-277		1
49	replacement for fuel tank vent (if equipped with on board fuel tank)	02250162-229		1
50	replacement for fuel tank filler cap	02250166-195		1
51	replacement for engine coolant level sensor	02250165-908		1
52	replacement for compressor lubricant - AWF (5 gallons/18.9 liters)	250030-757		1
53	replacement for 0-750 psi transducer (XH and XHH machines only)	02250144-311		3
54	replacement for receiver tank lid o-ring	826502-464		1
<b>LUBRICATION</b>				
55	replacement for compressor lubricant - AWF (55 gallons/208 liters)	250030-758		3
56	replacement for compressor lubricant - AWF (5 gallons/18.9 liters)	250030-757		1

(I) CAT C-18 requires 2 oil filters

### CAUTION

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

6.3 COMPRESSOR SYSTEM 750 - 1350 XHH/XH



- A1 Optional: Cold air louvers
- A2 Standard air
- A3 Aftercooled air
- A4 Moisture drain
- A5 Optional: Discharge air cooler

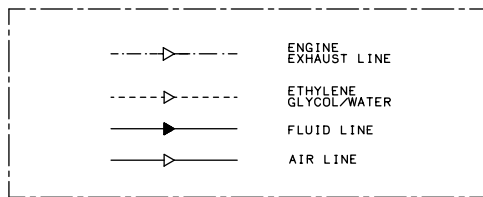
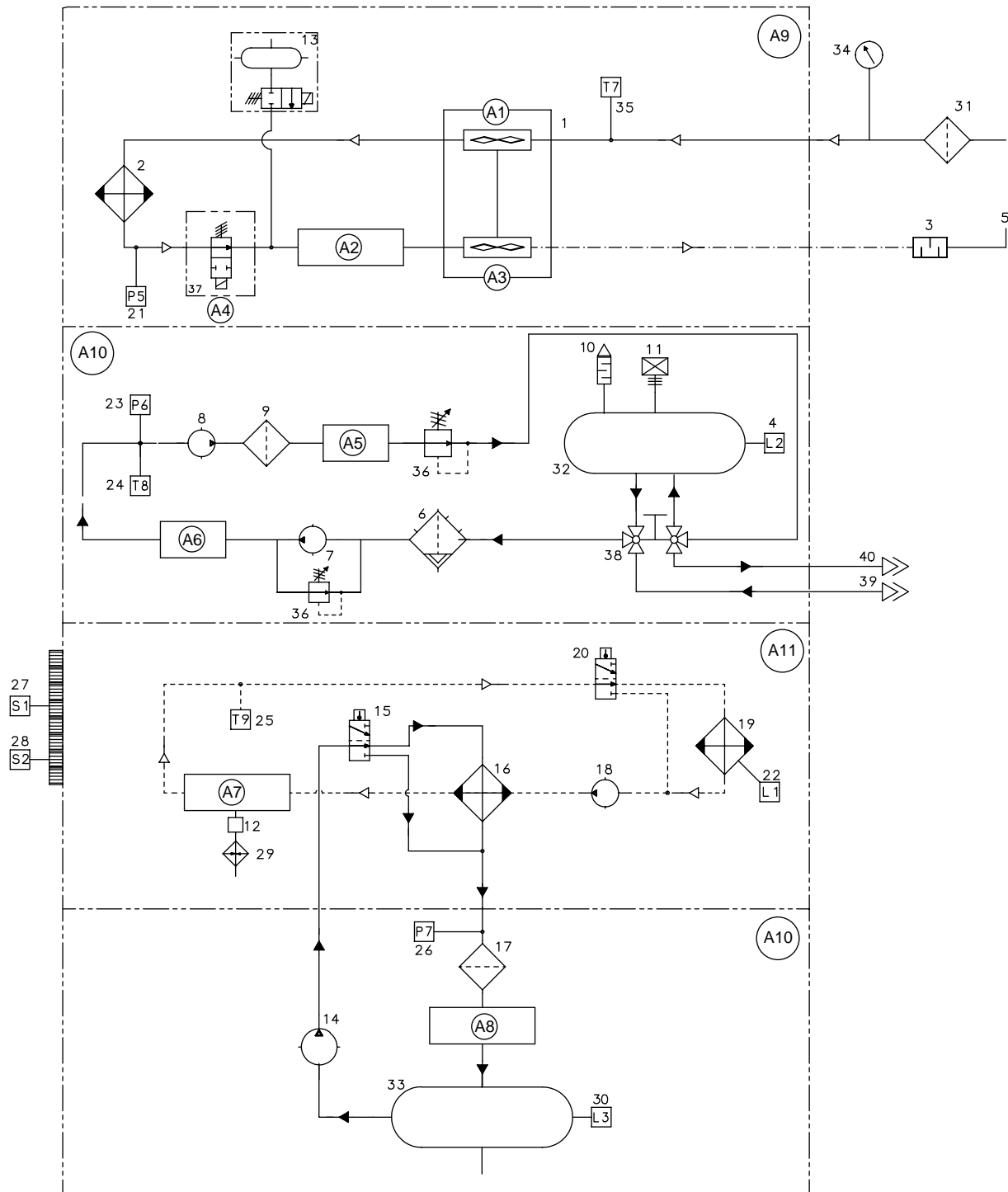
- P1 Dry side pressure
- P2 Control pressure
- P3 Wet side pressure

- T1 Compressor discharge temperature sensor
- T2 Interstage temperature switch
- T3 Receiver tank temperature switch (RTT)

### 6.3 COMPRESSOR SYSTEM 750 - 1350 XHH/XH (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	filter, air			1
2	gauge, air filter restriction			1
3	inlet valve			1
4	compressor			2
5	valve, relief			1
6	switch, temperature			2
7	sensor, temperature			1
8	sensor, pressure			3
9	valve, discharge check			3
10	receiver, air/oil			1
11	glass, sight oil level			3
12	valve, minimum pressure			1
13	valve, ball			1
14	cooler, air (optional)			2
15	separator, moisture			1
16	trap, drain			1
17	orifice			1
18	valve, blowdown N.C.			1
19	strainer			1
20	sightglass, orifice block			1
21	valve, thermal bypass			2
22	cooler, oil			2
23	filter, oil			8
24	valve, oil stop			1
25	valve, pilot actuated recirc sol.			1
26	valve, regulator backpressure			1
27	gauge, pressure			2
28	valve, pressure regulator			1
29	valve, check			12
30	valve, solenoid 3-way run/start			1
31	valve, solenoid 2-way elect			1
32	separator, element			3
33	valve, spiral			1
34	vent, air			2
35	cylinder, air (optional)			2
36	valve, pressure diff. bypass			1
37	valve, back pressure regulator			1
38	manifold, oil control			1
39	manifold, air control			1

6.4 ENGINE SYSTEM 750 XHH - 1350 XH

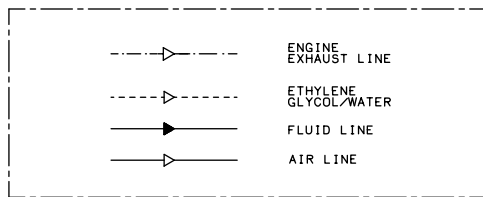
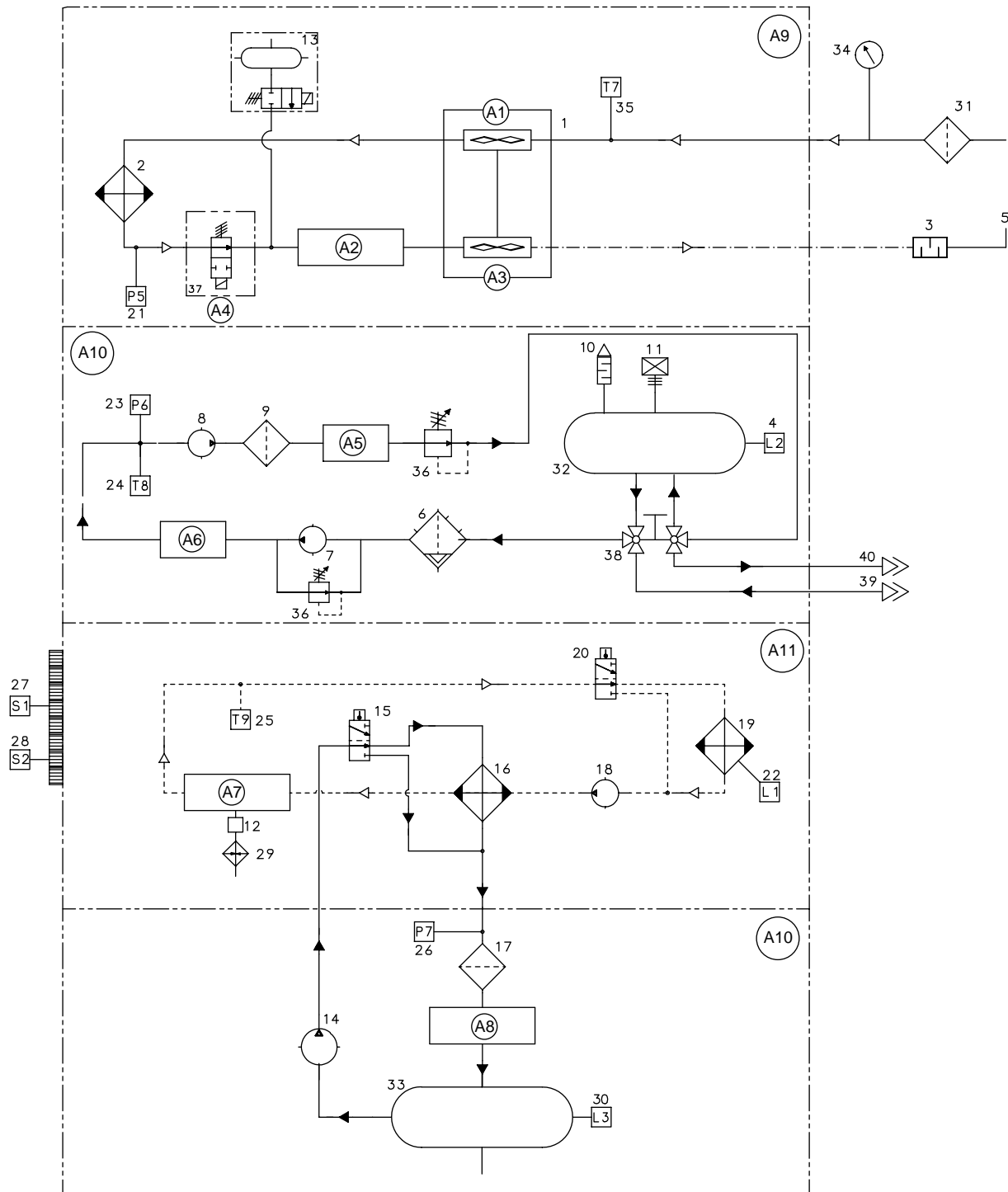


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## 6.4 ENGINE SYSTEM 750 XHH - 1350 XH (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	turbocharger, engine			1
2	cooler, charge air			1
3	muffler, engine			1
4	sender, fuel level			1
5	rain cap, exhaust system			1
6	filter, fuel w/ water separator			1
7	pump, fuel (internal to engine)			1
8	pump, fuel hand operated priming			1
9	filter, fuel			1
10	vent, fuel tank			1
11	cap, fuel tank fill			1
12	thermostat, thermocord (optional)			1
13	kit, ether assembly			1
14	pump, oil (integral to engine)			1
15	by-pass valve (internal to engine)			1
16	cooler, oil (internal to engine)			1
17	filter, oil			1
18	pump, water (integral to engine)			1
19	radiator, engine			1
20	engine thermo (integral to engine)			1
21	sensor, inlet air press (turbo boost)			1
22	switch, coolant level			1
23	sensor, fuel pressure			1
24	sensor, fuel temperature			1
25	sensor, coolant temperature			1
26	sensor, engine oil pressure			1
27	sensor, cam speed timing			1
28	sensor, crank speed timing			1
29	heater, water jacket (optional)			1
30	oil level (dipstick)			1
31	filter, air			1
32	tank, fuel (optional)			1
33	pan, engine oil			1
34	gauge, filter restriction			1
35	sensor, inlet air temperature			1
36	valve, relief (integral to engine)			1
37	valve, air stop (optional)			1
38	valve, ball 3-way (dual port)			1
39	coupling, quick connect 1/2" supply			1
40	coupling, quick connect 3/8" return			1

6.4 ENGINE SYSTEM 750 XHH - 1350 XH (CONTINUED)

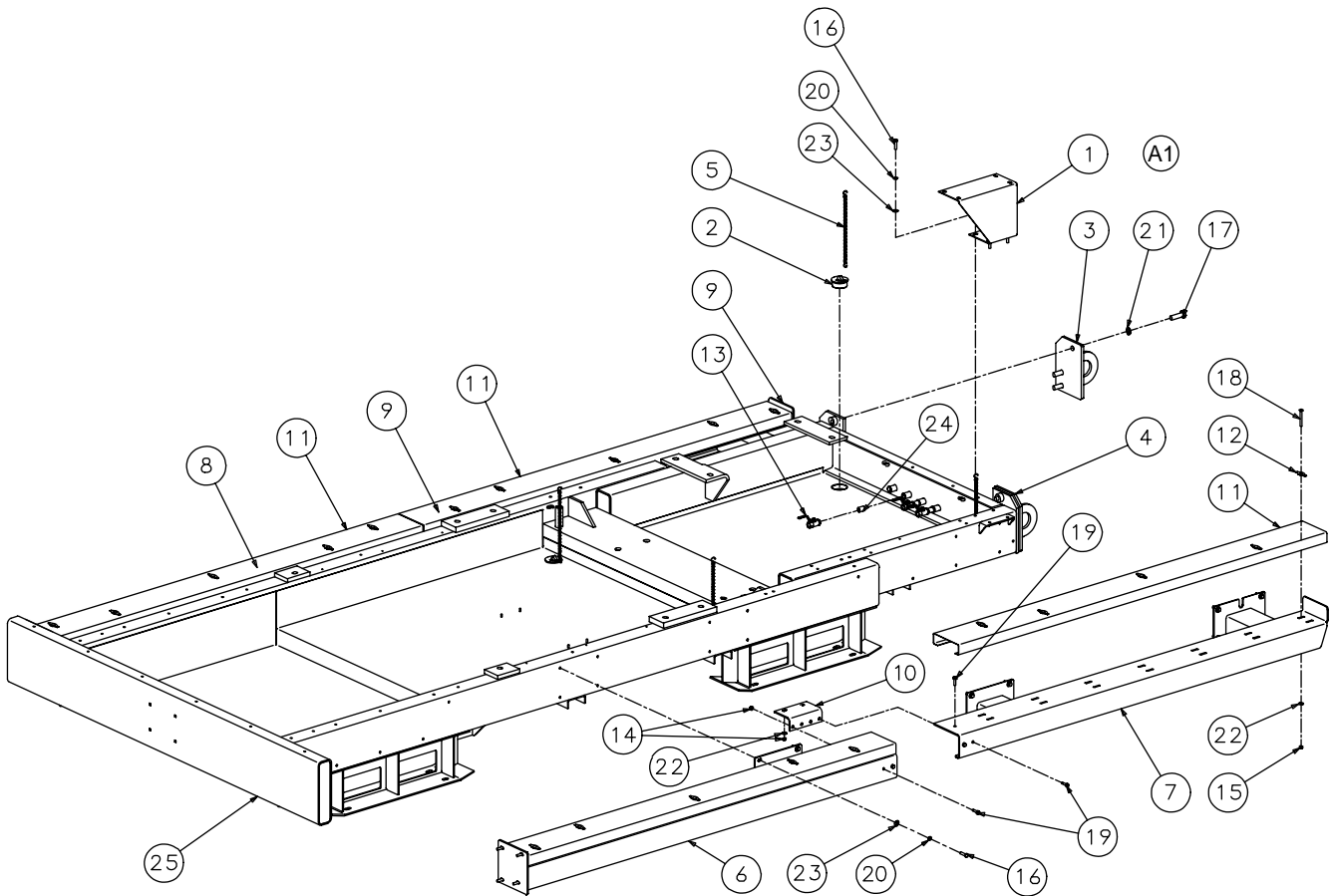
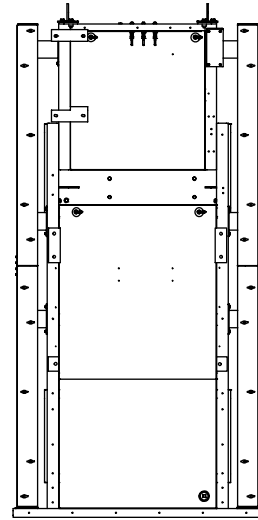
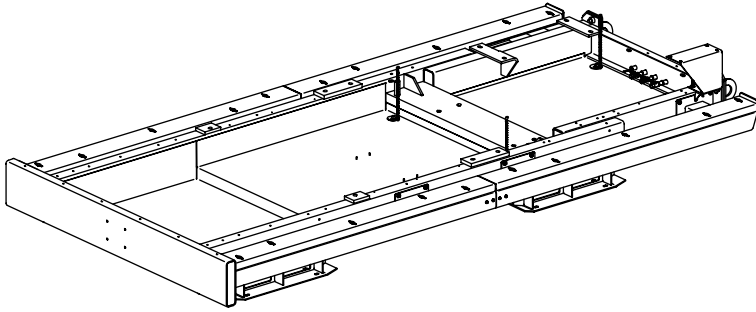


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## 6.4 ENGINE SYSTEM 750 XHH - 1350 XH (CONTINUED)

Key	Description	Part Number	Note	Quantity
A1	Compressor			
A2	Intake manifold			
A3	Turbine			
A4	Optional: air stop system			
A5	Injector			
A6	ECM			
A7	Heads and cylinders			
A8	Engine lube system/block and turbo			
A9	Air intake and exhaust system			
A10	Fuel system			
A11	Cooling system			
A12	Lubrication system			
L1	Coolant level			
L2	Fuel level			
L3	Oil level (dipstick)			
P5	Inlet manifold air pressure			
P6	Fuel pressure			
P7	Oil pressure			
T7	Inlet air temperature			
T8	Fuel temperature			
T9	Coolant temperature			
S1	Cam speed			
S2	Crank speed			

6.5 FRAME ASSEMBLY



02250170-414R00



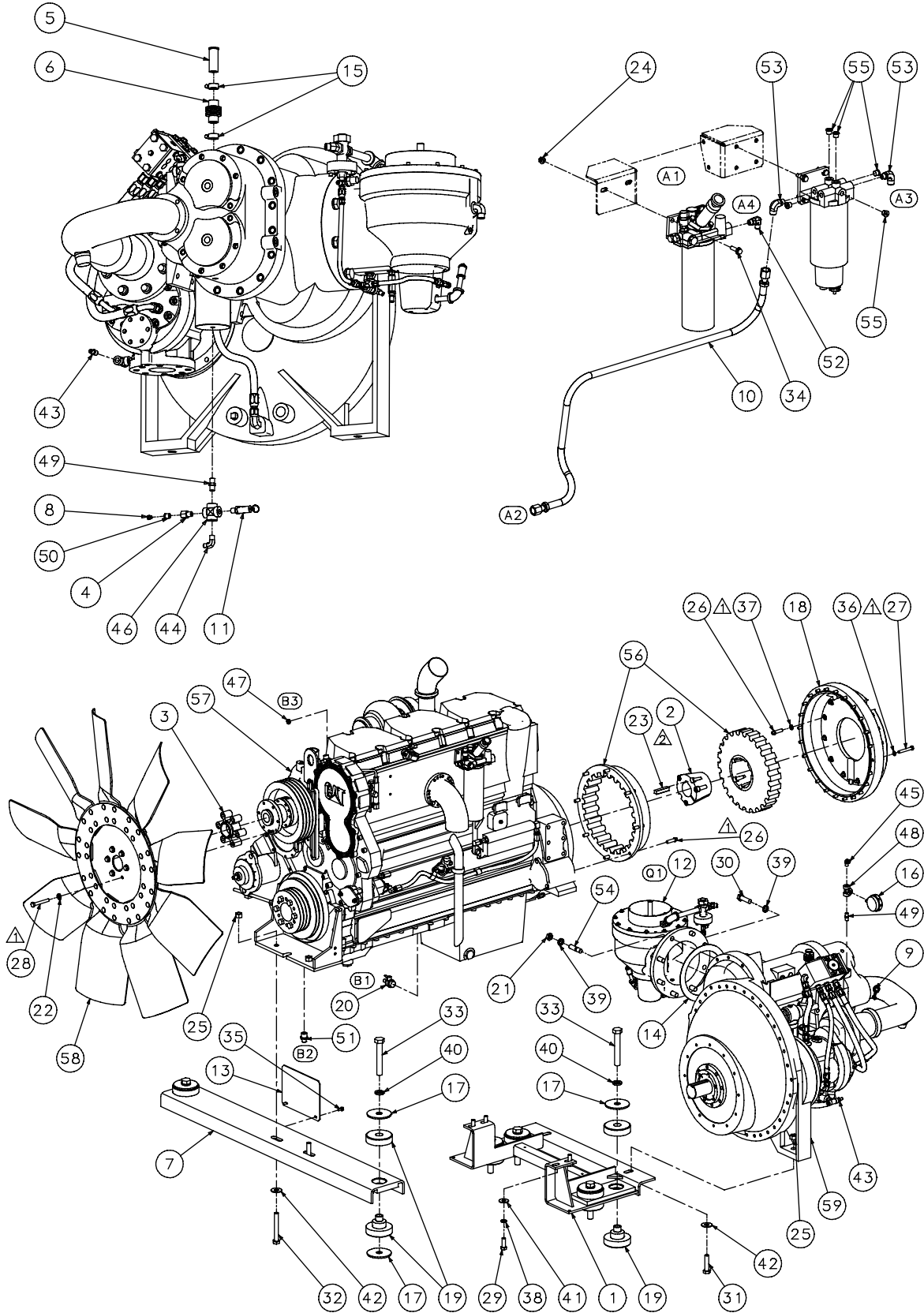
## 6.5 FRAME ASSEMBLY (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	support, enclosure compass \$ manf blk	02250157-352		1
2	plug,frame drain hole	02250160-013		4
3	eye, tow ss of/lrg	02250161-125		1
4	eye, tow cs of/lrg	02250161-126		1
5	chain, tether frame drain plug	02250167-767		4
6	guard, formed ss rear 1600d t3 of	02250169-689		1
7	guard, formed ss front 1600d t3 of	02250169-690		1
8	guard, formed cs rear 1600d t3 of	02250169-691		1
9	guard, formed cs front 1600d t3 of	02250169-692		1
10	support,formed guard 1600d t3 of	02250169-693		2
11	plate, diamond anti-slip grating	02250169-694		4
12	fastener, diamond anti-slip grate	02250169-695		20
13	valve,ball 1/2"npt	047117		3
14	nut,hex f pltd 5/16-18	825305-283		12
15	nut,hex locking 5/16-18	825505-166		20
16	capscrew,hex gr5 3/8-16 x 1 1/2	829106-150		36
17	capscrew,hex gr5 3/4-10 x 2 1/2	829112-250		6
18	bolt, carriage 5/16 x 3"	829505-300		20
19	screw, hex ser washer 5/16-18 x 1 1/4	829705-125		12
20	washer, spr lock reg pltd 3/8	837806-094		36
21	washer, spr lock reg pltd 3/4	837812-188		6
22	washer, pl-b reg pltd 5/16	838205-071		24
23	washer, pl-b reg pltd 3/8	838206-071		34
24	nipple,pipe-xs plt 1/2 x cl	866408-000		3
25	frame assembly	SEE_CHART		1

A1 Use 2440 Loctite & Torque To 220 FT/LBS

FRAME ASSEMBLY P/N	
02250158-305	FRM ASSY, 1600 T3 NO TNK NO RG
02250162-847	FRM ASSY, 1600 T3 NO RG (DLQ)

6.6 COMPRESSOR, FRAME AND DRIVE

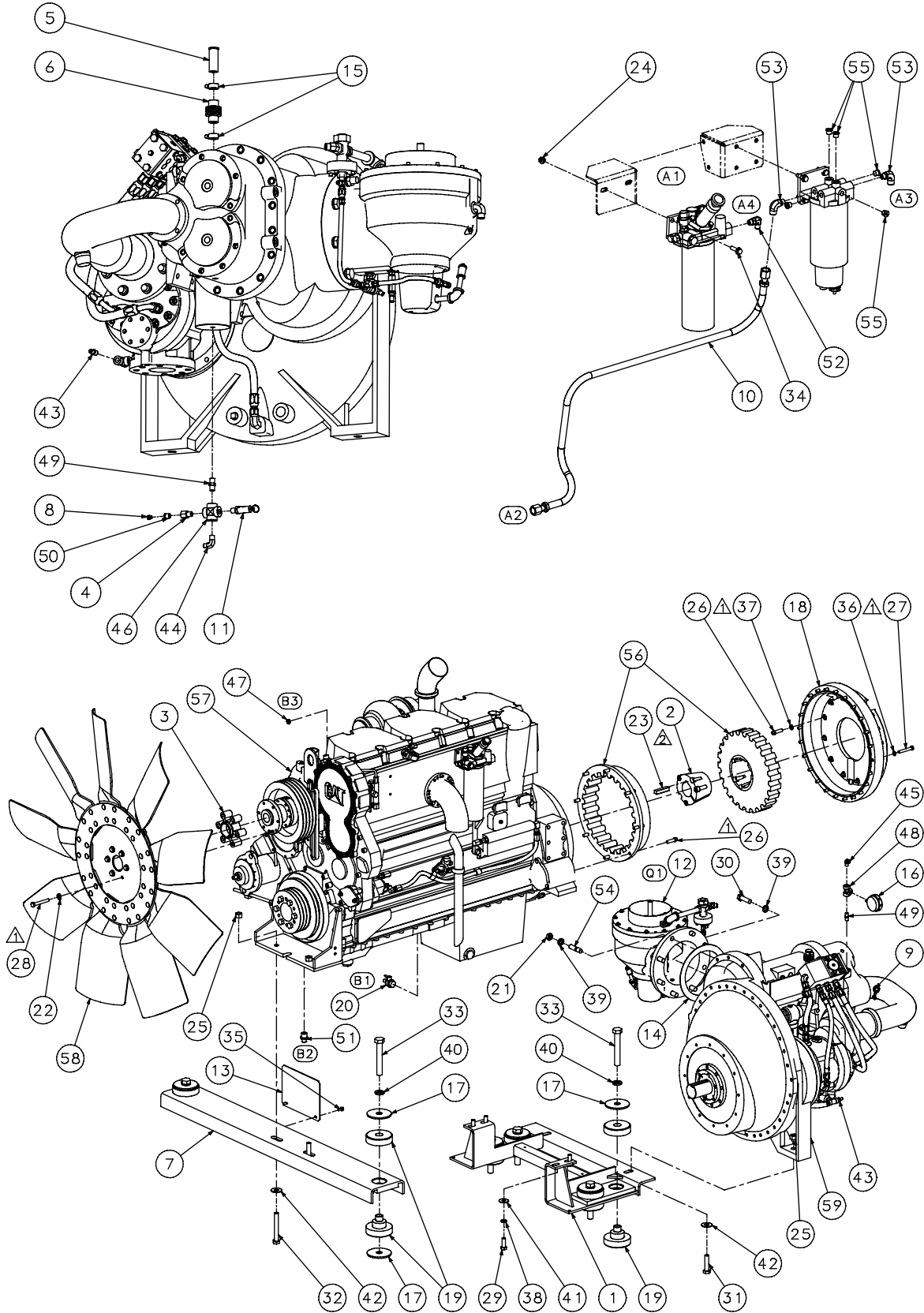


02250159-174R09

## 6.6 COMPRESSOR, FRAME AND DRIVE (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	support, unit/eng h900/350	02250043-377		1
2	bushing,taper lock 4040 w/2.75 bore	02250069-226		1
3	spacer, fan cat c15 49.63" fan	02250133-590		1
4	orifice,.040".25 fnpt *.25 mnpt	02250145-912		1
5	cover, air end rack dual capacity	02250155-102		1
6	bellows, actuator rack neoprene	02250155-103		1
7	support, engine front 1600 fam tier iii	02250156-382		1
8	ventilator, fuel tank	02250162-229		1
9	switch, high temp 280 deg f	02250163-929		1
10	hose, ball vlv drain to sep trnk	02250165-555		1
11	valve, pressure relief 100psi, 125 cfm	02250167-606		1
12	sub assembly, inlet vlv 8" 1600d t3 hp	02250169-844		1
13	gasket, 11 x 8 5/8 x 1/32	040422		1
14	clamp, hose 13/16" to 1-1/2"	040513		2
15	washer, snubbing 1" bolt	222607		8
16	adapter, eng/compr 900xh	231811		1
17	isolator, vibration 500 lb. capacity	250010-330		6
18	valve, drain 1-1/8-12unf	250031-046		1
19	nut, thin hex 3/4-10	250034-077		2
20	washer, .500 hardened	250040-099		6
21	key, square cl1 5/8" x 3	821110-300		1
22	nut, hex f pltd 3/8-16	825306-347		4
23	nut, hex locking 3/4-10	825512-382		4
24	capscrew, ferry head hd 1/2-13 x 1 3/4	828408-175		20
25	capscrew, hex gr5 7/16-14 x 3	829107-300		24
26	capscrew, hex gr5 1/2-13 x 3 1/2	829108-350		6
27	capscrew, hex gr5 5/8-11 x 1 3/4	829110-175		4
28	capscrew, hex gr5 3/4-10 x 2 1/2	829112-250		6
29	capscrew, hex gr5 3/4-10 x 3	829112-300		2
30	capscrew, hex gr5 3/4-10 x 5 1/2	829112-550		2
31	capscrew, hex gr5 1-8 x 6 1/2	829116-650		6
32	screw, hex ser washer 3/8-16 x 1 1/4	829706-125		4
33	washer, spr lock reg pltd 7/16	837807-112		24
34	washer, spr lock reg pltd 1/2	837808-125		12
35	washer, spr lock reg pltd 5/8	837810-156		4
36	washer, spr lock reg pltd 3/4	837812-188		8
37	washer, spr lock reg pltd 1	837816-250		6
38	washer, pl-b reg pltd 5/8	838210-112		4
39	washer, pl-b reg pltd 3/4	838212-112		4
40	connector,37 fl/mpt pltd 1/4 x 1/4	860104-025		1

6.6 COMPRESSOR, FRAME AND DRIVE (CONTINUED)



02250159-174R09

## 6.6 COMPRESSOR, FRAME AND DRIVE (CONTINUED)

Key	Description	Part Number	Note	Quantity
41	connector,37 fl/mpt pltd 5/16 x 1/4	860105-025		1
42	elbow, 37fl 90m 1/4 x 1/4	860204-025		1
43	elbow, 37fl 90m 1/2 x 1/2	860208-050		1
44	cross, pipe 1/4" plt	867830-010		1
45	nut, hex jam rh pltd 1/2-20	868208-323		1
46	nipple,pipe-hx pltd 1/4 x 1/4	868504-025		1
47	bushing,red hex pltd 1/4 x 1/8	868900-005		1
48	connector, straight x jic 1 1/16 x 3/4	870108-012		1
49	connector,90d str x jic 3/4 x 9/16	870608-006		2
50	stud, threaded 3/4-10 x 3 plt	873812-030		2
51	plug,str thd hol hx 9/16-18	875706-056		5
52	coupling, drive act6	SEE_CHART_CPLG		1
53	engine, diesel cat c15 tier iii	SEE_CHART_ENG		1
54	fan,58" dia.	02250154-560		1
55	compressor, unit and parts	SEE_CHART_UNIT		1

## Notes:

- 1 Make sure threads are clean and free of oil, apply loctite 242 sullair p/n 005898-250 to threads of screw and torque to 77 ft-lbs.
- 2 Install taper lock per manufacturer's instructions provided with part. Screws are supplied with taper lock.

A1 Remove filters from engine and mount to supts 02250159-072 and 02250159-073 on lifting bail.

A2 Connect to engine fuel pump

A3 Fuel supply to engine

A4 Fuel return from engine

B1 Engine oil drain

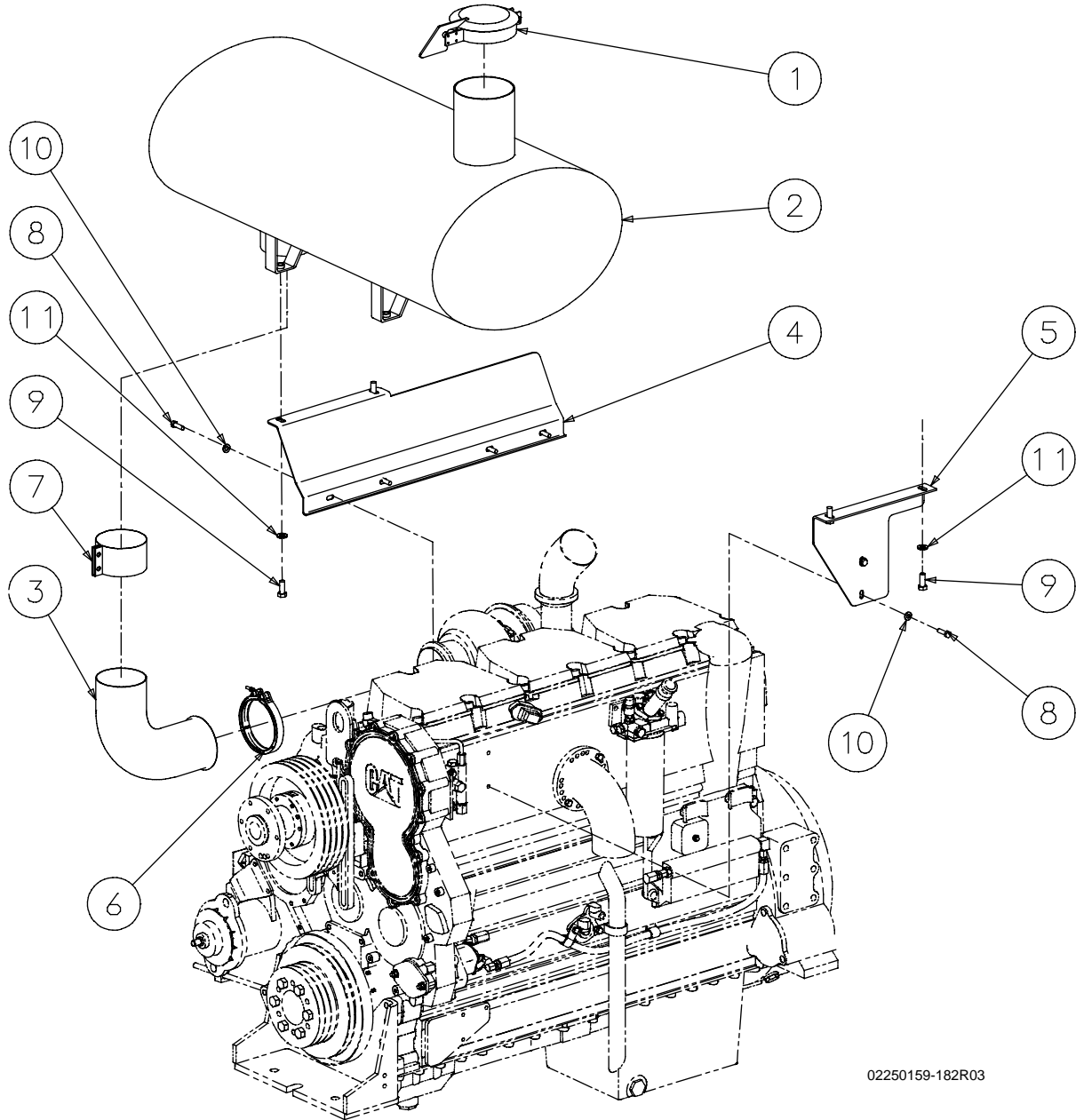
B2 Engine coolant drain

B3 Starter positive

Q1 Refer to *Inlet Valve Assembly* on page 72

MACHINE SIZE SPECIFIC PARTS (OF = OPEN FRAME)			
MACHINE SIZE (CFM/PSI)	ENGINE	UNIT	COUPLING
750/500 & 900/350-OF	02250155-316	02250160-926	02250069-601
900/500 & 1150/350-OF	02250153-564	02250164-821	02250069-601
1150/500 & 1350/350-OF	02250157-875	02250154-401	02250157-193
1350/500 & 1500/350-OF	02250165-629	02250154-401	02250157-193

6.7 ENGINE EXHAUST SYSTEM



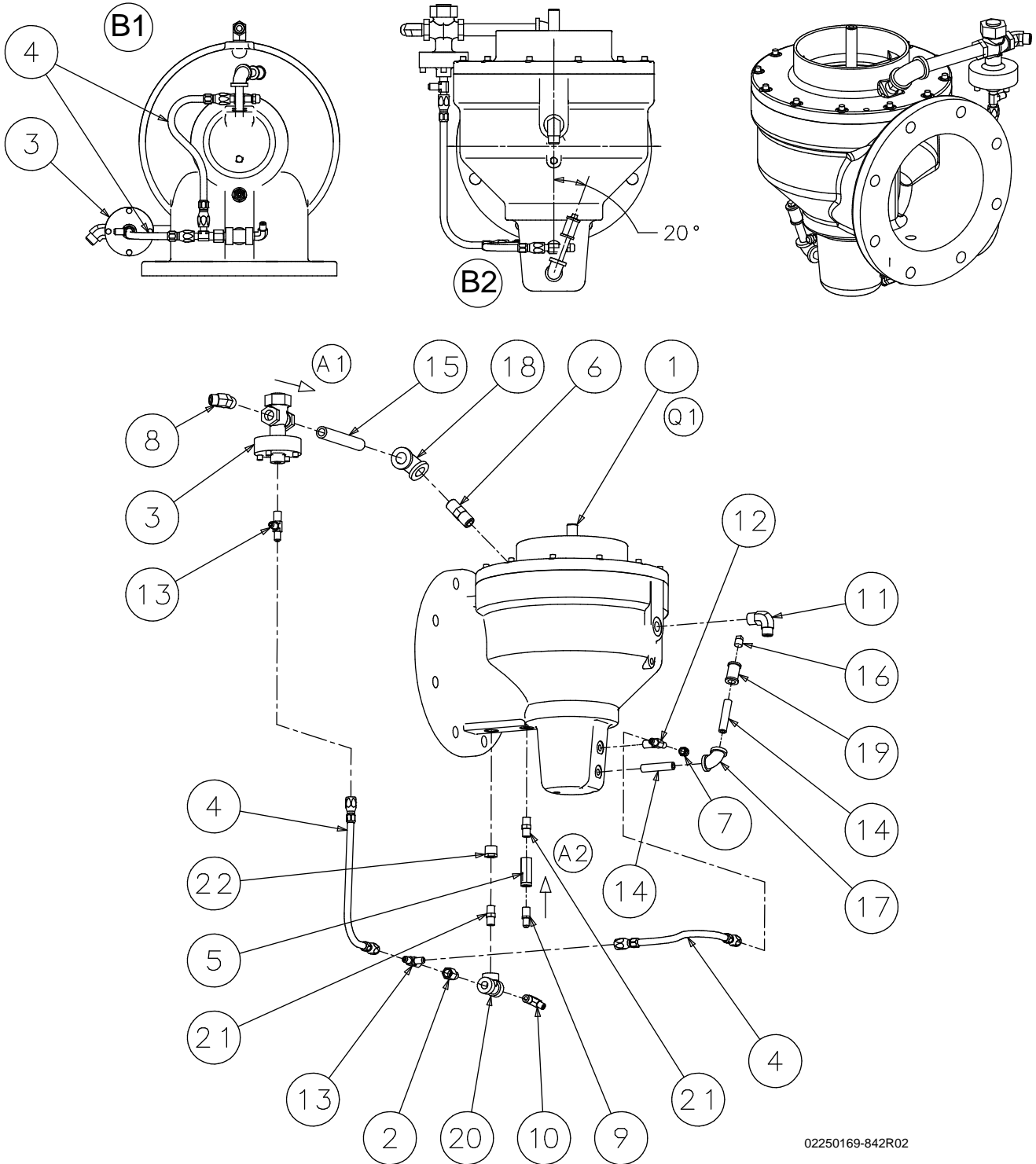
02250159-182R03

## 6.7 ENGINE EXHAUST SYSTEM (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	rain-cap, exhaust 5.75" to 6.35" dia pipe	02250051-589		1
2	muffler, exhaust engine t3	02250155-693	(I)	1
3	pipe, exhaust elbow cat c15 tieriii	02250157-158		1
4	support,muffler turbo side	02250158-466		1
5	support,muffler 1600 t3 cs	02250158-467		1
6	clamp, exhaust cat c15 t3	02250161-511		1
7	clamp, seal 5"	241260		1
8	capscrew,hex gr5 3/8-16 x 1 1/4	829106-125		6
9	capscrew,hex gr5 1/2-13 x 1 1/4	829108-125		4
10	washer, nord-lock pl 3/8" sp	878606-083		6
11	washer, nord-lock pl 1/2" sp	878608-100		4

(I) For maintenance on exhaust muffler, order replacement muffler no. 02250155-693

6.8 INLET VALVE ASSEMBLY



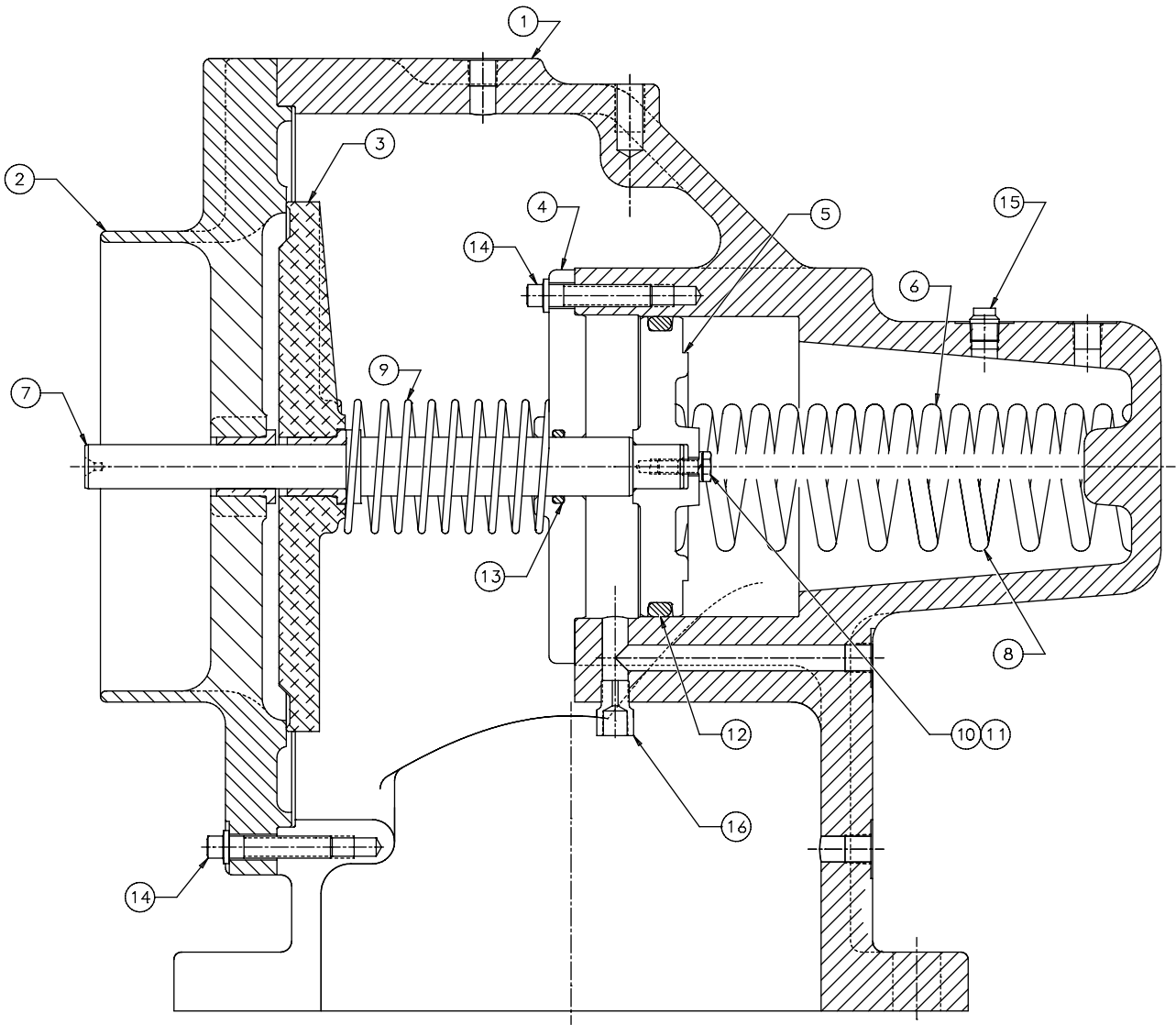
02250169-842R02



## 6.8 INLET VALVE ASSEMBLY (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	sub assembly,8" inlet valve	02250045-626		1
2	orifice,.062 .25 fnpt x .25 mnpt	02250118-585		1
3	valve, blowdown n.c. 8:1 ratio	02250120-888		1
4	orifice, .125 .50m x .50m	02250154-059		1
5	hose,assy 7/16-20 x 15"lg	02250162-246		2
6	valve, inline check(1/4"npt)dc	045244		1
7	nut,cap 37f x .25	250034-587		1
8	cap, pipe 1/4 300#	806130-010		1
9	elbow, 37fl 45m 1/2 x 1/2	860008-050		1
10	connector,37 fl/mpt pltd 1/4 x 1/4	860104-025		1
11	elbow, 37fl 90m 1/4 x 1/4	860204-025		1
12	elbow, 37fl 90m 1/2 x 1/2	860208-050		1
13	tee, 37fl male br 1/4 x 1/4	861704-025		1
14	tee, 37fl male m 1/4 x 1/4	861804-025		2
15	nipple,pipe-xs plt 1/4 x 3	866404-030		2
16	nipple,pipe-xs plt 1/2 x 6	866408-060		1
17	elbow, pipe 90 deg 300# plt 1/4"	867030-010		1
18	elbow, pipe 90 deg 300# plt 1/2"	867030-020		1
19	tee, pipe pltd 1/4	868430-010		1
20	nipple,pipe-hx pltd 1/4 x 1/4	868504-025		2
21	bushing,red hex pltd 1/2 x 1/4	868902-010		1
A1	Blowdown Valve Flow Direction			
A2	Check valve flow direction			
B1	Bottom View			
B2	Side View			
Q1	Refer to <i>Air Inlet Valve Sub-assembly on page 74</i>			

6.9 AIR INLET VALVE SUB-ASSEMBLY



02250045-625R05

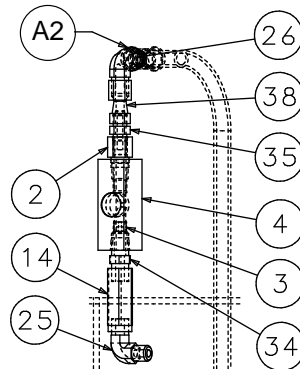
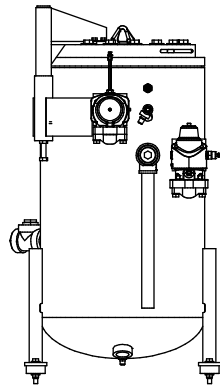
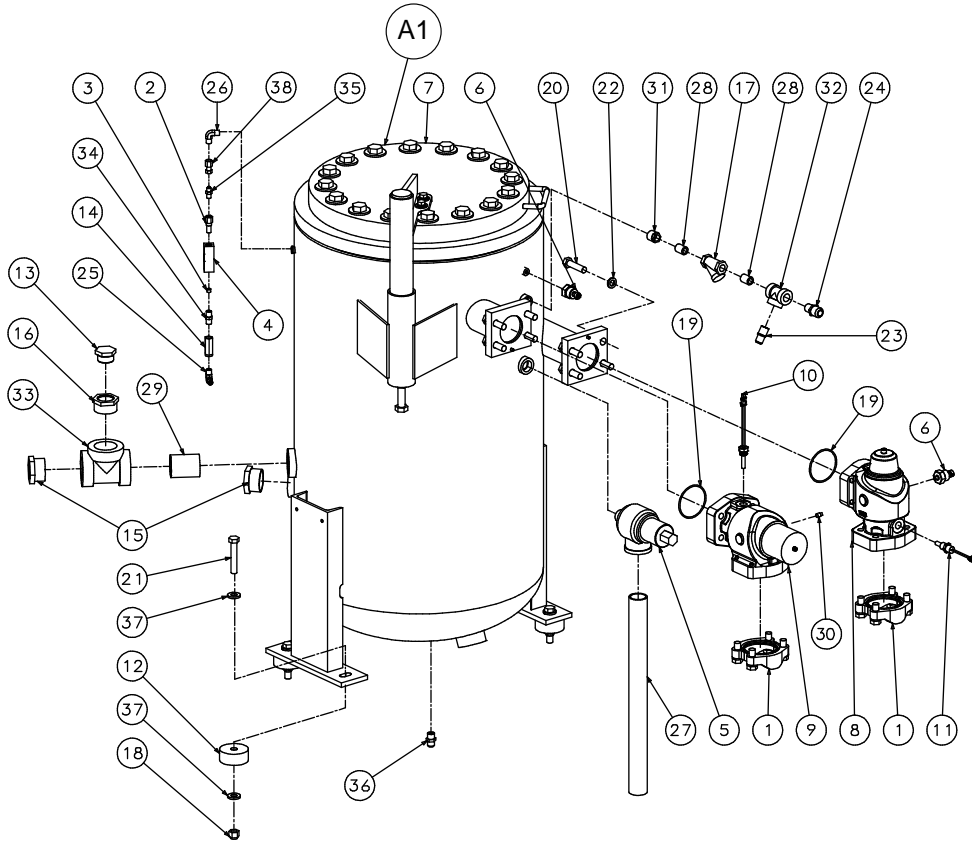
**6.9 AIR INLET VALVE SUB-ASSEMBLY (CONTINUED)**

Key	Description	Part Number	Note	Quantity
1	housing, body 8" inlet valve	250042-276		1
2	cover, assembly 8" inlet valve	02250048-491		1
3	plate, flow control 8" inlet valve	250042-297		1
4	cover, inter 8" inlet valve	250042-301		1
5	piston, 8" inlet valve	250042-299		1
6	spring, camp. 144 lbs inter	250042-384		1
7	shaft, 8" inlet valve	02250139-188		1
8	spring, camp. 109 lbs outer	250042-383		1
9	spring, camp. 2.61 lbs	250042-656		1
10	capscre hx. gr. 5 1/4-20 x 3/4	828604-075		1
11	washer, sprlock reg. 1/4	837504-062		1
12	o-ring, viton 45/8 x 1/4	826502-426		1
13	o-ring, viton 1 x 1/8	826502-214		1
14	screw, ferry hd, 3/8-16 x 1 3/4 lg	828406-175		18
15	plug, pipe 1/4 -18 npt; stl 3000#	807800-010		1
16	orifice, .093 x .125m x .125f	250014-060		1

**NOTE**

**For maintenance on air inlet valve,  
order repair kit no. 02250112-531  
(contains springs), or 02250056-278  
(contains no springs).**

6.10 RECEIVER TANK ASSEMBLY

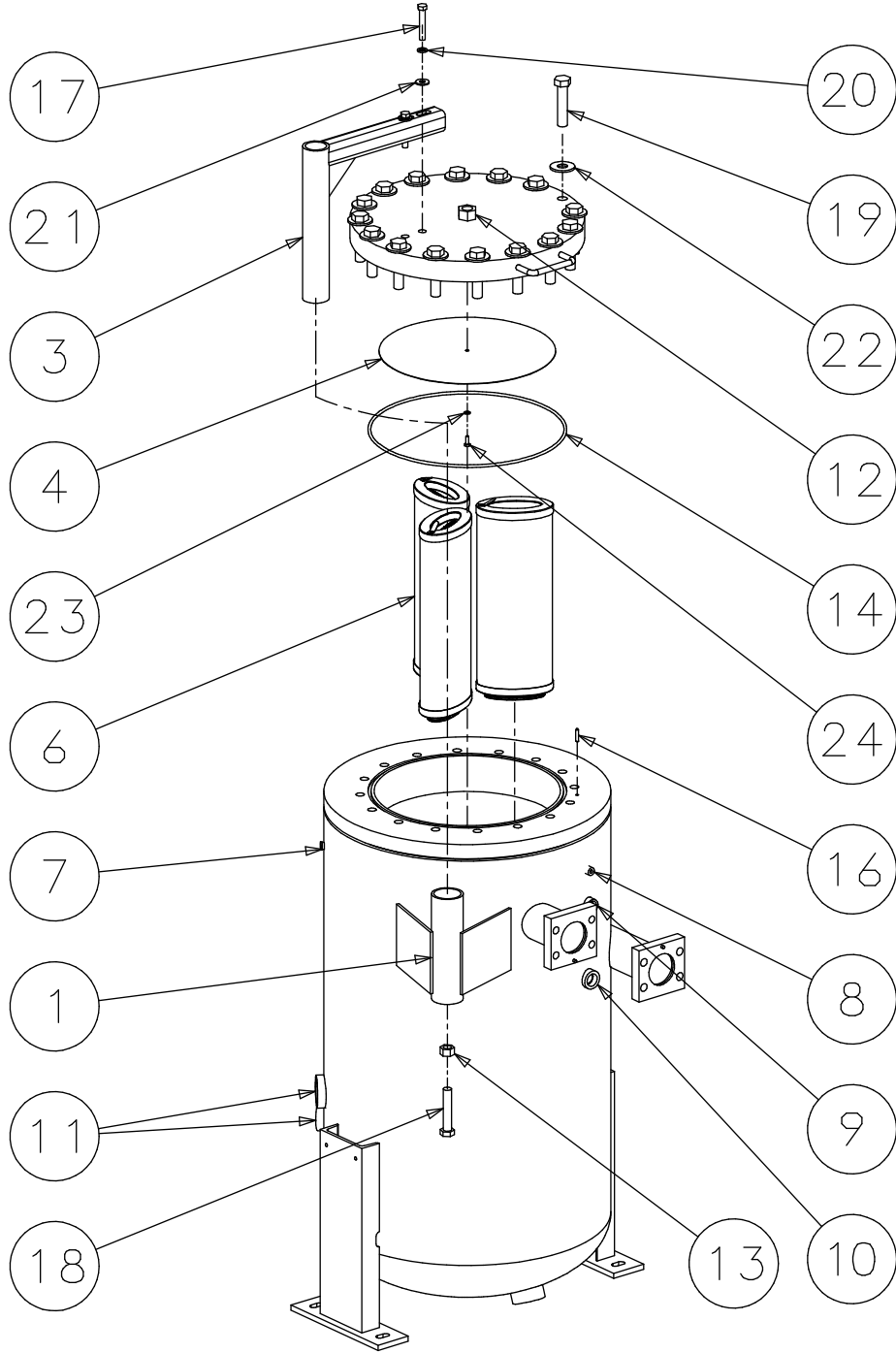


02250162-219R07

## 6.10 RECEIVER TANK ASSEMBLY (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	flange,3" sae j518 code 61	02250105-534		2
2	filter, assembly screen filter	02250117-782		1
3	orifice,plug brass 1/8"npt x 3/32"	02250125-776		1
4	sightglass, orf block sae	02250126-129		1
5	valve,relief 1" mnpt 600 psig	02250140-725		1
6	transducer, pressure 0-750psi 5volt n4	02250144-311		2
7	tank, air-oil sep 600psig - 1350cfm	02250154-809		1
8	valve, discharge check h.p.	02250157-697		1
9	valve, min press check h.p.	02250157-698		1
10	switch, high temperature 300 deg f - 3/4"-16 sae	02250159-105		1
11	sensor, temperature thermistor brass	02250161-277		1
12	plug,o-ring boss sae 1 1/4	040029		1
13	valve, inline check(1/4"npt)dc	045244		1
14	mount, vibration (50 durometer)	047628		4
15	mount, vibration isolator 185q	047630		4
16	glass, sight oil level 2"	048046		21
17	adapter, oil fill high press	234342		1
18	strainer, 1/2" "y"	406480		1
19	nut,hex locking 5/8-11	825510-329		4
20	o-ring, viton 3 3/8 x 1/8"	826502-237		2
21	capscrew,hex gr5 5/8-11 x 2 1/2	829110-250		8
22	capscrew,hex gr5 5/8-11 x 4	829110-400		4
23	washer, spr lock reg pltd 5/8	837810-156		8
24	washer, pl-b reg pltd 5/8	838210-112		8
25	connector,37 fl/mpt pltd 1/2 x 1/2	860108-050		1
26	connector,37 fl/mpt pltd 3/4 x 1/2	860112-050		1
27	elbow, 37fl 90m 5/16 x 1/4	860205-025		1
28	elbow, pipe-90m 1/4 x 1/4	860504-025		1
29	nipple,pipe pltd 1 1/2 x 22	866324-220		1
30	nipple,pipe-xs plt 1/2 x cl	866408-000		2
31	nipple,pipe-xs plt 2 x 3	866432-030		1
32	plug, pipe 1/8" 3000# stl plt	866900-005		1
33	bushing,red pltd 3/4 x 1/2	867103-020		1
34	tee, pipe pltd 1/2	868430-020		1
35	tee, pipe pltd 2	868430-080		1
36	nipple,pipe-hx pltd 1/4 x 1/4	868504-025		1
37	connector, straight x jic 7/16 x 7/16	870104-004		1
38	connector, straight x jic 3/4 x 3/4	870108-008		1
39	connector, 37fl sw f 1/4 x 1/4"	873004-002		1
A1	CE approved tank P/N 02250158-985			
A2	Receiver tank port			

6.11 RECEIVER TANK SUB-ASSEMBLY



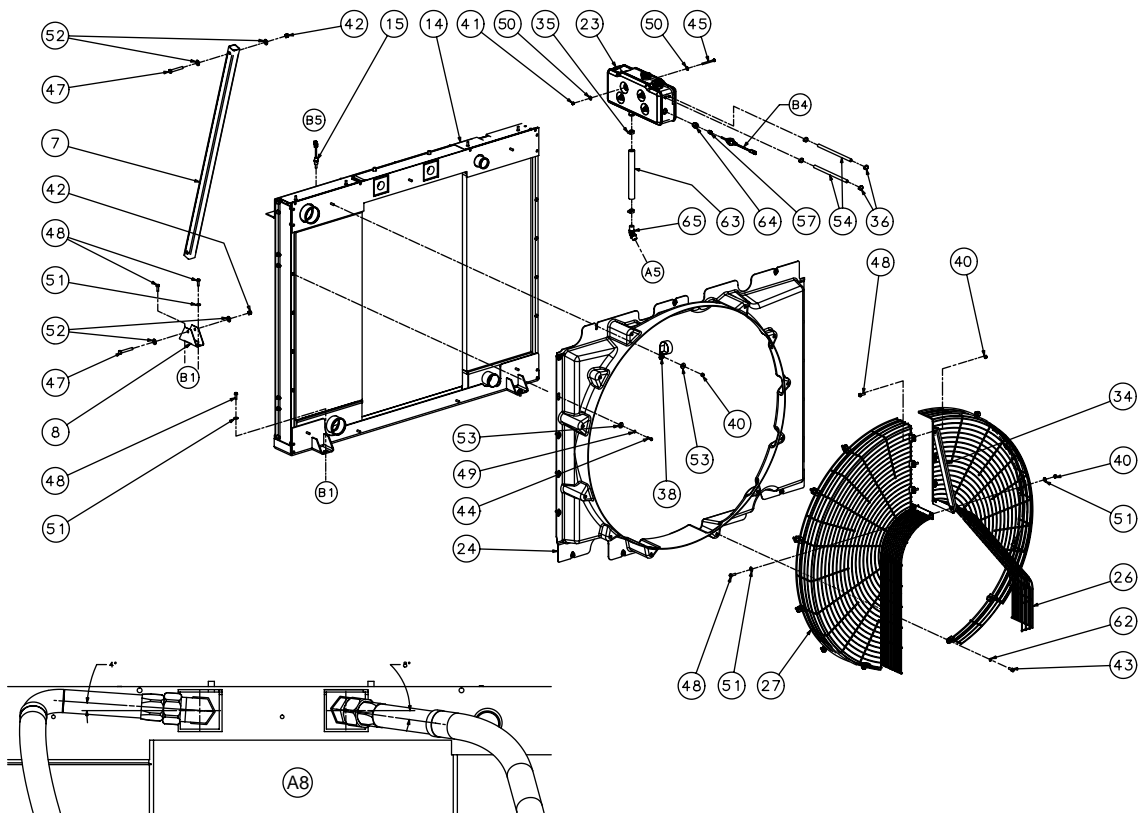
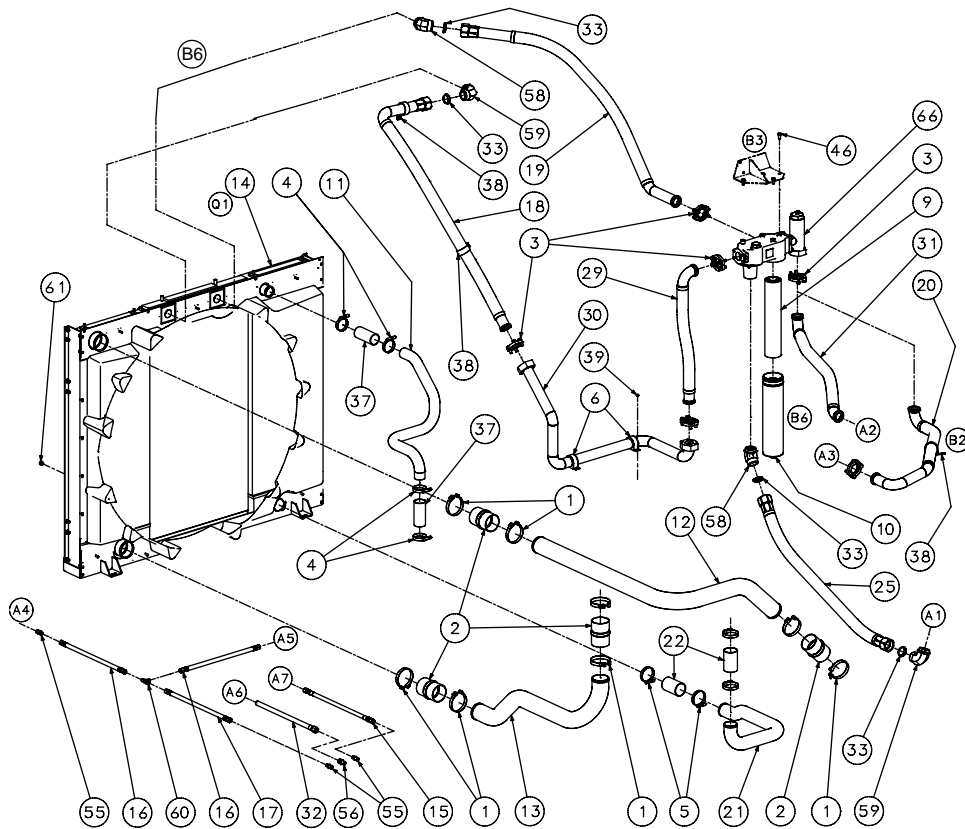
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## 6.11 RECEIVER TANK SUB-ASSEMBLY (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	davit assy, welded	-		1
2	tube, oil scavenge	-		1
3	boom,lid lifting	02250127-249		1
4	plate, grounding ss 1600 t3	02250166-858		1
5	baffle, rec tank 1600 t3 hp	02250166-859		1
6	element, seperator elp 1600 fam t3	02250160-845	(I)	3
7	coupling, pipe 1/4 3000#	807200-010		1
8	coupling, half 1/8 3000#	807900-005		1
9	coupling, half 3/4 3000#	807900-030		1
10	coupling, half 1 3000#	807900-040		1
11	coupling, half 2 3000#	807900-080		3
12	nut,hex unfin 1-8	824216-887		2
13	nut,hex pltd 3/4-10	826412-665		1
14	o-ring, viton 17 1/2 x 1/4"	826502-464		1
15	pin,dowel unfin 1/4 x 1"	827204-100		2
16	pin,dowel unfin 1/4 x 1 1/4"	827204-125		1
17	capscrew,hex gr5 1/2-13 x 3	829108-300		2
18	capscrew,hex gr5 3/4-10 x 4	829112-400		1
19	capscrew,hex gr5 7/8-9 x 4	829114-400		16
20	washer, spr lock 1/2	837508-125		2
21	washer, pl-b reg pltd 1/2	838208-112		2
22	washer, pl-b hardened pltd 7/8	875114-174		16
23	washer, nord-lock 1/4" sp ss	878704-053		1
24	capscrew,hex gr5 1/4-20 x 3/4 ss	881804-075		1

(I) For maintenance on receiver tank, order replacement kit P/N 02250167-378 (contains three elements per pack).

6.12 COOLING SYSTEM



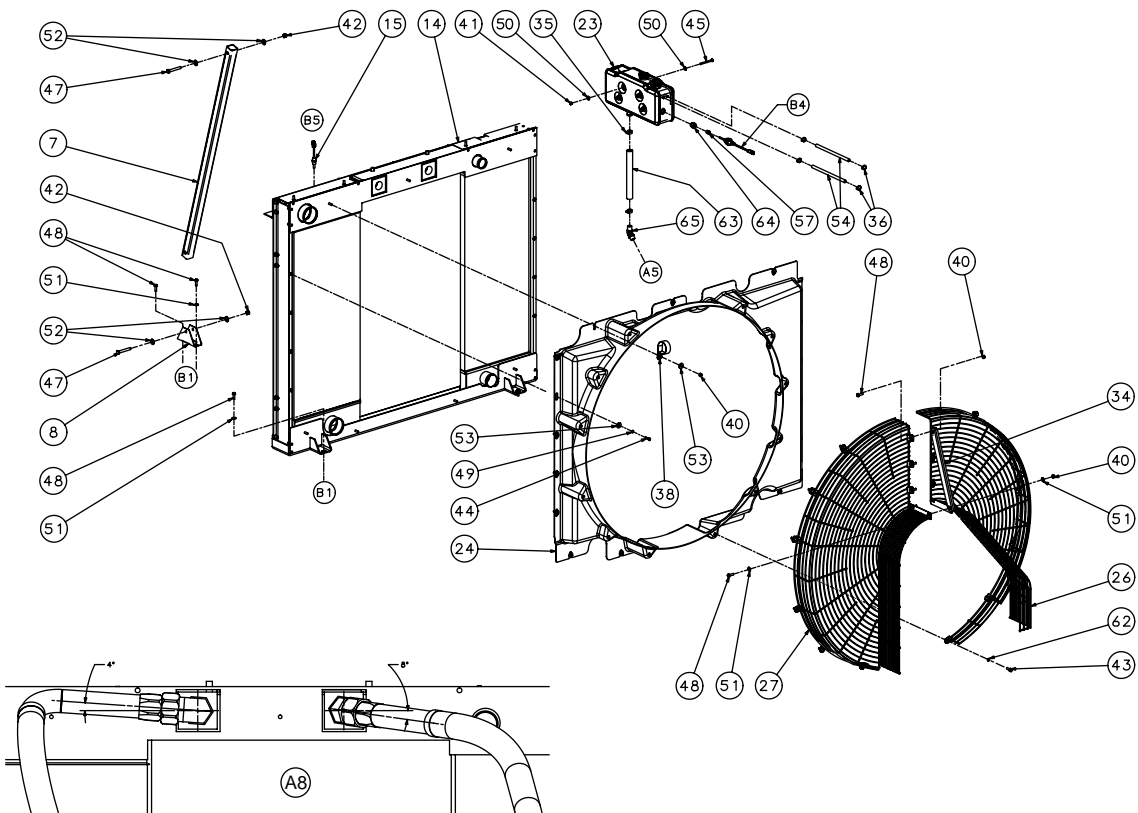
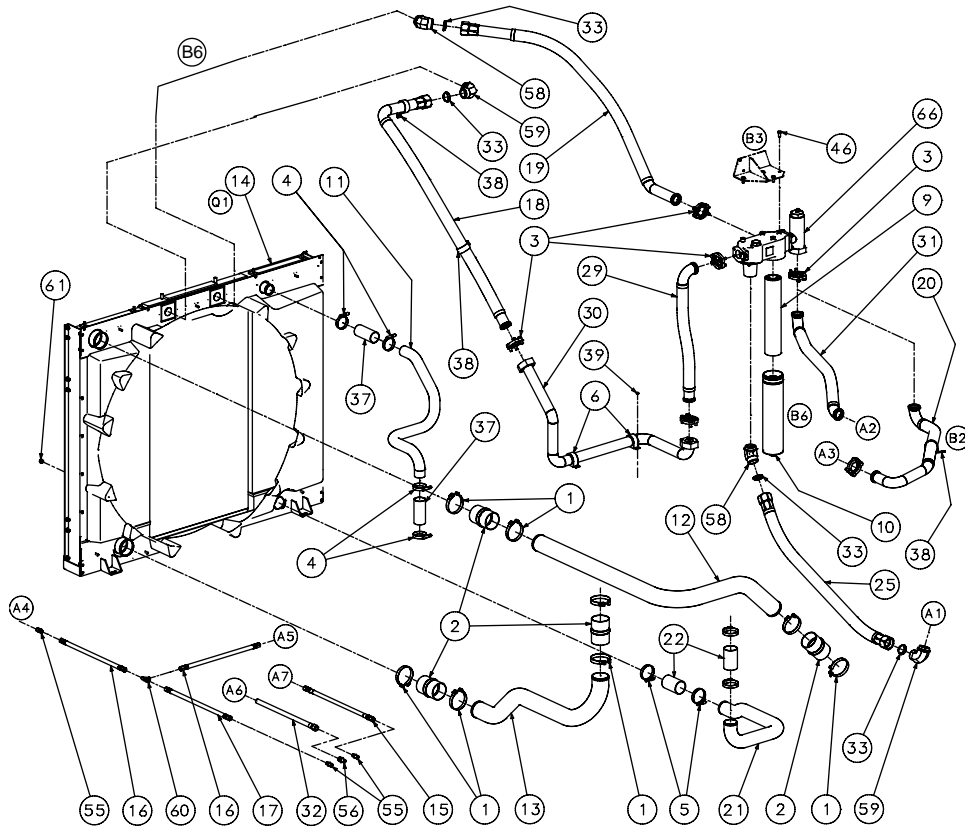
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## 6.12 COOLING SYSTEM (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	clamp, t-bolt ss band 4.50" id	02250084-842		8
2	hose, hump chrg air 4" id x 6" lg	02250085-094		4
3	flange, kit sae splt 2" - viton	02250099-415		6
4	clamp, hose const torque 57-79	02250138-968		4
5	clamp, hose const torque 70-92	02250138-969		4
6	clamp, cushion omega for 2" pipe	02250148-710		2
7	support, coolers 1600 t3	02250155-695		2
8	support, cooler mount	02250155-696		2
9	element, filter corless	02250156-345		1
10	bowl, oil fltr 1600 fam tier 3	02250156-351		1
11	hose, eng rad upper cat c15 t3	02250157-153		1
12	pipe, cac hot/upper cat c15 t3	02250157-156		1
13	pipe, cac cool/lower cat c15 t3	02250157-157		1
14	cooler, assembly 600 psi 1600 t3	02250162-201		1
15	hose, ball vlv drn-sep tnk	02250162-235		1
16	hose, rad drain-tee ftg	02250162-249		2
17	hose, tee-ball vlv drain	02250162-251		1
18	hose, assy hp oil 2" clr in	02250162-426		1
19	hose, assy hp oil 2" clr out	02250162-427		1
20	hose, assy hp oil 2" unit in	02250162-428		1
21	pipe, eng rad lower 1600 t3	02250162-645		1
22	hose, rad lower 3" id x 5" lg	02250162-700		2
23	bucket, engine fluid recovery	02250162-740		1
24	shroud, fan 58" fbrgls 1600 t3 of	02250163-231		1
25	hose, assy hp oil 2" rec oil rt	02250164-585		1
26	guard, fan/belt wireform ss 1600 t3	02250164-797		1
27	guard, fan/belt wireform cs 1600 t3	02250164-798		1
28	sensor, engine coolant cat	02250165-908		1
29	hose, assy oil 2" ss braid 1600	02250166-181		1
30	pipe, assembly oil 2" 1600 fam t3	02250166-182		1
31	hose, assy lp oil 2" unit in	02250166-302		1
32	hose, 3/4" eng oil drain	02250168-614		1
33	seal, alum 2" jic 37deg flare	02250169-646		4
34	support, gusset fan guard 1600d-t3	02250170-413		1
35	clamp, hose 13/16" to 1-1/2"	040513		1
36	clamp, hose 1/2"	043197		
37	hose, rad upper 2-1/2 x 6"	407749		2
38	clamp, hose 2 3/8" i.d.	408300-010		3
39	nut, hex f pltd 1/4-20	825304-236		4
40	nut, hex f pltd 3/8-16	825306-347		12
41	nut, hex locking 5/16-18	825505-166		4
42	nut, hex locking 1/2-13	825508-262		4
43	capscrew, hex 8.8 m10 x 30mm	828010-030		12

6.12 COOLING SYSTEM (CONTINUED)

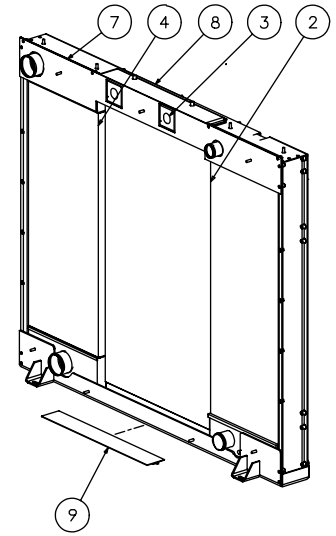
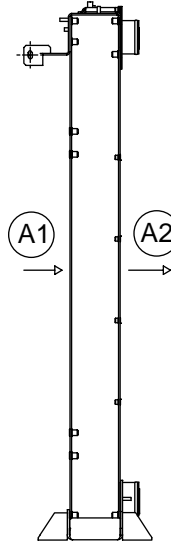
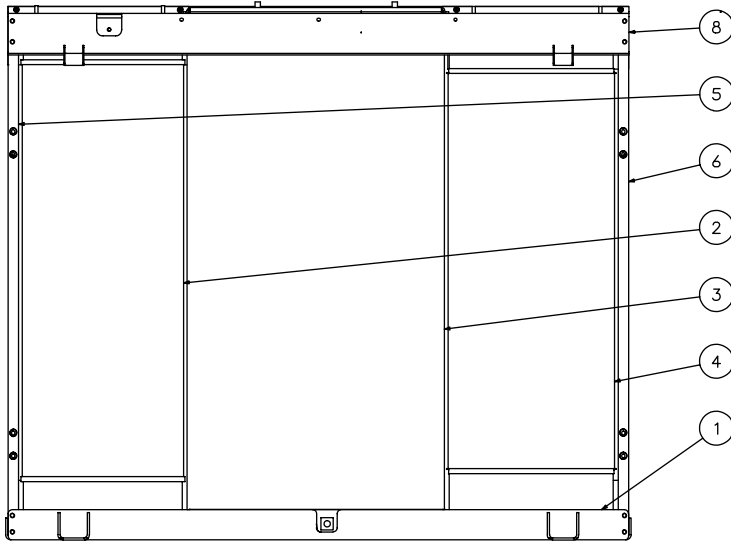
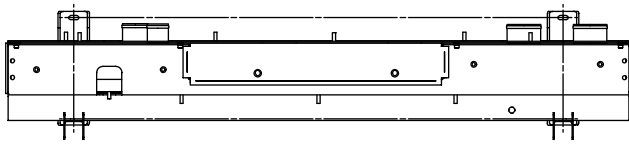


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## 6.12 COOLING SYSTEM (CONTINUED)

Key	Description	Part Number	Note	Quantity
44	capscrew, hex gr5 5/16-18 x 1 1/4	829105-125		9
45	capscrew, hex gr5 5/16-18 x 3 1/2	829105-350		4
46	capscrew, hex gr5 1/2-13 x 1	829108-100		4
47	capscrew, hex gr5 1/2-13 x 3 1/2	829108-350		4
48	screw, hex ser washer 3/8-16 x 1 1/4	829706-125		13
49	washer, spr lock reg pltd 5/16	837805-078		10
50	washer, pl-b reg pltd 5/16	838205-071		8
51	washer, pl-b reg pltd 3/8	838206-071		10
52	washer, pl-b reg pltd 1/2	838208-112		8
53	washer, pl-b wide pltd 3/8	838306-112		16
54	hose, fuel line 3/8 (ft)	842315-038		2
55	connector, 37 fl/mpt pltd 1/2 x 1/2	860108-050		3
56	connector, 37 fl/mpt pltd 3/4 x 1/2	860112-050		1
57	bushing, red pltd 3/8 x 1/4	867101-010		1
58	connector, 45 deg str x jic 2 1/2 x 2 1/2	870532-032		2
59	connector, 90d str x jic 2 1/2 x 2 1/2	870632-032		2
60	tee, 37fl union 1/2	873308-008		1
61	plug, str thd hol hx 3/4-16	875708-075		1
62	washer, nord-lock pl m10	883210-166		12
63	hose, heater heavy wall 1 (ft)	886117-100		8
64	adaptor, 3/8 nptf x m22 str thd	886303-022		1
65	elbow, 45 deg str thd 1 1/16 x 1" hose	886416-106		1
66	manifold, compr filter & flow control	02250157-159		1
A1	To Receiver Tank			
A2	To Low-Press Compressor			
A3	To High-Press Compressor			
A4	To Engine Radiator			
A5	To Engine Coolant Conn.			
A6	To Engine Oil Pan			
A7	To Receiver Tank Drain			
A8	Oil Cooler Port Orientation			
B1	Mount to frame			
B2	Mount to inlet			
B3	Oil manf support 02250159-074			
B4	Engine coolant sensor 02250165-908			
B5	Sensor installed in AC for AC machines			
B6	02250156-345 is bulk packaged for factory. For replacement element use: 02250139-996			
Q1	Refer to <i>Cooling System Assembly on page 84</i>			

6.13 COOLING SYSTEM ASSEMBLY

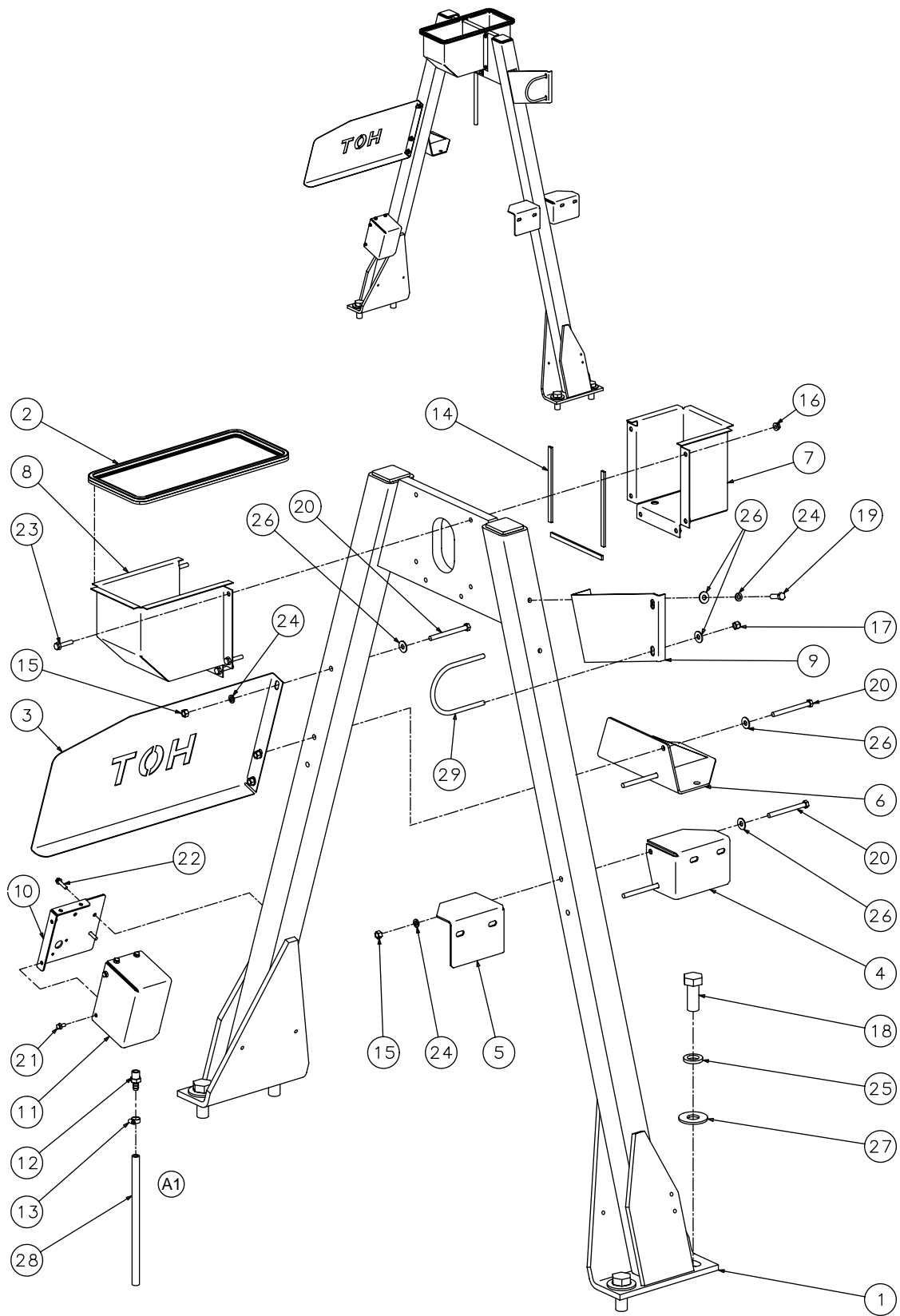


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**6.13 COOLING SYSTEM ASSEMBLY (CONTINUED)**

Key	Description	Part Number	Note	Quantity
1	support, cooler assy bottom 1600 t3	02250155-301		1
2	radiator, engine c15 1600 t3	02250157-344		1
3	cooler, oil 600 psi 1600 t3	02250157-345		1
4	cooler, air eng (cac) 1600 t3	02250157-346		1
5	support, cooler vert ss 1600 t3	02250161-831		2
6	support, cooler vert ss 1600 t3	02250161-832		1
7	support, cooler top front 1600 t3	02250161-833		1
8	support, cooler top rear 1600 t3	02250161-834		1
9	heater, compressor oil blanket 1600 t3	02250166-590		1
A1	Air flow			
A2	Air flow			

6.14 LIFT BAIL ASSEMBLY



02250162-126R03

## 6.14 LIFT BAIL ASSEMBLY (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	bail, lifting 1600 family tier iii	02250154-803		1
2	gasket, sponge-rubber black	02250158-314		2
3	shield, heat turbo c15 tier iii	02250159-070		1
4	support, primary fuel fltr c15 t3	02250159-072		1
5	support, second fuel fltr 1600 t3	02250159-073		1
6	support, oil filter manf block	02250159-074		1
7	enclosure, lift bail eye front	02250161-112		1
8	enclosure, lift bail eye rear	02250161-113		1
9	support, pipe 4" cac	02250161-509		1
10	support, relay & switch	02250162-209		1
11	cover, access relay & switch	02250168-418		1
12	fitting, hose male pipe	044845		1
13	clamp, hose 3/8"	047235		1
14	weatherstrip, ribbed 3/16" x 3/8" (ft)	250022-436		3
15	nut, hex pltd 3/8-16	825206-337		5
16	nut, hex f pltd 5/16-18	825305-283		6
17	nut, hex locking 3/8-16	825506-198		2
18	capscrew, hex gr5 1-8 x 2 1/2	828616-250		4
19	capscrew, hex gr5 3/8-16 x 1 1/4	829106-125		2
20	capscrew, hex gr5 3/8-16 x 4	829106-400		5
21	screw, hex ser washer 1/4-20 x 1/2	829704-050		4
22	screw, hex ser washer 1/4-20 x 1	829704-100		2
23	screw, hex ser washer 5/16-18 x 1 1/2	829705-150		6
24	washer, spr lock reg pltd 3/8	837806-094		7
25	washer, spr lock reg pltd 1	837816-250		4
26	washer, pl-b reg pltd 3/8	838206-071		9
27	washer, pl-b reg pltd 1	838216-174		4
28	hose, fuel line 3/8 (ft)	842315-038		5
29	u-bolt, 3/8" x 3 1/2" pipe pltd	868306-350		1

A1 Drain tube for lifting eye encl.

Open Frame Machines Do Not Require The Following:

02250161-112 Enclosure

02250161-113 Enclosure

020022-436 Weatherstrip

825305-283 Nut

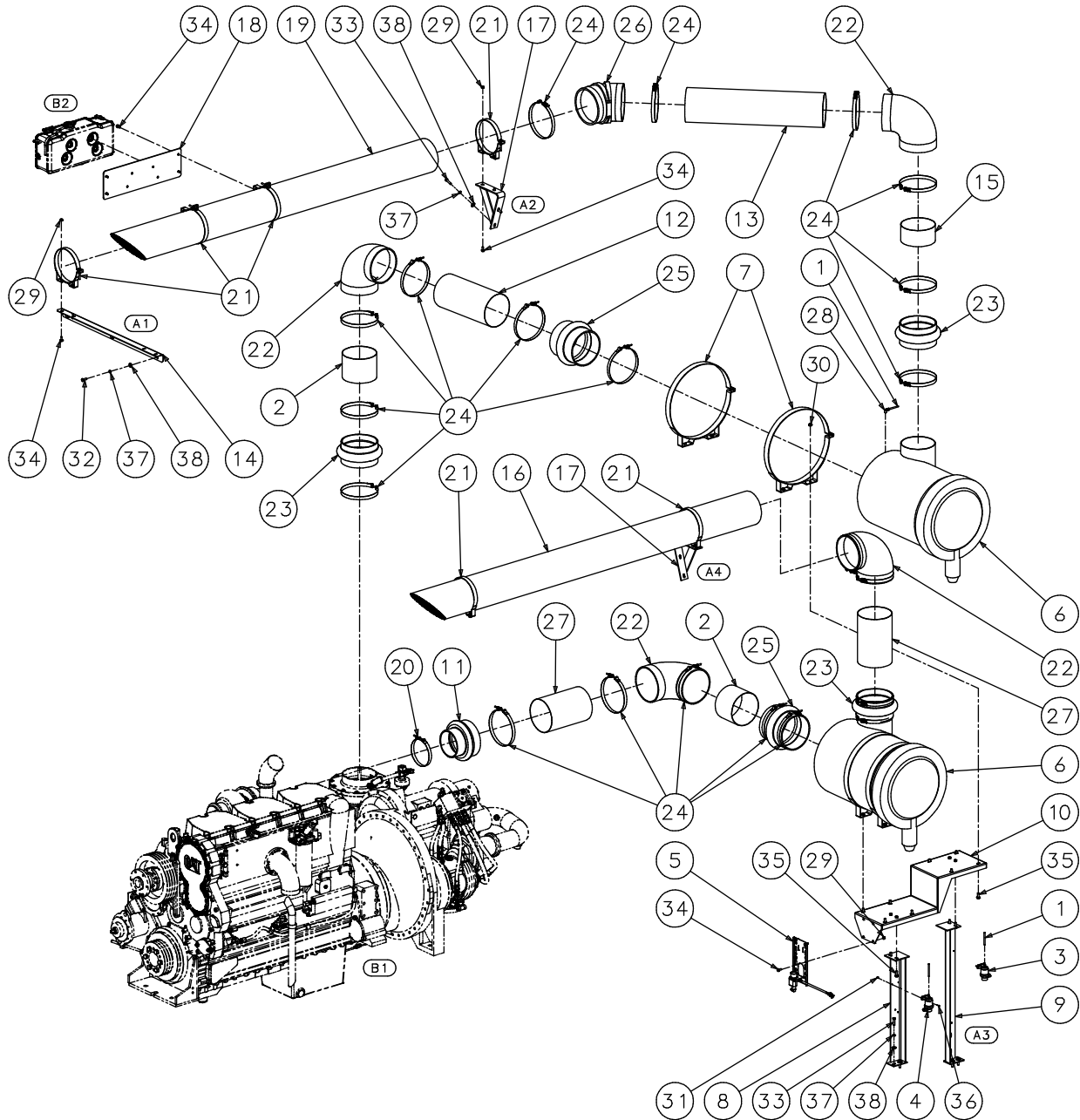
829705-150 Screw

842315-038 Hose

044845 Fitting

047235 Clamp

6.15 AIR INLET SYSTEM



02250159-181R02

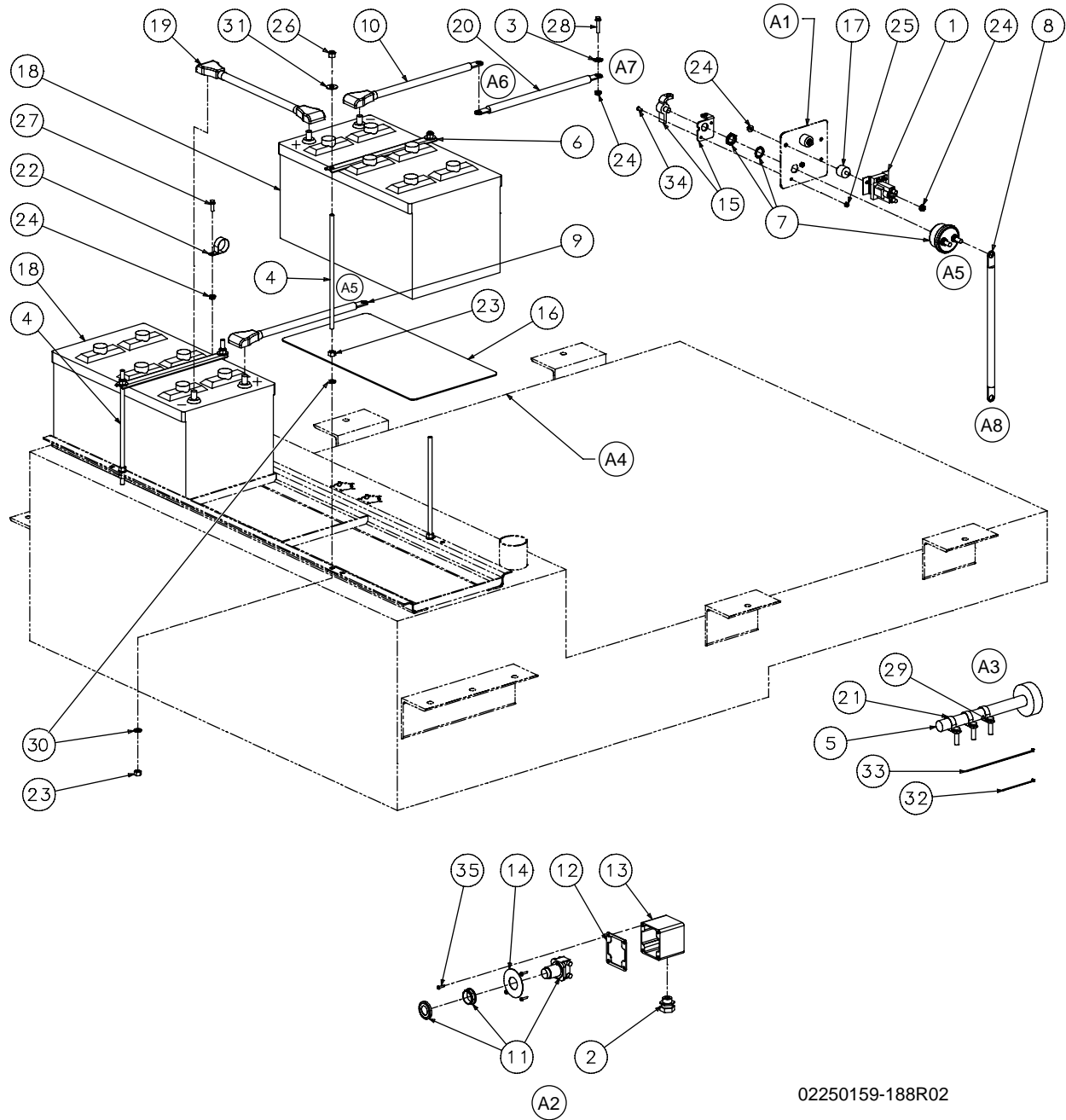
- A1 Mount to cooler assembly
- A2 Mount to lifting bail
- A3 Mount to frame
- A4 Use existing hardware
  
- B1 Reference: engine and compressor
- B2 Reference: engine fluid recovery tank



## 6.15 AIR INLET SYSTEM (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	tube, nylon .25"od x .04w black (ft)	02250054-861		4
2	tube, alum air inlet 8"od x 6"lg	02250134-182		2
3	ind,swt flr elem cmacs right	02250141-305		1
4	ind,swt flr elem cmacs left	02250143-881		1
5	aid, starting elec 24v c15	02250144-566		1
6	filter, air 18" 1600 t3	02250155-690		2
7	clp, 18" air filter 1600t3	02250156-380		4
8	supt, air fltrs hp leg1 tieriii	02250157-148		1
9	supt, air fltrs hp leg2 tieriii	02250157-149		1
10	supt, air fltrs hp myg tieriii	02250157-150		1
11	hose, hump reducing 8 x 6	02250160-133		1
12	tube, alum air inlet 8"od x 17"lg	02250160-134		1
13	tube, alum air inlet 8"od x 32"lg	02250160-629		1
14	support, air inlet tubes 1600t3 o.f.	02250160-631		1
15	tube, alum air inlet 8"od x 4"lg	02250160-984		1
16	tube, alum air inlet assy 8"od x 100"	02250162-919		1
17	supt, air inlet tube t3 o.f.	02250162-920		2
18	supt, eng fluid rec cntr	02250163-022		1
19	tube, alum air inlet assy 8"od x 93"	02250165-286		1
20	clamp, hose 6 1/2"	40305		1
21	band, mounting 8"	40598		6
22	elbow, air inlet 90 rubber	43406		4
23	hose, hump 8 x 5"	43596		3
24	clamp, hose 8"	43598		21
25	hose, hump 8 x 8"	44733		2
26	elbow, rubber 8" x 45 degrees	250005-776		1
27	tube, alum air inlet 8"od x 12"lg	250006-651		2
28	elbow, 90d 1/4" tube x 1/8"fnpt	250041-286		2
29	nut, hex f pltd 5/16-18	825305-283		16
30	nut, hex f pltd 3/16	825306-347		8
31	nut, hex locking #6-32	825500-102		4
32	capscr, hex gr5 3/8-16 x 1	829106-100		3
33	capscr, hex gr5 3/8-16 x 1 1/2	829106-150		6
34	screw, hex ser washer 5/16-18 x 3/4	829705-075		16
35	screw, hex ser washer 3/8-16 x 1	829706-100		12
36	screw, mach-pan hd #6-32 x 3/4	831300-075		4
37	washer, spr lock reg pltd 3/8	837806-094		9
38	washer. pl-b reg pltd 3/8	838206-071		9

6.16 ELECTRICAL SYSTEM



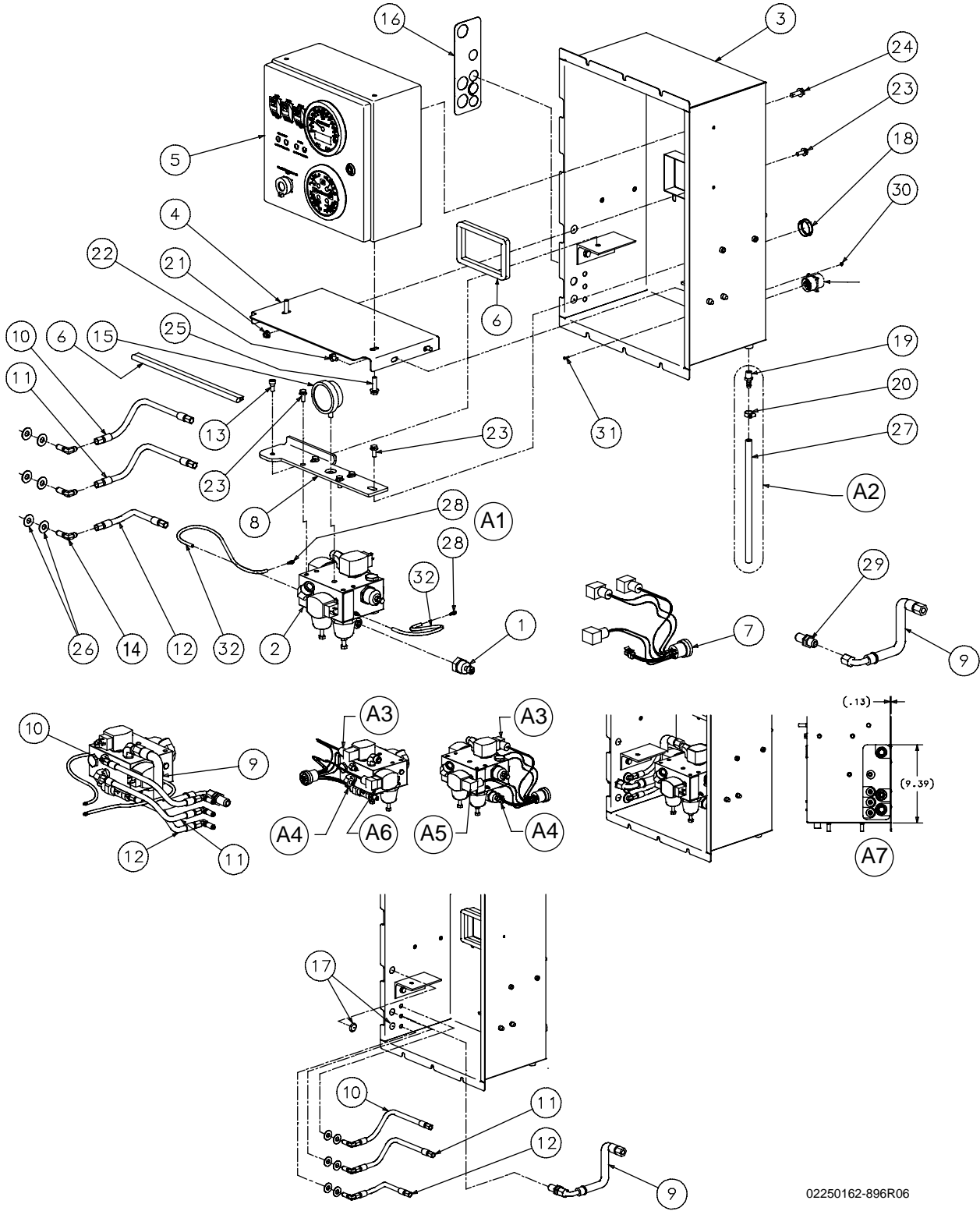
02250159-188R02

- A1 Reference: 02250162-209 support, relay and switch (mounts to lifting bail).
- A2 E-stop assembly mounts to front panel.
- A3 See work-center instructions for location of clamps and tie wraps.
- A4 Reference: 02250154-804 fuel tank (export only).
- A5 + to disconnect switch
- A6 - to connection at starter
- A7 - connection at frame
- A8 + connection to starter

## 6.16 ELECTRICAL SYSTEM (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	solenoid,spno 24vdc cont-duty	02250051-629		1
2	grip, cord n4 .187-.250 x 1/2"	02250071-380		1
3	washer, external serrated m10 -	02250092-169		1
4	rod,3/8-16 x 11.25"	02250123-122		4
5	harness, main 1600 fam tier iii	02250158-093		1
6	channel, batt hold down	02250160-154		2
7	switch, battery disconnect 6-36v; 175 amps continuou	02250160-837		1
8	cable,battery 2/0 36"lg red	02250163-018		1
9	cable,battery 2/0 139"lg red	02250163-019		1
10	cable,battery 2/0 164"lg black	02250163-020		1
11	switch, e-stop hd push-pull red	02250163-818		1
12	gasket, e-stop large portable mach	02250163-819		1
13	enclosure,large portable e-stop	02250163-820		1
14	plate, cover large portable e-stop	02250163-821		1
15	lock, batt disconnect switch	02250165-472		1
16	mat, anti-slip battery	02250167-768		2
17	isolator, vibration 1"od x 3/4"tall	40091		2
18	battery, 12 volt - wet	40703		2
19	cable,battery universal terminals	250019-646		1
20	cable,battery 1/0 34"lg black	250034-212		1
21	clamp, hose 5/8" i.d. -	408300-005		3
22	clamp, hose 7/8" i.d. -	408300-006		1
23	nut,hex pltd 3/8-16	825206-337		8
24	nut,hex f pltd 1/4-20	825304-236		6
25	nut,hex locking #10-24	825502-083		2
26	nut,hex locking 3/8-16	825506-198		4
27	screw, hex ser washer 1/4-20 x 3/4	829704-075		1
28	screw, hex ser washer 1/4-20 x 1 1/4	829704-125		1
29	screw, hex ser washer 3/8-16 x 1 1/4	829706-125		3
30	washer, spr lock reg pltd 3/8	837806-094		8
31	washer, pl-b reg pltd 3/8	838206-071		4
32	wrap,tie nylon ty 23mx	843201-023		8
33	wrap,tie nylon tf4-8x	843201-025		20
34	screw,rnd phillips 10-24 x 1/2"	876002-050		2
35	capscrew, socket btn hd m4 x 16mm	882304-016		4

6.17 HIGH PRESSURE ELECTRICAL AND PNEUMATIC CONTROL SYSTEM

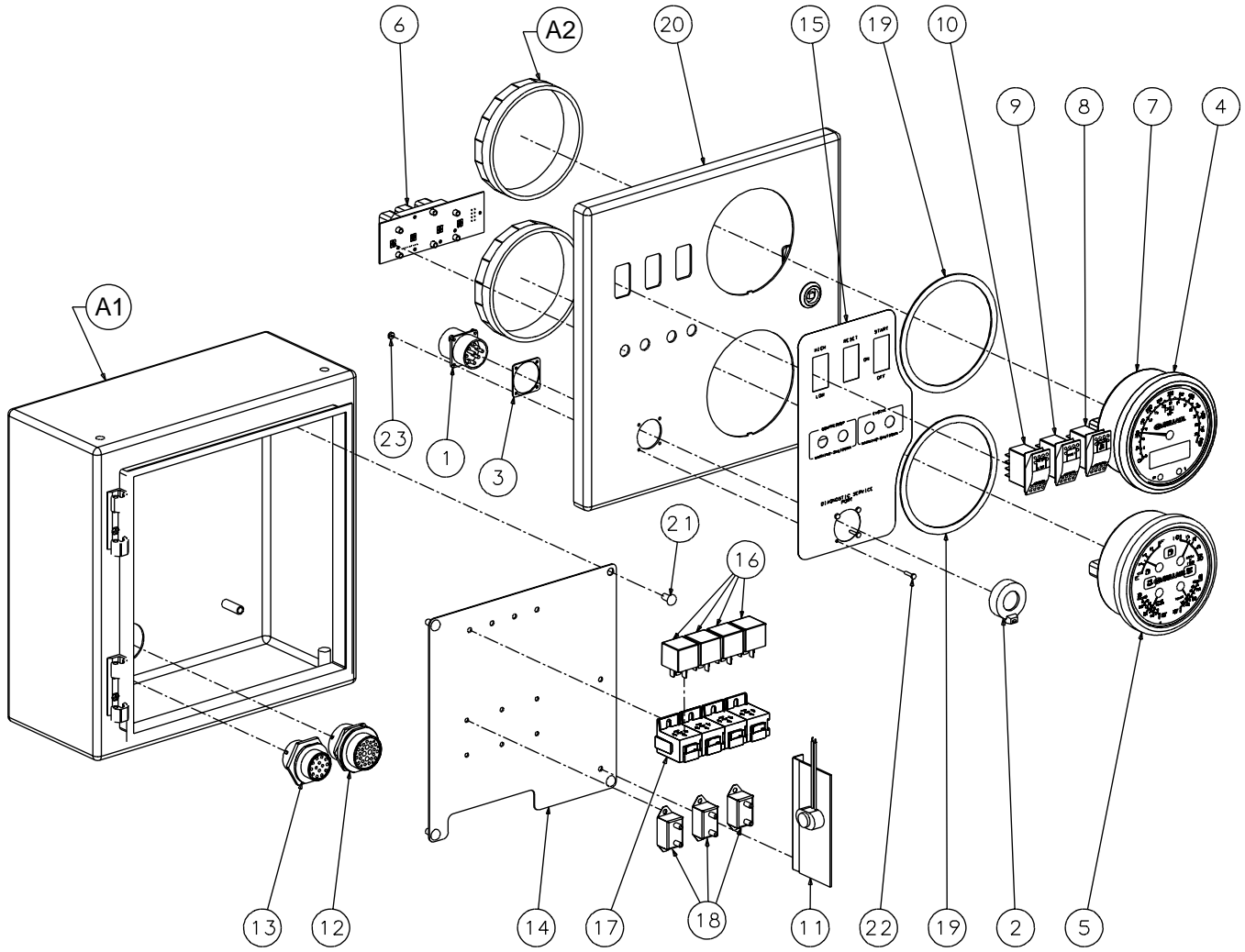


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## 6.17 HIGH PRESSURE ELECTRICAL AND PNEUMATIC CONTROL SYSTEM (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	transducer, pressure 0-750psi 5volt n4	02250144-311		1
2	manifold, air controls h.p.	02250144-972		1
3	enclosure,comp & manif blk t3	02250157-351		1
4	support,compass enclosure 1600 t3	02250157-696		1
5	controller, compass h.p.	02250159-205		1
6	weatherstrip,epdm 65 shore/spge rubber black	02250160-095		2
7	harness,manifold-block	02250162-204		1
8	support,manifold 900haf & 1600 t3	02250162-222		1
9	hose,manf-recirc valve	02250162-245		1
10	hose,manf-run/start	02250162-246		1
11	hose,manf-ctl sys vent	02250162-247		1
12	hose,manf-control air	02250162-248		1
13	bolt, shoulder 5/16-18 x .75	02250162-255		1
14	fitting, hose blkhd elbow 1/4 37 flr	02250162-703		3
15	gauge, pressure 2.5" cbm 600 psi	02250163-427		1
16	decal,hose ctl line loc-encl	02250163-467		1
17	plug,plastic .75 dia	02250163-473		2
18	bushing,open/closed 1.250	02250166-766		1
19	connector, hose 5/16" hose x 1/4"npt	43258		1
20	clamp, hose 3/8" -	47235		1
21	nut,hex f pltd 5/16-18	825305-283		2
22	screw, hex ser washer 5/16-18 x 1/2	829705-050		4
23	screw, hex ser washer 5/16-18 x 3/4	829705-075		7
24	screw, hex ser washer 3/8-16 x 1	829706-100		2
25	screw, hex ser washer 3/8-16 x 1 1/4	829706-125		2
26	washer, pl-b reg pltd 7/16	838207-071		6
27	hose,fuel line 5/16 (ft)	842315-031		2
28	connector, hose #10 x 1/8	842910-125		2
29	union,37fl bhd 1/2	862108-050		1
30	nut,hex locking ss 4-40	879611-081		4
31	capscrew, socket btn hd ss #4-40 x 1/2	880411-050		4
32	hose, viton 1/4od x 1/8" id	886702-062		2
A1	Mount to PEM nuts in 02250157-351			
A2	Use on open frame machines only			
A3	Start/Run - Wiring Harness Detail			
A4	P2 - Wiring Harness Detail			
A5	Hi/Low - Wiring Harness Detail			
A6	Recirculate - Wiring Harness Detail			
A7	Decal location			

6.18 INSTRUMENT PANEL



02250159-189R00

## 6.18 INSTRUMENT PANEL (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	connector, electrical ecm module	02250130-488		1
2	cap, receptacle ecm module	02250130-489		1
3	gasket, elect. conn. ecm module	02250131-087		1
4	gag, press 0-600 psi w/lcd	02250140-536	(I)	1
5	gag, temp/tach/fuel	02250140-537		1
6	instrument, warning bank mod	02250140-539		1
7	gag, press 0-300 psi w/lcd	02250140-692	(II)	1
8	swt, start-on-off cntrls	02250141-139		1
9	swt, reset cntrls	02250141-140		1
10	swt, hi/lo controls	02250141-141		1
11	heater,24v w/mntg plt & thermostat	02250141-630		1
12	connector, deutsch hdp24-24-29pn	02250144-332		1
13	connector, deutsch hdp24-18-14pn	02250144-333		1
14	panel, sub electrical controls	02250145-274		1
15	decal, overlay 14x14 encl	02250146-623		1
16	relay,75vdc	02250146-682		4
17	socket, relay 18-20ga wire	02250146-683		4
18	breaker, cir50a auto restart controls	02250147-476		3
19	gasket, neoprene cl cell	02250147-531		2
20	enclosure, compass n4x	02250157-350		1
21	screw, mach-rd hd 1/4-20 x 1/2	831604-050		4
22	screw, pan hd ph #4-40 x 1/2 ss	880511-050		4
23	nut, hex #4-40 ss	880711-092		4

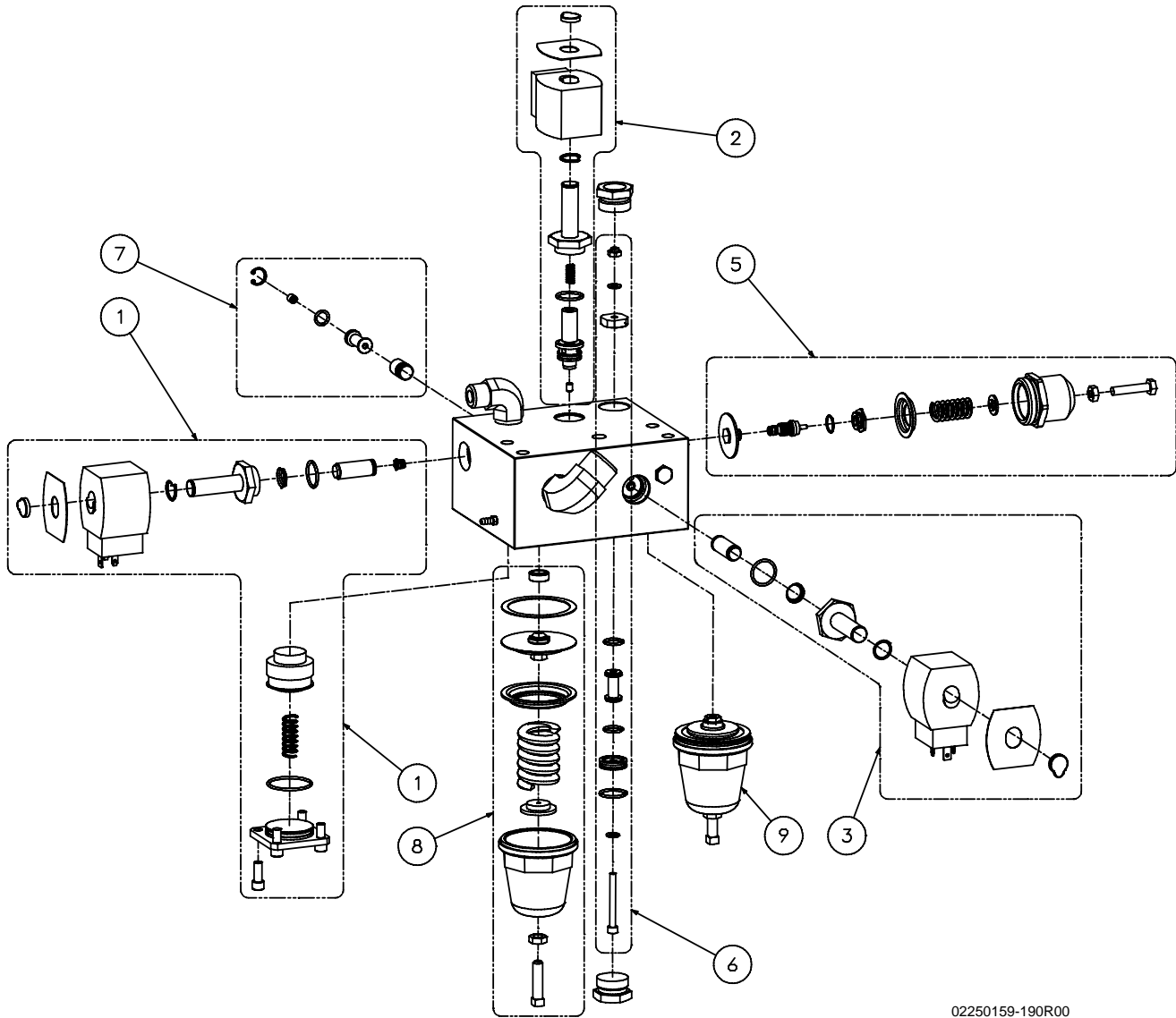
A1 Attached to 02250157-350

A2 Included with gauges

(I) Gauge is for machines from 300 to 600 PSI.

(II) Gauge is for machines less than 300 PSI.

6.19 AIR CONTROL MANIFOLD



02250159-190R00



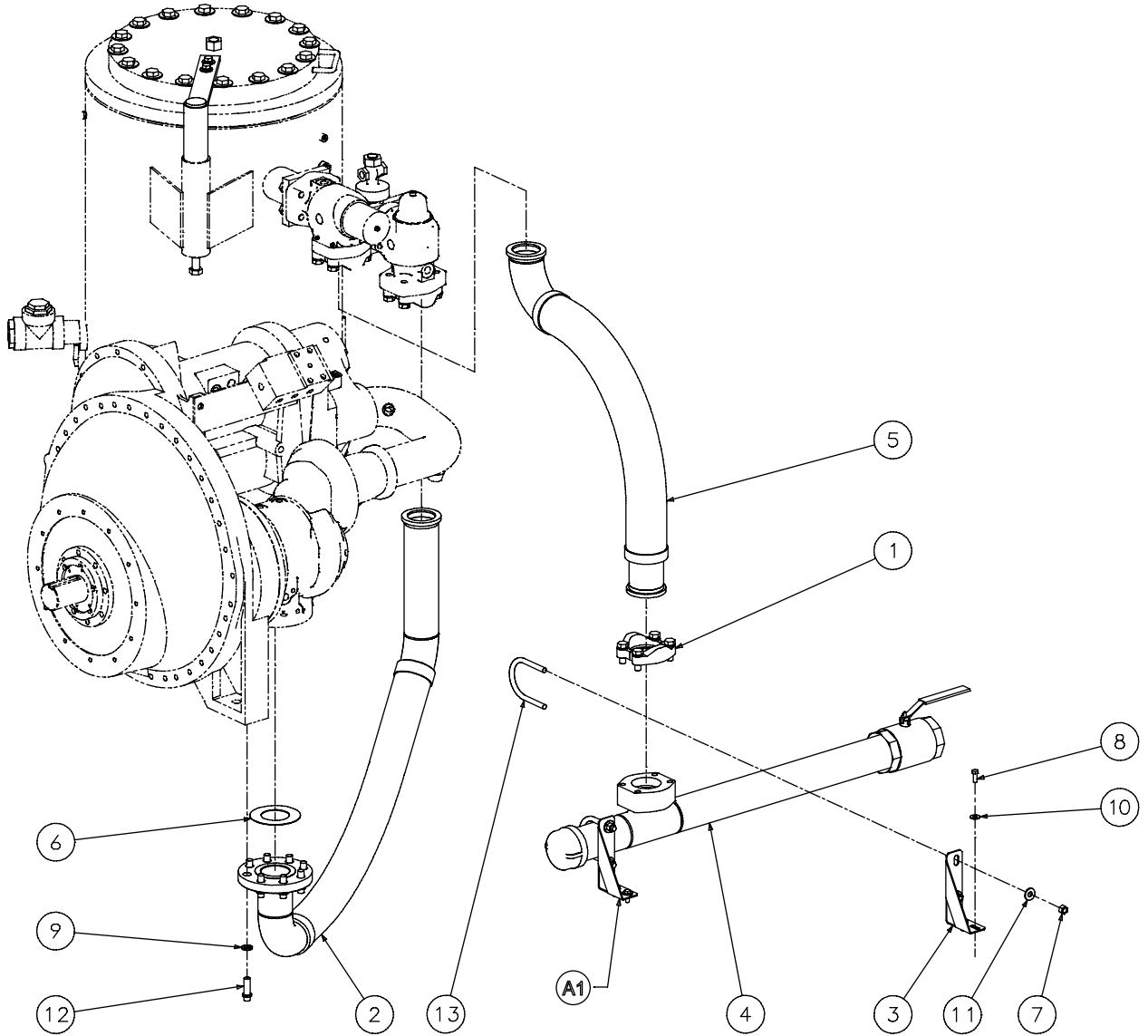
## 6.19 AIR CONTROL MANIFOLD (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	kit,repair recirculation solenoid	02250166-773		1
2	kit,repair run/start solenoid	02250166-774		1
3	kit,repair hi/lo solenoid	02250166-775	(I)	1
4	kit,repair solenoid coil (fits all)	02250166-777		1
5	kit,repair pressure reducing valve	02250166-779		1
6	kit,repair blowdown valve	02250166-781	(II)	1
7	kit,repair check valve	02250166-782		1
8	kit,repair cp valve (low pressure)	02250166-783		1
9	kit,repair cp valve (high pressure)	02250166-784	(I)	1

(I) Not required for single pressure machines

(II) Not required for XH and XHH machines

6.20 DISCHARGE SYSTEM, NON-AFTERCOOLED

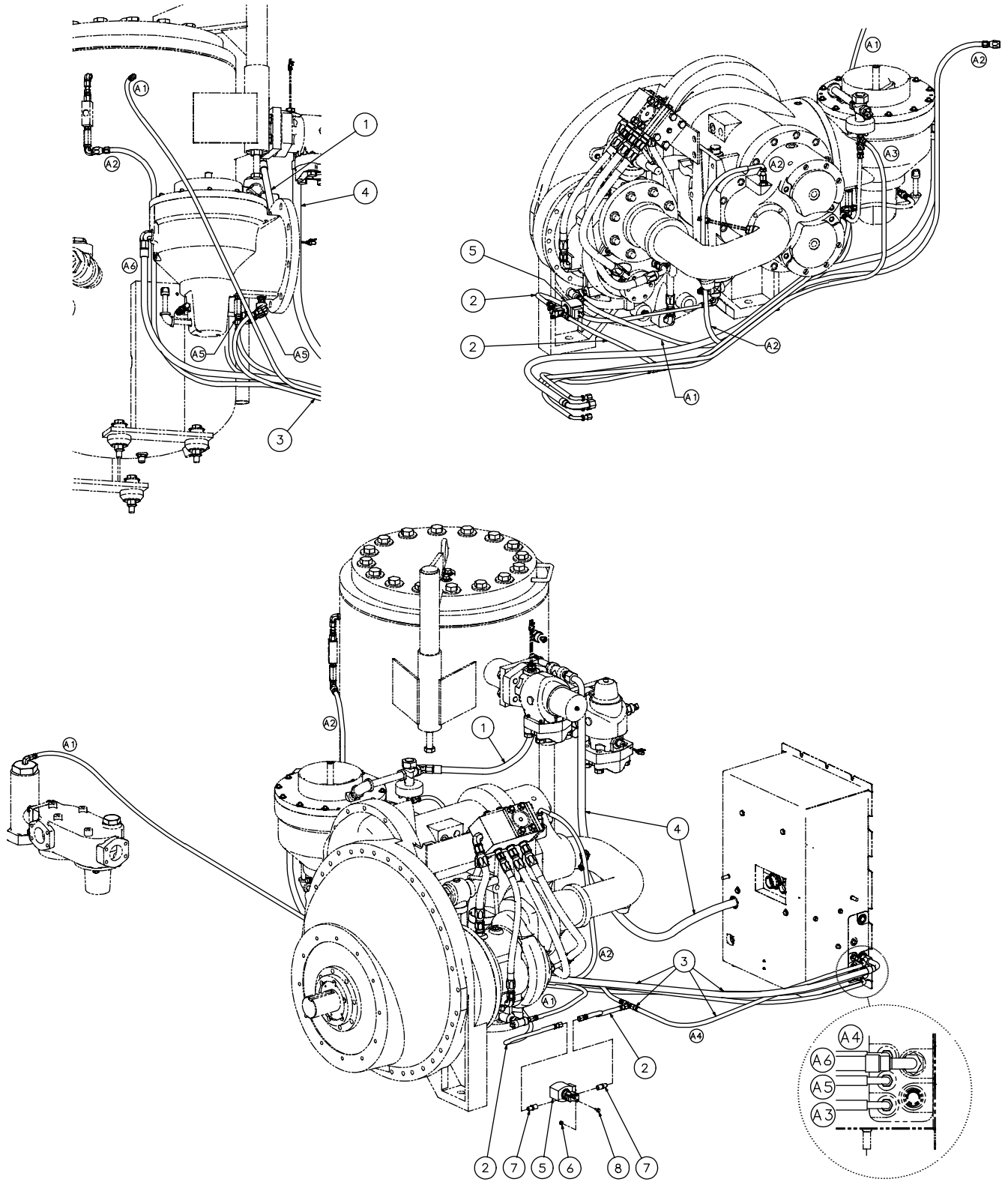


02250159-192R01

## 6.20 DISCHARGE SYSTEM, NON-AFTERCOOLED (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	flange,3" sae j518 code 61	02250105-534		1
2	hose,assembly 3" discharge h.p.	02250158-445		1
3	support, pipe 3"npt disch 1600 t3	02250161-316		2
4	hose,assy 3" disch 1600t3 lp	02250162-413		1
5	hose,assy 3" disch 1600 t3	02250164-590		1
6	gasket, 2-1/2" flange	46053		1
7	nut,hex pltd 1/2-13	825208-448		4
8	capscrew,hex gr5 3/8-16 x 1	829106-100		4
9	washer, spr lock reg pltd 5/8	837810-156		8
10	washer, pl-b reg pltd 3/8	838206-071		4
11	washer, pl-b reg pltd 1/2	838208-112		4
12	capscrew, ferry head hd pltd 5/8-11 x 1 3/4	867310-175		8
13	u-bolt,1/2" x 3" pipe pltd	868308-300		2
A1	Mount supports to frame			

6.21 CONTROL LINES, HIGH PRESSURE

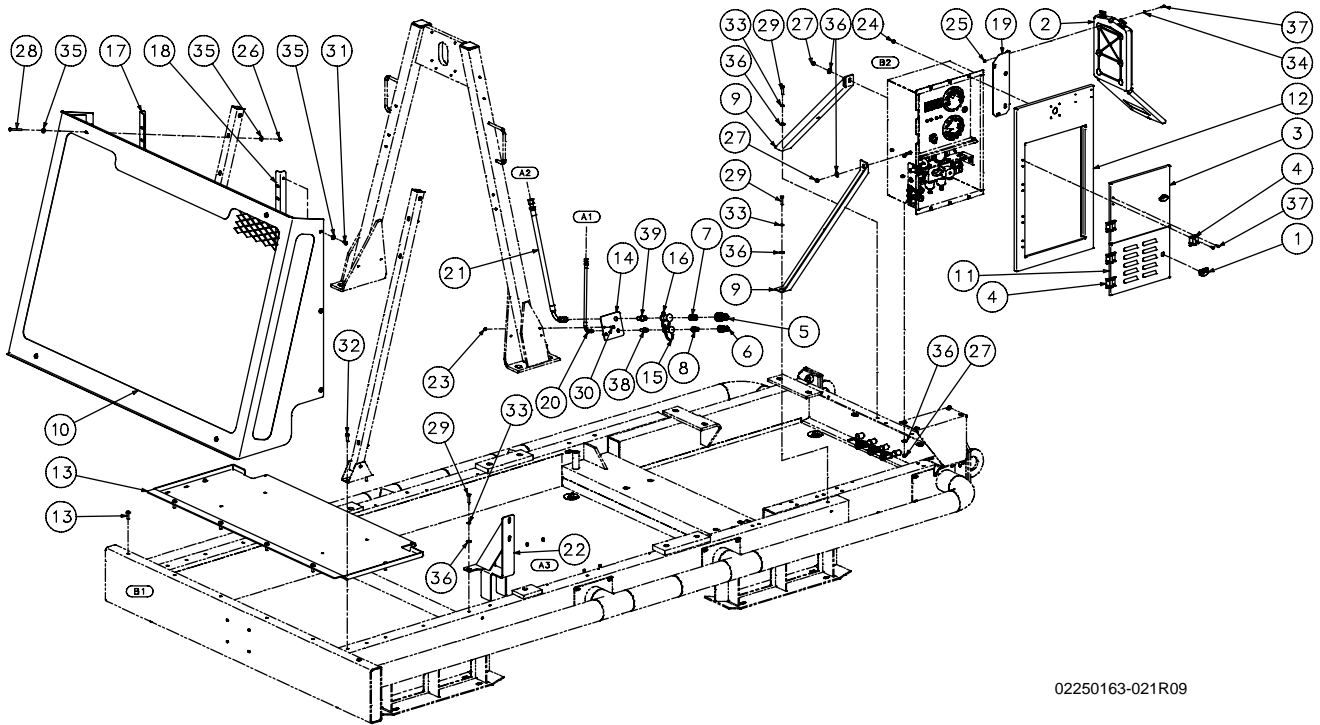


02250163-024R03

## 6.21 CONTROL LINES, HIGH PRESSURE (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	hose,3/4-16 x 3/4-16 jic x 22"lg	02250162-237		1
2	hose,spiral vlv sol-spiral vlv	02250163-455		2
3	hose,bndl ctl lines 1600-t3 hp	02250163-460		1
4	hose,ctl pnl-dry press rec tn	02250163-492		1
5	solenoid,spiral vlv 24v nc 2way	02250166-921		1
6	nut,hex locking #10-24	825502-083		2
7	connector,37 fl/mpt pltd 1/4 x 1/4	860104-025		2
8	connector,37 fl/mpt pltd 1/4 x 1/4	884302-050		2
A1	Green Line			
A2	Orange Line			
A3	Red Line			
A4	Yellow Line			
A5	White Line			
A6	Blue Line			

6.22 OPEN FRAME ASSEMBLY COMPONENTS



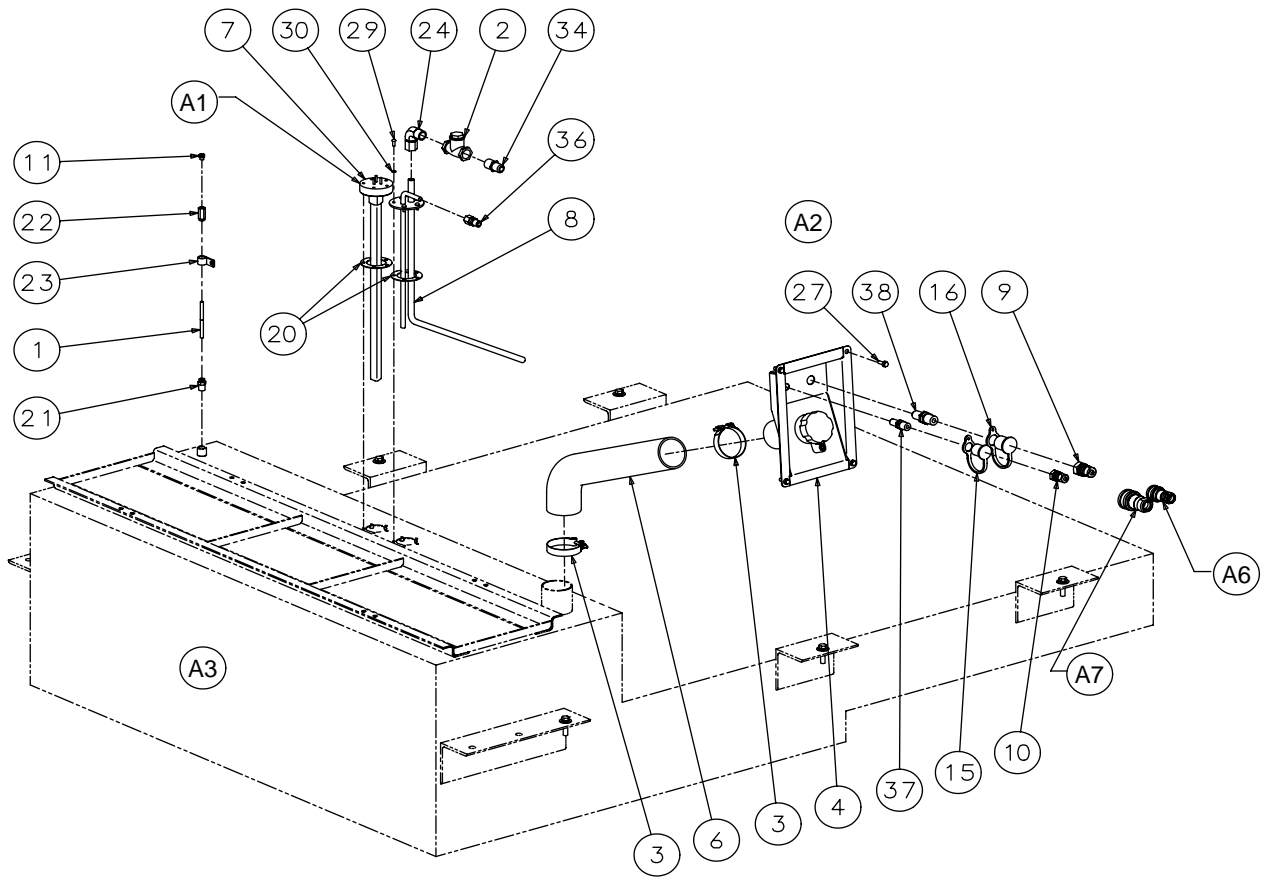
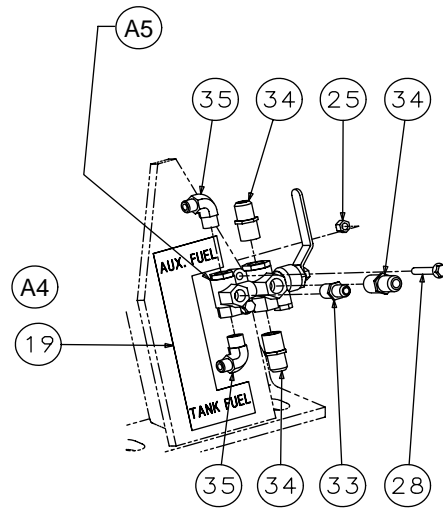
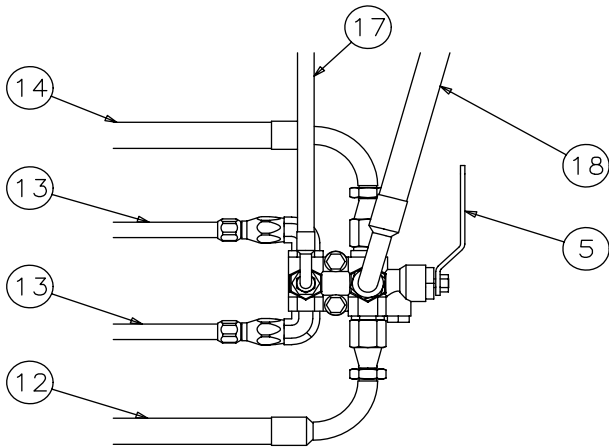
02250163-021R09

- A1 Engine fuel filter
- A2 Engine fuel pump
- A3 Fuel line to engine
- A4 Return line from engine
- A5 These parts only required for aftercooled machines
- A6 Reference: frame assembly 02250159-176
- A7 Engine filter connection detail
- A8 Reference: instrument panel 02250160-092
- A9 These two fittings are supplied with engine

## 6.22 OPEN FRAME ASSEMBLY COMPONENTS (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	catch, pad-lockable	02250131-747		2
2	enclosure, manual-pak	02250157-353		1
3	door, canopy top inspnl 1600t3 sst	02250157-885		1
4	hinge, canopy door 16 in-lbs black	02250158-992		4
5	coupling, quick disc fm 1/2"	02250160-014		1
6	coupling, quick disc fm 3/8"	02250160-017		1
7	coupling, quick disc male x 1/2"	02250160-020		1
8	coupling, quick disc male 3/8"	02250160-023		1
9	support,instrument panel 1600 t3 o.f.	02250160-630		2
10	guard, cooler pack 1600 t3 o.f.	02250161-750		1
11	door,ctrl lwr pnl bare 1600 t3	02250162-227		1
12	panel, instrument ss 1600 t3 of	02250162-845		1
13	support,batteries 1600 t3 o.f.	02250162-846		1
14	support, pipe 3" disch 1600 t3 o.f.	02250162-921		1
15	support, fuel conn. 1600 t3 o.f.	02250163-822		1
16	cover, dust fuel conn. 3/8 fm	02250164-184		1
17	cover, dust fuel conn. 1/2 fm	02250164-185		1
18	support, cooler guard ss	02250165-367		1
19	support, cooler guard cs	02250165-368		1
20	hose, ball vlv drain to sep tnk	02250165-555		1
21	support, manual encl 1600 t3 of	02250166-304		1
22	hose, fuel conn to eng 1600 of	02250168-082		1
23	hose, fuel conn to fltr 1600 of	02250168-083		1
24	insert, 1/4-20 blind	250034-538		4
25	nut, hex f pltd 1/4-20	825304-236		2
26	nut, hex f pltd 5/16-18	825305-283		6
27	nut, hex locking #10-24	825502-083		2
28	nut, hex locking 3/8-16	825506-198		6
29	capscrew, hex gr5 3/8-16 x 1 1/2	829106-150		8
30	screw, hex ser washer 1/4-20 x 1	829704-100		2
31	screw, hex ser washer 5/16-18 x 3/4	829705-075		6
32	screw, hex ser washer 3/8-16 x 1 1/4	829706-125		10
33	washer, spr lock reg pltd 3/8	837806-094		8
34	washer, pl-b reg pltd #10	838202-045		4
35	washer, pl-b reg pltd 5/16	838205-071		6
36	washer, pl-b reg pltd 3/8	838206-071		14
37	connector, 90d str x jic 9/16 x 9/16	870606-038		1
38	screw, hex ser washer #10-24 x 3/4	884302-075		20
39	union, 37fl/nptf bhd 3/8	885406-038		1
40	union, 37fl/nptf bhd 1/2	885408-050		1

6.23 FUEL SYSTEM, OPTIONAL - EXPORT ONLY



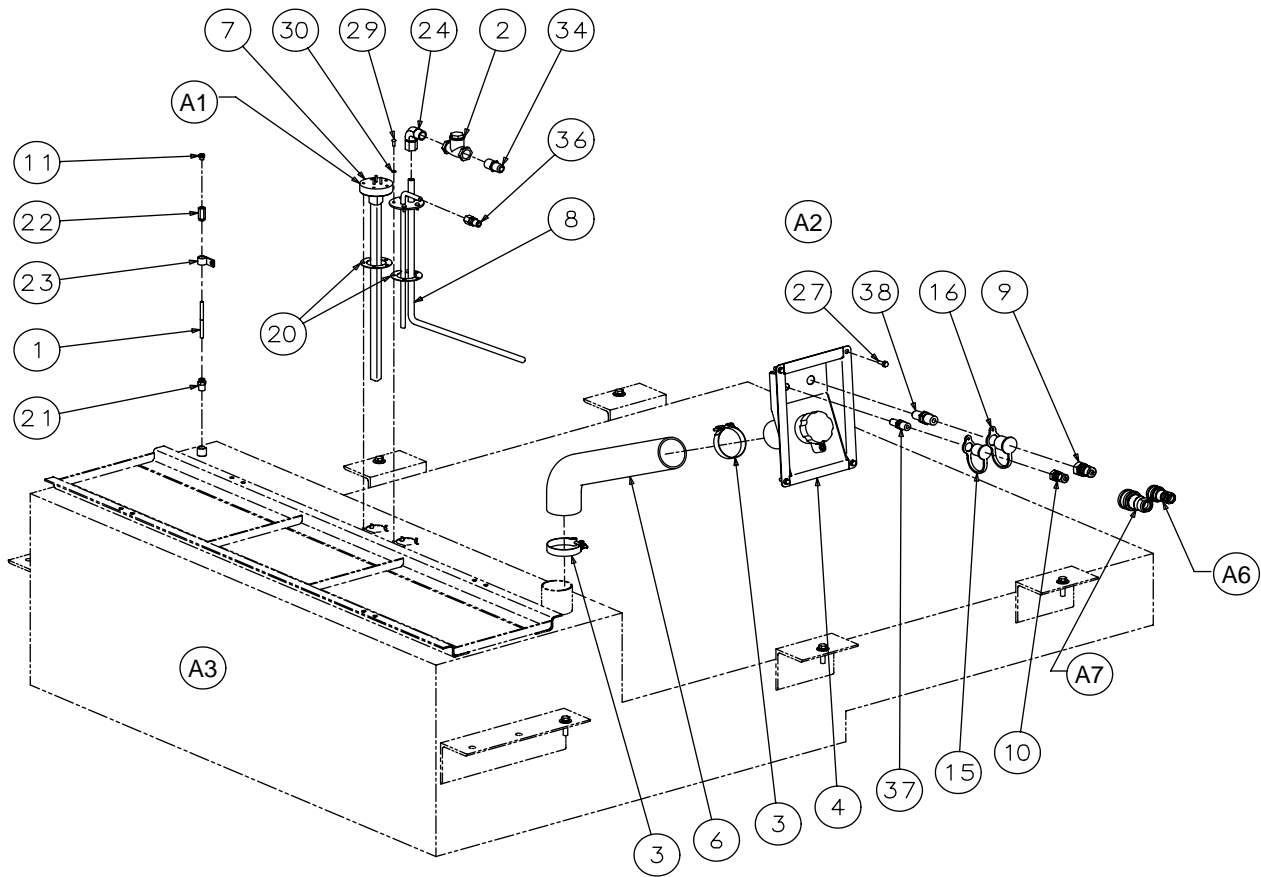
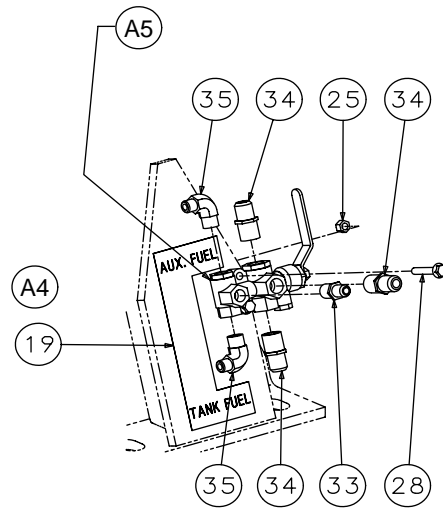
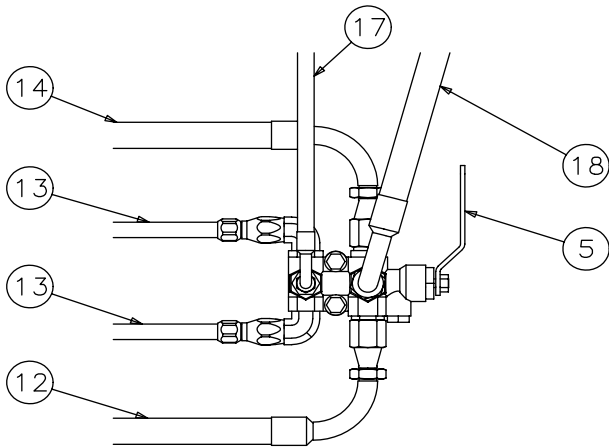
02250159-187R06



## 6.23 FUEL SYSTEM, OPTIONAL - EXPORT ONLY (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	tube, nyl .25 od x .040w blk (ft)	02250054-861		2
2	valve, check fuel 1/2" npt	02250111-934		1
3	clamp, t-bolt ss band 2.75" id	02250152-375		2
4	filler, fuel w/screen 2.6" dia	02250157-011		1
5	valve, fuel diversion 3-way	02250158-104	(I)	1
6	hose, fuel filler neck 1600 t3	02250158-112		1
7	sender, fuel level 1600 t3	02250158-368		1
8	flange, fuel pick-up & rtn 1600 t3	02250159-071		1
9	coupling, quick disc male x 1/2"	02250160-020		1
10	coupling, quick disc male 3/8"	02250160-023		1
11	ventilator, fuel tank	02250162-229		1
12	hose, ball vlv 3way-fuel tnk sup	02250162-239	(II)	1
13	hose, ball vlv 3way-fuel tnk ret	02250162-240	(III)	2
14	hose, ball vlv 3way-rem tnk sup	02250162-242	(IV)	1
15	cover, dust fuel conn. 3/8 fm	02250164-184		1
16	cover, dust fuel conn. 1/2 fm	02250164-185		1
17	hose, fuel conn to eng 1600 of	02250168-082	(V)	1
18	hose, fuel conn to fltr 1600 of	02250168-083	(VI)	1
19	decal, fuel selr sw 750 t3	02250168-292		1
20	gasket, fuel gauge neoprene	250004-752		2
21	connector, tube-strt 1/4mnpt x1/4"t	250024-685		1
22	connector, fem tube 1/4 x 1/8 nptf	250025-922		1
23	clamp, hose 9/16" id	408300-001		1
24	elbow, tube 90 deg m 1/2 x 1/2	810508-050		1
25	nut, hex locking 5/16-18	825505-166		2
26	capscrew, hex gr5 3/8-16 x 1 1/2	829106-150		6
27	screw, hex ser washer 1/4-20 x 3/4	829704-075		4
28	screw, hex ser washer 5/16-18 x 1 3/4	829705-175		2
29	screw, mach-rd hd #10-32 x 1/2	831702-050		5
30	washer, spr lock reg pltd #10	837802-047		5
31	washer, pl-b reg pltd 3/8	838206-071		6
32	washer, spr lock reg pltd 3/8	838506-094		6
33	connector, 37 fl/mpt pltd 3/8 x 3/8	860106-038		1
34	connector, 37 fl/mpt pltd 1/2 x 1/2	860108-050		4
35	elbow, 37fl 90m 3/8 x 3/8	860206-038		2
36	adapter, pltd 3/8 x 9/16-18	876106-056		1
37	union, 37fl/nptf bhd 3/8	885406-038		1
38	union, 37fl/nptf bhd 1/2	885408-050		1

6.23 FUEL SYSTEM, OPTIONAL - EXPORT ONLY (CONTINUED)

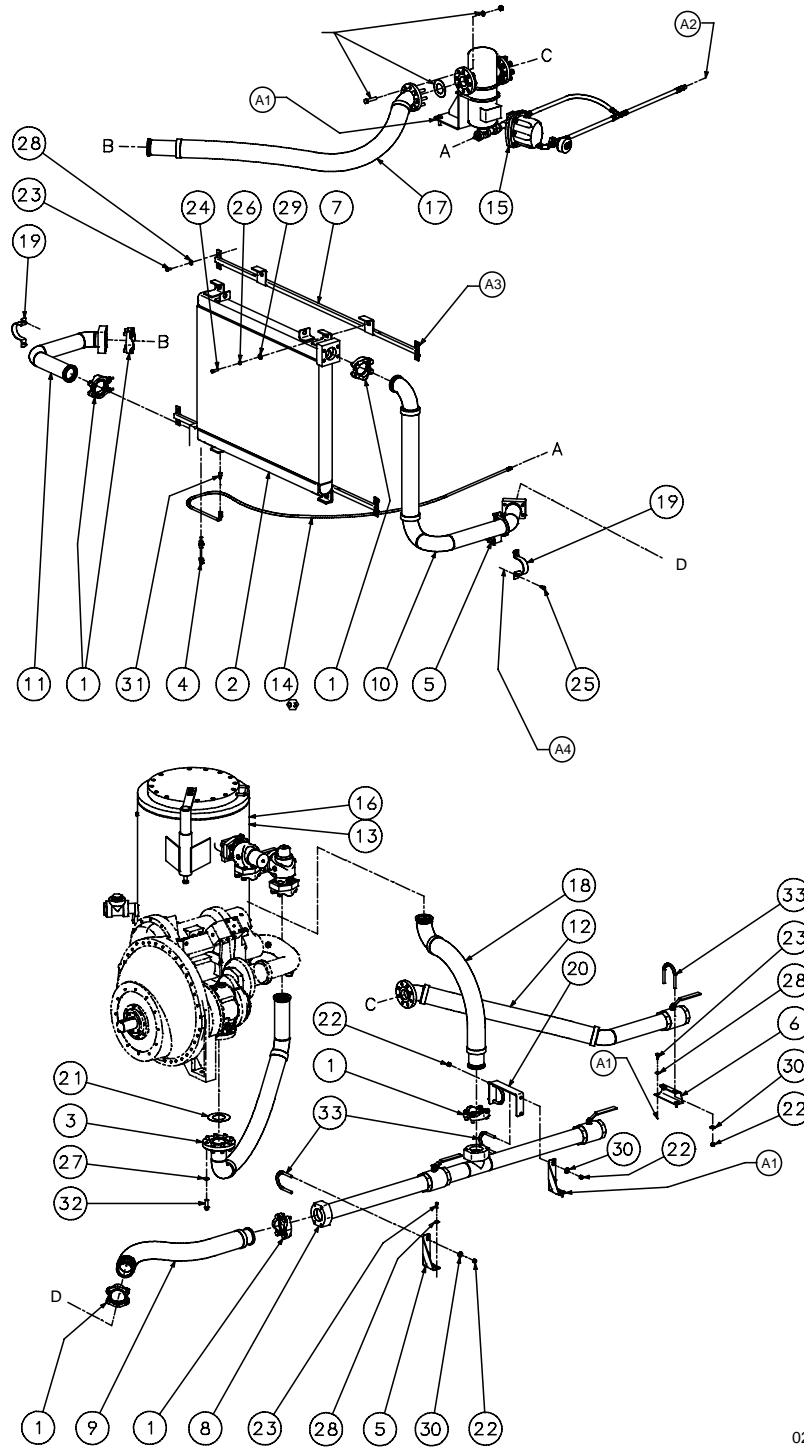


02250159-187R06

## 6.23 FUEL SYSTEM, OPTIONAL - EXPORT ONLY (*CONTINUED*)

Key	Description	Part Number	Note	Quantity
A1	Hardware is included with sending unit			
A2	To engine fuel pump			
A3	Reference: 02250154-804 fuel tank (tank is included with frame assembly)			
A4	Center decal as shown around fuel selector switch and on lifting bail			
A5	Mount fuel valve to lifting bail			
A6	Reference: hose connection; 02250160-017 coupling, quick disconnect 3/8"			
A7	Reference: hose connection; 02250160-014 coupling, quick disconnect 1/2" (these items are not shipped with machine but are available from Sullair parts department)			
(I)	Handle shown at internal position			
(II)	Fuel line from internal tank			
(III)	Fuel line to internal tank			
(IV)	Fuel line from external tank			
(V)	Fuel line from engine filter			
(VI)	Fuel line to engine filter			

6.24 DISCHARGE SYSTEM, AFTERCOOLED ONLY, OPTIONAL

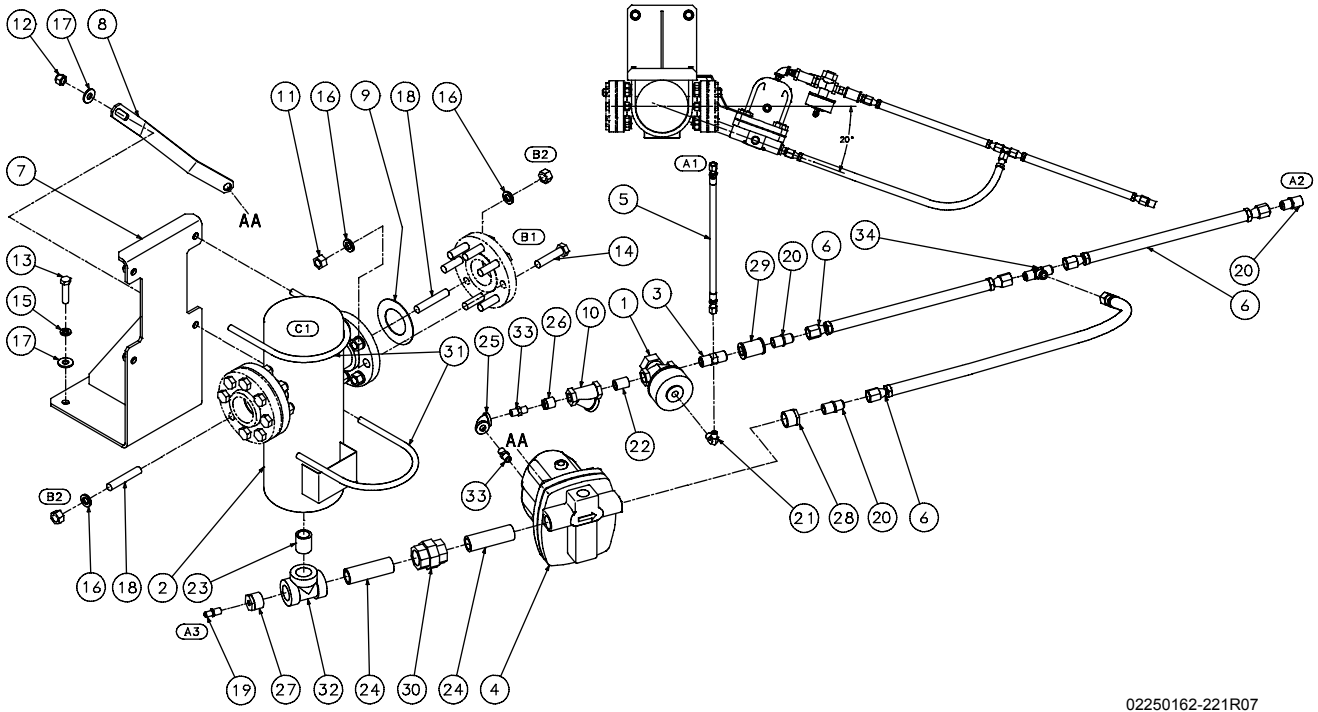


02250159-185R03

**6.24 DISCHARGE SYSTEM, AFTERCOOLED ONLY, OPTIONAL (CONTINUED)**

Key	Description	Part Number	Note	Quantity
1	flange,3" sae j518 code 61	02250105-534		6
2	cooler, air discharge 1600 t3	02250157-347		2
3	hose, assembly 3" discharge h.p.	02250158-445		1
4	sensor, temperature rtd 3/4 o-ring	02250161-276		1
5	support, pipe 3"npt disch 1600 t3	02250161-316		3
6	support,3" disch pipe 1600 t3 ac	02250161-754		1
7	support, ac to clr assy 1600 t3 01	02250162-202		2
8	hose, assy 3" disch 1600t3 lpac	02250162-346		1
9	pipe, assembly flex 3" ac 1600t3	02250162-418		1
10	pipe, assembly flex 3"-2.5" rdc ac	02250162-419		1
11	pipe, assembly elb 3"-2.5" rdc ac	02250162-420		1
12	pipe, assembly 3" ac disch 1600t3	02250162-482		1
13	sub assembly, rec tank h.p. Ce	02250162-577		1
14	sub assembly, ac water-sep h.p. 1600 t3	02250163-031		1
15	sub assembly, receiver tank h.p. 1600 t3	02250163-033		1
16	hose, assy 3" ac wtr sep	02250163-279		1
17	hose, manf bhd-inl vlv - 4 x 63	02250163-352		1
18	hose, assy 3" disch 1600 t3	02250164-590		1
19	clamp, pipe 3" 1600 tier iii ac	02250165-366		2
20	support, hp ac disch pipe 1600 t3	02250166-180		1
21	gasket, 2-1/2" flange	46053		1
22	nut, hex pltd 1/2-13	825208-448		10
23	capscrew, hex gr5 3/8-16 x 1	829106-100		16
24	capscrew, hex gr5 7/16-14 x 1 1/2	829107-150		4
25	screw, hex ser washer 3/8-16 x 1	829706-100		4
26	washer, spr lock reg pltd 7/16	837807-112		4
27	washer, spr lock reg pltd 5/8	837810-156		8
28	washer, pl-b reg pltd 3/8	838206-071		16
29	washer, pl-b reg pltd 7/16	838207-071		4
30	washer, pl-b reg pltd 1/2	838208-112		8
31	connector,37 fl/mpt pltd 1/4 x 1/4	860104-025		1
32	capscrew, ferry head hd pltd 5/8-11 x 1 3/4	867310-175		8
33	u-bolt,1/2" x 3" pipe pltd	868308-300		5
A1	Mount to frame			
A2	Hardware is part of 02250163-031 SA			
A3	To drain port on frame			
A4	Mount to support on cooler pack			
A5	Mount to cooler pack			

6.25 WATER SEPARATOR, AFTERCOOLED ONLY, OPTIONAL



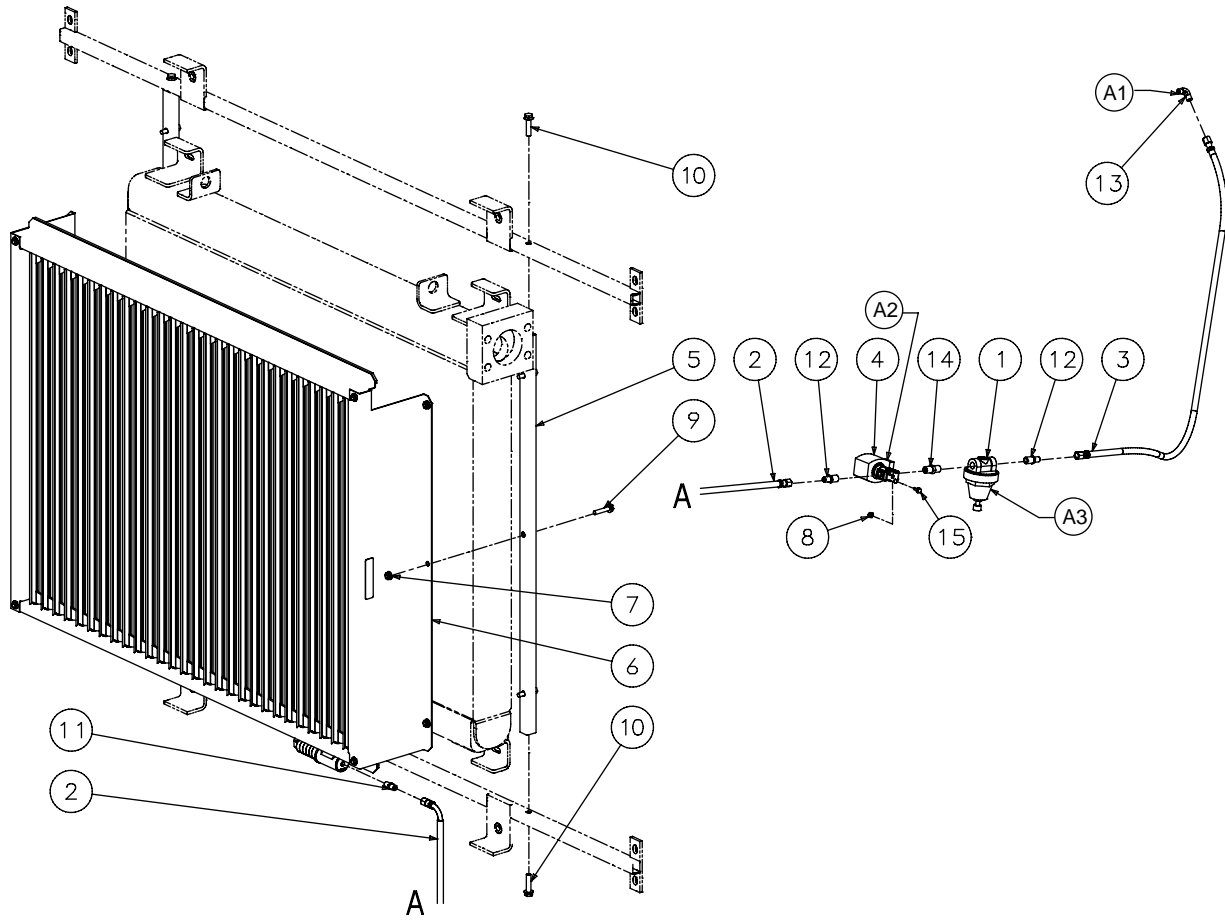
02250162-221R07

**6.25 WATER SEPARATOR, AFTERCOOLED ONLY, OPTIONAL (CONTINUED)**

Key	Description	Part Number	Note	Quantity
1	valve, blwdwn n.c. 5.4:1 ratio	02250069-820	(I)	1
2	orifice,.062 .25 fnpt x .25 mnpt	02250118-585		1
3	separator, t type gas/liq 2" npt	02250131-542		1
4	float, water sep trap	02250163-061		1
5	hose,37fl 1/2" x 18 lg	02250165-559		3
6	support, ac water sep h.p. t3	02250165-640		1
7	support,wtrtrap flt 1600t3 fam hp	02250167-436		1
8	gasket, asa flange 150# 2"	240621-006		2
9	nut,hex pltd 5/8-11	825210-559		16
10	nut,hex locking 1/2-13	825508-262		4
11	capscrew,hex gr5 1/2-13 x 2	829108-200		2
12	capscrew,hex gr5 5/8-11 x 2 3/4	829110-275		14
13	washer, spr lock reg pltd 1/2	837808-125		2
14	washer, spr lock reg pltd 5/8	837810-156		18
15	washer, pl-b reg pltd 1/2	838208-112		6
16	stud,with 2 nuts 5/8-11x3 1/2	842810-035		2
17	connector,37 fl/mpt pltd 1/4 x 1/4	860104-025		1
18	connector,37 fl/mpt pltd 1/2 x 1/2	860108-050		3
19	elbow, 37fl 90m 5/16 x 1/4	860205-025		1
20	nipple,pipe-xs plt 1 x cl	866416-000		1
21	nipple,pipe-xs plt 1 x 4	866416-040		2
22	bushing,red pltd 1/2 x 1/4	867102-010		1
23	bushing,red pltd 1 x 1/4	867104-010		1
24	bushing,red pltd 1 x 1/2	867104-020		1
25	union,pipe-brs seat 1 300# plt	868030-040		1
26	u-bolt,1/2" x 6" pipe pltd	868308-600		2
27	tee, pipe pltd 1	868430-040		1
28	nipple,pipe-hx pltd 1/4 x 1/4	868504-025		2
29	tee,37fl union 1/2	873308-008		1
30	elbow, pipe 90 deg 1/4" 3000# plt	877900-010		1
A1	Reference: Included with hose			
A2	To air signal from unit			
A3	To drain port on frame			
A4	To discharge air cooler drain port			
A5	Included with 842810-035			

(I) For maintenance on blowdown valve no. 02250069-820, order repair kit no. 02250077-469.

6.26 SHUTTERS ASSEMBLY, OPTIONAL



02250167-082R00



## 6.26 SHUTTERS ASSEMBLY, OPTIONAL (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	valve, pressure differential	02250115-269	(I)	1
2	hose,clr-wtr sep 4 x 123	02250163-009		1
3	hose,inlet vlv orifice-tee	02250163-452		1
4	solenoid,spiral vlv 24v nc 2way	02250166-921	(II)	1
5	support,shutter mtg 1600 t3 of	02250166-922		2
6	shutter, air cntrld 1600 t3 of	02250166-923		1
7	nut,hex f pltd 5/16-18	825305-283		6
8	nut,hex locking #10-24	825502-083		2
9	screw, hex ser washer 5/16-18 x 1 1/2	829705-150		6
10	screw, hex ser washer 3/8-16 x 1 1/2	829706-150		4
11	connector,37 fl/mpt pltd 1/4 x 1/8	860104-012		1
12	connector,37 fl/mpt pltd 1/4 x 1/4	860104-025		2
13	elbow, 37fl 90m 1/4 x 1/8	860204-012		1
14	nipple,pipe-hex 1/4 x 1/4	860404-025		1
15	screw, hex ser washer #10-24 x 1/2	884302-050		1

A1 Connected to minimum pressure check valve on separator tank

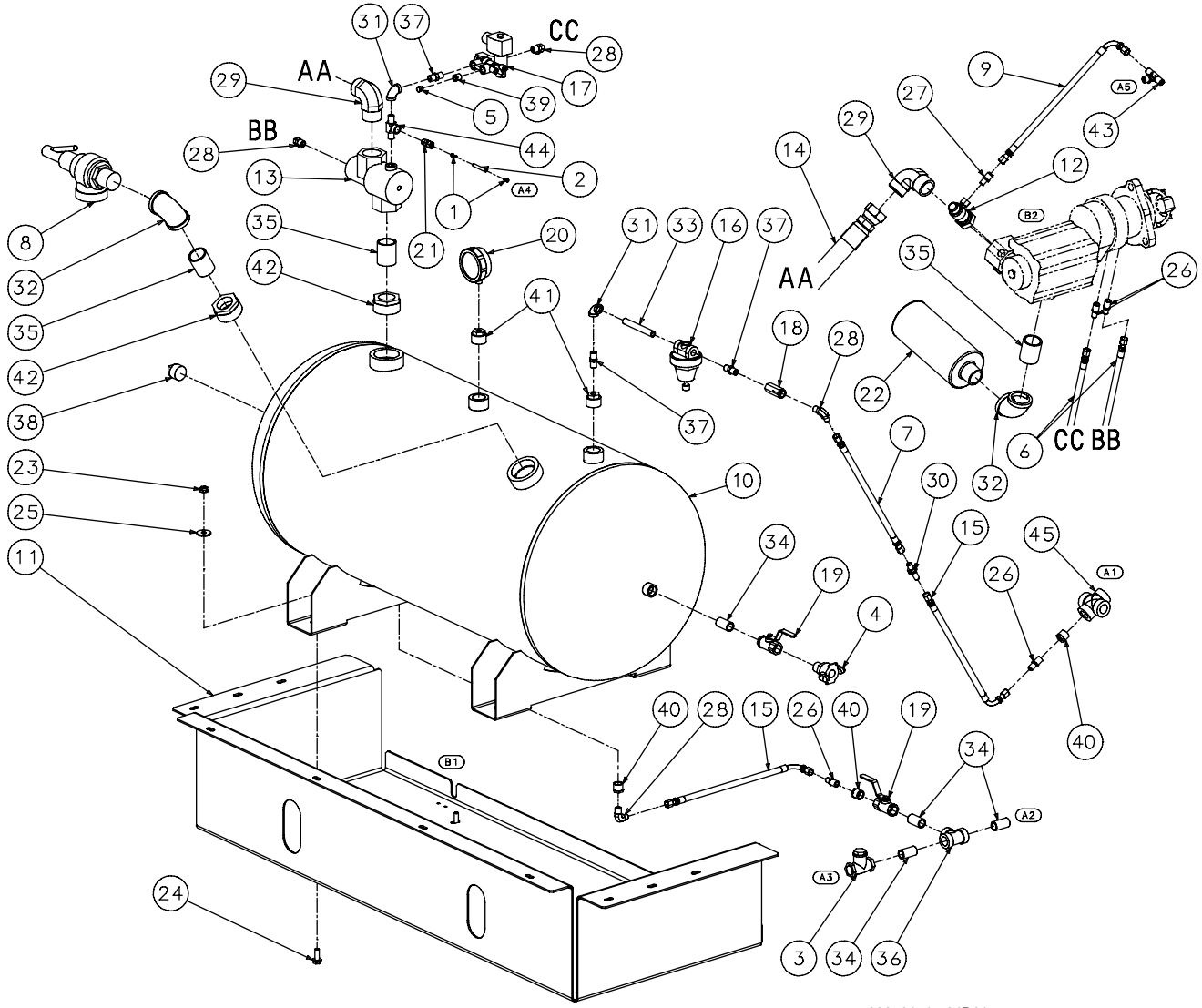
A2 Mounted to air filter support

A3 Set at 100 psi

(I) For maintenance on differential pressure valve no. 02250115-269, order repair kit no. 02250163-466.

(II) For maintenance on

6.27 AIR START TANK, OPTIONAL

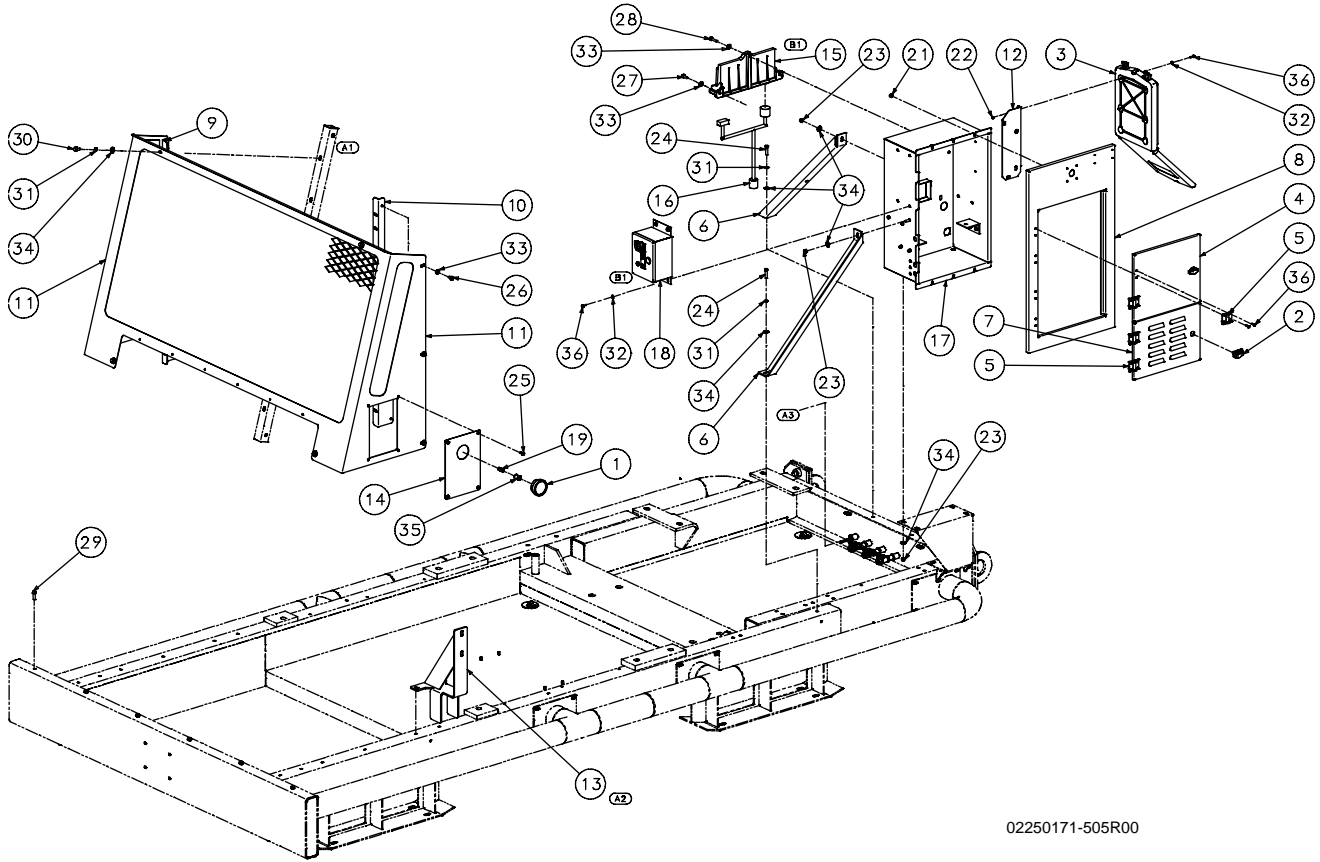


02250171-504R01

## 6.27 AIR START TANK, OPTIONAL (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	insert, nylon tubing 1/4"od	02250052-841		2
2	tube,nyl .25 od x .040w blk (ft)	02250054-861		5
3	valve, check fuel 1/2" npt	02250111-934		1
4	coupling, 1/2" male npt	02250126-794		1
5	hose, air jic 1/4" x 123"lg	02250163-009		2
6	valve, relief 1 1/4" x 1 1/2" 200psig ce	02250166-251		1
7	solenoid,valve 24v nc 2way	02250168-257		1
8	tank, air 20"dia 60gal 200psi	02250170-908		1
9	support, air tank 1600d o.f.	02250171-086		1
10	silencer, air 1-1/4"npt 1600d	02250171-501		1
11	lubrication system, one-shot 3/8"npt 1600d	02250171-502		1
12	valve, relay 1-1/4"npt 1600d	02250171-503		1
13	hose, air jic 1 1/4" x 100"lg	02250171-510		1
14	hose, air jic 1/4" x 175"lg	02250171-716		2
15	valve, pressure reg 600psi	02250171-724		1
16	valve, inline check(1/4"npt)dc	45244		1
17	valve,ball 1/2"npt	47117		2
18	gauge, ctl air press 0-200 psi	48448		1
19	conn, 1/4"tube x 1/4"npt	250018-428		1
20	nut,hex f pltd 3/8-16	825306-347		4
21	screw, hex ser washer 3/8-16 x 1	829706-100		4
22	washer, pl-b wide pltd 3/8	838306-112		4
23	connector,37 fl/mpt pltd 1/4 x 1/4	860104-025		6
24	elbow, 37fl 90m 1/4 x 1/4	860204-025		2
25	elbow, 37fl 90m 1 1/4 x 1 1/4	860220-125		2
26	elbow, pipe 90 deg plt 1/4"	866215-010		2
27	elbow, pipe 90 deg plt 1 1/4"	866215-050		2
28	nipple,pipe pltd 1/4 x 4	866304-040		1
29	nipple,pipe pltd 1/2 x 1 1/2	866308-015		4
30	nipple,pipe pltd 1 1/4 x 2	866320-020		3
31	tee, pipe 150# plt 1/2	866815-020		1
32	nipple,pipe-hx pltd 1/4 x 1/4	868504-025		3
33	plug, pipe 1" 150# plt	868815-040		1
34	bushing,red hex pltd 1/2 x 1/4	868902-010		3
35	bushing,red hex pltd 1 x 1/4	868904-010		2
36	bushing,red hex pltd 2 x 1 1/4	868908-050		2
37	tee,f branch npt 1/4 x 1/4	873104-004		1
38	cross, pipe 1/2" 3000# plt	877700-020		1
A1	Connect to rec. tank (replace tee)			
A2	Connect to frame drain			
A3	Connect to water trap			
A4	Connect to gauge on guard			
B1	Wire tie drain hose through these holes			
B2	Reference air starter on 02250171-085			

6.28 OPEN FRAME COMPONENTS WITH AIR START, OPTIONAL



02250171-505R00

## 6.28 OPEN FRAME COMPONENTS WITH AIR START, OPTIONAL (CONTINUED)

Key	Description	Part Number	Note	Quantity
1	gauge, press 2.5" cbm 300 psi	02250043-341		1
2	catch,pad-lockable	02250131-747		2
3	enclosure, manual-pak	02250157-353		1
4	door, canopy top inspnl 1600t3 sst	02250157-885		1
5	hinge,canopy door 16 in-lbs black	02250158-992		4
6	support,instrument panel 1600 t3 o.f.	02250160-630		2
7	door,ctrl lwr pnl bare 1600t3	02250162-227		1
8	panel, instrument ss 1600 t3 of	02250162-845		1
9	support, cooler guard ss	02250165-367		1
10	support, cooler guard cs	02250165-368		1
11	guard, cooler pack o.f. w/fuel tank	02250166-221		1
12	support>manual encl 1600 t3 of	02250166-304		1
13	support, pipe 3" ac out 1600d of	02250170-907		1
14	panel, gauge air tank	02250171-087		1
15	module, dc multiplexer	02250171-377		1
16	harness, dc multiplexer 1600d	02250171-378		1
17	enclosure,comp & manif 1600d spl	02250171-572		1
18	controller,air stop vlv opt	02250172-277		1
19	connector,1/4t x 1/4 npt str	250018-428		1
20	nut,hex f pltd 1/4-20	825304-236		6
21	nut,hex f pltd 5/16-18	825305-283		6
22	nut,hex locking #10-24	825502-083		2
23	nut,hex locking 3/8-16	825506-198		6
24	capscrew,hex gr5 3/8-16 x 1 1/2	829106-150		2
25	screw, hex ser washer 1/4-20 x 3/4	829704-075		4
26	screw, hex ser washer 5/16-18 x 3/4	829705-075		6
27	screw, hex ser washer 5/16-18 x 1	829705-100		2
28	screw, hex ser washer 5/16-18 x 1 1/2	829705-150		1
29	screw, hex ser washer 3/8-16 x 1 1/4	829706-125		6
30	screw, tc-hex 3/8-16 x 3/4	834206-075		4
31	washer, spr lock reg pltd 3/8	837806-094		6
32	washer, pl-b reg pltd #10	838202-045		8
33	washer, pl-b reg pltd 5/16	838205-071		9
34	washer, pl-b reg pltd 3/8	838206-071		12
35	coupling, pipe 1/4 150# plt	869015-010		1
36	screw, hex ser washer #10-24 x 3/4	884302-075		24
A1	Reference cooler assy support			
A2	Req'd for ac machines only			
A3	Air tank drain connection			
B1	Optional			

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 **WARNING**

**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 other reproductive harm.**

**Battery posts, terminals and related accessories contain lead and other compounds known to the State of California to cause cancer and birth defects and other reproductive harm. Wash hands after handling.**

02250118-633



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Specifications subject to change