SULLAIR

KEYSTONE DRILL SERVICES

Portable Air Compressor
KDS CONTROL RETROFIT
1150XH / 350 PSI
Caterpillar C15, 540 HP

WARRANTY NOTICE

Failure to follow the instructions and procedures in this manual or misuse of this equipment will void its warranty!

KEEP FOR FUTURE REFERENCE.

The information in this document is correct at the time of printing for portable compressor serial number.

201009170079

OPERATOR'S MANUAL AND PARTS LIST

DEAR OWNER/END-USER:

This manual contains important operation, maintenance, safety and parts information for Serial Number 201009170079 recently remanufactured by Keystone Drill Services. This information is necessary for the proper operation and maintenance of Unit Serial Number 201009170079.

THE MAINTENANCE AND OPERATION OF ANY COMPRESOR IS A COMPLICATED PROCESS. THE OPERATION OF SERIAL NUMBER 201009170079 MAY BE A DANGEROUS UNDERTAKING. IN ORDER FOR UNIT SERIAL NUMBER 201009170079 TO BE OPERATED SAFELY THE STANDARDS AND PROCEDURES INCLUDED IN THESE MANUALS MUST BE FOLLOWED PRECISELY. FAILURE TO PROPERLY OPERATE AND MAINTAIN UNIT SERIAL NUMBER 201009170079 MAY LEAD TO AN EXPLOSION THAT MAY RESULT IN SERIOUS BODILY HARM OR DEATH.

By accepting delivery and beginning operation of Unit Serial Number 201009170079, the owner/end-user hereby acknowledges that it now possesses the sole and absolute responsibility for the proper operation and maintenance of Serial Number 201009170079.

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Section 1

SAFETY

NOTE

OPERATOR IS REQUIRED TO READ ENTIRE INSTRUCTION MANUAL.

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 turning the battery disconnect switch to the off position 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.

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.

CAUTION
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.

1.2 TOWING (I)

Preparing To Tow

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

(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.

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 cannot 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 cannot 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.

0. 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.

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.

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.

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 cannot 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 screw jack 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 airline 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.

0. 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.

1.4 FIRE AND EXPLOSION

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.

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

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

C. Shut off 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 airline anti-icer systems antifreeze compound.

D. DO NOT permit liquids, including airline 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 airline 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.

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.

0. 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 airline 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.

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.

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

G. Turn the battery disconnect switch to the off position to prevent accidental engine operation prior to attempting repairs or adjustments. Tag the battery connection so others will not unexpectedly reconnect it.

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

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

1.6 HOT SURFACES, SHARP EDGES AND SHARP CORNERS

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

B. Keep all parts of the body away from all points of air discharge and away from hot exhaust gases.

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

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

1. 7 TOXIC AND IRRITATING SUBSTANCES

A. DO NOT use air from this compressor for respiration (breathing) except in full compliance with OSHA Standards 29 CFR 1920 and any other Federal, State or Local codes or regulations.

DANGER

INHALATION HAZARD!

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

B. DO NOT use airline 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 airline 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 airline 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 airline anti-icer system antifreeze compound in operator's cabs or in other similar confined areas.

L. The antifreeze compound used in airline 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 1 O 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.

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

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

F. DO NOT attempt to lift in high winds.

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

H. Lift compressor no higher than necessary.

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

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

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

1.10 ENTRAPMENT

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

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

1.11 JUMP STARTING

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

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

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

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

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

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

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

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

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

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

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

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

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

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

0. 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.

1.12 IMPLEMENTATION OF LOCKOUT/TAGOUT

The energy control procedure defines actions necessary to lockout 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 on any machine shall be locked out by each employee doing the work except when motion is necessary during setup, adjustment or troubleshooting.

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. Lockout 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. Lockout and/or Tagout 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.

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 ad lockout hasp on power shall remove padlock and lockout 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 lockout 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 by-passed, 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
	FUEL LEVEL
	INTERNAL FUEL
	EXTERNAL FUEL
	BATTERY
	BATTERY DISCONNECT
	SHUT-OFF VALVE WITH SAFTEY
	OPERATE WITH FAN GUARDS IN PLACE
	OPERATE WITH BELT GUARDS IN PLACE
	READ/WRITE DATA
	INTAKE AIR
	EXHAUST GAS
	SERVICE POINT

	ENGINE
	ENGINE COOLANT
	ENGINE COOLANT TEMPERATURE
	ENGINE ECM
	ENGINE INTAKE AIR FILTER
	ENGINE OIL
	ENGINE OIL PRESSURE
	ENGINE PREHEAT/LOW TEMPERATURE AID
	ENGINE RPM
	ENGINE START
	ENGINE WARNING
	ROTARY COMPRESSOR
	COMPRESSOR
	COMPRESSOR AIR PRESSURE
	COMPRESSOR TEMPERATURE
	INLET VALVE SPING OIL (AWF)
	ENGINE SHUTDOWN
	COMPRESSOR SHUTDOWN

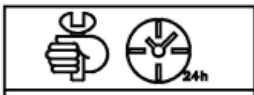
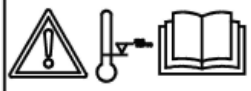
Safety Symbols-1

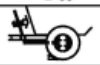
	READ MANUAL
	HOUR METER
	START
	ON
	OFF
	RESET
	NO
	EXAMINE, CHECK
	FORK LIFT HERE
	NO FORK LIFT
	FUSE
	CLOSED, MECHANICAL
	WATER
	OIL
	FUNCTIONAL ARROW
	FILTER
	RADIATOR
	STRAINER
	AFTERCOOLED AIR
	STANDARD AIR

	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

Safety Symbols-2

184 Alisa Street • Somerset Pa 15501 • Office 814-443-2670 • Fax 814-443-6974

	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 COMPRSSOR 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
	DO NOT MIX COOLANTS
	AFTERCOOLER BYPASS VALVE

	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

Safety Symbols-3

Section 2

DESCRIPTION

2.1 INTRODUCTION

Sullair Portable 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 49* 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

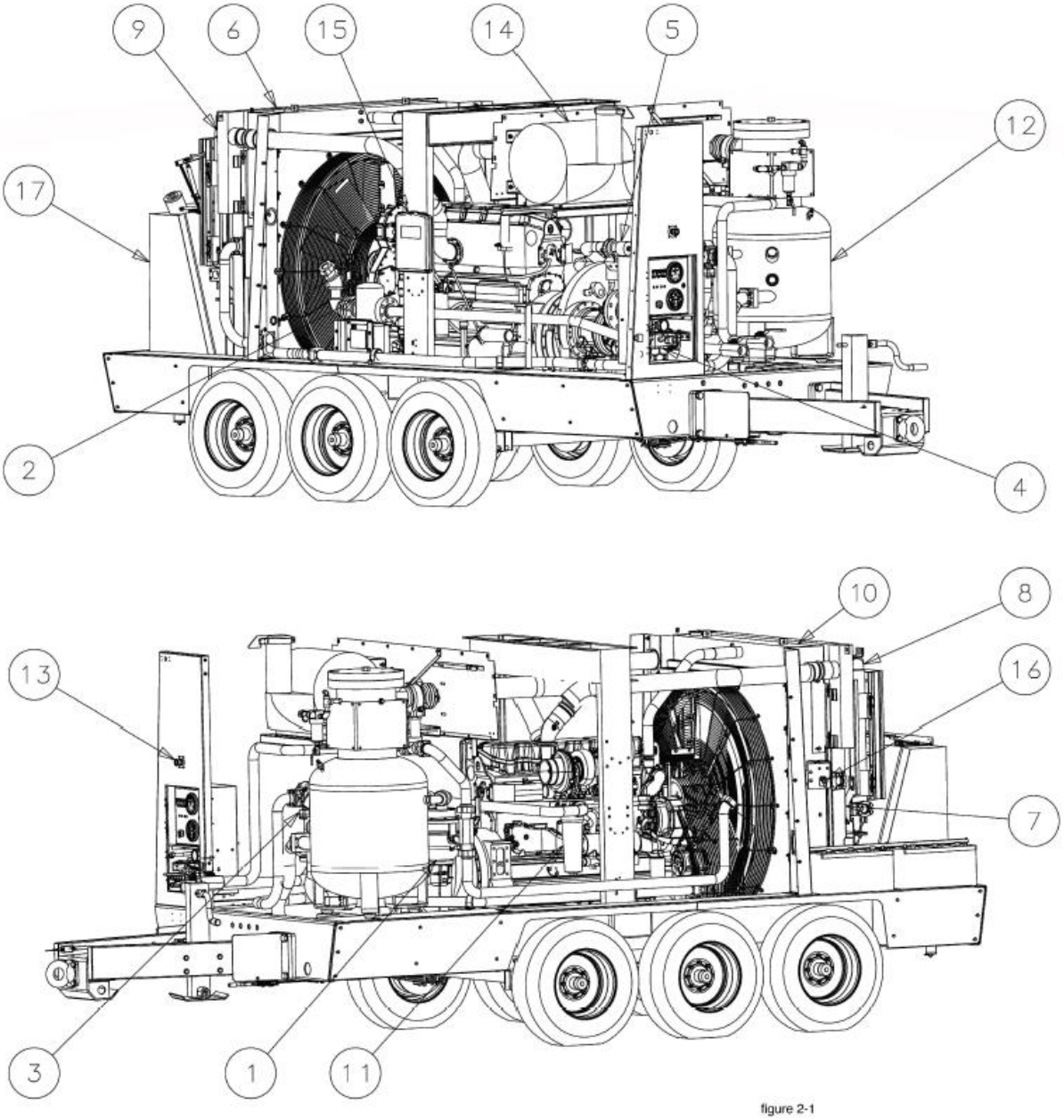
Refer to *Figure 2-1*. The components and assemblies of the Sullair Portable Air Compressor models are clearly shown. The package includes a compressor, diesel engine, compressor inlet system, compressor cooling and lubrication system, compressor discharge system, capacity control system, instrument panel and electrical system.

The machine is also supplied with sound deadening insulation to lower noise emissions to meet EPA and/or any Federal, State, or Local noise requirement. 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 thermostat. 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. Prior to 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. Prior to 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. The engine is coupled to the compressor unit with a non-lubricated, vulcanized rubber disk and a drive flange-type coupling.



1. Inlet Valve
2. Moisture Separator (if equipped) Fluid Filter
3. Thermal Valve
4. Regulator Valve
5. Fluid Stop Valve
6. Engine Coolant Fill
7. Fluid Cooler
8. After Cooler (if equipped)
9. Engine Charge Air Cooler
10. Engine Radiator
11. Compressor Fluid Filter
12. Receiver Tank
13. E-Stop
14. Engine Muffler
15. Manual Enclosure
16. Battery Disconnect Switch
17. Fuel Tank

Figure 2-1: Main Component Locations

2.3 SULLAIR COMPRESSOR UNIT, FUNCTIONAL DESCRIPTION

Sullair 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
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.

Sullair compressors are factory-filled with Sullair AWF lubricant. For more information on fluid fill, refer to *SPECIF/CATIONS on page 35.*

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 (if provided) then to your service line while the fluid is being cooled in preparation for reinjection.

2.4 COMPRESSOR COOLING AND LUBRICATION SYSTEM, FUNCTIONAL DESCRIPTION

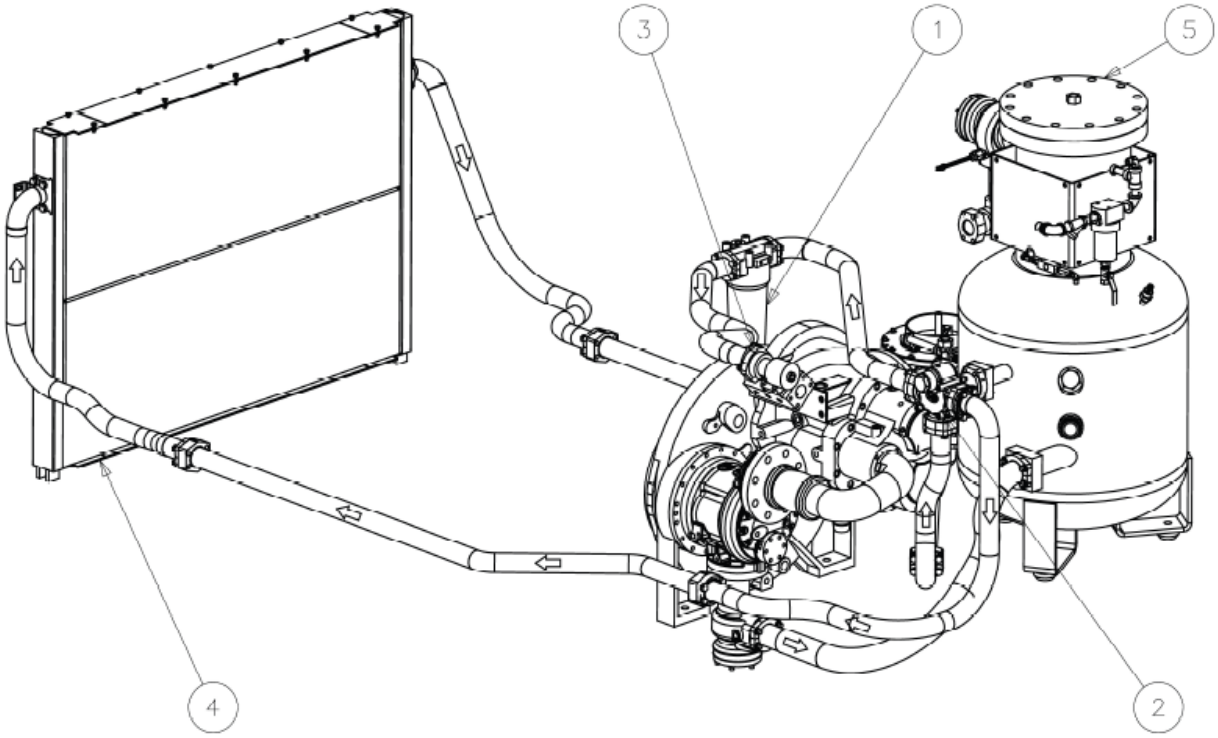
Refer to *Figure 2-2*. The compressor cooling and lubrication system is designed to provide adequate lubrication as well as maintain the proper operating temperature of the compressor. In addition to the cooler and fan, the system consists of a main filter and thermal valve.

Fluid is used in the system as a coolant and a lubricant. The fluid is housed in the receiver tank.

Upon start-up, the fluid temperature is cool, and routing to the cooler is not required. The fluid first enters the thermal valve and then flows on 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 150°F (66°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.



1. Compressor Fluid Filter
2. Thermal Valve
3. Stop Valve
4. Cooler
5. Receiver 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 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 receiver, 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.

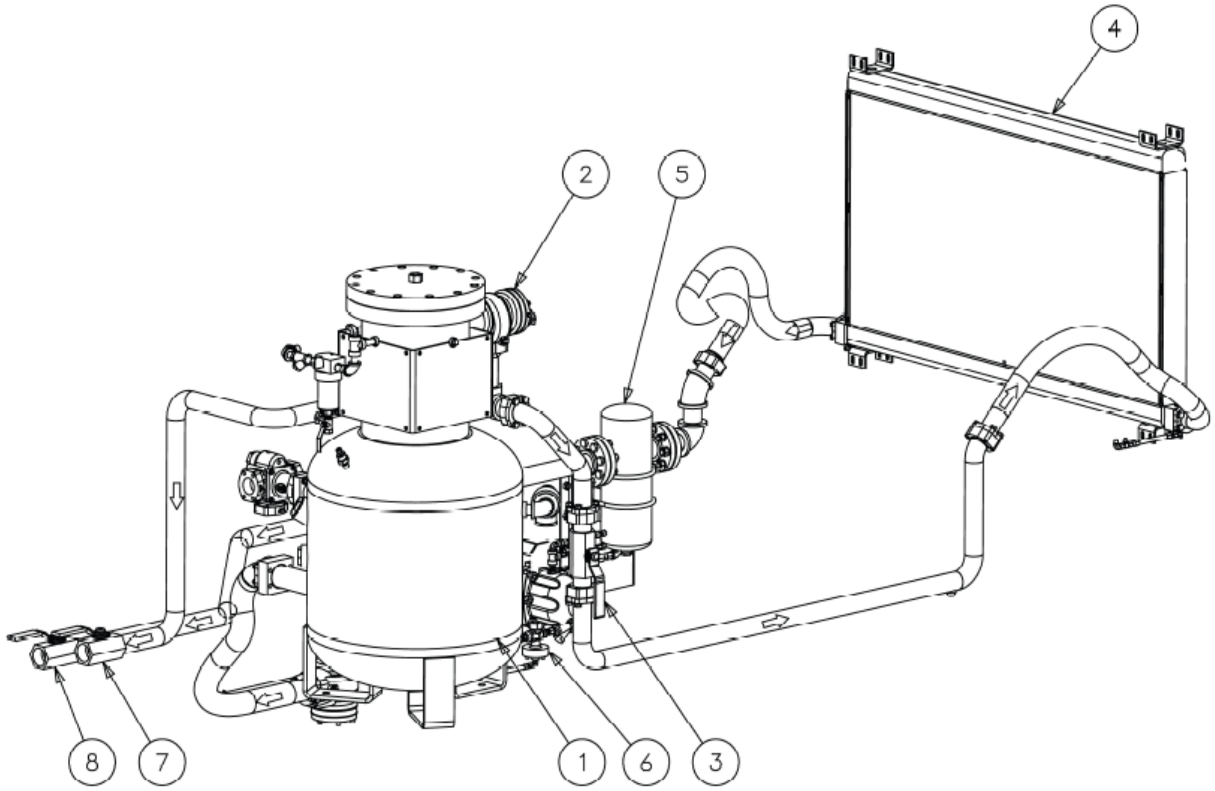
A minimum pressure/check valve is also used to prevent compressed air in the service line from bleeding back into the receiver on shutdown when the compressor is being run in parallel with other compressors tied to a large air system.

A pressure relief valve (located on the wet side of the separator) is set to open if the receiver tank pressure exceeds 425 psig (29.3 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 gauge glass enables the operator to visually monitor the receiver tank fluid level.

WARNING

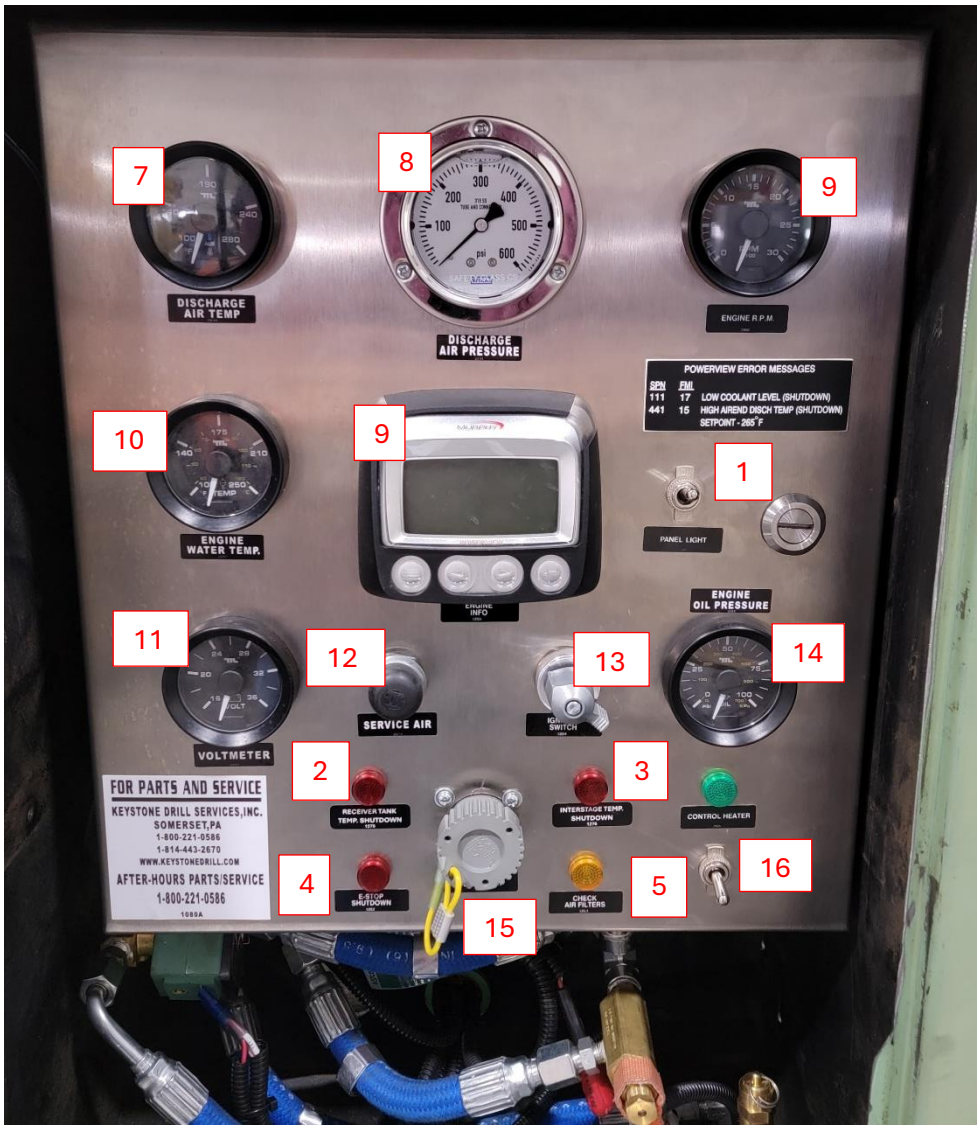
DO NOT remove caps, plugs, and/or other components when compressor is running or pressurized. Stop compressor and relieve all internal pressure before doing so.



1. Receiver Tank
2. Minimum Pressure/Check Valve
3. Aftercooled Air Valve
4. Aftercooler
5. Moisture Separator
6. Pneumatic Drain Valve
7. Standard Air Out
8. Aftercooled Air Out

Figure 2-3: Discharge System (shown with optional aftercooler)

2.6 CONTROL SYSTEM, FUNCTIONAL DESCRIPTION



Operating Controls and Instruments

The operating controls and instruments are arranged on the control panel as shown above. A description of each panel device is as follows:

1. **Panel Light:** Illuminates instrument and control panel.
2. **Receiver Tank Temp. Shutdown:** Fault indicator lamp. Indicates shutdown due to high air temperature in receiver tank.
3. **Interstage Temp. Shutdown:** Fault indicator lamp. Indicates shutdown due to high interstage air temperature.
4. **E-Stop:** Fault indicator lamp. Indicates shutdown due to E-Stop button activation.
5. **Restricted Air Filter:** Alarm indicator lamp. Indicates engine/compressor air inlet filters need service.
6. **Engine Info/Fuel Gauge:** Powerview gauge provides all pertinent engine info including Fuel Level.

2.6 CONTROL SYSTEM, FUNCTIONAL

Operating Controls and Instruments (continued)

7. **Discharge Air Temperature Gage:** Indicates discharge air temperature. Sensor located in discharge check valve.
8. **Discharge Air Pressure Gage:** Indicates pressure in receiver tank, normally from O psi(kPa) to the rated pressure of the machine.
9. **Engine Tachometer:** Indicates Engine speed in RPM from O when stopped to full speed.
10. **Engine Water Temp**
11. **Battery Voltage**
12. **Service Air Button:** Momentary contact button to operate compressor at rated discharge pressure.
13. **Ignition Switch:** 3 Position Switch. Off/On/Start. Switch locks after starter is engaged. Unlock by switching to "Off" position.
14. **Engine Oil Pressure**
15. **Diagnostic Connector:** Location to connect to Engine with CAT ET.
16. **Heaters:** ON/OFF Power Switch for regulation heaters. Prevents freeze up in cold weather.

2.6 CONTROL SYSTEM, FUNCTIONAL DESCRIPTION

Before Starting

Open manual blowdown valve to ensure the separator has been vented of all pressure. Valve is spring loaded and will close upon release.

Inspect the complete installation including remote fuel lines (if any) and air hose routing and connections.

Check battery for proper connections and condition.

WARNING

Combustible gas can cause severe burns, blindness or death. Keep sparks and open flame away from battery.

- Check the compressor fluid level. Maintain the fluid level between bottom and midway of the sight glass on the separator tank.
- Check engine oil level. The proper level is labeled on the engine dipstick. Add oil when required. Do not overfill.
- To jump-start, connect the positive booster/charger cable to the 24VDC positive(+) terminal of the battery. Then connect the negative booster/charger cable to the engine block ... Not to the negative (-) terminal of the weak battery. After starting, disconnect the negative(-) cable from engine block; then from the booster battery/ charger. Disconnect positive(+) cable from both batteries.

WARNING

Do not remove the cap from a HOT engine radiator. The sudden release of pressure from a heated cooling system can result in a loss of coolant and possible severe personal injury.

WARNING

Hot pressurized fluid can cause serious burns. Do not open radiator while hot.

Check coolant to assure coolant level is at minimum level when the unit is cold.

Check engine coolant level on coolant recovery bottle on inside of left rear door. Add coolant as required.

Insure that radiator cap is installed properly and tightened.

2.6 CONTROL SYSTEM, FUNCTIONAL DESCRIPTION

NOTE: This machine will not allow engine starting if engine coolant is low.

NOTICE

If the appropriate mixture of antifreeze is not used during freezing temperatures, failure to drain the engine may cause costly engine damage. Never use water only, as corrosion inhibitors are required in engine coolant fluid.

CAUTION

No smoking, sparks, or open flame near fuel.

Check the fuel level. Add only CLEAN DIESEL fuel for maximum service from the engine. Refer to the Engine Operator's Section for fuel specifications.

NOTICE

To minimize condensation (water in the fuel tank, it is recommended to fill the tank at the end of each day.

WARNING

This machine produces loud noise with doors open. Extended exposure to loud noise can cause hearing loss. Wear hearing protection when doors or valve(s) are open.

- Close the side doors to maintain a cooling air path and to avoid recirculation of hot air. This will maximize the life of the engine and compressor and protect the hearing of surrounding personnel.
- Make sure no one is IN or ON the compressor unit.

2.6 CONTROL SYSTEM, FUNCTIONAL DESCRIPTION

STARTING

NOTICE

This unit is equipped with a battery disconnect switch which removes power from the machine controller for long term storage. The switch is located inside the rear right door.

This switch must be turned ON to provide power to the control panel for starting this unit.

Close the air service valve to isolate the compressor from the compressed air tool until the engine is warmed up.

1. Turn the key switch to the "ON" position (first position). A 30 second timer activates the starting compressor to close the butterfly air inlet valve.

2. In freezing weather (below 32°F/0°C), flip HEATERS switch "ON" and wait sixty (60 seconds). The key switch will need to be turned to the "OFF" position before starting to reactivate the starter compressor. Leave heaters on during operation.

3. When the key switch is turned to "START' the engine starter will be engaged.

Do not operate the engine starter motor for more than ten (10) seconds without allowing at least one minute cooling time between start attempts.

Extended engine starter engagement will result in starter drop-out and generate a starter engagement time fault.

4. Following a successful start, the engine will accelerate to 1400 rpm initially, for warm-up. Compressor discharge pressure will be maintained from 50 to 85 psi during warm-up.

5. Press the LOAD button . The engine will increase speed up to 1800 rpm until the pressure reaches the desired set point.

2.6 CONTROL SYSTEM, FUNCTIONAL DESCRIPTION

NORMAL OPERATION

The Operator may observe and monitor operating parameters using the gages on the panel. In the event the machine controller detects a parameter outside normal operating limits, the unit will shut down.

In the event the machine controller detects a parameter at a dangerously high or low level, the machine will automatically be stopped with the cause of the SHUTDOWN shown on the diagnostic lights and display.

Delivered air volume at set point pressure is accomplished by two methods:

1. The compressor is loaded (inlet valve fully open or modulated partially open) or unloaded (inlet valve fully closed).

2. Engine speed varies between 1400 RPM and 1800 RPM while compressor is loaded to match the required volume flow.

Operation – Loaded

Assume engine has been started and is running in the unload state at 1400 RPM. If there is air demand (pressure falls below the load point pressure), compressor will load by opening the inlet butterfly valve. As air demand rises and falls, engine speed is controlled between 1400 RPM and 1800 RPM to match the required flow while maintaining rated pressure.

Operation - Unloaded

If there is no air demand (pressure rises above the unload point pressure), the compressor will unload by closing the inlet butterfly valve. The unit then runs at 1400 RPM unloaded with no air delivery. If air demand increases (pressure falls below the load point pressure), the compressor reloads to meet the required air demand.

Stopping

- Close air service valve(s).
- Allow the unit to run at "IDLE" for 3 to 5 minutes to reduce the engine temperatures.
- Turn the key switch to the "OFF" position.

NOTICE

Failure to allow turbo cool down prior to stopping can cause turbocharger damage.

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/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. 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 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 Powerview PV101 indicates a performance problem has occurred whenever the Engine Warning Lamp is lit. The diagnostic code may indicate the cause of the problem and should be corrected.

If the Powerview 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.

Refer to Table 2-1 for possible performance of active diagnostic codes.

MURPHY

PowerView 101 Error Messages

Updated 7 months ago

Note: This list represents text descriptions for faults supported by the PowerView 101 and does not necessarily comply with SAE J1939. For a specific engine manufacturer's explanation for codes, please consult the engine's technical manual.

Diagnostic Trouble Codes Text Translations provided by:

- PowerView Model PV101 software version Murphy 1.00.06
- PowerView Model PV100 software version Murphy 2.09

SPN	FMI	Description
28	3	% ACCEL POS3 VOLT ABOVE NORM OR SHORT HIGH
28	4	% ACCEL POS3 VOLT BELOW NORM OR SHORT LOW
29	3	% ACCEL POS2 VOLT ABOVE NORM OR SHORT HIGH
29	4	% ACCEL POS2 VOLT BELOW NORM OR SHORT LOW
84	8	TACHOMETER SIGNAL FAILED, VELOCITY SIGNAL DEFECTIVE
91	2	SPEED SET POINT1 (ACCELERATOR PEDAL DEFECTIVE)
91	3	ACCEL PEDAL POS VOLT ABOVE NORM OR SHORT HIGH
91	4	ACCEL PEDAL POS VOLT BELOW NORMAL OR SHORT LOW
91	9	ACCEL PEDAL POS A VALID THROTTLE MSG NOT RCVD
91	11	ERROR HARD SET POINT 1
91	14	ACCEL PEDAL POS THROTTLE SIG VOLT OUT OF RANGE
94	1	FUEL DELIVERY PRESSURE VERY LOW
94	3	FUEL RAIL PRESSURE VOLTAGE OUT OF RANGE HIGH
94	4	FUEL RAIL PRESSURE VOLTAGE OUT OF RANGE LOW
94	10	FUEL DELIVERY PRESSURE DROPPING TOO FAST
94	13	FUEL DELIVERY PRESSURE OUT OF CALIBRATION
94	16	FUEL DELIVERY PRESSURE HIGH
94	17	NO RAIL FUEL PRESSURE
94	18	FUEL DELIVERY PRESSURE LOW
97	0	WATER IN FUEL DETECTED
97	3	WATER IN FUEL INDICATOR VOLTAGE OUT OF RANGE HIGH
97	4	WATER IN FUEL INDICATOR VOLTAGE OUT OF RANGE LOW
97	16	WATER IN FUEL DETECTED
97	31	WATER IN FUEL DETECTED
98	1	OIL LEVEL SWITCH OFF
100	1	ENGINE OIL PRESSURE LOW
100	2	OIL PRESSURE SENSOR DEFECTIVE
100	3	ENGINE OIL PRESS VOLT ABOVE NORM OR SHORT HIGH SOURCE
100	4	ENGINE OIL PRESS VOLT BELOW NORM OR SHORT LOW SOURCE
100	16	ENGINE OIL PRESSURE READING INCORRECT
100	18	ENGINE OIL PRESS LOW
102	2	CHARGE AIR PRESSURE SENSOR DEFECTIVE
105	0	INTAKE MAN1 AIR TEMP HIGH
105	2	CHARGE AIR TEMPERATURE SENSOR DEFECTIVE
105	3	INTAKE MAN1 TEMP VOLT ABOVE NORM OR SHORT HIGH SOURCE
105	4	INTAKE MAN1 TEMP VOLT BELOW NORM OR SHORT LOW SOURCE
105	16	INTAKE MAN1 AIR TEMP HIGH
107	0	AIR FILT DIFF PRESS PLUGGED AIR FILTER DETECTED
107	31	AIR FILT DIFF PRESS PLUGGED AIR FILTER DETECTED
108	12	ATMOSPHERIC PRESSURE
110	0	ENG COOL TEMP HIGH
110	2	COOLANT TEMPERATURE SENSOR DEFECTIVE
110	3	ENG COOL TEMP VOLT ABOVE NORM OR SHORT HIGH SOURCE
110	4	ENG COOL TEMP VOLT BELOW NORM OR SHORT LOW SOURCE
110	15	ENG COOL TEMP HIGH
110	16	ENG COOL TEMP HIGH
111	1	LOW COOLANT LEVEL
120	15	RETARDER OIL TEMPERATURE ABOVE NORMAL
158	2	KEYSWITCH INTERMITTENT
158	17	KEYSWITCH CIRCUIT PROBLEM
171	12	INTERNAL TEMPERATURE
174	0	FUEL TEMP HIGH
174	2	FUEL TEMPERATURE SENSOR DEFECTIVE
174	3	FUEL TEMP VOLT ABOVE NORM OR SHORT HIGH SOURCE
174	4	FUEL TEMP VOLT BELOW NORM OR SHORT LOW SOURCE
174	15	FUEL TEMP HIGH
174	16	FUEL TEMP HIGH
174	31	FUEL TEMP VOLT OUT OF RANGE
177	15	TRANSMISSION OIL TEMPERATURE ABOVE NORMAL
189	31	ENG SPEED DERATE CONDITION EXISTS DUE TO FAULT
190	0	ENGINE OVERSPEED

SPN	FMI	Description
190	2	ENG SPD DATA ERRATIC, INTERMITTENT OR INCORRECT
190	3	ENG SPD VOLT ABOVE NORMAL OR SHORT HIGH
190	4	ENG SPD VOLT BELOW NORMAL OR SHORT LOW
190	5	ENG SPD CIRCUIT IS OPEN
190	8	ENGINE SPEED SENSOR DEFECTIVE
190	16	ENGINE OVERSPEED
201	2	SPEED SET POINT 2 (HAND THROTTLE DEFECTIVE)
441	0	AUXILIARY TEMPERATURE #1 HIGH (MOST SEVERE)
535	7	CONTROL TRAVEL DIFFERENCE
535	13	AUTO CALIBRATION BOSCH-EDC-PUMP UNSUCCESSFUL
536	12	FEEDBACK RACK POSITION
536	13	REFERENCE FEEDBACK RACK POSITION
563	2	DIGITAL OUTPUT 3 SUPERVISION (STOP SOLENOID)
563	6	EXCESS CURRENT DIGITAL OUTPUT 3 (STOP SOLENOID)
572	2	DIGITAL OUTPUT 6 SUPERVISION
611	3	INJ WIRING SHORTED TO BATTERY
611	4	INJ WIRING SHORTED TO GROUND
620	3	SENSOR VOLT1 (+5VDC)ABOVE NORMAL OR SHORT HIGH
620	4	SENSOR VOLT1 (+5VDC)BELOW NORMAL OR SHORT LOW
627	1	POWER SUPPLY LOW VOLT TO INJECTORS
627	4	POWER SUPPLY INTERRUPTION
629	13	REPROGRAM CONTROLLER ECU PROBLEM
629	19	ECU NOT RECEIVING MSG FROM PUMP
632	2	FUEL SHUTOFF VALVE ERR DETECTED
632	5	FUEL SHUTOFF VALVE NON-FUNCTIONAL
632	11	FUEL SHUTOFF VALVE SOLENOID CKT OPEN OR SHORTED
636	2	ENG POS SENSOR TIMING SIGNAL ERROR
636	8	ENG POS SENSOR TIMING SIGNAL ERROR
636	10	ENG POS SENSOR TIMING SIGNAL ERROR
637	2	TIMING (CRANK) SENSOR TIMING SIGNAL ERROR
637	7	TIMING (CRANK) SENSOR TIMING SIGNAL ERROR
637	8	TIMING (CRANK) SENSOR TIMING SIGNAL ERROR
637	10	TIMING (CRANK) SENSOR TIMING SIGNAL ERROR
639	13	CAN BUS FAILURE
651	5	INJ CYLINDER1 CURRENT LESS THAN EXPECTED
651	6	INJ CYLINDER1 CURRENT INCREASES TOO RAPIDLY
651	7	INJ CYLINDER1 FUEL FLOW LOWER THAN EXPECTED
652	5	INJ CYLINDER2 CURRENT LESS THAN EXPECTED
652	6	INJ CYLINDER2 CURRENT INCREASES TOO RAPIDLY
652	7	INJ CYLINDER2 FUEL FLOW LOWER THAN EXPECTED
653	5	INJ CYLINDER3 CURRENT LESS THAN EXPECTED
653	6	INJ CYLINDER3 CURRENT INCREASES TOO RAPIDLY
653	7	INJ CYLINDER3 FUEL FLOW LOWER THAN EXPECTED
654	5	INJ CYLINDER4 CURRENT LESS THAN EXPECTED
654	6	INJ CYLINDER4 CURRENT INCREASES TOO RAPIDLY
654	7	INJ CYLINDER4 FUEL FLOW LOWER THAN EXPECTED
655	5	INJ CYLINDER5 CURRENT LESS THAN EXPECTED
655	6	INJ CYLINDER5 CURRENT INCREASES TOO RAPIDLY
655	7	INJ CYLINDER5 FUEL FLOW LOWER THAN EXPECTED
656	5	INJ CYLINDER6 CURRENT LESS THAN EXPECTED
656	6	INJ CYLINDER6 CURRENT INCREASES TOO RAPIDLY
656	7	INJ CYLINDER6 FUEL FLOW LOWER THAN EXPECTED
676	3	GLOW PLUG RELAY STUCK ON
676	5	GLOW PLUG RELAY WILL NOT TURN ON
702	14	SPEED (THRUST MODE) WARNING
729	3	INLET AIR HEATER DRIVER1 STUCK ON
729	5	INLET AIR HEATER DRIVER1 WILL NOT TURN ON
743	9	CAN COMMUNICATION SAE J1939, RECEIVE MESSAGES MISSING
743	12	CAN CONTROLLER, BUS OFF
743	14	LINE BREAK, SHORT OR HEAVY BUS LOAD (CAN BUS PASSIVE)
752	2	STACK-OVERFLOW
752	12	CYCLIC FLASH TEST
765	2	PARAMETER ERROR (EEPROM CHECKSUM INCORRECT)
765	12	PARAMETER PROGRAMMING (EEPROM WRITING ERROR)
766	2	INTERNAL ERROR
833	2	RACK POSITION SENSOR ERROR
833	3	RACK POSITION SENSOR VOLT ABOVE NORMAL
833	4	RACK POSITION SENSOR VOLT BELOW NORMAL
834	2	RACK ACTUATOR ERROR BLEED AIR IN FUEL SYSTEM
834	3	RACK ACTUATOR CKT VOLT ABOVE NORMAL
834	5	RACK ACTUATOR CKT OPEN
834	6	RACK ACTUATOR CKT GROUNDED
834	7	RACK ACTUATOR POSITION ERROR
898	2	ERROR CAN SET POINT 1

SPN	FMI	Description
970	2	EXT AUX ENG SHUTDOWN SWITCH INTERMITTENT
970	11	EXT ENG PROTECTION SHUTDOWN ACTIVE
970	31	EXT AUX ENG SHUTDOWN SWITCH ACTIVE
971	31	ENG DERATE SWITCH ACTIVATED
1041	2	START SIGNAL MISSING
1041	3	START SIGNAL ALWAYS ACTIVE
1076	0	FUEL INJ PUMP CONT VALVE ERROR
1076	1	FUEL INJ PUMP CONT VALVE ERROR
1076	2	FUEL INJ PUMP CONT VALVE ERROR
1076	3	FUEL INJ PUMP CONT VALVE ERROR
1076	5	FUEL INJ PUMP CONT VALVE ERROR
1076	6	FUEL INJ PUMP CONT VALVE ERROR
1076	7	FUEL INJ PUMP CONT VALVE ERROR
1076	10	FUEL INJ PUMP CONT VALVE ERROR
1076	13	FUEL INJ PUMP CONT VALVE ERROR
1077	7	FUEL INJ PUMP ERROR
1077	11	FUEL INJ PUMP CONT VP44 INPUT VOLT OUT OF RANGE
1077	12	FUEL INJ PUMP CONT VP44 SELF TEST ERROR
1077	19	FUEL INJ PUMP CONT VP44 DETECTED CAN BUS FAILURE
1077	31	FUEL INJ PUMP CONT POWER DERATED
1078	7	FUEL INJ PUMP SPD/POS SENSOR ERROR
1078	11	FUEL INJ PUMP SPD/POS SENSOR ERROR
1078	31	FUEL INJ PUMP SPD/POS VP44 UNABLE TO ACHIEVE TIMING
1079	3	SENSOR VOLT1 (+5VDC)ABOVE NORM OR SHORT HIGH
1079	4	SENSOR VOLT1 (+5VDC)BELOW NORM OR SHORT LOW
1080	3	SENSOR VOLT2 (+5VDC)ABOVE NORM OR SHORT HIGH
1080	4	SENSOR VOLT2 (+5VDC)BELOW NORM OR SHORT LOW
1109	31	ENG PROT SYSTEM APPROACHING SHUTDOWN
1110	31	ENG PROT SYSTEM SHUT ENG DOWN
1347	5	FUEL PUMP ASSY 1 CKT OPEN, SHORTED GROUND OR OVLOAD
1347	7	FUEL PUMP ASSY 1 RAIL PRESSURE CONT MISMATCH
1347	10	FUEL PUMP ASSY 1 LOW FUEL FLOW
1348	5	FUEL PUMP ASSY 2 CKT OPEN, SHORTED GROUND OR OVLOAD
1348	10	FUEL PUMP ASSY 2 LOW FUEL FLOW
1387	1	AUXILIARY PRESSURE #1 LOW (MOST SEVERE)
1485	2	ECU MAIN RELAY PUMP POWER RELAY FAULT
1569	31	ENG PROT TORQ FUEL DERATE LIMIT CONDITION EXIST
2000	6	FUEL INJECTION PUMP CONT VALVE ERROR
2000	13	SECURITY VIOLATION PROPER CONT NOT INSTALLED
2003	31	GENERAL TRANSMISSION FAULT UNKNOWN

2.10 ELECTRICAL SYSTEM FUNCTIONAL DESCRIPTION

Refer to KDE00057. 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 300°F [149°C], an interstage compressor temperature switch set for shutdown above. 280°F [138°C], a low coolant shutdown switch and low fuel alarm below 20%. The engine coolant level detector is located in the top tank on the 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 locking ignition which prevents accidental starter engagement after cranking. There is also a start prevention pressure switch.

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ELECTRICAL SCHEMATIC LEGEND

ITEM	QTY.	MATERIAL NUMBER	DESCRIPTION
1	1	616054	GAUGE, POWERVIEW, PV101–C, CONFIGURABLE
2	1	612725	GAUGE, PVA20, VOLTMETER, 24VDC
3	1	616053	GAUGE, PVA20, AUX TEMP, 280°F
4	1	616052	GAUGE, PVA20, COOLANT TEMP, 250°F
5	1	616051	GAUGE, PVA20, ENGINE OIL PRESS, 100 PSI
6	1	626183	GAUGE, PVA20, TACHOMETER, 3000 RPM
7	1 6 3 1	607456 607531 607510 606937	RECEPTACLE, 9–CAVITY PIN, #16 X 20–16 AWG, GOLD SEALING PLUG, WHITE, #16–12 CONTACT DUST CAP, SHELL SIZE 9
8	2 2	606065 605640	SWITCH, TOGGLE, SPST FACE PLATE, ON/OFF, TOGGLE SWITCH
9	1	607382	PILOT LIGHT, GREEN, 24V
10	1	607385	PILOT LIGHT, YELLOW, 24V
11	3	607383	PILOT LIGHT, RED, 24V
12	1	607418	PLUG, TERMINATION RESISTOR
13	1 1 4 2	607416 607747 607541 607510	PLUG, DT, 6–WAY, SOCKET WEDGELOCK, 6–CAVITY PLUG SOCKET, #16 X 20–16 AWG, GOLD SEALING PLUG, WHITE, #16–12 CONTACT
14	1 1 5 1	607416 607747 607541 607510	PLUG, DT, 6–WAY, SOCKET WEDGELOCK, 6–CAVITY PLUG SOCKET, #16 X 20–16 AWG, GOLD SEALING PLUG, WHITE, #16–12 CONTACT
15	1	626264	SWITCH, IGNITION, 3–POSITION, ANTI–RESTART
16	1	604009	PUSH BUTTON, SPST, MOMENTARY ON
17	1 1	626139 626134	FUSE TERMINAL BLOCK, DIN MOUNT, LED CIRCUIT BREAKER, SLOW–BLOW, 40A, PUSH TO RESET
18	1 1	626139 626133	FUSE TERMINAL BLOCK, DIN MOUNT, LED CIRCUIT BREAKER, SLOW–BLOW, 25A, PUSH TO RESET
19	1 1	626139 626132	FUSE TERMINAL BLOCK, DIN MOUNT, LED CIRCUIT BREAKER, SLOW–BLOW, 20A, PUSH RESET
20	3 3	626139 626135	FUSE TERMINAL BLOCK, DIN MOUNT, LED CIRCUIT BREAKER, SLOW–BLOW, 5A, PUSH TO RESET
21	2 2	626140 626268	FUSE TERMINAL BLOCK, DIN MOUNT, LED, F–TYPE FUSE, AUTO, 2A, 32VDC, BLADE, MINI
22	8 4	626138 626127	TERMINAL BLOCK, 2 CONNECTIONS, 41A BRIDGE, DISTRIBUTION BLOCK, 2 POSITIONS
23	6 2	626138 626129	TERMINAL BLOCK, 2 CONNECTIONS, 41A BRIDGE, DISTRIBUTION BLOCK, 3 POSITIONS
24	4 1	626138 626130	TERMINAL BLOCK, 2 CONNECTIONS, 41A BRIDGE, DISTRIBUTION BLOCK, 4 POSITIONS
25	5 1	626138 626131	TERMINAL BLOCK, 2 CONNECTIONS, 41A BRIDGE, DISTRIBUTION BLOCK, 5 POSITIONS
26	20 1	626138 626128	TERMINAL BLOCK, 2 CONNECTIONS, 41A BRIDGE, DISTRIBUTION BLOCK, 20 POSITIONS
27	1	616048	CONVERTER, 0–5V / 5–90 PWM, PROGRAMMABLE

REVISION

REV	DESCRIPTION	BY	DATE
00	RELEASED FOR PRODUCTION	C.E.F.	01/20/2025

ITEM	QTY.	MATERIAL NUMBER	DESCRIPTION
28	4 1	626394 626141	RELAY, DPDT W/ DIODE, 24V, DIN RAIL END CLAMP, NS 35 DIN RAIL
29	1 1 2	626270 626269 619231	SOCKET, RELAY, DIN RAIL, MK2KP RELAY, DPDT, LATCHING, 24VDC, 5A HOLD DOWN, RELAY, MKS2
30	1	619546	RELAY, DPDT, TIME DELAY, 24VDC SETTINGS: TIME – 30 SECONDS DIAL #1 – 1 MIN DIAL #2 – 0.5 MIN FUNCTION – E
31	2 1	607460 626141	RELAY, SPST, 24V END CLAMP, NS 35 DIN RAIL
32	1 1 6 6	607401 607735 607544 607512	PLUG, DTM, 12–WAY, A KEY WEDGELOCK, 12–CAVITY PLUG SOCKET, #20 X 20 AWG, NICKEL SEALING PLUG, RED, SIZE 20 CONTACT
33	1 1 2 14 1	626200 607546 607538 607541 607510	RECEPT, HDP20, 18–WAY, SOCKET (HDP24–24–18SN) SOCKET, #8 X 10–8 AWG, NICKEL SOCKET, #12 X 14–12 AWG, NICKEL SOCKET, #16 X 20–16 AWG, GOLD SEALING PLUG, WHITE, #16–12 CONTACT
34	1 1 3 14	607443 607536 607529 607531	RECEPT, HDP20, 18–WAY, PIN (HDP24–24–18PN) PIN, #8 X 10–8 AWG, NICKEL PIN, #12 X 14–12 AWG, NICKEL PIN, #16 X 20–16 AWG, GOLD
35	1	606067	SWITCH, START PROTECTION
36	1	608885	RESISTOR, 120 OHM, 1/2 WATT

AS BUILT
DATE 1/20/2025
BY C.E.F.
UNIT COASTAL EAST #24–0427

KEYSTONE DRILL SERVICES
SOMERSET, PA 15501

WIRING SCHEMATIC, SULLAIR REBUILD

DRAWN: J.L.C	SCALE: NONE	REV NO. 00	DWG. NO. KDE00062
CHECKED: C.E.F.	DATE: 01/20/2025	SHEET 1 of 5	

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ELECTRICAL SCHEMATIC LEGEND

ITEM	QTY.	MATERIAL NUMBER	DESCRIPTION
37	1 22 48 1	608883 607541 607510 608379	PLUG, 70-CAVITY SOCKET, #16 X 20-16 AWG, GOLD SEALING PLUG, WHITE, #16-12 CONTACT COVER, ENDBELL-CONNECTOR
38	1 1 2 1	607412 607743 607541 607510	PLUG, DT, 3-CAVITY WEDGELOCK, 3-CAVITY PLUG SAE J1939 SOCKET, #16 X 20-16 AWG, GOLD SEALING PLUG, WHITE, #16-12 CONTACT
39	1	608380	TERMINATION RESISTOR
40	1 1 2 14 1	626201 607536 607529 607531 607510	PLUG, 18-WAY, PIN (HPD26-24-18PN) PIN, #8 X 10-8 AWG, NICKEL PIN, #12 X 14-12 AWG, NICKEL PIN, #16 X 20-16 AWG, GOLD SEALING PLUG, WHITE, #16-12 CONTACT
41	1 1 3 14	607405 607546 607538 607541	PLUG, 18-WAY, SOCKET (HPD26-24-18SN) SOCKET, #8 X 10-8 AWG, NICKEL SOCKET, #12 X 14-12 AWG, NICKEL SOCKET, #16 X 20-16 AWG, GOLD
42	1 11 8	626202 607531 607510	RECEPT, HDP20, 19-WAY, PIN PIN, #16 X 20-16 AWG, GOLD SEALING PLUG, WHITE, #16-12 CONTACT
43	1 11 8	626203 607541 607510	PLUG, 19-WAY, SOCKET SOCKET, #16 X 20-16 AWG, GOLD SEALING PLUG, WHITE, #16-12 CONTACT
44	2 2 2 2 2 2 8 2 8 2	626281 626280 631661 626282 626283 626287 626286 626285 626238 626284	CONNECTOR, 6-CONTACT, FEMALE, METRI-PACK LOCK, CONNECTOR, 6-CONTACT, METRI-PACK, TPA LOCK, CONNECTOR, 6-CONTACT, METRI-PACK, CPA BRIDGE, SPLICE PACK, 6 POSITIONS CAP, SPLICE PACK TERMINAL, 14-12 GAUGE, FEMALE, 280 SERIES TERMINAL, 20-16 GAUGE, FEMALE, 280 SERIES CABLE SEAL, 14 GAUGE, METRI-PACK, GRY CABLE SEAL, 20-16 GAUGE, WEATHER PACK, GRN SEALING PLUG, GREEN CABLE CAVITY, APTIV
45	1	607309	SENSOR, COOLANT LEVEL, 12/24V
46	1 1 3	607412 607742 607541	PLUG, DT, 3-WAY WEDGELOCK, 3-CAVITY PLUG SOCKET, #16 X 20-16 AWG, GOLD
47	1 1	606049 619566	SWITCH, MASTER, 2000A LOCKOUT LEVER KIT
48	1	616218	SENSOR, TEMP, AUXILIARY
49	1 1 3	607408 607736 607541	PLUG, DT, 2-WAY WEDGELOCK, 2-CAVITY PLUG SOCKET, #16 X 20-16 AWG, GOLD
50	1 2	607439 606762	PUSH BUTTON, EMERGENCY STOP, 12/24V CONTACT BLOCK, EMERGENCY STOP, 12/24V
51	1	604673	CABLE, STRAP GROUND

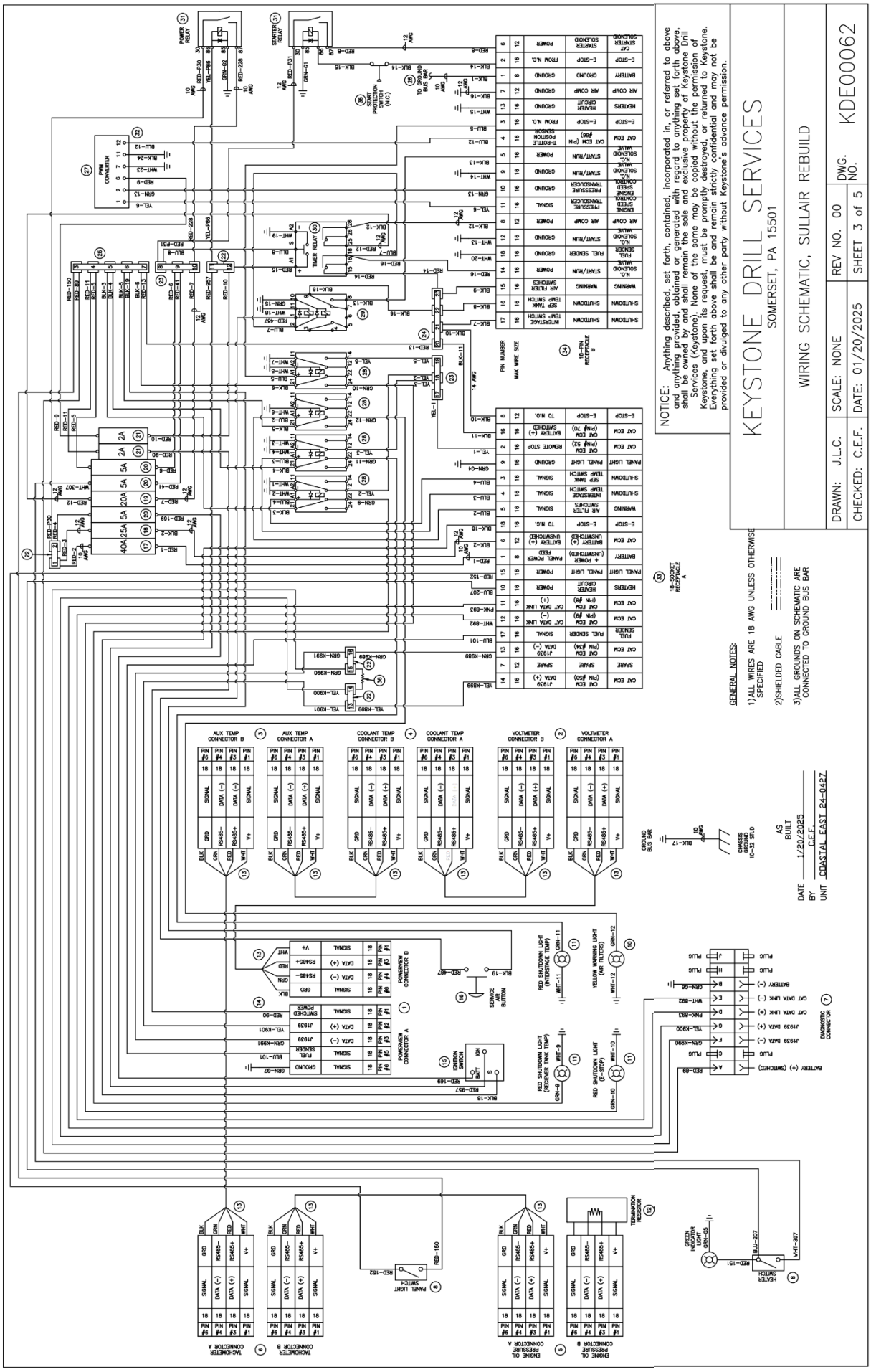
ITEM	QTY.	MATERIAL NUMBER	DESCRIPTION
52	4	605284	HEATER, ORIFICE, 24V, 11 WATTS
53	1	604749	COMPRESSOR, ELECTRIC, 24V
54	2 2	604861 605580	DIODE PIGTAIL, FOR DIODE
55	1	606274	VALVE, SOLENOID, IR START/COMP, N.O., 1/4" NPT
56	1	606275	VALVE, START/RUN NORMALLY CLOSED, IR, 3/8" NPT
57	1	614152	PRESSURE TRANSDUCER, 0-30 PSI, 1/4" NPT
58	1 1 1	626224 626225 626226	LIGHT TAPE, LED, 24V, 12 INCH ADAPTER, LED LIGHT TAPE, FLYING LEADS CHANNEL, ANOD AL, LED LIGHT TAPE
59	1 1	626692 634954	FUEL SENDING UNIT KIT, FUEL SENDING (GASKET AND HARDWARE)
60	2	614810	SWITCH, TEMPERATURE, 280F
61	1	618511	SWITCH, RESTRICTION, INTAKE, FILTER, N.C.
62	1	618512	INDICATOR, SWITCH, RESTRICTION, INTAKE, N.C.
63	2 2 4 4	626240 626242 626243 626241	CONNECTOR, 2-CONTACT, FEMALE, METRI-PACK LOCK, CONNECTOR, 2-CONTACT, METRI-PACK TERMINAL, 18-16 GAUGE, FEMALE, METRI-PACK CABLE SEAL, 20-18 GAUGE, METRI-PACK
64	2 4 4	626237 626239 626238	CONNECTOR, 2-CONTACT, MALE, WEATHER PACK TERMINAL, 20-18 GAUGE, MALE, WEATHER PACK CABLE SEAL, 20-16 GAUGE, WEATHER PACK
65	1	626089	CIRCUIT BREAKER, TYPE I RESET, 60A
66	2	604233	BATTERY, 8D
67	2 2 2 2 2 10 10 2	626281 626280 631661 626282 626283 626286 626238 626284	CONNECTOR, 6-CONTACT, FEMALE, METRI-PACK LOCK, CONNECTOR, 6-CONTACT, METRI-PACK, TPA LOCK, CONNECTOR, 6-CONTACT, METRI-PACK, CPA BRIDGE, SPLICE PACK, 6 POSITIONS CAP, SPLICE PACK TERMINAL, 20-16 GAUGE, FEMALE, 280 SERIES CABLE SEAL, 20-16 GAUGE, WEATHER PACK, GRN SEALING PLUG, GREEN CABLE CAVITY, APTIV

AS BUILT
DATE 1/20/2025
BY C.E.F.
UNIT COASTAL EAST #24-0427

KEYSTONE DRILL SERVICES
SOMERSET, PA 15501

WIRING SCHEMATIC, SULLAIR REBUILD

DRAWN: J.L.C.	SCALE: NONE	REV NO. 00	DWG. NO. KDE00062
CHECKED: C.E.F.	DATE: 01/20/25	SHEET 2 of 5	


KEYSTONE DRILL SERVICES
SOMERSET, PA 15501
WIRING SCHEMATIC, SULLAIR REBUILD
DRAWN: J.L.C.
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REV NO. 00
DWG. NO. KDE00062
CHECKED: C.E.F.
DATE: 01/20/2025
SHEET 3 of 5
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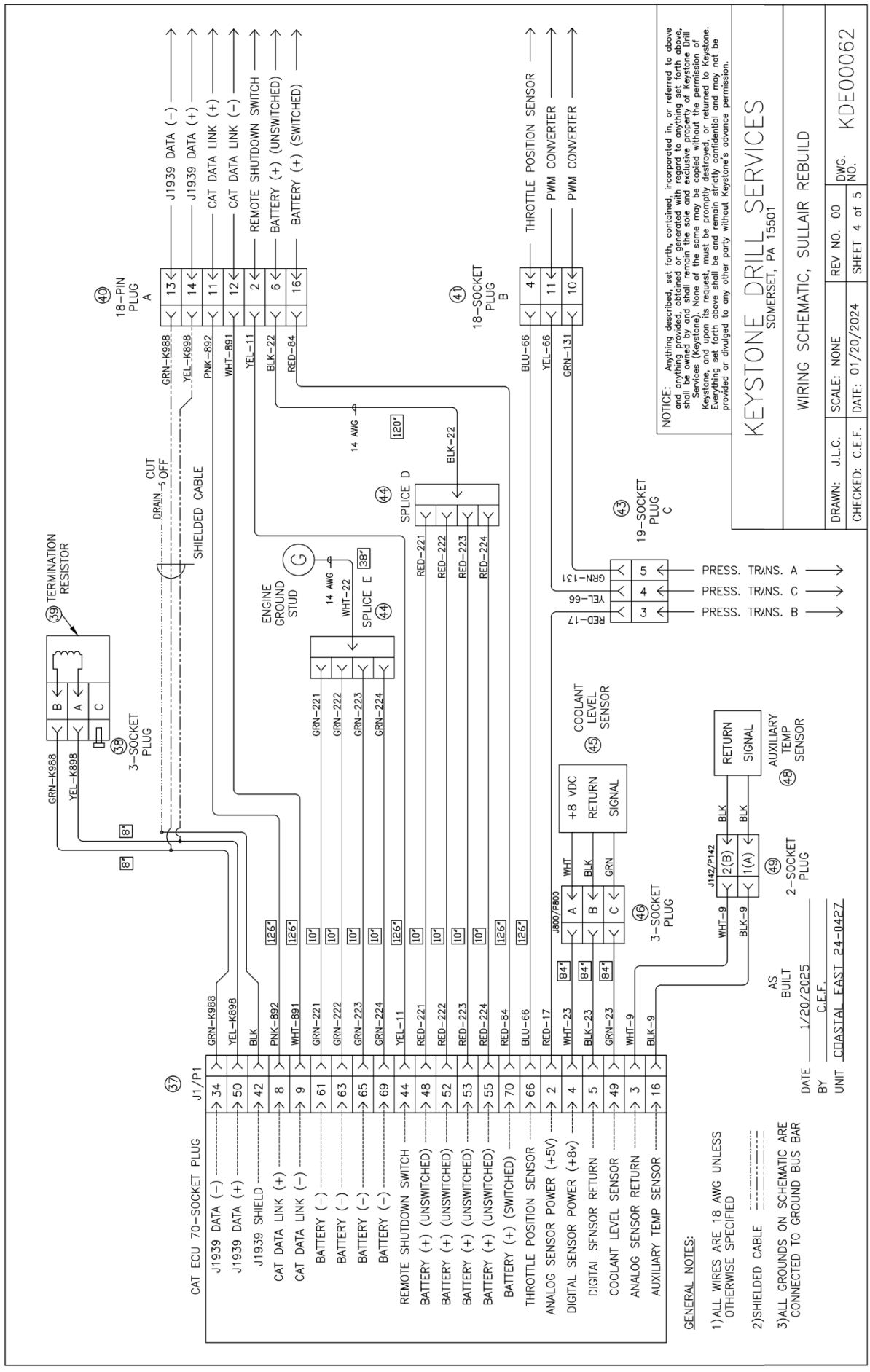
GENERAL NOTES:
1) ALL WIRES ARE 18 AWG UNLESS OTHERWISE SPECIFIED
2) SHIELDED CABLE
3) ALL GROUNDS ON SCHEMATIC ARE CONNECTED TO GROUND BUS BAR
AS BUILT
DATE 1/20/2025
BY C.E.F.
UNIT COASTAL EAST 24-0427


KEYSTONE DRILL SERVICES
SOMERSET, PA 15501
WIRING SCHEMATIC, SULLAIR REBUILD
DRAWN: J.L.C.
CHECKED: C.E.F.
SCALE: NONE
DATE: 01/20/2024
REV NO. 00
SHEET 4 of 5
DWG. NO. KDE00062
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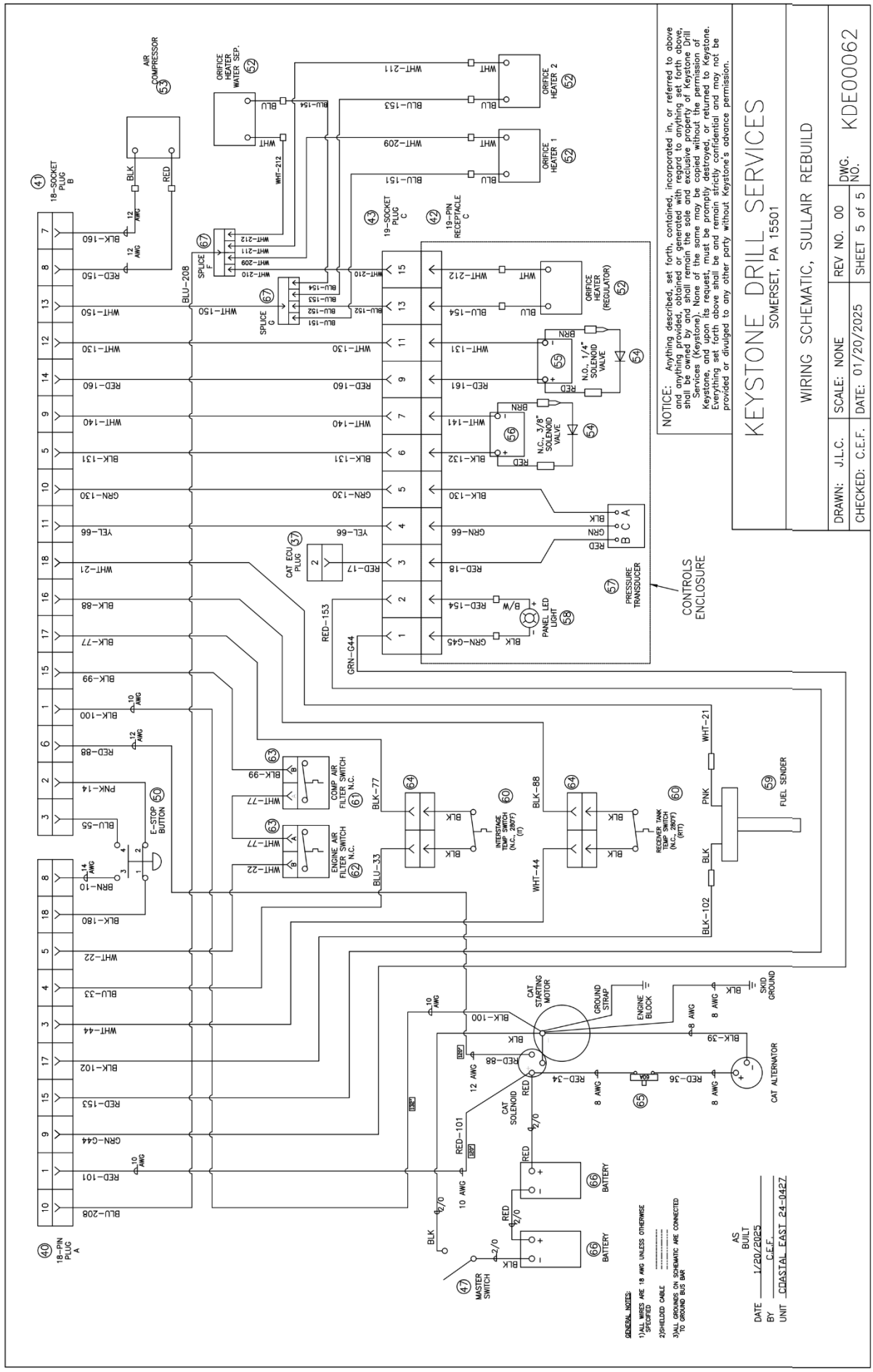
CAT ECU 70-SOCKET PLUG
J1/P1
J1939 DATA (-)
J1939 DATA (+)
J1939 SHIELD
CAT DATA LINK (+)
CAT DATA LINK (-)
BATTERY (-)
BATTERY (-)
BATTERY (-)
BATTERY (-)
REMOTE SHUTDOWN SWITCH
BATTERY (+) (UNSWITCHED)
BATTERY (+) (UNSWITCHED)
BATTERY (+) (UNSWITCHED)
BATTERY (+) (UNSWITCHED)
BATTERY (+) (SWITCHED)
THROTTLE POSITION SENSOR
ANALOG SENSOR POWER (+5V)
DIGITAL SENSOR POWER (+8v)
DIGITAL SENSOR RETURN
COOLANT LEVEL SENSOR
ANALOG SENSOR RETURN
AUXILIARY TEMP SENSOR
GRN-K988
YEL-K898
BLK
PNK-892
WHT-891
GRN-221
GRN-222
GRN-223
GRN-224
YEL-11
RED-221
RED-222
RED-223
RED-224
RED-84
BLU-66
RED-17
WHT-23
BLK-23
GRN-23
WHT-9
BLK-9
34
50
42
8
9
61
63
65
69
44
48
52
53
55
70
66
2
4
5
49
3
16
126"
10"
84"
37
38 3-SOCKET PLUG
39 TERMINATION RESISTOR
40 18-PIN PLUG A
41 18-SOCKET PLUG B
43 19-SOCKET PLUG C
44 SPLICE D
44 SPLICE E
45 COOLANT LEVEL SENSOR
46 3-SOCKET PLUG
48 AUXILIARY TEMP SENSOR
49 2-SOCKET PLUG
J800/P800
J142/P142
SHIELDED CABLE
DRAIN - CUT OFF
ENGINE GROUND STUD
14 AWG
120"
38"
+8 VDC
RETURN
SIGNAL
RETURN SIGNAL
J1939 DATA (-)
J1939 DATA (+)
CAT DATA LINK (+)
CAT DATA LINK (-)
REMOTE SHUTDOWN SWITCH
BATTERY (+) (UNSWITCHED)
BATTERY (+) (SWITCHED)
THROTTLE POSITION SENSOR
PWM CONVERTER
PWM CONVERTER
PRESS. TRANS. A
PRESS. TRANS. C
PRESS. TRANS. B
GRN-131
YEL-66
RED-17
13
14
11
12
2
6
16
4
11
10
5
4
3
AS BUILT
DATE 1/20/2025
BY C.E.F.
UNIT COASTAL EAST 24-0427
GENERAL NOTES:
1) ALL WIRES ARE 18 AWG UNLESS OTHERWISE SPECIFIED
2) SHIELDED CABLE
3) ALL GROUNDS ON SCHEMATIC ARE CONNECTED TO GROUND BUS BAR


KEYSTONE DRILL SERVICES
SOMERSET, PA 15501
WIRING SCHEMATIC, SULLAIR REBUILD
DRAWN: J.L.C.
SCALE: NONE
REV NO. 00
DWG. NO. KDE00062
CHECKED: C.E.F.
DATE: 01/20/2025
SHEET 5 of 5
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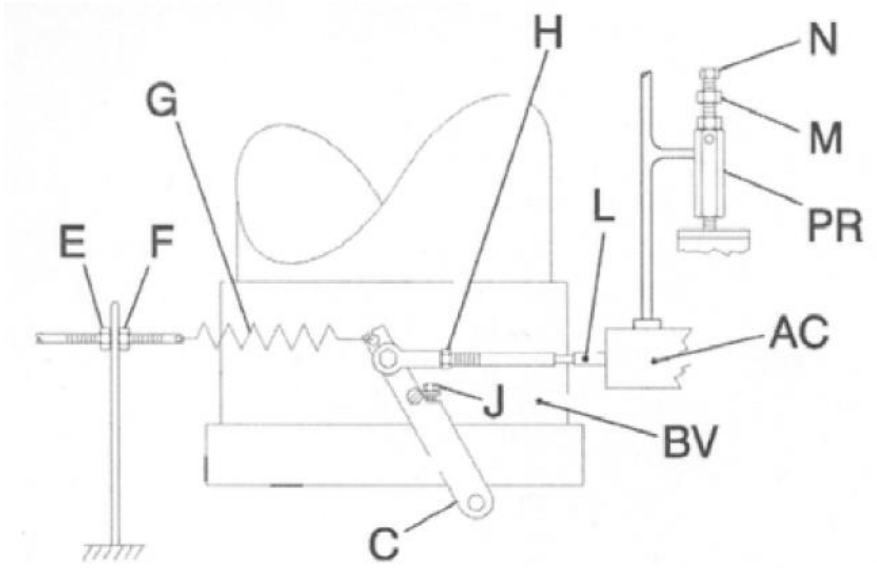
CONTROLS ENCLOSURE
AS BUILT
DATE 1/20/2025
BY C.E.F.
UNIT COASTAL EAST 24-042Z
GENERAL NOTES:
1) ALL WIRES ARE 18 AWG UNLESS OTHERWISE SPECIFIED
2) SHIELDED CABLE
3) ALL GROUNDS ON SCHEMATIC ARE CONNECTED TO GROUND BUS BAR

2.11 PNEUMATIC CONTROL SYSTEM FUNCTIONAL DESCRIPTION

Pressure Regulation



Normally, regulation requires no adjusting; but if proper adjustment is lost, proceed as follows:

The operating pressure of this unit was set at the factory to the 350 psi at 1800 RPM.

See General Data. However, this pressure may be reset down to 150 psi (1050 kPa). Perform these steps before starting the unit:

1. Disconnect one end of the tension spring (G) by loosening nut (E).
2. With the butterfly valve in the fully closed position, adjust the bracket and linkage so the rod (L) hits the bottom of the air cylinder (AC).
3. Secure all components while in this position.
4. Release the linkage to the open position.
5. Loosen jam nut (H) on rod end bearing.
6. With the rod end bearing secure, turn rod (L) in air cylinder one full turn clockwise (CW) as viewed from rod end. This opens the butterfly valve slightly.
7. Secure jam nut **(H)** against rod end bearing.
8. Move linkage (C) to closed position and verify that travel is positively stopped by the rod (L) reaching the bottom of the air cylinder. The butterfly valve should not seat closed.
9. Release linkage (C) to open position. Re-attach spring (G) and adjust nuts (E & F) so that there is zero tension on the spring, but no slack either.
10. Rotate linkage open and closed several times. Check that linkage is not binding.

Start unit and monitor separator tank pressure.

2.11 PNEUMATIC CONTROL SYSTEM, FUNCTIONAL DESCRIPTION

11. The target pressure is 50 to 80 psi while operating at start pressure.

12. If the pressure exceeds 80 psi: Loosen jam nut (H), turn rod (L) 1 /4 to 1 /2 turn CCW (as viewed from rod end) to lightly close butterfly, and secure jam nut (H). Use the manual blowdown valve to bleed pressure down to 60 psi (close M BVD). After 2.0 minutes, if the pressure is between 50 and 80 psi, OK. Adjustment complete.

13. If the pressure drops below 50 psi: Loosen jam nut (H), turn rod 1/4 to 1/2 turn CW (as viewed from rod end) to slightly open the butterfly, and secure jam nut (H). After 2.0 minutes, if the pressure is between 50 and 80 psi. OK. Adjustment complete.

14. If the pressure is not between 50 and 80 psi after 2.0 minutes, repeat steps 12 and/or 13 as needed.

15. Push "Service Air" button on control panel.

16. With service air valve closed, adjust pressure regulator (PR) to rated pressure (350 psi) plus 10 psi (70 kPa) as follows:

17. Loosen locknut (M) counterclockwise. Turn adjustment cap **(N)** clockwise to increase pressure, counterclockwise to decrease pressure.

18. Open service air valve and observe full load engine speed (1800 RPM). Adjust regulator to give rated operating pressure (350 psi). Tighten locknut **(M).**

19. To regulate any pressure between 150 psi (1050 kPa) and maximum rating (350 psi), make adjustment at the pressure regulator.

Engine Overspeed Shutdown

As a standard feature, the engine controller is programmed to stop the engine by shutting off the fuel supply if the engine speed reaches 2100.

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PNEUMATIC SCHEMATIC LEGEND

ITEM	QTY.	MATERIAL NUMBER	DESCRIPTION
1	1	626144	GAUGE, PRESS, 2-1/2" FF, 600 PSI
2	1	606963	FITTING, 90 ADAPTER, 4MJ X 4FP, 3000 PSI
3	1	606067	SWITCH, START PROTECTION
4	1	616193	FITTING, ADAPTER, 4FJX X 2FP, 5000 PSI
5	2	603072	FITTING, TEE ADAPTER, 4MJ X 4MJ X 4MP
6	5	616291	FITTING, BKHD, 4FP X 4FP, 5000 PSI
7	4	602826	FITTING, 90 ADAPTER, 6MJ X 4MP
8	9	610716	FITTING, TEE ADAPTER, 4FP X 4FP X 4FP
9	12	616483	FITTING, NIPPLE, 1/4" NPT X CLOSE, 304SS
10	3	626181	FITTING, ADAPTER, 8MP X 4FP, 6000 PSI
11	1	606257	VALVE, REGULATOR, IR
12	2	603009	FITTING, ADAPTER, 6MJ X 2MP, 5000 PSI
13	2	626150	FITTING, NIPPLE, 1/4" NPT X 2", XH, 304SS
14	2	626180	FITTING, ADAPTER, 6MP X 4FP, 6000 PSI
15	1	606275	VALVE, SOLENOID, IR START-RUN, N.C., 3/8" NPT
16	3	606331	FITTING, 45 ADAPTER, 6MJ X 4MP, 5000 PSI
17	3	626163	FITTING, 90 ADAPTER, 4MP X 4FP, 5000 PSI
18	8	603010	FITTING, ADAPTER, 6MJ X 4MP, 5000 PSI
19	1	602160	VALVE, SRV, 1/4" MP, 150 PSI
20	1	614152	PRESSURE TRANSDUCER, 0-30 PSI, 1/4" NPT
21	1	619755	GAUGE, PRESS, 1/4" NPT, 0-100 PSI, BACK
22	2	626292	FITTING, ORIFICE, 0.010 IN, 4MP X 4FP
23	1	627841	FITTING, ORIFICE, 0.070", 4MP X 4FP
24	1	619955	SILENCER, EXHAUST, 1/4" MNPT, ALUM
25	1	603076	FITTING, TEE ADAPTER, 6MJ X 6MJ X 6FJX
26	1	603009	FITTING, ADAPTER, 6MJ X 2MP, 5000 PSI
27	1	605730	KIT, CYLINDER
28	1	CONSULT FACTORY	VALVE, CHECK, 2MP X 2FP, 24V COMPRESSOR
29	1	622237	TEE, 1/8", BRASS, F X F X M, 1000 PSI
30	1	616369	VALVE, SAFETY RELIEF, 24V AIR COMPRESSOR
31	1	604749	COMPRESSOR, ELECTRIC, 24V
32	2	626162	FITTING, TEE ADAPTER, 8FP X 8FP X 8FP, 5
33	2	626153	FITTING, NIPPLE, 1/2" NPT X CLOSE, XH, 304SS
34	1	02250111-923	FILTER, COALESCING 600 PSIG 350DEG
35	1	607033	FITTING, ADAPTER, 6MB X 4FP, 2250 PSI
36	2	607035	FITTING, ADAPTER, 6MJ X 8MP, 2250 PSI
37	1	602911	FITTING, ADAPTER, 12MJ X 8MP, 3000 PSI
38	1	619236	VALVE, BRASS BALL, WOG, 1/4" NPT,DEADMAN
39	2	602985	FITTING, ADAPTER, 4MJ X 4MP, 5000 PSI
40	1	607156	FITTING, SQ HD PLUG, 1/4" NPT, 3M
41	1	605555	FITTING, ORIFICE, 0.156 IN
42	1	626563	FITTING, HEX SOCKET PLUG, 1/2" NPT, 7000
43	1	602837	FITTING, 90 ADAPTER, 8MJ X 4MP, 5000 PSI
44	1	607185	FITTING, TEE ADAPTER, 6MJ X 4MP X 4FP, 2
45	1	606970	FITTING, 90 ADAPTER, 8MJ X 12MP, 2000 PSI
46	1 1	626209 626328	THERMOWELL, 3/4"-16 MB X 3/8"-24 FB, 1-1/2" O-RING, #908, 90 DUR, -8 ORB
47	1	616218	SENSOR, TEMP AUXILIARY
48	1	606321	FITTING, CAP, 4FJ, 5000 PSI
49	1	618512	INDICATOR, SWITCH, RESTRICTION, INTAKE
50	1	618511	SWITCH, RESTRICTION, INTAKE, FILTER
51	2	631665	FITTING, 90 ADAPTER, 2FP X 2FP, BRASS
52	2	613157	FITTING, ADAPTER, 2BARB X 2MP, BRASS
53	1	602046	VALVE, ANTIRUMBLE, IR COMPRESSOR
54	1	619335	VALVE, 2 WAY, NO, 1/2" PORTS, 1/4" PILOT
55	2	603018	FITTING, ADAPTER, 8FJX X 8MP, 3000 PSI
56	2	607036	FITTING, ADAPTER, 8MJ X 12MP, 2000 PSI
57	1	602914	FITTING, ADAPTER, 12MP X 8FP, 2500 PSI
58	1	619565	FITTING, CROSS, 3/4" NPT
59	1	602784	FITTING, 90 ADAPTER, 12MJ X 12MP
60	1	627698	FITTING, HEX NIPPLE, 1/2" NPT, ZINC, 7000 PSI
61	2	618735	FITTING, 90 ADAPTER, 4MP X 4MP, 5000 PSI
62	1 1	CONSULT FACTORY 626117	SA, VAL MPV CHK 2.5-HP KIT, SVCE MPV, 425-1350 XH XHH
63	1	606265	VALVE, SRV, AIR, 3/4 X 1-1/4, 425PSI
64	1	603045	FITTING, ADAPATER, 16MP X 12FP, 2000 PSI
65	1	877900-040	ELBOW, PIPE 90 DEG 1" 3000# PLT
66	1	866416-020	NIPPLE, PIPE-XS PLT 1 X 2
67	1 1	626363 631992	PLUG, STR THD 1-5/8"-12 SAE VIT O-RING, 3-920-V75 VITON (-20 ORB)
68	1 1	605669 631993	PLUG, SIGHT GLASS, 1-7/8" SAE O-RING, 3-924-V75 VITON (-24 ORB)
69	2	602842	FITTING, 90 ADAPTER, 8MJ X 8MP
70	1	611997	FITTING, ADAPTER, 4FJX X 4FP, 5000 PSI
71	1	602983	FITTING, ADAPTER, 4MJ X 4MB, 5000 PSI
72	1	612357	FILTER, ASSEMBLY SCREEN FILTER
73	1	612356	SIGHTGLASS, PRESSURE VALVE
74	1	616200	FITTING, HEX NIPPLE, 4MP X 4MP, PLATED
75	1	606230	VALVE, INLINE CHECK (1/4"NPT) DC
76	1	606274	VALVE, SOLENOID, IR START/COMP, N.O., 1/4" NPT
77	1	620807	ORIFICE, PLUG BRASS, 1/8" NPT X 3/32"
78	1	632249	FITTING, NIPPLE, 1/4" NPT X 4", XH, 304SS
79	2	632501	FITTING, ADAPTER, 8MB X 8FP, 3500 PSI

AS BUILT
DATE 1/20/2025
BY C.E.F.
UNIT COASTAL EAST 24-0427

REVISION

REV	DESCRIPTION	BY	DATE

KEYSTONE DRILL SERVICES

SOMERSET, PA 15501

PLUMBING SCHEMATIC – PNEUMATIC CONTROLS, KDS SULLAIR

DRAWN: M.E.S.	SCALE: NONE	REV NO. 01	DWG. NO. KDA00048
CHECKED: C.E.F.	DATE: 05/09/22	SHEET 1 of 3	

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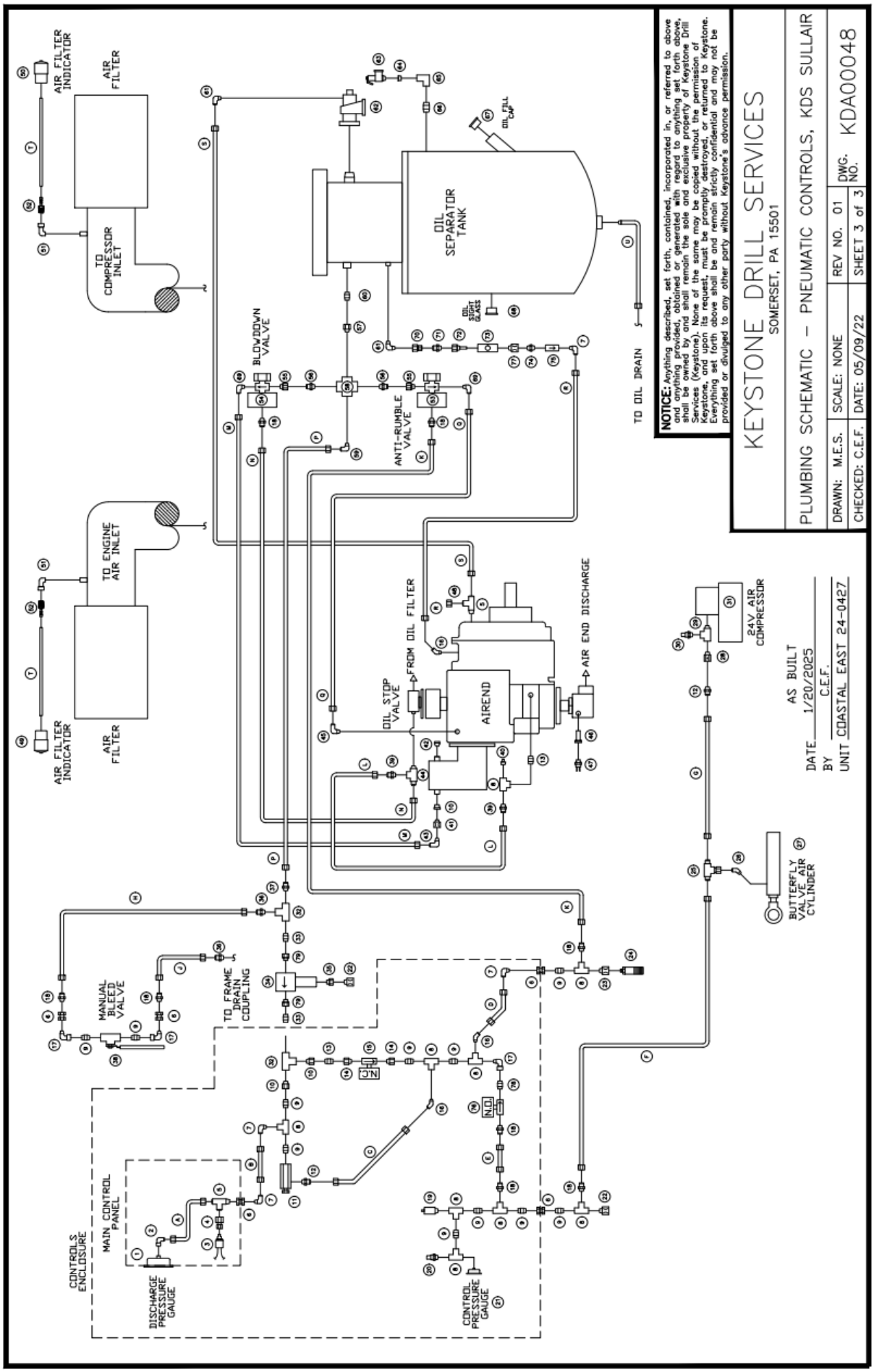
HOSE SIZE	DRAWING LETTER	DESCRIPTION	END #1	END #2	CUT LENGTH (in)
4	A	CONTROL PANEL PRESSURE GAUGE	STR	STR	13
6	B	CONTROLS ENCLOSURE, CONTROL PANEL SUPPLY	STR	STR	5.5
6	C	CONTROLS ENCLOSURE, REGULATOR DISCHARGE	STR	STR	5.5
6	D	CONTROLS ENCLOSURE, AR VALVE SUPPLY	STR	STR	11
6	E	CONTROLS ENCLOSURE, N.O. SOLENOID VALVE	90	STR	12
6	F	0.010" ORIFICE TEE TO BUTTERFLY CYLINDER	STR	STR	60
6	G	FISH PUMP TO BUTTERFLY CYLINDER	STR	STR	48
6	H	CONTROLS TEE (1/2") TO MANUAL BLOWDOWN VALVE	STR	STR	20
6	J	MANUAL BLOWDOWN VALVE TO BOTTOM DRAIN FITTING	STR	STR	30
6	K	0.070" ORIFICE TEE TO ANTI-RUMBLE VALVE PILOT	STR	STR	63
4	L	AIR END DISCHARGE TEE TO OIL STOP VALVE	STR	STR	35
8	M	BLOWDOWN VALVE TO AIR END AIR INLET	STR	STR	73
6	N	OIL STOP VALVE TO BLOWDOWN VALVE PILOT	STR	STR	60
12	P	SEPARATOR TANK TO CONTROLS TEE (1/2")	90	STR	72
8	Q	ANTI-RUMBLE VALVE TO AIR END INLET	STR	STR	60
6	R	SCAVENGE TO AIR END	STR	STR	40
4	S	AIR END GEAR HOUSING TO MINIMUM PRESSURE VALVE	STR	STR	80
$\frac{7}{64}$" VACUUM	T	AIR FILTER INDICATOR TUBES, VACUUM	--	--	(2) 48
8	U	SEPARATOR TANK DRAIN	STR	STR (NPT)	57

AS BUILT
DATE 1/20/2025
BY C.E.F.
UNIT COASTAL EAST 24-0427

KEYSTONE DRILL SERVICES
SOMERSET, PA 15501

PLUMBING SCHEMATIC – PNEUMATIC CONTROLS, KDS SULLAIR

DRAWN: M.E.S.	SCALE: NONE	REV NO. 01	DWG. NO. KDA00048
CHECKED: C.E.F.	DATE: 05/09/22	SHEET 2 of 3	


KEYSTONE DRILL SERVICES
SOMERSET, PA 15501
PLUMBING SCHEMATIC – PNEUMATIC CONTROLS, KDS SULLAIR
DRAWN: M.E.S.
SCALE: NONE
REV NO. 01
DWG. NO. KDA00048
CHECKED: C.E.F.
DATE: 05/09/22
SHEET 3 of 3
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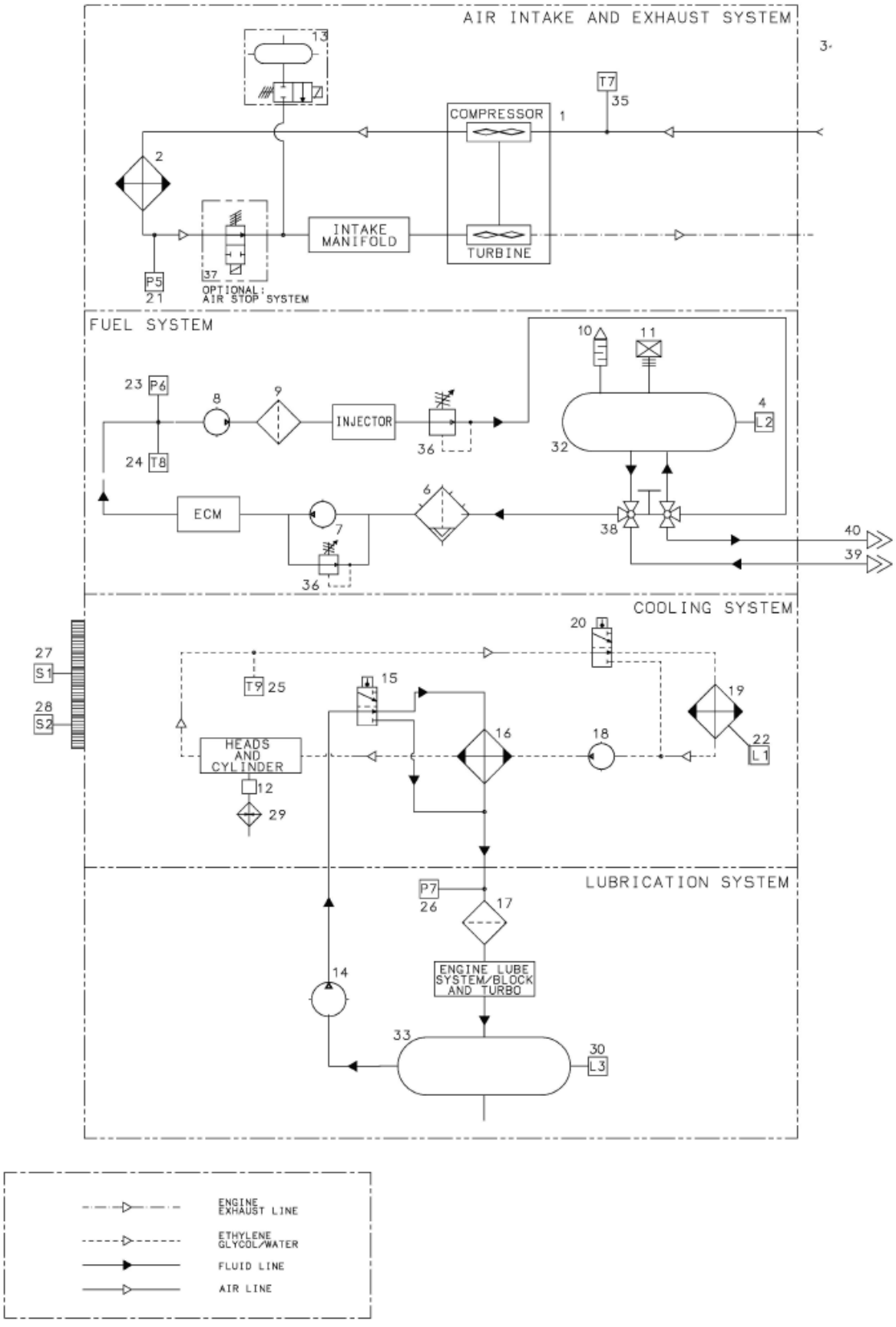
AS BUILT
DATE 1/20/2025
BY C.E.F.
UNIT COASTAL EAST 24-0427
AIR FILTER INDICATOR
AIR FILTER
TO COMPRESSOR INLET
OIL SEPARATOR TANK
OIL FILL CAP
OIL SIGHT GLASS
TO OIL DRAIN
BLOWDOWN VALVE
ANTI-RUMBLE VALVE
TO ENGINE AIR INLET
FROM OIL FILTER
OIL STOP VALVE
AIREND
AIR END DISCHARGE
24V AIR COMPRESSOR
BUTTERFLY VALVE AIR CYLINDER
MANUAL BLEED VALVE
TO FRAME DRAIN COUPLING
N.C.
N.O.
CONTROLS ENCLOSURE
MAIN CONTROL PANEL
DISCHARGE PRESSURE GAUGE
CONTROL PRESSURE GAUGE

2.12 P & I-ENGINE SYSYEM



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2.12 P & I-ENGINE SYSTEM

Key	Description	Quantity
01	TURBOCHARGER, ENGINE	1
02	COOLER, CHARGE AIR	1
03	MUFFLER, ENGINE	1
04	SENDER, FUEL LEVEL	1
05	RAIN CAP, EXHAUST SYSTEM	1
06	FILTER, FUEL W/ WATER SEPARATOR	1
07	PUMP, FUEL (INTERNAL TO ENGINE)	1
08	PUMP, FUEL HAND OPERATED PRIMING	1
09	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, FUELPRESSURE	1
24	SENSOR, FUELTEMPERATURE	1
25	SENSOR, COOLANTTEMPERATURE	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

COMPONENT	DESCRIPTION
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

Section 3

SPECIFICATIONS

3.1 TABLE OF SPECIFICATIONS

TABLE 3-1 OVERALL SPECIFICATIONS

Model Series	Length (l)		Width		Height (ll)		Weight (wet)	
	in	mm	in	mm	in	mm	lb	kg
DTQ (Tandem Axle)	240	6096	88	2235	93	2362	16,040	7276
DTQ	179	4547	88	2235	83	2108	14,940	6777

TABLE 3-2 COMPRESSOR SPECIFICATIONS

COMPRESSOR	1150XH
Type	Rotary Screw
Maximum Operating Pressure	350 PSIG (24.1 bar)
Rated Pressure	350 PSIG (24.1 bar)
Rated Delivery	1150 Free CFM
Cooling	Pressurized Compressor Fluid
Lubricating Compressor Fluid	See *Lubrication Guide*
Receiver Tank Capacity	45 US Gallon (170 liters)
Electrical System	Engine 24 Volts
	Instrument System – 24 Volt
Battery (2)	1700 CCA @ 32˚F (0˚C)
	(8D) 1400 CCA @ 0˚F (-18˚C)
Alternator	60 AMP
Service Valves	2” NPT

TABLE 3-3 ENGINE SPECIFICATIONS

ENGINE:	1150XH
Make	Caterpillar
Type	CAT C15 ATAAC TIER III (i)
Rated Speed	1800 RPM
Horsepower, SAE	540 HP (403 kw)
Cylinders	6
Cycles	4
Bore & Stroke	5.4 x 6.7 in (137 x 170 mm)
Displacement	923 cu.in (15.1 liters)
Lubricating System	Full Pressure Fluid
Type of Motor Oil	See engine operator's manual
Engine Cooling System Capacity	30 U.S. gallons (113 liters)
Idle Speed	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 1026	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 lubricant are 250030-757 (5 gallons/18.9) liters), 250030-758 (55 gallons, 208-liter drums)		

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.

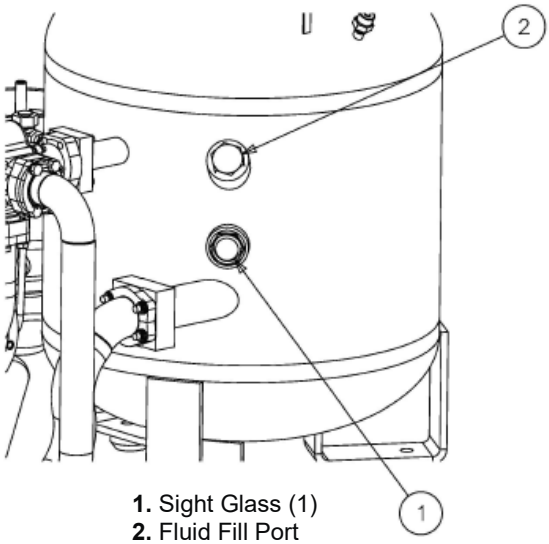
Water must be drained from the receiver periodically. In high ambient temperature and high humidity conditions, condensed moisture may emulsify with the oil forming a "milky" color. The fluid should be changed if this condition develops.

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 you 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.



1. Sight Glass (1)
2. Fluid Fill Port

Figure 3-1: Fluid Fill Location

(I) If fluid is seen in the 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**.

Section 4

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.

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.

5.2 ENGINE COOLANT REQUIREMENT FOR RADIATORS

The coolant provided with Keystone rebuilt air compressors is Peak Global Lifetime, 50/50 mixture, colored amber, and should never be mixed with a coolant of a different color such as yellow, green, or pink. If radiator coolant is to be added, for any reason, be sure that the coolant added is the same as what is in the cooling system, as well as what is recommended. Refer to the Maintenance Section of the engine Operators Manual for proper engine coolant specifications and instructions. Ensure that the proper coolant is used when adding engine coolant to the machine and never mix different color coolants. An engine originally filled with a conventional green coolant should not be "upgraded" to an extended life coolant unless the cooling system is completely flushed and filled with water several times to remove all traces of the old coolant. If you are not sure of the coolant that is installed originally it is always best to flush the system using water as a base until flushed water is clear. Then, fill the system with the recommended coolant using only one brand/type. Cross contamination which is caused by adding different types of engine coolants will result in the coolant additives to deplete (dropout); thus leaving radiator surfaces unprotected. Corrosion to radiator surfaces will occur, thus

5.3 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 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.

CAUTION
The radiator and engine cooling system must be drained and flushed every two (2) years. 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.

CAUTION
Dispose of fluids in accordance with applicable federal, state and local regulations.

Coolant Service Life	
Coolant type	**Service Life**
Caterpillar ELC	Six Years/12,000 Hours
Caterpillar DEAC	Three Years/3,000 Hours
Commercial Heavy-Duty Two Years/3,000 Hours Coolant/Antifreeze that meets "ASTM 05345"	Two Years/3,000 Hours
Commercial Heavy-Duty One Year/3,000 Hours Coolant/Antifreeze that meets "ASTM 04985"	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 53.*

5.4 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.

5.5 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 53.*

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. To clean between the fluid cooler and radiator, the bolts securing the top of the fluid cooler to the top mounting bracket should be removed, allowing the fluid cooler to swing down on its lower hinge. This will allow easier access to clean between the fluid cooler and radiator core.
4. Check the battery level and fill with water is necessary.
5. Check **engine operator's manual** for required service.

5.6 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 3-1 on* 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 41*.

Running Gear Lubrication

Refer to *Figure 5-1* . An inspection of the running gear should be made on a routine basis. On four-wheel steerable running gear models, front-axle pivot joints and rod ends are fitted with grease zerks which should be lubricated every six months.

Wheel Bearing Lubrication

Refer to *Figure* 5-2. Proper lubrication is essential to the proper functioning and reliability of your portable compressor axle. Wheel bearings should be lubricated at least once every 12 months, or more frequently to help insure proper performance. Use wheel bearing grease that conforms to military specification MIL-G-10924 or a high temperature wheel bearing grease such as lithium complex NLGI Consistency #2.

If your axle is equipped with the E-Z Lube feature, the bearings can be periodically lubricated without removing the hubs from the axle. This feature consists of axle
spindles that have been specially drilled and fitted with a grease zerk in their ends. When grease is pumped into the zerk, it is channeled to the inner bearing and then flows
back to the outer bearing and eventually back out of the
grease cap hole (refer to *Figure* 5-2). The procedure is as follows:

1. Remove the rubber plug from the end of the grease cap.
2. With a standard grease gun filled with a quality wheel bearing grease, place the gun onto the grease zerk located in the end of the spindle. Make sure the grease gun nozzle is fully engaged on the fitting.
3. Pump grease into the zerk. The old, displaced grease will flow back out of the cap around the grease gun nozzle.
4. When new, clean grease is observed, remove the grease gun, wipe off any excess, and replace the rubber plug in the cap.

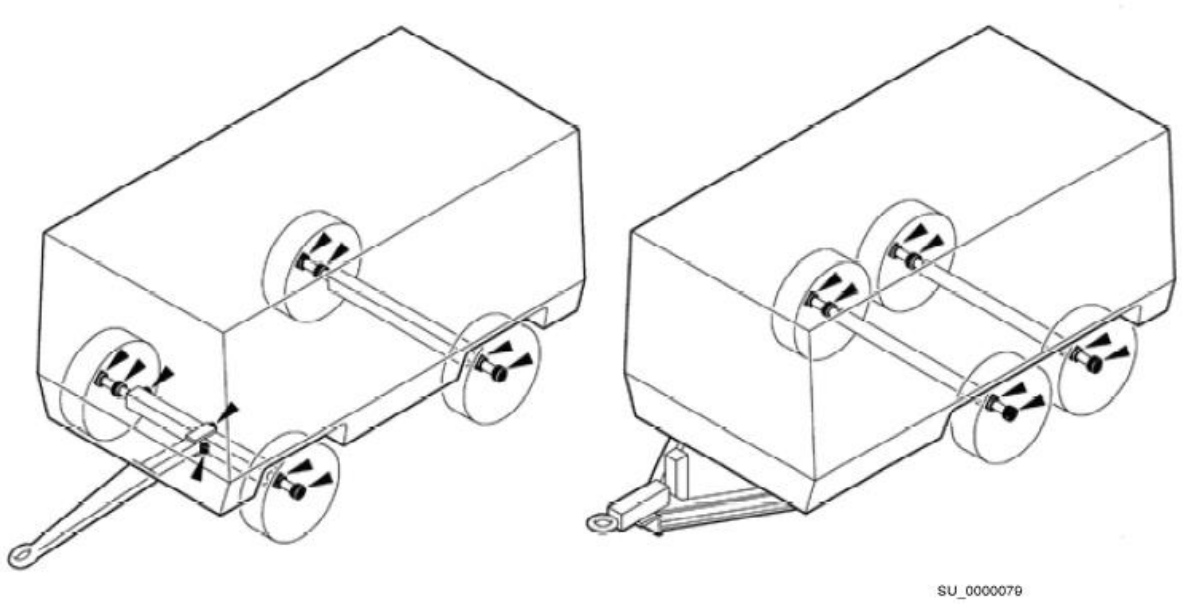
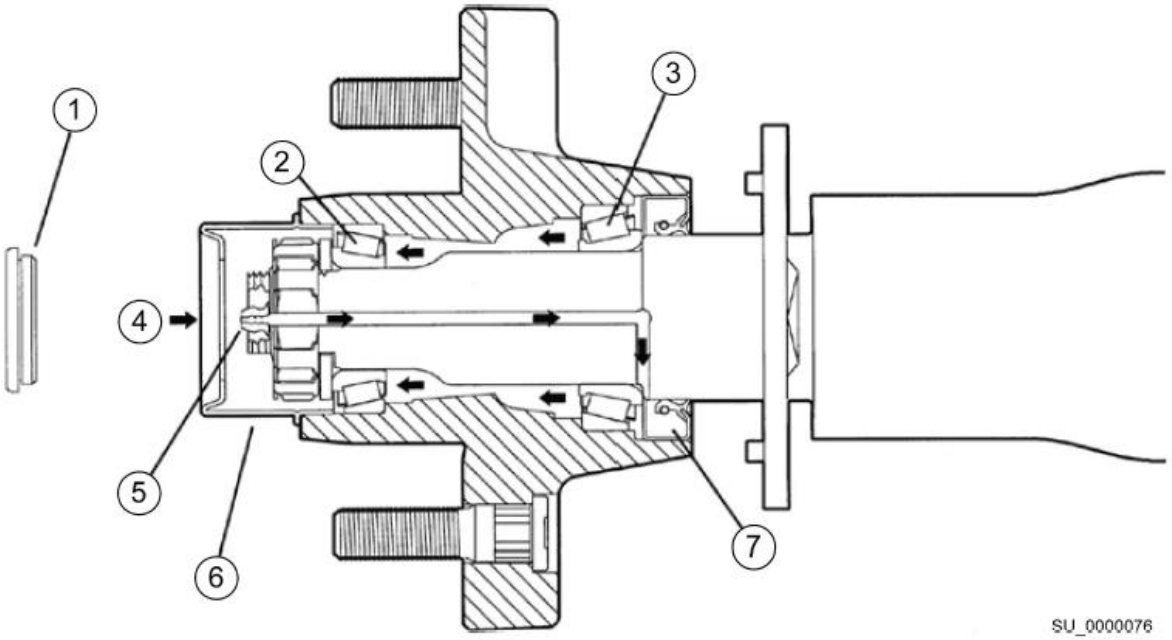


Figure 5-1: Running Gear Lubrication



1. Rubber Plug
2. Outer Bearing
3. Inner Bearing
4. Grease Flow
5. Grease Fitting
6. Metal End Cap
7. Spring-loaded Double Lip Seal

Figure 5-2:Typical E-Z Lube Axle

Main Fluid Filter Servicing

Refer to *Figure 5-3*. The main fluid filters are located schematically in the coolant line between the receiver tank and the compressor unit. The main filter elements are replaceable. For installation of the filter elements, follow the procedure explained below:

11. The compressor MUST be shut off and system pressure MUST be relieved.

12. Drain by removing drain plug at bottom of bowl and catching drainage in a container.

13. Rotate bowl counterclockwise and remove.

14. Remove element and O-ring from housing and discard. This element is NOT cleanable.

15. Make sure mounting surface of filter head is clean.

16. Apply a light film of AWF to O-ring and place it in its proper position.

17. Place new, clean element in housing centering it in the head.

18. Inspect bowl seal and replace if necessary.

19. Replace bowl. Rotate clockwise and hand-tighten.

20. Replace drain plug. Torque to 15 to 20 ft-lbs. (20 to 27 N·m)

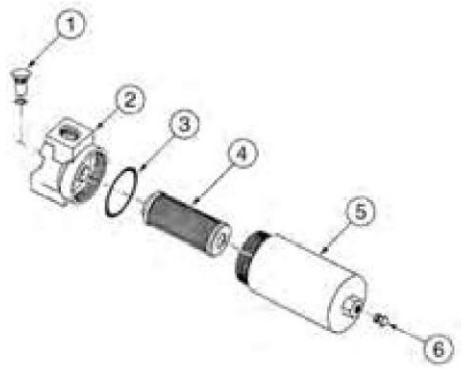


Figure 5-3: Main Fluid Filter Assembly

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

**Replacement filter element, P/N 604921

Air Filter Maintenance

Refer to *Figure 5-4*. 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.

Element Removal

1. Clean the exterior of the air filter housing.
2. Remove the cover/element assembly by loosening the wingnut securing the cover/element assembly.
3. Remove the cover/element assembly.
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.
5. Inspect all gaskets and gasket contact surfaces of the housing. Should faulty gaskets be evident, correct the condition immediately.

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 out of the housing.

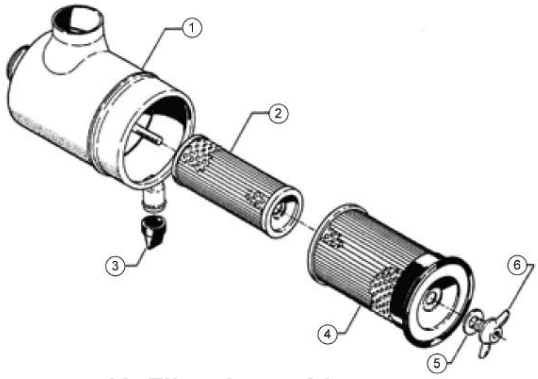


Figure 5-4: Air Filter Assembly

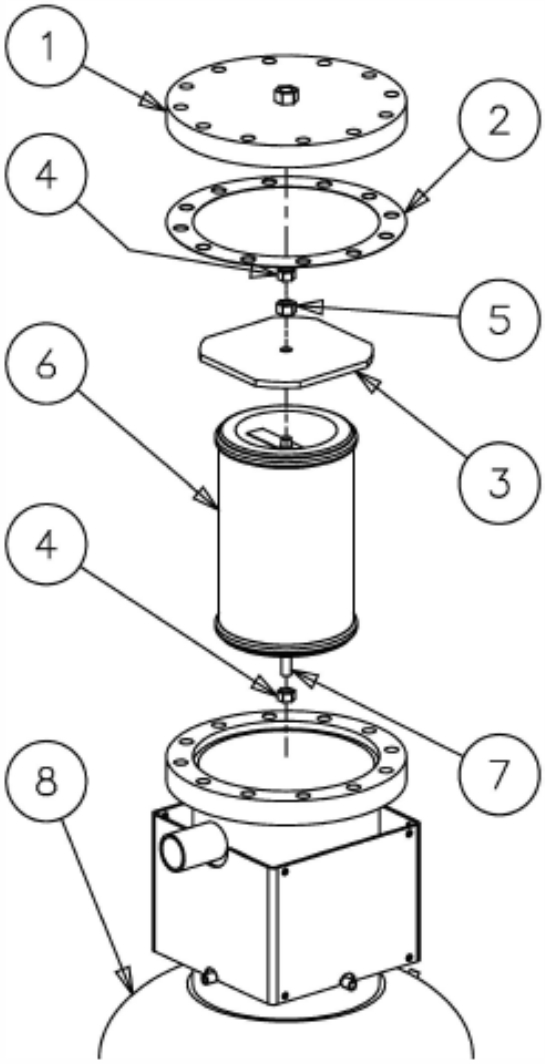
1. Housing
2. Secondary Element**
3. Dust Collector
4. Primary Element*
5. Sealing Washer
6. Wing Nut

*Primary replacement element, P/N 600853
**Secondar replacement element, P/N 600852

Separator Element Replacement

Refer to *Figure 5-6.* When the need for a separator element replacement is indicated, use the following procedure for separator replacement. Remove all piping connected to the receiver tank to:

1. Remove the air receiver tank lift by removing the hex head cap screws and washers.
2. Remove the 3/4"-10 jam nut and sealing hex nut from the 3/4"-10 separator hold down rod.
3. Remove the round separator cover plate from the top of the separator element.
4. Remove the old separator element and discard.
5. Scrape the old gasket material from the tank lid mounting surface and the flanges mounting surface on the tank. Be sure to keep all scrapings from falling back inside of the tank.
6. Before installing the new separator element, make sure to lubricate both sealing O-rings on the element with lubricating compound (i.e. Silglyde). T hen install the new separator element, the cover plate, the new 3/4"-10 sealing hex nut, and the 3/4"-10 jam hex nut. Torque the sealing hex nut to 85 to 90 ft.-lbs. (115 to 122 Nm). **DO NOT** over tighten, as damage to separator element can result.
7. Next, install the tank flange gasket that is provided. Before installing, lubricate both sides of the gasket (i.e. Silglyde). Reinstall the tank lid. Install the 8 cap screws finger tight, then gradually tighten in a crisscross pattern in 4 to 5 steps. Always tighten the 12 (1-8 UNC Grade 5) cap screws alternately at opposite sides of the cover. Torque lubricated cap screws to 480 ft.-lbs. (650 Nm).
8. Clean or replace fluid return line strainer.
9. Clean the fluid return line orifice installed in the inside of the compressor unit air end.



1. Receiver Lid
2. Gasket
3. Separator Plate
4. Nut
5. Lock Nut
6. Separator Element
7. Threaded Rod
8. Receiver Tank

5-6: Separator Element Assembly

* Replacement kit order P/N's 605111 & 600967

5. 7 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
Compressor will not start	No fuel	Check fuel level and add fuel if necessary.
	Plugged fuel filter	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 engine operator's manual
	Pressure is still in separator tank	Open manual bleed valve
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.
Compressor will not build up full Air demand is too great Check service lines for leaks of open discharge pressure	Air demand is too great	Check service lines for leaks of open discharge pressure valves.
	Dirty air filter	Check the filter gauges on instrument panel and change element if required.
	Pressure regulator out of adjustment	Adjust regulator according to control adjustment instructions in the *MAINTENANCE* section.
	Defective pressure regulator	Replace it if necessary.
	Defective air inlet cylinder	Replace cylinder

SYMPTOM	PROBABLE CAUSE	REMEDY
Improper unloading with an excessive pressure build-up causing pressure relief valve to open.	Pressure regulating valve set too high.	Readjust.
	Leak in control system causing loss of pressure signal.	Check control lines.
		Worn seals in inlet valve. Replace seals (kit available).
		Defective pressure regulating valves. repair valves (kits available).
	Inlet valve jammed.	Free or replace valve.
	Restriction in the control system.	Ice and other contaminants could cause restrictions.
		Check all control lines and components.
	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 is too low.	Readjust engine speed.
	Control air cylinder defective.	Replace cylinder.
Excessive compressor fluid consumption	Clogged return line.	Clear orifice.
	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.
	Dirty radiator core	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.
	Dirty oil cooler	Clean thoroughly.
	Low water level	Refill.
	Dirty aftercooler	Clean thoroughly.
	Low fluid level	Refill.
	Faulty water pump	Change pump.
	Plugged radiator	Clean and flush thoroughly.
	Defective engine thermostat	Replace engine thermostat.

Section 5

MISCELLANEOUS

Cat Electronic Technician 2024C v1.0

Product Status Report

1/21/2025 1:34 PM

Product Status Report

Parameter	Value
Engine Serial Number	JRE12219
Equipment ID	COASTAL SULLAIR 24-0427
Comments	

C15 IND (JRE12219)

Parameter	Value
Equipment ID	NOT PROGRAMMED
Engine Serial Number	JRE12219
ECM Serial Number	09786208JM
Personality Module Part Number	3167381-00
Software Group Release Date	MAY2008
Calibration Identification Number	Unavailable

Logged Diagnostic Codes [Diagnostic Clock = 7395 hours] - C15 IND (JRE12219)

Code	Description	Occ.	First	Last
91- 8	Throttle Position Sensor : Abnormal Frequency, Pulse Width, or Period	5	7393	7393

Logged Event Codes [Diagnostic Clock = 7395 hours] - C15 IND (JRE12219)

Code	Description	Occ.	First	Last
E445 (1)	High Auxiliary Temperature	1	7393	7393
E445 (2)	High Auxiliary Temperature	1	7393	7393
E445 (3)	High Auxiliary Temperature	1	7393	7393
E2143 (1)	Low Engine Coolant Level	3	7393	7393
E2143 (2)	Low Engine Coolant Level	3	7393	7393
E2143 (3)	Low Engine Coolant Level	1	7393	7393

Active Diagnostic Codes - C15 IND (JRE12219)

Code	Description
No Active Diagnostic Codes	

Current Totals - C15 IND (JRE12219)

Description	Value	Unit
Total Operating Hours	7396	hours
Total Idle Time	107374182:21	hours
Total Fuel	45620	gal

Total Idle Fuel	103234065	gal
Total Max Fuel	110991428	gal
Average Load Factor	-1330	%

Configuration - C15 IND (JRE12219)

Description	Value	Unit
Equipment ID	NOT PROGRAMMED	
Engine Serial Number	JRE12219	
ECM Serial Number	09786208JM	
Personality Module Part Number	3167381-00	
Software Group Release Date	MAY2008	
Rating Number	1	
Rated Power	540 hp at 2100 rpm	
Rated Peak Torque	1820 lb-ft at 1400 rpm	
Top Engine Speed Range	1800 - 2310 rpm	
Test Spec	0K5581 0K6208	
Top Engine Limit	1800	rpm
Low Idle Speed	1400	rpm
High Idle Speed	1800	rpm
Maximum Engine Torque Limit	1435	lb-ft
Engine Acceleration Rate	500	rpm/s
PTO Mode	Ramp Up/Ramp Down	
Intermediate Engine Speed	1400.0	rpm
Ether Control	Enabled	
Ether Solenoid Configuration	Continuous Flow Solenoid	
Air Shutoff	Disabled	
Throttle Position Sensor	Installed	
Coolant Level Sensor	Installed	
Engine Retarder Enable Command	Disabled	
Auxiliary Temperature Sensor Installation Status	Installed	
Auxiliary Pressure Sensor Installation Status	Not Installed	
Throttle Input Low Idle Duty Cycle Setpoint	10.0	%
Throttle Input High Idle Duty Cycle Setpoint	90.0	%
Engine Governor Primary Mode Configuration	Speed Control	
Engine Governor Mode Override Switch Installation Status	Unavailable	
Transmission Default Torque Limit Reset	Unavailable	
Engine Location	Unavailable	
Maintenance Indicator Mode	Data Invalid	
PM1 Interval	0	gal
FLS	-27	
FTS	16	
Customer Password #1	**********	
Customer Password #2	**********	
Last Tool to Change Customer Parameters		
Last Tool to Change System Parameters	ET695870	

Total Tattletale	47	
Run Out Control	On	
Runout Spd Droop	Off	

Lifetime: Time vs Engine Coolant Temperature - C15 IND (JRE12219)

Engine Coolant Temperature(Deg F)	hours	%
<122.0	39.95	1.42
122.0-130.0	11.85	0.42
131.0-139.0	12.30	0.44
140.0-148.0	13.65	0.49
149.0-157.0	77.85	2.78
158.0-166.0	573.60	20.46
167.0-175.0	776.40	27.69
176.0-184.0	630.25	22.48
185.0-193.0	417.45	14.89
194.0-202.0	232.80	8.30
203.0-211.0	16.90	0.60
212.0-220.0	0.65	0.02
221.0-229.0	0.00	0.00
230.0-238.0	0.00	0.00
239.0-247.0	0.00	0.00
>248.0	0.00	0.00

Lifetime: Time vs Inlet Air Temperature - C15 IND (JRE12219)

Inlet Air Temperature(Deg F)	hours	%
<104.0	40.70	54.38
104.0-112.0	11.55	15.43
113.0-121.0	10.95	14.63
122.0-130.0	9.35	12.49
131.0-139.0	2.30	3.07
140.0-148.0	0.00	0.00
149.0-157.0	0.00	0.00
158.0-166.0	0.00	0.00
167.0-175.0	0.00	0.00
176.0-184.0	0.00	0.00
185.0-193.0	0.00	0.00
194.0-202.0	0.00	0.00
203.0-211.0	0.00	0.00
>212.0	0.00	0.00

Lifetime: Time vs Boost Pressure - C15 IND (JRE12219)

Boost Pressure(psi)	hours	%
<11.6	0.35	0.47
11.6-12.1	0.05	0.07
13.1-13.5	0.05	0.07
14.5-15.0	0.25	0.33
16.0-16.4	1.95	2.61

17.4-17.9	13.45	18.01
18.9-19.3	37.10	49.67
20.3-20.8	10.55	14.12
21.8-22.2	9.25	12.38
23.2-23.7	1.70	2.28
24.7-25.1	0.00	0.00
26.1-26.6	0.00	0.00
27.6-28.0	0.00	0.00
>29.0	0.00	0.00

Lifetime: Time vs Engine Speed And Engine Load Factor - C15 IND (JRE12219)

rpm	<1100	1100-1299	1300-1499	1500-1699	1700-1899	1900-2099	2100-2299	>2300	Total
%									
<50.0	0.00	0.00	246.50	20.40	0.00	0.00	0.00	0.00	266.90
50.0-59.9	0.00	0.00	507.50	144.35	0.05	0.00	0.00	0.00	651.90
60.0-69.9	0.00	0.00	155.85	89.75	11.85	0.00	0.00	0.00	257.45
70.0-79.9	0.00	0.00	28.30	66.85	124.85	0.00	0.00	0.00	220.00
80.0-89.9	0.00	0.00	7.35	45.60	538.50	0.00	0.00	0.00	591.45
>90.0	0.00	0.10	11.20	25.90	49.70	0.00	0.00	0.00	86.90
Total	0.00	0.10	956.70	392.85	724.95	0.00	0.00	0.00	2074.60

Lifetime: Total Occurrences vs Engine Speed - C15 IND (JRE12219)

Engine Speed(rpm)	Count	%
<2500.0	0	0.00
2500.0-2599.0	0	0.00
2600.0-2699.0	0	0.00
2700.0-2799.0	0	0.00
2800.0-2899.0	0	0.00
2900.0-2999.0	0	0.00
3000.0-3099.0	0	0.00
3100.0-3199.0	0	0.00
3200.0-3299.0	0	0.00
>3300.0	1	100.00

Lifetime: Time vs Engine Speed - C15 IND (JRE12219)

Engine Speed(rpm)	hours	%
<1100.0	0.00	0.00
1100.0-1299.0	0.10	0.00
1300.0-1499.0	956.75	46.11
1500.0-1699.0	393.00	18.94
1700.0-1899.0	725.10	34.95
1900.0-2099.0	0.00	0.00
2100.0-2299.0	0.00	0.00
>2300.0	0.00	0.00

Lifetime: Time vs Engine Load Factor - C15 IND (JRE12219)

Engine Load Factor(%)	hours	%
<50.0	266.95	12.87
50.0-59.0	651.95	31.42
60.0-69.0	257.45	12.41
70.0-79.0	220.05	10.61
80.0-89.0	591.55	28.51
>90.0	86.95	4.19

Trip: Time vs Engine Speed - C15 IND (JRE12219)

Engine Speed(rpm)	hours	%
<1100.0	0.00	0.00
1100.0-1299.0	0.10	0.00
1300.0-1499.0	956.75	46.11
1500.0-1699.0	393.00	18.94
1700.0-1899.0	725.10	34.95
1900.0-2099.0	0.00	0.00
2100.0-2299.0	0.00	0.00
>2300.0	0.00	0.00

Trip: Time vs Engine Load Factor - C15 IND (JRE12219)

Engine Load Factor(%)	hours	%
<50.0	266.95	12.87
50.0-59.0	651.95	31.42
60.0-69.0	257.45	12.41
70.0-79.0	220.05	10.61
80.0-89.0	591.55	28.51
>90.0	86.95	4.19

Injector Trim Calibration - C15 IND (JRE12219)

Injector	Serial Number	File Version
Injector1	000000005A519889048D	0
Injector2	000000005A51988937BB	0
Injector3	000000005A51988927AE	0
Injector4	000000005A5198891084	0
Injector5	000000005A51988919BB	0
Injector6	000000005A51988926A9	0

Monitoring System - C15 IND (JRE12219)

Description	State	Trip Point	Delay Time
Engine Overspeed			
Least Severe (1)	On	2100 rpm	1 sec
Most Severe (3)	On	2100 rpm	1 sec
High Auxiliary Pressure			
Least Severe (1)	Off	218 psi	4 sec
Moderate Severity (2)	Off	218 psi	3 sec
Most Severe (3)	Off	218 psi	3 sec

High Auxiliary Temperature			
Least Severe (1)	On	261 Deg F	4 sec
Moderate Severity (2)	On	264 Deg F	4 sec
Most Severe (3)	On	264 Deg F	4 sec
High Engine Coolant Temperature			
Least Severe (1)	On	226 Deg F	10 sec
Moderate Severity (2)	On	232 Deg F	10 sec
Most Severe (3)	On	232 Deg F	10 sec
High Engine Inlet Air Temperature			
Least Severe (1)	On	179.6 Deg F	8 sec
Moderate Severity (2)	On	186.8 Deg F	8 sec
High Fuel Pressure			
Least Severe (1)	On	109.9 psi	8 sec
High Fuel Temperature			
Least Severe (1)	On	194.0 Deg F	30 sec
Moderate Severity (2)	On	195.8 Deg F	10 sec
Most Severe (3)	Off	195.8 Deg F	10 sec
Low Coolant Level			
Least Severe (1)	On	None	10 sec
Moderate Severity (2)	On	None	10 sec
Most Severe (3)	On	None	10 sec
Low Engine Oil Pressure			
Least Severe (1)	On	None	8 sec
Moderate Severity (2)	On	None	8 sec
Most Severe (3)	On	None	4 sec

Job Segment - C15 IND (JRE12219)

Description	Value	Unit
Time	7395:50	hours
Fuel	45619.5	gal
Idle Time	7395:47	hours
Idle Fuel	45619.5	gal
% Idle Time	100	%
Total Fuel / Total Rated Fuel	0	%
Start Time	0:00	hours
End Time	7395:50	hours

Maintenance Indicator - C15 IND (JRE12219)

Description	Service Status	Value	Unit
PM1	---	Unavailable	

Sullair Open Frame Compressor Performance Test

Unit Number..... S/N 201009170079
Date..... 01/21/2025
Tester(s)..... Ryan Will / Carl Foust
Airend Gear Set (1150 or 1350).. 1150 (ADA#1)

Ambient Conditions:
Humidity..... 63 %
Pressure..... 30.48 inches Mercury

		#1	#2	#3	#4	#5	#6	#7	#8	#9
	Time.....	11:10	11:20	11:30	11:40	11:50				
	Ambient Air (°F).....	3°F	3°F	5°F	5°F	5°F				
	Flow Meter Flow (SCFM).....									
	Flow Meter Pressure (PSI).....									
ENGINE:										
	Engine Speed (RPM).....	1800	1800	1800	1800	1800				
	Hour Meter Hours.....	7395	7395.2	7395.4	7395.6	7395.7				
	Engine Load Factor (%).....	87	87	87	87	87				
	Boost Pressure (PSI, CAT ET).....									
	Coolant Temperature (°F).....	158	158	158	158	158				
	Oil Pressure (PSI).....	72	72	72	72	72				
	Fuel Temperature (°F).....									
	Fuel Pressure (PSI).....									
	Fuel Consump. Rate (gal/h).....									
	Intake Manifold Temp (°F).....									
	Volts Charging.....	27.9	28	28	28	28				
COMPRESOR:										
	Airend Disch. Press. (PSI).....	350	350	350	350	350				
	Disch Air Temp (°F, CAT ET).....	220	220	220	220	220				
	Inlet Oil Cooler Temp (°F).....	118	116	116	112	112				
	Outlet Oil Cooler Temp (°F).....	118	115	127	126	121				
	Return Oil Temp (°F) to Comp.....	144	156	152	152	153				
	AC Discharge Air Temp (°F)									

PHYSICAL SHUTDOWN AUDIT - SULLAIR WITH KDS CONTROLS

(Non-Aftercooled, No Louvers, 1150CFM/350PSI/1800RPM)

Customer..... Coastal Drilling
Compressor (Sullair)..... Model #900/1150XHDTQ-CA3
S/N 201009170079
(No Louvers or After Cooler)
Coastal ID No..... 24-0427
WO Number..... 219

Date..... 01/21/2025
Tester(s)..... Ryan Will / Carl Foust
Hours..... 7396

1) EMERGENCY STOP (E-STOP) SHUTDOWN:
- -E-STOP SHUTDOWN FUNCTIONAL — ✓ YES ____ NO
- -E-STOP SHUTDOWN "LIGHT" FUNCTIONAL (RED) — ✓ YES ____ NO

2) ENGINE COOLANT LEVEL SENSOR:
- -COOLANT LEVEL SENSOR FUNCTIONAL — ✓ YES ____ NO
- -VERIFY SHUTDOWN CODE "SPN 111 FMI 17" IS DISPLAYED ON POWERVIEW — ✓ YES ____ NO

3) COMPRESSOR AUTO. BLOWDOWN VALVE:
- -BLOWDOWN VALVE FUNCTIONAL — ✓ YES ____ NO
- -BLOWDOWN TIME (350 PSI to 100 PSI) — 85 SECONDS

4) AIREND DISCHARGE TEMP. SENSOR (CAT #145-7028):
- -LOCATED IN AIREND DISCHARGE CHECK VALVE — ✓ YES ____ NO
- -SHUTS ENGINE DOWN — ✓ YES ____ NO
- -VERIFY SHUTDOWN TEMP. IS SET AT 265°F — ✓ YES ____ NO
- -VERIFY SHUTDOWN CODE "SPN 441 FMI 15" IS DISPLAYED ON POWERVIEW — ✓ YES ____ NO

5) AIREND INTERSTAGE TEMP. SWITCH (280°F, N.C.):
- -LOCATED IN AIREND INTERSTAGE PIPE — ✓ YES ____ NO
- -SHUTS ENGINE DOWN — ✓ YES ____ NO
- -AIREND TEMP SHUTDOWN "LIGHT" FUNCTIONAL (RED) — ✓ YES ____ NO
- -VERIFY SWITCH IS 280°F (SULLAIR #02250163-929) — ✓ YES ____ NO

6) RECEIVER TANK TEMP. SWITCH (280°F, N.C.):
- -LOCATED IN SEPARATOR TANK (FOR COMPRESSOR FLASH) — ✓ YES ____ NO
- -SHUTS ENGINE DOWN — ✓ YES ____ NO
- -DISCH. TEMP SHUTDOWN "LIGHT" FUNCTIONAL (RED) — ✓ YES ____ NO
- -VERIFY SWITCH IS 300°F (SULLAIR #02250159-105) — ✓ YES ____ NO

7) STARTING 24 VOLT AIR PUMP:
- -OPERATIONAL — ✓ YES ____ NO
- -PROGRAMMED TO RUN 20 SECONDS — ✓ YES ____ NO

8) CONTROL PANEL LIGHT FUNCTIONAL — ✓ YES ____ NO

9) CONTROL HEATERS FUNCTIONAL:
- -REGULATOR — ✓ YES ____ NO
- -FRONT CONTROL ORIFICE — ✓ YES ____ NO
- -REAR CONTROL ORIFICE — ✓ YES ____ NO
- -WATER SEPARATOR ORIFICE — ✓ YES ____ NO
- -CONTROL HEATER "LIGHT" FUNCTIONAL (RED) — ✓ YES ____ NO

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10) DIAGNOSTIC PORT FUNCTIONAL — ✓ YES ____ NO

11) FUEL SENSOR CALIBRATED & FUNCTIONAL — ✓ YES ____ NO

12) AIR FILTER SWITCHES (N.C.) / INDICATOR LIGHT:
- -ENGINE AIR FILTER SWITCH FUNCTIONAL — ✓ YES ____ NO
- -COMPRESSOR AIR FILTER SWITCH FUNCTIONAL — ✓ YES ____ NO
- -CHECK AIR FILTERS "LIGHT" FUNCTIONAL (YELLOW) — ✓ YES ____ NO

13) 1-UP DISPLAY OPTIONS PROGRAMMED FOR:
- -RPM — ✓ YES ____ NO
- -FUEL LEVEL — ✓ YES ____ NO
- -AUX TEMPERATURE — ✓ YES ____ NO
- -ENGINE HOURS — ✓ YES ____ NO

14) MURPHY POWERVIEW ANALOG GAUGES FUNCTIONAL & BACKLIGHT:
- -DISCHARGE AIR TEMPERATURE — ✓ YES ____ NO
- -ENGINE WATER TEMPERATURE — ✓ YES ____ NO
- -VOLTMETER — ✓ YES ____ NO
- -ENGINE RPM — ✓ YES ____ NO
- -ENGINE OIL PRESSURE — ✓ YES ____ NO

15) ENGINE SPEED SETTINGS:
- -TOP ENGINE LIMIT PROGRAMMED TO 1800 RPM — ✓ YES ____ NO
- -LOW IDLE SPEED PROGRAMMED TO 1400 RPM — ✓ YES ____ NO

16) START PROTECTION SWITCH FUNCTIONAL (ENGINE WILL NOT CRANK WITH SEPARATOR TANK PRESSURE > 20 PSI) — ✓ YES ____ NO

17) ENGINE ETHER STARTING AID FUNCTIONAL (DISCONNECT ETHER LINE AT ENGINE AND DEPRESS BUTTON) — ____ YES ____ NO; ✓ NOT APPLICABLE

18) ENGINE "PRODUCT STATUS REPORT" DOWNLOADED AND EMAILED TO CEF — ✓ YES ____ NO

NOTES: NON AFTERCOOLED, ENCLOSED UNIT, KDS CONTROL PANEL AND REGULATION SYSTEM

COMMENTS:

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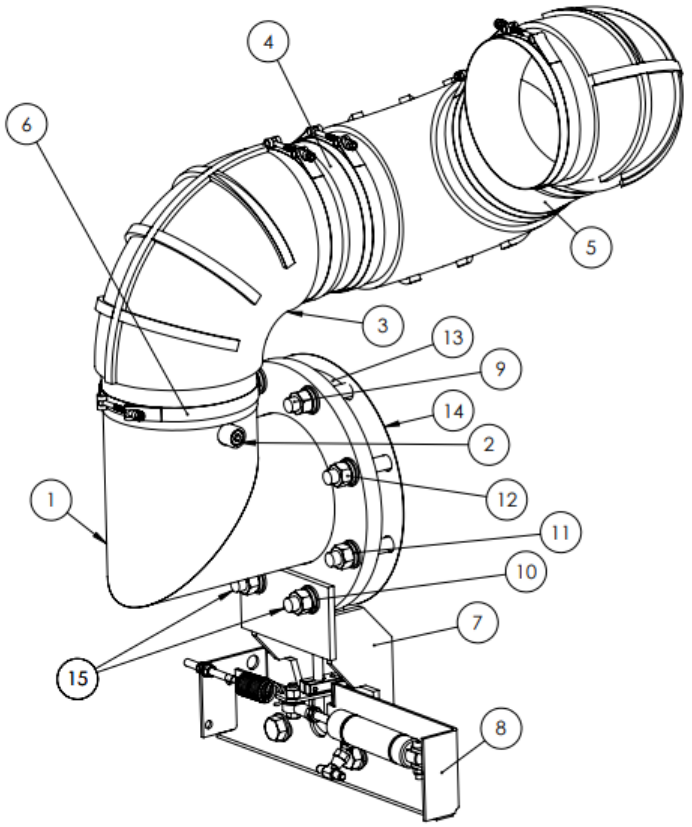
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
00	Release to Prod	01-24-2025	C.E.F.



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	637075	FLANGE, AIR INTAKE, SULLAIR	1
2	626563	FITTING, HEX SOCKET PLUG, 1/2" NPT, 7000	1
3	604201	AIR INLET, ELBOW, 8IN	3
4	02250160-984	TUBE, ALUM AIR INLET, 8" OD X 4" LG	1
5	02250134-182	TUBE, ALUM AIR INLET, 8" OD X 6" LG	1
6	607740	CLAMP, T-BOLT, 8"	6
7	637074	BRACKET, ASSY, SULLAIR-KDS	1
8	701156	INLET AIR CONTROL, SULLAIR 1150/350 ENCLOSED	1
9	614643	BOLT, STUD, 3/4"-10 X 4-1/4", B7, PLAIN	6
10	607707	WASHER, FLAT SAE, 3/4", STEEL, YZ	8
11	607728	WASHER, SPLIT LOCK, 3/4", STEEL, YZ	8
12	607344	NUT, HEX, 3/4"-10, GR8, YZ	8
13	612869	VALVE, BUTTERFLY 1070/1250, AIR, 8, NA	1
14	600989	GASKET, BUTTERFLY VALVE	2
15	606625	BOLT, STUD, 3/4"-10 X 5", B7, PLAIN	2

TOLERANCES

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
FRACTIONAL: ±1/16"
ANGULAR: ±1°
DECIMALS: .X ±.030"
.XX ±.015"
.XXX ±.005"

MATERIAL: SEE BOM

FINISH: N/A

DO NOT SCALE DRAWING

PROPRIETARY AND CONFIDENTIAL

NOTICE: ANYTHING DESCRIBED, SET FORTH, CONTAINED, INCORPORATED IN, OR REFERRED TO ABOVE AND ANYTHING PROVIDED, OBTAINED OR GENERATED WITH REGARD TO ANYTHING SET FORTH ABOVE, SHALL BE OWNED BY AND SHALL REMAIN THE SOLE AND EXCLUSIVE PROPERTY OF KEYSTONE DRILL SERVICES (KEYSTONE). NONE OF THE SAME MAY BE COPIED WITHOUT THE PERMISSION OF KEYSTONE, AND UPON ITS REQUEST, MUST BE PROMPTLY DESTROYED, OR RETURNED TO KEYSTONE. EVERYTHING SET FORTH ABOVE SHALL BE AND REMAIN STRICTLY CONFIDENTIAL AND MAY NOT BE PROVIDED OR DIVULGED TO ANY OTHER PARTY WITHOUT KEYSTONE'S ADVANCE PERMISSION.

	NAME	DATE
DRAWN	J.L.C.	12-11-2024
CHECKED	M.E.K.	01-17-2025

KEYSTONE DRILL SERVICES
SOMERSET, PA 15501

TITLE: AIR INLET, KDS SULLAIR

SIZE	DWG. NO.	REV
B	KD400023	00

SCALE: 1:6 WEIGHT: SHEET 1 OF 1

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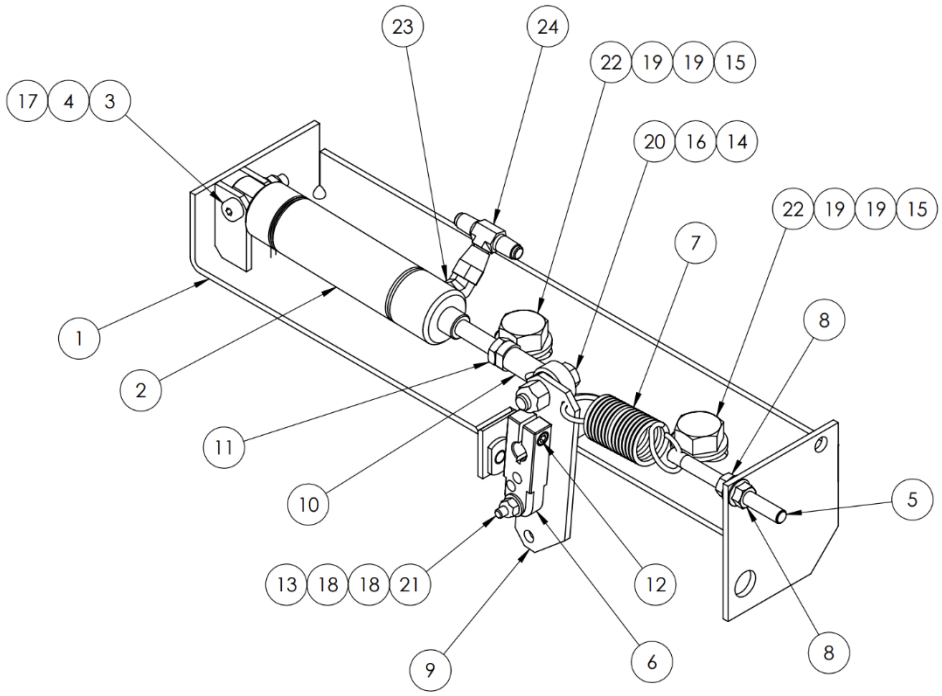
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
00	RELEASED FOR PRODUCTION	1/27/2022	C.E.F.
01	Update Item #22 in BOM	01-23-2025	C.E.F.



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	611677	BRACKET, AIR CYLINDER	1
2	605730	KIT, CYLINDER	1
3	603541	PIN, PIVOT, UL88	1
4	601291	NUT, PIVOT BOLT	1
5	605991	SPRING, ADJUSTING ROD	1
6	605393	LEVER, AIR CYLINDER	1
7	605998	SPRING, BUTTERFLY	1
8	605435	NUT, WHIZ-LOCK, 3/8-16	2
9	615836	LEVER, REG	1
10	605389	BEARING, ROD	1
11	605361	NUT, HEX JAM 43	1
12	617653	SCREW, LEVER, SCH250, 20 X 07555	1
13	607364	NUT, NYLOK, 1/4"-20, GR8, YZ	1
14	607371	NUT, NYLOK, 7/16"-14, GR8, YZ	1
15	607365	NUT, NYLOK, 3/4"-10, GR8, YZ	2
16	607711	WASHER, FLAT SAE, 7/16", STEEL, YZ	1
17	607709	WASHER, FLAT SAE, 5/16", STEEL, YZ	1
18	607706	WASHER, FLAT SAE, 1/4", STEEL, YZ	2
19	607707	WASHER, FLAT SAE, 3/4", STEEL, YZ	4
20	606570	BOLT, HHCS, 7/16"-14 X 1-1/2", GR8, YZ	1
21	606518	BOLT, HHCS, 1/4"-20 X 1-1/2", GR8, YZ	1
22	0115361	BOLT, HHCS, 3/4"-10 X 2", GR8, YZ	2
23	626165	FITTING, 45 ADAPTER, 6MJ X 2MP, 5000 PSI	1
24	603076	FITTING, TEE ADAPTER, 6MJ X 6MJ X 6FJX	1

GENERAL NOTES:

(1) AIR CONTROL TO BE USED ON STANDARD AIR COMPRESSOR EQUIPPED WITH KDS CONTROLS.

TOLERANCES

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
FRACTIONAL: ±1/16"
ANGULAR: ±1°
DECIMALS: .X ±.030"
.XX ±.015"
.XXX ±.005"

MATERIAL: N/A

FINISH: N/A

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	M.E.S.	1/27/2022
CHECKED	C.E.F.	1/27/2022

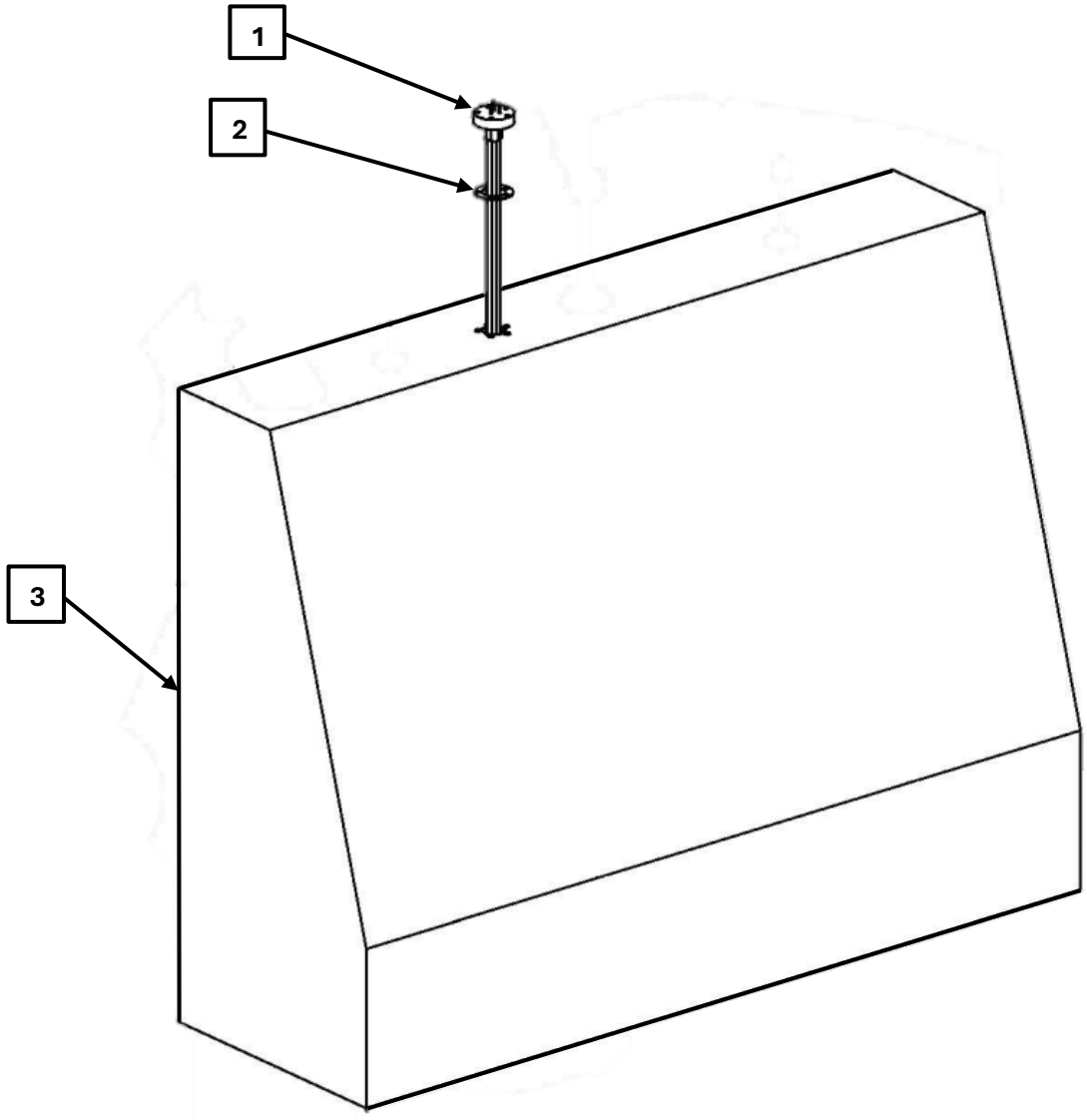
KEYSTONE DRILL SERVICES
SOMERSET, PA 15501

TITLE:
INLET AIR CONTROL, SULLAIR 1150/350 ENCLOSED

SIZE	DWG. NO.	REV
B	KD400022	01

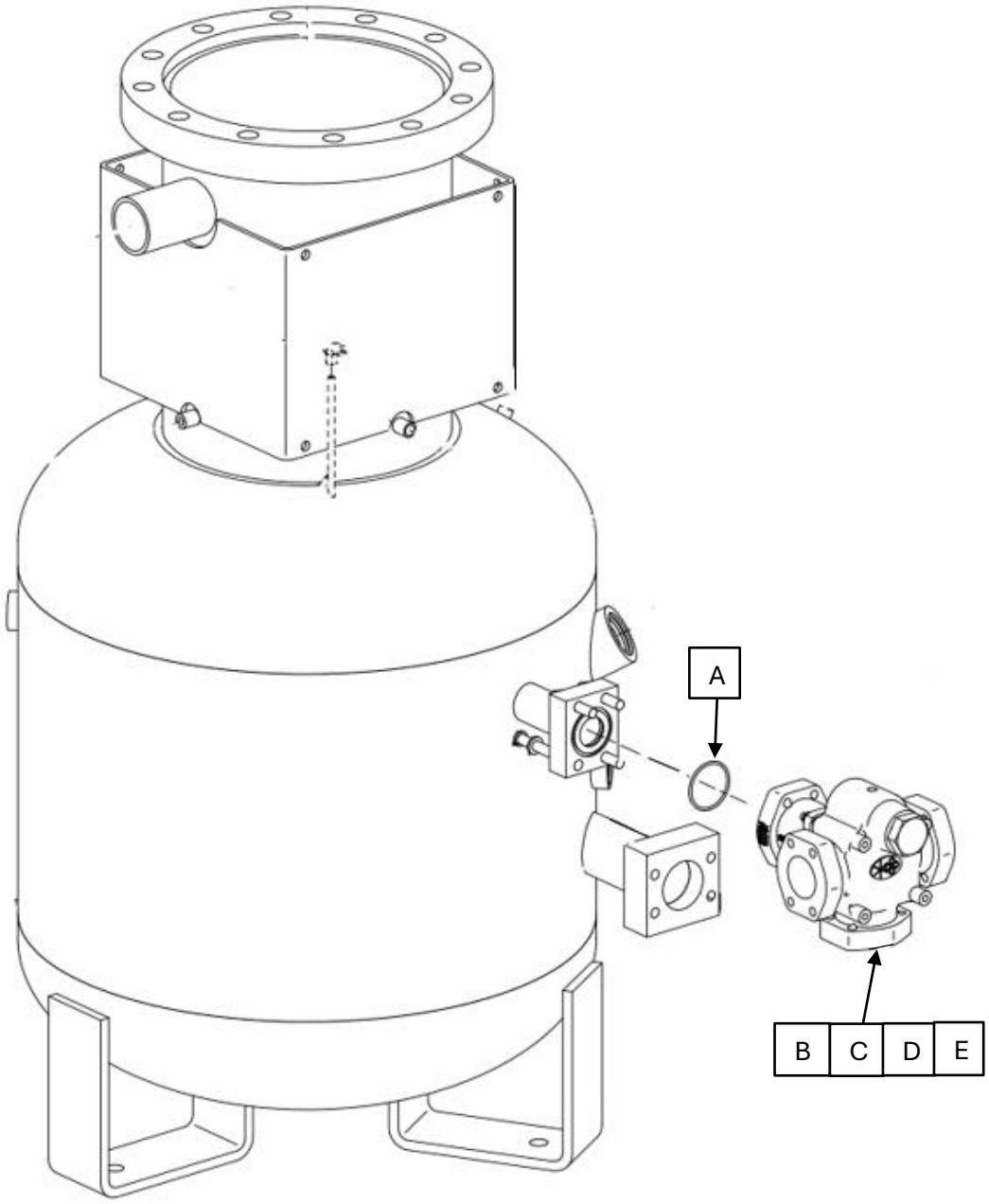
SCALE: 1:3 | WEIGHT: 2.83 | SHEET 1 OF 1

FUEL SYSTEM



Item #	Part #	Description	QTY.
1	626692	SENDER, FUEL LEVEL	1
2	634954	GASKET, FUEL GAUGE NEOPRENE (AND HARDWARE)	1
3	02250141-157	TANK, FUEL 190GAL FOR NEW SENDER	1

RECEIVER TANK STANDARD AIR



Item #	Part #	Description	QTY.
A	605451	O-RING, VITON 2-1/4" x 1/8"	1
B	609948	VALVE, THERMOSTAT ASSY, 600 PSI	1
C	606094	THERMOSTAT, TEMP ELEMENT, 150˚F	1
D	612406	QUAD SEAL, SULLAIR	1
E	618509	KIT, FLANGE , SAE, SPLIT, 2", VITON (NOT DETAILED IN IMAGE ABOVE)	3
	605520	O-RING (NOT DETAILED IN IMAGE ABOVE)	3

Recommended Spare Parts List

KEY	DESCRIPTION	PART NUMBER	QUANTITY
1	REPLACEMENT FOR AIR FILTER ELEMENT - PRIMARY	600853	2
2	REPLACEMENT FOR AIR FILTER ELEMENT - SECONDARY (SAFETY)	600852	2
3	REPLACEMENT FOR COMPRESSOR OIL FILTER	604921	1
4	REPLACEMENT FOR ENGINE (CAT) OIL FILTER - 1R1808	604964	1
5	REPLACEMENT FOR ENGINE (CAT) FUEL FILTER - PRIMARY: 1 R0771	604941	1
6	REPLACEMENT FOR ENGINE (CAT) FUEL FILTER - SECONDARY: 1R0749	604939	1
	KITS		
7	REPLACEMENT KIT FOR RECEIVER TANK SEPARATOR ELEMENT	600967	1
8	REPLACEMENT FOR STARTER SOLENOID	609768	1
9	REPLACEMENT FOR INLET BUTTERFLY VALVE	612869	1
10	REPLACEMENT FOR BUTTERFLY VALVE CYLINDER (NO SPRINGS INCLUDED)	605730	1
11	REPLACEMENT SPRING, BUTTERFLY VALVE CYLINDER	605998	1
12	REPLACEMENT START/RUN SOLENOID, N.C. - SERVICE AIR	606275	1
13	REPLACEMENT START SOLENOID, N.O. - STARTER COMPRESSOR	606274	1
14	REPLACEMENT PRESSURE TRANSDUCER - PNEUMATIC CONTROLS	614152	1
15	REPLACEMENT BACK PRESSURE REGULATOR	606257	1
16	REPLACEMENT FOR BLOWDOWN VALVE	619335	1
17	REPLACEMENT ANTI-RUMBLE VALVE	602046	1
18	REPLACEMENT AXIOMATIC SIGNAL CONVERTER (CONTROL PANEL)	616048	1
19	REPLACEMENT DISCHARGE TEMPERATURE SENSOR	616218	1
20	REPLACEMENT STARTING COMPRESSOR (FISH PUMP)	604749	1
21	REPLACEMENT SAFETY RELIEF VALVE (425 PSI)	606265	1
22	REPLACEMENT FOR COMPRESSOR OIL THERMOSTAT (150° F)	606094	1
23	REBUILD KIT FOR COMPRESSOR OIL STOP VALVE	605743	1
24	DISCHARGE CHECK VALVE KIT	626535	1
25	MINIMUM PRESSURE VALVE KIT	626117	1
	MISCELLANEOUS		
26	REPLACEMENT FOR ENGINE/COMPRESSOR DRIVE COUPLING	604789	1
27	REPLACEMENT FOR COMPRESSOR INTAKE FILTER RESTRICTION SWITCH	618511	1
28	REPLACEMENT FOR ENGINE INTAKE FILTER RESTRICTION SWITCH	618512	1
29	REPLACEMENT FOR COMPRESSOR INTERSTAGE TEMPERATURE (IT) 280˚F SWITCH	614810	1
30	REPLACEMENT FOR RECEIVER TANK TEMPERATURE (RTT) 280˚F SWITCH	614810	1
31	REPLACEMENT ALTERNATOR	616345	1
32	REPLACEMENT STARTER	612548	1
33	REPLACEMENT FOR BATTERY DISCONNECT SWITCH	606049	1
34	REPLACEMENT FOR ALTERNATOR BELT	626099	1
35	REPLACEMENT FOR COOLER FAN BELT	614574	4
36	REPLACEMENT FOR POWERVIEW PV101	616054	1
	LUBRICATION		
37	REPLACEMENT FOR COMPRESSOR LUBRICANT - SCH68 (55 GALLONS/208 LITERS)	605549	1
38	REPLACEMENT FOR COOLANT - PEAK GLOBAL 50/50 (55 GALLONS/208 LITERS)	621651	1

CAUTION

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

PROCEDURE FOR ORDERING PARTS

When ordering parts, always indicate the Serial Number of the compressor. This can be obtained from the Bill of Landing for the compressor or from the Serial Number Plate located on the compressor. Refer to *Figure 7-1.*

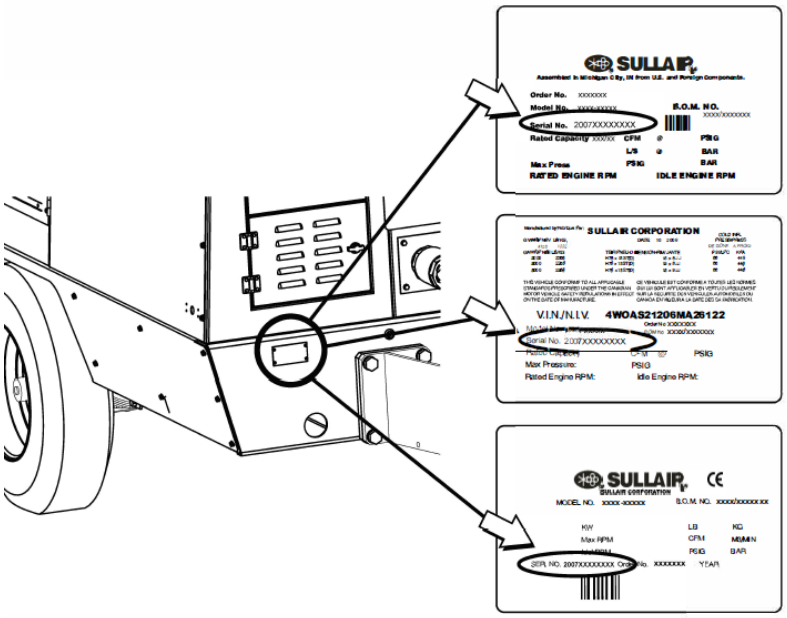


Figure 7-1: Serial Plate - Serial Number Location

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 CORPORATION
3700 East Michigan Boulevard
Michigan City, Indiana 46360 U.S.A.
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

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

FOR PARTS AND SERVICE

KEYSTONE DRILL SERVICES
SOMERSET, PA
1-800-221-0586
1-814-443-2670
www.keystonedrill.com

AFTER-HOUR SERVICE/PARTS
1-800-221-0586

MURPHY
by ENOVATION CONTROLS

PowerView™

Model PV101-C
User's Guide
Version 3.2

2013-04-08

00-02-0796
Catalog Section 78

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Table of Contents

In order to consistently bring you the highest quality, full featured products, we reserve the right to change our specifications and designs at any time. The latest version of this manual can be found at www.fwmurphy.com.

Warranty - A limited warranty on materials and workmanship is given with this Enovation Controls product. A copy of the warranty may be viewed or printed by going to www.fwmurphy.com/warranty

BEFORE BEGINNING INSTALLATION OF THIS MURPHY PRODUCT:

- Disconnect all electrical power to the machine.
- Make sure the machine cannot operate during installation.
- Follow all safety warnings of the machine manufacturer.
- Read and follow all installation instructions.

Introduction

Congratulations on purchasing your PowerView display, a multifunction tool that provides a window into the many parameters and service codes of modern electronic engines and transmissions.

This guide is intended to help you set up your PowerView display and identify navigation basics and product features. The display's simple navigation and powerful features allow you to quickly master the product.

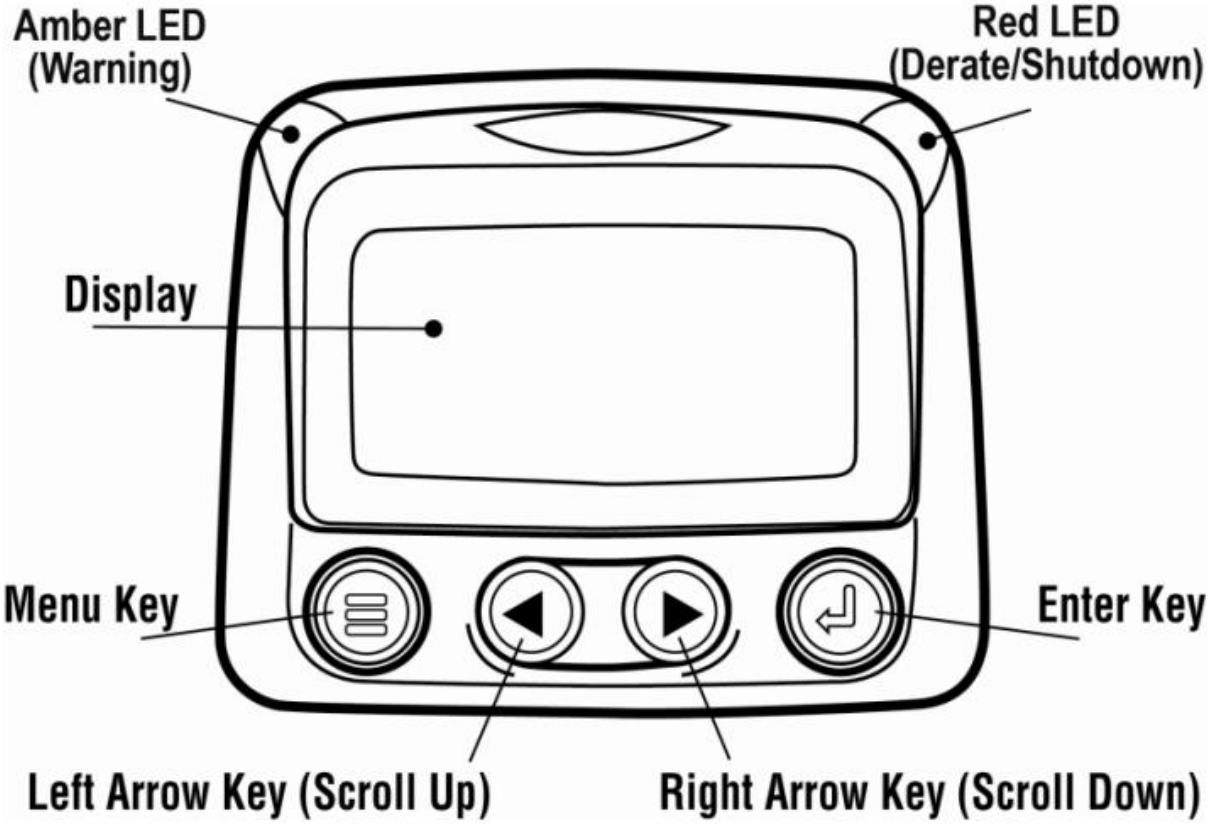
Additional information can be found on our website at www.fwmurphy.com/pv101/.

Engine and Transmission Parameters

The following are some of the engine and transmission parameters which can be displayed in standard or metric units as well as in English, Spanish, French, Italian or German languages (when applicable, consult engine or transmission manufacturer for SAE J1939 supported parameters):

- Engine RPM
- Engine hours
- System voltage
- Percent engine load at current RPM
- Coolant temperature
- Oil pressure
- Fuel economy
- Throttle position
- Engine manifold air temperature
- Current fuel consumption
- Transmission oil pressure
- Transmission oil temperature
- Transmission gear position
- Engine configuration parameters
- Active fault codes
- Stored fault codes

Faceplate Features



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Navigation and Keypad Functions

The keypad on the PowerView display is a capacitive touch sensing system. There are no mechanical switches to wear or stick. The keys on the keypad perform the following functions:

	**Menu** – Enter or exit menu screens.
	**Left Arrow** – Scroll the screen or move the parameter selection to the left or upward.
	**Right Arrow** – Scroll the screen and move the parameter selection to the right or downward.
	**Enter Key** – Select a menu or parameter or hide/view an active fault code.

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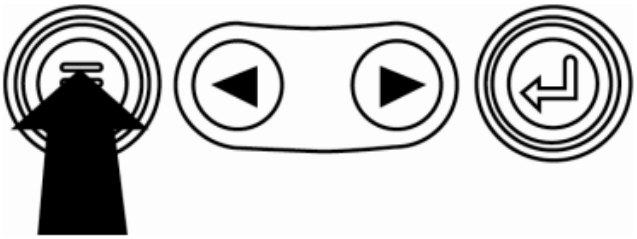
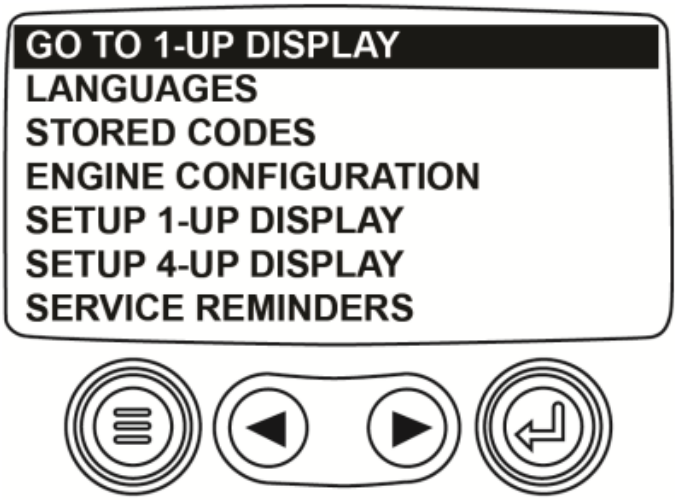
Basic Navigation

1. When **Menu** is pressed, the Main menu items display.





2. Press the **Arrow Keys** to move the selection bar to other menu items.

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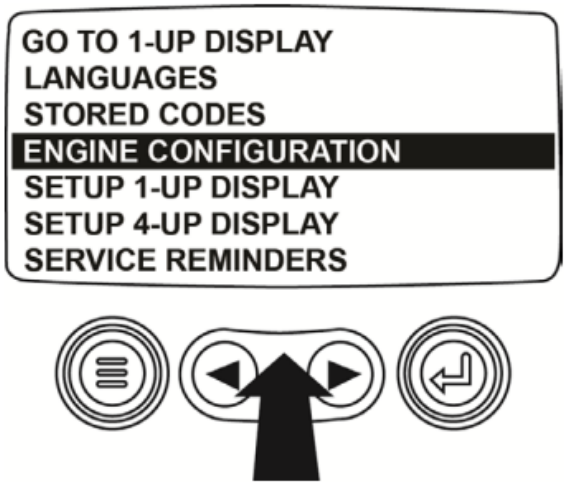
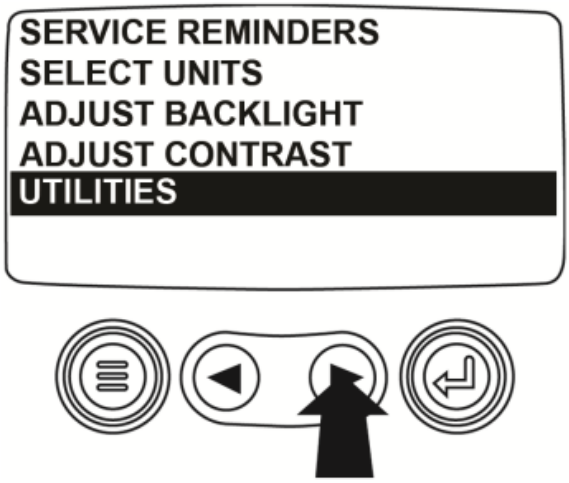


3. Certain menus have multiple pages. Scrolling to the top or bottom item on the current page reveals other menu items on additional pages.



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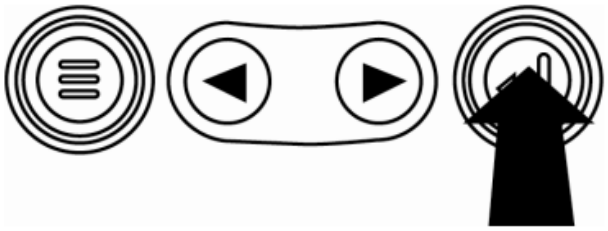
4. When the desired item is highlighted by the cursor, pressing **Enter** selects that item and displays the corresponding screen.



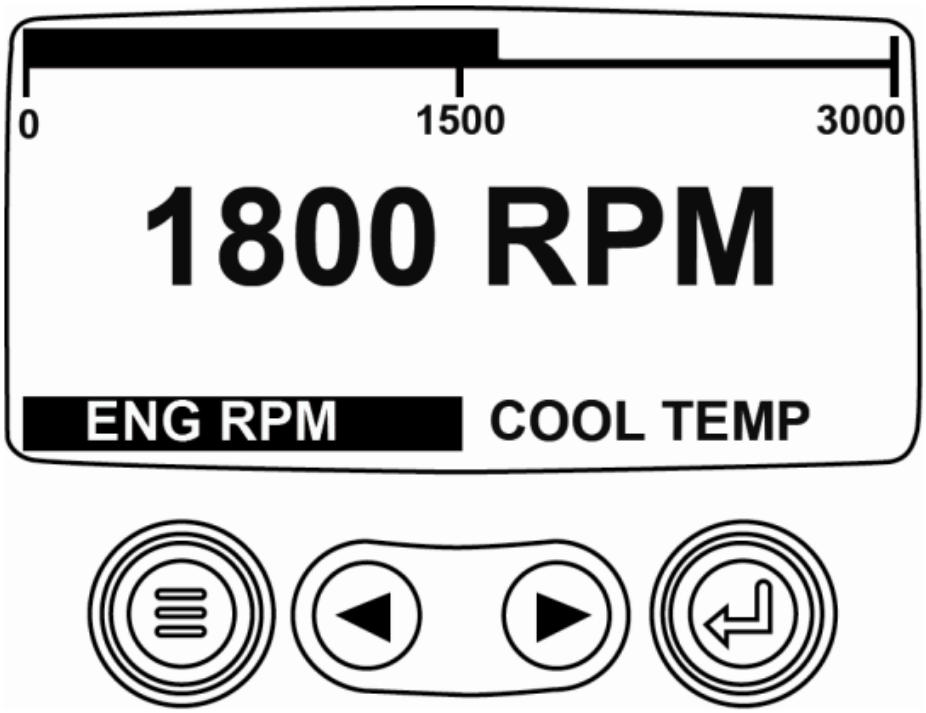
First Time Start Up

1. When power is first applied to the display, the Murphy logo is displayed.

NOTE: Expect a 20-minute warm up for the display at temperatures of -29°C/-20°F.

2. If the Engine ECU is broadcasting a 'Wait to Start' message, this screen will be shown. Engine manufacturers typically recommend against starting the engine while this message is broadcasted from the ECU. Once the ECU stops broadcasting this message, this screen will no longer be displayed.

3. Once the engine has started, the single engine parameter is displayed with the engine RPM. Touching the **Right Arrow Key** displays the coolant temperature. The screen can be changed to other parameters by touching **Menu**.



Main Menu Options

This section describes the features listed on the **Main menu** of the PowerView. These menu options display whenever you touch **Menu**. The **Arrow Keys** allow you to scroll through items. **Enter** selects the highlighted option.

Go to 1-Up Display/Go to 4-Up Display

If you want to go to a different display, touch **Enter**. The alternate view is displayed.

DPF Regen*

*Murphy products are compliant with requirements for U.S. EPA Emission Standard – Tier 4 Interim and EU Emissions Standard – Stage IIIB for diesel engines. These engines when fitted with a DPF (Diesel Particulate Filter) can self-clean the filter of particulates. This self-cleaning is known as Regeneration. PowerView offers 3-CAN options when DPF REGEN is enabled and available in the engine ECU. For more information, find document # 1110836 on the Murphy Web site (www.fwmurphy.com).

Unless selected in the **OEM** Menu, DPF REGEN does not display in the **Main** Menu. When available, the following options are presented:

1. **AUTO DPF REGEN** – This is the factory default. Select and PowerView sends a CAN message to the ECU to perform DPF Regeneration (regen) automatically whenever needed.

2. **REQUEST DPF REGEN** – Select this and a second screen, **REQUEST DIESEL PARTICULATE FILTER REGEN,** displays. Use this to force a regen when auto-regen is not due or is inhibited by PowerView. Touch **YES** (Enter) and PowerView sends a request for a regen every second for 10 seconds. If the engine does not respond, PowerView defaults back to Auto DPF Regen. You may send the request again or exit without sending a request by touching **CANCEL** (Menu). You return to the **Main** menu.

3. **INHIBIT DPF REGEN** – In cases where regen cannot be performed due to restrictions, select this to eliminate the possibility of a regen occurring. The inhibit lamp displays when the engine ECU responds to this inhibit request from PowerView. Once this option is selected, it remains in place through power cycles. When inhibit is no longer needed, you can select a different option.

The following ISO symbols indicate regen status. In each case, the symbol displays when the parameter's lamp status is broadcast from the ECU back to the PowerView.

DPF Regen ISO Symbols			
Icon	**PGN**	**SPN**	**Description**
	64892	3697	High Exhaust Temperature (HEST) lamp indicates regeneration in process.
	64892	3703	DPF Particulate Filter Restricted lamp indicates a Regen is needed.
	64892	3698	DPF Inhibit lamp indicates an inhibited Regen status.

Selecting a Language

From LANGUAGES, you may select ENGLISH, ESPANOL, FRANCAIS, ITALIANO, or DEUTSCH. An asterisk to the right of the language indicates it is selected.

Stored Codes

Select this and PowerView requests and displays stored fault codes from the engine ECU. If the engine does not support this function, a "**Timeout ECU Not Responding**" message displays.

Engine Configuration

This allows you to scroll through and view the engine's configuration data. If the engine does not support this function, a "**No Engine Configuration Data**" message displays.

Setup 1-Up Display

Press **Menu** and use the **Arrow Keys** to highlight SETUP 1-UP DISPLAY, then press **Enter**. Three options are available for modification of the 1-Up display:

1. **Use Defaults** – This option contains a set of engine parameters: Engine Hours, Engine RPM, System Voltage, Battery Voltage, % Engine Load at Current RPM, Coolant Temperature, and Oil Pressure.

To select USE DEFAULTS, highlight the option and press **Enter**. A message indicating “RESTORED TO DEFAULTS” is displayed.

2. **Custom Setup** – In this option, select the parameters and order in which they will be displayed. The list is long; continue to scroll until you have seen all available parameters. To select Custom Setup, highlight and press **Enter**. A list of engine parameters displays.

   NOTE: The PV101 must see the parameter being broadcast over J1939 in order to select the parameter from the list.

   To select a parameter, use the **Arrow Keys** to scroll and highlight the parameter, then press **Enter**.

   Selected parameters are indicated by a number to the right of it. The numbers represent the order in which the parameters will be displayed.

   To deselect a parameter and remove it from the list of displayed parameters, highlight the parameter and touch **Enter**.

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Continue to scroll and select additional parameters for the CUSTOM 1-UP DISPLAY. Touch **Menu** at any time to return to the **CUSTOM SETUP** menu.

3. **Automatic Scan** – (Default is **OFF**) Selecting the AUTOMATIC SCAN **ON** function will cause the 1-up display to scroll through the selected set of parameters one at a time.

Once the **Use Defaults**, **Custom Setup** and **Automatic Scan** functions have been set, touch **Menu** once to return to the Main menu, or twice to display the 1-up display screen.

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Setup 4-Up Display

There are two 4-up display screens available. Each option can place parameter data into one of four areas on the screen known as quadrants. ▪ Factory defaults for the first 4-up display include coolant temperature, engine speed, oil pressure, and battery voltage. ▪ Factory defaults for the second 4-up display include DEF (diesel exhaust fluid) Level, DPF (diesel particulate filter) active regen status, exhaust filter inlet temperature, and exhaust filter outlet temperature. You can customize each 4-up display with the parameter you define for each quadrant.

1. Touch **Menu** and use the **Arrow Keys** to highlight SETUP 4-UP DISPLAY, and touch **Enter**.

2. To select USE DEFAULTS, highlight the option and press **Enter**. A message indicating “RESTORED TO DEFAULTS” is displayed.

3. To select CUSTOM SETUP, highlight the option and press **Enter**. The 4-up display appears.

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4. Use the **Arrow Keys** to switch between the two 4-up displays.

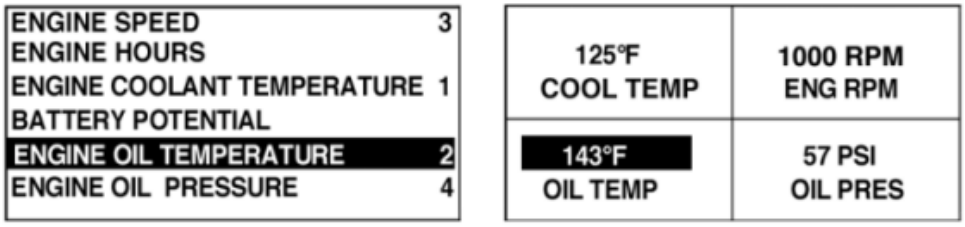
5. To edit a 4-up display, touch **Enter** while that 4-up displays on screen.

6. Use the **Arrow Keys** to select which quadrant to edit.

7. Once you select a quadrant, press **Enter** and you move to a list of parameters.

NOTE: The PowerView must see the parameter being broadcast over J1939 in order to select the parameter from the list.

8. The parameter highlighted is the selected parameter for the screen. The number to the right of the parameter indicates in which quadrant it displays.



1 = upper left quadrant	**3** = upper right quadrant
2 = lower left quadrant	**4** = lower right quadrant

9. Use the **Arrow Keys** to highlight the new parameter to be placed in the selected quadrant. Touch **Enter**.

10. Press **Menu** to return to the SETUP 4-UP CUSTOM SETUP screen.

11. The parameter in the selected quadrant has changed to the parameter selected in the previous screen.

12. Repeat the parameter selection process until you fill all quadrants.

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Service Reminders

SERVICE REMINDERS permit you to RESET REMINDERS or MODIFY REMINDERS for changing engine oil, air filters, and hydraulic oil or for servicing the engine and/or machine. **NOTE**: Service Reminders are internal reminders within PowerView. Once a Service Reminder is active, warnings will show SPN 916 and FMI 17. Check **PowerView Service Reminders** prior to calling **Technical Support**.

1. Use the **Arrow Keys** to highlight Service Reminders and touch **Enter**.

2. The **Service Reminders** options display. Use the **Arrow Keys** to select either **Reset Reminders** or **Modify Reminders**, and then touch **Enter**.

3. If you select **Reset Reminders**, use the **Arrow Keys** to highlight the **Reminder** you wish to edit. Touch **Enter**.

4. The **Reminder** name appears at the top of the screen. The action (**ON** or **OFF**) displays mid-screen, and two choices display at screen bottom. Touch **Menu** to **Cancel** the action. Touch **Enter** to choose **Reset**.

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5. If you select **Modify Reminders**, use the **Arrow Keys** to highlight the **Reminder** to modify and touch **Enter**.

6. The **Reminder** name appears at top screen. The hour value displays mid-screen and allows you to set the number of hours to elapse before a **Reminder** prompts. Bottom screen shows **Cancel** and **Save**. Touch **Cancel** to discard changes and return to **Reminders** list.

7. Use the right **Arrow Key** to increment the highlighted number. Use the left **Arrow Key** to move to the next number space.

8. Touch **Save**. The **Modify Service Reminder** screen displays. Touch **YES** to save or **NO** to return to the **Reminders** list.

9. A modified **Reminder** displays a (**+**) at right of **Reminder** name when successfully completed. Follow the above steps to modify other **Reminders**.

When finished, touch **Menu** to return to the **Main** Menu.

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Select Units

From SELECT UNITS, you may select how information is displayed:

- **ENGLISH** for Imperial units (PSI, °F)
- **METRIC KPA**
- **METRIC BAR** for **IS** units (kPa, Bar, °C).

Backlight Adjustment

ADJUST BACKLIGHT – Use the **Arrow Keys** to brighten or darken the backlight intensity.

Contrast Adjustment

ADJUST CONTRAST – Use the **Arrow Keys** to lighten or darken the text and graphics.

Utilities Menu

UTILITIES is the last item on the **Main** Menu. The **Utilities menu** provides troubleshooting features and other information about the PowerView configuration.

Gage Data

View data for optional connected PVA gages. When **Slave Active** is enabled, gage data is not available.

Remove All Gages

Reset the gage memory on the PowerView. When **Slave Active** is enabled, this function is not available.

Software Version

This screen lists Configuration, Firmware, Languages, and Bootloader versions for this PowerView unit. You may need this information if requesting assistance from Technical Support.

Fault Conversion

View/Edit the J1939 fault code version. Use the **Arrow Keys** to move between Versions, and then touch **Enter** to select a version.

> **NOTE:** There are four methods for converting fault codes. The PowerView always looks for J1939-Version 4.
> However, PowerView can be set to read one of three other J1939 versions, if Version 4 is not used/unavailable. Most ECU's use Version 4, so adjustment of this menu option is rarely required.

Upon receiving an unrecognizable fault, change to a different J1939 Version in the list. If the fault SPN does not change when the version is changed, the ECU generating the fault is using **Fault Conversion Method 4**. If the SPN number does change, but is still unrecognizable, try changing to another unused J1939 Version and continue to check the SPN number.

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Analog Input

With Analog Input highlighted, press **Enter**. You can select between two settings:

1) **BACKLIGHT DIMMER**, this is in factory default upon first use. The unit accepts an optional backlighting dimmer (0-1k Ω potentiometer).

2) **FUEL LEVEL**, touch **Enter** to reach **SET LOW FUEL LEVEL** screen. Then, touch **Enter** to reach **LOW FUEL %** screen. Use the right **Arrow Key** to increase, and left **Arrow Key** to decrease the percentage of remaining fuel at which to send a warning. The default is 20%.
NOTE: The PowerView accepts optional Murphy fuel sender (recommend Model ES2F) for fuel level information. A custom setup for a non-Murphy fuel sender is available. For more information, see **FUEL SETPOINTS,** page 31 (**OEM** Menu).

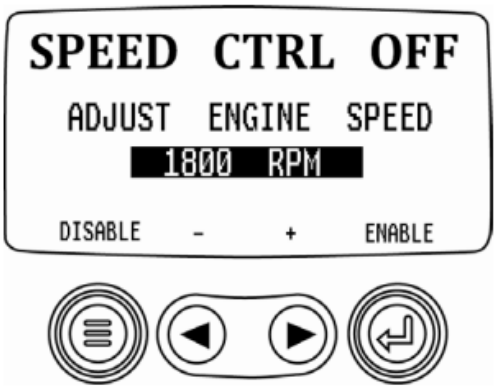
Engine Speed Control

This option must be **ON** in the **OEM** Menu for functionality to be available from the **Utilities** Menu.

1) From the **Engine Speed Control** screen, touch **Enter** to reach the **Speed Control** screen.

2) To change the setting of the engine speed via TSC1; use the right **Arrow Key** to increase or left **Arrow key** to decrease the throttle setting.

3) Once the target speed is reached, select **ENABLE** (Enter) to turn **ON** the TSC1 throttling control. (Use Disable to turn throttling control **OFF** and discard changes).



NOTE: Once enabled **Engine Speed Control** will stay enabled even through power cycles. To turn **OFF**, you must disable the feature from the **SPEED CTRL** screen.

OEM Menu

The **OEM** menu is the last item on the **Utilities** menu. You must have a password to access the **OEM** menu. Once in the OEM Menu, select an item by highlighting it and touch **Enter** to reach additional screens.

ENTER PASSWORD screen – Enter 3482 in the numeric spaces provided. Start at the furthest left numeric value and use the **Left Arrow Key** to increment the number and the **Right Arrow Key** to move to the next numeric position. If the Murphy standard key does not work, contact the OEM from whom the engine or machine was purchased. If you have access, the password is user changeable via the PV101-C Config Tool application.

The following items are in the OEM Menu.

MODBUS® Setup

To set the MODBUS, highlight **MODBUS SETUP** and touch **Enter**.

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1) There are four selections: Use Factory Defaults, Serial Port Setup, Slave Address Setup, and Master Active/Slave Active. You can toggle between **Slave Active** (which is SCADA/remote Modbus master) and **Master Active** (which is Auxiliary gages). Highlight your selection and touch **Enter**.

2) If in Slave Active, select **SERIAL PORT SETUP** and touch **Enter**.

3) Scroll through the **Serial Port Setup** list and make selections for BAUD RATE, PARITY, DATA BITS, and STOP BITS to configure the serial port parameters for your Modbus slave application.

CANBUS Data Rate

Touch **Enter** to reach the six CANBUS data rates. Use the **Arrow Keys** to highlight your choice and touch **Enter** to make the selection.

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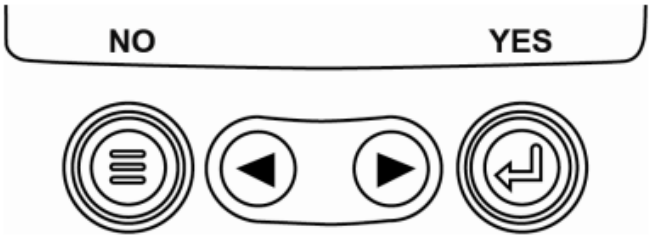
Select Engine ECU

Highlight **Select Engine ECU** and touch **Enter**.

1) The message "**LISTEN TO ECU: ALL**" displays as the default setting. This message indicates the PV101 is listening to all devices on the network.
2) To change the setting to a specific address, press the **Arrow Keys** to scroll through the selections (0-253, and ALL).
3) Once the target address displays, press **Enter**.
4) A confirmation screen displays; selecting **NO** (Menu) returns to the **SELECT ENGINE ECU** screen. Selecting **YES** (Enter) stores the selected address and returns to the **OEM** menu.



Set Source Address

Allows setting the source claim address for the PowerView on the CAN Network. Options are **Auto Claim** or **0** to **253**.

Restore All Defaults

PowerView **automatically resets** after the restore defaults is complete. **RESTORING ALL FACTORY DEFAULTS** displays when this is selected.

Clear Machine Hours

Use this to clear machine hours internal to PowerView outside of ECU hours.

Set Machine Hours

Machine hours calculate internally when the RPM is greater than 50 and the engine is not broadcasting hours. Use this if you want to track hours for just the machine.

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Fuel Setpoints

Highlight and press **Enter** to select **Fuel Setpoints**.

1) Press **Enter** to turn Fuel Setpoints **ON** or **OFF**.
2) Choose **Set Empty Setpoint**, **Set Fuel Setpoint, Show Fuel Setpoints, Clear Fuel Setpoints,** or choose to set ¼, ½ and ¾ fuel points.

Fuel Setpoints must be **ON** to work with a non-Murphy fuel sender. Modifying fuel setpoints is a complex process. To configure for a *Murphy Fuel Sender* or program for a *non-Murphy Sender*, find document #1110833, PowerView – Model PV101-C V3.2 **Fuel Sender Calibration** on the FW Murphy Web site at www.fwmurphy.com/pv101.

DPF Regen Menu ON/OFF

Highlight and touch **Enter** to turn this option **ON** or **OFF**. Turn this option **ON** to have it available in the **Main** menu or **OFF** for no availability in the **Main** menu.

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ENG SPD CTRL Menu ON/OFF

This option must be **ON** in the **OEM** Menu for functionality to be available in the **Utilities** Menu. Highlight and touch **Enter**. The Speed Control can be Enabled (**ON**) or Disabled (**OFF**).

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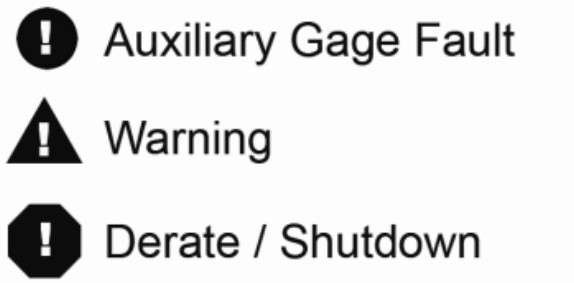
Faults and Warnings

The PowerView provides two means for detecting faults and warnings: visual LEDs on the casing (*Amber* in the upper left corner, and *Red* in the upper right corner) and fault indicators on the display.

Visual Indication

- Amber LED (Warning)
- Red LED (Derate / Shutdown)

Fault Indicators



Auxiliary Gage Fault

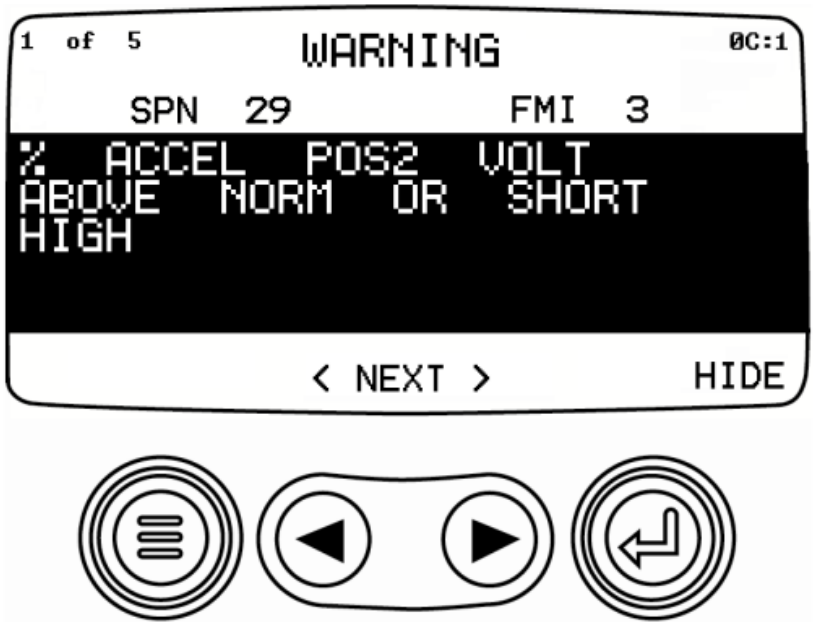
Murphy PVA Gages can be attached to the PowerView. If an auxiliary gage should fail, the 1-up or 4-up display will be replaced with a fault message: **GAGE NOT RESPONDING**.

NOTE: A fault can only be cleared by correcting the cause of the condition (See **Troubleshooting** in this document).

Active Fault Codes

When the PowerView receives a fault code from an engine, the 1-up or 4-up display is replaced with the active fault codes message. See following fault example:

Example: Active Fault Code screen



Derate / Shutdown Codes

When the PowerView receives a severe fault code from an engine control unit the 1-up or 4-up display is replaced with the SHUTDOWN message.

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Acknowledging Fault Codes

1. To acknowledge and hide the fault and return to the 1-up or 4-up display, touch **Enter**. The display will return to the 1-up or 4-up display, but the display will contain the warning or shutdown icon.

2. Touch **Enter** to redisplay the hidden fault. Touch **Enter** once again hides the fault and returns the screen to the 1-up or 4-up display.

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- **WAIT TO START PREHEATING** is displayed

The ECU is broadcasting a 'Wait to Start' message. Engine manufacturers typically recommend against starting the engine while the ECU is broadcasting this message. Once the ECU stops broadcasting this message, this screen will no longer be displayed on the PowerView.

- **CANBUS FAILURE** is displayed

The PowerView has not received any valid J1939 CAN messages for at least 30 seconds. Check wiring, CANBUS, termination resistors, and Engine ECU address in the OEM Menu.

- **TIMEOUT ECU NOT RESPONDING** is displayed

The PowerView sent a request to the ECU for Stored Fault Code (DM2) information, and the ECU did not respond to the request. This message on the PowerView indicates the ECU may not support Stored Fault Code (DM2) functionality over J1939.

- **NO STORED CODES** is displayed

The PowerView sent a request to the ECU for Stored Fault Code (DM2) information. The ECU responded: *There are zero stored codes.*

- **NO GAGE DATA** is displayed

The PowerView has no record of gages connected to the RS485 bus.

- **NO DATA** is displayed in place of a parameter value

The PowerView has not received data for the selected parameter for at least 5 seconds.

- **NOT SUPPORTED** is displayed in place of a parameter value

This means the data received for this parameter is not valid or not supported.

- **DATA ERROR is displayed in place of a parameter value**

The ECU is sending a message that there is a data error with this parameter. Alternatively, (PV101 only) FUEL LEVEL has been selected for display, ANALOG INPUT has been set to FUEL LEVEL, but no Murphy Fuel Sender has been connected to the analog input.

- **One of the 4-UP quadrants is empty**

No parameter has been selected for display in this quadrant.

- **Display is not readable, either very dim or very dark**

The LCD contrast may have been over or under adjusted. Press and hold the **MENU** key for approximately 5 seconds. This will reset the LCD contrast setting to factory default.

- **PVA Gages not working**

When PVA Gages are connected and do not seem to work, go to the **Utilities** menu and select **Remove all Gages**.

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IMPORTANT!

Before returning your PV101 for Warranty, please call our Technical Support team to further trouble-shoot any issues.

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NOTES

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Documentation Chart

SULLAIR WHEELED 1150 CFM AIR COMPRESSOR - STANDARD AIR

Serial Number..... 201009170079
Model Number..... 900/1150XHDTQ-CA3
Rated Capacity..... 1150 CFM @ 350 PSIG
Max. Pressure..... 350 PSIG

Compressor Airend 1500/500/1800

Manufactuer	Sullair Corporation
Part. No.	02250147-093
Serial No.	RR-011524

Separator Tank - Built 2010

Manufactuer	
Serial No.	Illegible due to Rust
Part No. (Sullair)	02250134-837
MAWP (psi)	600 @ 300˚F

Engine

Manufactuer	Caterpillar
Model	C-15
Serial	JRE12219
RPM (Max/Min)	1800/1400
Arrangment No.	254-3835
Engine Power	540 @ 1800 RPM Tier 3

Check Valve (Discharge Air)

Supplied by Customer

Discharge Air Valve(s)

Supplied by Customer

Unit Dimensions

Overall Height (in.)	96"
Overall Length (in.)	232"
Overall Width (in.)	98"

Separator Tank Safety Relief Valve

Manufactuer	Kunkle Valve
Set Pressure	425 PSI
Fig No.	913BEDM03-KE
Capacity (scfm)	1674 SCFM
Size (in.)	3/4"
SN	2063993-1-7
Date	1-2025
Certifications	ASME / National Board

Oil Coolers (Compressor)

Manufactuer	Sullair
Part No.	02250166-257

Radiator (Engine)

Manufactuer	Sullair
Part No.	02250169-276

Charge Air Cooler (Engine)

Manufactuer	Sullair
Part No.	2250124-822
Manufactuer	N/A
Part No.	N/A

AS REMANUFACTURED
Date: 1/15/2025
BY: Carl Foust
Unit Serial Number: 201009170079