Doosan Infracore
Portable Power

OPERATION and MAINTENANCE MANUAL

COMPRESSORS MODEL:

HP1600WCU-T4F (F76)

This manual contains important safety information.
Do not destroy this manual.
This manual must be available to the personnel who operate and maintain this product.

Doosan Infracore Portable Power
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DoosanPortablePower.com

P/N: 46663127 (2015) Rev F

WARNING: Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to www.P65warnings.ca.gov/diesel.

WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm.

For more information go to
www.P65warnings.ca.gov.

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Foreword

Information

SAVE THESE INSTRUCTIONS—This manual contains important instructions for the compressor models stated in this manual. These instructions have been written expressly by Doosan Portable Power and must be followed during installation, operation, and maintenance of these machines.

The contents of this manual are considered to be proprietary and confidential to Doosan Portable Power (herein referred to as “Portable Power”), and should not be reproduced without the prior written permission of Portable Power.

Nothing contained in this document is intended to extend any promise, warranty or representation, expressed or implied, regarding the Portable Power products described herein. Any such warranties or other terms and conditions of sale of products shall be in accordance with the standard terms and conditions of sale for such products, which are available upon request.

This manual contains instructions and technical data to cover all routine operation and scheduled maintenance tasks by operation and maintenance staff. Major overhauls are outside the scope of this manual and should be referred to an authorized Portable Power service department.

All components, accessories, pipes, and connectors added to the compressed air system should be:

- Of good quality, procured from a reputable manufacturer and, wherever possible, be of a type approved by Portable Power.
- Clearly rated for a pressure at least equal to the compressor safety valve setting.
- Compatible with the compressor oil.
- Accompanied with instructions for safe installation, operation, and maintenance.

Details of approved equipment are available from the Portable Power service department. The use of repair parts other than those included within the approved parts list may create hazardous conditions over which Portable Power has no control. Therefore, Portable Power cannot be held responsible for equipment in which non-approved repair parts are installed.

QR Code

Details of approved equipment are available from the Portable Power service department. The use of repair parts other than those included within the approved parts list may create hazardous conditions over which Portable Power has no control. Therefore, Portable Power cannot be held responsible for equipment in which non-approved repair parts are installed.

Use the QR Code on the compressor to order the Parts Book for ordering replacement parts or use the QR Code below to go directly to the Portable Power Online Parts Store.

When ordering parts or requesting service information, be prepared to provide the unit model number, revision number, serial number, and item number.

Portable Power reserves the right to make changes and improvements to products without notice and without incurring any obligation to make such changes or add such improvements to products sold previously.

The intended use of this compressor are outlined below and examples of unapproved usage are also given. However, Portable Power cannot anticipate every application or work situation that may arise.

This compressor has been designed and supplied for above ground operation to be used for compression of normal ambient air containing no additional gases, vapors, or particles within the ambient temperature range specified in the general data section of this manual.

This compressor should NOT be used:

- For direct or indirect human consumption of the compressed air.
- Outside the ambient temperature range specified in the general data section of this manual.
- When an actual or foreseeable risk of hazardous levels of flammable gases or vapors exists.
- With other than Portable Power approved components.
- With guards, controls, or switches missing or disabled.
- For storage or transportation of materials inside or on the enclosure.

Portable Power accepts no responsibility for errors in translation of this manual from the original English version.

You, as the customer, are expected to provide certain service and maintenance items. Your Portable Power dealer will provide all other more detailed service and maintenance items on a special preventive maintenance schedule for each compressor. It is very important that the minimum service and maintenance requirements explained in this manual be performed at the required intervals. Exceeding these intervals may reduce the reliability of the compressor.

This manual provides information and procedures to safely operate and maintain the above Portable Power model(s). For your own safety and to reduce the risk of injury, carefully read, understand, and observe all instructions described in this manual.

Portable Power expressly reserves the right to make technical modifications, even without notice, which improve the performance or safety standards of its machines.

During the preparation of this manual, every effort was made to ensure the accuracy and adequacy of the contents. The information contained in this manual is based on machines manufactured up until the time of publication. Portable Power reserves the right to change any portion of this information without notice.

Your Portable Power dealer will assist with setup and initial startup of the compressor and will also provide brief operating and service instructions. Before starting the compressor, this manual and instructions should be carefully read to obtain a thorough knowledge of the duties to be performed. Please take pride in the compressor, keep it clean and in good mechanical condition.

To enable proper maintenance records, Portable Power provides a noise emission control maintenance log in the noise emission section of this manual. The noise emission section contains a recommended maintenance schedule and provides space in the log for the technician to note what service and maintenance was done, by whom, where, and when.

Safety

Compressor Description and Intended Use

This compressor is a mobile compressed air source. The Doosan compressor consists of a trailer-mounted cabinet containing a fuel tank, diesel engine, compressor inlet system, compressor cooling and lubrication system, compressor discharge system, control system, instrument and electrical system. As the engine runs, the compressor converts mechanical energy into air power.

When air is consumed by the compressor, the inlet unloader valve opens, and air is drawn into the compressor through a dry type air filter. Air enters the housing of the compressor where it is partially compressed. Air then passes along the flutes from the wide end to the narrow end where it is compressed to the desired discharge pressure.

The oil is removed by air/oil separator filter. This oil is returned to the system to aid in compressor lubrication.

Air passes through an air cooled aftercooler, where it is cooled. The flow and service pressure for compressed air is controlled by the operator from the instrument/control panel.

Refer to the product specifications general data section in this manual for the output air delivery and operating pressure of this compressor, and for the maximum output air power limit of this compressor.

This compressor has been designed and built strictly for the intended use described above. Using the compressor for any other purpose could permanently damage the compressor or seriously injure the operator or other persons in the area. compressor damage caused by misuse is not covered under warranty.

The following are some examples of misuse:

- Operating the compressor in a manner that is inconsistent with all federal, state and local codes and regulations.
- Using the compressor as a ladder, support, or work surface.
- Using the compressor to carry or transport passengers or equipment.
- Using the compressor to tow other compressors.
- Operating the compressor outside of factory specifications.
- Operating compressor in a manner inconsistent with all warnings found on the compressor and in the Operator’s Manual.

This compressor has been designed and built in accordance with the latest global safety standards. It has been carefully engineered to eliminate hazards as far as practicable and to increase operator safety through protective guards and labeling. However, some risks may remain even after protective measures have been taken. They are called residual risks. On this compressor, they may include exposure to:

- Heat, noise, exhaust, and carbon monoxide from the engine.
- Fire hazards from improper refueling techniques.
- Fuel and its fumes.
- Electric shock and/or arc flash.
- Personal injury from improperly relieving pressure before removing filler plugs/caps, fittings or covers.
- Personal injury from improper lifting of the trailer tongue.
- Typical hazards related to towing a trailer on roads and highways.

Electrocution or severe electrical shock hazards are present throughout the compressor any time the engine is running!

To protect yourself and others, make sure you thoroughly read and understand the safety information presented in this manual before operating the compressor.

This compressor is built with user safety in mind; however, like any device it can present serious hazards if improperly operated and serviced. Follow instructions carefully! Should questions arise during operation or service of this equipment, contact Doosan Portable Power.

Safety Precautions

Never operate the compressor without first observing all safety warnings and carefully reading the Operation and Maintenance Manual shipped from the factory with this compressor.

Ensure the operator reads and understands the decals and consults the manuals before operation or performing maintenance.

Ensure all maintenance personnel are adequately trained, competent, and have read the manuals.

Ensure all protective covers are in place and the canopy/doors are closed during operation.

The specification of this compressor is such that the compressor is not suitable for use in flammable gas risk areas. If such an application is required, all local regulations, codes of practice, and site rules must be observed. To ensure the compressor can operate in a safe and reliable manner, additional equipment such as gas detection, exhaust spark arrestors, and intake (shut-off) valves may be required, dependent on local regulations or the degree of risk involved.

A weekly visual check must be made of all fasteners/fixing screws securing mechanical parts. In particular, safety-related parts such as coupling hitch, drawbar components, wheels, tires, and lifting bail should be checked for total security.

All components which are loose, damaged, or unserviceable must be rectified without delay.

Air discharged from this compressor may contain carbon monoxide or other contaminants which will cause serious injury or death. Do not breathe discharged air.

This compressor produces loud noise with the doors open or service valve vented. Extended exposure to loud noise can cause hearing loss. Always wear hearing protection when doors are open or service valve is vented.

Never inspect or service the compressor without first disconnecting battery cable(s) to prevent accidental starting.

Do not use petroleum products (solvents or fuels) under high pressure as this can penetrate the skin and result in serious illness. Wear eye protection while cleaning the compressor with compressed air to prevent debris from injuring eye(s).

Rotating fan blades can cause serious injury. Do not operate without fan guard in place.

Use care to avoid contacting hot surfaces (engine exhaust manifold and piping, air receiver, and air discharge piping, etc.).

Ether is an extremely volatile, highly flammable gas. When it is specified as a starting aid, use sparingly. Do not use Ether if the engine has glow plugs or inlet heater starting aids. Engine damage will result.

Never operate the compressor with guards, covers, or screens removed. Keep hands, hair, clothing, tools, blow gun tips, etc. well away from moving parts.

Compressed Air

Compressed air can be dangerous if incorrectly handled. Prior to performing maintenance or service on the compressor, ensure all pressure is vented from the system and the compressor cannot be started accidentally.

Ensure the compressor is operating at the rated pressure and the rated pressure is known to all relevant personnel.

All air pressure equipment installed in, or connected to, the compressor must have safe working pressure ratings of at least the compressor safety valve setting.

If more than one compressor is connected to one common downstream plant, effective check valves and isolation valves must be fitted and controlled by work procedures, to ensure one compressor cannot accidentally be pressurized or over pressurized by another.

Compressed air must NOT be used for a direct feed to any form of breathing apparatus or mask.

Compressed air can cause serious injury or death. Relieve pressure before removing filler plugs/caps, fittings, or covers.

Air pressure can remain trapped in air supply line which can result in serious injury or death.

Always carefully vent air supply line at tool or vent valve before performing any service or maintenance.

Discharged air contains a very small percentage of compressor lubricating oil and care should be taken to ensure downstream equipment is compatible.

If discharged air is to be ultimately released into a confined space, adequate ventilation must be provided.

When using compressed air, always use appropriate personal protective equipment.

All pressure containing parts, especially flexible hoses and their couplings, must be regularly inspected, be free from defects, and be replaced according to the manual instructions.

Avoid bodily contact with compressed air.

The safety valve located in the separator tank must be checked periodically for correct operation.

Whenever the compressor is stopped, air will flow back into the compressor from downstream devices or systems unless the service valve is closed. Install a check valve at the compressor service valve to prevent reverse flow in the event of an unexpected shutdown when the service valve is open.

Disconnected air hoses whip and can cause serious injury or death. Always attach a safety flow restriction to each hose at the source of supply or branch line in accordance with OSHA Regulation 29 CFR Section 1926.302(b).

Never allow the compressor to sit or stop with pressure in the separator tank or piping.

Operating Safety Information

⚠ WARNING

Familiarity and proper training are required for the safe operation of the compressor. Compressors operated improperly or by untrained personnel can be dangerous. Read the operating instructions contained in both this manual and the engine manual and familiarize yourself with the location and proper use of all controls. Inexperienced operators should receive instruction from someone familiar with the compressor before being allowed to operate it.

Operator Qualifications

Only trained personnel are permitted to start, operate, and shut down the compressor. They also must meet the following qualifications:

- Have received instruction on how to properly use the compressor.
- Be familiar with required safety devices.

The compressor must not be accessed or operated by:

- Children
- People impaired by alcohol or drugs

Personal Protective Equipment (PPE)

Wear the following Personal Protective Equipment (PPE) while operating this compressor:

- Close-fitting work clothes that do not hinder movement.
- Safety glasses with side shields.
- Hearing protection.
- Safety-toed footwear.

Only trained personnel are permitted to operate the compressor. They must meet the following guidelines below for operating the compressor safely:

1. Do not operate the compressor when open containers of fuel, paint, or other flammable liquids are near.
2. Do not place flammable material or liquids near the compressor.
3. Do not operate the compressor, or tools attached to the compressor, with wet hands.
4. Do not operate the compressor indoors unless exhaust fumes can be adequately ventilated.
5. Do not overload the compressor. The total amperage of the tools and equipment attached to the compressor must not exceed the load rating of the compressor.
6. Do not allow untrained personnel to operate or service the compressor.
7. Do not operate compressor in standing water.
8. Do not touch the hot engine, exhaust, or compressor components. Burns will result.
9. Do not start a compressor in need of repair.
10. Do not restart the engine until the cause of the trouble has been determined and fixed.
11. Wear hearing protection when operating equipment.
12. Follow starting and stopping instructions described in this manual. Know how to operate and stop compressor before starting it.
13. Make a walk-around inspection of the compressor set before starting it. Open side doors and visually inspect engine compartment for obvious damage or the presence of foreign objects which might affect operation.
14. Keep the compressor at least one meter (three feet) away from structures, buildings, and other equipment during use.
15. Store the compressor properly when it is not being used. The compressor should be stored in a clean, dry location out of the reach of children.
16. Keep the area immediately surrounding and underneath the compressor clean, neat, and free of debris and combustible materials. Make sure that the area overhead is clear of debris that could fall onto or into the compressor or exhaust compartment.
17. Make sure the compressor is on a firm, level surface and will not tip, roll, slide, or fall while operating.
18. Remove all tools, cords, and other loose items from the compressor before starting it.
19. Make sure the compressor is well-grounded and securely fastened to a good earthen ground per national and local regulations.

Operator Safety while using Internal Combustion Engines

Exhaust gas from the engine contains carbon monoxide, a deadly poison. Exposure carbon monoxide can kill you in minutes.

- **NEVER operate the compressor inside an enclosed area, such as a tunnel, unless adequate ventilation is provided through such items as exhaust fans or hoses.**

Internal combustion engines present special hazards during operation and fueling. Failure to follow the warnings and safety standards could result in severe injury or death.

- **Read and follow the warning instructions in the engine owner's manual and the safety guidelines below.**

Operating Safety

When running the compressor engine:

- Keep the area around exhaust pipe free of flammable materials.
- Check the fuel lines and the fuel tank for leaks and cracks before starting the engine. Do not run the compressor if fuel leaks are present or the fuel lines are loose.
- Do not smoke while operating the compressor.
- Do not run the engine near sparks or open flames.
- Do not touch the engine or muffler while the engine is running or immediately after it has been turned off.
- Do not operate a compressor when its fuel cap is loose or missing.
- Do not start the engine if fuel has spilled or a fuel odor is present. Move the compressor away from the spill and wipe the compressor dry before starting.

Operator's Safety Information

Battery

⚠ CAUTION

Do not attempt to jump start a frozen battery since this may cause it to explode.

A battery contains sulfuric acid and can produce gases which are corrosive and potentially explosive. Avoid contact with skin, eyes, and clothing. In case of contact, flush area immediately with water.

Exercise extreme caution when using an external method to jump start a unit. Verify the electrical systems on the weak battery system and the external jump system are the same voltage type system, 12VDC Or 24VDC. Connect the positive (+) terminal of the external system to the positive (+) terminal on the weak system. Connect the negative (-) terminal of the external system to the negative (-) terminal of the weak system. Always disconnect the two systems in reverse order.

Exhaust System

Hot engine exhaust gas and hot exhaust system surfaces are produced during and after compressor operation. Avoid contact with exhaust gas and hot exhaust system surfaces. Keep flammable and combustible materials away. Do not operate compressor on, under, or near flammable or combustible materials.

The potential for higher temperatures is present when the exhaust aftertreatment system undergoes regeneration. Refer to engine manual for further safety instructions and information on the exhaust aftertreatment system and controls.

Coolant System

Hot engine coolant and steam can cause injury. When adding coolant or antifreeze solution to the engine radiator, stop the engine and allow radiator to cool prior to releasing the reservoir cap. Using a cloth to protect the hand, slowly release the reservoir cap, absorbing any released fluid with the cloth. Do not remove the reservoir cap until all excess fluid is released and the engine cooling system fully depressurized.

Follow the instructions provided by the antifreeze supplier when adding or draining the antifreeze solution. It is advisable to wear personal protective equipment to prevent skin and eye contact with the antifreeze solution.

Hot engine coolant and steam can cause injury. Ensure the reservoir cap is removed with due care and attention.

Do not remove reservoir cap while radiator is hot. Allow radiator to cool before removing reservoir cap.

Materials

⚠ WARNING

Avoid inhalation of material substances.

The following substances may be produced during the operation of this compressor:

- Brake Lining Dust
- Engine Exhaust Fumes

Ensure that adequate ventilation of the cooling system and exhaust gases is maintained at all times.

The following substances are used in the manufacture of this compressor and may be hazardous to health if used incorrectly:

- Antifreeze
- Compressor Oil
- Engine Oil
- Preservative Grease, Lubricating Grease
- Rust Preventative
- Diesel Fuel
- Battery Electrolyte

⚠ WARNING

Avoid ingestion, skin contact, and inhalation of fumes.

Should compressor oil come into contact with the eyes, irrigate with water for at least 5 minutes.

Should compressor oil come into contact with the skin, wash off immediately. Consult a physician if large amounts of compressor oil are ingested or if compressor oil is inhaled. Never give fluids or induce vomiting if the patient is unconscious or having convulsions.

Safety Data Sheets (SDS) for compressor and engine oils should be obtained from the oil supplier.

Do not start or operate this compressor in a confined area. Avoid breathing exhaust fumes when working on or near the compressor.

This compressor may include such materials as oil, diesel fuel, antifreeze, brake fluid, oil/air filters, and batteries which may require proper disposal when performing maintenance or service tasks. Contact local authorities for proper disposal of these materials.

Service Air Connection(s)

All air pressure equipment installed in or connected to the compressor must have safe working pressure ratings of at least the safety valve setting, and materials compatible with the compressor oil (refer to the General Data).

Do not connect the air discharge on this compressor onto a common header with any other unit of any description, or any other source of compressed air, without first making sure a check-valve is used between the header and the compressor. If this compressor is connected in parallel with another compressor of higher discharge pressure and capacity, a safety hazard could occur in a back-flow condition.

Unrestricted air flow from a hose will result in a whipping motion of the hose which can cause serious injury or death. A safety device must be attached to the hose at the source of supply to reduce pressure in case of hose failure or other sudden pressure release. Reference: OSHA Regulation 29 CFR Section 1926.302 (B).

Air Hose Restraint Installation

Safety devices such as hose restraints (whipchecks) must be used to prevent hose whipping if a connection fails. Whipchecks are to be constructed of woven stainless steel, galvanized steel wire rope, or chain with a minimum strength adequate for the supplied pressure and hose diameter. Whipchecks must be fastened to suitable mounting points or shackles.

The mounts and/or shackles are to be of the same or greater strength as the whipchecks. An engineer should be consulted about suitability of whipchecks, mounts, mounting points, shackles, and fittings as well as strength rating of materials. Whipchecks must be used at the hose origination, termination, and each hose to hose connection.

Hoses can fail in areas other than at connecting points and require daily inspection of the hoses for:

- Cuts, cracks, or kinks
- Weakened clamps due to rust and corrosion
- Damaged connections
- Deformity
- Incorrect or incompatible components or fittings
- Any visual damage

Hoses must be selected that are rated for the application as to the maximum pressure and temperature to be encountered as well as compatible with the materials being conveyed inside the hose. Hoses must be compatible with the Compressor Oil.

Fuel Safety

For more information on fueling the compressor. Refer to Lifting, Transporting and Preparation in this manual.

When fueling the compressor fuel tank:

- Clean up any spilled fuel immediately.
- Refill the fuel tank in a well-ventilated area.
- Replace the fuel tank cap after refueling.
- Do not smoke.
- Do not refuel a hot or running engine.
- Do not refuel the engine near sparks or open flames.

Towing Safety

⚠ WARNING

Towing any trailer requires special care. Both the trailer and vehicle must be in good condition and securely fastened to each other to reduce the possibility of an accident.

For more information on towing the compressor. Refer to Lifting, Transporting and Preparation in this manual.

1. Verify that the hitch and coupling on the vehicle are rated equal to, or greater than, the trailer's Gross Vehicle Weight Rating (GVWR).
2. Inspect the hitch and coupling for wear or damage. DO NOT tow the trailer using defective parts.
3. Make sure the coupling is securely fastened to the vehicle.
4. Check the tires on the trailer for tread wear, inflation, and condition. Replace worn tires.
5. Connect the safety chains.
6. Connect the breakaway cable safety hook to the bumper or rear of the vehicle. DO NOT attach it to the hitch.
7. Test the surge brakes on the trailer and the brakes on the vehicle that will be used for towing.
8. Make sure directional and trailer lights are connected and working properly.
9. Check that the lug nuts holding the wheels are tight and that none are missing.
10. The canopy is secure.
11. Check all ancillary equipment is stored in a safe and secure manner.

Reporting Trailer Safety Defects

If you believe your trailer has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Doosan Portable Power.

Service Safety Information

Personal Protective Equipment (PPE)

⚠ WARNING

A poorly maintained compressor can become a safety hazard! In order for the compressor to operate safely and properly over a long period of time, periodic maintenance and occasional repairs are necessary.

Wear the following Personal Protective Equipment (PPE) while servicing or maintaining this compressor:

- Close-fitting work clothes that do not hinder movement.
- Safety glasses with side shields.
- Hearing protection.
- Safety-toed footwear.

In addition, before servicing or maintaining the compressor:

- Tie back long hair.
- Remove all jewelry (including rings).

1. Do not perform even routine service (oil/filter changes, cleaning, etc.) until unit is shut down.

   Before servicing this compressor, make sure the engine start switch is turned to off “O”, the negative terminal on battery is disconnected. Attach a “DO NOT START” sign to the control panel. This will notify everyone that the unit is being serviced and will reduce the chance of someone inadvertently trying to start the unit. If the unit is connected to a remote start or transfer switch, make sure the remote switch is also off and tagged.

2. Ground Connection.

   The compressor must be connected to a good earthen ground for proper operating safety!

   Ground the compressor in accordance with the standards defined in national, state, and local regulations.

3. Do not attempt to open the reservoir cap while the unit is running or before the engine has cooled down. Severe burns may result!
4. Do not allow water to accumulate around the base of the compressor. If water is present, move the compressor and allow the compressor to dry before servicing.
5. Do not service the compressor if your clothing or skin is wet.
6. Do not allow untrained personnel to service this equipment.

7. Do not modify the compressor without the express written approval of the manufacturer.
8. Do not pressure wash the control panel, compressor end, or any other electrical components when cleaning the unit. Never allow water to accumulate around the base of the compressor set. If water is present, DO NOT service!
9. Allow the engine to cool before performing any service work on the compressor.
10. Remain aware of moving parts and keep hands, feet, and loose clothing away from the moving parts of the compressor and engine.
11. Replace all guards, fasten doors, and make sure all safety devices operate properly after making repairs or servicing the equipment.
12. Keep the compressor clean and labels legible. Replace all missing and hard-to-read labels. Labels provide important operating instructions and warn of dangers and hazards.
13. Check all external fasteners at regular intervals.
14. Make sure slings, chains, hooks, ramps, jacks, and other types of lifting devices are attached securely and have enough weight-bearing capacity to lift or hold the compressor safely. Always remain aware of the location of other people in the area when lifting the compressor.

Safety Decals

Free Safety Decals
To promote communication of Safety Warnings on products manufactured by the Portable Power Division in Statesville, N.C., Safety Decals are available FREE of charge. Safety Decals are identified by the decal heading: DANGER, WARNING, CAUTION, NOTICE.
Decal part numbers are located in the lower right hand corner of each decal and are also listed in the Parts Manual. Submit orders for Safety Decals to the Statesville Parts Service Dept. The no charge order should contain only Safety Decals.
Help promote product safety! Ensure decals are present on the machine. Replace decals that are not readable.

General Safety Decals Summary

Look for these safety decals and safety symbols on machines manufactured in North America, which point out potential hazards to the safety of you and others. Read and understand thoroughly. Heed warnings and follow instructions.

This manual describes physical and chemical processes which may cause injury or death to personnel, or damage to equipment if not properly followed. This safety summary includes general safety precautions and instructions that must be understood and applied during operation and maintenance to ensure personnel safety and protection of equipment. Prior to performing any task, the DANGERs, WARNINGs, CAUTIONs, and NOTEs included in that task shall be reviewed and understood.

Dangers, Warnings, Cautions, and Notes Summary

DANGERs, WARNINGs and CAUTIONs are used in this manual to highlight operating or maintenance procedures, practices, conditions, or statements which are considered essential to protection of personnel (DANGER), (WARNING) or equipment (CAUTION). DANGERs, WARNINGs and CAUTIONs immediately precede the step or procedure to which they apply. DANGERs, WARNINGs and CAUTIONs consist of four parts: heading (DANGER, WARNING, CAUTION, or Icons, a statement of the hazard, minimum precautions, and possible result if disregarded. NOTEs are used in this manual to highlight operating or maintenance procedures, practices, conditions, or statements which are not essential to protection of personnel or equipment. NOTEs may precede or follow the step or procedure, depending upon the information to be highlighted.

The headings used, and their definitions are as follows:

(Red Background)

Indicates the presence of a hazard which WILL cause serious injury, death, or property damage, if ignored.

(Orange Background)

Indicates the presence of a hazard which CAN cause serious injury, death, or property damage, if ignored.

(Yellow Background)

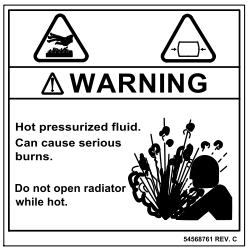
Indicates the presence of a hazard which WILL or CAN cause injury or property damage, if ignored.

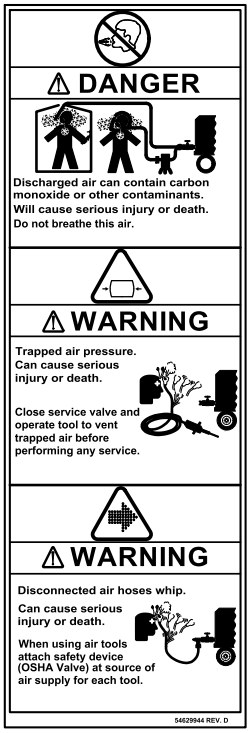
(Blue Background)

Indicates important set-up, operating, or maintenance information.

Safety Decals

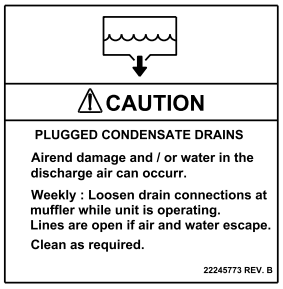
Below is a summary of safety decals which may be included on this machine.

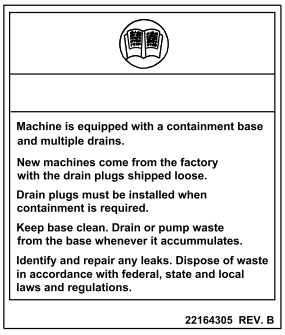


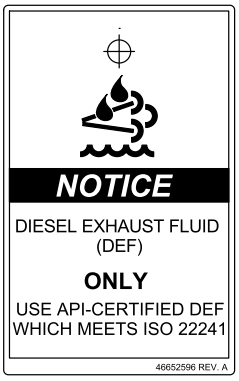


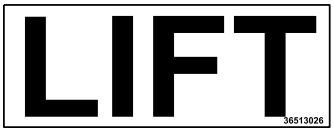
Safety Decals (Continued)

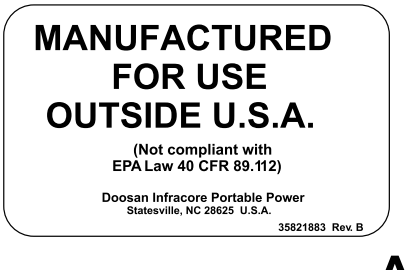
Below is a summary of safety decals which may be included on this machine.

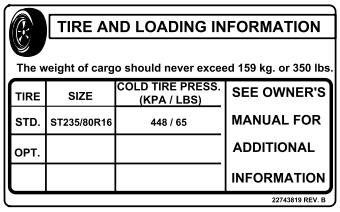








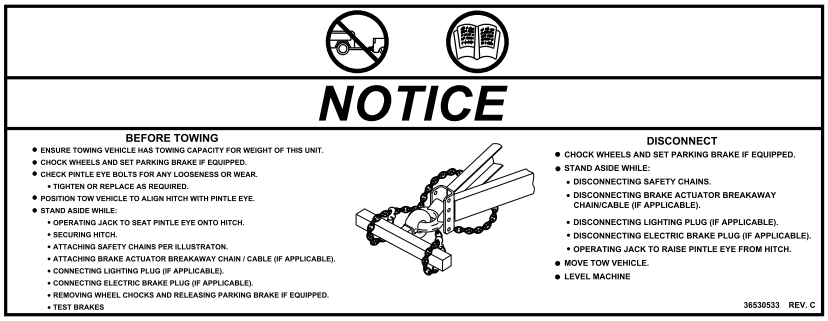




AFTERCOOLED AIR

Safety Decals (Continued)

Below is a summary of safety decals which may be included on this machine.



DOOSAN

Doosan Infracore Portable Power

COMPRESSOR NOISE EMISSION CONTROL INFORMATION

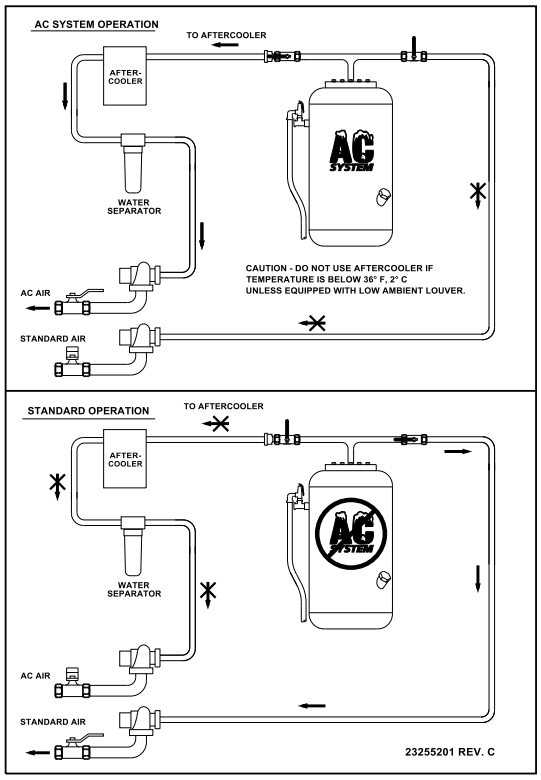
THIS COMPRESSOR CONFORMS TO U.S. E.P.A. REGULATIONS FOR NOISE EMISSIONS APPLICABLE TO PORTABLE AIR COMPRESSORS. THE FOLLOWING ACTS OR THE CAUSING THEREOF BY ANY PERSON ARE PROHIBITED BY THE NOISE CONTROL ACT OF 1972:

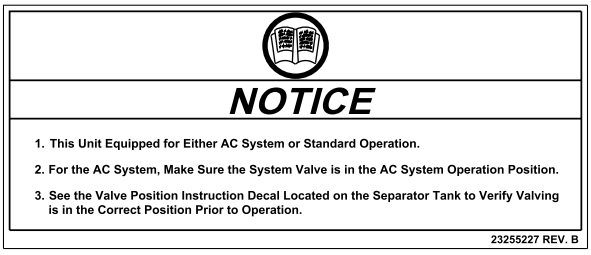
(A) THE REMOVAL OR RENDERING INOPERATIVE, OTHER THAN FOR THE PURPOSE OF MAINTENANCE, REPAIR, OR REPLACEMENT, OF ANY NOISE CONTROL DEVICE OR ELEMENT OF DESIGN INCORPORATED INTO THIS COMPRESSOR IN COMPLIANCE WITH THE NOISE CONTROL ACT;

(B) THE USE OF THIS COMPRESSOR AFTER SUCH DEVICE OR ELEMENT OF DESIGN HAS BEEN REMOVED OR RENDERED INOPERATIVE.

TO ASCERTAIN POINT OF ORIGIN, DATE OF MANUFACTURE, AND RELATED INFORMATION VERIFYING COMPLIANCE TO E.P.A. REGULATIONS FOR NOISE EMISSIONS, PLEASE CONTACT YOUR NEAREST DOOSAN INFRACORE PORTABLE POWER DEALER AND REFERENCE YOUR COMPRESSOR SERIAL NUMBER.

36514602 REV. C





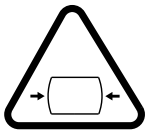
Safety Symbols

Below is a summary of the intended meanings of the safety symbols used on this machine.

Graphic Images and Meanings of ISO Symbols


Do Not Weld


Warning Hot Surface

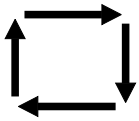

Pressurized

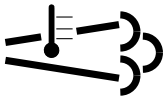

Consult Operation And Maintenance Manual


Lift Location


Do Not Lift


Stay Clear Of Rotating parts


Machine May Start Automatically


High Exhaust System Temperature


Diesel Exhaust Fluid


Warning Electric Shock


Corrosive Substance


No High Pressure Water Or Steam

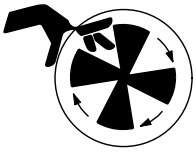

Safety Alert Symbol; Used To Alert To Potential Personal Injury Hazard


No Open Flames


Guards Must Be Fitted

Low or Ultra Low Sulfur Diesel


Hand Crush Hazard


Fan Hazard


High Pressure

Safety Symbols (Continued)

Below is a summary of the intended meanings of the safety symbols used on this machine.

Graphic Images and Meanings of ISO Symbols (continued)

Automatic Start-up

Forklift Load

Do Not Use Ether

Do Not Attach to Tow Vehicle

Hand Injury

Speed Designation

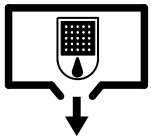
Speed Designation

Speed Designation

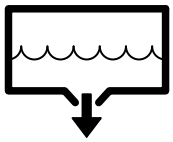
Do Not Breath This Air

Air FLow

Emergency Stop



Separator Tank Drain



Moisture Drain

Lifting, Transporting and Preparation

Lifting, Transporting and Preparation

Introduction

⚠ WARNING

Failure to follow these instructions could result in serious personal injury or death.

Personal injury or damage to equipment can result if material is stored or transported in or on the compressor.

Personal injury or damage to vehicle can result if vehicle is rated below 1000 lb load capacity.

This chapter provides instructions for preparing the compressor for use. It is essential that personnel become familiar with this information before attempting to perform these procedures.

Lifting the Compressor

The central lifting bail can be reached through the roof door only from inside the unit. Use hoist or crane capable of lifting machine gross weight. Loading and unloading or transporting the compressor shown below (See Figure 1):

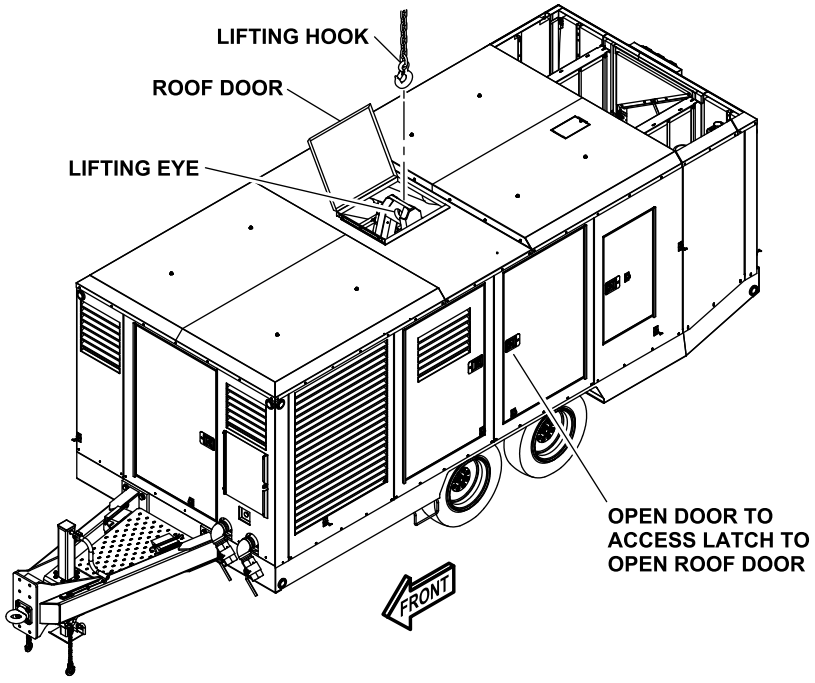


Figure 1 Lifting the Compressor

Lifting the Compressor

⚠ WARNING

Crushing/compressor damage hazard. Use approved lifting devices as necessary within sufficient capacity to lift the compressor safely. Refer to *General Data* for the proper operating weight of the compressor.

Severe injury or death can result if compressor shifts or falls suddenly during installation procedures.

If the compressor is provided with a lifting bail, then 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.

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, refer to General Data information before lifting.

Make sure lifting hook has a functional safety latch or equivalent and is fully engaged and latched on the bail (See Figure 1).

Transporting compressor refer to figure for proper securing of compressor to transporter.

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

DO NOT attempt to lift in high winds

Keep lift operator in constant attendance whenever compressor is suspended. Keep all personnel out from under and away from the compressor whenever it is suspended. Lift compressor no higher than necessary.

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

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 lift hook.

Towing the Compressor

NOTICE

When towing, maintain extra space between vehicles and avoid soft shoulders, curbs and sudden lane changes. If you have not pulled a trailer before, practice turning, stopping, and backing up in an area away from heavy traffic.

Before towing the compressor, ensure:

- The tires and towing hitch are in a serviceable condition and tires are properly inflated.
- The canopy is secure.
- All ancillary equipment is stored in a safe and secure manner.
- The brakes and lights are functioning correctly and meet necessary road traffic requirements.
- Breakaway cables/safety chains are connected to the towing vehicle.

The compressor must be towed in a level attitude in order to maintain correct handling, braking, and lighting functions. This can be achieved by correct selection and adjustment of the vehicle towing hitch and, on variable height running gear, adjustment of the drawbar.

1. Ensure wheels, tires, and drawbar connectors are in safe operating condition and drawbar is properly connected before towing.
2. When parking, always use the handbrake and, if necessary, suitable wheel chocks.

Safety Chains/Breakaway Cable And Their Adjustment (Where Fitted).

Ensure breakaway cable is securely coupled to the towed compressor and also to a substantial anchorage point on the towing vehicle.

Ensure cable length is as short as possible, while still allowing enough slackness for the towed compressor to articulate without the brake being applied.

Attach safety chains to the towing vehicle at substantial anchorage points of suitable strength.

Ensure effective chain length is as short as possible while still allowing normal articulation of the towed compressor and proper operation of the breakaway cable.

DO NOT exceed 65 mph when towing a trailer.

NOTE

A film of grease on the coupler will extend coupler and ball life and eliminate squeaking. Wipe the coupler and ball clean and apply fresh grease each time the trailer is towed.

⚠ WARNING

Personal injury or damage to vehicle can result if vehicle is rated below 1000 lb load capacity.

The compressor trailer is equipped with brakes, lights, and coupler connection. Check that the towing vehicle and hitch have a rating equal to or greater than the Gross Vehicle Weight Rating (GVWR). Refer to the General Data Decal. Before towing the compressor, perform the following:

1. Engage parking brake.
2. Check mounting bolts on actuator and/or pintle eye or coupler for any looseness or wear. Tighten or replace as necessary.
3. Check the condition of both the coupler and hitch. **DO NOT** tow the trailer if the coupler or hitch is damaged. Make adjustments, repairs, or replacement as necessary.
4. Check that the directional and running lights on the trailer are working. Make adjustments, repairs, or replacement as necessary.

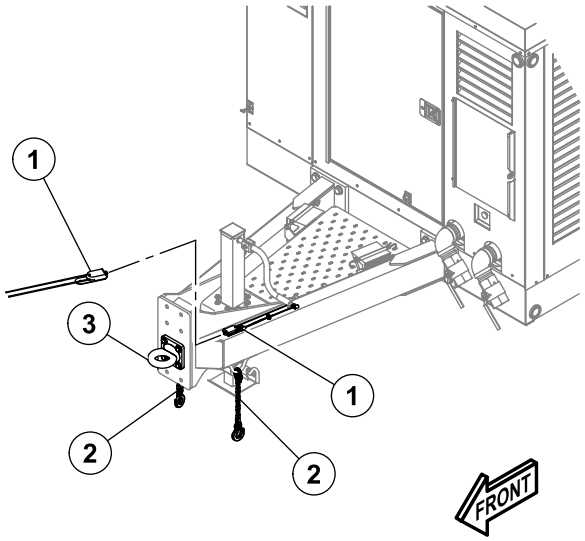


Figure 2 Connecting Breakaway Cable

5. On trailers with surge or electric brakes, connect the breakaway cable (See Figure 2), **(1)** on the trailer coupler to the rear bumper or frame of the vehicle. This cable will actuate the brake system on the trailer if both the coupling and safety chains have failed. The breakaway cable is not a parking brake and should not be used as one.
6. Connect the safety chains **(2)** using a crossed pattern under the trailer tongue.
7. Make sure that the hitch and actuator and/or pintle eye or coupler are compatible **(3)**. Ensure compressor trailer is equipped with either connections.
8. Ensure tires are inflated per General Data Information.

9. Check the tread wear and inflation of tires. Make sure that all lug nuts are in place and are tight.
10. Position compressor actuator and/or pintle eye or coupler is in align with tow vehicle hitch.
11. Seat actuator and/or pintle eye or coupler onto hitch of tow vehicle, and secure hitch.
12. Raise wheel jack and fully lock pin in position.
13. Release parking brake or remove wheel chocks if installed.
14. Check the operation of the optional surge brakes by braking the vehicle at a slow speed before entering traffic. Both the vehicle and the trailer should brake smoothly. If the trailer seems to be pushing, check the fluid level **(Not Shown)** in the surge brakes or the operation of the electric brakes.

Compressor Mounting

Portable Compressors which are modified to remove the Running Gear and mount the Compressor directly to Trailers, Truck Beds, or Frames, etc. may experience failure of the Enclosure, Frame, and/or other Components. It is necessary to isolate the Compressor package from the Carrier Base with a Flexible Mounting System. Such a system must also prevent detachment of the package from the carrier base in the event the Isolators fail. Contact your Portable Power representative for flexible mounting kits.

Warranty does not cover failures attributable to mounting of the Compressor package to the carrier base unless it is a Portable Power provided system.

Unhitching the Compressor for Operation

⚠ WARNING

Failure to fully engage wheel jack can result in severe hand or foot injury.

Do not attempt to operate compressor unit if wheel jack is not functioning properly. Personal injury or damage can result if wheel jack fails causing front end of compressor to drop to the ground.

If compressor is parked with pintle eye facing up hill, the compressor must remain secured to tow vehicle or anchored down.

Before unhitching the compressor, perform the following steps:

- Engage both parking brakes on compressor and tow vehicle.
- Remove lock pin and lower wheel jack.
- Insert pin though wheel jack and lock pin into position.
- Open hitch and lower drawbar until wheel jack touches ground.
- Place wheel chock to tires on the compressor.
- Disconnect safety chains from vehicle. Crank jack to raise pintle eye or coupler from hitch. Now tow vehicle can be moved.

Compressor Mounting

Portable Compressors which are modified to remove the Running Gear and mount the Compressor directly to Trailers, Truck Beds, or Frames, etc. may experience failure of the Enclosure, Frame, and/or other Components. It is necessary to isolate the Compressor package from the Carrier Base with a Flexible Mounting System. Such a system must also prevent detachment of the package from the carrier base in the event the Isolators fail. Contact your Portable Power representative for flexible mounting kits.

Warranty does not cover failures attributable to mounting of the Compressor package to the carrier base unless it is a Portable Power provided system.

Utility Package Set-Up (No Running Gear)

The compressor must be located on vehicle bed to allow access of normal servicing and maintenance.

The air going into the inlet must be relatively free of oil, dirt, soot and other debris. It must be no more than 10° F (5° C) over the ambient temperature.

Preparing for First Use

⚠ WARNING

Failure to follow these instructions could result in serious personal injury or death.

Personal injury or damage to equipment can result if material is stored or transported in or on the compressor.

To prepare compressor for first use:

1. Check the compressor and its components for damage. If there is visible damage, do not operate the compressor! Contact your Portable Power dealer immediately for assistance.
2. Take inventory of all items included with the compressor and verify that all loose components and fasteners are accounted for.
3. Attach component parts not already attached.
4. Crank jack to lower pintle eye coupler onto the hitch and to raise foot of jack off the ground. If a foldable jack, pull pin from tube of jack. Fold jack handle down and forward. Swing up jack tube and FULLY insert pin in tube.
5. Add fluids as needed and applicable, including fuel, engine oil, and battery acid (if needed). This is described further in this chapter.
6. Move the compressor to its operating location.

Never operate compressor without first observing all safety warnings and carefully reading the Operation and Maintenance Manual shipped from the factory with this compressor.

Setting Up the Compressor

Before setting up the compressor, perform the following steps:

- Position as level as possible. The design of these units permits a 10 degree sidewise limit on out-of-level operation. (See General Data).
- Ensure the compressor is positioned securely and on a stable foundation. Any risk of movement should be removed by suitable means, especially to avoid strain on air discharge piping.
- To keep the engine crankcase oil level near the high level mark (when the compressor is level).
- Ensure the compressor oil level gauge show no more than mid-scale. Do not overfill either the engine crankcase or the compressor lubricating oil system.
- The side doors must be closed to maintain a cooling air path and to avoid recirculation of hot air.
- Set parking brake and/or chock wheels.
- Ensure all transport and packing materials are removed.

Fueling (Refueling) the Fuel Tank

⚠ DANGER

Do not permit smoking, open flame, or sparks to occur near the battery, fuel leaking solvents, or other flammable substances and explosive gases.

⚠ WARNING

Fire hazard. Fuel and its vapors are extremely flammable. Burning fuel can cause severe burns.

- **Keep all sources of ignition away from the compressor while refueling.**
- **Refuel only when the compressor is outdoors.**
- **Clean up spilled fuel immediately.**

⚠ WARNING

Flammable Fuels - Do not fill tank when engine is running.

Do not smoke or use an open flame in the vicinity of the compressor or fuel tank.

Do not permit smoking, open flame, or sparks to occur near the battery, fuel, cleaning solvents or other flammable substances and explosive gases.

⚠ WARNING

Diesel fuel and its vapors are dangerous to your health and the surrounding environment. Avoid skin contact and/or inhaling fumes.

⚠ CAUTION

Always place compressor on firm level ground before refueling to prevent spilling and maximize the amount of fuel that can be pumped into the fuel tank.

⚠ CAUTION

Only properly trained personnel who have read and understand this section should refill the fuel tank system.

⚠ CAUTION

Lighter fuels can reduce fuel economy or possibly damage fuel system components.

⚠ CAUTION

Do not use diesel fuel blended with lubricating oil in engines equipped with an Aftertreatment System. Service intervals for Aftertreatment Systems will be reduced.

⚠ CAUTION

Ultra Low Sulfur diesel fuel is required for correct operation of the Aftertreatment System. If Ultra Low Sulfur diesel fuel is not used, the engine could possibly not meet emission regulations and the Aftertreatment System could possibly be damaged.

Procedures for Fueling (Refueling) Fuel Tank

- Ensure compressor and fuel tank level with the ground.
- Ensure fresh, clean fuel supply.

1. Make sure fuel tank is level with the ground. Failure to do so will cause fuel to spill from the tank before reaching full capacity.

   The compressor has an fuel tank located inside the compressor enclosure. Fill the fuel tank with clean, fresh #2 Ultra Low Sulfur diesel fuel.
2. Open the enclosure door of the compressor.
3. Remove the fuel tank cap and fill the fuel tank.
4. When fueling or refueling fuel tank by methods other than a pump and hose, use a non-metallic funnel. Wipe funnel clean before and after use.
5. Fill the fuel tank until the fuel level gauge indicates that the fuel tank is full. If the container does not have a spout, use a funnel. Wipe up any spilled fuel immediately. Do not fill the fuel tank beyond their capacities.
6. Reinstall the fuel tank cap.
7. The procedure for fueling (refueling) the fuel tank is now complete.

Lubrication

⚠ CAUTION

Always check the oil levels before a new compressor is put into service.

If, for any reason, the compressor oil has been drained, it must be re-filled with new oil before putting into operation.

Engine Oil

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals.

Fill engine with lubricating oil as specified in General Data Information section.

After the first 25 initial operating hours drain and replace engine oil.

The engine oil and oil filter element should be changed at the engine manufacturer's recommended intervals. Refer to the Engine Operator Manual.

The Tier 4 engine in this compressor requires engine lubricating oil to ensure proper Aftertreatment System operation and engine durability. Doosan Tier 4 Premium Engine Oil is recommended. Refer to the Engine Operator Manual for engine oil specifications.

Compressor Oil

⚠ WARNING

DO NOT, under any circumstances, remove any drain plugs or the oil filler plug from the compressor lubricating and cooling system without first ensuring the compressor is stopped and the system has been completely relieved of all air pressure (refer to STOPPING in the Operating Instructions Section of this manual).

⚠ CAUTION

Some oil mixtures are incompatible and result in the formation of varnishes, shellacs, or lacquers which may be insoluble. Refer to the Portable Compressor Oil Chart.

Refer to the Preventive Maintenance Schedule (PMS) in this manual for recommended servicing intervals.

Fill compressor initially with 2 quarts (qts) of lubricating oil. Start compressor and immediately shutdown.

Add an additional 1.7 quarts to compressor and make sure the oil level is visible in the sight glass.

After 25 hours of operation check the valve clearance. Refer to Preventive Maintenance Schedule.

Preparation for Storage

The preservation specification should be consulted with Portable Power dealer for assistance.

Storing the Compressor

Perform the following steps:

1. Ensure the service air tank is depressurized by opening service air tank blowdown valve.
2. Drain all fuel and oil from the compressor before storing. Remove bottom hose from aftercooler to completely drain oil from compressor.
3. Drain liquid from fuel/water separator filter in a clearly marked approved container.

Noise Emission

Noise Emission

Compressors Distributed Within the United States

Tampering With Noise Control System Prohibited.

Federal Law Prohibits the following Acts or the Causing Thereof:

(1) The removal or rendering inoperative by any persons, other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new compressor for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use; or (2) the use of the compressor after such device or element of design has been removed or rendered inoperative by any person.

Among those acts included in the prohibition against tampering are these:

1. Removal or rendering inoperative any of the following:
   A. The Engine Exhaust System or Parts thereof
   B. The Air Intake System or Parts thereof
   C. Enclosure or Parts thereof
2. Removal of any of the following:
   A. Fan Shroud
   B. Vibration Mounts
   C. Sound Absorption Material
3. Operation of the Compressor with any of the Enclosure Doors Open.

Compressor Noise Emission Control Information

A. Removal or rendering inoperative, other than for the purpose of maintenance, repair, or replacement of any noise control device or element of design incorporated into this Compressor in compliance with the Noise Control Act.

B. The use of this Compressor after such device or element of design has been removed or rendered inoperative.

NOTE

The information above applies only to compressors that are built in compliance with the U.S. Environmental Protection Agency.

Portable Power reserves the right to make changes or add improvements without notice and without incurring any obligation to make such changes or add such improvements to products sold previously. The purchaser is urged to include the above provisions in any agreement for any resale of this Compressor.

Noise Emission Warranty

The Manufacturer Warrants to the Ultimate Purchaser and each Subsequent Purchaser that this Compressor was Designed, Built and Equipped to conform at the time of Sale to the First Retail Purchaser, with all applicable U.S. EPA Noise Control Regulations.

This Warranty is not Limited to any Particular Part, Component, or System of the Compressor. Defects in the Design, Assembly or in any Part, Component, or System of the Compressor which, at the time of Sale to the First Retail Purchaser, caused Noise Emissions to Exceed Federal Standards are covered by this Warranty For the Life of the Compressor.(40 CFR 204.58-1)

Noise Introduction

The Compressor for which this Maintenance Log is provided conforms To U.S. EPA Regulations for Noise Emissions, applicable to Portable Compressors.

The purpose of this book is to provide (1) The Maintenance Performance Schedule for all Required Noise Emission Controls and (2) Space so that the Purchaser or Owner can record what Maintenance was done, by whom, where and when. The Maintenance Schedule and Detailed Instructions on the Maintenance Items are given on the following pages.

Maintenance Log

COMPRESSOR MODEL:
SERIAL NO:
USER UNIT NO:

UNIT IDENTIFICATION	**DEALER / DISTRIBUTOR INFORMATION**
Engine Make & Model:	Purchased From:
Serial No:	
Purchaser or Owner:	
Address:	Date Purchased:

The Noise Control Act Of 1972 (86 Stat. 1234) Prohibits Tampering with the Noise Control System of any Compressor Manufactured and Sold Under The Above Regulations, Specifically The Following Acts or the Causing Thereof:

(1) The Removal Or Rendering Inoperative by any persons, other than for Purposes Of Maintenance, Repair, or Replacement, of any Device or Element of Design Incorporated into new Compressor for the purpose of Noise Control prior to its Sale or Delivery to the Ultimate Purchaser or while it is in use; or (2) the use of the Compressor after such Device or Element of Design has been removed or rendered inoperative by any person.

Maintenance Schedule

PERIOD	DESCRIPTION
As Detected	**Compressed Air Leaks:** Correct all compressed air leaks during the first shutdown period after discovery. If severe enough to cause serious noise problems and efficiency loss, shut down immediately and correct the leak(s).
As Detected	**Safety and Control Systems:** Repair or replace all safety and control systems or circuits as malfunction occurs. No compressor should be operated with either system bypassed, disabled, or nonfunctional.
Daily	**Acoustic Materials:** In daily inspections, observe these materials. Maintain all acoustic material to its original condition or closely as possible. Repair or replace all sections that have: 1) sustained damage, 2) have partially separated from panels to which they were attached, 3) are missing, or have otherwise deteriorated due to severe operating or storage conditions.
100 Hours	**Fasteners:** All fasteners such as hinges, nuts, bolts, clamps, screws, rivets, and latches should be inspected for looseness after each 100 hours of operation. They should be retightened, repaired, or if missing, replaced immediately to prevent subsequent damage and noise emission increase.
100 Hours	**Enclosure Panels:** Enclosure panels should be inspected at 100 hour operational intervals. All panels that are warped, punctured, torn, or otherwise deformed, such that their noise containment function is reduced, should be repaired or replaced before the next operation interval. Doors, access panels, and hatch closures especially, should be checked and adjusted at this time to ensure continuous seating between gasket or acoustic material and the mating frame.
100 Hours	**Air Intake and Engine Exhaust:** Engine and compressor air intake and engine exhaust systems should be inspected after each 100 hours of operation for loose, damaged, or deteriorated components. Repairs or replacements should be made before the next period of use.
250 Hours	**Cooling Systems:** All components of the cooling system for engine water and compressor oil should be inspected every 250 hours of use. Any discrepancies found should be corrected before placing the compressor back in operation. Unrestricted airflow over the radiator and oil cooler must be maintained at all times during operation.
250 Hours	**Isolation Mounts:** Engine/Airend isolation mounts should be inspected after each 250 hours of operation. Those mounts with cracks or splits in the molded rubber or with bent or broken bolts due to operation or storage in severe environments should be replaced with equivalent parts.

PERIOD	DESCRIPTION
See Operator Manual	**Engine Operation:** Inspect and maintain engine condition and operation as recommended in the manuals supplied by the engine manufacturer.
See Operator Manual	**Fuels and Lubricants:** Use only the types and grades of fuels and lubricants recommended in the Operator and Maintenance Manual and Engine Manual.

Maintenance Record

MAINTENANCE RECORD FOR NOISE EMISSION CONTROL AND EXTENDED WARRANTY					
ITEM NO.	DESCRIPTION OF WORK	HOURMETER READING	MAINT/INSP DATE	LOCATION CITY/STATE	WORK DONE BY (NAME)

General Data

General Data for HP1600WCU-T4F

UNIT MODEL	HP1600WCU-T4F
Air Delivery - cfm (m^3/min)	1600 (45.3)
Rated Operating Pressure - psi (bar)	80-150 (5.5-10.3)
Safety Valve Setting - psi (bar)	200 (13.8)
ENGINE (Diesel)	
Manufacturer	Cummins
Model	QSX15
Rated Power at Full Load Speed - hp (kw)	580 (433)
Full Load Speed - rpm	1800
Idle Speed - rpm	1200
Idle Speed (warm-up) - rpm	1500
Electrical System	24VDC
FLUID CAPACITIES - (U.S. Gallons (liters))	
Compressor Lubricant	55 (208)
Engine Oil, including Filter	12 (46)
Engine Coolant	26.5 (100.3)
Fuel Tank (Tandem Frame)	222 (840)
Fuel Tank (Wagon Frame)	228.1 (863.4)
DEF (Diesel Exhaust Fluid)	15.6 (59)
AMBIENT TEMPERATURE RANGE - ° F (° C)	
With Standard Features	10 to 120 (-12 to 49)
With Required Options	-10 to 120 (-23 to 49)
With Aftercooler or IQ System	Max. 115 (46)
OUT-OF-LEVEL	
Out-Of-Level Operating Limit	10° Angle in any direction

General Data for HP1600WCU-T4F (Continued)

RUNNING GEAR				
	TANDEM	TANDEM	TANDEM	TANDEM
Tire Size	ST 215/75R17.5H	N/A	ST 215/75R17.5H	N/A
Inflation Pressure (Cold) psi	125 (8.62)	N/A	125 (8.62)	N/A
Towing Speed (Max.) mph (km/hr)	65 (105)	N/A	20 (32)	N/A
UNIT MEASUREMENTS & WEIGHTS				
	TANDEM	TANDEM	TANDEM	TANDEM
Overall Length - feet (meters)	24.5 (7.43)	19 (5.80)	18.8 (5.73	18.8 (5.73)
Overall Height - feet (meters)	8.3 (2.53)	8.2 (2.50)	8.5 (2.58)	7.3 (2.21)
Overall Width - feet (meters)	7.51 (2.29)	7.51 (2.29)	7.51 (2.29)	7.51 (2.29)
Weight (with fuel) - lbs (kg)*	19,565 (8874)	18,590 (8432)	19,463 (8828)	18,521 (8400)
Weight (less fuel) - lbs (kg)*	17,874 (8107)	16,899 (7665)	18,280 (8291)	17,338 (7864)

NOTE

*Does not include options

Consumable Service Parts for HP1600WCU-T4F

SERVICE PARTS	
Maintenance Interval Kits	
46615579	500 Hours
46656759	2000 Hours

Description	P/N	Where Used	Qty
Filter, Oil Compressor	36897346	Airend	2
Separator, Oil Compressor	22402317	Airend	1
Filter Element, Air Inlet Primary	36864361	Engine and Airend	2
Filter Element, Air Inlet Safety	36864379	Engine and Airend	2
Filter, Oil Engine	54662028	Engine	1
Filter, Fuel Engine	46618460	Engine	1
Engine Oil Filter, Fuel-Water Separator	46578120	Engine	1
Element, Crankcase Breather	46610619	Engine	1
Filter, Eng. Coolant Conditioner	54662051	Engine	1
Filter, Fuel Tank Vent	46594960	Engine	1
Filter, DEF Supply Pump	46652904	Engine	1
Filter Element, IQ Primary*	46727826*	IQ System	1
Filter Element, IQ Secondary*	46727828*	IQ System	1
Filter Element, IQ Primary**	23178965**	IQ System	1
Filter Element, IQ Secondary**	23178957**	IQ System	1

NOTE

*Optional IQ System and **Optional IQ System - Prior to SN486012

Operating Instructions

Instrument Control Gauge Panel

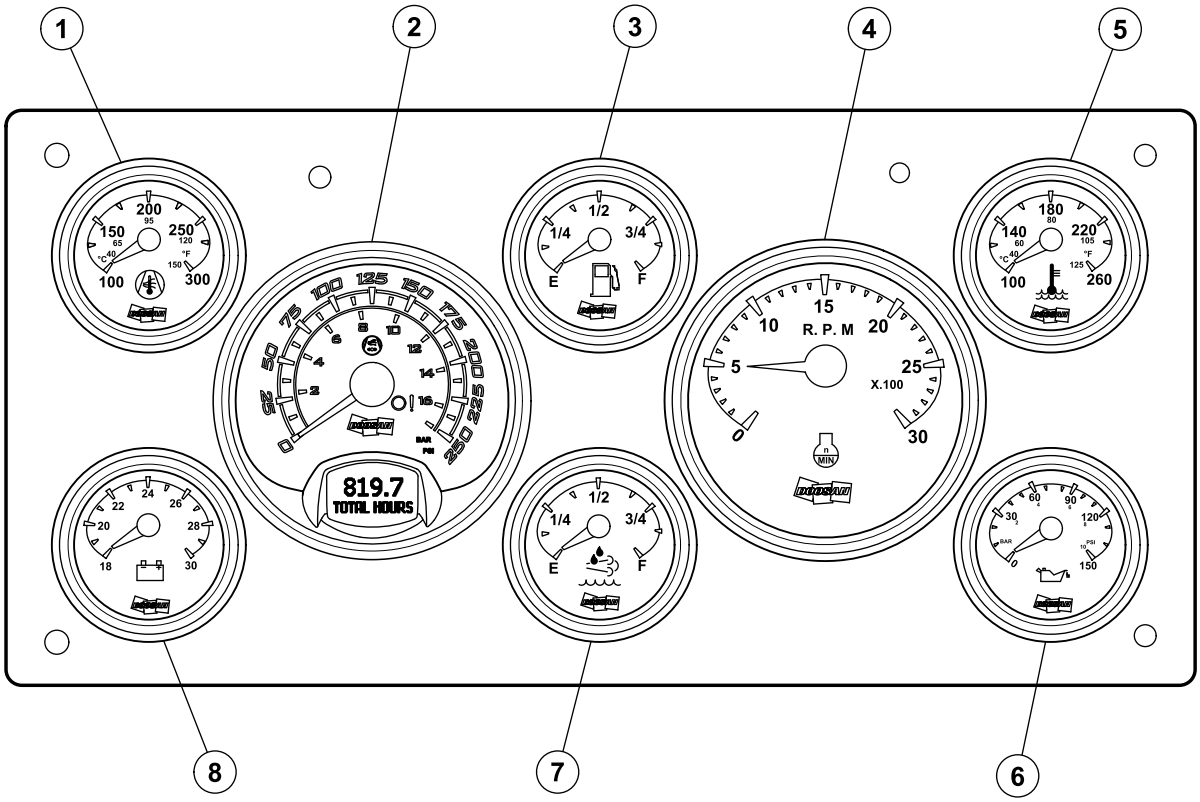


Figure 3 Instrument Control Gauge Panel

Instrument Control Gauge Panel

The following definitions describe the gauges and functions of the Instrument Control Gauge Panel (See Figure 3).

1. **Voltmeter:** Indicates electrical system voltage.
2. **Compressor Temperature Gauge:** Indicates airend discharge temperature.
3. **Air Pressure Gauge:** Indicates pressure in the separator tank.
4. **Fuel Level Gauge:** Indicates fuel level in fuel tank.
5. **Engine Tachometer:** Indicates engine speed (RPM).
6. **Engine Coolant Temperature Gauge:** Indicates engine coolant temperature.
7. **Engine Oil Pressure Gauge:** Indicates engine oil pressure.
8. **DEF Level Gauge:** Indicates DEF level in DEF Tank.

Instrument Control Panel

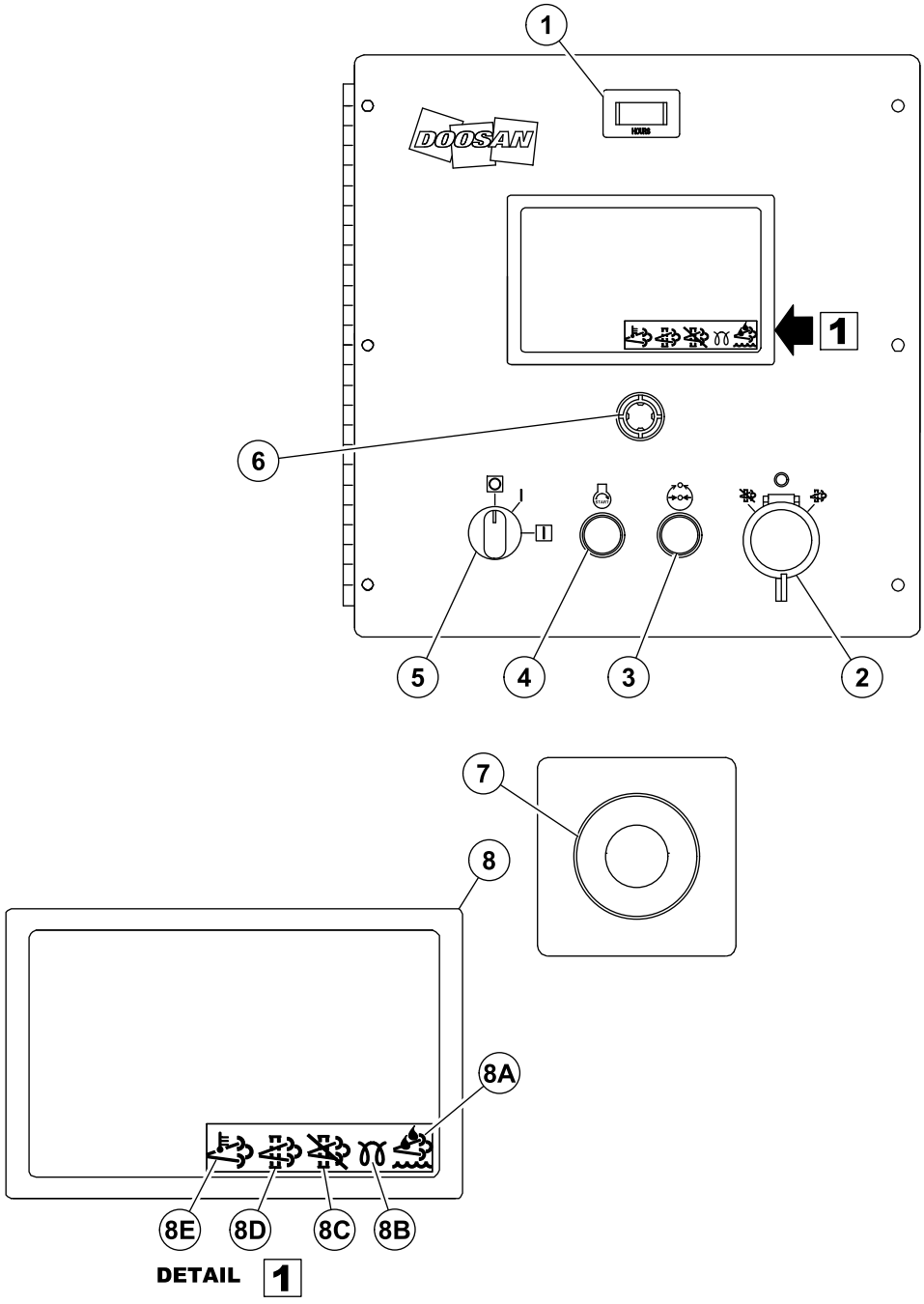
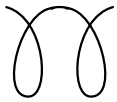
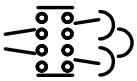
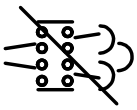


Figure 4 Instrument Control Panel

Control Panel Instrument

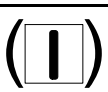
The following definitions describe the controls and functions of the Instrument Control Panel (See Figure 4).

1. **Hourmeter:** Indicates compressor operating hours.
2. **Service Air Button:** Allows operator to load compressor after warm-up.
3. **Joystick:** Scrolls screen to view additional content. Selects display menus.
4. **Start Button:** Initiates engine cranking.
5. **Main Control Switch:** Used for starting and stopping the compressor.
6. **Exhaust System Cleaning Switch:** Provides operator control of the Exhaust Cleaning System.
7. **Emergency Stop:** Push to shut down compressor quickly in emergency situations.
8. **ViewPort:** Displays compressor operating parameters and diagnostic codes.

	8A. **High Exhaust System Temperature (HEST) Lamp:** Illuminates when exhaust temperatures are high due to cleaning of the Aftertreatment.
	8B. **Exhaust System Cleaning Lamp:** Illuminates when Exhaust Aftertreatment System needs cleaning.
	8C. **Exhaust System Cleaning Disabled Lamp:** Illuminates when cleaning is disabled by the Exhaust System Cleaning switch.
	8D. **Wait to Start Lamp:** Illuminates when the operator should wait before starting the engine because the intake air heater is heating (if equipped with an air intake heater).
	8E. **Diesel Exhaust Fluid Lamp:** Illuminates when the DEF level is low.

Screen Icon Instrument Indicators

The following table definitions describe the screen icon indicators for the compressor operating parameters and diagnostic codes. (See Figure 4.)

O	**Normal Position:** Allows automatic exhaust system cleaning to take place as needed.
	**Disable Position:** Inhibits automatic and manual cleaning of the exhaust system.
	**Initiate Position:** Requests manual (non-mission) cleaning of the exhaust system if entry conditions are within proper range. Momentary position.
	**OFF:** Shuts down the compressor.
	**ON:** Powers on compressor control system and ViewPort.
	**RUN:** Powers on engine control system.

Quick ViewPort Screens

Default Screen

If at any time you would need to return the Viewport to its Default settings, navigate to the Set-Up screen and select Default in the Gauges configuration panel. All previous changes to the Viewport will be reset except for Machine ID and Date and Time.

Navigation Button

The Navigation Button is located directly below the Viewport LCD display. The button allows the user to navigate between and within screens, make selections, scroll gauges, manuals, and information. The available functions of the button are shown in Figure 5.

Throughout this description of the Viewport Screens and operation we will refer to TILT LEFT, TILT RIGHT, TILT UP, TILT DOWN, and ENTER. (Refer to Figure 5.)

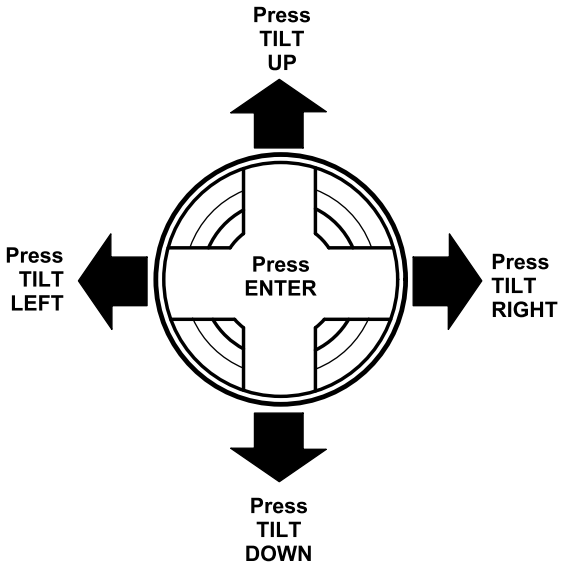


Figure 5 Navigation Button

Screen Definitions

The available display screens are displayed along the bottom of the Viewport LCD display. Also, the Hourmeter which counts cumulative hours of machine operation and the Fuel Gauge which approximates the level of fuel remaining are displayed above the gauges. Along the lower right of the Viewport is a series of indicators of additional machine operation functions/parameters.

During machine operation Figure 6 represents the Viewport screen is required to monitor machine performance.

NOTE

All of the following navigation instructions are based on starting from the Gauge Screen (Figure 6).

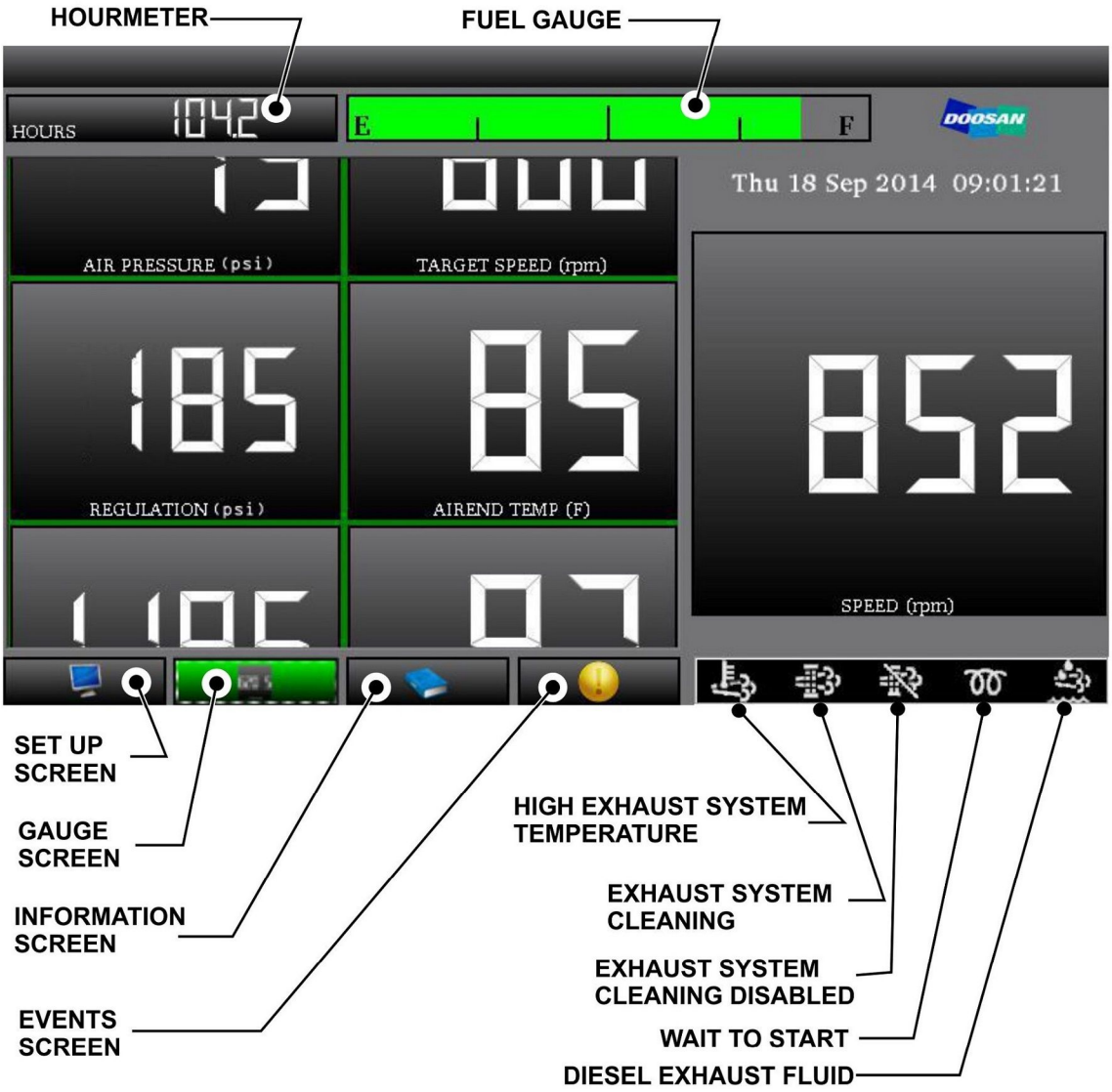


Figure 6 Screen Definitions

Setup Screen

TILT LEFT to highlight the Set Up Screen and press ENTER. The screen represented by Figure 3 will appear.

The Set Up Screen is comprised of 4 sections: Units, Language and Machine ID, System Configuration, and Gauges Configuration.

When the window opens, PRESSURE will be highlighted

To navigate between available fields, TILT LEFT or TILT RIGHT. To change information to be displayed in highlighted field, TILT UP or TILT DOWN.

To exit screen, navigate to Quit button, TILT LEFT or RIGHT until Quit button is highlighted. Press ENTER.

NOTE

Changes to parameters in first 3 sections take effect immediately.

Figure 7 Setup Screen

Units

Pressure Allows user to select units of pressure measurement to be displayed on pressure gauge.

Temperature Allows user to select units of temperature measurement to be displayed on temperature gauge.

Language and Machine ID

Language - Allows user to select language to display on available screens and Operation and Maintenance Manual.

NOTE

English is the default language.

Machine ID Allows user to select Machine ID. Machine ID must match Unit Model Number as shown on the machine's Data Plate.

System Configuration

Alert Duration Allows user to select the desired duration of ALERT notification. During machine operation, if an ALERT condition occurs, the EVENTS Screen will display (over-riding currently viewed screen) for a predetermined set time.

Save Data Allows user to select length of time (in days) data will be stored internally and be available to copy.

Date and Time Allows user to set correct date and time. Date and time will be displayed on the Gauges Screen and will be used to time/date stamp ALERTS, FAULTS, and saved information.

Time Zone Allows user to select appropriate time zone of machine operation.

NOTE

Date and Time Settings are saved automatically.

NOTE

UTC-05 US/Eastern is the default setting.

Gauges Configuration

This panel shows the available gauges for the machine. The Scrolling Gauges are displayed in 2 columns, the Main Gauge is in the upper right corner. The order of the Scrolling Gauges and selection of the Main Gauge are set in this panel.

To arrange the order the Scrolling Gauges are displayed on the Gauge Screen do the following:

- Navigate to the desired gauge by TILTING LEFT and press ENTER. The gauge and its numeric display will be highlighted Green.
- If gauge in right column, TILT LEFT or TILT UP/DOWN to reposition gauge to new location. Press ENTER to deselect.
- Repeat until desired layout is set.
- TILT right until Main Gauge Button is highlighted. Continue to TILT RIGHT until the Save Button is highlighted. Press ENTER to save set up.
- To exit, TILT RIGHT to highlight Quit Button and press ENTER.

Figure 8 Gauges Configuration

The Main Gauge is the largest, most prominent gauge displayed on the Gauge Screen. Any of the available machine gauges can be set as the Main Gauge.

To set the Main Gauge, do the following:

- Navigate the Gauges Configuration area in the Set-Up Screen.
- Navigate to the desired gauge and press ENTER. The selected gauge and its numeric display will be highlighted Green.
- If the highlighted gauge is in the left column, TILT LEFT to highlight the Main Gauge Button.
- If the highlighted gauge is in the right column, TILT RIGHT to highlight the Main Gauge Button.
- Press ENTER.
- TILT RIGHT
- To exit, to highlight Save Button and press ENTER.
- TILT RIGHT to highlight Quit Button and press ENTER.

NOTE

Gauge Configuration changes are immediate. However, to ensure settings are saved after a power cycle the Save Button must be pressed.

Figure 9 Main Gauge Configuration

Gauge Screen

The Gauge Screen consists of the Main Gauge and Scrolling Gauges. These gauges allow the user to monitor machine operating and performance parameters.

The Main Gauge and the order of the Scrolling Gauges is defined in the Set Up Screen procedure.

To view gauges, Gauge Screen must be selected. To scroll gauges, TILT UP or TILT DOWN.

Figure 10 Gauge Screen

Information Screen

TILT RIGHT to navigate to the Information Screen. The Information Screen will open.

The Information Screen is comprised of 3 areas: Manuals, System Info, and Gauge Data.

Figure 11 Information Screen

Manuals

Press ENTER. The Engine Manual Button will be highlighted.

NOTE

At this time the Engine Manual is not loaded.

TILT RIGHT. The Operation Button will be highlighted. Select Operation and the Operation and Maintenance Manual will open in a new screen. 4 buttons are located at the bottom of the screen. TOC (Table of Contents) button will be highlighted. Pressing ENTER will open the manual at the Table of Contents.

There are two methods of viewing displayed manuals. Use the PgUp and Pg Dn button on either side of the TOC Button. TILT LEFT or RIGHT from the TOC Button. Using the Pg Up or Pg Dn will step through the manual page by page (approximately).

- To scroll the chosen manual, TILT UP or TILT DOWN. Any button can be highlighted.
- To exit, TILT RIGHT to highlight the Quit Button. Press ENTER. You will be returned to the Information Screen.
- The procedure to view the Parts Manual and the Service Manual is the same as noted before.

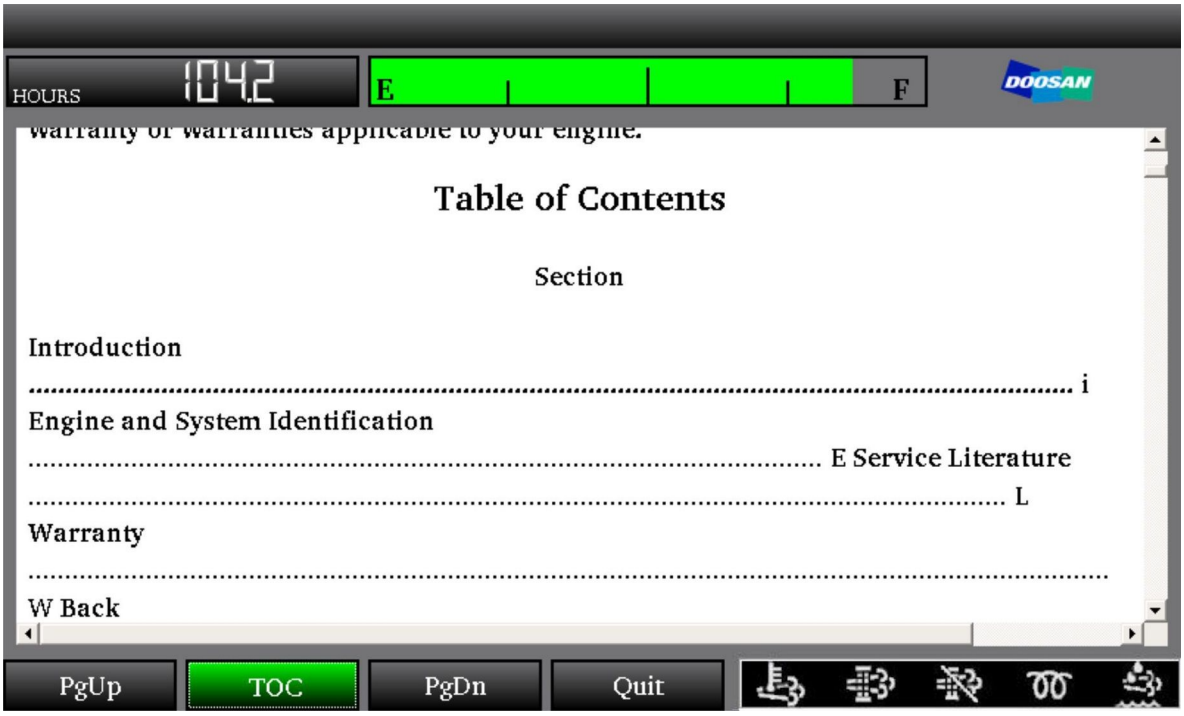


Figure 12 Manuals Uploads

System Info

Navigate by TILTING RIGHT until CAN Devices Button is highlighted. Press ENTER. A new screen will open displaying information for all devices attached to the machine's CAN Bus.

There are 4 buttons at the bottom of the screen. CAN Device Info will be highlighted.

TILT LEFT to highlight Save List Button. Press ENTER to save a snapshot of the displayed information. The snapshot will be stored internally for a predetermined length of time (see Set Up Screen) and available for retrieval.

To retrieve saved information, TILT RIGHT to highlight the Copy to USB Button. Press ENTER. A new smaller screen will open. The smaller screen consists of 2 buttons - Cancel and Save, and a status bar.

Figure 13 CAN Devices Info button

Cancel will close smaller screen and return the user to the CAN Devices Screen.

To save stored information, insert a removable data storage device into the USB port located on the back of the Viewport. Navigate to the Copy to USB Button and press ENTER. The status of the data download will be shown along the status bar. When download is complete, user will be returned to the CAN Devices Screen.

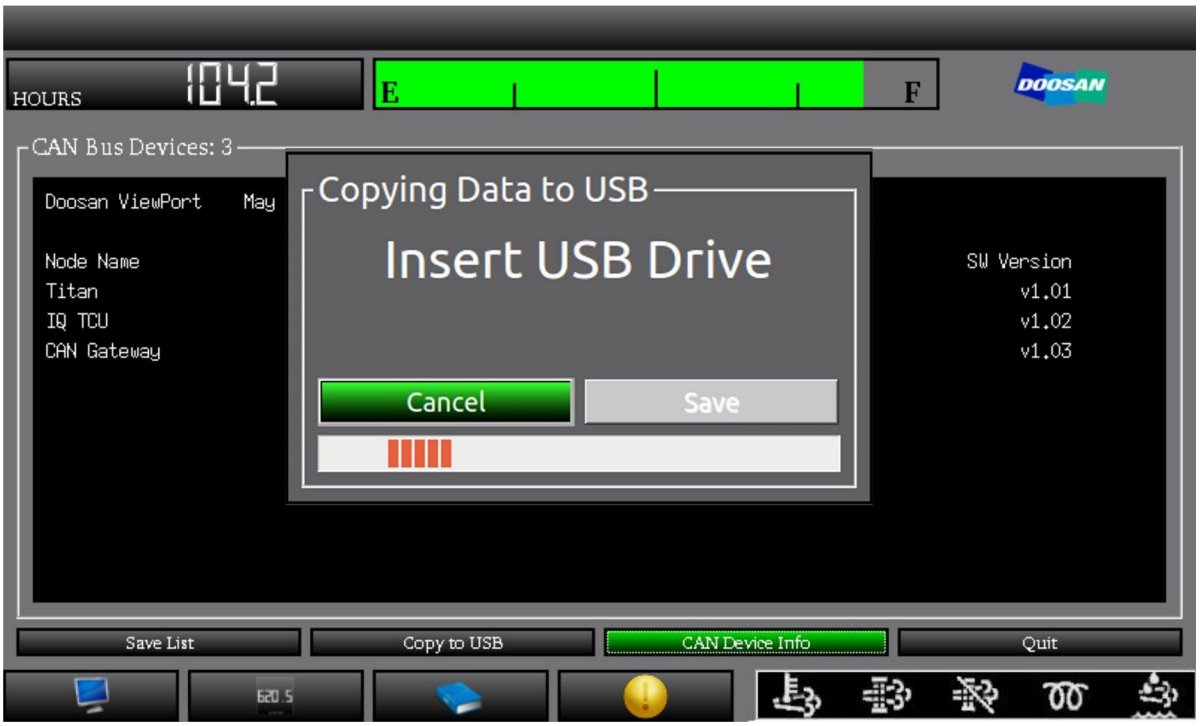


Figure 14 Copy to USB Drive

With the CAN Devices Info Button highlighted press ENTER. A new screen will open.

The new screen consists of 2 panels. The left panel lists all devices attached to the machines CAN Bus. TILT UP or TILT DOWN to highlight any of the devices. Press ENTER to select a drive.

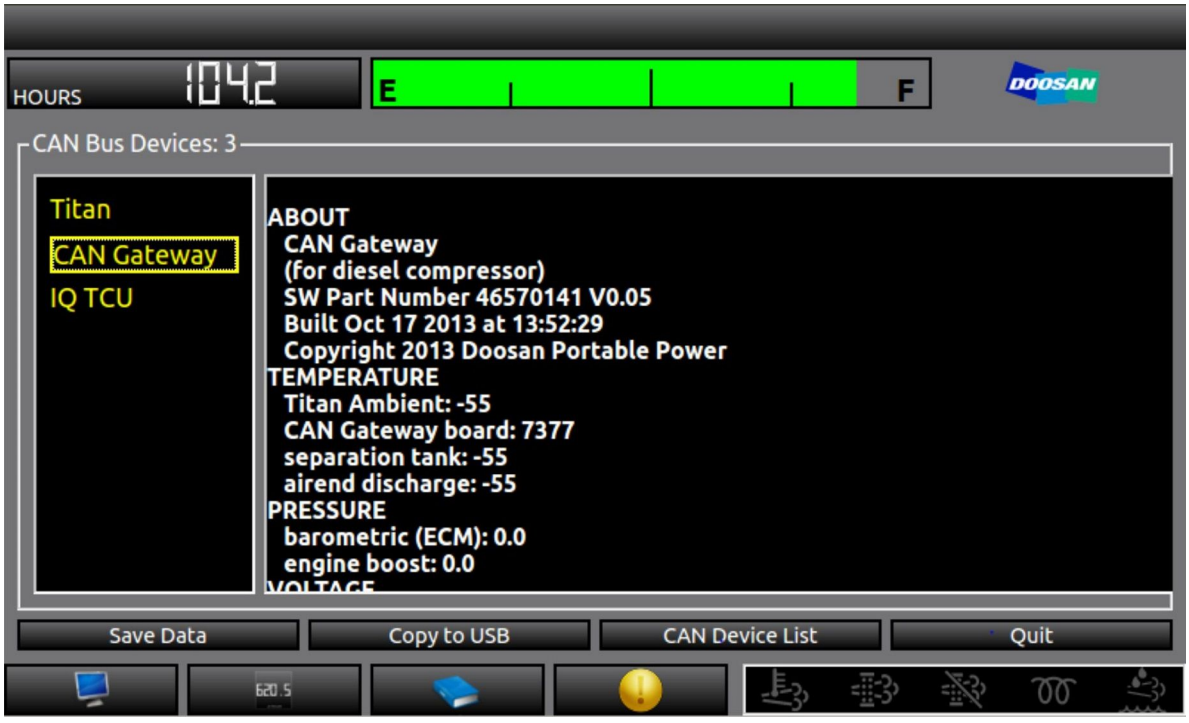


Figure 15 CAN Devices

The right panel shows all vital information of device selected. To scroll the information in the right panel, TILT RIGHT to enter panel and then TILT UP or TILT DOWN to scroll.

To save displayed information, TILT RIGHT until Save Data Button is highlighted, press ENTER. Data will be stored internally for retrieval.

Figure 16 Info/Manuals Screen

Cancel will close the smaller screen and return the user to the CAN Devices info screen.

To save stored information, insert a removable data storage device into the USB port located on the back of the Viewport. Navigate to the Copy to USB Button and press ENTER. The status of the download will be displayed along the status bar. When download is complete, user will be returned to the CAN Devices Info Screen.

Navigate to the Fault Log Button. Once button is highlighted, press TILT UP or TILT DOWN to view available Fault Logs arranged by date. To view Fault Log, highlight date desired and press ENTER.

The Fault Log retains all Faults/Alerts generated for the time duration set in the Set Up Screen. If at any time data is copied to a USB device, the Fault Log is included in the saved data.

TILT DOWN to highlight Information Screen Button to exit Fault Log.

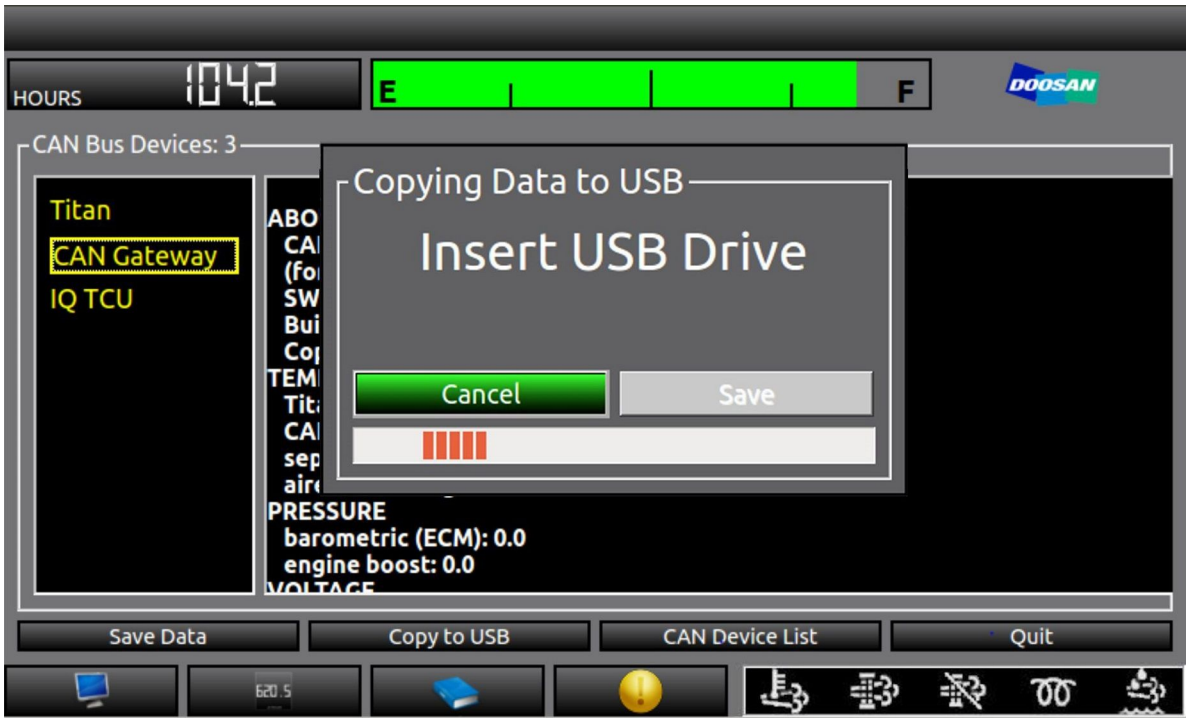


Figure 17 Copy to USB Drive

Navigate to the Gauge Data Section. The Gauge Data Section consists of a Strip Chart Information panel and 5 buttons.

The Strip Chart Information panel allows the user to select information to be displayed on Strip Chart and to define time interval points for data displayed.

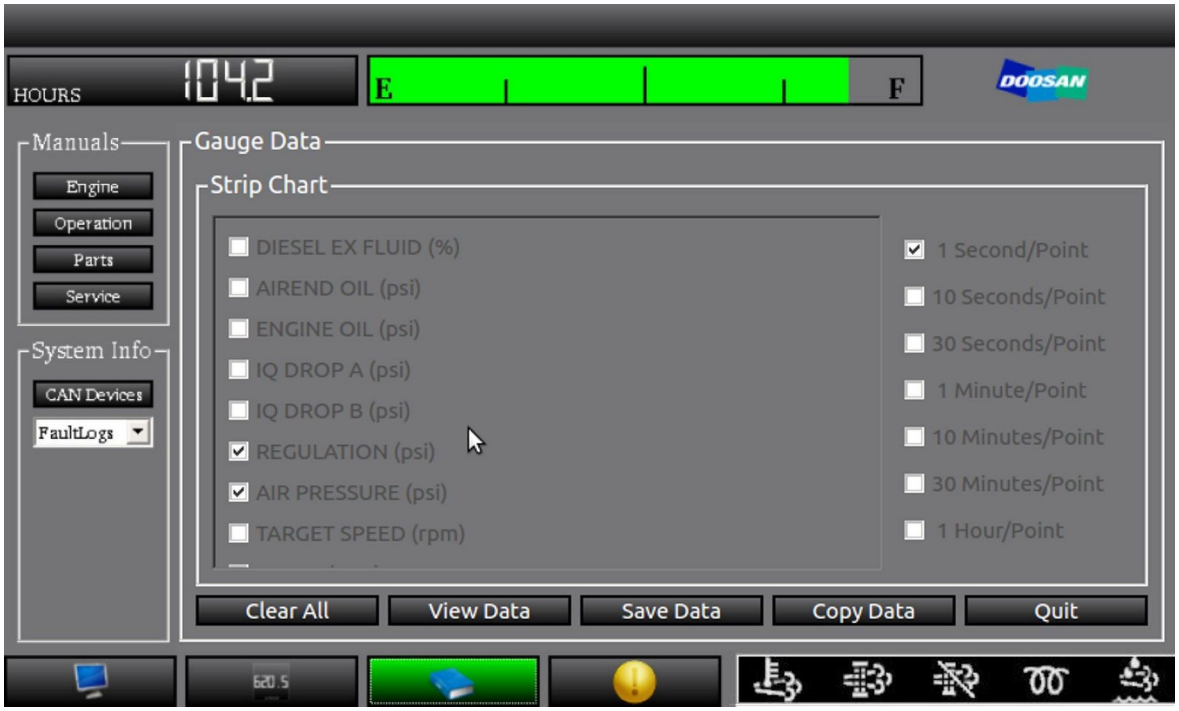


Figure 18 Strip Chart Information

The 5 buttons are:

Clear All Allows user to deselect information selected (if any) from previous data gathering. Navigate to select Clear All button and press ENTER.

View Data Allows user to view data selected in the form of a Strip Chart. Select desired channel(s), then navigate to View Data and press ENTER.

A new screen will open displaying chart of selected data in the left panel. On the right is the color-code legend of the data. Navigating to any of the legend buttons and pressing ENTER allows the user to toggle ON/OFF selected information.

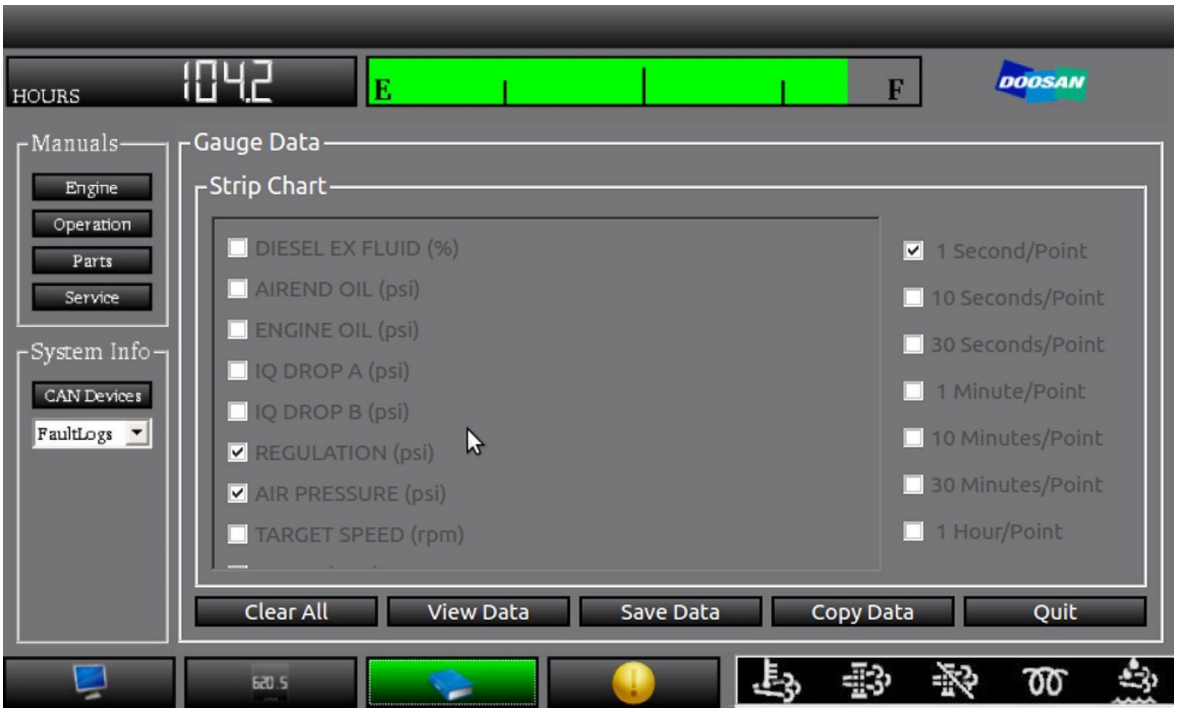


Figure 19 Legend Buttons

Navigate to the Information Screen button and press ENTER to return to Information Screen. Navigate to the Gauge Data Section and select Save Data.

Save Data Allows user to save a snapshot of Strip Chart. Press ENTER.

Quit Press ENTER. Highlights System Info Button.

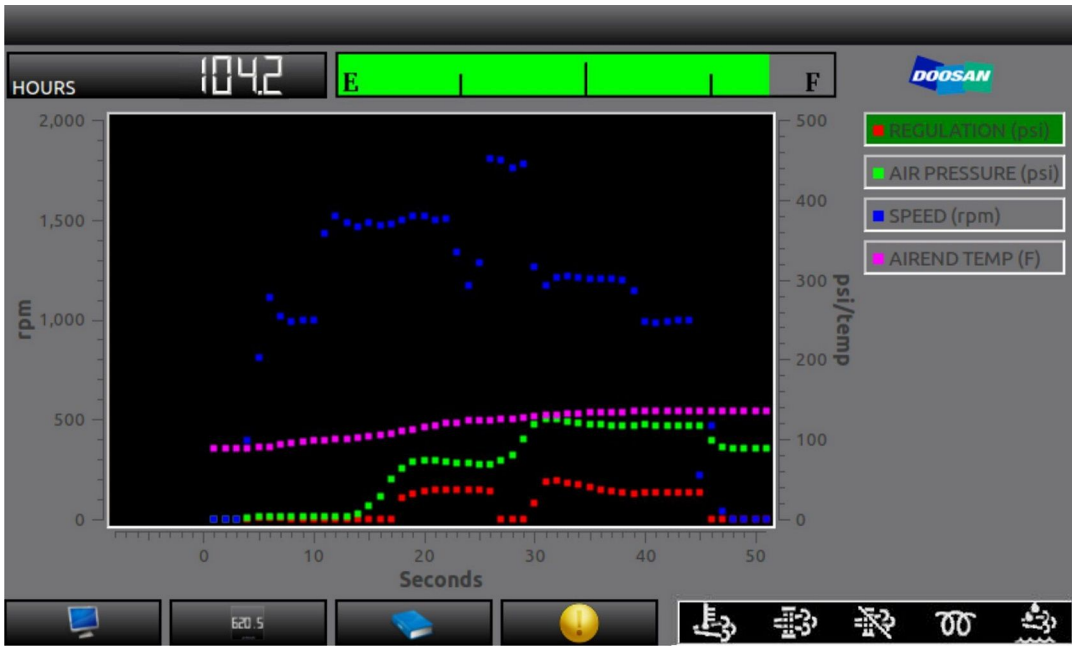


Figure 20 Highlights

Copy Data To save stored information, insert a removable data storage device into the USB port located on the back of the Viewport. Navigate to the Copy to USB button and press ENTER. The status of the data download will be shown along the status bar. When download is complete, user will be returned to the System Info screen.

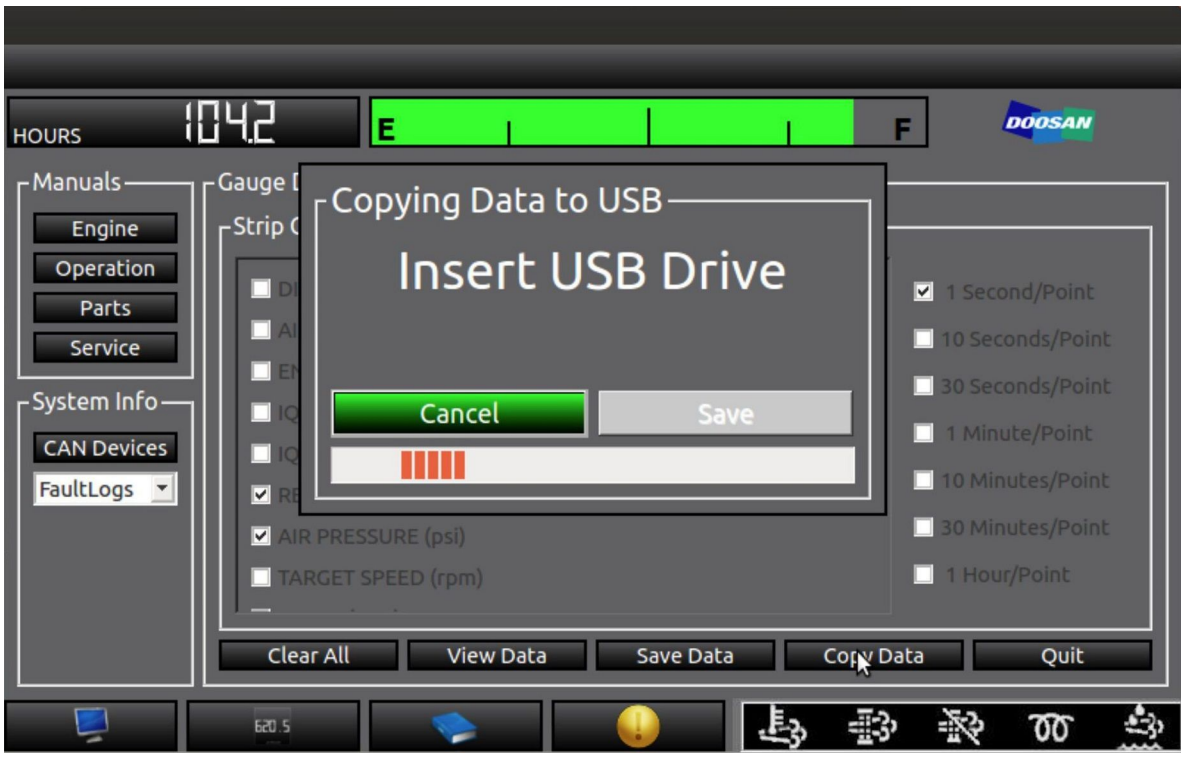


Figure 21 Copy Data

Events Screen

TILT Right to highlight Events Screen. Press ENTER. The Events Screen opens and consists of 2 panels. The left panel lists ALERTS and FAULTS and the right panel displays information for ALERTS and FAULTS.

FAULTS and ALERTS are color-coded as follows:

FAULT Red - Will shut down machine until user investigates and corrects issue. A FAULT will never time-out.

ALERT Yellow - An active ALERT. Will not immediately shut down machine but may become a FAULT if not investigated and corrected.

ALERT Gray - An active ALERT. Either the user has intervened and corrected the ALERT or the machine has determined the original ALERT reading data point has returned to within acceptable operational parameters.

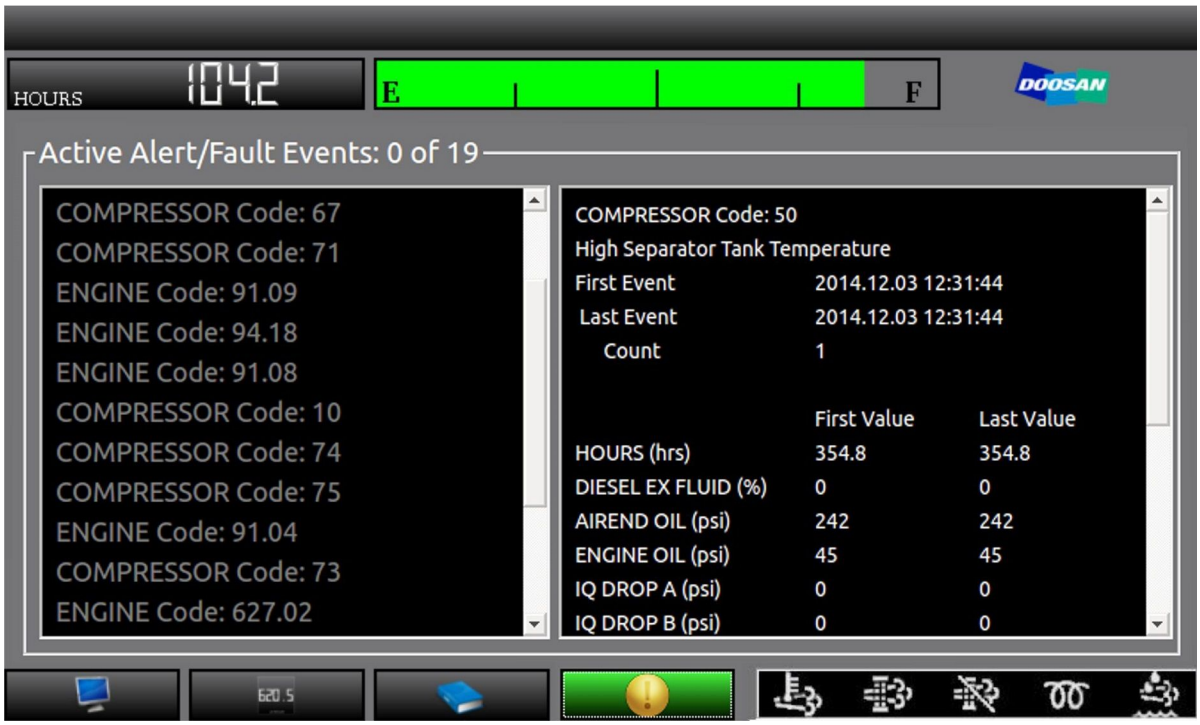


Figure 22 Events Screen

To view detailed information for a particular ALERT/FAULT, TILT UP or DOWN within left panel. An ALERT will be highlighted with a Yellow bounding box while a FAULT will be highlighted by a Red bounding box.

TILT RIGHT to enter right panel and then TILT UP or DOWN to scroll information. Information displayed includes first event, last event, relevant values, and operational data readings at time of events.

Press ENTER to return to ALERT/FAULT list to select another ALERT/FAULT to view. To exit, TILT LEFT from ALERT/FAULT lists. Gauge Screen will open.

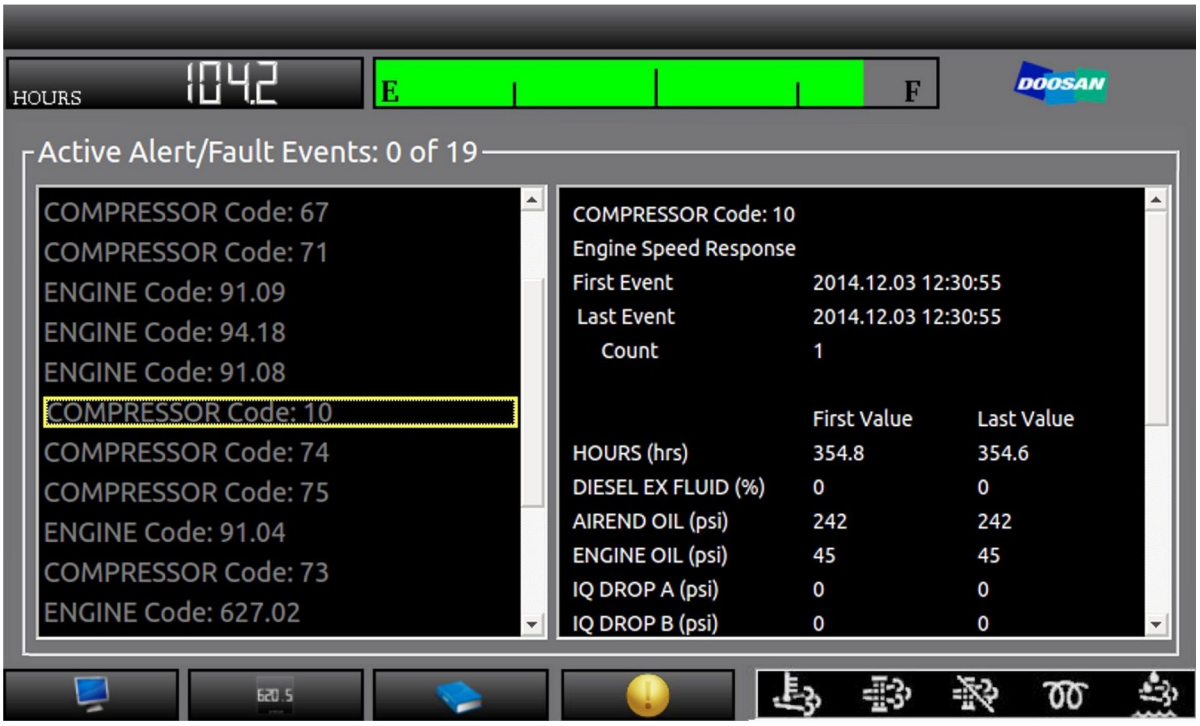


Figure 23 View Detail Information

Before Starting the Compressor

Do not remove reservoir cap from a hot radiator. Allow radiator to cool down before removing reservoir cap. Use extreme care when removing a reservoir cap from a liquid cooling system for the engine. The sudden release of pressure from a heated cooling system can result in a loss of coolant and possible severe personal injury.

Hot pressurized fluid can cause serious burns. Do not open radiator while engine is still hot, hot water will spurt out and may cause severe personal injury.

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

Ensure that the access panels for heat exchanger cleaning are closed and secure before starting the compressor. Rotating fan blades can cause serious injury or death. Do not operate without all guards in place.

Compressor 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.

⚠ WARNING

Unrestricted air flow from a hose will result in a whipping motion of the hose which can cause severe injury or death. A safety device must be attached to the hose at the source of supply to reduce pressure in case of hose failure or other sudden pressure release. Reference: OSHA regulation 29 CFR Section 1926.302 (b).

⚠ CAUTION

Exercise extreme caution when using an external method to jumpstart a unit. Verify the electrical systems on the weak battery system and the external jump system are the same voltage type system, 12VDC or 24VDC. Connect the Positive (+) terminal of the external system to the Positive (+) terminal on the weak system. Connect the Negative (-) terminal of the external system to the Negative (-) terminal of the weak system. Always disconnect the two systems in reverse order.

⚠ CAUTION

No smoking, sparks, or open flame near fuel.

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.

NOTICE

To minimize condensation (water) in the fuel tank, it is recommended to fill the tank at the end of each day. Compressor will not allow engine starting if the fuel level is below the minimum fuel shut off level.

Starting Procedure

⚠ CAUTION

Do not use ether or any other starting fluid. Starting fluids can cause an explosion, fire, and severe engine damage. The engine is equipped with an electric heater starting aid.

⚠ CAUTION

To ensure an adequate flow of oil to the Airend, never allow the discharge pressure to fall below 50 psi.

NOTICE

This compressor is equipped with a battery disconnect switch which disconnects power for long term storage. The switch is located on the fuel tank side. This switch must be in the ON position to provide power to the Control Panel for starting the compressor.

Check the following before starting the compressor:

- Open service valve(s) to ensure pressure is relieved in receiver-separator system. Close valve(s) in order to build up full air pressure and ensure proper oil circulation.
- Check battery for proper connections and condition.
- Check engine coolant level when engine is cold. Ensure reservoir cap is installed property and tightened.
- Check the engine oil level. Maintain per marks on dipstick.
- Check the fuel level. Add fuel as necessary. Refer to Engine Operator Manual for fuel specifications.
- Check the compressor lubricating fluid level between bottom and midway of the sight glass on the separator tank.
- Drain water from fuel/water separator.
- Close all 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.
- Ensure no one is IN or ON the compressor unit.
- Ensure that the location of the Emergency Stop Button (if equipped) is known and recognized by its markings.

Start the compressor by following the decal (See Figure 24) for startup procedure:

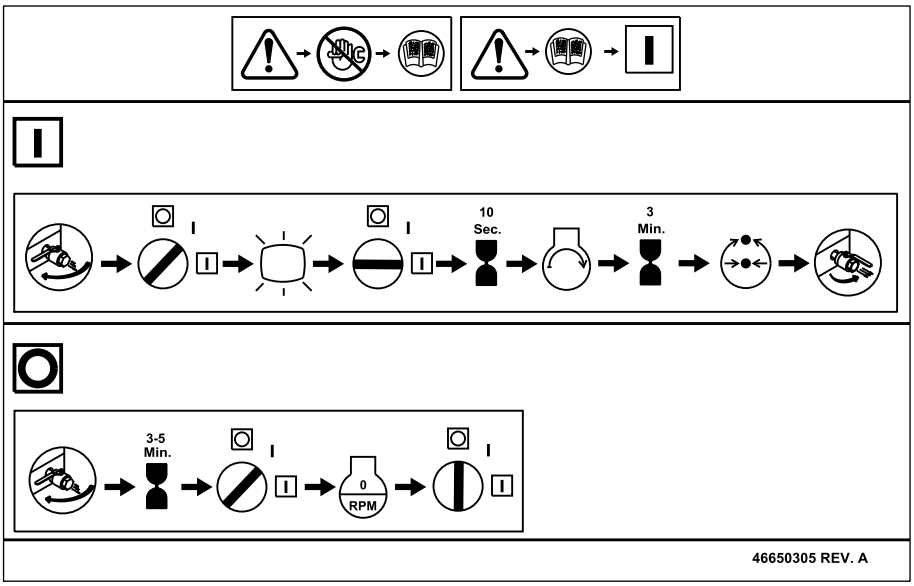


Figure 24 Startup Procedure

1. Close the service valve(s) to isolate the compressor.
2. Move the Main Control Switch to the ON (I) position. The ViewPort and compressor control system will power-up. When the ViewPort is ready, it will show compressor operating parameters and any active diagnostic codes.
3. Move the Main Control Switch to the RUN (I) position. The engine control system will power-up.
4. Press the Start button. The engine starter motor will engage. Hold this position until the engine starts and runs freely. Release the button. Do not operate the engine starter for more than 15 seconds before waiting at least 1 minute between start attempts. Compressor control system will limit starter operation.
5. Following a successful start, the engine will accelerate to idle speed and separator tank pressure will rise to the start pressure (approximately 60 psi). If necessary for warm-up, the engine will accelerate to the warm-up idle speed (1500 RPM) and then return to idle speed (1200 RPM) after warming up.
6. When ready for full pressure, and after the compressor has warmed up, press the Service Air Button. The engine may accelerate to full load speed until the rated operating pressure is reached.
7. Open the service valve(s) to supply air from the compressor and begin normal operation.
8. To change to the high pressure mode, press the high pressure button. Three lights on the button will illuminate.

Normal Operation

The Operator may observe and monitor operating parameters using the ViewPort and gauge(s). In the event the compressor controller detects a parameter outside normal operating limits, the compressor will alert and/or shutdown and display a diagnostic code.

In the event the compressor controller detects a parameter at a dangerously high or low level, the compressor will automatically shutdown with the cause of the shutdown shown on the ViewPort.

Delivered air volume at load point pressure is accomplished by two methods, which work together:

1. The compressor is loaded (inlet valve fully open or modulated partially open) or unloaded (inlet valve fully closed).
2. Engine speed varies between idle speed and full load speed 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 idle speed. If there is air demand (pressure falls below the load point pressure), compressor will load at idle speed by opening the inlet valve. As air demand rises and falls, engine speed is controlled between idle speed and full load speed to match the required flow while maintaining load point pressure.

Operation-Unloaded

If there is no air demand at idle speed (pressure rises above the unload point pressure), the compressor will unload by closing the inlet valve. The compressor then runs at idle speed 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.

Fan Clutch Operation

The fan clutch is controlled by the engine ECM and utilizes engine oil to lubricate and control fan speed. Engine oil circulates continuously to the clutch and drains back into the engine oil pan. Engine oil pressure is also metered to the fan clutch through a solenoid that adjusts the flow of oil to a pilot on the clutch, controlling fan speed. The solenoid is mounted on the top of the engine next to the thermostat housing.

If at any time the electrical connection to the solenoid is interrupted or disconnected, the fan will default to full speed.

During shutdown the ECM sends a 24VDC signal to the fan clutch solenoid causing the fan to fully unlock. This allows the fan to freewheel at shutdown reducing stress on the fan belt and drive system.

During standard air operation, the engine ECM modulates the fan clutch speed based on Engine Coolant temperature, Charge Air Cooler temperature, and Airend Discharge temperature. The system requiring the most cooling of the three at any given time controls the fan clutch.

When the machine is equipped with an IQ or AC system, the fan will run at 100% speed when the IQ or AC system is pressurized. If at any time the IQ VAC system is turned off and the machine returned to standard air operation, the fan will resume modulation based on Engine Coolant temperature, Charge Air Cooler temperature, and Airend Discharge temperature when the pressure in the IQ or AC system falls below 12 psi.

If the aftercooler outlet temperature falls below 50 deg F during operation with the IQ or AC system active, the fan speed command from the IQ or AC system will slow down proportionally from 100% to 0% between 50 deg F and 40 deg F. If at any time the Engine Coolant temperature, Charge Air Cooler temperature, or Airend Discharge temperature requires more fan speed for cooling than is commanded by the IQ or AC system, control of fan speed will be relinquished to the system requiring the most cooling.

If at any time the engine ECM fails to receive temperature data from the the Engine Coolant temperature, Charge Air Cooler temperature, or Airend Discharge temperature sensors, an engine fault code will be displayed on the Viewport and the fan will default to 100% speed until the fault is corrected.

Shutdown

⚠ WARNING

Pressure will remain in the system between the Minimum Pressure Valve and the Service Valve after shutdown and operation of the Automatic Blowdown Valve. This pressure must be relieved by disconnecting any downstream equipment and opening the Discharge Valve to atmosphere.

⚠ WARNING

Since the service valve is closed, air downstream of the valve may be trapped. A vent hole in the service valve will slowly bleed air from the hose. Do not disconnect hoses until all pressure has been vented.

⚠ CAUTION

Use the Emergency Stop, if equipped, only for emergency conditions. Do not use for normal stopping. Emergency Stop must be reset before starting can be accomplished.

⚠ CAUTION

Never allow the compressor to sit stopped with pressure in the separator tank or piping. As a precaution, open the Service Valve.

NOTICE

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

NOTICE

Once the engine stops, the Automatic Blowdown Valve will relieve pressure from the separator tank. If the Automatic Blowdown Valve fails to operate, pressure must be relieved from the system by means of the Manual Blowdown Valve.

NOTICE

This compressor is equipped with a battery disconnect switch which disconnects power for long term storage. The switch is located on the fuel tank side.

Do not use the battery disconnect switch for normal stopping. Wait 1 minute after stopping engine before turning the battery disconnect switch to the OFF position.

Powering Down the Compressor

Do the following for powering down the compressor by following these procedure:

1. Close all Service Valves.
2. Allow the engine to idle for 3 to 5 minutes to cool down.
3. Move the Main Control Switch to the ON position  (second position). This will shut down the engine. The ViewPort will remain active. Operating parameters and any active diagnostic codes may be viewed, if desired.
4. Move the Main Control Switch to the OFF position  (first position). This will shut down the ViewPort and compressor control system.

Dual Pressure Regulator Adjustment Instructions

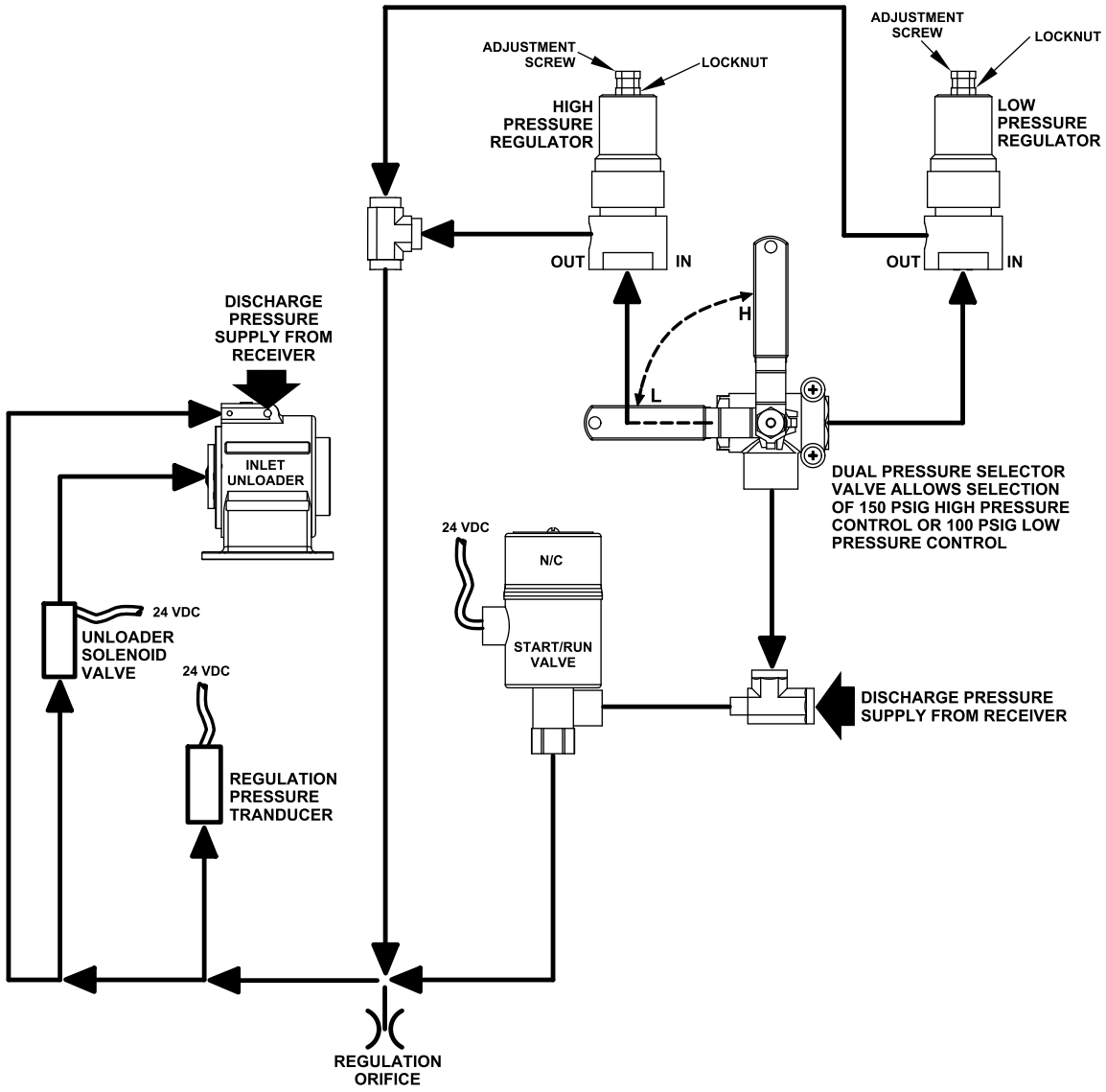


Figure 25 Dual Pressure Regulator Adjustment

This machine is equipped with a Dual Pressure Regulation system which allows the unloaded operating pressure to be changed between two levels. These levels are selectable by a two-position valve located on the left side of the Separator Tank.

The settings labeled High and Low are factory set at 150 psig for the High pressure and 100 psig for the Low setting.

Regulation normally requires no adjustment, but if proper adjustment is lost, proceed as follows:

Preparation

1. Operate the compressor to determine if the High (150 psi) or Low (100 psi) regulator needs adjusting. Rotate the Selector Valve to point to the correct value High or Low.
2. Locate the Regulator which controls the pressure to be adjusted.
3. Complete all adjustments on this Regulator before making any adjustments to the other Regulator.

Before Starting

1. At the side of the Separator Tank, at the Pressure Regulator, loosen adjustment locknut by turning counterclockwise. Turn adjustment screw counterclockwise one full turn.

After Starting

1. Allow the compressor to warm up, then push Service Air Button on Control Panel.
2. Open and adjust Service Valve on outside of the compressor to obtain the rated operating pressure on the Air Pressure Gauge.

   NOTE

   If the rated operating pressure cannot be maintained with engine at full load speed, turn the regulator adjustment screw clockwise and adjust service valve until engine maintains rated full load speed (1800 RPM).

3. Ensure that pressure is maintained at rated pressure, then turn Regulator Adjustment Screw counterclockwise until engine speed just begins to be reduced.

   NOTE

   Turning Regulator Adjustment Screw clockwise will raise pressure at full speed.

4. Close Service Valve (engine will slow to idle speed).
5. If necessary, repeat Steps 2 and 3.
6. Tighten lock nut at the top of the Pressure Regulator.
7. Ensure Unloader Solenoid acts to hold pressure in Inlet Unloader after shutdown. After startup, the compressor controller will open Unloader Solenoid.
8. Repeat all steps above to select and adjust the Low Pressure Regulator to maintain 100 psig rated pressure at full load engine RPM.

Lubrication

Lubrication Information

Lubrication is an essential part of Preventive Maintenance, affecting to a great extent the useful life of the compressor. Different Lubricants are needed and some components require more frequent Lubrication than others. Therefore, it is important that the instructions regarding types of Lubricants and the frequency of their application be explicitly followed. Periodic Lubrication of the Moving Parts reduces to a minimum the possibility of mechanical failures.

The Maintenance Schedule shows those items requiring regular service and the interval in which they should be performed. A regular service program should be developed to include all items and fluids. These intervals are based on average operating conditions. In the event of extremely severe (hot, cold, dusty, or wet) operating conditions, more frequent lubrication than specified may be necessary.

All filters and filter elements for air and compressor oil must be obtained through portable power to ensure the proper size and filtration for the compressor.

Compressor Oil Change

High pressure air can cause severe injury or death from hot oil and flying parts. Always relieve pressure before removing caps, plugs, covers, or other parts from pressurized air system. Ensure that the air pressure gauge reads zero (0) pressure and ensure there is no air discharge when opening the manual blowdown valve.

In most severe applications (i.e., sandblasting, quarry drilling, well drilling, and oil and gas drilling) more frequent service intervals will be required to ensure long component life.

Portable power provides compressor oil specifically formulated for portable compressors. Use of these fluids is required to obtain extended limited airend warranty.

NOTICE

Some oil types are incompatible when mixed and result in the formation of varnishes, shellacs, or lacquers which may be insoluble. Such deposits can cause serious troubles including clogging of the filters. Do not mix oils of different types and avoid mixing different brands. A type or brand change is best made at the time of a complete oil drain and refill.

These compressors are furnished with an initial supply of oil sufficient to allow operation until the first service interval indicated in the Maintenance Schedule. If a compressor has been drained of all oil, it must be refilled with new oil before it is placed in operation. Refer to specifications in the Portable compressor Oil Chart.

If the compressor has been operated for the time/hours indicated in the Maintenance Schedule, it should be drained of oil. If the compressor has been operated under adverse conditions, or after long periods in storage, an earlier change may be necessary as oil deteriorates with time as well as by operating conditions.

An oil change is good insurance against the accumulation of dirt, sludge, or oxidized oil products.

Completely drain the separator tank, piping, and cooler.

NOTE

If the compressor has been operating under adverse conditions or has suffered long shutdown periods, more frequent service intervals will be required. If the oil is drained immediately after the compressor has been run for some time, most of the sediment will be in suspension and, therefore, will drain more readily. However, the oil will be hot and care must be taken to avoid contact with the skin or eyes.

After The compressor has been drained of all old oil, close the drain valves and/or plugs and install new oil filter elements. Add oil in the specified quantity at the filler plug. Tighten the filler plug and run the compressor to circulate the oil. Check the oil level. DO NOT OVERFILL.

Compressor Oil Chart

Refer to this table for the correct compressor oil required. Note that the selection of oil is dependent on the rated operating pressure of the compressor and the ambient temperature expected to be encountered before the next oil change.

NOTE

Oils listed as “preferred” are required for extended warranty. Compressor oil carryover (oil consumption) may be greater with the use of alternative oils.

Table 1 Compressor Oil Specification

Rated Operating Pressure	Ambient Temperature	Compressor Oil Specification
100 psi to 200 psi	-10° F to 120 F (-23° C to 49° C)	Preferred: **PRO-TEC™** Alternate: ISO Viscosity Grade 46 Group 3 or 4 with rust and oxidation inhibitors designed for air compressor service.
	ARCTIC -22° F to 68 F (-30° C to 20° C)	Alternate: **Mobil 1 SYNTHETIC ATF**
201 psi to 365 psi	-10° F to 120° F (-23° C to 49° C)	Preferred: **XHP605 (required for extended warranty)** Alternate: XHP405 ISO Viscosity Grade 68 Group 3 or 4 with rust and oxidation inhibitors designed for air compressor service.
	ARCTIC 1-Stage Airend -22° F to 68 F (-30° C to 20° C)	Alternate: **Mobil 1 SYNTHETIC ATF**
	2-Stage Airend -40° F to 68 F (-40° C to 20° C)	

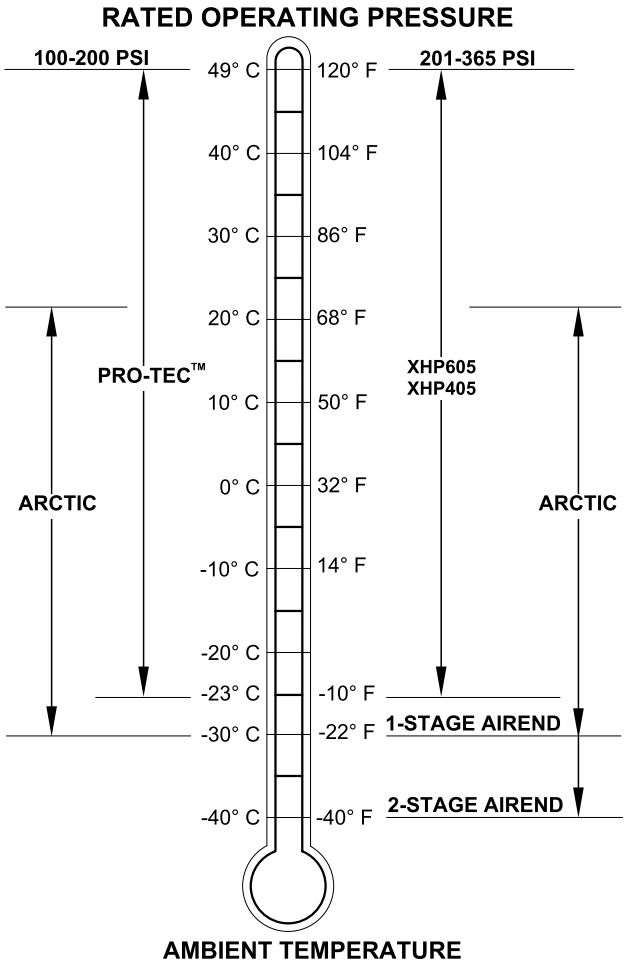


Figure 26 Rated Ambient Temperature Pressure

Preferred Oil - Use of these oils with Doosan (See Table 2) branded filters can extend airend warranty. Refer to the warranty policy for details or contact your representative.

Table 2 Preferred Oil

Preferred Oil	1 gal. (3.8 Liter)	5 gal. (19 Liter)	55 gal. (208 Liter)	Bulk 220 gal. (833 Liter)	Bulk 275 gal. (1041 Liter)
Pro-Tec™	36899698	36899706	36899714	-	36899722
XHP605	-	22252076	22252050	22252068	-
XHP405	-	22252126	22252100	-	-

Maintenance

Maintenance Information

⚠ CAUTION

Any unauthorized modification or failure to maintain this equipment may make it unsafe and out of factory warranty.

If performing more than visual inspections, disconnect Negative (-) battery cable and open manual blowdown valve.

Use extreme care to avoid contacting hot surfaces (engine exhaust manifold, piping, air receiver, and air discharge piping, etc.).

Never operate this machine with any guards removed.

Inch and metric hardware were used in the design and assembly of this unit. Consult the parts manual for clarification of usage.

NOTICE

Disregard any maintenance pertaining to components not provided on your machine.

This section refers to the various components which require periodic maintenance and replacement.

The Maintenance Schedule indicates the various components' descriptions and the intervals when maintenance has to take place. Fluid capacities can be found in the General Data of this manual. For any specification or specific requirement on service or preventative maintenance for the engine, refer to the Engine Manual.

In addition to periodic inspections, many of the components in these units require periodic servicing to provide maximum output and performance. Servicing may consist of pre-operation and post-operation procedures to be performed by the operating or maintenance personnel. The primary function of preventive maintenance is to prevent failure, and consequently, the need for repair. Preventive maintenance is the easiest and the least expensive type of maintenance. Maintaining your unit and keeping it clean at all times will facilitate servicing.

Compressed air can be dangerous if incorrectly handled. Review all maintenance precautions listed below before attempting any maintenance work on the compressor.

Maintenance Precautions

⚠ WARNING

Pressure will remain in the system between the minimum pressure valve and the service valve after shutdown and operation of the automatic blowdown valve. This pressure must be relieved by disconnecting any downstream equipment and opening the discharge valve to atmosphere.

NOTICE

Refer to the Preventive Maintenance Schedule (PMS) in this manual that describes the service intervals that should be followed For normal applications of this compressor. This page may be reproduced and used as a checklist by service personnel.

In more severe applications such as sandblasting, quarry drilling, well drilling, and oil and gas drilling, more frequent service intervals will be required to ensure long component life.

Dust and dirt, high humidity, and high temperatures will affect lubricant life and service intervals for components such as inlet air filters, oil separation elements, and oil filters.

Prior to attempting any maintenance work, ensure:

1. All pressure is vented from the system and the compressor cannot be started accidentally.
2. If the automatic blowdown valve fails to operate, then pressure must be gradually relieved by operating the manual blowdown valve.
3. The discharge pipe/manifold area is depressurized by opening the discharge valve while keeping clear of any airflow from it.
4. Maintenance personnel are adequately trained, competent, and have read the operation and maintenance manual.

Prior to opening or removing panels or covers inside a compressor, ensure:

1. Anyone entering the compressor is aware of the reduced level of protection and the additional hazards, including hot surfaces and intermittently moving parts.
2. The compressor cannot be started. Post warning signs and/or fit anti-start devices.
3. Battery cables are disconnected.

Prior to attempting any maintenance work on a running compressor, ensure:

1. The work carried out is limited to only those tasks which require the compressor to run.
2. The work carried out with safety protection devices disabled or removed is limited to only those tasks which require the compressor to be running with safety protection devices disabled or removed.
3. All hazards present are known (e.g. Pressurized components, electrically live components, removed panels, covers and guards, extreme temperatures, inflow and outflow of air, intermittently moving parts, safety valve discharge etc.).
4. Appropriate personal protective equipment is worn.
5. Loose clothing, jewelry, long hair, etc. is made safe.
6. Warning signs indicating that maintenance work is in progress are posted in a position that can be clearly seen.

Upon completion of maintenance task and prior to returning the compressor into service, ensure:

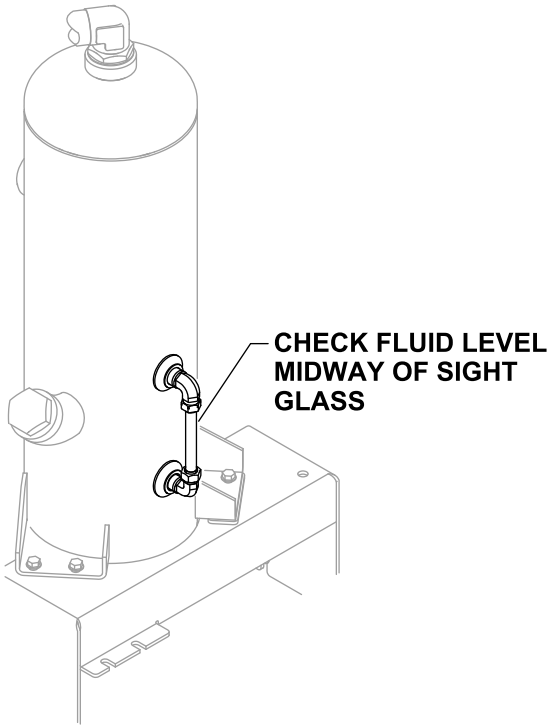
1. The compressor is suitably tested.
2. All guards and safety protection devices are refitted.
3. All panels are replaced, canopy and doors closed.
4. Hazardous materials are effectively contained and disposed of.

Scheduled Maintenance

The maintenance schedule is based on normal operation of the unit. This section can be reproduced and used as a checklist by the service personnel. In the event unusual environmental operation conditions exist, the schedule should be adjusted accordingly.

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals.

Compressor Oil Level



Check the compressor fluid level when the machine is not operating. Maintain the fluid level between bottom and midway of the sight glass on the separator tank.

Scavenge Line

⚠ WARNING

High Pressure Air can cause severe injury or death from hot oil and flying parts. Always relieve pressure before removing caps, plugs, covers or other parts from pressurized air system.

The scavenge line originates at the manifold and terminates at the compressor airend near the oil filter element. An orifice check valve is located on the scavenge tube

Once a year or every 1000 hours of operation, whichever comes first, replace the separator element and clean the scavenge orifice/check valve.

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals.

NOTE

Excessive oil carry-over may be caused by an oil-logged separator element. Do not replace element without first performing the following maintenance procedure:

1. Check oil level. Maintain as indicated earlier in this section.
2. Thoroughly clean scavenge line, any orifice, and check valve.
3. Ensure minimum pressure valve/orifice is operational.
4. Run unit at rated operating pressure for 30 to 40 minutes to permit element to clear itself.

Compressor Oil Filter

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals.

⚠ WARNING

Do not remove the filter(s) without first ensuring the compressor is shut off and the system has been completely relieved of all air pressure. (Refer to STOPPING in the OPERATING INSTRUCTIONS section of this manual).

⚠ CAUTION

If there is any indication of the formation of varnishes, shellacs, or lacquers on the filter element, it is a warning that the compressor lubricating and cooling oil has deteriorated and should be changed immediately. Refer to LUBRICATION section.

NOTICE

Installing a new oil filter element when the old gasket remains on the filter head will cause an oil leak and can cause property damage.

Removal

Clean the exterior of the filter housing and remove the spin-on element.

Inspection

Inspect the oil filter head to be sure the gasket was removed with the oil filter element. Clean the gasket seal area on the oil filter head.

Reassembly

Clean the filter gasket contact area and install the new element. Tighten until the gasket makes contact with the filter housing. Tighten an additional 1/2 to 3/4 of a revolution.

Compressor Oil Separator Element

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals.

⚠ WARNING

Do not remove the filter(s) without first ensuring the compressor is shut off and the system has been completely relieved of all air pressure. (Refer to STOPPING in the OPERATING INSTRUCTIONS section of this manual).

⚠ WARNING

DO NOT remove the staple from the anti-static gasket on the separator element since it serves to ground any possible static build-up. DO NOT use gasket sealant since this will affect electrical conductance.

⚠ WARNING

Follow the instructions provided by the antifreeze supplier when adding or draining the antifreeze solution. It is advisable to wear personal protective equipment to prevent skin and/or eye contact with the antifreeze solution.

⚠ CAUTION

If there is any indication of the formation of varnishes, shellacs, or lacquers on the filter element, it is a warning that the compressor lubricating and cooling oil has deteriorated and should be changed immediately. Refer to LUBRICATION section.

⚠ CAUTION

Start the compressor (refer to BEFORE STARTING and STARTING in the OPERATING INSTRUCTIONS section of this manual) and check for leakage before the compressor is put back into service.

If the element has to be replaced, then proceed as follows:

Removal

Disconnect all hoses and tubes from the separator tank cover plate. Remove the drop tube from the separator tank cover plate and remove the cover plate. Remove the separator element.

Inspection

Examine the separator element. Examine all hoses and tubes, and replace if necessary.

Reassembly

Thoroughly clean the orifice/drop tube and filter gasket contact area before reassembly. Install the new element.

Reposition the cover plate, taking care not to damage the gasket. Replace the cover plate screws tightening in a criss-cross pattern to the recommended torque (refer to the torque values in this section).

Reconnect all hoses and tubes to the separator tank cover plate.

Replace the compressor oil (refer to LUBRICATION section).

Compressor Oil Cooler, Engine Radiator, and other Heat Exchangers

⚠ WARNING

Ensure the heat exchanger access doors are closed and secure before starting the engine.

⚠ WARNING

Hot engine coolant and steam can cause injury. When adding coolant or antifreeze solution to the engine radiator, stop the engine and allow radiator to cool prior to releasing the radiator pressure cap. Using a cloth to protect the hand, slowly release the pressure cap, absorbing any released fluid with the cloth. Do not remove the pressure cap until all excess fluid is released and the engine cooling system fully depressurized.

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals.

When grease, oil, and dirt accumulate on the exterior surfaces of the heat exchangers, the efficiency is impaired. It is recommended that the heat exchangers be cleaned by a jet of compressed air. This should remove any accumulation of oil, grease, and dirt from the exterior cores of the cooler so the entire cooling area can radiate heat into the air stream. Access doors are located on each side of the compressor to provide access to aid in cleaning the heat exchangers.

Air Filter Elements

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals.

⚠ CAUTION

Never remove and replace element(s) when the compressor is running.

⚠ CAUTION

If inspection reveals damage to the main element, the safety element must be replaced.

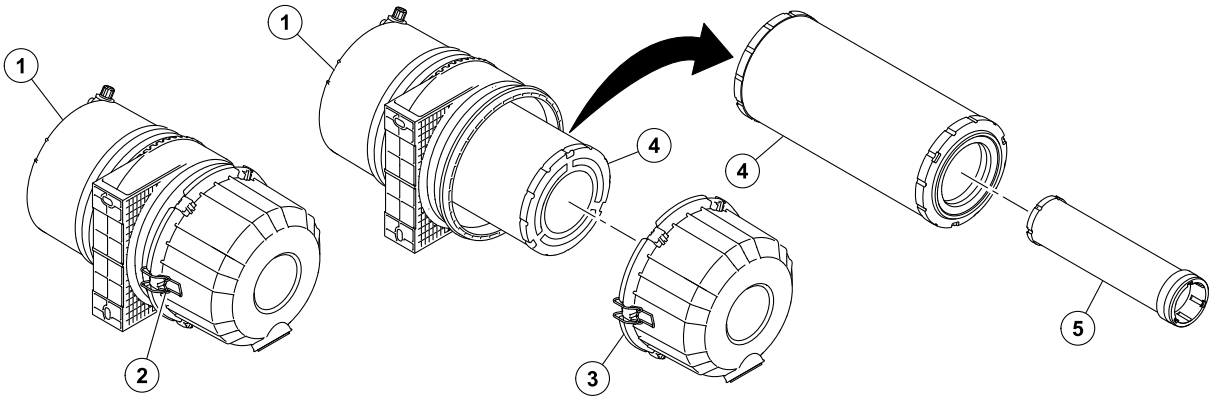
NOTICE

Installing a new oil filter element when the old gasket remains on the filter head will cause an oil leak and can cause property damage.

The air filter elements maintenance should be performed as often as conditions require. The air filters elements should be replaced regularly or when indicated on the Control Panel, whichever comes first. The air filter elements should be change every time the indicators show a change is necessary, as indicated in the Maintenance Schedule (more frequently in dusty operating conditions).

Air Filter Elements Exploded View

Removal



1. Loosen the two (2) latches item 2, on the sides of the air cleaner cover item 3 and air cleaner housing item 1.
2. Remove the primary element filter item 4, from air cleaner housing item 1. If equipped, remove the optional safety element filter item 5, from the inside of primary filter item 4.

   Clean the exterior of the air cleaner housing item 1, inside and out, with a damp cloth.
3. If the optional safety element filter item 5, is to be replaced, thoroughly clean the interior of the air cleaner housing item 1, prior to replacing the optional safety element filter item 5.

Inspection

Check for cracks, holes, or any other damage to the element by holding it up to a light source or by passing a lamp inside.

Check the seal at the end of the element and replace if any sign of damage is evident.

Reassembly

1. Reinstall (if clean) or replace the optional safety element filter item 5, if equipped.
2. Reinstall the new primary element filter item 4, install the new filters into air cleaner housing item 1.
3. Reinstall air cleaner cover item 3, onto air cleaner housing item 1.
4. Secure air cleaner cover item 3 and lock the two (2) latches item 2, after securing to air cleaner housing item 1.

Before restarting the compressor, ensure all clamps and flange joints are tight. Make sure the pre-cleaner dirt dump is pointed within 30° of down.

Gauges

Instruments or gauges are essential for safety, maximum productivity and long service life of the machine. Inspect the gauges and test any diagnostic lamps prior to start-up. During operation observe the gauges and any lamps for proper functioning. Refer to Operating Controls for the normal readings.

Cooling Fan Drive

Every 3 months check to ensure fan drive mounting bolts to the engine have not loosened. If, for any reason, it becomes necessary to remove or re-tighten the mounting bolts. Replace bolts with Doosan approved bolts and torqued to 25 ft lbs. 35Nm.

The fan belt(s) should be checked monthly for wear and correct tensioning.

This compressor is equipped with a variable speed fan clutch and requires no periodic maintenance.

Fuel System

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals.

CLEAN fuel in the fuel tanks is vitally important and every precaution should be taken to ensure that only clean fuel is poured or pumped into the tank.

The fuel tank(s) should be filled daily or every eight hours. To minimize condensation in the fuel tank(s), it is advisable to top up after the compressor is shut down or at the end of each working day. Drain any sediment or condensate that may have accumulated in the tank(s).

When filling the fuel tank on this unit, by methods other than a pump and hose, use a CLEAN non-metallic funnel.

Fuel Filter Water Separator

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals.

The fuel filter water separator contains a filter element which should be replaced as required.

Charge Air Cooler Pipework

Foreign particles can damage the engine and turbocharger. Maintain internal cleanliness and integrity of the air filtration, intake piping, and charge air cooler piping to help avoid damage. Monthly inspect systems for leaks and that hoses, clamps, and connections are sealed. Check for damaged or deteriorated components. Pay careful attention to keep the internal surfaces clean, particularly when parts are removed for inspection or service.

Radiator

NOTICE

The use of water alone in this engine can result in major engine failure. Refer to engine section for coolant recommendation.

Hoses

⚠ WARNING

Some of the air lines are nylon tubing. The associated fittings are push in design. Features are as follows:

Pulling on the tubing will cause the inner sleeve to withdraw and compress, thus tightening the connection. The tubing can be withdrawn only while holding the sleeve against the fitting. The tubing can be removed and replaced numerous times without losing its sealing ability.

To install the nylon tubing, make a mark (with tape or grease pencil) approximately 7/8 inch from the end of the tubing. Insert the tubing into the sleeve and push in past the first resistance to the bottom. The mark should be approximately 1/16 inch from the sleeve, for the 3/8 inch O.D. tubing; 1/8 inch for the 1/4 inch O.D. tubing. This will ensure that tubing is fully engaged in the sealing mechanism.

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals.

All components of the fuel, engine cooling, and air intake system should be checked monthly to keep the engine at peak efficiency.

At the recommended intervals, inspect all of the intake lines to the air filter, and all flexible hoses used for air lines, oil lines, and fuel lines. It is important they be periodically inspected for wear and deterioration. It is also important the operator does not use the hoses as convenient hand hold or steps. Such use can cause early cover wear and hose failure. Replace immediately if damaged.

Periodically inspect all pipework for cracks, leaks, etc. and replace immediately if damaged.

Ventilation

Ensure air inlets and outlets are clear of debris etc.

Electrical System

⚠ WARNING

Disconnect the battery cables before performing any maintenance or service.

Check the security of electrical devices and sensors to ensure terminals and/or connectors are tight. Loose connections may cause local hot spot oxidation.

When removing connectors from electrical devices and sensors, inspect the terminals to ensure they have electrical grease on them. If electrical grease is not present or very minimal, add a small amount of Doosan Part No. 22409114 Electrical Grease to the terminals.

Dirty and/or corroded electrical terminals can be cleaned using electrical contact cleaner.

Inspect the components and wiring for signs of overheating (i.e., discoloration, charring of cables, deformation of parts, acrid smells, and blistered paint).

Battery

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals.

Keep the battery terminals and cable clamps clean and lightly coated with petroleum jelly to prevent corrosion. The battery restraint should be kept tight enough to prevent the battery from moving.

Pressure System

Regularly, it is necessary to inspect the external surfaces of the pressure system, from the airend through to the Service Valve(s) including hoses, tubes, tube fittings, and the separator tank for visible signs of impact damage, excessive corrosion, abrasion, tightness, and chafing. Any suspect parts should be replaced before the compressor is put back into service.

Tire Pressure

A weekly inspection is recommended. Tires that have cuts or cracks or little tread should be repaired or replaced. Monthly check the wheel lug nuts for tightness. Refer to the General Data in this manual and Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals.

Fasteners

Visually check entire unit in regard to bolts, nuts and screws being properly secured. Spot check several capscrews and nuts for proper torque. If any are found loose, a more thorough inspection must be made. Take corrective action. (Refer to Torque Values Chapter in this manual.)

Running Gear/Wheels

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals.

Check wheel nut torque 20 miles (30 kilometers) after refitting the wheels. Refer to Torque Values chapter in this manual.

Lifting jacks should only be used under the axle.

Bolts securing the running gear to the chassis should be checked for tightness. Re-tighten where necessary. (Refer to Torque Values Chapter in this manual).

Lubrication

⚠ CAUTION

Always check the oil levels before a new compressor is put into service.

If, for any reason, the compressor oil has been drained, it must be re-filled with new oil before putting into operation.

Engine Oil

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals.

Fill engine with lubricating oil as specified in General Data Information section.

After the first 25 initial operating hours drain and replace engine oil.

The engine oil and oil filter element should be changed at the engine manufacturer's recommended intervals. Refer to the Engine Operator Manual.

The Tier 4 engine in this compressor requires engine lubricating oil to ensure proper Aftertreatment System operation and engine durability. Doosan Tier 4 Premium Engine Oil is recommended. Refer to the Engine Operator Manual for engine oil specifications.

Compressor Oil

⚠ WARNING

DO NOT, under any circumstances, remove any drain plugs or the oil filler plug from the compressor lubricating and cooling system without first ensuring the compressor is stopped and the system has been completely relieved of all air pressure (refer to STOPPING in the Operating Instructions Section of this manual).

⚠ CAUTION

Some oil mixtures are incompatible and result in the formation of varnishes, shellacs, or lacquers which may be insoluble. Refer to the Portable Compressor Oil Chart.

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals.

NOTE

If the compressor has been operating under adverse conditions or has suffered long shutdown periods, more frequent service intervals will be required.

Completely drain the separator tank, piping, and oil cooler by removing the drain plug(s) and collecting the used oil in a suitable container.

Replace the drain plug(s) ensuring that each one is secure.

NOTE

If the oil is drained immediately after the compressor has been in operation, most of the sediment will be in suspension and will drain more readily.

Bearing Lubrication

Proper lubrication of the portable compressor's bearing axle is critical to its proper function and reduction of wear on parts. Wheel bearing should be lubricated at least every 12 months, or more, to ensure proper performance and minimize wear. Use a wheel bearing grease per the Maintenance Schedule in this manual that conforms to the table below (Refer to Table 1):

Table 1 Grease Specifications

Grease Specifications	
Thickener Type	Lithium Complex
Dropping Point	215° C (419° F) Minimum
Consistency	NLGI No.2
Additives	EP, Corrosion & Oxidation Inhibitors
Viscosity Index	80 Minimum

Axles with E-Z lube feature can be periodically lubricated without removing the hubs from the axle. This feature consists of axle spindles that have been fitted with grease fitting in their ends. When grease is pumped into it, it is channeled to the inner bearing and then flows back to the outer bearing, and then back out of the grease cap.

Exterior Finish Care

This unit was painted, and heat cured at the factory with a high quality, thermoset polyester powder coating. The following care will ensure the longest possible life from this finish.

1. If necessary to remove dust, pollen, etc. from housing, wash with water and soap or dish washing liquid detergent. Do not scrub with a rough cloth, pad, etc.
2. If grease removal is needed, a fast evaporating alcohol or chlorinated solvent can be used.

   NOTE

   This may cause some dulling of the paint finish.
3. If the paint has faded or chalked, the use of a commercial grade, nonabrasive automotive car wax may partially restore the color and gloss.

Field Repair of Textured Paint

1. The sheet metal should be washed and clean of foreign material and then thoroughly dried.
2. Clean and remove all grease and wax from the area to be painted using Dupont 3900S Cleaner prior to sanding.
3. Use 320 grit sanding paper to repair any scratches or defects necessary.
4. Scuff sand the entire area to be painted with a red Scotch Brite™ pad.
5. Wipe the area clean using Dupont 3900S.
6. Blow and tack the area to be painted.
7. Apply a smooth coat of Dupont 1854S Tuffcoat Primer to all bare metal areas and allow to dry.
8. Apply 2 medium - wet coats of Dupont 222S Adhesion Promoter over the entire area to be painted, with a 5-minute flash in between coats.
9. To apply the texture coat, use Dupont 1854S Tuffcoat Primer. The proper technique to do this is to spray the Tuffcoat Primer using a pressure pot and use about 2 - 5 pounds of air pressure. This will allow the primer to splatter causing the textured look.

   NOTE

   You must be careful not to put too much primer on at one time, this will affect the amount of texture that you are trying to achieve. Allow the texture coat to flash for 20 minutes or until dry to touch.
10. Apply any Dupont Topcoat Finish such as Imron™ or Centari™ according to the label instructions.

NOTE

To re-topcoat the textured surfaces when sheet metal repairs are not necessary, follow steps 1, 2, 4, 5, 6, 8 and 10.

Field Replacement of Exterior Decals

Field Replacement of Enclosure Decals

1. The decal area should be wiped with 70% isopropyl alcohol and a lint free cloth, in a well-ventilated area.
2. Allow enough time for drying, but not enough time for dust to resettle on surface.
3. Align decals prior to removing the backing.
4. Peel one section of backing from decal, while still aligned, and squeegee decal from center to the edges, to remove air.
5. Remove the remaining backing and repeat squeegee process.
6. Repeat squeegee process over entire decal surface to ensure a tight bond. Allow 24 hours for permanent bond.
7. Any air bubbles may be removed by pricking the bubble center with a pin and squeegee air toward the hole.

Cummins Outlet NOx Sensor Control Module

⚠ CAUTION

Do not clean the NOx sensor with any kind of fluid.

⚠ CAUTION

Do not immerse the NOx sensor in water or any kind of chemical wash.

⚠ CAUTION

Do not jet-wash or steam clean the NOx sensor.

Outlet NOx Sensor Replacement

The Cummins Outlet NOx Sensor Control Module is located on a bracket attached to the bottom of the streetside baffle in the discharge plenum. Cummins supplies the module mounted to the SCR assembly. In the event the SCR assembly has to be replaced, the new SCR will be supplied with the NOx Sensor Control Module mounted to the sensor table on the SCR. When installing a replacement SCR, the NOx Sensor Control Module must be removed from the SCR sensor table and mounted to the bracket in the discharge plenum per the following instructions.

Removal of NOx Sensor Control Module

Removal of NOx Sensor Control Module from SCR:

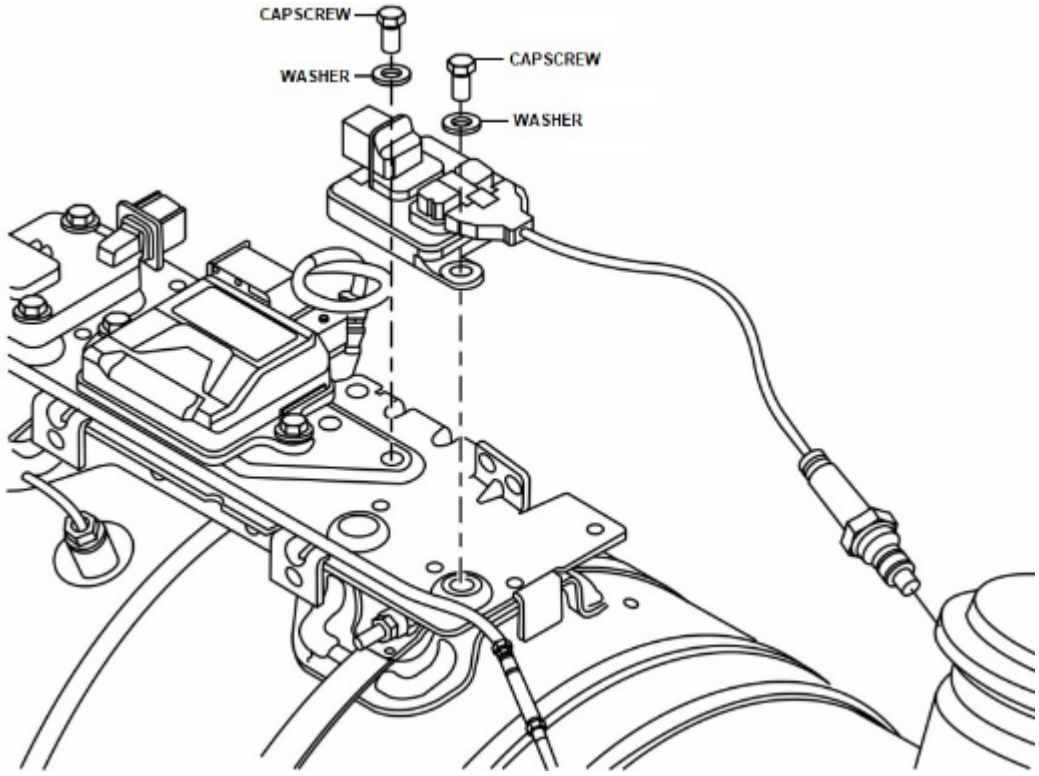


Figure 27 Removal of NOx Sensor

1. Disconnect the slide-lock connector from the NOx Sensor Module.
2. Remove the two retaining capscrews and washers. (See Figure 27.)
3. Re-install capscrews and washers into the sensor table. One of the screws retains a wiring P-clip to the sensor table. Torque screws to 10 N-m (89 in-lb). (See Figure 28, Item A.)

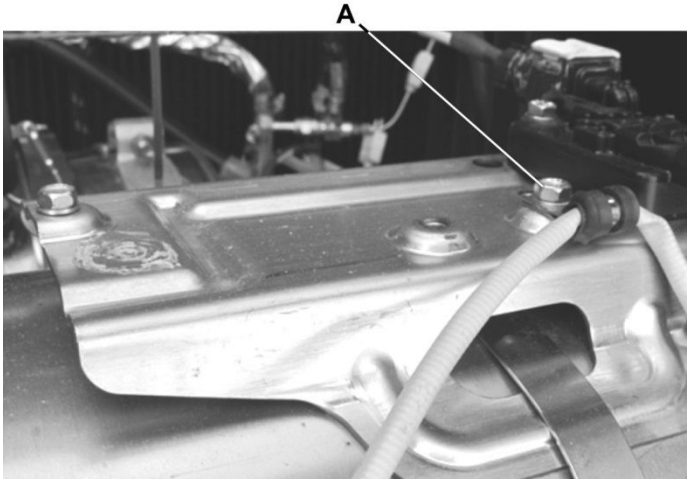


Figure 28 Torque Capscrew

Installation of NOx Sensor Control Module

Installation of NOx Sensor Control Module to bracket on bottom of Discharge Baffle:

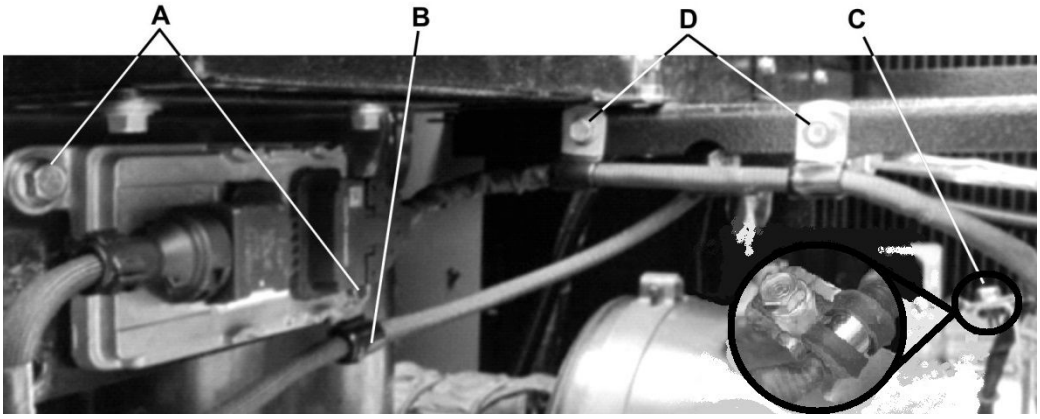


Figure 29 Mounted NOx Sensor Control Module

1. Mount NOx Sensor Control Module to bracket using 2 (two) M06 capscrews and nuts. (See Figure 29, Item A.)
2. The capscrew nearest the SCR will also retain a P-Clip to support the wire to the sensor from the engine wiring harness. (See Figure 29, Item B.)
3. Torque capscrews to 10 N-m (89 in-lb)
4. Loosen capscrew holding wire from NOx Sensor Probe to support on SCR outlet. Rotate P-clip 90° clockwise to route wire in direction of control module (see Figure 29, Item C). Re-torque capscrew to 10 N-m (89 in-lb).
5. Secure wire from sensor probe to rear step support using 2 (two) M08 capscrews and P-Clips. (See Figure 29, Item D.)

Ensure service work and wire routing is per the following guidelines:

The outgoing cable from the NOx Sensor Control Module and NOx Sensor Probe must exit at an angle of 0° ± 15°.

The permitted twisting angle of the NOx Sensor Cable is 180°.

The minimum bend radius of the NOx sensor cable must be greater than 20 mm.

The NOx Sensor Cable must be fixed between the control module and the sensor probe.

The NOx Sensor Cable must remain a minimum of 25 mm (1 in) off the surface of the SCR assembly.

The NOx Sensor Cable must be protected from sharp edges and abrasive surfaces. The wiring between the probe and the module must not be modified.

Do not connect or disconnect the sensor while power is available in the harness to the sensor.

Preventive Maintenance Schedule (PMS)

Preventive Maintenance Schedule (PMS)

Preventive Maintenance Schedule - Front

SERVICE PARTS

Maintenance Interval Kits	
46615579	500 Hours
46615779	1000 Hours
46656759	2000 Hours

Consumables	
36897346	Compressor Oil Filter Element
22402317	Compressor Separator Filter Element
36864361	Primary Air Filter Element
36864379	Secondary Air Filter Element
54662028	Engine Oil Filter Element
46618460	Engine Fuel Filter Element
46578120	Fuel / Water Separator Filter Element
46610619	Engine Crankcase Breather Element
46643008	Engine Fan Belt
46615382	Engine Alternator Belt
46594960	Fuel Tank Vent Filter Element
54662051	Filter, Coolant Conditioner
46652904	Filter, DEF Supply Pump

Remanufactured Airends	
35099159	Assembly, Reman Airend

RECOMMENDED DOOSAN FLUIDS:
Use of these fluids with original Doosan filters can extend warranty. Refer to warranty brochure for details or contact your Doosan Representative.

COMPRESSOR FLUID	1 Gal. (3.8 Litre)	5 Gal. (19.0 Litre)	55 Gal. (208.2 Litre)	Bulk 220 Gal. (833 Liter)	Bulk 275 Gal. (1041 Liter)
Doosan Pro-Tec™	36899698	36899706	36899714	—	36899714
XHP605	—	22252076	22252050	22252068	—
XHP405	—	22252126	22252100	—	—
ENGINE OIL	1 Gal. (3.8 Litre)	5 Gal. (19.0 Litre)	55 Gal. (208.2 Litre)	Bulk 220 Gal. (833 Liter)	Bulk 275 Gal. (1041 Liter)
Doosan Tier 4	46557017	46557016	—	46557015	—

PREVENTIVE MAINTENANCE SCHEDULE

For a complete maintenance schedule refer to Operation & Maintenance Manual. If operating in extreme conditions (very hot, cold, dusty or wet), these time periods should be reduced.

HP1600WCU-T4F

INITIAL 500 Miles / 800 km		
Brakes		C
Brakes Linkage		C
	DAILY	WKLY
Compressor Oil Level	C	
Engine Oil Level	C	
Radiator Coolant Level	C	
Gauges / Lamps	C	
Air Cleaner Service Indicators	C	
Fuel Tank (Fill At End Of Day)	C	
DEF Tank (Fill At End Of Day)	C	
Fuel / Water Separator Drain	C	
Oil Leaks	C	
Fuel Leaks	C	
Coolant Leaks	C	
Radiator Filler Cap	C	
Emergency Stop	T	
Air Cleaner Precleaner Dumps		C
Fan / Alternator Belts		C
Battery Connection / Electrolyte		C
Hoses (Oil, Air, Intake, Etc.)		
Automatic Shutdown System		
Air Cleaner System		
Compressor Oil Cooler Exterior		
Engine Radiator Exterior		
Engine Charge Air Cooler Exterior		
Aftercooler Exterior		
Safety Valve		
Fasteners, Guards		
Air Cleaner Elements		

MO.	3 MOS.	6 MOS.	12 MOS.	18 MOS.	30 MOS.
250 Hrs	500 Hrs	1000 Hrs	2000 Hrs	3000 Hrs	5000 Hrs
		D			
C					
C					
C					
C					
C					
C					
C					
C					
C					
C					
C					
	C				
	R / WI				

Legend:

CBT = Check Before Towing
G = Grease
C = Check (Adjust or Replace If Necessary)
R = Replace
T = Test
D = Drain
WI = or When Indicated
CR = Check & Report

(Continued On Back)

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4666148 REV. B

Preventive Maintenance Schedule - Back

PREVENTIVE MAINTENANCE SCHEDULE

For a complete maintenance schedule refer to Operation / Maintenance manual. If operating in extreme conditions (very hot, cold, dusty or wet), these time periods should be reduced.

HP1600WCU-T4F	DAILY	WKLY	MO.	3 MOS.	6 MOS.	9 MOS.	12 MOS.	18 MOS.	30 MOS.
			250 Hrs	500 Hrs	1000 Hrs	1500 Hrs	2000 Hrs	3000 Hrs	5000 Hrs
Fuel Tank Vent Filter				R					
Fuel / Water Separator Element			R						
Fuel Filter Element (High Pressure)				R					
Engine (Oil Changes, Oil Filters)				R					
Compressor Oil Filter Elements				R		R			
Engine Coolant Conditioner Element					R				
Compressor Oil							R		
Oil Separator Element							CR		
Separator Tank Exterior								R	
Engine Coolant							R		
Engine Crankcase Breather Element							R		
DEF Pump Filter Element							G		
Waterpump Grease							T		
Shutdown Switch Settings							C		
Scavenge Orifice & Related Parts							C		
Scavenge Line				C			C		
Feed Pump Strainer Cleaning						C			C
Aftertreatment Injection Nozzle				C					
Brakes & Linkage	CBT								
Lights (Running, Brake, & Turn)	CBT								
Pintle Eye Bolts		C							
Tire Pressure & Condition			C						
Wheel Lug Nuts			G						
Running Gear Linkage				C					
Running Grear Bolts					C		G		
Wheels (Bearings, Seals, Etc.)									C
Valve Clearance Check									

Legend:

CBT = Check Before Towing
G = Grease
C = Check (and Adjust or Replace If Necessary)
R = Replace
T = Test
D = Drain
WI = or When Indicated
CR = Check & Report

Troubleshooting

Introduction to Troubleshooting

Troubleshooting for a Portable Air Compressor is an organized study of a particular problem or series of problems and a planned method of procedure for investigation and correction. The Troubleshooting Chart that follows includes some of the problems that an operator may encounter during the operation of a Portable Compressor.

The Chart does not attempt to list all of the troubles that may occur, nor does it attempt to give all of the answers for correction of the problems. The chart does give those problems that are most apt to occur. To use the Troubleshooting Chart:

A. Find the Complaint depicted as a bold heading.

B. Follow down that column to find the potential cause or causes. The causes are listed in suggested order to follow in Troubleshooting.

C. Study the problem thoroughly and ask yourself these questions:

1. What were the warning signals that preceded the trouble?
2. Has a similar trouble occurred before?
3. What previous maintenance work has been done?
4. If the compressor will still operate, is it safe to continue operating it to make further checks?

Do The Simplest Things First

Most troubles are simple and easily corrected. For example, most complaints are “Low Capacity” which may be caused by too low an Engine speed or “Compressor over-heats” which may be caused by Low Oil level.

Always check the easiest and most obvious things first; following this simple rule will save time and trouble.

Double Check Before Disassembly

The source of most Compressor troubles can be traced not to one component alone, but to the relationship of one component with another. Too often, a Compressor can be partially disassembled in search of the cause of a certain trouble and all evidence is destroyed during disassembly. Check again to be sure an easy solution to the problem has not been overlooked.

Find And Correct Basic Cause

After a mechanical failure has been corrected, be sure to locate and correct the cause of the trouble so the same failure will not be repeated. For example, a complaint of “premature breakdown” may be corrected by repairing any improper wiring connections, but something caused the defective wiring. The cause may be excessive vibration.

Troubleshooting Chart

Complaint	Cause	Correction
1. Compressor has stopped unexpectedly	Out of Fuel.	Add Clean Fuel.
	Compressor Oil Temp. too High.	See Complaint #6.
	Engine Coolant Temp. too High.	Check Coolant level. If low, add Coolant. See Complaint #3.
	Engine Oil Pressure too Low.	See Complaint #4.
	Loose or Broken Belts.	Tighten or replace belt set.
	Loose wire connections.	Check wires at switches and connectors to find loose connection. Make repairs. See Electronic Service Manual.
	Low fuel level fault.	If adequate fuel in the tank, check fuel level sender device. Replace if determined faulty. See Electronic Service Manual.
	Defective sensor.	Identify and check sensor. Replace if necessary. See Electronic Service Manual.
	Malfunctioning relay.	Identify and check relay. Replace if necessary. See Electronic Service Manual.
	Blown fuse.	Identify and replace fuse. See Electronic Service Manual.
	Engine malfunctioning.	See troubleshooting in Engine manual.
	Airend malfunctioning.	See Complaint #6.
2. Compressor won't Start or Run	Battery disconnect switch off.	Check switch position and operation.
	Emergency stop pushed.	Check emergency stop switch position and operation.
	Low battery voltage.	Check battery condition, recharge if necessary. Check electrolyte level, add if necessary. Check cable connections, clean and tighten as needed.

Complaint	Cause	Correction
2. Compressor won't Start or Run (Continued)	Blown fuse.	Identify and replace fuse. See Electronic Service Manual.
	Malfunctioning main power switch.	Check switch. Replace if necessary. See Electronic Service Manual.
	Clogged fuel filters.	Service fuel filters. See Engine Manual.
	Out of Fuel.	Add clean fuel.
	Compressor oil temp. too High.	See Complaint #6.
	Engine coolant temp. too High.	Check coolant level. If low, add coolant. See Complaint #3.
	Engine oil pressure too Low.	See Complaint #4.
	Loose wire connection.	Check wires at switches and connectors to find loose connection. Make repairs. See Electronic Service Manual.
	Defective sensor.	Identify and check sensor. Replace if necessary. See Electronic Service Manual.
	Malfunctioning relay.	Identify and check relay. Replace if necessary. See Electronic Service Manual.
	Engine malfunctioning.	See troubleshooting in Engine manual.
	Airend malfunctioning.	See Complaint #6.
	Starter will not turn engine over.	Check battery, check fuel. Engine will not crank without 40 psi of fuel pressure.
3. High Engine Coolant Temperature	Low coolant level.	Check coolant level. If low, add coolant.
	Loose or broken belts.	Tighten or replace belt set.
	Ambient temperature above rated ambient temperature range	Operate in cooler environment.
	Dirty operating conditions.	Move compressor to cleaner environment.
	Dirty cooler(s).	Clean exterior of cooler(s).

Complaint	Cause	Correction
3. High Engine Coolant Temperature (Continued)	Compressor tilted beyond out-of-level operating limit.	Reposition or relocate compressor to be more level.
	Operating pressure too High.	Reduce pressure to rated operating pressure.
	Recirculation of cooling air.	Close enclosure doors. Close and secure access panels. Check for loose or missing belly pans.
	Loose wire connection.	Check wires at switches and connectors to find loose connection. Make repairs. See Electronic Service Manual.
	No air flow.	Check fan clutch operation. Unplug fan clutch wire connection.
4. Low Engine Oil Pressure	Low engine oil level.	Check oil level. If low, add oil.
	Compressor tilted beyond out-of-level operating limit.	Reposition or relocate compressor to be more level.
	Wrong engine oil.	Change engine oil. Review engine oil specification.
	Clogged engine oil filter.	Replace engine oil filter.
	Engine malfunctioning.	See troubleshooting in Engine Manual.
	Loose wire connection.	Check wires at switches and connectors to find loose connection. Make repairs. See Electronic Service Manual.
5. Low Electrical System Voltage	Loose or broken belts.	Tighten or replace belt set.
	Loose wire connection.	Check wires at switches and connectors to find loose connection. Make repairs. See Electronic Service Manual.
	Low battery voltage.	Check battery condition, recharge if necessary. Check electrolyte level, add if necessary. Check cable connections, clean and tighten as needed.
	Malfunctioning alternator.	Repair or replace alternator.

Complaint	Cause	Correction
6. High Compressor Oil Temperature	Ambient temperature above rated ambient temperature range.	Operate in cooler environment.
	Compressor tilted beyond out-of-level operating limit.	Reposition or relocate compressor to be more level.
	Low compressor oil.	Add compressor oil. Look for and repair any leaks.
	Wrong compressor oil.	Change compressor oil. Review compressor oil specification.
	Dirty cooler(s).	Clean exterior of cooler(s).
	Dirty operating conditions.	Move compressor to cleaner environment.
	Clogged compressor oil filter(s).	Replace compressor oil filter(s) and change compressor oil.
	Clogged fuel filters.	Service fuel filters. See Engine manual. Drain, clean fuel tanks. Add clean fuel.
	Operating pressure too high.	Reduce pressure to rated operating pressure.
	Recirculation of cooling air.	Close enclosure doors. Close and secure access panels. Check for loose or missing belly pans.
	Malfunctioning compressor oil thermostat.	Replace thermostat element in conventional bypass valve, if equipped. Replace valve.
	Malfunctioning oil cooler pressure relief valve.	Replace valve.
	Malfunctioning minimum pressure valve.	Repair or replace valve.
	Blocked or restricted oil lines.	Clean by flushing, or replace lines.
	Airend malfunctioning.	See Complaints #11, 12.
	Loosen or broken belts.	Tighten or replace belt set.

Complaint	Cause	Correction
7. Low Engine Speed	Clogged fuel filters.	Service fuel filters. See Engine Manual. Drain and clean fuel tanks. Add clean fuel.
	Operating pressure too high.	Reduce pressure to rated operating pressure.
	Clogged air filter element(s).	Clean or replace air filter element(s).
	Wrong air filter elements(s).	Install correct air filter element(s).
	Engine malfunctioning.	See troubleshooting in Engine manual.
	Airend Malfunctioning.	See Complaints #11, 12.
8. Excessive vibration	Rubber mounting isolators loose or damaged.	Tighten or replace.
	Defective or imbalanced fan.	Replace fan.
	Defective airend drive coupling.	Replace coupling.
	Engine malfunctioning.	See troubleshooting in Engine Manual.
	Airend malfunctioning.	See Complaint #7, #11, 12.
	Engine idle speed too low.	See Complaint #7. See Engine Manual.
9. Low Air Delivery/Low cfm	Clogged air filter element(s).	Clean or replace air filter element(s).
	Incorrect pressure regulation adjustment.	Make adjustment per this manual.
	Malfunctioning inlet unloader/butterfly valve.	Inspect valve. Make adjustments per this manual.
	Wrong air filter element(s).	Install correct air filter element(s).
	Low engine speed.	See Complaint #7. See Engine Manual.
	Compressed air leaks.	Locate and repair leaks.

Complaint	Cause	Correction
10. Short air filter life	Dirty operating conditions.	Move compressor to cleaner environment.
	Incorrect air filter element(s).	Install correct air filter element(s).
	Inadequate air filter element cleaning.	Install new air filter element(s).
	Incorrect stopping procedure.	Comply with procedure in this manual.
11. Compressor will not unload	Malfunctioning inlet unloader / butterfly valve.	Inspect valve. Make adjustments per this manual.
	Malfunctioning pressure regulator.	Check pressure regulator. Check regulation lines for leaks.
	Ice in regulation lines and/or regulation orifice.	Apply heat to lines and or orifice. Check operation of DC electric heaters, if equipped.
	Load solenoid leak or malfunction.	Replace load solenoid.
	Plugged vent leak.	Clean and/or replace.
12. Safety Valve Opens	Operating pressure too high.	Reduce pressure to rated operating pressure.
	Malfunctioning inlet unloader / butterfly valve.	Inspect valve. Make adjustments per this manual.
	Defective safety valve.	Replace safety valve.
	Compressor will not unload fast enough.	Check pressure regulator. Check regulation lines for leaks.
	Ice in regulation lines and/or regulation orifice.	Apply heat to lines and/or orifice. Check operation of DC electric heaters, if equipped.
13. Excessive carryover (Compressor Oil in the Compressed Air).	Blocked separator scavenge line.	Check scavenge line, drop tube, and orifice. Clean and replace as needed.
	Deteriorated separator element.	Replace separator element.
	Separator tank pressure too low.	Check the minimum pressure valve. Repair or replace as necessary.

Compressor Diagnostic Codes

Compressor Diagnostic Codes

Diagnostic Codes

TheViewPort displays Diagnostic Codes for the compressor system and the engine. Listings of these codes are provided in following sections of this manual.

The Engine Diagnostic Codes (Refer to Engine Fault Codes in this manual) can also be read with the engine manufacturer's service tool. A service tool connector is provided in the electrical harness, providing access to the J1939 CAN network. For advanced engine troubleshooting, it is recommended the manufacturer's service tools and service literature be used.

CPR Code	CPR Code Hex Value	Display Name	LCD Display	CPR Type
1	01	Low Engine Speed	CPR CODE 1 LOW ENGINE SPEED	FAULT
2	02	High Engine Speed	CPR CODE 2 HIGH ENGINE SPEED	FAULT
3	03	Engine Crank Timeout	CPR CODE 3 WAIT 30 SEC RETRY START	FAULT
4	04	Out of Fuel	CPR CODE 4 OUT OF FUEL	FAULT
5	05	AE Oil Level Low	CPR CODE 5 LOW AIREND OIL LEVEL	ALERT
6	06	Airend Oil Sump Temp Alert	CPR CODE 6 HIGH AIREND OIL TEMP	ALERT
7	07	Airend Oil Sump Temp Fault	CPR CODE 7 HIGH AIREND OIL TEMP	FAULT
8	08	AE Oil Level Sensor	CPR CODE 8 AIREND OIL LVL SENSOR	ALERT
10	0A	Engine Speed Response	CPR CODE 10 ENG SPEED RESPONSE	ALERT
11	0B	Autostart Attempts Exceeded	CPR CODE 11 A/S ATTEMPT EXCEEDED	FAULT
12	0C	Low Fuel Level	CPR CODE 12 LOW FUEL LEVEL	ALERT
13	0D	AE Oil Filter Restriction	CPR CODE 13 HIGH AE OIL FILTER RSTR	ALERT
14	0E	Sep Elem Filter Restriction	CPR CODE 14 HIGH SEP ELEM RSTR	ALERT
16	10	High Engine Temperature	CPR CODE 16 HIGH ENGINE TEMP	ALERT
17	11	High Engine Temperature (Shutdown)	CPR CODE 17 HIGH ENGINE TEMP	FAULT

CPR Code	CPR Code Hex Value	Display Name	LCD Display	CPR Type
18	12	Low Oil Pressure	CPR CODE 18 LOW OIL PRESSURE	FAULT
19	13	High Fuel Temperature	CPR CODE 19 HIGH FUEL TEMP	ALERT
23	17	Low Generator Frequency	CPR CODE 23 LOW GEN FREQUENCY.	ALERT
24	18	High Airend Temp	CPR CODE 24 HIGH AIREND TEMP	ALERT
25	19	Unintended Load	CPR CODE 25 UNINTENDED LOAD	FAULT
26	1A	Load Inhibit Delay	CPR CODE 26 LOAD INHIBIT DELAY	ALERT
27	1B	Interstage Pressure Out of Range	CPR CODE 27 INTERSTAGE PRESSURE	ALERT
28	1C	Incorrect Engine ECU Calibration	CPR CODE 28 ECU CAL.	FAULT
29	1D	Engine Shutdown Unknown	CPR CODE 29 ENGINE SHUTDOWN	FAULT
30	1E	High Airend Discharge Temperature	CPR CODE 30 HIGH AIREND TEMP	FAULT
31	1F	Low Airend Oil Pressure	CPR CODE 31 LOW AIREND OIL PRESSURE	FAULT
32	20	Airend Discharge Temperature Sensor	CPR CODE 32 AIREND DISC TEMP SENSOR	FAULT
33	21	Separator Tank Pressure Sensor	CPR CODE 33 SEP TANK PRES SENSOR	FAULT
34	22	High Separator Pressure at Start	CPR CODE 34 HIGH PRESS AT START	ALERT
35	23	High Separator Tank Pressure	CPR CODE 35 HIGH SEP TANK PRES	FAULT
36	24	Safety Value Open	CPR CODE 36 SAFETY VALVE OPEN	FAULT
37	25	Low Airend Discharge Temperature	CPR CODE 37 LOW AIREND DIS. TEMP	FAULT
38	26	Intake Air Filters Restricted	CPR CODE 38 AIR FILTERS RESTRICTED	ALERT
39	27	Low System Voltage	CPR CODE 39 LOW SYSTEM VOLTAGE	ALERT
41	29	Airend Oil Pressure Sensor	CPR CODE 41 AIREND OIL PRES SENSOR	FAULT
42	2A	Fuel Level Sensor	CPR CODE 42 FUEL LEVEL SENSOR	ALERT

CPR Code	CPR Code Hex Value	Display Name	LCD Display	CPR Type
43	2B	Low Separator Tank Pressure	CPR CODE 43 LOW SEP TANK PRES	FAULT
44	2C	High IQ Filter Restriction	CPR CODE 44 HIGH IQ FILTER RSTR	ALERT
45	2D	AE Oil Sump Temp Sensor	CPR CODE 45 AE OIL SUMP TEMP SENSOR	FAULT
46	2E	High Package Temperature	CPR CODE 46 PKG TEMP SHUTOFF SW	FAULT
47	2F	Ambient Humidity Sensor	CPR CODE 47 HUMIDITY SENSOR	ALERT
48	30	Interstage Pressure Sensor	CPR CODE 48 INTERSTAGE PRESS. SENS	ALERT
50	32	High Separator Tank Temperature	CPR CODE 50 HIGH SEP TANK TEMP	FAULT
51	33	Compressor ID Invalid	CPR CODE 51 COMPRESSOR D INVALID	FAULT
52	34	IQ Filter Restricted	CPR CODE 52 IQ FILTERS RESTRICTED	FAULT
53	35	Separator Tank Temperature Sensor	CPR CODE 53 SEP TANK TEMP SENSOR	FAULT
54	36	Regulation System	CPR CODE 54 REG SYSTEM	FAULT
55	37	Emergency Stop Activated	CPR CODE 55 E-STOP ACTIVATED	FAULT
56	38	Low Pressure During Warmup	CPR CODE 56 LOW START PRESSURE	FAULT
58	3A	Ambient Temperature Sensor	CPR CODE 58 AMBIENT TEMP SENSOR	ALERT
59	3B	OTBV Solenoid Malfunction	CPR CODE 59 OTBV SOLENOID	ALERT
60	3C	OTC System Temp Sensor	CPR CODE 60 OTC SYS TEMP SENS	ALERT
61	3D	IQ Filter Pressure Error	CPR CODE 61 IQ FILTER PRES ERROR	FAULT
62	3E	IQ Louver problem	CPR CODE 62 IQ SYSTEM LOUVERS	ALERT
63	3F	IQ Differential Pressure Sensor	CPR CODE 63 IQ DIFF PRES SENS 1	ALERT
64	40	IQ Pressure transducer #2 failed	CPR CODE 64 Q DIFF PRES SENS 2	ALERT

CPR Code	CPR Code Hex Value	Display Name	LCD Display	CPR Type
66	42	IQ Aftercooler Temperature Sensor	CPR CODE 66 IQ AC TEMP SENS	ALERT
67	43	IQ Position sensor	CPR CODE 67 IQ ACTUATOR POS SENSOR	ALERT
69	45	CAC Temperature transducer fault	CPR CODE 69 CAC TEMP SENSOR	ALERT
71	47	Engine ECM Communication	CPR CODE 71 ENG ECM COMMS	FAULT
73	49	Auto Start Controller Communication	CPR CODE 73 AUTOSTART CTRL COMMS	ALERT
74	4A	OTC Controller Communication	CPR CODE 74 OTC CONTR COMM..	ALERT
75	4B	IQ TCU Controller Communication	CPR CODE 75 IQ TCU CTRL COMMS	ALERT
78	4E	Secondary Controller Communication	CPR CODE 78 SECONDARY CTRL COMMS	FAULT
80	50	Fan Clutch Speed	CPR CODE 80 FAN CLUTCH SPEED	FAULT
141	8D	Low Def Level	CPR CODE 141 LOW DEF LEVEL	FAULT
143	8F	Inducement Active	CPR CODE 143 ENG INDUCE. ACTIVE	ALERT
251	FB	Compressor Controller Communication	CPR CODE 251 CPR CTRL COMMS	ALERT
252	FC	Keypad Communication	CPR CODE 252 KEYPAD COMMS	FAULT

Engine Troubleshooting Codes

Engine Fault Code List (Cummins)

Engine Diagnostics Codes

The Engine Diagnostic Codes can also be read with the engine manufacturer's service tool. A service tool connector is provided in the electrical harness, providing access to the J1939 CAN network. For advanced engine troubleshooting, it is recommended that the manufacturer's service tools and service literature be used.

The following tables contain the engine fault codes common to the Cummins engines utilized in these compressors models. A description of the fault condition can be determined by reading the SPN and the FMI from the Diagnostic Display. For more detailed fault information and troubleshooting information, consult the appropriate Cummins Service Manual.

Table .1 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
27	4	2272	Engine Exhaust Gas Recirculation 1 Valve Position	Voltage Below Normal, or Shorted to Low Source	EGR Valve Position Circuit - Voltage Below Normal, or Shorted to Low Source
81	16	2754	Engine Diesel Particulate Filter Intake Pressure	Data Valid but Above Normal Operating Range - Moderately Severe Level	Engine Particulate Trap Inlet Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
84	2	241	Wheel-Based Vehicle Speed	Data Erratic, Intermittent or Incorrect	Vehicle Speed Sensor Circuit - Data Erratic, Intermittent, or Incorrect
84	10	242	Wheel-Based Vehicle Speed	Abnormal Rate of Change	Vehicle Speed Sensor Circuit tampering has been detected – Abnormal Rate of Change
91	0	148	Accelerator Pedal Position 1	Data Valid but Above Normal Operational Range - Most Severe Level	Accelerator Pedal or Lever Position Sensor Circuit – Abnormal Frequency, Pulse Width, or Period
91	1	147	Accelerator Pedal Position 1	Data Valid but Below Normal Operational Range - Most Severe Level	Accelerator Pedal or Lever Position Sensor Circuit – Abnormal Frequency, Pulse Width, or Period

Table .2 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
91	2	1242	Accelerator Pedal Position 1	Data Erratic, Intermittent or Incorrect	Accelerator Pedal or Lever Position Sensor 1 and 2 - Data Erratic, Intermittent, or Incorrect
91	3	131	Accelerator Pedal Position 1	Voltage Above Normal, or Shorted to High Source	Accelerator Pedal or Lever Position Sensor Circuit - Voltage Above Normal, or Shorted to High Source
91	4	132	Accelerator Pedal Position 1	Voltage Below Normal, or Shorted to Low Source	Accelerator Pedal or Lever Position Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
91	9	3326	Accelerator Pedal Position 1	Abnormal Update Rate	SAE J1939 Multiplexed Accelerator Pedal or Lever Sensor System - Abnormal update rate
91	19	287	Accelerator Pedal Position 1	Received Network Data in Error	SAE J1939 Multiplexing Accelerator Pedal or Lever Sensor System Error - Received Network Data In Error
93	2	528	Engine Net Brake Torque	Data Erratic, Intermittent or Incorrect	Auxiliary Constrained Operation Curve Validation Switch - Data Erratic, Intermittent, or Incorrect
95	16	2372	Fuel Pressure	Data Valid but Above Normal Operating Range - Moderately Severe Level	Fuel Filter Differential Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
97	3	428	Water in Fuel Indicator	Voltage Above Normal, or Shorted to High Source	Water in Fuel Sensor Circuit - Voltage Above Normal, or Shorted to High Source

Table .3 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
97	15	418	Water in Fuel Indicator	Data Valid but Above Normal Operating Range - Least Severe Level	Water in Fuel Indicator High - Data Valid but Above Normal Operational Range – Least Severe Level
97	16	1852	Water in Fuel Indicator	Data Valid but Above Normal Operating Range - Moderately Severe Level	Water in Fuel Indicator - Data Valid but Above Normal Operational Range - Moderately Severe Level
100	1	415	Engine Oil Pressure	Data Valid but Below Normal Operational Range - Most Severe Level	Oil Pressure Low – Data Valid but Below Normal Operational Range - Most Severe Level
100	2	435	Engine Oil Pressure	Data Erratic, Intermittent or Incorrect	Oil Pressure Sensor Circuit - Data Erratic, Intermittent, or Incorrect
100	3	135	Engine Oil Pressure	Voltage Above Normal, or Shorted to High Source	Oil Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
100	4	141	Engine Oil Pressure	Voltage Below Normal, or Shorted to Low Source	Oil Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
97	15	418	Water in Fuel Indicator	Data Valid but Above Normal Operating Range - Least Severe Level	Water in Fuel Indicator High - Data Valid but Above Normal Operational Range – Least Severe Level
97	16	1852	Water in Fuel Indicator	Data Valid but Above Normal Operating Range - Moderately Severe Level	Water in Fuel Indicator - Data Valid but Above Normal Operational Range - Moderately Severe Level

Table .4 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
100	1	415	Engine Oil Pressure	Data Valid but Below Normal Operational Range - Most Severe Level	Oil Pressure Low – Data Valid but Below Normal Operational Range - Most Severe Level
100	2	435	Engine Oil Pressure	Data Erratic, Intermittent or Incorrect	Oil Pressure Sensor Circuit - Data Erratic, Intermittent, or Incorrect
100	3	135	Engine Oil Pressure	Voltage Above Normal, or Shorted to High Source	Oil Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
100	4	141	Engine Oil Pressure	Voltage Below Normal, or Shorted to Low Source	Oil Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
100	18	143	Engine Oil Pressure	Data Valid but Below Normal Operating Range - Moderately Severe Level	Oil Pressure Low – Data Valid but Below Normal Operational Range - Moderately Severe Level
101	0	556	Engine Crankcase Pressure	Data Valid but Above Normal Operational Range - Most Severe Level	Crankcase Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
101	2	1942	Engine Crankcase Pressure	Data Erratic, Intermittent or Incorrect	Crankcase Pressure - Data Erratic, Intermittent or Incorrect
101	3	1843	Engine Crankcase Pressure	Voltage Above Normal, or Shorted to High Source	Crankcase Pressure Circuit - Voltage Above Normal, or Shorted to High Source
101	4	1844	Engine Crankcase Pressure	Voltage Below Normal, or Shorted to Low Source	Crankcase Pressure Circuit - Below Normal, or Shorted to Low Source

Table .5 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
101	15	1974	Engine Crankcase Pressure	Data Valid but Above Normal Operating Range - Least Severe Level	Crankcase Pressure - Data Valid But Above Normal Operating Range - Least Severe Level
101	16	555	Engine Crankcase Pressure	Data Valid but Above Normal Operating Range - Moderately Severe Level	Crankcase Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
102	2	2973	Engine Intake Manifold #1 Pressure	Data Erratic, Intermittent or Incorrect	Intake Manifold Pressure Sensor Circuit - Data Erratic, Intermittent, or Incorrect
102	3	122	Engine Intake Manifold #1 Pressure	Voltage Above Normal, or Shorted to High Source	Intake Manifold Pressure Sensor Circuit – Voltage Above Normal, or Shorted to High Source
102	4	123	Engine Intake Manifold #1 Pressure	Voltage Below Normal, or Shorted to Low Source	Intake Manifold Pressure Sensor Circuit – Voltage Below Normal, or Shorted to Low Source
102	18	125	Engine Intake Manifold #1 Pressure	Data Valid but Below Normal Operating Range - Moderately Severe Level	Intake Manifold 1 Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level
103	15	2288	Engine Turbocharger 1 Speed	Data Valid but Above Normal Operating Range - Least Severe Level	Turbocharger 1 Speed - Data Valid But Above Normal Operating Range - Least Severe Level
103	16	595	Engine Turbocharger 1 Speed	Data Valid but Above Normal Operating Range - Moderately Severe Level	Turbocharger #1 Speed High - Data Valid but Above Normal Operational Range – Moderately Severe Level

Table .6 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
103	18	687	Engine Turbocharger 1 Speed	Data Valid but Below Normal Operating Range - Moderately Severe Level	Turbocharger #1 Speed Low - Data Valid but Below Normal Operational Range – Moderately Severe Level
105	0	155	Engine Intake Manifold 1 Temperature	Data Valid but Above Normal Operational Range - Most Severe Level	Intake Manifold Air Temperature High – Data Valid but Above Normal Operational Range - Most Severe Level
105	3	153	Engine Intake Manifold 1 Temperature	Voltage Above Normal, or Shorted to High Source	Intake Manifold Air Temperature Sensor Circuit - Voltage Above Normal, or Shorted to High Source
105	4	154	Engine Intake Manifold 1 Temperature	Voltage Below Normal, or Shorted to Low Source	Intake Manifold Air Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
105	16	488	Engine Intake Manifold 1 Temperature	Data Valid but Above Normal Operating Range - Moderately Severe Level	Intake Manifold 1 Temperature - Data Valid but Above Normal Operational Range - Moderately Severe Level
108	2	295	Barometric Pressure	Data Erratic, Intermittent or Incorrect	Barometric Pressure Sensor Circuit - Data Erratic, Intermittent, or Incorrect
108	3	221	Barometric Pressure	Voltage Above Normal, or Shorted to High Source	Barometric Pressure Sensor Circuit – Voltage Above Normal, or Shorted to High Source
108	4	222	Barometric Pressure	Voltage Below Normal, or Shorted to Low Source	Barometric Pressure Sensor Circuit – Voltage Below Normal, or Shorted to Low Source

Table .7 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
108	9	3372	Barometric Pressure	Abnormal Update Rate	Turbocharger 1 Compressor Inlet Pressure - Abnormal Update Rate
108	9	3372	Barometric Pressure	Abnormal Update Rate	Turbocharger 1 Compressor Inlet Pressure - Abnormal Update Rate
110	0	151	Engine Coolant Temperature	Data Valid but Above Normal Operational Range - Most Severe Level	Coolant Temperature High - Data Valid but Above Normal Operational Range - Most Severe Level
110	3	144	Engine Coolant Temperature	Voltage Above Normal, or Shorted to High Source	Coolant Temperature Sensor Circuit – Voltage Above Normal, or Shorted to High Source
110	4	145	Engine Coolant Temperature	Voltage Below Normal, or Shorted to Low Source	Coolant Temperature Sensor Circuit – Voltage Below Normal, or Shorted to Low Source
110	14	1847	Engine Coolant Temperature	Special Instructions	Engine Coolant Temperature - Special Instructions
110	16	146	Engine Coolant Temperature	Data Valid but Above Normal Operating Range - Moderately Severe Level	Coolant Temperature High - Data Valid but Above Normal Operational Range - Moderately Severe Level
110	18	2789	Engine Coolant Temperature	Data Valid but Below Normal Operating Range - Moderately Severe Level	Engine Coolant Temperature - Data Valid But Below Normal Operating Range - Moderately Severe Level
110	31	2646	Engine Coolant Temperature	Not Available or Condition Exists	Engine Coolant Temperature - Condition Exists
110	31	2659	Engine Coolant Temperature	Not Available or Condition Exists	Engine Coolant Temperature - Condition Exists

Table .8 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
111	1	235	Engine Coolant Level	Data Valid but Below Normal Operational Range - Most Severe Level	Coolant Level Low - Data Valid but Below Normal Operational Range - Most Severe Level
111	2	422	Engine Coolant Level	Data Erratic, Intermittent or Incorrect	Coolant Level - Data Erratic, Intermittent, or Incorrect
111	3	195	Engine Coolant Level	Voltage Above Normal, or Shorted to High Source	Coolant Level Sensor Circuit - Voltage Above Normal, or Shorted to High Source
111	4	196	Engine Coolant Level	Voltage Below Normal, or Shorted to Low Source	Coolant Level Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
111	17	2448	Engine Coolant Level	Data Valid but Below Normal Operating Range - Least Severe Level	Coolant Level - Data Valid But Below Normal Operating Range - Least Severe Level
111	18	197	Engine Coolant Level	Data Valid but Below Normal Operating Range - Moderately Severe Level	Coolant Level - Data Valid but Below Normal Operational Range - Moderately Severe Level
157	0	449	Engine Injector Metering Rail 1 Pressure	Data Valid but Above Normal Operational Range - Most Severe Level	Fuel Pressure High - Data Valid but Above Normal Operational Range – Moderately Severe Level
157	0	1911	Engine Injector Metering Rail 1 Pressure	Data Valid but Above Normal Operational Range - Most Severe Level	Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Most Severe Level
157	1	2249	Engine Injector Metering Rail 1 Pressure	Data Valid but Below Normal Operational Range - Most Severe Level	Injector Metering Rail 1 Pressure - Data Valid but Below Normal Operational Range - Most Severe Level

Table .9 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
157	3	451	Engine Injector Metering Rail 1 Pressure	Voltage Above Normal, or Shorted to High Source	Injector Metering Rail #1 Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
157	4	452	Engine Injector Metering Rail 1 Pressure	Voltage Below Normal, or Shorted to Low Source	Injector Metering Rail #1 Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
108	9	3372	Barometric Pressure	Abnormal Update Rate	Turbocharger 1 Compressor Inlet Pressure - Abnormal Update Rate
108	19	3373	Barometric Pressure	Received Network Data in Error	Turbocharger 1 Compressor Inlet Pressure - Received Network Data In Error
110	0	151	Engine Coolant Temperature	Data Valid but Above Normal Operational Range - Most Severe Level	Coolant Temperature High - Data Valid but Above Normal Operational Range - Most Severe Level
110	3	144	Engine Coolant Temperature	Voltage Above Normal, or Shorted to High Source	Coolant Temperature Sensor Circuit – Voltage Above Normal, or Shorted to High Source
110	4	145	Engine Coolant Temperature	Voltage Below Normal, or Shorted to Low Source	Coolant Temperature Sensor Circuit – Voltage Below Normal, or Shorted to Low Source
110	14	1847	Engine Coolant Temperature	Special Instructions	Engine Coolant Temperature - Special Instructions
110	16	146	Engine Coolant Temperature	Data Valid but Above Normal Operating Range - Moderately Severe Level	Coolant Temperature High - Data Valid but Above Normal Operational Range - Moderately Severe Level

Table .10 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
110	18	2789	Engine Coolant Temperature	Data Valid but Below Normal Operating Range - Moderately Severe Level	Engine Coolant Temperature - Data Valid But Below Normal Operating Range - Moderately Severe Level
110	31	2646	Engine Coolant Temperature	Not Available or Condition Exists	Engine Coolant Temperature - Condition Exists
110	31	2659	Engine Coolant Temperature	Not Available or Condition Exists	Engine Coolant Temperature - Condition Exists
111	1	235	Engine Coolant Level	Data Valid but Below Normal Operational Range - Most Severe Level	Coolant Level Low - Data Valid but Below Normal Operational Range - Most Severe Level
111	2	422	Engine Coolant Level	Data Erratic, Intermittent or Incorrect	Coolant Level - Data Erratic, Intermittent, or Incorrect
111	3	195	Engine Coolant Level	Voltage Above Normal, or Shorted to High Source	Coolant Level Sensor Circuit - Voltage Above Normal, or Shorted to High Source
111	4	196	Engine Coolant Level	Voltage Below Normal, or Shorted to Low Source	Coolant Level Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
111	17	2448	Engine Coolant Level	Data Valid but Below Normal Operating Range - Least Severe Level	Coolant Level - Data Valid But Below Normal Operating Range - Least Severe Level
111	18	197	Engine Coolant Level	Data Valid but Below Normal Operating Range - Moderately Severe Level	Coolant Level - Data Valid but Below Normal Operational Range - Moderately Severe Level

Table .11 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
157	0	449	Engine Injector Metering Rail 1 Pressure	Data Valid but Above Normal Operational Range - Most Severe Level	Fuel Pressure High - Data Valid but Above Normal Operational Range – Moderately Severe Level
157	0	1911	Engine Injector Metering Rail 1 Pressure	Data Valid but Above Normal Operational Range - Most Severe Level	Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Most Severe Level
157	1	2249	Engine Injector Metering Rail 1 Pressure	Data Valid but Below Normal Operational Range - Most Severe Level	Injector Metering Rail 1 Pressure - Data Valid but Below Normal Operational Range - Most Severe Level
157	3	451	Engine Injector Metering Rail 1 Pressure	Voltage Above Normal, or Shorted to High Source	Injector Metering Rail #1 Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
157	4	452	Engine Injector Metering Rail 1 Pressure	Voltage Below Normal, or Shorted to Low Source	Injector Metering Rail #1 Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
108	9	3372	Barometric Pressure	Abnormal Update Rate	Turbocharger 1 Compressor Inlet Pressure - Abnormal Update Rate
108	19	3373	Barometric Pressure	Received Network Data in Error	Turbocharger 1 Compressor Inlet Pressure - Received Network Data In Error
110	0	151	Engine Coolant Temperature	Data Valid but Above Normal Operational Range - Most Severe Level	Coolant Temperature High - Data Valid but Above Normal Operational Range - Most Severe Level
110	3	144	Engine Coolant Temperature	Voltage Above Normal, or Shorted to High Source	Coolant Temperature Sensor Circuit – Voltage Above Normal, or Shorted to High Source

Table .12 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
110	4	145	Engine Coolant Temperature	Voltage Below Normal, or Shorted to Low Source	Coolant Temperature Sensor Circuit – Voltage Below Normal, or Shorted to Low Source
110	14	1847	Engine Coolant Temperature	Special Instructions	Engine Coolant Temperature - Special Instructions
110	16	146	Engine Coolant Temperature	Data Valid but Above Normal Operating Range - Moderately Severe Level	Coolant Temperature High - Data Valid but Above Normal Operational Range - Moderately Severe Level
110	18	2789	Engine Coolant Temperature	Data Valid but Below Normal Operating Range - Moderately Severe Level	Engine Coolant Temperature - Data Valid But Below Normal Operating Range - Moderately Severe Level
110	31	2646	Engine Coolant Temperature	Not Available or Condition Exists	Engine Coolant Temperature - Condition Exists
110	31	2659	Engine Coolant Temperature	Not Available or Condition Exists	Engine Coolant Temperature - Condition Exists
111	1	235	Engine Coolant Level	Data Valid but Below Normal Operational Range - Most Severe Level	Coolant Level Low - Data Valid but Below Normal Operational Range - Most Severe Level
111	2	422	Engine Coolant Level	Data Erratic, Intermittent or Incorrect	Coolant Level - Data Erratic, Intermittent, or Incorrect
111	3	195	Engine Coolant Level	Voltage Above Normal, or Shorted to High Source	Coolant Level Sensor Circuit - Voltage Above Normal, or Shorted to High Source
111	4	196	Engine Coolant Level	Voltage Below Normal, or Shorted to Low Source	Coolant Level Sensor Circuit - Voltage Below Normal, or Shorted to Low Source

Table .13 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
111	17	2448	Engine Coolant Level	Data Valid but Below Normal Operating Range - Least Severe Level	Coolant Level - Data Valid But Below Normal Operating Range - Least Severe Level
111	18	197	Engine Coolant Level	Data Valid but Below Normal Operating Range - Moderately Severe Level	Coolant Level - Data Valid but Below Normal Operational Range - Moderately Severe Level
157	0	449	Engine Injector Metering Rail 1 Pressure	Data Valid but Above Normal Operational Range - Most Severe Level	Fuel Pressure High - Data Valid but Above Normal Operational Range – Moderately Severe Level
157	0	1911	Engine Injector Metering Rail 1 Pressure	Data Valid but Above Normal Operational Range - Most Severe Level	Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Most Severe Level
157	1	2249	Engine Injector Metering Rail 1 Pressure	Data Valid but Below Normal Operational Range - Most Severe Level	Injector Metering Rail 1 Pressure - Data Valid but Below Normal Operational Range - Most Severe Level
157	3	451	Engine Injector Metering Rail 1 Pressure	Voltage Above Normal, or Shorted to High Source	Injector Metering Rail #1 Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
157	4	452	Engine Injector Metering Rail 1 Pressure	Voltage Below Normal, or Shorted to Low Source	Injector Metering Rail #1 Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source

Table .14 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
157	16	553	Engine Injector Metering Rail 1 Pressure	Data Valid but Above Normal Operating Range - Moderately Severe Level	Injector Metering Rail #1 Pressure High – Data Valid but Above Normal Operational Range - Moderately Severe Level
157	18	559	Engine Injector Metering Rail 1 Pressure	Data Valid but Below Normal Operating Range - Moderately Severe Level	Injector Metering Rail #1 Pressure Low – Data Valid but Below Normal Operational Range - Moderately Severe Level
166	2	951	Engine Rated Power	Data Erratic, Intermittent or Incorrect	Cylinder Power Imbalance Between Cylinders - Data erratic, intermittent or incorrect
168	16	442	Battery Potential / Power Input 1	Data Valid but Above Normal Operating Range - Moderately Severe Level	Battery #1 Voltage High - Data Valid but Above Normal Operational Range – Moderately Severe Level
168	18	441	Battery Potential / Power Input 1	Data Valid but Below Normal Operating Range - Moderately Severe Level	Battery #1 Voltage Low - Data Valid but Below Normal Operational Range – Moderately Severe Level
171	9	3369	Ambient Air Temperature	Abnormal Update Rate	Turbocharger 1 Compressor Inlet Temperature Sensor - Abnormal Update Rate
171	19	3371	Ambient Air Temperature	Received Network Data in Error	Turbocharger 1 Compressor Inlet Temperature Sensor - Received Network Data In Error
190	0	234	Engine Speed	Data Valid but Above Normal Operational Range - Most Severe Level	Engine Speed High - Data Valid but Above Normal Operational Range - Most Severe Level

Table .15 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
190	0	2468	Engine Speed	Data Valid but Above Normal Operational Range - Most Severe Level	Engine Crankshaft Speed/Position - Data Valid But Above Normal Operating Range Moderately Severe Level
190	2	689	Engine Speed	Data Erratic, Intermittent or Incorrect	Primary Engine Speed Sensor Error – Data Erratic, Intermittent, or Incorrect
190	2	2321	Engine Speed	Data Erratic, Intermittent or Incorrect	Engine Speed / Position Sensor #1 - Data Erratic, Intermittent, or Incorrect
191	9	3328	Transmission Output Shaft Speed	Abnormal Update Rate	Transmission Output Shaft Speed - Abnormal update rate
191	16	349	Transmission Output Shaft Speed	Data Valid but Above Normal Operating Range - Moderately Severe Level	Transmission Output Shaft Speed - Data Valid but Above Normal Operational Range - Moderately Severe Level
191	18	489	Transmission Output Shaft Speed	Data Valid but Below Normal Operating Range - Moderately Severe Level	Transmission Output Shaft Speed - Data Valid but Below Normal Operational Range - Moderately Severe Level
411	2	1866	Engine Exhaust Gas Recirculation 1 Differential Pressure	Data Erratic, Intermittent or Incorrect	Exhaust Gas Recirculation (EGR) Valve Delta Pressure - Data Erratic, Intermittent or Incorrect
411	3	2273	Engine Exhaust Gas Recirculation 1 Differential Pressure	Voltage Above Normal, or Shorted to High Source	Exhaust Gas Recirculation (EGR) Valve Delta Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source

Table .16 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
411	4	2274	Engine Exhaust Gas Recirculation 1 Differential Pressure	Voltage Below Normal, or Shorted to Low Source	Exhaust Gas Recirculation (EGR) Valve Delta Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
412	3	2375	Engine Exhaust Gas Recirculation 1 Temperature	Voltage Above Normal, or Shorted to High Source	Exhaust Gas Recirculation (EGR) Temperature Sensor Circuit - Voltage Above Normal, or Shorted to High Source
412	4	2376	Engine Exhaust Gas Recirculation 1 Temperature	Voltage Below Normal, or Shorted to Low Source	Exhaust Gas Recirculation (EGR) Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
412	15	2961	Engine Exhaust Gas Recirculation 1 Temperature	Data Valid but Above Normal Operating Range - Least Severe Level	Exhaust Gas Recirculation (EGR) Temperature - Data Valid But Above Normal Operating Range - Least Severe Level
412	16	2962	Engine Exhaust Gas Recirculation 1 Temperature	Data Valid but Above Normal Operating Range - Moderately Severe Level	Exhaust Gas Recirculation (EGR) Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
441	3	293	Auxiliary Temperature 1	Voltage Above Normal, or Shorted to High Source	Auxiliary Temperature Sensor Input # 1 Circuit - Voltage Above Normal, or Shorted to High Source
441	4	294	Auxiliary Temperature 1	Voltage Below Normal, or Shorted to Low Source	Auxiliary Temperature Sensor Input # 1 Circuit - Voltage Below Normal, or Shorted to Low Source

Table .17 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
441	14	292	Auxiliary Temperature 1	Special Instructions	Auxiliary Temperature Sensor Input 1 - Special Instructions
441	14	1381	Auxiliary Temperature 1	Special Instructions	Auxiliary Temperature Sensor Input 1 - Special Instructions
558	2	431	Accelerator Pedal 1 Low Idle Switch	Data Erratic, Intermittent or Incorrect	Accelerator Pedal or Lever Idle Validation Circuit - Data Erratic, Intermittent, or Incorrect
558	13	432	Accelerator Pedal 1 Low Idle Switch	Out of Calibration	Accelerator Pedal or Lever Idle Validation Circuit - Out of Calibration
597	3	769	Brake Switch	Voltage Above Normal, or Shorted to High Source	Brake Switch Circuit - Voltage Above Normal, or Shorted to High Source
597	4	771	Brake Switch	Voltage Below Normal, or Shorted to Low Source	Brake Switch Circuit - Voltage Below Normal, or Shorted to Low Source
611	2	523	System Diagnostic Code #1	Data Erratic, Intermittent or Incorrect	OEM Intermediate (PTO) Speed switch Validation - Data Erratic, Intermittent, or Incorrect
611	4	2186	System Diagnostic Code #1	Voltage Below Normal, or Shorted to Low Source	Sensor Supply 4 Circuit-Voltage Below Normal, or Shorted to Low Source
611	16	2292	System Diagnostic Code #1	Data Valid but Above Normal Operating Range - Moderately Severe Level	Fuel Inlet Meter Device - Data Valid but Above Normal Operational Range - Moderately Severe Level

Table .18 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
611	18	2293	System Diagnostic Code #1	Data Valid but Below Normal Operating Range - Moderately Severe Level	Fuel Inlet Meter Device Flow Demand Lower Than Expected - Data Valid But Below Normal Operational Range - Moderately Severe Level
612	2	115	System Diagnostic Code #2	Data Erratic, Intermittent or Incorrect	Engine Speed/Position Sensor Circuit lost both of two signals from the magnetic pickup sensor - Data Erratic, Intermittent, or incorrect
623	4	244	Red Stop Lamp	Voltage Below Normal, or Shorted to Low Source	Red Stop Lamp Driver Circuit - Voltage Below Normal, or Shorted to Low Source
627	2	1117	Power Supply	Data Erratic, Intermittent or Incorrect	Power Lost With Ignition On - Data Erratic, Intermittent, or Incorrect
627	12	351	Power Supply	Bad Intelligent Device or Component	Injector Power Supply - Bad Intelligent Device or Component
629	12	343	Controller #1	Bad Intelligent Device or Component	Engine Control Module Warning internal hardware failure - Bad Intelligent Device or Component
633	31	2311	Engine Fuel Actuator 1 Control Command	Not Available or Condition Exists	Fueling Actuator #1 Circuit Error – Condition Exists
639	2	426	J1939 Network #1, Primary Vehicle Network	Data Erratic, Intermittent or Incorrect	J1939 Network #1 - Data erratic, intermittent or incorrect
639	9	285	J1939 Network #1, Primary Vehicle Network	Abnormal Update Rate	SAE J1939 Multiplexing PGN Timeout Error - Abnormal Update Rate
639	13	286	J1939 Network #1, Primary Vehicle Network	Out of Calibration	SAE J1939 Multiplexing Configuration Error – Out of Calibration

Table .19 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
640	14	599	Engine External Protection Input	Special Instructions	Auxiliary Commanded Dual Output Shutdown - Special Instructions
641	7	2387	Engine Variable Geometry Turbocharger Actuator #1	Mechanical System not Responding or Out of Adjustment	VGT Actuator Driver Circuit (Motor) - Mechanical System Not Responding or Out of Adjustment
641	9	2636	Engine Variable Geometry Turbocharger Actuator #1	Abnormal Update Rate	VGT Actuator Driver Circuit - Abnormal Update Rate
641	12	2634	Engine Variable Geometry Turbocharger Actuator #1	Bad Intelligent Device or Component	VGT Actuator Controller - Bad intelligent Device or Component
641	13	2449	Engine Variable Geometry Turbocharger Actuator #1	Out of Calibration	VGT Actuator Controller - Out of Calibration
641	15	1962	Engine Variable Geometry Turbocharger Actuator #1	Data Valid but Above Normal Operating Range - Least Severe Level	VGT/VFT Actuator Driver Over Temperature (Calculated) - Data Valid But Above Normal Operating Range - Least Severe Level
641	31	2635	Engine Variable Geometry Turbocharger Actuator #1	Not Available or Condition Exists	VGT Actuator Driver Circuit - Condition Exists
644	2	237	Engine External Speed Command Input	Data Erratic, Intermittent or Incorrect	External Speed Input (Multiple Unit Synchronization) - Data Erratic, Intermittent, or Incorrect
647	3	2377	Engine Fan Clutch 1 Output Device Driver	Voltage Above Normal, or Shorted to High Source	Fan Control Circuit - Voltage Above Normal, or Shorted to High Source

Table .20 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
647	4	245	Engine Fan Clutch 1 Output Device Driver	Voltage Below Normal, or Shorted to Low Source	Fan Control Circuit - Voltage Below Normal, or Shorted to Low Source
651	5	322	Engine Injector Cylinder #01	Current Below Normal or Open Circuit	Injector Solenoid Cylinder #1 Circuit – Current Below Normal, or Open Circuit
652	5	331	Engine Injector Cylinder #02	Current Below Normal or Open Circuit	Injector Solenoid Cylinder #2 Circuit – Current Below Normal, or Open Circuit
653	5	324	Engine Injector Cylinder #03	Current Below Normal or Open Circuit	Injector Solenoid Cylinder #3 Circuit – Current Below Normal, or Open Circuit
654	5	332	Engine Injector Cylinder #04	Current Below Normal or Open Circuit	Injector Solenoid Cylinder #4 Circuit – Current Below Normal, or Open Circuit
655	5	323	Engine Injector Cylinder #05	Current Below Normal or Open Circuit	Injector Solenoid Cylinder #5 Circuit – Current Below Normal, or Open Circuit
656	5	325	Engine Injector Cylinder #06	Current Below Normal or Open Circuit	Injector Solenoid Cylinder #6 Circuit – Current Below Normal, or Open Circuit
677	3	584	Engine Starter Motor Relay	Voltage Above Normal, or Shorted to High Source	Starter Relay Driver Circuit- Voltage Above Normal, or Shorted to High Source
697	3	2557	Auxiliary PWM Driver #1	Voltage Above Normal, or Shorted to High Source	Auxiliary PWM Driver #1 - Voltage Above Normal, or Shorted to High Source
697	4	2558	Auxiliary PWM Driver #1	Voltage Below Normal, or Shorted to Low Source	Auxiliary PWM Driver #1 - Voltage Below Normal, or Shorted to Low Source

Table .21 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
702	3	527	Auxiliary I/O #02	Voltage Above Normal, or Shorted to High Source	Auxiliary Input/Output 2 Circuit - Voltage Above Normal, or Shorted to High Source
703	3	529	Auxiliary I/O #03	Voltage Above Normal, or Shorted to High Source	Auxiliary Input/Output 3 Circuit - Voltage Above Normal, or Shorted to High Source
703	11	779	Auxiliary I/O #03	Root Cause Not Known	Warning Auxiliary Equipment Sensor Input # 3 (OEM Switch) - Root Cause Not Known
703	14	2195	Auxiliary I/O #03	Special Instructions	Auxiliary Equipment Sensor Input 3 Engine Protection Critical - Special Instructions
723	2	778	Engine Speed 2	Data Erratic, Intermittent or Incorrect	Engine Speed Sensor (Camshaft) Error – Data Erratic, Intermittent, or Incorrect
723	2	2322	Engine Speed 2	Data Erratic, Intermittent or Incorrect	Engine Speed / Position Sensor #2 - Data Erratic, Intermittent, or Incorrect
723	7	731	Engine Speed 2	Mechanical System not Responding or Out of Adjustment	Engine Speed/Position #2 Mechanical Misalignment Between Camshaft and Crankshaft Sensors - Mechanical System Not Responding Properly or Out of
729	3	2555	Engine Intake Air Heater Driver #1	Voltage Above Normal, or Shorted to High Source	Intake Air Heater #1 Circuit - Voltage Above Normal, or Shorted to High Source
729	4	2556	Engine Intake Air Heater Driver #1	Voltage Below Normal, or Shorted to Low Source	Intake Air Heater #1 Circuit - Voltage Below Normal, or Shorted to Low Source

Table .22 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
974	3	133	Remote Accelerator Pedal Position	Voltage Above Normal, or Shorted to High Source	Remote Accelerator Pedal or Lever Position Sensor Circuit – Voltage Above Normal, or Shorted to High Source
974	4	134	Remote Accelerator Pedal Position	Voltage Below Normal, or Shorted to Low Source	Remote Accelerator Pedal or Lever Position Sensor Circuit – Voltage Below Normal, or Shorted to Low Source
974	19	288	Remote Accelerator Pedal Position	Received Network Data in Error	SAE J1939 Multiplexing Remote Accelerator Pedal or Lever Data Error - Received Network Data In Error
1073	3	2367	Engine (Compression) Brake Output #2	Voltage Above Normal, or Shorted to High Source	Engine Brake Actuator Driver Output 2 Circuit - Voltage Above Normal, or Shorted to High Source
1073	4	2363	Engine (Compression) Brake Output #2	Voltage Below Normal, or Shorted to Low Source	Engine Brake Actuator Driver Output 2 Circuit - Voltage Below Normal, or Shorted to Low Source
1075	3	2265	Engine Electric Lift Pump for Engine Fuel Supply	Voltage Above Normal, or Shorted to High Source	Fuel Priming Pump Control Signal Circuit – Voltage Above Normal, or Shorted to High Source
1075	4	2266	Engine Electric Lift Pump for Engine Fuel Supply	Voltage Below Normal, or Shorted to Low Source	Fuel Priming Pump Control Signal Circuit – Voltage Below Normal, or Shorted to Low Source
1112	3	2368	Engine (Compression) Brake Output #3	Voltage Above Normal, or Shorted to High Source	Engine Brake Actuator Driver 3 Circuit - Voltage Above Normal, or Shorted to High Source

Table .23 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
1112	4	2365	Engine (Compression) Brake Output #3	Voltage Below Normal, or Shorted to Low Source	Engine Brake Actuator Driver Output 3 Circuit - Voltage Below Normal, or Shorted to Low Source
1136	3	697	Engine ECU Temperature	Voltage Above Normal, or Shorted to High Source	ECM Internal Temperature Sensor Circuit - Voltage Above Normal, or Shorted to High Source
1136	4	698	Engine ECU Temperature	Voltage Below Normal, or Shorted to Low Source	ECM Internal Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
1172	3	691	Engine Turbocharger 1 Compressor Intake Temperature	Voltage Above Normal, or Shorted to High Source	Turbocharger 1 Compressor Inlet Temperature Circuit-Voltage Above Normal, or Shorted to High Source
1188	2	3925	Engine Turbocharger Wastegate Actuator 1 Position	Data Erratic, Intermittent or Incorrect	Engine Turbocharger Wastegate Actuator 1 Position - Data erratic, intermittent or incorrect
1209	2	2554	Engine Exhaust Gas Pressure	Data Erratic, Intermittent or Incorrect	Exhaust Gas Pressure - Data Erratic, Intermittent or Incorrect
1209	3	2373	Engine Exhaust Gas Pressure	Voltage Above Normal, or Shorted to High Source	Exhaust Gas Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
1209	4	2374	Engine Exhaust Gas Pressure	Voltage Below Normal, or Shorted to Low Source	Exhaust Gas Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source

Table .24 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
1209	16	2764	Engine Exhaust Gas Pressure	Data Valid but Above Normal Operating Range - Moderately Severe Level	Exhaust Gas Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
1231	2	3329	J1939 Network #2	Data Erratic, Intermittent or Incorrect	J1939 Network #2 - Data Erratic, Intermittent or Incorrect
1235	2	3331	J1939 Network #3	Data Erratic, Intermittent or Incorrect	J1939 Network #3 - Data Erratic, Intermittent or Incorrect
1347	3	272	Engine Fuel Pump Pressurizing Assembly #1	Voltage Above Normal, or Shorted to High Source	High Fuel Pressure Solenoid Valve Circuit – Voltage Above Normal, or Shorted to High Source
1347	4	271	Engine Fuel Pump Pressurizing Assembly #1	Voltage Below Normal, or Shorted to Low Source	High Fuel Pressure Solenoid Valve Circuit – Voltage Below Normal, or Shorted to Low Source
1347	7	281	Engine Fuel Pump Pressurizing Assembly #1	Mechanical System not Responding or Out of Adjustment	High Fuel Pressure Solenoid Valve #1 – Mechanical System Not Responding Properly or Out of Adjustment
1377	2	497	Engine Synchronization Switch	Data Erratic, Intermittent or Incorrect	Multiple Unit Synchronization Switch Circuit - Data Erratic, Intermittent, or Incorrect
1378	31	649	Engine Oil Change Interval	Not Available or Condition Exists	Change Lubricating Oil and Filter – Condition Exists
1388	3	297	Auxiliary Pressure #2	Voltage Above Normal, or Shorted to High Source	Auxiliary Pressure Sensor Input # 2 Circuit - Voltage Above Normal, or Shorted to High Source

Table .25 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
1388	4	298	Auxiliary Pressure #2	Voltage Below Normal, or Shorted to Low Source	Auxiliary Pressure Sensor Input # 2 Circuit - Voltage Below Normal, or Shorted to Low Source
1388	14	296	Auxiliary Pressure #2	Special Instructions	Auxiliary Pressure Sensor Input 1 - Special Instructions
1623	2	3213	Tachograph Output Shaft Speed	Data Erratic, Intermittent or Incorrect	Tachograph Output Shaft Speed - Received Network Data In Error
1623	9	3186	Tachograph Output Shaft Speed	Abnormal Update Rate	Tachograph Output Shaft Speed - Abnormal update rate
1632	14	2998	Engine Torque Limit Feature	Special Instructions	Engine Torque Limit Feature - Special Instructions
1675	11	3737	Engine Starter Mode	Root Cause Not Known	Engine Starter Mode Overcrank Protection - Condition Exists
1800	16	2263	Battery 1 Temperature	Data Valid but Above Normal Operating Range - Moderately Severe Level	Battery Temperature - Data Valid but Above Normal Operational Range - Moderately Severe Level
1800	18	2264	Battery 1 Temperature	Data Valid but Below Normal Operating Range - Moderately Severe Level	Battery Temperature - Data Valid but Below Normal Operational Range - Moderately Severe Level
2623	3	1239	Accelerator Pedal #1 Channel 2	Voltage Above Normal, or Shorted to High Source	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage Above Normal, or Shorted to High Source

Table .26 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
2623	4	1241	Accelerator Pedal #1 Channel 2	Voltage Below Normal, or Shorted to Low Source	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage Below Normal, or Shorted to Low Source
2630	3	2571	Engine Charge Air Cooler 1 Outlet Temperature	Voltage Above Normal, or Shorted to High Source	Engine Charge Air Cooler Outlet Temperature - Voltage Above Normal, or Shorted to High Source
2630	4	2572	Engine Charge Air Cooler 1 Outlet Temperature	Voltage Below Normal, or Shorted to Low Source	Engine Charge Air Cooler Outlet Temperature - Voltage Below Normal, or Shorted to Low Source
2789	15	2346	Engine Turbocharger 1 Calculated Turbine Intake Temperature	Data Valid but Above Normal Operating Range - Least Severe Level	Turbocharger Turbine Inlet Temperature (Calculated) - Data Valid but Above Normal Operational Range – Least Severe Level
2791	4	2351	Engine Exhaust Gas Recirculation 1 (EGR1) Valve Control	Voltage Below Normal, or Shorted to Low Source	EGR Valve Control Circuit - Voltage below normal, or shorted to low source
2791	5	2349	Engine Exhaust Gas Recirculation 1 (EGR1) Valve Control	Current Below Normal or Open Circuit	EGR Valve Control Circuit - Current below normal or open circuit
2791	6	2353	Engine Exhaust Gas Recirculation 1 (EGR1) Valve Control	Current Above Normal or Grounded Circuit	EGR Valve Control Circuit - Current above normal or grounded circuit
2791	7	2357	Engine Exhaust Gas Recirculation 1 (EGR1) Valve Control	Mechanical System not Responding or Out of Adjustment	EGR Valve Control Circuit - Mechanical system not responding or out of adjustment

Table .27 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
2791	13	1896	Engine Exhaust Gas Recirculation 1 (EGR1) Valve Control	Out of Calibration	EGR Valve Controller - Out of Calibration
2797	13	2765	Engine Injector Group 1	Out of Calibration	Engine Injector Bank 1 Barcodes - Out of Calibration
3050	11	2637	Catalyst Bank 1 System Monitor	Root Cause Not Known	Aftertreatment Diesel Oxidation Catalyst Face Plugged - Root Cause Not Known
3050	17	2638	Catalyst Bank 1 System Monitor	Data Valid but Below Normal Operating Range - Least Severe Level	Aftertreatment Diesel Oxidation Catalyst System - Data Valid But Below Normal Operating Range - Least Severe Level
3050	18	1691	Catalyst Bank 1 System Monitor	Data Valid but Below Normal Operating Range - Moderately Severe Level	Aftertreatment Diesel Oxidation Catalyst System - Data Valid But Below Normal Operating Range - Moderately Severe Level
3058	31	2774	EGR System Monitor	Not Available or Condition Exists	Engine Exhaust Gas Recirculation (EGR) System - Condition Exists
3241	2	1667	Aftertreatment 1 Exhaust Gas Temperature 1	Data Erratic, Intermittent or Incorrect	Aftertreatment Exhaust Gas Temperature 1 - Data Erratic, Intermittent or Incorrect
3241	3	1666	Aftertreatment 1 Exhaust Gas Temperature 1	Voltage Above Normal, or Shorted to High Source	Aftertreatment Exhaust Gas Temperature 1 Circuit - Voltage Below Normal, or Shorted to Low Source

Table .28 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
3241	4	1665	Aftertreatment 1 Exhaust Gas Temperature 1	Voltage Below Normal, or Shorted to Low Source	Aftertreatment Exhaust Gas Temperature 1 Circuit - Voltage Below Normal, or Shorted to Low Source
3241	13	1663	Aftertreatment 1 Exhaust Gas Temperature 1	Out of Calibration	Aftertreatment Exhaust Gas Temperature 1 Swapped - Out of Calibration
3242	0	3311	Aftertreatment 1 Diesel Particulate Filter Intake Gas Temperature	Data Valid but Above Normal Operational Range - Most Severe Level	Aftertreatment Diesel Particulate Filter Intake Gas Temperature – Data valid but above normal operational range – Most Severe Level
3242	2	3318	Aftertreatment 1 Diesel Particulate Filter Intake Gas Temperature	Data Erratic, Intermittent or Incorrect	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data erratic, intermittent or incorrect
3242	3	3317	Aftertreatment 1 Diesel Particulate Filter Intake Gas Temperature	Voltage Above Normal, or Shorted to High Source	Aftertreatment 1 Diesel Particulate Filter Intake Temperature Sensor Circuit - Voltage above normal, or shorted to high source
3242	4	3316	Aftertreatment 1 Diesel Particulate Filter Intake Gas Temperature	Voltage Below Normal, or Shorted to Low Source	Aftertreatment 1 Diesel Particulate Filter Intake Temperature Sensor Circuit - Voltage below normal, or shorted to low source
3242	15	3254	Aftertreatment 1 Diesel Particulate Filter Intake Gas Temperature	Data Valid but Above Normal Operating Range - Least Severe Level	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data Valid But Above Normal Operating Range - Least Severe Level

Table .29 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
3242	16	3253	Aftertreatment 1 Diesel Particulate Filter Intake Gas Temperature	Data Valid but Above Normal Operating Range - Moderately Severe Level	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
3245	2	1878	Aftertreatment 1 Exhaust Gas Temperature 3	Data Erratic, Intermittent or Incorrect	Aftertreatment Exhaust Gas Temperature 3 - Data Erratic, Intermittent or Incorrect
3245	3	1876	Aftertreatment 1 Exhaust Gas Temperature 3	Voltage Above Normal, or Shorted to High Source	Aftertreatment Exhaust Gas Temperature 3 Circuit - Voltage Above Normal, or Shorted to High Source
3245	4	1877	Aftertreatment 1 Exhaust Gas Temperature 3	Voltage Below Normal, or Shorted to Low Source	Aftertreatment Exhaust Gas Temperature 3 Circuit - Voltage Below Normal, or Shorted to Low Source
3245	16	1972	Aftertreatment 1 Exhaust Gas Temperature 3	Data Valid but Above Normal Operating Range - Moderately Severe Level	Aftertreatment Exhaust Gas Temperature 3 - Data Valid But Above Normal Operating Range - Moderately Severe Level
3246	0	3312	Aftertreatment 1 Diesel Particulate Filter Outlet Gas Temperature	Data Valid but Above Normal Operational Range - Most Severe Level	Aftertreatment Diesel Particulate Filter Outlet Gas Temperature – Data valid but above normal operational range – Most Severe Level
3249	2	1676	Aftertreatment 1 Exhaust Gas Temperature 2	Data Erratic, Intermittent or Incorrect	Aftertreatment Exhaust Gas Temperature 2 - Data erratic, intermittent or incorrect

Table .30 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
3249	3	1675	Aftertreatment 1 Exhaust Gas Temperature 2	Voltage Above Normal, or Shorted to High Source	Aftertreatment Exhaust Gas Temperature 2 Circuit - Voltage Below Normal, or Shorted to Low Source
3249	4	1674	Aftertreatment 1 Exhaust Gas Temperature 2	Voltage Below Normal, or Shorted to Low Source	Aftertreatment Exhaust Gas Temperature 2 Circuit - Voltage Below Normal, or Shorted to Low Source
3249	16	1968	Aftertreatment 1 Exhaust Gas Temperature 2	Data Valid but Above Normal Operating Range - Moderately Severe Level	Aftertreatment Exhaust Gas Temperature 2 - Data Valid But Above Normal Operating Range - Moderately Severe Level
3249	17	2742	Aftertreatment 1 Exhaust Gas Temperature 2	Data Valid but Below Normal Operating Range - Least Severe Level	Aftertreatment Exhaust Gas Temperature 2 - Data Valid But Below Normal Operating Range - Least Severe Level
3249	18	2743	Aftertreatment 1 Exhaust Gas Temperature 2	Data Valid but Below Normal Operating Range - Moderately Severe Level	Aftertreatment Exhaust Gas Temperature 2 - Data Valid But Below Normal Operating Range - Moderately Severe Level
3251	0	1922	Aftertreatment 1 Diesel Particulate Filter Differential Pressure	Data Valid but Above Normal Operational Range - Most Severe Level	Aftertreatment Particulate Filter Differential Pressure - Data Valid But Above Normal Operational Range - Most Severe Level
3251	2	1883	Aftertreatment 1 Diesel Particulate Filter Differential Pressure	Data Erratic, Intermittent or Incorrect	Aftertreatment Particulate Filter Differential Pressure Sensor - Data Erratic, Intermittent or Incorrect

Table .31 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
3251	3	1879	Aftertreatment 1 Diesel Particulate Filter Differential Pressure	Voltage Above Normal, or Shorted to High Source	Aftertreatment Particulate Filter Differential Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
3251	4	1881	Aftertreatment 1 Diesel Particulate Filter Differential Pressure	Voltage Below Normal, or Shorted to Low Source	Aftertreatment Particulate Filter Differential Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
3251	15	2639	Aftertreatment 1 Diesel Particulate Filter Differential Pressure	Data Valid but Above Normal Operating Range - Least Severe Level	Aftertreatment Particulate Filter Differential Pressure - Data Valid But Above Normal Operating Range - Least Severe Level
3251	16	1921	Aftertreatment 1 Diesel Particulate Filter Differential Pressure	Data Valid but Above Normal Operating Range - Moderately Severe Level	Aftertreatment Particulate Filter Differential Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
3481	16	2778	Aftertreatment 1 Fuel Rate	Data Valid but Above Normal Operating Range - Moderately Severe Level	Aftertreatment Fuel Rate - Data Valid But Above Normal Operating Range - Moderately Severe Level
3509	3	386	Sensor supply voltage 1	Voltage Above Normal, or Shorted to High Source	Sensor Supply Voltage #1 Circuit – Voltage Above Normal, or Shorted to High Source
3509	4	352	Sensor supply voltage 1	Voltage Below Normal, or Shorted to Low Source	Sensor Supply Voltage #1 Circuit – Voltage Below Normal, or Shorted to Low Source

Table .32 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
3510	3	227	Sensor supply voltage 2	Voltage Above Normal, or Shorted to High Source	Sensor Supply Voltage #2 Circuit – Voltage Above Normal, or Shorted to High Source
3510	4	187	Sensor supply voltage 2	Voltage Below Normal, or Shorted to Low Source	Sensor Supply Voltage #2 Circuit – Voltage Below Normal, or Shorted to Low Source
3511	3	239	Sensor supply voltage 3	Voltage Above Normal, or Shorted to High Source	Sensor Supply Voltage #3 Circuit - Voltage Above Normal, or Shorted to High Source
3511	4	238	Sensor supply voltage 3	Voltage Below Normal, or Shorted to Low Source	Sensor Supply Voltage #3 Circuit – Voltage Below Normal, or Shorted to Low Source
3512	3	2185	Sensor supply voltage 4	Voltage Above Normal, or Shorted to High Source	Sensor Supply 4 Circuit - Voltage above normal, or shorted to high source
3513	3	1695	Sensor supply voltage 5	Voltage Above Normal, or Shorted to High Source	Sensor Supply 5 - Voltage Above Normal, or Shorted to High Source
3513	4	1696	Sensor supply voltage 5	Voltage Below Normal, or Shorted to Low Source	Sensor Supply 5 - Voltage Below Normal, or Shorted to Low Source
3514	3	515	Sensor supply voltage 6	Voltage Above Normal, or Shorted to High Source	Sensor Supply 6 Circuit - Voltage above normal, or shorted to high source
3514	4	516	Sensor supply voltage 6	Voltage Below Normal, or Shorted to Low Source	Sensor Supply 6 Circuit - Voltage below normal, or shorted to low source

Table .33 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
3555	17	1943	Ambient Air Density	Data Valid but Below Normal Operating Range - Least Severe Level	Ambient Air Density - Data Valid But Below Normal Operating Range - Least Severe Level
3556	16	2728	Aftertreatment 1 Hydrocarbon Doser	Data Valid but Above Normal Operating Range - Moderately Severe Level	Aftertreatment Fuel Injector 1 - Data Valid But Above Normal Operating Range - Moderately Severe Level
3597	3	1939	ECU Power Output Supply Voltage #1	Voltage Above Normal, or Shorted to High Source	ECU Power Output Supply Voltage 1 - Voltage Above Normal, or Shorted to High Source
3597	4	1941	ECU Power Output Supply Voltage #1	Voltage Below Normal, or Shorted to Low Source	ECU Power Output Supply Voltage 1 - Voltage Below Normal, or Shorted to Low Source
3597	18	1938	ECU Power Output Supply Voltage #1	Data Valid but Below Normal Operating Range - Moderately Severe Level	ECU Power Output Supply Voltage 1 - Data Valid But Below Normal Operating Range - Moderately Severe Level
3610	2	3135	Diesel Particulate Filter Outlet Pressure 1	Data Erratic, Intermittent or Incorrect	Aftertreatment Diesel Particulate Filter Outlet Pressure - Data Erratic, Intermittent or Incorrect
3610	3	3133	Diesel Particulate Filter Outlet Pressure 1	Voltage Above Normal, or Shorted to High Source	Aftertreatment Diesel Particulate Filter Outlet Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source

Table .34 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
3610	4	3134	Diesel Particulate Filter Outlet Pressure 1	Voltage Below Normal, or Shorted to Low Source	Aftertreatment Diesel Particulate Filter Outlet Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
3667	3	3139	Engine Air Shutoff Status	Voltage Above Normal, or Shorted to High Source	Engine Air Shutoff Circuit - Voltage above normal, or shorted to high source
3667	4	3141	Engine Air Shutoff Status	Voltage Below Normal, or Shorted to Low Source	Engine Air Shutoff Circuit - Voltage below normal, or shorted to low source
3703	31	2777	Diesel Particulate Filter Active Regeneration Inhibited Due to Inhibit Switch	Not Available or Condition Exists	Particulate Trap Active Regeneration Inhibited Due to Inhibit Switch - Condition Exists
3936	15	1981	Aftertreatment Diesel Particulate Filter System	Data Valid but Above Normal Operating Range - Least Severe Level	Aftertreatment Diesel Particulate Filter System - Data Valid But Above Normal Operating Range - Least Severe Level
3936	16	3168	Aftertreatment Diesel Particulate Filter System	Data Valid but Above Normal Operating Range - Moderately Severe Level	Aftertreatment Diesel Particulate Filter System - Data Valid But Above Normal Operating Range - Moderately Severe Level

Table .35 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
4765	0	3251	Aftertreatment 1 Diesel Oxidation Catalyst Intake Gas Temperature	Data Valid but Above Normal Operational Range - Most Severe Level	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
4765	2	3315	Aftertreatment 1 Diesel Oxidation Catalyst Intake Gas Temperature	Data Erratic, Intermittent or Incorrect	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature - Data erratic, intermittent or incorrect
4765	3	3314	Aftertreatment 1 Diesel Oxidation Catalyst Intake Gas Temperature	Voltage Above Normal, or Shorted to High Source	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage above normal, or shorted to high source
4765	4	3313	Aftertreatment 1 Diesel Oxidation Catalyst Intake Gas Temperature	Voltage Below Normal, or Shorted to Low Source	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage below normal, or shorted to low source
4765	13	3325	Aftertreatment 1 Diesel Oxidation Catalyst Intake Gas Temperature	Out of Calibration	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Swapped - Out of Calibration
4795	31	1993	Aftertreatment 1 Diesel Particulate Filter Missing	Not Available or Condition Exists	Aftertreatment Diesel Particulate Filter Missing - Condition Exists
4796	31	1664	Aftertreatment 1 Diesel Oxidation Catalyst Missing	Not Available or Condition Exists	Aftertreatment Diesel Oxidation Catalyst Missing - Condition Exists

Table .36 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
5246	0	3712	Aftertreatment SCR Operator Inducement Severity	Data Valid but Above Normal Operational Range - Most Severe Level	Aftertreatment SCR Operator Inducement - Data valid but above normal operational range - Most Severe Level
5421	5	3922	Engine Turbocharger Wastegate Actuator 1	Current Below Normal or Open Circuit	Engine Turbocharger Wastegate Actuator - Current below normal or open circuit
5421	6	3923	Engine Turbocharger Wastegate Actuator 1	Current Above Normal or Grounded Circuit	Engine Turbocharger Wastegate Actuator - Current above normal or grounded circuit
5421	7	3921	Engine Turbocharger Wastegate Actuator 1	Mechanical System not Responding or Out of Adjustment	Engine Turbocharger Wastegate Actuator - Mechanical system not responding or out of adjustment
5421	11	3927	Engine Turbocharger Wastegate Actuator 1	Root Cause Not Known	Engine Turbocharger Wastegate Actuator - Root Cause Not Known
5421	11	3928	Engine Turbocharger Wastegate Actuator 1	Root Cause Not Known	Engine Turbocharger Wastegate Actuator - Condition Exists
5421	13	3918	Engine Turbocharger Wastegate Actuator 1	Out of Calibration	Engine Turbocharger Wastegate Actuator - Out of Calibration
5571	7	3727	High Pressure Common Rail Fuel Pressure Relief Valve	Mechanical System not Responding or Out of Adjustment	High Pressure Common Rail Fuel Pressure Relief Valve - Mechanical system not responding or out of adjustment
520199	3	193	Cruise Control (Resistive) Signal Circuit	Voltage Above Normal, or Shorted to High Source	Cruise Control (Resistive) Signal Circuit - Voltage Above Normal, or Shorted to High Source

Table .37 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
520199	4	194	Cruise Control (Resistive) Signal Circuit	Voltage Below Normal, or Shorted to Low Source	Cruise Control (Resistive) Signal Circuit - Voltage Below Normal, or Shorted to Low Source
520320	7	2699	Crankcase Depression Valve	Mechanical System not Responding or Out of Adjustment	Crankcase Depression Valve - Mechanical System Not Responding or Out of Adjustment
520435	12	3222	Glow Plug Module	Bad Intelligent Device or Component	Glow Plug Module - Bad intelligent device or component
520441	3	3136	Engine Exhaust Gas Recirculation (EGR) Outlet Pressure Sensor Circuit	Voltage Above Normal, or Shorted to High Source	Engine Exhaust Gas Recirculation (EGR) Outlet Pressure Sensor Circuit - Above Normal, or Shorted to High Source
520441	4	3137	Engine Exhaust Gas Recirculation (EGR) Outlet Pressure Sensor Circuit	Voltage Below Normal, or Shorted to Low Source	Engine Exhaust Gas Recirculation (EGR) Outlet Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
520442	3	3295	Engine Exhaust Gas Recirculation (EGR) Mixer Inlet Temperature Sensor Circuit	Voltage Above Normal, or Shorted to High Source	Engine Exhaust Gas Recirculation (EGR) Mixer Inlet Temperature Sensor Circuit - Voltage Above Normal, or Shorted to High Source

Table .38 Cummins CM2250 Diagnostics Codes

J1939 SPN	J1939 FMI	Cummins Code	J1939 SPN Description	J1939 FMI Description	Cummins Description
520442	4	3296	Engine Exhaust Gas Recirculation (EGR) Mixer Inlet Temperature Sensor Circuit	Voltage Below Normal, or Shorted to Low Source	Engine Exhaust Gas Recirculation (EGR) Mixer Inlet Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
520448	31	3377	Engine Crankcase Ventilation Hose Disconnected	Not Available or Condition Exists	Engine Crankcase Ventilation Hose Disconnected - Condition Exists
520553	11	3924	Utility Reverse kW Fault	Root Cause Not Known	Utility Reverse kW Fault - Condition Exists
524286	31	952	Reserved for temporary use	Not Available or Condition Exists	Reserved for temporary use - Condition Exists
524286	31	953	Reserved for temporary use	Not Available or Condition Exists	Reserved for temporary use - Condition Exists

Options

IQ System

NOTICE

Do not operate aftercooler at temperatures less than 36° F (2° C) unless equipped with Low Ambient IQ option.

The IQ System is a complete, self-contained system which provides cooler, cleaner air than from a standard portable compressor. The system utilizes an integral aftercooler, high-efficiency filtration, and a patented condensate disposal system to provide cool, clean air.

The condensate disposal system injects all liquid condensed from the moisture separator and filters into the engine exhaust system where it is vaporized by heat. This eliminates the need for collecting and disposing of the condensate, which is often regulated by local, state, and/or federal regulations.

The IQ System automatically adjusts movable louvers to control airflow through the aftercooler, ensuring compressed air temperature always remains above freezing temperatures (typically 45° F (7° C) at any ambient temperature down to the low limit of the ambient temperature range. This eliminates the need for AC heat tracing systems or any manual adjustment to prevent freezing of the compressed air system. All drain points for the condensate handling system are heated with 24 VDC heaters which are integral to the compressor heater system.

IQ Theory of Operation

⚠ CAUTION

The compressor regulation system is adjusted to maintain regulated pressure at the separator tank. Do not adjust regulation to provide full rated pressure at the service valve when the IQ system is enabled. This will result in operation at excessive horsepower levels, causing overheating, reduced engine life, and reduced airend life.

NOTICE

Keep all doors and panels closed during operation to direct proper flow of cooling air across the aftercooler and maintain aftercooling performance.

IQ Theory of Operation (Continued)

The compressed air exits the Separator Tank through the top cover piping and can then travel along one of two paths selectable via manual valving. These valves can be locked to prevent unauthorized redirection of the discharge air between Standard and IQ Operation.

If the IQ System is enabled by proper setting of the selector valve, the compressed air first enters the aftercooler. The aftercooler is cooled by the incoming compressor package air, which is controlled by movable louvers mounted on the aftercooler. In most conditions, the louvers are fully open and maximum aftercooling is available. The compressed air and condensate (water with a small amount of compressor oil) exits the aftercooler and enters the moisture separator where most of the condensate is removed. The compressed air then flows through two stages of filtration, where the aerosol oil is removed down to approximately 0.01 ppm and all particulates are removed down to 0.01 micron.

At the bottom of the moisture separator and both filters are strainers and constant-bleed orifices which are sized to allow the maximum flow of condensate while minimizing compressed air loss. The condensate lines are then piped together, and the condensate is injected at a single point into the engine exhaust piping.

After removing the condensate and filtering, the compressed air then travels through IQ Minimum Pressure Valve and out through the IQ Service Air Valve (see IQ System Configuration later in this section.)

The Air Pressure Gauge on the instrument panel indicates the pressure inside the Separator Tank. If the IQ System is bypassed (Standard Operation selected), the delivered air pressure will be approximately equal to the Separator Tank pressure. If the IQ System operation is selected, the delivered air pressure will be slightly less, depending on the restriction of the filters

Low Ambient Option Operation

When the ambient temperature falls to the point that the aftercooler outlet temperature is approaching 45° F (7° C), the Temperature Control Unit (TCU), mounted behind the control panel, will automatically adjust the louvers to control the cooling airflow through the aftercooler

There are no user selectable or serviceable components in the TCU. Contact factory service if any abnormal operation of the low ambient temperature system occurs.

IQ System Configuration and Maintenance

Daily Maintenance

⚠ CAUTION

Excessively restricted filter elements may cause an increase in the amount of aerosol water and oil carryover which could result in damage to downstream equipment. Normal service intervals should not be exceeded.

⚠ CAUTION

Blockage of the drain lines can result in flooding of the vessels with condensate. If flooding occurs, excessive condensate may enter the airstream and could result in damage to downstream equipment.

Verify, during full load (maximum compressed air delivery) operation, the IQ System filter restriction is not excessive. Filter restriction can be checked at the control panel. The compressor will shutdown if restriction exceeds recommended values (See Figure 30).

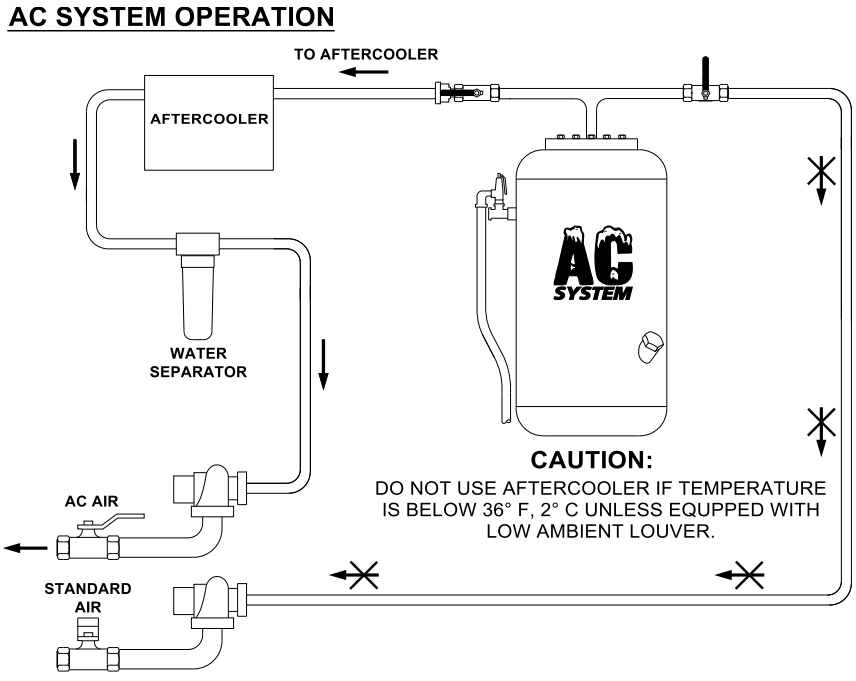


Figure 30 AC System Operation

Weekly Maintenance

- Remove Y-strainer screens at the bottom of the moisture separator and both filters. Clean out any residue.
- Verify the orifices below the Y-strainers are not clogged.
- Verify the piping from the orifice purge points to the exhaust system is not clogged.

Yearly Maintenance

⚠ CAUTION

Excessively restricted filter elements may cause an increase in the amount of aerosol water and oil carryover, which could result in damage to downstream equipment. Normal service intervals should not be exceeded.

The normal maintenance interval on the primary and secondary IQ System filter elements is one year (earlier if pressure drop becomes excessive). High filter restriction will shutdown the compressor if restriction exceeds recommended values (See Figure 31).

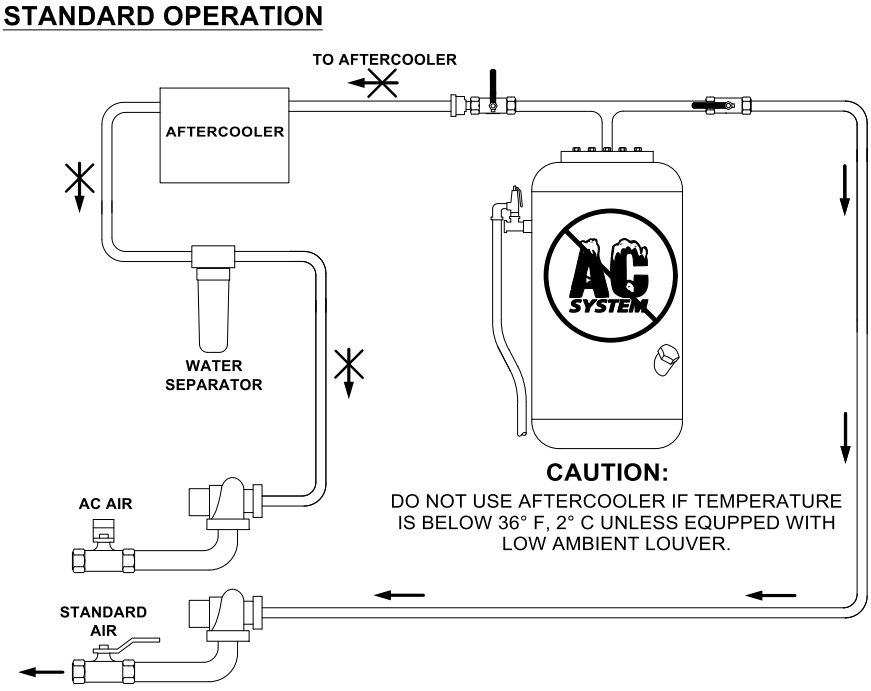


Figure 31 Standard Operation

Filter Replacement

- With engine shutdown, ensure pressure is relieved from air system.
- Disconnect drains on the bottom of each filter housing. Inspect fittings and hoses for any blockage. Clean if necessary.
- Using a chain wrench or similar tool, loosen the housing. The housing should be removed by hand after initial loosening, taking care to prevent the housing from falling.
- Remove and replace the filter element being careful not to damage outer wrap.

NOTE

Remove complete canister. Removing bottom only will not allow element replacement.

- Remove the filter element.
- Verify the part number and positions of new element vs. old element, as the two IQ filter stages are of different media.
- Put a small amount of petroleum jelly or other non-synthetic grease on the element O-ring to aid installation into the filter head.
- Replace housing, making sure to not overtighten.
- Repeat the above procedure on the remaining filter element.
- Reconnect drains on the bottom of each filter housing.

Torque Values

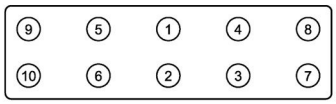
Torque Values

Fasteners

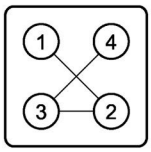
See the following pages for inch torque chart, metric torque chart and wheel torque chart. All fasteners should be torqued in accordance to size and grade.

Table 1 Inch Fasteners

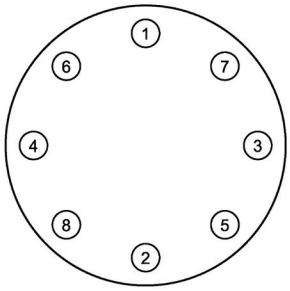
TABLE 1 INCH FASTENERS				
CAPSCREW OR NUT THREAD SIZE AND PITCH	NOMINAL DESIGN TORQUE			
	8AE J249 GRADE 5 (HEAD MARKING)		8AE J249 GRADE 8 (HEAD MARKING)	
	(Nm.)	(FT–LBF)	(Nm.)	(FT–LBF)
1/4 – 20	11	8	16	12
5/16 – 18	24	17	33	25
3/8 – 16	42	31	59	44
7/16 – 14	67	49	95	70
1/2 – 13	102	75	144	106
9/16 – 12	148	109	208	154
5/8 – 11	203	150	287	212
3/4 – 10	361	266	509	376



TYPICAL RECTANGULAR TORQUE PATTERN



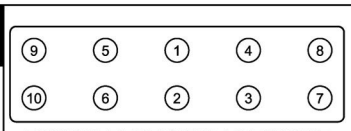
TYPICAL SQUARE TORQUE PATTERN



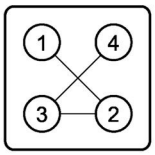
TYPICAL CIRCULAR TORQUE PATTERN

Table 2 Metric Fasteners

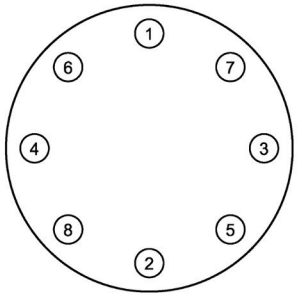
TABLE 2 METRIC FASTENERS						
CAPSCREW OR NUT THREAD SIZE AND PITCH	NOMINAL DESIGN TORQUE					
	PROPERTY GRADE 8.8 (HEAD MARKING)		PROPERTY GRADE 10.9 (HEAD MARKING)		PROPERTY GRADE 12.9 (HEAD MARKING)	
	(Nm.)	(FT–LBF)	(Nm.)	(FT–LBF)	(Nm.)	(FT–LBF)
M6 X 1.0	11	8	15	11	18	13
M8 X 1.25	26	19	36	27	43	31
M10 X 1.5	52	38	72	53	84	62
M12 X 1.75	91	67	126	93	147	109
M14 X 2	145	107	200	148	234	173
M16 X 2	226	166	313	231	365	270
M20 X 2.5	441	325	610	450	713	526



TYPICAL RECTANGULAR TORQUE PATTERN



TYPICAL SQUARE TORQUE PATTERN



TYPICAL CIRCULAR TORQUE PATTERN

NOTE

Cooling Fan Drive Bolts (10.9 M8 x 1.25) should be torqued to 23 Nm (17 ft-lb). Separator Lid Max Bolt torque: 166 (ft-lb).

Table 3 Wheel Torque Chart

Wheel Torque Chart - Inch	
M12 Bolts	**Torque (Ft-Lbs)**
13” Wheel	60-70
1/2” Lug Nuts	**Torque (Ft-Lbs)**
13” Wheel	80-90
15” Wheel	105-115
16” Wheel	105-115
16.5” Wheel	105-115
5/8” Lug Nuts	**Torque (Ft-Lbs)**
16” Wheel	190-210
17” Wheel	190-210
17.5” Wheel	190-210
Clamp Nuts/Demountable Wheels	
9/16” Clamp Nuts	**Torque (Ft-Lbs)**
14.5” Wheel	105-115

Wheel Torque Chart - Metric		
	Torque (N-m)	**Torque (Ft-Lbs)**
M12 Bolts	85-95	62-70
M14 Bolts	145-155	107-115
M16 Bolts	175-185	129-137
M18 Bolts	205-215	151-159

Warranty

Warranty

Doosan Portable Power General Warranty Information

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Doosan Portable Power General Warranty Information

The following charts summarize the general warranty information for Doosan Portable Power machines and the applicable warranty for your specific machine is available at:
http://www.doosanportablepower.com/en/aftermarket/warranty

Compressors

Products	Package	Airend	Extended Coverage	
			Package	Airend
Portable Compressors	1 yr / 2000 hrs Parts & Labor	2 yrs / 4000 hrs Parts & Labor	N/A	*5 yrs / 10000 hrs limited optional warranty

Electric Compressors

Products	Package	Airend	Extended Coverage	
			Package	Airend
Electric Compressors	1 yr / 2000 hrs Parts & Labor	2 yrs / 4000 hrs Parts & Labor	N/A	*5 yrs / 10000 hrs limited optional warranty

* The limited optional warranty is automatically available when the initial user registers their machine prior to expiration of the standard warranty and can demonstrate that the following conditions have been met during the warranty period:

1. All maintenance is completed at prescribed intervals using only genuine Doosan parts, fluids, and filters.
2. The original airend/engine is returned assembled and unopened.
3. The starter, alternator, fuel system components, all electrical components, and all NHP models are excluded from this optional warranty.
4. To register please click the following link: http://go.doosanportablepower.com/extendedwarranty, or contact your local Doosan Portable Power dealer.

Generators

Products	Package	Generator	Extended Coverage	
			Package	Generator
Portable Generators 10 KVA thru 570 KVA	1 yr / 2000 hrs Parts & Labor	2 yrs / 4000 hrs Parts & Labor	N/A	N/A

Lighting

Products	Package	Generator	LED Fixture and Driver
Lighting Systems	2 yrs / 2000 hrs Parts & Labor	2 yrs / 4000 hrs Parts & Labor	5 yrs / Parts & Labor
Balloon Light	1 yr Parts & Labor	6 months Parts & Labor	N/A

Light Compaction

Products	Package	Extended Coverage	
Light Compaction Equipment Plate & Drum Compactors, Rammers	1 yr Parts & Labor	N/A	N/A

Truck Mounted Equipment

DOOSAN

Truck Mounted Equipment

Products	Package	Airend	Extended Coverage	
			Package	Airend
Truck Mounted Equipment	1 yr / 2000 hrs Parts & Labor	2 yrs / 4000 hrs Parts & Labor	N/A	*5 yrs / 10000 hrs limited optional warranty

Compressor Modules

Products	Package	Airend	Extended Coverage	
			Package	Airend
Compressor Modules	1 yr / 2000 hrs Parts & Labor	2 yrs / 4000 hrs Parts & Labor	N/A	*5 yrs / 10000 hrs limited optional warranty

* The limited optional warranty is automatically available when the initial user registers their machine prior to expiration of the standard warranty and can demonstrate that the following conditions have been met during the warranty period:

1. All maintenance is completed at prescribed intervals using only genuine Doosan parts, fluids, and filters.
2. The original airend/engine is returned assembled and unopened.
3. The starter, alternator, fuel system components, all electrical components, and all NHP models are excluded from this optional warranty.
4. To register please click the following link register please click the following link: http://go.doosanportablepower.com/extendedwarranty, or contact your local Doosan Portable Power dealer.

Replacement Parts

Parts	Months	Hours
Doosan	6	No Limit
This parts warranty applies for replacement parts only. If a replaced part fails within six months of installation, a Parts Claim may be submitted. Invoice is required for purchased part that failed.		

ALL WARRANTIES PROVIDED BY DOOSAN PORTABLE POWER HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED (EXCEPT THAT OF TITLE), AND THERE ARE NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL DOOSAN PORTABLE POWER OR ITS AUTHORIZED DEALERS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES WHATSOEVER, WHETHER BASED ON CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY, STATUTE OR OTHERWISE, EVEN IF DOOSAN PORTABLE POWER OR ITS AUTHORIZED DEALERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE TOTAL LIABILITY OF DOOSAN PORTABLE POWER AND ITS AUTHORIZED DEALERS WITH RESPECT TO THE PRODUCT FURNISHED SHALL NOT EXCEED THE PURCHASE PRICE OF THE PRODUCT.

It is the selling dealer's responsibility to register each product sold on Doosan's Warranty Website by entering current customer information and warranty start date. Any changes in ownership thereafter may be submitted to Doosan Portable Power by completing an Equipment Transfer Request. This form may be found at the Doosan website under Aftermarket > Warranty

http://www.doosanportablepower.com/en/aftermarket/warranty

Doosan Infracore Federal & California Emission Control Systems Limited Warranty for Non-Road Engines (CI)

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FEDERAL & CALIFORNIA EMISSION CONTROL SYSTEMS
LIMITED WARRANTY for NON-ROAD ENGINES (CI)

OWNER'S WARRANTY RIGHTS AND OBLIGATIONS

The U.S. Environmental Protection Agency (EPA), the California Air Resources Board (ARB), and Doosan Infracore are pleased to explain the Federal and California Emission Control System Warranty on your 2017MY to 2019MY non-road engine. DOOSAN INFRACORE has designed, built and equipped the engine so as to conform at the time of sale with all applicable regulations of the EPA and of the California ARB. In California, new heavy-duty off-road engines must be designed, built and equipped to meet the State's stringent anti-smog standards.

Doosan Infracore must warrant to the initial owner, and each subsequent owner, the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect, improper maintenance or unapproved modifications of your engine. Your emission control system may include those parts listed below:

1. **Fuel Metering System**
   Fuel Supply Pump (HP Pump), Injector, Common Rail, Glow Plug
2. **Air-Induction System**
   Intake Manifold, Turbocharger System
3. **Exhaust Gas Recirculation (EGR) System**
   EGR Valve, EGR Cooler
4. **Catalyst or Thermal Reactor System**
   Diesel Oxidation Catalyst (DOC), Exhaust Manifold
5. **Positive Crankcase Ventilation (PCV) System**
   PCV Valve
6. **Electronic Control System**
   ECU, Cam / Crank Sensor, Coolant Temperature Sensor, MAF Sensor, MAP Sensor (Manifold Pressure Sensor), Inlet Boost Temperature Sensor, Fuel Temperature Sensor, Common Rail Pressure Sensor
7. **Miscellaneous Items Used In Above Systems** Temperature and time sensitive valve and switches Solenoids and wiring harnesses, hoses, clamps, fittings and tubing, sealing gasket, pulleys, belts and idlers, Emission control information labels

When a warrantable condition exists, DPP will repair your heavy-duty off-road engine at no cost to you, including diagnosis, parts, and labor.

MANUFACTURER'S WARRANTY COVERAGE

The 2017MY to 2019MY heavy-duty off-road engines are warranted for **five years or 3,000 hours** of operation, whichever occurs first. If any emission-related part on your engine is defective, the part will be repaired or replaced by DPP. The warranty period shall begin on the date the machine is delivered to the first retail customer.

OWNER'S WARRANTY RESPONSIBILITIES

As a Doosan off-road engine owner, you are responsible for the performance of the **required maintenance listed in the Operation and Maintenance Manual**. DPP recommends that you retain all receipts covering maintenance on your engine, but DPP cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

However, you should be aware that Doosan may deny you warranty coverage if your heavy-duty off-road engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

Your engine is designed to operate on **Ultra Low Sulfur Diesel Fuel Only**. Use of any other fuel may result in your engine no longer operating in compliance with the EPA's emissions requirements.

You are responsible for initiating the warranty process. The EPA and California ARB suggest that you present your machine to your Doosan Portable Power dealer as soon as a problem exists. The warranty repairs should be completed by the dealer as expeditiously as possible.

If you have any questions regarding your warranty rights and responsibilities, please contact your nearest authorized Doosan Portable Power dealer: go to http://www.doosanportablepower.com and click on Our Company > Our Dealer Network, call 1-800-633-5206, or mail:

Attn: Technical Services Dept.
Doosan Portable Power
1293 Glenway Drive
Statesville, NC 28625

Corp. R&D Div. 1 of 1

Revision History

REV.	DATE	DESCRIPTION
A	09/17/2019	Original Release
B	02/04/2015	Updated Content
C	06/17/2015	Updated Content
D	07/05/2016	Updated Content
E	09/28/2018	Updated Content
F	10/07/2019	Updated Content, Revised Oil Chart

Doosan Infracore Portable Power
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DoosanPortablePower.com

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