



Doosan Infracore
Portable Power

COMPRESSORS MODEL:

P185WDOU-T4F (F89)
P185WDOU-T4F (H28)
XP185WDOUA-T4F (F91)
XP185WDOUA-T4F (H29)

Doosan Infracore Portable Power
1293 Glenway Drive
Statesville, N.C. 28625
DoosanPortablePower.com

P/N: 46680186 (2015) Rev C



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.

TABLE OF CONTENTS

TITLE	PAGE
.....	iii
FOREWORD	11
Information	12
SAFETY	15
Safety Precautions	16
Compressed Air	17
Safety Information	18
Compressor Description and Intended Use	18
Operating Safety	20
Service Safety	22
Visual Walk Around and Inspection	23
Operator Safety while using Internal Combustion Engines	24
Operating Safety	24
Battery	25
Exhaust System	25
Coolant System	26
Materials	27
Service Air Connection(s)	28
Air Hose Restraint Installation	29
Fuel Safety	29
Safety Decals	30
Safety Decals Summary	31
Safety Decals (continued)	32
Safety Decals (continued)	33
Safety Decals (continued)	34
Safety Symbols	35
Safety Symbols (continued)	36
LIFTING, TRANSPORTING AND PREPARATION	37
Lifting, Transporting and Preparation	38
Introduction	38
Lifting the Compressor	38
Lifting the Compressor	39
Compressor Mounting	39
Utility Package Set-Up (No Running Gear)	40
Preparing for First Use	41
Setting Up the Compressor	41
Fueling (Refueling) the Fuel Tank	42
Lubrication	44
Engine Oil	44
Compressor Oil	45

TABLE OF CONTENTS

TITLE	PAGE
Preparation for Storage.....	45
NOISE EMISSION.....	47
Noise Emission.....	48
Compressor Noise Emission Control Information	48
Noise Introduction.....	49
Maintenance Schedule.....	49
Noise Emission Warranty	51
Maintenance Log.....	51
Maintenance Record.....	52
GENERAL DATA	53
General Data for P185WDOU-T4F	54
General Data for XP185WDOUA-T4F.....	55
HP Available for Auxiliary Power Use	56
XP185WDOUA-T4F Model.....	56
OPERATING INSTRUCTIONS	57
Control Panel.....	58
Instrument Control Panel.....	58
Instrument Control Panel Indicators	59
Auto Power Off.....	60
Quick View Screens.....	61
Fault and Alert	62
Service Interval Setup.....	64
Display Setup.....	66
Languages and Units.....	67
Before Startup	68
Before Starting the Compressor.....	68
Starting Procedure.....	71
Normal Operation	73
Operation-Loaded.....	73
Operation-Unloaded	73
Shutdown.....	74
Pressure Regulator Adjustment Instructions	76

TABLE OF CONTENTS

TITLE	PAGE
ENGINE OPERATION.....	77
Engine Operation and Maintenance.....	78
Engine Management.....	78
Safety.....	80
Instructions.....	81
Instructions (continued).....	82
General Repair.....	84
Environmental Pollution.....	85
Prevention of Pollution.....	86
Startup and Shutdown.....	87
Inspection after Starting the Engine.....	89
Break-in Period of Engine.....	90
Operation in Winter.....	93
Regular Inspection.....	94
Replacement of Engine Oil.....	95
Procedure for Changing Oil and Oil Filter.....	96
Step 1 Component Locations.....	96
Step 2 Checking Oil Level.....	98
Step 3: Check Oil Level A-B Limits.....	100
Step 4 Drain Engine Oil.....	102
Step 5: Replacing Oil Filter.....	104
Step 6: Final Inspection for Leaks.....	106
Coolant.....	108
Checking the Coolant.....	109
Replenishment of Coolant.....	112
Replacement of Coolant.....	113
LUBRICATION.....	115
General Lubrication Information.....	116
Compressor Oil Change.....	116
Compressor Oil Chart.....	118
MAINTENANCE.....	121
General Maintenance Information.....	122
Maintenance Precautions.....	123
Scheduled Maintenance.....	125
Compressor Oil Level.....	125
Scavenge Line.....	126
Compressor Oil Filter.....	127
Compressor Oil Separator Element.....	128
Compressor Oil Cooler, Engine Radiator, and other Heat Exchangers.....	130
Air Filter Elements.....	131
Gauges.....	133

TABLE OF CONTENTS

TITLE	PAGE
Cooling Fan Drive	133
Fuel System	133
Diesel Exhaust Fluid	133
Fuel Filter Water Separator	133
Charge Air Cooler Pipework	133
Radiator	134
Hoses	134
Ventilation	134
Electrical System	135
Battery	135
Pressure System	135
Tire Pressure	135
Fasteners	136
Running Gear/Wheels	136
Lubrication	136
Engine Oil	136
Compressor Oil	137
Bearing Lubrication	138
Exterior Finish Care	139
Field Replacement of Exterior Decals	140
TROUBLESHOOTING	141
Introduction	142
Troubleshooting Chart	143
Diagnostic Codes	149
COMPRESSOR DIAGNOSTIC CODES	151
Compressor Diagnostic Codes	152
ENGINE FAULT CODES	157
Engine Fault Code List	158
Engine Fault Code List	159
Engine Fault Code List	160
Engine Fault Code List	161
Engine Fault Code List	162
Engine Fault Code List	163
Engine Fault Code List	164
Engine Fault Code List	165
Engine Fault Code List	166
Engine Fault Code List	167
Engine Fault Code List	168
PREVENTIVE MAINTENANCE SCHEDULE (PMS)	169

TABLE OF CONTENTS

TITLE	PAGE
Preventive Maintenance Schedule (PMS)	170
TORQUE VALUES.....	171
Torque Values	172
Torque Values (Continued)	173
WIRING DIAGRAMS.....	175
Compressor and Engine Harness	176
.....	177
.....	178
.....	179
.....	180
Compressor and Engine Control System	181
.....	182
.....	183
P185WDOU Generator Option.....	184
.....	185
Electrical Parts List.....	186
.....	187
WARRANTY.....	189
Warranty	190
Doosan Portable Power General Warranty Information.....	190
Truck Mounted Equipment	191
Doosan Infracore Federal & California Emission Control Systems Limited Warranty for Non-Road Engines (CI).....	192
Revision History	193



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 Infracore 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 Infracore 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.

Use the QR Code on the compressor to order the Parts Book for ordering replacement parts.

When ordering parts or requesting service information, be prepared to provide the compressor model number, item number, revision number, and serial 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. **If in doubt, consult supervision.**

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.

Foreword

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.

The information during the preparation of this manual, every effort was made to ensure the accuracy and adequacy of the contents. 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

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 blade 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.

Safety

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 stopped with pressure in the separator tank or piping.

Safety Information

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.

Safety

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.



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 Infracore Portable Power.

Operating Safety



Familiarity and proper training are required for the safe operation of the compressor. Compressor 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.
- Are 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.

Safety

Only trained personnel are permitted to start, operate, and shut down the compressor. They also must meet the following guidelines below for operating the compressor safety:

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.

Service Safety



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.

Personal Protective Equipment (PPE)

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.

Safety

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.

Visual Walk Around and Inspection

Check the controller daily for faults. Visually check all hoses and connections for leaks. Make sure there are no obstructions in the path of the cooling, intake and exhaust air. Ensure that all safety and protective devices are installed properly. On diesel fuel unit check fuel level.

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.

Battery



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

 **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 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.

 **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 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.

Safety

Materials



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



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 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) **WARNING**

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).

 **WARNING**

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.

 **WARNING**

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).

Safety

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.

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.

Safety Decals Summary

Look for these safety decals 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. If you do not understand, inform your supervisor.

Decals are located on the compressor to point out potential safety hazards. Read and follow these instructions. If you do not understand these instructions, inform your supervisor.



(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 (continued)

Below is a summary of safety decals which may be included on your compressor.

32
km/h

WARNING

Excessive Towing Speed.
Can Cause Serious Injury or Death.
Do Not Tow On Highway.
Do Not Exceed 20 mph (32 km/h).

2205791 REV. A

WARNING

Combustible gas.
Can cause serious burns, blindness or death.
Keep sparks and open flames away from batteries.

5456753 REV. C

WARNING

Falling off machine.
Can cause serious injury or death.
Access lifting bail from inside machine.

54604939 REV. C

24
km/h

WARNING

Excessive Towing Speed.
Can Cause Serious Injury or Death.
Do Not Tow On Highway.
Do Not Exceed 15 mph (24 km/h).

54699392 REV. B

WARNING

Hot Surfaces.
Serious injury or death can occur.
Do not touch components.
Allow machine to cool before touching.

22334916 REV. B

WARNING

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

5456761 REV. C

WARNING

Door under pressure.
Can cause serious injury.
Use both hands to open door when machine is running.

54604988 REV. C

WARNING

MACHINE WILL START 10 SECONDS AFTER ALARM SOUNDS.
CAN CAUSE SERIOUS INJURY OR DEATH.
GET CLEAR OF MACHINE.
TURN MAIN POWER SWITCH OFF AND DISCONNECT BATTERY BEFORE SERVICING.

46091972 REV. A

WARNING

Hot Exhaust Gas. Hot Surfaces.
Risk of Ignition.
Can cause serious injury or death.
Do NOT Operate Machine on, under or near flammable materials.

4659983 REV. A

WARNING

Rotating fan blade.
Can cause serious injury.
Do not operate without guard in place.

5456773 REV. C

WARNING

Risk of electric shock.
Hazardous voltage.
Can cause serious injury or death.
Disconnect power before servicing.
Lockout / tagout machine.

54605027 REV. D

WARNING

High pressure air.
Can cause serious injury or death.
Relieve pressure before removing filter plugs/caps, fittings or covers.

5469785 REV. C

DANGER

Discharged air can contain carbon monoxide or other contaminants.
Will cause serious injury or death.
Do not breathe this air.

5456787 REV. C

WARNING

Improper operation of this equipment.
Can cause serious injury or death.
Read Operator's Manual supplied with this machine before operation or servicing.
Modification or alteration of this machine.
Can cause serious injury or death.
Do not alter or modify this machine without the express written consent of the manufacturer.

5456787 REV. C

WARNING

DO NOT OPERATE UNIT WITHOUT GUARD IN PLACE SERIOUS INJURY CAN OCCUR.

46576740 REV. A

105
km/h

WARNING

Collapsing jackstand.
Can cause serious injury.
Insert locking pin completely.
Excessive towing speed.
Can cause serious injury or death.
Do NOT exceed 65 mph (105 km/hr).

5466805 REV. C

WARNING

Trapped air pressure.
Can cause serious injury or death.
Close service valve and operate tool to vent trapped air before performing any service.

54629802 REV. C

DANGER

Discharged air can contain carbon monoxide or other contaminants.
Will cause serious injury or death.
Do not breathe this air.

5456787 REV. C

WARNING

Trapped air pressure.
Can cause serious injury or death.
Close service valve and operate tool to vent trapped air before performing any service.

54629802 REV. C

WARNING

Disconnected air hoses whip.
Can cause serious injury or death.
When using air tools attach safety device (OSHA Valve) at source of air supply for each tool.

54629802 REV. C

WARNING

Disconnected air hoses whip.
Can cause serious injury or death.
When using air tools attach safety device (OSHA Valve) at source of air supply for each tool.

54629844 REV. D

WARNING

FALLING OFF MACHINE CAN CAUSE SERIOUS INJURY OR DEATH.
USE LADDER AND HAND HOLDS TO ACCESS LIFTING BAIL.

22298343 REV. C

Safety Decals (continued)

Below is a summary of safety decals which may be included on your compressor.

CAUTION

PLUGGED CONDENSATE DRAINS
Air end damage and / or water in the discharge air can occur.
Weekly : Loosen drain connections at muffler while unit is operating. Lines are open if air and water escape. Clean as required.

22245773 REV. B

CAUTION

DO NOT USE ETHER.
ENGINE DAMAGE WILL OCCUR.
This engine is equipped with an electric heater starting aid.

54454756 Rev. E

CAUTION

DO NOT WELD.
ELECTRONIC DAMAGE WILL OCCUR.
This engine is equipped with an electronic engine controller and other electronic components.

54749205 REV. B

CAUTION

EQUIPMENT FALLING OFF FORKLIFT.
EQUIPMENT DAMAGE WILL OCCUR.
Use forklift points provided to lift equipment.

546049213 REV. B

Machine is equipped with a containment base and multiple drains.
New machines come from the factory with the drain plugs shipped loose. Drain plugs must be installed when containment is required.
Keep base clean. Drain or pump waste from the base whenever it accumulates.
Identify and repair any leaks. Dispose of waste in accordance with federal, state and local laws and regulations.

22164305 REV. B

USE LOW OR ULTRA LOW SULFUR DIESEL FUEL ONLY

23321961 REV. A

WARNING

Separator Tank Drain Under Pressure
Can cause serious injury.
Do NOT drain while tank is under pressure, first relieve pressure.

35899324 REV. B

NOTICE
COOLANT FILL INSTRUCTIONS

Adding:
Do NOT remove radiator cap. Top off at overflow reservoir. Use same anti-freeze mixture as in radiator.

Replacing:
With system cool, remove radiator cap. Drain coolant and close drain. At radiator, refill system. Replace radiator cap. At reservoir, fill to "Hot" level. Run for 30 minutes. Stop and allow to cool. At reservoir, add coolant as necessary to reach

54604962 REV. D

NOTICE

REMOVE THIS PANEL TO CLEAN COOLERS

DO NOT OPERATE MACHINE WITH PANEL REMOVED.

36529691 REV. C

NOTICE

DIESEL EXHAUST FLUID (DEF) ONLY
USE API-CERTIFIED DEF WHICH MEETS ISO 22241

46652596 REV. A

NOTICE

LIFT POINT

54699400 REV. B

USE LOW OR ULTRA LOW SULFUR DIESEL FUEL ONLY

23321961 REV. A

NOTICE

WHEN COOLANT DOES NOT SHOW IN SIGHT BUBBLE, ADD COOLANT AS REQUIRED TO FILL.

35821883 REV. B

LIFT

36513026

NOTICE

CORROSIVE
MAY CAUSE PROPERTY DAMAGE
DIESEL ENGINE EXHAUST FLUID. DO NOT SPILL.

46666162 REV. B

WARNING

Crush area.
Can cause serious injury.
Stay clear.

36520955 REV. D

MANUFACTURED FOR USE OUTSIDE U.S.A.

(Not compliant with EPA Law 40 CFR 89.112)

Doosan Infracore Portable Power
Statesville, NC 28625 U.S.A.

35821883 Rev. B

HIGH PRESSURE **LOW PRESSURE**



AFTERCOOLED AIR

TIRE AND LOADING INFORMATION

The weight of cargo should never exceed 159 kg. or 350 lbs.

TIRE	SIZE	COLD TIRE PRESS. (KPA / LBS)	SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION
STD.	ST235/80R16	448 / 65	
OPT.			

22743819 REV. B

Safety Decals (continued)

Below is a summary of safety decals which may be included on your compressor.

NOTICE

BEFORE TOWING

- ENSURE TOWING VEHICLE HAS TOWING CAPACITY FOR WEIGHT OF THIS UNIT.
- CHOCK WHEELS AND SET PARKING BRAKE IF EQUIPPED.
- CHECK PINTLE EYE BOLTS FOR ANY LOOSENESS OR WEAR.
 - TIGHTEN OR REPLACE AS REQUIRED.
- POSITION TOW VEHICLE TO ALIGN HITCH WITH PINTLE EYE.
- STAND ASIDE WHILE:
 - OPERATING JACK TO SEAT PINTLE EYE ONTO HITCH.
 - SECURING HITCH.
 - ATTACHING SAFETY CHAINS PER ILLUSTRATION.
 - ATTACHING BRAKE ACTUATOR BREAKAWAY CHAIN / CABLE (IF APPLICABLE).
 - CONNECTING LIGHTING PLUG (IF APPLICABLE).
 - CONNECTING ELECTRIC BRAKE PLUG (IF APPLICABLE).
 - REMOVING WHEEL CHOCKS AND RELEASING PARKING BRAKE IF EQUIPPED.
 - TEST BRAKES.

DISCONNECT

- CHOCK WHEELS AND SET PARKING BRAKE IF EQUIPPED.
- STAND ASIDE WHILE:
 - DISCONNECTING SAFETY CHAINS.
 - DISCONNECTING BRAKE ACTUATOR BREAKAWAY CHAIN/CABLE (IF APPLICABLE).
 - DISCONNECTING LIGHTING PLUG (IF APPLICABLE).
 - DISCONNECTING ELECTRIC BRAKE PLUG (IF APPLICABLE).
 - OPERATING JACK TO RAISE PINTLE EYE FROM HITCH.
- MOVE TOW VEHICLE.
- LEVEL MACHINE.

36530533 REV. C

Doosan Infracore
Portable Power

COMPRESSOR NOISE EMISSION CONTROL INFORMATION

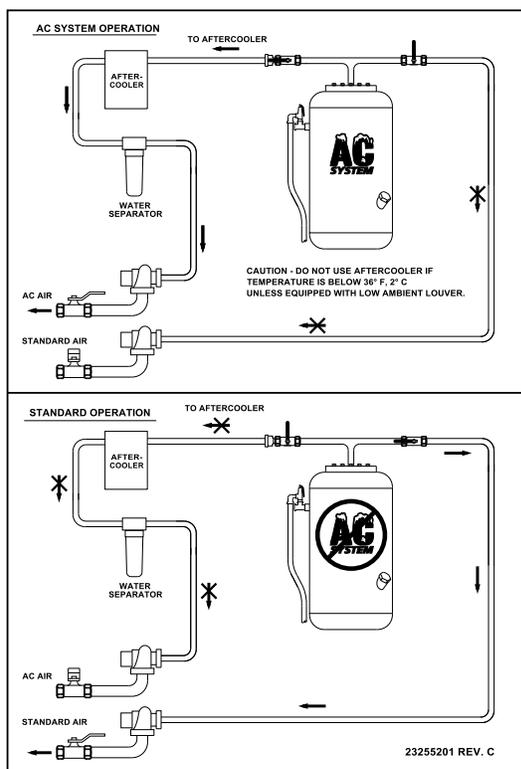
THIS COMPRESSOR CONFORMS TO U.S. E.P.A. REGULATIONS FOR NOISE EMISSIONS APPLICABLE TO PORTABLE AIR COMPRESSORS. THE FOLLOWING ACTS OR THE CAUSING THEREOF BY ANY PERSON ARE PROHIBITED BY THE NOISE CONTROL ACT OF 1972:

(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



NOTICE

BEFORE TOWING

- ENSURE TOW VEHICLE HAS TOWING CAPACITY FOR WEIGHT OF THIS UNIT.
- CHOCK WHEELS AND SET PARKING BRAKE IF EQUIPPED.
- CHECK PINTLE EYE BOLTS FOR ANY LOOSENESS OR WEAR.
 - TIGHTEN OR REPLACE AS REQUIRED.
- POSITION TOW VEHICLE TO ALIGN HITCH WITH PINTLE EYE.
- STAND ASIDE WHILE :
 - OPERATING JACKS TO SEAT PINTLE EYE ONTO HITCH.
 - SECURE HITCH.
 - ATTACHING SAFETY CHAINS PER ILLUSTRATION.
 - ATTACHING BRAKE ACTUATOR BREAKAWAY CHAIN / CABLE (IF APPLICABLE).
 - CONNECTING LIGHTING PLUG (IF APPLICABLE).
 - CONNECT ELECTRIC BRAKE PLUG (IF APPLICABLE).
 - REMOVE WHEEL CHOCKS AND RELEASE PARKING BRAKE IF EQUIPPED.
 - TEST BRAKES.

DISCONNECT

- CHOCK WHEELS AND SET PARKING BRAKE IF EQUIPPED.
- STAND ASIDE WHILE :
 - DISCONNECTING SAFETY CHAINS.
 - DISCONNECTING BRAKE ACTUATOR BREAKAWAY CHAIN / CABLE (IF APPLICABLE).
 - DISCONNECTING LIGHTING PLUG (IF APPLICABLE).
 - DISCONNECTING ELECTRIC BRAKE PLUG (IF APPLICABLE).
 - OPERATING JACKS TO RAISE PINTLE EYE FROM HITCH.
- MOVE TOW VEHICLE.
- LEVEL MACHINE.

54604921 REV. F

NOTICE

1. This Unit Equipped for Either AC System or Standard Operation.
2. For the AC System, Make Sure the System Valve is in the AC System Operation Position.
3. See the Valve Position Instruction Decal Located on the Separator Tank to Verify Valving is in the Correct Position Prior to Operation.

23255227 REV. B

Safety Symbols

Below is summary of the intended meanings for the symbols used on safety compressor.

Graphic Images and Meanings of ISO Symbols



Do Not Weld



Warning Electric Shock



Warning Hot Surface



Corrosive Substance



Pressurized



No High Pressure Water Or Steam



Consult Operation And Maintenance Manual



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



Lift Location



No Open Flames



Do Not Lift



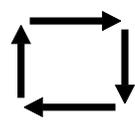
Guards Must Be Fitted



Stay Clear Of Rotating parts



Low or Ultra Low Sulfur Diesel



Machine May Start Automatically



Hand Crush Hazard



High Exhaust System Temperature



Fan Hazard



Diesel Exhaust Fluid



High Pressure

Safety Symbols (continued)

Below is summary of the intended meanings for the symbols used on safety compressor.

Graphic Images and Meanings of ISO Symbols (continued)



Automatic Start-up



Speed Designation



Forklift Load



Do Not Breath This Air



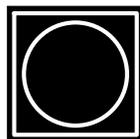
Do Not Use Ether



Air FLOW



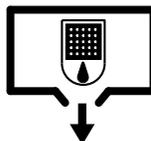
Do Not Attach to
Tow Vehicle



Emergency Stop



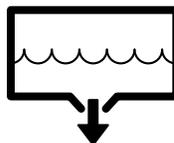
Hand Injury



Separator Tank Drain



Speed Designation



Moisture Drain



Speed Designation



Lifting, Transporting and Preparation

Lifting, Transporting and Preparation

Introduction



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

Loading and unloading or transporting the compressor shown below (See Figure 2-1):

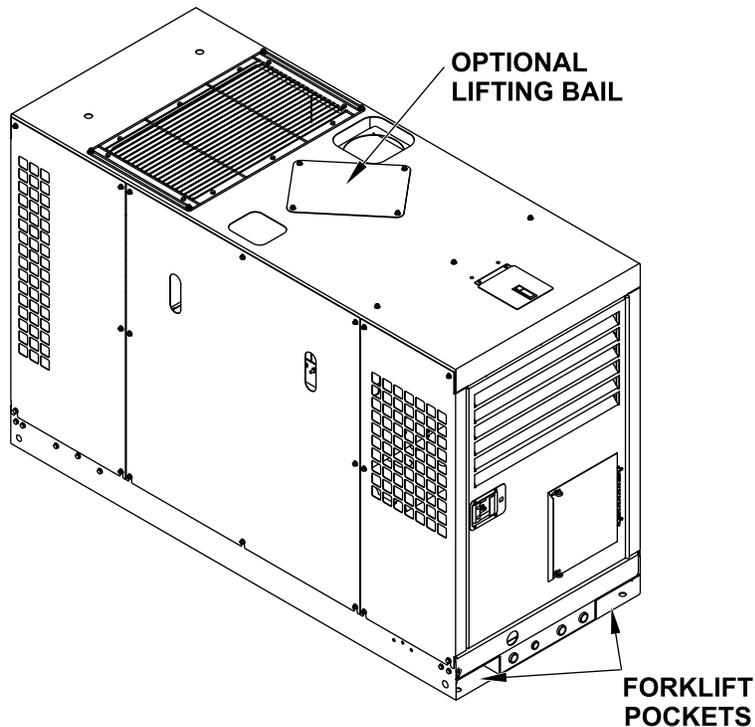


Figure 2-1: LIFTING THE COMPRESSOR

Lifting the Compressor



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 lift by the lifting bail provided. If no lifting bail is provided, then lift by using forklift either end of compressor (See Figure 2-1).

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, then weigh compressor before lifting.

Make sure lifting hook has a functional safety latch or equivalent and is fully engaged and latched on the lifting bail (if equipped) (See Figure 2-1).

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.

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)

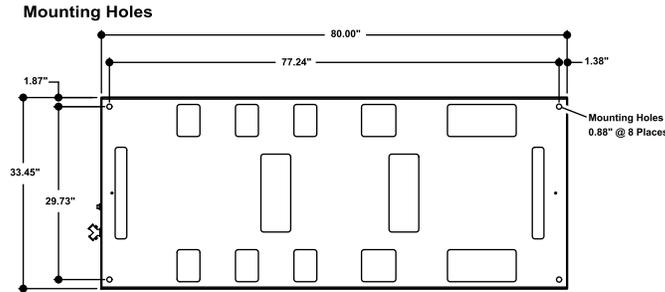


FIGURE X

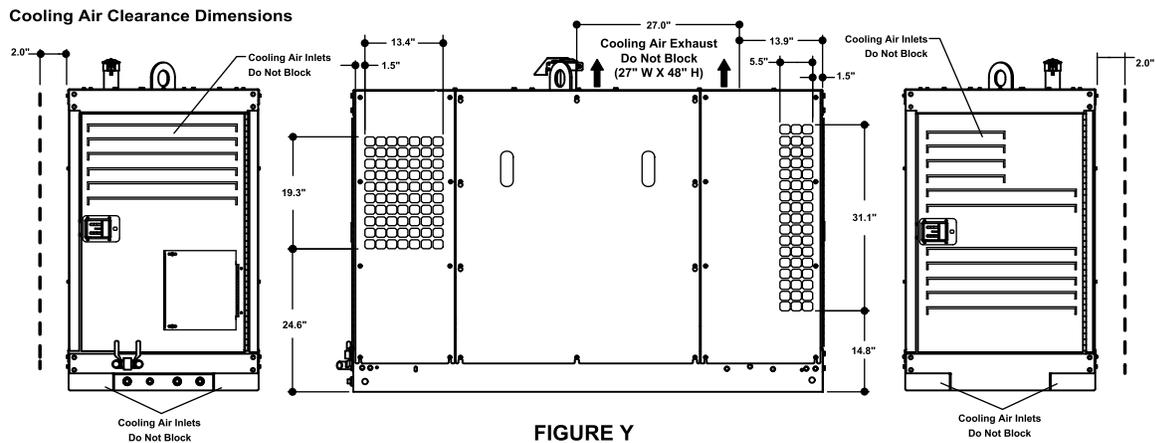


FIGURE Y

FIGURE 2-2: UTILITY PACKAGE SET-UP (NO RUNNING GEAR)

The unit must be secured while operating or transporting. The compressor must be located on vehicle bed to allow access of normal servicing and maintenance.

See Figure X (See Figure 2-2) for mounting base holes provided in base. The compressor should be hard mounted directly to the vehicle bed.

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.

The inlet and outlet grilles must not be restricted. See Figure Y (See Figure 2-2) for recommended clearance around the compressor. The cross-sectional area of any ductwork must be larger by a minimum of 10 percent.

Adjust raincap orientation and open away forward direction of truck.

The addition of any power-absorbing components (hydraulic pumps, paint mixers, etc.) must be approved by Portable Power to maintain the warranty.

Preparing for First Use



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. Add fluids as needed and applicable, including fuel, engine oil, and battery acid (if needed). This is described further in this chapter.
5. 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 hot air.
- Ensure all transport and packing materials are removed.

Fueling (Refueling) the Fuel Tank



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



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.



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.



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

Requirements

Before fueling (refueling) the fuel tank, perform the following steps:

- Compressor and fuel tank level with the ground.
- Fresh, clean fuel supply.

Lifting, Transporting and Preparation

Procedure for fueling (refueling) the fuel tank:

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.

Perform the procedure below for initial filling (refueling) of the fuel tank.

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 begin filling 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.

The procedure for fueling (refueling) the fuel tank is now complete.

NOTE

Cummins recommends the use of ASTM number 2D fuel for optimum engine performance.

Lubrication



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



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).



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.

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 (PMS).

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

This Section Pertains Only To 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 Above Information 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 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 page.

Maintenance Schedule

PERIOD	DESCRIPTION
As Detected	<p>COMPRESSED AIR LEAKS</p> <p>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).</p>
As Detected	<p>SAFETY AND CONTROL SYSTEMS</p> <p>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.</p>
Daily	<p>ACOUSTIC MATERIALS</p> <p>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.</p>
100 HOURS	<p>FASTENERS</p> <p>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.</p>
100 HOURS	<p>ENCLOSURE PANELS</p> <p>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.</p>

PERIOD	DESCRIPTION
100 HOURS	<p>AIR INTAKE AND ENGINE EXHAUST</p> <p>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.</p>
250 HOURS	<p>COOLING SYSTEMS</p> <p>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.</p>
250 HOURS	<p>ISOLATION MOUNTS</p> <p>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.</p>
See Operator Manual	<p>ENGINE OPERATION</p> <p>Inspect and maintain engine condition and operation as recommended in the manuals supplied by the engine manufacturer.</p>
See Operator Manual	<p>FUELS AND LUBRICANTS</p> <p>Use only the types and grades of fuels and lubricants recommended in the Operator and Maintenance Manual and Engine Manual.</p>

Noise Emission

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)

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.



General Data

General Data for P185WDOU-T4F

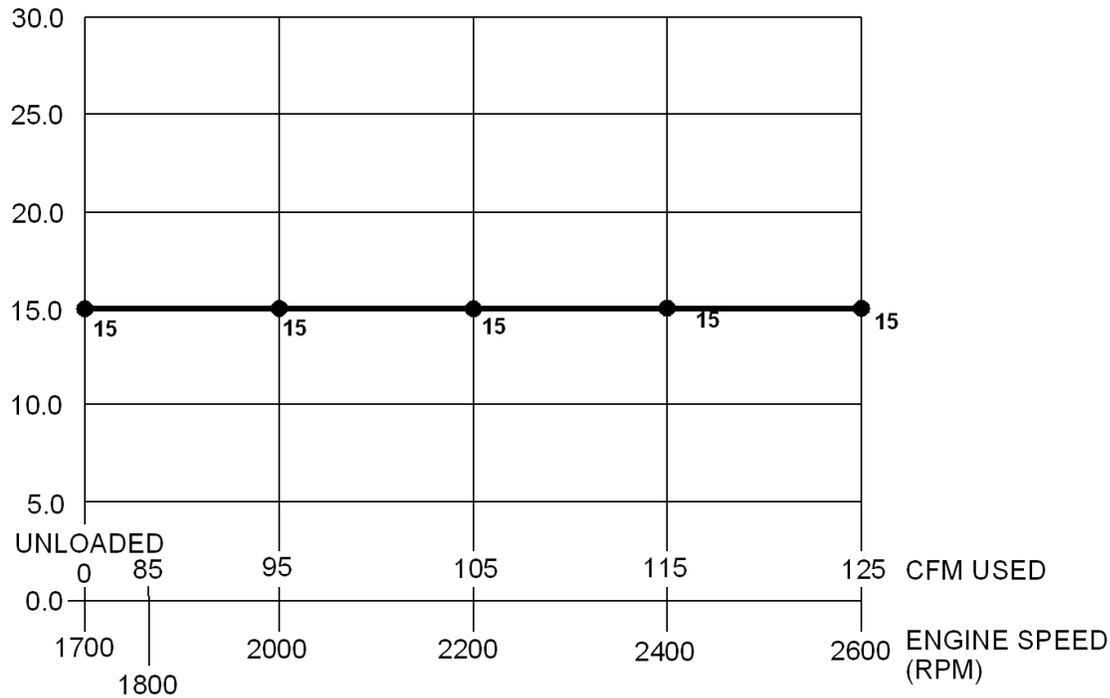
MODEL	P185WDOU-T4F
COMPRESSOR	
Air Delivery - cfm (m ₃ /min)	185 (87.0)
Rated Operating Pressure - psi (bar)	100 (6.9)
Safety Valve Setting - psi (bar)	200 (13.78)
ENGINE (Diesel)	
Manufacturer	Doosan
Model	D24 (49 HP)
Rated Power @ Full Load Speed - hp (kw)	49 (36.4) @ 2600 rpm
Full Load Speed - rpm	2600
Idle Speed - rpm	1700
Idle Speed (warm-up) - rpm	1700
Electrical System	12VDC
FLUID CAPACITIES	
Compressor Lubricant - gallon (litres)	3.5 (13.2 liters)
Engine Cooling System - gallon (litres)	3 (11.4 liters)
Engine Crankcase Lubricant - gallon (litres)	2.5 (9.5 liters)
Fuel Tank - gallon (litres)	28 (106 liters)
AMBIENT TEMPERATURE RANGE	
With Standard Features	10° F (-12° C) to 130° F (54.4° C)
OUT-OF-LEVEL	
Out-of-Level Operating Limit	10°
UNIT MEASUREMENTS & WEIGHTS	
Overall Length - feet (meters)	85.3 (2.17)
Overall Height - feet (meters)	52.5 (1.33)
Overall Width - feet (meters)	33.3 (0.85)
Operating Weight (with fuel) - lbs (kg)	2300 lbs. (1043 kg)
Shipping Weight (less fuel) - lbs (kg)	2100 lbs. (952 kg)

General Data

General Data for XP185WDOUA-T4F

MODEL	XP185WDOUA-T4F
COMPRESSOR	
Air Delivery - cfm (m ₃ /min)	185 (87.0)
Rated Operating Pressure - psi (bar)	125 (8.6)
Safety Valve Setting - psi (bar)	200 (13.78)
ENGINE (Diesel)	
Manufacturer	Doosan
Model	D24 (73 HP)
Rated Power @ Full Load Speed - hp (kw)	73 @ 2600 rpm
Full Load Speed - rpm	2600
Idle Speed - rpm	1700
Idle Speed (warm-up) - rpm	1700
Electrical System	12VDC
FLUID CAPACITIES	
Compressor Lubricant - gallon (litres)	3.5 (13.2 liters)
Engine Cooling System - gallon (litres)	3 (11.4 liters)
Engine Crankcase Lubricant - gallon (litres)	2.5 (9.5 liters)
Fuel Tank - gallon (litres)	28 (106 liters)
AMBIENT TEMPERATURE RANGE	
With Standard Features	10° F (-12° C) to 125° F (51.6° C)
OUT-OF-LEVEL	
Out-of-Level Operating Limit	10°
UNIT MEASUREMENTS & WEIGHTS	
Overall Length - feet (meters)	85.3 (2.17)
Overall Height - feet (meters)	52.5 (1.33)
Overall Width - feet (meters)	33.3 (0.85)
Operating Weight (with fuel) - lbs (kg)	2300 lbs. (1043 kg)
Shipping Weight (less fuel) - lbs (kg)	2100 lbs. (952.5 kg)

HP Available for Auxiliary Power Use



XP185WDOUA-T4F Model

NOTE

The XP185WDOU model is designed to have excess power available to allow power to be drawn from the engine to drive auxiliary equipment the customer may desire to use. The application of this power is the responsibility of the customer. The following guidelines are furnished to assist in that application.

1. An Auxiliary Drive (such as a hydraulic pump) can be mounted to the auxiliary drive location on the right-hand side of the front of the engine.
2. The maximum auxiliary drive power from the engine auxiliary drive location is 15 HP at any engine speed.
3. Engine speed will vary depending on the air demand on the compressor. The more air demand, the faster the engine will run.
4. Depending on hydraulic pump type selected, the pump flow could vary with engine speed. It is recommended that the maximum flow rate of the pump be selected based on the rated speed (2600 RPM) of the engine.



Operating Instructions

Control Panel

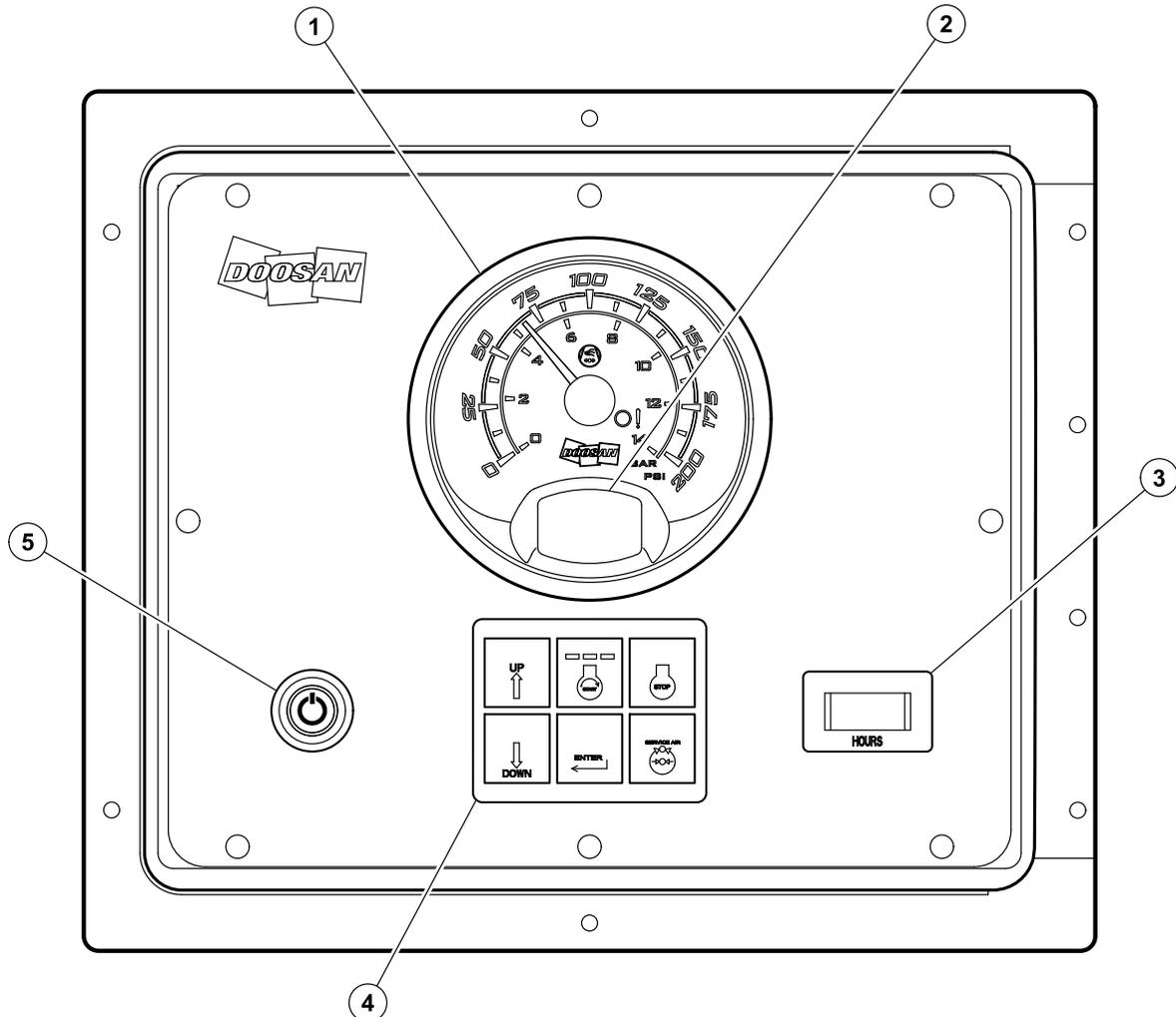


FIGURE 3-1: INSTRUMENT CONTROL PANEL

Instrument Control Panel

The following definitions describe the controls and functions of the Control Operator Panel (See Figure 3-1).

1. **Air Pressure Gauge:** Indicates Pressure in the Separator Tank.
2. **Mini-Port Display:** Displays Compressor Operating Parameters, and Diagnostic Codes.
3. **Hour Meter:** Display Machine Hours
4. **Keypad:** Used for Starting and Stopping the Compressor.
5. **Main Power Button:** Turns On and Off Compressor Control System and Gauge Panel.

Operating Instructions

Instrument Control Panel Indicators

The following table definitions describe the controls and functions of the Control Operator Panel (See Figure 3-1).

	<p>STOP: Stops the Compressor.</p>
	<p>START: Initiates Engine Cranking.</p>
	<p>SERVICE AIR: Allows Operator to Load Compressor after Warm-Up.</p>
	<p>UP: Pressing and Releasing the UP Button scrolls up through Parameter lists and Menu choices or Increases a value one Item/Unit at a time. Pressing and Holding the UP Button continuously Scrolls Up through Parameter Lists, Menu choices, or Increases a value until the end of the Parameter List, Menu choices, or Maximum Parameter Value is reached.</p>
	<p>DOWN: The DOWN Button functions identical to the UP Button with the exception that its direction for all Displays, Menu choices, and Values is Down or Decreasing.</p>
	<p>ENTER: Pressing and Releasing this Button provides Enter functionality when the Display requires you to choose a Menu item, Parameter Selection, or Value Input. Pressing and Holding this switch for approximately three seconds while any of the Main Screens are Displayed brings up the Main Menu. Pressing the ENTER Button after an Alert or Fault has been displayed acknowledges the message and the Display Unit returns to the Default Screen.</p>

Auto Power Off

The compressor control system has a power save feature that is designed to prevent drain on the batteries when the compressor engine is not running. If the Control Panel is powered ON and the engine has not ran for 15 minutes the control system will automatically power OFF. Power can be restored by simply pressing the Power Button.

In the event of a Fault this feature is not active and the power will remain ON until the Fault has been acknowledged or the control system is manually powered OFF.

Wait To Start

When the Main Power Button is pressed the display will initialize and then the Wait to Start message will be displayed. Wait to Start offers a chance to check for Faults/Alerts prior to crank.

Quick View Screens

Engine and Compressor Parameters

The Quick View Screens allow for easy viewing of up to 14 commonly used parameters by pressing the UP and DOWN buttons. Pressing the UP and DOWN buttons continuously loops through the Quick View Screens (i.e., when the last screen is reached pressing the DOWN button displays the first screen and vice versa). (See Figure 3-2).

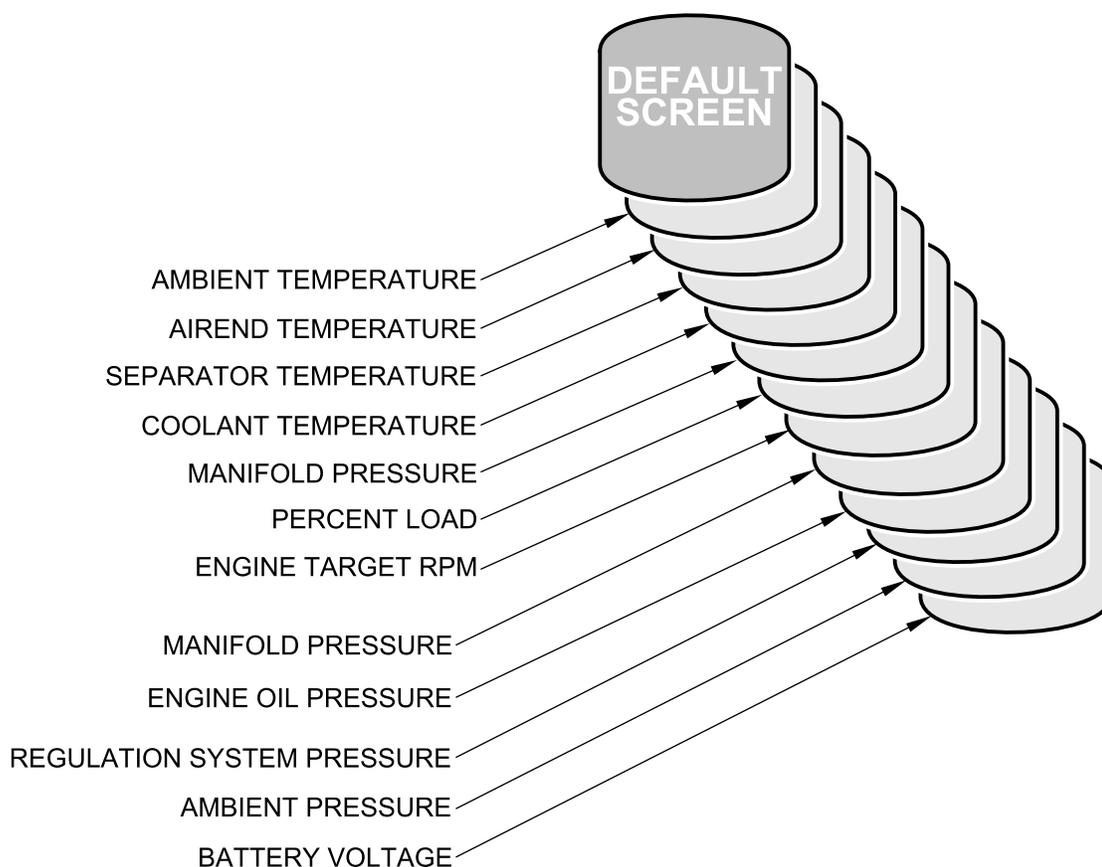


FIGURE 3-2: ENGINE and COMPRESSOR PARAMETERS

Note 1: Only the Parameters that are available from the Engine or Compressor will be Displayed.

Note 2: Unit times out after 3 minutes of inactivity and returns to the Default Screen.

Note 3: Pressing the Enter button while viewing a Quick View screen will return to the Default Screen.

Default Screen

The Default Screen will display the Engine RPM unless the machine is configured with the Fuel Level Option. With the Fuel Level Option installed the Default Screen will be Fuel Level and the first screen of the Quick View will be Engine RPM.

Fault and Alert

If a Fault occurs, the Display unit will Display The SPN, FMI, OC, and description for Engine Fault or the CPR Code and description for Compressor Error. An Engine Fault will be Displayed only when the Engine is shutdown. The Fault has to be acknowledged by the user by pressing the Enter button. The unit does not time out in the Fault display. After 60 seconds, If the fault is still Active, The Fault display will appear again on the screen and will remain until acknowledged by the User. This will continue to occur as long as the Fault is Active (See Figure 3-3).

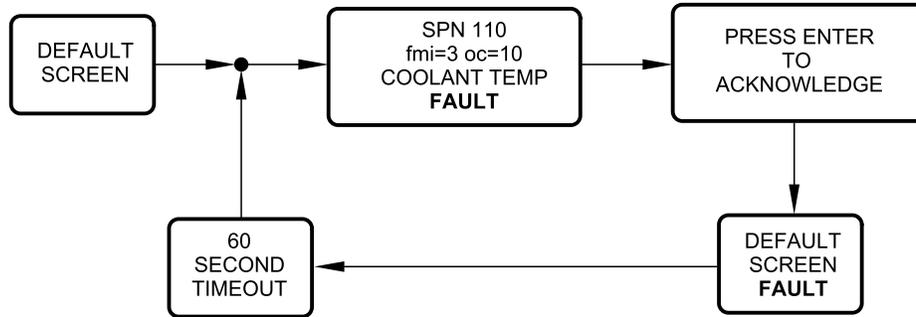


FIGURE 3-3: FAULT and ALERT

Operating Instructions

Fault and Alert (continued)

When present, an Alert with the number of Alert conditions will popup on the screen, the User will press the UP or DOWN button to display the Alert, or press the Enter button to acknowledge an Alert has occurred. If there are Multiple Alerts, pressing the DOWN button will scroll through the various Alerts. All Faults and Alerts will be Displayed until the Engine shuts down and then the most severe Fault will be Displayed as a Fault. Pressing the ENTER button after the Alert has been Displayed, acknowledges the message and the Display unit returns to the Default screen of Engine hours (See Figure 3-4).

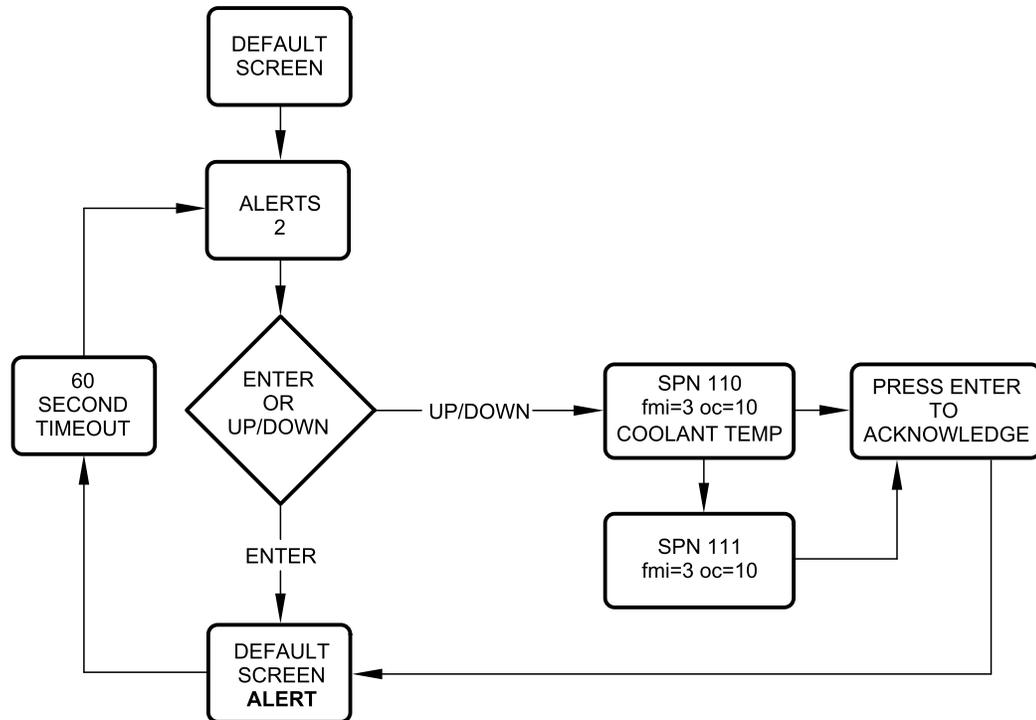


FIGURE 3-4: FAULT and ALERT (continued)

Service Interval Setup

Service will popup on the screen after one of the two hour service channels has decremented to 5 hours. The user will press the UP or DOWN button to display the service channels or press the ENTER button to acknowledge a service has occurred. Pressing the ENTER button after the service channels have been displayed, acknowledges The message and the display unit returns to the Default Screen. If service is between 5 and 0 hours or it remains at 0 hours, the SERVICE DUE Display will appear every hour. To disable, the user can reset the hours to the OFF position by decreasing the value to OFF (See Figure 3-5).

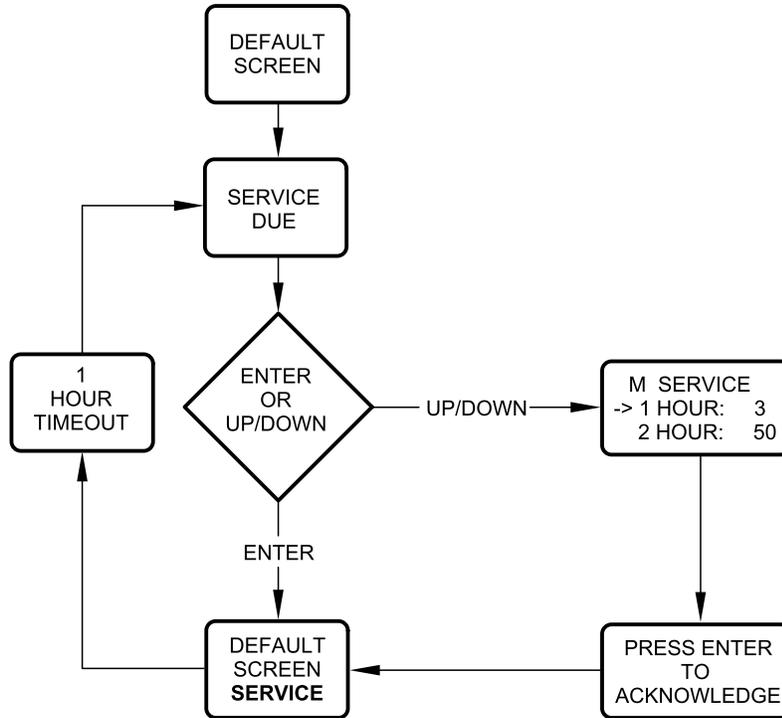


FIGURE 3-5: SERVICE INTERVAL SETUP

Display Setup

The Display Menu functions give users the ability to configure the LCD. Options for configuring the Display include Intensity, Contrast, and Viewing Mode. To access the Display Menu, press and hold the ENTER button while the Default Screen of Engine Hours is Displayed until the Main Menu appears. Scroll to the Setup Option using the DOWN button and press the ENTER button. Scroll to the Display Option using the DOWN button and press The ENTER button. Use the DOWN or UP buttons to highlight and the ENTER button to select the desired Display setting. To Return to the Default Screen of Engine Hours, use the DOWN button to highlight the Main Screen Menu Item and press the ENTER Button (See Figure 3-7).

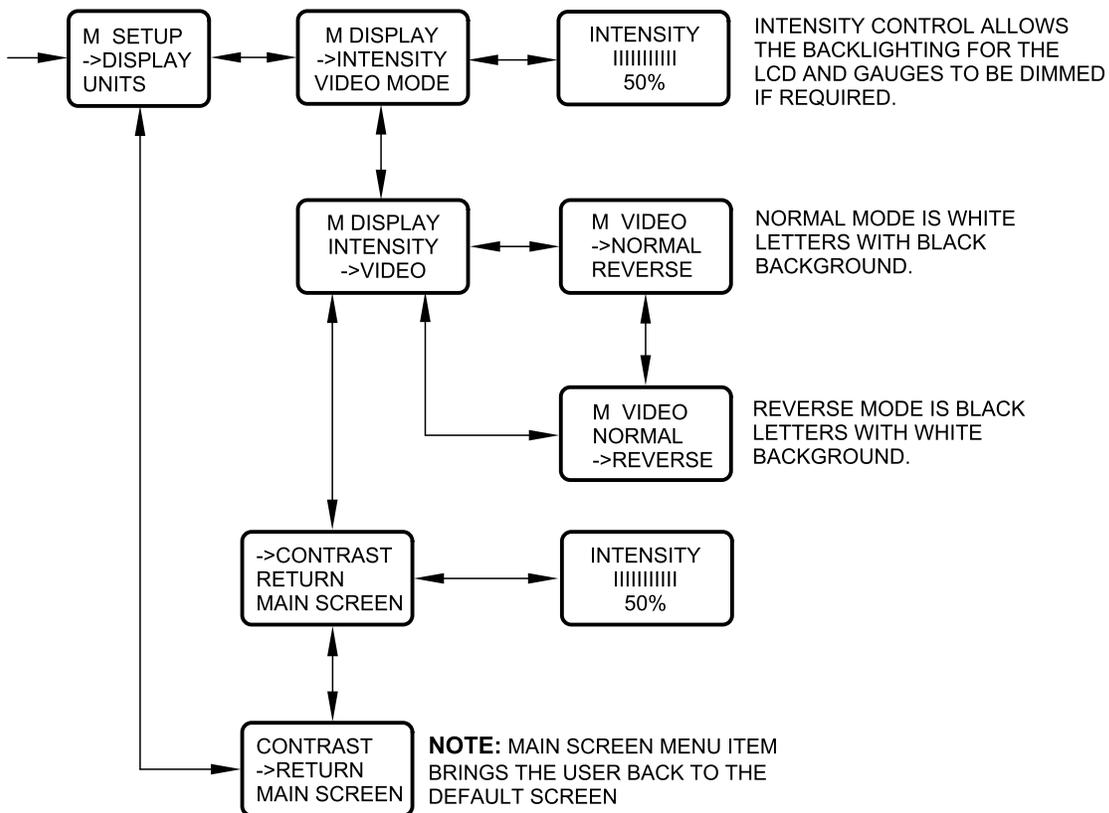


FIGURE 3-7: DISPLAY SETUP

NOTE

In the event of a compressor Fault this feature is not active and the power will remain on until the Fault has been acknowledged or the control system is manually powered off. Power remains on as long as Keyswitch is in ON position.

WAIT TO START

When the Main Power Button is pressed the display will initialize and then the wait to start message will be displayed. Wait to Start offers a chance to check for Faults/Alerts prior to crank.

Operating Instructions

Languages and Units

The Display is User configured to Display in English, Spanish, Or French languages and in either English or Metric units. The Language and Display units can be changed by accessing the Setup Menu. to access the Setup Menu, press and hold the ENTER button while the Default Screen of Engine Hours is Displayed until the Main Menu appears. Scroll to the Setup Option using the DOWN button then press the ENTER button. Use the DOWN or UP buttons to highlight the chosen Unit and PRESS the ENTER button to select. To Return to the Default Screen of Engine Hours, use the DOWN button to highlight the Main Screen Menu item and press the ENTER button (See Figure 3-8).

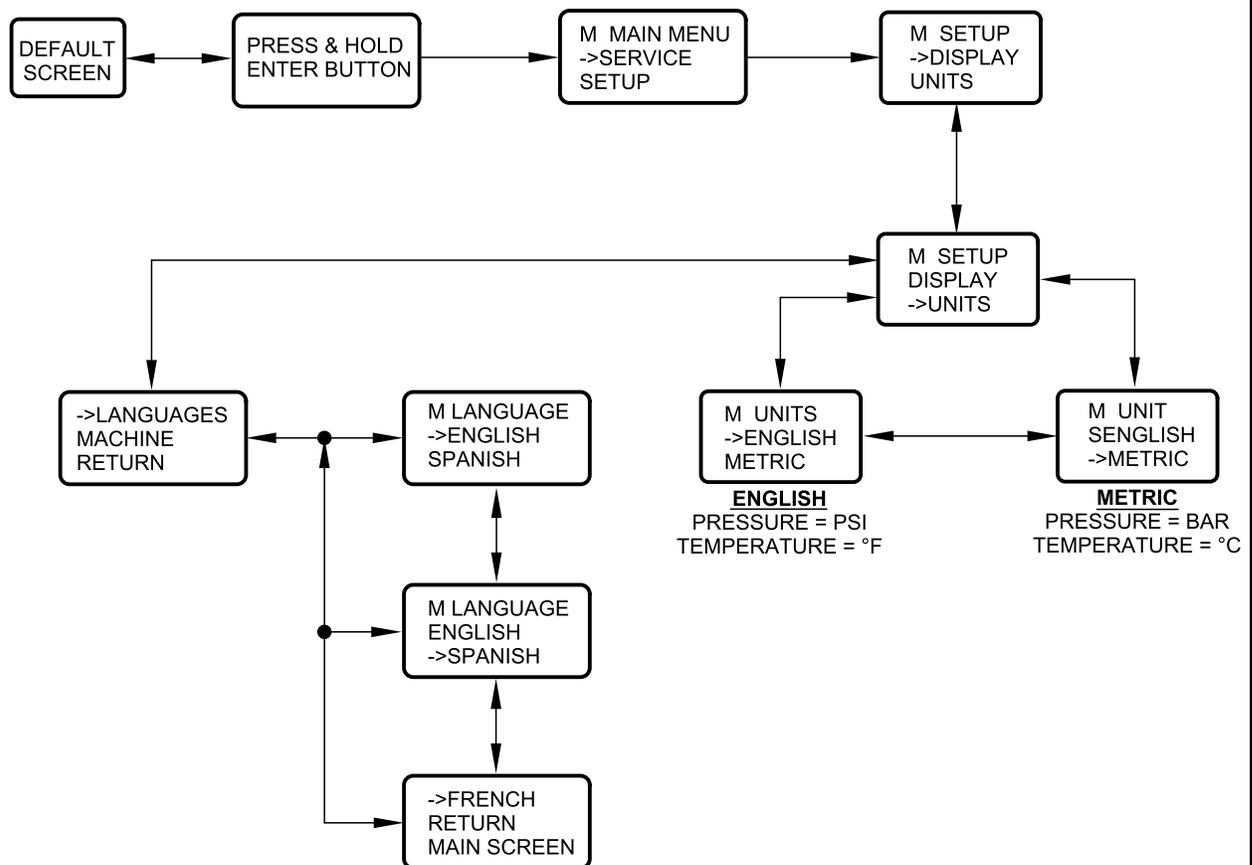


FIGURE 3-8: LANGUAGES and UNITS

Before Startup

Before Starting the Compressor

WARNING

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.

WARNING

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.

WARNING

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

WARNING

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.

WARNING

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.

NOTE: Compressor will not allow engine starting if the fuel level is below the minimum fuel shut off level.

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 properly 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.

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.

Starting Procedure (continued)

Do the following for starting the compressor by following the decal instruction (See Figure 3-10) for startup procedure:

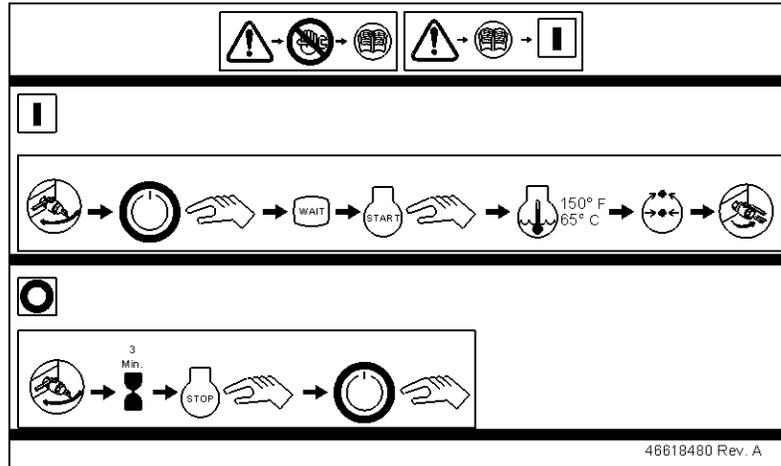


FIGURE 3-10: STARTING INSTRUCTION

1. Press the main power button .
2. When the wait to start message on the mini-port changes to total fuel% DEF %hours=, press and release green start button .
3. Engine will crank until engine starts or engine starting time limit is reached. The first green light on the start button will illuminate.
4. If engine fails to start, press main power button  to remove power from engine. Repeat steps 1-3.
5. When engine starts, the first two lights on the start button will illuminate.
6. Wait for engine temperature to reach 150° F (65° C). Press service air button . The third light on the start button will illuminate.
7. The compressor will start in the low pressure mode and the low pressure light will be illuminated on the low pressure button.
8. To change to the high pressure mode, press the high pressure button. Three lights on the button will illuminate.

Operating Instructions

Normal Operation

The operator may observe and monitor operating parameters using the Mini-Port and gauges. 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 be automatically shut down with the cause of the shutdown shown on the Mini-Port.

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.

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.

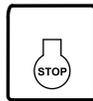
Do not use the battery disconnect switch for normal stopping. Wait 1 minute after stopping engine before turning the battery disconnect switch to the OFF position.

Shutdown

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 minutes to cool down.

3. Press the Red Stop Button



4. Press the Main Power Button  when use of the compressor is not needed.

Note: Until Main Power Button is pressed, the gauges can be read and the Mini-Port can be navigated using the UP, DOWN, and ENTER Buttons.

5. If the Main Power Button is not pressed within 3 minutes (if ambient temperature is above 45° F (7° C) or 15 minutes if ambient temperature is 45° F (7° C) or below of the keypad being used the compressor will automatically power down.

Pressure Regulator Adjustment Instructions

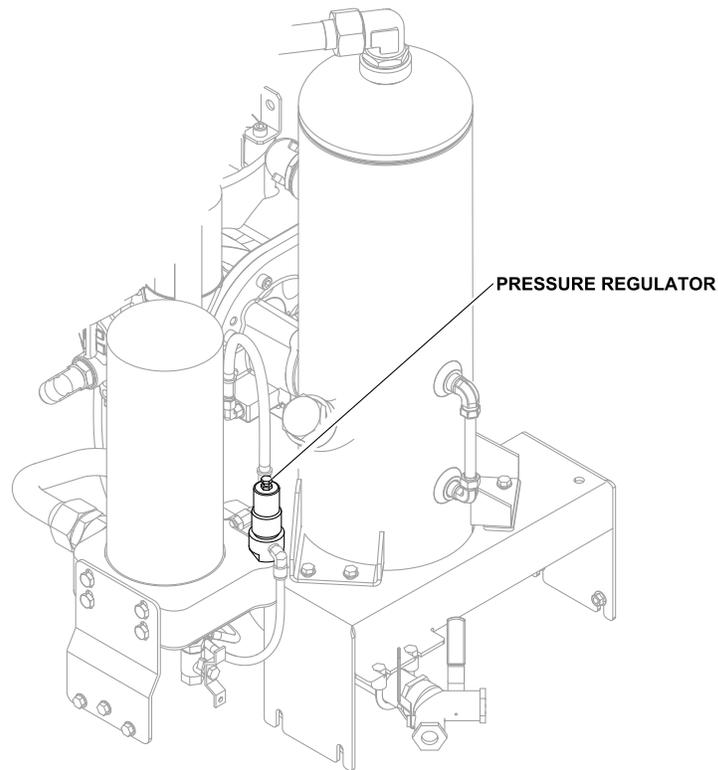


FIGURE 3-11 PRESSURE REGULATOR ADJUSTMENTS

NOTICE

Always adjust High Pressure first.

Before Starting

1. On the Pressure Regulator, loosen the jam nut and turn screw counterclockwise until tension is no longer felt at the screw. Then, turn screw clockwise one full turn.
2. Close Service Valves

After Starting

1. Push the Service Air button on the Control Panel. The unit should speed up and then unload (and drop back to IDLE). With the unit unloaded, turn the adjusting screw on the Pressure Regulator clockwise until the Discharge Pressure Gauge indicates 25–30 psi higher than service pressure. Tighten the Pressure Regulator jam nut.

NOTE

If equipped with dual pressure, the high-pressure regulator must be set before the low-pressure regulator.



Engine Operation

Engine Operation and Maintenance

We, Doosan Infracore, do our best to provide more convenient and safe maintenance techniques and to meet the requirements of our customers. If you have any questions or find any errors in this Operation and Maintenance Manual, please do not hesitate to contact us.

Thank you for purchasing our engine and we hope this Operation and Maintenance Section will be helpful for you.

General Information

This Operation and Maintenance Section provides the most efficient methods for engine maintenance as well as quick, efficient methods to determine the cause of engine faults to ensure that any actions taken by professionally certified maintenance technicians are done in the most efficient way possible. If maintenance is performed by unskilled technicians, or maintenance performed without the specified tools and facilities, serious bodily injury or critical faults in engine performance may occur.

Regular inspection and maintenance are required to maintain long term optimal engine conditions and best performance. In the event that a part must be replaced, only genuine Doosan parts, as defined by the parts list (Parts Manual) should be used. Doosan shall not be held liable for any critical damage or faults which may be caused by the use of unauthorized or non-factory remanufactured parts.

The maintenance methods stated in this Operation and Maintenance Section are the most efficient and safest work procedures. Some work procedures require special tools.

For questions about genuine parts and special tools, please contact us.

This Operation and Maintenance Section includes **Danger, Warning, and Caution** headings in order to reduce possible injuries and engine faults which may occur while performing maintenance. If workers do not follow the instructions, critical faults in engine performance and operation or serious bodily injury may occur. **Danger, Warning, and Caution** instructions must be followed.

Engine Management



If the radiator cap is opened while the engine is still hot, hot water will spurt out and may cause burns.



Using inappropriate or unspecified fuel may cause critical damage, faults, and diminished engine performance.

Engine Operation

Engine Management (continued)



Immediately replenish engine oil when the engine oil level is below the lower limit of the engine oil gauge.



Always use coolant mixed with antifreeze. If coolant without antifreeze is used, the coolant may freeze causing the coolant passage in the cylinder block to freeze and damage the engine.

Prevention of Damage and Abrasion

Using an engine for any purposes other than the designed purpose may cause critical faults to the engine for which Doosan shall not be held liable. For details concerning the usage and purpose of the engine, please direct questions to our Sales Team. Do NOT adjust, convert, or change the ECU without our authorization.

If a problem is found in an engine, research and solve the cause to prevent the critical faults in advance. Use of genuine Doosan parts is recommended. Using unauthorized or non-factory remanufactured parts may cause critical damage and faults to engine for which Doosan shall not be held liable.

Consider the following while managing engines.

1. Use clean, specified, and qualified fuel only. Use only fuel recommended in this Operation and Maintenance Manual.
2. Do not operate an engine without lubrication oil. Use only products (engine oil, cooling water, anticorrosive agent, and etc) recommended by Doosan.
3. Always keep surroundings of the engine clean.
4. Use fuel recommended in this Operation and Maintenance Manual.
5. Conduct inspections and exchanges regularly according to the regular inspection table.
6. If the engine is overheated, do not shut down immediately, but operate at idle status for five minutes or more to lower the engine temperature to the proper level.
7. Check the engine oil level on a flat surface. Do not exceed the maximum of the oil level gauge.
8. If there are gauges for battery, oil pressure, coolant, and temperature, check if they indicate a normal status.
9. Do not operate engine without coolant.

Safety

This Operation & Maintenance Section divides maintenance operations such as performing engine checks, troubleshooting, or diagnosing faults into three categories, Danger, Warning, and Caution. In addition, Note is used to provide additional descriptions and information required for maintenance technicians to successfully operate our engines. The recommended repair methods and Danger, Warning, and Caution can enhance the degree of completion of engine maintenance and prevent bodily injury which may occur to workers. However, this section cannot predict all possible risks.

In the event the compressor controller detects a parameter at a dangerously high or low level, the compressor will be automatically shut down with the cause of the shutdown shown on the Mini-Port.



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



Workers MUST observe instructions, otherwise fatal or serious injuries to workers and other persons may occur.



Workers must follow this instruction. Failing to do so may result in the death or serious bodily harm of workers or others.



Workers must observe this instruction since failing to do so may cause critical faults which can have impact on the engine performance and operation.

NOTE

NOTE: Indicates additional description, information, and references for workers' easy understanding.

Instructions

DANGER

When accessories such as necklaces, rings, watches, or gloves become stuck in rotating parts while the engine is operating, serious bodily injury may occur.

WARNING

When a safety accident, such as skin contact with corrosive acids or fuel, burns with hot oil, exposure of eyes to fuel or antifreeze, occurs while starting, inspecting, or repairing an engine, see a doctor immediately.

WARNING

Do not exchange or disassemble a pipe or hose (from the engine fuel circuit, engine oil circuit, coolant circuit, or compressed air circuit) while the engine is operating. The leaked liquid may cause bodily injuries.

WARNING

If the coolant cap is opened while the engine is still hot, hot water will spurt out and may cause burns. Open the engine coolant cap after fully cooling the engine.

WARNING

Only refuel when the engine is shut down.

WARNING

Battery fluid is corrosive and dangerous because of its explosiveness and toxicity. Therefore, it should only be handled by a skilled technician who specializes in battery fluid.

Instructions (continued)

Read and Observe the following instructions below:

1. In order to maintain the best long term performance and safety, please read and understand this manual and perform routine inspections and regular inspections.
2. We have divided the content of this section into causes of bodily injury and damage to assets and causes of pollution.

Cautions for Starting the Engine

1. Before starting the engine, please read this manual carefully and fully understand **Danger, Warning, and Caution**. If you cannot fully understand or have any questions, please contact us.
2. For safety reasons, attach warning signs around engines in operation to keep people other than workers from accessing the engines. Let engine operators know that they are responsible for the safety of the engine room.
3. Only authorized people may start and operate engines. Unauthorized people should not be allowed to handle engines.
4. Do not access running or rotating parts while the engine is in operation.
5. Be careful not to touch or contact the engine during operation since it becomes hot during operation.
6. Exhaust gas is poisonous. Fully ventilate area before starting engine. If the space is airtight, ensure that it is well ventilated.

Engine Operation

Instructions (continued)

Cautions for Inspection and Repair

1. Inspection and repair of engine should be performed only when the engine is shut down, otherwise, burns or safety accidents may occur. Do not perform inspection or repair while the engine is operating.
2. If it is absolutely necessary to perform inspection or repair on the operating engine, avoid the rotating parts.
3. Use an engine oil drain container that is large enough to prevent the overflow of engine oil while draining engine oil.
4. Open the engine coolant cap after fully cooling the engine to exchange or replenish coolant.
5. Fuel is highly flammable. Do NOT smoke or use open flame near engine.
6. Mark and separately manage containers for storing coolant from beverage containers to avoid confusion. See a doctor immediately in case of drinking coolant.
7. Follow the instructions provided by the battery manufacturer when checking or handling batteries.
8. Only certified professional technicians should repair and maintain engines.
9. Only appropriate tools should be used. If the jaws of a wrench are worn out, the wrench might slip during use, causing safety accidents.
10. Do not allow other persons to stay or pass under an engine when lifting the engine with a crane. Before lifting the engine, ensure there is no one around the engine and reserve enough safety space.
11. Before inspecting or replacing an electrical apparatus, disconnect the battery Negative (-) cable first. Connect the battery Negative (-) cable after completing all required work for checking or replacing the electrical apparatus in order to prevent a short circuit.
12. Before performing electric welding works, turn off engine, block the power supply to the engine, and remove the wire harness connector connected to the engine control unit (ECU).
13. Do NOT give any electric or mechanical shocks or perform welding work on the electrical apparatus or the ECU.

General Repair

1. Wait until the engine is properly cooled before starting work otherwise, you may get burned by the heated engine. Before performing fuel line work, check the common rail pressure and engine temperature by using the failure diagnosis device.
2. Disconnect the battery Negative (-) cable to prevent damage of wires and sensors caused by a short circuit.
3. Engine oil and coolant may damage paint. Engine oil and coolant should be stored in separate containers and marked for safe management.
4. Store the disassembled parts in a specified space to avoid damage or contamination.
5. Use specified and special tools for efficient and safe repair.
6. If parts need to be replaced, use only genuine Doosan parts for replacement. Using unauthorized or non-factory remanufactured parts may cause critical damage and faults in engine performance.
7. Replace parts such as cotter pins, gaskets, o-rings, seal rings, oil seals, and washers with new ones during repairs. Reuse of parts may be the cause of engine faults and engine may not operate properly.
8. Group and store disassembled parts in disassembling order. Bolts and nuts vary in strength, shape, and torque according to their assembly position. Please divide and store them accordingly to these characteristics.
9. Clean disassembled parts to remove foreign substances before inspecting or reassembling parts. Use compressed air to clean the oil holes.
10. Thinly spread oil or grease on rotating parts or parts requiring lubrication, before assembly.
11. If required, use a specified adhesive to assemble gaskets to prevent water or oil from leaking.
12. Assemble bolts and nuts with the specified tightening torque.
13. After completing repairs, conduct a final inspection and perform a test operation to ensure all work has been successfully completed.

Environmental Pollution

Observe the following instructions to protect workers from danger and to prevent environmental pollution while performing engine repairs.



Failure to observe the regulations of the relevant authorities violates environmental pollution regulations and may be subject to legal penalties.

1. Good ventilation and low humidity should be maintained in the work space.
2. The workspace should be clean and in good order. No flammables are allowed in the workshop.
3. Smoking is strictly forbidden in the workshop.
4. Workers should wear work clothes, protective goggles, and safety shoes.
5. Workers are not allowed to wear accessories such as necklaces, rings, watches, and earrings.
6. Start the engine in a well ventilated space to prevent carbon monoxide poisoning.
7. Wait until the engine is properly cooled before starting work otherwise, you may get burned by the heated engine.
8. Do NOT work on rotating or operating parts once the engine has been started.
9. Discard oil according to the regulations set forth by the relevant authorities.
10. If engine oil or fuel leaks on the floor or is improperly discharged, serious environmental pollution of sea, river, or underground water may occur.
11. Discard the undiluted anticorrosive agent, antifreeze, filter elements, and cartridges as special waste.
12. Discard coolant and special waste according to the regulations of the appropriate authorities.

Use of Genuine Doosan Parts

An engine consists of many parts which are mechanically harmonized. To prevent future engine faults and ensure best performance for a long period, maintenance and replacement of expendable parts should be conducted regularly. Use of Doosan genuine parts is recommended. Using unauthorized or non-factory remanufactured parts may cause critical damage and faults to engine for which Doosan shall not be held liable.

Prevention of Pollution

Consider the following to manage engine without causing environmental pollution.



Discard oil according to the regulations set forth by the relevant authorities. Disposing of discharged oil into the ground, sewers, drains, rivers, or the sea will cause serious environmental pollution. Violation of regulations regarding discard of engine oil without observing the handling regulations may result in legal action.

1. Discharge oil and coolant using collection containers.
2. Discard oil and coolant according to the regulations of the relevant authorities.
3. Be careful not to let discharged oil and cooling water flow into the ground or the sewer. Otherwise, serious pollution of the drinking water source may occur.
4. Classify the oil, filters, and filter cartridges as environmental pollution waste and discard them according to regulations.
5. Classify the antifreeze, cooling water, and anticorrosive agent as hazardous waste and discard them by observing the regulations.

Handling of Engine Oil

Prolonged and repeated contact of skin and engine oil may cause skin irritations. Engine oil includes substances toxic to the human body. Handle engine oil by observing the following safety rules:

1. Do not expose skin to engine oil for extended periods.
2. Always wear working clothes and gloves.
3. If skin comes in contact with engine oil, immediately clean skin with water, soap, or hand cleaners.
4. Do not clean skin with gasoline, fuel, thinner, or solvent.
5. Apply a protective skin cream after cleaning from oil.
6. Do not put oil stained gloves or cloth in pocket.

Startup and Shutdown



When replenishing engine oil, do not exceed the maximum on the oil level gauge. Too much oil may cause damage to the engine.

Initial Startup and Shutdown Procedure.

Procedure for Startup

Perform the following actions when starting the compressor for the first time:

Ensure that the compressor is on a level surface. (if the compressor is on an uneven surface, the fluid sight gauge readings will not be accurate, and will not be possible to determine if fluid levels are to low.)

Ensure that a minimum clearance of 3 feet is provided all the way around the compressor to allow exhaust gas to ventilate before operating the compressor. Failure to ventilate hot exhaust gases can result in improper functioning compressor and the heat build-up can result in melting rubber and or plastic components.

1. Before starting an engine, check the levels of fuel, coolant, and oil. Replenish those fluids if required.
2. Ensure engine oil level is between the upper and lower limit of the oil level gauge. The upper and lower limit of the oil level gauge indicate the maximum and minimum of the engine oil level.
3. Be careful not to mix foreign substances in fuel, engine oil, or coolant while injecting the fluid. Keep the fluid clean while it is not in use. Use fuel, oil, and coolant recommended by Doosan. Otherwise, critical damage to the engine may occur.
4. Fill the fuel tank (describe in Lifting, Transporting and Preparation), and drain water from the fuel/water separator.

Initial Startup and Shutdown Procedure (continued).

Starting the Engine

Observe the following when starting the engine.

1. For a cold start, start the engine after preheating it sufficiently through the glow plug.

After Starting the Engine

1. Operate engine at light load until engine has reached normal operating temperature.
2. Oil, air, or fuel leaks can cause a decrease in oil pressure. Oil leaks are especially likely to cause the burning of bearings. As such, if oil, air, or gas leaks occur, check the leaking parts and solve the problem.

During Operation

1. If oil pressure drops too low, it may cause abnormal wear and burning of bearings. If oil pressure is too high, it may cause oil leakage.
2. Continuing to operate the engine after noises or vibrations coming from the engine are noted may lead to serious engine damage. As such, if noises or vibrations come from the engine, slowly decrease the rpm to stop the engine and examine the cause.

Shutdown

Do not suddenly shutdown the engine after it was operated under high loads for a long period. If oil burns because of heat sent from the high-temperature turbine blade to the bearing part, the bearing metal and rotating shaft may burn. As such, if the engine was operated under high loads for a long period, sufficiently run the engine at idle before shutdown.

Engine Operation

Inspection after Starting the Engine

Check the pressure of the engine lubrication system by using the engine oil pressure gauge mounted on the apparatus while the engine is in operation. If pressure decreases on oil pressure gauge, immediately shutdown the engine. In addition, make sure that the recharge alarm indicator lamp of the alternator is off while the engine is operating.

1. Tightly connect the +/- terminals to prevent gaps. The sheath of battery connection cables should not be damaged or broken.
2. If the recharge alarm indicator lamp suddenly lights or blinks during engine operation and the engine shuts down, fix the fault of the electric apparatus.
3. If color or odor of exhaust gas is unusual during operation, shutdown the engine, diagnose the cause and fix the fault.
4. Check the engine status through the alarm indicator lamp and gauges mounted on the apparatus during operation.

Engine Oil Pressure

If the engine oil pressure is not consistent at idle or does not reach the reference value while the engine is operating at high speed, immediately shutdown the engine and check oil level and leakage.

Coolant Temperature

Operating an engine with too low coolant temperature increases fuel consumption, abrasion of the cylinder liner, and shortens the engine's life span.

Revolutions per Minute (rpm)

On an electronic control engine, the engine control unit (ECU) prevents the engine from being operated at too high rpm over the specifications to protect the engine. The memory of ECU has various functions which cannot be changed by operators, such as fuel flow control, ignition time delay, and blocking of fuel and ignition.

Break-in Period of Engine

Doosan engines are subjected to a final approval test to ensure the provision of high quality engines before being shipped. However, engines are not operated for a long period of time in this test. Therefore, new engines require a break-in period during the initial 50 hours after delivery. By properly breaking-in an engine, the highest levels of engine performance can be maintained long term.

If the engine's bearings are not properly broken in, they may be easily damaged and the lifetime of the engine may be shortened by overloading or high speeds. In order to prevent this, please follow the guidelines below for the initial 50 hours after delivery of new engine.

1. Fully warm up the engine until the engine temperature reaches the normal operation condition, before starting operation of the engine.
2. Do not overload the engine or operate it at too high RPM.
3. Do not operate the engine with high speed at idle.
4. Do not rapidly start up or shutdown.
5. Do not operate the engine with less than 70% of the engine load.
6. Inspection, check, and repair of engines should be managed by officially certified technicians at certified service centers in compliance with corresponding rules.

Engine Operation

Check Points

CAUTION

If you cannot accurately check the oil level through the oil level gauge, rotate the oil level gauge to 180 degree, put it in the guide tube, and then pick it out again to check.

CAUTION

The oil pressure may increase with high rpm and decrease with low rpm. In addition, the pressure of cold oil may be higher at a specific rpm than of warm oil. This phenomenon may even occur when the engine operates properly.

CAUTION

If engine oil and oil filter need to be replaced, use only genuine engine oil and parts recommended by Doosan.

Check the following during the break-in period of a new engine.

1. Periodically check to verify the engine oil level is between the minimum and maximum limit of the oil level gauge.
2. If the oil indicator lamp on the apparatus is lighted or blinks, the oil pressure may be insufficient. In this case, shutdown engine and check the oil level and replenish oil if required. When replenishing engine oil, do not exceed the maximum on the oil level gauge . If the oil level is normal, check other related parts such as the oil pressure sensor, oil pump, or oil line.
3. Check the coolant gauge on the apparatus to ensure the coolant is circulating properly. If the coolant level in the supplementary tank is too low, the coolant gauge may be inaccurate.
4. Replace engine oil and oil filter after the break-in period.

Operation after Break-in

Slowly preheat the engine when starting up during cold weather or in areas with cold climate. Do not rapidly raise the rpm while the engine has not been properly preheated. The engine consumes additional oil until its piston rings are positioned properly and operates successfully. Please check the engine oil level frequently for the initial 50 hours of the break-in period.

Engine Operation

Operation in Winter

Preventing Coolant from Freezing

When only water used as coolant without mixing with antifreeze, corrosion in the engine, degradation of cooling efficiency, and freezing of the engine in winter may occur. If the engine is not operated for a long period during cold weather or in areas with cold climate, fully discharge the coolant from the engine. Freezing of coolant leads to critical damage to the engine. Please use a mixture of coolant with antifreeze at recommended ratio when replacing or replenishing the coolant. The antifreeze prevents coolant from freezing.

Preventing Overcooling of the Engine

When the engine is cooled below the normal operating temperature, thermal efficiency is lowered and fuel consumption as well as abrasion of the cylinder liner may increase. Therefore, the engine should be operated within the normal operating temperature. If the engine has been sufficiently operated, but the temperature of coolant remains below the normal operating temperature, check the water temperature controller or other parts related to the cooler.

Engine Oil

When viscosity of engine oil increases due to its low temperature during cold weather or in areas with cold climate, the rpm may not be stable after starting the engine. To prevent this, replace oil to engine oil for cold weather or areas with cold climate. When replacing engine oil, use only genuine engine oil recommended by Doosan.

NOTICE

Cold Weather - The manual blowdown valve is closed for normal operation. In extremely cold weather, fully opening the manual blowdown valve prior to starting will allow the engine to crank faster and start at a reduced load. Once the engine is running at idle speed, close the manual blowdown valve slowly to ensure lubrication of the airend.

Regular Inspection

General Information

Engine oil lubricates, cools, seals, prevents corrosion, and cleans engines, enhancing engine performance and extending the engine's lifetime. If the engine is continuously operated while engine oil is insufficient the moving parts of the engine may get stuck, causing engine faults.

Engine oil should be checked with the oil level gauge and replenished if required. Oil level should be checked while the engine is shut down. To check the oil level, shut down the engine and wait for 5 ~ 10 minutes to allow the engine oil to flow back into the oil pan. The engine oil level should indicate between the upper limit and the lower limit of the oil level gauge.

Engine oil should be periodically replaced based on the regular inspection table and the oil filter and the cartridge should be replaced as the engine oil is replaced.

Engine Oil Standards

Use the specified engine oil suitable for the environment and conditions of the site where the engine will be used.

Please use the engine oil which satisfies the following recommended specifications (See Table 4-1).

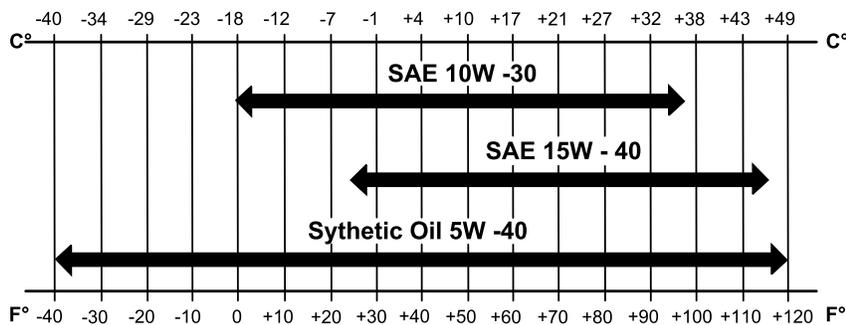
TABLE 4-1: ENGINE OIL STANDARDS

Engine Model	SAE Classification	Oil Class
DL01/DL02	SAE 10W/30	API CJ-4 or Better
DL01/DL02	SAE 15W/40	API CJ-4 or Better

Note: Doosan engine oils are recommended for use in this machine. If Doosan engine oil is not available, use a good quality engine oil that meets API service classification of CJ-4 or Better (See Table 4-1).

ENGINE OIL

RECOMMENDED SAE VISCOSITY NUMBER
(LUBRICATION OILS FOR DIESEL ENGINE CRANKCASE)



TEMPERATURE RANGE ANTICIPATED BEFORE NEXT OIL CHANGE
(DIESEL ENGINES MUST USE API CLASSIFICATION CJ-4 OR BETTER)

Synthetic oils are recommended for use in this machine. If synthetic oil is not available, use a good quality oil that meets API Service Classification CJ-4 or better.

Engine Operation

Replacement of Engine Oil



Prolonged and repeated contact of skin with engine oil may lead to shrinking, dryness of skin and even cause dermatitis.

Do not expose skin with exchanged engine oil for a long period.

Always wear work clothes and gloves.

When skin is stained with engine oil, immediately wash with water, soap or hand cleaners.

Do not clean skin with gasoline, fuel, thinner, or solvent.

Apply a skin protective cream after cleaning.

Do not put oil-stained gloves or cloth in pockets.



Discard exchanged oil according to the regulations set forth by the relevant authorities. Disposing of discharged oil into the ground, sewers, drains, rivers, or the sea will cause serious environmental pollution. Violation of regulations regarding discard of engine oil without observing the handling regulations may result in legal action.

Tightening Torque

Component	Tightening Torque
Drain Plug	16–20 Nm

Engine Model	Engine Oil Capacity (1)		
	Inside the Oil Pan		Total *
	Max.	Min.	
DL02	8.6	4.5	9.2
DL02	8.6	4.5	9.2
Oil Capacity			
Crank Case Oil Capacity	2.4 gal (9.1 liters)		

* Note: Including 0.6 liter in the engine.

Note: Including 0.6 Liter in the Engine.

Procedure for Changing Oil and Oil Filter

Step 1 Component Locations

Showing oil fill, oil filter, dipstick and drain locations

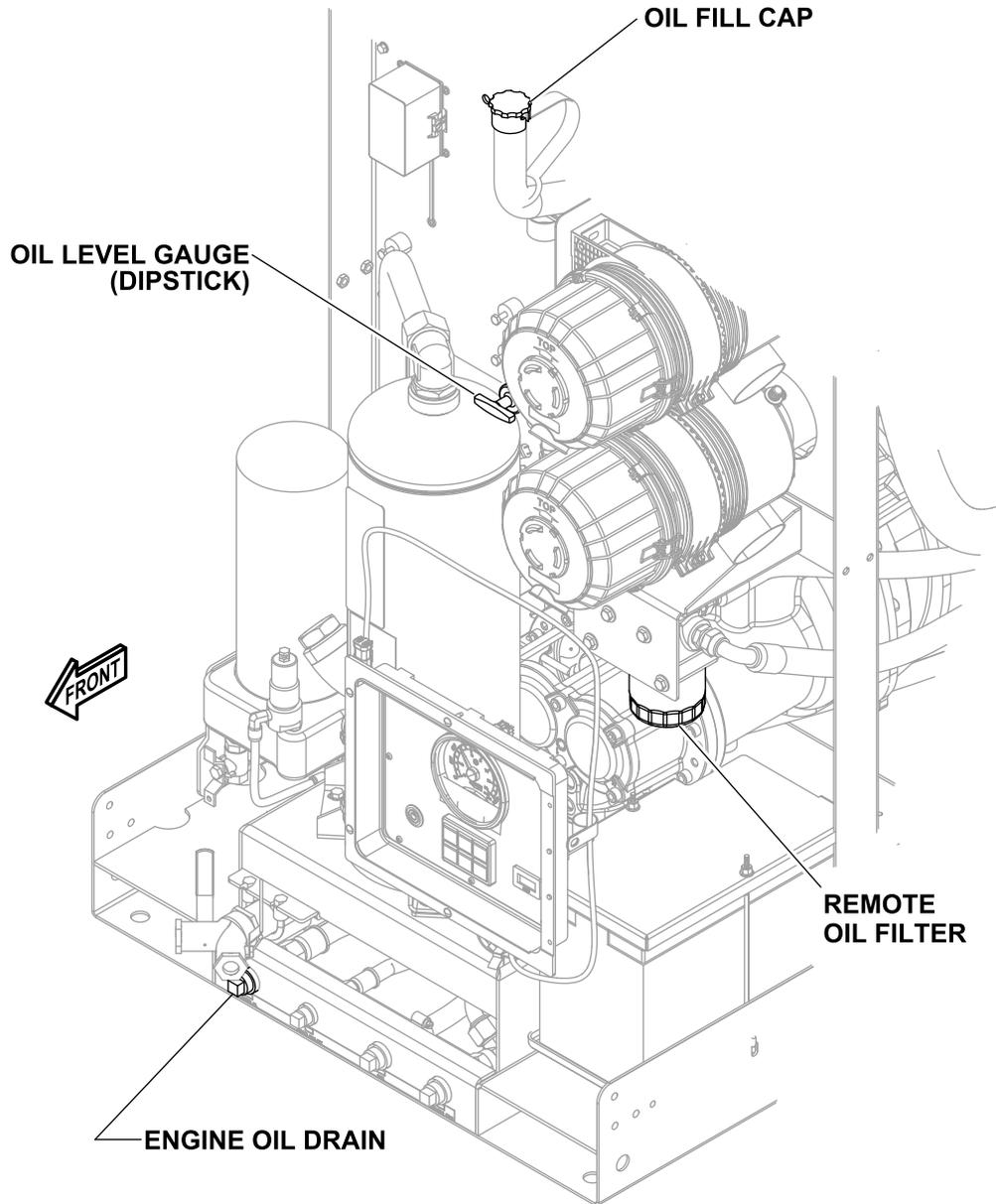


FIGURE 4-1: SHOWING OIL FILL, OIL FILTER , DIPSTICK and DRAIN LOCATIONS

Engine Operation

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals. Perform the following procedure below as follows:

Before proceeding do the following:

1. Move the unit to a flat surface to maintain the engine level.
2. Start the engine and then shut down when it reaches the normal temperature.
3. Wait for 5 ~ 10 minutes.
4. Check the position of the oil level gauge (dipstick) (Figure 4-1).

Step 2 Checking Oil Level

Showing oil fill, oil filter , dipstick and drain locations

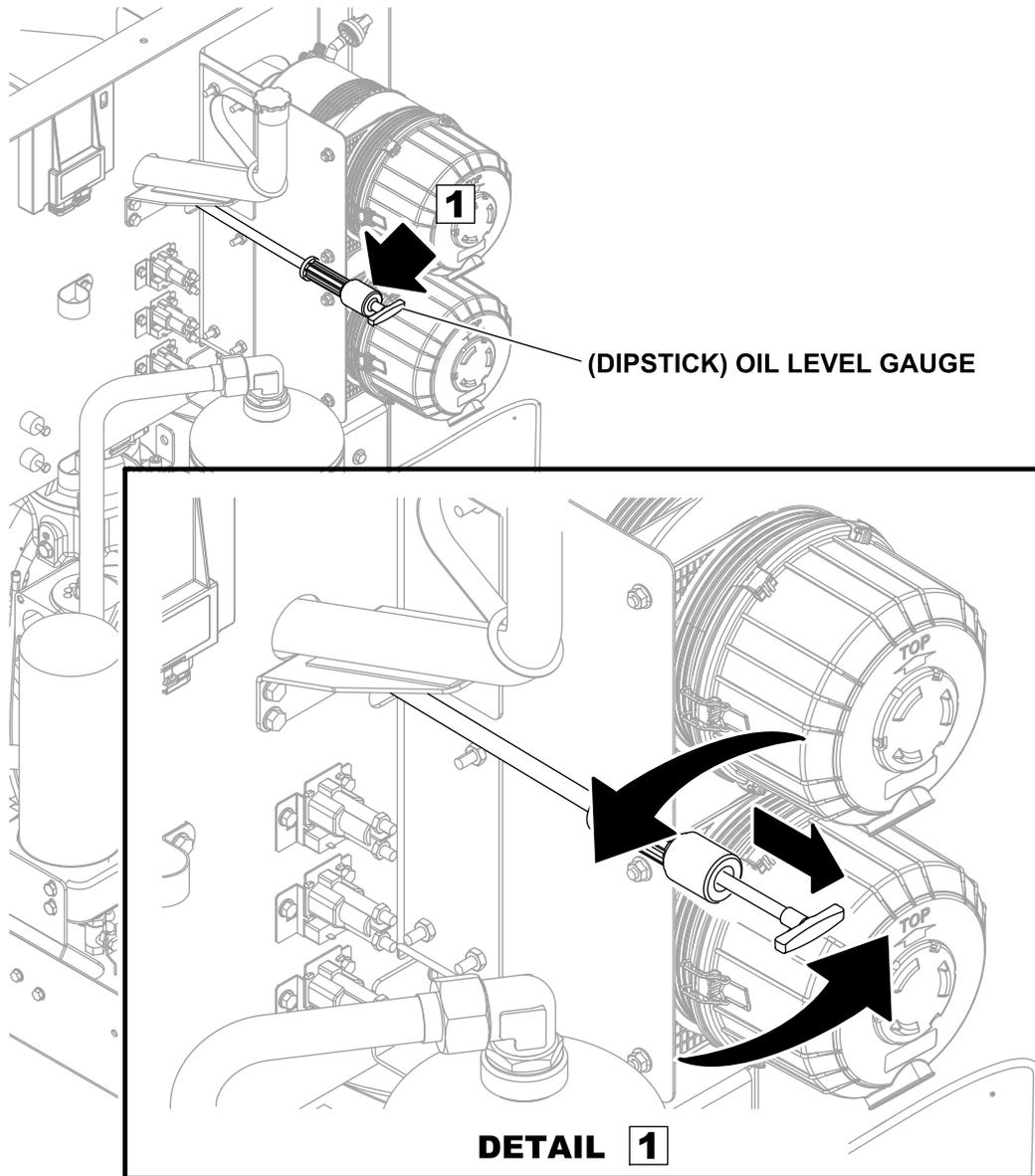


FIGURE 4-2: ENGINE OIL LEVEL GAUGE (DIPSTICK)

Engine Operation

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals. Perform the following procedure below as follows:

Procedure:

1. Locate the engine oil level gauge (dipstick).
2. Twist the oil level gauge (dipstick) handle.
3. Pull the handle of the oil level gauge (dipstick) forward and out (See Figure 4-2).
4. Clean the indication line of the oil level gauge (dipstick) with clean cloth.
5. Reinsert the oil level gauge (dipstick) again by using the handle.
6. Check condition of engine oil. If it is polluted, replace it with new oil. (See Figure 4-3).
7. Completely remove oil level gauge (dipstick). Helps the oil flow when draining.(Figure 4-2).

Step 3: Check Oil Level A-B Limits

Showing oil levels between A-B limits

OIL LEVEL GAUGE (DIPSTICK)

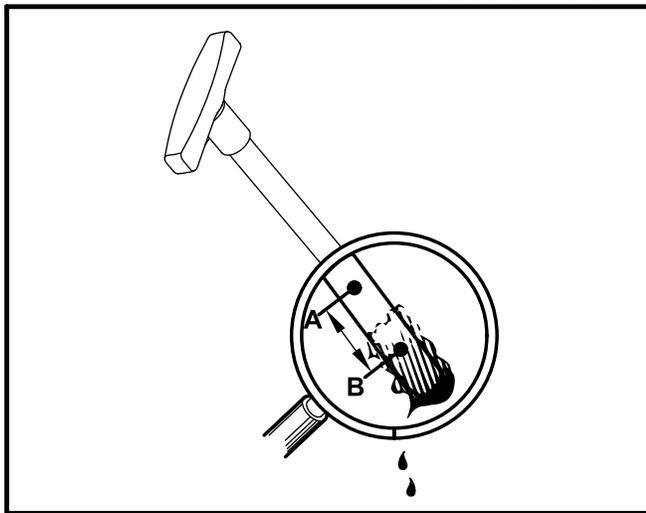
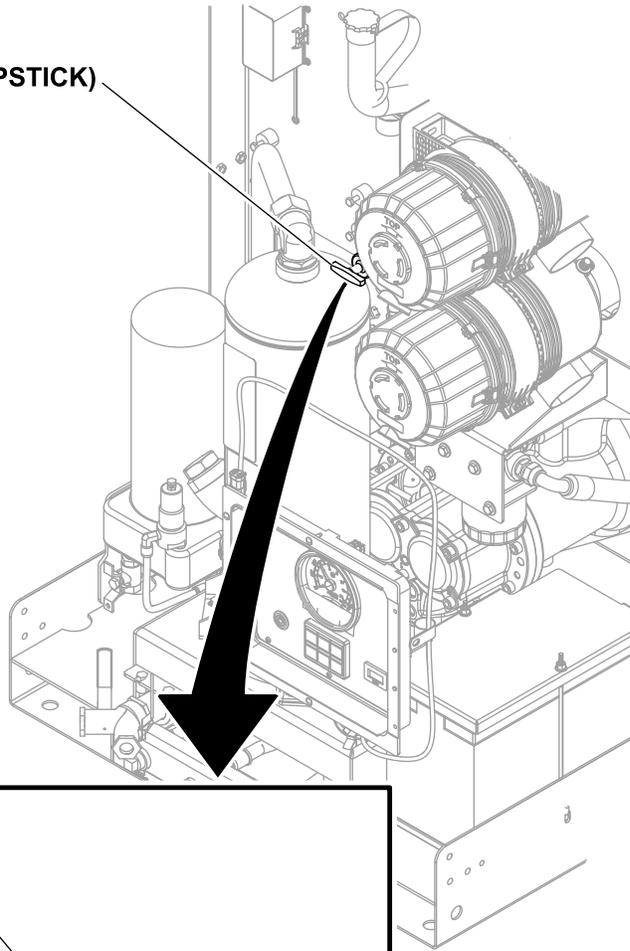


FIGURE 4-3: CHECK OIL LEVELS A-B LIMITS

Engine Operation

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals. Perform the following procedure below as follows:

Procedure:

1. Check if the oil is smeared between the upper limit (a) and the lower limit (b) (See Figure 4-3) of the oil level gauge (dipstick) .
2. If engine oil is smeared below the lower limit (b) or not smeared on the gauge at all, replenish engine oil.
3. Check condition of engine oil. If it is polluted, replace it with new oil.

Step 4 Drain Engine Oil

Showing engine drain location.

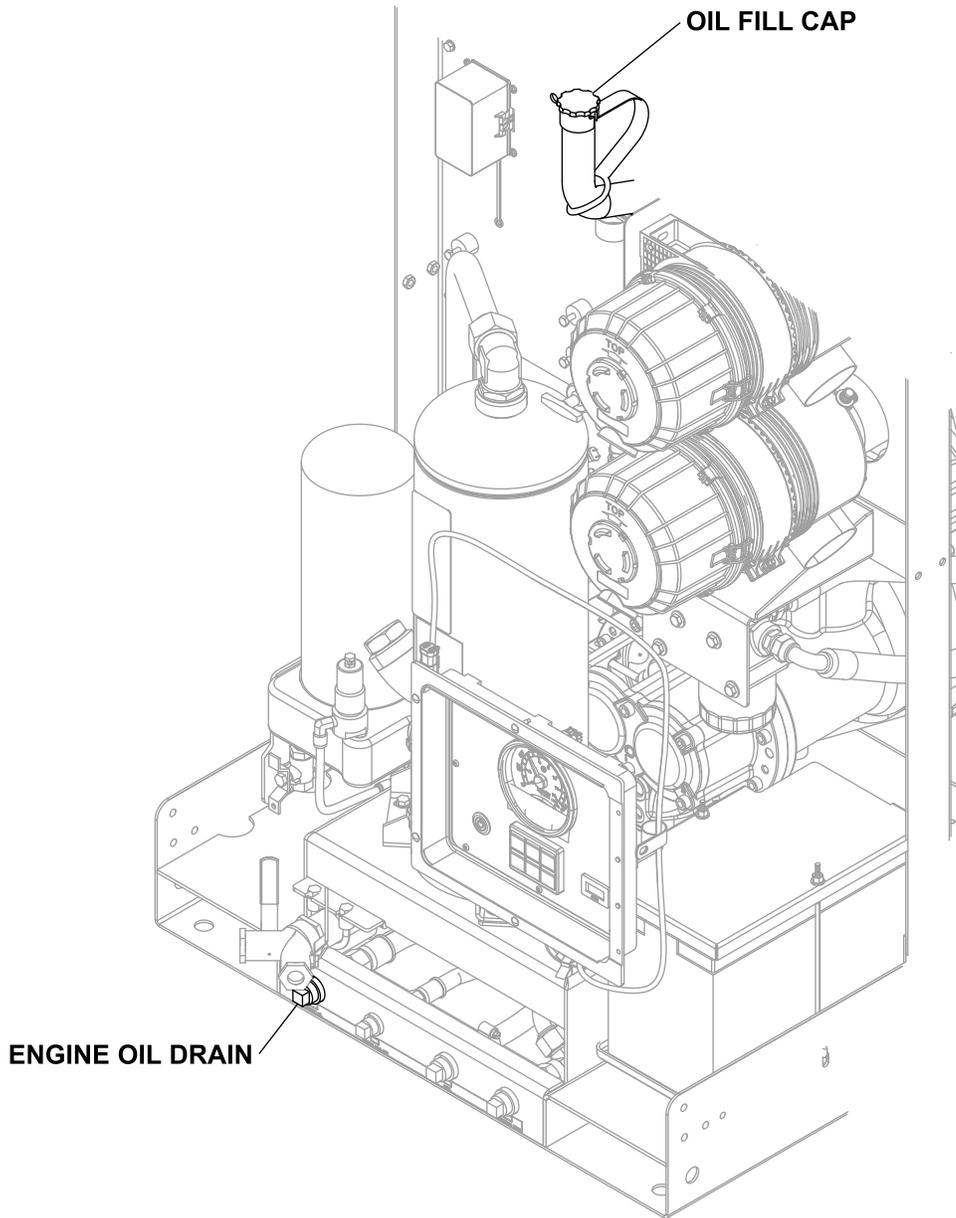


FIGURE 4-4: SHOWING ENGINE OIL DRAIN

Engine Operation

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals. Perform the following procedure below as follows:



Oil in the filter may run down while detaching the oil filter. Be careful not to contaminate the other parts by using a cloth when detaching the filter. After replacing the oil filter, wipe clean any other parts which the oil has touched.

Procedure:

1. Locate the engine oil drain plug. The drain plug allows the oil to drain out of the pan.
2. Position a container, such as an approved oil catch pan, under the engine oil drain plug. Make sure the catch pan is large enough to hold the volume of oil expected to drain out of the engine. (Refer to engine owner's manual).
3. Loosen the engine oil drain plug. Carefully remove the plug by hand, making sure the catch pan is underneath the plug hole. Oil will flow rapidly from the hole, but allow several minutes for all old oil to drain out. (Refer to engine owner's manual for additional information.) **CAUTION: OIL MAY BE HOT!** (See Figure 4-4).
4. Remove oil fill cap.
5. Wipe the engine oil threads and engine oil drain plug with a rag, and visually inspect the condition of the oil pan and oil drain plug threads and gasket. Replace drain plug if you have any concerns about the condition of the plug. Replace the drain plug gasket if needed. Once the oil is finished draining, reinstall the oil drain plug and tighten.
6. Drain plug at the torque of 3.0 kgf•m to the manufacturer-specified. (Refer to engine owner's manual.) (See Figure 4-4).

Step 5: Replacing Oil Filter

Showing oil filter location.

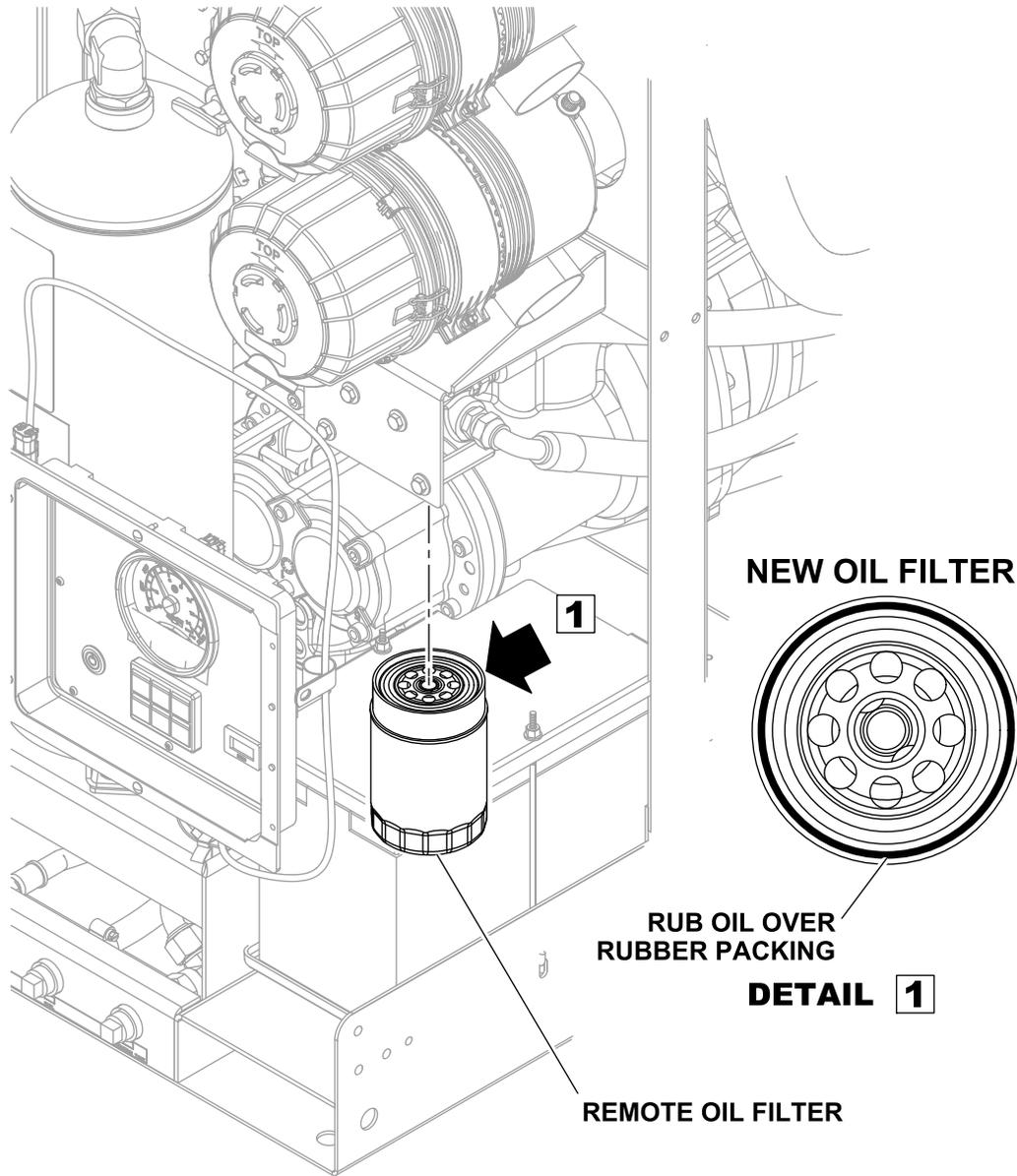


FIGURE 4-5: REPLACING OIL FILTER

Engine Operation

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals. Perform the following procedure below as follows:



Adding oil which exceeds the upper limit of the oil level gauge may cause engine faults. If you have injected engine oil far over the upper limit of the oil level gauge, drain it until the engine oil level indicates somewhere between the upper and lower limit of the oil level gauge.

Procedure:

1. Locate the oil filter. If the old and new oil filters are not the same, double-check the application to be sure you have the correct filter. (Refer to engine owner's manual for additional information.)
2. Position an oil catch pan under oil filter to catch any residual oil remaining inside filter.
3. Loosen the oil filter or oil filter cap with oil filter wrench, and allow the oil to drain from the oil filter (See Figure 4-5).
4. Remove the oil filter. Check to make sure the filter gasket has come off with the filter. If it's still clinging to the engine mounting plate, remove it and any remaining residue.

Install:

1. Cleanly wipe the surface on which the oil filter is mounted. (See Figure 4-5).
2. Place a light coating of new oil on the gasket of the new oil filter (See Figure 4-5) so it will install smoothly onto the engine. (Note: Do not use grease!) By hand, install the new oil filter onto the engine by turning in a clockwise direction. Once the oil filter gasket first contacts the mounting plate gasket surface, tighten the filter, preferably by hand. Generally, this is three-quarters to one full turn after the filter gasket contacts the engine. (NOTE: Cartridge oil filter replacement procedures may differ. Refer to engine owner's manual for instructions.)
3. Assemble the oil filter with the filter wrench at a torque of 16 ~ 20 Nm.
4. Add the engine oil.
Inject genuine oil recommended by Doosan.
5. Reinsert the oil level gauge (dipstick).
6. Reinstall the oil cap.
7. Remove the engine oil drain container from under the drain valve.

Step 6: Final Inspection for Leaks

Performing final inspection for leaks.

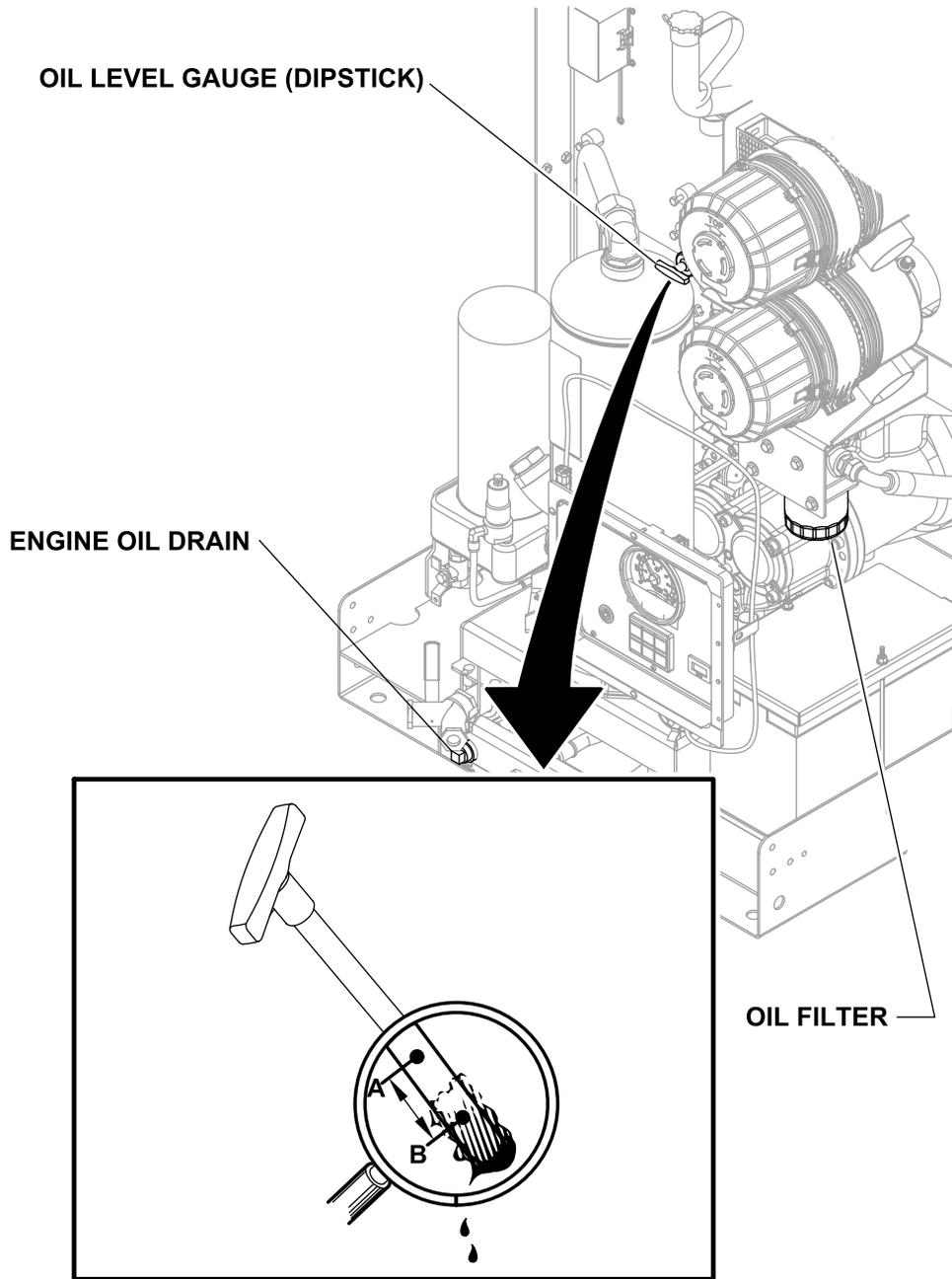


FIGURE 4-6: FINAL INSPECTION FOR LEAKS

Engine Operation

Refer to the Preventive Maintenance Schedule in this manual for recommended servicing intervals. Perform the following procedure below as follows:

Procedure:

1. Start the engine and then stop it when it reaches a normal temperature.
2. Check if engine oil leaks after starting the engine.
3. Wait for 5 ~ 10 minutes.
4. Check the engine oil level with the oil level gauge (dipstick) (See Figure 4-6).

This procedure for changing oil and oil filter is now complete.

Coolant



The recommended mixing ratio allows coolant to prevent corrosion of the engine efficiently and to maintain the best engine performance for a long period. Using contaminated water or unspecified antifreeze or additives may cause critical faults in the cooler.

General Information

The coolant plays an important role in the prevention of overheating and freezing of the engine. However, if the engine is used for a long period, the performance of antifreeze and anticorrosion of the coolant degrades. Maintain the condition of the coolant through daily inspections and periodic replacements. The mixing ratio for the engine coolant is 40 % antifreeze and 3~5 % additives (DCA4) to prevent corrosion. For the water in the coolant, use clean tap water. Periodically check coolant to maintain the concentration of antifreeze and additives (Refer to Table 5-1).

Ambient Temperature (° C)	Coolant (° C)	Antifreeze %
Above -10	85	15
-10	80	20
-15	73	27
-20	67	33
-25	60	40
-30	56	44
-40	50	50

Checking the Coolant

DANGER

If the reservoir cap is opened to exchange or replenish coolant while the engine is overheated, hot water will spurt out and may cause serious burns. If it is absolutely necessary to open the reservoir cap while the engine is overheated, wrap the reservoir cap with a cloth and slowly open the reservoir cap in two steps until the steam pressure has been released from the inside. After the steam pressure has been completely released, remove the reservoir cap.

CAUTION

When taking out a sample of coolant from the supplementary tank, it is difficult to measure the precise concentration. Always take out sample by opening the drain plug of coolant.

CAUTION

Measurement time should not exceed 75 seconds. The color changes as time passes.

CAUTION

If the color on the test sheet does not match the color of the standard color table, find a middle color on the standard color table. For example, if the color of (C) of the test sheet matches D and F on the NITRITE of the standard color table, select E.

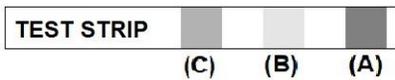
To prevent corrosion inside of the engine cooling unit, drain the coolant and replace it with new coolant once a year.

Procedure for checking coolant.

1. Make sure that the engine and radiator are cooled.
2. Check the level in the supplementary tank.
3. If the coolant level indicates between the upper limit and the lower limit on the supplementary tank, it means that the coolant volume is normal.
4. If there is insufficient coolant, replenish it.
5. Open the reservoir cap and check the condition of the coolant. If the coolant cap is contaminated or insufficient, measure the coolant concentration. If the coolant concentration is outside the specified range, exchange the coolant.

Measurement of Coolant Concentration

Special Tools

FIGURE 5-1: TEST STRIP	PRODUCT NUMBER/NAME
 <p>TEST STRIP</p> <p>(C) (B) (A)</p>	<p>60.99901-0038 CC2602M (Fleet guard number) Coolant test sheet</p>

The Coolant concentration can be measured as follows:

1. If the Engine coolant temperature is within a range of 10 ~ 55° C, drain the Coolant.
2. Soak the test strip (See Figure 5-1) in the coolant and remove after 3 ~ 5 seconds. Shake the test strip to remove the remaining coolant.
3. Wait for about 45 seconds until the test strip changes its color.
4. Check the color on test sheet (See Table 5-2).

Engine Operation

% GLYCOL / ANTIFREEZE (C) (END PAD)



-12° -15° -18° -21° -23° -29° -34° -43° -51 °C

SCA Units per Litre

Row E	0.0	0.4	0.7	0.9	1.0	1.1	1.3	1.5
Row D	0.0	0.4	0.6	0.7	0.9	0.9	1.1	1.3
Row 4	0.0	0.4	0.5	0.5	0.6	0.7	1.0	1.2
Row 3	0.0	0.3	0.4	0.4	0.6	0.7	0.9	1.1
Row 2	0.0	0.2	0.3	0.4	0.5	0.6	0.8	1.0
Row 1	0.0	0.2	0.2	0.2	0.4	0.5	0.7	0.9
Row C	0.0	0.1	0.2	0.2	0.3	0.4	0.6	0.9
MOLYBDATE (MIDDLE PAD)	A	B	C	D	E	F	G	H
	NITRITE							

TABLE 5-2: GLYCOL-ANTIFREEZE TEST SHEET

1. Compare the color of part A (See Table 5-2) on the test sheet to the color of GLYCOL/FREEZEPOINT (End pad) of the standard color table.
2. Compare the color of the test sheet (B) (See Table 5-2) to the color of MOLYBDATE (Middle pad) of the standard color table.
3. Compare the color of the test sheet (C) (See Table 5-2) to the color of NITRITE of the standard color table.
4. Compare the changed pink color part A (See Table 5-2) of the test sheet with the GLYCOL/FREEZEPOINT (End pad) of the standard color table on top of the container and confirm the concentration. The concentration indication has to be within the color scope of 33 ~ 50%.
5. The state of additives for anticorrosion is shown on the point where the color of MOLYBDATE (Middle pad) on the standard color table (See Table 5-2) (which is identical with the Middle (B) of the test sheet) is crossed with the color of NITRITE on the standard color table (See Table 5-2) (which is identical with the (C) of the test sheet). It should be maintained at the optimum range, in the green section between 0.3 to 0.8.
6. If the measurement result is below 0.3, replenish anticorrosion additives (DCA4). If it is above 0.8 or, drain a little coolant and then inject clean tap water to adjust the concentration.

Replenishment of Coolant



Do NOT let foreign substances flow into the engine when replenishing coolant.



If the reservoir cap is opened while the engine is hot, hot water will spurt out and may cause serious burns. Open the reservoir cap after making sure that the engine has been fully cooled.

Mark and separately manage the containers for storing coolant from beverage containers for avoiding confusion. See a doctor immediately in case of drinking coolant.

If the coolant level of the supplementary tank is below the lower limit, replenish the coolant as follows:

1. Remove the supplementary tank cap.
2. Replenish coolant until level is between the upper and lower limit of the supplementary tank.
3. Install the supplementary tank cap.

If there is no coolant in the supplementary tank, replenish the coolant as follows:

1. Remove the reservoir cap while the engine and radiator are cold.
2. Replenish coolant up to the inlet of the radiator.
3. After starting the engine let the coolant circulate sufficiently and check the coolant level. If there is insufficient coolant, replenish more.
4. Remove the supplementary tank cap.
5. Replenish coolant until its level is between the upper and lower limit of the supplementary tank.
6. Install the supplementary tank cap.

Replacement of Coolant

DANGER

Never open the reservoir cap while the engine is overheated. If the reservoir cap is opened while the engine is overheated, hot water will spurt out and may cause serious burns. Open the reservoir cap after ensuring that the engine has been cooled sufficiently.

Mark and separately manage the containers for storing coolant from beverage containers to avoid confusion. If coolant is ingested, see a doctor immediately.

WARNING

Discard exchanged coolant to the regulations set forth by the relevant authorities. Disposing of exchanged coolant into the ground, sewers, drains, rivers or the sea will cause serious environmental pollution. Violation of regulations regarding discard of coolant without observing the handling regulations may result in legal action.

CAUTION

Be careful not to get coolant on any belts or electric apparatus when replacing the coolant.

CAUTION

Do not mix antifreezes from different manufacturers.

Do not mix the coolant with different concentrations.

Do not add antirust which is not recommended by us.

As insufficient coolant concentration may cause corrosion or freezing. However, an excessive concentration may degrade the cooling performance. Mix coolant with 40% antifreeze and 3~5% additives (DCA4) to prevent corrosion.

 **CAUTION**

After replenishing coolant, check the coolant level of the supplementary tank for at least two or three days.

1. Make sure that engine and radiator are cooled.
2. Place an appropriate size container in front of the coolant drain plug.
3. Remove the reservoir cap.
4. Unplug the coolant drain plug of the radiator and drain coolant.
5. After completing coolant drain, connect the coolant drain plug.
6. Drain the coolant from the coolant supplementary tank and cleanse the tank.
7. Fill the radiator inlet with water and install reservoir cap.
Note: slowly pour coolant in to let the air be discharged from radiator and press the hose connected to it to discharge the air inside.
8. Start the engine to let the cooling fan rotate 2 or 3 times. When the engine is warmed up, increase the engine rpm two or three times.
9. Shut down engine and wait until engine is cooled.
10. Remove the radiator drain plug and drain water.
11. Repeat steps 1–8 until the drained water becomes clear.
12. Press the hose connected to the radiator to discharge the air from inside of the radiator and slowly fill the radiator with the coolant at the specified mixing ratio to let the air be discharged from the radiator.
Note: Use recommended genuine antifreeze.
13. Operate the engine at idle after starting. When cooling fan is running and coolant is circulated, remove radiator cap and replenish coolant through the inlet.
14. Replenish coolant until the cooling fan rotates 3 ~ 5 times.
15. Replenish coolant to the upper limit of the supplementary tank and then install radiator cap.
16. Operate the engine at idle until the cooling fan rotates 2 ~ 3 times.
17. Shut down the engine and wait until the engine and radiator are cooled.
18. After checking the coolant level in the supplementary tank, replenish coolant until the tank level stays between the upper and lower limit without changing.



Lubrication

General 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

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. Ensure That The Air Pressure Gauge Reads Zero (0) Pressure And Ensure There Is No Air Discharge When Opening The Manual Blowdown Valve.

CAUTION

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.

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.

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.

NOTICE

Portable Power Provides compressor Oil Specifically Formulated For Portable compressors. Use Of These Fluids Is Required To Obtain Extended Limited Airend Warranty.

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 chart (See Chart 6-1) 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.

CHART 6-1: COMPRESSOR OIL SPECIFICATION

Rated Operating Pressure	Ambient Temperature	Compressor Oil Specification
100 psi to 300 psi	-10° F to 125° F (-23° C to 52° C)	Preferred: PRO-TEC™ Alternate: ISO Viscosity Grade 46 PAO, with rust and oxidation inhibitors, for rotary screw compressor service.
350 psi	(-23° C to 52° C) (-10° F to 125° F) 65° F to 125° F (18C° C to 52° C)	Preferred: PRO-TEC™ XHP605 Alternate: XHP405 ISO Viscosity Grade 68 Group 3 or 5 with rust and oxidation inhibitors designed for air compressor service. Preferred: XHP605 XHP1001

Lubrication

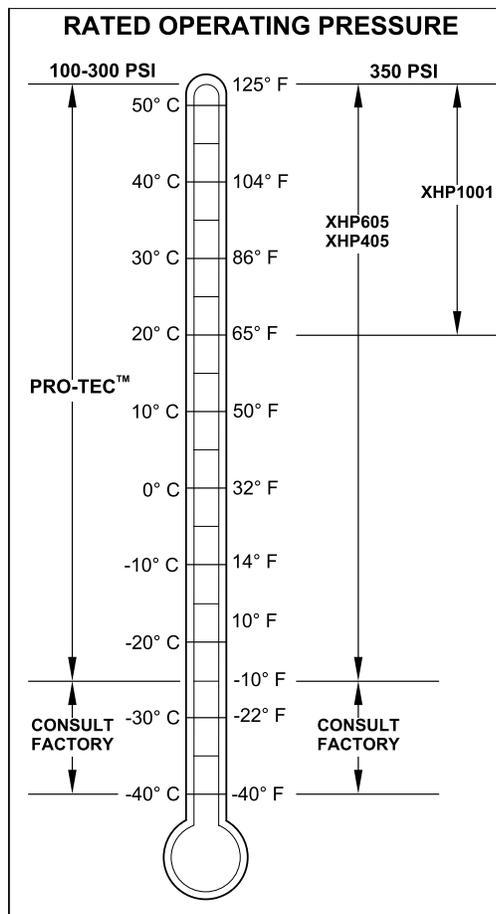


FIGURE 6-1: RATED AMBIENT TEMPERATURE PRESSURE

Compressor Oil Carryover (Oil Consumption) May Be Greater With The Use Of Alternative Oils.

Preferred Oil - use of these Oils with Doosan (See Table 6-1) branded Filters can extend Airend Warranty. Refer to the Warranty Policy for details or contact your Representative.

TABLE 6-1: PREFERRED OIL

Preferred Oil	1 gal. (3.8 Liter)	5 gal. (19.0 Liter)	55 gal. (208 Liter)	275 gal. (1041 Liter)
Pro-Tec™	36899698	36899706	36899714	36899722
XHP605	—	22252076	22252050	22252068
XHP1001	—	35612738	35300516	—
XHP405	—	22252126	22252100	22252118



Maintenance

General 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.

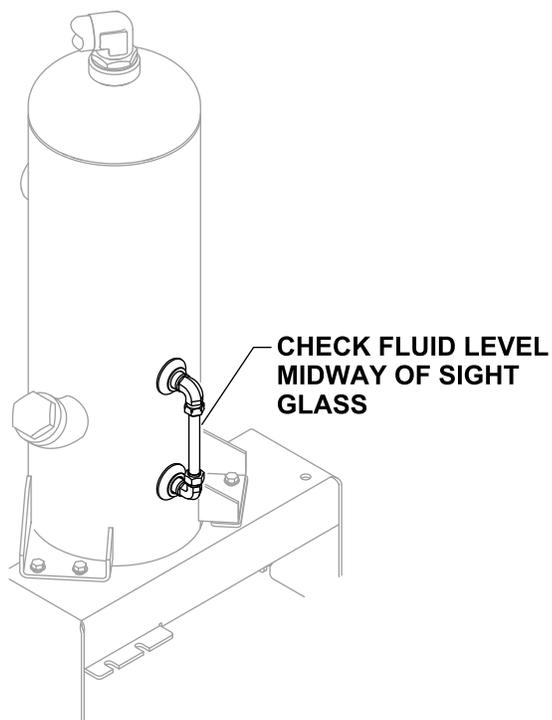
Maintenance

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



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.

Maintenance

Compressor Oil Separator Element (continued)

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

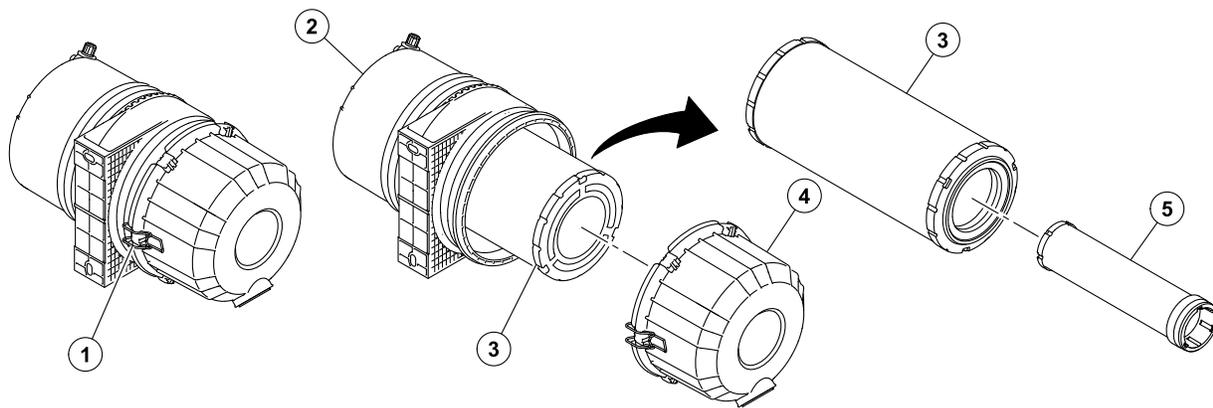
If inspection reveals damage to the main element, the safety element must be replaced.



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).

Removal

1. Loosen the two (2) latches item 1, on the sides of the air filter body item 2 and cover item 4.
2. Remove the primary element filter item 3, from air filter body item 2. If equipped, remove the optional safety element filter item 5, from the inside of primary filter item 3.
Clean the exterior of the air filter body, 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 filter body prior to removing the safety element.

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 3, install the new filters into air filter body item 2.
3. Reinstall cover item 4, onto air filter body item 2.
4. Lock the two (2) latches item 1, and cover item 4, after securing to air filter body item 2.

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.

Maintenance

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 electric fan and requires no periodic maintenance.

Fuel System

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

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).

Diesel Exhaust Fluid

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

Check the DEF level and add fluid as necessary. Use API certified DEF which meets ISO 22241. The DEF pump contains a filter that should be replaced at regular intervals.

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



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 later in this section.

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 in this manual).

Lubrication



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 7-1):

TABLE 7-1: 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.

Maintenance

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 Texture 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 of 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.



Troubleshooting

Introduction

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.

Think Before Acting

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

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).

Troubleshooting

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 conne
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.
	No air flow.	Check electric fans to ensure they are operating.
	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.	

Troubleshooting

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
11. Compressor will not unload	Malfunctioning inlet unloader.	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.
	Plugged vent leak.	Clean and/or replace.
12. Safety Valve Opens	Operating pressure too high.	Reduce pressure to rated operating pressure.
	Malfunctioning inlet unloader.	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.

Troubleshooting

Diagnostic Codes

The Miniport Displays Diagnostic Codes For The Compressor System And The Engine. Listings Of These Codes Are Provided In This Section.

The Engine Diagnostic Codes Can Also Be Read With The Engine Manufacturer'S Service Tool (Refer to Engine Fault Codes section in this manual). 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.



Compressor Diagnostic Codes

Compressor Diagnostic Codes

LCD Display	Display Name	Description	Type
CPR CODE 1 LOW ENGINE SPEED	Low Engine Speed	Engine speed less than 1300 RPM for 30 seconds.	FAULT
CPR CODE 2 HIGH ENGINE SPEED	High Engine Speed	Engine speed greater than 2720 RPM for 30 seconds.	FAULT
CPR CODE 3 WAIT 30 SEC RETRY START	Engine Crank Timeout	Engine crank attempt longer than 15 seconds above 50° F or longer than 30 seconds below 32° F.	FAULT
CPR CODE 4 OUT OF FUEL	Out of Fuel	Fuel level in tank below usable limit.	FAULT
CPR CODE 10 ENG SPEED RESPONSE	Engine Speed Response	Engine target idle speed not met within 10 seconds after loading compressor.	ALERT
CPR CODE 11 A/A/S ATTEMPT EXCEEDED	AutoStart Attempts Exceeded	Compressor not started after 3 crank attempts.	ALERT
CPR CODE 12 FUEL LEVEL LOW	Low Fuel Level	Fuel level in tank approaching empty.	ALERT
CPR CODE 16 HIGH ENGINE TEMP	High Engine Temperature	Engine coolant temperature greater than 226° F (Engine derate begins)	FAULT
CPR CODE 17 HIGH ENGINE TEMP	High Engine Temperature (Shutdown)	Engine coolant temperature greater than 231° F (Engine Shutdown)	FAULT
CPR CODE 18 LOW OIL PRESSURE	Low Oil Pressure	Low engine oil pressure	FAULT
CPR CODE 19 HIGH FUEL TEMP	High Fuel Temperature	Engine fuel temperature greater than 180° (Engine derate)	ALERT
CPR CODE 23 LOW GEN. FREQUENCY	Low Generator Frequency	Low engine speed detected while running in generator mode. Generator excitation disabled.	ALERT
CPR CODE 25 UNINTENDED LOAD	Unintended Load	Air pressure in regulation system exceeded limit prior to loading.	FAULT

Compressor Diagnostic Codes

LCD Display	Display Name	Description	Type
CPR CODE 26 LOAD INHIBIT DELAY	Load Inhibit Delay	The operator has attempted to load the machine before the warm up timer has expired.	ALERT
CPR CODE 28	Incorrect Engine ECU Calibration	Engine ECU has a different calibration than what is expected (Engine will not crank).	ALERT
CPR CODE 29 ENGINE SHUTDOWN UNKNOWN	Engine Shutdown Unknown	Engine stopped without an engine diagnostic code.	FAULT
CPR CODE 30 HIGH AIREND TEMP	High Airend Discharge Temperature	Airend discharge temperature greater than or equal to 251° F.	FAULT
CPR CODE 32 AIREND DISC TEMP SENSOR	Airend Discharge Temperature Sensor	Airend discharge temperature sensor reading out of range.	FAULT
CPR CODE 33 SEP TANK PRES SENSOR	Separator Tank Pressure Sensor	Separator Tank Pressure Sensor reading out of range.	FAULT
CPR CODE 34 HIGH PRES AT START	High Separator Tank Pressure At Start	Separator Tank Pressure greater than 20 psi at crank attempt.	FAULT
CPR CODE 35 HIGH SEPT TANK PRES	High Separator Tank Pressure	Air Pressure in the Separator Tank exceeded limit.	FAULT
CPR CODE 36 SAFETY VALVE OPEN	Safety Valve Open	Safety relief valve on separator tank opened.	FAULT
CPR CODE 38 AIR FILTERS RESTRICTED	Intake Air Filters Restricted	Intake filters restricting air flow.	ALERT
CPR CODE 39 LOW SYSTEM VOLTAGE	Low System Voltage/Alternator Not Charging	Electrical system voltage below 13.5 VDC.	ALERT
CPR CODE 42 FUEL LEVEL SENSOR	Fuel Level Sensor	Fuel Level Sensor reading out of range.	ALERT
CPR CODE 43 LOW SEP TANK PRES	Low Separator Tank Pressure	Separator tank pressure below 40 psi after compressor is loaded.	FAULT

Compressor Diagnostic Codes

LCD Display	Display Name	Description	Type
CPR CODE 44 HIGH IQ FILTERS RESTR	High IQ Filter Restriction	IQ filters restricting air flow.	ALERT
CPR CODE 50 HIGH SEP TANK TEMP	High Separator Tank Temperature	Separator tank temperature greater than or equal to 251° F.	FAULT
CPR CODE 51 COMPRESSOR ID INVALID	Compressor ID Invalid	The Compressor Controller and Mini-Port Display do not have a valid compressor ID.	FAULT
CPR CODE 52 IQ FILTERS RESTRICTED	IQ Filters Restricted	IQ filters restricted past usable level.	FAULT
CPR CODE 53 SEP TANK TEMP SENSOR	Separator Tank Temperature Sensor	Separator tank temperature sensor reading out of range.	FAULT
CPR CODE 54 REG SYSTEM PRES SENSOR	Regulation System Pressure Sensor	Regulation system pressure sensor reading out of range.	FAULT
CPR CODE 55 E E STOP ACTIVATED	Emergency Stop Activated	Emergency Stop Button has been activated.	FAULT
CPR CODE 56 LOW START PRESSURE	Low Pressure During Warmup	The machine is detecting a low system pressure before the machine is loaded.	FAULT
CPR CODE 58 AMBIENT TEMP SENSOR	Ambient Temperature Sensor	Ambient temperature sensor reading out of range.	ALERT
CPR CODE 61 IQ FILTER PRES ERROR	IQ Filter Pressure Sensor	IQ Differential Pressure Sensor reading out of range.	ALERT
CPR CODE 63 AMBIENT TEMP SENSOR	Ambient Temperature Sensor	Ambient temperature sensor reading out of range.	ALERT
CPR CODE 71 ENG ECM COMMS	Engine ECM Communication	Communication between Compressor Controller and engine ECM not functional.	FAULT
CPR CODE 73 AUTOSTART CTRL COMMS	AutoStart Controller Communication	Communication between Compressor Controller and engine ECM not functional.	ALERT

Compressor Diagnostic Codes

LCD Display	Display Name	Description	Type
CPR CODE 75 IQ TCU CTRL COMMS	IQ TCU Controller Communication	Communication between Compressor Controller and engine IQ TCU controller not functional.	ALERT
CPR CODE 141 LOW DEF LEVEL	Low Def Level	0% DEF level initiate engine shutdown after 1 minute.	FAULT
CPR CODE 143 ENG INDUCE. ACTIVE	Inducement Active	Engine inducement active, see engine diagnostic code.	ALERT
CPR CODE 251 CPR CTRL COMMS	Compressor Controller Communication	Communication between Compressor Controller and engine Tachometer with Mini-Port Display not functional.	ALERT
CPR CODE 252 KEYPAD COMMS	Keypad Communication	Communication between Compressor Controller and Keypad not functional.	FAULT



Engine Fault Codes

Engine Fault Code List

SPN	FMI	DTC	Fault Name	Fault Description	LAMP	LIMPHOME	STOP	Purpose
11	94	P0088	F_M_OVER_PRESSURE_IMV	Rail pressure too high - Check fuel line, wiring harness and IMV	FLASH		Stop	Performance
27	20	P0C17	F_M_EGR_CLOSE_POS_DRIFT	EGR (Exhaust gas recirculation) position sensor learning value drift	ON			Plausibility
27	30	P0C18	F_M_EGR_CLOSE_POS_RANGE	EGR (Exhaust gas recirculation) position sensor learning value out of range	ON			Learned value
27	0	P0402	F_M_EGR_ERROR_AIR_HI	EGR (Exhaust gas recirculation) system detected excessive flow	ON			Plausibility
27	1	P0401	F_M_EGR_ERROR_AIR_LO	EGR (Exhaust gas recirculation) system detected insufficient flow	ON			Plausibility
27	3	P0406	F_M_EGR_FDB_POS_HI_FLT	EGR (Exhaust gas recirculation) position sensor voltage high	ON			Short circuit to Battery
27	4	P0407	F_M_EGR_FDB_POS_LO_FLT	EGR (Exhaust gas recirculation) position sensor voltage low	ON			Short circuit to Ground
27	10	P046D	F_M_EGR_FDB_POS_NOI_FLT	EGR (Exhaust gas recirculation) position sensor signal noise (intermittent)	ON			Noise
29	11	P2138	F_M_PEDAL_HAND_CORREL	Hand Pedal Position 1,2 voltage correlation	ON	LimpHome		
29	31	P2121	F_M_PEDAL_HAND_LIMPH	Hand Pedal sensor 1,2 out of range	ON	LimpHome		
29	29	P2120	F_M_PEDAL_HAND_T1_HI	Hand Pedal sensor position 1	ON	LimpHome		
29	29	P2120	F_M_PEDAL_HAND_T1_LO	Hand Pedal sensor position 1	ON	LimpHome		
29	30	P2125	F_M_PEDAL_HAND_T2_HI	Hand Pedal sensor position 2	ON	LimpHome		
29	30	P2125	F_M_PEDAL_HAND_T2_LO	Hand Pedal sensor position 2	ON	LimpHome		
81	7	P2463	F_M_DPF_PLUGGED	Forced (Switch) DeSOx needed	ON			SCR
91	19	U0140	F_M_J1939_CAN_PEDAL	Pedal signal missing via CAN	FLASH	LimpHome		CAN
94	16	P0089	F_M_RPC_CTRL_ERROR_2_POS	Rail Pressure control positive error - Check fuel line, wiring harness and IMV				Performance
94	18	P0089	F_M_RPC_CTRL_ERROR_2_POS	Rail Pressure control negative error - Check fuel line, wiring harness and IMV				Performance
97	9	P2264	F_M_WATER_IN_FUEL_FDB_SUP_0	Water in Fuel sensor circuit issue (analog to digital converting error)				ECU internal
97	4	P2266	F_M_WATER_IN_FUEL_FDB_SUP_1	Water in Fuel sensor voltage low	FLASH			Short circuit to Ground
97	3	P2267	F_M_WATER_IN_FUEL_FDB_SUP_2	Water in Fuel sensor voltage high	FLASH			Short circuit to Battery

Engine Fault Codes

Engine Fault Code List

SPN	FMI	DTC	Fault Name	Fault Description	LAMP	LIMPHOME	STOP	Purpose
97	31	P2269	F_M_WATER_IN_FUEL_SUP_0	Water in Fuel detected	FLASH			Performance
100	1	P0524	F_M_OIL_PRES_CAL_LO_RUN	Oil pressure too Low	FLASH		Stop	Plausibility
100	3	P0523	F_M_OIL_PRES_HI	Oil pressure sensor voltage high	ON			Short circuit to Battery
100	4	P0522	F_M_OIL_PRES_LO	Oil pressure sensor voltage low	ON			Short circuit to Ground
105	3	P0113	F_M_T2_TEMP_CNT_HI_SUP	Intake Manifold Temperature sensor voltage high	ON			Short circuit to Battery
105	4	P0112	F_M_T2_TEMP_CNT_LO_SUP	Intake Manifold Temperature sensor voltage low	ON			Short circuit to Ground
105	10	P0114	F_M_T2_TEMP_NOI	Intake Manifold Temperature sensor circuit noise (intermittent)	ON			Noise
105	2	P0111	F_M_T2_TEMP_PLAU	Intake Manifold Temperature sensor out of range (plausibility)				Plausibility
108	3	P0108	F_M_MAP_SENSOR_HI	Intake Manifold Pressure sensor voltage high	ON			Short circuit to Battery
108	4	P0107	F_M_MAP_SENSOR_LO	Intake Manifold Pressure sensor voltage low	ON			Short circuit to Ground
108	3	P2229	F_M_ATMOSP_HI	Atmospheric sensor voltage high	ON			Short circuit to Battery
108	4	P2228	F_M_ATMOSP_LO	Atmospheric sensor voltage low	ON			Short circuit to Ground
110	2	P0116	F_M_COOLANT_PLAU	Coolant Temperature sensor out of range (plausibility)				Plausibility
110	3	P0118	F_M_COOLANT_SENSOR_HIGH	Coolant Temperature sensor voltage high	ON			Short circuit to Battery
110	4	P0117	F_M_COOLANT_SENSOR_LOW	Coolant Temperature sensor voltage low	ON			Short circuit to Ground
110	15	P0217	F_M_VGT_ERROR_BOOST_HI	Coolant overheating (temperature high)	ON			
132	0	P00BD	F_M_AMF_PLAU_HI	Air mass flow sensor detected excessive air flow (high)	ON			Plausibility
132	1	P00BC	F_M_AMF_PLAU_LO	Air mass flow sensor detected insufficient air flow (low)	ON			Plausibility
132	3	P0103	F_M_AMF_SENSOR_HI	Air mass flow sensor voltage high	ON			Short circuit to Battery
132	4	P0102	F_M_AMF_SENSOR_LO	Air mass flow sensor voltage low	ON			Short circuit to Ground
157	2	P0190	F_M_RAIL_PRES_GRAD	Rail Pressure sensor noise (rapid gradient)	FLASH		Stop	Plausibility
157	3	P0193	F_M_RAIL_PRES_HI	Rail Pressure sensor voltage high	FLASH		Stop	Short circuit to Battery
157	4	P0192	F_M_RAIL_PRES_LO	Rail Pressure sensor voltage low	FLASH		Stop	Short circuit to Ground
157	11	P0191	F_M_RAIL_CAL_MED_TST_FLT	Rail Pressure sensor out of range (drift)	FLASH		Stop	Plausibility

Engine Fault Code List

SPN	FMI	DTC	Fault Name	Fault Description	LAMP	LIMPHOME	STOP	Purpose
157	10	P0087	F_M_RPC_BUILD_NIMTK	Rail Pressure Build-up at cranking - Check fuel line, wiring harness and IMV	ON			Performance
157	22	P0089	F_M_RPC_CTRL_ERROR_2_POS	Rail Pressure control error - Check fuel line, wiring harness and IMV				Performance
157	21	P0002	F_M_RPC_CTRL_ERROR_IO_NEG	Rail Pressure control error - Check fuel line, wiring harness and IMV	ON			Performance
168	3	P0563	F_M_BATTERY_HI	Battery voltage high	ON			Battery
168	4	P0562	F_M_BATTERY_LO	Battery voltage low	ON			Battery
172	2	P0074	F_M_INLET_AIR_TEMP_GRAD	Inlet Air Temperature sensor signal noise (<i>rapid gradient</i>)	ON			Plausibility
172	3	P0073	F_M_INLET_AIR_TEMP_HI	Inlet Air Temperature sensor voltage high	ON			Short circuit to Battery
172	4	P0072	F_M_INLET_AIR_TEMP_LO	Inlet Air Temperature sensor voltage low	ON			Short circuit to Ground
173	1	P0421	F_M_DOC_EXO	DOC (Diesel oxidation catalyst) efficiency too low				Performance
173	0	P2428	F_M_EXH_OVER_TEMP	Exhaust gas temperature too high	ON			Performance
174	9	P0180	F_M_FUEL_TEMP_EX	Fuel Temperature sensor circuit issue (analog to digital converting error)				
174	2	P0181	F_M_FUEL_TEMP_GRAD	Fuel Temperature sensor signal noise (<i>rapid gradient</i>)	ON			Plausibility
174	3	P0183	F_M_FUEL_TEMP_HI	Fuel Temperature sensor voltage high	ON			Short circuit to Battery
174	4	P0182	F_M_FUEL_TEMP_LO	Fuel Temperature sensor voltage low	ON			Short circuit to Ground
175	31	P0195	F_M_OIL_TEMP	Oil Temperature sensor voltage high / low	ON			Open/Short circuit
175	2	P0196	F_M_OIL_TEMP_PLAU	Oil Temperature sensor out of range (plausibility)				Plausibility
527	9	P253A	F_M_PTO_CRUISE_INCON_SW	PTO Cruise Control switch plausibility				
527	7	P253E	F_M_PTO_CRUISE_SW_STUCK	PTO Cruise Control Switch Stuck				
596	11	P260A	F_M_IDLE_RPM_SWITCH_SUP_0	PTO Cruise Control switch(analog to digital converting error)				
596	4	P260B	F_M_IDLE_RPM_SWITCH_SUP_1	PTO Cruise Control switch voltage Low				
596	3	P260C	F_M_IDLE_RPM_SWITCH_SUP_2	PTO Cruise Control switch voltage High				
629	12	P060B	F_M_ACC_FUNC_CHECK_ADC	Accelerometer (knock) sensor signal analog to digital converting error	FLASH			ECU internal
630	11	P0602	F_M_C2L_DATA_0	Injector code (C3) not installed	ON	Limphome		ECU internal
630	25	P0605	F_M_MEMORY_INTEGRITY_CODE	ECU Memory (Code Integrity)	FLASH			ECU internal

Engine Fault Codes

Engine Fault Code List

SPN	FMI	DTC	Fault Name	Fault Description	LAMP	LIMPHOME	STOP	Purpose
630	23	P0603	F_M_MEMORY_INTEGRITY_DATA	ECU Memory (Data / Calibration Integrity)	FLASH			ECU internal
630	24	P0604	F_M_MEMORY_INTEGRITY_RAM	ECU Memory (RAM Integrity)	FLASH			ECU internal
630	31	P062F	F_M_P_L_NVM	ECU Non-volatile Memory error				ECU internal
636	0	P0371	F_M_APS_CRANK_EARLY	Crankshaft sensor signal early				Performance
636	8	P0374	F_M_APS_CRANK_LOST	Crankshaft sensor signal lost	ON			Performance
636	2	P0372	F_M_APS_CRANK_MISSING	Crankshaft sensor signal missing	ON			Performance
636	11	P0335	F_M_APS_CRK_DIR_SENS	Crankshaft sensor signal overspeed	ON			Performance
636	1	P0339	F_M_APS_GAP_MISSED	Crankshaft sensor signal gap missing	ON			Performance
637	30	P0340	F_M_APS_CAM_ERRATIC	Cam sensor abnormal signal detection				Learned value
637	8	P0342	F_M_APS_CAM_LOST	Cam sensor signal lost	ON			Performance
637	2	P0344	F_M_APS_CAM_MISSING	Cam sensor signal missing	ON			Performance
637	20	P0341	F_M_APS_CAM_OVER_SPD	Cam sensor signal over speed				Performance
639	19	U0100	F_M_CC_CAN_CONFIRMED_BUS_OFF	CAN communication error	ON		Stop	CAN
639	19	U0140	F_M_J1939_CAN_PEDAL	DeSox switch signal missing via CAN	FLASH	Limphome		CAN
641	3	P0242	F_M_VGT_ERROR_BOOST_HI					Plausibility
641	4	P0241	F_M_VGT_ERROR_BOOST_LO					Plausibility
651	20	P0262	F_M_BRC_HI_RES_DROP_0	Harness resistance high (Cylinder #1)				Open/Short circuit
651	21	P0261	F_M_BRC_LO_RES_DROP_0	Harness resistance low (Cylinder #1)				Open/Short circuit
651	5	P0201	F_M_FCI_OC_INJ_0	Injector circuit open (Cylinder #1)	ON			Open/Short circuit
651	6	P02EE	F_M_FCI_SC_INJ_0	Injector circuit short (Cylinder #1)	ON			Open/Short circuit
651	31	P029B	F_M_MDP_MIN_ABSOLUTE_0	MDP (Minimum Drive Pulse) leaning value below threshold (Cylinder #1)	ON			Performance
651	31	P029A	F_M_MDP_TRIM_HI_INJ_HI_0	Injector MDP (Minimum Drive Pulse) value low (Cylinder #1)				Performance
651	31	P029A	F_M_MDP_TRIM_HI_INJ_HI_0	Injector MDP (Minimum Drive Pulse) value low (Cylinder #1)				Performance
651	31	P029A	F_M_MDP_TRIM_HI_INJ_HI_0	Injector MDP (Minimum Drive Pulse) value low (Cylinder #1)				Performance
652	20	P0265	F_M_BRC_HI_RES_DROP_3	Harness resistance high (Cylinder #2)				Open/Short circuit
652	21	P0264	F_M_BRC_LO_RES_DROP_3	Harness resistance low (Cylinder #2)				Open/Short circuit
652	5	P0202	F_M_FCI_OC_INJ_3	Injector circuit open (Cylinder #2)	ON			Open/Short circuit

Engine Fault Code List

SPN	FMI	DTC	Fault Name	Fault Description	LAMP	LIMPHOME	STOP	Purpose
652	6	P02EF	F_M_FCI_SC_INJ_3	Injector circuit short (Cylinder #2)	ON			Open/Short circuit
652	31	P029F	F_M_MDP_MIN_ABSOLUTE_3	MDP (Minimum Drive Pulse) learning value below threshold (Cylinder #2)	ON			Performance
652	31	P029E	F_M_MDP_TRIM_HI_INJ_HL_3	Injector MDP (Minimum Drive Pulse) value low (Cylinder #2)				Performance
652	31	P029E	F_M_MDP_TRIM_HI_INJ_HL_3	Injector MDP (Minimum Drive Pulse) value low (Cylinder #2)				Performance
652	31	P029E	F_M_MDP_TRIM_HI_INJ_HL_3	Injector MDP (Minimum Drive Pulse) value low (Cylinder #2)				Performance
653	20	P0268	F_M_BRC_HI_RES_DROP_1	Harness resistance high (Cylinder #3)				Open/Short circuit
653	21	P0267	F_M_BRC_LO_RES_DROP_1	Harness resistance low (Cylinder #3)				Open/Short circuit
653	5	P0203	F_M_FCI_OC_INJ_1	Injector circuit open (Cylinder #3)	ON			Open/Short circuit
653	6	P02F0	F_M_FCI_SC_INJ_1	Injector circuit short (Cylinder #3)	ON			Open/Short circuit
653	31	P02A3	F_M_MDP_MIN_ABSOLUTE_1	MDP (Minimum Drive Pulse) learning value below threshold (Cylinder #3)	ON			Performance
653	31	P02A2	F_M_MDP_TRIM_HI_INJ_HL_1	Injector MDP (Minimum Drive Pulse) value low (Cylinder #3)				Performance
653	31	P02A2	F_M_MDP_TRIM_HI_INJ_HL_1	Injector MDP (Minimum Drive Pulse) value low (Cylinder #3)				Performance
653	31	P02A2	F_M_MDP_TRIM_HI_INJ_HL_1	Injector MDP (Minimum Drive Pulse) value low (Cylinder #3)				Performance
654	20	P0271	F_M_BRC_HI_RES_DROP_2	Harness resistance high (Cylinder #4)				Open/Short circuit
654	21	P0270	F_M_BRC_LO_RES_DROP_2	Harness resistance low (Cylinder #4)				Open/Short circuit
654	5	P0204	F_M_FCI_OC_INJ_2	Injector circuit open (Cylinder #4)	ON			Open/Short circuit
654	6	P02F1	F_M_FCI_SC_INJ_2	Injector circuit short (Cylinder #4)	ON			Open/Short circuit
654	31	P02A7	F_M_MDP_MIN_ABSOLUTE_2	MDP (Minimum Drive Pulse) learning value below threshold (Cylinder #4)	ON			Performance
654	31	P02A6	F_M_MDP_TRIM_HI_INJ_HL_2	Injector MDP (Minimum Drive Pulse) value low (Cylinder #4)				Performance
654	31	P02A6	F_M_MDP_TRIM_HI_INJ_HL_2	Injector MDP (Minimum Drive Pulse) value low (Cylinder #4)				Performance
654	31	P02A6	F_M_MDP_TRIM_HI_INJ_HL_2	Injector MDP (Minimum Drive Pulse) value low (Cylinder #4)				Performance
676	5	P0380	F_M_DTI_GP_RELAY_OC	glow plug (air heater) relay open circuit	ON			Open circuit
676	4	P0383	F_M_DTI_GP_RELAY_SC2G	glow plug (air heater) relay voltage low	ON			Short circuit to Ground
676	3	P0384	F_M_DTI_GP_RELAY_SC2VBATT	glow plug (air heater) relay voltage high	ON			Short circuit to Battery

Engine Fault Codes

Engine Fault Code List

SPN	FMI	DTC	Fault Name	Fault Description	LAMP	LIMPHOME	STOP	Purpose
731	20	P0325	F_M_ACC_FUNC_CHECK_PROG	Accelerometer (Knock) sensor 0 wiring open Cylinder 1/2)				Open circuit
731	21	P0330	F_M_FCI_ACC_DECODE_1	Accelerometer (Knock) sensor 1 wiring open (Cylinder 3/4)				Open circuit
1076	31	P0251	F_M_IM_CONTROL_TRIM_CLAMPED	Rail Pressure control error - Check fuel line, wiring harness and IMV				Plausibility
1076	15	P0259	F_M_IM_CONTROL_TRIM_HIHI	Rail Pressure control error - Check fuel line, wiring harness and IMV	ON			Performance
1076	16	P0254	F_M_IM_CONTROL_TRIM_HILO	Rail Pressure control error - Check fuel line, wiring harness and IMV	FLASH		Stop	Performance
1076	17	P0253	F_M_IM_CONTROL_TRIM_LOHI	Rail Pressure control error - Check fuel line, wiring harness and IMV	ON			Performance
1076	18	P0258	F_M_IM_CONTROL_TRIM_LOLO	Rail Pressure control error - Check fuel line, wiring harness and IMV	ON			Performance
1076	0	P0007	F_M_IM_CTRL_CTRL_TRIM_HIGH	Rail Pressure control trim high - Check fuel line, wiring harness and IMV	FLASH		Stop	Performance
1076	1	P0006	F_M_IM_CTRL_CTRL_TRIM_LOW	Rail Pressure control trim low - Check fuel line, wiring harness and IMV	FLASH		Stop	Performance
1076	3	P0004	F_M_IM_CTRL_FB_HIGH	IMV Current high	FLASH		Stop	Short circuit to Battery
1076	4	P0003	F_M_IM_CTRL_FB_LOW	IMV Current low	ON			Short circuit to Ground
1076	20	P0252	F_M_IM_CTRL_PWM_HIGH	Rail Pressure control error - Check fuel line, wiring harness and IMV	ON			Plausibility
1180	3	P0546	F_M_TURB_IN_TEMP_CNT_TEMP_HI	Turbine inlet temperature sensor voltage high	ON			Short circuit to Battery
1180	4	P0545	F_M_TURB_IN_TEMP_CNT_TEMP_LO	Turbine inlet temperature sensor voltage low	ON			Short circuit to Ground
1180	10	P2081	F_M_TURB_IN_TEMP_NOI	Turbine inlet temperature sensor circuit noise (intermittent)	ON			Noise
1180	2	P2080	F_M_TURB_IN_TEMP_PLAU	Turbine inlet temperature sensor out of range (plausibility)				Plausibility
1221	XX	P061B	F_M_ESM_0_TRQ	Engine Safety Monitoring: Abnormal torque control by ECU	FLASH			ECU internal
1221	19	P1608	F_M_ESM_COMMS_FAIL_SUP0	Engine Safety Monitoring: Communication failure in ECU	ON			
1221	19	P1607	F_M_ESM_COMMS_FAIL_SUP1	Engine Safety Monitoring: Communication failure in ECU	ON			ECU internal
1221	26	P1611	F_M_ESM_DISABLE_INJ	Engine Safety Monitoring: ECU is not able to lock injection	ON			ECU internal

Engine Fault Code List

SPN	FMI	DTC	Fault Name	Fault Description	LAMP	LIMPHOME	STOP	Purpose
1221	11	P16D6	F_M_ESM_ENG_SPD	Engine Safety Monitoring: Abnormal engine speed calculated by ECU				ECU internal
1221	11	P160C	F_M_ESM_ENGINE_OFF	Engine Safety Monitoring: Abnormal ECU status after resets in Engine off mode				ECU internal
1221	26	P1612	F_M_ESM_FC_DISABL_INJ	Engine Safety Monitoring: ECU is not able to lock injection	ON			ECU internal
1221	11	P16D8	F_M_ESM_GND_TRACK2	Engine Safety Monitoring: Abnormal pedal position calculated by ECU	ON			ECU internal
1221	11	P161C	F_M_ESM_IDLE_RPM_AN	Engine Safety Monitoring: PTO Cruise control Circuit				
1221	26	P1602	F_M_ESM_MEM_INT_COL2	Engine Safety Monitoring: Abnormal Memory in ECU	ON			ECU internal
1221	26	P1601	F_M_ESM_MEM_INT_DATL2	Engine Safety Monitoring: Abnormal Memory in ECU	ON			ECU internal
1221	26	P1604	F_M_ESM_MEM_INT_RAML2	Engine Safety Monitoring: Abnormal Memory in ECU	ON			ECU internal
1221	27	P162B	F_M_ESM_MM_DISABL_INJ	Engine Safety Monitoring: ECU is not able to lock injection	ON			ECU internal
1221	11	P1620	F_M_ESM_MM_L2_TRIP	Engine Safety Monitoring: ECU reset triggered	ON			ECU internal
1221	27	P1621	F_M_ESM_MM_L3_TRIP	Engine Safety Monitoring: ECU reset triggered	ON			ECU internal
1221	27	P1622	F_M_ESM_MM_RESET	Engine Safety Monitoring: ECU reset triggered	ON			ECU internal
1221	27	P1623	F_M_ESM_MM_TRIP	Engine Safety Monitoring: ECU reset triggered	ON			ECU internal
1221	11	P1624	F_M_ESM_NOMINAL	Engine Safety Monitoring: Abnormal ECU status after reset to Nominal mode				ECU internal
1221	11	P1606	F_M_ESM_OP_MODE	Engine Safety Monitoring: Abnormal engine operation mode	ON			ECU internal
1221	11	P160D	F_M_ESM_PEDAL	Engine Safety Monitoring: Abnormal pedal position calculated by ECU				ECU internal
1221	28	P1625	F_M_ESM_PFC_FAIL_SUP0	Engine Safety Monitoring: Abnormal Program flow in ECU	ON			ECU internal
1221	11	P1630	F_M_ESM_PLS_CHK_BANK	Engine Safety Monitoring: Abnormal FIE system status calculated by ECU				ECU internal
1221	11	P1631	F_M_ESM_PLS_CHK_C21	Engine Safety Monitoring: Abnormal FIE system status calculated by ECU				ECU internal
1221	11	P1632	F_M_ESM_PLS_CHK_INJNB	Engine Safety Monitoring: Abnormal FIE system status calculated by ECU				ECU internal
1221	11	P1633	F_M_ESM_PLS_CHK_L1QT	Engine Safety Monitoring: Abnormal FIE system status calculated by ECU				ECU internal

Engine Fault Codes

Engine Fault Code List

SPN	FMI	DTC	Fault Name	Fault Description	LAMP	LIMPHOME	STOP	Purpose
1221	11	P1634	F_M_ESM_PLS_CHK_NBR	Engine Safety Monitoring: Abnormal FIE system status calculated by ECU				ECU internal
1221	11	P1635	F_M_ESM_PLS_CHK_TOFF	Engine Safety Monitoring: Abnormal FIE system status calculated by ECU				ECU internal
1221	11	P1636	F_M_ESM_PLS_CHK_TON	Engine Safety Monitoring: Abnormal FIE system status calculated by ECU				ECU internal
1221	11	P1637	F_M_ESM_PLS_CHK_TOO TH	Engine Safety Monitoring: Abnormal FIE system status calculated by ECU				ECU internal
1221	11	P1638	F_M_ESM_PLS_CHK_TYPE	Engine Safety Monitoring: Abnormal FIE system status calculated by ECU				ECU internal
1221	11	P153E	F_M_ESM_PTO_AN_CL_SW	Engine Safety Monitoring: PTO Cruise Control Circuit Plausibility				
1221	11	P258E	F_M_ESM_PTO_CANCEL	Engine Safety Monitoring: PTO Cruise control cancel				
1221	11	P153D	F_M_ESM_PTO_SW_STUCK	Engine Safety Monitoring: PTO Cruise control switch stuck				
1221	11	P1660	F_M_ESM_PULSE_CMP_ASSOC	Engine Safety Monitoring: Abnormal FIE system status calculated by ECU				ECU internal
1221	11	P1661	F_M_ESM_PULSE_CMP_COUNT	Engine Safety Monitoring: Abnormal FIE system status calculated by ECU				ECU internal
1221	29	P1662	F_M_ESM_PWOFF_INJLCK	Engine Safety Monitoring: ECU is not able to lock injection	ON			ECU internal
1221	29	P1663	F_M_ESM_PWOFF_RESET	Engine Safety Monitoring: ECU reset failed	ON			ECU internal
1221	31	P160B	F_M_ESM_QADC_MUX	Engine Safety Monitoring: Abnormal reference voltage in ECU	ON			ECU internal
1221	3	P1690	F_M_ESM_QADC_SLOPE_HI	Engine Safety Monitoring: Abnormal reference voltage in ECU	ON			ECU internal
1221	4	P1691	F_M_ESM_QADC_SLOPE_LO	Engine Safety Monitoring: Abnormal reference voltage in ECU	ON			ECU internal
1221	11	P1692	F_M_ESM_QST_TOUT	Engine Safety Monitoring: Abnormal electrical test result by ECU	ON			ECU internal
1221	11	P16D2	F_M_ESM_REDUCED	Engine Safety Monitoring: Abnormal ECU status after reset to reduced torque mode				ECU internal
1221	XX	P1219	F_M_ESM_VDG_ERR	Engine Safety Monitoring: Abnormal speed control by ECU				ECU internal
1221	XX	P16XX	#N/A	ECU Safety Monitoring Fault				ECU internal
1221	XX	P0606	#N/A	ECU Safety monitoring				ECU internal
1221	XX	P0607	#N/A	ECU Safety monitoring				ECU internal

Engine Fault Code List

SPN	FMI	DTC	Fault Name	Fault Description	LAMP	LIMPHOME	STOP	Purpose
1221	XX	P060A	#N/A	ECU Safety monitoring				ECU internal
1221	XX	P060C	#N/A	ECU Safety monitoring				ECU internal
1382	31	P0451	F_M_FUEL_FILT_PRES	Fuel filter pressure sensor voltage high/low				Open/Short circuit
1382	9	P0455	F_M_FUEL_FILT_PRES_ADC	Fuel filter pressure sensor (analog to digital converting error)				
1382	7	P0452	F_M_FUEL_FLTR_MIN_PRESS	Fuel filter pressure sensor feedback low than threshold - Check fuel line and fuel filter				
1485	7	P0685	F_M_CU_RELAY_STUCK	Main relay stuck	ON			Battery
1485	11	P068A	F_M_DROPDOWN_CU_RELAY	Main relay inoperative (unstable power to ECU)	ON			Battery
1612	3	P062D	F_M_FCI_BANK_SC2VBATT_0	Injector Bank 1 (Injector 1, 4) (Open/short circuit to battery/short circuit to ground)	FLASH			Open/Short circuit
1612	4	P062D	F_M_FCI_BANK_SC2VBATT_0	Injector Bank 1 (Injector 1, 4) (Open/short circuit to battery/short circuit to ground)	FLASH			Open/Short circuit
1612	11	P062D	F_M_FCI_BANK_SC2VBATT_0	Injector Bank 1 (Injector 1, 4) (Open/short circuit to battery/short circuit to ground)	FLASH			Open/Short circuit
1613	3	P062E	F_M_FCI_BANK_SC2VBATT_1	Injector Bank 2 (Injector 2, 3) / (Open/short circuit to battery/short circuit to ground)	FLASH			Open/Short circuit
1613	4	P062E	F_M_FCI_BANK_SC2VBATT_1	Injector Bank 2 (Injector 2, 3) / (Open/short circuit to battery/short circuit to ground)	FLASH			Open/Short circuit
1613	11	P062E	F_M_FCI_BANK_SC2VBATT_1	Injector Bank 2 (Injector 2, 3) / (Open/short circuit to battery/short circuit to ground)	FLASH			Open/Short circuit
2791	8	P0404	F_M_EGR_CONTROL	EGR (Exhaust gas recirculation) control error	ON			Performance
2791	5	P2143	F_M_EGR_HB_DRV_OC	EGR (Exhaust gas recirculation) actuator open circuit	ON			Open/Short circuit
2791	4	P2144	F_M_EGR_HB_DRV_SC2G	EGR (Exhaust gas recirculation) actuator short circuit to ground	ON			Open/Short circuit
2791	3	P2145	F_M_EGR_HB_DRV_SC2VBATT	EGR (Exhaust gas recirculation) actuator short circuit to battery	ON			Open/Short circuit
3509	11	P0641	F_M_VEXT1_REG	ECU 5 volt sensor supply (VREF1)	FLASH			ECU internal
3510	11	P0651	F_M_VEXT2_REG	ECU 5 volt sensor supply (VREF2)	FLASH			ECU internal
3511	11	P0697	F_M_VEXT2AUX_REG	ECU 5 volt sensor supply (VREF3)	FLASH			ECU internal
3696	5	P25BA	F_M_DPF_REGEN_SW_OC	DeSOx Switch open circuit	ON			Open/Short circuit
3696	4	P25BB	F_M_DPF_REGEN_SW_SC2G	DeSOx Switch short to ground	ON			Open/Short circuit

Engine Fault Code List

SPN	FMI	DTC	Fault Name	Fault Description	LAMP	LIMPHOME	STOP	Purpose
3696	3	P25BC	F_M_DPFF_REGEN_SW_SC2VBATT	DeSox Switch short circuit to battery	ON			Open/Short circuit
4082	5	P025A	F_M_IMV_DRIVE_OC_PWM	IMV (inlet metering valve) sensor open circuit	FLASH		Stop	Open/Short circuit
4082	6	P025B	F_M_IMV_DRIVE_SC_PWM	IMV Drive short circuit				Open/Short circuit
4082	4	P025C	F_M_IMV_DRIVE_SC2G_PWM	IMV (inlet metering valve) sensor short circuit to ground	FLASH			Open/Short circuit
4082	3	P025D	F_M_IMV_DRIVE_SC2VBATT_PWM	IMV (inlet metering valve) sensor short circuit to battery	FLASH		Stop	Open/Short circuit
5246	26	P2BB6	F_M_IND_RPT_OFNS_ACTIVE	SCR Inducement - Repeat offense				SCR
5246	22	P2BB2	F_M_J1939_IND_DOSING	SCR Inducement - Dosing interrupt				SCR
5246	21	P2BB1	F_M_J1939_IND_EGR_BL	SCR Inducement - EGR (Exhaust gas recirculation) block				SCR
5246	24	P2BB4	F_M_J1939_IND_REAG_Q	SCR Inducement - UREA (DEF) quality				SCR
5246	25	P2BB5	F_M_J1939_IND_TAMPER	SCR Inducement - Tampering				SCR
5246	15	P2BC2	F_M_J1939_IND_UR_ESC	SCR Inducement - UREA (DEF) tank level 1				SCR
5246	0	P2BC4	F_M_J1939_IND_UR_MT	SCR Inducement - UREA (DEF) tank level empty (final)				SCR
5246	16	P2BC3	F_M_J1939_IND_UR_RTN	SCR Inducement - UREA (DEF) tank level 2				SCR
5246	17	P2BC1	F_M_J1939_IND_UR_WRN	SCR Inducement - UREA (DEF) tank level				SCR
5246	19	P2BD0	F_M_J1939_INDCNTR_T	DCU communication error via CAN	FLASH			SCR
5246	XX	P2BXX	#N/A	SCR Inducement Fault				SCR
5324	3	P037F	F_M_GLOW_PLUG_DIAG_SUP0	glow plug (air heater) relay circuit error	ON			Open/Short circuit
5324	4	P037E	F_M_GLOW_PLUG_DIAG_SUP3	glow plug (air heater) relay feedback error	ON			Open/Short circuit
2791	07	P0400	F_M_EGR_FLOW_LIMIT	EGR (Exhaust gas recirculation) flow out of range (plausibility)				
		P0100	F_M_AMF	Air mass flow sensor circuit issue (analog to digital converting error)				Plausibility
		P2226	F_M_ATMOSP_EX	Barometric pressure sensor circuit issue (analog to digital converting error)				ECU internal
		P1650	F_M_CE_LAMP	Check engine lamp circuit open				Open/Short circuit
		P0115	F_M_COOLANT_SENSOR_EX	Coolant Temperature sensor circuit issue (analog to digital converting error)				Performance
		P242B	F_M_DPFF_IN_TEMP_PLAU	SCR inlet temperature sensor out of range (plausibility)	FLASH			

Engine Fault Code List

SPN	FMI	DTC	Fault Name	Fault Description	LAMP	LIMPHOME	STOP	Purpose
		P0381	F_M_DTI_ICI_GP_LAMP_OC	Glow plug lamp circuit issue (open/short circuit to ground) - FL				Open/Short circuit
		P0409	F_M_EGR_FDB_POS_EX_FLT	EGR (Exhaust gas recirculation) sensor circuit issue (ADC)				ECU internal
		P0403	F_M_EGR_HB_DRV_CURR_LIM	EGR (Exhaust gas recirculation) actuator circuit issue				Open/Short circuit
		P0070	F_M_EXT_AIR_TEMP	Inlet Air Temperature sensor circuit issue (analog to digital converting error)				ECU internal
		P0001	F_M_IM_CRT_FB_EX	IMV (inlet metering valve) sensor circuit issue (analog to digital converting error)				ECU internal
		P0105	F_M_MAP_SENSOR_EX	MAP (Manifold air pressure) sensor circuit issue (analog to digital converting error)				ECU internal
		P0711	F_M_OIL_TRANS_T_SENS_LO	Transmission oil temperature out of range	ON			Performance
		P2135	F_M_PEDAL_FOOT_CORREL	Pedal position sensor 1,2 voltage correlation	ON	Limphome		Performance
		P060D	F_M_PEDAL_FOOT_LIMPH	Pedal position sensor 1,2 out of range	ON	Limphome		Performance
		P0120	F_M_PEDAL_FOOT_T1_HI	Pedal position sensor 1	ON	Limphome		Open/Short circuit
		P0220	F_M_PEDAL_FOOT_T2_HI	Pedal position sensor 2	ON	Limphome		Open/Short circuit
		P0110	F_M_T2_TEMP_CNT_EX_SUP	Intake manifold temperature sensor circuit issue (analog to digital converting error)				ECU internal
		P2544	F_M_TORQUE_SWITCH_ADC	Multi torque switch circuit issue (analog to digital converting error)				ECU internal
		P2547	F_M_TORQUE_SWITCH_HI	Multi torque switch out of range (over)	ON			Short circuit to Battery
		P2546	F_M_TORQUE_SWITCH_LO	Multi torque switch out of range (under)	ON			Short circuit to Ground
		P0544	F_M_TURB_IN_TEMP	Turbine inlet temperature sensor circuit issue (analog to digital converting error)				ECU internal
		P0121		Throttle valve feedback control error	ON			
		P0120		Throttle valve feedback position Ex	ON			
		P0123		Throttle valve feedback position sensor voltage high	ON			Short circuit to Battery
		P0122		Throttle valve feedback position sensor voltage low	ON			Short circuit to Ground
		P0124		Throttle valve feedback position sensor signal noise	ON			Noise
		P2100		Throttle valve open circuit	ON			Open circuit
		P2102		Throttle valve voltage low				Short circuit to Battery
		P2103		Throttle valve voltage high				Short circuit to Ground
		P0C17		Throttle valve learning error				



Preventive Maintenance Schedule (PMS)



Torque Values

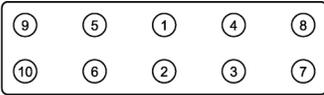
Torque Values

Fasteners

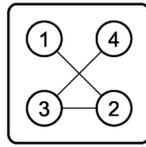
See the following pages for inch torque chart, metric torque chart and wheel torque chart. All fasteners should be torqued in accordance to size and grade.

TABLE 1: INCH FASTENERS

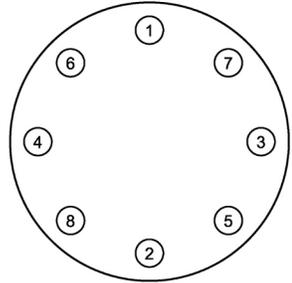
TABLE 1 INCH FASTENERS				
CAPSCREW OR NUT THREAD SIZE AND PITCH	NOMINAL DESIGN TORQUE			
	8AE J249 GRADE 5 (HEAD MARKING)		8AE J249 GRADE 8 (HEAD MARKING)	
	(Nm.)	(FT-LBF)	(Nm.)	(FT-LBF)
1/4 – 20	11	8	16	12
5/16 – 18	24	17	33	25
3/8 – 16	42	31	59	44
7/16 – 14	67	49	95	70
1/2 – 13	102	75	144	106
9/16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

Torque Values

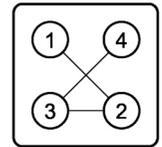
Torque Values (Continued)

TABLE 2: METRIC FASTENERS

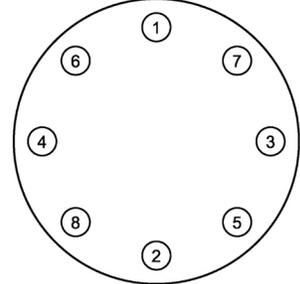
TABLE 2		METRIC FASTENERS					
CAPSCREW OR NUT THREAD SIZE AND PITCH	NOMINAL DESIGN TORQUE						
	PROPERTY GRADE 8.8 (HEAD MARKING)		PROPERTY GRADE 10.9 (HEAD MARKING)		PROPERTY GRADE 12.9 (HEAD MARKING)		
	(Nm.)	(FT-LBF)	(Nm.)	(FT-LBF)	(Nm.)	(FT-LBF)	
M6 X 1.0	11	8	15	11	18	13	
M8 X 1.25	26	19	36	27	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 23Nm (17ft-lbF). Separator Lid Max Bolt torque: 166 (ft-lb).

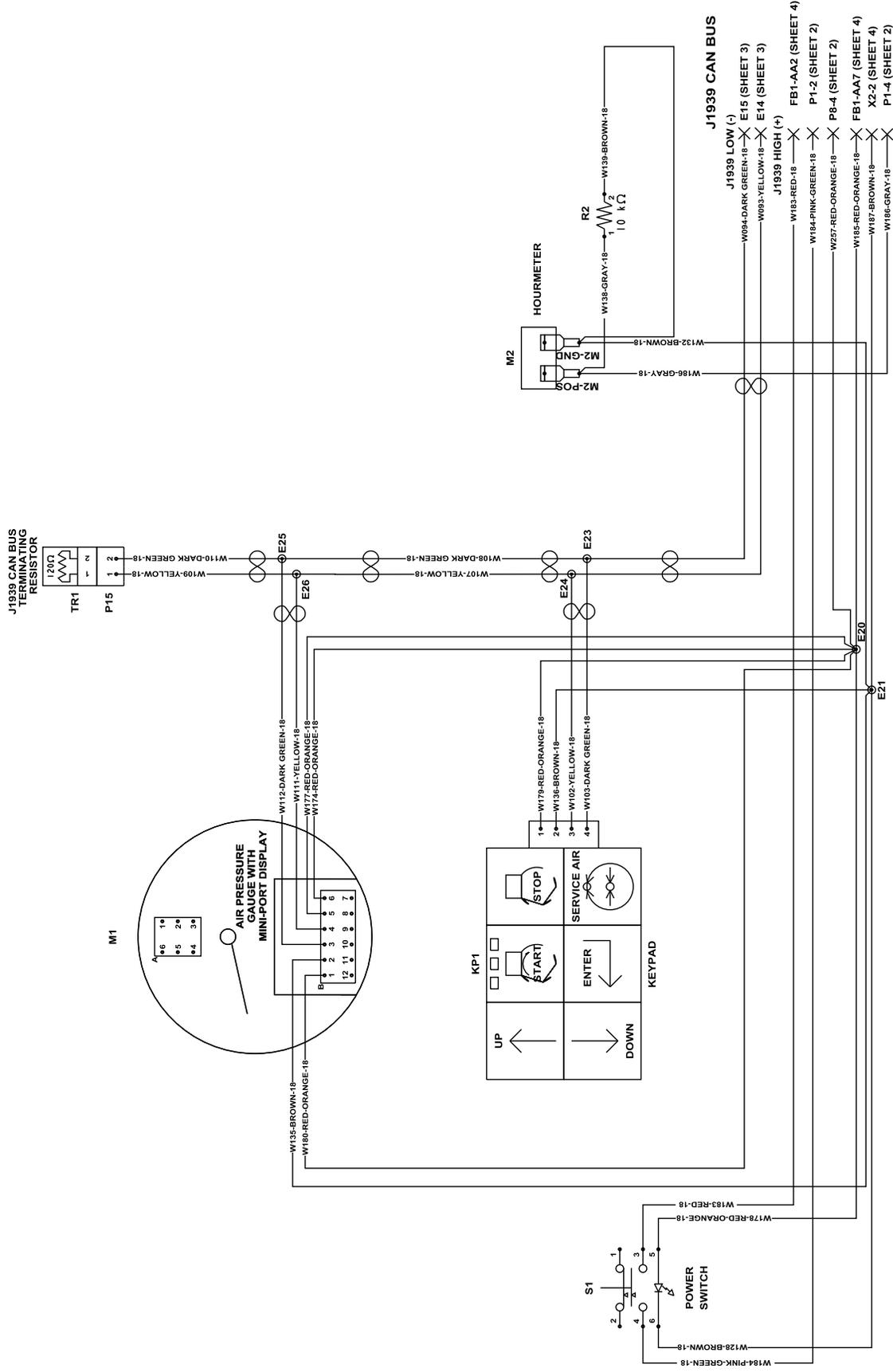
TABLE 3: WHEEL TORQUE CHART

Wheel Torque Chart - Inch		Wheel Torque Chart - Metric		
M12 Bolts	Torque (Ft-Lbs)			
13" Wheel	60-70			
1/2" Lug Nuts	Torque (Ft-Lbs)		Torque (N-m)	Torque (Ft-Lbs)
13" Wheel	80-90	M12 Bolts	85-95	62-70
15" Wheel	105-115	M14 Bolts	145-155	107-115
16" Wheel	105-115	M16 Bolts	175-185	129-137
16.5" Wheel	105-115	M18 Bolts	205-215	151-159
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			

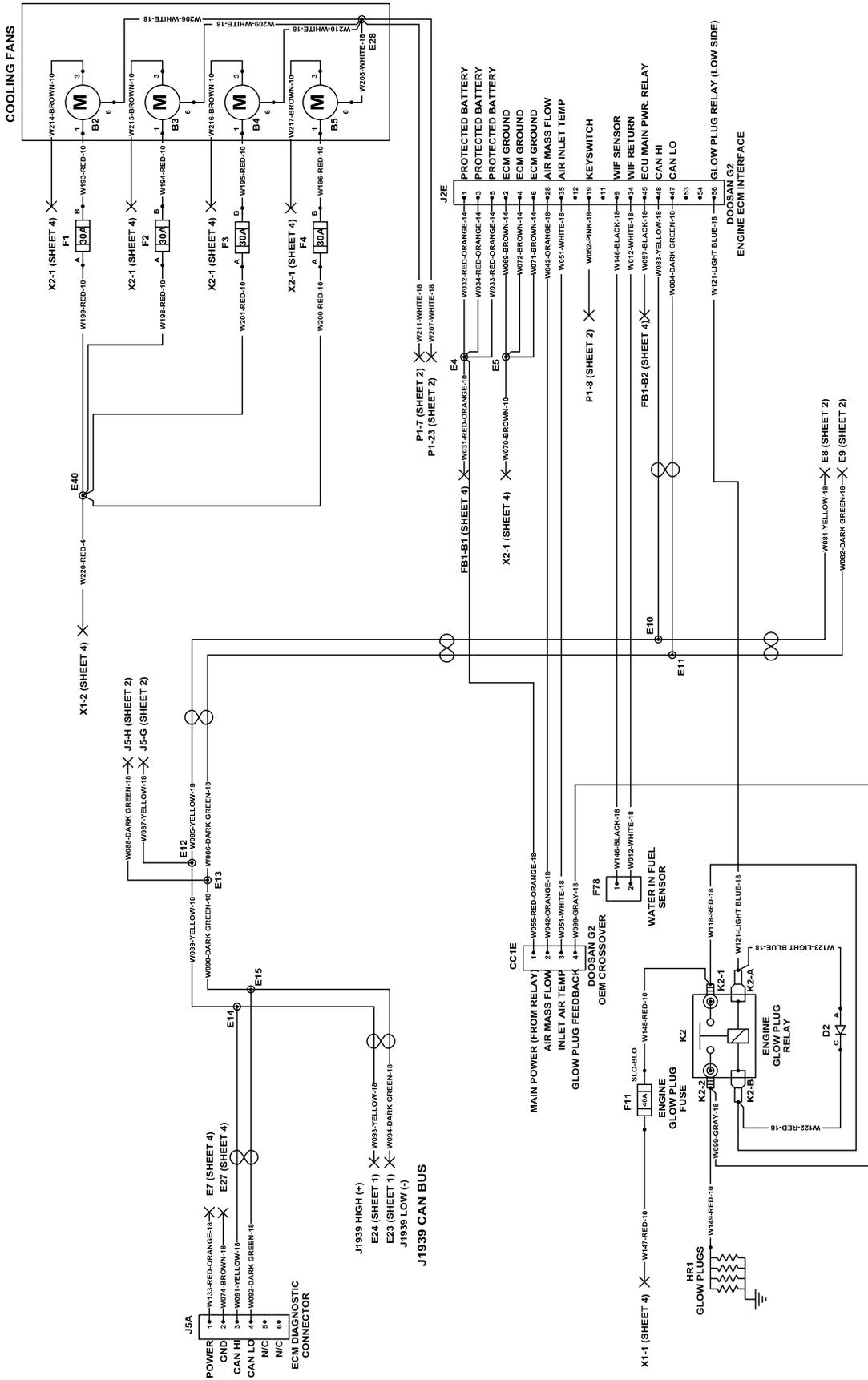


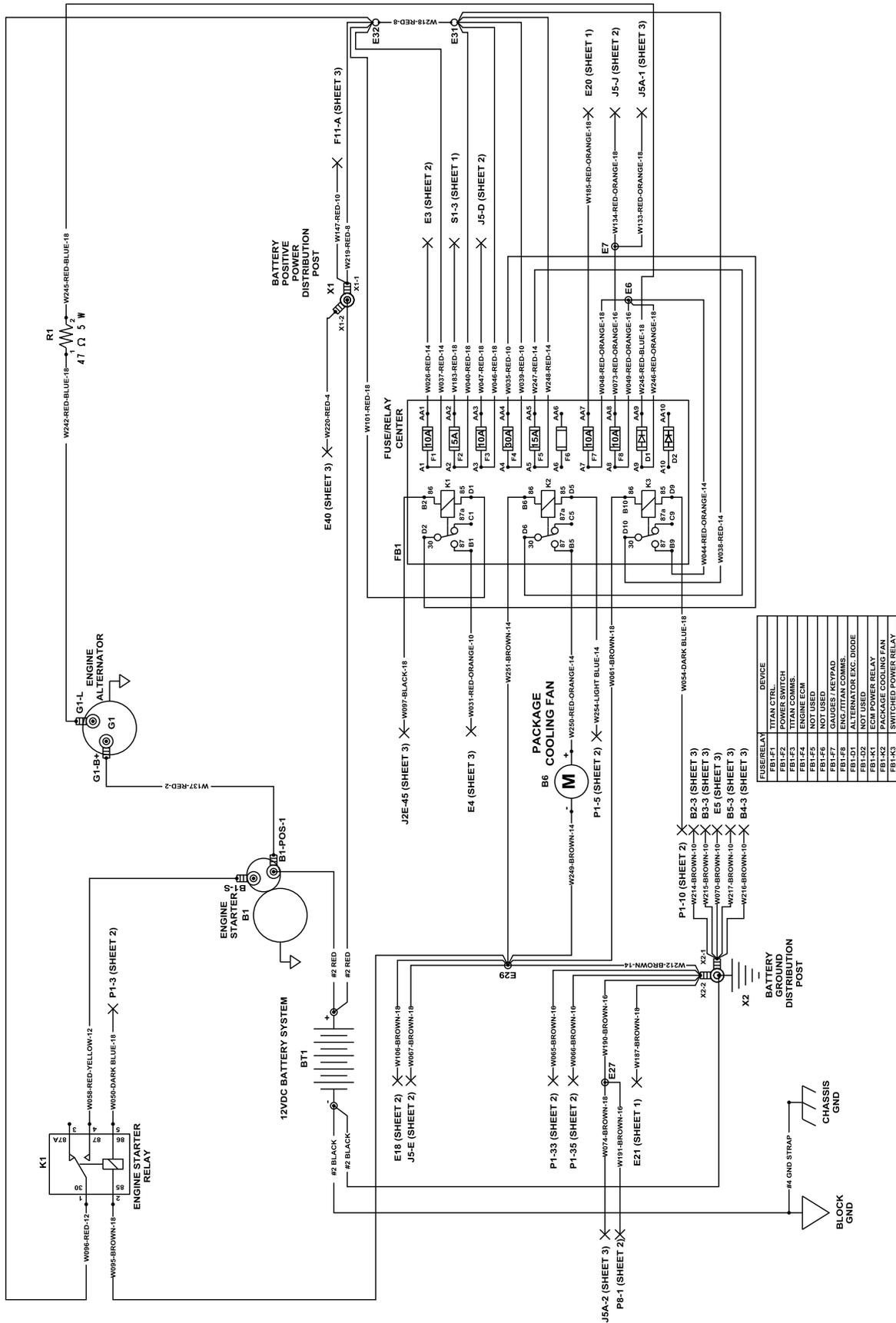
Wiring Diagrams

Compressor and Engine Harness



P185WDOU-T4F COMPRESSOR AND ENGINE HARNESS WIRING DIAGRAM 46695070 (REV. B S1 OF S4)

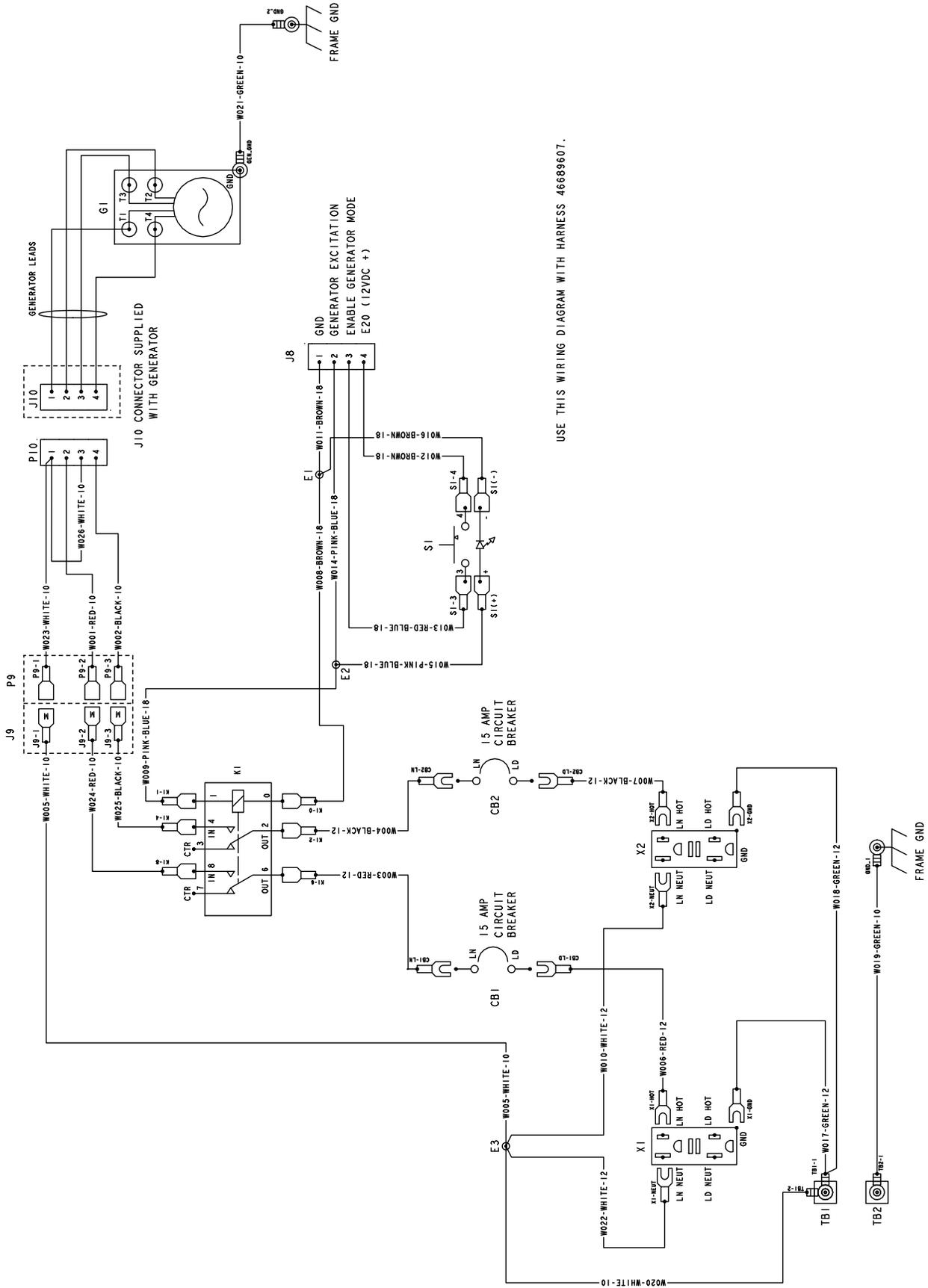




P185WDOU-T4F COMPRESSOR AND ENGINE HARNESS WIRING DIAGRAM (REV. B S4 OF S4)

Compressor and Engine Control System

P185WDOU Generator Option



USE THIS WIRING DIAGRAM WITH HARNESS 46689607.

P185WDOU-T4F GENERATOR OPTION WIRING DIAGRAM (REV. A S1 OF S1)

Electrical Parts List

Compressor and Engine

Reference Designator	Description	Part Number
U1	Fuel Level Sensor (Option)	22058531
	Compressor and Engine Harness	46673841
	Cable, Battery Positive 1350mm	46679499
	Cable, Battery Negative 900mm	46679500
B1	Engine Starter	46668915
BT1	Battery, 12 VDC 700 CCA	46678320
BT1	Battery, 12 VDC 1000 CCA	36844975
D1	Diode	35376169
D2	Diode	35376169
D3	Diode	35376169
F1	Cooling Fan Fuse 30 Amp	36786259
F11	Engine Glow Plug Fuse 40 Amp	46679984
F2	Cooling Fan Fuse 30 Amp	36786259
F3	Cooling Fan Fuse 30 Amp	36786259
F4	Cooling Fan Fuse 30 Amp	36786259
F78	Water In Fuel Sensor (Built Into Fuel Filter)	46664395
FB1	Fuse /Relay Center	46556356
FB1	Fuse/Relay Center Decal Outside Cover	46574381
FB1	Fuse/Relay Center Decal Inside Cover	46679867
FB1	Fuse/Relay Center Replacement Cover	23366172
FB1-F1	Titan Controller Fuse 10 Amp	23091812
FB1-F2	Power Switch Fuse 5 Amp	46663377
FB1-F3	Titan Communication Fuse 10 Amp	23091812
FB1-F4	Engine ECM Fuse 30 Amp	23091853
FB1-F7	Gauge/Keypad Fuse 10 Amp Engine/Titan Communication Fuse 10 Amp	23091812
FB1-F8	ECM Power Relay	23091812
FB1-K1	Switched Power Relay	46650951
FB1-K3	Switched Power Relay	46650951

Reference Designator	Description	Part Number
G1	Engine Alternator	46681309
J2E	Engine ECM	46668916
J5	Replacement Cap with Lanyard	23366768
J5A	Replacement Cap with Lanyard	23366768
K1	Engine Starter Relay	46666988
K2	Engine Glow Plug Relay	36856250
KP1	Keypad	46630199
L1	Start/Run Solenoid Valve	46555970
M1	Air Pressure Gauge with Mini-Port Display	46671810
M2	Hourmeter	46557109
P1	Kit, P185WDO-T4F Programmed Controller	46738405
PT2	Regulation System Pressure Sensor 0-100psig	36920825
RT1	Separator Element Temperature Sensor	46626400
RT2	Discharge Air Temperature Sensor	46626400
RT4	CAC Out Temperature Sensor	46571299
S1	Power Switch	46605159
S10	Engine Air Filter Restriction Switch	36847838
S11	Airend Air Filter Restriction Switch	36847838
S12	Package Temp Shutoff Switch	46680714
TR1	J1939 CAN Bus Terminating Resistor	23091804
TR2	J1939 CAN Bus Terminating Resistor	23091804
X1	Battery Positive Power Distribution Post	23322738
X2	Battery Negative Power Distribution Post	46664458
J2E	Engine ECM	46668916

ELECTRICAL PARTS LIST 46680251 (REV. B S1 OF S1)

INTENTIONALLY LEFT BLANK



Warranty

Warranty

Doosan Portable Power General Warranty Information



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

Warranty

Truck Mounted Equipment



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)

DOOSAN

DOOSAN INFRACORE 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:

- | | |
|--|---|
| <p>1. Fuel Metering System
Fuel Supply Pump (HP Pump), Injector, Common Rail, Glow Plug</p> <p>2. Air-Induction System
Intake Manifold, Turbocharger System</p> <p>3. Exhaust Gas Recirculation (EGR) System
EGR Valve, EGR Cooler</p> <p>4. Catalyst or Thermal Reactor System
Diesel Oxidation Catalyst (DOC), Exhaust Manifold</p> <p>5. Positive Crankcase Ventilation (PCV) System
PCV Valve</p> | <p>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</p> <p>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</p> |
|--|---|

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 1-800-833-5206, or mail:

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

Corp. R&D Div.

1 of 1



Doosan Infracore Portable Power
1293 Glenway Drive
Statesville, N.C. 28625
DoosanPortablePower.com

Doosan Infracore
Portable Power