



Doosan Infracore
Portable Power

OPERATION and MAINTENANCE MANUAL

COMPRESSOR MODELS

XHP1070WCAT-T3 (B41)

XHP1170WCAT-T3 (B40)

XHP1170WCAT-FX-T3 (E21)

XHP1170WCAT-EX-T3 (E37)

XHP1170WCAT-EU-FX-T3 (E61)

XHP1170CAT-EX-T3 (F53)



This manual contains important safety information.

Do not destroy this manual.

This manual must be available to the personnel who operate and maintain this compressor.

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Book: 22742944 (05/2017) Rev G



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

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

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



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

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

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Foreword

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 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 machine maximum allowable working pressure.
- compatible with the compressor lubricant/coolant.
- accompanied with instructions for safe installation, operation and maintenance.

Details of approved equipment are available from the Portable Power Service departments. The use of repair parts other than those included within the Portable Power 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.

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 uses of this machine 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 Portable Power supervision.**

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

This machine should not be used:

- A. For direct or indirect human consumption of the compressed air.
- B. Outside the ambient temperature range specified in the general data section of this manual.
- C. When an actual or foreseeable risk of hazardous levels of flammable gases or vapors exists.

- D. With other than Portable Power approved components.
- E. With guards, or controls or switches missing or disabled.
- F. For storage or transportation of materials inside or on the enclosure.

This company 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 machine. 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 machine.

The purpose of this manual is to train the operator with functions, operation, and basic service and maintenance requirements of the compressor. During the preparation of this manual, every effort was made to ensure the adequacy and accuracy of the contents.

Your Portable Power dealer will assist with setup and initial startup of the compressor. He will also provide brief operating and service instructions and will insure that a copy of this manual is included with the machine. 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 Book (PCD Form 685) with each compressor shipped from the factory. This Log Book contains a recommended schedule and space so that the serviceman can note what service and maintenance was done, by whom, where, and when.



Safety

Safety

Safety Precautions

General Information

Never operate unit without first observing all safety warnings and carefully reading the operation and maintenance manual shipped from the factory with this machine.

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

Ensure that maintenance personnel are adequately trained, competent and have read the Maintenance Manuals.

Make sure that all protective covers are in place and that the canopy/doors are closed during operation.

The specification of this machine is such that the machine is not suitable for use in flammable gas risk areas. If such an application is required then all local regulations, codes of practice and site rules must be observed. To ensure that the machine 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 on all fasteners/fixing screws securing mechanical parts. In particular, safety-related parts such as coupling hitch, drawbar components, road-wheels, 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 machine may contain carbon monoxide or other contaminants which will cause serious injury or death. Do not breathe this air.

This machine 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 unit without first disconnecting batter 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 unit with compressed air to prevent debris from injuring eye(s).

Rotating fan blade can cause serious injury. Do not operate without 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 inflammable gas. When it is specified as a starting aid, use sparingly. **DO NOT USE ETHER IF THE MACHINE HAS GLOW PLUGS OR INLET HEATER STARTING AIDS OR ENGINE DAMAGE WILL RESULT.**

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

Compressed Air

Compressed air can be dangerous if incorrectly handled. Before doing any work on the unit, ensure that all pressure is vented from the system and that the machine cannot be started accidentally.

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

All air pressure equipment installed in or connected to the machine must have safe working pressure ratings of at least the machine 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, so that one machine 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.

High Pressure 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.

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

If the 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 machine is stopped, air will flow back into the compressor system from devices or systems downstream of the machine unless the service valve is closed. Install a check valve at the machine 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 restrictor to each hose at the source of supply or branch line in accordance with OSHA Regulation 29CFR Section 1926.302(b).

Never allow the unit to sit stopped with pressure in the receiver-separator system.

Materials

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

- brake lining dust
- engine exhaust fumes



Avoid inhalation

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 machine and may be hazardous to health if used incorrectly:

- anti-freeze
- compressor lubricant
- engine lubricant
- preservative grease
- rust preventative
- diesel fuel
- battery electrolyte



Avoid ingestion, skin contact and inhalation of fumes

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

Should compressor lubricant come into contact with the skin, then wash off immediately.

Consult a physician if large amounts of compressor lubricant are ingested.

Consult a physician if compressor lubricant is inhaled.

Never give fluids or induce vomiting if the patient is unconscious or having convulsions.

Safety data sheets for compressor and engine lubricants should be obtained from the lubricant supplier.

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

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

Battery

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

WARNING

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

Exercise extreme caution when using booster battery. To jump battery, connect ends of one booster cable to the positive (+) terminal of each battery. Connect one end of other cable to the negative (-) terminal of the booster battery and other end to a ground connection away from dead battery (to avoid a spark occurring near any explosive gases that may be present). After starting unit, always disconnect cables in reverse order.

Radiator

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

Do not remove the pressure cap from a HOT radiator. Allow radiator to cool down before removing pressure cap.

NOTICE

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.

Transport

When loading or transporting machines, ensure that the specified lifting and tie down points are used.

When loading or transporting machines, ensure that the towing vehicle, its size, weight, towing hitch and electrical supply are all suitable to provide safe and stable towing at speeds either, up to the legal maximum for the country in which it is being towed or, as specified for the machine model if lower than the legal maximum.

Do not exceed gross vehicle weight rating.

Before towing the machine, ensure that:-

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

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

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

Safety chains/connections and their adjustment where fitted:

Ensure that the breakaway cable is securely coupled to the trailer and also to a substantial point on the towing vehicle.

Ensure that the cable length is as short as possible, while still allowing enough slackness for the trailer to articulate without the handbrake being applied.

Loop the chains onto the towing vehicle using the towing vehicle hitch as an anchorage point, or any other point of similar strength.

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

Decals

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

Note that there are different decal headings:



(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.



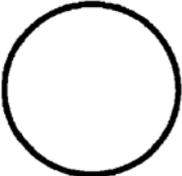
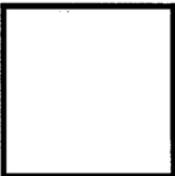
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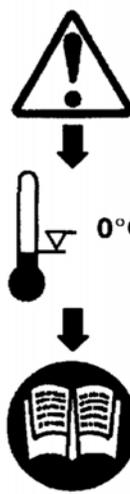
Indicates important set-up, operating or maintenance information.

DECALS

Look for these signs on machines manufactured in Europe, 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.

GRAPHIC FORM AND MEANING OF ISO SYMBOLS

		
Prohibition / Mandatory	Information / Instructions	Warning
 <p>WARNING: Electrical shock risk.</p>	 <p>WARNING – Pressurised component or system.</p>	 <p>WARNING – Hot surface.</p>
 <p>WARNING – Pressure control.</p>	 <p>WARNING – Corrosion risk.</p>	 <p>WARNING – Air/gas flow or Air discharge.</p>
 <p>WARNING – Pressurised vessel.</p>	 <p>WARNING – Hot and harmful exhaust gas.</p>	 <p>WARNING – Maintain correct tyre pressure. (Refer to the GENERAL INFORMATION section of this manual).</p>

 <p>WARNING – Flammable liquid.</p>	 <p>WARNING – Before connecting the tow bar or commencing to tow consult the operation and maintenance manual.</p>	 <p>WARNING – For operating temperature below 0°C, consult the operation and maintenance manual.</p>
 <p>WARNING – Do not undertake any maintenance on this machine until the electrical supply is disconnected and the air pressure is totally relieved.</p>	 <p>WARNING – Consult the operation and maintenance manual before commencing any maintenance.</p>	 <p>Do not breathe the compressed air from this machine.</p>
 <p>Do not remove the Operating and Maintenance manual and manual holder from this machine.</p>	 <p>Do not stack.</p>	 <p>Do not operate the machine without the guard being fitted.</p>

 <p>Do not stand on any service valve or other parts of the pressure system.</p>	  <p>Do not operate with the doors or enclosure open.</p>	 <p>Do not use fork lift truck from this side.</p>
 <p>Do not exceed the trailer speed limit.</p>	 <p>No naked lights.</p>	 <p>Do not open the service valve before the airhose is attached.</p>
 <p>Use fork lift truck from this side only.</p>	 <p>Emergency stop.</p>	 <p>Tie down point</p>
 <p>Lifting point.</p>	 <p>On (power).</p>	 <p>Off (power).</p>
 <p>Read the Operation and Maintenance manual before operation or maintenance of this machine is undertaken.</p>	 <p>When parking use prop stand, handbrake and wheel chocks.</p>	 <p>Compressor oil filling</p>
 <p>Diesel fuel No open flame.</p>	 <p>Parking brake.</p>	 <p>Rough Service Designation. Wet Location Operation.</p>



⚠ DANGER

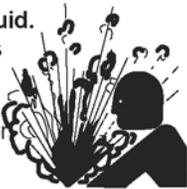


Discharged air can contain carbon monoxide or other contaminants. Will cause serious injury or death. Do not breathe this air.



⚠ WARNING

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



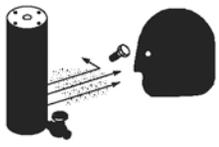

⚠ WARNING

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




⚠ WARNING

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



Look for these signs 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



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.



WARNING

Falling off machine.
Can cause serious injury or death.

Access lifting bail from inside machine.



WARNING

Rotating fan blade.
Can cause serious injury.

Do not operate without guard in place.



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.



WARNING

Door under pressure.
Can cause serious injury.

Use both hands to open door when machine is running.



WARNING

Combustible gas.
Can cause serious burns, blindness or death.

Keep sparks and open flames away from batteries.



CAUTION

DO NOT WELD.
ELECTRONIC DAMAGE WILL OCCUR.

This engine is equipped with an electronic engine controller and other electronic components.



CAUTION

**DO NOT USE ETHER.
ENGINE DAMAGE WILL OCCUR.**

This engine is equipped with an electric heater starting aid.



WARNING

High pressure air. Can cause serious injury or death.

Relieve pressure before removing filler plugs/caps, fittings or covers.



USE DIESEL FUEL ONLY



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 "Cold" level.

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 or CAUTION. Decal part numbers are on the bottom of each decal and are also listed in the compressor's parts manual. Submit orders for Safety Decals to the Statesville Parts Service Department. The no charge order should contain only Safety Decals. Help promote product safety! Replace decals that are not readable.



Noise Emission

Noise Emission

This section pertains only to machines distributed within the United States.



TAMPERING WITH NOISE CONTROL SYSTEM PROHIBITED

Compressor Noise Emission Control Information

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.

NOTE: the above information applies only to units that are built in compliance with the U.S. Environmental Protection Agency.

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

The Purchaser is urged to include the above provisions in any agreement for any resale of this compressor.

NOISE EMISSION CONTROL MAINTENANCE LOG

COMPRESSOR MODEL _____
SERIAL NO. _____
USER UNIT NO. _____

UNIT IDENTIFICATION Engine Make & Model: _____ Serial No.: _____ Purchaser or Owner: _____ Address: _____	DEALER OR DISTRIBUTOR FROM WHOM PURCHASED: _____ _____ 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.

Noise Emission Warranty

The manufacturer warrants to the ultimate purchaser and each subsequent purchaser that this air compressor was designed, built and equipped to conform at the time of sale to the first retail purchaser, with all applicable U.S. EPA Noise Control Regulations.

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

Introduction

The unit for which this Maintenance Log is provided conforms to U.S. E.P.A. Regulations for Noise Emissions, applicable to Portable Air 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 following page.

Maintenance Schedule

Item	Area	Period
A.	Compressed Air Leaks	As Detected
B.	Safety and Control Systems	As Detected
C.	Acoustic Materials	Daily
D.	Fasteners	100 hours
E.	Enclosure Panels	100 hours
F.	Air Intake & Engine Exhaust	100 hours
G.	Cooling Systems	250 hours
H.	Isolation Mounts	250 hours
I.	Engine Operation	See Operator's Manual
J.	Fuels & Lubricants	See Operator's Manual

A. Compressed Air Leaks

Correct all compressed air leaks during the first shutdown period after discovery. If severe enough to cause serious noise problems and efficiency loss, shut down immediately and correct the leak(s).

B. Safety and Control Systems

Repair or replace all safety and control systems or circuits as malfunction occurs. No compressor should be operated with either system bypassed, disabled, or nonfunctional.

C. Acoustic Materials

In daily inspections, observe these materials. Maintain all acoustic material as nearly as possible in its original condition. 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.

D. Fasteners

All fasteners such as hinges, nuts, bolts, clamps, screws, rivets, and latches should be inspected for looseness after each 100 hours of operation. They should be retightened, repaired, or if missing, replaced immediately to prevent subsequent damage and noise emission increase.

E. Enclosure Panels

Enclosure panels should also 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 insure continuous seating between gasket or acoustic material and the mating frame.

F. Air Intake and Engine Exhaust

Engine and compressor air intake and engine exhaust systems should be inspected after each 100 hours of operation for loose, damaged, or deteriorated components. Repairs or replacements should be made before the next period of use.

G. Cooling Systems

All components of the cooling system for engine water and compressor oil should be inspected every 250 hours of use. Any discrepancies found should be corrected before placing the unit back in operation. Unrestricted airflow over the radiator and oil cooler must be maintained at all times during operation.

H. Isolation Mounts

Engine/airend isolation mounts should be inspected after each 250 hours of operation. Those mounts with cracks or splits in the molded rubber, or with bent or broken bolts due to operation or storage in severe environments, all should be replaced with equivalent parts.

I. Engine Operation

Inspect and maintain engine condition and operation as recommended in the manuals supplied by the engine manufacturer.

J. Fuels and Lubricants

Use only the types and grades of fuels and lubricants recommended in the Portable Power and Engine Manufacturer's Operator and Maintenance Manuals.



General Data

General Data

MODELS	XHP1070CWCAT	XHP1170AWCAT
Air Delivery - cfm (litres/sec)	1070 (505)	1170 (553)
COMPRESSOR		
Rated Operating Pressure - psi (kPa)	150-350 (1034-2412)	150-350 (1034-2412)
ENGINE (Diesel)		
Manufacturer	Caterpillar	Caterpillar
Model	C15	C15
Rated Horsepower at 1800 rpm	475	540
Electrical System	24VDC	24VDC
Full Load Speed - rpm	1800	1800
No Load Speed - rpm	1350	1350
FLUID CAPACITIES - U.S. Gallons (litres)		
Compressor Lubricant	55 (208)	55 (208)
Engine Lube (including filter)	10.5 (40)	10.5 (40)
Engine Coolant (radiator)	15.2 (57.5)	15.2 (57.5)
Fuel Tank (Clean DIESEL fuel)	230 (870)	230 (870)

UNITS MEASUREMENTS/WEIGHTS			
Feet (Meters)	HSRG	WAGON RG	LRG
Overall Length	24.3 (7.4)	19.2 (5.85)	19.2 (5.85)
Overall Height	8.33 (2.54)	8.33 (2.54)	7.25 (2.21)
Overall Width	7.5 (2.29)	7.5 (2.29)	7.5 (2.29)
Gross Weight - pounds (kg)	16,700 (7590)	16,000 (7258)	15, 300 (6940)
(including fluids - no fuel)		est	est

RUNNING GEAR			
Tire Size	215/ 75R17.5H	215/ 75R17.5H	NA
Towing Speed (maximum) mph	65	20	NA
Inflation Pressure	125 psig	125 psig	NA

EXPENDABLE SERVICE PARTS

Part Number	Description	Where Used	Quantity
46671454	Filter, Oil	Airend	2
46555952	Separator, Oil HP	Airend	1
36864361	Filter, Inlet Primary	Engine & AE inlet	2
36864379	Filter, Inlet Secondary	Engine & AE inlet	2
35362235	Filter Oil, Engine	C15	1
35362268	Filter Coolant, Engine	C15	1
22730014	Filter Fuel Eng-primary w/seals	C15	1
22090526	Filter Fuel Engine -secondary	C15	1
22730022	Filter Bowl, Fuel - primary	C15	1

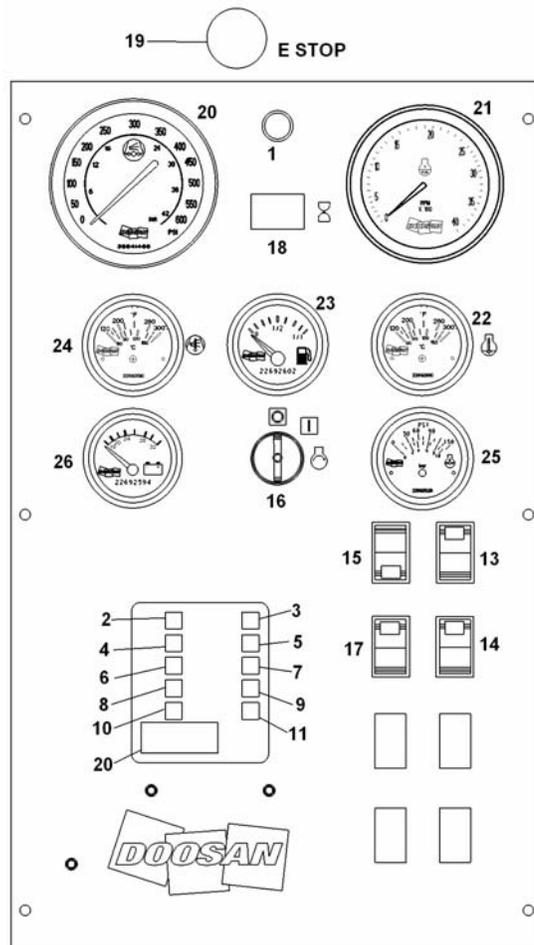


Any departure from the specifications may make this equipment unsafe.



Operating Instructions

Operating Instructions



Operating Controls and Instruments

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

1. **Panel Light:** Illuminates instrument and control panel. Controlled by Switch 14.
2. **High Compressor Temp:** Fault indicator lamp. Indicates shutdown due to high compressor temperature.
3. **Low Radiator Coolant Level:** Alarm indicator lamp. Indicates engine coolant needs service.
4. **Low Engine Oil Pressure:** Fault indicator lamp. Indicates shutdown due to low engine oil pressure.
5. **Restricted Air Filter:** Alarm indicator lamp. Indicates engine/compressor air inlet filters need service.
6. **High Engine Coolant Temp:** Fault indicator lamp. Indicates shutdown due to high engine water temperature.

7. **Restricted IQ Air Filters:** Fault indicator lamp. Indicates shutdown due to dirty IQ air filters (if equipped).
8. **Low Fuel Level:** Fault indicator lamp. Indicates shutdown due to low fuel level. Lamp blinks at low fuel warning.
9. **Compressor Malfunction:** Fault indicator lamp. Indicates shutdown due to compressor system fault. Refer to Fault Code List.
10. **Low Battery Voltage:** Alarm indicator lamp. Indicates battery or charging system requires service.
11. **Engine Malfunction:** Engine Fault code. Refer to service card or engine manual for codes and service requirements.
12. **Malfunction Code (4 Digit):** Compressor or engine fault. Refer to manual for list of codes and service requirements.
13. **Ether Inject:** Injects a measured shot of ether for aid in cold weather starting of engine.

**CAUTION**

Use Sparingly.

14. **Panel Light Switch:** Controls panel lamp # 1.
15. **Pressure Control:** Momentary contact switch. Allows engine to warm up at low compressor pressure.
16. **Main Power Control Switch:** ON/OFF Start Switch.
17. **Heaters:** ON/OFF Power Switch for regulation and IQ heaters. Prevents freeze up in cold weather.
18. **Hourmeter:** Indicates machine operating hours.
19. **E-STOP:** Emergency Stop Push Button (ESA units only). Push to stop, turn to release.
20. **Discharge Air Pressure Gage:** Indicates pressure in receiver tank, normally from 0 psi(kPa) to the rated pressure of the machine.
21. **Engine Tachometer:** Indicates engine speed in RPM from 0 when stopped to full speed.
22. **Engine Water Temp**
23. **Fuel Level Gauge:** Not used on "S" Models.
24. **Compressor Oil Temp**
25. **Engine Oil Pressure**
26. **Battery Voltage**

Lifting Unit

The central lifting bail can be reached through the roof door only from inside the machine. Use hoist or crane capable of lifting machine gross weight (see General Data).

Before Towing

Ensure that the tires, wheels and running gear are in good condition and secure.

Wagon Style Running Gear

- Do not tow this unit in excess of 20 mph (32km/hr).
- Use a tow vehicle whose towing capacity is greater than the gross weight of this unit. (see general data).
- Machine is not designed to be highway towable.
- Set parking brake or chock wheels before disconnecting from towing vehicle.
- Optional Parking Brake - located beside towbar on front of unit, if equipped.
- Push lever down to apply brake.

High Speed Running Gear

- Use jack to raise or lower lunette eye.
- Use tow vehicle whose towing capacity is greater than the gross weight of this unit (see general data).
- Do not tow this unit in excess of 65 mph.
- Place wheel chocks under tires before disconnecting from towing vehicle.
- When raising or lowering lunette eye, always stand to one side.

Wheel Chock - HSRG

- Located inside of front towbar
- Secure unit with chocks before disconnecting drawbar from tow vehicle.

Setting Up (All Units)

Place the unit in an open, well-ventilated area. Position as level as possible. The design of these units permits a maximum 10 degree limit on out-of-level operation.

When the unit is to be operated out-of-level, it is important: (1) to keep the engine crankcase oil level near the high level mark (with the unit level), and (2) to have the compressor oil level gauge show no more than mid-scale (with the unit running at full load). Do not overfill either the engine crankcase or the compressor lubricating oil system.

Chock wheels or set parking brake.

This unit is equipped with on-board fuel tanks with a total capacity of 230 gallons which provides 10 hours of full load operation.

Compressor Mounting

Portable compressors, which are modified to remove the running gear and mount the machine direct 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.

WARNING

Do not connect the air discharge on this unit 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 unit. If this unit is connected in parallel with another unit 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).

Air hose restraining cable installation:

Secure hose restraining cable at each end to prevent accidental hose whipping. At the machine-side of the air hose, install and secure one end of the hose restraining cable on the 3" nipple on the inlet side of the 3" service valve. Install the other end of the hose restraining cable over the main hose connector.

Install suitable 3" air hose between service valve on unit and point of air use. The air hose must be rated for outdoor use and for pressurized air service. Minimum rating is 250°F (121°C) and 200 psig (HP) or 425 psig (XHP).

Before Starting

Open manual blowdown valve to ensure the separator has been vented of all pressure. Close the valve before starting.

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

Check battery for proper connections and condition.

WARNING

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

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

WARNING

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

WARNING

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

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

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

Insure that radiator cap is installed properly and tightened.

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

NOTICE

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

CAUTION

No smoking, sparks, or open flame near fuel.

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

NOTICE

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

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

WARNING

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

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

Starting

NOTICE

This unit is equipped with a battery disconnect switch which removes power from the machine controller for long term storage. The switch is located on the side of the engine near the battery.

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

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

1. Turn the keyswitch to the "ON" position (first position). All diagnostic lamps and the LED display will light for two (2) seconds. All lamps should then go off and ALTERNATOR NOT CHARGING and LOW ENGINE OIL PRESSURE lamps will flash.
2. In freezing weather (below 32°F/0°C), flip HEATERS switch "ON" and wait sixty (60 seconds). This applies heat to the control system components for easier starting. Leave this switch "ON" while operating at these temperatures.
3. When the keyswitch is turned to "START" the engine starter will be engaged. **Do not operate the engine starter motor for more than ten (10) seconds without allowing at least one minute cooling time between start attempts.**

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

⚠ CAUTION

Ether is an extremely volatile, high flammable gas. Use Sparingly! If too much is injected, the uncontrolled explosion may result in costly damage to the engine.

4. In cold weather, as required, press the ETHER INJECT button once or twice only while the engine is cranking. This injects a measured amount of ETHER to the engine.
5. Following a successful start, the engine will accelerate to 1200 rpm initially, then 1500 rpm for warm-up. Compressor discharge pressure will be maintained at 60 psi during warm-up. After warm-up, rpm will maintain 1200 rpm idle.
6. Press the LOAD button. The engine will increase speed up to 1800 rpm until the pressure reaches the desired set point.

After the engine has warmed up, open the service air valve to supply air to compressed air tool.

Normal Operation

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

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

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

1. The compressor is loaded (inlet valve fully open or modulated partially open) or unloaded (inlet valve fully closed).
2. Engine speed varies between 1350 RPM and 1800 RPM while compressor is loaded to match the required volume flow.

Operation - Loaded

Assume engine has been started and is running in the unload state at 1350 RPM. If there is air demand (pressure falls below the load point pressure), compressor will load at 1350 RPM by opening the inlet valve. As air demand rises and falls, engine speed is controlled between 1200 RPM and 1800 RPM to match the required flow while maintaining rated pressure.

Operation - Unloaded

If there is no air demand at 1350 RPM (pressure rises above the unload point pressure), the compressor will unload by closing the inlet valve. The unit then runs at 1350 RPM unloaded with no air delivery. If air demand increases (pressure falls below the load point pressure), the compressor reloads to meet the required air demand.

Stopping

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

NOTICE

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

 **CAUTION**

Machines with EMERGENCY STOP BUTTON - Use the Emergency Stop Button only for emergency conditions. Do not use for normal machine stopping. Button must be reset before starting can be accomplished.

NOTICE

Once the engine stops, the automatic blowdown valve will relieve pressure from the separator tank.

 **WARNING**

Even after pressure is relieved from the piping system, any air supply line from the compressor to a tool or machine could remain under pressure and cause serious personal injury or death. After the compressor stops, carefully open a valve at any tool or machine to exhaust the pressure in any line prior to removal or servicing.

 **CAUTION**

Never allow the unit to sit stopped with pressure in the receiver-separator system. As a precaution, open the service valve.

IQ System

The IQ System is a complete, self-contained system which provides cooler, cleaner air than from a standard portable compressor. The system utilizes an integral aftercooler, high-efficiency filtration, and a patented condensate disposal system to provide the cool, clean air. The condensate disposal system injects all liquid condensed from the moisture separator and filters into the engine exhaust system where it is vaporized by heat. This eliminates the need for collecting the condensate, and the added cost of disposing of the condensate, which is often regulated by local, state, and/or federal regulations.

When equipped with the low ambient feature of the IQ System automatically adjusts movable louvers to control airflow through the aftercooler, ensuring that the compressed air temperature always remains above freezing temperatures (typically 45° F) at any ambient temperature down to -20° F. This prevents the need for 120V AC heat tracing systems, or any manual adjustment to prevent freezing of the compressed air system. All drain points for the condensate handling system are heated with 24V DC heat tracing, which is integral to the compressor control orifice heater system.

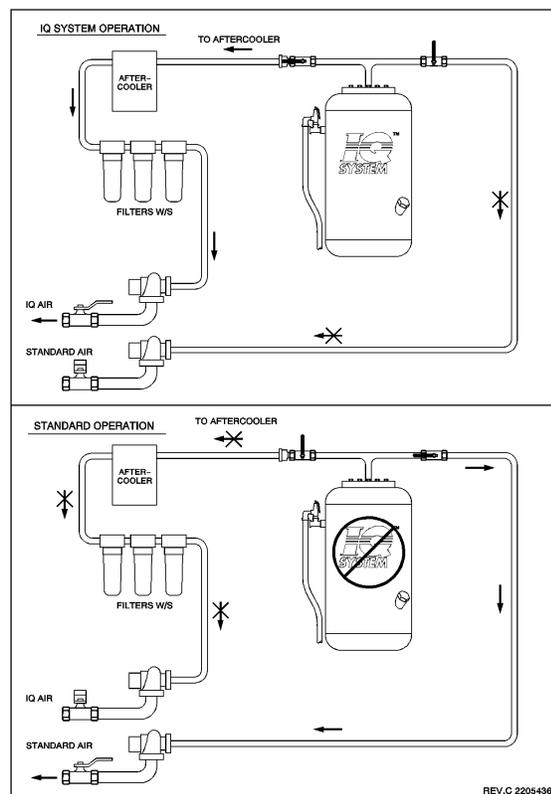
Theory of Operation

The compressed air exits the separator tank through the top cover piping, and can then travel along one of two paths, selectable via manual valving.

One path allows Standard Operation, which bypasses the IQ System, and delivers air quality equivalent to a standard oil-flooded portable compressor. If the IQ System is enabled by proper setting of the selector valve, the compressed air first enters the aftercooler.

The aftercooler is cooled by the incoming compressor package air, which is controlled by movable louvers mounted on the aftercooler (if equipped with low ambient option). At most conditions, the louvers are fully open, and maximum aftercooling is available. The compressed air and condensate (water with a small amount of compressor lubricant) exits the aftercooler and enters the moisture separator, where most of the condensate is removed.

The compressed air then flows through two stages of filtration, where the aerosol water and oil is removed down to approximately 0.01 ppm, and all particulates are removed down to 0.01 micron.



At the bottom of the moisture separator and both filters are strainers and constant-bleed orifices, which are sized to allow the maximum flow of condensate while minimizing compressed air loss.

The condensate lines are then piped together, and the condensate is injected at a single point into the engine exhaust piping. The compressed air then travels through the minimum pressure valve, and out through the service air valve. The air pressure gauge on the instrument panel indicates the pressure inside the separator tank. A service air pressure gauge is located inside the front door of the compressor on the filter support.

If the IQ System is bypassed (Standard Operation selected), the delivered air pressure will be approximately equal to the separator tank pressure. If the IQ System operation is selected, the delivered air pressure will be slightly less, depending on the restriction of the filters.

**CAUTION**

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

Low Ambient Option Operation

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

In the event that the unit is operating under abnormal conditions (i.e., an enclosure door open) which would cause excessive cooling of the aftercooler, a temperature sensor in the aftercooler outlet header will signal the TCU to further close the louvers if the compressed air temperature falls to approximately 36° F or lower.

There are no user selectable or serviceable components in the TCU. Contact Portable Power Service Department if any abnormal operation of the freeze protection control system occurs.

Daily Maintenance:

Verify, during full-load (maximum compressed air delivery) that the IQ System filter restriction indicators do not show excessive restriction. Restriction indicators for the filters are mounted inside the control panel, and will shut down the compressor if restriction exceeds recommended values.

**CAUTION**

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

Weekly Maintenance:

- Remove Y-strainer screens at the bottom of the moisture separator and both filters and clean out any residue.
- Verify that the orifices below the Y-strainers are not clogged.

- Verify that the piping from the orifice purge points to the exhaust system is not clogged.

**CAUTION**

Blockage of the Y-strainers, orifices, or piping can result in flooding of the vessels with condensate. If flooding occurs, excessive condensate may enter the air stream and could result in damage to downstream equipment.

Yearly Maintenance:

The normal maintenance interval on the primary and secondary IQ System filters is one year, or earlier if pressure drop becomes excessive. Restriction indicators for the filters are mounted on the filter support inside the front door, and will shut down the compressor if restriction exceeds recommended values.

**CAUTION**

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

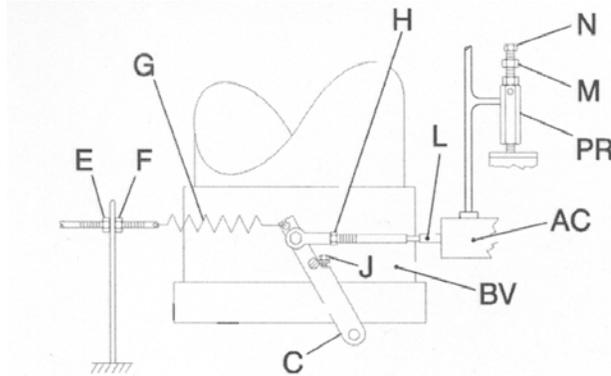
Filter Replacement

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

Verify the part number of new element vs. old element, as the two IQ filters are of different media.

- Put a small amount of petroleum jelly or other non-synthetic grease on the element O-Ring to aid installation into the filter head.
- Replace housing making sure to not overtighten.
- Repeat the above procedure on the remaining filter element.
- Reconnect all wires and hoses to drains on bottom of each filter housing.

Pressure Regulation



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

Adjustment Instructions (for XHP units with Tier II and Tier III Electronic Control Caterpillar Engines.

The operating pressure of this unit was set at the factory to the maximum rating (at full speed). See General Data. However, this pressure may be reset down to 150 psi (1050 kPa). Perform these steps before starting the unit:

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

Start unit and monitor separator tank pressure.

11. The target pressure is 50 to 80 psi while operating at start pressure.
12. If the pressure exceeds 80 psi: Loosen jam nut (H), turn rod (L) 1/4 to 1/2 turn CCW (as viewed from rod end) to lightly close butterfly, and secure jam nut (H). Use the manual blowdown valve to bleed pressure down to 60 psi (close M BVD). After 2.0 minutes, if the pressure is between 50 and 80 psi, OK. Adjustment complete
13. If the pressure drops below 50 psi: Loosen jam nut (H), turn rod 1/4 to 1/2 turn CW (as viewed from rod end) to slightly open the butterfly, and secure jam nut (H). After 2.0 minutes, if the pressure is between 50 and 80 psi. OK. Adjustment complete.
14. If the pressure is not between 50 and 80 psi after 2.0 minutes, repeat steps 12 and/or 13 as needed.
15. Push "Service Air" button on control panel.
16. With service air valve closed, adjust pressure regulator (PR) to rated pressure (350 psi) plus 10 psi (70 kPa) as follows:
17. Loosen locknut (M) counterclockwise. Turn adjustment cap (N) clockwise to increase pressure, counterclockwise to decrease pressure.
18. Open service air valve and observe full load engine speed (*). Adjust regulator to give rated operating pressure (*). Tighten locknut (M).
19. To regulate any pressure between 150 psi (1050 kPa) and maximum rating (350 psi), make adjustment at the pressure regulator.

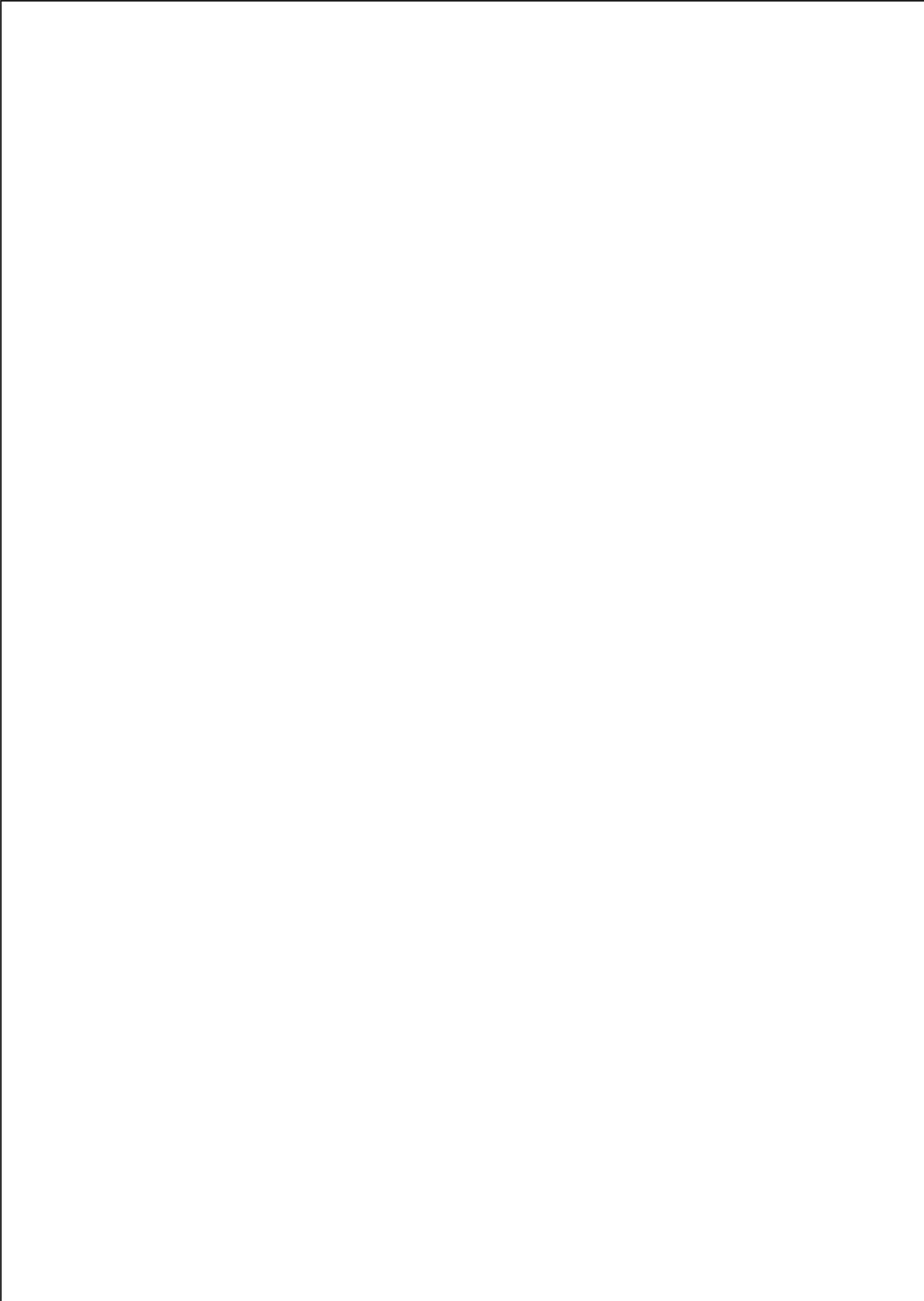
*Refer to General Data Section.

Optional Engine Overspeed Shutdown with Engine Air Inlet Shutoff

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

As optional feature can be supplied to shut off the air supply to the engine inlet manifold at the same time the fuel is shut off.

This feature requires an optional engine air inlet elbow containing the shutoff valve mechanism, optional engine ECM set up programming to activate the air shutoff feature and optional wiring harnesses to provide power to the shutoff valve relay and to transmit the shutoff signal.





Maintenance

PREVENTIVE MAINTENANCE SCHEDULE

If operating in extreme conditions (very hot, cold, dusty or wet), these time periods should be reduced.

XHP1170CAT/CATF-EX-T3	DAILY	WKLY	MO.	3 MDS.	6 MDS.	9 MDS.	12 MDS.	18 MDS.	30 MDS.
				500 Hrs	1000 Hrs	1500 Hrs	2000 Hrs	3000 Hrs	5000 Hrs
Fuel / Water Separator Element			R						
Fuel Filter Element			R						
Engine (Oil Changes, Oil Filters)			R						
Compressor Oil Filter Elements				R					
Engine Coolant Conditioner Element					R				
Compressor Oil						R			
Oil Separator Element							R		
Separator Tank Exterior							CR		
Engine Coolant								R	
Engine Crankcase Breather Element			CL						
Engine Waterpump					C				
Shutdown Switch Settings							T		
Scavenge Orifice & Related Parts								C	
Scavenge Line									C
Compressor Feed Pump Strainer									C
* Brakes & Linkage									C
* Lights (Running, Brake, & Turn)			CBT						
* Pintle Eye Bolts			CBT						
* Tire Pressure & Condition			C						
* Wheel Lug Nuts									
* Running Gear Linkage			G						
* Running Gear Bolts					C				
* Wheels (Bearings, Seals, Etc.)							G		
Engine Valve Clearance Check									C
Electronic Unit Injector									C
* Disregard if not applicable to your particular machine									
Legend:									
CBT = Check Before Towing									
G = Grease									
C = Check (Adjust, Clean, or Replace if Necessary)									
R = Replace									
T = Test									
D = Drain									
WI = or When Indicated									
CR = Check & Report									
CL = Clean									

Routine Maintenance

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

The MAINTENANCE CHART indicates the various components' descriptions and the intervals when maintenance has to take place. Oil capacities, etc., can be found in the GENERAL DATA SECTION of this manual.

For any specification or specific requirement on service or preventative maintenance for the engine, refer to the Engine Section.

Compressed air can be dangerous if incorrectly handled. Before doing any work on the unit, ensure that all pressure is vented from the system and that the machine cannot be started accidentally.

If the automatic blowdown fails to operate, then pressure must be gradually relieved by operating the manual blowdown valve. Suitable personal protective equipment should be worn.

Ensure that maintenance personnel are adequately trained, competent and have read the Maintenance Manuals.

Prior to attempting any maintenance work, ensure:

- all air pressure is fully discharged and isolated from the system. If the automatic blowdown valve is used for this purpose, then allow enough time for it to complete the operation.
- the discharge pipe / manifold area is depressurized by opening the discharge valve, while keeping clear of any airflow from it.

 **WARNING**

Pressure will remain in the system between the minimum pressure valve and the service valve after shutdown and operation of the auto blowdown valve.

This pressure must be relieved by:

(a) Disconnecting any downstream equipment.

(b) Opening the discharge valve to atmosphere.

- the machine cannot be started. Post warning signs and/or fit anti-start devices.
- Disconnect battery cables.

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

- anyone entering the machine is aware of the reduced level of protection and the additional hazards, including hot surfaces and intermittently moving parts.
- The machine cannot be started.

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

- the work carried out is limited to only those tasks which require the machine to run.
- the work carried out with safety protection devices disabled or removed is limited to only those tasks which require the machine to be running with safety protection devices disabled or removed.
- all hazards present are known (e.g. pressurised components, electrically live components, removed panels, covers and guards, extreme temperatures, inflow and outflow of air, intermittently moving parts, safety valve discharge etc.).
- appropriate personal protective equipment is worn.
- loose clothing, jewelry, long hair etc. is made safe.
- warning signs indicating that Maintenance Work is in Progress are posted in a position that can be clearly seen.

Upon completion of maintenance tasks and prior to returning the machine into service, ensure:

- the machine is suitably tested.
- all guards and safety protection devices are refitted.
- all panels are replaced, canopy and doors closed.
- hazardous materials are effectively contained and disposed of.

Protective Shutdown System

Refer to the diagnostic display codes table for a listing of shutdown conditions.

Low engine fuel level switch.

Test the low engine fuel level switch circuit as follows:

- Start the machine.

NOTE: Do not press the load button.

- Disconnect the switch, the machine should shutdown.
- Re-connect the switch.

Test the low engine fuel level switch by removing and operating the float manually.



Never remove or replace switches when the machine is running.

Scavenge Line

The scavenge line runs from the combined orifice/drop tube in the separator tank, to the orifice fitting located in the airend.

Check that the scavenge line and tube are clear of any obstruction each time the compressor lubricant is changed as any blockage will result in oil carryover into the discharge air.

Compressor Oil Filter

Refer to the MAINTENANCE CHART in this section for the recommended servicing intervals.

Removal

WARNING

Do not remove the filter(s) without first making sure that the machine is stopped and the system has been completely relieved of all air pressure. (Refer to STOPPING THE MACHINE in the OPERATING INSTRUCTIONS section of this manual)

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.

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 that it should be changed immediately. Refer to LUBRICATION later in this 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.

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.

CAUTION

Start the machine (refer to PRIOR TO STARTING and STARTING THE MACHINE in the OPERATING INSTRUCTIONS section of this manual) and check for leakage before the machine is put back into service.

Compressor Oil Separator Element

Refer to the MAINTENANCE CHART in this section for the recommended servicing intervals. If, however, the element has to be replaced, then proceed as follows:

Removal

WARNING

Do not remove the filter(s) without first making sure that the machine is stopped and the system has been completely relieved of all air pressure. (Refer to STOPPING THE MACHINE in the OPERATING INSTRUCTIONS section of this manual).

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

Inspection

Examine the filter 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.

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.

Reposition the cover plate, taking care not to damage the gasket, and replace the cover plate screws tightening in a criss-cross pattern to the recommended torque (refer to the TORQUE SETTING TABLE later in this section).

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

Replace the compressor oil (refer to LUBRICATION later in this section).

CAUTION

Start the machine (refer to PRIOR TO STARTING and STARTING THE MACHINE in the OPERATING INSTRUCTIONS section of this manual) and check for leakage before the machine is put back into service.

Compressor Oil Cooler and Engine Radiator

When grease, oil and dirt accumulate on the exterior surfaces of the oil cooler and radiator, the efficiency is impaired. It is recommended that each month the oil cooler and radiator be cleaned by directing a jet of compressed air, (carrying if possible a non-flammable cleaning solvent) over the exterior core of the cooler/radiator. This should remove any accumulation of oil, grease and dirt from the exterior core of the cooler so that the entire cooling area can radiate the heat of the lubricating and cooling oil/water into the air stream.

WARNING

Hot engine coolant and steam can cause injury. When adding coolant or antifreeze solution to the engine radiator, stop the engine at least one minute prior to releasing the radiator filler cap. Using a cloth to protect the hand, slowly release the filler cap, absorbing any released fluid with the cloth. Do not remove the filler 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.

Air Filter Elements

The air filter element should be replaced regularly (refer to the MAINTENANCE CHART) or when the restriction indicator shows red, whichever comes first. The aircleaner precleaner dumps should be cleaned as indicated in the MAINTENANCE CHART (more frequently in dusty operating conditions).

Removal

 **CAUTION**

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

Clean the exterior of the filter housing and remove the filter element by releasing the nut.

Reassembly

Assemble the new element into the filter housing ensuring that the seal seats properly. Secure element by tightening nut.

Before restarting the machine, check that all clamps are tight.

Ventilation

Always check that the air inlets and outlets are clear of debris etc.

Cooling Fan Drive

Periodically check that the fan mounting bolts in the fan hub have not loosened. If, for any reason, it becomes necessary to remove the fan or re-tighten the fan mounting bolts, apply a good grade of commercially available thread locking compound to the bolt threads and tighten to the torque value shown in the TORQUE SETTING TABLE later in this section.

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

Fuel System

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

Fuel Filter Water Separator

The fuel filter water separator contains a filter element which should be replaced at regular intervals (see the SERVICE/MAINTENANCE CHART).

Charge Air Cooler Pipework

Inspect all hoses and clamps on the charge cooler pipe work.

Engine damage will occur if the charge cooling system leaks.

Hoses

All components of the engine cooling air intake system should be checked periodically to keep the engine at peak efficiency.

At the recommended intervals, (see the MAINTENANCE CHART), inspect all of the intake lines to the air filter, and all flexible hoses used for air lines, oil lines and fuel lines.

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

Electrical System



Disconnect the battery cables before performing any maintenance or service.

Check the security of electrical terminals on the switches and relays i.e. nuts or screws loose, which may cause local hot spot oxidation.

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

Battery

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 system (from the airend through to the discharge 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 machine is put back into service.

Tire Pressure

See the GENERAL DATA SECTION of this manual.

Running Gear/wheels

Check the wheel nut torque 20 miles (30 kilometres) after refitting the wheels. Refer to the TORQUE SETTING TABLE later in this section.

Lifting jacks should only be used under the axle

The bolts securing the running gear to the chassis should be checked periodically for tightness (refer to the MAINTENANCE CHART for frequency) and re-tighten where necessary. Refer to the TORQUE SETTING TABLE later in this section.

Lubrication



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

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

Engine Lubricating Oil

The engine oil and oil filter element should be changed at the engine manufacturer's recommended intervals. Refer to the Engine operator manual/section.

Refer to the Engine operators' manual/section for engine oil specifications.

Compressor Lubricating Oil

Refer to the MAINTENANCE CHART in this section for service intervals.

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

WARNING

DO NOT, under any circumstances, remove any drain plugs or the oil filler-plug from the compressor lubricating and cooling system without first making sure that the machine is stopped and the system has been completely relieved of all air pressure (refer to STOPPING THE MACHINE in the OPERATING INSTRUCTIONS section of this manual).

Completely drain the receiver/separator system including the 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.

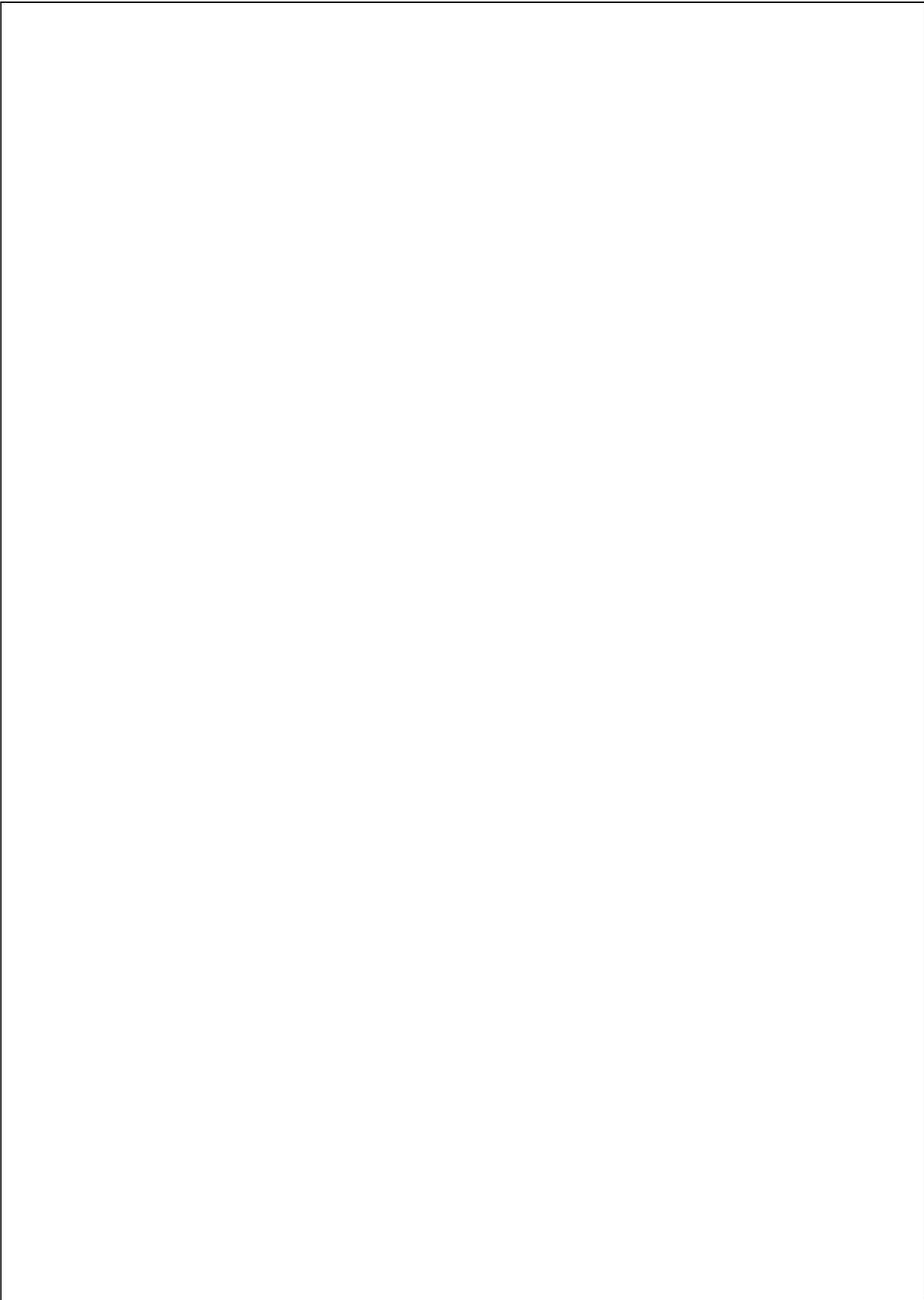
NOTE: If the oil is drained immediately after the machine has been running, then most of the sediment will be in suspension and will therefore drain more readily.

CAUTION

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

Running Gear Wheel Bearings

Wheel bearings should be packed with grease every 12 months. The type of grease used should conform to specification MIL-G-10924.





Lubrication

Lubrication

General Information

Lubrication is an essential part of preventive maintenance, affecting to a great extent the useful life of the unit. Different lubricants are needed and some components in the unit 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 Preventive 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. Details concerning lubrication of the running gear are in Maintenance Section.

All filters and filter elements for air and compressor lubricant must be obtained through Portable Power to assure the proper size and filtration for the compressor.

Compressor Oil Change

These units are normally furnished with an initial supply of oil sufficient to allow operation of the unit for approximately 6 months or 1000 hours, whichever comes first. If a unit has been completely drained of all oil, it must be refilled with new oil before it is placed in operation. Refer to specifications in Lubrication Table.

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. Where possible, 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.

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

 **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 the following conditions are met:

- **Discharge air pressure gauge reads zero (0).**
- **No air discharging from an “open” manual blowdown valve.**

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

Completely drain the reservoir, piping, and cooler. If the oil is drained immediately after the unit has been run for some time, most of the sediment will be in suspension and, therefore, will drain more readily. However, the fluid will be hot and care must be taken to avoid contact with the skin or eyes.

After the unit has been completely drained of all old fluid, close the drain valve, install new oil filter elements. Add oil in the specified quantity at the filler plug. Tighten the filler plug and run the machine to circulate the oil. Check the oil level. **DO NOT OVERFILL.**

NOTICE

Portable Power provides compressor oil specifically formulated for Portable Compressors and requires the use of these fluids in order to obtain extended limited aircend warranty.

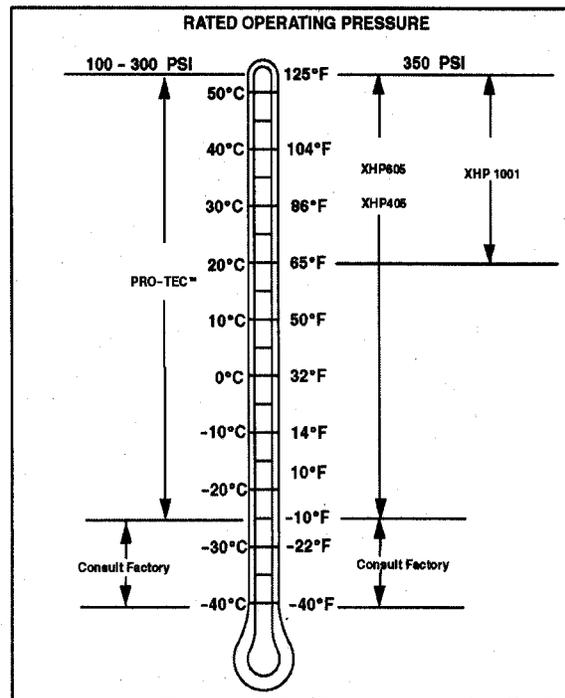
Portable Compressor Fluid Chart

Refer to these charts for correct compressor fluid required. Note that the selection of fluid is dependent on the design operating pressure of the machine and the ambient temperature expected to be encountered before the next oil change.

NOTE: Fluids listed as “preferred” are required for extended warranty.

Compressor oil carryover (oil consumption) may be greater with the use of alternative fluids.

Design Operating Pressure	Ambient Temperature	Specification
100 psi to 300 psi	-10°F to 125°F (-23°C to 52°C)	Preferred: Pro-Tec™ Alternate: ISO Viscosity Grade 46 with rust and oxidation inhibitors, designed for air compressor service.
350 psi	-10°F to 125°F (-23°C to 52°C) 65°F to 125°F (18°C to 52°C)	Preferred: XHP 605 Alternate: XHP405 ISO Viscosity Grade 68 Group 3 or 5 with rust and oxidation inhibitors designed for air compressor service. Preferred: XHP605 XHP1001



Preferred Fluids - Use of these fluids with original branded filters can extend airtend warranty. Refer to operator’s manual warranty section for details or contact your Portable Power representative.

Preferred Fluids	1 gal. (3.8 Litre)	5 gal. (19.0 Litre)	55 gal. (208.2 Litre)	220 gal. (836 Litre)
Pro-Tec™	36899698	36899706	36899714	36899722
XHP605	-	22252076	22252050	22252068
XHP1001	-	35612738	35300516	-
XHP405	-	22252126	22252100	22252118



Troubleshooting

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 order (1, 2, 3 etc.) to suggest an order to follow in troubleshooting.

A. 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?

B. 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.

NOTE: For troubleshooting electrical problems, refer to the Wiring Diagram Schematic found in Parts List Section.

General Information

The WEDGE controller records and displays diagnostic fault codes for the compressor system and the electronic engine. These codes are displayed on the 4-digit LED display on the machine control panel. Two of the ten LED diagnostic lamps on the control panel are used with fault codes display. One lamp is designated “Engine Fault” and the other “Compressor Fault”. When the engine fault lamp is on, all codes displayed are engine faults. When the compressor fault lamp is on, all codes displayed are compressor or package related faults.

A list of compressor and engine faults is attached with the placards inside the machine control panel and provided in this section. The table of Alert/Shutdown conditions in this section also lists the compressor fault codes and a list of the engine fault codes is provided.

The engine diagnostic fault codes can also be read with the manufacturer's service tool. A service tool connector is mounted on the engine. This connector provides a connection to the J1939 CAN network. For advanced engine troubleshooting, it is recommended that the manufacturer's service tools be used with accompanying service literature.

Fault Code	Caterpillar Model C15 Engine Diagnostic Codes
13	Fuel Temperature open/short to + battery
21	5 Volt Sensor DC power supply short to + battery
	5 Volt Sensor DC power supply short to ground
	8 Volt DC supply short to + battery
	8 Volt DC supply short to ground
24	Engine Oil Pressure open/short to + battery
	Engine Oil Pressure short to ground
	Engine Oil Pressure abnormal rate of change
25	Boost Pressure Sensor abnormal rate of change
	Boost Pressure Sensor open/short to + battery
	Boost Pressure Sensor short to ground
26	Atmospheric Pressure open/short + battery
	Atmospheric Pressure short to ground
27	Engine Coolant Temperature open/short to + battery
	Engine Coolant Temperature short to ground
28	Throttle position calibration required
32	Throttle position signal abnormal

Fault Code	Caterpillar Model C15 Engine Diagnostic Codes
34	Engine Speed Signal abnormal
	Secondary Engine Speed Signal abnormal
35	Engine Overspeed Warning
	Engine Overspeed Shutdown
37	Fuel Pressure open/short + battery
	Fuel Pressure short to ground
38	Intake Manifold Air Temperature open/short + battery
	Intake Manifold Air Temperature short to ground
39	Injector Actuation Pressure Signal Erratic
	Injector Actuation Pressure Voltage High
	Injector Actuation Pressure Voltage Low
	Injector Actuation Pressure System Fault
42	Engine Timing Calibration Required
46	Low Engine Oil Pressure Warning
	Low Engine Oil Pressure Derate
	Low Engine Oil Pressure Shutdown
49	Air Inlet Heater Relay Open/Current Below Normal
	Air Inlet Heater Relay Grounded/Current Above Normal
51	System Voltage Intermittent/Erratic/High/Low
56	Check Programmable Parameters
58	J1939 Data Link Communication
61	High Engine Coolant Temperature Warning
	High Engine Coolant Temperature Derate
	High Engine Coolant Temperature Shutdown
62	Low Engine Coolant Level Warning
	Low Engine Coolant Level Derate
	Low Engine Coolant Level Shutdown
63	High Fuel Pressure Warning

Fault Code	Caterpillar Model C15 Engine Diagnostic Codes
64	High Inlet Air Temperature Warning
	High Inlet Air Temperature Shutdown
65	High Fuel Temperature Warning
	High Fuel Temperature Derate
	High Fuel Temperature Shutdown
71	Injector Cylinder #1 Fault
72	Injector Cylinder #2 Fault
73	Injector Cylinder #3 Fault
74	Injector Cylinder #4 Fault
75	Injector Cylinder #5 Fault
76	Injector Cylinder #6 Fault

Wedge Diagnostic Display Codes

- 
 If the  fault indicator lamp is illuminated, refer to the  Alert/Shutdown list.
- 
 If the  fault indicator lamp is illuminated, refer to the  Engine diagnostic list.

Condition	Alert			Shut Down		
	Code	Light (Blinks)	Code	Light (Steady)	Delay (sec.)	
Engine Speed < 950 RPM			1	Compressor Malfunction	30	
Engine Speed > 1950 RPM			2	Compressor Malfunction	30	
Engine Crank Time Exceeded 15 sec			3	Compressor Malfunction	0	
Engine Not Responding To Throttle	10	Compressor Malfunction				
Too Many Start Attempts During Autostart			11	Compressor Malfunction	0	
Engine Shut Down: reason unknown			29	Compressor Malfunction	0	
Discharge Temperature (RT2) Sensor Fault			32	Compressor Malfunction	10	
Separator Tank Pressure (PT1) Sensor Fault	33	Compressor Malfunction				
Separator Tank Pressure >20 PSI During Start			34	Compressor Malfunction	0	
Separator Tank Pressure (PT1) > 410 PSI			35	Compressor Malfunction	1	
Safety Valve Open			36	Compressor Malfunction	2	
Separator Tank Temperature >248deg. F			50	Compressor Malfunction	3	
Machine ID Not Valid			51	Compressor Malfunction	0	
Separator Tank Temp. (RT1) Sensor Fault			53	Compressor Malfunction	10	
Reg. Sys. Pressure (PT2) Sensor Fault	54	Compressor Malfunction				
Estop Button Pushed	55	Compressor Malfunction				
Minimum Pressure Not Met	56	Compressor Malfunction				
RS232 Serial Communication Failure	70	Compressor Malfunction				
Engine ECM Communication Failure	71	Compressor Malfunction				
Auto Start/Stop Module Communication Fault (Note 1)	73	Compressor Malfunction				
			73	Compressor Malfunction	0	

ALERT/SHUTDOWN CONDITIONS

WEDGE: 22173579 - SOFTWARE V2.07 to V2.25
 WEDGE: 46636279 - SOFTWARE V3.00 and GREATER

XHP 1170CAT/CATF-EX-T3

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Trouble Shooting Chart

Bold Headings depict the COMPLAINT - Subheadings suggest the CAUSE

NOTE: Subheadings suggest sequence to follow troubleshooting.

1. Unit Shutdown:

- Out of Fuel
- Compressor Oil Temp. too High
- Engine Water Temp. too High
- Engine Oil Pressure too Low
- Broken Engine Fan Belt
- Loose Wire Connection
- Low Fuel Level Shutdown
- Defective Sensor
- Malfunctioning Relay
- Blown Fuse
- Engine Malfunctioning
- Airend Malfunctioning

Corrective Action

- Add CLEAN diesel Fuel
- See Complaint 6
- Check coolant level. If necessary, Add.
- See Complaint 3 and Complaint 4.
- Replace fan belt.
- Wiggle wires at switches & connector blocks.
- Make repairs.
- Replace fuel sender.
- Replace sensor.
- Replace relay.
- Replace fuse.
- See Trouble Shooting in Engine Manual.
- See Complaint 6.

2. Won't Start/Run:

- Low Battery Voltage
- Blown Fuse
- Malfunctioning Start Switch
- Clogged Fuel Filters
- Out of Fuel
- Compressor Oil Temp. too High
- Engine Water Temp. too High
- Engine Oil Pressure too Low
- Loose Wire Connection
- Defective Sensor
- Malfunctioning Relay
- Engine Malfunctioning
- Airend Malfunctioning

- Check electrolyte level. Check connections.
- Replace fuse.
- Replace switch.
- Service filters. See Engine Operator's Manual.
- Add CLEAN fuel.
- See Complaint 6.
- Check fluid level. If necessary, Add.
- See Complaint 3 and Complaint 4.
- Repair or replace connection.
- Replace sensor.
- Replace relay.
- See Trouble Shooting in Engine Manual.
- See Complaint 10, 11.

3. High Engine Temperature

- Broken Engine Fan Belt
- *Ambient Temp. > 115° F
- Dirty Operating Conditions
- Dirty Cooler
- *Out of Level > 15 degrees
- Operating Pressure too High
- Recirculation of Cooling Air
- Loose Wire Connection

- Replace fan belt set.
- Above spec limit.
- Move unit to cleaner environment.
- Clean exterior of cooler.
- Relocate or reposition unit.
- Reduce pressure to spec.
- Close side doors.
- Repair or replace.

* : > = greater than, < = less than

4. Low Engine Oil Pressure

Low Oil Level
 Out of Level > 15 degrees
 Wrong Lube Oil
 Clogged Oil Filter Element(s)
 Engine Malfunctioning
 Loose Wire Connection.

Corrective Action

Add oil.
 Relocate or reposition.
 See Engine Oil Spec. Change oil.
 Replace element(s).
 See Trouble Shooting in Engine Manual.
 Repair or replace.

5. Alternator Low Voltage

Loose or Broken Belts
 Loose Wire Connection
 Low Battery Voltage

Tighten or replace belt set.
 Repair or replace connection.
 Check electrolyte level. Add if necessary.
 Check connectors. Clean & tighten.
 Recharge battery.
 Repair or replace alternator.

Malfunctioning Alternator

6. High Compressor Discharge Temperature:

Ambient Temp. > 115° F
 Out of Level > 15 degrees
 Low Oil Level
 Wrong Lube Oil
 Dirty Cooler
 Dirty Operating Conditions
 Clogged Oil Filter Elements
 Loose or Broken Belts
 Operating Pressure too High
 Recirculation of Cooling Air
 Malfunctioning Thermostat
 Malfunctioning Fan
 Defective Oil Cooler Relief Valve
 Defective Minimum Pressure Valve
 Blocked or Restricted Oil Lines
 Airend Malfunctioning

Above spec limit.
 Relocate or reposition unit.
 Add oil. Look for any leaks.
 Check spec. in this manual.
 Clean exterior surfaces.
 Move unit to cleaner environment.
 Replace elements. Change oil.
 Tighten or replace belt set.
 Reduce pressure to spec.
 Close side doors. Replace belly pan.
 Replace thermostat in bypass valve.
 Check fan belt tension. Tighten or replace belt set.
 Replace valve.
 Repair or replace valve.
 Clean by flushing or replace.
 See Complaint 11, 12

7. Engine RPM Down:

Clogged Fuel Filter (primary)
 Operating Pressure too High
 Dirty Air Filter
 Wrong Air Filter Element
 Engine Malfunctioning
 Airend Malfunctioning

Replace primary filter. Replace final filter. Drain tanks. Add CLEAN fuel.
 Reduce pressure to spec limit.
 Clean or replace elements.
 Install correct element.
 See Trouble Shooting in Engine Manual.
 Refer to Factory.

8. Excessive Vibration:

Rubber Mounts, Loose or Damaged	Tighten or replace.
Defective Fan	Replace fan.
Drive Coupling Defective	Replace coupling.
Engine Malfunctioning	See Trouble Shooting in Engine Manual.
Airend Malfunctioning	See Complaint 7, 11, 12
Engine idle speed too low.	See Engine Manual.

9. Low CFM:

Dirty Air Filter	Clean or replace elements.
Incorrect Linkage Adjustment	Make adjustment per Section 6.
Malfunctioning Inlet Unloader/Butterfly Valve	Inspect valve. Make adjustment per Section 6.
Wrong Air Filter Element	Install correct element.

10. Short Air Cleaner Life:

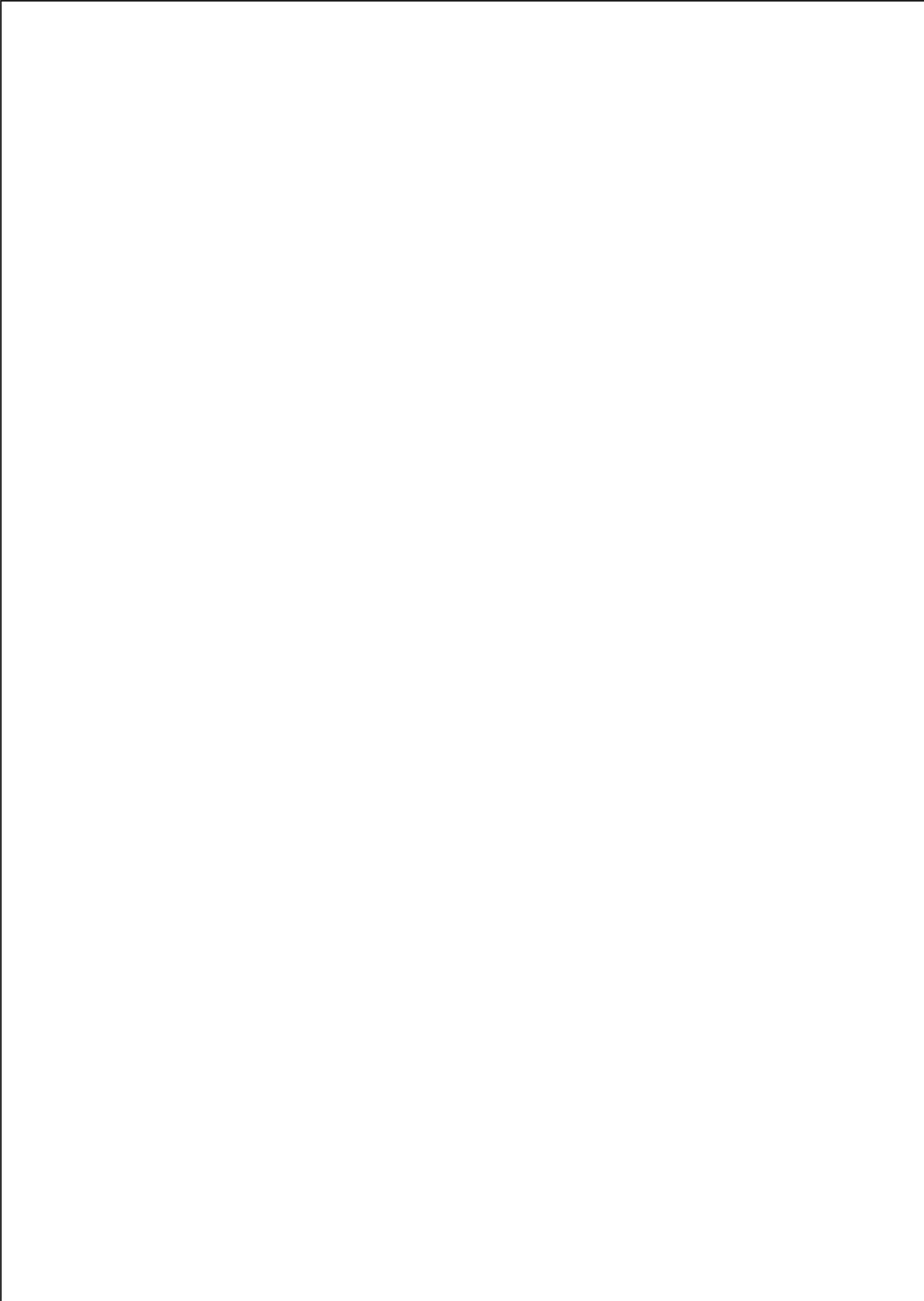
Dirty Operating Conditions	Move unit to cleaner environment.
Inadequate Element Cleaning	Install new element.
Incorrect Stopping Procedure	Read procedure in this manual.
Wrong Air Filter Element	Install proper element.

11. Will Not Unload:

Malfunctioning Inlet Butterfly Valve	Inspect valve fit. Re-adjust per Section 6.
Ice in Regulation Lines/Orifice	Apply heat to line(s) and or orifice.
Load Solenoid Leak	Replace load solenoid.
Plugged Vent Leak	Clean and/or replace.

12. Safety Valve Relieves:

Operating Pressure too High	Reduce pressure to spec limit.
Malfunctioning Inlet Unloader/Butterfly Valve	Inspect valve fit. Readjust per Section 6.
Defective Safety Valve	Replace safety valve.
Unit will not Unload Fast Enough	Apply heat to lines and/or orifice.





Electrical

Electrical

General Information and Operational Theory

General

The XHP1070/1170 machine has an electronic monitor and control system to provide discharge air pressure control and engine and package monitor functions. The system uses the WEDGE controller to perform these functions. The electrical system connects all the necessary switches, sensors and transducers to the WEDGE controller in order for it to perform the monitor and control functions.

Wedge Controller

The WEDGE controller is the heart of the machine monitor and control system. It provides data collection, alarming and control functions for compressor operations. It is a micro controller based unit with analog and digital inputs and outputs.

The WEDGE controller is attached to the back of the control panel. The LED annunciators are part of the front panel of the WEDGE. They can be seen through the laminate on the front of the control panel. The WEDGE is attached to the control panel with four #10 size nuts.

The first function of the WEDGE is to scan all analog and digital inputs at a fixed interval. These inputs are scanned every 50 milliseconds. The analog values are then compared against minimum and maximum values and an ALERT or SHUTDOWN is issued, if a value is out of range. The various ALERTS and SHUTDOWNS are listed in the trouble shooting section.

The second function of the WEDGE controller is machine discharge pressure control. The WEDGE monitors the regulation system air pressure and varies the engine throttle to maintain the setpoint discharge air pressure. The setpoint pressure is set using the regulator on the separator tank.

The third function of the WEDGE controller is to communicate with the diesel engine via the J1939 CAN network. The WEDGE controller provides the engine throttle setting to the engine controller and retrieves diagnostic information from the engine.

A PWM (Pulse Width Modulated) throttle is used to communicate with the CAT engine. The WEDGE controller receives diagnostic and run time data from the engine over the J1939 CAN network. A PWM throttle interface is used with the engine.

It has a base frequency of 500 Hz and the duty cycle varies from 10% to 90%.

Figure 8-2 shows the signals between the engine controller and the WEDGE controller.

Sensors and Transducers

The electronics system contains sensors and transducers that are used to collect process data from the compressor. The temperature is measured by a thermistor. This device exhibits a change in resistance as the temperature changes. The resistance causes an input voltage change to the WEDGE controller input and is interpreted as a temperature change.

The electronics system also uses pressure transducers to measure process pressure changes. These devices have an output signal of 4.5V DC to 4.5V DC, corresponding to 0 psi and the maximum measured psi for a particular device. The maximum pressure transducer ranges are 100 or 225 psi. The 100 and 225 psi devices are gauge pressure devices. These transducers are provided with 5V DC excitation to power the device. These are three wire devices: excitation, signal and ground (return) connections.

Digital Inputs and Outputs

The WEDGE controller scans digital inputs such as switch contacts. These are either "ON" (24V DC) or "OFF" (0 V DC). These digital inputs are connected to switches within the package such as the key start switch, air filter switches and IQ filter switches.

The WEDGE controller provides 24V DC digital outputs to control solenoids, start compressor and DC heaters. These are 24V DC "ON" and 0V DC "OFF". They are current limited and short circuit protected.

Controller Outputs:

The WEDGE controller has three different types of outputs: frequency, pulse width modulated (PWM) and 24V DC digital (ON/OFF). The frequency output is used as a throttle signal for the engine.

The PWM signal is used as a throttle signal for the Caterpillar engine. It has a base frequency of 500 Hz and the duty cycle varies from 10% to 90%.

Pressure Control

The discharge pressure is controlled by manipulating the engine speed and compressor inlet valve position. The inlet valve position is controlled pneumatically and the engine speed is determined by the WEDGE controller. The WEDGE measures the pneumatic system regulation pressure and computes an engine throttle setting. This throttle setting is sent to the engine via the frequency throttle, PWM or J1939 throttle, depending on which technique is used. The engine controller will control engine speed to this throttle setting.

Electronic Engine

The XHP1070/1170 machine contains an emissions certified diesel engine. In order to meet the emissions requirements, the engine has an electronic control system.

The control system handles all the monitor, alarm and control functions for the engine. The WEDGE controller communicates with the engine controller over the J1939 CAN network.

J1939 Data Link - The CAN network is a single pair shielded cable located with the W1 main harness. Figure 8-3 shows a layout of the CAN harness or “backbone” as it is referred to. The termination resistors (Terminator) are important to prevent reflections on the transmission line and must be in place for the network to function properly. The shield from the cable is floating at the WEDGE controller end.

The engine diagnostics connector is located on the left side of the engine. This is used to connect the engine manufacturer’s service tools to the CAN network. This connector also provides 24V DC power to these service tools.

Electrical System

The electrical system consists of the wiring harnesses and associated electrical devices such as relays, switches, lights, solenoids and alarm horn. There are two wiring harnesses in the XHP machines. They are as follows:

22661854 W1 Chassis Main Wiring Harness

22108690 Control Panel Wiring Harness

The schematic diagrams show the connections for these harnesses. Figure 8-1 is a system diagram showing harness connection with devices and controllers.

The electrical circuits are protected using ATC style fuses. A fuse should only be replaced with one of the same rating. Replacing a fuse with one of a larger rating could lead to harness damage. If a fault occurs and the circuit does not have the appropriate size fuse, wires could be burned in the harness and damage other circuits.

Software versions 1.60 and greater use software to set the machine ID. Versions less than 1.60 use an ID resistor plug, R2. The ID plug is located behind the control panel box on the W1 harness trunk. The resistor plugs are molded in colors for easy identification.

It is recommended that all machines be upgraded to version 1.60 or greater. The software set machine ID is much more reliable than the resistor plug.

Trouble Shooting Flow Chart

PROBLEM	CHECK LIST
Control panel key is turned to "ON" position, WEDGE controller annunciator lamps and 4 digit LED display do not come on	Check F1 fuse Check operation of switch S1 Check wiring from S1 to WEDGE controller Checking battery voltage, ensure battery disconnect switch is turned ON
Wedge controller annunciator lamps & 4 digit LED display initialize OK but alternator lamp and engine oil pressure lamps do no blink.	J1939 CAN communications not working Check for 24FDC key switch at engine CAN network wiring problem Ensure 24VDC power to engine ECM Check connector pins
Engine cranks but will not start	Ensure key switch (24VDC) at engine Frozen fuel cooler or associated piping Estop button pressed (ESA units) or Estop jumpers not making connection Clear active engine fault code
Engines does not crank when key turned to crank position	Check switch S1 Check relay K1 Check starter solenoid Check starter motor Check WEDGE output to K1 relay Check battery voltage
Compressor fails to load when "Service Air" switch pressed	Check Run/Start valve operation Verify frequency throttle signal at engine Check "Service Air" switch operation



Electrical Schematics

HP-XHP VIKING HARNESS SYSTEM SCHEMATIC

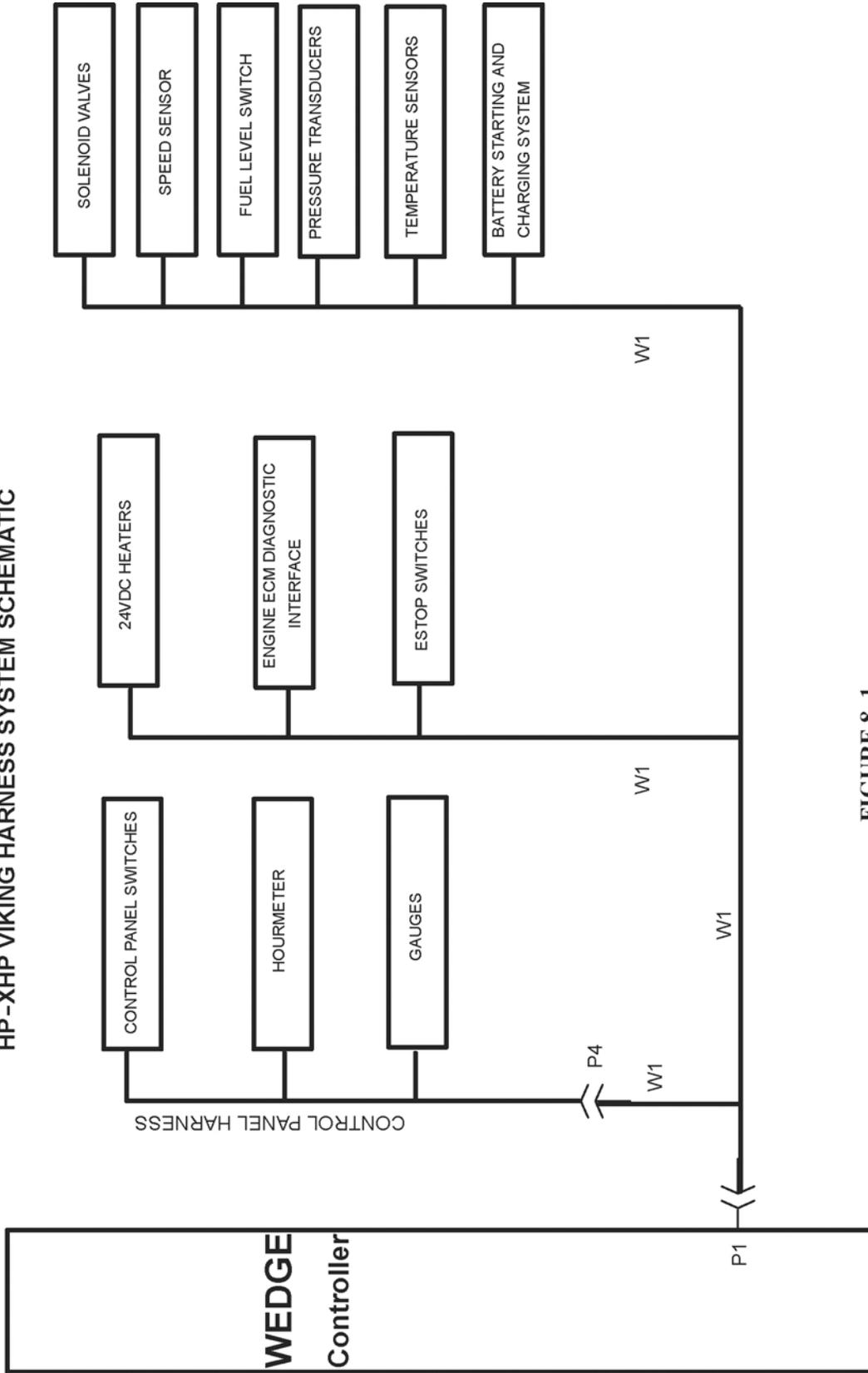


FIGURE 8-1

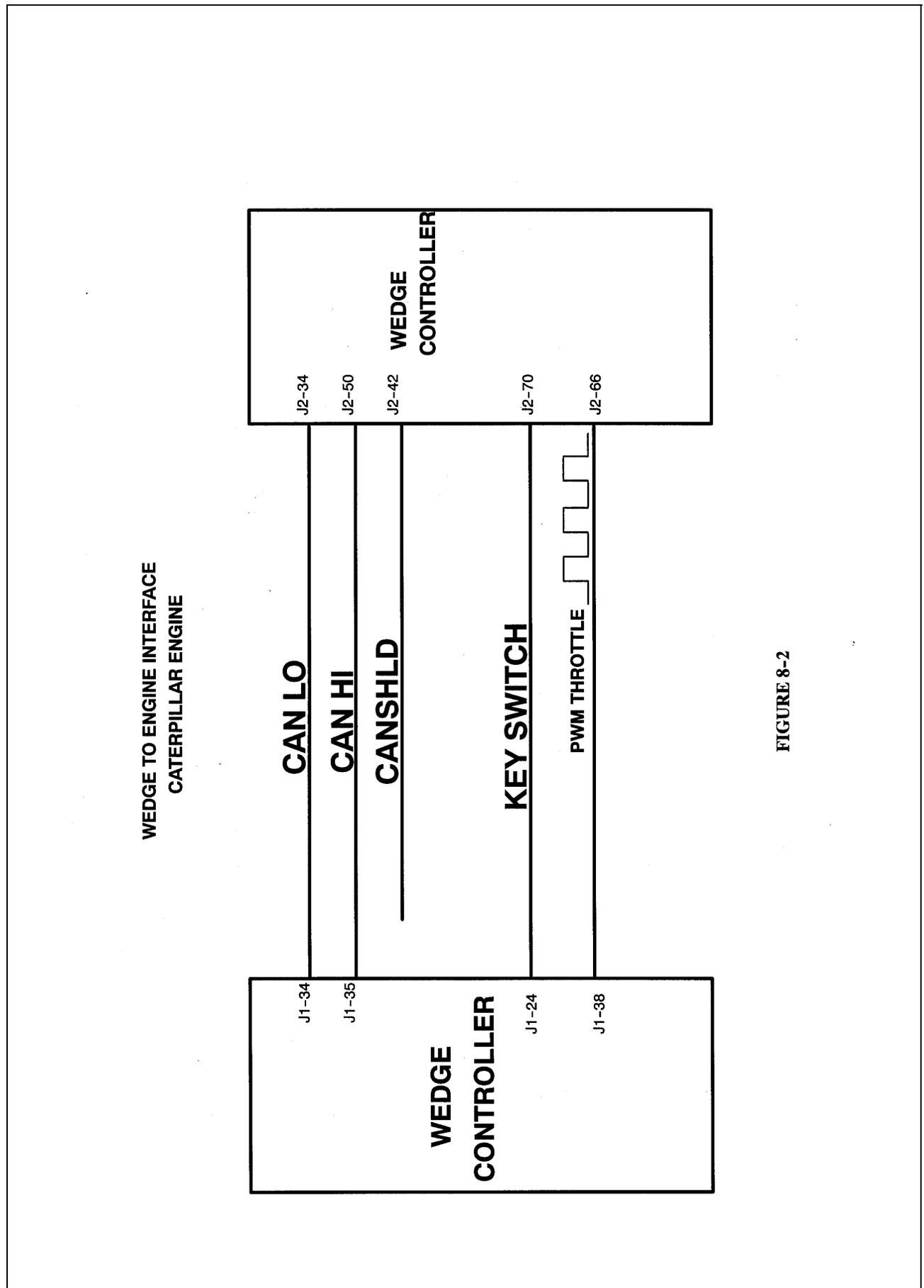


FIGURE 8-2

HP-XHP VIKING J1939 CAN COMMUNICATIONS SCHEMATIC

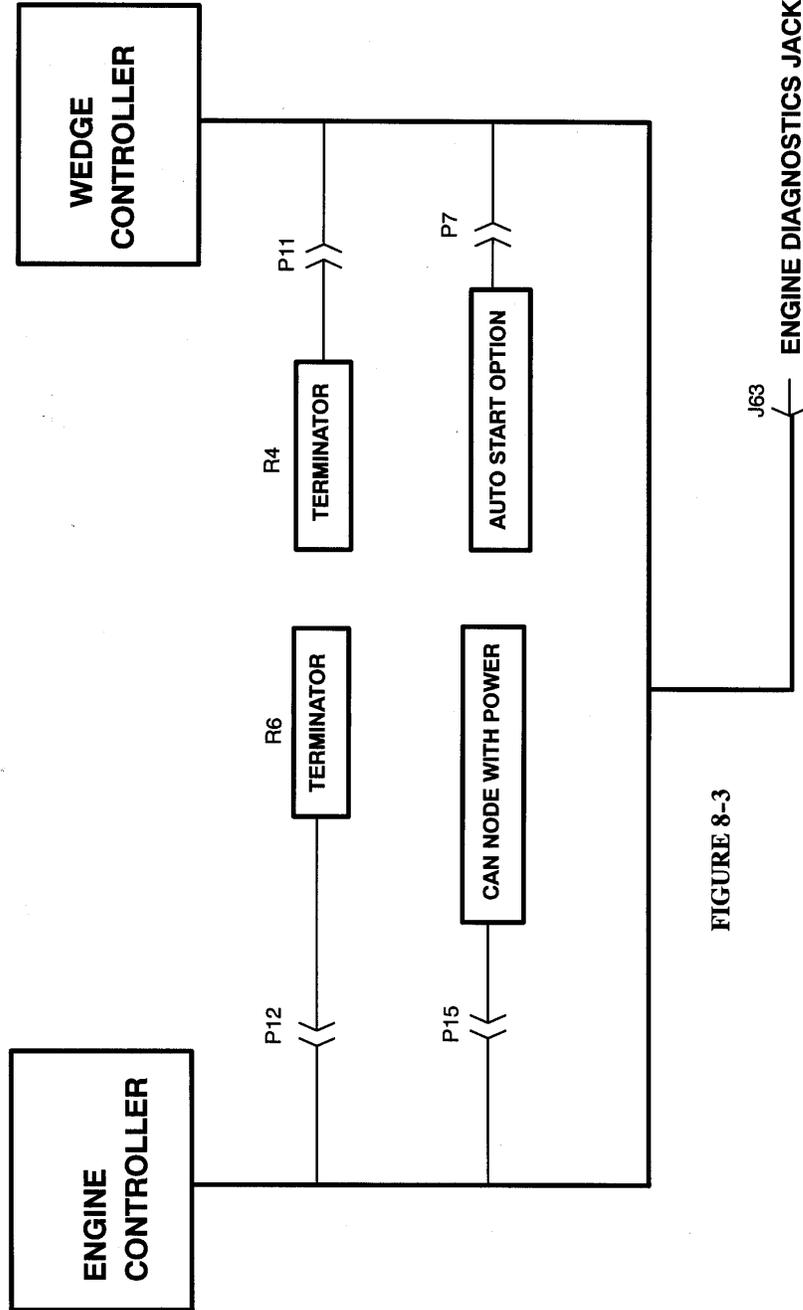
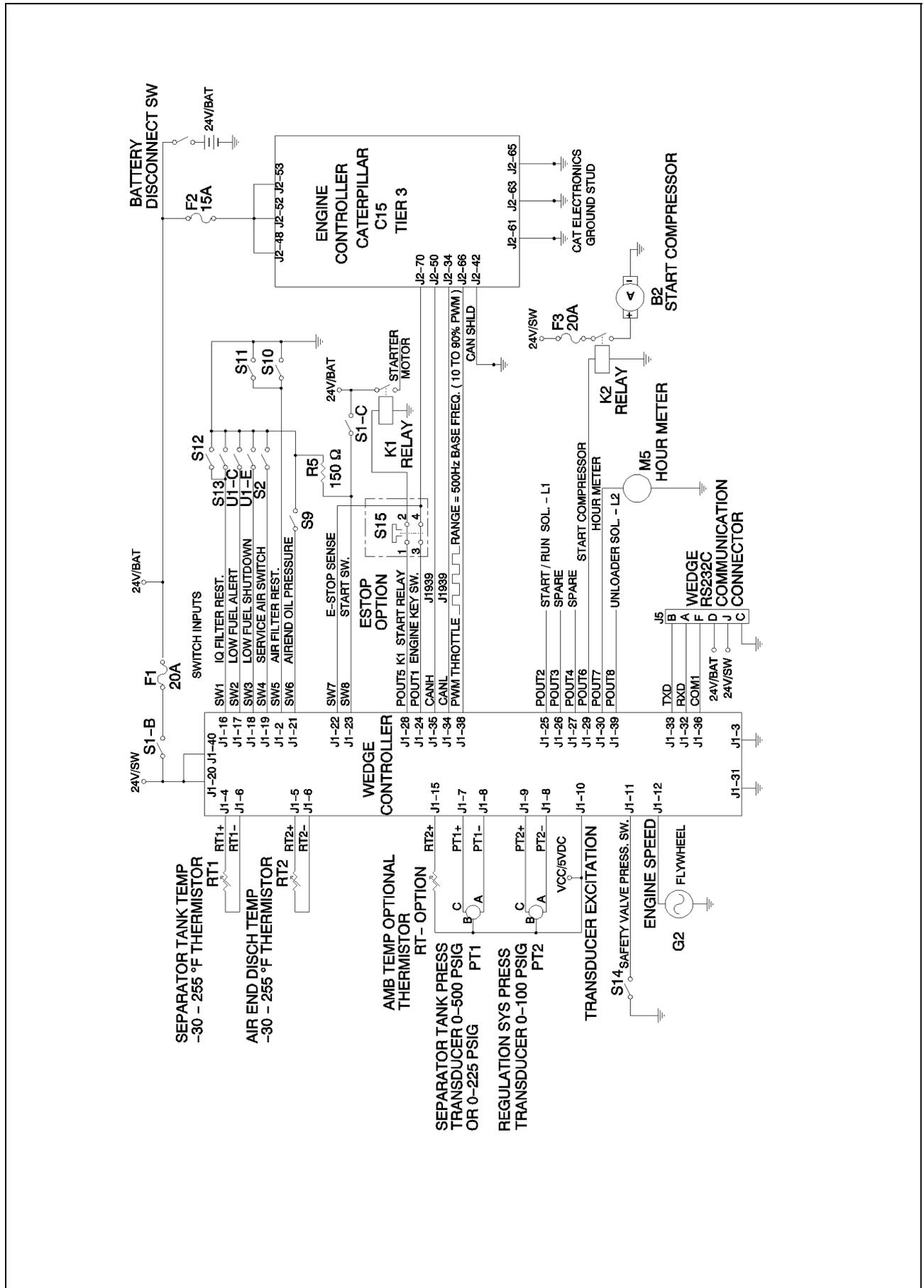
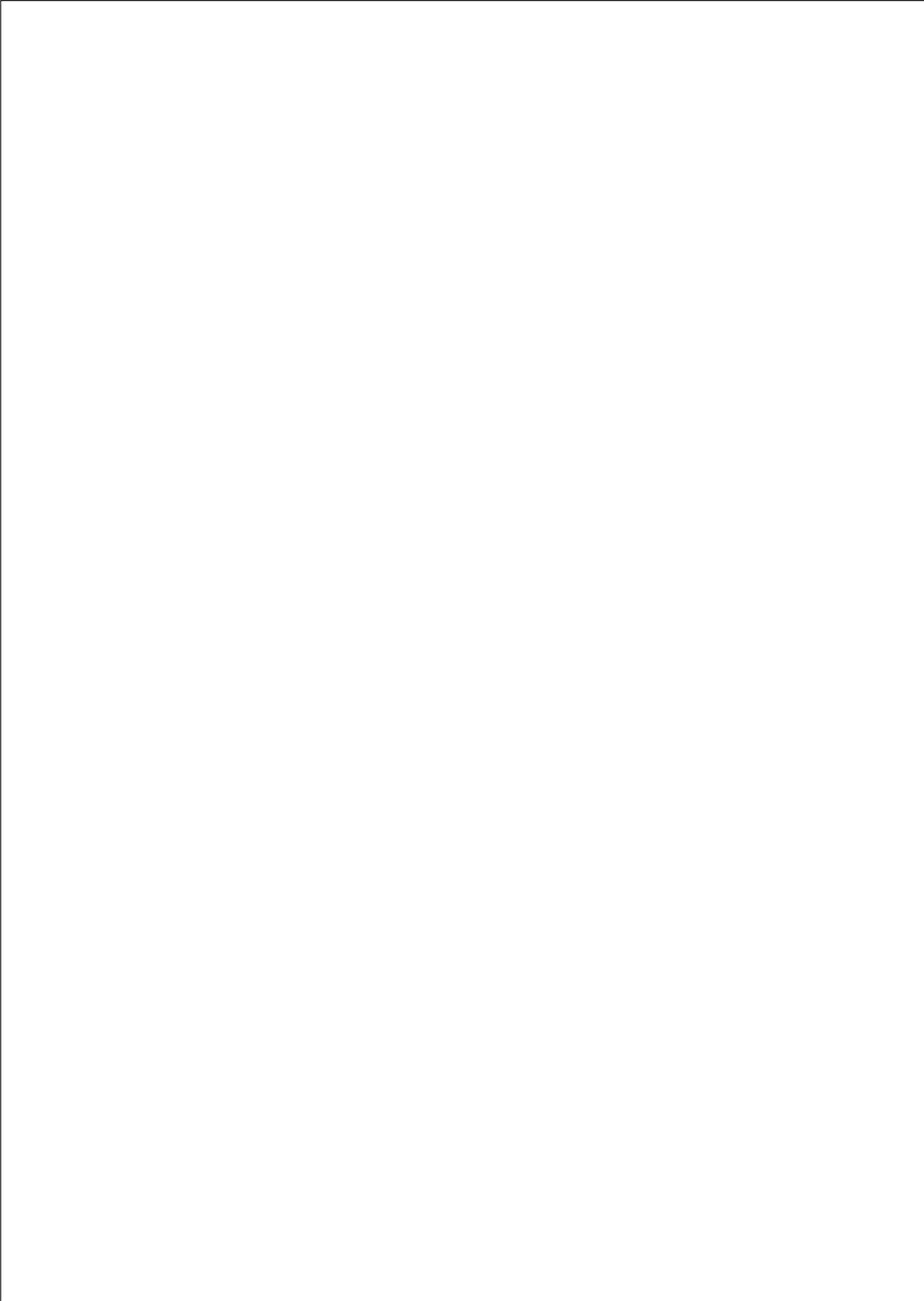


FIGURE 8-3





Warranty



Doosan Portable Power General Warranty Information

The following charts summarize the general warranty information for Doosan Portable Power machines and the applicable warranty for your specific machine is available at:

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

Compressors

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

Electric Compressors

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

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

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

Generators

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

Lighting

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

Light Compaction

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

Truck Mounted Equipment

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)**

OWNER'S WARRANTY RIGHTS AND OBLIGATIONS

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

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

1. Fuel Metering System

Fuel Supply Pump (HP Pump), Injector, Common Rail, Glow Plug

2. Air-Induction System

Intake Manifold, Turbocharger System

3. Exhaust Gas Recirculation (EGR) System

EGR Valve, EGR Cooler

4. Catalyst or Thermal Reactor System

Diesel Oxidation Catalyst (DOC), Exhaust Manifold

5. Positive Crankcase Ventilation (PCV) System

PCV Valve

6. Electronic Control System

ECU, Cam / Crank Sensor, Coolant Temperature Sensor, MAF Sensor, MAP Sensor (Manifold Pressure Sensor), Inlet Boost Temperature Sensor, Fuel Temperature Sensor, Common Rail Pressure Sensor

7. Miscellaneous Items Used In Above Systems

Temperature and time sensitive valve and switches Solenoids and wiring harnesses, hoses, clamps, fittings and tubing, sealing gasket, pulleys, belts and idlers, Emission control information labels

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

MANUFACTURER'S WARRANTY COVERAGE

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

OWNER'S WARRANTY RESPONSIBILITIES

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

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

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

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

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

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

Corp. R&D Div.



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