Use this page to record important information about your unit

<table>
<thead>
<tr>
<th>Unit Model No.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Serial No.</td>
<td></td>
</tr>
<tr>
<td>Engine Model No.</td>
<td></td>
</tr>
<tr>
<td>Engine Serial No.</td>
<td></td>
</tr>
<tr>
<td>Generator Model No.</td>
<td></td>
</tr>
<tr>
<td>Generator Serial No.</td>
<td></td>
</tr>
</tbody>
</table>

Record the information found on your unit data label on this page. See Unit Serial Number Locations.

Engine and generator serial numbers are located on data plates affixed to the engine and generator, respectively. When contacting a Generac Mobile Authorized Service Dealer (GMASD) about parts and service, always provide the unit model and serial number.

**Operation and Maintenance:** Proper maintenance and care of the unit ensures a minimum number of problems and keeps operating expenses at a minimum. It is the operator’s responsibility to perform all safety checks, to verify that all maintenance for safe operation is performed promptly, and to have the equipment checked periodically by a GMASD. Normal maintenance, service, and replacement of parts are the responsibility of the owner/operator and, as such, are not considered defects in materials or workmanship within the terms of the warranty. Individual operating habits and usage may contribute to the need for additional maintenance or service.

---

**WARNING**

CANCER AND REPRODUCTIVE HARM

www.P65Warnings.ca.gov.

(000393a)

---

**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.

(000394)
# Table of Contents

## Section 1: Introduction and Safety
- Introduction ..........................................................1
- Read This Manual Thoroughly ..................................1
- Safety Rules ..........................................................1
- How to Obtain Service ............................................1
- General Hazards ....................................................2
- Explosion and Fire Hazards .....................................2
- Trailer Hazards ......................................................3
- Battery Hazards ......................................................3
- Service Safety ........................................................3
- Towing Safety ........................................................3
  - Hitch and Coupling ...............................................4
  - Running Lights ....................................................4
  - Safe Towing Techniques ........................................4
- Reporting Trailer Safety Defects ...............................4

## Section 2: General Information
- Specifications .......................................................5
- Unit Dimensions ....................................................6
- Unit Serial Number Locations ..................................6
- Component Locations .............................................7
  - Exterior ..............................................................7
  - Interior ............................................................8
- Control Panel .......................................................10
- Controller ............................................................11
  - Controller Display: Alert (Icon) Definitions ...............12
  - Controller Faceplate Icons ....................................13
- Emissions Information .............................................14
- Engine Oil Recommendations ....................................14
- Coolant Recommendation ........................................14
- Fuel System ..........................................................14
- Hydraulic Oil ........................................................15
- Trailer Towing Guidelines .......................................15
  - Wheel Chock Guidelines .......................................15
- Rooftop Beacon .....................................................15
- Home Page (Default Operator Display) .......................15
- Controller Mode ...................................................16
- Controller Monitoring, Diagnostic, and Protective Features 17
- Advanced Controller Functions ................................19

## Section 3: Operation
- Before Starting Engine ...........................................21
  - Pre-start Checklist ...............................................21
  - Engine Oil Check ..................................................21
  - Hydraulic Oil Check ..............................................21
  - Engine Coolant Check ..........................................21
  - Battery Check .....................................................21
- Starting Engine and Heater ......................................22
- Adjusting Air Output Temperature ............................22
- Adjusting Heater CFM ............................................22
- Changing Controller Mode .......................................23
- Shutting Down Engine and Heater .............................23
- Emergency Stop Switch ..........................................23
- Battery Disconnect Switch .......................................23
- Before Towing Unit ................................................23

## Section 4: Maintenance
- Maintenance Tasks ................................................25
  - Daily Walk Around Inspection ................................25
  - Checking Engine Oil Level .....................................25
  - Draining Fluids—Union Fluid Drain .........................26
  - Adding Coolant ....................................................26
  - Removing Crankcase Filter ....................................27
- Maintenance Schedule ...........................................28
  - Engine Maintenance Schedule ................................28
  - Hydraulic Oil Schedule .........................................29
  - Hydraulic Oil Filters Schedule ...............................29
  - Accessing and Resetting Controller Service Intervals ......29
- Other Maintenance Checks ........................................30

## Section 5: Troubleshooting
- General Troubleshooting Guide ................................31
- Controller Warnings and Faults ...............................34

## Section 6: Wiring Diagrams
- Main Control System ..............................................37
- Perkins Engine Aftertreatment ................................38
- J1939 CAN Bus Network ...........................................39
- Trailer Harness—Electric Brakes ...............................40
- Trailer Harness—Lights Only or With Surge Brakes .......41
- Hydraulic Circuit ....................................................43
This page intentionally left blank.
Section 1: Introduction and Safety

Introduction

Thank you for purchasing a Generac Mobile product. This unit has been designed to provide high-performance, efficient operation, and years of quality use when maintained properly.

The MFH900 flameless air heater is designed and built for sustained, reliable heat production in industrial operating conditions and environments. The MFH900 is built to withstand frequent handling under these conditions.

The unit is mounted on a trailer that has forklift pockets, tie-down points, and a central lifting point. The fully enclosed design protects the operating components, allowing all-weather storage and operations.

The information in this manual is accurate based on products produced at the time of publication. The manufacturer reserves the right to make technical updates, corrections, and product revisions at any time without notice.

Read This Manual Thoroughly

**WARNING**
Consult Manual. Read and understand manual completely before using product. Failure to completely understand manual and product could result in death or serious injury.

If any section of the manual is not understood, contact your nearest Generac Mobile Authorized Service Dealer (GMP ASD), or contact Generac Mobile customer service at 800-926-9768, or visit [www.generacmobileproducts.com](http://www.generacmobileproducts.com) with any questions or concerns.

The owner is responsible for proper maintenance and safe use of the equipment. The manufacturer strongly recommends that if the operator is also the owner, to read the owner’s manual and thoroughly understand all instructions before using this equipment. The manufacturer also strongly recommends instructing other users to properly start and operate the unit. This prepares them if they need to operate the equipment in an emergency.

SAVE THESE INSTRUCTIONS for future reference. This manual contains important instructions for the machine that should be followed during installation, operation, and maintenance of the heater and batteries. Always supply this manual to any individual that will use this machine.

Safety Rules

The manufacturer cannot anticipate every possible circumstance that might involve a hazard. The alerts in this manual, and on tags and decals affixed to the unit, are not all inclusive. If using a procedure, work method, or operating technique that the manufacturer does not specifically recommend, verify that it is safe for others and does not render the equipment unsafe.

Throughout this publication, and on tags and decals affixed to the unit, DANGER, WARNING, CAUTION, and NOTE blocks are used to alert personnel to special instructions about a particular operation that may be hazardous if performed incorrectly or carelessly. Observe them carefully. Alert definitions are as follows:

**DANGER**
Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

**WARNING**
Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION**
Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

**NOTE:** Notes contain additional information important to a procedure and will be found within the regular text of this manual.

These safety alerts cannot eliminate the hazards that they indicate. Common sense and strict compliance with the special instructions while performing the action or service are essential to preventing accidents.

How to Obtain Service

When the unit requires servicing or repairs, contact a GMP ASD for assistance. Service technicians are factory-trained and are capable of handling all service needs. For assistance locating a dealer, go to [https://www.generacmobileproducts.com-parts-service/find-service](https://www.generacmobileproducts.com-parts-service/find-service).

When contacting a GMP ASD about parts and service, always supply the complete model and serial number of the unit as given on the data decal located on the unit. Record the model and serial numbers in the spaces provided on the front cover of this manual.
Introduction and Safety

General Hazards

⚠️ DANGER

Asphyxiation. Running engines produce carbon monoxide, a colorless, odorless, poisonous gas. Carbon monoxide, if not avoided, will result in death or serious injury. (000103)

⚠️ WARNING

Personal injury. Do not operate unit during transport. Doing so could result in death, serious injury, or property damage. (000231a)

⚠️ WARNING

Moving Parts. Keep clothing, hair, and appendages away from moving parts. Failure to do so could result in death or serious injury. (000111)

⚠️ WARNING

Equipment damage. Do not attempt to start or operate a unit in need of repair or scheduled maintenance. Doing so could result in serious injury, death, or equipment failure or damage. (000291)

⚠️ WARNING

Hot Surfaces. When operating machine, do not touch hot surfaces. Keep machine away from combustibles during use. Hot surfaces could result in severe burns or fire. (000108)

⚠️ WARNING

Hearing Loss. Hearing protection is recommended when using this machine. Failure to wear hearing protection could result in permanent hearing loss. (000107)

⚠️ CAUTION

Equipment or property damage. Do not block air intake or restrict proper air flow. Doing so could result in unsafe operation or damage to unit. (000229)

⚠️ CAUTION

Unit damage. Do not stop engine before heating unit is cooled. Doing so could result in unit damage. (000240a)

Explosion and Fire Hazards

⚠️ DANGER

Explosion and Fire. Fuel and vapors are extremely flammable and explosive. Add fuel in a well ventilated area. Keep fire and spark away. Failure to do so will result in death or serious injury. (000105)

⚠️ DANGER

Explosion and Fire. Do not fill fuel tank past full line. Allow for fuel expansion. Overfilling may cause fuel to spill onto engine causing fire or explosion, which will result in death or serious injury. (000214)

⚠️ DANGER

Explosion and Fire. Fuel and vapors are extremely flammable and explosive. Store fuel in a well ventilated area. Keep fire and spark away. Failure to do so will result in death or serious injury. (000143)

⚠️ WARNING

Risk of Fire. Unit must be positioned in a manner that prevents combustible material accumulation underneath. Failure to do so could result in death or serious injury. (000147)

⚠️ WARNING

Fire risk. Fuel and vapors are extremely flammable. Do not operate indoors. Doing so could result in death, serious injury, or property or equipment damage. (000281)

⚠️ WARNING

Explosion and fire risk. Do not smoke near unit. Keep fire and spark away. Failure to do so could result in death, serious injury, or property or equipment damage. (000282)
Introduction and Safety

Trailer Hazards

- **WARNING**
  Personal injury. Trailer must be securely coupled to the hitch with the chains correctly attached. Uncoupled or unchained towing could result in death or serious injury.

- **WARNING**
  Crushing hazard. Verify unit is properly secured and on level ground. An unsecured unit can suddenly roll or move, causing death or serious injury.

- **WARNING**
  Property or Equipment Damage. Tighten wheel lug nuts after first 50 miles to factory specifications. Failure to do so could result in death, serious injury, property or equipment damage.

- **WARNING**
  Rollover hazard. Unit must be placed on flat, level ground to prevent tipping or rollover. Failure to do so could result in death, serious injury, or property or equipment damage.

- **WARNING**
  Property or equipment damage. Do not alter the trailer. Alterations can damage essential safety items. Doing so could result in death, serious injury, or property or equipment damage.

Battery Hazards

- **WARNING**
  Explosion. Do not dispose of batteries in a fire. Batteries are explosive. Electrolyte solution can cause burns and blindness. If electrolyte contacts skin or eyes, flush with water and seek immediate medical attention.

- **WARNING**
  Risk of burn. Do not open or mutilate batteries. Batteries contain electrolyte solution which can cause burns and blindness. If electrolyte contacts skin or eyes, flush with water and seek immediate medical attention.

Service Safety

- **CAUTION**
  Personal injury. Wear appropriate personal protective equipment at all times while operating and servicing unit. Failure to do so could result in personal injury.

- **WARNING**
  Accidental Start-up. Disconnect the negative battery cable, then the positive battery cable when working on unit. Failure to do so could result in death or serious injury.

- **WARNING**
  Vision Loss. Eye protection is required to avoid spray from spark plug hole when cranking engine. Failure to do so could result in vision loss.

- **WARNING**
  Environmental Hazard. Always recycle batteries at an official recycling center in accordance with all local laws and regulations. Failure to do so could result in environmental damage, death, or serious injury.

Always recycle batteries in accordance with local laws and regulations. Contact your local solid waste collection site or recycling facility to obtain information on local recycling processes. For more information on battery recycling, visit the Battery Council International website at: [http://batterycouncil.org](http://batterycouncil.org)

Towing Safety

Towing a trailer requires care. The trailer and vehicle must be in good condition and securely fastened to each other to reduce the possibility of an accident. Some states require that large trailers be registered and licensed. Contact your local Department of Transportation (DOT) office to verify license requirements for your particular unit.
Introduction and Safety

Hitch and Coupling

- Verify the hitch and coupling on the towing vehicle are rated equal to, or greater than, the trailer's Gross Vehicle Weight Rating (GVWR).
- Verify the trailer hitch and the coupling are compatible. Verify the coupling is securely fastened to the vehicle.
- **DO NOT** tow the trailer using defective parts. Inspect the hitch and coupling for wear or damage before every tow.
- To eliminate squeaking, wipe the coupler clean and apply fresh grease each time the trailer is towed.
- Connect safety chains in a crossing pattern under the tongue.
- Before towing the trailer, verify that the weight of the trailer is equal across all tires. On trailers with adjustable height hitches, adjust the angle of the trailer tongue to keep the trailer as level as possible.
- Verify all access doors on the trailer are closed and locked.

Running Lights

- Verify directional and brake lights on trailer are connected and working properly.

Safe Towing Techniques

- Practice turning, stopping, and backing up in an area away from heavy traffic prior to transporting the unit.
- Maximum recommended speed for highway towing is 45 mph (72 km/h). Recommended off-road towing speed is 10 mph (16 km/h) or less, depending on terrain.
- When towing, maintain extra space between vehicles and avoid soft shoulders, curbs, and sudden lane changes.
- Reduce speed before curves, and maintain speed throughout the curve.

Reduce speed before going over bumps or holes. Keep your foot off the accelerator while going over bumps or holes.

Reporting Trailer Safety Defects

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

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1-888-327-4236 (TTY:1-800-424-9153), go to [http://www.safercar.gov](http://www.safercar.gov), or write to:

Administrator
NHTSA
1200 New Jersey Avenue S.E.
Washington, DC 20590

You can also obtain other information about motor vehicle safety from [http://www.safercar.gov](http://www.safercar.gov).
## Section 2: General Information

### Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit of Measure</th>
<th>MFH900</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engine</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make (Model)</td>
<td>—</td>
<td>Perkins (1204F-E44TTA)</td>
</tr>
<tr>
<td>EPA Certification</td>
<td>tier</td>
<td>4 Final</td>
</tr>
<tr>
<td>Type</td>
<td>—</td>
<td>Diesel, liquid cooled, 4-stroke</td>
</tr>
<tr>
<td>Horsepower At Operating Speed</td>
<td>hp (kW)</td>
<td>150 (112 kW)</td>
</tr>
<tr>
<td>Operating Speed</td>
<td>rpm</td>
<td>2,200</td>
</tr>
<tr>
<td>Displacement</td>
<td>in³ (L)</td>
<td>268.5 (4.4)</td>
</tr>
<tr>
<td>Cylinders</td>
<td>qty</td>
<td>4</td>
</tr>
<tr>
<td>Fuel Type</td>
<td>—</td>
<td>#1 diesel (below 32 °F [0° C]), #2 diesel</td>
</tr>
<tr>
<td>Fuel Consumption</td>
<td>gph (Lph)</td>
<td>4.9 (29.9)</td>
</tr>
<tr>
<td>DEF Consumption</td>
<td>gph (Lph)</td>
<td>0.4 (1.51)</td>
</tr>
<tr>
<td>Fan</td>
<td>—</td>
<td>Puller type, 26 in (66 cm) diameter, seven blades, 26° pitch</td>
</tr>
<tr>
<td><strong>Capacities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum Run Time</td>
<td>hr</td>
<td>26</td>
</tr>
<tr>
<td>Fuel—Tank, Usable</td>
<td>gal (L)</td>
<td>200 (757.1), 178 (673.8)</td>
</tr>
<tr>
<td>DEF—Tank, Usable</td>
<td>gal (L)</td>
<td>10 (38), 8 (30)</td>
</tr>
<tr>
<td>HTF—Tank, System</td>
<td>gal (L)</td>
<td>14 (53), 20.6 (77.9 L)</td>
</tr>
<tr>
<td>Coolant</td>
<td>gal (L)</td>
<td>4.8 (18)</td>
</tr>
<tr>
<td>Oil</td>
<td>qt (L)</td>
<td>10.3 (9.75)</td>
</tr>
<tr>
<td><strong>Heater</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>—</td>
<td>Flameless, self-contained</td>
</tr>
<tr>
<td>Maximum Heat Produced</td>
<td>BTU/hr (kW/hr)</td>
<td>875,000 (256.44)</td>
</tr>
<tr>
<td>Air Output—Temperature Range</td>
<td>°F (°C)</td>
<td>120–180 (48.9–82.2)</td>
</tr>
<tr>
<td>Air Output—Volume</td>
<td>ft³/min (m³/min)</td>
<td>3,500–5,000 (99.1–141.6)</td>
</tr>
<tr>
<td>Air Ducts</td>
<td>qty, diameter</td>
<td>Two, 12 in (30.5 cm)</td>
</tr>
<tr>
<td>Estimated Efficiency</td>
<td>%</td>
<td>85</td>
</tr>
<tr>
<td>HTF Pump</td>
<td>type</td>
<td>Variable displacement piston pump</td>
</tr>
<tr>
<td><strong>Trailer</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brakes</td>
<td>Type</td>
<td>Electric</td>
</tr>
<tr>
<td>Per-Axle Rating</td>
<td>lb (kg)</td>
<td>8,000 (3,628.7)</td>
</tr>
<tr>
<td>Axles</td>
<td>qty</td>
<td>1</td>
</tr>
<tr>
<td>Tire Size</td>
<td>—</td>
<td>ST215/75R15.7</td>
</tr>
<tr>
<td>Hitch</td>
<td>size, type</td>
<td>2-5/16 in, ball coupler</td>
</tr>
<tr>
<td>Maximum Tire Pressure</td>
<td>psi (kPa)</td>
<td>123 (848)</td>
</tr>
<tr>
<td><strong>Electrical</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Voltage</td>
<td>VDC</td>
<td>24</td>
</tr>
<tr>
<td>Battery—Voltage (Quantity Per Unit)</td>
<td>VDC (qty)</td>
<td>12 (2)</td>
</tr>
<tr>
<td>Battery—Rating</td>
<td>CCA</td>
<td>950</td>
</tr>
<tr>
<td>Battery—Group Number</td>
<td>—</td>
<td>31</td>
</tr>
<tr>
<td>Controller, Display</td>
<td>—</td>
<td>Epec 3610, Wachendorf OPUS A3</td>
</tr>
<tr>
<td><strong>Unit Weight</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry</td>
<td>lb (kg)</td>
<td>6,590 (2,992)</td>
</tr>
<tr>
<td>Operating</td>
<td>lb (kg)</td>
<td>7,700 (3,512)</td>
</tr>
</tbody>
</table>

Specifications are subject to change without notice.
Unit Dimensions

![Figure 2-1. MFH900](Image)

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>192 in (4.88 m)</td>
<td>94 in (2.39 m)</td>
<td>76.5 in (1.93 m)</td>
</tr>
</tbody>
</table>

Unit Serial Number Locations

See *Figure 2-2* for unit ID tag and Vehicle Identification Number (VIN) tag. Important information, such as the unit serial number, model number, VIN and tire loading information are found on these tags. Record the information from these tags so it is available if the tags are lost or damaged. When ordering parts or requesting assistance, you may be asked to provide this information.
Component Locations

Exterior

Figure 2-3. Exterior Components

A  Roof beacon  G  Fuel fill
B  Radiator fill access panel  H  Tie-down (4 locations)
C  Air intake  I  Forklift pocket (4 locations)
D  Exhaust  J  DEF fill
E  Control panel  K  Battery for breakaway brakes
F  Emergency stop switch  L  Union fluid drain port

M  Hot air discharge ducts
**General Information**

**Interior**

Figure 2-4. Interior Components—1 of 2

A Engine crankcase filter  
B Secondary fuel filter  
C Primary fuel filter (water separator)  
D Fuel lift pump  
E Heat transfer fluid (HTF or hydraulic fluid) reservoir  
F HTF fill point and breather  
G HTF level switch  
H HTF high-temperature switch  
I HTF thermistor  
J HTF filter (2 locations)  
K Inline fuel filter  
L HTF ball valve  
M Engine oil level gauge (dipstick)  
N Engine oil filter  
O Engine oil ball valve  
P Engine oil fill  
Q DEF pump  
R DEF pump filter (under cap)  
S Coolant overflow tank  
T Clog sensor for HTF filters  
U Perkins ECU engine diagnostic port
Figure 2-5. Interior Components—2 of 2

A  Selective catalytic reduction (SCR) canister
B  Intake air filter
C  Engine radiator
D  Union drain manifold (through hole in floor)—ball valves for DEF, coolant, and fuel
E  Positive air shutdown (PAS)
F  Battery (2 locations)
G  Engine starter
H  Ground strip (on floor)
I  Fuse block (next to ground strip)
J  Battery disconnect switch
K  Hydraulic manifold (behind shield)
L  Series turbocharger (behind shield)
Control Panel

A Controller
B Unit start switch
C Main power switch
D Light switch
E Emergency stop switch
F USB port

Figure 2-6. Control Panel
Controller

Figure 2-7. MFH900 Controller—Common Functions

A Main button (eight)
Eight buttons around the screen are for page-to-page navigation or real-time heater adjustment. See Figure 2-8. On most pages, an icon displays next to each button (A). Each icon indicates what navigation or adjustment occurs when the corresponding button is pushed.

Figure 2-8. Home Page

More information is provided throughout this manual.

B Screen
C Faceplate icon (four)
D Knob
Navigates selection on current page:
  • Twist knob: Scroll
  • Push knob: Select
E Go to Home page
F [not used’]
G Go to previous page
Controller Display: Alert (Icon) Definitions

See Figure 2-9. The controller displays many alerts in specific areas of the controller (A). Alerts are often accompanied by explanatory text (B).

![Figure 2-9. Alerts Display](image)

Some alerts are routine and indicate normal unit function; others indicate problems.

**Routine Alerts**
The alerts described below are routine and indicate normal unit function.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Icon ID</th>
<th>State</th>
<th>Indicated Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Engine At Work Speed Icon" /></td>
<td>Engine At Work Speed</td>
<td>Steady ON (green)</td>
<td>Engine is at desired work speed or higher (about 2,200 rpm or higher)</td>
</tr>
<tr>
<td><img src="image" alt="Engine At Idle Icon" /></td>
<td>Engine At Idle</td>
<td>Steady ON (green)</td>
<td>Engine is at idle rpm (about 800 rpm or lower)</td>
</tr>
<tr>
<td><img src="image" alt="Wait to Start Icon" /></td>
<td>Wait to Start</td>
<td>Steady ON</td>
<td>Glow plugs are ON—engine is preheating</td>
</tr>
<tr>
<td><img src="image" alt="Engine Heating Icon" /></td>
<td>Engine Heating</td>
<td>Steady ON (amber)</td>
<td>Engine is heating coolant to a minimum temperature</td>
</tr>
<tr>
<td><img src="image" alt="Engine Cooling Icon" /></td>
<td>Engine Cooling</td>
<td>Steady ON (blue)</td>
<td>Engine ECU indicates engine is cooling</td>
</tr>
<tr>
<td><img src="image" alt="Heater Cooling Icon" /></td>
<td>Heater Cooling</td>
<td>Steady ON</td>
<td>During unit shutdown</td>
</tr>
<tr>
<td><img src="image" alt="Heater Heating Icon" /></td>
<td>Heater Heating</td>
<td>Steady ON</td>
<td>During unit shutdown</td>
</tr>
<tr>
<td><img src="image" alt="Wait To Disconnect Icon" /></td>
<td>Wait To Disconnect</td>
<td>Steady ON (amber)</td>
<td>DEF purge cycle in progress (may take up to 10 minutes)\nCorresponds with battery disconnect indicator light</td>
</tr>
<tr>
<td><img src="image" alt="Delayed Engine Shutdown Icon" /></td>
<td>Delayed Engine Shutdown</td>
<td>Steady ON</td>
<td>DPF outlet temperature is above a set temperature threshold</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steady ON (amber) and Steady ON—Engine Cooling lamp</td>
<td>Engine is cooling</td>
</tr>
</tbody>
</table>

**Warning and Fault Alerts**
When a warning or fault alert displays, the unit requires inspection or service. See *Troubleshooting* for more information.
Controller Faceplate Icons

See Figure 2-6, Four icons are stamped into the controller faceplate. They illuminate according to situation.

![Figure 2-6. Faceplate Icons](image)

<table>
<thead>
<tr>
<th>Icon (Lit)</th>
<th>Indicates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Photo sensor for controller display (day or night mode)</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>When lit (green), controller power is ON</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>When lit, USB cable is connected</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>[not used]</td>
</tr>
</tbody>
</table>
Emissions Information
For emissions information, see the OEM engine manual.

Engine Oil Recommendations
Genuine Generac parts are recommended for all maintenance items.

All Generac oil kits meet minimum American Petroleum Institute (API) Service Class CJ-4/SM. Select the appropriate viscosity oil grade according to the expected operating temperature. Synthetic oil also can be used in the appropriate weight as standard, once the engine has been broken in. Once synthetic oil is used, it should be used for the life of the unit. It is not recommended to go back to a mineral oil. Do not use special additives.

See Specifications for engine oil capacity.

Figure 2-11. MFH900 Engine Oil Viscosity

NOTE: For temperatures below -4 °F (-20 °C), use SAE 5W-30.

For more information, see the engine manual.

Coolant Recommendation

DANGER
Risk of poisoning. Do not use mouth to siphon coolant. Doing so will result in death or serious injury.

Where the atmospheric temperature falls below freezing, the cooling system should be drained after engine operation. To eliminate the need for repeated draining and refilling, the use of a 50/50 Ethylene glycol base antifreeze/water mix is recommended. Never exceed a 60/40 antifreeze/water mix.

NOTE: Recommended coolant is ZEREX™ Nitrate Free Extended Life Antifreeze/Coolant.

<table>
<thead>
<tr>
<th>Freezing Point °F (°C)</th>
<th>3 (-16)</th>
<th>-13 (-25)</th>
<th>-31 (-35)</th>
<th>-58 (-50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coolant (% Volume)</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>Water (% Volume)</td>
<td>70</td>
<td>60</td>
<td>50</td>
<td>40</td>
</tr>
</tbody>
</table>

See Specifications for coolant capacity.
For more information, see the engine manual.

Fuel System

DANGER
Explosion and Fire. Fuel and vapors are extremely flammable and explosive. Keep fire and spark away. Failure to do so will result in death or serious injury.

DANGER
Explosion and Fire. Do not overfill fuel tank. Overfilling may cause fuel to leak and ignite or explode, resulting in death or serious injury.

The heater is designed to operate with diesel fuel.

See Specifications for fuel tank capacity.

IMPORTANT NOTE: Comply with all laws regulating the storage and handling of fuels.

Follow these guidelines:

- Use only ultra-low-sulfur diesel fuel.
- When temperatures are at or below freezing, use No. 1D diesel fuel.
- When temperatures are above freezing, use No. 2D diesel fuel.
- In some areas of the country, climatized fuel—a mixture of 1D and 2D, may also be used.
Hydraulic Oil

**DANGER**

Hydraulic Fluid Injection. High-pressure, high-temperature hydraulic fluid can pierce skin and cause severe burns. Do not check for leaks with hands. Seek immediate medical attention in case of accident. Failure to protect body accordingly will result in death or serious injury. (000239)

**NOTE:** Sometimes referred to as *heat transfer fluid* or HTF.

Type: Thrive DTE-10 ISO VG 68 hydraulic oil
See Specifications for tank and system capacities.

**WARNING**

Personal injury. Trailer must be securely coupled to the hitch with the chains correctly attached. Uncoupled or unchained towing could result in death or serious injury. (000233a)

**WARNING**

Property or Equipment Damage. Tighten wheel lug nuts after first 50 miles to factory specifications. Failure to do so could result in death, serious injury, property or equipment damage. (000235)

Driving a vehicle with a trailer in tow is vastly different than driving the same vehicle without a trailer in tow. Consider the following:

- It takes longer to get up to speed.
- More room is needed to turn and pass.
- More distance is needed to stop.
- The driver is responsible for keeping the vehicle and trailer in control.

Before towing, verify the following:

1. The coupling, safety chains, safety brake, tires, wheels, and lights are in working order.
2. The breakaway battery is fully charged.
3. Wheel lug nuts are tightened to 85–95 ft-lbs (115–129 Nm).
4. Brake controller engages the trailer brakes before the tow vehicle brakes.

While towing, make regular stops to verify the following:

1. Coupler is secured to the hitch and locked.
2. Electrical connections are made.
3. Appropriate slack in the safety chains.
4. Appropriate slack in the breakaway switch pull-pin cable.
5. Tires are inflated to proper air pressure and no damage or unusual wear to tread or sidewalls.

6. Trailer and doors are secured and latched.

Wheel Chock Guidelines

**WARNING**

Crushing hazard. Verify unit is properly secured and on level ground. An unsecured unit can suddenly roll or move, causing death or serious injury. (000234a)

- Select wheel chock according to equipment type and size.
- Always use in pairs and on firm surfaces.
- Chock in direction of grade.
- Chock both sides of wheel if direction of grade is unknown.
- Use wheel chock only after parking brake is applied and tested.
- Center chocks squarely against tread of each wheel.
- Do not drive over wheel chocks.

Rooftop Beacon

See Figure 2-3. The unit is equipped with a rooftop beacon. The beacon indicates the following:

<table>
<thead>
<tr>
<th>Beacon State</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>Unit OFF or in forced shutdown due to malfunction</td>
</tr>
<tr>
<td>Strobe</td>
<td>Unit operational</td>
</tr>
</tbody>
</table>

Home Page (Default Operator Display)

See Figure 2-13. The Home page is the default operator display: Every time the unit fully starts without a shutdown fault, the Home page displays.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Access Hydraulic System Information page</td>
</tr>
<tr>
<td>B</td>
<td>Increase airflow CFM</td>
</tr>
<tr>
<td>C</td>
<td>Decrease airflow CFM</td>
</tr>
</tbody>
</table>
General Information

Accessing Home Page from Other Pages

When the Home icon displays (A), press corresponding button once to display Home page.

![Figure 2-13. Home Icon (A) Provides Access to Home Page.](image)

Controller Mode

The controller has two modes—AUTO and MANUAL.

- AUTO mode is for everyday unit operation, providing basic unit functions and access to related operational information.
- MANUAL mode provides advanced functions, and is only accessible by keying a password.

NOTE: The unit starts in the mode in which it was last shut down.

Changing Mode

1. See Figure 2-14. When the Mode icon displays (A), press corresponding button once

![Figure 2-14. Mode Icon (A)](image)

2. Enter the password.

IMPORTANT NOTE: Contact Generac Mobile Technical Service for password.

About AUTO Mode

In AUTO Mode, three temperatures are available. At each temperature, three airflow volumes are available. See table below.

<table>
<thead>
<tr>
<th>Temperature—°F (°C)</th>
<th>Airflow—CFM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low 120 (48.9)</td>
<td>Low: 4,630</td>
</tr>
<tr>
<td></td>
<td>Med: 4,770</td>
</tr>
<tr>
<td></td>
<td>High: 4,920</td>
</tr>
<tr>
<td>Med 150 (65.6)</td>
<td>Low: 4,050</td>
</tr>
<tr>
<td></td>
<td>Med: 4,170</td>
</tr>
<tr>
<td></td>
<td>High: 4,280</td>
</tr>
<tr>
<td>High 180 (82.2)</td>
<td>Low: 3,660</td>
</tr>
<tr>
<td></td>
<td>Med: 3,760</td>
</tr>
<tr>
<td></td>
<td>High: 3,860</td>
</tr>
</tbody>
</table>

AUTO Mode Navigation

![Figure 2-16. AUTO Mode Home Page](image)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Access Hydraulic System Information page</td>
</tr>
<tr>
<td>B</td>
<td>Increase airflow volume</td>
</tr>
<tr>
<td>C</td>
<td>Decrease airflow volume</td>
</tr>
<tr>
<td>D</td>
<td>Access Engine &amp; Fuel Information page</td>
</tr>
<tr>
<td>E</td>
<td>Change mode</td>
</tr>
<tr>
<td>F</td>
<td>Increase air-output temperature</td>
</tr>
<tr>
<td>G</td>
<td>Decrease air-output temperature</td>
</tr>
<tr>
<td>H</td>
<td>Access Engine Diagnostics page</td>
</tr>
</tbody>
</table>

About MANUAL Mode

In MANUAL mode, temperature is adjustable by single degrees (F) and blower speed is adjustable by single CFM. See Specifications for ranges.

MANUAL mode provides advanced access to maintain, diagnose, and troubleshoot the unit. A password is required to access MANUAL mode.
Controller Monitoring, Diagnostic, and Protective Features

Mechanical and electrical systems are connected to various sensors that monitor unit status. If conditions occur outside of predetermined manufacturing parameters, the controller will automatically stop the machine and display fault information. The controller can also display a variety of critical alerts, diagnostics, and recommendations. The controller provides a variety of real-time current operating condition data on outlet temperature, engine rpm, and fuel level. For more information, refer to the controller wiring diagrams.

Accessing Engine Diagnostics Page

This procedure accesses MANUAL mode. A password is required for this procedure.

1. See Figure 2-19. Access a page displaying the Diagnostics icon (A).

2. Press the Diagnostics button (B).

3. See Figure 2-20. The Password Prompt page displays. Press the Diagnostics button (A).

See Advanced Controller Functions for more information.
4. See Figure 2-21. The Password Entry page displays. Enter the password.

![Figure 2-21. Password Entry Page](image)

**NOTE:** To enter password: Twist knob to scroll through on-screen items. When the desired number is highlighted, press knob. Repeat until all numbers are entered. Then, scroll to DONE and press the knob.

**Using Engine Diagnostics Page**

See Figure 2-22. The Engine Diagnostics page:
- Displays warnings and faults.
- Provides access to detailed functional information and display brightness/contrast.

![Figure 2-22. Engine Diagnostics Page](image)

5. Enter the password.

See Figure 2-23. The Enter Password page displays.

![Figure 2-23. Enter Password Page](image)

**NOTE:** For more information, see Troubleshooting.

**Data Logging (D)**

Press this button to display engine errors and other codes. See the engine manual for more information.

**Accessing Engine and Fuel Information**

See Figure 2-25. When the Engine and Fuel icon displays (A), press corresponding button once.

![Figure 2-25. Engine and Fuel Icon (A)](image)

The Engine & Fuel Information page displays.

**Item** | **Definition**
---|---
A | Reset Service Interval button
B | Go to Controller Brightness/Contrast page
C | Faults button
D | Data Logging button

**Reset Service Interval (A)**

Press the Reset Service Interval button to reset **HRs Since Last Maintenance** (Figure 2-22).

**Controller Brightness/Contrast (B)**

Press the Controller Brightness Contrast button (B) to access controller display preferences.

**Faults (C)**

Press the Faults button (C) to access fault codes and alerts.
Advanced Controller Functions

Advanced controller functions are only available in MANUAL mode. A password is required.

To access an advanced controller function:

1. Change controller mode to MANUAL. See Controller Mode.

See Figure 2-27. The Home page (1 of 2) for MANUAL mode displays.

2. Choose a function or setting.

Hydraulic System Information

The Hydraulic System Information page displays hydraulic system data—HTF temperature, HTF pressure, and electrical current.

To access:

1. From the Home page (1 of 2), press the Hydraulic System Information button (A).

See Figure 2-28. The Hydraulic System Information button (A) is highlighted.

2. Press the scroll button (A).

See Figure 2-29. The Hydraulic System Information page (1 of 2) displays.

See Figure 2-30. Page 2 displays.
This page intentionally left blank.
Section 3: Operation

Before Starting Engine

Pre-start Checklist

![WARNING]

Hot Surfaces. When operating machine, do not touch hot surfaces. Keep machine away from combustibles during use. Hot surfaces could result in severe burns or fire. (000108)

• Verify all maintenance procedures are up to date. For more information, see Maintenance.
• Verify unit is not leaking fluids: check inside and outside the unit for leaking fuel, engine oil, HTF, DEF, and engine coolant.
• Check levels of fuel, HTF, DEF, engine oil, and engine coolant.
• Remove all flammable materials and fire hazards within 5 ft (1.5 m) of heater.
• Keep heater a minimum of 5 ft (1.5 m) from structures or barricades.
• Verify the following are clear of debris and obstructions:
  • Engine air intake
  • Unit intake
  • Exhaust stack
  • Outlets and fan intakes
• Verify unit is properly secure with jacks deployed, if applicable, wheels chocked and level.
• Check alternator drive belt for tension and wear.
• Verify the emergency stop switch is pulled out

Engine Oil Check

![CAUTION]

Engine damage. Verify proper type and quantity of engine oil prior to starting engine. Failure to do so could result in engine damage. (000135)

1. Remove oil dipstick from crankcase and wipe it clean.
2. Insert oil dipstick fully and remove slowly.
3. Oil level must be between the FULL and ADD marks on the oil dipstick.

Hydraulic Oil Check

On the hydraulic fluid reservoir tank is a gauge showing hydraulic oil level. Verify level is between MIN and MAX.

Engine Coolant Check

![WARNING]

Risk of burns. Do not open coolant system until engine has completely cooled. Doing so could result in serious injury. (000154)

1. Remove radiator fill cap.
2. Check coolant level and degree of fouling.

NOTE: Coolant level should be approximately 0.4 in (10.2 mm) below the radiator core top.
3. Install radiator cap securely.

Battery Check

![WARNING]

Electrical shock. Disconnect battery ground terminal before working on battery or battery wires. Failure to do so could result in death or serious injury. (000164)

![WARNING]

Risk of burn. Do not open or mutilate batteries. Batteries contain electrolyte solution which can cause burns and blindness. If electrolyte contacts skin or eyes, flush with water and seek immediate medical attention. (000163a)

![WARNING]

Explosion. Batteries emit explosive gases while charging. Keep fire and spark away. Wear protective gear when working with batteries. Failure to do so could result in death or serious injury. (000137a)

![CAUTION]

Equipment damage. Do not make battery connections in reverse. Doing so will result in equipment damage. (000167a)

1. Verify battery cable connections are not loose or corroded.
Starting Engine and Heater

This section applies both to MANUAL and AUTO modes.

**NOTE:** The unit starts in the mode in which it was last shut down.

1. Perform **Pre-start Checklist**.
2. Close all doors.
3. Switch positive air shutdown to OFF (O).
4. Switch battery disconnect to ON (I).
5. Attach ducting to unit.
6. On control panel, switch MAIN POWER to ON (I).
7. See **Figure 3-1.** Wait for controller to display OK To Crank Engine (A).

8. On control panel, press PUSH TO START button.

---

**CAUTION**

Equipment Damage. Do not continuously crank engine for more than ten seconds. Doing so will lead to overdischarge of batteries and starter seizure.

(000230)

Unit engine starts and begins HTF warm-up. During HTF warm-up, controller displays *Wait – Heater Warming* (**Figure 3-2**).

9. See **Figure 3-3.** Wait for controller to display Heater Run.

10. Adjust air output temperature and heater CFM.

---

Adjusting Air Output Temperature

This section applies both to MANUAL and AUTO modes.

1. Verify unit is fully operational—controller must display *Heater Run*.
2. See **Figure 3-4.** Adjust temperature by pressing Increase (A) or Decrease (B).

---

**Figure 3-4. Air Output Temperature Adjustment**

- In AUTO mode, choose one of three temperatures—120, 150, or 180 °F.
- In MANUAL mode, choose any output temperature between 120 and 180 °F.

Adjusting Heater CFM

This section applies both to MANUAL and AUTO modes.

1. Verify unit is fully started—controller must display *Heater Run*.
2. See **Figure 3-5.** Adjust heater CFM by pressing Increase (A) or Decrease (B).

---

**Figure 3-5. Heater CFM Adjustment**

- In AUTO mode, choose Low, Medium, or High.

**NOTE:** In AUTO mode, selected temperature determines what heater CFM setpoints are available. See *About AUTO Mode* for more information.

- In MANUAL mode, choose any CFM between 2,800 and 4,900.
Changing Controller Mode

See Figure 3-6. The Mode icon (A) displays on various pages. When it displays, change controller mode by pressing corresponding button once.

![Figure 3-6. Mode Icon](image)

Shutting Down Engine and Heater

1. Switch main power to OFF (O).
   Engine runs until heat exchangers are cooled.
2. When engine stops, disconnect and stow ducting.
3. When amber light on battery disconnect switch shuts off, switch battery disconnect to OFF (O).
4. Pull (detach) the battery disconnect lever from battery disconnect switch.

**NOTE:** See Figure 3-7. While the amber light is on, the Wait to Disconnect icon displays on the controller.

**Figure 3-7. Wait to Disconnect Icon**

**IMPORTANT NOTE:** Do not switch battery disconnect OFF (O) until amber light switches off. The light indicates DEF is being purged from the DEF lines. Purging the lines (the **purge cycle**) prevents DEF freezing in the lines.

**NOTE:** The purge cycle could last up to 10 minutes.

Battery Disconnect Switch

When switching OFF the battery disconnect switch:

1. Switch to the OFF position.
2. Remove the lever from the switch.

Emergency Stop Switch

Activate the emergency stop switch by pushing the button in until it locks down. This trips the main circuit breaker which then opens the contact, disconnecting the load to the connection lugs. This will also open the fuel circuit, shutting down the engine. The emergency stop fault will be displayed on the control panel. The switch will remain closed until it is pulled out.

Before Towing Unit

Before towing unit:

- Drain any fluids from containment.
- Close and lock all doors.
- Verify tire pressure.
Section 4: Maintenance

NOTE: Normal maintenance, service, and replacement of parts are the responsibility of the owner and are not considered defects in materials or workmanship within the terms of the warranty. It is strongly recommended that equipment be periodically checked by an IASD.

Maintenance Tasks

Daily checks must be performed when unit is operated continuously for extended periods of time. Daily checks and routine monthly checks can be performed by an authorized operator.

Daily Walk Around Inspection

See Maintenance Schedule for additional daily tasks.

Look for conditions that could hinder performance or safety, such as (but not limited to) oil, coolant, or fuel leakage, blocked vents, loose or missing hardware, and improper electrical connections. Check for foreign matter blocking the vents and on top of unit.

- Inspect engine air cleaner service indicator
- Inspect outer cover for significant damage beyond scuffs and small nicks.
- Inspect for wire abrasion.
- Inspect the fan belt for cracks, fraying, and stretching. Verify belt is properly seated in the pulley grooves. Every 750 hours, it is recommended that the belt be removed and checked for wear. While belt is removed, inspect pulleys and bearing. Rotate and feel for hard turning or unusual sounds.
- Check coolant.
- Check electrical connectors, battery, and ground points. Look for loose or missing hardware.
- Check all flexible rubber hoses for deterioration.
- Check hydraulic hoses for signs of wear.
- Verify hoses are not crushed, kinked or twisted.
- Verify there are no cracks or corrosion.

Checking Engine Oil Level

CAUTION

Engine damage. Verify proper type and quantity of engine oil prior to starting engine. Failure to do so could result in engine damage.

NOTE: If engine was running, wait at least ten minutes before proceeding.

1. Remove oil dipstick and wipe it dry with a clean, lint free cloth.
Draining Fluids—Union Fluid Drain

See Figure 4-1. This unit is equipped with a union fluid drain (A), an exterior drain port for multiple fluids—engine oil, engine fuel, engine coolant, hydraulic oil, and DEF.

To drain a fluid:

**IMPORTANT NOTE:** Drain one fluid at a time.

---

**WARNING**

Risk of burns. Allow engine to cool before draining oil or coolant. Failure to do so could result in death or serious injury.

---

Potential of cancer. Prolonged or repeated contact with used motor oil has been shown to cause cancer in laboratory animals. Thoroughly wash exposed areas with soap and water.

---

1. Verify unit is off and interior components are cool.
2. Verify all ball valves are OFF.
3. Place suitable container under exterior drain.
4. Remove plug from exterior drain port.
5. Open a ball valve.

**IMPORTANT NOTE:** Drain one fluid at a time—do not open more than one ball valve.

6. Allow fluid to drain.
7. When fluid stops flowing from exterior drain, install exterior drain plug removed in step 4.
8. On the controller, reset service interval.

See Accessing and Resetting Controller Service Intervals for more information.

Adding Coolant

---

**DANGER**

Risk of poisoning. Do not use mouth to siphon coolant. Doing so will result in death or serious injury.

---

**WARNING**

Risk of burns. Do not open coolant system until engine has completely cooled. Doing so could result in serious injury.

---

**CAUTION**

Risk of overheating. Do not use any chromate base rust inhibitor with propylene glycol base antifreeze, boosters, or additives. Doing so will cause overheating and possible equipment damage.

If coolant level is below the filler neck, coolant needs to be added (see Coolant Recommendation).

1. Verify engine is stopped and cooled.
2. Remove radiator cap.
3. Fill radiator slowly with coolant until it comes up to the filler neck.
4. Operate engine approximately five minutes at a low idle speed to bleed the air in the coolant circuit.

**NOTE:** Coolant level will drop.

5. Stop the engine and, once cooled, replenish with coolant.

**Removing Crankcase Filter**
To remove crankcase filter, unscrew top and lift vertically.

**NOTE:** Removal may be difficult due to suction.
See engine manual for more information.

**Engine Diagnostic Port and ECM (Engine Control Module)**
See engine manual.
Maintenance Schedule

Periodic inspection, service, and maintenance of this unit is critical to ensure reliable operation. The following is the manufacturer’s recommended maintenance schedule. The maintenance items will need to be performed more frequently if the heater is used in severe applications (such as very high or very low ambient conditions or extremely dirty/dusty environments). Use the heater hour meter or calendar time, whichever occurs first, from the previous maintenance interval to determine the next required maintenance interval. Note that some checks are based on hours of operation.

Follow all applicable safety alerts found in this manual or engine service manual before performing any maintenance checks or service.

This maintenance schedule reflects the minimum tasks that need to be accomplished to verify the heater remains operational. Some of the tasks can be performed by an authorized operator and others must be performed by an IASD.

NOTE: An authorized operator is one who has been trained by an IASD in proper operation and inspection of this unit.

Engine Maintenance Schedule

For procedures, see the OEM engine manual.

<table>
<thead>
<tr>
<th></th>
<th>Daily</th>
<th>Weekly</th>
<th>Every 50 hr or weekly</th>
<th>Every 250 hr</th>
<th>Every 500 hr</th>
<th>Every 500 hr or 1 yr</th>
<th>Every 1,000 hr</th>
<th>Every 1,500 hr</th>
<th>Every 2,000 hr</th>
<th>Every 3,000 hr</th>
<th>Every 3,000 hr or 2 yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check coolant level</td>
<td>Check driven equipment</td>
<td>Inspect/replace hoses and clamps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inspect engine air cleaner service indicator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check/clean engine air precleaner</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check engine oil level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drain fuel system primary filter/water separator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Walk-around inspection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check battery electrolyte level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inspect/clean/replace engine air cleaner element (dual element)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inspect/replace engine air cleaner element (single element)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Change engine oil and filter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Replace inline fuel filter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Replace fuel system primary filter (water separator) element</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Replace fuel system secondary filter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clean radiator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Owner’s Manual for Flameless Air Heater
NOTE: All service and maintenance or repairs are recommended to be completed by an IASD to maintain the warranty status of a unit. You cannot be denied emissions warranty coverage solely based on failure to complete recommended service maintenance.

NOTE: For additional maintenance information, see engine manual.

Hydraulic Oil Schedule
The hydraulic oil change schedule is:
1. Change every 1,000 hr
2. Change at the end of the season.

Hydraulic Oil Filters Schedule
The hydraulic oil filters should be changed on each of the following occasions:
- When changing hydraulic oil
- When hydraulic oil filters are clogged. See Figure 4-2. When filters are clogged, The controller displays the illustrated icon.

Figure 4-2. Hyd Return Filter icon - indicates clogged hydraulic filters

Accessing and Resetting Controller Service Intervals
After changing the oil, air filter, engine fuel filter, or hydraulic oil filters; the appropriate interval MUST BE RESET ON THE CONTROLLER in order to continue providing accurate data.

Engine Oil, Fuel Filter, and Air Filter
1. See Figure 4-3. On the Service Alerts page, press the Diagnostics button (A).

Figure 4-3. Service Alerts Page

2. See Figure 4-4. The Engine Diagnostics page displays. Press the indicated button (A).

Figure 4-4. Engine Diagnostics Page
See Figure 4-5. The Service Hours Engine page displays.

![Figure 4-5. Service Hours Engine Page](image)

3. On this page, you can:
   - View service intervals.
   - View hours remaining until next scheduled service.
   - Press a RESET button to reset the corresponding HRs REMAIN (B).
   - Access the hydraulic oil service interval (A).

Hydraulic Oil

1. See Figure 4-5. On the Service Hours Engine page, press the indicated icon (A).

See Figure 4-6. The Service Hours Hydraulics page displays.

![Figure 4-6. Service Hours Hydraulics Page](image)

Here, you can:
   - View service intervals.
   - View hours remaining until next scheduled service.
   - Press the RESET button to reset the HRs REMAIN for hydraulic oil (A).

Other Maintenance Checks

The following inspections should be performed by an authorized service technician, or a properly trained authorized operator. These maintenance items require a high level of experience and skill to evaluate and correct.

   • Inspect engine accessory drive belts
   • Inspect hoses and connections
   • Inspect fuel supply system
   • Inspect exhaust system
   • Inspect exhaust pipe sleeve
# Section 5: Troubleshooting

## General Troubleshooting Guide

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine cranks but does not start</td>
<td>No fuel</td>
<td>Verify there is no fuel leakage and replenish.</td>
</tr>
<tr>
<td></td>
<td>Low oil level</td>
<td>Replenish oil to full.</td>
</tr>
<tr>
<td></td>
<td>Emergency shutdown switch is ON</td>
<td>Turn emergency shutdown switch OFF.</td>
</tr>
<tr>
<td></td>
<td>Air in fuel system</td>
<td>Purge air.</td>
</tr>
<tr>
<td></td>
<td>Clogged fuel filter</td>
<td>Remove water and change element.</td>
</tr>
<tr>
<td></td>
<td>Fuel is frozen</td>
<td>Warm fuel pipes with hot water or wait until ambient temperature rises.</td>
</tr>
<tr>
<td></td>
<td>Injection pump failure</td>
<td>Contact an IASD.</td>
</tr>
<tr>
<td></td>
<td>Electromagnetic type fuel pump failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engine control system failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Restricted air flow</td>
<td>Check/replace air filter.</td>
</tr>
<tr>
<td></td>
<td>LCD panel shows engine failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clogged strainer</td>
<td>Contact an IASD.</td>
</tr>
<tr>
<td></td>
<td>Pre-heating device failure</td>
<td></td>
</tr>
<tr>
<td>Engine does not crank</td>
<td>Discharged battery</td>
<td>Replace battery.</td>
</tr>
<tr>
<td></td>
<td>Battery terminal is disconnected, loose, or corroded</td>
<td>Replace corroded part and tighten securely.</td>
</tr>
<tr>
<td></td>
<td>Starter ground terminal is disconnected, loose, or corroded</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High engine oil viscosity</td>
<td>Change with oil of correct viscosity.</td>
</tr>
<tr>
<td></td>
<td>Starter or electrical system failure</td>
<td>Contact an IASD.</td>
</tr>
</tbody>
</table>
### Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine starts but stops shortly thereafter</td>
<td>Low idle</td>
<td>Adjust by idling control equipment on the machine. If adjustment is not possible, contact ISUZU dealer.</td>
</tr>
<tr>
<td></td>
<td>Clogged fuel filter</td>
<td>Remove water and change element.</td>
</tr>
<tr>
<td></td>
<td>Clogged pre-fuel filter</td>
<td>Clean or change element.</td>
</tr>
<tr>
<td></td>
<td>Clogged air cleaner</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engine control system failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Injection pump failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clogged strainer</td>
<td>Contact an IASD.</td>
</tr>
<tr>
<td></td>
<td>Electromagnetic type fuel pump failure</td>
<td></td>
</tr>
<tr>
<td>Engine running is unstable</td>
<td>Fuel system failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water or air is in fuel system</td>
<td>Purge air or remove water.</td>
</tr>
<tr>
<td></td>
<td>Engine control system failure</td>
<td>Contact an IASD.</td>
</tr>
<tr>
<td>Exhaust smoke is white</td>
<td>Insufficient warm-up time</td>
<td>Conduct warm-up operation.</td>
</tr>
<tr>
<td></td>
<td>Excessive engine oil</td>
<td>Correct oil level.</td>
</tr>
<tr>
<td></td>
<td>Engine control system failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Injection pump failure</td>
<td>Contact an IASD.</td>
</tr>
<tr>
<td></td>
<td>Fuel system failure</td>
<td></td>
</tr>
<tr>
<td>Exhaust smoke is black</td>
<td>Excessive speed</td>
<td>Verify engine RPM. Check AVR adjustment.</td>
</tr>
<tr>
<td></td>
<td>Injection pump failure</td>
<td>Contact an IASD.</td>
</tr>
<tr>
<td></td>
<td>Clogged air cleaner</td>
<td>Clean or change element.</td>
</tr>
<tr>
<td></td>
<td>Clogged intercooler</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fuel system failure</td>
<td>Contact an IASD.</td>
</tr>
<tr>
<td></td>
<td>Clogged exhaust system</td>
<td></td>
</tr>
<tr>
<td>Engine overheats</td>
<td>No coolant</td>
<td>Add coolant.</td>
</tr>
<tr>
<td></td>
<td>Front of radiator is clogged with dust</td>
<td>Clean with soft brush.</td>
</tr>
<tr>
<td></td>
<td>Sub tank cap is not tightened</td>
<td>Tighten or replace sub tank cap.</td>
</tr>
<tr>
<td></td>
<td>Coolant is fouled</td>
<td>Clean inside of radiator and change coolant.</td>
</tr>
<tr>
<td></td>
<td>Oil in coolant</td>
<td>Contact an IASD.</td>
</tr>
<tr>
<td></td>
<td>Thermostat failure</td>
<td>Change thermostat.</td>
</tr>
<tr>
<td>Oil pressure does not rise</td>
<td>Incorrect engine oil viscosity</td>
<td>Change with oil of correct viscosity.</td>
</tr>
<tr>
<td></td>
<td>Insufficient engine oil level</td>
<td>Replenish.</td>
</tr>
<tr>
<td></td>
<td>Engine failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Meter, lamp, or switch failure</td>
<td>Contact an IASD.</td>
</tr>
<tr>
<td>Problem</td>
<td>Possible Cause</td>
<td>Solution</td>
</tr>
<tr>
<td>---------</td>
<td>---------------</td>
<td>----------</td>
</tr>
<tr>
<td>Engine has no power</td>
<td>Clogged air cleaner</td>
<td>Clean element.</td>
</tr>
<tr>
<td></td>
<td>Clogged pre-fuel filter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clogged fuel filter</td>
<td>Remove water and change element.</td>
</tr>
<tr>
<td></td>
<td>Clogged strainer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engine control system failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engine failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clogged exhaust system</td>
<td>Contact an IASD.</td>
</tr>
<tr>
<td></td>
<td>Fuel system failure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Incorrect fuel type</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electromagnetic type fuel pump failure</td>
<td></td>
</tr>
<tr>
<td>Overheat/shutdown condition</td>
<td>Access doors are open</td>
<td>Close all access doors.</td>
</tr>
<tr>
<td></td>
<td>Air outlets are not open</td>
<td>Open the air outlets and verify there are no obstructions or sharp bends in the ducting.</td>
</tr>
<tr>
<td></td>
<td>Front radiator or rear oil cooler are full of debris</td>
<td>Clean the machine.</td>
</tr>
<tr>
<td></td>
<td>Engine rpm is set too high based on ambient temperature</td>
<td>Lower the engine rpm.</td>
</tr>
<tr>
<td></td>
<td>Faulty temperature sensor</td>
<td>Check air outlet sensor operation.</td>
</tr>
<tr>
<td></td>
<td>Blower fan not operating correctly</td>
<td>Remove ducting; check blower fan operation.</td>
</tr>
<tr>
<td>No/low heat condition</td>
<td>Incorrect heater setting (target temperature too low)</td>
<td>Adjust heater output.</td>
</tr>
<tr>
<td></td>
<td>Access doors are open</td>
<td>Close all access doors.</td>
</tr>
<tr>
<td></td>
<td>Low HTF/hydraulic oil level</td>
<td>• Check level on tank sight glass, adjust as needed. • Inspect HTF hoses for leaks or loose fittings. • Check fluid for foaming.</td>
</tr>
<tr>
<td></td>
<td>HTF/hydraulic oil filters clogged</td>
<td>Check restriction gauges/replace HTF filters.</td>
</tr>
<tr>
<td></td>
<td>Ducting too long for ambient conditions</td>
<td>Move unit closer to heat recipient if possible.</td>
</tr>
<tr>
<td></td>
<td>HTF pump drive sheared</td>
<td>Contact an IASD.</td>
</tr>
</tbody>
</table>

IMPORTANT NOTE: See the OEM engine manual for related troubleshooting.
Troubleshooting

Controller Warnings and Faults
See *Figure 5-1* The controller indicates warnings and faults by displaying messages in the message bar (A) and/or by displaying an icon (B, for example).

![Controller Display](image)

*Figure 5-1.*

**NOTE:** For more information on warnings and faults, contact Generac Mobile Technical Service at 1-800-926-9786.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Icon ID</th>
<th>State</th>
<th>Indicated Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>🚬</td>
<td>Engine Stop/Shutdown</td>
<td>Steady ON</td>
<td>Indicates engine shutdown required for severe system faults/events.</td>
</tr>
<tr>
<td>🚬</td>
<td>Engine Warning</td>
<td>Steady ON or Slow flash or Fast flash</td>
<td>Used to indicate engine and emissions system diagnostics.</td>
</tr>
<tr>
<td>🔥</td>
<td>High Exhaust Temperature (HEST)</td>
<td>Steady ON</td>
<td>Engine is NOT at idle and the engine ECU is requesting high idle (typically, 1,200 rpm) Control system has granted permission for high idle state Typical when DPF is above 80% soot load</td>
</tr>
<tr>
<td>🔥</td>
<td>DEF Fluid Level</td>
<td>Steady ON (amber) Slow flash (red)</td>
<td>DEF fluid level is 20% DEF fluid level is 16% or below</td>
</tr>
</tbody>
</table>
| 🔥 | Engine Emissions Malfunction | Steady ON or Slow flash or Fast flash | Indicates failure of a critical emissions component. Engine derate:  
  - Steady ON: 0%  
  - Slow flash: 50%  
  - Fast flash: 100% |
| 🔥 | Regen Inhibit | Steady ON (amber) | Control system not allowing high idle that engine has requested |
| 🔥 | Engine Oil Pressure | Steady ON Flasing | Severity level 1—0% derated engine power Severity level 3—100% derated engine power |
| 🔥 | Engine Intake Temperature | Steady ON (amber) | Engine intake temperature is above 253 °F (123 °C)  
  **IMPORTANT NOTE:** Temperature above 253 °F (123 °C) begins to deteriorate engine! |
<p>| 🔥 | Hydraulic Oil Level Low | Fast flash (red) | Low hydraulic oil level |</p>
<table>
<thead>
<tr>
<th><strong>Hydraulic Oil Temperature</strong></th>
<th><strong>Steady ON (amber)</strong></th>
<th>Tank &gt;160 °F (71 °C) or oil stream &gt;200 °F (93 °C)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Steady ON (red)</strong></td>
<td>Tank &gt;170 °F (77 °C) or oil stream &gt;210 °F (99 °C)</td>
</tr>
<tr>
<td></td>
<td><strong>Steady ON</strong></td>
<td>High-temperature cut-out switch open</td>
</tr>
<tr>
<td><strong>Hydraulic Return Filter</strong></td>
<td></td>
<td>Filter condition</td>
</tr>
<tr>
<td><strong>Engine Overspeed</strong></td>
<td><strong>Steady ON</strong></td>
<td>Engine rpm exceeds set parameter in EPEC ECU for overspeed, or the engine ECU transmits the overspeed indication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Remains ON until engine cycles through a stopped state</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Setpoint: 2,600 rpm</td>
</tr>
<tr>
<td><strong>Low Diesel Fuel</strong></td>
<td><strong>Steady ON (amber)</strong></td>
<td>Fuel level is 20%</td>
</tr>
<tr>
<td></td>
<td><strong>Slow flash (red)</strong></td>
<td>Fuel level is 16%</td>
</tr>
<tr>
<td></td>
<td><strong>Fast flash (red)</strong></td>
<td>Fuel level is 12% or below</td>
</tr>
<tr>
<td><strong>Control System Fault</strong></td>
<td><strong>Steady ON</strong></td>
<td>Any control system fault</td>
</tr>
<tr>
<td><strong>Delayed Engine Shutdown</strong></td>
<td><strong>Steady ON</strong></td>
<td>DPF outlet temperature is above a set temperature threshold</td>
</tr>
<tr>
<td></td>
<td><strong>Steady ON (amber)</strong></td>
<td>Engine is cooling</td>
</tr>
<tr>
<td></td>
<td><strong>Steady ON</strong></td>
<td>Engine is cooling</td>
</tr>
<tr>
<td></td>
<td><strong>Engine Cooling lamp</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Battery Charge</strong></td>
<td><strong>Steady ON</strong></td>
<td>Battery voltage is below 25 V with engine in RUN</td>
</tr>
<tr>
<td><strong>Engine Coolant Temperature</strong></td>
<td><strong>Steady ON (amber)</strong></td>
<td>Coolant level is above 228 °F (109 °C)</td>
</tr>
<tr>
<td><strong>Water In Fuel</strong></td>
<td><strong>Steady ON</strong></td>
<td>Water detected in fuel</td>
</tr>
<tr>
<td><strong>Service Due</strong></td>
<td><strong>Steady ON</strong></td>
<td>Service is due for one or more of:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Engine oil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Air filter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Engine fuel filter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hydraulic oil filters</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See <em>Draining Fluids—Union Fluid Drain</em>.</td>
</tr>
</tbody>
</table>
This page intentionally left blank.
Hydraulic Circuit

![Diagram of Hydraulic Circuit]
This page intentionally left blank.
This page intentionally left blank.
This page intentionally left blank.