

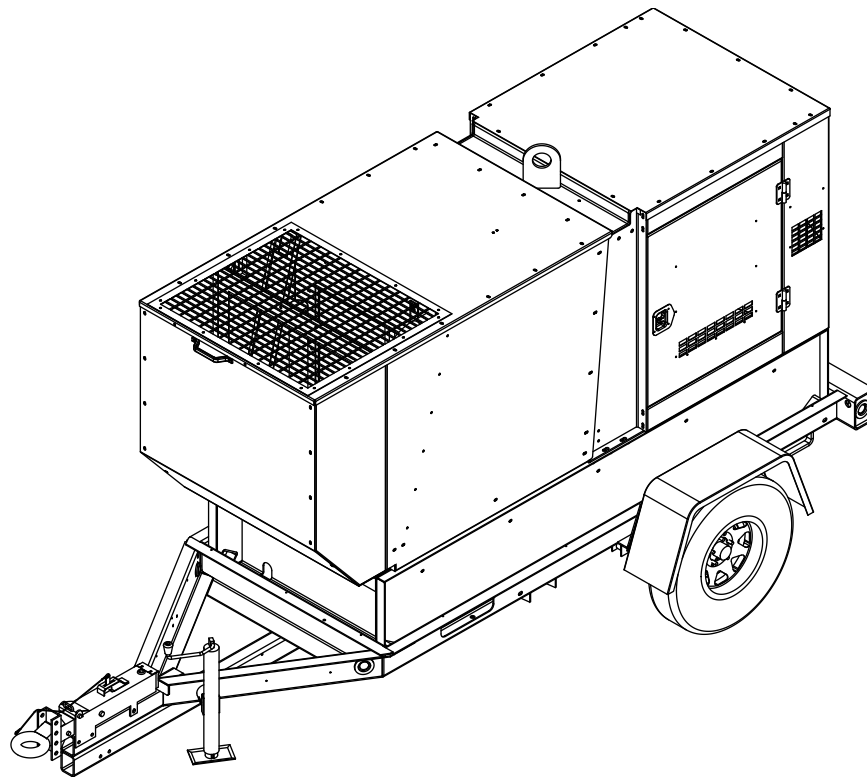
Owner's Manual

For

Diesel Generator

MMG75D • MMG100D

With **Power Zone™** Controller



MODEL NUMBER: _____

SERIAL NUMBER: _____

DATE PURCHASED: _____

SAVE THIS MANUAL FOR FUTURE REFERENCE

▲WARNING

California Proposition 65. Engine exhaust and some of its constituents are known to the state of California to cause cancer, birth defects, and other reproductive harm.

(000004)

▲WARNING

California Proposition 65. This product contains or emits chemicals known to the state of California to cause cancer, birth defects, and other reproductive harm.

(000005)

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Section 1 Introduction and Safety

Introduction

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



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. (000100a)

If any section of the manual is not understood, contact your nearest Independent Authorized Service Dealer (IASD), or contact Generac Mobile Products (GMP) Customer Service at 1-800-926-9768, or www.generacmobileproducts.com with any questions or concerns.

The owner is responsible for proper maintenance and safe use of the equipment. Before installing, operating, or servicing this generator:

Save these instructions for future reference. This manual contains important instructions for the generator that should be followed during installation, operation and maintenance of the generator and batteries. ALWAYS supply this manual to any individual that will use this machine.

The information contained herein was based on machines in production at the time of publication. Generac reserves the right to modify this manual at any time.

Safety Rules

The manufacturer cannot anticipate every possible circumstance that might involve a hazard. The warnings in this manual, and on tags and decals affixed to the unit are, therefore, 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. Also make sure the procedure, work method or operating technique utilized 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. Their definitions are as follows:

DANGER

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

(000001)

WARNING

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

(000002)

CAUTION

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

(000003)

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

These safety warnings 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.

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

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



⚠ 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. (000181)



⚠ 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

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

In case of an emergency, press the emergency stop button to stop the engine immediately. Failure to do so could result in death or serious injury. (000298)

⚠ 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

Risk of injury. Do not operate or service this machine if not fully alert. Fatigue can impair the ability to service this equipment and could result in death or serious injury. (000215)

⚠ WARNING

Only qualified service personnel may install, operate and maintain this equipment. Failure to follow proper installation requirements could result in death, serious injury, and damage to equipment or property. (000182)

⚠ 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)

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)



⚠ 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

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)

Trailer Hazards

WARNING

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

WARNING

Do not operate this unit while transporting. Doing so could result in death or serious injury. (000231)

WARNING

Verify unit is properly secured with wheel chocks and on level ground. Failure to do so could result in death or serious injury. (000234)

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)

Electrical Hazards

DANGER



Electrocution. In the event of electrical accident, immediately shut power OFF. Use non-conductive implements to free victim from live conductor. Apply first aid and get medical help. Failure to do so will result in death or serious injury. (000145)

DANGER



Electrocution. Water contact with a power source, if not avoided, will result in death or serious injury. (000104)

DANGER



Electrocution. Contact with bare wires, terminals, and connections while generator is running will result in death or serious injury. (000144)

DANGER



Electrocution. Verify electrical system is properly grounded before applying power. Failure to do so will result in death or serious injury. (000152)

DANGER



Electrocution. Turn utility supply OFF before working on utility connections of the transfer switch. Failure to do so will result in death or serious injury. (000123)

DANGER



Electrocution. Never connect this unit to the electrical system of any building unless a licensed electrician has installed an approved transfer switch. Failure to do so will result in death or serious injury. (000150)

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)

Battery Hazards



⚠ DANGER

Electrocution. Do not wear jewelry while working on this equipment. Doing so will result in death or serious injury.

(000188)



⚠ 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)



⚠ 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.

(000162)



⚠ 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

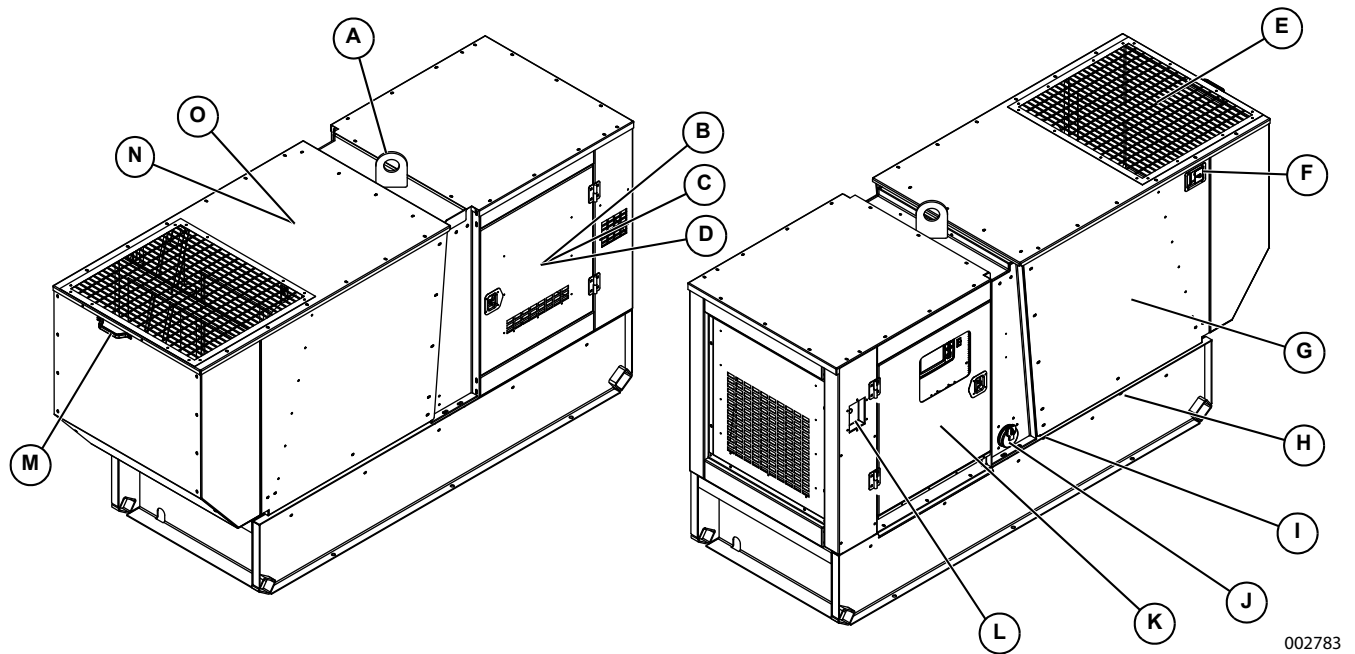
Environmental Hazard. Always recycle batteries at an official recycling center in accordance with all local laws and regulations. Failure to do so could result in environmental damage, death or serious injury.

(000228)

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/>.

Section 2 General Information

Component Locations



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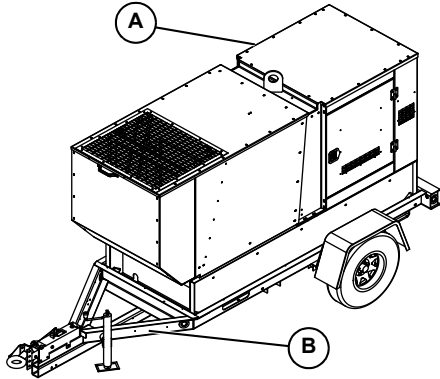
Figure 2-1. Features and Controls

Table 2-1. Generator Components

A	Central Lift Point	I	Oil Drain Port
B	Voltage Selector Switch Access	J	Fuel Fill
C	Generator Access	K	Control Panel Access
D	Manual Holder Access	L	Emergency Stop Switch
E	Engine Exhaust	M	Handle
F	Front Hood Latch	N	Radiator Access
G	Engine/Battery Access	O	Engine Access
H	Radiator Drain Port		

Unit and Serial Number Locations

See **Figure 2-2** to locate the unit ID tag (A) and Vehicle Identification Number (VIN) tag (B). Important information, such as the unit model number, serial number, VIN and tire loading information is 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.



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Figure 2-2. Unit and Serial Number Locations

Engine Oil Recommendations

To maintain the product warranty, the engine oil should be serviced in accordance with the recommendations of this manual.

The engine has been filled with factory engine oil of a grade recommended by the engine supplier.

Use a high quality detergent oil with an appropriate classification and viscosity for the engine type and ambient temperature conditions. Consult your IASD or the applicable engine service manual for engine oil recommendations.

Coolant Recommendation



DANGER

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

(000149)



WARNING

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

(000154)

CAUTION

Do not use any chromate base rust inhibitor with propylene glycol base antifreeze, boosters or additives. Doing so will cause overheating.

(000165)

Consult your IASD or the applicable engine service manual for engine coolant recommendations. See table below for mixtures:

Freezing Point °F (°C)	-12 (-24)	-34 (-36)	-54 (-48)	-90 (-67)
Water (% Volume)	60	50	40	30
Antifreeze (% Volume)	40	50	60	70*

* Maximum freeze protection is at 70%.

Control Panel

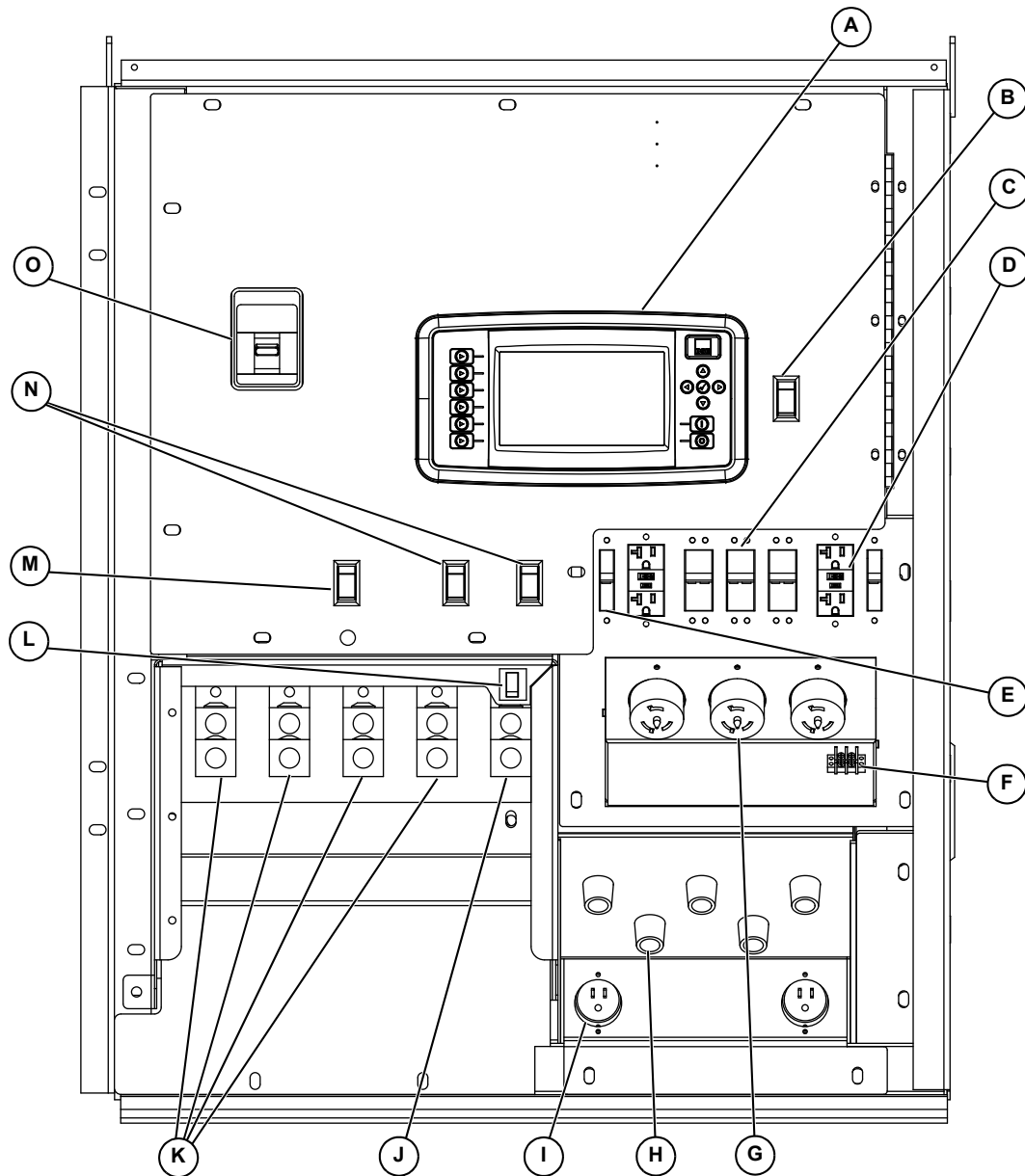


Figure 2-3. Control Panel Component Locations

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Table 2-2. Control Panel Components

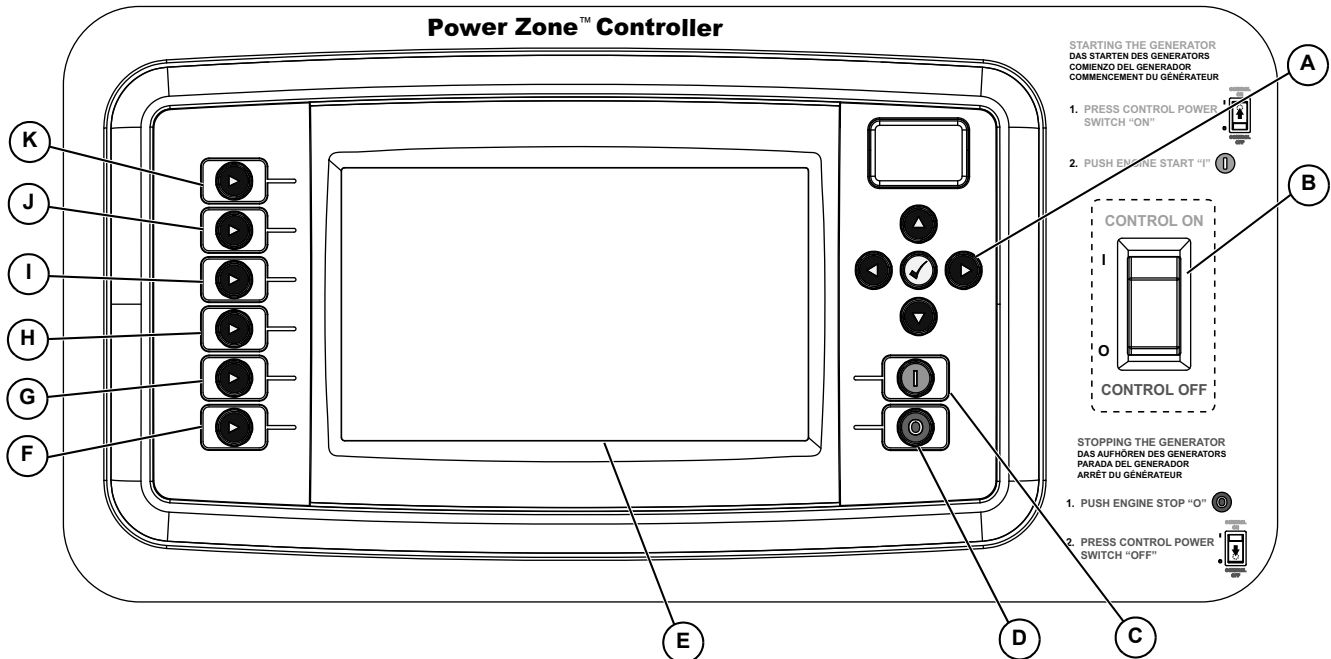
A	Power Zone™ Controller	I	120V Inlet Receptacle
B	Control Power Switch	J	Generator Ground Connection Lug
C	50A Circuit Breakers (3)	K	Generator Output Connection Lugs (4)
D	120V GFCI Receptacles (2)	L	Door Safety Switches (2)
E	20A Circuit Breakers (2)	M	Diesel Exhaust Filter Cleaning Switch
F	Remote Start Terminal Block	N	Auxiliary Light Switches (optional)
G	120/240V Twist-Lock Receptacles (3)	O	Main Circuit Breaker
H	Cam Lock Connections (5)		

Power Zone™ Gen Controller

The Power Zone™ controller is an auto start controller that monitors the unit and indicates operational status and fault conditions. The controller can be programmed to automatically start or stop, based on time schedule, fault condition, or load demand.

The controller constantly monitors vital generator and engine functions for a number of preprogrammed alarm and fault conditions. When a fault condition occurs, the engine can be shut down automatically and the LCD window will show the fault that caused the shut down; to resume operation, the fault condition must be resolved.

This controller also records a history of unit performance which may be viewed at any time and will not be lost when the controller is powered down.



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Figure 2-4. Power Zone™ Controller Layout

Table 2-3. Control Panel Components

- A Navigation Buttons
- B Control Power Switch
- C Engine Start Button
- D Engine STOP/RESET button
- E Liquid Crystal Display (LCD)
- F AUTO/MANUAL mode button
- G Alarm Mute Button
- H Voltage Adjust Button
- I Generator Button
- J Engine Button
- K Home Button

Controller Features and Functions

Home Button

The Home (🏠) button is the default screen of the controller and will display after the controller is powered up and the unit management software is loaded. It displays a live readout of the kW meter, percent of load used (gauge), selected phase, volts and amps being produced by the generator, and the fuel level with time until empty. The controller will automatically return to this screen from any other screen after a period of inactivity.

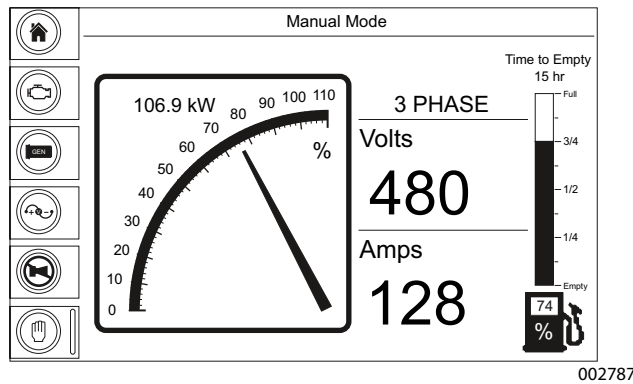


Figure 2-5. Home Button Screen

Engine Button

The Engine (🔧) button displays the oil pressure, coolant temperature and battery voltage on three main gauges. Below the gauges is an hour gauge displaying the total run time on the engine. At the bottom of the screen, this screen also displays maintenance alarm status with the time remaining (black text), or the time past (red text) a scheduled maintenance task, along with the description of the maintenance procedure and the action that will take place when the timer trips the alarm.

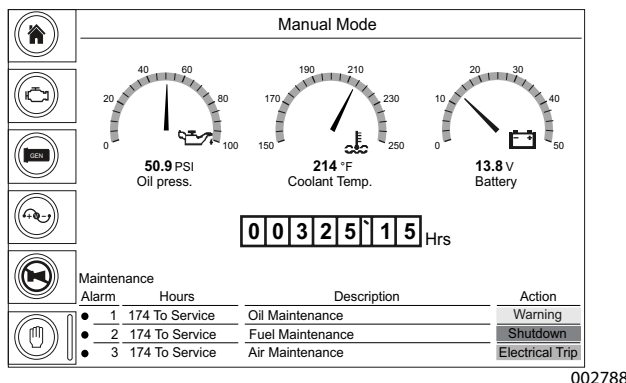


Figure 2-6. Engine Button Screen

NOTE: If the measured value is outside the range of a gauge, the needle will not be displayed. The digital value below the gauge will still show the measured value.

- **Oil Press:** Displays engine oil pressure. Current coolant temperature is displayed directly below the

gauge at all times. The gauge registers oil pressure between 0-100 psi (0-689 kPa). Normal operating pressure is between 35-80 psi (241-552 kPa).

- **Coolant Temp:** Displays engine coolant temperature. Current coolant temperature is displayed directly below the gauge at all times. The gauge displays coolant temperature between 150°-250°F (66°-121°C). Normal operating temperature of the unit is between 180°-200°F (82°-93°C) with an average ambient air temperature of 70°F (21°C).
- **Battery:** Displays the engine battery voltage. Current battery voltage is displayed directly below the gauge at all times. The gauge displays battery voltage between 0-50V. A normal reading is 12-14V on 12 volt systems and 24-26V on 24 volt systems (with the engine running).

Generator Button

The Generator (GEN) button displays the average voltage frequency, volts and amps from the generator, as well as line-to-line voltage and individual line-to-neutral voltage, amperage and power (kW). This screen also displays the generator winding configuration set by the voltage selector switch in the lower right corner.

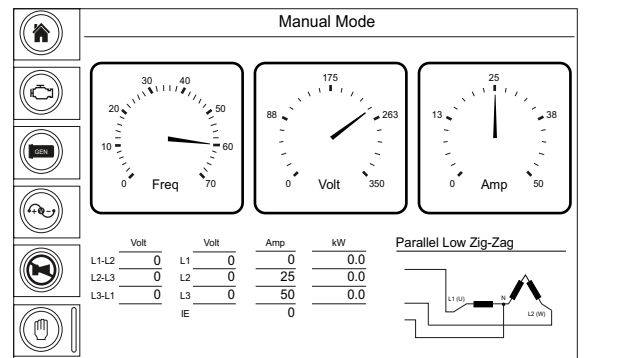


Figure 2-7. Generator Button Screen

NOTE: When loading the generator, it is important to observe the amperage to determine the load balance on each line of the generator. Minor load unbalances, usually ten percent or less, will not cause any particular problems. Every effort should be made to distribute the load equally between all lines.

- **Freq:** Displays the output frequency in Hertz (Hz). Normal operating frequency is 60 Hz.
- **Volts:** Displays the nominal voltage in Volts (V).
- **Amps:** Displays the AC output amperage produced by the generator in Amps (A).

Additional information can be found on the electric power table at the bottom-left side of the screen. This provides an overview of all three lines and average voltage and amperage readouts.

Voltage Adjust Button

The Voltage Adjust (🔌) button displays the line-to-neutral and line-to-line voltage averages. The operator

can electronically adjust the voltage within limits to prevent under-voltage or over-voltage conditions using the on-screen instructions. This feature replaces a traditional potentiometer. See *Fine Voltage Adjustment* for more information.

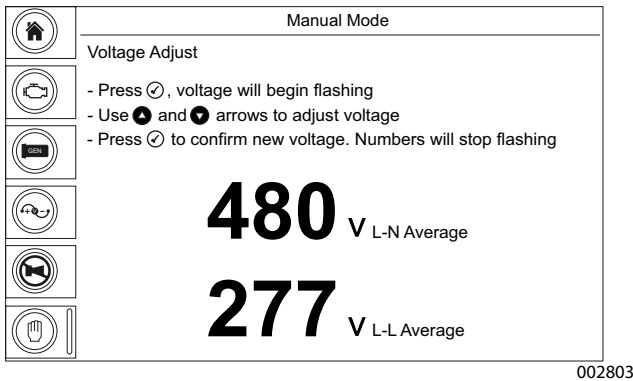


Figure 2-8. Voltage Adjust Button Screen

Alarm Mute Button

The Alarm Mute (Mute icon) button silences the audible alarm. Additional action will be required to fully disable the active alarm.

AUTO/MANUAL Mode Button

The AUTO/MANUAL Mode (Auto/Manual icon) button is used to change the startup and shutdown modes of the unit. When pressed once, the unit enters MANUAL mode and when pressed and held for five seconds, the unit enters AUTO mode. If in AUTO mode, pressing once will return the unit to MANUAL mode.

Navigation Buttons

These buttons are used to navigate and interact with the Power Zone™ controller screens. Pressing any directional arrow (Up, Down, Left, Right) while on any of the operator screens will open the maintenance screens, and navigate the tabs and pages within the maintenance screens. The Enter (Checkmark) button is used to select menus, confirm alarms, and confirm altered settings.

Control Power Switch

Use this switch to start up and shut down the Power Zone™ controller. This switch should not be turned off when the unit is running.

Engine Start Button

Pressing the Engine Start (Start icon) button while the controller is in MANUAL mode will start the unit, provided there are no shutdown errors and the engine satisfies the start status. If the controller is in AUTO mode, the Engine Start (Start icon) button has no effect.

Engine STOP/RESET Button



In case of an emergency, press the emergency stop button to stop the engine immediately. Failure to do so could result in death or serious injury. (000298)



Equipment Damage. The emergency stop switch is not to be used to power down the unit under normal operating circumstances. Doing so will result in equipment damage. (000246)

Pressing the Engine STOP/RESET (O) button will shut down the unit and put the controller into STOP mode, whether in MANUAL mode or AUTO mode.

The Liquid Crystal Display (LCD)

This window will display the various operator and maintenance screens. By viewing these screens, the operator will be able to monitor both the engine and generator status while the unit is running.

Maintenance Screens

All of the data inputs from the engine, generator, inputs/ outputs, schedule and Power Zone™ controller are visible on the maintenance screens.

The information displayed on the maintenance screens can be used to identify, diagnose and troubleshoot unit shutdown conditions and poor unit performance. The maintenance screens can be accessed from any operator screen by pressing any directional arrow (Up, Down, Left, Right).

The bottom of the screens have a list of available tabs, with the currently displayed tab highlighted in blue. The tabs can be selected by using the Right or Left buttons. To the left of the tabs, the current/available pages are displayed. The pages within a tab can be viewed by using the Up and Down buttons. Whenever a new tab is selected, the current page will always be page one.

Generator Summary

The Generator Summary can be found at the top of all maintenance screens and provides an overview of the system.

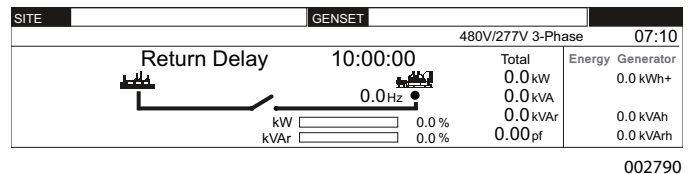


Figure 2-9. Generator Summary Screen

Engine Tab

The Engine tab contains maintenance and instrumentation data gathered from the engine. Above the engine analogue meters is a row of alarm icons. Each icon can be one of three colors: gray (inactive), yellow (warning) or red (shutdown). The alarm icons are as follows from left to right: water in fuel, emission filter, engine air inlet temperature, charge alternator, oil pressure, fuel level, battery voltage, coolant temperature, and ECU lamp.

NOTE: The content may change depending upon the selected engine and the features supported by the engine.

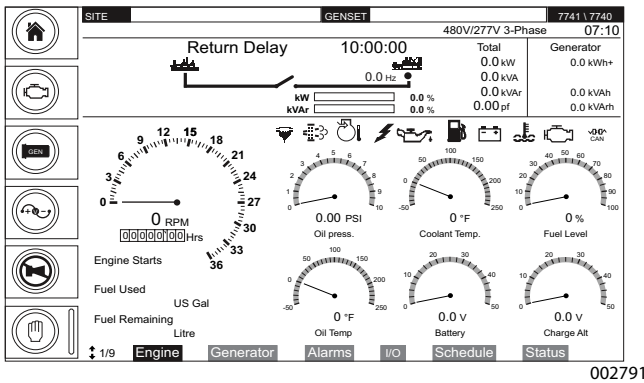


Figure 2-10. Engine Tab Screen

Generator Tab

The Generator tab contains maintenance and instrumentation data gathered from the generator. Each page highlights different data gathered by the generator, with the analogue meters changing accordingly. The last two pages will display the information in the bar graph. The bar graph shows blue for positive and red for negative. For the power factor bar graph, blue is for lagging pf and red is for leading pf.

NOTE: The content may change depending upon the selected generator and the features supported by the generator.

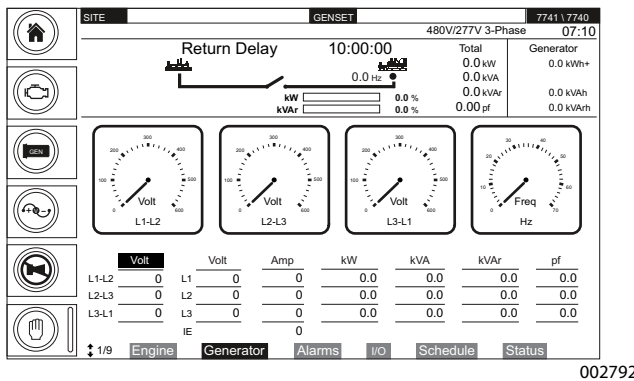


Figure 2-11. Generator Tab Screen

Alarms Tab

The Alarms tab displays warnings, electrical trip, shutdown alarms and any engine Diagnostic Trouble Codes (DTC) that are occurring or have occurred previously. The first page on the Alarms tab displays the alarms that are currently active. They are organized by alarm type.

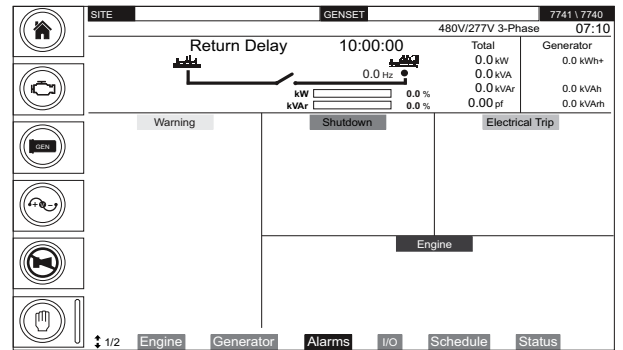


Figure 2-12. Alarms Tab Screen (Page One)

Table 2-4. Diagnostic Trouble Codes

Alarm Type	Color - Background/ Text	Graphic
Warning	Yellow/Black	Warning
Electrical Trip	Purple/Black	Electrical Trip
Shutdown	Red/Black	Shutdown
ECU Code	Blue/White	Engine

The second page of the Alarms tab shows the event log with a list of events, including normal operation events and alarm notifications, with the most recent events at the top of the list. All indexed events include the date and time of the event, hours of runtime on the engine when it occurred, along with the event name or alarm type and details.

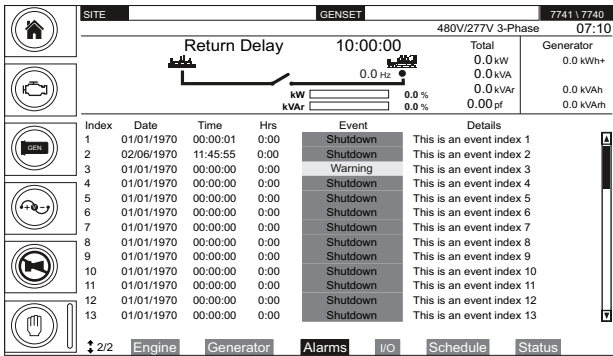


Figure 2-13. Alarms Tab Screen (Page Two)

To scroll down within the event log, press the Enter (✓) button. The scroll bar will change to blue, signifying it is active. Press the ▲ or ▼ buttons to scroll up or down in the event log. When finished, press the Enter (✓) button again.

Input/Output Tab

The Input/Output (I/O) tab shows a list of digital inputs and outputs connected to the controller, whether they are active and the current state (open/closed status) of the input and output.

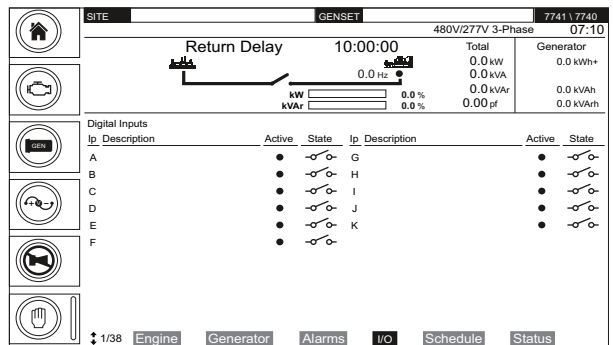


Figure 2-14. Input/Output Tab Screen

Schedule Tab

The Scheduler tab shows the current configuration and status of the scheduler, located below the generator summary. The maintenance configuration status and time remaining until an alarm, electrical trip or shutdown will be displayed at the bottom of the screen. The lamp(s) to the left shows the configuration status of the maintenance alarm, not the alarm condition.

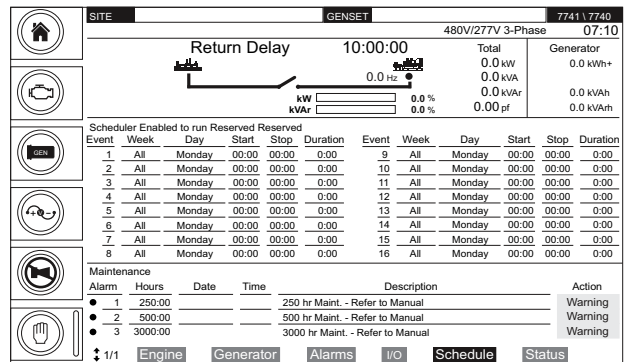


Figure 2-15. Schedule Tab Screen

Status Tab

The Status tab contains the status and configuration of the controller, firmware and data connections.

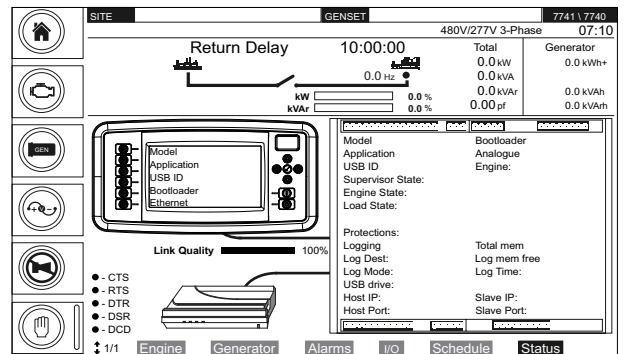


Figure 2-16. Status Tab Screen

Generator Monitoring

Generator information is displayed on both the Generator button screen and Generator tab within the maintenance screens. For more information, refer to [Generator Button](#) and [Generator Tab](#).

Engine Monitoring

Engine information is displayed on both the Engine operator screen and Engine tab within the maintenance screens. For more information, refer to [Engine Button](#) and [Engine Tab](#).

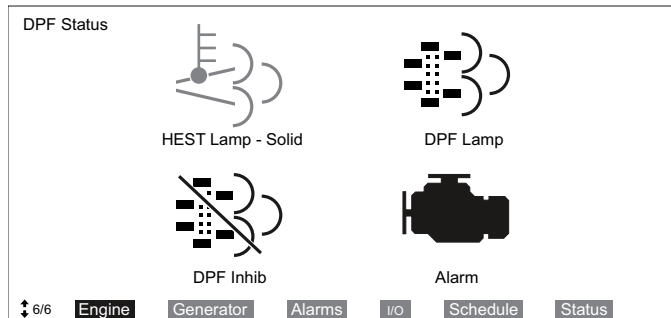
Diesel Exhaust Filter Monitoring

This unit is equipped with a Diesel Particulate Filter (DPF) to meet current EPA emissions standards. This section gives an explanation of the indicators that are displayed on the DPF Status page of the Engine tab.

To access the DPF Status page, press any direction arrow (▲, ►, ▼, ◀) to enter the maintenance screens, and then while on the Engine tab, press the ▼ button to toggle through the pages until the DPF Status page appears. There are four areas on the DPF Status page that communicate various information to the operator. The

areas and the indicators that appear in those areas are explained here:

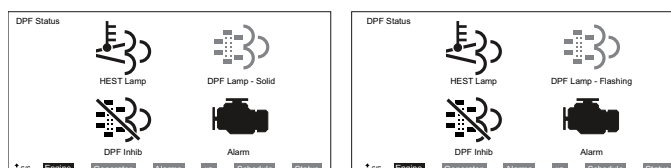
- **HEST Lamp (High Exhaust System Temperature):** This area will display the Regeneration Underway indicator above the words “HEST Lamp - Solid” when the unit is in the process of diesel exhaust filter regeneration. During the regeneration process, the exhaust temperature will be very high.



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Figure 2-17. Regeneration Underway Indicator

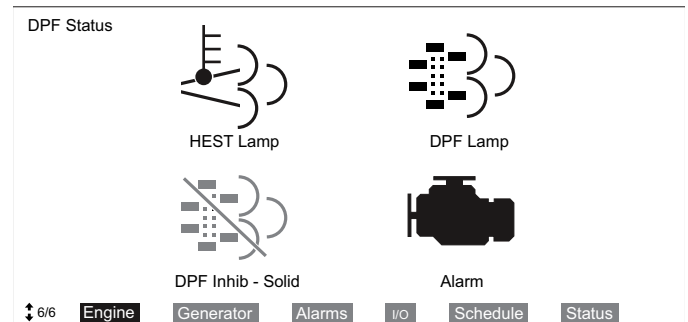
- **DPF Lamp:** This area will display the Regeneration indicator above the words “DPF Lamp - Solid” when auto exhaust filter cleaning is enabled. When the unit is being operated with auto exhaust filter cleaning disabled, the indicator will begin to flash above the words “DPF Lamp - Flashing” if the soot load level goes above 80%.



002799

Figure 2-18. Regeneration Indicator

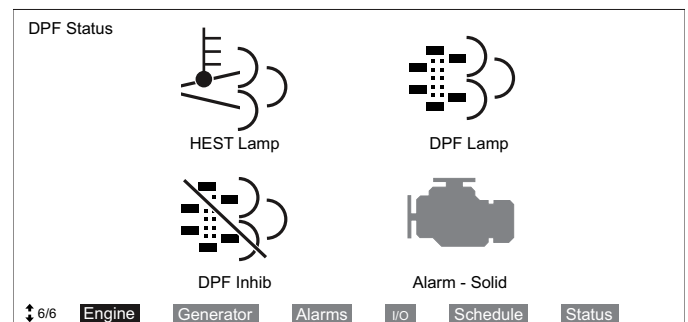
- **DPF Inhib:** This area will display the Disabled Regeneration indicator above the words “DPF Inhib - Solid” when auto exhaust filter cleaning is disabled.



002800

Figure 2-19. Disabled Regeneration Indicator

- **Alarm:** This area will display the Engine Alarm indicator above the words “Alarm - Solid” when an alarm condition occurs. This area displays different text depending upon which alarm condition occurs.



002801

Figure 2-20. Engine Alarm Indicator

For more information on the operation of auto exhaust filter regeneration and service regeneration, see [Exhaust Filter Cleaning Operations](#).

Controller Information Displays, Functions, and Reset

The Power Zone™ controller constantly monitors vital generator and engine functions for a number of operation, alarm and fault conditions. When a fault condition occurs, the engine will shut down automatically and the main display will show the fault that has caused the shutdown. To resume operation, the fault condition must be resolved. To reset the controller and resume operation, press the Enter (✓) button.

Belt Tensioners

John Deere engines use two types of belt tensioners: manual and automatic. Adjust the belt using the manual tensioner according to the manufacturer’s specifications. The automatic tensioner cannot be adjusted or repaired and is designed to maintain proper tension over the belt’s life. Units with the automatic belt tensioner must be inspected according to the manufacturer’s specifications.

Front Hood Operation



WARNING

Crushing Hazard. Stay clear of hood and lift structure when opening and closing generator hoods. Failure to do so could result in death or serious injury. (000300)

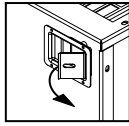


Figure A

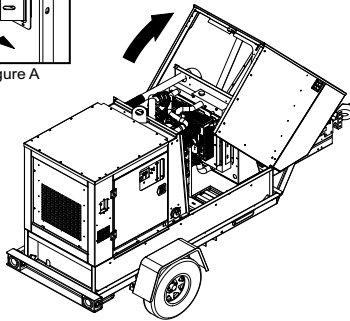


Figure 2-21. Front Hood Operation

002802

To Open the Front Hood

1. With your right hand, grip the handle located on the front panel.
2. With your left hand, pull the hood latch located on the upper corner of the hood. See Figure A. Tilt the hood open until it contacts the bulkhead panel.

To Close the Front Hood



WARNING

Crushing Hazard. Do not attempt to close the hood from sides of unit. Failure to close hood correctly could result in serious injury or equipment damage. (000301)

1. Verify the skid is free of debris and all personnel are clear of unit.
2. While standing at the front of the unit, slowly push the hood forward until firmly closed.
3. Verify the hood is securely closed by attempting to open without pulling the hood latch.

Section 3 Operation

Prestart Checklist

Before starting the unit, all items in the prestart checklist must be completed. This checklist applies to both manual and remote starting of the unit.



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. (000100a)

- Verify all maintenance procedures are up to date. For more information, see [General Maintenance](#) and [Basic Maintenance Schedule](#).
- The unit must be level.
- Verify there is no water inside, on, or near the unit; dry if needed.
- For grounding requirements, follow any local, state, or National Electrical Code (NEC) guidelines.
- Verify the Control Power switch is OFF (O).
- Verify all circuit breakers are OFF (O).
- Inspect all electrical cords; repair or replace any that are cut, worn, or bare.
- Verify oil, coolant, and fuel levels are correct, per the engine manufacturer manual.
- Verify battery connections are secure.
- Turn the battery disconnect switch ON, if equipped.
- Check the engine fan belt tension and condition.
- Check the engine fan belt guard.
- Check the engine exhaust system for loose or rusted components.
- Verify all covers are in place and secure.
- Verify all electrical connections at the connection lugs, if equipped, are tight and wired correctly.
- Verify the voltage selector switch is set to the desired voltage and locked.
- Verify the emergency stop switch is pulled out.
- Verify the radiator and surrounding shroud are clear of debris.

Manually Starting the Unit



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)

All units equipped with the Power Zone™ controller will initially start up in STOP mode. Use the following procedure to start the generator in MANUAL mode:

1. Move the Control Power switch to ON (I).

2. The LCD window will show the prestart diagnosis and the controller will load the unit management software.

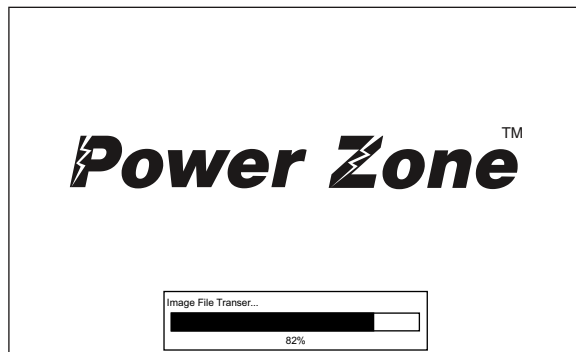


Figure 3-1. Prestart Screen

002804

3. When the software is loaded, the Home screen will be displayed and the controller will be in STOP mode as indicated at the top of the screen. Press the AUTO/MANUAL Mode (⏸) button to enter MANUAL mode.

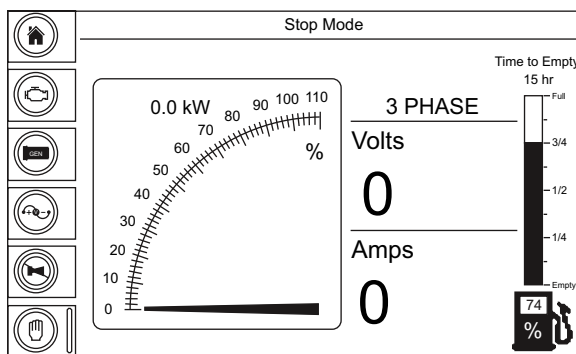


Figure 3-1. Home Screen

002805

NOTE: The controller can be started from any screen when it is in MANUAL mode.

4. Pressing the green Engine Start (I) button on the controller will initiate the startup procedure and start the engine, provided there are no engine faults preventing the unit from starting.

NOTE: It may take a few seconds for the engine to run smoothly and reach its governed operating speed. During this time, the screen will show a voltage different from that set with the voltage selector switch.

5. If the engine does not start after the first cranking attempt, the engine will pause for 15 seconds to allow the starter to cool. The LCD window will show

“Manual Mode - Crank Rest” at the top of the screen. The engine will make two more attempts to start for a total of three crank cycles.

- Should the engine not start and run within three crank cycles, the LCD window will show the “Fail to Start” alarm. The starting sequence may be repeated after the starter has had a minimum of two minutes to cool. Pressing the Enter (P) button will clear the alarm and reset the controller.

NOTE: The engine controller may skip the preheat engine steps on some of the larger models.

- Once the engine starts, it will immediately begin speeding up to a constant 1800 rpm. The engine may hunt or change speeds until operating speed is reached. After a few minutes of operation, the engine will be warmed up and the operator screens will show engine and generator operating parameters.
- Check the generator for excessive noise or vibration and any coolant, oil, or fuel leaks before applying any loads.
- Verify the AC output voltage is correct. See [Fine Voltage Adjustment](#).
- Check that the frequency (Hz) is correct on the Generator screen. With no loads connected to the generator, the frequency should read approximately 60 Hz, depending on the type of engine governing used.
- If all wiring connections have been made correctly, switch the main circuit breaker to the ON (I) position and then add any loads attached to the receptacles by switching the respective circuit breaker to the ON (I) position. You will notice a slight change in engine sound when a load is applied to the unit.

AUTO (Remote) Starting the Unit

AUTO mode is used when the unit is started from a location other than the control panel by using a transfer switch. AUTO (remote start) is the normal setting when the unit is being used as a standby power supply. Before putting the unit in AUTO mode, review the [Prestart Checklist](#) and [Manually Starting the Unit](#). Follow all safety warnings and review all information on isolating the generator with a transfer switch if the unit is to be used as a standby power supply. See [AUTO Exercise Timer](#), then continue with the steps described below:

- Perform a manual start of the unit at least once to verify that the engine is operating correctly.
- If a check of the remote start circuit is desired, remove the wires from the remote start terminal block. Press the AUTO/MANUAL Mode () button, the LCD window should show “Auto Mode” at the top of the screen. Attach a jumper wire (minimum 16 gauge) across the two terminals on the remote

start terminal block. This applies a ground to the Power Zone™ Controller to close the starting circuit contacts. The engine should crank, start and run.

- Remove the jumper wire from the remote start terminal block and the engine will stop. Reconnect any necessary wires from the remote start switch (transfer switch) to the remote start terminal block.
- Verify the unit is in AUTO mode. The LCD window should show “Auto Mode” at the top of the screen.
- Close the main circuit breaker (set to ON (I)).
- Secure the unit by closing and locking all access doors.
- The unit is now ready for remote starting.

See [Figure 3-2](#). The remote start terminal block provides a connection for installation of a remote start switch which will allow the unit to be started by a remote dry-contact closure switch. For location of the remote start terminal block, see [Control Panel](#).

Before entering AUTO mode, verify the contacts on any remote switch linked to the unit are open. If the contacts on a remote switch are closed, the engine will crank and start when AUTO mode is entered. Attach the switch leads to the two unused terminals (A) on the unit’s remote start terminal block.

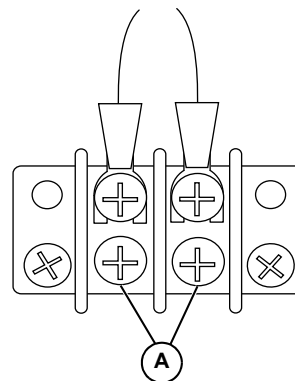


Figure 3-2. Remote Start Terminal Block

002806

Transfer Switch

⚠ DANGER

Loss of life. Property damage. Installation must always comply with applicable codes, standards, laws and regulations. Failure to do so will result in death or serious injury. (000190)

⚠ DANGER

Electrical backfeed. Use only approved switchgear to isolate generator from the normal power source. Failure to do so will result in death, serious injury, and equipment damage. (000237)

⚠ WARNING

Only a trained and licensed electrician should perform wiring and connections to unit. Failure to follow proper installation requirements could result in death, serious injury, and damage to equipment or property. (000155)



⚠ WARNING

Phase rotation between transfer switch and power lines must be compatible. Incompatible phase rotation could result in equipment damage, death or serious injury. (000226)

Installation should be in compliance with the National Electrical Code (NEC), state and local regulations.

Before any connections are attempted, verify the main circuit breaker and the Control Power switch are in the OFF (O) position and that the negative (-) battery cable has been disconnected from the battery.

Installation of such devices must be performed by following all directions supplied by the manufacturer of the switch. If attaching the unit to a power supply normally serviced by a utility company, notify the utility company and check state and local regulations. Familiarize yourself with all instructions and warning labels supplied with the switch.

When the unit is used as a standby power supply, it must be equipped with a transfer switch which isolates it from the utility's distribution system. A transfer switch is designed to transfer electrical loads from the normal power source (utility) to the emergency power source (generator) when normal voltage falls below a prescribed level. The transfer switch automatically returns the load back to the normal source when power is restored back to operating levels.

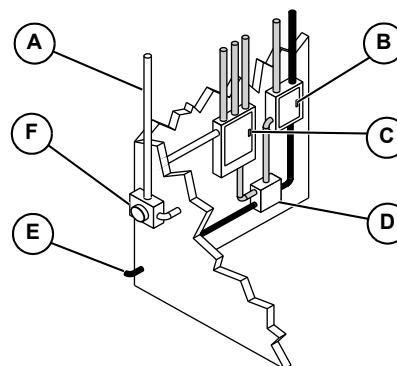


Figure 3-3. Transfer Switch Operation

002807

A	Incoming Utility Power
B	Emergency Distribution Panel (Generator Power)
C	Main Distribution Panel (Utility Power)
D	Transfer Switch
E	Power From Generator
F	Utility Meter
WHITE	Incoming Utility Power
GRAY	Normal Utility Power Circuit
BLACK	Emergency Generator Power Circuit

Derating for Altitude

All units are subject to derating for altitude; this will reduce the available power for operating tools and accessories connected to the receptacles. Typical reductions in performance are 5% per 1,000 ft above 10,000 ft (3048 m) of elevation.

Generator Output Connections



⚠ DANGER

Electrocution. Do not disable or modify the connection box door safety switch. Doing so will result in death or serious injury.

(000157)



⚠ DANGER

Electrocution. Before connections are made to the unit, verify the main circuit breaker and battery disconnect switch are OFF. Failure to do so will result in death or serious injury.

(000156)

⚠ DANGER

Electrical backfeed. Use only approved switchgear to isolate generator from the normal power source. Failure to do so will result in death, serious injury, and equipment damage.

(000237)

⚠ WARNING

Only a trained and licensed electrician should perform wiring and connections to unit. Failure to follow proper installation requirements could result in death, serious injury, and damage to equipment or property.

(000155)

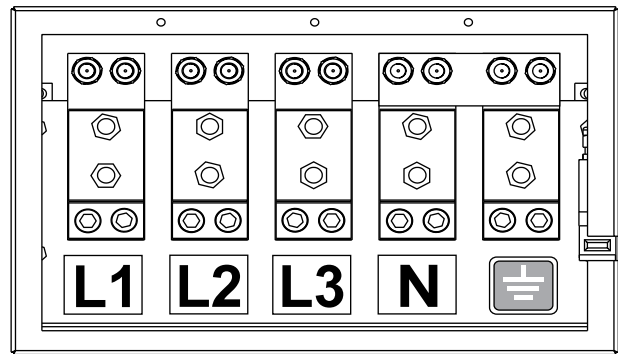
installation should be in compliance with the national electrical code (NEC), state and local regulations.

The unit is equipped with connection lugs, located on the lower portion of the control box behind the lug box door. The lugs provide connection points for attachment of external loads to the generator. A large decal on the inside of the connection lug door details the proper connections for selected voltages.

Connections to the lugs should be made by running the power cables up through the opening in the bottom of the box.

IMPORTANT NOTE: Do not make any connections directly to the lugs without routing the cables through the opening. Use a hex-wrench to tighten the cable connections.

The connection lug door is equipped with safety interlock switches that will trip the main circuit breaker and disable the voltage regulator if the door is opened while the unit is operating.



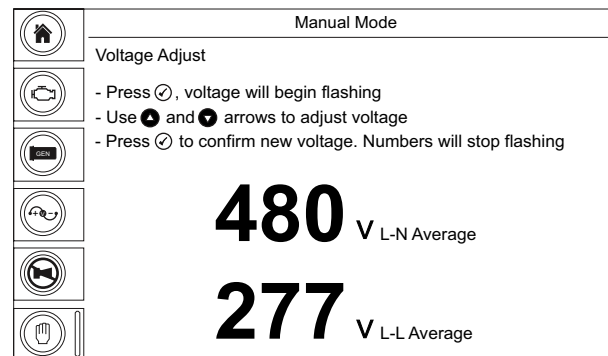
002808

Figure 3-4. Generator Connection Lugs

A ground connection is located next to the connection lugs. The unit must be connected to ground for proper operating safety. The generator neutral is bonded to ground when it is shipped from the factory. The bonding plate will need to be removed when the generator is used as a standby power source.






Fine Voltage Adjustment

Adjustment of the output voltage from the generator is necessary to provide the correct voltage to the end of the power line. Voltage adjustment can be carried out at any time on the Voltage Adjust screen.



002803

Figure 3-5. Voltage Adjust Screen

1. With the unit running, press .
2. Press . The voltages displayed will begin flashing.
3. Use  and  to adjust the voltage.
4. Press  to confirm the new voltage. The voltages displayed will stop flashing.

Voltage Selector Switch



⚠ WARNING

Electric Shock. Never change the voltage selector switch while the engine is running or the controller is on. Doing so could result in death, serious injury or equipment damage. (000302)

The voltage selector switch mechanically changes the connections between the generator output leads and the connection lugs on the main control panel. Voltage ranges are selected by rotating the handle on the switch to the desired voltage.

The voltage selector switch is equipped with a lockout mechanism. Once the proper voltage has been selected, insert a padlock through the lockout hole(s). By locking the handle in place, unauthorized changing of the voltage setting is prevented.

Voltage Regulator

The automatic voltage regulator controls the output of the generator by regulating the current into the exciter field. The regulator has four screwdriver adjustable potentiometers that may be adjusted for under frequency (U/F) dip, protection (U/F), stability, and voltage. The voltage regulator is adjusted before shipment from the factory. Contact Generac Mobile Products LLC for additional information before attempting to adjust the voltage regulator.

NOTE: For units equipped with a Marathon DVR2000E+ automatic voltage regulator, see the Marathon operating manual provided with the unit.

To Achieve 240V in 208V Configuration

⚠ CAUTION

Equipment Damage. Verify voltage application before making changes to factory settings. Incorrect voltage applied to a load could result in equipment damage. (000303)

240V can only be achieved with version 4 (V4) or higher of the Power Zone™ controller application. To check which version of the Power Zone™ controller application the unit has, follow the steps below:

1. With the unit shut down, move the Control Power switch to the ON (I) position. After initialization, the controller will toggle automatically to the Home screen.
2. Press ▲, ►, ▼, or ◀ to enter the maintenance screens.
3. Press ► until the Status tab is selected. This tab will display which version of the Power Zone™ application the unit has.

NOTE: The version is also displayed in the top left corner of the Configuration menu. See [Accessing the Configuration Menu](#).

After verifying the unit has V4 or higher of the Power Zone™ controller application, use the following procedure to achieve 240V while in the 208V configuration:

4. Starting in any of the operator screens, press ▲, ►, ▼, or ◀ to enter the maintenance screens.
5. Press ✓ and O simultaneously. The next screen will display the Configuration menu.
6. Press ▼ to move the cursor (blue highlighted text) down to Config Selection.
7. Press ► to highlight Config to Edit. Press ► again to highlight Selected Configuration. Press ✓ to access the selections.
8. Press ▲ to highlight Alternative Configuration 1. Press ✓.
9. Press ◀ two times to get back to the left most column.
10. Press ▼ to highlight Password Entry. Press ✓ to display the Pin Entry screen. Press ✓ again to gain access to enter the password. The left most pound sign should change to 0.
11. Press ▲, ►, ▼, or ◀ to enter the password 4444 if applicable. Press ✓.
12. Press ▼ to highlight Generator. Press ► again to access the selections.
13. Press ▼ to highlight Generator voltage. Press ► again to access the selections.
14. Press ▼ to highlight Over Voltage Alarms. Press ► again to access the selections.
15. Press ▼ to highlight Alarm Trip and press ✓ to adjust the voltage.

NOTE: Alarm Trip setting must be changed first in order to set the Pre-alarm Trip setting.

16. Press ▲ until the voltage becomes 153V. Press ✓.
17. Press ▲ and ✓ to adjust the voltage for the Pre-alarm Trip.
18. Press ▲ until the voltage becomes 151V. Press ✓.

NOTE: It is recommended the current trip settings also get changed. The current values will depend on the unit.

19. Press ▲ and hold ✓ for five seconds until the Saving screen appears. The screen will then return to the maintenance screens.

NOTE: Change the alarm settings back for the 208V configuration according to [Changing Back to 208V Configuration](#).

Changing Back to 208V Configuration

When finished with the 240V settings, change the alarm settings back for the 208V configuration. Follow steps 1-19 above, changing the Pre-alarm Trip to 132V and the Alarm Trip to 134V.

NOTE: Verify the Pre-alarm Trip setting is adjusted before the Alarm Trip setting in order to set the Alarm Trip setting.

Customer Convenience Receptacles



Equipment Damage. Verify voltage application before making changes to factory settings. Incorrect voltage applied to a load could result in equipment damage. (000303)

The unit is equipped with five receptacles. The 240/120VAC twist-lock receptacles are rated at 50A each. The 120VAC duplex receptacles are rated at 20A each, with ground fault circuit interrupt (GFCI) protection. The receptacles are not routed through the main circuit breaker. Each receptacle has its own circuit breaker, located directly above or next to the receptacle. Each breaker is sized to the maximum rating of the corresponding receptacle.

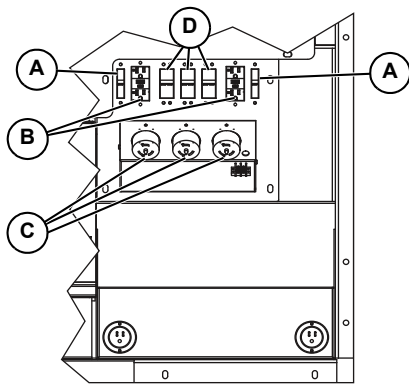


Figure 3-6. Receptacle and Breaker Locations

002813

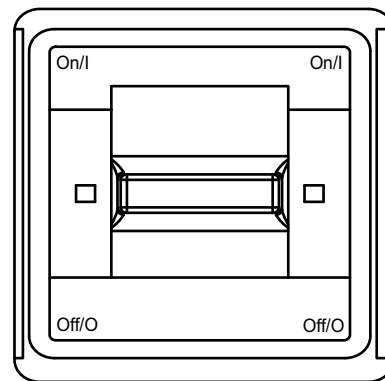
A	20A Circuit Breakers
B	120V GFCI Receptacles
C	120/240V Twist-Lock Receptacles
D	50A Circuit Breakers

NOTE: Power to the receptacles is available any time the generator is running, even if the main circuit breaker is OFF (O). Verify equipment connected to the receptacles is turned OFF before turning the breakers ON.

NOTE: When the voltage selector switch is in position for 480/277V 3Ø, voltage at the two GFCI receptacles is 139 volts and the voltage at the three twist-lock receptacles is 240/139 volts. Generac Mobile Products LLC does not recommend using the receptacles in the 480V position. When the voltage selector switch is in position for 208/120V 3Ø, voltage at the three twist-lock receptacles and the two GFCI receptacles is 208/120 volts.

Main Circuit Breaker

See **Figure 3-7**. The main circuit breaker is located on the main control panel. When the breaker is OFF (O), power is interrupted to the connection lugs, the optional cam lock receptacles, and the generator. Once the connections have been made to the connection lugs or the optional cam lock receptacles, and the unit has been started and allowed to reach normal operating temperature, the breaker may be switched ON (I).



002814

Figure 3-7. Main Circuit Breaker

1. Overload of the generator circuits to the connection lugs or the optional cam lock receptacles.
2. The door covering the connection lugs or the optional cam lock receptacles is opened.
3. If the emergency stop switch is activated.

Verify any problems that cause the main circuit breaker to trip are corrected before returning the switch to ON (I).

NOTE: The main circuit breaker interrupts power to the connection lugs and the optional cam lock receptacles only. The customer convenience receptacles have power even if the main circuit breaker is OFF (O). To disconnect power to these receptacles, use the individual circuit breakers located near each receptacle.

Exhaust Filter Cleaning Operations



⚠ WARNING

Risk of Burn. Stay clear of the exhaust system during operation and exhaust filter cleaning. Exposure to hot exhaust gases and components could result in serious injury. (000304)

⚠ WARNING

Hazardous Material. Only an authorized engine service dealer should remove, handle and dispose of Diesel Particulate Filter (DPF) ash. Failure to dispose of DPF ash properly could result in serious injury and environmental damage. (000307)

When enabled, the exhaust filter system goes through an automatic cleaning process known as regeneration. Under normal circumstances, regeneration occurs without interruption of unit operation and with minimal operator involvement. In the event there are conditions requiring the operation of the unit with the auto exhaust filter cleaning disabled, the operator may be required to perform procedures to enable or disable the auto exhaust filter cleaning. The operator may also be required to perform a manual regeneration.

NOTE: Always park the unit in a safe location for elevated exhaust temperatures and check for adequate fuel level before beginning the exhaust filter cleaning process. The cleaning cycle can take an extended period of time (approximately 45 minutes). Cleaning is complete when the Regeneration indicator remains off.

Disabling Automatic (AUTO) Exhaust Filter Cleaning

The auto exhaust filter cleaning feature should always be enabled unless doing so would cause an unsafe working environment. In the event that an unsafe working environment would occur, use the following procedure to disable the auto exhaust filter cleaning feature:

1. Open the control door and locate the switch labeled “EXHAUST FILTER CLEANING.”
2. Move the switch to DISABLED (O).
3. Enter the DPF Status screen and verify the Disabled Regeneration indicator appears above the words “DPF Inhib - Solid.” For information regarding the DPF Status screen and indicators, see [Diesel Exhaust Filter Monitoring](#).

NOTE: Disabling Auto Exhaust Filter Cleaning is not recommended for any situation unless it is safety related or if the fuel tank lacks the required fuel to complete the cleaning process.

Force a Manual Exhaust Filter Cleaning

If running the unit with the exhaust filter cleaning function disabled, the DPF Status screen may display a red alarm, prompting the operator to force a manual exhaust filter cleaning. Use the following procedure to force a manual exhaust filter cleaning feature:

1. Open the control door and locate the switch labeled “EXHAUST FILTER CLEANING.”
2. Move and hold the switch in ON/FORCED (I) for five seconds.
3. Enter the DPF Status screen and verify the Regeneration indicator appears above the words “DPF Lamp - Solid.” For information regarding the DPF Status screen and indicators, see [Diesel Exhaust Filter Monitoring](#).

Enable Exhaust Filter Cleaning

If the environment no longer requires the function to be disabled and there are no alarms present on the DPF Status screen, the auto exhaust filter cleaning function should be enabled. Use the following procedure to enable the auto exhaust filter cleaning feature:

1. Open the control door and locate the switch labeled “EXHAUST FILTER CLEANING.”
2. Move the switch to ON/AUTO (I/O).
3. Enter the DPF Status screen and verify the Regeneration indicator appears above the words “DPF Lamp - Solid.” For information regarding the DPF Status screen and indicators, see [Diesel Exhaust Filter Monitoring](#).

AUTO Exercise Timer

The Power Zone™ controller is capable of starting and stopping the unit automatically, based on a programmable schedule.

Units installed in a standby application should be exercised regularly to maintain operating condition and to ensure responsiveness in an emergency situation. Use the following procedures to operate the unit in AUTO mode:

Accessing the Configuration Menu

1. With the unit stopped, press ▲, ►, ▼, or ◀ to navigate to the maintenance screens from any of the operator screens.
2. While on any maintenance screen, press ✓ and O simultaneously. The controller will display the Configuration menu.
3. To save any changes and exit the Configuration menu, press and hold ✓ for five seconds. To cancel any changes and return to the maintenance screen, press and hold O for five seconds.

Set the Controller Clock

The schedule runs based off the time set in the controller clock. Use the following procedure to set the controller clock before setting the schedule:

1. Navigate to the Maintenance group and press ► to access it.
2. Press ► to select the Time section.
3. Set the time and date to the correct local time.

Set the Schedule

NOTE: The controller must be in Auto mode to run at the programmed time. Use a trickle or solar battery charger to prevent the controller from draining the battery while in Auto mode.

1. Access the Scheduler group by pressing the ► button.

NOTE: The Scheduler group is made up of the Scheduler Options and Scheduler Setup sections. Each section can be accessed and exited using the ► and ◀ buttons.

2. Access the Scheduler Options section. Within this section, the scheduler can be enabled, run mode selected, and load mode selected.

Table 3-1. Scheduler Options

Item	Values
Enable	Yes/No
Run Mode	Monthly/Weekly
Load	Idle, In Island, On Load, Off Load

3. Access the Scheduler Setup section. Within this section, each schedule entry can be modified by pressing the ✓ button to select the item and the ▲ and ▼ buttons to define them.

Table 3-2. Scheduler Setup

Item	Values
Schedule Entry	1-16
Start Time	00:00-23:59
Duration	00:00-99:59
Day	Monday-Sunday
Week (of month)	First, Second, Third, Fourth

NOTE: If setting up a daily scheduled run, select Weekly run mode, then set Start Time and Duration for each day (seven schedule entries total). This will repeat the seven day schedule as long as the unit is in AUTO mode.

Setting Up a Daily Scheduled Run

1. Enable the Scheduler.
2. Set RUN mode to Weekly.
3. Set Load to preferred method.
4. Set the Start Time and Duration for seven days (Monday - Sunday).
5. Set the controller to AUTO mode.

Set the Unit to AUTO Mode

1. From any operator or maintenance screen, press and hold the AUTO/MANUAL Mode (⏻) button for five seconds, or until AUTO mode is displayed at the top of the screen.

NOTE: If any of the scheduled time slots are currently active, the controller will begin the starting sequence and start the unit, provided there are no shutdown conditions present.

Shutting Down the Unit

Prior to shutting down the unit, check with personnel using power supplied by the generator and let them know that the power is going to be turned off. Verify the power shut down will not create any hazards by accidentally turning off equipment that needs to be kept on (pumps, compressors, lights, etc.).

1. Remove all loads from the generator by opening all circuit breakers (turn OFF (O)).
2. Let the engine run for approximately five minutes to allow it to cool down.
3. Press the red Engine STOP/RESET (O) button on the controller. This will result in the generator going into the shutdown cycle and starting a 15 second shutdown timer called stopping. If the unit does not shut down within 15 seconds, a stop fail alarm will be displayed on the LCD window.
4. After the unit shuts down, move the Control Power switch to OFF (O).

NOTE: For extended storage time, disconnect the battery. See the engine operator’s manual for extended storage requirements.

Emergency Stop Switch

⚠ WARNING

In case of an emergency, press the emergency stop button to stop the engine immediately. Failure to do so could result in death or serious injury. (000298)

⚠ CAUTION

Equipment Damage. The emergency stop switch is not to be used to power down the unit under normal operating circumstances. Doing so will result in equipment damage. (000246)

The unit is equipped with one emergency stop switch. For location of the emergency stop switch, see [Component Locations](#). The red button is clearly labeled "EMERGENCY STOP." The switch can be accessed and activated with all doors closed and locked.

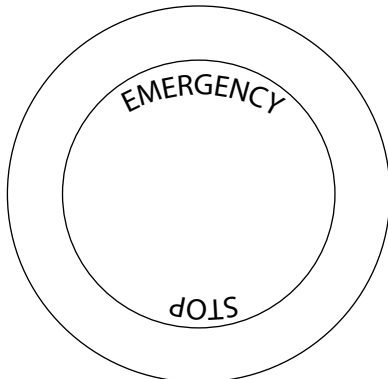


Figure 3-8. Emergency Stop Switch

002815

Activate the emergency stop switch by pushing the button in until it locks down. This will trip the main circuit breaker which will open 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.

ECU Override Switch

⚠ CAUTION

Equipment Damage. Do not start the engine with the Engine Control Unit (ECU) override switch ON. Doing so will damage the ECU. (000305)

The ECU override switch is located inside the control box. This toggle switch powers up the ECU without having to start the engine. Use the ECU override switch to turn the ECU off. If the unit needs to be shut down immediately, use the emergency stop switch. See [Emergency Stop Switch](#) for additional information.

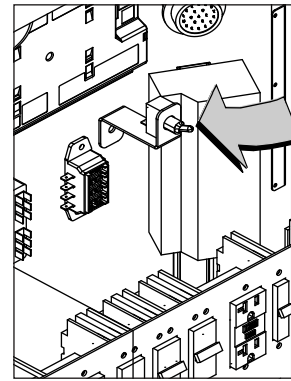


Figure 3-9. ECU Override Switch

002816

Towing the Unit

Once the engine is shut down, follow these steps to prepare the unit for towing.

1. Verify the unit is OFF.
2. Use the tongue jack to raise or lower the trailer onto the hitch of the towing vehicle. Lock the hitch coupling and attach the safety chains or cables to the vehicle. Release the jack locking pin and rotate the jack into the travel position. Verify the locking pin snaps into place.

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

3. To ensure proper operation of the jacks, lube the grease fittings located on the leveling jacks. See [Jack Maintenance](#). For maintenance interval information, see [Basic Maintenance Schedule](#).
4. Connect trailer wiring to the tow vehicle. Check for proper operation of the directional and brake lights.
5. Verify all doors and hoods are properly latched.
6. Check for proper inflation of the trailer tires. Proper inflation is specified on each tire.
7. Check the wheel lugs. Tighten or replace any lugs that are loose or missing. If a tire has been removed for axle service or replaced, tighten the lugs, in the order shown, to the following specifications:
 - a. Start all lug nuts by hand.
 - b. First pass tighten to 20-25 ft-lbs (27-33 Nm).
 - c. Second pass tighten to 50-60 ft-lbs (67-81 Nm).
 - d. Third pass tighten to 90-120 ft-lbs (122-162 Nm).

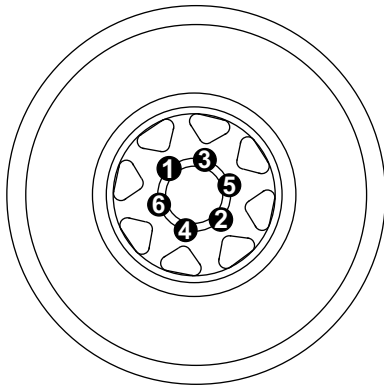


Figure 3-10. Lug Sequence

002817

NOTE: After first road use, repeat tightening procedure. Maximum recommended speed for highway towing is 45 mph (72 km/h). Recommended off-road towing speed is 10 mph (16 km/h).

Lifting the Unit

A central lift point is located on the top of the unit. The central lift point is connected to a lift structure inside the unit. Attach a sling or hook directly to the central lift point only if the devices are in good condition and the equipment being used to raise the unit has sufficient capacity. For approximate weights, see the applicable product spec sheet. Always remain aware of people and objects around when moving or lifting the unit. Keep the doors and hood closed and locked.

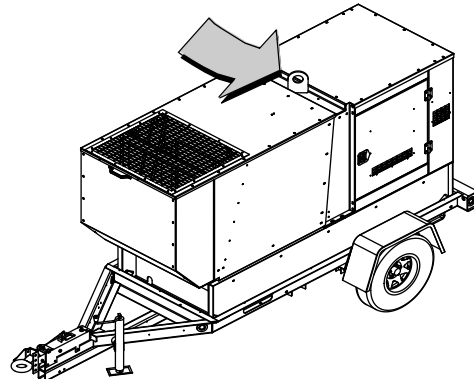


Figure 3-11. Central Lift Point Location

002818

Section 4 Maintenance

Emissions Information

For emissions information, see the OEM engine manual.

Daily Walk Around Inspection



Equipment Damage. Failure to perform a daily inspection could result in damage to the unit.

(000306)

Look for conditions that could hinder performance or safety, such as (but not limited to) oil/coolant/fuel leakage, blocked vents, loose/missing hardware, and electrical connections.

Visually inspect the fan belt for cracks, fraying, stretching, and verify the belt is properly seated in the pulley grooves. Replace the belt according to the manufacturer's recommendations.

NOTE: At the 500 hour/12 month service interval, it is recommended that the belt be removed and checked for wear. While the belt is removed, inspect pulleys and bearings. Rotate and feel for hard turning or unusual sounds. If pulleys or bearings need replacement, contact the engine manufacturer.

General Maintenance

Poorly maintained equipment can become a safety hazard. In order for the equipment to operate safely and properly over a long period of time, periodic maintenance and occasional repairs are necessary. Never perform routine service (oil/filter changes, cleaning, etc.) unless all electrical components are shut OFF. Before servicing the unit, always follow the instructions listed below.

- Verify the Control Power switch is OFF (O).
- Verify the circuit breakers are OFF (O).
- Activate (push in) the emergency stop switch.
- Disconnect the negative (-) terminal on the battery.
- Attach a "Do Not Start" sign to the control panel. This will notify everyone that the unit is being serviced and will reduce the chance of someone inadvertently trying to start the unit.
- Do not wash the unit with a high pressure hose or with any kind of power washer.
- Do not wash the engine block or fuel tank with a power washer or steam cleaner. Water may enter the cabinet and collect in the generator windings or other electrical parts, causing damage.
- If the unit is stored outside, check for water inside the cabinet and generator before each use. If wet, dry the unit thoroughly before starting.

- Inspect condition of electrical cords. **DO NOT** use the unit if insulation is cut or worn through.
- Verify the condition of the air filter by viewing the level of the vacuum draw on the filter minder gauge. Replace the air filter when the yellow center bar reaches the red section on the gauge (20 in. H₂O).
- Check wheel lugs. see [Towing the Unit](#).
- Check coolant level daily. See the engine operator's manual for coolant recommendations and proper mixture.
 - Coolant is checked visually by inspecting the level in the coolant overflow jug located near the radiator.
 - Normal operating level is between the FULL and ADD markings on the overflow jug, also known as the normal range.
 - When engine is stopped and completely cool, coolant may be added directly to the coolant overflow jug.
- Verify the oil level daily. See the engine operator's manual for the proper viscosity grade of oil, including special operating conditions such as a change in season or climate.
 - Do not start the unit if the engine oil level is below the add mark on the dipstick.
 - Normal operating level is in the cross-hatch pattern between the FULL and ADD markings on the dipstick.
 - Add oil only if the oil level is below the ADD mark on the bottom of the cross-hatch pattern on the dipstick.
 - Do not overfill the crankcase.
- Verify the fuel level.
- If the unit is connected to a remote start or transfer switch, make sure the remote switch is also off and tagged.

NOTE: If the engine was run out of fuel or the fuel tank was drained, it may be necessary to bleed the fuel lines. See the engine operator's manual supplied with the unit for more information.

Basic Maintenance Schedule

See the original equipment manufacturer's operating manual for a complete list of maintenance requirements. Failure to comply with the procedures as described in the engine operator manual will nullify the warranty, decrease performance and cause equipment damage or premature equipment failure. Maintenance records may be required to complete a warranty request.

Table 4-1. Basic Maintenance Schedule

Item	Daily	100 Hrs. (Break-In Period Only)	Every 250 Hrs.	Every 500 Hrs./12 Months	Every 1000 Hrs.	Every 3000 Hrs./36 Months	As Required
Check Oil Level	◆						
Check Coolant Level	◆						
Check Fuel Level	◆						
Check Tire Pressure	◆						
Check All Electrical Connections	◆						
Inspect Radiator Fins For Debris, Clean As Required	◆						
Check Fuel Filter/Water Separator Bowl	◆						
Check Air Cleaner Filter Minder Gauge	◆*						
Perform Visual Walkaround Inspection	◆						
Check Oil Vapor Recirculation System/Non-Return Valve			◆				
Change Engine Oil and Replace Oil Filter		◆		◆**			
Replace Oil Vapor Recirculation Filter				◆			
Service Battery				◆			
Replace Fuel Filter Elements				◆			
Check Engine Mounts				◆			
Check Air Intake Hoses, Connections, and System				◆			
Check Engine Electrical Ground Connection				◆			
Check Automatic Belt Tensioner and Belt Wear				◆			
Check Cooling System				◆			
Lubricate Leveling Jack(s)				◆			
Check Generator Drive Plate Torque (see Checking Generator Drive Plate Torque)				◆			
Replace OVR filter				◆			
Replace oil filter				◆			
Replace air filter				◆			
Replace primary fuel filter				◆			
Replace fuel filter final				◆			
Replace fan belt					◆		
Test Thermostats						◆	
Replace Air Cleaner Elements							◆
Replace Alternator and Fan Belts							◆
Check Fuses							◆

* Replace primary air cleaner when filter minder gauge shows a vacuum of 25 in. H₂O.

** If not using John Deere Plus 50 II engine oil, the interval must be decreased to every 250 hours.

Engine Break-In Requirements

NOTE: During the first 20 hours of operation, avoid long periods of no load or sustained maximum load operation. If the generator is to run for longer than five minutes without a load, shut the generator down.

John Deere engines are supplied with engine break-in oil from the factory. Extra care during the first 100 hours of engine operation will result in better performance and longer engine life. Do not exceed 100 hours of operation with the break-in oil. Operate the engine at heavy loads (60-90% of maximum) as much as possible. If the engine has spent significant time at idle, constant speed(s), and/or light load, or if makeup oil is required, a longer break in period may be needed. See the engine operator's manual for a full description of necessary procedures on the addition of break-in oil and extension of the break-in period.

Resetting the Maintenance Alarms

The Power Zone™ controller will display a warning message when the unit is due for maintenance or service. The maintenance or service interval is set at 250, 500 and 3000 hours of engine running time. Once the unit has been serviced, the appropriate maintenance alarm reminder needs to be reset. The following procedure demonstrates how to reset the maintenance alarms:

1. With the unit shut down, move the Control Power switch to "CONTROL ON (/I)". After initialization, the controller will toggle automatically to the Home screen.
2. Press ▲, ►, ▼, or ◀ to enter the maintenance screens.
3. Press ✓ and O simultaneously. The next screen will display the Configuration menu.
4. Press ▼ to move the cursor (blue highlighted text) down to the Maintenance group.
5. Press ► to access the sections. Press ▼ to highlight the Maintenance section.
6. Press ► to access the parameters and highlight the maintenance alarm that needs to be reset.
7. Press ✓ to select the editable parameters. The cursor will highlight "Not Reset" under the selected maintenance alarm. Press ▲ to highlight "Reset".
8. Press ✓ to reset the selected maintenance alarm.
9. To perform additional maintenance alarm resets, repeat steps 6 - 8.

NOTE: If the selected maintenance alarm does not need to be reset, press ▼ to highlight "Not Reset" and press ✓ to return to the parameters section.

10. To save changes, press and hold ✓ for five seconds. To discard changes made, press and hold O for five seconds.

Exhaust Filter Service Requirements



⚠ WARNING

Risk of Burn. Stay clear of the exhaust system during operation and exhaust filter cleaning. Exposure to hot exhaust gases and components could result in serious injury. (000304)

⚠ WARNING

Hazardous Material. Only an authorized engine service dealer should remove, handle and dispose of Diesel Particulate Filter (DPF) ash. Failure to dispose of DPF ash properly could result in serious injury and environmental damage. (000307)

The exhaust filter system contains a Diesel Particulate Filter (DPF). Over time, the DPF will require professional servicing to remove ash buildup. The expected service interval will be at least 3,000 or 4,500 hours, based on engine power and operating conditions. Actual service should take place when the indicator light appears on the Power Zone™ controller. The DPF should be cleaned or replaced by an OEM authorized engine service dealer only. The removal of DPF ash must be done by removing the DPF from the unit and placing it into specialized equipment.

To avoid unnecessary buildup of diesel particulates or soot in the exhaust filter system:

1. Utilize the Automatic Exhaust Filter Cleaning mode.
2. Avoid unnecessary idling.
3. Use proper engine oil. See the engine operator's manual.
4. Use only ultra low sulfur diesel fuel. See the engine operator's manual.

Checking Generator Drive Plate Torque

Follow the procedure below to check the torque of the generator drive plate bolts in accordance with the maintenance chart.

1. Disconnect battery.
2. Remove generator fan guard.
3. Torque each of the drive plate bolts to the appropriate specification shown in the table below.

Table 4-2. Drive Plate Bolt Torques

Unit	ft-lbs (Nm)
MMG75D	36 (49)
MMG100D	36 (49)

4. Install generator fan guard.
5. Connect battery.

Jack Maintenance

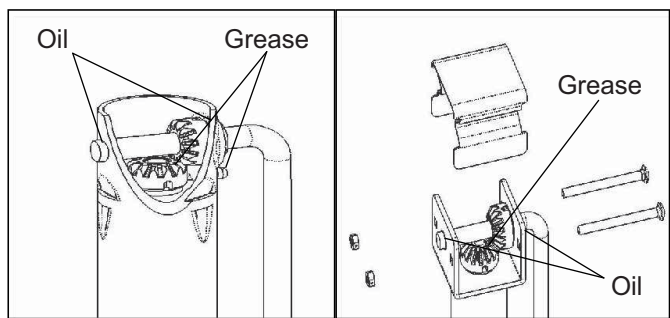
The following procedures should be performed annually.

Side-Wind Models

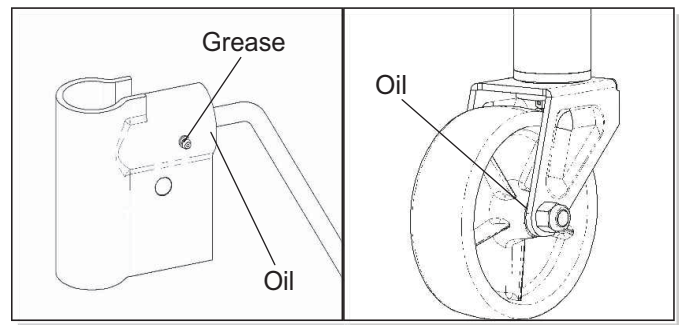
- The internal gearing and bushings of the jack must be kept lubricated. Apply a small amount of automotive grease to the internal gearing by removing the jack cover, or if equipped, use a needle nose applicator or standard grease gun on the lubrication point found on the side of the jack near the crank. Rotate the jack handle to distribute the grease evenly.
- A lightweight oil must be applied to the handle unit at both sides of the tube.
- If equipped, the axle bolt and nut assembly of the caster wheel must also be lubricated with the same lightweight oil.

Top-Wind Models

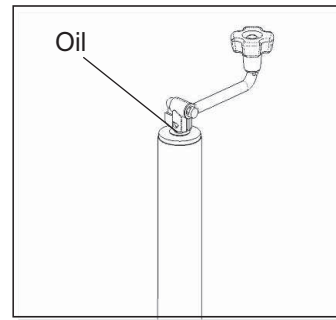
- Apply a lightweight oil to the screw stem.



002823



002824



002825

Figure 4-1. Lubrication Points

Trailer Wheel Bearings

The trailer axles are equipped with a grease fitting to allow lubrication of the wheel bearings without the need to disassemble the axle hub. To lubricate the axle bearings, remove the small rubber plug on the grease cap, attach a standard grease gun fitting to the grease fitting and pump grease into the fitting until new grease is visible around the nozzle of the grease gun. Use only a high quality grease made specifically for lubrication of wheel bearings. Wipe any excess grease from the hub with a clean cloth and replace the rubber plug when finished. The minimum recommended lubrication is every 12 months or 12,000 miles (19,312 km). More frequent lubrication may be required under extremely dusty or damp operating conditions.

Section 5 Troubleshooting

General Troubleshooting

This information is intended to be a check or verification for simple causes that can be located and fixed. It does not cover all types of problems. See the engine operator's manual for additional troubleshooting information. Procedures that require in-depth knowledge or skills should be referred to a trained technician.

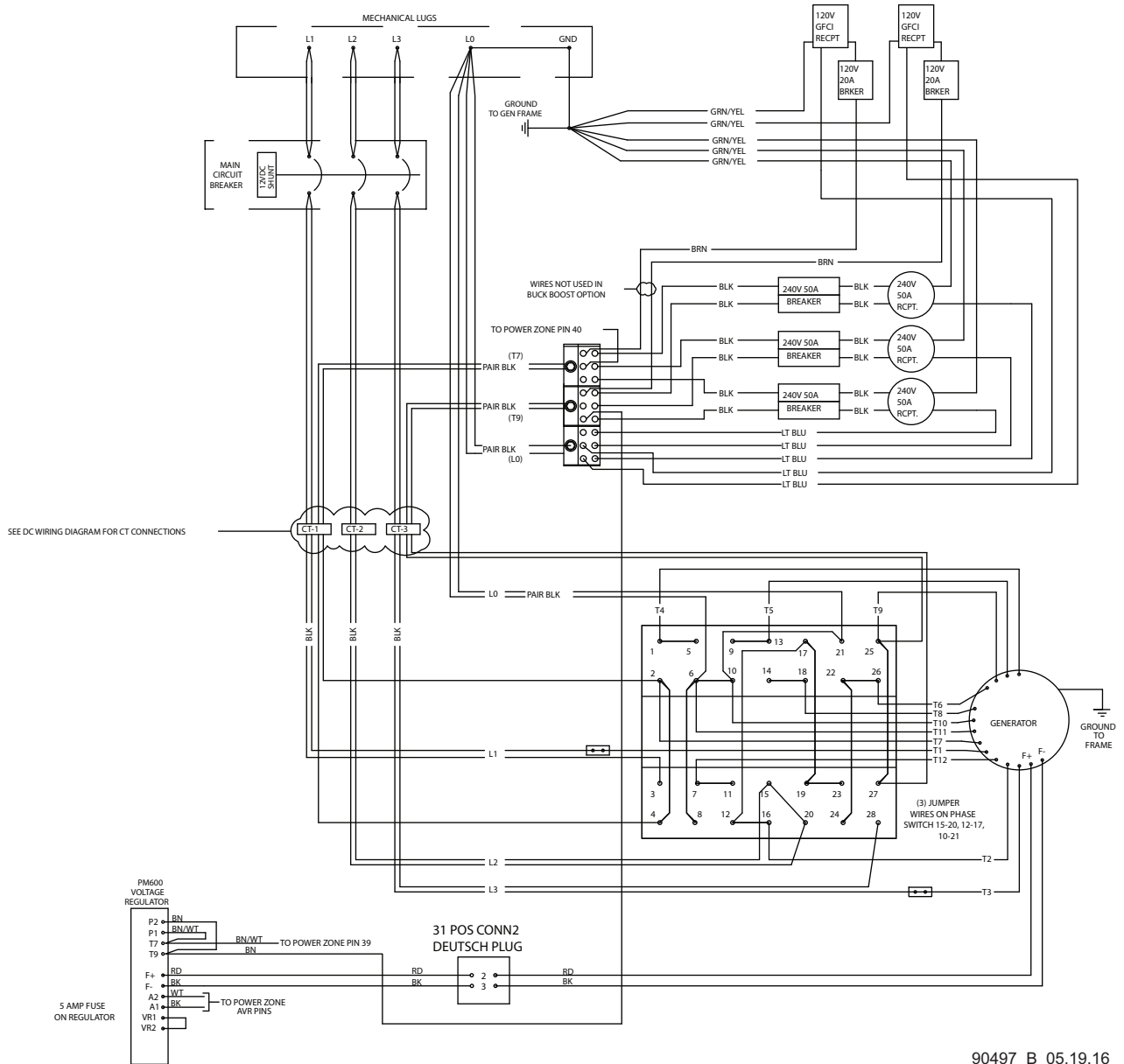
Table 5-3. General Troubleshooting Guide

Problem	Cause	Solution
Low Fuel Level Shutdown	Low fuel level	Check fuel level in LCD window of controller.
	Unit not level	Confirm that unit is sitting level to ensure an accurate reading.
	Fuel tank leaking	Check tank for leaks.
	Damaged fuel sender or wiring	Check for continuity between sender and engine controller. (See DC Wiring .)
Low Oil Pressure Shutdown	Low oil level	Check oil level on dipstick. Add oil, if needed.
	Oil leaking from engine	Visually inspect the engine for leaks. Restart unit and verify loss of pressure. Shut down immediately if pressure does not reach 5 psi (34 kPa) within five seconds.
	Oil pressure sender	See engine operator's manual to identify corrective action.
Low Coolant Level Shutdown	Low coolant level	Allow engine to cool, then check coolant level in radiator. Add coolant, if needed.
	Coolant hoses leaking	Inspect hoses for leaks. Repair or replace as necessary.
	Engine block or water pump leaking	Visually inspect for leaks. Verify no coolant has mixed with the engine oil (oil will appear milky). See engine operator's manual for additional information.
High Coolant Temperature Shutdown	Low coolant level	Add coolant if needed. Allow engine to cool, then check coolant level in radiator. Restart engine and check coolant temperature (on controller). Stop engine immediately if coolant temperature is 210°F (99°C) or more.
	Blockage in radiator	Check radiator shroud and ducting for blockage and remove any foreign matter.
	Leakage in coolant hoses, engine block, or water pump	Inspect for visible leaks. Check tension of water pump serpentine drive belt. Remove load on generator and restart engine. Check coolant temperature and shut engine down immediately if it starts to overheat (230 degrees or higher). See the engine operator's manual for additional information on engine overheating.
Overcrank Shutdown	Fuel level low	Check fuel level in tank. Check fuel pump operation. Check air filter for blockage. See engine operator's manual for additional information.
Overspeed or Underspeed Shutdown	Frequency setting incorrect	Disconnect all loads and restart unit. Read frequency (Hz) in the LCD window on controller. Frequency should read 60 Hz. If frequency is above 60 Hz, engine speed will need to be adjusted. Contact John Deere to adjust speed.

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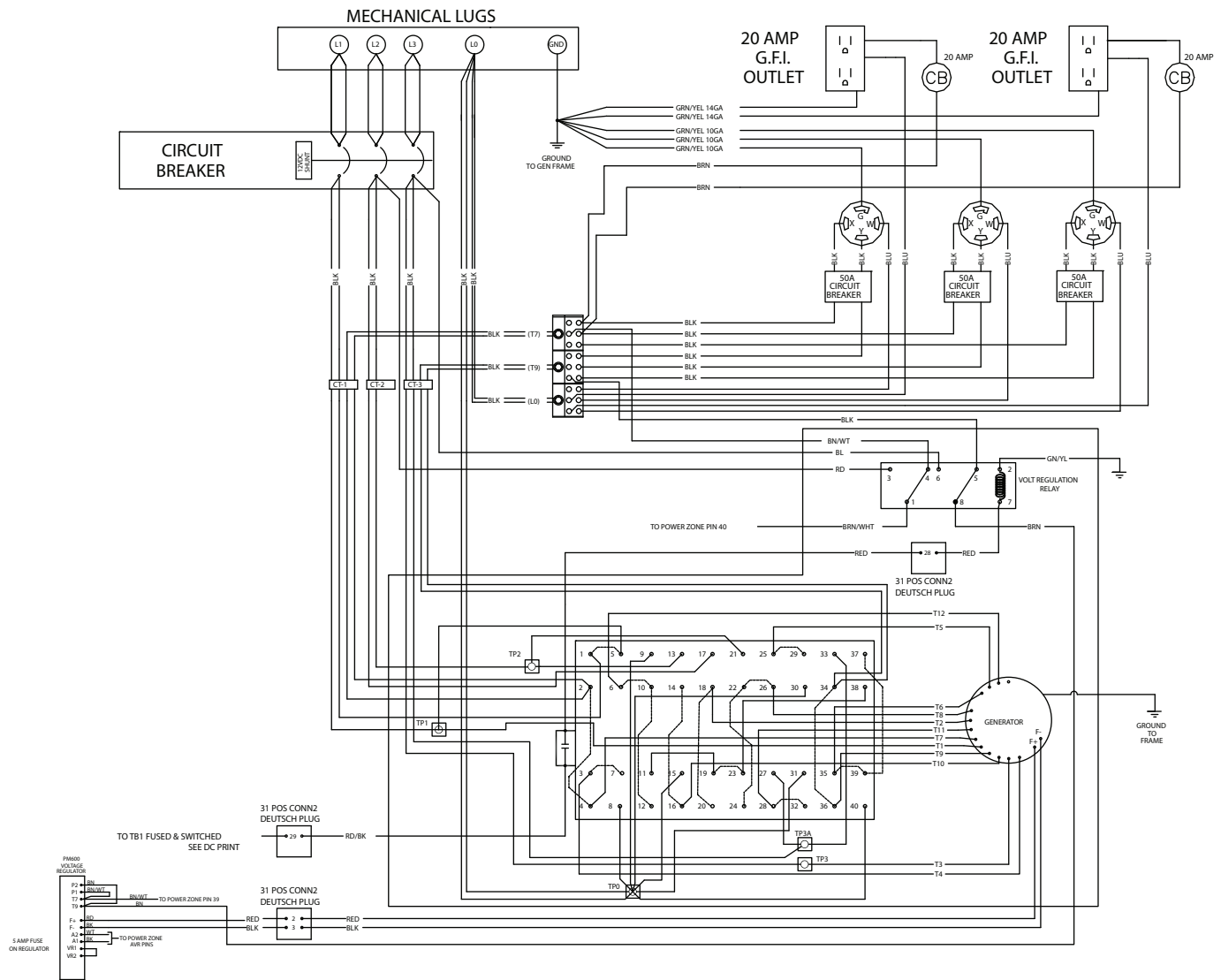
Section 6 Wiring Diagrams and Service Log

AC Wiring - 3 Position Voltage Selector Switch



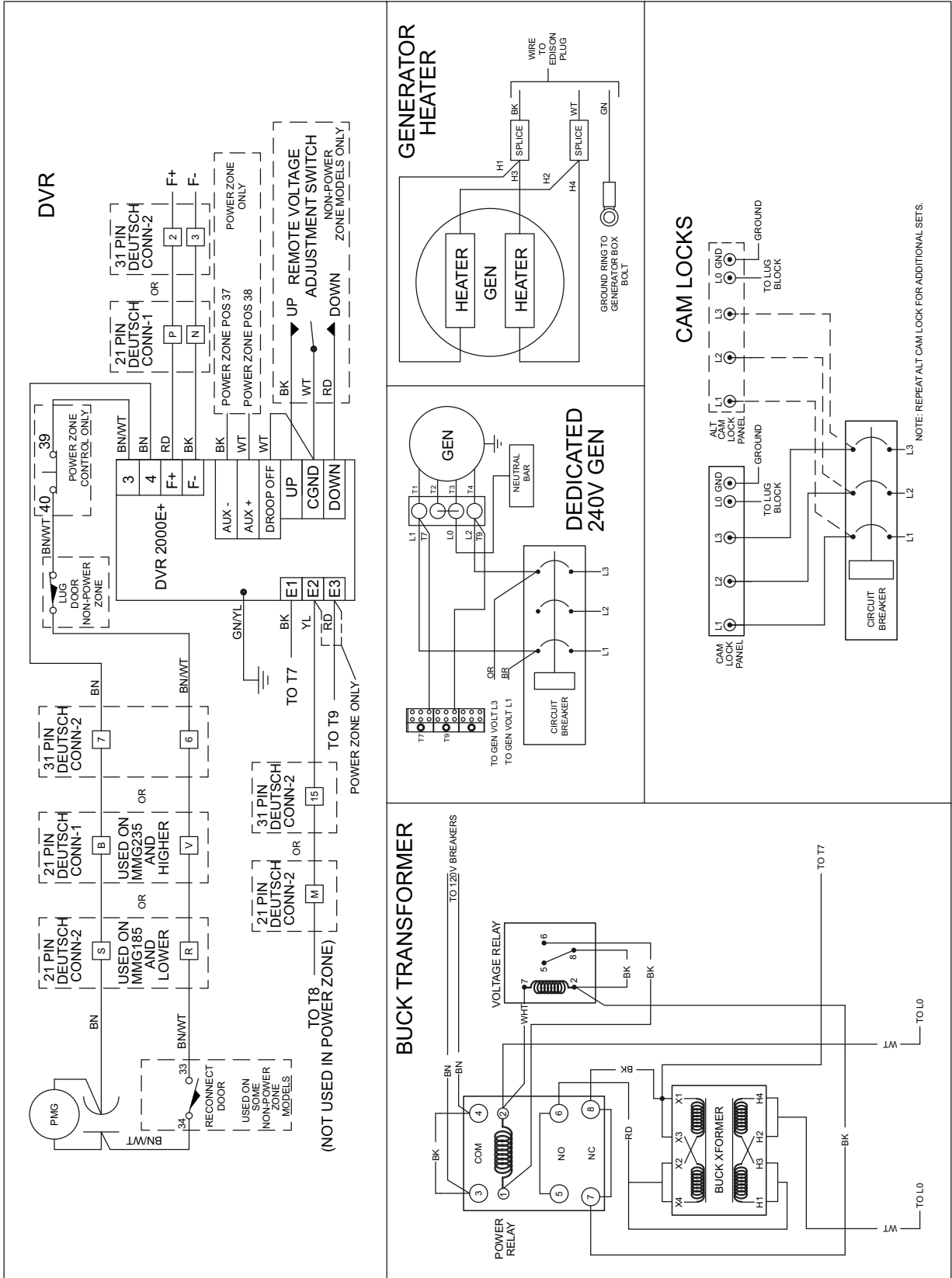
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AC Wiring - 4 Position Voltage Selector Switch Option



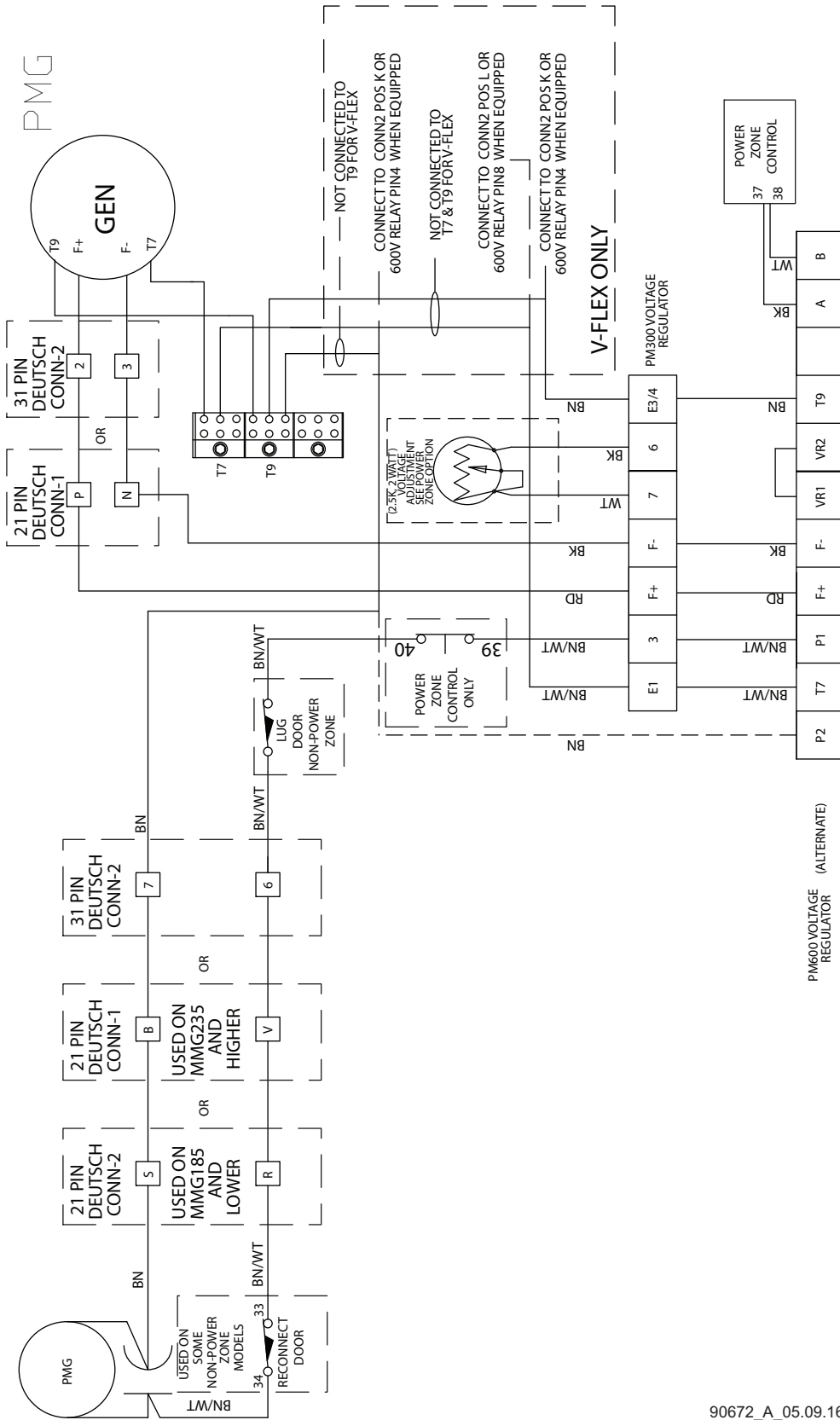
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AC Wiring Options



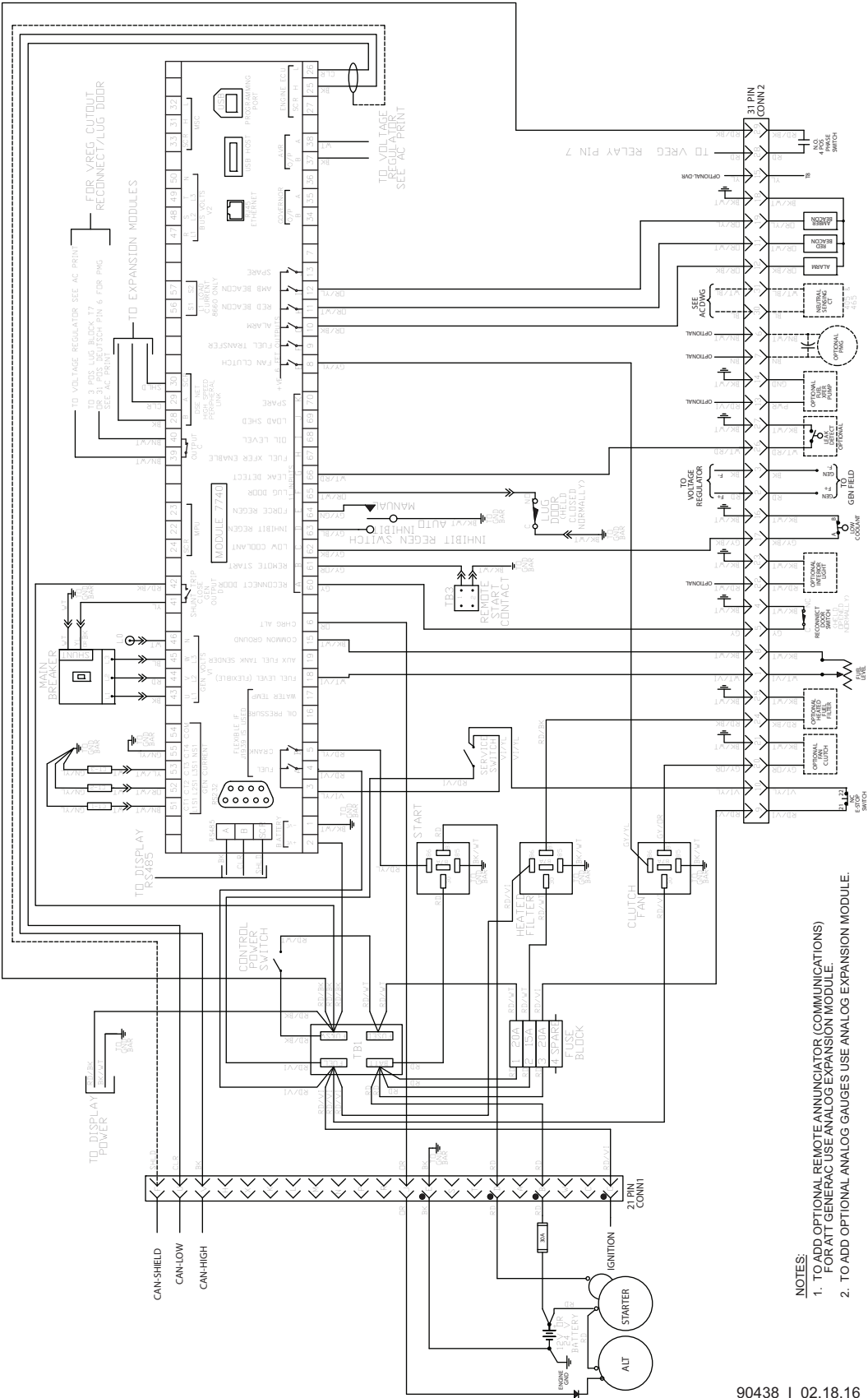
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PMG Wiring Option



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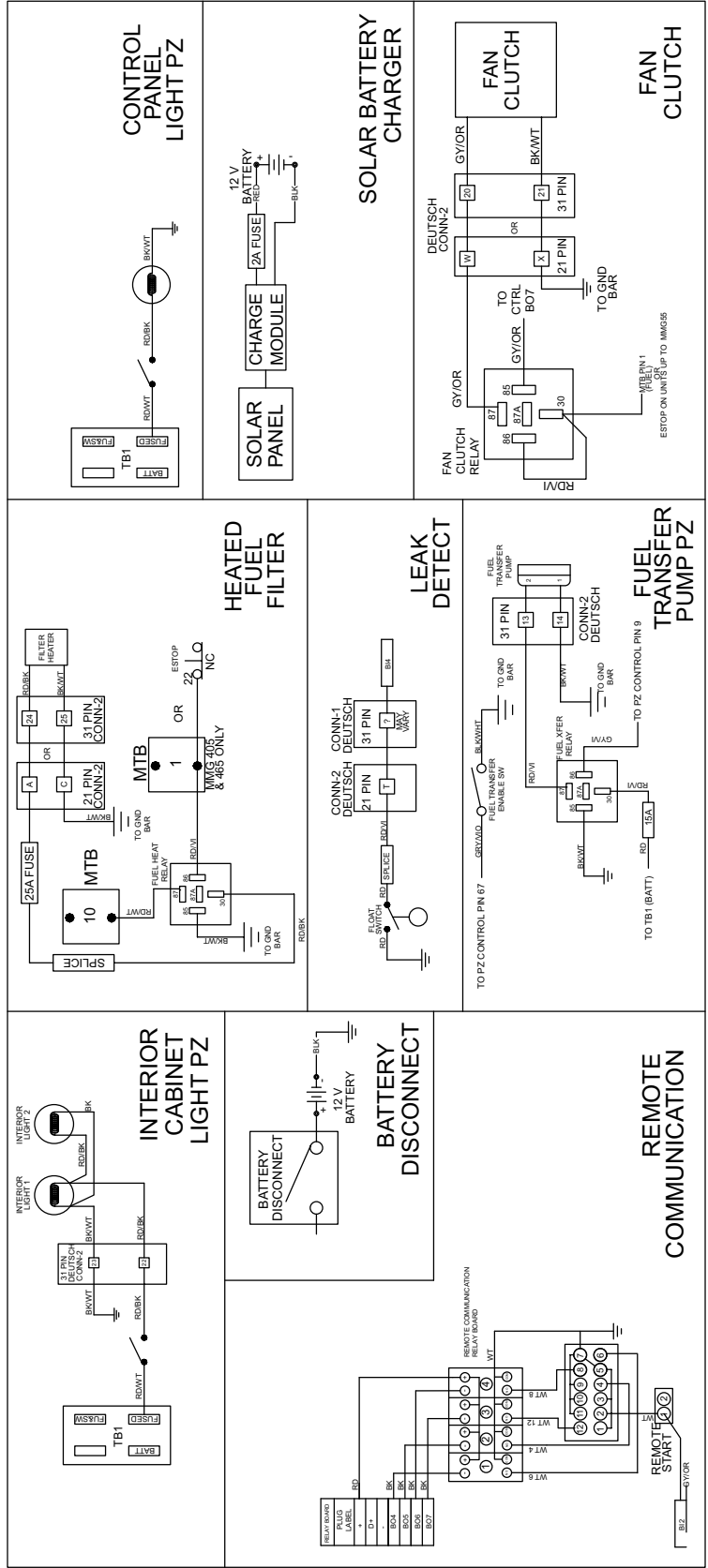
DC Wiring



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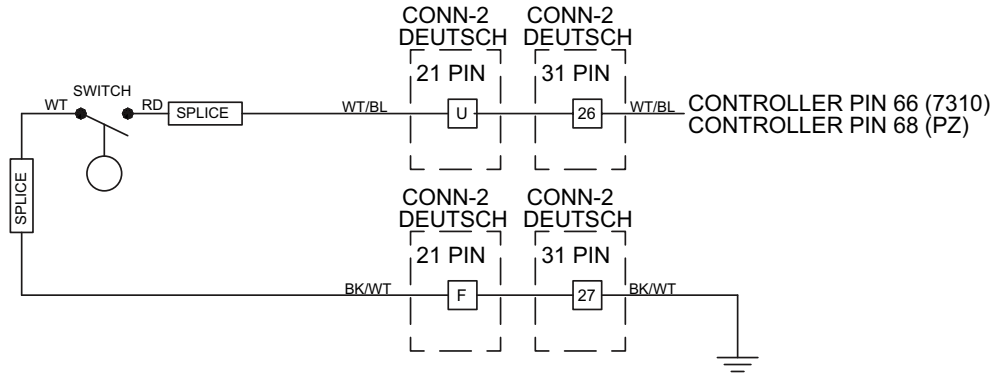
- NOTES:**
- 1. TO ADD OPTIONAL REMOTE ANNUNCIATOR (COMMUNICATIONS) FOR ATT GENERAC USE ANALOG EXPANSION MODULE.
 - 2. TO ADD OPTIONAL ANALOG GAUGES USE ANALOG EXPANSION MODULE.

DC Wiring Options



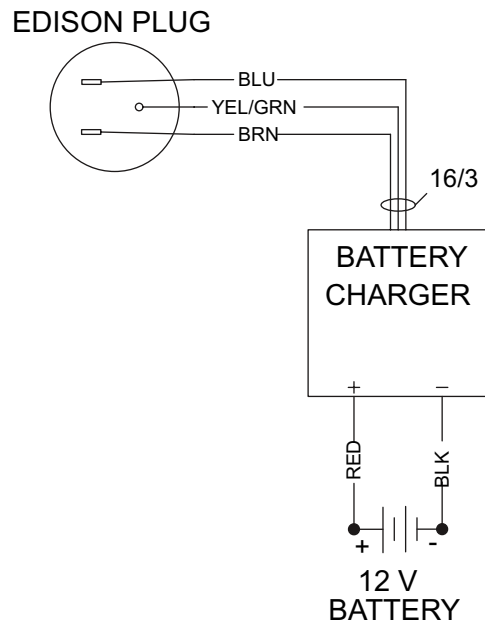
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Low Oil Level Wiring Option



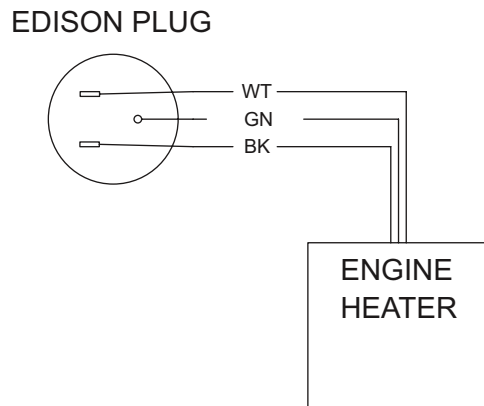
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Battery Charger Wiring Option



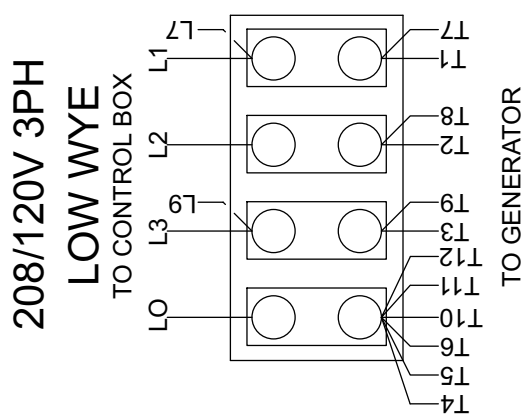
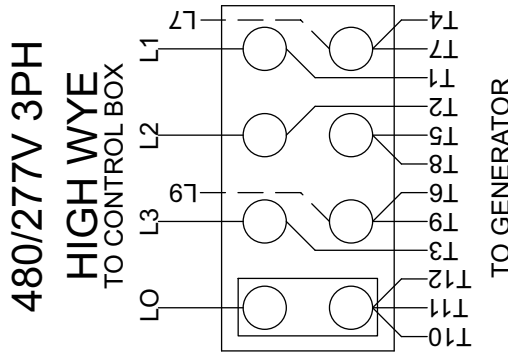
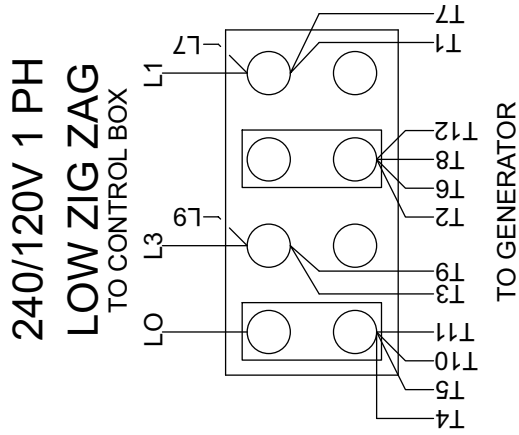
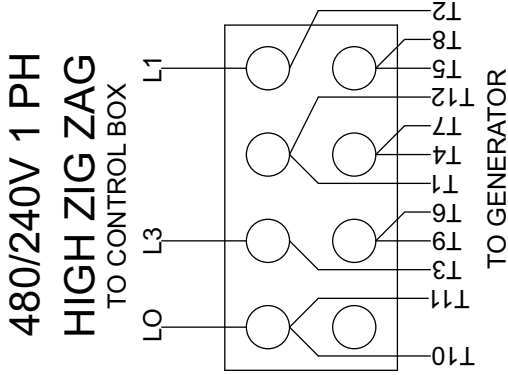
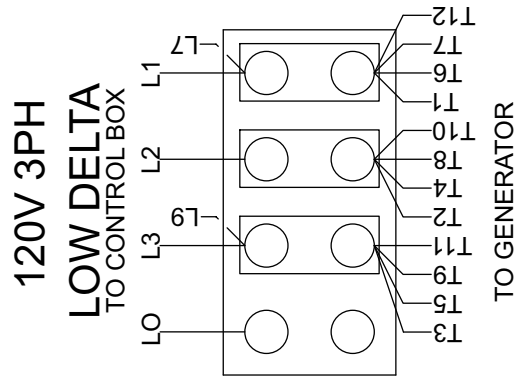
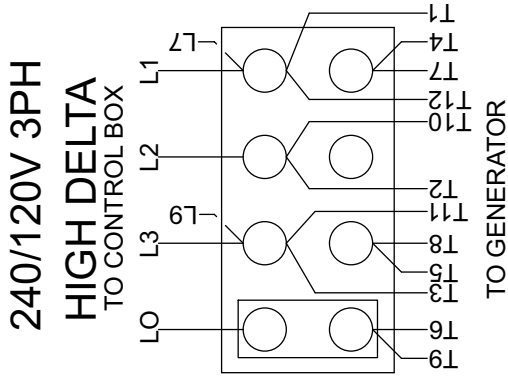
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Engine Heater Wiring Option



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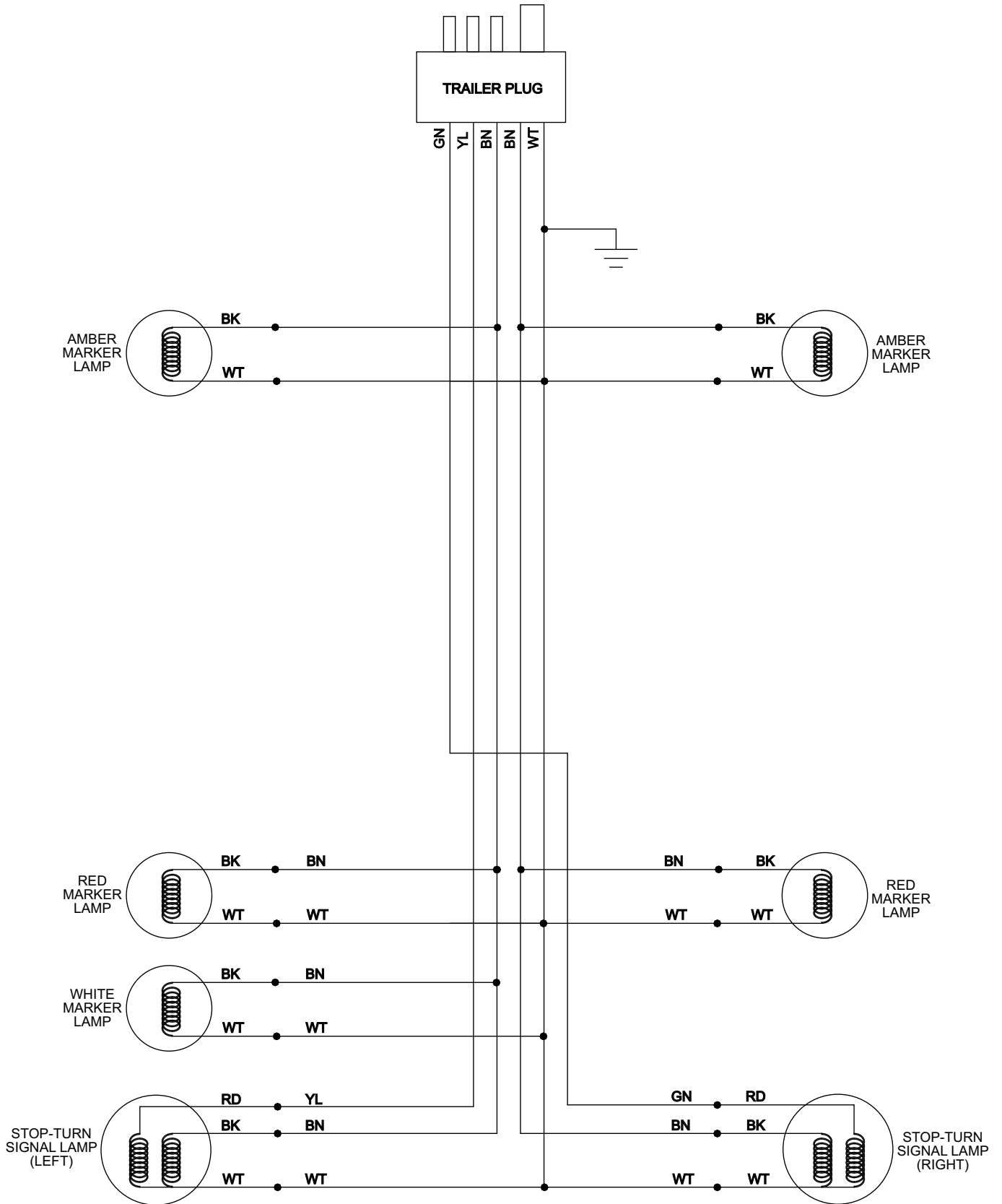
Wiring Block Diagram - Dedicated 12 Lead Generators Option



- NOTE:**
1. CABLES TO CONTROL BOX MAY CONTAIN 1, 2 OR 3 WIRES DEPENDING ON THE MODEL AND VOLTAGE.
 2. APPLIES TO ALL 12 LEAD GENERATORS TO BE HARD WIRED IN GEN BOX.

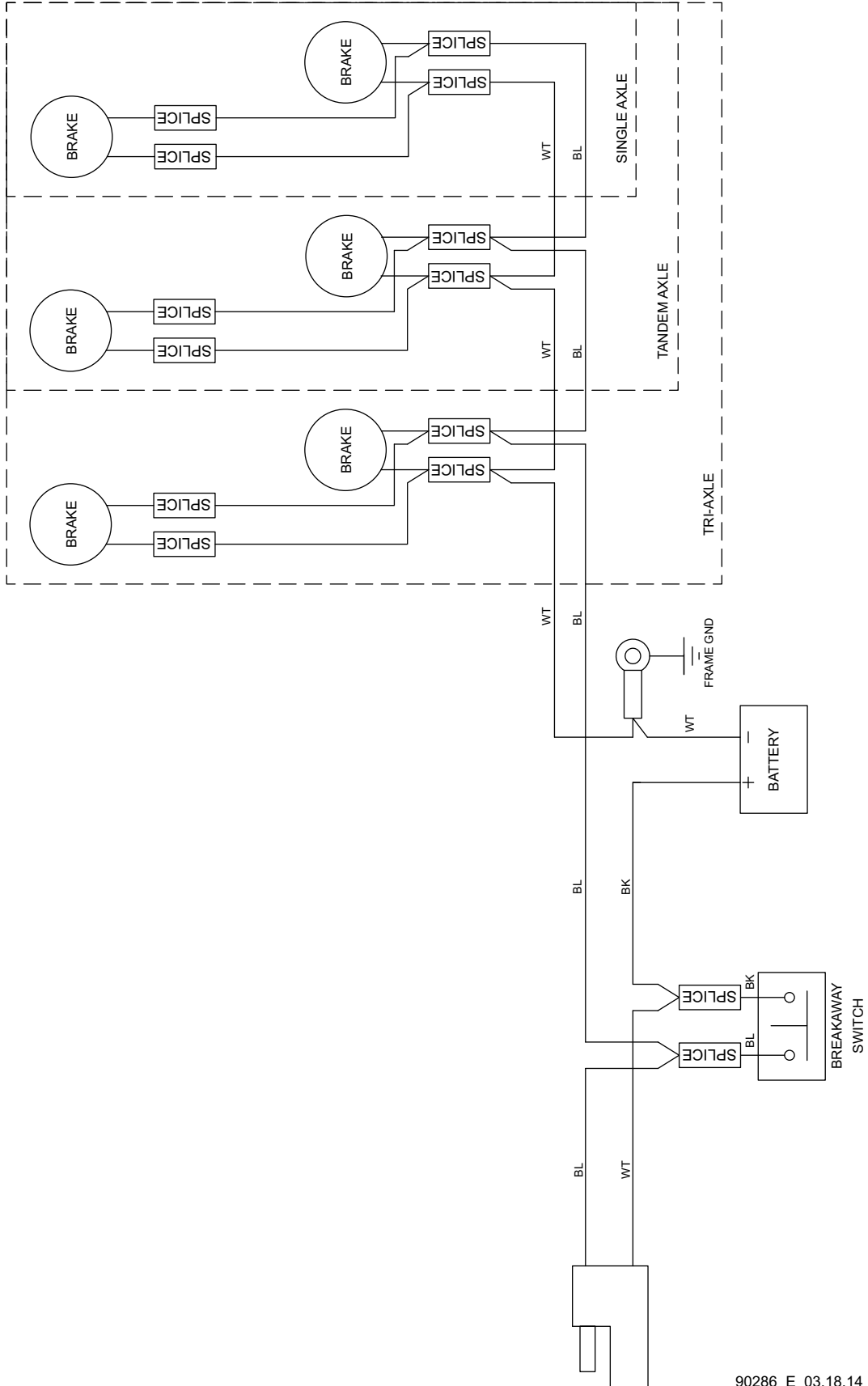
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Trailer Lights Wiring



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Wiring Harness - Electric Brake Option



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Service Log

OIL GRADE: _____ BRAND: _____

COOLANT MIXTURE: _____ BRAND: _____

Date	Hours to Service	Oil Level	Coolant Level

Date	Hours to Service	Oil Level	Coolant Level



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