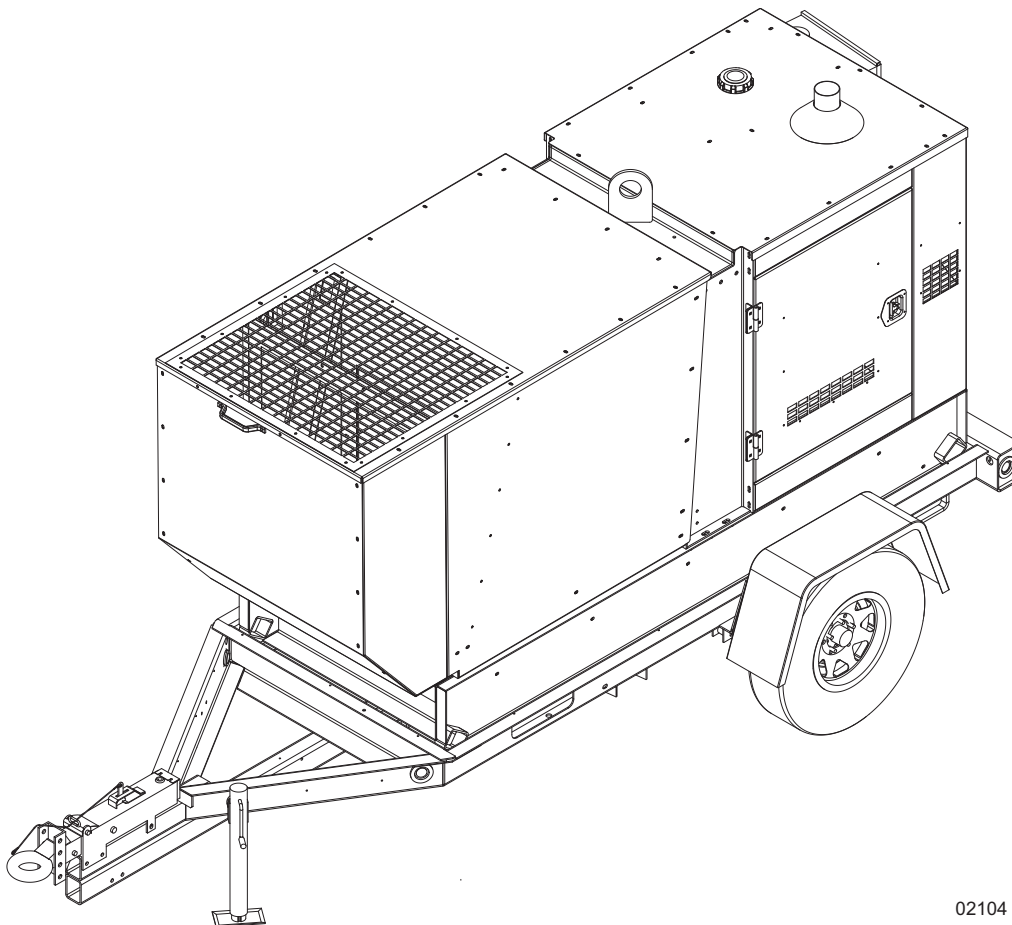




GASEOUS GENERATOR MGG100M



02104

OPERATOR MANUAL

Parts manuals available online at www.generacmobileproducts.com

⚠ 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)

⚠ 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)

Introduction

This manual provides information and procedures to safely operate and maintain the Generac Mobile Products unit. For your own safety and protection from physical injury, carefully read, understand, and observe the safety instructions described in this manual. Keep a copy of this manual with the unit at all times. Additional copies are available from Generac Mobile Products LLC, or can be found at www.generacmobileproducts.com.

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

Read all of the manuals included with the unit. Each manual details specific information regarding items such as setup, use, and service requirements. An engine service manual provides detailed maintenance procedures for the engine. Additional copies of the engine service manual are available from the engine manufacturer.

DO NOT MODIFY or use this equipment for any application other than what it was intended for. See *Intended Use*.

Generac Mobile Products LLC recommends a trained and licensed professional perform all electrical wiring and testing functions. Any wiring should be in compliance with the National Electrical Code (NEC), state and local codes, and Occupational Safety and Health Association (OSHA) guidelines.

Generac Mobile Products
215 Power Drive • Berlin, WI 54923
U.S.A.
Phone: 920-361-4442
FAX: 920-361-4416
Toll Free: 1-800-926-9768
www.generacmobileproducts.com

For technical or parts QUESTIONS, please contact the Generac Mobile Products Customer Support or Technical Support team at 1-800-926-9768. Please have your serial number available.

To ORDER SERVICE PARTS, please contact the dealer from which you purchased the unit, or call Generac Mobile Products to locate a dealer in your area.

Engine Make: _____
Engine Serial Number: _____
Engine Model Number: _____
Generator Make: _____
Generator Model Number: _____
Generator Serial Number: _____
Unit Model Number: _____
Unit Serial Number: _____
Dealer Name: _____
Dealer Phone Number: _____

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Contents

Section 1 - Safety

Safety Notes	1
Operating Safety.....	1
Engine Safety	2
Electrical Safety.....	2
Battery Safety.....	3
Towing Safety.....	4
Reporting Trailer Safety Defects	4
Safety Symbol Summary	5

Section 2 - General Information

Specifications	7
Unit Dimensions	8
Engine Oil Recommendations.....	8
Coolant Recommendations	8
Tag and Label Locations	9
Unit ID and VIN Tags	9
NG Fuel Pressure Label.....	9
Generator Data Label.....	10
Component Locations.....	11
Left Side	11
Right Side.....	12
Fuel System	13
Equipment Description	14
Intended Use	14
Generator	14
Generator and Load Compatibility.....	14
Load Imbalance Limits	14
H-100 Control Panel	15
Components	15
Left Display	15
Right Display	15
Emergency Stop Switch	16
Common Alarm Horn.....	16
Key Switch.....	16
Navigation Keypad	17
Setting the Internal Clock	17
Engine and Generator Protective Devices	18
Coolant Temperature Sensor	18
Low Coolant Level Sensor	18
Oil Pressure Sensor	18
Overspeed Shutdown.....	18
RPM Sensor Loss Shutdown	18
Overcrank Shutdown.....	18
Fuse Block.....	19
Main Line Circuit Breaker	19
Automatic Shut-Off	19
Manual Shut-Off	20
Emissions	20
Fuel System.....	20
Sourcing Natural Gas	21
Sourcing Liquid Propane	21
Fuel Switching	21
GenLink DCP: Dual Fuel Setup and Operation	22
Rooftop Beacon.....	22

Low Fuel Pressure Warning	22
NG Fuel Filters	23
Preparing External Drain Ports for Use	23
Wellhead Priming	23
Unit Alarms and Warnings	23
Non-emissions Alarms	23
Warnings	23
Non-shutdown Alarms	24
Shutdown Alarms	24
Emissions Alarms (DTCs)	24
General Fault Response Procedure	24
H-100 System Alarm and Warning Pages	25
Alarm and Warning Response Procedures	26

Section 3 - Operation

Operator Guidelines	27
Well Site Approval	28
Setting Up Unit	28
Positioning Unit	28
Connecting Fuel Sources	29
Pipe Diameter and Fuel Flow Rate	30
Valve and Fitting Pipe Equivalents	32
Grounding Unit	33
Connecting Loads	33
Prestart Inspection	33
Operating Unit	34
Purging Air from Fuel Line	34
Starting Unit	34
MANUAL Mode	34
AUTO Mode	34
Operation Inspection	35
Shutting Down Unit	35
Normal Shut-Down	35
Emergency Shut-Down	35
Re-starting After Emergency Shut-Down	36
Generator Output Connections	37
Temperature and Altitude Derating	37
Customer Convenience Receptacles	37
Generator Output Connection Lugs	38
General Wiring Considerations	39
Generator Cam Lock Connections	39
Frame Ground Connection	40
Transfer Switch	40
Electrical Connections	41
Battery Connections	41
Battery Disconnect Switch	42
Towing Unit	43

Section 4 - Maintenance

Maintenance	45
General Maintenance Procedure	45
Regular Maintenance Schedule	46
Maintenance Tasks	48
Daily Walk Around Inspection	48
Engine Oil	48
About the Engine Oil Replenishment System	48
Checking Engine Oil Level	49
Typical Causes of Inaccurate Readings	49
Adding Engine Oil to Auxiliary Reservoir	49
Changing Engine Oil and Filter	50
Engine Coolant	50
Checking Coolant Level	51
Adding Coolant	51
Fan Belt	51
Fuel System	51
NG Fuel Filters	51
External Drain Ports	51
Particulate Filter	52
Moisture Separator Filter	52
Vaporizer Regulator	53
Draining Oil Build-Up from Regulator	53
Battery	54
Inspection	54
Installation and Replacement	54
Other Maintenance Checks	55
Ignition and Distributor Timing	55
Integrated Electronic Pressure Regulator (IEPR)	55
Jack	56
Trailer Wheel Bearings	56

Section 5 - Troubleshooting

Section 6 - Wiring Diagrams

AC	59
ECM	61
Cam Locks	62
DC	63
Trailer Lights	67

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Section 1 - Safety

SAFETY NOTES



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

This manual contains DANGERS, WARNINGS, CAUTIONS, NOTICES, and NOTES that must be followed to prevent the possibility of improper service, damage to the equipment, personal injury, or death. The following formatting elements are used to call your attention to DANGERS, WARNINGS, CAUTIONS, NOTICES, and NOTES.

⚠ 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)

NOTICE

Indicates a hazardous situation which, if not avoided, could result in property or equipment damage.

Note: Notes contain additional information important to a procedure. They are embedded in regular text.

OPERATING SAFETY



Before using the generator, read and understand all of the instructions. This equipment was designed for specific applications; **DO NOT** modify or use this equipment for any application other than which it was designed. Equipment operated improperly or by untrained personnel can be dangerous. Read the operating instructions and familiarize yourself with the location and proper use of all instruments and controls. Inexperienced operators should receive instruction from someone familiar with the equipment before being allowed to operate or set up the generator. The following points should be practiced at all times:

- All fuel types are potentially FLAMMABLE and/or EXPLOSIVE and should be handled with care. Comply with all local laws and regulations regarding the safe handling and storage of fuels. Inspect the unit's fuel system frequently and correct any leaks immediately. Fuel supply lines must be properly installed, purged, and leak tested according to local codes and regulations before placing the equipment into service.
- The area immediately surrounding the generator should be dry, clean, and free of debris.
- **NEVER** start a unit in need of repair.
- Verify the generator is properly grounded before use.
- **NEVER** operate the unit on a combustible surface.
- **NEVER** operate the generator if any of the following conditions exist during operation:
 1. Noticeable change in engine speed.
 2. Loss of electrical output.
 3. Equipment connected to the generator overheats.
 4. Sparking occurs.

5. Engine misfires or there is excessive engine/generator vibration.
 6. Protective covers are loose or missing.
 7. If the ambient air temperature is above 120°F (49°C).
- Make sure slings, chains, hooks, ramps, jacks, and other types of lifting devices are attached securely and have enough weight-bearing capacity to lift or hold the equipment safely. Always remain aware of the position of other people around you when lifting the equipment.
 - **NEVER** operate a unit while tired, distracted, or under the influence of drugs or alcohol.

ENGINE SAFETY



Internal combustion engines present special hazards during operation and fueling. Failure to follow the safety guidelines described below could result in severe injury or death. Read and follow all safety warnings described in the engine operator's manual. A copy of this manual was supplied with the unit when it was shipped from the factory.

- **DO NOT** run engine indoors or in an area with poor ventilation. Engine exhaust contains carbon monoxide, a deadly, odorless and colorless gas which, if inhaled, can cause nausea, fainting, or death. Only use this unit outside and away from windows, doors, and ventilation equipment.
- **DO NOT** smoke around generator. Ensure that no combustible materials are left on or near generator, as FIRE or EXPLOSION may result.
- **DO NOT** touch or lean against hot exhaust pipes or engine block.
- **DO NOT** clean air filter with gasoline or other types of low flash point solvents.
- **DO NOT** remove engine coolant cap while engine is hot.
- **DO NOT** operate the unit without a functional exhaust system.
- Prolonged exposure to sound levels in excess of 85 dB(A) can cause permanent hearing loss. Wear hearing protection when working around a running engine.
- Keep hands, feet and loose clothing away from moving parts on the generator and engine.
- Keep area around exhaust pipes and air ducts free of debris to reduce the chance of an accidental fire.
- Batteries contain sulfuric acid which can cause severe injury or death. Sulfuric acid can cause eye damage, burn flesh or eat holes in clothing. Protective eye wear and clothing are necessary when working on or around the battery. Always disconnect the negative (-) battery cable from the corresponding terminal before performing any service on the engine or other components.

ELECTRICAL SAFETY



The unit is powered by a generator driven by a gaseous engine. While the engine is running, potentially lethal voltages are present at the 120V Ground Fault Circuit Interrupt (GFCI) receptacle located on the side of the disconnect switch box and at the connection lugs and optional cam lock receptacles. Failure to follow the safety guidelines described below could result in severe injury or death.

- Only a qualified and licensed electrician should make connections to the generator.
- **NEVER** wash the unit with high pressure hoses or power washers.
- **NEVER** start the unit under load. The circuit breakers must be OFF when starting the unit in MANUAL mode. The circuit breakers can be ON only when started in AUTO mode. A transfer switch must be used in AUTO mode to deflect the load upon start up.
- **ALWAYS** disconnect the negative (-) battery cable from the corresponding terminal before performing any service on the engine, generator, or any other components. Remove the negative (-) battery cable from the corresponding terminal if the unit is to be stored or transported.
- **ALWAYS** use extreme caution when servicing this unit in damp conditions. Do not service the unit if your skin or clothing is wet. Do not allow water to collect around the base of the unit.
- **ALWAYS** ground the unit before use. Follow the National Electrical Code (NEC), state, and local regulations.

BATTERY SAFETY

⚠ DANGER

STORAGE BATTERIES GIVE OFF EXPLOSIVE HYDROGEN GAS. THIS GAS CAN FORM AN EXPLOSIVE MIXTURE AROUND THE BATTERY FOR SEVERAL HOURS AFTER CHARGING. THE SLIGHTEST SPARK CAN IGNITE THE GAS AND CAUSE AN EXPLOSION. AN EXPLOSION CAN SHATTER THE BATTERY AND CAUSE BLINDNESS OR OTHER INJURY. ANY AREA THAT HOUSES A STORAGE BATTERY MUST BE PROPERLY VENTILATED. DO NOT ALLOW SMOKING, OPEN FLAME, SPARKS, OR ANY SPARK PRODUCING TOOLS OR EQUIPMENT NEAR THE BATTERY.

⚠ WARNING

Risk of burns. Batteries contain sulfuric acid and can cause severe chemical burns. Wear protective gear when working with batteries. Failure to do so could result in death or serious injury. (000138a)

Observe the following precautions when working on batteries.

- Servicing of the battery is to be performed or supervised by personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from batteries.
- Remove the 10A F2 fuse from the generator control panel.
- Remove watches, rings, or other metal objects.
- Use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the battery.
- If applicable, disconnect the charging source before connecting or disconnecting battery terminals. Remove the battery charger fuse (ATC style fuse, 5 amp on the 2.5A charger and 15 amp on the 10A charger).
- Wear full eye protection and protective clothing.
- Where electrolyte contacts the skin, wash it off immediately with water.
- Where electrolyte contacts the eyes, flush thoroughly and immediately with water, and seek medical attention.
- Spilled electrolyte is to be washed down with an acid neutralizing agent. A common practice is to use a solution of 1 lb. (454g) bicarbonate of soda to 1 gal (3.8L) of water. The bicarbonate of soda solution is to be added until the evidence of reaction (foaming) has ceased. The resulting liquid is to be flushed with water.
- Lead-acid batteries present a risk of fire because they generate hydrogen gas.
- **DO NOT SMOKE** when near the battery.
- **DO NOT** cause flame or spark in battery area.
- Discharge static electricity from the body before touching the battery by first touching a grounded metal surface.
- **DO NOT** dispose of the battery in a fire. The battery is capable of exploding.
- **DO NOT** open or mutilate the battery. Released electrolyte can be toxic and harmful to the skin and eyes.
- The battery represents a risk of high short circuit current. When working on the battery, always remove watches, rings, or other metal objects, and only use tools that have insulated handles.
- Be sure control power switch is OFF before connecting the battery cables. If the switch is set to AUTO or MANUAL, the generator can crank and start as soon as the battery cables are connected.
- Be sure the utility power supply to the battery charger is turned OFF and the 10A and 15A fuses are removed from the generator control panel and the ATC style fuse removed from the battery charger, or sparking may occur at the battery posts as the cables are attached and cause an explosion.

TOWING SAFETY



Towing a trailer requires care. Both the trailer and vehicle must be in good condition and securely fastened to each other to reduce the possibility of an accident. Also, some states require that large trailers be registered and licensed. Contact your local Department of Transportation office to check on license requirements for your particular unit.

- Check that the hitch and coupling on the towing vehicle are rated equal to, or greater than, the trailer's Gross Vehicle Weight Rating (GVWR).
- Check tires on trailer for tread wear, inflation, and condition.
- **NEVER** tow trailer using defective parts. Inspect the hitch and coupling for wear or damage.
- Make sure the trailer hitch and the coupling are compatible. Make sure the coupling is securely fastened to the vehicle.
- Connect safety chains in a crossing pattern under the tongue and **ATTACH THE BREAKAWAY CABLE TO THE REAR BUMPER OF THE TOWING VEHICLE**. Do not attach the cable to the trailer hitch.
- Make sure directional and brake lights on the trailer are connected and working properly.
- Check that lug nuts holding wheels are tight and that none are missing.
- Maximum recommended speed for highway towing is 45 mph (72 km/h). Recommended off-road towing speed is not to exceed 10 mph (16 km/h) or less, depending on terrain.

Before towing the trailer, ensure the trailer's weight is equally distributed across all tires. A large angle between trailer and tow vehicle causes more weight to be carried by one axle, which can cause premature wear on the tires and axles, resulting in potentially unsafe operating conditions.

The trailer is equipped with electric surge brakes. Check the operation of the brakes by braking the vehicle at a slow speed before entering traffic. Both the trailer and the vehicle should brake smoothly. If the trailer seems to be pushing, check the level in the surge brake fluid reservoir.

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

A film of grease on the coupler extends coupler life and eliminates squeaking. Wipe the coupler clean and apply fresh grease each time the trailer is towed.

Reporting Trailer Safety Defects

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

If NHTSA receives similar complaints, it may open an investigation; and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in an individual problem between you, your dealer, or Generac Mobile Products.

















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>; 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 the Web site shown above.

SAFETY SYMBOL SUMMARY

This equipment has been supplied with numerous safety and operating decals. These decals provide important operating instructions and warn of dangers and hazards. Replace any missing or hard-to-read decals and use care when washing or cleaning the unit. Below is a summary of the intended meanings for the symbols used on the decals.

	Safety alert symbol; used to alert you to potential personal injury hazards.		No open flames.
	Unit electrical ground.		Dangerous voltage may be present.
	Wear protective gloves.		Use protective eyewear.
	Explosion hazard.		Lift here only.
	Fire hazard.		Read and understand the supplied operator's manual before operating unit.
	Burn/scald hazard; pressurized steam.		Belt/entanglement hazard; keep body parts clear of this area.
	Hot surface(s) nearby.		Fan hazard; keep body parts clear of this area.
	Engine running.		Anchor/tie down point.

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Section 2 - General Information

SPECIFICATIONS

GENERAC MODEL

MGG100M

Engine

Make/Brand.....	Generac
Model	G9.0L G18
Type	Naturally Aspirated
Horsepower, natural gas - prime.....	80 (60)
Operating Speed rpm	1800
Displacement in³ (L)	540 (8.9)
Cylinders - qty	8
Spark plug gap in (mm)	0.015 (.381)
Fuel Consumption, natural gas - 100% Load ft³/hr (m³/hr)	710.5 (20.1)
Fuel Consumption, liquid propane - 100% Load gph (Lph)	8.5 (32.2)

Battery

Battery type, Group Number	GRP 24
Battery voltage (qty. of batteries)	12V (1)
Battery rating.....	720 CCA

Generator*

Brand	Marathon
Model	362PSL3185
Type, insulation	H Type

Capacities

Coolant (incl. engine), qt (L)	22.0 (20.8)
Oil (incl. filter), qt (L)	8.5 (8.0)
Oil Reservoir, qt (L)	62.8 (59.4)
Maximum run time between oil changes, hrs.	250

Weights

Operating weight, skid mounted lb (kg)	3250 (1474)
Operating weight, trailer mounted** lb (kg)	4000 (1814)

Trailer

Qty of axles	1
Capacity—axle rating lb (kg)	6000 (2721)
Tire size, in. (cm)	15 (38.1)
Brakes—standard	Surge
Hitch—standard, in. (cm)	2" (5.08) lunette ring
Maximum tire pressure, PSI (kPa)	80 (552)

* See the generator data label for rated watts, amperes, frequency, voltage, phase, and other information.

** Standard trailer only. Consult factory for custom trailer weights.

Unit Dimensions

Trailer mounted—LxWxH, in. (m) 168x69x83 (4.26x1.75x2.1)

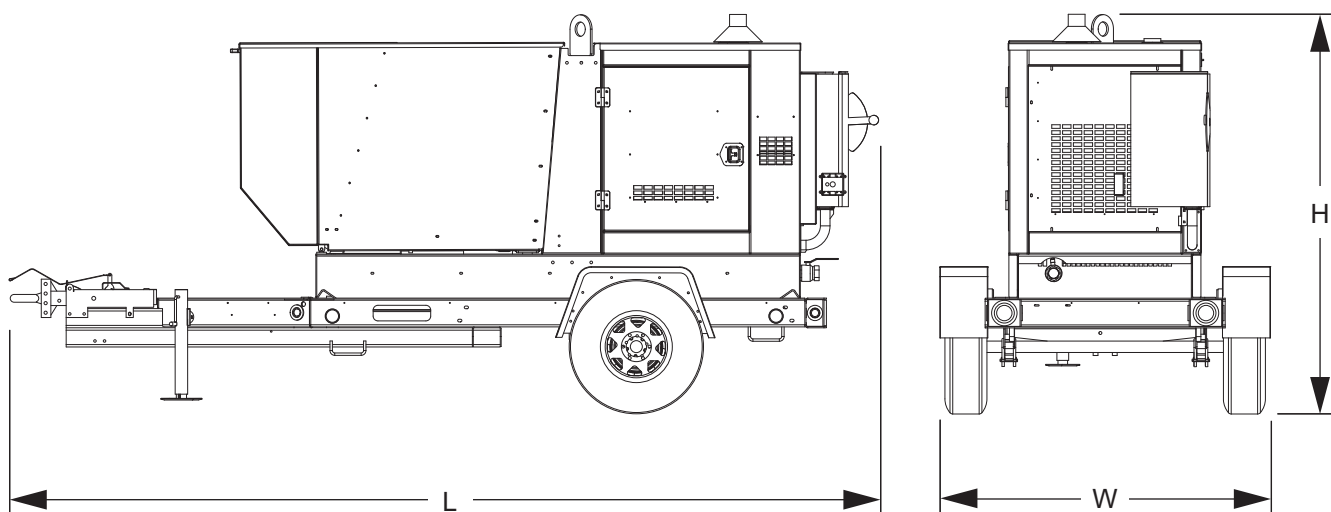


Figure 1 - Unit Dimensions

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Engine Oil Recommendations

The engine has been filled with 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.

- 15W-40 low ash
- API Service Category SJ, SL, SM, or SN
- Engine oil capacity, including filter: 8.5 qt (8.0 L)
- Oil reservoir capacity: 62.8 qt (59.4 L)

Coolant Recommendations

Mix a 1:1 ratio of water (deionized or distilled only) to ethylene glycol antifreeze. Propylene glycol can be used in place of ethylene glycol, but do not mix the types.

Coolant capacity, including engine: 22 qt (20.8L)

⚠ WARNING

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

⚠ DANGER

ETHYLENE GLYCOL BASE ANTIFREEZE IS POISONOUS. DO NOT USE MOUTH TO SIPHON COOLANT FROM THE RADIATOR, RECOVERY BOTTLE, OR ANY CONTAINER. WASH HANDS THOROUGHLY AFTER HANDLING. NEVER STORE USED ANTIFREEZE IN AN OPEN CONTAINER BECAUSE ANIMALS ARE ATTRACTED TO THE SMELL AND THE TASTE OF ANTIFREEZE EVEN THOUGH IT IS POISONOUS.

⚠ CAUTION

Do not use any chromate-base rust inhibitor with propylene glycol-base antifreeze. Using any high silicate antifreeze boosters or additives also will cause overheating. The manufacturer also recommends that any soluble oil inhibitor is **NOT USED** for this equipment.

TAG AND LABEL LOCATIONS

Unit ID and VIN Tags

Record the information from the unit ID and VIN tags, in case the tags are lost or damaged. When ordering parts or requesting technical assistance, you may be asked to provide this information.

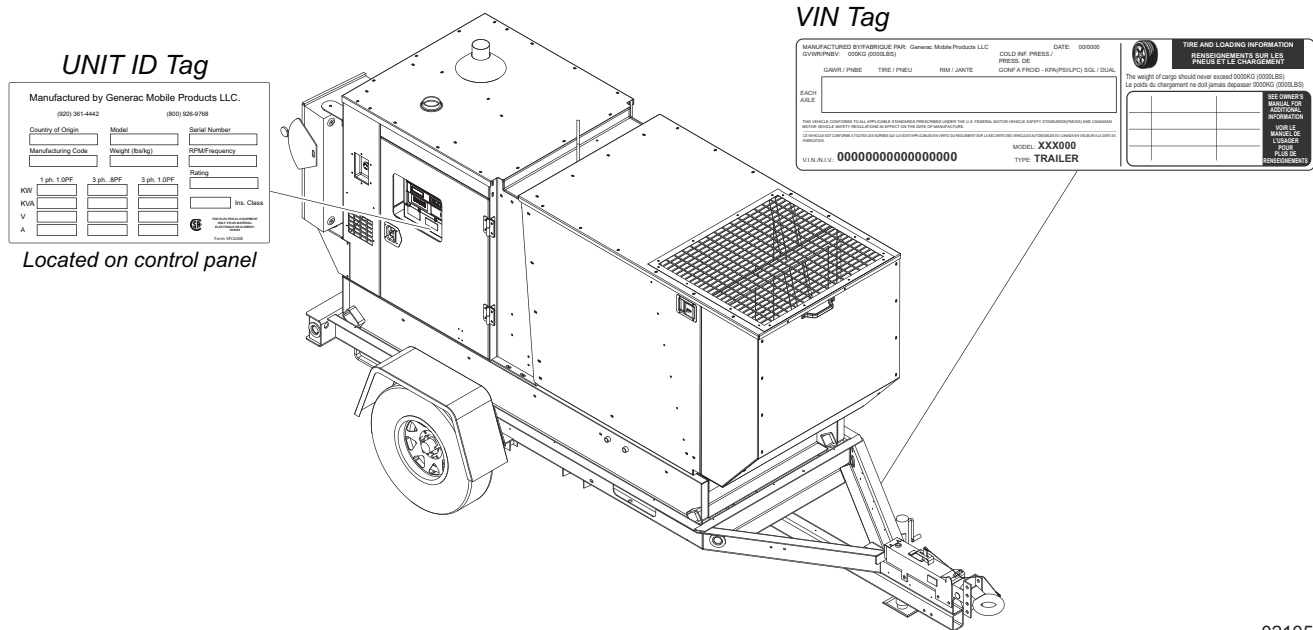


Figure 2 - Unit ID and VIN Tag Locations

NG Fuel Pressure Label

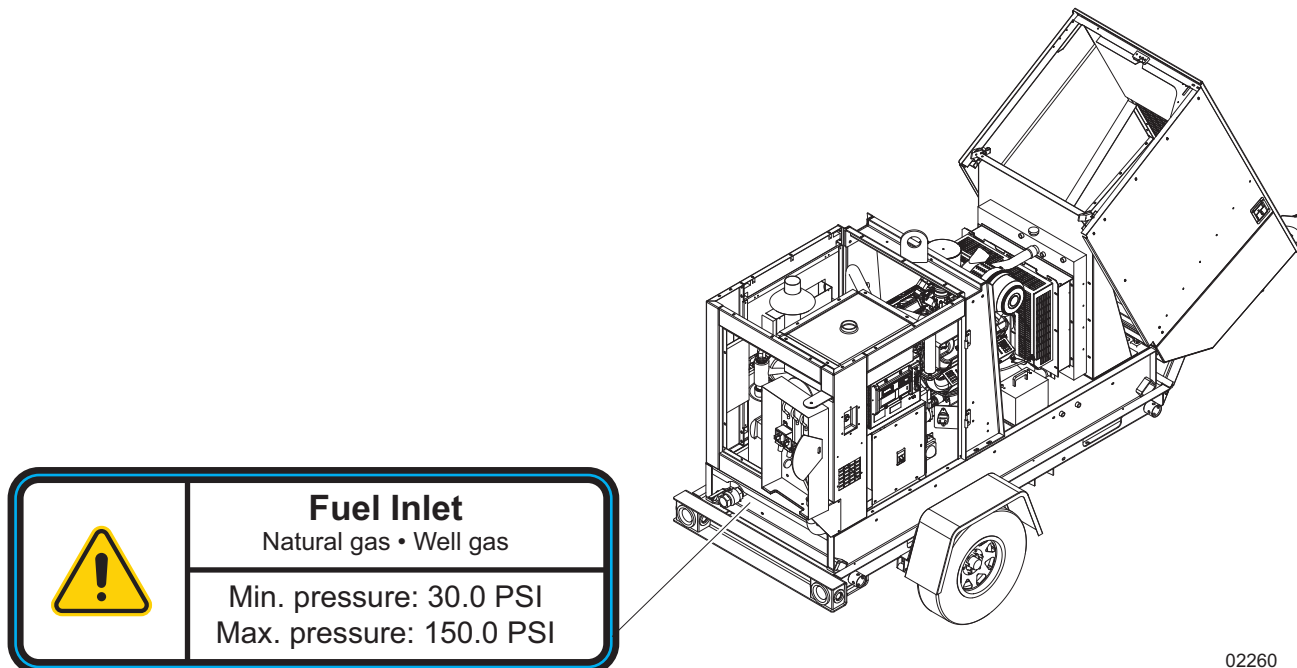


Figure 3 - NG Fuel Pressure Label

Generator Data Label

The generator data label is prominently displayed on the generator, behind the NG fuel filters (see [Figure 4](#)).

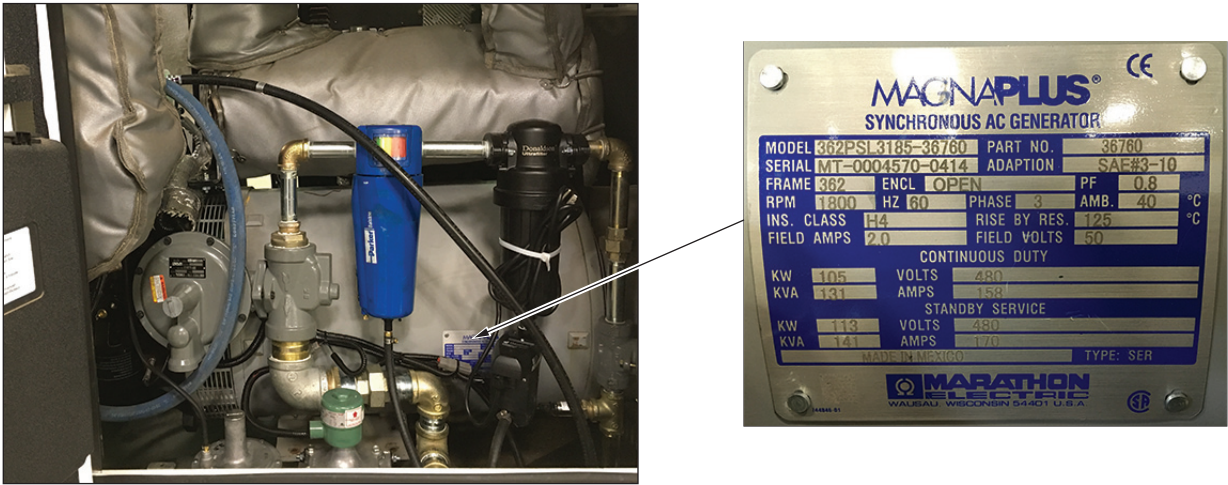
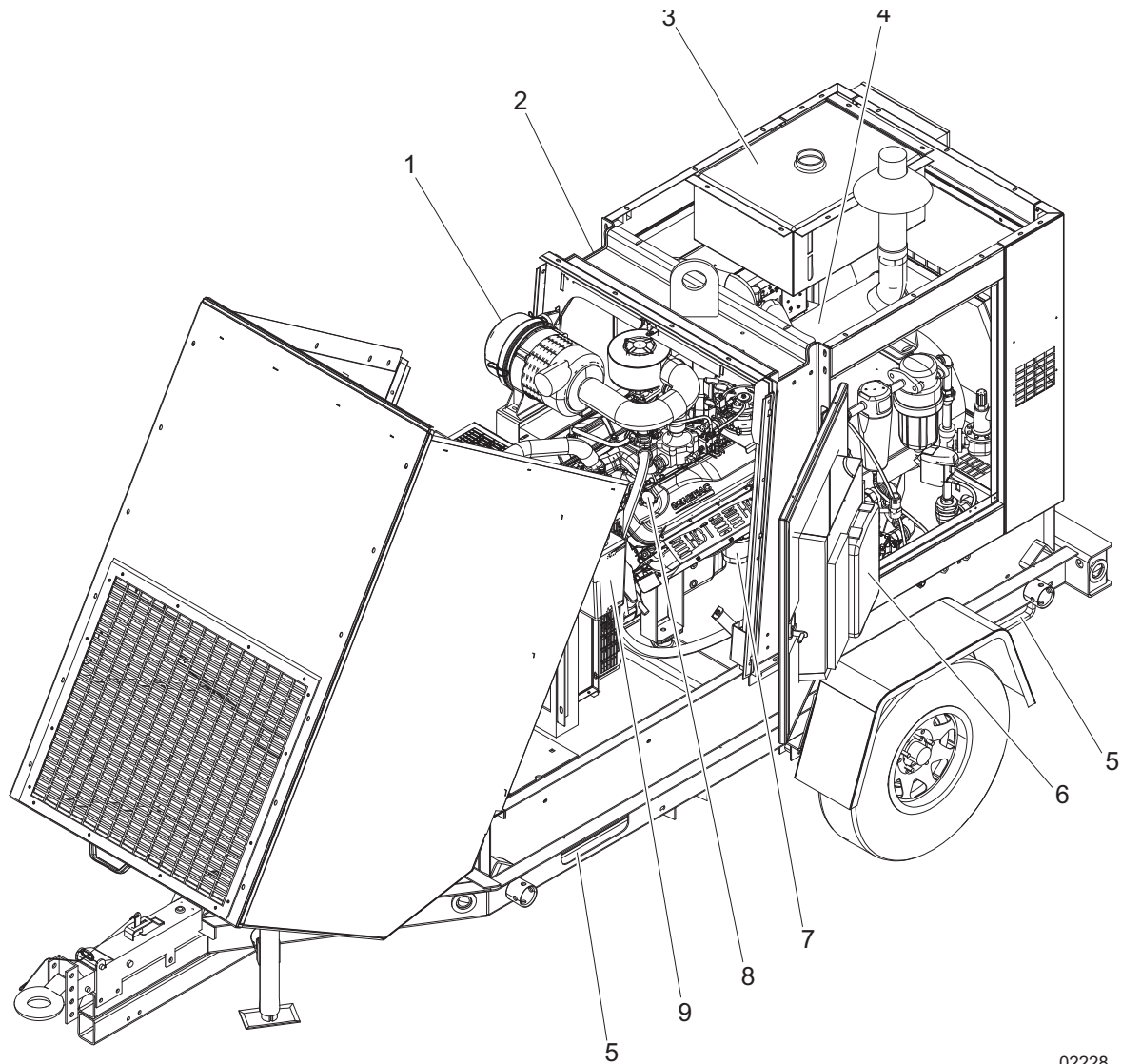


Figure 4 - Generator Data Label

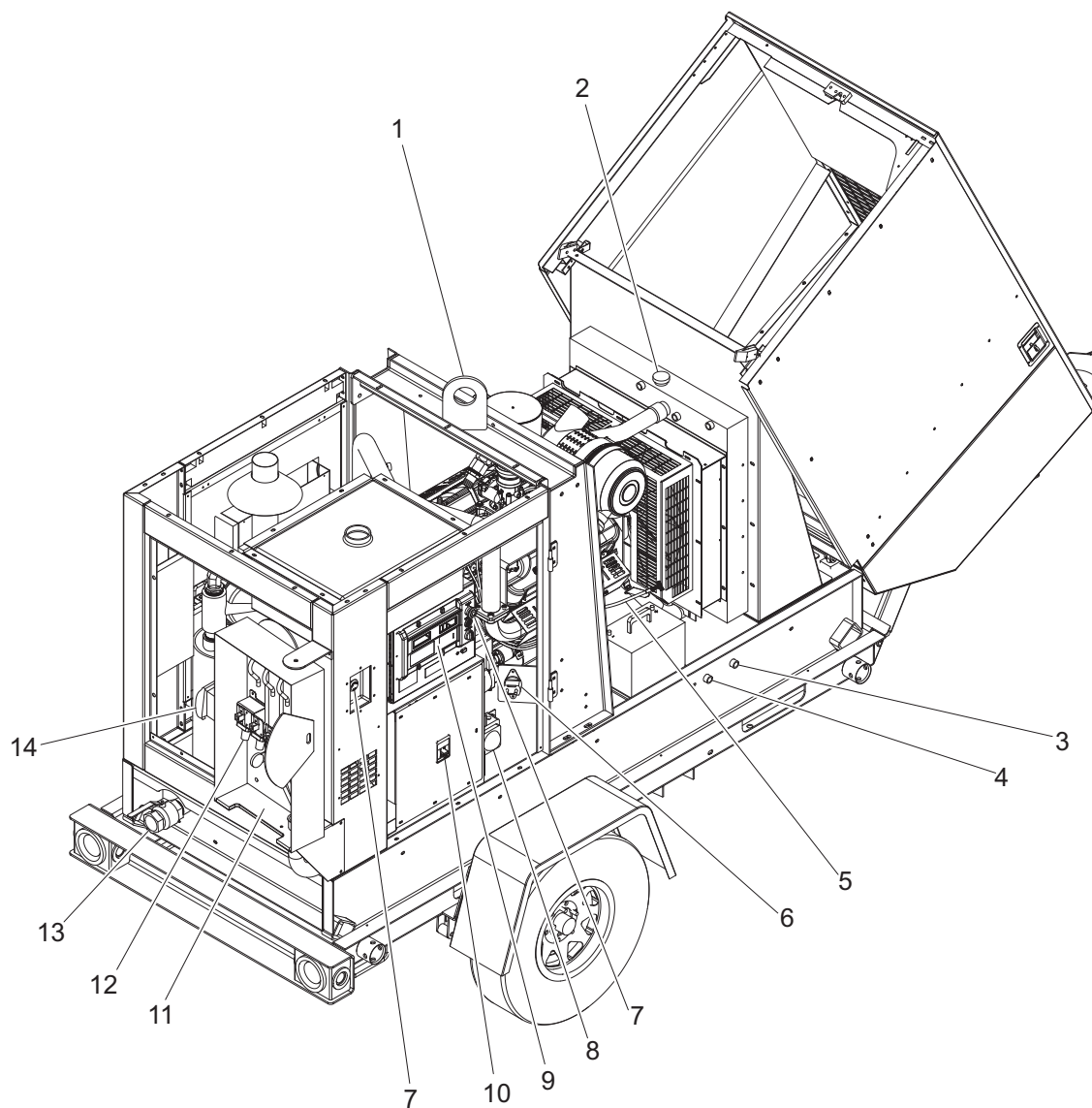
COMPONENT LOCATIONS**Left Side**

02228

Figure 5 - Component Locations, Left Side

- | | |
|-----------------------------|------------------|
| 1. Air filter | 6. Manual holder |
| 2. Lift structure | 7. Oil filter |
| 3. Oil reservoir | 8. Oil fill |
| 4. Catalyst exhaust muffler | 9. Coolant jug |
| 5. Fork lift slots | |

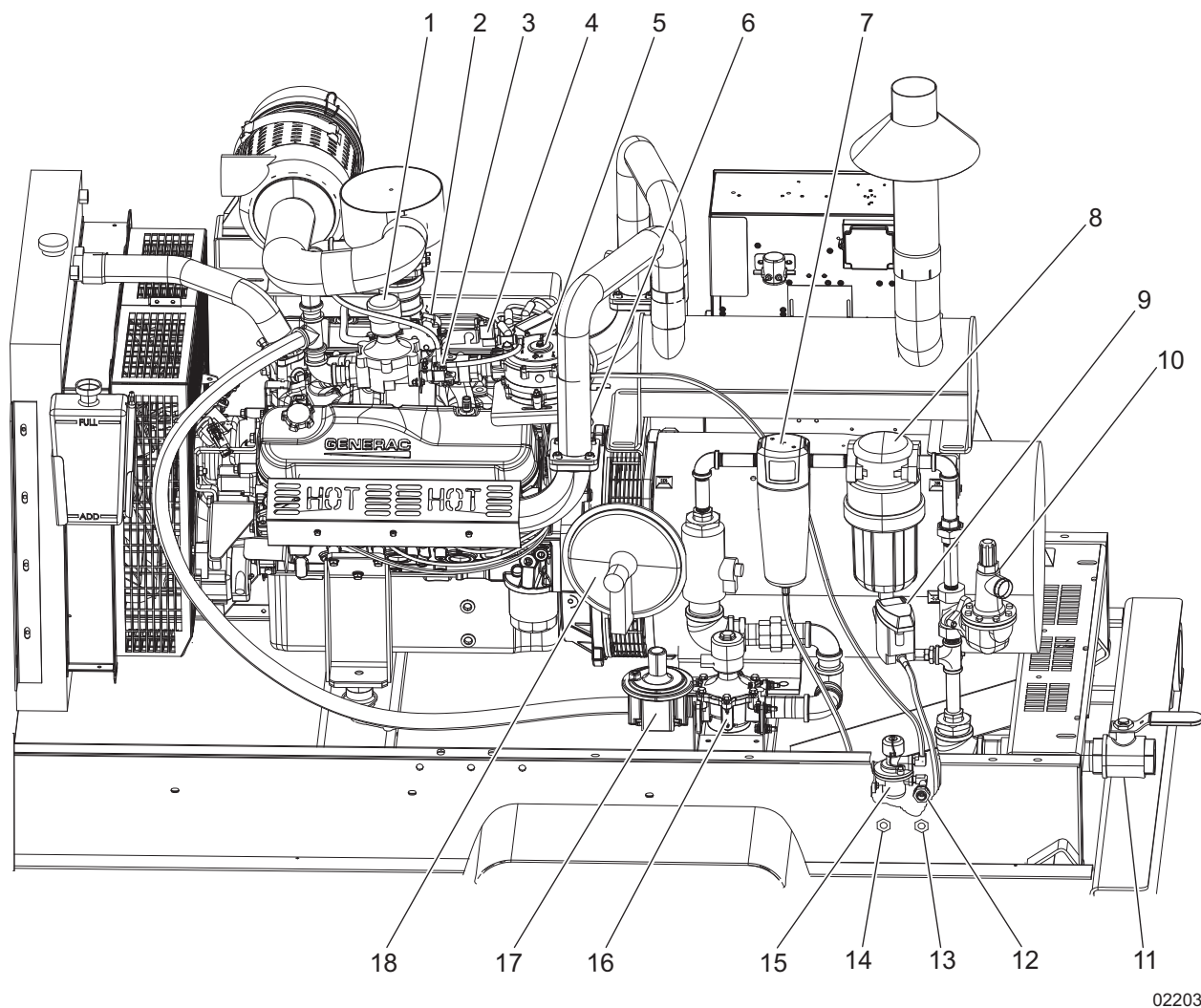
Right Side



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Figure 6 - Component Locations, Right Side

- | | |
|------------------------------|-------------------------------------|
| 1. Central lift point | 8. Oil level controller |
| 2. Coolant pressure cap | 9. H-100 controller |
| 3. Coolant drain | 10. Main circuit breaker (MLCB) |
| 4. Engine oil drain | 11. Customer disconnect switch box |
| 5. Dipstick | 12. Connection lugs with cam locks |
| 6. Battery disconnect switch | 13. NG inlet port |
| 7. Emergency stop switch | 14. Customer convenience receptacle |

Fuel System**Figure 7 - MGG100M Fuel System**

- | | |
|---|--|
| 1. LPV solenoid shut-off valve | 10. Primary high pressure regulator |
| 2. Bosch throttle body | 11. NG inlet port |
| 3. LPL A/F solenoid valve | 12. LPL inlet port |
| 4. LPL solenoid valve vent | 13. Moisture separator drain port |
| 5. LPL vaporizer and regulator | 14. Particulate filter drain port |
| 6. Wellhead gas A/F solenoid valve | 15. LPL solenoid shut-off valve |
| 7. Wellhead gas particulate filter | 16. Wellhead gas solenoid shut-off valve |
| 8. Wellhead gas moisture separator filter | 17. Low pressure regulator |
| 9. Electronic condensate drain | 18. Secondary high pressure regulator |

EQUIPMENT DESCRIPTION

This unit supplies electrical power for operation of compatible electrical loads through the use of a revolving field, alternating current type generator set. Power is delivered by way of connection lugs and 120V customer convenience receptacles.

Intended Use

This unit is intended to supply direct electrical power to compatible loads, through connections to customer convenience receptacles and connection lugs.

GENERATOR

The generator is a revolving field, alternating current type generator set. The generator supplies electrical power for the operation of compatible electrical loads.

The revolving field is directly connected to and driven by an engine by means of flexible discs. Generators with a four-pole rotor are driven at a rated speed of 1,800 rpm to supply a frequency of 60 Hertz. See the generator data label for rated AC volts, watts, amperes, and number of phases.

The generator incorporates the following features.

- The rotor insulation system is Class H rated, and the stator insulation is Class H rated, as defined by NEMA MG1-1.65.
- The generator is self-ventilated and drip-proof constructed.
- The voltage waveform deviation, total harmonic content of the AC waveform, and telephone influence factor have been evaluated and are acceptable according to NEMA MG1-32.

Generator and Load Compatibility

The generator must be fully compatible with the rated voltage, phase, and frequency of the connected electrical loads.

NOTICE

Equipment damage. The generator, connected electrical devices, or both can be damaged if voltage, phase, and frequency are not compatible.

Load Imbalance Limits

The maximum load imbalance between phases cannot exceed 25% of rated load.

H-100 CONTROL PANEL

The H-100 control panel ([Figure 8](#)) enables the operator to start and stop the unit, monitor the unit, and view and respond to alarms and warnings.

Components

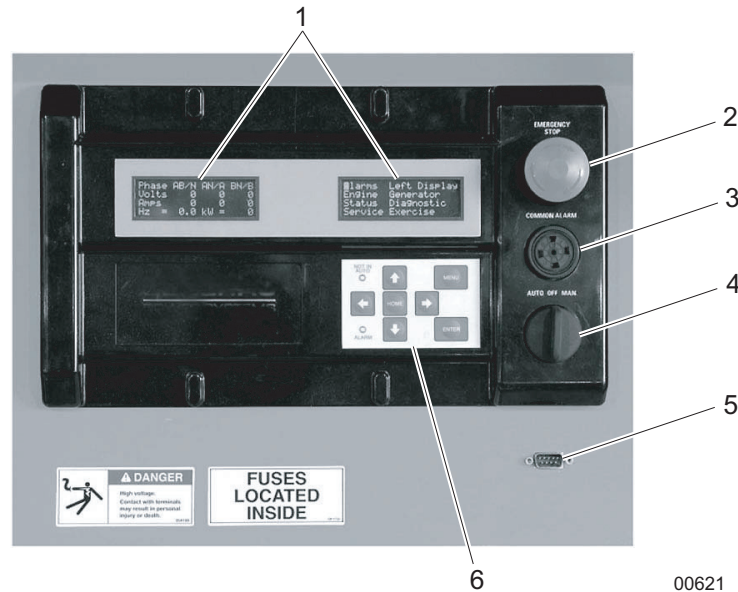


Figure 8 - H-100 Control Panel

- | | |
|----------------------------|------------------------------|
| 1. Left and right displays | 4. Key switch |
| 2. Emergency stop switch | 5. Programming/GenLink® port |
| 3. Common alarm horn | 6. Navigation keypad |

Left Display

The left display contains predefined pages that display operating parameters. It does not respond directly to the keypad; its contents are determined by menu selections in the right display.

The left display can be configured to display different menus. Default items are current operating volts, amperes, kilowatts, and frequency.

See the H-100 Control Panel Operations Manual for more information.

Right Display

The right display contains several pages and responds directly to the keypad. The right display shows the following.

- Alarm information
- If you press HOME: Displays engine data (oil pressure, oil temperature, water temperature, battery voltage)
- If you press MENU: Displays main menu

Emergency Stop Switch

⚠ 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 two red emergency stop switches, both labeled EMERGENCY STOP. See [Figure 6](#) for locations. Activating emergency stop results in the following.

- MLCB shuts off, opening the contact and disconnecting the load to the connection lugs.
- Fuel circuit opens, shutting down the engine.
- Controller posts an EMERGENCY STOP shutdown alarm. See [Shutdown Alarms](#) for more information.
- The switch remains active until it is pulled out.

Common Alarm Horn

The common alarm horn sounds when an alarm or warning condition is active. When the horn sounds, the controller displays a corresponding message on the System Alarm and Warning page ([Figure 16](#)). Conditions that cause the alarm horn to sound are as follows.

- Digital output function #1, COMMON ALARM, activates under alarm conditions
- Digital output function #2, COMMON WARNING, activates under warning conditions

Note: DTC faults do not activate the alarm horn. See [Unit Alarms and Warnings](#) for more information.

Key Switch

The key switch is a manually operated, three-position key switch. The positions are AUTO, OFF, and MAN.

Note: This unit is intended for applications that utilize the MAN key-switch position. See [Equipment Description](#) for more information.

- **AUTO:**
 - For use if unit is used as back-up to utility power. (Unit must be connected to an automatic transfer switch.)
 - If unit is connected to an automatic transfer switch, unit starts when the transfer switch senses loss or reduction of available utility power.
 - If unit is not connected to an automatic transfer switch, unit automatically starts.
 - Unit starts when *internal exercise* is enabled and the internal exercise cycle is due.
 - When the condition that caused the unit to start in AUTO mode ceases to exist, the unit runs a cool-down cycle and then shuts off.
- **OFF:** Immediately shuts off the unit and/or prevents it from starting automatically.
- **MAN:** Indicates *manual*. Immediately starts the unit.

Navigation Keypad

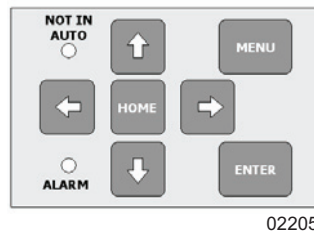


Figure 9 - Navigation Keypad

The navigation keypad controls the right display.

- Arrows: move the cursor around the current screen, enabling selection of menu items.
- MENU: immediately displays the Menu page.
- HOME: immediately displays the Home page.
- ENTER: selects menu items, enters and exits *edit* mode, and saves changes.

LEDs:

- NOT IN AUTO: flashes once per second when the key switch is turned to OFF or MAN.
- ALARM:
 - During normal operation when no alarms are present: Flashes once every 30 seconds.
 - During active alarm or warning condition: Flashes once each second. The LED remains on if the alarm or warning condition is acknowledged but still active.

Setting the Internal Clock

The H-100 control panel contains an internal clock that tracks date and time. The clock is used to schedule internal exercise, time stamp alarm/event log entries, and time-stamp reports. Operators can change date and time using the H-100 control panel, as follows.

Note: Date and time can also be changed using GenLink. See H-100 Control Panel Operations Manual for more information.

1. Press MENU. The main menu displays ([Figure 10](#)).

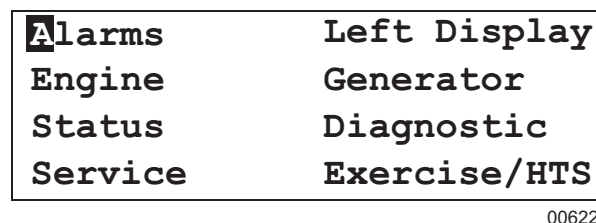


Figure 10 - Main Menu

2. Press the DOWN button until STATUS is highlighted, then press ENTER. The Status page displays ([Figure 11](#)).

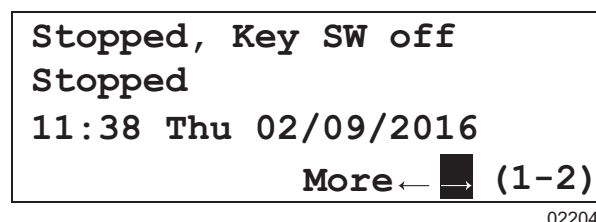


Figure 11 - Status Page

3. Select field to adjust: Press RIGHT or LEFT, then press ENTER.
Note: *Applicable fields are HOUR, MINUTE, MONTH, DAY, and YEAR.*
4. Change field value: Press UP or DOWN.
5. Save field value: Press ENTER.
6. Repeat steps 3–5, as necessary.

ENGINE AND GENERATOR PROTECTIVE DEVICES

The generator set might operate for long time periods without an operator present to monitor conditions such as coolant temperature, oil pressure, voltage, and frequency. Therefore, the generator set has numerous sensors to provide the controller with information necessary to protect the engine and generator. The controller shuts down the engine if potentially damaging conditions are present. Examples of damaging conditions are low oil pressure, high coolant temperature, low coolant level, engine overspeed, over- or under-voltage, and over- or under-frequency.

Note: *Controller settings are factory configured. A Generac Mobile Products Authorized Service Dealer (GMPASD) can change controller settings.*

The MGG100M leaves the factory with the controller warning set at 65 kW (five second delay) and shutdown set at 70 kW (five second delay). Our testing indicates that knocking can start to occur at loads above 70 kW. To operate the unit above 70 kW, an adjustment must be made within the generator controller. Adjustments must be done by an authorized owner or a GMPASD.

Note: *The list below is not all-inclusive. See the H-100 Control Panel Operations Manual for more information.*

Coolant Temperature Sensor

If engine coolant temperature rises to an unsafe level, the controller shuts down the engine.

Low Coolant Level Sensor

If engine coolant level drops to an unsafe level, the controller shuts down the engine.

Oil Pressure Sensor

If oil pressure drops to an unsafe level, the controller shuts down the engine.

Overspeed Shutdown

If the engine speed signal rises above a safe level, the controller shuts down the engine.

RPM Sensor Loss Shutdown

If the speed signal to the control panel is lost, the engine shuts down and then attempts to re-start until the overcrank alarm sets.

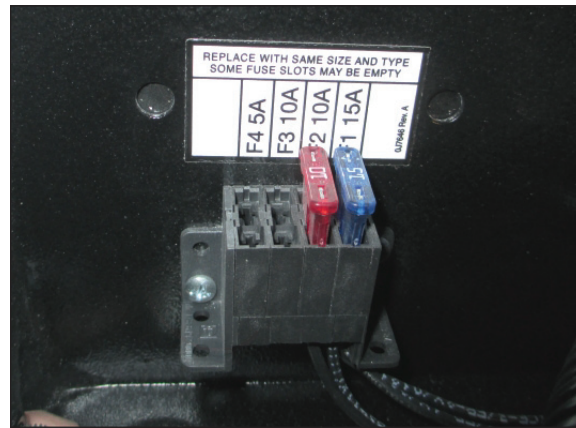
Overcrank Shutdown

If the engine fails to start after three crank cycles, overcrank shutdown prevents further starter-cranking, as described below.

- The unit attempts to start three times.
- A crank cycle lasts 30 seconds: 15 seconds cranking followed by 15 seconds rest (to cool the starter).
- After three starting attempts, the unit shuts down.

FUSE BLOCK

The fuse block is located behind the front panel, in the back lower-left corner of the controller box. The 10A fuse in the F2 slot is the control panel fuse.



00577

Figure 12 - Panel Fuse Block

MAIN LINE CIRCUIT BREAKER

The main line circuit breaker (MLCB) is below the H-100 control panel (see [Figure 6](#)). The MLCB controls power between the generator and connection lugs.

NOTICE

The main circuit breaker only controls power to the connection lugs. The customer convenience receptacles are powered even if the main circuit breaker is switched OFF (O).

To disconnect power to the convenience receptacles, use the individual circuit breakers located near each receptacle.

When the MLCB is OFF (O), power does not flow between the generator and connection lugs. When connections to the lugs are established and the generator is started and allowed to reach normal operating temperature, the MLCB can be switched ON (I).

Automatic Shut-Off

If any of the following occurs during unit operation, the MLCB shuts OFF (O), disconnecting power to the connection lugs.

- Overload of generator circuits to connection lugs
- Door is open on the customer disconnect switch box
- EMERGENCY STOP switch is active

Before switching the MLCB to ON (I), do the following.

- Correct the problems that caused it to shut off
- Verify the connection lugs are not energized by another source

Manual Shut-Off

To manually interrupt power between the generator and connection lugs, use the disconnect lever on the customer disconnect switch box ([Figure 13](#)).



Figure 13 - Disconnect Lever

EMISSIONS

The United States Environmental Protection Agency (US EPA) (and California Air Resources Board (CARB), for engines/equipment certified to California standards) requires that this engine/equipment complies with exhaust and evaporative emissions standards. Locate the emissions compliance decal on the engine to determine applicable standards. For emissions warranty information, please reference the included emissions warranty. It is important to follow the maintenance specifications in the manual to ensure that the engine complies with the applicable emissions standards for the duration of the product's life.

FUEL SYSTEM

Note: The ignition is factory set to 18° BTDC.

⚠ CAUTION

Verify timing set correctly to 18° BTDC. Failure to do so could result in irreparable damage to the unit.

This is a dual-fuel generator, capable of running on either natural gas—wellhead or refined (NG), or propane liquid (LPL). The unit runs on either fuel source, but never simultaneously. Each fuel source is connected to an independent fuel system. Fuel switching occurs automatically and during unit operation—no operator action is required. For more information, see [Fuel Switching](#).

⚠ DANGER

ALL FUEL TYPES ARE POTENTIALLY FLAMMABLE AND/OR EXPOSIVE AND SHOULD BE HANDLED WITH CARE. COMPLY WITH ALL LAWS REGULATING THE STORAGE AND HANDLING OF FUELS.

Sourcing Natural Gas

The unit accepts NG vapor, sourced from either of the following.

- A utility supply line
- A wellhead

Natural gas is drawn into the fuel system through the NG inlet port (see [Figure 7](#)).

Sourcing Liquid Propane

The unit accepts propane liquid, sourced in pressurized tanks.

Note: *THIS FUEL SYSTEM DOES NOT ACCEPT PROPANE VAPOR. Propane supply tanks must dispense propane liquid. Check the regulator on the supply tank to verify LPL is dispensed. If your propane supply tank does not have a liquid withdrawal system, a licensed propane supply company must install the correct fitting to allow for it.*

Liquid propane is drawn into the fuel system through the LPL inlet port (see [Figure 7](#)). The LPL vaporizer and regulator converts the liquid to a vapor before introducing the fuel to the engine carburetor.

Fuel Switching

Natural gas is the primary fuel and LPL is the secondary. The unit always selects and uses the primary fuel source, provided it is available. The primary fuel source is available when input pressure in the primary fuel line is at or above 30 PSI (207 kPa).

Note: *Input pressure is fuel pressure in the supply pipe between the fuel source and the unit.*

Fuel switching occurs automatically and during unit operation—no operator action is required. At all times, if input pressure in the NG fuel line drops below 30 PSI (207 kPa) for a certain time frame, the unit switches to the secondary fuel; and when input pressure in the NG fuel line rises to or above 30 PSI (207 kPa), the unit switches back to the primary fuel. A fuel sensor measures the input pressure in the primary fuel line.

Note: *No sensor is connected to the secondary fuel line. If NG is unavailable and LPL becomes depleted, no fuel switching is attempted and no warning is delivered, but the unit shuts off.*

If NG input pressure drops below 30 PSI (207 kPa) for a certain time frame and no secondary fuel source is available, the low fuel pressure warning activates. If the primary fuel source drops below 20 PSI (138 kPa), the unit shuts off. For more information, see [Low Fuel Pressure Warning](#).

GenLink DCP: Dual Fuel Setup and Operation

The Dual Fuel Setup page in GenLink provides flexibility in controlling the operation of the fuel source switching. There are four modes of operation: default, digital pressure, analog pressure, and digital and analog pressure.

The default dual-fuel setup setting is analog. [Figure 14](#) shows default analog settings.

The screenshot shows a window titled "Dual Fuel Setup" with a dropdown menu set to "Analog Pressure". Below this, there are several input fields and buttons. The "Return to Primary Fuel Delay (m)" field is set to 2. The "Transition Overlap Time (s)" field is set to 1.00. The "Analog Input Channel Assignment" dropdown is set to "Analog Input Channel #5". The "Analog Pressure Threshold" field is set to 30. The "Analog Pressure Hysteresis" field is set to 5. The "Analog Pressure Loss Delay (s)" field is set to 0.00. At the bottom, there are four buttons: "Apply", "Print", "Close", and "Help".

02258

Figure 14 - Dual Fuel Setup Page (Analog Pressure)

The unit owner has access to GenLink and can affect changes to dual-fuel setup.

Rooftop Beacon

The rooftop beacon indicates what fuel source is currently in use. See table below.

Beacon Color	Indicates Fuel Source Is
Green	Primary (NG)
Red	Secondary (LPL)

Low Fuel Pressure Warning

The NG fuel system is equipped with a low fuel pressure warning; the LPL fuel system is not.

If input pressure in the NG fuel line drops below 30 PSI (207 kPa) for a certain time frame, the unit attempts to switch to the LPL fuel source. Almost immediately after the switch, a warning activates and the controller displays message FUEL PRESS Lo ([Figure 15](#)). The warning stops when NG input pressure rises to or above 30 PSI (207 kPa). Resetting the controller is unnecessary. See [Warnings](#) for more information.

```

Wr*DI12/FUEL PRESS Lo
n/a
n/a
ACK MORE<--> (1-3)

```

02227

Figure 15 - Low NG Fuel Pressure

NG Fuel Filters

The NG fuel system is equipped with two filters: a moisture separator and particulate filter. Waste material (condensates) exit the filters and then the unit through drain ports. See [Figure 7](#) for filter and drain port locations.

⚠ CAUTION

Condensates may contain aggressive or harmful components. Therefore, skin contact should be avoided. Always wear proper protective clothing and use appropriate tools when servicing the filter system.

Preparing External Drain Ports for Use

Before operating unit, verify the external drain ports (see [Figure 7](#)) are un-stopped and routed to suitable containers.

NOTICE

Condensate is subject to mandatory waste disposal. As such, it must be collected in suitable containers and disposed of or processed according to applicable local, state, and federal laws.

WELLHEAD PRIMING

When priming a wellhead to obtain NG, LPL must be connected to the unit, enabling the unit to start and run. The unit runs on LPL until the pumpjack delivers NG to the fuel system at or above 30 PSI (207 kPa), at which point the unit switches to the NG fuel source. See [Purging Air from Fuel Line](#) for more information.

UNIT ALARMS AND WARNINGS

Alarms and warnings inform the operator of fault conditions that may require attention to ensure the generator continues to operate safely and efficiently. The operator can correct and clear some alarms and warnings. Others must be cleared by a GMPASD.

Non-emissions Alarms

Non-emissions alarms include warnings, non-shutdown alarms, and shutdown alarms. If any of those alarm types are active, the unit responds as follows.

- Common alarm horn sounds
- Alarm LED flashes
- H-100 control panel displays an explanatory message on the System Alarm and Warning page ([Figure 16](#))

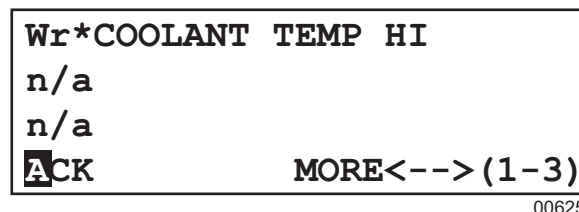


Figure 16 - System Alarm and Warning Page

Warnings

- Indicate a changed operating condition that might require action or inspection
- Do not cause the unit to shut down
- Automatically clear when the conditions causing the alert are no longer present

Non-shutdown Alarms

- More urgent than warnings
- Indicate a system parameter that is approaching or has exceeded a safe operating limit
- Do not cause the unit to shut down
- Require some form of action, such as inspection or close monitoring
- Automatically clear when 1) conditions causing the alarm are corrected and 2) the alarm is acknowledged on the H-100 control panel

Shutdown Alarms

- Indicate a system fault that, if allowed to continue without immediate inspection or correction, will result in damage to the unit.
- Immediately shut down the unit, protecting the generator from damage.
- Shutdown alarms clear only after they have been acknowledged, the alarm condition has been resolved, the control power switch has been cycled from AUTO or MAN to OFF, and the alarm is no longer active.

Emissions Alarms (DTCs)

Diagnostic trouble codes (DTCs) are special alarms equipped in generators that are required by the Environmental Protection Agency (EPA) to contain on-board diagnostics (OBD). This unit is equipped with a DTC alarm, which activates when an emissions-related fault is present. The DTC supported by the generator is P0134, which indicates the oxygen sensor has not toggled between indicating *lean* and indicating *rich* for at least one minute.

Diagnostic trouble codes do not generate audible alarms. They display the Malfunction Indicator Light (MIL) message CHECK ENGINE on the H-100 control panel display ([Figure 17](#)).

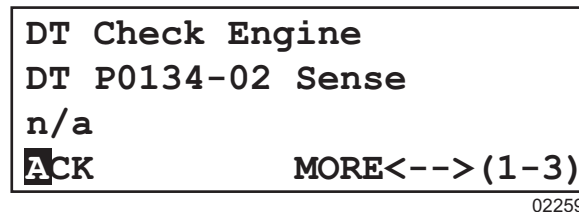


Figure 17 - Emissions Alarm

Diagnostic trouble codes automatically clear after three run cycles (three times fully starting the unit and then completely shutting it down) in which no DTC conditions are active. A GMPASD can also clear the DTC through GenLink.

See the H-100 Control Panel Operations Manual for more information.

General Fault Response Procedure

Each time a fault becomes active, follow this procedure:

1. Take note of what faults are displayed, as acknowledging the faults will remove any nonactive faults from the display. Also, turning the key switch from AUTO or MAN to OFF acknowledges the faults.
2. Carefully read each line of the Alarm/Warning Page to determine what fault condition is present. If there is more than one fault, the most recent is listed first.
3. Press ENTER to acknowledge the fault, silence the alarm horn, and switch the Alarm LED from flashing to On.
4. Press MENU to display the main menu navigation screen.
5. Depending on the fault condition, use the arrow keys to toggle to the corresponding area and press ENTER.
6. Observe the information displayed for the affected area.
7. Determine corrective action necessary.
8. When the fault condition is cleared, the ALARM LED switches off.

H-100 System Alarm and Warning Pages

There are three System Alarm and Warning pages. Each displays up to three alarms and warnings. If there are more than nine total alarms and warnings to list, then only the most recent nine will be visible. All alarms and warnings remain in the list until they are cleared. Warnings clear when they are no longer active. Normal Alarms clear when they are no longer active and have been acknowledged. Shutdown alarms clear only after the key switch has been placed in the OFF position and they are no longer active. There are a few shutdown alarms that will only clear after a power cycle of the controller and they are no longer active. DTCs only clear after 3 consecutive run cycles with no corresponding fault conditions. Besides using the menu to get to the alarm pages, the right display immediately changes to the first alarm page when an alarm, warning, or DTC first becomes active. If a shutdown alarm is active and an alarm or warning is not acknowledged, the displays will flash with the Alarm LED.

To view the alarm/warnings pages:

1. Press MENU. The main menu displays, with the cursor on the A in Alarms ([Figure 10](#)).
2. Press ENTER. The System Alarm and Warning Page displays ([Figure 18](#)).

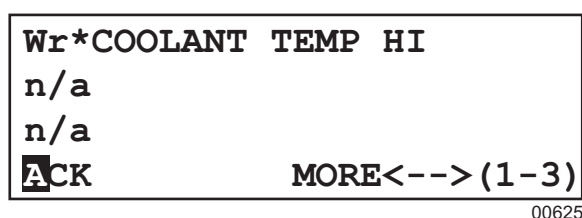


Figure 18 - Typical System Alarm and Warning Page

The table below explains each display item.

Display Item	Description
Wr	Warning type <ul style="list-style-type: none"> • AI: Alarm • SD: Shutdown alarm • DT: Emissions DTC
*	Indicates fault has not been acknowledged
COOLANT TEMP Hi	Fault condition <ul style="list-style-type: none"> • Hi: Tripped by being above threshold • Lo: Tripped by being below threshold • Sn: Sensor fault
n/a	Indicates vacant lines—no additional alarms or warnings to display
Cursor flashes on the A in ACK	System is requesting acknowledgment of the alarm Press ENTER to acknowledge alarm, stop alarm horn, and remove asterisk (*) from display <i>Note: Some faults immediately reactivate the horn</i>
More <--->(1-3)	Indicates more pages of alarm information are available. To navigate pages, move the cursor to the <-- or --> and press ENTER.

Alarm and Warning Response Procedures

Acknowledging an alarm or warning silences the alarm horn and clears the record from the H-100 controller display.

Note: *The manufacturer recommends notifying a GMPASD of any alarm/warning condition, so qualified service personnel can examine the situation.*

Shutdown alarms are cleared, as follows.

- Turn key switch to OFF
- Resolve conditions that caused the alarm
- On the H-100 control panel, acknowledge the alarm:
 1. Go to the Alarms page.
 2. Move the cursor to the ACK field.
 3. Press ENTER.

Section 3 - Operation

This section assumes the unit has been properly configured, serviced, tested, adjusted, and otherwise prepared for use. The owner is responsible for ensuring the emission control system complies with state and local regulations.

Note: *The unit should be configured, serviced, tested, and adjusted by a GMPASD.*

OPERATOR GUIDELINES

The unit should be operated only by an authorized operator. An authorized operator is someone trained by a GMPASD. For information on training and authorizing operators, contact a GMPASD. Operators should read and understand this manual before operating the equipment.

⚠ 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)**

Note: *Contact Generac Mobile Products Technical Service if you have any questions.*

The procedures in this manual are suggestions. The owner/operator is responsible for ensuring these procedures are executed by licensed contractors according to all applicable codes.

In addition to these suggestions, before installing the unit, you should obtain the most up-to-date copies of the following documents from the National Electrical Code and other authorities.

- National Electric Code, articles 230, 250, 445, 517, and 700
- National Fire Protection Association:
 - No. 30: Storage, Handling and Use of Flammable Liquids
 - No. 37: Stationary Combustion Engines and Gas Turbines
 - No. 99: Essential Electrical Systems for Health Care Facilities
 - No. 101: Life Safety Code No. Systems
 - No. 110: 1985 Emergency and Standby Power Systems
- NEMA MG1
- Local codes applicable to genset installation (see your local building inspector)

NFPA (National Fire Protection Association) (617) 770-3000 (includes NEC)
1 Batterymarch Park, Quincy, MA 02169-7471 USA

NEMA (National Electrical Manufacturers Association) (703) 841-3200
1300 N. 17th Street, Suite 1847, Rosslyn, VA, 22209 USA

WELL SITE APPROVAL

The engine was tested and is approved to operate on any wellhead gas composition with sulfur content of less than 115 mg/m³ (5.03 gr/SCFM). Formal well site approval is unnecessary.

SETTING UP UNIT

Installing the unit comprises the following procedures.

1. Position unit for operation.
2. Connect fuel sources.
3. Ground unit.
4. Connect loads.
5. Inspect the installation.

Each procedure is explained below.

Positioning Unit

Unit should be positioned for operation as follows.

- On level, stable ground
- Outdoors and in a well ventilated location
- A safe distance from doors, windows, and ventilation equipment; which can draw in exhaust

⚠ 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)

- A safe distance from flammable or combustible material, and in a position that prevents flammable material from accumulating under or around unit

⚠ 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)

- Deploy trailer jacks
- Chock wheels

Connecting Fuel Sources

After safely positioning the unit, connect the fuel sources.

Both fuel sources must be connected during unit installation on a work site. After installation and confirmation of successful operation, both fuel sources should remain connected. Although the unit can operate with just one fuel source connected, it is designed to switch fuels under certain circumstances; and if the unit attempts to switch fuels without both sources connected, the unit may shut off, immediately stopping power to the output connections. See [Fuel System](#) for more information.

Connect fuel sources as follows.

1. Select pipes appropriate for the required fuel flow rate.
See [Pipe Diameter and Fuel Flow Rate](#).
2. Apply **Gasolia® soft-set thread sealant with PTFE** to threads of tapered ends of pipes.
Note: *Do not apply sealant to flanged ends.*
3. Connect pipes to fuel sources.
4. Connect pipes to fuel inlets on unit (see [Figure 7](#)).
5. Open valves at fuel sources.
6. Open valves on unit fuel inlet ports.
7. Verify the external fuel-filter drain ports (see [Figure 7](#)) are un-stopped and routed to suitable containers.

Pipe Diameter and Fuel Flow Rate

Pipe diameter determines the rate at which a fuel flows to the unit. To attain a workable flow rate, you must choose a suitable pipe size.

- The required NG fuel flow-rate for the unit is 1,320 ft³/hr (37.38 m³/hr). To determine pipe diameter for your application, see [Table 1](#), below.
- The required LPL fuel flow-rate for the unit is 8.5 gph (32.2 Lph). To determine pipe diameter for your application, see [Table 2](#), below.

Note: Almost all operation problems are related to the installation techniques used. **DO NOT** guess; be sure pipe diameter is adequate for required flow rate.

Table 1 - NG Flow Rate (Ft³/Hr) At Pipe Length

Pipe Length (Feet)	Iron Pipe Size (Diameter)										
	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"
15	73	165	332	722	1174	2386	3704	6253	13352	37229	
30	50	115	232	515	818	1712	2646	4521	9331	26330	53728
45	41	95	191	418	673	1419	2213	3752	7600	22462	43867
60	37	83	166	366	587	1241	1924	3319	6542	18595	37999
75		74	149	332	524	1077	1684	2886	5772	16652	33959
90		67	137	298	433	962	1501	2597	5291	15200	31025
105		63	126	274	415	885	1376	2357	4906	14064	28715
120			115	260	404	827	1289	2213	4618	13160	26859
150			105	233	366	750	1174	2011	4185	11775	24050
180			96	216	337	693	1077	1876	3848	10736	21934
210			89	197	308	635	991	1712	3559	9937	20298
240				183	289	596	933	1616	3357	9235	18990
270				171	274	558	875	1520	3127	8658	17903
300				164	260	524	827	1433	2886	8177	16998

Table 2 - LP Liquid Line Sizing Chart

Liquid Propane Flow	Iron Pipe Size (Diameter)													
	1/4"		3/8"		1/2"		3/4"		1"		1-1/4"		1-1/2"	
	Schedule		Schedule		Schedule		Schedule		Schedule		Schedule		Schedule	
GPH	40	80	40	80	40	80	40	80	40	80	40	80	40	80
10	729	416												
15	324	185												
20	182	104	825	521										
40	46	26	205	129	745	504								
60	20	11	92	58	331	224								
80	11	6	51	32	187	127	735	537						
100	7	4	33	21	119	81	470	343						
120			23	15	83	56	326	238						
140			15	9	61	41	240	175	813	618				
160			13	8	47	32	184	134	623	473				
180					37	25	145	106	491	373				
200					30	20	118	86	399	303				
240					21	14	81	59	277	211				
280					15	10	60	44	204	155				
300					13	9	52	38	177	135	785	623		
350							38	28	130	99	578	459		
400							30	22	99	75	433	344	980	794

Use the charts as follows.

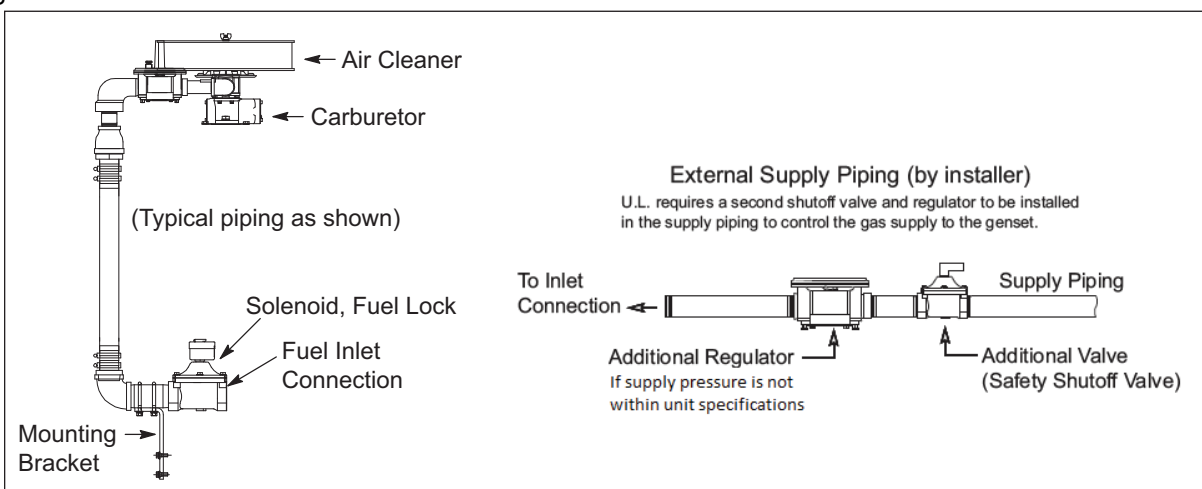
1. Locate required flow in the left hand column. If it falls between two numbers, use the larger.
2. Determine total required pipe length.
3. Read chart from left to right to find the total length equal to or greater than the distance from source to use.
4. From that point, read up to find the required pipe size.

Valve and Fitting Pipe Equivalents

Table 3 - Valve And Fitting Pipe Equivalents

Fitting	Equivalent Length Of Steel Pipe (Feet)													
	Nominal Pipe Size (NPT)													
	3/4"		1"		1-1/4"		1-1/2"		2"		2-1/2"		3"	
	Schedule		Schedule		Schedule		Schedule		Schedule		Schedule		Schedule	
	40	80	40	80	40	80	40	80	40	80	40	80	40	80
45° Screwed Elbow	1.2	0.9	1.3	1.2	1.7	1.5	2.0	1.8	2.6	2.4	3.0	2.8	3.8	3.7
90° Screwed Elbow	1.8	1.6	2.3	2.1	3.1	2.9	3.7	3.4	4.6	4.4	5.3	5.1	6.9	6.5
Screwed T Thru Run	1.4	1.3	1.7	1.6	2.4	2.3	2.8	2.6	3.6	3.3	4.2	4.0	5.4	5.0
Screwed T Thru Branch	4.6	4.0	5.6	5.3	7.9	7.3	9.3	8.6	12.0	11.0	15.0	14.0	17.0	16.0
Screwed Globe Valve*	14.0	10.0	21.0	16.0	24.0	19.0	39.0	27.0	42.0	34.5	24.0	20.0	46.0	39.0
Screwed Angel Valve*	11.0	8.0	13.0	10.0	10.5	8.5	20.0	16.0	32.0	26.5	7.5	6.0	19.0	16.0
Flanged Globe Valve*	-	-	-	-	-	-	30.0	24.0	4.10	34.0	-	-	46.0	39.0
Flanged Angel Valve*	-	-	-	-	-	-	12.0	10.0	14.5	12.0	-	-	19.0	16.0

* Reg O A7500 series valves.



02256

Figure 19 - Gas Line Connections

Grounding Unit

After connecting fuel sources to the unit, ensure the unit is properly grounded.

⚠ DANGER

VERIFY THE SYSTEM IS PROPERLY GROUNDED BEFORE APPLYING POWER. DO NOT APPLY AC POWER BEFORE CONFIRMING THAT GROUNDS ARE CONNECTED. ELECTRICAL SHOCK CAN CAUSE SERIOUS OR FATAL INJURY. THE NEC MAY REQUIRE THAT THE FRAME AND EXPOSED CONDUCTIVE SURFACES (METAL PARTS) BE CONNECTED TO AN APPROVED EARTH GROUND. LOCAL REGULATIONS MAY ALSO REQUIRE PROPER GROUNDING OF THE UNIT.

Connecting Loads

After unit is properly grounded, electrical loads can be safely connected to the unit. Loads can be connected to the following.

- Customer convenience receptacles
- Cam locks

See [Generator Output Connections](#) for more information.

Prestart Inspection

The inspection below is only required once: after the initial install of the unit on the work site.

- ☐ Verify battery disconnect switch is turned to ON.
- ☐ Verify unit is positioned stably.
- ☐ Verify proper clearance exists on all sides and top of enclosure.
- ☐ Verify unit is a safe distance from flammable or combustible material.
- ☐ Verify no load is connected to unit.
- ☐ Inspect engine and genset: verify there are no loose wires or components. Tighten if necessary.
- ☐ Inspect generator windings for moisture: verify they are thoroughly dry.

⚠ CAUTION

Do not apply high voltage to windings in moisture-saturated conditions. Serious damage to genset and property can result. (000153)

Note: *Units that have been in transit or storage for long time periods may have been subject to extreme temperature and moisture changes, which can cause excessive condensation. Thoroughly dry the generator windings before bringing the genset up to full nameplate voltage.*

- ☐ Verify engine oil level is between ADD and FULL.
- ☐ Verify level of engine coolant in the overflow jug is between ADD and FULL.
- ☐ Verify the key switch is turned to OFF.
- ☐ Verify fuel valves are open, with correct pressure and flow rate.
- ☐ Inspect fuel lines and connections for gas leaks: Check inside unit and check pipes connecting fuel sources to unit. Repair any leaks and breaks.
- ☐ Verify fuel connections comply with applicable building codes. Remove tools, rags, and other foreign material from inside unit.
- ☐ Close all enclosure doors, except the control panel door; and ensure no hands are inside unit enclosure when it starts.

OPERATING UNIT

Before attempting to operate the unit, verify the unit is properly set up. See [Setting Up Unit](#) for more information.

Purging Air from Fuel Line

Before the unit will run on NG, air must be purged from the primary fuel line and the NG pressure in the fuel system must be at or above 30 PSI (207 kPa). To accomplish that, both fuel sources must be connected to the unit during start-up. The procedure is as follows.

1. Verify both fuel sources are connected to the unit.
2. Verify valves are open on both fuel sources.
3. Turn the key switch to MAN. The unit starts and begins running on LPL. Simultaneously, NG is drawn from the pumpjack into the NG fuel system. When the pumpjack delivers NG to the fuel system at or above 30 PSI (207 kPa), the unit switches to the NG fuel source. See [Fuel System](#) for more information.

Starting Unit

The intended use is MANUAL mode (key-switch position MAN). See [Equipment Description](#) for more information.

MANUAL Mode

1. Turn key switch to MAN. The unit starts. The controller display activates and the NOT IN AUTO light begins pulsing.
Note: *The NOT IN AUTO light always pulses when the unit is running in manual mode.*
2. Perform operation inspection. See [Operation Inspection](#) for more information.
3. Turn key switch to OFF and allow unit to completely stop.
4. Connect electrical loads to unit. See [Generator Output Connections](#) for more information.
5. Repeat step 1 and begin using connected loads.

AUTO Mode

If unit is correctly connected to a transfer switch, the start-up procedure is as follows.

1. Turn key switch to AUTO. The unit does not start.
2. When transfer switch is tripped, the unit starts.

⚠ CAUTION

If unit is connected to a transfer switch, the unit must only be used in AUTO mode, to deflect the load upon start up.

See [General Information](#) for more information on the key switch.

Operation Inspection

The inspection below is recommended each time the unit starts.

Note: To stop the engine, turn key switch to OFF.

- ☐ Inspect fuel lines and connections for gas leaks—check inside unit and check pipes connecting fuel sources to unit. Repair any leaks and breaks.
- ☐ Verify fuel supply pressure is correct.
- ☐ Verify there are no coolant or oil leaks. If a leak is detected, immediately stop the engine and repair the leak before proceeding.
- ☐ Verify operation is smooth. If you observe squealing belts, harsh vibrations, or other abnormal behavior; immediately stop the engine and repair before proceeding.
- ☐ Verify correct output voltage exists (line-to-line and line-to-neutral) at the genset.
- ☐ Verify phase rotation is the same as the attached equipment.
- ☐ Adjust output voltage in GenLink.
- ☐ After completing the operation checks, stop the engine and wait for the engine to cool. When the engine is cool, check engine oil and coolant levels.

⚠ WARNING

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

- ☐ When unit reaches operation speed, verify the voltage setting is correct and adjust if necessary.

⚠ WARNING

Do not connect or disconnect a fuel source while the engine is running.

Shutting Down Unit

⚠ 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)

Normal Shut-Down

1. Verify power to connected loads can be interrupted. Warn equipment users of the pending power disruption. Depending on unit application, other actions may be required before shutting down the unit.
2. Switch the MLCB to OFF (O). Power to connected loads is stopped.
3. Allow unit to run for approximately five minutes. That allows the engine to cool, preventing damage to critical engine components.
4. On control panel, turn key switch to OFF.

Note: Depending on unit application, safety tag-outs or lock-outs may also be required.

5. Turn battery disconnect switch to OFF.

Emergency Shut-Down

⚠ 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)

Push the EMERGENCY STOP switch to immediately shut down the unit and stop power to all electrical loads. Doing so results in an EMERGENCY STOP shutdown alarm. For more information, see [General Information](#).

Re-starting After Emergency Shut-Down

1. Verify the MLCB is OFF (O).
2. Pull the EMERGENCY STOP switch.
3. On controller, acknowledge the EMERGENCY STOP shutdown alarm. See [Unit Alarms and Warnings](#) for more information.
4. Turn key switch to OFF.
5. Switch the MLCB to ON (I).
6. Start unit. See [Starting Unit](#) for more information.

GENERATOR OUTPUT CONNECTIONS

⚠ CAUTION

Equipment damage. Exceeding rated voltage and current will damage the auxiliary contacts. Verify that voltage and current are within specification before energizing this equipment.
(000134a)

Temperature and Altitude Derating

Derating is the reduction of available power for operating tools and accessories connected to the receptacles. All units are subject to derating due to altitude and temperature. Typical reductions in performance are 2–4% for every 1000 ft (305 m) of elevation and 1% per 10°F (3–5°C) increase in ambient air temperature over 72°F (22°C).

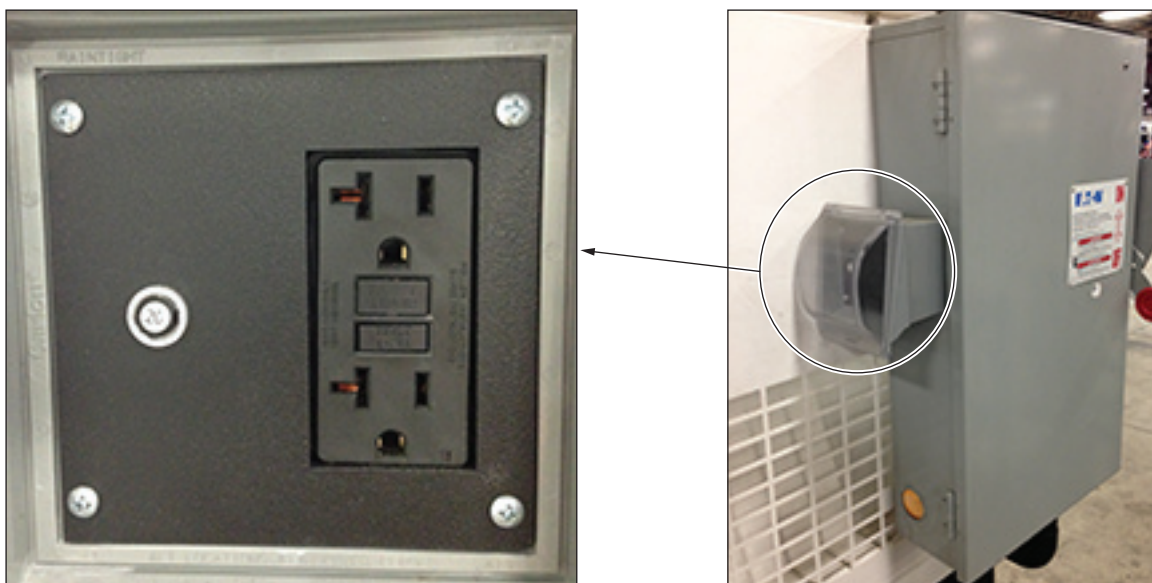
Customer Convenience Receptacles

The customer convenience receptacle is attached to the outside of the customer disconnect switch box ([Figure 20](#)). The receptacle is a 120VAC duplex outlet rated at 20A with Ground Fault Circuit Interrupt (GFCI) protection.

The receptacle is not routed through the MLCB, but through an independent circuit breaker, located directly next to it. The breaker is sized to the maximum rating of the receptacle.

NOTICE

Power to the receptacles is available when the generator is running, even if the main circuit breaker is OFF (O). **MAKE SURE THAT ANY EQUIPMENT CONNECTED TO THE CONVENIENCE RECEPTACLES IS TURNED OFF BEFORE TURNING THE BREAKERS ON** and the output voltage is correct for equipment connected to the receptacles. Improper voltage may cause equipment damage or malfunction.



02198

Figure 20 - Customer Convenience Receptacle

Generator Output Connection Lugs

The unit is equipped with connection lugs, which are inside the customer disconnect switch box ([Figure 6](#)). The lugs provide connection points for attachment of external loads to the generator.

NOTICE

It is HIGHLY RECOMMENDED that only a trained and licensed electrician perform any wiring and related connections to the generator. Installation should be in compliance with the National Electric Code (NEC), state and local regulations. Failure to follow proper installation requirements may result in equipment or property damage, personal injury, or death.

⚠ DANGER

ELECTROCUTION. BEFORE CONNECTIONS ARE MADE TO UNIT, VERIFY THE MAIN CIRCUIT BREAKER AND BATTERY DISCONNECT SWITCH ARE OFF (O). FAILURE TO DO SO WILL RESULT IN DEATH OR SERIOUS INJURY. (000156)

⚠ 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)

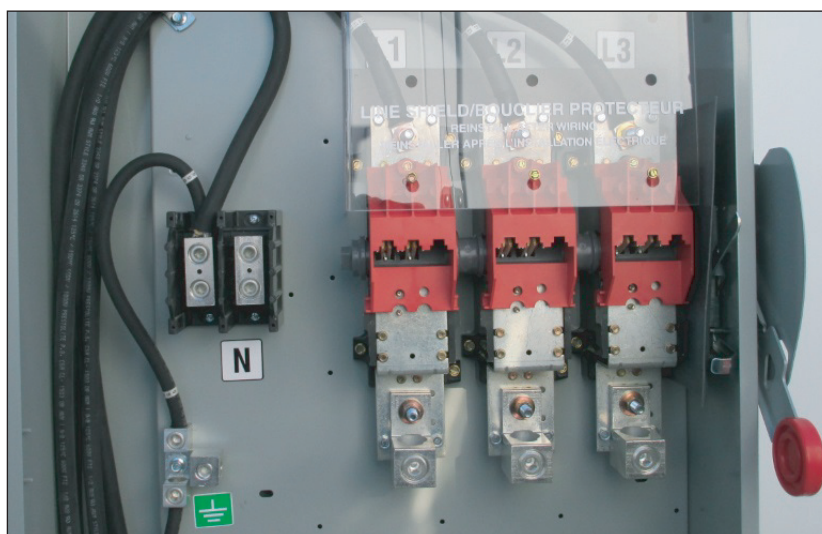
Connections to the lugs should be made by running the power cables up through the opening in the bottom of the box. DO NOT make any connections directly to the lugs without routing the cables through the slot. Use a hex-wrench to tighten the cable connections.

The door on the customer disconnect switch box is equipped with a safety interlock switch. If the door is opened while the unit is operating, the safety interlock switch trips the MLCB and disables the voltage regulator.

⚠ DANGER

ELECTROCUTION. DO NOT DISABLE OR MODIFY THE CONNECTION BOX DOOR SAFETY SWITCH. DOING SO WILL RESULT IN DEATH OR SERIOUS INJURY. (000157)

See [Figure 21](#). A ground connection is located next to the connection lugs. The generator neutral is bonded to ground when it is shipped from the factory. The bonding plate must be removed if the generator is used as a standby power source. **INSTALLATION SHOULD BE IN COMPLIANCE WITH NATIONAL ELECTRIC CODE (NEC), AS WELL AS ANY STATE AND LOCAL CODES OR REGULATIONS.**



01182

Figure 21 - Generator Output Connection Lugs

General Wiring Considerations

- When routing the interface wiring, do not route it up against anything that could cut or chafe the wiring. Do not route the wire up against any hot or potentially hot object.
- Make sure that all the electrical components share a common hard wired ground.
- Check with your local building inspector to determine what you must do to comply with the local regulations for grounding of this type of permanent installation.

⚠ DANGER

VERIFY THE SYSTEM IS PROPERLY GROUNDED BEFORE APPLYING POWER. DO NOT APPLY AC POWER BEFORE CONFIRMING THAT GROUNDS ARE CONNECTED. ELECTRICAL SHOCK CAN CAUSE SERIOUS OR FATAL INJURY. THE NEC MAY REQUIRE THAT THE FRAME AND EXPOSED CONDUCTIVE SURFACES (METAL PARTS) BE CONNECTED TO AN APPROVED EARTH GROUND. LOCAL REGULATIONS MAY ALSO REQUIRE PROPER GROUNDING OF THE UNIT.

⚠ CAUTION

This unit must have a battery installed for operation. The battery is used during starting and during operation. If engine operation is attempted while the battery is removed, damage to the engine's electrical components may result.

Generator Cam Lock Connections

The generator cam lock connections are located inside the customer disconnect switch box. These receptacles provide connection points for attachment of external loads to the generator.

⚠ WARNING

It is HIGHLY RECOMMENDED that only a trained and licensed electrician perform any wiring and related connections to the generator. Installation should be in compliance with the National Electric Code (NEC) as well as any local or state guidelines as required by law. Failure to follow proper installation requirements may result in equipment or property damage, personal injury or death.

⚠ DANGER

IMPROPER OR INCORRECT CONNECTIONS TO A BUILDING'S ELECTRICAL SYSTEM CAN CAUSE POTENTIALLY LETHAL VOLTAGES TO BACKFEED INTO UTILITY LINES. THIS MAY RESULT IN INJURY OR ELECTROCUTION TO UTILITY WORKERS NEARBY. MAKE SURE THE GENERATOR IS SUPPLYING POWER TO AN ISOLATED OBJECT OR BUILDING THAT IS NOT CONNECTED TO ANY UTILITY LINES.

Connections should be made by routing the power cables equipped with series 16 taper nose 400A, 600V cam lock plugs up through the opening in the bottom of the box and into the cam lock receptacles. Secure the connection by rotating the plug a half turn to the right. The customer disconnect switch box door is equipped with a mechanical safety interlock which doesn't allow the door to open with the disconnect switch closed (ON position). The input terminals of the customer disconnect switch will still be live with the door open and engine running.

⚠ WARNING

Before any connections are made to the generator, make sure that the main circuit breaker and the controller switch are in the OFF (O) position and that the negative (-) battery cable is disconnected. Potentially lethal voltages may be present at the generator cam lock receptacles.

⚠ WARNING

Never attempt to disable or modify the switch box door safety interlock. Equipment damage, personal injury or death may result.



00623

Figure 22 - Cam Locks

A ground connection is located on the far left of the cam lock set. The set **MUST** be connected to a good earthen 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. INSTALLATION SHOULD BE IN COMPLIANCE WITH NATIONAL ELECTRIC CODE (NEC), AS WELL AS ANY STATE AND LOCAL CODES OR REGULATIONS.

FRAME GROUND CONNECTION

Follow all NEC, state, and local regulations regarding frame ground connections.

Determine ground stud location and connect the ground wire to the ground connection lug, located inside the customer disconnect switch box. This ground is the local reference ground to ground the unit frame only.

TRANSFER SWITCH

If the unit is connected to an emergency power system, a transfer switch must be used. A transfer switch must be used in AUTO mode to deflect the load upon start-up.

⚠ 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)

Electrical Connections

Class-1 wiring methods must be used for field wiring connections to terminals of class 2 circuits. It is the responsibility of the owner/operator to arrange for these procedures to be performed by a licensed electrical contractor and ensure conformance to all applicable codes, including local codes specific to your municipality/city/county and state. Wire size and insulation type should be as required by National Electrical Code (NEC) and local codes.

⚠ WARNING

Never connect this generator to the electrical system of any building unless a licensed electrician has installed an approved transfer switch. The National Electrical Code (NEC) requires that connection of a generator to any electrical circuit normally powered by means of an electric utility must be connected by means of approved transfer switch equipment to isolate the electrical circuit from the utility distribution system when the generator is operating. Failure to isolate the electrical circuits by such means may result in injury or death to utility power workers due to backfeed of electrical energy onto the utility lines.

⚠ WARNING

Incorrect installation of this generator set could result in property damage, injury or death. Connection of the generator to its fuel source must be done by a qualified professional technician or contractor.

⚠ WARNING

Be sure the system is properly grounded before applying power. Do not apply AC power before you ensure that grounds are connected. Electrical shock can cause serious or fatal injury. NEC requires that the frame and exposed conductive surfaces (metal parts) be connected to an approved earth ground. Local codes may also require proper grounding of generator systems.

BATTERY CONNECTIONS

Installation and servicing of batteries is to be performed or supervised by personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from batteries. 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/>.

⚠ 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)

⚠ 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)

A battery presents an electrical shock hazard and high short circuit current, as well as being caustic and corrosive. When working on batteries, observe the following precautions.

- Remove watches, rings, necklaces, and all other metal objects.
- Use tools with insulated handles.
- Wear rubber gloves and boots.
- Wear full eye protection (safety glasses or goggles) and protective clothing.
- Where electrolyte contacts the skin, flush the area immediately with water and wash it off using soap and water.
- Where electrolyte contacts the eyes, immediately flush the eye thoroughly with water and seek medical attention quickly.
- Spilled electrolyte is to be washed down with an acid neutralizing agent. A common practice is to use a solution of 1 lb (454 grams) bicarbonate of soda (baking soda) to 1 gal (3.8L) of water. The bicarbonate solution is to be added until evidence of reaction (foaming) has ceased. The resulting liquid is to be flushed with water and the area dried.

⚠ WARNING

A battery presents a risk of fire because they generate hydrogen gas. Hydrogen gas is extremely explosive. Never jump start a battery, smoke in the area around the battery or cause any spark to occur in the area around the battery.

- Do not smoke when near batteries.
- Do not cause flame or spark in battery area.
- Discharge static electricity from body before touching batteries by first touching a grounded metal surface.

⚠ WARNING

Disconnect the battery's ground terminal before working in the vicinity of the battery or battery wires. Contact with the battery can result in electrical shock when a tool accidentally touches the positive battery terminal or wire. The risk of such shock is reduced when the ground lead is removed during installation and maintenance.

Battery Disconnect Switch

The unit is equipped with a battery disconnect switch ([Figure 6](#)), which allows the operator to disconnect power from the battery by turning the switch to OFF.

TOWING UNIT

1. Use the 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. Raise the jack foot completely.
2. Connect trailer wiring to tow vehicle. Check for proper operation of the stop and signal lights.
3. Make sure all doors are properly latched.
4. Check for proper inflation of trailer tires. See [Specifications](#) for more information.
5. Check the wheel lugs. Tighten or replace any 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.

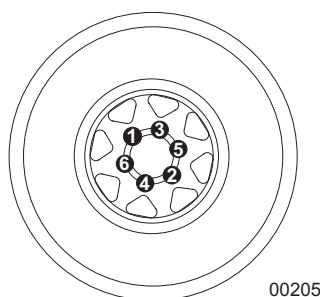


Figure 23 - Lug Tightening Sequence

- 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).

Note: After the first road use, re-torque the lug nuts in sequence.

Maximum recommended speed for highway towing is 45 mph (72 km/h). Maximum recommended speed for off-road towing speed is 10 mph (16 km/h).

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Section 4 - Maintenance

MAINTENANCE

Regular maintenance will improve performance and extend engine/equipment life. Generac Mobile Products, LLC. recommends that all maintenance work be performed by a Generac Mobile Products (GMP) Authorized Service Dealer (ASD). Regular maintenance, replacement, or repair of the emissions control devices and systems may be performed by any repair shop or person of the owner's choosing. To obtain emissions control warranty service free of charge, the work must be performed by a GMP ASD. See the emissions warranty.

⚠ CAUTION

Verify timing is set correctly to 18° BTDC. Failure to do so could result in irreparable damage to the unit. See [Ignition and Distributor Timing](#) for more information.

GENERAL MAINTENANCE PROCEDURE

To prevent injury, disable the generator set BEFORE performing any maintenance.

1. Shut down unit. See [Normal Shut-Down](#).

⚠ 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)

2. Verify the trailer is level and the wheels are blocked.
3. Perform maintenance.
4. Start unit. See [Starting Unit](#).
5. Perform a final visual inspection of the generator set to verify it is operating properly.

REGULAR MAINTENANCE SCHEDULE

Periodic inspection, service, and maintenance are critical to ensuring reliable operation. The following is the manufacturer's recommended maintenance schedule. The maintenance items must be performed more frequently if the unit is used in severe applications (such as very high or very low ambient conditions or extremely dirty/dusty environments).

Use the unit 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.

NOTICE

Follow all applicable safety and caution statements found in the unit operating manual or engine service/maintenance manual before performing any maintenance checks or service.

This maintenance schedule reflects the minimum tasks that need to be accomplished to ensure that the unit remains operational. For more maintenance information, see the engine service manual.

Item	Daily	50 Hours	250 Hours	500 Hours	750 Hours	1000 Hours	2000 Hours	8000 Hours
Daily Walk Around Inspection	◆							
Check engine oil level	◆							
Check coolant level	◆							
Inspect air cleaner	◆							
Inspect radiator for signs of obstruction or damage	◆							
Drain fuel water separator	◆							
Check electrical wiring	◆							
Check tire pressure	◆							
Check belts	◆							
Check all flex hoses	◆							
Change oil, replace oil filters		◆*	◆					
Drain oil from vaporizer regulator		◆*	◆					
Inspect air filter and replace if necessary			◆					
Verify ignition timing is 18° BTDC and have a GMPASD reset it, if necessary			◆					
Remove fan belt and check for wear (replace if necessary)				◆				
Service Battery					◆			
Replace Spark Plugs						◆		

Item	Daily	50 Hours	250 Hours	500 Hours	750 Hours	1000 Hours	2000 Hours	8000 Hours
Remove and Inspect Accessory Drive Belts (replace if necessary)						◆		
Inspect tensioner (replace if necessary)						◆		
Inspect spark plug wires (replace if necessary)						◆		
Inspect heat socks (replace if necessary)						◆		
Apply Dielectric Grease to Disconnect Box Connections							◆	
Check Electrical Connections							◆	
Exhaust/Catalyst Inspection							◆**	
Clean and Adjust Magnetic Pick Up							◆	
Check Engine and Generator Mounts							◆	
Inspect Flexible Hoses (replace if necessary)							◆	
Lubricate Trailer Leveling Jacks							◆	
Check Battery Connections and Disconnect Switch							◆	
Check Manifold/Pipe Hardware Torque (31 ft-lbs [42 Nm])							◆	
Inspect DC stator (replace if necessary)							◆	
Remove valve covers and Inspect valvetrain for excess wear or abnormalities Check valve lash (adjust if necessary); if adjusted, replace rocker nuts							◆	
Have a GMPASD replace distributor and reset timing to 18° BTDC							◆	
Replace water pump, water pump gaskets, thermostat, and coolant								◆
Flush coolant system								◆
Cylinder head swap: Replace cylinder head assemblies, roller lifters, pushrods, rocker arms, and rocker nuts								◆
Replace head gaskets, intake gaskets, exhaust manifold gaskets, cylinder head bolts, exhaust manifold bolts, and any other consumables during cylinder head swap								◆
NG fuel filters	See NG Fuel Filters , below							
Replace harmonic balancer and front engine seal								◆
Replace spark plug wires								◆
Replace automatic belt tensioner								◆

Item	Daily	50 Hours	250 Hours	500 Hours	750 Hours	1000 Hours	2000 Hours	8000 Hours
Replace PCV valve, inspect grommet and fittings (replace if necessary)								◆
Replace valve cover gaskets								◆
Replace timing chain, cam sprocket, and crank sprocket								◆

* Break-in period, one time.

** When disconnecting or replacing the catalyst or exhaust pipes, the clamps and exhaust blankets **MUST** be replaced.

MAINTENANCE TASKS

Daily Walk Around Inspection

Daily walk around inspection must be performed when the unit is operated continuously for extended periods of time.

Look for conditions that could hinder performance or safety, such as leaking oil, coolant, or gas (NG or propane); blocked vents, loose or missing hardware, and bad electrical connections. Check for foreign matter blocking the vents, the radiator and exhaust areas, and on top of the unit.

When the unit is not running, perform the following inspections:

- Inspect fan belt for cracks, fraying, and stretching. Ensure fan belt is properly inserted in the pulley grooves.
- Check fuel system, engine oil, and coolant.
- Inspect the tire pressure.
- Check electrical connectors, battery and battery disconnect connections, and ground points. Look for loose or missing hardware.
- Check all flexible rubber hoses for deterioration.

Engine Oil

At all times, the engine oil dipstick should measure between FULL and ADD. See [Engine Oil Recommendations](#) for more information.

About the Engine Oil Replenishment System

This unit contains an engine oil replenishment system. The system eliminates the need for frequent filling and checking of the crankcase. The system consists of a 21 gallon (79.5L) oil reservoir tank and an oil level regulator. The regulator is mounted so the centerline of the sight glass is at the same height as the level of the oil in the crankcase. When the engine oil level is low, the float triggers the reservoir tank to send fresh oil to the crankcase. The oil level regulator delivers the amount of oil required to maintain a constant oil level in the crankcase. A fine mesh screen in the regulator provides protection against damage by contaminants and abrasive foreign matter.

The regulator is pre-set to the appropriate level at the factory and should not require adjustment.

Checking Engine Oil Level

The engine oil level can be checked using the sight glass or dipstick. Both methods are below.

Note: The unit is equipped with an auxiliary engine oil reservoir and automatic float valve. When engine oil is checked, the auxiliary reservoir also should be checked.

- Checking sight glass: See [Figure 24](#). The oil level should be about halfway up the sight glass when the engine is running and near the top when the engine is stopped. If not, adjust the regulator height by loosening the two screws on the regulator bracket and slowly sliding the regulator along the slots until the oil is at the proper level. Tighten the screws.

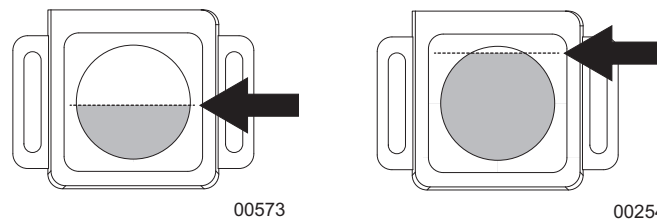


Figure 24 - Appropriate Levels: Engine Running (Left) and Stopped (Right)

- Checking dipstick:
 1. Stop engine and let cool for at least 10 minutes.
 2. Remove oil dipstick and wipe it dry with a clean, lint free cloth.
 3. Fully insert dipstick into dipstick tube. Visually confirm dipstick is fully inserted.
 4. Wait 10 seconds, then remove dipstick.
 5. Examine oil level on both sides of dipstick. The lower of the two levels is the correct measurement.
 6. Add oil, if necessary.

Typical Causes of Inaccurate Readings

- Reading higher oil level on dipstick
- Reading dipstick before oil fully drains into oil pan
- Inserting and removing dipstick too quickly
- Dipstick not fully inserted in dipstick tube

Adding Engine Oil to Auxiliary Reservoir

As needed, add oil into the oil reservoir. Open the valve and allow oil to drain into the controller until the sight glass is approximately halfway full when engine is running, or near the top of the sight glass when the engine is stopped (see [Figure 24](#)). The dipstick can be used to verify correct oil level when the unit is off. The valve may be left open. Close the valve before moving the unit.

After adding or changing the oil, run the engine one minute and check the oil level. Remember to wait 10 minutes to allow the engine to cool and oil to fully drain into the oil pan.

Changing Engine Oil and Filter

⚠ WARNING

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. (000127a)

When changing oil, it is not necessary to drain oil from reservoir.

1. Stop engine and let cool for at least 10 minutes.
2. Close valve below oil reservoir.
3. Place a container below oil drain port.
4. Remove oil drain plug.
5. Open drain valve at the engine oil pan. Verify oil level regulator valve is open.
6. Allow oil to drain completely into the container.
7. Remove oil filter and discard it. Gasket from filter might separate and become stuck to the engine. If so, remove the gasket and discard it.
8. Before installing new oil filter, lubricate oil filter gasket with a thin film of clean engine oil.
9. Install new oil filter, turning one full turn after initial gasket contact.
10. Close engine oil drain valve and reinstall plug at the skid frame drain port.
11. Remove oil fill cap on engine valve cover and add fresh oil. See [General Information](#) for oil capacity and oil type.
12. Check the oil dipstick. Oil level should be between ADD and FULL marks.
13. Open oil reservoir valve.
14. Top off the oil in the reservoir.

There is no need to run the unit and re-check the oil level. The filter automatically fills up with oil and the oil switch allows the proper amount of oil to supply the engine until full.

Engine Coolant

⚠ DANGER

ETHYLENE GLYCOL BASE ANTIFREEZE IS POISONOUS. DO NOT USE MOUTH-TO-SIPHON COOLANT FROM THE RADIATOR, RECOVERY BOTTLE, OR ANY CONTAINER. WASH HANDS THOROUGHLY AFTER HANDLING. NEVER STORE USED ANTIFREEZE IN AN OPEN CONTAINER BECAUSE ANIMALS ARE ATTRACTED TO THE SMELL AND THE TASTE OF ANTIFREEZE EVEN THOUGH IT IS POISONOUS.

⚠ DANGER

DO NOT USE ANY CHROMATE BASE RUST INHIBITOR WITH PROPYLENE GLYCOL BASE ANTIFREEZE. USING ANY HIGH SILICATE ANTIFREEZE BOOSTERS OR ADDITIVES WILL CAUSE OVERHEATING. THE MANUFACTURER RECOMMENDS THAT NO SOLUBLE OIL INHIBITOR BE USED FOR THIS EQUIPMENT.

Checking Coolant Level

You can check the coolant level when the engine is running or stopped.

1. Locate the coolant overflow jug, near the top of the radiator.
2. Determine coolant level, as follows.
 - If unit is OFF and engine is cool, the coolant level should be between ADD and FULL. If level is at or below ADD, add coolant.
 - If unit is ON, coolant should be visible in the overflow jug. If not, add coolant.

Adding Coolant

1. Stop engine and let cool for at least 10 minutes.

⚠ WARNING

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

2. Add coolant to overflow jug, according to the [Coolant Recommendations](#), until coolant level is between ADD And FULL.

Fan Belt

Every 500 hours, remove the fan belt and inspect it, as follows.

- Inspect fan belt for cracks, fraying, and stretching.
- Inspect pulleys and bearing.
- Rotate pulleys and feel for hard-turning and unusual sounds.

Fuel System

Check the fuel supply pressure. At the NG inlet port, fuel pressure should be a minimum of 30 PSI (207 kPa) and a maximum of 150 PSI (1,034 kPa).

NG Fuel Filters

⚠ CAUTION

Condensates may contain aggressive or harmful components. Therefore, skin contact should be avoided. Always wear proper protective clothing and use appropriate tools when servicing the filter system.

External Drain Ports

Periodically, inspect and clean the particulate filter drain port and moisture separator drain port ([Figure 7](#)).

Particulate Filter

Two parts of the particulate filter require maintenance:

- **Filter cartridge:** Prone to clogging over time as it filters the NG. Must be monitored and changed as needed.
- **Float valve:** Can become dirty and stick. Check it when replacing the filter cartridge. If grime has built-up on the valve, remove it and clean it.

Note: Do not blast pressurized air inside the filter to clean the float valve. Always remove the valve for cleaning.

To monitor the condition of the filter cartridge, check the Differential Pressure Indicator (DPI) ([Figure 25](#)).

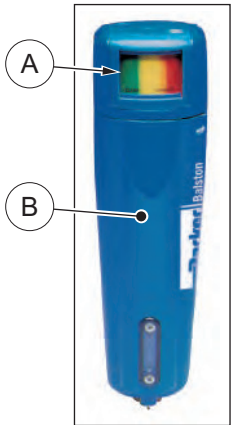


Figure 25 - Particulate filter

Item	Description
A	<ul style="list-style-type: none">• DPIRed = DirtyYellow = ChangeGreen = Clean <p>The filter cartridge should be replaced when the DPI indicates yellow.</p> <p>Note: The DPI is accurate when the unit is running on NG. When the unit is running on LPL, the DPI indicates green, regardless of actual filter status.</p>
B	Filter body

Replace the filter cartridge as follows.

1. Twist-off filter body.
2. Replace filter cartridge.
3. Twist-on filter body.

Moisture Separator Filter

The moisture separator does not contain a filter cartridge. Centrifugal force separates waste fluid and some particles.

Vaporizer Regulator

During the course of normal operation of propane-fired engines, an oil-like residue called *heavy ends* can build inside the secondary chamber of the vaporizer regulator. The residue may be a result of poor fuel quality, contamination of the fuel, or regional variation of the fuel make up. A significant build up of oil can affect the performance of the secondary diaphragm response. It is recommended that the oil be drained periodically. This is the minimum requirement to maintain the emission warranty.

The vaporizer regulator should be drained at every engine oil change, if contaminated or sub-standard fuel is suspected or known to have been used. Failure to follow this recommendation may be used to deny a warranty claim.

Draining Oil Build-Up from Regulator

Draining the regulator when the engine is warm helps the oil to flow freely from the regulator. To drain the regulator, follow the steps below.

1. Ensure the equipment is in a well-ventilated area and no external ignition sources are present.
2. Start the engine.
3. With the engine running, close the manual valve.
4. When the engine runs out of fuel, turn the key switch to OFF and turn the battery disconnect switch to OFF.
5. Loosen the hose clamps at the inlet and outlet hoses on the regulator and remove the hoses.
6. Remove the regulator mounting bolts.
7. Place a small receptacle in the engine compartment under the regulator.
8. Rotate the regulator 90° so that the outlet fitting is pointing down into the receptacle and drain the regulator.
9. Inspect the secondary chamber of the regulator for any large dried particles and remove.
10. Rotate the regulator back to its original position and reinstall the regulator mounting bolts.
11. Remove the receptacle. Dispose of any drained material in a safe and proper manner.
12. Reinstall the fuel hoses.
13. Reconnect any other hoses removed during this procedure.
14. Slowly open the manual service valve.

Note: *The fuel cylinder manual valve contains an excess flow check valve. Open the manual valve slowly to prevent activation the excess flow check valve.*

15. Check for leaks at the inlet and outlet fittings using a soapy solution or an electronic leak detector. If leaks are detected, repair the leaks.
16. Check coolant line connection to ensure no leaks are present.
17. Start engine.
18. Recheck for leaks at the regulator.

BATTERY

⚠ DANGER

STORAGE BATTERIES GIVE OFF EXPLOSIVE HYDROGEN GAS. THIS GAS CAN FORM AN EXPLOSIVE MIXTURE AROUND THE BATTERY FOR SEVERAL HOURS AFTER CHARGING. THE SLIGHTEST SPARK CAN IGNITE THE GAS AND CAUSE AN EXPLOSION. AN EXPLOSION CAN SHATTER THE BATTERY AND CAUSE BLINDNESS OR OTHER INJURY. ANY AREA THAT HOUSES A STORAGE BATTERY MUST BE PROPERLY VENTILATED. DO NOT ALLOW SMOKING, OPEN FLAME, SPARKS, OR ANY SPARK PRODUCING TOOLS OR EQUIPMENT NEAR THE BATTERY.

⚠ CAUTION

Battery electrolyte fluid is an extremely caustic sulfuric acid solution that can cause severe burns. Do not permit fluid to contact eyes, skin, clothing, painted surfaces, etc. Wear protective goggles, protective clothing and gloves when handling a battery. If fluid is spilled, flush the affected area immediately with clear water.

Inspection

Note: See [Battery Safety](#) for information on safely handling batteries.

Every month, inspect the engine battery, as follows.

- Check battery fluid level. Add distilled water, if needed.
- Inspect battery cables and connections for cleanliness and corrosion.

Every six months, a GMPASD should inspect the battery system, as follows.

- Check battery condition
- Check battery charge using a battery hydrometer. Recharge or replace, as required.

Installation and Replacement

Note: See [Battery Safety](#) for information on safely handling batteries.

When required, the battery must be replaced with one of equivalent size, voltage, and CCA (cold crank amp capacity). See unit specifications or contact a GMPASD for proper battery sizing. A new battery must be filled with the proper electrolyte and be fully charged before installing.

Preliminary instructions:

1. Turn key switch to OFF.
2. Turn battery disconnect switch to OFF.

Battery cables are connected at the factor to the generator connection points. Connect cables to battery posts as follows.

12VDC System:

Note: A negative ground system is used. Battery connections are shown in the wiring diagrams. Make sure the battery is correctly connected and terminals are tight. Observe battery polarity when connecting the battery to the generator set.

⚠ WARNING

Explosion. Batteries emit explosive gases. Always connect positive battery cable first to avoid spark. Failure to do so could result in death or serious injury. (000133)

1. Connect red battery cable of starter contactor to the positive (+) battery post.
2. Connect the black battery cable from the battery disconnect to the negative (-) battery post.

Final instructions:

1. Turn battery disconnect switch to ON.
2. Verify controller is powered—display screen lights up.

⚠ CAUTION

Damage will result if the battery connections are made in reverse.

OTHER MAINTENANCE CHECKS

The maintenance items below 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 blankets. Replace if deteriorated.

Note: When disconnecting or replacing the catalyst or exhaust pipes, 1) the clamps and exhaust blankets **MUST** be replaced, and 2) there can be no leaks in the exhaust system.

Ignition and Distributor Timing

All distributor servicing **MUST** be performed by a GMPASD. Removal of the tamper-resistant cap by anyone other than a GMPASD constitutes a violation of Federal law and is subject to civil penalties.

- Every 250 hours, verify the ignition timing is 18° BTDC. If timing is not 18° BTDC, have a GMPASD correct it.
- Every 2000 hours, have a GMPASD replace the distributor and reset timing to 18° BTDC.

Integrated Electronic Pressure Regulator (IEPR)

If the IEPR fails to operate or develops a leak, it should be repaired or replaced with the OEM recommended replacement parts. When inspecting the system, check for the following items:

- Check for any fuel leaks at the inlet and outlet fittings.
- Check for any fuel leaks in the IEPR body.
- Check the inlet and outlet fittings of the coolant supply lines for water leaks, if applicable.
- Ensure the IEPR is securely mounted and the mounting bolts are tight.
- Check the IEPR for external damage.
- Check the IEPR electrical connection to ensure the connector is seated and locked.

Jack

The following procedures should be performed at least annually.

- 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.

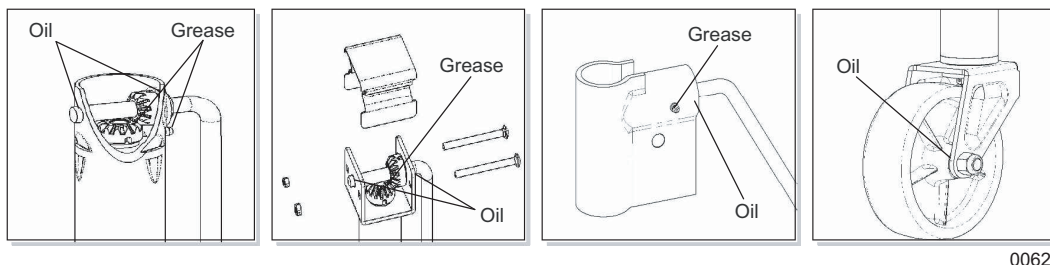


Figure 26 - Jack Lubrication Points

Trailer Wheel Bearings

The trailer axles are equipped with a grease zerk 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 zerk 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

This section describes many common problems; it does not cover all problems. Procedures that require in-depth knowledge or skills (like flashing the field) should be referred to a GMPASD.

For detailed engine diagnostic procedures, see the engine service manual.

For controller troubleshooting, see the H-100 Control Panel Operations Manual.

Symptom	Possible Cause	Solution
Starter cranks but engine does not start	No fuel	Open fuel valves Purge air from fuel system Check for/repair fuel line leaks
	Restricted air flow	Check/replace air filter
	No spark	Check/replace spark plug(s)
Starter does not crank	Dead battery	Remove battery and trickle charge (do not jump start)
	Emergency stop is activated	Reset controller after an emergency stop
	Shutdown alarm is active	Resolve shutdown alarm condition
	High Oil Pressure Starter Lockout is active	Verify oil pressure reading correctly
Engine starts but runs poorly	Fuel or ignition problem	Contact Generac Mobile Products Technical Service
Engine overheats	Excessive load	Remove one or more electrical loads
	Debris, dirt buildup on engine, radiator	Remove debris Clean engine and radiator surfaces
No output voltage	Circuit breaker tripped or failed	Reset circuit breaker or replace if required
	Internal failure of alternator	Check electrical connections Contact Generac Mobile Products Technical Service
Output voltage fluctuates	Irregular or fluctuating speed	Check engine for malfunction or load for fluctuation Stabilize load—the addition of a lamp load (resistance load) may compensate partially for load changes caused by intermittent motor operation—do not overload
	Loose terminal or load connections	Verify tightness at all connections and terminals
	Voltage regulator failed or needs adjustment	Contact Generac Mobile Products Technical Service

Symptom	Possible Cause	Solution
Low output voltage	<p>Low engine speed</p> <p>Excessive load</p> <p>High resistance connections—connections are warm or hot</p> <p>Internal failure of alternator</p> <p>Low power factor</p>	<p>Verify engine RPM</p> <p>Check engine for malfunction or system for overload. Reduce load</p> <p>Verify all connections and terminal tightness</p> <p>Contact Generac Mobile Products Technical Service</p> <p>Reduce inductive (motor) load—some AC motors use about the same current regardless of load—do not use motors of greater horsepower rating than necessary to move the mechanical load</p>
High output voltage	<p>Faulty wiring</p> <p>Failed AVR module</p>	<p>Check wiring</p> <p>Replace AVR module</p>
Electrical shock when frame is touched	<p>Static charge</p> <p>Grounded armature or field coil</p>	<p>Ground generator frame at local reference ground</p> <p>Contact GMPASD</p>
Mechanical noise	<p>Internal failure of alternator</p> <p>Loose flexplate</p> <p>Engine fan or belts issues</p>	<p>Contact GMPASD</p> <p>Tighten flexplate to flywheel and alternator shaft</p> <p>Contact Generac Mobile Products Technical Service</p>
Engine loses frequency, stalls, or switches to LPL fuel	<p>Diameter of pipes is too small between fuel source and unit</p>	<p>Install pipes of appropriate diameter</p>

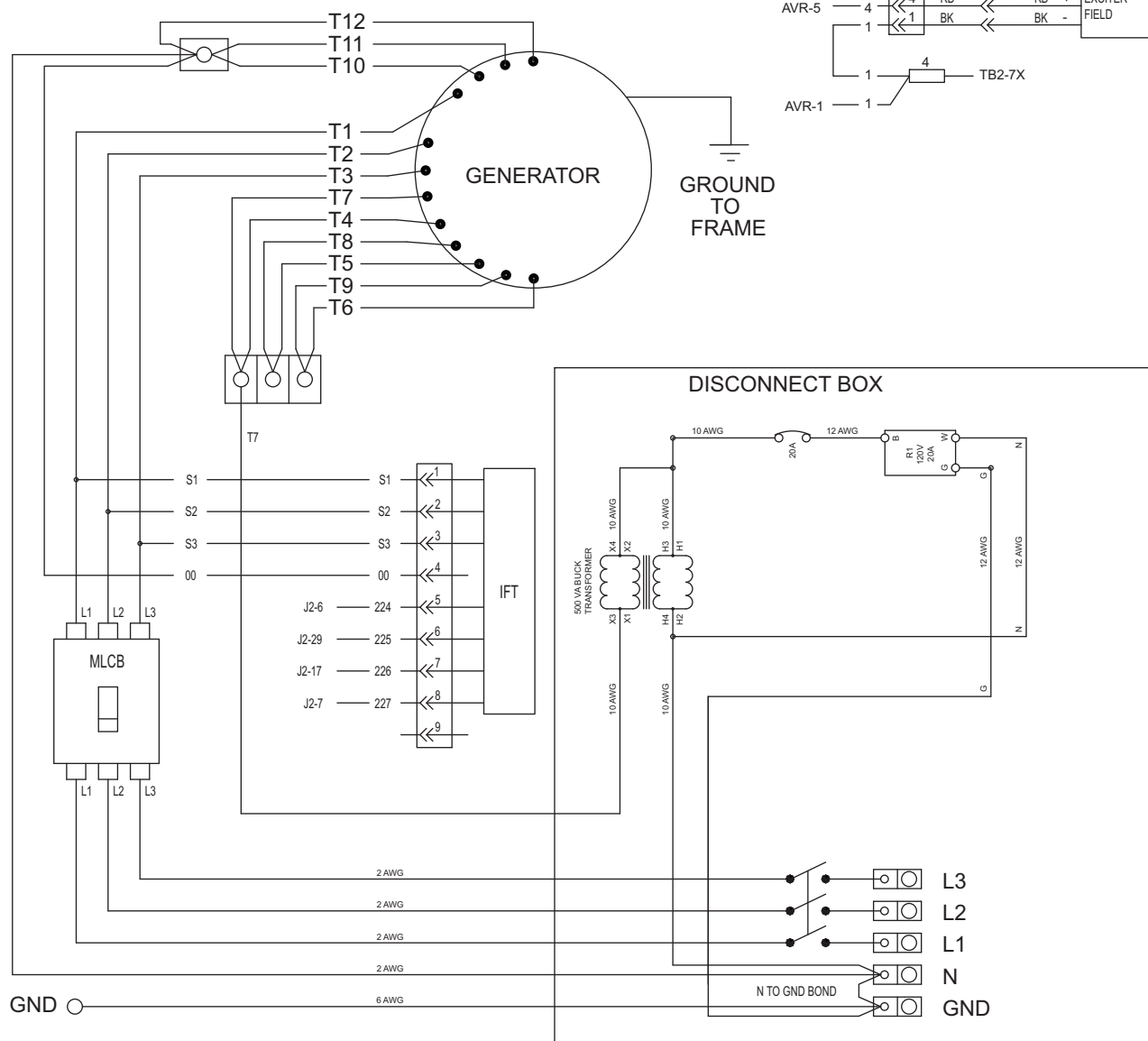
Section 6 - Wiring Diagrams

AC

LEGEND

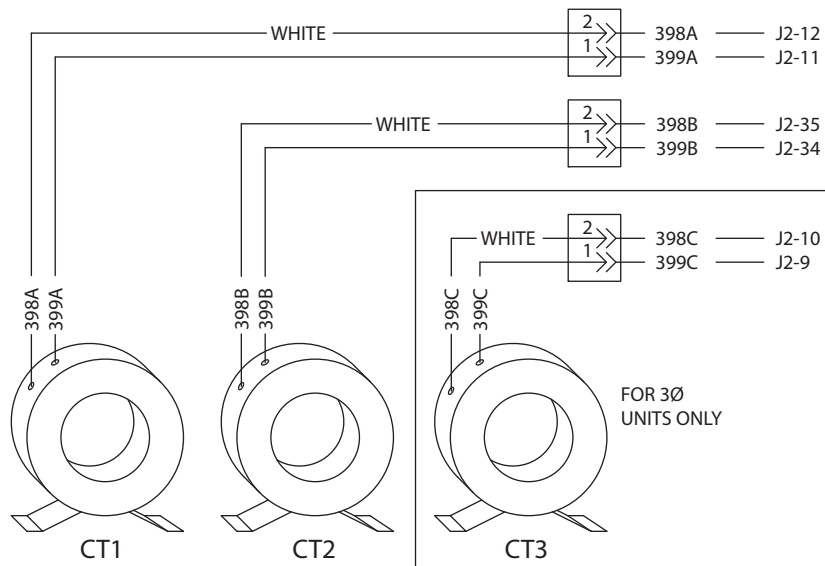
AFS	- AIR/FUEL SOLENOID*	IFT	- INTERFACE TRANSFORMER
AH1	- ALARM HORN	INS	- IGNITION NOISE SUPPRESSION
ALT	- DC CHARGE ALTERNATOR	J	- ENGINE CONTROL MODULE CONN.
AVR	- AUTOMATIC VOLTAGE REGULATOR	LFP	- LOW FUEL PRESSURE SWITCH
CO	- CROSSOVER CONNECTOR	MLCB	- MAIN LINE CIRCUIT BREAKER
COM	- COMMUNICATIONS PORT	MOD	- MODEM CONNECTOR
CT	- CURRENT TRANSFORMER	MPU1	- MAGNETIC PICKUP
DB	- DIODE BRIDGE	NB	- NEUTRAL BLOCK
DIST	- DISTRIBUTOR	OPS1	- OIL PRESSURE SENDER
ES1	- EMERGENCY STOP SWITCH	OS	- OXYGEN SENSOR*
F	- FUSE	OTC	- OIL TEMPERATURE CONNECTOR
FS	- FUEL SOLENOID	OTS	- OIL TEMPERATURE SENDER
FSP	- FUEL SOLENOID PLUG	RB	- RELAY BOARD
FSR	- FUEL SOLENOID RECEPTACLE	RB_A	- RELAY BOARD CONNECTOR
GA	- GOVERNOR ACTUATOR	SC	- START CONTACTOR
GD	- GOVERNOR DRIVER	SM	- STARTER MOTOR
GND	- GROUND BAR CONNECTION	SW1	- OFF/AUTO/MANUAL SWITCH
		SWC	- OPERATOR SWITCH CONNECTOR
		TB	- TERMINAL BLOCKS
		WLS	- COOLANT LEVEL SENDER
		WTS	- COOLANT TEMPERATURE SENDER

* - AVAILABLE US & CANADA ONLY



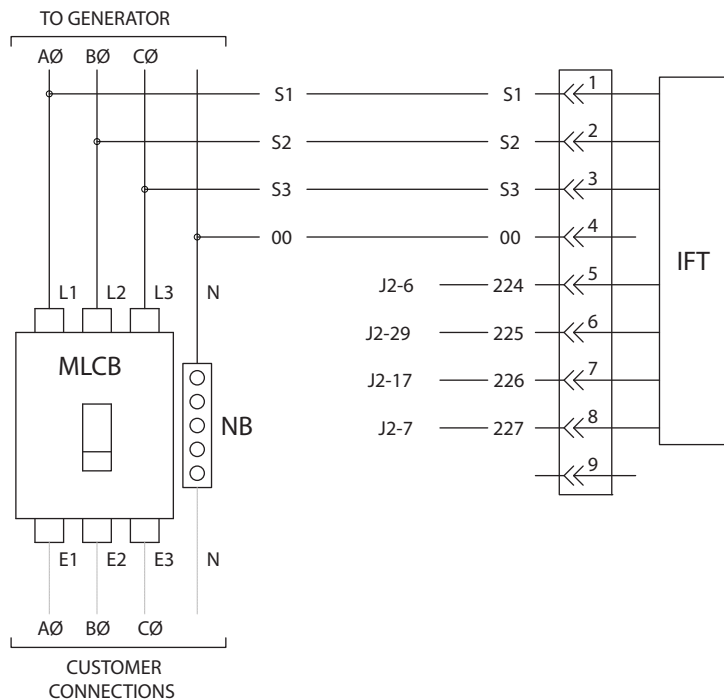
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COMPONENTS LOCATED IN ALTERNATOR CONNECTION BOX



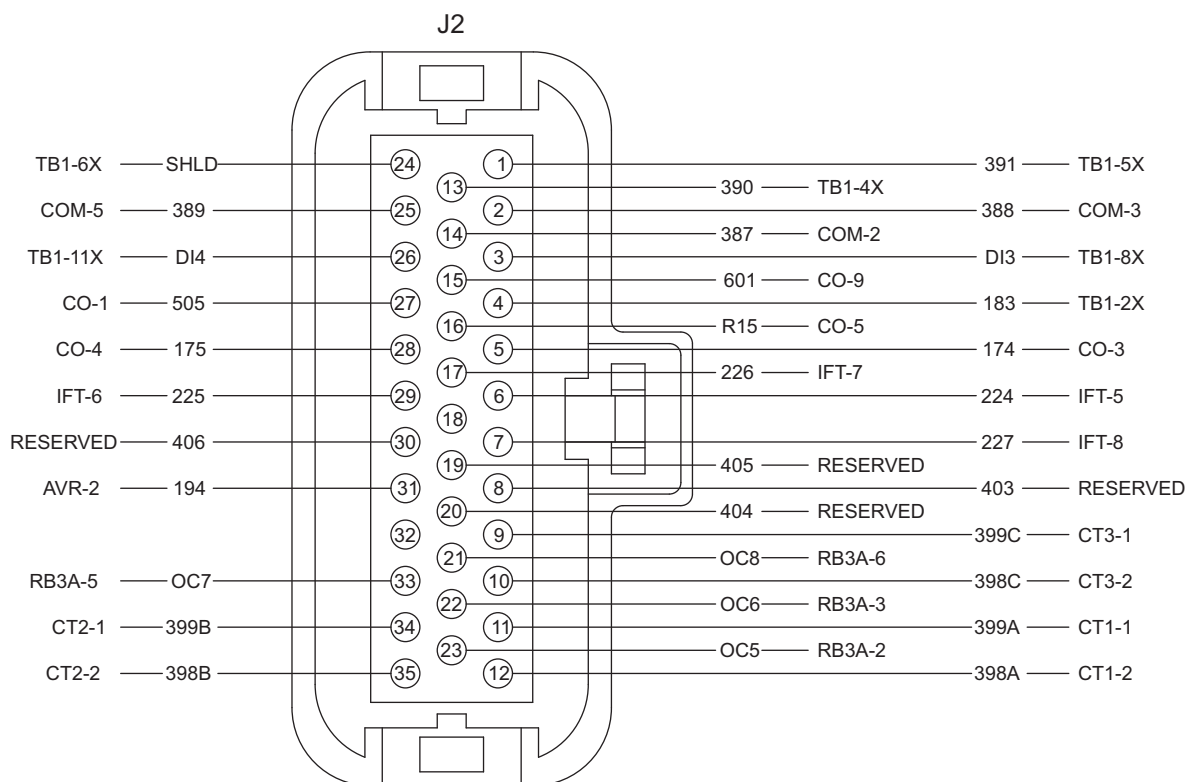
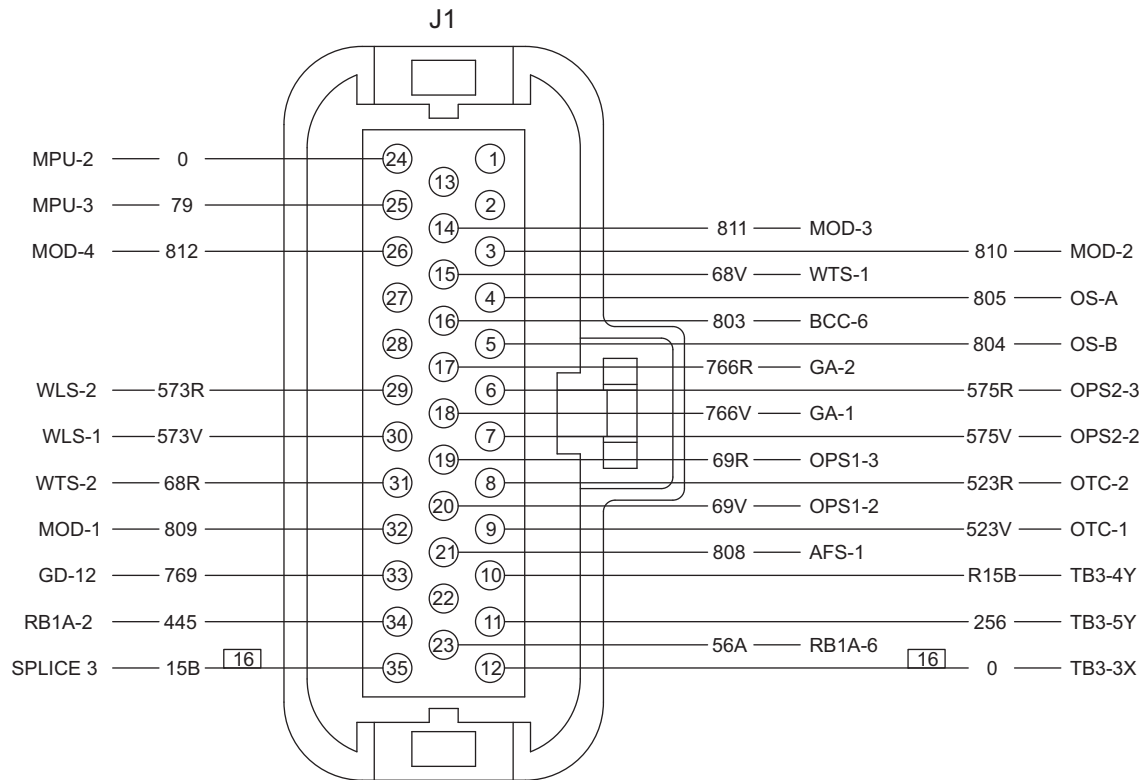
COMPONENTS LOCATED IN HIGH VOLTAGE CUSTOMER CONNECTION MODULE

NOTE: ALL WIRES IN THIS SECTION ARE 600V RATED



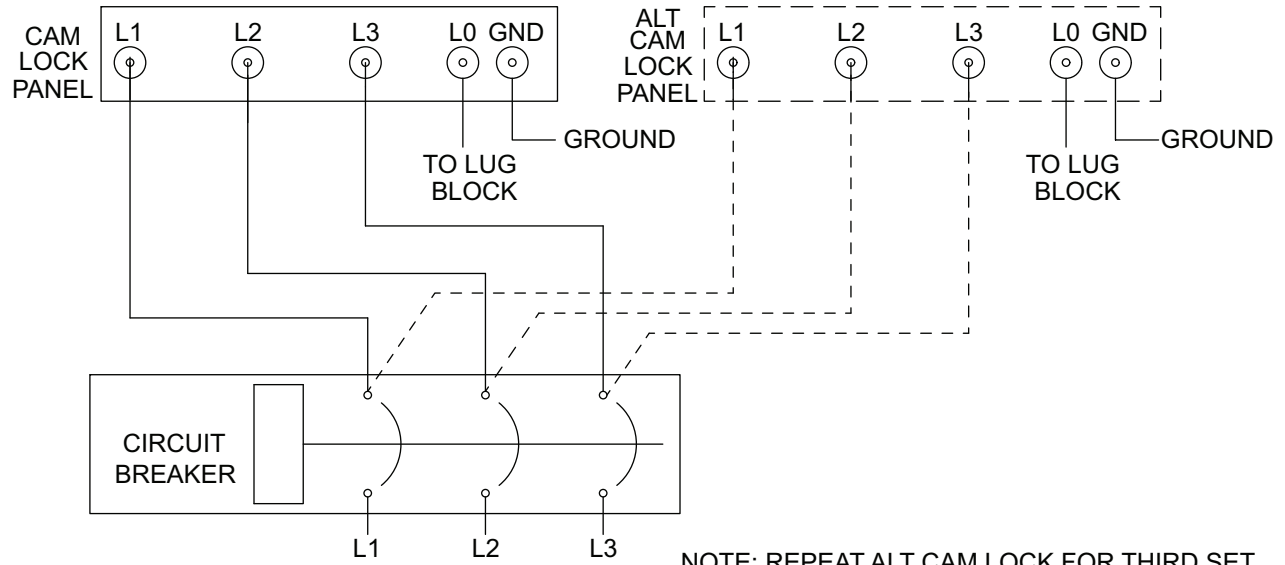
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ECM



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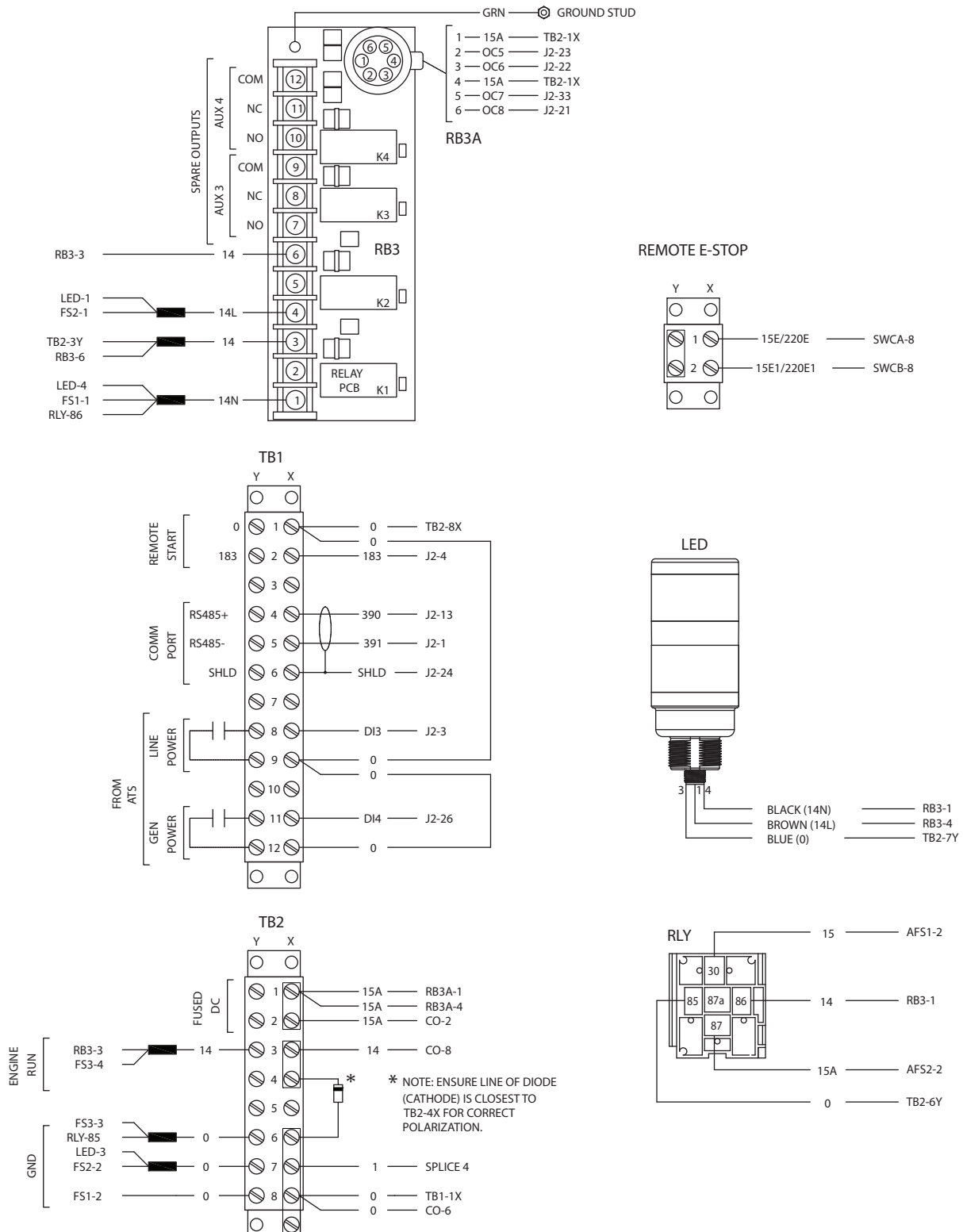
CAM LOCKS



90415_S_02.19.14

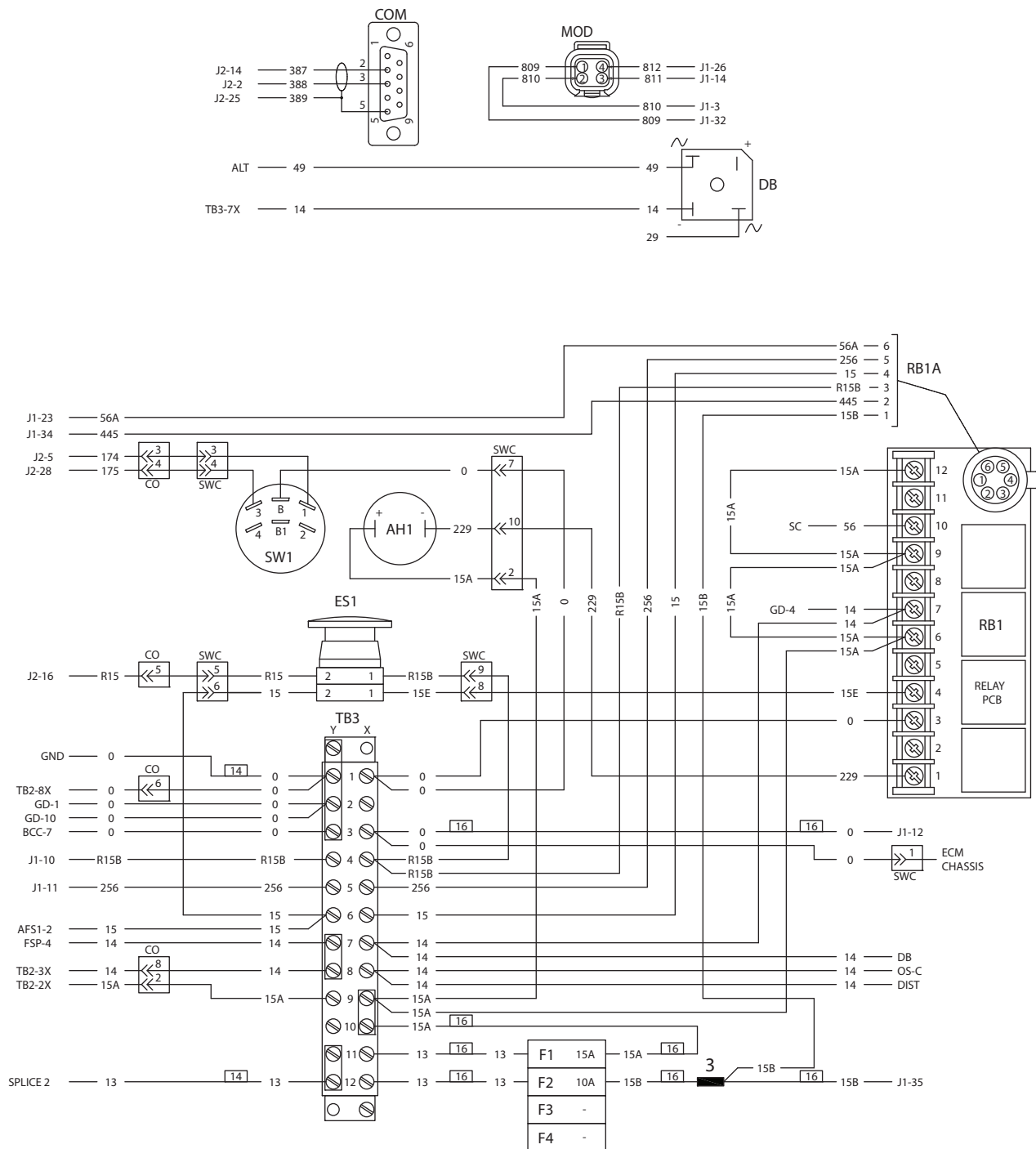
DC

COMPONENTS LOCATED ON LOW VOLTAGE CUSTOMER CONNECTION PANEL



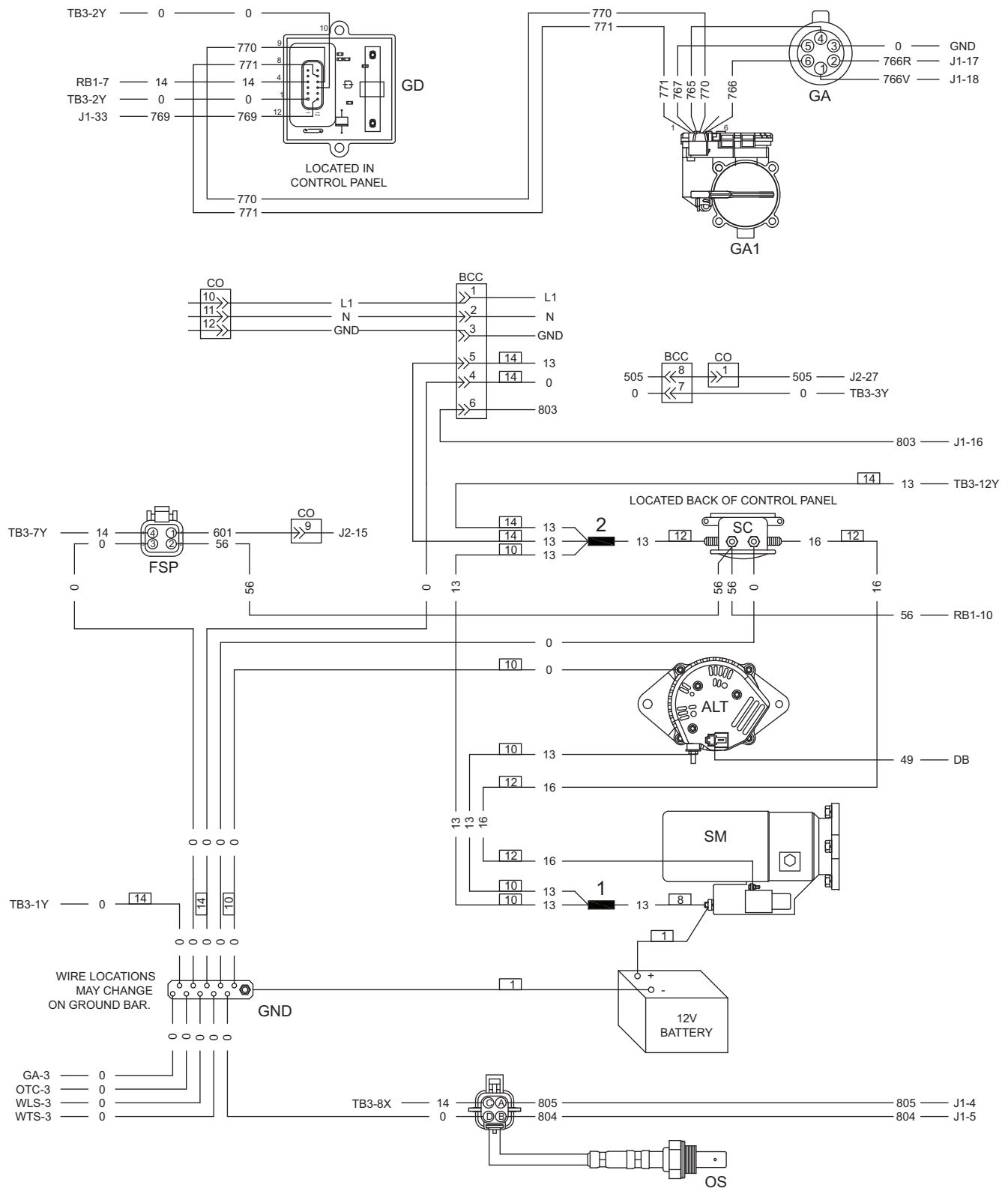
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COMPONENTS LOCATED IN CONTROL PANEL

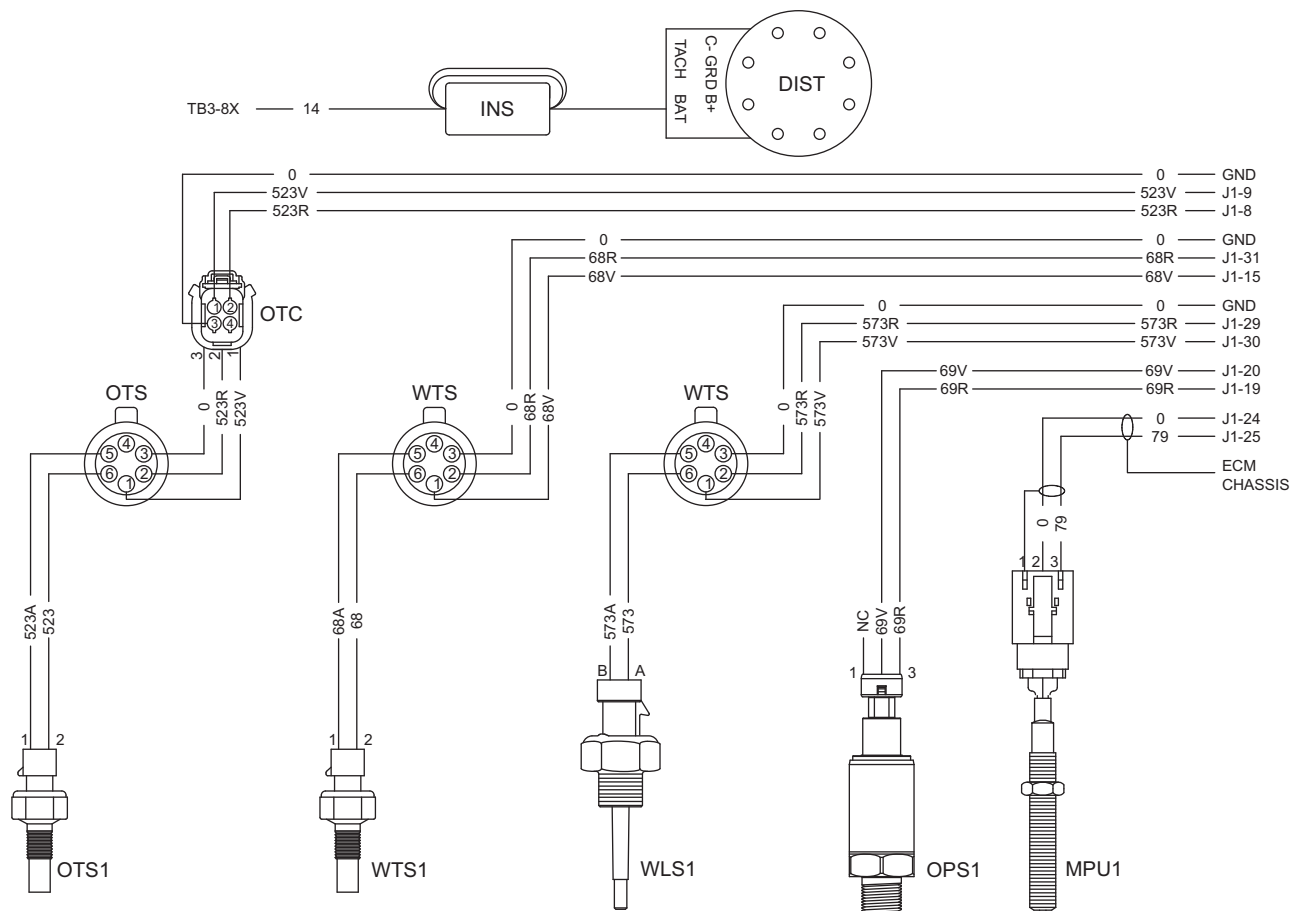
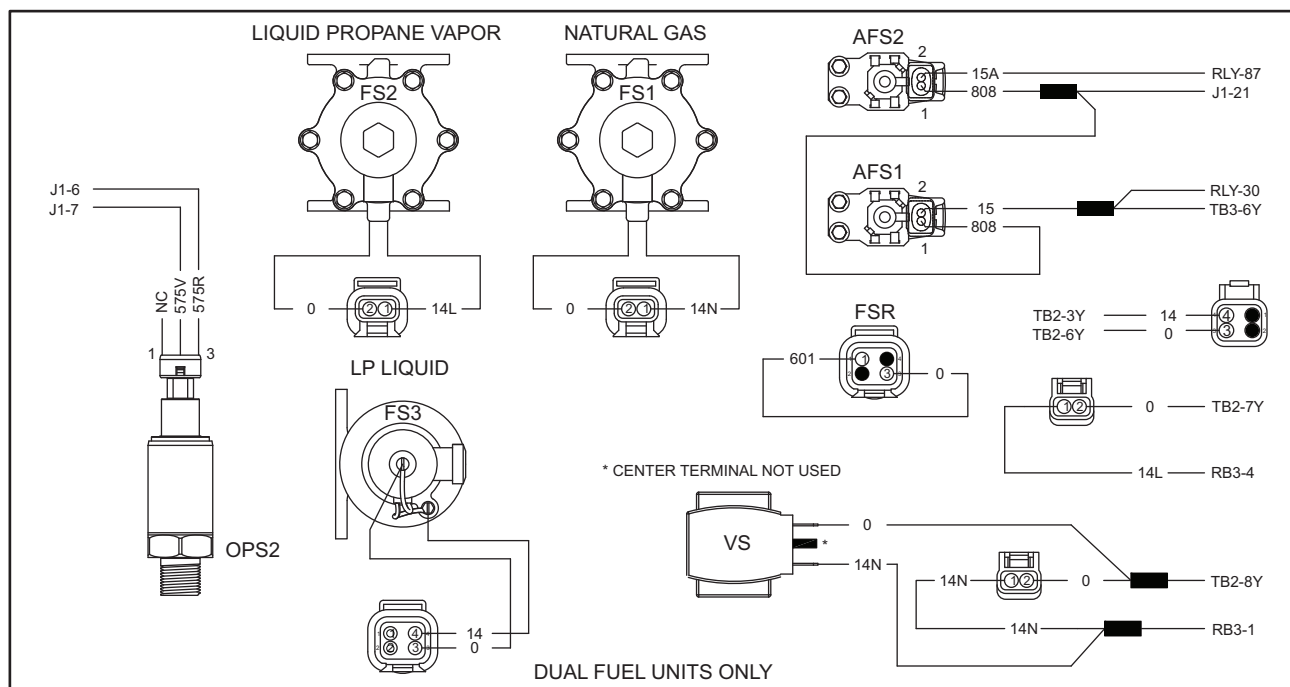


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COMPONENTS LOCATED ON ENGINE

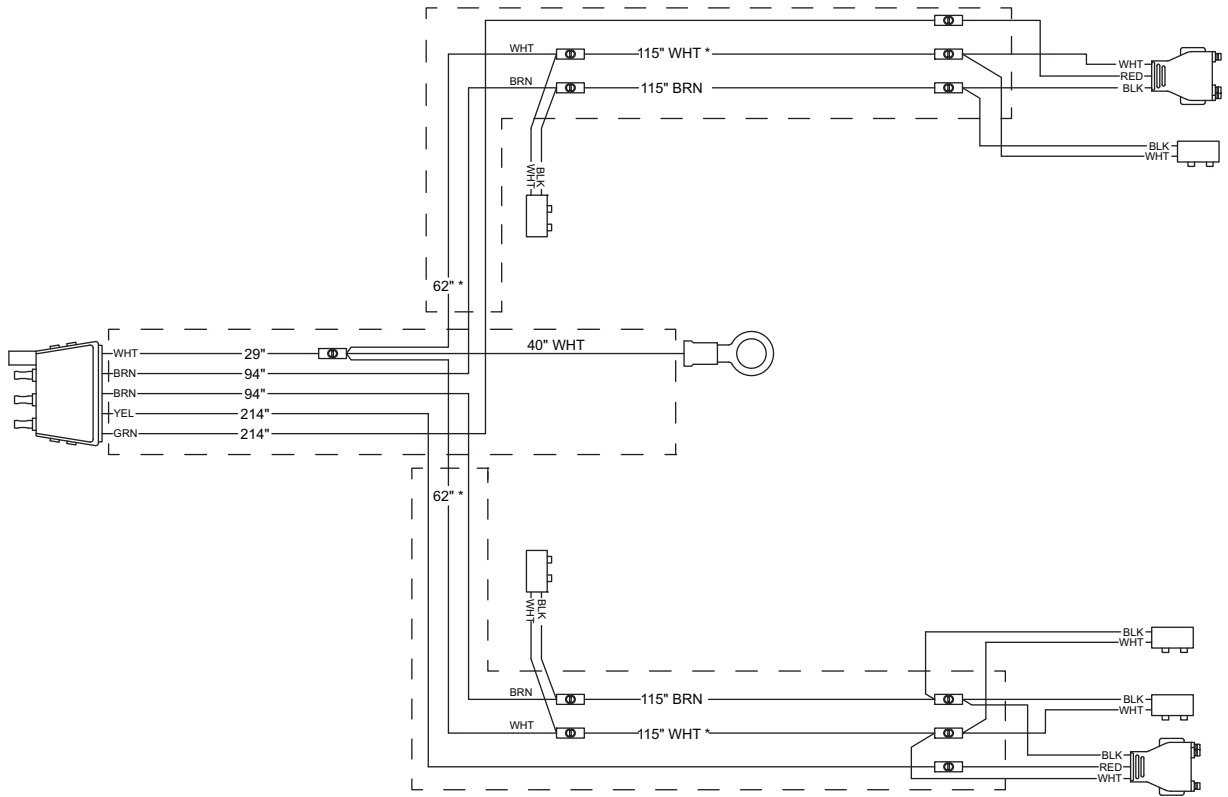


COMPONENTS LOCATED ON ENGINE



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TRAILER LIGHTS



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Service Log

OIL GRADE: _____ BRAND: _____

COOLANT MIXTURE: _____ BRAND: _____

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Part No. 36833 Rev. C 11/04/2016

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