
OPERATOR'S MANUAL



GENERAL POWERTM
THE GENERATOR COMPANY

WARNING:

California Proposition 65 WARNING:

Engine exhaust produced by this product contains chemicals known to the state of California to cause cancer, birth defects and other reproductive harm.

California Proposition 65 WARNING:

Battery Posts, Terminals and related accessories contain chemicals known to the state of California to cause cancer, birth defects and other reproductive harm.

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Warranty Terms and Conditions

WARRANTY GIVEN FOR: STANDBY POWER DIESEL GENERATOR SETS

"A" 1,000 HOURS (500 HOURS/YEAR) OPERATION	"B" 2-YEARS PARTS & LABOR	OR WHICHEVER OCCURS FIRST
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Your diesel-powered generator set has been manufactured and inspected with great effort by qualified personnel to provide our customers with a superb quality product. If you are the original consumer, General Power Limited, Inc warrants for the period indicated, each product to be free from defects in materials and workmanship.

This warranty is extended to the first end user, and no warranty is made nor authorized to be made assignable on resale by the first end user. Repair, replacement or appropriate adjustment at General Power Limited, Inc's first option will be furnished if the product, upon General Power Limited, Inc inspection or analysis, is properly installed, maintained and operated in accordance with the manufacturer's manuals. This warranty does not apply to malfunctions caused by damage, unreasonable use, misuse, repair or service by unauthorized persons or normal wear and tear.

Period of Generator Set Warranty

Diesel /Gaseous Engine Generator Set: Two (2) years or 1000 hours (500/year) from the date of Invoice. Accessories: One (1) year from the date of invoice. The warranty period can be adjusted to the date of start-up of the diesel engine generator set if completed within One (1) month of the invoice date. A valid warranty requires that: (A) Manufacturer's warranty certificate form must be completed and returned to General Power Limited, Inc. within Fifteen (15) days of start-up (B) Service and maintenance records must be kept on file with the end user and made available upon request from factory or as a minimum, proactively submitted by the end user on a yearly basis. (3) The generator set must be routinely exercised in accordance with the factory's operating instructions. (4) Diesel engine generator sets that are to remain out of service for a period longer than two (2) months are subject to special preservation requirements.

Contact General Power Limited, Inc for instructions. For a description of accessories and exclusions from this limited warranty, review the listing on the second page of this document.

General Power Limited, Inc shall not be liable for any claim greater in the amount than the purchase price of the product, in respect of which such claim is made and in no event shall General Power Limited, Inc be liable for any special, indirect or consequential damages.

THERE ARE NO EXPRESS WARRANTIES OTHER THAN THOSE DESCRIBED HEREIN. NO WARRANTIES SHALL BE IMPLIED OR OTHERWISE CREATED UNDER THE UNIFORM COMMERCIAL CODE, INCLUDING BUT NOT LIMITED TO A WARRANTY OF MERCHANTABILITY, AND A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

1. The following items are among those that are not considered nor will be reimbursable under warranty:

- a) Time and labor involving: Technical support, Diagnostics, Performance investigations or Proactive corrections
- b) Battery or Batteries of any type or kind. The battery manufacturer's warranty applies to those only. Any warranty for such should be handled with the manufacturer according to their policies.
- c) Priming or Adjustments to fuel/governor system at time of startup or any time after.
- d) Normal maintenance cost: adjustments, loose/leaking fittings or clamps, belts, bolts, and tune-ups.
- e) Non-approved replacement part(s) will void the entire limited warranty.
- f) Products that are modified in any form without the written consent of General Power Limited, Inc will void the entire limited warranty.
- g) Shipping damage of any type. All equipment is shipped EX Works and is consigned to the carrier once loaded for shipment. It is the responsibility of the receiver to sign and note any damage to the equipment and file any resulting freight damage claims if applicable. No exceptions
- h) Any overtime travel or overtime/emergency/premium labor rates to make repairs under warranty.
- i) Any special access fees required for gaining access to equipment provided by General Power Limited not limited to but including any training or safety policy, planes, ferries, railroad, buses, helicopters, snowmobiles, snow-cats, off-road vehicles or another mode of transport deemed abnormal.
- j) Rental equipment used during warranty work such as generators, rigging equipment such as crane or boom truck, load banks and special testing above factory requirements, etc.
- k) Any and All Freight costs for parts inspections or parts replacements.
- l) Excess mileage charges. Any distributor or service company authorized by General Power Limited, Inc may provide warranty service anywhere but will only be paid travel from the nearest service center up to 200 miles round trip of the generators permanent location at \$1.00 per mile.
- m) Any equipment not factory approved or engineered for use on General Power Limited, Inc products. This includes but is not limited to aftermarket items such as fuel systems, enclosures, exhaust systems, or switchgear that had been sought out and quoted by a third party to include in the billing of General Power Limited, Inc equipment.
- n) Misuse or abuse including installation errors and thereafter.
- o) Normal wear and tear, maintenance and consumable items that include but are not limited to belts, hoses, coolant, oil, filters and fuses that are not required as part of a warranty repair.
- p) Acts of nature such as, freezing, lightning, earthquake, windstorm, hail, volcanic eruption, water or flood, tornado or hurricane,
- q) Any damage due to situations beyond control of the manufacturing of the product or workmanship of the product, such as collision, theft, vandalism, riot or wars, fire.
- r) Installation or operations outside the guidelines as stated in the Operator Manual(s).
- s) Misapplication such as usage outside the original design parameters as stated on the nameplate, manuals or technical literature.
- t) Lodging expense of person(s) performing service and/or Air travel expenses when deemed required.
- u) Keys, Manuals, Engine fluids, starting batteries, fuses, light bulbs, filters.
- v) Failures caused by any contaminated fuels, oils, coolants or improper fluid amounts.
- w) Units purchased as Standby Power that are being operated as Prime Power.
- x) Any repair labor time that is determined to be excessive; e.g. such as two or more persons performing a one-person job or labor that exceeds 1.5 times our labor performance standards
- y) Any associated costs for replacing components that are found not to be defective.



Warranty Terms and Conditions

WARRANTY GIVEN FOR: PRIME POWER DIESEL GENERATOR SETS

**"A" 2,000 HOURS
(2,000HOURS/YEAR)
OPERATION**

"B" 1-YEARS PARTS & LABOR

**OR WHICHEVER OCCURS
FIRST**

Your diesel-powered generator set has been manufactured and inspected with great effort by qualified personnel to provide our customers with a superb quality product. If you are the original consumer, General Power Limited, Inc warrants for the period indicated, each product to be free from defects in materials and workmanship.

This warranty is extended to the first end user, and no warranty is made nor authorized to be made assignable on resale by the first end user. Repair, replacement or appropriate adjustment at General Power Limited, Inc's first option will be furnished if the product, upon General Power Limited, Inc inspection or analysis, is properly installed, maintained and operated in accordance with the manufacturer's manuals. This warranty does not apply to malfunctions caused by damage, unreasonable use, misuse, repair or service by unauthorized persons or normal wear and tear.

Period of Generator Set Warranty

Diesel /Gaseous Engine Generator Set: One (1) year or 2000 hours (2000/year) from the date of Invoice. Accessories: One (1) year from the date of invoice. The warranty period can be adjusted to the date of start-up of the diesel engine generator set if completed within One (1) month of the shipping date. A valid warranty requires that: (A) Manufacturer's Warranty Registration Form must be completed and returned to General Power Limited, Inc. within Fifteen (15) days of start-up (B) Service and maintenance records must be kept on file with the end user and made available upon request from factory or as a minimum, proactively submitted by the end user on a yearly basis. (3) The generator set must be routinely exercised in accordance with the factory's operating instructions. (4) Diesel engine generator sets that are to remain out of service for a period longer than two (2) months are subject to special preservation requirements.

Contact General Power Limited, Inc for instructions. For a description of accessories and exclusions from this limited warranty, review the listing on the second page of this document.

General Power Limited, Inc shall not be liable for any claim greater in the amount than the purchase price of the product, in respect of which such claim is made and in no event shall General Power Limited, Inc be liable for any special, indirect or consequential damages.

THERE ARE NO EXPRESS WARRANTIES OTHER THAN THOSE DESCRIBED HEREIN. NO WARRANTIES SHALL BE IMPLIED OR OTHERWISE CREATED UNDER THE UNIFORM COMMERCIAL CODE, INCLUDING BUT NOT LIMITED TO A WARRANTY OF MERCHANTABILITY, AND A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

1. The following items are among those that are not considered nor will be reimbursable under warranty:

- a) Time and labor involving: Technical support, Diagnostics, Performance investigations or Proactive corrections
- b) Battery or Batteries of any type or kind. The battery manufacturer's warranty applies to those only. Any warranty for such should be handled with the manufacturer according to their policies.
- c) Priming or Adjustments to fuel/governor system at time of startup or any time after.
- d) Normal maintenance cost: adjustments, loose/leaking fittings or clamps, belts, bolts, and tune-ups.
- e) Non-approved replacement part(s) will void the entire limited warranty.
- f) Products that are modified in any form without the written consent of General Power Limited, Inc will void the entire limited warranty.
- g) Shipping damage of any type. All equipment is shipped EX Works and is consigned to the carrier once loaded for shipment. It is the responsibility of the receiver to sign and note any damage to the equipment and file any resulting freight damage claims if applicable. No exceptions
- h) Any overtime travel or overtime/emergency/premium labor rates to make repairs under warranty.
- i) Any special access fees required for gaining access to equipment provided by General Power Limited not limited to but including any training or safety policy, planes, ferries, railroad, buses, helicopters, snowmobiles, snow-cats, off-road vehicles or another mode of transport deemed abnormal.
- j) Rental equipment used during warranty work such as generators, rigging equipment such as crane or boom truck, load banks and special testing above factory requirements, etc.
- k) Any and All Freight costs for parts inspections or parts replacements.
- l) Excess mileage charges. Any distributor or service company authorized by General Power Limited, Inc may provide warranty service anywhere but will only be paid travel from the nearest service center up to 200 miles round trip of the generators permanent location at \$1.00 per mile.
- m) Any equipment not factory approved or engineered for use on General Power Limited, Inc products. This includes but is not limited to aftermarket items such as fuel systems, enclosures, exhaust systems, or switchgear that had been sought out and quoted by a third party to include in the billing of General Power Limited, Inc equipment.
- n) Misuse or abuse including installation errors and thereafter.
- o) Normal wear and tear, maintenance and consumable items that include but are not limited to belts, hoses, coolant, oil, filters and fuses that are not required as part of a warranty repair.
- p) Acts of nature such as, freezing, lightning, earthquake, windstorm, hail, volcanic eruption, water or flood, tornado or hurricane,
- q) Any damage due to situations beyond control of the manufacturing of the product or workmanship of the product, such as collision, theft, vandalism, riot or wars, fire.
- r) Installation or operations outside the guidelines as stated in the Operator's Manual(s)
- s) Misapplication such as usage outside the original design parameters as stated on the nameplate, manuals or technical literature.
- t) Lodging expense of person(s) performing service and/or Air travel expenses when deemed required.
- u) Keys, Manuals, Engine fluids, starting batteries, fuses, light bulbs, filters.
- v) Failures caused by any contaminated fuels, oils, coolants or improper fluid amounts.
- w) Units purchased as Standby Power that are being operated as Prime Power.
- x) Any repair labor time that is determined to be excessive; e.g. such as two or more persons performing a one-person job or labor that exceeds 1.5 times our labor performance standards
- y) Any associated costs for replacing components that are found not to be defective.



Return & Refund Policy

Return

All orders are non-cancellable, non-returnable, non-exchangeable **WITHOUT** our previous written authorization.

Cancellations or Returns are subject to 35% cancellation/return fee based on order value plus all freight and return charges, if applicable. **NO EXCEPTIONS.**

If you want to cancel or return an order, please contact us with the order information, proforma, sales order or invoice number and the reason for cancellation/return.

A RMA number is required before returning any product.

We reserve the right to accept any return. The unit must not show any damage, wear and/or tear.

Previously installed, used and/or repaired units will **NOT** be accepted.

Refunds

Refunds, if applicable, will be issued after inspection, testing and acceptance of unit. Please allow up to 30 calendar days for processing. Any discrepancy will be notified via email.

General Power is **NOT** responsible for any shipping cost associated with the product return, and in case of damage of the merchandise during transportation, the customer is responsible for requesting and processing any resulting insurance claims with the shipping company.



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Warranty Registration Form

The Warranty Registration Form, Start-Up Checklist: Installation, and Start-Up Checklist: Pre-Start/Running Checks must be filled out completely by a certified electrician or generator technician during the start-up and returned to General Power Limited Inc. to activate the factory warranty. Signing these forms represents acceptance of unit and that all information on the start-up is correct. The owner's representative signature acknowledges review and understanding of these forms.

To activate your warranty, please return a copy of these 3 (three) completed form(s) to General Power Limited Inc. within 30 days of shipment from the factory.

CERTIFIED GENERATOR ELECTRICIAN/TECHNICIAN PERFORMING START-UP			OWNER/SITE LOCATION		
COMPANY NAME			OWNER NAME		
ADDRESS			SITE ADDRESS		
CITY	STATE	ZIP/POSTAL CODE	CITY	STATE	ZIP/POSTAL CODE
TELEPHONE			TELEPHONE		
ELECTRICIAN/TECHNICIAN NAME			OWNER OR OWNER'S REPRESENTATIVE NAME		

GENSET DATA	UTILITY SERVICE DATA
GENSET MODEL GP-J _____	VOLTAGE
GENSET SERIAL #	PHASE
	PHASE ROTATION
VOLTAGE	LOAD/BALANCE WITHIN 15%
PHASE	YES _____ NO _____
PHASE ROTATION	SERVICE DUTY
START UP DATE Month _____ Day _____ Year _____	
	PRIME (PRP) _____ STANDBY (ESP) _____

The General Power Limited Inc. Limited Warranty will be void if the installation does not meet the general guidelines, standards and recommendations as laid out in the Genset Installation Guide (provided with generator set). Contact us to obtain a copy. Send completed forms to info@genpowerusa.com



START-UP CHECKLIST: INSTALLATION

CHECK ONLY THOSE THAT APPLY TO THE SPECIFIC APPLICATION.

MOUNTING

YES NO N/A

- 1. Wood shipping skid removed.
- 2. Mounting structure constructed of non-combustible material.
- 3. Mounting surface level.
- 4. Vibration isolation mounts installed between unit and mounting structure.
- 5. Anchor bolts installed, snugged down and double nutted.

ENVIRONMENTAL

- 6. Equipment room protected from freezing temperatures during unit operation (water lines Etc).
- 7. Adequate clearance around the unit for service and proper operation.
- 8. Equipment room protected with a fire suppression system.
- 9. Adequate ventilation for engine starting battery(ies).

COOLING SYSTEM

- 10. Ample inlet and outlet airflow (motorized louvers adjusted and ventilation fan motor(s) connected to an available source of power of the correct voltage.
- 11. Radiator ductwork properly sized and connected to the air vent or exhaust louver to prevent air recirculation and transmission of vibration.
- 12. Flexible connectors installed in the cooling water lines (remote radiator applications).

FUEL SYSTEM

- 13. Adequate dedicated fuel supply of proper type, volume and pressure. Record type and pressure above.
- 14. Fuel filters/drain leg installed.
- 15. Adequate fuel transfer pump lift capacity (diesel units).
- 16. Fuel transfer pump connected to available source of power with the correct voltage (diesel units).
- 17. Flexible connectors installed in fuel piping (supply and return and diesel systems).
- 18. Diesel fuel storage tanks properly installed and vented according to local codes.

EXHAUST SYSTEM

YES NO N/A

- 19. Flexible connector installed in extended exhaust piping.
- 20. Condensation trap with drain installed.
- 21. Silencer installed, hanger and mounting hardware tight and secure.
- 22. Heat-isolating wall thimble (per local code) installed where exhaust piping penetrates combustible walls.
- 23. Exhaust piping free of excessive bends and restriction.
- 24. Exhaust installed with a downward slope away from the engine.
- 25. Exhaust piping wall penetration protected from entry of rain, snow and pests.
- 26. Exhaust outlet termination suitable to prevent entrance of rain and pests (Rain cap Etc)
- 27. Exhaust outlet termination location prevents re-entry of exhaust gases into buildings or structures.
- 28. Personnel protection from hot surfaces and gases installed or accounted for.

ELECTRICAL

- 29. Generator and transfer switch nameplate electrical data matches normal/utility source ratings.
- 30. Generator set load conductors are of adequate ampacity and are correctly connected to the output means and the emergency side terminals of the transfer switch.
- 31. Generator load conductors, remote start contacts, battery charger, engine heater and remote monitoring panel wiring installed in separate conduits.
- 32. Battery charger AC supply connected to a circuit of the proper voltage and amperage, and energized.
- 33. Engine jacket water heater AC supply connected to a circuit of the proper voltage and amperage and energized.
- 34. Engine starting battery(ies) fully charged and connected to the engine and battery charger.
- 35. Transient Voltage Surge Suppression protection devices installed to protect the equipment against voltage spikes.



START-UP CHECKLIST:

PRE-START/RUNNING CHECKS

PRE-STARTUP CHECKS

YES NO N/A

- 1. Inspect unit for freight damage (ensure components are tight).
- 2. Engine is filled with oil; cooling system is filled with coolant/antifreeze.
- 3. Verify the engine oil level.
- 4. Check oil dip stick is secured.
- 5. Check and verify any additional protection devices. List them: _____
- 6. Inspect belts, hoses and clamps for proper alignment and tension.
- 7. Inspect all electrical connections to verify tightness and security.
- 8. Verify battery terminals are secured and battery switch is on.
- 9. Check the coolant level, add coolant as necessary, and replace the radiator cap. Verify that all hose clamps are tight and secure.
- 10. Prime the fuel system.
- 11. Place the generator set engine control switch in the OFF/RESET position. Observe Not-In-Auto display and alarm, if equipped on the controller.
- 12. Open the generator main line circuit breakers.
- 13. Verify power to the water/oil heaters and fuel lift pumps.

YES NO N/A

- 23. Verify that the AC current is balanced for three phase systems and record. L1_L2_____L3_____.
- 24. Release the transfer switch test switch. The transfer switch should retransfer to the utility source after appropriate time delay(s).
- 25. Allow the generator set to run and shut down automatically after the appropriate cool down time delay(s).
- 26. If equipped, set the plant exerciser with load to the customer's required exercise period.
- 27. Verify that all options on transfer switch are adjusted and functional per the customer's requirements. Transfer Switch delay setting: TDES____TDE____TDN____TDEC_____.
- 28. In phase monitor ON____Setting_____OFF_____.
- 29. If possible, run the building loads with the generator set or perform the load bank test if required.
- 30. Verify that the customer has the appropriate engine/generator set and transfer switch literature and manuals. Instruct the customer in the operation and maintenance of the system.

IMPORTANT: All fluid levels and lose connections must be checked and filled/tightened during start-up to prevent future issues and possible warranty claim denial.

PRE-STARTUP CHECKS

- 14. Place the generator set engine control switch in the RUN position. Allow the engine to start and run.
- 15. Check the battery charging voltmeter for battery charging indication.
- 16. Verify sufficient oil pressure.
- 17. Verify speed is stable.
- 18. Verify no load frequency to be no more than 62.5. Adjust if necessary (Mechanical governor only).
- 19. Check the utility source voltage, frequency, and phase sequence on three-phase models. The generator set must match the utility source and load.
- 20. Close the generator set main line circuit breakers connected to the transfer switch and place the generator in the manual mode.
- 21. Place the generator set engine control switch in the STOP/RESET position. Place the generator set engine control in the AUTO position.
- 22. Place the transfer switch in the Test Position. NOTE: Obtain permission from the building authority before proceeding. This procedure tests transfer switch operation and connects building load to generator set power.

Gen-Set Weekly Test & Inspection Checklist



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Caution: Improper operation of equipment can result in serious injury or death. Operation should be performed by trained personnel only.

Date:	-Fill in the date of the inspection.	Leaks (Oil-Water-Fuel):	-Check all hoses and connections for leaks, tighten hose clamps as needed.
Ambient Temp:	-Record outside or room air temperature.	Amps:	-When the unit is running with load, record the amperage reading.
Oil Level:	-Record the level from the oil dipstick and the amount of oil added to engine.	Volts:	-When the unit is running with load, record the voltage reading.
Coolant Level:	-Record the level of the coolant in radiator and the amount added to radiator.	Frequency:	-When the unit is running with load, record the frequency reading.
Heaters:	-Feel the block heater inlet and outlet hoses to make sure they are warm.	Oil Pressure:	-When the unit is running with load, record the oil pressure.
Belts:	Make sure the engine control is in the "OFF" position and E-Stop button is pushed-in. -Check belts to make sure they are tight and in alignment.	Coolant Temperature:	-When the unit is running with load, record the water temperature reading once stabilized.
Radiator:	-Inspect for leaks, corrosion and foreign matter. Inspect all hoses and clamps.	Alternator Volts:	-Charge alternator bolts. Record engine battery voltage (DC charge alt.)
Battery Charger:	-Visual inspection of charger to verify operation. If equipped with LED's verify LED's lit.	Engine Run Time (ERT):	-Running time meter total should be recorded before each test -this will allow you to determine if the unit has run since the last exercise. Length of weekly runtime should be a minimum of 30 minutes.
Battery & Cables:	-Make sure cables are tight and battery posts are clean. Check electrolyte level.	ATS:	-Automatic transfer switch should be filled in as "OK" if the test performed a load transfer properly.
		By:	-Should be initialed by the person doing the test.

GEN-SET SAFETY GUIDELINES



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GENERAL SAFETY GUIDELINES

This guide contains important safety instructions for Genpowerusa generators.

INSTALLING EQUIPMENT

The certified generator electrician/technician must document and describe all changes and modifications made to the genset during the installation process.

TO USE EQUIPMENT

Before operating

Appoint an operations manager, who will be responsible for:

- Monitoring all activities, directly or indirectly, that will be performed in the genset, verifying that all safety and operations instructions/guidelines are being respected and followed properly.
- Reading and comprehending all documentation delivered with the genset.

Inform personnel

- Remind the operating staff the importance of following all safety and operations guidelines.
- If there are any questions regarding the operation of the equipment or if staff training is required, contact your dealer.
- Verify that all personnel have access to the operator's manual (preferably on-site)

Individual and Equipment Safety

- Always wear appropriate clothing.
- Keep a safe distance from operating genset(s)
- Assure that all non-authorized personnel remain away from the genset at all times. Verify that this is done even when the unit is not in use.
- Keep the genset away from undesirable fluids and splashes.
- Verify that all access doors are properly secured before starting the unit.
- Verify that the exhaust gas circuit is available and that the air filter is present and secured.
- Verify that all fuel regulations are being followed at all times.
- Keep corrosive products away from the cooling circuit.
- Verify that the unit is properly installed, following all manufacturer's guidelines. Observe that the genset is operating properly.
- Always employ the parking break when operating a trailer mounted unit. If parked in a slope, make sure that the trailer path is clear.

GENSET MAINTENANCE

Knowledgeable staff

- Ensure that all authorized personnel performing maintenance is properly trained.

Personnel safety

- Always wear appropriate clothing and safety goggles.
- Remove any loose or hanging personal belongings that might interrupt/delay operations.
- Ensure that all personnel remain away from the controller to prevent start attempts.
- Verify that the battery-disconnect switch is in its "OFF" position.
- Always follow general guidelines and best practices when performing maintenance on the genset to preserve the safety of all

personnel.

- Always use protective gloves when looking for equipment leaks.
- Constantly verify that all safety devices are working properly.

Genset preservation

- Ensure that all equipment used for the genset is in good condition and fit for the job. Verify that all instructions are clear before operating unit.
- Confirm that all maintenance schedules are being followed properly and on time (found in John Deere's Operating Manual provided with genset). If in harsh or dusty environment certain maintenance intervals must be reduced.

- Ensure that all spare parts are factory direct replacements from your dealer.
- Always follow general guidelines and best practices to prevent equipment damage.
- Verify that all pictograms and stickers are present and completely legible.

personnel allowed to use:

- Petroleum based fluids, or any other flammable substance.
- Products containing ammonia and chloride.
- High-pressure cleaner.

Additional Instructions

Contact your dealer in case of:

- General overall questions about the genset.
- Personnel training inquiries.
- Missing or lost documentation/guidelines
- Spare parts request.

Cleaning Genset

- Verify that any remaining oil, fuel, or coolant is properly cleaned with a clean cloth.
- Ensure that all maintenance personnel have knowledge on what solvents can be used to clean the unit. Under no circumstances is the

WORK-SITE

Maintenance

- Verify that the genset's environment where the unit is operating is regularly cleaned (with appropriate products) and well-kept.
- Always keep flammable and hazardous materials away from the premises where the genset is operating.

General access

- Limit the access to the equipment to only the authorized operating personnel, or those authorized by the designated operations manager.

Environmental guidelines

- Always use appropriate containers to dispose of used oil. Local fuel dealers can dispose used oil.
- Do not burn any waste as this is prohibited by law.
- Always dispose of waste water and any other waste fluids in appropriate processing centers

GENSET HANDLING GUIDELINES

Dropping risk

- Always use the appropriate lifting equipment depending on the unit being handled. Make sure that the handling capabilities of the lifting equipment is sufficient.
- Verify that all lifting equipment is in good working conditions.
- Confirm that lifting and handling guidelines are being respected, as well as all pictograms and safety labels.
- Under no circumstance is the personnel to be allowed under the load while it's being handled.

ELECTRICAL GUIDELINES

Electric shock risk

- Verify that all the information provided by the identification label is congruent with the current installation being supplied. Check for: power, voltage, current and frequency.
- All electric connections provided by the dealer must be in accordance with laws and regulations in the country of use.
- In the case that the genset is to be connected to

an existing electrical network, contact a certified generator electrician/technician who can perform the connection.

- Place the battery-disconnect switch in "OFF" position to disconnect the power from the genset before installation and maintenance.
- Always follow provided genset and transfer switch diagrams when performing connections.

- Ensure that the equipment is always handled with dry hands and feet.
- Always wear protective gear to prevent touching any stripped wires or loose connectors.
- Always use proper wires and connectors. They should always be insulated, in good conditions and properly secured.
- When replacing parts that protect the user from electric shock verify that these spare parts are original replacements with the same specification.
- Ensure that all cables being used are durable, have proper rubber insulation and comply with NEC (or equivalent) and local regulations.
- Verify that all protective plates are properly placed and secured after each maintenance service.

SAFETY PRECAUTIONS IN CASE OF ELECTRICAL SHOCK

In case of electrical shock

1. Remain distant and avoid contact with the live conductors or the victim's body.
2. Immediately activate the emergency stop and disconnect the power from the genset.
3. The victim might be moved away with dry wood, cloth or any other non-conductive material if the unit is not instantly accessible.
4. Begin CPR immediately if the victim has stopped breathing or has no pulse.
5. Call the emergency line immediately.



FIRE AND EXPLOSION RISK

To avoid serious burns, fires and explosions

- Verify that the unit has a clean and clear environment without any flammable fluids or products (fuel, oil, etc.)
- Under no circumstance is the user to place flammable products close or on top of hot surfaces (exhaust system, manifold, etc.)
- Verify that the equipment always has proper ventilation for cool down.
- Only remove radiator cap when the genset has completely cooled down.
- Only cover the unit (if necessary) when the genset has completely cooled down.
- Before removing or disconnecting any circuits (air, oil, cooling system, etc.) verify that the unit has completely depressurize.

- Never smoke or have open flames when filling the tank.
- Use protective wear against flames and explosions.
- Observe the condition of the pipes and replace as necessary.

Oil Guidelines

- The genset should be fully depressurized before any operations are carried out.
- Never touch or come in contact with hot oil.
- Only fill oil when the genset has completely stopped.
- Revise that the oil cap is properly secured before starting the engine.
- Never cover the genset with oil to prevent corrosion.

Fuel Guidelines

- Verify that you are in compliance with all current local fuel regulations.
- Only fill the engine when the genset has completely stopped.

Battery Guidelines

- Never smoke or have open flames when close to the battery, especially if the battery is charging.

HAZARDOUS FUMES AND EXHAUST GAS RISKS

Exhaust Guidelines

- Under no circumstance is the genset to run in a non-ventilated space. Always have sufficient ventilation to release exhaust gases.
- Verify that you are following all current local fuel regulations (diesel, petrol, etc.)
- The exhaust system should be regularly inspected to confirm everything is in good working conditions.
- Observe the condition of the pipes and replace as necessary.

Note: High levels of carbon monoxide released by the exhaust system in an enclosed environment can be fatal by inhalation. The generator set should never be used without proper ventilation

Coolant Corrosion Inhibitor (Alkali)

- Read and understand the instructions provided with coolant.
- Always keep coolant out of reach of children
- Do not swallow coolant
- Avoid direct or continuous contact with bare skin.

- Keep away from eyes
 - If in contact with eyes
 - Wash immediately with water and for up to 15 minutes.
 - Consult a doctor immediately.
 - If in contact with skin:
 - Rinse with water and soap.
 - Consult a doctor immediately.

Fuels and Oils

- Never swallow these fluids
- Handle in well-ventilated areas.
- Use protective masks (when necessary)

Battery Electrolyte

- Never let it come in direct contact with eyes or skin.
- Always use proper gear when handling electrolyte, including strong alkali-resistant gloves.
 - If in contact with eyes:
 - Wash immediately with water and/or 10% diluted boric acid solution.
 - Consult a doctor immediately.

NOISE RISKS

- When working around an operating generator set make sure to use proper hearing protection.

Note: For indoor generator sets it is not possible to precisely calculate future ambient noise levels as this depends on installation conditions. The unit must be first installed to get accurate acoustic measurements; if necessary additional preventive measurements can be taken after installation. This is crucial as prolonged exposure to high sound pressure may cause permanent loss of hearing.



ENVIRONMENT PROTECTION GUIDELINES

- It is imperative that all fluids as: fuel, oil, coolant, etc. are properly disposed, these should be collected in suitable containers and disposed in the closest waste collection point. These products are extremely toxic to the environment and people's health.
- When the generator is no longer suitable for use verify that its disposal is through the specific collection point.
- When installing the unit, it is necessary to make sure that the genset is properly placed and distant from walls, as this might cause reverberation through the walls and building (amplifying the noise)

QUICK-START GUIDE



GENERAL POWERTM
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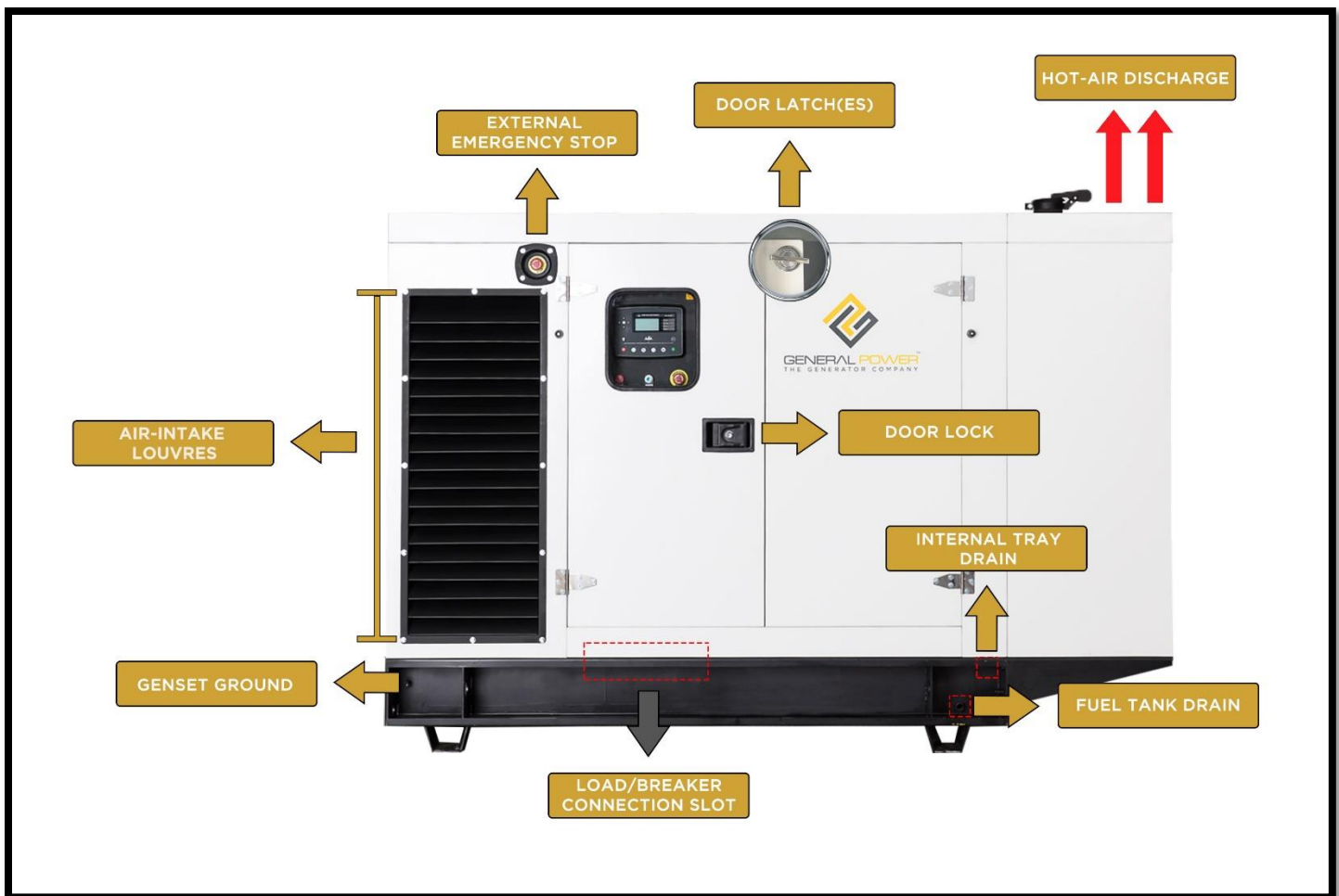
STEP-BY-STEP QUICK-START GUIDE

This guide contains important instructions for Genpowerusa generators.

It must be followed during start-up of the generator unit.

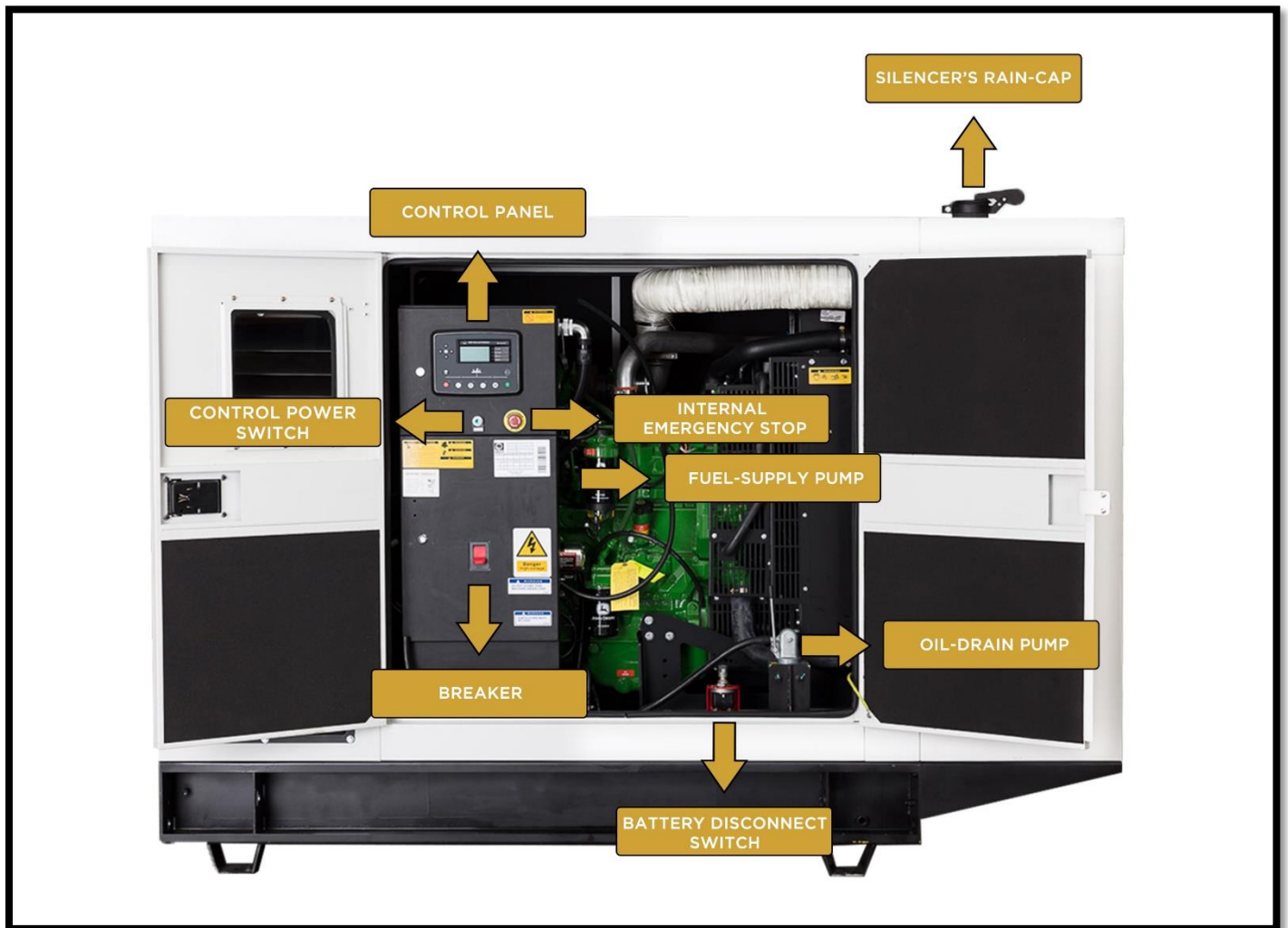
Generator Description

Side View



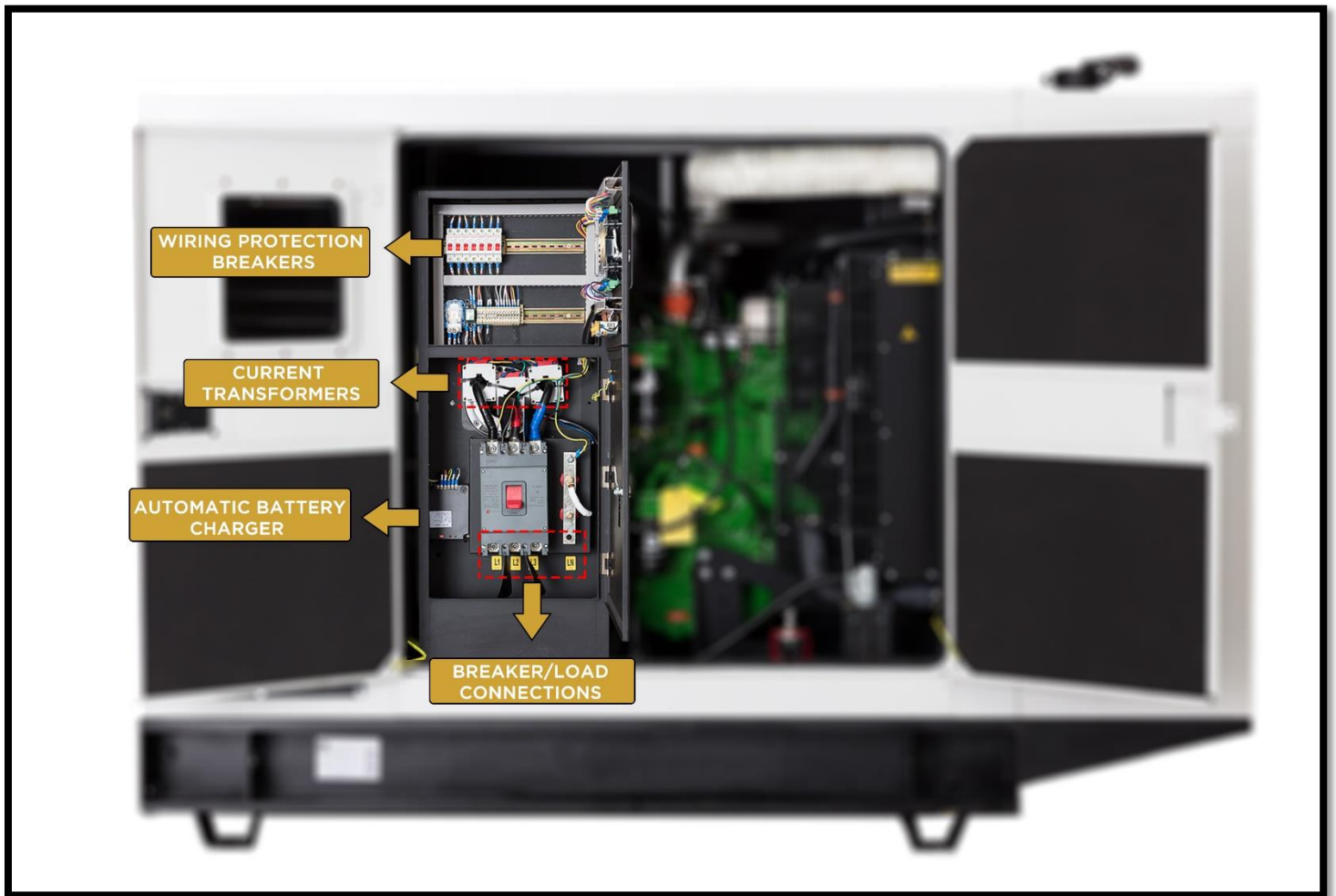
Generator Description

Open View



Generator Description

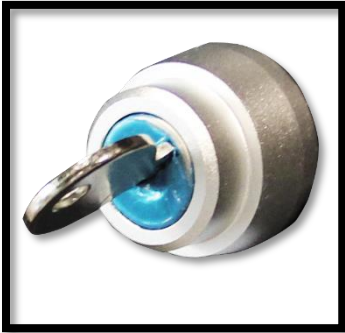
Control Panel



Key Legend



Control Cabinet



Control Power

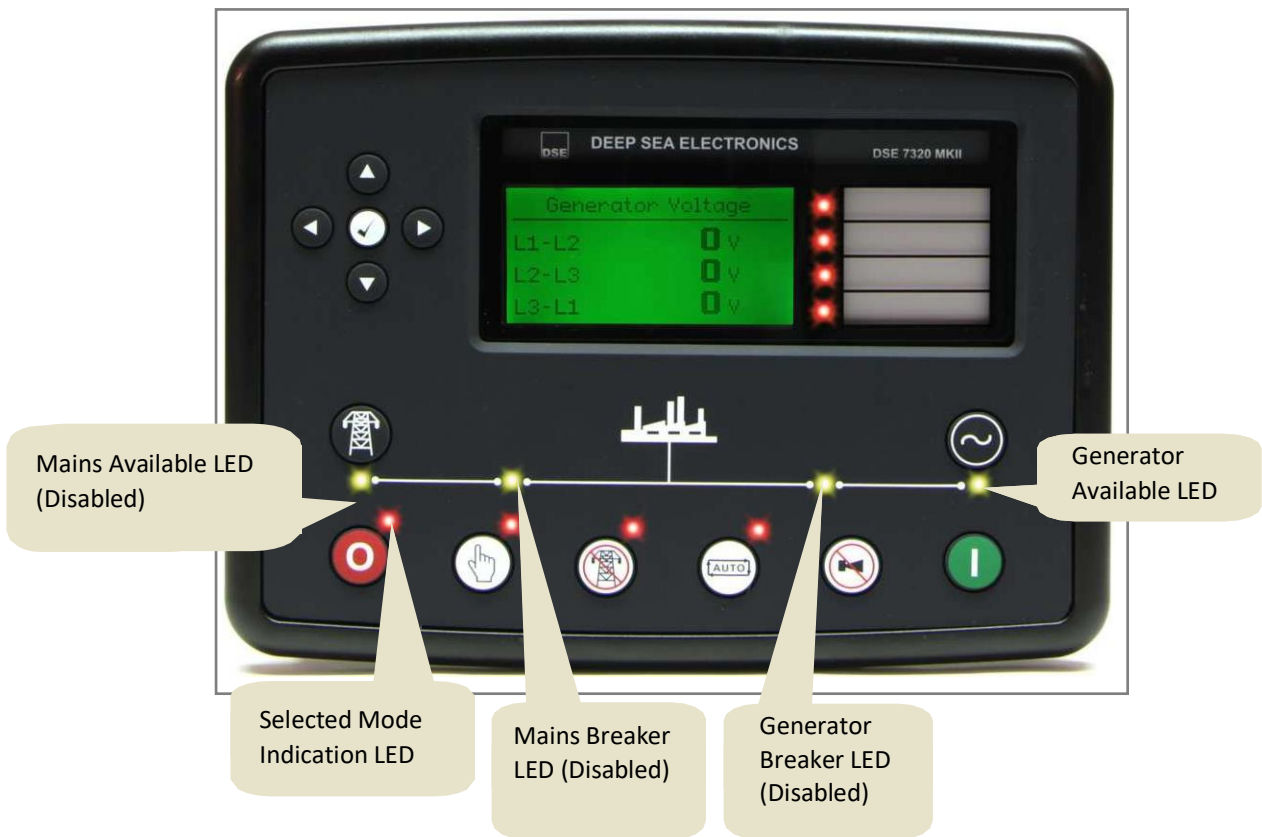
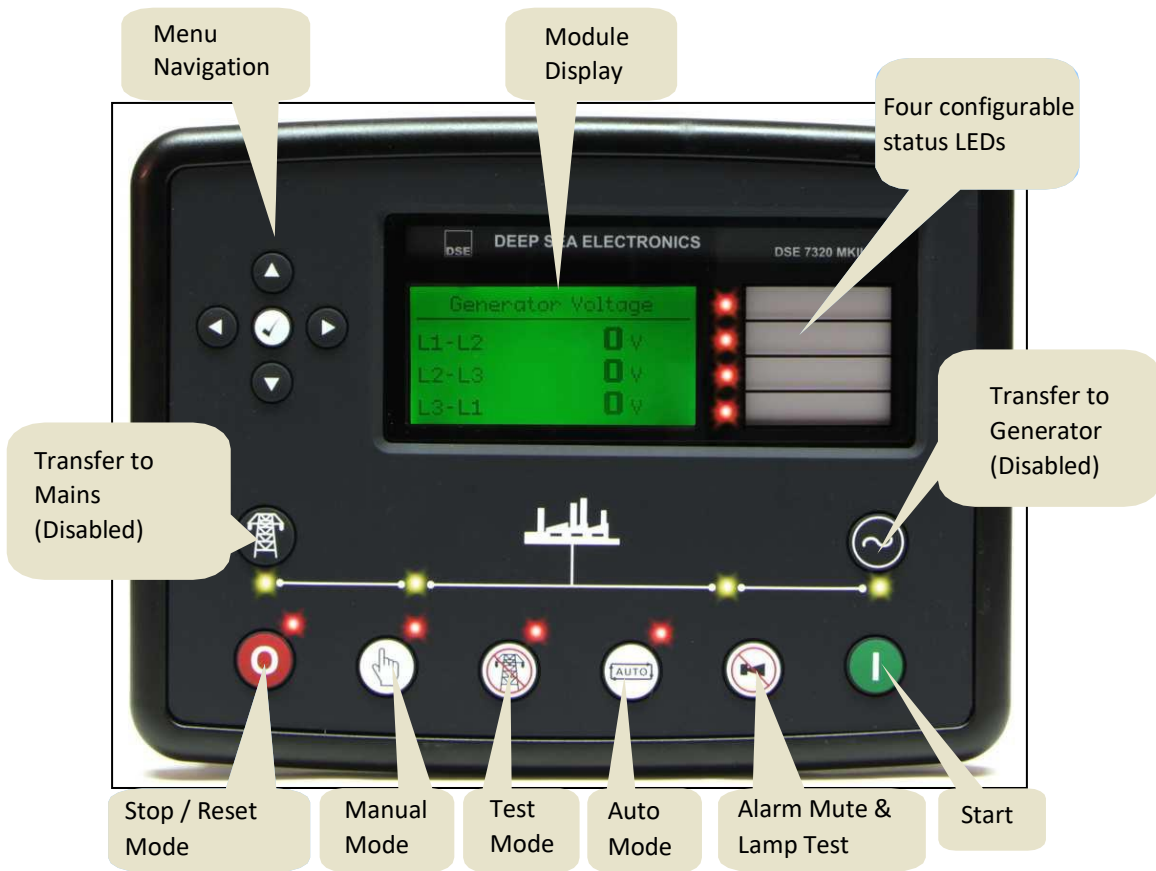


Door Lock





Door Latch

Know Your Controller






Stop / Reset Mode

- This button places the module into its **Stop/Reset Mode** . This clears any alarm conditions for which the triggering criteria has been removed. If the engine is **Stop/Reset Mode**  the generator remains at rest.



Manual Mode

- This button places the module into its **Manual Mode** . Once in **Manual Mode** , the module responds to the **Start**  button to start the generator and run it off load.



Test Mode (DSE7320 MKII Only)


- This button places the module into its **Test Mode** . Once in **Test Mode** , the module responds to the **Start**  button to start the generator.

Once the set has started and becomes available, it is automatically placed on load (Close Mains Output becomes inactive (if used on DSE7320 MKII) and Close Generator Output becomes active (if used)).

The generator remains on load until either the **Stop/Reset Mode**  or **Auto Mode**  is selected.



Auto Mode

- This button places the module into its **Auto Mode** . This mode allows the module to control the function of the generator automatically. The module monitors numerous start requests and when one has been made, the set is automatically started. Once the generator is available, the mains is taken off load (**'Close Mains Output'** becomes inactive (if used on DSE7320 MKII)) and the generator is placed on load (**'Close Generator Output'** becomes active (if used)). Upon removal of the starting signal, the module starts the *Return Delay Timer* and once expired, takes the generator off load (**'Close Generator Output'** becomes inactive (if used on)) and place the mains on load (**'Close Mains Output'** becomes active (DSE7320 MKII)). The generator then continues to run for the duration of the *Cooling Timer* until it stops. The module then waits for the next start event.



Alarm Mute / Lamp Test






- This button silences the audible alarm in the controller, de-activates the *Audible Alarm* output (if configured) and illuminates all the LEDs on the module's fascia as a lamp test function.



Start

- This button is only active in the **Stop/Reset Mode** , **Manual Mode**  and **Test Mode** .

Pressing the **Start**  button in **Stop/Reset Mode**  powers up the engine's ECU but does not start the engine. This can be used to check the status of the CAN communication and to prime the fuel system.

Pressing the **Start**  button in **Manual Mode**  or **Test Mode**  starts the generator and runs it off load in **Manual Mode**  or on load in **Test Mode** .



Menu Navigation

- Used for navigating the instrumentation, event log and configuration screens.

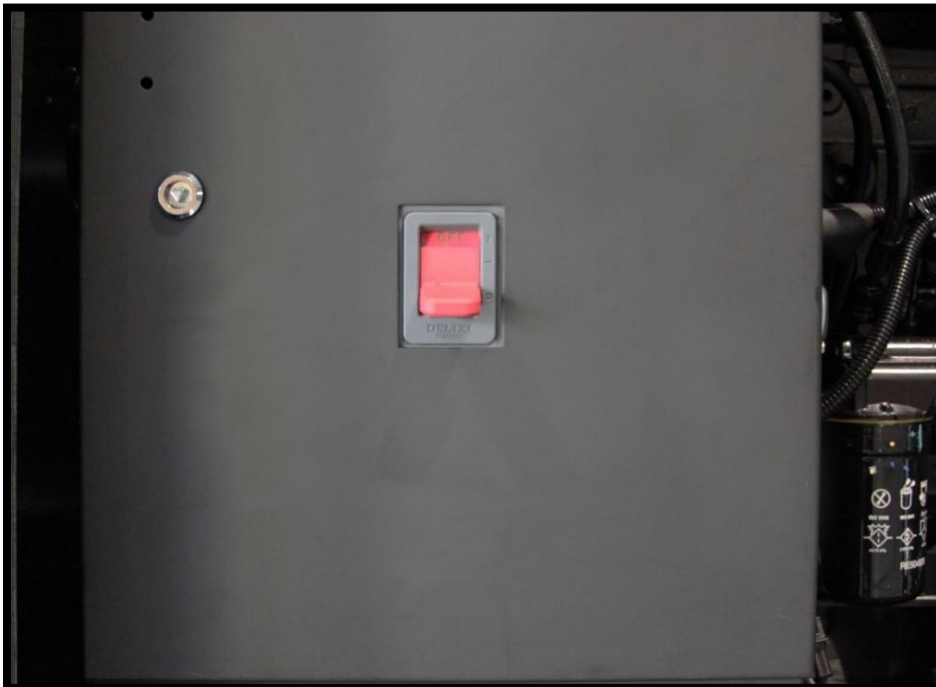


Pre-start

1. Open the enclosure's doors by turning **BOTH** quarter turn latches counter-clockwise



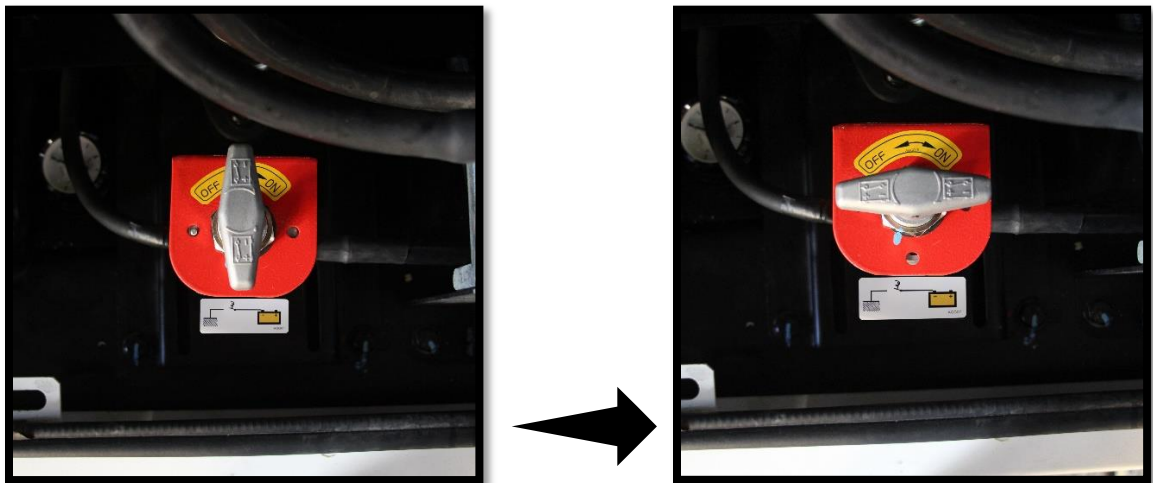
2. Switch the Main line breaker to its **OFF** position.



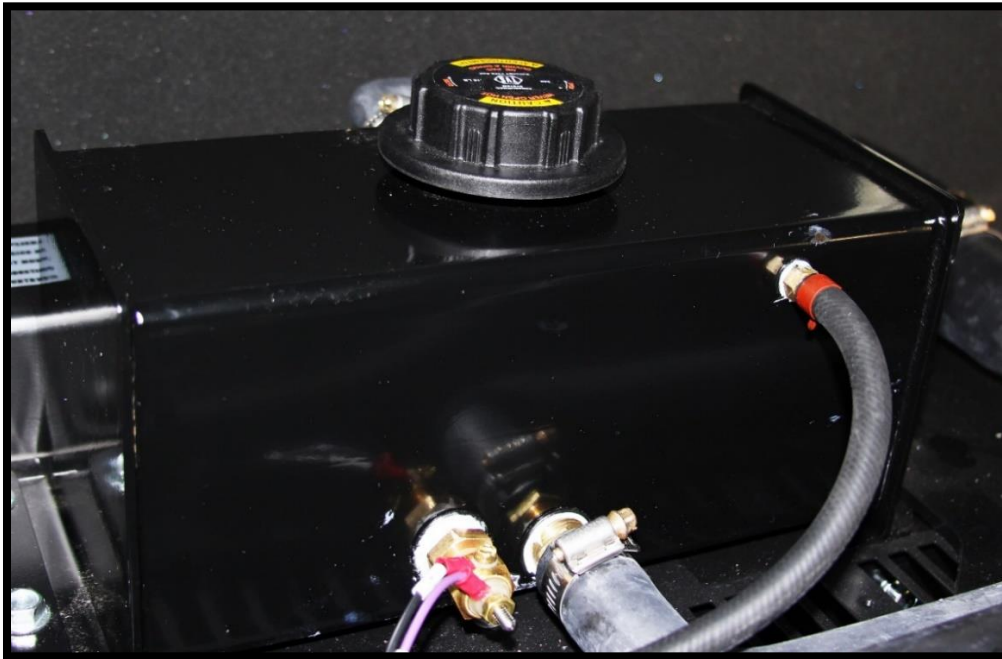
3. Verify both battery terminals are properly secured.



4. Turn the battery disconnect switch to the “ON” position (clockwise).



5. Verify coolant level (should be about one inch from the top) and confirm radiator cap is then properly secured.



6. Verify Oil level and confirm oil dip stick is then properly secured.



7. Once the fuel tank is appropriately filled (at least 50%), make sure you thoroughly prime the engine's fuel supply system.

To do this, manually push/actuate the lever at the bottom of the fuel elevation pump (labeled "fuel supply" until there is no resistance to the push/movement.

During installation, and everytime the unit "loses" its prime, the process must be performed again; this might be a prolonged procedure that can take multiple attempts to work. During this time the unit will "crank" without starting; this is normal and will happen until the priming process is complete.



8. Press (push-in) emergency stop button (located under the generator's control panel) and on the generator's enclosure, if equipped with one, then immediately twist to the right to make sure the button mechanism pops out.



9. Press the Stop/Reset button to reset the controller and make sure there are no active alarms



Test-Start (without load / breaker OFF)

1. Make sure both start-up checklists “Installation” and “Pre-start/Running” checklists are completed.



2. Make sure the generator is ready to start and that all precautions as outlined in the “Genset Installation Guide” and the engine’s “Operators Manual” have been taken.

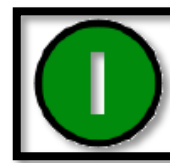
Make sure that all users have followed all relevant local and federal safety regulations for industrial machinery, electrical equipment and personnel safety.



3. Place the controller in manual mode.



4. Press the start mode.



5. To stop the unit, press the stop mode once to stop the unit with cool down time or twice to cancel the cooling time and stop the unit immediately.



GENSET INSTALLATION GUIDE



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IMPORTANT SAFETY INSTRUCTIONS

This guide contains important instructions for Genpowerusa generators. It must be followed during installation and maintenance of the generator unit.

FOREWORD

This installation guide is intended to provide general instructions for the safe and reliable installation of your Genpowerusa engine generator set. It is of the utmost importance that each and every person who performs work on this equipment is trained and familiar with the equipment and the contents of this entire installation guide.

Each installation is unique in some ways and may require variance or modification from the suggestions presented within this guide. If you are in doubt in any way during the installation process, please take a moment to consult with your authorized General Power LTD representative. They are trained and experienced in the installation and operation/maintenance of

this equipment.

Note: The procedures presented in this guide are suggestions. They are not intended to address every circumstance that can and will arise during the installation process. It is the responsibility of the Owner/Operator to arrange for these to be performed by licensed individuals that regularly engage in this type of work.

It is the responsibility of the Owner/Operator to ensure that all aspects of the installation are performed in accordance with all Federal/State/county and local codes, and in accordance with the requirements of the authorities having jurisdiction.

APPLICABLE CODES AND STANDARDS

Prior to installation, you should obtain and familiarize yourself with the following codes and standards that are referenced within this guide and that may/will govern how the equipment is installed:

- National Fire Protection Association (NFPA)
- NFPA 30: Storage, handling and use of flammable liquids. NFPA 37: Stationary combustion engines and gas turbines. NFPA 54: National Fuel Gas Code.
- NFPA 70: National Electrical Code. NFPA 77E: Arc Flash Safety.
- NFPA 99: Essential Electrical Systems for Health Care Facilities. NFPA 101: Life Safety Code Number Systems.
- NFPA 110 2010: Emergency and Standby Systems. National Electrical Manufacturers Association (NEMA)

Local codes enforced by the authority having jurisdiction.

The information presented within this guide is of the latest and up to date as of the publication date. General Power LTD, Inc. reserves the right to change/update this publication and the information contained within, without notice, obligation or liability whatsoever. General Power LTD does not guarantee the satisfactory results of any installation performed using the information contained in this guide. Nor will General Power LTD assume responsibility for any injury or damage to property as a result of the use of this guide. Persons engaging in product installation do so at their own risk.

Once again, if you are in doubt in any way about the procedures for safe and proper installation of this product, stop now and consult your authorized General Power LTD representative. They are trained and experienced in the installation and operation/maintenance of this equipment.

PRODUCT IDENTIFICATION

Locate and record the unit model and serial numbers from the unit nameplate (usually affixed near the controller) immediately after unpacking the equipment. Record the information in the space provided below for future reference when requesting assistance or information regarding this equipment.

Generator Model: _____

Generator Serial No: _____

SAFETY PRECAUTIONS AND WARNINGS

Important safety Instructions:

Electromechanical equipment, including generator sets, transfer switch equipment and accessories can cause bodily harm and pose life threatening danger when improperly installed, operated, maintained or accessed.


The terms **DANGER**, **WARNING** and **CAUTION** are used throughout this guide to alert the installer/operator to special instructions concerning particular procedures that may be hazardous if performed incorrectly. These safety alerts alone cannot eliminate the hazards that they signal. Strict adherence to these special


instructions and common-sense operation of the equipment are the best accident prevention measures.


Observe all warning labels found on the equipment. Ensure that all warning labels remain affixed and intact, and are not obstructed with dirt, grease or other equipment.


General Power LTD Inc. cannot anticipate every possible circumstance that may involve a hazardous situation. The warnings contained in this guide as well as the tags and labels affixed to the equipment, are therefore not to be considered all inclusive.

Definitions:


 **DANGER:** Indicates the presence of a hazard that WILL cause severe personal injury, death or substantial property damage.


 **WARNING:** Indicates the presence of a hazard that CAN cause severe personal injury, death or substantial property damage.


 **CAUTION:** Indicates the presence of a hazard that CAN or WILL cause minor personal injury or property damage.


 **HIGH VOLTAGE:** Indicates that high voltage may be present in this vicinity or while performing this procedure.

Additional Safety Precautions:

 **DANGER:** Risk of Electrical Shock. The equipment ground connection on this equipment must be suitably connected to earth ground in accordance with NFPA 70. This equipment shall not be used in “floating neutral” applications.

 **WARNING:** Be aware that once the engine starting batteries are connected, this equipment can and will start automatically. Use extreme caution or disconnect the engine starting batteries prior to servicing or making adjustments.

 **CAUTION:** Prior to servicing the unit, remove power to all energized circuits, such as a battery charger, coolant heaters, or any device that remains energized during servicing functions.

 **CAUTION:** Wear eye protection when operating or servicing this equipment. Flying debris and/or acid/gases from the engine starting batteries could be present during equipment operation and normal battery charging.


SITE PLANNING AND SELECTION


Outdoor, enclosed units:


Choose a site that allows adequate clearance around the unit for ancillary equipment, fuel storage/supply and routine servicing. The site should be level, not subject to flooding and in compliance with local codes and ordinances.

The Unit is to be installed in a location that minimizes the risk of people coming in contact with hot surfaces. **Unless specified otherwise**, the maximum ambient operating temperature rating of the unit is 50° C/ 122°F.

Allow adequate clearance for engine radiator air discharge so as not to restrict cooling air flow.

 **CAUTION:** Allow adequate clearance for engine exhaust discharge, keeping in mind the high temperatures and fumes associated with engine exhaust. Do not direct engine exhaust toward other structures or their air intake means.

 **CAUTION:** Internal combustion engines can produce high noise levels. Choose a location where sound levels during operation will not be objectionable.

 **CAUTION:** In northern climates, provide a suitable means to prevent the accumulation and penetration of blowing snow.

⚠ WARNING: Open bottomed stationary engine generator sets must be installed over/on noncombustible materials and shall be located such that it prevents the accumulation of combustible materials under or inside the generator set. Provide a suitable means to prevent the accumulation of leaves and debris.

See the Mounting Pad Construction Section for typical foundation/inertia pad construction details. For any other application, consult a structural engineering firm for proper design to meet the application requirements.

Indoor Units:

Engine generator sets must be protected from the elements, and be provided with adequate ventilation and cooling air.

Considerations when selecting a room size and location:

DO NOT USE THE GENERATOR ROOM FOR STORAGE OF ANY MATERIALS NOT ASSOCIATED WITH THE GENERATOR SET.

The room should be sized to adequately accommodate the unit and all of the ancillary equipment such as fuel supply/storage, starting batteries and charging equipment, cooling and exhaust system components and automatic transfer switch equipment.

Allow a minimum of three feet of clearance on each side and radiator end, and five feet on the end opposite the radiator for servicing

The fuel storage tank for diesel driven units should be located as close as possible to the unit. Allow for clearance between hot components (such as exhaust system) and combustible materials. Consult local building/safety codes for specific applicable requirements. Fire rating codes and requirements must be adhered to.

Utilizing a generator set with a unit mounted radiator/cooling system is the most cost-effective solution when allowable. However, the room must be situated such that sufficient cooling air can be brought into and exhausted to allow proper cooling of the equipment. Utilizing opposing exterior walls for radiator cooling air supply and radiator discharge is the most effective and cost efficient when possible. Avoid utilizing the same wall for air intake and discharge.

Consult your General Power LTD representative for installation guidance for remote cooled unit applications.

Verify the load carrying capacity of the floor.

See the exhaust system section for pertinent information regarding exhaust system considerations.

Utility Power: Make sure there is an adequate source of utility power available to supply the ancillary equipment necessary for support while the gen-set is not in operation (Heaters, Chargers, Etc).

⚠ WARNING: Open bottomed stationary engine generator sets must be installed over/on noncombustible materials and shall be located such that it prevents the accumulation of combustible materials from accumulating under or inside the generator set.

UNIT LIFTING PROVISIONS

For safety and convenience, all Genpowerusa generator sets are provided with a means to lift the unit from the skid base. Larger units are provided with removable lifting brackets for chain attachment. In both instances, the use of chain spreader bars or equipment to suit the particular situation is required to prevent the lifting chains from damaging

the unit during lifting. Due to the vast amount of variation in units, lifting equipment and circumstances; the safest means to lift the equipment without damage is at the sole discretion of the lifting equipment operator.

The use of the individual engine and generator lifting devices shown on the diagrams are NOT to be used to lift the entire

engine generator set. These devices were designed to lift only their respective component and not the complete unit. Lifting a complete unit by means of the engine and generator lifting devices will be done solely at the lifting equipment operator's discretion and assumed risk.

MOUNTING PAD CONSTRUCTION

Genpowerusa Generator Sets should be installed on a concrete pad that is properly sized to support the weight load of the unit and all associated accessories that will be installed with it as well as reduce transmitted vibration to acceptable levels. The weight of your particular unit can be found on the unit specification sheet provided in the operator's manual provided with the unit. If your unit is equipped with a sub-base fuel tank, you must include the weight of the fuel tank and fuel in your weight calculations.

CAUTION: The design criteria presented within this guide are general guidelines only. Check local building codes and ordinances for proper composition, design criteria and clearances. Consult a structural engineering firm for assistance with the design and certification of any supporting structure that is not placed directly on the ground.

CAUTION: The unit dimensions listed on the model specification sheets provided in the operator's manuals are general dimensions for open type units. The overall dimensions of any particular unit can vary greatly depending on the configuration and accessories ordered. If in doubt about the physical size of any particular unit, contact your local General Power LTD Inc representative for unit specific drawings prior to proceeding.

Common specifications require 2500 PSI concrete, reinforced with eight-gauge wire mesh or #6 reinforcing bars on 12-inch centers. The minimum recommended thickness of the pad can be calculated by using the formula below. If the weight per Ft³ of the specific concrete being used is unknown, use 145 pounds per Ft³, (which is a general average) for the calculations below.

To reduce vibration transmission to the surrounding areas, a sub-surface layer of sand or gravel should be used. Consult a qualified structural engineer for recommendations.

The overall width and length of the mounting pad should be a minimum of 12 inches longer and wider than the skid base

of the unit being mounted. It is normally desirable to extend the mounting pad three to six inches above the surrounding

concrete or grade for ease of service and cleaning.

Formula for calculating minimum mounting pad thickness:

$$\text{Minimum Pad Thickness (Ft)} = \frac{(\text{Weight Of Unit (Lbs)} + \text{Accessories (Lbs)})}{[(\text{Concrete Wt / Ft}^3) \times (\text{Pad Width (Ft)}) \times (\text{Pad Length (Ft)})]}$$

MOUNTING AND VIBRATION ISOLATION

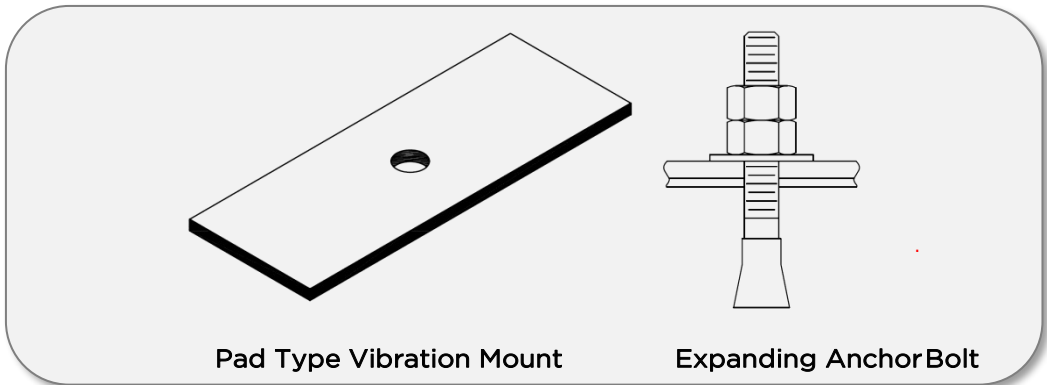
Also see vibration isolation requirements in subsequent sections relative to fuel, exhaust and electrical.

Noise and vibration are normal by-products of any internal combustion engine driven generator.

Vibration reducing mounts are generally used to secure the engine generator set to the concrete mounting pad. The purpose of such mounts is to reduce the amount of noise and vibration that is transmitted to the mounting pad during unit operation. Installations within buildings that have adjacent areas designated for other uses should be reviewed by a structural engineer to ensure that transmitted noise and vibration are reduced to unobjectionable levels.

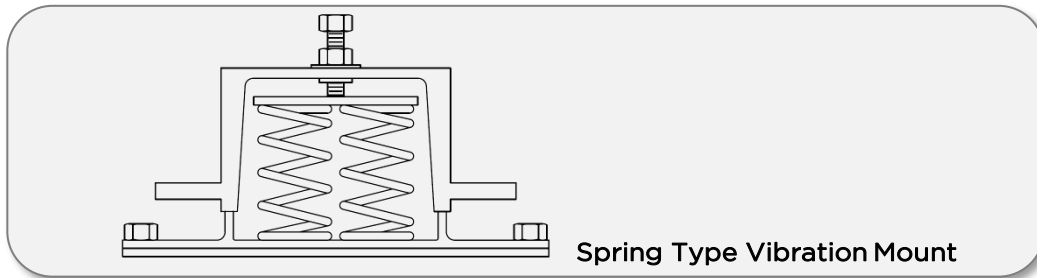
There are typically two types of vibration reducing mounts used:

Pad type vibration mounts, which are simple and effective for most applications, are placed between the engine generator set base frame and the concrete mounting pad. They are sized according to the weight of the unit and accessories and should be placed at each mounting point designed into the generator set skid base. To allow the vibration isolation pads to function properly, the nuts on the anchor bolts holding the unit to the mounting pad should be left loose and “double-nutted” as opposed to being tightened down. Refer to the illustration below.



Spring type vibration mounts are designed for a higher level of vibration and noise isolation for critical installations. If your particular generator set was provided with spring type

mounts, please refer to the operator's manual provided with the unit for installation details for the particular mount that was provided.



COOLING SYSTEMS AND AIR REQUIREMENTS

CAUTION: In cold climate areas, the high volume of outside air that will be drawn into the generator room can quickly reduce temperatures within the room to sub-freezing levels. All water piping and other equipment subject to damage by freezing temperatures should be relocated or properly insulated to prevent damage.

The cooling system is one of the most critical aspects of any generator set installation. Careful planning must be exercised to ensure that adequate ventilation will be available during operation under all possible climatic conditions.

Cooling systems can range in complexity from the simplest and most common “unit mounted radiator” to the most elaborate, remote mounted radiator, heat exchanger or heat recovery system. It would be inconceivable to properly cover all possible cooling system applications in a guide of this type. For that reason, only unit mounted radiator cooling systems will be described within. Please consult your local General Power LTD representative for design, application and installation assistance for all cooling system applications other than unit mounted radiator cooling.

Installation considerations for unit mounted radiator cooling systems:

Prevailing wind: should be a key factor in deciding which direction to discharge the cooling air that will be exhausted out through the unit mounted radiator. Wind pressure may reduce the amount of air the engine mounted cooling fan can discharge through the unit mounted radiator, causing poor performance or overheating. Consider which direction the wind is usually out of during the hottest days of the year, when the cooling system will require the maximum amount of cooling airflow possible.

Noise: The fans required to move air through a unit mounted radiator

cooling system will produce a fair amount of noise. Consider positioning the radiator exhaust in a direction less subject to objectionable noise levels.

Hot air discharge: At times, the cooling air discharged through a unit mounted radiator cooling system can reach levels that could damage shrubs, bushes and plantings. This is of particular a concern if the unit will be operated for extended periods of time during high ambient temperature periods. Choose the placement direction accordingly.

Recirculation of cooling air: The most common cause of unit overheating is cooling air recirculation. When hot air that's discharged through the radiator is allowed to re-circulate back into the

cooling air intake means and through the radiator again, the cooling air can exceed the temperature capabilities of the cooling system causing overheating. If at all possible, the cooling air intake and discharge means should be located on opposing walls or be drawn from and exhausted to opposing directions.

Excessive external static pressure within

Sizing cooling air inlet and exhaust openings for unit mounted radiator cooling systems: Adequate cooling air flow is critical to the proper operation of any engine generator set. These recommendations are presented in terms of “effective opening” which is the amount of open area of which air is allowed to flow through a device.

Air intake: As a general rule, the “effective opening” of any device used as an air intake means to the engine

FORMULA:

$$\begin{aligned}
 &(\text{Radiator Core Length (In.)}) \times (\text{Radiator Core Width (In.)}) = (\text{Radiator Core Area (In.}^2\text{)}) \\
 &(\text{Radiator Core Area (In.}^2\text{)}) \times (1.75) = (\text{Effective Opening Required (In.}^2\text{)}) \\
 &(\text{Effective Opening Required (In.}^2\text{)}) \div (\text{Required Effectiveness (\%)}) = (\text{Required Louver Size (In.}^2\text{)})
 \end{aligned}$$

Next, the louver dimensions (In²) can be converted to ft² by dividing the ‘Required Louver Size’ by 144. Louvers can then be chosen based on the physical layout of the room and what’s available for louver sizes, so long as the length x width is equal to the ‘Required Louver Size’ in Ft².

Various types of air intake and exhaust devices:

Fixed Blade Louvers: Generally used as air intake devices. The angled stationary blades allow cooling air to flow into a room or enclosure while keeping out the elements and debris. A bird/rodent screen should be installed on the back (inside) of the louver to prevent pest activity within the generator room.

Gravity Operated Louvers: Can only be

the cooling system: The location of the unit relative to the cooling air intake and exhaust should be such that the need for air ducting is kept to a minimum. For proper operation, all extended air ducting should be sized to maintain the total cooling system external restriction to less than 0.50 inches H₂O. Indoors, the radiator discharge must be ducted with flexible material when installing to the wall opening.

generator set should be a **minimum of 75% larger in “effective opening”** than the units’ radiator core. (See example)

Air exhaust: As a general rule, the “effective opening” of any device placed in front of the unit mounted radiator as an air discharge device should be a **minimum of 50% larger in “effective opening”** than the radiator core itself. The device and the radiator core duct adapter should be connected by ductwork of minimal length, and shall be fitted with a flexible section installed at the radiator end.


used as air exhaust devices. The hinged louver blades are held open by the discharge airflow during unit operation and fall shut by gravity when not in operation. The use of ductwork to prevent cooling air recirculation is an absolute must when using gravity exhaust louvers.

Motor Operated Intake Louvers: Perform the same basic function as fixed intake louvers except that they close to keep out the elements when the unit is not in operation. The desired mode of operation

is such that the louver motor is “energized to close” and opens when power is removed.

Motor Operated Exhaust Louvers: Differ from motor operated intake louvers as the blades open to a full 90° position to allow


the higher velocity, exhausted air to flow with less restriction. The desired mode of operation is such that the louver motor is “energized to close” and opens when power is removed.

 **CAUTION:** Care should be taken to verify the mode of operation of the motorized louver being installed (Either energize to close or energize to open) to ensure that power is supplied or removed as needed in all modes of operation. IE: During periods of test/exercise, actual power failure, simulated power failure Etc. Improper control sequence/wiring could cause the louvers to remain closed while the unit is in operation causing an overheat condition, shutdown or damage to the unit or accessories.

In some extreme cold climatic applications, the use of thermostatically controlled louvers may be used to reduce problems associated with fuel system icing/gelling, engine overcooling Etc. Contact your General Power LTD Representative for assistance in these applications.

EXHAUST SYSTEMS

The purpose of the exhaust system is to safely discharge the engine combustion exhaust gasses to a safe area outside of the building or structure.

 **WARNING:** Engine combustion exhaust fumes are deadly. Never allow the exhaust outlet termination to be positioned such that exhaust gasses will be directed toward any air entry routes (doors, windows, air intake vents, Etc.) of an occupied building. When choosing the location for the discharge termination, do not direct it towards anything that could catch fire or be damaged by high temperatures.

Exhaust system consideration checklist:

- A. Exhaust outlet terminations are not located upwind or near any building air intakes.
- B. A flexible piping section of suitable design is used to prevent the transmission of vibration to the exhaust piping which is extended beyond what was provided with the unit from the factory.
- C. The exhaust piping materials are suitable for the temperatures expected and as published for the particular unit. These temperatures can sometimes exceed 1200°F (649°C).
- D. Extended piping is adequately sized to prevent excessive engine exhaust system back pressure as published for the particular unit. Consult your General Power LTD representative for assistance in the design of lengthy or elaborate exhaust system requirements.
- E. Exhaust piping components are properly insulated to prevent operator exposure to excessive temperatures.
- F. Ventilated wall thimbles,

pipng sleeves or other suitable fire-proof materials are used where piping passes through building materials as per all state and local codes.

- G. Exhaust pipe termination includes a rain cap or other suitable means to prevent the entrance of rain, debris and pests when not in operation.
- H. All exhaust system components and extended piping beyond

what was provided with the unit from the factory is adequately supported to prevent damage to these components during operation.

- I. The overall exhaust system is oriented to provide a slight downward slope away from the engine to prevent condensation from draining back into the engine.

FUEL SYSTEM

General:

The fuel delivery system must be adequately sized and properly installed to provide an ample supply of fuel for starting and running the unit throughout the duration of any emergency event. Prior to connecting the fuel lines, ensure that the fuel connections are free of dirt, grease, water or other foreign matter that could damage the engine.

The components required for a complete fuel system will vary depending on the fuel type, unit location and applicable state and local codes. This is to be used only as a guide. It is the fuel system installers' responsibility to ensure that the overall fuel delivery system is of a safe and code compliant design.

DIESEL FUEL SYSTEMS

The following components comprise a typical diesel fuel delivery system:

- A. Main fuel storage tank, sized for the desired length of run time. Main fuel tank fill pipe with a suitable cap.
- B. Main fuel tank vent line.
- C. Fuel supply line with a foot/check valve.
- D. Fuel return line.
- E. Fuel storage "Day Tank" with transfer pump if required.
- F. Fuel level switches as required for controls.

Main Fuel Storage Tank:

The ideal location for the main fuel storage tank is as close to the unit as possible. Provided that applicable building and fire codes permit, the tank could be located within the same, or in an adjoining room to the unit. If this is not feasible, the tank should be located in a suitable location according to applicable state and local codes.

The fuel level in the main tank should be at the same height as the engines fuel transfer

pump inlet. If located within the generator room, the tank should be placed on the same general level as the unit, but lower than the engine's fuel injectors. If the tank must be placed at a level above or below this, a separate priming or float tank may be required. When the main fuel storage tank can be located close to the unit and the vertical "fuel lift" is five feet or less, the engines' fuel pump may be adequate for supplying fuel to the engine without additional means. If the horizontal run is excessive or the vertical lift exceeds five feet, a fuel "Day Tank" and fuel transfer pump will be required.

All fuel storage tanks must be vented to a safe area to allow air and other gasses to escape to atmosphere. The vent termination must be plumbed to a level above the highest point in the system to prevent spillage in the event of an overflow situation. The vent pipe termination should be suitable to prevent dust, dirt, moisture and pests from entering the tank.

ELECTRICAL REQUIREMENTS

AC Output Connections:

Verify that the generator output voltage and phase as listed on the unit nameplate match the system voltage and phase to which it is to be connected.

If the gen-set was provided from the factory without a main line circuit breaker, a main line circuit breaker must be provided by the installing contactor downstream of the gen-set load output terminals. The maximum number of circuit breakers installed downstream of

the load output terminals is limited to six. The output load connection point on units supplied without a main line circuit breaker will be located in an externally mounted terminal block within an enclosure and will be permanently marked as such. The output load conductors must be connected to this connection point.

Note: The enclosures supplied with main line breakers in excess of 1200 amps are intended for bottom conduit/connection access only.

All wiring must be sized and installed in accordance with all applicable electrical code requirements. All conductors must be sized, insulated and supported in an approved manner.

Wire Sizing Guidelines:

Load connection wires to circuit breaker / gen-set should be sized as follows:

Formula:

$$\begin{aligned} & \frac{\text{Genset rated output} * 115\%}{0.88 \text{ (40C ambient correction)}} \\ & \text{Example:} \\ & \frac{100\text{A Rated Output} * 115\%}{0.88 \text{ (40C ambient correction)}} \\ & = 130.68181 \text{ Amps (Round up to 131 Amps)} \end{aligned}$$

Note:

- If mainline circuit breaker is rated below calculated amps of formula, use calculated amps for wire sizing.
- If mainline circuit breaker is rated above calculated amps of formula, use circuit breaker rating for wire sizing.

Wire Sizing Selection:

- Use 75C column of NEC (Table 310-16) (Even when using 90C or greater wire)
- Wire selection must have amperage rating above calculated amps or circuit breaker, whichever is greater.

A suitable earth ground must be connected to the grounding terminal marked with the symbol shown below:



All conduits terminating at the generator connection points must incorporate a flexible section to eliminate the transmission of vibration.

Refer to output circuit breaker nameplate data for wire sizing/type and pressure terminal torque values. The tightening torque tables shown below are to be used as a guide.

Tightening torque for pressure wire connectors having screws

Size of wire that is to be used for connection of the unit		Tightening torque, pound-inches (N·m)			
		Slotted head no. 10 (4.7 mm) and larger ^a		Hexagonal head – external drive socket wrench	
		Slot width – 0.047 inch (1.2 mm) or less; and slot length – 1/4 inch (6.4 mm) or less	Slot width – over 0.047 inch (1.2 mm); or Slot length – over 1/4 inch (6.4 mm)		
AWG /kcmil	(mm ²)				
18 – 10	(0.82 – 5.3)	20 (2.3)	35 (4.0)	80 (9.0)	75 (8.5)
8	(8.4)	25 (2.8)	40 (4.5)	80 (9.0)	75 (8.5)
6 – 4	(13.3 – 21.2)	35 (4.0)	45 (5.1)	165 (18.6)	110 (12.4)
3	(26.7)	35 (4.0)	50 (5.6)	275 (31.1)	150 (16.9)
2	(33.6)	40 (4.5)	50 (5.6)	275 (31.1)	150 (16.9)
1	(42.4)	–	50 (5.6)	275 (31.1)	150 (16.9)
1/0 – 2/0	(53.5 – 67.4)	–	50 (5.6)	385 (43.5)	180 (20.3)
3/0 – 4/0	(85.0 – 107.2)	–	50 (5.6)	500 (56.5)	250 (28.2)
250 – 350	(127 – 177)	–	50 (5.6)	650 (73.4)	325 (36.7)
400	(203)	–	50 (5.6)	825 (93.2)	325 (36.7)
500	(253)	–	50 (5.6)	825 (93.2)	375 (42.4)
600 – 750	(304 – 380)	–	50 (5.6)	1000 (113.0)	375 (42.4)
800 – 1000	(406 – 508)	–	50 (5.6)	1100 (124.3)	500 (56.5)
1250 – 2000	(635 – 1016)	–	–	1100 (124.3)	600 (67.8)

NOTE – Connectors having a clamping screw with multiple tightening means (for example, a slotted, hexagonal head screw) are to be tested using both values of torque.

^a For values of slot width or length not corresponding to those specified, select the largest torque value associated with the conductor size. Slot width is the nominal design value. Slot length is to be measured at the bottom of the slot.

Tightening torque for pressure wire connectors having internal drive socket head screws

Socket size across flats, inch (mm) ^a		Tightening torque, pound-inches (N·m)	
1/8	(3.2)	45	(5.1)
5/32	(4.0)	100	(11.4)
3/16	(4.8)	120	(13.8)
7/32	(5.6)	150	(17.0)
1/4	(6.4)	200	(22.6)
5/16	(7.9)	275	(31.1)
3/8	(9.5)	375	(42.4)
1/2	(12.7)	500	(56.5)
9/16	(14.3)	600	(67.8)

^a See note a in Table 62.1 for screws with multiple tightening means.

Accessory Wiring:

It is recommended that all accessories requiring power be wired to a local panel being supplied by the load side of the transfer switch. This ensures that the accessories will be powered by whichever electrical source is available.

All accessory wiring should per Class 1 wiring methods and should be run in conduits separate of the generator output conductors. AC and DC accessory circuits should also be run in separate conduits.

All accessory wiring is to be terminated within the interface connection box provided and labeled as such.

Verify that the nameplate voltage of the accessories matches the system voltage that will be supplying them.

Refer to the electrical wiring diagrams provided in the Operation and Maintenance Manual provided with the particular unit for further wiring details.

AUTOMATIC TRANSFER SWITCHES

Automatic transfer switch installation should be provided by a licensed electrician. Refer to the detailed wiring diagrams and installation instructions that are provided with the equipment.



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