HIPOWER®
A YANMAR COMPANY

OPERATING MANUAL

For Mobile Generators Diesel V 1.0

HRVW-625/685

(VOLVO ENGINE)

HIPOWER SYSTEMS

For Parts and Service Support contact:

HIPOWER SYSTEMS

16600 S Theden St. Olathe, KS 66062-9607

(866) 710-2988

Parts@hipowersystems.com

Service@hipowersystems.com

This product can expose you to chemicals, including carbon monoxide and benzene, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to: www.P65warnings.ca.gov (000103)

Equipment damage. Only qualified service personnel may install, operate, and maintain this equipment. Failure to follow proper installation requirements could result in death, serious injury, and equipment or property damage. (0001182)

Safety and environmental risks that are regulated by California Proposition 65 may be present before, during and after the operation of HRVW-625 and HRVW-685 generators.

WARNING

CALIFORNIA - Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm

1/3

WARNING

CALIFORNIA - Proposition 65 Warning

This product may contain a chemical known to the State of California to cause cancer, or birth defects or other reproductive harm

2/3

WARNING

CALIFORNIA - Proposition 65 Warning

Batteries, battery posts, terminals and related accessories contain lead and lead compounds, and other chemicals known to the State of California to cause cancer and birth defects or other reproductive harm

WASH HANDS AFTER HANDLING

3/3

CALIFORNIA ENVIRONMENTAL HAZARD WARNING

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

1/1

1.2 AVERTISSEMENT DE DANGER POUR L'ENVIRONNEMENT EN CALIFORNIE

ATTENTION

CALIFORNIE - Avertissement Proposition 65

Dans l'État de Californie, on sait que les gaz d'échappement des moteurs diesel et certains de leurs composants sont cancérigènes, provoquent des anomalies .congénitales et d'autres troubles de la reproduction

CALIFORNIA ENVIRONMENTAL HAZARD WARNING

ATTENTION

CALIFORNIE - Avertissement Proposition 65

Ce produit peut contenir un produit chimique reconnu par l'État de Californie comme pouvant causer le cancer, des anomalies congénitales ou d'autres troubles de la reproduction

2/3

1.2 AVERTISSEMENT DE DANGER POUR L'ENVIRONNEMENT EN CALIFORNIE

ATTENTION

CALIFORNIE - Avertissement Proposition 65

Les batteries, les bornes de batterie, les terminaux et les accessoires associés contiennent du plomb et des composés de plomb, ainsi que d'autres produits chimiques reconnus par l'État de Californie pour provoquer le cancer, des anomalies .congénitales ou d'autres troubles de la reproduction

SE LAVER LES MAINS APRES LA MANIPULATION

CALIFORNIA ENVIRONMENTAL HAZARD WARNING

ATTENTION

Danger Environnemental

Recyclez toujours les piles dans un centre de recyclage officiel conformément à la législation et à la réglementation en vigueur

Dans le cas contraire, cela pourrait entraîner des dommages environnementaux, la mort ou des blessures graves

2. Warranty Letter

Dear Generator Owner:

Thank you for purchasing your Mobile T4F generator. HIPOWER SYSTEMS brands are designed to provide a reliable solution to the inconveniences and safety concerns associated with unexpected power outages.
The Standard Two-Year or 3,500 hours (whichever occurs first) parts & labor warranty has been registered for the generator listed below.

SERIAL #	MODEL DESCRIPTION	EFFECTIVE DATE	EXPIRATION DATE

Proper maintenance is essential to ensure reliable operation of your generator. Scheduled maintenance, as outlined by the generators operating manual, is highly recommended. Scheduled maintenance should be performed by an Authorized HIPOWER Service Dealer (AHSD) , or a branch thereof. This will verify that service has been performed on the unit throughout the warranty period. Your generator must be registered and Proof of Purchase and Maintenance must be provided at the time a warranty claim is filed. Failure to satisfy these conditions will void the Limited Warranty.

For more details and guidelines see next page.
You have made an important investment to protect yourself against potentially damaging power outages.
Thank you for choosing a mobile generator manufactured by HIPOWER SYSTEMS.

Sincerely,

HIPOWER SYSTEMS

16600 S Theden St. Olathe, KS 66062-9607
(866) 710-2988

HIPOWER Generating Sets Limited Warranty for Mobile Generators

Himoinsa Power Systems, Inc ("HIPOWER") will, at its discretion, repair or replace any part(s) that, upon examination, inspection, and testing by HIPOWER, or branch thereof, is found to be defective under normal use and service, in accordance with the warranty period. Any repaired product shall be warranted for the remaining original warranty period only. Any equipment that the purchaser/owner claims to be defective must be examined by HIPOWER or your approved service center. This will verify service has been performed on the unit throughout the warranty period. This warranty is limited to and available only on Liquid-cooled units. Emissions warranty coverage, if applicable, is detailed in a separate emissions warranty statement.

Warranty Coverage: Warranty period starts on ship date. However, it may be adjusted to the date of commissioning of the generator set if completed within (6) months of the ship date from factory.

Product Line	Warranty
Diesel Tier 4 Final	2 years or 3,500 hours (whichever occurs first) parts and labor
Spark-Ignited Generators	2 years or 3,000 hours (whichever occurs first) parts and labor

Guidelines:

1. All warranty repairs, must be performed and/or addressed by HIPOWER or an approved service center.
2. All warranty expense allowances are subject to the conditions defined in HIPOWER'S claim policy.
3. All mobile gaseous generator well sites must be certified; a sample of the well site must be sent to, and pre-approved by HIPOWER prior to installation. Without pre-approval, warranty will be void.
4. Damage to any covered components or consequential damages caused by the use of a non-OEM part will not be covered by the warranty.
5. Block heater controls and circulating pumps are only covered during the first year of warranty
6. HIPOWER may choose to repair, replace, or refund a piece of equipment.
7. Warranty Labor Rates are based on normal working hours. Additional cost for overtime, emergency labor costs for repairs outside of normal business hours will be the responsibility of the customer.
8. Battery and batteries of any type or kind. The battery manufacturer's warranty applies to these only. Any warranty for such should be handled with the manufacturer according to their policies.
9. Excessive mileage charges. Any HIPOEWR authorized distributor may provide warranty service anywhere but will only be paid travel from the nearest service center up to 240 miles round trip of the generator's permanent location at the IRS Standard Mileage Rate.
10. Verification of maintenance records may be required for warranty coverage.
11. Engines, Alternators and Controllers used in HIPOWER mobile generators carry a separate manufacturer's (OEM) warranty, unless otherwise expressly stated. All warranty claims for defects in material and /or workmanship on HIPOWER product components should be directed through HIPOWER SYSTEMS. (OEM) Warranties may vary and are subject to change. HIPOWER shall have no liability under OEM warranties.
12. Rates- Labor rate is $85.00 per hour. Portal to Portal Drive Labor Time rate is $30 per hour with a 4-hour maximum. Portal to Portal Mileage is based on IRS yearly rate for a maximum of 240 miles.
13. A valid warranty requires that: (1) HIPOWER's warranty certificate form must be completed, returned and on file at Himoinsa Power System, Inc. (2) Generator sets that are to remain out of service for a period longer than two months are subject to special preservation requirements.
14. Unit enclosure is only covered against rust and corrosion the first year of the warranty provision.
15. The owner is responsible for the performance of regular maintenance services as specified in the operator's manual applicable to the engine.

The following will NOT be covered by this warranty:

1. Cost of normal maintenance (i.e. tune-ups, associated part(s), adjustments, loose/leaking clamps, installation and start-up).
2. Any failure caused by contaminated fuels, oils, coolants/antifreeze or lack of proper fuels, oils or coolants/antifreeze.
3. Failures caused by any act of God or external cause such as, but not limited to, collision, fire, theft, freezing, vandalism, riot or wars, lighting, earthquake, hurricane, terrorist acts or nuclear holocaust, or any other matters which are reasonably beyond the manufacturer's control.
4. Products that are modified or altered in a manner not authorized by HIPOWER in writing.
5. Failures due, but not limited to, normal wear and tear, accident, misuse, abuse, negligence, or improper installation or sizing.
6. Any incidental, consequential or indirect damages caused by defects in materials or workmanship, or any delay in repair or replacement of the defective part(s).
7. Damage related to rodent and/or insect infestation.
8. Overnight freight costs for replacement part(s).
9. Failure due to misapplication, misrepresentation, or bi-fuel conversion.
10. Any special access fees required gaining access to HIPOWER equipment not limited to but including, lodging, training or safety policy, planes, ferries, railroad, buses, helicopters, snowmobiles, snow-cats, off-road vehicles or any other mode of transport or living quarters deemed abnormal.
11. Telephone, facsimile, cellular phone satellite, internet, or any other communication expenses.
12. Rental equipment used while warranty repairs are being performed (i.e. rental generators, cranes, etc.)
13. The warranty does not cover sales tax or any incidental costs including, without limitation, shipping or associated transportation charges, travel to and from repair sites, damages related to the loss of use, lost rentals, rental expenses and damages to property or equipment.
14. Any and all expenses incurred investigating performance complaints unless defective HIPOWER materials and/or workmanship were the direct cause of the problem.
15. Any failed components warranted by the OEM (i.e. engine, generator, starting batteries, etc.)
16. Normal maintenance and/or wear items (i.e. bearings, belts, bulbs, brakes, filters, fuses, fluids, hoses, tires, etc.)
17. Trailers and UL listed sub base fuel tanks will be covered under the original equipment manufacturer's warranty.
18. Housing Lights and light switches.
19. Cords, receptacles, and cord reels.
20. Any repair labor time that is determined to be excessive: e.g., such as two or more persons performing a one-person job.

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

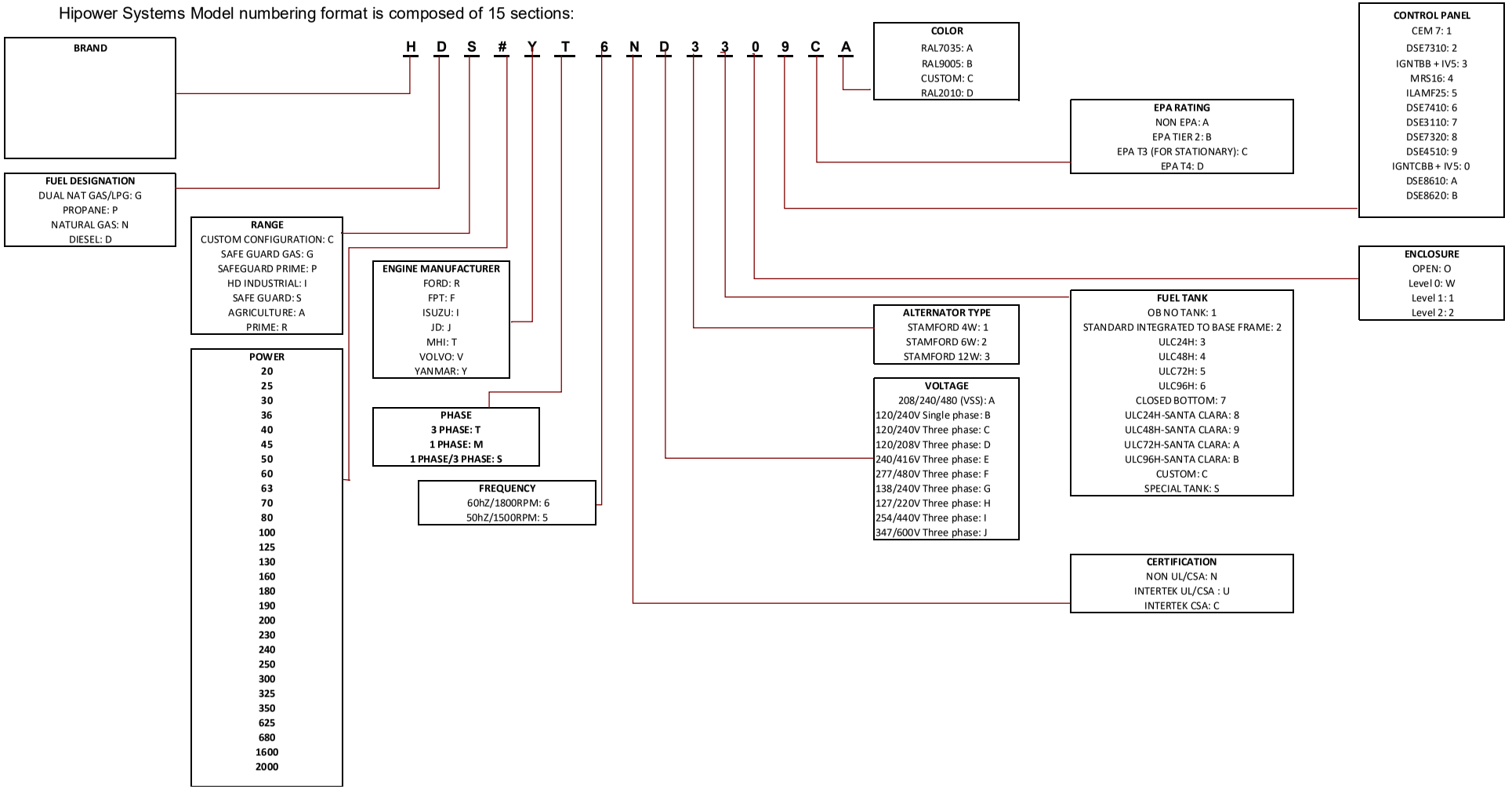
*Note: HIPOWER is a registered brand of Himoinsa Power Systems, Inc.

This warranty is in place of all other warranties, expressed or implied, specifically HIPOWER makes no other warranties as to the merchantability or fitness for a particular purpose. Any implied warranties which are allowed by law, shall be limited in duration to the terms of the express warranty provided herein. Some jurisdictions do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to purchaser/owner. HIPOWER's only liability shall be the repair or replacement of part(s) as stated above. In no event shall HIPOWER be liable for any incidental or consequential damages, even if such damages are a direct result of HIPOWER's negligence. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. You agree to make no claims against HIPOWER based on negligence. This warranty gives you specific legal rights. You may also have other rights under applicable law.

PRODUCT IDENTIFICATION INFORMATION

HOW TO READ MODEL NUMBERS

Hipower Systems Model numbering format is composed of 15 sections:



3.1 Product Identification Numbers

Product identification numbers determine service parts. Record the product identification numbers in the spaces below immediately after unpacking the products so that the numbers are readily available for future reference. Record field-installed kit numbers after installing the kits.

GENERATOR SET IDENTIFICATION NUMBERS

Record the product identification numbers from the generator set nameplate(s).

Model Designation _____

Specification Number _____

Serial Number _____

Accessory Number _____

Accessory Description _____

ENGINE IDENTIFICATION

Record the product identification information from the engine name plate.

Manufacturer _____

Model Designation _____

Serial Number _____

CONTROLLER IDENTIFICATION

Record the controller description from the generator set operation manual, spec sheet, or sales invoice. Record the Controller Serial Number from the controller name plate.

CONTROLLER DESCRIPTION

Serial Number _____

WARNING

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

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

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

WARNING

CALIFORNIA - Proposition 65 Warning
This product may contain a chemical known to the State of California to cause cancer, or birth defects or other reproductive harm.

CANCER AND REPRODUCTIVE HARM
www.P65Warnings.ca.gov.

HIPOWER®
A YANMAR COMPANY

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IMPORTANT SAFETY INSTRUCTIONS.

Electromechanical equipment, including generator sets, transfer switches, switchgear, and accessories, can cause bodily harm and pose life-threatening danger when improperly installed, operated, or maintained. To prevent accidents be aware of potential dangers and act safely. Read and follow all safety precautions and instructions.

SAVE THESE INSTRUCTIONS.

This manual has several types of safety precautions and instructions: Danger, Warning, Caution, and Notice.

DANGER

Danger indicates the presence of a hazard that will cause severe personal injury,death, or substantial property damage.

WARNING

Warning indicates the presence of a hazard that can cause severe personal injury,death, or substantial property damage.

CAUTION

Caution indicates the presence of a hazard that will or can cause minor personal injury or property damage.

NOTICE

Communicates installation, operation, or maintenance information that is safety related but not hazard related.

Safety decals affixed to the equipment in prominent places alert the operator or service technician to potential hazards and explain how to act safely.

ACCIDENTAL STARTING

WARNING

ACCIDENTAL STARTING.

Can cause severe injury or death.

Disconnect the battery cables before working on the generator set. Remove the negative (--) lead first when disconnecting the battery. Reconnect the negative (--) lead last when reconnecting the battery.

Disabling the generator set. Accidental starting can cause severe injury or death.

Before working on the generator set or equipment connected to the set, disable the generator set as follows: (1) Press the generator set on/off button to shut down the generator set. All indicator lamps dim. (2) Disconnect the power to the battery charger, if equipped. (3) Remove the battery cables, negative (--) lead first. Reconnect the negative (--) lead last when reconnecting the battery. Follow these precautions to prevent the starting of the generator set by the remote start/stop switch.

BATTERY

WARNING

SULFURIC ACID IN BATTERIES.

Can cause severe injury or death.

Wear protective goggles and clothing. Battery acid may cause blindness and burn skin.

WARNING

EXPLOSION

Can cause severe injury or death.

Relays in the battery charger cause arcs or sparks.

Locate the battery in a well-ventilated area. Isolate the battery charger from explosive fumes.

Battery electrolyte is a diluted sulfuric acid. Battery acidcan cause severe injury or death. Battery acid can cause blindness and burn skin. Always wear splash proof safety goggles, rubber gloves, and boots when servicing the battery. Do not open a sealed battery or mutilate the battery case. If battery acid splashes in the eyes or on the skin, immediately flush the affected area for 15 minutes with large quantities of clean water. Seek immediate medical aid in the case of eye contact. Never add acid to a battery after placing the battery in service, as this may result in hazardous spattering of battery acid.

Battery acid cleanup. Battery acid can cause severe injury or death.

Battery acid is electrically conductive and corrosive. Add 500 g (1 lb.) of bicarbonate of soda (baking soda) to a container with 4 L (1 gal.) of water and mix the neutralizing solution. Pour the neutralizing solution on the spilled battery acid and continue to add the neutralizing solution to the spilled battery acid until all evidence of a chemical reaction (foaming) has ceased. Flush the resulting liquid with water and dry the area.

Battery gases. Explosion can cause severe injury or death. Battery gases can cause an explosion. Do not smoke or permit flames or sparks to occur near a battery at any time, particularly when it is charging. Do not dispose of a battery in a fire.

To prevent burns and sparks that could cause an explosion, avoid touching the battery terminals with tools or other metal objects. Remove all jewelry before servicing the equipment. Discharge static electricity from your body before touching batteries by first touching a grounded metal surface away from the battery. To avoid sparks, do not disturb the battery charger connections while the battery is charging. Always turn the battery charger off before disconnecting the battery connections. Ventilate the compartments containing batteries to prevent accumulation of explosive gases.

Battery short circuits. Explosion can cause severe injury or death.

Short circuits can cause bodily injury and/or equipment damage. Disconnect the battery before generator set installation or maintenance. Remove all jewelry before servicing the equipment. Use tools with insulated handles. Remove the negative (--) lead first when disconnecting the battery. Reconnect the negative (--) lead last when reconnecting the battery. Never connect the negative (--) battery cable to the positive (+) connection terminal of the starter solenoid. Do not test the battery condition by shorting the terminals together.

Battery gases. Explosion can cause severe injury or death.

Incorrect use of the equalize charge state may lead to hazardous situations. Equalization is ONLY applicable for flooded lead acid (FLA) type batteries and will damage gel, absorbed glass mat (AGM), or nickel-cadmium (NiCad) type batteries. In the controller menu or SiteTecht settings, verify that the battery topology is set correctly for the battery type used. Do not smoke or permit flames, sparks, or other sources of ignition to occur near a battery at any time.

ENGINE BACKFIRE/FLASH FIRE

RISK OF FIRE.

Can cause severe injury or death.

Do not smoke or permit flames or sparks near fuels or the fuel systems.

Servicing the fuel system. A flash fire can cause severe injury or death.

Do not smoke or permit flames or sparks near the carburetor, fuel line, fuel filter, fuel pump, or other potential sources of spilled fuels or fuel vapors. Catch fuels in an approved container when removing the fuel line or carburetor.

Servicing the air cleaner. A sudden backfire can cause severe injury or death.

Do not operate the generator set with the air cleaner removed.

Combustible materials. A fire can cause severe injury or death.

Generator set engine fuels and fuel vapors are flammable and explosive. Handle these materials carefully to minimize the risk of fire or explosion. Equip the compartment or nearby area with a fully charged fire extinguisher. Select a fire extinguisher rated ABC or
BC for electrical fires or as recommended by the local fire code or an authorized agency. Train all personnel on fire extinguisher operation and fire prevention procedures.

EXHAUST SYSTEM

CARBON MONOXIDE.

Can cause severe nausea, fainting, or death.

Generator set operation. Carbon monoxide can cause severe nausea, fainting, or death. Carbon monoxide is an odorless, colorless, tasteless, nonirritating gas that can cause death if inhaled for even a short time. Avoid breathing exhaust fumes when working on or near the generator set. Never operate the generator set inside a building unless the exhaust gas is piped safely outside. Never operate the generator set where exhaust gas could accumulate and seep back inside a potentially occupied building.

Carbon monoxide symptoms. Carbon monoxide can cause severe nausea, fainting, or death.

Carbon monoxide is a poisonous gas present in exhaust gases. Carbon monoxide is an odorless, colorless, tasteless, nonirritating gas that can cause death if inhaled for even a short time. Carbon monoxide poisoning symptoms include but are not limited to the following:

- Light-headedness, dizziness
- Physical fatigue, weakness in joints and muscles
- Sleepiness, mental fatigue, inability to concentrate or speak clearly, blurred vision
- Stomachache, vomiting, nausea If experiencing any of these symptoms and carbon monoxide poisoning is possible, seek fresh air immediately and remain active. Do not sit, lie down, or fall asleep. Alert others to the possibility of carbon monoxide poisoning. Seek medical attention if the condition of affected persons does not improve within minutes of breathing fresh air.

Do not use copper tubing in diesel exhaust systems. Sulfur in diesel exhaust causes rapid deterioration of copper tubing exhaust systems, resulting in exhaust leakage.

FUEL SYSTEM

EXPLOSIVE FUEL VAPORS.
Can cause severe injury or death.
Use extreme care when handling, storing, and using fuels.

The fuel system. Explosive fuel vapors can cause severe injury or death. Vaporized fuels are highly explosive. Use extreme care when handling and storing fuels. Store fuels in a well-ventilated area away from spark-producing equipment and out of the reach of children. Never add fuel to the tank while the engine is running because spilled fuel may ignite on contact with hot parts or from sparks. Do not smoke or permit flames or sparks to occur near sources of spilled fuel or fuel vapors. Keep the fuel lines and connections tight and in good condition. Do not replace flexible fuel lines with rigid lines. Use flexible sections to avoid fuel line breakage caused by vibration. Do not operate the generator set in the presence of fuel leaks, fuel accumulation, or sparks. Repair fuel systems before resuming generator set operation.

Explosive fuel vapors can cause severe injury or death.
Take additional precautions when using the following fuels:

Fuel tanks. Explosive fuel vapors can cause severe injury or death.

Gasoline and other volatile fuels stored in day tanks or sub-base fuel tanks can cause an explosion. Store only diesel fuel in tanks.

Draining the fuel system. Explosive fuel vapors can cause severe injury or death.

Spilled fuel can cause an explosion. Use a container to catch fuel when draining the fuel system. Wipe up spilled fuel after draining the system.

HAZARDOUS NOISE

HAZARDOUS NOISE.
Can cause hearing loss.

Never operate the generator set without a muffler or with a faulty exhaust system. Engine noise. Hazardous noise can cause hearing loss. Generator sets not equipped with sound enclosures can produce noise levels greater than 105 dBA. Prolonged exposure to noise levels greater than 85 dBA can cause permanent hearing loss. Wear hearing protection when near an operating generator set.

HAZARDOUS VOLTAGE/ MOVING PARTS

HAZARDOUS VOLTAGE.
Will cause severe injury or death.

Disconnect all power sources before opening the enclosure.

HAZARDOUS VOLTAGE.
MOVING PARTS.
Will cause severe injury or death.

Operate the generator only when all guards and electrical enclosures are in place.

HAZARDOUS VOLTAGE.
Back-feed to the utility system can cause property damage, severe injury, or death.

If the generator set is used for standby power, install an automatic transfer switch to prevent inadvertent interconnection of standby and normal sources of supply.

Grounding electrical equipment. Hazardous voltage will cause severe injury or death.

Electrocution is possible whenever electricity is present. Ensure you comply with all applicable codes and standards. Electrically ground the generator set, transfer switch, and related equipment and electrical circuits. Turn off the main circuit breakers of all power sources before servicing the equipment. Never contact electrical leads or appliances when standing in wa-

High voltage test. Hazardous voltage will cause severe injury or death.

Follow the instructions of the test equipment manufacturer when performing high-voltage tests on the rotor or stator. An improper test procedure can damage equipment or lead to generator set failure.

Hazardous voltage will cause severe injury or death.

An ungrounded battery charger may cause electrical shock. Connect the battery charger enclosure to the ground of a permanent wiring system. As an alternative, install an equipment grounding conductor with circuit conductors and connect it to the equipment grounding terminal or the lead on the battery charger. Install the battery charger as prescribed in the equipment manual. Install the battery charger in compliance with local codes and ordinances.

Connecting the battery and the battery charger. Hazardous voltage will cause severe injury or death.

Reconnect the battery correctly, positive to positive and negative to negative, to avoid electrical shock and damage to the battery charger and battery(ies). Have a qualified electrician install the battery (ies).

Short circuits. Hazardous voltage/current will cause severe injury or death.

Short circuits can cause bodily injury and/or equipment damage. Do not contact electrical connections with tools or jewelry while making adjustments or repairs. Remove all jewelry before servicing the equipment.

Engine block heater. Hazardous voltage will cause severe injury or death.

The engine block heater can cause electrical shock. Remove the engine block heater plug from the electrical outlet before working on the block heater electrical connections.

Handling the capacitor. Hazardous voltage can cause severe injury or death.

Electrical shock results from touching the charged capacitor terminals. Discharge the capacitor by shorting the terminals together. (Capacitor-excited models only)

Electrical back-feed to the utility. Hazardous back-feed voltage can cause severe injury or death.

Install a transfer switch in standby power installations to prevent the connection of standby and other sources of power. Electrical back-feed into a utility electrical system can cause severe injury or death to utility personnel working on power lines.

Testing live electrical circuits. Hazardous voltage or current will cause severe injury or death.

Have trained and qualified personnel take diagnostic measurements of live circuits. Use adequately rated test equipment with electrically insulated probes and follow the instructions of the test equipment manufacturer when performing voltage tests. Observe the following precautions when performing voltage tests:
(1) Remove all jewelry.
(2) Stand on a dry, approved electrically insulated mat.
(3) Do not touch the enclosure or components inside the enclosure.
(4) Be prepared for the system to operate automatically. (600 volts and under)
Servicing the generator set when it is operating. Exposed moving parts will cause severe injury or death. Keep hands, feet, hair, clothing, and test leads away from the belts and pulleys when the generator set is running. Replace guards, screens, and covers before operating the generator set.

HEAVY EQUIPMENT

UNBALANCED WEIGHT.

Improper lifting can cause severe injury or death and equipment damage.

Do not use lifting eyes. Lift the generator set using lifting bars inserted through the lifting holes on the skid.

HOT PARTS

HOT COOLANT AND STEAM.

Can cause severe injury or death.

Before removing the pressure cap, stop the generator set and allow it to cool. Then loosen the pressure cap to relieve pressure.

HOT ENGINE AND EXHAUST SYSTEM.

Can cause severe injury or death.

Do not work on the generator set until it cools.

Servicing the alternator. Hot parts can cause severe injury or death. Avoid touching the alternator field or exciter armature. When shorted, the alternator field and exciter armature become hot enough to cause severe burns.

Servicing the exhaust system. Hot parts can cause severe injury or death.

Do not touch hot engine parts. The engine and exhaust system components become extremely hot during operation.

THANK YOU FOR PURCHASING A HIPOWER SYSTEMS PRODUCT.

This unit has been designed to provide high-performance, efficient operation, and years of use when maintained properly.
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.

Refer to the engine operation manual for generator set engine scheduled maintenance information.
Information in this publication represents data available at the time of print. HIPOWER SYSTEMS reserves the right to change this publication and the products represented without notice and without any obligation or liability whatsoever.

WARNING

Read this manual and carefully follow all procedures and safety precautions to ensure proper equipment operation and to avoid bodily injury.
Read and follow the Safety Precautions and Instructions section at the beginning of this manual.

- Protect yourself and your co-workers from injury.
- Prevent damage to equipment.
- Maximize the functional life of the equipment.

COMPLETE any required training before attempting to operate the HRVW-625 and HRVW-685 generators and any associated equipment.
Keep this manual with the equipment for future reference.

INSTALLATION, OPERATION, AND MAINTENANCE

Installation and initial startup of this equipment is not a "do-it-yourself" project. This generator set must be installed by an Authorized HIPOWER Service Dealer (AHSD) or other competent, qualified contractor. The initial startup must be performed and documented by an Authorized HIPOWER Service Dealer (AHSD). An AHSD can also provide the necessary training for authorized operators. It is the operator's responsibility to perform all safety checks, to make sure that all maintenance for safe operation is performed promptly, and to have the equipment checked periodically by an AHSD.

Access to the generator shall be through the use of a special tool, or lock and key, or other means of security and shall be controlled by the authority responsible for the location.
Normal maintenance service and replacement of parts are the responsibility of the owner and, as such, are not considered defects in materials or workmanship within the terms of the warranty. Individual operating habits and usage contribute to the need for maintenance service.

Proper maintenance and care of the generator will ensure a minimum number of problems and keep operating expenses at a minimum. See an AHSD for service aids and accessories

Contact HIPOWER SYSTEMS to request additional copies of this operating manual or to obtain more information about the safe operation of HRVW-625 and HRVW-685 generators.
KNOW and **FOLLOW** rules published by regulatory authorities, including:

- The United States Occupational Safety and Health Administration (OSHA).
- Canada Occupational Health and Safety (OH&S).
- All other, applicable state, Province, District, County and municipality regulations.

For Parts and Service Support contact:

HIPOWER SYSTEMS

16600 S Theden St. Olathe, KS 66062-9607

(866) 710-2988
Parts@hipowersystems.com
Service@hipowersystems.com

HIPOWERSYSTEMS.COM

6. Service Assistance

For professional advice on generator set power requirements and conscientious service, please contact your nearest AUTHORIZED HIPOWER SERVICE DEALER OR DISTRIBUTOR. (AHSD)

Visit the HIPOWER website for contact information (Dealer Locator) at :
WWW. HIPOWERSYSTEMS.COM

Look at the labels and decals on your HIPOWER SYSTEMS product or review the appropriate literature or documents included with the product.

See below for European offices and visit the website for offices in Central and South America, Asia Pacific and Middle East.

HIMOINSA POWER
SOLUTIONS LTD.
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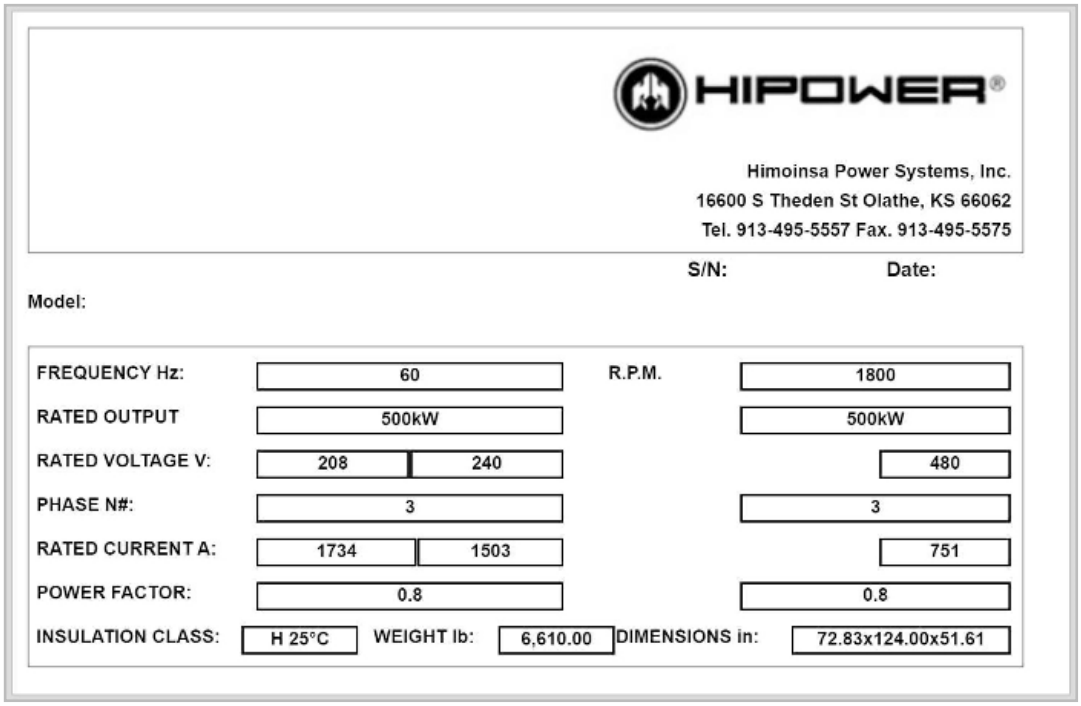
UNIT IDENTIFICATION - DATA LABEL

Each generator set has a data label containing important information about the generator. The data label lists the unit serial number, rated voltage, amps, wattage capacity, etc.

NOTE:
The figure below is a generic representation only. For actual information on your particular model, refer to the data label(s) affixed to your unit.

HRVW-625


HIPOWER®

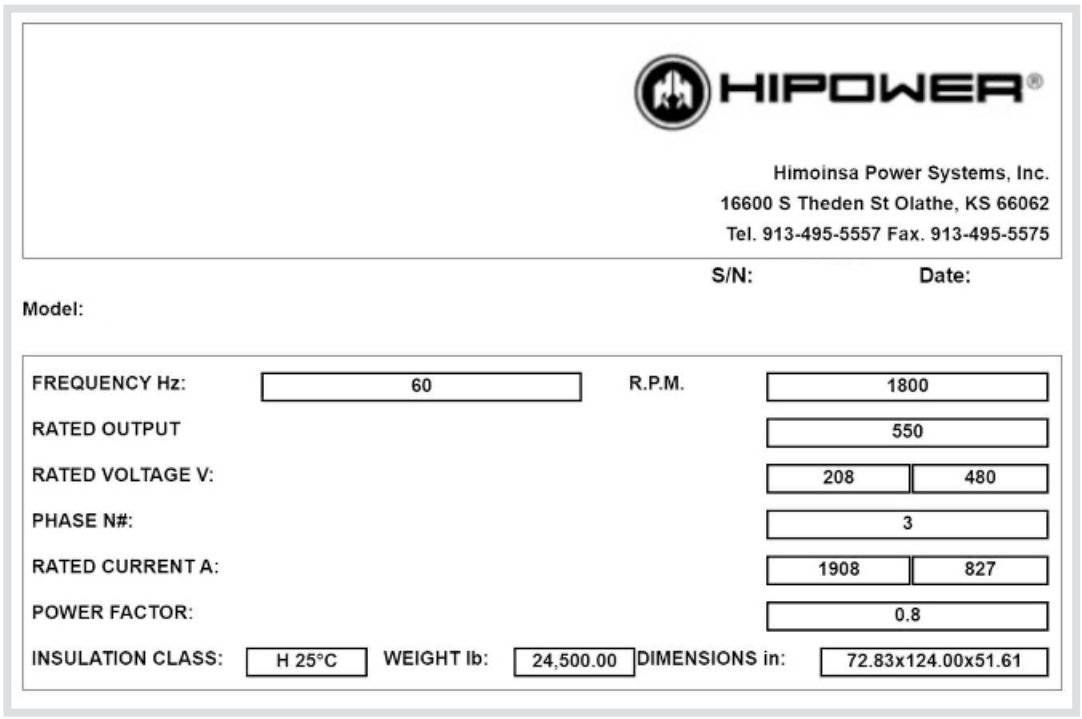
Himoinsa Power Systems, Inc.
16600 S Theden St Olathe, KS 66062
Tel. 913-495-5557 Fax. 913-495-5575

S/N: Date:

Model:

FREQUENCY Hz:	60		R.P.M.	1800
RATED OUTPUT	500kW			500kW
RATED VOLTAGE V:	208	240		480
PHASE N#:	3			3
RATED CURRENT A:	1734	1503		751
POWER FACTOR:	0.8			0.8
INSULATION CLASS:	H 25°C	WEIGHT lb:	6,610.00	DIMENSIONS in: 72.83x124.00x51.61

HRVW-685


HIPOWER®

Himoinsa Power Systems, Inc.
16600 S Theden St Olathe, KS 66062
Tel. 913-495-5557 Fax. 913-495-5575

S/N: Date:

Model:

FREQUENCY Hz:	60		R.P.M.	1800
RATED OUTPUT				550
RATED VOLTAGE V:				208 / 480
PHASE N#:				3
RATED CURRENT A:				1908 / 827
POWER FACTOR:				0.8
INSULATION CLASS:	H 25°C	WEIGHT lb:	24,500.00	DIMENSIONS in: 72.83x124.00x51.61

Controller Type

HIPOWER® COMAP IntelliGen NT Control Panel: The IntelliGen NT digital control panel is back-lit with icon LCD text display, and is PC configurable. IInteliGen NT is a comprehensive controller for both single and multiple gen-sets operating in standby or parallel modes.

Equipment Description

This equipment is a revolving field, alternating current type generator set. The generator is designed to supply electrical power for the operation of compatible electrical loads when the utility power supply is not available or has dropped to an unacceptable level.

The generator's revolving field is directly connected to and driven by an engine by means of flexible discs or a gearbox. Generators with a four-pole rotor are driven at a rated speed of 1,800 RPM to supply a frequency of 60 Hertz.

Refer to the data label affixed to the unit for rated AC voltage, wattage, amperage, number of phases, etc.

See Model Identification Code for an explanation of how to identify the unit's features.

Standard Generator Features

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 MG1-22.4 and NEMA MG1-1.65.
- The generator is self-ventilated and drip-proof con structed.
- The voltage waveform deviation, total harmonic con tent of the AC waveform and "telephone influence factor" have been evaluated and are acceptable accord ing to NEMA MG1-22.
- All prototype tested models have passed three phase symmetrical short circuit test to ensure system protec tion and reliability.

Generator and Load Compatibility

The generator must be fully compatible with the rated voltage, phase, and frequency of the connected electrical loads. The generator, connected electrical devices, or both, can be damaged if voltage, phase, and frequency are not compatible.

NOTE: This manual assumes that the generator set has been properly selected, installed and interconnected by a competent, qualified electrician or installation contractor. Once the installation is complete, do nothing that may result in non-compatibility between the generator and connected electrical loads.

Single-Phase

The generator is suitable for supplying typical residential loads, such as induction motors (sump pumps, refrigerators, air conditioners, furnaces, etc.), electronic components (TV, computer, monitor, etc.), lighting loads, and microwaves.

Three-Phase Load Imbalance Limits

For three-phase units the maximum load imbalance between phases can not exceed 25% of rated load (current).

Ambient Condition Derate

The maximum ambient temperature for the generator is indicated on the unit data label. Derate values for ambient temperature in excess of that indicated on the data label, as well as altitude, may apply depending on the engine and kW rating of the unit. Consult an AHSD for any derate values applicable to this specific generator at its installed location.

Engine and Generator Protective Devices

The generator set may be required to operate for long periods of time without an operator to monitor conditions such as coolant temperature, oil pressure, voltage, frequency, etc. For this reason, the generator set has numerous sensors to provide the control panel with the information it needs to protect both the engine and generator. The control panel is designed to shut down the engine if potentially damaging conditions occur. These conditions can include low oil pressure, high coolant temperature, low coolant level, engine over-speed, over or under voltage, over or under frequency, etc. These settings are configured at the factory and can be adjusted by an AHSD if required.

NOTE: Engine and generator protective devices are only mentioned here for the owner's general information. For details, consult the applicable control panel technical manual. The list below is not all inclusive.

Coolant Temperature Sensor

The control panel automatically shuts down the engine if the engine coolant temperature rises above a safe level.

Low Coolant Level Sensor

Should the engine coolant level drop below the level of the low coolant temperature sensor, it is possible for the engine to overheat without automatic shutdown. To prevent such overheating, the engine has a low coolant level sensor. If the level of engine coolant drops below the level of the low coolant level sensor, the control panel will shut the engine down.

Oil Pressure Sensor

This sensor monitors engine oil pressure. If oil pressure drops below a safe level, the control system automatically shuts down the engine.

Overspeed Shutdown

A speed circuit controls engine cranking, startup, operation, and shutdown. Engine speed signals are delivered to the control panel whenever the unit is running. Should the engine overspeed above a safe, preset value, the control panel initiates an automatic engine shutdown.

Overcrank Shutdown

After a pre-specified duration of cranking, this function ends the cranking if the engine has failed to start. The default settings are:

- The unit will attempt to start (crank) three times.
- Each crank cycle lasts either 10 or 15 seconds, followed by a five second rest (to cool the starter).
- After three starting attempts the unit will shutdown.

RPM Sensor Loss Shutdown

If the speed signal to the control panel is lost, engine shutdown will occur.

Low Fuel Pressure Warning

- Some gaseous units are equipped with a low fuel pressure warning switch which will trigger a Warning alarm if the fuel pressure drops below a minimum setting.
- Diesel units with fuel tanks are equipped with High and Low fuel level warning alarms, as well as a low fuel level shutdown alarm.

Fuel System

This generator set is equipped with one of the following fuel systems:

- **DIESEL FUEL SYSTEM**

Diesel Fuel System

The manufacturer recommends the use of No. 2 diesel fuel when temperatures are above freezing, and No. 1 diesel fuel when temperatures drop below freezing. Diesel fuel must meet the following requirements:

Beginning October 1, 2010, owners and operators that use diesel fuel must use diesel fuel that meets:

- Sulfur content of 15 parts per million (ppm) maximum.
- Cetane index or aromatic content as follows:
  A minimum cetane index of 40, or a maximum aromatic content of 35 volume percent.

SPECIFICATIONS

Generator

Refer to the data plate on the generator for rated watts, amperes, frequency, voltage, phase, and other important information.

Engine Oil Recommendations

The engine has been filled with factory engine oil of a grade recommended by the engine supplier. See the applicable engine service manual for engine oil recommendations.
The manufacturer recommends an initial oil and filter change after the first 50 hours (or first three months) of service operation. Use a high quality detergent oil with an appropriate classification and viscosity for the engine type and ambient temperature conditions Consult your AHSD for oil recommendations. Synthetic oils meeting the same service category and viscosity requirements for the application may be used.

Recommended Lubricating oil grade:

- **SAE 10W-40 CONVENTIONAL DH4**

Coolant

DANGER

Risk of poisoning. Do not use mouth to siphon coolant. Doing so will result in death or serious injury. (000149)

WARNING

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

CAUTION

Risk of overheating. Do not use any chromate base rust inhibitor with propylene glycol base antifreeze,boosters, or additives. Doing so will cause overheating and possible equipment damage. (000165a)

Use only deionized or distilled water and Ethylene glycol anti freeze (Propylene glycol can also be used but do not mix with Ethylene glycol). When adding coolant, always add the recommended 50-50 mixture.

Starting Aids (If Equipped)

One or more of the following starting aids may be provided to ensure quicker, easier starts under varying climactic conditions.

- Engine coolant heater
- Engine oil heater
- Battery warmer

These aids are powered by a normal (utility) power source during non-operating periods.

Engine Coolant Heater

Heats the engine coolant when the unit is not operating. This action keeps the engine warm even in cold weather, helping to ensure quicker starts. Powered by a circuit normally fed by the utility power supply.

Engine Oil Sump Heater

Keeps the oil in the sump heated to allow easier starting and faster engine warm-up. Powered by a circuit normally fed by the utility power supply.

Battery Warmer

Keeps the battery warm so it can provide full cranking current when starting in cold conditions. Powered by a circuit normally fed by the utility power supply.

DESCRIPTION - DIESEL ENGINES

HIPOWER MOBILE GENERATORS are an efficient, reliable and versatile source of electrical power. Designed to operate in the most extreme working conditions. All HIPOWER mobile generators combine an innovative deign and the use of the high quality materials that provide the user with the most dependable power that you can rely on for non-stop power with easy to operate controls. Powered by a radiator-cooled, industrial **VOLVO PENTA** diesel engines which meets current Environmental Protection Agency (EPA) TIER 4 Final non-road exhaust emission regulations, driving a single bearing, four-pole, three-phase alternator, with IP23 protection. The Prime Power kVA rating for generator set is given with a 105 degree C alternator winding temperature rise.

VOLVO PENTA Diesel Engine

- HRVW-625 - VOLVO TWD1672 GE
- HRVW-685 - VOLVO TWD1673 GE

Long-life, heavy-duty, 4-cycle, direct injection engine for economy of operation and maximum reliability and durability. Capable of full rated load acceptance in one step.

COOLING

Radiator with belt driven pusher fan.

AIR FILTER

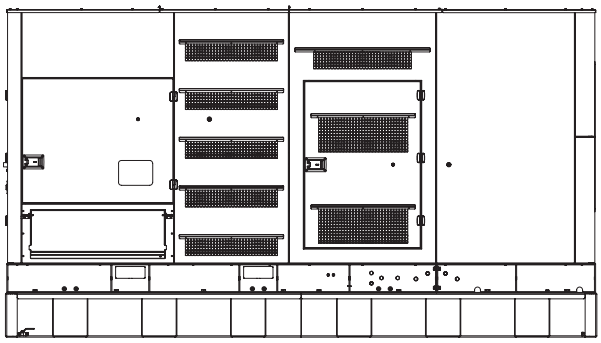
Heavy-duty replaceable element air-cleaner.

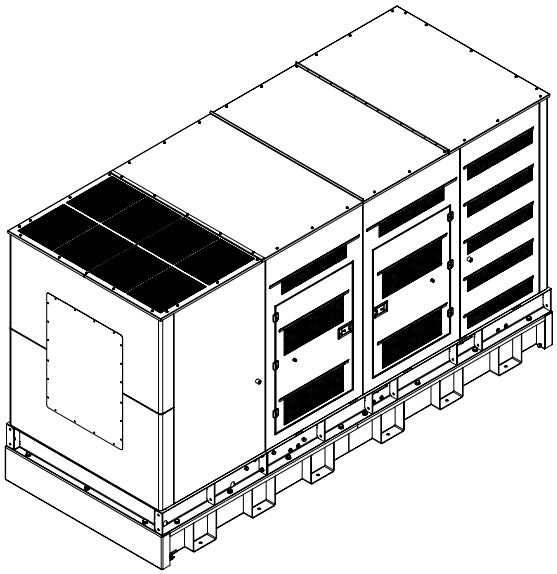
ALTERNATOR

Single bearing, rotating field, self-excited, self-ventilated, 12-wire re-connectable, 60Hz brushless alternator with permanent magnetic generator (PMG), with Class F insulation. Automatic voltage regulator (AVR) providing close voltage regulation and skVA starting capability for electric motor loads.

Certification: ISO 8528-5

- HRVW-625 - STAMFORD ALTERNADOR: HCI 534 E with PMG
- HRVW-685 - STAMFORD ALTERNADOR: HCI 534 F with PMG





ENGINE MOUNTS

The engine and alternator are coupled and are mounted on a supporting bedplate formed from high strength steel. The coupling between the generator set and the bedplate incorporates elastic supports (anti-vibration elements) to reduce the transmission of engine vibration.

FUEL TANK

Environmentally friendly steel base welded sub-base fuel tank with internal filling system and 110% containment capability for any diesel fuel, coolant or engine oil spills. Easy access for maintenance activities.

ENCLOSURE

Fully sound attenuated enclosure, fabricated in 11-gauge steel, powder coated with finish that exceeds 1400-hr salt spray test, curved edges, minimum outside fasteners and single point lift. Ample layer of durable Rockwool sound insulating material placed all around the inside of the container, doors and ducting with metal retaining frames. It can be cleaned with high-pressure water and is oil and fire resistant. Vertical air discharge for quiet operation. Wide steel lockable access doors with rubber seals, easy access for maintenance and service activities, lift off stainless steel hinges, corrosion resistant hardware and fasteners.

FUEL FILTRATION

Standard and secondary water separator with visible level on fuel filters

CONTROLS

Digital control panel with manual and automatic start and stop features. Many programmable automatic functions for local and remote controls with LED lights, tamper proof engine hour recorder. Load Connections: Covered distribution panel for easy access to cable power outlets, receptacles, lugs and Camloks. (See Picture below)

SAFETY OVERVIEW

This operating manual includes safety messages and hazard symbols to increase awareness of hazards and risks associated with diesel-powered generators and associated distribution equipment.

READ AND FOLLOW THE OPERATING MANUAL

READ all manuals shipped with HRVW-625 and HRVW-685 generators.
UNDERSTAND how to safely operate the HRVW-625 and HRVW-685 generators to prevent severe injury and damage to property.

SAFETY MESSAGES

Safety messages inform about potential hazards that could injure you or others.
The safety messages are **Danger, Warning, Caution and Notice.**

SAFETY SYMBOLS

Safety hazard symbols are easily-recognized icons that warn of potential hazards associated with the operation of machinery.

OPERATING GUIDELINES

For your safety and the safety of your co-workers, follow the operating guidelines presented in this manual for Hipower Systems' HRVW-625 and HRVW-685 generators.
FOLLOW all relevant and applicable safety precautions when operating HRVW-625 and HRVW-685 generators.
POSITION and operate HRVW-625 and HRVW-685 generators on a secure, level surface free of excess dirt and moisture and away from vehicle and pedestrian traffic.

! WARNING

ELECTRICAL SAFETY

ONLY trained, licensed electricians should assess repair, change or modify wiring and connections to the HRVW-625 and HRVW-685.

Wiring materials and installation must meet standards published by relevant regulatory and standards agencies, including:

- Occupational Safety and Health Administration **(OSHA)** guidelines
- Canada Occupational Health and Safety **(OH&S)**
- National Electrical Code **(NEC)**
- Applicable state, Province, District, county and municipality regulations

DISPLAY the appropriate and required signs to warn operators, employees and others of hazards that may exist with the HRVW-625 and HRVW-685 generators. Example signs include:

- Lock-Out / Tag-Out signs and locks to prevent accessing or starting an engine being serviced, is out-of-service or is unsuit able for use.
- Hazard Warning Signs displayed during fueling, lifting, hoisting, loading, maintenance and other activities that present potential hazards.
- Personal Protective Equipment (PPE) signs that identify required personal protection for eyes, hearing, face, head, hands and feet.

DANGER

PROHIBIT people with pacemakers from working on or near the HRVW-625 and HRVW-685 generators because electromagnetic fields created by generator(s) may cause pacemaker to malfunction or stop working.

WARNING

DO NOT start a HRVW-625 and HRVW-685 generator that is inoperable or is not ready to be started or operated. Immediately shut down the engine if any of the following conditions exist:

- Noticeable, unplanned change in engine speed
- Unexpected loss of electrical output
- Overheating of HRVW-625 and HRVW-685 or equipment connected to the generators
- Sparking and / or engine misfire
- Excessive vibration
- Ambient air temperature above 113°F / 45°C

VENTILATION, FUELING, BATTERIES, LUBRICANTS, COOLANT

Diesel engines present specific risks during operation and fueling. To avoid risks, operators of HRVW-625 and HRVW-685 generators must understand and follow guidelines for safe operation.

ASSURE proper ventilation when operating theHRVW-625 and HRVW-685 generators inside tunnels and caves.

- Engine exhaust contains noxious, potentially harmful and fatal elements.
- Accumulation of engine exhaust can result in serious injury or death.
- Route engine exhaust to a ventilated area.

AVOID exposure to diesel fuel fumes and diesel exhaust because:

- **SHORT-TERM** exposure to diesel exhaust can irritate the eyes, throat, and lungs.
- **LONG-TERM** exposure to diesel exhaust can cause chronic respiratory symptoms, including persistent cough, bronchitis and reduced lung capacity.

ALWAYS refuel in a well-ventilated area, away from sparks and open flames because diesel fuel is extremely flammable and its vapors explode when ignited.

DO NOT start the HRVW-625 and HRVW-685 near spilled fuel or combustible fluids.

DO NOT fill the fuel tank while the engine is running or hot.

DO NOT overfill tank, since spilled fuel could ignite if it encounters hot engine parts or sparks from the ignition system.

- Store fuel in appropriate containers, in well-ventilated areas and away from sparks and flames.

DO NOT smoke around or near HRVW-625 and HRVW-685 generators.

- Fire or explosion could result from fuel vapors or if fuel is spilled on a hot engine.

NEVER use fuel as a cleaning agent.

WARNING

CORROSIVES

ALWAYS wear safety glasses and gloves when handling batteries because they contain acids that can seriously injure the eyes and skin.

DO NOT drop the battery because impact may cause the battery to explode.

DO NOT expose the battery to open flames, sparks, cigarettes, or other sources of ignition. Batteries contain combustible gases and liquids that may ignite and/or explode when exposed to flame, spark or other ignition source.

DANGER

HIGH TEMPERATURES

DO NOT remove radiator cap if engine of HRVW-625 and HRVW-685 is hot because heated, pressurized coolant may gush from radiator and severely burn anyone in the area.

DO NOT remove the coolant drain plug while engine of HRVW-625 and HRVW-685 is hot because heated, pressurized water may gush from radiator and scald anyone in the area.

DO NOT remove the engine oil drain plug while the engine is hot because heated oil may eject from the engine and severely burn anyone standing in the vicinity.

DO NOT touch the hot exhaust manifold, muffler or cylinder because the surface temperatures exceed 600° F, (316° C) and can cause severe burns.

ALWAYS allow exhaust manifold and surrounding parts to cool before servicing HRVW-625 and HRVW-685generators.

CAUTION

SAFE MAINTENANCE

The HRVW-625 and HRVW-685 generators should be serviced by qualified personnel who are familiar with the equipment, are adequately trained and have access to the resources required for safe operation.

SHUT DOWN electrical components before performing any service.

ALWAYS disconnect power battery switch before performing any service

VERIFY the control power switch and circuit breakers are in the **OFF** position and the **battery disconnect switch.**

DO NOT start the HRVW-625 and HRVW-685 under load.

- Circuit breakers must be in the OFF (O) position when starting in Manual mode.
- Circuit breakers can be in the ON (I) position only when started in Auto mode.
- A transfer switch must be used in the Auto mode to deflect load during startup.

MAINTAIN safety labels and decals in clean condition so they can be easily read.

- **DO NOT** alter, damage, cover, obscure or modify safety labels and decals.
- Contact **Parts** at **HIPOWER SYSTEMS** to replace safety labels and decals when they no longer meet requirements.

AVOID working on or standing near HRVW-625 and HRVW-685 generators while wearing loose clothing that could be caught by moving machinery components, such as pulleys, belts, arms, gears and shafts.
ALWAYS keep track of tools, parts and equipment used in engine maintenance.
ALWAYS remove tools, parts and equipment used for maintenance before starting or moving the generator. ALWAYS check the generator for loosened fasteners or parts before starting.
NEVER leave or temporarily store objects on a generator or in the generator housing.
NEVER use the generator for anything other than its intended purpose(s) or application(s).
NEVER by-pass, remove, alter or modify safety devices.
NEVER by-pass, remove, alter or modify the operational settings of the HRVW-625 and HRVW-685 generator sets.

TOWING SAFETY

Trailer-mounted HRVW-625 and HRVW-685 generators sets are transported by a towing vehicle with adequate gross vehicle weight rating (GVWR).
ALWAYS follow federal, state, Province, District, local and company towing rules.
INSPECT trailer before attaching to towing vehicle.
VERIFY hitch and coupling are rated equal to or greater than the trailer gross vehicle weight rating (GVWR). INSPECT safety chains to identify signs of excessive wear or damage.
ATTACH safety chains (trailer to towing vehicle).
VERIFY tires on trailer and towing vehicle are inflated to specified pressures.
VERIFY lights on trailer and towing vehicle function as intended and required before towing.
MAINTAIN trailer in level position while towing.

! CAUTION

LIFTING SAFETY

Follow all appropriate and required safety and health guidelines pertaining to safe lifting. Relevant regulatory authorities include:

- The United States Occupational Safety and Health Administration (OSHA)
- Canada Occupational Health and Safety (OH&S)
- Forklift safety guidelines adopted by your company and/or employer
- All other, applicable state, Province, District, county and municipality regulations

If the HRVW-625 and HRVW-685 generator sets are not mounted on a trailer or if the trailer is not needed, the equipment can be safely moved into position with:

- Slings
- Forklift trucks

LIFTING should be performed only by trained, qualified personnel.
VERIFY that the machinery and the lifting elements to be used are rated for the weight of the genset(s).
ENSURE the floor / platform can support the weight of the genset before lifting.
ENSURE that the transport route is free of obstacles, overhead wires or unstable terrain before starting.
KEEP the genset in a level position.

SAFE USE OF SLINGS

LIFTS with slings should only be performed by trained, qualified personnel.
ATTACH lift equipment to the generator at the designated lift points.
TIGHTEN sling(s) to assure stable and safe lift.
WATCH the sling for tearing or other signs of failure throughout lift.
STOP lift if load shifts or if sling shows signs of tearing or damage.
PREVENT people from walking near or under equipment during lift by using appropriate barriers, danger signs and assigning a person to monitor the lift.

CAUTION

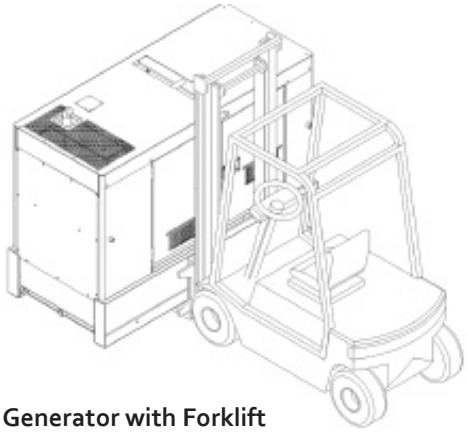
SAFE USE OF FORKLIFT TRUCKS

Follow all appropriate and required safety and health guidelines pertaining to the safe use of forklifts.

Relevant regulatory authorities include:

- The United States Occupational Safety and Health Administration (OSHA)
- Canada Occupational Health and Safety (OH&S)
- Forklift safety guidelines adopted by your company and/or employer
- All other, applicable state, Province, District, county and municipality regulations

LIFTING should be performed only by trained, qualified personnel.
INSPECT forklift (structural integrity, lights, power, etc.) before attempting to lift.
VERIFY that the machinery and the lifting elements to be used are rated for the weight of the genset(s).
ENSURE the floor / platform can support the weight of the genset before beginning.
ENSURE that the transport route is free of obstacles, overhead wires or unsafe terrain.
USE trained spotters or aids such as rear-view mirrors to boost visibility.
USE headlights if working at night, outdoors or in areas in which additional lighting would improve visibility.



Moving Generator with Forklift

NOTICE

SAFE DECOMMISSIONING: HRVW-625 and HRVW-685

WHEN AND HOW TO DECOMMISSION

Decommission HRVW-625 and HRVW-685 generators when unacceptable safety risk appears and/or when the generator is no longer cost-effective to operate and maintain.

FOLLOW the guidelines presented in this manual to safely decommission a HRJW190 and HRJW240 generators:

DO NOT pour oil, coolants or other waste fluids onto the ground, down a drain or into any water source.

USE the appropriate personal protective equipment (PPE) and applicable safety precautions when handling batteries that contain sulfuric acid.

CONTACT appropriate regulatory or government officials to plan proper disposal of any electrical components, waste or oil associated with this HRVW-625 and HRVW-685 generators.

REMOVE battery and transport it to an appropriate facility for lead reclamation when the life cycle of the HRJW190 and HRJW240 generators is completed.

NOTICE

PLACEMENT OF SAFETY LABELS

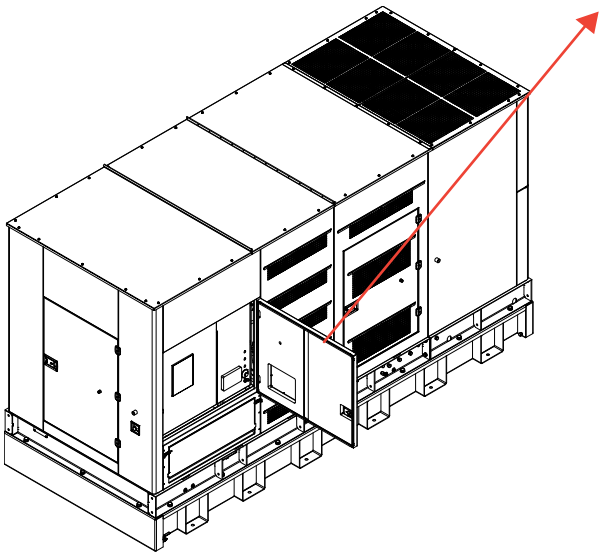
HIPOWER SYSTEMS applies safety labels and decals onHRVW-625 and HRVW-685 generators to prevent injury or death to operators and damage to equipment.

MAINTAIN safety labels and decals in clean condition so they can be easily read.

DO NOT alter, damage, cover, obscure or modify safety labels and decals.

REPLACE safety labels and decals that are damaged, altered or modified in any way that obscures text or symbols. There can be additional safety information contained on parts and components sourced from suppliers that is not reproduced in this operator's manual.

Contact the Spare Parts Department at HIPOWER SYSTEMS to replace safety labels and decals when they no longer meet requirements.



Any opening provided in this enclosure must be sealed using listed or recognized conduit hub or control devices with the same rating as the enclosure in compliance with the installations of the O.E.M.

To maintain the integrity and ratings of this enclosure use only approved accessories and repalcement parts for HIPOWER SYSTEMS.

9. Application Data HRVW-625

ENGINE SPECIFICATION	
Manufacturer	VOLVO PENTA
Model	TWD 1672 GE
EPA certified	Tier 4 FINAL
Crankshaft speed	1,800 rpm
Type	Diesel, 4-stroke
Injection	Direct
Aspiration	Turbocharged
Number of Cylinders	6
Cylinder arrangement	In-line
Displacement CID (liters)	983.9 (16.12)
Bore and Stroke ins (mm)	5.67 x 6.5 (144 x 165)
Nominal power	796 HP
Cooling	Liquid
Governor	Electronic
Governor Regulation Class	ISO 8528 Part 1 Class G3
Frequency Regulation	Isochronous
Starting motor & alternator	12 volt
Compression ratio	16.8:1
Air cleaner type	Heavy duty - single cartridge
Exhaust gas flow cu. ft./minute (cu.m. /minute)	4025 (114)
Max. Exhaust temp at full load degrees °F (°C)	793 (423)
Max. permissible back pressure - ins H2O (kPA)	76 (19)
COOLING SYSTEM	
Engine cooling air flow - cu. ft./min (cu. m/min)	30,207 (912)
Alternator cooling flow - cu. ft./min (cu. m/min)	2100 (59)
Total cooling air flow (engine + alternator + combustion) - cu. ft./min (cu. m/min)	TBD
Total cooling capacity - US gallons (liters)	25.3 (96)
Max. Operating Temperature °F (°C)	113 (45)
LUBRICATION SYSTEM	
Oil pan capacity - US gallons (liters)	11.1 (42)
Oil pan capacity with filter - US gallons (liters)	12.7 (48)
Oil cooler	Liquid
Recommended lubricating oil grade	SAE 10W-40 conventional DH4 (refer to owners manual)
Oil consumption at full load	< 0.1% of fuel consumption
Oil pressure – psi (kPA)	58 (399)
ENGINE ELECTRICAL SYSTEM	
Starting motor voltage	24 volt
Cold Cranking Amps - minimum	300 Amp X 2
Battery charging Alternantor	N/A
Battery capacity	225 Amps X 2

HIMOINSA POWER SYSTEMS, INC.
16600 South Theden Street, Olathe, KS 66062
Tel: 913 495 5557 | Fax: 913 495 5575 **www. hipowersystems.com**

Codes and Standards Compliances used where applicable

9. Application Data HRVW-625

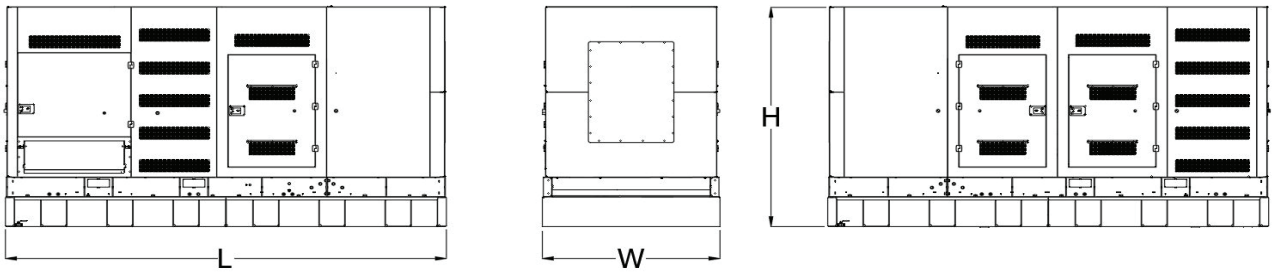
FUEL SYSTEM		
Recommended fuel	# 2 - ULSD	
Fuel supply line, min. ID mm(in.)	9.5 (3/8")	
Fuel return line,min. ID, mm (in.)	9.5 (3/8")	
Max. lift, fuel pump, type, m (ft)	TBD	
Fuel filter	Secondary 5 Microns @ 98% Efficiency	
DEF Tank capacity - US Gal.	42.3	
FUEL and DEF COMPSUMTION	FUEL (Prime Power Rating)	DEF (% of fuel consumption)
100% load – US gallons/hour (L/hr)	27.9 (105.6)	7.1 %
75% load - US gallons/hour (L/hr)	25 (94.6)	TBA
50% load - US gallons/hour (L/hr)	17.3 (65.4)	TBA
25% load - US gallons/hour (L/hr)	9.9 (37.4)	TBA
ALTERNATOR SPECIFICATION		
Manufacturer	STAMFORD	
Model	HCI 534 E with PMG	
Voltages	120/208V - 277/480	
Alternator Type	Four pole, rotating field	
Excitation System	Brushless. PMG-excited	
Power factor	0.8 / 1.0	
Number of leads	12 leads, reconnectable	
Stator Pitch	2/3	
Insulation	Class H	
Windings – Temperature Rise	Class F (105/40° C)	
Enclosure (IEC-34-S)	IP23	
Bearing	Single, sealed	
Coupling	Flexible disc	
Amortisseur windings	Full	
Voltage regulation – no load to full load with MX341 AVR	± 1%	
TIF	<50	
Radio Frequency Emissions compliance	Meets requirements of most industrial and commercial applications	
Line harmonics	5% maximum	

STANDARD ACCESSORIES	
• Air Filter Restriction Indicator	• Leak Proof Tray
• Leakage Detection Sensor	• MLCB Auxiliary Contacts
• Battery Switch	• Shunt Trip on MLCB
• Crankcase Ventilation Filter	• 2 Positions Voltage Change Over Board
• Oil/Coolant Drain Extention	• PMG Excitation on Alternator
• Distribution Panel 2000A	• Low Coolant Level Sensor

•Distribution power panel *See image RH back-page -
NEMA 3R/IP67 0.09" aluminum panel, black powder coated, weather proof rated; 2 x15A 125V NEMA 5-15P Shore line connector; 6 sets 400A single pin Camlocks rated 400A with snap covers; color coded Camlocks 3Ø - 5W black, red blue, white & green; pad lockable 1/4 turn door access with cable trap; auxiliary bus bars with mechanical lugs; 1 single barrel lug per phase; mechanical lugs up to 2 x 600MCM cable

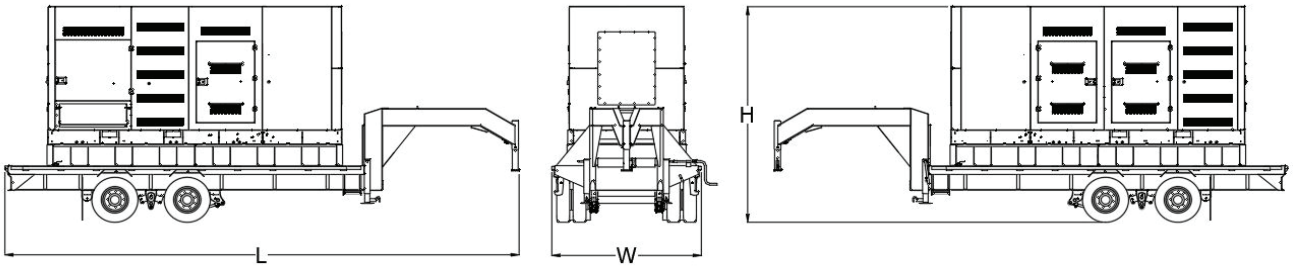
OPTIONAL ACCESSORIES	
• Battery Blanket	• Low cooland level Sensor
• Hydronic heater (5 kw)	• Engineered Options available upon request
• 3-Way Fuel valve	• Control Panel Heater
• 6 Amp - 10 Amp battery charger, 12/24V, UL Listed	• Oil Pan Heater
• Water Jacket Heater	• Trailer

ENCLOSED SET



CONFIGURATION	Fuel Tank Data (base option)		Generator Data *				
	Run Time Hours	Capacity (Gals)	L = Length	W = Width	H = Height	Weight lbs	dBA
Enclosed Set	19	600	200″	81″	112″	18700	72

ENCLOSED SET WITH TRAILER



CONFIGURATION	Fuel Tank Data (base option)		Generator Data *				
	Run Time Hours	Capacity (Gals)	L = Length	W = Width	H = Height	Weight lbs	dBA
Enclosed Set with Trailer	19	600	315″	92″	140″	26900	72

* All measurements are approximate and for estimation purposes only. Weights are without fuel tank. Sound levels measured at 23ft (7m) and does not account for ambient site conditions.

Codes and Standards Compliances used where applicable

10. Application Data HRVW-685

ENGINE SPECIFICATION	
Manufacturer	VOLVO PENTA
Model	TWD 1673 GE
EPA certified	Tier 4 FINAL
Crankshaft speed	1,800 rpm
Type	Diesel, 4-stroke
Injection	Direct
Aspiration	Turbocharged
Number of Cylinders	6
Cylinder arrangement	In-line
Displacement CID (liters)	983.9 (16.12)
Bore and Stroke ins (mm)	5.67 x 6.5 (144 x 165)
Nominal power	809 HP
Cooling	Liquid
Governor	Electronic
Governor Regulation Class	ISO 8528 Part 1 Class G3
Frequency Regulation	Isochronous
Starting motor & alternator	12 volt
Compression ratio	16.8:1
Air cleaner type	Heavy duty - single cartridge
Exhaust gas flow cu. ft./minute (cu.m. /minute)	4471 (126.6)
Max. Exhaust temp at full load degrees °F (°C)	851 (455)
Max. permissible back pressure - ins H2O (kPA)	76 (19)
COOLING SYSTEM	
Engine cooling air flow - cu. ft./min (cu. m/min)	30,207 (912)
Alternator cooling flow - cu. ft./min (cu. m/min)	220 (72)
Total cooling air flow (engine + alternator + combustion) - cu. ft./min (cu. m/min)	TBD
Total cooling capacity - US gallons (liters)	25.3 (96)
Max. Operating Temperature °F (°C)	113 (45)
LUBRICATION SYSTEM	
Oil pan capacity - US gallons (liters)	11.1 (42)
Oil pan capacity with filter - US gallons (liters)	12.7 (48)
Oil cooler	Liquid
Recommended lubricating oil grade	SAE 10W-40 conventional DH4 (refer to owners manual)
Oil consumption at full load	< 0.1% of fuel consumption
Oil pressure – psi (kPA)	58 (399)
ENGINE ELECTRICAL SYSTEM	
Starting motor voltage	24 volt
Cold Cranking Amps - minimum	300 Amp X 2
Battery charging Alternantor	N/A
Battery capacity	225 Amps X 2

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Codes and Standards Compliances used where applicable

10. Application Data HRVW-685

FUEL SYSTEM		
Recommended fuel	# 2 - ULSD	
Fuel supply line, min. ID mm(in.)	9.5 (3/8")	
Fuel return line,min. ID, mm (in.)	9.5 (3/8")	
Max. lift, fuel pump, type, m (ft)	TBD	
Fuel filter	Secondary 5 Microns @ 98% Efficiency	
DEF Tank capacity - US Gal.	42.3	
FUEL and DEF COMPSUMTION	FUEL (Prime Power Rating)	DEF (% of fuel consumption)
100% load – US gallons/hour (L/hr)	36.8 (139.3)	6.4 %
75% load - US gallons/hour (L/hr)	27.6 (104.4)	TBA
50% load - US gallons/hour (L/hr)	19.1 (72.3)	TBA
25% load - US gallons/hour (L/hr)	10.7 (40.5)	TBA
ALTERNATOR SPECIFICATION		
Manufacturer	STAMFORD	
Model	HCI 534 F with PMG	
Voltages	120/208V - 277/480	
Alternator Type	Four pole, rotating field	
Excitation System	Brushless PMG-excited	
Power factor	0.8	
Number of leads	12 leads, reconnectable	
Stator Pitch	2/3	
Insulation	Class H	
Windings – Temperature Rise	Class F (105/40° C)	
Enclosure (IEC-34-S)	IP23	
Bearing	Single, sealed	
Coupling	Flexible disc	
Amortisseur windings	Full	
Voltage regulation – no load to full load with MX341 AVR	± 1%	
TIF	<50	
Radio Frequency Emissions compliance	Meets requirements of most industrial and commercial applications	
Line harmonics	5% maximum	

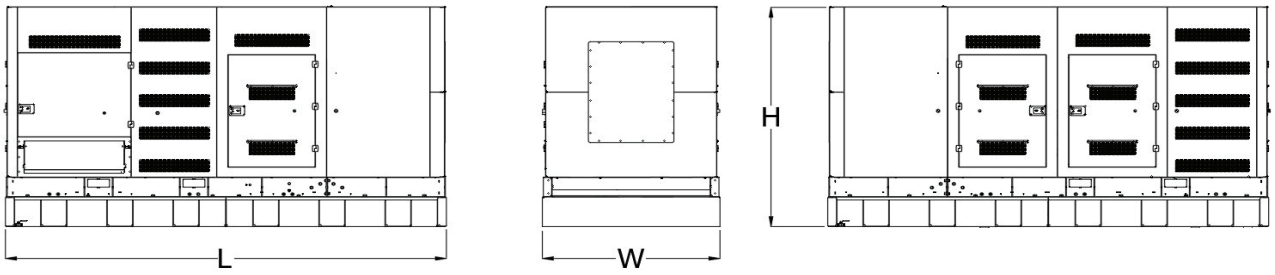
STANDARD ACCESSORIES	
• Air Filter Restriction Indicator	• Leak Proof Tray
• Leakage Detection Sensor	• MLCB Auxiliary Contacts
• Battery Switch	• Shunt Trip on MLCB
• Crankcase Ventilation Filter	• 2 Positions Voltage Change Over Board
• Oil/Coolant Drain Extention	• PMG Excitation on Alternator
• Distribution Panel 2000A	• Low Coolant Level Sensor

•Distribution power panel *See image RH back-page -
NEMA 3R/IP67 0.09" aluminum panel, black powder coated, weather proof rated; 2 x15A 125V NEMA 5-15P Shore line connector; 6 sets 400A single pin Camlocks rated 400A with snap covers; color coded Camlocks 3Ø - 5W black, red blue, white & green; pad lockable 1/4 turn door access with cable trap; auxiliary bus bars with mechanical lugs; 1 single barrel lug per phase; mechanical lugs up to 2 x 600MCM cable

OPTIONAL ACCESSORIES	
• Battery Blanket	• Low cooland level Sensor
• Hydronic heater (5 kw)	• Engineered Options available upon request
• 3-Way Fuel valve	• Control Panel Heater
• 6 Amp - 10 Amp battery charger, 12/24V, UL Listed	• Oil Pan Heater
• Water Jacket Heater	• Trailer

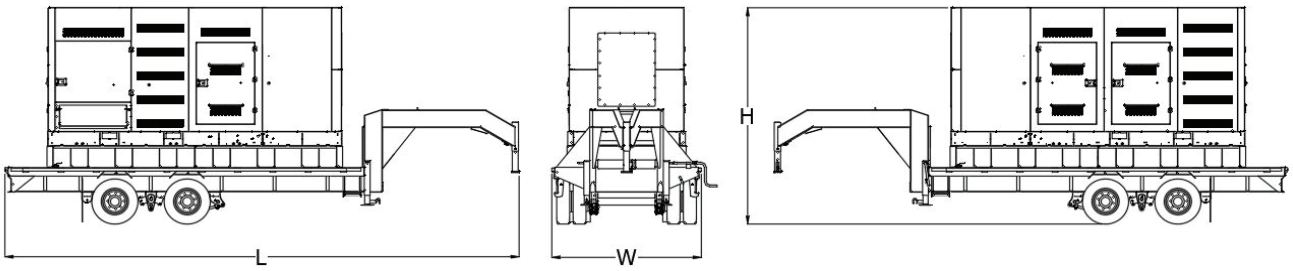
DIMENSIONS, WEIGHTS & SOUND LEVELS

ENCLOSED SET



CONFIGURATION	Fuel Tank Data (base option)		Generator Data *				
	Run Time Hours	Capacity (Gals)	L = Length	W = Width	H = Height	Weight lbs	dBA
Enclosed Set	15	600	200″	81″	112″	19500	72

ENCLOSED SET WITH TRAILER

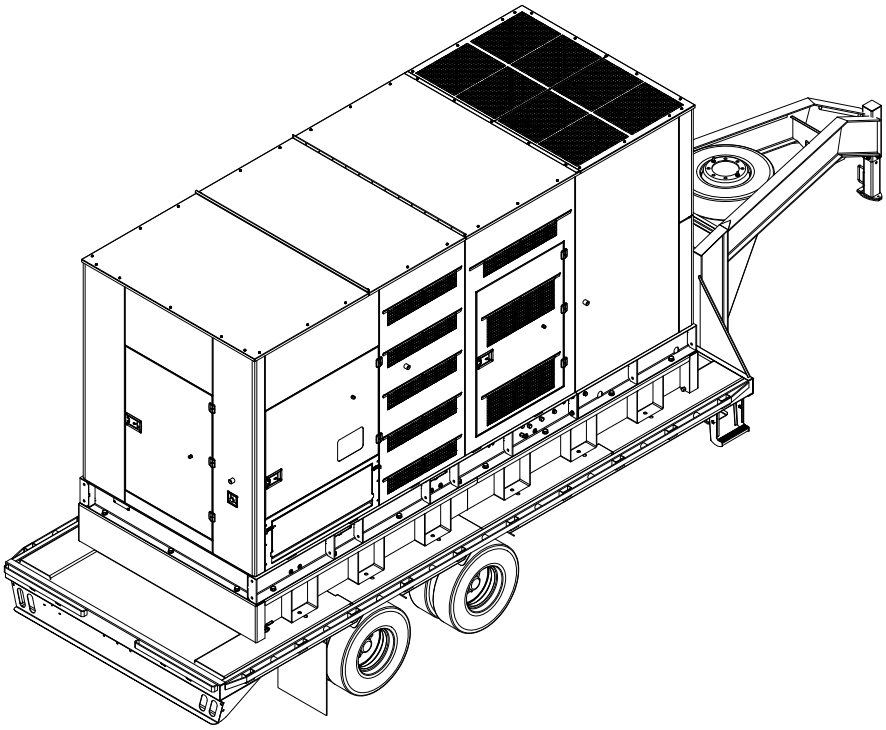


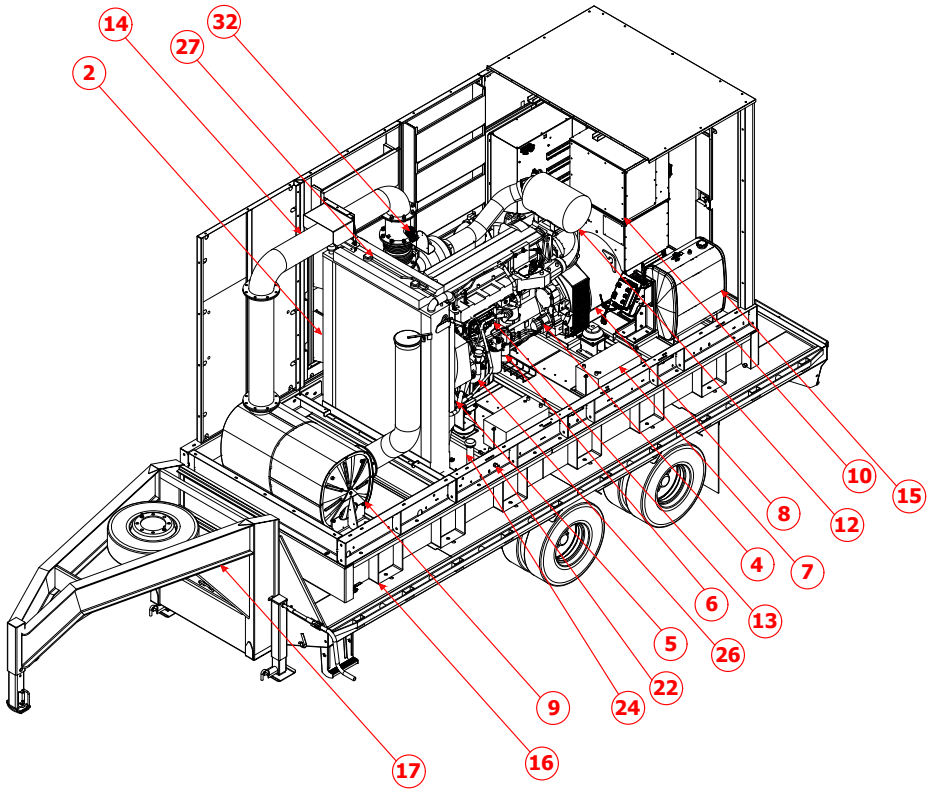
CONFIGURATION	Fuel Tank Data (base option)		Generator Data *				
	Run Time Hours	Capacity (Gals)	L = Length	W = Width	H = Height	Weight lbs	dBA
Enclosed Set with Trailer	15	600	315″	92″	140″	27700	72

* All measurements are approximate and for estimation purposes only. Weights are without fuel tank. Sound levels measured at 23ft (7m) and does not account for ambient site conditions.

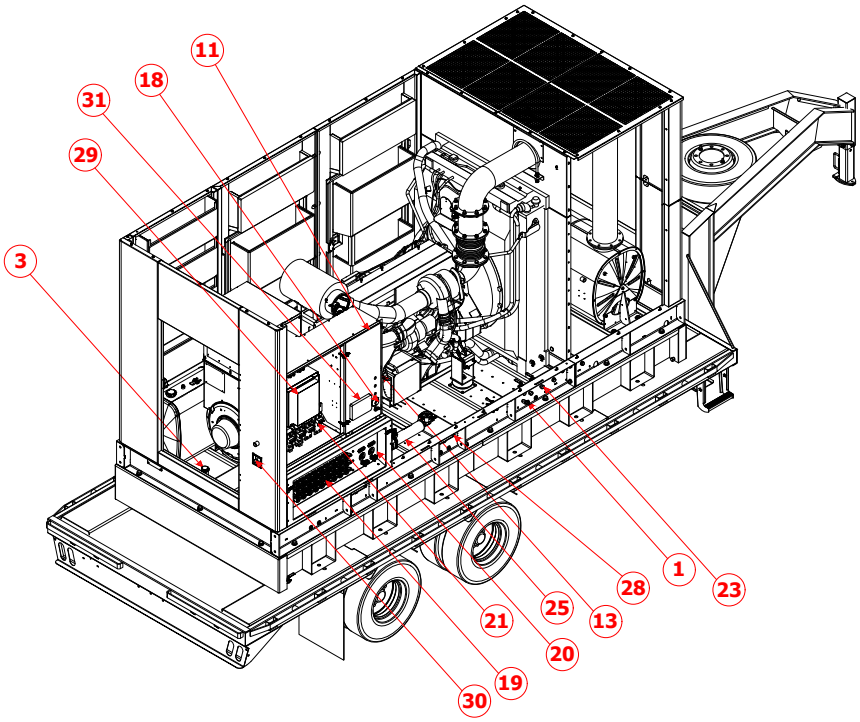
Codes and Standards Compliances used where applicable

11. Component Locations for HRVW-625/685

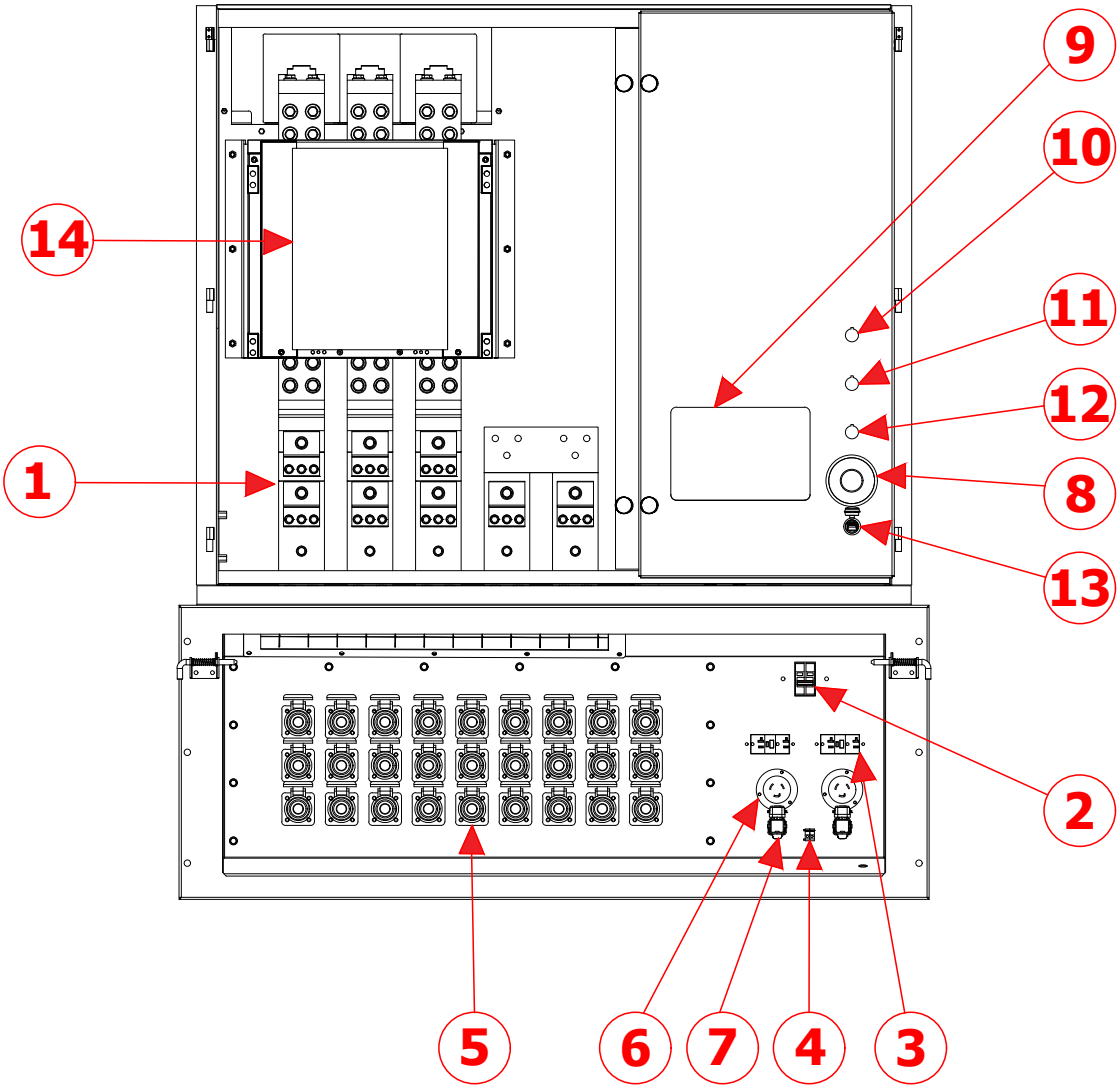




11. Component Locations for HRVW-625/685

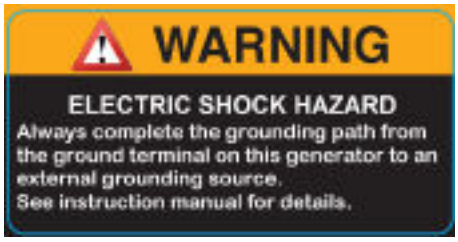


NUMBER	SHORT DESCRIPTION	NUMBER	SHORT DESCRIPTION	NUMBER	SHORT DESCRIPTION
1	External Fuel Fill	14	Exhaust Pipe	27	Coolant Fill
2	Radiator	15	DEF Tank	28	Lift Point
3	Internal Fuel Fill	16	Chassis	29	Main Circuit Breaker
4	Engine Alternator	17	Trailer	30	Emergency Stop Switch
5	Engine	18	Emergency Stop Switch	31	Controller
6	Oil Filter	19	Camlocks	32	Catalytic Converter
7	Battery	20	Receptacles		
8	Generator	21	Mechanical Lugs		
9	SCR	22	Oil Drain		
10	Generator Box	23	Coolant Drain		
11	Control Panel	24	Vent Pipe		
12	Air Filter	25	Jacket Water Heater		
13	ECM	26	Oil Dipstick		



NUMBER	SHORT DESCRIPTION	NUMBER	SHORT DESCRIPTION
1	Mechanical Lugs	8	Emergency Stop Switch
2	20A Circuit Breakers	9	Controller
3	120V GFCI Receptacles	10	Power Control Switch
4	AutoStart Contact	11	Generator Mode
5	Camlocks	12	Hydronic Heater (Option)
6	Auxiliary Supply Plug	13	USB Connector
7	Parallel Contact	14	Main Circuit Breaker

12.1 Distribution & Control Panel-Safety Labels



ComAp

CONTROL SYSTEMS STANDARD FEATURES

Generator Digital Control Panel

HIPOWER® COMAP IntelliGen NT Control Panel: The IntelliGen NT digital control panel is back-lit with icon LCD text display, and is PC configurable. IInteliGen NT is a comprehensive controller for both single and multiple gen-sets operating in standby or parallel modes. Compact construction is optimized for these purposes and various modifications allow customers to select the optimum type for a particular application. A built-in synchronizer and digital isochronous load sharer allow a total integrated solution for gen-sets in standby, island parallel or mains parallel. Native cooperation of up to 32 gen-sets is a standard feature. InteliGen NT supports many standard ECU types and is specially designed to easily integrate new ones.

Engine alarms included: High coolant temperature, low oil pressure, low coolant level, unexpected shutdown, low fuel level, stop failure, low battery voltage, battery charging alternator failure, over-speed, under-speed, start failure and emergency stop. Support of engines with ECU (J1939, Modbus and other proprietary interfaces); alarm codes displayed in text form.

Alternator alarms included: Overload, unbalanced voltage, over voltage, under voltage, over frequency, under frequency, short circuit, reverse power, and incorrect phase sequence.

FOR MORE DETAIL INFORMATION PLEASE REFER TO THE DATA SHEET ON PAGE 83 INCLUDED IN THIS MANUAL.

LED and Buttons

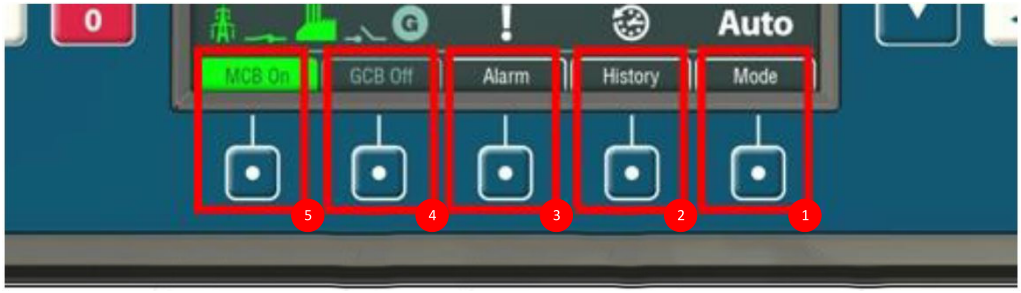
1	**Status:**	Status LED indication (green = InteliVision 5 is powered)
2	**Navigation buttons:**	Arrows for movement + Menu and Enter button
3	**Context buttons:**	Control or select submenu/sub-options buttons
4	**Control buttons:**	Horn reset, Fault reset, Stop and Start buttons

Navigation Buttons

1	**Menu**	Movement up
2	**Enter**	Movement down
3	↓	Jump to menu/sub-menu page or escape from any dialog window
4	↑	Confirms a value or opens a value adjustment within setting dialogs

Note: *To leave the menu, use Menu button.*

Context Buttons



1	**Mode button**	Jump to the controller mode window
2	**History**	Jump to history screen
3	**Alarm**	Jump to Alarm list
4	**GCB control**	GCB control (close/open GCB)
5	**MCB control**	MCB control (close/open MCB)*

Note: **) MCB control button is present only in application where MCB is controlled. Context buttons may be modified by users to fulfill customer's requirements (see chapter User configurable soft keys buttons).*

Control Buttons

1	**Start**	Starts the gen-set
2	**Stop**	Stops the gen-set
3	**Fault reset**	Acknowledges faults and alarms (active only in Alarm screen)
4	**Horn reset**	Deactivates the horn (audible alarm)

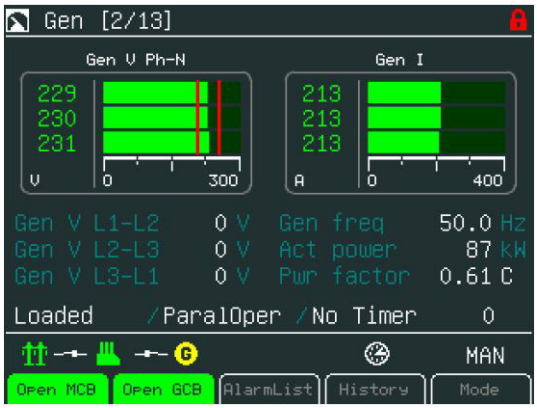
Note: *Start and Stop buttons work in MAN or SEM mode only. START and STOP buttons are independent on the InteliVision 5 screen, menu or sub-menu.*

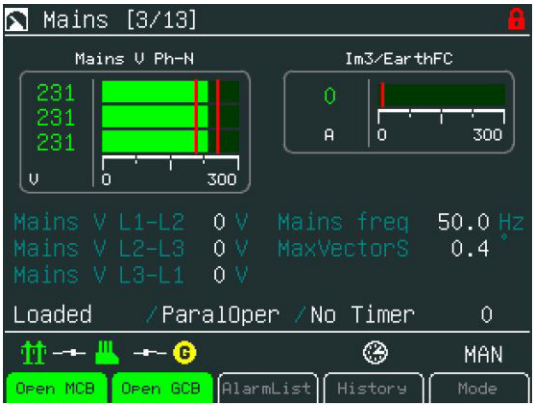
Metering Screens

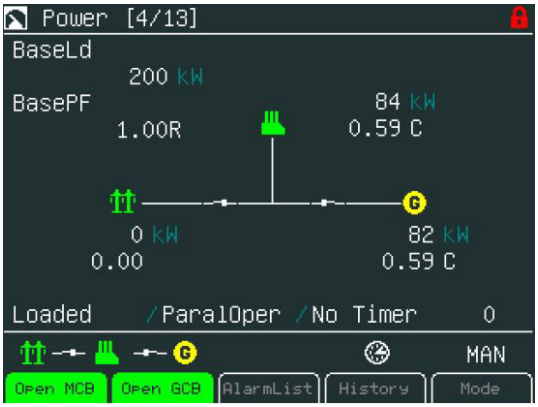
Various values can be seen on the metering screens. Metering screens appear after the InteliVision 5 and controller are powered up and initialization procedure is done. Automatic jump to the home metering screen is performed if there is 15 minutes of inactivity and there are no active and unconfirmed alarms in the controller.

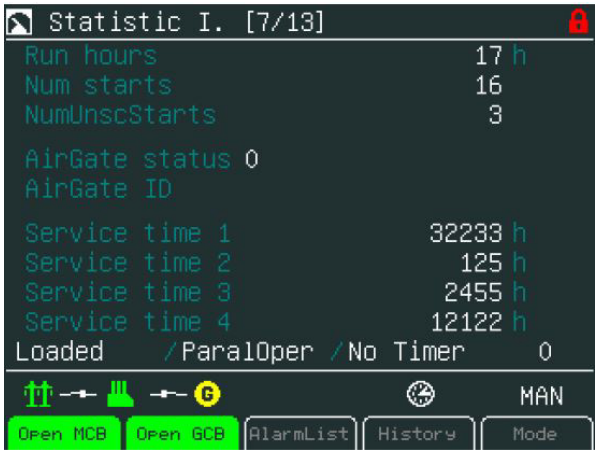
Arrows ↑ or ↓ are used for metering screens browsing.

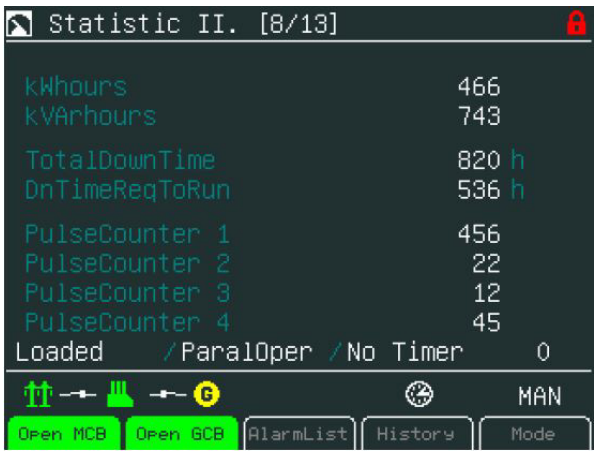
Metering screens are stored in the controller configuration and can differ by controller type, controller firmware version or application.

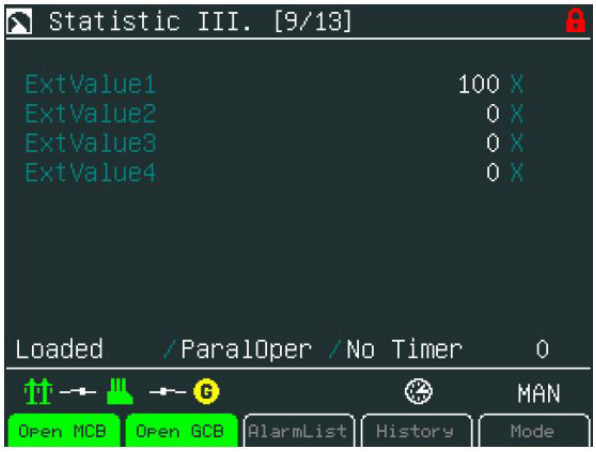


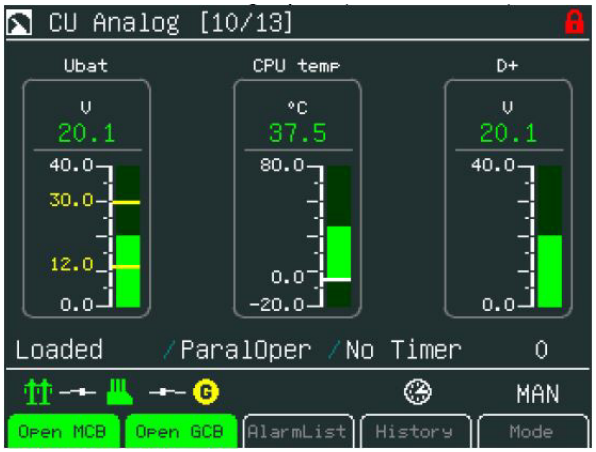


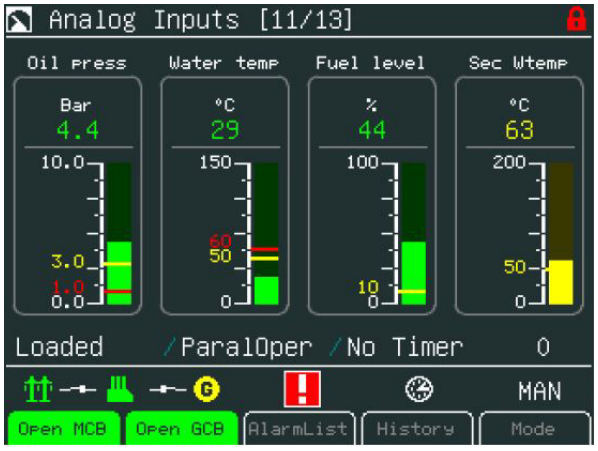



Statistic I. [7/13]
Run hours 17 h
Num starts 16
NumUnscStarts 3
AirGate status 0
AirGate ID
Service time 1 32233 h
Service time 2 125 h
Service time 3 2455 h
Service time 4 12122 h
Loaded /ParalOper /No Timer 0
MAN
Open MCB
Open GCB
AlarmList
History
Mode


Statistic II. [8/13]
kWhours 466
kVArhours 743
TotalDownTime 820 h
DnTimeReqToRun 536 h
PulseCounter 1 456
PulseCounter 2 22
PulseCounter 3 12
PulseCounter 4 45
Loaded /ParalOper /No Timer 0
MAN
Open MCB
Open GCB
AlarmList
History
Mode


Statistic III. [9/13]
ExtValue1 100 X
ExtValue2 0 X
ExtValue3 0 X
ExtValue4 0 X
Loaded /ParalOper /No Timer 0
MAN
Open MCB
Open GCB
AlarmList
History
Mode


CU Analog [10/13]
Ubat
V
20.1
40.0
30.0
12.0
0.0
CPU temp
°C
37.5
80.0
0.0
-20.0
D+
V
20.1
40.0
0.0
Loaded /ParalOper /No Timer 0
MAN
Open MCB
Open GCB
AlarmList
History
Mode


Analog Inputs [11/13]
Oil press
Bar
4.4
10.0
3.0
1.0
0.0
Water temp
°C
29
150
60
50
0
Fuel level
%
44
100
10
0
Sec Wtemp
°C
63
200
50
0
Loaded /ParalOper /No Timer 0
MAN
Open MCB
Open GCB
AlarmList
History
Mode

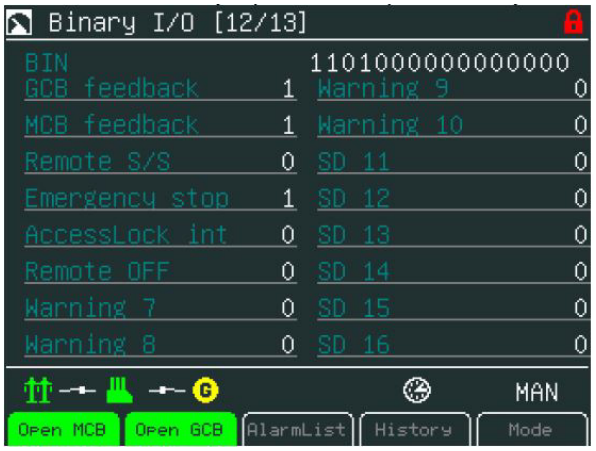

Binary I/O [12/13]
BIN 1101000000000000
GCB feedback 1
MCB feedback 1
Remote S/S 0
Emergency stop 1
AccessLock int 0
Remote OFF 0
Warning 7 0
Warning 8 0
Warning 9 0
Warning 10 0
SD 11 0
SD 12 0
SD 13 0
SD 14 0
SD 15 0
SD 16 0
MAN
Open MCB
Open GCB
AlarmList
History
Mode

Image 3.1 Illustrative Metering screens for the InteliSys NTC BaseBox controller

Other screens with ECU values, analogue or binary inputs/outputs can follow. It depends on the controller configuration.

Note: *Use ↑ or ↓ to scroll the screens.*
Screens could be hidden or the order of the screens could be modified by users.

ENERGIZE ECM PROCEDURE: HRVW-625 HRVW-685

SERVICE–DIAGNOSTIC MODE SETUP INSTRUCTION

****AUTHORIZED PERSONNEL ONLY****

Please follow instruction bellow to have ECM Power ON for engine diagnostic purposes.

***Switch on the Power Control.**

1. Use **MODE** button to move to set the controller in OFF Mode.

9 2. Push **SERVICE** button to have access to service menu.
note: Push back this button to go back to the MAIN Screen.

11 3. Push **ECM ON** Button to access ECM Diagnostic options.

IMPORTANT:
ECM Diagnostic options will be displayed until push “ECM ON” back again. Once finished diagnostics, make sure to press “ECM ON” to return to Operating Mode.

CAUTION

INSTALL GENERATORS ON SOLID, LEVEL FOUNDATION

Install HRVW-625 and HRVW-685 generators on a solid, level foundation (such as concrete).

- Isolate vibration by securing generator securely to the foundation.

Comply With National Fire Protection Association (NFPA) Codes

ALWAYS install the HRVW-625 and HRVW-685 generators at least 6 inches above the floor or grade level, in compliance with NFPA 110, Chapter 54.1.

Metal Skids Protect HRVW-625 and HRVW-685 generators

DO NOT remove the metal skids on the bottom of the generator.

- Skids prevent damage to the generator and maintain alignment.

OUTDOOR INSTALLATION: HRVW-625 AND HRVW-685

FOLLOW these guidelines when installing HRVW-625 and HRVW-685 generators:

- Choose area with very low levels of moisture and dust.
- Area must be free of debris, bystanders, and overhead obstructions.
- Set unit securely on level ground so it cannot slide or shift position.
- Position so exhaust is discharged away from nearby homes, offices, dwellings.

PROTECT all electrical equipment from excessive moisture and dust.

- Failure to protect electrical equipment can result in deterioration of the insulation which may lead to short circuits and grounding.

DANGER

OUTDOOR EXHAUST GAS VENTILATION REQUIREMENTS

Exhaust gases from diesel engines are extremely dangerous and exposure can cause serious injury or death.

ASSURE proper ventilation when operating the HRVW-625 and HRVW-685 generators inside tunnels and caves.

- Engine exhaust contains noxious, potentially harmful and fatal elements.
- Accumulation of engine exhaust can result in serious injury or death.
- Direct engine exhaust to a ventilated area.

INDOOR INSTALLATION: HRVW-625 AND HRVW-685

INSTALL HRVW-625 and HRVW-685:

- In area free of debris, pedestrians, obstructions and excessive moisture.
- Securely on level surface so it cannot slide or shift position.
- In location that allows exhaust to be discharged away from occupied areas.

PROTECT all electrical equipment from excessive moisture. Failure to protect equipment will result in deterioration of the insulation and will result in short circuits and grounding. Foreign materials such as dust, sand, lint and abrasive materials cause excessive wear to engine and alternator parts.

DANGER

INDOOR EXHAUST GAS VENTILATION REQUIREMENTS

Exhaust gases from diesel engines are extremely poisonous and exposure can cause serious injury or death.

- VENT engine exhaust fumes to the outside.
- INSTALL the engine a minimum of two feet from any outside wall.

ALWAYS use correctly-sized exhaust pipe because using exhaust pipe that is too long or too small causes excessive back pressure.

WARNING

GROUNDING GUIDELINES FOR HRVW-625 and HRVW-685

Regulatory Requirements

Regulatory agencies governing the design, build, maintenance and operation of the HRVW-625 and HRVW-685 generator sets include:

- The Occupational Safety and Health Administration (OSHA)
- The National Electrical Code (NEC)
- The Canada Occupational Health and Safety (OH&S)

Before operating a generator, assure that you **PROVIDE** a good **EARTH** ground.

WARNING

LICENSED ELECTRICIAN

Always consult with a licensed electrician before connecting HRVW-625 and HRVW-685 generators to any electrical system. **FOLLOW** federal, state, Province, District, regional and municipalities electrical grounding requirements before using HRVW-625 and HRVW-685 generators.

NEC Article 250 (Grounding) of the NEC handbook provides guidelines for proper grounding.

NEC Article 250 specifies that the cable ground shall be connected to the grounding system of the building as close to the point of cable entry as practical.

NOTICE

EQUIPMENT OPERATOR REQUIREMENTS

HRVW-625 and HRVW-685 generators should only be operated by trained and qualified personnel 18 years of age and older.

Curbside Output Terminal Panel: HRVW-625 and HRVW-685

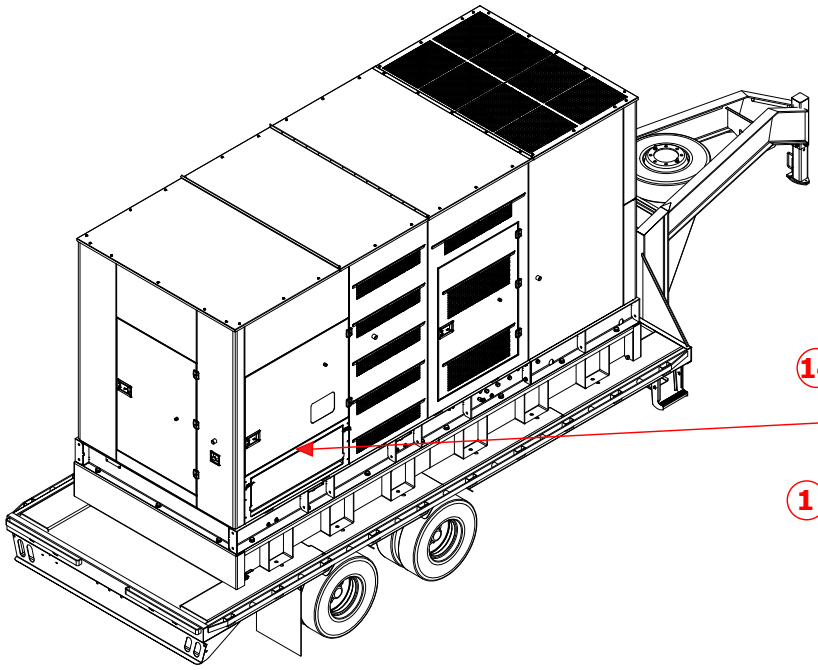
The Output Terminal Panel is located on the curb-side of the HRVW-625 and HRVW-685 generators. Lift the cover to gain access to receptacles and terminal lugs.

- Terminal legs "O" and "Ground" are considered bonded grounds.

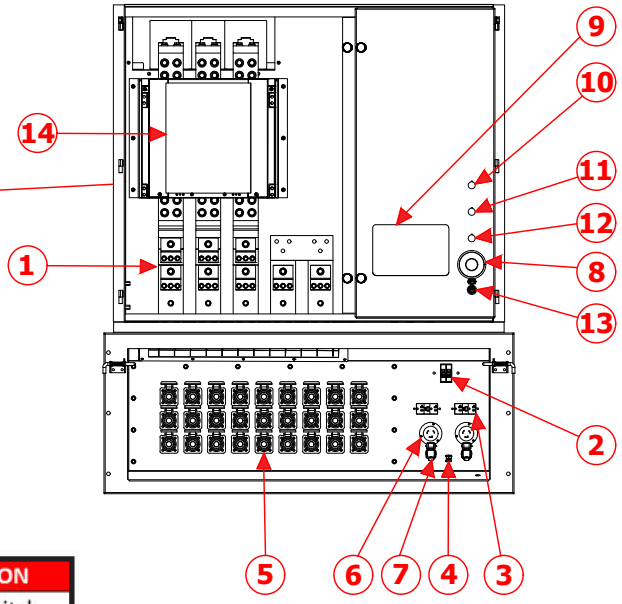
Output Terminal Panel

The output terminal panel provides the following power management options:

- Two 120V GFCI receptacles @ 20 amps
- Two GFCI circuit breakers @ 20 amps
- Eight output terminal lugs (U,V,W,O,Ground)
- Twenty Seven output camlocks (U,V,W,O,Ground)



OUTPUT TERMINAL



NUMBER	SHORT DESCRIPTION	NUMBER	SHORT DESCRIPTION
1	Mechanical Lugs	8	Emergency Stop Switch
2	20A Circuit Breakers	9	Controller
3	120V GFCI Receptacles	10	Power Control Switch
4	AutoStart Contact	11	Generator Mode
5	Camlocks	12	Hydronic Heater (Option)
6	Auxiliary Supply Plug	13	USB Connector
7	Parallel Contact	14	Main Circuit Breaker

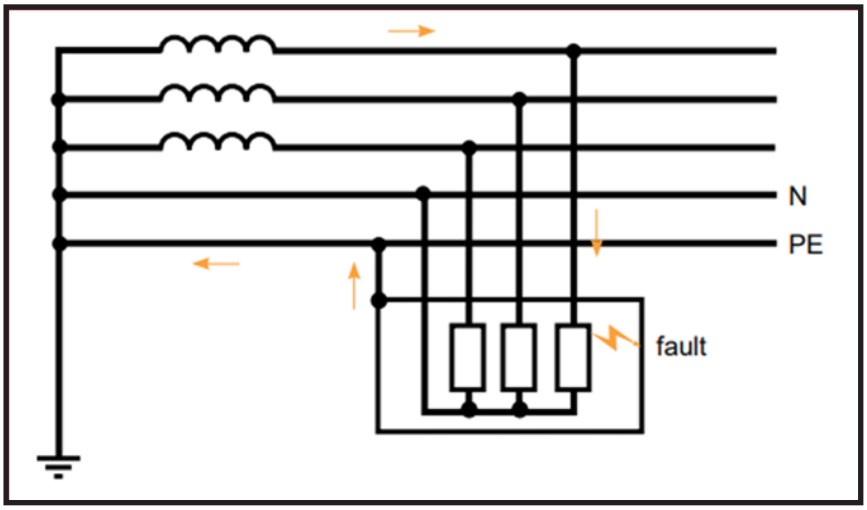
NOTICE

GROUNDING SYSTEMS

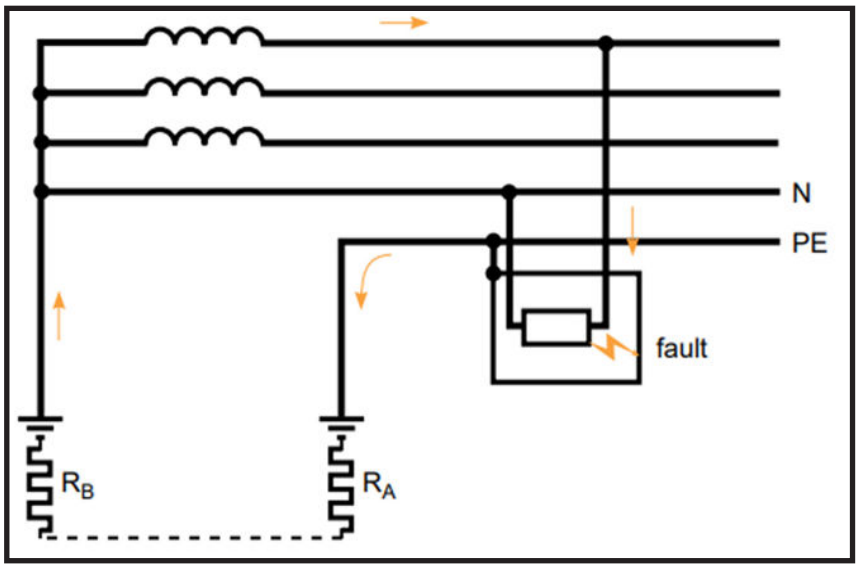
Two grounding systems (also known as earthing systems) are approved for use with HRVW-625 and HRVW-685

- TN-S
- TT

TN-S Grounding System

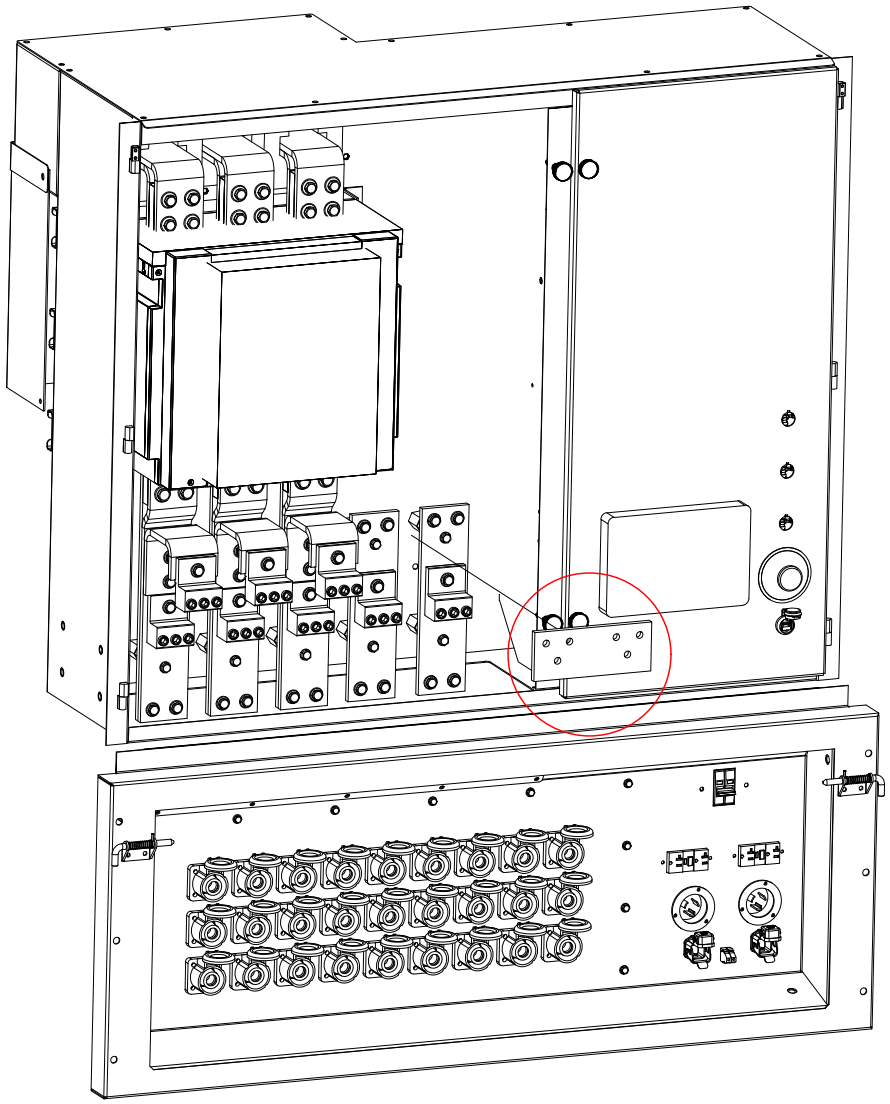


TT Grounding System



CAUTION

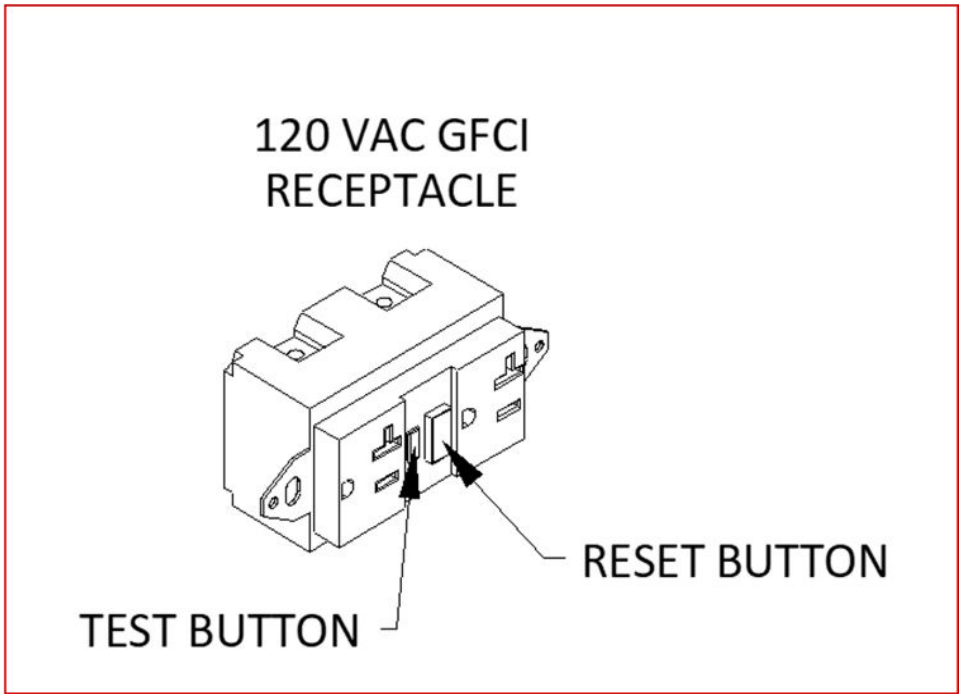
NEVER change the grounding system while the engine is running.
ALWAYS place circuit breaker in the OFF position before selecting grounding system.
Ground the generator set in accordance with all codes and regulatory requirements.



120 VAC GROUND FAULT CURRENT INTERRUPTER (GFCI) RECEPTACLES

Two 120 VAC, 20 amp GFCI (Duplex Nema 5-20R) receptacles are accessible on the output terminal panel.
Receptacles are protected by 20 amp circuit breakers located above the GFCI receptacles. They are accessible in all voltage selector switch configurations.

- Load output (current) of GFCI receptacles is determined by the load requirements of the U,V and W output terminal lugs. If GFCI receptacle trips offline, press the reset button.
- TEST GFCI function each month by pressing test button (in the center of the receptacle).



NOTICE

HIPOWER SYSTEMS' HRVW-625 and HRVW-685 generators provide the ability to connect camlocks, mechanical lugs and GFCI receptacles at the same time at 480/277V and 208/120V configurations.

Circuit breakers are located above GFCI receptacles.

Load output (current) on receptacles is determined by load requirements of output terminal lugs.

LOAD APPLICATION

How to calculate wattage

If wattage is not given on the equipment's name plate, approximate wattage may be determined by multiplying nameplate voltage by the nameplate amperage.

Watts = Voltage x Amperage

Generally, the power factor of HRVW-625 and HRVW-685 generators is 0.8.

Refer to the following table for calculating power factor by load for HRVW-625 and HRVW-685 generators.

POWER FACTOR BY LOAD: HRVW-625 AND HRVW-685

Power Factor by Load: HRVW-625 & HRVW-685	
Type of Load	**Power Factor**
Single-phase induction motors	0.4-0.75
Electric heaters, incandescent lamps	1.0
Fluorescent lamps, mercury lamps	0.4-0.9
Electronic devices, communication equipment	1.0
Common power tools	0.8

NOTICE

LOAD RECOMMENDATION

With highly complex engine systems comprising both engine and exhaust after-treatment system (EATS), a sufficiently high temperature is a required in order to have a well-functioning system. The average engine load needs to be sufficiently high to provide exhaust energy to enable the catalyst to work. During low load operations, deposits (crystallization) may form in the exhaust system and evaporate at higher operating loads. Low load operation is defined as operation where the average exhaust temperature is lower than 300 °C. To avoid low load operation, it is recommended that the engine operates with a minimum load factor of 60%. Operation at load factors below 30% should also be avoided as wet stacking and/or crystallization may form in the exhaust system. If extended low load operation occurs, HIPOWER SYSTEMS recommends the unit to operate with a load bank at 100% load for 2 hours every 150 hours.

Due to varying circumstances, the above statement is a recommendation only and not guaranteed.

NOTICE

THREE-PHASE LOAD

Use the following equation to calculate power requirements for 3-phase power:

kVA = Voltage x Amperage x 1.732 / 1000

- If 3Ø load (kVA) is not given on the equipment nameplate, approximate 3Ø load may be determined by multiplying volt age by amperage by 1.732.
- Motors and motor-driven equipment draw much greater current for starting than during operation.
- Inadequately sized connecting cable that cannot carry the required load can cause a voltage drop.
- Voltage drops can damage tools and appliances and overheat the cable.

CAPACITY CALCULATIONS: TOOLS AND APPLIANCES

- Resistance Loads (incandescent lamp, electric heater): When connecting a resistance load, a capacity of up to the gener ating set's rated output (kW) can be used.
- Lamps: When connecting a fluorescent or mercury lamp, a capacity of up to the generating set's rated output (kW) multi plied by 0.6 can be used.
- Power Tools: Calculate required starting current capacity.
- Standard Tools: A capacity of up to the generating set's rated output (kW) multiplied by 0.8.

WARNING

ISOLATION TRANSFER SWITCH

WARNING: A licensed electrician must install an isolation (transfer) switch before connecting this HRVW-625 and HRVW-685 generators to any building's electrical system.

WARNING: Serious damage to the building's electrical system can occur if no isolation transfer switch is installed.

OUTPUT VOLTAGES: HRVW-625 AND HRVW-685

A wide range of voltages are available to supply voltage for many different applications. Voltages are selected by using the voltage change-over board.

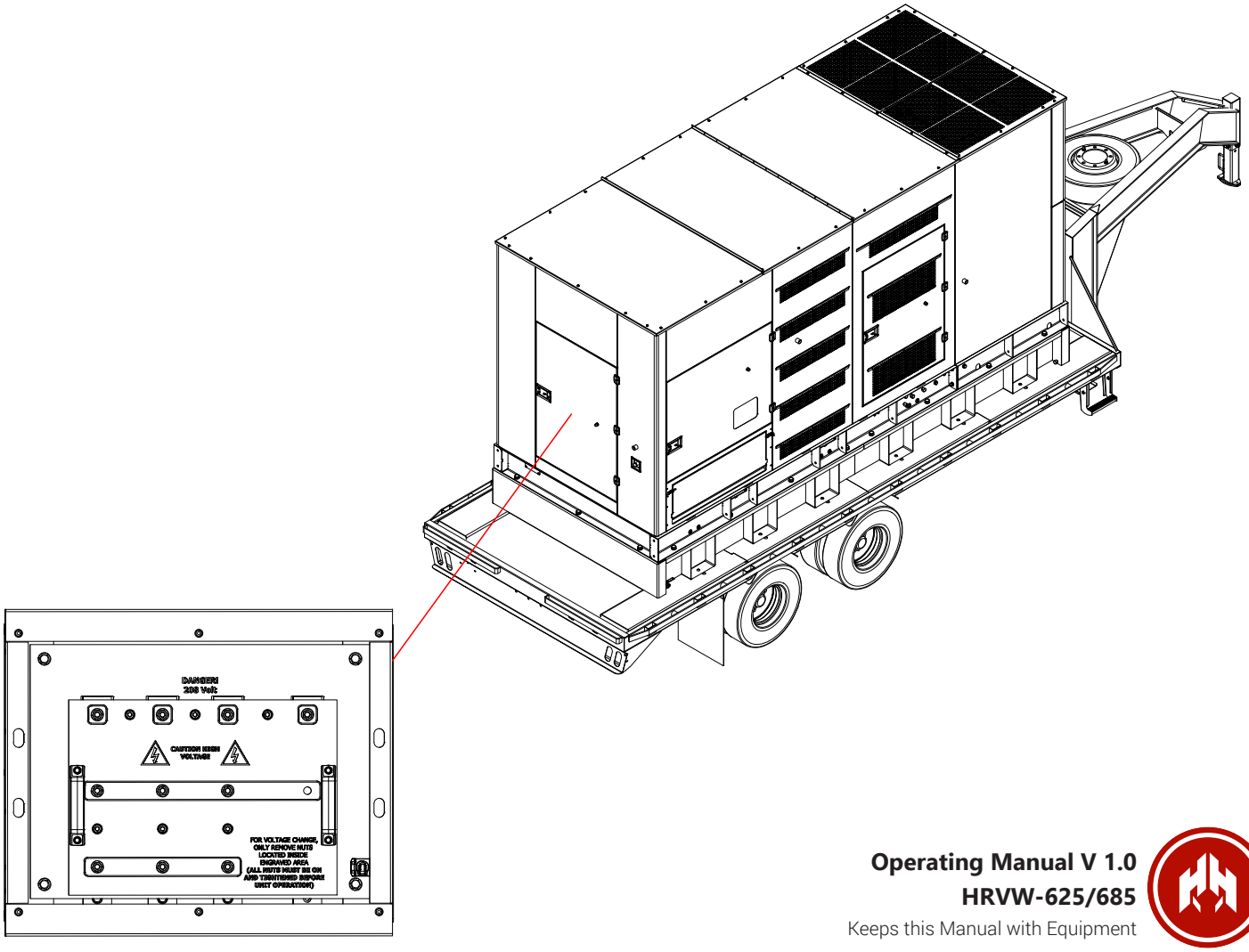
VOLTAGE SELECTION GUIDE FOR HRVW-625 AND HRVW-685

Voltage change over board is located in the alternator box.

NEVER change the position of the voltage change-over board switch while the engine is running.

ALWAYS place circuit breaker in the OFF position before selecting voltage.

Voltages Available: HRVW-625 & HRVW-685				
Output Terminal Lugs	3-Phase 208/120V Position	Voltage Change-Over Board 3-Phase 480/277V Position		
3Ø Line-Line	208V	416 V	440 V	480V
1Ø Line-Neutral	120V	240 V	254 V	277V



17. U, V, W, 0 Terminal Output Voltage

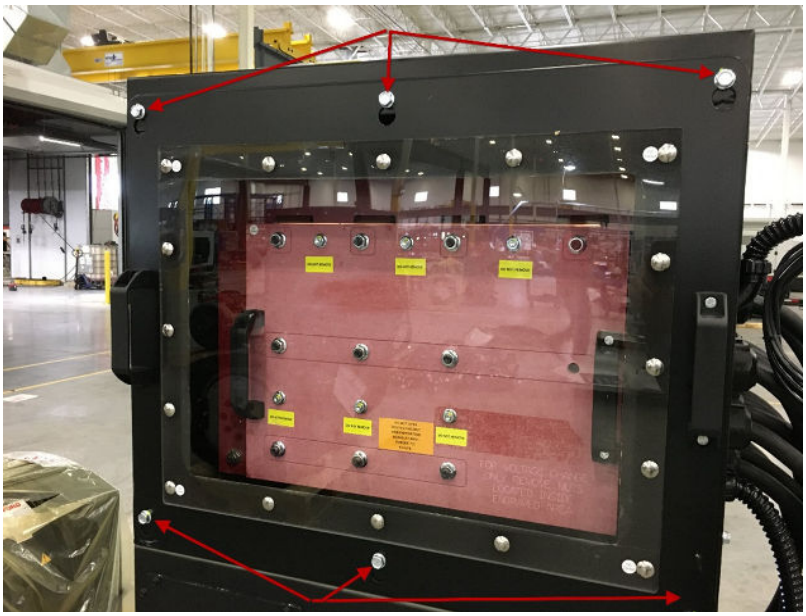
Output voltages can be obtained using the UVWO output mechanical lugs.
Voltages at the terminals are dependent on the position of the Voltage Selector Overboard and the adjustment of the Voltage Regulator Control.
RANGE of output voltage is controlled by the voltage selector overload.

HOW TO CHANGE THE OUTPUT VOLTAGES

1.Open the rear door

2.Take the back-alternator panel out. It is not necessary to remove the bolts, you only need to lose them.

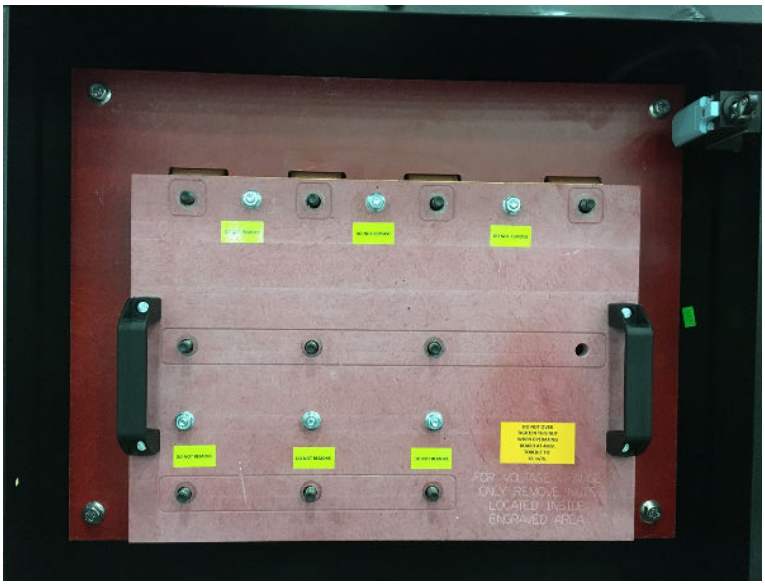
Push the back panel up and take it out



Note: There is a safety disconnect switch which will shut down the unit once you remove this back-alternator panel.

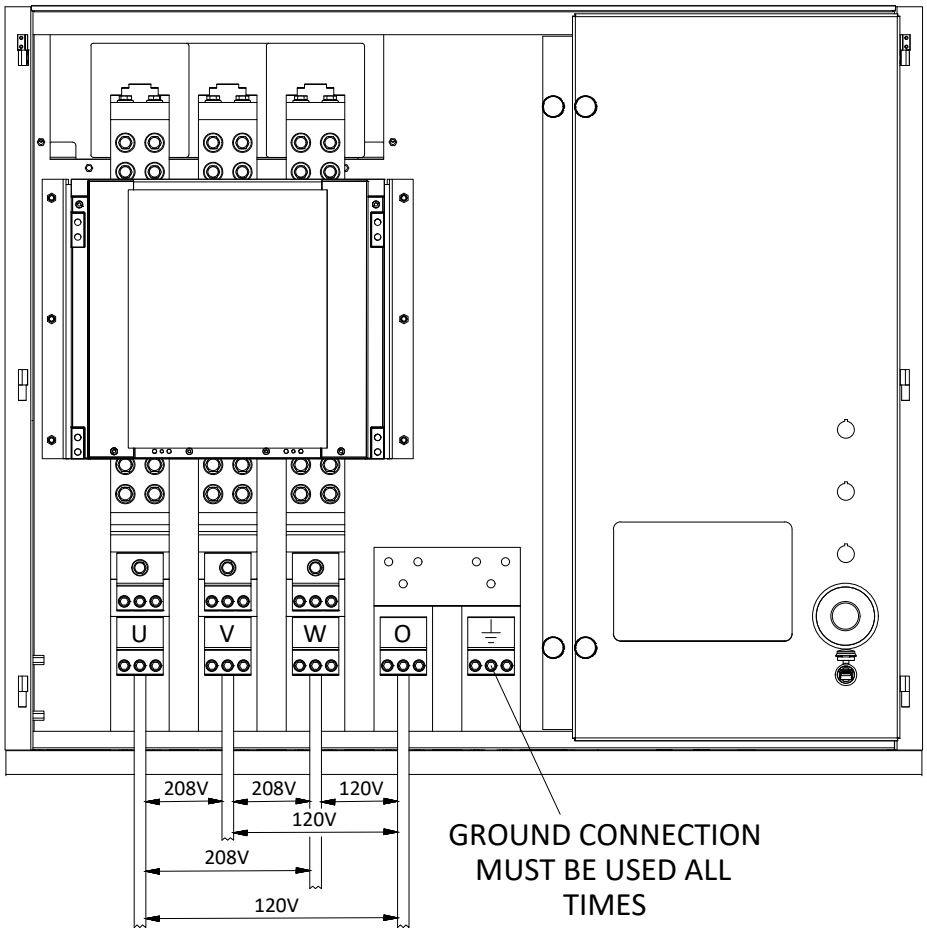
17. U, V, W, 0 Terminal Output Voltage

3Ø-208V/1Ø-120V UVWO Terminal Output Voltages
Place voltage selector overboard in the following position



Connect load wires to UVWO terminals

Mechanical lugs drawing 208/120V.



17. U, V, W, 0 Terminal Output Voltage

3Ø - 480V/277V UVWO Terminal Output Voltages

Place voltage selector overboard in the following position

Do not over tighten this nut when operation board at 480V. Torque to **45**in/lb

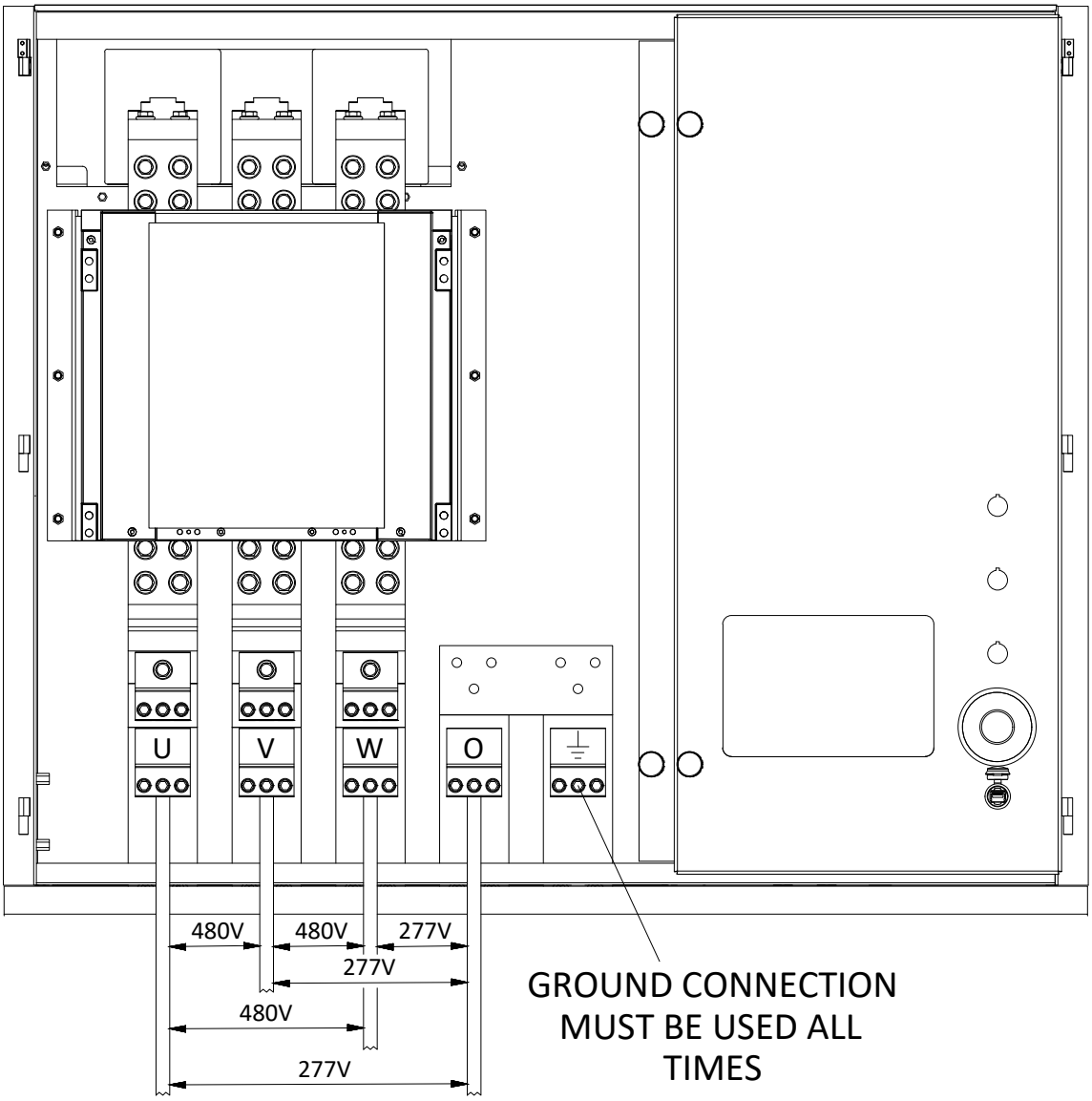
Note: Make sure that you see the yellow label with the following message:

VOLTAGE IS 277/480V IF YOU CAN SEE THIS LABEL

Connect load wires to UVWO terminals

Mechanical lugs drawing 277/480V. See next page example.

17. U, V, W, 0 Terminal Output Voltage



VERIFY that connections to UVWO terminals are secure and tight to prevent arcing, which could cause a fire.

CIRCUIT BREAKERS

HRVW625 & HRVW685: To protect the HRVW625 & HRVW685 generator from overload, a 3-pole, 2000 amps (ABB-T8V 2000A) main circuit breaker is provided to prevent overload of U, V, and W Output Terminals.

- Two single-pole, 20-amp duplex circuit breakers are provided to protect the GFCI receptacles from overload.

The main circuit breaker only protect the loads connected to Camlocks and Mechanical Lugs.
ALWAYS switch ALL circuit breakers to the OFF position before starting the engine.

REPLACE LUBRICATION OIL

POSITION HRVW-625 & HRVW-685 generators on level ground.

- Turn off engine.
- Check oil level.
- Verify oil is clean.
  - –If the oil is not clean, drain oil by removing the oil drain plug.

Fill the engine crankcase with lubricating oil through the filler hole.

- Refill with the specified amount of oil specified by the engine manufacturer.

DO NOT overfill crankcase with lubricating oil.

- ENSURE oil level is maintained between the two notches in the dipstick.

! DANGER

FUEL TANK

Fuel spilled onto a hot engine will likely cause a fire or explosion.

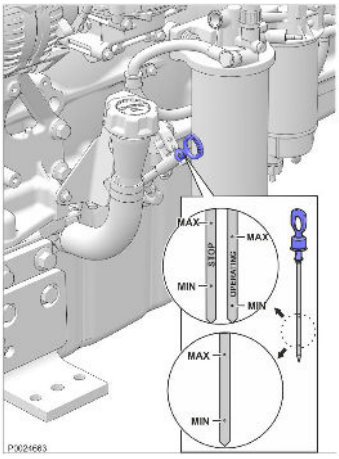
- Spilled fuel must be cleaned up to prevent fire or explosion.
- **NEVER** smoke around or near the HRVW-625 & HRVW-685 generators.
- Turn engine **OFF** before refueling.

! WARNING

TANK REFUELING PROCEDURE

Only properly trained personnel who have read and understand this section should refill the fuel tank system. Working with or approaching a running engine is a safety risk. Watch out for rotating components and hot surfaces.

HRVW-625 & HRVW-685 generators have internal fuel tanks located inside the trailer frame; they may also be equipped with an environmental fuel tank.



ALWAYS fill the fuel tanks with clean, fresh No. 2 diesel fuel.

DO NOT fill the fuel tanks beyond their capacities.

Be attentive when replenishing fuel.

- Store and transport fuel in an approved safety container.
- Prevent spills; if the container does not have a spout, use a funnel.
- The fuel tank cap must be closed tightly after filling.
- Immediately clean up any spilled fuel.

DO NOT add fuel while engine is running. Stop engine and let cool before adding fuel.

Diesel fuel and its vapors are dangerous to your health and the surrounding environment.

- Avoid skin contact and/or inhaling fumes.
- Wear appropriate PPE if there is a risk of contact with fuel.

ALWAYS place trailer on firm level ground before refueling to prevent spilling and maximize the amount of fuel that can be pumped into the tank.

- Failure to do so will cause fuel to spill from the tank before reaching full capacity.

ONLY use diesel fuel (ultra-low sulfur diesel fuel).

NEVER overfill fuel tank.

- **MONITOR** fill rate by reading the digital fuel gauge when filling the fuel tank.
- The ECU controller must be powered ON to read the fuel gauge in the controller

CAUTION

COOLANT / ANTIFREEZE

FOLLOW engine manufacturer recommendations for type and concentration of coolant / antifreeze.

DO NOT remove the radiator cap until the unit has completely cooled.

- Day-to-day addition of coolant is done from the recovery tank.

CONSULT the coolant capacity table (presented below) to identify engine, radiator, and recovery tank coolant capacities.

VERIFY coolant level in the recovery tank is always between the "H" and the "L" markings.

OPERATION IN FREEZING TEMPERATURES

When operating in freezing temperatures, maintain required antifreeze levels at the appropriate coolant / water mix ratios.

- When operating in freezing weather, add the correct amount of antifreeze.

Coolant / Water Mix Ratios for HRVW-625 & HRVW-685

Coolant / Water Mix Ratios		
Climate	**Outside Temperature**	**Coolant Concentration**
Warm	10°F (-12°C) or Above	30%
Cold	-22°F (30°C) or Above	50%

CLEANING THE RADIATOR

CLEAN radiator fins with compressed air to prevent overheating due to dust or debris overload.

TURN OFF engine and **DISCONNECT** negative battery terminal before cleaning inside the machine.

AIR CLEANER MAINTENANCE

Periodic cleaning/replacement is necessary.

INSPECT air cleaner in accordance with the manufacturer's recommendations.

WARNING

Working with or approaching a running engine is a safety risk. Watch out for rotating components and hot surfaces. lways change a belt which looks worn or cracked.

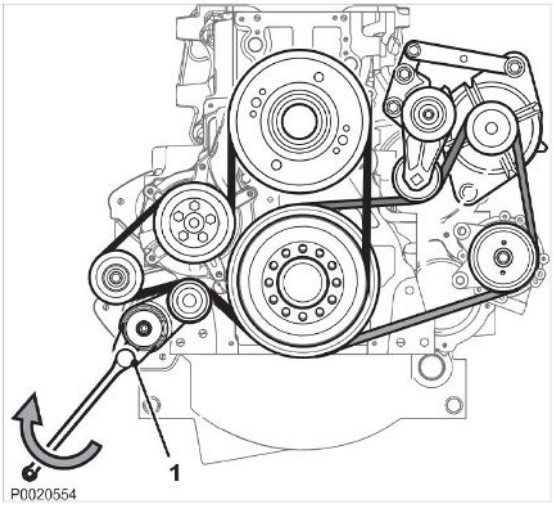
Inspections must be carried out after operations, while the belts are hot.

You should be able to depress the alternator belt and the drive belt about 3-4 mm between the pulleys. The alternator belts and drive belts have automatic belt tensioners and do not need to be adjusted.

Check the condition of the drive belts. Replace as necessary.

Drive belt, change

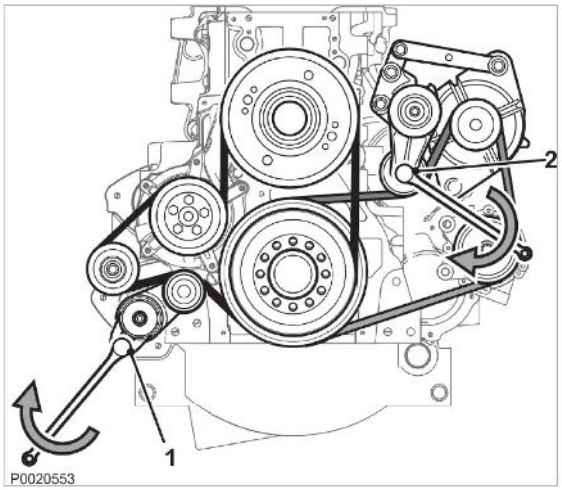
1. Disconnect the main switch(es) and check that the engine is not connected to system voltage.
2. Remove the fan guard and fan ring round the cooling fan.
3. Remove the belt guard.
4. Insert a 1/2" square wrench in the belt tensioner (1). Lift the wrench and remove the drive belt.
5. Thread the drive belt round the fan and remove it.
6. Check that the pulleys are clean and undamaged.
7. Thread the new drive belt over the fan.
8. Lift the 1/2" wrench and install the new drive belt.
9. Install the belt guards.
10. Install the fan guard and fan ring round the cooling fan.
11. Start the engine and do a function check.



Alternator Belt, Replace

Always change a drive belt which appears worn or cracked.

1. Disconnect the main switch(es) and check that the engine is not connected to system voltage.
2. Remove the fan guard and fan ring round the cooling fan.
3. Remove the belt guard.
4. Insert a 1/2" square wrench in the belt tensioner (1). Lift the wrench up and lift the water pump drive belt off.
5. Insert a 1/2" square wrench in the belt tensioner (2). Press the wrench down and remove the alternator/water pump belt.
6. Check that the pulleys are clean and undamaged.
7. Press the 1/2" wrench in the belt tensioner (2) down and install the new alternator/water pump drive belt.
8. Lift the 1/2" wrench in the belt tensioner (2) and install the new water pump drive belt.
9. Install the belt guards.
10. Install the fan guard and fan ring round the cooling fan.
11. Start the engine and do a function check.



Engine Product Designation
TWD1672-1673GE

Service activity	Action	
S At 1000 hours		
Valve clearance	Inspection	●
A Every 12 months or 500 hours whichever occurs first		
Check software status	Inspection	●
Engine oil and oil filters	Replace	●
Coolant level and antifreeze mixture	Inspection	● / ○
Drive belts, belt tensioner and idler wheels	Inspection	● / ○
Air filter	Inspection	●
Fuel pre-filter, draining water / contamination	Clean	● / ○
B Every 12 months or 1000 hours whichever occurs first		
Fuel pre-filter and fuel fine filter	Replace	●
Air filter	Replace	●
C1 Every 2000 hours		
Valve clearance	Inspection	●
C2 Every 48 months or 2000 hours whichever occurs first		
Drive belts	Replace	●
C3 Every 24 months or 2000 hours whichever occurs first		
Air filter, AdBlue®/DEF tank breather	Replace	●
AdBlue®/DEF filter , pump unit	Replace	●
D Every 48 months or 8000 hours whichever occurs first		
Coolant	Replace	●

● = Service operation is recommended to be performed by an authorized Volvo Penta dealer
○ = Service operation could be performed by owner/operator

ALTERNATOR

Polarity of the alternator is negative grounding type. When an inverted circuit connection takes place, the circuit will be in short circuit instantaneously resulting alternator failure.

- **DO NOT** direct a water stream directly on the alternator because water in the alternator causes corrosion and damages the alternator.

WIRING MAINTENANCE

INSPECT the HRVW-625 & HRVW-685 generators for bad or worn electrical wiring or connections.

- REPLACE if wiring or connections are exposed (insulation missing).

PIPING AND HOSE CONNECTION

Inspect all piping, oil hose, and fuel hose connections for wear and secure fit.

- Check for leaks.
- Tighten all hose clamps.
- Replace defective hose (fuel or oil) lines.

GENERAL MAINTENANCE INSPECTION

Before each use, inspect and clean the HRVW-625 & HRVW-685 generators.

- **LOOK** for deficiencies and any loose, missing or damaged nuts, bolts or other fasteners.
- **LOOK** for fuel, oil, and coolant leaks.

BATTERY MAINTENANCE

ALWAYS correctly connect battery.

- **DO NOT** connect in reverse because it will shorten battery life and poses risk of sparking and explosion.

ALWAYS maintain battery fluid level because inadequate water level shortens battery life.

ONLY use distilled water when replenishment is necessary.

- **DO NOT** overfill.

VERIFY that battery cables are secure because non-secure contact may result in poor starting and malfunctions.

- Coat battery terminals with approved battery terminal treatment compound to assure adequate connection and prevent corrosion.

Assess Battery Condition (Charge)

Battery is sufficiently charged if specific gravity of the battery fluid is 1.28 (at 68° F).

If specific gravity is 1.245 or lower, the battery should be considered dead.

- Recharge or replace a dead battery.
- **DISCONNECT** battery cables before charging the battery with an external electric source.

Battery Replacement

ONLY replace battery with recommended battery type.

21. General Maintenance Guidelines

MAINTENANCE

Regular maintenance will improve performance and extend engine/equipment life. HIPOWER SYSTEMS recommends that all maintenance work be performed by an Authorized HIPOWER Service Dealer (AHSD). 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 an AHSD. See the emissions warranty.

Periodic inspection, service, and maintenance of this unit is critical in ensuring its reliable operation. The following is the manufacturer's recommended maintenance schedule. The established intervals are the maximum required when the unit is used in typical standby service applications (approximately 250 hours per year). The maintenance items will need to be performed more frequently if the unit is used in severe applications (such as long duration outages, very high or very low ambient conditions, or extremely dirty or dusty environments). Use calendar time or hours of operation, whichever occurs first, from the previous maintenance interval to determine the next required maintenance interval. Note that some checks are based only on hours of operation.

There may be times when the generator must operate continuously for long periods of time (for example, extended utility outages). During such extended operational periods some items will require more frequent checking (based on hours). Use the "Extended Run-Time Maintenance Checks" recommendation for such periods of operation.
Be sure to 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.

Service Maintenance Intervals
Extended Run-Time Maintenance Checks:
Daily checks which must be performed when the unit is operated continuously for extended periods of time. These checks and routine monthly checks can be performed by an Authorized Operator.

NOTE: For units equipped with a gearbox, the gearbox oil should be checked monthly or every 100 hours of operation.

1A. A **one-time** post installation, initial operation, service inspection of the generator set to ensure it is ready to operate, transfer to, and carry the load when required, and to identify any potential problem areas.
Performed ONLY ONCE following the first three months or first 50 hours of operation after installation and startup of the unit.

The various service maintenance intervals are designated by interval numbers:

1.A frequent, periodic inspection of the generator set to ensure it is ready to operate when required and to identify any potential problem areas. Performed monthly, or every 24 hours (interrupted) of operation of the unit.

2.An operational service inspection of the generator set to ensure it is ready to operate and carry the load when required, and to identify any potential problem areas. Performed semi-annually (6 months) or every 125 hours of operation of the unit.

3.A mid-level service inspection of the generator set to ensure it is ready to operate and carry the load when required, and to identify any potential problem areas. Performed annually or every 250 hours of operation of the unit.

4.A comprehensive service inspection of the generator set to ensure it is properly serviced and ready to operate and carry the load when required, and to identify any potential problem areas. Performed biannually (every 24 months or 500 hours).

NOTE:

Maintenance levels 2, 3, and 4 require the use of the applicable engine service manual and must be performed by a qualified service technician.

Maintenance Schedule

The following pages contain the maintenance schedule describing the checks/tasks which need to be accomplished at each designated maintenance interval. Some maintenance level tasks are combined. For example, if the six month tasks are due, both the monthly and the six month task should be completed at the same time. Similarly, when the annual tasks are due, the monthly and semi-annual tasks should also be completed. There is space on the sheets for recording the date and signature of the person completing the task, as well as recording the engine hours and other pertinent information. At the bottom of each sheet, space is also provided to record any fluids added, parts replaced or corrective action taken. All of this recorded information provides a detailed maintenance history of the unit.
This maintenance history may be required for warranty validation purposes, and is a good idea to maintain throughout the lifetime of the unit.
It is recommended by the manufacturer that service procedures beyond the normal monthly checks be performed by an AHSD.

NOTES AND MAINTENANCE ITEM EXPLANATIONS

MAINTENANCE ITEM	DESCRIPTION
Oil and Oil Filter	Change oil and filter shortly after start up or commissioning of the unit. The recommendation is that this be done after the first 50 hours of operation or after the first three months of service. Perform oil and filter changes every 250 hours (or yearly) thereafter. If an oil analysis program is used (annually), the acceptable oil change interval can be extended to 500 hours or every two years, based
Coolant Quality	Check coolant annually for proper thermal protection levels. Drain, flush, and refill the cooling system with fresh coolant every two years regardless of operating hours.
Flexible Hoses	Change coolant, fuel (gaseous supply hoses from regulator to mixer), oil, charge air cooling, and block heater hoses, flexible joints, etc.) every two years regardless of operating hours.
Accessory drive belts	Replace accessory drive belts every two years regardless of operating hours. If necessary, check and replace automatic tensioner (if used).
Magnetic Pickup(s) mounted on flywheel housing	Remove, clean, inspect, and reset magnetic pickups to the correct operational output voltage every two years.
Crank and/or Cam Pickup for ignition system	Visually inspect (outside) for cleanliness and tightness.

NOTE: Certain applications may require more frequent maintenance checks and more frequent operation under load.

NOTE: This schedule does not reflect all of the possible requirements of an individual engine manufacturer service schedule, particularly if the unit is used in other than a standby power application.

NOTE: For more information about service schedules and support for your application, please consult your local AHSD.

EXTENDED RUN-TIME MAINTENANCE CHECKS

These maintenance tasks can be performed by an AHSD or an Authorized Operator. Comply with all safety notices contained in the owner's manual.

AHSD/Authorized Operator Maintenance Tasks. Perform steps 1 through 8 and 11 every 24 continuous operating hours.	Task Completed Date/Initials
1. Before shutting the unit down, perform a thorough visual inspection for leaks, loose components or connections, excessive apparent wear or damage. Any discrepancies noted should be further inspected and corrected while the unit is shut down.	
2. Shut the unit down per the procedure in the owner's manual.	
3. Check the engine oil level. The level should be between the low and full markings on the dipstick. Adjust as necessary.	
4. Check the engine coolant level. Make sure the level in the coolant catch tank is between the cold and hot level markings. Adjust as necessary. Use only a 50/50 mixture of appropriate coolant.	
5. Visually inspect the engine accessory drive belts and fan coupling device (if equipped) for correct tension and any signs of abrasion, wear, deterioration or damage. Correct as necessary.	
6. Visually inspect all hoses and connections (exhaust, intake, coolant, block heater, fuel lines and filters, oil filters, etc) for leaks, tightness, signs of deterioration, wear, or damage. Correct as necessary.	
7. Check the air inlets and outlets (enclosure or building vents) for debris or blockage. Correct as necessary.	
8. Visually inspect the fuel supply system for signs of leaks or damage. Correct as necessary.	
9. Weekly When Operating: Check the battery electrolyte level (if accessible). Adjust as necessary (add only distilled or deionized water to replenish battery cells).	
10. Return the unit to operational condition and restart. Check unit voltage and frequency. Visually inspect the unit for leaks, loose connections or components. Place the unit back in service.	

Date inspection Completed: _____ **Unit Hour-Meter Reading:** _____

AHSD/Authorized Operator signature signifying inspection complete: _____

***Record any oil or coolant added and notes about any discrepancies found and corrective action* taken.**

MAINTENANCE LEVEL 1A

One Time at 50 Hours / 3 Months. These maintenance tasks must be performed by an AHSD. Comply with all safety notices contained in the owner's manual. Some of these tasks require the use of the applicable engine service manual.

AHSD/Authorized Operator Maintenance Tasks . **Perform these tasks in addition to the regularly scheduled monthly maintenance tasks.**	**Task Completed Date/Initials**
1. Disable the unit from operating per the procedure found in the owner's manual.	
2. Check engine valve clearance (valve lash) as specified in the engine	
3. Change the engine oil.	
4. Change the oil filter(s).	
5. Check the engine accessory drive belts and fan coupling device (if equipped) for correct tension, wear or abrasion, deterioration, or damage. Correct as necessary.	
6. Check all hoses, piping, and connections (intake, exhaust, coolant, block heater, fuel and filters, oil lines and filters) for tightness, leaks, deterioration or damage. Correct as necessary.	
7. Check wiring connections (at MLCB, customer connections, control terminal strips, battery, etc) for loose connections, corrosion or damage. Correct as necessary.	
8. Return the unit to operational condition and test. Place the unit in automatic and open the service disconnect to force the unit to start and transfer to the load. Exercise the unit against the load for 15 minutes, visually inspecting for leaks, loose connections or components, and any abnormal operating conditions. Record the unit voltage, frequency, kW and kVA while running. Restore utility power and monitor transfer to utility, cool-down and shutdown. Correct any discrepancies. **Voltage:** **Frequency:** **kW:** **kVA:**	
9. If the control has alarm and/or event or run logs, record the alarm and event logs to a history file for the unit.	
10. Return the unit to operational condition.	
Date Inspection Completed: **Unit Hour-Meter Reading:**	
AHSD/Authorized Operator signature signifying inspection complete: _____ *****Record any oil or coolant added and notes about any discrepancies found and corrective action* taken.**	

MAINTENANCE LEVEL 1 - Monthly or Every 24 Hours

These maintenance tasks can be performed by an AHSD or an Authorized Operator. Comply with all safety notices contained in the owner's manual.

AHSD/Authorized Operator Maintenance Tasks	Task Completed Date/Initials
1. Disable the unit from operating per the procedure found in the owner's manual.	
2. Check the engine oil level. The level should be between the low and full markings on the dipstick. Adjust as necessary.	
3. Check the engine coolant level. Verify the level in the coolant catch tank is between the cold and hot level markings. Adjust as necessary. Use only a 50/50 mixture of appropriate coolant.	
4. Check the battery electrolyte level (if accessible). Adjust as necessary (add only distilled or deionized water to replenish battery cells).	
5. Check the battery terminal posts, connections, cables and charger connections, and battery hold-downs for signs of corrosion, looseness, etc. Remove, clean and tighten connections as necessary.	
6. Check operation and condition of the battery charger. Check operation and condition of optional block heater, oil sump heater, and battery warmer (if equipped). Correct discrepancies as necessary.	
7. Check the air inlets and outlets (enclosure or building vents) for debris or blockage. Correct as necessary.	
8. Visually inspect the fuel supply system for signs of leaks or damage. Correct as necessary.	
9. Perform a 5 minute, no-load operational test of the unit. Check unit voltage and frequency. Visually inspect the unit for leaks, wear, damage, loose connections or components, and corrosion. Correct as necessary. **Voltage:** **Frequency:**	
10. If the control has alarm and/or event or run logs, record the alarm and event logs to a history file for the unit.	
11. Return the unit to operational condition.	

Date inspection Completed: **Unit Hour-Meter Reading:**

AHSD/Authorized Operator signature signifying inspection complete:_____

***Record any oil or coolant added and notes about any discrepancies found and corrective action* taken.**

MAINTENANCE LEVEL 2 - Semi-Annual or Every 125 Hours

These maintenance tasks must be performed by an AHSD. Perform these tasks every six months or every 125 hours of operation. Perform these tasks in addition to the regularly scheduled monthly maintenance tasks. Comply with all safety notices contained in the owner's manual. Some of the tasks will require the use of the applicable engine service manual.

AHSD/Authorized Operator Maintenance Tasks.	Task Completed Date/Initials
1. Disable the unit from operating per the procedure found in the owner's manual.	
2. Check the engine accessory drive belts and fan coupling device (if equipped) for correct tension, wear, abrasion, deterioration, or damage. Correct as necessary.	
3. Check all hoses, piping, and connections (intake, exhaust, coolant, block heater, fuel and filters, oil lines and filters) for tightness, leaks, deterioration or damage. Correct as necessary.	
4. Load test the battery or test electrolyte levels (specific gravity) with a hydrometer.	
5. Return the unit to operational condition and test. Place the unit in automatic and open the service disconnect to force the unit to start and transfer to the load. Exercise the unit against the load for 15 minutes, visually inspecting for leaks, loose connections or components, and any abnormal operating conditions. Record the unit voltage and frequency while running. Restore utility power and monitor transfer to utility, cool-down and shutdown. Correct any discrepancies. **Voltage:** **Frequency:** **kW:** **kVA:**	
6. If the control has alarm and/or event or run logs, record the alarm and event logs to a history file for the unit.	
7. Return the unit to operational condition.	
Date Inspection Completed: **Unit Hour-Meter Reading:**	
AHSD/Authorized Operator signature signifying inspection complete:_____	
***Record any oil or coolant added and notes about any discrepancies found and corrective action* taken.**	

MAINTENANCE LEVEL 3 - Annual or Every 250 Hours

These maintenance tasks must be performed by an AHSD. Perform these tasks every 12 months or every 250 hours of operation. Perform these tasks in addition to the regularly scheduled Monthly and Semi-Annual maintenance tasks. Comply with all safety notices contained in the owner's manual. Some of the tasks will require the use of the applicable engine service manual.

AHSD/Authorized Operator Maintenance Tasks.	Task Completed Date/Initials
1. Disable the unit from operating per the procedure found in the owner's manual. Some of the following tasks will require the use of the applicable engine service manual.	
2. Change the engine oil.	
3. Change the engine oil filter(s).	
4. Inspect the air filter. Replace as necessary.	
5. Gaseous Units Only: Inspect, clean, and gap the spark plugs. Replace as necessary.	
6. Gaseous Units Only: Inspect ignition wires for damage, deterioration and tightness. Replace as necessary.	
7. Diesel Units Only: Test the fuel quality. If required, strip any water/sediment from the tank. Filter or polish the fuel and add any additional additives required to maintain fuel quality.	
8. Diesel Units Only: Change the primary and secondary fuel filters (if equipped). Clean any water separator or mechanical strainer (if equipped). Prime and bleed the fuel system per the engine service manual procedures.	
9. Check the engine accessory drive belts and fan coupling device (if equipped) for correct tension, wear or abrasion, deterioration, or damage. Correct as necessary.	
10. Check all hoses, piping, and connections (intake, exhaust, coolant, block heater, fuel and filters, oil lines and filters) for tightness, leaks, deterioration or damage. Correct as necessary.	
11. Visually inspect the radiator and charge air core (if equipped) for any build up of dirt, debris, or oil contamination (external). Clean, correct as necessary.	
12. Check the coolant thermal protection level. Correct as necessary.	
13. Check all wiring connections in the high voltage and low voltage connection panels. Check for loose connections, corrosion, arcing or damage. Check torque on all main load lugs at generator connections (MLCB) and transfer switch connections (refer to applicable transfer switch manual). Correct as necessary.	

AHSD/Authorized Operator Maintenance Tasks.	Task Completed Date/Initials
14. Return unit to operational condition and test. Place unit in automatic and open the service disconnect to force the unit to start and transfer to the load. Exercise unit against the load for 1 hour (60 minutes). Visually inspect for leaks, loose connections or components, and any abnormal operating conditions. Record unit voltage, frequency and kW while running. Restore utility power and monitor transfer to utility, cool-down and shutdown. Correct any discrepancies. **Voltage:** **Frequency:** **kW:** **kVA:**	
15. If control has alarm and/or event or run logs, record the alarm and event logs to a history file.	
16. Return the unit to operational condition and place back in automatic operation.	
Date Inspection Completed: **Unit Hour-Meter Reading:**	
AHSD/Authorized Operator signature signifying inspection complete: _____	
***Record any oil or coolant added and notes about any discrepancies found and corrective action* taken.**	

MAINTENANCE LEVEL 4 - Bi-Annual or Every 500 Hours

These maintenance tasks must be performed by an AHSD. Perform these tasks every 24 months or every 500 hours of operation.

Perform these tasks in addition to the regularly scheduled Monthly, Semi-Annual and Annual maintenance tasks. Comply with all safety notices contained in the owner's manual. Some of the tasks will require the use of the applicable engine service manual

AHSD/Authorized Operator Maintenance Tasks.	Task Completed Date/Initials
1. Disable the unit from operating per the procedure found in the owner's manual. Some of the following tasks will require the use of the applicable engine service manual.	
2. Check engine valve clearance (valve lash) as specified in the engine service manual. NOTE: This is NOT required for engines with hydraulic lifters. Check the engine service manual.	
3. Replace the engine air filter(s).	
4 Replace the engine accessory drive belts. Inspect and lubricate (if required) the belt tensioning device (if equipped) and replace if necessary.	
5. Drain and flush the cooling system. Refill with fresh coolant of appropriate type (50/50 mixture).	
6. Replace all flexible hoses: Coolant hoses including the block heater hoses and vaporizer hoses (if equipped); charge air system connection hoses/joints/couplings, and any flexible fuel or oil lines.	
7. Replace fuel filter. Verify the fuel system is bled and primed before running unit (diesel	
8. Remove, clean, inspect, reinstall and reset to correct voltage level the flywheel magnetic pickup(s) (if equipped).	
9. Return the unit to operational condition and test. Place the unit in automatic and open the service disconnect to force the unit to start and transfer to the load. Use an appropriate load bank to supplement load to full rated load (100% kW at rated kVA) if possible. Exercise the unit against the load for 2 hours (120 minutes). Visually inspect for leaks, loose connections or components, and any abnormal operating conditions. Record the unit voltage, frequency, kW and kVA while running. Remove the load bank load, restore utility power and monitor transfer to utility, cool-down and shutdown. Correct any discrepancies. **Voltage:** **Frequency:** **kW:** **kVA:**	
10. If control has alarm and/or event or run logs, record the alarm and event logs to a history file.	

AHSD/Authorized Operator Maintenance Tasks.	Task Completed Date/Initials
11. Return the unit to operational condition and place back in automatic operation.	
Date Inspection Completed: **Unit Hour-Meter Reading:**	
AHSD/Authorized Operator signature signifying inspection complete:_____	
***Record any oil or coolant added and notes about any discrepancies found and corrective action* taken.**	

24. General Maintenance & Inspections

General Maintenance Inspection

Before each use, inspect and clean the HRVW-625 and HRVW-685 generators.

- **LOOK** for deficiencies and any loose, missing or damaged nuts, bolts or other fasteners.
- **LOOK** for fuel, oil, and coolant leaks.

Air Filter Dust Indicator

DO NOT change the air filter until indicator reads "RED".
DISPOSE of old air filter.
DO NOT clean or reuse air filter because air filters cannot be cleaned or reused.

- When the air filter element is clogged, air intake restriction becomes greater and the air filter indicator signal shows RED.
- When indicator is red, replace filter immediately. After changing the air filter, press the air filter indicator button to reset.

PPE

Wear protective equipment including approved safety glasses or face shields and dust masks or respirators when cleaning air filters with compressed air.

Maintenance:

Primary and Secondary Air Cleaner - Every 250 Hours

- Remove air cleaner element and clean the heavy-duty paper element with light spray of compressed air.
- Replace the air cleaner as needed.

This diesel engine is equipped with a replaceable, high-density paper air cleaner element. It also contains an inner (secondary) element that serves as a backup filter if the primary element is damaged.

Inspection of Primary and Secondary Air Cleaner Elements

CHECK air cleaner daily or before starting the engine.

- Release latches that secure the cover to the air cleaner body.
- Remove air cleaner cover and set aside.
- Remove both the primary and secondary air cleaner elements.

CHECK for and correct heavy buildup of dirt and debris along with loose or damaged components.

OPERATING the engine with loose or damaged air cleaner components could allow unfiltered air into the engine causing premature wear and failure.

Maintenance: Air Cleaner - Every 500 Hours

This diesel engine is equipped with a replaceable, high-density paper air cleaner element. It also contains an inner element that serves as a backup filter if the primary element is damaged.

- Remove air cleaner element and clean the heavy-duty paper element with light spray of compressed air.
- Replace the air cleaner as needed.

Inspection of Air Cleaner Elements

CHECK air cleaner daily or before starting the engine.

- Release latches that secure the cover to the air cleaner body.
- Remove air cleaner cover and set aside.
- Remove air cleaner elements.

How to Clean the Air Cleaner Elements

To clean the primary element (paper air filter) as referenced in the drawing (below):

- Tap the filter element several times on a hard surface to remove dirt, or blow compressed air (not to exceed 30 psi (207 kPa, 2.1 kgf / cm2) through the filter element from the inside out.
- **CLEAN** the element (paper air filter).
- **REPLACE** both elements if they are damaged or ex cessively dirty.
- **CLEAN** the inside of the air cleaner body.
- **REINSTALL** the air filter elements back into air cleaner body.
- **REINSTALL** the air cleaner cover, and secure with latches.

Maintenance: Draining the Fuel Filter Element

INSPECT the fuel filter daily.
DRAIN the fuel filter if it water and sediment have accumulated at the bottom of the cup.

- Loosen the air bleeder plug on the fuel filter body.
- To **DISCHARGE** fuel from the fuel filter, **OPEN** the drain valve on the fuel filter by turning the knob counterclockwise approximately 3-1/2 turns until the valve drops down 1-inch (25.4 mm) and draining begins.
- **ALLOW** residue or foreign substances inside the case to flow into a suitable container.

Use a filter wrench to remove the element case from the fuel filter body.

- **REMOVE** foreign matter or debris that may have accumulated by wiping the inside of the filter body with a clean cloth.
- **INSERT** the new fuel filter element into the element case.

•**REPLACE** both O-rings; coat O-rings with clean 15W-40 engine oil.
•**REINSTALL** element case by hand until it contacts the fuel filter body surface.
•**TORQUE** element case to 22.4 lb-ft (30 N.m).
•**TORQUE** drain plug to 1.4 lb-ft (2.0 N.m).
•**BLEED** air from the fuel system.

To **CLEAN** or **REPLACE** fuel pump filter:

•Disconnect any electrical connections that are at tached to the fuel pump.
•Prepare a fuel collector to drain the fuel.
•Prevent fuel spill by securing fuel lines.
•Remove fuel pump from HRVW-625 and HRVW-685 generators enclosure.
•Remove the filter and gasket from the fuel pump housing.
•After fuel pump filter is removed, replace both gaskets and clean the magnet portion inside the cover.
•Clean or replace fuel pump filter.
•Reassemble fuel pump and mount back onto HRVW-625 and HRVW-685 generators enclosure.
•Reconnect all fuel lines and electrical components.
•Check for fuel leaks.

Prevent Water Condensation

Regular inspection and maintenance will prevent accumulation of water and impurities in the fuel tank.
PREVENT water condensation inside the tank during cold weather by maintaining a full tank of diesel fuel.

Clean Inside the Fuel Tank

If necessary, drain the fuel inside the fuel tank completely. Using a spray washer to clear out accumulated deposits or debris.

Inspect the Fuel Tank

In addition to cleaning the fuel tank, the following components should be inspected for wear:

•**Rubber Suspension**: Look for signs of wear or defor mity due to contact with oil. Replace the rubber sus-pension if necessary.
•**Fuel Hoses:** Inspect nylon and rubber hoses for signs of wear, deterioration and hardening.
•**Fuel Tank Lining**: Inspect the fuel tank lining for signs of excessive amounts of oil or other foreign matter.

Assess Drive Belt Tension

Slack drive belt contributes to overheating and insufficient battery charging. Adjust drive belt according to the engine manufactur-er's recommendations.

Daily Drive Belt Inspection

Inspect the drive belt for damage and wear. Horizontal cracks (across the belt) are acceptable. Vertical (direction of belt ribs) cracks that intersect with horizontal cracks are not acceptable. Inspect the belt to determine if it is oil soaked or "glazed " (hard shiny appearance on the sides of the belt).

•Both conditions cause belt to weaken, increase risk of breaking.
•If the drive belt exhibits breaks or glaze, replace it im mediately.

Daily Engine Oil Check

ASSURE HRVW-625 and HRVW-685 generators are level before checking or replacing oil.
REMOVE (pull) the engine oil dipstick from its holder.
ASSESS engine oil level.

•Oil level should be between the upper and lower limit on the dipstick.
•If oil level is low, **ADD** correct amount of engine oil to bring oil level to a normal safe level.
•ALLOW enough time for added oil to flow into oil pan before rechecking.

Maintenance: Drain Engine Oil

•RUN the engine until the engine coolant reaches a temperature of 140° (60°C).
•Turn the engine off.
•REMOVE oil dipstick from its holder.
•REMOVE oil drain cap.
•OPEN oil drain valve.
•DRAIN oil into approved container.

AFTER engine oil is completely drained, reinstall oil drain cap and tighten securely.

•TURN oil drain valve to CLOSED position.

Maintenance: Engine Oil Filter Replacement

•**CLEAN** area around the lubricating oil filter head.
•**REMOVE** engine oil filter with oil filter wrench.
•**COAT** rubber filter seal with oil recommended by manufacturer.
•**INSTALL** new oil filter first by hand until it makes con-tacts with the filter head surface. Tighten it another 3/4 turn using filter wrench.

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Disabling a Generator for Maintenance

There are two conditions when maintenance checks may have to be performed on the unit:

1.When the unit is in standby mode (automatic) and NOT running. To disable the unit from starting in this condition, in order to perform maintenance checks or service, follow the steps in To Disable the Generator From Starting.

2.When the unit is running and providing power to the load. To shut down the unit safely, without damaging loads or the generator, follow the steps for shutting down a unit while in operation. See Shutdown and Restart an Operating Generator. Before shutting down an operating unit for maintenance, always warn personnel that power will be shut down temporarily, so equipment that might be damaged can be properly turned OFF or placed in standby.

To Disable the Generator From Starting

To prevent injury, BEFORE performing any maintenance, disable the generator set from starting and/or connecting to the load:

1.Set the control panel POWER switch to the OFF position.

2.Remove the control panel fuses.

3.Turn OFF power to the battery charger (remove bat tery charger ATC style fuse or open the battery charger circuit breaker located in the load control panel).

4.Disconnect the negative battery cable.

NOTE: The battery charger must be turned OFF BEFORE disconnecting the battery cable to prevent an over-current condition from burning out sensitive control panel components and circuits.

NOTE: Following any maintenance, reverse these steps so the unit is returned to standby setup for normal operation.

Shutdown and Restart an Operating Generator

If the unit is operating and required checks must be performed:

1.Verify power to the load can be interrupted (warn any equipment users that there will be a temporary power disruption). There may be other procedures that must be done before shutting a unit down, depending on application.

2.Open the utility MLCB.

3.Open the generator MLCB components.

4. Allow the unit to cool down (running at no-load) for approximately five minutes to prevent damage to critical engine

5. Push the OFF button. There may be safety tag-outs or lockouts required at this point, depending on application.

6. Perform the necessary maintenance checks or tasks (based on the hourly requirements).

7. When all checks have been completed and any discrepancies corrected, push the control panel AUTO button.

8. When the generator is running, and all engine/ generator parameters (voltage, frequency, coolant temp, oil pressure, etc.) have been verified as correct, close the generator MLCB. The unit will accept and carry the load.

9. Make a last visual inspection of the generator set to make sure it is operating properly.

10. Close the utility MLCB.

MAINTENANCE TASKS

Visually Inspect Unit

Perform a visual inspection of the unit periodically. If problems are found contact your local AHSD. Look for the following:

•Any debris, trash, grass or weed growth, which would obstruct the flow of cooling air into and out of the unit ventilation louvers.

•Visually inspect hoses and hose connections for signs of leakage. This includes all coolant hoses, fuel hoses, exhaust system connections, intake system connections, etc.

•Visually inspect the engine accessory drive belts for evidence of obvious wear, fraying or deterioration, and obvious looseness. A "squealing" sound heard during starting and running could indicate a loose belt.

Long Term Storage: HRVW-625 and HRVW-685

For long term storage of the HRVW-625 and HRVW-685, HIPOWER SYSTEMS recommends the following:

DRAIN fuel tank.

- If draining the fuel tank is impracticable, add appropriate amount of fuel stabilizer to maintain integrity of the fuel.

DRAIN all oil from the crankcase.
REFILL crankcase with high quality detergent oil.
CLEAN entire generator, internal and external.
COVER generating set and store in a clean, dry place.
DISCONNECT battery.
MEASURE engine coolant to ensure proper level. Add engine coolant if necessary.

For trailer-mounted HRVW-625 and HRVW-685 generators, **EXTEND** the life of tires by lifting the trailer off the ground and placing on blocks.

- Trailer should be elevated high enough to prevent tires from touching the ground.
- Alternatively, remove tires after lifting trailer off ground.

Jacket Water Heater and Internal Battery Charger: 120 VAC Input Receptacles

HRVW-625 and HRVW-685 generators are equipped engine block heating elements and internal battery chargers. The elements and chargers are installed with electric cords to connect to a commercial power source.
The engine block heating element and internal battery charger both require 120 VAC to operate. A receptacle has been provided on the output terminal panel to allow commercial power to be applied.
The engine block heating element and internal battery charger ONLY function when commercial power is supplied to them.
The battery charger should always be connected to a commercial power source to ensure that the battery does not get discharged.

DO NOT use jacket water heater when operating HRVW-625 and HRVW-685 generators in HOT climates.
When operating HRVW-625 and HRVW-685generators in COLD climates, use jacket water heater.

- If the generator is used daily, the battery should not require charging.
- If the generator remains idle (not used) for extended periods of time, apply power to the battery charger receptacle via commercial power using a power cord of adequate size.

ENSURE adequate starting capacity by maintaining power supply to the internal battery charger.

Check Engine Fluids

The following checks can be performed by a trained Authorized Operator. Observe all safety precautions outlined in Introduction and Safety.

Check Engine Oil Level

An Authorized Operator should check the levels of engine oil and engine coolant monthly (or every 24 hours of operation) The oil level should be maintained between the FULL and ADD marks on the engine dipstick. Recommended fluids are listed in Engine Oil Recommendations.

To check the engine oil:

1.Locate the engine oil dipstick.

2.The most accurate oil level readings are measured when the engine is cold. If the engine was running, wait at least ten minutes before proceeding.

3.Remove the dipstick and wipe it dry with a clean, lint free cloth.

4.Slowly insert the clean dipstick into the tube. Visually confirm that the dipstick is fully seated in the dipstick tube. A visual inspection is required because some dip sticks will require more effort than others to fully seat.

5.After ten seconds remove the dipstick.
Look at the oil level on both sides of the dipstick. The lower of the two readings will be the correct oil level measurement.

7.Add oil (if necessary) to adjust the level. After adding or changing the oil, the engine should run for one minute before checking the oil level. Remember to wait ten minutes to allow the engine to cool and oil to fully drain into the oil pan.

Typical causes of inaccurate oil level readings:

- Reading the high level of the dipstick.
- Reading the dipstick before the oil fully drains into the oil pan.
- Inserting and removing the dipstick too quickly.
- The dipstick is not fully seated in the dipstick tube.

DANGER

Risk of poisoning. Do not use mouth to siphon coolant. Doing so will result in death or serious injury.
(000149)

WARNING

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

CAUTION

Risk of overheating. Do not use any chromate base rust inhibitor with propylene glycol base antifreeze, boosters, or additives. Doing so will cause overheating and possible equipment damage. (000165a)

Maintenance: Replacing Radiator Coolant

DO NOT remove the pressure cap from the radiator when the engine is hot.

1.WAIT for coolant temperature to fall below 120°F (50°C) before removing pressure cap.
2.TURN coolant drain valve to OPEN position.
3.ALLOW coolant to drain into a suitable container.
4.INSPECT hoses for softening and kinks.
5.INSPECT clamps for signs of leakage.
6.REMOVE and INSPECT radiator cap.
7.FLUSH radiator by running clean water through radia tor until debris is removed.
8.TIGHTEN coolant drain valve to CLOSED position.
9.REPLACE with coolant as recommended by the engine manufacturer.
10.REINSTALL radiator cap. TIGHTEN securely.

Maintenance: Cleaning Radiator Cooling Fins and Tubes

CLEAN radiator when inspection reveals accumulation of dirt and debris on cooling fins or tubes.

BATTERY INSPECTION

DANGER

Electrocution. Do not wear jewelry while working on this equipment. Doing so will result in death or serious injury. (000188)

WARNING

Sudden start-up. Always set the safety disconnect switch to MANUAL before working on equipment. Failure to do so could result in death or serious injury. (000194)

WARNING

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

WARNING

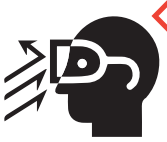
Explosion. Batteries emit explosive gases. Always disconnect negative battery cable first to avoid spark. Failure to do so could result in death or serious injury. (000238)

WARNING

Explosion. Do not dispose of batteries in a fire. Batteries are explosive. Electrolyte solution can cause burns and blindness. If electrolyte contacts skin or eyes, flush with water and seek immediate medical attention. (000162)

WARNING

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



WARNING

Vision Loss. Eye protection is required to avoid spray from spark plug hole when cranking engine. Failure to do so could result in vision loss. (000181)

WARNING

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)

An Authorized Operator should inspect the engine battery system monthly. At this time, the battery fluid level should be checked and distilled water added if needed. Battery cables and connections also should be inspected for cleanliness and corrosion.

Once every six months, an Authorized Service Technician should inspect the battery system. At this time the battery condition and state of charge should be checked using a battery hydrometer. The battery should be recharged or replaced as required.

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

Battery Installation and Replacement

When required, the battery must be replaced with one of equivalent size, voltage, and CCA (cold crank amp capacity). Consult the Unit Specification Sheet or contact the local AHSD for proper battery sizing.
A new battery must be filled with the proper electrolyte and be fully charged before installing.

Preliminary Instructions

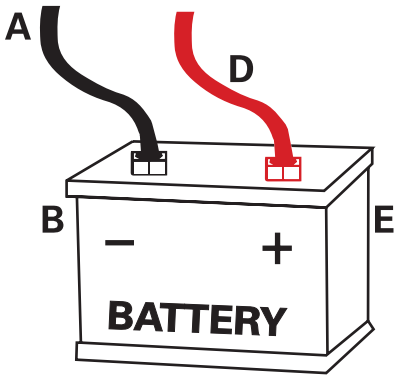
1. Set the POWER switch on the generator control panel to OFF.
2. Turn off utility power supply to the battery charger circuit.

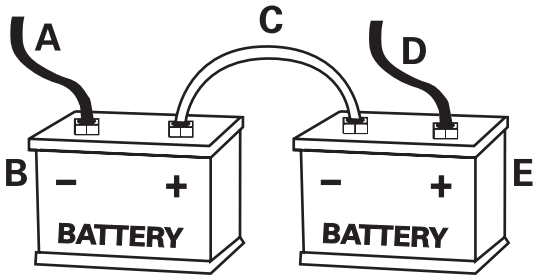
3.Remove the fuse from the generator control panel.
4.Remove the ATC style fuse from the battery charger.

Battery cables are connected to the generator connection points at the factory. Connect the cables to the battery posts as shown in Figure 4-2 and Figure 4-3.

12 VDC System

1.Connect the red battery cable from the starter con tactor to the positive (POS or +) battery post.
2.Connect the black battery cable to the frame ground to the negative (NEG or -) battery post.





A ..... Black Lead to Frame
B ..... Black (-)
C ..... Red or Black Jumper
D ..... Red Lead from Starter Contactor
E ..... Red (+)

24 VDC System

1.Connect the red battery cable from the starter contac tor to the positive (POS or +) post of battery A.
2.Connect the black battery cable to the frame ground to the negative (NEG or -) post of battery B.
3.Connect either a black or red jumper cable from the negative (NEG or -) post of battery A to the positive (POS or +) post of battery B.

Final Instructions

1.Install the ATC style fuse in the battery charger.
2.Install the fuses in the generator control panel.
3.Turn on the utility power supply to the battery char ger circuit.
4.If the unit was previously operational, turn the POWER switch on the generator and push the AUTO button.

! WARNING

Environmental Hazard. Always recycle batteries at an official recycling center in accordance with all local laws and regulations. Failure to do so could result in environmental damage, death or serious injury.
(000228)

Always recycle batteries in accordance with local laws and regulations. Contact your local solid waste collection site or re-cycling facility to obtain information on local recycling process-es. For more information on battery recycling, visit the Battery Council International website at: **http://batterycouncil.org**

! CAUTION

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

Other Maintenance Checks

The following inspections should be performed by an Autho-rized HIPOWER Service Dealer, or an Authorized Operator. These maintenance items require a high level of experience and skill to evaluate and correct.

- Inspect engine accessory drive belts
- Inspect hoses and connections
- Inspect fuel supply system
- Inspect exhaust system

Maintenance and Repair Parts

All non-emissions related service maintenance or repairs should be completed by an authorized service technician to maintain the warranty status of a unit. Emissions related maintenance and repairs may be performed by a person or repair shop of the owner's choosing.

ComAp
The heart of smart control

InteliVision 5

Order code: INTELIVISION 5

Controller Colour Display Unit

Datasheet

Product description

InteliVision 5 is a 5.7“ TFT industrial colour display equipped with configurable active buttons. It is intended for localized visualization and control (in combination with a ComAp controller).

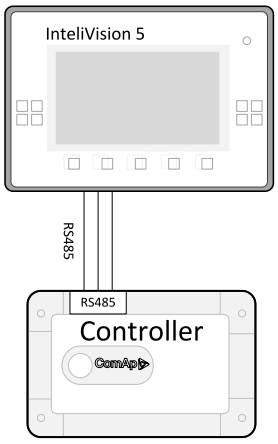
Key features

- 5.7” Colour TFT Display with a resolution of 320 × 240 pixels.
- Plug and play operation (auto configuration based on controller application).
- Direct connection to the controller (converters not needed).
- Communication connection via RS485.
- Configurable active buttons.
- Same language support as the controller including graphic languages.
- Graphical editor for screen configuration.
- IP65 front seal.
- Operating temperature: -30 °C to +70 °C (-40 °C to +70 °C if the device is powered on above -30 °C).

Related products

- InteliSys Gas
- InteliSys^{NTC} BaseBox
- InteliGen^{NTC} BaseBox
- InteliMains^{NTC} BaseBox
- InteliSys^{NTC} BaseBox
- InteliGen GSC
- InteliGen GSC-C
- InteliSys GSC-C

Application overview



Technical data

Power supply

Power supply range	8-36 V DC
Consumption	0.7 A / 8 V DC
Power dissipation	6 W

Screen specifications

Type	TFT
Size	5.7"
Resolution	320 × 240 px
Front Panel Dimensions	245 × 164 mm

Interfaces

RS-485	Galvanic Isolation Terminating resistor - DIP switch

Operating conditions

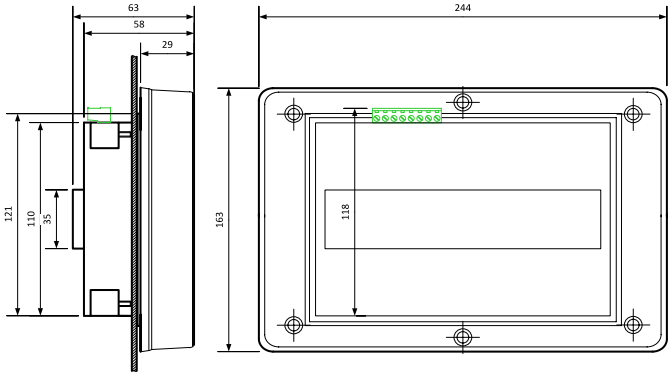
Protection – Front	IP65
Operating temperature	-30 °C to +70 °C (-40 °C to +70 °C)*
Storage temperature	-30 °C to +80 °C

*) Device must be powered on above -30 °C to operate at temperatures to -40 °C.

Related products

Product	Description	Order code
InteliSys Gas	Industrial grade controller for gas gen-set based CHPs and power generation applications	I2GASXXBAB
InteliSys NTC BaseBox	Premium Parallel Gen-set Controller	IS-NTC-BB
InteliGen NTC BaseBox	Complex Parallel Gen-set Controller	IG-NTC-BB
InteliGen NT BaseBox	Complex Parallel Gen-set Controller	IG-NT-BB
InteliMains NTC BaseBox	Mains Supervision Controller Base Unit	IM-NTC-BB
InteliSys NTC Hybrid	Hybrid Gen-set controller	IS-NTC HYBRID
InteliGen GSC	Complex Parallel Gen-set Controller with Detachable Colour Display	IG2GSCXXBAB
InteliGen GSC-C	Complex Parallel Gen-set Controller with Detachable Colour Display	IG2GSCCXBAB
InteliSys GSC-C	Premium Gen-set Controller	IS2GSCCXBAB

Dimension and mounting



Certificates and standards

- EN 60068-2-6 ed.2:2008
- EN 60068-2-27 ed.2:2010
- EN 60068-2-30, May 2000
- EN 60068-2-64
- EN 61010-1:2003

List of standards is available on: https://webstore.iec.ch/

Manufacturer:
ComAp a.s.
Czech Republic
Phone: +420 246 012 111
Fax: +420 266 316 647
E-mail: info@comap-control.com
Web: www.comap-control.com

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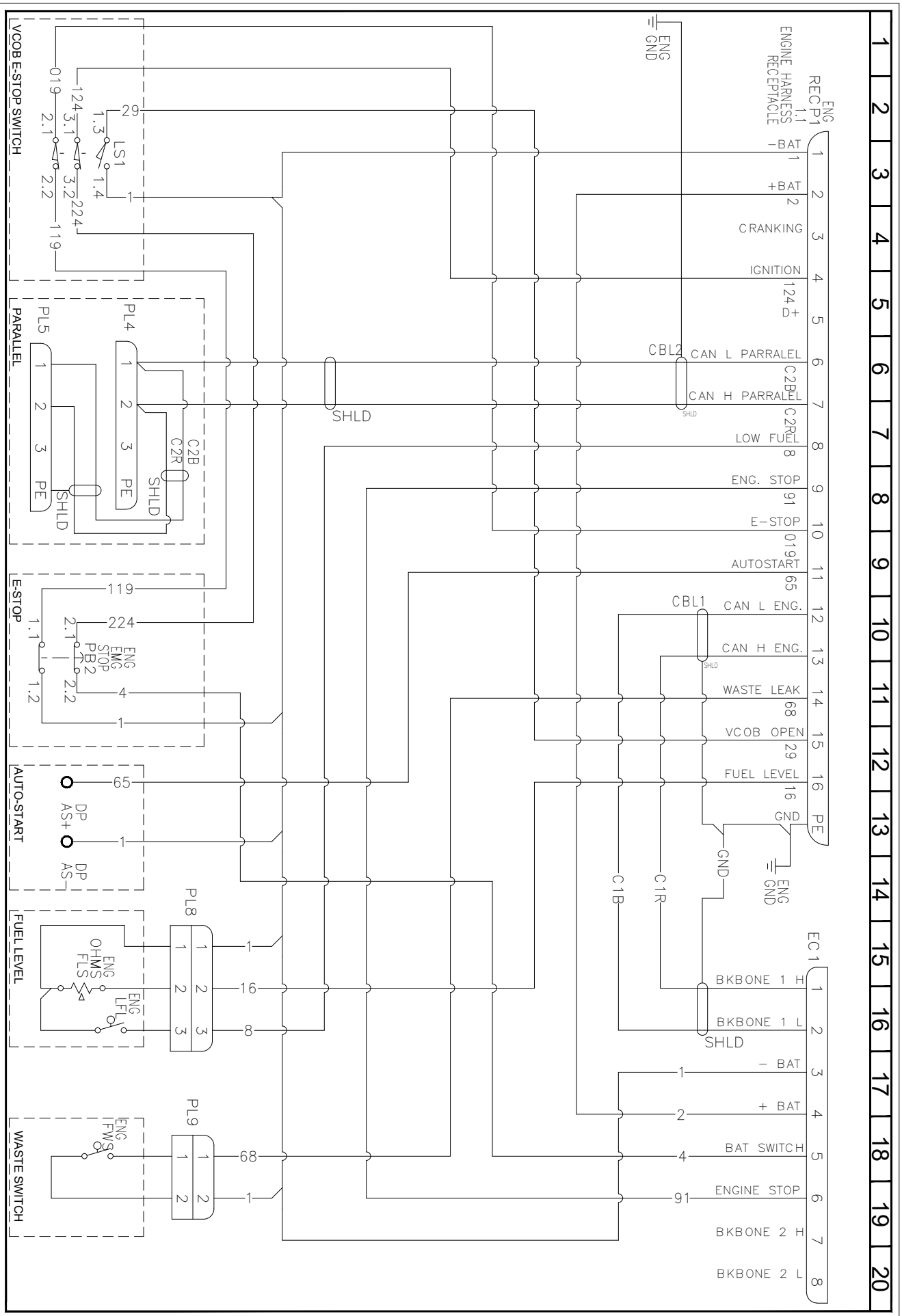

HIMOINSA POWER SYSTEMS, INC. OFFICE: 913-495-5557 WWW.HIPOWERSYSTEMS.COM

HRVH T4F PROJECT
CONTROL PANEL
VOLVO PENTA
ENGINE HARNESS

2290990

1 OF 1

HIPOWER® generating sets

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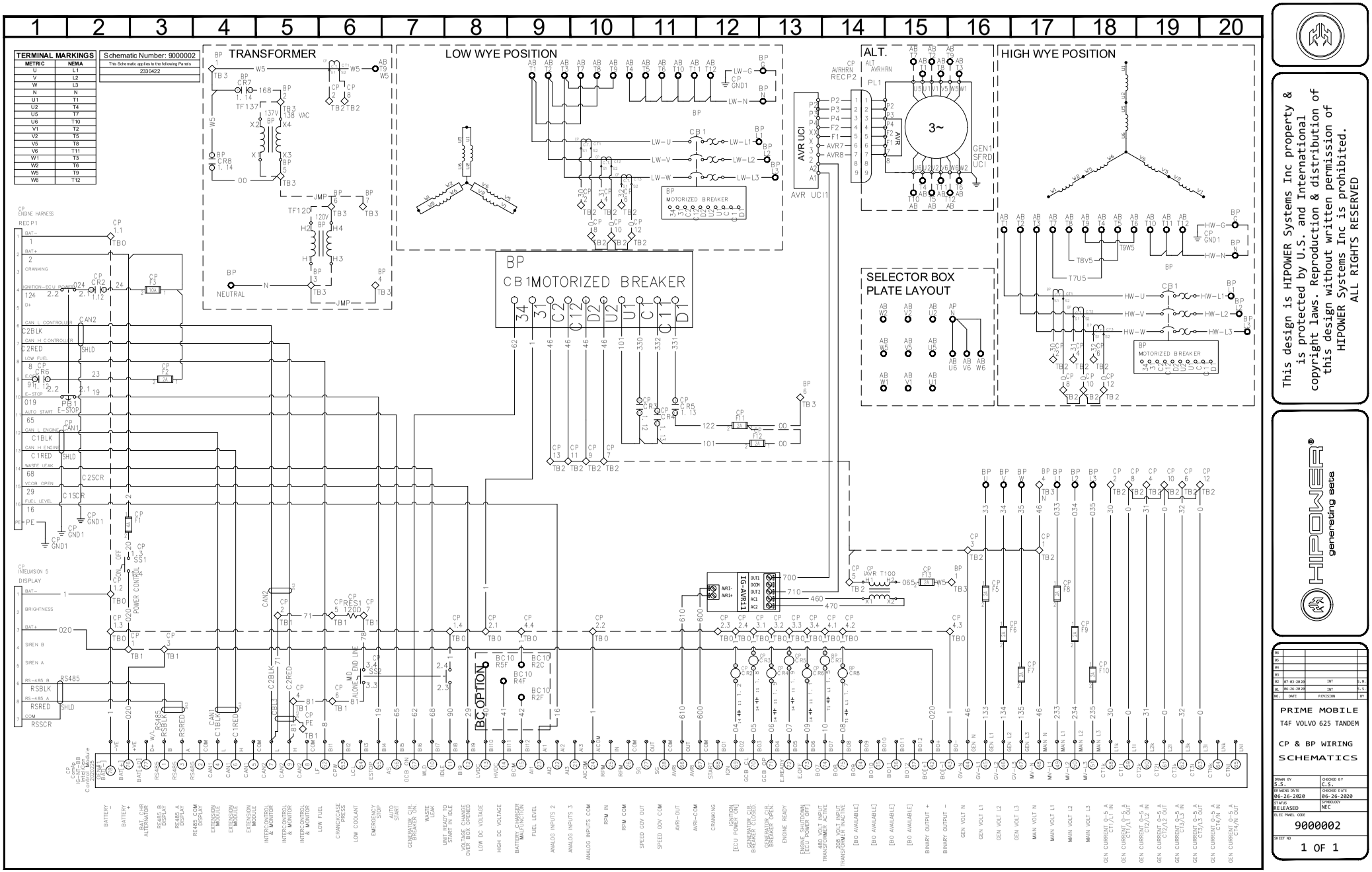
27. Electrical Drawings



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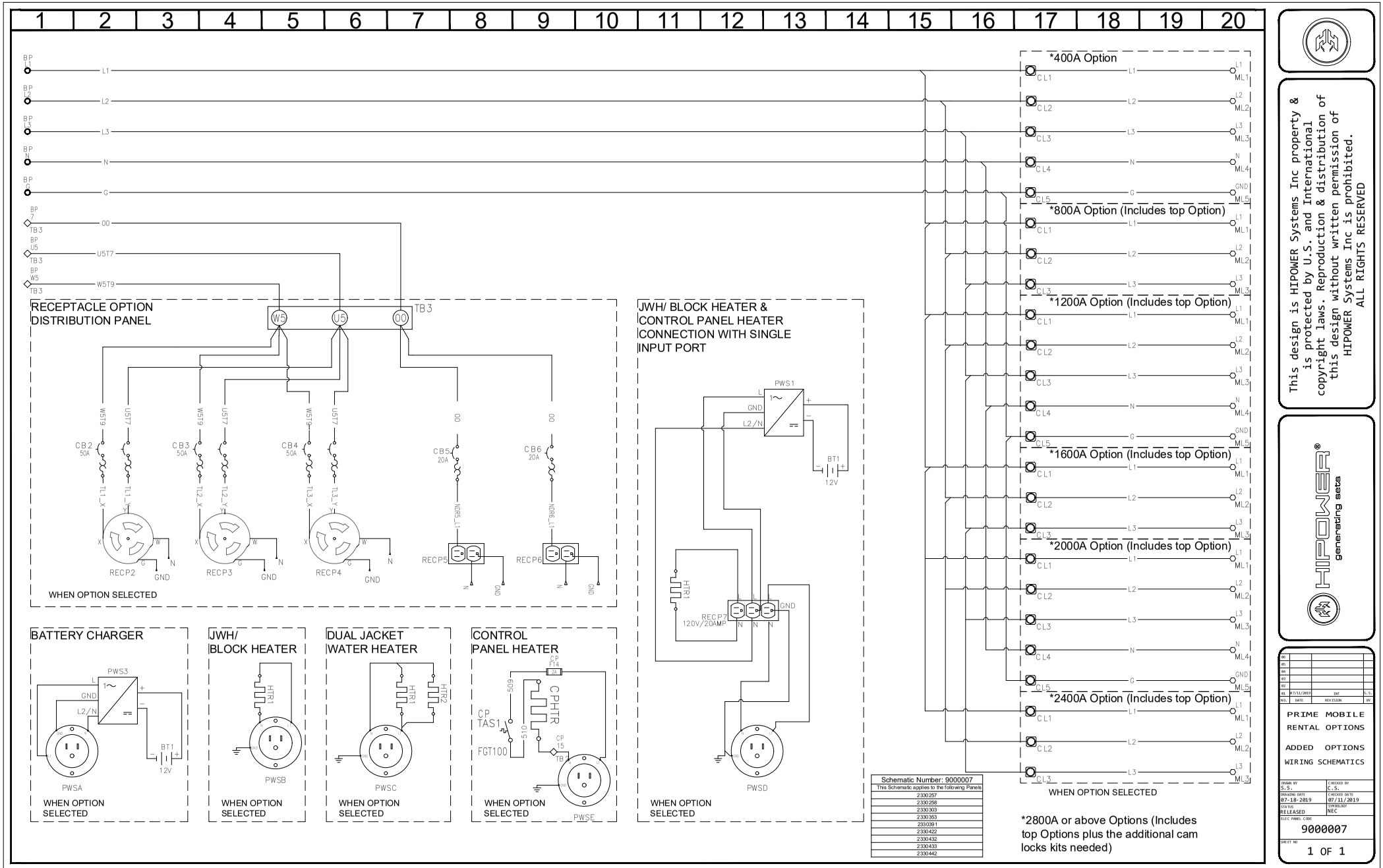
27. Electrical Drawings



Schematic Number: 9000007
This Schematic applies to the following Panels
2330257
2330258
2330303
2330353
2330391
2330422
2330432
2330433
2330442

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NO.	DATE	REVISION	BY
01	07/11/2019	INT	S.S.

PRIME MOBILE
RENTAL OPTIONS
ADDED OPTIONS
WIRING SCHEMATICS

DRAWN BY	CHECKED BY
S.S.	C.S.
DRAWING DATE	CHECKED DATE
07-18-2019	07/11/2019
STATUS	SYMBOLOGY
RELEASED	NEC

ELEC PANEL CODE
9000007

SHEET NO
1 OF 1

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