Installation Instructions

Trane Rental Services

Power Generators

⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

August 2022 **SRV-SVN04E-EN**

Introduction

Read this manual thoroughly before operating or servicing this unit.

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:

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

⚠CAUTION Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.

NOTICE Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants-including industry replacements for CFCs such as HCFCs and HFCs.

Important Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified. The Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

⚠WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.

All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

⚠WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury.
Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- **Before installing/servicing this unit, technicians MUST put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). ALWAYS refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.**
- **When working with or around hazardous chemicals, ALWAYS refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labelling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.**
- **If there is a risk of energized electrical contact, arc, or flash, technicians MUST put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, PRIOR to servicing the unit. NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.**

⚠ WARNING

Follow EHS Policies!

Failure to follow instructions below could result in death or serious injury.

- **All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.**
- **Non-Trane personnel should always follow local regulations.**

Copyright

Trademarks

All trademarks referenced in this document are the trademarks of their respective owners.

Revision History

Minor edits to the document.

Table of Contents

Product Safety Information

The procedures described in this document are to be used as suggestions only. It is the sole responsibility of the customer to ensure that the procedures described herein are carried out by a licensed professional within the guidelines on the National Electric Code (NEC) as well as any other local codes for your municipality/city/county and state.

NOTICE

Safety Notice!

Be sure that you are qualified to operate this generator or that you have hired a qualified professional to do so for you. Equipment connected to this generator may have their own inherent risks including, but not limited to, rotating parts and exposed electrical wiring. These risks must be considered whenever equipment is connected to a generator. Loads must always be disconnected before starting the generator. Improper use could result in serious or fatal injuries.

Installation, repairs and service of Trane rental generators require qualified technicians with experience in electrical generators and liquid-cooled, diesel engines. The customer is responsible for having repairs, installation, and operation performed by qualified individuals. The precautionary statements made in this manual serve as general guidelines only. It is impossible to list all possible risks that may exist in the use of this rental generator. Whether you use a procedure covered in this manual, or a procedure that is NOT covered in this manual, it is your responsibility to seek professional advice as to the safety of the procedure prior to operation. This equipment generates high voltages and currents that can pose risks to the operator as well as anyone near the generator or near any equipment connected to the generator.

- Never make or remove wiring connections while the engine is running.
- Always allow engine to cool before fueling or servicing.

Customer's Responsibility

For the time the rental generator is in the customer's possession, it is the customer's responsibility to ensure safe operating conditions including, but not limited to:

- Correct and safe installation
- Complying with the NEC as well as any federal, state, or local codes
- All operators and persons with access to the generator are properly trained to do so
- Manuals and information regarding the rental generator are made available to all operators and persons with access
- Providing the necessary fuel for operation
- Facilitating regularly scheduled preventative maintenance as outlined in this manual
- Limiting access to rental generator by persons that are not qualified or trained

Read this Manual Thoroughly

If you do not understand any comment made in this manual, seek expert advice before operation.

Identification

For detailed specifications on a particular rental generator, please refer to Trane Rental Service's "Temporary Power Distribution" Catalog (SRV-PRC007*-EN).

RSGP xxxx F x xx

Generator Size:
0036 = 36 kW
0055 = 55 kW
0060 = 60 kW
0096 = 96 kW
0100 = 100 kW
0120 = 120 kW
0140 = 140 kW
0144 = 144 kW
0175 = 175 kW
0200 = 200 kW
0350 = 350 kW
0450 = 450 kW
0500 = 500 kW
0725 = 725 kW
0750 = 750 kW
0900 = 900 kW
1125 = 11125 kW
1450 = 1450 kW

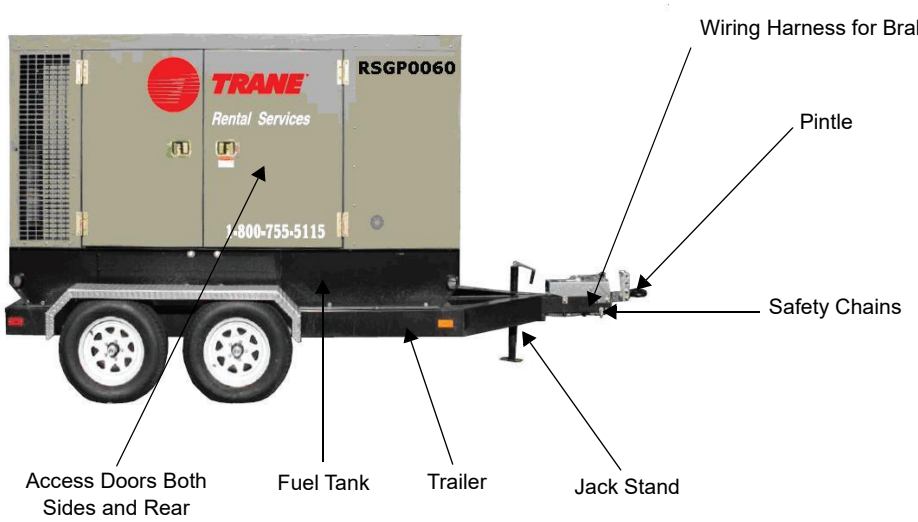
Mfg
0 = Baldor
1 = SDMO
2 = MQ

Incremental Designator

Large generator (500 kW, 750 kW, 1450 kW, 725 kW, 1125 kW)

Example of Baldor style Containerized generator

Towable generator (36 kW through 450 kW)



Before operating your rental generator, please take the time to locate and identify the items referenced in the rest of this manual.

Receiving and Placement

Receiving and Inspection

⚠WARNING

Heavy Objects!

Failure to properly lift waterbox could result in death or serious injury.
Each of the individual cables (chains or slings) used to lift the waterbox must be capable of supporting the entire weight of the waterbox. The cables (chains or slings) must be rated for overhead lifting applications with an acceptable working load limit. Refer to the waterbox weights table.

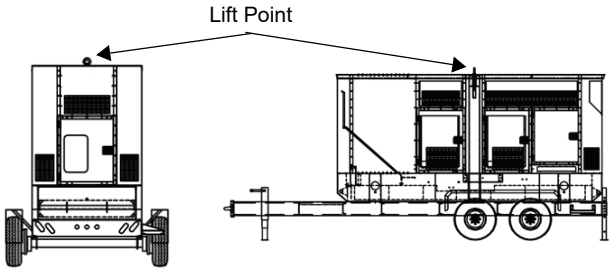
Generator Off-loading

Before lifting is attempted, ensure that all chains or straps that may be securing the generator to the shipping vehicle have been detached. When attaching lifting chains or straps, make sure to connect them only to designating lifting eyes or hooks. The generator enclosure and the attached trailer are not designed to support the weight of the generator during lifting.

Note: *Depending on the application, it may be requested that generators be shipped without a trailer.*

Prior to lifting, identify possible "pinch points" where a shift in weight could result in the pinning of person, appendages, or nearby fragile equipment. To avoid swinging, position the hoist to be at the center of gravity. When the lifting straps have been securely attached, perform the lift slowly in order to determine if the load is balanced. If the there is any indication that the generator will tip or swing, set it back down and make the necessary adjustments to the straps/chains and/or the hoist's position.

During the lift and the movement of the generator, all personnel should wear appropriate Personal Protective Equipment (PPE) including, but not limited to, hard hats and safety gloves. People should not stand close to, or under, a generator that is being lifted or moved. A chain/strap or hoist failure should always be considered a possibility, and as such, all personnel should stand clear.



Generators 500 kW* and Larger

Larger generators are housed in a trucking container which is movable by trucks using a "Fifth Wheel" coupling. Hitching, movement, and placement should be performed by a qualified individual, as defined by state and local code, using a properly rated truck.

*Except 450F2 who also have a Fifth Wheel Coupling.

Positioning

⚠WARNING

Combustibles and Toxic Gasses!

When positioning the rental generator for operation, there are inherent risks resulting from the extreme temperatures of the machinery and also from the toxic exhaust fumes.
Failure to follow the safety requirements in this section could result in death or serious personal injury, as well as property damage due to fire, smoke, or exhaust fumes.
It is impossible to list all possible dangers, and as such, it is the responsibility of the customer to have the placement handled by a professional qualified to identify these risks.

Keep in mind that Trane rental generators are designed to withstand the weather and are meant to be positioned outdoors. It is not necessary to provide overhead protection from the elements other than checking/maintaining the provided exhaust rain cap or moisture drain in the base of the exhaust stack.

When choosing a general vicinity to place the generator, several things must be considered. First, always place the generator outside where ventilation, for cooling of the engine and dissipation of exhaust gasses, is plentiful. Ensure that the exhaust is directed away from occupied buildings as well as not directed toward any fresh air intakes or windows.

Next, it is best to position the generator as close as possible to the equipment being powered. This improves the ability of the operator to safely operate the generator as it improves awareness and visibility of the cables and equipment that are energized at start-up.

The generator should not be placed on or near any forest, brush covered, or dry-grass covered land where combustible leaves, brush, etc. could come in contact with the hot parts of the generator.

The area should also be easily and quickly accessible by operating and maintenance personnel, with as much restriction as possible to individuals not qualified to work on, or around, generators.

Once a general vicinity has been chosen to place the generator, keep the following guidelines in mind when choosing the exact spot on which to orient the generator:

- Avoid placing the generator next to any equipment that generates heat, moisture, corrosive vapors/substances, metal particles, and dust.
- Avoid areas that are close to storage of flammable materials.

- Maintain at least 3 feet clearance on all sides to promote adequate air flow.
- Choose an area that is smooth and level.
- Area should be free of debris and leaves.
- Area should be free of drainage or flooding, and should not be near any water pipes.

Once the generator has been properly placed, the area should be well maintained to avoid build-up of unwanted debris or other combustibles. It should also be clearly identified, either by sign or other restrictive means, that non-qualified personnel should not approach the generator. There is no smoking or working with flammable materials near the generator.

Towing the Generator

⚠WARNING

Improper Towing!

Failure to follow the safety requirements in this section could result in mechanical failure in-tow, which could result in death or serious personal injury, as well as property damage.
It is critical that the vehicles used to move the rental generator be properly rated in terms of weight, braking capacity, hitch connection, and any other classifications pertaining to the type of vehicle being used. Ensure that all wheels, lug nuts, hitches, safety chains, towing vehicles, etc have been properly maintained and inspected.

- **Trane rental generators (sizes 450kW and below) have Pintle-type trailer hitches installed, which are not compatible with ball type hitches.**
- **Never move a generator set that is running.**
- **Make sure the tow vehicle is able to tow the load as brake capacity is extremely critical and the tow vehicle must be able to handle the additional weight of the trailer mounted generator. Radiator and transmission cooling must also be considered.**
- **Be sure hitch capacity is equal to or greater than the load when mounted on the vehicle.**
- **Make sure the safety chain(s) rating is equal to or greater than twice the maximum gross vehicle weight rating of your trailer.**
- **It is illegal to transport passengers in any trailer.**

Selecting the Proper Towing Equipment

When selecting the proper towing equipment, the two most important factors are the Maximum Gross Vehicle Weight (MGVW) and the tongue weight (trailer tongue weight at the hitch). The MGVW is the total weight of the trailer plus the payload in the trailer. The tongue weight is the downward pressure exerted at the coupler. The easiest way to measure the gross vehicle weight is to place the loaded trailer on a vehicle scale making sure that the scales are supporting the entire weight of the loaded trailer. The easiest method to measure tongue weight is to place the jack stand (trailer tongue) on a scale making sure the trailer is level. The trailer tongue should be level and in its normal towing position. Tongue weight should be 10 percent of trailer weight and not more than 10 percent of MGVW.

Tow Vehicle

Make sure the vehicle you are using is capable of towing the weight. Check the vehicle Owner's Manual for towing capability or contact the vehicle manufacturer for this information. Vehicle brake capacity is extremely critical and the tow vehicle must be able to handle the additional weight of the trailer mounted generator. Radiator and transmission cooling must also be considered. Seek expert advice to select the proper tow vehicle.

All trailers must have taillights, brake lights and turn signals connected to the towing vehicle's electrical system. Check to ensure these features are operational before traveling on roads.

Towing Heavy Trailer Loads

1. Trailer brakes - In all cases refer to the vehicles Owner's Manual and the trailer operating manual to be certain you have an adequate braking system to handle the vehicle/ trailer combination. Also, state and local requirements, road and weather conditions, grade of road, etc. should be considered.
2. Additional equipment - The following items may be helpful for towing heavy loads. Consult your vehicle Owner's Manual or dealership for recommended towing accessories.
   a. Overload springs
   b. Overload or air shocks
   c. Transmission oil cooler
   d. Engine oil cooler
   e. Coolant recovery system
   f. Heavy duty fan
   g. Side view mirrors
   h. Sway control

Safe Driving Tips

1. Loading Trailer - The trailer should be loaded so that the downward tongue weight is approximately 10 percent of the gross vehicle weight. The trailer tongue should be level with the tow vehicle coupling during towing. Adjust load, hitch and coupling as necessary to ensure trailer tongue remains level during towing.
2. Following and stopping distance - The stopping distance is increased when towing a trailer. The distance maintained from the vehicle in front of the towing vehicle should be increased accordingly, depending on road and weather conditions. Avoid sudden stops if possible.
3. Passing - Accelerating and passing should be done slowly to allow extra distance for passing. Signal well in advance

when passing and returning to the proper lane. Allow for the extra length of the trailer before changing lanes. Never change lanes abruptly as this may cause the trailer to sway and push the tow vehicle into a “jack knife” condition.

4. Turning - Allow for the extra length of the trailer. Drive slightly beyond normal turning point to avoid running over curbs and soft shoulders. Turning radius increases when towing.
5. Uphill and Downhill Grades - Reduce speed and use a lower transmission gear for steep or long up or down hill grades. Maintain safe distance from other vehicles.
6. Parking -
   a. Avoid parking on uphill or downhill grades
   b. Place transmission in “PARK”
   c. Apply parking brake
   d. Use wheel chocks
   e. In a parking lot, avoid parking close to other vehicles. Turning radius is greater and it may be impossible to get out of a parking space after a few other vehicles have parked around your vehicle.
7. Trailer Sway - If trailer sway occurs, reduce speed. Apply trailer brakes rather than car brakes to control sway. See Step 1 and ensure trailer tongue remains level during towing. If sway persists, seek expert advise.
8. Trailer Backing - Backing a trailer can be frustrating. The most important item to remember is that the trailer will go in the opposite direction of the tow vehicle. It is helpful to have another person help you back the trailer and watch for objects. Turn the vehicle’s wheels to the right to make the trailer go left, and vice versa. Put your hand at the bottom of the steering wheel. The trailer will go in the same direction your hand moves (moving your hand to the right will cause the trailer to go right, and vice versa). Sharp steering wheel corrections will cause the trailer to jackknife and may cause damage to the rear of the tow vehicle or the front of the trailer.

Safety Checks

The following items should be checked before each use and once every 100 miles of towing:

1. Verify the tow vehicle is designed to tow the trailer before trailer is connected to the vehicles hitch. Using a tow vehicle that is too small is very dangerous.
2. Verify the stop, tail and turn signals are working properly. Replace damaged lenses, reflectors or bulbs.
3. Check wires for good connections and possible fraying or wearing of insulation.
4. Check and properly maintain the trailer and hitch.
5. Inspect hitch for damage. The hitch can be damaged in parking, hitting curbs, dragging when crossing ditches or railroad tracks.
6. Check and properly tighten all bolts on trailer, hitch, and coupler (including trailer wheels).
7. Check safety chains for wear and do not allow them to drag on ground or roadway.
8. Test breakaway system. Hydraulic surge brake system, normally has a cable or chain connected to the tow vehicle. In a break away condition, this cable or chain activates the cylinder and operates the brakes as the trailer stops. An electric brake system, the emergency breakaway system has a battery, charger, breakaway switch with a pull pin and cable connected to the tow vehicle. In a break away condition, this cable operates the electric brakes (power provided by the brake battery) as the trailer stops.
9. Check all generator mounting hardware for tightness.
10. Check tow vehicle tires for wear and proper inflation. (Check vehicle Owner's Manual for proper level of inflation of tires for towing a trailer).
11. Check trailer tires for wear and proper inflation. Replace only with a tire of the same size and capacity ratings.
12. Carry emergency flares, reflectors and fire extinguisher.
13. Carry spare light bulbs and fuses.
14. Check wheel bearings and re-greased after the first 100 miles, and every 4000 miles thereafter or at least once a year. Wheel bearing grease or a good grade of multipurpose grease should be used for packing wheel bearings. If you don’t know how to repack your wheel bearing, take your trailer to a service shop. Be sure to properly tighten the axle nut and wheel nuts during assembly.
15. For proper tow vehicle maintenance while towing a trailer, check vehicle’s Owner Manual and manufacturer’s specifications.

Towing Instructions

1. Be sure the generator is off.
2. Shut all enclosure doors and latch the locks.
3. Back the tow vehicle to within a few inches of the trailer coupler.
4. Be sure the Coupler Handle is in the “UP” (open) position or the Pintle hook is open.
5. Adjust the trailer jack for the height of the hitch on the tow vehicle.
6. Back the tow vehicle so the trailer coupler is directly over the Pintle hook. Latch the Pintle and lock the Pintle device securely.

Note: *If this is not done properly, the trailer may become unhitched when it is towed.*

7. Retract the front jack, pull the jack pin and rotate the jack 90 degrees from vertical to the horizontal position, making sure the self-locking pin reseats and the jack is secured to the tow bar (stowed position).
8. Connect safety chains, making sure to cross them. If a safety chain is too long, simply twist it a few turns to shorten the chain before attaching to the tow vehicle.
9. Connect the trailer light connector to the tow vehicle.

10. Test the trailer lights to ensure they are operational.
11. Check tires for proper inflation.
12. Check wheel lug nuts for correct tightness (see “Lug Nut Tightness,” p. 11.

    Wheel nuts/bolts should be torqued before the first road use and after each wheel removal. Check and re−torque after the first 50 miles and again at 100 miles. Check periodically thereafter.
13. Verify that all jacks, pins, cables, and doors are secured and trailer tongue is level.
14. Remove tire chocks (if used). These prevent the trailer from moving when parked.

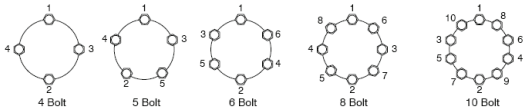
Lug Nut Tightness

It is necessary that all lug nuts are installed, in good condition, and properly tightened.

Be sure to use only the fasteners matched to the cone angle of your wheel (usually 60 or 90 degrees.) The proper procedure for attaching your wheel is as follows:

1. If a wheel is removed and installed, start each nut by hand to prevent cross threading.
2. Tighten lug nuts in the following sequence.
   a. Tighten each bolt in the sequence shown in figure below and tighten to one half the torque specified until all lug nuts are tightened to one half the torque.
   b. Tighten each bolt in the sequence shown in figure below and tighten to three fourths the torque specified until all lug nuts are tightened to three fourths the torque.
   c. Tighten each bolt in the sequence shown in figure below and tighten each to the specified torque until all lug nuts are tightened to the correct torque.

Tightening Sequence



Torque Specification

Description	Application	Minimum Torque (ft–lb)	Maximum Torque (ft–lb)
1/2 in Cone nut	12 in - 13 in Wheel 14 in - 16 in Wheel	50 90	65 120
5/8 in Cone nut	Flat Disc Wheel	175	225
5/8 in Cone nut	Clamp Ring	190	210
3/4 in Hex nut	Demountable Ring Clamp	210	260

Trailer Setup

Carefully read all instructions before starting.

1. Locate a suitable, level location. Also be sure there are no overhead wires or obstructions.

   The trailer is balanced so the majority of the weight rests on the tow bar (Jack). If on a minor incline, the safest way to position the tailer is to have the tow bar facing down the incline (front of the trailer lower than the rear of the trailer).
2. Install tire chocks if used. These prevent the trailer from moving when parked.
3. Disconnect the safety chains and the trailer light connector from the tow vehicle.
4. Pull the pin on the front jack and rotate the jack 90 degrees to the vertical position. Lock the jack in the vertical position using the pin to secure it.

   Release the Pintle hook.
5. Use the jack to raise the trailer coupler from the ball hitch of the tow vehicle.
6. The tow vehicle can now be moved away from the trailer.
7. Use the jack to level the trailer for operation.

Installation

Trane Rental Services generators come completely assembled. The procedures described in this document are to be used as suggestions only. It is the sole responsibility of the customer to ensure that the procedures described herein are carried out by a licensed professional within the guidelines of the NEC, as well as any other local codes for your municipality/city/county and state.

Installation requirements are as follows:

- Electrical Wiring
- Ground Connection
- Battery Terminal Connections
- Fueling
- Post Installation Checks
- Maintenance

On generators 500 kW* and larger, installation and operation requires access to the interior of the container, which is accessible through the doors on the side of the container. Behind doors is a hinged set of stairs.

*Except 450F2 who also have a Fifth Wheel Coupling.

⚠WARNING

Heavy Objects Behind Door!

Failure to stand clear could result in serious injury or death.
Stand clear when opening in the event that the stair set has shifted during transit. Stairs that have become dislodged could fall when doors are opened.

Electrical Wiring

Class 1 wiring methods must be used for field wiring connections to terminals of a class 2 circuit. It is the responsibility of the customer to arrange for these procedures to be performed by a licensed electrical contractor and ensure conformance to all applicable codes including local codes peculiar to your municipality/city/county and state. Wire size and insulation type should be as required by NEC and local codes.

⚠WARNING

Electric Shock!

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

⚠WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.
All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

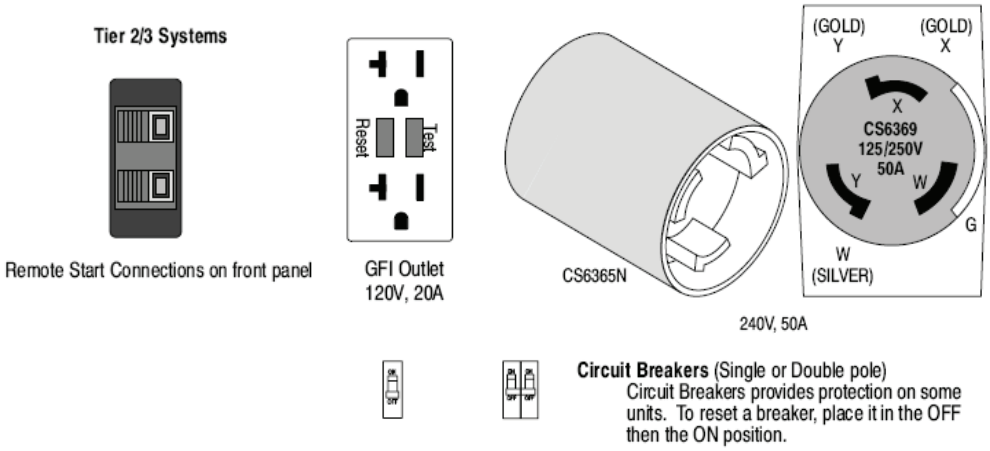
Intended purpose of this generator set is to provide electrical power when the main utility power supply is interrupted or not available. Therefore, it is important that all the wiring that connects the generator set with the facility, transfer switch, distribution box, Trane rental equipment, etc. be properly installed.

Single Phase circuit protection is provided within the generator. The power output connections are rated and sized according to the kW of the generator. Additional overcurrent protection may be required depending on application and applicable regulations and codes.

Three phase circuit protection is provided by the generator. When connecting the generator output to an electrical load, a UL listed circuit breaker with the appropriate ratings shall be provided within 25 feet of the generator. Use only copper wires.

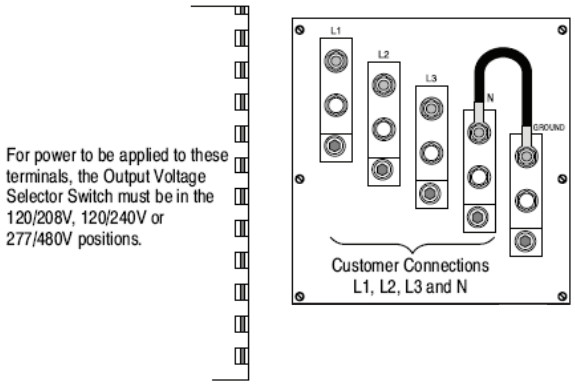
Single Phase Connections

Single phase power is available whenever the generator is in operation.



Three Phase Connections

All rental generators have "whips", or short lengths of wire with cam-type connectors installed in the three phase connections. These whips allow for connection of Trane rental power cable without requiring direct access to the three phase power lugs on the generator. Please contact Trane Rental Services or your Trane sales representative if these cables are missing or damaged.



Automatic Transfer Switch

An Automatic Transfer Switch is required whenever a generator is used as an emergency backup power source. Transfer switches should be placed indoors if possible. If outdoors, it should be protected from the elements as much as possible. Contact Trane Rental Services if you require an Automatic Transfer Switch.

Remote Start Contacts

This two wire connection is connected to the generator's Engine Start Contacts and will start and stop the generator when connected to a remote start contact, such as on an Automatic Transfer switch. A two-pole normally open contact may also be used to start the generator using the Remote Start Contacts.

Shore Power

Shore power receptacles receive customer supplied power to charge the batteries or power the block heater. Please refer to your specific generator for plug types. For models 350 kW and up, the generator may require a 240 V power source for the battery charger and/or the block heater. An extension cord which is properly sized and has the appropriate plug may be used to connect the Shore Power receptacle. These should be connected when the generator is not in use as it will power the engine block heaters as well as the battery charger. This will prevent complications that may prevent the generator from starting properly. The Shore Power connection is not required while the generator is in use as internal battery charging and radiant heat will eliminate the need for external power.

NOTICE

Generator Engine Failure!

Failure to do so could result in serious damage to the engine. The engine block heaters must be powered, via the shore power receptacles, for at least one hour before start-up is attempted.

General Wiring Considerations

Route wiring such that they do not come in contact with sharp edges or surfaces that may cut or chafe the insulation. Take care to route wires such that they do not come in contact with potentially hot surfaces.

Never connect or disconnect wiring during operation. Always connect load circuits before starting the engine and use external branch disconnects etc. to switch loads On/Off.

Grounding

Frame Ground Connection

⚠WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.
All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

It is important for safety and operation that the generator and all connected equipment share a common earth ground. This may require driving an earth grounding rod into the earth. Proper ground connection should be connected to the exposed, conductive frame of the generator.

Battery Terminals

⚠WARNING

Live Electrical Components!

Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.
When it is necessary to work with live electrical components, have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks.

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

A battery presents a risk of electrical shock hazard and high short circuit current. Disconnect the battery's ground terminal before working in the vicinity of the battery or battery wires. Precautions are to be followed when working on batteries:

- Remove watches, rings, necklaces and other metallic objects
- Use tools with insulated handles
- Wear safety goggles, gloves, and boots

The battery electrolyte is a dilute sulfuric acid that is harmful to the skin and eyes. It is electrically conductive and corrosive. The following precautions are to be followed when working on batteries:

- Wear full eye protection (safety glasses or goggles) and protective clothing.
- Where electrolyte contacts the skin, flush the area immediately with water and wash it off using soap and water.
- Where electrolyte contacts the eyes, immediately flush the eye thoroughly with water and seek medical attention quickly.
- Spilled electrolyte is to be washed down with an acid neutralizing agent. A common practice is to use a solution of 1 pound (500 grams) bicarbonate of soda to 4 gallon (4 liters) of water. The bicarbonate solution is to be added until evidence of reaction (foaming) has ceased. The resulting liquid is to be flushed with water and the area dried.

A battery presents a risk of fire because they generate hydrogen gas. The following precautions are to be followed when working on batteries:

- Do not mutilate or attempt to "jump start" a battery.
- Do not smoke when near batteries.
- Do not cause flame or spark in vicinity of battery.
- Discharge static electricity from your body before touching batteries.

Battery Installation

⚠WARNING

Electric Shock!

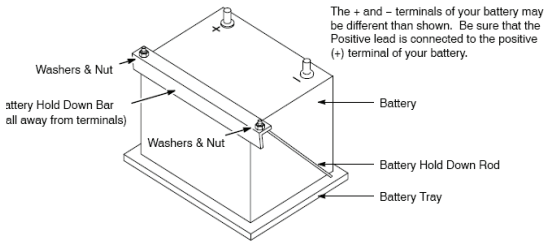
Disconnect the battery's ground terminal before working in the vicinity of the battery or battery wires. Contact with the battery can result in electrical shock when a tool accidentally touches the positive battery terminal or wire. The risk of such shock is reduced when the ground lead is removed during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

In the event that the battery on your rental generator requires replacement, please contact Trane Rental Services for information on a suitable replacement. Installation and

servicing of batteries is to be performed by personnel knowledgeable of batteries and the required precautions.

Keep unauthorized personnel away from batteries

1. Open access doors and locate battery tray.
2. Remove battery cables from the battery, the (−) negative first then the (+) positive.
3. Remove the Battery Hold Down Bar and Rods.
4. Remove the old battery and place the correct new battery.
5. Install the Battery Hold Down Bar and Rods
   a. Place the bent end of the Battery Hold Down Rod through the hole in the Battery Tray.
   b. Place the threaded end of the Battery Hold Down Rod through the hole in the Battery Hold Down Bar and secure with flat washer, lock washer and nut.
   c. Repeat steps a and b for the other Battery Hold Down Rod.



6. Connect the positive lead to the positive (+) battery terminal.
7. Connect the negative lead to the negative (−) battery terminal.
8. Do not lay tools or metal parts on top of batteries.
9. Connect charging source to the battery terminals.

Fueling

⚠WARNING

Flammable Fluids!

Failure to follow the safety requirements in this section could result in death or serious personal injury, as well as property damage due to fire or explosion.
Diesel fuel is flammable and poses a fire hazard. Do not expose the fuel to excessive heat, pressure, or open flames or sparks.

Trane Rental Services generators will usually be shipped with a full amount of diesel fuel except when noted in the Rental Agreement. Trane Rental will ship generators to the site with a specific amount of fuel so as to avoid slushing in the fuel tank and also to avoid making it overweight at the time of transportation. No external fueling tank is required as the generators have integral gas tanks mounted in the base of the generator. Local fueling services are available to keep your generator fueled and ready for use. Contact Trane Rental Services for assistance in contacting such services.

During storage and refueling, use only properly rated containers and fueling equipment. Refuel with care and use clean and properly operated fuel transfer equipment.

Do not overfill the fuel tank. Only fill the tank to within ½ inch of the top of the tank to allow space for fuel expansion. Overfilling of tank may cause fuel to spill out onto engine and cause fire or explosion.

On generators 450 kW* and smaller, the fueling port can be found in the floor of the generator inside one of the main compartment doors.

*Except 450 kW MQ generators, whose fueling port can be found outside at the end of the container.

On generators 500 kW and larger the fuel tank is located inside the rear doors of the container.

Post Installation Checks

⚠WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.
Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

⚠WARNING

Safety Requirements!

Failure to follow the safety guidelines in this section could result in death or serious personal injury.

- Be sure that you understand how to stop the engine quickly in case of an emergency situation.
- Always wear safety glasses with side shields and hearing protection when working near the generator and ensure that all guards and covers on the generator are closed or in place. Also ensure that all hands, feet, tools, and clothing are clear of any electrical or mechanical components.
- Keep a suitable fire extinguisher in the vicinity in the event of a fire.

Note: *Trane Rental Generators are supplied with a fire extinguisher.*

- Improper operation may cause violent motion of connected equipment. Be certain that unexpected movement will not cause injury to personnel or damage to equipment.
- Never start the engine unless the installation and operation of the generator are deemed safe by qualified professionals.
- Be sure that you are completely familiar with the safe operation of this equipment as well as any equipment

connected to it. The operator is responsible not only for the rental generator but also any other damage caused by improper operation. Be sure to keep a copy of this manual with the generator so that all users can be properly informed of its safe operation.

- Generators that have been in transit or storage for long periods may be subjected to extreme temperature and moisture changes. This can cause condensation and the generator windings should be thoroughly dried before bringing the generator up to full nameplate voltage. If this precaution is not taken, serious damage to the generator can result.

Note: *These precautions are especially necessary in locations such as seaboard installations and other high humidity areas. Some installations will be in atmospheres that are much more corrosive than others. Prevention of a failure is better than being forced to make a repair.*

1. Verify that there is no voltage present at the generator terminals. There must not be a power source connected to the same circuit as the generator. Verify with voltmeter.
2. Verify that the engine starting battery switch is in the “OFF” position to prevent accidental starting.
3. Verify that proper clearance exists on all sides and top of enclosure.
4. Verify no debris (buildup of leaves, grass, sand, snow, etc.) is present.
5. Assure generator is a safe distance from any flammable or combustible material.
6. Verify that the three phase generator power (L1, L2, L3 and N) are properly connected.
7. Verify that the generator and the equipment to be powered are voltage compatible. Take this opportunity to place the Voltage Selector Switch in the appropriate position.
8. Verify that no load is connected to the circuit breaker.
9. Inspect the engine and generator and verify that there are no loose wires or components. Tighten if necessary.
10. Verify that the ground conductor is of correct wire size and properly connected.
11. Verify engine oil level is full. Refer to engine manual if necessary.
12. Verify engine coolant level is full. Refer to engine manual if necessary.
13. Verify exhaust system to assure it is properly connected and pointing away from occupied living space, air entry routes (doors, windows, vents etc.) and combustible materials.
14. Verify all electrical devices or loads are disconnected.
15. Locate and turn on the battery connect/control power switch.
16. Verify that the fuel tank has sufficient fuel for operation and that a fueling service has been scheduled if generator down-time needs to be limited.
17. Remove all tools, rags, etc. from inside the generator enclosure. Close all enclosure doors and be sure no hands are inside the generator enclosure when it starts.

Note: *Some larger models (500 kW and up) require you to be inside the generator at startup. Please see the startup instructions for your particular model.*

18. Start the generator.
19. The engine should begin to crank and start when the fuel moves to the engine.
20. With the engine running, several checks must be made:
    a. Verify there are no fuel leaks. If a fuel leak is detected, stop the engine (set the control in the “Stop” position) immediately and repair the leak before proceeding.

⚠WARNING

Hot Pressurized Coolant!

Failure to follow the safety requirements could result in serious injury.
Engine coolant is under pressure and is near the boiling point of water when engine is hot. DO NOT open the cooling system until the engine has completely cooled. Always put on your Personal Protective Equipment (PPE) before opening the system.

    b. Verify there are no coolant or oil leaks. If a leak is detected, stop the engine (set the control in the “Stop” position) immediately and repair the leak before proceeding.
    c. Verify that operation is smooth. If squeals, vibrations or other abnormal sources of noise exist, stop the engine (set the control in the “Stop” position) immediately and repair before proceeding.
    d. Verify the correct voltage exists at the receptacles.
21. After the operation checks are made, stop the engine (set the control in the “Stop” position) and wait 2 hours for the engine to cool. When the engine is cool, check engine oil and coolant levels as instructed in the engine operation manual.
22. Close all enclosure covers. The post installation checks are now complete.

Operation

⚠WARNING

Hazardous Service Procedures!

This product contains components that emit high-intensity ultraviolet (UV-C) radiation which can be harmful to unprotected eyes and skin, and cause serious damage to the equipment.
Failure to disconnect power before servicing could result in burns or electrocution which could result in death or serious injury.
Disconnect all electrical power, including remote disconnects, and make sure the UV lights are off before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized.
Trane does not recommend field installation of ultraviolet lights in its equipment for the intended purpose of improving indoor air quality. Trane accepts no responsibility for the performance or operation of our equipment in which ultraviolet devices were installed outside of the Trane factory or its approved suppliers.

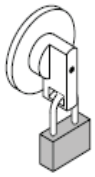
Voltage Selection

Note: *Trane Rental Services generators 350 kW* and above do not have a voltage selection switch and are wired to provide 480 volt, 3 phase power only.*

*Except 450F2 and 500 F2 Generators.

High voltage is present whenever the engine is running. Electrical shock can cause serious or fatal injury. Always stop the engine before connecting or disconnecting power cords or external devices.

1. Ensure the generator is off.
2. Place voltage select switch in the correct position 208/120, 240/120 or 480/277 Vac. Refer to below table for voltages available in each position. To ensure the switch position is not accidentally changed, it should be padlocked shown in figure below.



Insert padlock through the hole in the handle. This activates an internal mechanism that prevents handle rotation.

3. Carefully inspect all Individual load cables for broken insulation or other signs of damage. Never use a damaged cable. Replace it before usage.
4. L1, L2, L3, Neutral and Ground cables must be brought into load block compartment through access hole in base of enclosure.
5. Ensure that wires are properly connected and connections are secure.
6. Use disconnect at the load to turn off the load. Do not start engine with load switched “on”. Allow engine to come up to speed and warm up before load is switched on.

Note: *When the generator is running, opening load block door will cause load disconnect to trip.*

7. Observe the output voltage indicator and set the Voltage Adjust for proper voltage.
8. If left unattended, lock all doors to prevent tampering or injury.

Switch Position	Alternator Winding Connection	Voltage Adjust Position	Voltage at Terminal Lugs						Voltage at Plug Receptacles		
			Line To Line Voltage			Line To Neutral Voltage			120VAC Receptacles	240VAC Receptacles (Twist Lock)	
			L1-L2	L2-L3	L1-L3	L1-N	L2-N	L3-N	L-N	L-L	L-N
480/277	Series High Wye	Minimum	416	416	416	240	240	240	120	208	120
		Middle	460	460	460	266	266	266	133	230	133
		Maximum	480	480	480	277	277	277	139	240	139
208/120	Parallel Low Wye	Minimum	208	208	208	120	120	120	120	208	120
		Middle	230	230	230	133	133	133	133	230	133
		Maximum	240	240	240	139	139	139	139	240	139
240/120	Parallel Low Zig Zag	Minimum	■	■	200	100	■	100	100	200	100
		Middle	■	■	220	110	■	110	110	220	110
		Maximum	■	■	240	120	■	120	120	240	120

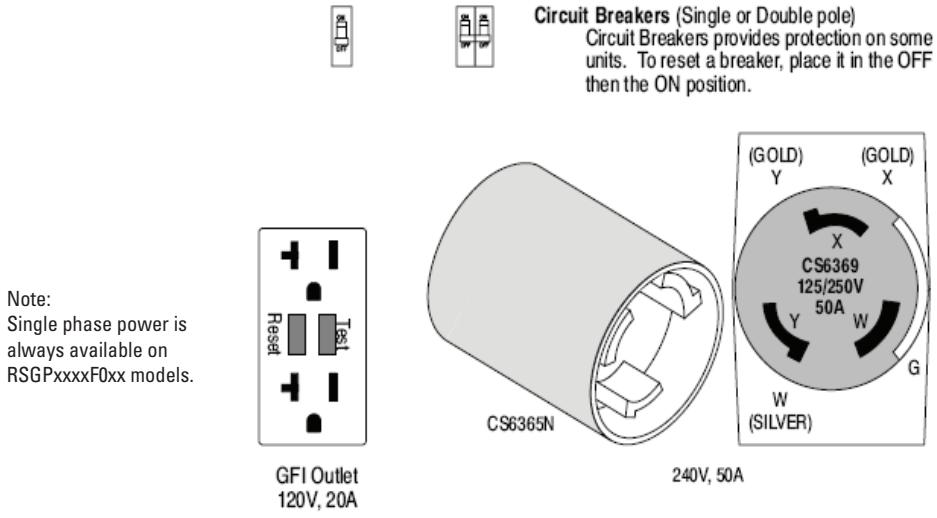
■ No connection at Terminal Lug L2.

Voltage Selection for 450 MQ generators

Since there is a special procedure required when selecting the voltage for your application, please have Trane Rental Services technical staff perform this procedure before shipping to jobsite. Otherwise contact TRS Engineering with more info on this topic at 1-800-755-5115.

Receptacle Panel Load Connections

1. On RSGPxxxxF0xx series rental generators, electricity is always supplied to the convenience receptacles. On all other models, the Voltage Selector Switch must be in "240 V/120 V Single Phase" in order for the convenience outlets to be powered.
2. Carefully inspect all Individual load cables for broken insulation or other signs of damage. Never use a damaged cable. Replace it before usage.
3. Individual load cables may be routed into the receptacle compartment through the Enclosure Electrical Access Panel.
4. The cables connected to these convenience receptacles will operate the same as those found in a residential dwelling. Voltage is always present. It is acceptable to plug and unplug these cables while the generator is running as long as contact with the metal, conducting pins is completely avoided.
5. Keep Enclosure Electrical Access Panel closed at all times. This prevents rain or other harmful elements from entering the compartment. Output metering and gauges can be observed through the window in the Enclosure Electrical Access Panel.



Voltage Reconnect and Adjustment

If your rental generator has a digital engine controller, every time the engine is started and after the Stability timer has elapsed, the nominal voltage will be detected and locked in. Various set points in the engine controller are then calculated as a percentage of this nominal voltage. For example: The over voltage set point is set to 110 percent.

This means that when the unit is providing 208 V, the over voltage set point will lock in at 229 V.

When the unit is operating in 480 V the over voltage set point will lock in at 528 V.

Example: To change the voltage from 480 V 3 phase nominal to 208 V3 phase nominal, the voltage adjustment must be made before the controller locks in the nominal voltage.

1. Set the Voltage Select Switch to 208/120 V 3 phase position.
2. Start the engine.
3. Immediately adjust the Voltage Adjust to 208 Vac nominal before the 12 second timer expires.
4. The new 208 V nominal voltage is now locked in.

This procedure must be performed whenever the nominal voltage is changed. Please refer to your generator's corresponding start-up guide for instructions on monitoring the voltage while adjusting.

Pre-Start Procedure

⚠WARNING

Hazardous Service Procedures!

This product contains components that emit high-intensity ultraviolet (UV-C) radiation which can be harmful to unprotected eyes and skin, and cause serious damage to the equipment.
Failure to disconnect power before servicing could result in burns or electrocution which could result in death or serious injury.
Disconnect all electrical power, including remote disconnects, and make sure the UV lights are off before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized.
Trane does not recommend field installation of ultraviolet lights in its equipment for the intended purpose of improving indoor air quality. Trane accepts no responsibility for the performance or operation of our equipment in which ultraviolet devices were installed outside of the Trane factory or its approved suppliers.

Before attempting to start the generator set, verify or perform these steps:

1. Fill system fuel tank with clean, fresh diesel fuel.
2. Fill engine crankcase to full mark with clean, fresh lubricating oil per engine manufacturer operating guide.
3. Check radiator coolant at the beginning of each day and filled in compliance with the engine manufacturer's guidelines.
4. Secure the generator for operation.
   a. Trailer mounted − block wheels to prevent accidental movement.
   b. Provide adequate clearance for access doors to fully open.

Note: *The exhaust also exits radiator end. When positioning a generator system ensure position does not cause a concentration of toxic emissions.*

5. Place voltage select switch in the correct position 208/120, 240/120 or 480/277 Vac and pad lock it in position if required shown in figure in Step 2 in "Voltage Selection," p. 17.
6. Carefully inspect all Individual load cables for broken insulation or other signs of damage. Never use a damaged cable. Replace it before usage.
7. L1, L2, L3, Neutral and Ground cables must be brought into load block compartment through access hole in base of enclosure.
8. Ensure that wires are properly connected and connections are secure.
9. Ensure that an external ground connection is made when required for safety.
10. Ensure that the Remote Start wires are properly connected, if used.
11. Use disconnect at the load to turn off the load. Do not start engine with load switched "On" and warm up before load is switched on.
12. Locate and turn on the battery connect/control power switch.
13. Manually start the engine, allow engine to come up to speed and perform the Voltage Reconnect and Adjustment within the allotted time.
14. Stop the engine.Some parts of this generator rotate during operation. Rotating parts can present extreme danger if clothing or body extremities are caught by the rotating part. Never touch a part of the generator until the engine has been stopped and all rotating parts are completely stopped. Also, disconnect the battery terminals to prevent accidental engine rotation during servicing.

⚠WARNING

Rotating Components!

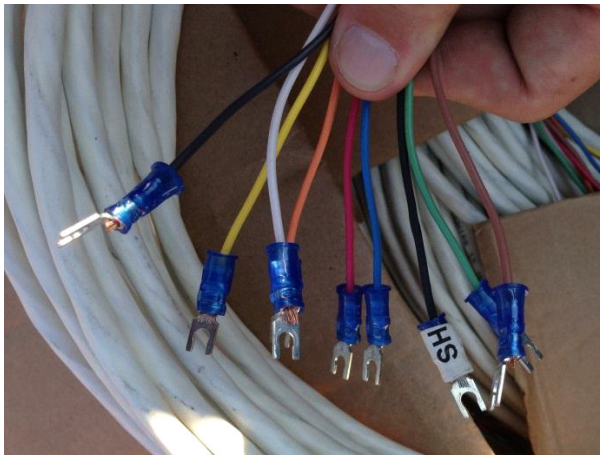
Failure to disconnect power before servicing could result in rotating components cutting and slashing technician which could result in death or serious injury. Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized.

15. Ensure that Engine Compartment doors are closed for proper ventilation.

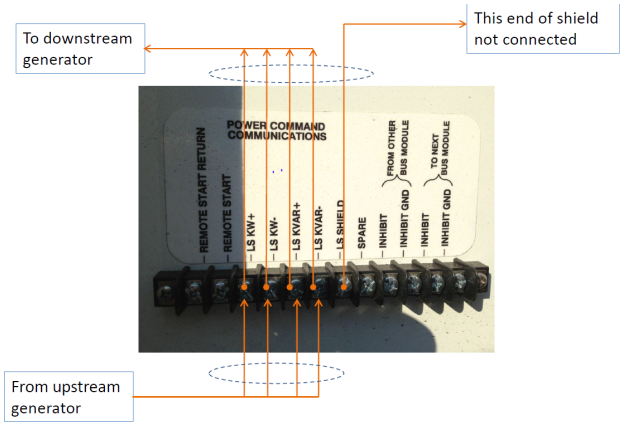
Note: *Receptacle Panel Load cables may be routed into the receptacle compartment through the Enclosure Electrical Access Panel after generator is started and has warmed up.*

Paralleling Procedure for MQ generators 450 and 900 kW

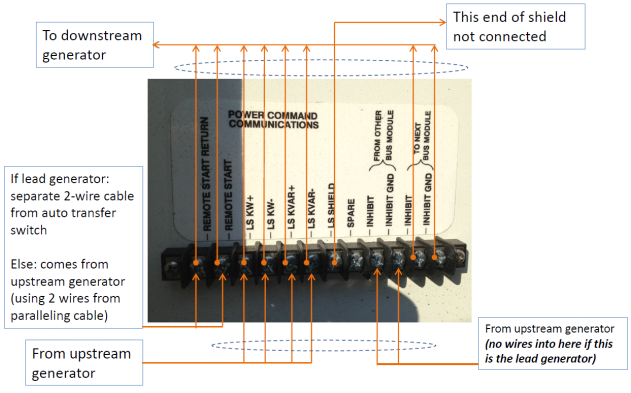
- Ensure that the generators are turned off, and that the breakers are in the Open position.
- Generators will be provided with paralleling cable(s) with (8) conductors plus a shield wire.



Note: *Shield wire should only be connected on one end as shown below. (This setup is for Manual Operation only).*



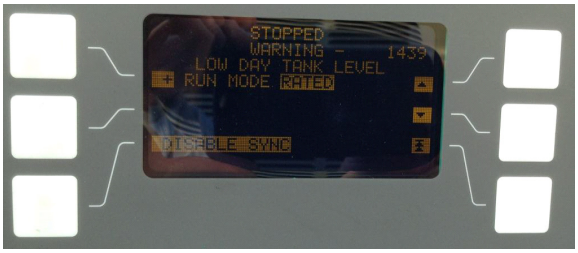
- For Auto operation paralleling cables would have to be setup as shown below.



- Ensure both generators are setup for the same voltage. (On the 450 MQ generators this is done by checking inside the Alternator Access).

- Ensure the power wiring from each generator is wired to a common bus on the load.
- Once each of the generators have reached rated speed, close the breakers, one by one by pressing the middle button (see picture below) on the right to close the breaker (button with open relay symbol). This symbol will change to look like a closed relay when the breaker closes.

- If there are voltage mismatch or frequency issues, the breaker won't close.
- Setup screen should appear as below if paralleling press the button to disable syncing.



Paralleling procedure for 500 and 725 kW MQ generators

- Before starting unit perform a maintenance check for oil, coolant and fuel levels and visually inspect engine, generator and controls for any potential maintenance issues that would prevent the generators from operating correctly.
- Make sure that both generators are set for the same nominal voltage.
- Connect the paralleling cable to both Gensets ports (on the 500 it is located inside the container where the bus connections are made. Whereas on the 725 is on the bus output panel; there should be two ports on each generator) as well as the load conductors to the bus. When connecting the load cables be very careful to get the phase rotation correct.
- Now start one generator and with a multimeter verify that voltage and frequency are at desired levels, if not make appropriate adjustments so desired voltage and or frequency is attained.
- Start the second generator and conduct the same process, this helps with cross currents when generators are paralleled.
- Once both generators are set up and you are ready to close the breakers to supply load, close the breaker on one generator. The first breaker should close on a dead bus which means that there will be no delay in breaker closure. When closing the breaker on the second generator the breaker closure will generally take a couple of seconds while synchronization of frequency takes place. When the breaker on the second generator closes the two are paralleled and if no load is on either bus current readings should be low. When load is applied the generators will share that load isochronously so that each generator will carry a proportional amount of the total load, so if the generators have different kilowatt ratings the amount of load will be larger on the larger generator.

Paralleling Procedure for Baldor Parallel Capable Generators 450 kW and Larger

For Trane Rental Services Generators only

Verify that the use and connection of any rental generator complies with the NEC and any other local regulations. Contact a licensed contractor to ensure compliance.

⚠WARNING

Hazardous Service Procedures!

This product contains components that emit high-intensity ultraviolet (UV-C) radiation which can be harmful to unprotected eyes and skin, and cause serious damage to the equipment.
Failure to disconnect power before servicing could result in burns or electrocution which could result in death or serious injury.
Disconnect all electrical power, including remote disconnects, and make sure the UV lights are off before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized.
Trane does not recommend field installation of ultraviolet lights in its equipment for the intended purpose of improving indoor air quality. Trane accepts no responsibility for the performance or operation of our equipment in which ultraviolet devices were installed outside of the Trane factory or its approved suppliers.

1. Ensure that the generators are turned off, and that the breakers are in the OPEN position.
2. Connect each generator to a common load point.
   a. Make a connection from the first generator's main breaker to the connection point on the equipment to be powered.
   b. Make a connection from the second generator's main breaker to the same connection point on the equipment to be powered.
   c. Repeat for each generator being used.
3. Locate the communications cable stored by the battery inside the generator.
   a. Connect the cable to the "CAN OUT" receptacle on the first generator.
   b. Connect the other end of the cable to the "CAN IN" receptacle on the second generator.
   c. If more than two generators are being used, locate additional communications cables.
   d. Continue by connecting to the "CAN OUT" receptacle on the second generator to the "CAN IN" receptacle on the third generator, and so on.
4. The termination plugs (bundled with the communications cable) need to be connected to the first and last generator (the first and second generators if only two are used)
   a. On the first generator, connect the termination plug to the "CAN IN" receptacle.
   b. On the last generator, connect the termination plug to the "CAN OUT" receptacle.
   c. If the termination plugs are not available, a jumper must be placed on the back of the controller (accessible by opening the door the controller is mounted in). Be sure that controller power is turned off.

i. On the back of the controller, behind the green plug labeled “CAN”, there is a jumper that is placed on one of two posts. Reposition the jumper so that it is mounted on both posts.

ii. Perform this on the first and last generator being used.

5. When all connections have been made and it is safe to do so, turn on the controller power to each generator. Be sure that each generator is in Manual operating mode.
6. There are settings that must be verified or entered in each controller before paralleling can continue.
   a. From the main screen on the controller, press escape and scroll down to “Setpoints” in the menu.
   b. Next, select “Comms Settings”.
   c. Next, go to “Contr. Address”.
      i. Set the address of the first generator to “1”, set the address of the second generator to “2”, and so on. Each generator being used must have a unique address.
   d. Go back to the “Setpoints” menu and select “Power Management”.
      i. Scroll to the bottom of the “Power Management” menu and verify that “Control Group”, “GroupLinkLeft”, and “GroupLinkRight” are all set to “COMMON”.
   e. Go back to the “Setpoints” menu and select “Sync/Load Control”.
      i. Set the “Phase Window” to “5”.
   f. Exit “Setpoints” and go back to the main menu.
   g. Select “Measurement CU” to go back to the screen seen at startup.
   h. Scroll up or down from this screen until you see the “Engine Priority” screen. At the bottom, you should see:
      i. “Reg16 0000000000000000000”
         1. For each generator being used, there should be an “I” present in this number.
         2. If two generators are used, one with address “1” and one with address “2”, then it should read:
            a. Reg16 II000000000000000000”
         3. Paralleling will not succeed unless there is an “I” present for each generator to be paralleled.
   i. Controller programming is complete only once. Step 6 has been performed for each controller.
7. Verify that it is safe to energize the circuit connected to the generators:
   a. All wiring is complete and complies with the NEC and local regulations.
   b. All access panels on connected equipment are closed and there are no exposed electrical connections.
   c. Either all the connected equipment is turned off, or a main disconnect is in place and in the OPEN position.
      i. There should be no load present that exceeds the rating of the first generator until the all generators have been started and paralleled.
8. Start all generators.
9. Once all generators have reached stable operation, close the breaker on the first generator using the “I/O” button on the controller (there are two I/O buttons, use the one on the right).
10. On each generator, scroll up or down from the startup screen until you can read “Bus Freq”, “Bus V Ph-N”, and “Bus V Ph-Ph”.
    a. These values should read the same on each generator and they should correspond to the desired operating voltage.
    b. For example, at 480 V, 3-phase, 60 Hz:
       i. Bus Freq = 60
       ii. Bus V Ph-N = 277
       iii. Bus V Ph-Ph = 480
    c. If the values read zero, or reads a value that does not correspond to the desired operation, then turn off all generators and check power cables for proper connection and phasing.
11. Press the same “I/O” button on the second generator to sync.
    a. A “sync” timer will initiate and wait for the generators to be in phase.
    b. Once they are synced, the breaker will close and the generator will be paralleled with the first generator.
12. Repeat for each generator in use.
13. Once all generators are synced and the breakers on each generator are in the CLOSED position, you may begin “loading” the generators by turning on electrical equipment.
14. Watch each generator to make sure that the load is evenly distributed between each generator.
    a. If any one generator appears to be taking the entire load, use the “I/O” button to OPEN the breaker immediately.
    b. Turn off all generators and check controller settings and wiring connections.
15. Paralleling is complete.
    a. If you wish to turn one or more of the generators off because they are not needed for a particular time, press the “I/O” button on the generator you want to turn off. The breaker will OPEN and the load will be automatically distributed to the remaining generators. DO NOT TURN OFF CONTROLLER POWER OR GENERATOR COMMUNICATIONS WILL BE INTERUPTED.

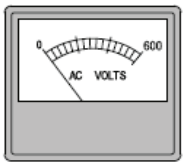
b. To use the generator again, start it, wait for stable operation, and press the “I/O” button. Part of the load will automatically be transferred to this generator.

c. WHEN REMOVING A GENERATOR FROM USE, ENSURE THAT THE REMAINING GENERATORS CAN MAINTAIN THE CURRENT LOAD.

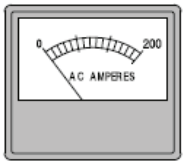
Controls

Please refer to your generator’s corresponding start-up guide for specific controls.

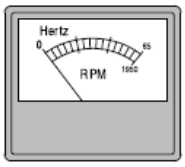
There are basic controls that are commonly found on any generator. In the event that your rental generator has a digital controller, it will replace most of the needle gauges.



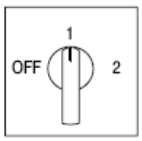
Volts
Analog display of generator output voltage in RMS volts.



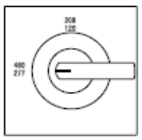
AMPS
Analog display of generator output current in RMS amps.



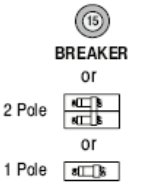
HERTZ
Analog display of generator RPM which relates to the output frequency in Hertz.



Amps Switch switch (On-Off)
Selects what is displayed on AC Amperes meter.
Off - No AC Ampere display.
1 - Phase 1 current display.
2 - Phase 2 current display.
3 - Phase 3 current display.

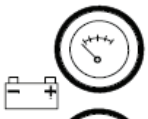


Voltage Select Switch switch
Selects 208/120, 240/120 or 480/277VAC.

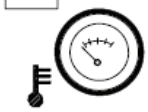


Breaker Circuit Breakers provides protection on some units. To reset a breaker, simply press the center button when tripped or move handle to “Off” then back to “On”.

Note: Some features are optional and may not be installed on your system.



Battery
Displays the voltage of the engine starting battery.



Water Temp
Displays the temperature of the engine coolant.

Oil Press
Displays engine oil pressure.

Horn A Horn (annunciator or buzzer) sounds an alarm when operator attention is needed.

Shore Power Inlet Connect an extension cord that has an appropriate rating from utility power to this outlet. To power onboard battery charger, block heater, etc.

Voltage Adjust
Increase or Decrease the Generator output voltage.

Panel Lights)
Lamps to illuminate the operator panel.

Panel Lights switch (On-Off)
Turns on the panel lights.

Fuse Fuses provides protection on some units.
(Do not remove while generator is running).

Auto Start Connection for external two wire starting from transfer switch or other controller. Strip the insulation from the remote start wires. Simply press while inserting the wire then release to secure the connection.

Mode selection

There will be either a toggle switch or mode select button that will allow you to choose between OFF, MANUAL, and AUTO.

- In OFF mode, the generator will not start by any means.
- In AUTO mode, the generator will only start if the remote engine start contacts are energized by a control circuit.
- In MANUAL mode, the generator will only start if the operator starts the generator. The remote engine start contacts will not affect startup.

Voltage Adjust

On models where the voltage mode is selectable, there will be a voltage adjust pot on the generator. You must perform a voltage adjustment whenever you first start your generator, and also whenever you switch voltage modes. Use the adjust voltage knob to adjust the voltage to the desired operating level.

Generator Alarms

On analog generators, there are lamps to indicate warnings. It is necessary to check periodically that there are no warning lights illuminated. In the case that a warning light has come on,

stop the generator immediately and contact Trane Rental Services.

On digital generators, there is an onboard controller that communicates with the Engine Control Unit (ECU). The onboard digital controller will monitor the generator's power lines as well as the engine status. In the event that the generator experiences a technical problem, the controller will issue one of two warning types. In the first, the controller will display a warning to notify the user that there is a problem. In the second type, if the fault is critical, the controller will shutdown the generator in order to protect it. Warnings are accompanied by a high pitched horn sound in order to alert the operator.

Common Warnings

The table below lists some common faults that will be displayed if your rental generator has a digital controller. Warnings (WRN) will sound an alarm to alert the operator, use horn reset to stop the horn, and use fault reset to acknowledge the error. The error will only disappear completely if the condition causing the alarm has been resolved. In the event that you have an unresolved error, please contact Trane Rental Services. Shutdown alarms (SD) are critical errors that will cause the generator to shut down in self-protection. "Over Crank" indication can mean a loss of crank disconnect signal during the previous run period. Attempting to restart the engine with no crank disconnect signal can destroy the starter motor, which is a personal safety hazard as mentioned in the warnings in this section. Always have a professional diagnose and resolve problems before attempting to restart.

Events specification	Protection type
Wrn Oil press	WRN
Sd Oil press	SD
Wrn Water temp	WRN
Sd Water temp	SD
Wrn Wtemp Low	WRN
Wrn Fuel Level	WRN
Sd Fuel Level	SD
Battery voltage <, >	WRN
Battery flat	SD
Start fail	SD
Vgen <, >	SD
Vgen unbl	SD
Fgen <, >	SD
Igen unbl	SD
Overload	SD
RPM over	SD
RPM under	SD
PickupFault	SD
Stop fail	SD
WrnServiceTime	WRN
Emergency Stop	SD
ECU Common Warning	WRN
ECU Shutdown	SD

Troubleshooting and Maintenance

⚠WARNING

Hazardous Service Procedures!

This product contains components that emit high-intensity ultraviolet (UV-C) radiation which can be harmful to unprotected eyes and skin, and cause serious damage to the equipment.
Failure to disconnect power before servicing could result in burns or electrocution which could result in death or serious injury.
Disconnect all electrical power, including remote disconnects, and make sure the UV lights are off before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized.
Trane does not recommend field installation of ultraviolet lights in its equipment for the intended purpose of improving indoor air quality. Trane accepts no responsibility for the performance or operation of our equipment in which ultraviolet devices were installed outside of the Trane factory or its approved suppliers.

Note: *Trane Rental Services requires that preventative maintenance be performed every 250 hours of operation. Based on the length of rental this may include, but is not limited to:*

- *Oil Filter Change*
- *Fuel Filter Change*
- *Water Separator Change*
- *Oil Change*
- *Radiator Flush*

The customer is responsible for the scheduling and the cost associated with this maintenance. Please contact Trane Rental Services for additional information regarding required services, as well as assistance with locating a qualified generator service technician in your area.

Maintenance

⚠WARNING

Rotating Components!

Failure to disconnect power before servicing could result in rotating components cutting and slashing technician which could result in death or serious injury.
Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized.

⚠WARNING

Hot Engine Parts!

Parts of this generator are extremely hot during and after operation. To prevent severe burns do not touch any part of the generator until you have first determined if the part is hot. Allow generator sufficient cooling time and wear protective gloves/clothing before touching any part of the generator.

Before cleaning, inspecting, repairing or performing any maintenance to the generator set, always be sure the engine has stopped and that all rotating parts have also stopped. After stopping, certain components are still extremely hot so be careful not to get burned. Always disconnect the battery to avoid accidental starting and engine rotation.

This manual contains only very minimal engine maintenance instructions. Refer to the engine manufacturer's guidelines for specific engine maintenance instructions for your generator set. Any maintenance instructions or recommendations in the engine manufacturer's guidelines take precedence over any of the following general recommendations.

General

1. Inspect the fuel system for leaks.
2. Inspect fuel lines for sign of deterioration.
3. Inspect all the fuel clamps to ensure they are tight.
4. Make sure the fuel cap fits snugly on the fuel tank and that the fuel tank contains no leaks.
5. Inspect the battery posts and leads for corrosion.
6. Inspect the external wire cables and connectors used with the generator set for cuts, fraying, or loose connections.

Engine

1. Ensure that any fuel, oil, air filters are replaced on a schedule.
2. Check oil level regularly, at least every 5 to 8 operating hours. Maintain the proper oil level.
3. Ensure that oil is changed at appropriate intervals.
4. Periodically inspect the radiator for excessive sludge or debris.

Alternator (also called Generator End)

1. Clean the generator (Alternator) and remove any and all dust, dirt, or other foreign material.
2. Inspect and clean the cooling air intake and exhaust louvers of the generator end. Make sure they are clean. Remove dirt or any buildup that may restrict the cooling air flow.

Problems and Solutions

Some of the more common problems are listed in the following table. This information is intended to be a check or verification that simple causes can be located and fixed. It is not an exhaustive "how to" for all types of problems. Procedures that require in depth knowledge or skills (like flashing the field). should be referred to an authorized service department.

Problem	Possible Cause	Solution
Engine will not start	No Fuel	Check that fuel valves are ON. Check fuel level in fuel tank.
	Restricted Airflow	Check/replace air filter.
	Damaged Glow Plug	Check/replace glow plug(s). Check that engine switch is in Start position.
Engine will not crank	Dead Battery	Remove battery and trickle charge or replace with new battery. Never Jump Start.
Engine start but will not run smoothly	Fuel or Ignition Problem	Refer to engine manual.
Engine overheats	Excessive Load	Remove one or more electrical loads.
	Debris or Dirt Build-up on Engine	Remove debris. Clean engine surfaces to allow cooling.
	Low Coolant Level	Replenish coolant.
Output voltage varies	Irregular Speed	Check engine for malfunction or load for fluctuation.
	Fluctuating Speed	Stabilize load. The addition of a lamp load (resistance load) may compensate partially for load changes caused by intermittent motor operation. Do not overload.
	Loose Terminal or Load Connections	Verify all connections are proper and check tightness torque of terminals.
	Defective Alternator Bearing (Uneven Air Gap)	Replace worn bearing.
Low voltage (0-15 VAC output)	Bad Voltmeter	Measure the voltage across the voltage meter with an accurate voltmeter to verify.
	Bad/Open Circuit Breaker/Fuse	Check continuity across Breaker/Fuse. Replace if defective.
	Bad Connection	Check wiring including grounds, crimps and connection points. Repair defects.
	Loss of Residual Magnetism	The generator needs to be flashed. Contact service center to perform this procedure.
	Bad Voltage Selector Switch	Replace switch, contact service center to perform this procedure.
	Bad Stator Windings	Contact service center to perform this procedure.

Problem	Possible Cause	Solution
Low voltage (15-20 Vac output)	Bad Voltmeter	Measure the voltage across the voltage meter with an accurate voltmeter to verify.
	Incorrect Engine Speed	Remove electrical load, output should be 61−62 Hertz adjust engine speed if necessary.
	Bad/open Circuit Breaker/Fuse	Check continuity across Breaker/Fuse. Replace if defective.
	Bad Connection	Check wiring including grounds, crimps and connection points. Repair defects.
	Bad Voltage Selector Switch	Replace switch, contact service center to perform this procedure.
	Bad Stator Windings	Contact service center to perform this procedure.
	Bad Voltage Adjacent Rheostat	Replace rheostat, contact service center to perform this procedure.
	Bad Voltage Regulator	Replace regulator, contact service center to perform this procedure.
	Bad Rotor Diodes	Contact service center to perform this procedure.
	Bad Rotor Windings	Contact service center to perform this procedure.
Incorrect voltage output	Bad Voltmeter	Measure the voltage across the voltage meter with an accurate voltmeter to verify.
	Incorrect Engine Speed	Remove electrical load, output should be 61−62 Hertz adjust engine speed if necessary.
	Bad voltage Adjacent Rheostat	Replace rheostat, contact service center to perform this procedure.
	Bad Voltage Regulator	Replace regulator, contact service center to perform this procedure.
	Bad Connection	Check wiring including grounds, crimps and connection points. Repair defects.
	Bad Voltage Selector Switch	Replace switch, contact service center to perform this procedure.
High voltage output	Excessive Speed	Check engine for malfunction.
GenSet will not pull load	Incorrect Engine Speed	Remove electrical load, output should be 61−62 Hertz adjust engine speed if necessary.
	Load not Connected Properly	Verify voltage at the load and the connections to the proper receptacle or load terminal block.
	Load too Large for Unit	Verify load amperage is less than the generator set rated. Note: For inductive loads, use the starting amperage rating of the load (not the running amperage rating). Starting amps may be as much as 5 times the running amps.
Electric shock when frame is touched	Static Charge	Ground generator frame at local reference ground (see Section 3).
	Grounded Armature or Field Coil	Contact service center.
Mechanical noise (alternator)	Defective Bearing	Replace bearing.
		Bad bearing − replace.
		Bent shaft − contact service center.
	Rotor Rubbing on Stator	Loose end bell − tighten.
		Loose drive Discs − tighten.
	Loose or Misaligned Coupling	Tighten; align coupling and alternator shaft to engine shaft.
Trailer lights inoperative	Trailer to Tow Vehicle Connection	Connect trailer lighting connector to tow vehicle trailer connector.
	Trailer Electrical Connection not Compatible	Use adapter plug to convert from connector style found on trailer to connector style found on tow vehicle or replace connector with compatible mate.
	Insufficient Ground Connection	Verify there is a ground wire connection from the tow vehicle to the trailer. Do not rely on the trailer tow coupling for the battery ground connection. Repair as necessary.
	Faulty Light Bulb	Replace as necessary.
Trailer sways during towing	Tow Vehicle Trailer Ratings too Small	Check tow vehicle ratings meet or exceed the Gross Vehicle Weight Rating (GVWR) of the trailer. Use larger tow vehicle as necessary. Seek expert advice.
	Trailer Tongue not Level on Tow Vehicle	Adjust trailer or tow vehicle as necessary for trailer tong to be level or slightly higher than rear of tow vehicle when additional supports have been removed. View and make adjustments while vehicle and trailer are on level surface. Seek expert advise.
	Towing at Excessive Speed	Reduce tow vehicle speed and use caution while braking. Obey all local laws and regulations, never exceed the posted speed limit, and use reasonable care when towing any type of trailer. Contact local authority having jurisdiction.

Note: After the engine is stopped, there is a 15 second restart delay before engine cranking.

Service and Parts

Please contact Trane Rental Services regarding servicing and parts for your rental generator. You will be referred to a local, licensed, and preferred generator service company that will perform any necessary repairs as well as the required preventative maintenance.

Start-Up Guides

- Analog F0 Series – F0 series generator with Analog Controls
- Digital F0 Series – F0 series generator with Digital Controls
- F0 Series (500 kW and Larger)
- F0 Series Parallel Capable (500 kW and Larger)
- F1 Series (55 kW to 200 kW) – F1 series generator with a Nexys controller
- F1 Series (350 kW to 450 kW) – F1 series generator with a Telys controller
- Analog F2 Series – F2 series generator with Analog Controls
- Analog F2 Series (500 kW to 725 kW) - with Basler Controller
- Digital F2 Series - 450 and 900 kW Digital F2 series generator

Trane Rental Generator – Analog F0 Series Start-Up

⚠WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.
Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

It is the operator's responsibility to verify that the use of this generator is performed by qualified individuals and in compliance with the NEC. Please read and understand the entire contents of this IOM before start-up is attempted.

1. If the rental generator will not be run for long periods of time, connect an extension cord to the Shore Power receptacle to keep the batteries charged and the engine block heated.

Note: *It is a requirement that the shore power is unplugged before starting the generator.*

2. Properly ground the generator enclosure as well as any equipment connected to it.

⚠WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.
All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

3. Check engine oil level using the dipstick on the side of the engine. Add 15W-40 oil, if required.
4. Verify that there is sufficient fuel for operation (DIESEL FUEL ONLY). This can be done visually through the fueling port or the gauge mounted on the fuel tank.
5. Verify that the Voltage Selector Switch is set for the desired voltage.

Note: *Never operate the Voltage Selector Switch while the generator is in operation.*

6. Verify that the Circuit Breaker is in the OPEN position.
7. Properly connect all power cables in accordance with the NEC. NEVER make wiring connections after the generator has been started.
8. Verify that battery leads are connected and that any battery switch inside the main compartment is turned to the "On" position.
9. Ensure that connected equipment is either turned off, or disconnected by an external disconnect switch. Damage will occur to generator if a load tries to pull power while the generator is starting.

Note: *The single phase power receptacles are always energized when the generator is running. Disconnect loads plugged into these receptacles before start-up is attempted.*

10. Move the toggle switch to the “Manual Run” position to start the engine.
11. Once engine has started, use the Voltage Adjust Knob (VAK) to adjust desired voltage. Example: If Voltage Selector is set to 480 V, turn the VAK slowly until meter reads 480 V.
12. Once the desired voltage is obtained, all safety checks have been done, and wiring connections are correct, place the Circuit Breaker in the CLOSED position to supply electricity.
13. It is necessary to periodically check the generator for warning lights and fuel level. Do not operate for extended periods of time without performing checks.

Output Voltage Readout

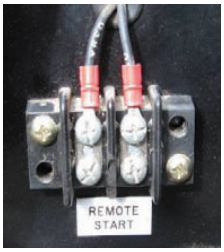
Voltage Adjust Knob

Run/Stop/Auto Switch

Voltage Selector Switch

Shore Power

Circuit Breaker



Remote Engine Start Contacts

Single Phase Power Receptacles

Trane Rental Generator – Digital F0 Series Start-Up

⚠WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.
Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

It is the responsibility of the operator to verify that the use of this generator is performed by qualified individuals and in compliance with the NEC. Please read and understand the entire contents of this IOM before start-up is attempted.

1. If the rental generator will not be run for long periods of time, connect an extension cord to the Shore Power receptacle to keep the batteries charged and the engine block heated.

Note: *It is a requirement that the shore power is unplugged before starting the generator.*

2. Properly ground the generator enclosure and any equipment connected to it.

⚠WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.
All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

3. Check engine oil level using the dipstick on the side of the engine. Add 15W-40 oil, if necessary.
4. Verify that there is sufficient fuel for operation (DIESEL FUEL ONLY). This can be done visually through the fueling port, the gauge on the fuel tank, or on the controller screen.
5. Verify that the Voltage Selector Switch is set for desired voltage.

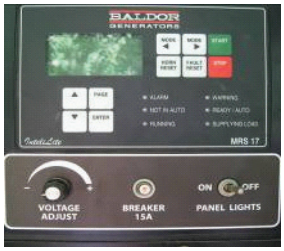
Note: *Never operate the Voltage Selector Switch while the generator is in operation.*

6. Verify that the Circuit Breaker is in the OPEN position.
7. Properly connect all power cables in accordance with NEC. NEVER make wiring connections after the generator has been started.
8. Verify that the battery leads are connected.
9. Ensure that connected equipment is either turned off, or disconnected by an external disconnect switch. Damage will occur to generator if a load tries to pull power while the generator is starting.

Note: *The single phase power receptacles are always energized when the generator is running. Disconnect loads plugged into these receptacles before start-up is attempted.*

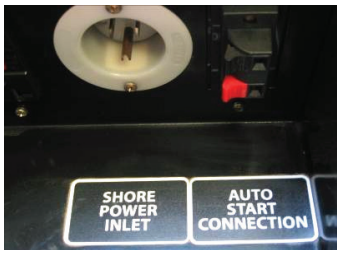
10. Turn on the “Control Power” or “Battery Switch”, located inside the main compartment.
11. Verify that the Digital Controller is in Manual Mode (MAN), and then press the Start button.
12. Once engine has started, use the Voltage Adjust Knob (VAK)to adjust to desired voltage. Example: If Voltage Selector is set to 480 V, turn the VAK slowly until meter reads 480 V.
13. The voltage must be regulated within 12 seconds of startup or the incorrect voltage will be locked into the controller.
14. If you are not able to regulate the voltage within the 12 seconds, stop the generator, and then start again.
15. Once the desired voltage is obtained and all safety checks have been done, place the Circuit Breaker into the CLOSED position to supply electricity.
16. It is necessary to periodically check the controller for warning messages and fuel level. Do not operate the generator for extended periods of time without performing necessary checks.
17. The settings in the Digital Controller are configured for optimal performance. Do not adjust these settings without first consulting Trane Rental Services.

Voltage Selector Switch



Digital Controller and Voltage Adjust Knob

Circuit Breaker



Shore Power and Remote Engine Start

Battery Switches (one of these per generator)

Startup Screen: Press the ▶ button to select "OFF", "MAN", or AUTO"

Voltage Readout: To read this screen, press the ▼ button. Monitor L12, L23, and L31 while adjusting voltage

Single Phase Power Receptacles

Trane Rental Generator – F0 Series (500 kW and Larger)

⚠WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.
Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

It is the responsibility of the operator to verify that the use of this generator is performed by qualified individuals and in compliance with the NEC. Please read and understand the entire contents of this IOM before start-up is attempted.

1. If the rental generator will not be run for an extended period of time, connect an extension cord to the Shore Power receptacle to keep batteries charged and engine block heated. The block heater MUST be powered for at least an hour before operation is attempted.

Note: *It is a requirement that the shore power is unplugged before starting the generator.*

2. Properly ground the generator enclosure and any equipment connected to it.

⚠WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.
All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

⚠WARNING

Heavy Objects Behind Door!

Failure to stand clear could result in serious injury or death.
Stand clear when opening in the event that the stair set has shifted during transit. Stairs that have become dislodged could fall when doors are opened. Failure to stand clear could result in serious injury or death.

3. Check engine oil using the dipstick on the side of the engine. Add 15W-40 oil, if necessary.
4. Verify that there is sufficient fuel for operation (DIESEL FUEL ONLY). This can be done visually through the fueling port, the gauge on the fuel tank, or on the controller screen. The fuel tank is located inside the rear doors.
5. Properly connect all power cables in accordance with NEC. NEVER make wiring connections after the generator has been started.
6. Ensure that connected equipment is either turned off, or disconnected by an external disconnect switch. Damage will occur to generator if a load tries to pull power while the generator is starting.
7. Open the small side door, place the Circuit Breaker in the CLOSED position, and then close the door (this door has a pressure switch, and if opened, will trigger the Circuit Breaker to go into the OPEN position).
8. Access the generator from the large side door that provides access to the batteries and the digital controller (mounted on the top of the alternator). Verify that batteries are connected.
9. Place the Battery Power Switch in the ON position.
10. Starting the generator will energize the power cables. Double check that all connected equipment is turned off or disconnected by a disconnect switch. Also verify that there are no personnel in contact with any of the cables or equipment connected to the generator.
11. Once the digital controller powers up be sure that Manual Mode (MAN), operation mode is selected. The generator is ready to be started.

⚠CAUTION

Unsafe Exit!

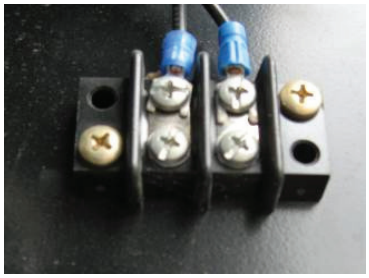
This model requires the operator to be inside the generator at startup. Upon exit, ensure the door has been properly secured or that the door is being held open. The draft created by the radiator fan can cause the door to shut, resulting in personal injury from being struck by the swinging door.

12. Once the generator has stabilized, verify that there are no warning messages on the controller.
13. Exit and close the access door.
14. Start or connect equipment (by means of switches only).
15. Periodically, it will be necessary to enter the container to check that there are no warning messages displayed on the controller, as well as to check the fuel level.
16. The settings in the Digital Controller are configured to provide optimum performance. Do not change any settings in this controller without first consulting Trane Rental Services.

Access to Breaker, Terminal Blocks, Shore Power Connection, and Remote Engine Start Contacts Never Open While in Operation

Shore Power Receptacle

Side Door Access to Battery Switch, and Digital Controller



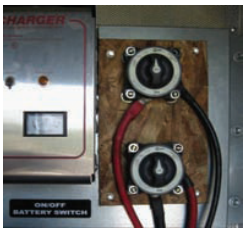
Remote Engine Start Contacts

Digital Controller

Main measurement screen on Digital Controller

Press the ▶ button to select OFF, MAN, or AUTO modes.

Press the ▼ button to view other diagnostic screens (fuel level, oil pressure, engine temperature, etc)



Battery Switches

Trane Rental Generator – F0 Series Parallel Capable (500 kW and Larger)

⚠WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.
Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

It is the operator's responsibility to verify that the use of this generator is performed by qualified individuals and in compliance with the NEC. Please read and understand the entire contents of this IOM before start-up is attempted.

1. If the rental generator will not be run for an extended period, connect an extension cord to the Shore Power receptacle to keep the batteries charged and the engine block heated. The block heater MUST be powered for at least an hour before operation is attempted.

Note: *It is a requirement that the shore power is unplugged before starting the generator.*

2. Properly ground the generator enclosure and any equipment connected to it.

⚠WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.
All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

⚠WARNING

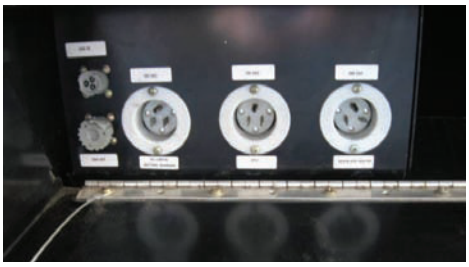
Heavy Objects Behind Door!

Failure to stand clear could result in serious injury or death.
Stand clear when opening in the event that the stair set has shifted during transit. Stairs that have become dislodged could fall when doors are opened. Failure to stand clear could result in serious injury or death.

3. Check engine oil using the dipstick on the side of the engine. Add 15W-40 oil, if necessary.
4. Verify that there is sufficient fuel for operation (DIESEL FUEL ONLY). This can be done visually through the fueling port, the gauge on the tank, or on the controller screen. The fuel tank is located inside the rear doors.
5. Properly connect all power cables in accordance with NEC. NEVER make wiring connections after the generator has been started.
6. Ensure that connected equipment is either turned off, or disconnected by an external disconnect switch. Damage will occur to generator if a load tries to pull power while the generator is starting.
7. Enter the container from the large side door providing access to the Battery Power Switch. Turn the switch(es) on and exit, closing the door behind you.
8. A small side door on the exterior of the generator contains the Digital Controller.
9. Verify that the circuit breaker is in the OPEN position.
10. Verify the Digital Controller is in Manual Mode (MAN), operation mode, then press the Start button on the Digital Controller to start the generator.
11. Once generator and equipment are connected properly, all safety checks have been performed, and the generator has reached stable operation, press the I/O button on the controller to CLOSE the circuit breaker. Always use the I/O button on the controller to open or close the circuit breaker. Do not use the manual push buttons located on the circuit breaker.
12. It is necessary to check the controller periodically during operation in order to check for errors and fuel levels. Do not allow generator to run for extended periods of time without checking operating condition of the generator.
13. The settings in the Digital Controller are configured to provide optimum performance. Do not change any settings in this controller without first consulting Trane Rental Services.

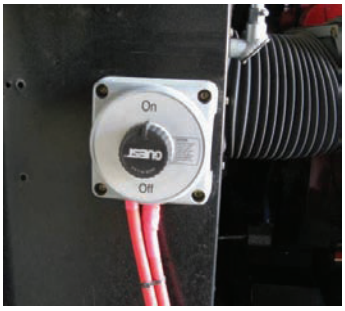
Battery Switch Access

Circuit Breaker
Do Not Use Manual Push Buttons



Shore Power Connect (Beneath Controller)

Digital Controller
Use the Mode button to select OFF, MAN, or AUTO mode
Use the Up or Down button to access diagnostic screens (fuel level, oil pressure, engine temp, etc.)



Battery On/Off Switch

Remote Engine Start Contacts

Trane Rental Generator – Paralleling/Towable (450 kW) Start-Up

⚠WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.
Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

It is the responsibility of the operator to verify that the use of this generator is performed by qualified individuals and in compliance with the NEC. Please read and understand the entire contents of this IOM before start-up is attempted.

1. If the rental generator will not be run for long periods of time, connect an extension cord to the Shore Power receptacle to keep the batteries charged and the engine block heated.

Note: *It is a requirement that the shore power is unplugged before starting the generator.*

2. Properly ground the generator enclosure and any equipment connected to it.

⚠WARNING

Proper Field Wiring and Grounding Required!

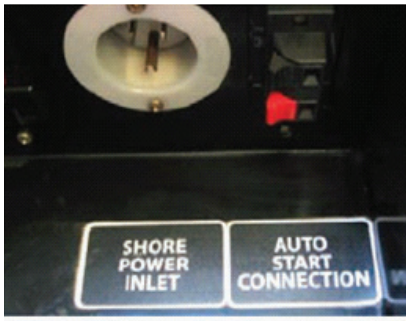
Failure to follow code could result in death or serious injury.
All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

3. Check engine oil level using the dipstick on the side of the engine. Add 15W-40 oil, if necessary.
4. Verify that there is sufficient fuel for operation (DIESEL FUEL ONLY). This can be done visually through the fueling port, the gauge on the fuel tank, or on the controller screen.
5. Verify that the Circuit Breaker is in the OPEN position.
6. Properly connect all power cables in accordance with NEC. NEVER make wiring connections after the generator has been started.
7. Ensure that connected equipment is either turned off, or disconnected by an external disconnect switch. Damage will occur to generator if a load tries to pull power while the generator is starting.
8. Verify that the battery leads are connected.
9. .Turn on the “Control Power” or “Battery Switch”, located inside the main compartment.
10. Verify that the Digital Controller is in Manual Mode (MAN), and then press the Start button.
11. Once generator and equipment are connected properly, all safety checks have been performed, and the generator has reached stable operation, press the I/O button on the controller to CLOSE the circuit breaker. Always use the I/O button on the controller to open or close the circuit breaker. Do not use the manual push buttons located on the circuit breaker.
12. It is necessary to check the controller periodically during operation in order to check for errors and fuel levels. Do not allow generator to run for extended periods of time without checking operating condition of the generator.
13. The settings in the Digital Controller are configured to provide optimum performance. Do not change any settings in this controller without first consulting Trane Rental Services.

Digital Controller
Use the Mode button to select OFF, MAN, or AUTO mode
Use the Up or Down button to access diagnostic screens (fuel level, oil pressure, engine temp, etc.)

Circuit Breaker
Do Not Use Manual Push Buttons

Battery Switches (one of these per generator)



Shore Power and Remote Engine Start

Single Phase Power Receptacles

Trane Rental Generator – F1 Series (55 kW to 200 kW)

⚠WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.
Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

It is the responsibility of the operator to verify that the use of this generator is performed by qualified individuals and in compliance with the NEC. Please read and understand the entire contents of this IOM before start-up is attempted.

1. If the rental generator will not be run for long periods of time, connect an extension cord to the Shore Power receptacle to keep the batteries charged and the engine block heated.

Note: *It is a requirement that the shore power is unplugged before starting the generator.*

2. Properly ground the generator enclosure and any equipment connected to it.

⚠WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.
All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

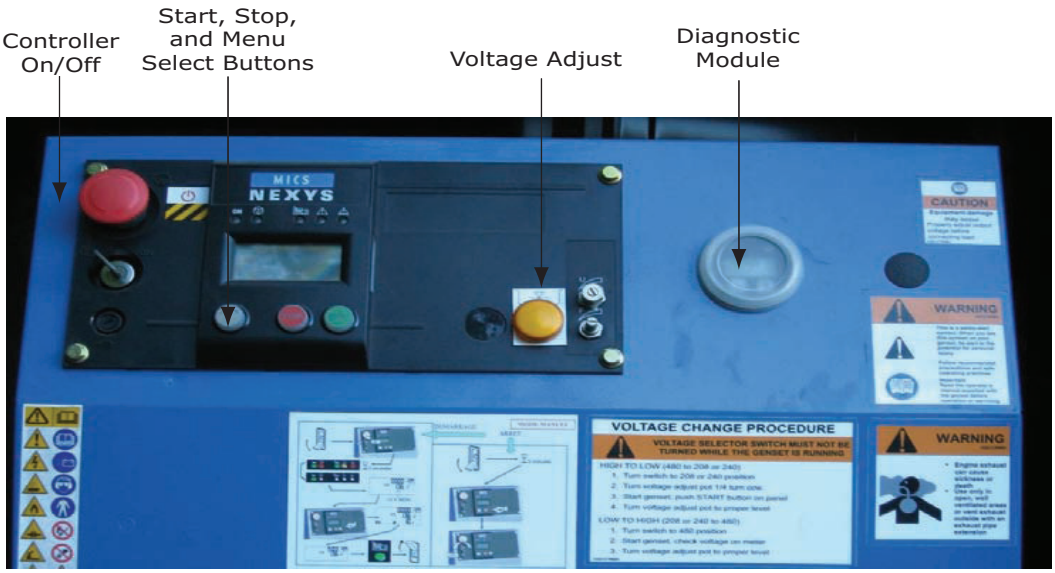
3. Check engine oil level using the dipstick on the side of the engine. Add 15W-40 oil, if required.
4. Verify that there is sufficient fuel for operation (DIESEL FUEL ONLY). This can be done visually through the fueling port, the gauge on the fuel tank, or on the digital controller screen.
5. Verify that the Voltage Selector Switch is set for the desired voltage.

Note: *Never operate the Voltage Selector Switch while the generator is in operation.*

6. Verify that the Circuit Breaker is in the OPEN position.
7. Properly connect all power cables in accordance with NEC. NEVER make wiring connections after the generator has been started.
8. Verify that the battery leads are connected.
9. Ensure that connected equipment is either turned off, or disconnected by an external disconnect switch. Damage will occur to generator if a load tries to pull power while the generator is starting.

Note: *The single phase power receptacles are only energized when the Voltage Selector Switch is in the "240V/120V Single Phase" position.*

10. Turn on the Battery Power Switch inside the main compartment.
11. Turn the On/Off Key to the ON position.
12. Verify on the Digital Controller that the generator is in MANUAL operating mode.
13. Press the Start button to start the generator.
14. Once engine has started, use the Voltage Adjust Knob (VAK) to adjust to desired voltage. Example: If Voltage Selector is set to 480 V, turn the VAK slowly until the generator voltage readout on the controller is 480 V.
15. Once the desired voltage is obtained and all safety checks have been done, place the Circuit Breaker in the CLOSED position to supply electricity.
16. It is necessary to periodically check the controller for warning messages and fuel level. Do not operate the generator for extended periods of time without performing necessary checks.
17. The settings in the Digital Controller are configured for optimal performance. Do not adjust these settings without first consulting Trane Rental Services.



Digital Controller

Shore Power

Output Voltage Readout

Auto Start Contacts

Single Phase Power Connections

Battery Power Switch

Breaker

Trane Rental Generator – F1 Series (350 kW to 450 kW)

⚠WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.
Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

It is the responsibility of the operator to verify that the use of this generator is performed by qualified individuals and in compliance with the NEC. Please read and understand the entire contents of this IOM before start-up is attempted.

1. If the rental generator will not be run for long periods of time, connect an extension cord to the Shore Power receptacle to keep batteries charged and the engine block heated.

Note: *It is a requirement that the shore power is unplugged before starting the generator.*

2. Properly ground the generator enclosure as well as any equipment connected to it.

⚠WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.
All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

3. Check engine oil level using the dipstick on the side of the engine. Add 15W-40 oil, if required.
4. Verify that there is sufficient fuel for operation (DIESEL FUEL ONLY). This can be done visually through the fueling port, the gauge on the tank, or on the controller screen.
5. Verify that the Voltage Selector Switch is set for the desired voltage.

Note: *Never operate the Voltage Selector Switch while the generator is in operation.*

6. Verify that the Circuit Breaker is in the OPEN position.
7. Properly connect all power cables in accordance with NEC. NEVER make wiring connections after the generator has been started.
8. Verify that the battery leads are connected.
9. Ensure that connected equipment is either turned off, or disconnected by an external disconnect switch. Damage will occur to generator if a load tries to pull power while the generator is starting.
10. Turn on the Battery Power Switch inside the main compartment.
11. Turn the On/Off Key to the ON position.
12. Verify that the Digital Controller is in MANUAL mode, then press the Start button to start the generator.
13. Use the finger wheel underneath the Start, Stop, and Menu buttons to make selections and push the wheel to confirm choices. Navigate these Menus to see diagnostics (fuel level, voltage, oil pressure, Amps, etc.).
14. Once the generator has stabilized and all safety checks have been done, place the Circuit Breaker in the CLOSED position to supply electricity.
15. It is necessary to periodically check the controller for warning messages as well as fuel level. Do not operate the generator for extended periods of time without performing necessary checks.
16. The settings in the controller are configured for optimal performance. Do not change settings in the controller without first consulting Trane Rental Services.

Digital Controller

Shore Power

Auto Start Contacts

Battery Power Switch

Breaker

Trane Rental Generator – Analog F2 Series Start-Up

⚠WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.
Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

It is the operator's responsibility to verify that the use of this generator is performed by qualified individuals and in compliance with the NEC. Please read and understand the entire contents of this IOM before start-up is attempted.

1. If the rental generator will not be run for long periods of time, connect an extension cord to the Shore Power receptacle to keep the batteries charged and the engine block heated.

Note: *It is a requirement that the shore power is unplugged before starting the generator.*

2. Properly ground the generator enclosure as well as any equipment connected to it.

⚠WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.
All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

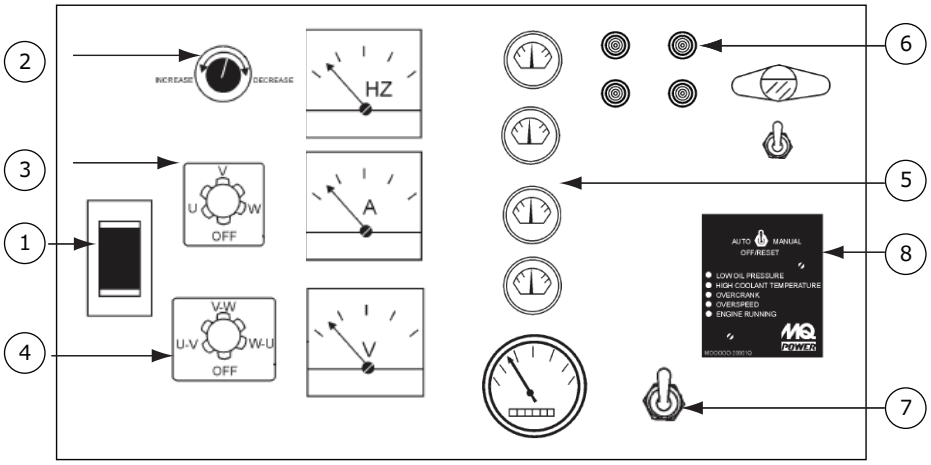
3. Check engine oil level using the dipstick on the side of the engine. Add 15W-40 oil, if necessary.
4. Verify that there is sufficient fuel for operation (DIESEL FUEL ONLY). This can be done visually through the fueling port or by the gauge mounted on the fuel tank.
5. Verify that the Voltage Selector Switch is set for the desired voltage.

Note: *Never operate the Voltage Selector Switch while the generator is in operation.*

6. Verify that the Circuit Breaker is in the OPEN position.
7. Properly connect all power cables in accordance with NEC. NEVER make wiring connections after the generator has been started.
8. Verify that the battery leads are connected.
9. Ensure that connected equipment is either turned off, or disconnected by an external disconnect switch. Damage will occur to generator if a load tries to pull power while the generator is starting.

Note: *The single phase power receptacles are only energized when the Voltage Selector Switch is in the "240V/120 V Single Phase" position.*

10. Flip the “Engine Speed Switch” to the Low position.
11. Move the toggle switch to the “Manual” position to start the engine.
12. Flip the “Engine Speed Switch” to the High position after 5 minutes.
13. Once engine has stabilized in High speed operation, use the Voltage Adjust Knob (VAK) to adjust to desired voltage. Example: If Voltage Selector is set to 480 V, turn the VAK slowly until the output voltage meter on the generator reads 480 V.
14. Once the desired voltage is obtained and all safety checks have been done, place the Circuit Breaker in the CLOSED position to supply electricity.
15. It is necessary to periodically check the generator for warning lights and fuel level. Do not operate the generator for extended periods of time without performing checks.



1. Circuit Breaker
2. Voltage Adjust Knob
3. Phase Select for Amp Meter
4. Phase Select for Volt Meter
5. Service Gauges
6. Warning Lamps
7. Engine Speed (High/Low)
8. Auto/Off/Manual Switch

Shore Power Receptacle

Single Phase Power Receptacles

Remote Engine Start Contacts

Voltage Selector Switch

Startup Procedure for 500 kW and 725 kW Analog F2 Series Generators

⚠WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.
Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

1. Shore power receptacle must be connected to an extension cord to keep the batteries charged and the engine block heated prior to initial startup at job site. Keep shore power connected when generator is off for periods long enough for the engine to cool down.

Note: *It is a requirement that the shore power is unplugged before starting the generator. (See image below).*

2. Properly ground the generator enclosure and any equipment that is connected to it.

⚠WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.
All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

3. Check engine oil level using dipstick on the side of the engine. Add 15W-40 oil to the fill port as necessary.
4. Verify that there is sufficient fuel for operation (DIESEL FUEL ONLY). This can be done by observing the fuel level on the control screen inside the generator compartment.
5. Verify the generator is set for the desired voltage (500F2 only) by appropriately spinning the wheel and setting the dial.

Note: *Perform this operation while generator is powered down.*

6. Inside the generator, turn the battery disconnect switch to ON. (Be sure this switch is in the off position when generator is not in use).

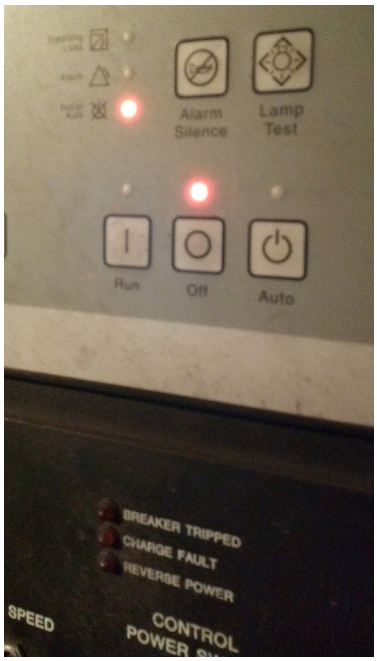
7. Enter the generator compartment to access the control panel.

Notes:

- *Ear protection should be worn in this compartment when engine is running.*
- *High velocity air flow through this compartment when generator is running, remove any loose items from inside compartment before starting. (See image below).*

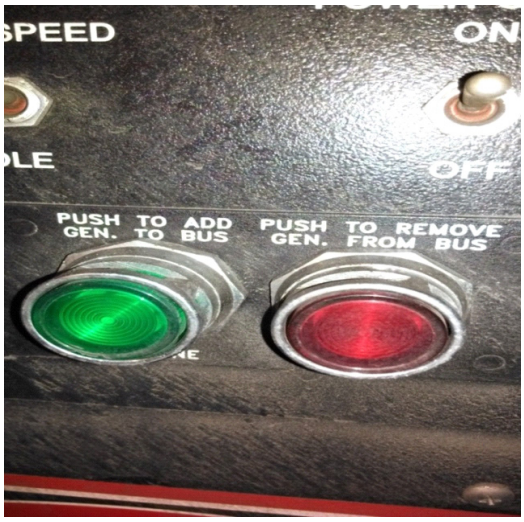
8. Turn the control power switch on and turn toggle switch to the left of the power switch to IDLE. (See image below).

9. Select RUN on the keypad above the power switch. This will start the engine.



10. Allow for engine warm up and then move toggle switch to FULL SPEED position. (As shown in picture in Step 8).
11. Push Green button below control power switch to close breaker. Breaker will not close on idle.

Note: *This will add generator power to bus. Be sure the equipment you are powering is ready to be energized. (See image below).*



Startup Procedure for 450 and 900 kW Digital F2 Series Generators

⚠WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.
Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

1. If the rental generator will not be run for long periods of time, connect an extension cord to the Shore Power receptacle to keep the batteries charged and the engine block heated.

Note: *It is a requirement that the shore power is unplugged before starting the generator.*

2. Properly ground the generator enclosure and any equipment connected to it.

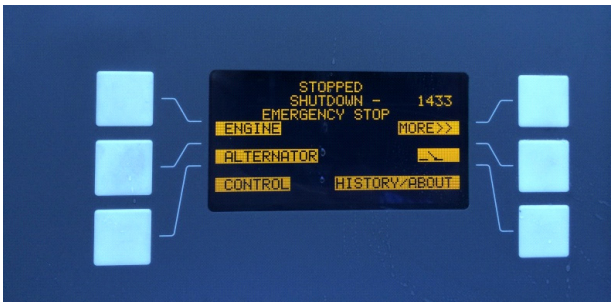
⚠WARNING

Proper Field Wiring and Grounding Required!

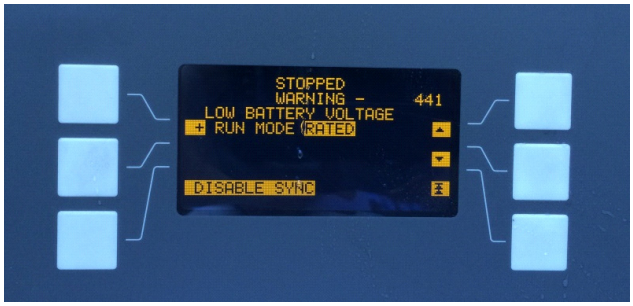
Failure to follow code could result in death or serious injury.
All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

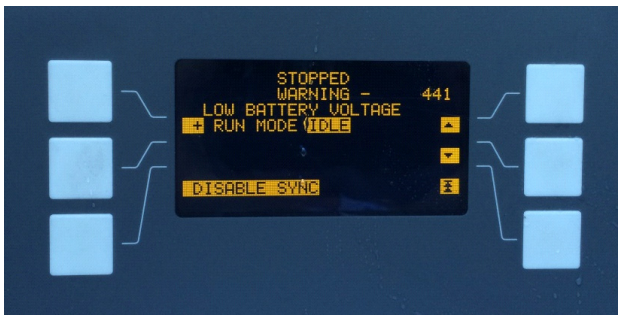
3. Check engine oil level using the dipstick on the side of the engine. Add 15W-40 oil to the oil fill port if necessary.
4. Verify that there is sufficient fuel for operation (DIESEL FUEL ONLY). This can be done visually through the fueling port, the gauge on the fuel tank, or on the controller screen.
5. Verify that the generator is set for desired voltage. Please refer to Voltage Switch Procedure attached in this document.
6. Inside the generator turn battery disconnect to on position.
7. Open controller door located in the outside panel of the generator.

8. After locating control panel, press any button to the left of display to illuminate the screen.
9. Press control button at the bottom left of the screen as shown in the picture below.



10. Press + button at the top left to go from rated to idle.





11. Press button on bottom right to go back to main menu.
12. Set control knob to manual position, and immediately after press and hold manual run / stop button located above the knob.

13. After engine starts allow to warm up.
14. Repeat Step 9 and Step 10 to take the generator from an Idle to a Rated Mode.
15. Press the bottom right button to go back to main menu.
16. To close the breaker you have to be at main menu, press the center button on the right side (as shown in the picture in Step 9), after button is pressed it will show a closed breaker.

Note: *Breaker cannot be closed while in engine idle position. Be sure the equipment is ready to be energized prior to closing the breaker.*

Returning a Rental

When preparing to return the Rental Generator:

- Turn the battery switch off in order to avoid unnecessarily draining the battery.
- Ensure that any tools that may have been used during maintenance or repair have not been left inside the unit.
- Verify that the power cable pigtails are attached as when you received the unit.
- Any accessories (cable, shore power cables, grounding rods, lugs, etc) that came with the rental unit are being included in the shipment.
- Trane Rental Services will not reimburse additional fuel in excess of what was originally delivered.
- If generator is returned with less fuel than when shipped, customer will incur additional extra fees.

Contact Information

Please contact Trane Rental Services at 1-800-755-5115 if additional information is needed.

Notes

Trane - by Trane Technologies (NYSE: TT), a global climate innovator - creates comfortable, energy efficient indoor environments for commercial and residential applications. For more information, please visit trane.com or tranetechnologies.com.

SRV-SVN04E-EN 05 Aug 2022
Supersedes SRV-SVN04D-EN (Jul 2020)