INSTALLATION GUIDELINES

Air-cooled Generators

⚠ DANGER!

⚠ NOT INTENDED FOR USE IN CRITICAL LIFE SUPPORT APPLICATIONS.

⚠ ONLY QUALIFIED ELECTRICIANS OR CONTRACTORS SHOULD ATTEMPT INSTALLATION!

⚠ DEADLY EXHAUST FUMES! OUTDOOR INSTALLATION ONLY!

THIS MANUAL MUST BE USED IN CONJUNCTION WITH THE OWNERS MANUAL.

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INTRODUCTION

Thank you for purchasing this compact, high performance, air-cooled, engine-driven generator. It is designed to automatically supply electrical power to operate critical loads during a utility power failure.

This unit is factory installed in an all-weather, metal enclosure that **is intended exclusively for outdoor installation.** This generator will operate using either vapor withdrawn liquid propane (LP) or natural gas (NG).

NOTE:

This generator is suitable for supplying typical residential loads such as Induction Motors (sump pumps, refrigerators, air conditioners, furnaces, etc.), Electronic Components (computer, monitor, TV, etc.), Lighting Loads and Microwaves.

READ THIS MANUAL THOROUGHLY

If any portion of this manual is not understood, contact the nearest Dealer for starting, operating and servicing procedures.

Throughout this publication, and on tags and decals affixed to the generator, DANGER, WARNING, CAUTION and NOTE blocks are used to alert personnel to special instructions about a particular operation that may be hazardous if performed incorrectly or carelessly. Observe them carefully. Their definitions are as follows:

⚠ DANGER!

INDICATES A HAZARDOUS SITUATION OR ACTION WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY.

⚠ WARNING!

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

⚠ CAUTION!

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

NOTE:

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

These safety warnings cannot eliminate the hazards that they indicate. Common sense and strict compliance with the special instructions while performing the action or service are essential to preventing accidents.

Four commonly used safety symbols accompany the **DANGER**, **WARNING** and **CAUTION** blocks. The type of information each indicates is as follows:

This symbol points out important safety information that, if not followed, could endanger personal safety and/or property of others.

This symbol points out potential explosion hazard.

This symbol points out potential fire hazard.

This symbol points out potential electrical shock hazard.

The operator is responsible for proper and safe use of the equipment. The manufacturer strongly recommends that the operator read this *Owner's Manual* and thoroughly understand all instructions before using this equipment. The manufacturer also strongly recommends instructing other users to properly start and operate the unit. This prepares them if they need to operate the equipment in an emergency.

CONTENTS

This manual contains pertinent owner's information for these models:

- 7 kW NG, 8 kW LP, single-cylinder GH-410 Engine
- 9 kW NG, 10 kW LP, V-twin GT-530 Engine
- 13 kW NG, 13 kW LP, V-twin GT-990 Engine
- 13 kW NG, 14 kW LP, V-twin GT-990 Engine
- 16 kW NG, 16 kW LP, V-twin GT-990 Engine
- 16 kW NG, 17 kW LP, V-twin GT-990 Engine
- 18 kW NG, 20 kW LP, V-twin GT-999 Engine

OPERATION AND MAINTENANCE

It is the operator's responsibility to perform all safety checks, to make sure that all maintenance for safe operation is performed promptly, and to have the equipment checked periodically by a Dealer. Normal maintenance service and replacement of parts are the responsibility of the owner/operator and, as such, are not considered defects in materials or workmanship within the terms of the warranty. Individual operating habits and usage contribute to the need for maintenance service.

Proper maintenance and care of the generator ensures a minimum number of problems and keep operating expenses at a minimum. See a Dealer for service aids and accessories.

HOW TO OBTAIN SERVICE

When the generator requires servicing or repairs, contact a Dealer for assistance. Service technicians are factory-trained and are capable of handling all service needs. For assistance locating a dealer, call 1-888-436-3722.

When contacting a Dealer about parts and service, always supply the complete model number and serial number of the unit as given on its data decal, which is located on the generator. See section "The Generator" for decal location.

Model No._____ Serial No._____

SAFETY RULES

⚠ WARNING!

Save These Instructions – The manufacturer suggests that these rules for safe operation be copied and posted near the unit's installation site. Safety should be stressed to all operators and potential operators of this equipment.

Study these SAFETY RULES carefully before installing, operating or servicing this equipment. Become familiar with this *Owner's Manual* and with the unit. The generator can operate safely, efficiently and reliably only if it is properly installed, operated and maintained. Many accidents are caused by failing to follow simple and fundamental rules or precautions.

The manufacturer cannot anticipate every possible circumstance that might involve a hazard. The warnings in this manual, and on tags and decals affixed to the unit are, therefore, not all-inclusive. If using a procedure, work method or operating technique the manufacturer does not specifically recommend, ensure that it is safe for others. Also make sure the procedure, work method or operating technique utilized does not render the generator unsafe.

⚠ DANGER!

Despite the safe design of this generator, operating this equipment imprudently, neglecting its maintenance or being careless can cause possible injury or death. Permit only responsible and capable persons to install, operate and maintain this equipment.

Potentially lethal voltages are generated by these machines. Ensure all steps are taken to render the machine safe before attempting to work on the generator.

Parts of the generator are rotating and/or hot during operation. Exercise care near running generators.

Installation must always comply with applicable codes, standards, laws and regulations.

A running generator gives off carbon monoxide, and odorless, colorless poison gas. Breathing in carbon monoxide can cause headaches, fatigue, diziness, nausea, vomitting, confusion, fainting, siezures or death.

CALIFORNIA PROPOSITION 65 WARNING
Engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

CALIFORNIA PROPOSITION 65 WARNING
This product contains or emits chemicals known to the State of California to cause cancer, birth defects and other reproductive harm.

GENERAL HAZARDS

- For safety reasons, the manufacturer recommends that this equipment be installed, serviced and repaired by a Service Dealer or other competent, qualified electrician or installation technician who is familiar with applicable codes, standards and regulations. The operator also must comply with all such codes, standards and regulations.
- The engine exhaust fumes contain carbon monoxide, which can be DEADLY. This dangerous gas, if breathed in sufficient concentrations, can cause unconsciousness or even death. Do NOT alter or add to the exhaust system or do anything that might render the system unsafe or in noncompliance with applicable codes and standards.
- Install a battery operated carbon monoxide alarm indoors, according to manufacturer's instructions/recommendations.
- Adequate, unobstructed flow of cooling and ventilating air is critical to correct generator operation. Do not alter the installation or permit even partial blockage of ventilation provisions, as this can seriously affect safe operation of the generator. **The generator MUST be installed and operated outdoors only.**
- Keep hands, feet, clothing, etc., away from drive belts, fans, and other moving or hot parts. Never remove any drive belt or fan guard while the unit is operating.
- When working on this equipment, remain alert at all times. Never work on the equipment when physically or mentally fatigued.
- Inspect the generator regularly, and contact the nearest Dealer for parts needing repair or replacement.
- Before performing any maintenance on the generator, disconnect its battery cables to prevent accidental start up. Disconnect the cable from the battery post indicated by a NEGATIVE, NEG or (–) first, then remove the POSITIVE, POS or (+) cable. When reconnecting the cables, connect the POSITIVE cable first, the NEGATIVE cable last.
- Never use the generator or any of its parts as a step. Stepping on the unit can stress and break parts, and may result in dangerous operating conditions from leaking exhaust gases, fuel leakage, oil leakage, etc.

ELECTRICAL HAZARDS

- All generators covered by this manual produce dangerous electrical voltages and can cause fatal electrical shock. Utility power delivers extremely high and dangerous voltages to the transfer switch as does the standby generator when it is in operation. Avoid contact with bare wires, terminals, connections, etc., while the unit is running. Ensure all appropriate covers, guards and barriers are in place, secured and/or locked before operating the generator. If work must be done around an operating unit, stand on an insulated, dry surface to reduce shock hazard.
- Do not handle any kind of electrical device while standing in water, while barefoot, or while hands or feet are wet. DANGEROUS ELECTRICAL SHOCK MAY RESULT.
- The National Electrical Code (NEC) requires the frame and external electrically conductive parts of the generator to be connected to an approved earth ground. Local electrical codes also may require proper grounding of the generator electrical system.
- After installing this home standby electrical system, the generator may crank and start at any time without warning. When this occurs, load circuits are transferred to the STANDBY (generator) power source. To prevent possible injury if such a start and transfer occur, always set the generator's AUTO/OFF/MANUAL switch to its OFF position before working on equipment and remove the 7.5A fuse from the generator control panel.
- In case of accident caused by electric shock, immediately shut down the source of electrical power. If this is not possible, attempt to free the victim from the live conductor. AVOID DIRECT CONTACT WITH THE VICTIM. Use a nonconducting implement, such as a dry rope or board, to free the victim from the live conductor. If the victim is unconscious, apply first aid and get immediate medical help.
- Never wear jewelry when working on this equipment. Jewelry can conduct electricity resulting in electric shock, or may get caught in moving components causing injury.

FIRE HAZARDS

- For fire safety, the generator must be installed and maintained properly. **Installation must always comply with applicable codes, standards, laws and regulations.** Adhere strictly to local, state and national electrical and building codes. Comply with regulations the Occupational Safety and Health Administration (OSHA) has established. Also, ensure that the generator is installed in accordance with the manufacturer's instructions and recommendations. Following proper installation, do nothing that might alter a safe installation and render the unit in noncompliance with the aforementioned codes, standards, laws and regulations.
- Keep a fire extinguisher near the generator at all times. Extinguishers rated "ABC" by the National Fire Protection Association are appropriate for use on the standby electric system. Keep the extinguisher properly charged and be familiar with its use. Consult the local fire department with any questions pertaining to fire extinguishers.

EXPLOSION HAZARDS

- Do not smoke around the generator. Wipe up any fuel or oil spills immediately. Ensure that no combustible materials are left in the generator compartment, or on or near the generator, as FIRE or EXPLOSION may result. Keep the area surrounding the generator clean and free from debris.
- Gaseous fluids such as natural gas and liquid propane (LP) gas are extremely EXPLOSIVE. Install the fuel supply system according to applicable fuel-gas codes. Before placing the home standby electric system into service, fuel system lines must be properly purged and leak tested according to applicable code. After installation, inspect the fuel system periodically for leaks. No leakage is permitted.

STANDARDS INDEX

In the absence of pertinent standards, codes, regulations and laws, the published information listed below may be used as installation guide for this equipment.

1. NFPA No. 37, STATIONARY COMBUSTION ENGINES AND GAS TURBINES, available from the National Fire Protection Association, 470 Atlantic Avenue, Boston, MA 02210.
2. NFPA No. 76A, ESSENTIAL ELECTRICAL SYSTEMS FOR HEALTH CARE FACILITIES, available same as Item 1.
3. NFPA No. 54, NATIONAL FUEL GAS CODE, available same as Item 1.
4. NFPA No. 58, AMERICAN NATIONAL STANDARD FOR STORAGE AND HANDLING OF LIQUEFIED PETROLEUM GAS, available same as Item 1.
5. NFPA No. 70, NFPA HANDBOOK OF NATIONAL ELECTRIC CODE, available same as Item 1.
6. Article X, NATIONAL BUILDING CODE, available from the American Insurance Association, 85 John Street, New York, N.Y. 10038.

7. AGRICULTURAL WIRING HANDBOOK, available from the Food and Energy Council, 909 University Avenue, Columbia, MO 65201.
8. ASAE EP-3634, INSTALLATION AND MAINTENANCE OF FARM STANDBY ELECTRICAL SYSTEMS, available from the American Society of Agricultural Engineers, 2950 Niles Road, St. Joseph, MI 49085.
9. NFPA No. 30, FLAMMABLE AND COMBUSTIBLE LIQUIDS CODE, available same as Item 1.

⚠ DANGER!

Only qualified electricians or contractors should attempt such installations, which must comply strictly with applicable codes, standards and regulations.

UNPACKING/INSPECTION

After unpacking, carefully inspect the contents for damage.

- This standby generator set is ready for installation with a factory supplied and pre-mounted base pad and has a weather protective enclosure that is intended for **outdoor installation only.**
- This UL listed standby generator set may be packaged with an automatic transfer switch with built in load center. The combination transfer switch and load center is pre-wired with a two foot and 30 foot conduit. Circuit breakers for emergency circuit connections are included (if equipped).
- This UL listed, 2-pole switch is rated at 100 or 200 AC amperes at 250 volts maximum. **The 100 Amp transfer switch is for indoor use only. The 200 Amp transfer switch is for indoor/outdoor use (if equipped).**

⚠ WARNING!

If this generator is used to power electrical load circuits normally powered by a utility power source, it is required by code to install a transfer switch. The transfer switch must effectively isolate the electrical system from the utility distribution system when the generator is operating (NEC 700, 701 & 702). Failure to isolate an electrical system by such means will result in damage to the generator and also may result in injury or death to utility power workers due to backfeed of electrical energy.

If any loss or damage is noted at time of delivery, have the person(s) making the delivery note all damage on the freight bill or affix their signature under the consignor's memo of loss or damage.

If a loss or damage is noted after delivery, separate the damaged materials and contact the carrier for claim procedures.

"Concealed damage" is understood to mean damage to the contents of a package that is not in evidence at the time of delivery, but is discovered later.

To properly open the roof, press down on the center top lip and release the latch. If pressure is not applied from the top, the roof may appear stuck. Always verify that the side lock is unlocked before attempting to lift the roof.

NEC REQUIREMENTS

Local code enforcement may require that AFCI's be incorporated into the transfer switch distribution panel. The Transfer Switch provided with this generator has a distribution panel that will accept AFCI's.

Siemens Part No. Q115AF - 15A or Q120AF - 20A can be obtained from a local electrical wholesaler and will simply replace any of the single pole circuit breakers supplied in the Transfer Switch distribution panel.

BEFORE YOU BEGIN

Contact the local inspector or City Hall to be aware of all federal, state and local codes that could impact the installation. Secure all required permits before starting the job.

Carefully read and follow all of the procedures and safety precautions detailed in the installation guide. If any portion of the installation manual, technical manual or other factory-supplied documents is not completely understood, contact a dealer for assistance.

Fully comply with all relevant NEC, NFPA and OSHA standards as well as all federal, state and local building and electric codes. As with any generator, this unit must be installed in accordance with current NFPA 37 and NFPA 70 standards as well as any other federal, state, and local codes for minimum distances from other structures.

SITE PREPARATION AND GENERATOR PLACEMENT

1. Locate the mounting area as close as possible to the transfer switch and fuel supply.
   Leave adequate room around the area for service access (check local code), and place high enough to keep rising water from reaching the generator.
   Choose an open space that will provide adequate and unobstructed airflow (see the “Location” section in the Owner’s Manual).

2. Place the unit so air vents won’t become clogged with leaves, grass, snow or debris. Make sure exhaust fumes will not enter the building through eaves, windows, ventilation fans or other air intakes.
   Dig a rectangular area approximately five inches deep and about six inches longer and wider than the footprint of the generator. Cover with polyurethane film and fill with pea gravel or crushed stone. Compact and level the stone. A concrete pad can be poured if desired.

3. Inspect the generator for shipping damage and if necessary, file a claim with the shipper.
   Remove the bands holding the generator to the wooden pallet.

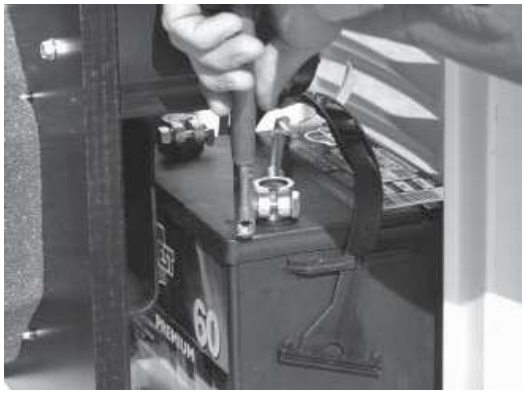
4. Make sure the lifting equipment to be used has sufficient capacity to safely handle the weight of the generator.
   Use nylon lifting straps and connect them to the lifting eyes on each corner of the base frame to avoid damaging the enclosure.

5. Set the generator onto the pad so that the gravel bed extends several inches beyond the generator on all sides.
   Make sure the generator is level within ½ inch.

6. Connect an approved ground strap to the grounding lug on the base frame and to an approved earth ground or grounding rod as specified by local regulations.

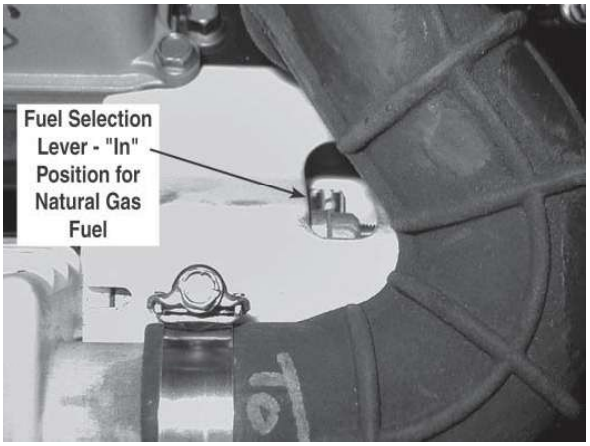
7. Check the engine oil and, if necessary, add enough of the recommended oil to bring the level up to the FULL mark on the dipstick. Be careful not to overfill the crankcase.

CONVERTING TO LP VAPOR

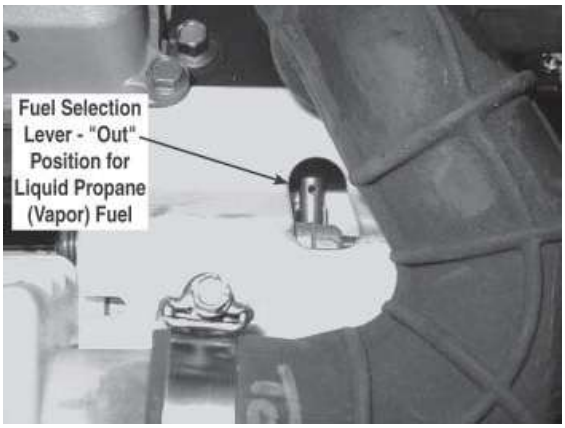


1. The generator was configured for natural gas operation at the factory. Switching over to LP Vapor is a simple procedure. On models with a single cylinder engine, begin by disconnecting and removing the battery if installed.

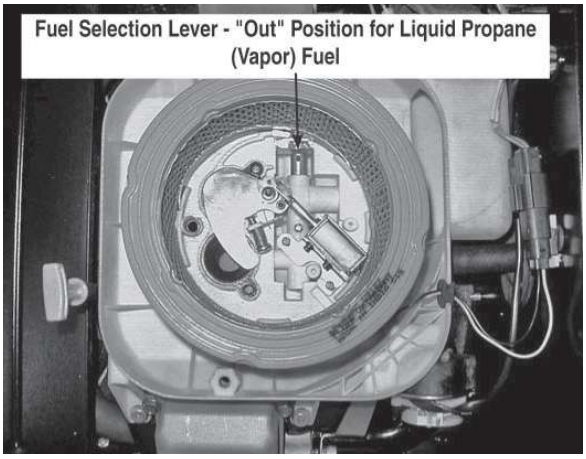
2. Take the plastic T-handle fuel selector in the poly bag supplied with the generator and locate the selector tab on the air box cover. Insert the pin end into the hole in the selector tab and **pull outward** to overcome spring pressure. Then twist clockwise 90 degrees and allow the selector to return in once aligned with the LP position.



3. On 10 kW units, open the roof, loosen the forward clamp on the air inlet hose, and slide the hose away from the hose fitting.



4. Slide the fuel selector pin on the carburetor out towards the back of the enclosure.
5. Replace the inlet hose and tighten the clamp securely.



6. On all other models, simply remove the air cleaner cover and slide the fuel selector pin outward from the natural gas to the LP position.

INSTALLING & CONNECTING GAS LINES

1. Both natural gas and LP Vapor are highly volatile substances, so strict adherence to all safety procedures, codes, standards and regulations is essential.
   Gas line connections should be made by a certified plumber familiar with local codes. Always use AGA-approved gas pipe and a quality pipe sealant or joint compound.
   Verify the capacity of the natural gas meter or the LP tank in regards to providing sufficient fuel for both the generator and other operating appliances.

2. Most applications will require an external manual shutoff valve on the fuel line.

3. When connecting the gas line to the generator, use the provided section of UL Listed or AGA-approved flexible fuel line in accordance with local regulations. The purpose of the flexible fuel line is to ensure that vibration from the generator does not cause a gas leak at one of the connection points, so it's important that the line be installed with as few bends as possible. Installing a sediment trap is also recommended.

4. Never bend the flexible fuel line to avoid using an elbow. Bending the flexible line decreases its ability to absorb vibrations and defeats its purpose as well as constricts the actual fuel flow.

5. After checking for leaks, check the gas pressure at the REGULATOR to make sure there's enough gas pressure for generator operation. See Owner's Manual for fuel pressure specifications. If not within these limits, contact your local gas supplier.

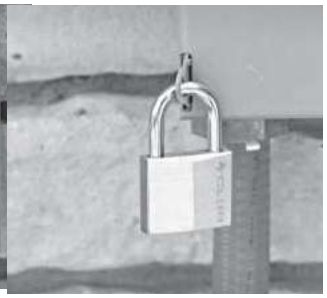
6. When finished checking the gas pressure, close the manual shutoff valve.

EXTERNAL ELECTRICAL CONNECTIONS

1. Drill a 1 ¾ inch hole and feed the conduit through the hole.

2. Remove the knockout in the back of the connection box, feed the wires through the back of the box and secure the conduit with the lock nut.
   Seal the hole with silicone caulk. Don't forget to caulk the hole inside the house as well.

3. Mount the connection box so that it completely covers the hole in the wall. Caulk around the sides and top of the box to ensure a good seal.
   Connect all wires to the lugs in the connection box (black to black, red to red and white to white). Attach the green ground wire to the ground screw and connect the two small plugs to their mating receptacle ends.



4. Replace the protective cover plate and retaining screw, and lock the connection box.

5. For 10-20 kW models, locate the metal hasp that is packaged in the owner's manual bag. Insert the hasp in the slot located on the left side of the external circuit breaker box. Be sure that the clip of the hasp is facing toward the front of the generator. If desired, lock the external box.

GENERATOR ACTIVATION

When battery power is applied to the generator during the installation process, the controller will light up. However, the generator still needs to be activated before it will automatically run in the event of a power outage.

Activating the generator is a simple one time process that is guided by the controller screen prompts. Once the product is activated, the controller screen will not prompt you again, even if you disconnect the generator battery.

After obtaining your activation code, please complete the following steps at the generator's control panel in the **Activation Chart** (shown on the following page).

GENERATOR CONNECTIONS – EZ SWITCH

1. If the generator comes with an external connection box and 5' seal-tite whip pre-wired and connected to the generator, no additional connections are necessary at the generator. Skip the following section and proceed with Appendix A, EZ Switch Installation & Operational Testing.

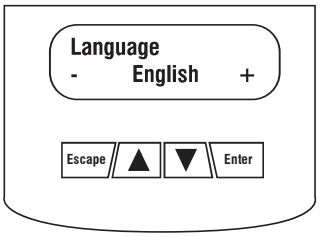
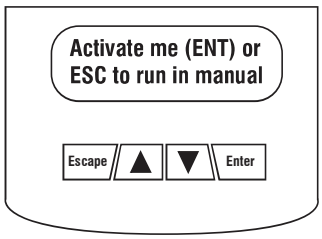
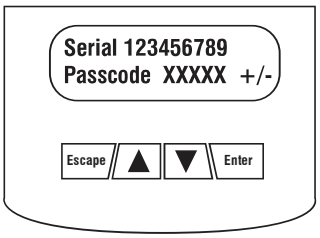
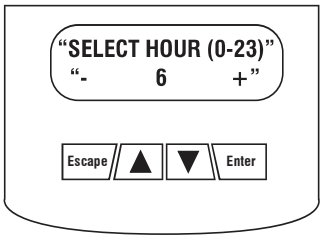
2. If the EZ Switch was purchased separately from the generator, the 5' seal-tite whip will need to be connected to the generator. To complete the wiring, run the ¾" conduit for the power leads and control wires from the external connection box to the generator.
3. Remove the two screws securing the connection area cover, and remove the cover.

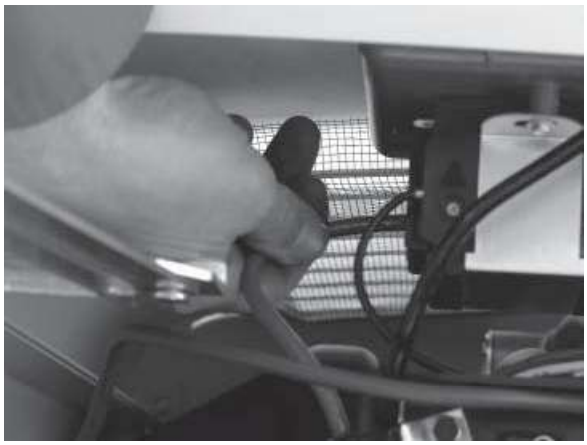
4. Feed the wires through the back of the generator and secure the conduit with the lock nut.
5. Run the power leads through the strain relief provided.

6. The circuit breaker is attached to the exterior access panel.

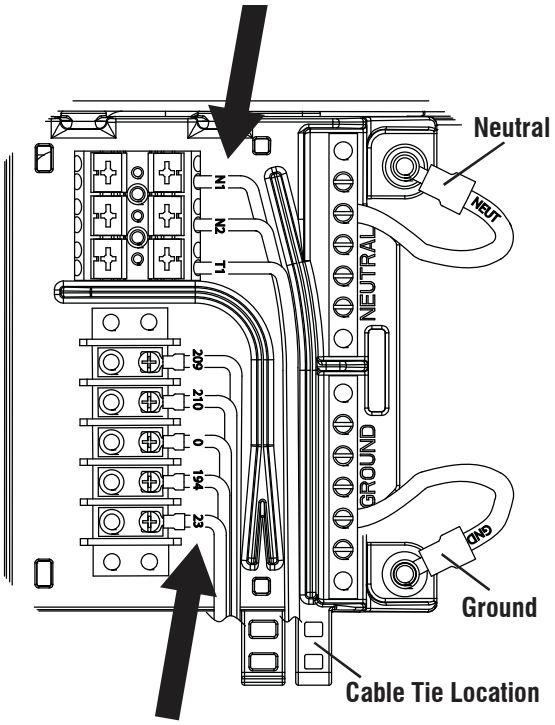
7. Remove the plastic plugs inside the main breaker access area to allow connection of the power leads to the circuit breaker.

ACTIVATION CHART

CHOOSE LANGUAGE		**TROUBLESHOOTING**
Display Reads: 	Use ARROW keys to scroll to desired language. Press ENTER to select.	If the wrong language is chosen, it can be changed later using the “edit” menu.
Display Reads: 	Press ENTER to begin the activation process.	If ESCAPE is pressed instead of ENTER, your generator will only run in manual mode (for test purposes) and NOT ACTIVATED will be displayed. You will need to remove the generator control panel fuse AND disconnect the T1, N1 and N2 connector in the external connection box (if equipped); or disconnect utility input (main breaker) to the transfer switch for 3-5 seconds and reconnect, then begin with Step 1.
Display Reads: 	If you do not have your activation code, go to www.activategen.com or call 1-888-9ACTIVATE (922-8482). If you already have your activation code, wait 3-5 seconds for the next display.	
ENTER ACTIVATION CODE (Passcode)		**TROUBLESHOOTING**
Display Reads: 	Use ARROW keys to scroll and find the first number of your Activation Code. Press ENTER to select. Repeat this step until all digits have been entered. Use ESCAPE to correct previous digits.	
Display Reads: 	Activation is complete when all digits are entered above and your screen shows this display. Follow the controller prompts to continue setting the time function. Refer to your Owner’s Manual with questions.	What happens if “Wrong Passcode Try Again” appears? Reenter the activation code. If a second attempt is unsuccessful, check the number against the code given on activategen.com. If it is correct and the generator will not accept it, contact 1-888-9ACTIVATE (922-8482).



8. Now connect the red and black power leads to the circuit breaker. Since this is a single-phase application, it doesn't matter which wire is connected to which lug.
9. Connect the green equipment ground wire to the ground bus bar and torque to 35 inch lbs. The torque values are:
   - 10-14 AWG = 35 in/lbs
   - 8 AWG = 40 in/lbs
   - 4-6 AWG = 45 in/lbs



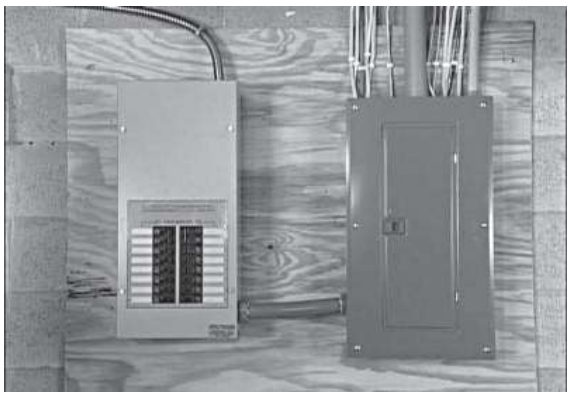
10. Connect the white neutral wire to the neutral bus bar and torque to 35 inch lbs. The torque values are:
    - 10-14 AWG = 35 in/lbs
    - 8 AWG = 40 in/lbs
    - 4-6 AWG = 45 in/lbs
11. Connect the control wires to the correct terminals. The terminals are clearly marked N1 and N2 for utility sensing; 23 and 194 for transfer relay control; and T1 and 0 for battery charge. On pre-wired switches, the 0 (zero) wire will not be present/required.

NOTE:

In order to maintain separation of circuits, the DC control wires must be separated from the AC control wires. A piece of fiberglass sleeving has been provided in the manual kit to achieve this. Slide the sleeving over the AC wires OR the DC wires, but not both, from the wire landing area to the outside of the generator. Use the cable tie locations to hold the sleeving in place.

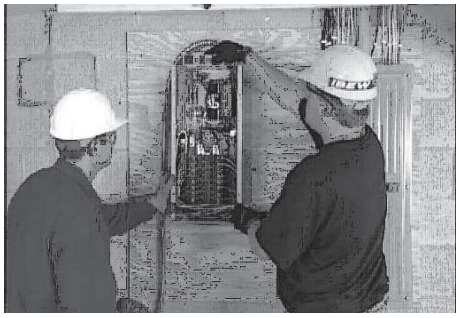
12. An improperly connected control wire can damage the generator control board.

APPENDIX A – EZ SWITCH INSTALLATION & OPERATIONAL TESTING

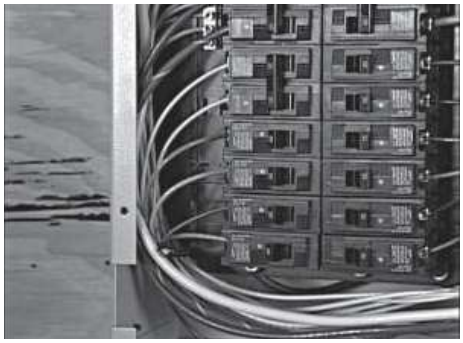


1. Before beginning any installation, make sure power is shut OFF to the main distribution panel and carefully read the Owner's Manual that came with the transfer switch.
   The distributed load center switch must be mounted close enough to the main distribution panel to accommodate the two-foot, pre-wired conduit. Make sure no water or corrosive substances can drip onto the transfer switch enclosure.

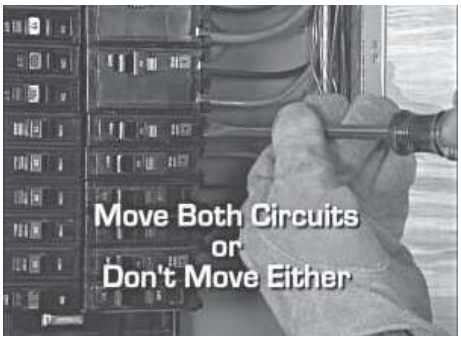
2. Always inspect the switch for shipping damage. Never mount a transfer switch that shows any evidence of damage.



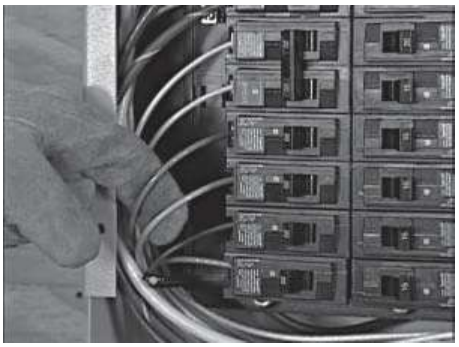
3. Protect against impact and mount the switch vertically to a rigid support structure. Make sure the switch is level and plumb.
   The transfer switch is an open transition switch. Open transition switches prevent electrical feedback between the generator and the utility by only allowing load circuits to be connected to one power supply at a time.



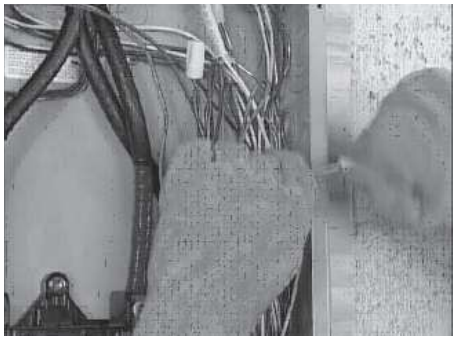
4. Each wire in the pre-wired transfer switch is color-coded to easily match circuits in the main panel to their new breakers in the transfer switch.



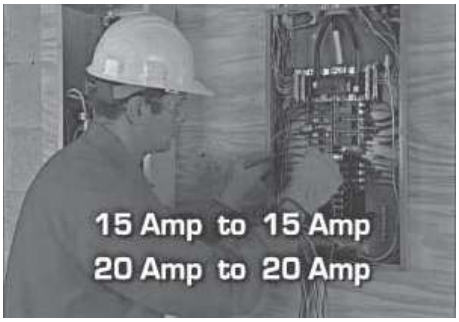
5. When three-conductor wiring is used, two 120 volt circuits will often share the same neutral wire. To avoid overloading the neutral, either move BOTH of the circuits that share the neutral or don't move either of them.



6. When moving two circuits with a shared neutral, they should be connected to adjacent positions (one above the other) in the transfer switch. That will assure that the two hot wires are on separate phases and will maintain their relationship to neutral.

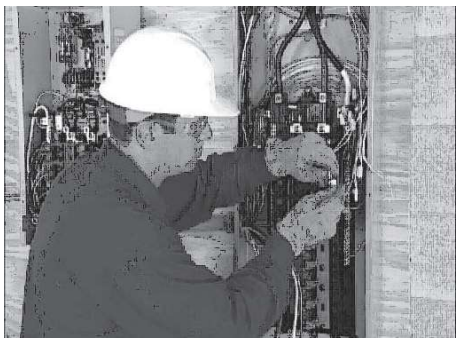


7. Choose a circuit to be backed up and remove the power lead from the breaker.



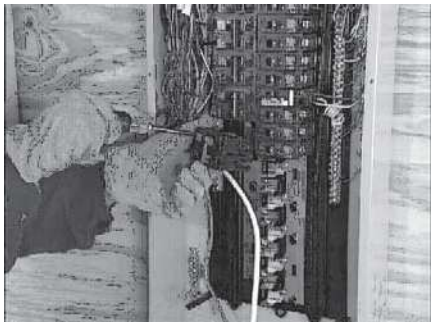
8. Using UL Listed wire nuts, reconnect the power lead to a matching breaker in the transfer switch.

Appendix A



9. Make sure each circuit moved is protected by the same size breaker in the transfer switch. 15 Amp circuits must be connected to 15 Amp breakers and 20 Amp circuits to 20 Amp breakers.

10. Connect the provided large neutral to the neutral bar in the distribution panel.



11. Install a 2-pole breaker in the distribution panel to protect the transfer switch. The required amp rating of the breaker depends on which transfer switch is used. The breaker in pre-wired load center switches cannot exceed 70 Amps. This breaker must be compatible with the existing electrical distribution panel.
    Install the breaker in two adjacent empty slots (one above the other) in the main panel.

12. When all priority circuits have been moved to the transfer switch, close the main breaker to restore utility power and make sure utility voltage at the transfer switch is correct. Refer to NFPA 70-E for the safety equipment required when working inside a live transfer switch.

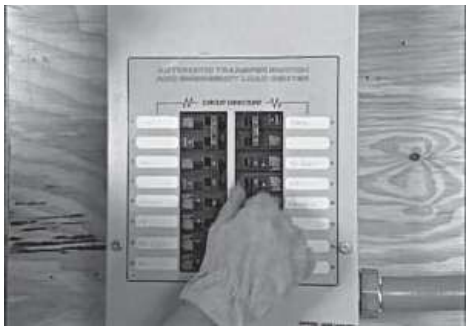
BATTERY INSTALLATION

1. A Group 26R battery is recommended for these generators.

2. Follow all of the procedures and safety precautions in the generator Owner's Manual when installing the battery. Verify the switch is in the off position. When preparing for operational testing, DO NOT connect the battery until transfer switch connections are complete.

OPERATIONAL TESTING

1. Switch the generator's main circuit breaker OFF and put the mode switch in the OFF position.



2. Make sure utility power is OFF and place all of the priority circuit breakers in the transfer switch in the OFF position.

3. Locate the transfer handle, insert the metal end into the slot in the main contactor assembly and pull the handle DOWN to move the main contacts to the standby power, or generator position.
   NEVER OPERATE THE TRANSFER SWITCH MANUALLY WHEN LOADS ARE CONNECTED.
4. Put the generator's mode switch in MANUAL to start the engine. Allow the engine to warm up, then switch the generator's main breaker to the ON position. The generator is now supplying electricity to the transfer switch but is not carrying any load.

5. Be sure that voltage and frequency from the generator is correct. If line-to-line voltage is not approximately 240 volts, refer to the Owner's Manual for the proper adjustment procedures. On all models, if line-to-neutral voltage is not 120 volts, check the neutral connection between the generator and transfer switch.

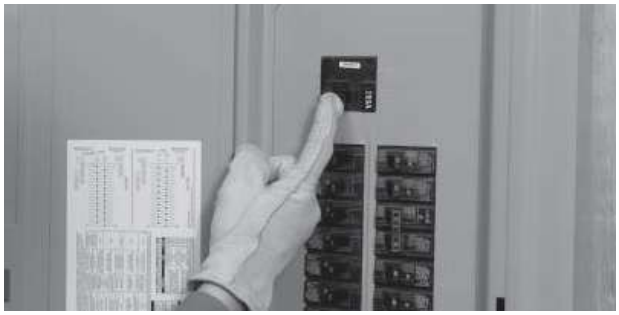
6. When finished checking the voltage, switch the generator's main circuit breaker OFF and put the mode switch in the OFF position to shut down the generator.

7. Make sure the 2-pole circuit breaker installed in the main distribution panel is in the OFF position.

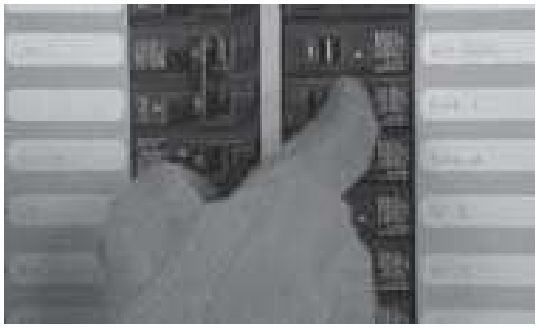
Appendix A

8. Use the transfer handle to move the main contacts in the transfer switch to the UP (utility position). Switch the 2-pole breaker ON in the distribution panel.
9. Now switch the generator's main breaker ON, and put the mode switch in AUTO.

10. Shut OFF utility power and make sure the generator starts automatically.



11. If everything worked properly, switch the main breaker to ON and make sure that power is automatically transferred back to the utility.

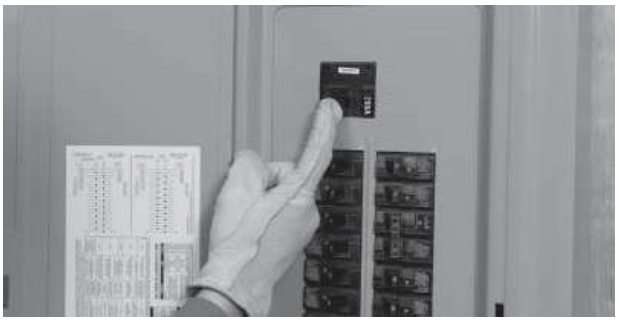


12. After the engine has completed its cool down cycle and shut down, shut OFF utility power again.
    When the generator is supplying power to the transfer switch, move the breakers in the switch to the ON position, one at a time, until the generator has accepted the entire priority load.

13. With the generator carrying the entire priority load, recheck gas pressure to verify that it is at the same level it was before the generator was started.

NOTE:

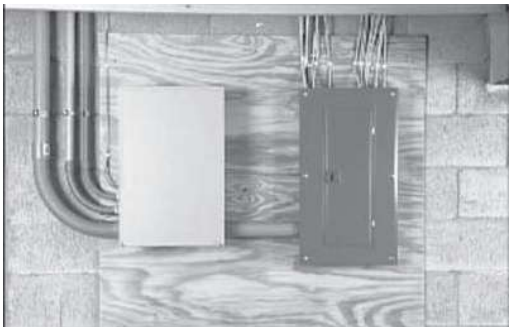
Even if the generator is running smoothly at this point, a drop in gas pressure indicates that the supply is barely adequate to supply the generator's needs. Changes in the generator load, or additional gas demand by other appliances may affect the generator's performance. Verify gas pressure and pipe sizing. Turn off the gas, unhook the manometer and reinstall the port plug.



14. Switch the main breaker ON to restore utility power.
    The generator will continue to run to allow the engine to cool down before shutting itself off.
    Shut off utility power again. The generator should start and the entire priority load should transfer to the generator.
    Close the main breaker to restore utility power and allow the engine to cool down and shut itself off.

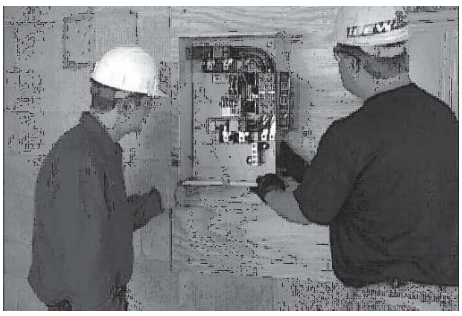
15. Operational tests are now complete. Refer to – Setting the Automatic Exercise Function to complete the installation.

APPENDIX B – RTSX AND RTSD TRANSFER SWITCH INSTALLATION & OPERATIONAL TESTING



1. Before beginning any installation, make sure power is shut OFF to the main distribution panel and carefully read the Owner's Manual that came with the transfer switch. To simplify the installation process, the transfer switch should be mounted as close to the main distribution panel as possible. Make sure no water or corrosive substances can drip onto the transfer switch enclosure.

2. Always inspect the switch for shipping damage. Never mount a transfer switch that shows any evidence of damage.

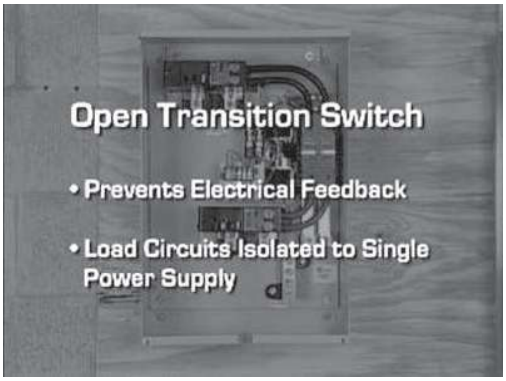


3. Protect against impact and mount the switch vertically to a rigid support structure. Make sure the switch is level and plumb. Check local codes before wiring the transfer switch. Some jurisdictions require that wiring inside the switch be done by a licensed electrician.

4. All wiring must be the correct size and type, and must conform to all codes, standards and regulations. Refer to the transfer switch Owner's Manual and the National Electrical Code for additional information.

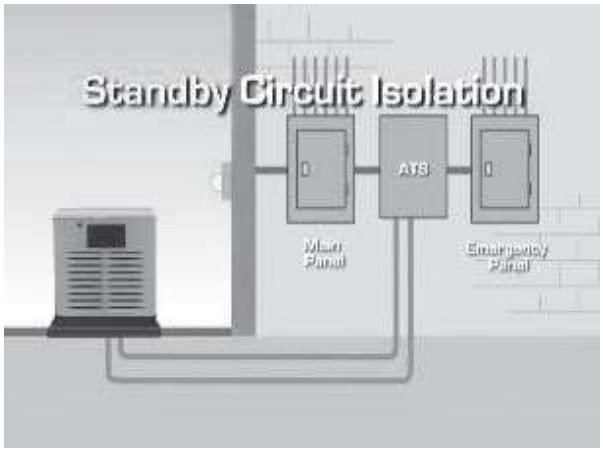
5. As with any product, design changes can occur over time, so always refer to the schematics in the transfer switch Owner's Manual for the required connections and safety precautions.

Appendix B



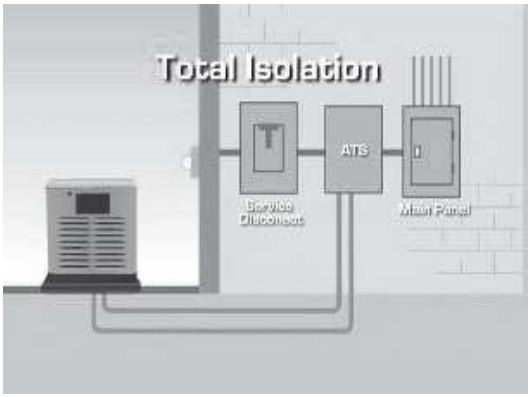
6. The transfer switch being used is an open transition switch. Open transition switches prevent electrical feedback between the generator and the utility by only allowing load circuits to be connected to one power supply at a time.

SELECTED CIRCUIT COVERAGE

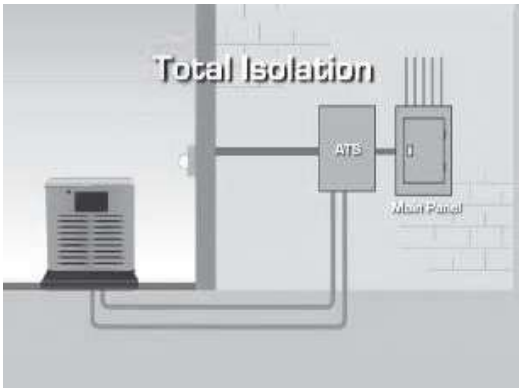


1. The generator powers only designated circuits that are grouped together and wired into a separate priority distribution panel. The transfer switch is installed between the main distribution panel and the priority panel.
   The amperage rating of the transfer switch must be equal to or greater than the highest amperage rating of the utility and generator breakers feeding the switch.

WHOLE-HOUSE CIRCUIT COVERAGE



1. The generator will be backing up all electrical loads within the panel, so the amperage rating of the transfer switch must be equal to or greater than the amperage rating of the normal utility service.
   Unless a service rated transfer switch is used, a main service disconnect must be located before the transfer switch. The transfer switch must be installed between the utility service entrance and the building distribution panel.

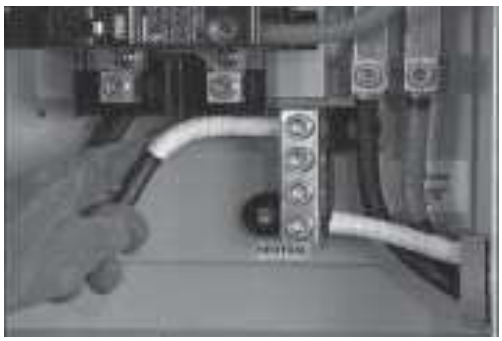


2. A service rated transfer switch is installed between the service and the main distribution panel. The service rated switch becomes the main service so no service disconnect is needed. The existing main distribution panel becomes a sub-panel.

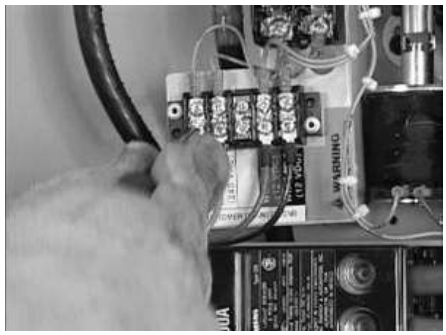
3. The grounding that is normally in the main panel must be accomplished in the service rated switch and must be disconnected in the existing distribution panel. Refer to the National Electrical Code (NEC) for complete information on grounding and bonding.

ELECTRICAL CONNECTIONS

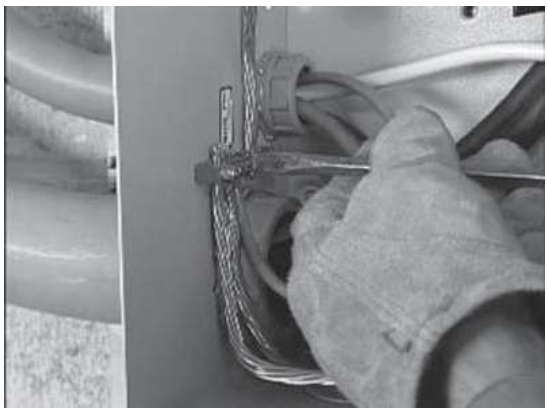
1. Connect the power leads from both the generator and the utility to the appropriate lugs in the transfer switch. The lugs are clearly marked in the switch.
   N = Normal Utility Supply
   E = Generator Connection Panel
   T = Load Distribution Panel



2. Neutral wires from both the utility and the generator are connected to the same neutral bar in the switch.



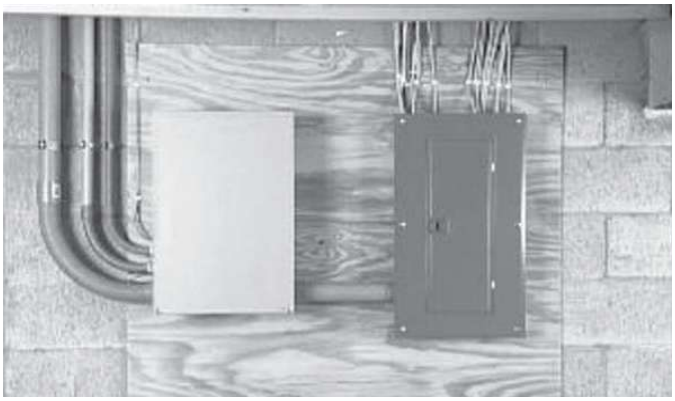
3. Connect the control wires from the generator to the designated locations. Wires 0, 23 and 194 connect to the terminal strip; N1, N2, and T1 connect directly to the fuse holders.



4. Complete the transfer switch wiring by connecting the equipment ground wires from both the utility and the generator to the ground lug.

5. Being careful to support the lugs, torque the lugs in the transfer switch to the specifications shown on the transfer switch. Decal located on the inside of the switch door.

OPERATIONAL TESTING

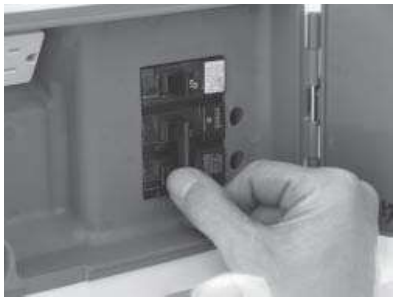


1. If installing the RTSD switch, the service was changed so make sure the terminations are good before re-energizing the utility.

Appendix B

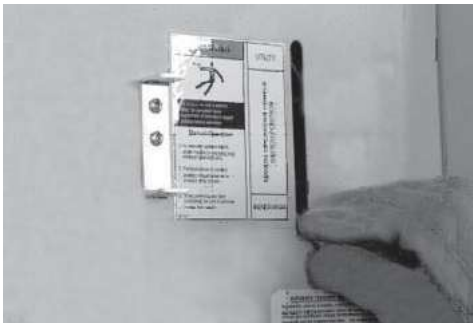
2 Switch the main utility breaker OFF. Refer to NFPA 70-E for the safety equipment required when working inside a live transfer switch.

3. Energize the utility and check line-to-line and line-to-neutral voltage at terminals N1 and N2 on the transfer contactor. If line-to-line voltage is not approximately 240 volts, de-energize utility power and check the terminations between the utility and N1 and N2.
   If line-to-neutral voltage is not approximately 120 volts, de-energize utility power and check the neutral terminations.
   Repeat the same voltage checks on terminals T1 and T2 to make sure current is flowing properly through the contactor.



4. Switch the generator's main circuit breaker OFF and put the mode switch in the OFF position.

5. Make sure utility power is OFF and place all of the individual circuit breakers in the main distribution panel in the OFF position.



6. Locate the transfer handle, insert the metal end into the slot in the main contactor assembly. Pull the handle DOWN to move the main contacts to the standby power (generator) position. NEVER OPERATE THE TRANSFER SWITCH MANUALLY WHEN LOADS ARE CONNECTED.
7. Put the generator's mode switch in MANUAL to start the engine. Allow the engine to warm up, then switch the generator's main breaker to the ON position. The generator is now supplying electricity to the transfer switch but is not carrying any load.

8. Check to be sure that voltage and frequency from the generator is correct. If line-to-line voltage is not approximately 240 volts, refer to the generator Owner's Manual for the proper adjustment procedures. If line-to-neutral voltage is not approximately 120 volts, check the neutral connection between the generator and transfer switch.

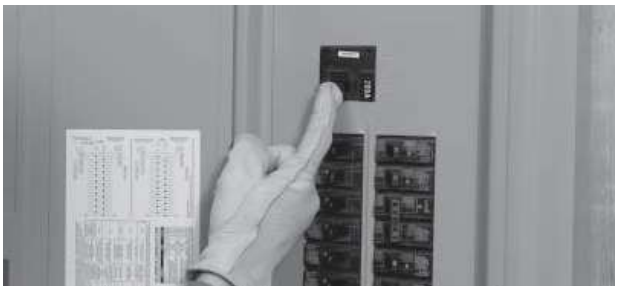
9. Switch the generator's main circuit breaker OFF and put the mode switch in the OFF position to shut down the generator.

10. With utility power still OFF, use the transfer handle to move the main contacts to the UP (utility) position.

11. Close the main breaker to turn utility power ON.

12. Switch the generator's main breaker to the ON position and put the mode switch in AUTO.

13. Shut OFF utility power and make sure the generator starts automatically after the line interrupt delay.



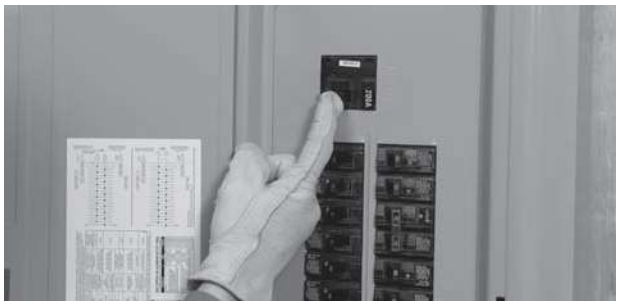
14. Switch the utility breaker to ON and make sure that power is automatically transferred back to the utility.

15. Shut OFF utility power again to automatically start the generator. When power has transferred to the generator, close each of the breakers in the distribution panel one at a time until the generator has accepted the entire load.

16. With the generator carrying the entire load, recheck gas pressure to verify that it's at the same level it was before the generator was started.

NOTE:

Even if the generator is running smoothly at this point, a drop in gas pressure indicates that the supply is barely adequate to supply the generator's needs. Changes in the generator load, or additional gas demand by other appliances may affect the generator's performance. Verify gas pressure and pipe sizing. Turn off the gas, unhook the manometer and reinstall the port plug.



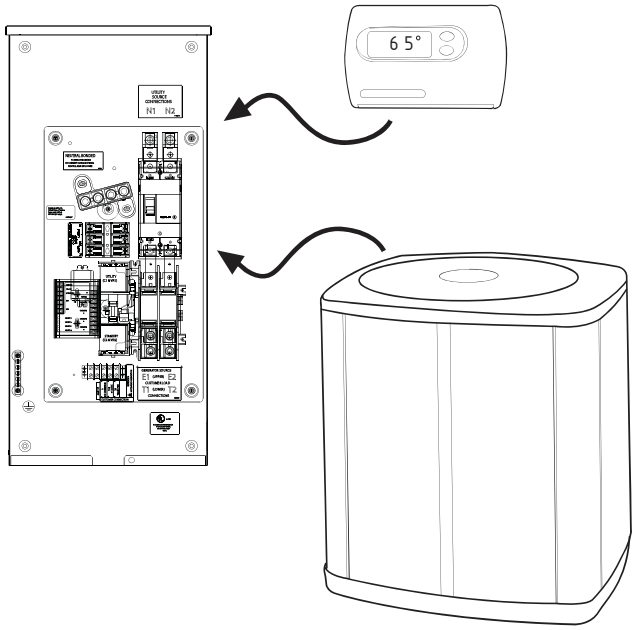
17. Switch the utility breaker ON to restore utility power to the home.

18. The generator will continue to run to allow the engine to cool down, then shut itself off.
19. Shut OFF utility power again. The generator should start and the entire priority load should transfer to the generator.

20. Close the main breaker to restore utility power and allow the engine to cool down and shut itself off.
    Operational tests are now complete. Refer to Appendix E – Setting the Automatic Exercise Function to complete the installation.

APPENDIX C – DIGITAL LOAD MANAGEMENT (DLM)

1. To control an Air Conditioner, connect the Y terminal of the thermostat to one of the A/C 1 terminals. Connect the other A/C 1 terminal to the Y terminal on the air conditioner.
   Use 18 – 26 AWG copper wire. Refer to the Owner's Manual for specific torque/connection requirements.
2. To control a second air conditioner repeat the above using terminals marked A/C 2.



NOTE:

For specific AC control wire information, please refer to the HVAC systems Owner's/Operation Manual.

APPENDIX D – DIGITAL LOAD MANAGEMENT (DLM) MODULES

The load controller can operate up to four separate DLM's, each one connected the same way as below.

- The NEMA 3R Enclosure of the DLM module can be installed indoors or outdoors. If mounting outdoors the enclosure MUST be orientated with the drain hole at the bottom.
- The DLM module is fitted with conduit knockout locations. These knockout locations are the only locations that conduit should be attached to the enclosure. A grounding stud is provided inside the enclosure in order to ground the conduit.

CONNECTING LOAD SHED MODULE (LSM) CONNECTIONS

The LSM can control an air conditioner (24 VAC) directly or a separate contactor (120 VAC) which can control any load connected to it (see "Load Shed Module Connections" Figure).

Sequence of Operation

The 4 green status LEDs will indicate when a load priority level is enabled.

- All loads are enabled when the transfer signal is off. (ATS in Utility position).
- If the transfer signal is pulled low (Active)
  - All loads are enabled until an overload is detected
  - When an overload is detected all loads are disabled
  - After 5 minutes priority 1 loads are enabled.
  - After another 30 seconds priority 2 loads are enabled
  - After another 30 seconds priority 3 loads are enabled
  - After another 30 seconds priority 4 loads are enabled

If an overload is detected within 30 seconds of a level being enabled, all loads are disabled again and the sequence repeats. However, the level that caused the overload and all levels higher will not be enabled again for 30 minutes.

Control of Air Conditioner Load

1. Route the thermostat cable (from the furnace/thermostat to the outdoor air conditioner unit) to the transfer switch.
2. Connect the wire to the terminal strip terminals (Air 1) on the LSM as shown in the "Load Shed Module Connections". These are normally closed contacts which open upon load shed conditions. Route thermostat wire away from High voltage wires.
3. If required, connect the second air conditioner to the terminal strip terminals (Air 2).

Contact Ratings	
Air 1 & 2	24 VAC, 5.0 Amps Max

NOTE:

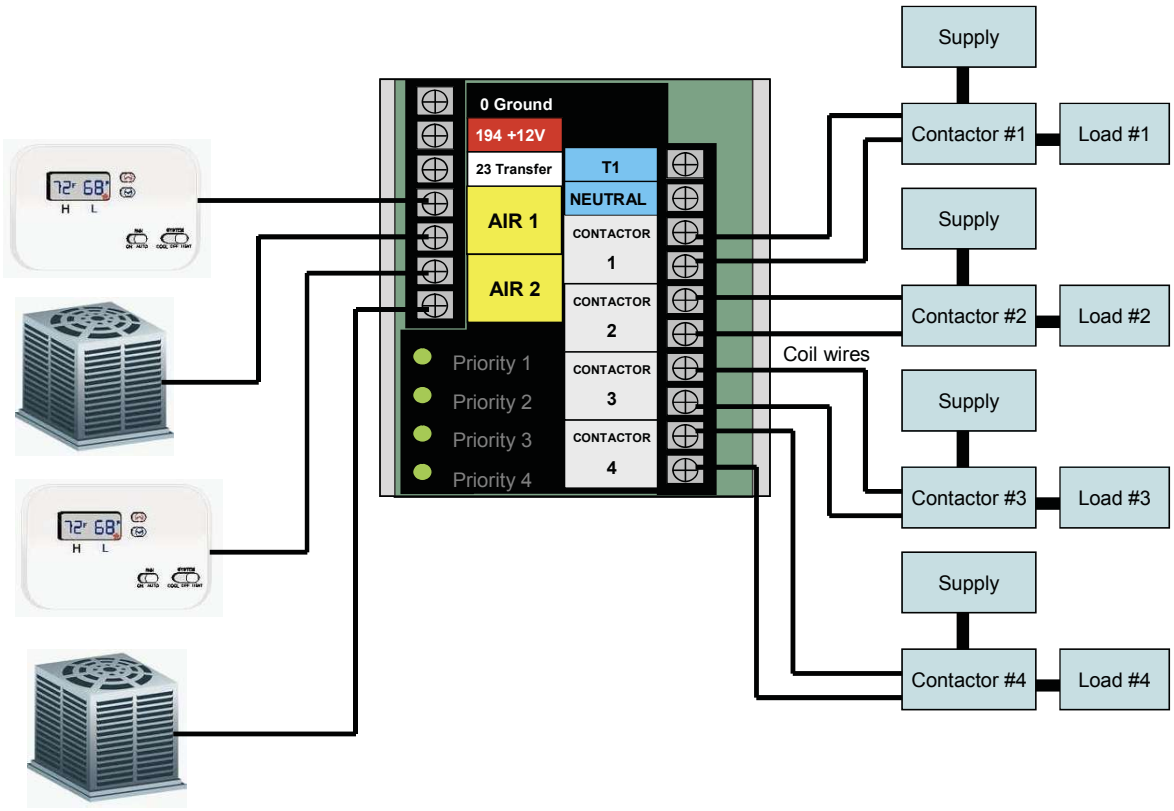
These instructions are for a typical air conditioner installation. Control of heat pump and 2-stage air conditioners will require special connections.

Control of a Separate Contactor

A separate contactor relay module can be purchased from the manufacturer. If a different relay is used it must have a 120 VAC coil voltage. The LSM supplies fused (5A) 120 VAC to energize the coils of the relay contactors (contactor 1, 2, 3 or 4).

1. Mount the contactor module and connect the load to the main contacts.
2. Connect the contactor coil to the desired LSM (contactor 1, 2, 3 or 4) terminals on the terminal strip.
3. Connect additional load shedding contactors in a similar fashion.

Load Shed Module Connections



NOTE:

It will be necessary to determine the order of "shedding" the connected loads and connect the loads to the LSM in that order. One is the highest priority and four is the lowest priority.

⚠ CAUTION!

⚠ Perform functional tests in the exact order presented in this manual, or damage to the switch could be done.

IMPORTANT: Before proceeding with functional tests, read and make sure you understand all instructions and information in this section. Also read the information and instructions of labels and decals affixed to the switch. Note any options or accessories that might be installed and review their operation.

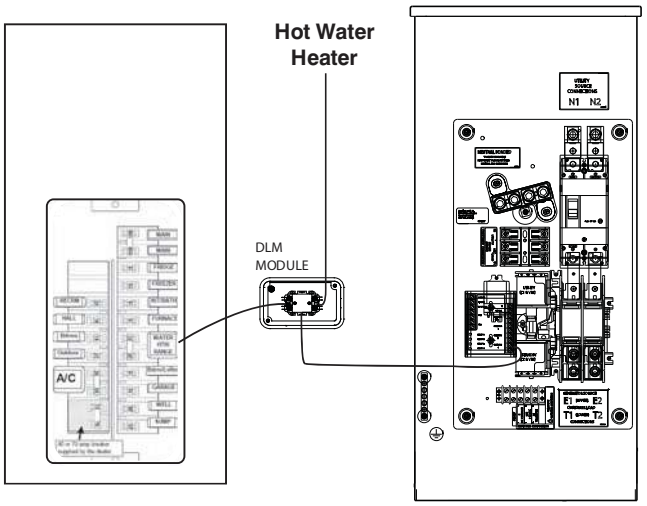
NOTE:

This test can be performed with the utility or generator connected to the loads. However if the generator is supplying the loads and is overloaded the controller may have already turned off certain loads.

Depress the " TEST " button on the load controller. This function will disconnect all loads controlled by the controller. The load controller will then reconnect each load in a timed and staggered manner as described in the Transfer Switch Owner's Manual.

FUNCTIONAL TESTS AND ADJUSTMENTS

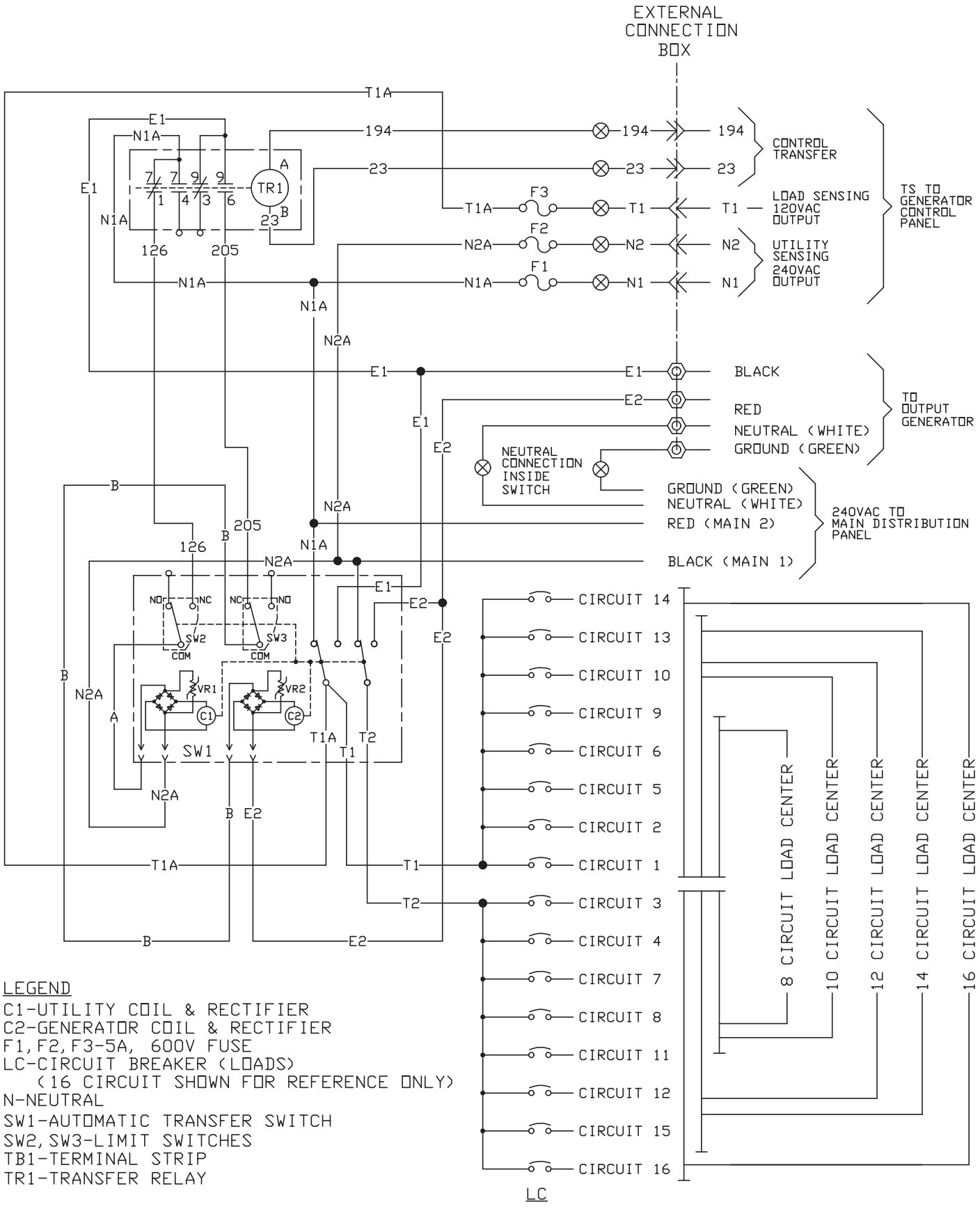
Following transfer switch installation and interconnection, inspect the entire installation carefully. A competent, qualified electrician should inspect it. The installation should comply strictly with all applicable codes, standards, and regulations. When absolutely certain the installation is proper and correct, complete a functional test of the system.



APPENDIX E - SETTING THE AUTOMATIC EXERCISE FUNCTION

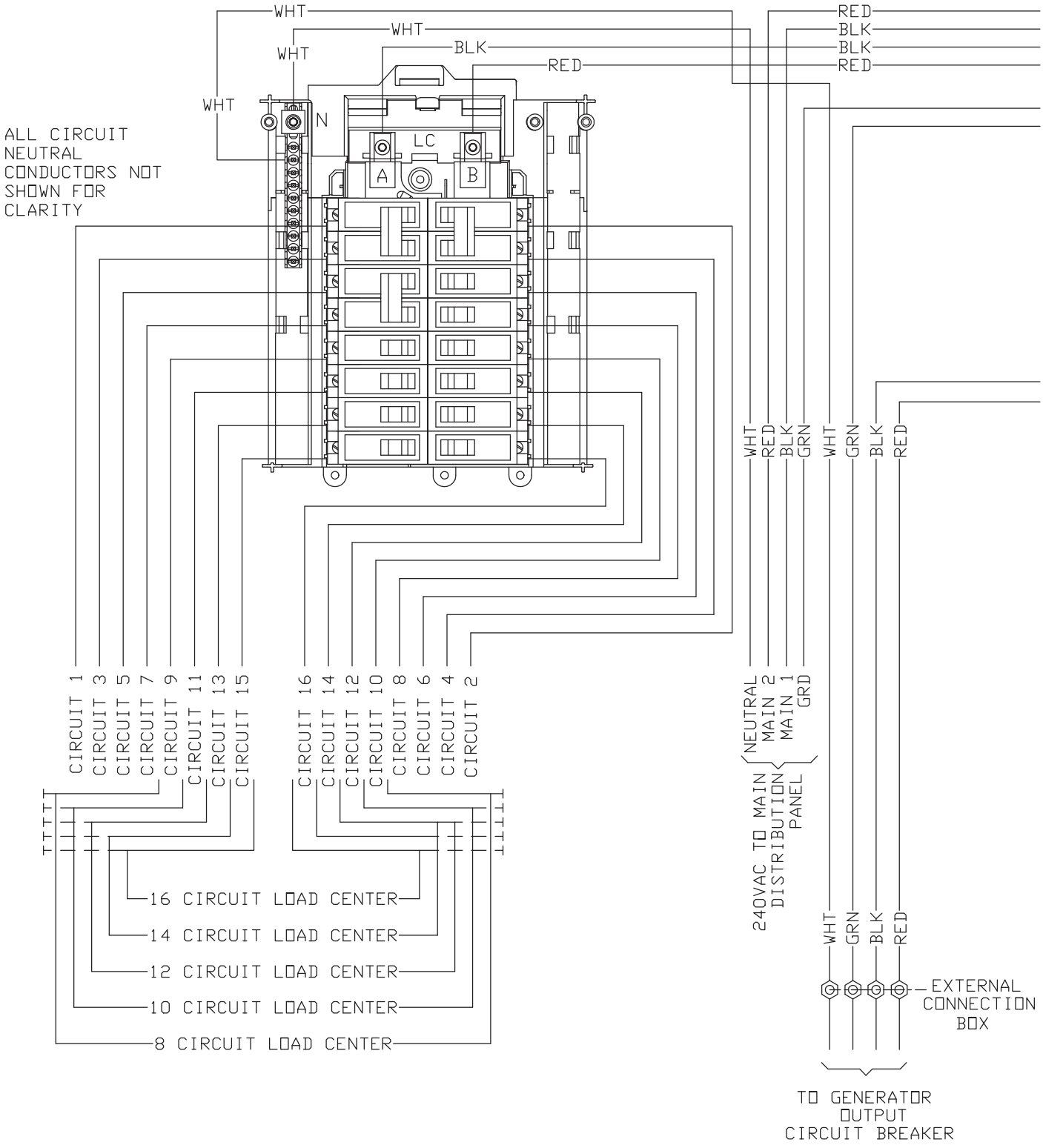
1. The display will enter an Installation Assistant mode when battery power is first connected. The assistant will prompt to first enter the current date and time, followed by the exercise day and time. If the battery is ever disconnected and reconnected, or fuse removed and replaced, the Installation Assistant will be displayed again, but only the current date and time will need to be entered.
2. If the exercise time or day ever needs to be changed, press the escape key to access the main menu.
3. Press the left or right arrow key until 'Edit' is flashing and press enter.
4. Press the right or left arrow key until the exercise time is displayed and press enter.
5. Using the arrow and enter keys first set the exercise hour in 24 hour format, followed by the minute, and finally the day.
6. Once set, the generator will exercise each week at the same time. Be sure to show the owners how to set the exercise function for the day and time they want the unit to exercise.
7. If the generator is equipped with the low speed exercise feature, it was enabled at the factory and no adjustment is needed.

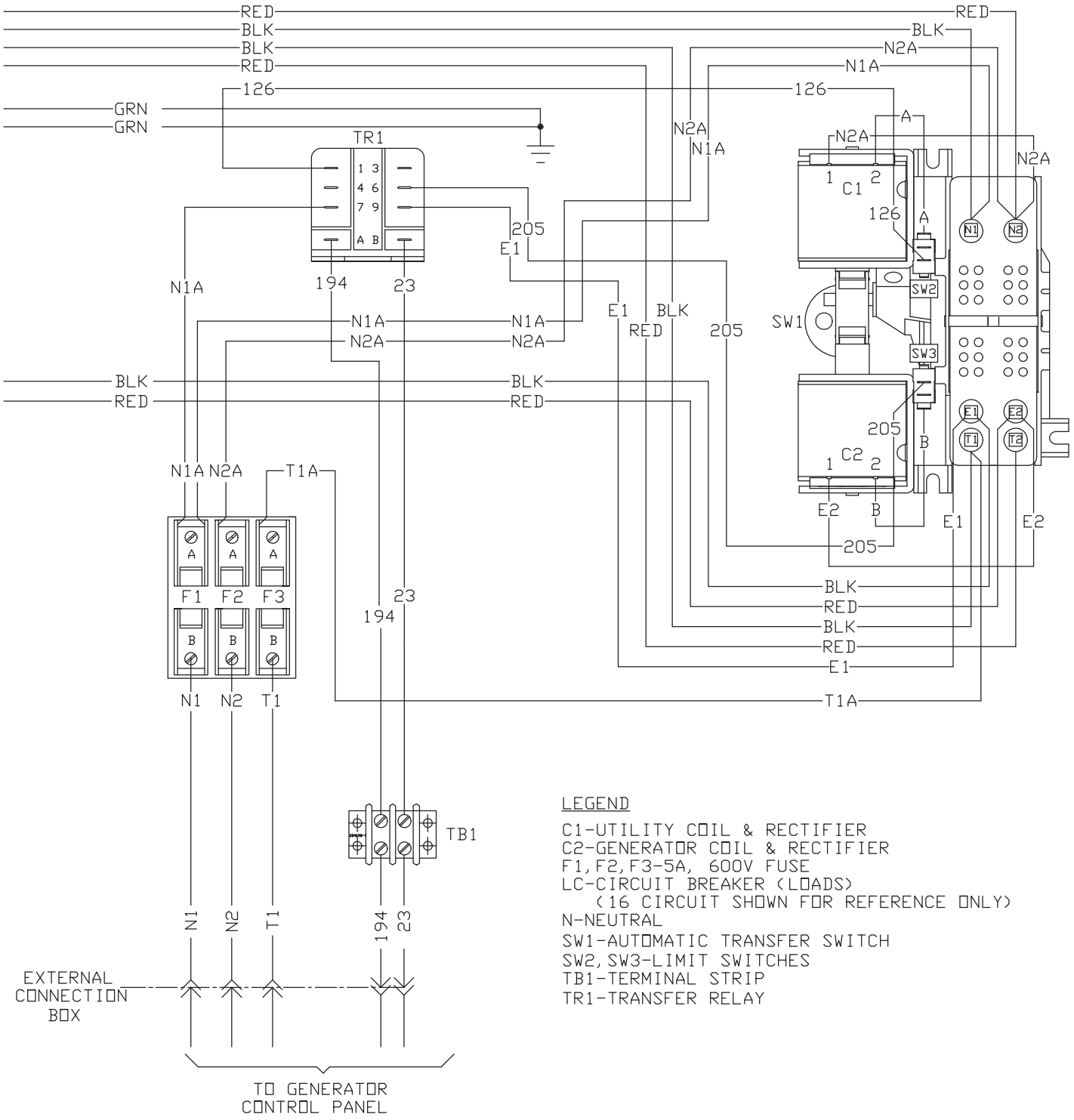
Every installation has its own unique set of circumstances and requirements. This booklet provides guidelines for basic installations only and is not intended to cover all applications. If there are any questions or concerns after carefully reading all documentation received with the equipment, contact the nearest dealer for assistance.

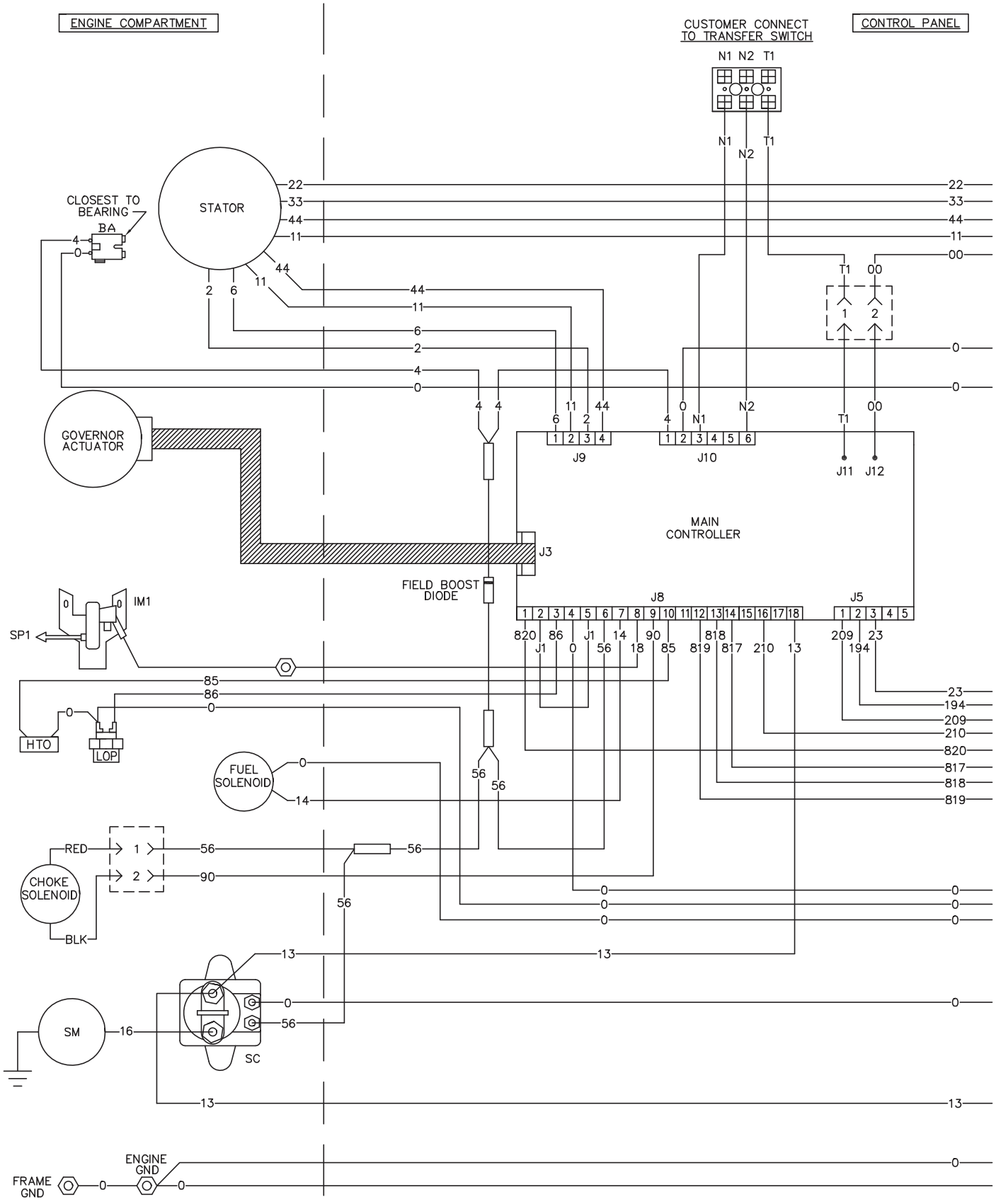


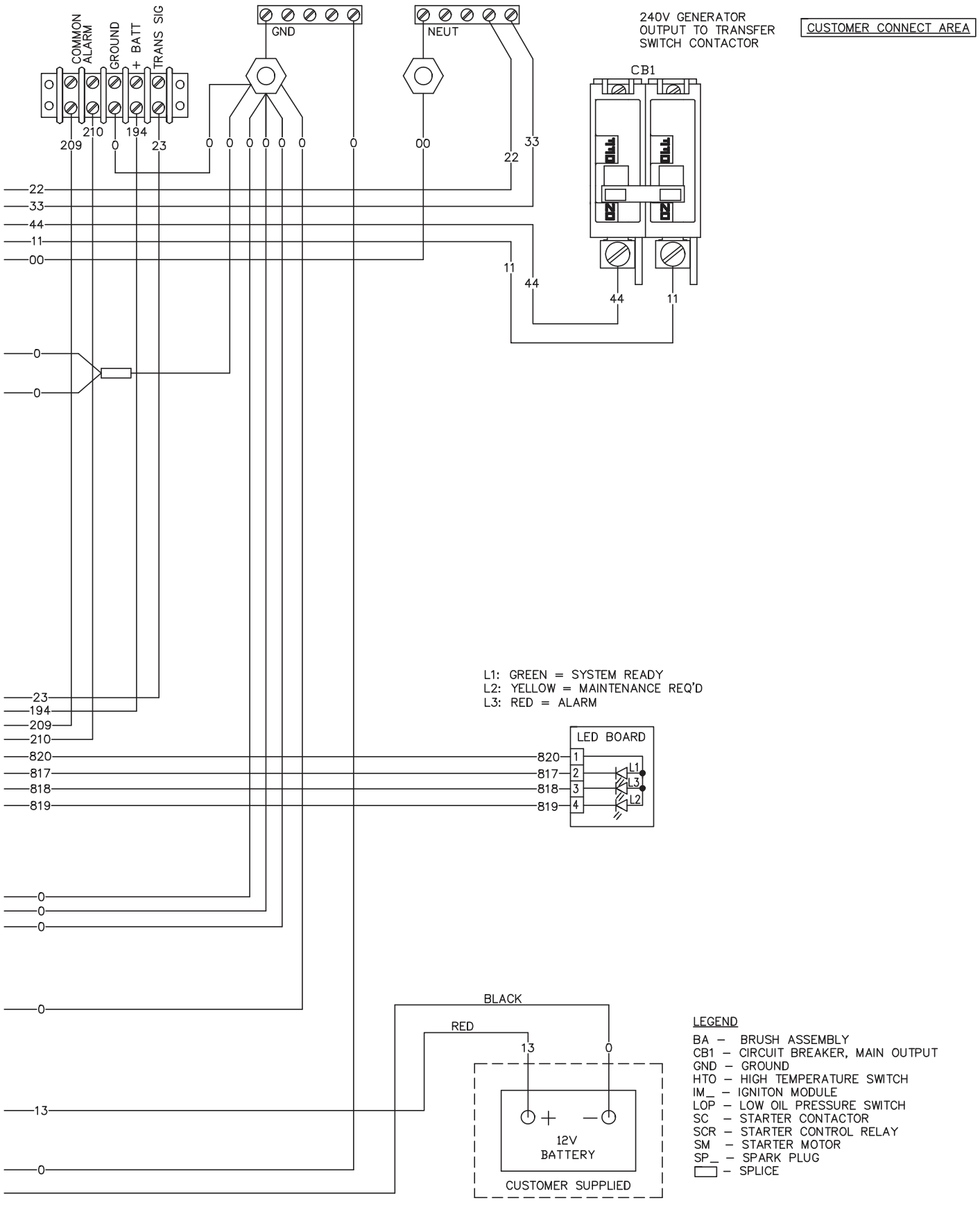
LEGEND

C1-UTILITY COIL & RECTIFIER
C2-GENERATOR COIL & RECTIFIER
F1, F2, F3-5A, 600V FUSE
LC-CIRCUIT BREAKER (LOADS)
(16 CIRCUIT SHOWN FOR REFERENCE ONLY)
N-NEUTRAL
SW1-AUTOMATIC TRANSFER SWITCH
SW2, SW3-LIMIT SWITCHES
TB1-TERMINAL STRIP
TR1-TRANSFER RELAY


WHT
WHT
WHT
WHT
BLK
RED
RED
BLK
BLK
RED
N
LC
A
B
ALL CIRCUIT NEUTRAL CONDUCTORS NOT SHOWN FOR CLARITY
CIRCUIT 1
CIRCUIT 3
CIRCUIT 5
CIRCUIT 7
CIRCUIT 9
CIRCUIT 11
CIRCUIT 13
CIRCUIT 15
CIRCUIT 16
CIRCUIT 14
CIRCUIT 12
CIRCUIT 10
CIRCUIT 8
CIRCUIT 6
CIRCUIT 4
CIRCUIT 2
16 CIRCUIT LOAD CENTER
14 CIRCUIT LOAD CENTER
12 CIRCUIT LOAD CENTER
10 CIRCUIT LOAD CENTER
8 CIRCUIT LOAD CENTER
WHT
RED
BLK
GRN
WHT
GRN
BLK
RED
NEUTRAL
MAIN 2
MAIN 1
GRD
240VAC TO MAIN DISTRIBUTION PANEL
WHT
GRN
BLK
RED
EXTERNAL CONNECTION BOX
TO GENERATOR OUTPUT CIRCUIT BREAKER

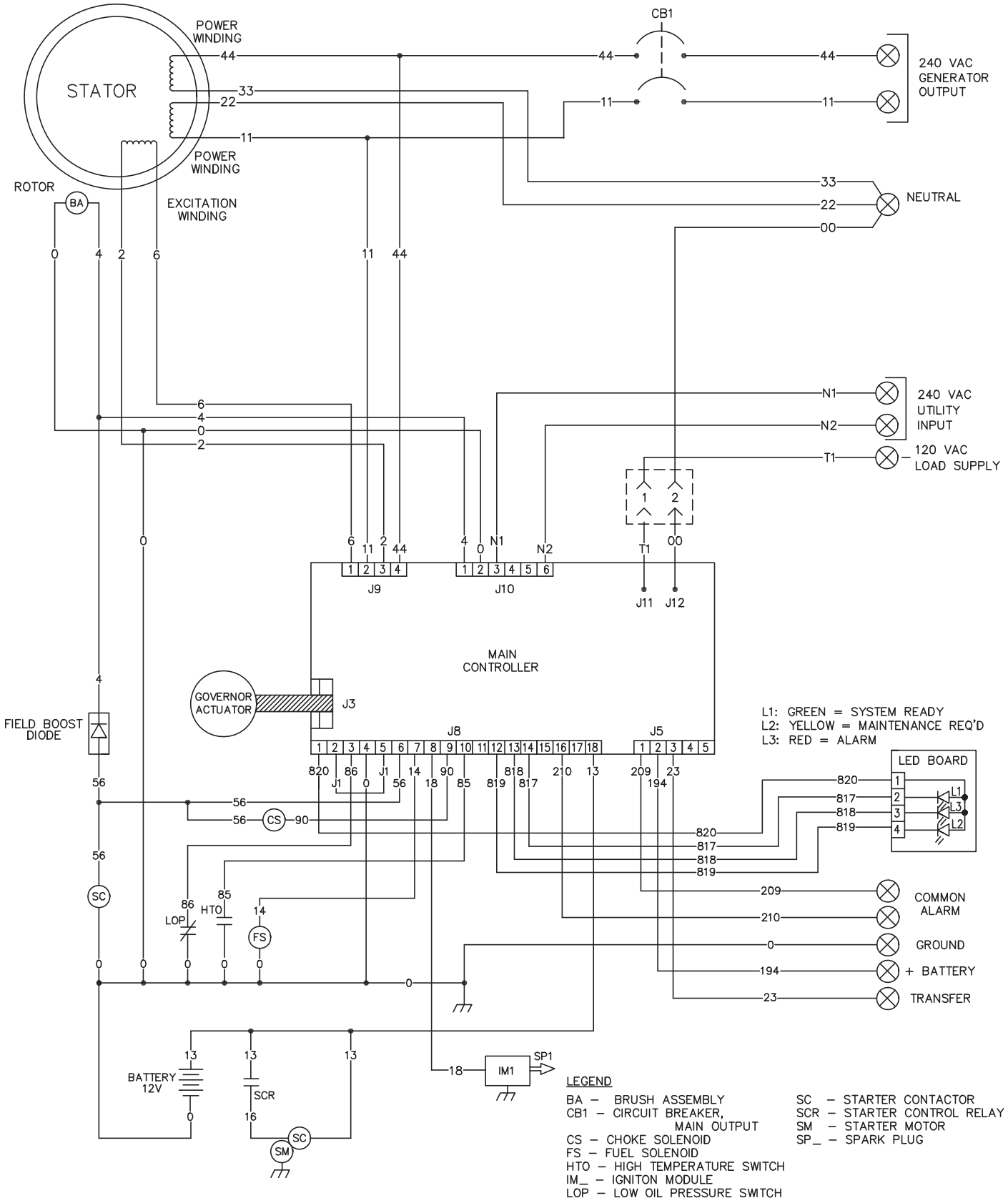

RED
BLK
BLK
RED
GRN
GRN
126
TR1
1 3
4 6
7 9
A B
205
E1
194
23
N1A
N2A
BLK
RED
F1 F2 F3
B B B
N1 N2 T1
T1A
TB1
EXTERNAL CONNECTION BOX
TO GENERATOR CONTROL PANEL
C1
C2
SW1
SW2
SW3
N1
N2
T1
T2
E1
E2
A
B
LEGEND
C1-UTILITY COIL & RECTIFIER
C2-GENERATOR COIL & RECTIFIER
F1, F2, F3-5A, 600V FUSE
LC-CIRCUIT BREAKER (LOADS)
(16 CIRCUIT SHOWN FOR REFERENCE ONLY)
N-NEUTRAL
SW1-AUTOMATIC TRANSFER SWITCH
SW2, SW3-LIMIT SWITCHES
TB1-TERMINAL STRIP
TR1-TRANSFER RELAY

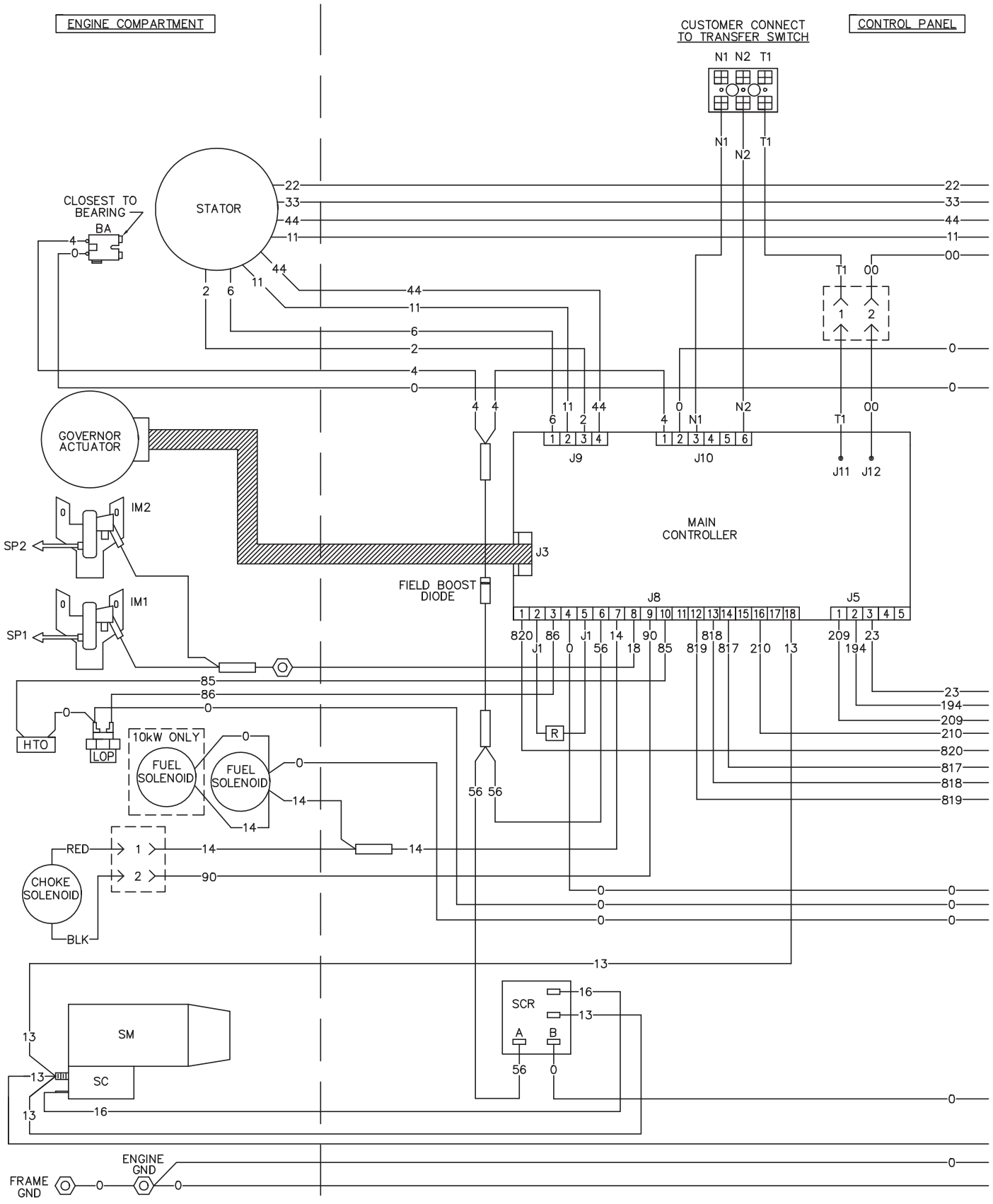

ENGINE COMPARTMENT
CUSTOMER CONNECT TO TRANSFER SWITCH
CONTROL PANEL
N1 N2 T1
STATOR
CLOSEST TO BEARING
BA
GOVERNOR ACTUATOR
MAIN CONTROLLER
J3
J8
J5
J9
J10
J11
J12
FIELD BOOST DIODE
IM1
SP1
HTO
LOP
FUEL SOLENOID
CHOKE SOLENOID
RED
BLK
SM
SC
ENGINE GND
FRAME GND

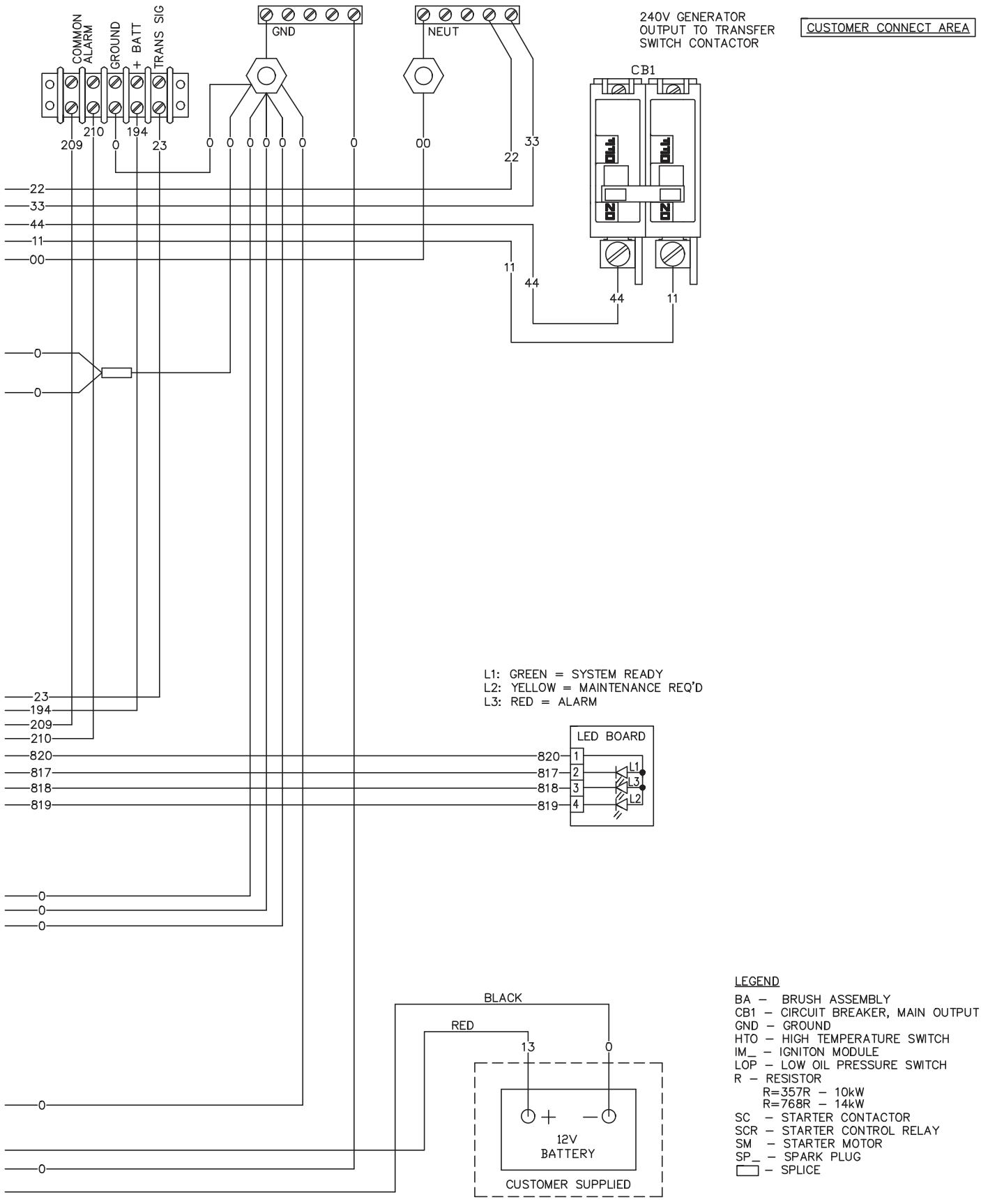


LEGEND

BA – BRUSH ASSEMBLY
CB1 – CIRCUIT BREAKER, MAIN OUTPUT
GND – GROUND
HTO – HIGH TEMPERATURE SWITCH
IM_ – IGNITON MODULE
LOP – LOW OIL PRESSURE SWITCH
SC – STARTER CONTACTOR
SCR – STARTER CONTROL RELAY
SM – STARTER MOTOR
SP_ – SPARK PLUG
▭ – SPLICE

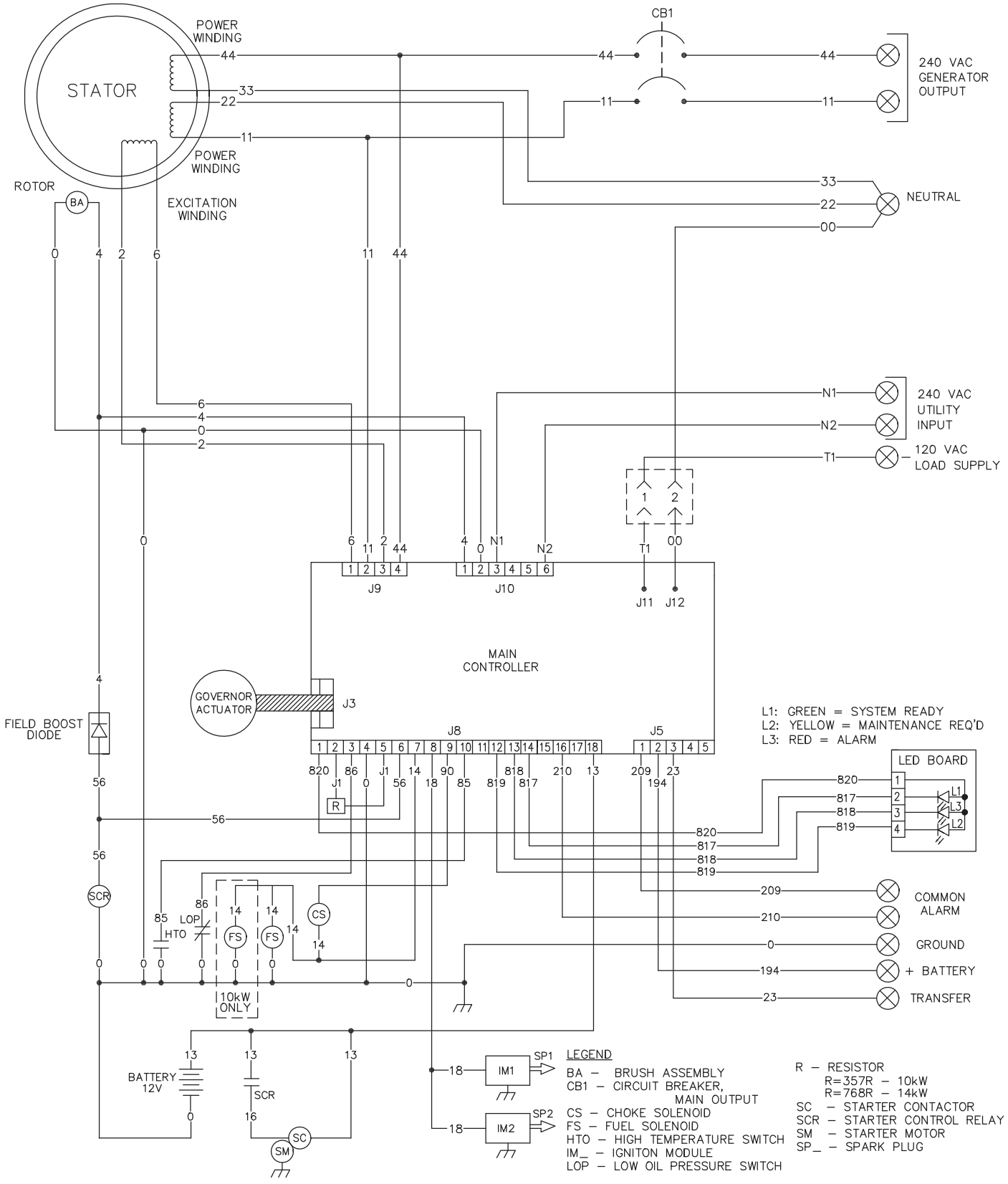

STATOR
POWER WINDING
POWER WINDING
EXCITATION WINDING
ROTOR
BA
CB1
240 VAC GENERATOR OUTPUT
NEUTRAL
240 VAC UTILITY INPUT
120 VAC LOAD SUPPLY
MAIN CONTROLLER
J1
J3
J5
J8
J9
J10
J11
J12
GOVERNOR ACTUATOR
FIELD BOOST DIODE
L1: GREEN = SYSTEM READY
L2: YELLOW = MAINTENANCE REQ'D
L3: RED = ALARM
LED BOARD
COMMON ALARM
GROUND
+ BATTERY
TRANSFER
CS
FS
HTO
LOP
SC
SCR
SM
IM1
SP1
BATTERY 12V
LEGEND
BA – BRUSH ASSEMBLY
CB1 – CIRCUIT BREAKER, MAIN OUTPUT
CS – CHOKE SOLENOID
FS – FUEL SOLENOID
HTO – HIGH TEMPERATURE SWITCH
IM_ – IGNITON MODULE
LOP – LOW OIL PRESSURE SWITCH
SC – STARTER CONTACTOR
SCR – STARTER CONTROL RELAY
SM – STARTER MOTOR
SP_ – SPARK PLUG

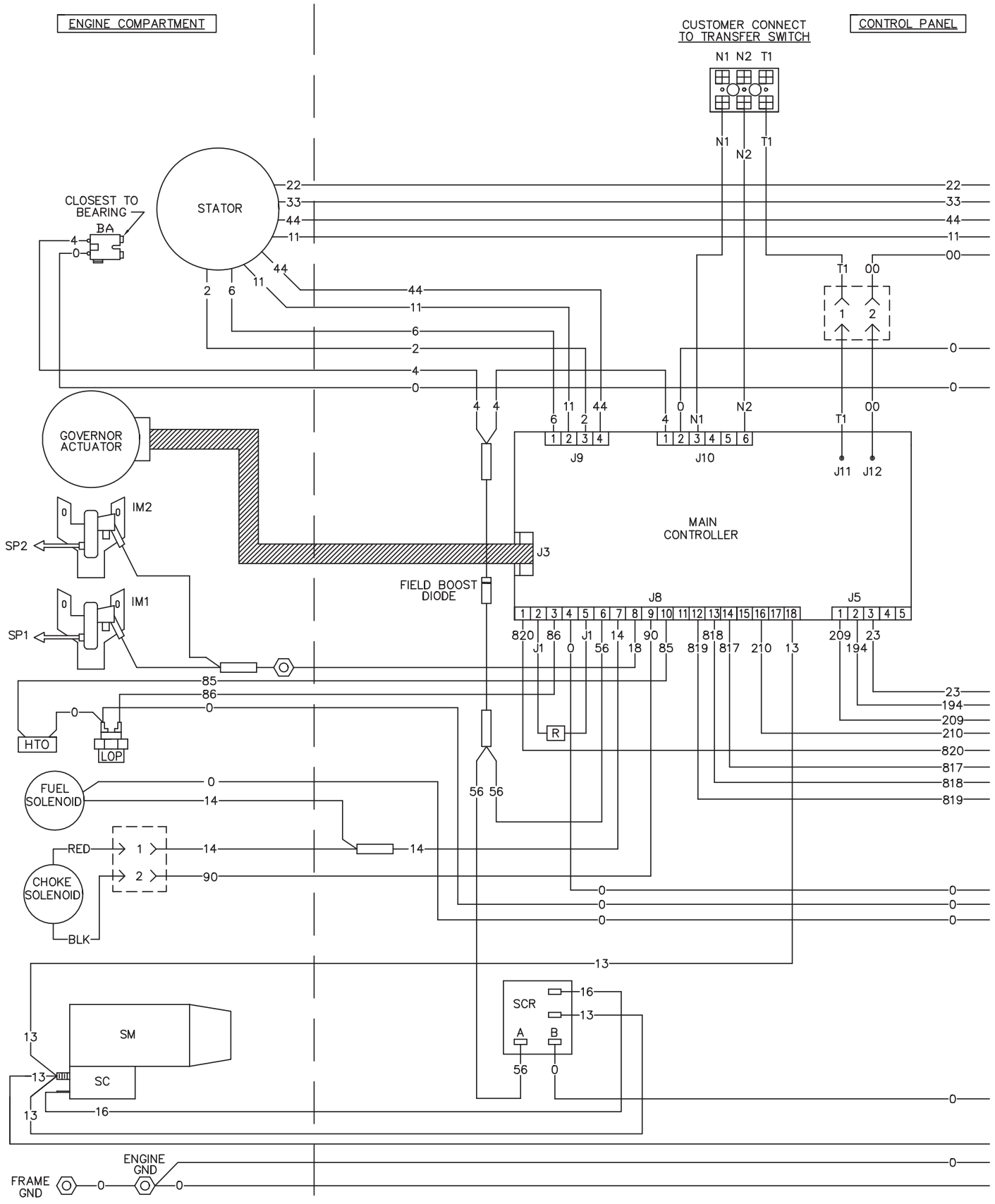

ENGINE COMPARTMENT
CUSTOMER CONNECT TO TRANSFER SWITCH
CONTROL PANEL
N1 N2 T1
STATOR
CLOSEST TO BEARING
BA
GOVERNOR ACTUATOR
IM2
SP2
IM1
SP1
FIELD BOOST DIODE
MAIN CONTROLLER
J1
J3
J5
J8
J9
J10
J11
J12
HTO
LOP
10kW ONLY
FUEL SOLENOID
FUEL SOLENOID
CHOKE SOLENOID
RED
BLK
R
SCR
A
B
SM
SC
ENGINE GND
FRAME GND

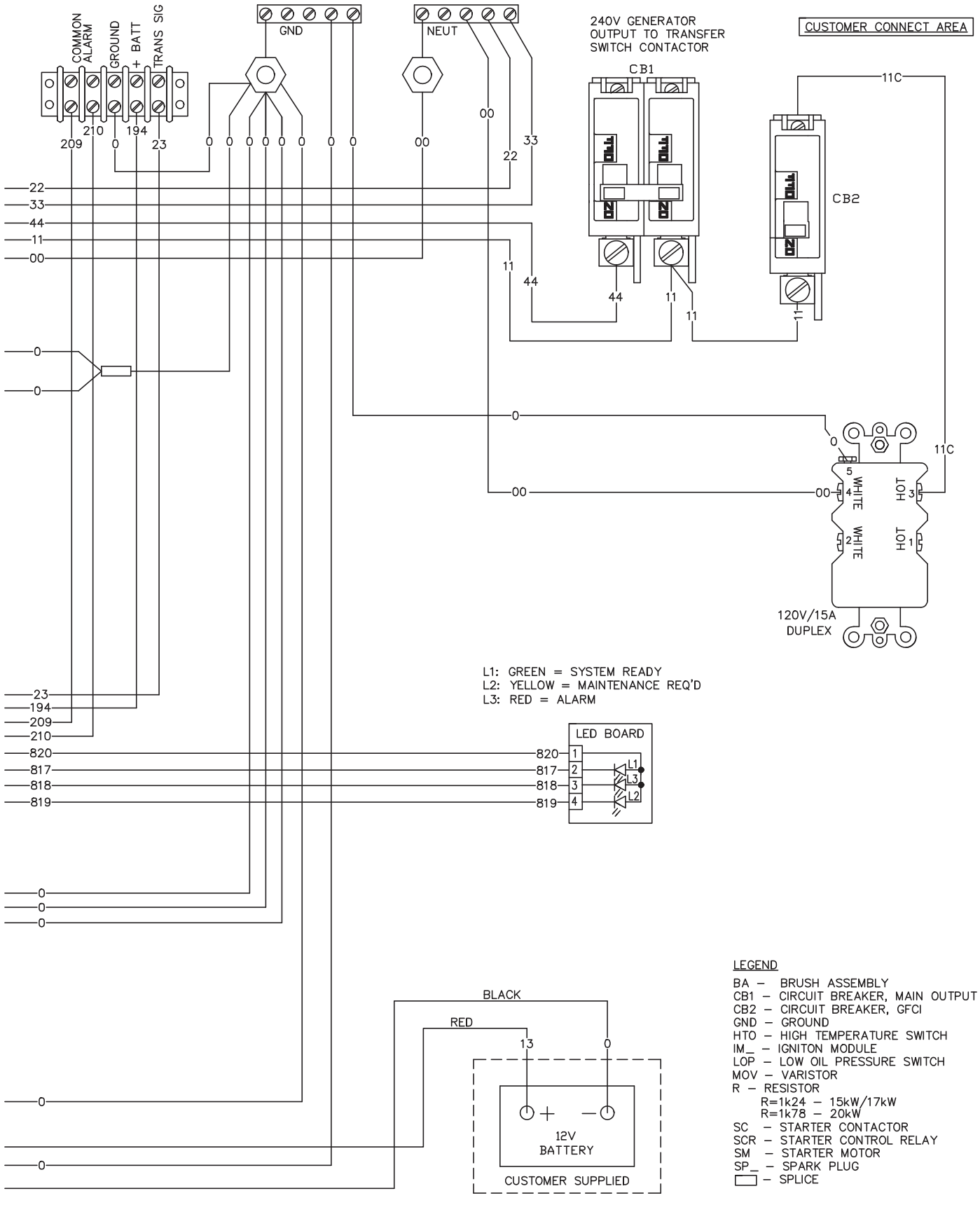


LEGEND

BA – BRUSH ASSEMBLY
CB1 – CIRCUIT BREAKER, MAIN OUTPUT
GND – GROUND
HTO – HIGH TEMPERATURE SWITCH
IM_ – IGNITON MODULE
LOP – LOW OIL PRESSURE SWITCH
R – RESISTOR
R=357R – 10kW
R=768R – 14kW
SC – STARTER CONTACTOR
SCR – STARTER CONTROL RELAY
SM – STARTER MOTOR
SP_ – SPARK PLUG
▭ – SPLICE

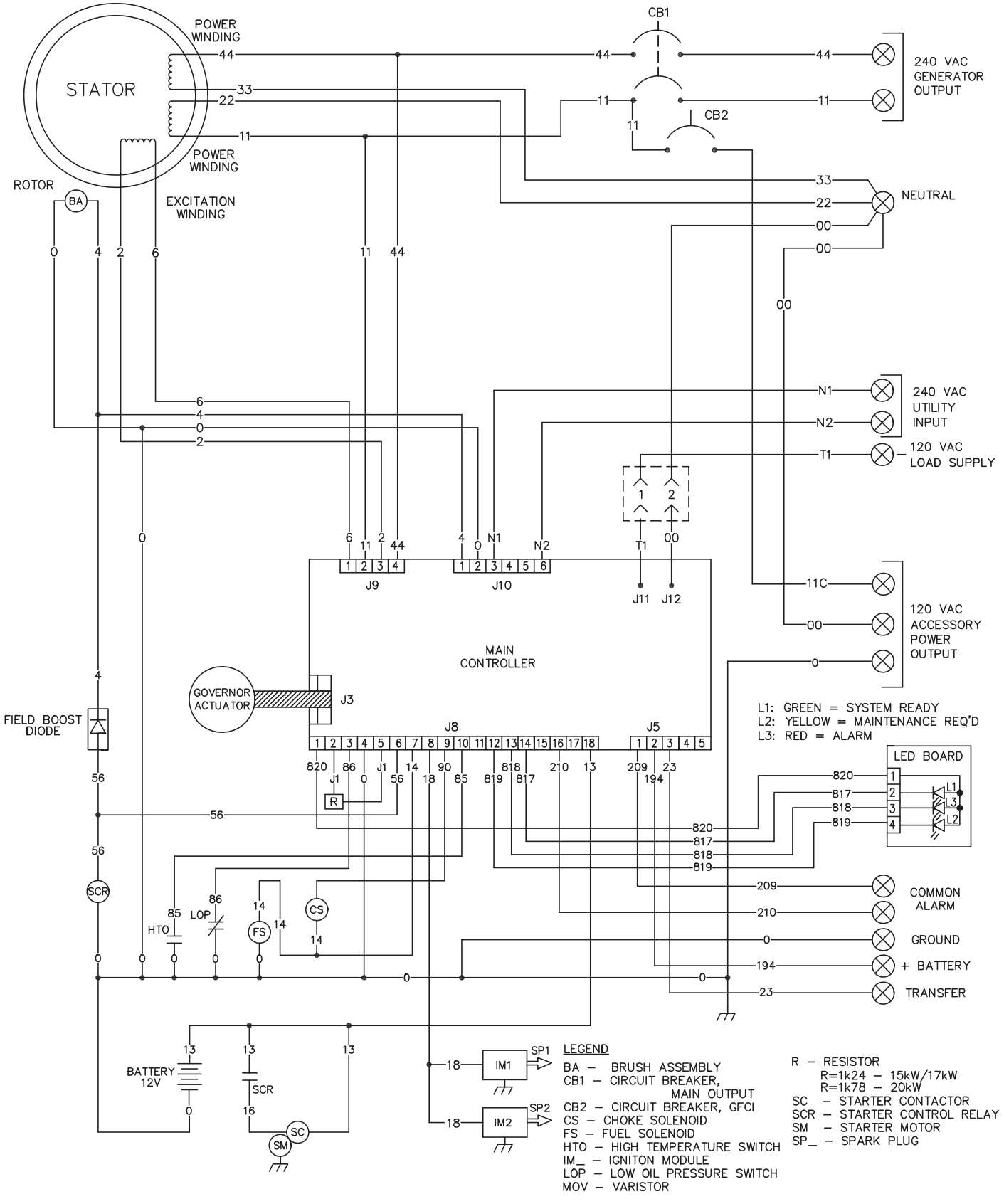

POWER WINDING
STATOR
POWER WINDING
ROTOR
BA
EXCITATION WINDING
CB1
240 VAC GENERATOR OUTPUT
NEUTRAL
240 VAC UTILITY INPUT
120 VAC LOAD SUPPLY
J9
J10
J11
J12
MAIN CONTROLLER
GOVERNOR ACTUATOR
J3
FIELD BOOST DIODE
J8
J5
R
LED BOARD
L1: GREEN = SYSTEM READY
L2: YELLOW = MAINTENANCE REQ'D
L3: RED = ALARM
SCR
LOP
HTO
FS
CS
10kW ONLY
COMMON ALARM
GROUND
+ BATTERY
TRANSFER
BATTERY 12V
SCR
SC
SM
IM1
IM2
SP1
SP2
LEGEND
BA – BRUSH ASSEMBLY
CB1 – CIRCUIT BREAKER, MAIN OUTPUT
CS – CHOKE SOLENOID
FS – FUEL SOLENOID
HTO – HIGH TEMPERATURE SWITCH
IM_ – IGNITON MODULE
LOP – LOW OIL PRESSURE SWITCH
R – RESISTOR
R=357R – 10kW
R=768R – 14kW
SC – STARTER CONTACTOR
SCR – STARTER CONTROL RELAY
SM – STARTER MOTOR
SP_ – SPARK PLUG


ENGINE COMPARTMENT
CUSTOMER CONNECT TO TRANSFER SWITCH
CONTROL PANEL
N1 N2 T1
STATOR
CLOSEST TO BEARING
BA
GOVERNOR ACTUATOR
IM2
SP2
IM1
SP1
HTO
LOP
FUEL SOLENOID
CHOKE SOLENOID
RED
BLK
SM
SC
FIELD BOOST DIODE
MAIN CONTROLLER
J1
J3
J5
J8
J9
J10
J11
J12
R
SCR
A
B
ENGINE GND
FRAME GND



LEGEND

BA – BRUSH ASSEMBLY
CB1 – CIRCUIT BREAKER, MAIN OUTPUT
CB2 – CIRCUIT BREAKER, GFCI
GND – GROUND
HTO – HIGH TEMPERATURE SWITCH
IM_ – IGNITON MODULE
LOP – LOW OIL PRESSURE SWITCH
MOV – VARISTOR
R – RESISTOR
R=1k24 – 15kW/17kW
R=1k78 – 20kW
SC – STARTER CONTACTOR
SCR – STARTER CONTROL RELAY
SM – STARTER MOTOR
SP_ – SPARK PLUG
□ – SPLICE


STATOR
POWER WINDING
POWER WINDING
EXCITATION WINDING
ROTOR
BA
CB1
CB2
240 VAC GENERATOR OUTPUT
NEUTRAL
240 VAC UTILITY INPUT
120 VAC LOAD SUPPLY
120 VAC ACCESSORY POWER OUTPUT
MAIN CONTROLLER
J1
J3
J5
J8
J9
J10
J11
J12
GOVERNOR ACTUATOR
FIELD BOOST DIODE
LED BOARD
L1: GREEN = SYSTEM READY
L2: YELLOW = MAINTENANCE REQ'D
L3: RED = ALARM
COMMON ALARM
GROUND
+ BATTERY
TRANSFER
BATTERY 12V
SCR
SC
SM
HTO
LOP
FS
CS
R
IM1
IM2
SP1
SP2
LEGEND
BA – BRUSH ASSEMBLY
CB1 – CIRCUIT BREAKER, MAIN OUTPUT
CB2 – CIRCUIT BREAKER, GFCI
CS – CHOKE SOLENOID
FS – FUEL SOLENOID
HTO – HIGH TEMPERATURE SWITCH
IM_ – IGNITON MODULE
LOP – LOW OIL PRESSURE SWITCH
MOV – VARISTOR
R – RESISTOR
R=1k24 – 15kW/17kW
R=1k78 – 20kW
SC – STARTER CONTACTOR
SCR – STARTER CONTROL RELAY
SM – STARTER MOTOR
SP_ – SPARK PLUG

NOTES

NOTES

NOTES

Part No. 0J4873 Revision B (06/29/11) Printed in U.S.A.