

# OPERATION AND PARTS MANUAL



**MULTIQUIP®**

**MQ POWER®**

**WHISPERWATT™ SERIES**  
**MODEL DCA150SSJU4F**  
**60Hz GENERATOR**  
**(JOHN DEERE 6068HFG08 DIESEL ENGINE)**

**PARTS LIST NO. M3871300204**

Revision #0 (11/06/14)

To find the latest revision of this  
publication, visit our website at:  
[www.mqpower.com](http://www.mqpower.com)



**THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.**



**CALIFORNIA — Proposition 65 Warning**

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

## REPORTING SAFETY DEFECTS

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If you believe that your vehicle has a defect that could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Multiquip Inc. at 1-800-421-1244.

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

To contact NHTSA, you may either call the Vehicle Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153), go to <http://www.safercar.gov>, or write to:

Administrator  
NHTSA  
400 Seventh Street, SW.,  
Washington, DC 20590

You can also obtain information about motor vehicle safety from <http://www.safercar.gov>.

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### NOTICE

Specifications are subject to change without notice.




# SAFETY INFORMATION

Do not operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.


## SAFETY MESSAGES

The four safety messages shown below will inform you about potential hazards that could injure you or others. The safety messages specifically address the level of exposure to the operator and are preceded by one of four words: **DANGER**, **WARNING**, **CAUTION** or **NOTICE**.


## SAFETY SYMBOLS

 **DANGER**

Indicates a hazardous situation which, if not avoided, **WILL** result in **DEATH** or **SERIOUS INJURY**.

 **WARNING**

Indicates a hazardous situation which, if not avoided, **COULD** result in **DEATH** or **SERIOUS INJURY**.








 **CAUTION**

Indicates a hazardous situation which, if not avoided, **COULD** result in **MINOR** or **MODERATE INJURY**.

**NOTICE**

Addresses practices not related to personal injury.

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety messages.

Symbol	Safety Hazard
	Lethal exhaust gas hazards
	Explosive fuel hazards
	Burn hazards
	Overspeed hazards
	Rotating parts hazards
	Pressurized fluid hazards
	Electric shock hazards

# SAFETY INFORMATION

## GENERAL SAFETY

### CAUTION

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.



- **NEVER** operate this equipment when not feeling well due to fatigue, illness or when under medication.
- **NEVER** operate this equipment under the influence of drugs or alcohol.



- **ALWAYS** check the equipment for loosened threads or bolts before starting.
- **DO NOT** use the equipment for any purpose other than its intended purposes or applications.

### NOTICE

- This equipment should only be operated by trained and qualified personnel 18 years of age and older.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.

- **NEVER** use accessories or attachments that are not recommended by MQ Power for this equipment. Damage to the equipment and/or injury to user may result.

- **ALWAYS** know the location of the nearest **fire extinguisher**.



- **ALWAYS** know the location of the nearest **first aid kit**.



- **ALWAYS** know the location of the nearest phone or **keep a phone on the job site**. Also, know the phone numbers of the nearest **ambulance, doctor and fire department**. This information will be invaluable in the case of an emergency.



## GENERATOR SAFETY

### DANGER

- **NEVER** operate the equipment in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe **bodily harm or even death**.



### WARNING

- **NEVER** disconnect any **emergency or safety devices**. These devices are intended for operator safety. Disconnection of these devices can cause severe injury, bodily harm or even death. Disconnection of any of these devices will void all warranties.

### CAUTION

- **NEVER** lubricate components or attempt service on a running machine.

### NOTICE

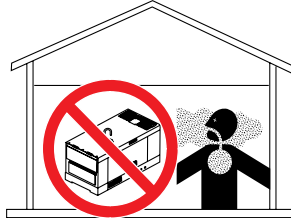
- **ALWAYS** ensure generator is on level ground before use.
- **ALWAYS** keep the machine in proper running condition.
- Fix damage to machine and replace any broken parts immediately.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel

# SAFETY INFORMATION

## ENGINE SAFETY

### DANGER

- The engine fuel exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled.
- The engine of this equipment requires an adequate free flow of cooling air. **NEVER** operate this equipment in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause injury to people and property and serious damage to the equipment or engine.



### WARNING

- **DO NOT** place hands or fingers inside engine compartment when engine is running.
- **NEVER** operate the engine with heat shields or guards removed.
- Keep fingers, hands hair and clothing away from all moving parts to prevent injury.
- **DO NOT** remove the radiator cap while the engine is hot. High pressure boiling water will gush out of the radiator and severely scald any persons in the general area of the generator.
- **DO NOT** remove the coolant drain plug while the engine is hot. Hot coolant will gush out of the coolant tank and severely scald any persons in the general area of the generator.



### CAUTION

- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing equipment.



## NOTICE

- **NEVER** run engine without an air filter or with a dirty air filter. Severe engine damage may occur. Service air filter frequently to prevent engine malfunction.
- **NEVER** tamper with the factory settings of the engine or engine governor. Damage to the engine or equipment can result if operating in speed ranges above the maximum allowable.
- Wet stacking is a common problem with diesel engines which are operated for extended periods with light or no load applied. When a diesel engine operates without sufficient load (less than 40% of the rated output), it will not operate at its optimum temperature. This will allow unburned fuel to accumulate in the exhaust system, which can foul the fuel injectors, engine valves and exhaust system, including turbochargers, and reduce the operating performance.



In order for a diesel engine to operate at peak efficiency, it must be able to provide fuel and air in the proper ratio and at a high enough engine temperature for the engine to completely burn all of the fuel.

Wet stacking does not usually cause any permanent damage and can be alleviated if additional load is applied to relieve the condition. It can reduce the system performance and increase maintenance. Applying an increasing load over a period of time until the excess fuel is burned off and the system capacity is reached usually can repair the condition. This can take several hours to burn off the accumulated unburned fuel.

- State Health Safety Codes and Public Resources Codes specify that in certain locations, spark arresters must be used on internal combustion engines that use hydrocarbon fuels. A spark arrester is a device designed to prevent accidental discharge of sparks or flames from the engine exhaust. Spark arresters are qualified and rated by the United States Forest Service for this purpose. In order to comply with local laws regarding spark arresters, consult the engine distributor or the local Health and Safety Administrator.



# SAFETY INFORMATION

## FUEL SAFETY

### DANGER

- **DO NOT** start the engine near spilled fuel or combustible fluids. Diesel fuel is extremely flammable and its vapors can cause an explosion if ignited.
- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.
- **ALWAYS** use extreme caution when working with **flammable** liquids.
- **DO NOT** fill the fuel tank while the engine is running or hot.
- **DO NOT** overfill tank, since spilled fuel could ignite if it comes into contact with hot engine parts or sparks from the ignition system.
- Store fuel in appropriate containers, in well-ventilated areas and away from sparks and flames.
- **NEVER** use fuel as a cleaning agent.
- **DO NOT** smoke around or near the equipment. Fire or explosion could result from fuel vapors or if fuel is spilled on a hot engine.



## TOWING SAFETY

### CAUTION

- Check with your local county or state safety towing regulations, in addition to meeting **Department of Transportation (DOT) Safety Towing Regulations**, before towing your generator.
- Refer to MQ Power trailer manual for additional safety information.
- In order to reduce the possibility of an accident while transporting the generator on public roads, **ALWAYS** make sure the trailer that supports the generator and the towing vehicle are mechanically sound and in good operating condition.
- **ALWAYS** shutdown engine before transporting



- Make sure the hitch and coupling of the towing vehicle are rated equal to, or greater than the trailer “gross vehicle weight rating.”
- **ALWAYS** inspect the hitch and coupling for wear. **NEVER** tow a trailer with defective hitches, couplings, chains, etc.
- Check the tire air pressure on both towing vehicle and trailer. **Trailer tires should be inflated to 50 psi cold.** Also check the tire tread wear on both vehicles.
- **ALWAYS** make sure the trailer is equipped with a **safety chain**.
- **ALWAYS** properly attach trailer’s safety chains to towing vehicle.
- **ALWAYS** make sure the vehicle and trailer directional, backup, brake and trailer lights are connected and working properly.
- DOT Requirements include the following:
  - Connect and test electric brake operation.
  - Secure portable power cables in cable tray with tie wraps.
- The maximum speed for highway towing is **55 MPH** unless posted otherwise. Recommended off-road towing is not to exceed **15 MPH** or less depending on type of terrain.
- Avoid sudden stops and starts. This can cause skidding, or jack-knifing. Smooth, gradual starts and stops will improve towing.
- Avoid sharp turns to prevent rolling.
- Trailer should be adjusted to a level position at all times when towing.
- Raise and lock trailer wheel stand in up position when towing.
- Place **chock blocks** underneath wheel to prevent **rolling** while parked.
- Place **support blocks** underneath the trailer’s bumper to prevent **tipping** while parked.
- Use the trailer’s swivel jack to adjust the trailer height to a level position while parked.

# SAFETY INFORMATION

## ELECTRICAL SAFETY

### DANGER

- **DO NOT** touch output terminals during operation. Contact with output terminals during operation can cause **electrocution, electrical shock or burn.**



- The electrical voltage required to operate the generator can cause severe injury or even death through physical contact with live circuits. Turn generator and all circuit breakers **OFF** before performing maintenance on the generator or making contact with output terminals.

- **NEVER** insert any objects into the output receptacles during operation. This is extremely dangerous. The possibility exists of **electrical shock, electrocution or death.**



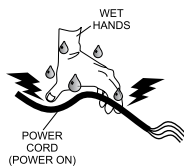
- Backfeed to a utility system can cause **electrocution** and/or property damage. **NEVER** connect the generator to a building's electrical system without a transfer switch or other approved device. All installations should be performed by a **licensed electrician** in accordance with all applicable laws and electrical codes. Failure to do so could result in electrical shock or burn, causing **serious injury or even death.**



## Power Cord/Cable Safety

### DANGER

- **NEVER** let power cords or cables **lay in water.**
- **NEVER stand in water** while AC power from the generator is being transferred to a load.
- **NEVER** use **damaged** or **worn** cables or cords when connecting equipment to generator. Inspect for cuts in the insulation.
- **NEVER** grab or touch a live power cord or cable with wet hands. The possibility exists of **electrical shock, electrocution or death.**



- Make sure power cables are securely connected to the generator's output receptacles. Incorrect connections may cause electrical shock and damage to the generator.

### NOTICE

- **ALWAYS** make certain that proper power or extension cord has been selected for the job. See Cable Selection Chart in this manual.

## Grounding Safety

### DANGER

- **ALWAYS** make sure that electrical circuits are properly grounded to a suitable earth ground (ground rod) per the National Electrical Code (NEC) and local codes before operating generator. **Severe injury or death by electrocution** can result from operating an ungrounded generator.

- **NEVER** use gas piping as an electrical ground.

## BATTERY SAFETY

### DANGER

- **DO NOT** drop the battery. There is a possibility that the battery will explode.
- **DO NOT** expose the battery to open flames, sparks, cigarettes, etc. The battery contains combustible gases and liquids. If these gases and liquids come into contact with a flame or spark, an explosion could occur.



### WARNING

- **ALWAYS** wear safety glasses when handling the battery to avoid eye irritation. The battery contains acids that can cause injury to the eyes and skin.
- Use well-insulated gloves when picking up the battery.
- **ALWAYS** keep the battery charged. If the battery is not charged, combustible gas will build up.
- **ALWAYS** recharge the battery in a well-ventilated environment to avoid the risk of a dangerous concentration of combustible gasses.



# SAFETY INFORMATION

- If the battery liquid (dilute sulfuric acid) comes into contact with **clothing or skin**, rinse skin or clothing immediately with plenty of water.
- If the battery liquid (dilute sulfuric acid) comes into contact with **eyes**, rinse eyes immediately with plenty of water and contact the nearest doctor or hospital to seek medical attention.

## CAUTION

- **ALWAYS** disconnect the **NEGATIVE battery terminal** before performing service on the generator.
- **ALWAYS** keep battery cables in good working condition. Repair or replace all worn cables.

## ENVIRONMENTAL SAFETY/DECOMMISSIONING

### NOTICE

Decommissioning is a controlled process used to safely retire a piece of equipment that is no longer serviceable. If the equipment poses an unacceptable and unreparable safety risk due to wear or damage or is no longer cost effective to maintain (beyond life-cycle reliability) and is to be decommissioned (demolition and dismantlement), be sure to follow rules below.

- **DO NOT** pour waste or oil directly onto the ground, down a drain or into any water source.
- Contact your country's Department of Public Works or recycling agency in your area and arrange for proper disposal of any electrical components, waste or oil associated with this equipment.
- When the life cycle of this equipment is over, remove battery and bring to appropriate facility for lead reclamation. Use safety precautions when handling batteries that contain sulfuric acid.
- When the life cycle of this equipment is over, it is recommended that the trowel frame and all other metal parts be sent to a recycling center.



Metal recycling involves the collection of metal from discarded products and its transformation into raw materials to use in manufacturing a new product.

Recyclers and manufacturers alike promote the process of recycling metal. Using a metal recycling center promotes energy cost savings.

## EMISSIONS INFORMATION

### NOTICE

The diesel engine used in this equipment has been designed to reduce harmful levels of carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOx) contained in diesel exhaust emissions.

This engine has been certified to meet US EPA Evaporative emissions requirements in the installed configuration.

Attempting to modify or make adjustments to the engine emission system by unauthorized personnel without proper training could damage the equipment or create an unsafe condition.

Additionally, modifying the fuel system may adversely affect evaporative emissions, resulting in fines or other penalties.

### Emission Control Label

The emission control label is an integral part of the emission system and is strictly controlled by regulations.

The label must remain with the engine for its entire life.

If a replacement emission label is needed, please contact your authorized engine distributor.

# SPECIFICATIONS

**Table 1. Generator Specifications**

<b>Model</b>	DCA150SSJU4F	
<b>Type</b>	Revolving field, self ventilated, open protected type synchronous generator	
<b>Armature Connection</b>	<b>Star with Neutral</b>	<b>Zigzag</b>
<b>Phase</b>	3Ø	1Ø
<b>Standby Output</b>	132 kW (165 kVA)	95 kW
<b>Prime Output</b>	120 kW (150 kVA)	87 kW
<b>3Ø Voltage (L-L/L-N) Voltage Change-Over Bd. at 3Ø 240/139</b>	208Y/120, 220Y/127, 240Y/139	
<b>3Ø Voltage (L-L/L-N) Voltage Change-Over Bd. at 3Ø 480/277</b>	416Y/240, 440Y/254, 480Y/277	
<b>1Ø Voltage (L-L/L-N) Voltage Change-Over Bd. at 1Ø 240/120</b>	240/120	
<b>Power Factor</b>	0.8	1.0
<b>Frequency</b>	60 Hz	
<b>Speed</b>	1800 rpm	
<b>Aux. AC Power</b>	Single Phase, 60 Hz	
<b>Aux. Voltage/Output</b>	4.8 Kw (2.4 kW x 2)	
<b>Dry Weight</b>	6,615 lbs. (3,000 kg)	
<b>Wet Weight</b>	7,497 lbs. (3,400 kg)	

**Table 2. Engine Specifications**

<b>Model</b>	John Deere 6068HF08 Tier 4 Final Certified	
<b>Type</b>	4 cycle, water-cooled, direct injection, turbo-charged charged air cooled, EGR, DOC, DPF and SCR	
<b>No. of Cylinders</b>	6 cylinders	
<b>Bore x Stroke</b>	4.17 in. x 4.99 in. (106 mm x 127 mm)	
<b>Displacement</b>	4015 cu. in. (6.8 liter)	
<b>Rated Output</b>	240 HP at 1800 rpm	
<b>Starting</b>	Electric	
<b>Coolant Capacity</b>	10.3 gal. (39 liters) <sup>1</sup>	
<b>Lube Oil Capacity</b>	8.18 gal. (31 liters) <sup>2</sup>	
<b>Lubricating Type Oil</b>	API service class CJ-4, John Deere Plus-50™ II	
<b>DEF Tank Capacity</b>	14 gal. (55 liters)	
<b>Fuel Type</b>	#2 Diesel Fuel (Ultra low sulfur diesel fuel only)	
<b>Fuel Tank Capacity</b>	69 gal. (260 liters)	
<b>Fuel Consumption</b>	8.4 gal. (31.9 L)/hr at <b>full load</b>	6.5 gal. (24.7 L)/hr at <b>3/4 load</b>
	4.9 gal. (18.4 L)/hr at <b>1/2 load</b>	3.2 gal. (12.1 L)/hr at <b>1/4 load</b>
<b>Battery</b>	12 (100Ah X 2 (24 V System))	

<sup>1</sup> Includes engine and radiator hoses

<sup>2</sup> Includes filters

# DIMENSIONS

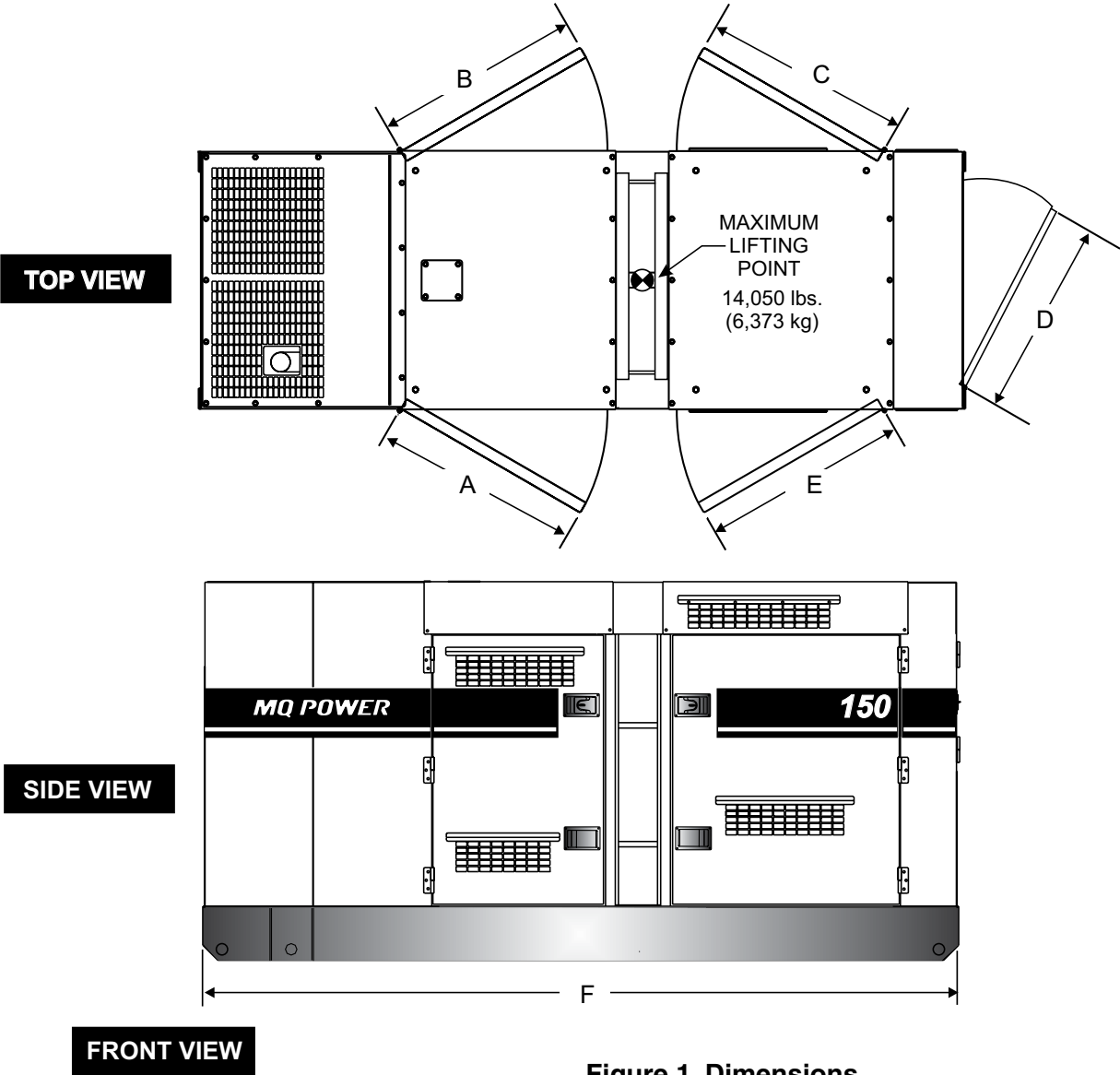


Figure 1. Dimensions

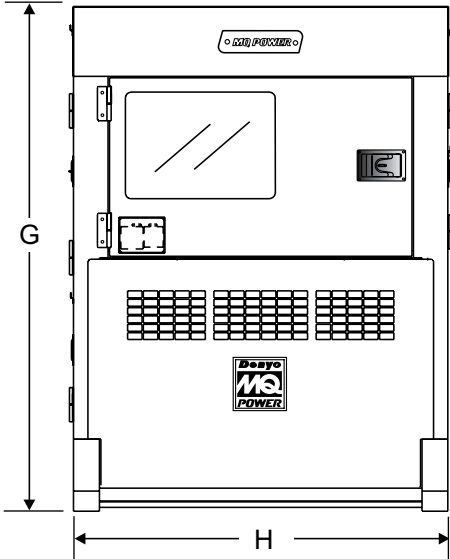
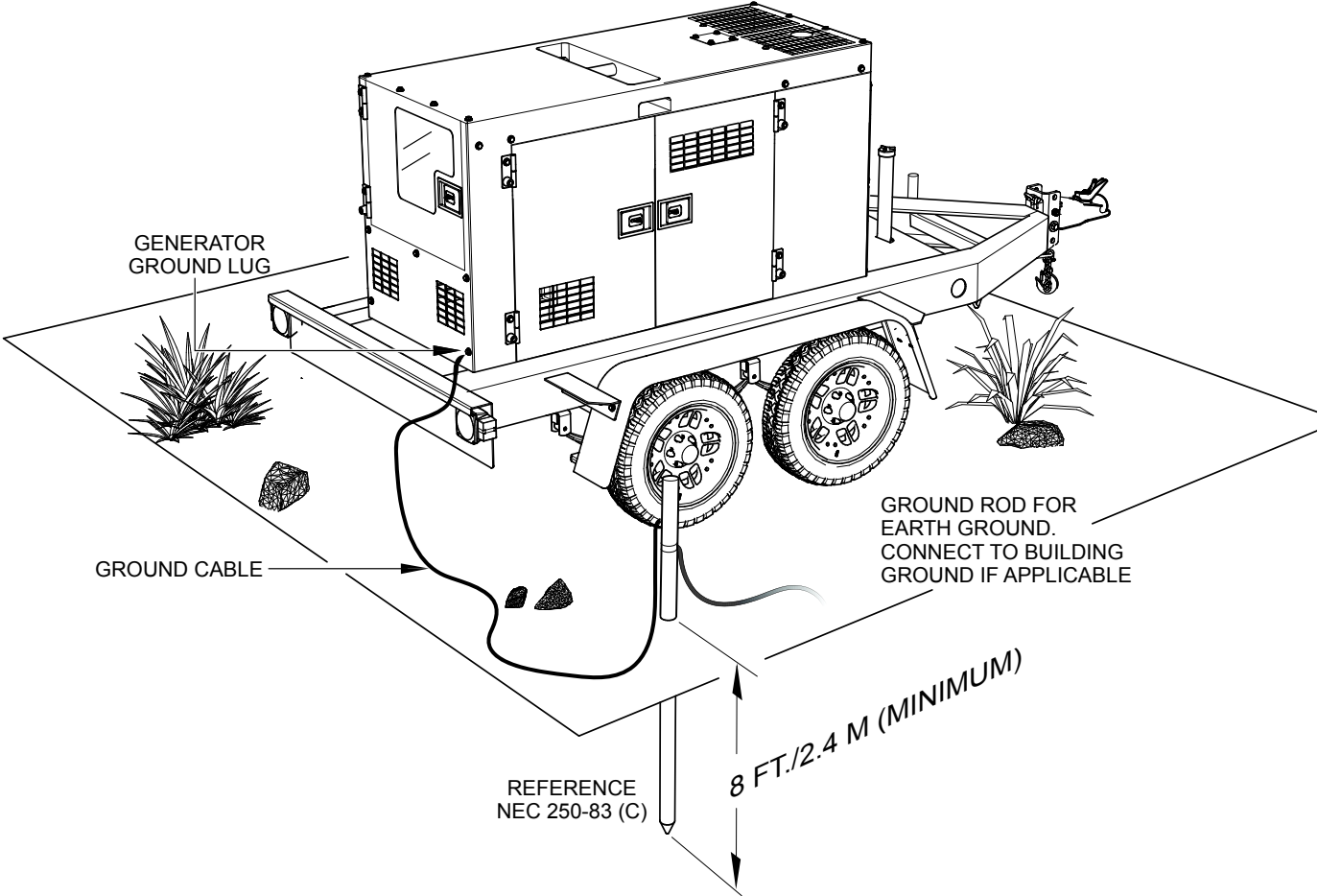


Table 3. Dimensions			
Reference Letter	Dimension in. (mm)	Reference Letter	Dimension in. (mm)
A	35.83 in. (910 mm)	E	43.70 in. (1,110 mm)
B	35.83 in. (910 mm)	F	137.79 in. (3,500 mm)
C	43.70 in. (1,110 mm)	G	68.89 in. (1,750 mm)
D	41.33 in. (1,050 mm)	H	51.18 in. (1,300 mm)



**Figure 2. Typical Generator Grounding Application**

## OUTDOOR INSTALLATION

Install the generator in a area that is free of debris, bystanders, and overhead obstructions. Make sure the generator is on secure level ground so that it cannot slide or shift around. Also install the generator in a manner so that the exhaust will not be discharged in the direction of nearby homes.

The installation site must be relatively free from moisture and dust. All electrical equipment should be protected from excessive moisture. Failure to do will result in deterioration of the insulation and will result in short circuits and grounding.

Foreign materials such as dust, sand, lint and abrasive materials have a tendency to cause excessive wear to engine and alternator parts.

### CAUTION

Pay close attention to ventilation when operating the generator inside tunnels and caves. The engine exhaust contains noxious elements. Engine exhaust must be routed to a ventilated area.

## INDOOR INSTALLATION

Exhaust gases from diesel engines are extremely poisonous. Whenever an engine is installed indoors the exhaust fumes must be vented to the outside. The engine should be installed at least two feet from any outside wall. Using an exhaust pipe which is too long or too small can cause excessive back pressure which will cause the engine to heat excessively and possibly burn the valves.

## MOUNTING

The generator must be mounted on a solid foundation (such as concrete) and set firmly on the foundation to isolate vibration of the generator when it is running. The generator must set at least 6 inches above the floor or grade level (in accordance to NFPA 110, Chapter 5-4.1). **DO NOT** remove the metal skids on the bottom of the generator. They are to resist damage to the bottom of the generator and to maintain alignment.

## GENERATOR GROUNDING

To guard against electrical shock and possible damage to the equipment, it is important to provide a good **EARTH** ground (Figure 2).

Article 250 (Grounding) of the National Electrical Code (NEC) provides guide lines for proper grounding and specifies that the cable ground shall be connected to the grounding system of the building as close to the point of cable entry as practical.

NEC articles 250-64(b) and 250-66 set the following grounding requirements:

1. Use one of the following wire types to connect the generator to earth ground.
  - a. Copper - 8 AWG (5.3 mm<sup>2</sup>)
  - b. Aluminum - 6 AWG (8.4 mm<sup>2</sup>)
2. When grounding the generator (Figure 2) connect the ground cable between the lock washer and the nut on the generator and tighten the nut fully. Connect the other end of the ground cable to earth ground.
3. NEC article 250-52(c) specifies that the earth ground rod should be buried a minimum of 8 ft. into the ground.

### NOTICE

When connecting the generator to any buildings electrical system **ALWAYS** consult with a licensed electrician.

### NOTICE

This generator has a permanent bonding conductor between the generator stator windings and the frame.



# GENERAL INFORMATION

## GENERATOR

This generator (Figure 3) is designed as a high quality portable (requires a trailer for transport) power source for telecom sites, lighting facilities, power tools, submersible pumps and other industrial and construction machinery.

## OPERATING PANEL

The “Operating Panel” is provided with the following:

- ECU Controller
- Gauge Unit Assembly
  - Oil Pressure Gauge
  - Water Temperature Gauge
  - Charging Voltmeter
  - Fuel Gauge
  - Tachometer
- Panel Light/Panel Light Switch
- Hour Check Button
- Auto Start/Stop Switch
- Engine Speed Switch
- Emergency Stop Button
- Water Temperature Gauge

## CONTROL PANEL

The “Control Panel” is provided with the following:

- Frequency Meter (Hz)
- AC Ammeter (Amps)
- AC Voltmeter (Volts)
- Ammeter Change-Over Switch
- Voltmeter Change-Over Switch
- Voltage Regulator
- 3-Pole, 400 amp Main Circuit Breaker
- “Control Box” (located behind Control Panel)
  - Automatic Voltage Regulator
  - Current Transformer
  - Over-Current Relay
  - Starter Relay

## OUTPUT TERMINAL PANEL

The “Output Terminal Panel” is provided with the following:

- Three 120/240V output receptacles (CS-6369), 50A
- Three auxiliary circuit breakers, 50A
- Two 120V output receptacles (GFCI), 20A
- Two GFCI circuit breakers, 20A
- Eight output terminal lugs (3Ø power)
- Ground lug
- Battery Charger (Optional)
- Jacket Water Heater (Optional)

## OPEN DELTA EXCITATION SYSTEM

Each generator is equipped with the state of the art “Open-Delta” excitation system. The open delta system consist of an electrically independent winding wound among stationary windings of the AC output section.

There are four connections of the open delta A, B, C and D. During steady state loads, the power from the voltage regulator is supplied from the parallel connections of A to B, A to D, and C to D. These three phases of the voltage input to the voltage regulator are then rectified and are the excitation current for the exciter section.

When a heavy load, such as a motor starting or a short circuit occurs, the automatic voltage regulator (AVR) switches the configuration of the open delta to the series connection of B to C. This has the effect of adding the voltages of each phase to provide higher excitation to the exciter section and thus better voltage response during the application of heavy loads.

The connections of the AVR to the AC output windings are for sensing only. No power is required from these windings. The open-delta design provides virtually unlimited excitation current, offering maximum motor starting capabilities. The excitation does not have a “fixed ceiling” and responds according the demands of the required load.

## ENGINE

This generator is powered by a 6 cylinder, 4-cycle water cooled, direct injection, turbocharged, air cooled EGR John Deere 6068HFG08 diesel engine. This engine is designed to meet every performance requirement for the generator. Reference Table 2 for engine specifications.

In keeping with MQ Power’s policy of constantly improving its products, the specifications quoted herein are subject to change without prior notice.

## ELECTRIC GOVERNOR SYSTEM

The electric governor system controls the RPMs of the engine. When the engine demand increases or decreases, the governor system regulates the frequency variation to  $\pm 0.25\%$ .

## EXTENSION CABLES

When electric power is to be provided to various tools or loads at some distance from the generator, extension cords are normally used. Cables should be sized to allow for distance in length and amperage so that the voltage drop between the generator and point of use (load) is held to a minimum. Use the cable selection chart (Table 6) as a guide for selecting proper extension cable size.



# MAJOR COMPONENTS

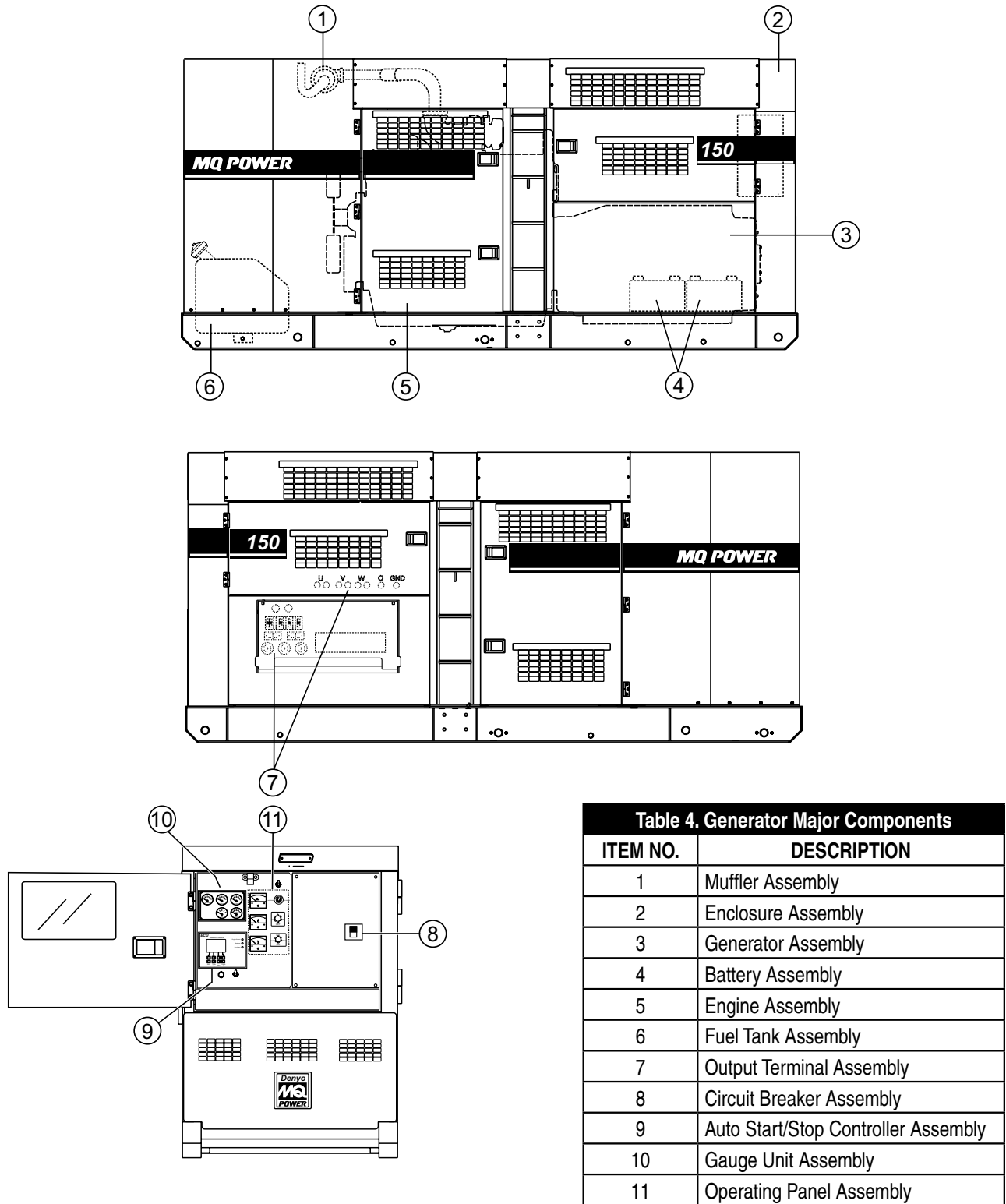


Figure 3. Major Components

# ENGINE CONTROL UNIT (ECU)

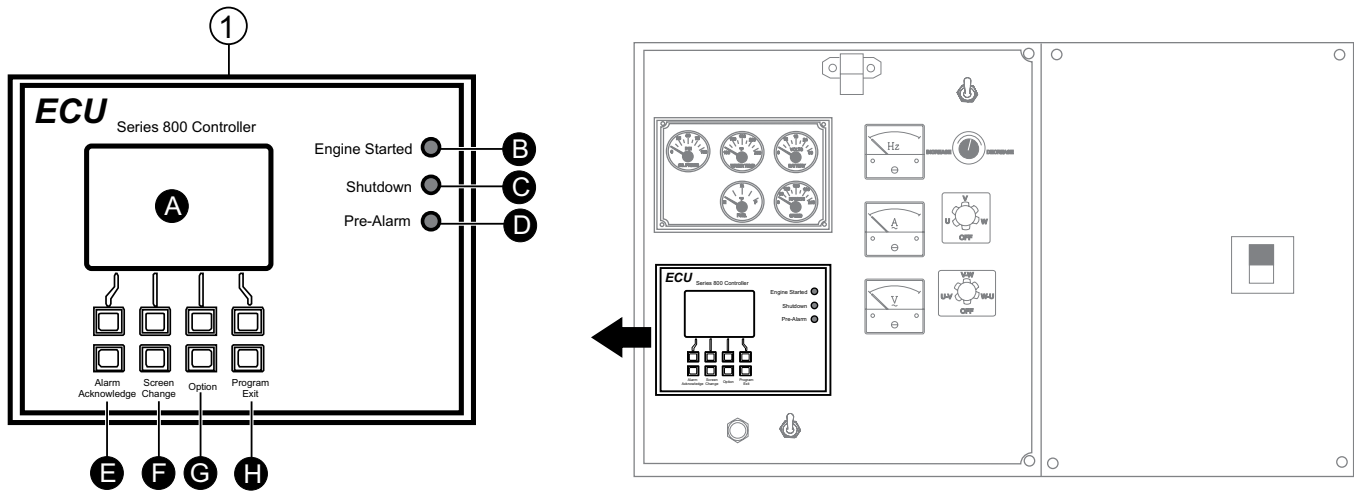
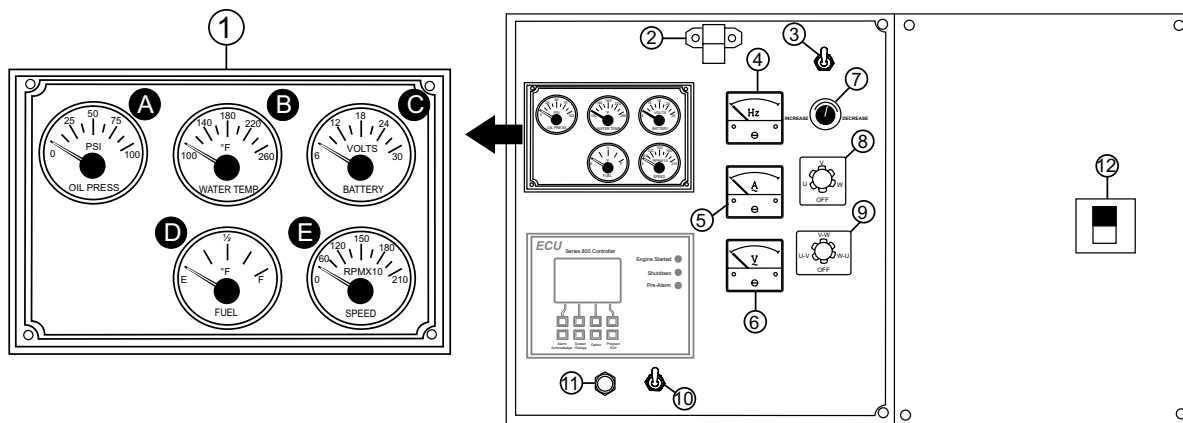


Figure 4. Engine Control Unit (ECU)

The definitions below describe the controls and functions of the Engine Control Unit (Figure 4).

1. **ECU Controller** — This auto start/stop controller displays the parameters and the diagnostic troubleshooting messages of the engine, and controls DPF regeneration.
  - A. **ECU Display Screen** — Engine fault diagnostic messages are shown on this LCD display. screen
  - B. **Engine Started Lamp** — This lamp when lit indicates engine is operating normally.
  - C. **Engine Shutdown Lamp** — When an engine failure has occurred this lamp will blink. Indicating the engine has been shutdown. The diagnostic fault message will be displayed on the LCD screen.
  - D. **Pre Alarm Lamp** — When an engine failure has occurred this lamp will blink. Indicating a pre-fault engine condition and the possibility of engine shutdown. The diagnostic fault message will be displayed on the LCD screen
  - E. **Alarm Acknowledge Button** — When the engine experiences a fault, the "Pre Alarm Lamp" or the "Shutdown Lamp" will start blinking. Pushing this button will confirm the fault message and the blinking lamp will change to a solid lamp display. The fault message will be displayed on the screen. When multiple engine faults occur, the lamp will continue blinking until all fault messages are confirmed. The blinking lamp will change to a solid lamp display all current confirmed fault messages will scroll across the screen.
  - F. **Screen Change Button** — When this button is pushed during operation, the screen will cycle through each parameter screen.
  - G. **Option Button** — This button is not active. Do not use.
  - H. **Program/Exit Button** — Pushing this button allows the DPF Force Regen and diagnostic code to be confirmed.

# ENGINE/GENERATOR CONTROL PANEL



**Figure 5. Gauge Unit Assembly**

The definitions below describe the controls and functions of the Engine/Generator Control Panel (Figure 5).

1. **Gauge Unit Assembly** — This assembly houses the various engine monitoring gauges. These gauges indicate: oil pressure, water temperature, charging voltmeter, fuel and engine speed RPM (tachometer).
  - A. **Oil Pressure Gauge** — During normal operation this gauge be should read between 35 to 65 psi. (241~448 kPa). When starting the generator the oil pressure may read a little higher, but after the engine warms up the oil pressure should return to the correct pressure range.
  - B. **Water Temperature Gauge** — During normal operation this gauge be should read between 180° and 225°F (82°~107°C).
  - C. **Charging Voltmeter Gauge** — During normal operation this gauge indicate minimum 26 VDC
  - D. **Fuel Gauge** — Indicates amount of diesel fuel available.
  - E. **Tachometer** — Indicates engine speed in RPM's for 60 Hz operation. This meter should indicate 1800 RPM's when the rated load is applied. .
2. **Panel Light** — For operation at night, panel light illuminates control panel for ease of reading meters and gauges. Make sure oanel light switch is in the OFF position when light is not in use.
3. **Panel Light Switch** — When activated will turn on control panel light.
4. **Frequency Meter** — Indicates the output frequency in hertz (Hz). Normally 60 Hz
5. **AC Ammeter** — Indicates the amount of current the load is drawing from the generator per leg selected by the ammeter phase-selector switch.
6. **AC Voltmeter** — Indicates the output voltage present at the **U,V, and W Output Terminal Lugs**.
7. **Voltage Regulator Control** — Allows  $\pm 15\%$  manual adjustment of the generator's output voltage.
8. **Ammeter Change-Over Switch** — This switch allows the AC ammeter to indicate the current flowing to the load connected to any phase of the output terminals, or to be switched off. This switch does not effect the generator output in any fashion, it is for current reading only.
9. **Voltmeter Change-Over Switch** — This switch allows the AC voltmeter to indicate phase to phase voltage between any two phases of the output terminals or to be switched off.
10. **Auto/Start Switch** — This switch selects either manual or automatic operation. Center position is OFF (reset).
11. **Hour Check Button** — With the engine stopped, press and hold ths button. The total running hours, fuel level, and battery voltage will be displayed.
12. **Main Circuit Breaker** — This three-pole, 400 amp main breaker is provided to protect the **U,V, and W Output Terminal Lugs** from overload.

# OUTPUT TERMINAL PANEL FAMILIARIZATION

## OUTPUT TERMINAL PANEL

The Output Terminal Panel (Figure 7) shown below is provided for the connection of electrical loads. Lift up on the cover to gain access to receptacles and terminal lugs.

### NOTICE

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

## OUTPUT TERMINAL FAMILIARIZATION

The "Output Terminal Panel" (Figure 7) is provided with the following:

- Three (3) 240/139V output receptacles @ 50 amp
- Three (3) Circuit Breakers @ 50 amps
- Two (2) 120V GFCI receptacles @ 20 amp
- Two (2) GFCI Circuit Breakers @ 20 amps
- Eight (8) Output Terminal Lugs ( U, V, W, O, Ground)

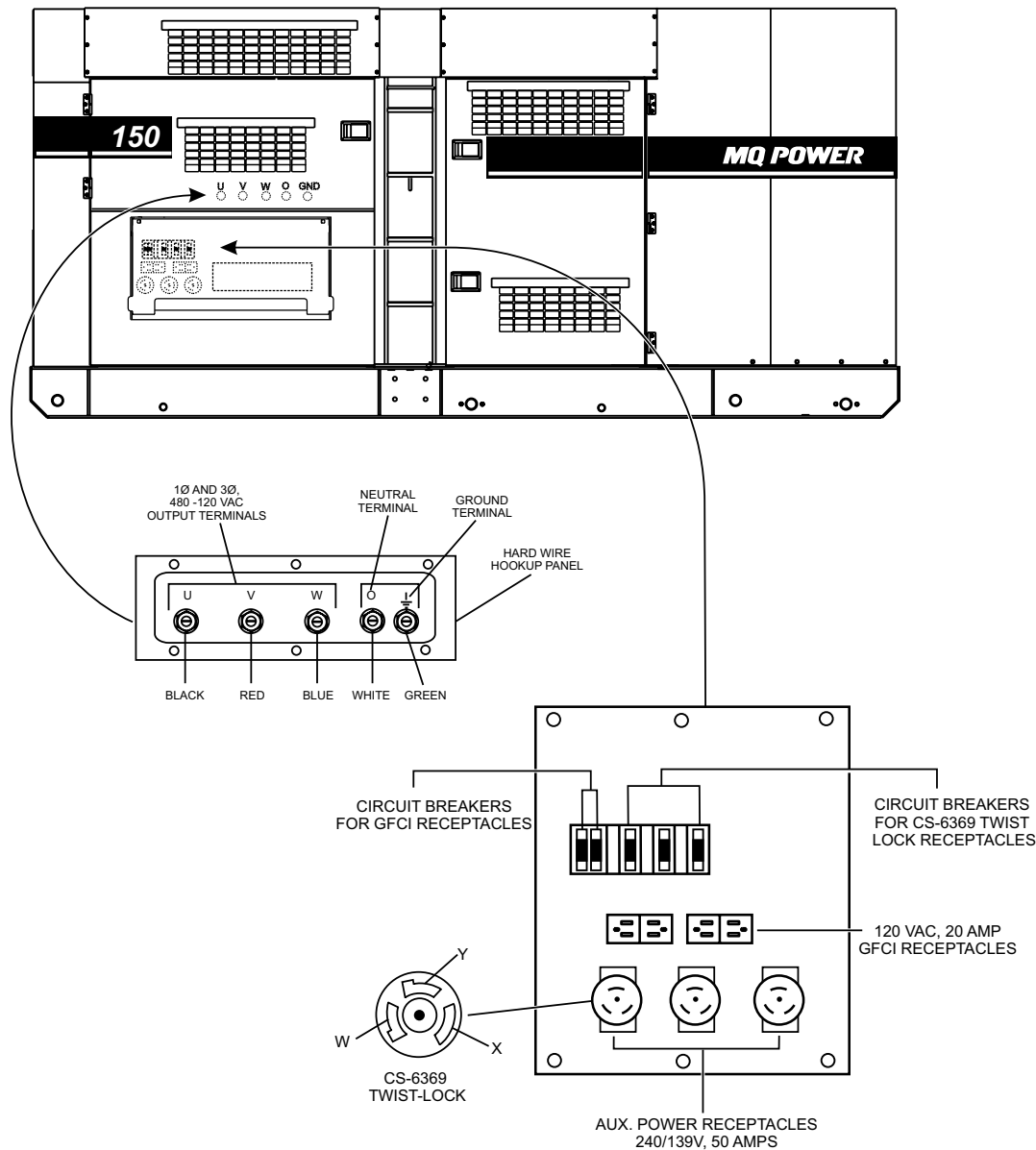


Figure 6. Output Terminal Panel

# OUTPUT TERMINAL PANEL FAMILIARIZATION

## 120 VAC GFCI Receptacles

There are two 120 VAC, 20 amp GFCI (Duplex Nema 5-20R) receptacles provided on the output terminal panel. These receptacles can be accessed in **any voltage selector switch** position. Each receptacle is protected by a 20 amp circuit breaker. These breakers are located directly above the GFCI receptacles. Remember the load output (current) of both GFCI receptacles is dependent on the load requirements of the U, V, and W output terminal lugs.

Pressing the **reset** button resets the GFCI receptacle after being tripped. Pressing the **test button** (See Figure 7) in the center of the receptacle will check the GFCI function. Both receptacles should be tested at least once a month.

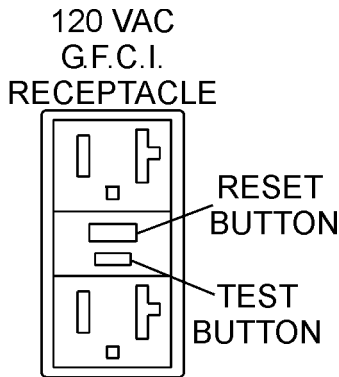


Figure 7. G.F.C.I. Receptacle

## Twist Lock Dual Voltage 120/240 VAC Receptacles

There are three 240/139V, 50 amp auxiliary twist-lock (CS-6369) receptacles (Figure 8) provided on the output terminal panel. These receptacles can **only** be accessed when the voltage change-over board is configured for **single-phase 240/120** application

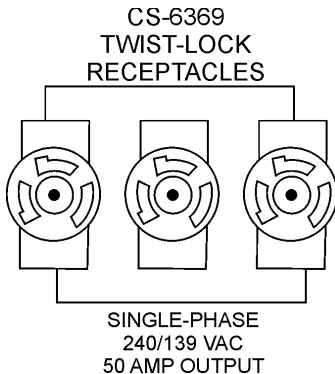


Figure 8. 240/139V Twist-Lock Auxiliary Receptacles

Each auxiliary receptacle is protected by a 50 amp circuit breaker. These breakers are located directly above the GFCI receptacles. Remember the load output (current) on all three receptacles is dependent on the load requirements of the **output terminal lugs**.

Turn the **voltage regulator control knob** (Figure 9) on the control panel to obtain the desired voltage. Turning the knob clockwise will **increase** the voltage, turning the knob counter-clockwise will **decrease** the voltage.

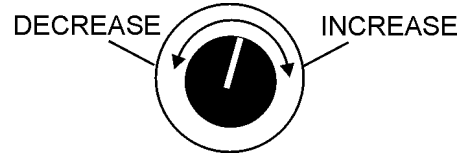


Figure 9. Voltage Regulator Control Knob

# OUTPUT TERMINAL PANEL FAMILIARIZATION

## Connecting Loads

Loads can be connected to the generator by the **Output Terminal Lugs** or the convenience receptacles (Figure 10). Make sure to read the operation manual before attempting to connect a load to the generator.

To protect the output terminals from overload, a 3-pole, 400A **main** circuit breaker is provided. Make sure to switch **ALL** circuit breakers to the **OFF** position prior to starting the engine.

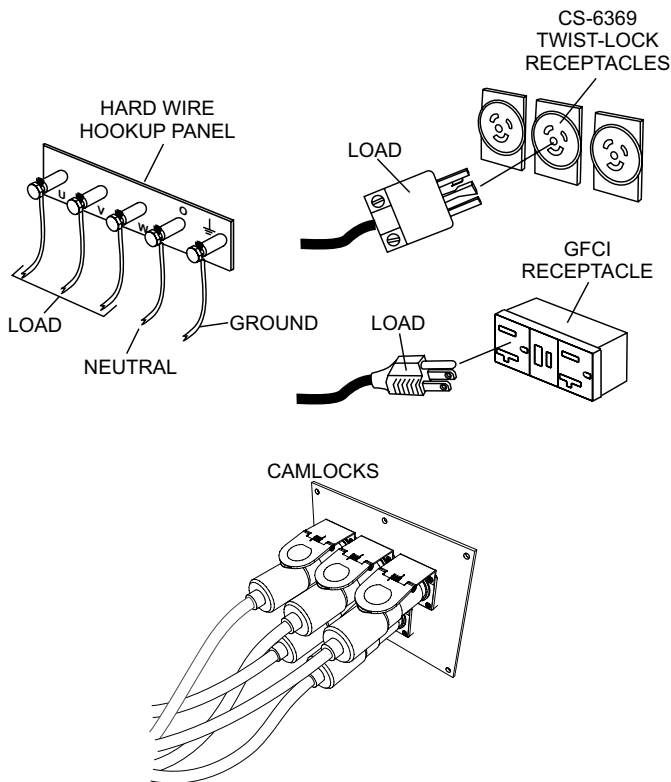


Figure 10. Connecting Loads

## Over Current Relay

An **over current relay** (Figure 11) is connected to the main circuit breaker. In the event of an overload, both the circuit breaker and the over current relay may trip. If the circuit breaker can not be reset, the **reset button** on the over current relay must be pressed. The over current relay is located in the control box.

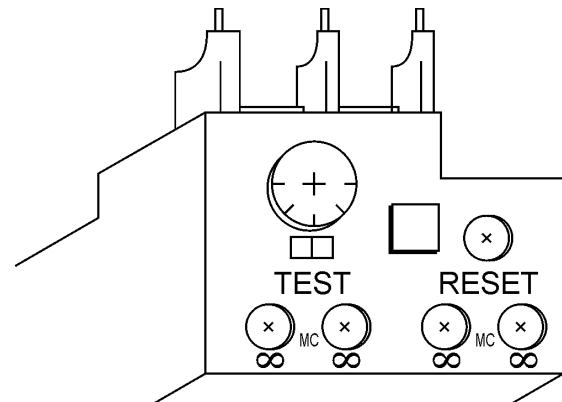


Figure 11. Over Current Relay

### NOTICE

Remember the **overcurrent relay** monitors the current flowing from the **U,V, and W Output Terminal Lugs** to the load.

In the event of a short circuit or over current condition, it will automatically trip the 400 amp main breaker.

To restore power to the **Output Terminal Panel**, press the reset button on the overcurrent relay and place the **main** circuit breaker in the **closed** position (**ON**).

# LOAD APPLICATION

## SINGLE PHASE LOAD

Always be sure to check the nameplate on the generator and equipment to insure the wattage, amperage, frequency, and voltage requirements are satisfactorily supplied by the generator for operating the equipment.

Generally, the wattage listed on the nameplate of the equipment is its rated output. Equipment may require 130—150% more wattage than the rating on the nameplate, as the wattage is influenced by the efficiency, power factor and starting system of the equipment.

### NOTICE

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

$$\text{WATTS} = \text{VOLTAGE} \times \text{AMPERAGE}$$

The power factor of this generator is 0.8. See Table 5 below when connecting loads.

**Table 5. Power Factor By Load**

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

**Table 6. Cable Selection (60 Hz, Single Phase Operation)**

Current in Amperes	Load in Watts		Maximum Allowable Cable Length			
	At 100 Volts	At 200 Volts	#10 Wire	#12 Wire	#14 Wire	#16 Wire
2.5	300	600	1000 ft.	600 ft.	375 ft.	250 ft.
5	600	1200	500 ft.	300 ft.	200 ft.	125 ft.
7.5	900	1800	350 ft.	200 ft.	125 ft.	100 ft.
10	1200	2400	250 ft.	150 ft.	100 ft.	
15	1800	3600	150 ft.	100 ft.	65 ft.	
20	2400	4800	125 ft.	75 ft.	50 ft.	

CAUTION: Equipment damage can result from low voltage

## THREE PHASE LOAD

When calculating the power requirements for 3-phase power use the following equation:

$$\text{KVA} = \frac{\text{VOLTAGE} \times \text{AMPERAGE} \times 1.732}{1000}$$

### NOTICE

If 3Ø load (kVA) is not given on the equipment nameplate, approximate 3Ø load may be determined by multiplying voltage by amperage by 1.732

### NOTICE

Motors and motor-driven equipment draw much greater current for starting than during operation.

An inadequate size connecting cable which cannot carry the required load can cause a voltage drop which can burn out the appliance or tool and overheat the cable. See Table 6.

- When connecting a resistance load such as an incandescent lamp or electric heater, a capacity of up to the generating set's rated output (kW) can be used.
- When connecting a fluorescent or mercury lamp, a capacity of up to the generating set's rated output (kW) multiplied by 0.6 can be used.
- When connecting an electric drill or other power tools, pay close attention to the required starting current capacity.

When connecting ordinary power tools, a capacity of up to the generating set's rated output (kW) multiplied by 0.8 can be used.

### DANGER

Before connecting this generator to any building's electrical system, a **licensed electrician** must install an **isolation (transfer) switch**. Serious damage to the building's electrical system may occur without this transfer itch.

# GENERATOR OUTPUTS

## GENERATOR OUTPUT VOLTAGES

A wide range of voltages are available to supply voltage for many different applications. Voltages are selected by using the **voltage selector switch** (Figure 12). To obtain some of the voltages as listed in Table 7 (see below) will require a fine adjustment using the **voltage regulator (VR) control knob** located on the control panel.

### Voltage Selector Switch

The voltage selector switch (Figure 12) is located above the output terminal panel's Hard Wire Hook-up Panel. It has been provided for ease of voltage selection..

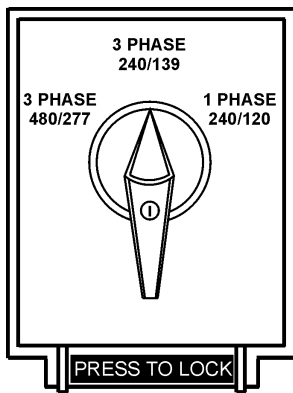


Figure 12. Voltage Selector Switch

**CAUTION**

**NEVER** change the position of the **voltage selector switch** while the engine is running. **ALWAYS** place circuit breaker in the **OFF** position before selecting voltage.

Table 7. Voltages Available						
UVWO Output Terminal Lugs	Voltage Selector Switch 3-Phase 240/139V Position			Voltage Selector Switch 3-Phase 480/270V Position		
	3Ø Line-Line	208V	220V	240V	416V	440V
1Ø Line-Neutral	120V	127V	139V	240V	254V	277V
Voltage Selector Switch Single-Phase 240/120V Position						
1Ø Line-Neutral/ Line-Line	120V Line-Neutral	N/A	N/A	240V Line-Line	N/A	N/A

## Maximum Amps

Table 8 shows the **maximum** amps the generator can provide. **DO NOT** exceed the maximum amps as listed.

Table 8. Generator Maximum Amps	
Rated Voltage	Maximum Amps
1Ø 120 Volt	333.3 X 2 amps (4 wire) 361 amps X 2 (Zigzag)
1Ø 240 Volt	166.7 amps (4 wire) 361 amps (Zigzag)
3Ø 240 Volt	400 amps
3Ø 480 Volt	180 amps



# GENERATOR OUTPUTS/GAUGE READING

## HOW TO READ THE AC AMMETER AND AC VOLTAGE GAUGES

The AC ammeter and AC voltmeter gauges are controlled by the AC ammeter and AC voltmeter change-over switches.

Both of these switches are located on the control panel and **DO NOT** effect the generator output. They are provided to help observe how much power is being supplied, produced at the UVWO terminals lugs.

Before taking a reading from either gauge, set the **Voltage Selector Switch** (Figure 13) to the position which produces the required voltage. Example, for 3Ø 240V, choose the center 3Ø 240/139V position on the voltage selector switch.

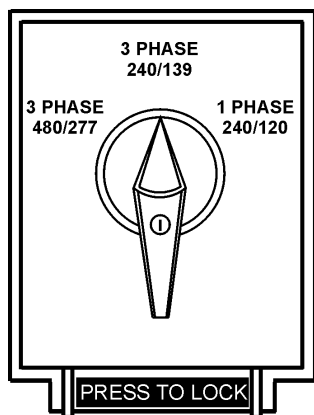


Figure 13. Voltage Selector Switch-  
240/3Ø Position

## AC Voltmeter Gauge Reading

Place the **AC Voltmeter Change-Over Switch** (Figure 14) in the W-U position and observe the phase to phase voltage reading between the W and U terminals as indicated on the **AC Voltmeter Gauge** (Figure 15).

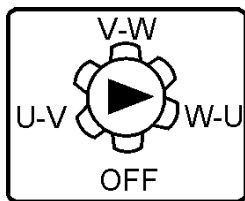


Figure 14. AC Voltmeter  
Change-Over Switch

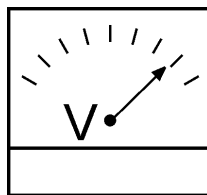


Figure 15. AC Voltmeter Gauge  
(Volt reading on W-U Lug)

## AC Ammeter Gauge Reading

Place the **AC Ammeter Change-Over Switch** (Figure 16) in the U position and observe the current reading (load drain) on the U terminal as indicated on the **AC Ammeter Gauge** (Figure 17). This process can be repeated for terminals V and W.

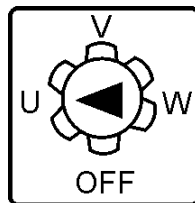


Figure 16. AC Ammeter  
Change-Over Switch

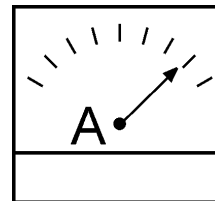


Figure 17. AC Ammeter  
(Amp reading on U Lug)

### NOTICE

The **ammeter** gauge will only show a reading when the **Output Terminal Lugs** are connected to a load and in use.

# OUTPUT TERMINAL PANEL CONNECTIONS

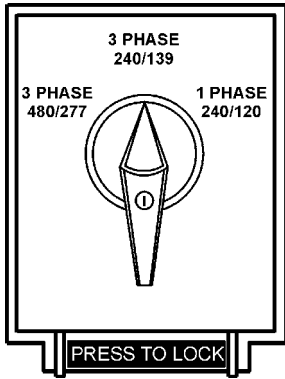
## UVWO TERMINAL OUTPUT VOLTAGES

Various output voltages can be obtained using the UVWO output terminal lugs. The voltages at the terminals are dependent on the position of the **Voltage Selector Switch** and the adjustment of the **Voltage Regulator Control Knob**.

Remember the voltage selector switch determines the **range** of the output voltage. The voltage regulator (VR) allows the user to increase or decrease the selected voltage.

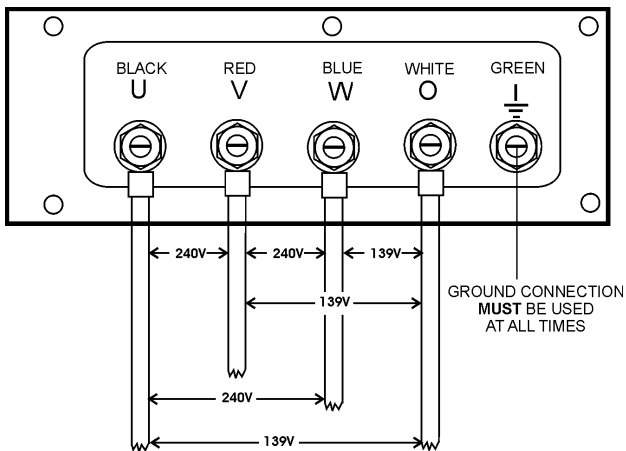
### 3Ø-240V UVWO Terminal Output Voltages

1. Place the voltage selector switch in the 3Ø 240/139 position as shown in Figure 18



**Figure 18. Voltage Selector switch  
3Ø-240/139V Position**

2. Connect the load wires to the UVWO terminals as shown in Figure 19



**Figure 19. UVWO Terminal Lugs  
3Ø-240/1Ø-139V Connections**

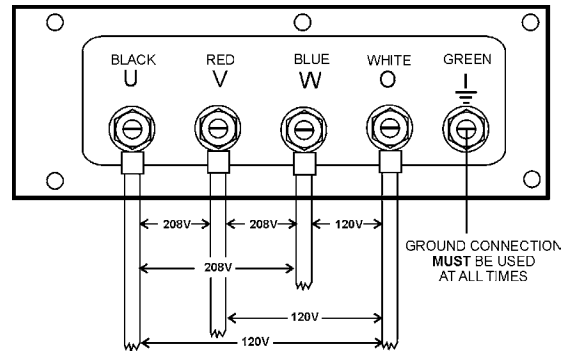
3. Turn the voltage regulator knob (Figure 20) clockwise to increase voltage output, turn counterclockwise to decrease voltage output. Use voltage regulator adjustment knob whenever fine tuning of the output voltage is required



**Figure 20. Voltage Regulator Knob**

### 3Ø-208V/1Ø-120V UVWO Terminal Output Voltages

1. Place the voltage selector switch in the 3Ø 240/139 position as shown in Figure 18.
2. Connect the load wires to the UVWO terminals as shown in Figure 21.



**Figure 21. UVWO Terminal Lugs  
3Ø-208/1Ø-120V Connections**

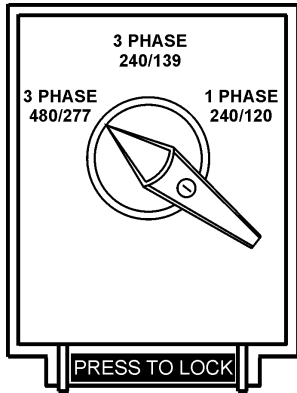
### NOTICE

To achieve a 3Ø 208V output the voltage selector switch must be in the 3Ø-240/139 position and the voltage regulator must be adjusted to 208V.

# OUTPUT TERMINAL PANEL CONNECTIONS

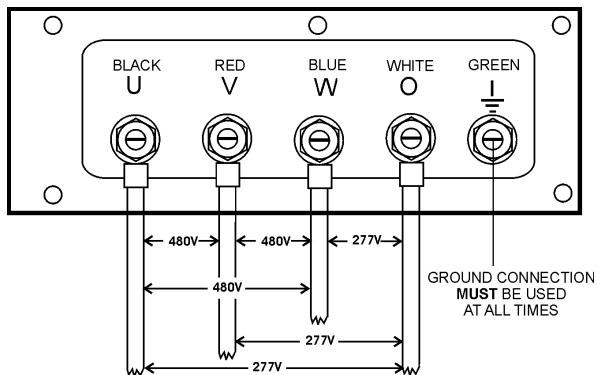
## 3Ø-480/277V UVWO Terminal Output Voltages

1. Place the voltage selector switch in the 3Ø 480/277 position as shown in Figure 22.



**Figure 22. Voltage Selector switch 3Ø-480/277V Position**

2. Connect the load wires to the UVWO terminals as shown in Figure 23.



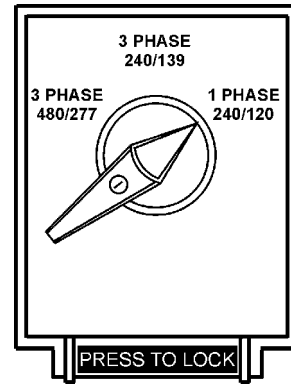
**Figure 23. UVWO Terminal Lugs 3Ø-480V Connections**

### NOTICE

**ALWAYS** make sure that the connections to the UVWO terminals are **secure** and **tight**. The possibility of arcing exists, that could cause a fire.

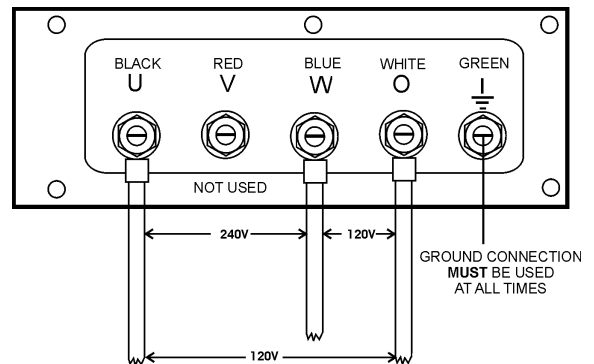
## 1Ø-240/120V UVWO Terminal Output Voltages

1. Place the voltage selector switch in the 1Ø 240/120 position as shown in Figure 24.



**Figure 24. Voltage Selector switch 1Ø-240/120V Position**

2. Connect the load wires to the UVWO terminals as shown in Figure 25.



**Figure 25. UVWO Terminal Lugs 1Ø-240/120V Connection**

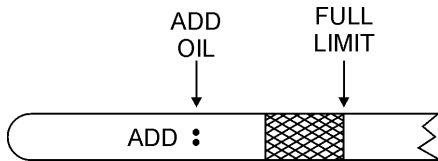
3. Turn the voltage regulator knob (Figure 20) clockwise to increase voltage output, turn counterclockwise to decrease voltage output. Use voltage regulator adjustment knob whenever fine tuning of the output voltage is required.

## CIRCUIT BREAKERS

To protect the generator from an overload, a 3-pole, 400 amp, main circuit breaker is provided to protect the **U, V, and W Output Terminals** from overload. In addition two single-pole, 20 amp **GFCI** circuit breakers are provided to protect the GFCI receptacles from overload. Three 50 amp **load** circuit breakers have also been provided to protect the auxiliary receptacles from overload. Make sure to itch **ALL** circuit breakers to the **OFF** position prior to starting the engine.

## LUBRICATION OIL

Fill the engine crankcase with lubricating oil through the filler hole, but **DO NOT** overfill. Make sure the generator is level and verify that the oil level is maintained between the two notches (Figure 26) on the dipstick. See Table 9 for proper selection of engine oil.



**Figure 26. Engine Oil Dipstick**

When checking the engine oil, be sure to check if the oil is clean. If the oil is not clean, drain the oil by removing the oil drain plug, and refill with the specified amount of oil as outlined in the **John Deere Owner's Manual**. Oil should be warm before draining.

Delo<sup>®</sup> engine oil is the recommended engine oil for this generator. When replacing engine oil please refill using Delo<sup>®</sup> 400 LE SAE 15W-40 (API CJ-4) engine oil.

Table 9. Recommended Motor Oil		OIL: SAE	
°F	°C		
122	50	10W/40	10W/40
104	40	30	15W/30
86	30	ARCTIC OIL	10W/30
68	20	5W/30	10W
50	10		20W/40
32	0		
-14	-10		
-4	-20		
-22	-30		
-40	-40		

## FUEL CHECK

### **! DANGER**



Fuel spillage on a **hot** engine can cause a **fire** or **explosion**. If fuel spillage occurs, wipe up the spilled fuel completely to prevent fire hazards. **NEVER** smoke around or near the generator.

## Refilling the Fuel System

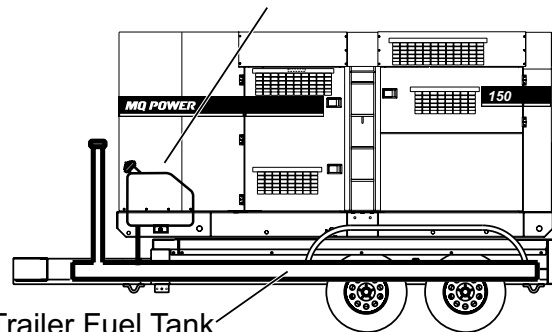
### **! CAUTION**

**ONLY** properly trained personnel who have read and understand this section should refill the fuel tank system.

This generator has an internal fuel tank located inside the trailer frame and may also be equipped with an environmental fuel tank (Figure 27). **ALWAYS** fill the fuel tanks with clean fresh **#2 diesel fuel**. **DO NOT** fill the fuel tanks beyond their capacities.

Pay attention to the fuel tank capacity when replenishing fuel. The fuel tank cap must be closed tightly after filling. Handle fuel in a safety container. If the container does not have a spout, use a funnel. Wipe up any spilled fuel immediately.


### Generator Internal Fuel Tank



**Figure 27. Internal Fuel Tank System**

## Refueling Procedure:

**WARNING**

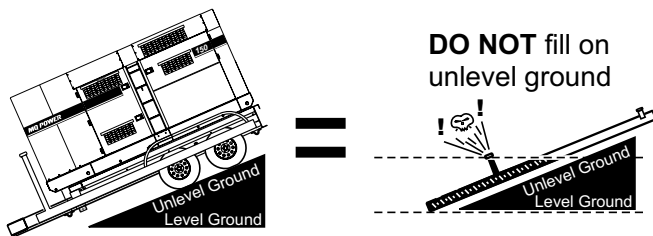


**Diesel fuel** and its vapors are dangerous to your health and the surrounding environment. Avoid skin contact and/or inhaling fumes.

1. **Level Tanks** — Make sure fuel cells are level with the ground. Failure to do so will cause fuel to spill from the tank before reaching full capacity (Figure 28).

**CAUTION**

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

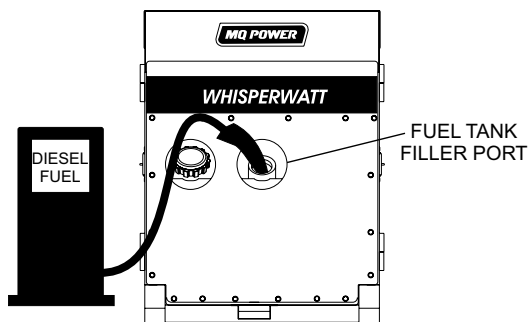


**Figure 28. Only Fill on Level Ground**

**NOTICE**

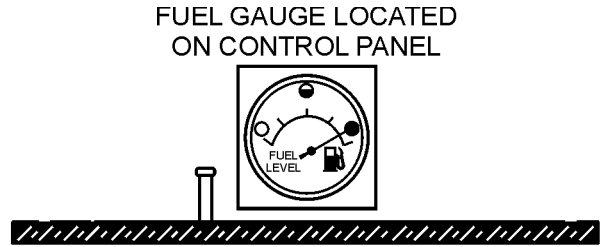
**ONLY** use #2 diesel fuel (ultra low sulfur diesel fuel) when refueling.

2. Remove fuel cap and fill tank as shown in Figure 29.



**Figure 29. Fueling the Generator**

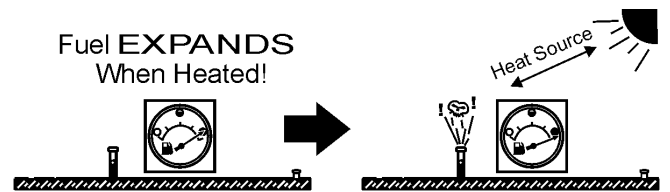
3. **NEVER** overfill fuel tank — It is important to read the fuel gauge when filling trailer fuel tank. **DO NOT** wait for fuel to rise in filler neck (Figure 30).



**Figure 30. Full Fuel Tank**

**CAUTION**

**DO NOT OVERFILL** fuel system. Leave room for fuel expansion. Fuel expands when heated (Figure 31).

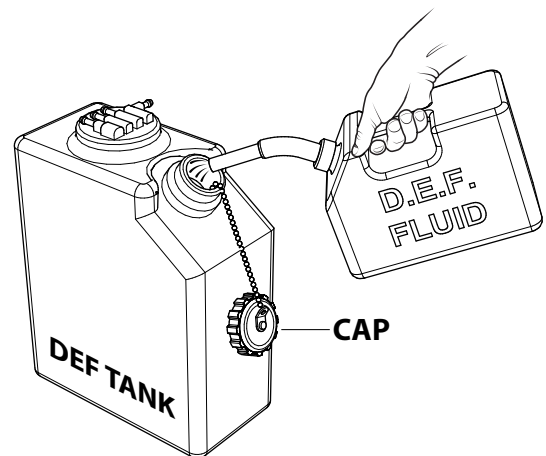


**Figure 31. Fuel Expansion**

## DEF Refueling

Diesel exhaust fluid is an aqueous solution made with 32.5% high purity *urea* (carbamide) and 67.5 *deionized water*. DEF is used as a consumable in selective catalytic reduction (SCR) in order to lower NO<sub>x</sub> concentration from diesel exhaust emissions.

1. Remove the filler cap from the DEF tank (Figure 32),
2. Next add DEF fluid to the tank. **DO NOT** overfill.




**Figure 32. DEF Tank Filling**

## COOLANT (ANTIFREEZE/SUMMER COOLANT/WATER)

John Deere recommends Cool-Gard II™ antifreeze/summer coolant for use in their engines, which can be purchased in concentrate (and mixed with 50% demineralized water) or pre-diluted. See the **John Deere Engine Owner's Manual** for further details.

**! WARNING**



If adding coolant/antifreeze mix to the radiator, **DO NOT** remove the radiator cap until the unit has completely cooled. The possibility of **hot!** coolant exists which can cause severe burns.

Day-to-day addition of coolant is done from the recovery tank. When adding coolant to the radiator, **DO NOT** remove the radiator cap until the unit has completely cooled. See Table 10 for engine, radiator, and recovery tank coolant capacities. Make sure the coolant level in the recovery tank is always between the “H” and the “L” markings.

Table 10. Coolant Capacity	
Engine and Radiator	10.3 gal (39 liters)
Reserve Tank	N/A

### Operation in Freezing Weather

When operating in freezing weather, be certain the proper amount of antifreeze (Table 11) has been added.

Table 11. Anti-Freeze Operating Temperatures		
Vol % Anti-Freeze	Freezing Point	
	°C	°F
50	-37	-34

**NOTICE**

When the antifreeze is mixed with water, the antifreeze mixing ratio **must be** less than 50%.

## Cleaning the Radiator

The engine may overheat if the radiator fins become overloaded with dust or debris. Periodically clean the radiator fins with compressed air. Cleaning inside the machine is dangerous, so clean only with the engine turned off and the **negative** battery terminal disconnected.

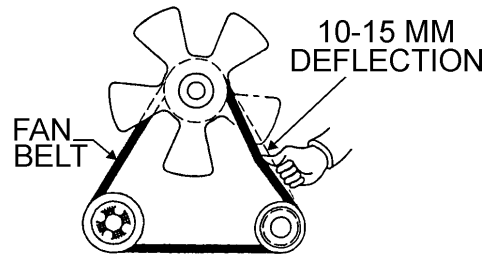
## AIR CLEANER

Periodic cleaning/replacement is necessary. Inspect air cleaner in accordance with the **John Deere Engine Owner's Manual**.

## FAN BELT TENSION


A slack fan belt may contribute to overheating, or to insufficient charging of the battery. Inspect the fan belt for damage and wear and adjust it in accordance with the **John Deere Engine Owner's Manual**.

The fan belt tension is proper if the fan belt bends 10 to 15 mm (Figure 33) when depressed with the thumb as shown below.



**Figure 33. Fan Belt Tension**

**! CAUTION**



**NEVER** place hands near the belts or fan while the generator set is running.

## BATTERY

This unit is of negative ground **DO NOT** connect in reverse. Always maintain battery fluid level between the specified marks. Battery life will be shortened, if the fluid level are not properly maintained. Add only distilled water when replenishment is necessary.

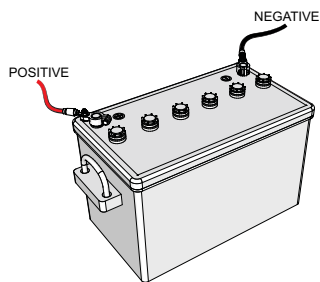
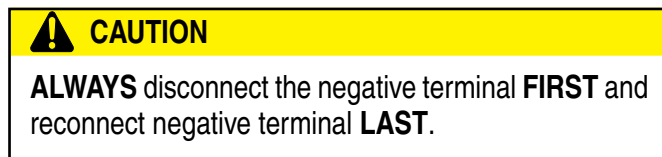
**DO NOT** over fill. Check to see whether the battery cables are loose. Poor contact may result in poor starting or malfunctions. **Always** keep the terminals firmly tightened. Coating the terminals with an approved battery terminal treatment compound. Replace battery with only recommended type battery. The battery type used in this generator is BCI Group 27.

The battery is sufficiently charged if the specific gravity of the battery fluid is 1.28 (at 68° F). If the specific gravity should fall to 1.245 or lower, it indicates that the battery is dead and needs to be recharged or replaced.

Before charging the battery with an external electric source, be sure to disconnect the battery cables.

### Battery Cable Installation

**ALWAYS** be sure the battery cables (Figure 34) are properly connected to the battery terminals as shown below. The **red cable** is connected to the positive terminal of the battery, and the **black cable** is connected to the negative terminal of the battery.



**Figure 34. Battery Connections**

When connecting battery do the following:

1. **NEVER** connect the battery cables to the battery terminals when the **Auto-Off/Reset-Manual** *itch* is in either the **AUTO** or **MANUAL** position. **ALWAYS** make sure that this *itch* is in the **OFF/RESET** position when connecting the battery.
2. Place a small amount of battery terminal treatment compound around both battery terminals. This will ensure a good connection and will help prevent corrosion around the battery terminals.

### NOTICE

If the battery cable is connected incorrectly, electrical damage to the generator will occur. Pay close attention to the polarity of the battery when connecting the battery.

### CAUTION

Inadequate battery connections may cause poor starting of the generator, and create other malfunctions.

## ALTERNATOR

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

**DO NOT** put water directly on the alternator. Entry of water into the alternator can cause corrosion and damage the alternator.

## WIRING

Inspect the entire generator for bad or worn electrical wiring or connections. If any wiring or connections are exposed (insulation missing) replace wiring immediately.

## PIPING AND HOSE CONNECTION

Inspect all piping, oil hose, and fuel hose connections for wear and tightness. Tighten all hose clamps and check hoses for leaks.

If any hose (**fuel or oil**) lines are defective replace them immediately.



# GENERATOR START-UP PROCEDURE (MANUAL)

## BEFORE STARTING

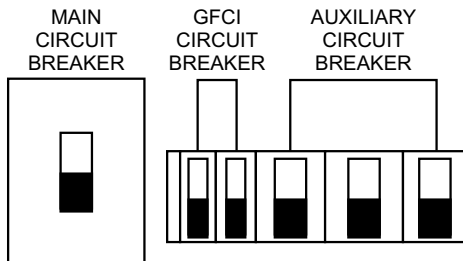
### CAUTION

The engine's exhaust contains harmful emissions. **ALWAYS** have adequate ventilation when operating. Direct exhaust away from nearby personnel.

### WARNING

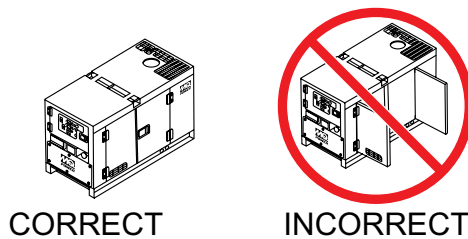
**NEVER** manually start the engine with the main, GFCI or auxiliary circuit breakers in the **ON** (closed) position.

1. Place the **main, G.F.C.I., and aux.** circuit breakers (Figure 35) in the **OFF** position prior to starting the engine.



**Figure 35. Main, Aux. and GFCI Circuit Breakers (OFF)**

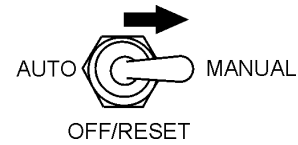
2. Make sure the **voltage change-over board** has been configured for the desired output voltage.
3. Connect the load to the **receptacles** or the **output terminal lugs** as shown in Figure 10. These load connection points can be found on the output terminal panel and the output terminal panel's hard wire hookup panel.
4. Tighten terminal nuts securely to prevent load wires from slipping out.
5. Close all engine enclosure doors (Figure 36).



**Figure 36. Engine Enclosure Doors**

## STARTING (MANUAL)

6. Place the **Auto-Off/Reset Manual Switch** in the **MANUAL** position to start the engine (Figure 37).



**Figure 37. Auto-Off/Reset Manual Switch (Manual Position)**

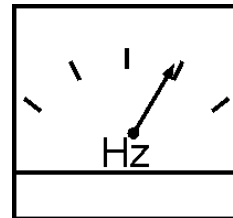
### NOTICE

If engine fails to start in a specified number attempts, the shutdown lamp will illuminate and the Auto-Off/Reset Switch must be placed in the Off/Reset position before the engine can be restarted.

### NOTICE

Engine will pre-heat automatically in cold weather conditions. "Glow Plug Hold" message will be displayed and the engine will start automatically after pre-heating..

7. Once the engine starts, let the engine run for 1-2 minutes. Let engine idle longer in cold weather conditions. Listen for any abnormal noises. If any abnormalities exist, shut down the engine and correct the problem.
8. The generator's frequency meter (Figure 38) should be displaying the 60 cycle output frequency in **HERTZ**.

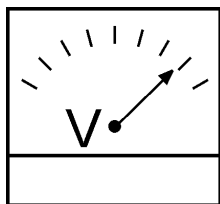


**Figure 38. Frequency Meter**



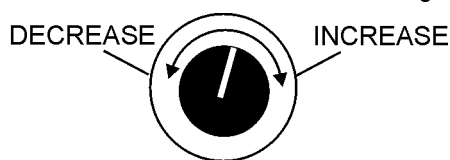
# GENERATOR START-UP PROCEDURE (MANUAL)

9. The generator's AC-voltmeter (Figure 39) will display the generator's output in **VOLTS**. If the voltage is not within the specified tolerance,



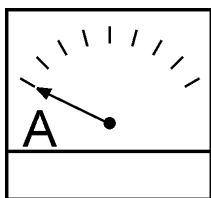
**Figure 39. Voltmeter**

10. Use the voltage adjustment control knob (Figure 40) to increase or decrease the desired voltage.



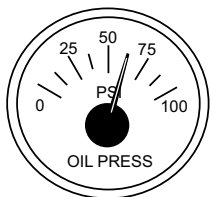
**Figure 40. Voltage Adjust Control Knob**

11. The ammeter (Figure 41) will indicate **zero amps** with no load applied. When a load is applied, the ammeter will indicate the amount of current that the load is drawing from the generator.



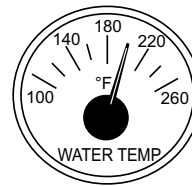
**Figure 41. Ammeter (No Load)**

12. The engine oil pressure gauge (Figure 42) will indicate the oil pressure of the engine. Under normal operating conditions the oil pressure is approximately 35 to 65 psi. (193~586 kPa).



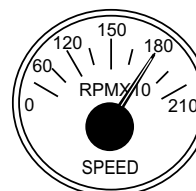
**Figure 42. Oil Pressure Gauge**

13. The **coolant temperature gauge** (Figure 43) will indicate the coolant temperature. Under normal operating conditions the coolant temperature should be between 185°~207°F (85°~97°C).



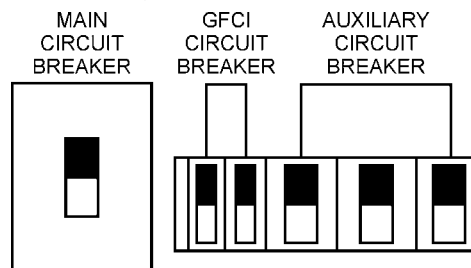
**Figure 43. Coolant Temperature Gauge**

14. The **tachometer gauge** (Figure 44) will indicate the speed of the engine when the generator is operating. Under normal operating conditions this speed is approximately 1800 RPM's.



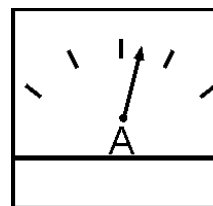
**Figure 44. Engine Tachometer Gauge**

15. Place the **main, GFCI, and aux.** circuit breakers in the **ON** position (Figure 45).



**Figure 45. Main, Aux. and GFCI Circuit Breakers (ON)**

16. Observe the generator's ammeter (Figure 46) and verify it reads the anticipated amount of current with respect to the load. The ammeter will only display a current reading if a load is in use.



**Figure 46. Ammeter (Load)**

17. The generator will run until manually stopped or an abnormal condition occurs.

# GENERATOR START-UP PROCEDURE (AUTO MODE)

## STARTING (AUTO MODE)

### DANGER



Before connecting this generator to any building's electrical system, a **licensed electrician** must install an **isolation (transfer) switch**. Serious damage to the building's electrical system may occur without this transfer itch.

### CAUTION

When connecting the generator to a isolation (transfer) itch, **ALWAYS** have power applied to the generator's internal battery charger. This will ensure that the engine will not fail due to a dead battery.

### NOTICE

When the generator is set in the **AUTO** mode, the generator will **automatically start** in the event of commercial power falling below a prescribed level by means of a contact closure that is generated automatically by a transfer switch.

### WARNING

When running the generator in the **AUTO** mode, remember the generator can start up at any time without warning. **NEVER** attempt to perform any maintenance when the generator is in the auto mode.

### NOTICE

When the **Auto Off/Reset Manual Switch** is placed in the **AUTO** position, the engine glow plugs will be warmed and the engine will start automatically.

When starting generator in **AUTO** mode use the "Manual Start-up" procedure except where noted (see below).

1. Perform steps 1 through 5 in the Before Starting section as outlined in the Manual Starting Procedure.
2. Place the **Auto Off/Reset Manual Switch** (Figure 47) in the **AUTO** position.



**Figure 47. Auto Off/Reset Manual Switch (AUTO)**

3. Continue operating the generator as outlined in the Manual Start-up procedure (start at step 7).

# GENERATOR SHUT-DOWN PROCEDURES

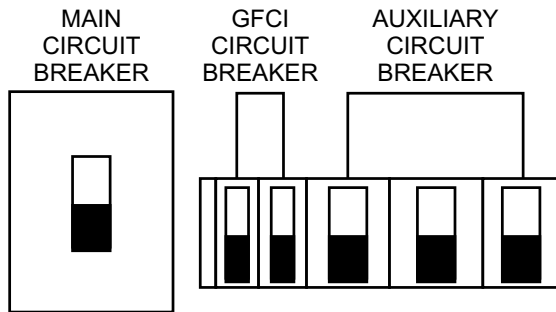
## WARNING

**NEVER** stop the engine suddenly except in an emergency.

## NORMAL SHUTDOWN PROCEDURE

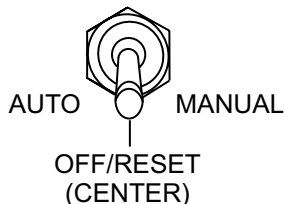
To shutdown the generator, use the following procedure:

1. Place both the **MAIN, GFCI and LOAD** circuit breakers as shown in Figure 48 to the **OFF** position.



**Figure 48. Main, Aux. and GFCI Circuit Breakers (OFF)**

2. Let the engine cool by running it at low speed for 3-5 minutes with no load applied.
3. Place the **Auto Off/Reset Manual Switch** (Figure 49) in the **OFF/RESET** position.

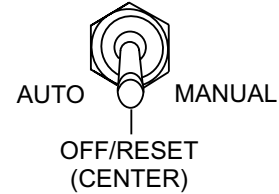


**Figure 49. Auto Off/Reset Manual Switch (Off/Reset)**

4. Verify that all status LEDs on the ECU control panel are **OFF** (not lit).
5. Remove all loads from the generator.
6. Inspect entire generator for any damage or loosening of components that may have occurred during operation.

## EMERGENCY SHUTDOWN PROCEDURE

1. Place the **Auto Off/Reset Manual Switch** (Figure 50) in the **OFF/RESET** position.



**Figure 50. Auto Off/Reset Manual Switch (OFF)**

# MAINTENANCE

Table 12. Inspection/Maintenance		10 Hrs DAILY	250 Hrs	500 Hrs or Every 12 Months	3000 Hrs or Every 36 Months	OTHER
<b>Engine</b>	Check Engine Oil and Coolant Levels	X				
	Check Fuel Filter/Water Separator Bowl	X				
	Check Air Cleaner	X				
	Check Air Cleaner Element	X				
	Check for Leaks/Hoses/Clamps	X				
	Check for Loosening of Parts	X				
	Change Engine Oil and Oil Filter * 1		X			
	Clean Unit, Inside and Outside		X			
	Replace Fuel Filter Elements			X		
	Check Engine Mounts			X		
	Service Battery			X		
	Check Air Intake Hoses			X		
	Check Fan Belt Condition			X		
	Check Automatic Belt Tensioner			X		
	Check Electrical Ground Connection			X		
	Clean Radiator, Check Cooling System			X		
	Coolant Solution Analysis, Add SCA's As Required			X		
	Pressure Test Cooling System			X		
	Check Engine Speed			X		
	Test Thermostats				X	
	Check and Adjust Engine Valve Clearance				X	
	Test Glow Plugs				X	
	Inspect Diesel Particulate Filter (DPF) * 2				X	
Flush and Refill Cooling System*3					2 yrs. or 2000 hrs.	
Clean Inside of Fuel Tank					1000 hrs.	
Clean DEF Tank					As Required	
Check Crankcase Ventilation Filter*4					1500 hrs.	
Replace Air Cleaner Elements * 5					As Required	
<b>Generator</b>	Measure Insulation Resistance Over 3M ohms		X			
	Check Rotor Rear Support Bearing			X		

\*1 During initial operation of a new engine, change oil and filter between a minimum of 100 hrs. and a maximum of 500 hrs. Service interval depends on type of oil.

\*2 Expectation for minimal service interval will be at least 4500 hrs. based on engine power. However, actual service should take place when indicated by diagnostic gauge. Please contact nearest authorized Multiquip Service Center for DPF Cleaning.

\*3 If John Deere COOL-GARD™ John Deere COOL-GARD™ II is used, the flushing intervals may be extended. See "Testing Diesel Coolant" in engine manual.

\*4 Minimal Service interval will be at least 1500 hrs. or when service indicator light turns on or as indicated by diagnostic gauge. Critical emission related service required before 1500 hrs. is not necessary. The emissions-related warranty is valid up to 1500 hrs.

\*5 Replace primary air filter element when restriction indicator shows a vacuum of 625 mm (25 in. H<sub>2</sub>O).

## GENERAL INSPECTION

Prior to each use, the generator should be cleaned and inspected for deficiencies. Check for loose, missing or damaged nuts, bolts or other fasteners. Also check for fuel, oil, and coolant leaks. Use Table 12 as a general maintenance guideline **Engine Side** (Refer to the Engine Instruction Manual)

## AIR CLEANER

Every 250 hours: Remove air cleaner element (Figure 51) and clean the heavy duty paper element with light spray of compressed air. Replace the air cleaner as needed.

### Air Cleaner with Dust Indicator

This indicator (Figure 51) is attached to the air cleaner. When the air cleaner element is clogged, air intake restriction becomes greater and the dust indicator signal shows **RED** meaning the element needs changing or service. After changing the air element, press the dust indicator button to reset the indicator.

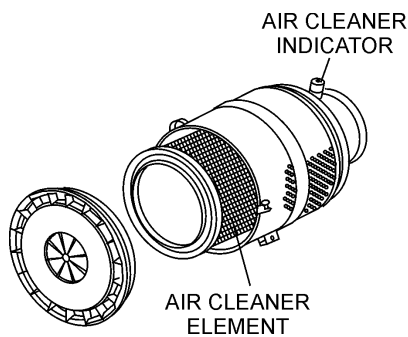


Figure 51. Air Cleaner/Indicator

### NOTICE

The air filter should not be changed until the indicator reads "**RED**". Dispose of old air filter. It may not be cleaned or reused..

If the engine is operating in very **dusty** or **dry grass** conditions, a clogged air cleaner will result. This can lead to a loss of power, excessive carbon buildup in the combustion chamber and high fuel consumption. Change air cleaner more **frequently** if these conditions exist.

## FUEL ADDITION

Add diesel fuel (the grade may vary according to season and locations).

### Removing Water from the Fuel Tank

After prolonged use, water and other impurities accumulate in the bottom of the tank. Occasionally inspect the fuel tank for water contamination and drain the contents if required.

During cold weather, the more empty volume inside the tank, the easier it is for water to condense. This can be reduced by keeping the tank full with diesel fuel.

### Cleaning Inside the Fuel Tank

Drain the fuel inside the fuel tank completely. Using a spray washer (Figure 52) wash out any deposits or debris that have accumulated inside the fuel tank.

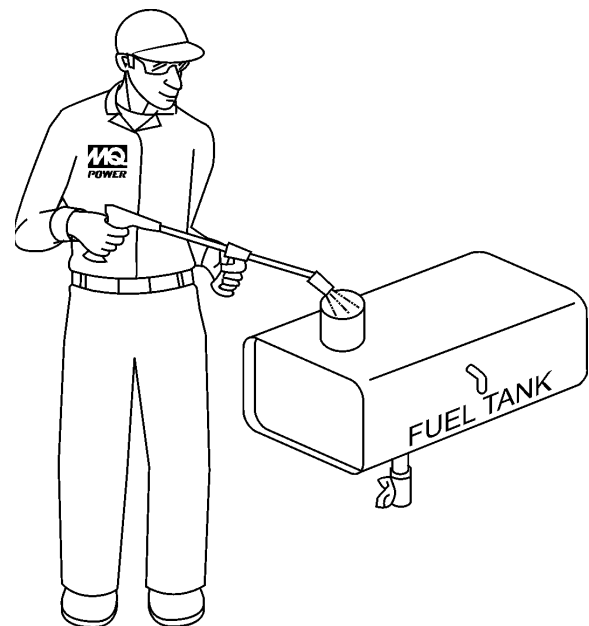


Figure 52. Fuel Tank Cleaning

## FUEL TANK INSPECTION

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

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

## Replacing Fuel Filter

- Replace the fuel filter cartridge with new one every 500 hours or so.
- Loosen the drain plug at the lower top of the fuel filter. Drain the fuel in the fuel body together with the mixed water. **DO NOT** spill the fuel during disassembly.
- Vent any air

## AIR REMOVAL

If air enters the fuel injection system of a diesel engine, starting becomes impossible. After running out of fuel, or after disassembling the fuel system, bleed the system according to the following procedure. See the **John Deere Engine Manual** for details.

To restart after running out of fuel, turn the itch to the “**ON**” position for 15-30 seconds. Try again, if needed. This unit is equipped with an automatic air bleeding system.

## CHECK OIL LEVEL

Check the crankcase oil level prior to each use, or when the fuel tank is filled. Insufficient oil may cause severe damage to the engine. Make sure the generator is level. The oil level must be between the two notches on the dipstick as shown in Figure 26.

## Replacing Oil Filter

- Remove the old oil filter.
- Apply a film of oil to the gasket/rubber seal (Figure 53) on the new oil filter

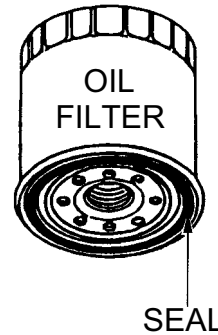


Figure 53. Oil Filter

- Install the new oil filter.
- After the oil cartridge has been replaced, the engine oil will drop slightly. Run the engine for a while and check for leaks before adding more oil if needed. Clean excessive oil from engine.

## FLUSHING OUT RADIATOR AND REPLACING COOLANT

- Open both cocks located at the crankcase side and at the lower part of the radiator and drain coolant. Open the radiator cap while draining. Remove the overflow tank and drain.
- Check hoses for softening and kinks. Check clamps for signs of leakage.
- Tighten both cocks and replace the overflow tank.
- Replace with coolant as recommended by the engine manufacturer.
- Close radiator cap tightly.
- Flush the radiator by running clean tap water through radiator until signs of rust and dirt are removed. **DO NOT** clean radiator core with any objects, such as a screwdriver.

## WARNING



Allow engine to **cool** when flushing out radiator. Flushing the radiator while hot could cause serious burns from water or steam.

## RADIATOR CLEANING

The radiator (Figure 54) should be sprayed (cleaned) with a high pressure washer when excessive amounts of dirt and debris have accumulated on the cooling fins or tube. When using a high pressure washer, stand at least 5 feet (1.5 meters) away from the radiator to prevent damage to the fins and tube.

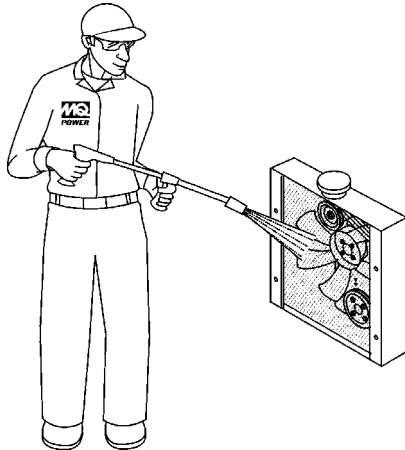


Figure 54. Radiator Cleaning

## GENERATOR STORAGE

For long term storage of the generator the following is recommended:

- Drain the fuel tank completely. Treat with a fuel stabilizer if necessary.
- Completely drain the oil from the crankcase and refill if necessary with fresh oil.
- Clean the entire generator, internal and external.
- Cover the generating set and store in a clean, dry place.
- Disconnect the battery.
- Make sure engine coolant is at proper level.
- If generator is mounted on a trailer, jack trailer up and place on blocks so tires do not touch the ground or block and completely remove the tires.

## JACKET WATER HEATER AND INTERNAL BATTERY CHARGER 120 VAC INPUT RECEPTACLES (OPTIONAL)

This generator can be optionally equipped with two 120 VAC, 20 amp input receptacles located on the output terminal panel.

The purpose of these receptacles is to provide power via commercial power to the **jacket water heater** and **internal battery charger**.

These receptacles will **ONLY** function when commercial power has been supplied to them (Figure 55). To apply commercial power to these receptacles, a power cord of adequate size will be required (See Table 6).

When using the generator in **hot** climates there is no reason to apply power to jacket water heater. However, if the generator will be used in **cold** climates it is always a good idea to apply power to the jacket water heater at all times.

To apply power to the jacket water heater simply apply power to the jacket water heater receptacle via commercial power using an power cord of adequate size.

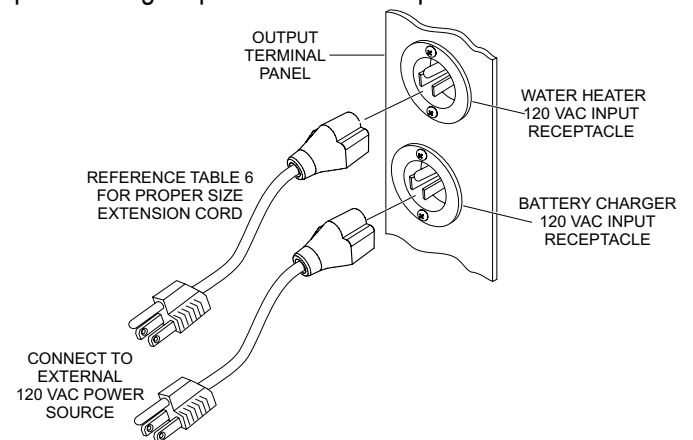


Figure 55. Battery Charger and Jacket Water Heater Power Connections

If the generator will be used daily, the battery should normally not require charging. If the generator will be idle (not used) for long periods of time, apply power to the battery charger receptacle via commercial power using a power cord of adequate size.

## NOTICE

To ensure adequate starting capability, always have power applied to the generator's internal battery charger..

## EMISSION CONTROL

The emission control system employed with the John Deere 6068HFG08 diesel engine consist of a Diesel Oxidation Catalyst (DOC) and a Diesel Particulate Filter (DPF). The oxidation catalyst and particulate filter are housed in one unit. See Figure 58.

These devices help in filtering out large amounts of harmful Nitrogen Oxides (NOx) and Particulate Matter (PM) which are emitted by diesel engines. These exhaust emissions pose serious environmental and health risks. It is important to maintain and service this DOC/DPF emission safety device on a periodic basis.

### Diesel Oxidation Catalyst (DOC)

The DOC does not filter particles it oxidizes them. This catalyst (honeycomb like structure) uses a chemical process to break down pollutants in the exhaust stream into less harmful components. In general this catalyst collects/burns accumulated particulates. The DOC contains palladium and platinum which serve as a catalysts to oxidize hydrocarbons and carbon monoxide.

### Diesel Particulate Filter (DPF)

A diesel particulate filter (DPF) is a device designed to remove diesel particulate matter (soot) from the exhaust gas of a diesel engine. This type of filter usually removes about 85-95% of the soot.

Soot accumulated in the DPF is removed via the "regeneration process". Regeneration is the process of removing the accumulated soot from the filter. This regeneration process can occur in a few different ways.

■ **Passive Regeneration** — Occurs during normal operation, typically under heavy load applications. Soot is oxidized faster than it is collected.

■ **Active Regeneration** — Occurs when engine exhaust temperatures are not high enough to oxidize the soot collected in the DPF. Active regeneration requires assistance from the engine to help increase the heat level in the after-treatment system.

Active regeneration occurs at a normal engine speed of 1800 rpm. In addition active regeneration is initiated automatically by the Engine Control Module (ECM) timer based program every 96 hours. This timer base program will reset at the end of any regeneration mode.

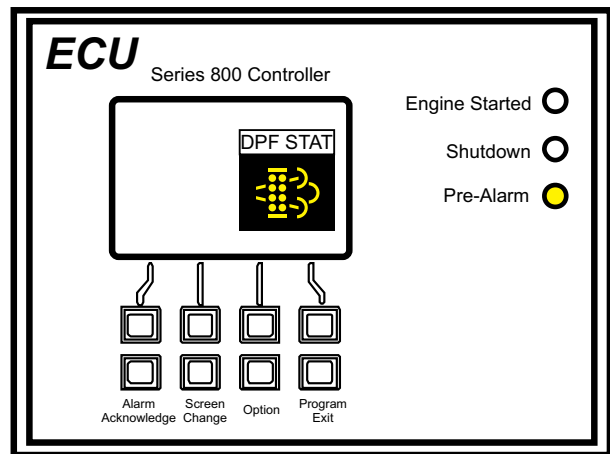
■ **Forced (Stationary) Regeneration** — A forced regeneration only occurs when the operator has initiated this action at the ECU and the ECM recognizes a pre-programmed set point of soot in the PDF to allow a forced regeneration cycle.

This process can take anywhere from 30 minutes to 1-1/2 hours. When forced regeneration is in process all loads must be removed from the generator, all circuit breakers must be placed in the OFF position (OPEN), and the engine speed set to idle.

### DPF PRE-ALARM

In the event the Engine Control Unit (ECU) determines the soot level back pressure and/or tempertaure has reached a pre-determined trip point the ECU will indicate a maintenance action is required by the operator.

This maintenance action will be shown on the LCD display (DPF Warning Symbol) and the AMBER pre-alarm LED on the ECU control panel will be ON (lit). See Figure 56.



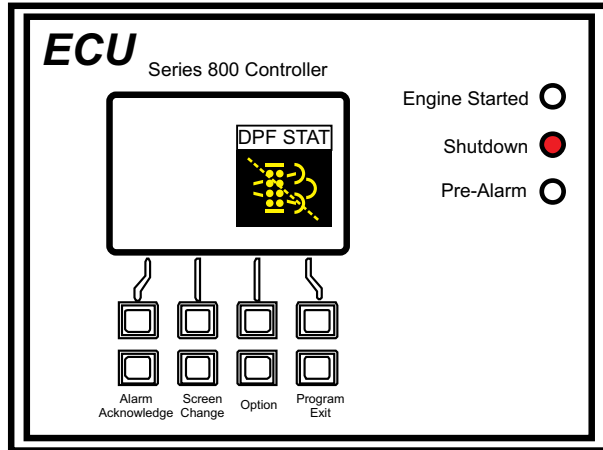
**Figure 56. ECU DPF Pre-Alarm**

The DPF pre-alarm status symbol displayed in Figure 56 indicates the soot level buildup has exceeded a pre-determined level and a "Forced Regeneration" action is required.

#### NOTICE

If the **AMBER** pre-alarm warning LED is ever **ON**, the operator should always take **immediate action** to correct the problem. If the engine is allow to run under this condition, a higher pressure differential will be created in the DPF and will result in the **RED** status LED being **ON**, causing an engine shutdown.





**Figure 57. ECU DPF Engine Shutdown**

### NOTICE

If the **RED** engine shutdown LED is ever **ON** (Figure 57), John Deere recommends that the DPF be removed, cleaned or replaced. In addition the shutdown code must be cleared. To clear the code, the ECM must be reset by a licensed John Deere Engine Service Technician, using John Deere service software.

### NOTICE

Soot and ash will accumulate in the DPF over time and must be cleaned. The ash is a result of the normal oil consumption while the engine is operated. The ash cleaning interval will largely depend on the engine's duty cycle and condition. Normal service intervals for cleaning ash from the DPF is every 6 months (5000 hours).

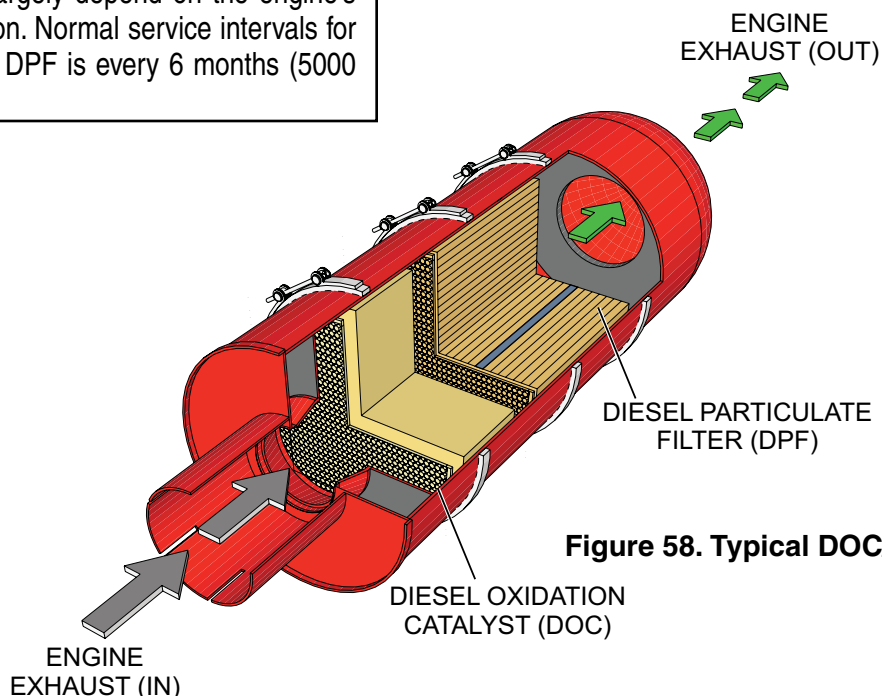
## FORCED REGENERATION PROCEDURE

Follow the steps below to initiate a forced regeneration:

1. Verify that the **AMBER** pre-alarm LED is **ON** or **FLASHING** and the DPF symbol is shown on the ECU display.
2. Place all circuit breakers in the **OFF** position.
3. Place the engine speed itch in the **LOW** position.
4. Press the **Program/Exit** button on the ECU controller and select **FORCE REGEN** mode.
5. Press and hold the request until the **REGEN ACTIVE** message is displayed on the screen, then release.
6. Once activated, regeneration will start automatically and the engine idling speed will increase through the forced regeneration cycle. This process will last anywhere from 30 minutes to 1-1/2 hours.

### NOTICE

During the regeneration cycle the High Exhaust System Temperature (**HEST**) symbol may be displayed. Display of this symbol can be considered normal during the regeneration period.



**Figure 58. Typical DOC/DPF Unit**

# MAINTENANCE

If the **diesel exhaust fluid** (DPF) symbol (Figure 59) is displayed during ECU controller operation, it indicates the following:

- DEF tank level is below 10%. Reference Table 13, DEF Level System Action System.
- DEF quality is poor. Check DEF tank level and check active **diagnostics trouble codes** (DTC).

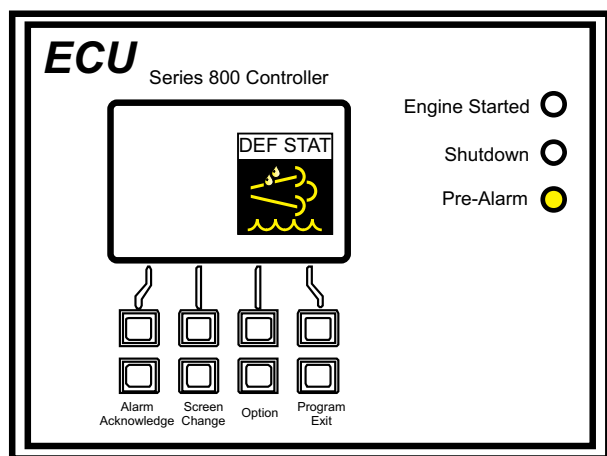


Figure 59. ECU DEF State Pre-Alarm

If the **engine emissions system malfunction** (EESM) symbol (Figure 60) is displayed during ECU controller operation, it indicates the following:

- Engine emissions are outside of normal operation range.
- System fault has occurred.

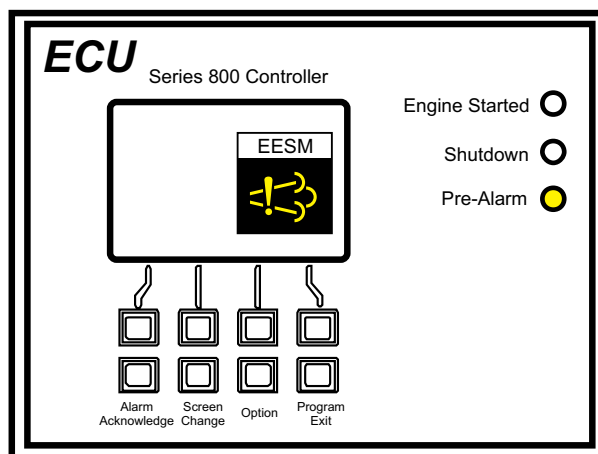


Figure 60. Engine Emissions System Malfunction Pre-Alarm

## NOTICE

If the engine emissions system malfunction symbol (Figure 60) is displayed during normal operation please contact your nearest MQ service center.

Table 13. DEF Level System Action System

DEF Level	Over 10%	Below 10%	0%	Empty or After 4 hrs. From 0%
Controller Message	—	DEF<10% Tank Level	DEF<10% Tank Level	DEF Tank Empty Level
DEF Symbol	—	● ON	● Blinking	● Blinking
Pre-Alarm Lamp	—	—	● ON	● ON
Shutdown Lamp	—	—	—	● ON Engine Shutdown





## NOTICE

Unit derate occurs at below 0% DEF level. If DEF level is at empty, engine will shutdown. When refilling with diesel fuel is required, refill DEF tank as well.

## AUTO REGENERATION PROCEDURE

Auto regeneration process will automatically occur. No operator action is required for this process. Allow the engine to run for at least 30 minutes to complete the automatic regeneration process.

Reference Table 14 for the various soot level stages for the DPF system.

<b>Table 14. Automatic DPF System</b>					
	Soot Level 0	Soot Level 1 & 2	Soot Level 3	Soot Level 4	Soot Level 5
Controller Message	N/A	N/A	FILTER CLEAN REQUESTED	SOOT LEVEL HIGH!	SOOT LEVEL VERY HIGH!
DPF Condition	Regen Not Required	Moderate Soot Level	High Soot Level	Very High Soot Level	Service DPF (Soot Only)
Pre-Alarm Lamp	N/A	N/A	 Blinking	 ON	 ON
Shutdown Lamp	N/A	N/A	N/A	N/A	 ON Engine Shutdown

### NOTICE

Generator derating occurs during soot levels 4 and 5. Soot level 5 will cause the generator to shutdown. If this condition occurs, contact your nearest authorized service center.

### NOTICE

**DO NOT** perform regeneration in conditions where it may be unsafe due to high exhaust temperatures.

### NOTICE

The area above and around the generator during the regeneration process should be free of any type of debris, flammable or combustible materials, as temperatures during the regeneration process can reach as high as 1,022 °F (550 °C).

# TRAILER MAINTENANCE

The following trailer maintenance guidelines are intended to assist the operator in preventive maintenance.

## TRAILER BRAKES

Properly functioning brake shoes and drums are essential to ensure safety. The brakes should be inspected the first 200 miles of operation. This will allow the brake shoes and drums to seat properly. After the first 200 mile interval, inspect the brakes every 3,000 miles. If driving over rough terrain, inspect the brakes more frequently.

## HYDRAULIC BRAKES

If your trailer has hydraulic brakes, they function the same way the surge brakes do on your tow vehicle. The hydraulic braking system must be inspected at least as often as the brakes on the tow vehicle, but no less than once per year. This inspection includes an assessment of the condition and proper operation of the wheel cylinders, brake shoes, brake drums and hubs.

## MANUALLY ADJUSTING THE BRAKES

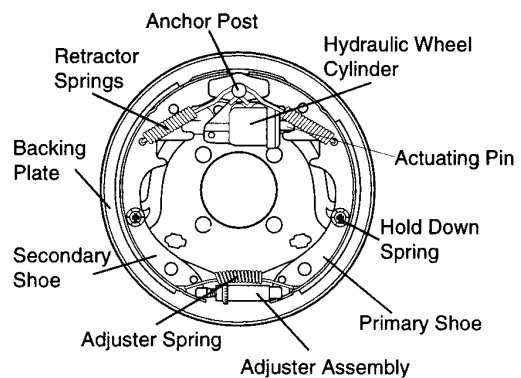
Most axles are fitted with a brake mechanism that will adjust the brakes during a hard stop. However, some braking systems are not automatically adjusted by hard stopping. These brakes require manual adjustment. The following steps apply to adjust most manually adjustable brakes.

1. Jack up the trailer and secure it on adequate capacity jackstands.
2. Be sure the wheel and brake drum rotate freely.
3. Remove the adjusting-hole cover from the adjusting slot on the bottom of the brake backing plate.
4. With a screwdriver or standard adjusting tool, rotate the starwheel of the adjuster assembly to expand the brake shoes. Adjust the brake shoes out until the pressure of the linings against the drum makes the wheel very difficult to turn. Note: Your trailer maybe equipped with drop spindle axles. See axle manual for your axle type. You will need a modified adjusting tool for adjusting the brakes in these axles. With drop spindle axles, a modified adjusting tool with about an 80 degree angle should be used.
5. Rotate the starwheel in the opposite direction until the wheel turns freely with a slight drag.

6. Replace the adjusting-hole cover.
7. Repeat the above procedure on all brakes.
8. Lower the trailer to the ground.

Check the fluid level in the master cylinder reservoir at least every three months. If you tow your trailer an average of 1,000 miles per month in a hot and dry environment, you must check the brake fluid level once a month. The brake fluid reservoir is located on the tongue of the trailer. Always fill with clean, uncontaminated DOT 4 brake fluid.

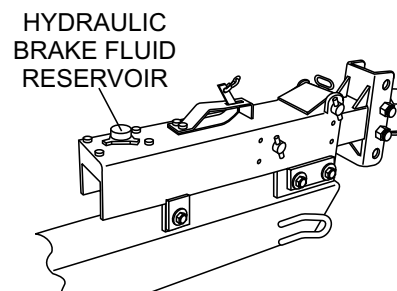
Figure 61 below displays the major hydraulic brake components that will require inspection and maintenance. Please inspect these components as required using steps 1 through 6 as referenced in the “Manually Adjusting The Brakes” section on this page. See Table 15 for Hydraulic Brake Troubleshooting.



**Figure 61. Hydraulic Brake Components**

## HYDRAULIC BRAKE ACTUATOR

The hydraulic brake actuator (Figure 62) is the mechanism that activates the trailer's brake system. This actuator changes fluid power into mechanical power. Therefore, the fluid level must be checked frequently to assure that the brakes function properly.



**Figure 62. Hydraulic Brake Actuator**

# TRAILER MAINTENANCE

## WARNING

Failure to maintain proper fluid level in the actuator may result in loss of braking action which could cause severe property damage, injury or death.

Periodically check the actuator mounting fasteners for damage or loosening. Inspect the actuator for worn or damaged parts. As you are towing your trailer, be aware of any changes in braking quality. This could be an early warning of brake or actuator malfunction and requires immediate attention. Consult a certified brake specialist to make necessary adjustment or repairs.

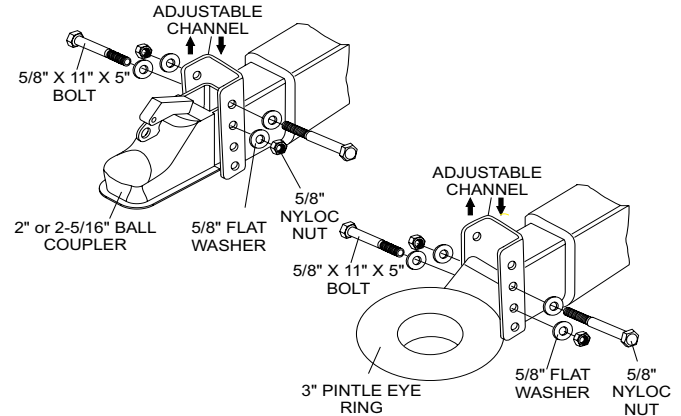


Figure 63. Adjustable Channel

Table 15. Hydraulic Brake Troubleshooting		
Symptom	Possible Cause	Solution
No Brakes	Brake line broken or kinked?	Repair or replace.
Weak Brakes or Brakes Pull to One Side	Brake lining glazed?	Reburnish or replace.
	Trailer overloaded?	Correct weight.
	Brake drums scored or grooved?	Machine or replace.
	Tire pressure correct?	Inflate all tires equally.
	Tires unmatched on the same axle?	Match tires.
Locking Brakes	Brake components loose, bent or broken?	Replace components.
	Brake drums out-of-round?	Replace.
Noisy Brakes	System lubricated?	Lubricate.
	Brake components correct?	Replace and correct.
Dragging Brakes	Brake lining thickness incorrect or not adjusted correctly?	Install new shoes and linings.
	Enough brake fluid or correct fluid?	Replace rubber parts fill with dot 4 fluid.

## ADJUSTABLE CHANNEL

Your trailer may be equipped with an adjustable channel (Figure 63) that allows the coupler to be raised or lowered to a desired height. Periodically check the channel bolts for damage or loosening.

## NOTICE

When replacing channel mounting hardware (nuts, bolts and washers), **NEVER** substitute substandard hardware. Pay close attention to **bolt length** and **grade**. **ALWAYS** use manufacturer's recommended parts when replacing channel mounting hardware.

## Wheel Bearings

Wheel bearings (Figure 64) must be inspected and lubricated once a year or 12,000 miles to insure safe operation of your trailer.

If trailer wheel bearings are immersed in water, they must be replaced.

## DANGER

If trailer wheels are under water for a long period of time, wheel bearings may fail. If this is the case, service wheel bearings immediately.

The possibility exists of the wheels falling off causing equipment damage and severe bodily harm even death!

If the trailer has not been used for an extended amount of time, have the bearings inspected and packed more frequently, at least every six months and prior to use.

Follow the steps below to disassemble the wheel hub and service the wheel bearings. See Figure 64.

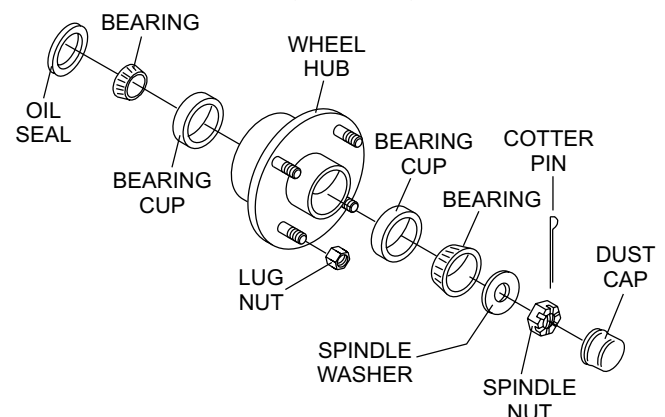


Figure 64. Wheel Hub Components

# TRAILER MAINTENANCE

- After removing the dust cap, cotter pin, spindle nut and spindle washer, remove the hub to inspect the bearings for wear and damage.
- Replace bearings that have flat spots on rollers, broken roller cages, rust or pitting. Always replace bearings and cups in sets. The inner and outer bearings are to be replaced at the same time.
- Replace seals that have nicks, tears or wear.
- Lubricate the bearings with a high quality EP-2 automotive wheel bearing grease.

## WHEEL HUB ADJUSTMENT

Every time the wheel hub is removed and the bearings are reassembled, follow the steps below to check the wheel bearings for free running and adjust.

- Turn the hub slowly, by hand, while tightening the spindle nut until you can no longer turn the hub by hand.
- Loosen the spindle nut just until you are able to turn it (the spindle nut) by hand. Do not turn the hub while the spindle nut is loose.
- Install a new cotter pin through the spindle nut and axle.
- Check the adjustments. Both the hub and the spindle nut should be able to move freely (the spindle nut motion will be limited by the cotter pin).

### **!** DANGER

**NEVER** crawl under the trailer unless it is on firm and level ground and resting on properly placed and secured jackstands.

The possibility exists of the trailer falling thus causing equipment damage and severe bodily harm even death!

### **!** DANGER

When performing trailer inspection and maintenance activities, you must jack up the trailer using jacks and jackstands.

When jacking and using jackstands, place them so as to clear wiring, brake lines, and suspension parts (i.e., springs, torsion bars). Place jacks and jackstands inside of the perimeter strip on the supporting structure to which the axles are attached.

### **!** DANGER

Improper weld repair will lead to early failure of the trailer structure and can cause serious injury or death.

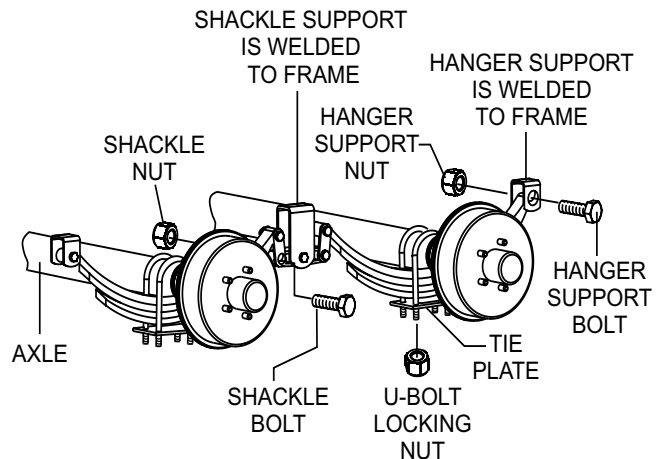
**DO NOT** repair cracked or broken welds unless you have a certified welder perform the repair. If not, have the welds repaired by your dealer.

### **!** WARNING

If the trailer is involved in an accident, have it inspected immediately by qualified personnel. In addition, the trailer should be inspected annually for signs of wear or deformations.

## LEAF SUSPENSION

The leaf suspension springs and associated components (Figure 65) should be visually inspected every 6,000 miles for signs of excessive wear, elongation of bolt holes, and loosening of fasteners. Replace all damaged parts (suspension) immediately.



**Figure 65. Leaf Suspension Components**

### **!** DANGER

Worn or broken suspension parts can cause loss of control, damage to equipment and severe bodily injury, even death!

Check suspension regularly.

# TRAILER MAINTENANCE


Torque suspension components (Figure 65) as referenced in Table 16.

Item	Torque (Ft.-Lbs.)
3/8" U-Bolt	Min-30 Max-35
7/16" U-Bolt	Min-45 Max-60
1/2" U-Bolt	Min-45 Max-60
Shackle Bolt Spring Eye Bolt	Snug fit only. Parts must rotate freely. Locking nuts or cotter pins are provided to retain nut-bolt assembly.
Shoulder Type Shackle Bolt	Min-30 Max-50

## TIRES/WHEELS/LUG NUTS


Tires and wheels are a very important and critical components of the trailer. When specifying or replacing the trailer wheels it is important the wheels, tires, and axle are properly matched.

**CAUTION**



**ALWAYS** wear safety glasses when removing or installing force fitted parts. Failure to comply may result in serious injury.

**CAUTION**









**DO NOT** attempt to repair or modify a wheel. **DO NOT** install in inner tube to correct a leak through the rim. If the rim is cracked, the air pressure in the inner tube may cause pieces of the rim to explode (break off) with great force and cause serious eye or bodily injury.

## Tire Wear/Inflation

Tire inflation pressure is the most important factor in tire life. Pressure should be checked cold before operation **DO NOT** bleed air from tires when they are **hot!** Check inflation pressure weekly during use to insure the maximum tire life and tread wear.

Table 17 (Tire Wear Troubleshooting) will help pinpoint the causes and solutions of tire wear problems.

Wear Pattern	Cause	Solution
 Center Wear	Over inflation.	Adjust pressure to particular load per tire manufacturer.
 Edge Wear	Under inflation.	Adjust pressure to particular load per tire manufacturer.
 Side Wear	Loss of camber or overloading.	Make sure load does not exceed axle rating. Align wheels.
 Toe Wear	Incorrect toe-in.	Align wheels.
 Cupping	Out-of-balance.	Check bearing adjustment and balance tires.
 Flat Spots	Wheel lockup and tire skidding.	Avoid sudden stops when possible and adjust brakes.

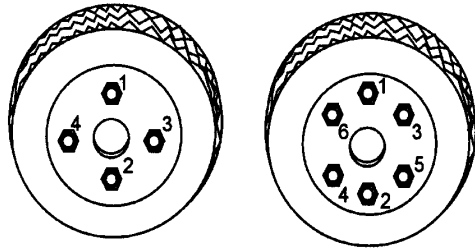
## Lug Nut Torque Requirements

It is extremely important to apply and maintain proper wheel mounting torque on the trailer. Be sure to use only the fasteners matched to the cone angle of the wheel. Proper procedure for attachment of the wheels is as follows:

1. Start all wheel lug nuts by hand.
2. Torque all lug nuts in sequence (see Figure 66). **DO NOT** torque the wheel lug nuts all the way down. Tighten each lug nut in 3 separate passes as defined by Table 18.
3. After first road use, retorque all lug nuts in sequence. Check all wheel lug nuts periodically.

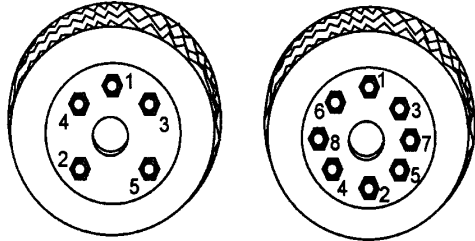
Wheel Size	First Pass FT-LBS	Second Pass FT-LBS	Third Pass FT-LBS
12"	20-25	35-40	50-65
13"	20-25	35-40	50-65
14"	20-25	50-60	90-120
15"	20-25	50-60	90-120
16"	20-25	50-60	90-120





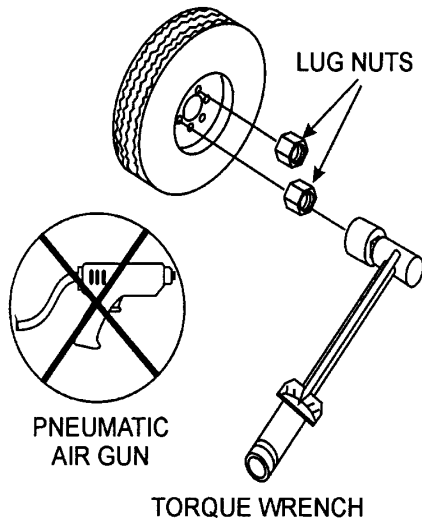
4-LUG NUTS

6-LUG NUTS



5-LUG NUTS

8-LUG NUTS



**Figure 66. Wheel Lug Nuts Tightening Sequence**

**NOTICE**

**NEVER** use an pneumatic air gun to tighten wheel lug nuts.



# TRAILER WIRING DIAGRAM

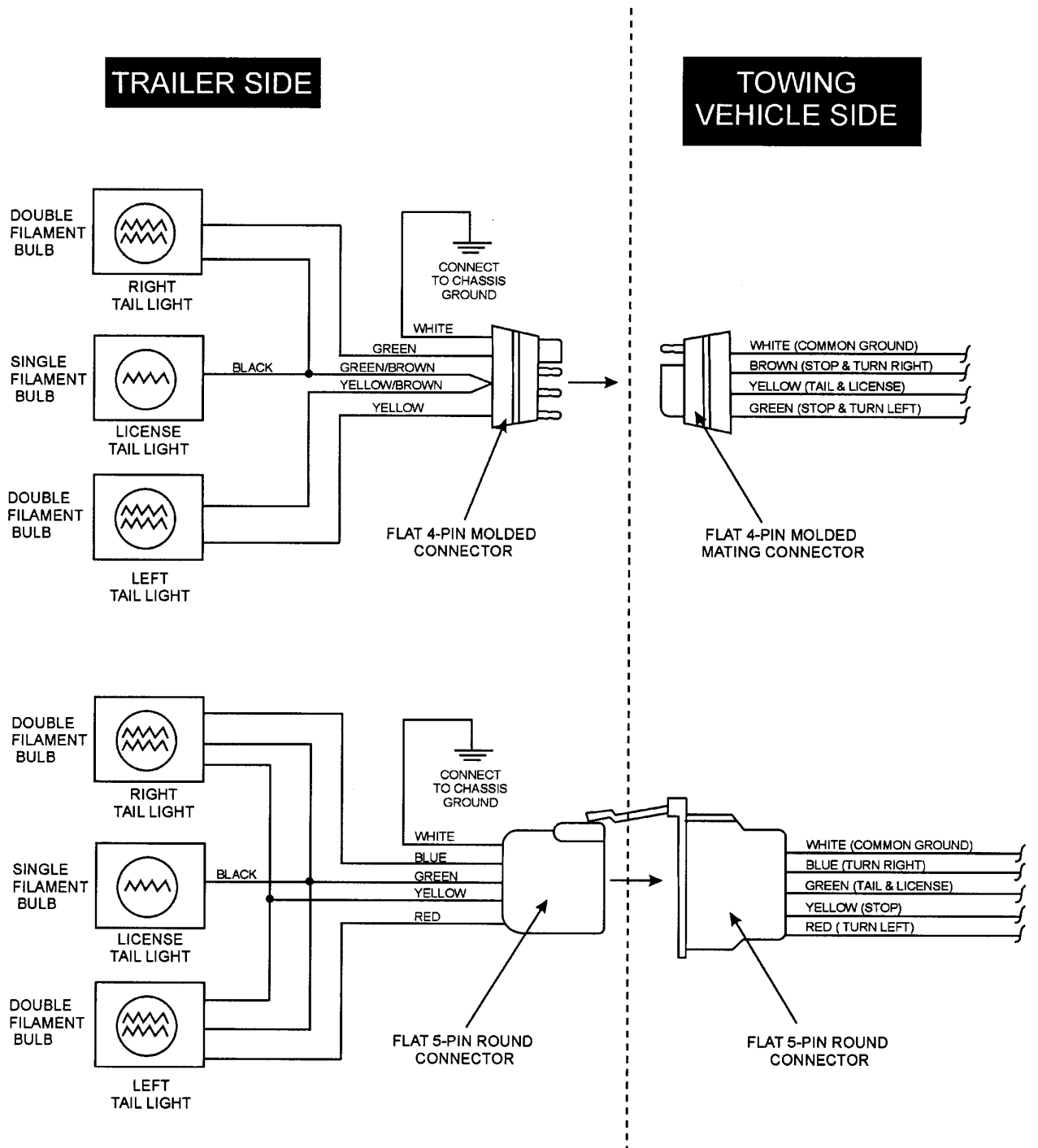
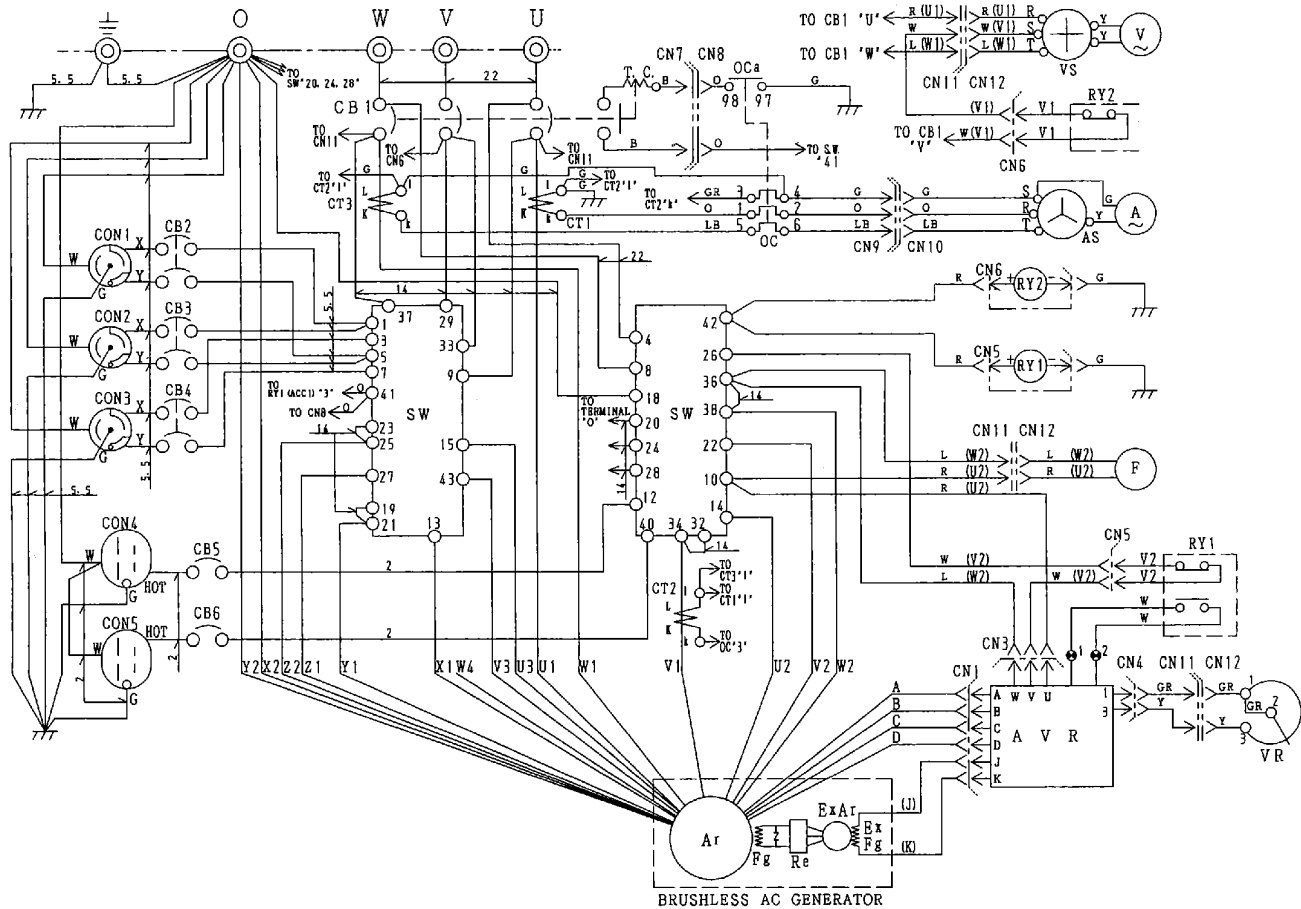
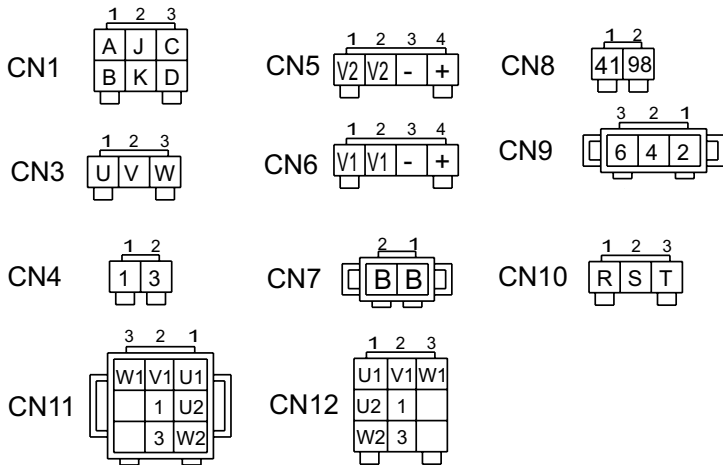


Figure 67. Trailer/Towing Vehicle Wiring Diagram

# GENERATOR WIRING DIAGRAM



**CONNECTER ARRANGEMENT  
(WIRING VIEW)**



Notice :

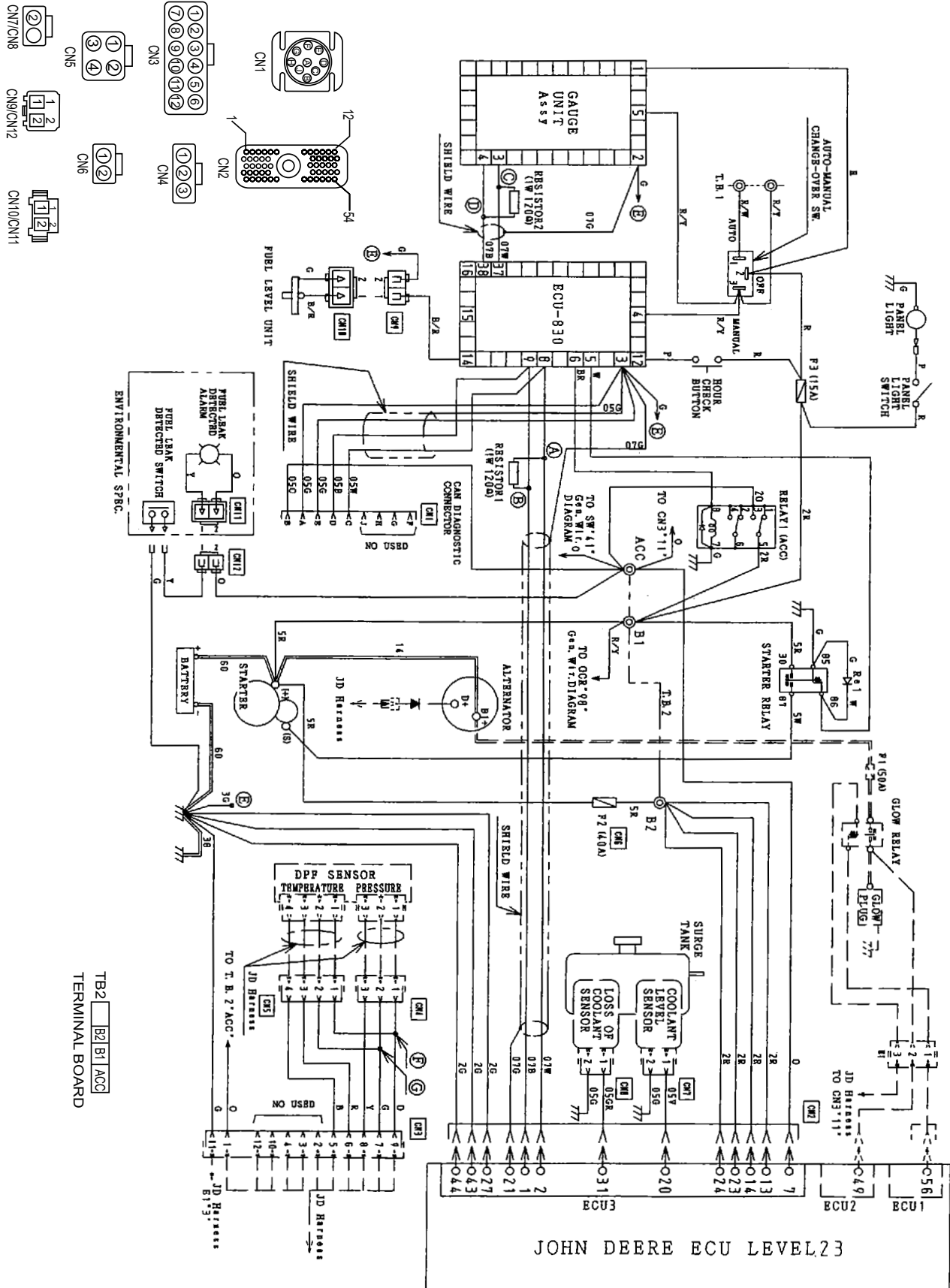
1. No designation lead size : 1.25

SYMBOL	DESIGNATION
Ar	MAIN GENERATOR ARMATURE WINDING
Fg	MAIN GENERATOR FIELD WINDING
ExAr	EXCITER ARMATURE WINDING
ExFg	EXCITER FIELD WINDING
Re	RECTIFIER
AVR	AUTOMATIC VOLTAGE REGULATOR
VR	VOLTAGE REGULATOR (RHEOSTAT)
CT 1,2,3	CURRENT TRANSFORMER
AS	CHANGE-OVER SWITCH,AMMETER
A	AC,AMMETER
VS	CHANGE-OVER SWITCH,VOLTMETER
V	AC. VOLTMETER
F	FREQUENCY METER
CB1	CIRCUIT BREAKER 3P 400A
CB2,3,4	CIRCUIT BREAKER 2P 50A
CB5,6	CIRCUIT BREAKER 1P 20A
CN1,2,3	RECEPTACLE 250V 50A
CN4,5	RECEPTACLE 125V 20A
OC	OVER CURRENT RELAY
SW	SELECTOR SWITCH
RY1,2	RELAY UNIT
Re1	RECTIFIER

**COLOR CODE**

SYM.	WIRE COLOR	SYM.	WIRE COLOR
B	BLACK	R	RED
L	BLUE	W	WHITE
BR	BROWN	Y	YELLOW
G	GREEN	LB	LIGHT BLUE
GR	GRAY	LG	LIGHT GREEN
V	VIOLET	O	ORANGE

# ENGINE WIRING DIAGRAM



## TROUBLESHOOTING (GENERATOR)

Practically all breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, use Table 19 shown below for diagnosis of the Generator. If the problem cannot be remedied, consult our company's business office or service plant.

<b>Table 19. Generator Troubleshooting</b>		
<b>Symptom</b>	<b>Possible Problem</b>	<b>Solution</b>
No Voltage Output	AC Voltmeter defective?	Check output voltage using a voltmeter.
	Is wiring connection loose?	Check wiring and repair.
	Is AVR defective?	Replace if necessary.
	Defective Rotating Rectifier?	Check and replace.
	Defective Exciter Field?	Check for approximately 19 ohms across J & K on CN1
Low Voltage Output	Is engine speed correct?	Turn engine throttle lever to "High".
	Is wiring connections loose?	Check wiring and repair.
	Defective AVR?	Replace if necessary.
High Voltage Output	Is wiring connections loose?	Check wiring and repair.
	Defective AVR?	Replace if necessary.
Circuit Breaker Tripped	Short Circuit in load?	Check load and repair.
	Over current?	Confirm load requirements and reduce.
	Defective circuit breaker?	Check and replace.
	Over current Relay actuated?	Confirm load requirement and replace.

# TROUBLESHOOTING DIAGNOSTICS

The engine controller of this generator diagnoses problems that arise from the engine control system and the engine itself.

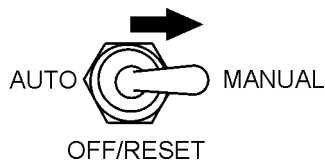
1. With the engine stopped (**OFF**), push and hold the **Hour Check Button** (Figure 69) located on the control panel.

HOUR CHECK  
BUTTON



**Figure 69. Hour Check Button**

2. While keeping the **Hour Check Button** pressed, place the **Auto Off/Reset Manual Switch** (Figure 70) in the **MANUAL** position.



**Figure 70. Auto-Off/Reset Switch  
(Manual Position)**

3. The **Hour Check Menu Screen** will be displayed on the ECU controller.
4. Releasing the **Hour Check Button** and pushing the **Program/Exit Button** on the ECU controller will return the controller to the main screen.

5. Push the **Program/Exit Button** on the ECU controller and select the **Fault Diagnostics** mode. This mode enables the ability to carry out the fault diagnostics as listed below:

■ **DM1 Active Faults** — Displays active fault messages and codes.

■ **DM2 Messages and Codes** — Displays messages and codes which previously occurred that are recorded in the Engine Control Module (ECM).

■ **Last Shutdown** — Displays the messages and codes that caused the most recent shutdown.

6. After performing diagnostic tests, place the **Auto Off/Reset Manual Switch** in the **OFF** position

# EXPLANATION OF CODE IN REMARKS COLUMN

The following section explains the different symbols and remarks used in the Parts section of this manual. Use the help numbers found on the back page of the manual if there are any questions.

**NOTICE**

The contents and part numbers listed in the parts section are subject to change **without notice**. Multiquip does not guarantee the availability of the parts listed.

## SAMPLE PARTS LIST

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	12345	BOLT .....	1	INCLUDES ITEMS W/%
2%		WASHER, 1/4 IN. ....		NOT SOLD SEPARATELY
2%	12347	WASHER, 3/8 IN. ...	1	MQ-45T ONLY
3	12348	HOSE .....	A/R	MAKE LOCALLY
4	12349	BEARING .....	1	S/N 2345B AND ABOVE

## NO. Column

**Unique Symbols** — All items with same unique symbol (@, #, +, %, or >) in the number column belong to the same assembly or kit, which is indicated by a note in the “Remarks” column.

**Duplicate Item Numbers** — Duplicate numbers indicate multiple part numbers, which are in effect for the same general item, such as different size saw blade guards in use or a part that has been updated on newer versions of the same machine.

**NOTICE**

When ordering a part that has more than one item number listed, check the remarks column for help in determining the proper part to order.

## PART NO. Column

**Numbers Used** — Part numbers can be indicated by a number, a blank entry, or TBD.

TBD (To Be Determined) is generally used to show a part that has not been assigned a formal part number at the time of publication.

A blank entry generally indicates that the item is not sold separately or is not sold by Multiquip. Other entries will be clarified in the “Remarks” Column.

## QTY. Column

**Numbers Used** — Item quantity can be indicated by a number, a blank entry, or A/R.

A/R (As Required) is generally used for hoses or other parts that are sold in bulk and cut to length.

A blank entry generally indicates that the item is not sold separately. Other entries will be clarified in the “Remarks” Column.

## REMARKS Column

Some of the most common notes found in the “Remarks” Column are listed below. Other additional notes needed to describe the item can also be shown.

**Assembly/Kit** — All items on the parts list with the same unique symbol will be included when this item is purchased.

Indicated by:

“INCLUDES ITEMS W/(unique symbol)”

**Serial Number Break** — Used to list an effective serial number range where a particular part is used.

Indicated by:

“S/N XXXXX AND BELOW”

“S/N XXXX AND ABOVE”

“S/N XXXX TO S/N XXX”

**Specific Model Number Use** — Indicates that the part is used only with the specific model number or model number variant listed. It can also be used to show a part is NOT used on a specific model or model number variant.

Indicated by:

“XXXXX ONLY”

“NOT USED ON XXXX”

**“Make/Obtain Locally”** — Indicates that the part can be purchased at any hardware shop or made out of available items. Examples include battery cables, shims, and certain washers and nuts.

**“Not Sold Separately”** — Indicates that an item cannot be purchased as a separate item and is either part of an assembly/kit that can be purchased, or is not available for sale through Multiquip.

## SUGGESTED SPARE PARTS

### DCA150SSJU4F WHISPERWATT GENERATOR WITH JOHN DEERE 6068HFG08 DIESEL ENGINE

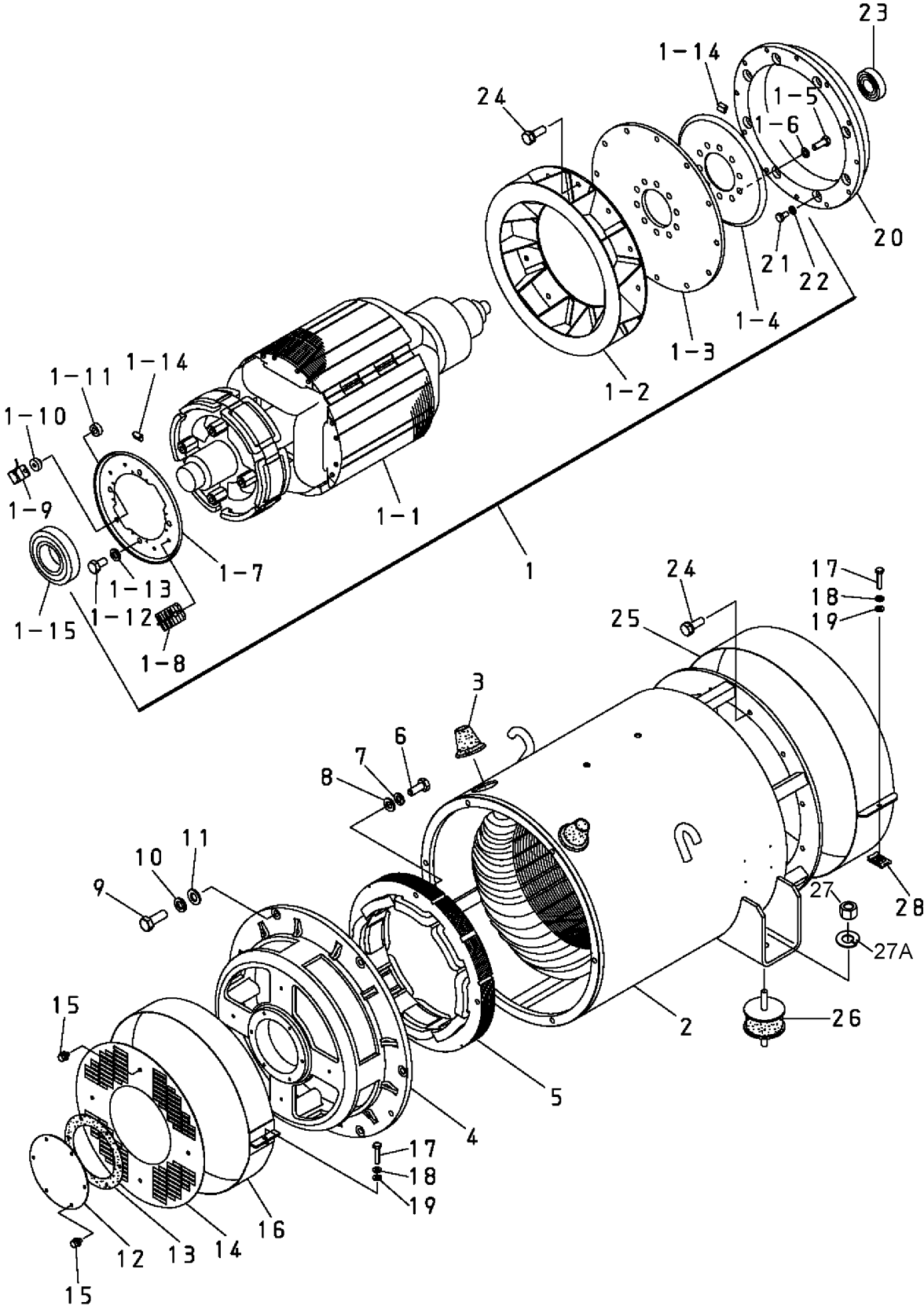
#### 1 TO 3 UNITS

Qty.	P/N	Description
2	M3311500503	HOSE, RADIATOR, UPPER
2	M3311500603	HOSE, RADIATOR, LOWER
3	R529382	BELT, FAN
3	RE556406	FUEL FILTER KIT PRIMARY/SECONDARY
6	RE539279	FILTER, OIL CARTRIDGE
3	P537876	ELEMENT AIR CLEANER PRIMARY
3	P537877	ELEMENT AIR CLEANER SAFETY
1	.0601870440	CIRCUIT BREAKER 1P 20A, S/N 7601039 AND BELOW
1	.0601808803	CIRCUIT BREAKER 1P 20A, S/N 7601040 AND ABOVE
1	.0601870441	CIRCUIT BREAKER 2P 50A, S/N 7601039 AND BELOW
1	.0601808804	CIRCUIT BREAKER 2P 50A, S/N 7601040 AND ABOVE
2	LY2DUS12VDC	RELAY
1	.0601806643	FUSE, 15A
1	Y0601806647	FUSE, 25A

#### NOTICE

Part number on this Suggested Spare Parts list may supersede/replace the P/N shown in the text pages of this book.

# GENERATOR ASSY.

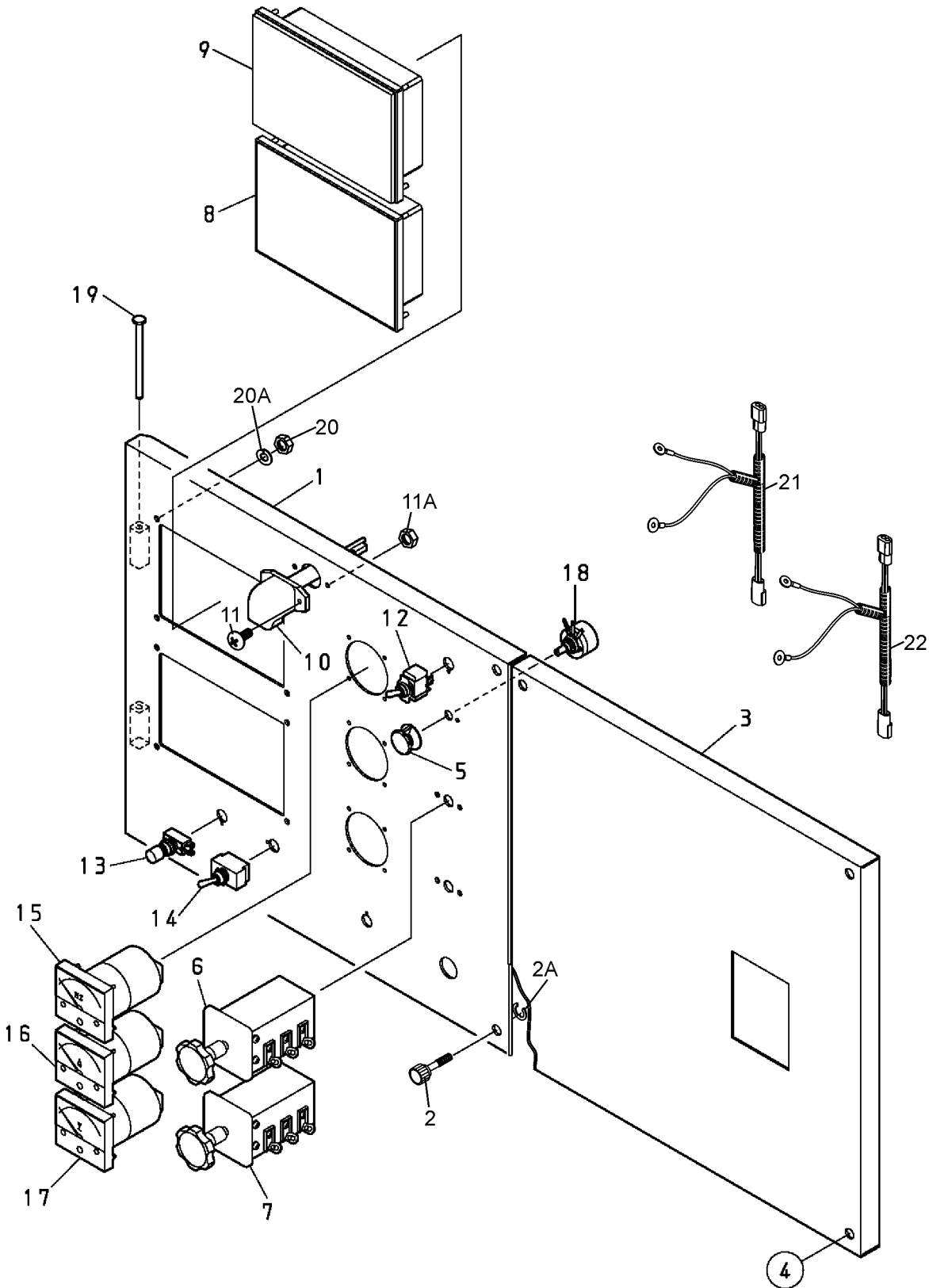




# GENERATOR ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	C1110000122	ROTOR ASSY. ....	1.....	INCLUDES ITEMS W/#
1-1#		FIELD ASSY.	1	
1-2#	8131070013	FAN	1	
1-3#	8131611014	COUPLING DISK	8	
1-4#	8131015003	BALANCING PLATE .....	1.....	PURCHASE ITEM 1-14 AS A SET
1-5#	0012112035	HEX. HEAD BOLT	10	
1-6#	0042612000	WASHER, LOCK	10	
1-7#	8101026013	SET PLATE RECTIFIER.....	1.....	PURCHASE 1-14 AS A SET
1-8#	0601821349	RECTIFIER	2	
1-9#	Y0601822624	SURGE ABSORBER	1	
1-10#	8001020004	INSULATOR WASHER	1	
1-11#	8001020504	INSULATOR WASHER	1	
1-12#	012210020	HEX. HEAD BOLT .....	4.....	REPLACES P/N 0010110020
1-13#	0040010000	WASHER, LOCK	4	
1-14#	0601000209	BALANCING WEIGHT KIT	1	
1-15#	0071906312	BEARING	1	
2	C0130000603	STATOR ASSY.	1	
3	0845041804	GROMMET	2	
4	8131315202	END BRACKET	1	
5	8101350013	FIELD ASSY., EXCITER	1	
6	0012110060	HEX. HEAD BOLT	4	
7	0042610000	WASHER, LOCK	4	
8	031110160	WASHER, FLAT .....	4.....	REPLACES P/N 0041210000
9	0010112035	HEX. HEAD BOLT	6	
10	0040012000	WASHER, LOCK	6	
11	031112230	WASHER, FLAT .....	6.....	REPLACES P/N 0041212000
12	8131310104	COVER, BEARING	1	
13	8131312204	GASKET, BEARING	1	
14	8131331003	COVER, END BRACKET	1	
15	0105050616	HEX. HEAD BOLT .....	10.....	REPLACES P/N 0017106012
16	8101333003	COVER, END BRACKET	1	
17	0010006030	HEX. HEAD BOLT .....	2.....	REPLACES P/N 0010106030
18	0040006000	WASHER, LOCK	2	
19	952404470	WASHER, FLAT .....	2.....	REPLACES P/N 0041206000
20	M3163400303	COUPLING RING	1	
21	0343204220	HEX. HEAD BOLT	8	
22	EM923344	WASHER, LOCK.....	8.....	REPLACES P/N 0043604000
23	0070506306	BEARING	1	
24	012010030	HEX. HEAD BOLT .....	24.....	REPLACES P/N 0012810030
25	C0131300004	COVER, FAN	1	
26	Y0605000463	RUBBER SUSPENSION	2	
27	0030016000	HEX. NUT	4	
27A	0040016000	WASHER, LOCK	4	
28	020106050	NUT.....	1.....	REPLACES P/N 0600815000

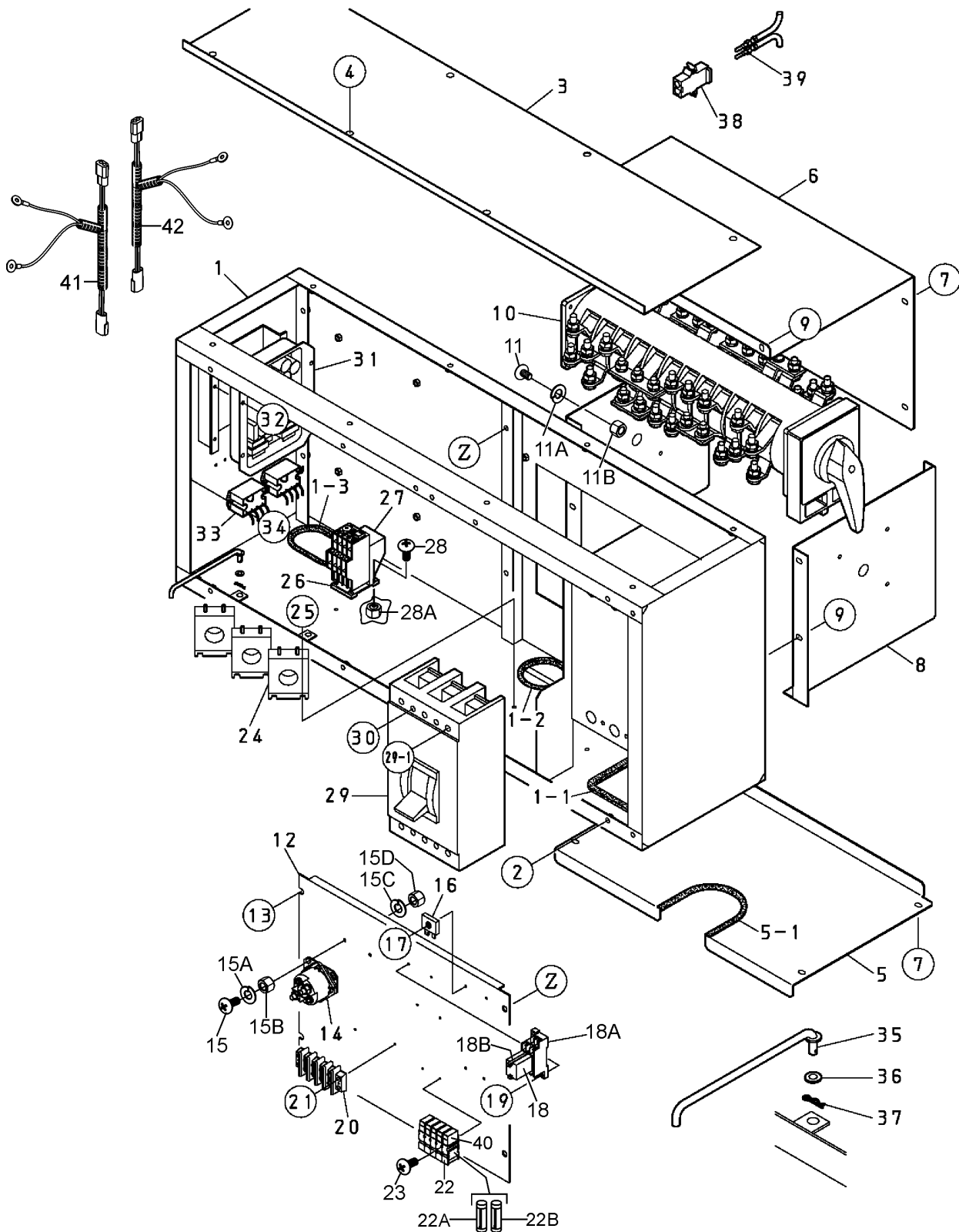
# CONTROL PANEL ASSY.



## CONTROL PANEL ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	M3223001503	CONTROL PANEL	1	
2	M9220100004	SET SCREW	2	
2A	0080200007	E-RING	2	
3	M3223001604	CONTROL PANEL	1	
4	0017108040	HEX. HEAD BOLT	4	
5	0601840100	KNOB .....	1	REPLACES P/N 0601840121
6	0601801040	CHANGE-OVER SWITCH, AMMETER	1	
7	0601801041	CHANGE-OVER SWITCH, VOLTMETER	1	
8	Y0602202651	ECU CONTROLLER	1	
9	Y0602120569	GAUGE UNIT ASSY.	1	
10	Y0601810170	PANEL LIGHT, 12V	1	
11	0027104020	MACHINE SCREW	2	
11A	OEMAA8	HEX. NUT .....	2	REPLACES P/N 0207004000
12	0601830710	PANEL LIGHT SWITCH	1	
13	0601831205	PUSH BUTTON SWITCH, RED	1	
14	82608	TOGGLE ITCH .....	1	REPLACES P/N 0601831340
15	Y0601807631	FREQUENCY METER, 45~65 HZ	1	
16	Y0601817036	AC AMMETER, 0~300A/600A: 5A	1	
17	Y0601806947	AC VOLTMETER	1	
18	0601840073	VOLTAGE REGULATOR, 1K	1	
19	0605011211	PIN	2	
20	Y0206707000	HEX. NUT	8	
20A	Y0044807000	WASHER, LOCK	8	
21	M3246703704	WIRE HARNESS, GENERATOR	1	
22	M3358200402	WIRE HARNESS, ENGINE	1	

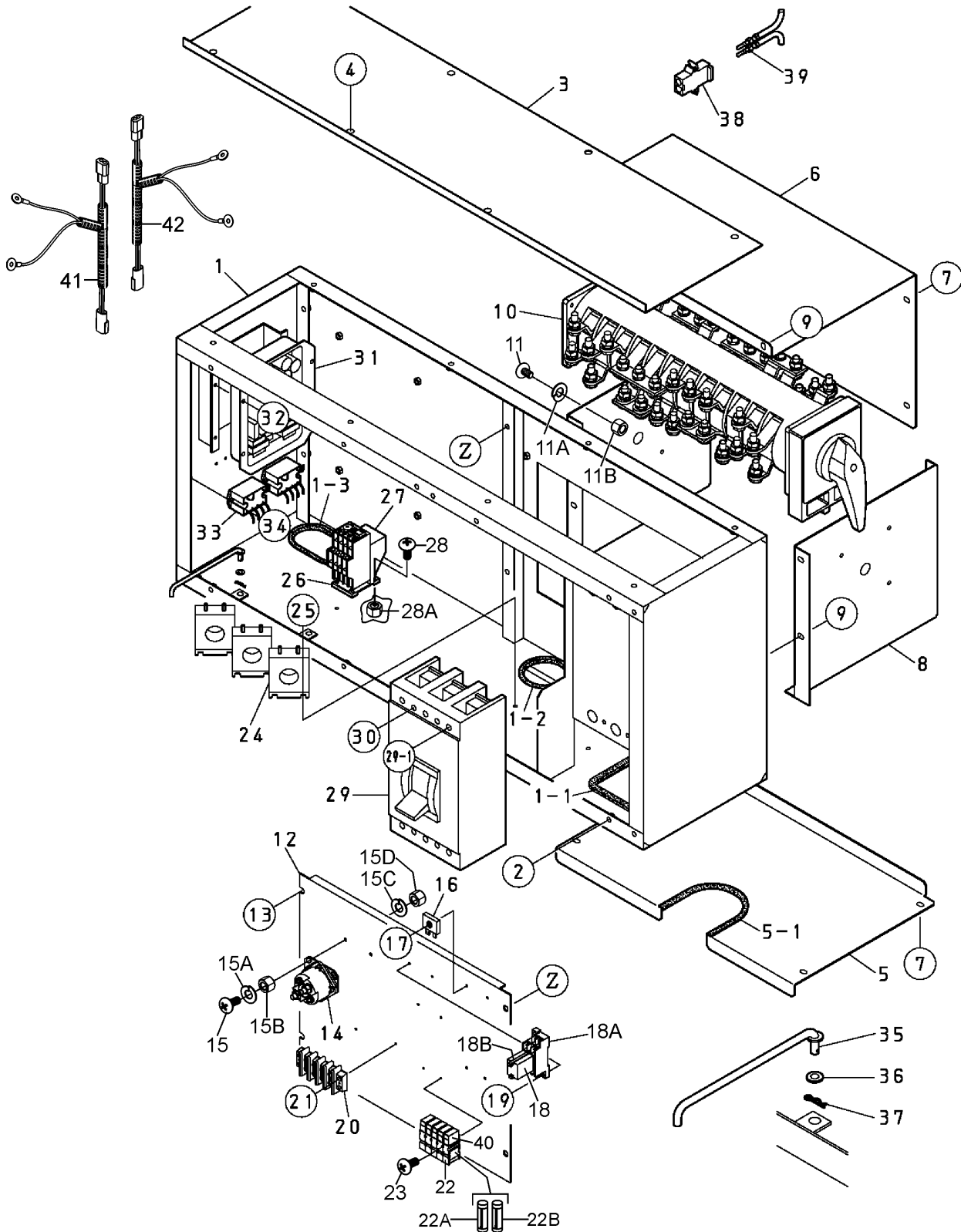
# CONTROL BOX ASSY.



## CONTROL BOX ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	M3214000402	CONTROL BOX	1	
1-1	Y0330000500	EDGING	1	
1-2	0330000210	EDGING	1	
1-3	Y0330000285	EDGING	1	
2	011008020	HEX. HEAD BOLT .....	13	REPLACES P/N 0016908020
3	M4213500104	CONTROL UP PANEL	1	
4	011008020	HEX. HEAD BOLT .....	8	REPLACES P/N 0016908020
5	M3213603104	SWITCH COVER	1	
5-1	Y0317700265	WEATHER STRIP	1	
6	M3213603004	SWITCH COVER	1	
7	011106015	HEX. HEAD BOLT .....	8	REPLACES P/N 0016906015
8	M3213602904	SWITCH BRACKET	2	
9	011106015	HEX. HEAD BOLT .....	6	REPLACES P/N 0016906015
10	M3270100304	SELECTOR SWITCH	1	
11	0021005020	MACHINE SCREW	4	
11A	0032005000	WASHER, LOCK.....	4	REPLACES P/N 0040005000
11B	0030005000	HEX. NUT .....	4	REPLACES P/N 0207005000
12	M3261500003	SET PANEL	1	
13	011008020	HEX. HEAD BOLT .....	4	REPLACES P/N 0016908020
14	Y0602201458	STARTER RELAY	1	
15	011808015	MACHINE SCREW .....	2	REPLACES P/N 0027106015
15A	0044808000	WASHER, LOCK	2	
15B	Y0206508000	HEX. NUT	2	
15C	0043003000	WASHER, LOCK	2	
15D	Y0206803000	HEX. NUT	2	
16	0601821370	RECTIFIER .....	1	REPLACES P/N 0601823240
17	0027104020	MACHINE SCREW	1	
18	LY2DUS12VDC	RELAY, DC12V .....	1	REPLACES P/N 0601827656
18A	PTF08A	RELAY BASE .....	1	REPLACES P/N 0601823109
18B	PYCA1	RELAY CLIP .....	2	REPLACES P/N 0601824400
19	0027104020	MACHINE SCREW	2	
20	0601815153	TERMINAL BLOCK	1	
21	0027104020	MACHINE SCREW	2	
22	M5214600004	HOLDER, FUSE	1	
22A	0601806643	FUSE, 15A	2	
22B	Y0601806647	FUSE, 25A	3	
23	Y0027203035	MACHINE SCREW	2	
24	Y0601809692	CURRENT TRANSFORMER	3	
25	011808015	MACHINE SCREW .....	6	REPLACES P/N 0027106015
26	0601820847	OVER CURRENT RELAY	1	
27	0601820848	OVER CURRENT RELAY	1	
28	0027104020	MACHINE SCREW	2	
28A	OEMAA8	HEX. NUT .....	2	REPLACES P/N 0207004000
29	0601808821	CIRCUIT BREAKER, 3P 400A	1	
29-1	Y0017904032	HEX. SOCKET HEAD CAP SCREW	6	

# CONTROL BOX ASSY. (CONTINUED)

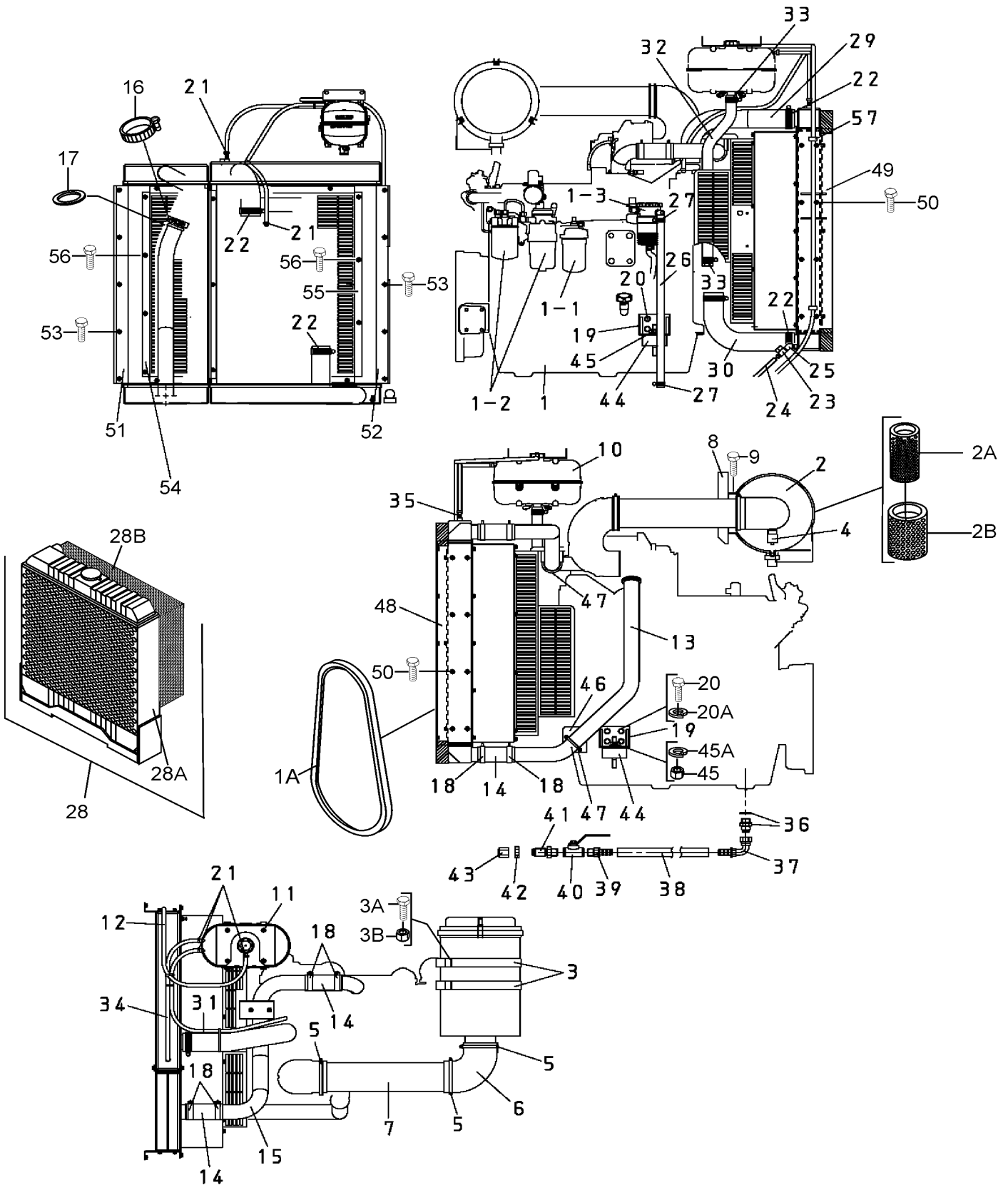


## **CONTROL BOX ASSY. (CONTINUED)**

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<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
30	0021006080	MACHINE SCREW	4	
31	0601820608	AUTOMATIC VOLTAGE REGULATOR	1	
32	0027105015	MACHINE SCREW	4	
33	0601823863	RELAY UNIT, 12V	2	
34	7538070	MACHINE SCREW .....	4.....	REPLACES P/N 0027104015
35	M4213600104	STOPPER, CONTROL PANEL	1	
36	952404470	WASHER, FLAT .....	1.....	REPLACES P/N 0041206000
37	505015300	SNAP PIN .....	1.....	REPLACES P/N 0605010502
38	0601812626	PLUG	1	
39	0601812711	PINS	2	
40	M9501400304	DECAL, FUSE HOLDER	1	
41	M3246703704	WIRE HARNESS, GENERATOR	1	
42	M3358200402	WIRE HARNESS, ENGINE	1	

# ENGINE AND RADIATOR ASSY.

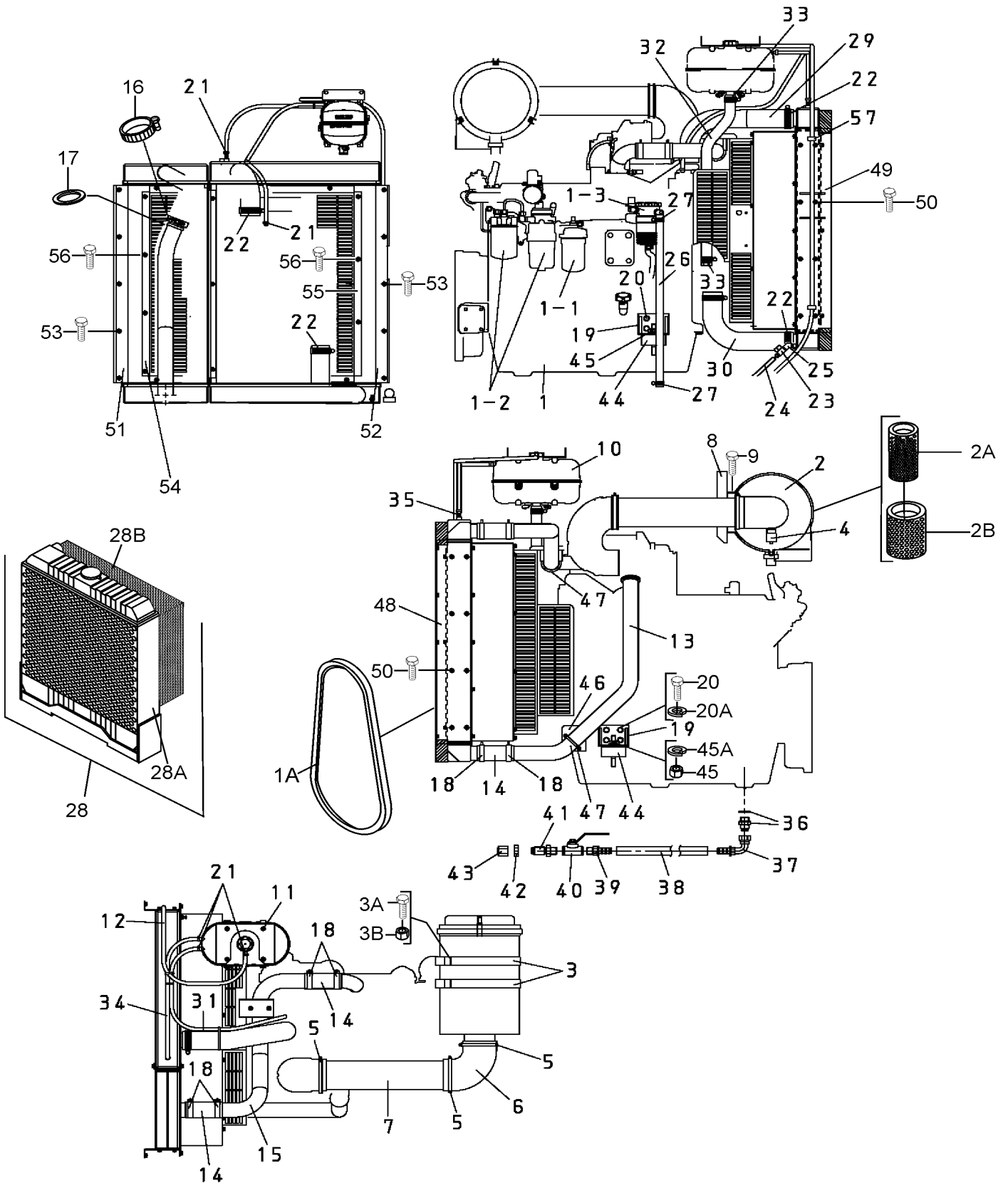




## ENGINE AND RADIATOR ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	M3924200074	ENGINE, JOHN DEERE 6068HFG08	1	
1A	R529382	FAN BELT .....	1	REPLACES P/N Y0602015209
1-1	RE539279	CARTRIDGE, OIL FILTER .....	1	REPLACES P/N Y0602041293
1-2	RE556406	FUEL FILTER KIT, PRIMARY, SECONDARY ....	1	REPLACES P/N Y0602042599
1-3	RE540710	BLOWBY FILTER .....	1	REPLACES P/N 0602044230
2	FRG130097	AIR CLEANER .....	1	REPLACES P/N 0602046586
2A	P537877	ELEMENT, SAFETY .....	1	REPLACES P/N 0602046683
2B	P537876	ELEMENT, PRIMARY .....	1	REPLACES P/N 0602046682
3	P013722	AIR CLEANER BAND .....	2	REPLACES P/N 0602040558
3A	011208025	HEX. HEAD BOLT .....	4	REPLACES P/N 0016908025
3B	020108060	SELF LOCK NUT .....	4	REPLACES P/N 0207008000
4	0602040650	AIR CLEANER INDICATOR	1	
5	0605515202	HOSE BAND	3	
6	0602040365	90° ELBOW	1	
7	M3374000104	AIR CLEANER PIPE	1	
8	M3374200004	AIR CLEANER BRACKET	1	
9	0016910025	HEX. HEAD BOLT	2	
10	RE549081	SURGE TANK .....	1	REPLACES P/N Y0602010222
11	Y0016908016	HEX. HEAD BOLT	4	
12	Y0193602200	OVER FLOW HOSE	1	
13	M3311400103	CAC PIPE, HOT SIDE	1	
14	Y0602015610	CAC HOSE	3	
15	M3311400203	CAC PIPE COLD SIDE	1	
16	RE292067	V-BAND CLAMP .....	1	REPLACES P/N Y0602325033
17	R529509	GASKET .....	1	REPLACES P/N Y0602320206
18	0605515215	T-BOLT CLAMP	6	
19	M3303200404	ENGINE FOOT	2	
20	0012312030	HEX. HEAD BOLT .....	6	REPLACES P/N 0013612030
20A	0040012000	WASHER, LOCK	6	
21	0605515073	HOSE BAND	5	
22	9500202080	HOSE BAND .....	4	REPLACES P/N 0605515178
23	Y0605511394	MINI BALL VALVE	1	
24	0193600300	DRAIN HOSE	1	
25	Y0603307520	45° ELBOW	1	
26	Y0191600800	BLOWBY HOSE	1	
27	0605515073	HOSE BAND	2	
28	Y0602012905	RADIATOR AND INTER-COOLER, ASSY.	1	
28A	Y0602012905-R	RADIATOR	1	
28B	Y0602012905-I	INTER-COOLER	1	
29	M3311500503	RADIATOR HOSE, UPPER	1	
30	M3311500603	RADIATOR HOSE, LOWER	1	
31	Y0379101150	VENT HOSE	1	
32	M3311500703	SURGE TANK HOSE	1	
33	0605515147	HOSE BAND	2	

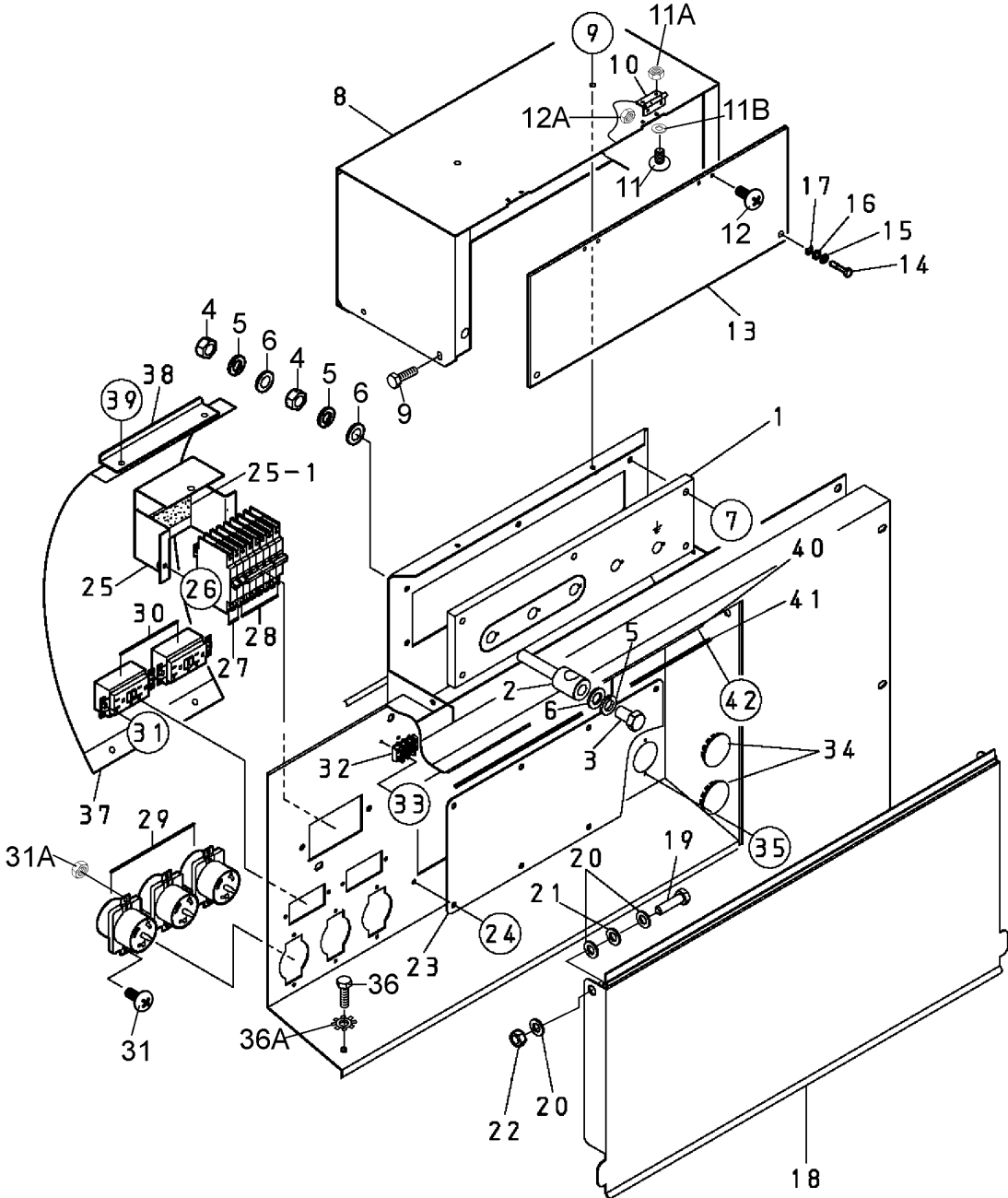
# ENGINE AND RADIATOR ASSY. (CONTINUED)



## ENGINE AND RADIATOR ASSY. (CONTINUED)

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
34	Y0379100630	VENT HOSE	1	
35	Y0605512192	HOSE JOINT	1	
36	0602022580	ADAPTER	1	
37	0602022561	90° ELBOW	1	
38	Y0269201300	PUSH-LOCK HOSE	1	
39	0603306395	MALE PIPE	1	
40	0605511395	BALL VALVE	1	
41	0603306590	MALE BULKHEAD CONNECTOR	1	
42	0603300285	BULKHEAD ROCKNUT	1	
43	0602021070	CAP	1	
44	Y0605000462	RUBBER SUSPENSION	2	
45	0030016000	HEX. NUT	4	
45A	0040016000	WASHER, LOCK	4	
46	M3314300104	CAC PIPE BRACKET	1	
47	0602326063	U-BOLT	2	
48	M3311200204	RADIATOR BRACKET	1	
49	M3311200304	RADIATOR BRACKET	1	
50	Y0016908015	HEX. HEAD BOLT	24	
51	M3311301003	FAN SHROUD	1	
52	M3311301103	FAN SHROUD	1	
53	011008020	HEX. HEAD BOLT .....	10.....	REPLACES P/N 0016908020
54	M3311300803	FAN GUARD	1	
55	M3311300903	FAN GUARD	1	
56	011008020	HEX. HEAD BOLT .....	17.....	REPLACES P/N 0016908020
57	0602220911	CLAMP .....	2.....	REPLACES P/N 0602220910

# OUTPUT TERMINAL ASSY.



ADD THE FOLLOWING DIGITS AFTER THE PART NUMBER WHEN ORDERING ANY PAINTED PANEL TO INDICATE COLOR OF UNIT:

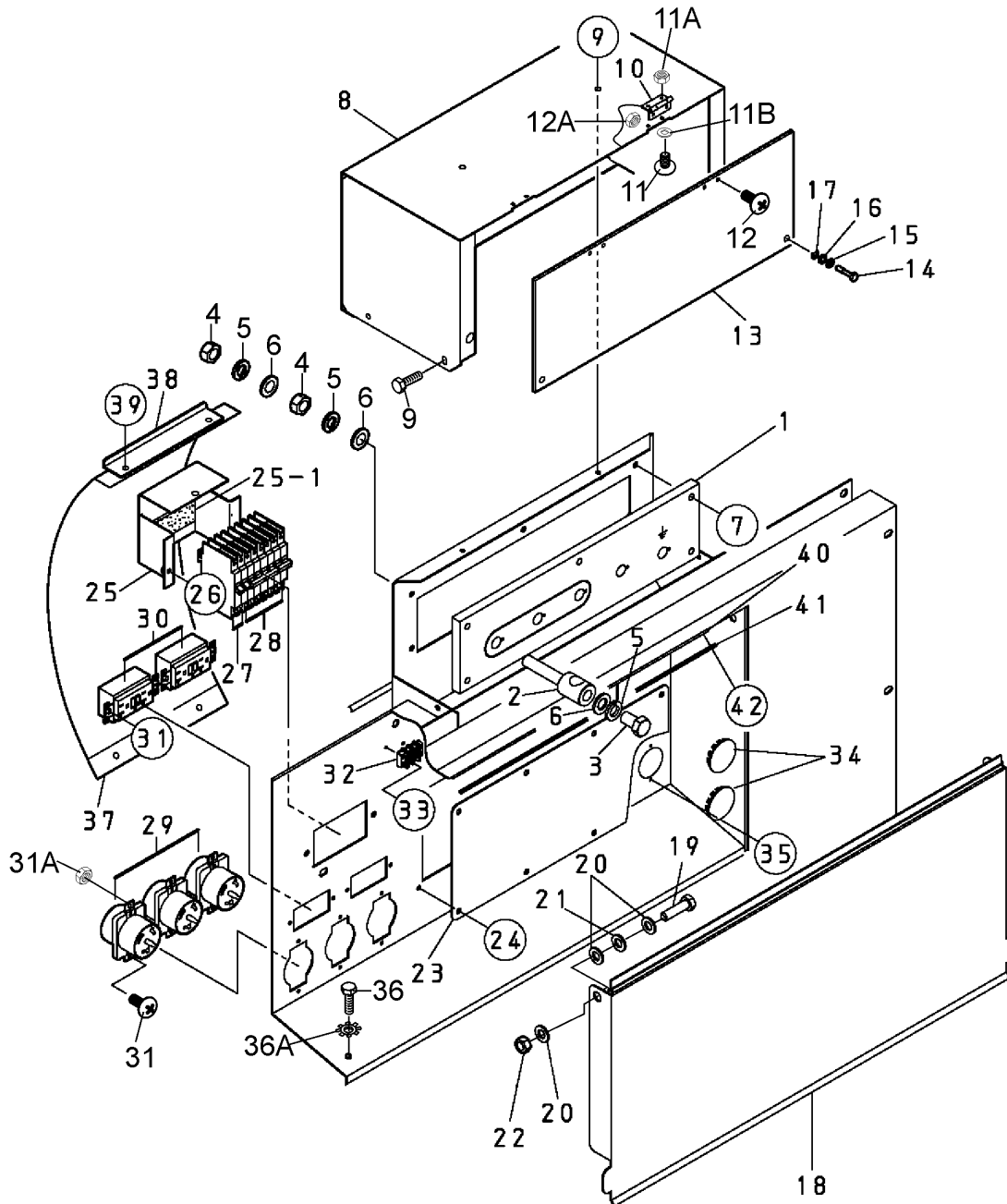
1-ORANGE	6-CATERPILLAR YELLOW
2-WHITE	7-CATO GOLD
3-SPECTRUM GREY	8-RED
4-SUNBELT GREEN	9-DESERT TAN
5-BLACK	

THE SERIAL NUMBER MAY BE REQUIRED.

## OUTPUT TERMINAL ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	M3230700003	TERMINAL PANEL	1	
2	M9220100304	OUTPUT TERMINAL BOLT	5	
3	0801830804	TIE BOLT .....	5.....	REPLACES P/N M9220100404
4	0039316000	HEX. NUT	10	
5	0040016000	WASHER, LOCK	15	
6	0401450160	WASHER, FLAT .....	20.....	REPLACES P/N 0041416000
7	0012108035	HEX. HEAD BOLT .....	5.....	REPLACES P/N 0016908035
8	M2237100103	TERMINAL COVER	1	
9	011106015	HEX. HEAD BOLT .....	4.....	REPLACES P/N 0016906015
10	0605010040	HINGE	2	
11	0027103010	MACHINE SCREW	4	
11A	0207003000	HEX. NUT .....	4.....	REPLACES P/N 0030003000
11B	0041203000	WASHER, FLAT	4	
12	0027103015	MACHINE SCREW	4	
12A	0207003000	HEX. NUT .....	4.....	REPLACES P/N 0030003000
13	M3236100104	OUTPUT WINDOW	1	
14	M9220100804	SET SCREW	2	
15	0040006000	WASHER, LOCK	2	
16	952404470	WASHER, FLAT .....	2.....	REPLACES P/N 0041206000
17	0080200005	E-RING	2	
18	M3454400003	TERMINAL COVER	1	
19	012212045	HEX. HEAD BOLT .....	2.....	REPLACES P/N 0010112045
20	031112230	WASHER, FLAT .....	6.....	REPLACES P/N 0041212000
21	0605050060	CONICAL WASHER, LOCK	2	
22	0030012000	HEX. NUT	2	
23	M3236400204	COVER	1	
24	011106015	HEX. HEAD BOLT .....	8.....	REPLACES P/N 0016906015
25	M1260700504	BRACKET, CIRCUIT BREAKER .....	1.....	S/N 7601039 AND BELOW
25	M1260700304	BRACKET, CIRCUIT BREAKER .....	1.....	S/N 7601040 AND ABOVE
25-1	0222100150	RUBBER CUSHION .....	1.....	S/N 7601039 AND BELOW
25-1	0222100100	RUBBER CUSHION .....	1.....	S/N 7601040 AND ABOVE
26	011206020	HEX. HEAD BOLT .....	2.....	REPLACES P/N 0016906020
27	0601870440	CIRCUIT BREAKER, 1P 20A .....	2.....	S/N 7601039 AND BELOW
27	0601808803	CIRCUIT BREAKER, 1P 20A .....	2.....	S/N 7601040 AND ABOVE
28	0601870441	CIRCUIT BREAKER, 2P 50A .....	3.....	S/N 7601039 AND BELOW
28	0601808804	CIRCUIT BREAKER, 2P 50A .....	3.....	S/N 7601040 AND ABOVE
29	Y0601814014	RECEPTACLE, 50A	3	
30	0601814013	RECEPTACLE, 20A	2	

# OUTPUT TERMINAL ASSY. (CONTINUED)



ADD THE FOLLOWING DIGITS AFTER THE PART NUMBER WHEN ORDERING ANY PAINTED PANEL TO INDICATE COLOR OF UNIT:

- |                 |                      |
|-----------------|----------------------|
| 1-ORANGE        | 6-CATERPILLAR YELLOW |
| 2-WHITE         | 7-CATO GOLD          |
| 3-SPECTRUM GREY | 8-RED                |
| 4-SUNBELT GREEN | 9-DESERT TAN         |
| 5-BLACK         |                      |

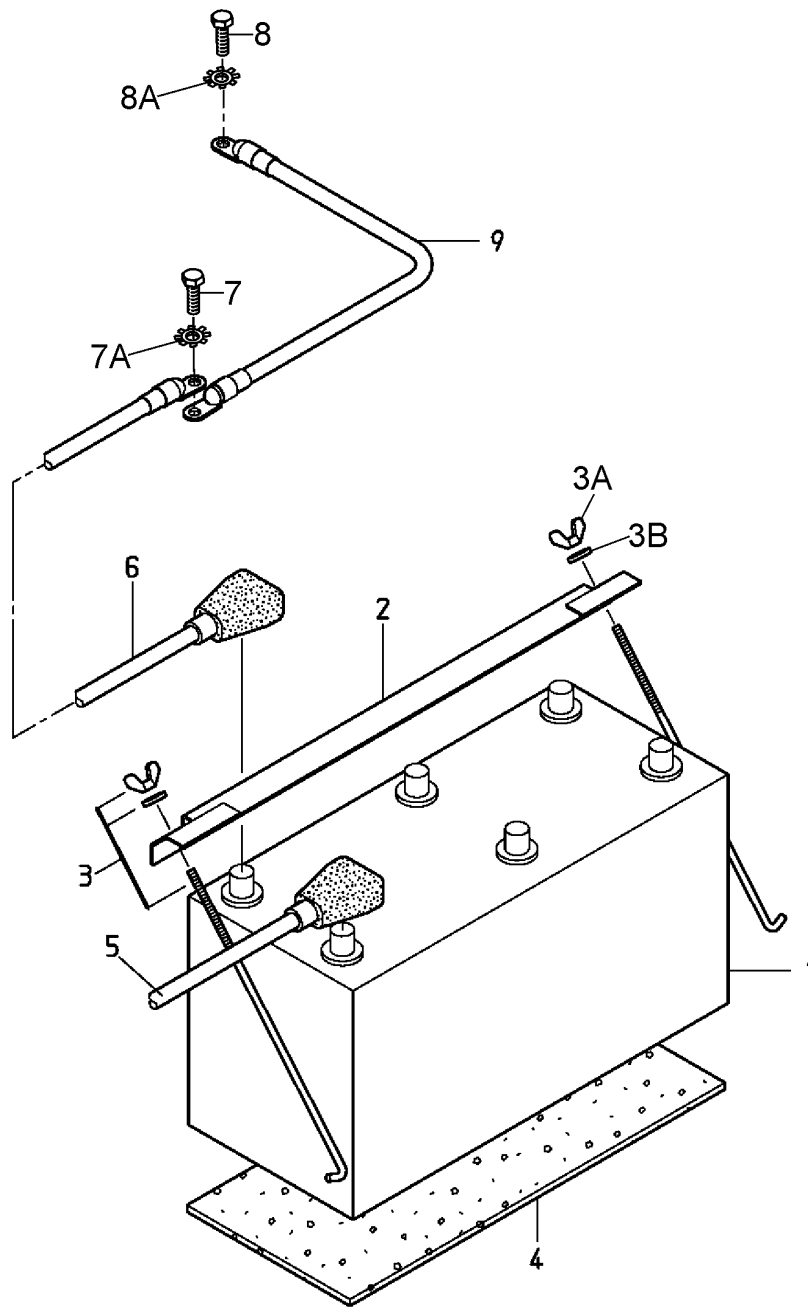
THE SERIAL NUMBER MAY BE REQUIRED.

## **OUTPUT TERMINAL ASSY. (CONTINUED)**

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<b><u>NO.</u></b>	<b><u>PART NO.</u></b>	<b><u>PART NAME</u></b>	<b><u>QTY.</u></b>	<b><u>REMARKS</u></b>
1	M3230700003	TERMINAL PANEL	1	
31	7538070	MACHINE SCREW .....	10.....	REPLACES P/N 0027104015
31A	OEMAA8	HEX. NUT .....	10.....	REPLACES P/N 0207004000
32	0601815194	TERMINAL	1	
33	7538070	MACHINE SCREW .....	2.....	REPLACES P/N 0027104015
34	0603306775	BLIND PLUG	2	
35	7538070	MACHINE SCREW .....	4.....	REPLACES P/N 0027104015
36	0019208020	HEX. HEAD BOLT	1	
36A	0040508000	TOOTHED WASHER	1	
37	M3237100204	INSULATING COVER	1	
38	M4236400304	BRACKET	1	
39	011106015	HEX. HEAD BOLT .....	2.....	REPLACES P/N 0016906015
40	M3236400004	CABLE OUTLET COVER	1	
41	M3236300004	SUPPORTER, CABLE OUTLET COVER	1	
42	011206020	HEX. HEAD BOLT .....	6.....	REPLACES P/N 0016906020

# BATTERY ASSY.



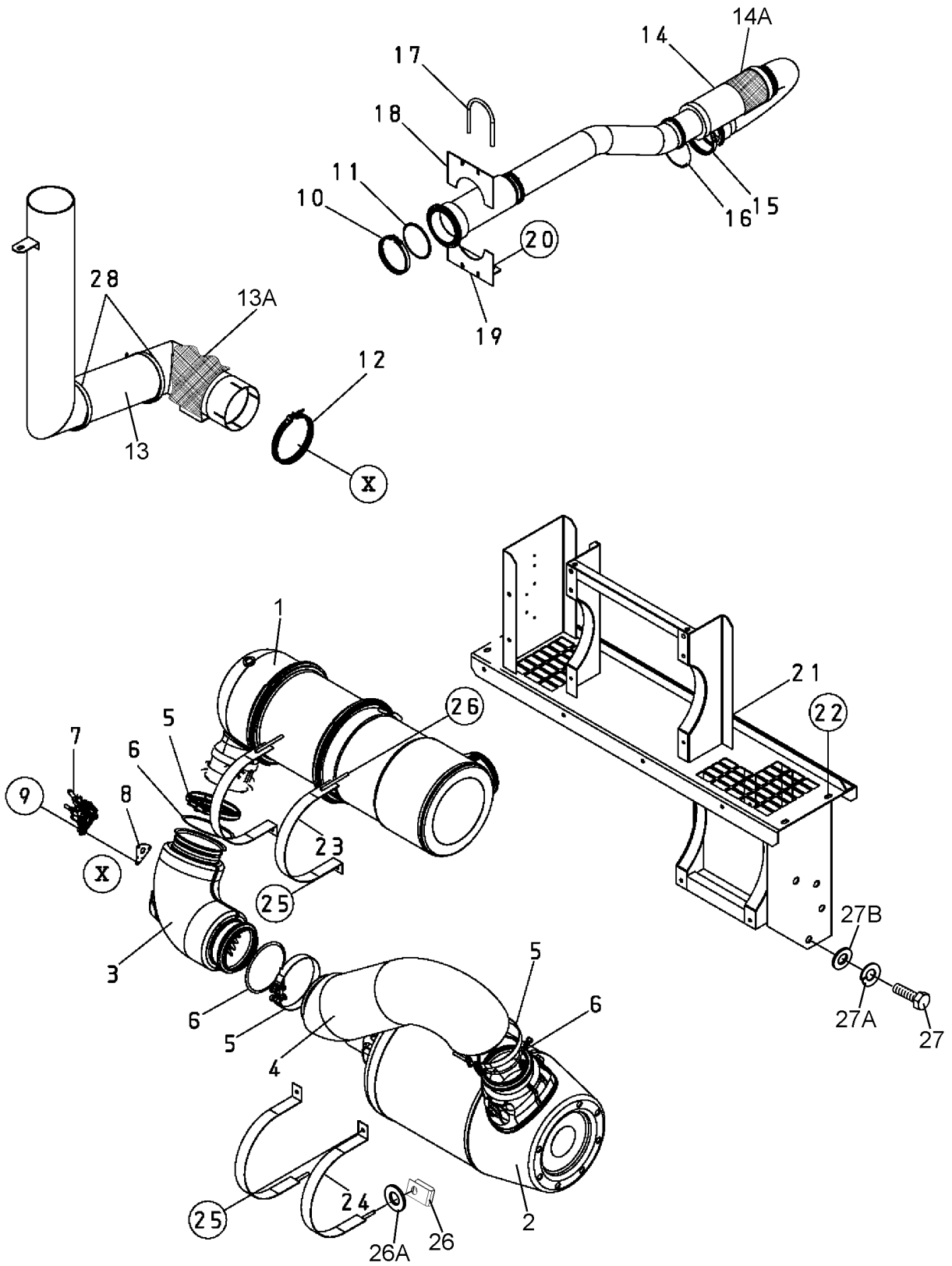


## BATTERY ASSY.

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<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	0602220198	BATTERY	1	
2	M9103000504	BATTERY BAND	1	
3	0602220921	BATTERY BOLT SET .....	2.....	INCLUDES ITEMS W/#
3A#		WING NUT	2	
3B#		PLASTIC WASHER	2	
4	M9310500404	BATTERY SHEET	1	
5	M2346900704	BATTERY CABLE	1	
6	M3346901114	BATTERY CABLE	1	
7	0017112025	HEX. HEAD BOLT	1	
7A	0040512000	TOOTHED WASHER	1	
8	0016910025	HEX. HEAD BOLT	1	
8A	0040510000	TOOTHED WASHER	1	
9		EARTH CABLE .....	1.....	MAKE LOCALLY

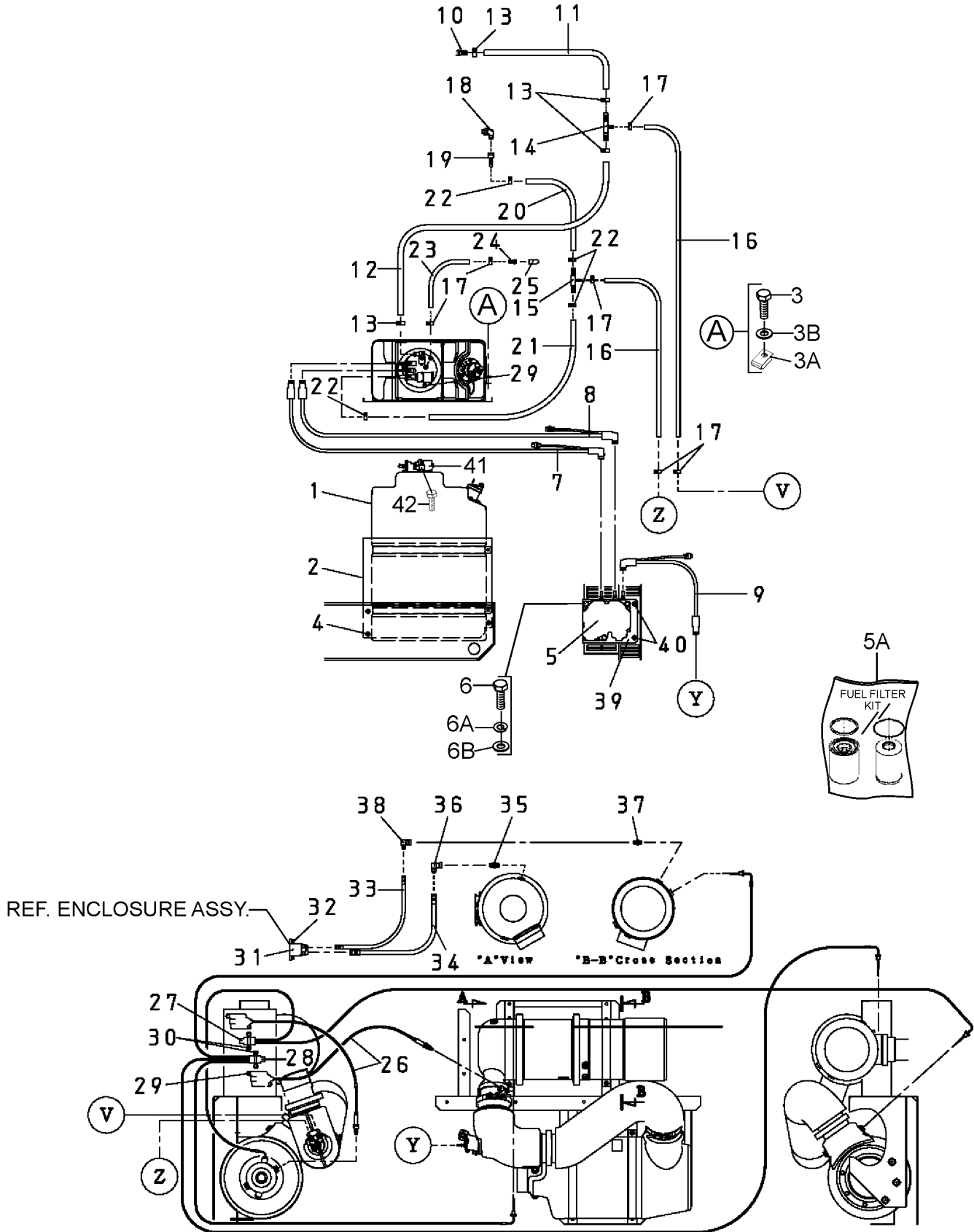
# MUFFLER ASSY.



## MUFFLER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	RE559542	DIESEL PARTICULATE FILTER .....	1.....	REPLACES P/N Y0602330102
2	RE554146	SCR CATALYST .....	1.....	REPLACES P/N Y0602330300
3	RE565074	DECOMPOSITION TUBE .....	1.....	REPLACES P/N Y0602330403
4	RE559456	DECOMPOSITION EXTENSION TUBE .....	1.....	REPLACES P/N Y0602330404
5	RE540348	V-BAND CLAMP .....	3.....	REPLACES P/N Y0602325034
6	RE529640	GASKET .....	3.....	REPLACES P/N Y0602320205
7	RE560468	DEF INJECTOR .....	1.....	REPLACES P/N Y0602330405
8	RE556879	GASKET .....	1.....	REPLACES P/N Y0602330406
9	R537624	HEX. HEAD BOLT .....	3.....	REPLACES P/N Y0602330407
10	RE298757	V-BAND CLAMP .....	1.....	REPLACES P/N Y0602325036
11	R300529	SEALING RING .....	1.....	REPLACES P/N Y0602320203
12	Y0602325026	PIPE BAND	1	
13	M3334100103	TAIL PIPE	1	
13A	Y0602311130	EXHAUST INSULATING WRAP	1	
14	M3334000103	EXHAUST PIPE	1	
14A	Y0602311143	EXHAUST INSULATING MAT	1	
15	RE289839	V-BAND CLAMP .....	1.....	REPLACES P/N Y0602325037
16	R528112	SEALING RING .....	1.....	REPLACES P/N Y0602320202
17	0602326062	U-BOLT	1	
18	M3330400804	COVER, EXHAUST PIPE	1	
19	M3330400903	BRACKET, EXHAUST PIPE	1	
20	011008020	HEX. HEAD BOLT .....	4.....	REPLACES P/N 0016908020
21	M3331200103	BRACKET, DPF AND SCR	1	
22	0016910025	HEX. HEAD BOLT	4	
23	M3331400604	DPF BAND	2	
24	M3331400704	SCR BAND	2	
25	011008020	HEX. HEAD BOLT .....	4.....	REPLACES P/N 0016908020
26	020108060	U-NUT .....	4.....	REPLACES P/N 0037908000
26A	0401450080	WASHER, FLAT .....	4.....	REPLACES P/N 0041208000
27	Y0010116030	HEX. HEAD BOLT	4	
27A	0040016000	WASHER, LOCK	4	
27B	0041216000	WASHER, FLAT	4	
28	0605515202	HOSE BAND	2	

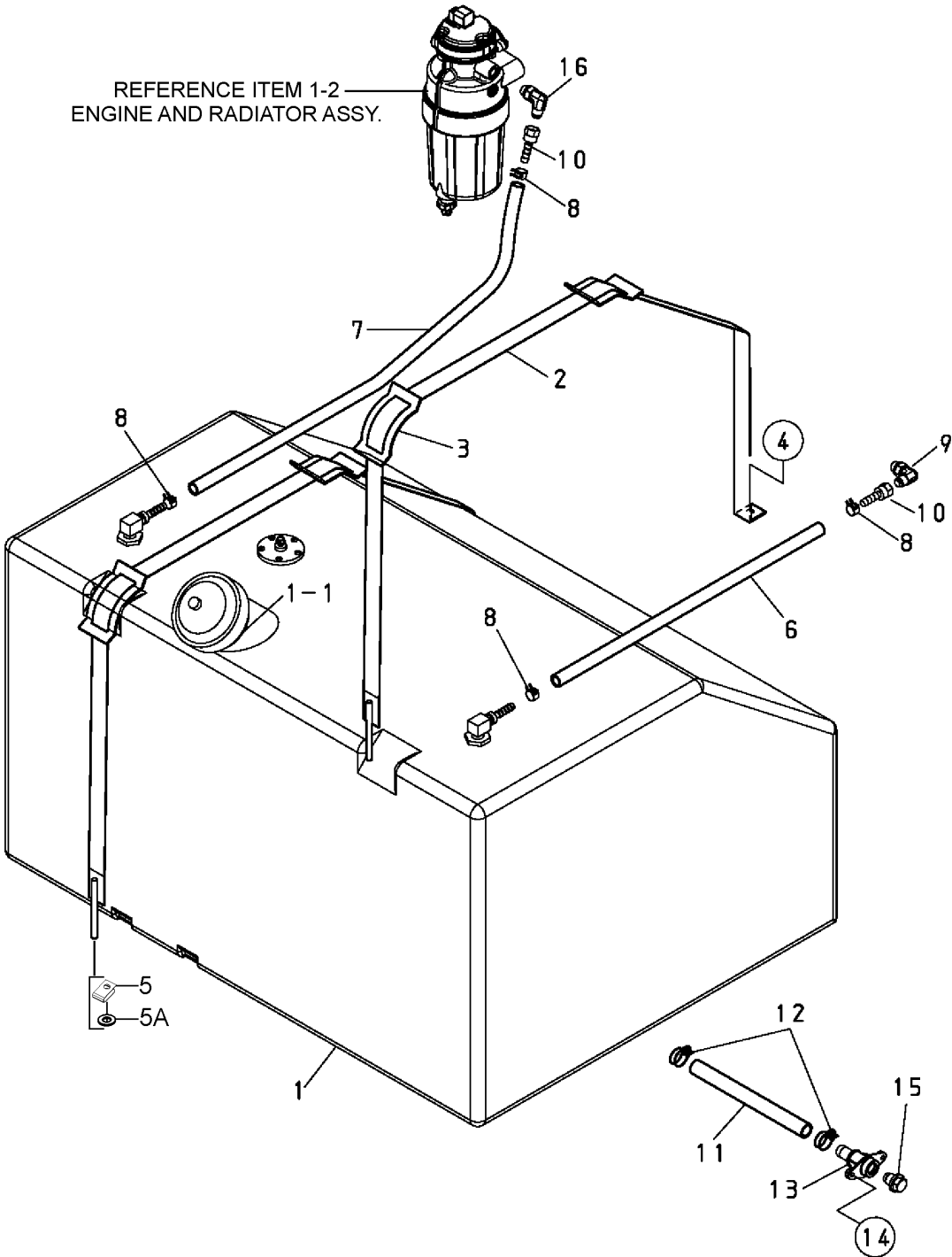
# FUEL LINE ROUTING (PLUMBING) ASSY.



## FUEL LINE ROUTING (PLUMBING) ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	RE558330	DEF TANK .....	1.....	REPLACES P/N Y0605500070
2	M3331400503	BRACKET, DEF TANK	1	
3	011208060	HEX. HEAD BOLT .....	2.....	REPLACES P/N 0016908055
3A	020108060	U-NUT .....	2.....	REPLACES P/N 0037908000
3B	0401450080	WASHER, FLAT .....	2.....	REPLACES P/N 0041208000
4	011008020	HEX. HEAD BOLT .....	3.....	REPLACES P/N 0016908020
5	RE552175	DEF SUPPLY MODULE	1	REPLACES P/N Y0602330400
5A	RE554498	FILTER KIT	1	REPLACES P/N Y0602330414
6	Y0010108090	HEX. HEAD BOLT	3	
6A	0040008000	WASHER, LOCK	3	
6B	0401450080	WASHER, FLAT .....	3.....	REPLACES P/N 0041208000
7	RE560902	DEF SUCTION LINE .....	1.....	REPLACES P/N Y0602330411
8	RE560900	DEF BACKFLOW LINE .....	1.....	REPLACES P/N Y0602330412
9	RE560898	DEF PRESSURE LINE .....	1.....	REPLACES P/N Y0602330413
10	AT377287	HOSE BARB .....	1.....	REPLACES P/N Y0602022975
11	TY22328	COOLANT HOSE, 22.7"/730 MM .....	3.....	1 PC =1 FT.
12	TY22328	COOLANT HOSE, 53.1"/1350 MM .....	5.....	1 PC =1 FT.
13	0605515198	HOSE BAND	4	
14	T317541	BLACK TEE-FITTING WITH ORIFICE .....	1.....	REPLACES P/N Y0602022976
15	T296925	WHITE TEE-FITTING .....	1.....	REPLACES P/N Y0602022977
16	TY25141	COOLANT HOSE .....	2.....	REPLACES P/N Y0379301300
17	Y0605515340	HOSE BAND	6	
18	Y0602022585	90° ELBOW	1	
19	0602022980	HOSE JOINT	1	
20	TY22326	COOLANT HOSE, 26.8"/680 MM .....	3.....	1 PC =1 FT.
21	TY22326	COOLANT HOSE, 53.1"/1350 MM .....	5.....	1 PC =1 FT.
22	0605515198	HOSE BAND	4	
23	0191300950	VENT HOSE	1	
24	H216170	DEF TANK VENT FITTING .....	1.....	REPLACES P/N Y0602330402
25	H216169	DEF TANK VENT FILTER .....	1.....	REPLACES P/N Y0602330401
26	RE552182	NOX SENSOR .....	2.....	REPLACES P/N Y0602330410
27	RE552186	SCR TEMP. SENSOR .....	1.....	REPLACES P/N Y0602330409
28	Y0602330204	DPF TEMP. SENSOR	1	
29	011106015	HEX. HEAD BOLT .....	8.....	REPLACES P/N 0016906015
30	RE542006	STRAP, TEMP. SENSOR .....	2.....	REPLACES P/N Y0602330205
31	RE538131	PRESSURE SENSOR .....	1.....	REPLACES P/N Y0602330203
32	011208030	HEX. HEAD BOLT .....	2.....	REPLACES P/N 0016908030
33	RE544013	FLEXIBLE LINE .....	1.....	REPLACES P/N Y0602330002
34	RE544012	FLEXIBLE LINE .....	1.....	REPLACES P/N Y0602330001
35	RE543081	JOINT .....	1.....	REPLACES P/N Y0602330201
36	Y0603306489	SWIVEL JOINT	1	
37	RE542003	JOINT	1	REPLACES P/N Y0602330200
38	Y0603306488	SWIVEL JOINT	1	
39	M3331400804	SUPPLY MODULE BRACKET	1	
40	011008020	HEX. HEAD BOLT .....	2.....	REPLACES P/N 0016908020
41	RE560048	DEF HEADER	1	REPLACES P/N Y0602330408
42	011106015	HEX. HEAD BOLT .....	3.....	REPLACES P/N 0016906015

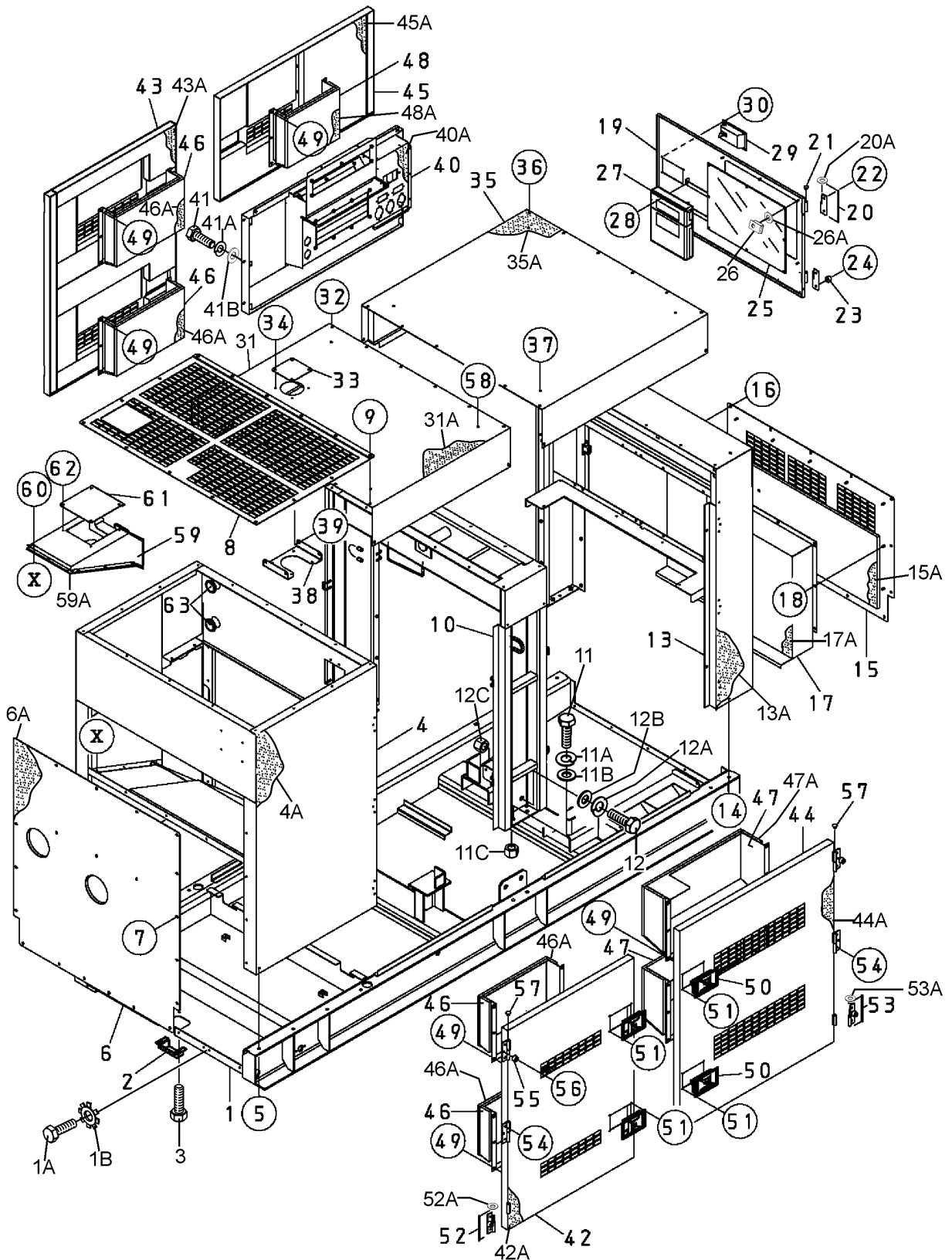
# FUEL TANK ASSY.



## FUEL TANK ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	M3364000402	FUEL TANK	1	
1-1	0605505070	FUEL TANK CAP	1	
2	M4363200004	TANK BAND	2	
3	M9310500104	SUPPORTER SHEET	4	
4	011008020	HEX. HEAD BOLT .....	2.....	REPLACES P/N 0016908020
5	020108060	U-NUT .....	2.....	REPLACES P/N 0037908000
5A	0401450080	WASHER, FLAT .....	2.....	REPLACES P/N 0041208000
6	0191302300	SUCTION HOSE	1	
7	0191302800	RETURN HOSE	1	
8	Y0605515340	HOSE BAND	4	
9	Y0602022577	90° ELBOW	1	
10	Y0602022985	HOSE JOINT	2	
11	M1363400104	DRAIN HOSE	1	
12	0605515198	HOSE BAND	2	
13	1502025103C	DRAIN JOINT .....	1.....	REPLACES P/N M9200000003
14	011206020	HEX. HEAD BOLT .....	2.....	REPLACES P/N 0016906020
15	0802011104	DRAIN BOLT .....	1.....	REPLACES P/N M9200200004
15A	0150000018	O-RING	1	
16	Y0602022578	90° ELBOW	1	

# ENCLOSURE ASSY.





## ENCLOSURE ASSY.

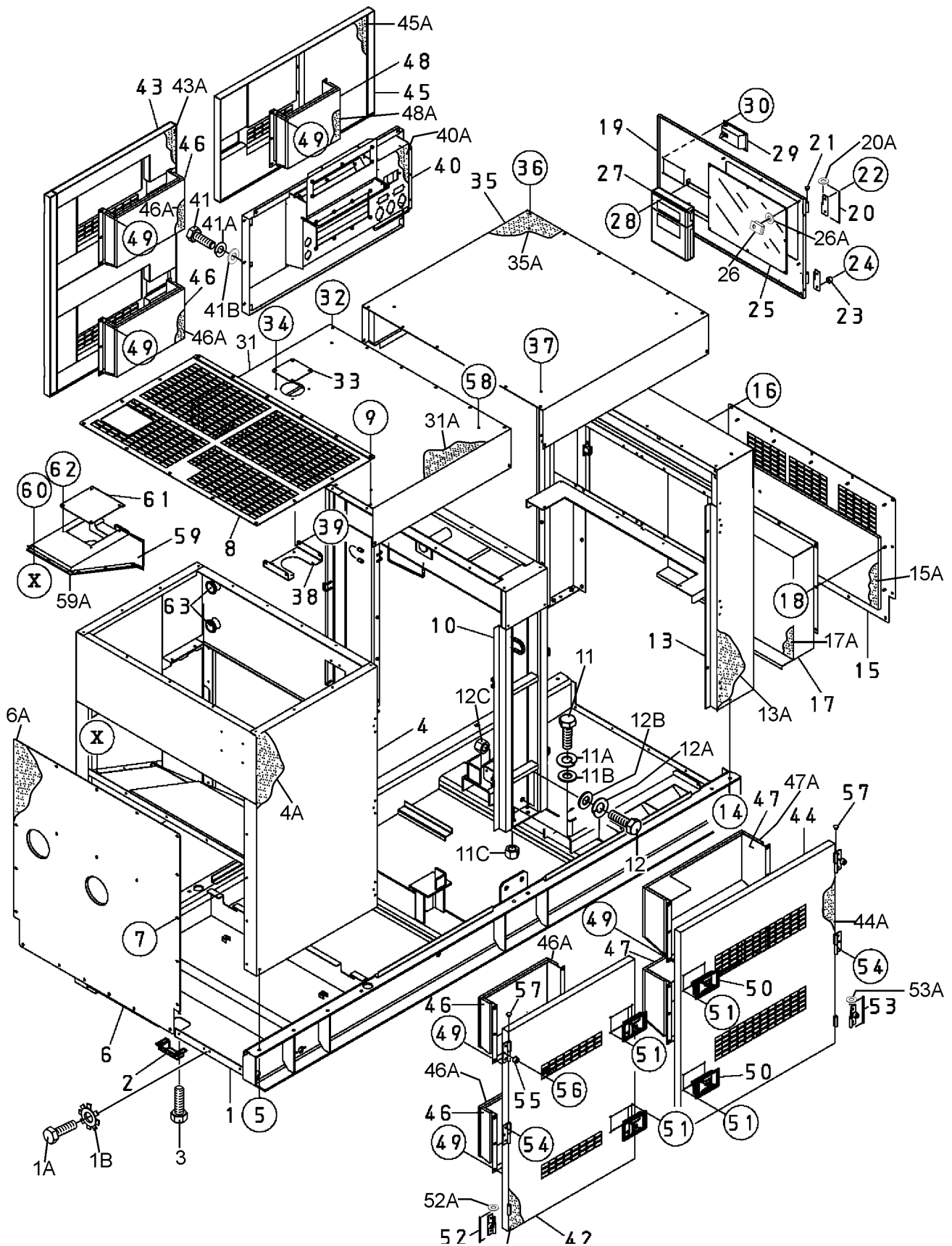
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	M3414000402	BASE	1	
1A	011008020	HEX. HEAD BOLT .....	1	REPLACES P/N 0016908020
1B	0040508000	TOOTHED WASHER	1	
2	M1413400004	COVER	1	
3	011008020	HEX. HEAD BOLT .....	2	REPLACES P/N 0016908020
4	M3424000202	FRONT FRAME	1	
4A	M3491200003	ACOUSTIC SHEET	1	
5	0016910025	HEX. HEAD BOLT	8	
6	M3424200304	COVER, FRONT FRAME	1	
6A	M3491200104	ACOUSTIC SHEET	1	
7	0019208020	HEX. HEAD BOLT	22	
8	M3424200203	OVER COVER, FRONT FRAME	1	
9	0019208020	HEX. HEAD BOLT	15	
10	M3434000302	CENTER FRAME	1	
11	0010114040	HEX. HEAD BOLT	4	
11A	030214350	WASHER, LOCK .....	4	REPLACES P/N 0040014000
11B	031114260	WASHER, FLAT .....	8	REPLACES P/N 0041214000
11C	515455840	HEX. NUT .....	4	REPLACES P/N 0030014000
12	0010120050	HEX. HEAD BOLT	4	
12A	030220510	WASHER, LOCK .....	4	REPLACES P/N 0040020000
12B	0041220000	WASHER, FLAT	8	
12C	0030020000	HEX. NUT	4	
13	M3444000302	REAR FRAME	1	
13A	M4493302804	ACOUSTIC SHEET	1	
14	0016910025	HEX. HEAD BOLT	4	
15	M4443300404	COVER, REAR FRAME	1	
15A	M4493302904	ACOUSTIC SHEET	1	
16	0019208020	HEX. HEAD BOLT	14	
17	M4443300503	DUCT, REAR FRAME	1	
17A	M4493303004	ACOUSTIC SHEET	1	
18	020108060	HEX. NUT .....	9	REPLACES P/N 0207008000
19	M3444200303	DOOR, REAR FRAME	1	
20	M9110100204	HINGE	2	
20A	M9116100004	WASHER	2	

ADD THE FOLLOWING DIGITS AFTER THE PART NUMBER WHEN ORDERING ANY PAINTED PANEL TO INDICATE COLOR OF UNIT:

1-ORANGE	6-CATERPILLAR YELLOW
2-WHITE	7-CATO GOLD
3-SPECTRUM GREY	8-RED
4-SUNBELT GREEN	9-DESERT TAN
5-BLACK	

THE SERIAL NUMBER MAY BE REQUIRED.

# ENCLOSURE ASSY. (CONT.)



## ENCLOSURE ASSY. (CONT.)

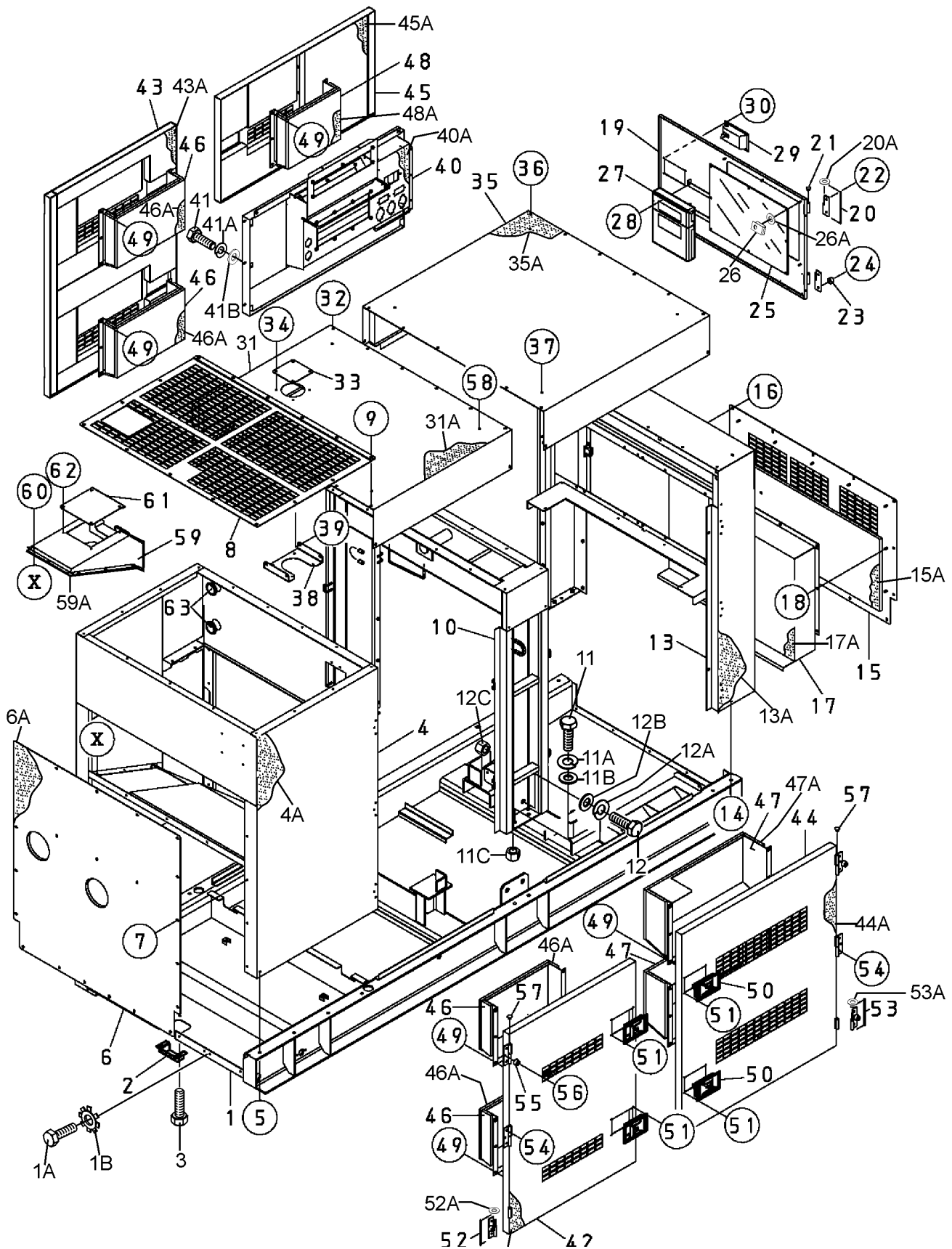
NO.	PART NO.	PART NAME	QTY.	REMARKS
21	0845031504	BLIND PLUG .....	2.....	REPLACES P/N M931000004
22	0019208020	HEX. HEAD BOLT	3	
23	0601850097	STOPPER	1	
24	0027208025	MACHINE SCREW	1	
25	M4443600004	WINDOW PLATE	1	
26	020106050	SELF-LOCKING U NUT .....	8.....	REPLACES P/N 0037906000
26A	952404470	WASHER, FLAT .....	8.....	REPLACES P/N 0041206000
27	0600800320	MANUAL PAK	1	
28	0027106016	MACHINE SCREW .....	4.....	REPLACES P/N 0021806015
29	Y0605012309	DOOR HANDLE	1	
30	0176060030	SELF-LOCKING NUT .....	4.....	REPLACES P/N 0207006000
31	M3464100102	ROOF PANEL	1	
31A	M3491600004	ACOUSTIC SHEET	1	
32	0019208020	HEX. HEAD BOLT	10	
33	M3310600004	COVER	1	
34	0019208020	HEX. HEAD BOLT	4	
35	M3464200102	ROOF PANEL	1	
35A	M3491600104	ACOUSTIC SHEET	1	
36	0019208020	HEX. HEAD BOLT	16	
37	0017110025	HEX. HEAD BOLT .....	4.....	REPLACES P/N 0019210025
38	M3317100004	BRACKET, SURGE TANK	1	
39	011008020	HEX. HEAD BOLT .....	4.....	REPLACES P/N 0016908020
40	M3454200102	SPLASHER PANEL	1	
40A	M3494407404	ACOUSTIC SHEET	1	
41	0019108065	HEX. HEAD BOLT	6	
41A	0042308000	WASHER, LOCK	6	
41B	031108160	WASHER, FLAT .....	6.....	REPLACES P/N 0042408000
42	M3454001203	SIDE DOOR	1	
42A	M3494406804	ACOUSTIC SHEET	1	
43	M3454001303	SIDE DOOR	1	
43A	M3494406904	ACOUSTIC SHEET	1	
44	M3454001403	SIDE DOOR	1	
44A	M3494407004	ACOUSTIC SHEET	1	
45	M3454001503	SIDE DOOR	1	
45A	M3494407104	ACOUSTIC SHEET	1	
46	M3454300604	DUCT	4	
46A	M3494407204	ACOUSTIC SHEET	4	

ADD THE FOLLOWING DIGITS AFTER THE PART NUMBER WHEN ORDERING ANY PAINTED PANEL TO INDICATE COLOR OF UNIT:

1-ORANGE	6-CATERPILLAR YELLOW
2-WHITE	7-CATO GOLD
3-SPECTRUM GREY	8-RED
4-SUNBELT GREEN	9-DESERT TAN
5-BLACK	

THE SERIAL NUMBER MAY BE REQUIRED.

# ENCLOSURE ASSY. (CONT.)



## ENCLOSURE ASSY. (CONT.)

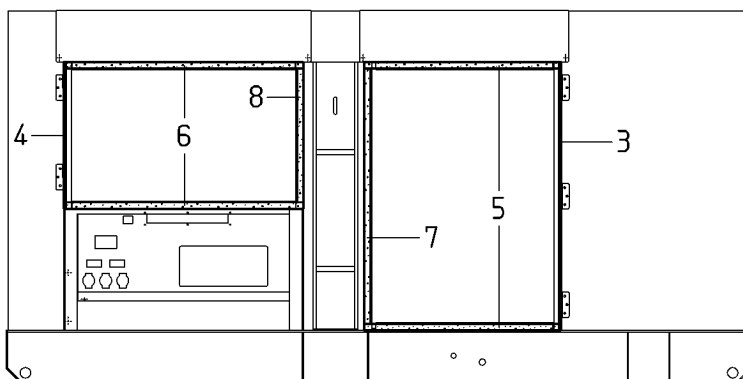
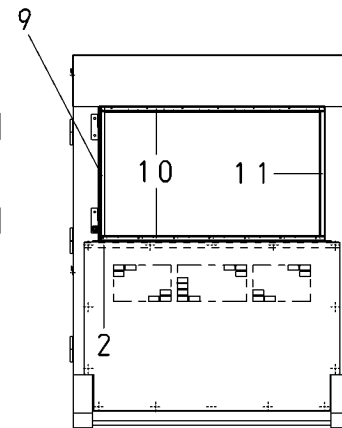
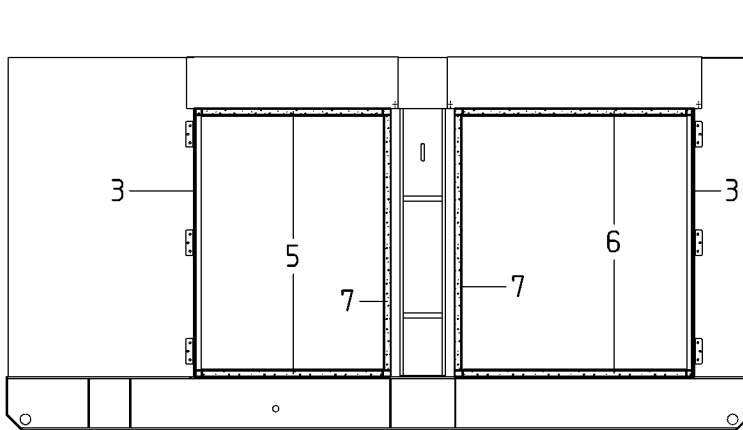
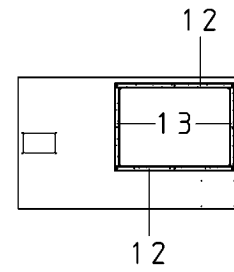
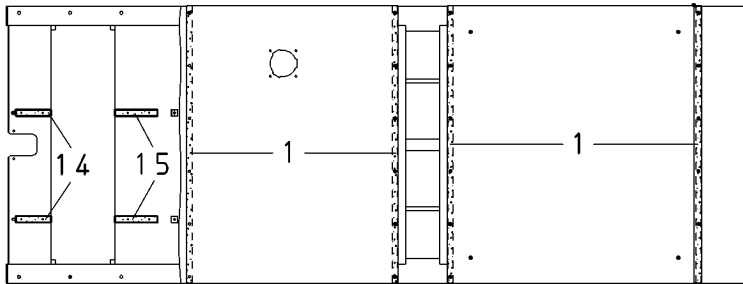
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
47	M3454300704	DUCT	2	
47A	M3494407304	ACOUSTIC SHEET	2	
48	M3454300804	DUCT	1	
48A	M3494411104	ACOUSTIC SHEET	1	
49	020108060	HEX. NUT .....	39	REPLACES P/N 0207008000
50	Y0605012309	DOOR HANDLE	7	
51	0176060030	SELF-LOCKING NUT .....	28	REPLACES P/N 0207006000
52	0845046904	HINGE .....	5	REPLACES P/N M9110100804
52A	M9116100004	WASHER	5	
53	0845047004	HINGE .....	6	REPLACES P/N M9110100904
53A	M9116100004	WASHER	6	
54	0019208020	HEX. HEAD BOLT	25	
55	0601850097	STOPPER	8	
56	0027208025	MACHINE SCREW	8	
57	0845031504	BLIND PLUG .....	11	REPLACES P/N M9310000004
58	0017110025	HEX. HEAD BOLT .....	4	REPLACES P/N 0019210025
59	M3424700003	DEF TANK COVER	1	
59A	Y0229200280	RUBBER SEAL	1	
60	0019208020	HEX. HEAD BOLT	7	
61	M3424700104	DEF TANK COVER	1	
62	0019206015	HEX. HEAD BOLT	4	
63	0601851736	GROMMET	2	

ADD THE FOLLOWING DIGITS AFTER THE PART NUMBER WHEN ORDERING ANY PAINTED PANEL TO INDICATE COLOR OF UNIT:

1-ORANGE	6-CATERPILLAR YELLOW
2-WHITE	7-CATO GOLD
3-SPECTRUM GREY	8-RED
4-SUNBELT GREEN	9-DESERT TAN
5-BLACK	

THE SERIAL NUMBER MAY BE REQUIRED.

# RUBBER SEALS ASSY.

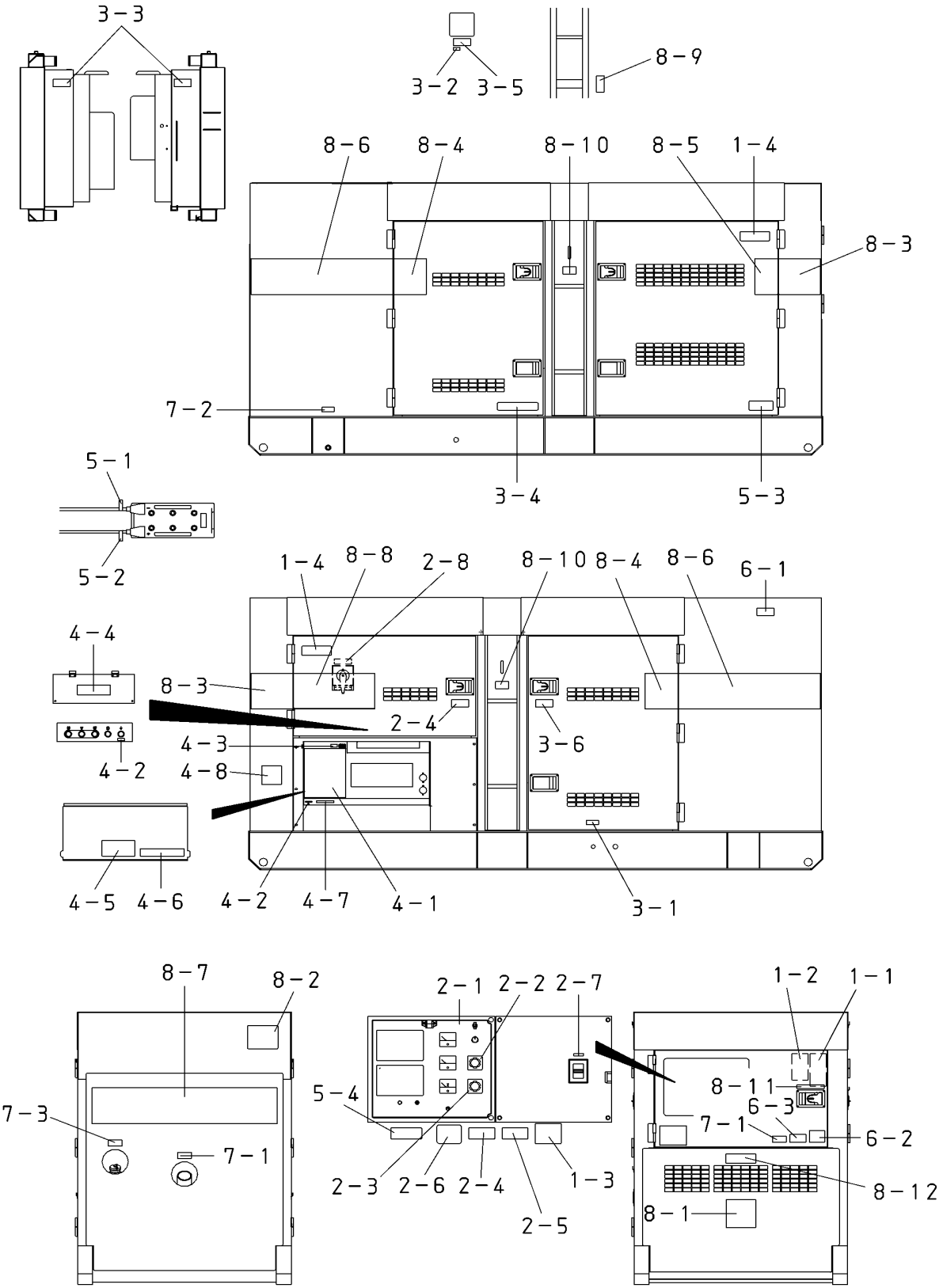


## **RUBBER SEALS ASSY.**

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<b><u>NO.</u></b>	<b><u>PART NO.</u></b>	<b><u>PART NAME</u></b>	<b><u>QTY.</u></b>	<b><u>REMARKS</u></b>
1	Y0229201300	SEAL, RUBBER	4	
2	Y0229201200	SEAL, RUBBER	1	
3	Y0228901260	SEAL, RUBBER	3	
4	Y0228900690	SEAL, RUBBER	1	
5	Y0228900915	SEAL, RUBBER	4	
6	Y0228901115	SEAL, RUBBER	4	
7	Y0228901200	SEAL, RUBBER	3	
8	Y0228900630	SEAL, RUBBER	1	
9	Y0229400630	SEAL, RUBBER	1	
10	Y0228801050	SEAL, RUBBER	2	
11	Y0228800590	SEAL, RUBBER	1	
12	Y0228100560	SEAL, RUBBER	2	
13	Y0228100370	SEAL, RUBBER	2	
14	Y0222100165	RUBBER SHEET	2	
15	Y0222100200	RUBBER SHEET	2	

# NAMEPLATE AND DECALS ASSY.

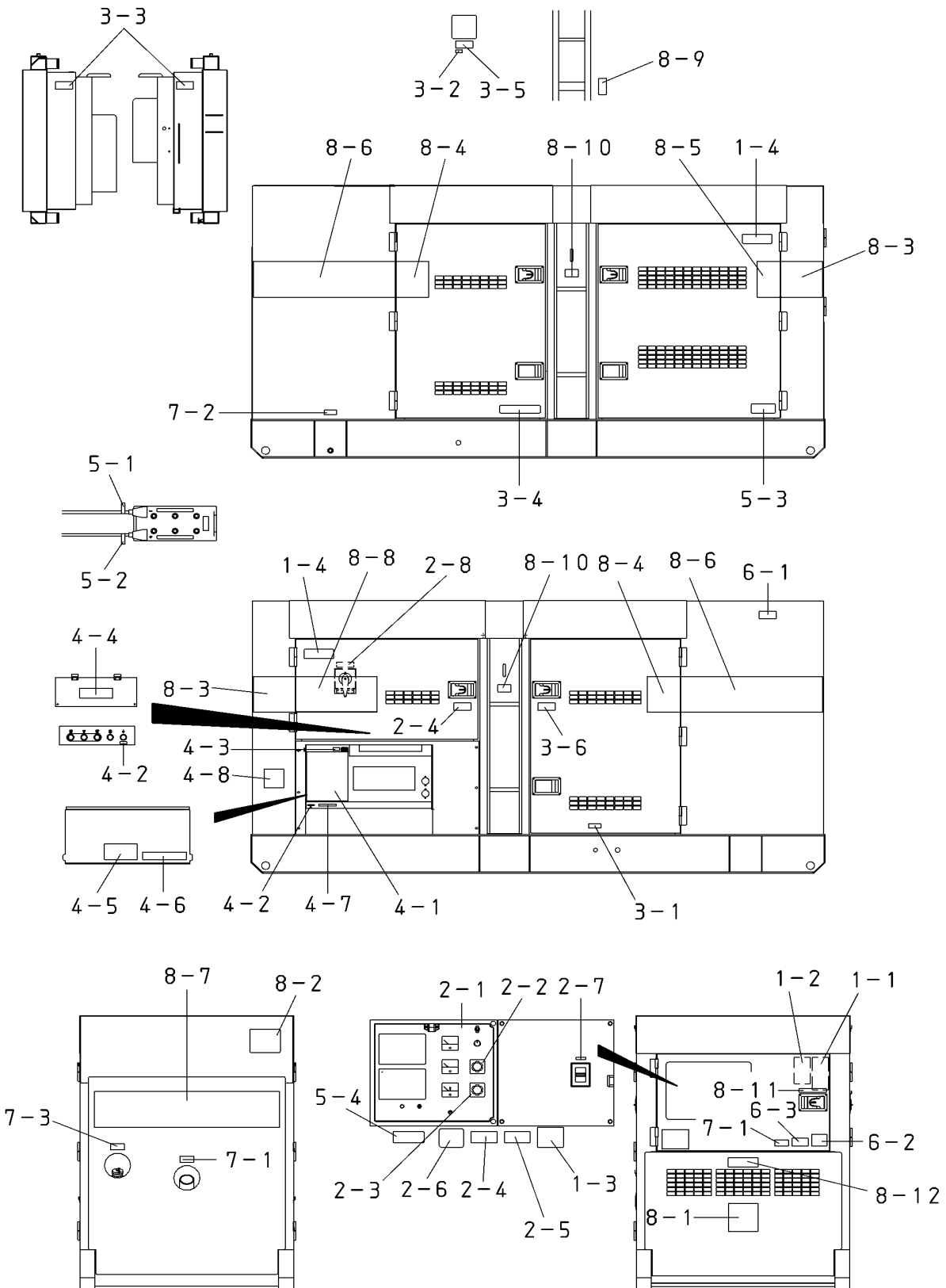




## NAMEPLATE AND DECALS ASSY.

<b>NO.</b>	<b>PART NO.</b>	<b>PART NAME</b>	<b>QTY.</b>	<b>REMARKS</b>
1-1	M3551000103	DECAL: OPERATING PROCEDURES .....	1.....	M35100010
1-2	M3551000303	DECAL: DPF REGENERATION PROC. ....	1.....	M35100030
1-3	M9520100304	DECAL: SAFETY INSTRUCTIONS .....	1.....	M92010030
1-4	M9520100603	DECAL: CAUTION .....	2.....	M92010060
<b>CONTROL PANEL AND BOX GROUP</b>				
2-1	M3551000502	DECAL: CONTROL PANEL .....	1.....	M35100050
2-2	M9520000104	PLATE: AMMETER CHANGE-OVER SW. ....	1.....	M92000010
2-3	M9520000204	PLATE: VOLTMETER CHANGE-OVER SW. ....	1.....	M92000020
2-4	M9520100004	DECAL: WARNING: ELECTRICAL SHK. HAZ. .	2.....	M92010000
2-5	M9520100704	DECAL: WARNING: ARC FLASH .....	1.....	M92010070
2-6	M9520200404	DECAL: OVER CURRENT RELAY .....	1.....	M92020040
2-7	M9522000504	DECAL: CIRCUIT BREAKER .....	1.....	M92200050
2-8	M9520100204	DECAL: CAUTION .....	1.....	M92010020A
<b>ENGINE AND RADIATOR GROUP</b>				
3-1	M9500000004	DECAL: OIL DRAIN PLUG .....	1.....	M90000000
3-2	M9500100004	DECAL: WATER .....	1.....	M90010000
3-3	M9503000004	DECAL: WARNING: ROTATING PART .....	2.....	M90300000
3-4	M9503000103	DECAL: WATER-OIL CHECK .....	1.....	M90300010
3-5	M9503100004	DECAL: WARNING: HOT COOLANT .....	1.....	M90310000
3-6	M9510100004	DECAL: CAUTION: HOT PARTS .....	1.....	M91010000
<b>OUTPUT TERMINAL GROUP</b>				
4-1	M1550002203	DECAL: RECEPTACLE & CIRC. BREAKER ....	1.....	M15000220
4-2	M9520000004	DECAL: GROUND .....	2.....	M92000000
4-3	M9520000504	DECAL: START CONTACT .....	1.....	M92000050
4-4	M9520200003	DECAL: CONNECTION OF OUTPUT CABLE .	1.....	M92020000
4-5	M9520100404	DECAL: DANGER: HIGH VOLTAGE .....	1.....	M92010040
4-6	M9520100503	DECAL: WARNING .....	1.....	M92010050
4-7	M9511100104	DECAL: NOTICE .....	1.....	M91110010
4-8	M3550000804	DECAL: NOTICE .....	1.....	M35000080A
<b>BATTERY GROUP</b>				
5-1	M9500300004	DECAL: - .....	1.....	M90030000
5-2	M9500300104	DECAL: + .....	1.....	M90030010
5-3	M9510100403	DECAL: CAUTION .....	1.....	M91010040
5-4	M9501300004	DECAL: CAUTION .....	1.....	M90130000
<b>MUFFLER GROUP</b>				
6-1	M9503200004	DECAL: WARNING: ENGINE EXHAUST .....	1.....	M90320000
6-2	M9503200104	DECAL: DANGER: EXHAUST .....	1.....	M90320010
6-3	920214100	DECAL: WARNING: START FIRES .....	1.....	M90420000
		.....		REPLACES P/N M9504200004

# NAMEPLATE AND DECALS ASSY. (CONT.)



## NAMEPLATE AND DECALS ASSY. (CONT.)

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
<b>FUEL TANK GROUP</b>				
7-1	M9501500004	DECAL: DIESEL FUEL .....	2.....	M90150000
7-2	M9500500104	DECAL: FUEL DRAIN PLUG .....	1.....	M90050010
7-3	M9501500104	DECAL: DIESEL EXHAUST FLUID .....	1.....	M90150010
<b>ENCLOSURE GROUP</b>				
8-1	M9511200204	DECAL: MQ .....	1.....	M91120020
8-2	0600500092	EMBLEM	1	
8-2	0021106015	MACHINE SCREW	4	
8-3	M3561100004	STRIPE .....	2.....	M3110000
8-4	M5560101604	STRIPE .....	2.....	M56010160
8-5	M4560100904	STRIPE .....	1.....	M46010090
8-6	M3561100203	STRIPE .....	2.....	M36110020
8-7	M4560100003	STRIPE .....	1.....	M46010000
8-8	M3561100104	STRIPE .....	1.....	M36110010
8-9	M3550002204	DECAL: CAUTION .....	1.....	M35000220
8-10	M9512000004	DECAL: SUPPORT HOOK .....	2.....	M91200000
8-11	M9510000104	DECAL: DOCUMENT BOX LOCATED .....	1.....	M91000010
8-12	M9511200103	DECAL: TIER4F .....	1.....	M91120010

# TERMS AND CONDITIONS OF SALE — PARTS

## PAYMENT TERMS

Terms of payment for parts are net 30 days.

## FREIGHT POLICY

All parts orders will be shipped collect or prepaid with the charges added to the invoice. All shipments are F.O.B. point of origin. Multiquip's responsibility ceases when a signed manifest has been obtained from the carrier, and any claim for shortage or damage must be settled between the consignee and the carrier.

## MINIMUM ORDER

The minimum charge for orders from Multiquip is \$15.00 net. Customers will be asked for instructions regarding handling of orders not meeting this requirement.

## RETURNED GOODS POLICY

Return shipments will be accepted and credit will be allowed, subject to the following provisions:

1. A Returned Material Authorization must be approved by Multiquip prior to shipment.
2. To obtain a Return Material Authorization, a list must be provided to Multiquip Parts Sales that defines item numbers, quantities, and descriptions of the items to be returned.
  - a. The parts numbers and descriptions must match the current parts price list.
  - b. The list must be typed or computer generated.
  - c. The list must state the reason(s) for the return.
  - d. The list must reference the sales order(s) or invoice(s) under which the items were originally purchased.
  - e. The list must include the name and phone number of the person requesting the RMA.
3. A copy of the Return Material Authorization must accompany the return shipment.
4. Freight is at the sender's expense. All parts must be returned freight prepaid to Multiquip's designated receiving point.

5. Parts must be in new and resalable condition, in the original Multiquip package (if any), and with Multiquip part numbers clearly marked.
6. The following items are not returnable:
  - a. Obsolete parts. (If an item is in the price book and shows as being replaced by another item, it is obsolete.)
  - b. Any parts with a limited shelf life (such as gaskets, seals, "O" rings, and other rubber parts) that were purchased more than six months prior to the return date.
  - c. Any line item with an extended dealer net price of less than \$5.00.
  - d. Special order items.
  - e. Electrical components.
  - f. Paint, chemicals, and lubricants.
  - g. Decals and paper products.
  - h. Items purchased in kits.
7. The sender will be notified of any material received that is not acceptable.
8. Such material will be held for five working days from notification, pending instructions. If a reply is not received within five days, the material will be returned to the sender at his expense.
9. Credit on returned parts will be issued at dealer net price at time of the original purchase, less a 15% restocking charge.
10. In cases where an item is accepted, for which the original purchase document can not be determined, the price will be based on the list price that was effective twelve months prior to the RMA date.
11. Credit issued will be applied to future purchases only.

## PRICING AND REBATES

Prices are subject to change without prior notice. Price changes are effective on a specific date and all orders received on or after that date will be billed at the revised price. Rebates for price declines and added charges for price increases will not be made for stock on hand at the time of any price change.

Multiquip reserves the right to quote and sell direct to Government agencies, and to Original Equipment Manufacturer accounts who use our products as integral parts of their own products.

## SPECIAL EXPEDITING SERVICE

A \$35.00 surcharge will be added to the invoice for special handling including bus shipments, insured parcel post or in cases where Multiquip must personally deliver the parts to the carrier.

## LIMITATIONS OF SELLER'S LIABILITY

Multiquip shall not be liable hereunder for damages in excess of the purchase price of the item with respect to which damages are claimed, and in no event shall Multiquip be liable for loss of profit or good will or for any other special, consequential or incidental damages.

## LIMITATION OF WARRANTIES

No warranties, express or implied, are made in connection with the sale of parts or trade accessories nor as to any engine not manufactured by Multiquip. Such warranties made in connection with the sale of new, complete units are made exclusively by a statement of warranty packaged with such units, and Multiquip neither assumes nor authorizes any person to assume for it any other obligation or liability whatever in connection with the sale of its products. Apart from such written statement of warranty, there are no warranties, express, implied or statutory, which extend beyond the description of the products on the face hereof.

Effective: February 22, 2006



# OPERATION MANUAL

## HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL  
NUMBER ON-HAND WHEN CALLING

### UNITED STATES

#### ***Multiquip Corporate Office***

18910 Wilmington Ave.  
Carson, CA 90746  
Contact: mq@multiquip.com

Tel. (800) 421-1244  
Fax (310) 537-3927

#### ***Service Department***

800-421-1244  
310-537-3700

Fax: 310-537-4259

#### ***Technical Assistance***

800-478-1244

Fax: 310-943-2238

#### ***MQ Parts Department***

800-427-1244  
310-537-3700

Fax: 800-672-7877  
Fax: 310-637-3284

#### ***Warranty Department***

800-421-1244  
310-537-3700

Fax: 310-943-2249

### CANADA

#### ***Multiquip***

4110 Industriel Boul.  
Laval, Quebec, Canada H7L 6V3  
Contact: jmartin@multiquip.com

Tel: (450) 625-2244  
Tel: (877) 963-4411  
Fax: (450) 625-8664

### UNITED KINGDOM

#### ***Multiquip (UK) Limited Head Office***

Unit 2, Northpoint Industrial Estate,  
Globe Lane,  
Dukinfield, Cheshire SK16 4UJ  
Contact: sales@multiquip.co.uk

Tel: 0161 339 2223  
Fax: 0161 339 3226

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This manual MUST accompany the equipment at all times. This manual is considered a permanent part of the equipment and should remain with the unit if resold.

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