OPERATION AND PARTS MANUAL

MQ POWER DCA-70SSJU2 WHISPERWATT™ GENERATOR

(FEMA)

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PARTS LIST NO. M1870300034A

Revision #2 (06/03/03)

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WARNING

CALIFORNIA — Proposition 65 Warning

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

HERE'S HOW TO GET HELP

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

PARTS DEPARTMENT
800-427-1244 or 310-537-3700
FAX: 800-672-7877 or 310-637-3284

SERVICE DEPARTMENT
800-421-1244
FAX: 310- 537-4259

TECHNICAL ASSISTANCE
800-478-1244
FAX: 310- 631-5032

WARRANTY DEPARTMENT
888-661-4279, or 310-661-4279
FAX: 310- 537-1173

MQ POWER DCA-70SSJU2 AC GENERATOR (FEMA)

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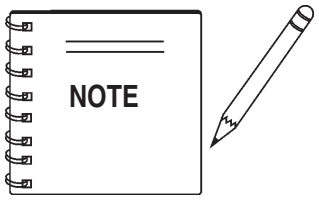

Specification and part number are subject to change without notice.

When ordering parts, please supply the following information:

- ❒ **Dealer account number**
- ❒ **Dealer name and address**
- ❒ **Shipping address (if different than billing address)**
- ❒ **Return fax number**
- ❒ **Applicable model number**
- ❒ **Quantity, part number and description of each part**
- ❒ **Specify preferred method of shipment:**
  - ✓ FedEx or UPS Ground
  - ✓ FedEx or UPS Second Day or Third Day
  - ✓ FedEx or UPS Next Day
  - ✓ Federal Express Priority One
  - ✓ DHL
  - ✓ Truck

Note: Unless otherwise indicated by customer, all orders are treated as "Standard Orders", and will ship within 24 hours. We will make every effort to ship "Air Shipments" the same day that the order is received, if prior to 2PM west coast time. "Stock Orders" must be so noted on fax or web forms.

Here's how to get help...

Please have the model and serial number on hand when calling.

Parts Department
800-427-1244 — Fax: 800-672-7877
310-537-3700 — Fax: 310-637-3284

Mayco Parts
800-306-2926 — Fax: 800-672-7877
310-537-3700 — Fax: 310-637-3284

Service Department
800-478-1244 — Fax: 310-537-4259
310-537-3700

MQ Power Service Department
800-835-2551 — Fax: 310-638-8046
310-537-3700

Warranty Department
800-421-1244, Ext. 279 — Fax: 310-537-1173
310-537-3700, Ext. 279

Multiquip's Main Phone Numbers
800-421-1244 — Fax: 310-537-3927
310-537-3700

Place Your Parts Order Via Web or Fax For Even More Savings!

Extra Discounts!

All parts orders which include complete part numbers and are received by our automated web parts order system, or by fax qualify for the following extra discounts:

Ordered via	Standard orders	Stock orders ($750 list and above)
Fax	3%	10%
Web	5%	10%

*Special freight allowances when you order 10 or more line items via Web or Fax!***

FedEx Ground Service ***at no charge for freight***

No other allowances on freight shipped by any other carrier.

NOTE: DISCOUNTS ARE SUBJECT TO CHANGE

MULTIQUIP

MULTIQUIP INC.
18910 WILMINGTON AVENUE
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CARSON, CALIFORNIA 90749
310-537-3700 • 800-421-1244
FAX: 310-537-3927
E-MAIL: mq@multiquip.com
WWW: multiquip.com

Direct TOLL-FREE access to our Parts Department:

Toll-free nationwide — 800-427-1244

Table 1. Generator Specifications		
Model	**DCA-70SSJU2**	
Type	Revolving field, self ventilated, open protected type synchronous generator	
Armature Connection	**Star with Neutral**	**Zig Zag**
Phase	3	Single
Standby Output	77 KVA (61.6 KW)	44 KW
Prime Output	70 KVA (56 KW)	40KW
Voltage	240V or 480V	240/120V
Frequency	60 Hz	
Speed	1800 rpm	
Power Factor	0.8	1
Aux. AC Power	Single Phase, 60 Hz	
Voltage	120 V	
Output	4.8 KW (2.4 KW x 2)	
Engine Specifications		
Model	JOHN DEERE 4045TF 150	
Type	4 Cycle, water-cooled, direct injection, turbo-charged	
No. of Cylinders	4 cylinders	
Bore x Stroke	4.19 in. x 5 in. (106 mm x 127 mm)	
Rated Output	90HP/1800 rpm	
Displacement	274 cu. in. (4500 cc)	
Starting	Electric	
Coolant Capacity	6.9 gal. (26 liters)	
Lube Oil Capacity	3.4 gal. (13 liters)	
Fuel Consumption	4.7 gal. (17.9L)/hr at **full load**	3.5 gal. (13.3L)/hr at **3/4 load**
	2.6 gal. (9.9L)/hr at **1/2 load**	1.6 gal. (6.1L)/hr at **1/4 load**
Battery	12V- 120AH	
Fuel	#2 Diesel Fuel	

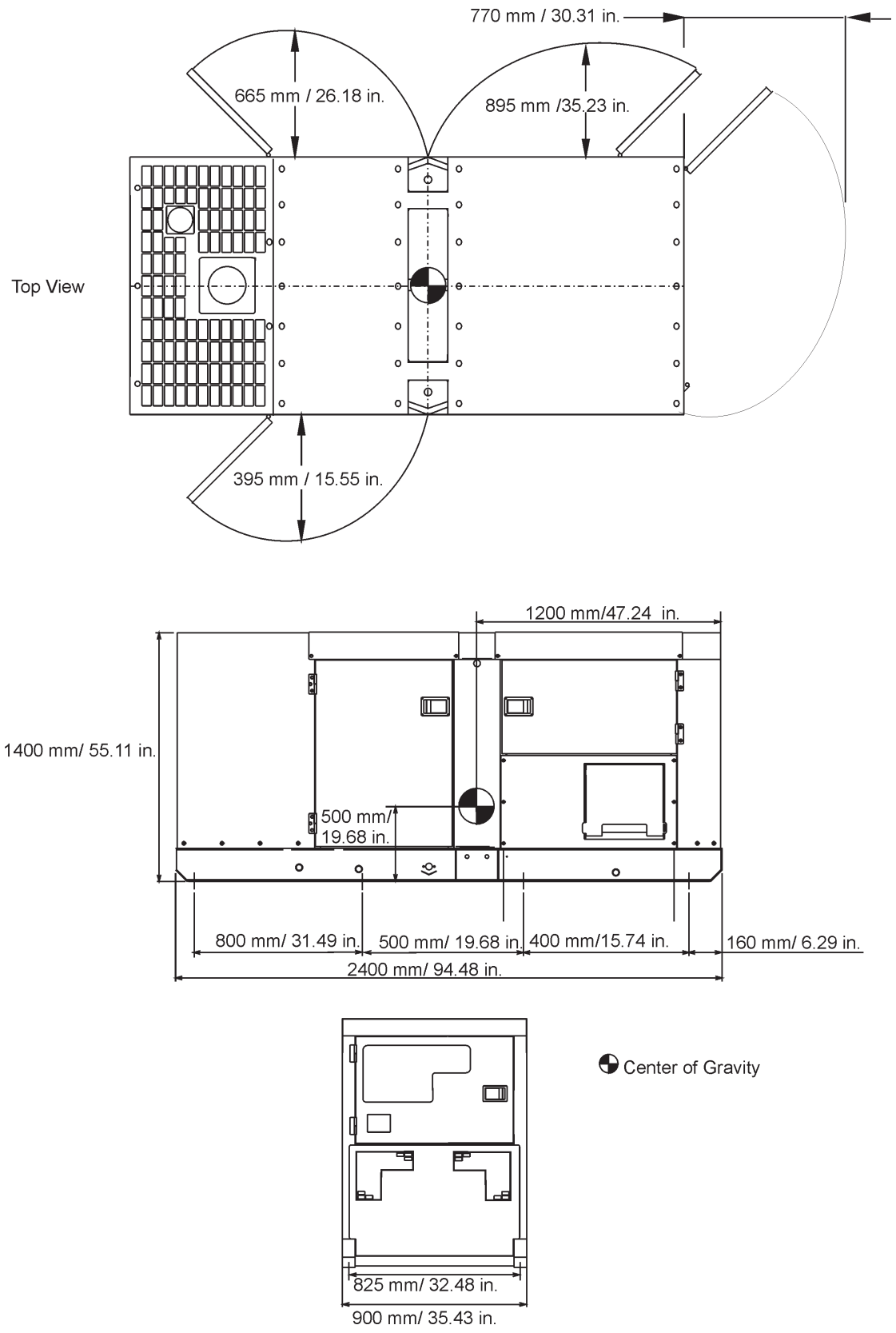
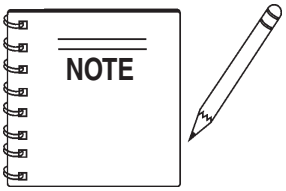


Figure 1. Dimensions

DCA-70SSJU2 — SAFETY MESSAGE ALERT SYMBOLS

FOR YOUR SAFETY AND THE SAFETY OF OTHERS!

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.



This Owner's Manual has been developed to provide complete instructions for the safe and efficient operation of the MQ Power ***Model DCA70SSJU2 WHISPERWATT™ GENERATOR.***

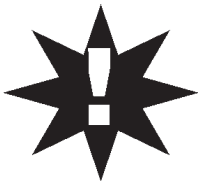
Before using this GENERATOR, ensure that the operating individual has read and understands all instructions in this manual.

SAFETY MESSAGE ALERT SYMBOLS

The three (3) 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 three words: **DANGER**, **WARNING**, or **CAUTION**.

DANGER: You **WILL** be **KILLED** or SERIOUSLY injured if you **DO NOT** follow directions.

WARNING: You **CAN** be **KILLED** or SERIOUSLY injured if you **DO NOT** follow directions.



CAUTION: You **CAN** be injured if you **DO NOT** follow directions.

Potential hazards associated with trowel operation will be referenced with "***Hazard Symbols***" which appear throughout this manual, and will be referenced in conjunction with Safety "***Message Alert Symbols***".

HAZARD SYMBOLS

Lethal Exhaust Gases

Engine exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled. **NEVER** operate this equipment in a confined area or enclosed structure that does not provide ample free flow air.

Explosive Fuel

Diesel fuel is extremely flammable, and its vapors can cause an explosion if ignited. **DO NOT** start the engine near spilled fuel or combustible fluids. **DO NOT** fill the fuel tank while the engine is running or hot. **DO NOT** overfill tank, since spilled fuel could ignite if it comes into contact with hot engine parts or sparks from the ignition system. Store fuel in approved containers, in well-ventilated areas and away from sparks and flames. **NEVER** use fuel as a cleaning agent.

Burn Hazards

Engine components can generate extreme heat. To prevent burns, **DO NOT** touch these areas while the engine is running or immediately after operations. **NEVER** operate the engine with heat shields or heat guards removed.

Rotating Parts

NEVER operate equipment with covers, or guards removed. Keep ***fingers***, ***hands***, ***hair*** and ***clothing*** away from all moving parts to prevent injury.

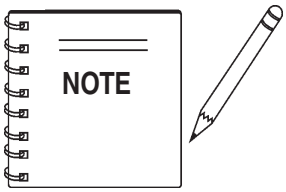
DCA-70SSJU2 — SAFETY MESSAGE ALERT SYMBOLS

Accidental Starting

ALWAYS place the engine ON/OFF switch in the **OFF** position, when the trowel is not in use.

Over Speed Conditions

NEVER tamper with the factory settings of the engine governor or settings. Personal injury and damage to the engine or equipment can result if operating in speed ranges above maximum allowable.

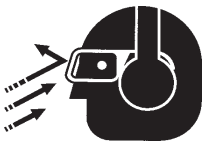


This ***generator***, other property, or the surrounding environment could be damaged if you do not follow instructions.

Respiratory Hazard

ALWAYS wear approved respiratory protection.

Sight and Hearing hazard



ALWAYS wear approved eye and hearing protection.

Equipment Damage Messages

Other important messages are provided throughout this manual to help prevent damage to your trowel, other property, or the surrounding environment.

CAUTION:

Failure to follow instructions in this manual may lead to serious injury or even death! This equipment is to be operated by trained and qualified personnel only! This equipment is for industrial use only.

The following safety guidelines should always be used when operating the **DCA-70SSJU2 Generator**:

GENERAL SAFETY

■ **DO NOT** operate or service this equipment before reading this entire manual.

■ This equipment should not be operated by persons under 18 years of age.

■ **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, steel-toed boots and other protective devices required by the job.

■ **NEVER** operate this equipment when not feeling well due to fatigue, illness or taking medicine.

■ **NEVER** operate this equipment under the influence or drugs or alcohol.

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

■ Manufacture does not assume responsibility for any accident due to equipment modifications.

■ Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.

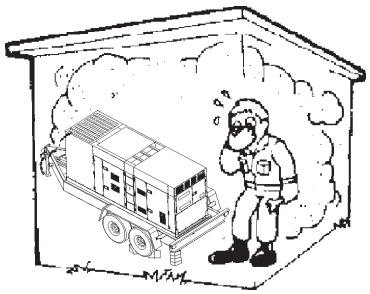
■ **ALWAYS** check the machine for loosened threads or bolts before starting.

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

■ **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing engine or generator.

■ **High Temperatures** – Allow the engine to cool before performing service and maintenance functions. Contact with ***hot!*** components can cause serious burns.

■ The engine of this generator requires an adequate free flow of cooling air. ***NEVER*** operate the generator in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause serious damage to the generator or engine and may cause injury to people. The generator engine gives off **DEADLY** carbon monoxide gas.



■ **ALWAYS** make sure generator is properly grounded.

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

■ **DO NOT** place hands or fingers inside generator engine compartment when engine is running.

■ **ALWAYS** make sure generator installation is accordance with ***national and local electrical codes***.

■ **ALWAYS** have a qualified electrician perform the generator wiring installation.

■ **NEVER** power cables or cords ***lay in wate***r.

■ **NEVER** ***stand in water*** while AC power from the generator is being transfer to a load.

■ **NEVER** use a defective or frayed power cable. Check the cable for cuts in the insulation.

■ **NEVER** use a extension cord that is frayed or damaged where the insulation has been cut.

■ **ALWAYS** make certain that proper extension cord has been selected for the job See Table 4.

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

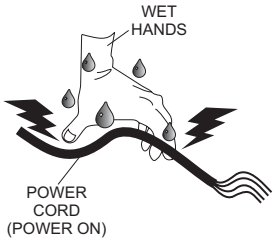
- **ALWAYS** make sure that electrical circuits are properly ***grounded*** per the ***National Electrical Code*** (NEC) and local codes before operating generator. Severe ***injury*** or ***death!*** by electrocution can result from operating an ungrounded generator.
- **ALWAYS** be sure the operator is familiar with proper safety precautions and operations techniques before using generator.
- **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.
- **ALWAYS** read, understand, and follow procedures in Operator's Manual before attempting to operate equipment.

DANGER:

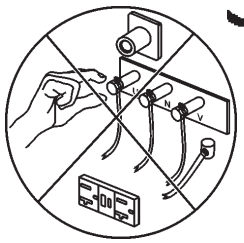
Never use damaged or worn cables when connecting equipment to the generator. Make sure power connecting cables are securely connected to the generator's output terminals, insufficient tightening of the terminal connections may cause damage to the generator and electrical shock.

DANGER:

NEVER grab or touch a live power cord with wet hands , the possibility exists of electrical shock, electrocution, and even ***death!***

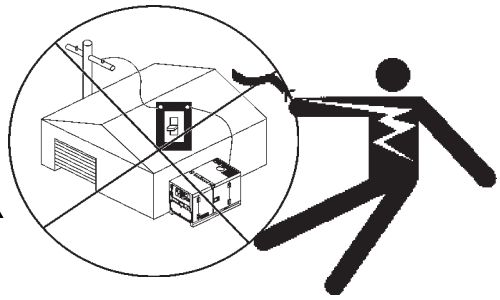


DANGER:



- **NEVER** touch output terminals during operation. This is extremely dangerous. **ALWAYS** stop the machine and place the circuit breaker in the "**OFF**" position when contact with the output terminals is required. There exists the possibility of ***electrocution, electrical shock or burn, which can cause severe bodily harm or even death***!

DANGER:



- Backfeed to a utility system can cause ***electrocution*** and or property damage. **DO NOT** connect to any building's electrical system except through an approved device or after building main switch is opened. **ALWAYS** have a licensed electrician perform the installation

CAUTION:

DO NOT touch or open any of the below mentioned components while the generator is running. Always allow sufficient time for the engine and generator to cool before performing maintenance.

Radiator

1. **Radiator Cap -** Removing the radiator cap while the engine is hot will result in high pressurized, boiling water to gush out of the radiator, causing severe scalding to any persons in the general area of the generator.
2. **Coolant Drain Plug -** Removing the coolant drain plug while the engine is hot will result in hot coolant to gush out of the coolant drain plug, therefore causing severe scalding to any persons in the general area of the generator.
3. **Engine Oil Drain Plug -** Removing the engine oil drain plug while the engine is hot will result in hot oil to gush out of the oil drain plug, therefore causing severe scalding to any persons in the general area of the generator.

Maintenance Safety

- **NEVER** lubricate components or attempt service on a running machine.
- **ALWAYS** allow the machine a proper amount of time to cool before servicing.

- Keep the machinery in proper running condition.
- Fix damage to the machine immediately and always replace broken parts.

- **NEVER** Run engine without air filter. Severe engine damage may occur.
- **ALWAYS**service air cleaner frequently to prevent engine malfunction.
- **ALWAYS** disconnect the ***negative*** *battery terminal* before performing service on the generator.
- **ALWAYS** be sure the operator is familiar with proper safety precautions when operating the generator set.
- **ALWAYS** store equipment properly when not in use.
- **DO NOT** leave the generator running in the ***manual mode*** unattended.
- **DO NOT** allow unauthorized people to operate this equipment.
- **ALWAYS** read, understand, and follow procedures in Operator's Manual before attempting to operate equipment.
- Refer to the ***John Deere Engine Owner's Manual*** for engine technical questions or information.

DANGER:

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.

Generator Grounding

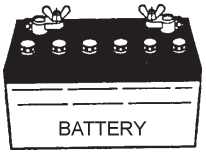
To guard against electrical shock and possible damage to the equipment, it is important to provide a good **EARTH** ground.

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.

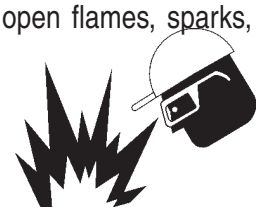
ALWAYS be sure to use the ground terminal (green wire) when connecting a load to the UVWO output terminals.

Battery

The battery contains acids that can cause injury to the eyes and skin. To avoid eye irritation, ***always*** wear safety glasses. Use well insulated gloves when picking up the battery. Use the following guidelines when handling the battery:



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

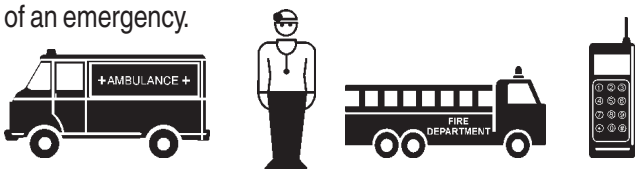


3. **ALWAYS** keep the battery charged. If the battery is not charged a buildup of combustible gas will occur.
4. **ALWAYS** keep battery charging and cables in good working condition. Repair or replace all worn cables.
5. **ALWAYS** recharge the battery in an vented air environment, to avoid risk of a dangerous concentration of combustible gases.
6. In case the battery liquid (dilute sulfuric acid) comes in contact with ***clothing or skin***, rinse skin or clothing immediately with plenty of water.
7. In case the battery liquid (dilute sulfuric acid) comes in contact with your **eyes**, rinse eyes immediately with plenty of water, then contact the nearest doctor or hospital, and seek medical attention.

Emergencies

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

- In emergencies ***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.



NOTE PAGE

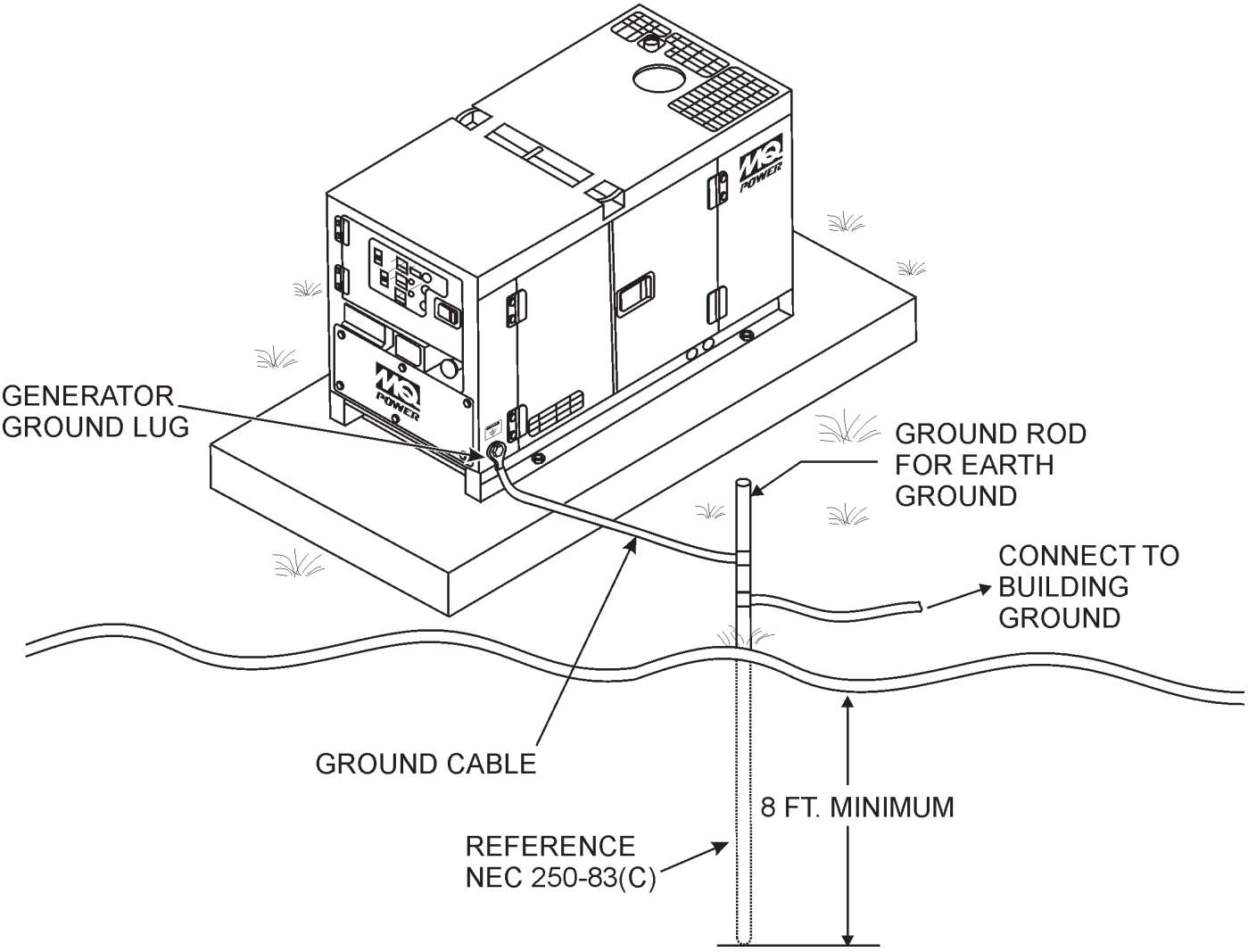


Figure 2. Typical Generator Grounding Application

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.

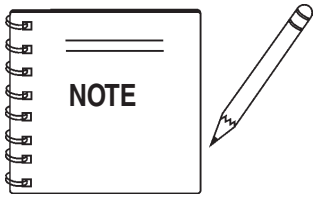
Generator Grounding

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

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.

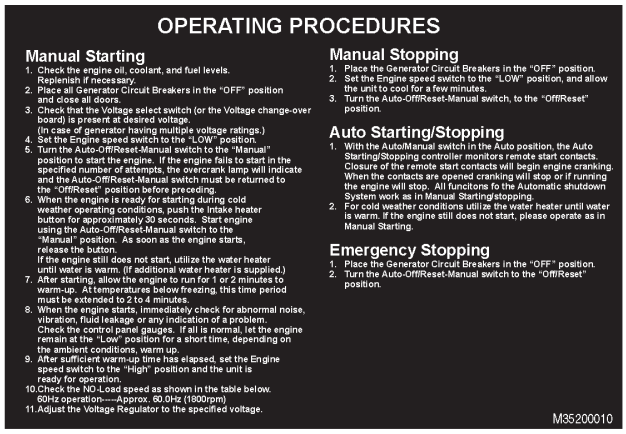
NEC articles 250-64(b) and 250-66 set the following grounding requirements:

1. Use one of the following wire types to connect the generator to earth ground.
   a. Copper - 10 AWG (5.3 mm^2) or larger.
   b. Aluminum - 8 AWG (8.4 mm^2) or larger.
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 aminimum of 8 ft. into the ground.



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

The DCA-70SSJU2 generator is equipped with a number of safety decals. These decals are provided for operator safety and maintenance information. The illustration below and on the preceding page show the decals as they appear on the machine. Should any of these decals become unreadable, replacements can be obtained from your dealer.



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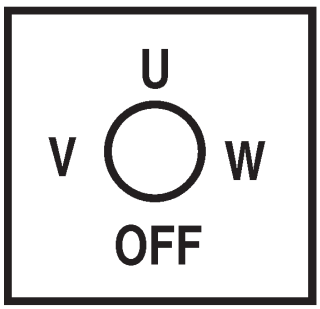

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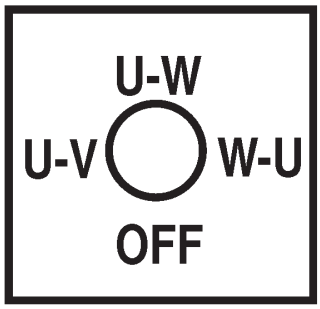

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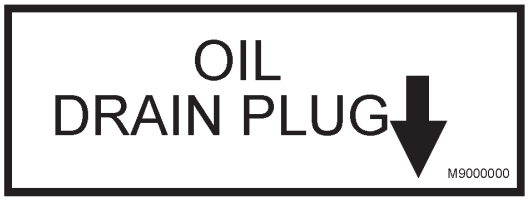

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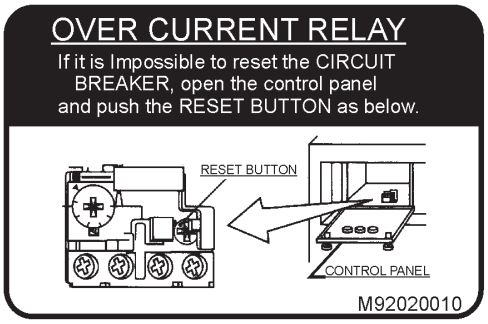

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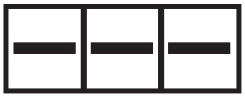

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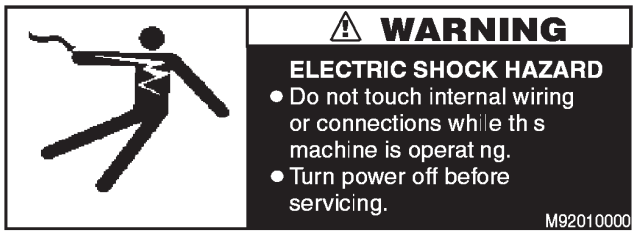

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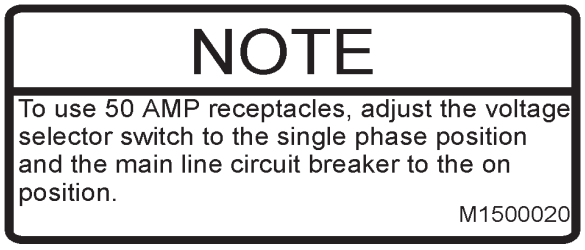

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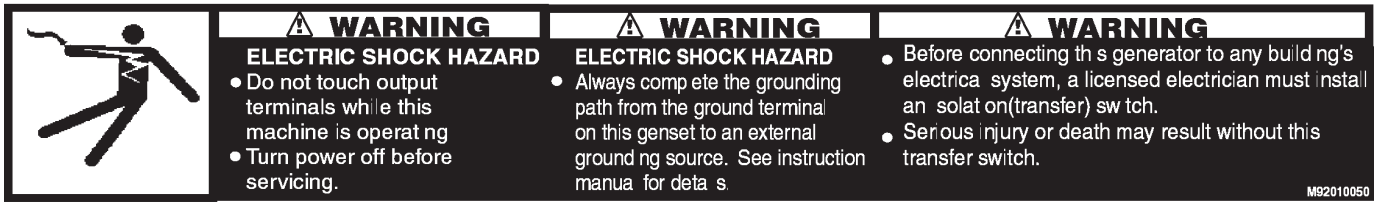

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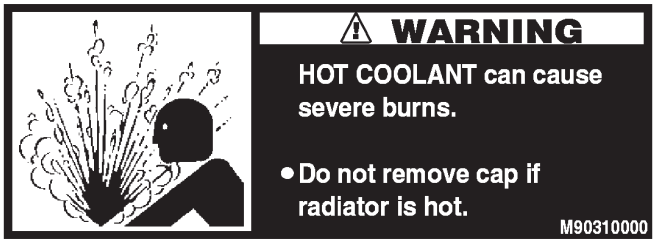

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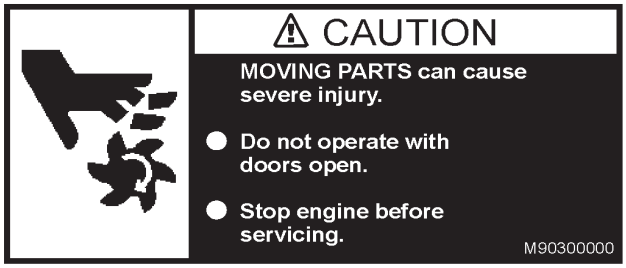

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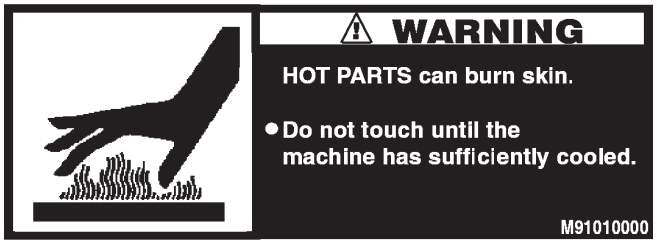

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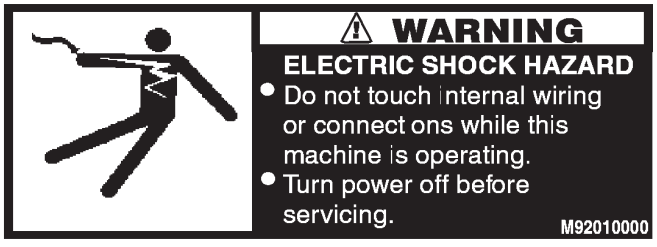

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DCA-70SSJU2 Famliarization

Generator

The MQ Power Model DCA-70SSJU2 is a 26 kW ***generator*** (Figure 3) that 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.

Engine Operating Panel

The "Engine Operating Panel" is provided with the following:

- Tachometer
- Water Temperature Gauge
- Oil Pressure Gauge
- Charging Ammeter Gauge
- Engine Speed Switch
- Cold Starting Button
- Panel Light
- Panel Light Switch
- Auto ON/OFF Engine Controller

Generator Control Panel

The "Generator Control Panel" is provided with the following:

- Output Voltage Adjustment Knob
- Frequency Meter (Hz)
- AC Ammeter (Amps)
- AC Voltmeter (Volts)
- Ammeter Change-Over Switch
- Voltmeter Change-Over Switch
- Voltage Regulator
- Over-Current Relay

Output Terminal Panel

The "Output Terminal Panel" is provided with the following:

- Three 250 VAC output receptacles (CS-6369), 50 amps
- Three auxilliary circuit breakers, 250V @ 50 amps
- Two 125 VAC output receptacles, (GFCI), 20 amps
- Two GFCI circuit breakers, 120V @ 20amps
- Five output terminal lugs (3Ø power)

Control Box

The "Control Box" is provided with the following:

- 3-Pole, 250 VAC, 175 amp Main Circuit Breaker
- Automatic Voltage Regulator
- Current Transformer
- Emergency Relay

Open Delta Excitation System

The DCA-70SSJU2 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 ot 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

The **DCA-70SSJU2** is powered by a 4 cycle, water cooled, turbocharged JOHN DEERE Model 4045TF150 ***diesel*** engine. This engine is designed to meet every performance requirement for the generator. Reference Table 1 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.

Mechanical Governor System

The mechanical governor system control the RPM of the engine. When the engine demands increase or decrease, the mechanical governor system regulates the frequency variation to ±.5%. The electronic governor option increases frequency variation to ±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 4) as a guide for selecting proper extension cable size.

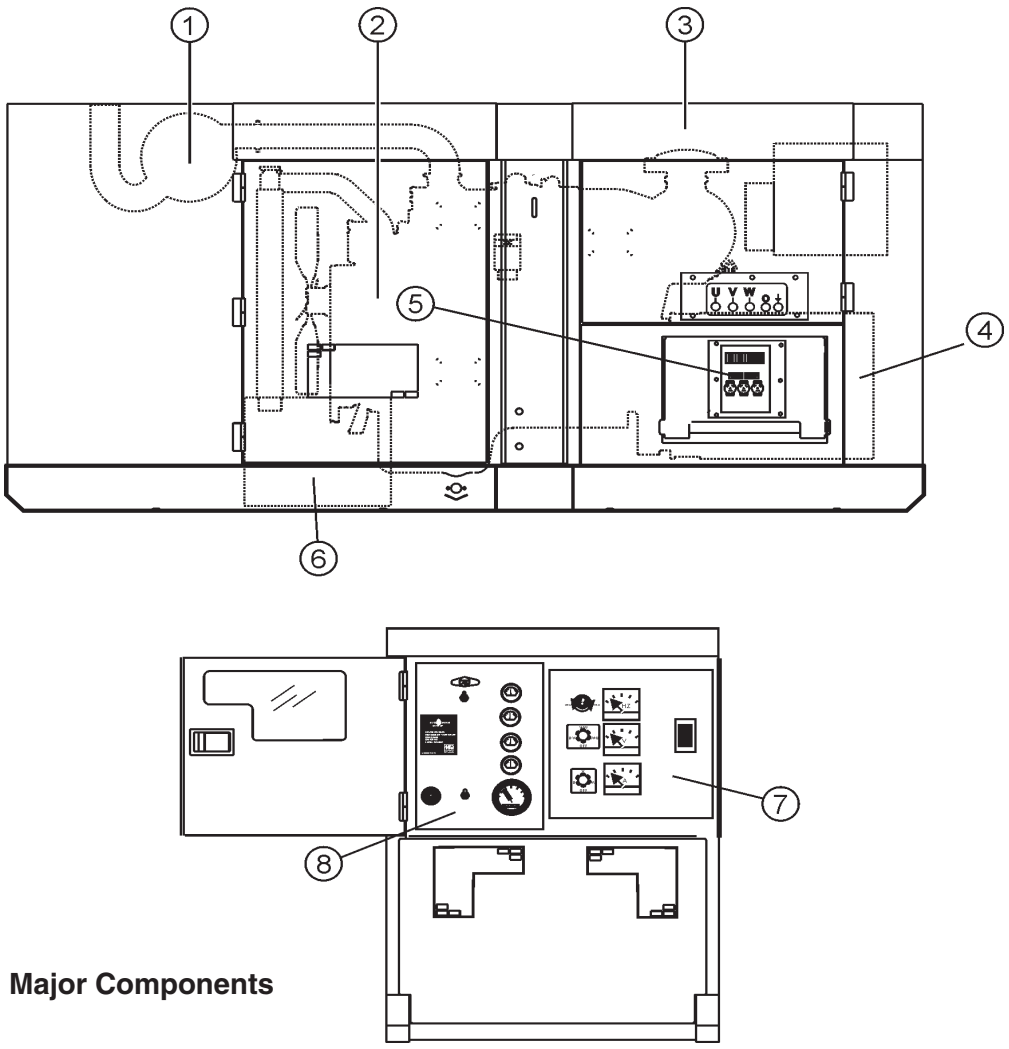


Figure 3. Major Components

Table 2. Generator Major Components	
ITEM NO.	**DESCRIPTION**
1	Muffler Assembly
2	Engine Assembly
3	Enclosure Assembly
4	Generator Assembly
5	Output Terminal Assembly
6	Battery Assembly
7	Generator Control Panel Assembly
8	Engine Operating Panel Assembly

NOTE PAGE

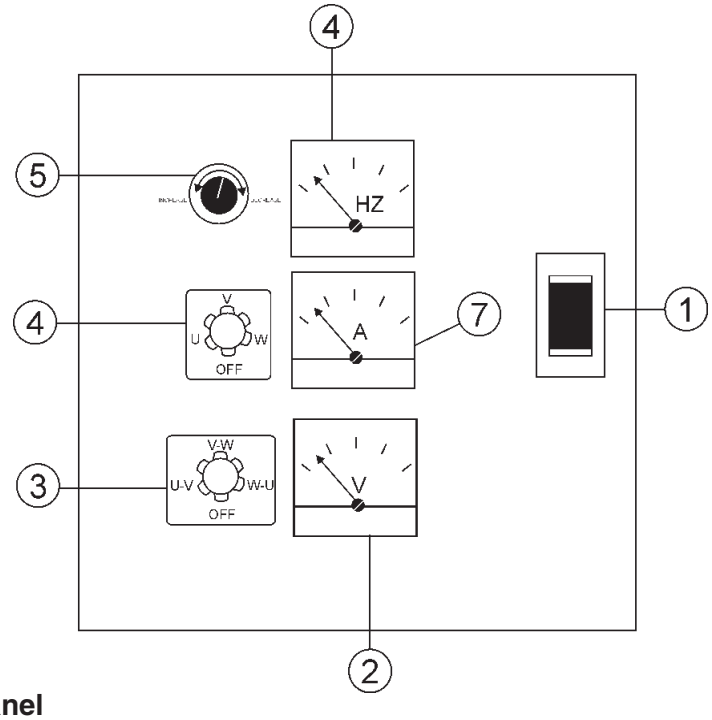


Figure 4. Generator Control Panel

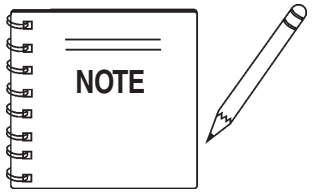
The definitions below describe the controls and functions of the DCA-70SSJU2 "***Generator Control Panel***" (Figure 4).

1. **Main Circuit Breaker –** This three-pole, 175 amp main breaker is provided to protect the **UVWO** output terminals from overload.
2. **AC Ammeter –** Indicates the amount of current the load is drawing from the generator per leg selected by the ammeter phase-selector switch.
3. **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.
4. **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.
5. **Voltage Regulator Control –** Allows ±15% manual adjustment of the generator's output voltage.
6. **Frequency Meter –** Indicates the output frequency in hertz (Hz). Normally 60 Hz ±1 Hz .
7. **AC Voltmeter –** Indicates the output voltage present at the **UVWO** terminals.

Located behind the generator control panel is the ***Generator Control Box***. This box contains some of the necessary electronic components required to make the genertator function.

The "**Control Box**" is equipped with the following major components:

- Over-Current Relay
- Voltage Rectifer
- Starter Relay
- Engine Controller (Computer Controlled)
- Current Transformer
- Voltage Selector Switch



Remember the ***overcurrent relay*** monitors the current flowing from the **UWVO** output terminals to the load.

In the event of a short circuit or over current condition, it will automatically trip the main 250 amp breaker.

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

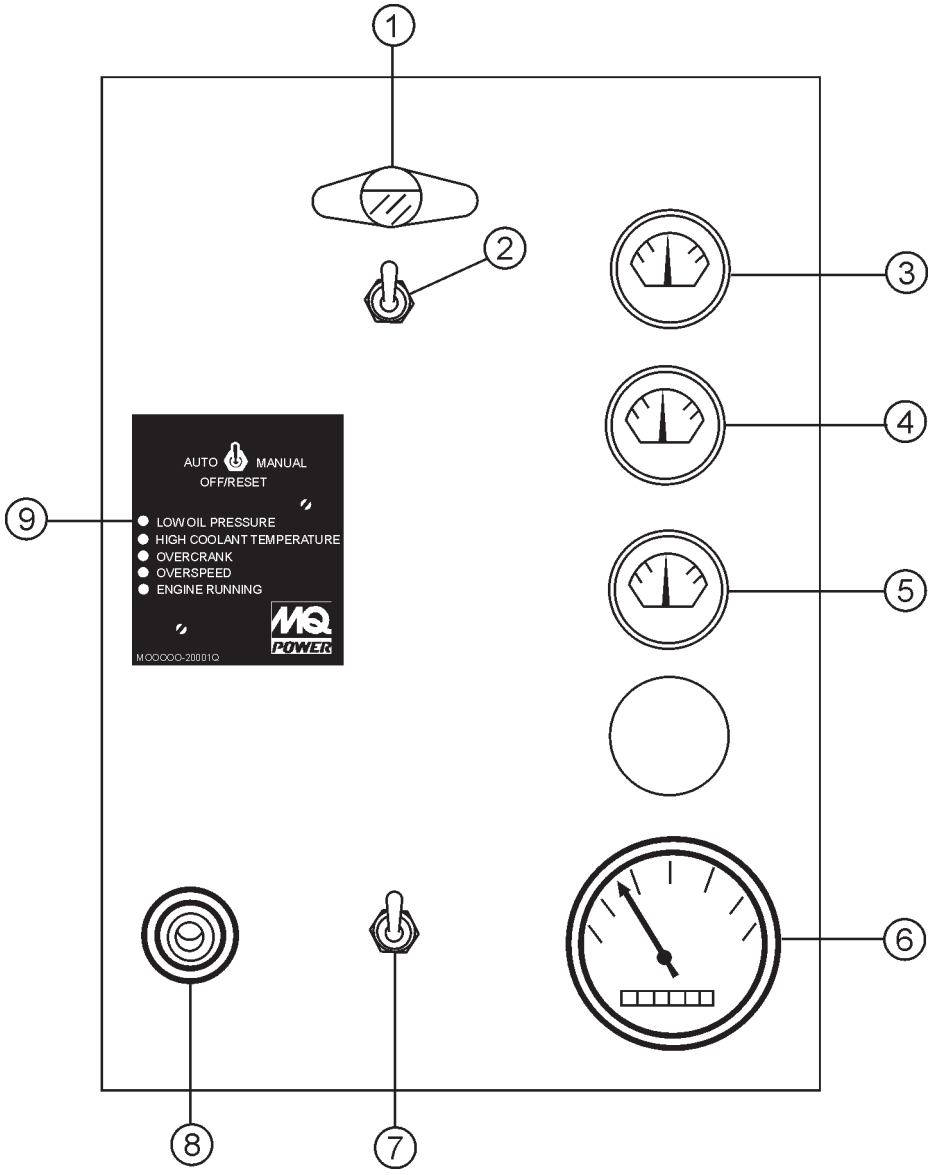


Figure 5. Engine Operating Panel

The definitions below describe the controls and functions of the DCA-70SSJU2 "***Engine Operating Panel***" (Figure 5).

1. **Panel Light –** Normally used in dark areas or at night time. When activated, panel lights will illuminate. When the generator is not in use be sure to turn the panel light switch to the **OFF** position.
2. **Panel Light Switch –** When activated will turn on control panel light.
3. **Oil Pressure Gauge –** During normal operation this gauge be should read between 42 to 71 psi. When starting the generator the oil pressure mar read a little bit higher, but after the engine warms up the oil pressure should return to the green zone.
4. **Water Temperature Gauge –** During normal operation this gauge be should read between 165° and 203°F.
5. **Charging Ammeter Gauge –** Indicates the current being supplied by the engine's alternator which provides current for generator's control circuits and battery charging system.
6. **Tachometer –** Indicates engine speed in RPM's for 60 Hz operation. This meter should indicate 1800 RPM's when the rated load is applied. In addition a built in hour meter will record the number of operational hours that the generator has been in use.
7. **Engine Speed Switch -** This switch controls the speed of the engine (low or high).
8. **Cold Starting Button –** Used to warm the engine glow plugs in cold weather conditions. Press and hold the engine cold starting button until the button illuminates.

COLD STARTING BUTTON

9. **Auto On/Off Engine Controller –** This controller as a vertical row of status LED's (inset), that when lit, indicate that an engine malfunction (fault), has been detected. When a fault has been detected the engine controller will evaluate the fault. Any major fault will shutdown the generator.

During ***cranking cycle***, The MPEC will attempt to crank the engine for 10 seconds before disengaging. If the engine does not engage (start) by the third attempt, the engine will be shutdown by the engine controller's " Over Crank Protection" mode. If the engine engages at a speed (RPM's) that is not safe, the controller will shutdown the engine by initializing the "***Over Speed Protection***" mode.

Also the engine controller will shutdown the generator in the event of low oil pressure, high coolant temperature, low coolant level, and loss of magnetic pickup. These conditions can be observed by monitoring the **LED** status indicators on the front of the controller module.

A. **Off/Manual/Auto Switch –** This switch controls the running of the generator. If this switch is left in the "**OFF**" position, the generator will not run. When this switch is set to the ***manual*** position, the generator will start immediately.

   If the generator is to be connected to a building's AC power source via a transfer switch (isolation), place the switch in the ***auto*** position. In this position the generator will monitor the AC line output from the building's power source.

B. **Low Oil Pressure –** Indicates the engine pressure has fallen below 15 psi. The oil pressure is detected using variable resistive values from the oil pressure sending unit. This is considered a ***major*** fault.

C. **High Coolant Temperature –** Indicates the engine temperature has exceeded 215° F. The engine temperature is detected using variable resistive values from the temperature sending unit. This is considered a ***major*** fault.

D. **Overcrank Shutdown –** Indicates the unit has attempted to start a pre- programmed number of times, and has failed to start. The number of cycles and duration are programmable. It is pre-set at 3 cycles with a 10 second duration. This is considered a ***major*** fault.

E. **Overspeed Shutdown –** Indicates the engine is running at an unsafe speed. This is considered a ***major*** fault.

F. **Engine Running –** Indicates that engine is running at a safe operating speed.

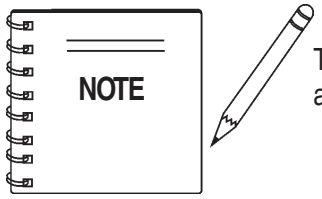
Output Terminal Familiarization

The "***Output Terminal Panel***" (Figure 6) is provided with the following:

- Three (3) 240V output receptacles, 50 amp
- Three (3) Circuit Breakers 240V @50 amps
- Two (2) 120V GFCI receptacles, 20 amp
- Two (2) GFCI Circuit Breakers 120V@ 20 amps
- One Main Circuit Breaker 250V @175 amps
- Five (5) Output Terminal Lugs

Output Terminal Panel

The ***Output Terminal Panel*** (Figure 6) shown below is located on the right-hand side (left from control panel) of the generator. Lift up on the cover to gain access to receptacles and terminal lugs.



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

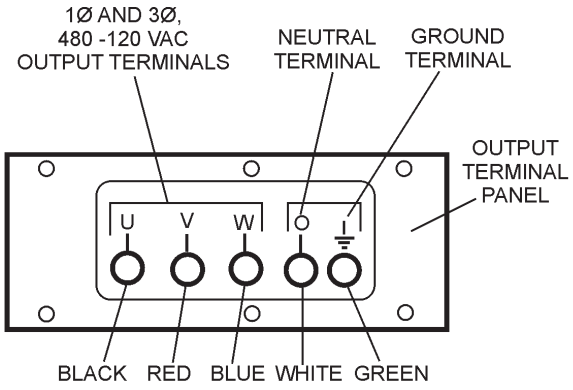
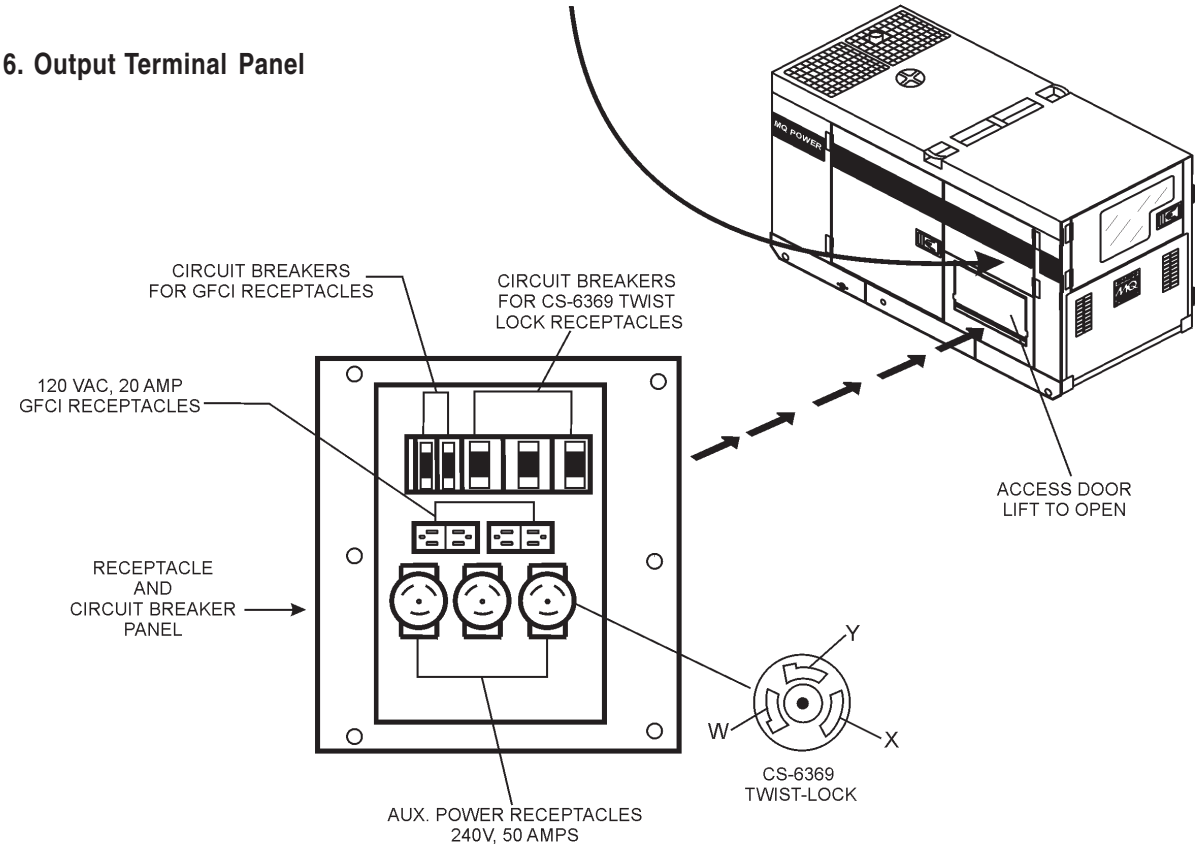


Figure 6. Output Terminal Panel



120 VAC GFCI Receptacles

There are two 120 VAC, 20 amp GFCI (Duplex Nema 5-20R) recepacles 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 UVWO terminals.

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.

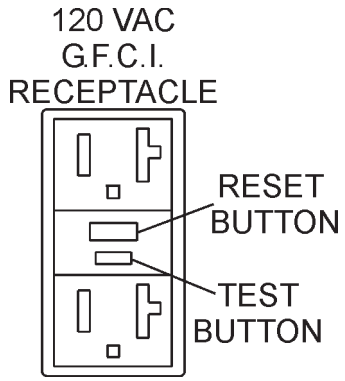


Figure 7. G.F.C.I. Receptacle

Twist Lock Dual Voltage 120/240 VAC Receptacles

There are three 240 VAC, 50 amp auxilliary twist-lock (CS-6369) recepacles (Figure 8) provided on the output terminal panel. These receptacles can ***only*** be accessed when the voltage selector switch is placed in the ***single-phase 240/ 120 position.***

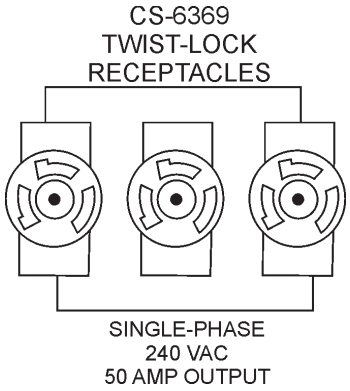


Figure 8. 240 VAC Twist-Lock Auxiliary Receptacles

Each auxilliary 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 UVWO terminals.

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

Removing the Plastic Face Plate (UVWO Terminals)

The UVWO terminal lugs are protected by a plastic face plate cover (Figure 10). Un-lock the locking latch, and lift the terminal cover to gain access to the plastic face plate. Remove the screws securing the face plate to the terminal enclosure, then lift the plastic hinged face plate.

After the load wires have been securely attached to the UVWO terminals, reinstall the plastic face plate. Place the terminal cover in the down position and secure the locking latch.

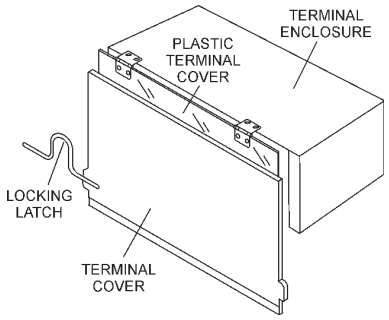


Figure 10. Plastic Face Plate (UVWO Terminals)

Connecting Loads

Loads can be connected to the generator by the **UVWO** terminal lugs or the convienience receptacles. (See Figure 11). Make sure to read the operation manual before attempting to connect a load to the generator.

To protect the UVWO output terminals from overload, a 3-pole, 175 amp, ***main*** circuit breaker is provided. Make sure to switch ***ALL*** circuit breakers to the "**OFF**" position prior to starting the engine.

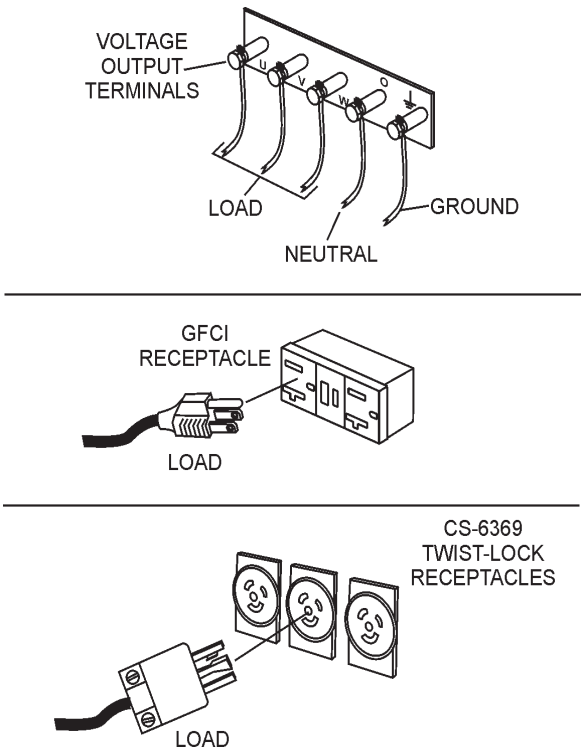


Figure 11. Connecting Loads

Over Current Relay

An ***over current relay*** (Figure 12) 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.

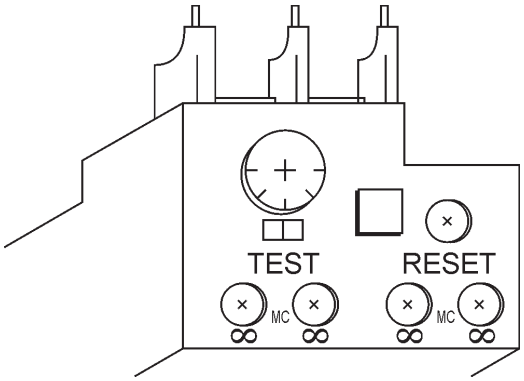
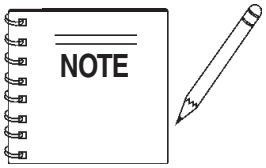


Figure 12. Over Current Relay

Single Phase Load

Always be sure to check the nameplate on the generator and equipment to insure the wattage, amperage and frequency 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.



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

WATTS = VOLTAGE x AMPERAGE

The power factor of this generator is 0.8. See Table 3 below when connecting loads.

Table 3. 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

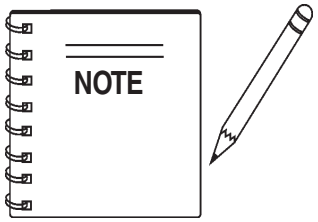
Table 4. Cable Selection (60 Hz, Single Phase Operation)

Current in Amperes	Load In Watts		Maximum Allowable Cable Length			
	At 120 Volts	At 240 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:

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



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

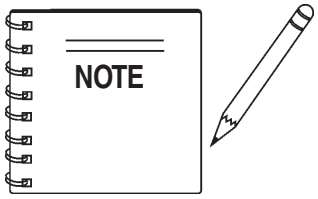
An inadequate size connecting cable which cannot carry the required load can cause a voltage drop which can burn out the appliance or tool and overheat the cable. See Table 4.

- 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.

CAUTION:

Before connecting this generator to any building's electrical system, a ***licensed electrician*** must install an ***isolation (transfer) switch***. Serious injury or death may result without this transfer switch.



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

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 15). To obtain some of the voltages as listed in Table 5 (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 13) is located above the UVWO Hard Wire Hook-up Panel. It has been provided for ease of voltage selection.

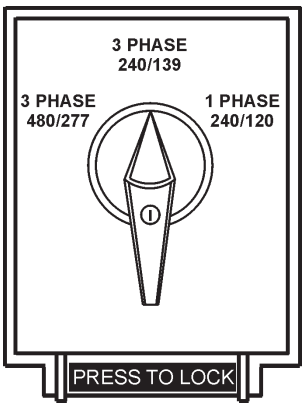


Figure 13. Voltage Selector Switch

Voltage Selector Switch Locking Button

The voltage selector switch has a locking button to protect the generator and load from being switched while the engine is running. To lock the voltage selector switch, ***press*** and ***hold*** the ***red button*** located at the bottom of the switch.

CAUTION:

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

Generator Amperage

Tables 6 and 7 describe the generator's current output capability for both 1Ø-phase and 3Ø phase applications.

Table 6. Generator Ampere Ratings — 1Ø

kW	240V	120V
20	83	166
25	104	208
30	225	250
35	145	291
40	166	333
45	187	375
50	208	417
60 (Max)	250	500

Table 7. Generator Ampere Ratings — 3Ø

kW	208V	240V	480V
20	59	60	30
25	87	75	38
30	104	90	45
35	121	105	53
40	139	120	60
45	156	136	68
50	174	152	76
60	208	181	99

Table 5. Voltages Available

Three Phase (Switchable)	**208 VOLT**	**220 VOLT**	**240 VOLT**	**416 VOLT**	**440 VOLT**	**480 VOLT**
Single Phase (Switchable)	**120 VOLT**	**127 VOLT**	**139 VOLT**	**240 VOLT**	**254 VOLT**	**277 VOLT**

GFCI Receptacle Load Capability

The load capability of the GFCI receptacles is directly related to the voltage being supplied at either the UVWO terminals or the 3 twist lock auxilliary receptacles.

Tables 8 and 9 show what amount of current is available at the GFCI receptacles when the UVWO terminals and twist lock receptacles are in use. Be careful that your load does not to exceed the available current capability at the receptacles.

Table 8. GFCI Receptacle Load Capability

KVA in Use (UVWO Terminals)	Available Load Current (AMPS)
3Ø 240/480V	GFCI Duplex NEMA 5-20R 120V
82	0
77.8	5 amps per receptacle
73.7	10 amps per receptacle
69.5	15 amps per receptacle
65.4	20 amps per receptacle

Table 9. GFCI Receptacle Load Capability

KW in Use Twist-Lock (CS6369)	Available Load Current (AMPS)
1Ø 240/120V	GFCI Duplex NEMA 5-20R 120V
60	0
58.8	5 amps per receptacle
57.6	10 amps per receptacle
56.4	15 amps per receptacle
55.2	20 amps per receptacle

How to Read the Output Terminal Gauge.

The gauge and selector switch on the control panel **DO NOT** effect the generator output. They are provided to help observe how much power is being supplied, produced at the UVWO terminals lugs.

When the Voltage selector switch is in the 3Ø,240/139V position (See Figure 14), place the ***AC Voltmeter Change-Over Switch*** (Figure 15) to the W-U position and the ***AC Ammeter Change-Over Switch*** (Figure 17) to the U or W position to read the output on the selected leg.

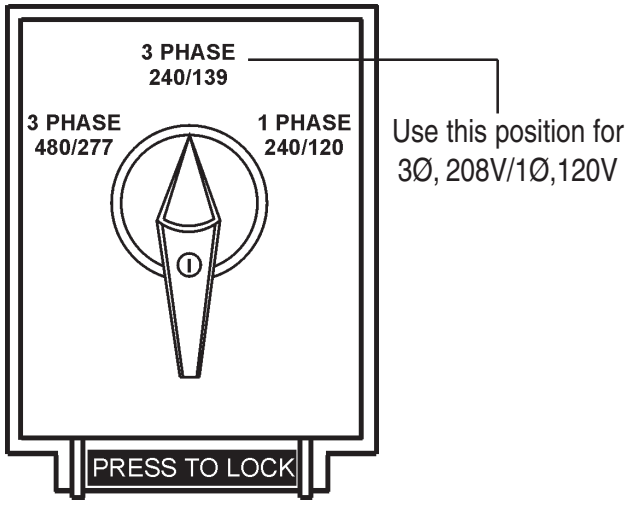


Figure 14. Voltage Selector Switch 240/139V Three Phase Position (for 3Ø, 208V, 120V voltage)

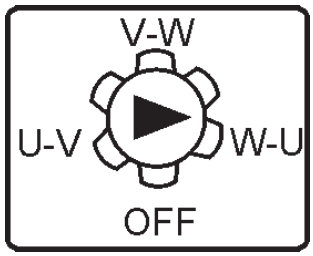


Figure 15. AC Voltmeter Change-Over Switch

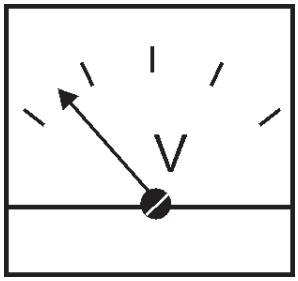


Figure 16. AC Voltmeter Gauge (Volt reading on W-U Lug)

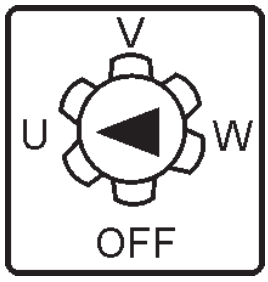


Figure 17. AC Ammeter Change-Over Switch

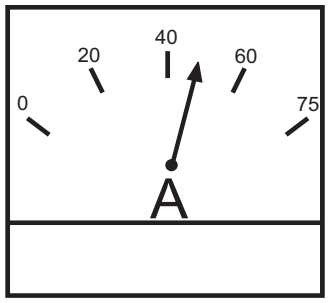
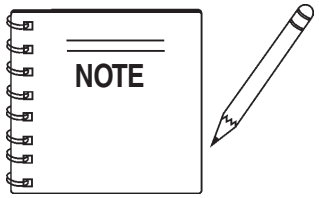


Figure 18. AC Ammeter (Amp reading on U lug)



The ***ammeter*** and ***voltmeter*** gauges are only active when the UVWO terminals are in use.

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 240/139 UVWO Terminal Output Voltages

1. Place the voltage selector switch in the 3Ø 240/139 position as shown in Figure 19.

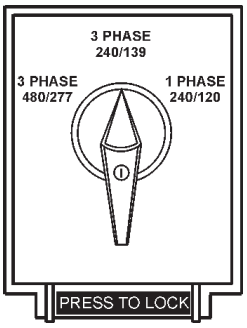


Figure 19. Voltage Selector Switch 240/139V Three-Phase Position

2. Connect the load wires to the UVWO terminals as shown in Figure 20.

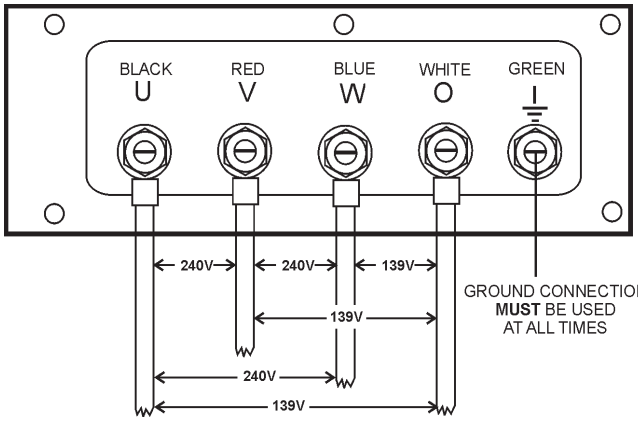


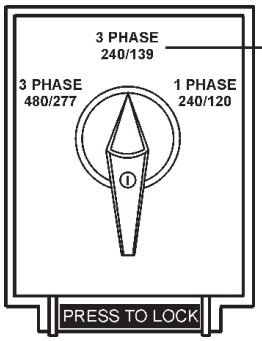
Figure 20. UVWO Terminal Lugs 240/139V Three Phase Connections

3. Turn the voltage regulator knob (Figure 21) clockwise to increase voltage output, turn counterclockwise to decrease voltage output.

Figure 21. Voltage Regulator Knob (3Ø-139V/240V)

3Ø 208V/1Ø120V UVWO Terminal Output Voltages

1. Place the voltage selector switch in the 3Ø 240/139 position as shown in Figure 22.



Use this position for 3Ø-208 or 1Ø120V.

Figure 22. Voltage Selector Switch 3Ø-208V/1Ø-120V Three-Phase Position

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

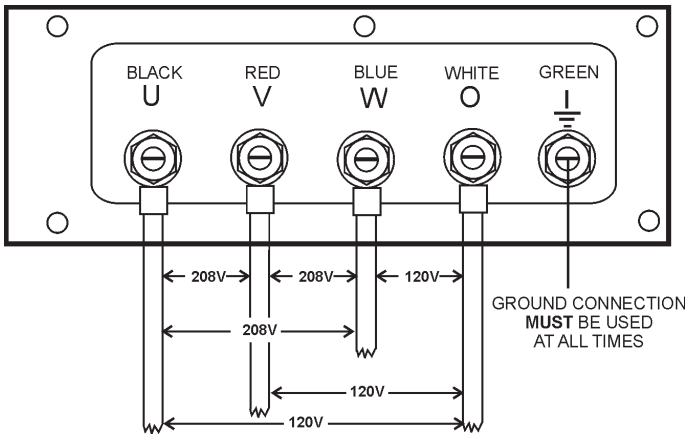
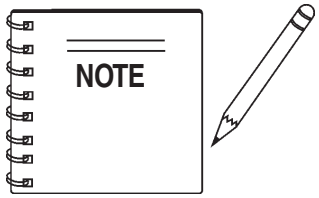


Figure 23. UVWO Terminal Lugs 3Ø-208V/120V Connections

3. Turn the voltage regulator knob (Figure 24) clockwise to increase voltage output, turn counterclockwise to decrease voltage output.

Figure 24. Voltage Regulator Knob (3Ø-208V)



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.

3Ø 480/277 UVWO Terminal Output Voltages

1. Place the voltage selector switch in the 3Ø 480/277 position as shown in Figure 25.

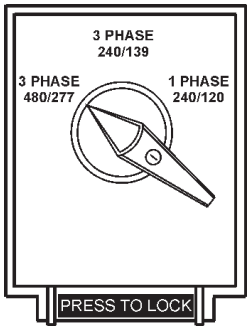


Figure 25. Voltage Selector Switch 480/277V Three-Phase Position

2. Connect the load wires to the UVWO terminals as shown in Figure 26.

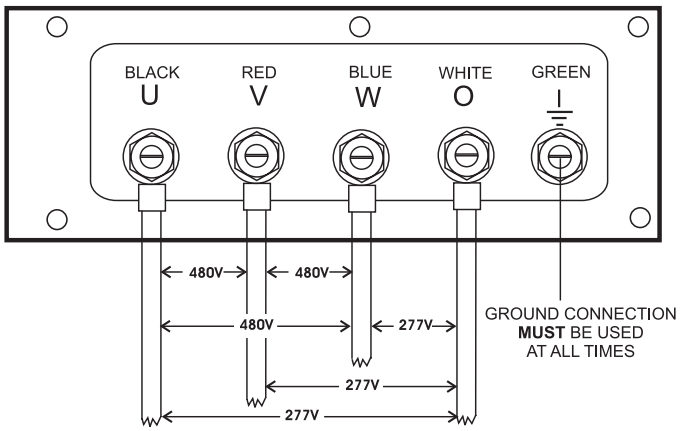


Figure 26. UVWO Terminal Lugs 480/277V Three Phase Connections

3. Turn the voltage regulator knob (Figure 27) clockwise to increase voltage output, turn counterclockwise to decrease voltage output.

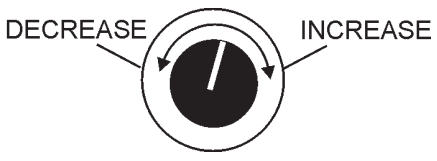


Figure 27. Voltage Regulator Knob (3Ø-480V/277V)

1Ø 240V/120V UVWO Terminal Output Voltages

1. Place the voltage selector switch in the 1Ø 240/120 position as shown in Figure 28.

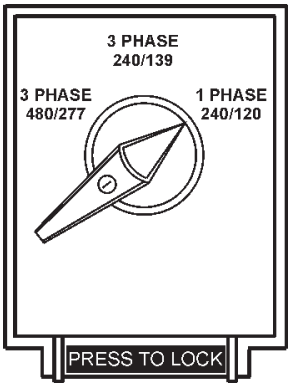


Figure 28. Voltage Selector Switch 240/120V Single-Phase Position

2. Connect the load wires to the UVWO terminals as shown in Figure 29.

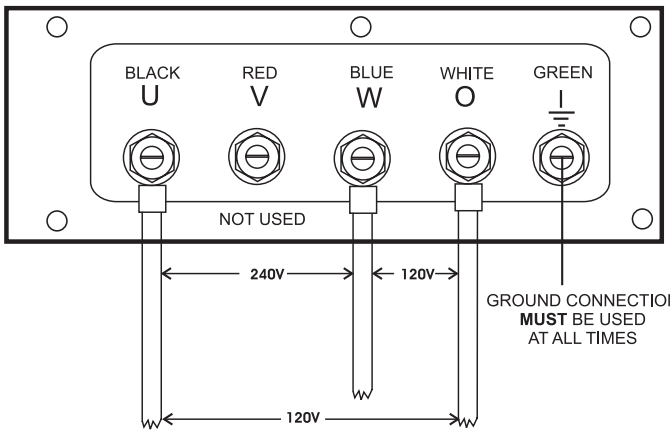


Figure 29. UVWO Terminal Lugs 1Ø-240V/120V Connections

3. Turn the voltage regulator knob (Figure 30) clockwise to increase voltage output, turn counterclockwise to decrease voltage output.

Figure 30. Voltage Regulator Knob (1Ø-240/120V)

Circuit Breakers

To protect the generator from an overload, a 3-pole, 110 amp, ***main*** circuit breaker is provided to protect the UVW 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 switch ***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 31) on the dipstick. See Table 10 for proper selection of engine oil.

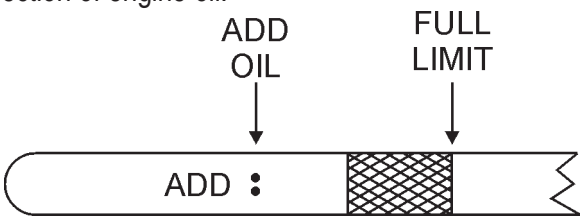


Figure 31. Engine Oil Dipstick

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 Engine Owner's Manual.** Oil should be warm before draining.

Other types of motor oils may be substituted if they meet the following requirements:

- API Service Classification CH-4
- API Service Classification CG-4
- API Service Classification CF-4
- ACEA Specification E3
- ACEA Specification E2

Table 10. Recommended Motor Oil

Temperature Range	Type Oil
77°F and greater (25°C and greater)	SAE15W-40 or SAE40
32°F to 77°F (0°C to 25°C)	SAE 10W-30 or SAE30
-22°F to -32°F (-30°C0°C)	SAE10W-30 or SAE10

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

The DCA70SSJU2 generator (FEMA) is equipped with a ***skid mounted*** fuel tank (Figure 32). The skid type fuel system does not use the internal generator fuel tank.

ALWAYS fill the fuel tank with clean and fresh ***#2 diesel fuel.*** **DO NOT** fill the fuel tank 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.

WARNING:

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

Refueling Procedure:

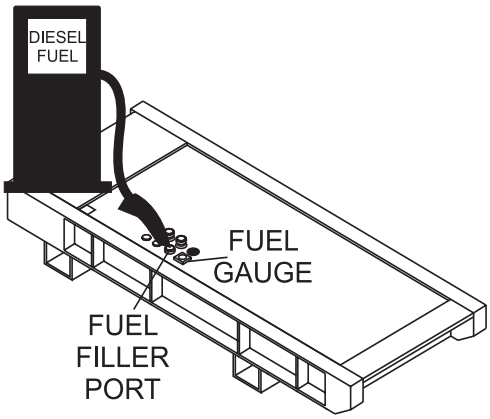
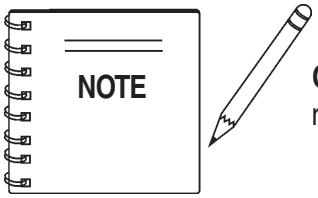


Figure 32. Skid Type Fuel Tank System

DANGER:

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.



ONLY! use ***#2 diesel fuel*** when refueling.

WARNING:

DO NOT OVER-FILL fuel system. Leave room for fuel expansion. Fuel expands when heated.

Coolant (Ethylane Glycol [Green] / Water — 50/50 mix)

Use only drinkable tap water. If hard water or water with many impurities is used, the inside of the engine and radiator may become coated with deposits and cooling efficiency will be reduced.

An anticorrosion additive added to the water will help prevent deposits and corrosion in the cooling system. See the engine manual for further details.

CAUTION:

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.

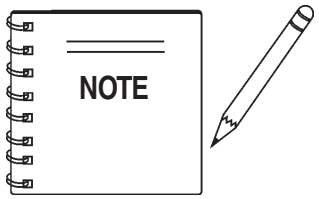
Day-to-day addition of coolant is done from the recovery tank. When adding coolant to the radiator, **DO NOT** remove the radiator cap until the unit has completely cooled. See Table 11 for engine, radiator, and recovery tank coolant capacities. Make sure the coolant level in the recovery tank is always between the "**H**" and the "**L**" markings.

Table 11. Coolant Capacity	
Engine and Radiator	6.9 Gal. (26 liters)
Reserve Tank	2 Quarts (1.9 liters)

Operation Freezing Weather

When operating in freezing weather, be certain the proper amount of antifreeze (Table 12) has been added.

Table 12. Anti-Freeze Operating Temperatures				
Vol % Anti-Freeze	Freezing Point		Boiling Point	
	°C	°F	°C	°F
40	-24	-12	106	222
50	-37	-34	108	226



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 it in accordance with the **Isusu 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.

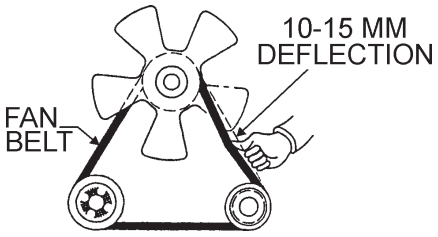


Figure 33. Fan Belt Tension

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.

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.

CAUTION:

ALWAYS disconnect the negative terminal **FIRST** and reconnect negative terminal **LAST**.

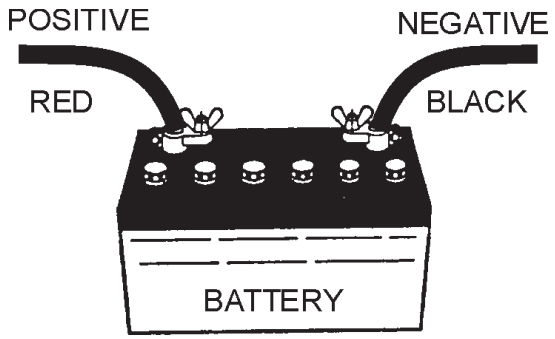


Figure 34. Battery Connections

When connecting battery do the following:

1. **NEVER** connect the battery cables to the battery terminals when the ***ignition*** switch is in either the **Pre-Heat, RUN, or START** position. **ALWAYS** make sure that the ignition switch is in the **STOP** 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.

NOTE

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 will damage windings (corrosion) causing an alternator failure.

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

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.

WARNING:

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

Before Starting

Generator and Control Panel

CAUTION:

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

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

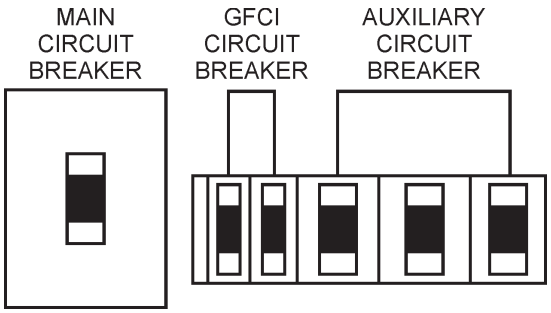


Figure 35. Main, Aux. and GFCI Circuit Breakers

2. Connect the load to the ***UVWO*** terminals or ***auxiliary receptacles*** as shown in Figure 36. These load connection points can be found on the output terminal panel. To gain access to the UVWO terminals or other power receptacles, unlock the access cover and lift the door.

   The UVWO terminals are protected by a plastic cover, remove this cover to gain access to the terminals. Tighten terminal nuts securely to prevent load wires from slipping out.

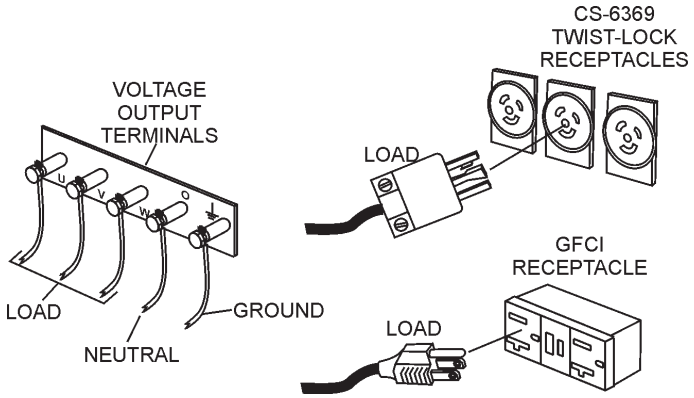


Figure 36. Load Connections

3. Close all engine enclosure doors (Figure 37).

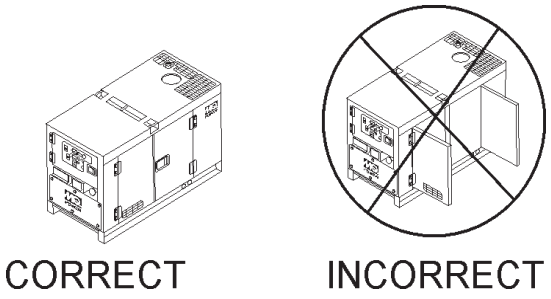


Figure 37. Engine Enclosure Doors

4. When starting the generator in **COLD** weather conditions, press and hold the engine cold starting button (Figure 38).

Figure 38. Engine Pre-Heat Button

5. Place the voltage selector switch in the desired voltage position (Figure 39).

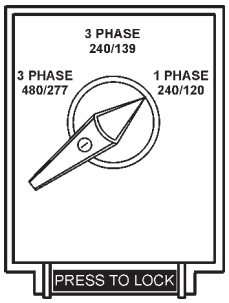


Figure 39. Voltage Selector Switch

6. Set engine speed switch to "**LOW** " (Figure 40).

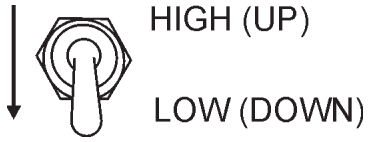


Figure 40. Engine Speed Switch (Low)

7. Place the Auto-Off/Reset-Manual switch in the "**MANUAL**" position to start the engine (Figure 41). Once the engine starts, let the engine run for 1-2 minutes. Listen for any abnormal noises.

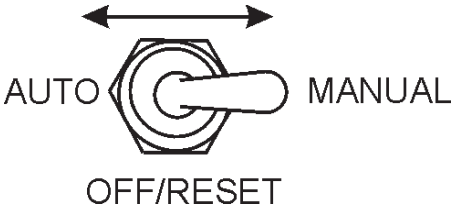


Figure 41. Auto-Off/Reset-Manual Switch

8. Once the engine is warm and the engine is running properly, set the engine speed switch to "**HIGH** " (Figure 42).

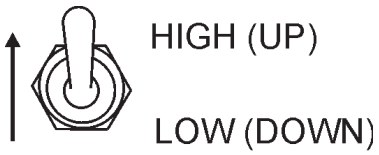


Figure 42. Engine Speed Switch (High)

9. Verify that the "**Engine Running**" status LED on the MPEC unit (Figure 43) is "**ON**" (lit) after the engine has been started.

Figure 43. Engine Running LED (ON)

10. The generator's frequency meter (Figure 44) displays the 60 cycle output frequency in **HERTZ**.

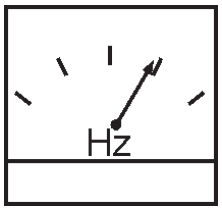


Figure 44. Frequency Meter (Hz)

11. The generator's voltage meter (Figure 45) displays the 120 VAC in **VOLTS**. If the voltage is not within the specified frequency tolerance,

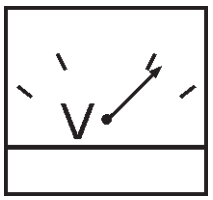


Figure 45. Voltmeter

12. Use the voltage adjustment control knob (Figure 46) to increase or decrease the desired voltage.

Figure 46. Voltage Adjust Control Knob

13. The ammeter (Figure 47) will indicate zero amps with no load applied. When a load is applied, this meter will indicate the amount of current that the load is drawing from the generator.

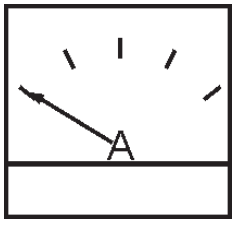


Figure 47. Ammeter (No Load)

14. The engine oil pressure gauge (Figure 48) will indicate the oil pressure (kg/ cm^2) of the engine. Under normal operating conditions the oil pressure is approximately

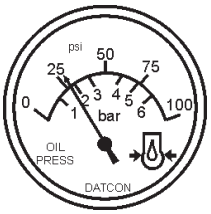


Figure 48. Oil Pressure Gauge

15. The coolant temperature gauge (Figure 49) will indicate the coolant temperature. Under normal operating conditions the coolant temperature is between 165 and 215 degrees fahrenheit.

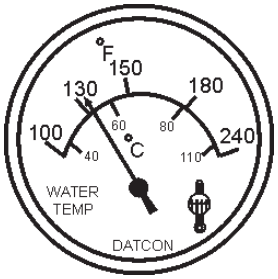


Figure 49. Coolant Temperature Gauge

16. The tachometer (Figure 50) will indicate the speed of the engine when the generator is operating. Under normal operating conditions this speed is approximately 1800 RPM's.

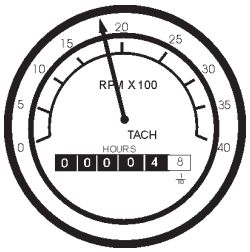


Figure 50. Engine Tachometer

17. Turn the ***main***, ***GFCI***, and ***aux***. circuit breakers to the "**ON**" position (Figure 51).

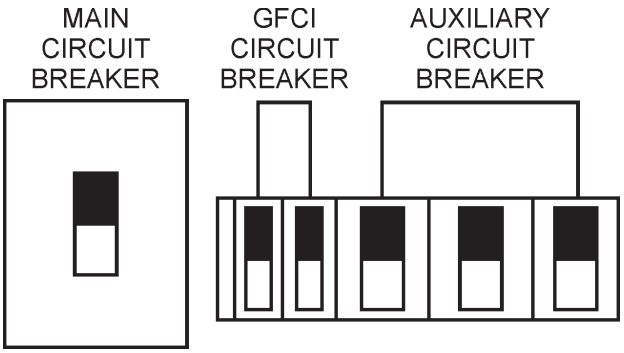


Figure 51. Main, AUX. and GFCI Circuit Breakers (ON)

18. Observe the generator's ammeter (Figure 52) and verify it reads the anticipated amount of current with respect to the load. The ammeter will only display a current reading if the load is in use.

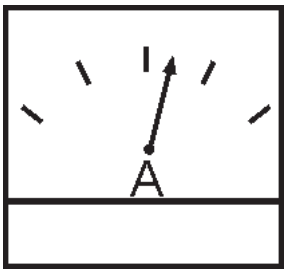


Figure 52. Ammeter (Load)

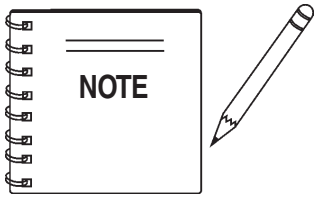
19. The generator will run until manually stopped or an abnormal condition occurs.

DANGER:

Before connecting this generator to any building's electrical system, a **licensed electrician** must install an ***isolation*** (transfer) ***switch***. Serious ***injury*** or ***death*** may result without this transfer switch.

CAUTION:

When connecting the generator to a isolation (transfer) switch, **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.



When the generator is set in the "**AUTO**" mode, the generator will ***automically start*** in the event of comercial 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.

1. Perform steps 1 through 5 in the ***Before Starting*** section (page 36) as outlined in the ***Manual Starting Procedure***.
2. Set the engine speed switch (Figure 53) to the "**HIGH**" position.

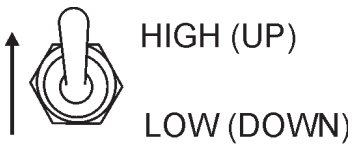


Figure 53. Engine Speed Switch (High)

CAUTION:

The ***Engine Speed Switch*** **must** be set to the "**HIGH**" position when running in the ***Auto-Start*** mode. Failing to set the switch in the proper position can result in damage to your generator when it turns on.

30. Place the Off/Manual/Auto switch (Figure 54) in the **"AUTO"** position .

Figure 54. Off/Manual Auto Switch (AUTO)

31. Continue to follow the steps outlined in the "***Manual Start-up"*** procedure (pages 37-38, steps 9 through 19).

Shutdown Procedure

To shutdown the generator use the following procedure:

1. Place both the **MAIN**, **GFCI** and **LOAD** circuit breakers as shown in Figure 35 to the "**OFF** position".
2. Place the engine speed switch in the "**LOW**" position (Figure 55).

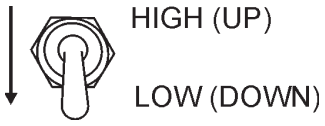


Figure 55. Engine Speed Switch (Low)

3. Let the engine cool by running it for 3-5 minutes with no load applied.
4. Place the Auto-Off/Reset-Manual switch (Figure 56) to the "**OFF/RESET**" position.

Figure 56. Off/Manual Auto Switch (Off)

5. Verify that the ***all*** status LED on the MPEC display (Figure 43) are "**OFF**" (not lit).
6. Remove all loads from the generator.

Emergency Shutdown Procedure

1. To shut-down the engine in the event of an emergency, switch the ***MAIN***, ***GFCI*** and ***LOAD*** (Figure 35) circuit breakers to "**OFF**" position.
2. Place the Auto-Off/Reset-Manual switch (Figure 55) to the "**OFF/RESET**" position.

CAUTION:

NEVER stop the engine suddenly except in an emergency. **DO NOT** use the emergency stop switch a as method of shutting down the generator. This switch is **ONLY** to be used in the event of an emergency.

TABLE 13. INSPECTION / MAINTENANCE		10 Hrs DAILY	250 Hrs	500 Hrs	1000 Hrs
ENGINE	Check Engine Fluid Levels	X			
	Check Fuel Filter	X			
	Check Air Cleaner Dust Indicator	X			
	Check for Leaks/Visual Walk Around	X			
	Check for Loosening of Parts	X			
	Replace Engine Oil and Filter *1		X		
	Service Battery		X		
	Clean Unit, Inside and Outside		X		
	Change Fuel Filter *2			X	
	Clean Radiator and Check Coolant Protection Level			X	
	Replace Air Filter Element				X
	Test Thermostats				X
	Check all Hoses and Clamps/Flush Radiator				X
	Clean Inside of Fuel Tank				X
GENERATOR	Measure Insulation Resistance Over 3M ohms		X		

*1 Replace engine oil anf filter at 100 hours, first time only.

*2 Replace fuel filter at 250 Hours, first time only.

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.

Engine Side (Refer to the Engine Instruction Manual)

Air Cleaner

Every 50 hours: Remove air cleaner element and clean the heavy duty paper element with kerosene, or foam element with liquid detergent and hot water. Wrap foam element in a cloth and squeeze dry. For heavy duty paper element, wipe excess kerosene with towel.

Air Cleaner with Dust Indicator

This indicator 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. After changing the air element, press the dust indicator button to reset the indicator.

Service Daily

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 exists.

Fuel Addition

Add diesel fuel (the grade may vary according to season and locations). Always pour through the mesh filter.

Removing Water from the Fuel Tank

After prolonged use, water and other impurities accumulate in the bottom of the tank. Occasionally remove the drain cock and drain the contents. 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.

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.

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

Cleaning the Fuel Strainer

Clean the fuel strainer if it contains dust or water. Remove dust or water in the strainer cap and wash it in gasoline. Securely fasten the fuel strainer cap so that fuel will not leak. Check the fuel strainer every 200 hours of operation or once a month.

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 31.

Replacing Oil Filter

- Detach the oil filter by loosening center bolt and remove the element together with the filter body.
- Apply a film of oil to the gasket for the cartridge.
- Install the filter body together with the element and fix them by tightening the center bolt.
- 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.

Replacing Fuel Filter

- Replace the fuel filter cartridge with new one every 400 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.

Feed Pump Strainer Cleaning

The strainer is incorporated in the feed pump inlet side joint bolt. Clean the strainer with compressed air and rinse it in the fuel oil.

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.
- 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.
- Tighten both cocks and replace the overflow tank.
- Replace with coolant (Table 12 for correct mixture).
- Close radiator cap tightly.

CAUTION:

Allow engine to ***cool*** when flushing out radiator. Flushing the radiator while ***hot!*** will damage radiator.

Generator Storage

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

- Fill 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 block so tires do touch the ground or remove tires.

Jacket Water Heater and Internal Battery Charger 120 VAC Input Receptacles (OPTIONAL)

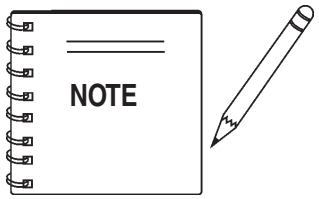
This generator is equipped with two 120 VAC, 20 amp input receptacles located on the output terminal panel.

The purpose of these receptacles is to provide power via commercial power to the ***jacket water heate***r and i***nternal battery charger***.

These receptacles will **ONLY** function when commercial power has been supplied to them (Figure 57). To apply commercial power to these receptacles, a power cord of adequate size will be required (See Table 4).

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.

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 an power cord of adequate size.



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

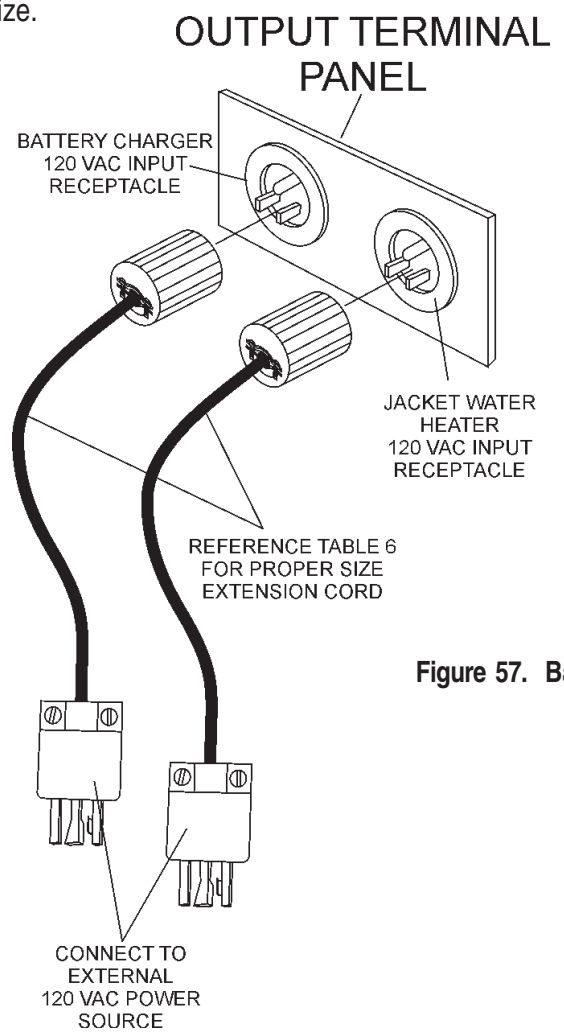
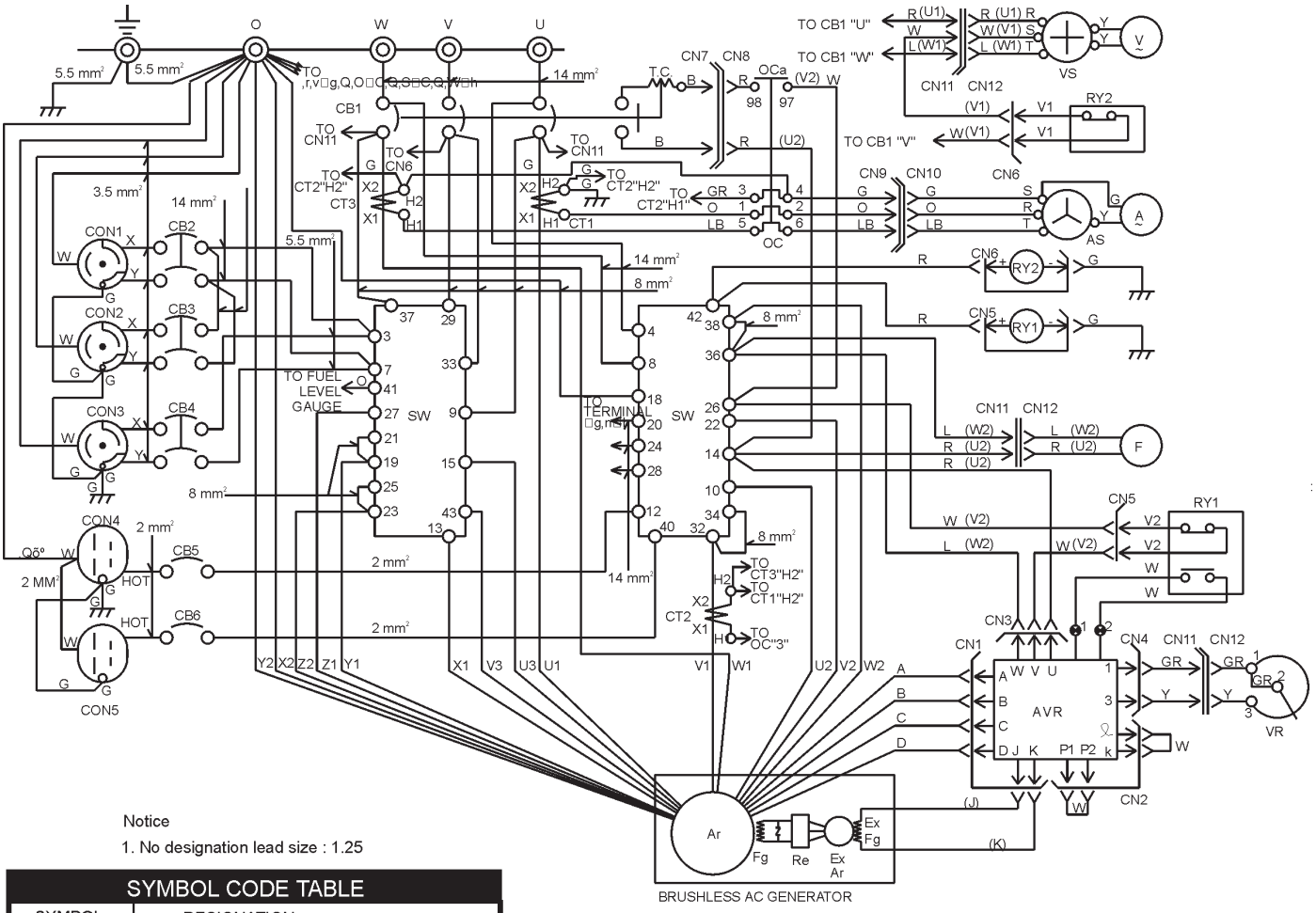


Figure 57. Battery Charger/Jacket Water Heater Power Connections



Notice

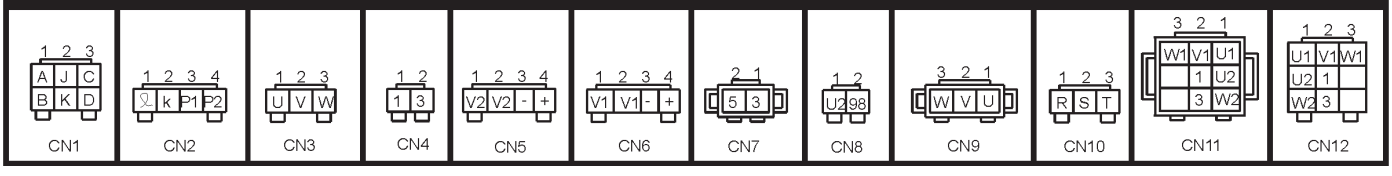
1. No designation lead size : 1.25

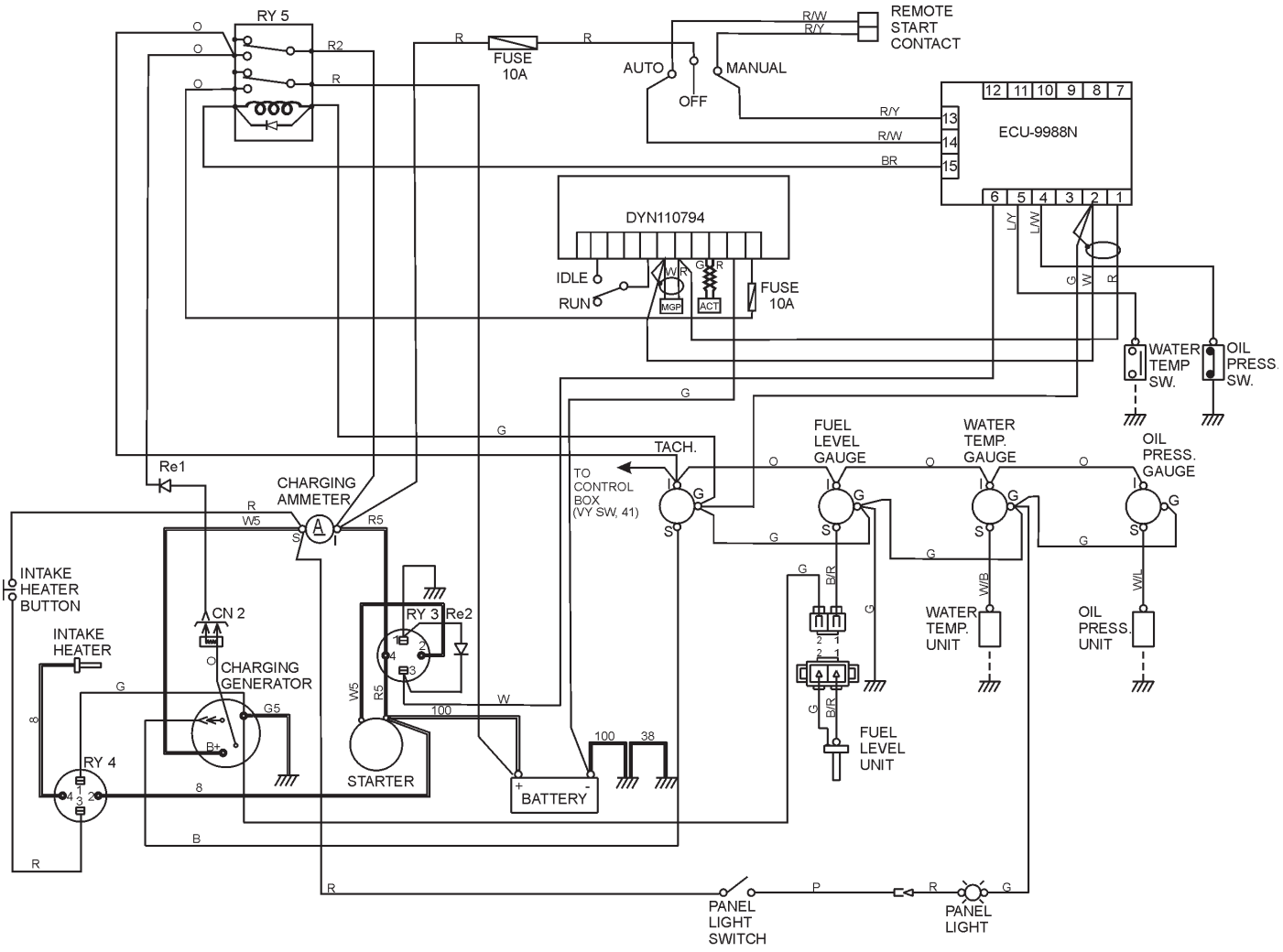
SYMBOL CODE TABLE	
SYMBOL	DESIGNATION
Ar	MAIN GENERATOR ARMATURE WINDING
Fg	MAIN GENERATOR FIELD WINDING
ExAr	EXCITER ARMATURE WINDING
ExFg	EXCITER FIELD WINDING
Re	RECTIFIER
AVR	AUTOMATIC VOLTAGE REGULATOR
VR	VOLTAGE REGULATOR (RHEOSTAT)
CT 1,2,3	CURRENT TRANSFORMER
AS	CHANGE-OVER SWITCH,AMMETER
A ~	AC.AMMETER
VS	CHANGE-OVER SWITCH,VOLTMETER
V ~	AC.VOLTMETER
F	FREQUENCY METER
Cb1	CIRCUIT BREAKER
CB 2,3,4	CIRCUIT BREAKER
CB 5,6	CIRCUIT BREAKER
CON 1,2,3	RECEPTACLE
CON 4,5	RECEPTACLE
OC	OVER CURRENT RELAY
SW	SELECTOR SWITCH
RY1,2	RELAY UNIT

Figure 58. Generator Wiring Diagram

COLOR CODE TABLE			
CODE/ 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
P	PINK		

CONNECTOR ARRANGEMENT (WIRING VIEW)





WIRE SIZE	COLOR CODE			
60: 60 ㎟		WIRE COLOR		WIRE COLOR
38: 38 ㎟	B	BLACK	R	RED
5: 5 ㎟	L	BLUE	W	WHITE
2: 2 ㎟	BR	BROWN	Y	YELLOW
No: 1.25 ㎟	G	GREEN	LB	LIGHT BLUE
	GR	GREY	LG	LIGHT GREEN
	V	VIOLET	O	ORANGE
	P	PINK		

= SEALED CABLE

CN2 — V

CONNECTOR ARRANGEMENT (WIRING VIEW)

Figure 59. Engine Wiring Diagram (MPEC Controller)

Practically all breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, use Table 14 (Engine Troubleshooting) as a basic guideline for troubleshooting the engine. If the problem cannot be remedied, consult our company's business office or service plant.

TABLE 14. ENGINE TROUBLESHOOTING

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Engine does not start.	No fuel?	Replenish fuel.
	Air in the fuel system?	Bleed system.
	Water in the fuel system?	Remove water from fuel tank.
	Fuel pipe clogged?	Clean fuel pipe.
	Fuel filter clogged?	Clean or change fuel filter.
	Excessively high viscosity of fuel or engine oil at low temperature?	Use the specified fuel or engine oil.
	Fuel with low cetane number?	Use the specified fuel.
	Fuel leak due to loose injection pipe retaining nut?	Tighten nut.
	Incorrect injection timing?	Adjust.
	Fuel cam shaft worn?	Replace.
	Injection nozzle clogged?	Clean injection nozzle.
	Injection pump malfunctioning?	Repair or replace.
	Seizure of crankshaft, camshaft, piston, cylinder liner or bearing?	Repair or replace.
	Compression leak from cylinder?	Replace head gasket, tighten cylinder head bolt, glow plug and nozzle holder.
	Improper valve timing?	Correct or replace timing gear.
	Piston ring and liner worn?	Replace.
	Excessive valve clearance?	Adjust.
Starter does not run.	Starter malfunctioning?	Repair or replace.
	Wiring disconnected?	Connect wiring.

TABLE 14. ENGINE TROUBLESHOOTING (CONTINUED)

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Engine revolution is not smooth.	Fuel filter clogged or dirty?	Clean or change.
	Air cleaner clogged?	Clean or change.
	Fuel leak due to loose injection pipe retaining nut?	Tighten nut.
	Injection pump malfunctioning?	Repair or replace.
	Incorrect nozzle opening pressure?	Adjust.
	Injection nozzle stuck or clogged?	Repair or replace.
	Fuel over flow pipe clogged?	Clean.
	Governor malfunctioning?	Repair.
Either white or blue exhaust gas is observed.	Excessive engine oil?	Reduce to the specified level.
	Piston ring and liner worn or stuck?	Repair or replace.
	Incorrect injection timing?	Adjust.
	Deficient compression?	Adjust top clearance.
Either black or dark gray exhaust gas is observed.	Overload?	Lessen the load.
	Low grade fuel used?	Use the specified fuel.
	Fuel filter clogged?	Clean or change.
	Air cleaner clogged?	Clean or change.
	Deficient nozzle injection?	Repair or replace the nozzle.
Deficient output.	Incorrect injection timing?	Adjust.
	Engine's moving parts seem to be seizing?	Repair or replace.
	Uneven fuel injection?	Repair or replace the injection pump.
	Deficient nozzle injection?	Repair or replace the nozzle.
	Compression leak?	Replace head gasket, tighten cylinder head bolt, glow plug and nozzle holder.

DCA-70SSJU2 — TROUBLESHOOTING (GENERATOR)

Practically all breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, use Table 15 (Generator Troubleshooting) as a basic guideline for troubleshooting the generator. If the problem cannot be remedied, consult our company's business office or service plant.

TABLE 15 GENERATOR TROUBLESHOOTING

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
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.
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.

DCA-70SSJU2 — TROUBLESHOOTING (ENGINE CONTROLLER)

Practically all breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, use Table 16 (Engine Controller Troubleshooting) as a basic guideline for troubleshooting the Microprocessor Engine Controller unit (MPEC). If the problem cannot be remedied, consult our company's business office or service plant.

TABLE 16. ENGINE CONTROLLER TROUBLESHOOTING (MPEC)

Sympton	Possible Cause	Solution
Low oil pressure light is on.	Low oil level?	Fill oil level.
	Oil pressure sending unit failure?	Replace oil pressure sending unit.
	Time delay malfuntion in Controller?	Refer to dealer.
	Wire shorted?	Inspect/repair wire.
Low coolant level light is on.	Low coolant level?	Fill coolant level.
	Sending unit failure?	Replace sending unit.
	Low battery voltage?	Replace/charge battery.
High coolant temperture light is on.	Fan belt tension incorrect?	Tighten/replace fan belt.
	Air flow is not circulation through radiator?	Clean/repair radiator grill.
	Doors open?	Close doors.
	Exhaust leaking?	Replace/repair gaskets or faulty part.
	Generator being overloaded?	Check/reduce load.
	Thermostat failure?	Replace thermostat.
	Air intake blocked?	Clear all air intakes.
	Temperature switch failure?	Replace temperature switch.
Overcrank light is on.	No or low Fuel?	Fill fuel level.
	Controller needs to be calibrated?	Refer to dealer.
Overspeed light is on.	RPM engine speed too high?	Adjust RPM.
	Governor actuator needs to be adjusted?	Adjust governor actuator.
	Governor controller needs to be adjusted?	Adjust governor controller.
	Engine Controller needs to be calibrated?	Refer to dealer.
Loss of MPU light(s) or on.	Magnetic pick up out of adjustment?	Adjust magnetic pick up.
	Magnetic pick up dirty?	Clean magnetic pick up.

EXPLANATION OF CODE IN REMARKS COLUMN

How to read the marks and remarks used in this parts book.

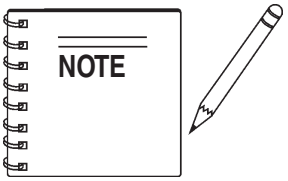
Items Found In the "Remarks" Column

Serial Numbers-Where indicated, this indicates a serial number range (inclusive) where a particular part is used.

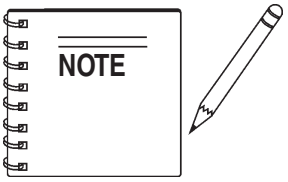
Model Number-Where indicated, this shows that the corresponding part is utilized only with this specific model number or model number variant.

Items Found In the "Items Number" Column

All parts with same symbol in the number column, *, #, +, %, or <, belong to the same assembly or kit



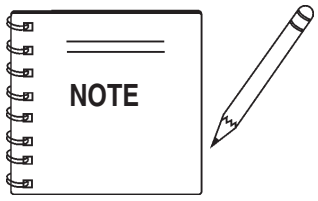
If more than one of the same reference number is listed, the last one listed indicates newest (or latest) part available.



The contents of this catalog are subject to change without notice.

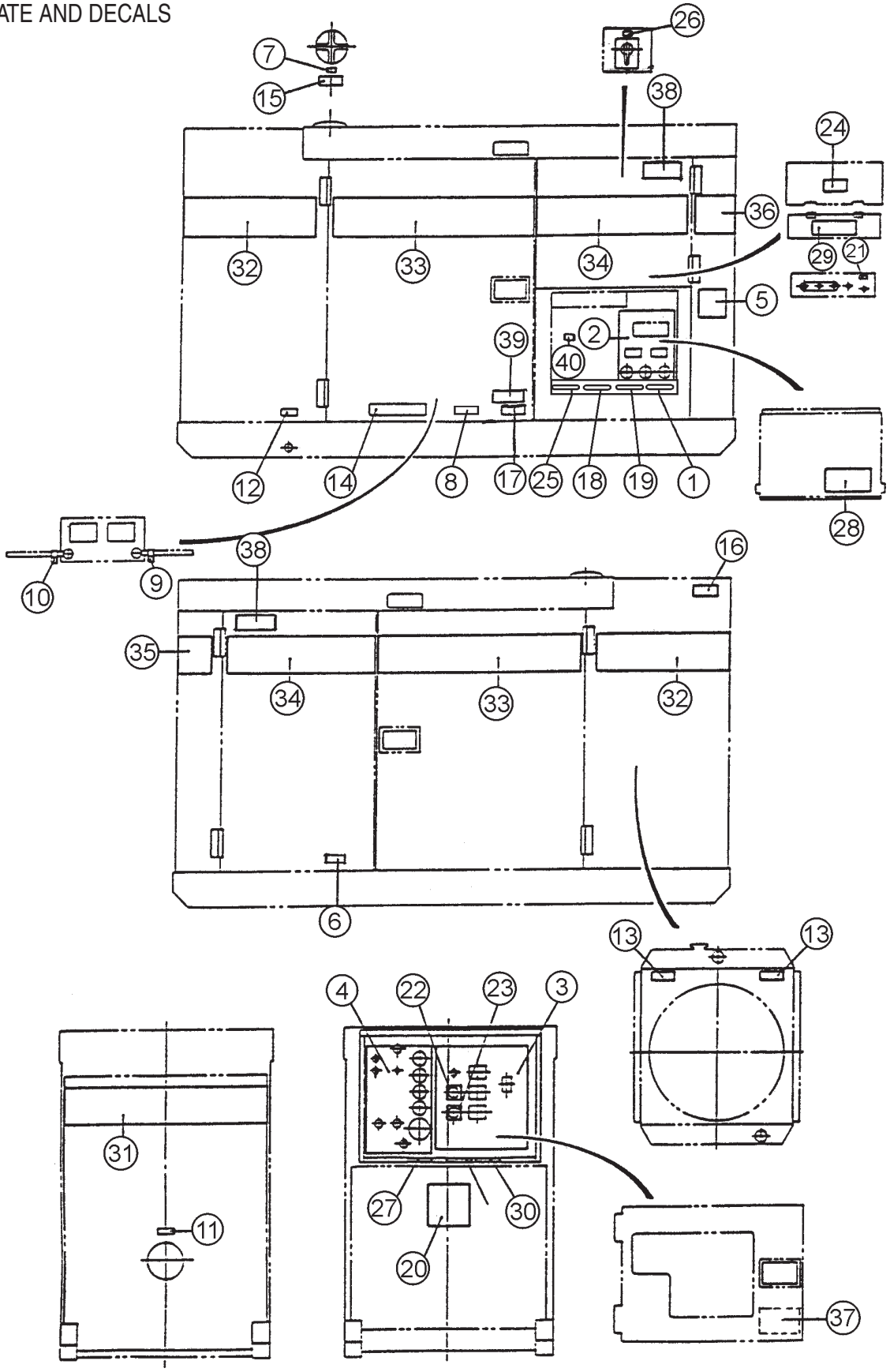
DCA-70SSJU2 W/JOHN DEERE 4045TF150 DIESEL ENGINE
1 TO 5 UNITS

Qty.	P/N	Description	
1	0601820671	AUTOMATIC VOLTAGE REGULATOR	
1	47230107	KNOB, SELECTOR SWITCH	
1	0601840073	RHEOSTAT, VOLTAGE REGULATOR	
1	0601840121	KNOB, RHEOSTAT	
3	0602011490	FAN BELT	
20	0602041290	OIL FILTER	
20	0602042590	FUEL FILTER	
10	0602046357	AIR ELEMENT	
1	M2310500203	RADIATOR HOSE, UPPER	S/N7300001 TO S/N7300267
1	M2310500303	RADIATOR HOSE, LOWER	S/N7300001 TO S/N7300267
1	M2310500403	RADIATOR HOSE, LOWER	S/N7300001 TO S/N7300267
1	M2310500503	RADIATOR HOSE, UPPER	S/N7300268~
1	M2310500603	RADIATOR HOSE, LOWER	S/N7300268~
1	0602100056	STARTER SWITCH	S/N7300001 TO S/N73002140
1	AR51481	KEY, STARTER SWITCH	S/N7300001 TO S/N73002140
1	06021030912	LAMP, PILOT ALARM	
1	0601810245	BULB, PILOT LAMP	
1	0602123263	WATER TEMPERATURE UNIT	
1	0602122272	OIL PRESSURE UNIT	
1	0605505070	FUEL TANK CAP	
5	0602042420	FUEL TANK IN-LINE FILTER	
1	1625165103	BONNET CAP	
1	1625165204	BONNET CAP CHAIN ASSEMBLY	
1	0602123261	WATER TEMPERTURE UNIT	S/N 7300646~
2	0601808803	CIRCUIT BREAKER, QOU120B 20A	
3	0601808804	CIRCUIT BREAKER, QOU250B 50A	



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

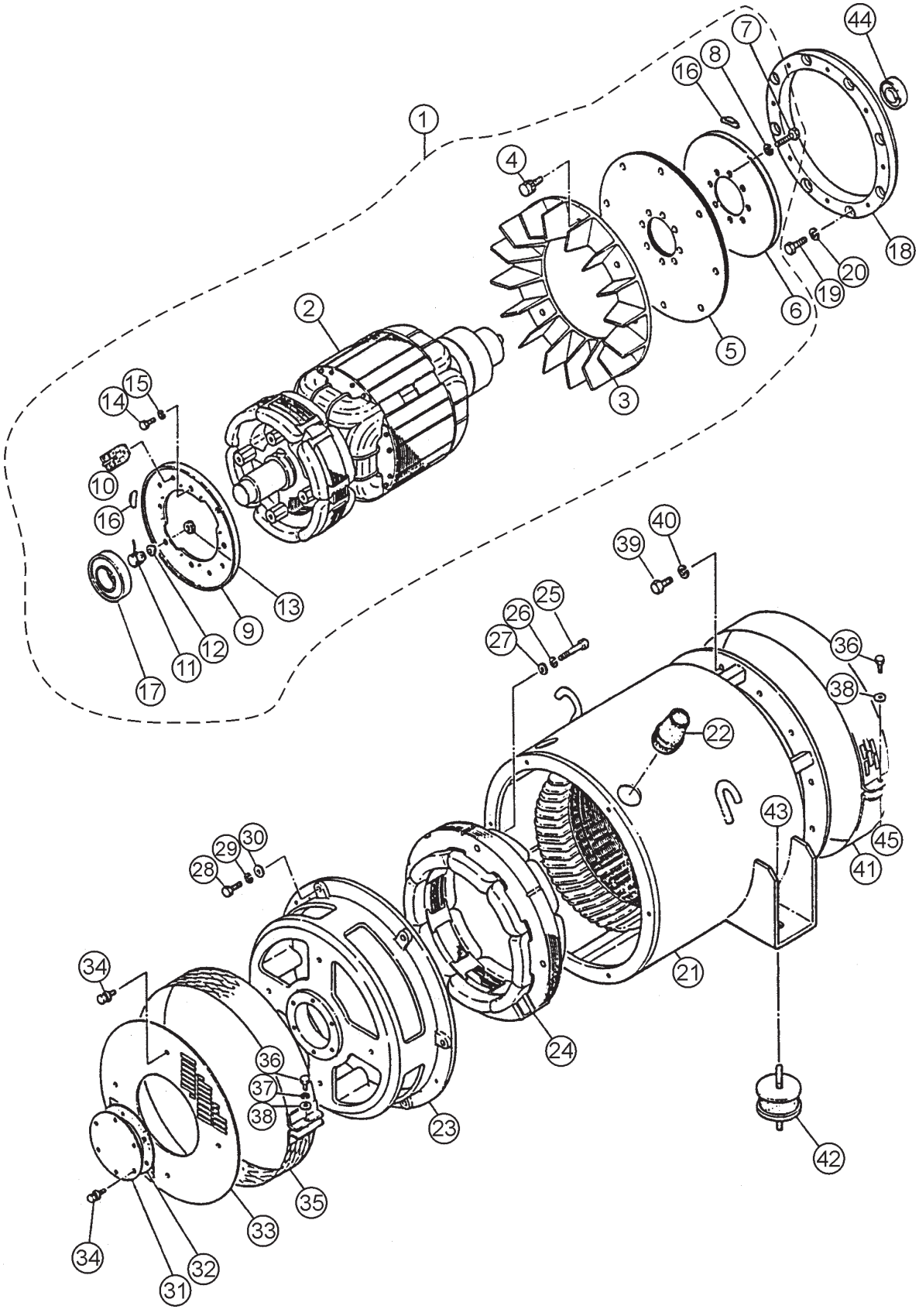
NAMEPLATE AND DECALS



NAMEPLATE AND DECALS.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	M1550000204	DECAL, NOTE	1	M15000020
2	M1550000703	DECAL, AUXILLARY OUTPUT	1	M15000070
3	M2550000002	DECAL, GENERATOR CONTROL	1	M25000000
4	M2550000102	DECAL, ENGINE OPERATING	1	M25000010
4	M2552000203	DECAL, ENGINE OPERATING	1	M25200020
5	M2550000304	DECAL, NOTE	1	M25000030
6	M9500000004	DECAL, OIL DRAIN PLUG	1	M90000000
7	M9500100004	DECAL, WATER	1	M90010000
8	M9500100104	DECAL, WATER DRAIN PLUG	1	M90010010
9	M9500300004	DECAL, NEGATIVE	1	M90030000
10	M9500300104	DECAL, POSITIVE	1	M90030010
11	M9500500004	DECAL, DIESEL FUEL	1	M90050000
12	M9500500104	DECAL, FUEL DRAIN PLUG	1	M90050010
13	M9503000004	DECAL, WARNING	2	M90300000
14	M9503000103	DECAL, WATER OIL CHECK	1	M90300010
15	M9503100004	DECAL, WARNING	1	M90310000
16	M9503200004	DECAL, WARNING	1	M90320000
17	M9510100004	DECAL, CAUTION	1	M91010000
18	M9520100503	DECAL, WARNING, M91010010	1	REPLACES M9510100104
19	M9520100503	DECAL, WARNING, M91010020	1	REPLACES M9510100204
20	M9510200002	DECAL, MQ	1	M91020000
21	M9520000004	DECAL, GROUND	1	M92000000
22	M9520000104	DECAL, AMMETER CHNG.-OVR SW.	1	M92000010
23	M9520000204	DECAL, VOLTMETER CHNG.-OVR SW.	1	M92000020
24	M9520100004	DECAL, WARNING	2	M92010000
25	M9520100503	DECAL, WARNING, M92010010	1	REPLACES M9520100104
	M9520100503	DECAL, WARNING	1	M92010050
26	M9520100204	DECAL, CAUTION	1	M92010020A
27	M9520100304	DECAL, SAFETY INSTRUCTIONS	1	M92010030
28	M9520100404	DECAL, DANGER	1	M92010040
29	M9520200003	DECAL, CONNECT. OUTPUT CABLE	1	M92020000
30	M9520200104	DECAL, OVER CURRENT RELAY	1	M92020010
31	M2560100003	STRIPE, WHISPERWATT	1	
32	M2560100103	STRIPE, MQ POWER	2	
33	M2560100203	STRIPE	2	
34	M2560100403	STRIPE	2	
35	M2560100304	STRIPE, 70	1	
36	M2560100504	STRIPE, 70	1	
37	M3552000103	DECAL, OPERATING PROCEDURES	1	M35200010
38	C9522100003	DECAL, CAUTION	2	C92210000
39	C9505300004	DECAL, CAUTION	1	C90530000
40	9039209064	DECAL, START CONTACT	1	S-4468

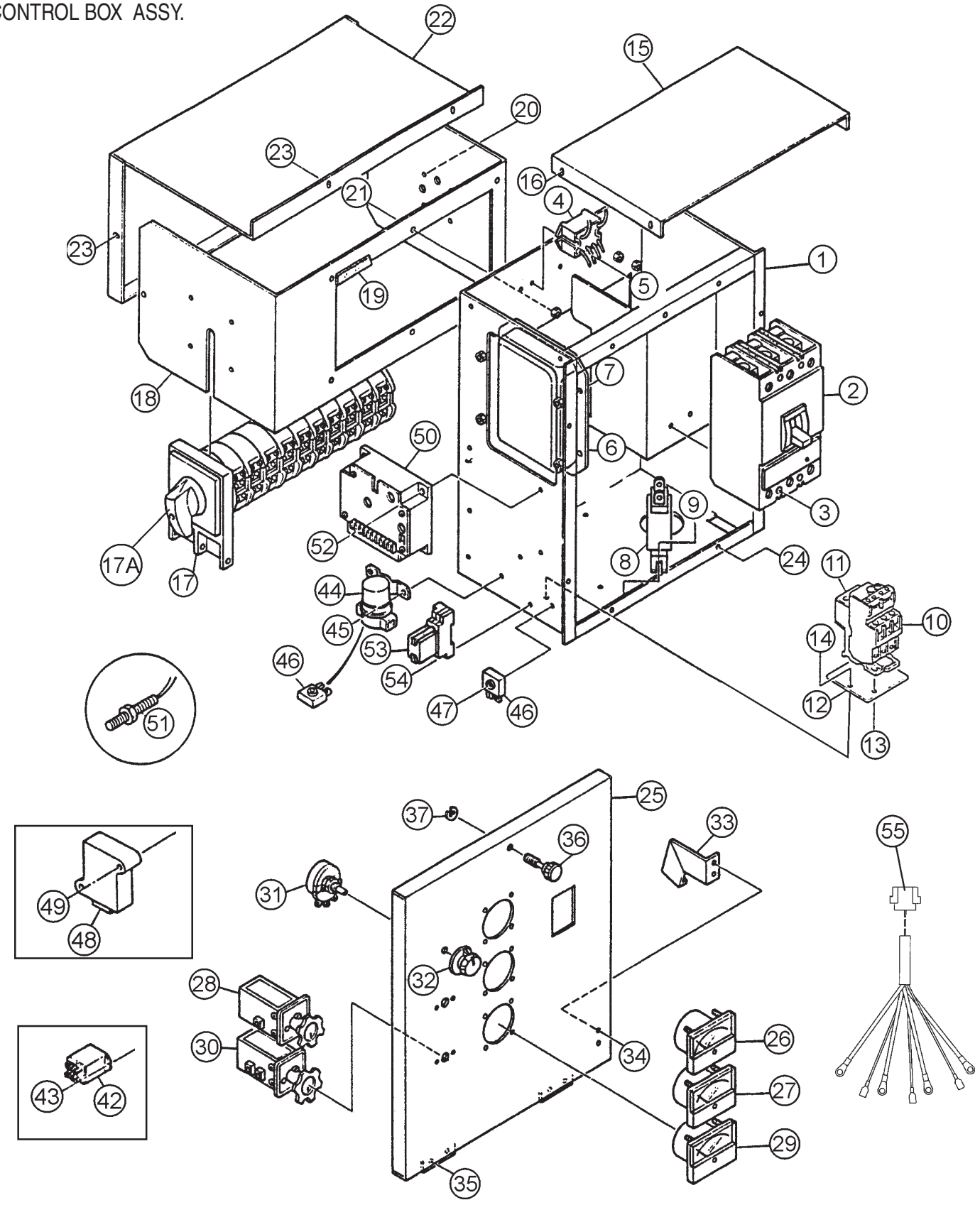
GENERATOR ASSY.



GENERATOR ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	B5110100602	ROTOR ASSY.	1	INCLUDE ITEMS W/*
2*		FIELD ASSY.	1	
3*	8101070033	FAN	1	
4*	0012810030	HEX HEAD BOLT	8	
5*	8101611004	COUPLING DISK	5	
6*	8101015003	BALANCING PLATE	1	
7*	012010030	HEX HEAD BOLT	8	REPLACES 0012110030
8*	0042610000	LOCK WASHER	8	
9*	8101026013	SET PLATE RECTIFIER	1	
10*	0601821349	RECTIFIER	2	PT3610
11*	0601822601	SURGE ABSORBER	1	ERZ-M14JK621A
12*	8001020004	INSULATOR WASHER	1	
13*	8001020504	INSULATOR WASHER	1	
14*	012210020	HEX HEAD BOLT	4	REPLACES 0010110020
15*	0040010000	LOCK WASHER	4	
16*	0601000209	BALANCING WEIGHT KIT	1	
17*	0071906311	BEARING	1	6311DDUC3
18	8101614003A	COUPLING RING	1	REPLACES M2163400003
19	0343204170	HEX HEAD BOLT	8	
20	EM923344	LOCK WASHER	8	REPLACES 0043604000
21	B5130100303	STATOR ASSY.	1	
22	0845041904	GROMMET	2	
23	8101315202	END BRACKET	1	
24	8101350013	FIELD ASSY. EXCITER	1	
25	0012110070	HEX HEAD BOLT	4	
26	0042610000	LOCK WASHER	4	
27	031110160	PLAIN WASHER	4	REPLACES 0041210000
28	0010110045	HEX HEAD BOLT	6	
29	0040010000	LOCK WASHER	6	
30	03111060	PLAIN WASHER	6	REPLACES 0041210000
31	8101310014	COVER BEARING	1	
32	8131312014	GASKET BEARING	1	
33	8101331003	COVER END BRACKET	1	
34	0105050616	HEX HEAD BOLT	10	REPLACES 0017106012
35	8101333003	COVER END BRACKET	1	
36	0010106030	HEX HEAD BOLT	2	
37	0040006000	LOCK WASHER	1	
38	952404470	PLAIN WASHER	2	REPLACES 0041206000
39	012210035	HEX HEAD BOLT	12	S/N7300001 TO 7301260
				REPLACES 0010310035
39	0012810030	HEX HEAD BOLT	12	S/N7301261 TO 7302210
39	0012810035	HEX HEAD BOLT	12	S/N7302211~
40	030210250	LOCK WASHER	12	S/N7300001 TO 7301260
				REPLACES 0042510000
41	8111332014	COVER FAN	1	
42	0605000010	RUBBER SUSPENSION	2	
43	0030012000	HEX NUT	2	
43	0040012000	LOCK WASHER	2	
43	031112230	PLAIN WASHER	2	REPLACES 0041212000
44	0070506306	BEARING	1	
45	020106050	NUT	1	REPLACES 0600815000

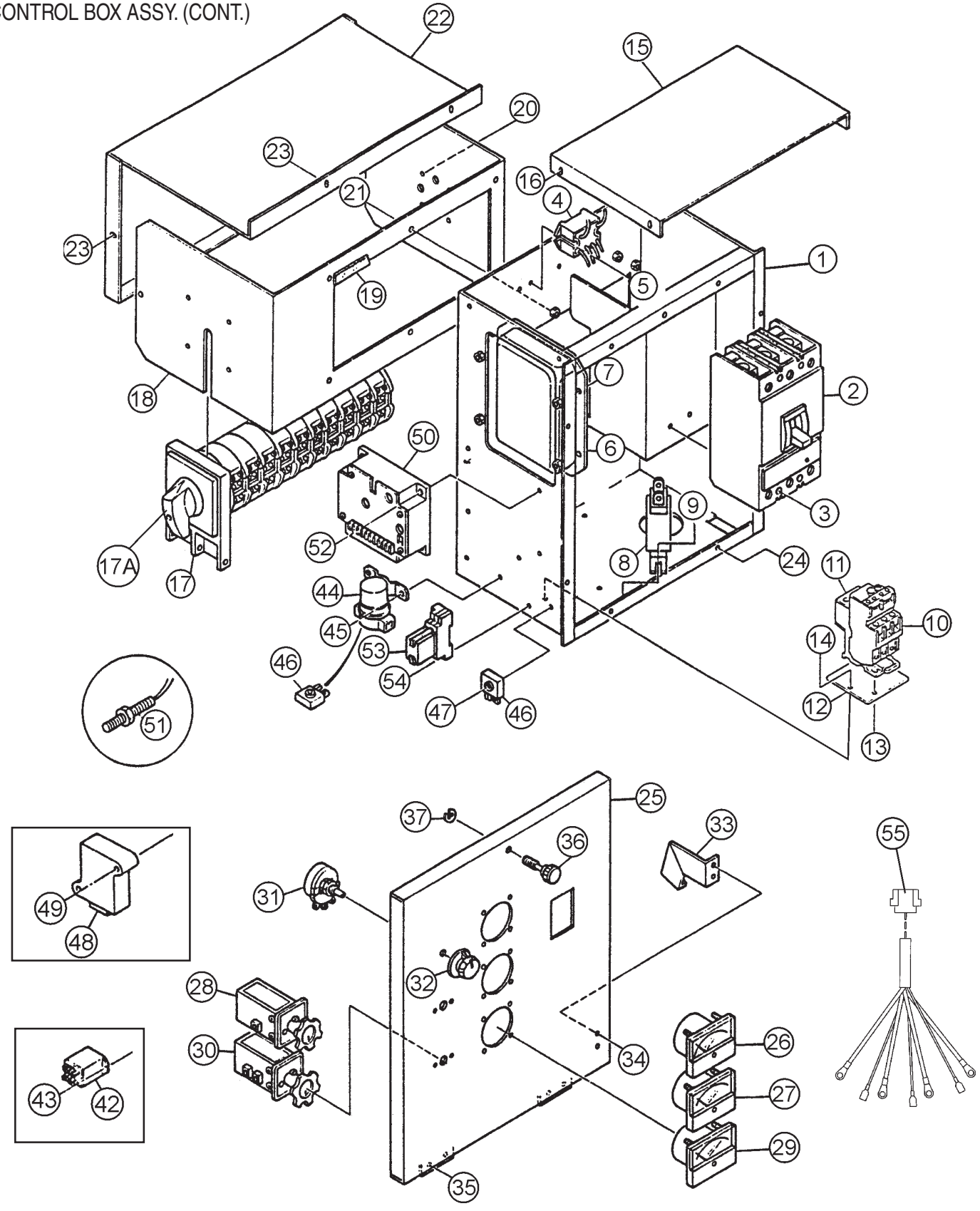
CONTROL BOX ASSY.



CONTROL BOX ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	M2213000102	CONTROL BOX	1	UP TO S/N7301040
1	M2213000122	CONTROL BOX	1	S/N7301041 TO S/N7302140
1	M2215000103	CONTROL BOX	1	S/N7302141~
2	0601808812	CIRCUIT BREAKER	1	KAF3617510213P175A
3	0021005080	MACHINE SCREW	4	
4	0601823863	RELAY UNIT	2	MSA9013A
5	0021304015	MACHINE SCREW	4	REPLACES 0027104015
6	0601820671	AUTOMATIC VOLTAGE REGULATOR	1	NTA-5A-2DB
7	0027105010	MACHINE SCREW	4	S/N7300001 TO S/N7301200
7	0027105015	MACHINE SCREW	4	S/N7301201~
8	0601806139	CURRENT TRANSFORMER, 5A	3	REPLACES 814943150 AND 0601806117
9	011106015	MACHINE SCREW	6	REPLACES 0027106015
10	0601820845	OVER CURRENT RELAY	1	LR2D1308
11	0601820846	KIT OVER CURRENT RELAY, LA7D1064	1	
12	M1260600004	FITTING BRACKET	1	S/N7300001 TO S/N7301040
13	0021304015	MACHINE SCREW	2	REPLACES 0027104015
13	OEMAA8	HEX NUT	2	REPLACES 0207004000
14	0027104010	MACHINE SCREW	2	S/N7300001 TO S/N7301040
15	M2213500103	CONTROL BOX COVER	1	
16	011106015	HEX HEAD BOLT	4	REPLACES 0016906015
17	M2923100004	SELECTOR SWITCH	1	VY-80/S
17A	47230107	KNOB, SELECTOR SWITCH	1	
18	M2213600203	SWITCH BRACKET	1	S/N7300001 TO S/N7300003
18	M2213600213	SWITCH BRACKET	1	S/N7300004~
19	EDGEGES	EDGING	2	REPLACES 0330000295
20	0027104010	MACHINE SCREW	4	
21	011106015	HEX HEAD BOLT	6	REPLACES 0016906015
22	M2213600314	SWITCH COVER	1	
23	011106015	HEX HEAD BOLT	4	REPLACES 0016906015
24	011106015	HEX HEAD BOLT	8	REPLACES 0016906015
24	0040506000	TOOTHED WASHER	1	
25	M2223000103	CONTROL PANEL	1	
26	0601807630	FREQUENCY METER; 264250DJDJ9	1	UP TO S/N7302695 REPLACES 0601807696
26	0601807641	FREQUENCY METER; FCF6 45~65Hz 240V	1	S/N7302696~
27	0601808955	AC AMMETER; 260240LSX1JBP	1	UP TO S/N7302695 REPLACES 0601808943
27	0601808987	AC AMMETER; ACF-6	1	S/N7302696~
28	0601801040	CHANGE-OVER SWITCH AMMETER	1	SL-2AS

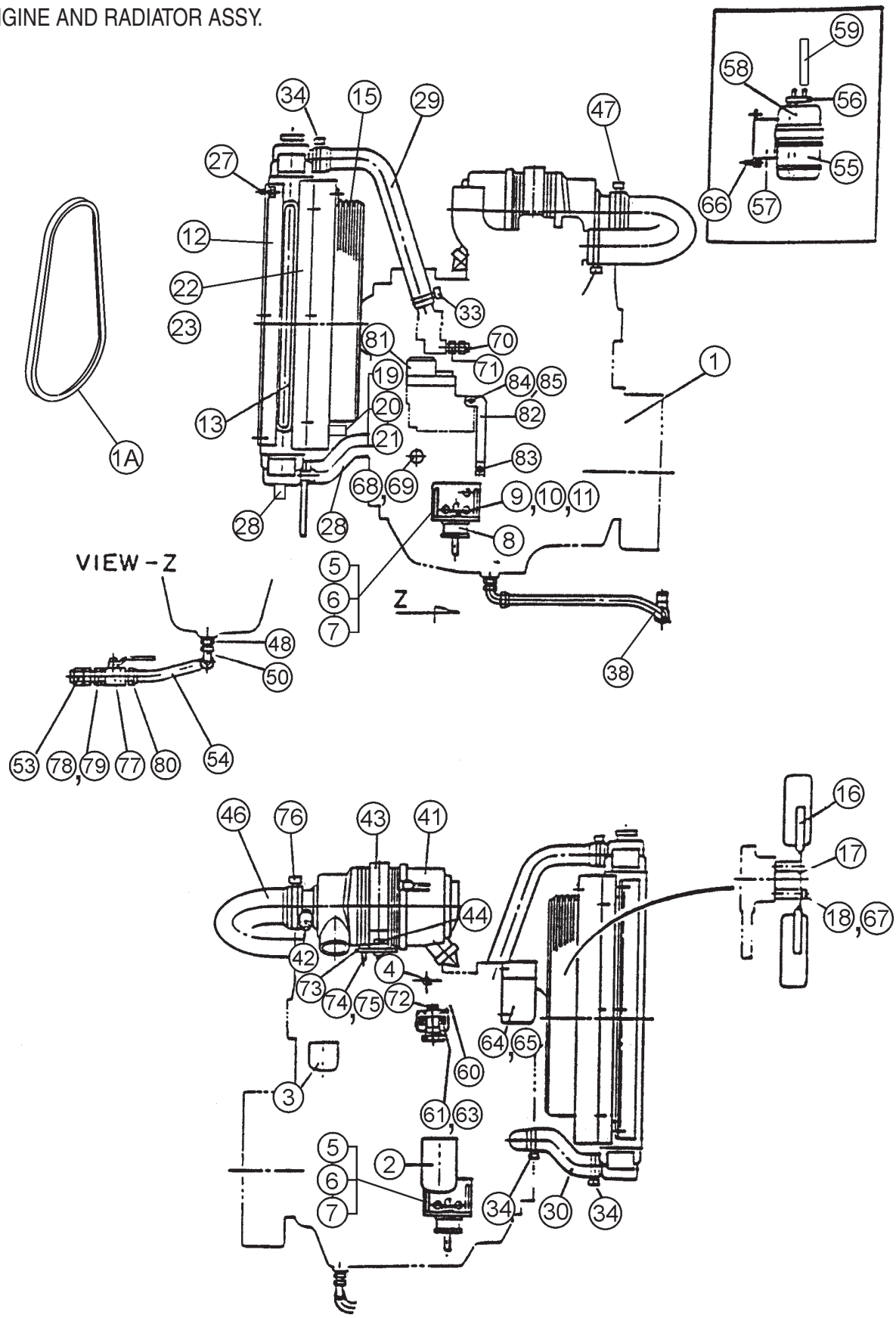
CONTROL BOX ASSY. (CONT.)



CONTROL BOX ASSY. (CONT.)

NO.	PART NO.	PART NAME	QTY.	REMARKS
29	0601806813	AC VOLTMETER; 260244SJSJ1	1	UP TO S/N7302695
				REPL.0601806896
29	0601806859	AC VOLTMETER; SCF-6	1	S/N7302696~
30	0601801041	CHANGE-OVER SWITCH VOLTMETER	1	SL-2VS
31	0601840073	REOSTAT, VOLTAGE REGULATOR	1	
32	0601840121	KNOB	1	
33	M1223100004	ST0PPER	1	
34	0027105015	MACHINE SCREW	2	S/N7300001 TO S/N7300505
34	0027105010	MACHINE SCREW	2	S/N7300506~
35	0027105015	MACHINE SCREW	4	S/N7300001 TO S/N7300505
35	0027105010	MACHINE SCREW	4	S/N7300506~
36	M9220100004	SET SCREW	1	
37	0080200007	SNAP RING	1	
38	0602202525	CONTROLLER; 0530000593	1	S/N7300001 TO S/N7300645
39	0027105015	MACHINE SCREW	2	S/N7300001 TO S/N7300645
40	0601823707	RELAY; CA1A12V-N-5ACA-12135	1	S/N7300001 TO S/N7300645
41	0027105015	MACHINE SCREW	1	S/N7300001 TO S/N7300645
42	0601826052	RELAY; HH62S-FDC12V	2	S/N7300001 TO S/N7300645
43	0027103010	MACHINE SCREW	4	S/N7300001 TO S/N7300645
44	0602202592	STARTER RELAY; AT141011	1	
45	011106015	MACHINE SCREW	2	REPLACES 0027106015
46	0601821370	RECTIFIER; DE4503	1	REPLACES 0601823240
47	0027104020	MACHINE SCREW	1	S/N7300261~
48	0602200478	EMERGENCY RELAY; A1070160602,3	1	S/N7300646 TO S/N7302140
49	0027105040	MACHINE SCREW	2	S/N7300646 TO S/N7302140;
50	DYN110794000012	CONTROLLER	1	S/N7302141~
				REPL.0602202599
51	MSP6724	SPEED SENSOR	1	S/N7302141~
				REPL.0602120485
52	0027105015	MACHINE SCREW	4	S/N7302141~
53	LY2DUS12VDC	RELAY	1	S/N7302141~
				REPL. 0601827656
53	PTF08A	BASE	1	S/N7302141~
				REPLACES 0601823109
53	PYCA1	CLIP	2	S/N7302141~
				REPLACES 0601824400
54	0027104020	MACHINE SCREW	2	S/N7302141~
55	M2246700004	WIRE HARNESS GENERATOR	1	S/N7300001 TO S/N7300365
55	M2246700014	WIRE HARNESS GENERATOR	1	S/N7300365 TO S/N7301090
55	M2246700024	WIRE HARNESS GENERATOR	1	S/N7301091~

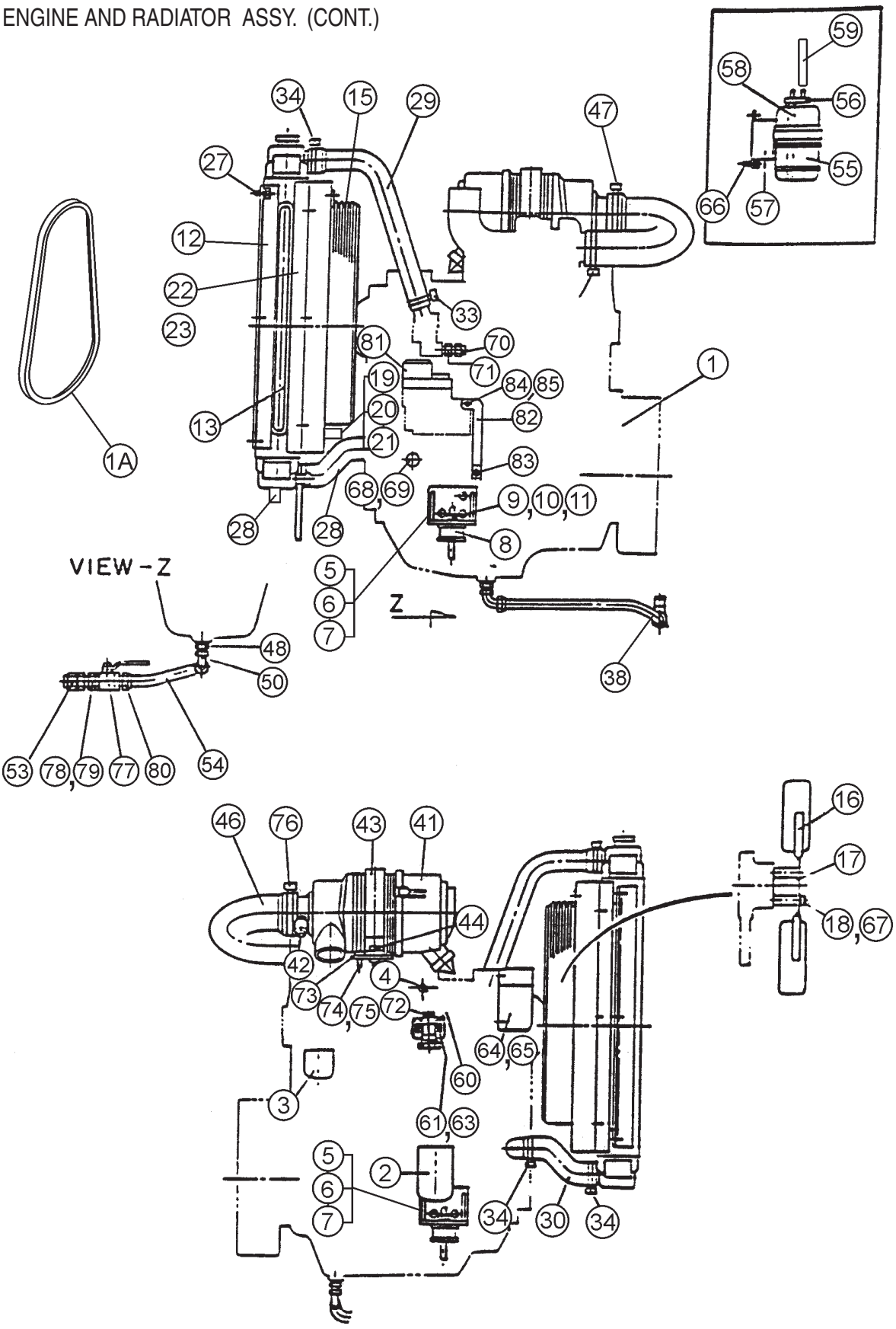
ENGINE AND RADIATOR ASSY.



ENGINE AND RADIATOR ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	M2923200004	ENGINE;JOHN DEERE 4045T	1	S/N7300001 TO S/N7302045
1	M2923200004	ENGINE;JOHN DEERE 4045TF150	1	S/N7302046~
1A	0602011490	FAN BELT	1	
2	0602041290	ELEMENT OIL FILTER	1	RE59754A
3	0602042590	ELEMENT FUEL FILTER	1	RE62418
4	0602014297	ELECTRIC HEATER; RE29658	1	S/N7300001 TO S/N7300720
4	RE502668	ELECTRIC HEATER ASSY.	1	S/N7000721~
5	M2303200303	ENGINE FOOT	2	
6	0131151240	HEX HEAD BOLT	6	REPLACES 0010312030
7	0040012000	LOCK WASHER	6	
8	0605000009	RUBBER SUSPENSION	2	
9	0030012000	HEX NUT	2	
10	0040012000	LOCK WASHER	2	
11	031112230	PLAIN WASHER	2	REPLACES 0041212000
12	0602011998	RADIATOR	1	S/N7300001 TO S/N7300267
12	0602011999	RADIATOR	1	S/N7300268~
13	C2810034100	SHROUD	1	S/N7300001 TO S/N7300267; REPLACES 0602010690
14	0605515148	HOSE BAND	1	S/N7300001 TO S/N7300267
15	0602010780	FAN COVER	1	S/N7300001 TO S/N7300267
16	0602060011	BLOWER FAN	1	320606
17	0602061000	FAN SPACER	1	R81911
18	0012110090	FAN BOLT;19M7811	4	S/N7300001 TO S/N7300220; REPLACES 0602060500
18	0012110095	HEX HEAD BOLT	4	S/N7300401~
19	011008015	HEX HEAD BOLT	6	S/N7300001 TO S/N7300267; REPLACES 0013004308
20	0043004000	LOCK WASHER	4	S/N7300001 TO S/N7300267
21	0043104000	PLAIN WASHER	4	S/N7300001 TO S/N7300267
22	M2310200304	RADIATOR BRACKET	1	S/N7300001 TO S/N7300003
22	M2310200314	RADIATOR BRACKET	1	S/N7300004 TO S/N7300267
23	M2310200204	RADIATOR BRACKET	1	S/N7300001 TO S/N7300003
23	M2310200214	RADIATOR BRACKET	1	S/N7300004 TO S/N7300267
27	011008020	HEX HEAD BOLT	6	REPLACES 0016908020
28	0138102000	PLUG	1	S/N7300001 TO S/N7300267
29	M2310500203	RADIATOR HOSE, UPPER	1	S/N7300001 TO S/N7300267
29	M2310500503	RADIATOR HOSE, UPPER	1	S/N7300268~
30	M2310500303	RADIATOR HOSE, LOWER	1	S/N7300001 TO S/N7300267
30	M2310500603	RADIATOR HOSE, LOWER	1	S/N7300268~
31	M2310500403	RADIATOR HOSE, LOWER	1	S/N7300001 TO S/N7300267
32	M2310400004	DRAIN PIPE	1	S/N7300001 TO S/N7300267

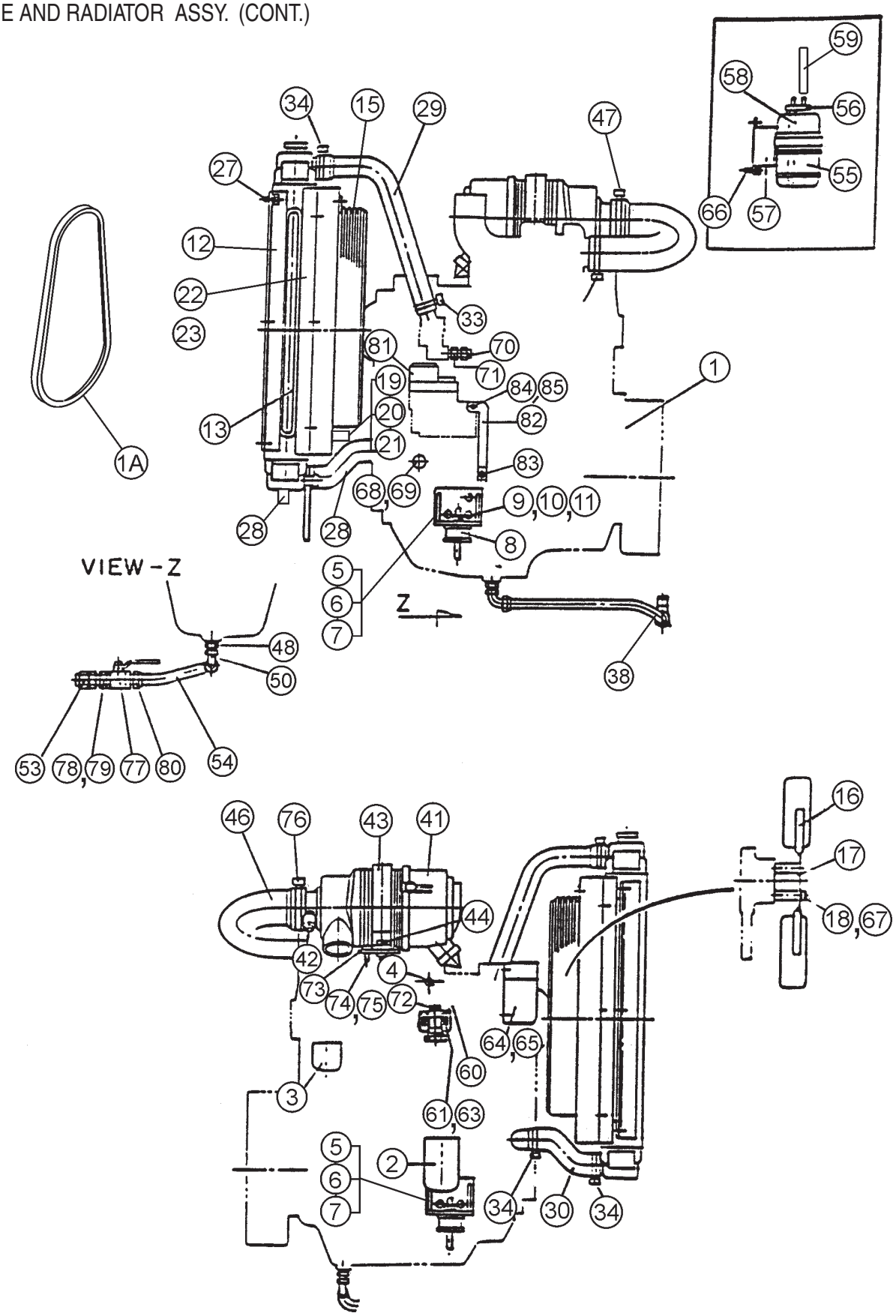
ENGINE AND RADIATOR ASSY. (CONT.)



ENGINE AND RADIATOR ASSY. (CONT.)

NO.	PART NO.	PART NAME	QTY.	REMARKS
33	0605515199	HOSE BAND	1	S/N7300001 TO S/N7300267
33	0605515201	HOSE BAND	1	S/N7300268~
34	0605515147	HOSE BAND	3	S/N7300268~
35	781204003B	DRAIN JOINT	1	S/N7300001 TO S/N7300267; REPLACES M2320300103
36	M9200200004	DRAIN BOLT	1	S/N7300001 TO S/N7300267
37	0150000018	O RING	1	S/N7300001 TO S/N7300267
38	011206020	HEX HEAD BOLT	2	S/N7300001 TO S/N7300267; REPLACES 0016906020
39	0199900685	DRAIN HOSE	1	S/N7300001 TO S/N7300267
40	0605515106	HOSE BAND	2	S/N7300001 TO S/N7300267
41	0602046233	AIR CLEANER;FWG080061	1	S/N7300001 TO S/N7302330
41	0602046582	AIR CLEANER;FPG082527	1	S/N7302331~
41	0602046357	ELEMENT AIR CLEANER;P18-1054	1	S/N7300001 TO S/N7302330
41	0602046365	ELEMENT AIR CLEANER;P828889	1	S/N7302331~
42	0602040650	INDICATOR AIR CLEANER	1	S/N7300001 TO S/N7302330
42	0602040651	INDICATOR AIR CLEANER	1	S/N7302331~
43	0602040590	BAND AIR CLEANER	2	S/N7300001 TO S/N7302330
43	0602040554	BAND AIR CLEANER	1	S/N7302331~
44	011008020	HEX HEAD BOLT	4	S/N7300001 TO S/N7302330; REPLACES 0016908020
46	M2373100103	HOSE AIR CLEANER	1	S/N7300001 TO S/N7302330
46	M2375100003	HOSE AIR CLEANER	1	S/N7302331~
47	0605515146	HOSE BAND	2	S/N7300001 TO S/N7302330
47	0605515146	HOSE BAND	1	S/N7302331~
48	0602022563	ADAPTER	1	
49	0602021165	O RING	1	S/N7300001 TO S/N7300991
50	0602022561	90 ELBOW	1	
51	0602022562	UNION	1	S/N7300001 TO S/N7302330
52	0602022792	SWIVEL	1	S/N7300001 TO S/N7302140
53	0602021070	CAP	1	
54	0602021572	DRAIN HOSE	1	S/N7300001 TO S/N7302140
54	0269200600	DRAIN HOSE	1	S/N7302141~
55	M9300000103	RESERVE TANK	1	
56	0802081104	CAP RESERVE TANK	1	REPLACES M9300100003
57	M2316100104	BRACKET RESERVE TANK	1	S/N7300001 TO S/N7300003
57	M2316100204	BRACKET RESERVE TANK	1	REPLACES M9300100003
58	0199100200	HOSE	1	
59	0193601500	HOSE	1	S/N7300001 TO S/N7300267
60	M2260600014	RELAY BRACKET	1	S/N7300001 TO S/N7301310

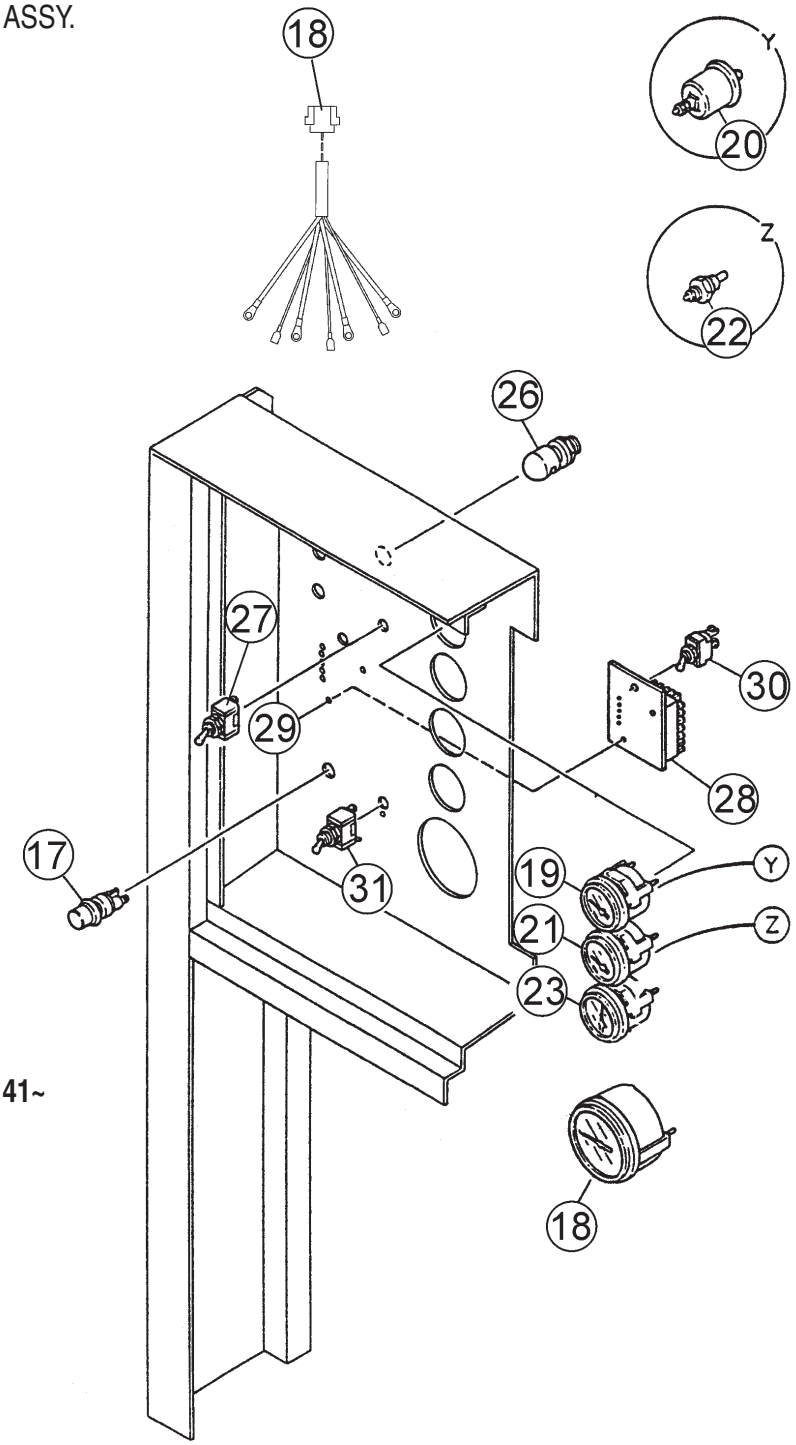
ENGINE AND RADIATOR ASSY. (CONT.)



ENGINE AND RADIATOR ASSY. (CONT.)

NO.	PART NO.	PART NAME	QTY.	REMARKS
60	M2260600024	RELAY BRACKET	1	S/N7301311~
61	0602202597	RELAY;AL81719	1	S/N7300001 TO 7301310
61	0602202592	RELAY;AT141011	1	S/N7301311~
62	0602220621	TERMINAL COVER	1	S/N7300001 TO S/N7300003
63	0017105015	HEX HEAD BOLT	1	S/N7300001 TO S/N7301310
63	011106015	MACHINE SCREW	2	S/N7301311~
				REPLACES 0027106015
64	M2483400014	ALTERNATOR COVER	1	
65	011206020	HEX HEAD BOLT	2	REPLACES 0016906020
66	011008020	HEX HEAD BOLT	2	S/N7 300004~
				REPLACES 0016908020
67	030210250	LOCK WASHER	4	S/N7300221~
				REPLACES 0042510000
68	1718939010	OIL SWITCH	1	S/N 7300646~
				REPLACES 0602122281
69	M9200100704	ADAPTER	1	S/N7300646~
70	1518183040	WATER SWITCH	1	S/N 7300646~
				REPLACES 0602123282
71	M9200100404	ADAPTER	1	S/N 7300646~
72	012210020	HEX HEAD BOLT	1	S/N7301311~
				REPLACES 0017110020
73	M2375200004	BRACKET AIR CLEANER	1	S/N7302331~
74	011008020	HEX HEAD BOLT	4	S/N7302331~
				REPLACES 0016908020
75	020108060	HEX NUT	4	S/N7302331~
				REPLACES 0207008000
76	0605515200	HOSE BAND	1	S/N7302331~
77	0605511395	VALVE;XV500P-8	1	S/N7302141~
78	0603306590	CONNECTOR	1	S/N7302141~
79	0603300285	ROCK NUT	1	S/N7302141~
80	0603306395	HOSE JOINT	1	S/N7302141~
81	DYNC70025000012	ACTUATOR	1	S/N7302141~
				REPLACES0602150093
82	M3356200004	STOPPER BRACKET	1	S/N7302141~
83	012210020	HEX HEAD BOLT	1	S/N7302141~
				REPLACES 0017110020
84	011206020	HEX HEAD BOLT	1	S/N7302141~
				REPLACES 0016906020
85	0207006000	HEX NUT	1	S/N7302141~

ENGINE OPERATING ASSY.

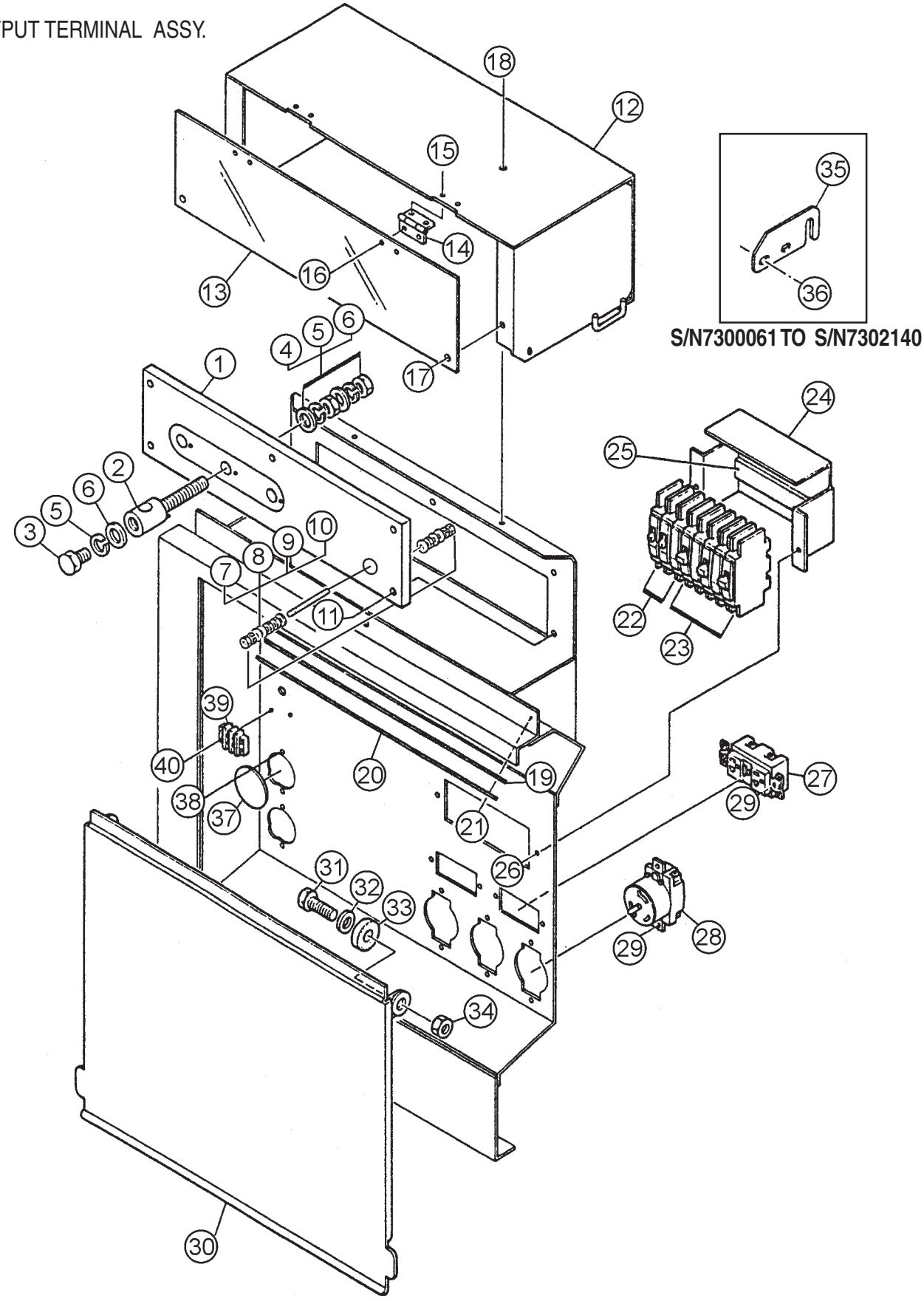


S/N73002141~

ENGINE OPERATING ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
18	M2357200042	WIRE HARNESS, ENGINE	1	UP TO S/N7301310
18	M2357200052	WIRE HARNESS, ENGINE	1	S/N7301311 TO S/N7302140
18	M2357200062	WIRE HARNESS, ENGINE	1	S/N730141~
17	0601831585	COLD STARTING BUTTON;44047	1	S/N7301511~
17	0601831584	CAP	1	S/N7300001 TO S/N7301510
17	0601831586	CAP	1	S/N7301511~
17	0602202450	WIRING READ	1	S/N7300001 TO S/N7300220
17	0602202451	WIRING READ	1	S/N7300001 TO S/N7300220
18	0602120096	TACHOMETER	1	103678
19	0602122094	OIL PRESSURE GAUGE;106068	1	S/N7300001 TO S/N7300645
19	0602122093	OIL PRESSURE GAUGE;100174	1	S/N7300646~
20	0602122272	UNIT, OIL PRESSURE;102225	1	REPL.0602122207&0602122271
21	0602123091	WATER TEMPERATURE GAUGE;106078	1	S/N7300001 TO S/N7300645
21	0602123092	WATER TEMPERATURE GAUGE;100182	1	S/N7300646~
22	0602123263	UNIT, WATER TEMPERATURE;0208900	1	S/N7300001 TO S/N7300645
22	0602123261	UNIT, WATER TEMPERATURE;0202500	1	S/N7300646~
23	0602121080	CHARGING AMMETER	1	100158
25	0602103092	ALARM LAMP	2	S/N7300001 TO S/N7302140
25	0601810245	BULB;18V	2	S/N7300001 TO S/N7302140
26	0601810141	PANEL LIGHT	1	
27	0601831330	SWITCH, PANEL LIGHT	1	90-0001
28	ECU9988NJD	ENGINE CONTROLLER	1	S/N7302141~
				REPLACES 0602202545
29	0027104035	MACHINE SCREW	2	S/N7302141~
29	OEMAA8	HEX NUT	2	S/N7302141~
				REPLACES 0207004000
30	82608	SWITCH;7562K4	1	S/N7302141~
				REPLACES 0601831340
31	0601831395	SWITCH;7302K36	1	S/N7302141~

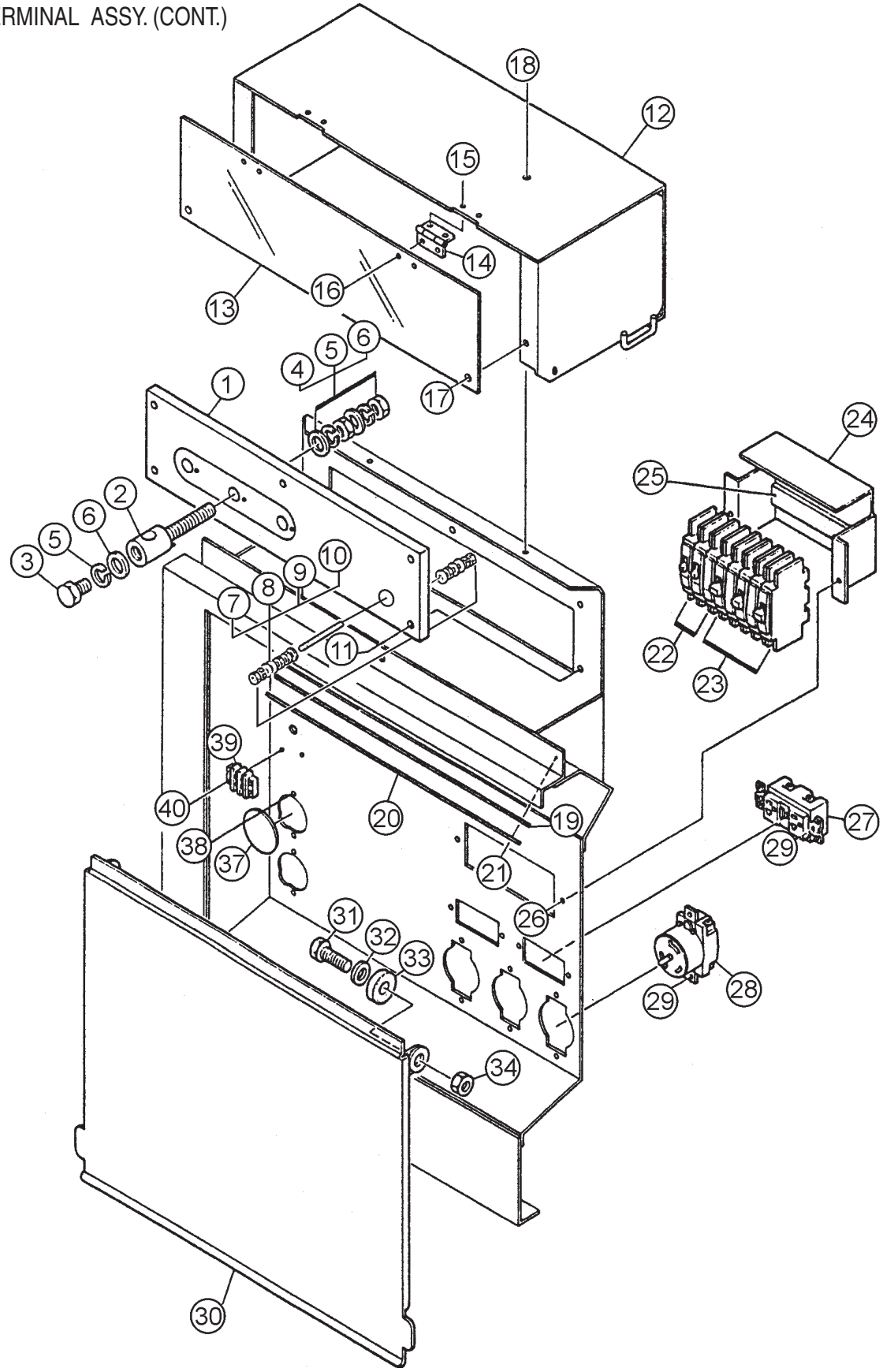
OUTPUT TERMINAL ASSY.



OUTPUT TERMINAL ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	8081860103	TERMINAL PANEL	1	S/N7300001 TO S/N7300365; REPLACES M2230700003
1	M2230700113	TERMINAL PANEL	1	S/N7300366~
2	M2233000004	OUTUT TERMINAL BOLT	4	S/N7300001 TO S/N7300365
2	M2233000004	OUTPUT TERMINAL BOLT	5	S/N7300366~
3	M2233100004	TIE BOLT	4	S/N7300001 TO S/N7300365
3	M2233100004	TIE BOLT	5	S/N7300366~
4	0039312000	HEX NUT	8	S/N7300001 TO S/N7300365
4	0039312000	HEX NUT	10	S/N7300366~
5	0040012000	LOCK WASHER	12	S/N7300001 TO S/N7300365
5	0040012000	LOCK WASHER	15	S/N7300366~
6	0041412000	PLAIN WASHER	16	S/N7300001 TO S/N7300365
6	0041412000	PLAIN WASHER	20	S/N7300366~
7	M2233700004	STUD BOLT	1	S/N7300001 TO S/N7300365
8	0039306000	HEX NUT	5	S/N7300001 TO S/N7300365
9	0040006000	PLAIN WASHER	2	S/N7300001 TO S/N7300365
10	0041406000	PLAIN WASHER	5	S/N7300001 TO S/N7300365
11	0012108035	HEX HEAD BOLT	5	S/N7300001 TO S/N7300365; REPLACES 0016908035
12	M2236100403	TERMINAL COVER	1	S/N7300001 TO S/N7300060
12	M2236100413	TERMINAL COVER	1	S/N7300061 TO S/N7301140
12	M2236100423	TERMINAL COVER	1	S/N7301141 TO S/N7301260
12	M2236100433	TERMINAL COVER	1	S/N7301261 TO S/N7302175
12	M2236100003	TERMINAL COVER	1	S/N7302176~
13	M2236100504	OUTPUT WINDOW	1	S/N73012611 TO S/N7302175
13	M3236100104	OUTPUT WINDOW	1	S/N7302176~
14	0605010040	HINGE	2	
15	0027103010	MACHINE SCREW	4	
15	0207003000	HEX NUT	4	REPLACES 0030003000
15	58413	PLAIN WASHER	4	REPLACES 0041203000
16	0027103010	MACHINE SCREW	4	
16	0207003000	HEX NUT	4	REPLACES 0030003000
17	011206020	HEX HEAD BOLT	2	REPLACES 0016906020
18	011106015	HEX HEAD BOLT	4	REPLACES 0016906015
19	M1236400004	CABLE OUTPUT COVER	1	S/N7300001 TO S/N7300140
19	M3236400004	CABLE OUTPUT COVER	1	S/N73000141~
20	M1236300004	SUPPORTER, CABLE OUTLET CVR.	1	S/N7300001 TO S/N7300140
20	M3236300004	SUPPORTER, CABLE OUTLET CVR.	1	S/N7300141~
21	011206020	HEX HEAD BOLT	6	REPLACES 0016906020
22	0601808803	CIRCUIT BREAKER	2	QOU120B1P20A
23	0601808804	CIRCUIT BREAKER	3	QOU250B2P50A

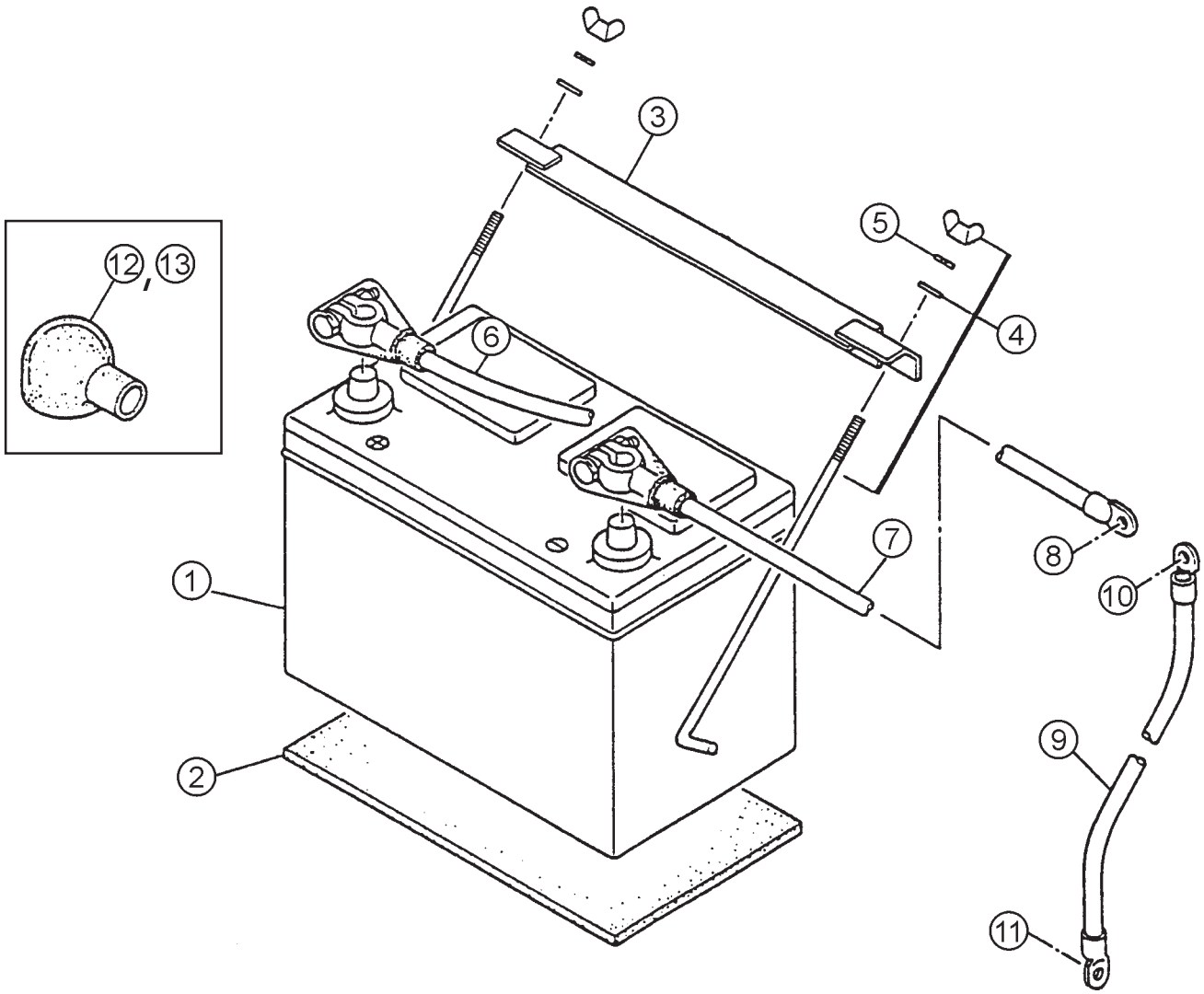
OUTPUT TERMINAL ASSY. (CONT.)



OUTPUT TERMINAL ASSY. (CONT.)

NO.	PART NO.	PART NAME	QTY.	REMARKS
24	M1260700304	BREAKER FITTING COVER	1	
25	0222100150	CUSHION RUBBER	1	
26	0016906020	HEX HEAD BOLT	2	
27	011206020	RECEPTACLE;GF5342125V 20A X 2	2	S/N7300001 TO S/N7300365; REPLACES 0601812540
27	0601812597	RECEPTACLE;GF530EM 125V 20A X2	2	S/N7300366~; REPLACES 0601812598
28	0601811034	RECEPTACLECS;6369 250V 50A	3	S/N7300001 TO S/N7300365; REPLACES 0601812548
28	0601812538	RECEPTACLE;CS6369 250V 50A	3	S/N7300366~
29	0021304015	MACHINE SCREW	10	REPLACES 0027104015
29	0030004000	HEX NUT	10	REPLACES 0207004000
30	M2236100303	TERMINAL COVER	1	S/N7300001 TO S/N7302175
30	M2455400003	TERMINAL COVER	1	S/N7302176~
31	012212045	HEX HEAD BOLT	2	REPLACES 0010112045
32	031112230	PLAIN WASHER	2	REPLACES 0041212000
33	M9310200004	STAY RUBBER	2	
34	0030012000	NUT	2	
35	M2354200004	SUPPORTER, GOVERNOR ROD	1	S/N7300061 TO S/N7302140
36	011106015	HEX HEAD BOLT	2	S/N7300061 TO S/N7302140; REPLACES 0016906015
37	0603306775	PLUG	2	S/N7302176~
38	0021304015	MACHINE SCREW	4	S/N7302176~; REPLACES 0027104015
39	0601815194	TERMINAL	1	S/N7302141~
40	0021304015	MACHINE SCREW	2	S/N7302141~; REPLACES 0027104015

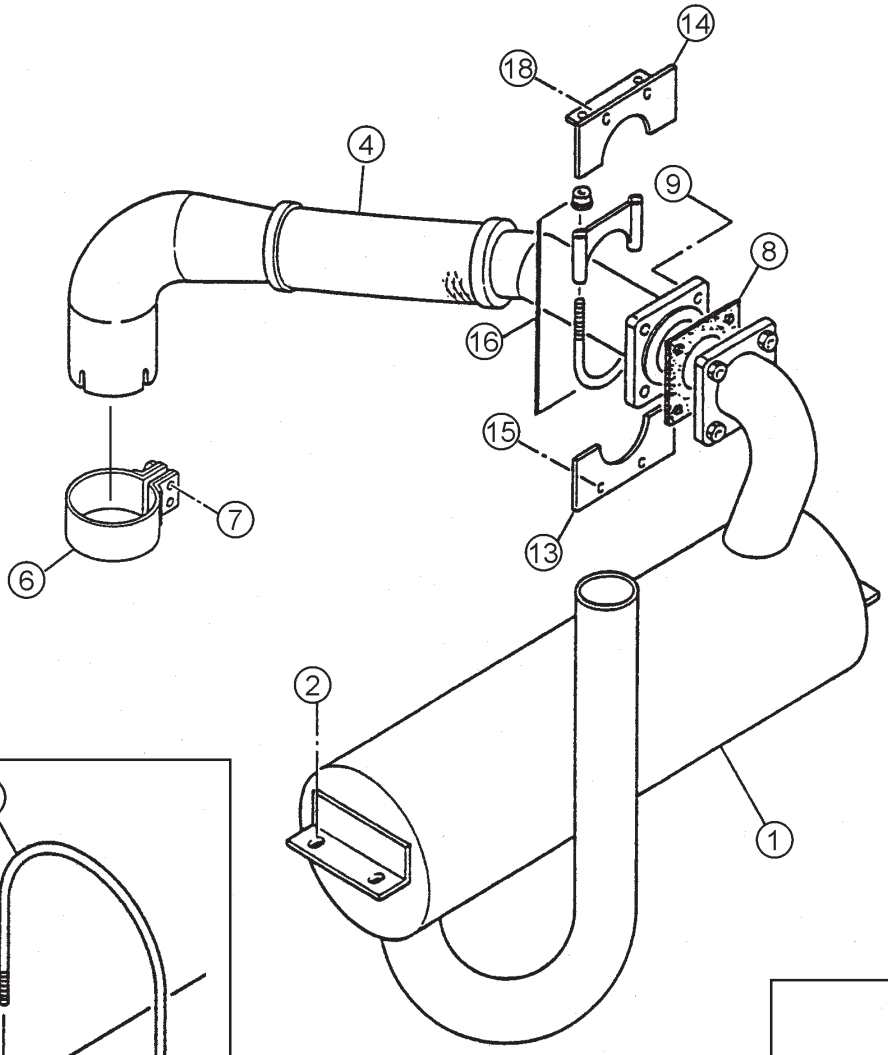
BATTERY ASSY.

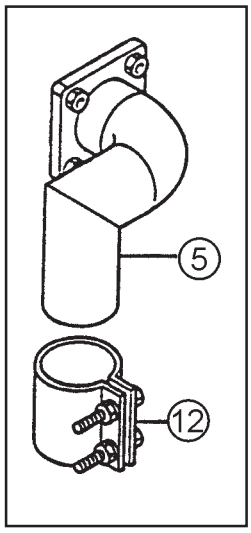


BATTERY ASSY.

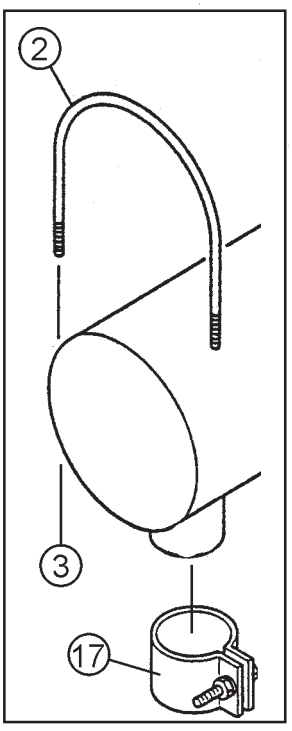
NO.	PART NO.	PART NAME	QTY.	REMARKS
1	GPL27T	BATTERY	1	627MFD ; REPLACES 0602220187
2	M9310500014	BATTERY SHEET	1	
3	M9103000304	BATTERY BAND	1	
4	0602220920	BATTERY BOLT SET	2	
5	0040006000	LOCK WASHER	2	
6	M1346400004	BATTERY CABLE	1	S/N7300001 TO S/N7302045
6	M1346400204	BATTERY CABLE	1	S/N7302046~
7	M2346400104	BATTERY CABLE	1	
8	011008020	HEX HEAD BOLT	1	REPLACES 0016908020
	0040508000	TOOTHED WASHER	1	
9		CABLE, GROJND	1	MAKE LOCALLY
10	0017112025	HEX HEAD BOLT	1	
10	0040512000	TOOTHED WASHER	1	
11	012210020	HEX HEAD BOLT	1	REPLACES 0017110020
11	0040510000	TOOTHED WASHER	1	
12	M1346400004	TERMINAL COVER	1	S/N7300001 TO S/N7300003; REPLACES M9310000304
13	M1346400104	TERMINAL COVER	1	S/N7300001 TO S/N7300003; REPLACES M9310000204

MUFFLER ASSY.

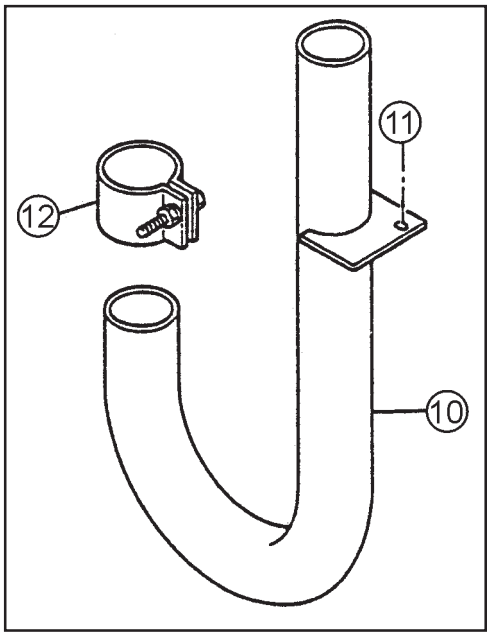




S/N7300001 TO S/N7300800



S/N7300001 TO S/N7300800

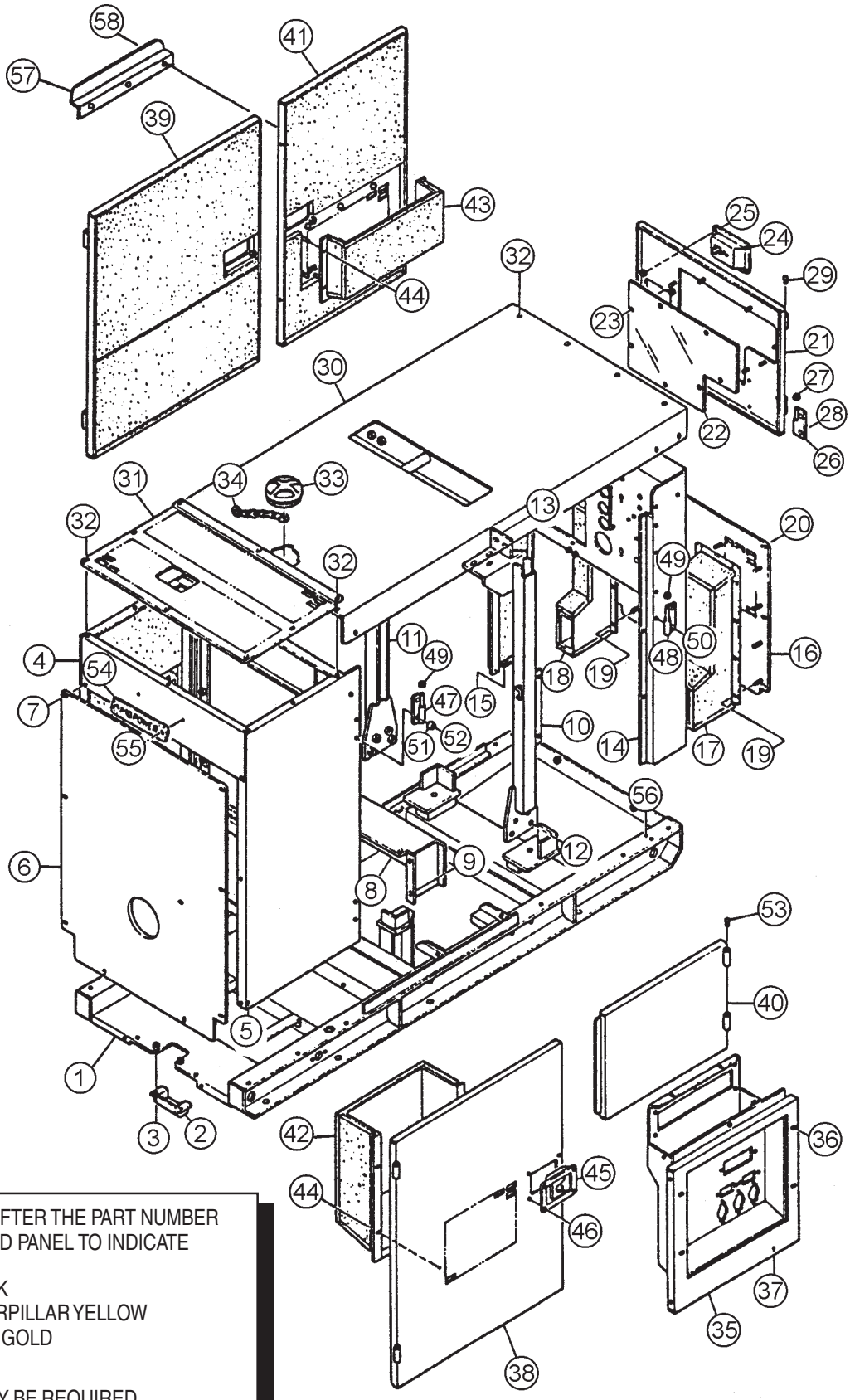


S/N7300001 TO S/N7300800

MUFFLER ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	0602300162	MUFFLER	1	S/N7300001 TO S/N7300800
1	0602300166	MUFFLER	1	S/N7300801~
2	M2330400204	U BOLT	2	S/N7300001 TO S/N7300800
2	012210025	HEX HEAD BOLT	4	S/N7300801~; REPLACES 0016910025
3	020108060	HEX NUT	4	S/N7300001 TO S/N7300800; REPLACES 0037908000
3	031108160	PLAIN WASHER	4	S/N7300001 TO S/N7300800; REPLACES 0041208000
4	M2333000303	EXHAUST PIPE	1	S/N7300001 TO S/N7300020
4	M2333000313	EXHAUST PIPE	1	S/N7300021 TO S/N7300180
4	M2333000323	EXHAUST PIPE	1	S/N7300181 TO S/N7300363
4	M2333000333	EXHAUST PIPE	1	S/N7300364~
5	M2333000203	EXHAUST PIPE	1	S/N7300001 TO S/N7300020
5	M2333000213	EXHAUST PIPE	1	S/N7300021 TO S/N7300180
5	M2333000223	EXHAUST PIPE	1	S/N7300181 TO S/N7300800
6	M2333300104	SEAL CLAMP	1	S/N7300001 TO S/N7300003
6	0602325065	CLAMP	1	S/N7300004 TO S/N7300400
6	0602325066	CLAMP	1	S/N7300401~
7	011008040	HEX HEAD BOLT	2	S/N7300001 TO S/N7300003; REPLACES 0010108040
8	M2333200004	GASKET	1	REPLACES M2333200014
9	0012108035	HEX HEAD BOLT	4	REPLACES 0016908035
10	M2333100204	TAIL PIPE	1	S/N7300001 TO S/N7300800
11	011008020	HEX HEAD BOLT	1	S/N7300001 TO S/N7300800; REPLACES 0016908020
12	0602325022	CLAMP	1	REPLACES 0602325089
13	M2330400304	COVER	1	S/N7300001 TO S/N7300180
13	M2330400314	COVER	1	S/N7300181~
14	M2333300003	BRACKET	1	S/N7300001 TO S/N7300180
14	M2333300013	BRACKET	1	S/N7300181~
15	011106015	HEX HEAD BOLT	4	S/N7300001 TO S/N7300140; REPLACES 0016906015
15	011106015	HEX HEAD BOLT	2	S/N7300141~; REPLACES 0016906015
16	0602326060	U BOLT SET	1	
17	0602325022	CLAMP	1	S/N7300001 TO S/N7300800
18	011106015	HEX. HEAD BOLT	2	S/N7302141~; REPLACES 0016906015
18	0207000600	HEX. NUT	2	S/N7302141~

ENCLOSURE ASSY.



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

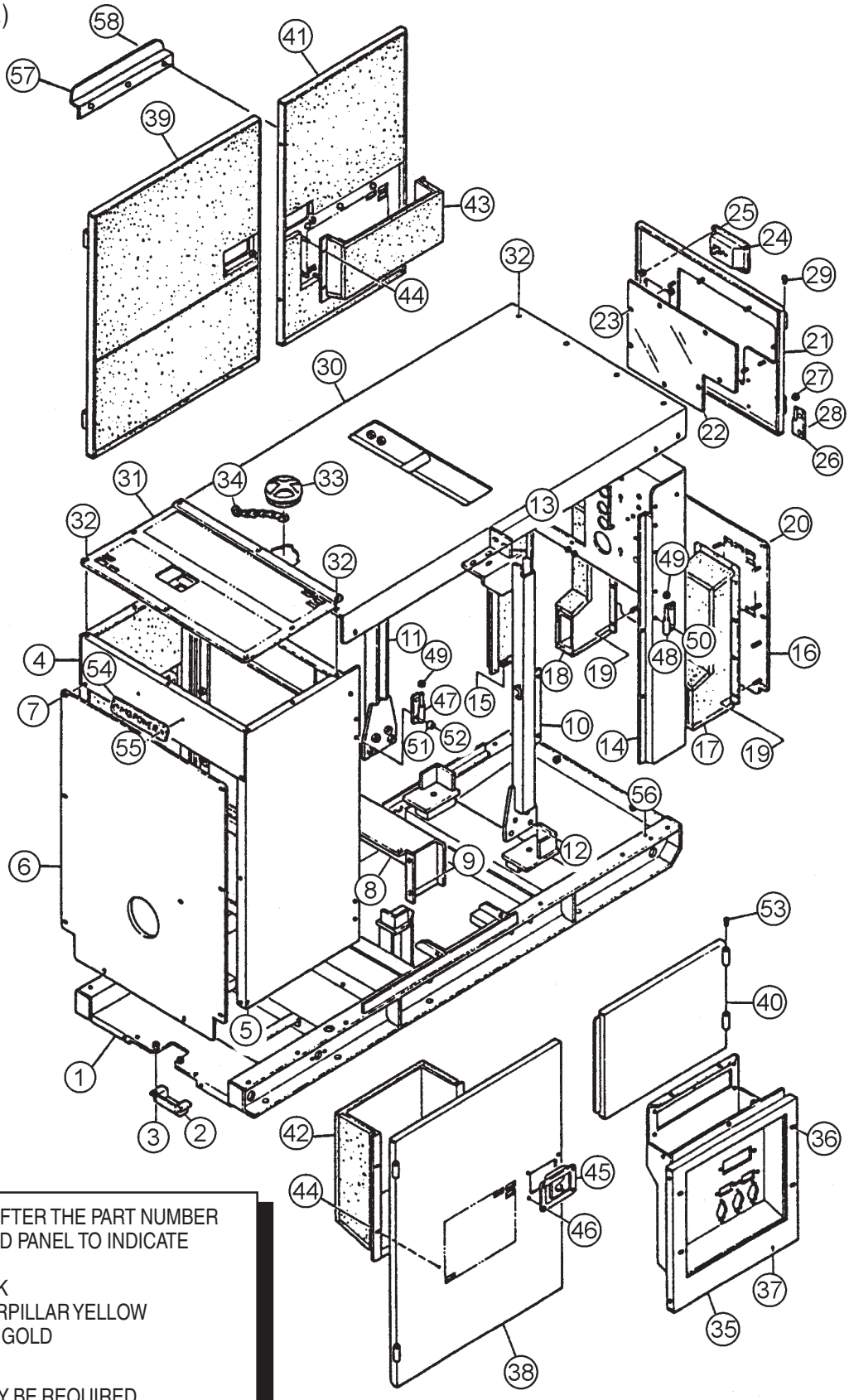
1-ORANGE	5 -BLACK
2-WHITE	6 -CATERPILLAR YELLOW
3 -SPECTRUM GRAY	7 -CATO GOLD
4 -SUNBELT GREEN	

THE SERIAL NUMBER MAY BE REQUIRED.

ENCLOSURE ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	M2413000102	BASE	1	S/N7300001 TO S/N7300003
1	M2413000112	BASE	1	S/N7300004 TO S/N7301200
1	M2413000212	BASE	1	S/N7301201 TO S/N7302140
1	M2415000203	BASE	1	S/N7302141~
2	M1413400004	UNDER COVER	1	
3	011008020	HEX HEAD BOLT	2	REPLACES 0016908020
4	M2423000102	FRONT FRAME	1	S/N7300001 TO S/N7300003
4	M2423000112	FRONT FRAME	1	S/N7300004 TO S/N7300180
4	M2423000212	FRONT FRAME	1	S/N7300181 TO 7302140
				REPLACES M2423000202
				AND M242300122
4	M2425000003	FRONT FRAME	1	S/N7302141~
4	M2493101203	ACOUSTIC SHEET	1	REPLACES M2493101213
5	0016908020	HEX HEAD BOLT	6	
6	M2423200214	COVER, FRONT FRAME	1	
6	M2493101104	ACOUSTIC SHEET	1	
7	011008020	HEX HEAD BOLT	11	REPLACES 0016908020
8	M2423200303	INNER COVER, FRONT FRAME	1	S/N7300001 TO S/N7300003
8	M2423200313	INNER COVER, FRONT FRAME	1	S/N7300004~
9	011008020	HEX HEAD BOLT	6	S/N7300001 TO S/N7300003
				REPLACES 0016908020
9	011008020	HEX HEAD BOLT	7	S/N7300004~
				REPLACES 0016908020
10	M2433000203	CENTER FRAME	1	S/N7300001 TO S/N7302175
10	M2435000203	CENTER FRAME	1	S/N7302176
11	M2433000303	CENTER FRAME	1	
12	0010114030	HEX HEAD BOLT	8	
12	030214350	LOCK WASHER	8	REPLACES 0040014000
12	031114260	PLAIN WASHER	8	REPLACES 0041214000
13	012212030	HEX HEAD BOLT	10	REPLACES 0017112030
14	M2443000102	REAR FRAME	1	S/N7300001 TO S/N7300003
14	M2443000112	REAR FRAME	1	S/N7300004 TO S/N7302175
14	M2445000103	REAR FRAME	1	S/N7302176~
14	M2493300904	ACOUSTIC SHEET	1	
15	011008020	HEX HEAD BOLT	4	REPLACES 0016908020
16	M2443300703	REAR COVER	1	S/N7300001 TO 7300003
16	M2443300713	REAR COVER	1	S/N7300004~
17	M2443300613	DUCT, REAR COVER	1	
17	M2493300704	ACOUSTIC SHEET	1	
18	M2443300513	DUCT, REAR COVER	1	
18	M2493300604	ACOUSTIC SHEET	1	
19	0207006000	HEX NUT	16	
20	01100802	HEX HEAD BOLT	8	S/N7300001 TO S/N7300003
				REPLACES 0016908020
20	01100802	HEX HEAD BOLT	9	S/N7300004~
				REPLACES 001690802

ENCLOSURE ASSY. (CONT.)



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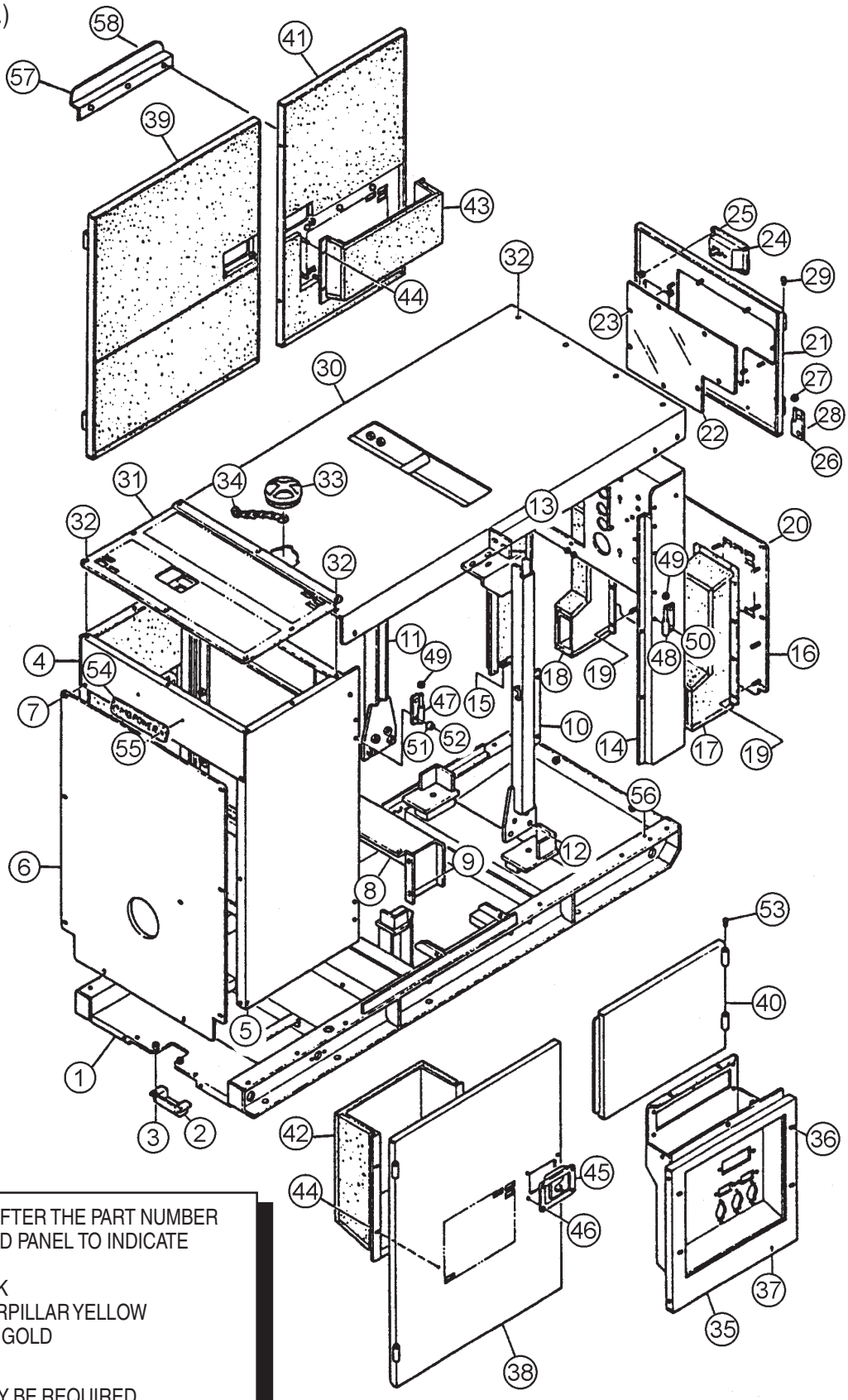
1-ORANGE	5 -BLACK
2-WHITE	6 -CATERPILLAR YELLOW
3 -SPECTRUM GRAY	7 -CATO GOLD
4 -SUNBELT GREEN	

THE SERIAL NUMBER MAY BE REQUIRED.

ENCLOSURE ASSY. (CONT.)

NO.	PART NO.	PART NAME	QTY.	REMARKS
21	M2443200103	REAR DOOR	1	S/N7300001 TO S/N7300003
21	M2443200123K	REAR DOOR	1	S/N7300004 TO S/N7300680
				REPLACES M2443200113
21	M2443200123	REAR DOOR	1	S/N7300681~
22	M1443600004	WINDOW PLATE	1	S/N7300001 TO S/N7300260
22	M1443600104	WINDOW PLATE	1	S/N7300261 TO 7300680
22	M1443600204	WINDOW PLATE	1	S/N7300681~
23	020106050	HEX NUT	6	UP TO 7300680
				REPLACES 0207306000
23	020106050	HEX NUT	8	S/N7300681~
				REPLACES 0207306000
23	952404470	PLAIN WASHER	12	S/N7300001 TO S/N7300610
				REPLACES 0041206000
23	952404470	PLAIN WASHER	6	S/N7300611 TO 7300680
				REPLACES 0041206000
23	952404470	PLAIN WASHER	8	S/N7300681~
				REPLACES 0041206000
24	B9114000002	DOOR HANDLE ASSY	1	REPLACES M9113000002
25	0027106016	MACHINE SCREW	4	REPLACES 0021806015
25	020106050	HEX NUT	4	REPLACES 0030006000
26	M9110100204	HINGE	2	
27	M9116100004	WASHER	2	
28	011008020	HEX HEAD BOLT	3	REPLACES 0016908020
29	0845031504	BLIND PLUG	2	REPLACES M9310000004
30	M2463000102	ROOF PANEL	1	S/N7300001 TO S/N7300267
30	M2463000202	ROOF PANEL	1	S/N7300268~
30	M2493500123	ACOUSTIC SHEET	1	REPLACES M2493500103
				AND M2493500113
31	M2463500104	OVER COVER, FRONT FRAME	1	S/N7300001 TO S/N7300800
				REPLACES M2463500104
31	M2463500114	OVER COVER, FRONT FRAME	1	S/N7300801~
32	011008020	HEX HEAD BOLT	18	REPLACES 0016908020
33	1625165103	BONNET CAP	1	REPLACES M9310000103
34	1625165204	CHAIN ASSY	1	REPLACES M1483600204
35	M2453200102	SPLASHER PANEL	1	S/N7300001 TO S/N7300140
35	M2236100504	ACOUSTIC SHEET	1	S/N7300001 TO S/N7300140
35	M2453200112	SPLASHER PANEL	1	S/N7300141 TO S/N7301140
35	M2236100504	ACOUSTIC SHEET	1	S/N7300141 TO S/N7301140
35	M2453200122	SPLASHER PANEL	1	S/N7301141 TO S/N7301260
35	M2236100504	ACOUSTIC SHEET	1	S/N7301141 TO S/N7301260
35	M2453200132	SPLASHER PANEL	1	S/N7301261 TO S/N7302175
35	M2236100504	ACOUSTIC SHEET	1	S/N7301261 TO S/N7302175
35	M2455200203	SPLASHER PANEL	1	S/N7302176~
35	M3236100104	ACOUSTIC SHEET	1	S/N7302176~
36	011208060	HEX HEAD BOLT	4	REPLACES 0016908055
37	011008020	HEX HEAD BOLT	2	REPLACES 0016908020

ENCLOSURE ASSY. (CONT.)



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

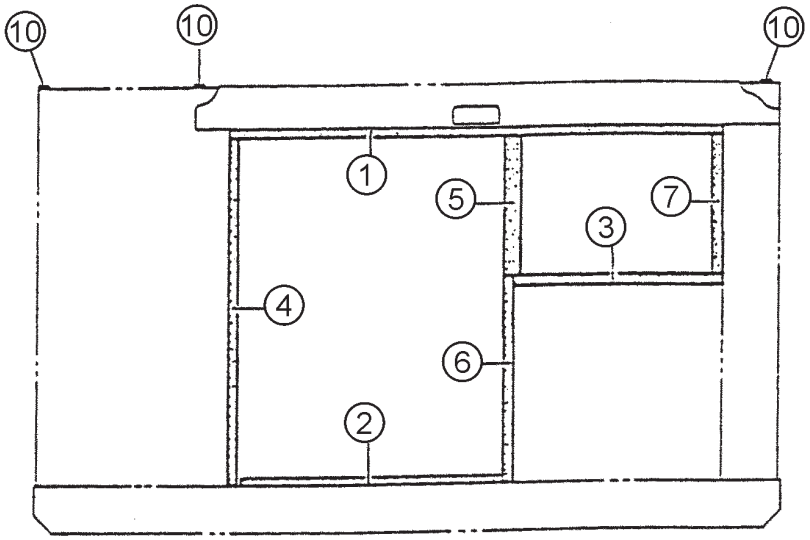
1-ORANGE	5 -BLACK
2-WHITE	6 -CATERPILLAR YELLOW
3 -SPECTRUM GRAY	7 -CATO GOLD
4 -SUNBELT GREEN	

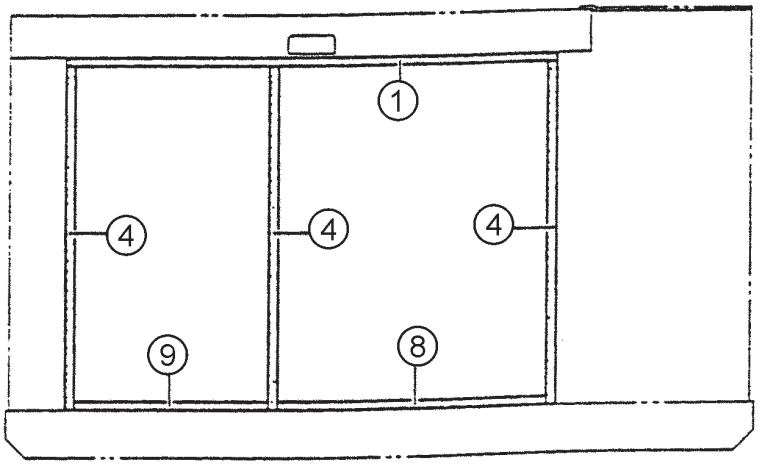
THE SERIAL NUMBER MAY BE REQUIRED.

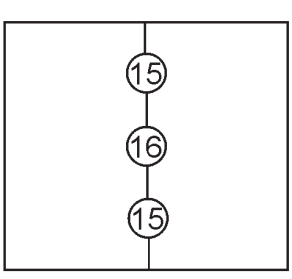
ENCLOSURE ASSY. (CONT.)

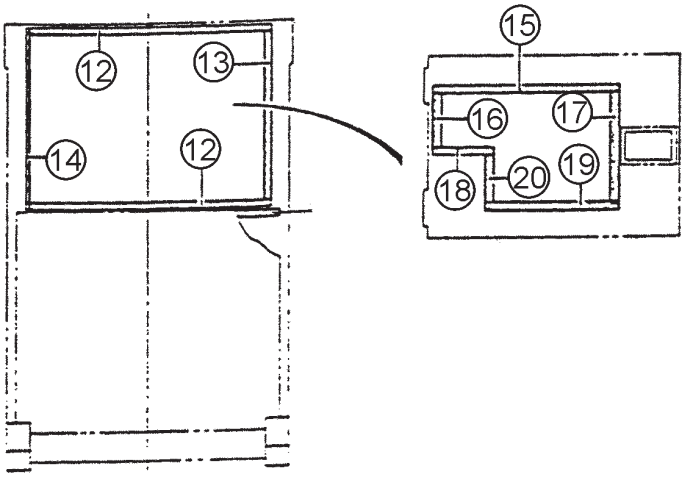
NO.	PART NO.	PART NAME	QTY.	REMARKS
38	M2453000503	SIDE DOOR	1	
38	M2493400904	ACOUSTIC SHEET	1	
39	M2453000603	SIDE DOOR	1	
39	M2493401104	ACOUSTIC SHEET	1	
40	M2453000703	SIDE DOOR	1	S/N7300001 TO S/N7302175
40	M2455000103	SIDE DOOR	1	S/N7302176~
40	M2493401904	ACOUSTIC SHEET	1	S/N7300001 TO S/N7302175
40	M2495400304	ACOUSTIC SHEET	1	S/N7302176~
41	M2453000803	SIDE DOOR	1	S/N7300001 TO S/N7302175
41	M2453000813	SIDE DOOR	1	S/N7302176~
41	M2493401204	ACOUSTIC SHEET	1	
42	M2453300503	DUCT	1	
42	M2493401004	ACOUSTIC SHEET	1	
43	M2453300603	DUCT	1	
43	M2493401304	ACOUSTIC SHEET	1	
44	0207006000	HEX NUT	13	
45	B9114000002	DOOR HANDLE ASSY	3	REPLACES M9113000002
46	0027106016	MACHINE SCREW	12	REPLACES 0021806015
46	020106050	HEX NUT	12	REPLACES 0030006000
47	M9110100204	HINGE	4	
48	M9110100304	HINGE	4	
49	M9116100004	WASHER	8	
50	011008020	HEX HEAD BOLT	9	REPLACES 0016908020
51	0601850097	DOOR STOPPER	8	
52	0027208025	MACHINE SCREW	8	
53	0845031504	BLIND PLUG	8	REPLACES M9310000004
54	0600500090	EMBLEM	1	
55	0021106015	MACHINE SCREW	2	
56	011008020	HEX HEAD BOLT	1	REPLACES 0016908020
56	0040508000	TOOTHED WASHER	1	
57	M2455600004	DOOR BRACKET	1	
58	0111006015	HEX HEAD BOLT	3	REPLACES 0016906015

RUBBER SEAL ASSY.







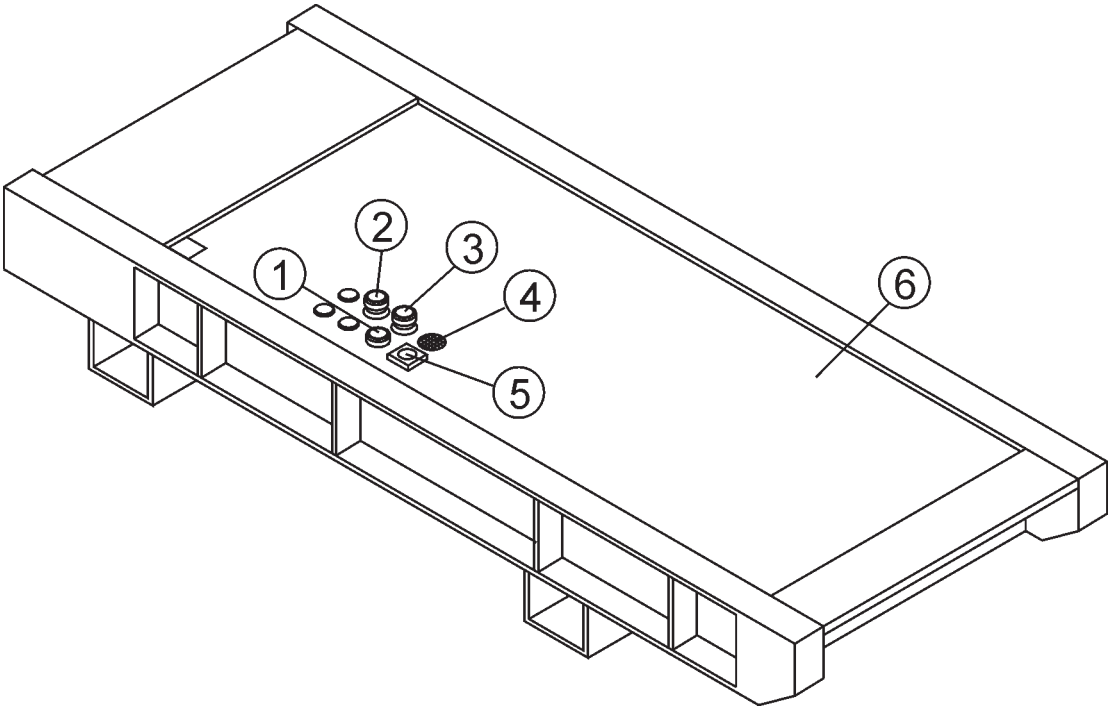


S/N 7300001 TO S/N 7300260

RUBBER SEALS ASSY.

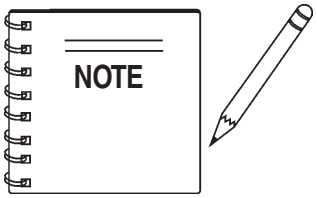
NO.	PART NO.	PART NAME	QTY.	REMARKS
1	0228901580	RUBBER SEAL	2	
2	0229200825	RUBBER SEAL	1	
3	0228900670	RUBBER SEAL	1	
4	0228901090	RUBBER SEAL	4	
5	M2490300004	RUBBER SEAL	1	S/N7300001 TO S/N7302175
5	M2492300004	RUBBER SEAL	1	S/N7302176~
6	0228800590	RUBBER SEAL	1	S/N7300001 TO 7302175
6	0228800665	RUBBER SEAL	1	S/N7302176~
7	0228900500	RUBBER SEAL	1	S/N7300001 TO S/N7302175
7	0228900425	RUBBER SEAL	1	S/N7302176~
8	0228900860	RUBBER SEAL	1	
9	0228900630	RUBBER SEAL	1	
10	0229200900	RUBBER SEAL	2	
11	0229200840	RUBBER SEAL	1	
12	0228800770	RUBBER SEAL	2	
13	0228800540	RUBBER SEAL	1	
14	0228800580	RUBBER SEAL	1	
15	0228100565	RUBBER SEAL	2	S/N7300001 TO S/N7300680
15	0228100550	RUBBER SEAL	1	S/N7300681~
16	0228100170	RUBBER SEAL	2	S/N7300001 TO S/N7300680
16	0228100170	RUBBER SEAL	1	S/N7300681~
17	NS2016	RUBBER SEAL	1	S/N7300681~; REPLACES 0228100350
18	0228100170	RUBBER SEAL	1	S/N7300681~
19	0228100360	RUBBER SEAL	1	S/N7300681~
20	0228100180	RUBBER SEAL	1	S/N7300681~

FUEL TANK ASSY.



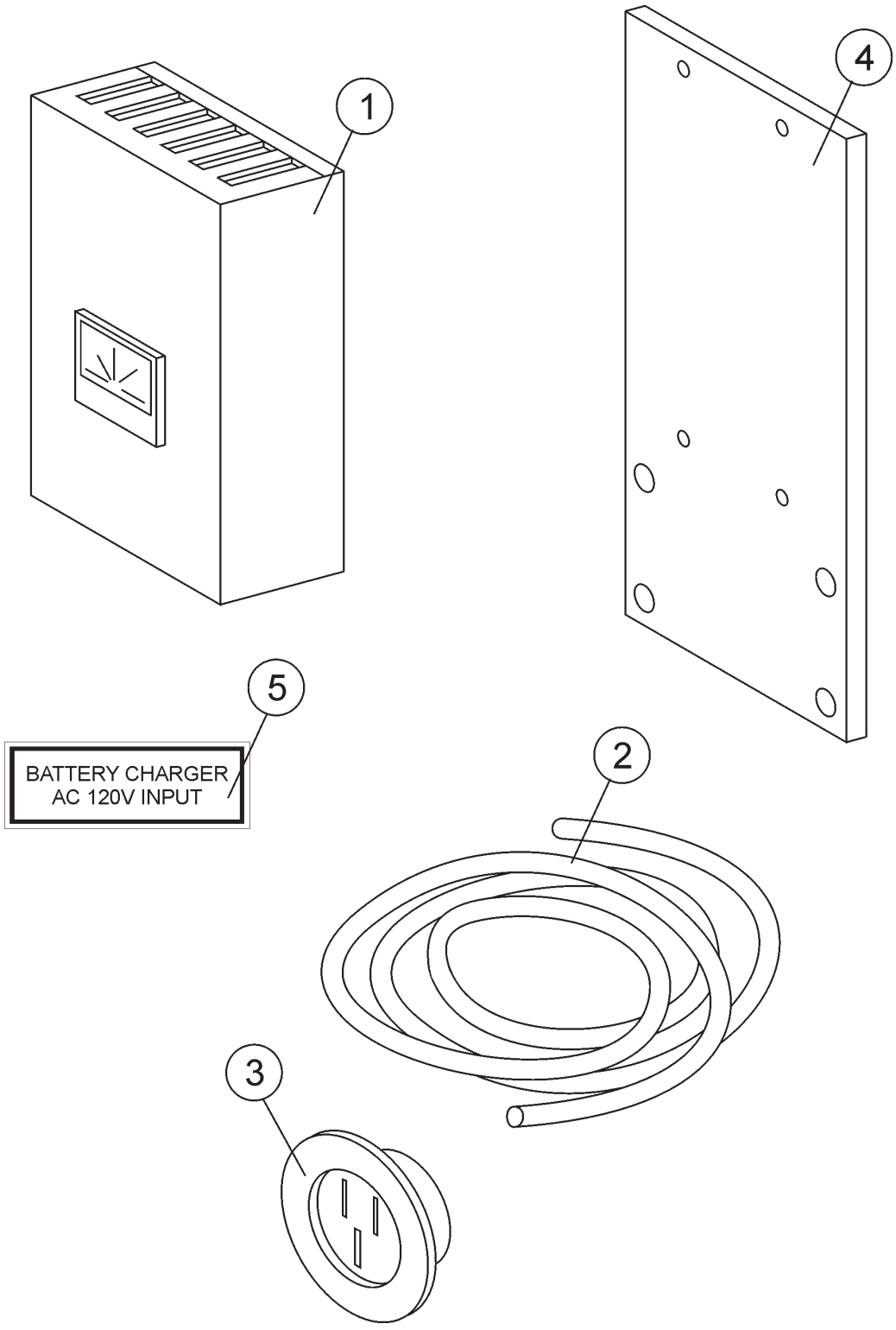
FUEL TANK ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	3000	CAP, FUEL	1	
2		REDUCER, 1/2 to 3/8	1	OBTAIN LOCALLY
3		REDUCER, 1/2 to 3/8	1	OBTAIN LOCALLY
4	2120	VENT, EMERGENCY	1	
5	9070	GUAGE, FUEL LEVEL	1	
6	SBT45-12H	TANK, FUEL, LESS FORK POCKETS	1	SEE NOTE BELOW



Fork pockets must be added to the above part number when ordering a replacement fuel tank.

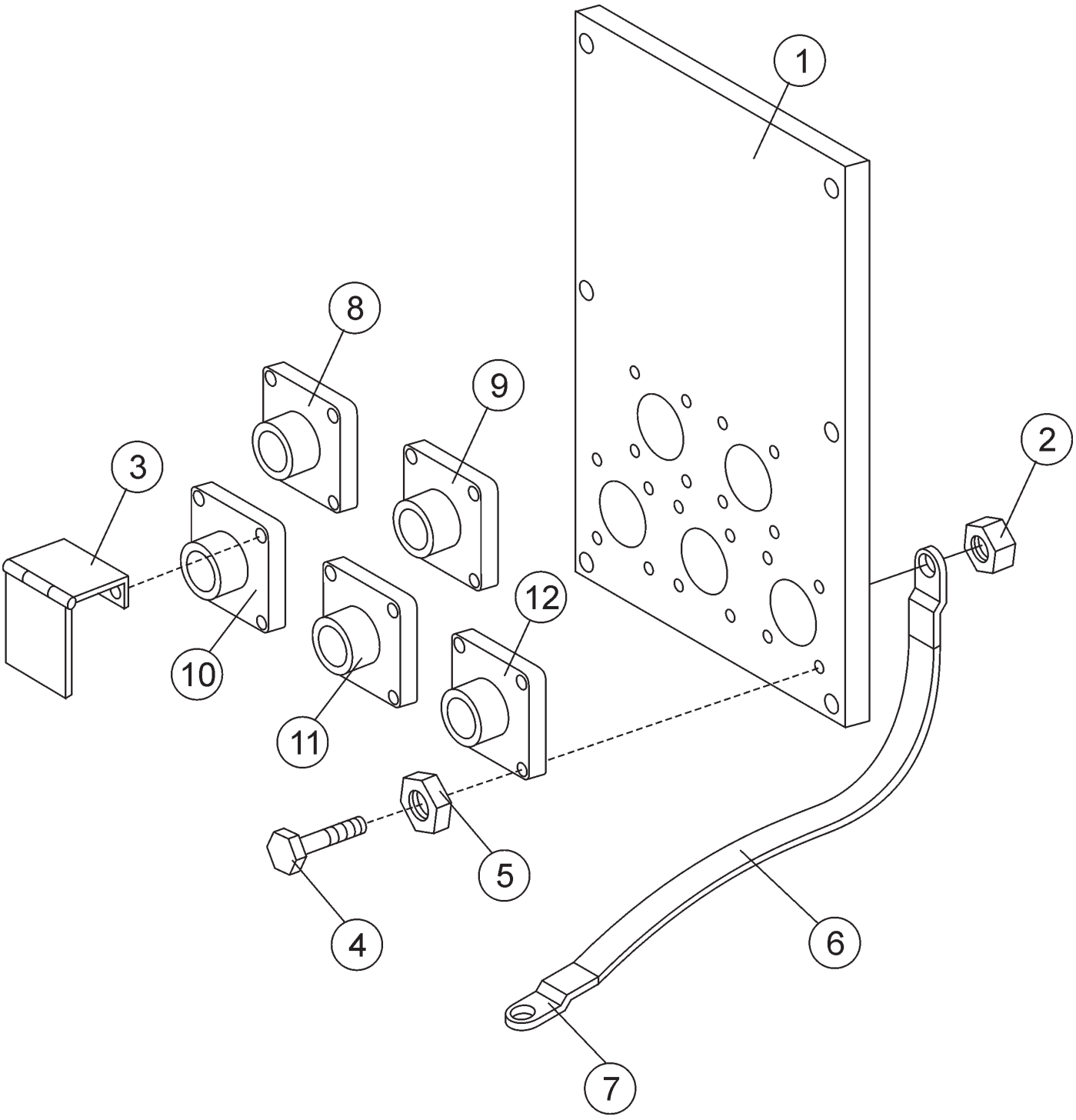
BATTERY CHARGER ASSY.



BATTERY CHARGER ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	LC125002	CHARGER, BATTERY 12V 3A	1	
2		CABLE, 16/3 x 3'	1	MAKE LOCALLY
3	HBL2578C	RECEPTICLE, 15A	1	
4	34530	BRACKET, MOUNTING	1	
5	M1940011014Q	DECAL, BATTERY CHARGER	1	

CAMLOCK PANEL ASSY.



CAMLOCK PANEL ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	CAM34551	CAM PANEL	1	
2		NUT, 1/2 x 13	10	OBTAIN LOCALLY
3	A100895-1	SNAP COVERS	5	
4		SCREW, 10/24 x 1-1/4"	20	OBTAIN LOCALLY
5		NUTS, KEP 10/24	20	OBTAIN LOCALLY
6		CABLE, 2OT x 15"	5	MAKE LOCALLY
7		TERMINALS, EYE 2OT x 1/2"	10	OBTAIN LOCALLY
8	E1016-1605S	CAMLOCK, WHITE	1	
9	E1016-1604S	CAMLOCK, GREEN	1	
10	E1016-1602S	CAMLOCK, RED	1	
11	E1016-1600S	CAMLOCK, BLACK	1	
12	E1016-1612S	CAMLOCK, BLUE	1	

PAYMENT TERMS

Terms of payment for parts are net 10 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 here under 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 not 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.

NOTE PAGE

OPERATION AND PARTS MANUAL

HERE'S HOW TO GET HELP

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

PARTS DEPARTMENT
800-427-1244 or 310-537-3700
FAX: 800-672-7877 or 310-637-3284

SERVICE DEPARTMENT
800-421-1244
FAX: 310- 537-4259

TECHNICAL ASSISTANCE
800-478-1244
FAX: 310- 631-5032

WARRANTY DEPARTMENT
888-661-4279, or 310-661-4279
FAX: 310- 537-1173

MULTIQUIP INC.
18910 WILMINGTON AVE.
CARSON, CALIFORNIA 90746
310-537-3700
800-421-1244
FAX:310-537-3927

PARTS DEPARTMENT:
800-427-1244
FAX: 800-672-7877

SERVICE DEPARTMENT:
800-835-2551
FAX:310-638-8046

E-mail:mq@multiquip.com ● www:multiquip.com