

OPERATION AND PARTS MANUAL



MODEL GA4.5R/GA4.5RA PORTABLE AC GENERATOR (ROBIN GASOLINE ENGINE)

Revision #1 (11/27/06)

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



WARNING



CALIFORNIA — Proposition 65 Warning

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

GA-4.5R/GA-4.5RA — AC Portable Generators

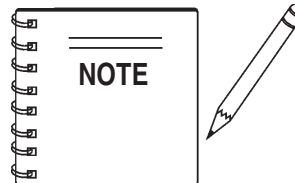
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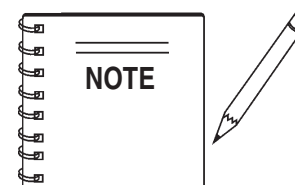
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As a continuing effort to update our parts book, contact the MQ literature department for the latest revision of your "Operation and Parts Manual"



Specification and part number are subject to change without notice.

PARTS ORDERING PROCEDURES

Ordering parts has never been easier! Choose from three easy options:

www.multiquip.com



Order via Internet (Dealers Only):

Order parts on-line using Multiquip's SmartEquip website!

- View Parts Diagrams
- Order Parts
- Print Specification Information



If you have an MQ Account, to obtain a Username and Password, E-mail us at: parts@multiquip.com.

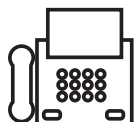
To obtain an MQ Account, contact your District Sales Manager for more information.

Goto www.multiquip.com and click on

Order Parts to log in and save!

Use the **internet** and qualify for a **5% Discount** on *Standard orders* for all orders which include complete part numbers.*

Note: Discounts Are Subject To Change



Order via Fax (Dealers Only):

All customers are welcome to order parts via Fax.

Domestic (US) Customers dial:

1-800-6-PARTS-7 (800-672-7877)

Fax your order in and qualify for a **3% Discount** on *Standard orders* for all orders which include complete part numbers.*

Note: Discounts Are Subject To Change



Order via Phone: Domestic (US) Dealers Call:

1-800-427-1244

Non-Dealer Customers:

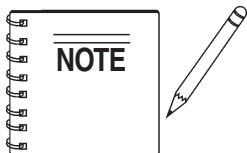
Contact your local Multiquip Dealer for parts or call 800-427-1244 for help in locating a dealer near you.



International Customers should contact their local Multiquip Representatives for Parts Ordering information.

When ordering parts, please supply:

- | | |
|---|--|
| <input type="checkbox"/> Dealer Account Number | <input type="checkbox"/> Specify Preferred Method of Shipment: |
| <input type="checkbox"/> Dealer Name and Address | <input checked="" type="checkbox"/> Fed Ex/UPS <input checked="" type="checkbox"/> DHL |
| <input type="checkbox"/> Shipping Address (if different than billing address) | <input type="checkbox"/> Priority One <input checked="" type="checkbox"/> Truck |
| <input type="checkbox"/> Return Fax Number | <input type="checkbox"/> Ground |
| <input type="checkbox"/> Applicable Model Number | <input type="checkbox"/> Next Day |
| <input type="checkbox"/> Quantity, Part Number and Description of Each Part | <input type="checkbox"/> Second/Third Day |



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 the order is received, if received prior to 2PM PST. *Stock Orders* must be noted on fax or web order form.

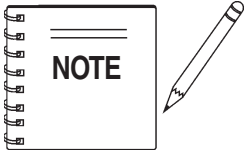
WE ACCEPT ALL MAJOR CREDIT CARDS!



GA-4.5R/GA-4.5RA — 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 Model GA-4.5R/GA-4.5RA Portable Generators**. Refer to the engine manufacturers instructions for data relative to its safe operation.

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 **COULD** be **KILLED** or **SERIOUSLY** injured if you do not follow directions.

CAUTION

You **CAN** be injured if you do not follow directions

HAZARD SYMBOLS

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

WARNING - LETHAL EXHAUST GASES



Gasoline 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.

WARNING - EXPLOSIVE FUEL



Gasoline 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.

WARNING - 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.

DANGER - ELECTROCUTION HAZARDS

During operation of these generators, there exists the possibility of **electrocution**, **electrical shock or burn**, which can cause **severe bodily harm** or even **DEATH!**



GA-4.5R/GA-4.5RA — SAFETY MESSAGE ALERT SYMBOLS

WARNING - ROTATING PARTS



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

CAUTION - RESPIRATORY HAZARDS



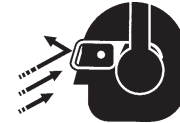
ALWAYS wear approved ***respiratory*** protection.

CAUTION - ACCIDENTAL STARTING



ALWAYS place the **Engine ON/OFF** switch in the **OFF** position and remove the ignition key when the pump is not in use.

CAUTION - SIGHT AND HEARING HAZARDS



ALWAYS wear approved ***eye*** and ***hearing*** protection.

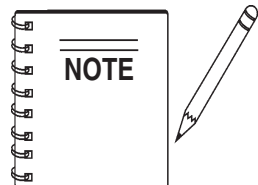
CAUTION - OVER-SPEED CONDITIONS



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.

CAUTION - EQUIPMENT DAMAGE MESSAGES

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



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

GA-4.5R/GA-4.5RA — RULES FOR SAFE OPERATION

DANGER - READ THIS MANUAL!

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 GA-4.5R/GA-4.5RA Portable Generators:

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 of **drugs** or **alcohol**.



■ **ALWAYS** wear proper respiratory (mask), hearing and eye protection equipment when operating the generator.

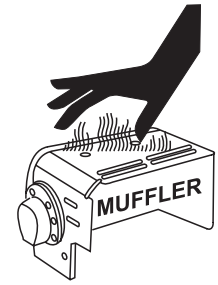


■ Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.

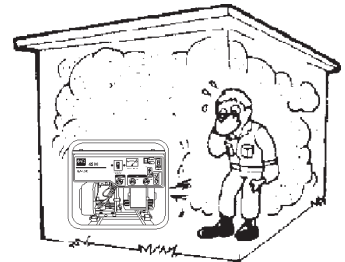
■ Manufacturer does not assume responsibility for any accident due to equipment modifications.

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

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



■ The engine section 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. Remember the generator's engine gives off **DEADLY** carbon monoxide gas.

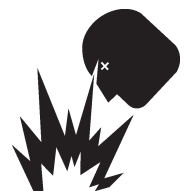


■ **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.

■ **ALWAYS** use extreme caution when working with **flammable** liquids. When refueling, **stop the engine** and allow it to cool. **DO NOT smoke** around or near the machine. Fire or explosion could result from fuel vapors, or if fuel is spilled on a hot engine.



■ **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** disconnect any "**emergency or safety devices**". These devices are intended for operator safety. Disconnection of these devices can cause severe injury, bodily harm or even death! Disconnection of any of these devices will void all warranties.

- **ALWAYS** be sure the operator is familiar with proper safety precautions and operation techniques before using generator.
- **NEVER** leave the generator unattended, turn off engine when unattended.
- Unauthorized equipment modifications will void all warranties.
- **ALWAYS** ensure generator is on level ground before use.
- **DO NOT** place hands or fingers inside generator engine compartment when engine is running.
- **NEVER** run engine without air cleaner. Severe engine damage may occur.
- **NEVER** change or adjust the engine speed which has been set at the factory prior to shipping.



Power Cord Safety

- **NEVER** let power cables or cords *lay in water*.
- **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 power or extension cord has been selected for the job See Table 3.

Grounding Safety

- **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** make sure generator is properly grounded to a suitable earth ground (**GROUND ROD**). See installation section in this manual.
- **NEVER** use *gas piping* as an electrical ground.

Maintenance Safety

- **NEVER** lubricate components or attempt service on a running machine.
- **High Temperatures** – Always stop engine and allow the engine to cool before adding fuel, oil or performing service and maintenance functions. Contact with **hot!** components can cause serious burns. 
- Keep the machinery in proper running condition.
- Fix damage to the machine immediately and replace any broken parts immediately.
- **ALWAYS** replace any worn or damaged warning decals.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and un-authorized personnel.
- 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.
- Dispose of hazardous waste properly. Examples of potentially hazardous waste are used motor oil, fuel and fuel filters.
- **DO NOT** use food or plastic containers to dispose of hazardous waste.
- **DO NOT** pour waste, oil or fuel directly onto the ground, down a drain or into any water source.
- 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. 

DANGER-ELECTROCUTION HAZARDS

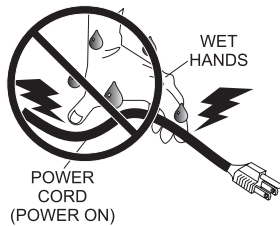
During operation of this generation, there exists the possibility of **electrocution, electrical shock or burn**, which can cause **severe bodily harm** or even **DEATH!**



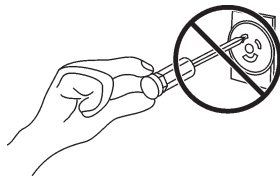
To avoid these hazards:

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 receptacles, incorrect connections may cause damage to the generator and electrical shock.

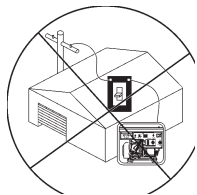
NEVER grab or touch a live power cord with wet hands, the possibility exist of electrical shock, electrocution, and even **death!**



NEVER insert any objects into the output receptacles during operation. This is extremely dangerous. **ALWAYS** turn-off the generator and place all circuit breakers in the **"OFF"** position when contact with the output receptacles is required. There exist the possibility of **electrocution, electrical shock or burn, which can cause severe bodily harm or even death!**



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



Emergencies

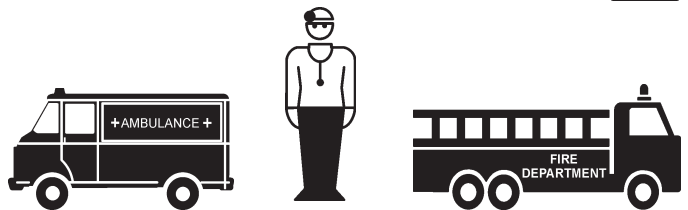
■ **ALWAYS** know the location of the nearest **fire extinguisher**.



■ **ALWAYS** know the location of the nearest **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.



GA-4.5R/GA-4.5RA — SPECIFICATIONS

Table 1. Specifications

MODEL		GA-4.5R/GA-4.5RA
GENERATOR	Type	2-Pole, Brushless Type Revolving Field
	Frequency (Hz)	60
	Continuous Output (kW)	3.70
	Maximum Output (kW)	4.5
	Voltages (VAC)	120/240
	Max/Continuous Amps 120 VAC	37.5/30.8
	Max/Continuous Amps 240 VAC	18.75/15.4
	Rated Speed (RPM)	3600
	Power Factor	1.0
	Dimension (L x W x H) in. (mm)	23 X 18.5 X 20.25 (595 X 470 X 515)
	Dry Net Weight lbs. (kg) Includes Engine	149 (68)
ENGINE	Model (Engine Specification)	ROBIN EX27OD20110 (GA-4.5R) ROBIN EX27OD20220 (GA-4.5RA)
	Type	Air-cooled, 4-stroke, Single Cylinder, Overhead Camshaft, Gasoline Engine
	Displacement (cc)	265
	Continuous Output (kW/min)	5.1 @3600
	Maximum Output (kW/min)	9.0 @4000
	Fuel Tank Capacity Gal. (L)	4.2 (19)
	Fuel	Non-leaded Automobile Gasoline
	Lube Oil Capacity Qts. (L)	1.16 (1.1)
	Speed Control Method	Centrifugal Fly-weight Type
	Starting Method	Recoil Start
	Dimension (L x W x H) in. (mm)	13.97 X 16.5 X 16.14 (355 X 420 X 410)
	Dry Net Weight lbs. (kg)	46.3 (21)

Effects of Altitude and Heat

The maximum output of the engine listed above is applicable to supplying electrical power for continuous service at ambient conditions in accordance with SAE Test cord J607. The above ambient conditions are at standard sea level, with a barometric reading of 29.92 inches and a temperature of 60 degrees fahrenheit.

Generally, the engine output power will decrease 3 1/2% for each 1000 feet of altitude above sea level, and 1% for each 10° F fahrenheit above the standard temperature of 60° F

GA-4.5R/GA-4.5RA — DIMENSIONS

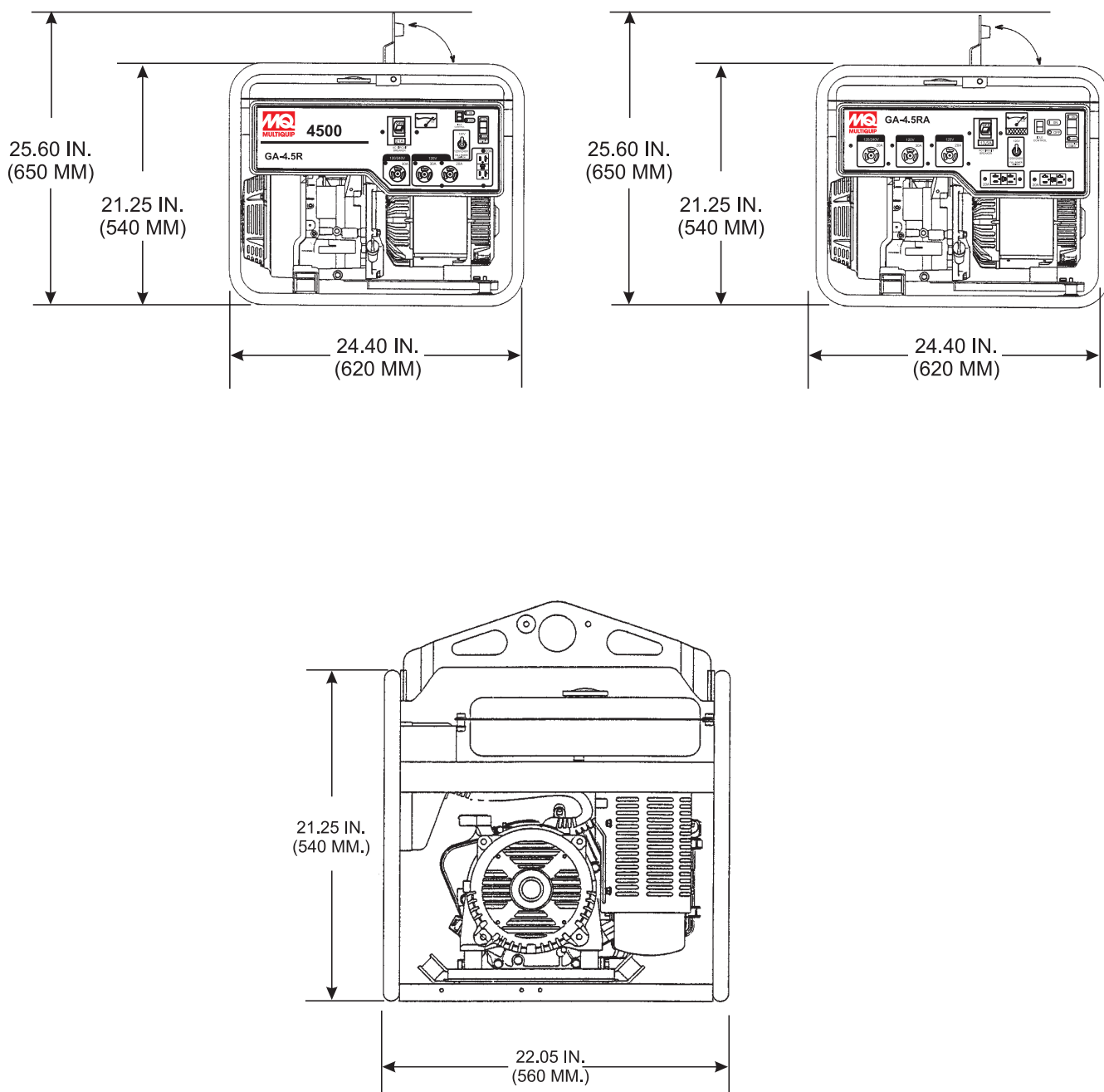


Figure 1. Dimensions

DANGER - ELECTRICAL SYSTEM HAZARDS

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

GA-4.5R/GA-4.5RA Familiarization

General Inspection Prior to Operation

This generator has been thoroughly inspected and accepted prior to shipment from the factory. However, be sure to check for damaged parts or components, or loose nuts and bolts, which could have become dislodged in transit.

The **MQ Model GA-4.5R** and **GA-4.5RA** generators have been designed as a portable lightweight power source for 60 Hz (single-phase) vibrators, lighting facilities, power tools, submersible pumps and other industrial and construction machinery.

These generators are powered by a 9.0 HP **ROBIN** air-cooled gasoline engine. The alternator, a brushless revolving-field type, is permanently aligned to the engine through rigid coupling.

These generators are mounted on rubber vibration isolators that have a steel base backplate which is attached to the protective steel pipe carrying frame. The protective carrying frame is made of steel tubing and fully wraps around the generator to protect against damage.

This portable generator is supplied with a electrical **control panel**. The control panel includes items as listed below.

Control Panel

The generator control panel has the following components:

- NEMA 5-20R GFCI duplex receptacle, (120V, 20 amps), GA-4.5RA has two.
- NEMA L5-20R, twist-lock receptacle, (125V, 20 amps)
- NEMA L5-30R, twist-lock receptacle, (125V, 30 amps)
- NEMA L14-20R, twist-lock receptacle, (125/250V, 20 amps)
- Circuit Breaker, 2-pole, 15 amps
- AC Voltmeter
- Operation Switch
- Idle Control Switch
- Full Power Switch

Excitation System

The GA-4.5R/GA-4.5RA generator uses a magnet attached to a flywheel to produce AC voltage from a lamp coil beneath the flywheel. As the magnet passes the coil it produces approximately 19-22 AC volts.

This voltage (19-22 VAC) is then sent to the control box that contains three rectifying diodes:

- Excitation (diode 1)
- Battery (diode 2)
- Slow Down (diode 3)

The AC voltage will pass through the excitation diode that converts the voltage to DC power.

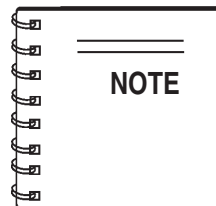
This DC power is then sent to the excitation windings housed within the main windings commonly called the "stator".

This voltage is then transferred into the rotor through induction. The rotor contains two diodes within it which rectify the DC voltage and send it out through the main windings, as AC voltage.

Engine

The four-cycle air-cooled **ROBIN** gasoline engine is designed to meet every performance requirement of this generator. Reference Table 1, for engine specifications.

Figures 2A through 2E show the basic controls and indicators for the GA-4.5R/ GA-4.5RA generators.

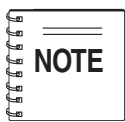


In keeping with **Multiquip's** policy of constantly improving its products, the specifications quoted herein are subject to change without prior notice.

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.

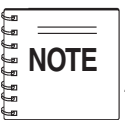


If wattage is not given on the equipment's name plate, approximate wattage may be determined by multiplying nameplate voltage by the nameplate amperage.

WATTS = VOLTAGE x AMPERAGE

The power factor of this generator is 1.0 See Table 2 below when connecting loads.

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



When using a combination of dual receptacles, total load **should not exceed** the rated capacity of the generator.

To determine the running wattage for your load, multiply the running wattage as indicated by steps 1, 2, and 3 below:

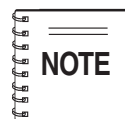
1. **INCANDESCENT LOADS**
Lights, heaters and similar appliances.
Total the running wattage and multiply by 1.
Example:
29 light bulbs @ 100W each = 2.9 KW
use a 3 KW generator.
2. **SMALL MOTORS**
Drills and other small power tools.
Total the running wattage and multiply by 2.
Example:
A 1 inch drill runs at 1 KW
use a 2 KW generator.
3. **LARGE MOTORS**
Submersible pumps, table saws etc.
Total the running wattage and multiply by 3.
Example:
A conveyor belt runs at 8 KW
use a 24 KW generator.

! CAUTION - ADEQUATE EXTENSION CABLE

Motors and motor-driven equipment draw much greater current for starting than during operation. **Always** use an adequate size **extension cable** which can carry the required load.

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 3) as a guide for selecting proper cable size.



The idle control device is operated at a minimum load capacity of 100W. If the load capacity is less than 100W, place the idle control switch in the **OFF** position.

GA-4.5R/GA-4.5RA — CONTROLS AND INDICATORS

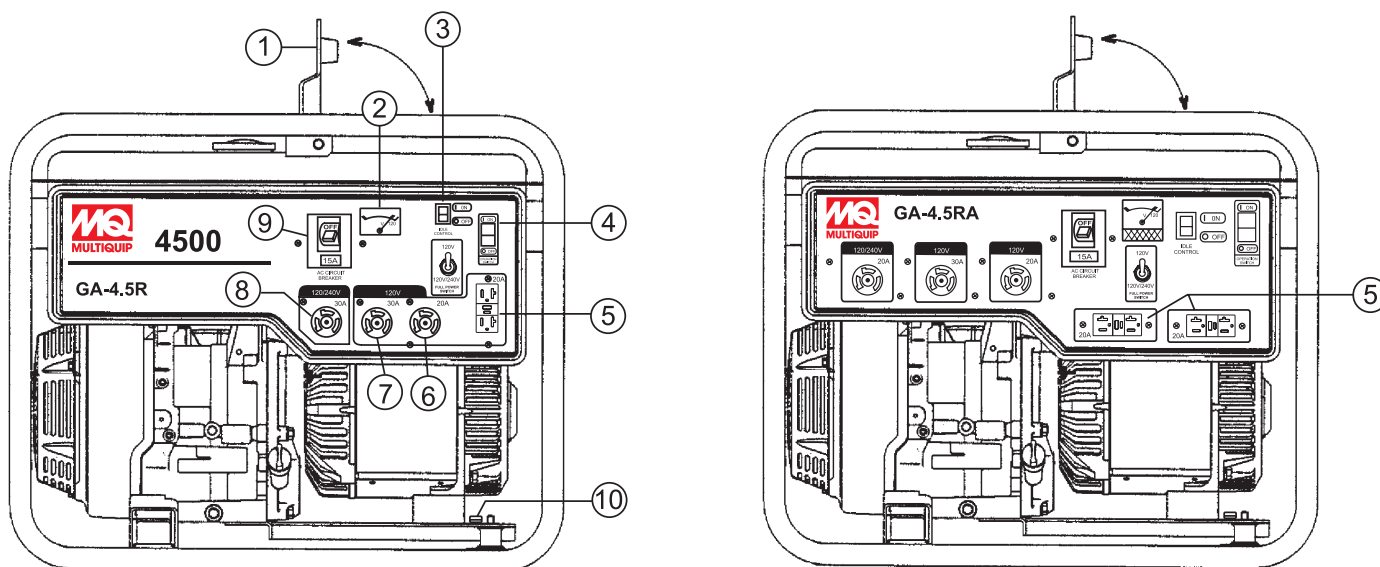


Figure 2A. Generator Controls and Components

1. **Lifting Bail Eye** – Attach a rope or chain to this lifting eye when lifting of the generator is required. Never stand underneath the generator while it is being lifted. Place lifting eye in down position when not in use.
2. **AC-Voltmeter** – This voltmeter indicates (with a mark) the rated 60 Hz, single phase output voltage. In addition the voltmeter can also be used as a diagnostic tool. If the voltmeter indicator (needle) is below the rated voltage, engine problems may exist (low/high RPM's). To prevent damage to the generator or power tools turn the generator **OFF** and consult your authorized **MQ** service dealer.
3. **Idle Control Switch** – This unit is provided with an automatic idle control for noise suppression and reduced fuel consumption. The automatic idle control automatically engages under a no-load condition. With the automatic idle control switched "**ON**", the engine revolutions will automatically drop to about 2600 rpm (low-speed operation) within 3 seconds after the load stops. When the operation is resumed, the engine speed is automatically increased to about 3600 rpm (high-speed operation) as soon as the load is connected.
4. **Operation Switch** – Place this *rocker* switch in the "**RUN**" position (up) for normal operation. To turn-off the generator place this switch in the "**STOP**" position (down).
5. **GFCI Duplex Receptacle** – NEMA 5-20R receptacle will provide 120V, 20 amps. The position of the full power switch does not effect the voltage output at the receptacle. The GA-4.5RA has two GFCI receptacles.
6. **120 VAC Receptacle** – NEMA L5-20R twist-lock receptacle will provide 120V, 20 amps when the full power switch is placed in either the 120 or 240 volt position.
7. **120 VAC Receptacle** – NEMA L5-30R twist-lock receptacle will provide 120V when the full power switch is placed in either the 120 or 240 volt position.
8. **240 VAC Receptacle** – NEMA L14-20R twist-lock receptacle will provide 240V when the full power switch is placed in the 240/120 volt position (down). When the full power switch is placed in the 120 volt position (up), 120V will be available.
9. **Main Circuit Breaker** – 2-pole circuit breaker (240V/18.75 amps or 120V/30.8 amps) protects the generator from short circuiting or overloading. When starting the generator **always** have the circuit breaker placed in the "**OFF**" position.
10. **Frame Ground** – This ground connection point should be connect to a good earth ground (ground rod).

GA-4.5R/GA-4.5RA — CONTROLS AND INDICATORS

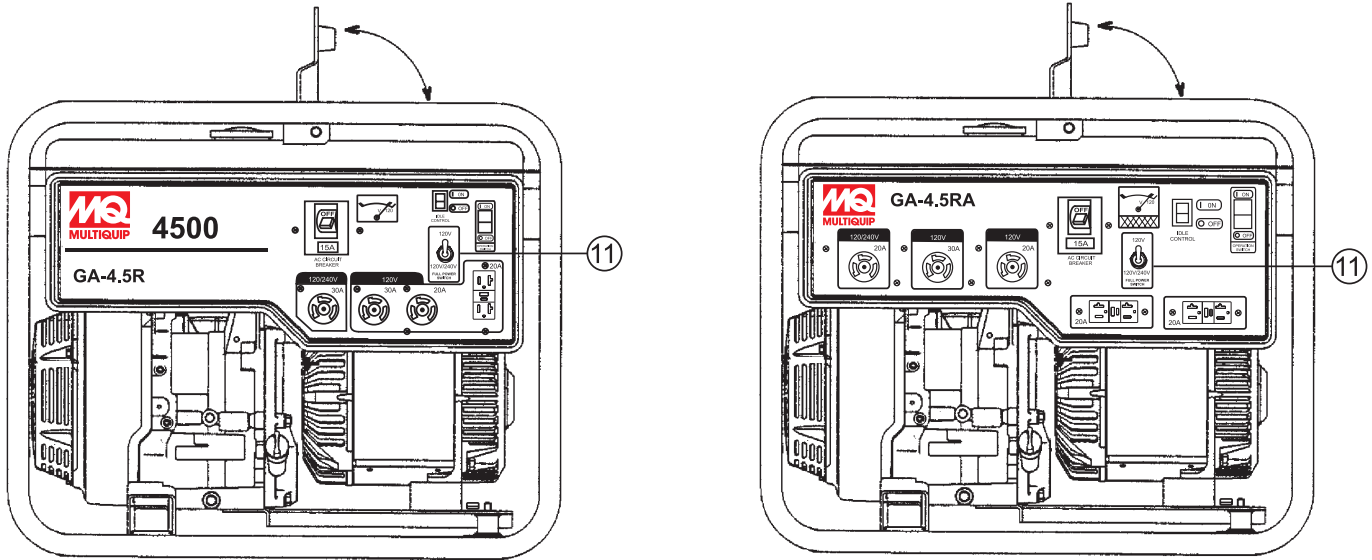


Figure 2B. Generator Controls and Components (continued)

11. **Full Power Switch** – The generators are provided with a full power switch. Figures 2C and 2D show simplified wiring diagrams of the dual voltage system.

When the full power switch is in the 120 volt (up) position, you can access the **full rated power** of the generators at 120 volts from the GFCI duplex receptacle and the 120V twist-lock receptacle, or a combination of both receptacles as long as the total load does not exceed the generating set capacity.

When the switch is in the 240 volt (down) position, you can access **half of the rated power** of the generating set at 120 volts from the GFCI duplex receptacle and up to half of the rated power of the set at 120 volts from 120V twist-lock receptacle; or full rated power of the set at 240 volts from the 240V twist-lock receptacle.

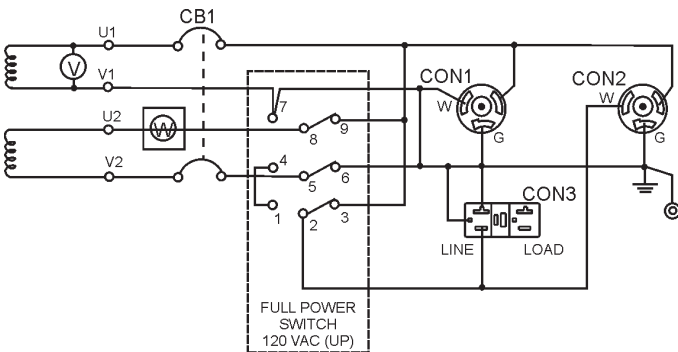


Figure 2C. Full Power Switch 120VAC (Up) Simplified Wiring Diagram

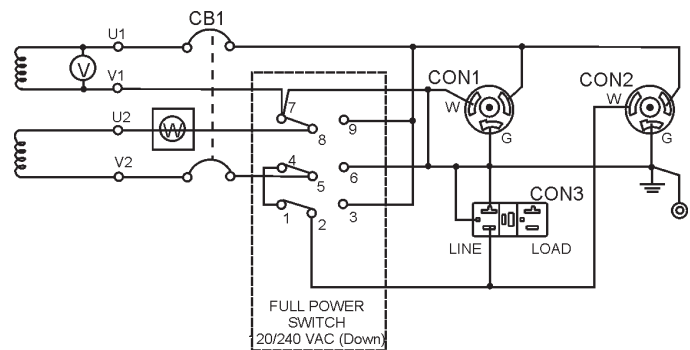


Figure 2D. Full Power Switch 20/240 VAC (Down) Simplified Wiring Diagram



When the **full power switch** is in the 120V position, the 240V twist-lock receptacle **cannot be used**.

GA-4.5R/GA-4.5RA — CONTROLS AND INDICATORS

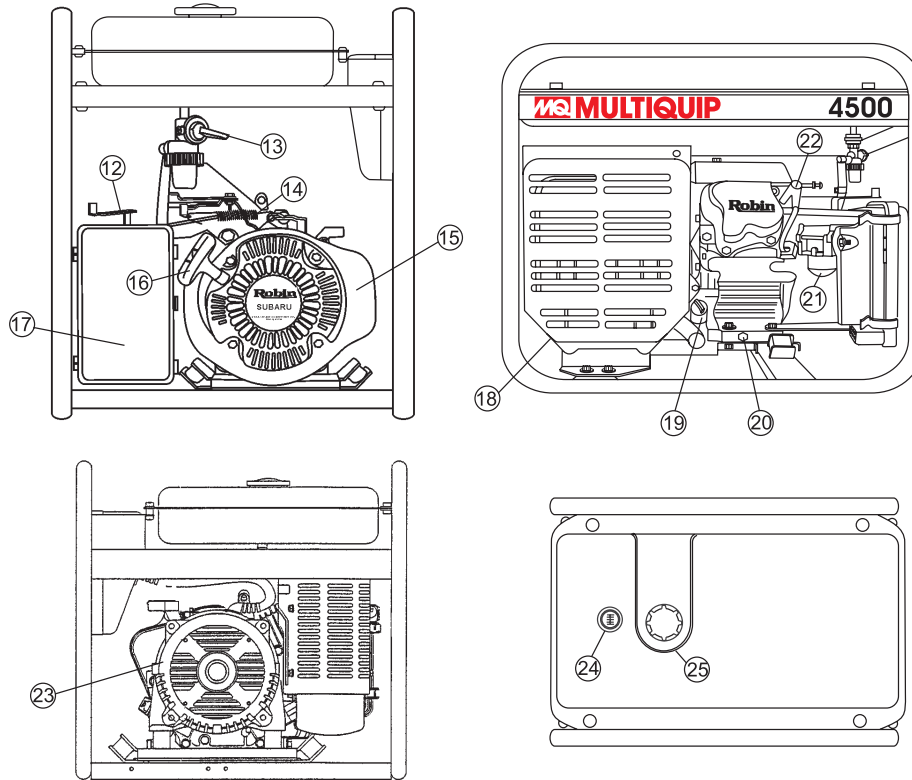


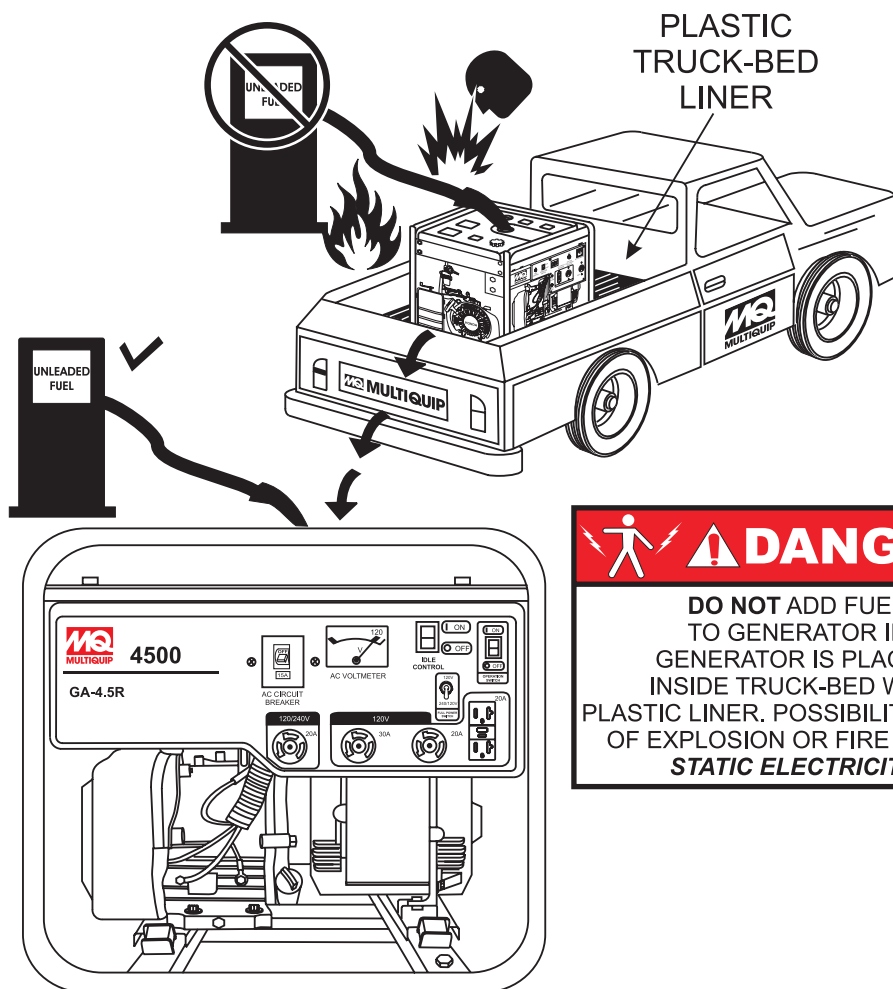
Figure 2E. Generator Controls and Components (continued)


12. **Choke Lever** – Used for starting the engine. **Close** the choke lever when starting a cold engine or in cold weather conditions. The choke enriches the fuel mixture. **Open** the choke lever if starting a warm engine or in warm weather conditions.
13. **Fuel Cock Lever** – Turn this lever **downward** to **start** (down) the flow of fuel to the carburetor. Turn **upward** to **stop** (up) the flow of fuel.
14. **Throttle Lever** – Used to adjust engine RPM speed. This unit is set at the factory and is not adjustable.
15. **Engine** – This generator uses a 9.0 HP **ROBIN** air-cooled, 4-stroke, single cylinder, overhead camshaft gasoline engine. Engine uses unleaded fuel.
16. **Recoil Starter (Pull Rope)** – Used for manual-starting of the engine. Pull the starter grip until resistance is felt, then pull briskly and smoothly.
17. **Air Cleaner** – Prevents dirt and other debris from entering the fuel system. Remove wing-nut on top of air filter canister to gain access to filter element. **NEVER** run the engine without an air cleaner.
18. **Muffler/Heat Shield** – Used to reduce noise and emissions. **NEVER** touch this **heat shield** when the generator is in use. Always allow time for the generator to cool down before performing maintenance.
19. **Oil Dipstick/ Filler Cap** – Remove the filler cap dipstick when checking the engine oil level. Add engine oil through this filler port. See Table 4 for recommended type engine oil.
20. **Oil Drain Plug** – Remove this plug to drain engine oil from the crankcase.
21. **Carburetor Fuel Cup** – Inspect the fuel cup weekly for water and dirt. Clean as referenced in the maintenance section of this manual.
22. **Spark Plug** – Provides spark to the ignition system. Set spark plug gap to 0.6 - 0.7 mm (0.024 - 0.028 inch). Clean spark plug once a week.
23. **Generator Housing** – Contains the rotor, rectifier field coil assembly, armature, bearings and other components that make up generator assembly.
24. **Fuel Gauge** – Read this gauge to determine when fuel is **low**.
25. **Fuel Gauge/Tank** – Remove this cap to add unleaded gasoline to the fuel tank. **Replenish** with **clean unleaded** gasoline. Make sure cap is tightened securely. **DO NOT** over fill. Fuel tank capacity is 5 gallons (19 liters).

GA-4.5R/GA-4.5RA — GENERATOR REFUELING

DANGER - REFUELING HAZARD

Adding fuel to the tank should be done only when the engine is stopped and has had an opportunity to cool down. In the event of a fuel spill, **DO NOT** attempt to start the engine until the fuel residue has been completely wiped up, and the area surrounding the engine is dry. If generator is placed in a truck bed with a plastic liner, **REMOVE** generator from truck bed and place on ground (Figure 3) to refuel. This possibility exist of **fire** or **explosion** due to static electricity.



 **DANGER**

DO NOT ADD FUEL TO GENERATOR IF GENERATOR IS PLACED INSIDE TRUCK-BED WITH PLASTIC LINER. POSSIBILITY EXISTS OF EXPLOSION OR FIRE DUE TO STATIC ELECTRICITY.


Figure 3. Generator Refueling

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.

 **WARNING - LETHAL EXHAUST GASES**

Pay close attention to ventilation when operating the generator inside tunnels and caves. The engine exhaust contains noxious elements.



Mounting

The generator should always be mounted on a flat level surface to isolate vibration of the generator when it is running. **DO NOT** place the generator on slopes, the possibility exists that the generator could slide.

Indoor Installation

Exhaust gases from gasoline 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.

Eliminate the danger of deadly carbon monoxide gas. Remember that exhaust fumes from any gasoline engine are very poisonous if discharged in a closed room, but harmless if allowed to mix with the outside air. If the generator is installed indoors, you must make provisions for venting the engine exhaust to the outside of the building.

Generator Grounding

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

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 mm²) or larger.
 - b. Aluminum - 8 AWG (8.4 mm²) or larger.
2. When grounding the generator (Figure 4) connect the ground cable between the lock washer and the nut on the generator and tighten the nut fully. Connect the other end of the ground cable to earth ground.
3. NEC article 250-52(c) specifies that the earth ground rod should be buried a minimum of 8 ft. into the ground.

Connecting the Ground

The nut and ground terminal on the generator should always be used to connect the generator to a suitable ground. The ground cable should be #8 size wire minimum.

At the generator, connect the terminal of the ground cable between the lock washer and the nut (Figure 4) and tighten the nut fully. Connect the other end of the ground cable to a suitable earth ground (ground rod).

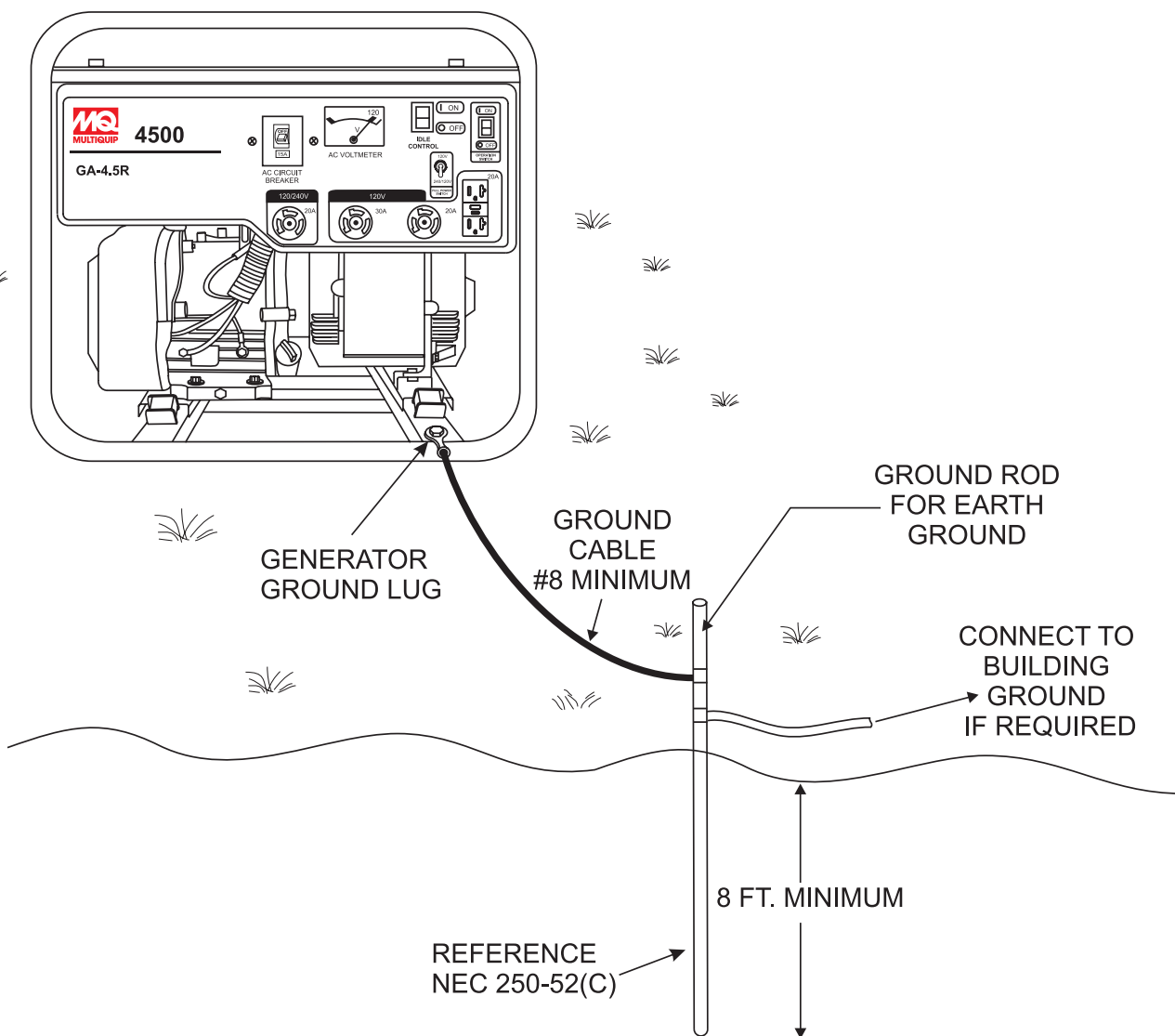


Figure 4. Generator Grounding

General Inspection Prior to Operation

Ground Power Tools

When using power tools or electrical equipment requiring AC power from the generator, make sure connecting (power tool) cable has a ground pin as shown in Figure 5.

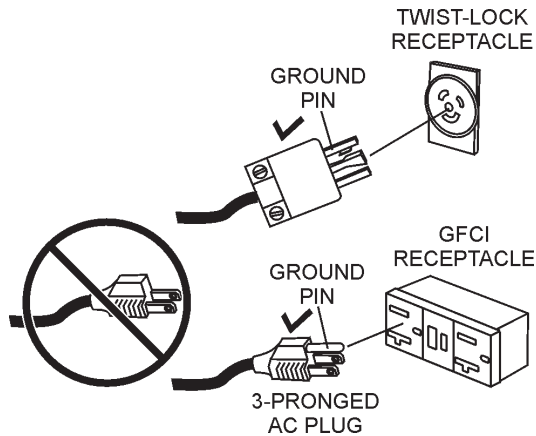
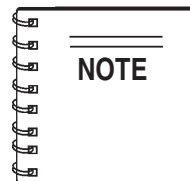


Figure 5. Ground Cables/Plugs

Extension Cable

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 3) as a guide for selecting proper cable size.



Never! use power tools or equipment that do not have a ground capability, the possibility exists of **electrocution, electrical shock or burn**, which can cause **severe bodily harm** or even **DEATH!**

Main Circuit Breaker

To protect the generator from an overload always place the main circuit breaker in the "OFF" position prior to starting the engine.

Table 3. Cable Selection (60 Hz, Single Phase Operation)

Current in Amperes	Load In Watts	Maximum Allowable Cable Length			
	At 120 Volts	#10 Wire	#12 Wire	#14 Wire	#16 Wire
2.5	300	1000 ft.	600 ft.	375 ft.	250 ft.
5	600	500 ft.	300 ft.	200 ft.	125 ft.
7.5	900	350 ft.	200 ft.	125 ft.	100 ft.
10	1200	250 ft.	150 ft.	100 ft.	
15	1800	150 ft.	100 ft.	65 ft.	
20	2400	125 ft.	75 ft.	50 ft.	

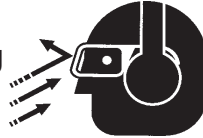
CAUTION: Equipment damage can result from low voltage.

CAUTION

NEVER operate the generator in a confined area or enclosed area structure that does not provide ample **free flow of air**.



ALWAYS wear approved eye and hearing protection before operating the generator.



Before Starting

1. Read safety instructions at the beginning of manual.
2. Clean the generator, removing dirt and dust, particularly the engine cooling air inlet, carburetor and air cleaner.
3. Check the air filter for dirt and dust. If air filter is dirty, replace air filter with a new one as required.
4. Check carburetor for external dirt and dust. Clean with dry compressed air.
5. Check fastening nuts and bolts for tightness.



Engine Oil Check

1. To check the engine oil level, place the generator on secure level ground with the engine stopped.
2. Remove the filler dipstick from the engine oil filler hole (Figure 6) and wipe clean.

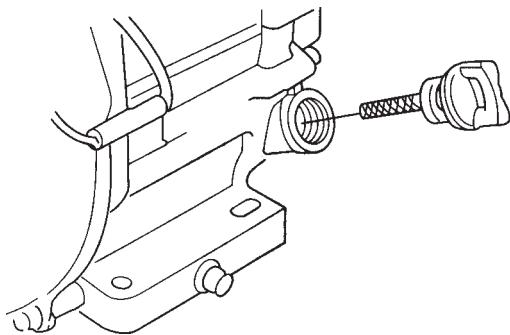


Figure 6. Engine Oil Dipstick (Removal)

3. Insert and remove the dipstick without screwing it into the filler neck. Check the oil level shown on the dipstick.
4. If the oil level is low (Figure 7), fill to the edge of the oil filler hole with the recommended oil type (Table 4). Maximum oil capacity is 1.16 quarts (1.1 liters)

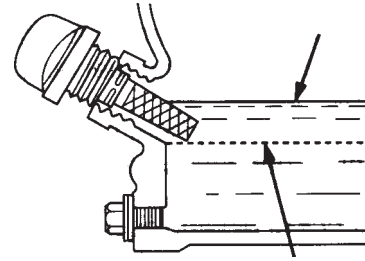


Figure 7. Engine Oil Dipstick (Oil Level)

Table 4. Oil Type

Season	Temperature	Oil Type
Summer	25°C or Higher	SAE 10W-30
Spring/Fall	25°C~10°C	SAE 10W-30/20
Winter	0°C or Lower	SAE 10W-10

DANGER - EXPLOSIVE FUEL

Motor fuels are highly flammable and can be dangerous if mishandled. **DO NOT** smoke while refueling. **DO NOT** attempt to refuel the generator if the engine is **hot!**, **running** or **in the dark**.



Fuel Check

1. Close the fuel cock before filling the fuel tank.
2. Remove the fuel cap located on top of fuel tank.
3. Read the fuel gauge located on top of the fuel tank (Figure 8) to determine if the fuel level is low. If fuel is low, replenish with **clean unleaded fuel**.

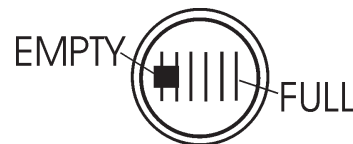


Figure 8. Fuel Gauge

4. When refueling, be sure to use a strainer for filtration. **DO NOT** top-off fuel. **DO NOT** fill the tank beyond capacity. Wipe up any spilled fuel **immediately!**

GA-4.5R/GA-4.5RA — INITIAL START-UP (ENGINE)

CAUTION - READ MANUAL

DO NOT attempt to operate this generator until the Safety, General Information and Inspection sections of this manual have been **read and thoroughly understood**.



DO NOT attempt to operate this generator until the Safety, General Information and Inspection sections of this manual have been **read and thoroughly understood**.

This section is intended to assist the operator with the **initial start-up** of the trash generator. It is extremely important that this section be read carefully before attempting to use the generator in the field.

Before Starting the Engine

1. Be sure to **disconnect all electrical loads** from the generator prior to starting the engine.
2. **NEVER start** the engine with the **main circuit breaker** in the "ON" position. Place the main circuit breaker (Figure 9) in the **OFF** position.

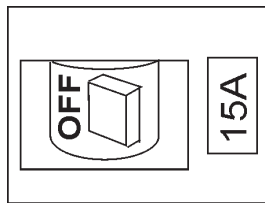


Figure 9. Main Breaker (OFF Position)

Starting the Engine

1. Place the engine **fuel valve lever** (Figure 10) to the "ON" position."

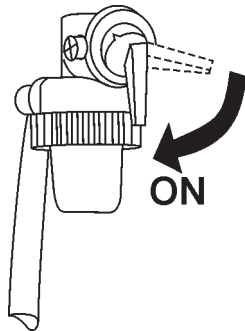


Figure 10. Engine Fuel Valve Lever (ON Position)

2. Place the **choke lever** (Figure 11) in the "**CLOSED**" position if starting a **cold** engine.

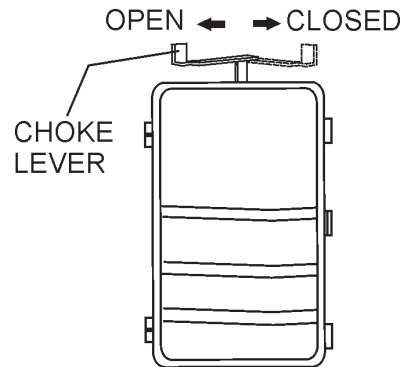
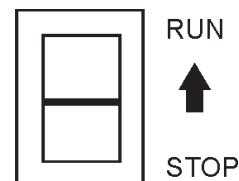


Figure 11. Choke Lever

3. Place the **choke lever** (Figure 11) in the "**OPEN**" position if starting a **warm engine** or the **temperature is warm**.
4. Place the **operation switch** (Figure 12) in the "**RUN**" position.



OPERATION SWITCH

Figure 12. Operation Switch (RUN)

5. Grasp the starter grip (Figure 13) and slowly pull it out. The resistance becomes the hardest at a certain position, corresponding to the compression point. Pull the starter grip briskly and smoothly for starting.

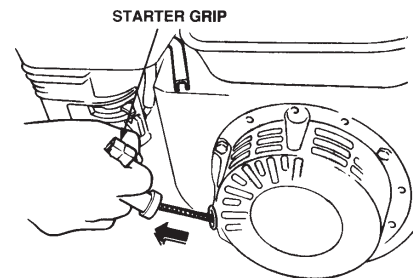


Figure 13. Starter Grip

CAUTION - RECOIL STARTER

DO NOT pull the starter rope all the way to the end.
DO NOT release the starter knob after pulling. Allow it to rewind as soon as possible.

GA-4.5R/GA-4.5RA — INITIAL START-UP ENGINE/OPERATION

- If the engine has started, slowly return the choke lever (Figure 11) to the **"OPEN"** position. If the engine has not started repeat steps 1 through 6.
- Before the generator is placed into operation, run the engine for 3-5 minutes. Check for abnormal smells, fuel leaks, and noises that would associate with loose components.
- Place** the **idle control switch** (Figure 14) in the **"OFF"** (down) position. This will allow the engine run at speed about 3600 RPM's



Figure 14. Idle Control Switch (3600 rpm's)

NOTE Placing the **idle control switch** in the down position allows the engine to operate at a maximum speed of about 3600 RPM's. When the idle control switch is placed in the up position (**ON**), the generator will run at idle speed (2200 RPM's) until a load is applied, at that time the engine speed will increase to 3600 RPM's as long as the load is being applied. When the load is not in use, the engine speed will drop back to the idle mode after about 3 seconds.

- Place** the **full power switch** (Figure 15) in the **"120V"** (Up) position.

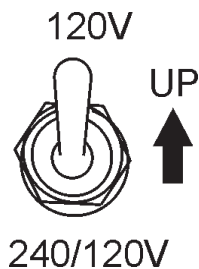


Figure 15. Full Power Switch (Up)

- Refer to the AC voltmeter (Figure 16) on the control box. The voltage indicated on the voltmeter should be 120 VAC with no load applied.

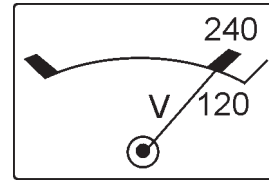


Figure 16. AC Voltmeter (120VAC)

- If desired, verify with a voltmeter (Figure17) that 120 VAC is present at the GFCI receptacle and all three twist-lock receptacles as shown below.

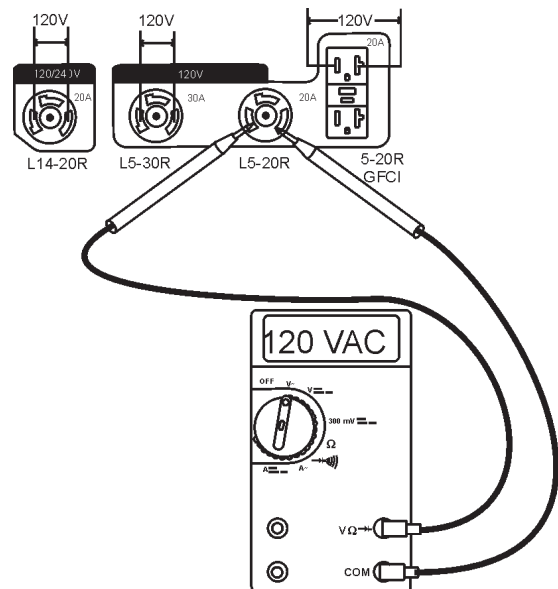


Figure 17. 120 VAC Receptacles

NOTE The **240V L14-20R receptacle** is not operational (no voltage) when the full power switch is in the 120V position. This receptacle is active (voltage) only when the full power switch is in the 240V position.

- Place** the **full power switch** (Figure 18) in the **"240/120V"** (Down) position.

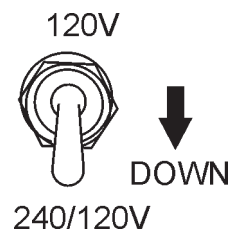


Figure 18. Full Power Switch (Down)

GA-4.5R/GA-4.5RA — INITIAL START-UP ENGINE/OPERATION

- Refer to the AC voltmeter (Figure 19) on the control box. The voltage indicated on the voltmeter should be 240 VAC with no load applied. If desired, verify with a voltmeter that 240V is present at the NEMA L14-20R twist-lock receptacle. In addition verify that 120VAC is present at the NEMA 5-20R GFCI duplex receptacle and the two NEMA L5-20R, L5-30R twist-lock receptacles.

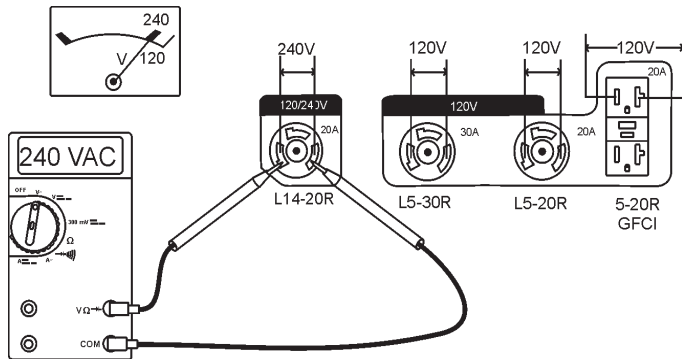
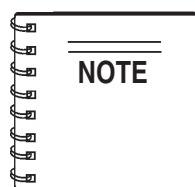


Figure 19. 240/120 VAC Receptacle



When the **full power switch** is in the 240V (down) position, up to half of the rated power of the generator is available at the 120V GFCI duplex receptacle, L5-20R and L5-30R twist-lock receptacles; or full rated power can be obtained at the L14-20R (240V) receptacle. Remember, when using a combination of dual receptacles, **total load should not exceed the rated capacity of the generator.**

receptacles; or full rated power can be obtained at the L14-20R (240V) receptacle. Remember, when using a combination of dual receptacles, **total load should not exceed the rated capacity of the generator.**

Connecting the Load

- Connect the load to the desired voltage output receptacle.
- Place the idle control switch (Figure 20) in the **ON** position (Up).

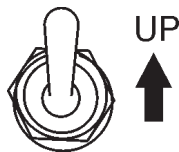


Figure 20. Idle Control Switch (Up)

- Place the main circuit breaker (Figure 21) in the **ON** position.

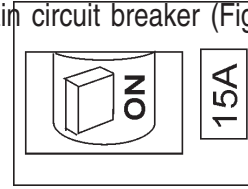


Figure 21. Main Circuit Breaker (ON)

Stopping The Engine

Normal Shutdown

- Place the **main circuit breaker** (Figure 9) in the **OFF** position.
- Remove the load from the generator.
- Place the **idle control switch** (Figure 22) in the up position (ON), and let the engine run at idle (2200 RPM's) for 3-5 minutes.



Figure 22. Idle Control Switch (2200 rpm's)

- Place the **operation switch** (Figure 23) in the **STOP** position.

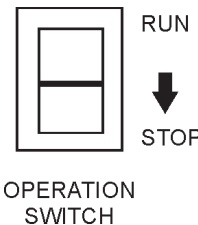


Figure 23. Operation Switch (Stop)

- Place the engine **fuel valve lever** (Figure 24) to the "OFF" position."

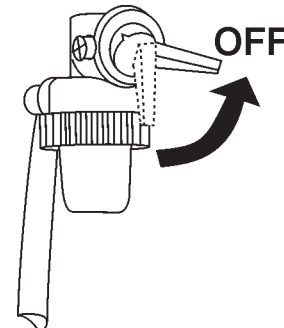


Figure 24. Engine Fuel Valve Lever (OFF Position)

Emergency Showdown

- Place the **operation switch** (Figure 23) in the **STOP** position.

GA-4.5R/GA-4.5RA — PREPARATION FOR LONG -TERM STORAGE

Generator Storage

For storage of the generating set for over 30 days, the following is required:

- Drain the fuel tank completely, or add STA-BIL to the fuel.
- Run the engine until the gasoline in the carburetor is completely consumed.
- Completely drain the oil from the crankcase and refill with fresh oil.
- Remove the spark plug, pour 2 or 3 cc of SAE 30 oil into the cylinder and crank slowly to distribute the oil.
- Slowly rotate the engine a few times with the starter Rope and install a new plug.
- Pull out the starter rope slowly and stop at the compression point.
- Clean all external parts of the generating set with a cloth.
- Cover the generating set and store in a clean, dry place.

GA-4.5R/GA-4.5RA — MAINTENANCE (ENGINE)

Use Table 5 as a general maintenance guideline when servicing your engine. For more detail engine maintenance information, refer to the engine owner's manual supplied with your engine.

Table 5. Engine Maintenance Schedule							
DESCRIPTION (3)	OPERATION	BEFORE	FIRST MONTH OR 10 HRS.	3 MONTHS OR 25 HRS.	EVERY 6 MONTHS OR 50 HRS.	EVERY YEAR OR 100 HRS.	EVERY 2 YEARS OR 200 HRS.
Engine Oil	CHECK	X					
	CHANGE		X				
Air Cleaner	CHECK	X					
	CHANGE			X (1)			
All Nuts & Bolts	Re-tighten If Necessary	X					
Spark Plug	CHECK-CLEAN				X		
	REPLACE						X
Cooling Fins	CHECK				X		
Spark Arrester	CLEAN					X	
Fuel Tank	CLEAN					X	
Fuel Filter	CHECK					X	
Idle Speed	CHECK-ADJUST					X (2)	
Valve Clearance	CHECK-ADJUST						X (2)
Fuel lines	CHECK	Every 2 years (replace if necessary) (2)					

(1) Service more frequently when used in **DUSTY** areas.

(2) These items should be serviced by your service dealer, unless you have the proper tools and are mechanically proficient. Refer to the ROBIN Shop Manual for service procedures.

(3) For commercial use, log hours of operation to determine proper maintenance intervals.

GA-4.5R/GA-4.5RA — MAINTENANCE (ENGINE)

Maintenance

Perform the scheduled maintenance procedures as defined by Table 6 and below:

DAILY

- Thoroughly remove dirt and oil from the engine and control area. Clean or replace the air cleaner elements as necessary. Check and retighten all fasteners as necessary. Check the gearbox for oil leaks. Repair or replace as needed.

WEEKLY

- Remove the fuel filter cap and clean the inside of the fuel tank.
- Remove or clean the filter at the bottom of the tank.
- Remove and clean the spark plug (Figure 25), then adjust the spark gap to 0.024 ~0.028 inch (0.6~0.7 mm). This unit has electronic ignition, which requires no adjustments.

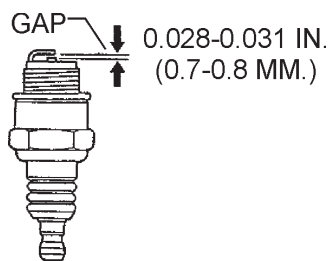


Figure 25. Spark Plug Gap

ENGINE OIL

- Drain the engine oil when the oil is **warm** as shown in Figure 26.
- Remove the oil drain bolt and sealing washer and allow the oil to drain into a suitable container.
- Replace engine oil with recommended type oil as listed in Table 4. For engine oil capacity, see Table 1 (engine specifications). **DO NOT** overfill.
- Install drain bolt with sealing washer and tighten securely.

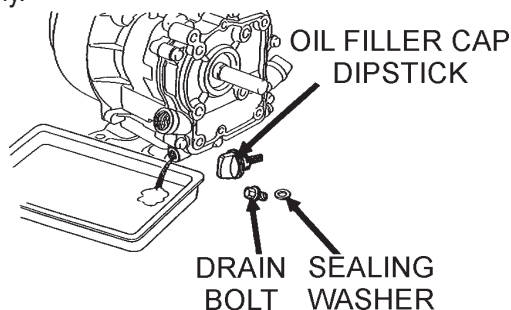


Figure 26. Engine Oil (Draining)

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.

! DANGER - EXPLOSIVE FUEL

DO NOT use gasoline as a cleaning solvent, because that would create a risk of fire or explosion.



ENGINE AIR CLEANER

- Remove the air cleaner cover and foam filter element as shown in Figure 27.
- Tap the paper filter element (Figure 27) several times on a hard surface to remove dirt, or blow compressed air [not exceeding 30 psi (207 kPa, 2.1 kgf/cm²)] through the filter element from the air cleaner case side. **NEVER** brush off dirt. Brushing will force dirt into the fibers. Replace the paper filter element if it is excessively dirty.

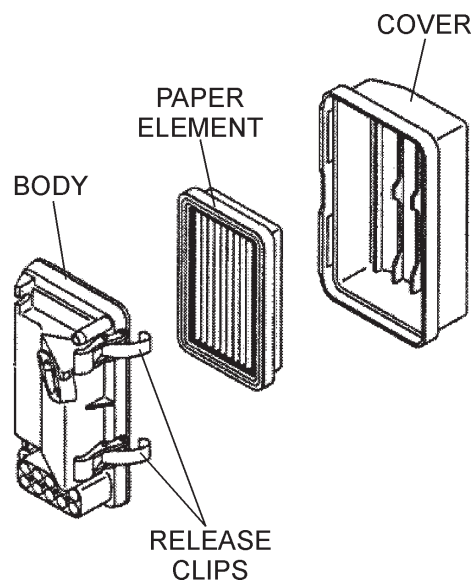
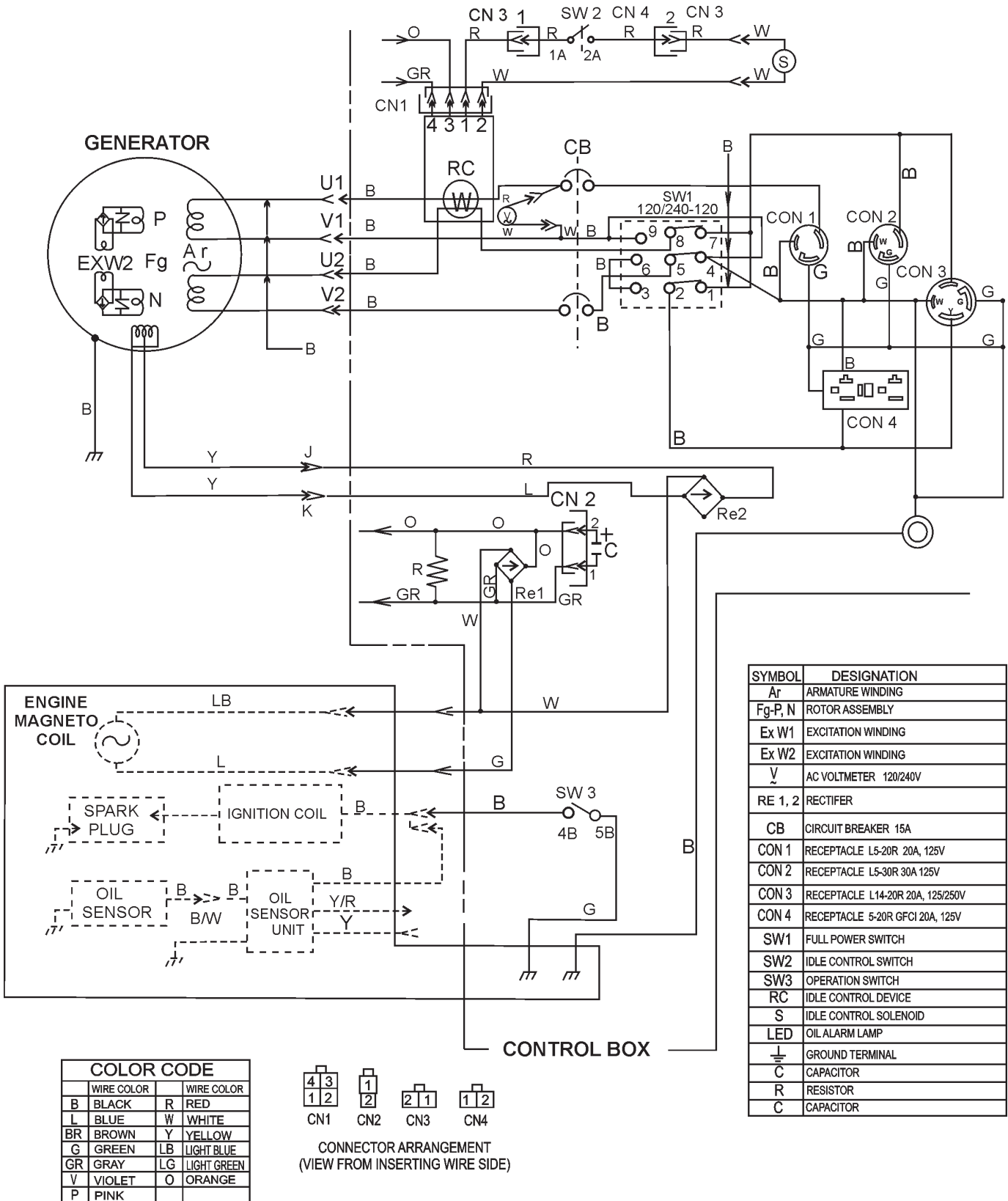


Figure 27. Engine Air Cleaner

MQ GA-4.5R — WIRING DIAGRAM



SYMBOL	DESIGNATION
Ar	ARMATURE WINDING
Fg-P, N	ROTOR ASSEMBLY
Ex W1	EXCITATION WINDING
Ex W2	EXCITATION WINDING
V	AC VOLTMETER 120/240V
RE 1, 2	RECTIFIER
CB	CIRCUIT BREAKER 15A
CON 1	RECEPTACLE L5-20R 20A, 125V
CON 2	RECEPTACLE L5-30R 30A 125V
CON 3	RECEPTACLE L14-20R 20A, 125/250V
CON 4	RECEPTACLE 5-20R GFCI 20A, 125V
SW1	FULL POWER SWITCH
SW2	IDLE CONTROL SWITCH
SW3	OPERATION SWITCH
RC	IDLE CONTROL DEVICE
S	IDLE CONTROL SOLENOID
LED	OIL ALARM LAMP
⊥	GROUND TERMINAL
C	CAPACITOR
R	RESISTOR
C	CAPACITOR

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

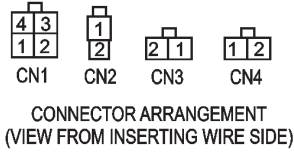


Figure 28. Generator/Engine Wiring Diagram (GA-4.5R Only)

MQ GA-4.5RA — WIRING DIAGRAM

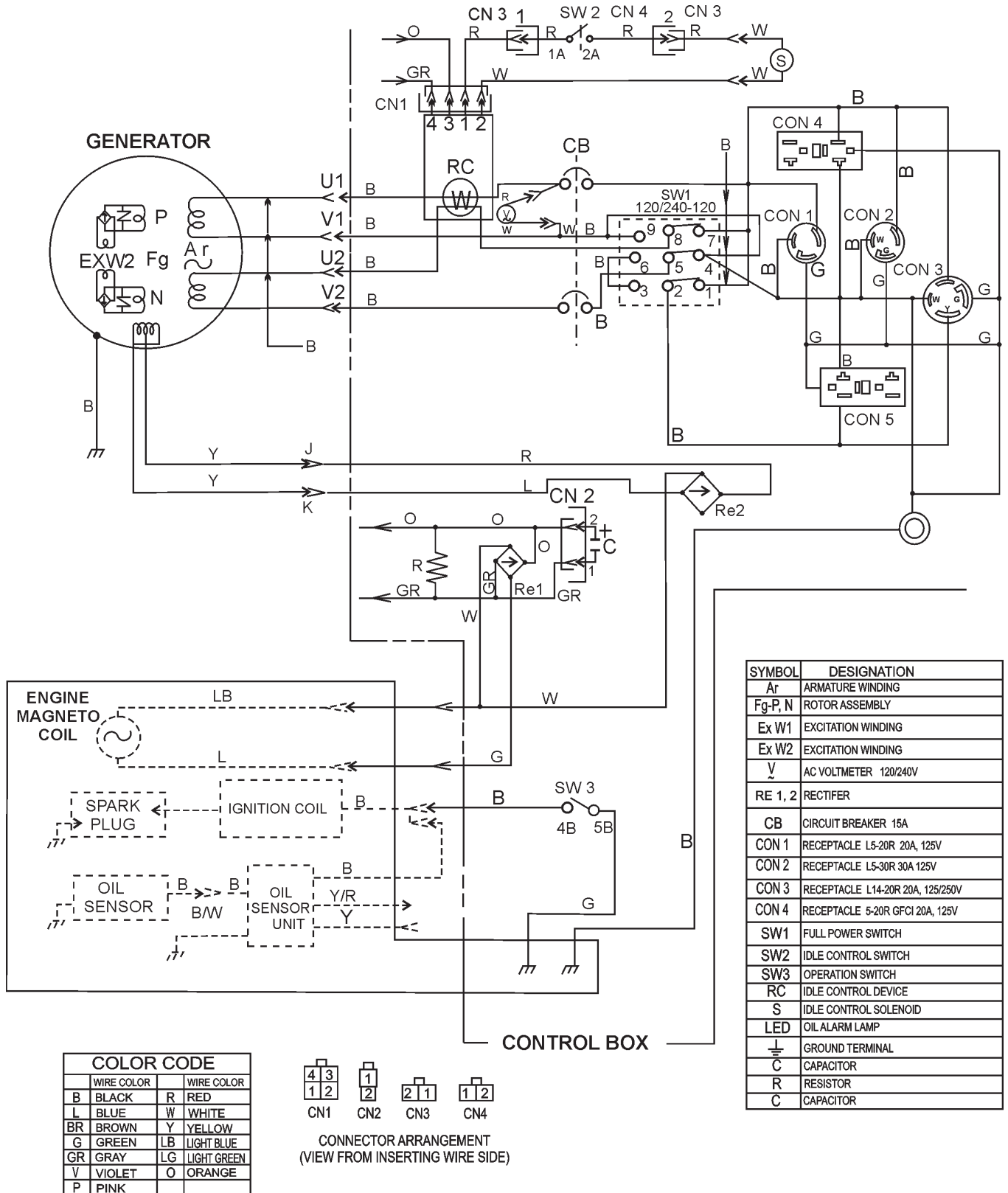


Figure 29. Generator/Engine Wiring Diagram (GA-4.5RA Only)

GA-4.5R/GA-4.5RA — TROUBLESHOOTING (ENGINE)

Practically all breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, please take a remedial action following the

diagnosis based on the Engine Troubleshooting (Table 6) information shown below and on the proceeding page. If the problem cannot be remedied, please leave the unit just as it is and consult our company's business office or service plant.

TABLE 6. ENGINE TROUBLESHOOTING

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Poor starting	Inspect carburetor to see if fuel is reaching it?	Check fuel line
	No Fuel?	Add Fuel
	Water in fuel tank?	Flush or replace fuel tank.
	Fuel filter clogged?	Replace fuel filter
	Stuck carburetor?	Check float mechanism.
	Spark plug is red?	Spark plug is fouled. Check transistor ignition unit.
	Spark plug is blue-white?	Insufficient compression, injected air leaking. Carburetor jets are clogged (overflow).
	No spark present at tip of spark plug?	Transistor ignition unit broken, high voltage cord cracked or broken. Start/Stop switch broken. Replace spark plug if fouled.
	No oil?	Add oil as required.
	Oil pressure alarm lamp blinks upon starting?	Check Automatic shutdown circuit "oil sensor".
Insufficient power output "no compression"	Engine will not turn over?	Replace cylinder and piston and if necessary axel joint.
	Cylinder head connecting bolts loose?	Tighten cylinder head connecting bolts.
	Cylinder head gasket damaged?	Replace cylinder head gasket.
	Malfunction of valve seat?	Re-seat valves.
	Spark plug is loose?	Replace spark plug.
	Worn piston rings?	Replace piston rings.
Insufficient power output "compression"	Malfunction in air-cleaner system, air filter clogged?	Clean or replace air filter.
	Air leaking in from interface between carburetor and cylinder head?	Tighten bolts between carburetor and cylinder head. Replace cylinder head gasket.
	Malfunction in fuel system?	Clean or replace fuel filter. Clean or replace carburetor. Check carburetor float.

GA-4.5R/GA-4.5RA — TROUBLESHOOTING (ENGINE)

TABLE 6. ENGINE TROUBLESHOOTING (CONTINUED)

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Insufficient power output "compression" and overheats	Malfunction in blower?	Check or replace blower.
	Air in-take filter clogged?	Clean or replace air in-take filter.
Burns to much fuel	Over accumulation of exhaust products?	Clean and check valves. Check muffler, replace if necessary.
	Wrong spark plug?	Replace spark plug with manufactures suggested type spark plug.
Exhaust color is continously "WHITE"	Lubricating oil is wrong viscosity?	Replace lubricating oil with correct viscosity.
	Worn rings?	Replace rings
Exhaust color is continously "BLACK"	Air cleaner clogged?	Clean or replace air cleaner.
	Choke valve has not been set to the correct position?	Adjust choke valve to the correct position.
	Carburetor defective, seal on carburetor broken?	Replace carburetor or seal.
	Poor carburetor adjustment "engine runs too rich?"	Adjust carburetor.

GA-4.5R/GA-4.5RA — TROUBLESHOOTING (GENERATOR)

Practically all generator breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, please take a remedial action following the

diagnosis based on the Generator Troubleshooting (Table 7) information shown below and on the preceding page. If the problem cannot be remedied, please leave the unit just as it is and consult our company's business office or service plant.

TABLE 7. GENERATOR TROUBLESHOOTING

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Low voltage	Engine speed too low?	Raise engine speed to rated RPM.
Low voltage. Engine speed normal 3650 RPM (unloaded), 2500 RPM (idle)	AC voltmeter not working?	Replace AC voltmeter.
	Control box internal wiring malfunction?	Check control box wiring.
	Defective ignition coil?	Check red and green ignition wires. Replace ignition wires if necessary.
	Rotor winding malfunction?	Check or replace rotor.
	Stator winding malfunction?	Check or replace stator.
	Breaker malfunction?	Check or replace CB1.
Voltage output too high.	Engine speed too high?	Lower engine speed to rated RPM.
Voltage output too high. Engine speed normal 3650 RPM (unloaded), 2500 RPM (idle)	Control box internal wiring malfunction	Check control box wiring.
Circuit breaker will not turn on "NO LOAD"	Defective circuit breaker?	Replace circuit breaker.
Circuit breaker will turn on "LOADED" but trips immediately.	Overload?	Reduce load or replace breaker.
	Load circuit is shorted?	Check load circuit for short.
Does not accelerate from low to high "NO LOAD"	Stuck solenoid?	Check solenoid.
Does not accelerate from low to high "LOAD ACTIVE"	Control box internal wiring defective?	Check control box wiring.
Does not decelerate no "VOLTAGE OUTPUT".	Defective rotor windings?	Check or replace rotor.
	Defective solenoid?	Check or replace solenoid.
	Defective idle control device?	Check or replace idle control device.
	Defective solenoid?	Check or replace idle control device.
Does not decelerate but has "VOLTAGE OUTPUT".	Control box wiring malfunction?	Check control box wiring, replace any defective components.
	Defective solenoid?	Check or replace solenoid.
	Idle control device malfunction?	Check or replace idle control device.

GA-4.5R/GA-4.5RA — EXPLANATION OF CODE IN REMARKS COLUMN

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

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

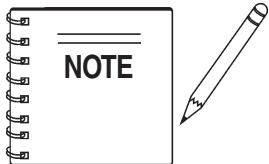
Sample Parts List:

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

NO. Column

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

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



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

PART NO. Column

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

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

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

QTY. Column

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

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

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

REMARKS Column

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

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

Indicated by:

"INCLUDES ITEMS W/(unique symbol)"

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

Indicated by:

"S/N XXXXX AND BELOW"

"S/N XXXX AND ABOVE"

"S/N XXXX TO S/N XXX"

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

Indicated by:

"XXXXX ONLY"

"NOT USED ON XXXX"

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

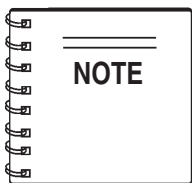
"Not Sold Separately" - Indicates that an item cannot be purchased as a separate item and is either part of an assembly/kit that can be purchased, or is not available for sale through Multiquip.

GA-4.5R/GA-4.5RA — SUGGESTED SPARE PARTS

GA-4.5R/GA-4.5RA 1 TO 3 UNITS WITH ROBIN EX270D ENGINE

1 to 3 Units

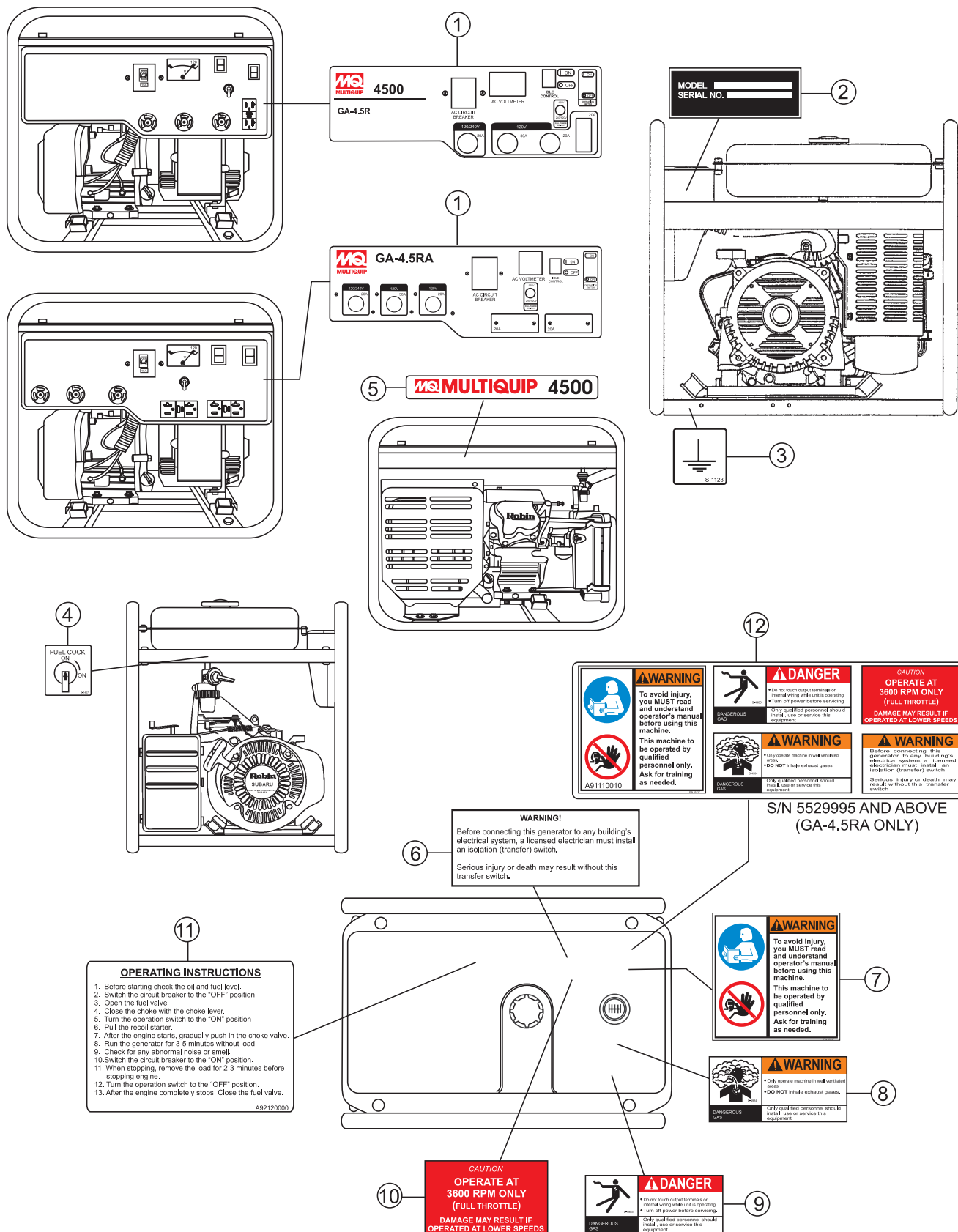
Qty.	P/N	Description
1	A9924800014	CAP, FUEL TANK
1	A9924800004	FUEL FILTER, FUEL TANK
3	0650140150	SPARK PLUG
3	2793260907	ELEMENT, AIR CLEANER
1	2795011008	ROPE, RECOIL STARTER



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

GA-4.5R/GA-4.5RA — NAME PLATE AND DECALS

NAMEPLATE AND DECALS



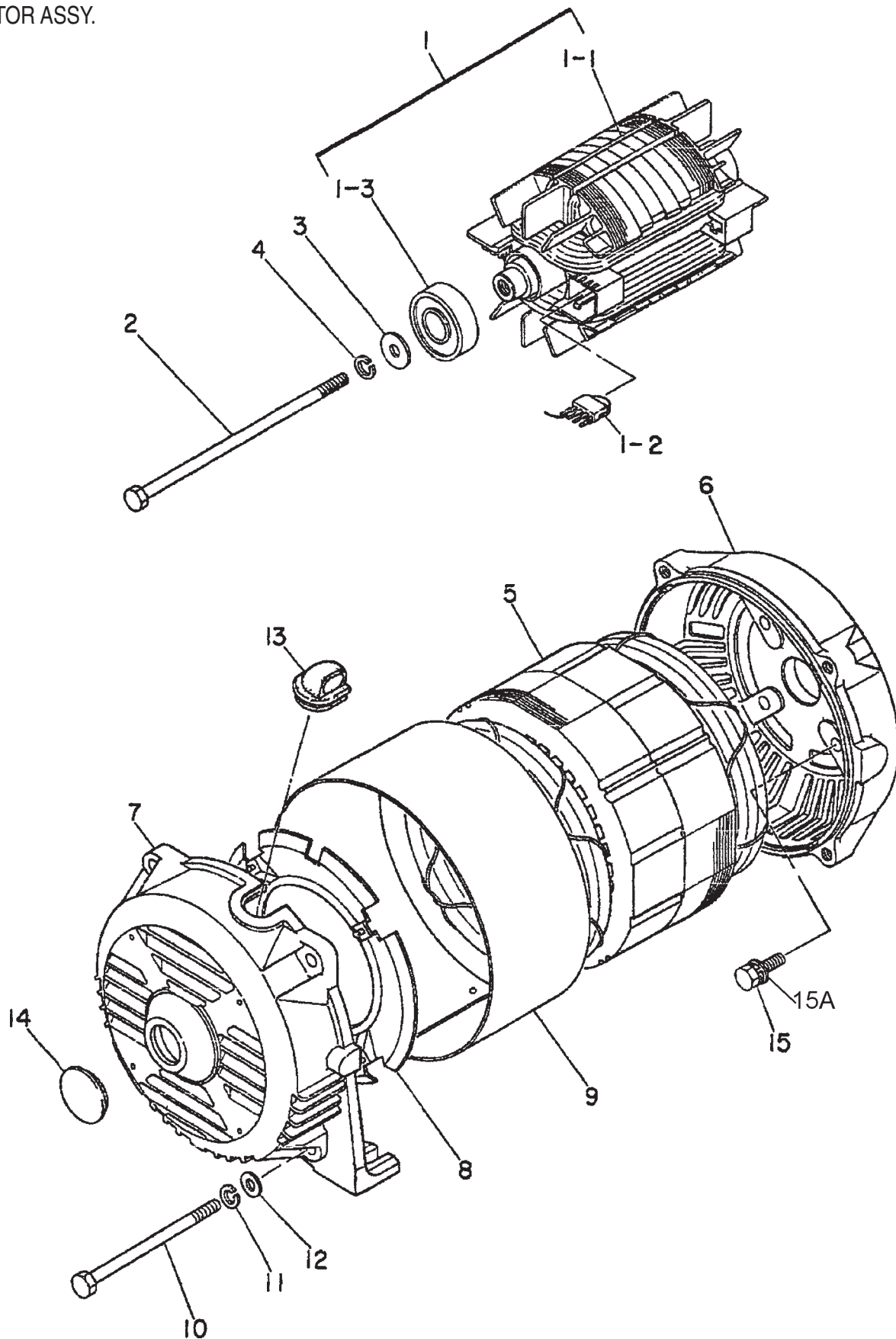
GA-4.5R/GA-4.5RA — NAME PLATE AND DECALS

NAMEPLATE AND DECALS

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	A4511200002	DECAL; CONTROL PANEL	1	A41120000 GA-4.5R ONLY
1	A4511200702	DECAL; CONTROL PANEL	1	A41120070 GA-4.5RA ONLY
2		NAMEPLATE	1	CONTACT MQ PARTS DEPT.
3	0800628504	DECAL; GROUND	1	S-1123
4	1630680104	DECAL; FUEL COCK	1	S-1407
5	A4561000003	DECAL; MQ MULTQUIP	1	
6	0820610404	DECAL; WARNING	1	S-3627
7	35137	DECAL; WARNING READ MANUAL	1	
8	8700611804	DECAL; WARNING DANGEROUS GAS	1	S-4984
9	8700611904	DECAL; DANGER ELECTRICAL SHOCK HAZ.	1	S-4985
10	7900636004	DECAL; CAUTION OPER. AT 3600 RPM ONLY	1	S-4461
11	A9521200004	DECAL; OPERATING INSTRUCTIONS	1	A92120000
12	A9511100103	DECAL; WARNINGS MULTIPLE	1	A91110010 GA-4.5RA ONLY
			S/N 5529995 AND ABOVE

GA-4.5R/GA-4.5RA — GENERATOR ASSY.

GENERATOR ASSY.



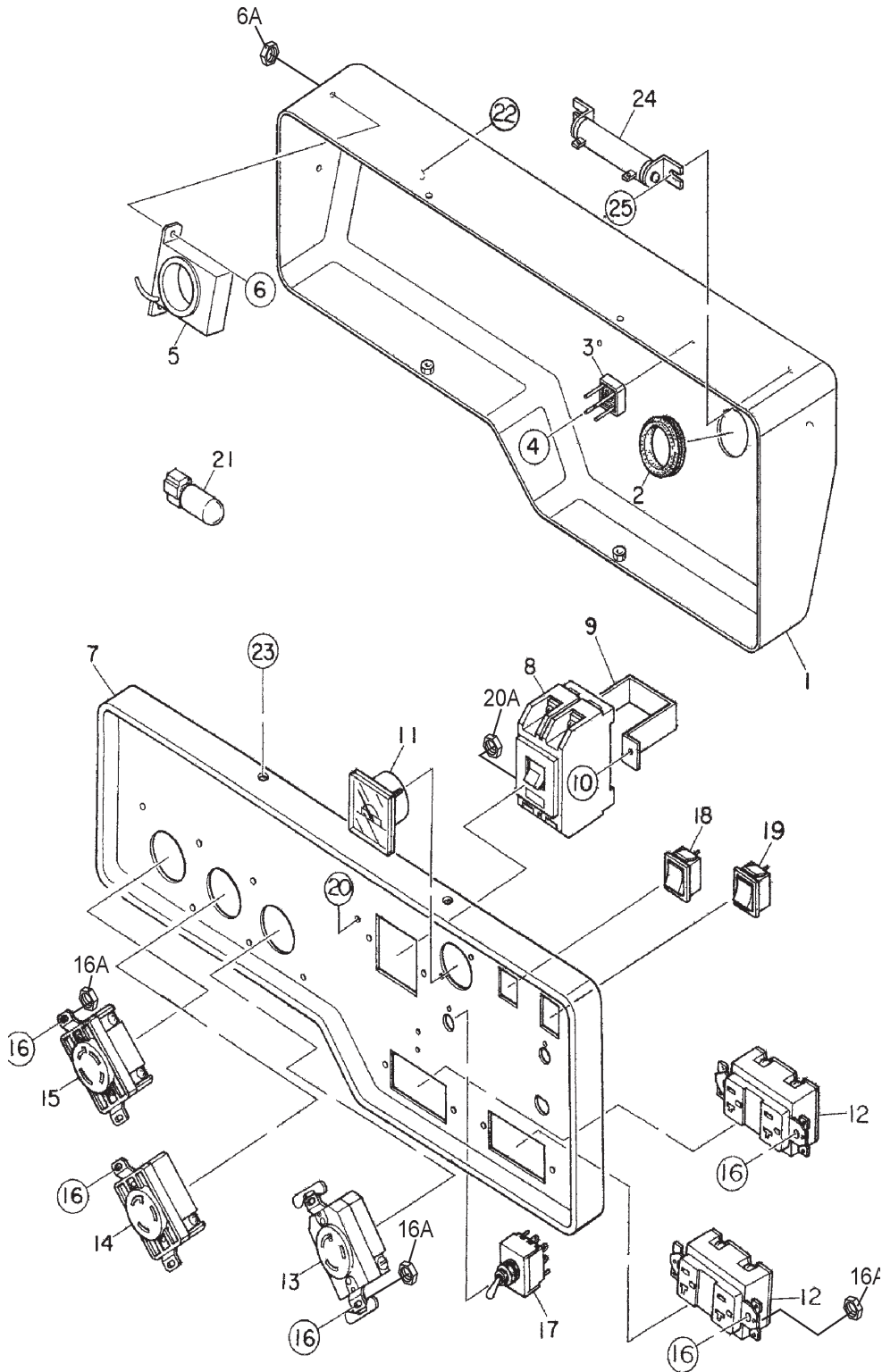
GA-4.5R/GA-4.5RA — GENERATOR ASSY.

GENERATOR ASSY.

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	A3110200003	ROTOR ASSY.	1	INCLUDES ITEMS W/*
1-1*	7661080003	FIELD COIL ASSY.	1	
1-2	0601823213	RECTIFIER	2	
1-2	0601822638	SURGE ABSORBER	2	
1-3*	0071706304	BEARING	1	
2	7661017104	SET BOLT, ROTOR	1	
3	0801086104	SET WASHER, BEARING	1	
4	0040010000	SPRING WASHER	1	
5	A4135000103	ARMATURE ASSY.	1	
6	7661315112	END BRACKET	1	
7	7871315022	END BRACKET	1	
8	7875021523	GUIDE PANEL, AIR	1	
9	7661331003	COVER	1	
10	7661344204	SET BOLT, STATOR	4	
11	0040008000	SPRING WASHER	4	
12	0041208000	PLAIN WASHER	4	
13	7871329514	GROMMET	1	
14	0601851760	CAP	1	
15	0013608020	HEX. HEAD BOLT	4	
15A	0040008000	WASHER, LOCK	4	

MQ GA-4.5R — CONTROL BOX ASSY.

CONTROL BOX ASSY. (GA-4.5R ONLY)



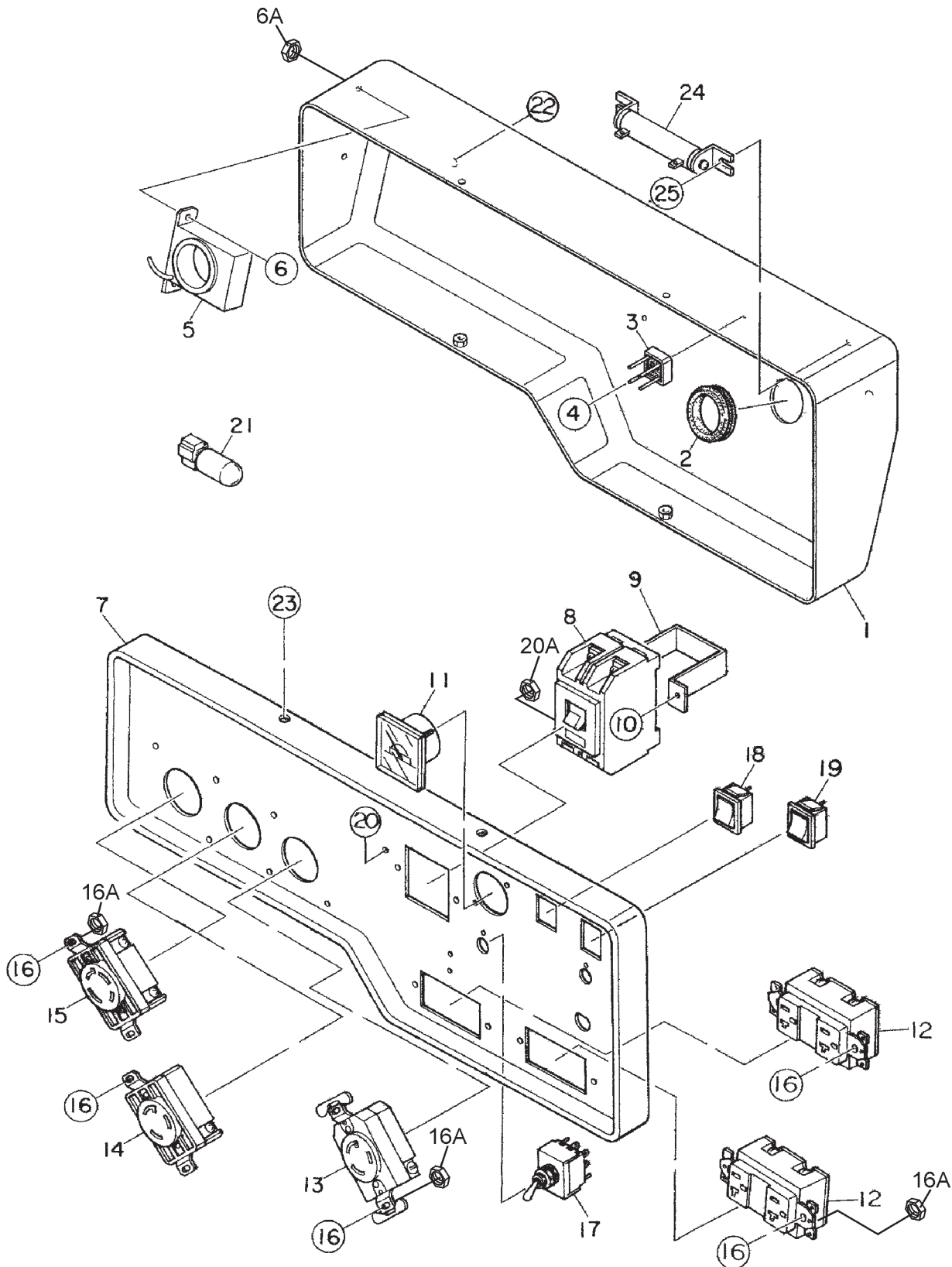
MQ GA-4.5R — CONTROL BOX ASSY.

CONTROL BOX ASSY. (GA-4.5R ONLY)

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	A3214000003	CONTROL BOX	1	
2	0601850102	GROMMET	1	
3	0601823204	RECTIFIER, S5VB60	2	
4	0027103012	MACHINE SCREW	2	
5	0601823853	SLOW-DOWN UNIT	1	
6	0027104010	MACHINE SCREW	2	
6A	0207004000	HEX NUT	2	
7	A3224000003	CONTROL PANEL	1	
8	0601802651	CIRCUIT BREAKER, 15 AMP	1	
9	4341817004	BRACKET, CIRCUIT BREAKER	1	
10	0021004010	MACHINE SCREW	2	
11	0601806819	AC VOLTMETER, 0 ~ 120/240V	1	
12	0601812598	RECEPTACLE, 5-20R : 125V, 20A	1	
13	0601812592	RECEPTACLE, L5-20R : 125V, 20A	1	
14	0601811035	RECEPTACLE, L5-30R : 125V, 30A	1	
15	0601814010	RECEPTACLE, L14-20R : 125/250V, 30A	1	
16	0021004010	MACHINE SCREW	8	
16A	0207004000	HEX NUT	8	
17	0601830737	SWITCH, FULL POWER	1	
18	0601831620	SWITCH, IDLE CONTROL	1	
19	0601831620	SWITCH, OPERATION	1	
20	0021004015	MACHINE SCREW	1	
20A	0207004000	HEX NUT	1	
21	A3262800004	CONDENSER ASSY. 50V @ 1000 μ F	1	
22	0017106016	HEX. HEAD BOLT	4	
23	0017105010	HEX. HEAD BOLT	4	
24	0601842426	RESISTOR, 40W 400 OHMS	1	
25	0027104010	MACHINE SCREW	2	

MQ GA-4.5RA — CONTROL BOX ASSY.

CONTROL BOX ASSY. (GA-4.5RA ONLY)



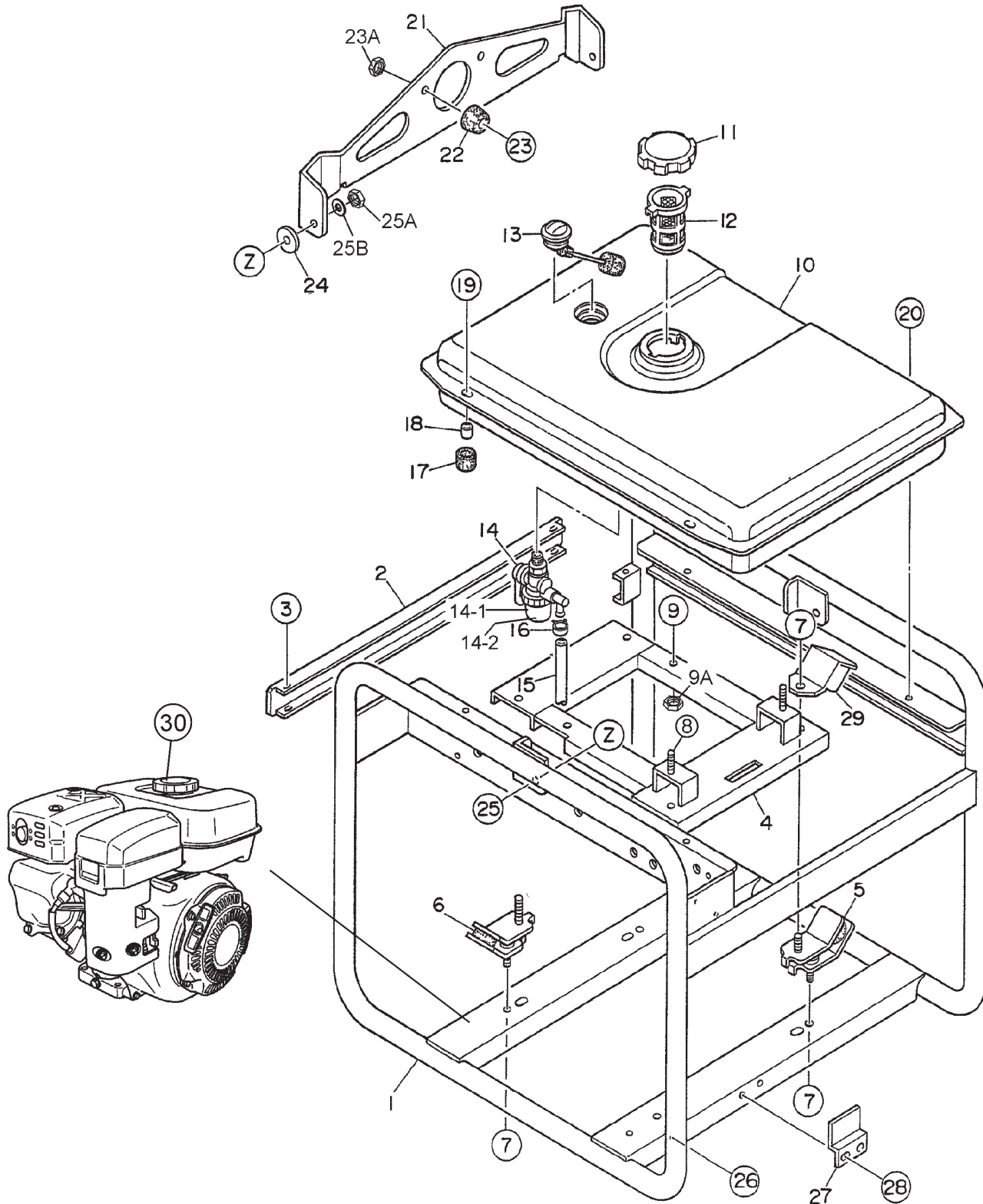
MQ GA-4.5RA — CONTROL BOX ASSY.

CONTROL BOX ASSY. (GA-4.5RA ONLY)

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	A3214000103	CONTROL BOX	1	
2	0601850102	GROMMET	1	
3	0601823204	RECTIFIER, S5VB60	2	
4	0027103012	MACHINE SCREW	2	
5	0601823853	SLOW-DOWN UNIT	1	
6	0027104010	MACHINE SCREW	2	
6A	0207004000	HEX NUT	2	
7	A3224000103	CONTROL PANEL	1	
8	0601802651	CIRCUIT BREAKER, 15 AMP	1	
9	4341817004	BRACKET, CIRCUIT BREAKER	1	
10	0021004010	MACHINE SCREW	2	
11	0601806819	AC VOLTMETER, 0 ~ 120/240V	1	
12	0601812598	RECEPTACLE, 5-20R : 125V, 20A	1	
13	0601812592	RECEPTACLE, L5-20R : 125V, 20A	1	
14	0601811035	RECEPTACLE, L5-30R : 125V, 30A	1	
15	0601814010	RECEPTACLE, L14-20R :125/250V, 30A	1	
16	0021004010	MACHINE SCREW	8	
16A	0207004000	HEX NUT	8	
17	0601830737	SWITCH, FULL POWER	1	
18	0601831620	SWITCH, IDLE CONTROL	1	
19	0601831620	SWITCH, OPERATION	1	
20	0021004015	MACHINE SCREW	1	
20A	0207004000	HEX NUT	1	
21	A3262800004	CONDENSER ASSY. 50V @ 1000 μ F	1	
22	0017106016	HEX. HEAD BOLT	4	
23	0017105010	HEX. HEAD BOLT	4	
24	0601842426	RESISTOR, 40W 400 OHMS	1	
25	0027104010	MACHINE SCREW	2	

GA-4.5R/GA-4.5RA — PIPE FRAME ASSY.

PIPE FRAME ASSY.



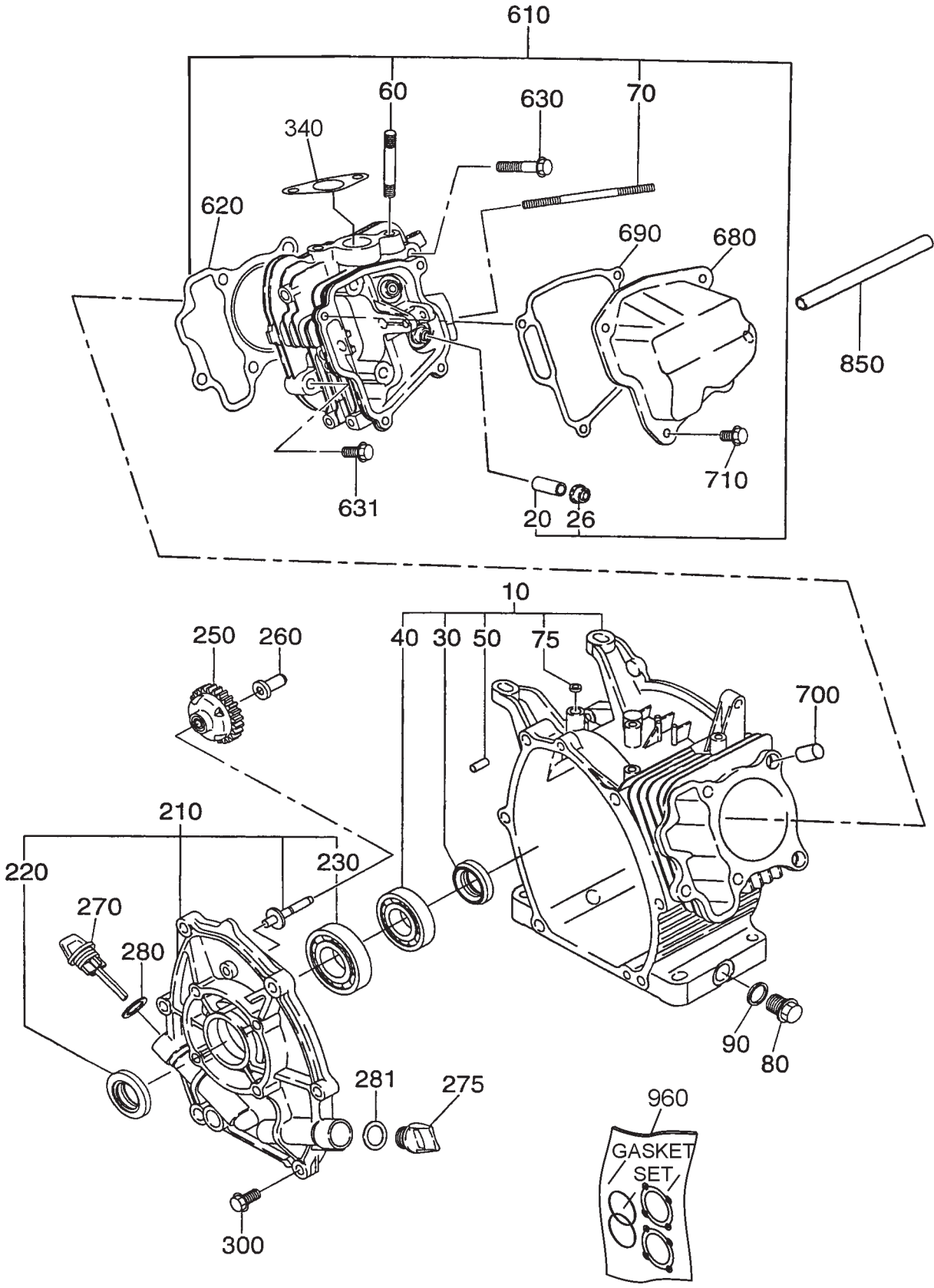
MQ GA-4.5R/GA-4.5RA — PIPE FRAME ASSY.

PIPE FRAME ASSY.

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	A4417000002	PIPE FRAME	1	GA-4.5R ONLY
1	A4417000202	PIPE FRAME	1	GA-4.5RA ONLY
2	A3417100004	BRACKET	1	
3	0017106016	HEX. HEAD BOLT	4	
4	A3304100003	ENGINE BASE	1	
5	A9312601704	RUBBER SUSPENSION	2	
6	7935416004	RUBBER SUSPENSION	2	
7	0207008000	HEX. NUT	8	
8	0207008000	HEX. NUT	2	
9	0017108040	HEX. HEAD BOLT	2	
9A	0207008000	HEX. NUT	2	
10	A4364000002	FUEL TANK	1	
11	A9924800014	CAP, FUEL TANK	1	
12	A9924800004	FUEL FILTER	1	
13	0602125034	FUEL GUAGE	1	
14	0605510026	FUEL STRAINER	1	
14-1	0642007810	CUP, FILTER FUEL STRAINER	1	
14-2	0642006410	PACKING, FUEL STRAINER CUP	1	
15	0605513194	HOSE	1	
16	0605515062	HOSE BAND	2	
17	7855525514	RUBBER CUSION	2	
18	7855525604	COLLAR	2	
19	0017108030	HEX. HEAD BOLT	2	
20	0017108020	HEX. HEAD BOLT	2	
21	A9117200103	HANGER	1	
22	0601850097	STOPPER	1	
23	0021008025	MACHINE SCREW	1	
23A	0207008000	HEX NUT	1	
24	A9311100004	PLASTIC WASHER	2	GA-4.5R ONLY
24	0601851116	PLASTIC WASHER	2	GA-4.5RA ONLY
25	0011308025	HEX HEAD BOLT	2	
25A	0037908000	HEX NUT	2	
25B	0042108000	WASHER, FLAT	2	
26	0019206016	HEX HEAD BOLT	1	
27	A3305200104	STOPPER	1	
28	0017106016	HEX HEAD BOLT	2	
29	A3414500004	COVER	1	
30	A4924200004	ROBIN ENGINE, EX27D	1	

ROBIN EX270D20220 — CRANKCASE ASSY.

CRANKCASE ASSY..



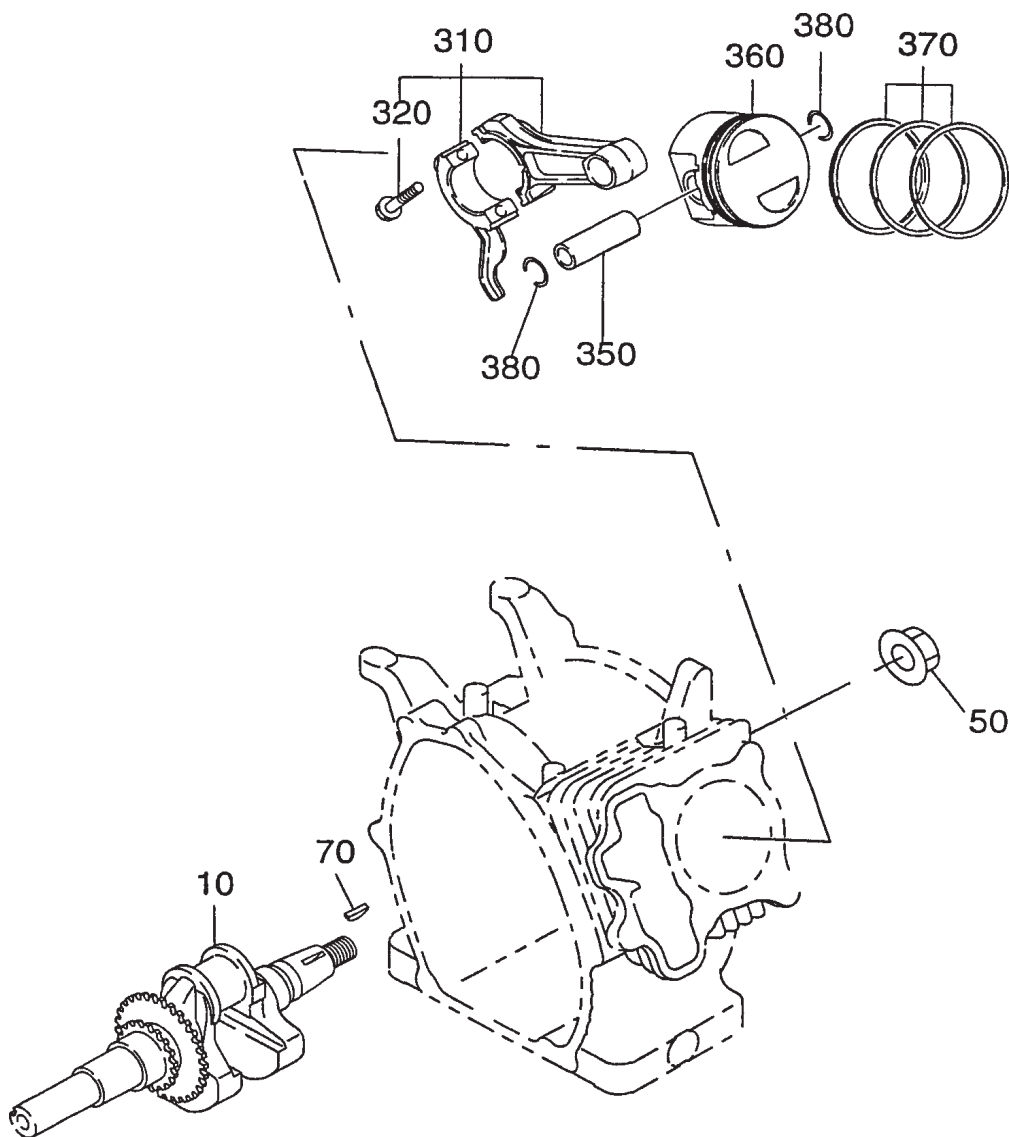
ROBIN EX270D20220 — CRANKCASE ASSY.

CRANKCASE ASSY.

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	2791010121	CRANKCASE ASSY.	1	INCLUDES ITEMS W/*
20%	2371420203	VALVE GUIDE	2	
26%	2771601001	STEM SEAL	1	
30*	0440300160	OIL SEAL	1	
46*	0600300340	BALL BEARING	1	
50*	2771501103	PIPE KNOCK	2	
60%	0105080250	STUD	2	
70%	0105060410	STUD	2	
75	0440060020	OIL SEAL	1	
80	0401140020	PLUG	2	
90	0211140020	GASKET	2	
210	2791100111	MAIN BEARING COVER	1	INCLUDES ITEMS W/+
220+	0440300160	OIL SEAL	1	
230+	0600300020	BALL BEARING	1	
250	2774500421	GOVERNOR GEAR	1	
260	2774190103	GOVERNOR SLEEVE	1	
275	2796500103	FILLER PLUG	1	
280\$	0213200050	GASKET	1	
281	0213200050	GASKET	1	
300	0010408350	FLANGE BOLT	7	
340\$	2773520103	GASKET, MUFFLER 26D 9DX58P 0.2T	1	
610	2791300111	CYLINDER HEAD ASSY	1	INCLUDES ITEMS W/%
620\$	2791500113	GASKET HEAD	1	
630	0110080240	FLANGE BOLT	4	
631	0010408350	FLANGE BOLT	1	
680	2771550101	ROCKER COVER	1	
690\$	2771600103	GASKET, ROCKET COVER	1	
700	2771501103	PIPE KNOCK	2	
710	0110060020	FLANGE BOLT	4	
850	0851080000	RUBBER PIPE	1	
960	2799900107	GASKET SET	1	INCLUDES ITEMS W/\$

ROBIN EX270D20110/EX270D20220 — CRANKSHAFT AND PISTON ASSY.

CRANKSHAFT AND PISTON ASSY.



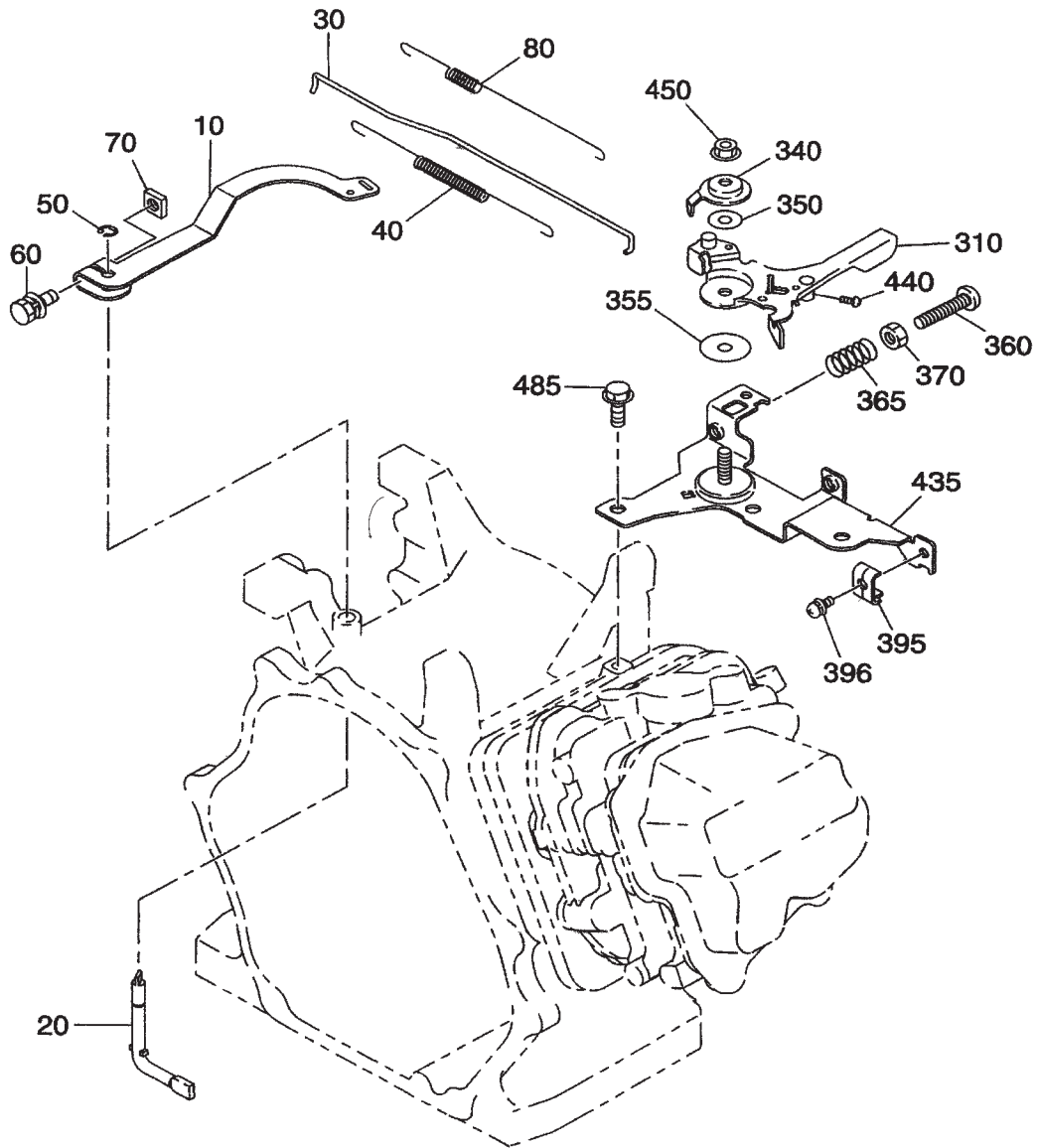
ROBIN EX270D20110/EX270D20220 — CRANKSHAFT AND PISTON ASSY.

CRANKSHAFT AND PISTON ASSY.

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	2792020121	CRANKSHAFT CP	1	
50	0180180010	FLANGE NUT	1	
70	0323030010	WOODRUFF KEY	1	
310	2792250120	CONNECTING ROD ASSY.	1	INCLUDES ITEM W/*
320*	2792300103	CONNECTING ROD BOLT	2	
350	2792330103	PISTON PIN	1	
360	2792340103	PISTON, STANDARD	1	
360	2792340303	PISTON OVERSIZE 0.25 MM	1	
360	2792340403	PISTON OVERSIZE 0.50 MM	1	
370	2792351107	PISTON RING SET, STANDARD	1	
370	2792351207	PISTON RING SET, 0.25 MM	1	
370	2792351107	PISTON RING SET, STANDARD	1	
380	0565180010	CLIP	2	

ROBIN EX270D20110/EX270D20220 — GOVERNOR ASSY.

GOVERNOR ASSY.



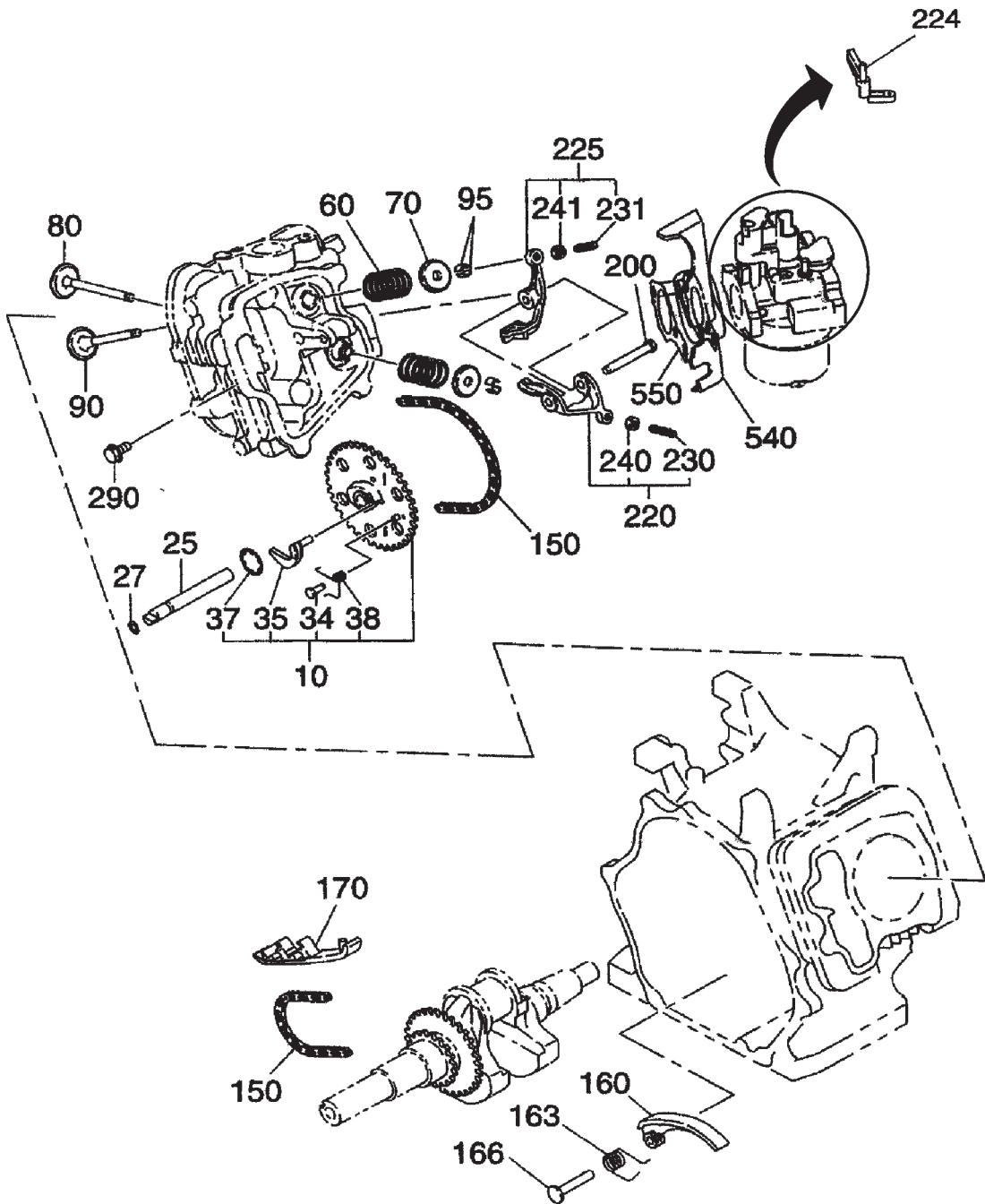
ROBIN EX270D20110/EX270D20220 — GOVERNOR ASSY.

GOVERNOR ASSY.

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	2794230113	GOVERNOR LEVER	1	
20	2774220113	GOVERNOR SHAFT	1	
30	2794270101	GOVERNOR ROD CP	1	
40	2774280113	ROD SPRING	1	
50	0031305000	CLIP	1	
60	0130060240	BOLT AND WASHER ASSY.	1	
70	0186060020	NUT	1	
80	2794250223	GOVERNOR SPRING	1	
310	2774330113	SPEED CONTROL LEVER	1	
340	2774350103	STOP PLATE	1	
350	0200060170	WASHER	1	
355	0217060070	FRICTION WASHER	1	
360	0140060180	SCREW	1	
365	2374500423	SPRING, ADJUST	1	
370	0021706000	NUT	1	
435	2774600101	SPEED CONT. BRKT CP	1	
395	2774390203	CLAMP	1	
396	0131050030	SCREW AND WASHER ASSY.	1	
440	0043104080	SCREW	1	
450	0023506000	SELF LOCK NUT	1	
480	2774510103	RETURN SPRING	1	
485	0110060020	FLANGE BOLT	2	

ROBIN EX270D20110/EX270D20220 — INTAKE AND EXHAUST ASSY.

INTAKE AND EXHAUST ASSY.



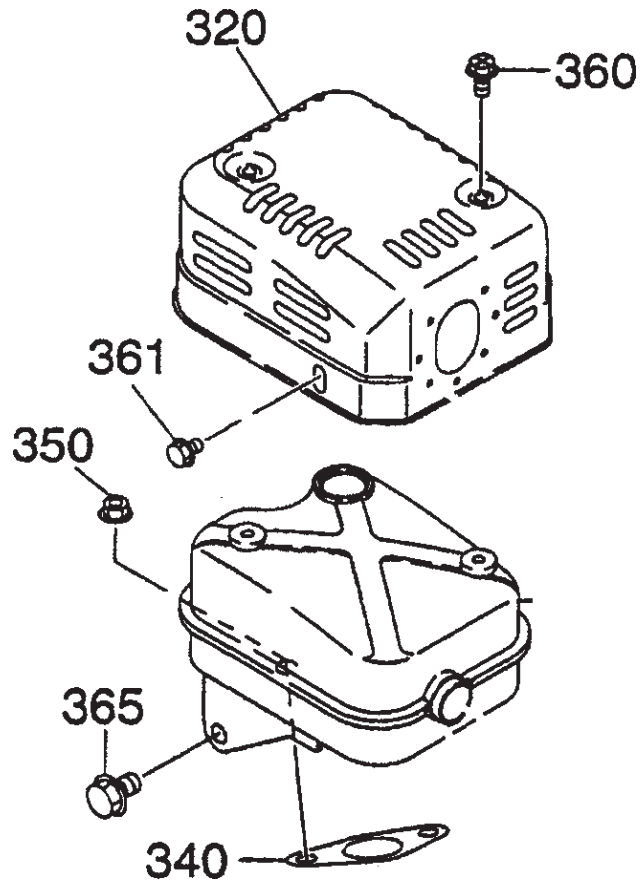
ROBIN EX270D20110/EX270D20220 — INTAKE AND EXHAUST ASSY.

INTAKE AND EXHAUST ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	2793160101	CAMSHAFT CP	1	INCLUDES ITEMS W/*
25	2773510103	PIN, CAMSHAFT, 9DX78.5L	1	
27	0240060010	O RING, 5.8DX9.6DX1.9T	1	
34*	2773860103	SPRING PIN, 4DX7.5DX11L	1	
35*	2793640103	RELEASE LEVER	1	
37*	2773650103	CLIP, 13.8DX20.3DX0.4T	1	
38*	2773870103	RETURN SPRING	1	
60	2793360103	VALVE SPRING, 17DX2.3DX27L N=5.8	2	
70	2693370103	SPRING RETAINER	2	
80	2793340113	INTAKE VALVE, 28.5DX5.5DX67.8L	1	
90	2793350113	EXHAUST VALVE, 26.5DX5.5DX67.8L	1	
95	13210KA031	COLLET VALVE	4	
150	2793560111	TIMING CHAIN CP, 100 LINK	1	
160	2773691103	TENTIONER	1	
163	2773710103	SPRING, TENTIONER	1	
166	2773690203	PIN, TENTIONER, 6DX13DX34L	1	
170	2773691313	CHAIN GUIDE	1	
200	2773500123	PIN, ROCKER, 6DX9DX41L	1	
210	0031305000	CLIP	1	
220	2773620100	ROCKER ARM ASSY. IN	1	INCLUDES ITEMS W/#
224	2774380101	CHOKE LEVER CP	1	
225	2773620200	ROCKER ARM ASSY. EX	1	INCLUDES ITEMS W/#
230#	0149050020	ADJUST SCREW, M5X0.5X23L	1	
240#	0170050030	NUT, M5X0.5X4.1H	1	
290	0110060020	FLANGE BOLT, M6X1.0X12L	1	
540	2793290113	INSULATOR	1	
550	2793590123	GASKET, INSULATOR	1	

ROBIN EX270D20110/EX270D20220 — MUFFLER ASSY.

MUFFLER ASSY.



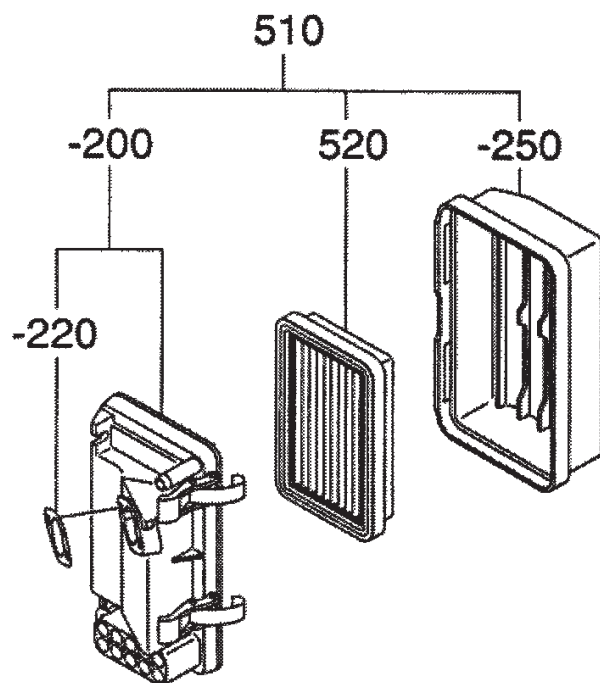
ROBIN EX270D20110/EX270D20220 — MUFFLER ASSY.

MUFFLER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
310	2793010121	MUFFLER, CP	1	
320	2793420111	MUFFLER COVER CP	1	
340	2773520103	GASKET, MUFFLER 26D 9DX58P 0.2T	1	
350	9802008280	FLANGE NUT	2	
360	0152060090	TAPPING BOLT, M6X1.0X10L	2	
361	0110060010	FLANGE BOLT, M6X1.0X8L	1	
365	0110080150	FLANGE BOLT, M8X1.25X12L	1	

ROBIN EX270D20110/EX270D20220 — AIR CLEANER ASSY.

AIR CLEANER ASSY.



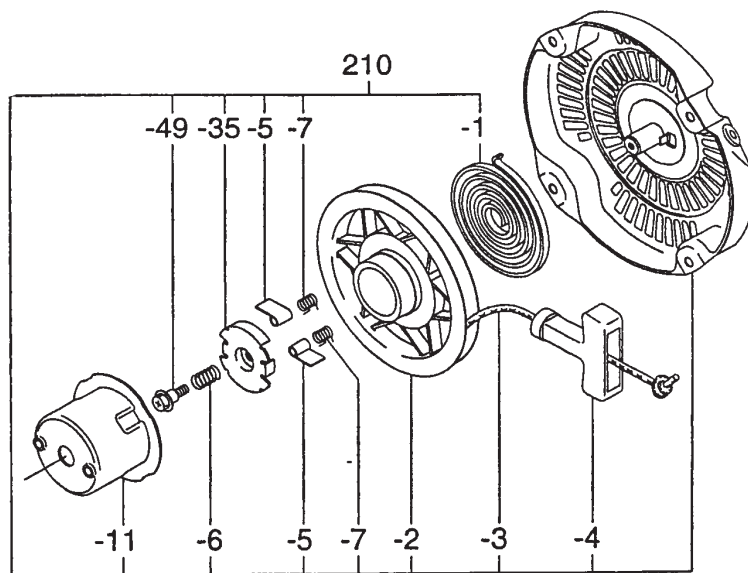
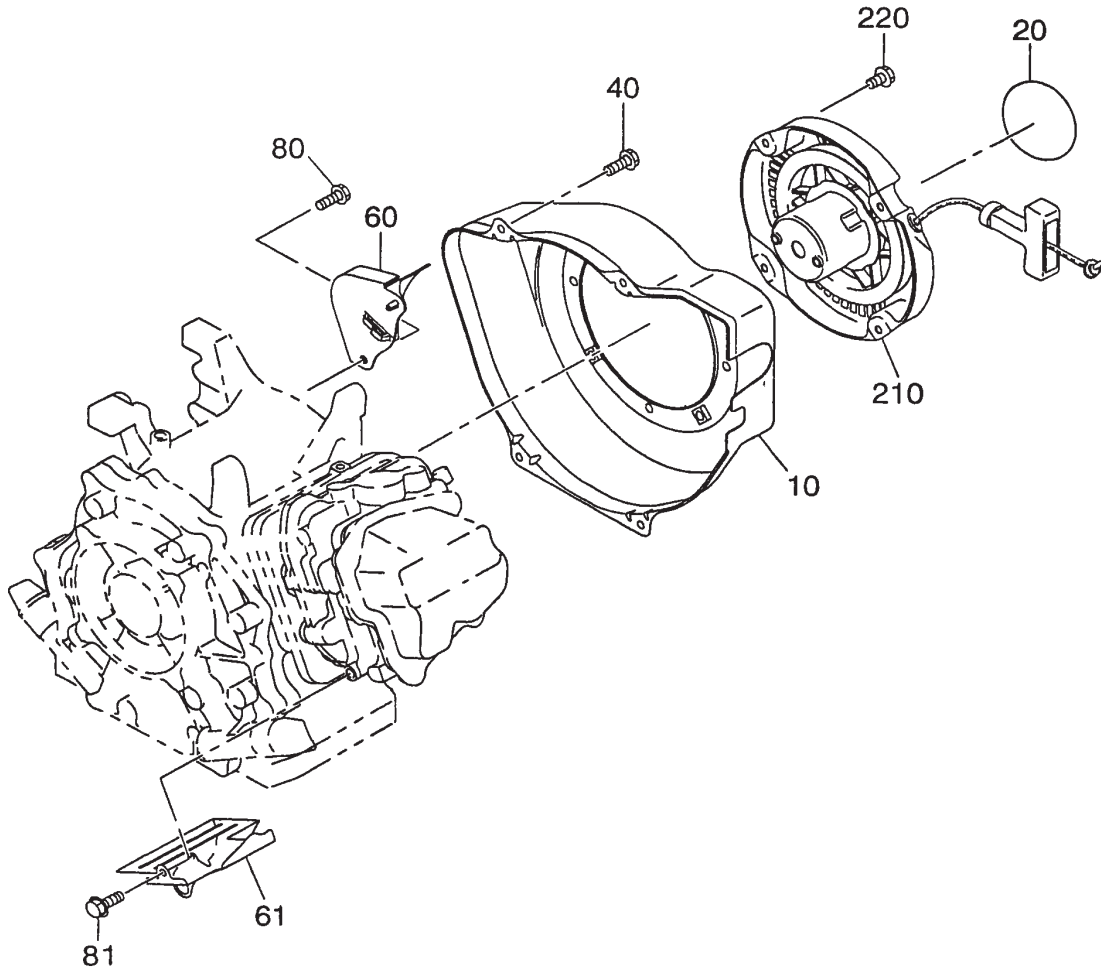
ROBIN EX270D20110/EX270D20220 — AIR CLEANER ASSY.

AIR CLEANER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
510	2793262030	AIR CLEANER ASSY. LOW PROFILE	1	INCLUDES ITEMS W/*
510-200*	2793263308	BODY CP	1	
510-220*	2793265008	GASKET	1	
510-250*	2793264508	COVER, LOW PROFILE	1	
520*	2793260907	ELEMENT ASSY.	1	

ROBIN EX270D20110/EX270D20220 — RECOIL STARTER ASSY.

RECOIL STARTER ASSY.



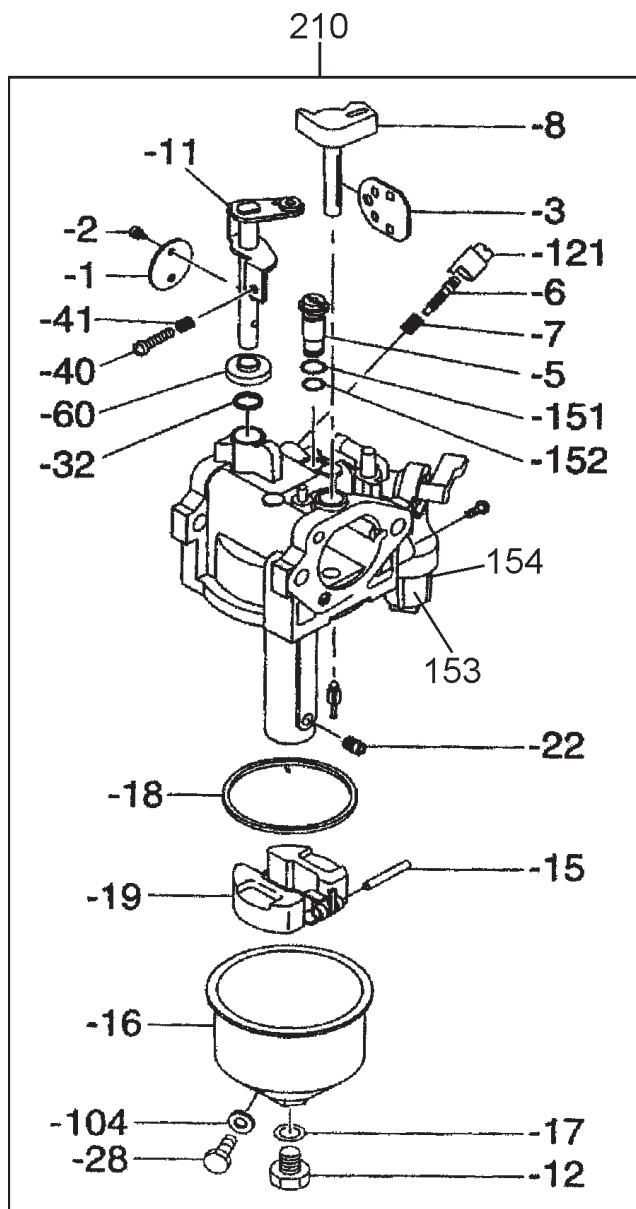
ROBIN EX270D20110/EX270D20220 — RECOIL STARTER ASSY.

RECOIL STARTER ASSY.

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	2795120101	BLOWER HOUSING CP	1	
20	0732005140	LABEL, TRADEMARK 64D	1	
40	0110060030	FLANGE BOLT	4	
60	2795271111	BAFFLE 1, CASE CP	1	
61	2795270203	BAFFLE 2, HEAD	1	
80	0016508120	BOLT	1	
81	0110060020	FLANGE BOLT	1	
210	2795020200	RECOIL STARTER ASSY.	1	INCLUDES ITEM W/*
210-1*	2265071608	SPIRAL SPRING	1	
210-2*	2795012008	REEL	1	
210-3*	2795011008	STARTER ROPE	1	
210-4*	2265070108	STARTER KNOB	1	
210-5*	2795012508	RATCHET	2	
210-6*	2265073108	FRICTION SPRING	1	
210-7*	2265075208	RATCHET SPRING	2	
210-11*	2795014508	STARTER PULLEY	1	
210-35*	2265074108	FRICTION PLATE	1	
210-49*	2265075318	CENTER SCREW	1	
220	0110060010	FLANGE BOLT	4	

ROBIN EX270D20110/EX270D20220 — CARBURETOR ASSY.

CARBURETOR ASSY.



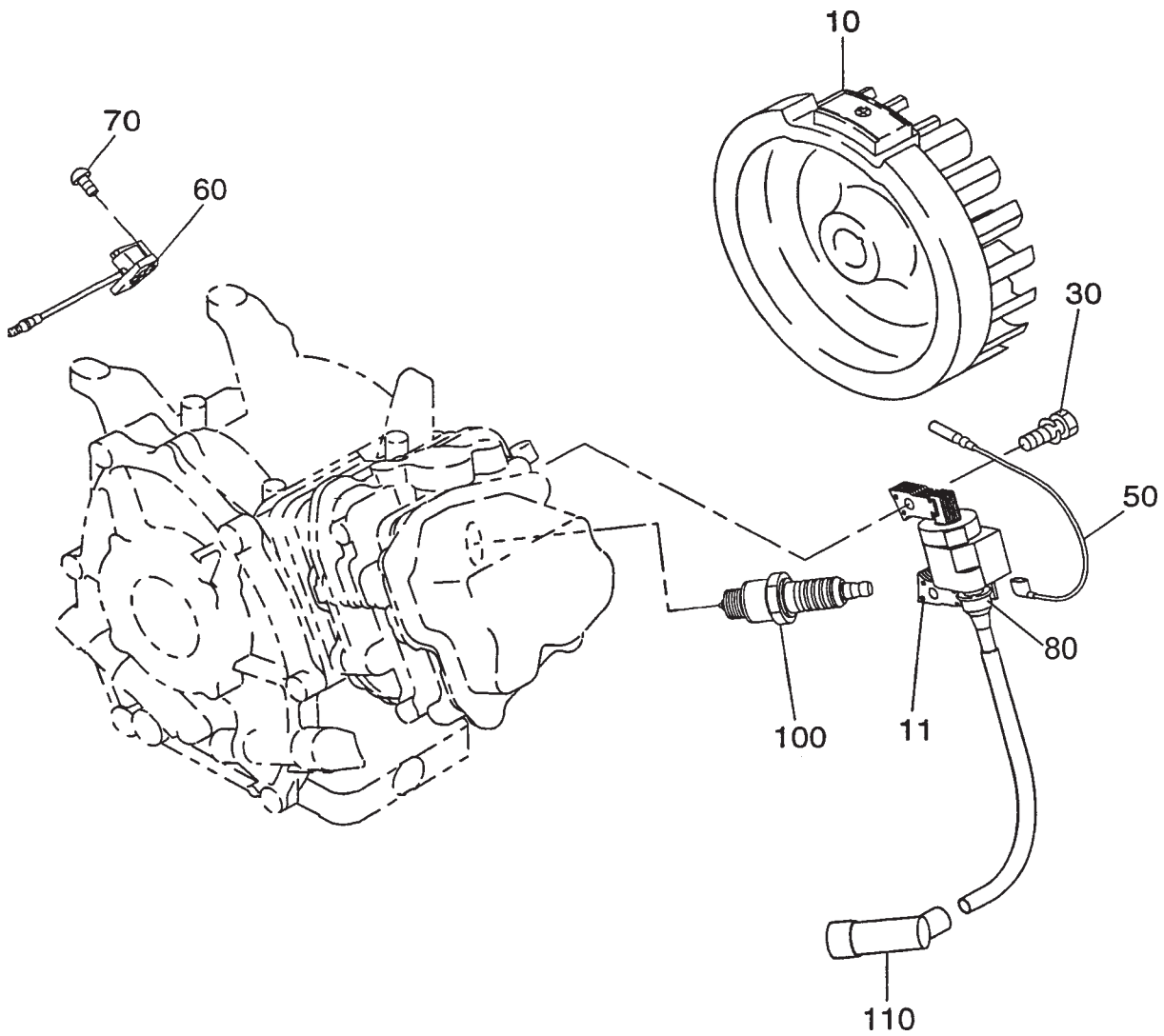
ROBIN EX270D20110/EX270D20220 — CARBURETOR ASSY.

CARBURETOR ASSY.

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
210	2796230210	CARBURETOR ASSY.	1	INCLUDES ITEM W/*
210-1*	2796253508	VALVE THROTTLE	1	
210-2*	2516245008	SCREW	2	
210-3*	2796252508	VALVE CHOKE	1	
210-5*	2796242008	JET SLOW	1	
210-6*	2796235408	SCRE IDLE ADJUSTING	1	
210-7*	2796252008	SPRING	1	
210-8*	2796252008	SHAFT CHOKE	1	
210-11*	2796253008	SHAFT SUB ASSY., THROTTLE	1	
210-12*	2516245308	SCREW	1	
210-15*	2796251508	PIN FLOAT LEVER	1	
210-16*	2796255008	CHAMBER FLOAT	1	
210-17*	2796235008	GASKET	1	
210-18*	2796254008	GASKET CHAMBER	1	
210-19*	2796250508	FLOAT SUB ASSY.	1	
210-22*	2796240008	JET MAIN	1	
210-22*	2796240108	JET MAIN	1	
210-28*	2796235508	SCREW DRAIN	1	
210-32*	2796256108	BUSH	1	
210-40*	2796235308	SCREW ADJUSTING	1	
210-41*	2796244508	SPRING	1	
210-60*	2796256208	COLLAR	1	
210-104*	2796255208	GASKET	1	
210-121*	2516248008	CAP	1	
210-151*	2796245208	O-RING	1	
210-152*	2796245108	O-RING	1	
210-153*	0652007810	FILTER CUP	1	
210-154*	0642006410	PACKING, FILTER CUP	1	

ROBIN EX270D20110/EX270D20220 — FLYWHEEL ASSY.

FLYWHEEL ASSY.



ROBIN EX270D20110/EX270D20220 — FLYWHEEL ASSY.

FLYWHEEL ASSY.

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	2797923001	FLYWHEEL CP	1	
11	2797943001	IGNITION COIL CP	1	
30	0011406250	BOLT & WASHER ASSY.	2	
50	2777310101	WIRE 2 CP, W/OIL SENSOR	1	
60	X660000420	SWITCH ASSY.	1	
70	0150040090	TAPPING SCREW	2	
100	0650140150	SPARK PLUG, NGK BR6HS	1	
110	0655000270	SPARK PLUG CAP	1	

PAYMENT TERMS

Terms of payment for parts are net 30 days.

FREIGHT POLICY

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

MINIMUM ORDER

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

RETURNED GOODS POLICY

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

1. A Returned Material Authorization must be approved by Multiquip prior to shipment.
2. To obtain a Return Material Authorization, a list must be provided to Multiquip Parts Sales that defines item numbers, quantities, and descriptions of the items to be returned.
 - a. The parts numbers and descriptions must match the current parts price list.
 - b. The list must be typed or computer generated.
 - c. The list must state the reason(s) for the return.
 - d. The list must reference the sales order(s) or invoice(s) under which the items were originally purchased.
 - e. The list must include the name and phone number of the person requesting the RMA.
3. A copy of the Return Material Authorization must accompany the return shipment.
4. Freight is at the sender's expense. All parts must be returned freight prepaid to Multiquip's designated receiving point.
5. Parts must be in new and resalable condition, in the original Multiquip package (if any), and with Multiquip part numbers clearly marked.
6. The following items are not returnable:
 - a. Obsolete parts. (If an item is in the price book and shows as being replaced by another item, it is obsolete.)
 - b. Any parts with a limited shelf life (such as gaskets, seals, "O" rings, and other rubber parts) that were purchased more than six months prior to the return date.
 - c. Any line item with an extended dealer net price of less than \$5.00.
 - d. Special order items.
 - e. Electrical components.
 - f. Paint, chemicals, and lubricants.
 - g. Decals and paper products.
 - h. Items purchased in kits.
7. The sender will be notified of any material received that is not acceptable.
8. Such material will be held for five working days from notification, pending instructions. If a reply is not received within five days, the material will be returned to the sender at his expense.
9. Credit on returned parts will be issued at dealer net price at time of the original purchase, less a 15% restocking charge.
10. In cases where an item is accepted, for which the original purchase document can not be determined, the price will be based on the list price that was effective twelve months prior to the RMA date.
11. Credit issued will be applied to future purchases only.

PRICING AND REBATES

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

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

SPECIAL EXPEDITING SERVICE

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

LIMITATIONS OF SELLER'S LIABILITY

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

LIMITATION OF WARRANTIES

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

OPERATION AND PARTS MANUAL

HERE'S HOW TO GET HELP

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

UNITED STATES

Multiquip Corporate Office

18910 Wilmington Ave. Tel. (800) 421-1244
Carson, CA 90746 Fax (800) 537-3927
Contact: mq@multiquip.com

Mayco Parts

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

Service Department

800-421-1244 Fax: 310-537-4259
310-537-3700

MQ Parts Department

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

Warranty Department

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

Technical Assistance

800-478-1244 Fax: 310-631-5032

MEXICO

MQ Cipsa

Carr. Fed. Mexico-Puebla KM 126.5 Tel: (52) 222-225-9900
Momoxpan, Cholula, Puebla 72760 Mexico Fax: (52) 222-285-0420
Contact: pmastretta@cipsa.com.mx

CANADA

Multiquip

4110 Industriel Boul. Tel: (450) 625-2244
Laval, Quebec, Canada H7L 6V3 Fax: (450) 625-8664
Contact: jmartin@multiquip.com

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Ashton-under-Lyne, Fax: 0161 339 3226
Lancashire OL7 0TL
Contact: sales@multiquip.co.uk

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Barra de Tijuca - Rio de Janeiro Fax: 011-55-21-3433-9055
Contact: cnavarro@multiquip.com.br, srentes@multiquip.com.br

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

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Manufactured for MULTIQUIP INC.

by

DENYO MANUFACTURING CO., JAPAN

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