



YAMAHA

OWNER'S MANUAL

Generator

EF12000DE



WARNING:



The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

YAMAHA

LIT-CALIF-65-01

NOTICE

FEDERAL EMISSION COMPONENT DEFECT WARRANTY and CALIFORNIA EMISSION CONTROL WARRANTY are applicable to only those engines complied with EPA (Environmental Protection Agency) and CARB (California Air Resources Board) emission regulations in the U.S.A.

NOTICE

To the engines/generators exported to and used in the countries other than the U.S.A., warranty service shall be performed by the distributor in each country in accordance with the standard engine/generator warranty policy as applicable.

AIR INDEX

To show compliance with California emission regulations, a hangtag has been provided displaying the Air Index level and durability period of this engine.

The Air Index level defines how clean an engine's exhaust is over a period of time. A bar graph scaled from "0" (most clean) to "10" (least clean) is used to show an engine's Air Index level. A lower Air Index level represents cleaner exhaust from an engine.

The period of time (in hours) that the Air Index level is measured is known as the durability period. Depending on the size of the engine, a selection of time periods can be used to measure the Air Index level (see below).

<u>Descriptive Term</u>	<u>Applicable to Emissions</u>	<u>Durability Period</u>
Moderate	-	50 hours (engine from 0 to 65 cc)
	-	125 hours (engine greater than 65 cc)
Intermediate	-	125 hours (engine from 0 to 65 cc)
	-	250 hours (engine greater than 65 cc)
Extended	-	300 hours (engine from 0 to 65 cc)
	-	500 hours (engine greater than 65 cc)

Notice : This hangtag must remain on this engine or piece of equipment, and only be removed by the ultimate purchaser before operation.

INTRODUCTION

Congratulations on your purchase of your new Yamaha.

This manual will provide you with a good basic understanding of the operation and maintenance of this machine.

If you have any questions regarding the operation or maintenance of your machine, please consult a Yamaha dealer.

PRI-I.D. NUMBER

	MODEL	
	<input type="text"/>	
PRI-I.D. CODE		SERIAL No.
<input type="text"/>		<input type="text"/>

IDENTIFICATION NUMBER RECORDS

Record your Primary I.D., and serial numbers in the spaces provided, to assist you in ordering spare parts from a Yamaha dealer.

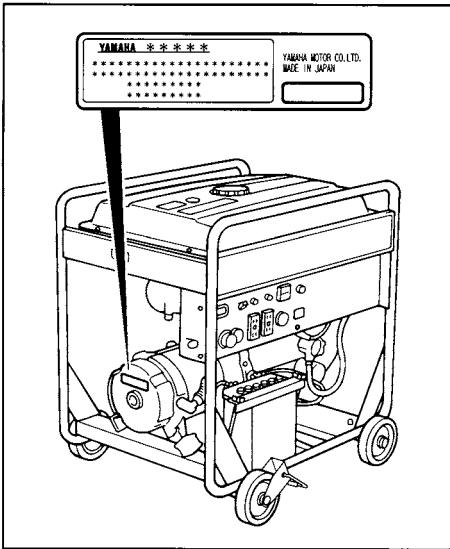
Also record and keep these I.D. numbers in a separate place in case your machine is stolen.

MACHINE IDENTIFICATION

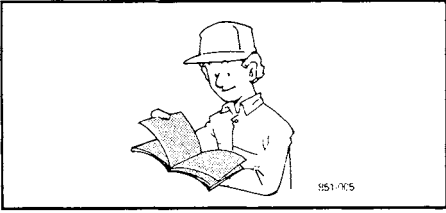
The machine serial number is stamped in the location as shown.

NOTE : _____

The first three digits of these numbers are for model identification; the remaining digits are the unit production number. Keep a record of these numbers for reference when ordering parts from a Yamaha dealer.



EF12000DE
OWNER'S MANUAL
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1st Edition, January 2003
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Printed in Japan.
P/N LIT-19626-01-05



NOTE: _____

- Yamaha continually seeks advancements in product design and quality. Therefore, while this manual contains the most current product information available at the time of printing, there may be minor discrepancies between your engine and this manual. If there is any question concerning this manual, please consult a Yamaha dealer.
- This manual should be considered a permanent part of this engine and should remain with this engine when resold.

WARNING

PLEASE READ AND UNDERSTAND THIS MANUAL COMPLETELY BEFORE OPERATING THE MACHINE.

Particularly important information is distinguished in this manual by the following notations.



The Safety Alert Symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

WARNING

Failure to follow WARNING instructions could result in severe injury or death to the engine operator, a bystander, or a person inspecting or repairing the engine.

CAUTION:

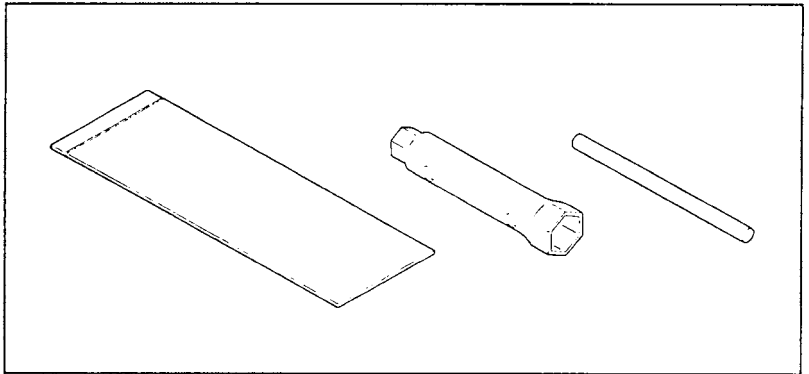
A CAUTION indicates special precautions that must be taken to avoid damage to the engine.

NOTE:

A NOTE provides key information to make procedures easier or clearer.

■ **Check that following accessories come with your Yamaha Generator.**

- (1) Owner's manual
- (2) Wheel mounting parts (See page 38.)
- (3) Servicing tools
- (4) Battery mounting bracket
(See page 14.)



- **Be sure to replenish with engine oil.**
(See page 11 for details.)

CONTENTS

LIMITED WARRANTY (EF-SERIES)	1
LOCATION OF IMPORTANT LABELS	3
SAFETY INFORMATION	4
EXHAUST FUMES ARE POISONOUS	4
FUEL IS HIGHLY FLAMMABLE AND POISONOUS	4
ENGINE AND MUFFLER MAY BE HOT	4
ELECTRIC SHOCK PREVENTION	5
CONNECTION NOTES	6
CONNECTION	6
EXTENSION CORD NOTES	6
CONTROL FUNCTION	8
PRE-OPERATION CHECK	11
CHECK ENGINE OIL	11
CHECK FUEL	12
BATTERY INSTALLATION	13
CHECK COMPONENT PARTS	15
CHECK GENERATOR SURROUNDINGS	15
OPERATION	16
STARTING THE ENGINE	16
USING ELECTRIC POWER	17
STOPPING THE GENERATOR	22
WATTAGE INFORMATION	23
VOLTAGE DROP IN ELECTRIC EXTENSION CORDS	24

MAINTENANCE SCHEDULE 25

DAILY INSPECTION. 25

PERIODICAL MAINTENANCE 25

“HOW-TO” MAINTENANCE 27

ENGINE OIL CHANGE 27

ENGINE OIL FILTER REPLACEMENT 27

SERVICING AIR CLEANER 28

CLEANING AND ADJUSTING SPARK PLUG 29

CLEANING FUEL STRAINER. 29

FUEL HOSE REPLACEMENT. 30

CHECKING CARBON BRUSH 30

BATTERY-Replenishing the battery fluid 31

SPARK ARRESTER 32

PREPARATION FOR STORAGE 33

BATTERY. 34

TROUBLESHOOTING. 35

SPECIFICATIONS 36

WIRING DIAGRAM 37

OPTIONAL PARTS. 38

“HOW-TO” INSTALL THE WHEEL. 38

FEDERAL EMISSIONS COMPONENT DEFECT WARRANTY. 39

EMISSION CONTROL SYSTEM WARRANTY STATEMENT 41

LIMITED WARRANTY ON EMISSION CONTROL SYSTEMS. 42

YAMAHA MOTOR CORPORATION, U.S.A.

EF-SERIES GENERATOR LIMITED WARRANTY

Yamaha Motor Corporation, U.S.A. hereby warrants that new Yamaha consumer generators purchased from an authorized Yamaha consumer generator dealer in the continental United States will be free from defects in material and workmanship for the period of time stated herein, subject to certain stated limitations.

THE PERIOD OF WARRANTY Any new EF-series Yamaha Generator purchased for private, non-commercial use from an authorized Yamaha consumer generator dealer in the continental United States will be warranted against defects in material or workmanship for a period two (2) years from date of purchase, subject to exclusions noted herein. Any Yamaha non-commercial generator purchased and utilized for commercial or rental applications will be warranted for a period one hundred eighty (180) days from the date of purchase, subject to exclusions noted herein.

DURING THE PERIOD OF WARRANTY any authorized Yamaha consumer generator dealer will, free of charge, repair or replace, at Yamaha's option, any part adjudged defective by Yamaha due to faulty workmanship or material from the factory. Parts used in warranty repairs will be warranted for the balance of the product's warranty period. All parts replaced under warranty become property of Yamaha Motor Corporation U.S.A.

GENERAL EXCLUSIONS from this warranty shall include any failures caused by:

- a. Installation of parts or accessories that are not qualitatively equivalent to genuine Yamaha parts.
- b. Abnormal strain, neglect, or abuse.
- c. Lack of proper maintenance.
- d. Accident or collision damage.

SPECIFIC EXCLUSIONS from this warranty shall include parts replaced due to normal wear or routine maintenance.

THE CUSTOMER'S RESPONSIBILITY under this warranty shall be to:

1. Operate and maintain the generator as specified in the appropriate Owner's Manual;

2. Give notice to an authorized Yamaha consumer generator dealer of any and all apparent defects within ten (10) days after discovery, and make the unit available at that time for inspection and repairs at such dealer's place of business.

WARRANTY TRANSFER: To transfer the warranty from the original purchaser to any subsequent purchaser(s), it is imperative that the unit be inspected and registered for warranty by an authorized Yamaha consumer generator dealer. In order for this warranty to remain in effect, this inspection and registration must take place within ten (10) days after transfer. An inspection and registration fee will be charged for this service. In no case will the warranty be extended beyond the original period.

YAMAHA MOTOR CORPORATION, U.S.A. MAKES NO OTHER WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED THE OBLIGATIONS AND TIME LIMITS STATED IN THIS WARRANTY ARE HEREBY DISCLAIMED BY YAMAHA MOTOR CORPORATION, U.S.A. AND EXCLUDED FROM THIS WARRANTY.

SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. ALSO EXCLUDED FROM THIS WARRANTY ARE ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES INCLUDING LOSS OF USE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

YAMAHA MOTOR CORPORATION, U.S.A.
Post Office Box 6555
Cypress, California 90630

WARRANTY QUESTIONS AND ANSWERS

Q. What coats are my responsibility during the warranty period?

A. The customer's responsibility includes all coats of normal maintenance service, non-warranty repairs, accident damages, as well as oil and spark plugs.

Q. What are some examples of "abnormal" strain, neglect, or abuse?

A. These terms are general and overlap each other in areas. Specific examples include: Running the machine out of oil; lack of proper maintenance; operating the machine with a broken or damaged part which causes another part to fail; and so on. If you have any specific questions on operation or maintenance, please contact your dealer for advice.

Q. Does the warranty cover incidental coats such as transportation due to a failure?

A. No. The warranty is limited to repair of the machine itself.

Q. May I perform any or all of the recommended maintenance shown in the Owner's Manual instead of having the dealer do them?

A. Yes, if you are a qualified mechanic and follow the procedures specified in the Owner's and Service Manual. We do recommend, however, that items requiring special tools or equipment be done by a Yamaha generator dealer.

Q. Will the warranty be void or cancelled if I do not operate or maintain my new Yamaha exactly as specified in the Owner's Manual?

A. No. The warranty on a new Yamaha cannot be "voided" or "cancelled."

However, if a particular failure is caused by operation or maintenance other than as shown in the Owner's Manual, that failure may not be covered under warranty.

Q. What responsibility does my dealer have under this warranty?

A. Each Yamaha generator dealer is expected to:

1. Check the operation of the generator before sale.
2. Explain the operation, maintenance, and warranty requirements to your satisfaction at the time of sale, and upon your request at any later date.

In addition, each Yamaha generator dealer is held responsible for his setup, service and warranty repair work.

Q. Is the warranty transferable to second owners?

A. Yes. The remainder of the existing warranty can be transferred upon request.

The unit has to be inspected and reregistered by an authorized Yamaha generator dealer for the policy to remain effective.

CUSTOMER SERVICE

If your machine requires warranty service, you must take it to any authorized Yamaha generator dealer within the continental United States. Be sure to bring your warranty registration identification or other valid proof of the original date of purchase. If a question or problem arises regarding warranty, first contact the owner of the dealership. Since all warranty matters are handled at the dealer level, this person is in the best position to help you. If you are still not satisfied and require additional assistance, please write:

YAMAHA MOTOR CORPORATION U.S.A.
CUSTOMER RELATIONS DEPARTMENT
P.O. BOX 6555
Cypress, California 90630

CHANGE OF ADDRESS

The federal government requires each manufacturer to maintain a complete, up-to-date list of all first purchasers against the possibility of a safety-related defect and recall. This list is compiled from the purchase registrations sent to Yamaha Motor Corporation, U.S.A. by the selling dealer at the time of your purchase. If you should move after you have purchased your new generator, please advise us of your new address by sending a postcard listing your Yamaha model name, engine number, dealer number (or dealer's name) as it is shown on your warranty identification, your name and new mailing address. Mail to:

YAMAHA MOTOR CORPORATION, U.S.A.
WARRANTY DEPARTMENT
P.O. Box 6555
Cypress, California 90630

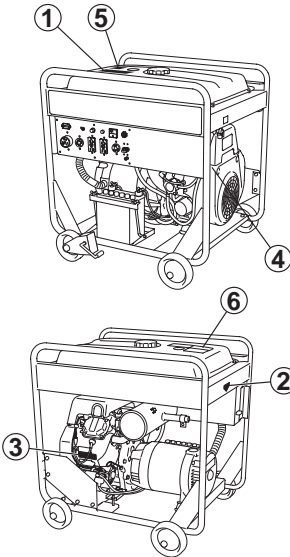
This will ensure that Yamaha Motor Corporation, U.S.A. has an up-to-date registration record in accordance with federal law.

LOCATION OF IMPORTANT LABELS

Please read the following labels carefully before operating this machine.

NOTE : _____

Maintain or replace safety and instruction labels, as necessary. _____



1

WARNING

Electrocution Or property damage can occur: Do not connect this generator to any building 's electrical system unless an isolation switch has been installed by a licensed electrician. Refer to the owner's manual.



3

IMPORTANT ENGINE INFORMATION **EM**

ENGINE FAMILY - ***** DISPLACEMENT 653 cm³

REFER TO OWNER'S MANUAL FOR MAINTENANCE SPECIFICATIONS AND ADJUSTMENTS. THIS ENGINE MEETS EMISSION STANDARDS FOR **** U.S. EPA REGULATIONS FOR SMALL NON-ROAD ENGINES (EMISSION COMPLIANCE PERIOD OF 1000 HOURS) AND **** CALIFORNIA SI SORE'S. YAMAHA MOTOR CO.,LTD. **YAMAHA EH63 .64 .65**

4

The Air Index of this engine is 3

Note: The lower the Air Index, the less pollution. This engine is certified to be emissions compliant for the following use:

- Moderate 125 hours (greater than 65cc)
- Intermediate 250 hours (greater than 65cc)
- * Extended 500 hours (greater than 65cc)

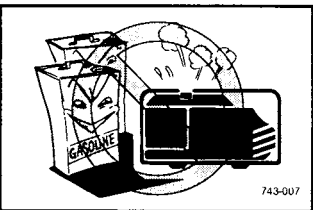
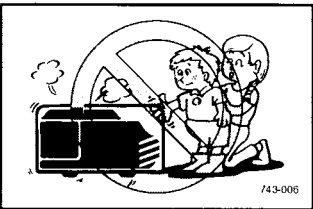
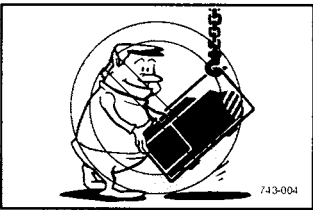
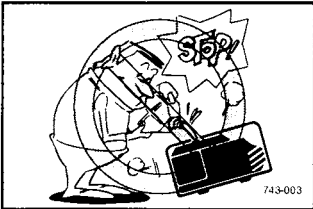
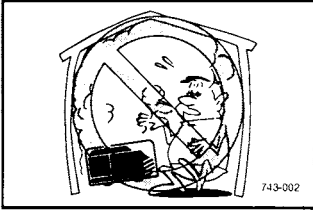
Check the owner's manual for further details.

5

⚠ WARNING	⚠ AVERTISSEMENT
<ul style="list-style-type: none"> ● READ THE OWNER'S MANUAL AND ALL LABELS BEFORE OPERATING. ● ONLY OPERATE IN WELL-VENTILATED AREA. ● EXHAUST GAS CONTAINS POISONOUS CARBON MONOXIDE. ● CHECK FOR SPILLED FUEL OR FUEL LEAKS. ● STOP ENGINE BEFORE REFUELING. ● DO NOT OPERATE NEAR FLAMMABLE MATERIALS. ● ELECTROCUTION CAN OCCUR IF GENERATOR IS USED IN RAIN, SNOW, OR NEAR WATER. KEEP THIS UNIT DRY AT ALL TIMES. 	<ul style="list-style-type: none"> ● LISEZ LE MODE D'EMPLOI ET TOUTES LES ETIQUETTES AVANT DE FAIRE FONCTIONNER LA MACHINE. ● FAITES FONCTIONNER UNIQUEMENT DANS DES LIEUX BIEN AERES. LES GAS D'ECHAPPEMENT CONTIENNENT DU MONOXYDE DE CARBONE. ● VERIFIEZ SI DU CARBURANT A ETE RENVERSEU DU S'IL FUIT. ● ARRETEZ LE MOTEUR AVANT DE FAIRE LE PLEIN DE CARBURANT. ● N'UTILISEZ PAS A PROXIMITE DE MATERIAUX INFLAMMABLES. ● IL Y A RISQUE D'ELECTROCUTION SI LE GENERATEUR FONCTIONNE SOUS LA PLUIE, DANS LA NEIGE, OU PRES DE L'EAU. GARDEZ LA MACHINE AU SEC EN TOUTES CIRCONSTANCES. <p style="text-align: right; font-size: small;">7N3 24162-10</p>

6

⚠ WARNING	⚠ AVERTISSEMENT
<p>DEATH, PERSONAL INJURY AND/OR PROPERTY DAMAGE MAY OCCUR UNLESS INSTRUCTIONS ARE FOLLOWED CAREFULLY.</p> <ul style="list-style-type: none"> ● DISCONNECT BATTERY CABLES WHEN CHARGING BATTERY. ● USE BATTERY OF SPECIFIED CAPACITY LISTED IN THE OWNER'S MANUAL. ● TURN THE STARTER SWITCH TO THE "STOP" POSITION WHEN MOUNTING OR DISMOUNTING BATTERY. CONNECT POSITIVE (+) TERMINAL FIRST WHEN MOUNTING BATTERY, AND DISCONNECT NEGATIVE (-) TERMINAL FIRST WHEN DISMOUNTING. <p style="text-align: center; font-size: small;">RED CABLE : TO POSITIVE (+) TERMINAL BLACK CABLE: TO NEGATIVE (-) TERMINAL</p>	<p>DES BLESSURES CORPORELLES, VOIRE MORTELLES, ET/OU DES DOMMAGES MATERIELS RISQUENT DE SE PRODUIRE SI L'ON NE SUIT PAS ATTENTIVEMENT LES INSTRUCTIONS.</p> <ul style="list-style-type: none"> ● DEBRANCHER LES CABLES DE BATTERIE EN CHARGEANT LA BATTERIE. ● UTILISER UNE BATTERIE DE CAPACITE REQUISE COMME INDIQUE DANS LE MANUEL DE L'UTILISATEUR. ● METTRE LE COMMUTEUR DEMARREUR A LA POSITION "STOP" EN MONTANT OU EN DEMONTANT LA BATTERIE. AU MONTAGE DE LA BATTERIE, CONNECTER LA BORNE POSITIVE (+) EN PREMIER LIEU, TANDIS QU'AU DEMONTAGE, DECONNECTEUR LA BORNE NEGATIVE (-) EN PREMIER LIEU. <p style="text-align: center; font-size: small;">CABLE ROUGE: VERS BORNE POSITIVE (+) CABLE NOIR : VERS BORNE NEGATIVE (-)</p>



G-380

SAFETY INFORMATION

G-381

EXHAUST FUMES ARE POISONOUS

- Never operate the engine in a closed area or it may cause unconsciousness and death within a short time. Operate the engine in a well ventilated area.

G-382

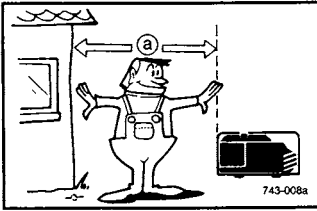
FUEL IS HIGHLY FLAMMABLE AND POISONOUS

- Always turn off the engine when refuelling.
- Never refuel while smoking or in the vicinity of an open flame.
- Take care not to spill any fuel on the engine or muffler when refuelling.
- If you swallow any fuel, inhale fuel vapor, or allow any to get in your eye(s), see your doctor immediately. If any fuel spills on your skin or clothing, immediately wash with soap and water and change your clothes.
- When operating or transporting the machine, be sure it is kept upright. If it tilts, fuel may leak from the carburetor or fuel tank.

G-383

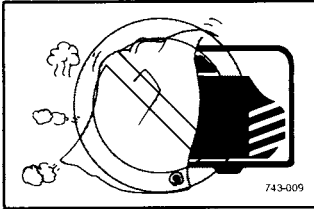
ENGINE AND MUFFLER MAY BE HOT

- Place the machine in a place where pedestrians or children are not likely to touch the machine.
- Avoid placing any flammable materials near the exhaust outlet during operation.

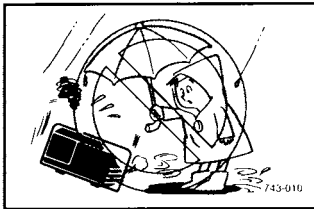


- Keep the machine at least 1 m (3 ft) from buildings or other equipment, or the engine may overheat.

Ⓐ 1 m (3ft)



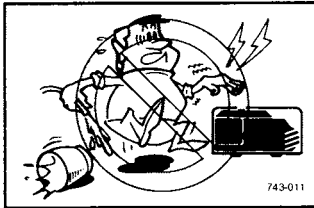
- Avoid operating the engine with a dust cover.



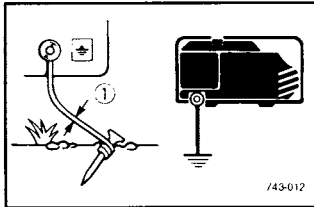
G-384

ELECTRIC SHOCK PREVENTION

- Never operate the engine in rain or snow.



- Never touch the machine with wet hands or electrical shock will occur.

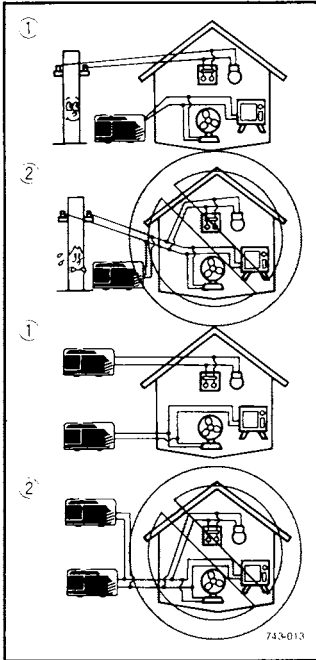


- Be sure to ground (earth) the generator.

NOTE: _____
 Use ground (earth) lead of sufficient current capacity.

① Lead diameter

Ground (earth) Lead
 Diameter:
 0.12 mm (0.005 in)/ampere
 EX:
 10 Ampere → 1.2 mm
 (0.05 in)



G-385

CONNECTION NOTES

- Avoid connecting the generator to commercial power outlet.
- Avoid connecting the generator in parallel with any other generator.

- ① Correct
- ② Incorrect

G-440

CONNECTION

⚠ WARNING

Before the generator can be connected to a building's electrical system, a licensed electrician must install an isolation (transfer) switch in the building's main fuse box. The switch is the connection point for generator power and allows selection of generator or main line power to the building. This will prevent the generator from charging the main power line (backfeeding) when the main power supply has failed or has been turned off for line repair. Backfeeding can electrocute or injure line maintenance personnel. Also, generator and building electrical system damage can occur when normal operating power returns if unit is used without an isolation switch.

G-387

EXTENSION CORD NOTES

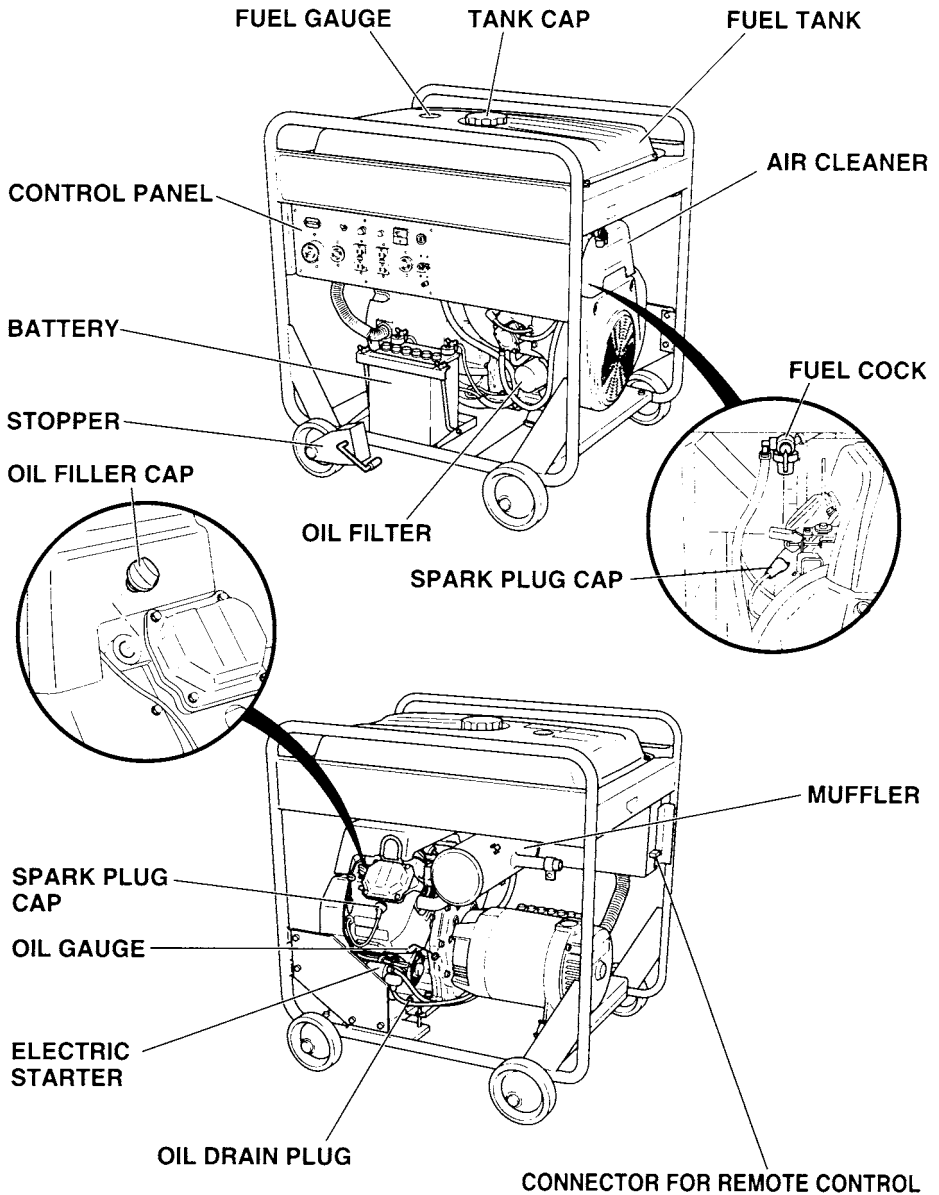
- When using an extension cord, its total length should not exceed

{	60 meters for cross section of 1.5 mm square
	and
}	100 meters for cross section of 2.5 mm square.
- This extension cord should be protected by a tough flexible rubber sheath (IEC 245) or the equivalent to withstand mechanical stresses.

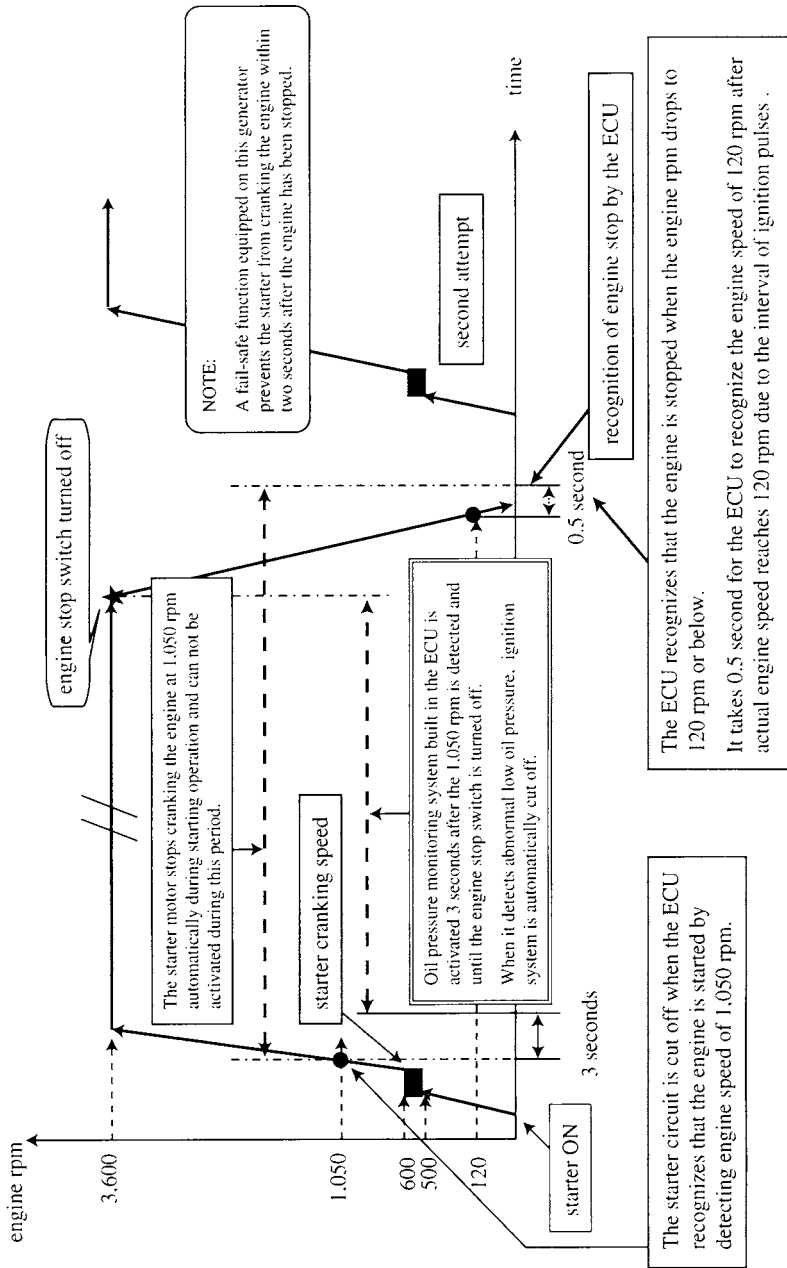
Notes on installation

1. If you provide the generator with wheels, always be sure to place the generator on a level surface, locking the wheel with the stopper and / or chocking the wheels.
2. Select a place which allows you to maintain and inspect the generator, which is not exposed to contamination caused by exhaust gas.
If you are planning to install the generator without its wheels attached, take into consideration being able to make oil changes efficiently.
3. In ground connection, be sure to use the designated ground terminal.
(A grounding cable is not included in the set of accessories.)
4. During use, be sure not to disconnect the battery.
5. While the power is on, do not unplug the unit or disconnect cables from the terminals.

CONTROL FUNCTION



Oil Pressure Monitoring System and Starter Motor Operation for EF12000DE



Oil Pressure Monitoring System

The engine is equipped with an oil pressure sensor (of a hydraulic pressure detection type).

If this sensor detects the oil pressure below the specified level, it stops the engine automatically. Then, the oil pressure warning lamp flashes for 3 minutes and goes off.

NOTE :

- If the engine stalls, check the engine oil level or contamination. Add or change oil, and restart. (See page 11 for more details.) Check the fuel level and the fuel cock because the same result can be expected when the fuel runs out.
 - If the engine runs over 4500 rpm for 7 seconds, the engine stops automatically and the oil pressure warning lamp flashes for 3 minutes.
-

Automatic bulb checking

When the starter switch is turned to the "START" from the "STOP" position, the oil pressure warning lamp flashes only once to check the bulb.

If it does not flash, ask a Yamaha dealer to inspect the electrical circuit.

Fail-safe Function of ECU (Electronic Control Unit)

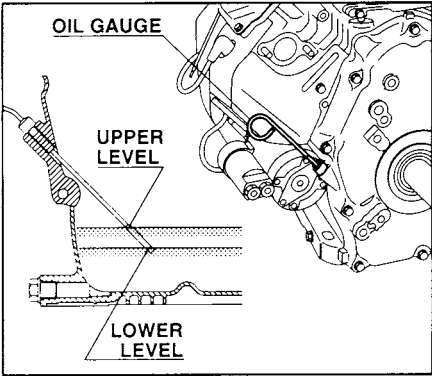
- When the remote control unit is connected, the engine will not start unless both starter switch on the control panel and the engine switch on the remote control unit are switched on.
- If the engine does not run for 3 seconds when the starter switch is turned to the "START" position on either the generator or the remote control unit, the starter motor will stop automatically.
- If the engine does not start for 21 seconds when the starter switch is turned to the "START" position on either the generator or the remote control unit, the starter motor will stop automatically.

PRE-OPERATION CHECK

CHECK ENGINE OIL

Before checking or refilling oil, be sure generator is located on stable and level surface with engine stopped.

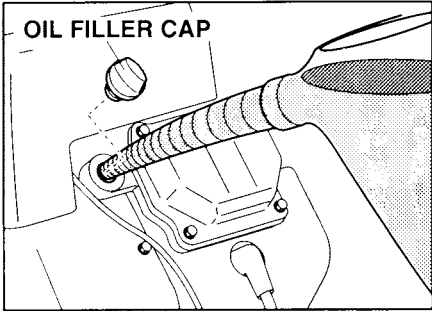
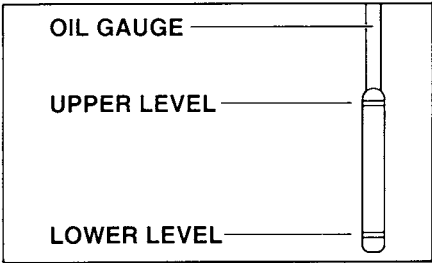
- 1) Remove oil level gauge and check the engine oil level.
- 2) If oil level is below the lower level "L" refill with suitable oil (see table) to upper level "F" after removing the engine oil filler cap.
- 3) Change oil if contaminated.
(See "How-To" Maintenance.)



Oil capacity 1.55 L (1.36 Imp qt,
1.64 US qt)

NOTE : _____

- The engine is equipped with an oil sensor unit (hydraulic pressure detection type) that will automatically stop the engine if oil in the crank case is reduced below the specified level. Should the engine be automatically stopped, be sure to check the amounts of fuel and oil.
- When the oil is reduced below the specified level, add new oil to the upper limit. Since the oil sensor will not detect the deterioration of oil, visually check the quality or determine it by the specified time and then change the oil if necessary.
(Refer to page 27.)



Recommended engine oil :

Use class "SE" (API classification) oil or a higher grade oil according to the table below. **SAE 10W-30** is recommended for general, all-temperature use. If single viscosity oil is used, select the appropriate viscosity for the average temperature in your area.

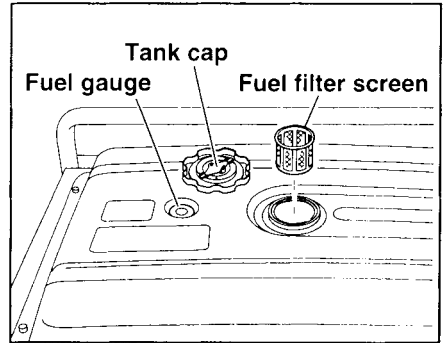
Single grade	5W	10W	20W	#20	#30	#40
Multigrade	YAMALUBE 4 (10W-30)					
	10W-40					
Ambient temperature	-20	-10	0	10	20	30 40°C
	-4	14	32	50	68	86 104°F

CHECK FUEL

⚠ WARNING

Do not refuel while smoking or near open flame or other such potential fire hazards. Otherwise fire accident may occur.

- 1) Check fuel level at fuel level gauge.
- 2) If fuel level is low, refill with unleaded automotive gasoline.
This engine is certified to operate on automotive unleaded gasoline.
- 3) Be sure the fuel filter screen is inserted.



Recommended fuel :

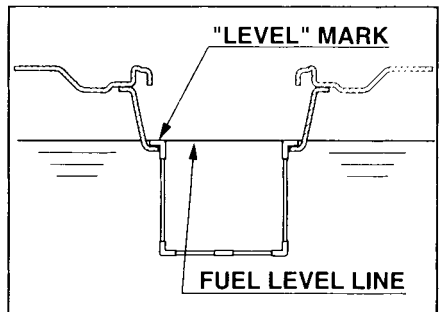
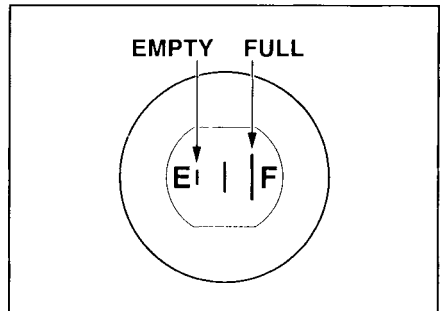
Unleaded automotive gasoline of octane rating RON87 or higher.

Fuel tank capacity :

44 L (9.68 Imp gal, 11.62 US gal)

NOTE :

- The full level of fuel is the upper surface of the fuel filter.
- Be sure to add the fuel in small amounts as the fuel level approaches to the full fuel level mark.



Continuous operation time in normal use (rated load)

60 Hz

Approx. 8.2 hours

⚠ WARNING

Make sure you review each warning in order to prevent fire hazard.

- Do not refill tank while engine is running or hot.
- Close fuel cock before refueling with fuel.
- Be careful not to admit dust, dirt, water or other foreign objects into fuel.
- Do not fill above the top of the fuel filter (marked "LEVEL") or the fuel may overflow when it heats up later and expands.
- Wipe off spilt fuel thoroughly before starting engine.
- Keep open flames away.

AE00231

BATTERY

(See page 31 for more details)

Check the fluid level and fill if necessary.

Use only distilled water if refilling is necessary.

Recommended Battery

Lead-acid battery : A capacity of 12V-32A·h or larger.

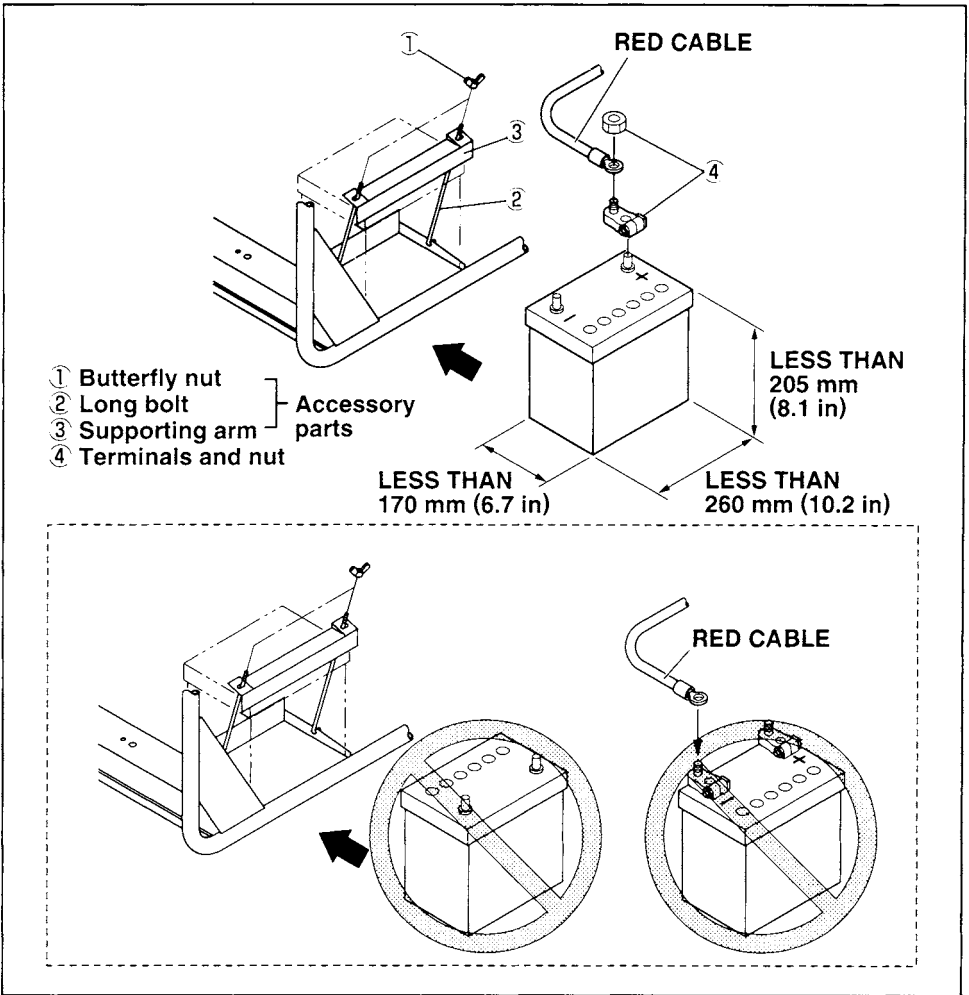
For the generators used in low temperature below
-5°C(23°F), 12V-40A·h or larger battery is recommended.

Installation

- 1) Turn the starter switch to the "STOP" position to prevent accidental short circuiting.
- 2) Attach terminals to a lead-acid battery already charged. Mount the battery onto the position as specified below, with its terminals facing inward.
- 3) Insert each long bolt through the specified hole, its tip pointing outward.
- 4) Put the supporting arm on the long bolts and tighten with the butterfly nuts.
(Push the lead-acid battery all the way inward.)
- 5) Arrange the wiring so that it won't be damaged by possible vibration caused by the engine.
- 6) Only after checking that the engine's starter key is in the "STOP" position, securely connect the cable with a red to the positive (+) terminal first. And then connect the other cable to the negative (-) terminal.

CAUTION

Should the connection be made in incorrect manner, the engine will be damaged.



Red cable: to the positive (+) terminal
 Black cable: to the negative (-) terminal

CHECK COMPONENT PARTS

Check following items before starting engine:

- Fuel leakage from fuel hose, etc.
- Bolts and nuts for looseness.
- Components for damage or breakage.
- Generator not resting on or against any adjacent wiring.

CHECK GENERATOR SURROUNDINGS

⚠ WARNING

Make sure you review each warning in order to prevent fire hazard.

- Keep area clear of inflammables or other hazardous materials.
 - Keep generator at least 1 meter (3 feet) away from buildings or other structures.
 - Only operate generator in a dry, well ventilated area.
 - Keep exhaust pipe clear of foreign objects.
 - Keep generator away from open flame. No smoking!
 - Keep generator on a stable and level surface.
 - Do not block generator air vents with paper or other material.
-

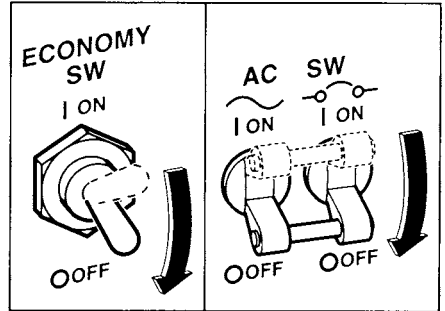
OPERATION

STARTING THE ENGINE

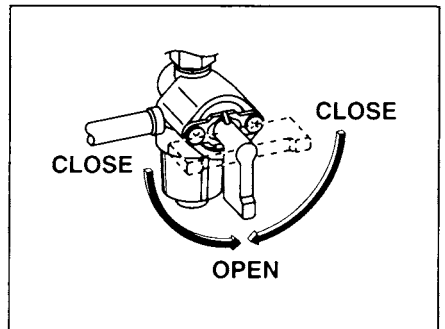
CAUTION :

- Check the oil level before each operations. (See page 11)
- Perform the specified daily inspection to see if it is in normal condition.

(1) Make sure that the economy switch and AC switch (no-fuse breaker) are off.



(2) Turn the fuel cock lever to the vertical (open) position.

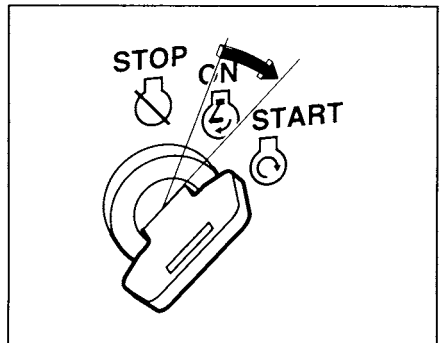


(3) Turn the starter switch to the "START" position.

- Take your hand off the switch immediately after the engine starts.
- If the engine fails to start, release the switch, wait a few seconds, then try again. Each attempt should be as short as possible to preserve the battery. Do not crank the engine more than 10 seconds on any one attempt.

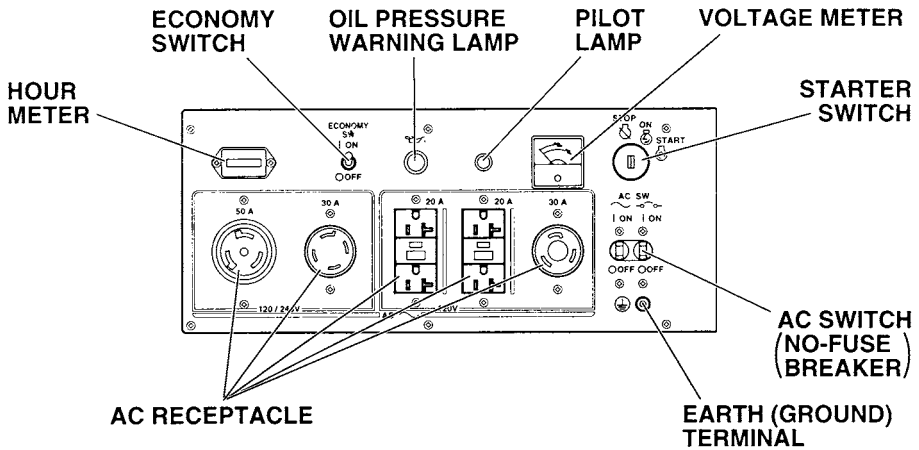
NOTE :

A fail-safe function equipped on this generator prevents the starter from cranking the engine within 0.5 second after the engine has been stopped.



- In the following occasion, two or three trials may be required for starting the engine :
 - (1) The very first starting of a new generator.
 - (2) After the refueling of the engine which has been stopped due to fuel short-age.
 - (3) Starting after the oil filter change.

USING ELECTRIC POWER CONTROL PANEL

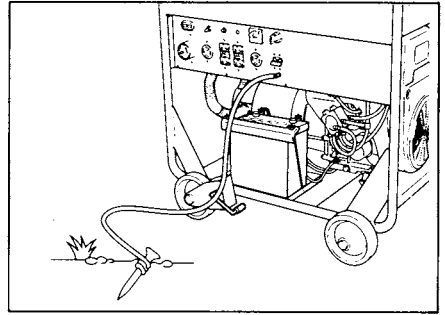


⚠ WARNING

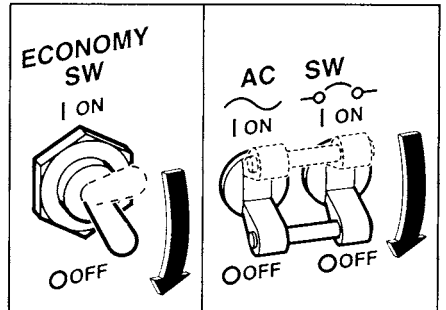
- Make sure that the appliance is switched OFF before connecting it to the generator.
- Do not move the generator while it is running.
- Be sure to ground the generator if the connected appliance is grounded. Failure to ground unit may lead to electrical shock.

(1) AC APPLICATION

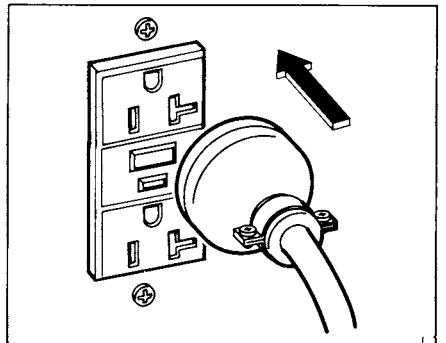
- (a) Ground the generator, using the ground terminal located at the side of the panel.



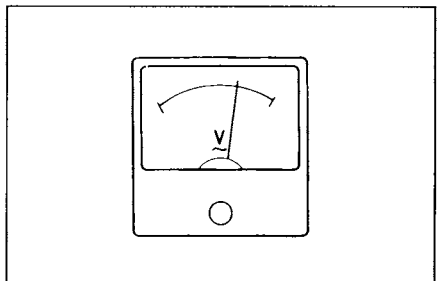
- (b) Before starting the engine, check that the economy switch and AC switch of the generator and the power switches of the appliances are turned off.



- (c) Connect the plugs of the appliances to the receptacles before starting the engine.



- (d) Start the engine and check that the voltage meter indicates the rated voltage.







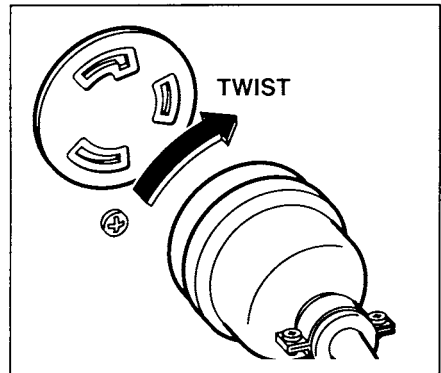
Style	Ampere	Receptacle	AC plug	Description
	up to 20A	NEMA 5-20R	NEMA 5-20P	GFCI (Ground Fault Circuit Interrupter) Receptacle, duplex (REC1)
	up to 30A	NEMA L5-30R	NEMA L5-30P	Locking Receptacle (REC2)
	up to 30A	NEMA L14-30R	NEMA L14-30P	Locking Receptacle (REC3)
	up to 50A	HUBBELL CS6369	HUBBELL CS6365C	Locking Receptacle (REC4)

TABLE 1

⚠ WARNING

- To take power out from the TWIST LOCK RECEPTACLE, insert the plug into the receptacle, and turn it clockwise to the lock position.
- Be sure to ground the generator if the connected electrical device is grounded.



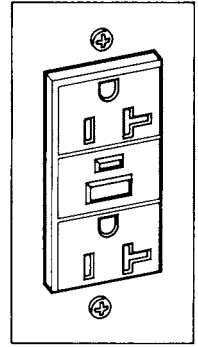
CAUTION :

The duplex 120V receptacle is protected by a GFCI (Ground Fault Circuit Interrupter). GFCI shuts off the output current from the duplex 120V receptacle when a ground fault occurs in the generator or the appliance. Please note that other receptacles are not protected by GFCI.

GFCI RECEPTACLE TEST

After starting the engine, check the GFCI for proper functioning by the following test procedure.

- Push blue TEST button, The red RESET button will pop out exposing the word TRIP. Power is now off at the outlets protected by the GFCI, indicating that the device is functioning properly.
- If TRIP dose not appear when testing, do not use the generator. Call a qualified electrician.
- To restore power, push RESET button.



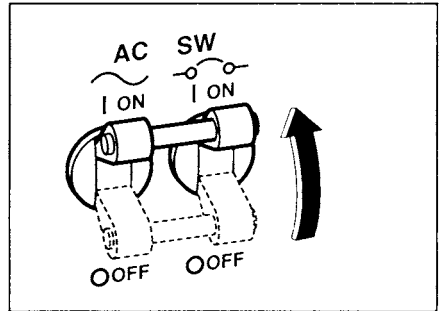
⚠ WARNING

If the RESET button pops out during operation, stop the generator immediately and call a qualified electrician for checking generator and the appliances.

- (e) Turn the AC switch (no fuse breaker) to on and check to see that the pilot lamp is on.
- (f) Turn on the switch of the appliance.

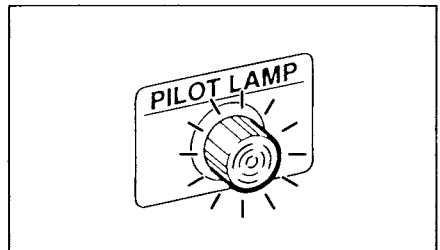
NOTE :

The AC switch (no-fuse breaker) turns off automatically when the load exceeds the generator rated output.



CAUTION :

When the AC switch (no-fuse breaker) turns off during operation, the generator is over loaded or the appliance is defective. Stop the generator immediately, check the appliance and / or generator for overloading or detect and have repaired as necessary by Yamaha dealer or service shop.



ECONOMY SWITCH

ECONOMY SWITCH automatically reduces engine speed when load is OFF, and automatically increases engine speed to rated r.p.m. when load is ON.

ECONOMY SWITCH provides fuel economy and low noise operation at no-load running.

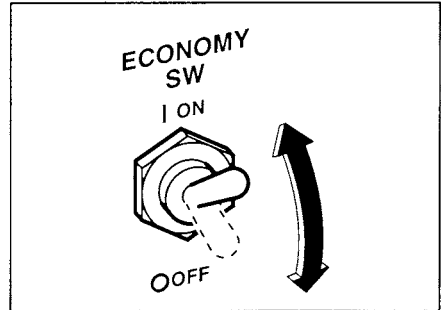
(1) HOW TO USE ECONOMY SWITCH

- Start the engine with ECONOMY SWITCH off.

NOTE :

Warm up the engine without a load for a few minutes.

- Turn ECONOMY SWITCH on.



(2) CHECKING THE OPERATION

When ECONOMY SWITCH does not operate normally, please check following :

- Overloaded ?
Please make it sure that the generator is not overload.

NOTE :

Most induction loads such as electric motors require three to five times more wattage than their ratings during starting.

This starting wattage should not exceed the rated output of the generator for proper operation of ECONOMY SWITCH.

- Turn ECONOMY SWITCH off when the ECONOMY SWITCH does not work normally under the rated output.

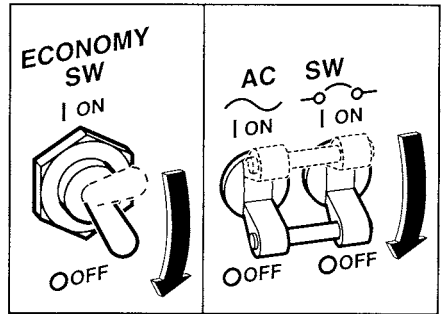
NOTE :

The ECONOMY SWITCH must be turned to "OFF" to increase engine speed to rated rpm when using a load of 0.04A or less.

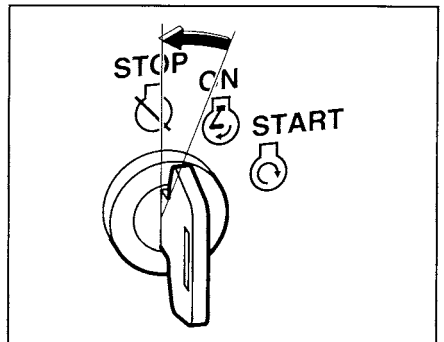
- The ECONOMY idling speed is 2,400 – 2,700 rpm.

STOPPING THE GENERATOR

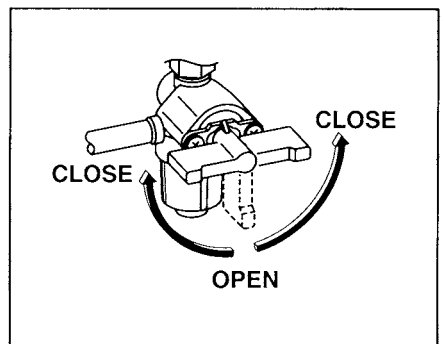
- (1) Turn off the power switch of the electric equipment.
- (2) Turn the economy switch and AC switch (no-fuse breaker) to off.
- (3) Unplug the cord from receptacle of the generator.



- (4) Allow the engine to run at no-load for about 3 minutes to cool down before stopping.
- (5) Turn the starter switch to the STOP position.



- (6) Close the fuel cock.



NOTE : _____

It is normal that the engine speed goes up for a moment when you turn the starter switch to "STOP" while the Economy switch is in the "ON" position.

WATTAGE INFORMATION

Some appliances need a "surge" of energy when starting.

This means that the amount of electrical power needed to start the appliance may exceed the amount needed to maintain its use.

Electrical appliances and tools normally come with a label indicating voltage, cycles/Hz, amperage (amps) and electrical power needed to run the appliance or tool.

Check with your nearest dealer or service center with questions regarding power surge of certain appliances or power tools.

- Electrical loads such as incandescent lamps and hot plates require the same wattage to start as is needed to maintain use.
- Loads such as fluorescent lamps require 1.2 to 2 times the indicated wattage during start-up.
- Loads for mercury lamps require 2 to 3 times the indicated wattage during start-up.
- Electrical motors require a large starting current. Power requirements depend on the type of motor and its use. Once enough "surge" is attained to start the motor, the appliance will require only 50% to 30% of the wattage to continue running.
- Most electrical tools require 1.2 to 3 times their wattage for running under load during use. (For example, a 9,000 watt generator can power a 3,200 to 7,000 watt electrical tool.)
- Loads such as submersible pumps, air conditioners and air compressors require a very large force to start. They need 3 to 5 times the normal running wattage in order to start. (For example, a 5,000 watt generator would only be able to drive a 1,800 to 3,100 watt pump.)
- If the power consumption of electrical appliances exceeds the operating range or if there is short circuit or other problems in the appliances, the AC breaker could trip "OFF" or the rotation of the generator could be abnormally reduced. In this case, stop the generator to see if the power consumption of the appliances is too large and if there is a problem in the appliances.
- The frequency (the number of the generators rotation) was adjusted before the time of shipment. Changing the frequency could result in the generators breakdown, so refrain from changing it.

To determine the total wattage required to run a particular electrical appliance or tool, multiply the voltage figure of the appliance/tool by the amperage (amps) figure of same. The voltage and amperage (amps) information can be found on a name plate which is normally attached to electrical appliances and tools.

Applications	Applicable Wattage (W)
	60 Hz
Incandescent lamp, Heater	9,500
Fluorescent lamp, Electric tool	4,700
Pump, Compressor	2,400

NOTE : _____

- The above wattage chart is general guide only. Refer to your specific appliance for correct wattage.
- When you use two or more alternating current outlets at a time, be careful that the sum of the appliances' power consumption does not exceed the value specified in the above chart.

VOLTAGE DROP IN ELECTRIC EXTENSION CORDS

When a long electric extension cord is used to connect an appliance or tool with the generator, a certain amount of voltage drop occurs in the extension cord which lessens the effective voltage available to the appliance or tool.

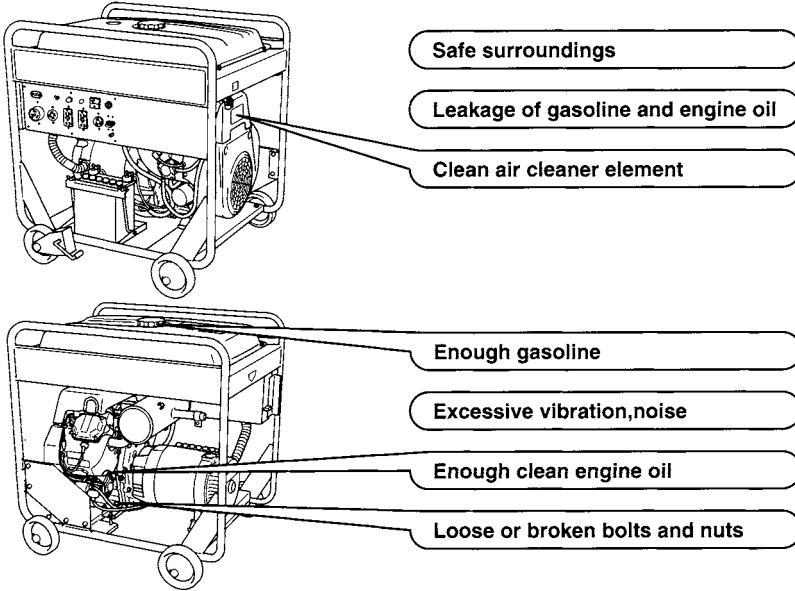
The chart below has been prepared to illustrate the approximate voltage loss when an extension cord of 300 feet (approx. 100 meters) is used to connect an appliance or tool to the generator.

Nominal cross section	A.W.G. Gauge No.	Allowable current	No. of strands / strands dia.	Resistance	Current Amp.							Voltage drop
					1A	3A	5A	8A	10A	12A	15A	
mm ²	No.	A	No./mm	Ω/100m	1A	3A	5A	8A	10A	12A	15A	
0.75	18	7	30/0.18	2.477	2.5V	8V	12.5V	---	---	---	---	
1.27	16	12	50/0.16	1.486	1.5V	5V	7.5V	12V	15V	18V	---	
2.0	14	17	37/0.26	0.952	1V	3V	5V	8V	10V	12V	15V	
3.5	12 to 10	23	45/0.32	0.517	---	1.5V	2.5V	4V	5V	6.5V	7.5V	
5.5	10 to 8	35	70/0.32	0.332	---	1V	2V	2.5V	3.5V	4V	5V	

MAINTENANCE SCHEDULE

DAILY INSPECTION

Before running the generator, check the following service items:



PERIODIC MAINTENANCE

Periodic maintenance is vital to safe and efficient operation of your generator. Check the table below for periodic maintenance intervals.

IT IS ALSO NECESSARY FOR THE USER OF THIS GENERATOR TO CONDUCT THE MAINTENANCE AND ADJUSTMENTS ON THE EMISSION-RELATED PARTS LISTED BELOW TO KEEP THE EMISSION CONTROL SYSTEM EFFECTIVE.

The emission control system consists of the following parts :

- | | | |
|---|--|--|
| (1) Carburetor and internal parts | (4) Air cleaner elements | (8) Exhaust manifold, if applicable |
| (2) Cold start enrichment system, if applicable | (5) Spark plug | (9) Hoses, belts, connectors, and assemblies |
| (3) Intake manifold, if applicable | (6) Magneto or electronic ignition system | |
| | (7) Spark advance/retard system, if applicable | |

The maintenance schedule indicated in the table is based on the normal generator operation. Should the generator be operated in extremely dusty condition or in heavier loading condition, the maintenance intervals must be shortened depending on the contamination of oil, clogging of filter elements, wear of parts, and so on.

Periodic Maintenance Schedule table

Maintenance Items	Every 8 hours (Daily)	Every 20 hours	Every 50 hours	Every 200 hours	Every 500 hours	Every 1000 hours
Clean generator and check bolts and nuts	● (Daily)					
Check and refill engine oil	● (Refill daily to upper level)					
Change engine oil (*Note 1)		● (Initial)	● (Every 100 hours)			
Replace engine oil filter (*Note 1)		● (Initial)		●		
Check battery electrolyte fluid level			●			
Clean spark plug			●			
Clean air cleaner			●			
Replace air cleaner element				●		
Clean fuel strainer				●		
Clean and adjust spark plug and electrodes				●		
Replace spark plug					●	
Spark arrester			● (Every 100 hours)			
Remove carbon from cylinder head (*Note 2)					●	
Clean and adjust carburetor (*Note 2)					●	
Clean engine base (oil pan) (*Note 2)					●	
Check and adjust valve clearance (*Note 2)					●	
Check and replace carbon brushes					●	
Replace fuel lines						● (Yearly)
Overhaul engine (*Note 2)						●

*Note 1 : Initial oil change should be performed after first twenty (20) hours of operation. Thereafter change oil every hundred (100) hours. Before changing oil, check for a suitable way to dispose of old oil. Do not pour it down into sewage drains, onto garden soil or into open streams. Your local zoning or environmental regulations will give you more detailed instructions on proper disposal.

*Note 2 : As to the procedures for these items, please refer to the SERVICE MANUAL or consult your nearest Yamaha dealer.

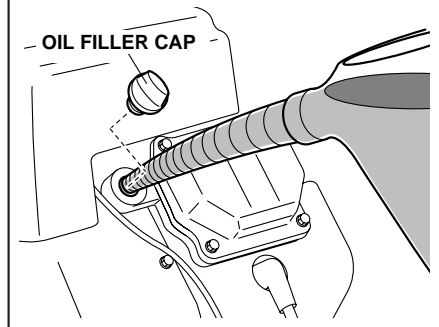
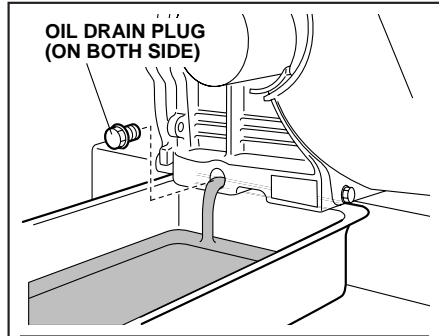
*Note 3 : More frequent oil changing, oil filter replacement and air cleaner service on replacement may be necessary depending on operating conditions. This would include dusty environment, high ambient temperature, heavy engine loading.

"HOW-TO" MAINTENANCE

ENGINE OIL CHANGE

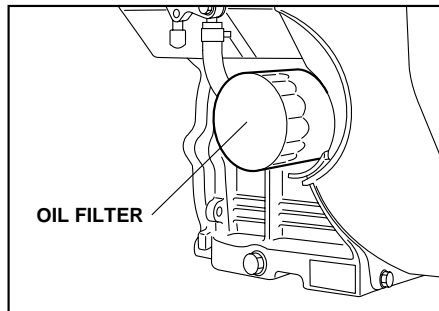
- Initial oil change
 - • • • • After 20 hours of operation
 - Thereafter
 - • • • • Every 100 hours of operation
1. When changing oil, stop the engine and loosen the drain plug.
 2. Re-install the drain plug before refilling oil.
 3. Refer to the recommended oil table on page 11.
 4. Always use the best grade and clean oil. Contaminated oil, poor quality oil and shortage of oil cause damage to engine or shorten the engine life.

**OIL CAPACITY : 1.55 L (1.36 Imp qt,
1.64 US qt)**



ENGINE OIL FILTER REPLACEMENT

- Initial engine oil filter replacement should be performed after 20 hours of operation. Thereafter replace the engine oil filter every 200 hours.
- When installing a new oil filter, apply oil to O-ring, attach the oil filter in position and tighten 2/3 turns by hand or with wrench after touching the O-ring to the sealing surface of engine.
- Run the engine for a minute ; stop the engine and check for oil leakage around the oil filter and recheck the oil level.



CAUTION :

To prevent injury, pay attention to the spilled hot engine oil when replacing engine oil filter.

SERVICING AIR CLEANER

A dirty air cleaner element will cause starting difficulty, power loss, engine malfunctions, and shorten engine life extremely.

Always keep the air cleaner element clean. Replace the air cleaner element set more often in dusty environments.

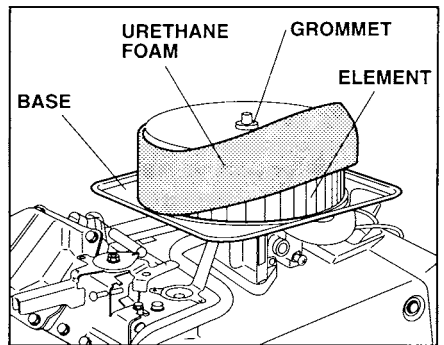
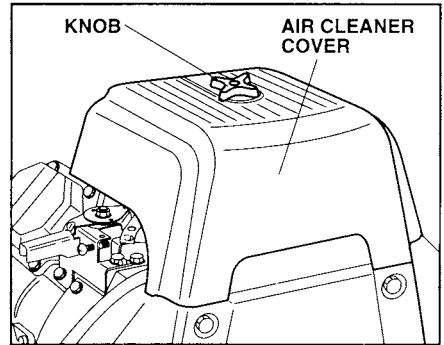
The air cleaner paper inner element and urethane foam outer element can be removed after removing knob and air cleaner cover. When installing, set the paper element and urethane foam on the air cleaner base. Check that the grommet is in position, and then install the cover with knob tightened securely.

■ Urethane Foam cleaning

Wash and clean the urethane foam in kerosene. Saturate in a mixture of 3 parts kerosene and 1 part engine oil, and then squeeze to remove excess oil. Clean or replace the urethane foam element every 50 hours. (more often in dusty environments)

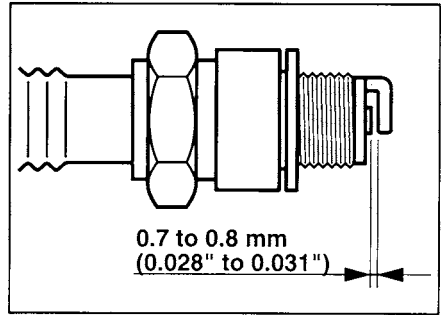
■ Paper element

Clean by tapping gently to remove dirt and blow off dust. Never use oil. Clean or replace the paper element every 50 hours of operation, and replace element set every 200 hours or once a year.



CLEANING AND ADJUSTING SPARK PLUG

- (a) Unplug the high-voltage cables (located at the outlet panel and lead-acid battery).
- (b) Using the supplied plug wrench and handle, turn it counterclockwise until it comes off.
- (c) Clean the area around the mounting hole.
- (d) Clean the electrodes if they are dirty. Adjust the clearance to 0.7-0.8 mm (0.028-0.031in). Replace it with a new one if the abrasion has developed to the degree where a flat surface cannot be obtained on its projection. If the electrodes turn black, also inspect the air cleaner.
- (e) Attach and tighten the plug with the specified torque : 25 to 30 Nm (2.5 to 3.0 kg-m).
- (f) After checking that the contact area inside the plug cap is not corroded, connect the high-voltage cables.

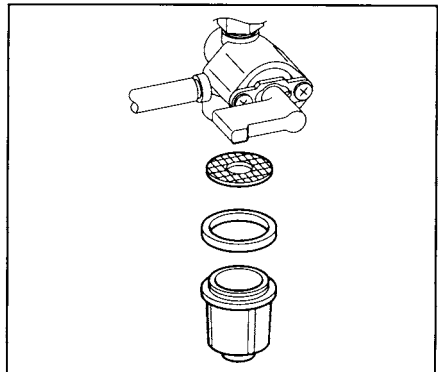


Spark plug
NGK BPR6ES (CHAMPION RN9YC)

CLEANING FUEL STRAINER

Dirt and water in the fuel are removed by the fuel strainer.

- (a) Remove the strainer cup and throw away water and dirt.
- (b) Clean the screen and strainer cup with gasoline.
- (c) Tightly fasten the cup to main body, making sure to avoid fuel leak.



FUEL HOSE REPLACEMENT

⚠ WARNING

Take extreme caution when replacing fuel hose ; gasoline is flammable.

Replace the fuel hose every 1,000 hours or every year.

If fuel hose leak is found, replace the fuel hose immediately.

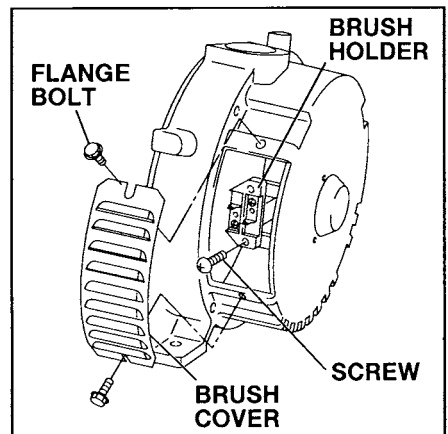
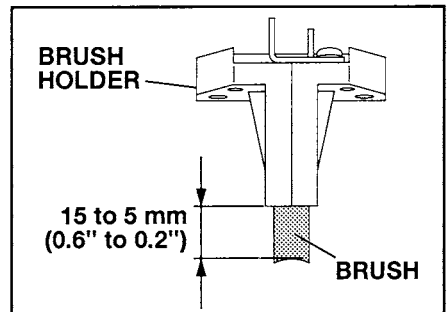
CHECKING CARBON BRUSH

If the brush become excessively worn, its contact pressure with the slip ring changes and causes a roughened surface on the slip ring, resulting in irregular generator performance.

Check the brush every 500 hours or if generator performance is irregular.

If the brush is 5 mm (0.20") long or less, replace it with a new one.

- (a) Remove the brush cover.
- (b) Disconnect the wire connector and remove the brush.
- (c) Carefully note the brush direction and relative position with the slip ring when installing new brush.



BATTERY

Replenishing the battery fluid

1. Check the fluid level. The level should be between the upper and lower level marks.

- ① Upper level
- ② Lower level

2. Add only distilled water if necessary.

CAUTION:

Normal tap water contains minerals which are harmful to a battery; therefore, refill only with distilled water.

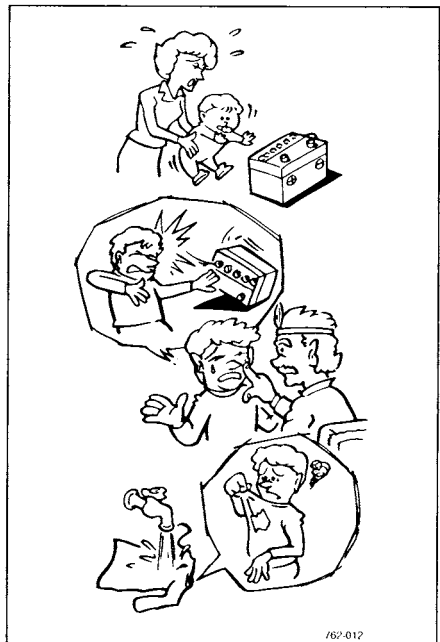
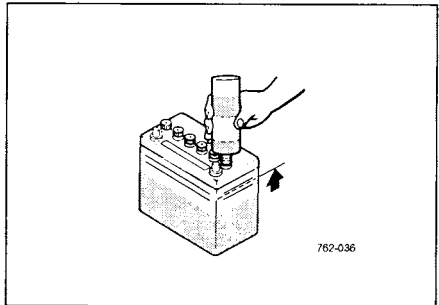
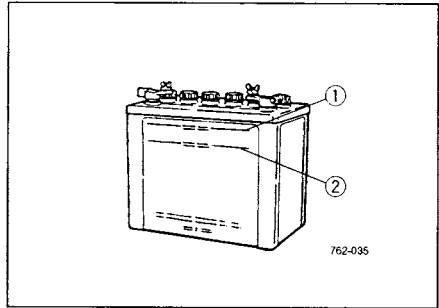
WARNING

Battery electrolyte is poisonous and dangerous. It contains sulfuric acid and can cause severe burns. Avoid contact with skin, eyes or clothing.

ANTIDOTE:

- EXTERNAL: Flush with water.
- INTERNAL: Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call a physician immediately.
- EYES: Flush with water for 15 minutes and get prompt medical attention.

Batteries produce explosive gases. Keep sparks, flame, cigarettes etc., away. Ventilate when charging or using in an enclosed space. Always shield your eyes when working near batteries. **KEEP OUT OF REACH OF CHILDREN.**



SPARK ARRESTER

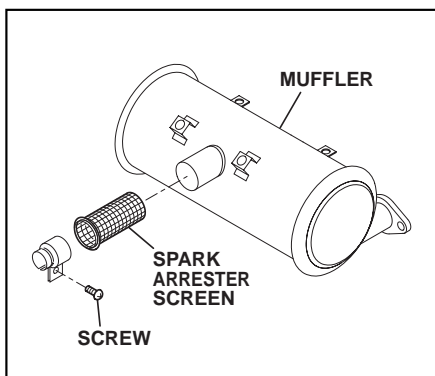
SPARK ARRESTER

In a dry or wooded area, it is recommendable to use the engine with a spark arrester. Some areas require the use of a spark arrester. Please check your local laws and regulations before operating your engine.

The spark arrester must be cleaned regularly to keep it functioning as designed. A clogged spark arrester :

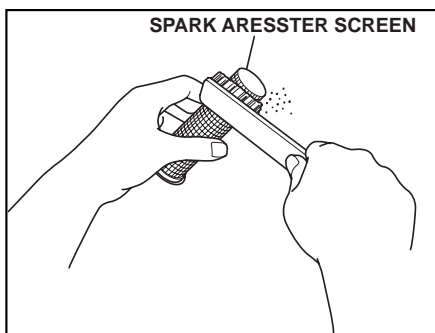
- Prevents the flow of exhaust gas
- Reduces engine output
- Increases fuel consumption
- Makes starting difficult

If the engine has been running, the muffler and the spark arrester will be very hot. Allow the muffler to cool before cleaning the spark arrester.



How to remove the spark arrester

1. Remove the flange bolts from the muffler cover and remove the muffler cover.
2. Remove the special screw from the spark arrester and remove the spark arrester from the muffler.



Clean the spark arrester screen

Use a brush to remove carbon deposits from the spark arrester screen. Be careful to avoid damaging the screen.

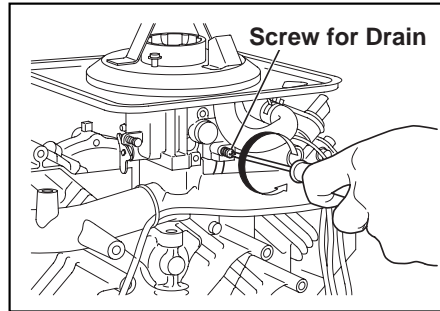
The spark arrester must be free of breaks and holes. Replace the spark arrester if it is damaged.

Install the spark arrester, and muffler protector in the reverse order of disassembly.

PREPARATION FOR STORAGE

The following procedures should be followed prior to storage of your generator for a period of 6 months or longer.

- Drain fuel from fuel tank and strainer (cup) carefully by disconnecting the fuel line. Gasoline left in the fuel tank will eventually deteriorate making engine-starting difficult.
- Drain fuel from the carburetor by loosening the drain screw on the carburetor float chamber , or run the engine at no-load until it stops.
- Disconnect the terminal of the battery.
- Change engine oil.
- Check for loose bolts and screws, tighten them if necessary.
- Clean generator thoroughly with oiled cloth. Spray with preservative if available. **NEVER USE WATER TO CLEAN GENERATOR !**
- Store generator in a well ventilated, low humidity area.



BATTERY

1. Remove the battery.
2. Check the fluid level. Add only distilled water if necessary.
(See page 31 "BATTERY–Replenishing the battery fluid")
3. After checking the fluid level, charge the battery.
4. Store the battery in a cool, dark and dry place.
Do not store the battery in an excessively warm or cold place [i.e., less than 0°C (30°F) or more than 30°C (90°F)].
5. Check battery condition with a hydrometer monthly, and charge as necessary.

⚠WARNING

- Disconnect the negative lead first, then the positive lead from the battery.
 - Connect the positive lead first, then the negative lead to the battery when installing the battery.
 - Never smoke or make and break connections at the battery while charging. Sparks may ignite the battery gas.
 - Be sure the battery terminals are tight and that the battery vent tube is properly routed and is securely attached to the battery.
-

CAUTION:

- Do not disconnect the battery during engine operation.
 - Avoid operating the generator with the battery removed.
-

TROUBLESHOOTING

When generator engine fails to start after several attempts, or if no electricity is available at the output receptacles, check the possible causes in accordance with the following table. If your generator still fails to start or generate electricity, contact your nearest Yamaha dealer or authorized service center for further information or corrective procedures.

Problem		Possible causes													
		Low battery	Blown fuse	Deteriorated fuel		Fuel piping		Clogging of Air cleaner	Clogging of Cooling air intake	Low oil level	Faulty spark plug	Overload by connected appliance	Incorrect or poor connection of wires	Insufficient capacity of extension cable	Carbon brushes are excessively worn
Starter will not run		×	×												
Starter runs, but Engine will not start.				×	×	×			×	×					
During operation	Rotation decreased			×	×	×	×	×	×	×	×				
	Unstable rotation			×	×	×	×			×					
	Breaker turned off										×	×			
	Low power			×	×	×	×			×	×	×	×	×	×

The starter motor will not run :

- Wait for more than 0.5 second after the engine is stopped and then turn the starter switch to the "START" position.
- If a remote control unit is connected, check if both starter switch on the control panel and the engine switch on the remote control unit are switched on.

The engine stopped and the oil pressure warning lamp flashed for three minutes. Check the following.

- No fuel in the fuel tankSupply fuel
- Fuel cock not openTurn on fuel cock
- No sufficient engine oilAdd or change engine oil

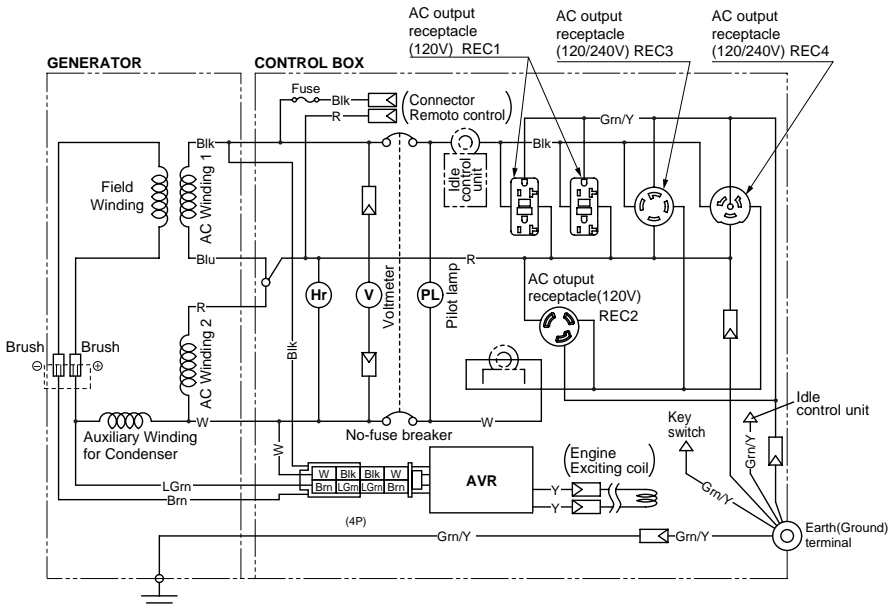
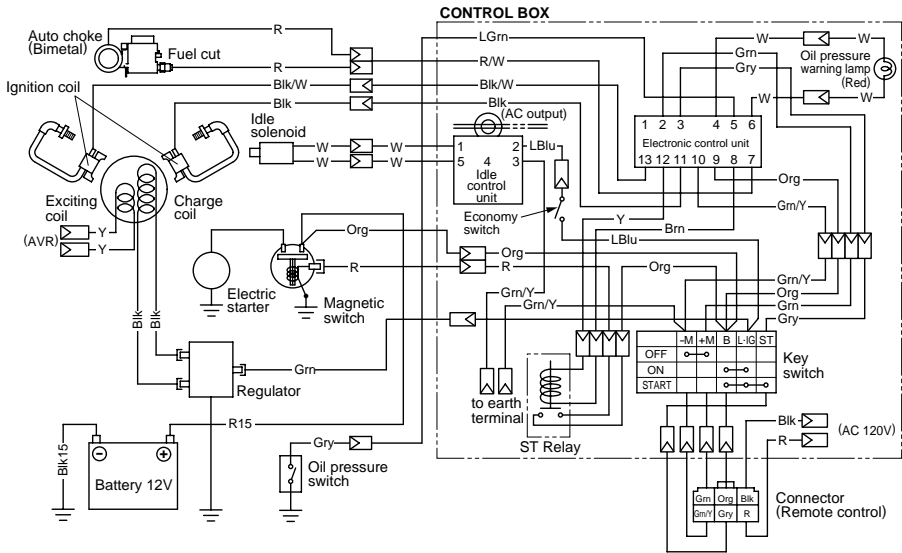
SPECIFICATIONS

Model		EF12000DE
Alternator	Type	Brush, Self-exciting, 2-pole, Single phase
	Rated frequency	60 Hz
	Rated voltage	120V / 240V
	Rated current	79.2 A / 39.6 A
	Rated output	9500 VA
	Maximum output	12000 VA
	Power factor	1.0
	Voltage regulator	A.V.R type
Engine	Model	EH65D
	Type	Twin cylinder, Air-cooled, 4-stroke, Overhead valve engine
	Displacement	653 cm ³
	Fuel	Automotive Unleaded Gasoline
	Oil capacity	1.55 L (1.36 Imp qt, 1.64 US qt)
	Starting system	Electric starter
Fuel tank capacity		44 L (9.68 Imp gal, 11.62 US gal)
Rated continuous operation per a tankful of fuel	Rated	Approx. 8.2 hours
Dimension	Large	826 mm (32.5 in)
	Width	611 mm (24.1 in) [758 mm (29.8 in)]*1
	High	771 mm (30.4 in) [856 mm (33.7 in)]*1
Dry weight		141 kg (310.8 lb) [149 kg (328.5 lb)]*2
Remote controller terminal (Auto choke)		Standard
Valve clearance (Intake & Exhaust)		0.0039 ± 0.0008 in (0.1 ± 0.02 mm) Note : Adjust the valve clearance while the engine is cold.
Emissions durability period (California only)		500 hours

*1: [] shows dimensions with castors.

*2: [] shows dry weight with castors installed.

WIRING DIAGRAM



Wiring color cord

Blk	: Black	Brn/W	: Brown/White	R	: Red	Blk/R	: Black/Red
Blk/W	: Black/White	Grn	: Green	W	: White	R/W	: Red/White
Blu	: Blue	Grn/W	: Green/White	Y	: Yellow	LGrn	: Light green
LBlu	: Light blue	Org	: Orange	Pik	: Pink		
Brn	: Brown	Gry	: Gray	Grn/Y	: Green/Yellow		

OPTIONAL PARTS

"HOW-TO" INSTALL THE WHEEL

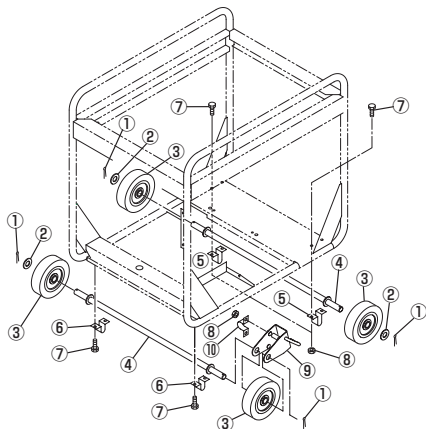
(1) Checking of supplied accessories

(2) Tool preparation

- Hoist or square bar (100 mm (3.94 in) by 100 mm (3.94 in), length : 700 mm (27.56 in))
- Plier
- Spanner or socket wrench (12 mm (0.472 in)), 2 units

(3) Installation procedures

- Raise the generator by about 100 mm (3.94 in), with hoist or with square bar put under the bottom panel.
- Attach wheel mounting parts ①, ②, stopper ⑨, using clamp ⑩, ⑧ and wheel ③, to wheel shaft ④.
Then check that wheel ③ is rotated smoothly. If moving turns out to be too complicated, assemble them together using grease. (4 locations / 2 pieces)
- Bend the tip of ① according to the shape of wheel shaft ④ as possible.
- Attach the assembled shaft to the foundation plate of the engine, using ⑤, ⑦, and ⑧.
- Attach the other shaft to the foundation plate of the generating unit, using ⑥ and ⑦.
(⑧ is not used.)
The tightening torque of bolts should be 20 to 25 Nm (2.0 to 2.5 kg-m).



⚠ WARNING

If you provide the generator with wheels, always be sure to place the generator on a level surface, locking the wheel with the stopper and /or chocking the wheels.

REMOTE CONTROL UNIT

When the remote control unit is connected, the engine will not start unless both starter switch on the control panel and the engine switch on the remote control unit are switched on.

FEDERAL EMISSIONS COMPONENT DEFECT WARRANTY

EMISSIONS COMPONENT DEFECT WARRANTY COVERAGE - This emission warranty is applicable in all States, except the State of California

Yamaha Motor Corporation, U.S.A. (herein "YAMAHA") warrant(s) to the initial retail purchaser and each subsequent owner, that this Nonroad engine (herein "engine") has been designed, built, and equipped to conform at the time of initial sale to all applicable regulations of the U.S. Environmental Protection Agency (EPA), and that the engine is free of defects in materials and workmanship which would cause this engine to fail to conform with EPA regulations during its warranty period.

For the components listed under PARTS COVERED, the dealer or service center authorized by YAMAHA will, at no cost to you, make the necessary diagnosis, repair, or replacement necessary to ensure that the engine complies with applicable U.S. EPA regulations.

EMISSION COMPONENT DEFECT WARRANTY PERIOD

The warranty period for this engine begins on the date of sale to the initial purchaser and continues for a period of 2 years.

PARTS COVERED

Listed below are the parts covered by the Emission Components Defect Warranty. Some of the parts listed below may require scheduled maintenance and are warranted up to the first scheduled replacement point for that part.

- | | |
|--|--|
| (1) Fuel Metering System | (3) Ignition System |
| (i) Carburetor and internal parts (and/or pressure regulator or fuel injection system) | (i) Spark plugs. |
| (ii) Air/fuel ratio feedback and control system, if applicable. | (ii) Magneto or electronic ignition system. |
| (iii) Cold start enrichment system, if applicable. | (iii) Spark advance/retard system, if applicable. |
| (iv) Regulator assy (gaseous fuel, if applicable) | (4) Exhaust manifold, if applicable |
| (2) Air Induction System | (5) Miscellaneous Items Used in Above Systems |
| (i) Intake manifold, if applicable | (i) Electronic controls, if applicable |
| (ii) Air filter. | (ii) Hoses, belts, connectors, and assemblies. |
| | (iii) Filter lock assy (gaseous fuel, if applicable) |

OBTAINING WARRANTY SERVICE

To obtain warranty service, take your engine to the nearest Authorized Yamaha distributor or dealer. Bring your sales receipts indicating date of purchase for this engine. The dealer or service center authorized by YAMAHA will perform the necessary repairs or adjustments within a reasonable amount of time and furnish you with a copy of the repair order. All parts and accessories replaced under this warranty become the property of YAMAHA.

WHAT IS NOT COVERED

- * Conditions resulting from tampering, misuse, improper adjustment (unless they were made by the dealer or service center authorized by YAMAHA during a warranty repair), alteration, accident, failure to use the recommended fuel and oil, or not performing required maintenance services.
- * The replacement parts used for required maintenance services.
- * Consequential damages such as loss of time, inconvenience, loss of use of the engine or equipment, etc.

- * Diagnosis and inspection charges that do not result in warranty-eligible service being performed.
- * Any non-authorized replacement part, or malfunction of authorized parts due to use of non-authorized parts.

OWNER'S WARRANTY RESPONSIBILITIES

As the engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. YAMAHA recommends that you retain all receipts covering maintenance on your engine, but YAMAHA cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the engine owner, you should however be aware that YAMAHA may deny warranty coverage if your engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your engine to the nearest dealer or service center authorized by YAMAHA when a problem exists.

If you have any questions regarding your warranty rights and responsibilities, you should contact the Yamaha Customer Relations Department at 1-800-962-7926 for the information.

THINGS YOU SHOULD KNOW ABOUT THE EMISSION CONTROL SYSTEM WARRANTY MAINTENANCE AND REPAIRS

You are responsible for the proper maintenance of the engine. You should keep all receipts and maintenance records covering the performance of regular maintenance in the event questions arise. These receipts and maintenance records should be transferred to each subsequent owner of the engine. YAMAHA reserves the right to deny warranty coverage if the engine has not been properly maintained. Warranty claims will not be denied, however, solely because of the lack of required maintenance or failure to keep maintenance records.

MAINTENANCE, REPLACEMENT OR REPAIR OF EMISSION CONTROL DEVICES AND SYSTEMS MAY BE PERFORMED BY ANY REPAIR ESTABLISHMENT OR INDIVIDUAL; HOWEVER, WARRANTY REPAIRS MUST BE PERFORMED BY A DEALER OR SERVICE CENTER AUTHORIZED BY YAMAHA MOTOR CORPORATION, U.S.A.. THE USE OF PARTS THAT ARE NOT EQUIVALENT IN PERFORMANCE AND DURABILITY TO AUTHORIZED PARTS MAY IMPAIR THE EFFECTIVENESS OF THE EMISSION CONTROL SYSTEM AND MAY HAVE A BEARING ON THE OUTCOME OF A WARRANTY CLAIM.

If other than the parts authorized by YAMAHA are used for maintenance replacements or for the repair of components affecting emission control, you should assure yourself that such parts are warranted by their manufacturer to be equivalent to the parts authorized by YAMAHA in their performance and durability.

HOW TO MAKE A CLAIM

All repair qualifying under this limited warranty must be performed by a dealer or service center authorized by YAMAHA. In the event that any emission-related part is found to be defective during the warranty period, you shall notify Yamaha Customer Relations Department at 1-800-962-7926 and you will be advised of the appropriate warranty service dealer or service providers where the warranty repair can be performed.

Emission Control System Warranty Statement

CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board and Yamaha Motor Corporation, U.S.A. (herein YAMAHA) are pleased to explain the emission control system warranty on your 2003 and later Small Off-Road engine(herein "engine"). In California, the engine must be designed, built and equipped to meet the State's stringent anti-smog standards. YAMAHA must warrant the emission control system on your engine for the periods of time described below, provided there has been no abuse, neglect or improper maintenance of your engine. Your emission control system may include parts such as the carburetor or fuel-injection system, and the ignition system. Also included may be hoses, belts,connectors and other emission-related assemblies. Where a warrantable condition exists, YAMAHA will repair your engine at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE:

The 2003 and later engines are warranted for two (2) years. If any emission related part on your engine is defective, the part will be repaired or replaced by YAMAHA.

OWNER'S WARRANTY RESPONSIBILITIES:

–As the engine owner, you are responsible for the performance of the required maintenance listed in your Owner's Manual. YAMAHA recommends that you retain all receipts covering maintenance on your engine, but YAMAHA cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

–As the engine owner, you should ,however, be aware that YAMAHA may deny you warranty coverage if your engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

–You are responsible for presenting your engine to a dealer, distributor or warranty station authorized by Yamaha Motor Corporation, U.S.A. P.O.BOX 6555, Cypress, California 90630, U.S.A. (herein "YAMAHA") as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact the Yamaha Customer Relations Department at 1-800-962-7926.

LIMITED WARRANTY
on Emission Control Systems
— California Only —

YAMAHA warrants to the owner of the 2003 and later engine that the engine (1) has been designed, built and equipped so as to conform at the time of manufacture with the applicable regulations of the California Air Resources Board, and (2) is free from defects in materials and workmanship that could cause it to fail to conform with those regulations as may be applicable in the terms and conditions stated below.

A. COMMENCEMENT DATE

The warranty period begins on the date the engine is delivered to a first retail purchaser.

B. LENGTH OF COVERAGE

YAMAHA warrants to a first retail purchaser and each subsequent purchaser that the engine is free from defects in materials and workmanship that cause the failure of a warranted emission-related part for a period of two (2) years after the date of delivery to the first retail purchaser.

C. WHAT IS COVERED:

1. REPAIR OR REPLACEMENT PARTS

Repairs and replacement of any warranted part will be performed at no charge to you by an authorized dealer, distributor or a warranty station. You may contact the Yamaha Customer relations Department at 1-800-962-7926 to obtain the name of the nearest appropriate location where your warranty repairs are performed.

2. WARRANTY PERIOD

This warranty continues for a period of two (2) years and applies only to the repair, replacement or adjustment of the component parts that are not scheduled for replacement as required maintenance. Further, component parts which are scheduled only for regular inspection to the effect of "repair or replace as necessary" are warranted for the warranty period. Any warranted part which is scheduled for replacement as required maintenance is warranted for the period of time up to the first scheduled replacement point for that part.

3. DIAGNOSIS

You will not be charged for diagnostic labor that leads to the determination that a warranted part is defective, if the diagnostic work is performed at an authorized dealer, distributor or warranty station.

4. DAMAGES

If a warranted part failed causing damage to other engine components, consult a warranty station.

D. WHAT IS NOT COVERED

1. This limited warranty does not cover any part which malfunctions, fails or is damaged due to failure to follow the maintenance and operating instructions set forth in the 2003 and later Owner's Manual including:
 - (1) improper or inadequate maintenance of any warranted parts
 - (2) improper installation, adjustment or repair of the engine or of any warranted part unless performed by an authorized dealer
 - (3) failure to follow recommendations on fuel use contained in the 2003 and later Owner's Manual
 - (4) repairs performed outside of the authorized warranty service facilities
 - (5) use of parts which are not authorized by YAMAHA.
2. Add-on or modified parts
This warranty does not cover any part that malfunctions, fails or is damaged due to alterations by changing, adding to or removing parts from the engine.
3. Expenses incurred by processing warranty claims
YAMAHA, any authorized dealer, distributors and warranty station shall not be liable for any loss of use of the engine, for any alternative usage, for any damage to goods, loss of time or inconvenience.

E. HOW TO FILE A CLAIM

All repairs qualifying under this Limited Warranty must be performed by a dealer who sold you the engine or distributors or warranty stations authorized by YAMAHA . In the event that any emission-related part is found to be defective during the warranty period, you must notify Yamaha Customer Relations Department at 1-800-962-7926 and you will be advised of the appropriate warranty service facilities where the warranty repair is to be performed.

F. WHERE TO GET WARRANTY SERVICE

It is recommended that warranty service be performed by the authorized dealer who sold you the engine, although warranty service will be performed by any authorized dealers, distributors and warranty stations anywhere in the United States. When warranty repair is needed, the engine must be brought to an authorized dealer, distributorship or warranty station's place of business during normal business hours. In all cases, a reasonable time, not to exceed 30 days, must be allowed for the warranty repair to be completed after the engine is received by the authorized dealer, distributor or service station.

G. MAINTENANCE, REPLACEMENT AND REPAIR OF EMISSION-RELATED PARTS

Only warranted engine replacement parts approved by YAMAHA should be used in the performance of any warranty maintenance or repairs on emission-related parts. If other than authorized parts are used for maintenance, replacement or repair of components affecting emission control, you should assure yourself that such parts are warranted by their manufacturer to be equivalent to authorized parts in performance and durability. YAMAHA, however, assumes no liability under this warranty with respect to parts other than authorized parts. The use of non-authorized replacement parts does not invalidate the warranty on other components unless the non-authorized parts cause damage to warranted parts.

H. PARTS COVERED UNDER THE CALIFORNIA EMISSIONS WARRANTY

- (1) Fuel Metering System
 - (i) Carburetor and internal parts (and/or pressure regulator or fuel injection system)
 - (ii) Air/fuel ratio feedback and control system, if applicable.
 - (iii) Cold start enrichment system, if applicable.
 - (iv) Regulator assy (gaseous fuel, if applicable)
- (2) Air Induction System
 - (i) Intake manifold, if applicable
 - (ii) Air filter.
- (3) Ignition System
 - (i) Spark plugs.
 - (ii) Magneto or electronic ignition system.
 - (iii) Spark advance/retard system, if applicable.
- (4) Exhaust manifold, if applicable
- (5) Miscellaneous Items Used in Above Systems
 - (i) Electronic controls, if applicable
 - (ii) Hoses, belts, connectors, and assemblies.
 - (iii) Filter lock assy (gaseous fuel, if applicable)

I. MAINTENANCE STATEMENTS

It is your responsibility to have all scheduled inspection and maintenance services performed at the times recommended in the 2003 and later Owner's Manual and to retain proof that inspection and maintenance services are performed at the times when recommended. YAMAHA will not deny a warranty claim solely because you have no record of maintenance; however, YAMAHA may deny a warranty claim if your failure to perform required maintenance resulted in the failure of warranted part. The proof which you maintain should be given to each subsequent owner of the engine. You are responsible for performing the scheduled maintenance described below based on the procedures specified in the 2003 and later Owner's Manual. The scheduled maintenance below is based on a normal engine operating schedule.

<u>PROCEDURE</u>	<u>INTERVAL</u>
1) Change engine oil	: Initial 20 hours and every 100 hours afterward
2) Clean air cleaner (element)	: Every 50 hours
3) Replace air cleaner element	: Every 200 hours
4) Clean and adjust spark plug and electrodes	: Every 200 hours

Note: More frequent maintenance may be necessary under dusty, dirty or severe conditions.

3ZZ9020132
ISSUE EMD-GU1763



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PRINTED IN JAPAN
2003.01-0.5x1