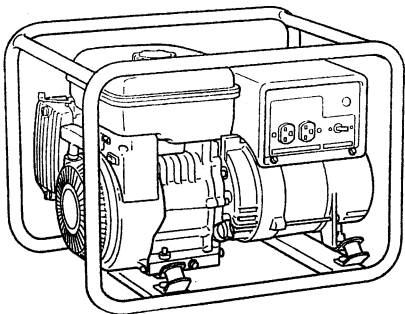


mitsubishi GENERATOR

MODEL SERIES MGA1200/MGA1801/MGA2901



OWNER'S MANUAL



**Before starting this generator,
read and understand this Owner's Manual.**



mitsubishi
HEAVY INDUSTRIES, LTD.

KN55063AA

CAUTIONARY NOTICE

The customer must know that the generator has potential danger.

MHI is not liable for any damage or injury arising from an individual's failure to follow instructions contained in this manual, or his failure to exercise due care and caution in the installation, operation, inspection, and service of the generator.

CONTENTS

	Page
1. SAFETY PRECAUTIONS	1
2. SPECIFICATIONS	2
3. COMPONENTS.....	4
4. PRE-OPERATION CHECKS.....	5
5. OPERATING PROCEDURES.....	8
6. SCOPE OF APPLICABILITY.....	13
7. MAINTENANCE SCHEDULE.....	14
8. "HOW-TO" MAINTENANCE.....	15
9. PREPARATION FOR STORAGE	17
10. TROUBLE SHOOTING	18
11. WIRING DIAGRAM	19

This generator conforms to
Saudi Arabian Standards
No. 609/1994.

Thank you for purchasing a Mitsubishi generator.

This manual covers operation and maintenance of the Mitsubishi generators. All information in this publication is based on the latest production information available at the time of approval for printing.

Pay special attention to statements preceded by the following words:

WARNING

Indicates a strong possibility of severe personal injury, loss of life and equipment damage if instructions are not followed.

CAUTION

Indicates a possibility of personal injury, or equipment damage if instructions are not followed.

NOTE


Gives helpful information.

If a problem should arise, or if you have any questions about the generator, consult a dealer selling Mitsubishi generator.

WARNING

- The generator is designed to give safe and dependable service if operated according to instructions.**
- Do not operate the generator before you have read and understood the instructions. Failure to do so could result in personal injury or equipment damage.**


1. SAFETY PRECAUTIONS

 Do not operate the generator near gasoline or gaseous fuel because of the potential danger of explosion or fire.

Do not fill the fuel tank with fuel while the engine is running. Do not smoke or use open flame near the fuel tank. Be careful not to spill fuel during refueling. If fuel is spilt, wipe it off and let dry before starting the engine.

 Do not place inflammables near the generator.

Be careful not to place fuel, matches, gunpowder, oily cloths, straw, trash, or any other inflammables near the generator.

 Do not operate the generator inside a room, cave, tunnel, or other insufficiently ventilated area. Always operate it in a well-ventilated area, otherwise the engine may become overheated, and the poisonous carbon monoxide gas contained in the exhaust gases will endanger human lives. Keep the generator at least 1 meter (3 feet) away from any structure or building during use.

If the generator must be used indoors, the area must be well-ventilated and extreme caution must be taken regarding the discharge of exhaust gases.


 Do not enclose the generator nor cover it with a box.

The generator has a built-in forced air cooling system, and may become overheated if it is enclosed.


 Operate the generator on a level surface.

It is not necessary to prepare a special foundation for the generator. However, the generator will vibrate on an irregular surface, so choose a level place without surface irregularities. If the generator is tilted or moved during operation, fuel may spill and/or the generator may tip over, causing a hazardous situation.

Proper lubrication cannot be expected if the generator is operated on a steep incline or slope. In such a case, piston seizure may occur even if the oil is above the upper level.

 Pay attention to the wiring from the generator to the connected device.


If the wire is under the generator or in contact with a vibrating part, it may break and possibly cause a fire or generator burnout.

 Do not operate in rain or with wet hands.


The operator may suffer severe electric shock if the generator is wet due to rain or snow.

If wet, wipe and dry it well before starting.

Do not pour water directly over the generator, not wash it with water.

 Do not contact the generator to a commercial power line. Connection to a commercial power line may short circuit the generator and run it.

Use the transfer switch for connecting to domestic circuits.

 No smoking while handling the battery.

The battery emits flammable hydrogen gas, which can explode if exposed to electric arcing or open flame.

Keep the area well-ventilated and keep open flames/sparks away when handling the battery.

2. SPECIFICATIONS

MODEL		MGA1200	MGA1801	
ALTERNATOR	Type	Brushless, Self-exciting, 2-poles, Single phase		
	AC Voltage	50Hz	110V, 220V, 230V, 240V	
		60Hz	110V, 120V, 220V, 240V	
	Max. Output	50Hz	1,000W	1,500W
		60Hz	1,200W	1,800W
	Rated Output	50Hz	800W	1,200W
		60Hz	1,000W	1,500W
	Duty type	Continuous running		
	Insulation Class	B		
	Voltage Regulator	Condenser Type		
Power Factor	1.0			
ENGINE	Model	GM082PN	GM132PN	
	Type	Air-cooled, 4 cycle, OHV, Gasoline Engine		
	Displacement	80cm ³	126cm ³	
	Fuel	Automobile Gasoline		
	Fuel Tank Capacity	1.6 L	2.5 L	
	Rated Continuous Operation	50Hz	2.0 h	3.0 h
		60Hz	1.5 h	2.5 h
	Lubricating Oil	Engine Oil SE Class or Higher		
	Lubricating Oil Capacity	0.4 L	0.6 L	
	Starting System	Recoil Starter		
DIMENSION	Length x Width x Height	500 x 370 x 365 mm	565 x 395 x 410 mm	
	Dry Weight	30 kg	36 kg	

Specifications are subject to change without notice.

MODEL		MGA2901	
ALTERNATOR	Type	Brushless, Self-exciting, 2-poles, Single phase	
	AC Voltage	50Hz	110V, 220V, 230V, 240V
		60Hz	110V, 120V, 220V, 240V
	Max. Output	50Hz	2,400W
		60Hz	2,900W
	Rated Output	50Hz	2,200W
		60Hz	2,500W
	Duty type	Continuous runnin	
	Insulation Class	B	
Voltage Regulator	Condenser Type		
Power Factor	1.0		
ENGINE	Model	GM182PN	
	Type	Air-cooled, 4 cycle, OHV, Gasoline Engine	
	Displacement	181cm ³	
	Fuel	Automobile Gasoline	
	Fuel Tank Capacity	3.8 L	
	Rated Continuous Operation	50Hz	2.5 h
		60Hz	2.0 h
	Lubricating Oil	Engine Oil SE Class or Higher	
	Lubricating Oil Capacity	0.6 L	
	Starting System	Recoil Starter	
DIMENSION	Length x Width x Height	565 x 395 x 410 mm	
	Dry Weight	39 kg	

Specifications are subject to change without notice.

3. COMPONENTS

① - AC NO-FUSE BREAKER

② ENGINE SWITCH

③ VOLTMETER (OPTION)

④ AC RECEPTACLE

⑤ PILOT LAMP

⑥ OIL FILTER CAP

⑦ OIL DRAIN PLUG

⑧ FUEL SHUT-OFF VALVE

⑨ OIL WARNING LAMP (OPTION)

⑩ AIR CLEANER

⑪ SPARK PLUG

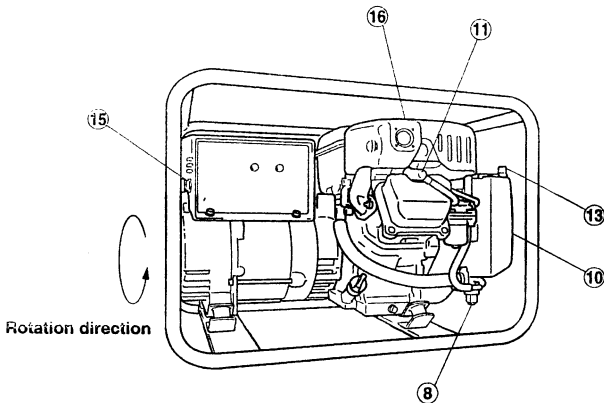
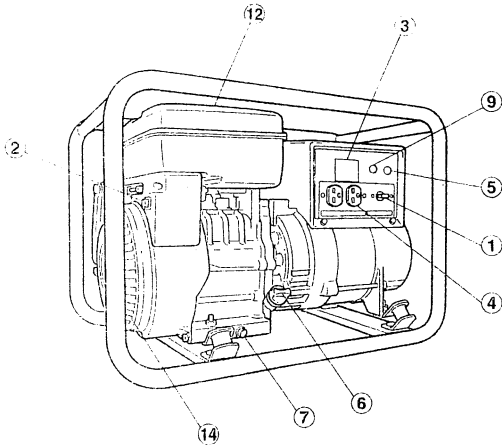
⑫ FUEL TANK CAP

⑬ CHOKE LEVER

⑭ RECOIL STARTER

⑮ GROUND TERMINAL

⑯ MUFLER

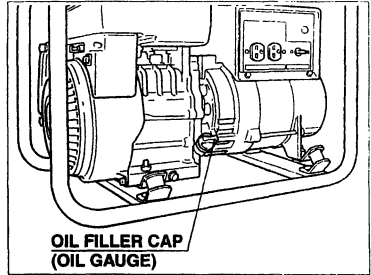


4. PRE-OPERATION CHECKS

1. CHECK ENGINE OIL

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

- Remove oil filter cap and check the engine oil level.

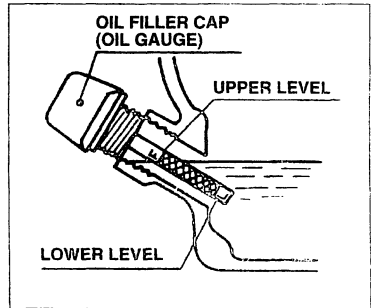


- If oil level is below the lower level line, refill with suitable oil (see table below) to upper level line. Do not screw in the oil filler cap when checking oil level.

- Change oil if contaminated. (See "How-To" Maintenance.)

- Oil capacity

Model.....	Upper level
MGA1200.....	0.4 L
MGA1801 }	0.6 L
MGA2901 }	



- Recommended engine oil:

Use class SE (API classification) oil or a higher grade oil according to the table below. SAE 10W-30 or 10W-40 is recommended for general, all temperature use. If you prefer to use single grade oil, select the appropriate viscosity grade for the average temperature in your area.

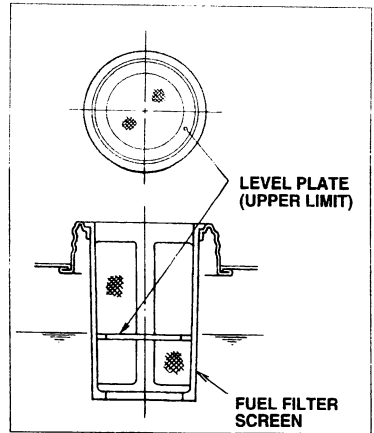
Single grade	5W	10W	20W	# 20	# 30	# 40
Multigrade	10W-30					
	10W-40					
Ambient temperature	-20	-10	0	10	20	30 40°C
	-4	14	32	50	68	86 104°F

2. CHECK ENGINE FUEL.

⚠️ WARNING

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

- Check fuel level at fuel level plate.
- If fuel level is low, refill with unleaded automotive gasoline.
- Be sure to use the fuel filter screen on the fuel filter neck.



Fuel tank capacity:

Model	Full
MGA1200.....	1.6 L
MGA1801.....	2.5 L
MGA2901.....	3.8 L

⚠️ 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.
- Wipe off spilt fuel thoroughly before starting engine.
- Keep open flames away.

3. CHECKING COMPONENTS

Check following items before starting engine:

- Fuel leakage from fuel hose, etc.
- Bolts and nuts for looseness.
- Components for damage or breakage.

4. CHECKING GENERATOR SURROUNDINGS.

⚠ WARNING

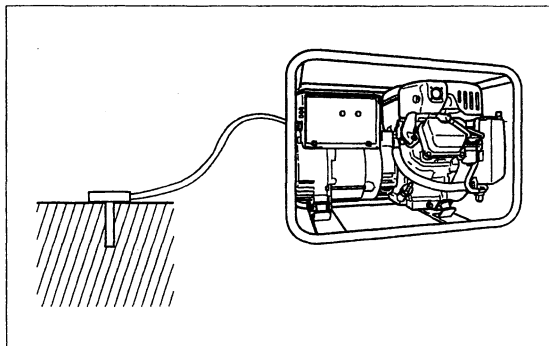
Make sure you review each warning in order to prevent fire hazard.

- **Keep area clear of inflammables or other hazardous materials.**
- **Keep generator at least 3 feet (1 meter) 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.**
- **Keep generator on a stable and level surface.**
- **Do not block generator air vents with paper or other material.**

5. CONNECT THE GROUND TERMINAL.

[CAUTION]

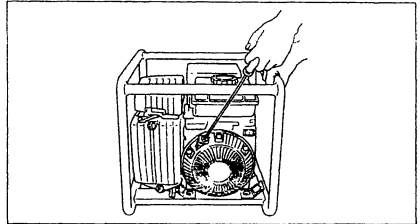
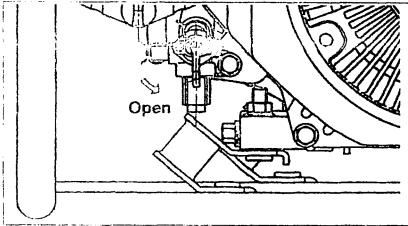
- **To prevent electric shock and damage of the generator, connect the ground terminal of the generator to the ground.**



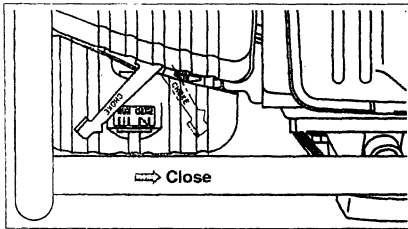
OPERATING PROCEDURES

1. STARTING THE ENGINE

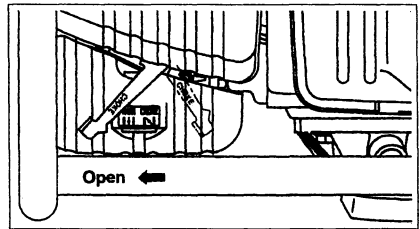
(a) Open the fuel shut-off valve.



(b) Set the choke lever to "Close" (arrow mark).
Not necessary if the engine is warm.



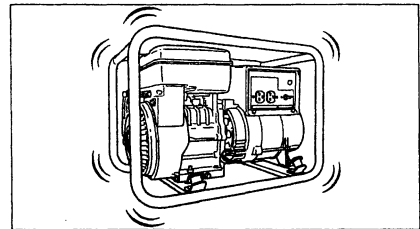
(d) After the engine started, return the choke lever gradually to "Open" position.



(c) Pull the starter handle slowly until resistance is felt.
This is the "Compression" point. Return the handle to its original position and pull swiftly.

(e) Warm up the engine without a load for a few minutes.

- Do not fully pull out the rope.
- After starting, allow the starter handle to return to its original position while still holding the handle.
- If the engine fails to start after several attempts, repeat above procedures with choke lever returned "Open" position.



USING ELECTRIC POWER

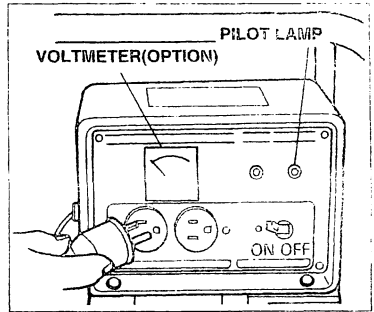
AC APPLICATION

Check the voltmeter or pilot lamp for proper voltage.

This generator is thoroughly tested and adjusted in the factory. If the generator does not produce the specified voltage, consult your nearest Mitsubishi Generator dealer.

Turn off the switch(es) of the electrical appliance(s) before connecting to the generator.

Insert the plug(s) of the electrical appliance(s) into the receptacle.



Check the amperage of the receptacles used referring to TABLE 1, and be sure not to take a current exceeding the specified amperage.

Be sure that the total wattage of all appliances does not exceed the rated output of the generator.

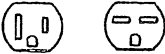



	Up to total 15 ampere from two receptacles
	Up to 15 ampere
	Up to 20 ampere
	Up to 30 ampere

TABLE 1

[CAUTION]

TABLE 1 does not apply to generators equipped with special receptacles.

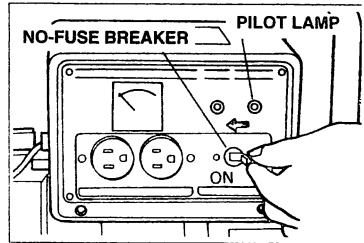
- To take out power from TWIST LOCK receptacle, insert the plug into receptacle and turn clockwise to lock it.
- Be sure to ground the generator if the connected electrical equipment is grounded.

NOTE:

When the circuit breaker or no-fuse breaker turns off during operation, the generator is overloaded or the appliance is defective.

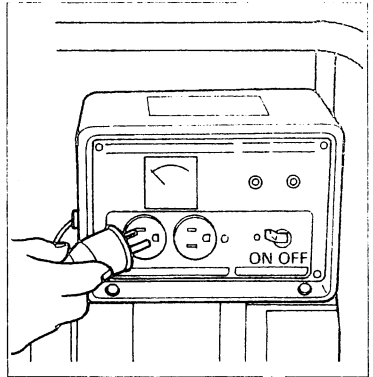
Stop the generator immediately, check the appliance and/or generator for overloading or defect and repair as necessary.

- (d) Check the no-fuse breaker is "ON".
If the breaker is "OFF", set the breaker "ON".
Pilot lamp will illuminate.

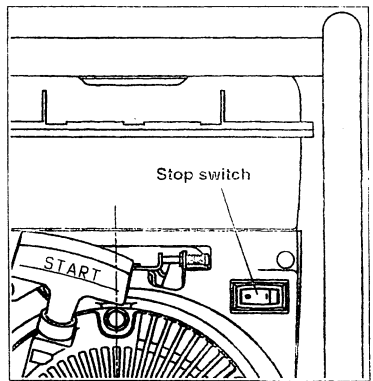


3. STOPPING THE GENERATOR

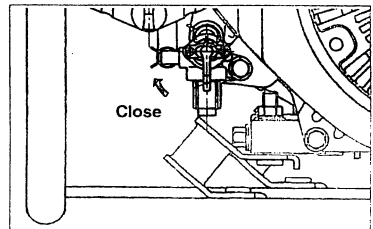
- (a) Turn off the power switch of the electric equipment or unplug the cord from receptacle of the generator.
- (b) Allow the engine about 3 minutes to cool down at no-load before stopping.



- (c) Set the stop switch to "OFF" position.

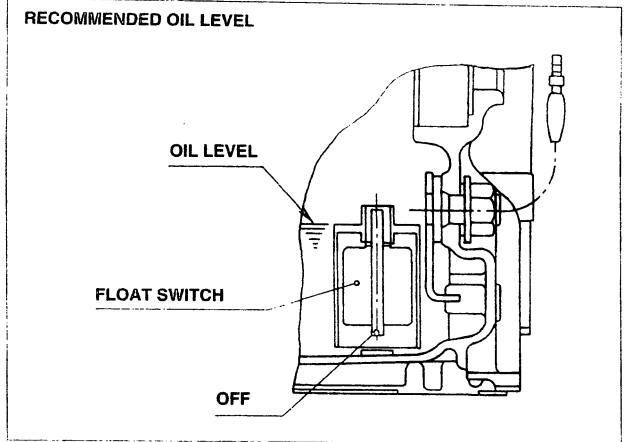


- (d) Close (stop) the fuel shut-off valve.

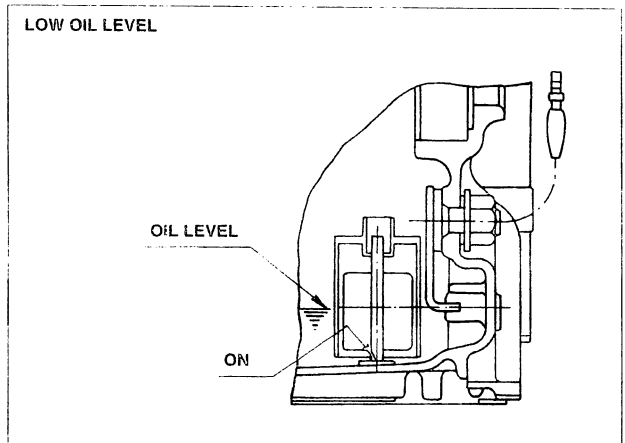


4. OIL SENSOR

- The oil sensor detects the fall in oil level in the crankcase and automatically stops the engine when the oil level falls down below the safety limit.
- When engine has stopped automatically, check the oil level.
- If the engine does not start by usual starting procedures, check the oil level.
- Run






⏏ Stop



6. SCOPE OF APPLICABILITY

It is recommended to use AC and DC power sources within the following scope.

Applicable instruments	Model	Scope of applicability		Remarks	
		50Hz	60Hz		
Alternating current (AC)	Light-Electric Heater 	MGA1200	Up to 800W	Up to 1,000W	● The instruments which require much starting current and some kinds of motors may be unable to be used even if they are within the applicable scope.
	MGA1801	Up to 1,200W	Up to 1,500W		
	MGA2901	Up to 2,200W	Up to 2,500W		
	Motors with single phase 	MGA1200	Up to 240W	Up to 300W	● The circuit breaker turns OFF when the current exceeding the applicable scope is used or when the applied instrument is defective.
		MGA1801	Up to 400W	Up to 500W	
		MGA2901	Up to 800W	Up to 900W	
Direct current (DC) 	MGA1801 MGA2901	Up to 12V-8.3A			

7. MAINTENANCE SCHEDULE

Daily	<ul style="list-style-type: none"> ⊕ Check the air cleaner ● Check oil level and refill to the upper level before starting the engine. ● Check all the points indicated in "PRE-OPERATION CHECKS".
50 hours	<ul style="list-style-type: none"> ● Clean and wash air-cleaner element. More often if used in dirty or dusty environments. ● Change engine oil. (The initial oil change must be conducted after the first 25 hours operation.) ● Check spark plug, and clean and adjust if necessary. ● Check and clean the fuel shut-off valve.
100 hours	<ul style="list-style-type: none"> ⊕ Replace spark plug. ● Replace air-cleaner element. ○ Decarbonize cylinder head, valves and piston. ○ Check and replace carbon brushes.
3 years	<ul style="list-style-type: none"> ○ Inspect control panel components. ○ Check rotor and stator. ○ Replace engine mount rubber. ○ Overhaul engine. ● Change fuel lines.

NOTE:

Initial oil change should performed after first 25 hours of use. Thereafter change oil every 50 hours. Before changing oil, check for a suitable way to dispose of the old oil. Do not pour it down into sewage drains, onto garden soil or into open streams. Your local zoning environmental regulations will give you more detailed instructions on proper disposal.

Items marked with a ○ required advanced skill and tools, so they should be done by the distributor.

8. "HOW-TO" MAINTENANCE

1. ENGINE OIL CHANGE

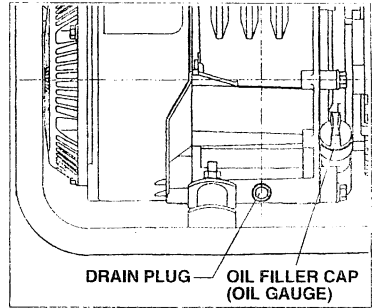
Change engine oil every 50 hours.

(for a new engine, change oil after 25 hours.)

- (a) Drain oil by removing the drain plug and the oil filler cap while the engine is warm.
- (b) Reinstall the drain plug and fill the engine with oil until it reaches the upper level on the oil filler cap.

Use fresh and high quality lubricating oil to the specified quantity.

If contaminated or deteriorated oil is used or the quantity of the engine oil is not sufficient, the engine damage will result and its life will be greatly shortened.

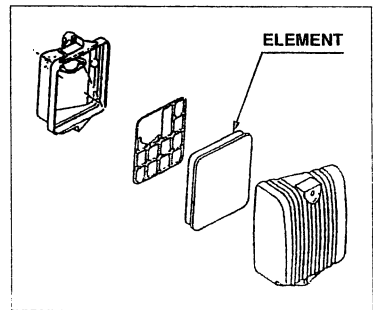
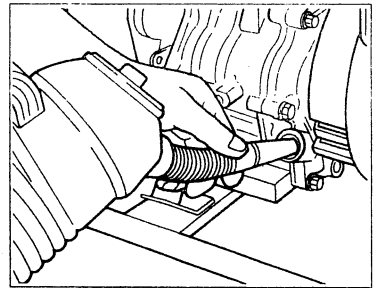


2. SERVICING THE AIR CLEANER

Maintaining an air cleaner in proper condition is very important. Dirt induced through improperly installed, improperly serviced, or inadequate elements damages and wears out engines.

Keep the element always clean.

- (a) Take out the air cleaner, clean it well in kerosene and dry it.
- (b) After wetting the element by clean engine oil, squeeze it tight by hand.
- (c) Lastly, put the element in the case and install it securely.



3. CLEANING AND ADJUSTING SPARK PLUG

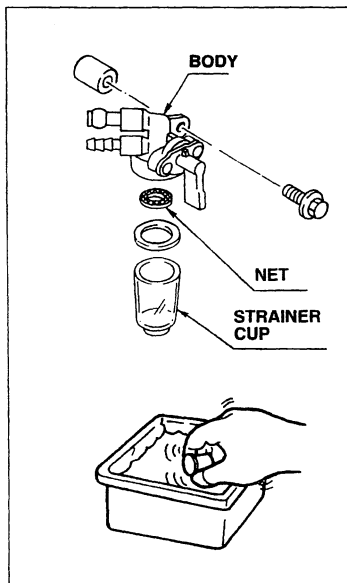
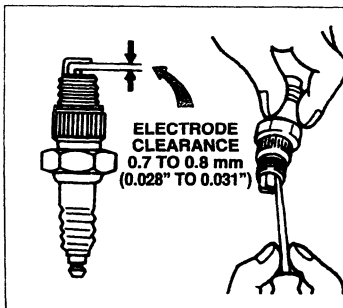
- (a) If the plug is contaminated with carbon, remove it using a plug cleaner and wire brush.
- (b) Adjust the electrode gap to 0.7 to 0.8 mm (0.028" to 0.031").

SPARK PLUG: NGK BPR6HS

4. 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.



9. PREPARATION FOR STORAGE

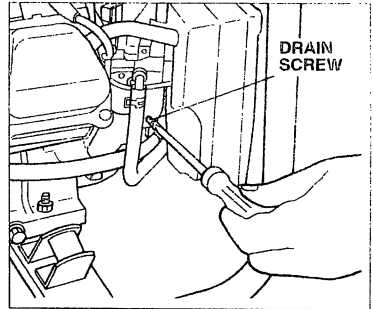
The following procedures should be followed prior to storage of your generator for periods of 3 months or longer.

1. Drain fuel from fuel tank carefully. Gasoline left in the fuel tank will eventually deteriorate making **engine-starting difficult**.

- Loosen the drain screw on the bottom of the carburetor float chamber, and drain the fuel completely.
- 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!

- Pull starter handle until resistance is felt, leaving handle in that position.
- Store generator in a well ventilated, low humidity area.



10. TROUBLE SHOOTING

When generator engine fails to start after several attempts, or if no electricity is available at the out socket, check the following chart.

If your generator still fails to start or generate electricity, contact your nearest Mitsubishi Generator dealer for further information or corrective procedures.

When Engine Fails to Start:

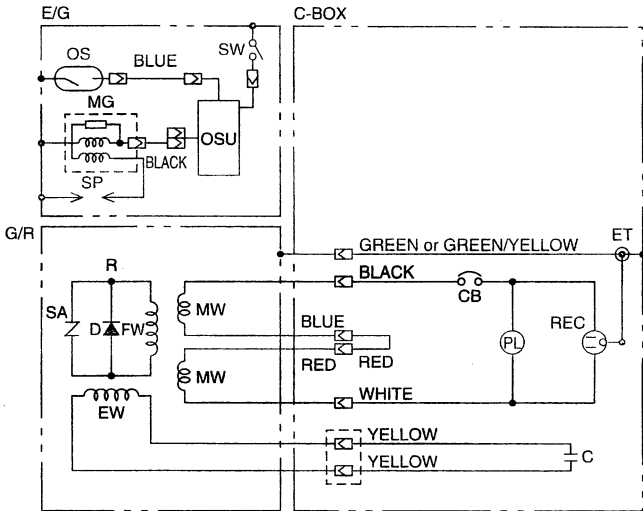
Check if choke lever is in its proper position.		Set the choke lever to "CLOSE" position.
Check if fuel shut-off valve is open.	↔	If closed, open fuel shut-off valve.
Check fuel level.		If empty, refill fuel tank making sure not to overfill.
Check to make sure generator is not connected to an appliance.		If connected, turn off the power switch on the connected appliance and unplug.
Check spark plug for loose spark plug cap.	↔	If loose, push spark plug cap back into place.
Check spark plug for contamination.		Remove spark plug and clean electrodes.

When No Electricity Is Generated at Receptacle:

Check to make sure no-fuse breaker is in the ON Position.	↔	After making sure that the total wattage of the electrical appliance is within permissible limits and there are no defects in the appliance, turn the circuit breaker to the "ON" position. If breaker, continue to actuate, consult your nearest servicing dealer.
Check AC terminals for loose connections.		Secure connections if necessary.
Check to see if engine starting was attempted with appliances already connected to generator.	↔	Turn off switch on the appliance and disconnect cable from receptacle. Reconnect after generator has been started properly.

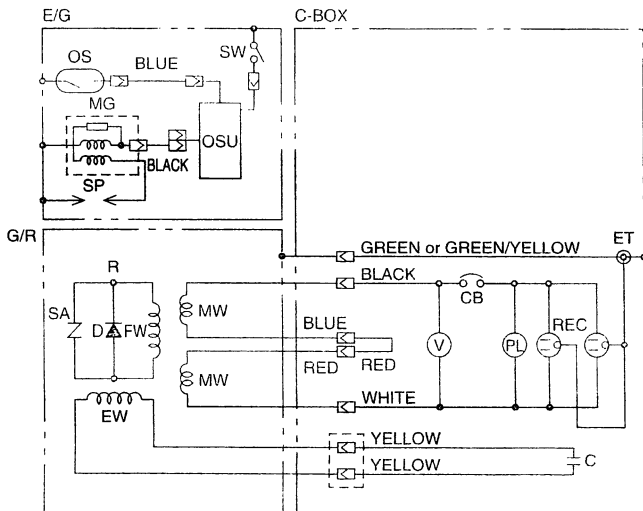
11. WIRING DIAGRAM

MGA1200



MGA1801

MGA2901



Symbol	Parts Name	Symbol	Parts Name	Symbol	Parts Name
C	Capacitor	FW	Field winding	R	Rotor
CB	Circuit breaker	G/R	Generator	REC	AC receptacle
C-BOX	Control box	MG	Fly wheel magneto	SA	Surge absorber
D	Diode	MW	Main wiring	SP	Spark plug
E/G	Engine	OS	Oil level switch	SW	Stop switch
ET	Ground terminal	OSU	Oil sensor unit		
EW	Exciter winding	PL	Pilot lamp		

MEMO

MEMO



MITSUBISHI HEAVY INDUSTRIES, LTD.
INDUSTRIAL MACHINERY DIVISION
MEIKI ENGINE DEPARTMENT SALES SECTION

1-TAKAMICHI, IWATSUKA-CHO, NAKAMURA-KU,
NAGOYA 453-8515, JAPAN

TEL : 81-52-412-1145 FAX : 81-52-412-7811

Printed in Japan
2002. 11