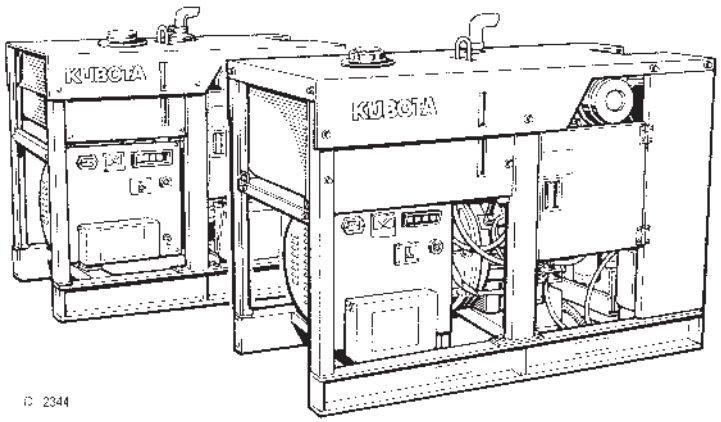
OPERATOR'S MANUAL

ENGLISH

KUBOTA
DIESEL GENERATOR

J106-STD·J107-STD·J108-STD·J110-STD·J112-STD·J114-STD·J116-STD
J119-STD·J310-STD·J313-STD·J315-STD·J318-STD·J320-STD·J324-STD
J107-SA·J110-SA·J114-SA·J119-SA
J106-AUS·J108-AUS·J112-AUS·J116-AUS·J310-AUS·J315-AUS·J320-AUS



ID 2344

G3907-8911-5

READ AND SAVE THIS MANUAL

Kubota

⚠ WARNING

To prevent electrical shock the following instruction must be followed.
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.

FOREWORD

You are now the proud owner of a KUBOTA Diesel Engine Generator. This generator is a product of KUBOTA quality engineering and manufacturing. It is made of fine materials and under a rigid quality control system with correct maintenance. It will give you long, satisfactory service. To obtain the best use of your generator, please read this manual carefully. It will help you become familiar with the operation of the generator and contains many helpful hints about generator maintenance. It is KUBOTA's policy to utilize as quickly as possible every advance in our research. The immediate use of new techniques in the manufacture of products may cause some small parts of this manual to be outdated. KUBOTA distributors and dealers will have the most up-to-date information. Please do not hesitate to consult with them.

SAFETY FIRST

This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury. Read these instructions carefully. It is essential that you read the instructions and safety regulations before you attempt to assemble or use this unit.

DANGER :	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING :	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION:	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
IMPORTANT :	Indicates that equipment or property damage could result if instructions are not followed.
NOTE :	Gives helpful information.

ENGLISH

CONTENTS

ENGLISH

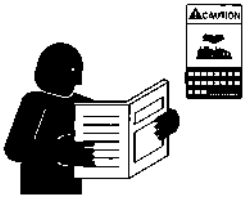
SAFE OPERATION

Careful operation is your best insurance against an accident. Read and understand this operator's manual carefully before operating the generator. All operators, no matter how much experience they may have had, should read this manual and all labels on the generator before operating the generator. It is the owner's responsibility to instruct all operators in safe operation.

Be sure to observe the following for safe operation.

OBSERVE SAFETY INSTRUCTIONS

- Read and understand carefully this OPERATOR'S MANUAL and LABELS ON THE GENERATOR before attempting to start and operate the generator.
- Learn how to operate and work safely. Know your equipment and its limitations. Always keep the generator in good condition.
- Before allowing other people to use your generator, explain to them how to operate and have them read this manual before operation.
- DO NOT modify the engine by yourself. UNAUTHORIZED MODIFICATIONS to the engine may impair the function and / or safety and affect engine life.



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WEAR SAFETY CLOTHING

- DO NOT wear loose, torn or bulky clothing around the generator that may catch on working controls and projections causing personal injury.
- Use additional safety items, e.g. hard hat, safety protections, gloves, etc., as appropriate or required.
- DO NOT operate generator or any equipment attached to it while under the influence of alcohol, medication, or other substances, or while fatigued.
- DO NOT wear radio or music headphones while operating the generator.


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CHECK BEFORE OPERATION & STARTING THE ENGINE

- Always turn off the circuit breaker and all switches for the electrical devices before starting the generator.
- Check the wiring and connections of the electrical devices before starting the generator.
- Be sure to check the engine before operation. If something is wrong with the engine, repair it immediately and before operation.
- Keep all guards and shields in place before operating the generator. Replace any that are damaged or missing.
- Check to see that bystanders are in a safe distance from the generator before starting.
- Always keep the generator at least 1 m away from buildings and other facilities.
- DO NOT allow children or livestock to approach the generator while the engine is running.
- DO NOT start the engine by shorting across starter terminals or bypassing normal starting circuit. The generator may start unexpectedly causing electric shock to others.

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HANDLING ELECTRICAL COMPONENTS

Always exercise extra caution when handling electrical equipment. Careless handling of electrical components can cause serious personal injury, death by electrocution or property damage.

- DO NOT touch the electrical system during operation.
- Connect or disconnect the load to the AC receptacles or terminals only when the engine is stopped.
- Make certain that all power cables and wiring are in good condition. Bare wire or frayed insulation can cause dangerous electrical shock, burns or death.
- DO NOT use the generator in damp or wet conditions. Handling terminals and cables with wet hands can result in personal injury or death.
- Always shut the engine off and allow to cool before cleaning. Use water sparingly when cleaning the outside of the generator. Make sure that water does not splash onto the electrical system or into the generator.
- DO NOT touch the generator with wet hands. You may get an electric shock that can cause burns or death.
- DO NOT connect this generator to any building's electrical system unless an isolation switch has been installed by a licensed electrician.
- DO NOT run other generators in parallel.

D-2282

D-2281

KEEP THE AREA AROUND THE ENGINE CLEAN

- Be sure to stop the engine before cleaning.
- Keep the engine clean and free of accumulated dirt, grease and trash to avoid a fire. Store flammable fluids away from sparks and fire.
- DO NOT stop the engine without idling. Sudden stops can cause temperatures around the engine to rise suddenly. Keep the engine idling for about 5 minutes before stopping.

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SAFE HANDLING OF FUEL AND LUBRICANTS

- Always stop the engine before refueling and/or lubricating.
- DO NOT smoke or allow flames or sparks in the working area. Fuel is extremely flammable and explosive under certain conditions.
- Refuel only when the engine has cooled off. Refuel in a well ventilated and open place. When fuel and lubricants are spilled, clean them up before starting the engine.
- DO NOT mix gasoline or alcohol with diesel fuel. The mixture can cause a fire and damage engine components.
- Operate the generator on a firm and level surface only. DO NOT tilt or move the generator while it is running since this can cause fuel spillage.

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EXHAUST GASES & FIRE PREVENTION

- Engine exhaust fumes can be very harmful if allowing them to accumulate. Be sure to run the engine in a well ventilated place and where there are no people or livestock near the generator.
- DO NOT operate the generator in a closed area such as inside houses, warehouses, tunnels, wells, ship holds, tanks, etc. or places without proper ventilation.
- DO NOT operate the generator where the building or other obstructions block off air circulation or where exhaust gas can accumulate.
- The exhaust gas from the muffler is very hot. To prevent a fire, DO NOT expose to dry grass, papers, oil and any other combustible materials to exhaust gas. Also, keep the engine and muffler clean at all times.
- To avoid fire, be alert for leaks of flammables from hoses and lines. Be sure to check for leaks from hoses or pipes, such as fuel and engine oil by following the maintenance check list.
- To avoid a fire, DO NOT short across power cables and wires.
  Check to see that all power cables and wiring are in good condition.
- Keep all power connections clean and tight. Bare wire or frayed insulation can cause a dangerous electrical shock and personal injury.

HANDS AND BODY AWAY FROM THE ROTATING PARTS

- DO NOT operate the generator with the side covers removed or open. Serious personal injury may result if fingers or clothing are caught in the rotating parts.
- Be sure to stop the engine before checking or adjusting belt tension and cooling fan.
- To avoid personal injury, keep your hands and body away from the rotating parts, such as cooling fan, V-belt, fan drive V-belt, pulleys or flywheel.
- DO NOT run the engine with installed safety guards detached. Install safety guards securely before operation.

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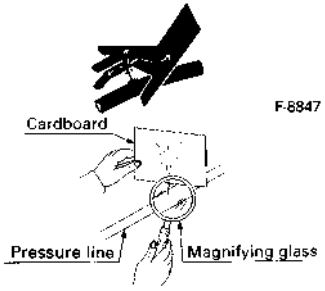
ESCAPING FLUID

- Relieve all pressure in the oil and the cooling systems before any lines, fittings or related items are removed or disconnected.
- Be alert for possible pressure when disconnecting any device from a system that utilizes pressure.
  DO NOT check for pressure leaks with your hand.
  High pressure oil or fuel can cause serious personal injury.
- Escaping fluid under pressure has sufficient force to penetrate skin causing serious personal injury.
- Fluid escaping from pinholes may be invisible.
  Use a piece of cardboard or wood to search for suspected leaks: DO NOT use hands or body. Use safety goggles or other eye protection when checking for leaks.
- If injured by escaping fluid, see a medical doctor at once. This fluid can produce gangrene or severe allergic reaction.



CAUTIONS AGAINST BURNS & BATTERY EXPLOSION

- To avoid burns, be alert for hot components, e.g. muffler, muffler cover, radiator, pipes, hoses, engine body, coolant, engine oil, etc. during operation and just after the engine has been shut off.
- DO NOT remove the radiator cap while the engine is running or immediately after stopping. Otherwise hot water from the radiator will escape under pressure causing injury by scalding. Wait for more than 10 minutes to allow the coolant to cool down, before removing the cap.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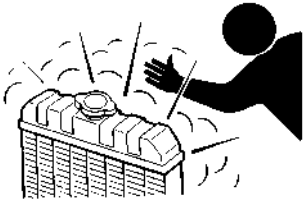
- Make sure to close the drain valve of coolant and engine oil, close radiator pressure cap and tighten hose clamps before operating. If any of these parts are taken off, or left loose, serious personal injury can result.
- The battery presents an explosive hazard. When the battery is being activated, hydrogen and oxygen gases are extremely explosive.
- Keep sparks and open flames away from the battery, especially when charging the battery. DO NOT strike a match near the battery.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- DO NOT check battery charge by placing a metal object across the terminals. Use a voltmeter or hydrometer.
- DO NOT charge battery if frozen, there is a risk of explosion. When battery is frozen, allow the battery to warm up to 16°C (61°F) before charging.
- DO NOT use or charge the battery if its fluid level is below the LOWER (lower limit level) mark (refillable type battery only).
  Otherwise, the component parts may deteriorate earlier than expected, which may shorten the service life or cause an explosion. Add distilled water until the fluid level


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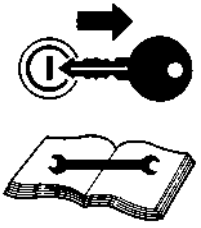
CONDUCTING SAFETY CHECKS & MAINTENANCE

- Know how to stop the generator quickly, and understand operation of all the controls. DO NOT permit anyone to operate the generator without proper instruction.
- When checking engine or servicing, place the generator in an open area and level ground. DO NOT work on anything that is supported ONLY by lift jacks or a hoist. Always use blocks or safety stands to support the generator before servicing.
- Detach the battery from the generator before conducting service.
  Put a “DO NOT OPERATE!” tag on the key switch and remove the key to avoid accidental starting.
- To avoid sparks from an accidental short circuit, always disconnect the battery’s ground cable (-) first and connect it last.
- Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skins and clothing and cause blindness if splashed into eyes. Keep electrolyte away from eyes, hands and clothing.
  If you spill electrolyte on yourself, flush with water, and get medical attention immediately.
- Be sure to stop the engine and remove the key when conducting daily and periodic maintenance, servicing and cleaning.
- Check or conduct maintenance after the engine, coolant, muffler, or muffler cover have cooled off completely.
- Always use the appropriate lifting equipment and make sure safety stands are in good condition when performing any service work. Make sure that you understand how to use the equipment before servicing.
- Use ONLY the correct engine flywheel rotating techniques for manually rotating the engine. DO NOT attempt to rotate the engine by pulling or prying on the cooling fan or V-belt. This practice can cause serious personal injury or premature machine damage to the cooling fan.
- Replace fuel, lubricant and coolant hoses with their hose clamps every 2 years or earlier if required. They are made of rubber and deteriorate over time whether used or not.
- When servicing is performed together by two or more persons, take care to perform all work safely.
- Keep first aid kit and fire extinguisher handy at all times.



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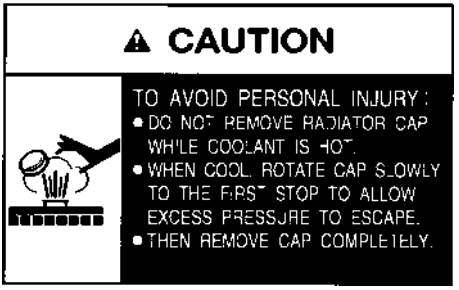
DANGER, WARNING AND CAUTION LABELS

Pay special attention to all labels on the generator.
Refer to following representations for labels used on the J-Series Generator. Labels are available individually from your KUBOTA Dealer.

(1) Part No. G3907-8832-0



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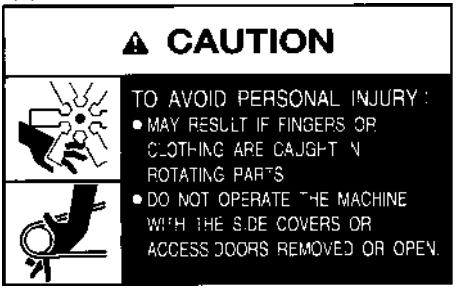

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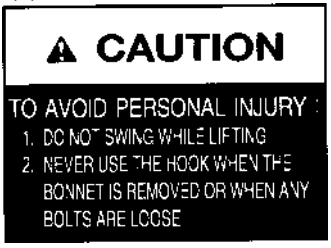

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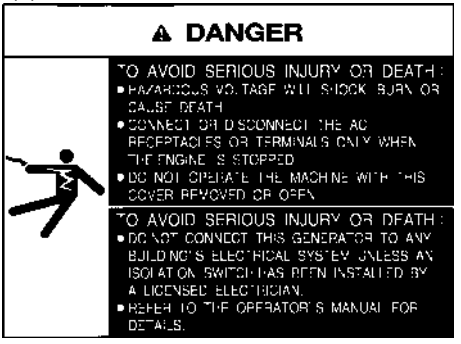
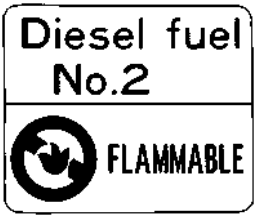


(5) Part No. 18901-5090-2



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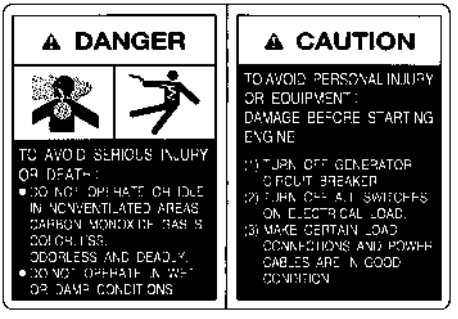
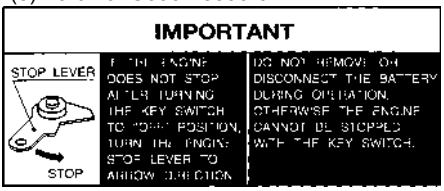
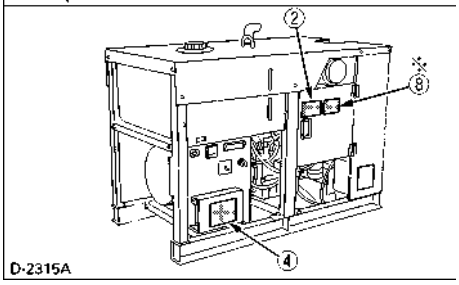


(7) Part No. 18620-8806-0

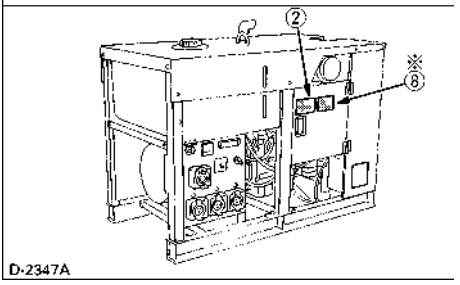
(8) Part No. G3907-8833-0



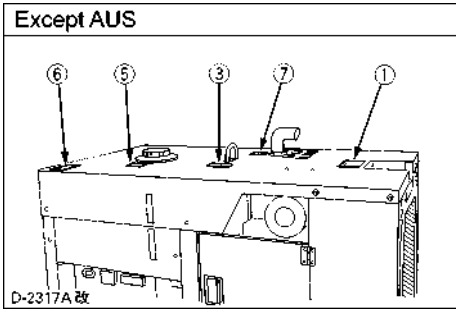
Except AUS



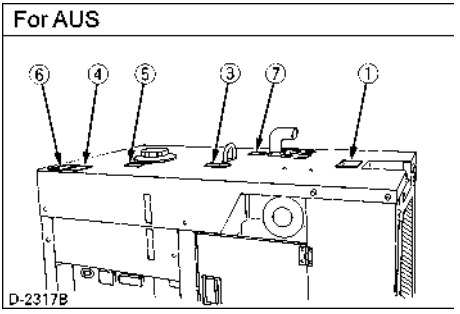
For AUS

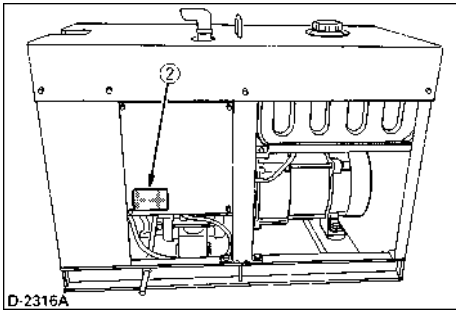


Except AUS



For AUS





※For the Z482 or D722-mounted machines only.

CARE OF DANGER, WARNING AND CAUTION LABELS

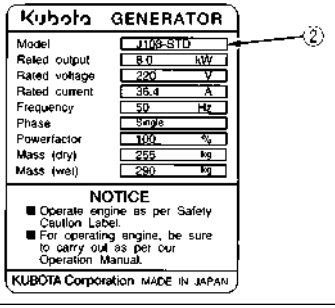
1. Keep danger, warning and caution labels clean and free from obstructing material.
2. Clean danger, warning and caution labels with soap and water, dry with a soft cloth.
3. Replace damaged or missing danger, warning and caution labels with new labels from your local KUBOTA Dealer.
4. If a component with danger, warning and caution label(s) affixed is replaced with new part, make sure new label(s) is (are) attached in the same location(s) as the replaced component.
5. Mount new danger, warning and caution labels by applying on a clean dry surface and pressing any bubbles to outside edge.

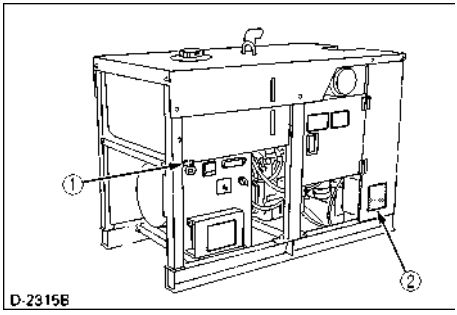
SERVICING OF GENERATOR

Your dealer is interested in your new generator and has the desire to help you get the most value from it. After reading this manual thoroughly, you will find that you can do some of the regular maintenance yourself.
However, when in need of parts or major service, be sure to see your KUBOTA Dealer.
For service, contact the KUBOTA Dealership from which you purchased your generator or your local KUBOTA Dealer.

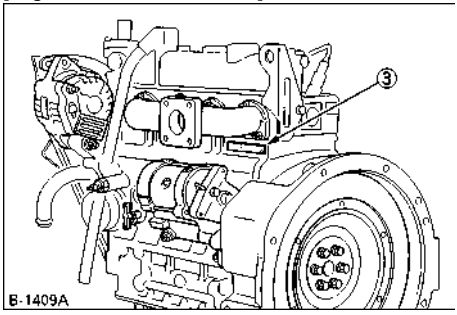
When in need of parts, be prepared to give your dealer the generator and engine serial numbers.
Locate the serial numbers now and record them in the space provided below.

	Model	Serial No.
Generator		
Engine		
Date of Purchase		
Name of Dealer		
(To be filled in by purchaser)		

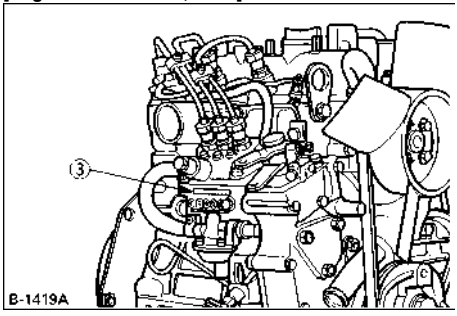




[Engine model : D1005, V1305]



[Engine model : Z482, D722]



(1) Generator serial number
(2) Generator model
(3) Engine serial number

SPECIFICATIONS

■1 Phase Type

GENERATOR									
Model		Unit	J106		J107		J108		
			-STD	-AUS	-STD	-SA	-STD	-AUS	
Design			Salient-pole, revolving-field AC generator (AVR system with separate and self-excitation brush)						
Frequency		Hz	50		60		50		
Rated Output (COP)		kVA	5.5		6.5		8		
		kW	5.5		6.5		8		
Rated Voltage		V	220	240	110/220	127/220	220	240	
Phase & Wire		ϕ -w	1-2		1-3		1-2		
Power Factor		%	100						
No. of Poles		-	2						
Insulation		-	Rotary coil: Class F, Stator coil: Class B						
Voltage Regulation		%	7 (No load to full load)						
Type of Coupling			Direct coupled						
DIESEL ENGINE									
Model			Z482-B-SEC				D722-B-SEC		
Design			Vertical, water-cooled, 4-cycle diesel engine						
No. of cylinders			2				3		
Bore x stroke		mm	ϕ 67 x 68				ϕ 67 x 68		
Displacement		L	0.479				0.719		
Engine speed		rpm	3000		3600		3000		
Lubricating Oil			API service class CD or higher						
Oil capacity		L	2.2				3.4		
Coolant capacity		L	2.3				3.0		
SET									
Fuel			Diesel fuel No. 2 (ASTM D975)						
Fuel consumption (at full load)		L	2.3		2.8		3.2		
Fuel tank capacity		L	37				37		
Continuous Operating Hours		hrs	16.0		13.2		11.5		
Battery (V x Ah/5Hr)			38B20R (12V x 28Ah)				55B24R (12V x 36Ah)		
Starting System			Electric						
L x W x H (with wheel)		mm	923 x 593 x 860 (1037)				995 x 593 x 860 (1037)		
Approx Net Wt.		kg	225				255		
Output	Terminal	-	○	-	○	○	○	-	
	Receptacle	-	-	○	-	-	-	○	
Option	Caster	-	○				○		
Sound Level (full load at 7m)		dB(A)	74.0		76.0		75.0		
Emergency Stop System		-	In case of abnormal: Oil pressure, water temperature						
AMPS									
AMPS		A	25.0	22.9	59.1/ 29.5	51.2/ 29.5	36.4	33.3	

GENERATOR									
Model		Unit	J110		J112		J114		
			-STD	-SA	-STD	-AUS	-STD	-SA	
Design			Salient-pole, revolving-field AC generator (AVR system with separate and self-excitation brush)						
Frequency		Hz	60		50		60		
Rated Output (COP)		kVA	10		12		14	11.5/ 14.0	
		kW	10		12		14	11.5/ 14.0	
Rated Voltage		V	110/220	127/220	220	240	110/220	127/220	
Phase & Wire		ϕ -w	1-3		1-2		1-3		
Power Factor		%	100						
No. of Poles		-	2						
Insulation		-	Rotary coil: Class F, Stator coil: Class B						
Voltage Regulation		%	7 (No load to full load)		8 (No load to full load)				
Type of Coupling			Direct coupled						
DIESEL ENGINE									
Model			D722-B-SEC		D1005-BG-SEC				
Design			Vertical, water-cooled, 4-cycle diesel engine						
No. of cylinders			3						
Bore x stroke		mm	ϕ 67 x 68		ϕ 76 x 73.6				
Displacement		L	0.719		1.001				
Engine speed		rpm	3600		3000		3600		
Lubricating Oil			API service class CD or higher						
Oil capacity		L	3.4		4.3				
Coolant capacity		L	3.0		3.3				
SET									
Fuel			Diesel fuel No. 2 (ASTM D975)						
Fuel consumption (at full load)		L	4.2		4.5		5.8		
Fuel tank capacity		L	37		79				
Continuous Operating Hours		hrs	8.5		17.0		13.5		
Battery (V x Ah/5Hr)			55B24R (12V x 36Ah)		80D26R(S) (12V x 55Ah)				
Starting System			Electric						
L x W x H (with wheel)		mm	995 x 593 x 860 (1037)		1215 x 611 x 922				
Approx Net Wt.		kg	255		340				
Output	Terminal	-	○	○	○	-	○	○	
	Receptacle	-	-	-	-	○	-	-	
Option	Caster	-	○		-				
Sound Level (full load at 7m)		dB(A)	76.5		76.5		81.0		
Emergency Stop System		-	In case of abnormal: Oil pressure, water temperature		In case of abnormal: Oil pressure, water temperature, fan belt broken				
AMPS									
AMPS		A	90.9/ 45.5	78.7/ 45.5	54.5	50.0	63.6 x 2 /63.6	90.6/ 63.6	

GENERATOR							
Model		Unit	J116		J119		
			-STD	-AUS	-STD	-SA	
Design			Salient-pole, revolving-field AC generator (AVR system with separate and self-excitation brush)				
Frequency		Hz	50		60		
Rated Output (COP)		kVA	16		18.8	11.5/18.8	
		kW	16		18.8	11.5/18.8	
Rated Voltage		V	220	240	110/220	127/220	
Phase & Wire		ϕ -w	1-2		1-3		
Power Factor		%	100				
No. of Poles		-	2				
Insulation		-	Rotary coil: Class F, Stator coil: Class B				
Voltage Regulation		%	8 (No load to full load)				
Type of Coupling			Direct coupled				
DIESEL ENGINE							
Model			V1305-BG-SEC				
Design			Vertical, water-cooled, 4-cycle diesel engine				
No. of cylinders			4				
Bore x stroke		mm	ϕ 76 x 73.6				
Displacement		L	1.335				
Engine speed		rpm	3000		3600		
Lubricating Oil			API service class CD or higher				
Oil capacity		L	5.7				
Coolant capacity		L	3.5				
SET							
Fuel			Diesel fuel No. 2 (ASTM D975)				
Fuel consumption (at full load)		L	6.0		7.5		
Fuel tank capacity		L	79				
Continuous Operating Hours		hrs	13.0		10.5		
Battery (V x Ah/5Hr)			80D26R(S) (12V x 55Ah)				
Starting System			Electric				
L x W x H (with wheel)		mm	1300 x 611 x 922				
Approx Net Wt.		kg	380				
Output	Terminal	-	○	-	○	○	
	Receptacle	-	-	○	-	-	
Option	Caster	-	-				
Sound Level (full load at 7m)		dB(A)	77.5		82.0		
Emergency Stop System		-	In case of abnormal: Oil pressure, water temperature, fan belt broken				
AMPS							
AMPS		A	72.7	66.7	85.5 x 2 /85.5	90.6/85.5	

■3 Phase Type

GENERATOR						
Model		Unit	J310			J313
			-STD	-AUS		-STD
Design			Salient-pole, revolving-field AC generator (AVR system with separate and self-excitation brush)			
Frequency		Hz	50			60
Rated Output (COP)		kVA	10	10	6	12.5
		kW	8	8	6	10
Rated Voltage		V	380	415	240	220
Phase & Wire		ϕ -w	3-4			
Power Factor		%	80	80	100	80
No. of Poles		-	2			
Insulation		-	Rotary coil: Class F, Stator coil: Class B			
Voltage Regulation		%	8 (No load to full load)			
Type of Coupling			Direct coupled			
DIESEL ENGINE						
Model			D722-B-SEC			
Design			Vertical, water-cooled, 4-cycle diesel engine			
No. of cylinders			3			
Bore x stroke		mm	ϕ 67 x 68			
Displacement		L	0.719			
Engine speed		rpm	3000			3600
Lubricating Oil			API service class CD or higher			
Oil capacity		L	3.4			
Coolant capacity		L	3.0			
SET						
Fuel			Diesel fuel No. 2 (ASTM D975)			
Fuel consumption (at full load)		L	3.2			4.2
Fuel tank capacity		L	37			
Continuous Operating Hours		hrs	11.5			8.5
Battery (V x Ah/5Hr)			55B24R (12V x 36Ah)			
Starting System			Electric			
L x W x H (with wheel)		mm	995 x 593 x 860 (1037)			
Approx Net Wt.		kg	255			
Output	Terminal	-	○	-		○
	Receptacle	-	-	○		-
Option	Caster	-	○			
Sound Level (full load at 7m)		dB(A)	75.0			76.5
Emergency Stop System		-	In case of abnormal: Oil pressure, water temperature			
AMPS						
AMPS		A	15.2	13.9	8.3 x 3	32.8

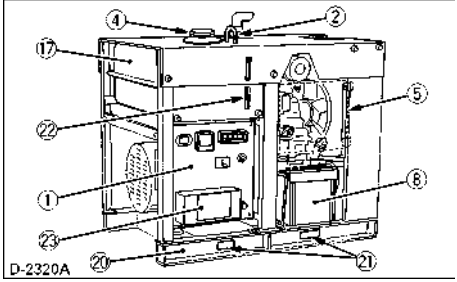
GENERATOR						
Model		Unit	J315			J318
			-STD	-AUS		-STD
Design			Salient-pole, revolving-field AC generator (AVR system with separate and self-excitation brush)			
Frequency		Hz	50			60
Rated Output (COP)		kVA	15	15	9	17.5
		kW	12	12	9	14
Rated Voltage		V	380	415	240	220
Phase & Wire		ϕ -w	3-4			
Power Factor		%	80	80	100	80
No. of Poles		-	2			
Insulation		-	Rotary coil: Class F, Stator coil: Class B			
Voltage Regulation		%	8 (No load to full load)			
Type of Coupling			Direct coupled			
DIESEL ENGINE						
Model			D1005-BG-SEC			
Design			Vertical, water-cooled, 4-cycle diesel engine			
No. of cylinders			3			
Bore x stroke		mm	ϕ 76 x73.6			
Displacement		L	1.001			
Engine speed		rpm	3000			3600
Lubricating Oil			API service class CD or higher			
Oil capacity		L	4.3			
Coolant capacity		L	3.3			
SET						
Fuel			Diesel fuel No. 2 (ASTM D975)			
Fuel consumption (at full load)		L	4.5			5.8
Fuel tank capacity		L	79			
Continuous Operating Hours		hrs	17.0			13.5
Battery (V x Ah/5Hr)			80D26R(S) (12V x 55Ah)			
Starting System			Electric			
L x W x H (with wheel)		mm	1215 x 611 x 922			
Approx Net Wt.		kg	340			
Output	Terminal	-	○	-		○
	Receptacle	-	-	○		-
Option	Caster	-	-			
Sound Level (full load at 7m)		dB(A)	76.5			81.0
Emergency Stop System		-	In case of abnormal: Oil pressure, water temperature, fan belt broken			
AMPS						
AMPS		A	22.8	20.9	12.5 x 3	45.9

GENERATOR						
Model		Unit	J320			J324
			-STD	-AUS		-STD
Design			Salient-pole, revolving-field AC generator (AVR system with separate and self-excitation brush)			
Frequency		Hz	50			60
Rated Output (COP)		kVA	20	20	10.8	23.5
		kW	16	16	10.8	18.8
Rated Voltage		V	380	415	240	220
Phase & Wire		ϕ -w	3-4			
Power Factor		%	80	80	100	80
No. of Poles		-	2			
Insulation		-	Rotary coil: Class F, Stator coil: Class B			
Voltage Regulation		%	8 (No load to full load)			
Type of Coupling			Direct coupled			
DIESEL ENGINE						
Model			V1305-BG-SEC			
Design			Vertical, water-cooled, 4-cycle diesel engine			
No. of cylinders			4			
Bore x stroke		mm	ϕ 76 x73.6			
Displacement		L	1.335			
Engine speed		rpm	3000			3600
Lubricating Oil			API service class CD or higher			
Oil capacity		L	5.7			
Coolant capacity		L	3.5			
SET						
Fuel			Diesel fuel No. 2 (ASTM D975)			
Fuel consumption (at full load)		L	6.0			7.5
Fuel tank capacity		L	79			
Continuous Operating Hours		hrs	13.0			10.5
Battery (V x Ah/5Hr)			80D26R(S) (12V x 55Ah)			
Starting System			Electric			
L x W x H (with wheel)		mm	1300 x 611 x 922			
Approx Net Wt.		kg	380			
Output	Terminal	-	○	-		○
	Receptacle	-	-	○		-
Option	Caster	-	-			
Sound Level (full load at 7m)		dB(A)	77.5			82.0
Emergency Stop System		-	In case of abnormal: Oil pressure, water temperature, fan belt broken			
AMPS						
AMPS		A	30.4	27.8	15 x 3	61.7

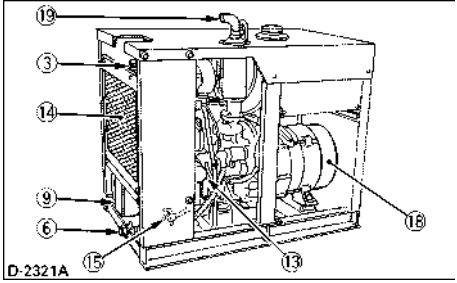
ENGLISH

NOMENCLATURE

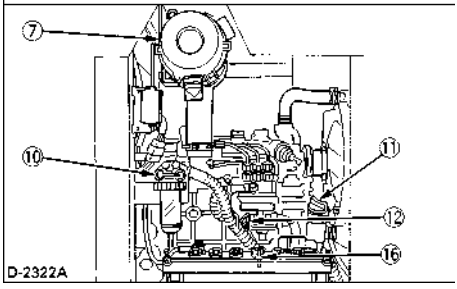
J106, J107, J108, J110, J310, J313



J106, J107, J108, J110, J310, J313

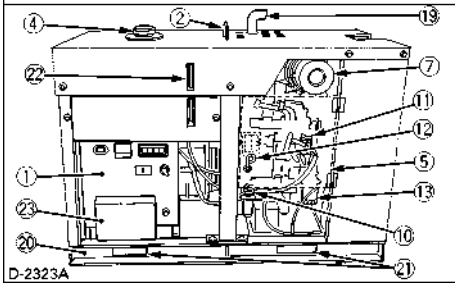


J106, J107, J108, J110, J310, J313

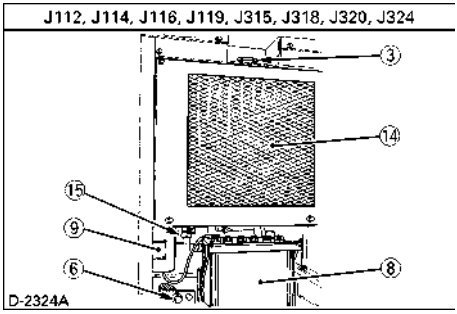


(1) Control panel
(2) Hook
(3) Coolant filling port
(4) Fuel tank cap
(5) Door
(6) Engine oil drain plug
(7) Air cleaner
(8) Battery
(9) Reserve tank
(10) Fuel cock
(11) Engine oil port
(12) Oil dipstick
(13) Oil filter cartridge
(14) Radiator
(15) Coolant drain plug (radiator)
(16) Coolant drain plug (engine)
(17) Fuel tank
(18) Generator
(19) Muffler
(20) Base
(21) Fork pockets
(22) Fuel gauge
(23) Terminal cover

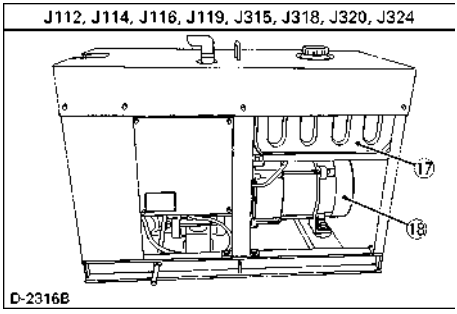
J112, J114, J116, J119, J315, J318, J320, J324



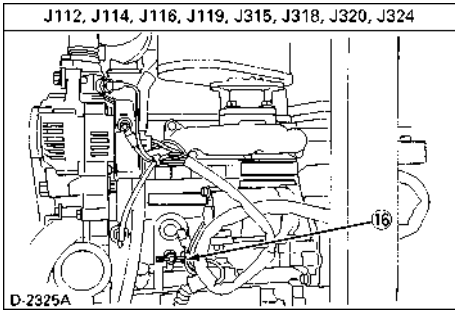
J112, J114, J116, J119, J315, J318, J320, J324



J112, J114, J116, J119, J315, J318, J320, J324



J112, J114, J116, J119, J315, J318, J320, J324



(1) Control panel
(2) Hook
(3) Coolant filling port
(4) Fuel tank cap
(5) Door
(6) Engine oil drain plug
(7) Air cleaner
(8) Battery
(9) Reserve tank
(10) Fuel cock
(11) Engine oil port
(12) Oil dipstick
(13) Oil filter cartridge
(14) Radiator
(15) Coolant drain plug (radiator)
(16) Coolant drain plug (engine)
(17) Fuel tank
(18) Generator
(19) Muffler
(20) Base
(21) Fork pockets
(22) Fuel gauge
(23) Terminal cover

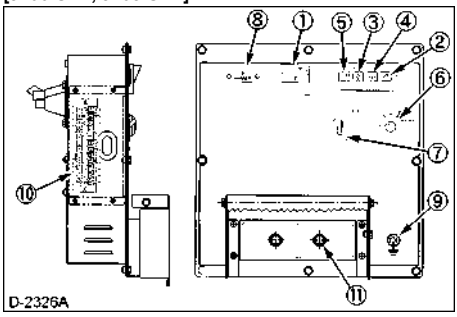
ENGLISH

■Control Panel

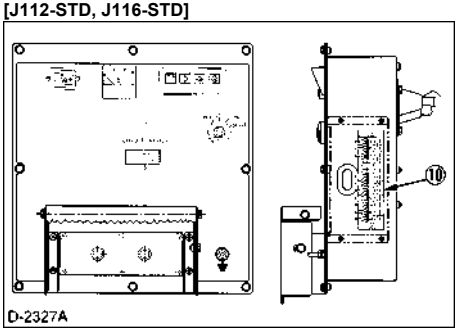
Standard Model

◆ 1 Phase Type (220V Type)

[J106-STD, J108-STD]



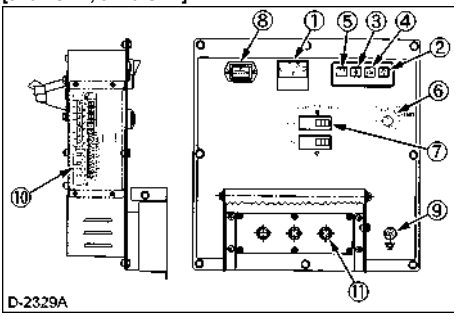
[J112-STD, J116-STD]



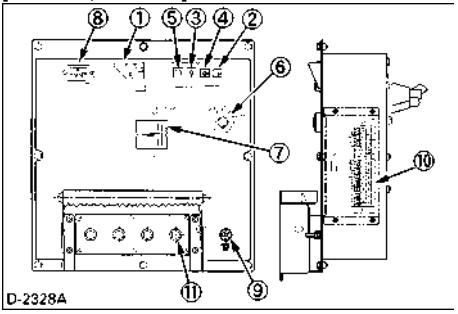
(1) A.C. Voltmeter
(2) Glow plug lamp
(3) Water temperature lamp
(4) Oil pressure lamp
(5) Battery charge lamp
(6) Main switch (key)
(7) Circuit breaker
(8) Hour meter
(9) Ground terminal
(10) Terminal (Autostart unit)
(11) Terminals (output)

◆ 1 Phase Type (110V/220V Dual voltage type)

[J107-STD, J110-STD]



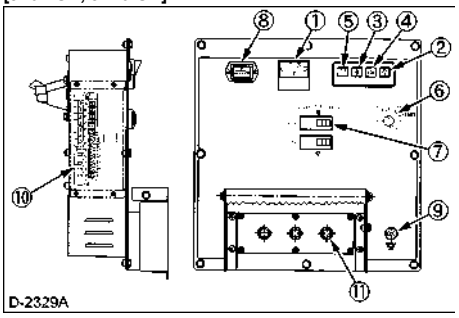
[J114-STD, J119-STD]



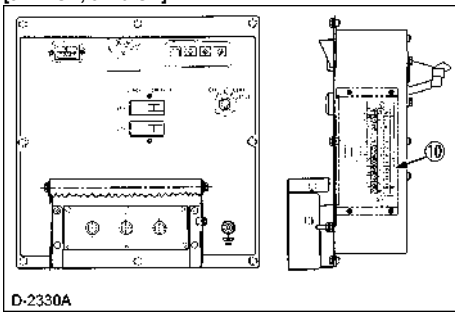
(1) A.C. Voltmeter
(2) Glow plug lamp
(3) Water temperature lamp
(4) Oil pressure lamp
(5) Battery charge lamp
(6) Main switch (key)
(7) Circuit breaker
(8) Hour meter
(9) Ground terminal
(10) Terminal (Autostart unit)
(11) Terminals (output)

◆ **1 Phase Type (127V/220V Dual voltage type)**

[J107-SA, J110-SA]



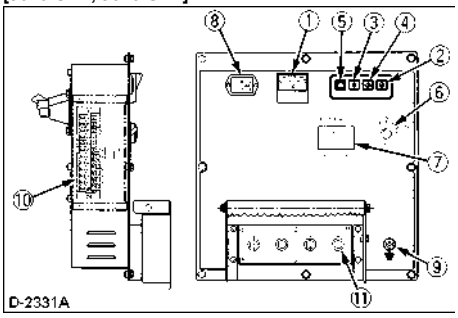
[J114-SA, J119-SA]



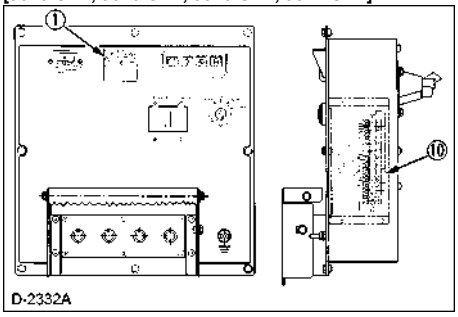
(1) A.C. Voltmeter
(2) Glow plug lamp
(3) Water temperature lamp
(4) Oil pressure lamp
(5) Battery charge lamp
(6) Main switch (key)
(7) Circuit breaker
(8) Hour meter
(9) Ground terminal
(10) Terminal (Autostart unit)
(11) Terminals (output)

◆ **3 Phase Type**

[J310-STD, J313-STD]



[J315-STD, J318-STD, J320-STD, J324-STD]



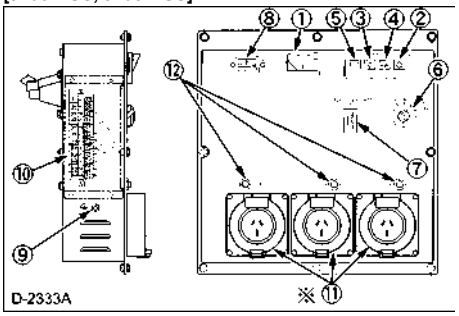
(1) A.C. Voltmeter
(2) Glow plug lamp
(3) Water temperature lamp
(4) Oil pressure lamp
(5) Battery charge lamp
(6) Main switch (key)
(7) Circuit breaker
(8) Hour meter
(9) Ground terminal
(10) Terminal (Autostart unit)
(11) Terminals (output)

ENGLISH

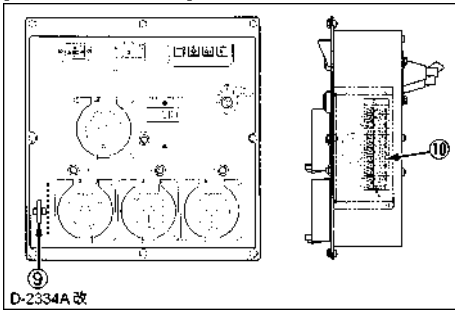
AUS Model

◆ **1 Phase Type**

[J106-AUS, J108-AUS]



[J112-AUS, J116-AUS]

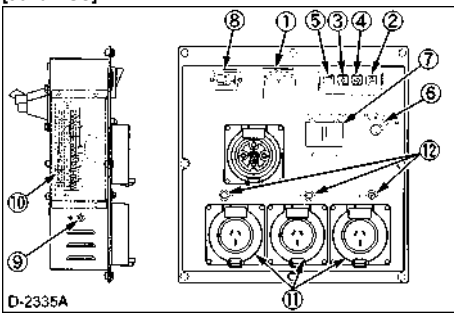


※The J106-AUS is equipped with 2 receptacles.

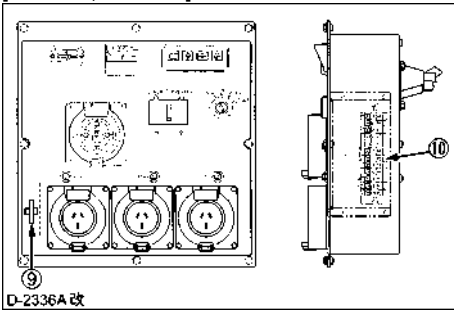
(1) A.C. Voltmeter
(2) Glow plug lamp
(3) Water temperature lamp
(4) Oil pressure lamp
(5) Battery charge lamp
(6) Main switch (key)
(7) Circuit breaker
(8) Hour meter
(9) Ground terminal
(10) Terminal (Autostart unit)
(11) Receptacles
(12) Circuit protector (Receptacle)

◆ **3 Phase Type**

[J310-AUS]



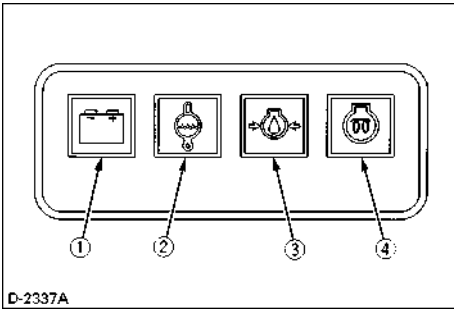
[J315-AUS, J320-AUS]



(1) A.C. Voltmeter
(2) Glow plug lamp
(3) Water temperature lamp
(4) Oil pressure lamp
(5) Battery charge lamp
(6) Main switch (key)
(7) Circuit breaker
(8) Hour meter
(9) Ground terminal
(10) Terminal (Autostart unit)
(11) Receptacles
(12) Circuit protector (Receptacle)

■Easy Checker

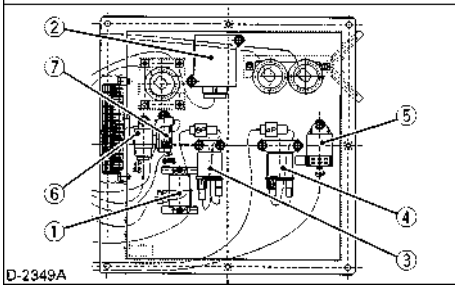
When an abnormal condition occurs with a part monitored by the easy checker while the engine is running, a lamp flashes to warn the operator of the impending trouble.



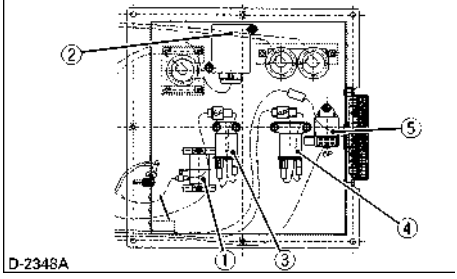
(1) Charge warning lamp
(2) Water temperature-overheat warning lamp, flashes on when cooling water rises to 112° to 118°C.
(3) Engine oil pressure drop warning lamp, flashes on below 39 to 59 kPa (0.4 to 0.6 kgf/cm²) oil pressure.
(4) Glow plug lamp

■Control Box

J106, J107, J108, J110, J310, J313



J112, J114, J116, J119, J315, J318, J320, J324



(1) Excitation unit
(2) Emergency relay
(3) Starter relay
(4) Glow relay
(5) Glow lamp timer
(6) Relay
(7) Relay (Solenoid)

PREPARATION TO SUPPLY THE ELECTRIC POWER

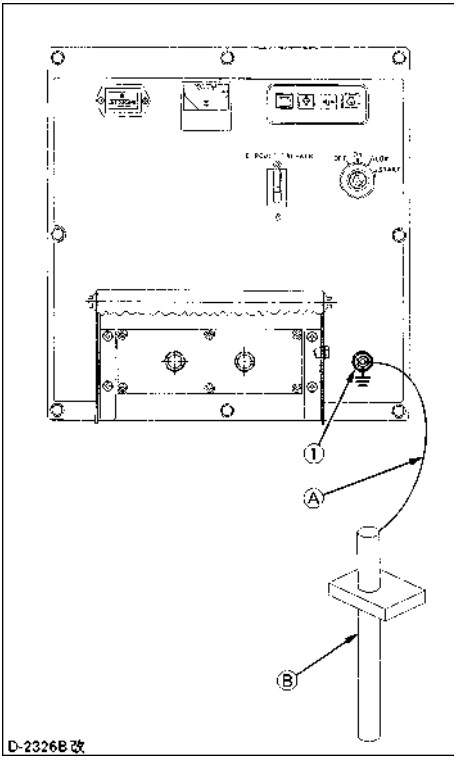
1. Generator grounding

The end user, equipment owner or operator must contact his local, state, county or municipal electric code department to determine the approved generator grounding method to be used in his application or location.

Recommendations in the NEC (National Electrical Code), NFPA (National Fire Protection Association), AUSTRALIAN STANDARDS and OSHA (Occupational Safety and Health Administration) regulations must be followed to assure compliance and safe operation.

Always be sure to ground (earth) the generator terminals to comply with the local, state, national or OSHA requirements.

One possible connection method for construction site use is as follows:



(1) Generator ground terminal (A) #6AWG Flexible copper ground connection
(B) Metal ground rod or building cold water pipe system per N.E.C. code

2. Recommended capacity of electrical devices

APPLICATION RANGE

You can operate the J-series generator in the following range.

Typical Apparatus	 Light and heaters	 Commutator motor	 Induction motor
J106	5.5 kW	2.8 kW	0.8 kW
J107	6.5 kW	3.3 kW	0.8 kW
J108	8 kW	4.0 kW	1.2 kW
J110	10 kW	5.0 kW	1.6 kW
J112	12 kW	6.0 kW	1.6 kW
J114	14 kW	7.0 kW	2 kW
J116	16 kW	8.0 kW	2.4 kW
J119	18.8 kW	9.4 kW	2.4 kW
J310	8 kW	5.0 kW	3.7 kW
J313	10 kW	6.3 kW	3.7 kW
J315	12 kW	7.5 kW	4.4 kW
J318	14 kW	8.8 kW	5.5 kW
J320	16 kW	10.0 kW	5.9 kW
J324	18.8 kW	11.8 kW	7.4 kW

NOTE :

- Keep an inverter load below 50% of the generator capacity.
- Make sure that total active mercury lamp load is below 30% or so of the generator capacity. Turn on the mercury lamps one by one. Be careful not to turn off the lamps and on again immediately. The generator voltage may rise to extremely high levels and the AVR may get damaged.
- Before turning on the lamps again, wait for 10 minutes or so until the lamps cool down enough.
- The data shown above is only a guideline to approximate load capacities and may vary from generator model to generator model, with different types of loads at rated outputs. These values may be different from actual applications because of the input characteristics peculiar to each load.

- **Connecting a motor.**
  When connecting to a line starting motor, these generators may be used to start a submerged pump of 3.7kW, 5.5kW, 7.5kW (three phase). When starting the motor, the voltage drops immediately. The circuit may be opened if an electromagnetic switch is connected to the same circuit. When connecting two motors or more, make sure the total current capacity of the motors does not exceed the total rated current.
- **Connecting to lights and electric heaters.**
  When connecting to lights or electric heaters, the generator can be used up to the rated capacity. When using a single phase, it can be used up to the rated current.
- **Power factor calculations.**
  The power factor calculation is used to determine input of the electrical devices.

AC devices
Electric power (W)
= Voltage (V) × Current (A) ÷ Power factor

Power factors of commonly used devices are listed in the following table.

Load type	Power factor
Single-phase induction motors	0.4 to 0.75
3-phase induction motors	0.65 to 0.85
Electric heaters, incandescent lamps	1.0
Commutator motor	0.8 to 0.95
Fluorescent lamps, mercury lamps	0.4 to 0.9
AC arc welder	0.4 to 0.6

- Ordinarily, a motor is rated in kW. This does not refer to motor output.

$$\text{Motor input (kVA)} = \frac{\text{Motor output (kW)}}{\text{Motor efficiency} \times \text{power factor}}$$

NOTE :

- If a lighting system is employed together with some types of computers and inverter air-conditioners and/ or the regulated power supply for TV sets, the lights might suffer flickering. This phenomenon does not indicate a fault of the generator: it is caused by poor matching between the above-mentioned regulated power supply and the generator's automatic voltage regulator. In such a case, modify the load combination to eliminate the flickering.

CONNECTING THE LOAD

■Connection Notes

WARNING

To avoid personal injury:

- **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.**

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

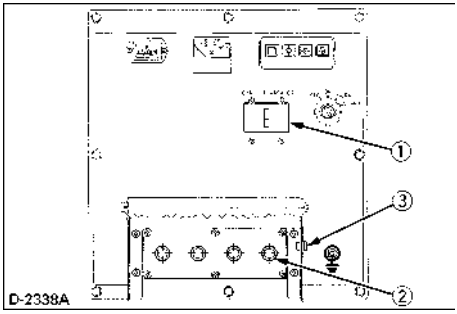
■Connecting the Load (Standard Model)

WARNING

To avoid personal injury:

- **Connect or disconnect the load to the AC receptacles or terminals only when the engine is stopped.**
- **For your safety, close the terminal cover after connecting the load.**
- **For your safety, secure the cover with the lock bolts.**

1. Turn OFF the circuit breaker on the control panel.
2. Connect the load to the A.C. output terminals.
3. Be sure to close the terminal cover after connecting the load.

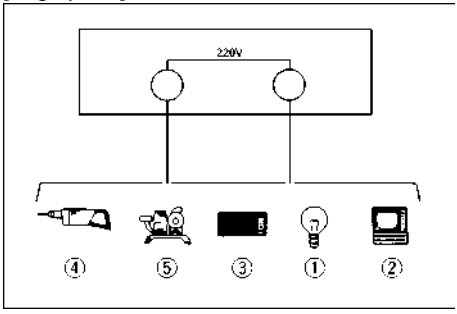


(1) Circuit breaker
(2) Terminals (output)
(3) Cover lock bolt

◆ **Single phase 2 terminals type**

i) J106-STD, J108-STD, J112-STD, J116-STD
50Hz 220V

[Single phase]



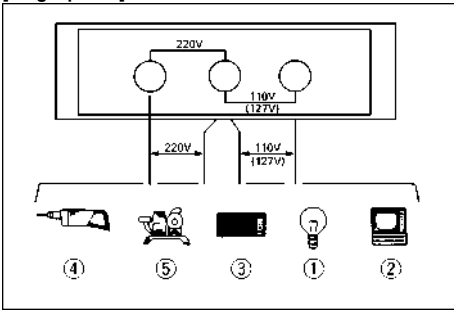
(1) Light
(2) Television
(3) Air conditioner
(4) Electric drill
(5) Motor pump

◆ **Single phase 3 terminals type (1P3W type) (Dual voltage type)**

i) J107-STD, J110-STD
60Hz 110/220V

ii) J107-SA, J110-SA, J114-SA, J119-SA
60Hz 127/220V

[Single phase]

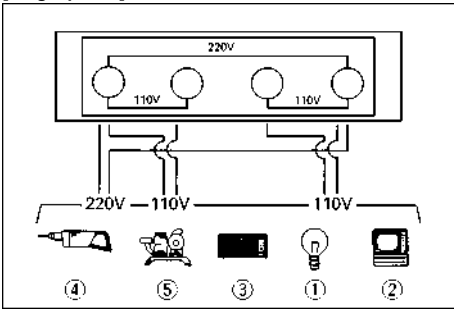


(1) Light
(2) Television
(3) Air conditioner
(4) Electric drill
(5) Motor pump

◆ **Single phase 4 terminals type (1P4W type) (Dual voltage type)**

i) J114-STD, J119-STD
60Hz 110/220V

[Single phase]



(1) Light
(2) Television
(3) Air conditioner
(4) Electric drill
(5) Motor pump

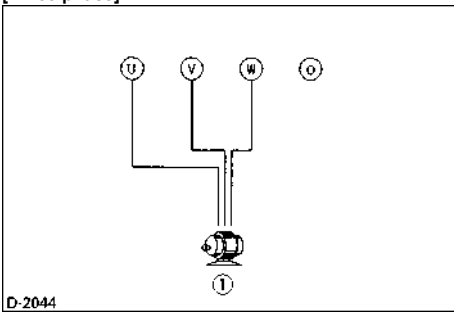
◆ **3 phase and single phase 4 terminals type**

● **For 3 phase power source**

i) J310-STD, J315-STD, J320-STD
50Hz 380V Use (W)-(V)-(U)

ii) J313-STD, J318-STD, J324-STD
60Hz 220V Use (W)-(V)-(U)

[Three phase]



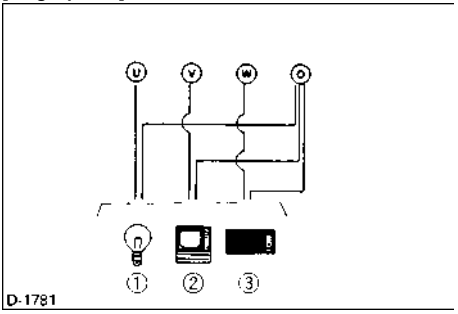
(1) Motor

● **For single phase power source**

i) J310-STD, J315-STD, J320-STD
50Hz 220V Use (O)-(U), (O)-(V), (O)-(W)

ii) J313-STD, J318-STD, J324-STD
60Hz 127V Use (O)-(U), (O)-(V), (O)-(W)

[Single phase]

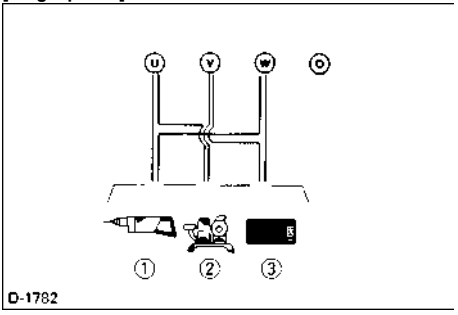


(1) Light
(2) Television
(3) Air conditioner

● **For single phase power source**

i) J310-STD, J315-STD, J320-STD
50Hz 380V single phase Use (U)-(V), (V)-(W), (W)-(U)
ii) J313-STD, J318-STD, J324-STD
60Hz 220V single phase Use (U)-(V), (V)-(W), (W)-(U)

[Single phase]



(1) Electric drill
(2) Motor pump
(3) Air conditioner

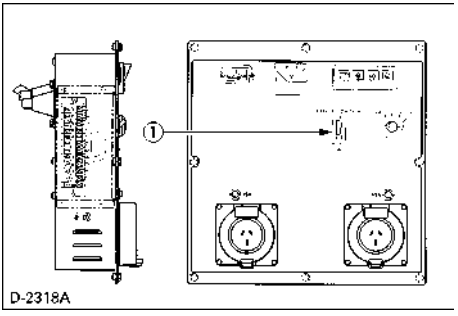
■Connecting the Load (AUS Model)

WARNING

To avoid personal injury:

- **Connect or disconnect the load to the AC receptacle only when the engine is stopped.**

1. Turn OFF the circuit breakers on the control panel.



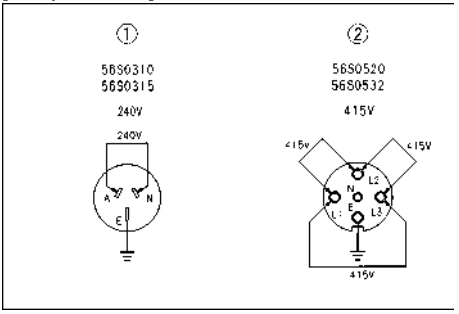
(1) Circuit breaker

2. Connect the load to the A.C. receptacles.

[A list of receptacles]

	Single Phase		3 Phase	
Model	56S0315	56S0310	56S0520	56S0532
J106-AUS	2	0	0	0
J108-AUS	3	0	0	0
J112-・J116-AUS	4	0	0	0
J310-AUS	0	3	1	0
J315-・J320-AUS	3	0	0	1

[Receptacles use]



(1) Single phase
(2) 3 phase

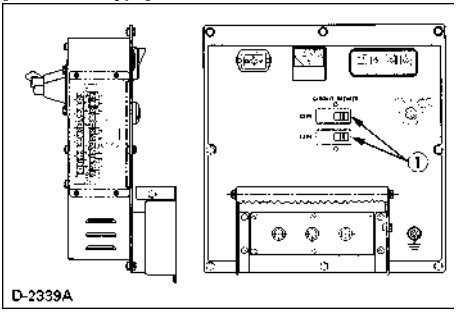
HANDLING THE CIRCUIT BREAKER

◆ **Single phase (3 terminals - Dual voltage type)**

Panel control is designed to have the two A.C. circuit breaker.

Turn ON the same voltage number circuit breaker as using the A.C. voltage.

[3 terminals type]



(1) Circuit breaker

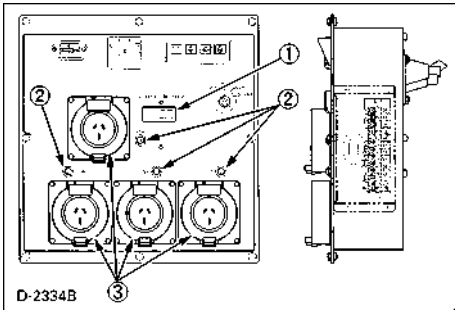
IMPORTANT :

- Do not add the A.C. load directly, using the circuit breaker.
- The simultaneous generation of 220V power source and 110V (or 127V) power source is possible but the total load should not exceed the following rated output.

■Handling the Circuit Breaker (Protector) (Australian model)

Each of the receptacles is provided with an over-current circuit protector.

If any of the circuit protectors is activated and the current flow is interrupted, stop the engine and check the load.



(1) Circuit breaker (Main)
(2) Circuit protector (Receptacle)
(3) Receptacles

◆ **Resetting the Circuit Protector**

1. If an over-current occurs, the center knob of the circuit protector pops up.
2. Press down the knob to reset the circuit protector.

WARNING

To avoid personal injury:

- **Before resetting the circuit protector, be sure to stop the engine. An attempt to reset it with the engine running is very dangerous.**

ENGLISH

PRE-OPERATION CHECK

DAILY CHECK

To prevent problems from occurring, it is important to know the condition of the generator. Always perform the following check items before starting the generator.

⚠ CAUTION

To avoid personal injury:

- **Before checking or servicing the generator, make sure it is on a level surface with the engine shut off.**

◆ **Check items**

-Check for oil and coolant leakage
-Check cooling air inlet and outlet for obstructions or clogging
-Check radiator fins for clogging
-Check fan belt tension
-Check engine oil level
-Check coolant level
-Check generator grounding
-Refuel
(See “FUEL” in “PERIODIC SERVICE” section.)
-Care of danger, warning and caution labels
(See "DANGER, WARNING AND CAUTION LABELS" in "⚠SAFE OPERATION" section.)

⚠ CAUTION

To avoid personal injury from contact with moving parts;

- **DO NOT open the door or generator side cover while the engine is running.**
- **Do not touch muffler or exhaust pipes while they are hot; Severe burns could result.**

■Battery

The battery is shipped in dry, charged condition without electrolyte.
The battery must be charged properly before using for the first time.

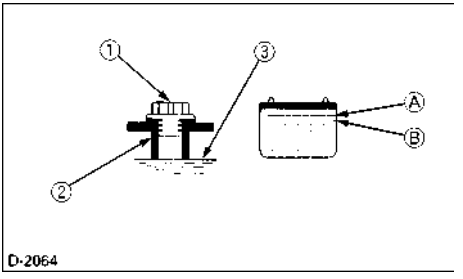
⚠ DANGER

To avoid the possibility of battery explosion:

The battery comes in two types: refillable and non-refillable. For using the refillable type battery, follow the instructions below.

- **DO NOT use or charge the battery if the fluid level is below the LOWER (lower limit level) mark.**
  Otherwise, the battery component parts may deteriorate prematurely, shorten the battery's service life; which may cause an explosion.
  Immediately, add distilled water until the battery's fluid level comes somewhere between the UPPER and LOWER levels.
- **Keep all sparks and flames away from the battery and fuel tank. A battery, especially when charging, will give off hydrogen and oxygen gases which can explode and cause serious personal injury.**

1. Remove the vent plugs.
2. Fill cells up to the upper level with electrolyte.
   [Specific gravity of sulfuric acid 1.270 to 1.290 (at 20°C=68°F)]
3. Allow the battery to sit for about one hour after filling.
4. If the electrolyte level is dropped, refill with electrolyte up to the upper level.
5. Replace the vent plugs.
6. Charge the battery at the normal charging rate of 6.0 amperes.
7. Wash off any electrolyte which may have spilled.



(1) Vent plug opening
(2) Electrolyte level indication tube
(3) Indicated level
(A) Upper level
(B) Lower level

NOTE :
- The duration of dry charged efficiency, will decrease in proportion to the period of time elapsed after shipment and during storage. To obtain the longest service life of the battery, it is necessary for the battery to be charged for a sufficient period of time. Continue to charge until all cells are gassing freely, and the voltage and specific gravity reading in all cells remain constant for 3 or more successive readings taken at 30 minute intervals.
- When the battery has been charged fully, the specific gravity of electrolyte should be 1.270 to 1.290 (at 20°C =68°F).

■Engine Oil

The generator has been shipped without engine oil. Fill with oil to the correct level before attempting to start the engine.

1. Place the machine on a level surface.
2. Remove the oil cap.
3. Add engine oil of grade CD or higher, up to the upper mark on the oil level gauge.

NOTE :
- See "ENGINE OIL" in "PERIODIC SERVICE" section for engine oil capacity and checking engine oil level.

■Coolant

CAUTION

To avoid personal injury:
- **Place the machine on a level surface.**
- **DO NOT remove the radiator cap while coolant is hot. When cool, rotate the radiator cap slowly to the first stop to allow excess pressure to escape. Then remove cap completely.**

1. Remove the radiator cap and fill with specified coolant until the coolant level is just below the port.
2. Fill with coolant to the “FULL” mark on the reserve tank.
3. Securely tighten radiator cap and reserve tank cap.

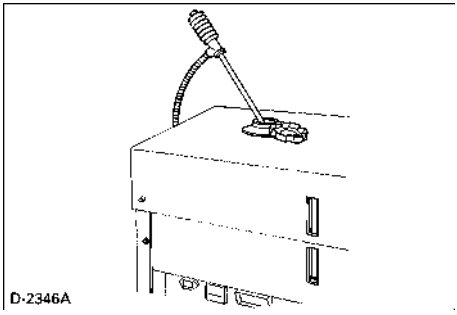
NOTE :
- See "RADIATOR" in "PERIODIC SERVICE" section for changing coolant.

■Fuel

WARNING

To avoid personal injury:
- **DO NOT refuel when engine is running or hot.**
- **Always shut off the engine before refueling.**
- **DO NOT overfill fuel system. If any fuel overflows, wipe it up completely before starting operation.**
- **When refueling, keep all flames, sparks and cigarettes away from generator.**

1. Always fill the fuel through the fuel tank strainer.
2. Make sure that dirt or water does not enter the fuel tank.
3. Fill with Diesel fuel No.2-D (ASTMD975).
4. Below 0°C (32°F) a mix of No.1-D and No.2-D is acceptable.
5. Fuel level is read by fuel gauge.



NOTE :
- If the fuel tank should empty completely causing the engine to stop, then the fuel system requires air bleeding after filling the tank and before restarting the engine.
  (See "Air Bleeding the Fuel System" in "PERIODIC SERVICE" section.)

OPERATING THE GENERATOR

⚠ CAUTION

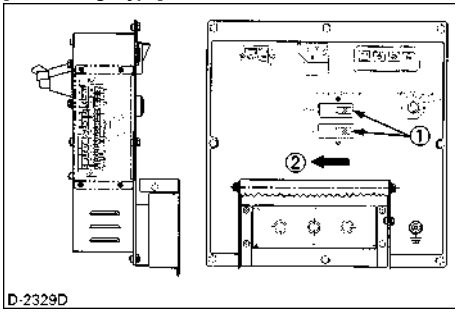
To avoid personal injury:

- **Read "⚠SAFE OPERATION" in the front of this manual.**
- **Read the danger, warning and caution labels located on the generator.**
- **To avoid the danger of exhaust fume poisoning, do not operate the engine in a closed building without proper ventilation.**
- **Always turn OFF the circuit breaker before starting the generator.**
- **Turn OFF all switches on the electrical devices.**
- **Check the wiring and connections of the electrical devices before starting the machine.**
- **DO NOT touch the live parts during operation.**

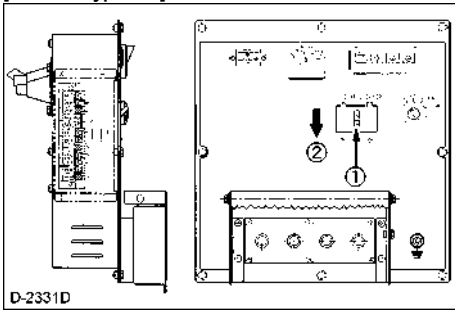
■Starting the Engine

1. **Turn off all switches on the electrical devices.**
2. **Turn off the circuit breakers on the control panel.**

[Dual voltage type]

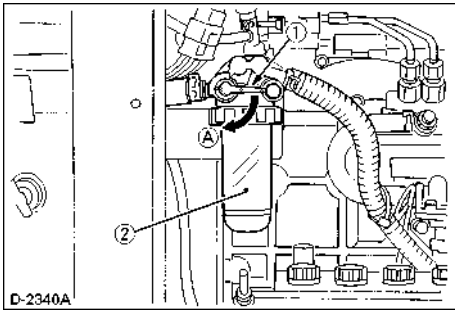


[3 Phase type etc.]



(1) Circuit breaker
(2) "OFF"

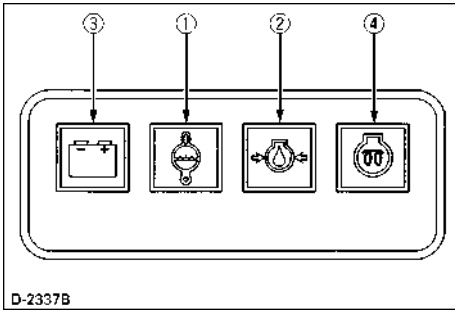
3. Ensure that the fuel lever is set to the "OPEN" Position.



(1) Fuel lever *(A) "OPEN"*
(2) Water separator

4. Insert the key into the main switch and turn it "ON".

5. Check the battery charge lamp and oil pressure lamp are "ON".



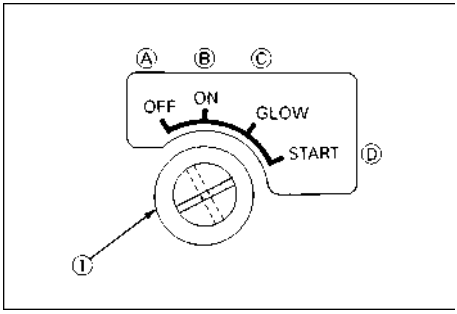
(1) Water temperature lamp
(2) Oil pressure lamp
(3) Battery charge lamp
(4) Glow timer lamp

IMPORTANT :
- Do not use ether or any starting fluid for starting the engine, or severe engine damage will occur.
- When there is a severe overload or short circuit in the wiring of the generator, the circuit breaker turns OFF. If this happens, eliminate the cause and then turn the circuit breaker ON again.

6. Turn the key to "GLOW" position.

NOTE :
- See "Cold Weather Starting" section as to the preheating times.

7. Turn the key to the "START" position and release when the engine starts.



(1) Main switch (Key) *(A) "OFF"*
(B) "ON"
(C) "GLOW"
(D) "START"

IMPORTANT :
- Do not run the starter motor continuously for more than 10 seconds at a time, or it may damage the starter. If the engine fails to start, wait for about 30 seconds and try again.

8. Check to see that the battery charge lamp, oil pressure lamp and water temperature lamp are "OFF".

9. Check the warning lamps.

Whenever the engine stops automatically during operation, correct the problem before restarting the engine.

10. For 5 minutes after engine start-up, allow engine to warm up without applying any load.

IMPORTANT :
- If load should be applied to the engine without this warm-up period, trouble such as seizure, breakage or premature wear may develop.

◆ **Warm-up in cold ambient temperatures**

In cold weather, the engine oil may be cold with increased viscosity. This can delay oil circulation or abnormally low oil pressure for some time after engine start-up. This can result trouble in the lubrication circuit or damage to the engine moving parts.

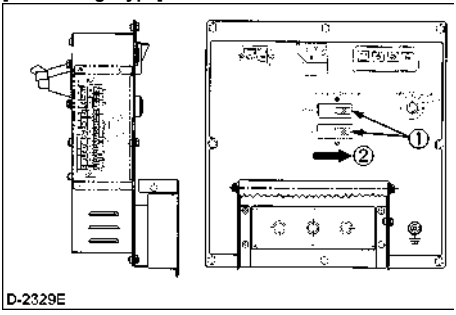
To prevent the above problems, perform the following instructions:

Warm up the engine at rated revolution with no load.

Ambient temperature	Warm-up time requirement
Above 0℃ (32℉)	At least 10 minutes
0℃(32℉) to -10℃(14℉)	10 to 20 minutes
Below -10℃ (14℉)	More than 20 minutes

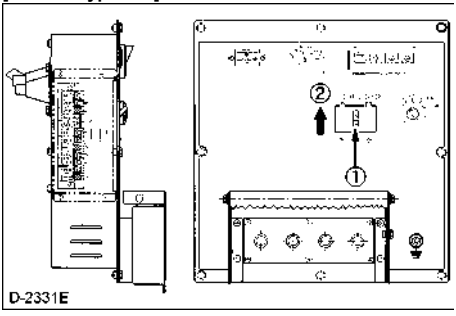
11. Turn ON the circuit breaker on the control panel.

[Dual voltage type]



D-2329E

[3 Phase type etc.]



D-2331E

(1) Circuit breaker
(2) "ON"

12. Turn ON the electrical device switches for the connections.

■Cold Weather Starting

If the ambient temperature is below * -5℃ (23℉) and the engine is very cold, start it in the following manner:

Take steps (1) through (5) in "Starting the Engine" section.

6. Turn the main switch (key) to the "GLOW" position until the glow plug indicator goes off.

NOTE :

- If the ambient temperature is low, the preheating time will take longer.

IMPORTANT :

- Shown below are the standard preheating times for various temperatures. This operation, however, is not required, when the engine is warmed up.

Ambient temperature	Preheating time
Above 10 C (50℉)	NO NEED
10℃ (50℉) to -5℃ (23℉)	Until glow lamp goes off
*Below -5℃ (23℉)	Approx. 5 seconds after the glow lamp goes off
Limit of continuous use	20 seconds

7. Turn the key to "ST" ("START") position and the engine should start.

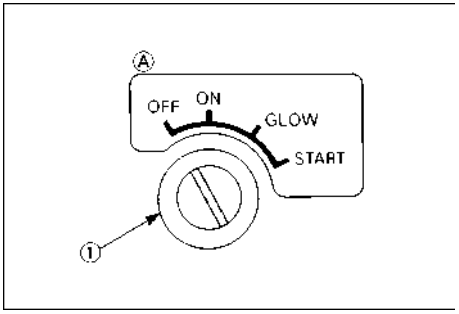
(If the engine fails to start after 10 seconds, turn off the key for 30 seconds. Then repeat steps (6) and (7) above.)

IMPORTANT :

- Do not allow the starter motor to run continuously for more than 10 seconds.
- Be sure to warm up the engine, not only in winter, but also in warmer seasons. An insufficiently warmed-up engine can shorten its service life.
- When there is possibility of temperature drops below -15℃ (5℉) detach the battery from the machine, and keep it indoor in a safe area. Reinstalled the battery before the next operation.

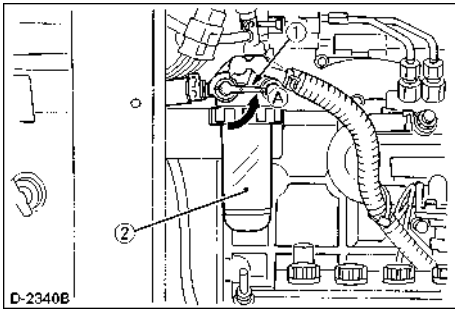
■Stopping the Engine

1. **Turn OFF all electrical device switches for connected loads.**
2. **Turn OFF the circuit breakers.**
3. **Allow the engine to run with no load for about 5 minutes before stopping the engine completely.**
4. **Turn the main switch (key) to the "OFF" position.**



(1) Main switch (Key) *(A) "OFF"*

5. **Turn the fuel lever to the "CLOSE" position.**



(1) Fuel lever *(A) "CLOSE"*
(2) Filter bowl

■If the Engine Fails to Stop in the Usual Procedure (EMERGENCY STOP)

If the engine does not stop after turning the key switch to "OFF" position, take the following (emergency stop) procedure.

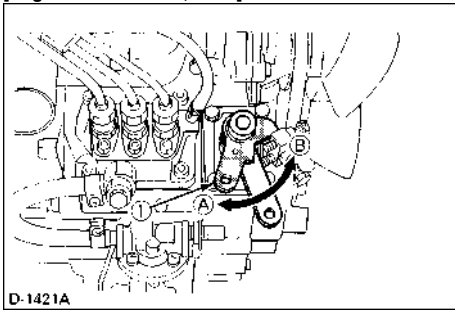
CAUTION

To avoid personal injury:

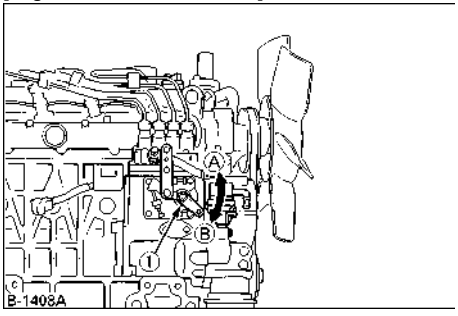
- **Keep your hands away from the rotating parts, such as cooling fan and V-belt. Otherwise personal injury may be caused when manipulating the engine stop lever.**

1. Open the door, using the door knob.
2. Turn the engine stop lever to "STOP" direction and hold it for 5 to 10 seconds to shut off the engine.

[Engine model : Z482, D722]



[Engine model : D1005, V1305]



(1) Engine stop lever *(A) "START"*
(B) "STOP"

3. After stopping the engine, make sure that the door is closed and the main switch (key) is at "OFF".
4. The following causes are possible for such unusual engine shut-off.
   Pinpoint and correct the cause of trouble.
   - Check for the stop solenoid.
   - Check to see if the battery has discharged too much or is in trouble.
   - Check for disconnection of the battery terminals.

MAINTENANCE

SERVICE INTERVALS

Observe the following for service and maintenance.

No.	Check point	Interval						Ref. page	
		First 50 hours	Every 50 hours	Every 100 hours	Every 200 hours	Every 400 hours	Every 500 hours		
1	Check of fuel pipes and clamp bands		○					31	
2	Change of engine oil	◎		○				33	◎
3	Cleaning of air cleaner element			○				34, 35	*1
4	Check of battery electrolyte level	○		○				39	
5	Check of fan belt tightness			○				45	
6	Check of radiator hoses and clamp bands				○			38	
7	Replacement of oil filter cartridge	◎			○			34	◎
8	Replacement of fuel filter cartridge or element					○		31	
9	Cleaning of water jacket (radiator interior)						○	38	
10	Replacement of fan belt							45	
11	Check of valve clearance							-	
12	Check of generator carbon brush Replace if necessary.							42	*2
13	Replacement of air cleaner element							34, 35	*3
14	Check of damage in electric wiring and loose connections							41	
15	Replacement of fuel pipes and clamp bands							31	*4
16	Replacement of radiator hoses and clamp bands							38	
17	Replacement of battery							39	
18	Change of radiator coolant (L.L.C.)							37	

IMPORTANT :

- The jobs indicated by ◎ must be done after the first 50 hours of operation.

*1 Air cleaner should be cleaned more often in dusty conditions than in normal conditions.

*2 Generator carbon brush should be checked more often in dusty conditions than in normal conditions.

*3 After 6 times of cleaning.

*4 Consult your local KUBOTA Dealer for this service.

- When the battery is used for less than 100 hours in a year, check its electrolyte yearly. (for refillable battery's only)

No.	Check point	Interval				Ref. page	
		Every 800 hours	Every 1000 hours	Every 1 year	Every 2 year		
1	Check of fuel pipes and clamp bands					31	
2	Change of engine oil					33	◎
3	Cleaning of air cleaner element					34, 35	*1
4	Check of battery electrolyte level					39	
5	Check of fan belt tightness					45	
6	Check of radiator hoses and clamp bands					38	
7	Replacement of oil filter cartridge					34	◎
8	Replacement of fuel filter cartridge or element					31	
9	Cleaning of water jacket (radiator interior)					38	
10	Replacement of fan belt	○				45	
11	Check of valve clearance	○				-	
12	Check of generator carbon brush Replace if necessary.		○			42	*2
13	Replacement of air cleaner element			○		34, 35	*3
14	Check of damage in electric wiring and loose connections			○		41	
15	Replacement of fuel pipes and clamp bands				○	31	*4
16	Replacement of radiator hoses and clamp bands				○	38	
17	Replacement of battery				○	39	
18	Change of radiator coolant (L.L.C.)				○	37	

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- When the battery is used for less than 100 hours in a year, check its electrolyte yearly. (for refillable battery's only)

PERIODIC SERVICE

FUEL

Fuel is flammable and can be dangerous. You should handle fuel with care.

CAUTION

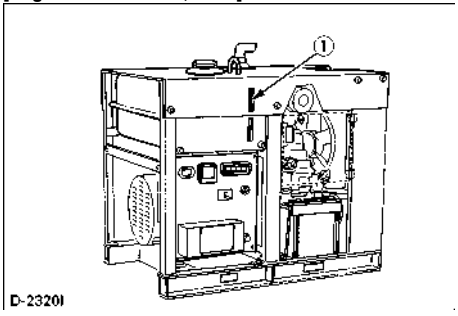
To avoid personal injury:

- **DO NOT mix gasoline or alcohol with diesel fuel. This mixture can cause an explosion.**
- **Be careful not to spill fuel during refueling. If fuel should spill, wipe it off at once, or it may cause a fire.**
- **Stop the engine before refueling. Keep the machine away from the fire.**
- **Be sure to stop the engine while refueling or bleeding and when cleaning or changing fuel filter or fuel pipes. DO NOT smoke when working around the machine or when refueling.**
- **Check the above fuel systems in a well ventilated and open place.**
- **When fuel and lubricant are spilled, refuel after the machine cooled down.**

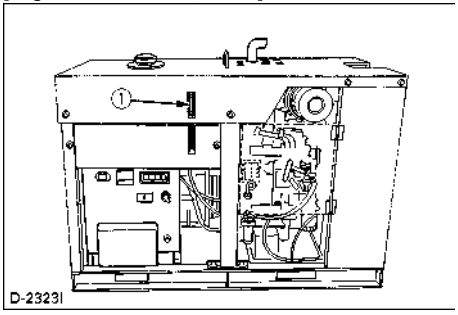
■Fuel Level Check and Refueling

1. Check to see that the fuel level is above the lower limit of the fuel level gauge.
2. If the fuel is too low, add fuel to the upper limit. Do not overfill.

[Engine model : Z482, D722]



[Engine model : D1005, V1305]



(1) Fuel level gauge

No.2-D is a distillate fuel oil of lower volatility for engines in industrial and heavy mobile service.
(SAE J313 JUN87)
Grade of Diesel Fuel Oil According to ASTM D975

Flash Point, °C (°F)	Water and Sediment, volume %	Carbon Residue on, 10 percent Residuum, %	Ash, weight %
Min	Max	Max	Max
52 (125)	0.05	0.35	0.01

Distillation Temperatures, °C (°F) 90% Point		Viscosity Kinematic cSt or mm $^2/_s$ at 40°C		Viscosity Sayboit, SUS at 100°F		Sulfur, weight %	Copper strip Corrosion	Cetane Number
Min	Max	Min	Max	Min	Max	Max	Max	Min
282 (540)	338 (640)	1.9	4.1	32.6	40.1	0.50	No.3	40

The cetane number is required not to be less than 45.

IMPORTANT :
- Be sure to use a strainer when filling the fuel tank, or dirt or sand in the fuel may cause trouble in the fuel injection pump.
- Always use diesel fuel. You are required not to use alternative fuel, because its quality is unknown and affect the generator performance. Kerosene, which is very low in cetane rating, adversely affects the engine. Diesel fuel differs in grades depending on the temperature.
- Be careful not to let the fuel tank become empty, or air can enter the fuel system, necessitating bleeding before next engine start.

Fuel tank capacity L (U.S.gal.)

Model	Capacity
J106, J107 [Engine model : Z482-B] J108, J110, J310, J313 [Engine model : D722-B]	37 (9.8)
J112, J114, J315, J318 [Engine model : D1005-BG] J116, J119, J320, J324 [Engine model : V1305-BG]	79 (20.9)

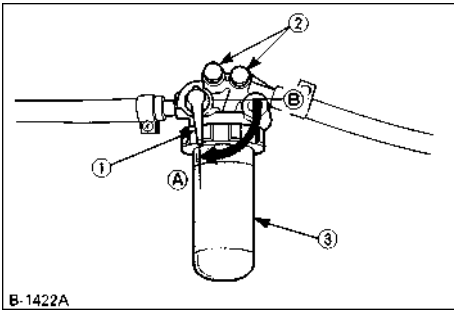
■Air Bleeding the Fuel System

CAUTION

To avoid personal injury;
- **Do not bleed a hot engine as this could cause fuel to spill onto a hot exhaust manifold creating a danger of fire.**

Air bleeding of the fuel system is required if;
- after the fuel filter and pipes have been detached and refitted;
- after the fuel tank has become empty; or
- before the engine is to be used after long storage.

[PROCEDURE]
1. Fill the fuel tank to the fullest extent. Open the fuel filter cock.
2. Loosen air vent plug of the fuel filter a few turns.
3. Screw back the plug when bubbles do not come up any more.
4. Open the air vent plug on top of the fuel injection pump.
5. Retighten the plug when bubbles do not come up any more.



(1) Fuel filter cock
(2) Air vent plug
(3) Fuel filter pot
(A) "OPEN"
(B) "CLOSE"

■Checking the Fuel Pipes

CAUTION

To avoid personal injury:

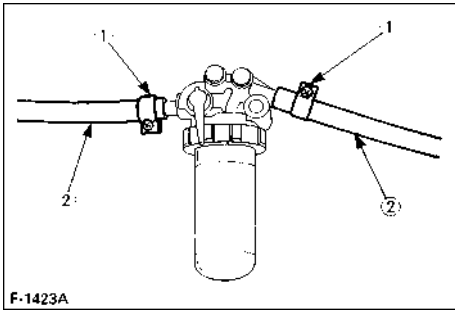
- **Check or replace the fuel pipes after stopping the engine. Broken fuel pipes can cause fires.**

Check the fuel pipes every 50 hours of operation. When if;

1. If the clamp band is loose, apply oil to the screw of the band, and tighten the band securely.
2. If the fuel pipes made of rubber became worn out replace them and clamp bands every two years.
3. If the fuel pipes and clamp bands are found worn or damaged before two years' pass, replace or repair them at once.
4. After replacement of the pipes and bands, air-bleed the fuel system.

IMPORTANT :

- When the fuel pipes are not installed, plug them at both ends with clean cloth or paper to prevent dirt from entering. Dirt in the pipes can cause fuel injection pump malfunction.

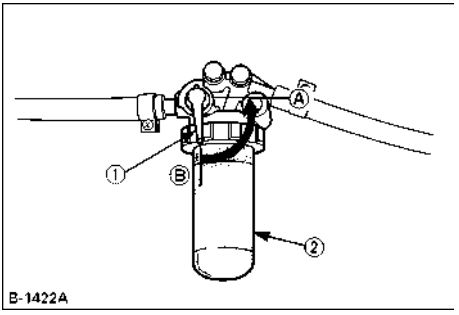


(1) Clamp band
(2) Fuel pipe

■Cleaning the Fuel Filter Pot

Every 100 hours of operation, clean the fuel filter in a clean place to prevent dust intrusion.

1. Close the fuel filter lever.

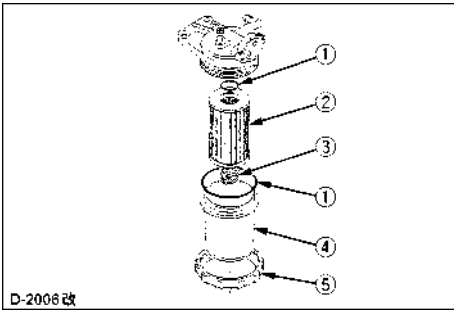


(1) Fuel filter lever *(A) "CLOSE"*
(2) Fuel filter pot *(B) "OPEN"*

2. Remove the top cap, and rinse the inside with diesel fuel.
3. Take out the element, and rinse it with diesel fuel.
4. After cleaning, reinstall the fuel filter, keeping out of dust and dirt.
5. Air-bleed the injection pump.

IMPORTANT :

- Entrance of dust and dirt can cause a malfunction of the fuel injection pump and the injection nozzle. Wash the fuel filter cup periodically.



(1) O ring
(2) Filter element
(3) Spring
(4) Filter bowl
(5) Screw ring

ENGINE OIL

⚠ CAUTION

To avoid personal injury:

- **Be sure to stop the engine before checking and changing the engine oil and the oil filter cartridge.**
- **DO NOT touch muffler or exhaust pipes while they are hot; severe burns could result. Always stop the engine and allow it to cool before conducting inspections, maintenance, or cleaning.**
- **Contact with engine oil can damage your skin.**
  Put on gloves when handling engine oil. If you come in contact with engine oil, wash it off immediately.

NOTE :

- Be sure to check the engine oil on a level surface. If placed on gradients, oil quantity can not be measured accurately.

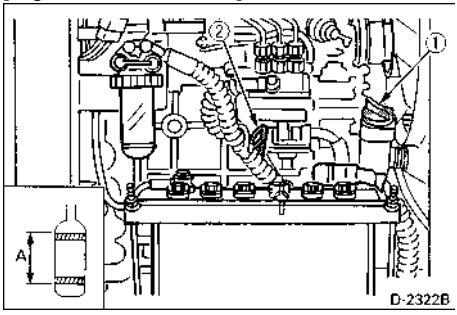
IMPORTANT :

- Do not operate a diesel engine when engine oil is overfilled. This can effect the air intake system which could result in engine damage or malfunction.

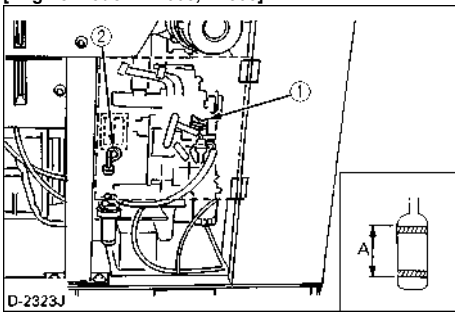
■Checking Oil Level and Adding Engine Oil

1. Check the engine oil level before starting or more than 5 minutes after stopping the engine.
2. Remove the oil level gauge, wipe it clean and reinstall it.
3. Take the oil level gauge out again, and check the oil level.

[Engine model : Z482, D722]



[Engine model : D1005, V1305]



(1) Oil port
(2) Oil level gauge
[Lower end of oil level gauge]
(A) Engine oil level within this range is proper.

4. If the oil level is too low, remove the oil port, and add new oil to the prescribed level.
5. After adding oil, wait more than 5 minutes and check the oil level again. It takes some time for the oil to drain down to the oil pan.
6. If the engine is operated with the oil level nearing the lower limit, the oil may deteriorate more quickly than normal, therefore, keeping the oil level near the upper limit is recommended.

Engine oil capacity L (U.S.qts.)

Model	Capacity
J106, J107 [Engine model : Z482-B]	2.2 (2.3)
J108, J110, J310, J313 [Engine model : D722-B]	3.4 (3.6)
J112, J114, J315, J318 [Engine model : D1005-BG]	4.3 (4.5)
J116, J119, J320, J324 [Engine model : V1305-BG]	5.7 (6.0)

IMPORTANT :

- Engine oil should be MIL-L-2104C or have properties of API classification CF grades or higher.
  Change the type of engine oil according to the ambient temperature.

Above 25ºC (77ºF)	SAE30 or SAE10W-30 SAE15W-40
-10ºC to 25ºC (14ºF to 77ºF)	SAE10W-30 or SAE15W-40
Below -10ºC (14ºF)	SAE10W-30

- When using oil of different brands from the previous one, be sure to drain all the previous oil before adding the new engine oil.

■Changing Engine Oil

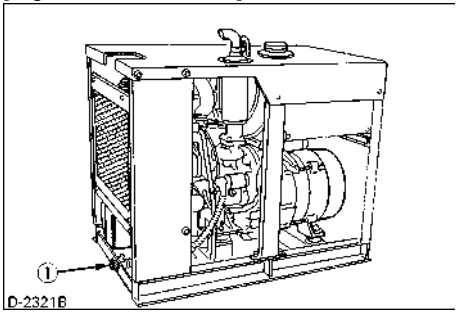
CAUTION

To avoid personal injury:

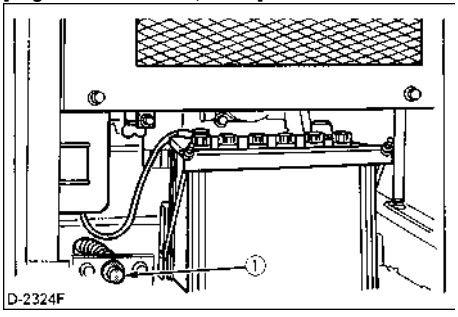
- **Be sure to stop the engine before draining engine oil.**
- **When draining engine oil, place a suitable container underneath the engine and dispose of it according to local regulations.**
- **DO NOT drain oil from a hot engine. Allow engine to cool down sufficiently to avoid being burned.**

1. Change oil after the initial 50 hours of operation and every 100 hours thereafter.
2. Remove the drain plug to drain the engine oil. Drain all the old oil, drains easier and completely when the engine is warm. Inspect drain plug gasket. Replace if damaged.

[Engine model : Z482, D722]



[Engine model : D1005, V1305]



(1) Engine oil drain plug

3. Install the oil drain plug and gasket.
4. Add new engine oil up to the upper line of the oil level gauge.

■Replacing the Oil Filter Cartridge

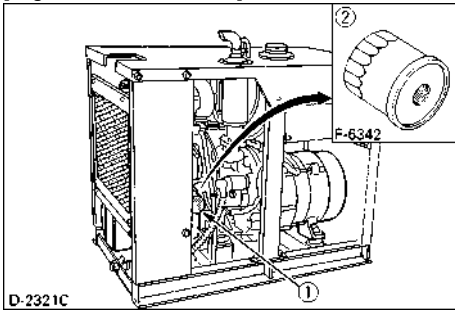
CAUTION

To avoid personal injury:

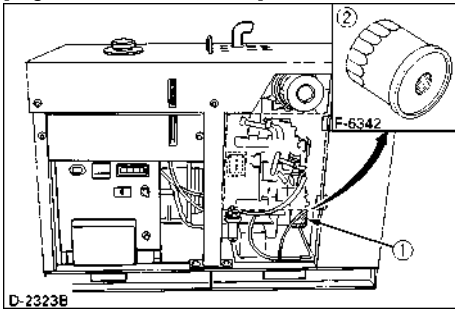
- **Be sure to stop the engine before changing the oil filter cartridge.**
- **Allow engine to cool down sufficiently. Oil can be hot and cause burns.**

1. Replace the oil filter cartridge every 200 hours of operation.
2. Remove the old oil filter cartridge with a filter wrench. Dispose of filter properly.
3. Apply a film of oil to the gasket of the new cartridge.
4. Screw in the cartridge by hand. When the gasket contacts the seal surface, tighten the cartridge firmly only by hand. If you tighten the cartridge with a wrench, it will be tightened too much.

[Engine model : Z482, D722]



[Engine model : D1005, V1305]



(1) Oil filter cartridge
(2) Remove with a filter wrench
(Tighten with your hand)

5. After the new cartridge has been replaced, the engine oil level normally decreases a little. Therefore run the engine for a while and check for oil leaks through the seal before checking the engine oil level. Add oil if necessary.

NOTE :

- Completely wipe off any oil sticking to the machine in the filter area.

AIR CLEANER

CAUTION

To avoid personal injury:

- **Be sure to stop the engine before cleaning air filter element.**

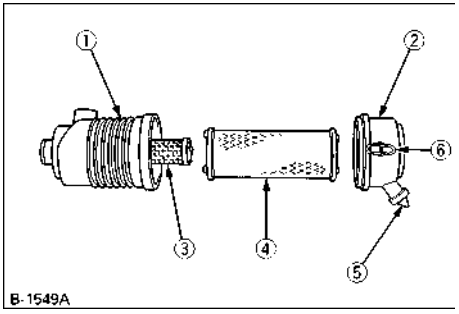
IMPORTANT :

- Make sure hooking clip is tight enough. If it is loose, dust and dirt may be sucked into the engine, causing excessive wear or premature engine failure and need for engine repair.

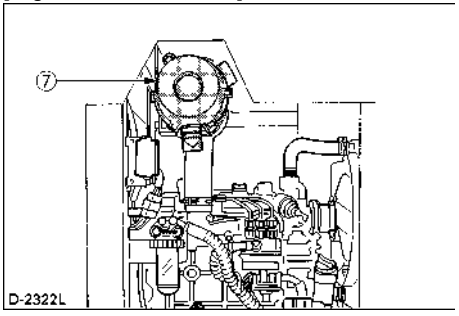
■Cleaning Secondary Air Filter Element

Since the air cleaner employed on this engine is a dry type, never apply oil to it.

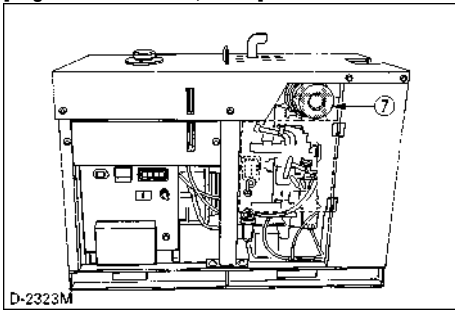
1. Open the evacuator valve once a week under ordinary conditions - or daily when used in severe or dusty conditions. This will get rid of large particles of dust and dirt.
2. Wipe the inside air cleaner clean with cloth if it is dirty or wet.
3. Avoid touching the element except when cleaning.
4. When dry dust adheres to the element, blow compressed air from the inside turning the element. Pressure of compressed air must be under 205 kPa (2.1 kgf/cm², 30 psi).
5. When carbon or oil adheres to the element, soak the element in detergent for 15 minutes, then wash it several times in water, rinse with clean water and dry it naturally.
6. After the element is fully dried, inspect the inside of the element with a light, and check if it is damaged or not. (referring to the instructions on the label attached to the element.)
7. Replace the primary element every year or every 6 cleanings. If the primary element is heavily stained, replace it sooner. At this time, also replace the secondary element.
8. The secondary element should be removed only if it is to be replaced.
9. To protect the engine, do not remove the secondary element in normal servicing of the primary element.



[Engine model : Z482, D722]



[Engine model : D1005, V1305]



(1) Air cleaner body
(2) Cover
(3) Secondary element
(4) Primary element
(5) Evacuator valve
(6) Hooking clip
(7) Air cleaner

■Cleaning Primary Air Filter Element

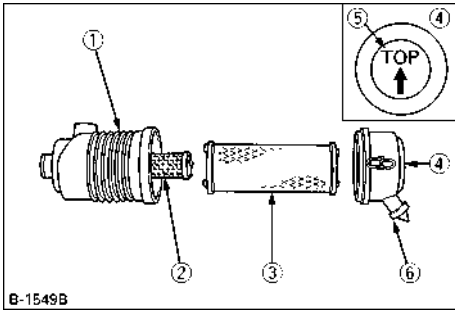
1. To clean the element, use clean dry compressed air on the inside of the element.
   Air pressure at the nozzle must not exceed 205 kPa (2.1 kgf/cm², 30 psi).
   Maintain reasonable distance between the nozzle and filter.
2. To wash the elements, use Donaldson ND-1500 Filter Cleaner, or its equivalent, which is especially effective on oily and soot-laden filters. Follow instructions that are supplied with the filter cleaner.

■Evacuator Valve

Open the evacuator valve once a week under ordinary conditions - or daily when used in dusty condition - to get rid of large particles of dust and dirt.

IMPORTANT :

- If the dust cup is mounted incorrectly, dust or dirt will not collect in the cup and allow the dust to come into direct contact with the element and thus require the element be replaced prematurely.



(1) Air cleaner body
(2) Secondary element
(3) Primary element
(4) Dust cup
(5) "TOP" mark
(6) Evacuator valve

■For the Air Cleaner with a Dust Cup

Remove and clean out the dust cup once a week under normal conditions or daily in extreme conditions.
Do not allow the dust cup to fill above half way regardless of conditions.
Install the air cleaner dust cup with "TOP" indicated on the rear of the cup in the upward position with horizontally mounted air cleaner bodies or vertically mounted air cleaner bodies, the cup may be mounted in any direction.

RADIATOR

Make it a rule to check the coolant level before every operation.

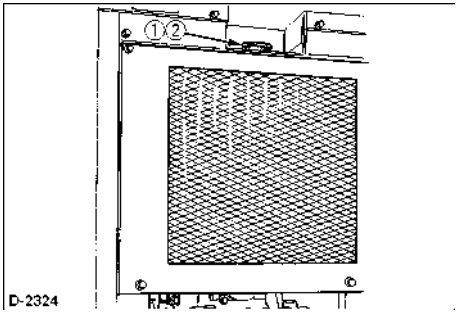
⚠ CAUTION

To avoid personal injury:

- **DO NOT stop the engine suddenly, stop it after about 5 minutes of unloaded idling.**
- **Work only after letting the engine and radiator cool off completely (more than 30 minutes after it has been stopped).**
- **DO NOT remove the radiator cap while coolant is hot. When cool, rotate cap slowly to the first stop to allow excess pressure to escape. Then remove cap completely.**
  If overheating should occur, steam gushes out from the radiator or reserve tank; Allow the engine to cool before attempting to open the cap. Severe burns could result.

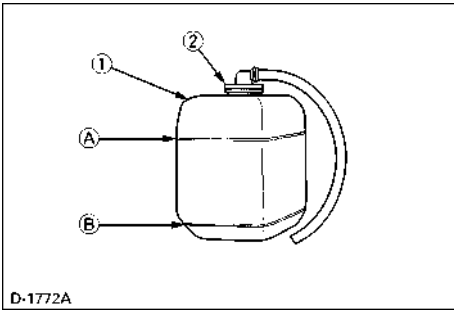
■Checking Coolant Level, Adding Coolant

1. Remove the radiator cap after the engine has completely cooled, and check to see that coolant reaches the supply port.



(1) Radiator cap
(2) Coolant filling port

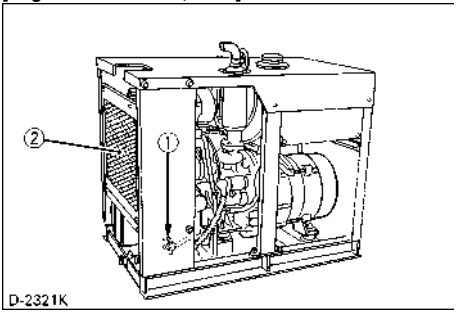
2. If the radiator is provided with a reserve tank, check the coolant level of the reserve tank. When it is between the "FULL" and "LOW" marks, the coolant will usually last for one day's work.

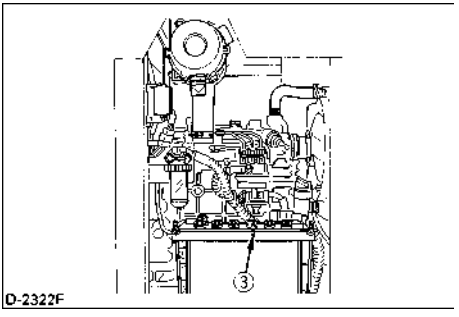


(1) Reserve tank
(2) Cap
(A) "FULL" Upper line 0.6 L (0.63 U.s.qts.)
(B) "LOW"

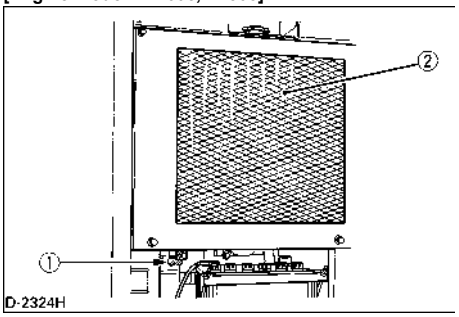
3. When the coolant level drops due to evaporation, add only coolant up to the full level.
4. Check to see the two drain cocks; one is at the crankcase side and the other is at the lower part of the radiator as shown below.

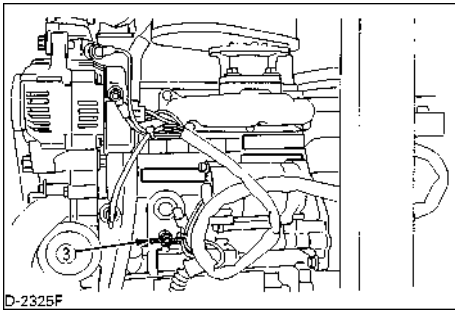
[Engine model : Z482, D722]





[Engine model : D1005, V1305]





(1) Coolant drain cock (Radiator)
(2) Radiator
(3) Coolant drain cock (Engine)

IMPORTANT :

- If the radiator cap has to be removed, proceed with caution and securely retighten the cap.
- If coolant is leaking, consult your local KUBOTA Dealer.
- Make sure that muddy or sea water is not used in the radiator.
- Use clean, fresh water and 50% anti-freeze to fill the recovery tank.
- Do not refill reserve tank with coolant over the "FULL" level mark.
- Be sure to close the radiator cap securely. If the cap is loose or improperly closed, coolant may leak out and decrease the level quickly.
- When coolant is added, coolant level may drop the first time the engine is started. Stop the engine, and add coolant if necessary.

■Changing Coolant

1. To drain coolant, always open both drain cocks and simultaneously open the radiator cap as well. With the radiator cap kept closed, the coolant will not drain completely. Dispose of used coolant properly.
2. Remove the overflow pipe of the radiator pressure cap to drain the reserve tank.
3. Prescribed coolant volume

L (U.S.qts.)

Engine model	Coolant capacity
Z482-B-SEC	2.3 (2.43)
D722-B-SEC	3.0 (3.17)
D1005-BG-SEC	3.3 (3.49)
V1305-BG-SEC	3.5 (3.70)

4. An improperly tightened radiator cap or a gap between the cap and the seat increases loss of coolant.
5. Coolant (Radiator cleaner and anti-freeze)

Season	Coolant
Summer	Pure water and radiator cleaner
Winter (When temperature drops below 0℃ (32℉)) or all season	Pure water and anti-freeze (See "Anti-freeze" in "RADIATOR" section.)

■Remedies for quick decrease of coolant

1. Check for dust and dirt between the radiator fins and cooling tube. Clean the fins and the tubes as if necessary.
2. Check the tension of the fan belt. If loose, tighten it securely.
3. Check the internal blockage in the radiator cooling tubes. If scale forms in the tubes, clean with the scale inhibitor or its equivalent.

■Checking Radiator Hoses and Clamps

CAUTION

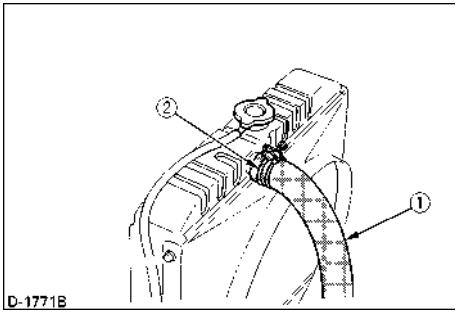
To avoid personal injury:

- **Be sure to check radiator hoses and hose clamps periodically. If radiator hoses are damaged or coolant leaks out, overheating can occur.**

Check to see if radiator hoses are properly fixed every 200 hours of operation or 6 months, whichever comes first.

1. If hose clamps are loose or water leaks, tighten hose clamps securely.
2. Replace hoses and hose clamps if radiator hoses are swollen, hardened or cracked.

Replace hoses and hose clamps every 2 years, or earlier as required, if hoses are found to be swollen, hardened or cracked.



(1) Radiator hose
(2) Hose clamp

■Precaution Overheating

Take the following actions in the event the coolant temperature is nearly or more than the boiling point, which is called "Precaution overheating". Take these actions if the engine's the alarm lamp lights up.

1. Turn off all output circuit breakers and keep the engine running without load.
2. Do not stop the engine suddenly. Stop it after about 5 minutes of unloaded idling.
3. If the engine stops within about 5 minutes of running under no load, immediately leave and keep yourself away from the machine. Do not open the hood and any other part.
4. Keep yourself and others well away from the engine for an additional 10 minutes or while the steam continues to blow out.
5. Checking that there is no danger of being burned eliminate the causes of overheating according to the manual, see "TROUBLESHOOTING" section. And then restart the engine.

■Cleaning Radiator Core (outside)

If dust is between the fin and tube, wash it away with running water.

IMPORTANT :

- Do not clean radiator with firm tools such as spatulas or screwdrivers. They may damage the delicate fins or tubes. It can cause coolant leaks or decrease cooling performance.
- Be careful to keep water off of electrical parts.

■Cleaning the Radiator

Clean the cooling system of the engine every 500 hours. In addition, clean it before adding anti-freeze and before stopping use of anti-freeze.

■Anti-freeze

CAUTION

To avoid personal injury:

- **When using anti-freeze, put on some protection such as rubber gloves (Anti-freeze contains poison.).**
- **If should drink anti-freeze, throw up at once and take medical attention.**
- **When anti-freeze comes in contact with the skin or clothing, wash it off immediately.**
- **Do not mix different types of anti-freeze. The mixture can produce chemical reaction causing harmful substances.**
- **Anti-freeze is extremely flammable and explosive under certain conditions. Keep fire and children away from anti-freeze.**
- **When draining fluids from the engine, place some container underneath the engine body.**
- **Do not pour waste onto the grounds, down a drain, or into any water source.**
- **Also, observe the relevant environmental protection regulations when disposing of anti-freeze.**

Always use a 50/50 mix of long-life coolant and clean soft water in KUBOTA engines.

Contact KUBOTA concerning coolant for extreme conditions.

1. Long-life coolant (hereafter LLC) comes in several types. Use ethylene glycol (EG) type for this engine.

2. Before employing LLC-mixed cooling water, flush the radiator with fresh water. Repeat this procedure 2 or 3 times to clean up the radiator and engine block from inside.
3. Mixing the LLC
   Premix 50% LLC with 50% clean soft water. When mixing, stir it up well, and then fill into the radiator.
4. The procedure for the mixing of water and anti-freeze differs according to the make of the anti-freeze. Refer to SAE J1034 standard, more specifically also to SAE J814c.

Vol % Anti-freeze	Freezing Point		Boiling Point*	
	C°	°F	°C	°F
50	-37	-34	108	226

* At 1.013 x 10⁵Pa (760 mmHg) pressure (atmospheric). A higher boiling point is obtained by using a radiator pressure cap which permits the development of pressure within the cooling system.

5. Adding the LLC
   (1) Add only water if the coolant level reduces in the cooling system by evaporation.
   (2) If there is a coolant leak, add the LLC of the same manufacturer and type in the same coolant percentage.
   *Never add any long-life coolant of different manufacturer. (Different brands may have different additive components, and the engine may fail to perform as specified.)
6. When the LLC is mixed, do not employ any radiator cleaning agent. The LLC contains anticorrosive agent. If mixed with the cleaning agent, sludge may build up, adversely affecting the engine parts.
7. Kubota's genuine long-life coolant has a service life of 2 years. Be sure to change the coolant every 2 years.

NOTE :
- The above data represent industry standards that necessitate minimum glycol content in the concentrated anti-freeze.

BATTERY

WARNING

To avoid personal injury:
- **Be careful not to let the battery electrolyte contact your body or clothing.**
- **Wear eye protection and rubber gloves, since the diluted sulfuric acid solution burns skin and eyes, and eats holes in clothing. Should this occur, immediately wash it off with running water and get medical attention.**

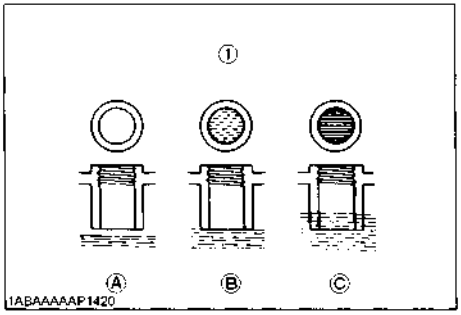
Mishandling of the battery shortens the service life and adds to maintenance costs. Obtain the maximum performance and the longest life of the battery by handling properly and with care.
Engine starting will be difficult, if the battery charge is low. Be sure to keep the battery in a fully charged state for best performance and battery life.

■Battery Charging

DANGER

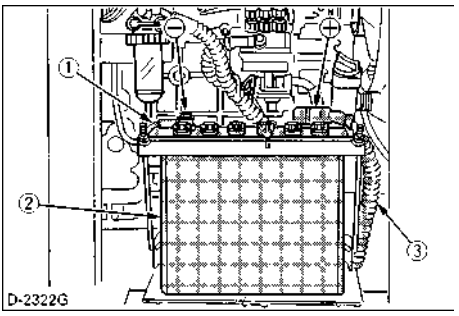
To avoid the possibility of battery explosion:
The batteries come in two types: refillable and non-refillable. For using the refillable type battery, follow the instructions below.
- **DO NOT use or charge the battery if the fluid level is below the LOWER (lower limit level) mark.**
  Otherwise, the battery component parts may deteriorate prematurely, which will shorten the battery's service life or may cause an explosion.
  Immediately, add distilled water until the battery's fluid level comes somewhere between the UPPER and LOWER levels.
- **When the battery is being activated, hydrogen and oxygen gases in the battery are extremely explosive. Keep open sparks and flames away from the battery at all times, especially when charging the battery.**
- **When charging the battery, ensure the vent caps are securely in place (if equipped).**
- **When disconnecting the cable from the battery, start with the negative terminal, and when connecting them, start with the positive terminal first.**
- **DO NOT check the battery charge by placing a metal object across the terminals. Use a voltmeter or hydrometer.**

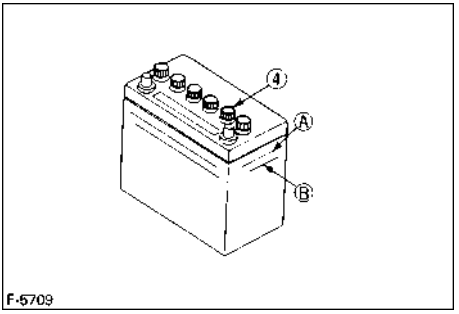
1. Make sure that each electrolyte level is to the bottom of vent wells, if necessary, add only distilled water in a well-ventilated place.



(1) Battery electrolyte level
(A) "TOO LOW"
(B) "PROPER"
(C) "TOO HIGH"

2. To slow charge the battery, connect the charger positive terminal to the battery positive terminal, and the negative to the negative, then recharge in the normal manner.
3. Quick recharging charges the battery at a high rate in a short time. This is only for emergencies.
4. Recharge the battery as early as possible, or battery life will be extremely shortened.
5. When exchanging an old battery for a new one, use a battery of equal specifications shown in page 2 to 7.





(1) Thick cable red (+)
(2) Battery case
(3) Negative / ground cable black (-)
(4) Plug
(A) "HIGHEST LEVEL"
(B) "LOWEST LEVEL"

IMPORTANT :

- Connect the charger positive terminal to the battery positive terminal, and negative to the negative.
- When disconnecting the cable from the battery, start with the negative terminal first.
  When connecting the cable to the battery, start with the positive terminal first.
  If reversed, the contact of tools on the battery may cause a shortage.
- DO NOT remove or disconnect the battery during operation, otherwise the engine cannot be stopped with the key switch.

■Instructions for Long Term Storage

1. When storing the generator for long periods of time, remove the battery, adjust the electrolyte to the proper level, and store in a dry and dark place.
2. The battery naturally discharges while it is stored. Recharge it once a month in summer, and every 2 months in winter.

■Battery Boost Starting

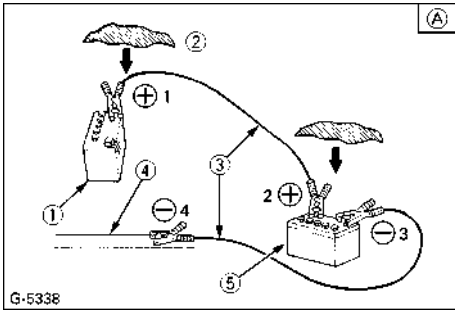
DANGER

To avoid serious personal injury.

- **Battery gases can explode. Keep cigarettes, sparks, and flames away from battery.**
- **If generator battery is frozen, do not battery boost start engine.**
- **Do not connect other end of negative (-) jumper cable to negative (-) terminal of generator battery.**

When battery boost starting engine, follow the instructions below to safely start the engine.

1. Bring helper battery of the same voltage as disabled generator within easy cable reach.
2. Put on safety goggles and rubber gloves.
3. Ensure the vent caps are securely in place. (if equipped)
4. Cover vent caps with damp rags. Do not allow the rag to touch the battery terminals.
5. Attach the red clamp to the positive (red, (+) or pos.) terminal of the dead battery and clamp the other end of the same cable to the positive (red, (+) or pos.) terminal of the helper battery.



(1) Dead battery
(2) Lay a damp rag over vent caps.
(3) Jumper cables
(4) Engine block or frame
(5) Helper battery
(A) Connect cables in numerical order. Disconnect in reverse order after use.

6. Clamp the other cable to the negative (black, (-) or neg.) terminal of the helper battery.
7. Clamp the other end to the engine block or frame of the generator as far from the dead battery as possible.
8. Start the disabled generator.
9. disconnect the jumper cables in the exact reverse order of attachment. (Steps 7, 6 and 5).
10. Remove and discard the damp rags.

IMPORTANT :

- This machine has a 12 volt negative 1 ground starting system.
- Use only same voltage for jump starting.
- Use of a higher voltage source on generators electrical system could result in severe damage to generators electrical system.

ELECTRIC WIRING

CAUTION

To avoid personal injury:
Shorting of electric cable or wiring may cause a fire.

- **Check to see if electric cables and wiring are swollen, hardened or cracked.**
- **Keep dust and water away from all power connections.**
  Loose wiring and terminal parts make bad connections, be sure to repair them before starting the engine.

Damaged wiring reduces the capacity of electrical parts. Change or repair damaged wiring immediately.

PERIODIC SERVICING AND CLEANING OF THE GENERATOR

⚠ CAUTION

To avoid personal injury:

- **Only a qualified electrical engineer must be allowed to do the servicing and cleaning.**
- **Before starting a periodic service, disconnect the negative cable from the battery's negative terminal to keep off the automatic start/stop device. Otherwise the device may get activated during the servicing job, possibly starting the engine unexpectedly and getting you injured. Also draw out the starter key beforehand.**
- **Before starting a periodic service, stop the engine and wait until the engine cools down enough. Otherwise you may get scalded yourself.**

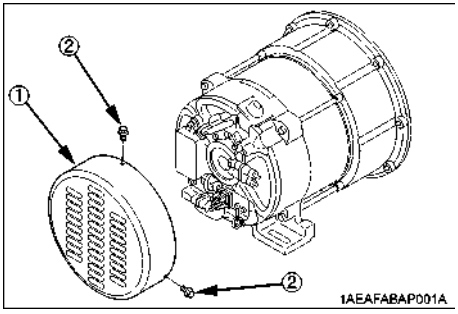
IMPORTANT :

- Check on the generator periodically to keep it at full capacity for a long time.
- It is prohibited to run the generator in a poorly-ventilated, dusty or humid place. If the generator is operated under a very dusty condition, dust and other foreign substances may get sucked in through its air intake. Such foreign substances may build up on conductive parts like the couplers and carbon brush. The deposits may cause poor contact, short-circuit or earlier worn-out carbon brush.
- To avoid the above trouble, remove the cleaner cover, and check the carbon brush holder, terminals, couplers, and housing at regular intervals. If any foreign substance is found accumulated on these parts, clean them up.
- If any part is found discolored or deformed, replace the part in question with new one.
- In practice, take the following procedure for the periodic servicing and cleaning.

◆ **Inspection procedure**

- Check the carbon brush every 1000 hours of operation.
- As the generator becomes dirty, remove the cleaner cover and check all the parts inside.
- To clean up the parts, use a soft brush and take care not to damage the cords and other parts. Wipe off water and oil, if any, with waste cloth.

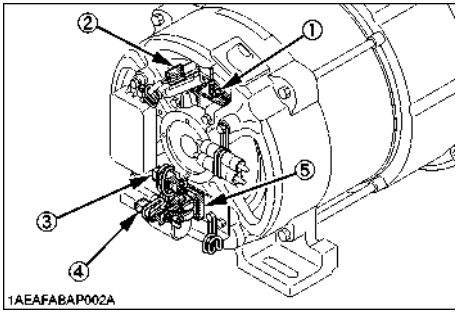
1. Loosen the three M6 x 12 mm lock screws of the cleaner cover, and take out the cleaner cover.



(1) Cleaner cover
(2) Lock screw (M6 x 12 mm)

2. Checkpoints and clean-up zones
   (1) Carbon brush holder assembly
   (2) Coupler
   (3) Coupler
   (4) Coupler
   (5) Diode stack terminal

Also remove dust and other foreign substances off the housing and cords.



(1) Carbon brush holder assembly
(2) Coupler
(3) Coupler
(4) Coupler
(5) Diode stack terminal

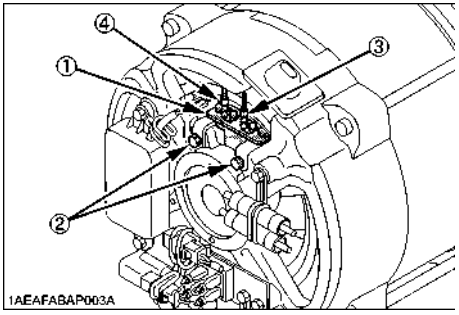
3. Checking and cleaning the carbon brush holder assembly

NOTE :

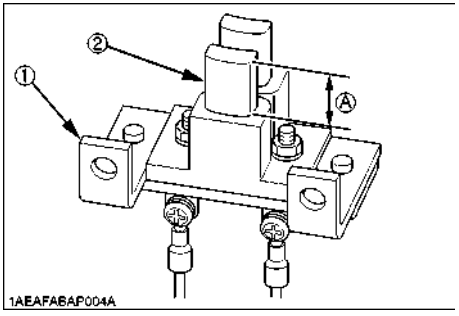
- Be careful not to remove the two M4 x 8 mm machine screws of the two cords (3 and 4) during this job.

(1) Loosen the two M6 x 15 mm bolts (2) and take out the carbon brush holder (1).
(2) Remove dust and other foreign substances off the terminals and body of the carbon brush holder assembly.
(3) Check the stretch allowance of the carbon brush every 1000 hours of operation.

(4) If the above allowance is shorter than 7 mm, replace the carbon brush holder assembly with new one. In replacing, be careful not to confuse the colors of cords (3 and 4).
M4 x 8 mm machine screw tightening torque:
1.0 to 1.4 N-m (0.1 to 0.14 kgf-m)
(5) Reassemble the above parts.
M6 x 15 mm bolt tightening torque:
7.84 to 11.8 N-m (0.8 to 1.2 kgf-m)

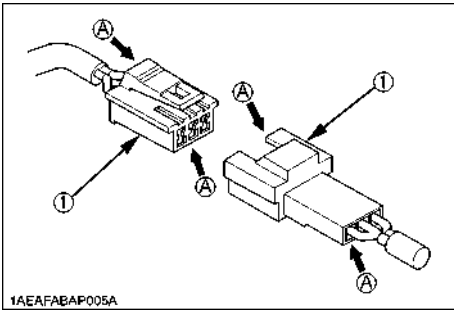


(1) Carbon brush holder assembly
(2) Bolt
(3) Black/White
(4) Red/White



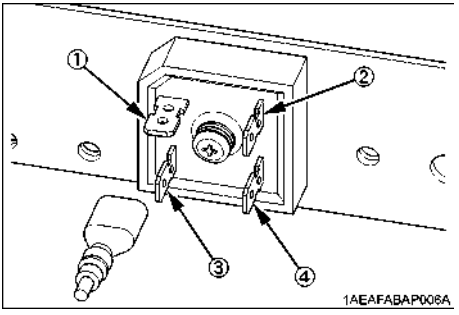
(1) Carbon brush holder assembly (A) More than 7 mm
(2) Brush

4. Checking and cleaning the couplers
(1) There are three sets of couplers in total.
(2) Disconnect all the couplers, and clean up the wire slots and coupling zones.
(3) Finally, reassemble these parts.



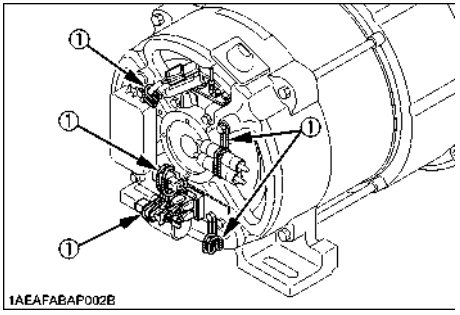
(1) Coupler *(A) "CLEAN UP"*

5. Checking and cleaning the diode stack terminals
(1) Remove foreign substances off the body and cords.
(2) Disconnect the cords from the four flat terminals and clean up the joints.
(3) Finally, reconnect the cords with care not to confuse the cord colors. The cords have their respective polarities.



(1) Red/White
(2) Light green
(3) Light green
(4) Blue

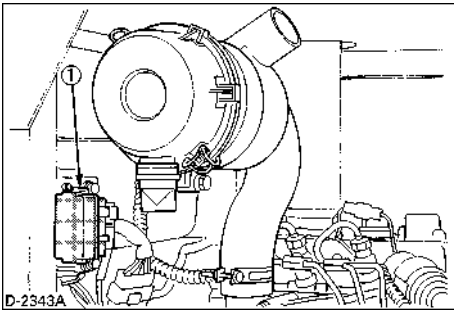
6. Double-checking
   (1) Double-check to see if the couplers are reinserted deep enough.
   (2) Using the clamps, secure the cables and cords to keep them out of contact with the bearing and rotor.
   (3) Retighten the cleaner cover lock screws.
   M6 x 12 mm lock screw tightening torque:
   7.84 to 11.8 N-m (0.8 to 1.2 kgf-m)
   (4) Trial-run the generator under no load to make sure there is nothing unusual. If anything is unusual, remove its cause.



(1) Clamp

FUSE

The electrical system is protected from potential damage by fuses.
A blown fuse indicates that there is an overload or a short circuit somewhere in the electrical system.
If any of the fuses should blow, replace with a new one of the same capacity.

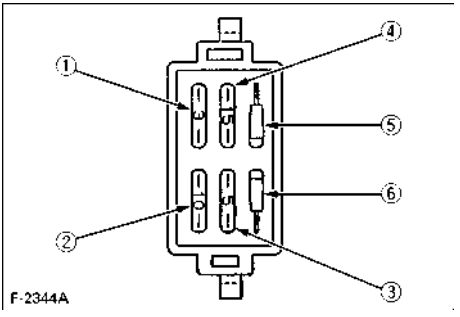


(1) Fuse box

IMPORTANT :

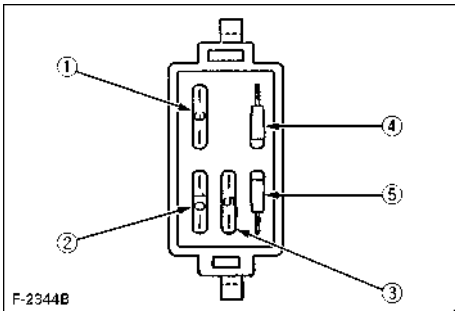
- Before replacing a blown fuse, determine why the fuse blew and make any necessary repairs. Failure to follow this procedure may result in serious damage to the generator electrical system. Refer to "TROUBLESHOOTING" section of this manual or your local KUBOTA Dealer for specific information.

[J106, J107, J108, J110, J310, J313]
[Engine model : Z482, D722]



(1) Fuse 3A : External connection terminal block
(2) Fuse 10A : AC (Accessory Line)
(3) Fuse 5A : Glow
(4) Fuse 15A : Solenoid
(5) Fuse 15A : (spare)
(6) Fuse 10A : (spare)

[J112, J114, J116, J119, J315, J318, J320, J324]
[Engine model : D1005, V1305]



(1) Fuse 3A : External connection terminal block
(2) Fuse 10A : AC (Accessory Line)
(3) Fuse 5A : Glow
(4) Fuse 5A : (spare)
(5) Fuse 10A : (spare)

FAN BELT

■Adjusting Fan Belt Tension

CAUTION

To avoid personal injury:

- **Be sure to stop the engine and remove the key before checking the belt tension.**
- **Be sure to reinstall the detached safety shield after maintenance or checking.**

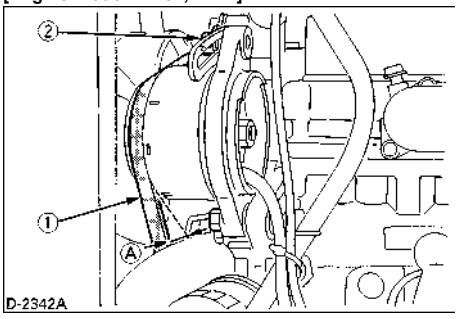
Proper fan belt tension	A deflection of between 7 to 9 mm (0.28 to 0.35 in.) when the belt is pressed in the middle of the span.

1. Stop the engine and remove the key.
2. Apply moderate thumb pressure to belt between pulleys.
3. If tension is incorrect, loosen the alternator mounting bolts and, using a lever placed between the alternator and the engine block, pull the alternator out until the deflection of the belt falls within acceptable limits.
4. Replace fan belt if it is damaged.

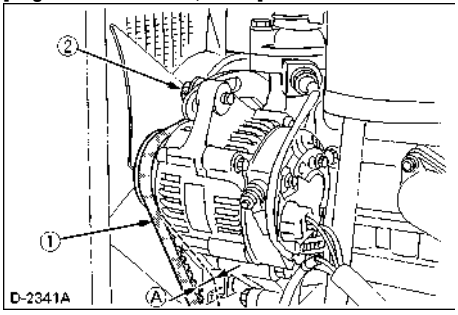
IMPORTANT :

- If belt is loosen or damaged and the fan is damaged, it could result in overheating or insufficient charging. Adjust correctly or replace the belt.

[Engine model : Z482, D722]



[Engine model : D1005, V1305]



(1) Fan belt
(2) Bolt and nut
(A) 7 to 9 mm (0.28 to 0.35 in.) (under load of 98 N (22.1 lbs.))

TRANSPORTING / STORAGE

■Transporting

CAUTION

To avoid personal injury:

- **Secure the generator to prevent movement during operation.**
- **DO NOT stand near or under the generator while it is suspended.**
- **The generator is heavy. Utilize suitable equipment to lift and transport. Keep hands and feet away from under the suspended generator.**
- **When transporting the generator, remove the (-) battery cable, close the fuel cock lever, and keep the generator level to prevent fuel spillage.**
- **Use hangers and wire ropes which are strong enough to withstand the weight of the machine.**

1. When transporting the generator, use only suitable transporting equipment, such as crane, fork lift or etc.
2. The generator is equipped with the 2 inlets in the machine bed for forklift forks. Transportability is increased by 2 ways; special forklift openings and 1-point lifting hook.
   Use lifting equipment of sufficient capacity.

Model	Approx. gross wt. kg (lbs.)
J106, J107 [Engine model: Z482-B]	260 (573)
J108, J110, J310, J313 [Engine model: D722-B]	290 (639)
J112, J114, J315, J318 [Engine model: D1005-BG]	410 (904)
J116, J119, J320, J324 [Engine model: V1305-BG]	455 (1003)

■Storage

CAUTION

To avoid personal injury:

- **DO NOT clean the machine with engine running.**
- **To avoid the danger of exhaust fume poisoning, do not operate the engine in a closed building without proper ventilation.**
- **When storing the generator just after running, let the engine cool off.**

Before storing the generator for more than a few months, remove any dirt on the machine, and:

1. Remove dirty engine coolant, fill with new coolant and run the engine for about 5 minutes.
   When coolant is added, coolant level drops the first time the engine is started, stop the engine and add more coolant.
2. Remove dirty engine oil, fill with new oil and run the engine for about 5 minutes to let the oil penetrate to all the parts.
3. Check all the bolts and nuts, and tighten if necessary.
4. Remove the battery from the generator, adjust the electrolyte level, and recharge it. Store the battery in a dry and dark place.
5. When the engine is not used for a long period of time, run it for about 5 minutes under no load every 2 to 3 months to keep it free from rust. If the engine is stored without any running, moisture in the air may condense into dew over the sliding parts of the engine, resulting in rust.
6. If you forget to run the engine for longer than 5 to 6 months, apply enough engine oil to the valve guide and valve stem seal and make sure the valves work smoothly before starting the engine.
7. Store the generator in a flat place and remove the key.
8. Do not store the generator in a place where flammable materials such as dry grass or straw are present.
9. When covering the generator for storage, let engine and muffler cool off completely.
10. Operate the engine after checking and repairing damaged wiring or pipes, and clearing flammable materials carried by rodents, insects or birds.

TROUBLESHOOTING

⚠ CAUTION

To avoid personal injury:

- **Always perform any check at "STOP" condition except for special check in which operation is required.**
- **Do not touch the charging section during operation.**
- **Keep your hands and body away from the rotating parts during operation.**

If the machine does not function properly, use the following chart to identify and correct the cause.

■Generator

Trouble	Cause	Countermeasure
After electrical equipment connected, generator does not operate.	Circuit breaker is off.	• Turn breaker "ON"
	Contact of output terminal and socket is bad.	• Reinstall.
	Malfunction of electrical equipment	• Request repair.
Not generated	Bad contact of brush	• Check, cleaning and maintenance of contact face and contact force of brush and slip ring. (⚠Danger: All works should be performed when stopped)
Circuit breaker can not be operated.	Overload	• Reduce load.
	Short circuit of load circuitry connected to output section	• Repair load.
Output cannot be obtained. **• Rotation goes slow.** **• Voltage drops.** **• Breaker turns off.**	Initial current is too much. (e.g. motor load)	• Reduce load.
	Overload	• Reduce load.
Engine indicates loaded condition.	Short circuit of generator wiring	• Stop immediately. Request for repair.

■Easy Checker

Trouble	Cause	Countermeasure
When the key is turned, the lamp doesn't light on.	Bulb is below or defective.	• Replace
	Component or wiring defect of charging circuit	• Check, repair
The water temperature lamp lights on when operating.	Engine overheating.	• See "Precaution Overheating" in "RADIATOR" section. (See page 38.)
	Water temperature sensor faulty.	• Replace the water temperature sensor.
	Water temperature sensor wiring faulty.	• Repair the wiring.
The oil pressure lamp lights on when operating.	Insufficient engine oil.	• Add engine oil.
	Lubricating system in trouble.	• Check the system.
	Oil pressure sensor faulty.	• Replace the sensor.
	Oil pressure sensor wiring faulty.	• Repair the wiring.
※ **The battery charge lamp lights on when operating.**	Fan belt loose or damaged.	• Readjust belt tension or replace the belt.
	Alternator terminal in poor contact.	• Connect tightly.
	Alternator problem.	• Check the alternator.

※The engine is not interrupted on the Z482, D722 models.

■Engine

Trouble		Cause	Countermeasure
Not started.	**Not turned or slow turning.**	Battery trouble.	• Replacement of battery.
		Insufficient battery charge.	• Recharge battery.
		Slow turning at cold circumstance due to high viscosity of engine oil. Fuse blown out (Slow blow fuse)	• Replace engine oil to D5W40 or D10W30 for cold. • Replace fuse.
	Normal turning, but not started.	Fuel shortage.	• Refuel.
		Fuel does not flow.	• Check fuel filter. If filter is dirty, replace. • Check fuel tank. Remove the settled impurities or moisture.
		Air and water are contained in fuel supply line.	• Check pipe and fastening clamp. If any damage exists, replace or repair. • Relieve air. • Remove water inside of fuel tank and filter.
		Injection pipe is loosened.	• Re-tighten.
		※Fuse between solenoid input code and grounding is blown.	• Replace fuse after checking that no trouble exists on moving section of solenoid. (10A)
Engine starts but stops immediately.		Engine oil shortage.	• Add engine oil to upper limit of gauge.

Trouble	Cause	Countermeasure
Rotation is irregular.	Fuel shortage.	• Refuel.
	Fuel does not flow.	• Check fuel filter. If filter is dirty, replace. • Check fuel tank. Remove the settled impurities or moisture.
	Air and water are contained in the fuel supply line.	• Check pipe and fastening clamp. If any damage exists, replace it, or repair.
		• Relieve air.
		• Remove water inside of fuel tank and filter.
	Injection pipe is loosened.	• Re-tighten.
Engine suddenly stops.	Fuel shortage.	• Refuel.
	Insufficient engine oil.	• Full oil.
	Water temperature is too high. • Insufficient cooling water. • Loosened water pump belt. • Blockage of radiator.	 • Fill cooling water. • Adjust belt tension. • Clean.
	※Belt broken	• Replace.
	※Alternator defective	• Replace.
Insufficient output. **When loaded, rotation goes slow.**	Choke of air cleaner element.	• Replace air cleaner element.
	Choke of fuel system.	• Check.
	Choke of fuel filter.	• Element cleaning.
	Oil deterioration.	• Replace engine oil.
	Overload.	• Refer to generator.
Coolant leaks out.	Insufficient cooling water.	• Fill cooling water.
	Loosened fan belt.	• Adjust belt tension.
	Blockage of radiator.	• Clean.
Exhaust gas is bad.	Choke of air cleaner element.	• Clean air cleaner element.
	Engine oil is over filled.	• Remove oil to upper limit of gauge.
	Fuel quality is bad.	• Replace fuel with good quality fuel.
Abnormal sound **Large vibration.**	Crack of vibration-proof rubber.	• Replace.
	Others.	• Check, repair.

If you have any questions, contact your KUBOTA dealer.

※D1005, V1305 engine only

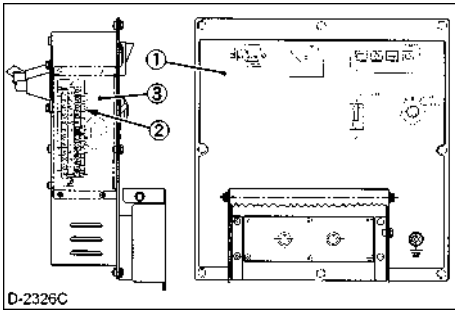
AUTOMATIC START/STOP UNIT (A S/S UNIT)

To connect the machine to the A S/S UNIT the generator is equipped with the ECTT on the left side panel of the control panel.

To connect the exterior apparatus with the machine, perform the following instructions;

1. Remove the terminal taps cover.
2. Connect the unit to the ECTT with the wiring harnesses, following the operator's manual of the A S/S unit.
3. To assemble the TTC, set the TTC, reversing the up/down sides of the cover.

For nomenclature and connection of terminal taps are referred to the "WIRING DIAGRAM" section . (See page 51.)

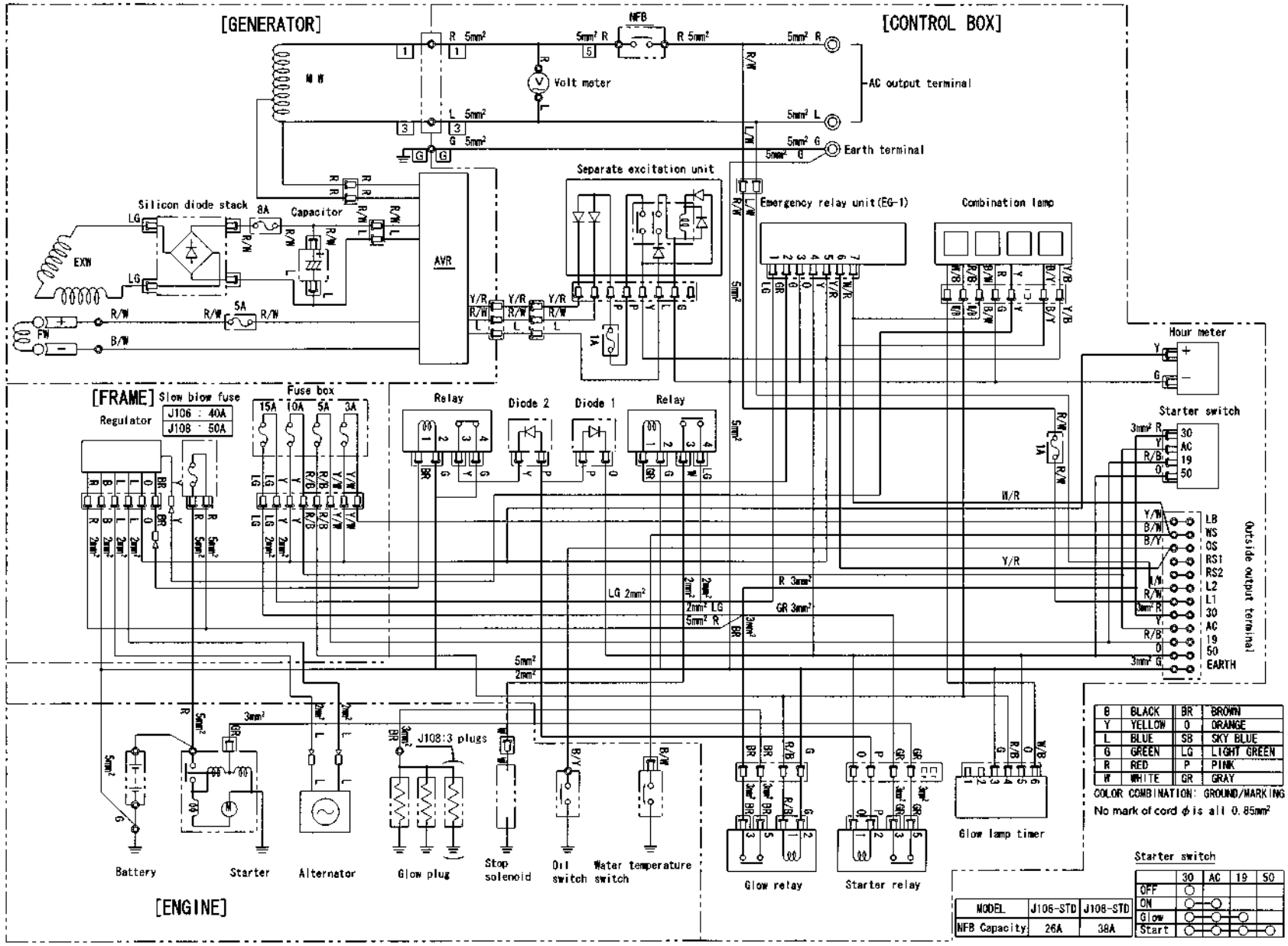


(1) Control panel
(2) Exterior connection terminal taps (ECTT)
(3) Terminal taps cover (TTC)

NOTE :

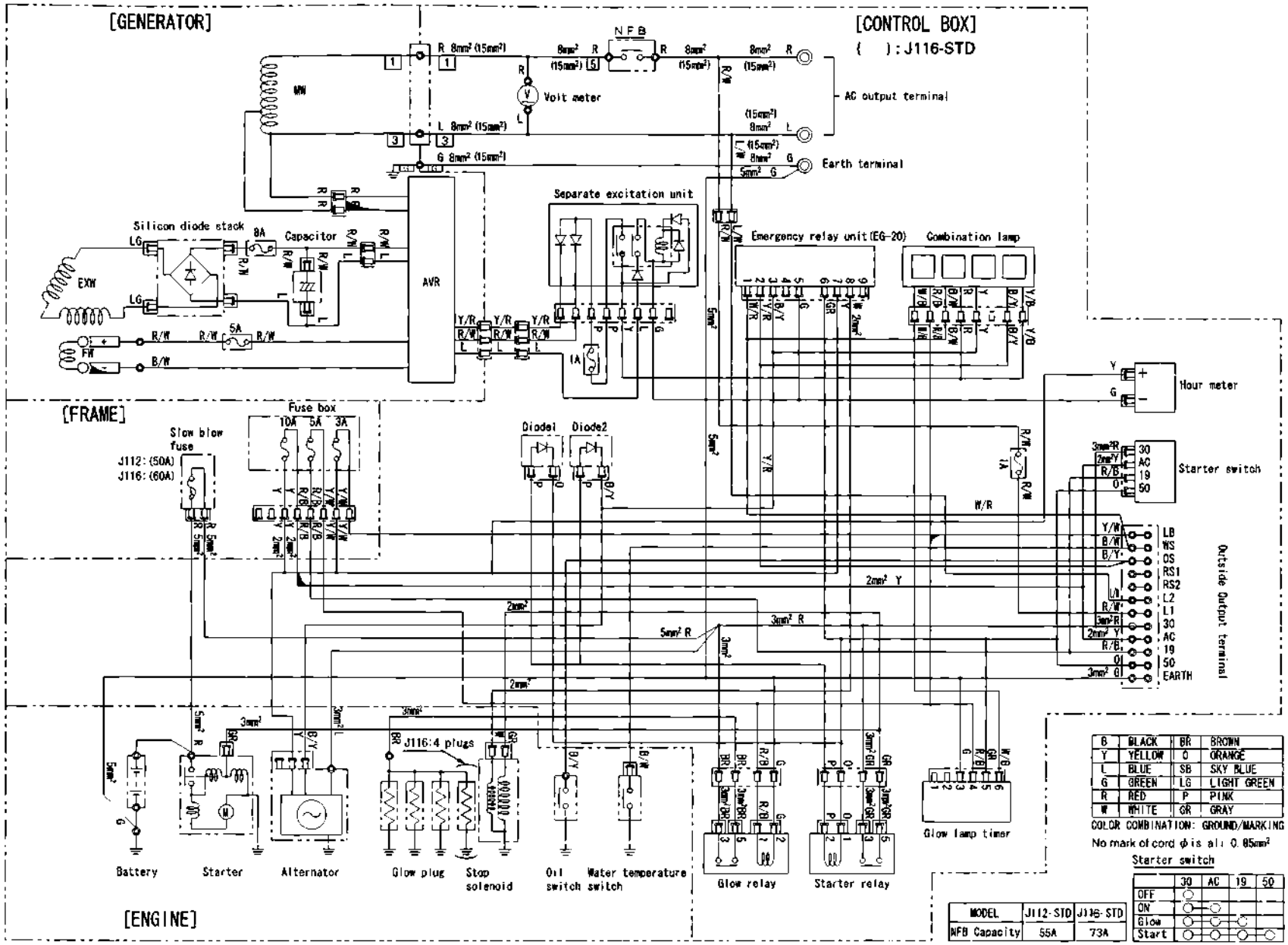
- For D1005, V1305 engine type the exterior connection terminal taps are placed on the right side of control panel.

■J106-STD (220V)
J108-STD (220V)

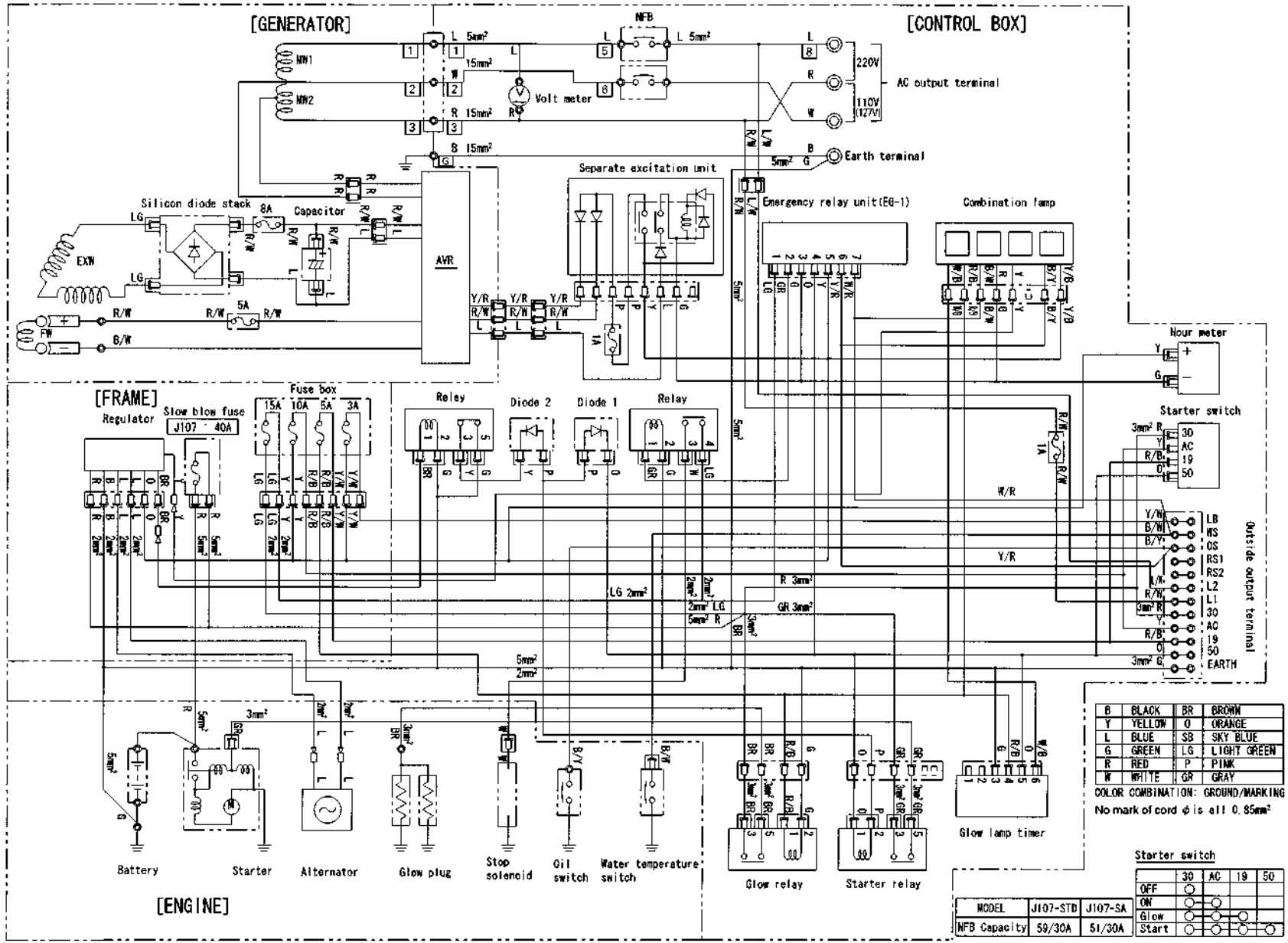


ENGLISH

■J112-STD (220V)
J116-STD (220V)

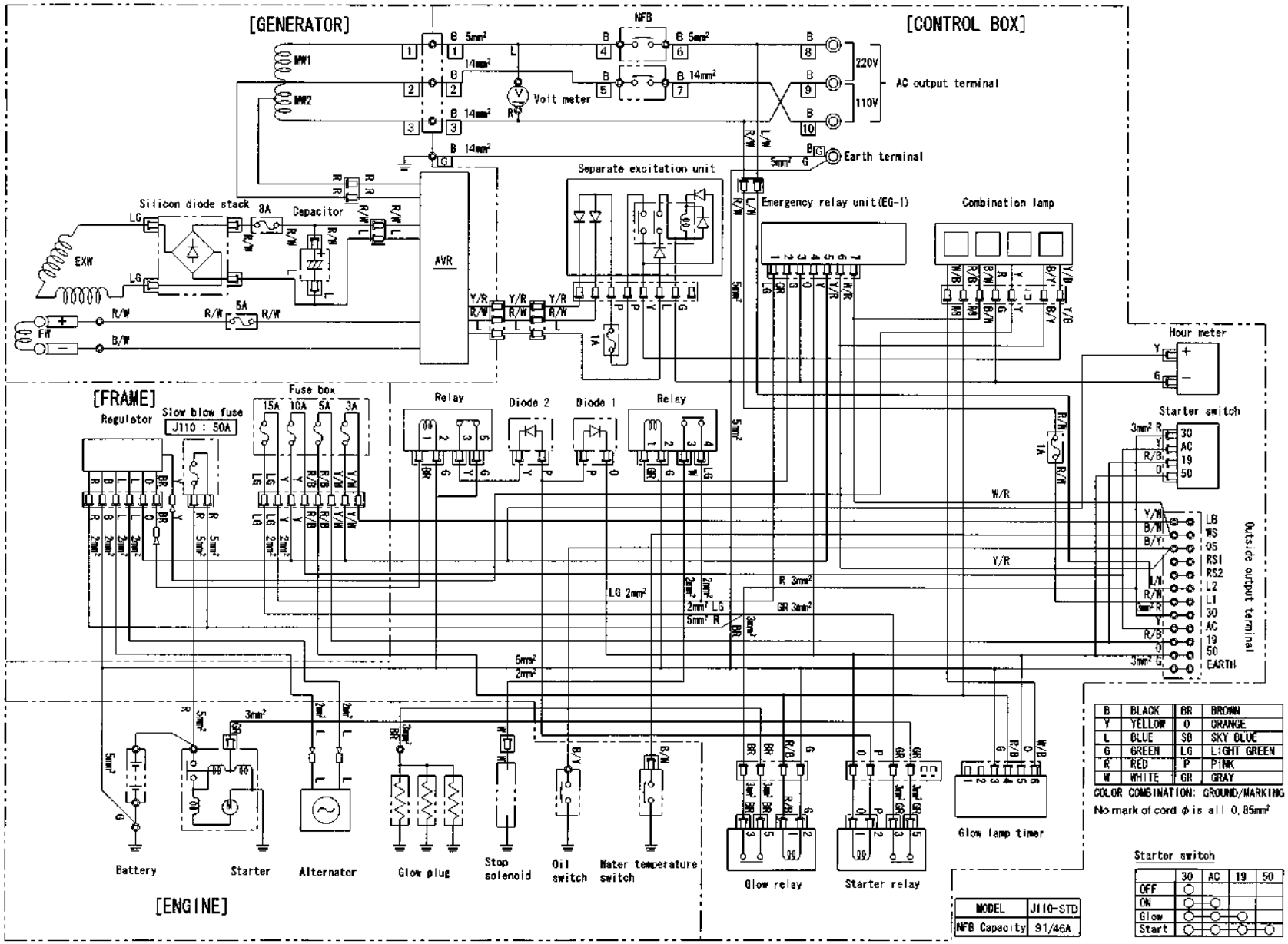


■J107-STD (110V/220V)
J107-SA (127V/220V)

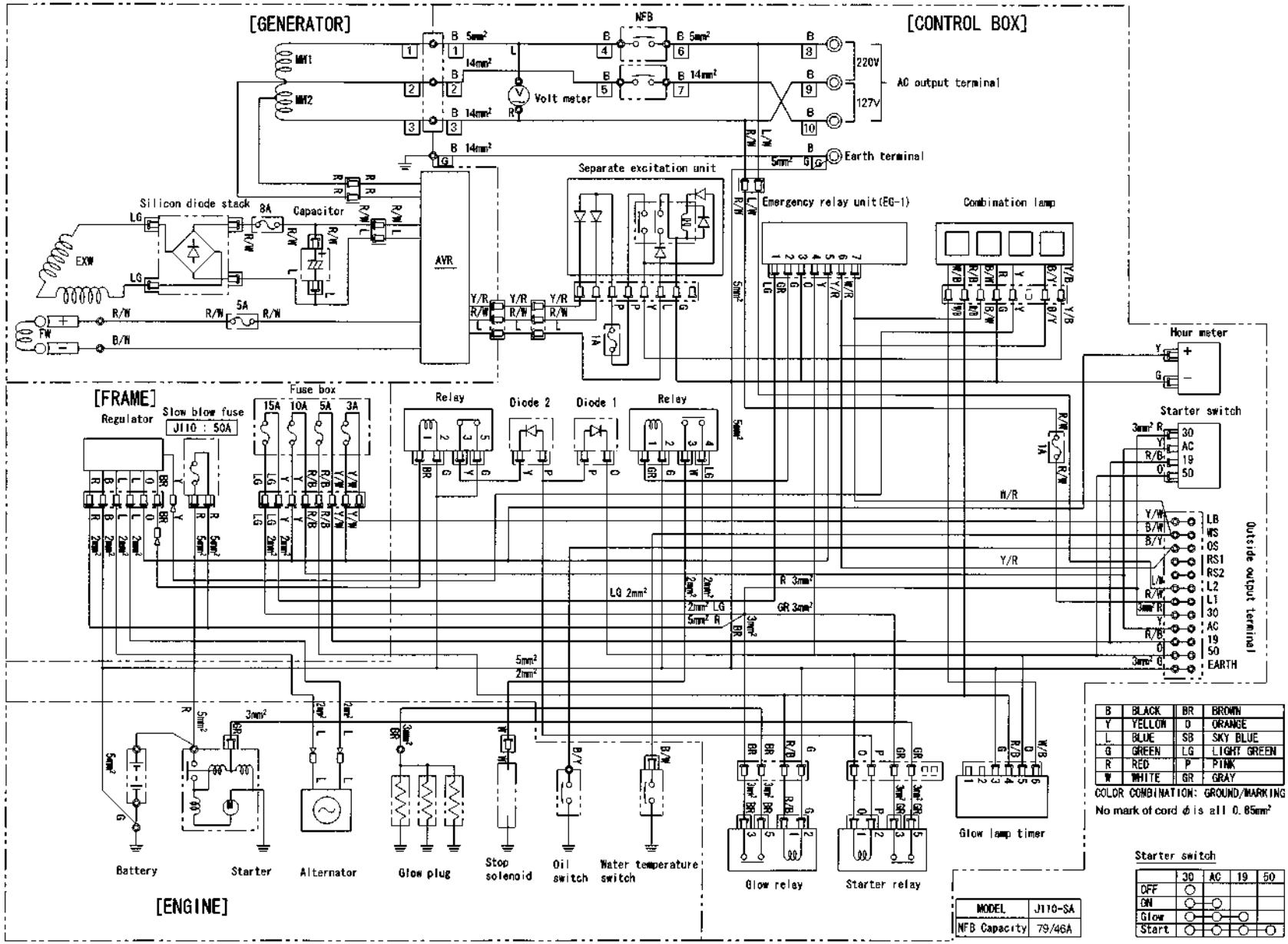


ENGLISH

■J110-STD (110V/220V)

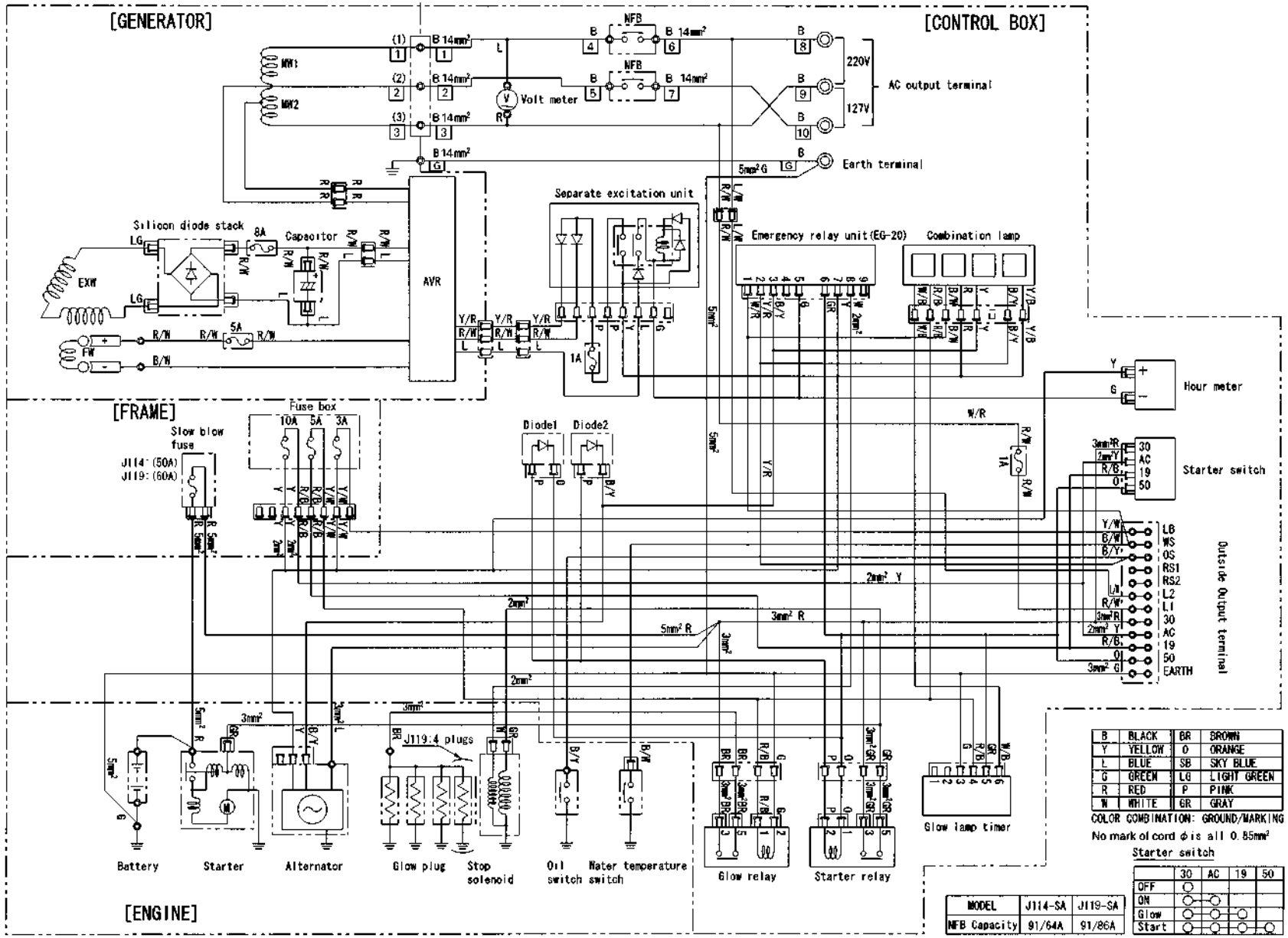


■J110-SA (127V/220V)

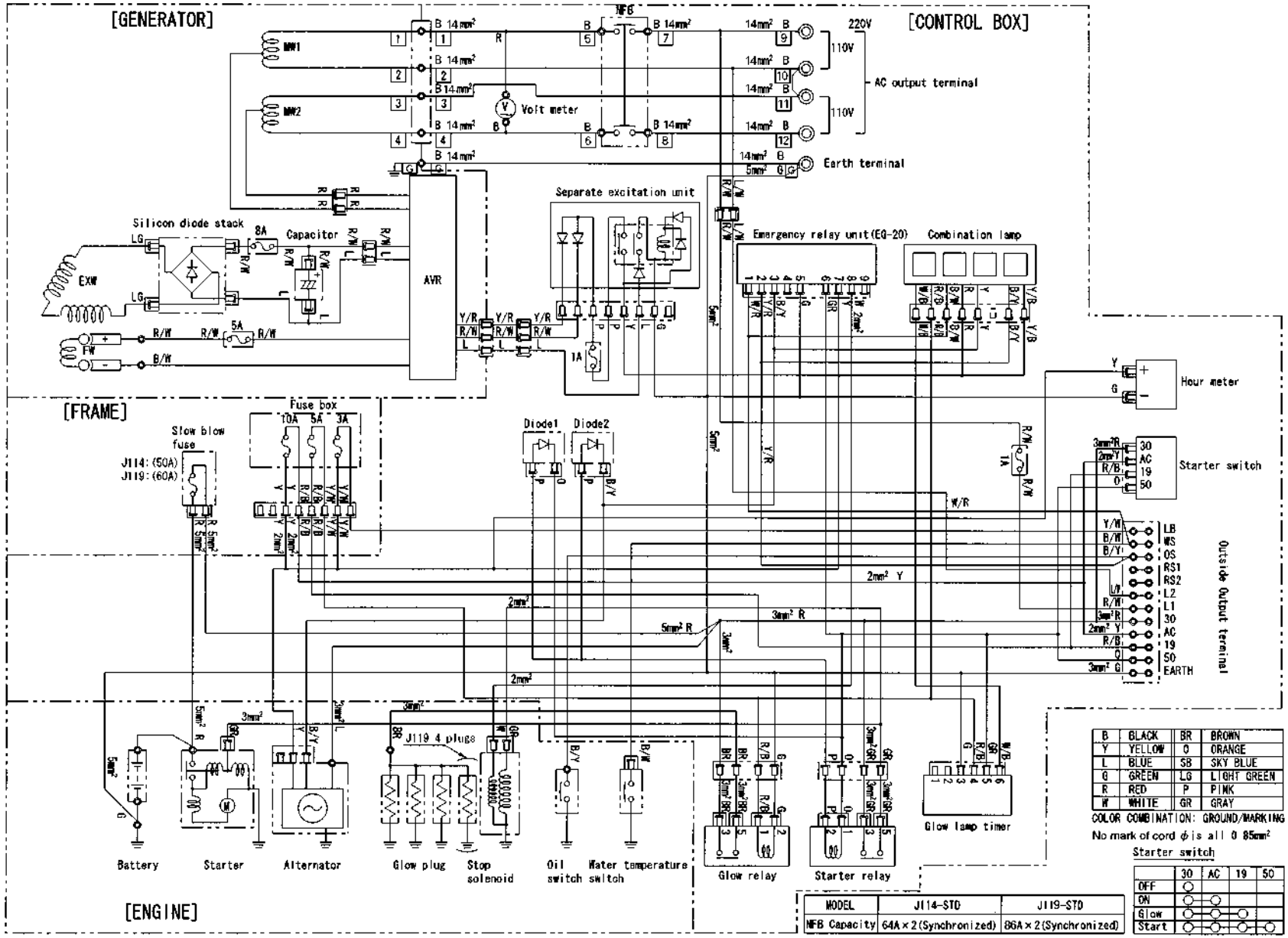


ENGLISH

■J114-SA (127V/220V)
J119-SA (127V/220V)



■J114-STD (110V/220V)
J119-STD (110V/220V)



B	BLACK	BR	BROWN
Y	YELLOW	O	ORANGE
L	BLUE	SB	SKY BLUE
G	GREEN	LG	LIGHT GREEN
R	RED	P	PINK
W	WHITE	GR	GRAY

COLOR COMBINATION: GROUND/MARKING
No mark of cord ϕ is all 0.85mm²

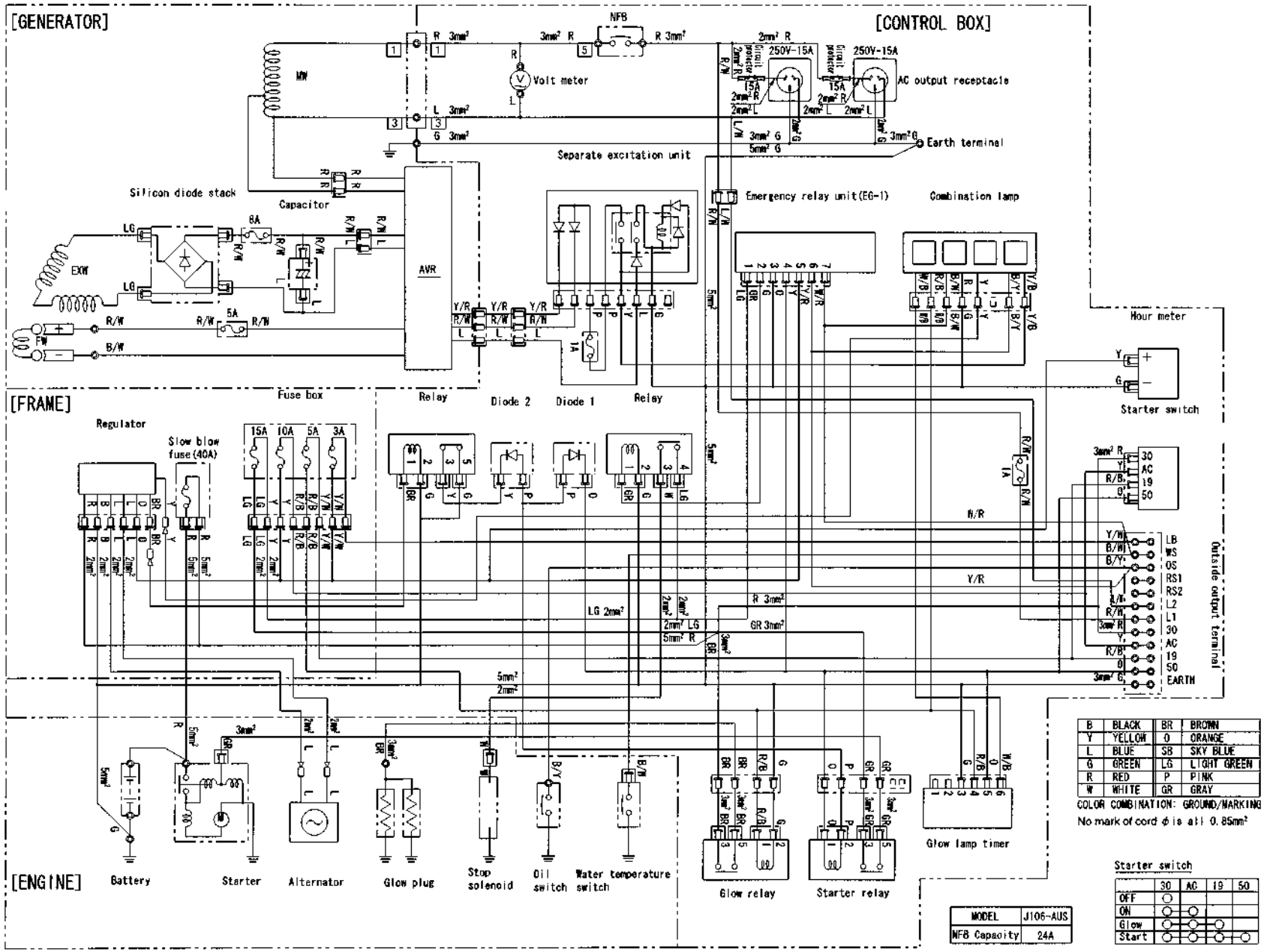
Starter switch

	30	AC	19	50
OFF	○			
ON	○	○		
Glow	○	○		○
Start	○	○	○	○

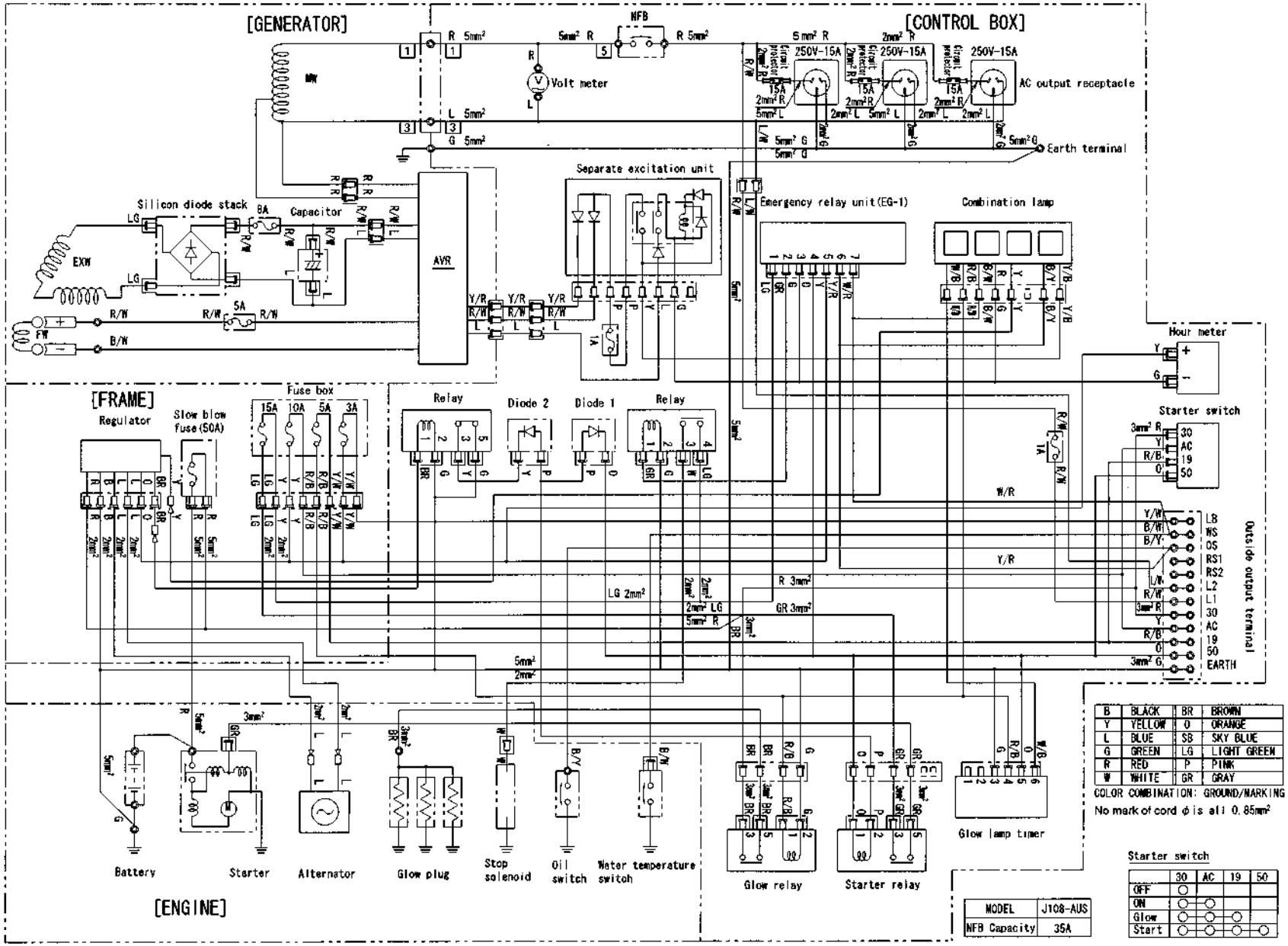
MODEL	J114-STD	J119-STD
NFB Capacity	64A×2(Synchronized)	86A×2(Synchronized)

ENGLISH

■J106-AUS (240V)

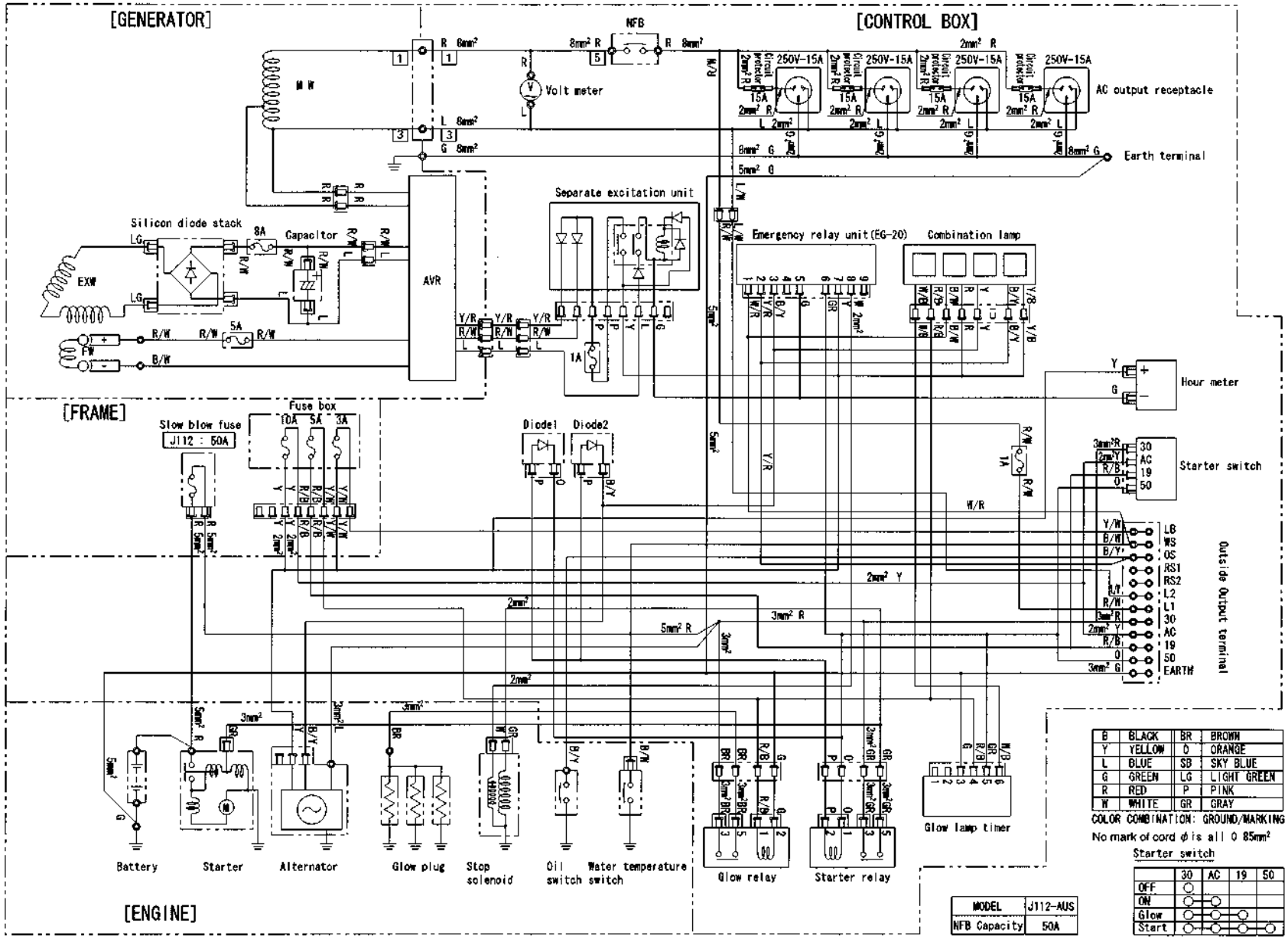


■J108-AUS (240V)



ENGLISH

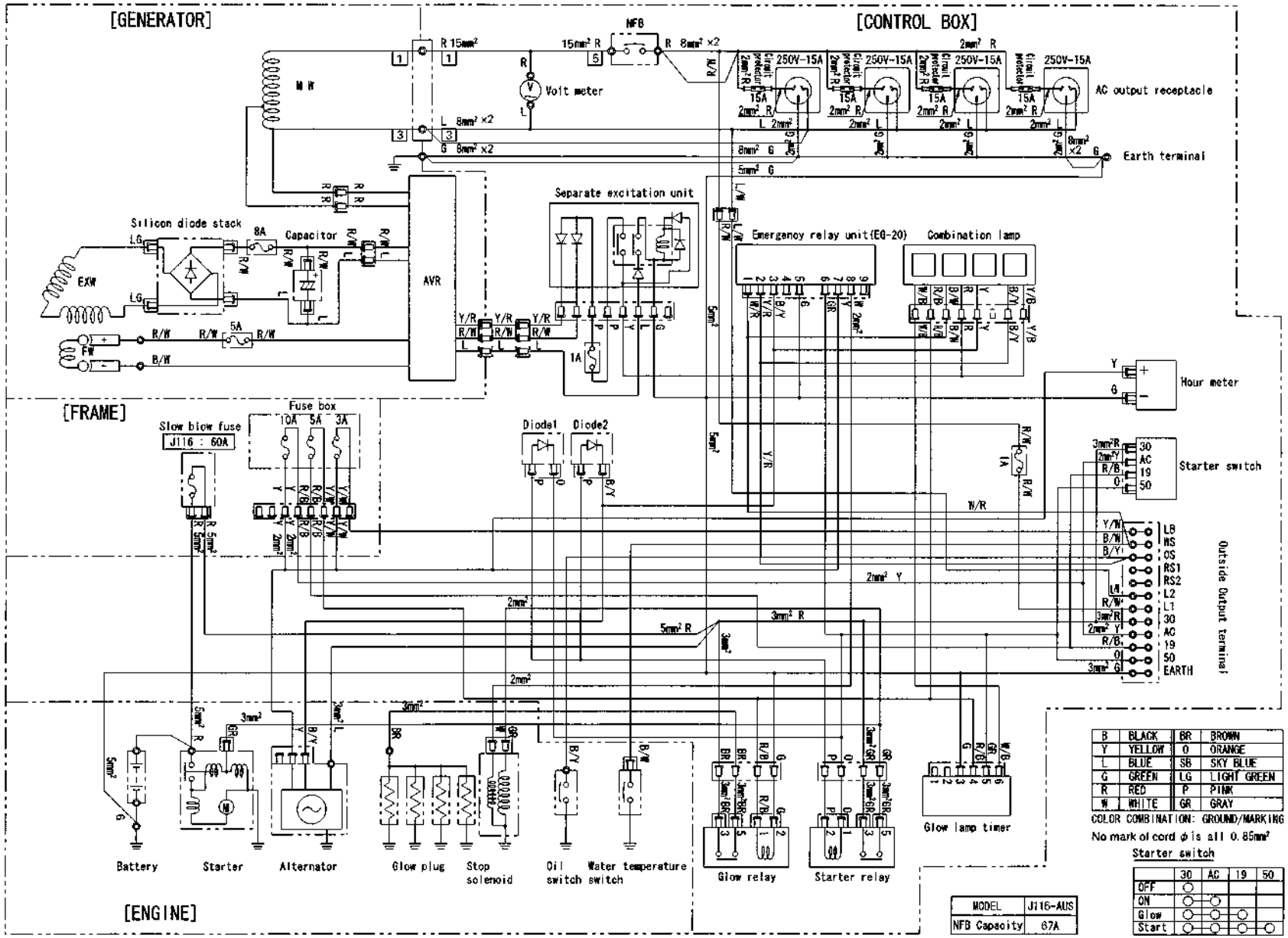
■J112-AUS (240V)



B	BLACK	BR	BROWN
Y	YELLOW	O	ORANGE
L	BLUE	SB	SKY BLUE
G	GREEN	LG	LIGHT GREEN
R	RED	P	PINK
W	WHITE	GR	GRAY

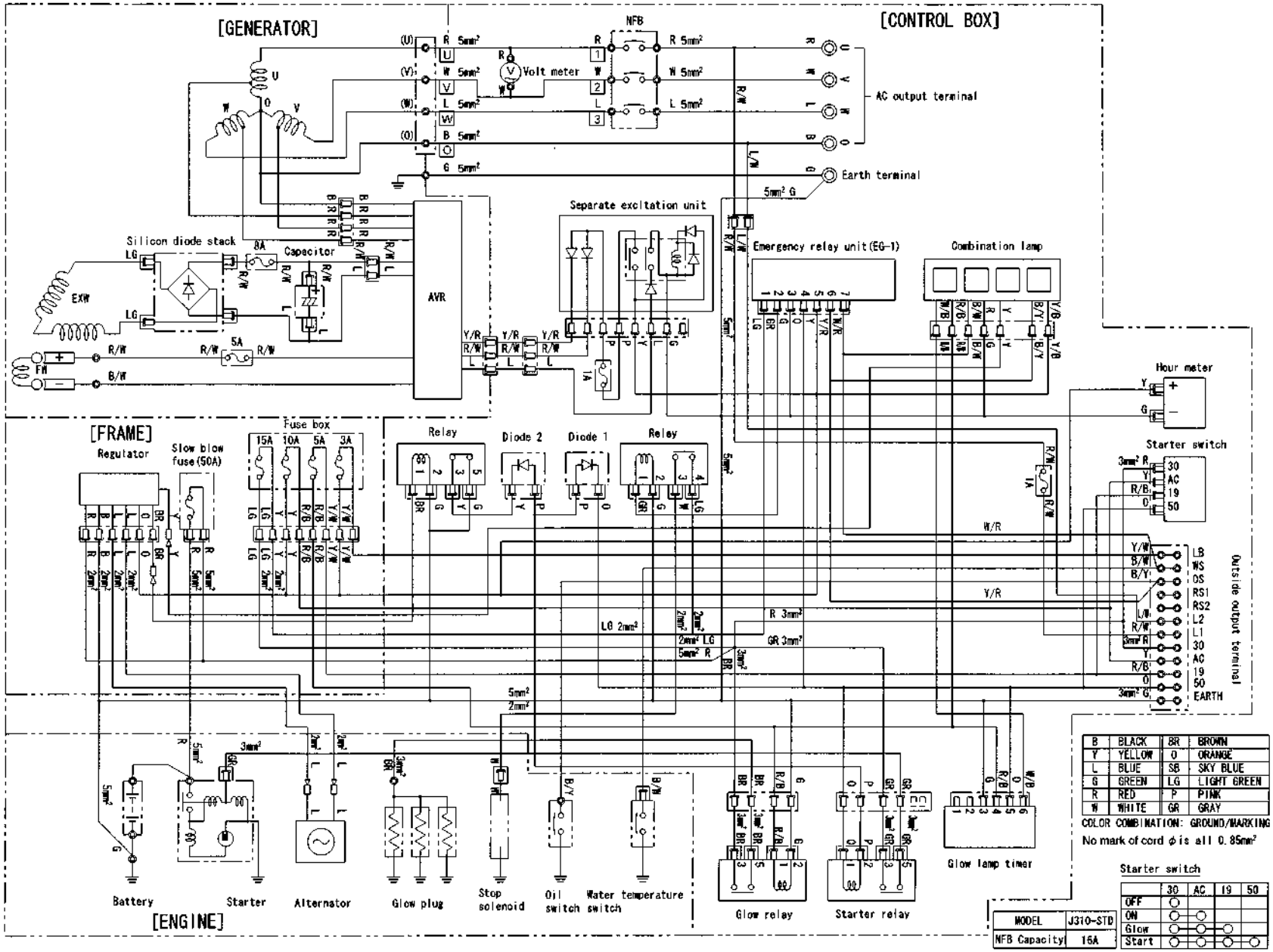
	30	AC	19	50
OFF	○			
ON	○	○		
Glow	○	○	○	
Start	○	○	○	○

■J116-AUS (240V)

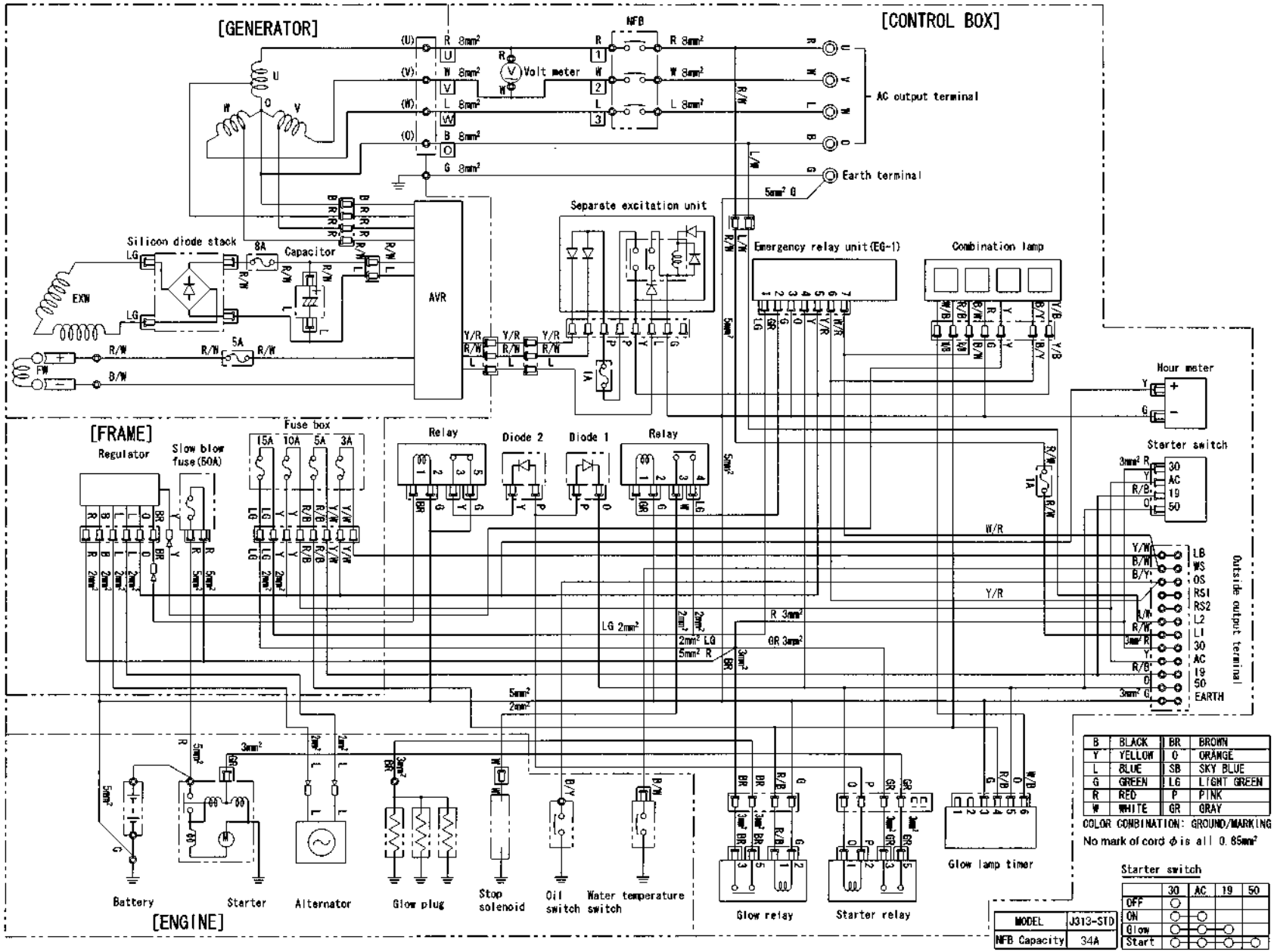


ENGLISH

■J310-STD (380V/220V)

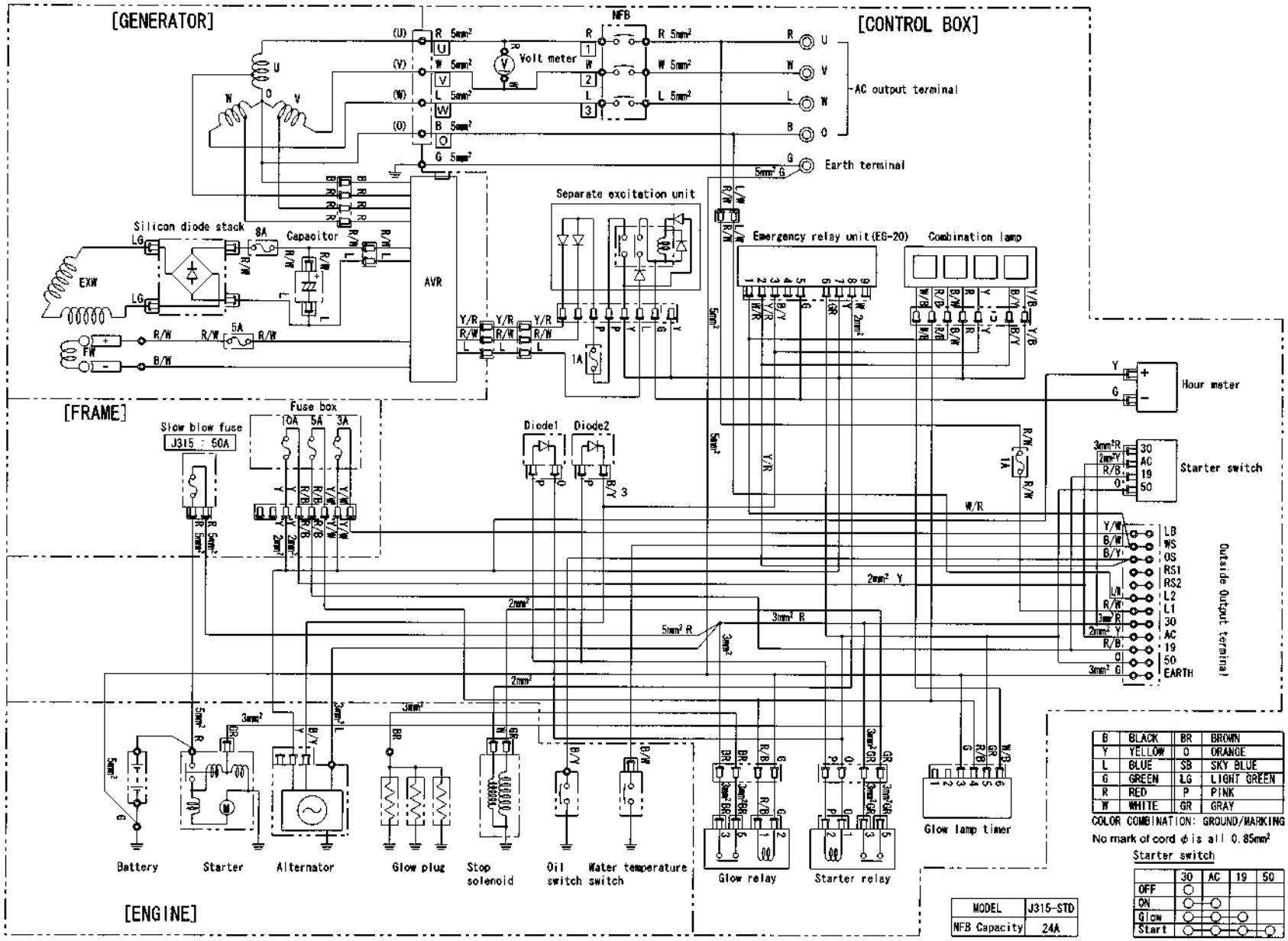


■J313-STD (220V/127V)



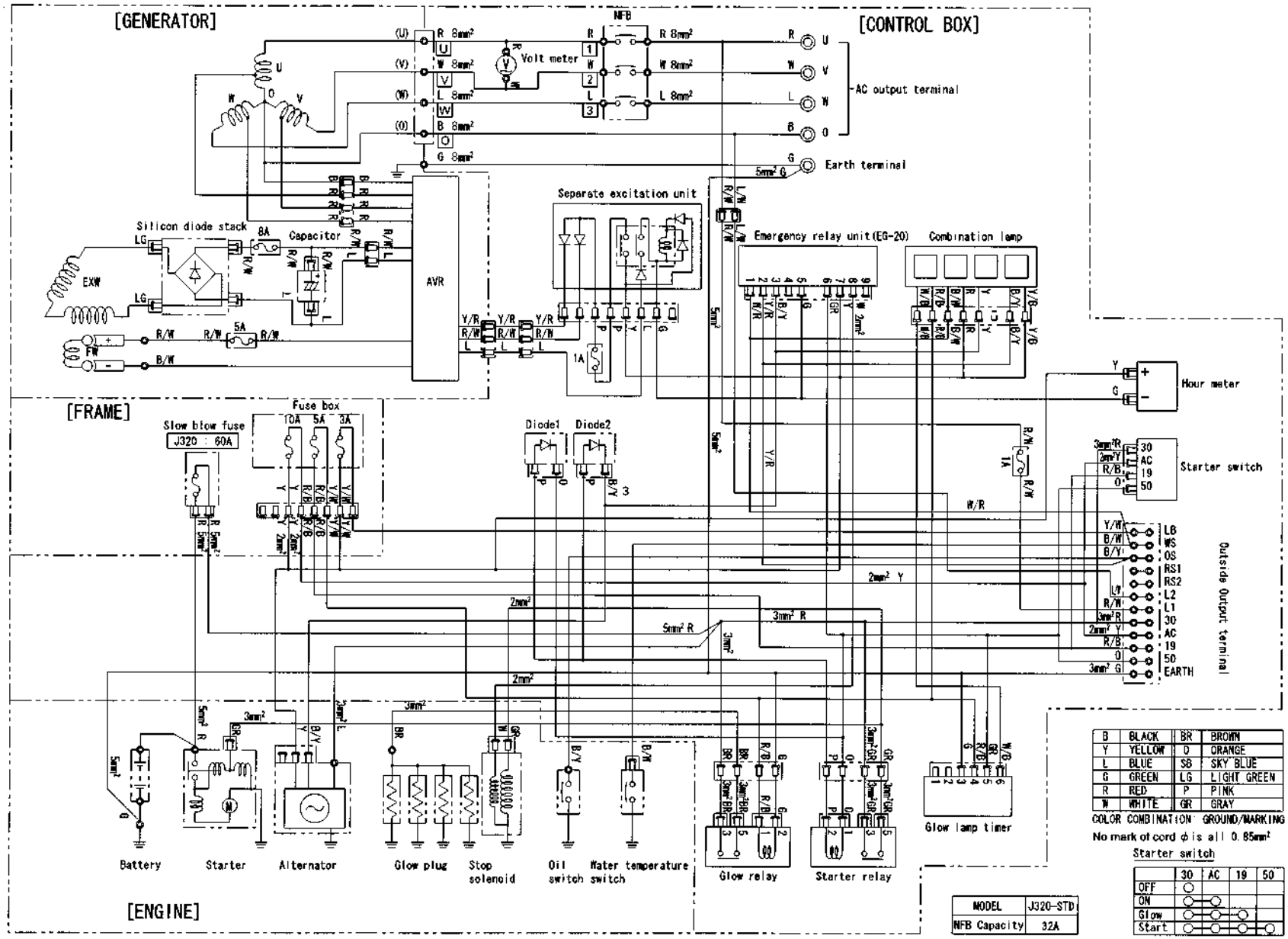
ENGLISH

■J315-STD (380V/220V)



B	BLACK	BR	BROWN
Y	YELLOW	O	ORANGE
L	BLUE	SB	SKY BLUE
G	GREEN	LG	LIGHT GREEN
R	RED	P	PINK
W	WHITE	GR	GRAY

■J320-STD (380V/220V)

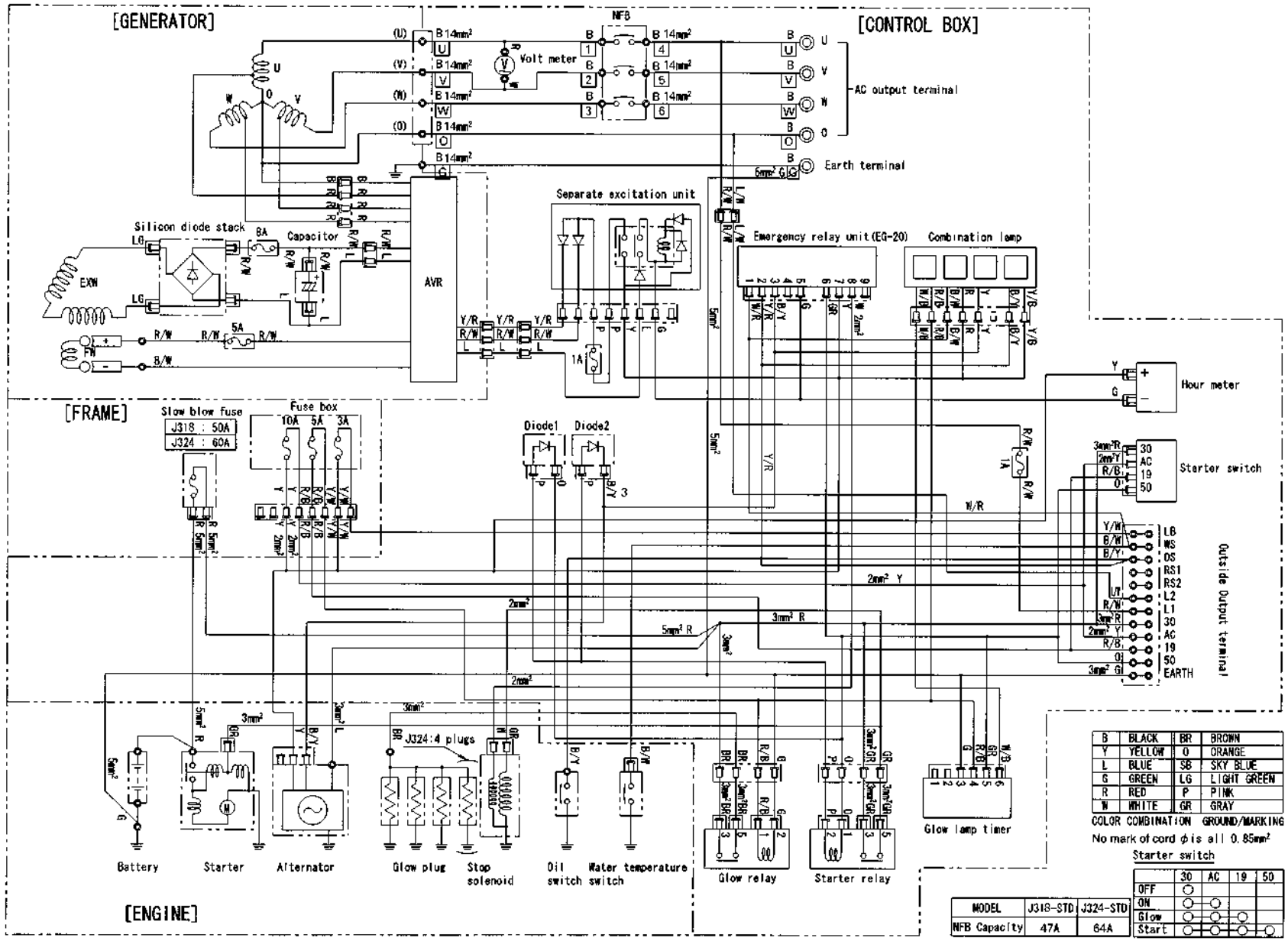


B	BLACK	BR	BROWN
Y	YELLOW	O	ORANGE
L	BLUE	SB	SKY BLUE
G	GREEN	LG	LIGHT GREEN
R	RED	P	PINK
W	WHITE	GR	GRAY

	30	AC	19	50
OFF	○			
ON	○	○		
Glow	○	○	○	
Start	○	○	○	○

ENGLISH

■J318-STD (220V/127V)
J324-STD (220V/127V)



B	BLACK	BR	BROWN
Y	YELLOW	O	ORANGE
L	BLUE	SB	SKY BLUE
G	GREEN	LG	LIGHT GREEN
R	RED	P	PINK
W	WHITE	GR	GRAY

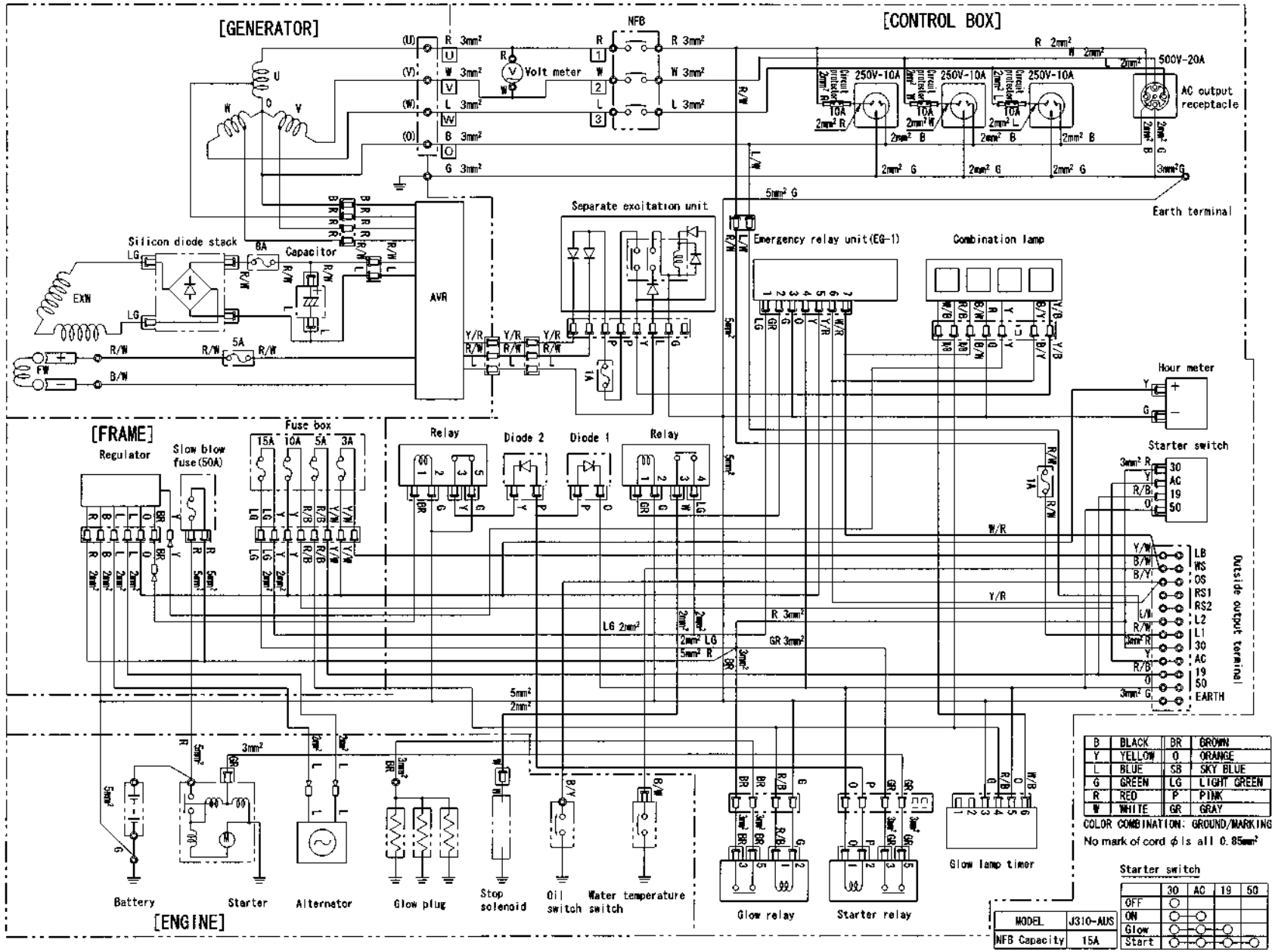
COLOR COMBINATION GROUND/MARKING
No mark of cord ϕ is all 0.85mm²

Starter switch

	30	AC	19	50
OFF	○			
ON	○	○		
Glow	○	○	○	
Start	○	○	○	○

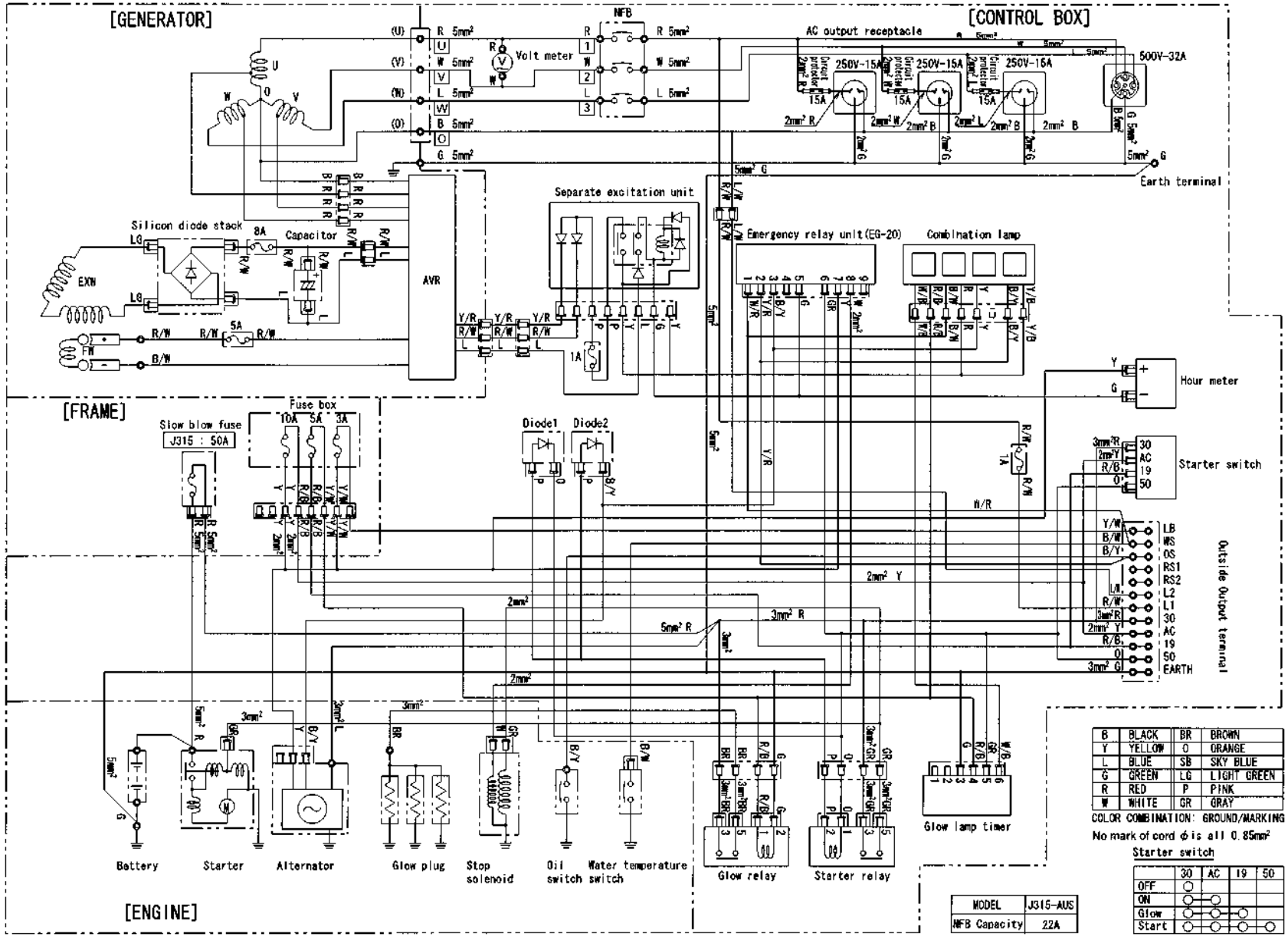
MODEL	J318-STD	J324-STD
NFB Capacity	47A	64A

■J310-AUS (415V/240V)



ENGLISH

■J315-AUS (415V/240V)



■J320-AUS (415V/240V)