OWNERS MANUAL

GENERATORS

NDK6000YE

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INTRODUCTION:

Thank you for purchasing a NAC portable generator.

Do not discard this manual; it contains important safety and operation information, so please keep it for future reference.

We want you to have years of safe and trouble-free operation from our high-quality NDK generators. Before you operate your NAC generator, read and become familiar with all information contained in this manual, so you can operate your new generator safely.

Pay attention to the information in this manual preceded by the following advisory words:

☠ **WARNING!** Indicates a strong possibility of death or serious injury if instructions are not followed.

CAUTION! Indicates a strong possibility of damage to the equipment if instructions are not followed.

Note: Gives helpful information.

TABLE OF CONTENTS:

SAFETY PRECAUTIONS:

Your safety is very important to us. While we cannot warn you about every possible hazard associated with operating your NAC portable generator, following the precautions listed below will assist you in operating your NAC generator safely. It is the operator's responsibility to be familiar with and to follow these important safety precautions.

1. Use extreme caution near fuel and other flammables.

- Do not fill the fuel tank while the engine is running.

☠ **WARNING!** Do not smoke or use open flame near the generator.

☠ **WARNING!** Do not place flammables such as fuel, oily rags, straw, trash, or matches near the generator.

- Take care not to spill diesel fuel on the generator when re-fueling. If fuel is spilled, wipe it off and allow it to dry completely before starting the generator.

2. Operate the generator in a well-ventilated area.

☠ **WARNING!** Exhaust gas contains poisonous carbon monoxide, which can be fatal if inhaled.

☠ **WARNING!** Do not operate the generator indoors or in any other insufficiently ventilated area. If the generator must be operated indoors, the area MUST be well ventilated and EXTREME CAUTION must be taken to prevent inhalation of poisonous carbon monoxide gasses.

- Do not operate the generator in any enclosed space or cover it with a box (including covered truck beds or vans). The engine and generator are air-cooled and may overheat if operated in an enclosed space. If this temperature rises excessively, the fuel may combust!
- Keep the generator at least 3 feet (1 meter) from any walls and other equipment during operation.

3. Operate the generator on a dry, level surface.

- Operating the generator on an inclined surface may cause the splash lubrication system to operate improperly. This could cause the engine to seize and is not covered under warranty.

4. Always operate the generator in a dry environment.

☠ **WARNING!** Do not operate the generator in the rain, snow, or with wet hands. Severe electrical shock may occur.

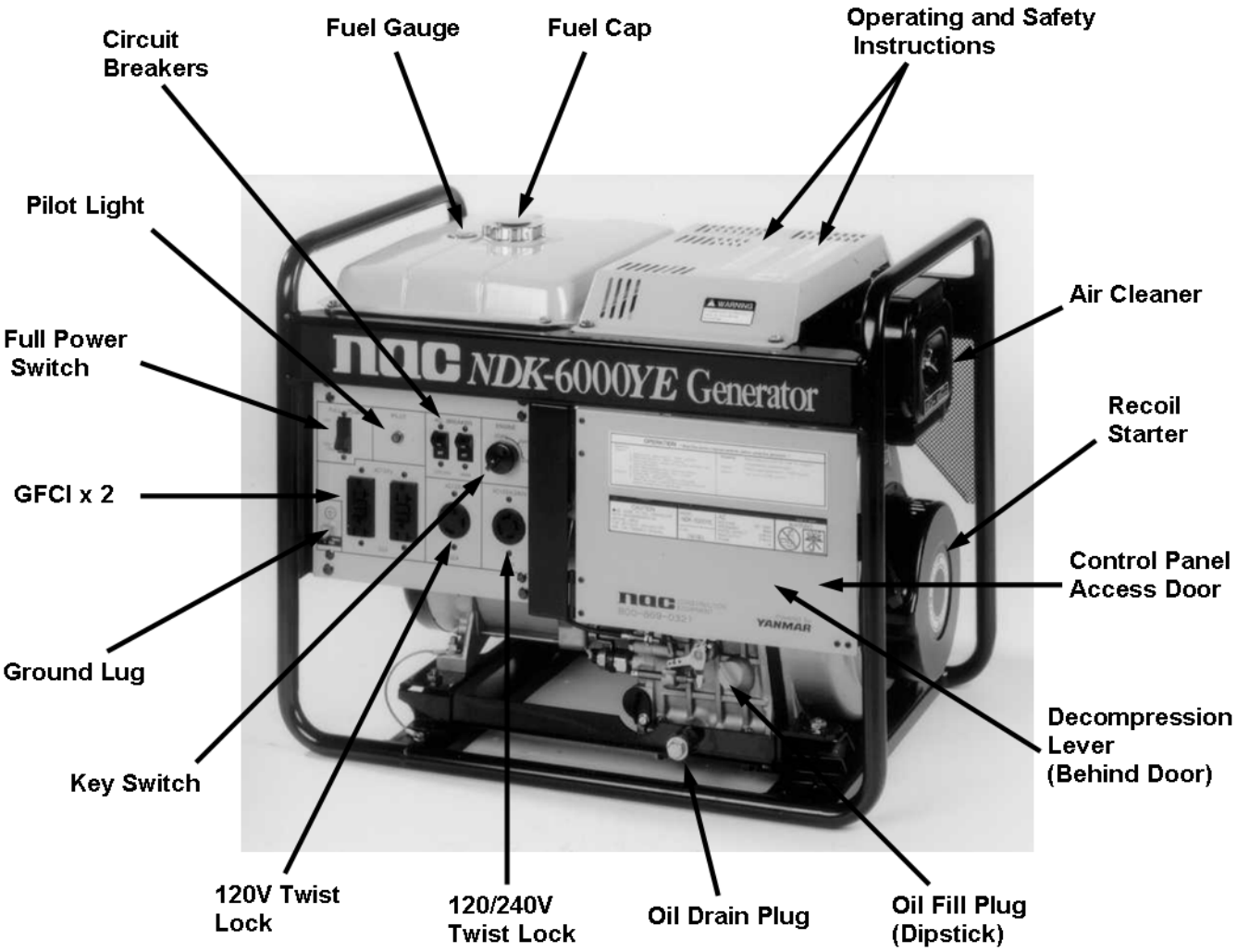
☠ **WARNING!** Do not clean the generator with a pressure washer or any other water hose. Use a damp cloth to wipe down the generator, and be especially careful not to get water into the receptacles.

☠ **WARNING!** Ensure there is no electrical wiring underneath the generator frame. Vibration from the generator frame could wear through the wiring and cause sparks, fire, or shock hazard.

5. Additional safety information.

☠ **WARNING!** Do not connect the generator directly to household or other indoor wiring or to any commercial power line. This could cause fatal injuries to Utility Service Personnel or damage to the generator. A licensed electrician must install a Manual Transfer Switch to the main circuit breaker panel in order to use a generator for back-up power.

- Although NAC generators are neutral grounded to the frame and should provide more than adequate safety, use a grounding rod in accordance with local and OSHA safety requirements for optimum grounding.
- The muffler and engine crankcase are extremely hot during and after operation. Allow the engine adequate time to cool before touching the muffler or crankcase.


Circuit Breakers
Fuel Gauge
Fuel Cap
Operating and Safety Instructions
Pilot Light
Air Cleaner
Full Power Switch
noc NDK-6000YE Generator
Recoil Starter
GFCI x 2
Control Panel Access Door
Ground Lug
Decompression Lever (Behind Door)
Key Switch
120V Twist Lock
120/240V Twist Lock
Oil Drain Plug
Oil Fill Plug (Dipstick)

SPECIFICATIONS:

Model		NDK-4100YE	NDK-6000YE
GENERATOR	**Type**	Brushless, single phase, 2-pole, self-exciting, revolving field type	
	Max AC output	4100W	6000W
	Rated AC output	3500W	5000W
	Rated voltage	120 / 240 V	120 / 240 V
	Rated current	29.2 / 14.6 A	41.7 / 20.8 A
	Voltage regulation	Condenser type	
	Frequency	60 Hz	
ENGINE	**Model**	Yanmar L70AE-DEG6NA	Yanmar L100AE-DEG6NA
	Horsepower	6.7	10.0
	Fuel tank capacity	3.4 gal.	3.4 gal.
	Run Time (hrs.)	8	6
	Recommended fuel	Diesel Fuel (45 Cetane Rating or higher)	
	Oil capacity	1.1 US qt.	1.7 US qt.
	Recommended oil	SAE 10W-30 API class CC or CD	
	Starting system	Electric with Recoil	Electric with Recoil
	Rated RPM	3600 rpm	
Dimensions (in.) (L x W x H)		25.6 x 19.5 x 20.9	28.4 x 19.0 x 22.8
Dry weight		170 lbs.	236 lbs.

*** Use a GROUP 51 battery on electric start models.**

** The engine rpm has been set at the factory and should ONLY be adjusted by authorized service centers.

MAINTENANCE SCHEDULE:

REGULAR SERIVCE PERIOD Perform at every indicated month or operating period, whichever comes first.		**Each use**	**Every month or 50 hrs.**	**Every 3 months or 200 hrs.**	**Every 6 months or 400 hrs.**	**Every year or 1000 hrs.**
Engine oil	Check level	●				
	Change		1st Time	●		
Oil Filter	Replace		1st Time		●	
Spark Arrester	Clean	●				
Fuel Tank	Drain		●			
Air cleaner	Inspect			●		
	Replace				● ※	
Fuel filter	Clean			●		
	Replace				●	
Valves	Adjust Clearance				●	
Fuel Injection Timing	Check				●	
Fuel Injection Nozzle	Check-Clean				●	
Fuel Injection Pump	Check					●

* For detailed engine information, refer to the Yanmar Engine Shop Manual.

Note: ※ Service more frequently in dusty areas.

PRE-OPERATION CHECKS (Perform Before Each Use):

Note: Before performing pre-operational checks, ensure the generator is located on a clean and level surface with the engine stopped.

INSPECT THE OVERALL CONDITION OF THE GENERATOR

- Look around the generator for signs of oil or fuel leaks.
- Ensure the cooling vents on the engine's recoil assembly and generator head are free of debris or obstructions.
- Check that all nuts, bolts, and screws are tightened.
- Inspect the generator for any signs of damage (especially on the control panel, fuel tank, and fuel hoses).
- Ensure the green, grounding wire located between the aluminum generator cover and the frame is securely connected.

CHECK ENGINE OIL

Note: The generator MUST be located on a level surface with the engine stopped when checking the oil level. Failure to do so could result in improper lubrication of the engine, which could cause engine damage!

- Remove the oil dipstick and wipe it clean.
- Fill the crankcase to the lower edge of the dipstick hole with the recommended oil. Yanmar recommends that you use API SERVICE category CC or CD oil.
  - SAE 10W-30 is recommended for general use (-5°F to 110°F). (Consult the Yanmar engine owner's manual for additional information)
- Inspect the color of the oil. If the oil appears excessively dark, cloudy, or has a metallic tint, change the oil. (Consult the Yanmar engine owner's manual for instructions about changing the oil)

CHECK AIR CLEANER

- Remove the air cleaner cover and inspect the outer, foam filter and inner, paper filter. Clean or replace dirty filters. If the foam filter is damaged, replace the filter.
  - Do NOT clean the filter with detergent or soapy water.
  - Clean the filters by carefully blowing the dirt from the inside of the filter with an air hose. Lightly coat the foam filter in engine oil, then squeeze out the excess. The engine will smoke when started if too much oil is left in the filter.

CHECK ENGINE FUEL

☠**WARNING!** Never check the fuel level or refuel the tank while the engine is running, near open flame, or while smoking.

- Remove the fuel cap and check fuel level. If level is low, refuel with fresh, clean, diesel fuel (45 Cetane rating or higher).

STARTING PROCEDURES:

USING RECOIL START

1) Ensure the switches on the generator control panel are in the correct position prior to starting the engine.
   a) All CIRCUIT BREAKERS should be turned off.
   b) Key Switch should be switched to "RUN."
2) Place the Engine Speed Lever in the "RUN" position by pushing the black lever to the right (The lever is located behind the yellow, access panel).
3) Grasp the Recoil Starter Handle and pull slowly until you feel a strong resistance, then return the handle to its original position.
4) Push the Decompression Lever down and release (The lever is behind the yellow, access panel).
5) Pull the Starter Handle hard and fast. Slowly return the starter handle to its original position.
6) If the engine fails to start, repeat steps 3) through 5).
7) Allow the engine to warm up for at least 3 minutes under "no-load," before you use the generator.

USING ELECTRIC START

1) Follow steps 1) through 3) of the RECOIL START section.
2) Insert the key into the key slot and turn it clockwise to the "START" position.
3) Release the key as soon as the engine starts (the key should automatically return to the "RUN" position).

CAUTION! If the engine does not start within 5 seconds, release the key. Wait at least 30 seconds and try to start the engine again.

Do not turn the key to the "START" position while the engine is running.

4) Allow the engine to warm up for 3 minutes before you use the generator.

USING A.C. POWER FROM THE GENERATOR

1) Single Voltage (120V only)

a) Leave the CIRCUIT BREAKERS off until your electrical appliances are properly connected to the generator.
b) Turn off the switches on all electrical appliances before connecting them to the generator.

CAUTION: Before plugging any appliances into the generator, add the wattage of each appliance to be used. The TOTAL wattage of all appliances should not exceed the RATED OUTPUT OF THE GENERATOR.

The total amperage of the appliances being used, should NEVER exceed the maximum amperage for EACH outlet. The maximum amperages for the outlets are labeled directly below each outlet on the generator control panel.

c) Insert the plugs from your electrical appliances into the generator.

Note: To use power from the round, locking receptacles, insert the plug into the receptacle and turn it clockwise to lock the plug.

d) Place the FULL POWER switch in the 120V position (The 240V receptacle can NOT be used when the FULL POWER switch is in the 120V position).
e) Switch the CIRCUIT BREAKERS on.

2) Dual Voltage (120V/240V)

a) Follow steps a) through c) above.
b) Place the FULL POWER switch in the 120V/240V position.
c) Switch the CIRCUIT BREAKERS on.

Note: When the FULL POWER switch is in the 120V/240V position, 100% of the RATED wattage can be taken from the 240V locking receptacle, but only 50% of the TOTAL RATED wattage is available from the 120V receptacles.

Example #1: Using an NDK-4100YE generator with the FULL POWER switch in the 120V/240V position, the rated output of the generator is 3500 watts. If you use a 960 watt appliance from the 240V receptacle, the maximum TOTAL wattage that can be used from the three 120V receptacles (combined) is 1750W. Even though the wattage consumed by all the appliances is only 2880 watts, the maximum output from the 120V receptacles is 50% of the rated output of the generator (3500W x 50% = 1750W).

Example #2: Using the same NDK-4100YE generator with the FULL POWER switch in the 120V/240V position, the rated output of the generator is 3500 watts. If you use a 3000 watt appliance from the 240V receptacle, the maximum TOTAL wattage that can be used from the three 120V receptacles (combined) is 500W. Although 50% of the rated output of the generator is 1750W, the total output of the generator can not exceed 3500W. You have used 3000W at 240V, so there is only 500W available from the 120V receptacles.

CAUTION! The FULL POWER switch should always be kept in the 120V position unless you are using the 240V receptacle. If you attempt to take more than 50% of the rated output from the 120V receptacles while the FULL POWER switch is in the 120V/240V position, the generator may become overloaded and possibly damaged.

STOPPING PROCEDURES:

1) Ensure all appliances are turned off.
2) Place CIRCUIT BREAKERS in the "OFF" position.
3) Before stopping the engine, allow it to run for at least three minutes with all appliances turned off, so the engine can cool down.
4) Once the engine has cooled down, turn the KEY switch on the generator control panel to the "STOP" position.

ADDITIONAL FEATURES OF YOUR NAC GENERATOR:

GFCI RECEPTACLES

GFCI stands for Ground Fault Circuit Interrupter. The GFCI compares the current leaving the GFCI receptacle with the current returning to the GFCI receptacle. If the current leaving the GFCI receptacle exceeds the current returning to the GFCI receptacle by 5 milliamps or more, the GFCI will trip. The GFCI is designed to stop the flow of electricity leaving the receptacle, in order to protect the person operating the appliances that are plugged into the GFCI. The GFCI will not limit the amount of current experienced if you are shocked, but it will limit the duration of the shock. This is why it is important to regularly test the GFCI's on your NAC generator.

TESTING GFCI's

1. The engine must be running and the CIRCUIT BREAKERS must be "ON" in order to test the GFCI's.
2. Press the TEST button located between the two outlets on each GFCI. The RESET button should pop out.
   - ❖ If the RESET button does not pop out, the generator or receptacle may be defective. Do not use the generator and contact your authorized NAC service center for repair.
3. To restore power, depress the RESET button until an audible "click" is heard. The TEST and RESET buttons should be level to each other.
   - ❖ If the GFCI trips during operation, turn the CIRCUIT BREAKERS off and unplug the appliances connected to the GFCI. Test the appliance for ground faults and repair faulty appliances before re-connecting them to the GFCI.
   - ❖ If the GFCI continues to trip, stop the generator and contact your authorized NAC service center.

CIRCUIT BREAKERS

The circuit breakers on NAC generators are "NO-FUSE" circuit breakers. These circuit breakers protect the GENERATOR from damage due to overload or short circuit in the appliance. They ARE NOT designed to protect the operator from shock or electrocution. When the circuit breaker trips, there is no voltage present at the receptacles.

WHAT TO DO IF THE CIRCUIT BREAKER TRIPS:

If the circuit breaker trips during operation, the generator may be overloaded or the appliance being used is defective.

1) Add the wattage from all appliances being used on the generator. If the total wattage exceeds the RATED output of the generator, the generator is overloaded.
   a) Reduce the number of appliances used on the generator.
   b) Use a NAC generator with higher wattage output.
2) If the total wattage being used is less than the RATED output of the generator, check the appliance for defects and repair faulty appliances before reconnecting them to the generator.
3) If the circuit breaker continues to trip, do not use the generator. Contact your authorized NAC service center.

OIL SENSOR

The oil sensors installed in the Yanmar engines on all NAC generators are designed to protect the engine from damage if you forget to maintain the proper oil level.

- If the oil level in the engine drops too low, the oil sensor will automatically stop the engine.
- If the engine stops automatically, check to ensure there is fuel in the tank and oil in the engine. Refill with fresh diesel fuel and/or oil if necessary and re-start the engine.
- If the engine still fails to start, follow the steps in the Troubleshooting section of this manual.

WATTAGE INFORMATION

Some appliances require more power when starting than when they are running. All NAC generators have an overload capacity designed to allow minimal overload for short periods. It is extremely important to use the proper size generator for the appliances you need to use. The information below gives the additional wattage required by certain appliances. The additional starting wattage required by these appliances must be considered when choosing the NAC generator best suited for your needs.

1) Incandescent lamps require no additional wattage to start.
2) Fluorescent lamps and mercury lamps require 1.2 to 2 times the running wattage to start.
3) Motor driven tools require 1.2 to 3 times the running wattage to start.
4) Motors that start under heavy loads such as compressors, refrigeration systems, and submersible pumps require high current for long periods while starting. These appliances require 3~5 times the running wattage to start.

Note: To determine running wattage, multiply the amperage on the tool nameplate by the voltage used. To determine starting wattage, multiply the running wattage by the factors listed above.

For example: A 5 amp submersible pump that runs on 120 volts has a running wattage of 600 watts (5A x 120V = 600W) and requires about 3000 watts to start (600W x 5 = 3000W).

- The chart below lists the approximate starting wattage (per H.P.) for motors rated by horsepower. Multiply the H.P. of the motor by the wattage listed by the specific Motor Code for your motor [For example: a 3 H.P., class G motor may require 16,800 Watts to start (3 x 5600 = 16,800W)].

MOTOR CODE LISTING					
Code	**Starting Watts per H.P.**	**Code**	**Starting Watts per H.P.**	**Code**	**Starting Watts per H.P.**
A	0 ~ 3150	H	6300 ~ 7100	R	14000 ~ 16000
B	3150 ~ 3550	J	7100 ~ 8000	S	16000 ~ 18000
C	3550 ~ 4000	K	8000 ~ 9000	T	18000 ~ 20000
D	4000 ~ 4500	L	9000 ~ 10000	U	20000 ~ 22400
E	4500 ~ 5000	M	10000 ~ 11200	V	22400 & up
F	5000 ~ 5600	N	11200 ~ 12500		
G	5600 ~ 6300	P	12500 ~ 14000		

- Check with the appliance manufacturer for specific information about the running and starting wattage requirements for that appliance.

EXTENSION CORD USAGE:

It important to use the proper gauge extension cord with any power tool or other electrical equipment. Improper selection of extension cords can reduce the voltage leading to your tools and could heat the extension cord excessively. Low voltage results in loss of speed and power, overheating, and possible damage to the tool.

WARNING! Take extreme caution not to cut through or damage any extension cord while using your NAC generator. Failure to heed this could result in damage to the generator, severe electric shock, or electrocution.

To assure the proper selection of extension cords, locate the ampere rating from the tool nameplate. Apply the amperage from this nameplate to the chart below to determine the proper gauge for the length of cable you are using. Always use UL approved extension cords.

CONTINUOUS LOAD			MAXIMUM GUAGE (AWG)		
AMPERES	WATTS				
	@ 120V	@ 240V	0~50 feet	50~100 feet	100~150 feet
2	240	480	18	18	16
3	360	720	18	16	14
4	480	960	18	14	12
5	600	1200	18	14	12
6	720	1440	16	12	12
8	960	1920	14	10	10
10	1200	2400	14	10	10
12	1440	2880	14	10	10
14	1680	3360	12	10	8
16	1920	3840	12	8	8
18	2160	4320	12	8	8
20	2400	4800	10	8	6
22	2640	5280	10	6	
25	3000	6000	8		
30	3600				

PREPARATION FOR STORAGE:

1) Operate the engine under No-load for three to five minutes and then stop the engine.
2) Change the engine oil while it is still warm. (See the Yanmar engine owner's manual for instructions)
3) Lubricate and protect the cylinder and valves from rust formation.
    a) Push the Decompression Lever down (Non-compression position) and hold it down while you pull the Recoil Starter 3 times. (Do not start the engine).
    b) Pull the Decompression Lever up. Pull the Recoil Starter slowly, and stop pulling when the resistance feels strong.
4) Drain the diesel fuel from the fuel tank.
5) Check all nuts, bolts, and screws for tightness; tighten if necessary.
6) Disconnect the two battery leads from the terminals on the battery.
7) Ensure the engine is cool, and clean the generator with a lightly oiled cloth.

Note: NEVER USE A GARDEN HOSE OR PRESSURE WASHER TO CLEAN THE GENERATOR! WATER CAN DAMAGE THE ENGINE AND GENERATOR!

8) Touch up any damaged paint to prevent corrosion.
9) Store the generator in a dry, well-ventilated area away from humidity, flames, or spark-producing equipment.

TROUBLESHOOTING:

IF THE ENGINE WILL NOT START

1. Check the fuel tank for sufficient diesel fuel. Refill with fresh diesel if necessary.
2. Check the engine oil. Fill to the upper limit with fresh oil.
3. Ensure the SPEED CONTROL LEVER is in the "RUN" position.
4. Inspect the air filter. Clean or replace it if necessary.
5. Disconnect all appliances from the generator.
6. Follow the starting procedures in this manual.

Note: Always pull the recoil starter quickly and firmly!

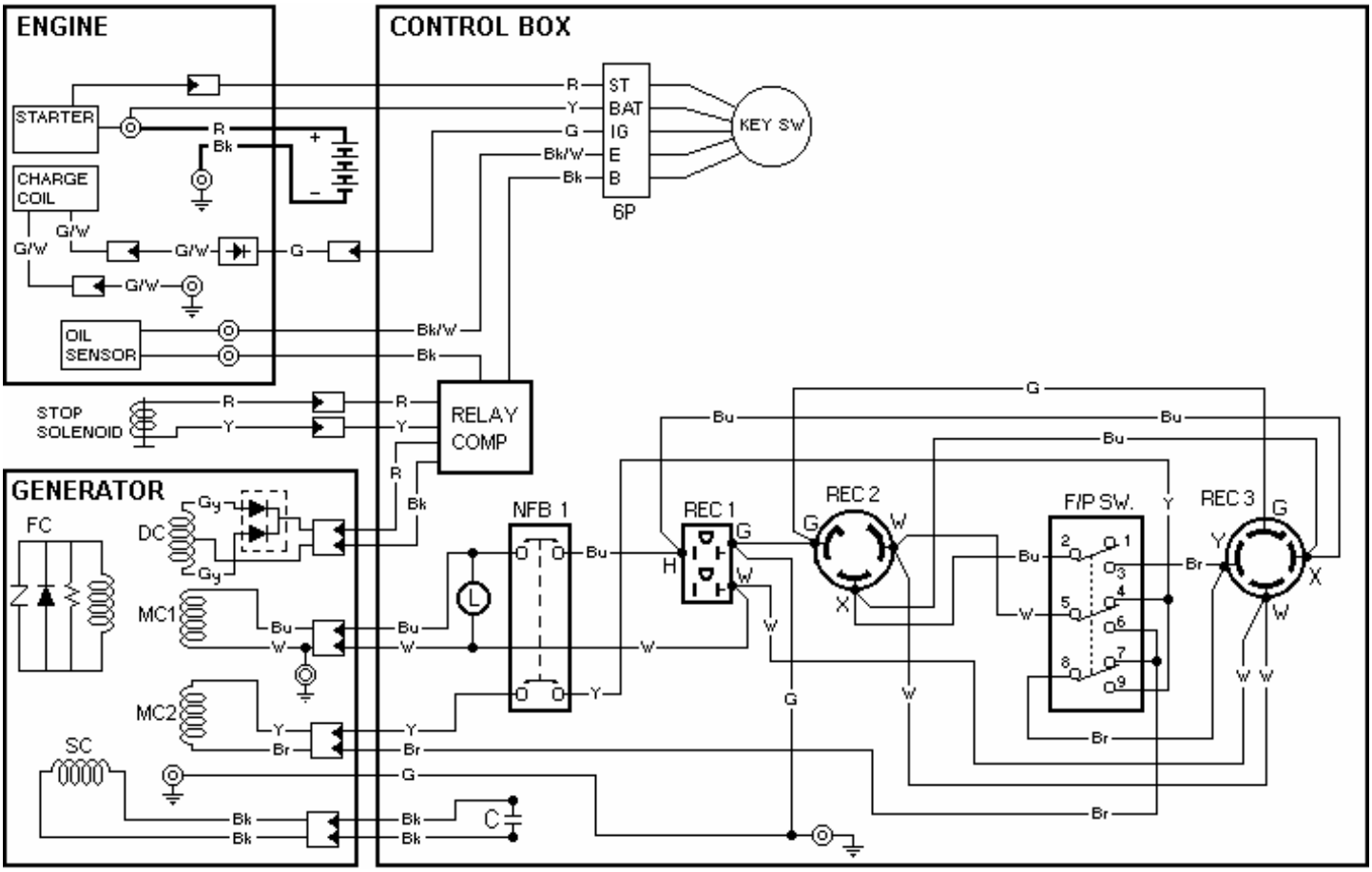
IF THE ENGINE STILL DOES NOT START

1. Take the generator to an authorized NAC or Yanmar engine service center.

IF THERE IS NO POWER AT THE RECEPTACLES

1) Turn the circuit breakers "OFF" and disconnect all appliances from the generator.
2) Turn the circuit breakers "ON" and test the GFCI's by following the procedures in this manual.
3) Add the wattage from all tools that will be connected to the generator, and ensure the total wattage consumed by the appliances is LESS than the RATED OUTPUT of the generator. (Refer to the section in this manual on Wattage Information for detailed information)
4) Place the FULL POWER switch in the "120V ONLY" position unless you are using a tool that requires 240V.
5) Turn the circuit breakers "OFF" and reconnect the appliances. Ensure the plugs are securely connected to the receptacles.
6) Then turn the circuit breakers back "ON."
7) If there is still no power at the receptacles, take the generator to an authorized NAC service center.

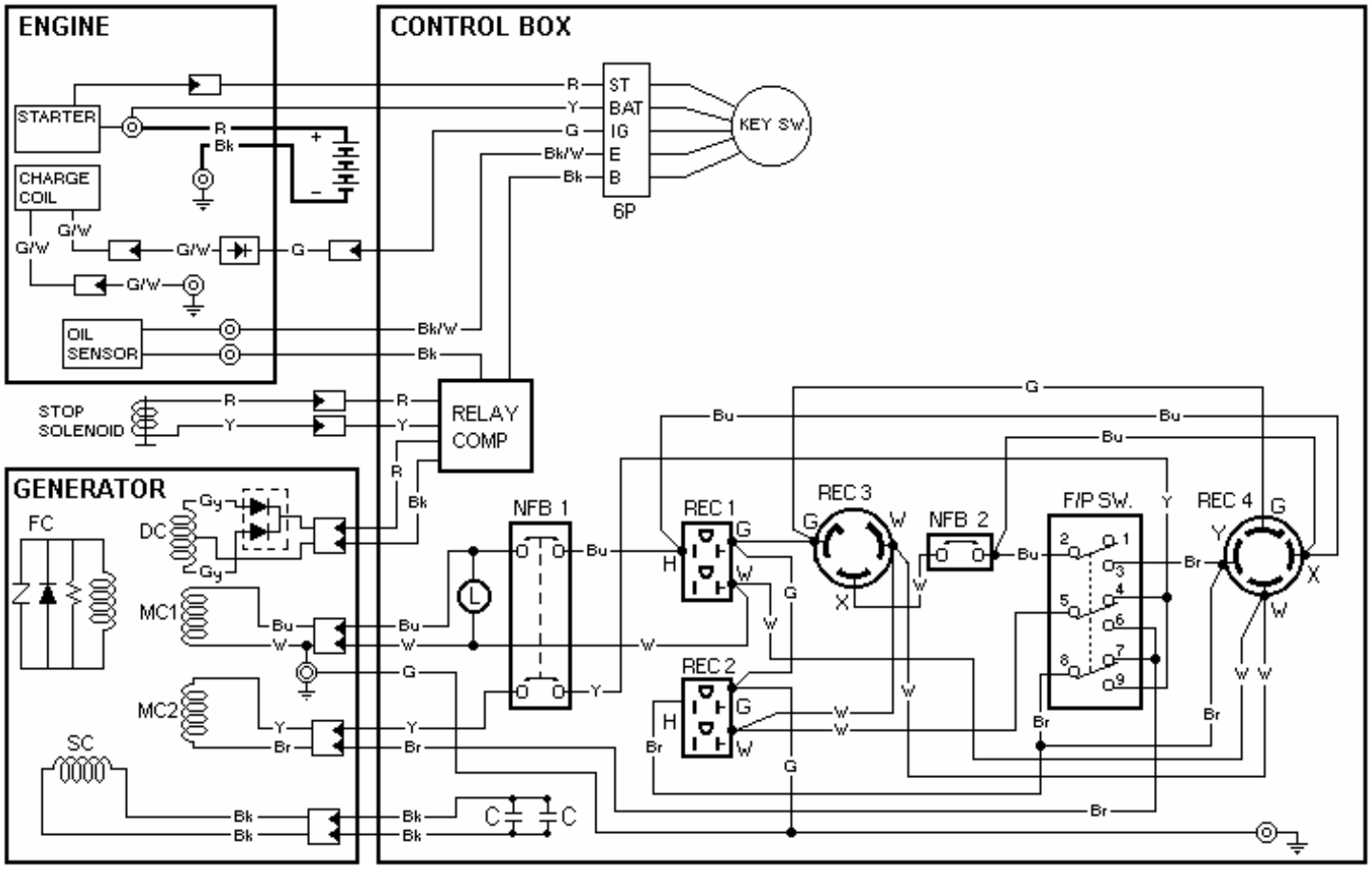
NDK-4100YE WIRING DIAGRAM



KEY

ROTOR FC = FIELD COIL STATOR MC1 = AC WINDING MC2 = AC WINDING SC = CONDENSER WINDING DC = DC WINDING C = CONDENSER NFB = NO FUSE BREAKER FP SW. = FULL POWER SWITCH L = PILOT LAMP	**FULL POWER SWITCH POSITION** UP = 120/240V DOWN = 120V ONLY **COLOR CODES** Br = Brown Y = Yellow Bk = Black Bu = Blue R = Red Gy = Gray G = Green G/W = Green with White stripe Bk/W = Black with White Stripe R/W = Red with White Stripe

NDK-6000YE WIRING DIAGRAM



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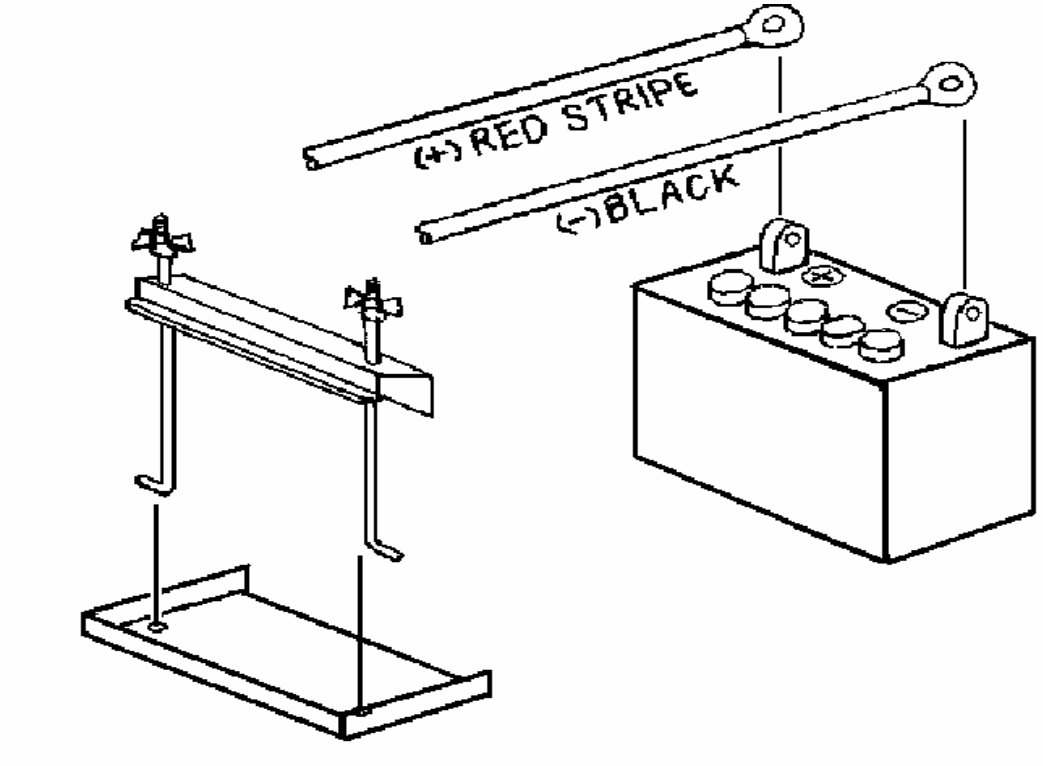
Battery Installation Instructions



- **Connect the black battery cable from the generator to the negative terminal on the battery.**
- **Connect the black battery cable (with the red stripe) from the generator to the positive terminal on the battery.**

****Use a GROUP 51 battery on NAC NDK-4100YE AND NDK-6000YE generators.****