DIAGNOSTIC REPAIR MANUAL

50/60 Hertz GP, LP and HW Series Portable Generators

GP/LP Models		Honeywell Models	International Models	
GP1800	GP7500E	HW3250	GP1000	GP3300
GP3250	GP7500E DF	HW5500	GP1100	GP5000
GP3250	GP8000E	HW5500E	GP2000	GP5500
GP3300	COSTCO	HW6500	GP2200	GP6000E
GP3600	LP3250	HW7500E	GP2600	GP6500E
GP5500	LP5500		GP2800	
GP6500				
GP6500E				

Important Note: Always use the unit specific Schematics and Wiring Diagrams for troubleshooting.

PORTABLE GENERATORS

Safety

Throughout this publication and on tags and decals affixed to the generator, DANGER, WARNING, and CAUTION blocks are used to alert personnel to special instructions about a particular operation that may be hazardous if performed incorrectly or carelessly. Observe them carefully. Their definitions are as follows:

⚠DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

(000001)

⚠WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

(000002)

⚠CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

(000003)

NOTE: Notes provide additional information important to a procedure or component.

These safety alerts cannot eliminate the hazards they indicate. Observing safety precautions and strict compliance with the special instructions while performing the action or service are essential to preventing accidents.

⚠WARNING

CANCER AND REPRODUCTIVE HARM

www.P65Warnings.ca.gov.

(000393a)

Read This Manual Thoroughly

This diagnostic manual has been written and published by Generac to aid dealer technicians and company service personnel when servicing the products described herein.

It is assumed that these personnel are familiar with the servicing procedures for these products, or like or similar products manufactured and marketed by Generac, and that they have been trained in the recommended servicing procedures for these products, including the use of common hand tools and any special Generac tools or tools from other suppliers.

Generac could not possibly know of and advise the service trade of all conceivable procedures by which a service might be performed and of the possible hazards and/or results of each method. We have not undertaken any such wide evaluation. Therefore, anyone who uses a procedure or tool not recommended by Generac must first satisfy themselves that neither his nor the products safety will be endangered by the service procedure selected.

All information, illustrations and specifications in this manual are based on the latest product information available at the time of publication.

When working on these products, remember that the electrical system and engine ignition system are capable of violent and damaging short circuits or severe electrical shocks. If you intend to perform work where electrical terminals could be grounded or touched, the battery cables should be disconnected at the battery.

Any time the intake or exhaust openings of the engine are exposed during service, they should be covered to prevent accidental entry of foreign material. Entry of such materials will result in extensive damage when the engine Is started.

During any maintenance procedure, replacement fasteners must have the same measurements and strength as the fasteners that were removed. Metric bolts and nuts have numbers that indicate their strength. Customary bolts use radial lines to indicate strength while most customary nuts do not have strength markings. Mismatched or incorrect fasteners can cause damage, malfunction and possible injury.

Replacement Parts

When servicing this equipment, it is extremely important that all components be properly installed and tightened. If improperly installed and tightened, sparks could ignite fuel vapors from fuel system leaks.

Rotor and Stator Resistance Tables

Series		Model	SD/WD	Alternator	Rotor Windings (Ohms)	Power Windings (Ohms)	Exciter Windings (Ohms)
GP/LP	GP1800	5981	0H8255	0J0819	29.4	0.798	2.53
	GP3250	5982	0H2626	0H3578	31	0.62	1.72
	GP3250	5789	0H2271	0H0401	52	0.389	2.58
	LP3250	6000	0J2561	0J6032	58	0.63	2
	GP3300	6431	0K3165	0K3343	31	1.25	1.72
		6432	0K3165				
	GP3600	G0076770	10000034448	10000034462	57.36 ±15%	0.33 ± 15%	2.95 ±15%
	GP/LP5500	5939	0G9769	0J8363	61.48	0.681	2.81
		5975	0J1926				
		5945	0J5235				
	GP6500	5940	0G9769	0K9546	58.95	0.657	2.168
		5946	0J5235				
		5976	0J1926				
	GP6500 w/CO-Sense™	7672	10000032713	0K9546	58.95	0.657	2.168
		7680					
		7683					
	GP6500E	5941	0H9920	0K1291	69 ± 10%	0.6 ± 10%	2.9 ± 10%
	GP7500E	5978	0J1927	0K8981	58.8		1.62
		5943	0H9920				
	GP7500E GFCI	5943	NA	0k0755	53.01	0.5	2.233
	GP7500E DF-CO	8011	A0001920613	A0000121536	52.42	0.491	1.928
	GP8000E COSTCO	6514	0J8438	0K9791	52.17	0.471	1.626
	GP8000 w/CO-Sense™	7673	NA	0K0755	53.01	0.5	2.233
		7675	NA				

Series		Model	SD/WD	Alternator	Rotor Windings (Ohms)	Power Windings (Ohms)	Exciter Windings (Ohms)
GP International	GP1000	6751	0K6394	0L1434	23	6	2.7
	GP1100	6844	0K9436	0L0144	23	1.5	2.4
	GP1100	6740	NA	NA	23	1.5	2.4
	GP1100	6741	0K9437	0L1434	23	6	2.7
	GP2000	6742	0K9438	0L0146	29	2.28	2.45
	GP2200	6845	0K3165	0L0145	29	0.57	2.45
	GP2200	6743	0K9439	NA	29	0.57	2.45
	GP2200	6752	0K9440	0L0146	29	2.28	2.45
	GP2600	6217	0J6928	0K1880	27.5	1.3	1.7
	GP2600	6425	0K2040	NA	27.5	1.3	1.7
	GP2800	6744	NA	NA	27.5	1.3	1.7
	GP3300	6745	0K3165	0K3343	31	0.63	1.7
	GP3300	6753	NA	NA	31	0.63	1.7
	GP5000	6426	0K2041	0K1881	65	0.7	2.2
	GP5000	6746	N/A	NA	65	0.7	2.2
	GP5500	6747	0J8438	0J8363	61.48	0.68	2.81
	GP5500	6754	0K2041	NA	61.48	0.68	2.81
	GP6000E	6427	NA	0K1882	72	0.6	2
	GP6000E	6755	N/A	NA	72	0.6	2
	GP6500E	6843	0J8438	0K9546	58.95	0.66	2.2
	GP6500E	6748	NA	NA	58.95	0.66	2.2
	GP6500E	6749	0K2041	NA	58.95	0.66	2.2

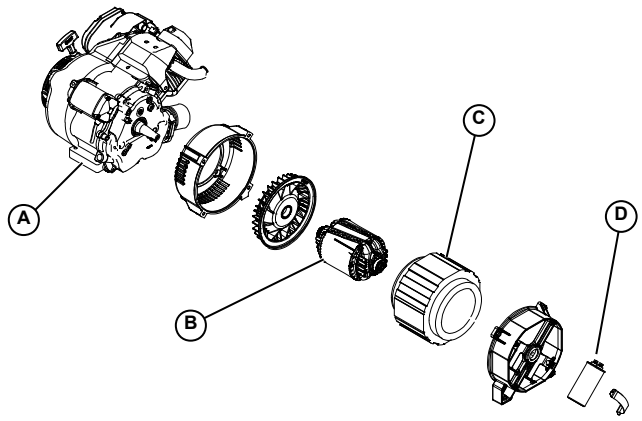
Series		Model	SD/WD	Alternator	Rotor Windings (Ohms)	Power Windings (Ohms)	Exciter Windings (Ohms)
HW	HW3250	5973	0H2626	0H3578	31	0.62	1.72
		6150			31	0.62	1.72
	HW5500	6036	0J3684	0J8363	61.48	0.681	2.81
		6151	0J3684A		61.48	0.681	2.81
	HW5500E	6037	0J3684	0J8363	61.48	0.681	2.81
	HW6500	6038		0K9546	58.95	0.657	2.68
	HW7500E	6039		0K0755 0H9209	49.1-53.01	0.479-0.5	1.37-2.23
		6152	0J3684A	0K0755	53.01	0.5	2.233

Wattage Reference Guide				
Device	**Running Watts**		**Device**	**Running Watts**
*Air Conditioner (12,000 Btu)	1700		Hand Drill	250 to 1100
*Air Conditioner (24,000 Btu)	3800		Hedge Trimmer	450
*Air Conditioner (40,000 Btu)	6000		Impact Wrench	500
Battery Charger (20 Amp)	500		Iron	1200
Belt Sander (3")	1000		*Jet Pump	800
Chain Saw	1200		Lawn Mower	1200
Circular Saw (6-1/2”)	800 to 1000		Light Bulb	100
*Clothes Dryer (Electric)	5750		Microwave Oven	700 to 1000
*Clothes Dryer (Gas)	700		*Milk Cooler	1100
*Clothes Washer	1150		Oil Burner on Furnace	300
Coffee Maker	1750		Oil Fired Space Heater (140,000 Btu)	400
*Compressor (1 HP)	2000		Oil Fired Space Heater (85,000 Btu)	225
*Compressor (3/4 HP)	1800		Oil Fired Space Heater (30,000 Btu)	150
*Compressor (1/2 HP)	1400		*Paint Sprayer, Airless (1/3 HP)	600
Curling Iron	700		Paint Sprayer, Airless (hand held)	150
*Dehumidifier	650		Radio	50 to 200
Disc Sander (9")	1200		*Refrigerator	700
Edge Trimmer	500		Slow Cooker	200
Electric Blanket	400		*Submersible Pump (1-1/2 HP)	2800
Electric Nail Gun	1200		*Submersible Pump (1 HP)	2000
Electric Range (per element)	1500		*Submersible Pump (1/2 HP)	1500
Electric Skillet	1250		*Sump Pump	800 to 1050
*Freezer	700		*Table Saw (10")	1750 to 2000
*Furnace Fan (3/5 HP)	875		Television	200 to 500
*Garage Door Opener	500 to 750		Toaster	1000 to 1650
Hair Dryer	1200		Weed Trimmer	500
* Allow 3 times the listed watts for starting these devices.				

Section 1 Brushless Capacitor Excitation

Introduction

See ***Figure 1-1***. A typical brushless type portable generator needs 4 major components to function: a prime mover, stator, rotor, and capacitor.



A. Engine
B. Rotor
C. Stator
D. Capacitor

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Figure 1-1. AC Generator Exploded View

As the engine begins to rotate, residual/permanent magnetism from the rotor creates magnetic lines of flux. The lines begin to cut the excitation winding and induce a small voltage into the winding. The voltage causes the capacitor to charge.

The capacitor on the excitation winding takes the place of a voltage regulator. It will charge until AC peaks, then as AC starts to fade it will discharge causing a voltage to be induced into the rotor.

In one rotation of the rotor, the capacitor will charge and discharge twice. Because it's being charged by the north and south poles, it will induce AC voltage discharges into the rotor.

Two diodes in the rotor convert AC voltage to DC. There is a diode in one pole that is orientated in one direction, and a diode in the opposite pole orientated in the opposite direction. This produces a north and south poled rotor.

A capacitor discharge generator will produce a lower voltage until load is applied. Once load is applied, the output voltage will rise due to induction into the DPE winding/capacitor.

As load is applied, current in the main AC windings increases. This increase in EMF is also induced into the excitation winding (much like a transformer functions). The increased EMF into the excitation winding causes voltage to increase which also increases the charge/discharge value of the capacitor. This creates a stronger magnetic field in the rotor and higher AC output.

NOTE: This will only increase from no load to full load and will stop increasing at that point.

NOTE: The voltage of a brushless capacitive discharge generator will start low and increase as load is applied.

Stator Assembly

The stator has three windings wound separately inside the can. Two are power windings located on Wire 44 (Hot) and Wire 33 (Neutral), the other winding is on Wire 11 (Hot) and Wire 22 (Neutral). The third winding is the Displaced Phase Excitation (DPE) winding and is on Wire 2 and Wire 6. Some generators have color coded wires. Always use the appropriate schematic and wiring diagram for unit.

Rotor Assembly

See ***Figure 1-2***. The 2-pole rotor must be operated at 3600 rpm to supply a 60 Hertz AC frequency. The term “2-pole” means the rotor has a single north magnetic pole and a single south magnetic pole. It spins freely inside the stator can and is excited by the charging and discharging of the capacitor. It has two diodes (A and B) that rectify voltage induced from the excitation winding to DC voltage. Each winding/pole will have a diode orientated to create current flow in one direction, and the other winding/pole will have a diode orientated to create current flow in the opposite direction. This creates a north and south pole. The rotor bearing is pressed onto the end of the rotor shaft. The tapered rotor shaft is mounted to a tapered crankshaft and is held in place with a single through bolt.

NOTE: Some Rotors have a magnet placed inside the laminations to help excite the rotor after it's been left idle for a long period of time.

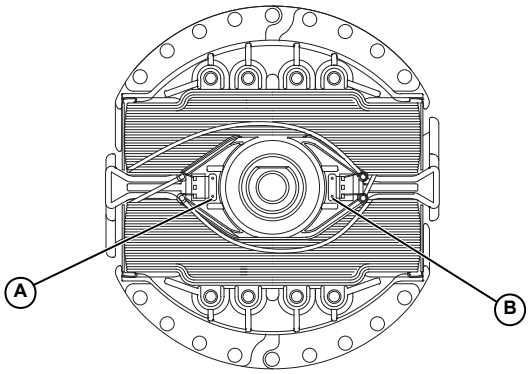

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Figure 1-2. Rotor and Diodes

Circuit Breakers

Each individual circuit on the generator is protected by a circuit breaker to prevent overload.

Operation

Startup

When the engine is started, residual/permanent magnetism from the rotor induces a voltage into (a) the stator AC power windings, and (b) the stator excitation or DPE windings. In an “on-speed” (engine cranking) condition, residual/permanent magnetism is capable of creating approximately one to three Volts AC.

On-Speed Operation

As the engine accelerates, the voltage that is induced into the stator windings increases rapidly, due to the increasing speed at which the rotor operates.

Field Excitation

An AC voltage is induced into the stator excitation (DPE) windings. The DPE winding circuit is completed to the capacitor where the capacitor is charged until the AC voltage peaks and then discharges as the AC voltage starts to decay. The charging and discharging causes a voltage to be induced back into the rotor which will produce voltage. The greater the current flow through the rotor windings, the more concentrated the lines of flux around the rotor become. The more concentrated the lines of flux around the rotor that cut across the stationary stator windings, the greater the voltage that is induced into the stator windings. Initially, the AC power winding voltage is low, but as the capacitor is charged and discharged this relationship between the rotor and the capacitor is what will regulate voltage at a desired level.

AC Power Winding Output

A maintained voltage is induced into the stator AC power windings. When electrical loads are connected across the AC power windings to complete the circuit, current can flow in the circuit.

NOTE: The voltage of a brushless capacitive discharge generator will start low and increase as load is applied.

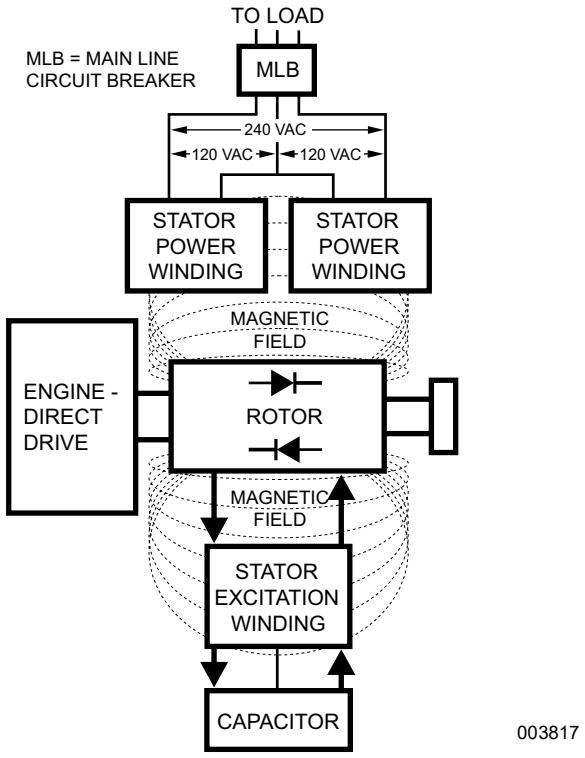


Figure 1-3. Generator Operating Diagram

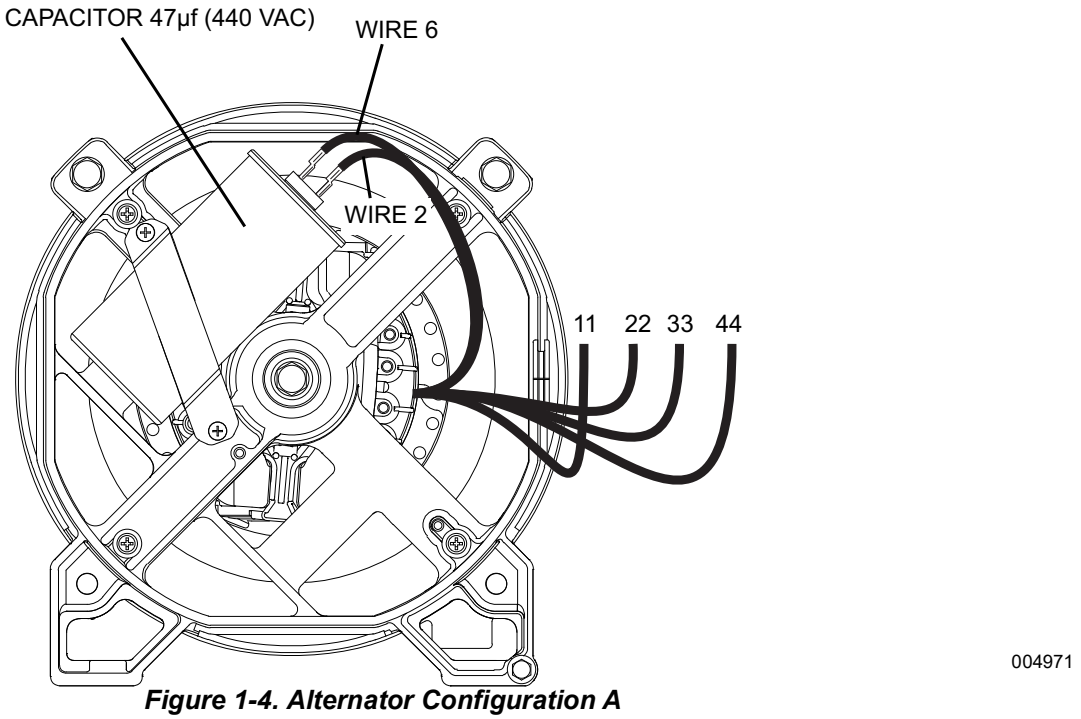


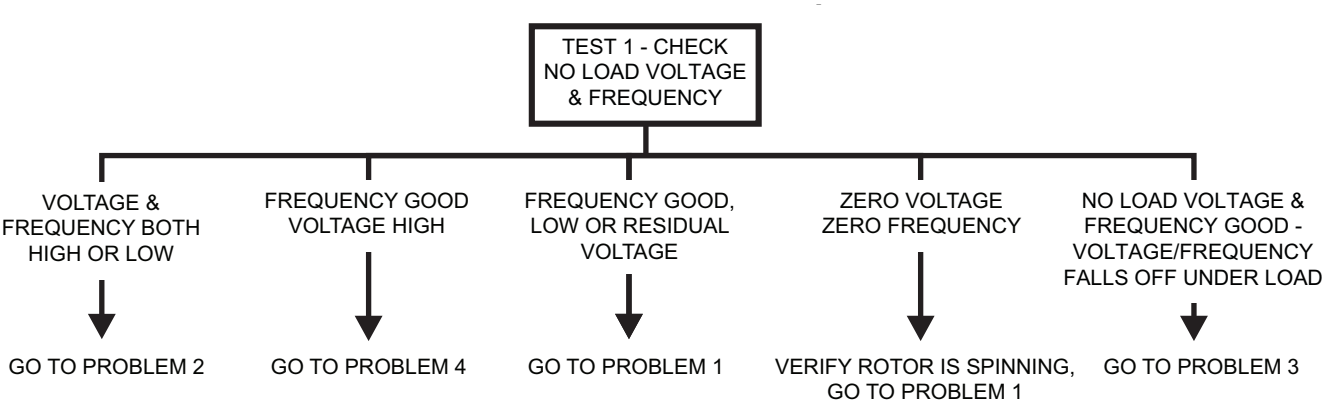
Figure 1-4. Alternator Configuration A

Troubleshooting Flowcharts

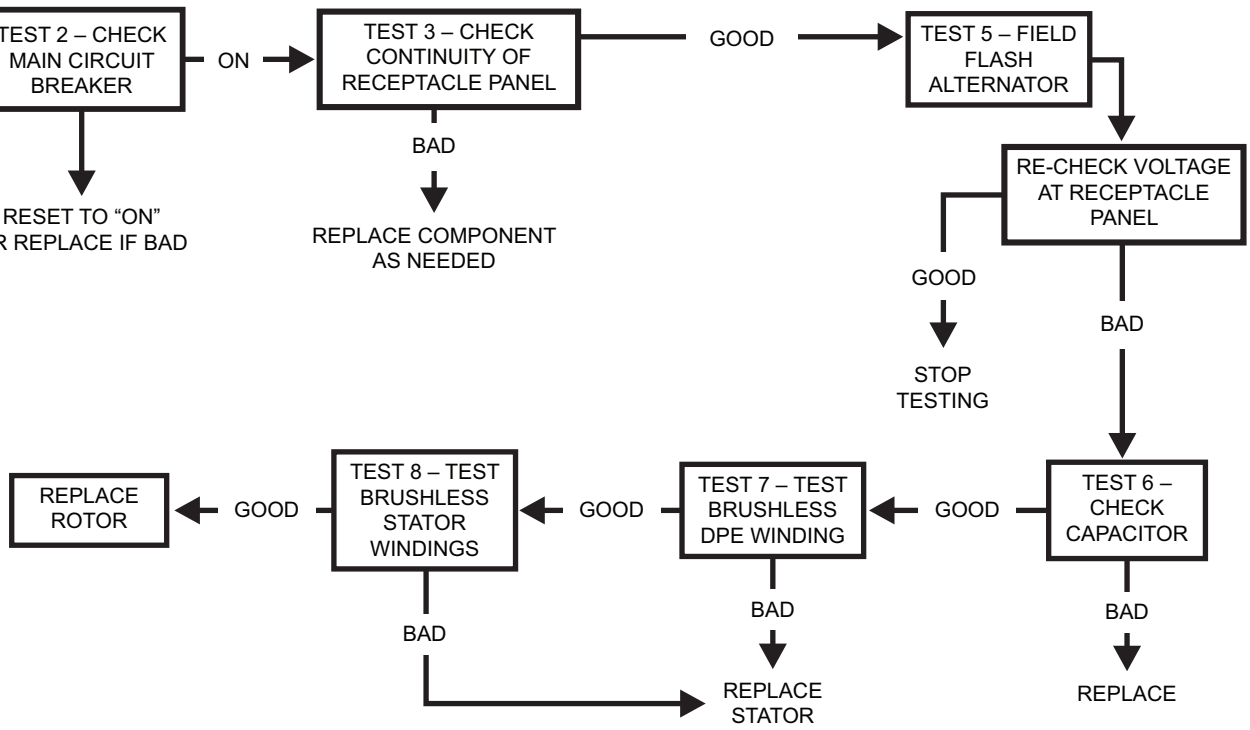
Introduction

Use the Flow Charts in conjunction with the ***AC Diagnostic Tests*** . Test numbers used in the flow charts correspond to the numbered tests in the ***AC Diagnostic Tests*** . The first step in using the flow charts is to identify the correct problem on the following pages. For best results, perform all tests in the exact sequence shown in the flow charts.

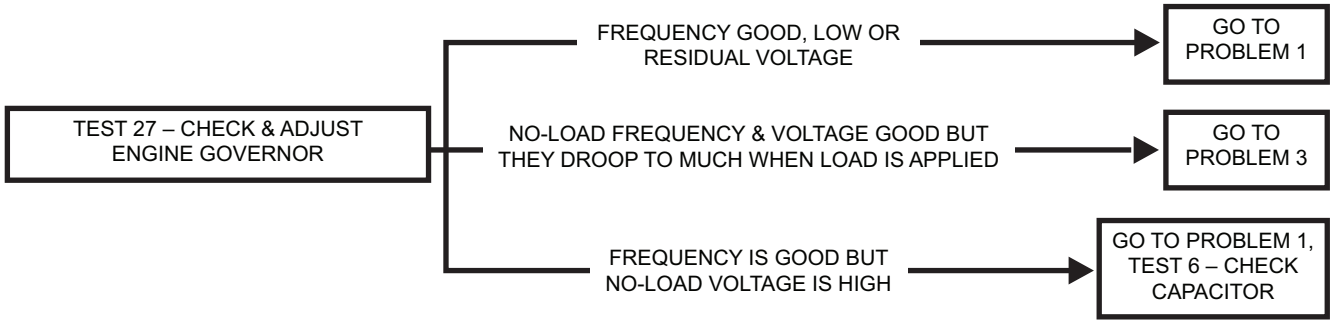
If Problem Involves AC Output



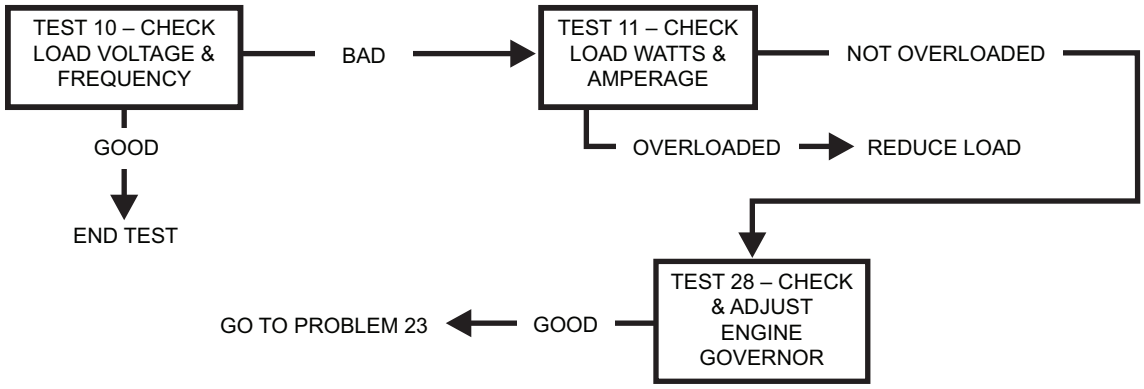
Problem 1 – Generator Produces Zero Voltage or Residual Voltage



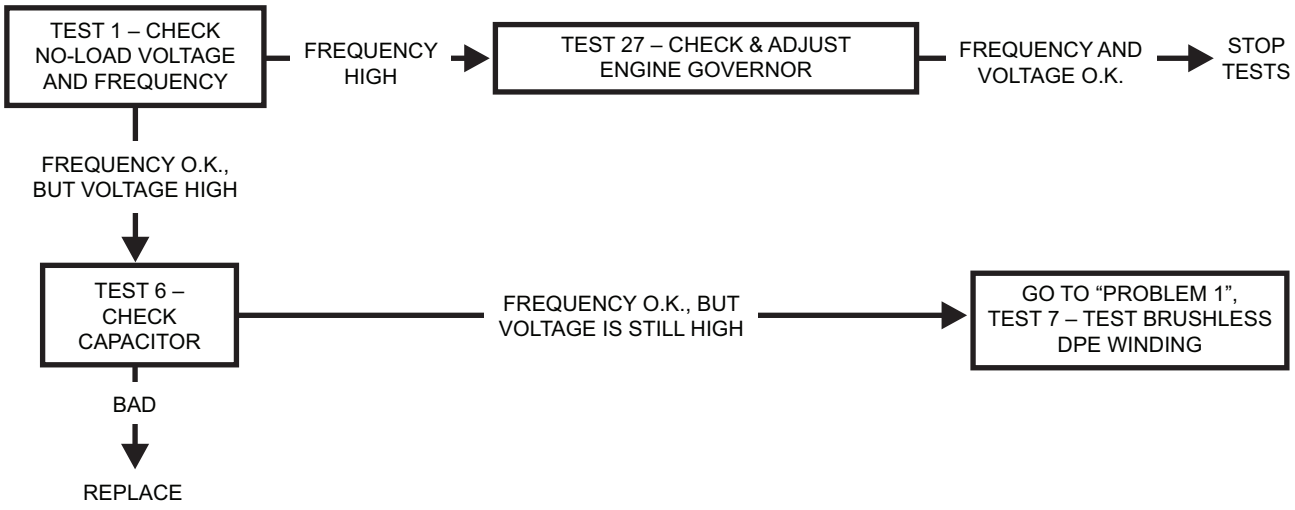
Problem 2 – Voltage & Frequency Are Both High or Low



Problem 3 – Excessive Voltage/Frequency Droop When Load is Applied



Problem 4 – Generator Produces High Voltage at No-Load

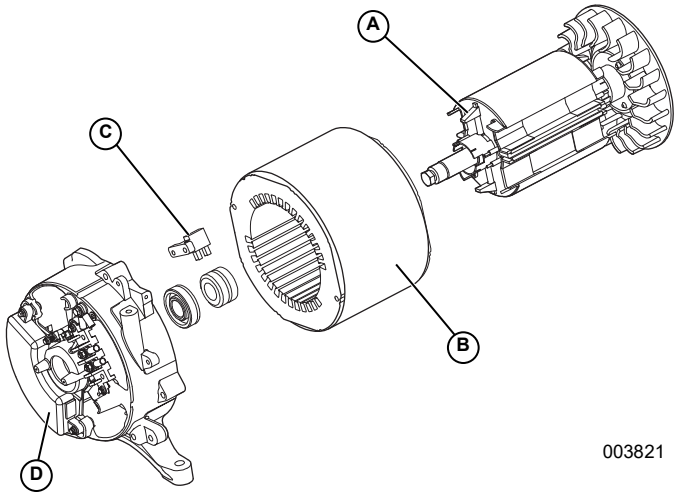


Section 2 Direct Excitation (Brush Type)

Introduction

See ***Figure 2-1***. A typical brush type portable generator needs 4 major components to function: prime mover, rotor, stator, and voltage regulator.

As the engine begins to rotate, residual magnetism from the rotor creates magnetic lines of flux. The lines begin to cut across the excitation winding and induce a small voltage into the voltage regulator. The excitation voltage will power the voltage regulator and the voltage regulator will start to sense AC voltage from Wires S15 and S16. The lower voltage from the sensing wires will cause DC excitation to the rotor to be driven up until AC output is at desired level of 240 VAC. Once the generator has reached 240 VAC it will maintain the DC voltage, regulating the alternator when loads are applied and removed.



A. Rotor
B. Stator
C. Brushes
D. Voltage Regulator

Figure 2-1. AC Generator Exploded View

Stator Assembly

The stator has three windings wound separately inside the can. Two are the power windings and are located on Wire 44 (Hot) and Wire 33 (Neutral); the other winding is located on Wire 11 (Hot) and Wire 22 (neutral). The third winding is called DPE winding or displaced phase excitation winding and is located on Wire 2 and Wire 6.

Some generators have color coded wires. Always use the appropriate schematic and wiring diagram for unit.

Brush Holder and Brushes

The brush holder has a positive (+) and a negative (-) brush, and is retained to the rear bearing carrier by means of two Taptite screws. Wire 4 connects to the positive (+) brush and Wire 0 to the negative (-) brush. Rectified and regulated excitation current is delivered to the rotor windings via Wire 4, and the positive (+) brush and slip ring. The excitation current passes through the windings to the negative (-) slip ring and brush on Wire 0. This current flow creates a magnetic field around the rotor having a flux concentration that is proportional to the amount of current flow.

Rotor Residual Magnetism

The generator revolving field (rotor) may be considered to be a permanent magnet. Some “residual” magnetism is always present in the rotor. This residual magnetism is sufficient to induce a voltage into the stator AC power windings that is approximately 2-5 volts AC.

NOTE: Some rotors have a magnet placed inside to help excite the rotor after it has been left idle for a long period of time.

Voltage Regulator

See ***Figure 2-1***. Unregulated AC output from the stator excitation winding is delivered to the regulator’s DPE terminals, via Wire 2 and Wire 6. The voltage regulator rectifies that current and regulates it based on stator AC power winding sensing. The rectified and regulated excitation current is then delivered to the rotor windings from the positive (+) and negative (-) regulator terminals, via Wire 4 and Wire 0. Stator AC power winding “sensing” is delivered to the regulator via Wires S15 and S16.

Operation

Startup

When the engine is started, residual magnetism from the rotor induces a voltage into (a) the stator AC power windings, (b) the stator excitation or DPE windings. In an “on-speed” (engine cranking) condition, residual magnetism is capable of creating approximately one to three volts AC.

On-Speed Operation

As the engine accelerates, the voltage that is induced into the stator windings increases rapidly, due to the increasing speed at which the rotor operates.

Field Excitation

An AC voltage is induced into the stator excitation (DPE) windings. The DPE winding circuit is completed to the voltage regulator, via Wire 2 and Wire 6. Unregulated alternating current can flow from the winding to the regulator. The voltage regulator senses AC power winding output voltage and frequency via stator Wires S15 and S16.

The regulator changes the AC from the excitation winding to DC. In addition, based on the Wire S15 and Wire S16 sensing signals, it regulates the flow of direct current to the rotor. The rectified and regulated current flow from the regulator is delivered to the rotor windings, via Wire 4, and the positive brush and slip ring. This excitation current flows through the rotor windings and through the negative (-) slip ring and brush on Wire 0.

The greater the current flow through the rotor windings, the more concentrated the lines of flux around the rotor become. The more concentrated the lines of flux around the rotor that cut across the stationary stator windings, the greater the voltage that is induced into the stator windings.

Some generators have color coded wires. Always use the appropriate schematic and wiring diagram for unit.

Initially, the AC power winding voltage sensed by the regulator is low. The regulator reacts by increasing the flow of excitation current to the rotor until voltage increases to a desired level. The regulator then maintains the desired voltage. For example, if voltage exceeds the desired level, the regulator will decrease the flow of excitation current. Conversely, if voltage drops below the desired level, the regulator responds by increasing the flow of excitation current.

AC Power Winding Output

A regulated voltage is induced into the stator AC power windings. When electrical loads are connected across the AC power windings to complete the circuit, current can flow in the circuit.

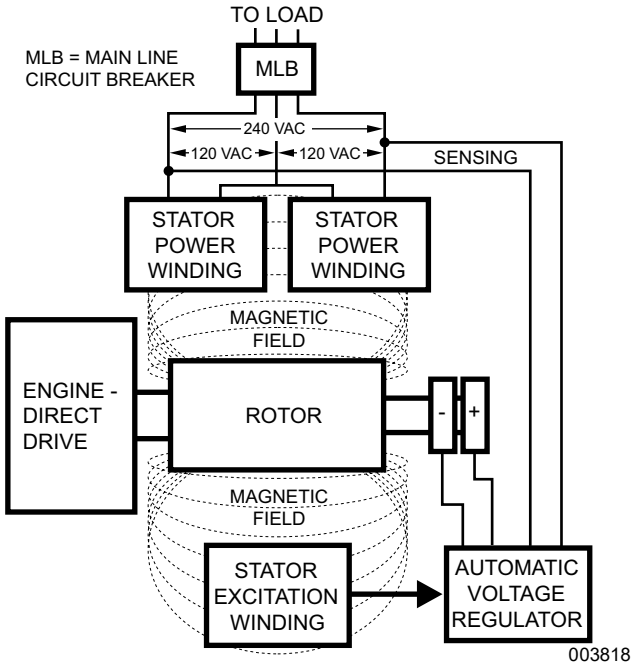


Figure 2-2. Generator Operating Diagram

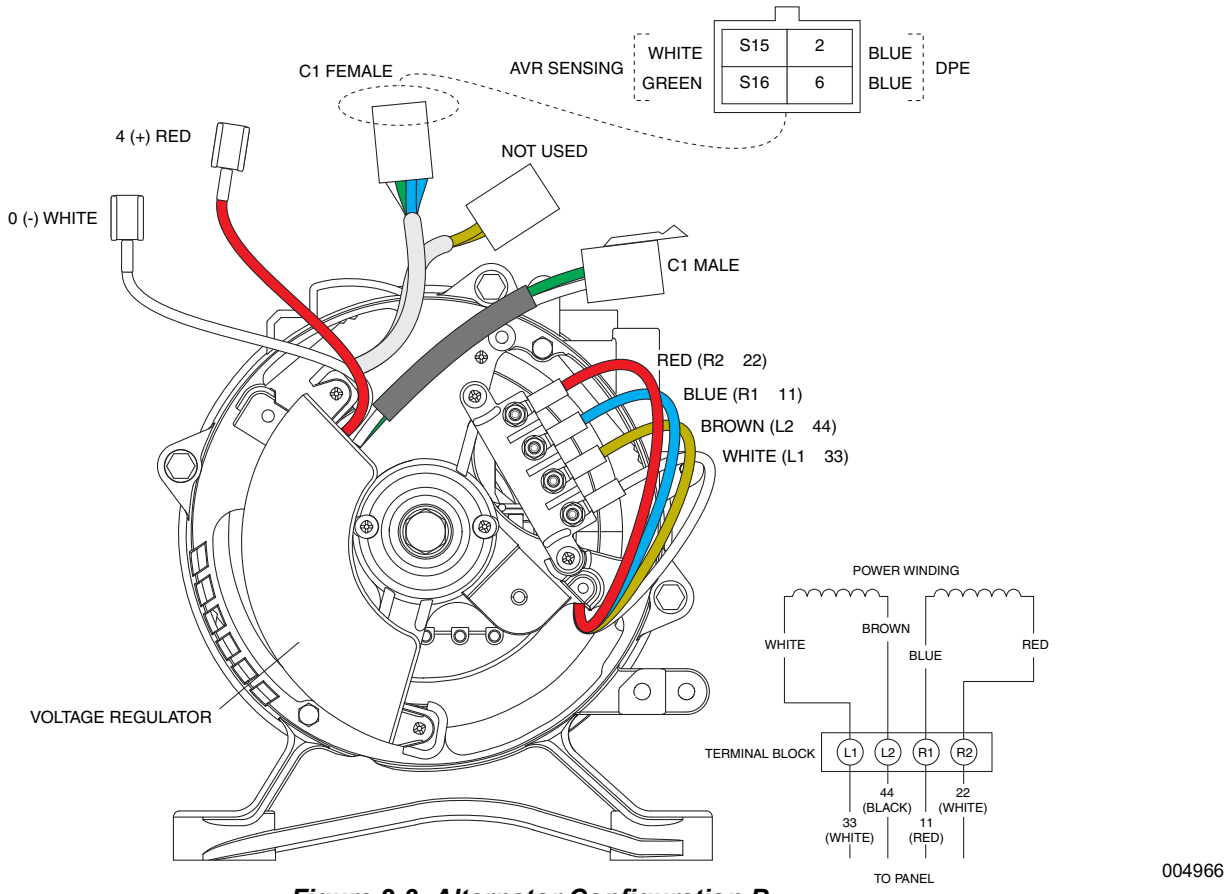


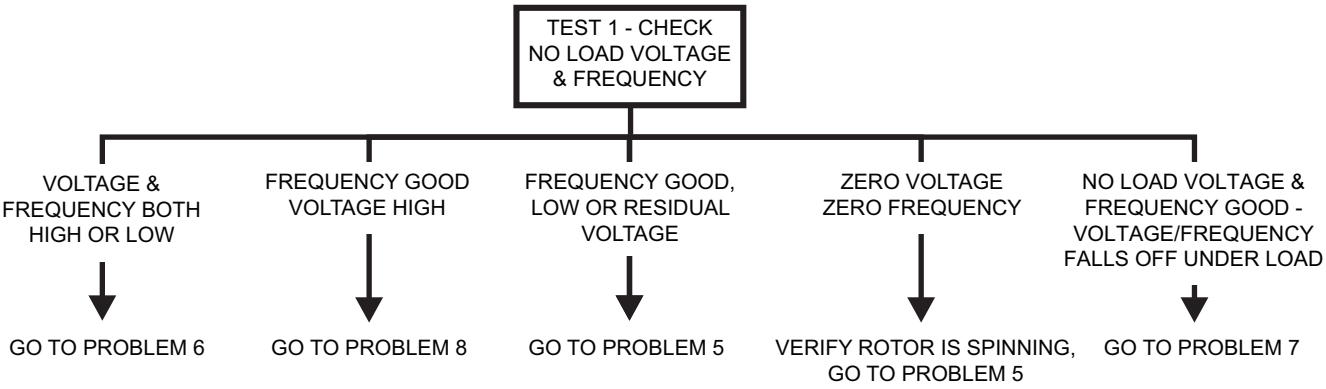
Figure 2-3. Alternator Configuration B

Troubleshooting Flowcharts

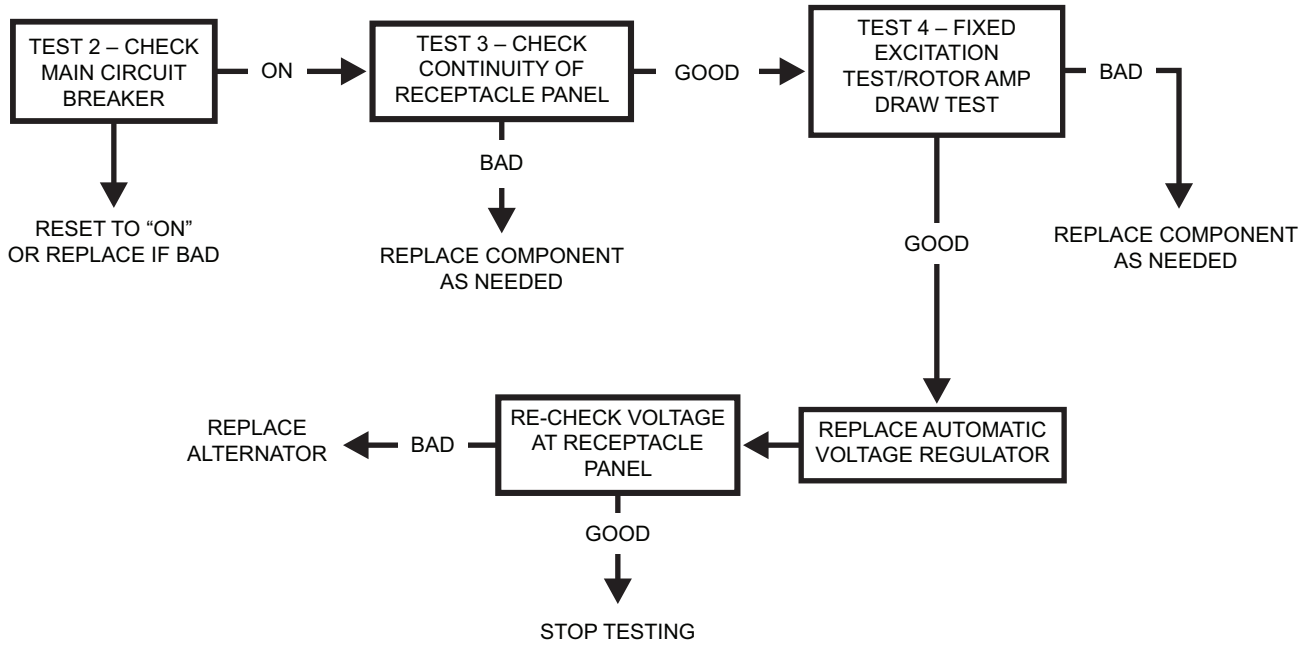
Introduction

Use the Flow Charts in conjunction with the ***AC Diagnostic Tests*** . Test numbers used in the flow charts correspond to the numbered tests in the ***AC Diagnostic Tests*** . The first step in using the flow charts is to identify the correct problem on the following pages. For best results, perform all tests in the exact sequence shown in the flow charts.

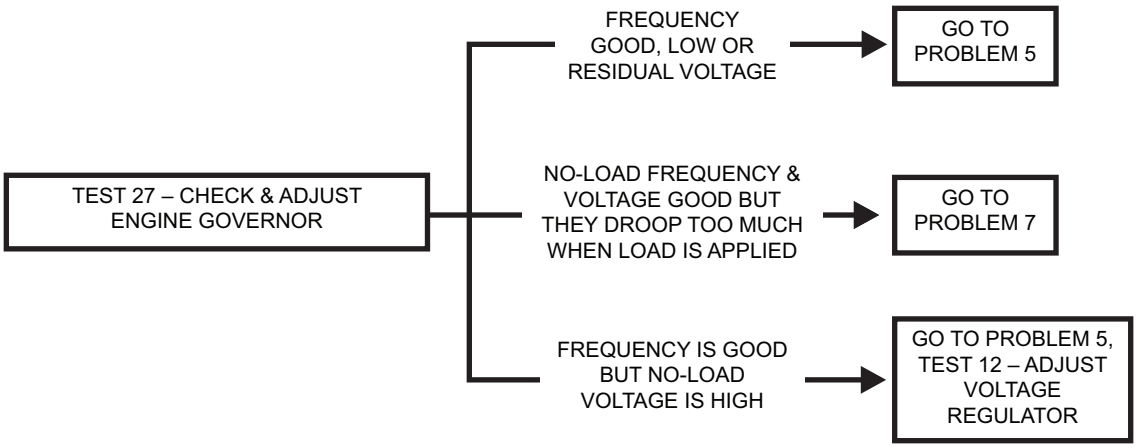
If Problem Involves AC Output (Brush Type)



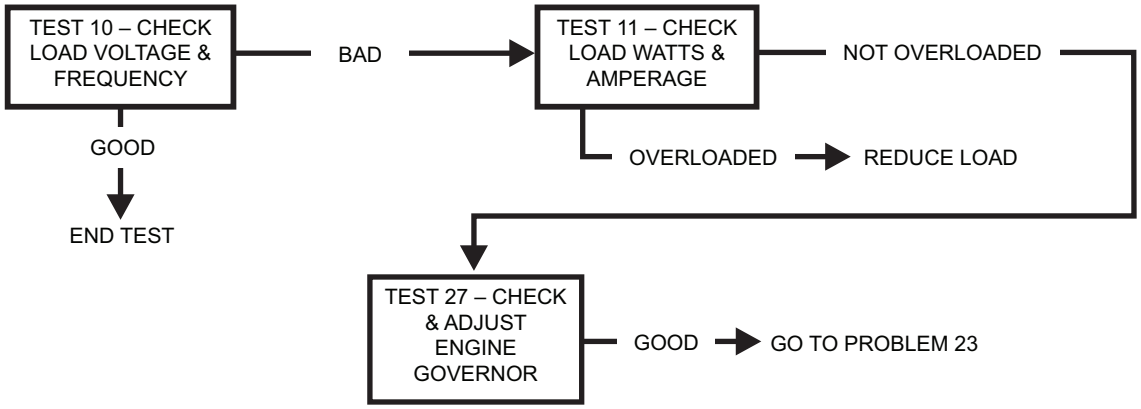
Problem 5 – Generator Produces Zero Voltage or Residual Voltage



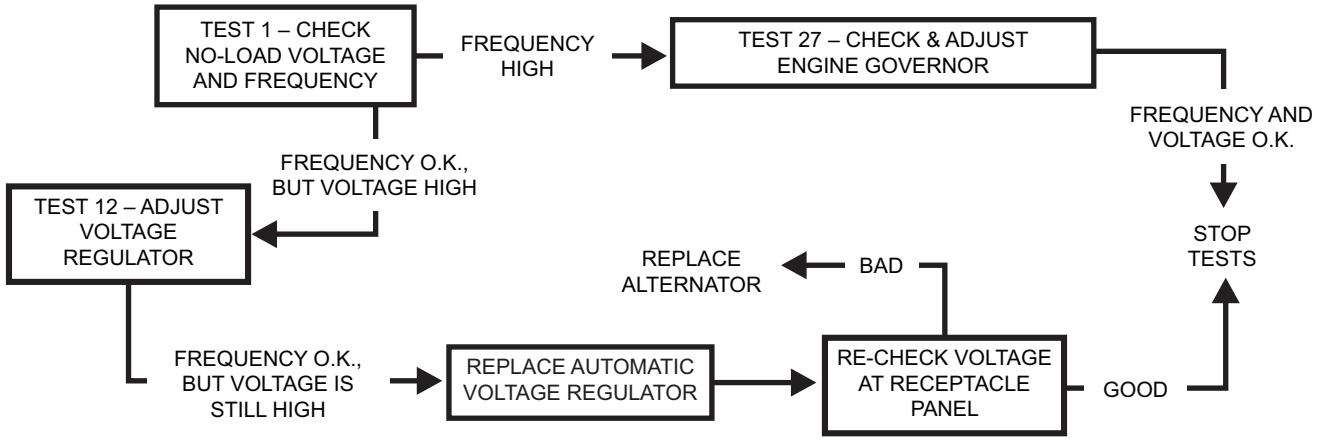
Problem 6 – Voltage & Frequency Are Both High or Low



Problem 7 – Excessive Voltage/Frequency Droop When Load is Applied



Problem 8 – Generator Produces High Voltage at No-Load



Introduction

Perform the Diagnostic Tests in this section in conjunction with the Brushless ***Troubleshooting Flowcharts*** or the Brush Type ***Troubleshooting Flowcharts***. Test numbers in this section correspond to numbered tests in the flow charts.

NOTE: Test procedures in this manual are not necessarily the only methods for diagnosing the condition of components and circuits. All possible methods that might be used for system diagnosis have not been evaluated. If any diagnostic method is used other than the method presented in this manual, the technician must be sure that neither personal safety nor product safety, will be endangered by the procedure or method selected.

NOTE: For graphics of different configurations of stators and the wire numbers associated with different components, see appropriate wiring diagrams and schematics for the generator.

Test 1 – Check No-Load Voltage and Frequency

Procedure

1. Disconnect or turn OFF all electrical loads connected to the generator.
2. Set digital multimeter (DMM) to measure AC voltage.
3. Reset all circuit breakers to ON.
4. Start engine and let stabilize and warm up.
5. See ***Figure 3-1***. Place meter test leads into an outlet.

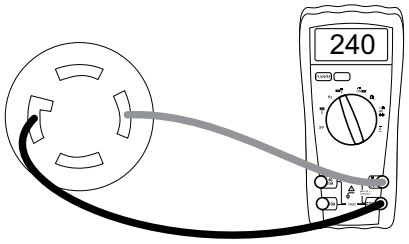


Figure 3-1. DMM Test Leads Connected to a 240 VAC Receptacle

6. Read AC voltage.
7. Connect an AC frequency meter as described in Step 5.
8. Read AC frequency.

Results

No Load Voltage	No Load Frequency
223.2 – 256.8 VAC	62.5 – 62.0 Hz

Refer to flow chart.

Test 2 – Check Main Circuit Breaker

Procedure

The generator has circuit breakers located on the control panel. If outlets are not receiving power, make sure breakers are set to ON or “Closed”.

If a breaker is suspected to have failed, test as follows:

1. Set DMM to measure resistance.
2. With generator shut down, disconnect all wires from suspected circuit breaker terminals to prevent interaction.
3. See ***Figure 3-2***. With the generator shut down, connect one meter test lead to one terminal of the breaker and the other meter test lead to the other terminal.
4. Set breaker to ON or “Closed”. The meter should read CONTINUITY.
5. Set breaker to OFF or “Open”. The meter should indicate INFINITY.

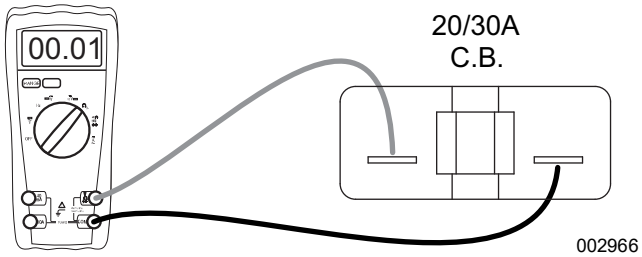


Figure 3-2. 20/30 Amp Breaker Test Points

Results

1. If circuit breaker tests good, refer to flow chart.
2. If breaker tests bad, replace.

Test 3 – Check Continuity of Receptacle Panel

General Theory

Continuity of the receptacle panel is important as it recognizes the receptacle has continuity through the wiring and is physically connected to the stator. Most stator winding values are between 0.01 and 0.02 Ohms of resistance. If a higher than normal value is shown, a poor connection could be the problem preventing that receptacle from receiving power.

Procedure

1. Set DMM to measure Resistance.
2. See ***Figure 3-3***. Connect DMM to each receptacle on unit.

NOTE: Only one outlet on each receptacle needs to be tested.

Results

1. If any other reading than CONTINUITY was measured, further troubleshooting needs to be done to determine if it is the receptacle or the wiring.
2. If receptacles test good, refer to flow chart.

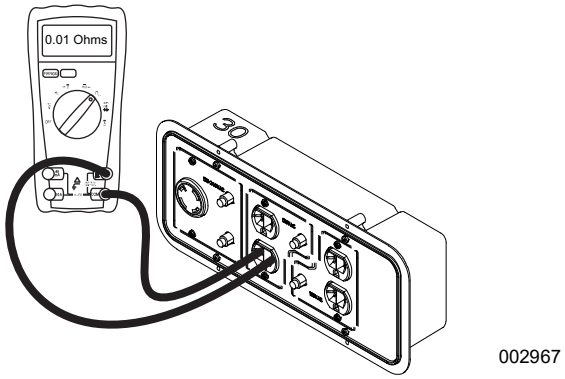


Figure 3-3. Checking Continuity of Receptacles

Test 4 – Fixed Excitation Test/Rotor Amp Draw Test

General Theory

Supplying a fixed DC current to the rotor will induce a magnetic field in the rotor. With the generator running, this should create a proportional voltage output from the stator windings.

NOTE: A standard 12 Volt battery is needed for this procedure.

NOTE: Always use the unit specific schematics and wiring diagrams for brush orientation.

Procedure

1. Remove positive and negative wires connected to the brush assembly.
2. Connect one jumper wire to where the positive brush wire was connected on the brush assembly.
3. Connect another jumper wire to where the negative brush wire was connected on the brush assembly.

NOTE: For safety, install an in-line fuse in the positive jumper wire. Maximum fuse should be 2 amps.

4. Set DMM to measure AC Voltage.
5. See ***Figure 3-4***. Connect meter test leads across the 240 VAC receptacle so the leads read line-to-line voltage.
6. Set RUN-STOP switch to RUN and start unit.
7. While the unit is running connect one jumper wire to the negative terminal of the battery and connect the other jumper wire to the positive terminal.
8. Record the voltage measured on the 240 VAC receptacle panel. Approximately 130 VAC should be measured. If no voltage is measured, connect meter test leads across R1 and L2 at the stator connection terminal strip.
9. Set RUN-STOP switch to STOP.
10. Disconnect meter leads from 240 VAC receptacle.
11. See ***Figure 3-5***. Connect one meter test lead to Wire 2 and the other meter test lead to Wire 6 on the C1 female connector.
12. Set RUN-STOP switch to RUN and start unit.

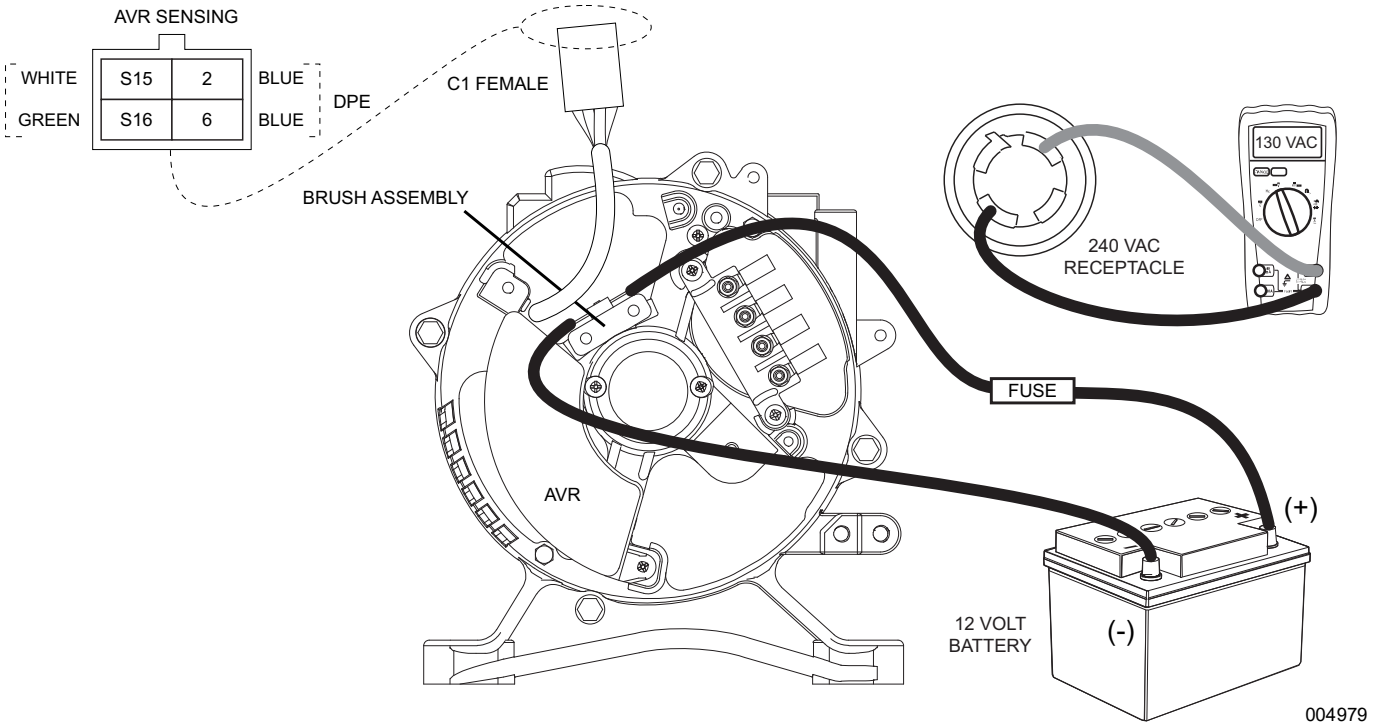


Figure 3-4. Jumper Wires Between Battery and Brush Assembly

13. While the unit is running connect one jumper wire to the negative terminal of the battery and connect the other jumper wire to the positive terminal.
14. Record voltage measured on Wires 2 and 6 on the C1 female connector. Approximately 60 VAC should be measured.
15. Set RUN-STOP switch to STOP.
16. Set DMM to measure resistance.
17. Connect the meter test lead to one jumper wire and connect the other meter test lead to the other jumper wire to measure resistance of the brushes and the rotor. See ***Rotor and Stator Resistance Tables*** for resistance values. If the correct resistance was not measured, remove brushes and measure resistance across the slip rings. If resistance is measured, inspect or replace brushes. If resistance was NOT measured across the slip rings, replace rotor.
18. Set DMM to measure DC amperage.

NOTE: Inspect the fuses in the meter to ensure test results will be correct.

19. Connect one meter test lead to the positive jumper wire.
20. Set RUN-STOP switch to RUN and start unit.
21. Connect the negative jumper wire to the negative terminal on the battery and connect the other meter test lead to the positive terminal.

NOTE: The meter should now be connected in series with the positive jumper wire.

22. Record DC amperage measured. Approximately 0.22 DC amps should be measured.

NOTE: The DC voltage of the battery divided by the resistance measured in Step 17 will give a calculated amp draw.

23. Set RUN-STOP switch to STOP.
24. Repeat Step 21 while the unit is OFF. The DC amperage measured should be the same as step 22 ± 0.10 DC amps.
25. Set DMM to measure resistance.
26. See ***Figure 2-3***. Connect one meter test lead to S15 and connect the other meter test lead to S15 on the female side of the C1 connector. Approximately 0.5 to 1.5 Ohms should be measured.

Results

1. If current was outside parameters in Steps 23 and 24, remove brushes and measure resistance.
2. If voltage was not measured in Step 8 at either the receptacle or the stator connection terminal strip, replace the alternator.
3. If voltage was not measured in Step 14, replace the alternator.
4. If the correct resistance was not measured in Step 26, replace the alternator.
5. If the correct resistance was not measured in Step 17, replace the alternator.
6. If the correct voltage was measured in Step 8 and Step 14 and the correct resistance was measured in Step 26, replace the voltage regulator.

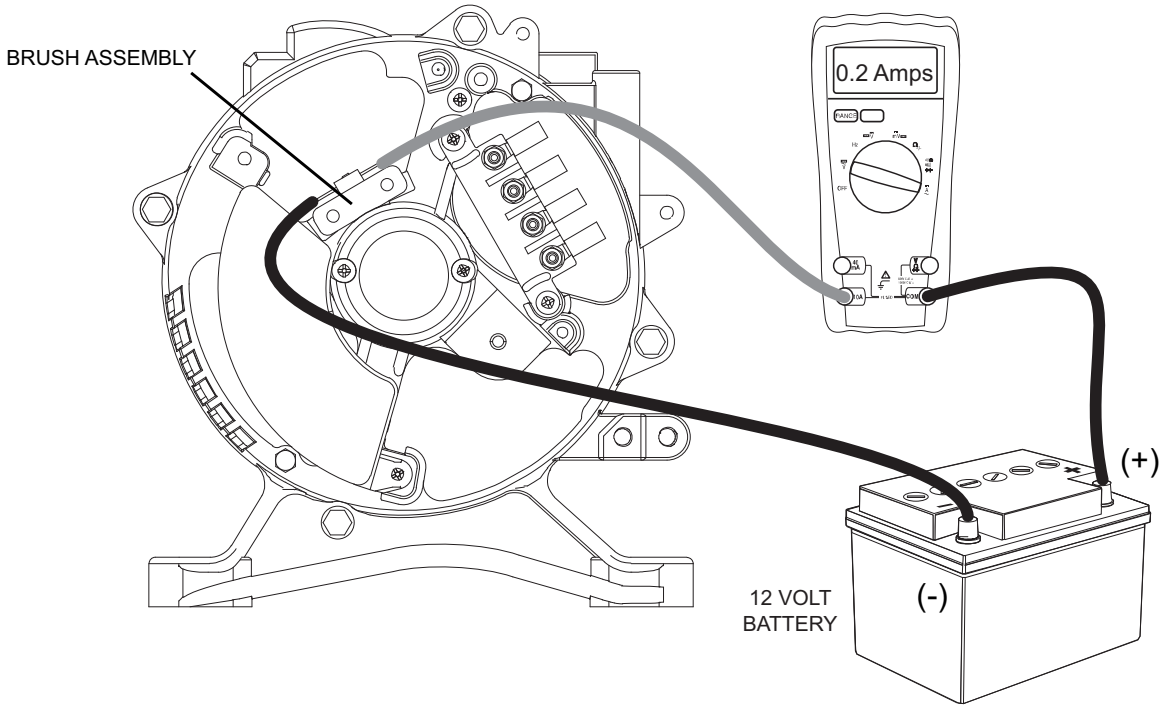


Figure 3-5. Jumper Wire and DMM Between Battery and Brush Assembly

Test 5 – Field Flash Alternator
(Configuration "A" Only)

General Theory

The alternator utilizes residual magnetism within the windings to charge the capacitor. If the generator has not been started for a long period of time, residual magnetism could be lost within the rotor. Field flashing the capacitor will restore voltage into the capacitor.

IMPORTANT NOTE: The capacitor may need to be discharged before testing. A capacitor can be discharged by crossing the terminals with a metal insulated screw driver.

IMPORTANT NOTE: Use proper protective equipment when dealing with a capacitor that has exploded.

Procedure

1. Construct an energizing cord similar to ***Figure 3-6*** and connect as shown in Figure 28.
2. Set START-RUN-STOP switch to OFF.

IMPORTANT NOTE: Do NOT energize the capacitor for more than 1 second at a time.

3. Momentarily turn on energizing cord (one second).
4. Disconnect energizing cord from capacitor.
5. Carefully re-connect the DPE winding leads to the capacitor.
6. If the field flash was successful, the generator should produce approximately 240 VAC at the main circuit breaker of the generator when the generator is started and running.

IMPORTANT NOTE: Do not field flash alternator more than two times in sequence. If the unit has not produced power after two attempts, other issues exist and need to be addressed.

Results

1. Generator produces approximately 240 VAC, stop testing.
2. Generator does not produce 240 VAC, refer to ***Troubleshooting Flowcharts***.

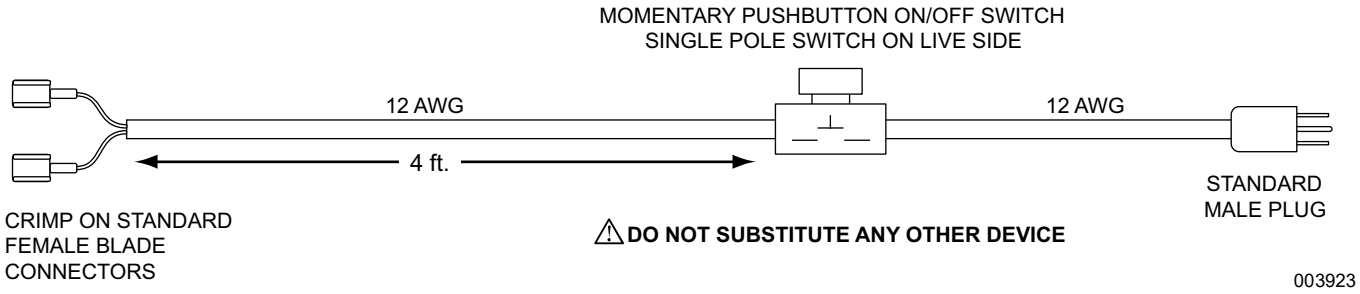


Figure 3-6. Construction of Energizing Cord

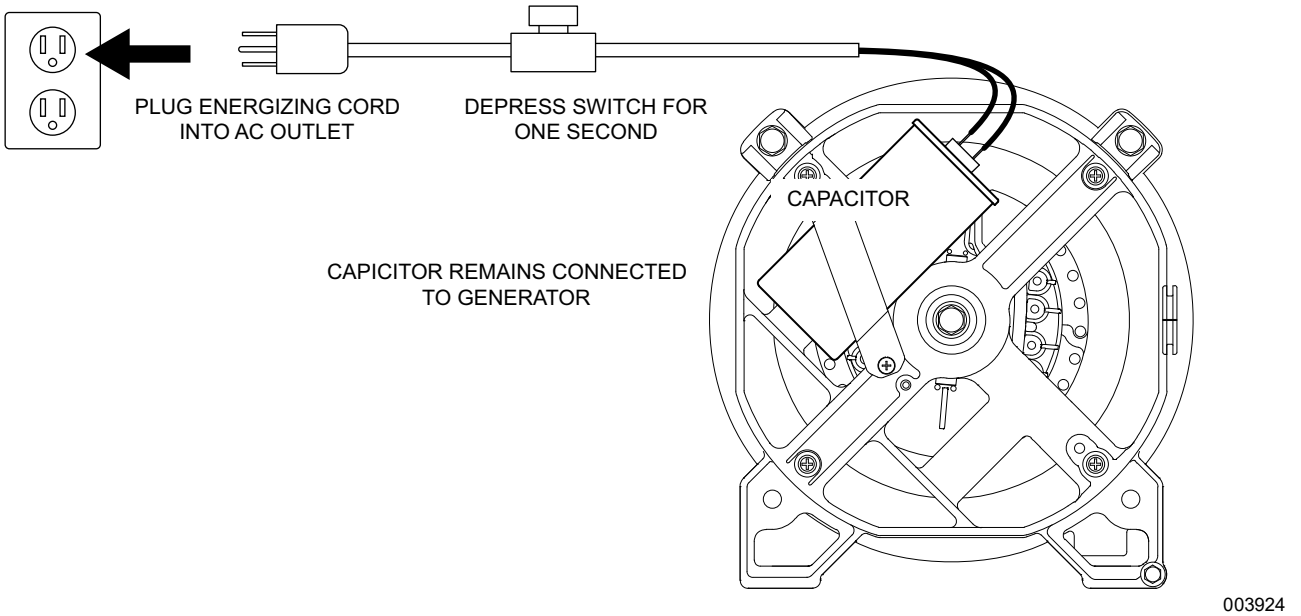


Figure 3-7. Connecting Energizing Cord

Test 6 – Check Capacitor

General Theory

The brushless rotor system relies on the charging and discharging of a capacitor to induce voltage into the rotor. The capacitor also maintains voltage once 240 VAC is achieved. If the capacitor fails, only residual magnetism of the rotor will be measured at the main breaker.

NOTE: The voltage of a brushless capacitive discharge generator will start low and increase as load is applied.

IMPORTANT NOTE: The capacitor may need to be discharged before testing. A capacitor can be discharged by crossing the terminals with a metal insulated screw driver.

IMPORTANT NOTE: Use proper protective equipment when dealing with a capacitor that has exploded.

Procedure

1. Consult the owner's manual of the meter being used for directions on measuring capacitance. ***Figure 3-8*** shows a typical meter and how to check capacitance.
2. Connect meter leads directly across the terminals of capacitor. The rated µf (micro farad) of the capacitor is marked on the side of the canister.
3. The meter should display the correct µf reading ± 5µf. If anything other than the indicated rating is displayed, replace the capacitor.

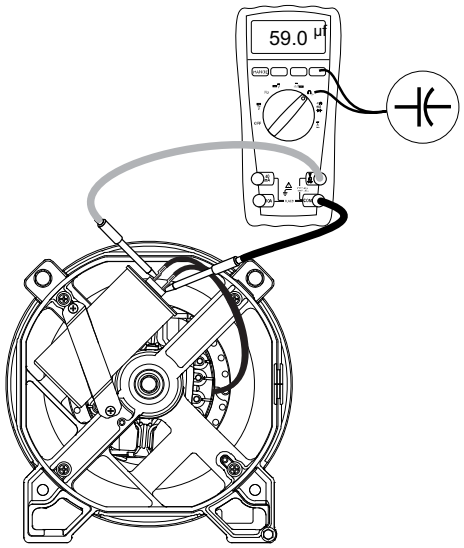


Figure 3-8. Capacitor Test Points (Alternator Configuration "A")

Results

1. Refer to ***Troubleshooting Flowcharts***.
2. Visually observe the capacitor. A capacitor is defective if:
   - terminal connections are loose on the canister.
   - capacitor wobbles while sitting on a flat surface.

If any of these traits are observed, replace capacitor.

IMPORTANT NOTE: A capacitor that has gone bad has a tendency to explode. Use caution when dealing with an exploded capacitor. The gel from inside a capacitor can cause skin irritation.

Test 7 – Test Brushless DPE Windings

General Theory

A Displaced Phase Excitation (DPE) winding is used to charge a capacitor. It discharges and charges, releasing a voltage that is induced into the rotor. If the DPE winding fails, only residual magnetism of the rotor will be measured at the Main Breaker.

NOTE: The resistance of stator windings is very low. Some meters will not read such a low resistance, and will simply indicate CONTINUITY. Recommended is a high quality, digital type meter capable of reading very low resistances.

IMPORTANT NOTE: The capacitor may need to be discharged before testing. A capacitor can be discharged by crossing the terminals with a metal insulated screw driver.

Procedure

1. Disconnect Wire 2 and Wire 6 from capacitor.
2. Set DMM to measure resistance.
3. Connect one meter lead to Wire 2 and connect the other meter lead to Wire 6.
   a. Reading should be approximately 0.97 and 1.13 Ohms.
4. Connect one meter lead to Wire 2 and connect the other meter lead to a clean frame ground, INFINITY should be measured.
5. Isolate the stator wire so the stator is disconnected from the receptacle panel and the capacitor.

NOTE: Isolate all main stator leads before proceeding.

6. Connect one meter lead to Wire 2 and connect the other meter lead to Wire 11. INFINITY should be measured.
7. Repeat Step 6 using Wire 2 and Wire 44. INFINITY should be measured.

Results

1. If INFINITY or a very high resistance is indicated, the winding is open or partially open.
2. Test for a "grounded" condition: Any resistance reading indicates the winding is grounded.
3. Test for a "shorted" condition: Any resistance reading indicates the winding is shorted.
4. If stator tests good and wire continuity tests good, refer to flow chart.

Test 8 – Test Brushless Stator Windings

General Theory

The brushless stator has three internal windings, two main power windings and a DPE winding. This test will ensure there are no shorts between the power windings or shorts to ground.

A DMM meter can be used to test the stator windings for the following faults:

- An open circuit condition
- A “short-to-ground” condition
- A short circuit between windings

NOTE: The resistance of stator windings is very low. Some meters will not read such a low resistance, and will simply indicate CONTINUITY. Recommended is a high quality, digital type meter capable of reading very low resistances.

NOTE: See ***Figure 1-4*** in Section 1, Configuration “A”. Some wire numbers will not be marked on the stator.

Procedure

1. Disconnect Wires 11, 22, 33, 44 from the receptacle panel so the stator is isolated.
2. Verify all the disconnected leads are isolated from each other, and are not touching the frame during the test.
3. Set DMM to measure resistance.
4. Connect one test lead to Stator Lead 11. Connect the other test lead to Stator Lead 22. Stator resistance should be between 0.12-0.14 Ohms.
5. Connect one test lead to Stator Lead 33. Connect the other test lead to Stator Lead 44. Stator resistance should be between 0.12-0.14 Ohms.

Test windings for a short-to-ground:

1. Verify all leads are isolated from each other and are not touching the frame.
2. Connect one test lead to a clean frame ground. Connect the other test lead to Stator Lead Wire 11.
   a. The meter should read INFINITY.
   b. Any reading other than INFINITY indicates a “short-to-ground” condition.
3. Repeat Step 2 using Stator Lead 44.

Test for a short circuit between windings:

1. Connect one test lead to Stator Lead 11. Connect the other test lead to Stator Lead 33.
   a. The meter should read INFINITY.
   b. Any reading other that INFINITY indicates a short between windings.

Test 9 – Test Brushed Stator Windings

General Theory

Most brushed stators have three main windings that are needed to produce voltage. The alternator has two main power windings which supply power to the load and a DPE winding to provide excitation voltage to the rotor. These windings must remain isolated from ground or the chassis of the alternator.

Procedure

1. Isolate all stator wires from the control panel and voltage regulator.
2. Set DMM to measure resistance.
3. See ***Figure 2-3*** for proper test points to check the stator. Every connection needs to be checked coming out of the stator for a short to ground.

Results

1. If any wire has a direct short-to-ground, or to the chassis of the alternator, replace alternator assembly.
2. If all wires test good for a short-to-ground, refer to flow chart.

Test 10 – Check Load Voltage and Frequency

Procedure

Perform this test the same as Test 1 but apply a load to the generator equal to its rated capacity. Check voltage and frequency with load applied.

Frequency should not drop below about 59 Hertz.

Voltage should not drop below about 220 VAC nor rise above 265 VAC.

Results

1. If voltage and/or frequency drop excessively when load is applied, refer to flow chart.
2. If load voltage and frequency are within limits, end tests.

Test 11 – Check Load Watts and Amperage

Procedure

Add up the wattages or amperages of all loads powered by the generator at one time. If desired, a clamp-on ammeter may be used to measure current flow.

See the ***Wattage Reference Guide*** to determine generator limits.

NOTE: All figures are approximate. See data label on appliance for wattage requirements.

Results

1. If unit is overloaded, reduce load.
2. If load is within limits but frequency and voltage still drop excessively, refer to flow chart.

Overloading a generator in excess of its rated wattage capacity can result in damage to the generator and to connected electrical devices. Observe the following to prevent overloading unit:

- Add up total wattage of all electrical devices to be connected at one time. This total should NOT be greater than the generator's wattage capacity.
- The rated wattage of lights can be taken from light bulbs. The rated wattage of tools, appliances and motors can be found on a data label or decal affixed to the device.
- If the appliance, tool or motor does not give wattage, multiply volts times ampere rating to determine watts (volts x amps = watts).
- Some electric motors, such as induction types, require about three times more watts of power for starting than for running. This surge of power lasts only a few seconds when starting such motors.

Be sure to allow for high starting wattage when selecting electrical devices to connect to the generator:

1. Calculate watts needed to start the largest motor.
2. Add to that figure the running watts of all other connected loads.

Test 12 – Adjust Voltage Regulator

NOTE: Always use the unit specific schematics and wiring diagrams for brush orientation.

Procedure

1. Remove cover from end of alternator assembly.
2. Remove two screws holding down the voltage regulator (AVR); refer to ***Figure 2-3*** in Section 1 for identification.
3. Leave AVR connected to stator and brushes.
4. Set DMM to measure AC voltage.
5. See ***Figure 3-9***. Connect DMM across a 240 VAC receptacle.

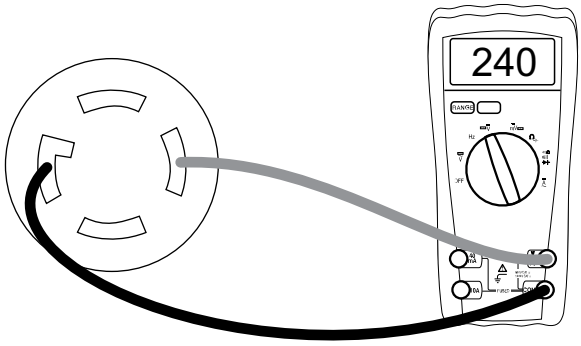


Figure 3-9. DMM Test Leads Connected to a 240 VAC Receptacle

6. Verify all material is clear of the alternator before proceeding.
7. Set START-STOP-RUN switch to START.
8. See ***Figure 3-10*** for location of adjustment screw.
9. Adjusting screw clockwise will increase voltage, adjusting counterclockwise will lower voltage.

Results

1. If there is no change in voltage while adjusting, refer to flow chart.
2. If voltage is correct, stop testing.

Figure 3-10. Voltage Regulator Adjustment Screw

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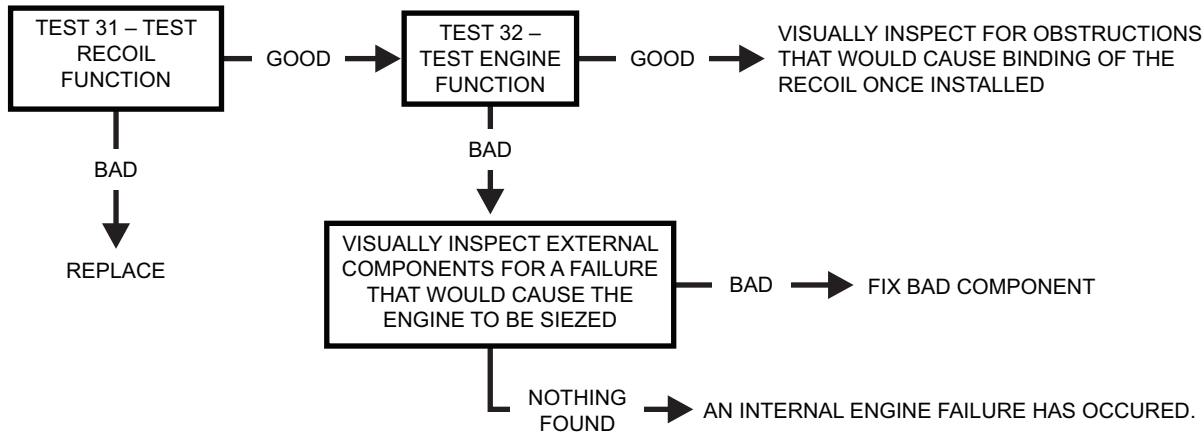
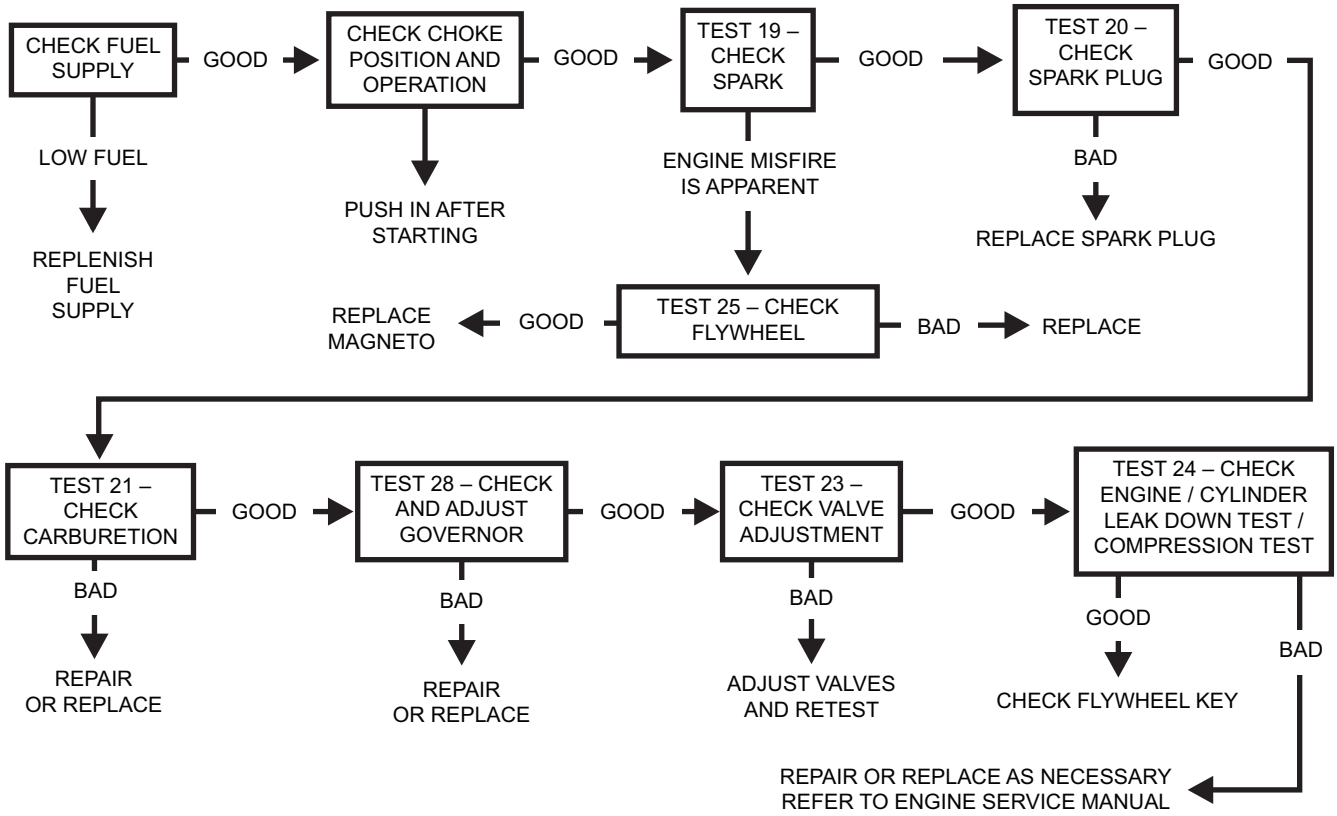
Diagnostic Flow Charts

There are multiple types of engines on the GP Series generators: 407cc, 389cc, 208cc, 196cc, 163cc, 420cc. Section 3 is divided into difference subsections that provide engine troubleshooting for each type of engine. It is imperative to identify what type of engine is used in order to effectively troubleshoot the problem.

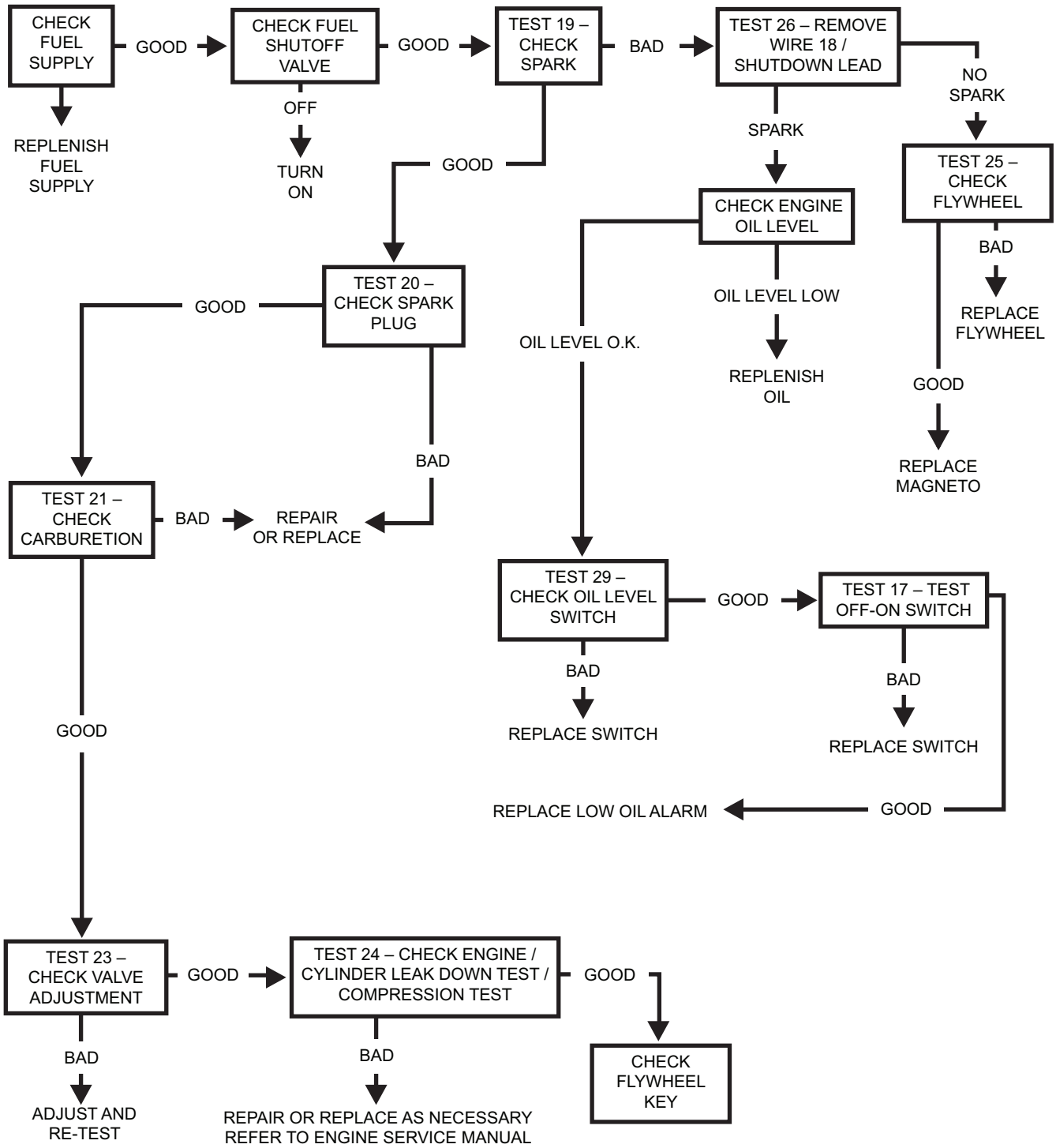
Problem 9 – Recoil Cord Will Not Pull



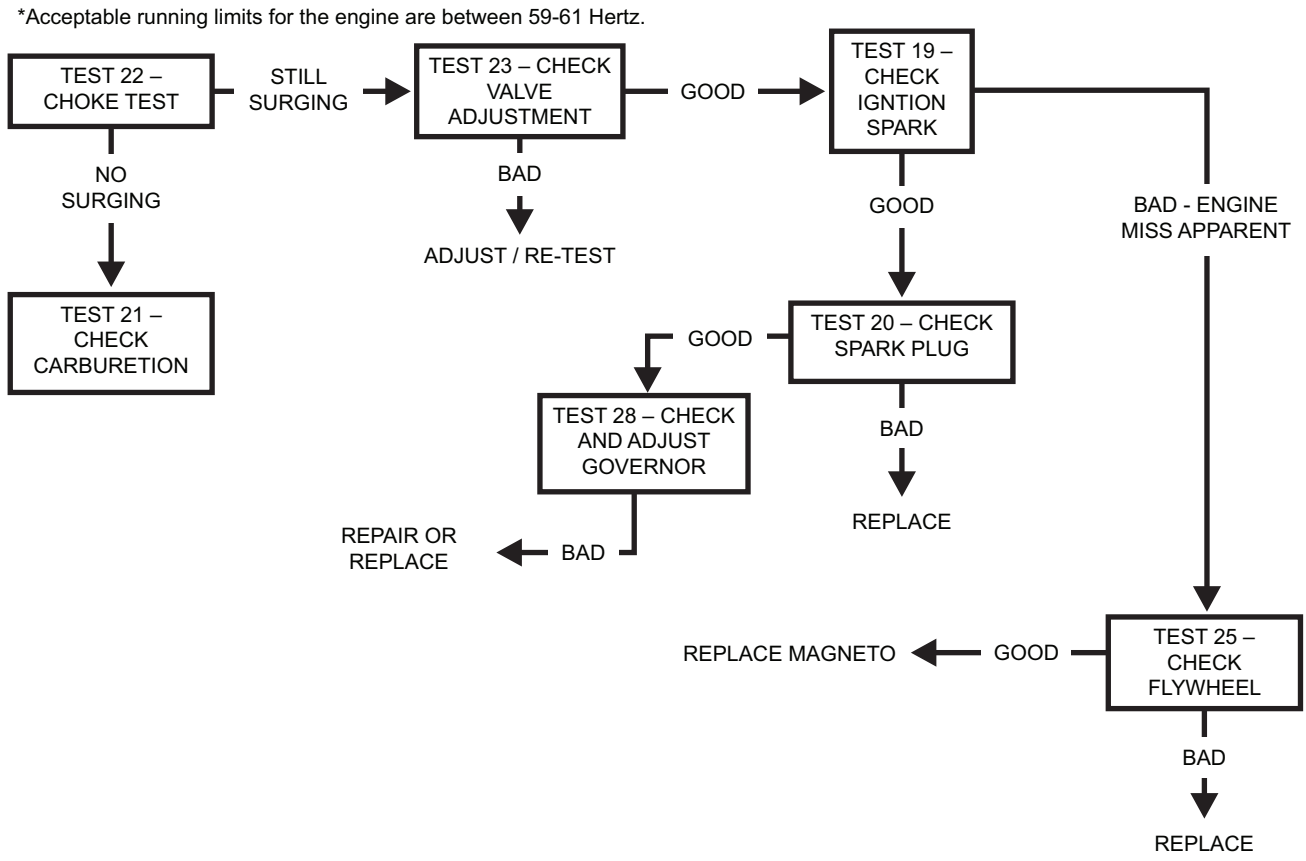
Problem 10 – Engine Starts Hard and Runs Rough



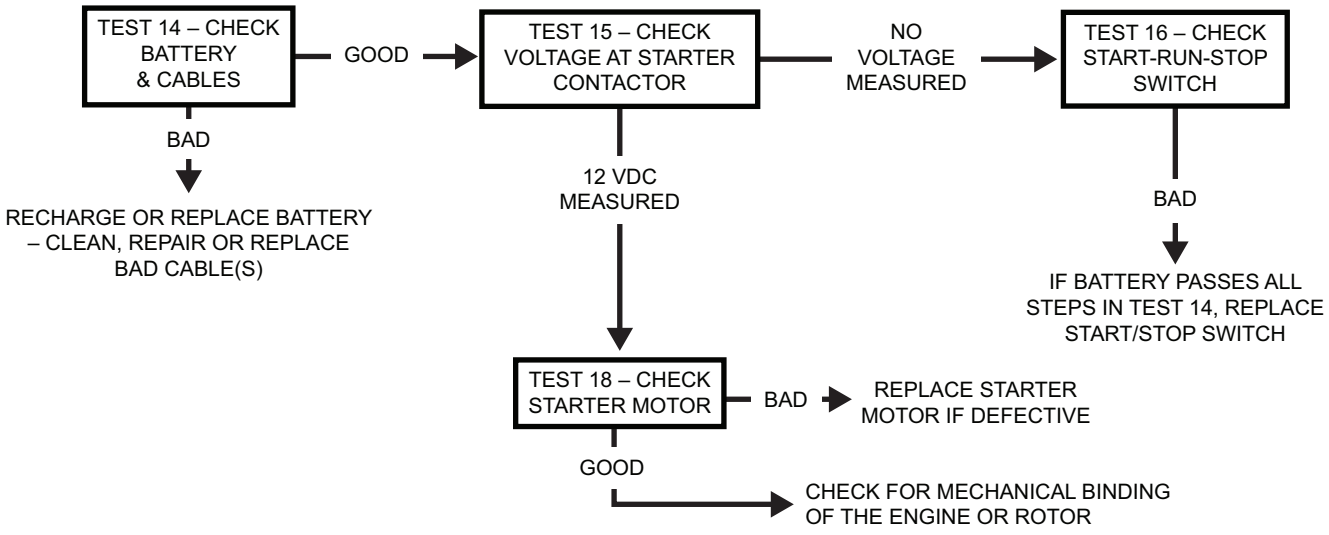
Problem 11 – Engine Turns Over But Will Not Start



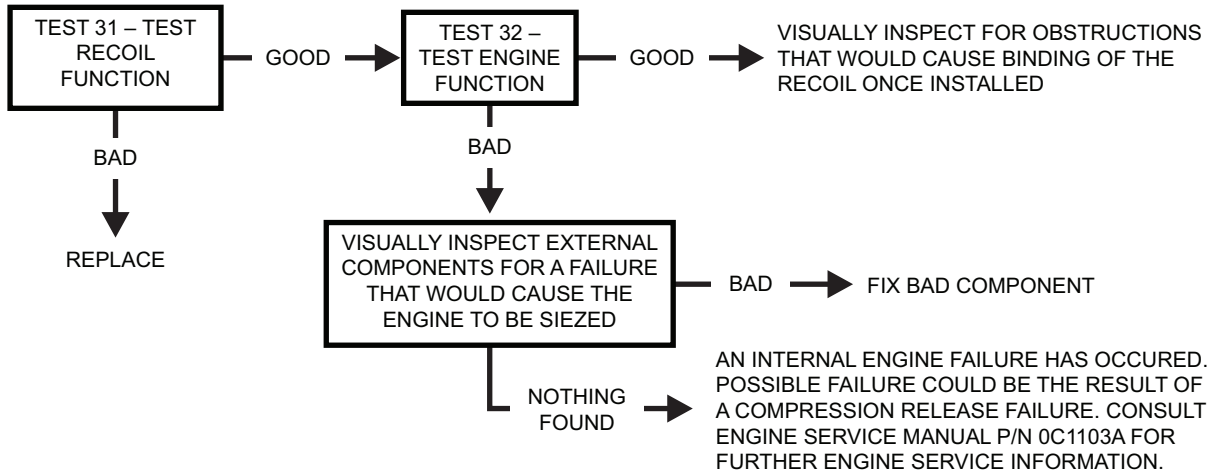
Problem 12 – Engine "Hunts" / Erratic Idle



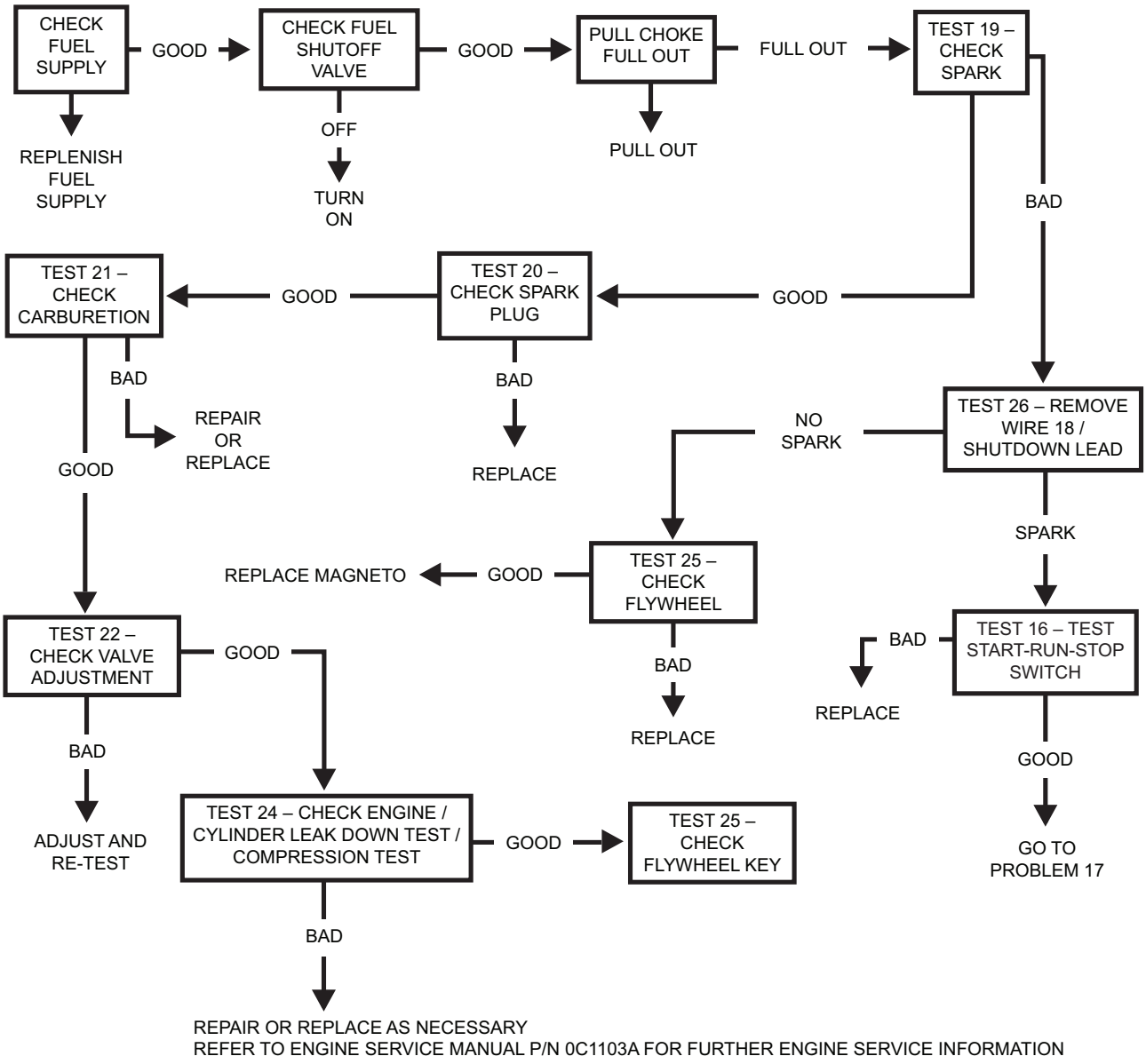
Problem 13 – Engine Will Not Crank



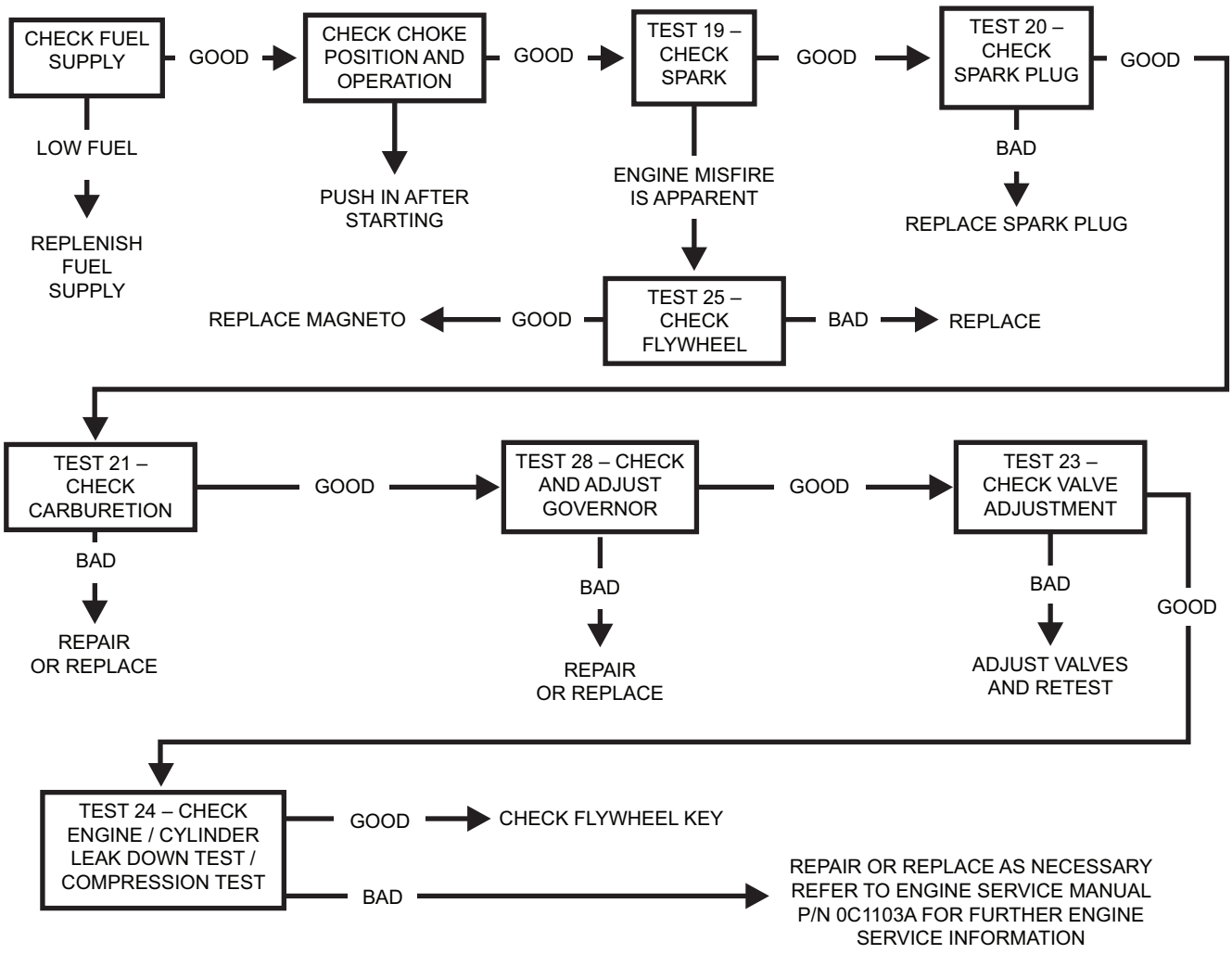
Problem 14 – Recoil Cord Will Not Pull (If So Equipped)



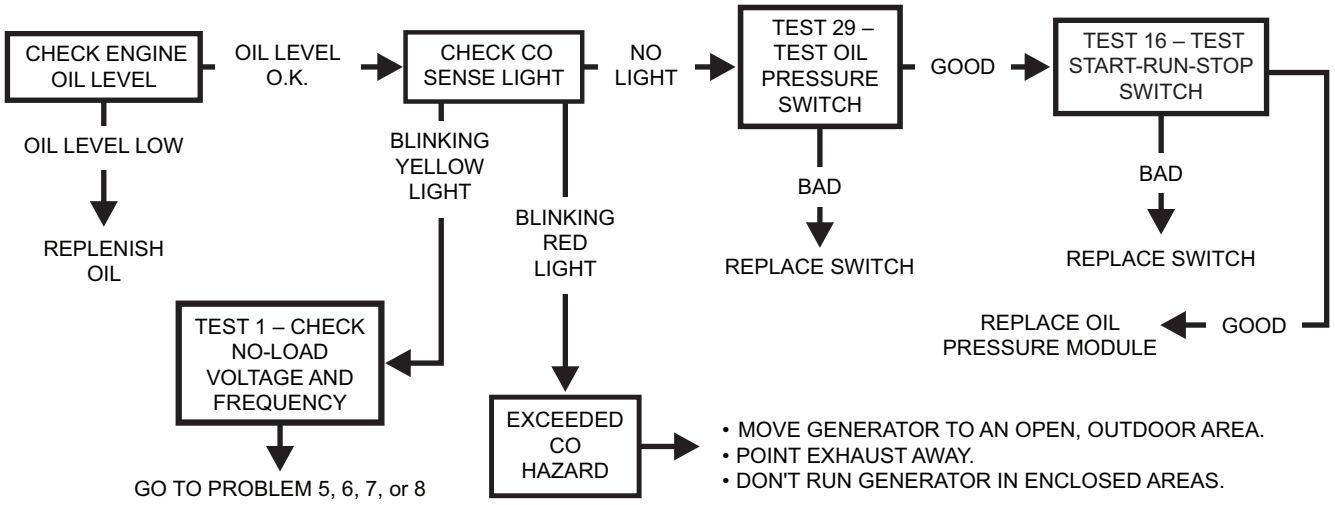
Problem 15 – Engine Cranks But Will Not Start



Problem 16 – Engine Starts Hard and Runs Rough



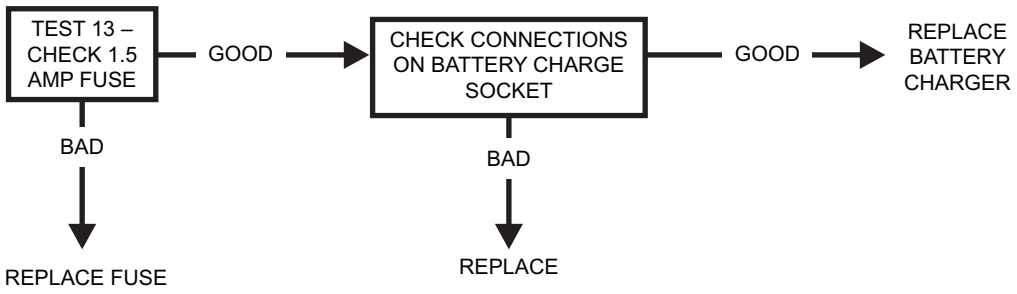
Problem 17 – Engine Starts Then Shuts Down



NOTE: If a CO-SENSE™ system fault has occurred and no longer provides protection, the portable generator is shut off automatically and the YELLOW light will blink for at least five minutes in the CO-SENSE badge to notify the user of the fault.

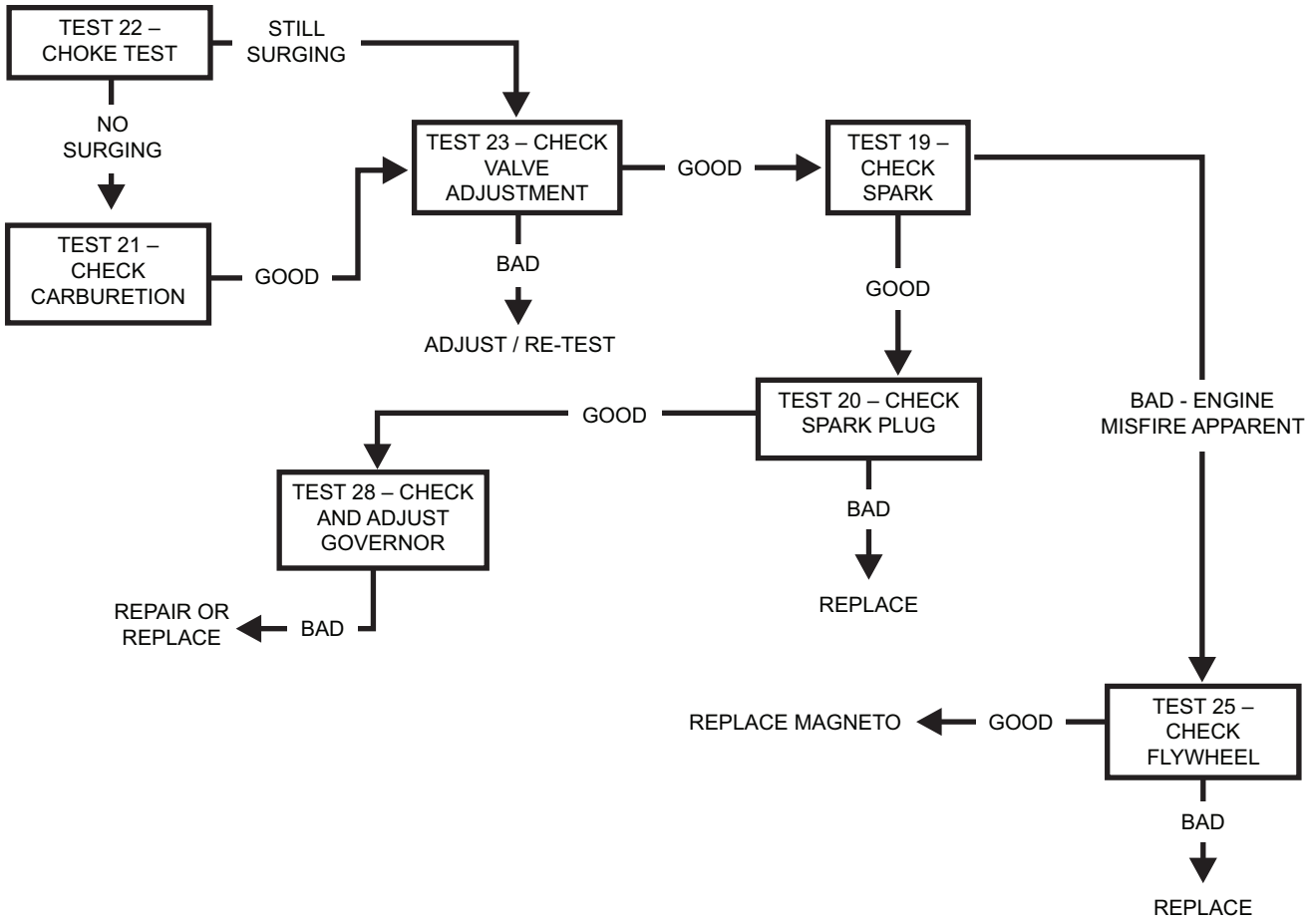
NOTE: A blinking RED light in the CO-SENSE badge on the side of the generator provides notification that the generator was shut off due to an accumulating carbon monoxide (CO) hazard. The RED light will blink for at least five minutes after a CO shut-off. Move the generator to an open, outdoor area and point the exhaust away from people and occupied buildings. Once relocated to a well-ventilated and safe area, the generator can be restarted and the proper electrical connections made to supply electrical power. The RED light will stop blinking automatically upon engine re-start. Introduce fresh air and ventilate the location where the generator had shut down.

Problem 18 – Battery Will Not Charge (410cc Engines)

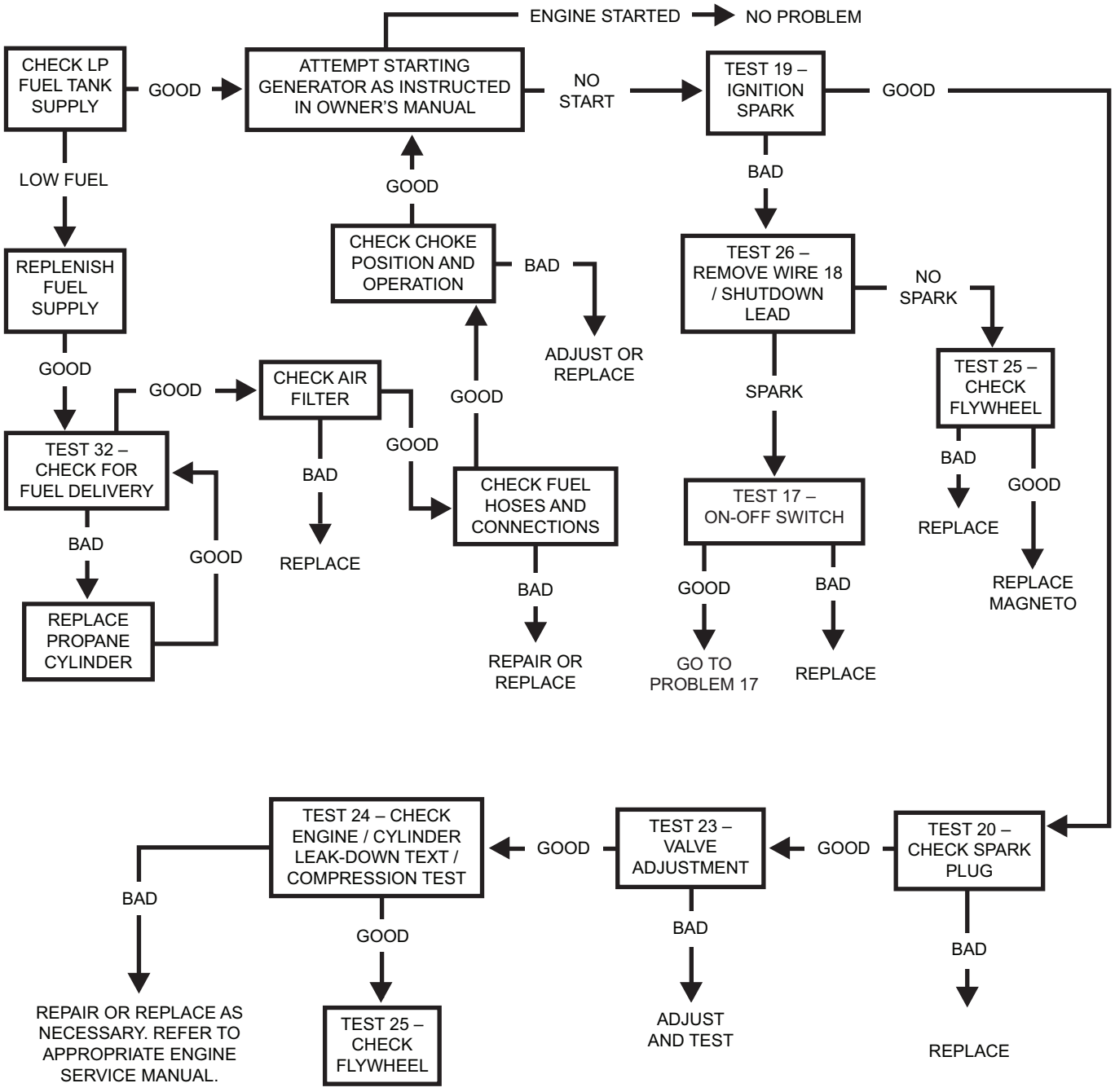


Problem 19 – Engine "Hunts" / Erratic Idle (410cc Engines)

*Acceptable running limits for the engine are between 59-62 Hertz.



Problem 20 – Engine Turns Over But Will Not Start (410cc Engines)



Introduction

Perform the Diagnostic Tests in this section in conjunction with the ***Diagnostic Flow Charts***. Test numbers in this chapter correspond to numbered tests in the flow charts.

NOTE: Test procedures in this manual are not necessarily the only methods for diagnosing the condition of components and circuits. All possible methods that might be used for system diagnosis have not been evaluated. If any diagnostic method is used other than the method presented in this manual, the technician must be sure that neither personal safety nor product safety, will be endangered by the procedure or method selected.

Test 13 – Check Fuse

General Theory

See ***Figure 4-1***. The fuse protects the wiring and battery charger from a short circuit.

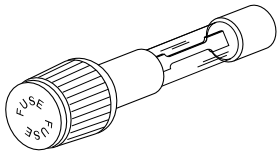


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Figure 4-1. Typical Fuse

Procedure

Push in fuse holder cap and turn counterclockwise. Remove cap with fuse. Inspect fuse.

Results

If fuse element melted open, replace fuse with an identical size fuse. If fuse is good, refer to flow chart.

NOTE: Fuse may be an in-line wire style.

Test 14 – Check Battery and Cables

General Theory

Battery power is used to (a) crank the engine and (b) to power the circuit board. Low or no battery voltage can result in failure of the engine to crank and the controller to blank out and restart in either MANUAL or AUTO modes of operation. As well, if there is a loose connection or corrosion associated with a wire (positive or negative), battery voltage may be present, but because of the high resistance, will not allow current to flow.

Electrical voltage drop varies according to current flow. Unless the circuit is operated so current flows through it, voltage drop cannot be measured. To properly measure voltage drop, a crank attempt will need to be performed. This test will determine whether the battery, battery cables, or both are at fault.

Procedure A. Inspect Battery Cables, Terminals, and Connections

1. Inspect battery cables and battery posts.
2. If cable clamps or terminals are corroded, clean away all corrosion.

NOTE: If corrosion cannot be cleaned or eliminated, replace the component in question.

3. Verify all cable clamps are tight. The red battery cable from the starter contactor (SC) must be securely attached to the positive (+) battery post. The black cable from the frame ground stud must be tightly attached to the negative (-) battery post.
4. If the above inspection points have been verified satisfactory, proceed to Procedure B.

Procedure B. Perform a Battery Open Circuit Voltage Test

1. Set a DMM to measure DC voltage.
2. Connect the red meter test lead to the positive battery post and connect the black meter test lead to the negative battery post.
3. Measure and record the open circuit voltage (OCV).
   a. If battery voltage is between 12.1 VDC and 9.0 VDC, or if engine does not crank (turn over), proceed to Procedure C.
   b. If battery voltage is 12.2 VDC or above and the engine does or does not crank, proceed to Procedure D.

Procedure C. Perform a Conductance Test with a Conductance Type Battery Tester

IMPORTANT NOTE: To properly load test a battery when using a resistance type load tester, the battery must be completely full of electrolyte, fully charged and the load applied must be 1/2 of the battery's CCA Rating. (e.g. 540/2=270A) For this reason, a resistance type load tester is not recommended.

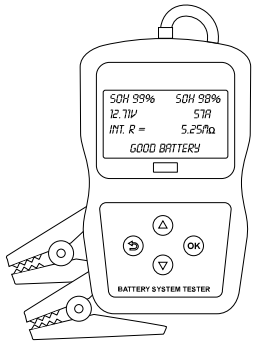

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Figure 1-2. Conductance Type Battery Tester

1. Verify the generator is OFF and battery is not being charged from any source.

2. Connect the test leads to the positive and negative posts of the battery being tested and follow the conductance battery tester manufacturer's instructions. Test results should not indicate anything lower than 60% of the battery's rated CCA. If battery CCA is 60% or less, replace battery with new.
3. If the above test results have been verified as satisfactory, proceed to Procedure D.

Procedure D. Perform Starter Circuit Voltage Drop Test

1. Turn off the fuel valve to inhibit any possible startup.
2. Refer to battery post and starter connections in ***Figure 4-3*** and ***Figure 4-4*** and perform a voltage drop tests as indicated.

NOTE: Some older single cylinder units have a bulkhead mounted starter solenoid.

3. Press the start button. Measure and record the voltage.
4. Record readings from test points V1 (A), V2 (B), V3 (C), V4 (D) as depicted in ***Figure 4-3*** and ***Figure 4-4***.

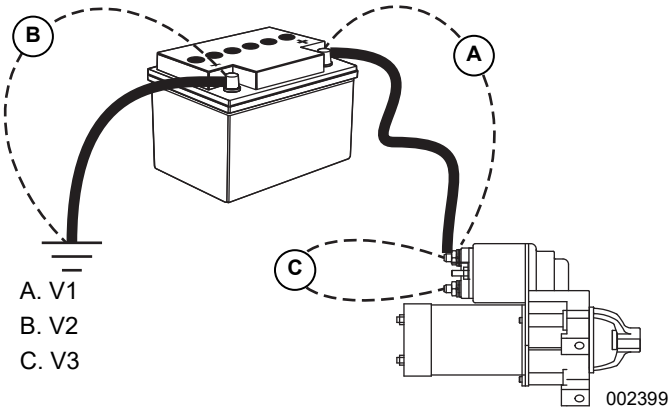


Figure 4-3.

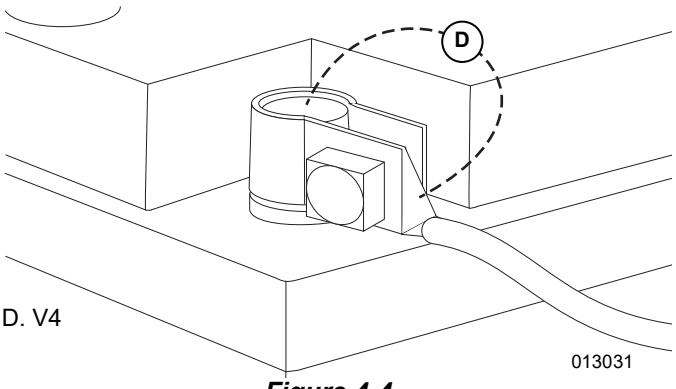


Figure 4-4.

5. Although resistance-free connections, wires and cables would be ideal, most of them will contain at least some voltage drop. Maximum voltage readings are shown in ***Table 4-1***:

Table 4-1. Maximum Voltage Readings

DC Volts	Connection	Test
0.00-0.10	Battery Post to Battery Terminal	(V4)
0.10-0.20	Any Ground	Ground
0.20-0.30	Across a wire or cable	(VI & V2)
0.20-0.30	Across a switch or starter contactor	(V3)
0.40-0.50	Across an entire circuit	(Pos or Neg)

6. If any of the voltages are greater than indication in ***Table 4-1***, repair or replace the component as needed.
7. After repairs are made, perform Procedure C (Conductance Test) and record the value for future record keeping.

Test 15 – Check Voltage at Starter Contactor (SC)

Procedure

1. Set DMM to measure DC voltage.
2. Disconnect Wire 16 from the starter contactor located on the starter motor.
3. Connect the positive meter test lead to Wire 16 previously removed. Connect the negative meter test lead to frame ground.
4. Place the START-RUN-STOP Switch to START. 12 VDC should be measured.
5. Reconnect Wire 16 to the starter motor.

Results

Refer back to flow chart.

Test 16 – Check START-RUN-STOP Switch

General Theory

See ***Figure 4-5***. The START-RUN-STOP switch utilizes ground potential to start and shutdown the engine. When the switch is actuated to the START position a ground is applied to the starter contactor where positive 12 VDC is already available allowing the engine to crank. Once the ground is removed by putting the switch in the RUN position it disengages the starter allowing the engine to operate normally. When the switch is actuated to the STOP position a ground is applied to the magneto coils grounding them out and inhibiting spark from occurring.

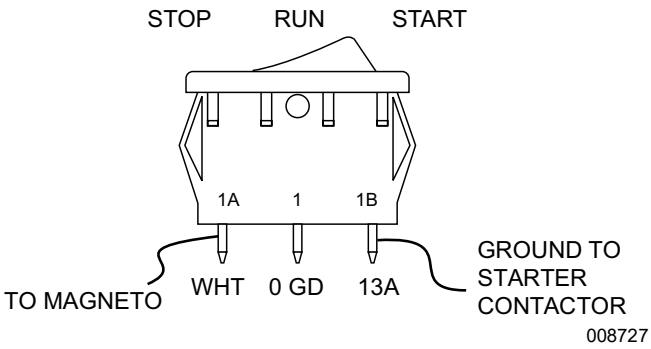


Figure 4-5. START-RUN-STOP Switch

Procedure

1. Set a digital multimeter (DMM) to measure resistance.
2. Remove all wires from START-RUN-STOP Switch (SW1).
3. Connect one meter lead to Terminal 2 and the other meter lead to Terminal 1. Actuate switch to START position. CONTINUITY should be measured.
4. Actuate switch to the STOP position. INFINITY should be measured.
5. Keep one meter lead on Terminal 2 and connect the other meter lead to Terminal 3. Actuate switch to the STOP position. CONTINUITY should be measured.
6. Actuate switch to START position. INFINITY should be measured.
7. Connect one meter test lead to disconnected Wire 0 from Terminal 2 and connect the other meter test lead to the positive post of the battery. 12 VDC should be measured. If voltage is not measured, repair or replace Wire 13A between the starter contactor and the START-RUN-STOP switch.
8. Connect all wires to the switch.

Results

1. If any other readings were measured, replace START-RUN-STOP switch.
2. Refer to flow chart.

NOTE: If unit has a PowerDial, the On/Off Switch functions the same as pictured. However, it is incorporated into the PowerDial assembly. Testing is the same procedure.

Test 17 – Test OFF-ON Switch

General Theory

The OFF-ON switch applies a ground to the shutdown harness (Wire 18). Applying ground to the harness grounds out the magneto and inhibits spark.

Procedure

1. See ***Figure 4-6***. Disconnect Point A from switch.

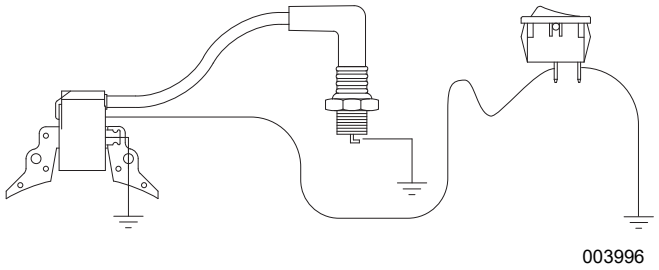


Figure 4-6. OFF-ON Switch Test Points

2. Connect one meter lead to male connector on switch and the other meter test lead to a clean frame ground.
3. Actuate switch back and forth between ON and OFF. CONTINUITY should only be measure in the OFF position.

Results

1. If switch failed Step 3, replace the OFF-ON switch (PowerDial on the LP5500).
2. If OFF-ON switch is good, refer to flow chart.

Test 18 – Check Starter Motor

The following conditions affect starter motor performance:

1. Binding or seizing in starter motor bearings.
2. A shorted, open, or grounded armature.
   a. Shorted, armature (wire insulation worn and wires touching), indicated by low or no RPM.
   b. Open armature (wire broken), indicated by low or no RPM and excessive current draw.
   c. Grounded armature (wire insulation worn and wire touching armature lamination or shaft), indicated by excessive current draw or no RPM.
3. A defective starter motor switch.
4. Broken, damaged or weak magnets.
5. Starter drive dirty or binding.

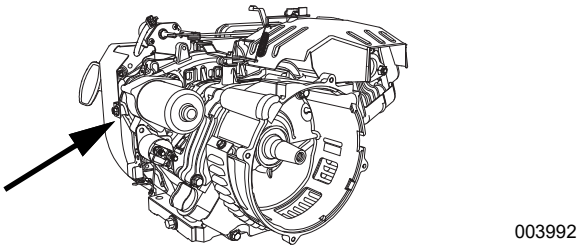


Figure 4-7. Starter Motor (SM)

Procedure

The battery should have been previously checked and fully charged.

Set a DMM to measure DC voltage (12 VDC). Connect meter positive (+) test lead to starter contactor stud (the small jumper wire connected to starter). Connect common (-) test lead to starter motor frame.

Set Start-Stop Switch to START and observe meter. Meter should indicate battery voltage. Starter motor should operate and engine should crank.

Results

1. If battery voltage is indicated on meter but motor did NOT operate, remove and test starter motor for proper operation independent of engine.
2. If battery voltage was indicated and Starter Motor tried to engage (pinion engaged) but engine did not crank, check for mechanical binding of engine or rotor.

NOTE: If a starting problem is encountered, the engine itself should be thoroughly checked to eliminate it as the cause of starting difficulty. It is good practice to check engine for freedom of rotation by removing spark plugs and turning crankshaft over slowly by hand to be sure it rotates freely.

IMPORTANT NOTE: Do not rotate engine with electric starter with spark plugs removed. Arcing at the spark plug ends may ignite the gasoline vapor exiting the spark plug hole.

⚠DANGER

Explosion and Fire. Fuel and vapors are extremely flammable and explosive. Store fuel in a well ventilated area. Keep fire and spark away. Failure to do so will result in death or serious injury.

(000143)

⚠WARNING

Explosion. Turn fuel supply OFF before checking for spark. Failure to do so could result in death or severe injury.

(000333)

Checking The Pinion

See ***Figure 4-8***. When starter motor is activated, the pinion gear should move and engage flywheel ring gear. If pinion does not move normally, inspect pinion for binding or sticking.

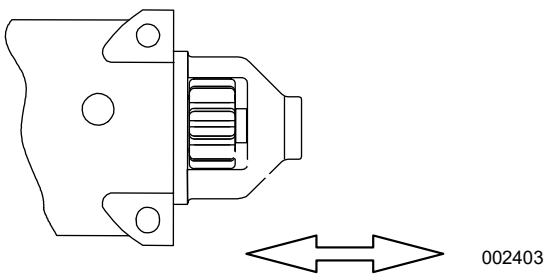


Figure 4-8. Check Pinion Gear Operation

Test 19 – Check Ignition Spark

Procedure

A commercially available spark tester may be used to test engine ignition system. One can also be purchased from Generac or local supplier.

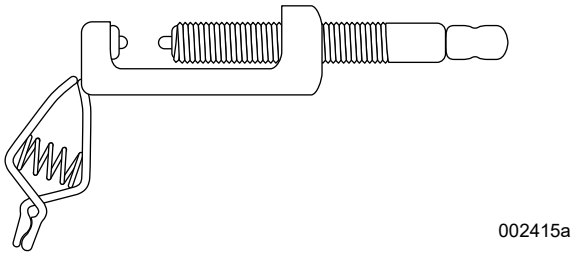


Figure 4-9. Spark Tester

1. Disconnect spark plug lead from spark plug.
2. Attach high tension lead to spark tester terminal.
3. See ***Figure 4-10*** and ***Figure 4-11***. Ground spark tester clamp by attaching to cylinder head.
4. Crank engine rapidly. Engine must crank at 350 rpm or more. If spark jumps tester gap, assume the ignition system is working properly. Repeat on remaining cylinder spark plug.

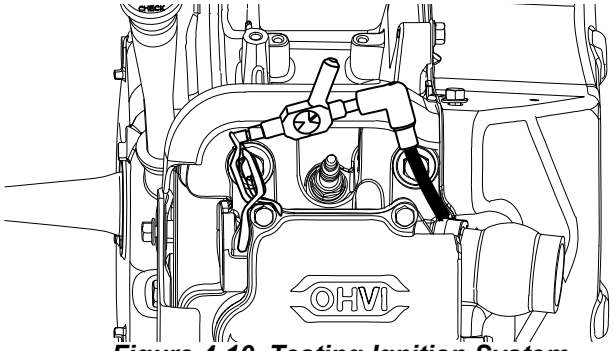


Figure 4-10. Testing Ignition System

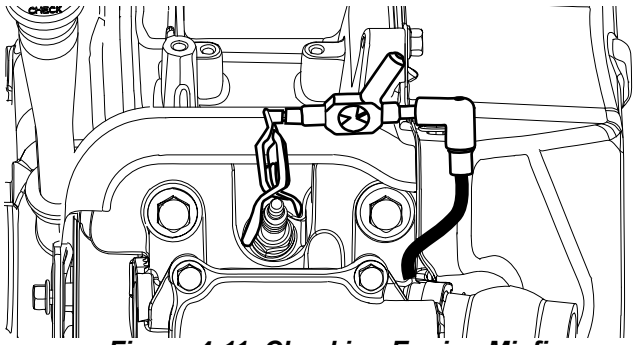


Figure 4-11. Checking Engine Misfire

5. If spark jumps tester gap intermittently, the problem may be in the ignition magneto.

Results

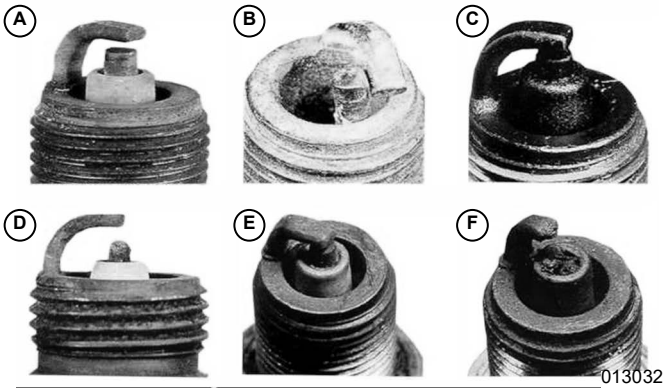
Refer to flow chart.

Test 20 – Check Spark Plugs

Procedure

See ***Figure 4-12*** and ***Figure 4-13***. Remove spark plugs. Clean with commercial solvent. Replace spark plugs if badly fouled, if ceramic is cracked, or if badly worn or damaged.

IMPORTANT NOTE: Do NOT blast clean spark plugs.



A.	Normal	D.	Overheated
B.	Mechanical Damage	E.	Insulator Glazing
C.	Oil Fouled	F.	Pre-Ignition

Figure 4-12. Spark Plug Conditions

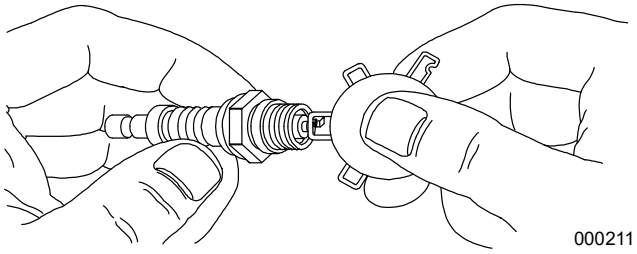


Figure 4-13. Setting Spark Plug Gap

Results

1. Clean and gap or replace sparks plug as necessary.
2. Refer to flow chart.

Test 21 – Check Carburetion

Procedure

Before making a carburetion check, be sure fuel supply tank has fresh, clean gasoline.

Check all shutoff valves are open and fuel flows freely through fuel line.

Verify choke operates correctly.

If engine will not start, remove and inspect spark plug. If spark plug is wet, look for the following:

- Overchoking
- Excessively rich fuel mixture
- Water in fuel
- Intake valve stuck open
- Needle/float stuck open

If spark plug is dry, look for the following:

- Leaking carburetor mounting gaskets
- Intake valve stuck closed
- Inoperative fuel pump
- Plugged fuel filter(s)
- Varnished carburetor

If engine starts hard or will not start, look for the following:

- Physical damage to AC generator. Check Rotor for contact with Stator.
- Starting under load. Make sure all loads are disconnected or turned off before attempting to crank and start engine.
- Be sure choke is working properly.

1. Remove fuel line at carburetor and ensure there is adequate fuel entering the carburetor.
2. Remove float bowl and check for foreign matter in bottom of carburetor bowl.
3. The float is plastic and can be removed for access to needle for cleaning.
4. With all of this removed, carburetor cleaner can be used to clean carburetor before assembly.
5. After cleaning carburetor with approved carburetor cleaner, blow dry with compressed air and assemble.

Shelf life of gasoline is 30 days. A fuel stabilizer must be used to ensure fuel is fresh at all times.

Results

If carburetor is varnished, clean or replace. Refer to flow chart.

Test 22 – Choke Test

Procedure

If generator is surging, it may be a carburetion problem. A lean condition can cause erratic RPM. Slowly pull choke out to see if surging stops. If it does stop, carburetion should be checked.

Test 23 – Check Valve Adjustment

Adjusting Valve Clearance

Improperly adjusted valves can cause various engine related problems including, but not limited to, hard starting, rough running and lack of power.

Adjust valve clearance with engine at room temperature. The piston should be at top dead center (TDC) of its compression stroke (both valves closed).

Another method is to turn engine over and position intake valve fully open (intake valve spring compressed) and adjust exhaust valve clearance. Turn engine over and position exhaust valve fully open (exhaust valve spring compressed) and adjust intake valve clearance.

1. See ***Figure 4-14***. Loosen rocker arm jam nut. Turn pivot ball stud while checking clearance between rocker arm and valve stem with a feeler gauge.

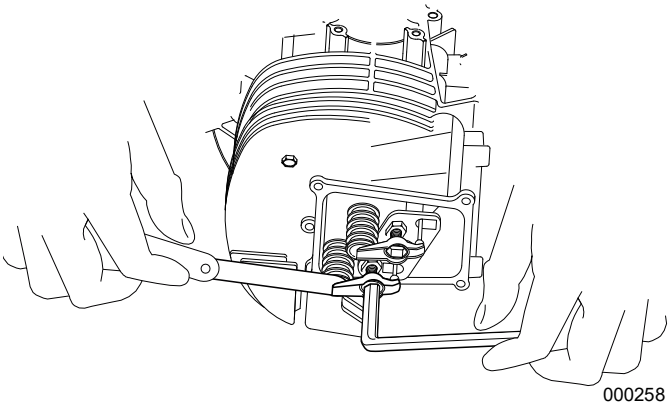


Figure 4-14. Adjusting Valve Clearance

Engine	Intake Valve	Exhaust Valve
189/208cc	0.0039 in (0.01 mm)	0.0059 in (0.015 mm)
196/212cc	0.002-0.004 in (0.005-0.01 mm)	0.004-0.006 in (0.01-0.015 mm)
389cc	0.005-0.007 in (0.013-0.017 mm)	
410cc	0.003-0.005 in (0.0076-0.0127 mm)	
500cc	0.004 ± 0.001 in (0.1 ± 0. 02mm)	0.006 ± 0.001 in (0.15 ± 0.02 mm)

2. See ***Figure 4-15***. When clearance is correct, hold pivot ball stud with hex wrench and tighten rocker arm jam nut to specified torque with a crow foot wrench. After tightening jam nut, recheck valve clearance to make sure it did not change.

Table 4-2.	
Rocker Arm Jam Nut	ft-lbs (Nm)
189cc	7 (9.4)
208cc	7 (9.4)
389cc	9–12 (12– 16)
410cc	14 (19)
500cc	6–9 (8– 12)

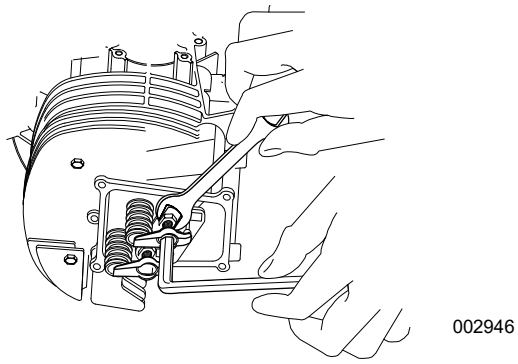


Figure 4-15. Tightening Jam Nut

Install Rocker Arm Cover

1. Use a new rocker arm cover gasket. Install rocker arm cover and retain with four screws.

Results

Adjust valves to specification and test. If problem continues, refer to flow chart.

Test 24 – Check Engine / Cylinder Leak Down Test / Compression Test

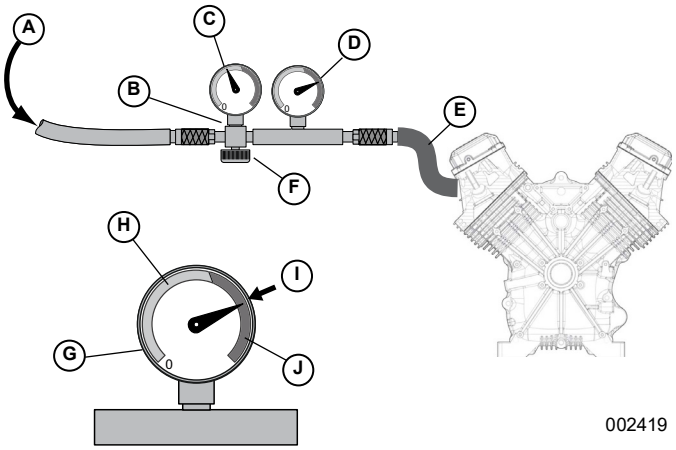
General Theory

Most engine problems may be classified as one, or a combination of the following:

- Will not start
- Starts hard
- Lack power
- Runs rough
- Vibration
- Overheating
- High oil consumption

General Theory

The cylinder leak down tester checks sealing (compression) ability of engine by measuring air leakage from combustion chamber. Compression loss can present many different symptoms. This test detects the section of the engine where the fault lies before disassembling the engine. ***Figure 4-16*** represents a standard tester available on the market.



A. Compressed air in
B. Air pressure regulator
C. Inlet gauge pressure set point
D. Outlet gauge pressure
E. To spark plug hole
F. Regulator adjustment knob
G. Outlet gauge
H. Red range indicates unacceptable leakage
I. Needle indicates minimal air leakage
J. Green range indicates acceptable leakage

Figure 4-16. Cylinder Leakdown Tester

Procedure

1. Shut off the fuel supply.
2. Remove spark plug.
3. Gain access to flywheel.
4. Remove valve cover.
5. Rotate engine crankshaft until piston reaches top dead center (TDC). Both valves should be closed.
6. Lock flywheel at top dead center.
7. Attach cylinder leak down tester adapter to spark plug hole.
8. Connect an air source of at least 90 psi to the leak down tester.
9. Adjust regulated pressure on gauge to 80 psi.
10. Read right hand gauge on tester for cylinder pressure. 20 percent leakage is normally acceptable. Use good judgment, and listen for air escaping at carburetor, exhaust, and crankcase breather. This determines where the fault lies.

Results

- Air escapes at carburetor – check intake valve.
- Air escapes through exhaust – check exhaust valve.
- Air escapes through breather – check piston rings.
- Air escapes from cylinder head – replace head gasket.

Check Compression

To check engine compression, remove spark plug. Insert an automotive type compression gauge into the spark plug hole. Crank engine until there is no further in pressure. The highest reading obtained is engine compression pressure.

Minimum Allowable Compression Pressure Cold Engine – 60 psi

If compression is poor, look the following causes:

- Loose cylinder head bolts
- Failed cylinder head gasket
- Burned valves or valve seats
- Insufficient valve clearance
- Warped cylinder head
- Warped valve stem
- Worn or broken piston ring(s)
- Worn or damaged cylinder bore
- Broken connecting rod
- Worn valve seats or valves
- Worn valve guides

NOTE: Refer to Engine Service Manual Part Number 0C1103A for further engine service information on the 410cc engine.

Test 25 – Check Flywheel

General Theory

See ***Figure 4-17***. In Test 19, a spark tester was used to check for engine ignition. If sparking or weak spark occurred, a possible cause might be the ignition magneto. This test checks magnetism of flywheel and will check the flywheel key.

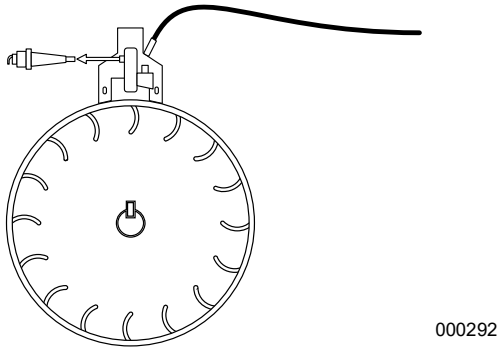


Figure 4-17. Engine Ground Harness

Procedure

1. Check flywheel magnet by holding a screwdriver at extreme end of handle with its point down. When the tip of screwdriver is moved to within 3/4 inch (19mm) of magnet, the blade should be pulled in against the magnet.
2. For rough running or hard starting engines, check flywheel key. The flywheel's taper is locked on the crankshaft taper by the torque of the flywheel nut.

A keyway is provided for alignment only and theoretically carries no load.

NOTE: If flywheel key becomes sheared or even partially sheared, ignition timing can change. Incorrect timing can result in hard starting or failure to start.

Test 28 – Remove Shutdown Wire

General Theory

Wire 18 on all engines is used to shut down the unit when either the switch is placed in OFF, or a low oil condition occurred. A ground is applied to the magneto in both instances which inhibits spark and shuts down unit. If a short to ground exists on this wire, the engine will be inhibited from producing spark. This test will check the integrity of the wire.

NOTE: The shutdown lead on units with the 389cc engine will not be identified as Wire 18. Refer to ***Figure 4-18*** for identification of location.

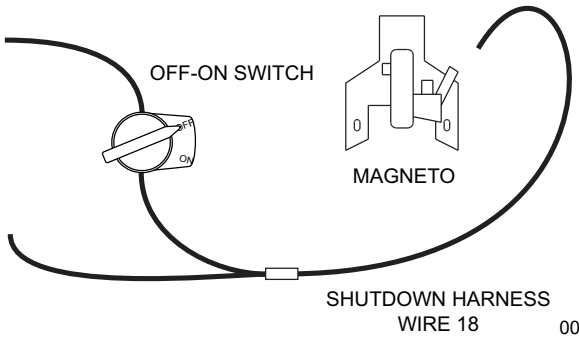


Figure 4-18. Shutdown Lead (389cc Engine)

Procedure

1. Turn off fuel supply.
2. Remove flywheel cover so magneto is exposed.
3. See ***Figure 4-19***. Disconnect Wire 18 from magneto.
4. Repeat ***Test 19 – Check Ignition Spark***.

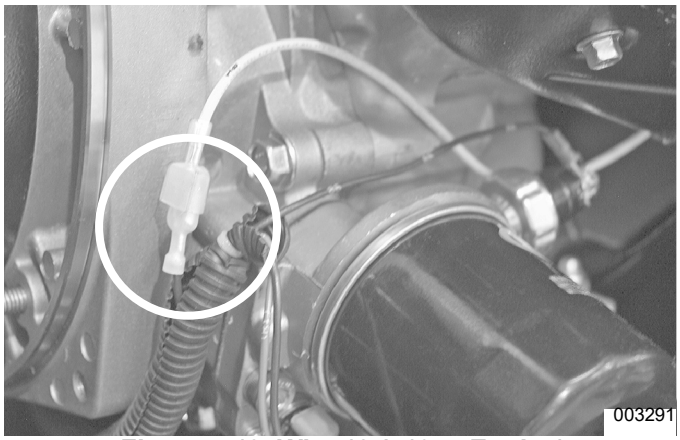


Figure 4-19. Wire 18 (410cc Engine)

Results

1. If spark now occurs, Wire 18 has a short to ground. Trace Wire 18 back to START-RUN-STOP switch and Oil Pressure Module (if equipped).
2. If spark still does not occur, refer to flow chart.

Test 27 – Check / Adjust Governor

Generator AC frequency output is directly proportional to the speed of the rotor. A two-pole rotor (having a single north and a single south magnetic pole) will produce an AC frequency of 60 hertz at 3600 RPM.

The AC output voltage is generally proportional to AC frequency. A low or high governor speed will result in a correspondingly low or high AC frequency and voltage output. The governed speed must be adjusted before any attempt to adjust the voltage regulator is made.

Procedure

See ***Figure 4-20***.

1. Loosen governor clamp bolt (A).
2. Hold governor lever (B) at its wide open throttle position, and rotate governor shaft (C) as follows:
   - Counterclockwise as far as it will go on 389/208/196cc Engines.
   - Clockwise as far as it will go on 410cc Engines
3. Tighten governor lever clamp bolt to:
   - 110 **in-lbs** (12.4 Nm) for 389/208/196cc Engines.
   - 70 **in-lbs** (8 Nm) for 410 Engines.

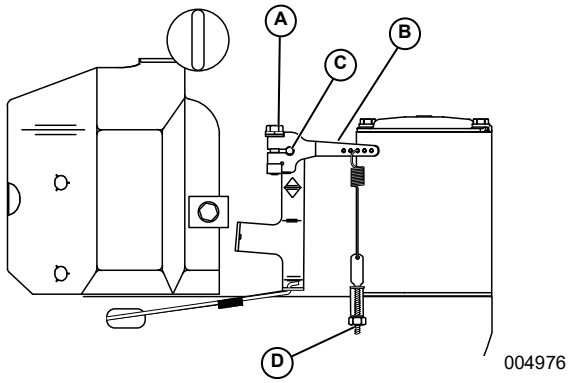


Figure 4-20. Governor Adjustment (410cc Engine)

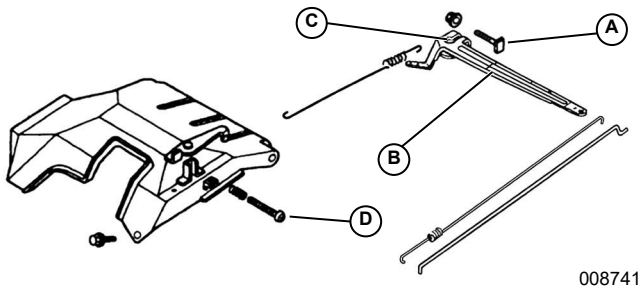


Figure 4-21. Governor Adjustment (389cc Engine)

Running Adjustment

After completing initial adjustment, final adjustment is accomplished with engine running under no-load.

1. Turn speed adjustment screw counterclockwise three full turns to avoid possible engine overspeed.
2. Start engine and let warm up to stabilize under no-load.
3. Connect AC frequency meter to one AC output receptacle. No-load frequency should be between 62.0 -62.5 hertz.
4. If frequency/RPM are incorrect, turn speed adjust screw until frequency/RPM is within limits. Turn clockwise to increase frequency/RPM, counterclockwise to decrease the frequency/RPM.
5. After adjustment is complete, add removable Loctite (Loctite 241) to threads of speed adjust screw.

Results

1. If after adjusting engine governor, frequency and voltage are good, discontinue tests.
2. If frequency is good but voltage is high or low, refer to flow chart.
3. If engine was overspeeding, check linkage and throttle for binding. If no governor response is indicated, refer to engine service manual.
4. If engine run rough and results in low frequency, proceed to ***Problem 19 – Engine "Hunts" / Erratic Idle (410cc Engines)***.

Test 28 – Check Oil Level Switch

General Theory

Some engines utilizes a splash type lubrication system. The switch should be open when the engine is filled with oil. The switch will close when the oil level drops too low. The switch will close and ground out the magnetos inhibiting spark until the oil level is raised.

Procedure

1. Verify the oil level is full.
2. Unplug wire from oil level switch.

Figure 4-22. Oil Level Switch

3. Set DMM to measure resistance.
4. Connect one meter test lead to disconnected wire from oil level switch. Connect the other meter test lead to frame ground. INFINITY should be measured.

Results

1. A CONTINUITY reading indicates the switch is not functioning. Replace switch.

Test 29 – Check Oil Pressure Switch

If engine cranks and starts, then shuts down almost immediately, check the following:

- Low engine oil level.
- Low oil pressure.
- Defective oil pressure switch.

Figure 4-23. Low Oil Pressure Switch

Procedure

1. Check engine crankcase oil level.
   a. Check engine oil level.
   b. If necessary, add recommended oil to dipstick FULL mark. DO NOT OVERFILL ABOVE FULL MARK.
2. Do the following:
   a. Disconnect Wire 86 and Wire 0 from low oil pressure switch (LOP) terminals.
   b. Remove switch and install an oil pressure gauge.
   c. Start engine while observing oil pressure reading on gauge.
   d. Note oil pressure.
      (1) Normal oil pressure is approximately 35-40 psi with engine running. If normal oil pressure is indicated, go to Step 4 of this test.
      (2) If oil pressure is below about 10 psi, shut engine down immediately. A problem exists in engine lubrication system. Refer to Service Manual, Generac P/N 0F6923 for engine service recommendations.

NOTE: The oil pressure switch is rated at 10 psi for single cylinder engines.

3. Remove oil pressure gauge and install oil pressure switch. Do NOT connect Wire 86 or Wire 0 to switch terminals.
   a. Set a DMM to measure resistance.
   b. Connect meter test leads across switch terminals. With engine shut down, the meter should read CONTINUITY.
   c. Crank and start engine. The meter should read INFINITY.
   d. Connect one test lead to Wire 0 (disconnected from LOP). Connect the other test lead to a clean frame ground. CONTINUITY should be measured. If CONTINUITY is NOT measured repair or replace Wire 0 between the LOP and the ground terminal connection on engine mount.
4. If LOP switch tests good in Step 3 and oil pressure is good in Step 2 but unit still shuts down with a LOP fault, check all wiring connections between START-STOP-RUN switch and LOP pressure module and LOP sender for a short to ground. Any ground on this wire will cause Wire 18 to receive a ground, also inhibiting spark from occurring. If a short to ground is found, replace wire.

Results

1. If LOP switch, oil pressure, and wiring all test good, refer to flow chart.
2. If LOP switch failed, replace switch.
3. If no pressure was measured, an internal failure of oil pump may have occurred.

Test 33 – Test Recoil Function

Procedure

1. Attempt to pull start engine and observe the following:
   a. Does cord pull easily and smoothly?
   b. Does cord return with no assistance?
   c. Does engine turn over as cord is pulled?

Results

If recoil did not perform correctly, possible problems could be:

- Compression release valve on 410 engine could be broken.
- Engine could be seized.
- Recoil could have become detached from flywheel.
- Recoil mechanism could be broken and not properly retracting back into engine.

Test 34 – Test Engine Function

Procedure

1. Remove recoil and front cover assembly.
2. Remove spark plug from unit.
3. Attempt to turn engine over by hand.

Results

1. If engine cannot turn over freely with spark plug removed, the engine has suffered an internal failure and seized.
2. Refer to flow chart.

Test 35 – Check For Fuel Delivery

(LP Units only)

Procedure

1. Open fuel valve on the propane cylinder.
2. Turn engine Power Dial to the #1 PRIME position. (on the LP3250 skip this step).
3. Press down on the dial (or Prime Button) for five (5) seconds to allow fuel to enter the mixer.
4. Listen for fuel discharging (sounds like air leaking).
   a. If no fuel is discharging while holding the Power Dial down, no fuel is coming from the Propane Cylinder through the demand regulator. Refer back to flow chart (BAD).
   b. If fuel is discharging while holding the Power Dial down, fuel is being delivered through the demand regulator. Refer back to the flow chart (GOOD).

Test 40 – Transfer Switch Test Operation

General Theory

This Manual Transfer switch requires electric power to operate with the rocker button. The transfer switch will not transfer to utility mode if the Utility Light is not illuminated prior to pressing the rocker button. Also, the transfer switch will not transfer to generator mode if the Generator Light is not illuminated (this safeguards against accidental transfer to the generator if generator power is not present). This test will help identify whether the switch, the lights or the mechanism is at fault.

Procedure

1. Before proceeding, verify the position of the switch by observing the position of manual operation handle.
   a. If the handle is DOWN, the contacts are closed in the NORMAL (UTILITY) position
   b. If the handle is UP, the contacts are closed in the GENERATOR (STANDBY) position.
2. With the handle inserted into the movable contact carrier arm, move handle DOWN.
   a. If the handle moved unencumbered from the

UP position to the DOWN position without binding, the switch is functioning mechanically. Proceed to the next step.

3. Turn ON the utility power supply (if currently off) to the transfer switch, using the means provided (such as utility main line circuit breaker).
   a. The utility light should illuminate only if the transfer switch is in the Generator position and utility voltage is present.
4. Press rocker button towards the UTILITY direction (the transfer switch will not operate unless utility voltage is present).
   a. The Utility Light should now be off. This is its normal operating condition (Utility voltage should be present when the transfer switch is in normal utility mode).
   b. Any loads will be energized via the power panel of the transfer switch.
5. With the generator properly connected, turn on the generator.
   a. The amber indicator light for Generator Power should illuminate on the front panel of the transfer switch any time generator voltage is available.
   b. The generator is now electrically isolated from any electrical connections beyond the transfer switch.
6. Press rocker button towards Generator Power direction.
   a. The generator light should continue to illuminate to indicate the presence of generator voltage.
   b. All loads through the transfer switch panel are now being supplied by the generator.

Results

1. If the Utility light DID NOT illuminate in Step 1 and also DID NOT light in Step 2, using the schematic diagram, determine where the open circuit is and repair appropriately.
2. If the Utility light DID NOT illuminate in Step 1, but did in Step 2, check the operation of the transfer mechanism.
3. If the amber light illuminated in Step 3, but DID NOT in Step 4, check the operation of the transfer mechanism.

Test 41 – CO Module Verification Test

Purpose

To determine if the CO module is installed correctly and functioning properly on a generator unit after replacement or repair. The status of the module is determined by LED patterns and colors.

Procedure

NOTE: Do not install CO badging (decal) prior to performing this test

NOTE: The generator must run under normal operation with no CO module notifications for a minimum of 65 seconds before performing the pin test.

1. See ***Figure 4-24***. With the generator running, insert the blunt end of a 3/64” drill bit into test switch hole (A).
2. Hold the drill bit against the mounting panel until notification LEDs appear and generator shuts off.

NOTE: The LED pattern for a successful pin test is both lights on solid (not blinking) as shown in ***Table 4-3***.

NOTE: Do NOT insert the drill bit into the LED holes (B) located above and below the test switch access hole. Damage the LEDs will occur.

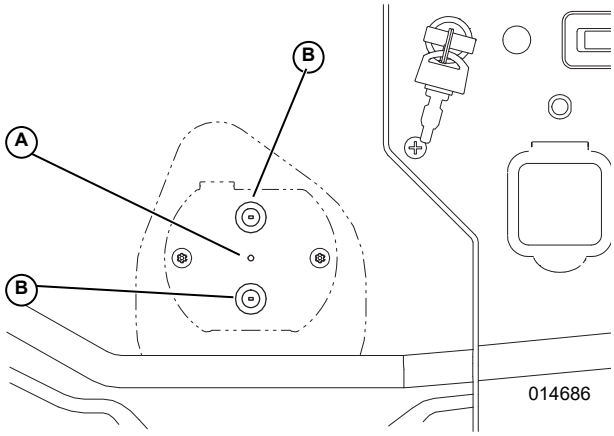
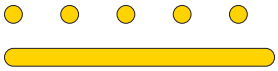
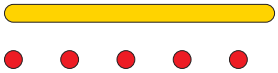
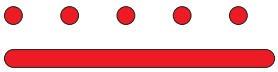
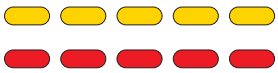
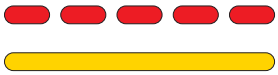


Figure 4-24. CO Module Test Switch and LEDs

Table 4-3. LED Notifications

Yellow Short Flash	
Yellow Solid	
Red Short Flash	
Red Solid	
Yellow & Red Long Flashing	
Yellow & Red Solid	
No lights	

NOTE: A red short flash with a generator shutdown at any time indicates an elevated level of CO in the area. The module is functioning properly and is protecting the operators.

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Section 5 Major Disassembly

Introduction

Each generator model has a unique method of disassembly. ***Figure 5-1*** is a simplified version of disassembly that does not go into step by step instructions. The figure below represents the basic disassembly and sequence of steps needed to remove the fuel tank, stator, rotor, and the engine.

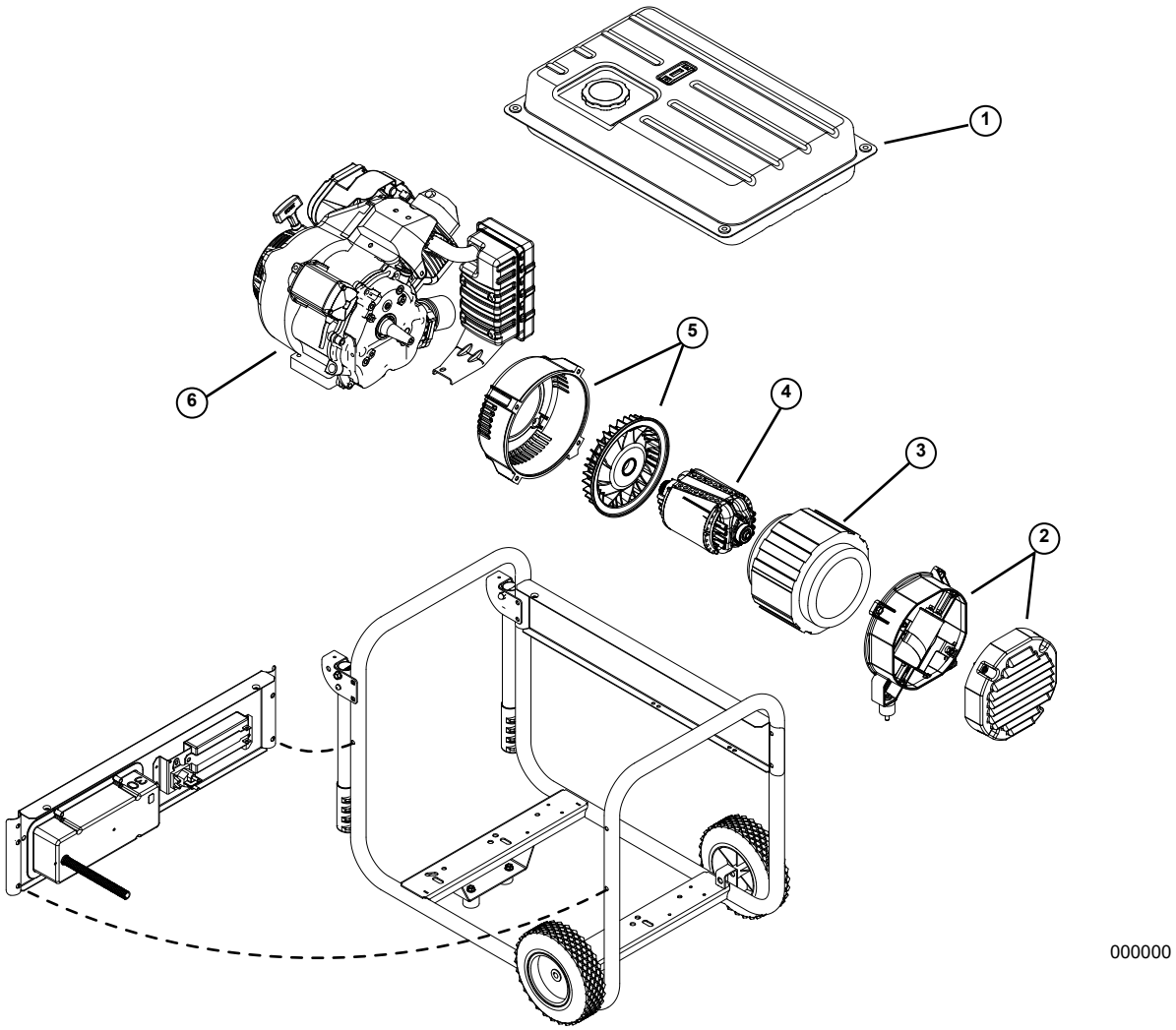
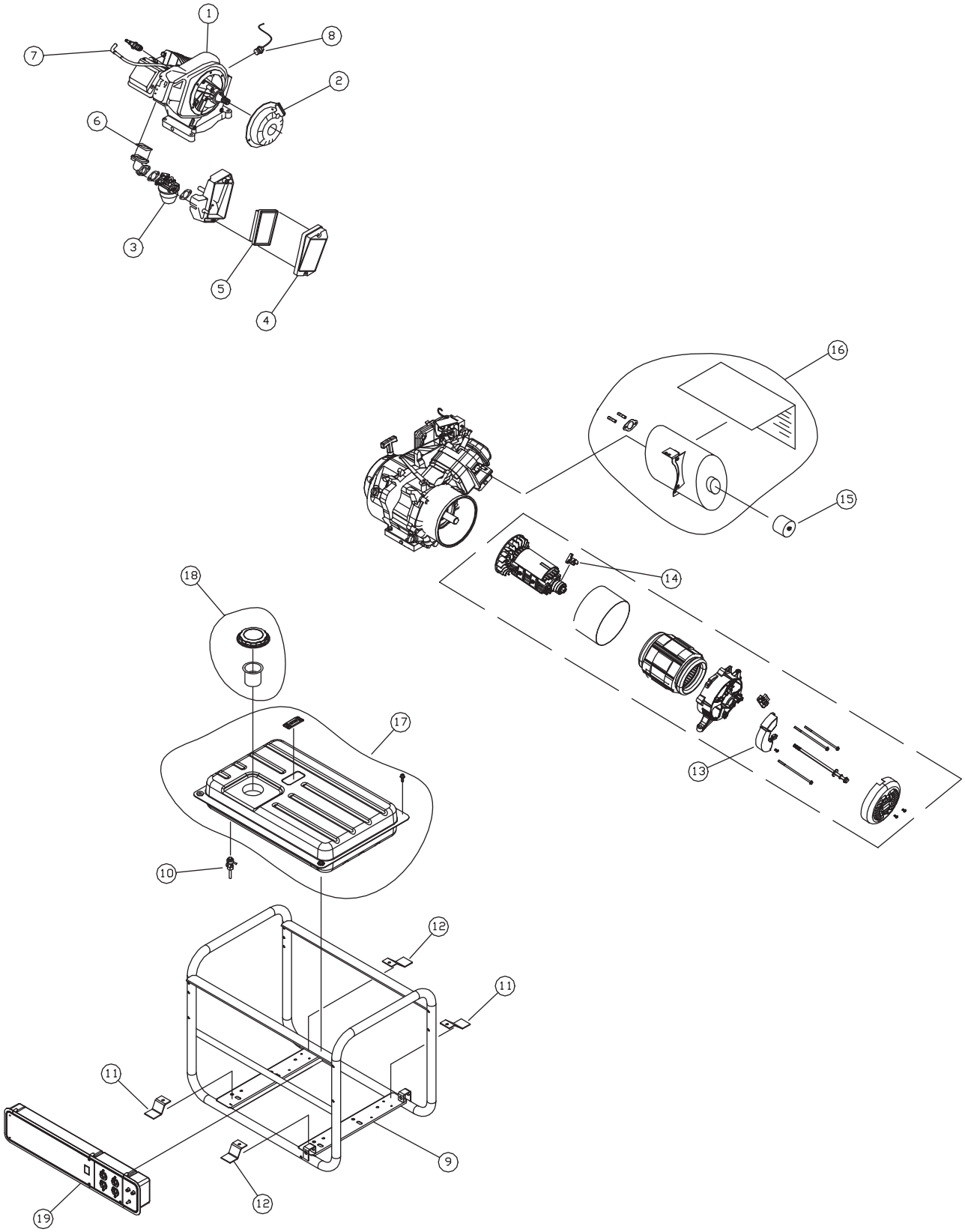


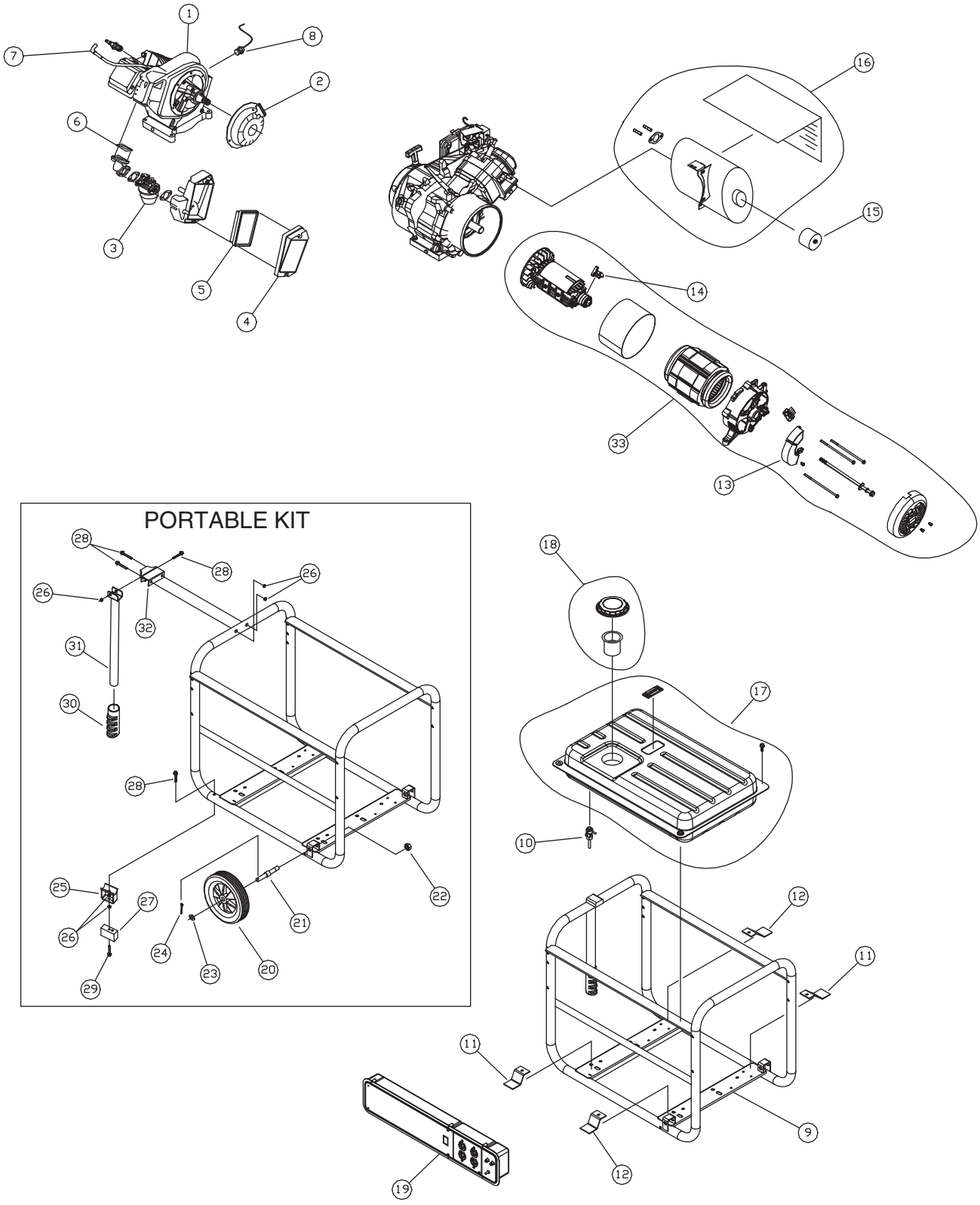
Figure 5-1. Typical Disassembly Steps

Exploded View – GP1800 – Drawing No. 0H0609-A



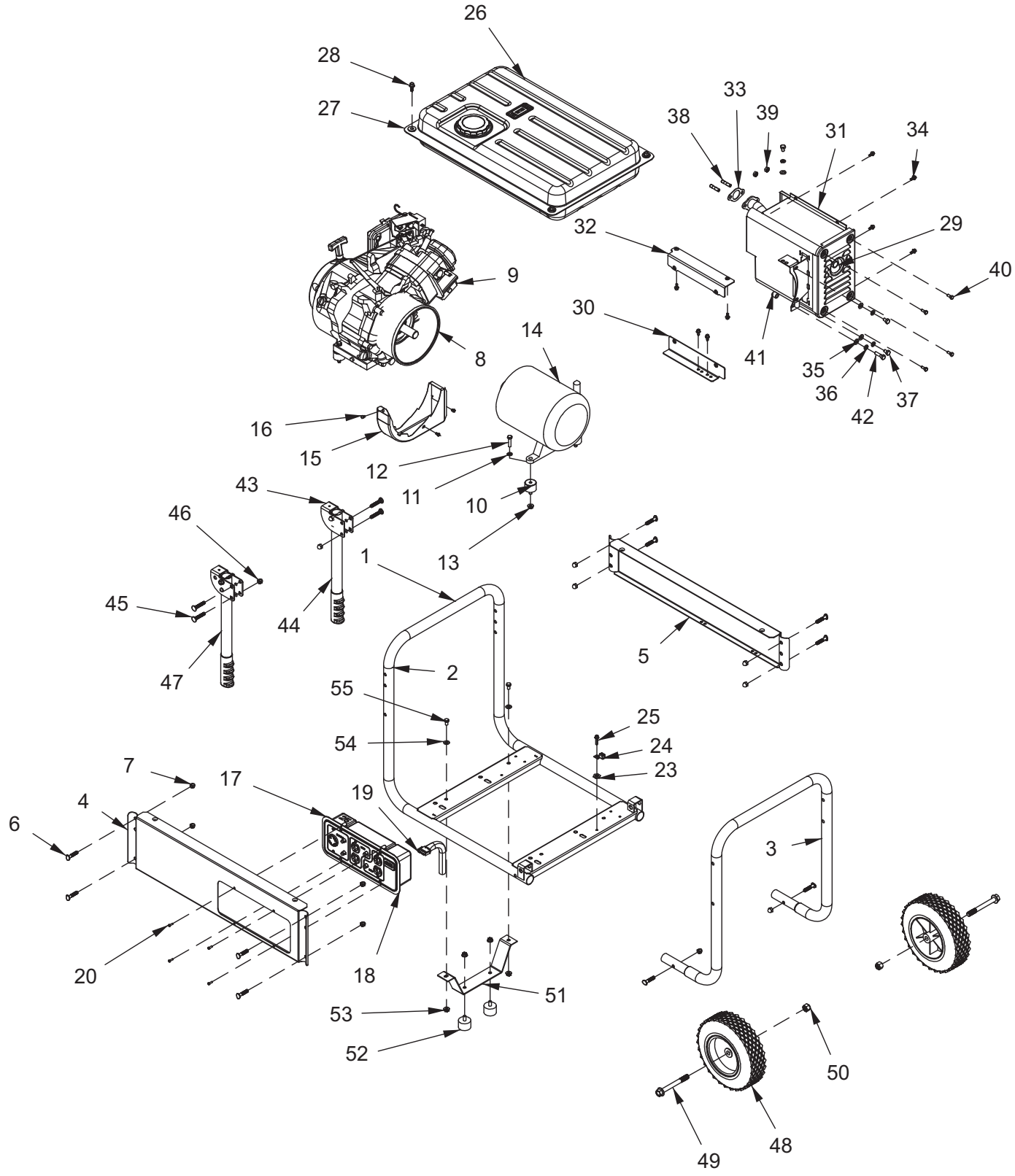
ITEM	QTY	DESCRIPTION
1	1	ENGINE, 196CC
2	1	RECOIL ASSEMBLY
3	1	CARBURETOR
4	1	AIR CLEANER COVER
5	1	AIR FILTER
6	3	CARBURETOR GASKET
7	1	SPARK PLUG BOOT
8	1	OIL LEVEL SENSOR
9	1	FRAME, 1800W
10	1	FUEL SHUTOFF VALVE
11	2	VIBRATION MOUNT, #1
12	2	VIBRATION MOUNT, #2
13	1	AVR
14	1	BRUSH ASSEMBLY
15	1	SPARK ARRESTOR
16	1	MUFFLER ASSEMBLY
17	1	FUEL TANK ASSEMBLY
18	1	FUEL TANK CAP ASSEMBLY
19	1	CONTROL PANEL ASSEMBLY
20	1	ASSEMBLY, ALTERNATOR 1800W

Exploded View – GP3250 – Drawing No. 0H0522-C



ITEM	QTY.	DESCRIPTION
1	1	ENGINE, 208CC
2	1	RECOIL ASSEMBLY
3	1	CARBURETOR
4	1	AIR CLEANER COVER
5	1	AIR FILTER
6	3	CARBURETOR GASKET
7	1	SPARK PLUG BOOT
8	1	OIL LEVEL SENSOR
9	1	FRAME, 3250W
10	1	FUEL SHUTOFF VALVE
11	2	VIBRATION MOUNT, #1
12	2	VIBRATION MOUNT, #2
13	1	AVR
14	1	BRUSH ASSEMBLY
15	1	SPARK ARRESTOR
16	1	MUFFLER ASSEMBLY
17	1	FUEL TANK ASSEMBLY
18	1	FUEL TANK CAP ASSEMBLY
19	1	CONTROL PANEL ASSEMBLY
20	2	WHEEL, 7” DIAMETER 3250W
21	2	WHEEL AXLE M12-1.75 THREADS
22	2	NUT, AXLE M12-1.75
23	2	WASHER, FLAT M12
24	2	COTTER PIN
25	2	BUMPER BRACKET 3250W
26	7	NUT, FLANGE M6-1.0
27	2	RUBBER BUMPER, 3250W
28	5	BOLT, FLANGE M6-1.0 X 40
29	2	BOLT, FLANGE M6-1.0 X 16
30	1	RUBBER GRIP, HANDLE 3250W
31	1	HANDLE, PORTABLE 3250W
32	1	ASSY, HANDLE BRACKET 3250W
33	1	ASSEMBLY, ALTERNATOR BRUSH TYPE 3250W

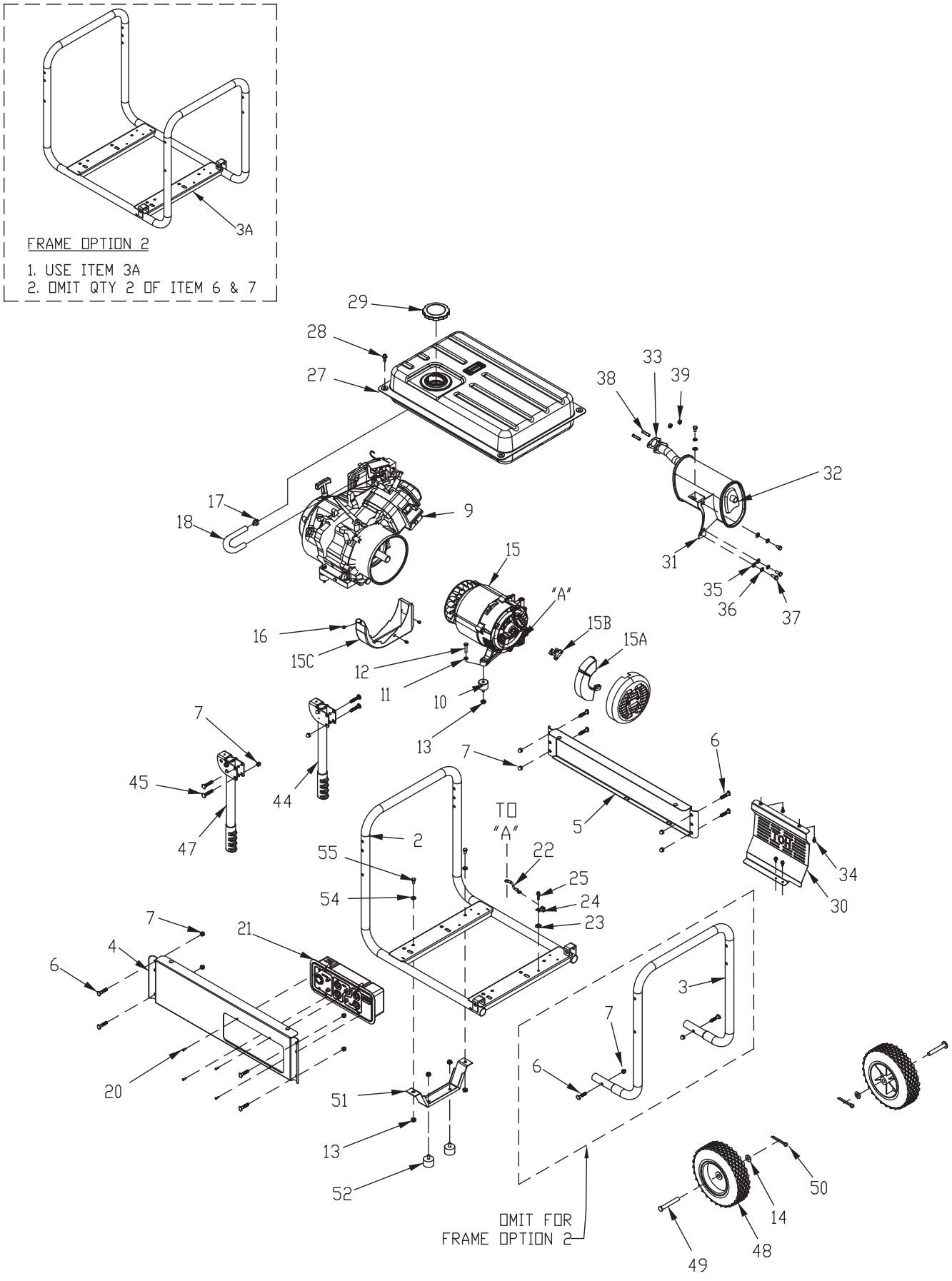
Exploded View – GP5000 – Drawing No. 0G9384A-C



ITEM	QTY.	DESCRIPTION
1	1	FRAME PARTS
2	1	ASSY CRADLE BASE
3	1	CRADLE END
4	1	PANEL RAIL
5	1	BACK RAIL
6	10	CURVED HEAD BOLT 5/16-18 x 1.625" LONG
7	10	CAP NUT LOCKING 5/16-18, 5/16” OF THREAD
8	1	ENGINE/ALT PARTS
9	1	ENGINE, 389cc W/O MUFFLER
10	4	VIB MOUNT RUBBER 1.38 x 1.0 x 5/ 16-18 MALE/FEMALE
11	4	WASHER LOCK M8-5/16
12	4	SCREW HHC 5/16-18 x 1-1/4 G5
13	4	NUT LOCK FLG 5/16-18
14	1	ALTERNATOR 6500W METRIC TAPER SHAFT
15	1	SCROLL, ALTERNATOR, SKU
16	3	SCREW HHC M5-0.8 x 8 PC8.8
17	1	ELECTRICAL PARTS
18	1	ASSY RCP PANEL 30A RD NOHR MTR
19	1	ASSY POWER LEADS
20	4	SCREW PPPH #8-16 x 1/2” BZC
21	1	ASSY GND WIRE PNL TO ALT
22	1	ASSY GND WIRE ALT TO BASE
23	1	WASHER LOCK SPECIAL 1/4”
24	1	LUG SLDLSS #2-#8 x 17/64 CU
25	1	SCREW HHTT M6-1.0 x 25
26	1	FUEL TANK PARTS 6.6GL
27	1	FUEL TANK ASSY 6.6 GAL
28	4	SCREW HHTT M8-1.25 x 20

ITEM	QTY.	DESCRIPTION
29	1	EXHAUST PARTS
30	1	BRACKET, MUFFLER SHIELD, BOTTOM
31	1	ASSY MUFFLER, 389cc
32	1	BRACKET, MUFFLER SHIELD TOP
33	1	GASKET, EXHUAST. 389cc
34	8	SCREW HHTT M6-1.0 x 12
35	4	WASHER FLAT 5/16-M8 ZINC
36	4	WASHER LOCK M8-5/16
37	4	SCREW HHC M8-1.25 x 12 G8.8 FT
38	2	STUD M8-125 x 35 G5 ZINC
39	2	HEX NUT M8-1.25 G8 CLEAR ZINC
40	4	SCREW HHC M6-1.0 x 16 C8.8
41	1	SPACER.34 x.62 x.590 ST/ZNC
42	1	SCREW HHC M8-1.25 x 30 C8.8
43	1	ACCESSORY KIT
44	1	ASSY HANDLE LH
45	4	CARRIAGE HEAD BOLT 5/16-18 x 1.75" LONG
46	2	CAP NUT LOCKING 5/16-18, 5/16” OF THREAD
47	1	ASSY HANDLE RH
48	2	TIRE 9.5" DIA RUN FLAT PLASTIC HUB/RUBBER TREAD
49	2	SCREW HHFC 1/2-13 x 4.5 ZBC
50	2	NUT LOCK HEX 1/2-13 NYL INS
51	1	FRAME, BENT, FOOT BLACK 03
52	2	RUBBER FOOT
53	4	NUT LOCK FLG 5/16-18
54	2	WASHER FLAT 5/16-M8 ZINC
55	2	SCREW HHC 5/16-18 x 1/2 G5

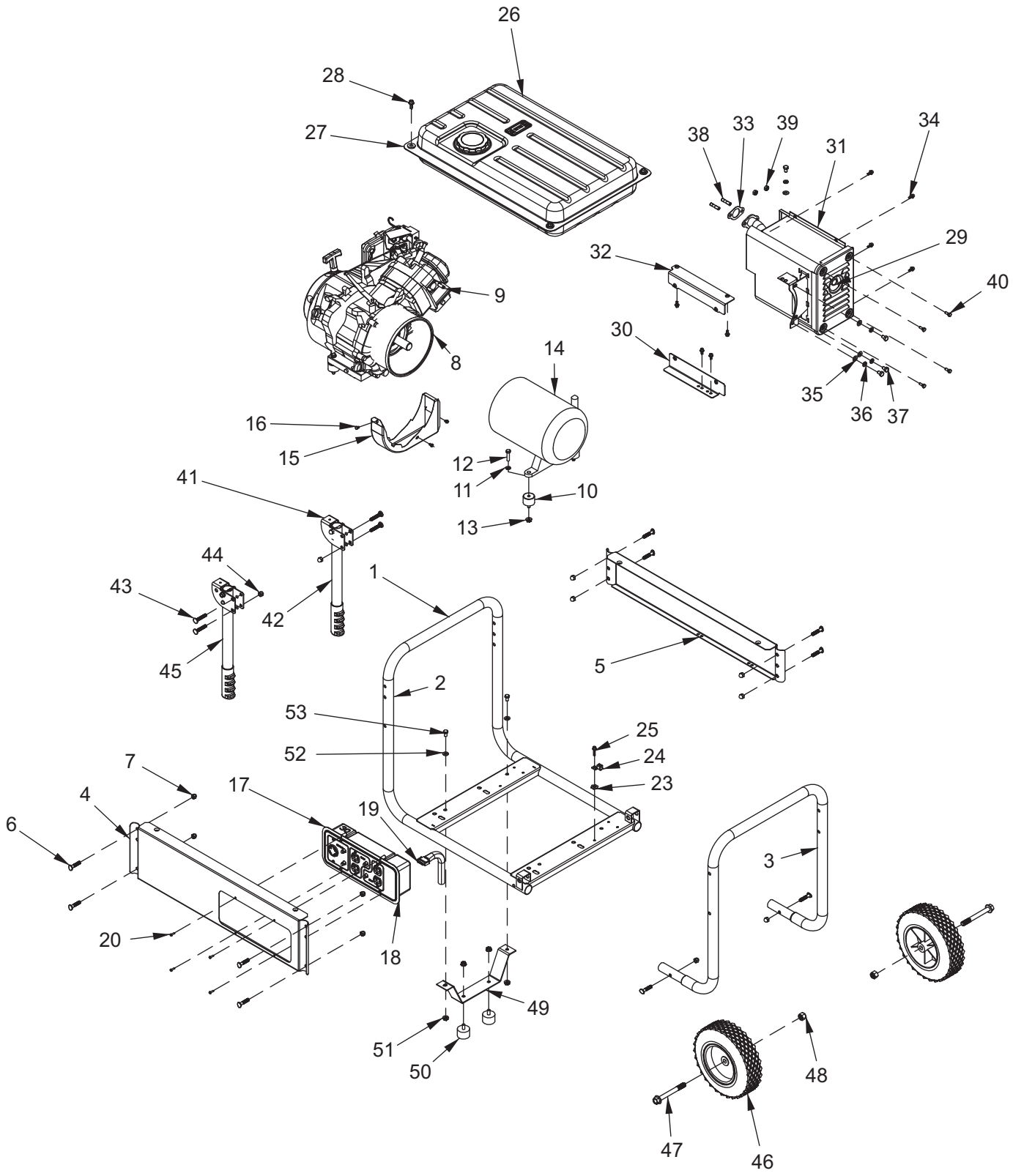
Exploded View – GP5500 – Drawing No. 0H1253-A



ITEM	QTY.	DESCRIPTION
2	1	ASSY CRADLE BASE
3	1	CRADLE END
3A	1	ASSEMBLY, FRAME 1 PIECE
4	1	PANEL RAIL
5	1	BACK RAIL
6	10	CURVED HEAD BOLT M8-1.25 X 42MM
7	11	CAP NUT LOCKING M8-1.25
9	1	ENGINE, 389cc W /0 MUFFLER
10	4	VIB MOUNT RUBBER 35MM X 25.4 X M8-1.25
11	4	WASHER LOCK M8-5/16
12	4	SCREW HHC M8-1.25 X 30
13	8	NUT LOCK FLG M8-1.25
14	2	WASHER FLAT 13mm
15	1	ALTERNATOR
15A	*	AVR
15B	*	BRUSH-ALTERNATOR
15C	1	SCROLL, ALTERNATOR, SKU
16	3	SCREW HHC M5-0.8 X 8 PC8.8
17	1	CLAMP HOSE.38-.87
18	1	FUEL HOSE, 4 ID, 8.5 OD X 120MM
20	4	SCREW PPPH #8-16 X 1/2” BZC
21	1	ASSY RCP PANEL 25A RD W/HR MTR
22	1	ASSY GND WIRE ALT TO BASE
23	1	WASHER LOCK SPECIAL 1/4”
24	1	LUG SLDLSS #2-#8 X 17/64 CU

ITEM	QTY.	DESCRIPTION
25	1	SCREW HHTT M6-1.0 X 25
27	1	FUEL TANK ASSY 6.6 GAL PORTABLE
28	4	SCREW HHTT M8-1.25 X 20
29	1	FUEL CAP, VENTED
30	1	SHIELD, HEAT, SKU
31	1	BRACKET, MUFFLER 389CC
32	1	MUFFLER, 389CC
33	1	GASKET, EXHAUST 389CC
34	4	SCREW HHTT M6-1.0 X 12
35	4	WASHER FLAT 5/16-M8 ZINC
36	4	WASHER LOCK M8-5/16
37	4	SCREW HHC MB-1.25 X 20 G8.8 FT
38	2	STUD M8-1.25 X 35 G5 ZINC
39	2	HEX NUT M8-1.25 G8 CLEAR ZINC
44	1	ASSY HANDLE LH
45	4	CARRIAGE HEAD BOLT M8-1.25 X 46mm LONG
47	1	ASSY HANDLE RH
48	2	TIRE 9,5” DIA RUN FLAT PLASTIC HUB/RUBBER TREAD
49	2	AXLE PIN, 1/2” X 4", 3/4” HEAD
50	2	COTTER PIN, 1/8” X 1 1/4” ZN PLT
51	1	FRAME, BENT, FOOT
52	2	RUBBER FOOT, M8-1.25
54	2	WASHER FLAT 5/16-M8 ZINC
55	2	SCREW HHC M8-1.25 X 15

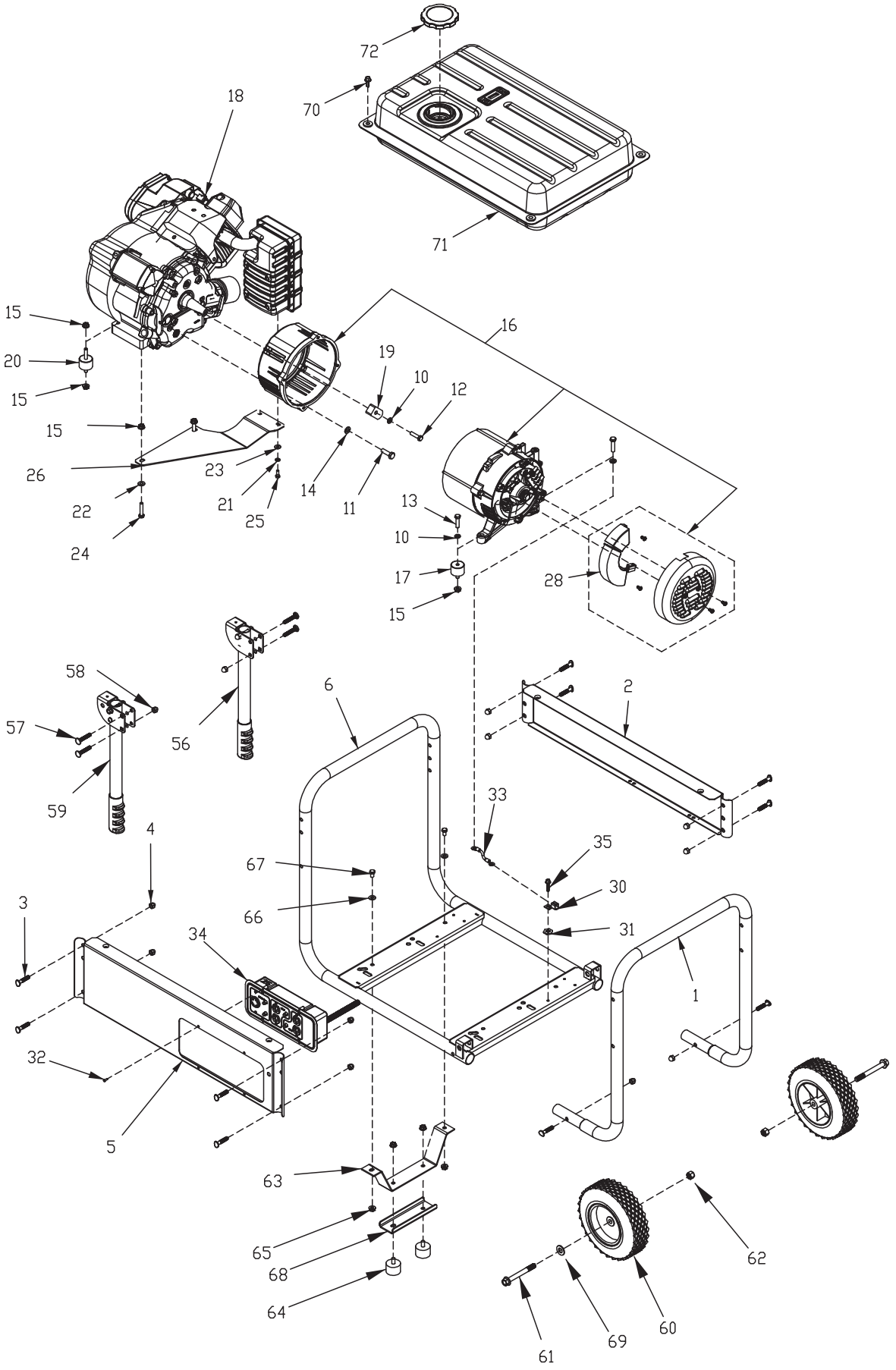
Exploded View – GP6500 – Drawing No. 0G9384B-C



ITEM	QTY.	DESCRIPTION
1	1	FRAME PARTS
2	1	ASSY CRADLE BASE
3	1	CRADLE END
4	1	PANEL RAIL
5	1	BACK RAIL
6	10	CURVED HEAD BOLT 5/16-18 x 1.625" LONG
7	10	CAP NUT LOCKING 5/16-18, 5/16” OF THREAD
8	1	ENGINE/ALT PARTS
9	1	ENGINE, 389cc W/O MUFFLER
10	4	VIB MOUNT RUBBER 1.38 x 1.0 x 5/ 16-18 MALE/FEMALE
11	4	WASHER LOCK M8-5/16
12	4	SCREW HHC 5/16-18 x 1-1/4 G5
13	4	NUT LOCK FLG 5/16-18
14	1	ALTERNATOR 6500W METRIC TAPER SHAFT
15	1	SCROLL, ALTERNATOR, SKU
16	3	SCREW HHC M5-0.8 x 8 PC8.8
17	1	ELECTRICAL PARTS
18	1	ASSY RCP PANEL 30A RD NOHR MTR
19	1	ASSY POWER LEADS
20	4	SCREW PPPH #8-16 x 1/2” BZC
21	1	ASSY GND WIRE PNL TO ALT
22	1	ASSY GND WIRE ALT TO BASE
23	1	WASHER LOCK SPECIAL 1/4”
24	1	LUG SLDLSS #2-#8 x 17/64 CU
25	1	SCREW HHTT M6-1.0 x 25
26	1	FUEL TANK PARTS 6.6GL
27	1	FUEL TANK ASSY 6.6 GAL

ITEM	QTY.	DESCRIPTION
28	4	SCREW HHTT M8-1.25 x 20
29	1	EXHAUST PARTS
30	1	BRACKET, MUFFLER SHIELD, BOTTOM
31	1	ASSY MUFFLER, 389cc
32	1	BRACKET, MUFFLER SHIELD TOP
33	1	GASKET, EXHUAST. 389cc
34	8	SCREW HHTT M6-1.0 x 12
35	4	WASHER FLAT 5/16-M8 ZINC
36	4	WASHER LOCK M8-5/16
37	4	SCREW HHC M8-1.25 x 12 G8.8 FT
38	2	STUD M8-125 x 35 G5 ZINC
39	2	HEX NUT M8-1.25 G8 CLEAR ZINC
40	4	SCREW HHC M6-1.0 x 16 C8.8
41	1	ACCESSORY KIT
42	1	ASSY HANDLE LH
43	4	CARRIAGE HEAD BOLT 5/16-18 x 1.75" LONG
44	2	CAP NUT LOCKING 5/16-18, 5/16” OF THREAD
45	1	ASSY HANDLE RH
46	2	TIRE 9.5" DIA RUN FLAT PLASTIC HUB/RUBBER TREAD
47	2	SCREW HHFC 1/2-13 x 4.5 ZBC
48	2	NUT LOCK HEX 1/2-13 NYL INS
49	1	FRAME, BENT, FOOT BLACK 03
50	2	RUBBER FOOT
51	4	NUT LOCK FLG 5/16-18
52	2	WASHER FLAT 5/16-M8 ZINC
53	2	SCREW HHC 5/16-18 x 1/2 G5

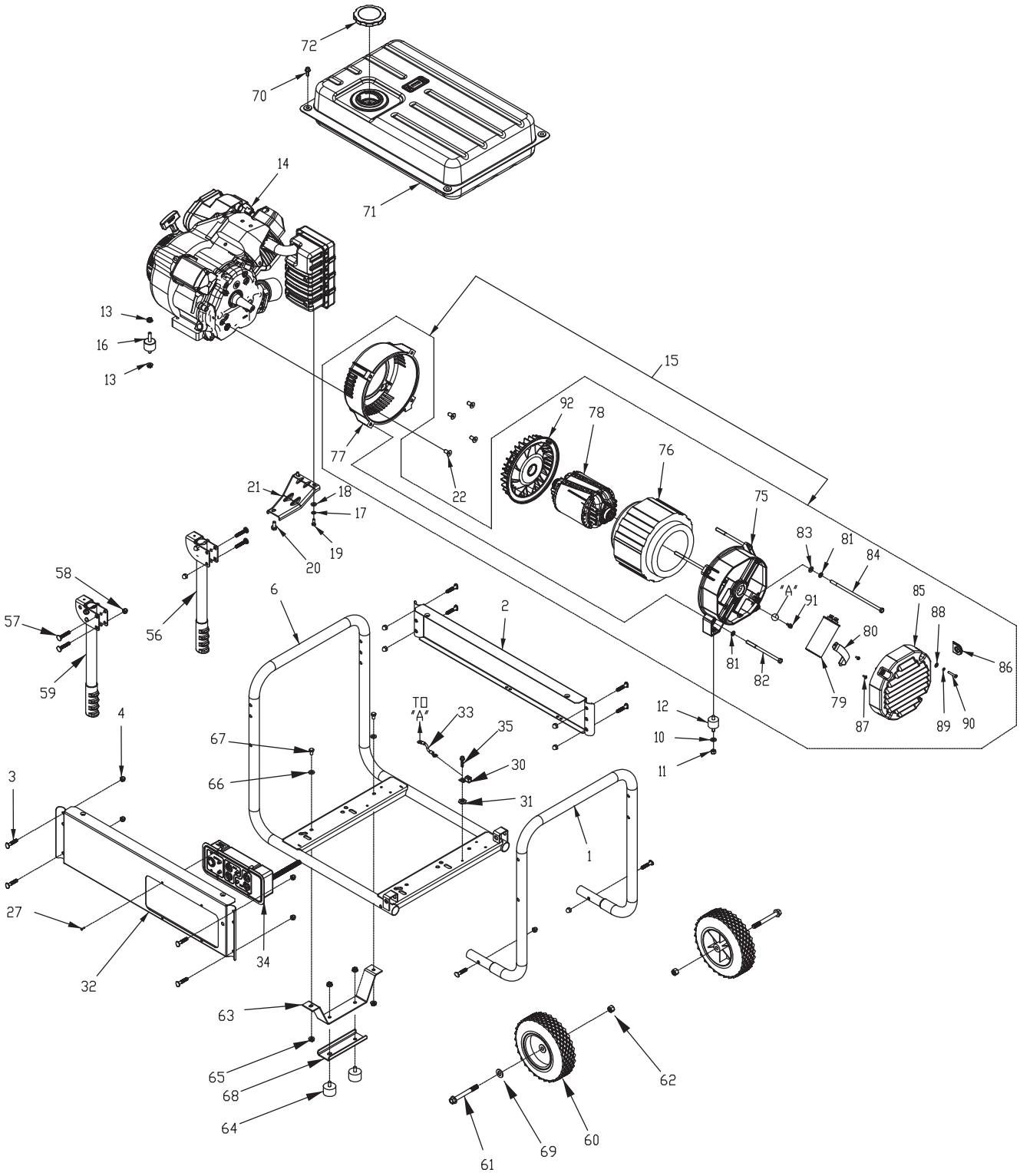
Exploded View – GP7000 – Drawing No. 0G9384D-B



ITEM	QTY.	DESCRIPTION
1	1	CRADLE END
2	1	BACK RAIL
3	10	CURVED HEAD BOLT 5/16-18 x 1.625" LONG
4	10	CAP NUT LOCKING 5/16-18 THREAD, 5/16” OF THREAD
5	1	PANEL RAIL
6	1	ASSY CRADLE BASE
10	3	WASHER LOCK M8-5/16
11	3	SCREW HHC 3/8-16 x 1-1/4 G5
12	1	SCREW HHC 5/16-24 x 1-1/4 G5
13	2	SCREW HHC 5/16-18 x 1-1/4 G5
14	3	WASHER LOCK M10
15	8	NUT LOCK FLG 5/16-18
16	1	ALTERNATOR, 7000W
17	2	VIB MOUNT RUBBER 1.38 x 1.0 x 5/ 16-18 MALE/FEMALE
18	1	ENGINE, GH410
19	1	BRACKET, MOUNT
20	2	VIB MOUNT RUBBER 1.38 x 1.0 x 5/ 16-18 M/M
21	2	WASHER LOCK M6-1/4
22	2	WASHER FLAT 5/16-M8 ZINC
23	2	WASHER FLAT 1/4-M6 ZINC
24	2	SCREW HHC 5/16-18 x 1-1/2 G5
25	2	SCREW HHC M6-1.0 x 16 C8,8
26	1	BRACKET, MOUNTING, MUFFLER 410
27	1	CLAMP HOSE.38-.87 [NOT SHOWN, FUEL HOSE]
28	1	CAPACITOR, VOLTAGE REG VS

ITEM	QTY.	DESCRIPTION
30	1	LUG SLDLSS #2-#8 X 17/64 CU
31	1	WASHER LOCK SPECIAL 1/4”
32	4	SCREW PPPH #8-16 x 1/2” BZC
33	1	ASSY GND WIRE ALT TO BASE
34	1	RECEPTACLE PANEL 30A RND W/ HR MTR
35	1	SCREW HHTT M6-1.0 x 25 BP
55	1	ACCESSORY KIT
56	1	ASSY HANDLE LH
57	4	CHB CUSTOM 5/16 18 x 46MM LONG
58	2	CAP NUT LOCKING 5/16-18, 5/16” OF THREAD
59	1	ASSY HANDLE RH
60	2	TIRE 9.5" DIA RUN FLAT PLASTIC HUB/RUBBER TREAD
61	2	SCREW, HHC 1/2”-13 x 4-1/2” LONG
62	2	NUT, LOCK HEX 1/2-13 NYLON INSERT
63	1	FRAME, BENT, FOOT
64	2	RUBBER FOOT
65	4	NUT LOCK FLG 5/16-18
66	2	WASHER FLAT 5/16-M8 ZINC
67	2	SCREW HHC 5/16-18 X 1/2 G5
68	1	FRAME, BENT, FOOT SUPPORT
69	2	WASHER FLAT 1/2 ZINC
70	4	SCREW HHTT M8-1.25 X 20
71	1	FUEL TANK ASSY 8.0 GAL PORTABLE
72	1	FUEL CAP-VENTED

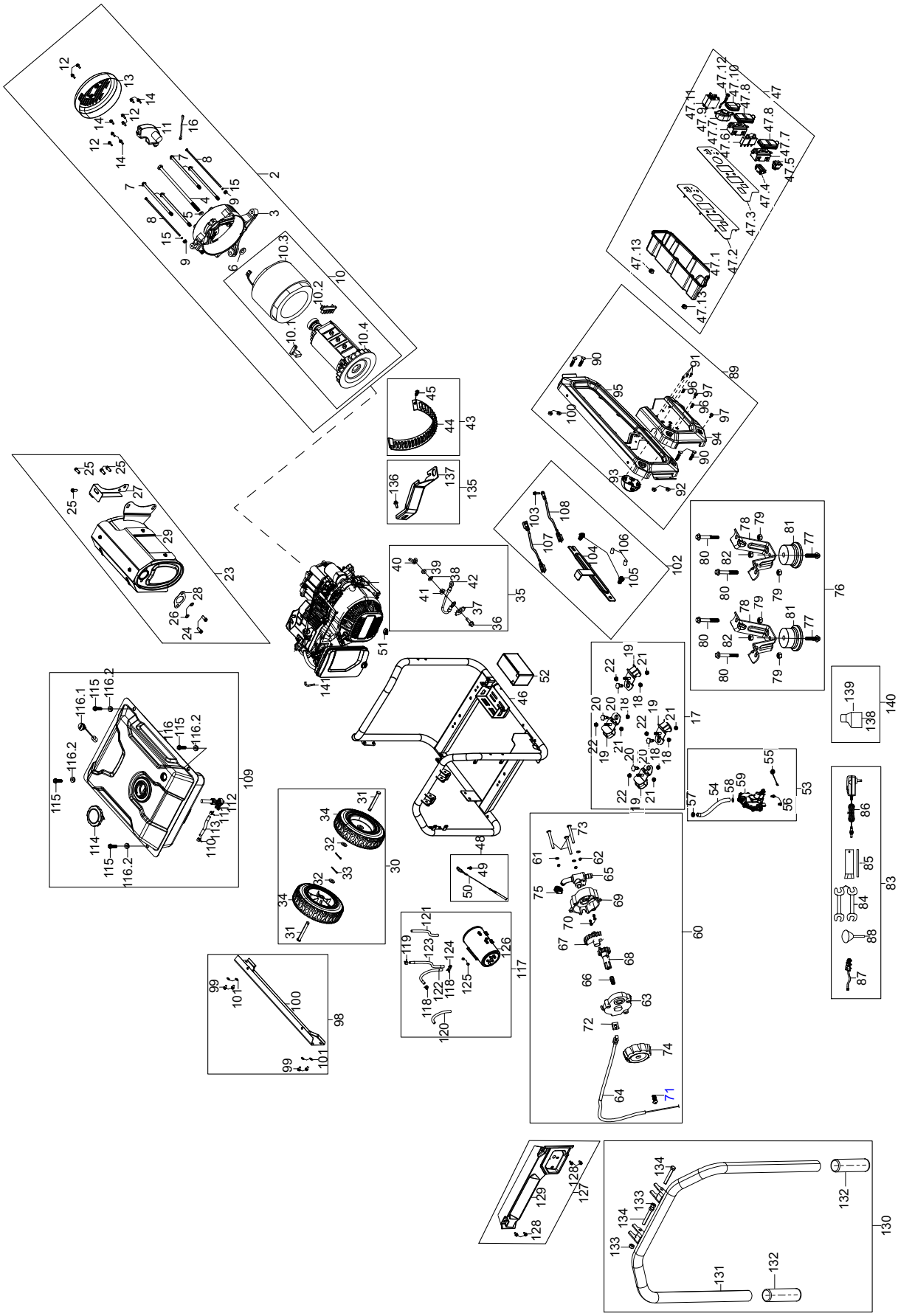
Exploded View – GP8000 – Drawing No. 0G9384F-B



ITEM	QTY.	DESCRIPTION
1	1	CRADLE END
2	1	BACK RAIL
3	10	CURVED HEAD BOLT 5/16-18 x 1.625" LONG
4	10	CAP NUT LOCKING 5/16-18 THREAD) 5/16” OF THREAD
5	1	PANEL RAIL
6	1	ASSY CRADLE BASE
10	2	WASHER FLAT 5/16-M8 ZINC
11	2	NUT HEX LOCK M8-1.25 NY INS
12	2	VIBE MOUNT 25.0 x 31.8 x M8-1.25 M/M
13	4	NUT LOCK FLG 5/16-18
14	1	ASSEMBLY ENGINE GH-410
15	1	ALTERNATOR 8000W
16	2	VIB MOUNT RUBBER 1.38 x 1.0 x 5/ 16-18 MALE/MALE
17	2	WASHER LOCK M6-1/4
18	2	WASHER FLAT 1/4-M6 ZINC
19	2	SCREW HHC M6-1.0 x 16 C8.8
20	1	SCREW HHTR 5/16-18 x 3/4
21	1	BRACKET MUFFLER
22	4	SCREW FHSC 3/8-16 x 3/4
23	1	CLAMP HOSE.38-.87 [NOT SHOWN, FUEL HOSE]
30	1	LUG SLDLSS #2-#8 x 17/64 CU
31	1	WASHER LOCK SPECIAL 1/4”
32	4	SCREW PPPH #8-16 x 1/2” BZC
33	1	ASSY GND WIRE ALT TO BASE
34	1	ASSY RCP PNL 8KW 30A W/HR MTR
35	1	SCREW HHTT M6-1.0 x 25 BP
55	1	ACCESSORY KIT
56	1	ASSY HANDLE LH
57	4	CHB CUSTOM 5/16 18 x 46MM LONG
58	2	CAP NUT LOCKING 5/16-18, 5/16” OF THREAD
59	1	ASSY HANDLE RH

ITEM	QTY.	DESCRIPTION
60	2	TIRE 9.5" DIA RUN FLAT PLASTIC HUB/RUBBER TREAD
61	2	SCREW, HHC 1/2”-13 x 4-1/2” LONG
62	2	NUT, HEX LOCK 1-2”-13 NYLON INSERT
63	1	FRAME, BENT, FOOT
64	2	RUBBER FOOT
65	4	NUT LOCK FLG 5/16-18
66	2	WASHER FLAT 5/16-M8 ZINC
67	2	SCREW HHC 5/16-18 x 1/2 G5
68	1	FRAME) BENT, FOOT SUPPORT
69	2	WASHER FLAT 1/2 ZINC
70	4	SCREW HHTT M8-1.25 x 20
71	1	FUEL TANK ASSY 8.0 GAL
72	1	FUEL CAP-VENTED
75	1	BEARING CARRIER REAR
76	1	STATOR 8KW
77	1	(CASTING) ENGINE ADAPTER HOUSING
78	I	ROTOR ASSEMBLY, 8kW
79	I	CAPACITOR
80	I	CLAMP
81	5	WASHER LOCK M8-5/16
82	4	SCREW IHHC M8-1.25 x 140 G8.8
83	1	WASHER FLAT 5/16-M8 ZINC
84	1	SCREW IHHC 5/16-24 x 8-1/2 G5
85	1	COVER ALTERNATOR INLET
86	1	GROMMET WIRE SLEEVE
87	2	SCREW PPHM M4-0,7 x 10
88	4	WASHER FLAT #10 ZINC
89	4	WASHER LOCK #10
90	4	SCREW PPHM M5-0,8 x 30
91	1	SCREW HHTT M6-1.0 x 12
92	1	ALTERNATOR FAN VARIED BLADE SPACING

Exploded View – GP7500E DF – Drawing No. A0003081286-A



ITEM	DESCRIPTION	QTY
1	ENGINE DHLG420	1
2	ALTERNATOR KIT ASSEMBLY	1
3	ALTERNATOR END BRACKET	1
4	BOLT M10*1.25*283	1
5	GASKET, ROTOR BOLT Φ10.5×Φ30×4	1
6	SPRING WASHER φ10	1
7	STATOR FASTEN BOLT M6*195	4
8	BOLT M5*230	2
9	NUT M5	2
10	ALTERNATOR ASSEMBLY	1
10.1	CARBON BRUSH KIT	1
10.2	BINDING POST	1
10.3	STATOR	1
10.4	ROTOR	1
11	AUTOMATIC VOLTAGE REGULATOR	1
12	BOLT M5X12	5
13	ALTERNATOR END COVER	1
14	BOLT M5X16	5
15	SPRING WASHER Φ5	2
16	WIRE	1
17	ISOLATOR ASSEMBLY	1
18	NUT M10*1.5	4
19	ISOLATOR	4
20	LIMITED SCREW M10xφ12x30	4
21	NUT M8	4
22	NUT M10*1.25	4
23	MUFFLER ASSEMBLY	1
24	NUT M8*30	2
25	BOLT M8X16	4
26	SPRING WASHER Φ8	2
27	MUFFLER BRACKET	1
28	EXHAUST GASKET	1
29	MUFFLER	1
30	WHEEL ASSEMBLY	1
31	WHEEL AXLE	2
32	PLAIN WASHER	2
33	SNAP BUTTON	2

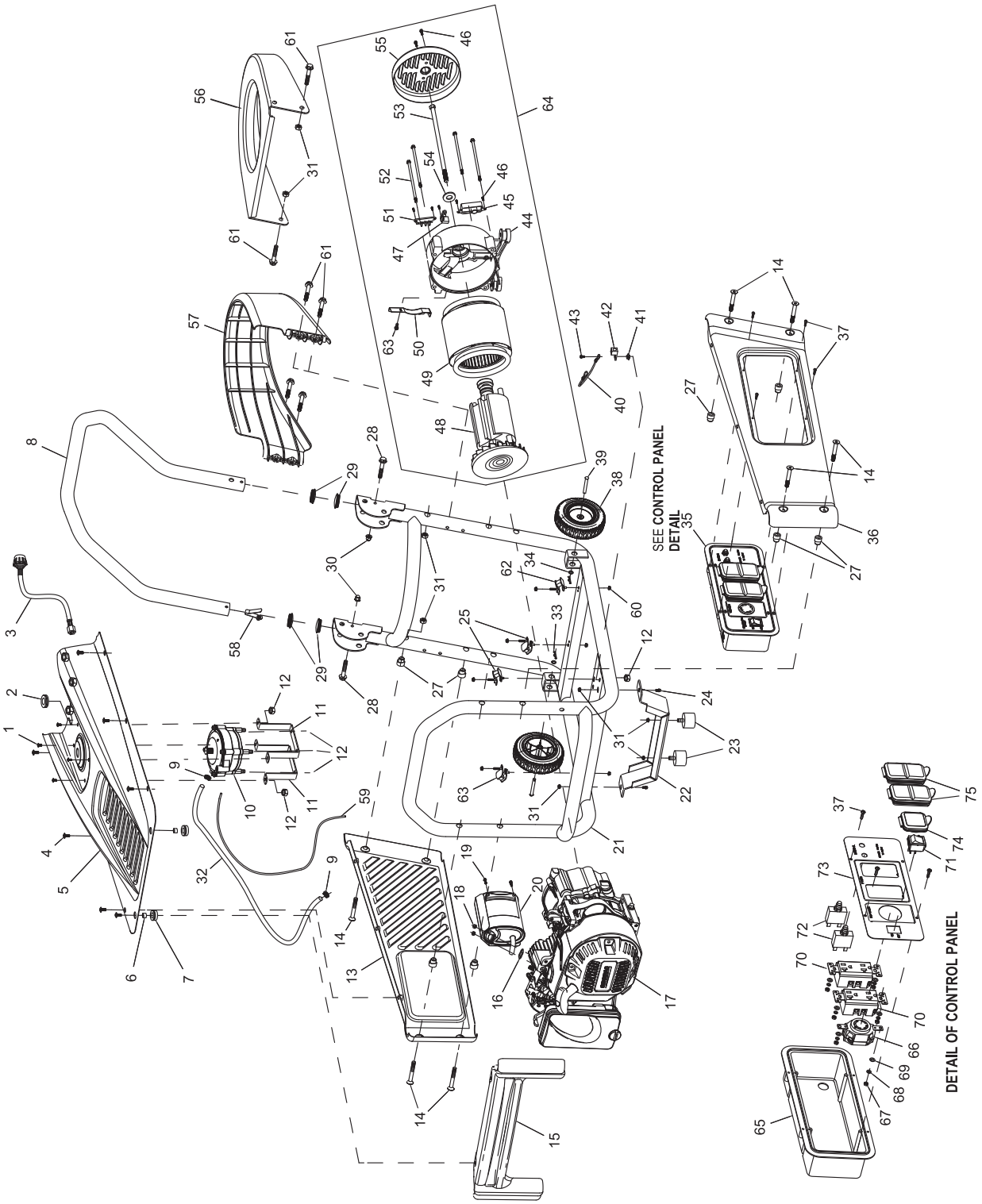
ITEM	DESCRIPTION	QTY
34	WHEEL	2
35	GROUNDING WIRE	1
36	BOLT M6*20	1
37	BEARING Φ6	1
38	PLAIN WASHER φ6	1
39	SPRING WASHER Φ6	1
40	BUTTERFLY NUT M6	1
41	NUT M6	1
42	WIRE	1
43	CRANKCASE COVER SHROUD ASSY	1
44	PROTECTIVE GUARD	1
45	BOLT M5X12	1
46	FRAME	1
47	CONTROL PANEL	1
47.1	PANEL REAR COVER	1
47.2	PANEL MOTHERBOARD	1
47.3	CONTROL PANEL DECAL	1
47.4	HOUR METER	1
47.5	ENGINE STOP	1
47.6	BREAKER-CIRCUIT (20A)	2
47.7	RECEPTACLE (5-20R 120V 20A GFCI)	2
47.8	DUST COVER	1
47.9	TWIST LOCK RECEPTACLE (L14-30R 120/ 240V 30A)	1
47.1	DUST COVER	1
47.11	CIRCUIT BREAKER	1
47.12	CHARGING SOCKET	1
47.13	WIRE CLIP	2
48	HANDLE PIN ASSEMBLY	1
49	SCREW	1
50	HANDLE PIN	1
51	DUST SHIELD	1
52	BATTERY	1
53	REGULATOR ASSY	1
54	LOW PRESSURE HOSE	1
55	PROTECTIVE SLEEVE	1
56	BOLT M6X12	12
57	LOW PRESSURE HOSE HOOP Φ12	1

ITEM	DESCRIPTION	QTY
58	PAPER GASKET	1
59	PRESSURE REDUCING VALVE	1
60	DUAL FUEL SELECTION SWITCH	1
61	PLAIN WASHER φ5*Φ10	3
62	SPRING WASHER Φ5	3
63	UPPER COVER	1
64	LASSO	1
65	GAS SWITCH	1
66	RETURN SPRING	1
67	TRANSMISSION GEAR	1
68	TRANSMISSION SHAFT	1
69	LOWER COVER	1
70	SCREW M4*8	2
71	HEXAGON SOCKET PAN HEAD SCREW M6*12	1
72	LOCK CLIP	1
73	BOLT M5*45	3
74	DIAL, DUAL FUEL MECHANISM, GP7500E DF-CO	1
75	LOW PRESSURE HOSE HOOP Φ12	1
76	FOOT BRACKET ASSEMBLY	1
77	BOLT M6X28	2
78	FOOT BRACKET	2
79	NUT M8	6
80	BOLT M8X45	4
81	FOOT-RUBBER DAMPENER	2
82	NUT M6	2
83	ACCESSORY KIT	1
84	WRENCH	2
85	SPARK PLUG SLEEVE	1
86	CHARGER	1
87	PRESSURE REDUCING VALVE	1
88	FUNNEL	1
89	CO MODULE KIT ASSEMBLY	1
90	BOLT M8*42	4
91	BOLT M5*12	3
92	NUT M8	4
93	CO MODULE	1

ITEM	DESCRIPTION	QTY
94	CO MODULE MOUNTING BRACKET	1
95	PANEL SUPPORT PLATE	1
96	BOLT ST5.4*16mm	2
97	BOLT M6X12	2
98	ACTIVE TORQUE TULE ASSEMBLY	1
99	BOLT M6X12	4
100	ACTIVE TORQUE TULE	1
101	PAPER GASKET	4
102	BATTERY LAYERING ASSEMBLY	1
103	BOLT M6X12	2
104	BATTERY LAYERING	1
105	BOLT M6*12	2
106	HEAT SHRINK TUBE	2
107	BATTERY CABLE RED	1
108	BATTERY CABLE BLACK	1
109	FUEL TANK ASSEMBLY	1
110	FUEL HOSE CLIP φ8.5	1
111	FUEL HOSE CLIP φ7.5	2
112	FUEL COCK	1
113	FUEL HOSE	1
114	FUEL CAP	1
115	BOLT M8*25	4
116	FUEL TANK	1
116.1	FUEL GAUGE	1
116.2	VIBRATION ISOLATION PAD	4
117	CARBON CANNISTER KIT ASSEMBLY	1
118	FUEL HOSE CLIP φ8.5	2
119	FUEL HOSE CLIP Φ9.5*0.8	1
120	GLASS FIBER TUBE 130mm	1
121	GLASS FIBER TUBE 280mm	1
122	CARBON CANISTER AND AIR FILTER CONNECTING PIPE	1
123	FUEL TANK AND AIR CLEANER CONNECTING PIPE	1
124	FUEL HOSE CLIP φ7.5	1
125	NUT M6	2
126	CARBON CANISTER	1
127	TRIM PANEL ASSEMBLY	1

ITEM	DESCRIPTION	QTY
128	BOLT M6X12	4
129	TRIM PANEL	1
130	HANDLE ASSEMBLY	1
131	HANDLE	1
132	HANDLE GRIP	2
133	NUT M8	2
134	BOLT M8X50	2
135	AIR FILTER BRACKET ASSEMBLY	1
136	BOLT M6X12	1
137	AIR FILTER BRACKET	1
138	THE OIL BOTTLE	1
139	DECAL THE OIL BOTTLE	1
140	OIL BOTTLE	1
141	NYLON BRAIDED TUBE	1

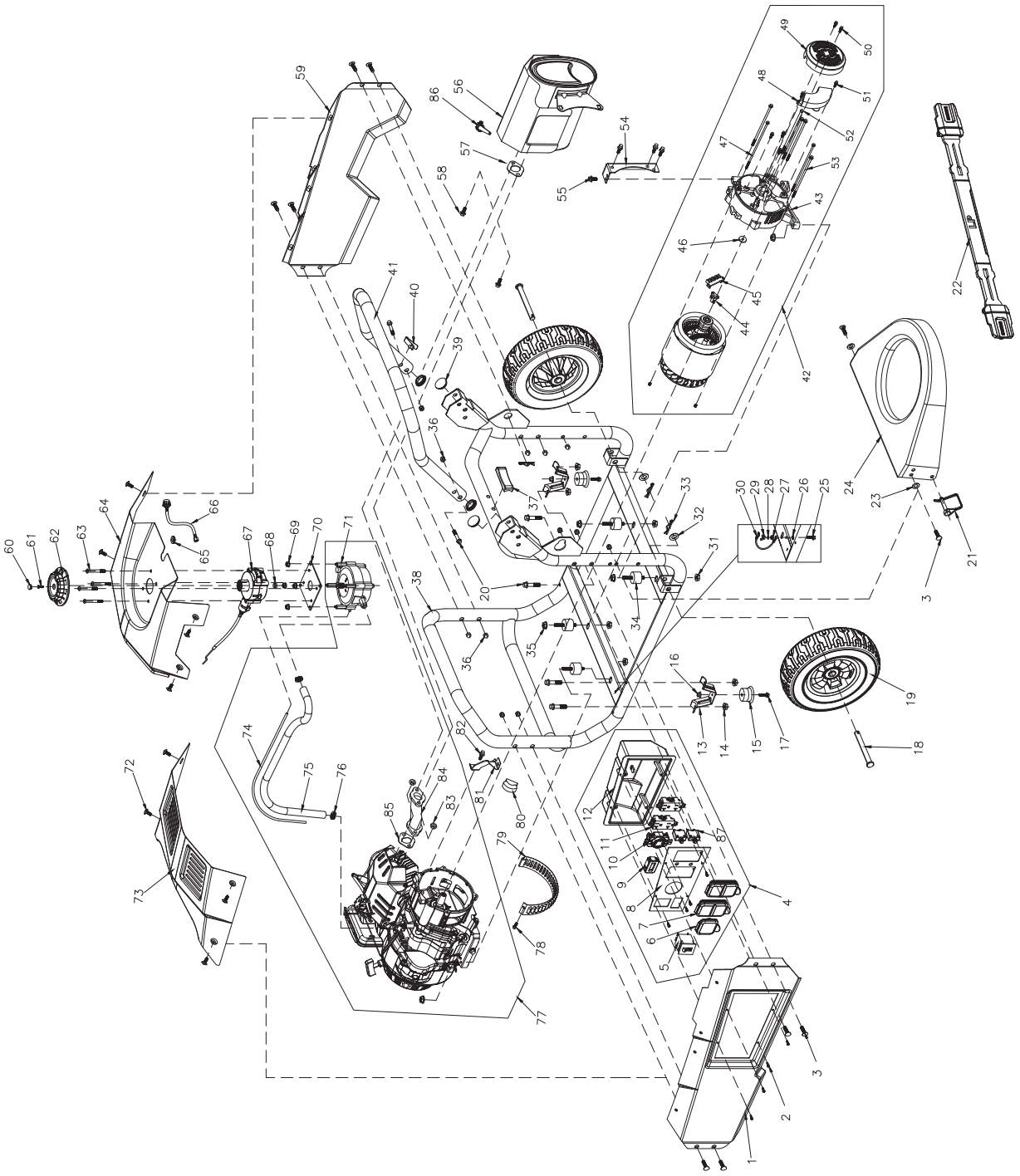
Exploded View – LP3250 – Drawing No. 0J2562



ITEM	QTY	DESCRIPTION
1	4	SCREW PPHM M6-1.0 X 16
2	1	GROMMET 5/8”X 1 1/8”X 5/16”
3	1	HOSE, FUEL LP TANK
4	8	SCREW BHSC M8-1.25 X 20 SS
5	1	TOP WRAPPER
6	2	ANTICRUSH INSERT
7	2	RUBBER MOUNT
8	1	HANDLE TUBE
9	2	CLAMP HOSE BAND.63
10	1	REGULATOR HIGH PRESSURE
11	2	BRACKET REGULATOR
12	9	NUT HEX M6-1.0 G8 CLEAR ZINC
13	1	EXHAUST SIDE WRAPPER
14	8	SCREW FHSC M8-1.25 X 60 BZC
15	1	FRONT WRAPPER
16	1	GASKET EXHAUST MUFFLER
17	1	ENGINE LP3250
18	2	NUT HEX M8-1.25 G8 CLEAR ZINC
19	2	SCREW SHC M8-1.25 X 16 C12.9
20	1	MUFFLER LP3250
21	1	CRADLE ASSY
22	1	BRACKET BENT FOOT
23	2	RUBBER FOOT M8-1.25
24	2	SCREW HHFC M8-1.25 X 16 G8.8
25	2	VIB MNT 45DEG M8X13.5/M8X38 L
26	1	NUT HEX M6-1.0 G8 CLEAR ZINC
27	8	SPACER
28	2	SCREW HHC M8-1.25 X 45 C10.9
29	4	PLUG
30	2	CAP NUT M8-1.25 BLACK ZINC
31	14	NUT HEX FL WHIZ M8-1.25
32	1	HOSE, FUEL LP REGULATOR
33	2	PIN COTTER 2.5DIA X 52.25
34	2	WASHER FLAT 1/2 ZINC
35	1	CONTROL PANEL LP3250
36	1	CONTROL SIDE WRAPPER
37	8	SCREW PPPH #8-16 X 0.66”66” BZC
38	2	WHEEL 9.5" DIA, PLASTIC

ITEM	QTY	DESCRIPTION
39	2	AXLE PIN, 1/2”X 4", 3/4” HEAD
40	1	GROUND WIRE LP3250
41	1	WASHER LOCK SPECIAL 1/4”
42	1	LUG, SOLDERLESS #2-#8
43	1	SCREW HHC M6-1.0 X 20 C8.8
44	1	REAR BEARING CARRIER 3250
45	1	AVR 3250W
46	7	SCREW PHM M5-0.8 X 12MM
47	1	BRUSH
48	1	ROTOR 3250WZNC
49	1	STATOR 3.8W
50	1	BRACKET MUFFLER
51	1	TERMINAL
52	4	SCREW HHC M6-1.0 X 153
53	1	SCREW HHC M8 X 1 X 215
54	1	WASHER FLAT 8.5ID X 3
55	1	ALTERNATOR INLET COVER
56	1	TANK SUPPORT LP3250
57	1	WRAPPER, TANK
58	1	DETENT
59	1	HOSE, VENT
60	9	NUT HEX M8-1.0 G8 YEL CHR
61	6	SCREW HHFC M8-1.25 X 45 G8.8
62	2	VIB MNT 45DEG M8X13.5/M8X38 R
63	1	SCREW HHFC M6-1.0 X 16 G8.8
64	1	ALTERNATOR, 3250W
65	1	RECPTACLE PANEL STORM-GEN ES
66	1	OUTLET 20A 120/250V SPCGR
67	6	NUT HEX M4-0.7 G8 YEL CHR
68	6	WASHER LOCK #10
69	6	WASHER FLAT M5
70	2	OUTLET 20A 120V DPLX 6342BK
71	1	DPST SWITCH ASSY
72	2	CB 15A 1P 120V CUL/CSA JOEMEX
73	1	FACEPLATE WLDMNT LP3250
74	1	COVER,30A 120/240V
75	2	COVER, 20A 120V GFCI/DUPLEX

Exploded View – LP5500



ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
1	1	CONTROL SIDE PANEL - DARK GRAY	7	2	COVER, OUTLET
2	8	SCREW PPPH #8-16 X 0.66" BZC	8	1	PLATE, CNTL PNL FACE
3	10	CURVED HEAD M8-1.25 X 41MM LNG	9	1	METER, HOUR
4	1	ASSEMBLY CONTROL PANEL LP5500	10	1	OUTLET 30A 120/250V SPCGR
5	1	CIRCUIT BREAKER, ON/OFF SWITCH	11	2	OUTLET 20A 120V DPLX 6342BK
6	1	COVER, OUTLET	12	1	CONTROL PANEL ENCLOSURE

ITEM	QTY	DESCRIPTION
13	2	BRACKET, FOOT
14	4	NUT, M8
15	2	FOOT, RUBBER
16	2	NUT, M6
17	2	BOLT, FLANGE M6X28
18	2	PIN, AXLE
19	2	WHEEL 10"D X 3" NVR FLT IND GR
20	6	BOLT, M8X45
21	2	PIN, LOCKING
22	1	STRAP ASSY, TANK
23	2	WASHER, NYLON
24	1	BRACKET, TANK SUPPORT
25	1	BOLT, M6X20
26	1	WASHER, SPECIAL LOCK
27	1	NUT, M6
28	1	WASHER, FLAT 6X0.8
29	1	NUT, M6
30	1	WIRE ASSY., GRND
31	4	NUT, M8
32	2	WASHER, FLAT
33	3	PIN, COTTER
34	4	VIB MOUNT, ENGINE
35	4	NUT, M10
36	10	NUT, LOCKING CAP M8
37	1	BUMPER TANK STOP - RUBBER
38	1	CRADLE WELDMENT LP5500
39	4	CAP END NYLON BLACK
40	1	BUTTON, SNAP (DETENT)
41	1	FRAME HANDLE
42	1	ASSY ALTERNATOR 5500W BT AL/AL
43	1	BRUSH, ALTERNATOR
44	1	TERMINAL
45	1	WASHER, FLAT M10X4
46	1	HOUSING, REAR BEARING
47	2	BOLT, M5X204
48	1	AVR 5.5-7.5KW VISION ALT
49	1	COVER ALTERNATOR INLET 5-7KW
50	6	BOLT, M5X12
51	3	BOLT, M5X16
52	1	BOLT,ROTOR M10X255
53	4	BOLT, M6X170
54	1	BRACKET, MUFFLER
55	4	BOLT, M8X16
56	1	MUFFLER
57	1	GASKET EXHAUST 389
58	2	BOLT, M8X25
59	1	EXHAUST SIDE PANEL - DARK GRAY
60	1	COVER, KNOB SCREW
61	1	SCREW, SELECTOR KNOB M5x10
62	1	KNOB, SELECTOR
63	4	SCREW, M6X50
64	1	COVER, TOP(BACK)
65	1	GROMMET 5/8”X 1 1/8”X 5/16”
66	1	HOSE, FUEL TANK TO REGULATOR
67	1	ASSY SINGLE POINT CTRL SYSTEM
68	1	BUMPER, RUBBER
69	4	NUT, M6
70	1	BRACKET, SINGLE POINT CNTRL
71	1	REGULATOR, 180 DEGREE HGH PRSHR
72	8	SCREW, M6X16
73	1	TOP COVER FRONT ACCESS - ORA
74	1	HOSE, VENT
75	1	HOSE, FUEL
76	2	CLAMP, FUEL HOSE
77	1	ENGINE 389 PS W/ REGULATOR
78	1	BOLT, M5X10
79	1	ALTERNATOR SCROLL
80	1	BAFFLE
81	1	BRACKET, AIR CLEANER
82	1	BOLT, M6X12
83	2	NUT, M8
84	1	MANIFOLD, EXHAUST
85	1	GASKET, EXH CYLNDR
86	1	ARRESTOR, SPARK
87	2	CB 20A 1P CUL/CSA

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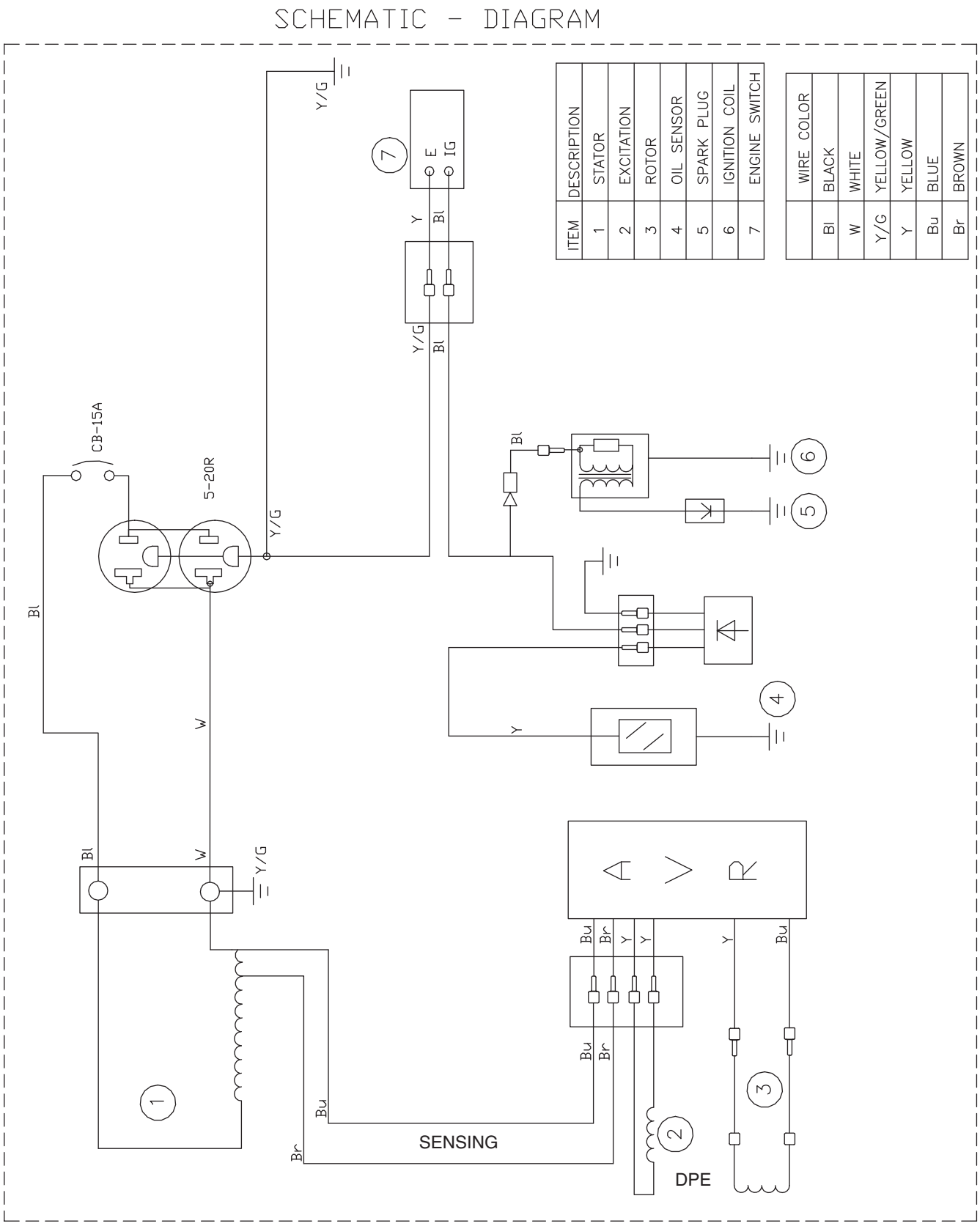
Section 6 Electrical Data

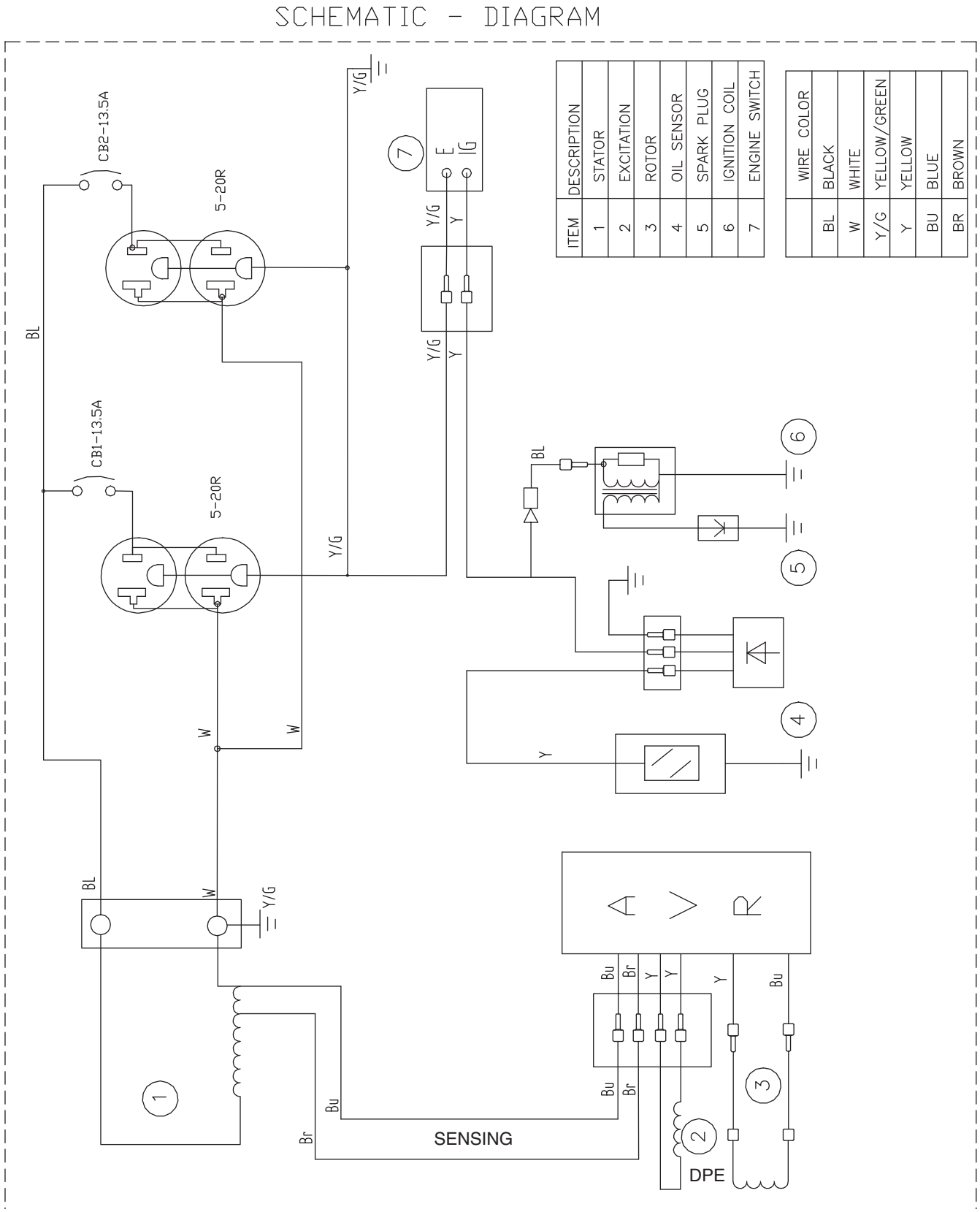
Introduction

Go to www.generac.com (http://www.generac.com/service-support/product-support-lookup) for the most current wiring diagrams and electrical schematics. Use model or serial number.

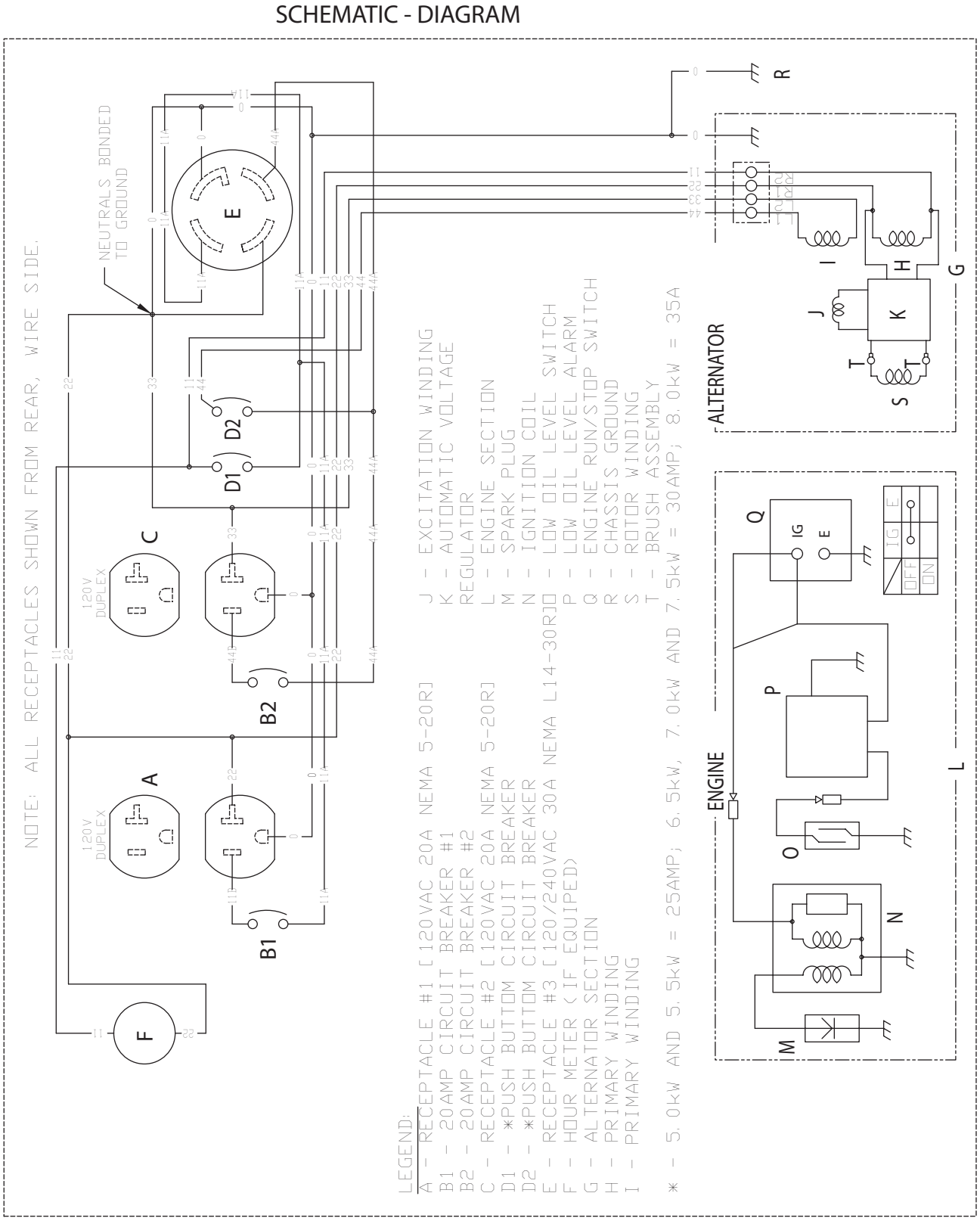
Electrical Schematic, GP1850 Brushed Alternator Drawing No. 0H0612-A



Electrical Schematic, GP3250 Brushed Alternator Drawing No. 0H0523-A

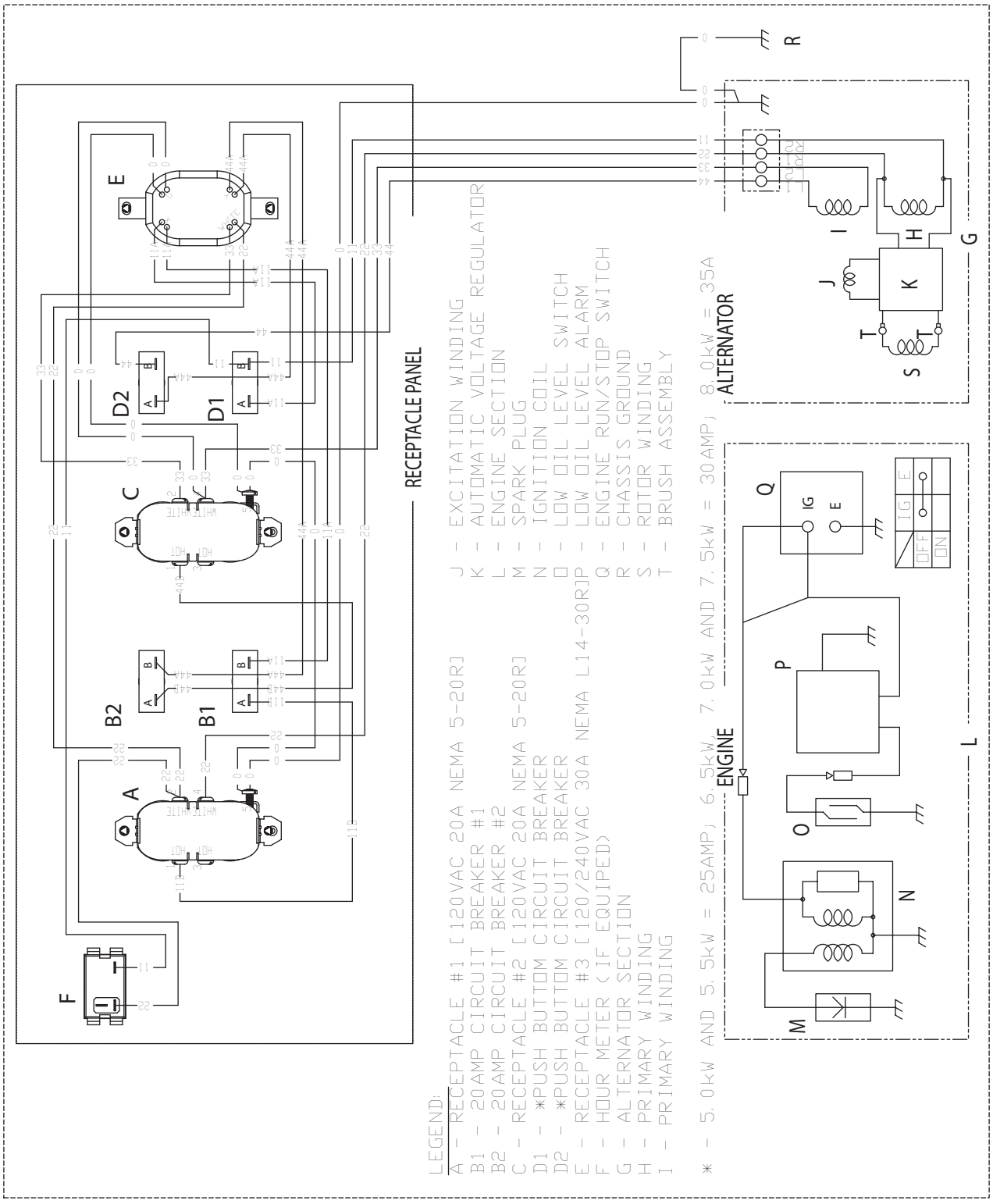


Electrical Schematic, GP5000/5500/6500 Brushed Alternator Drawing No. 0G9769-D

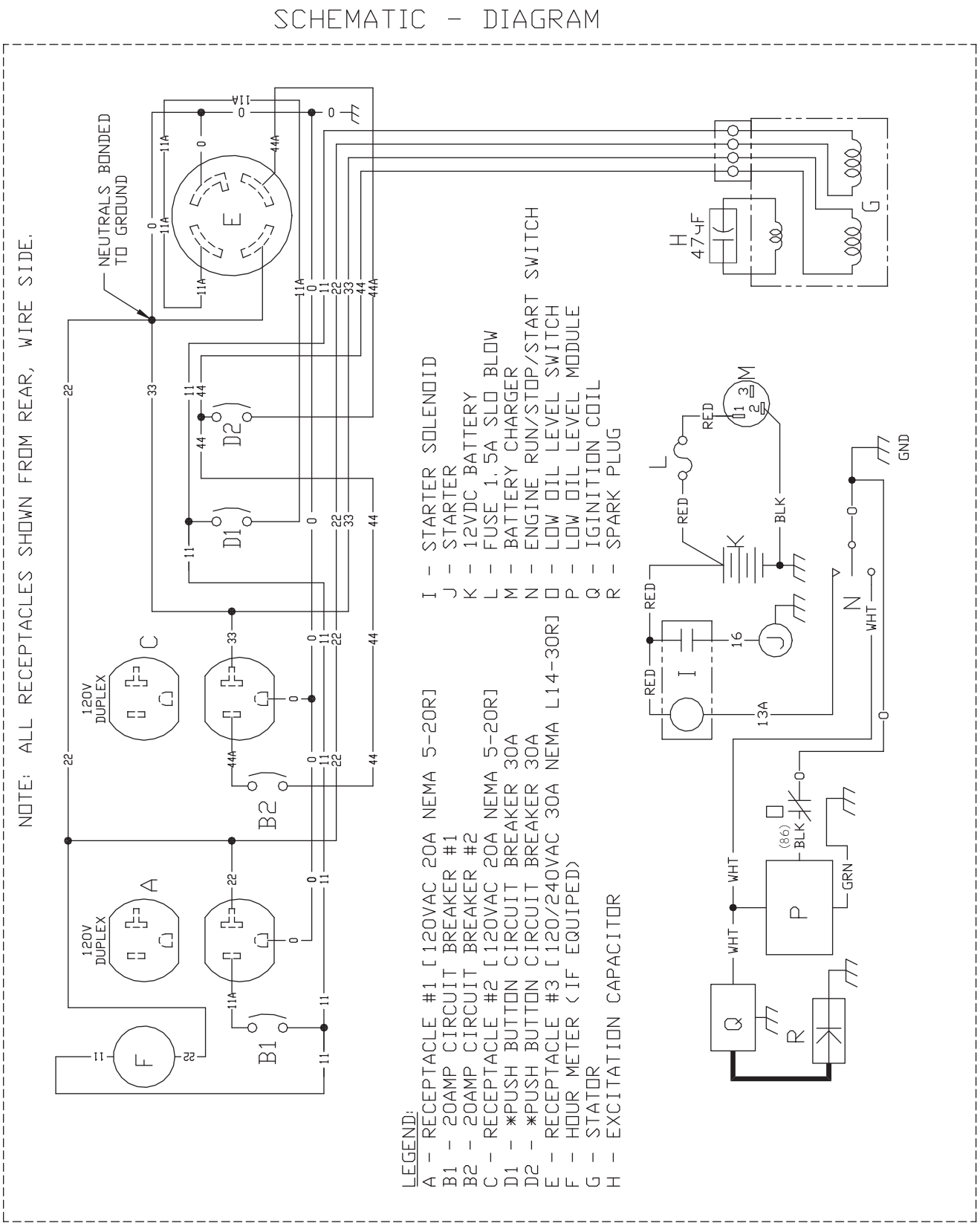


Wiring Diagram, GP5000/5500/6500 Brushed Alternator Drawing No. 0G9769-D

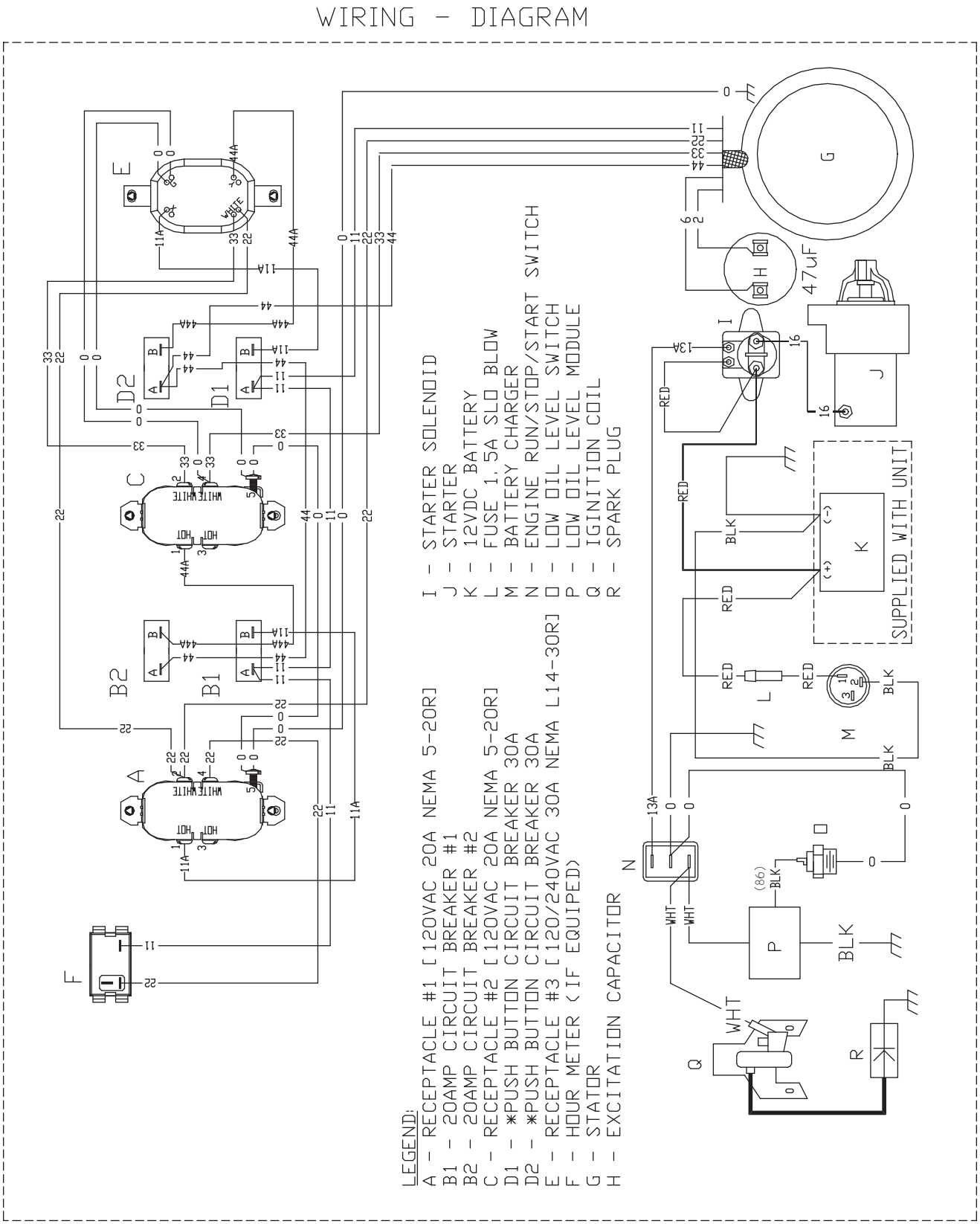
WIRING - DIAGRAM



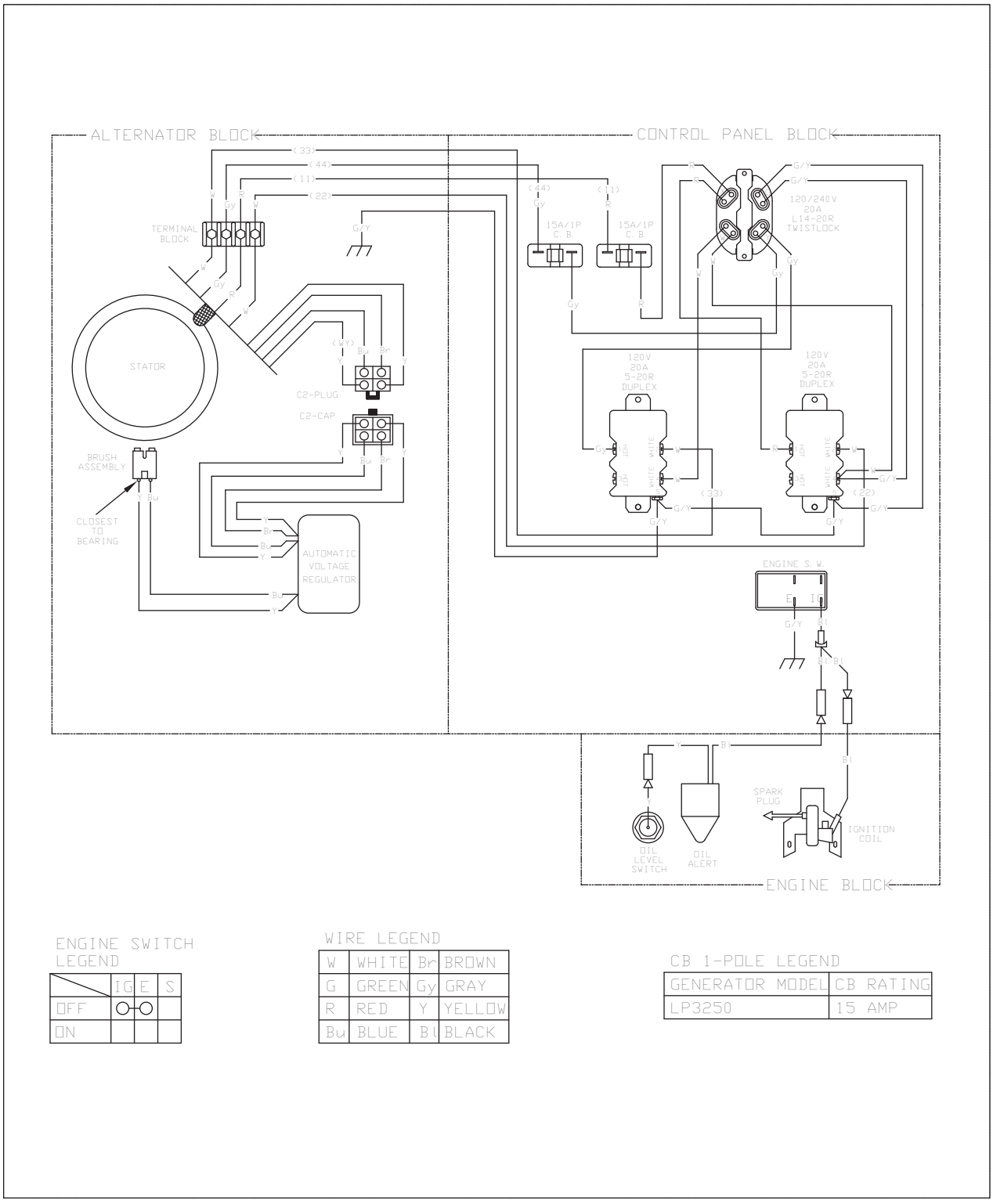
Electrical Schematic, GP7000E/8000E Brushless Alternator Drawing No. 0G9849-A



Wiring Diagram, GP7000E/8000E Brushless Alternator Drawing No. 0G9849-A



Wiring Diagram, LP3250 Brushless Alternator Drawing No. 0J2561-B



ENGINE SWITCH LEGEND

	IG	E	S
OFF	O	O	
ON			

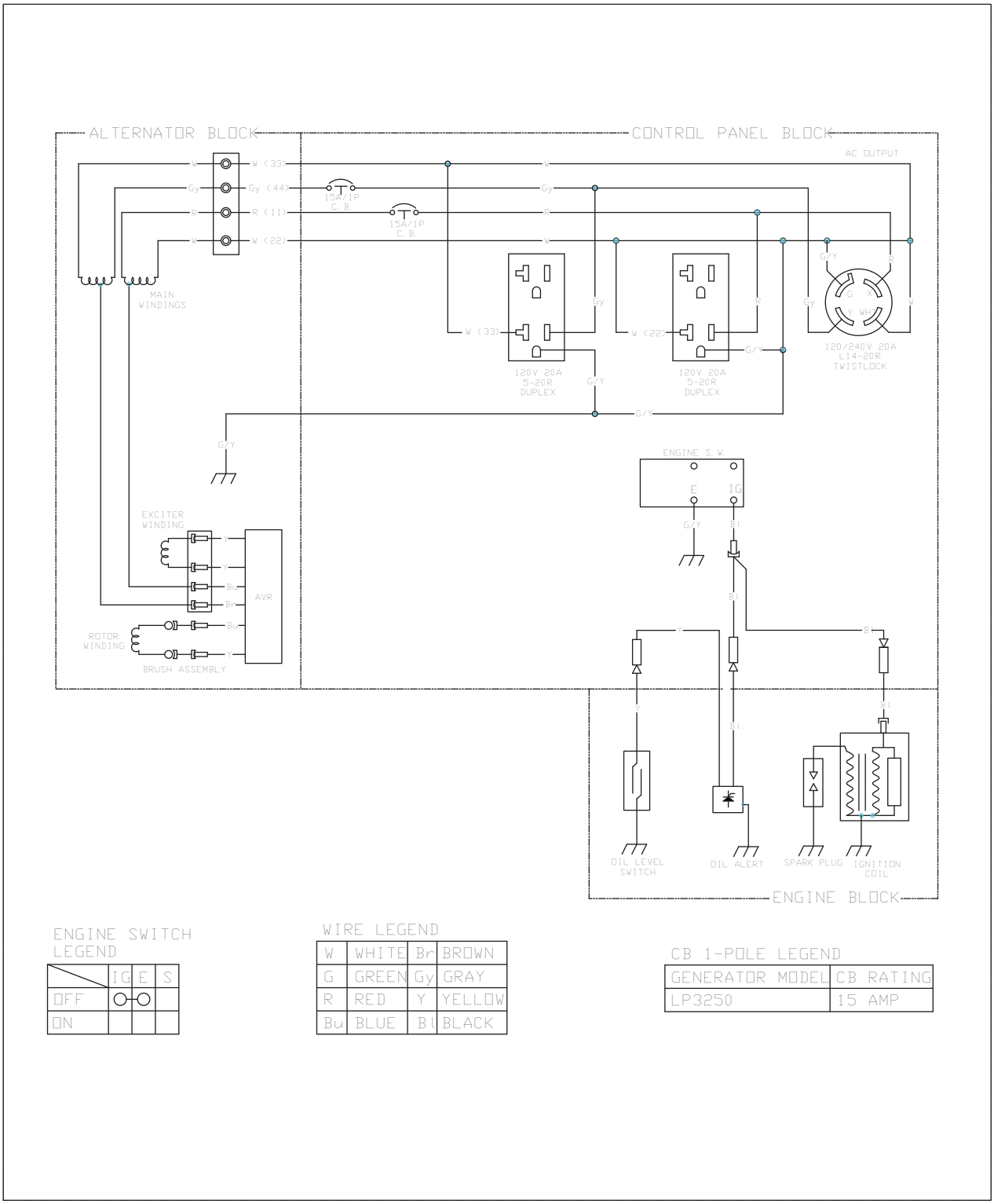
WIRE LEGEND

W	WHITE	Br	BROWN
G	GREEN	Gy	GRAY
R	RED	Y	YELLOW
Bu	BLUE	Bl	BLACK

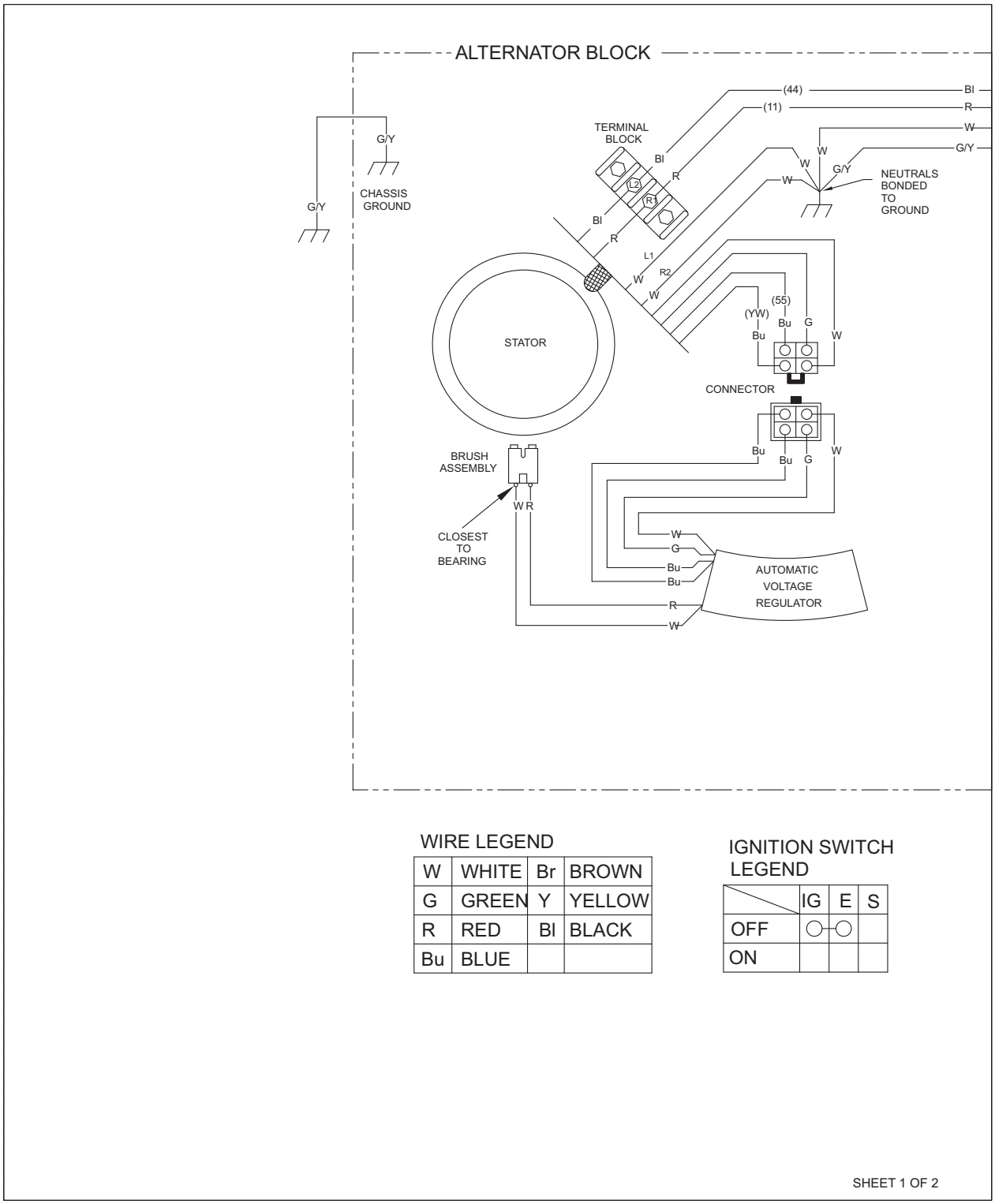
CB 1-POLE LEGEND

GENERATOR MODEL	CB RATING
LP3250	15 AMP

Electrical Schematic, LP3250 Brushless Alternator Drawing No. 0J2561-B



Wiring Diagram, LP5500 Brushless Alternator Drawing No. 0J7910-B



WIRE LEGEND

W	WHITE	Br	BROWN
G	GREEN	Y	YELLOW
R	RED	Bl	BLACK
Bu	BLUE		

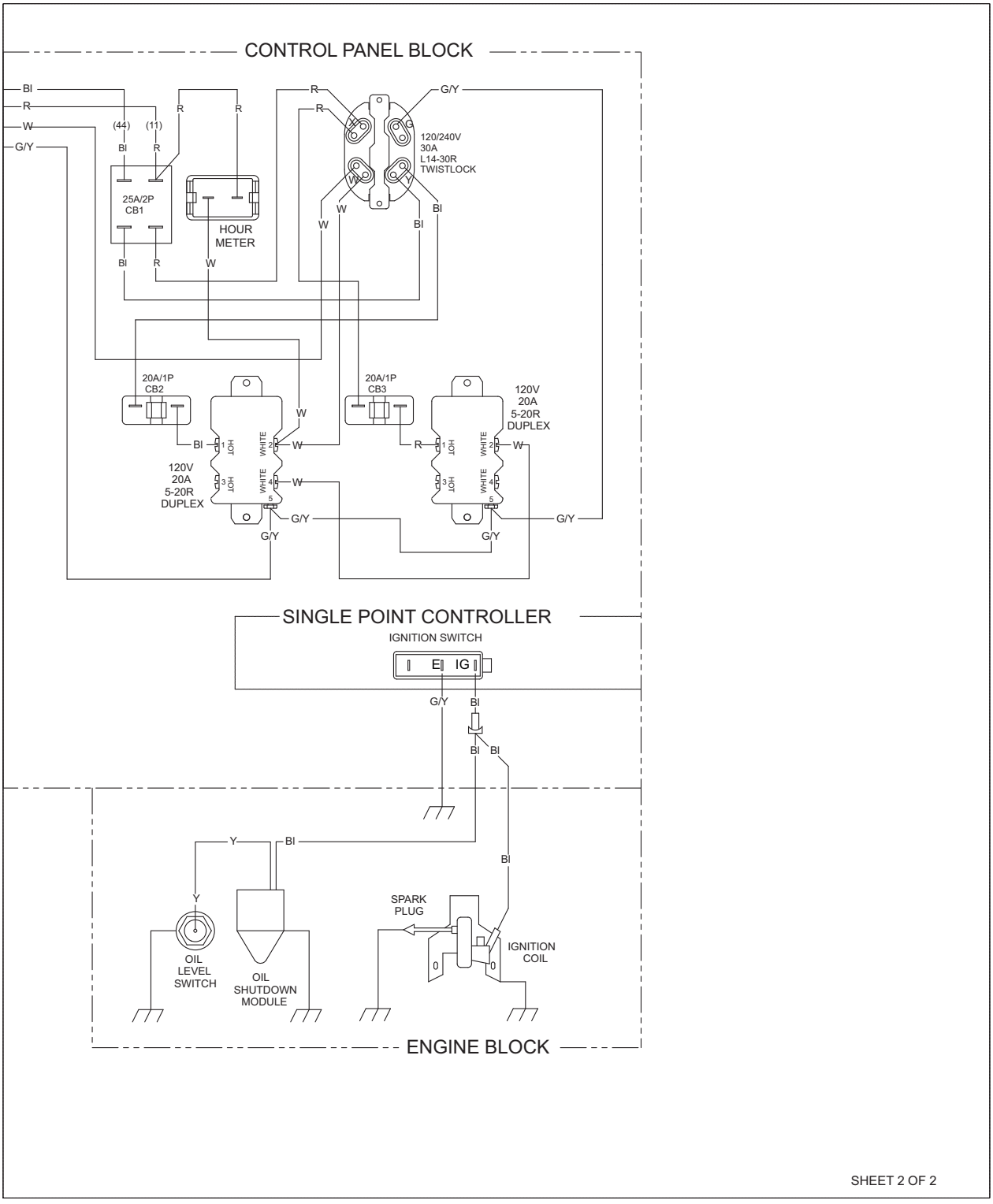
IGNITION SWITCH LEGEND

	IG	E	S
OFF	○—○		
ON			

WIRING - DIAGRAM
LP5500
DRAWING #: 0J7910

REVISION: B
DATE: 08/20/12

Electrical Schematic, LP5500 Brushless Alternator Drawing No. 0J7910-B

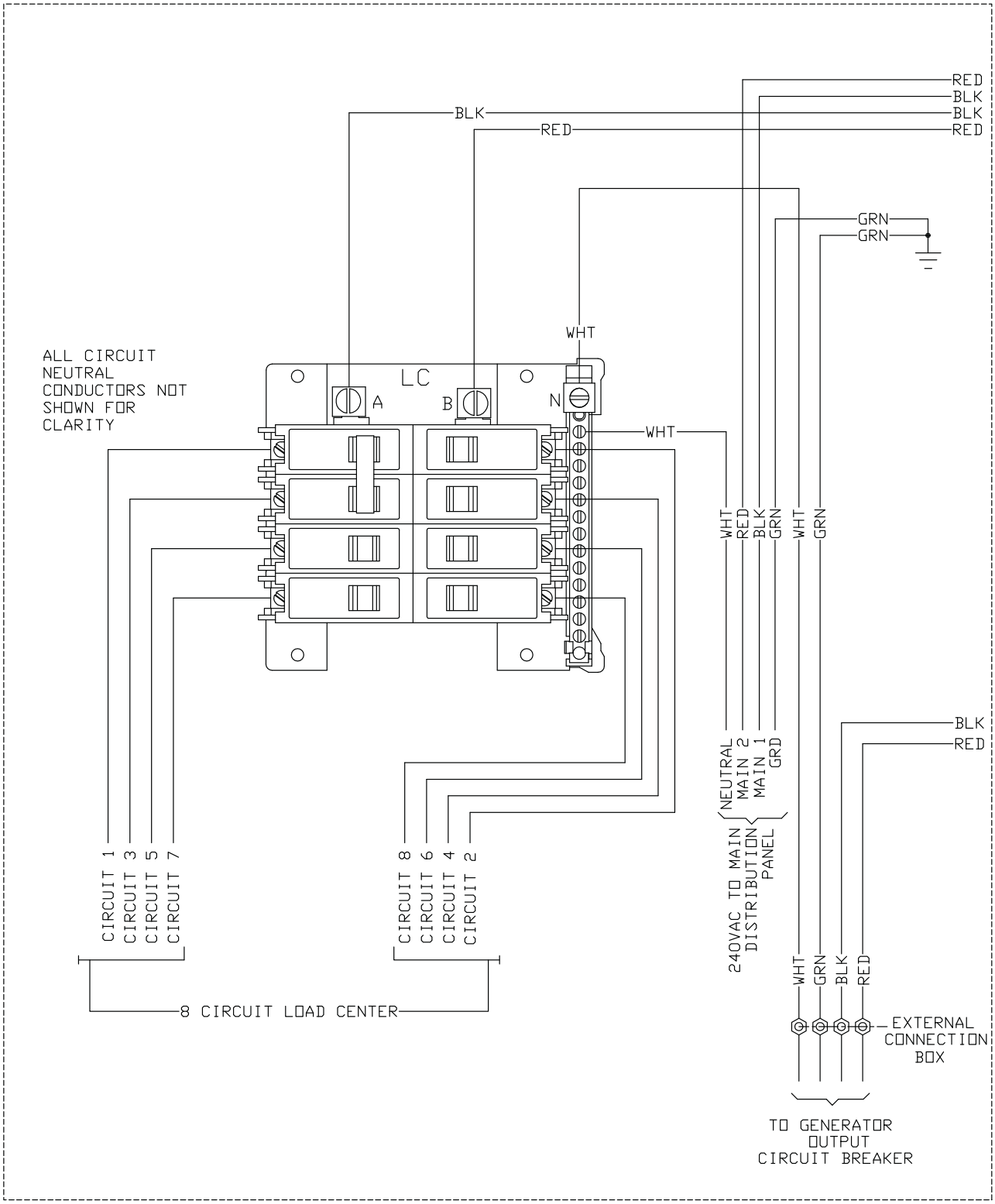


SCHEMATIC - DIAGRAM

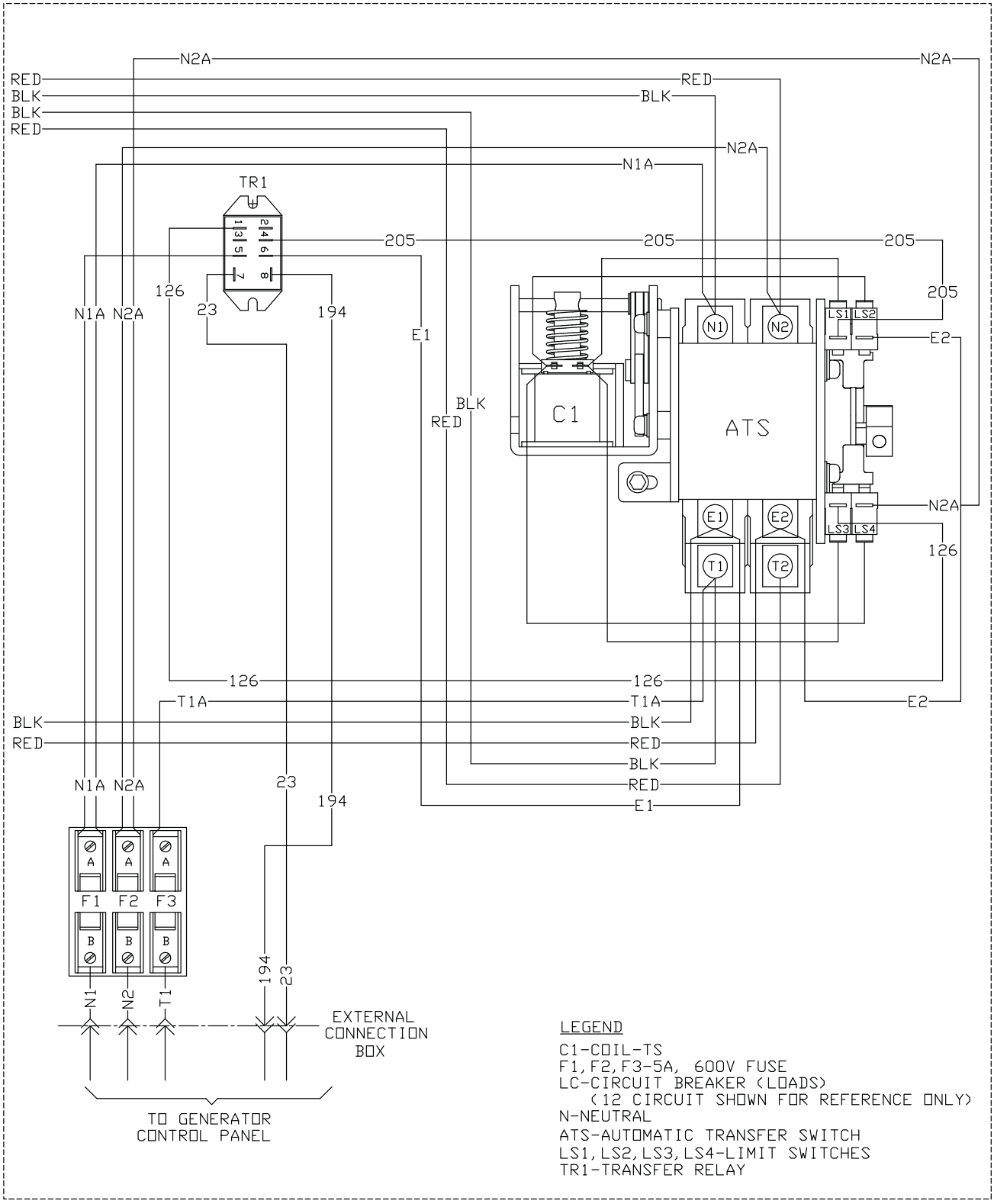
REVISION: B
DATE:08/20/12

LP5500
DRAWING #: 0J7910

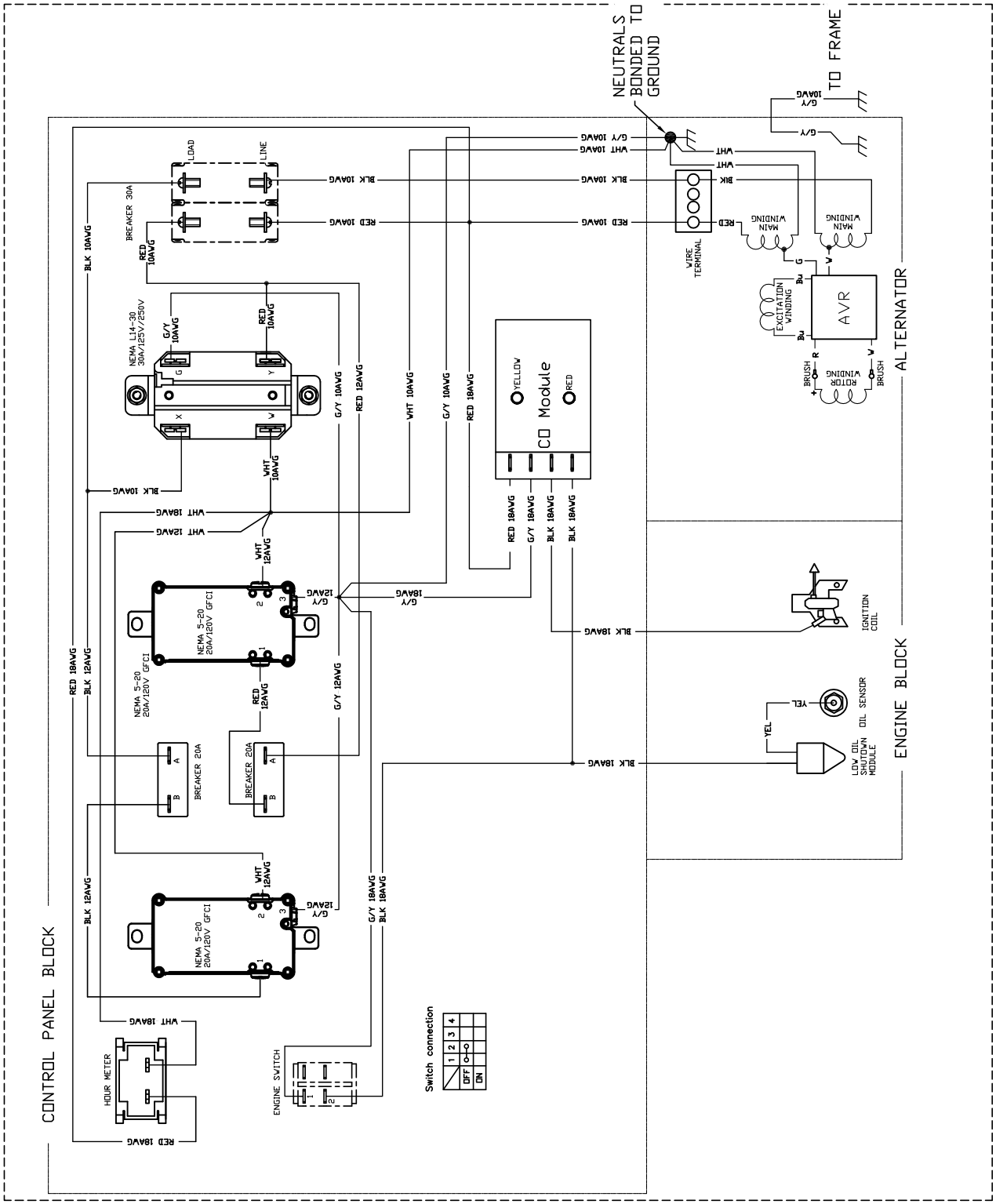
Wiring Diagram Drawing No. 0K5879-B



Electrical Schematic Drawing No. 0K5879-B



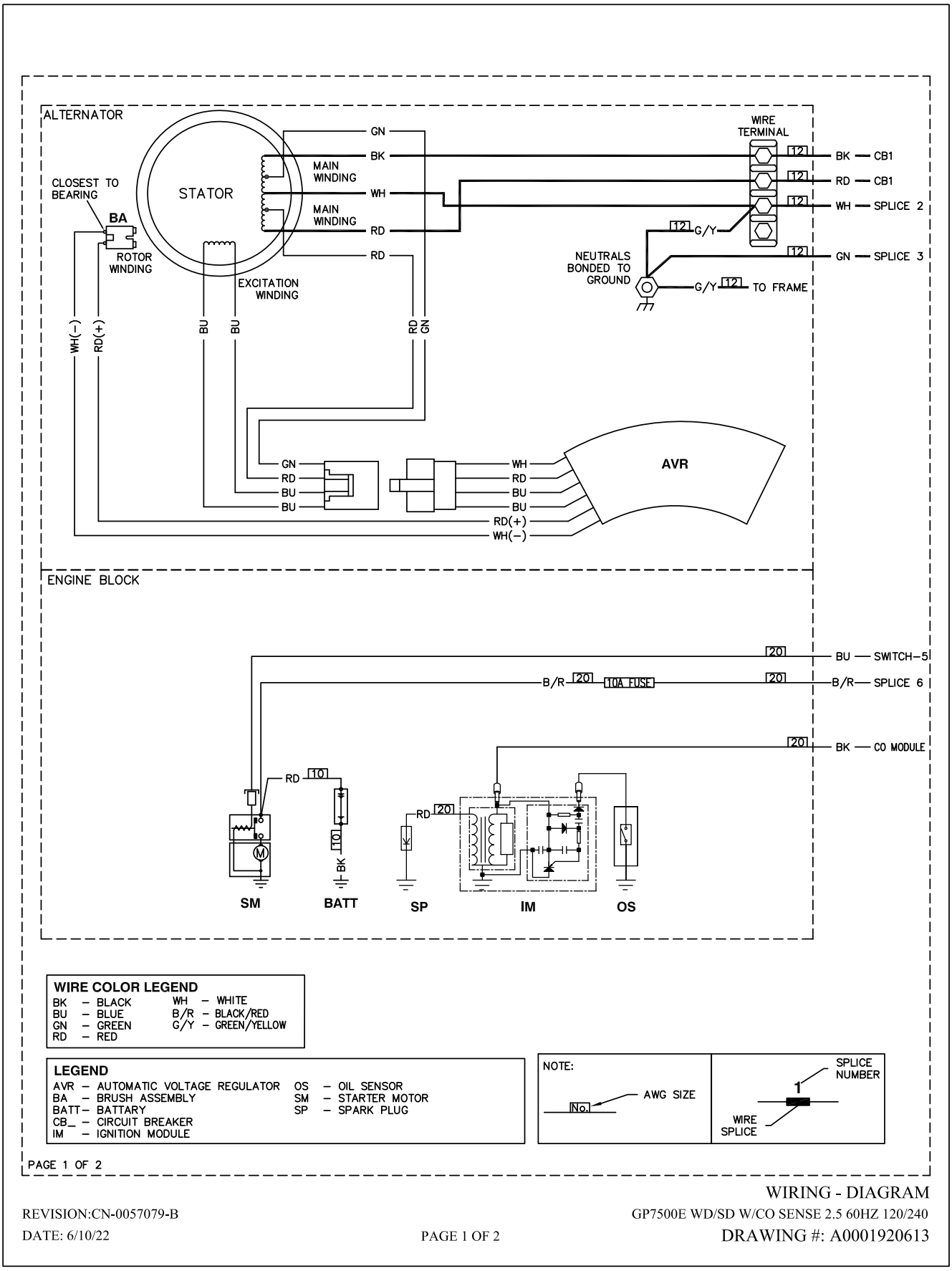
Wiring Diagram GP Series Drawing No. 10000032713-A



WIRING - DIAGRAM
GP SERIES
DRAWING #: 10000032713

REVISION: A
DATE: 3/14/18

Wiring Diagram GP7500E DF Drawing No. A0001920613-B (1 of 2)



WIRING - DIAGRAM

REVISION:CN-0057079-B

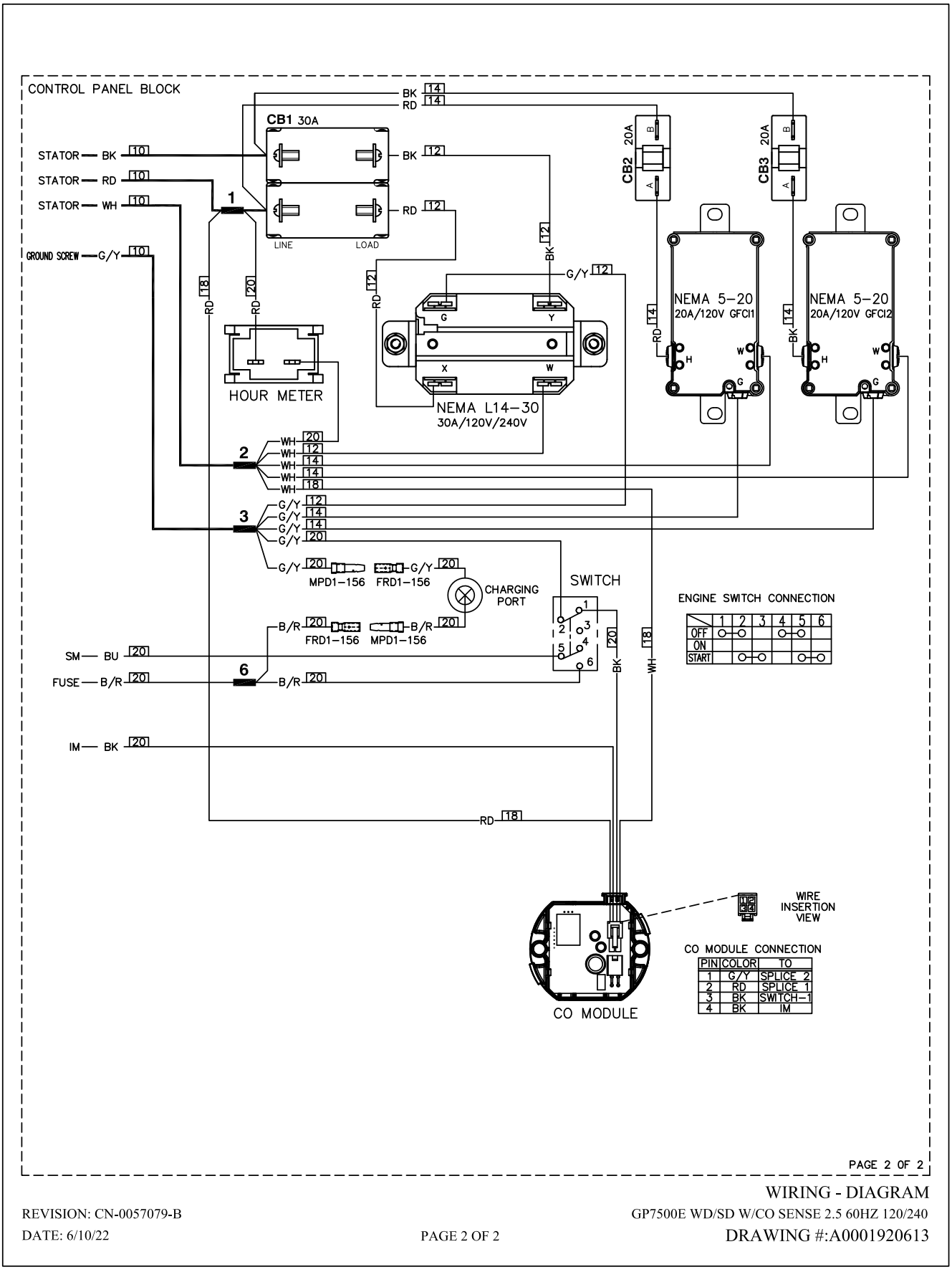
GP7500E WD/SD W/CO SENSE 2.5 60HZ 120/240

DATE: 6/10/22

PAGE 1 OF 2

DRAWING #: A0001920613

Wiring Diagram GP7500E DF Drawing No. A0001920613-B (2 of 2)

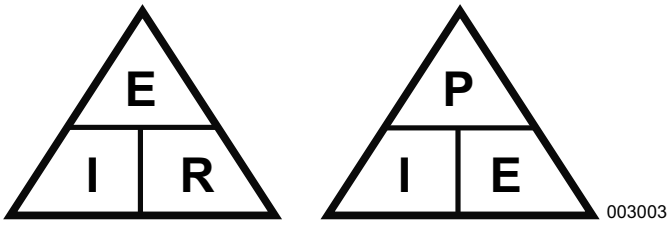


Electrical Formulas

To Find	Known Values	1-phase	3-phase
Kilowatts (kW)	Volts, Current, Power Factor	$\frac{E \times I}{1000}$	$\frac{E \times I \times 1.73 \times PF}{1000}$
KVA	Volts, Current	$\frac{E \times I}{1000}$	$\frac{E \times I \times 1.73}{1000}$
Amperes	kW, Volts, Power Factor	$\frac{kW \times 1000}{E}$	$\frac{kW \times 1000}{E \times 1.73 \times PF}$
Watts	Volts, Amps, Power Factor	Volts x Amps	E x I x 1.73 x PF
No. of Rotor Poles	Frequency, RPM	$\frac{2 \times 60 \times Frequency}{RPM}$	$\frac{2 \times 60 \times Frequency}{RPM}$
Frequency	RPM, No. of Rotor Poles	$\frac{RPM \times Poles}{2 \times 60}$	$\frac{RPM \times Poles}{2 \times 60}$
RPM	Frequency, No. of Rotor Poles	$\frac{2 \times 60 \times Frequency}{Rotor\ Poles}$	$\frac{2 \times 60 \times Frequency}{Rotor\ Poles}$
kW (required for Motor)	Motor Horsepower, Efficiency	$\frac{HP \times 0.746}{Efficiency}$	$\frac{HP \times 0.746}{Efficiency}$
Resistance	Volts, Amperes	$\frac{E}{I}$	$\frac{E}{I}$
Volts	Ohm, Amperes	I x R	I x R
Amperes	Ohms, Volts	$\frac{E}{R}$	$\frac{E}{R}$

E = Volts I = Amperes R = Resistance (Ohms) PF = Power Factor

Term	Symbol	Measurement
Current	I	Amps
Wattage	P	Watts
Voltage	E	Volts
Resistance	R	Ohms



Constant	Shift		Result	
Voltage E	Resistance Increase	⇧	Current Decrease	⇩
Voltage E	Resistance Decrease	⇩	Current Increase	⇧
Resistance R	Voltage Decrease	⇩	Current Decrease	⇩
Resistance R	Voltage Increase	⇧	Current Increase	⇧
Current I	Resistance Decrease	⇩	Voltage Decrease	⇩
Current I	Resistance Increase	⇧	Voltage Increase	⇧
Power P	Voltage Increase	⇧	Power Increase	⇧
Power P	Voltage Decrease	⇩	Power Decrease	⇩
Power P	Current Increase	⇧	Power Increase	⇧
Power P	Current Decrease	⇩	Power Decrease	⇩

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