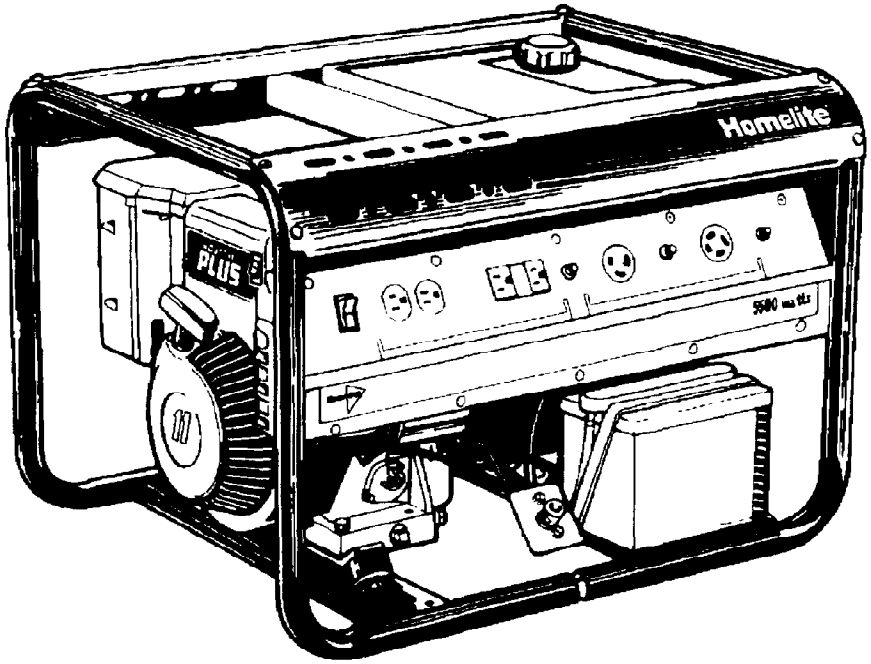
Homelite®

Dealer Service Guide

2500, 4400, 5500 LRI Series Generators



JOHN DEERE

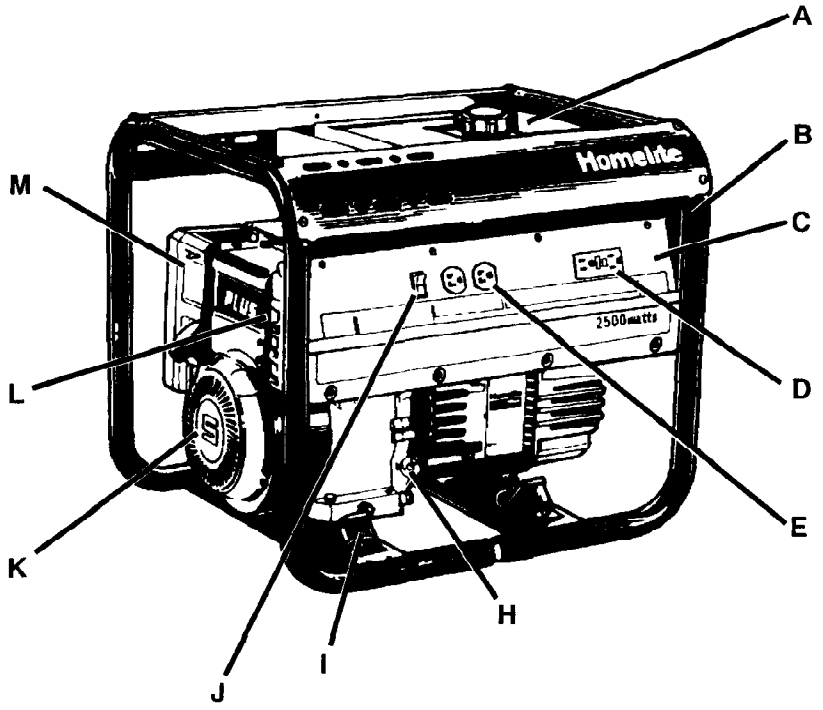
Consumer Products

P/N 16144

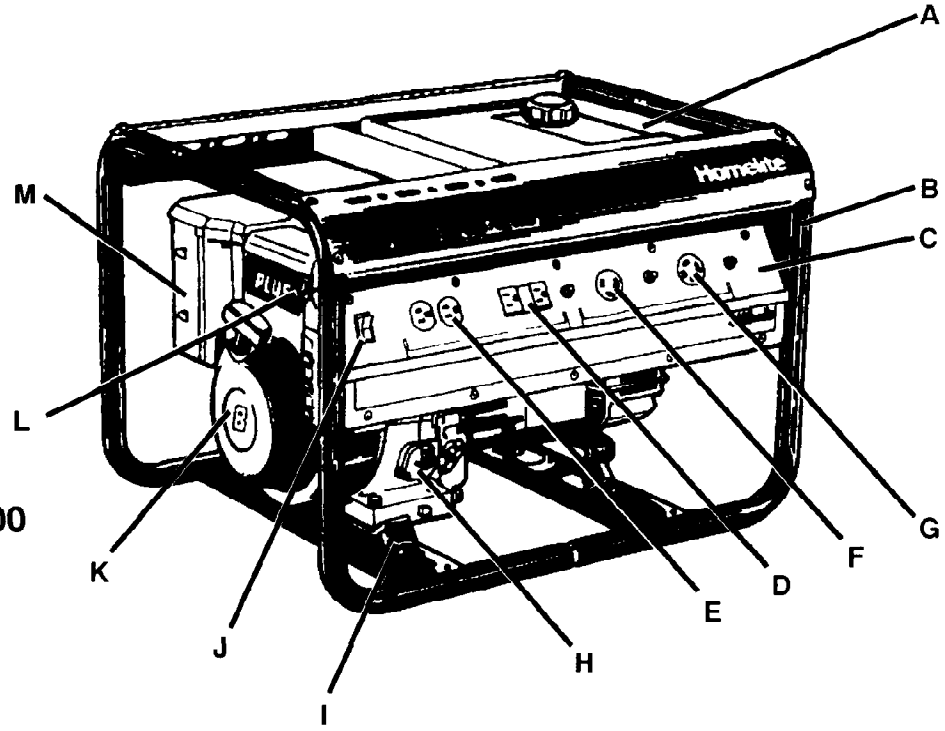
Contents

UNIT FEATURES

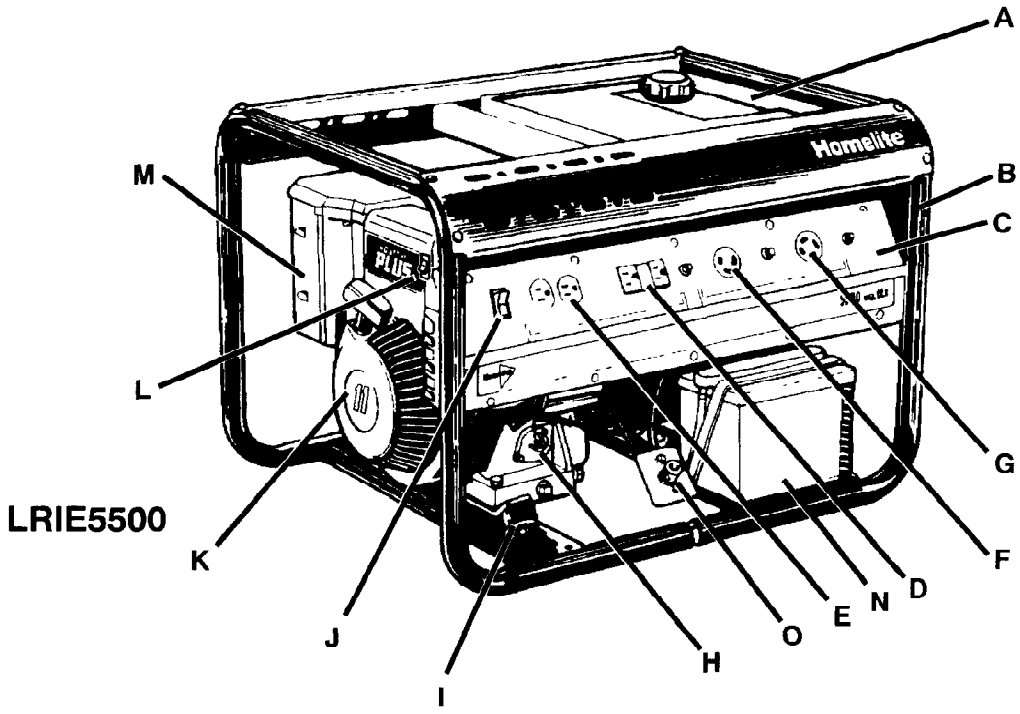
LRI2500



LRI4400

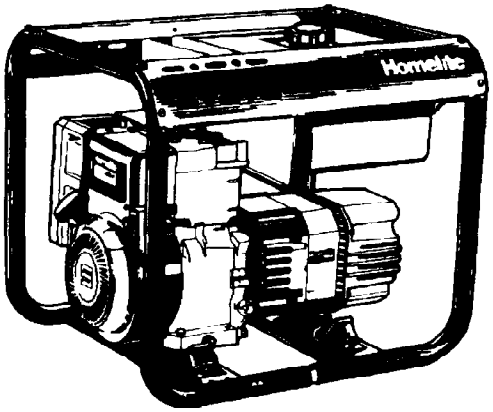


UNIT FEATURES



A. Fuel Tank
B. Roll Cage
C. Control Panel
D. 120 V. GFCI Receptacle
E. 120 V. Receptacle
F. 120 V. Receptacle (Locking)
G. 240 V. Receptacle (Locking)
H. Oil Level Switch
I. Vibration Isolator
J. Idle-Start Switch
K. Recoil Starter
L. Engine Run Switch
M. Air Filter
N. Battery
O. Start Switch

UNIT SPECIFICATIONS



LRI2500

Model	**LRI2500**

Engine

Model	Briggs & Stratton Industrial Plus
Horsepower	5 H.P.
Starting	Automatic Rewind
Running Time at 3600 RPM (Tank of Fuel)	7.2 Hours at Rated Load

Fuel System

Fuel Type	Automotive
Fuel Capacity	3 Gallons (11 Liters)

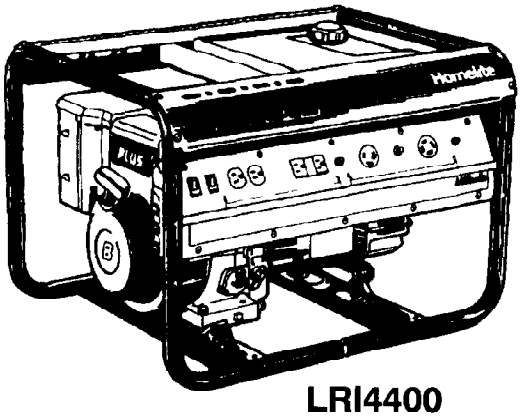
Electrical

AC Watts - Intermittent	2500
AC Watts - Continuous	2300
AC Power Output	120 Volts, Single Phase
Voltage Regulation	Electronic, +/- 6%
Frequency	60 Hz
Rated Amperage	19 2
Outlets	(2) 15 amp, 120 v. (Type 5-15R) (2) 15 amp, 120 v GFCI

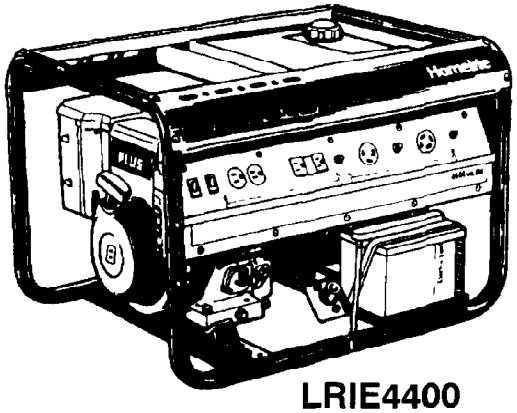
General

Sound Level at 50 ft.	71 dBA
Length	22-1/4" (57 cm)
Width	18-1/2" (47 cm)
Height	19" (48 cm)
Weight (dry)	95 lbs. (43 kg)
Warranty - Consumer	1 Year Limited
Warranty - Commercial	90 Days Limited

UNIT SPECIFICATIONS



LRI4400



LRIE4400

Model	LRI4400	LRIE4400

Engine

Model	Briggs & Stratton Industrial Plus	
Horsepower	8 H.P.	
Starting	Automatic Rewind	Automatic Rewind/Electric
Running Time at 3600 RPM (Tank of Fuel)	6.0 Hours at Rated Load	

Fuel System

Fuel Type	Automotive
Fuel Capacity	5 Gallons (19 Liters)

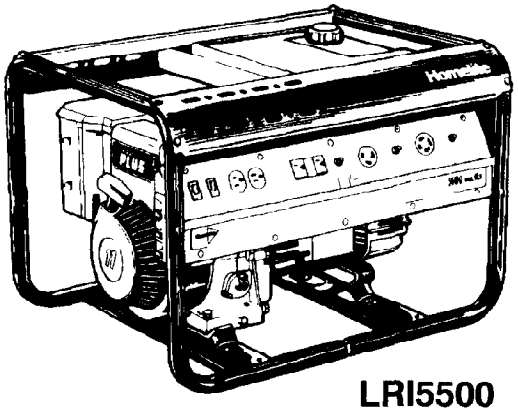
Electrical

AC Watts - Intermittent	4400
AC Watts - Continuous	4000
AC Power Output	120 /240 Volts
Voltage Regulation	Electronic, +/- 6%
Frequency	60 Hz
Rated Amperage	33.3/16.7
Outlets	(2) 20 amp, 120 v. (Type 5-20R) GFCI Protected (2) 15 amp, 120 v. (Type 5-15R) GFCI (1) 30 amp, 120 v. (Type L5-30R) (1) 20 amp, 120/240 v. (Type L14-20R)

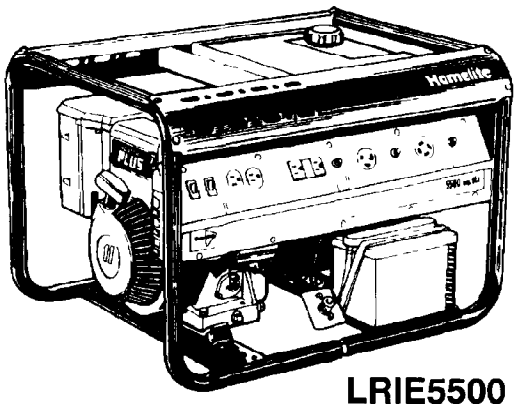
General

Sound Level at 50 ft.	76 dBA	
Length	28" (71 cm)	
Width	22-1/4" (57 cm)	
Height	19-1/2" (49 cm)	
Weight (dry)	142 lbs. (67 kg)	148 lbs (69 kg)
Warranty - Consumer	1 Year Limited	
Warranty - Commercial	90 Days Limited	

UNIT SPECIFICATIONS



LRI5500



LRIE5500

Model	**LRI5500**	**LRIE5500**

Engine

Model	Briggs & Stratton Industrial Plus	
Horsepower	11 H.P.	
Starting	Automatic Rewind	Automatic Rewind/Electric
Running Time at 3600 RPM (Tank of Fuel)	6.0 Hours at Rated Load	

Fuel System

Fuel Type	Automotive
Fuel Capacity	5 Gallons (19 Liters)

Electrical

AC Watts - Intermittent	5500
AC Watts - Continuous	5000
AC Power Output	120/240 Volts
Voltage Regulation	Electronic, +/- 6%
Frequency	60 Hz
Rated Amperage	33.3/16.7
Outlets	(2) 20 amp, 120 v. (Type 5-20R) GFCI Protected (2) 15 amp, 120 v. (Type 5-15R) GFCI (1) 30 amp, 120 v. (Type L5-30R) (1) 20 amp, 120/240 v. (Type L14-20R)

General

Sound Level at 50 ft.	75 dBA	
Length	28" (71 cm)	
Width	22-1/4" (57 cm)	
Height	9-1/2" (49 cm)	
Weight (dry)	188 lbs. (85 kg)	192 lbs. (87 kg)
Warranty - Consumer	1 Year Limited	
Warranty - Commercial	90 Days Limited	

TORQUE SPECIFICATIONS

NOTE: TORQUE SPECIFICATIONS ARE GIVEN IN INCH POUNDS AND NEWTON METERS (N•M)

LRI2500, LRI2500/CSA, LRI2500/CARB

SIZE & TYPE	QTY	APPLICATION	TORQUE LIMITS (IN. LBS)	TORQUE LIMITS (N•m)
5/16-24 X 750*	4	End Bell to Engine	120-150	13 6-16 9
1/4-20 X 4.00	4	Stator Bolts	60-80	6 8-9.0
5/16-24	1	Rotor Bolt	100-140	11.3-15 8
6-19 X .75 Plastite	2	Brush Holder	12-16	1 4-1.8
5/16-18 X .75	2	Stator to Bracket	150-155	16.9-17 5
6-32 X 50	2	Receptacle	9-13	1 0-1 5
6-19 X .75 Plastite	4	Fan to Rotor	12-16	1 4-1 8
5/16-18 Nut	4	Isolator to Frame	145-155	16 4-17 5
5/16-18 X 2.00	2	Engine to Engine Support	145-155	16 4-17 5
10-24 X .75 Taptite	1	Ground Wire to Stator	45-55	5.1-6 2
10-24 X .50 Mach. Torx	8	Tank Support to Frame	25-35	2 8-4 0
8-32 X .875 Mach-Pan	2	Heat Shield to Tank Support	8-12	0.9-1 4
5/16-18 X 1 25 Screw	2	Generator Support Bracket to Eng / Gen Support	145-155	16 4-17 5
10-24 X 50 Mach. Torx	4	Panel to Frame	20-25	2 4-2.8
8-32 X 375 Screw	4	Receptacles to Panels	12-14	1 4-1 6
7/16-18 Knurl Nut	1 or 2	Circuit to Panel	15-20	1 8-2.4
8-16 X .75 Plastite	8	Front to Back Panel	15-20	1 8-2.4
1/4-20 Screw, Hex Head	1	Idle Bracket to Engine	60-70	6.8-7 9
8-32 X .375	1	Idle Paddle to Governor Arm	14-18	1 6-2 0

*APPLY LOCTITE RED 277

LRI4400, LRIE4400, LRI4400/CSA, LRIE4400/CSA, LRI4400/CARB, LRIE4400/CARB

SIZE & TYPE	QTY	APPLICATION	TORQUE LIMITS (IN. LBS)	TORQUE LIMITS (N•m)
3/8-16 X 875*	4	End Bell to Engine	240-250	27 1-28.2
1/4-20 X 6.160	4	Stator Bolts	60-80	6 8-9 0
5/16-24 X 8.250	1	Rotor Bolt	100-140	11 3-15 8
6-19 X .75 Plastite	2	Brush Holder	12-16	1 4-1 8
5/16-18 X .75	2	Stator to Bracket	150-155	16.9-17 5
6-19 X .75 Plastite	4	Fan to Rotor	12-16	1 4-1 8
5/16-18 Nut	4	Isolator to Frame	145-155	16 4-17 5
5/16-18 Nut	2	Generator Bracket to Isolator	145-155	16 4-17 5
5/16-18 X 2.00	2	Engine to Engine Support	145-155	16 4-17 5
5/16-18 Nut	2	Engine Support to Isolator	145-155	16 4-17 5
10-24 X .75 Taptite	1	Ground Wire to Stator	45-55	5 1-6 2
10-24 X .50 Mach. Torx	8	Tank Support to Frame	25-35	2 8-4 0
8-32 X .875 Mach-Pan	2	Heat Shield to Tank Support	8-12	0 9-1 4
5/16-18 X 1.25 Screw	1	Ground Screw	145-155	16 4-17 5
1/4-20 Nut**	2	Switch to Battery Plate	70-80	7 9-9 0
10-32 Nut**	2	Battery Strap to Plate	12-16	1 4-1 8
1/4-20 X .625 Screw**	2	Battery Cables to Battery	40-50	4 5-5 6

TORQUE SPECIFICATIONS

NOTE: TORQUE SPECIFICATIONS ARE GIVEN IN INCH POUNDS AND NEWTON METERS (N•M)

5/16-24 Nut**	2	Battery Cables to Starter Switch (Supplied W/Switch)	50-60	5 6-6 8
1/4-20 Nut**	1	Battery Cable to Starter (Supplied W/Engine)	30-40	3.4-4 5
10-24 X .50 Mach. Torx	4	Panel to Frame	20-25	2.4-2 8
8-23 X .375 Screw	8	Receptacles to Panels	12-14	1 4-1 6
7/16-18 Knurl Nut	3	Circuit Breaker to Panel	15-20	1 8-2 4
8-16 X .75 Plastite	10	Front to Back Panel	15-20	1 8-2.4

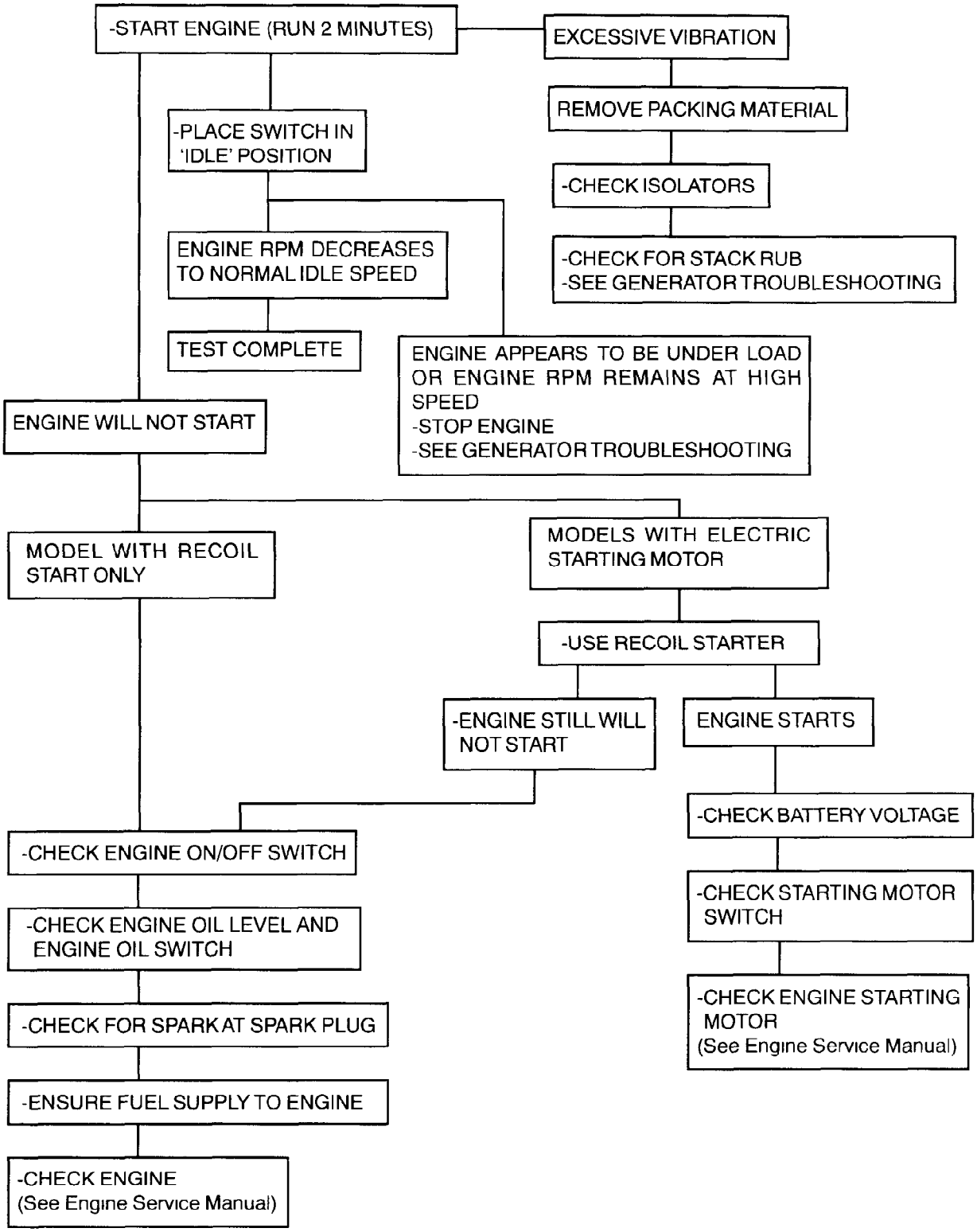
*APPLY LOCTITE RED 277
**APPLIES TO LRIE4400, LRIE4400/CSA, LRIE4400/CARB

LRI5500, LRI5500/CSA, LRI5500/CARB, LRIE5500, LRIE5500/CSA, LRIE5500/CARB

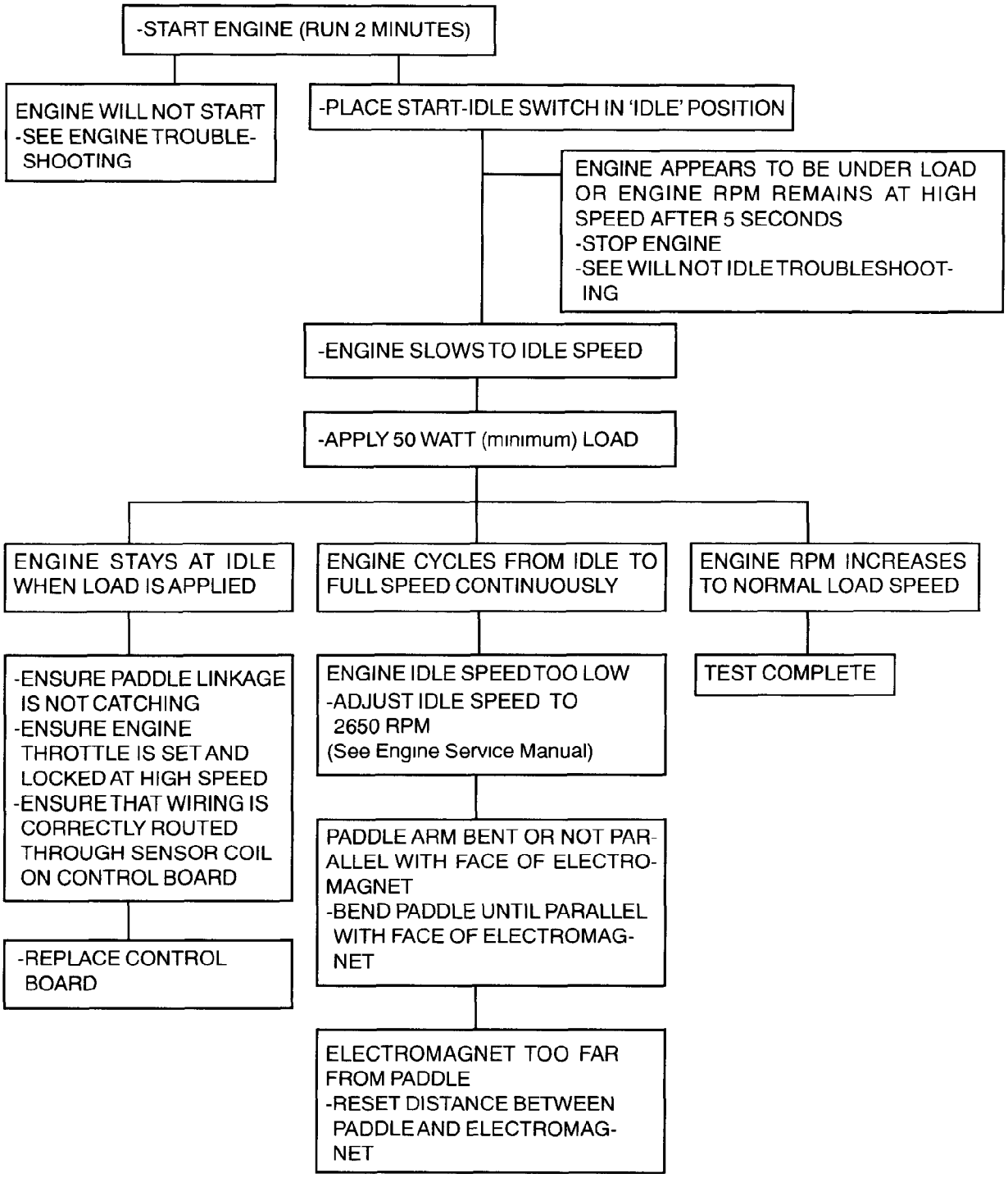
SIZE & TYPE	QTY	APPLICATION	TORQUE LIMITS (IN. LBS)	TORQUE LIMITS (N•m)
3/8-16 X .875*	4	End Bell to Engine	240-250	27 1-28.2
1/4-20 X 7.00	4	Stator Bolts	60-80	6 8-9 0
5/16-24	1	Rotor Bolt	100-140	11.3-15 8
6-19 X .75 Plastite	2	Brush Holder	12-16	1 4-1.8
5/16-18 X .75	2	Stator to Bracket	150-155	16 9-17.5
6-19 X .75 Plastite	4	Fan to Rotor	12-16	1 4-1 8
5/16-18 Nut	4	Isolator to Frame	145-155	16.4-17 5
5/16-18 Nut	2	Gen Bracket to Isolator	145-155	16 4-17 5
5/16-18 X 2.00	2	Engine to Engine Support	145-155	16.4-17 5
5/16-18 Nut	2	Engine Support to Isolator	145-155	16.4-17 5
10-24 X .75 Taptite	1	Ground Wire to Stator	45-55	5 1-6 2
10-24 X .50 Mach. Torx	8	Tank Support to Frame	25-35	2 8-4 0
8-32 X .875 Mach-Pan	2	Heat Shield to Tank Support	8-12	0 9-1 4
5/16-18 X 1.25 Screw	1	Ground Screw	145-155	16.4-17.5
1/4-20 Nut**	2	Switch to Battery Plate	70-80	7 9-9 0
10-32 Nut**	2	Battery Strap to Plate	12-16	1 4-1 8
1/4-20 X .625 Screw**	2	Battery Cables to Battery	40-50	4 5-5 6
5/16-24 Nut**	2	Battery Cables to Starter Switch (Supplied W/Switch)	50-60	5 6-6.8
1/4-20 Nut**	1	Battery Cable to Starter (Supplied W/Engine)	30-40	3 4-4 5
10-24 X .50 Mach. Torx	4	Panel to Frame	20-25	2 4-2 8
8-23 X .375 Screw	8	Receptacles to Panels	12-14	1 4-1 6
7/16-18 Knurl Nut	3	Circuit Breaker to Panel	15-20	1 8-2 4
8-16 X .75 Plastite	10	Front to Back Panel	15-20	1 8-2.4
5/16-18 Hex Nut	1	Idle Bracket to Muffler Bracket	145-155	16 4-17 5
8-32 X 3.75 Screw, Hex Head	1	Idle Bracket (Clamp)	14-18	1 6-2 0
8-32 X 3.75 Screw, Hex Head	1	Idle Paddle (Clamp)	14-18	1.6-2.0

*APPLY LOCTITE RED 277
**APPLIES TO LRIE5500, LRIE5500/CSA, LRIE5500/CARB

ENGINE

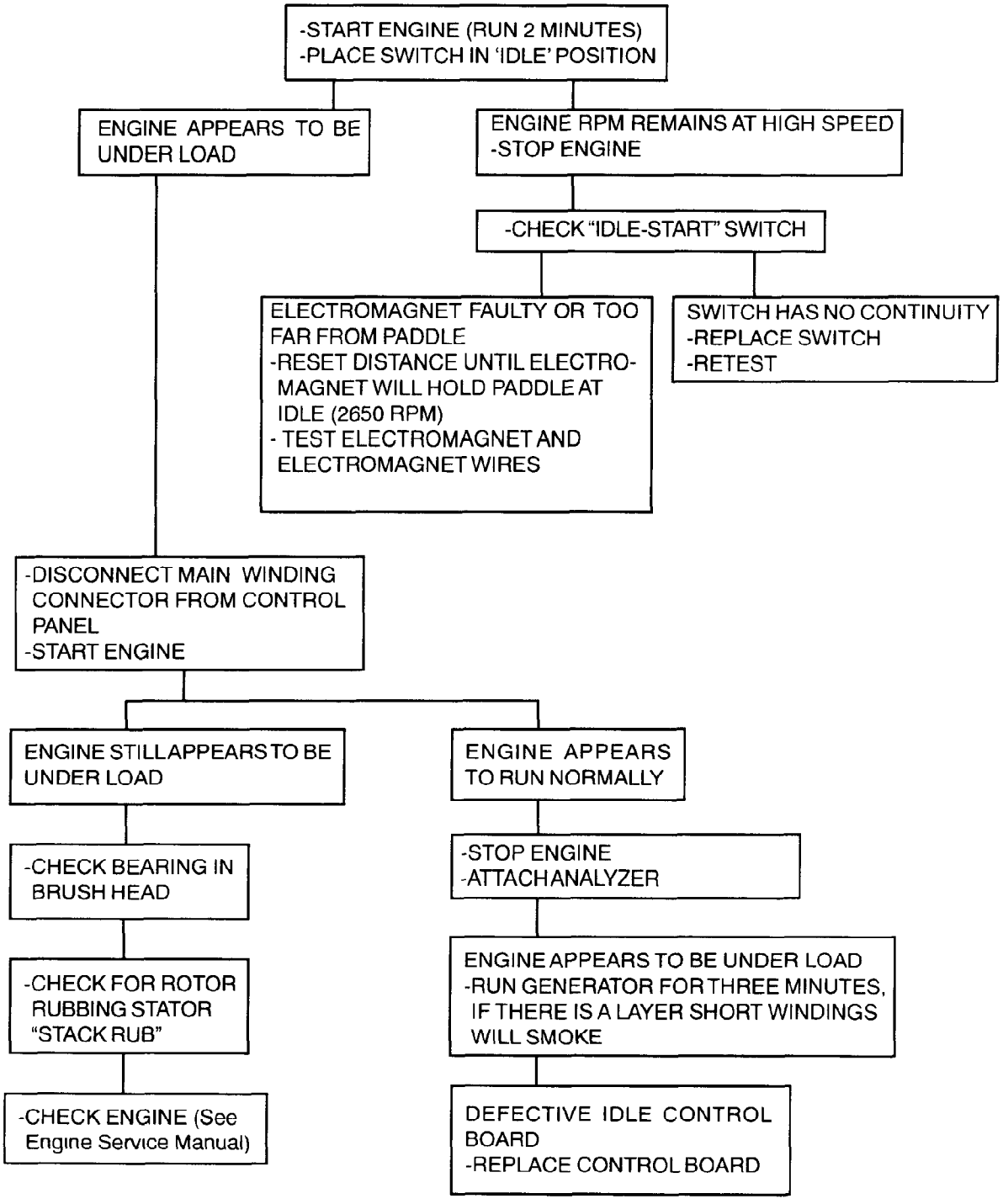


IDLE CONTROL

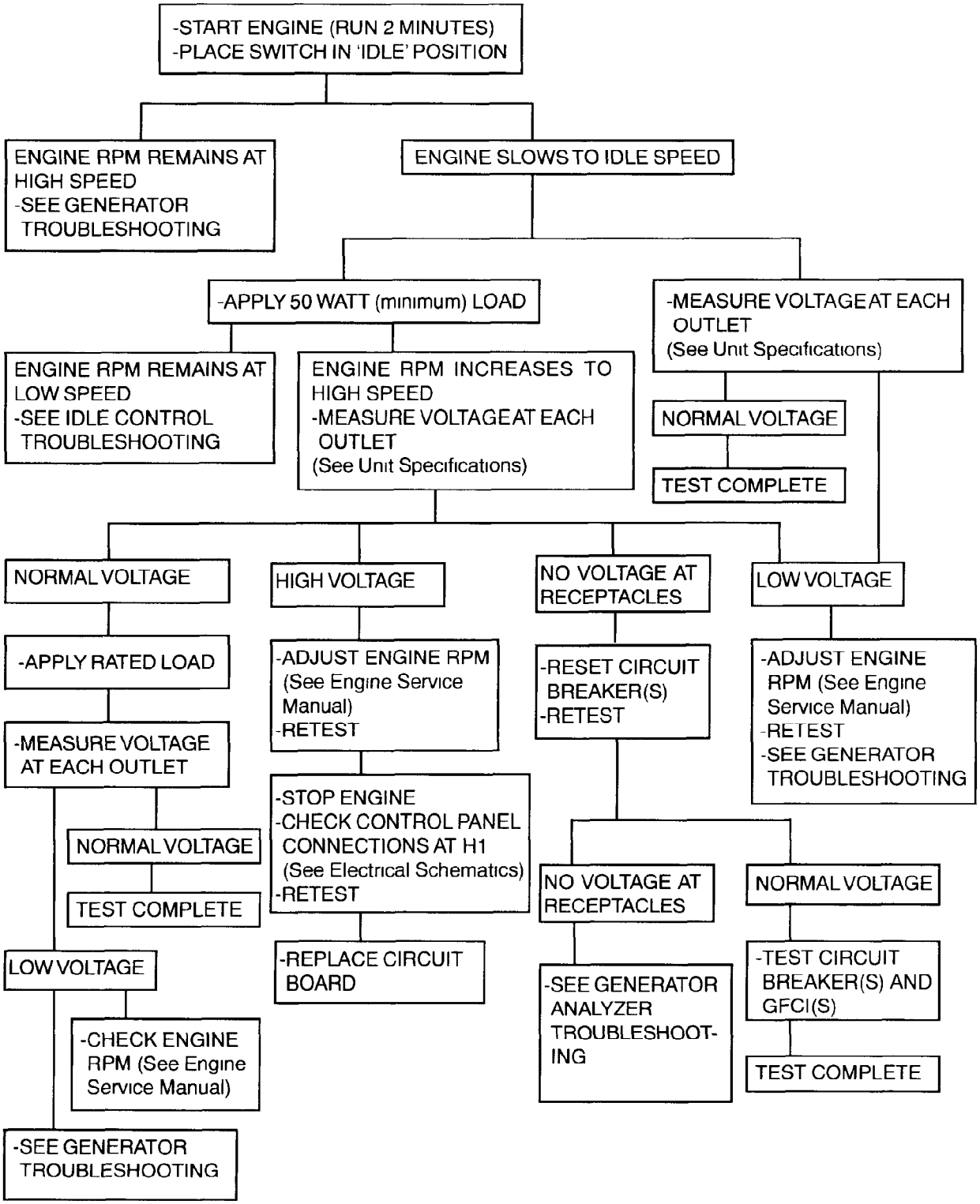


TROUBLESHOOTING

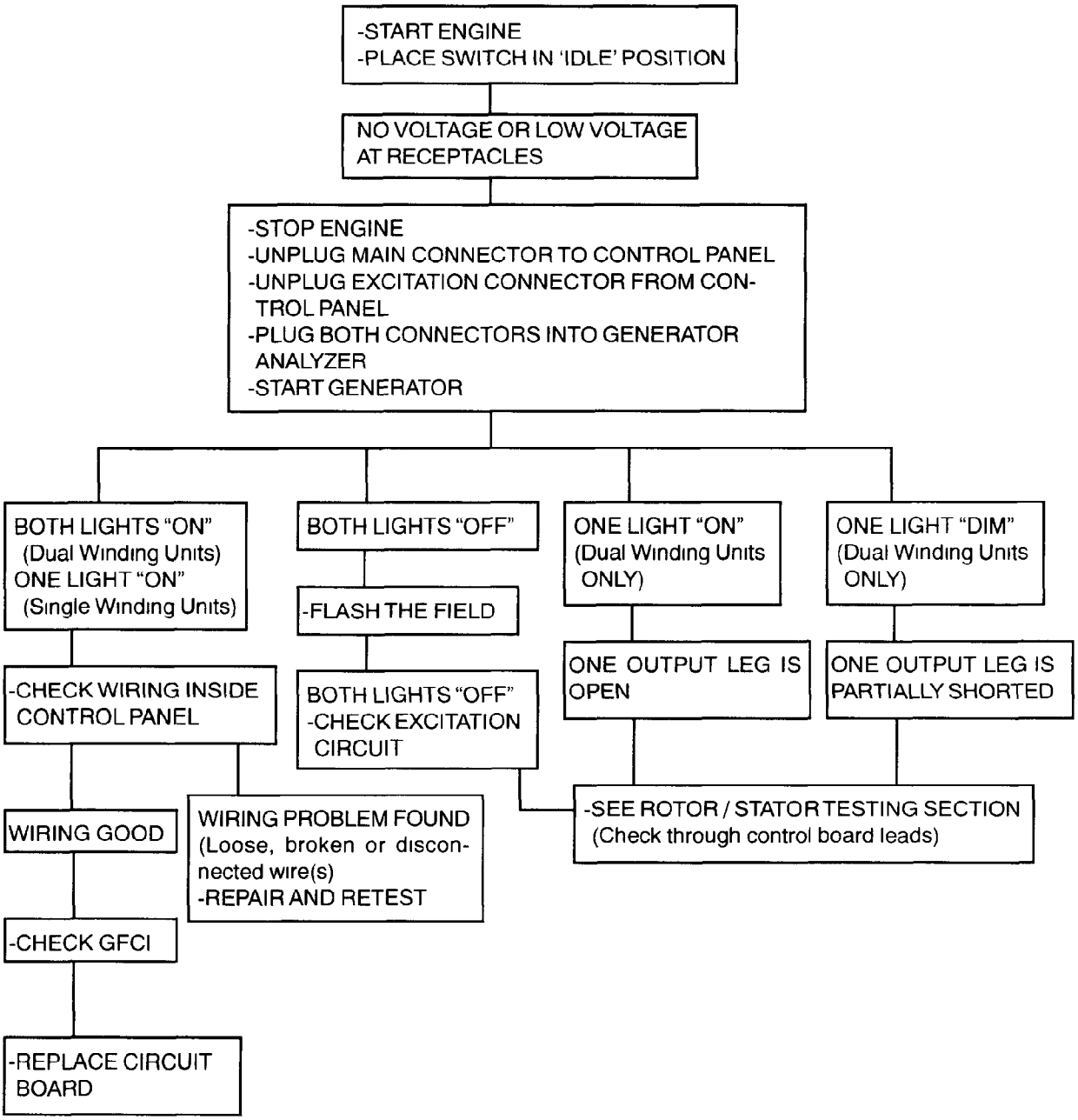
WILL NOT IDLE



ELECTRICAL



GENERATOR ANALYZER



ROTOR / STATOR

-STOP ENGINE
-UNPLUG CONNECTORS FROM CONTROL PANEL
-MEASURE RESISTANCE VALUES

ROTOR RESISTANCE MEASUREMENTS
(Small Plug - Red to Black wires)
-MEASURE(D) RESISTANCE

Model	Resistance at 25° C (77° F)
2500	47 ohms
4400	67 ohms
5500	76 ohms

STATOR RESISTANCE MEASUREMENTS
Resistance at 25° C (77° F)
-MEASURE(D) RESISTANCE

Model	Black-White	Red-White	Yellow-Yellow
2500	0.478 ohms	N/A	3 336 ohms
4400	0.372 ohms	0.372 ohms	2 856 ohms
5500	0.298 ohms	0.298 ohms	2.790 ohms

NORMAL RESISTANCE
TEST STATOR

LOW RESISTANCE
SHORTED TURNS
-REPLACE ROTOR

HIGH RESISTANCE
-SEE GENERATOR SYSTEM SECTION
-REMOVE GENERATOR END COVER
-ENSURE BRUSHES ARE GOOD AND MAKE CONTACT TO SLIP RINGS
-MEASURE RESISTANCE BETWEEN SLIP RINGS

LOW RESISTANCE
SHORTED TURNS
-REPLACE ROTOR

HIGH RESISTANCE
CLEAN SLIP RINGS
-MEASURE RESISTANCE

HIGH RESISTANCE
OPEN COIL IN ROTOR
-REPLACE ROTOR

NORMAL RESISTANCE
TEST COMPLETE

LOW RESISTANCE
SHORTED TURNS
-REPLACE STATOR

HIGH RESISTANCE
-SEE GENERATOR SYSTEM SECTION
-REMOVE GENERATOR END COVER
-ENSURE WIRING IS SECURELY CONNECTED
-MEASURE RESISTANCE THROUGH STATOR COILS

HIGH RESISTANCE
OPEN COIL IN STATOR
-REPLACE STATOR

FUELING

⚠ Caution

- Observe all safety regulations for the safe handling of fuel.
- Handle fuel in safety containers.
- If container does not have a spout, use a funnel
- DO NOT refill fuel tank while the engine is running.
- Fill the fuel tank only on an open area. While filling the tank, keep heat, sparks and open flame away. Carefully clean up any spilled fuel before starting the engine.

DO NOT mix oil with gasoline.
Use any gasoline intended for automotive use. When fuel will not be used within thirty days, stabilize fuel with an antioxidant fuel stabilizer, such as STA-BIL, a product of Gold Eagle Co , Chicago, IL or Briggs and Stratton, Milwaukee, WI.

DO NOT OPERATE ENGINE IF GASOLINE IS SPILLED. AVOID CREATING ANY IGNITION UNTIL THE GASOLINE HAS EVAPORATED.

LRI2500 FUEL SYSTEM

Fuel delivery is gravity fed. The fuel delivery system consists of the fuel tank, shut-off valve, fuel line and fuel filter.

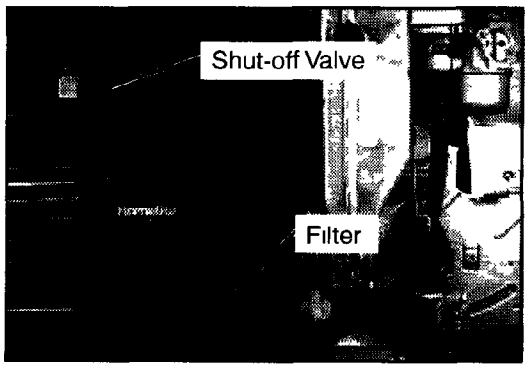


FIGURE 1
(Muffler heat shield and air filter removed for clarity)

If fuel delivery is considered a possible problem, check to see if there is a fuel flow to the carburetor. Before checking fuel flow, stop the engine and wait for it to cool down.
Place fuel shut-off valve in the CLOSED position Remove the air filter and air filter bracket connected to the carburetor. Slide the hose clamp away from the fuel port where the fuel line enters the carburetor and disconnect the fuel line from the carburetor
Place the end of the fuel line over a suitable container and open the fuel shut-off valve. Check for a steady stream of gasoline. Place fuel shut-off valve in the CLOSED position.
If a steady stream of gasoline cannot be obtained, disconnect the fuel line from where it enters into the fuel filter. Recheck for fuel flow. Replace the fuel filter if a steady flow is present.
If a steady stream of gasoline cannot be obtained the fuel tank may contain contaminants or sediment that has blocked the fuel shut-off valve

LRI4400 AND LRI5500 FUEL SYSTEM

Fuel is drawn from the tank by an external vacuum operated fuel pump, and is pushed to the carburetor float bowl.
The carburetor main circuit is not adjustable, and is controlled by the size of the main jet orifice Fuel is drawn from the float bowl through the main jet orifice, and out the main jet nozzle. The fuel level in the float bowl effects the amount of fuel drawn up the main jet. Float level is not adjustable and float must be replaced if level is not correct.

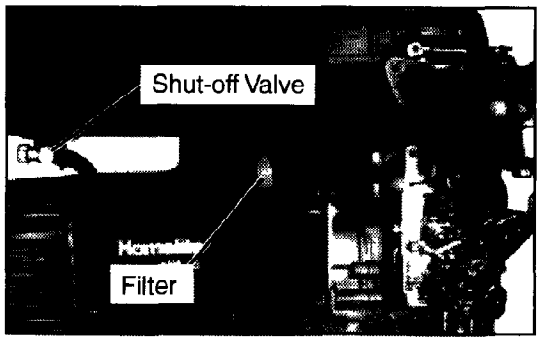


FIGURE 2
(Muffler and air filter removed for clarity)

If fuel delivery is considered a possible problem, check to see if there is a fuel flow to the carburetor Before checking fuel flow, stop the engine and wait for it to cool down.
Place fuel shut-off valve in the CLOSED position Remove the air filter. Slide the hose clamp securing the

fuel line away from the fuel port where the fuel line enters the fuel pump and disconnect the fuel line
Place the end of the fuel line over a suitable container and open the fuel shut-off valve. Check for a steady stream of gasoline. Place fuel shut-off valve in the CLOSED position.
If a steady stream of gasoline cannot be obtained, disconnect the fuel line from where it enters into the fuel filter. Recheck for fuel flow. Replace the fuel filter if a steady flow is present.
If a steady stream of gasoline cannot be obtained the fuel tank may contain contaminants or sediment that has blocked the fuel shut-off valve.

FUEL SHUT-OFF VALVES

Two types of fuel shut-off valves are provided for the generators.

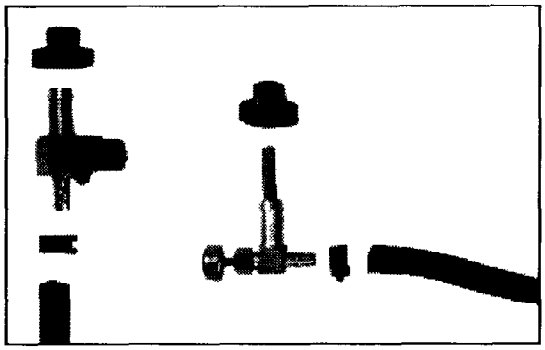


FIGURE 3

Both types are attached to the fuel tank by a compression style rubber grommet. The right angle shut-off valve used on the LRI4400 and LRI5500 has an attached screen fuel filter.

SERVICE NOTE

The fuel tank must be removed from the generator or empty before removing the shut-off valve(s) from the fuel tank.

Wait for the engine to cool before removing the shut-off valve. Place the shut-off valve in the CLOSED position, disconnect the fuel line on the side closest to the engine and drain any fuel in the line into a suitable container. Disconnect the fuel line from the shut-off valve and pull the shut-off valve straight out from the fuel tank
To install the shut-off valve, insert the rubber grommet into the fuel tank until it is fully seated. Insert and push the shut-off valve through the grommet until it is fully seated.

TESTING GENERATOR OUTPUT

Before testing electrical system, ensure engine is performing to specifications. See engine service manual.

Start and run engine with no load applied for two minutes to warm up. Place START/IDLE switch in IDLE position. The electromagnet energizes and engine will throttle back to idle speed after a 3 - 5 second delay. If generator will not throttle back to idle speed, refer to TROUBLESHOOTING. Measure voltage at 120 V receptacle.

LRI2500, LRI4400 and LRIE4400:
2600-2800 RPM .. .. 80-95 Volts RMS
LRI5500 and LRIE5500:
2400-2600 RPM ..... 80-95 Volts RMS

Generator Load Specifications:

Under the following prescribed conditions, with the START/IDLE switch in the IDLE position, the engine must accelerate to governed speed (minimum 3550 RPM) with the application of load (electromagnet deenergizes) and return to idle speed (electromagnet energizes) when the load is removed. If generator will not throttle up to governed speed, refer to TROUBLESHOOTING.

LRI2500:

LOAD (WATTS)	RECEPTACLE
2200 watts	5-20R (20 A)
50 watts	5-15R (GFCI)

LRI4400 and LRIE4400:

LOAD (WATTS)	RECEPTACLE
3800 watts	L14-20R (120/240 V, 20 A)
50 watts at 240 volts	L14-20R (120/240 V, 20 A)
50 watts at 120 volts	5-15R (120 V, GFCI)

LRI5500 and LRIE5500:

LOAD (WATTS)	RECEPTACLE
4800 watts	L14-20R (120/240 V, 20 A)
50 watts at 240 volts	L14-20R (120/240 V, 20 A)
50 watts at 120 volts	5-15R (120 V, GFCI)

GENERATOR REPAIR LRI2500

Before starting any disassembly procedures, allow engine to cool.

Disconnections:

WARNING: Gasoline is explosive. Do not expose to spark or flame. Serious personal injury can result Shut off fuel by placing fuel valve in CLOSED position Slide fuel line hose clamp closest to fuel tank down and disconnect fuel line from tank. Drain fuel line and fuel filter into suitable container.

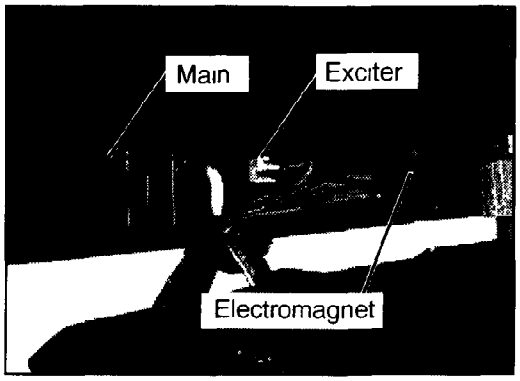


FIGURE 4

Disconnect (2) electrical connectors (main and excitation) and (2) electromagnet wire connectors from rear of control panel.

Generator Removal and Disassembly

Remove grounding wire wingnut and lock washers from rear bolt securing generator to generator support bracket. Remove two nuts, bolts and lock washers securing generator to support bracket.

SERVICE NOTE

When the generator end cover is removed, the spring loaded brushes will fall out after the cover is removed past the end of the rotor.

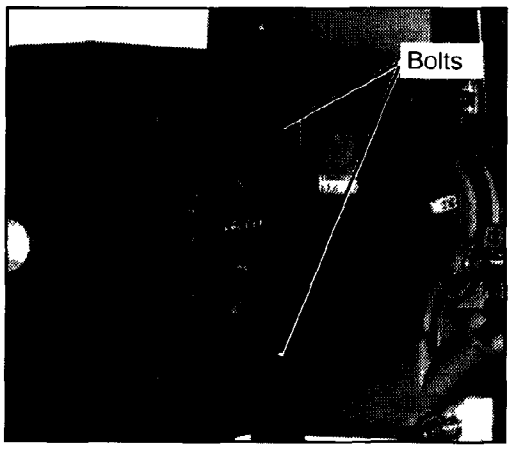


FIGURE 5

Remove the four (4) bolts securing the generator end cover to the generator body. Gently remove the end cover and stator winding, as an assembly, by pulling straight out from the generator body. Slide rubber grommet and wiring harness from exit slot located at the bottom of the end housing. Remove end plug cap from rotor bearing hole in center of end cover.

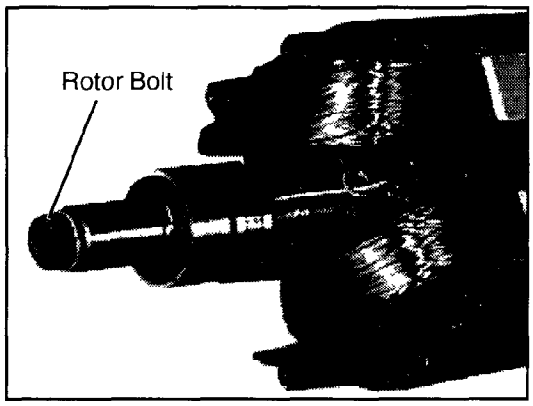


FIGURE 6

Remove long rotor bolt and lock washer from center shaft of rotor. Remove rotor using one of the following methods.

Method 1:
Prior to removing the generator rotor, obtain a Homelite rotor pin (22272) and cut to length.
From machined end, cut pin to a length of 4-1/2". Cut the left over length of rotor pin into the following pieces: 1/4", 1/2", 3/4", 1", and 2-1/2".

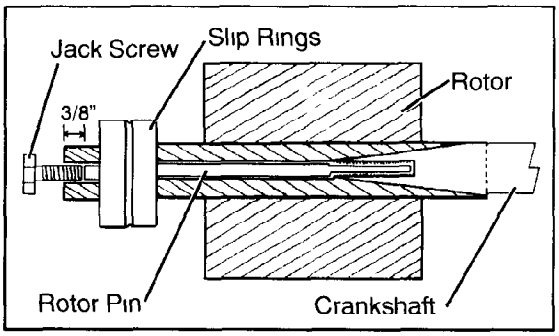


FIGURE 7

To remove rotor (generator) from engine crankshaft:
- Remove rotor retaining bolt.
- Insert the rotor pin and add pieces of the pin to obtain an overall length which is 3/8" shorter than the rotor shaft.
- Install Homelite jack screw (S00394) and tighten against the rotor pin to force the rotor away from the crankshaft.

SERVICE NOTE
Total length of the rotor pin (pieces) is dependent on the length of the rotor shaft and must always be 3/8" shorter than the rotor shaft.

Method 2:

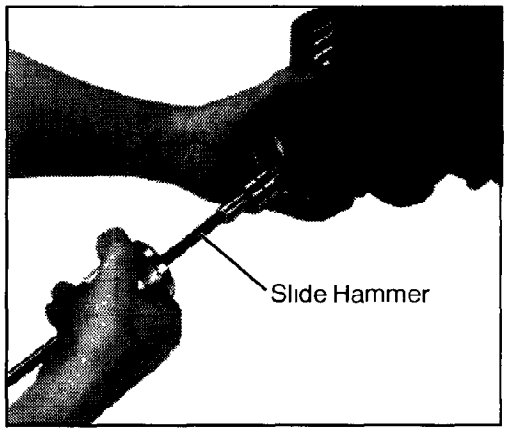


FIGURE 8

Screw slide hammer into rotor shaft, support rotor and remove rotor and fan as an assembly

LRI2500 Rotor Testing

Inspect the slip rings for excessive wear or damage. Grooves in the slip rings are not acceptable A carbon path (black discoloration) on the slip rings is normal, however, a severe build up of carbon may cause the brushes to lose contact with the slip rings.
Inspect the rotor for wear, burned spots, broken wires, or pitting. Resolder connections or replace the rotor if connections are broken.
Set VOM to ohms scale. Check resistance value of rotor against specification by placing VOM leads on each slip ring.

Rotor Resistance at 25° C (77° F):
LRI2500 .... 47 ohms

If the resistance reading is lower than that specified, the rotor has shorted turns and should be replaced

Check for continuity between each slip ring and the ro-

tor shaft. If there is any continuity between either slip ring and the rotor shaft, the coil is shorted to the shaft. The rotor must be replaced.

Check needle bearing in end cover for wear, freedom of movement and missing bearings. Replace as necessary.

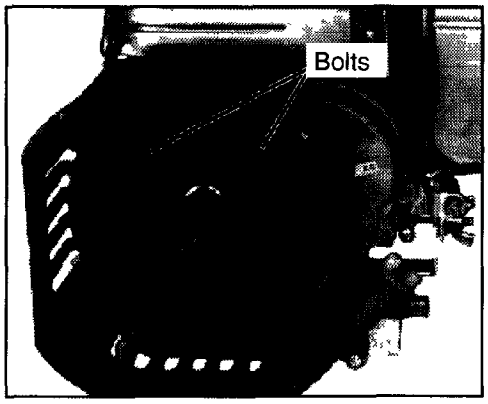


FIGURE 9

If necessary to work on engine, remove generator end bell by removing four (4) bolts securing housing to engine. Note solid side of end bell is located 'up'.

LRI2500 Stator Testing

Using VOM set to measure ohms, measure resistance of stator coils

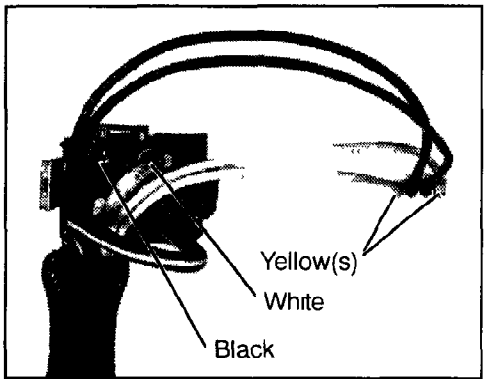


FIGURE 10

Resistance of main coil (large connector black and white wires), quad coil (small connector yellow wires), ground wire to stator body, and coils to stator housing should meet specifications. If resistance does not meet specifications, replace stator assembly.

Specifications at 25° C (77° F):

Main Coil (White to Black)	0 48 ohms
Quad Coil (White to Yellow)	1 67 ohms
(Yellow to Yellow)	3 34 ohms
Ground Wire to Stator Body	<0 5 ohms
Coils to Stator Body	Infinite Resistance

LRI2500 Generator Assembly

Assemble generator by applying Loctite to bolts, securing generator end bell to engine (if removed for engine repair). Set end bell against engine, insert bolts and torque bolts to specification.

Wipe engine crankshaft and rotor shaft taper clean of grease and debris. Slide rotor and fan assembly onto crankshaft.

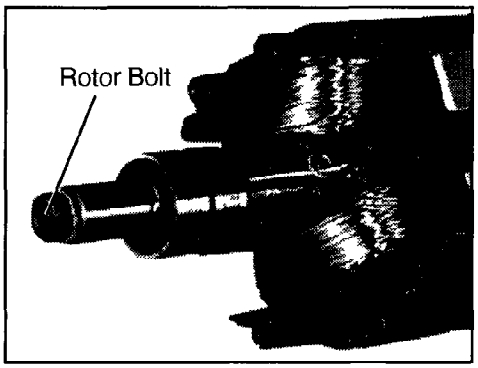


FIGURE 11

Insert long bolt through lock washer and rotor into crankshaft. Tighten finger tight.

SERVICE NOTE

Rotor bolt will be tightened after assembly is complete. The bolt needs to remain loose throughout assembly procedure to allow rotor and stator to align with housing and crankshaft

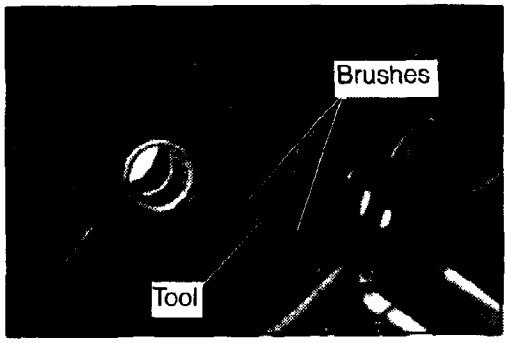


FIGURE 12

Install brushes in brush holder. Retain brushes by inserting brush holder tool or straightened paper clip through housing hole and brush holders. If previously removed, slide rubber grommet and wiring harness into the exit slot on bottom of end housing.

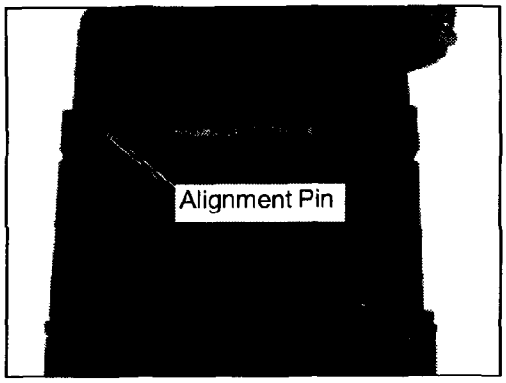


FIGURE 13

Gently slide stator and end housing over rotor. Align stator housing over alignment pins in end bell, and align rotor shaft with needle bearing in end housing. Slide two bolts into slots at bottom of stator housing and tighten finger tight. Install two bolts into slots at top of stator housing and tighten. Torque four (4) bolts to specification.

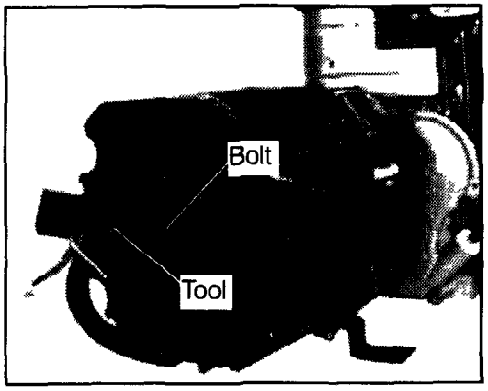


FIGURE 14

Tighten rotor bolt slowly and ensure rotor turns smoothly inside of stator. Torque rotor bolt to specifications. Install end plug cap into rotor bearing hole in center of end cover.

Important: Remove tool holding brushes

Install two bolts securing generator to roll cage and torque to specification. Install lock nut and grounding wire wingnut.
Connect electromagnet wires, excitation connector and main connector to control panel. Connect fuel line to engine. Open fuel shut-off valve.

GENERATOR REPAIR 4400 and 5500

Before starting any disassembly procedures, allow engine to cool.

Disconnections

Shut off fuel by placing fuel valve in CLOSED position. Disconnect battery (if equipped) and disconnect spark plug lead wire. If generator is equipped with electric start, disconnect starting motor cable and solenoid wire.

Generator Removal and Disassembly

4400 and 5500:
Disconnect and remove battery from generator (LRIE Series Generators). Disconnect (2) electrical connectors (main and excitation) and (2) electromagnet wire connectors from rear of control panel

GENERATOR SYSTEM

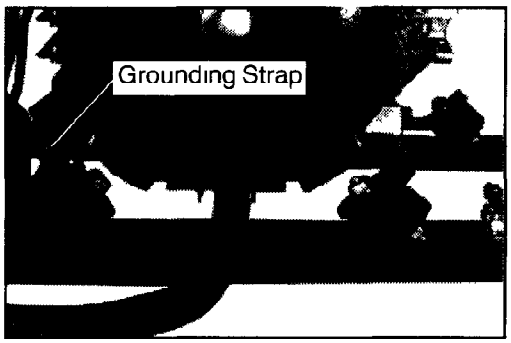


FIGURE 15

Remove nuts, lock washers and grounding strap from bolts securing generator mounting bracket to rubber isolation mounts.

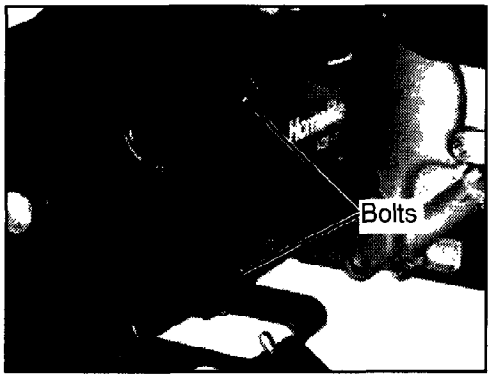


FIGURE 16

Remove the four (4) bolts securing the generator end cover to the generator body.

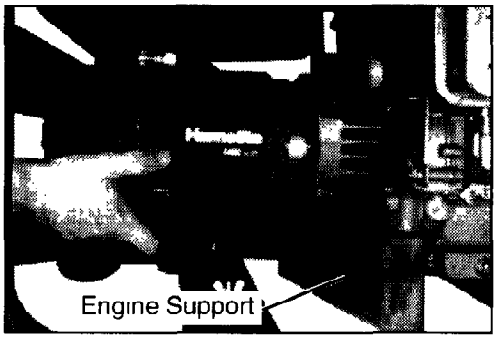


FIGURE 17

SERVICE NOTE
When the stator body is removed, the spring loaded brushes will fall out after the end cover is removed past the end of the rotor

Support the generator end bell with a block of wood, lift the generator body off of isolator mounts and gently remove the stator housing by pulling straight out from end bell.

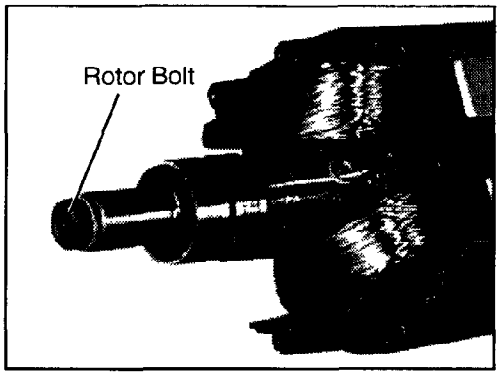


FIGURE 18

Remove long rotor bolt and lock washer from center shaft of rotor. Remove rotor using one of the following methods.

Method 1:
Prior to removing the generator rotor, obtain a Homelite rotor pin (22272) and cut to length
From machined end, cut pin to a length of 4-1/2" Cut the left over length of rotor pin into the following pieces. 1/4", 1/2", 3/4", 1", and 2-1/2".

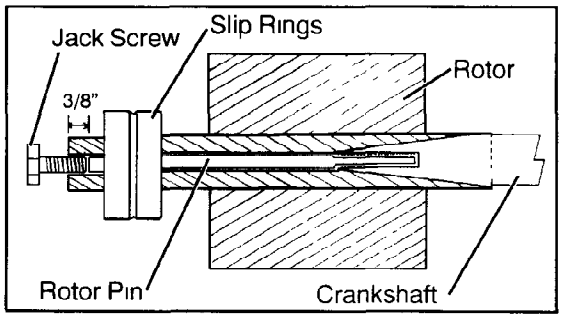


FIGURE 19

To remove rotor (generator) from engine crankshaft:
- Remove rotor retaining bolt.
- Insert the rotor pin and add pieces of the pin to obtain an overall length which is 3/8" shorter than the rotor shaft.

•Install Homelite jack screw (S00394) and tighten against the rotor pin to force the rotor away from the crankshaft.

SERVICE NOTE

Total length of the rotor pin (pieces) is dependent on the length of the rotor shaft and must always be 3/8" shorter than the rotor shaft.

Method 2:

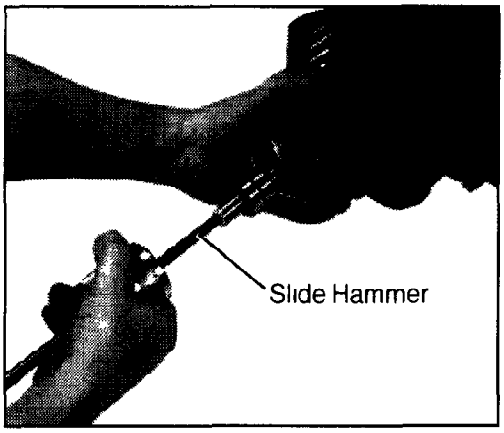


FIGURE 20

Screw slide hammer into rotor shaft, support rotor and remove rotor and fan as an assembly.

4400 and 5500 Rotor Testing

Inspect the slip rings for excessive wear or damage. Grooves in the slip rings are not acceptable. Use #00 fine grit sand paper to smooth the surface of the slip rings if damaged. A carbon path (black discoloration) on the slip rings is normal, however, a severe build up of carbon may cause the brushes to lose contact with the slip rings.

Inspect the rotor for wear, burned spots, broken wires, or pitting. Resolder connections or replace the rotor if connections are broken.

Set VOM to ohms scale. Check resistance value of rotor against specification by placing VOM leads on each slip ring.

Rotor Resistance at 25° C (77° F):

4400 ..... 67.0 ohms
5500 ..... 76.0 ohms

If the resistance reading is lower than that specified, the rotor has shorted turns and should be replaced.

Check for continuity between each slip ring and the rotor shaft. If there is any continuity between either slip ring and the rotor shaft, the coil is shorted to the shaft The rotor must be replaced.

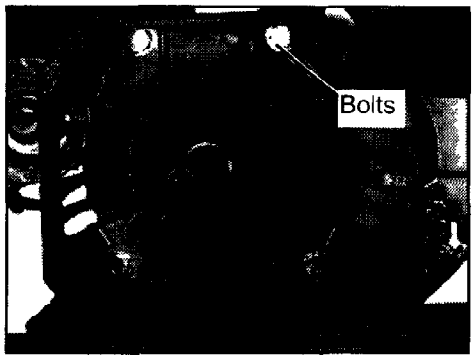


FIGURE 21

If necessary to work on engine, remove generator end bell by removing four (4) bolts securing end bell to engine. Note solid side of end bell is located 'up'.

4400 and 5500 Stator Testing

Using VOM set to measure ohms, measure resistance of stator coils.

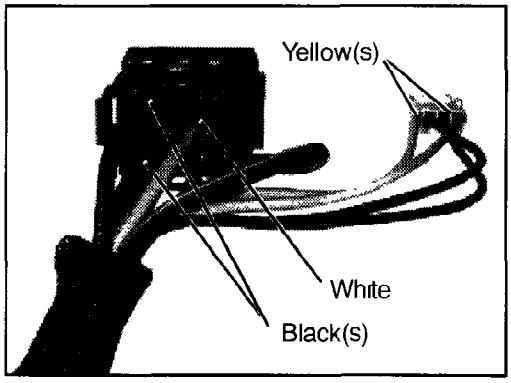


FIGURE 22

Resistance of main coils (large connector black and white wires, and red and white wires), rotor coil (small connector yellow wires), ground wire to stator body, and coils to stator housing should meet specifications.

Specifications at 25° C (77° F):

Main Coils (4400)(Blk-Wht or Red-Wht)	0.37ohms
Main Coils (5500)(Blk-Wht or Red-Wht)	0.30 ohms
Quad Coil (4400)(White to Yellow)	1 43 ohms
(4400)(Yellow to Yellow)	2 86 ohms

Quad Coil (5500)(White to Yellow) ..... 1 40 ohms
(5500)(Yellow to Yellow) ... . 2.79 ohms
Ground Wire to Stator Body ..... <0.5 ohms
Coils to Stator Body .... Infinite Resistance

Generator Assembly

4400 and 5500:
Assemble generator by applying Loctite to bolts, securing generator end bell to engine. Torque bolts to specification.
Check needle bearing in end cover for wear, freedom of movement and missing bearings. Replace bearing as necessary.
Wipe engine crankshaft and rotor shaft taper clean of grease and debris. Slide rotor and fan assembly onto crankshaft.

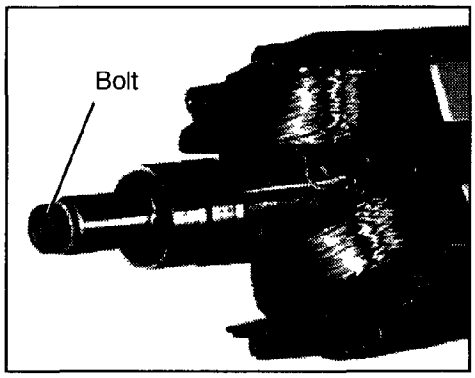


FIGURE 23

Insert long bolt through lock washer and rotor into crankshaft. Tighten finger tight.

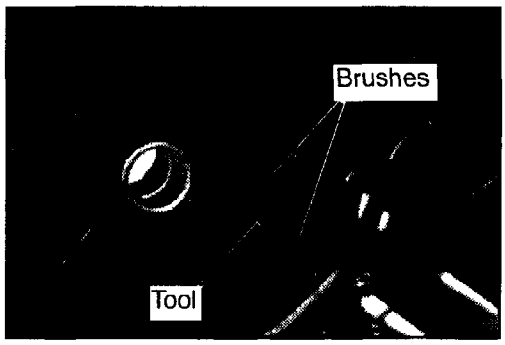


FIGURE 24

SERVICE NOTE
Rotor bolt will be tightened after assembly is complete. The bolt needs to remain loose throughout assembly procedure to allow rotor and stator to align with housing and crankshaft Install brushes in brush holder. Retain brushes by inserting brush holder tool or straightened paper clip through housing hole and brush holders If previously removed, slide rubber grommet and wiring harness into the exit slot on bottom of end housing

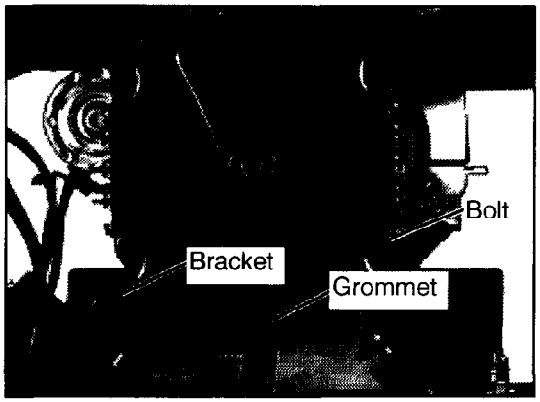


FIGURE 25

Gently slide stator and end housing over rotor Lift generator support bracket over isolation bolts and align rotor shaft with needle bearing in end housing. Slide two bolts into slots at bottom of stator housing and tighten finger tight.
Install two bolts into slots at top of stator housing. Tighten rotor bolt slowly and ensure rotor turns smoothly inside of stator. Torque four bolts securing stator housing to specification. Torque rotor bolt to specification

Important: Remove tool holding brushes

Loosen nuts on bolts securing generator support bracket to generator housing. Remove block supporting end bell and lower generator fully onto rubber isolators.
Install lock washer, grounding jumper wire, lock washer and nut onto front isolator bolt, and lock washer and nut onto rear isolator bolt. Torque nuts to specification
Torque nuts securing generator bracket to generator to specification.
Connect electromagnet wires, excitation connector and main connector to control panel Connect fuel line to engine. Open fuel shut-off valve

GENERATOR ANALYZER

Start and run the generator. If there is no output at any receptacle, bypass the control panel by attaching GENERATOR ANALYZER (08371).
With the generator NOT running, unplug the main connector (large) and the excitation connector (small) from the control panel.

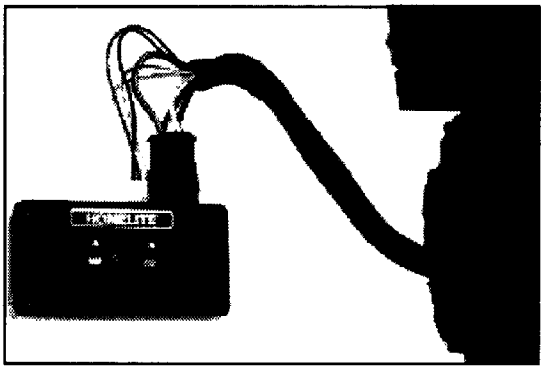


FIGURE 26

Plug the main and excitation connectors into the ANALYZER. Start and run the generator.

SERVICE NOTE

DO NOT unplug the generator from the analyzer while it is running at any time.

If both neon lights are ON (*dual winding units*) or one light is ON (*single winding units*) the voltage regulator board or control box wiring is faulty.
If both neon lights are OFF, insert the FIELD FLASHER (A06978) and flash the field. If both lights are still OFF, the problem is most likely located in the excitation circuit. If both lights come ON after flashing the field, stop the engine and restart it. If both lights are OFF again (after using the field flasher) the rotor will not hold residual magnetism and needs to be replaced.
If one green light is out, then one output leg is open (*dual winding units*).
If one green light is dim, the output leg is partially shorted.
Run the generator for three minutes. If there is a layer short, the windings should begin to smoke.
At this point the stator windings are faulty and need to be replaced.

FIELD FLASHER

Start and run the generator. If there is no output at any receptacle the rotor fields may have lost residual magnetism. The FIELD FLASHER (A06978) is used to restore a magnetic field in the rotor. The field flasher can be used with the generator analyzer or by itself
If there is no output at any receptacle perform the following procedure using the field flasher.

⚠ Caution

For use on portable generators ONLY.
DO NOT plug Field Flasher into house current.

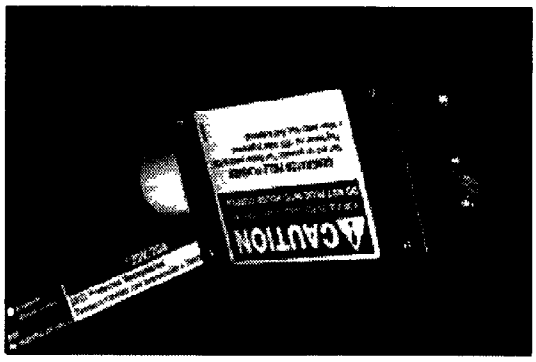


FIGURE 27

Using with Generator Analyzer:
Connect the generator analyzer. Start and run generator. Turn field flasher switch to ON position. Plug the field flasher into the generator analyzer. When the switch on the field flasher trips the magnetic field is restored Unplug the field flasher.
If both lights come ON after flashing the field, stop the engine and restart it. If both lights on the generator analyzer are OFF again (after using the field flasher) the rotor will not hold residual magnetism and needs to be replaced.

Using without Generator Analyzer:
Start and run generator. Turn field flasher switch to ON position. Plug the field flasher into a 120V outlet of the generator. When the switch on the field flasher trips the magnetic field is restored. Stop the engine and restart it. Measure the voltage at the 120 V receptacle. If the measurement is 0 volts the rotor will not hold residual magnetism and needs to be replaced

Control Panel Removal

Disconnect two generator connectors (main and excitation) from rear of control panel. Disconnect two electromagnet spade connectors from rear of control panel.

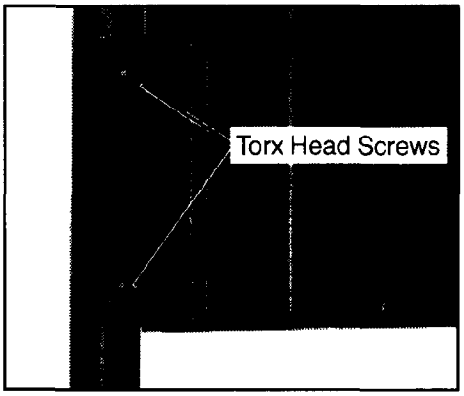


FIGURE 28

Remove four torx head screws securing control panel to roll cage and remove control panel.

Control Board Removal/Installation

Removal:
Disconnect excitation connector (small) from rear of control panel. Disconnect two electromagnet spade connectors from rear of control panel. Open front cover by removing torx screws securing front cover to control panel body.

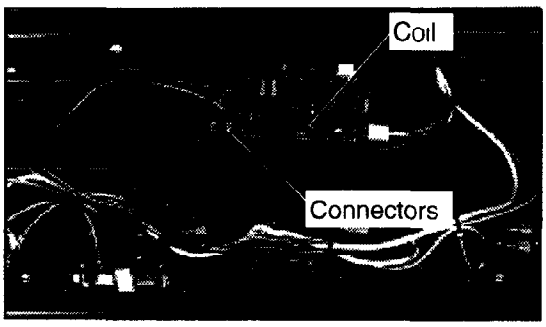


FIGURE 29

SERVICE NOTE
If it is necessary to cut and remove wire tie wraps, replace with new tie wraps before assembly of control panel.

Disconnect two spade connectors from the circuit board Disconnect red and black wires, that feed through the coil on the circuit board, where they connect to the circuit breakers. Disconnect the 4 pin connector from the side of the circuit board. Slide the circuit board out of the slots in the control panel.

Installation:
Clean the contacts on the control board before installation. This will remove all residue and provide the best electrical contact.

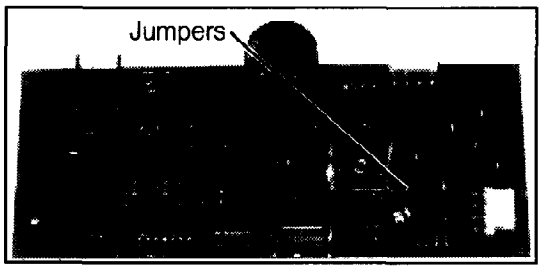


FIGURE 30

Remove the two jumpers on the control board for installation in the LRI2500 generator. **Do not remove** jumpers for use in the LRI4400 and LRI5500 If jumpers are removed generators will produce 120 volts only

Idle-Start Switch Test

The Idle-Start switch is in series in the electromagnet circuit. Placing the switch in the IDLE position closes the switch and allows current flow to the electromagnet. To test the switch disconnect the battery (if equipped) and disconnect spark plug lead wire Open front cover by removing torx screws securing front cover to control panel body.

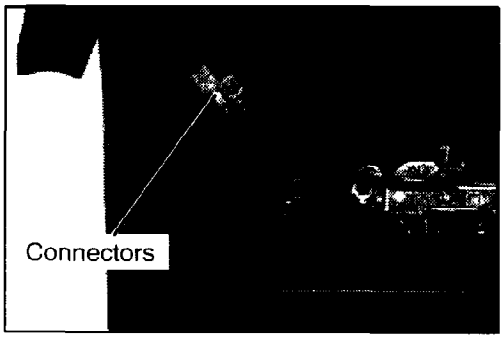


FIGURE 31

Disconnect spade connectors from IDLE-START switch. Continuity check switch. There should be continuity in IDLE position only. Replace switch as necessary

Paddle Adjustment

The paddle is connected to the throttle linkage. When pulled to the electromagnet the linkage sets the engine governor to the idle position. Ensure paddle is parallel with face of electromagnet by holding paddle to electromagnet. Bend paddle as needed.
Ensure idle speed of engine is set to 2650 rpm. See engine service manual.

FIGURE 32 (2500)

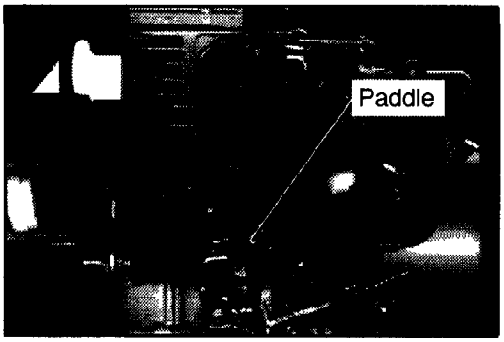


FIGURE 33 (4400)
(Muffler and air filter removed for clarity)

Place IDLE-START switch in IDLE position and check that electromagnet holds paddle. If paddle is not held to electromagnet, see Electromagnet Adjustment below. Turn IDLE-START switch from idle to start position several times and ensure paddle is alternately held and released. Tighten adjustment nuts.
Check idle throttle screw on top of carburetor. When paddle is held by the electromagnet, the throttle arm should NOT be touching the idle set screw.

Electromagnet Adjustment

The electromagnet, when energized, pulls a paddle toward the electromagnet face. If the engine speed is too low, voltage to the idle control board and the paddle is insufficient to hold the paddle.

SERVICE NOTE
At idle measured voltage at the 120 V receptacle is 90 VAC. Half wave rectified voltage is provided to the electromagnet providing it with 35 - 45 VDC

The electromagnet must be positioned close enough to the paddle to insure proper speed at idle (2650-2800 RPM. With the idle speed set to 2650 RPM (minimum), loosen the locking nuts and adjust the electromagnet toward the paddle until the electromagnet will hold the paddle at idle.

SERVICE NOTE
If the electromagnet cannot be adjusted far enough toward the paddle to hold the paddle, check the carburetor slow idle adjustment screw to see if it is interfering with the paddle full range of movement. The paddle linkage controls the engine governor and can be prevented from doing so if the idle stop screw is set in too far

Electromagnet Test

Ensure 35-45 volts DC to electromagnet when IDLE-START switch is set in IDLE position with engine running. If voltage is present and the electromagnet is not pulling the paddle in, test electromagnet
STOP engine. Disconnect the electromagnet wire spade connectors from the rear of the control panel Check for continuity between electromagnet wires Continuity should meet specification.

LRI2500:
Measured Resistance ..... . 250 ohms
4400 and 5500:
Measured Resistance ..... 285 ohms

Check for continuity between each electromagnet wire and electromagnet body. There should be NO continuity. Replace the electromagnet if resistance through the electromagnet coil is abnormally low. Continuity through either lead and the electromagnet case constitutes a short to ground. Replace the electromagnet.

Ground Fault Circuit Interrupter (GFCI) Checks

The 120 VAC outlets are protected by ground fault circuit interrupters (GFCI). The GFCI has to meet the following operational checks:

1. When the test button is pressed, the reset button must pop out and the power to the GFCI and the 5-20R duplex receptacle must be zero.
2. When the reset button is pressed back in, power must return to the GFCI and 5-20R receptacles.
3. When a 5mA "ground fault" is applied from either receptacle's Hot Line to Frame Ground, the reset button must pop out and the receptacle power must be zero. A 24,000 Ohm, 1 Watt resistor may be used to obtain a 5mA "ground fault".

SERVICE NOTE

The generator uses a vibration system that allows the generator and engine to "float" in the roll cage. The vibration isolation is nullified if the shipping block under the engine is not removed when preparing the unit for operation. If the GFCI trips regularly, check to ensure that the shipping material was removed.

Engine Oil Switch Test

The engine oil switch monitors the oil level with a float. If the engine oil is low, the switch provides a ground circuit for the engine coil and eliminates current to the spark plug. Check engine oil level. Add oil if needed to bring oil to correct level.

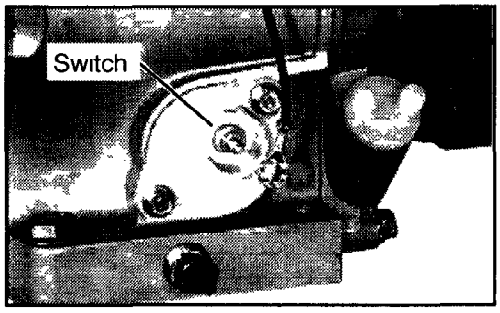


FIGURE 34

Disconnect lead wire to engine oil switch. Set VOM to ohms scale. Check continuity between oil switch and engine. There should be NO continuity. If continuity exists, drain the engine oil and remove engine oil switch. Ensure freedom of movement of the switch float.
Drain the engine oil and check continuity between oil switch and engine. There should be less than 2 ohms of resistance.
Replace switch as necessary.

Engine ON/OFF Switch Test

The engine ON/OFF switch grounds the engine ignition coil and prevents a spark at the spark plug. The ignition coil provides little resistance and it is difficult to test the switch with the coil, ground and oil switch wires connected to it.

LRI2500 Switch Test

Set VOM to ohms scale. Disconnect the wires from the switch. Check continuity between each of the switch connectors.

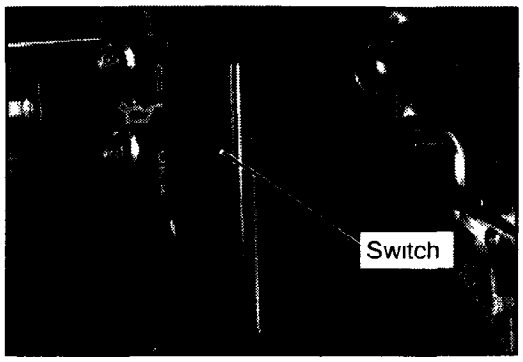


FIGURE 35

With the switch in the OFF position there should be continuity between each of the switch connectors
With the switch in the ON position there should be NO continuity between the middle connector and each of the outside connectors, and there should be continuity between the two outside connectors

LRI4400 and LRI5500 Switch Test

The ON/OFF switch is mounted in the engine blower housing. To test the switch the starting motor gear cover, air filter, fuel pump, and engine blower housing must be removed.
Remove blower housing. Set VOM to ohms scale. Disconnect the wires from the switch. Check continuity between each of the switch connectors

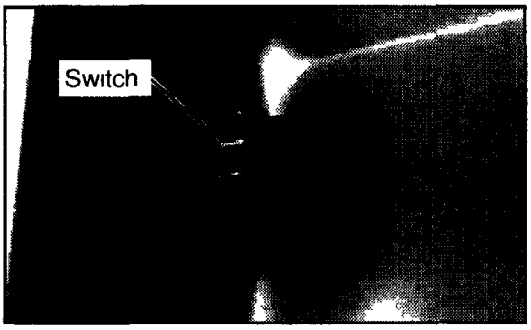


FIGURE 36

With the switch in the OFF position there should be continuity between each of the switch connectors.
With the switch in the ON position there should be NO continuity between the middle connector and each of the outside connectors, and there should be continuity between the two outside connectors

Starting Motor Switch Test

The starting motor switch is a momentary closed switch and must be depressed to check voltage or continuity.

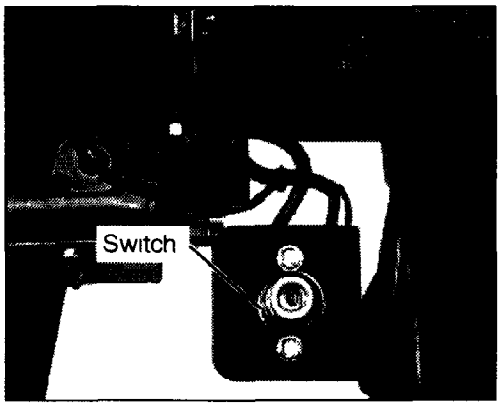


FIGURE 37

Set VOM to DC volts. Place leads on negative battery terminal and starting motor bolt. Depress switch and check for 12 volts. If voltage is not present, check switch for continuity. Disconnect battery cables. Disconnect charging wire connector. Check continuity between battery cable and starting motor cable. There should be NO continuity. Depress starting motor switch and check continuity. There should be continuity. Replace switch if continuity does not meet test standards.

Diode Test

The engine DC alternator provides DC current to charge the battery. The current flows through the diode to the battery. The diode prevents current flow from the battery to the alternator. Disconnect charging wire connector.

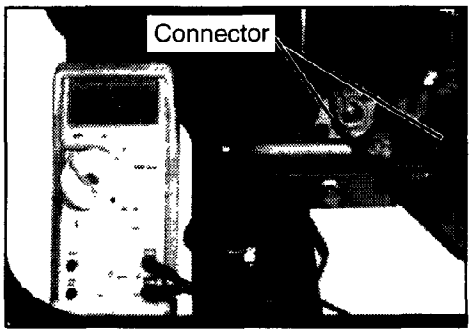


FIGURE 38

Set VOM to Diode Test position Check continuity between engine and charging wire connector Reverse leads and check continuity. There should be continuity in one direction only.

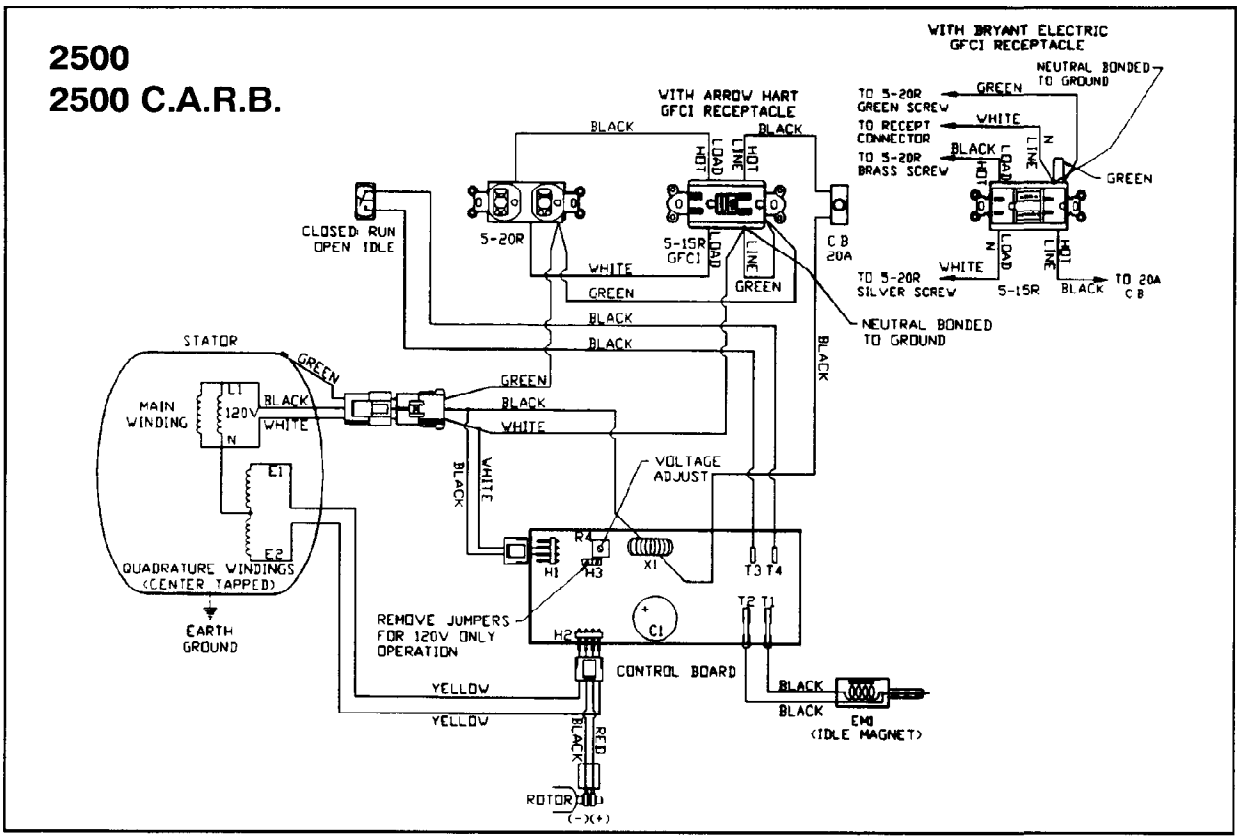
If continuity exists in both directions, replace diode If continuity does not exists in either direction the diode may be "open" or the lead wire may be disconnected Check charging wire lead connection to stator/regulator assembly. See Engine Service Manual. If diode is "open", replace diode.

SERVICE NOTE

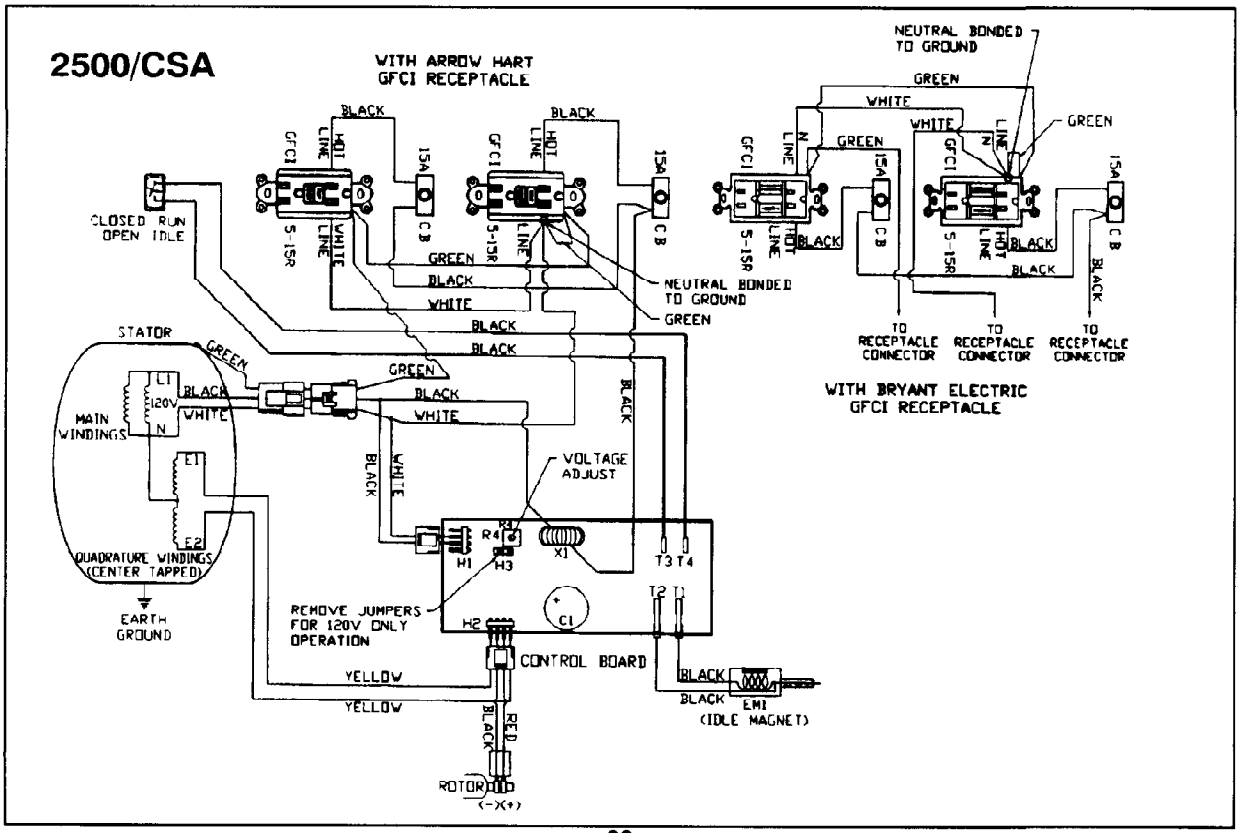
Service replacement diode harnesses are available. Use Rosin Core solder when installing new harness. Use shrink tubing or tape for all connections. Do NOT use crimp connectors

ELECTRICAL SCHEMATICS

2500
2500 C.A.R.B.

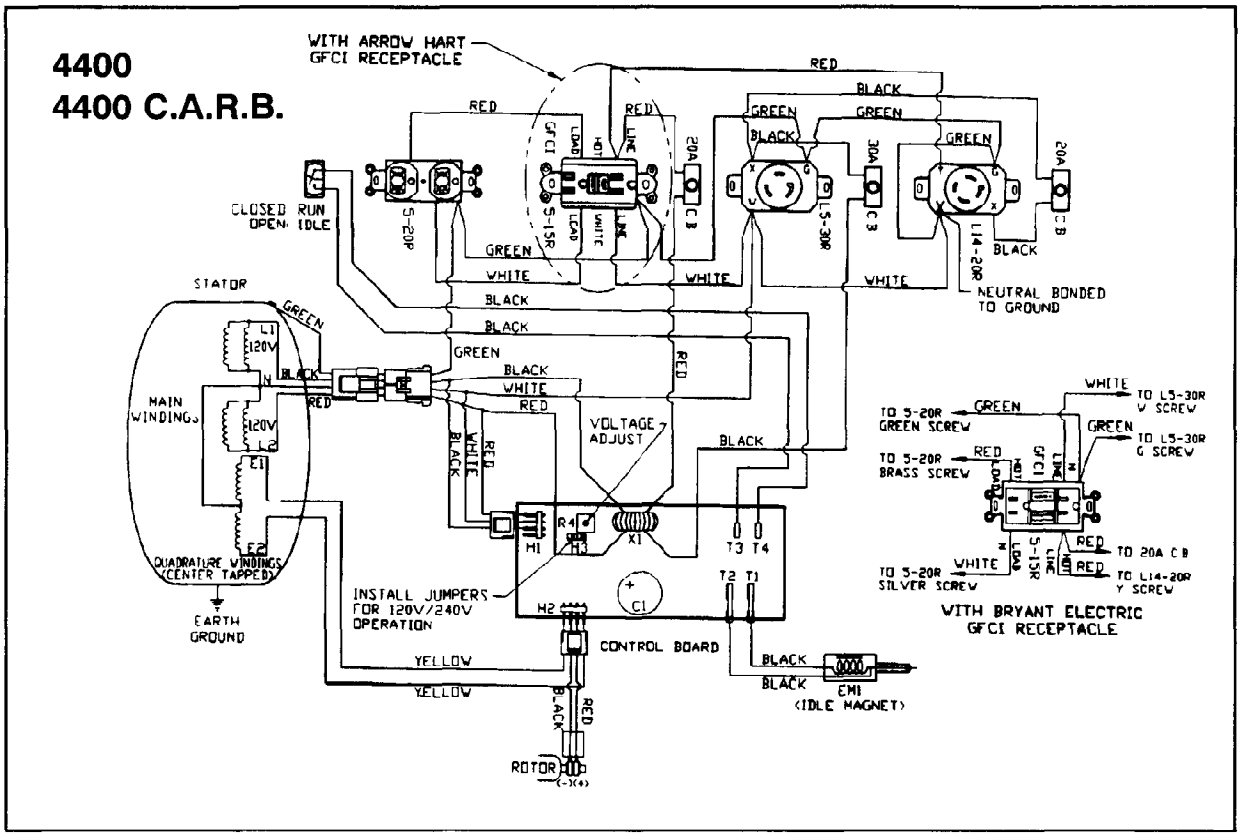


2500/CSA

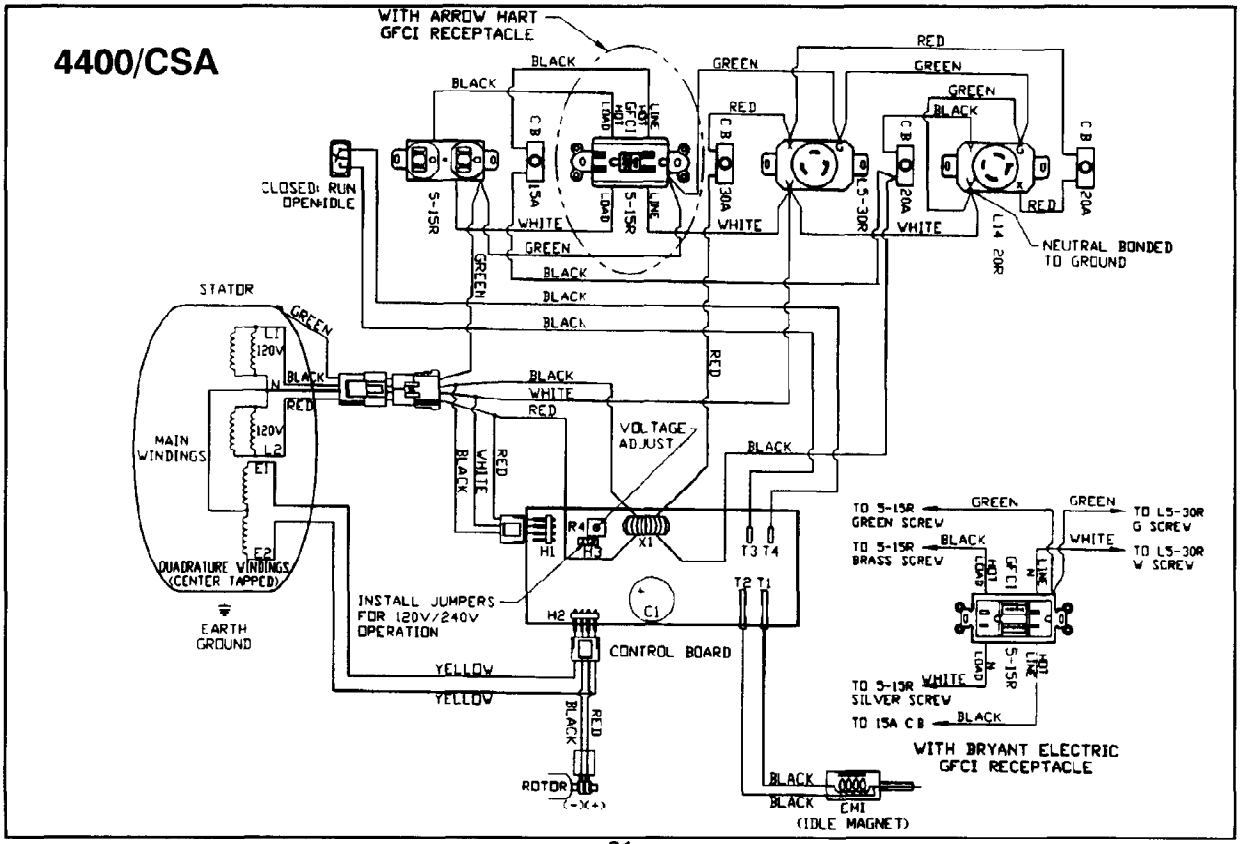


ELECTRICAL SCHEMATICS

4400
4400 C.A.R.B.

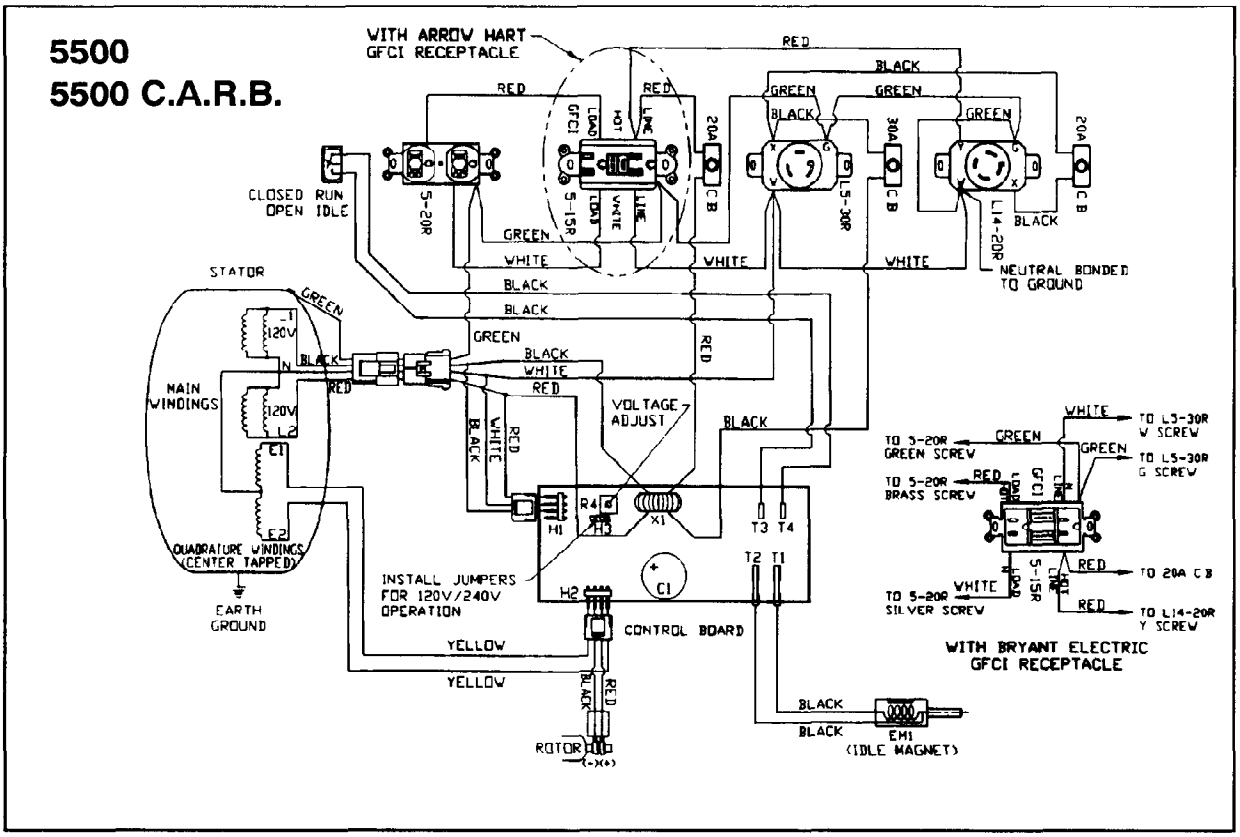


4400/CSA

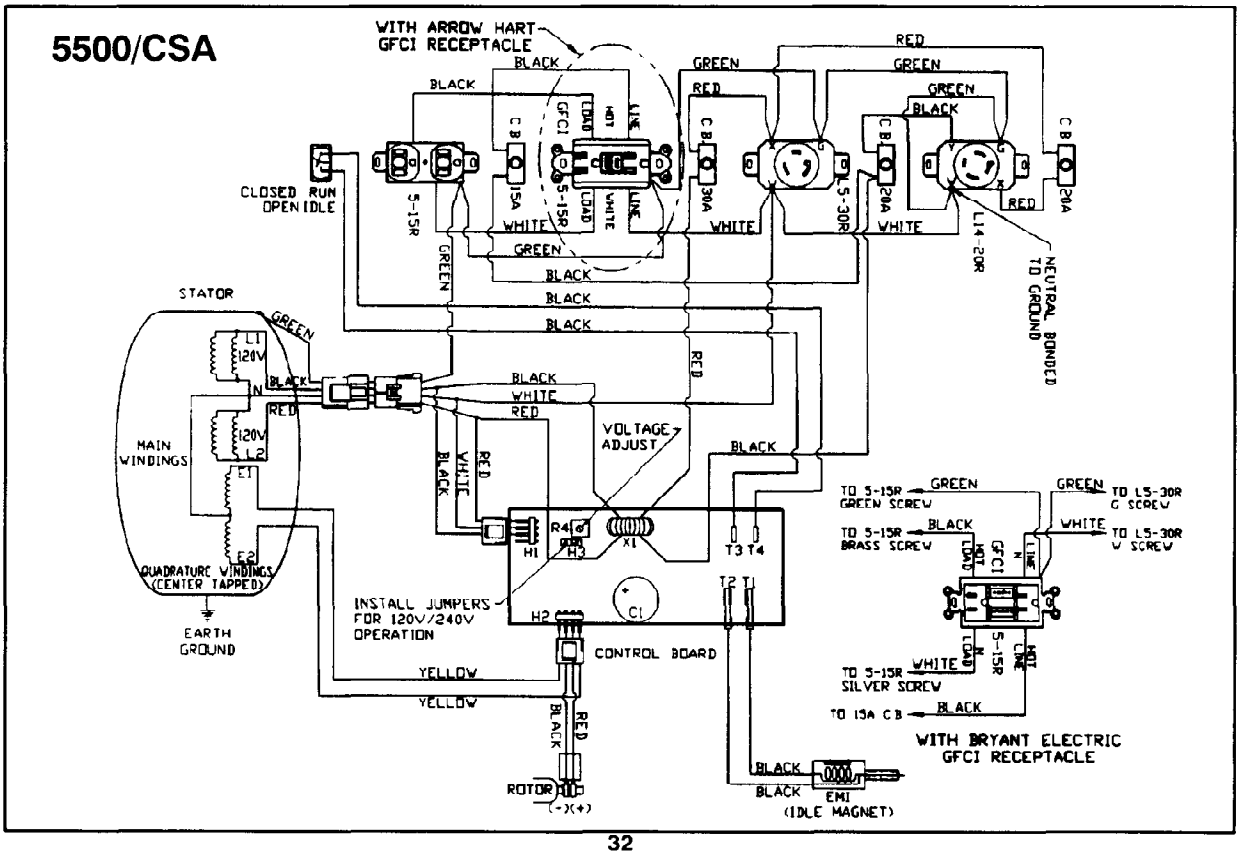


ELECTRICAL SCHEMATICS

5500
5500 C.A.R.B.



5500/CSA



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