



# SECTION IV–FUEL SYSTEM

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2. Air Cleaner .....	22

This section explains procedures unique to 1997 model S1 Lightnings. Any procedures not found in this supplement are covered in the [1996 S1 Lightning Service Manual](#) (Part No. 99490-96Y).

# NOTES



# REMOTE IDLE ADJUSTER

## GENERAL

See [Figure 16](#). The remote idle adjuster allows idle adjustments without use of tools. Idle speeds are listed in [Table 2](#).

## REMOVAL

1. Remove seat and fuel tank. See [FUEL TANK, REMOVAL](#) in Section 4 of the 1996 manual.
2. Remove cable strap holding adjuster to frame.
3. See [Figure 17](#). Unthread adjuster assembly from bracket (4). Remove spring (3) and washer (2).

### NOTE

If remote idle adjuster is permanently removed, install idle adjuster screw, spring and two washers. See the 1996 S1 LIGHTNING PARTS CATALOG (Part No. 99571-96Y).

## INSTALLATION

1. See [Figure 17](#). Thread remote adjuster (1), spring (3) and washer (2) into bracket (4). Adjuster shaft (5) must touch stop plate (6).
2. See [Figure 18](#). Secure adjuster to frame with a figure-8 cable strap.
  - a. Wrap cable strap around inside of frame, then up and through the slot.
  - b. Continue cable strap over adjuster.
  - c. Run cable strap through the other side of the slot. Strap should be tight enough that the adjuster turns easily.

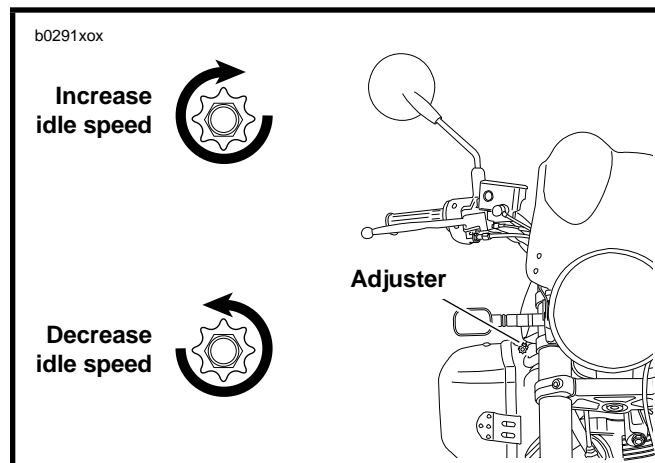
### WARNING

After installing seat, pull upward on front of seat to be sure it is locked in position. If seat is loose, it could shift during vehicle operation and startle the rider, causing loss of control and personal injury.

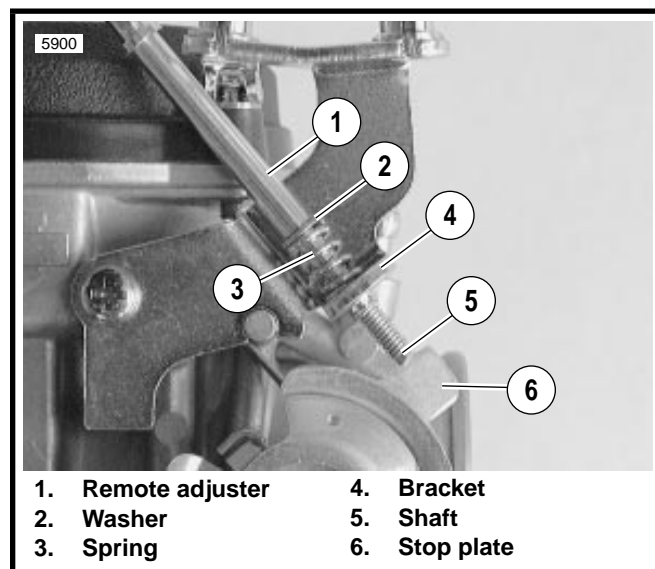
3. Install fuel tank and seat. See [FUEL TANK, INSTALLATION](#) in Section 4 of the 1996 manual.
4. Start vehicle and warm engine to normal operating temperature.
5. See [Figure 16](#). Set idle speed by turning adjuster. See [Table 2](#).
  - a. Turn clockwise to increase idle speed.
  - a. Turn counterclockwise to decrease idle speed.

**Table 2. Engine Idle Speed**

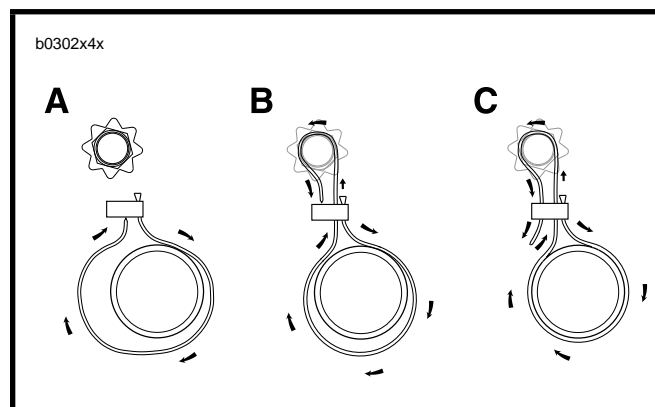
MODEL	REGULAR IDLE	FAST IDLE
World Model	950-1050 RPM	2000 RPM
California	1150-1250 RPM	



**Figure 16. Idle Speed Adjuster**



**Figure 17. Removal/Installation**



**Figure 18. Cable Strap**

# AIR CLEANER

## MODEL YEAR CHANGE

All 1997 model year motorcycles use a modified air cleaner assembly. The new design increases serviceability.

## REMOVAL

### CAUTION

**Do not run engine without filter element in place. Debris could be drawn into the engine causing damage.**

1. See [Figure 19](#). Remove screw and nylon washer (1) on top of air cleaner cover.
2. Remove screw and locknut (2) at rear of air cleaner cover.
3. See [Figure 20](#). Remove cover (3) with attached filter box (2) and filter (1).
4. See [Figure 21](#). Remove backplate hoses.
  - a. Detach rear breather hose (4) from tee fitting (3).
  - b. Detach snorkel breather hose (2) at snorkel (1).
  - c. Remove hoses (2, 5) and tee fitting (3) from front breather bolt (6).
  - d. On California models, slide fresh air hose from canister through backplate.
5. See [Figure 22](#). Remove two screws and snorkel plate.
6. Remove snorkel.
7. See [Figure 23](#). Remove screw with spacer and gasket.
8. Remove backplate.
  - a. See [Figure 24](#). Remove two bolts (1), washers (2) and nuts (3).
  - b. Draw rear breather hose through backplate.
  - c. Remove front breather bolt. Detach backplate from motorcycle.
9. If necessary, remove air cleaner support ring.
  - a. Detach breather hose from rear cylinder head breather bolt.
  - b. Loosen rear bolt.
  - c. Slide air cleaner support ring upward and remove.

### NOTE

*Air cleaner support ring fits around breather bolts. Fitting on rear breather bolt may not clear the frame if bolt removal is attempted. Do not remove rear breather bolt unless absolutely necessary.*

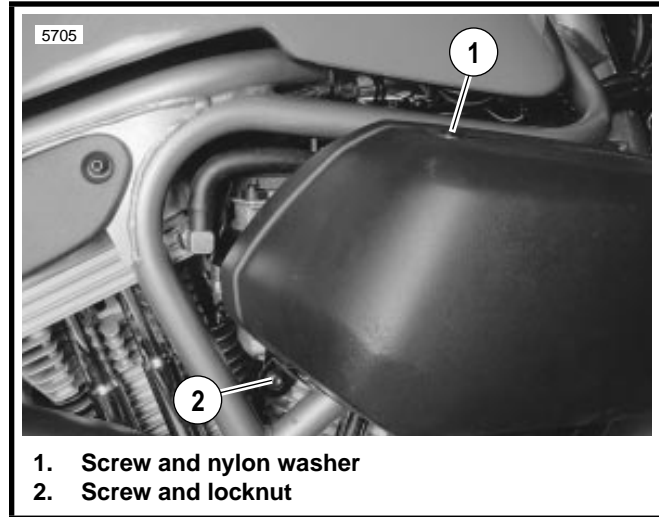


Figure 19. Air Cleaner Cover

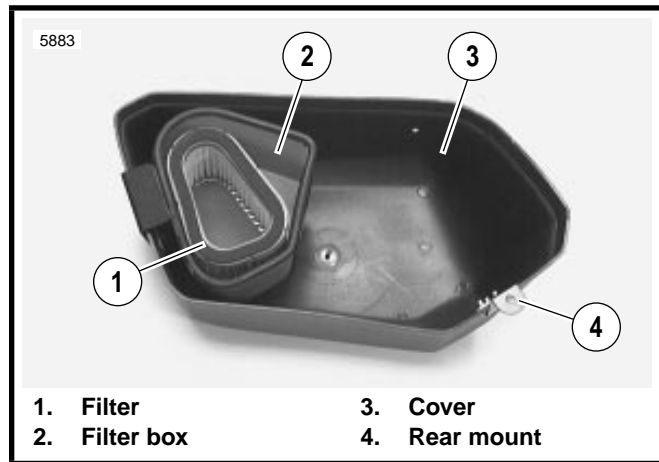


Figure 20. Inside of Air Cleaner Cover

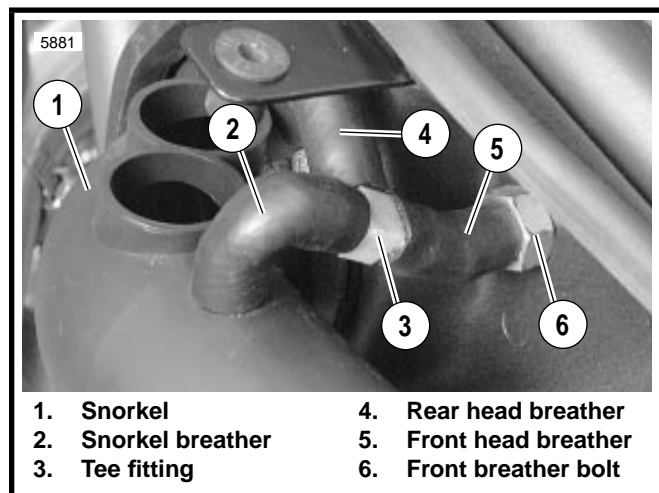


Figure 21. Breather Hoses

# INSTALLATION

1. Install backplate.
  - a. Apply HYLOMAR to threads of breather bolts.
  - b. Install air cleaner support ring and backplate using breather bolts. Tighten breather bolts to 10-15 ft-lbs (13.6-20.3 Nm).
  - c. Attach rear breather hose to rear breather bolt.
  - d. See [Figure 24](#). Install two bolts (1), washers (2) and nuts (3) through backplate into isolator mount.
2. See [Figure 21](#). Install breather hoses.
  - a. Slide rear breather hose through backplate.
  - b. Attach front breather hose (5, with attached tee and snorkel breather hose) to front breather bolt (6).
  - c. Connect rear breather hose (4) to tee fitting (3).
  - d. On California models, insert fresh air hose from canister through backplate.
3. See [Figure 23](#). Apply LOCTITE THREADLOCKER 242 (blue) to screw. Install ring with screw through backplate. Tighten to 7-9 ft-lbs (9.5-12.2 Nm).
4. See [Figure 22](#). Apply LOCTITE THREADLOCKER 242 (blue) to screws. Fasten snorkel tube with ring and two screws. Tighten to 6-8 ft-lbs (8.1-10.8 Nm).
5. Connect snorkel hose to snorkel tube.
6. See [Figure 20](#). Check air cleaner filter. Place filter inside filter box. Place cover assembly over backplate.
7. See [Figure 19](#). Install screw and washer into top well nut.
8. Install screw and locknut at rear mount. Tighten to 6-8 ft-lbs (8.1-10.8 Nm).

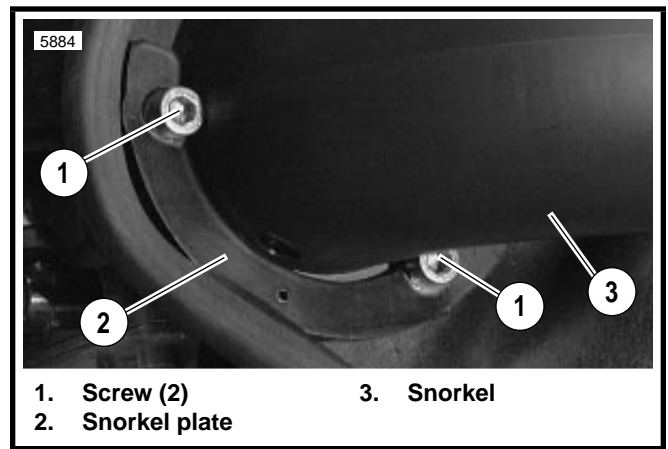


Figure 22. Snorkel Ring

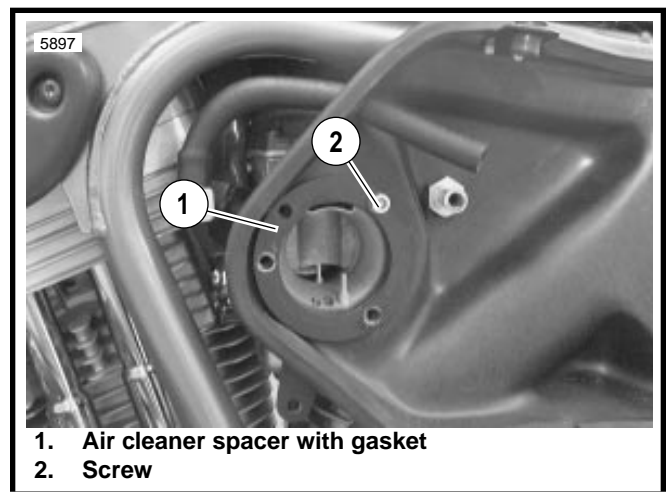


Figure 23. Air Cleaner Spacer

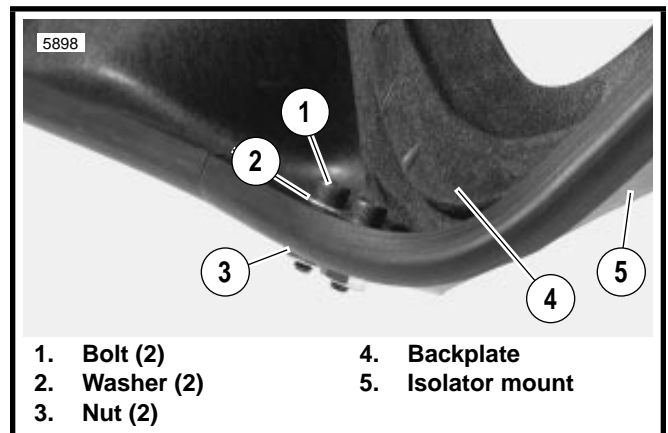


Figure 24. Front Isolator Mount Attachment

# NOTES





# SECTION V—ELECTRIC STARTER

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This section explains procedures unique to 1997 model S1 Lightnings. Any procedures not found in this supplement are covered in the [1996 S1 Lightning Service Manual](#) (Part No. 99490-96Y).

# NOTES





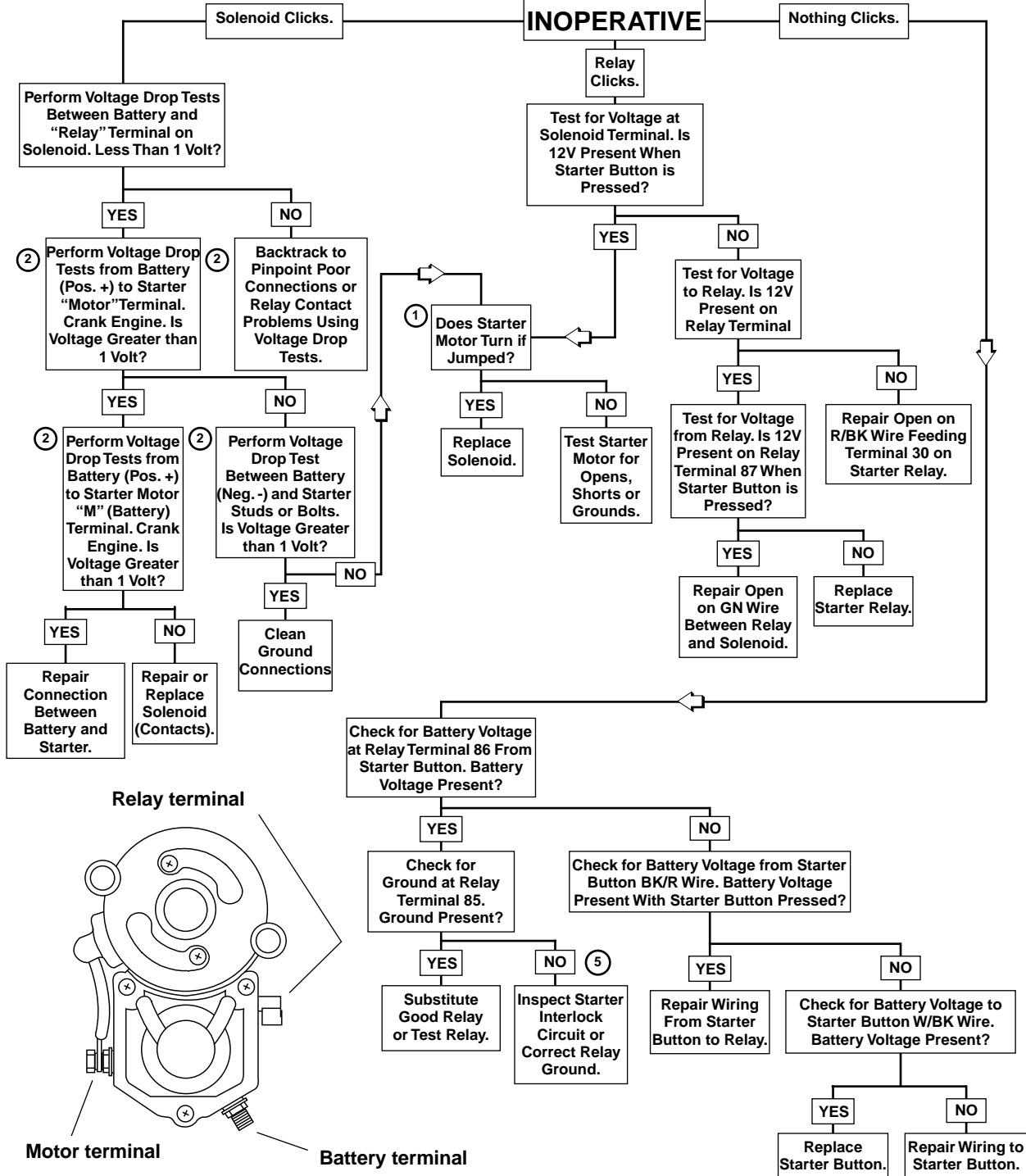
# STARTING SYSTEM DIAGNOSIS



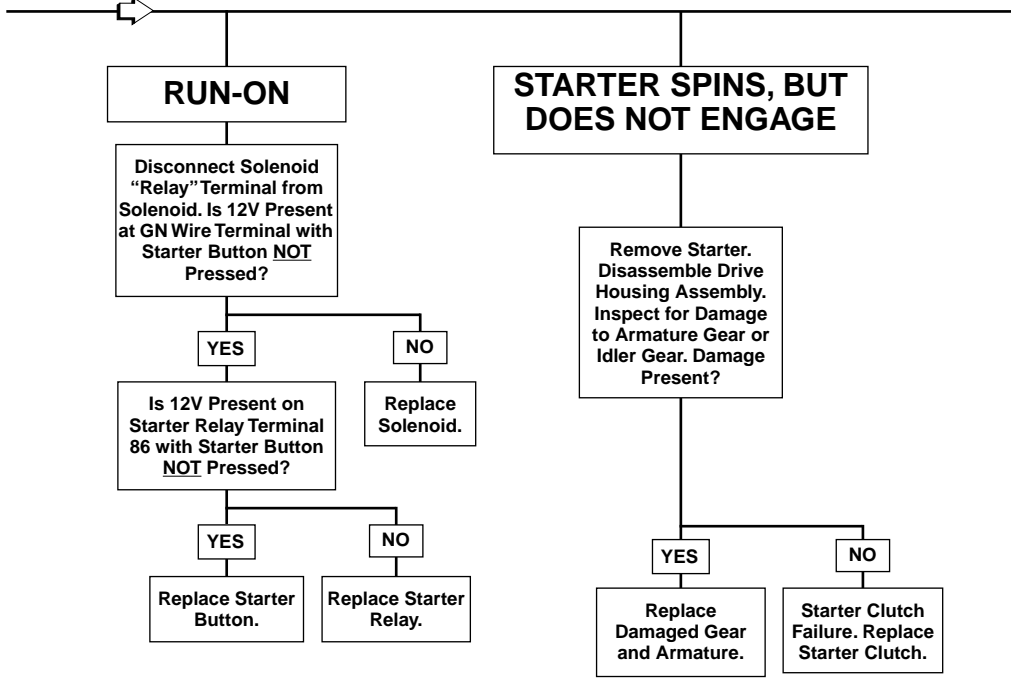
— BATTERY TESTS —  
 ● VISUAL ● VOLTAGE ● LOAD

Check Connections at Battery and Starter Components.

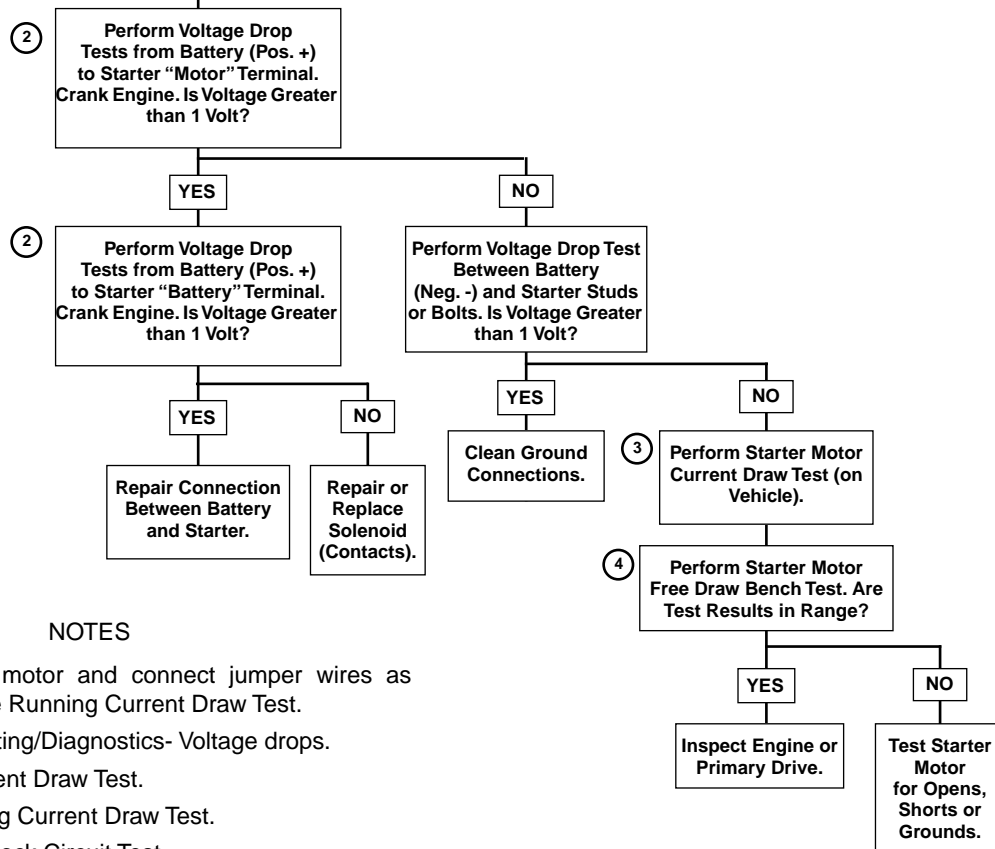
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Previous Page



**STARTER STALLS OR SPINS TOO SLOWLY**



**NOTES**

- ① Remove starter motor and connect jumper wires as described in Free Running Current Draw Test.
- ② See Troubleshooting/Diagnostics- Voltage drops.
- ③ See Starter Current Draw Test.
- ④ See Free Running Current Draw Test.
- ⑤ See Starter Interlock Circuit Test



## SECTION VI-DRIVE/TRANSMISSION

All drive/transmission procedures in the [1996 S1 Lightning Service Manual](#) (Part No. 99490-96Y) apply to 1997 models.

# NOTES





# SECTION VII-ELECTRICAL

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This section explains procedures unique to 1997 model S1 Lightnings. Any procedures not found in this supplement are covered in the [1996 S1 Lightning Service Manual](#) (Part No. 99490-96Y).

# NOTES



# HANDLEBAR SWITCHES

## MODEL YEAR CHANGE

All 1997 model year motorcycles use new handlebar switches. The switches feature new icons, connectors and a different pin numbering sequence.

### NOTE

All **HANDLEBAR SWITCHES, REMOVAL** and **HANDLEBAR SWITCHES, INSTALLATION** procedures remain the same. The new switch assemblies are interchangeable between 1996 and 1997 models if the corresponding connector on the wiring harness is changed.

See **WIRING HARNESS** on page 37 for more information.

## Right Handlebar Switch

See Figure 25. The right handlebar switch [P1] contains:

- Engine stop switch (ignition ON or OFF)
- Electric starter switch

## Left Handlebar Switch

See Figure 26. The left handlebar switch [P6] contains:

- Passing lamp switch
- Headlamp dimmer switch (headlamp HIGH or LOW beam)
- Turn signal switch
- Horn switch

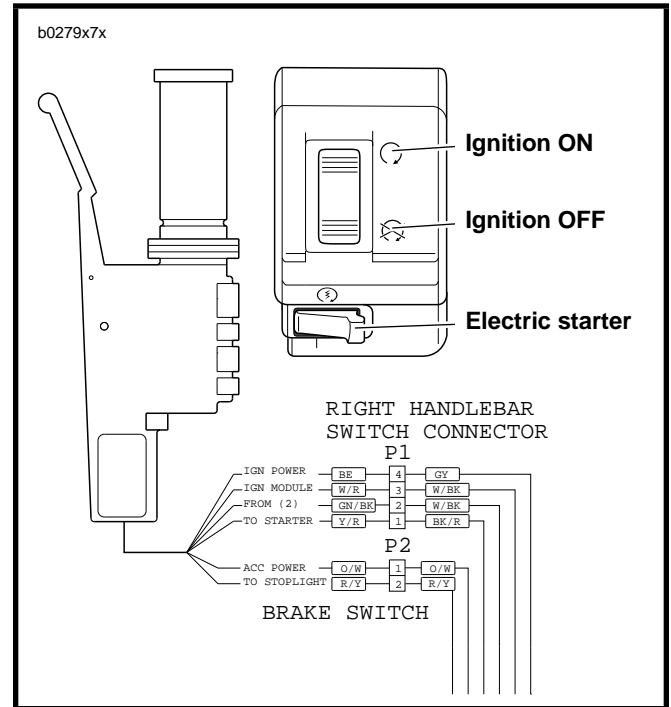


Figure 25. Right Handlebar Switch [P1]

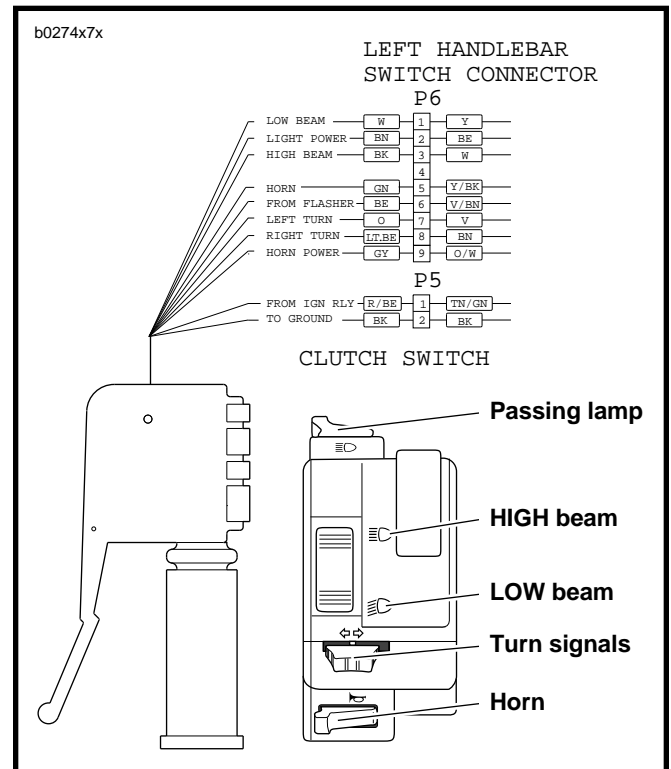


Figure 26. Left Handlebar Switch [P6]

# STARTER INTERLOCK SYSTEM

## INSPECTION

NOTE

The starter interlock system is designed to prevent unintended start-up and/or forward motion of the motorcycle with the vehicle's side stand not retracted. Use the following two tests to check the system for proper operation.

The **STARTER CIRCUIT** and **IGNITION CIRCUIT** tests should be performed in one continuous operation. Conduct both tests one after the other in the sequence given without interruption

### Starter Circuit

Raise rear wheel off floor using **REAR WHEEL SUPPORT STAND (Part No. B-41174)**.

Remove GN wire from starter motor.

Connect a test light or voltmeter to the vehicle in series.

- Attach one end to starter wire terminal.
- Attach the other end to vehicle ground.

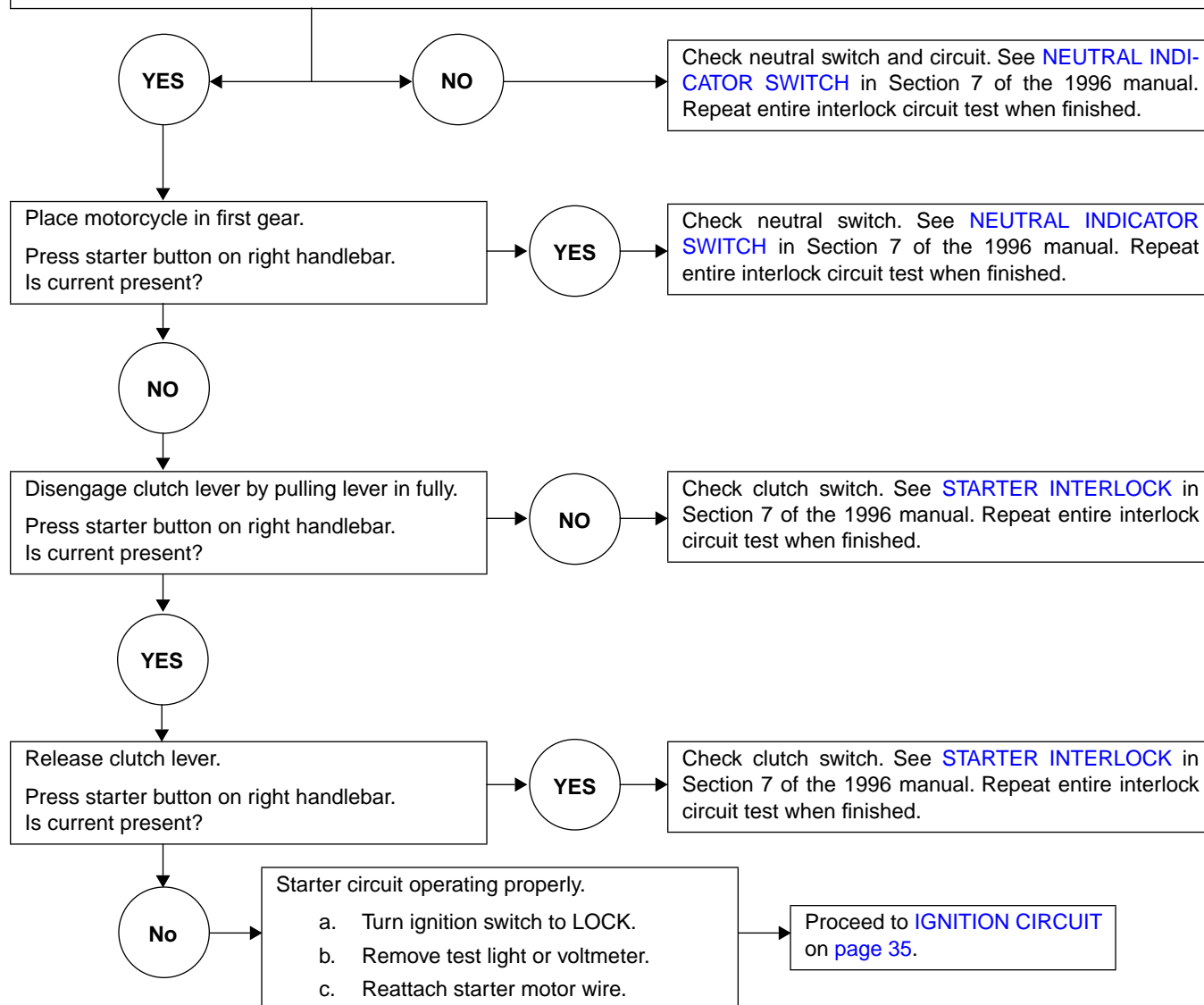
Set engine stop switch to RUN.

Turn ignition switch to IGN.

Place motorcycle in neutral.

Press starter button on right handlebar.

Is current present? (Current is present if test light illuminates or if voltmeter shows  $12\text{ VDC} \pm 1.0\text{ VDC}$ .)







## Ignition Circuit

Remove W/BK wire from ignition coil.

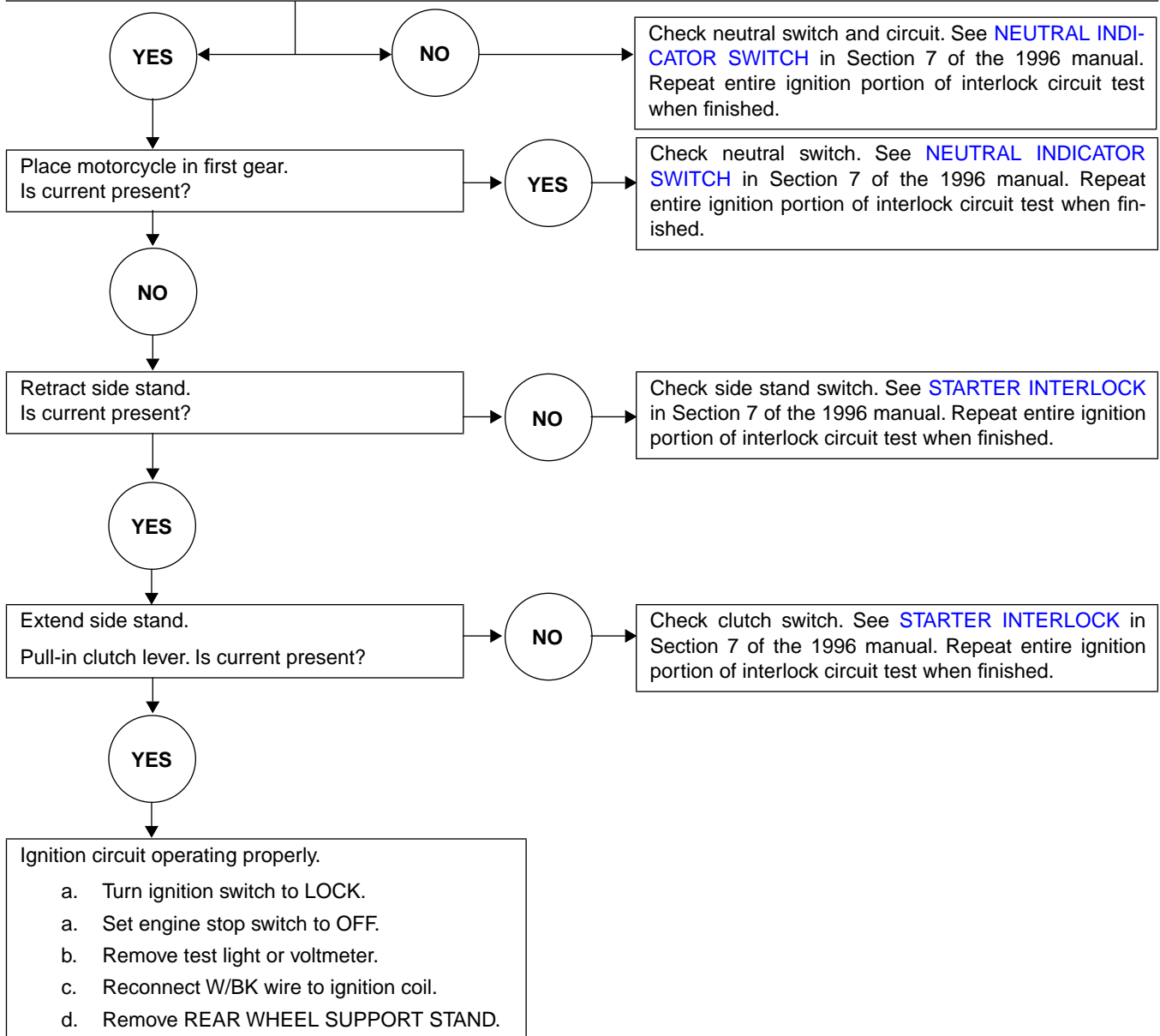
Connect a test light or voltmeter to the vehicle.

- a. Attach one end to W/BK wire terminal.
- b. Attach the other end to vehicle ground.

Turn ignition switch to IGN.

Set engine stop switch to RUN.

Place motorcycle in neutral. Is current present?



# HORN

## MODEL YEAR CHANGE

See [Figure 27](#). All 1997 model year motorcycles have a new horn in a new location.

### NOTE

For troubleshooting information, see [HORN, TROUBLESHOOTING](#) in Section 7 in the 1996 manual.

## REMOVAL

1. Remove seat and fuel tank. See [FUEL TANK, REMOVAL](#) in Section 4 of the 1996 manual.
2. See [Figure 28](#). Detach horn wires.
  - a. Disconnect Y/BK power wire (5).
  - b. Disconnect BK ground wire (6).
3. Remove bolt (1), lockwasher (2) and washer (3) to detach horn and bracket from frame.

## INSTALLATION

1. See [Figure 28](#). Attach horn assembly to frame using bolt (1), lockwasher (2) and washer (3).
2. Connect horn wires.
  - a. Attach Y/BK power wire (5).
  - b. Attach BK ground wire (6).

### WARNING

After installing seat, pull upward on front of seat to be sure it is locked in position. If seat is loose, it could shift during vehicle operation and startle the rider, causing loss of control and personal injury.

3. Install fuel tank and seat. See [FUEL TANK, INSTALLATION](#) in Section 4 of the 1996 manual.

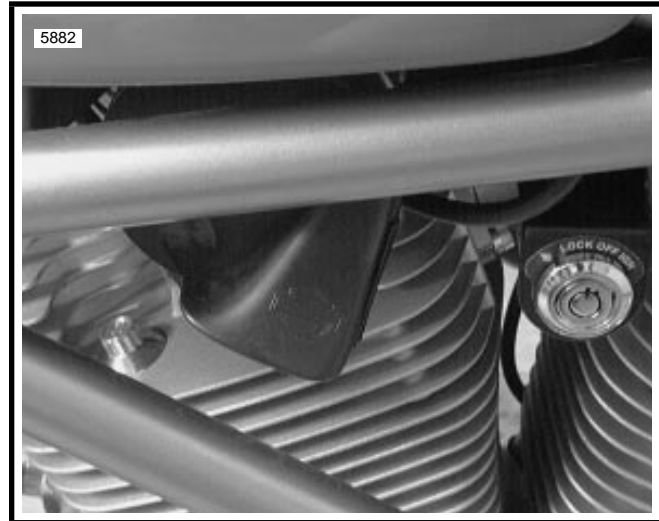


Figure 27. Horn Location

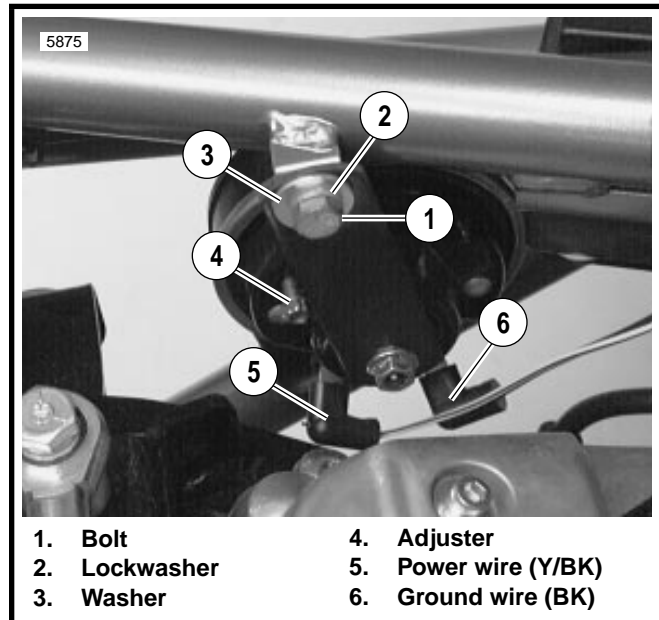


Figure 28. Horn Attachment

# WIRING HARNESS

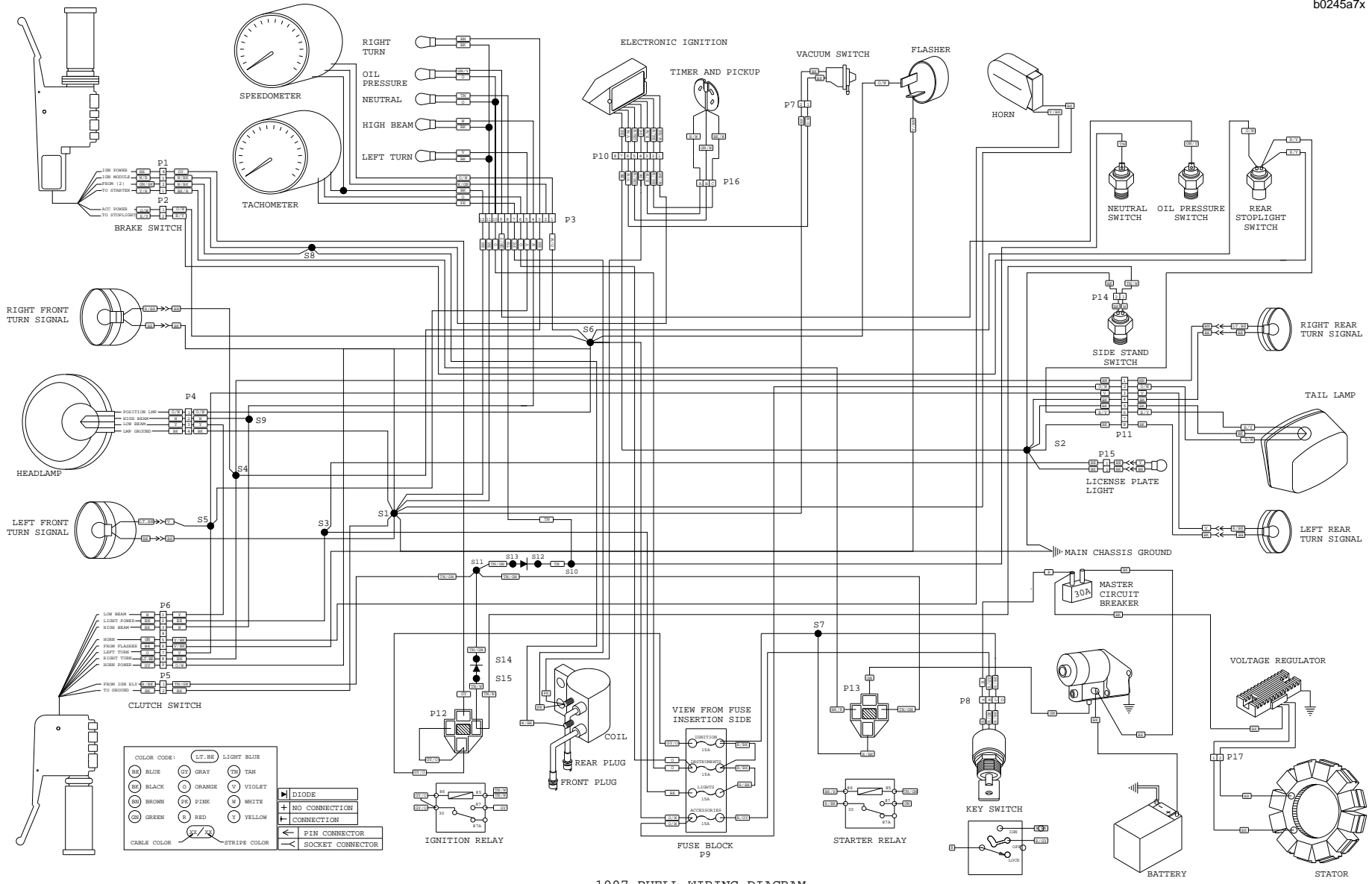
## MODEL YEAR CHANGE

The following changes were made to the wiring harness for 1997 model year motorcycles.

- New connectors and a different pin numbering sequence for the right handlebar switch [P1] and the left handlebar switch [P6]. See [HANDLEBAR SWITCHES](#) on [page 33](#).
- Longer wires leading to the horn to accommodate the new mounting position.

**Table 3. Electrical Connectors**

CONNECTOR NUMBER	DESCRIPTION	COMPONENT(S)
[P1]	4-place connector	right handlebar switch housing-ignition power, module and starter
[P2]	2-place Amp Multilock	front brake switch
[P3]	12-place Amp Multilock	instruments and indicator lamps
[P4]	4-place Amp Multilock	headlamp
[P5]	2-place Amp Multilock	clutch switch
[P6]	8-place connector	left handlebar switch housing-horn, turn signals, lights
[P7]	2-place Deutsch	vacuum-operated electric switch
[P8]	4-place PED	ignition/headlamp switch
[P9]	4-slot fuse block	four 15 amp fuses-ignition, instruments, lights and accessories
[P10]	8-place Deutsch	ignition module
[P11]	8-place Amp Multilock	tail lamp and rear turn signals
[P12]	4-place relay	ignition relay
[P13]	4-place relay	starter relay
[P14]	2-place Amp Multilock	side stand switch
[P15]	2-place Amp Multilock	license plate light
[P16]	3-place Deutsch	timer and pickup
[P17]	2-place plug	voltage regulator



1997 BUELL WIRING DIAGRAM

Figure 29. 1997 Wiring Diagram

