

FLHX, FLHT/C/U, FLTR

REMOVAL

1. Remove maxi-fuse. See Section 8.3 SYSTEM FUSES, MAXI-FUSE, REMOVAL.
2. Remove the ignition switch knob as follows:
 - a. Insert the ignition switch key and turn to the UNLOCK position. Leave the key installed in the ignition switch knob.
 - b. Turn the front forks to the left fork stop and rotate the knob to FORK LOCK.
 - c. Depressing the release button at bottom (left side) with a small screwdriver, push key down and turn 60 degrees in a counterclockwise direction. See Figure 8-71.

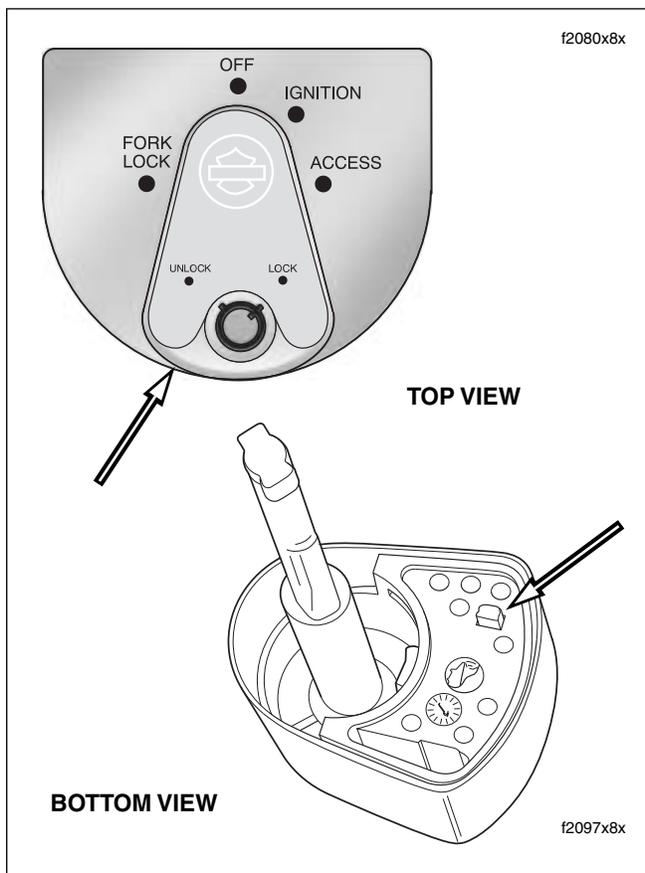


Figure 8-71. Ignition Switch Knob Release Button

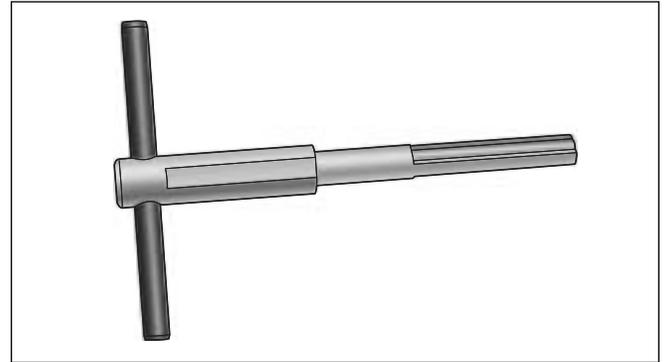


Figure 8-72. Ignition Switch Alignment Tool (Part No. HD-45962)

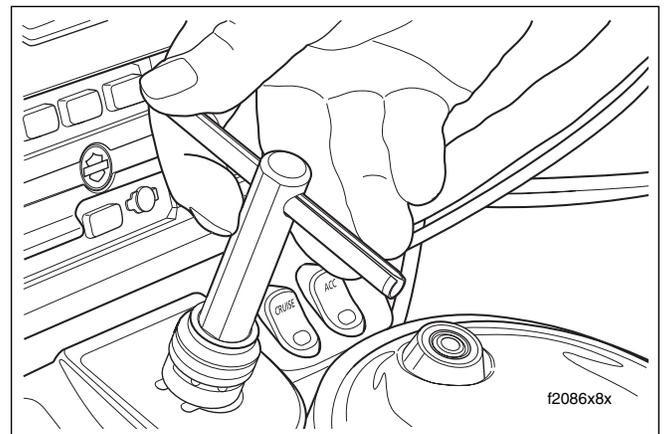


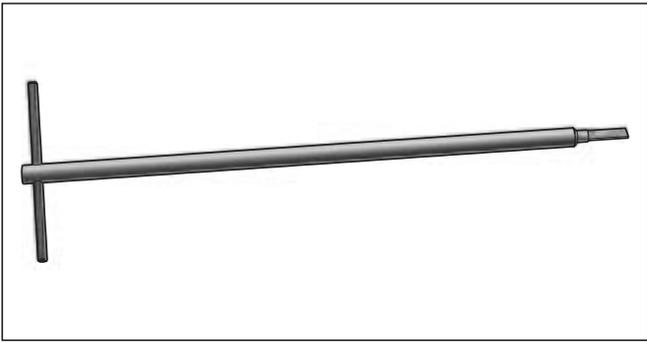
Figure 8-73. Bottom Alignment Tool in Threaded Post and Rotate to Desired Position

- d. Lift and remove knob. Be aware that spring will drop out of bore at underside of knob when removed.

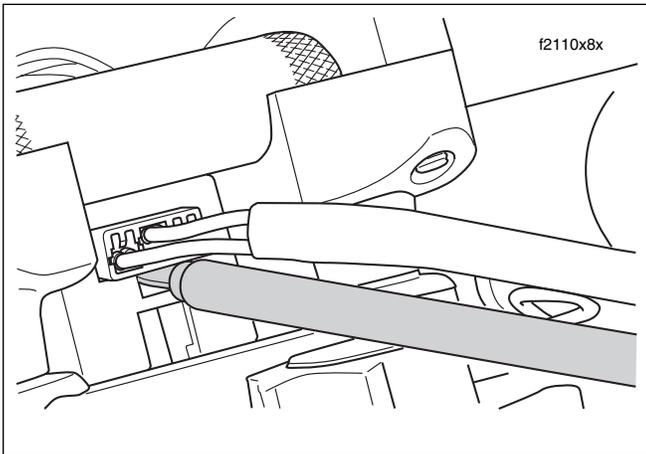
NOTE

After removal of the knob, the IGNITION SWITCH ALIGNMENT TOOL (HD-45962) may be used to move the switch to other positions as required. Insert tool until bottom of handle contacts top of threaded post, and then rotate handle in a clockwise direction to the selected position. See Figure 8-73.

3. Turn the front forks to the right fork stop, and using a 7/8 inch open end/box wrench on flats, remove nut from threaded post of ignition switch housing.
4. Pull collar and spacer from threaded post.
5. Remove the switch position plate by pulling tabs from slots in fairing cap (FLHX, FLHT/C/U) or instrument nacelle (FLTR).
6. Proceed as follows:



**Figure 8-74. Ignition Switch Connector Remover
(Part No. HD-45961)**



**Figure 8-75. Pull Main Harness Conduit and Tool
to Release Socket Housing**

FLHX, FLHT/C/U:

- Remove outer fairing. See Section 2.30 UPPER FAIRING/WINDSHIELD (FLHX, FLHT/C/U), OUTER FAIRING/WINDSHIELD, REMOVAL, step 2.
- Using a long shank ball end socket (Snap-on® FABL6E), remove four socket head screws to release radio (storage box on FLHT) from left and right radio support brackets. Use oblong holes in fairing brackets to access screws. Lift radio slightly.
- Carefully cut anchored cable strap to release main harness conduit from bottom right corner of radio.
- Remove fairing cap. See Section 2.30 UPPER FAIRING/WINDSHIELD (FLHX, FLHT/C/U), FAIRING CAP, REMOVAL, steps 2-4.

FLTR:

- Remove instrument nacelle. See Section 2.31 UPPER FAIRING/WINDSHIELD (FLTR), INSTRUMENT NACELLE, REMOVAL, steps 2-9.
7. Disconnect ignition switch connector [33], 3-place Packard, at front of ignition switch housing. Proceed as follows:

- Obtain the IGNITION SWITCH CONNECTOR REMOVER (HD-45961). See Figure 8-74.
- Gently insert end of tool into slot in ignition switch housing until it stops.
- Grasping main harness conduit and tool, pull both at the same time to release socket housing from ignition switch housing. See Figure 8-75.

8. Proceed as follows:

Domestic: Remove two socket head screws (with flat washers) at base of ignition switch housing.

International: Remove two break-away screws (with flat washers) as follows.

- Use a center punch to make a pilot hole at the top of each break-away screw.

WARNING

Always wear proper eye protection when drilling. Flying debris may result in eye injury.

- Install a 1/8 inch left handed bit in drill and set the drill to Reverse. Positioning the bit in the pilot hole, spin out the break-away screws.

NOTE

If the above method fails, use a 3/16 inch bit with long shank to carefully drill off heads of break-away screws. Use a pliers to unthread the shafts from the upper fork bracket.

- Remove ignition switch housing from bore of upper fork bracket. See Figure 8-76.

INSTALLATION

- Slide base of ignition switch housing into bore of upper fork bracket.
- Proceed as follows:

Domestic: Install two socket head screws (with flat washers) at base of ignition switch housing. Alternately tighten screws to 36-60 **in-lbs** (4.1-6.8 Nm).

International: Install two **new** break-away screws (with flat washers) as follows.

CAUTION

Verify that the threads in the upper fork bracket are clean and in good condition. Dirty and/or damaged threads may cause the heads of the break-away screws to snap off before the switch housing is properly tightened.

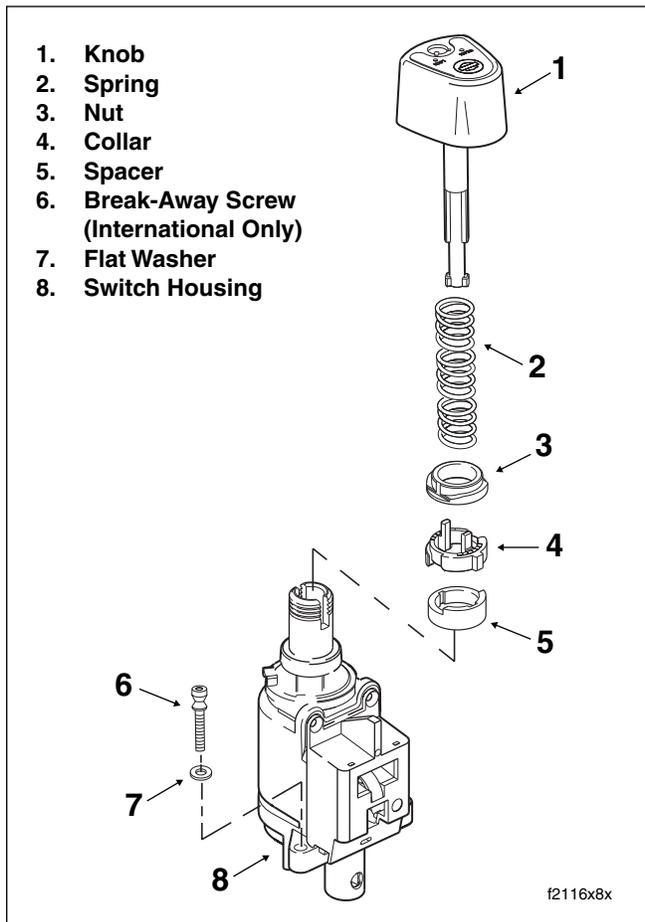


Figure 8-76. Ignition Switch Assembly (International)

CAUTION

Exercise care to avoid losing heads of break-away screws in motorcycle. Vibration may cause captured heads to scratch finished surfaces, chafe wires or cause other damage.

- a. Rotate break-away screws in a clockwise direction until heads snap off.
3. Install ignition switch connector [33], 3-place Packard, at front of ignition switch housing.
4. Install anchor of **new** cable strap in hole at bottom right side of radio. Tighten cable strap capturing main harness conduit (to ignition switch). Cut any excess cable strap material.
5. Proceed as follows:

FLHX, FLHT/C/U:

- a. Install fairing cap. See Section 2.30 [UPPER FAIRING/WINDSHIELD \(FLHX, FLHT/C/U\)](#), [FAIRING CAP, INSTALLATION](#), steps 1-4.

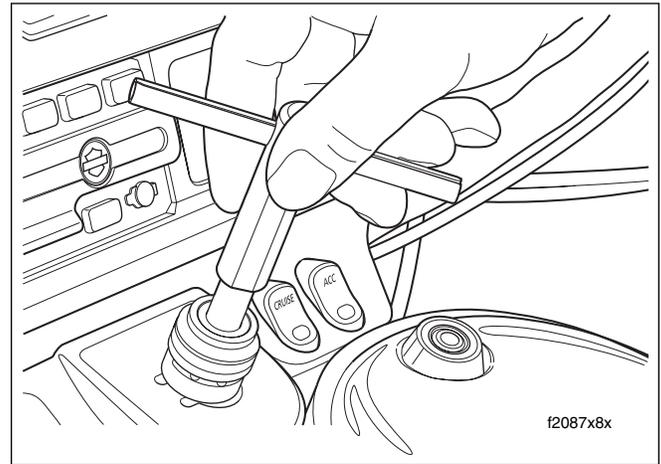


Figure 8-77. Rotate Alignment Tool Without Bottoming

- b. Using oblong holes in fairing brackets and a long shank ball end socket (Snap-on® FABL6E), install four socket head screws to fasten radio (storage box on FLHT) to left and right radio support brackets. Alternately tighten screws to 35-45 **in-lbs** (4.0-5.1 Nm).
- c. Install outer fairing. See Section 2.30 [UPPER FAIRING/WINDSHIELD \(FLHX, FLHT/C/U\)](#), [OUTER FAIRING/WINDSHIELD, INSTALLATION](#), step 1.

FLTR:

- a. Install instrument nacelle. See Section 2.31 [UPPER FAIRING/WINDSHIELD \(FLTR\)](#), [INSTRUMENT NACELLE, INSTALLATION](#), steps 1-10.
6. Install switch position plate fitting tabs in slots of fairing cap (FLHX, FLHT/C/U) or instrument nacelle (FLTR). Plate snaps in place when properly installed. Exercise care to avoid breaking tabs. Replace plate if tabs are broken.
7. Install spacer over threaded post of ignition switch housing until it contacts switch position plate. Orient spacer so that the widest side is forward and the inside tabs fit in slots of post. See [Figure 8-76](#).
8. Slide collar over threaded post until it contacts spacer. Orient collar so that the outside tab is forward and the inside tabs fit in slots of post.
9. Thread nut onto post with the lipped side down and the smaller OD topside. Turn the front forks to the right fork stop, and using a 7/8 inch Open End Crow Foot on flats, tighten nut to 125-150 **in-lbs** (14.1-16.9 Nm).
10. Install spring into bore at underside of knob.
11. With the knob pointing toward the FORK LOCK position, insert shaft into threaded post. Holding the knob down, turn key clockwise to UNLOCK. An audible “click” should be heard when knob and switch are properly engaged. Release knob and then rotate through all four switch positions to verify proper operation.

If knob will not install properly, move to step 12.

12. Proceed as follows:
 - a. Verify that button at bottom of knob is depressed and key is turned 60 degrees beyond the UNLOCK position. See [Figure 8-71](#).
 - b. Repeat step 11.
 - c. If knob does not install properly, move to step 13.
13. Knob was removed in ACCESS or switch may have been moved out of the FORK LOCK position. Proceed as follows:
 - a. Insert alignment tool until bottom of handle contacts top of threaded post, and holding front forks at the left fork stop, rotate handle of tool in a counter-clockwise direction until fork locks. See [Figure 8-73](#).
 - b. Remove tool and repeat step 11.
 - c. If knob does not install properly, move to step 14.
14. Detent and switch position lugs are misaligned. This can occur when the alignment tool (or ignition switch knob) is rotated before it is properly bottomed in the ignition switch housing. Proceed as follows:
 - a. Reinstall knob inserting shaft into threaded post and gently rotate knob until it drops into the partially installed position. Take note of the position of the knob, that is, whether it is pointing toward the rear, or to ACCESS, IGNITION or OFF.
 - b. Remove knob and insert alignment tool so that the bottom of the handle is approximately 1/2-3/4 inch (12.7-19.1 mm) from the top of the threaded post, and then hold. See [Figure 8-77](#).
 - c. Rotate alignment tool in a counter-clockwise direction the number of positions needed to get to FORK LOCK. For example, if the knob dropped into the partially installed position at IGNITION in step 14(a), rotate the alignment tool two positions in a counterclockwise direction. Or if the knob was pointing toward the rear when it dropped, rotate the alignment tool four positions in a counterclockwise direction or one position in a clockwise direction. Repeat step 11.
15. Install maxi-fuse. See [Section 8.3 SYSTEM FUSES, MAXI-FUSE, INSTALLATION](#).

FLHR/C/S

IGNITION/LIGHT KEY SWITCH

Removal

1. Remove seat. See [Section 2.25 SEAT, REMOVAL](#).

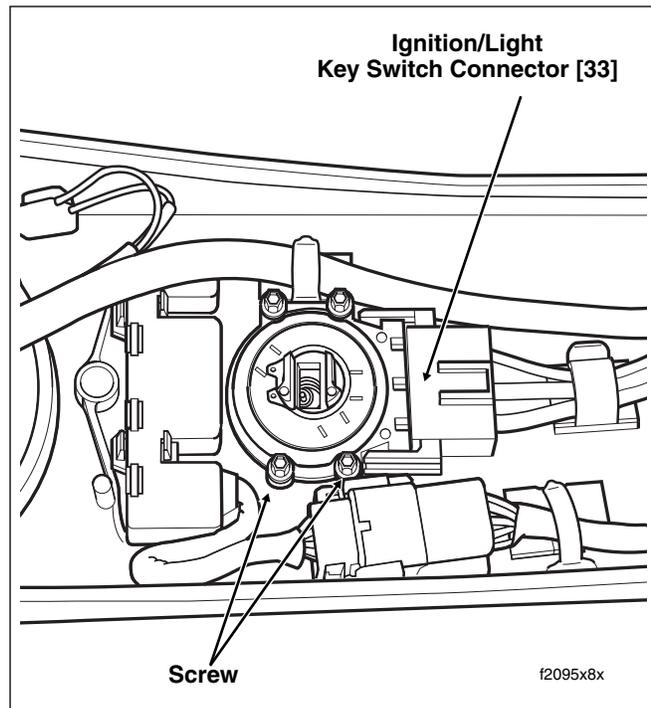


Figure 8-78. Instrument Console (FLHR/C)

WARNING

To protect against shock and accidental start-up of vehicle, disconnect the negative battery cable before proceeding. Inadequate safety precautions could result in death or serious injury.

2. Unthread bolt and remove battery negative cable (black) from battery negative (-) terminal.
3. Remove acorn nut from instrument console. If present, also remove Phillips screw and large flat washer (absent on FLHRS models).
4. On FLHRS models only, remove bolt (with flat washer) to free rear of fuel tank from frame backbone. Removal of rear bolt also releases instrument console bracket.
5. Raise instrument console and bend back flexible clamp on canopy to release main harness conduit. Remove fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy.
6. Lay a clean shop towel on forward part of rear fender. Lift the instrument console from fuel tank and lay upside down on shop towel.
7. Pull external latches outward to disconnect ignition/light key switch connector [33], 3-place Packard. See [Figure 8-78](#).
8. Remove four screws to release switch from console.

Installation

1. Align holes in **new** switch with those in console. See [Figure 8-78](#).
2. Start four screws and alternately tighten to 20-30 **in-lbs** (2.3-3.4 Nm) in a crosswise pattern.
3. Connect ignition/light key switch connector [33], 3-place Packard.
4. Slide head of console mounting bolt into slot at top of canopy.
5. Moving instrument console toward installed position, install fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy. Bend flexible clamp to capture main harness conduit.
6. Align hole in instrument console with console mounting bolt and place into position on fuel tank.
7. Install acorn nut at top of instrument console and tighten to 50-90 **in-lbs** (5.7-10.2 Nm). If present, also install Phillips screw and large flat washer (absent on FLHRS models). Tighten screw to 36-60 **in-lbs** (4.1-6.8 Nm).
8. On FLHRS models only, install bolt (with flat washer) to secure rear of fuel tank and instrument console bracket to frame backbone. Tighten bolt to 15-20 ft-lbs (20-27 Nm).
9. Insert bolt through battery negative cable (black) into threaded hole of battery negative (-) terminal. Tighten bolt to 60-96 **in-lbs** (6.8-10.9 Nm).
10. Install seat. See Section [2.25 SEAT, INSTALLATION](#).

FORK LOCK

Removal

1. Remove the handlebar clamp shroud. See Section [2.32 WINDSHIELD/HEADLAMP NACELLE \(FLHR/C/S\), NACELLE REMOVAL \(FLHR/C\)](#), steps 1-11, or [NACELLE REMOVAL \(FLHRS\)](#), steps 1-7.
2. Start acorn nuts on both the left and right side fork studs to keep halves of headlamp nacelle on motorcycle.
3. Remove two allen head socket screws (with flat washers) and pull fork lock assembly from upper fork bracket bore. See [Figure 8-79](#).

NOTE

On HDI models, use a center punch to make a pilot hole at the top of each break-away screw. Install a 1/8 inch left handed bit in drill and set the drill to reverse. Positioning the bit in the pilot hole, spin out the break-away screws.

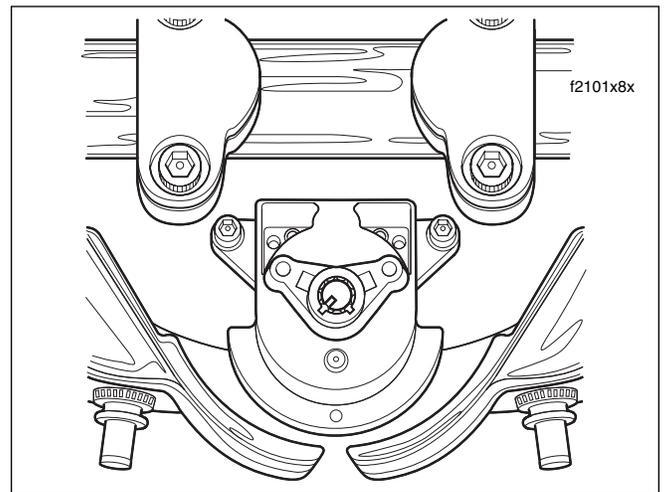


Figure 8-79. Fork Lock (FLHR/C/S)

Installation

1. Install **new** fork lock assembly into bore of upper fork bracket. See [Figure 8-79](#).
2. Install two allen head socket screws (with flat washers) and alternately tighten to 36-60 **in-lbs** (4.1-6.8 Nm).

NOTE

*On HDI models, install **new** break-away screws and turn in a clockwise direction until heads snap off. Verify that threads in upper fork bracket are clean and in good condition or heads may break off before fork lock assembly is properly tightened. Avoid losing heads of screws in motorcycle as vibration may cause captured heads to scratch finished surfaces, chafe wires or cause other damage.*

3. Install the handlebar clamp shroud. See Section [2.32 WINDSHIELD/HEADLAMP NACELLE \(FLHR/C/S\), NACELLE INSTALLATION \(FLHR/C\)](#), steps 3-15, or [NACELLE INSTALLATION \(FLHRS\)](#), steps 5-13.

REMOVAL

1. Partially disassemble ignition switch. See Section 8.19 **IGNITION/LIGHT KEY SWITCH AND FORK LOCK, FLHX, FLHT/C/U, FLTR, REMOVAL**, steps 1-5.
2. Remove two T27 TORX screws (with flat washers) to release fairing cap from left and right sides of inner fairing.
3. With the front forks turned to the left fork stop, reach behind right side of fairing cap and disconnect the fairing cap switch connector [105], 12-place Multilock (black).
4. Remove the fairing cap from the motorcycle. See [Figure 8-80](#).
5. Bend back the flexible clamp to release switch wires from the inboard side of the fairing cap. Carefully cut cable straps to free wires from bundles.
6. Remove two T25 TORX screws to release switch bracket from fairing cap.
7. Gently pry two latches on bracket outward to release tabs on switch. Remove switch from bracket. See [Figure 8-81](#).
8. If replacing Cruise or Speaker Switch, cut Black/Green wire lead halfway between Cruise and Speaker Switch terminals.
9. Follow the wires of the faulty switch to the socket housing, or reference [Figure 8-82](#) and [Table 8-13](#) for the applicable chamber numbers. For wire location purposes, numbers are stamped into the secondary locks of both the pin and socket housings.
10. Remove the appropriate terminals from the socket housing.

NOTE

For instructions on properly removing wire terminals, see [APPENDIX B.2 MULTILOCK ELECTRICAL CONNECTORS, REMOVING SOCKET/PIN TERMINALS](#).

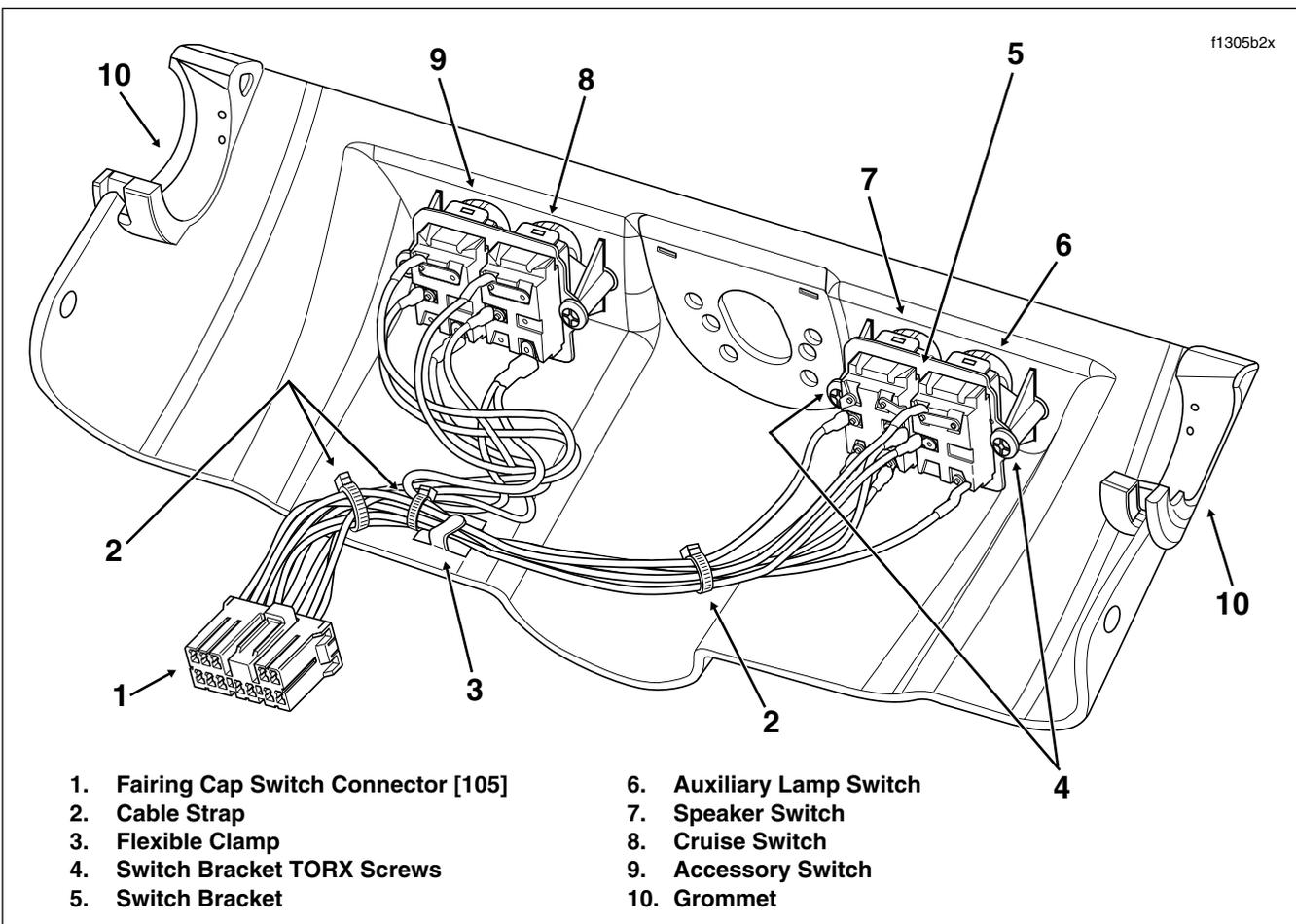


Figure 8-80. Fairing Cap (Inboard Side) - Ultra Model Shown

INSTALLATION

1. Feeding wires through bracket, place **new** switch into position. Engage tabs on switch in slots of latches and then gently bend tabs upward to lock position of switch in bracket.
2. Install terminals into socket housing.

NOTE

For instructions on properly installing wire terminals, see [APPENDIX B.2 MULTILOCK ELECTRICAL CONNECTORS, INSTALLING SOCKET/PIN TERMINALS](#).

3. If Cruise or Speaker Switch was replaced, butt splice Black/Green wire lead between Cruise and Speaker Switch terminals.

NOTE

For detailed butt splicing information, see [APPENDIX B.6 SEALED BUTT SPLICE CONNECTORS](#).

4. Install two T25 TORX screws to secure switch bracket to fairing cap.
5. Install **new** cable straps to capture wire bundles and then secure switch wires to the fairing cap using the flexible clamp. Route the wires as shown in [Figure 8-80](#).
6. Verify that the rubber grommets are installed on each side of the fairing cap. Barbs on cap fit into holes in grommets.

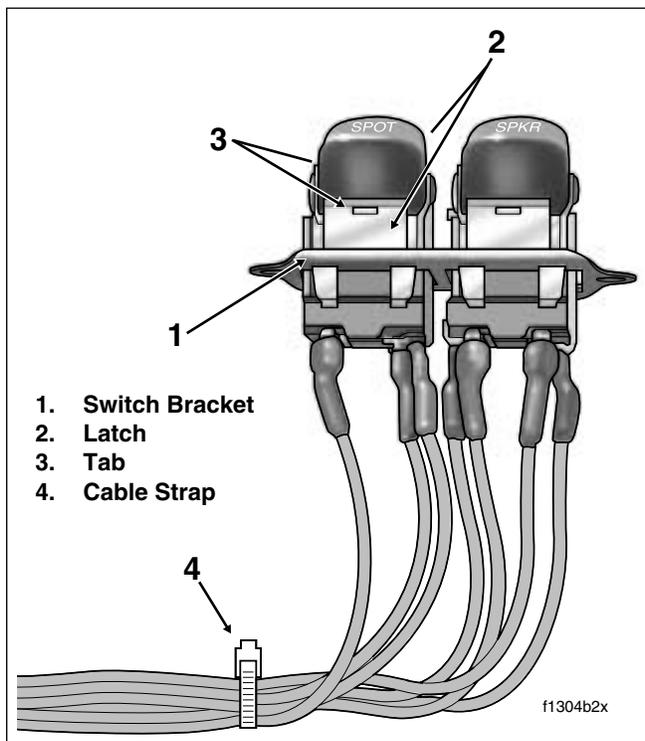


Figure 8-81. Bend Latches Outward to Release Tabs

Table 8-13. Fairing Cap Switches [105]

Switch	Wire Color	Chamber Number	
Accessory	Orange/Red	1	
	Orange	2	
	Black	3	
Cruise Ultra Only	Orange/Violet	4	
	Red/Green	5	
	Black/Green (Double Lugged)	12	To Speaker Switch
Auxiliary Lamp	Yellow	6	
	Gray/Black	7	
	Black	8	
Speaker Ultra Only	Orange/Blue	9	
	Violet/Orange	10	
	Brown/Orange	11	
	Black/Green	To Cruise Switch	

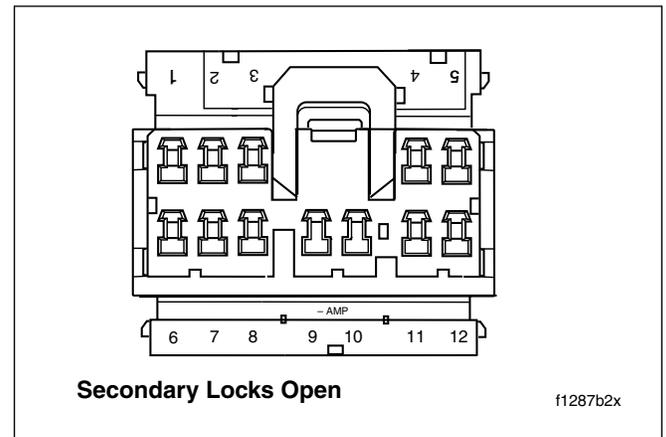


Figure 8-82. Numbers Stamped on Secondary Locks (Socket Housing Shown)

7. Connect the fairing cap switch connector [105], 12-place Multilock (black), on the right side of fairing cap.
8. With the front forks turned to the left fork stop, install fairing cap over ignition switch housing. Verify that grommets in fairing cap fully capture handlebar along with throttle and clutch cables.
9. Start two T27 TORX screws (with flat washers) to fasten fairing cap to left and right sides of inner fairing. Alternately tighten screws to 25-30 **in-lbs** (2.8-3.4 Nm).
10. Assemble ignition switch. See Section [8.19 IGNITION/LIGHT KEY SWITCH AND FORK LOCK, FLHX, FLHT/C/U, FLTR, INSTALLATION](#), steps 6-15.

REMOVAL

- Partially disassemble ignition switch. See Section 8.19 [IGNITION/LIGHT KEY SWITCH AND FORK LOCK, FLHX, FLHT/C/U, FLTR, REMOVAL](#), steps 1-5.
- Remove T25 TORX screw on left and right side of instrument bezel.
- Use thumbs to push tab at rear of bezel from slot in front of ignition switch. Gently raise free side of bezel until tabs at front of instrument nacelle become disengaged from slot at front of bezel (concealed behind decorative adhesive strip).
- Raising bezel slightly, remove anchor on ambient temperature sensor from hole in bottom inboard ear of speedometer bracket.
- See [Figure 8-83](#). Disconnect instruments and indicator lamps from interconnect harness as follows:
 - Speedometer connector [39], 12-place Packard.
 - Tachometer connector [108], 12-place Packard.
 - Indicator lamps connector [21], 10-place Multilock.
- Remove bezel from motorcycle.

- Follow instructions based on location of defective switch.

LEFT SIDE SWITCH

- See [Figure 8-83](#). Disconnect left side switch from instrument nacelle switch harness as follows:
 - Speaker Switch connector [105], 4-place Multilock.
- Pull clutch cable clip from hole on left side of instrument nacelle.
- Remove two T40 TORX bolts (with flat washers) to release left side of instrument nacelle from upper and lower fork brackets.
- Unthread rubber boot from odometer reset switch, and while carefully removing left side instrument nacelle from motorcycle, pull odometer reset switch from hole. Move left side of nacelle to bench area leaving right side on motorcycle. See [Figure 8-86](#).
- Gently bend back molded retainer to release switch bracket assembly from instrument nacelle.
- Carefully pry two latches on bracket outward to release tabs on switch. Remove switch from bracket. See [Figure 8-84](#).

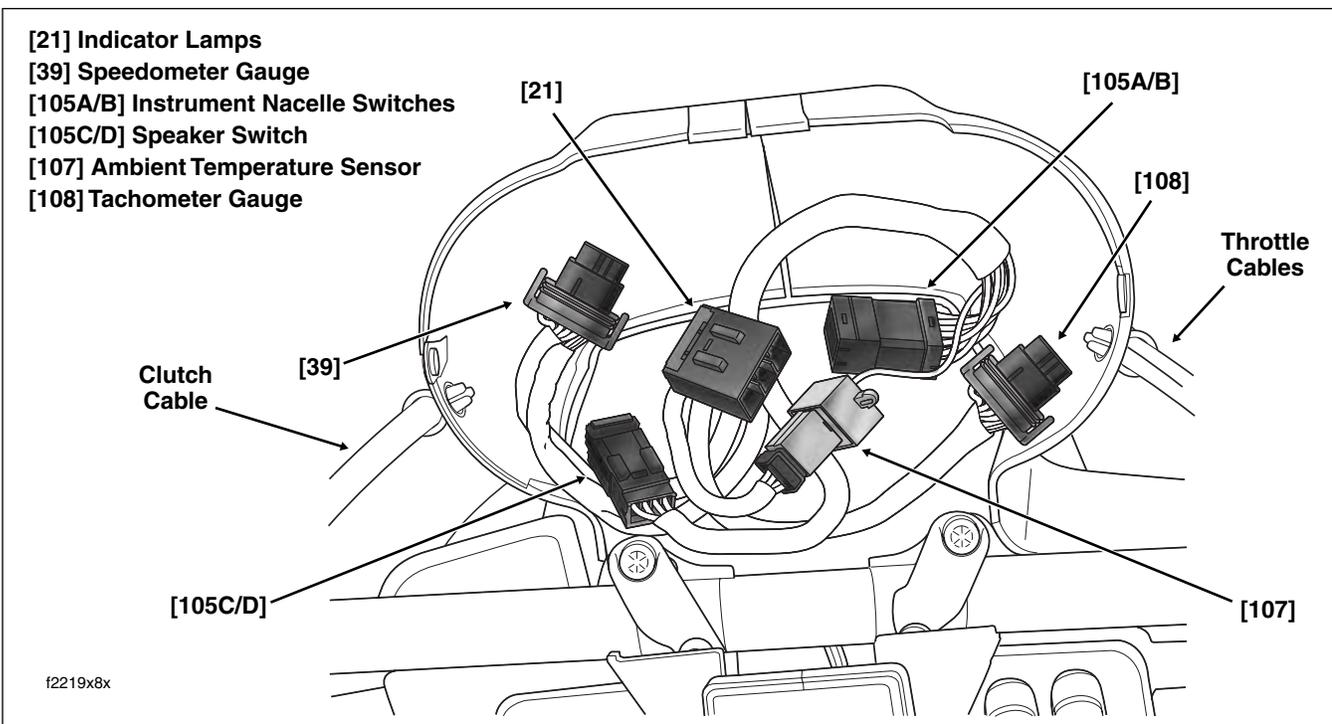


Figure 8-83. Instrument Nacelle (Bezel Removed)

RIGHT SIDE SWITCHES

- See [Figure 8-83](#). Disconnect left side switch from instrument nacelle switch harness as follows:
 - Speaker Switch connector [105], 4-place Multilock.
- See [Figure 8-83](#). Disconnect instrument nacelle switches from interconnect harness as follows:
 - Instrument nacelle switch connector [105], 12-place Multilock.
- Pull throttle cable clip from hole on right side of instrument nacelle.
- Remove two T40 TORX bolts (with flat washers) to release right side of instrument nacelle from upper and lower fork brackets. Move right side of nacelle to bench area leaving left side on motorcycle. See [Figure 8-86](#).
- Gently bend back molded retainer to release switch bracket assembly from instrument nacelle.
- Carefully pry two latches on bracket outward to release tabs on switch. Remove switch from bracket. See [Figure 8-84](#).
- Remove the appropriate terminals from the socket and/or pin housings. Follow the wires of the faulty switch or reference [Table 8-14](#) for the applicable chamber numbers. For wire location purposes, numbers are stamped into the secondary locks. See [Figure 8-85](#).

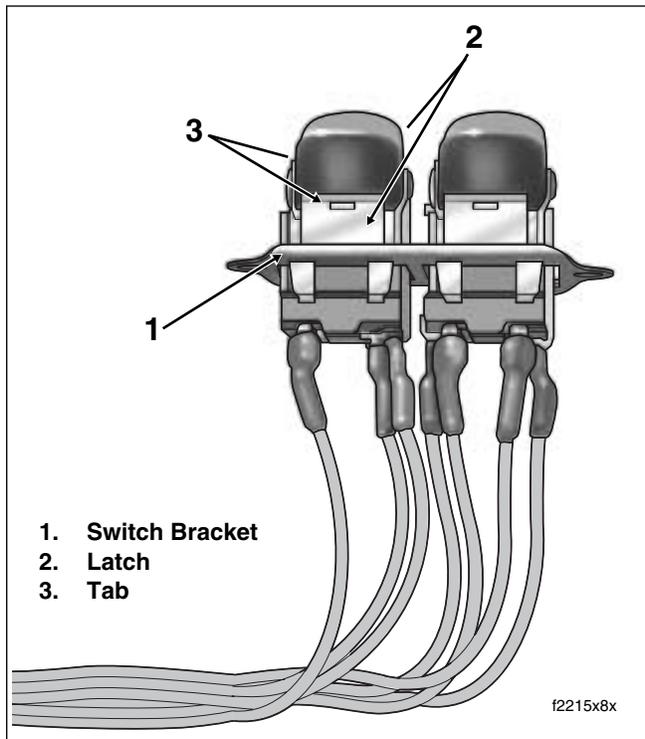


Figure 8-84. Bend Latches Outward to Release Tabs

Table 8-14. Right Side Instrument Nacelle Switches

Switch	Wire Color	Chamber Number	
		12-Place Multilock Socket	4-Place Multilock Pin
Accessory	Orange/Red	1	
	Orange	2	
	Black	3	
Cruise	Orange/Violet	4	
	Red/Green	5	
	Black/Green (Double Lugged)	12	4

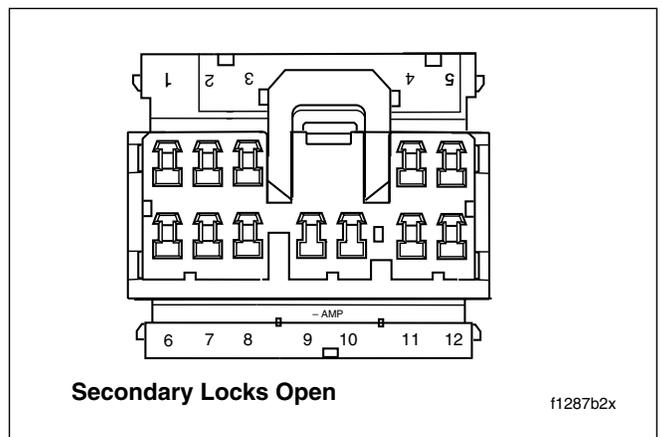


Figure 8-85. Numbers Stamped on Secondary Locks (Socket Housing Shown)

NOTE

For instructions on properly removing wire terminals, see [APPENDIX B.2 MULTILOCK ELECTRICAL CONNECTORS, REMOVING SOCKET/PIN TERMINALS](#).

- Carefully pull wires to draw terminals through conduit to backside of switch. For best results, pull one wire at a time.

INSTALLATION

- Follow instructions based on location of defective switch.

LEFT SIDE SWITCH

- Place **new** switch into position in bracket. Engaging tabs on switch in slots of latches, gently bend tabs upward to lock position of switch in bracket.

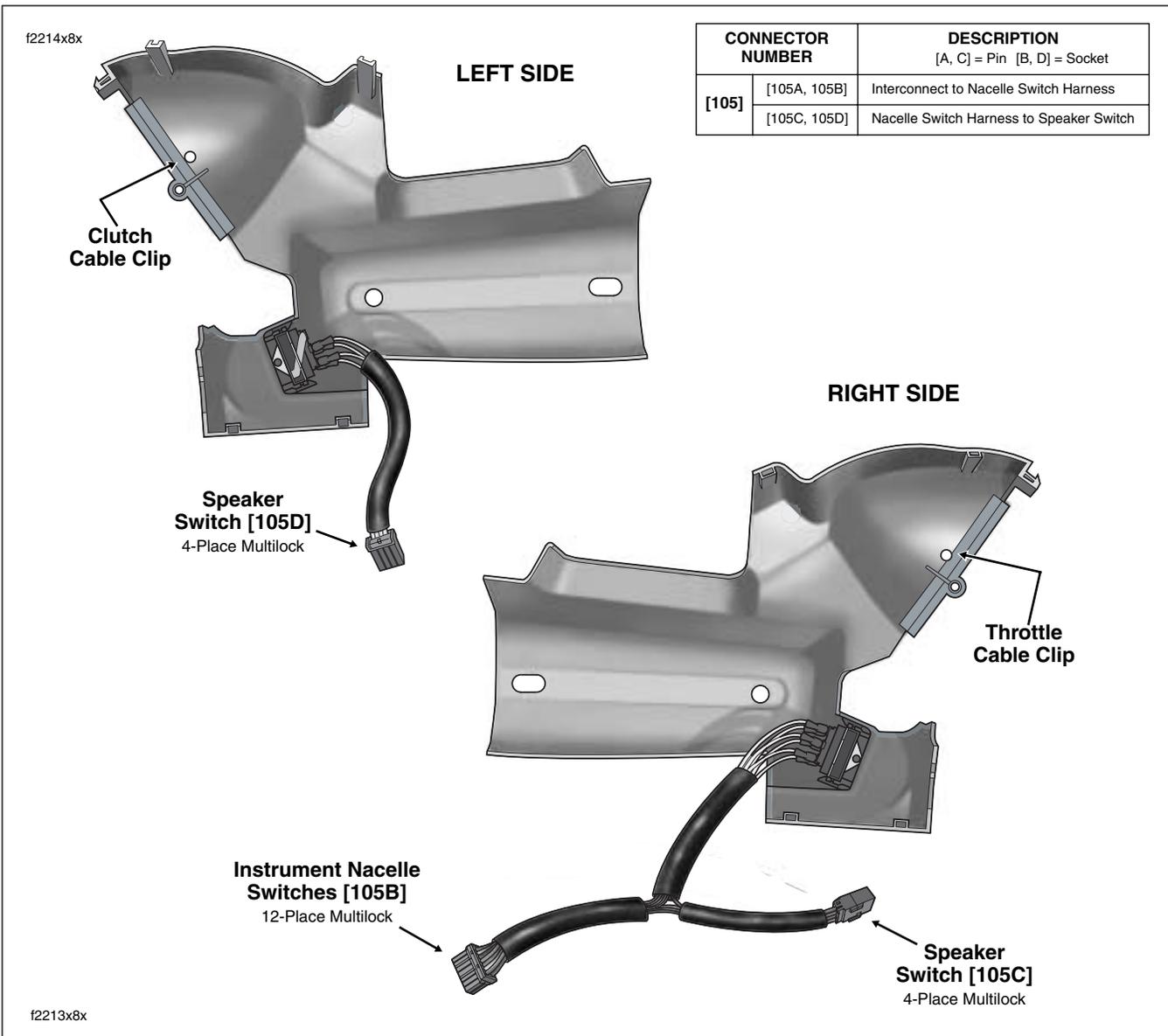


Figure 8-86. Instrument Nacelle Halves

- b. Snap switch bracket into molded retainer in instrument nacelle.
- c. While carefully placing left side of instrument nacelle on motorcycle, slide odometer reset switch through hole and install rubber boot.
- d. See [Figure 8-83](#). Connect left side switch to instrument nacelle switch harness as follows:
 - Speaker Switch connector [105], 4-place Multilock.
- e. Install two T40 TORX bolts (with flat washers) to fasten left side instrument nacelle to upper and lower fork brackets. Alternately tighten bolts to 15-20 ft-lbs (20-27 Nm).
- f. Capture clutch cable in cable clip. Insert cable clip into hole in left side of instrument nacelle.
- g. Move to **RIGHT SIDE SWITCHES**, step 2.

RIGHT SIDE SWITCHES

- a. Place **new** switch into position in bracket. Engaging tabs on switch in slots of latches, gently bend tabs upward to lock position of switch in bracket. See [Figure 8-84](#).
- b. Push terminals through two lengths of conduit to wire end of socket or pin housing. For best results, push one wire through conduit at a time.

- c. Install terminals into socket or pin housing. See Table 8-14 and [Figure 8-85](#).

NOTE

For instructions on properly installing wire terminals, see [APPENDIX B.2 MULTILOCK ELECTRICAL CONNECTORS, INSTALLING SOCKET/PIN TERMINALS](#).

- d. Snap switch bracket into molded retainer in instrument nacelle.
- e. Install right side of instrument nacelle on motorcycle.
- f. See [Figure 8-83](#). Connect left side switch to instrument nacelle switch harness as follows:
 - Speaker Switch connector [105], 4-place Multilock.
- g. See [Figure 8-83](#). Connect instrument nacelle switches to interconnect harness as follows:
 - Instrument nacelle switch connector [105], 12-place Multilock.
- h. Install two T40 TORX bolts (with flat washers) to fasten right side instrument nacelle to upper and lower fork brackets. Alternately tighten bolts to 15-20 ft-lbs (20-27 Nm).
- i. Capture throttle cables in cable clip. Insert cable clip into hole in right side of instrument nacelle.

2. See [Figure 8-83](#). Looking into the instrument nacelle, connect instruments and indicator lamps to interconnect harness as follows:

- Speedometer connector [39], 12-place Packard.
- Tachometer connector [108], 12-place Packard.
- Indicator lamps connector [21], 10-place Multilock.

3. Install anchor on ambient temperature sensor into hole in bottom inboard ear of speedometer bracket.
4. Verify that left and right sides of instrument nacelle are properly mated. Pins on left side of nacelle must fully engage holes on right.
5. Insert tab at rear of bezel into slot of instrument nacelle (just in front of ignition switch). Holding left and right sides of nacelle together, place bezel over instrument nacelle flange. When properly mated, tabs at front of instrument nacelle engage lip in slot at front of bezel (behind decorative adhesive strip).

NOTE

*If tabs do not properly engage slot at front of bezel, then a loose fit will result. Remove decorative adhesive strip by gently prying up outer edges, and using a flat bladed screwdriver, carefully raise tabs so that they engage lip in slot. If damaged, install **new** decorative adhesive strip.*

6. Install T25 TORX screw on each side of bezel. Alternately tighten screws to 25-35 **in-lbs** (2.8-4.0 Nm).
7. Assemble ignition switch. See [Section 8.19 IGNITION/LIGHT KEY SWITCH AND FORK LOCK, FLHX, FLHT/C/U, FLTR, INSTALLATION](#), steps 6-15.

GENERAL

The basic switch configuration is the “Road King.” The Road King switches have no specialized functions. Other switches, referred to as the Road King Classic, Classic and Ultra, have additional functions, such as cruise control, sound system controls, etc., which cause them to differ from the Road King switches. To accommodate these added functions, special lower switch housings are provided.

NOTE

Regardless of model or option, all motorcycles use the same upper switch housings. The motorcycles and their switch configurations are as follows:

Table 8-15. Handlebar Switches

Road King					
FLHR	FLHRI	FLHRS	FLHRSI		
Road King Classic					
FLHRCI					
Classic					
FLHX	FLHXI	FLHT	FLHTI	FLHTC	FLHTCI
Ultra					
FLTRI			FLHTCUI		
NOTE: See Figures 8-95 thru 8-98 for illustrations.					

NOTE

To replace or repair individual switches in either the right or left handlebar switch assemblies, see [SWITCH REPAIR/REPLACEMENT](#) in this section.

REMOVAL

NOTE

While there are four different switch configurations for Touring models (Road King, Road King Classic, Classic and Ultra), the removal procedures are the same. To simplify these instructions, only the Road King switch configuration is represented in the photographs and illustrations which follow.

RIGHT HANDLEBAR CONTROLS

CAUTION

Do not remove the switch housing assembly without first placing the 5/32 inch (4.0 mm) cardboard insert between the brake lever and lever bracket. Removal without the insert may result in damage to the rubber boot and plunger of the Front Stoplight Switch.

NOTE

Use the eyelet of an ordinary cable strap if the cardboard insert is not available.

1. Place the cardboard insert between the brake lever and lever bracket. See [Figure 8-87](#).
2. Remove the two T27 TORX screws with flat washers securing the handlebar clamp to the master cylinder housing. Remove the brake lever/master cylinder assembly and clamp from the handlebar.
3. Using a T25 TORX drive head, remove the upper and lower switch housing screws.
4. Remove the friction shoe from the end of the tension adjuster screw (non cruise equipped models only).

NOTE

The friction shoe is a loose fit and may fall out or become dislodged if the lower switch housing is turned upside down or shaken.

5. Remove the brass ferrules from the notches on the inboard side of the throttle control grip. Remove the ferrules from the cable end fittings.
6. Remove the throttle control grip from the end of the handlebar.
7. Pull the crimped inserts at the end of the throttle and idle control cable housings from the lower switch housing. For best results, use a rocking motion while pulling. Place a drop of light oil on the retaining rings, if necessary. Remove the cables from the switch housing.
8. Cut two cable straps to release wire harness conduit from handlebar.



Figure 8-87. Install Cardboard Insert

LEFT HANDLEBAR CONTROLS

1. Remove the two T27 TORX screws with flat washers securing the handlebar clamp to the clutch lever bracket. Remove the clutch hand lever assembly and clamp from the handlebar.
2. Using a T25 TORX drive head, remove the upper and lower switch housing screws.
3. Cut two cable straps to release wire harness conduit from handlebar.
4. Remove hand grip from handlebar, if damaged. See Section [2.23 HANDLEBARS, LEFT HAND GRIP, REMOVAL](#).

INSTALLATION

NOTE

While there are four different switch configurations for Touring models (Road King, Road King Classic, Classic and Ultra), the installation procedures are the same. To simplify these instructions, only the Road King switch configuration is represented in the photographs and illustrations which follow.

RIGHT HANDLEBAR CONTROLS

1. With the concave side facing upward, install the friction shoe so that the pin hole is over the point of the adjuster screw (non cruise equipped models only).

NOTE

The friction shoe is a loose fit and may fall out or become dislodged if the switch housing is turned upside down or shaken.

2. Push the throttle and idle control cables into the lower switch housing until they snap in place. Proceed as follows:

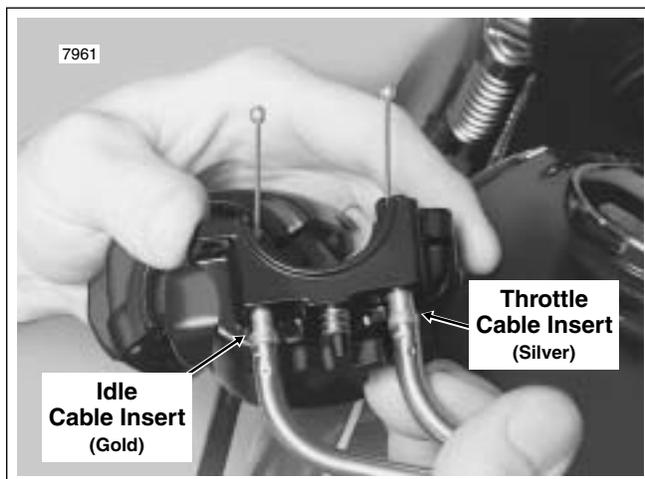


Figure 8-88. Install Throttle/Idle Control Cables in Lower Switch Housing

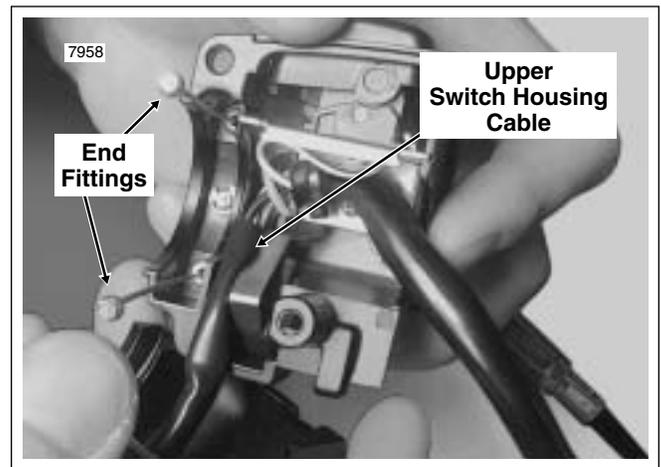


Figure 8-89. Route Cable to Upper Switch Housing

Note the different diameter inserts crimped into the end of the throttle and idle control cable housings. See [Figure 8-88](#).

Push the larger diameter insert (silver) on the throttle cable housing into the larger hole in front of the tension adjuster screw.

Push the smaller diameter insert (gold) on the idle cable housing into the smaller hole at the rear of the tension adjuster screw.

NOTE

To aid assembly, place a drop of light oil on the retaining rings of the crimped inserts. Always replace the retaining rings if damaged or distorted.

3. Route the cable to the upper switch housing as shown in [Figure 8-89](#).
4. Slide the throttle control grip over the end of the right handlebar until it bottoms against the closed end. Rotate the grip so that the ferrule notches are at the top. To prevent binding, pull the grip back about 1/8 inch (3.2 mm).
5. Position the lower switch housing beneath the throttle control grip. Install the brass ferrules onto the cables so that the end fittings seat in the ferrule recess. Seat the ferrules in their respective notches on the throttle control grip. Verify that the cables are captured in the grooves molded into the grip. See [Figure 8-90](#).
6. Position the upper switch housing over the handlebar and lower switch housing.
7. Verify that the wire harness conduit runs in the depression at the bottom of the handlebar. Be sure that the upper switch housing harness will not be pinched under the handlebar when the switch housing screws are tightened.
8. Start the upper and lower switch housing screws, but do not tighten.

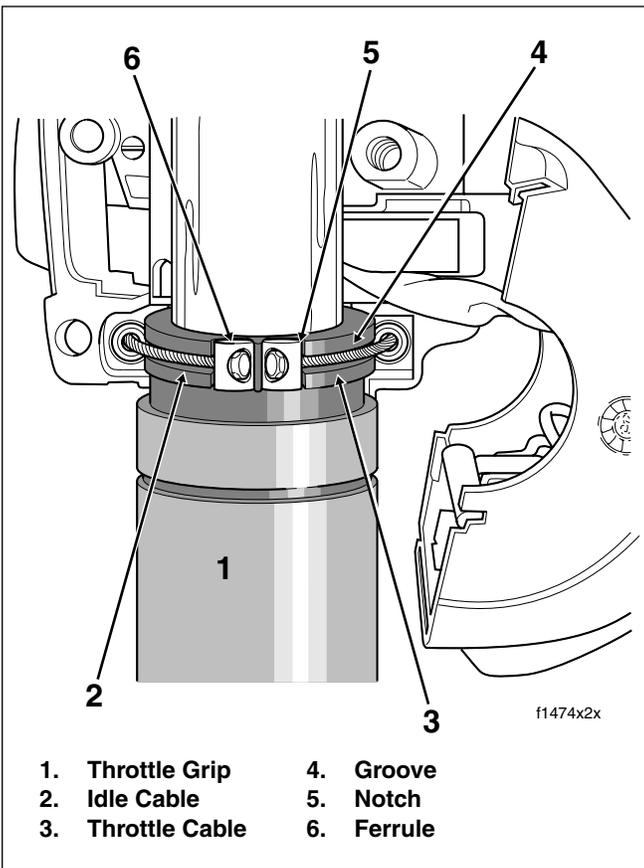


Figure 8-90. Install Throttle/Idle Cables

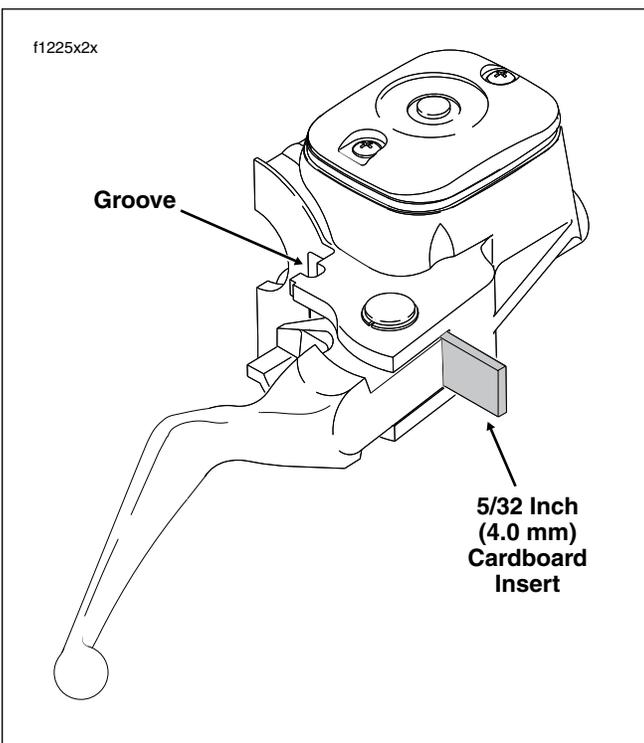


Figure 8-91. Leave Cardboard Insert in Place

CAUTION

See [Figure 8-91](#). Do not remove the 5/32 inch (4.0 mm) cardboard insert (or cable strap eyelet) wedged between the brake lever and lever bracket. Removal will result in damage to the rubber boot and plunger of the Front Stoplight Switch during installation of the master cylinder assembly.

9. Position the brake lever/master cylinder assembly inboard of the switch housing assembly engaging the tab on the lower switch housing in the groove at the top of the brake lever bracket. See [Figure 8-92](#).
10. Align the holes in the handlebar clamp with those in the master cylinder housing and start the two T27 TORX screws (with flat washers). Position for rider comfort. Beginning with the top screw, tighten the screws to 60-80 **in-lbs** (6.8-9.0 Nm).
11. Using a T25 TORX drive head, tighten the lower and upper switch housing screws to 35-45 **in-lbs** (4-5 Nm).

NOTE

Always tighten the lower switch housing screw first so that any gap between the upper and lower housings is at the front of the switch.

12. Remove the cardboard insert between the brake lever and lever bracket.
The completed assembly appears as shown in [Figure 8-95](#).
13. Secure wire harness conduit to handlebar using two **new** cable straps. Position first cable strap approximately 4-5 inches (102-127 mm) from handlebar clamp. Cut any excess cable strap material.
14. Test the switches for proper operation.

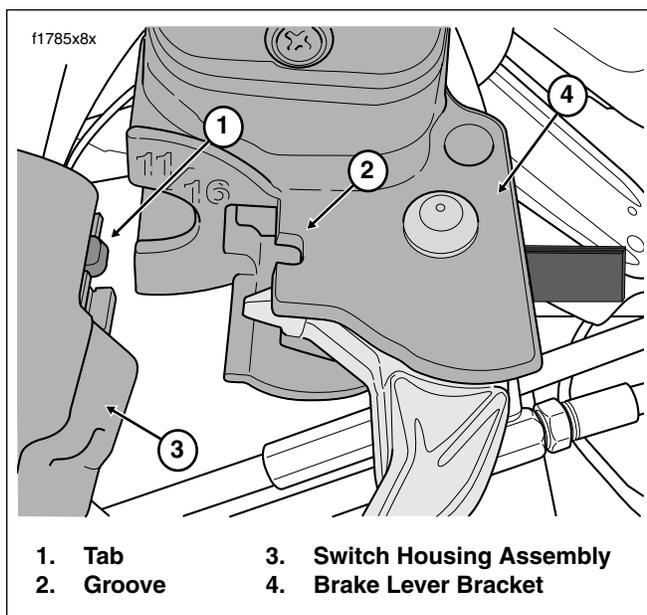


Figure 8-92. Fit Brake Lever/Master Cylinder to Right Handlebar Switch Housings

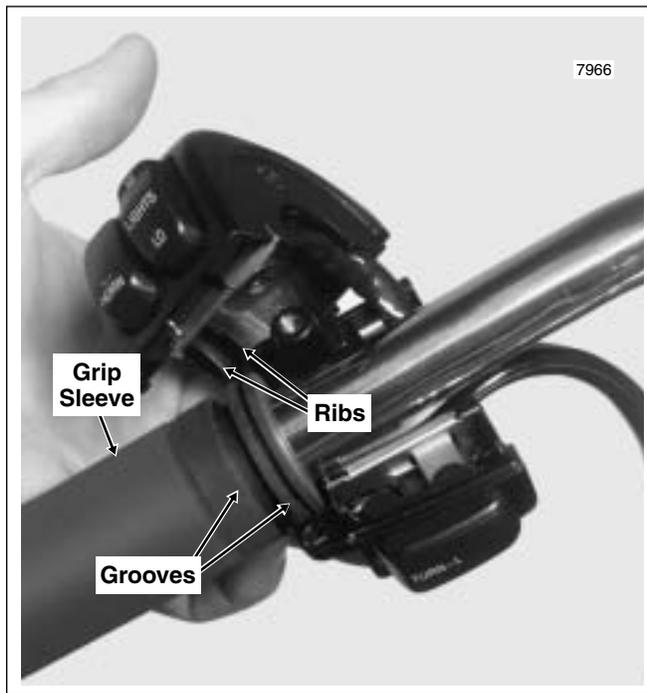


Figure 8-93. Install Left Handlebar Switch Housings

LEFT HANDLEBAR CONTROLS

1. Install **new** hand grip, if removed,. See Section 2.23 [HANDLEBARS, LEFT HAND GRIP, INSTALLATION](#).
2. Install upper and lower switch housings on handlebar. Be sure that ribs on outboard side of switch housings fit in grooves molded into grip. See [Figure 8-93](#).
3. Verify that the wire harness conduit runs in the groove at the bottom of the handlebar. Be sure that the upper switch housing harness will not be pinched under the handlebar when the switch housing screws are tightened.
4. Start the upper and lower switch housing screws, but do not tighten.
5. Position the clutch hand lever assembly inboard of the switch housing assembly engaging the tab on the lower switch housing in the groove at the bottom of the clutch lever bracket. See [Figure 8-94](#).
6. Align the holes in the handlebar clamp with those in the clutch lever bracket and start the two T27 TORX screws (with flat washers). Position for rider comfort. Beginning with the top screw, tighten the screws to 60-80 **in-lbs** (6.8-9.0 Nm).

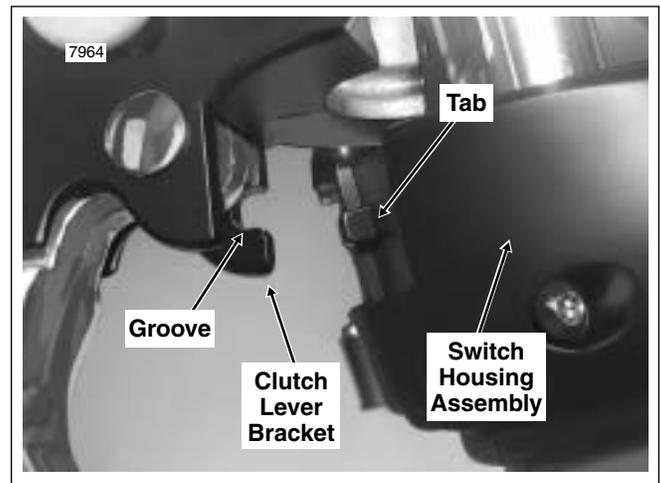


Figure 8-94. Fit Clutch Lever Bracket to Left Handlebar Switch Housings

7. Using a T25 TORX drive head, tighten the lower and upper switch housing screws to 35-45 **in-lbs** (4-5 Nm).

NOTE

Always tighten the lower switch housing screw first so that any gap between the upper and lower housings is at the front of the switch.

The completed assembly appears as shown in [Figure 8-95](#).

8. Secure wire harness conduit to handlebar using two **new** cable straps. Position first cable strap approximately 4-5 inches (102-127 mm) from handlebar clamp. Cut any excess cable strap material.
9. Test the switches for proper operation.

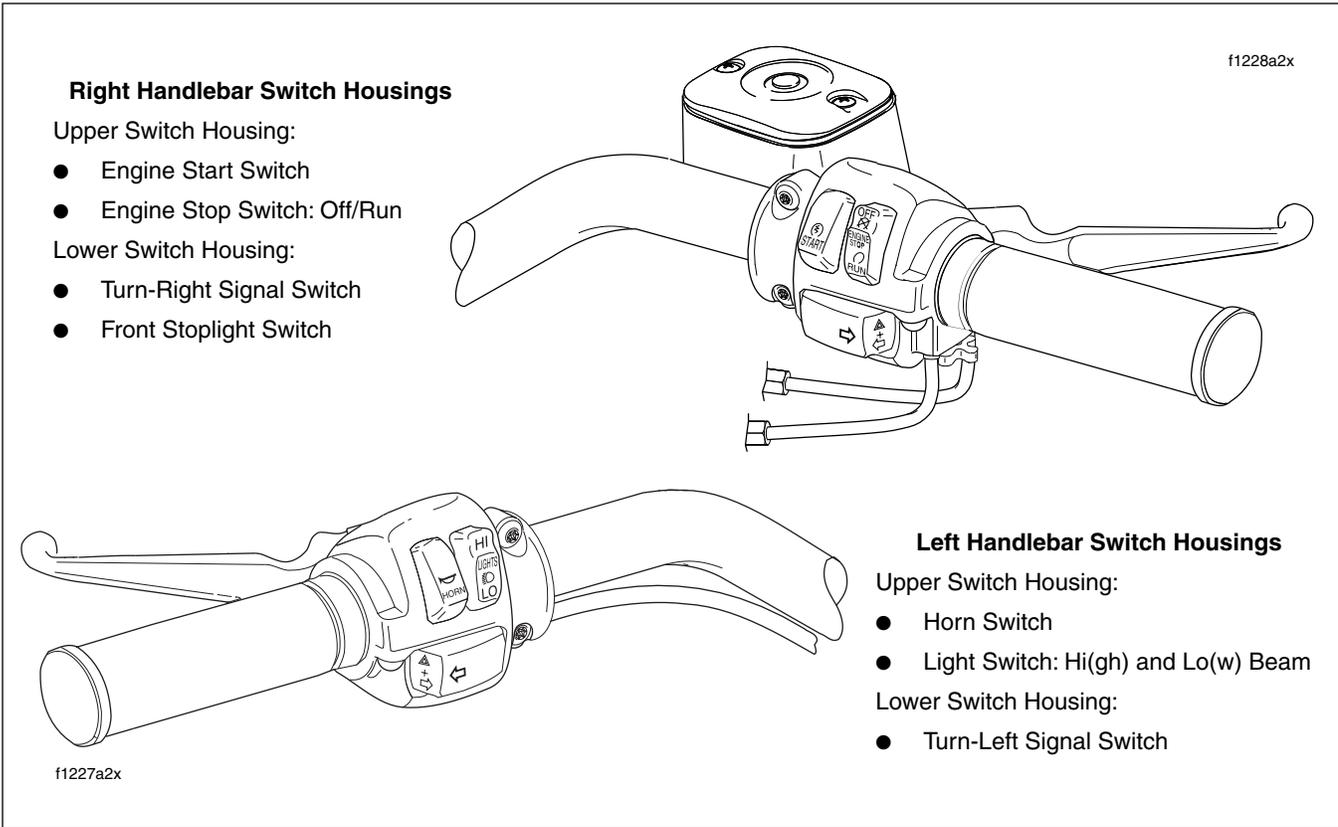


Figure 8-95. Road King Handlebar Switch Assemblies

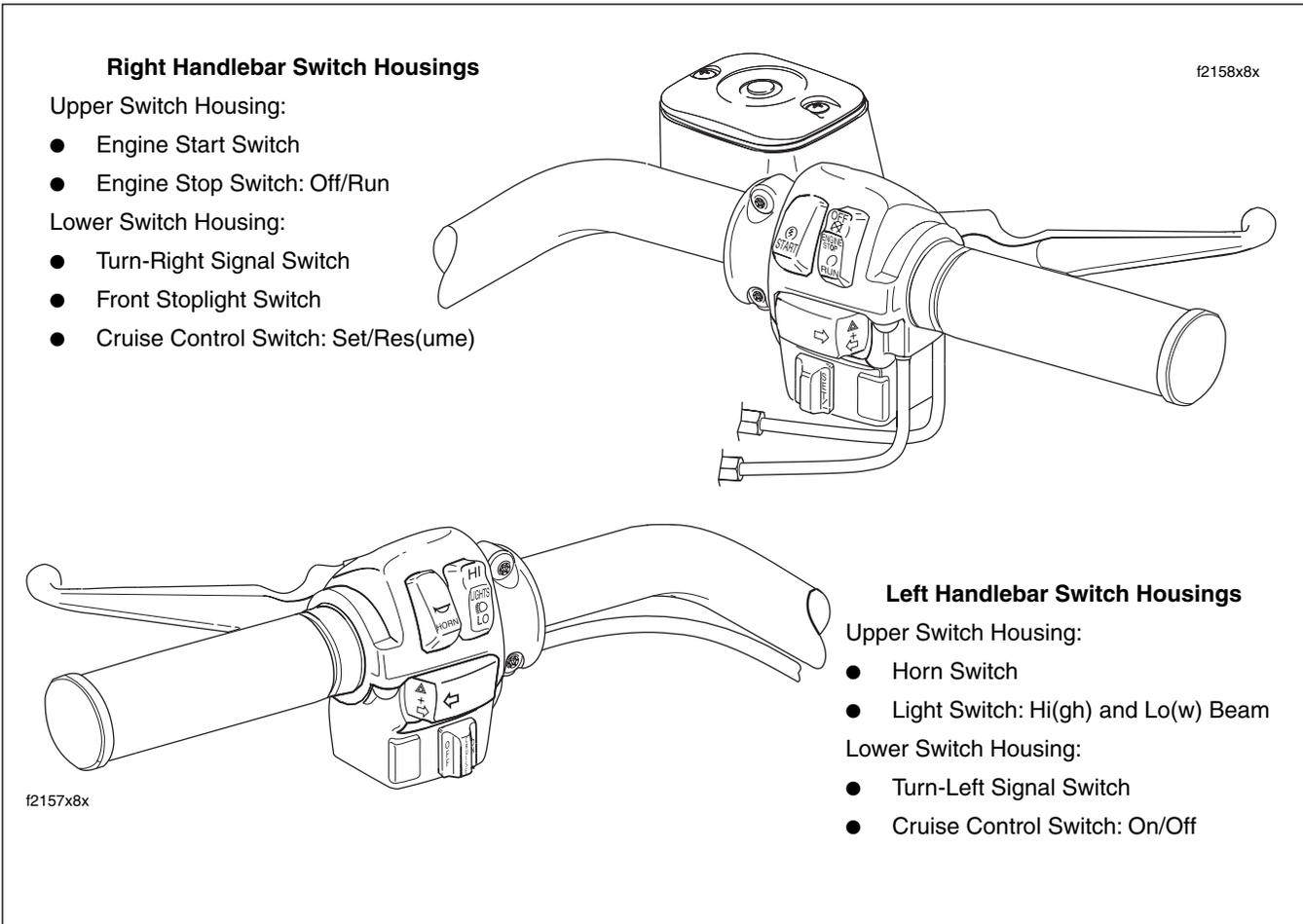


Figure 8-96. Road King Classic Handlebar Switch Assemblies

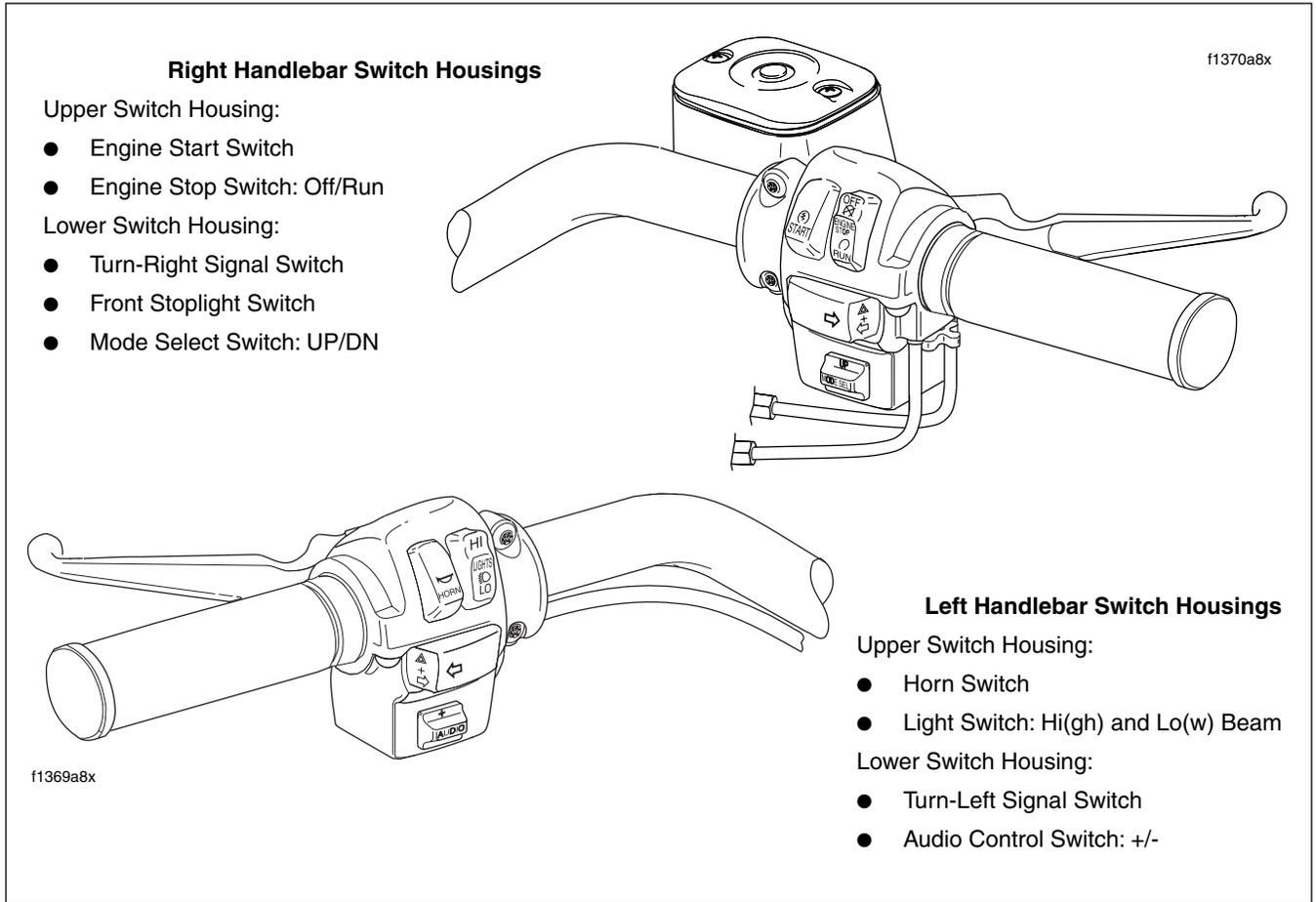


Figure 8-97. Classic Handlebar Switch Assemblies

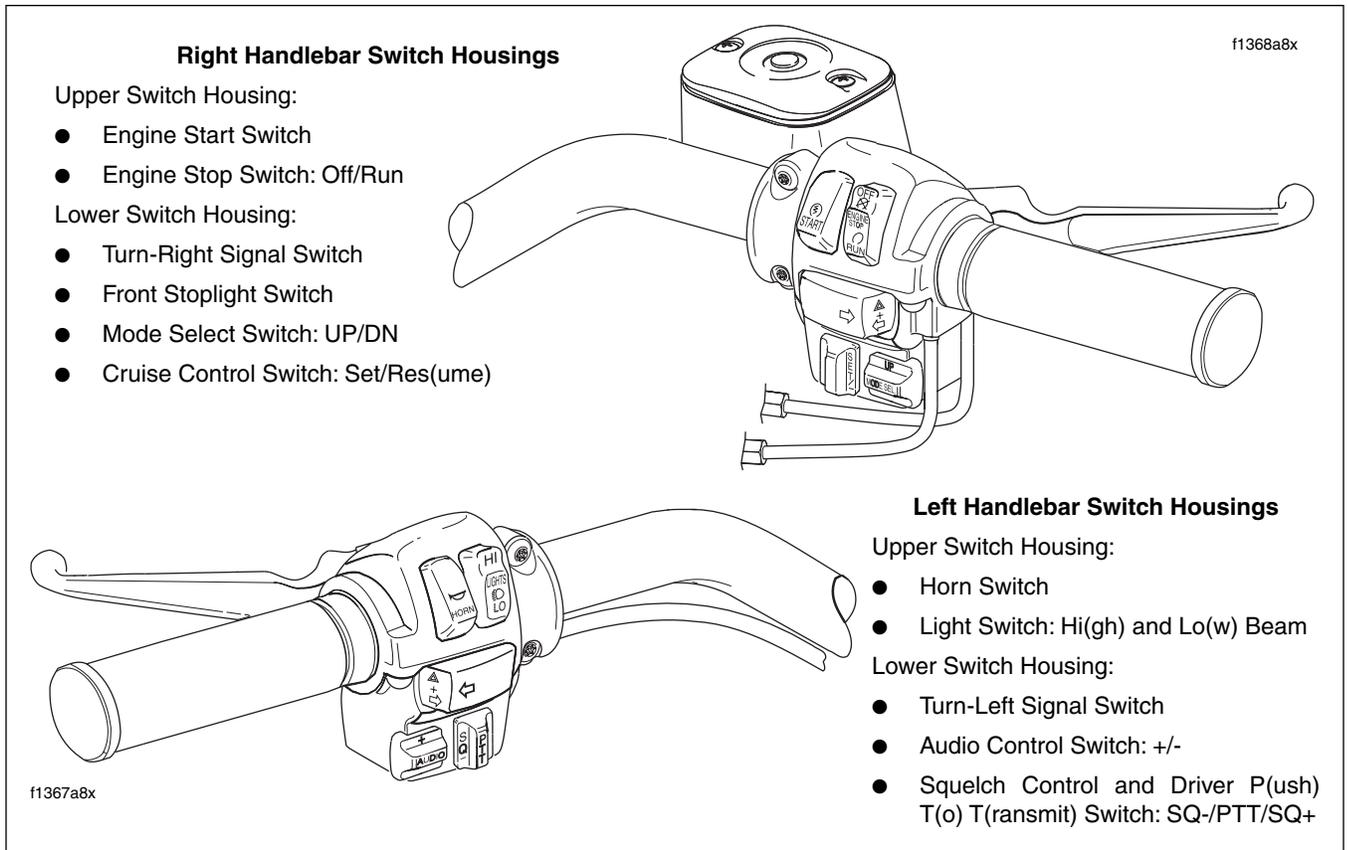


Figure 8-98. Ultra Handlebar Switch Assemblies

SWITCH REPAIR/REPLACEMENT

RIGHT SIDE HANDLEBAR SWITCHES

DISASSEMBLY

CAUTION

Do not remove the switch housing assembly without first placing the 5/32 inch (4.0 mm) cardboard insert between the brake lever and lever bracket. Removal without the insert may result in damage to the rubber boot and plunger of the Front Stoplight Switch.

NOTE

Use the eyelet of an ordinary cable strap if the cardboard insert is not available.

1. Place the cardboard insert between the brake lever and lever bracket.
2. Using a T25 TORX drive head, remove the upper and lower switch housing screws.
3. If replacing lower housing switches, proceed to step 4. If replacing upper housing switches, proceed to step 8.
4. Using a T27 TORX drive head, loosen the upper screw securing the handlebar clamp to the master cylinder housing. Remove the lower clamp screw with flat washer.
5. Remove the brass ferrules from the notches on the inboard side of the throttle control grip. Remove the ferrules from the cable end fittings.
6. Remove the friction shoe from the end of the tension adjuster screw (non cruise equipped models only).

NOTE

The friction shoe is a loose fit and may fall out or become dislodged if the lower switch housing is turned upside down or shaken.

7. Remove the throttle control grip from the end of the handlebar.
8. See [SPECIFIC REPAIR PROCEDURES, UPPER SWITCH HOUSINGS](#) for upper switch housing switches, [LOWER SWITCH HOUSINGS](#) for lower switch housing switches.

LEFT SIDE HANDLEBAR SWITCHES

DISASSEMBLY

1. Using a T25 TORX drive head, remove the upper and lower switch housing screws.
2. If replacing lower housing switches, proceed to step 3. If replacing upper housing switches, proceed to step 4.

3. Using a T27 TORX drive head, loosen the upper screw securing the handlebar clamp to the clutch lever bracket. Remove the lower clamp screw with flat washer.
4. See [SPECIFIC REPAIR PROCEDURES, UPPER SWITCH HOUSINGS](#) for upper switch housing switches, [LOWER SWITCH HOUSINGS](#) for lower switch housing switches.

SPECIFIC REPAIR PROCEDURES

NOTE

Regardless of model or option, all motorcycles use the same upper switch housings.

UPPER SWITCH HOUSINGS

NOTE

Replace the Engine Stop and Engine Start Switches as a single assembly even if only one switch is determined to be faulty.

RIGHT SIDE HANDLEBAR (ALL MODELS)

- **Engine Stop Switch: OFF/RUN**
- **Engine Start Switch**

[Continued from [RIGHT SIDE HANDLEBAR SWITCHES, DISASSEMBLY](#), on this page.]

1. From inside the switch housing, remove the Phillips screw to release the bracket. Remove the bracket and switch assembly from the housing. See [Figure 8-99](#).
2. Move cable conduit from beneath wing of bracket. Cut wires 1/4 inch (6.4 mm) from old switches. Discard old switch and bracket assembly.
3. Slide conduit forward over severed ends of switch wires and cut off 1/2 inch (12.7 mm) of conduit material. Push conduit back to access switch wires.
4. Separate **new** Engine Stop Switch and Start Switch wires into two bundles.

NOTE

Replacement Stop Switch and Start Switch wires are cut to length (2-1/2 inches and 2 inches, respectively) and partially stripped.

5. See [GENERAL REPAIR PROCEDURES](#) in this section.
6. Loop switch wires so that spliced lengths are positioned as shown in [Figure 8-100](#). Route wires downstream of splices beneath wing on Engine Stop Switch side of bracket as seen in [Figure 8-99](#).
7. Install a **new** 7 inch cable strap beneath wing on Engine Start Switch side of bracket and capture wire splices.

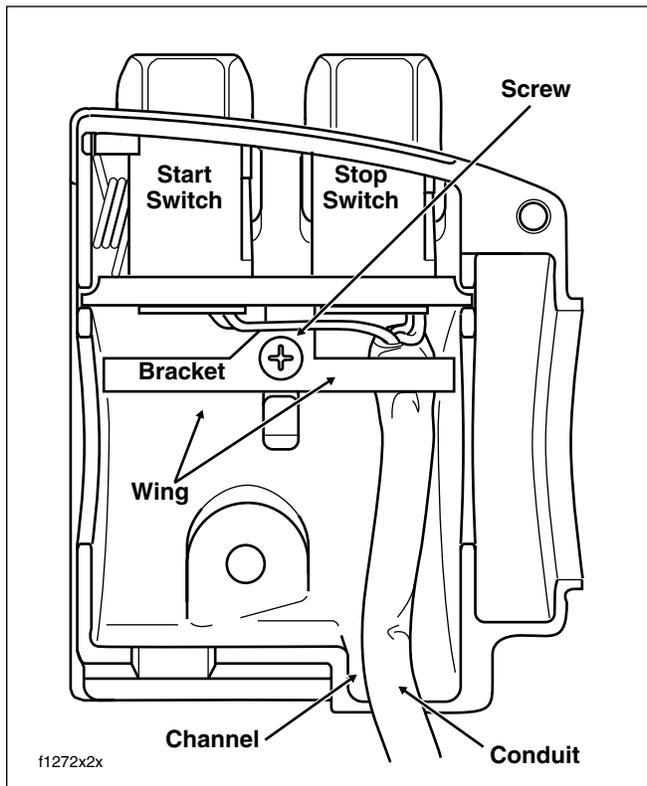


Figure 8-99. Upper Right Handlebar Switch Housing (Without Splices)

8. Place switch assembly into upper housing aligning hole in bracket with threaded hole in boss. Be sure that bracket is fully seated. The step at the edge of the boss captures the bottom edge of the bracket, while tabs on each side of the bracket fit in slots cast into the housing.
9. Install Phillips screw to secure bracket inside housing. Verify that wing on Engine Stop Switch side of bracket captures edge of conduit as shown in [Figure 8-99](#).
10. Securely tighten cable strap to draw splices to bracket. Remove any excess cable strap material.
11. See [RIGHT SIDE HANDLEBAR SWITCHES, ASSEMBLY](#), in this section.

NOTE

Replace the Horn and High/Low Beam Switches as a single assembly even if only one switch is determined to be faulty.

LEFT SIDE HANDLEBAR (ALL MODELS)

- **Hi(gh) and Lo(w) Beam Switch**
- **Horn Switch**

[Continued from [LEFT SIDE HANDLEBAR SWITCHES, DISASSEMBLY](#), in this section.]

1. See [Figure 8-101](#). From inside the switch housing, remove Phillips screw to release the bracket. Remove the bracket and switch assembly from the housing.

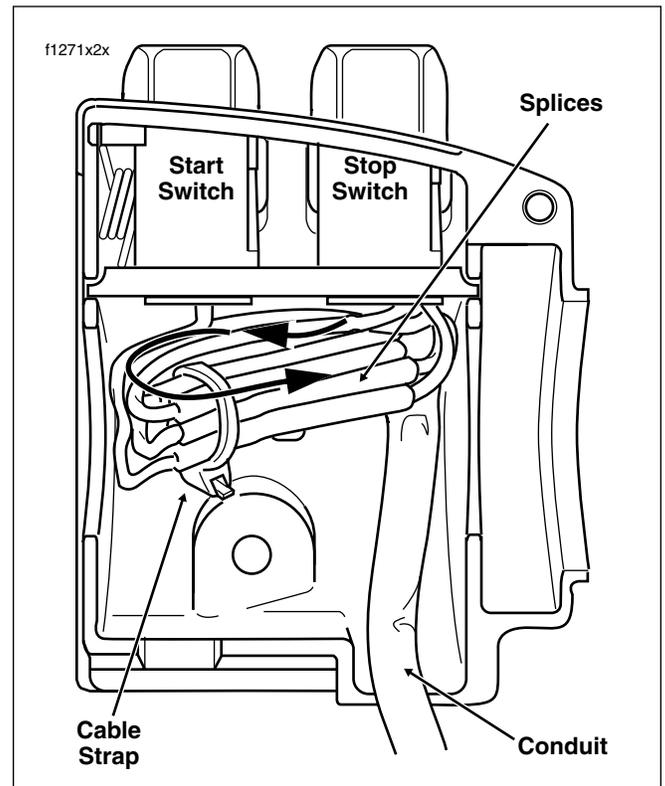


Figure 8-100. Upper Right Handlebar Switch Housing (With Splices)

2. Move cable conduit from beneath wing of bracket. Cut wires 1/4 inch (6.4 mm) from old switches. Discard old switch and bracket assembly.
3. Slide conduit forward over severed ends of switch wires and cut off 1/2 inch (12.7 mm) of conduit material. Push conduit back to access switch wires.
4. Separate new Horn and High/Low Beam Switch wires into two bundles.

NOTE

Replacement High/Low Beam Switch and Horn Switch wires are cut to length (2-1/2 inches and 2 inches, respectively) and partially stripped.

5. See [GENERAL REPAIR PROCEDURES](#) in this section.
6. Loop switch wires so that spliced lengths are positioned as shown in [Figure 8-102](#). Route wires downstream of splices beneath wing on High/Low Beam Switch side of bracket as seen in [Figure 8-101](#).
7. Install a **new** 7 inch cable strap beneath wing on Horn Switch side of bracket and capture wire splices.
8. Place switch assembly into upper housing aligning hole in bracket with threaded hole in boss. Be sure that bracket is fully seated. The step at the edge of the boss captures the bottom edge of the bracket, while tabs on each side of the bracket fit in slots cast into the housing.

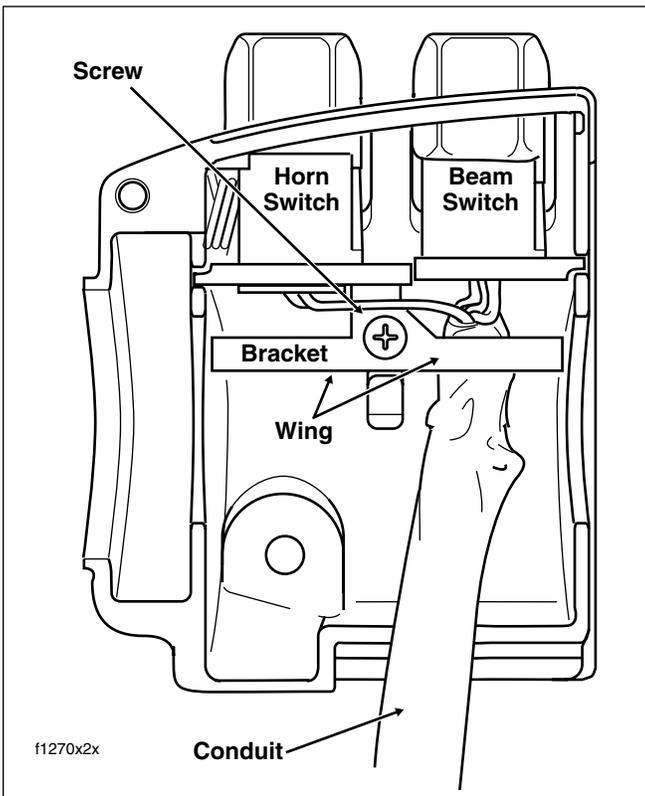


Figure 8-101. Upper Left Handlebar Switch Housing (Without Splices)

9. Install Phillips screw to secure bracket inside housing. Verify that wing on High/Low Beam Switch side of bracket captures edge of conduit as shown in [Figure 8-101](#).
10. Securely tighten cable strap to draw splices to bracket. Remove any excess cable strap material. See [Figure 8-102](#).
11. See [LEFT SIDE HANDLEBAR SWITCHES, ASSEMBLY](#), in this section.

LOWER SWITCH HOUSINGS

RIGHT SIDE HANDLEBAR

PRELIMINARY INSTRUCTIONS

[Continued from [RIGHT SIDE HANDLEBAR SWITCHES, DISASSEMBLY](#), in this section.]

1. From inside the switch housing, carefully cut cable strap to free conduit from the turn signal switch bracket, if present.
2. Remove the Phillips screw to release the turn signal switch bracket. Remove the bracket and switch assembly from the housing.

NOTE

On Classic and Ultra models, pull the conduit back to introduce some slack in the wires or the tight fit of the bundle will prevent removal of the turn signal switch bracket.

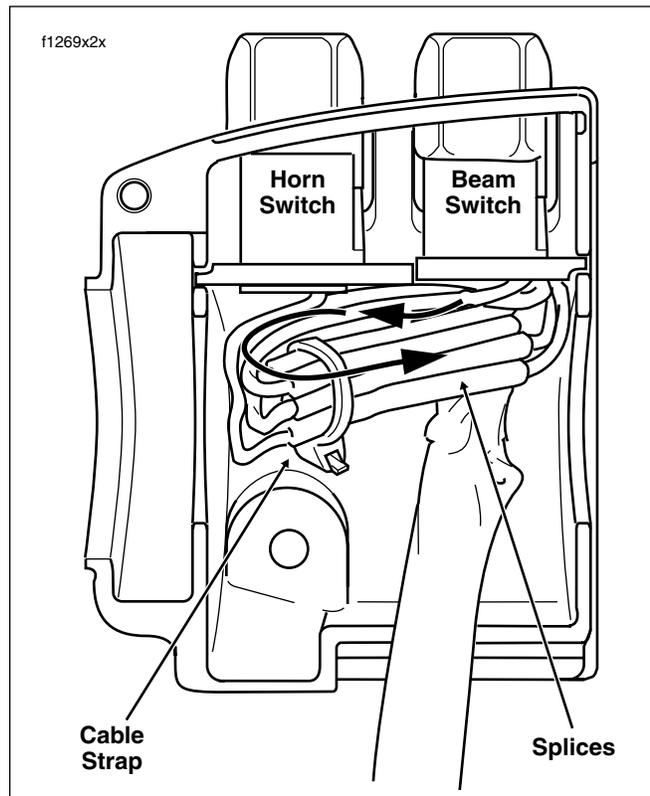


Figure 8-102. Upper Left Handlebar Switch Housing (With Splices)

● Turn-Right Signal Switch (All Models)

1. Cut wires 1-1/2 inches (38.1 mm) from old switch. Discard old switch assembly.

NOTE

Replacement Turn-Right Signal Switch wires are cut to length (1-1/2 inches) and partially stripped.

2. See [GENERAL REPAIR PROCEDURES](#) in this section.
3. See [RIGHT SIDE HANDLEBAR, FINAL INSTRUCTIONS](#) in this section.

● Front Stoplight Switch (All Models)

1. Carefully remove the wedge between the switch and switch housing, if present. To remove the switch from the housing, depress the plunger and slowly rotate switch upward while rocking slightly.
2. Cut wires 1 inch (25.4 mm) from old switch. Discard old switch.

NOTE

Replacement Stoplight Switch wires are cut to length (2-1/2 inches) and partially stripped.

3. See [GENERAL REPAIR PROCEDURES](#) in this section.

4. Carefully depress plunger against inside wall of switch housing. With thumb over plunger bore, move switch into the installed position in the switch housing cavity. When plunger is positioned against thumb, slowly rotate switch downward while rocking slightly. Release the plunger only after switch is properly positioned in the cavity.
5. Verify that the plunger is square in the bore and that the boot is not compressed, collapsed or torn. If necessary, gently work the plunger in and out until boot is fully extended.
6. Push down on switch so that it bottoms against housing and wires run in groove at base of cavity. With the concave side facing outward, insert wedge between switch and outboard side of switch housing. See [Figure 8-103](#).
7. Push wedge down until it also bottoms against housing. Verify that the plunger is still square in the bore and then place a drop of RTV Silicone Sealant on upper corner of wedge.
8. See [RIGHT SIDE HANDLEBAR, FINAL INSTRUCTIONS](#) on the next page.

● **Mode Select Switch (Classic and Ultra Models)**

1. Pull keycap from switch shaft.
2. Remove two lower bracket screws. Pull bracket and switch from switch housing. See [Figure 8-104](#).

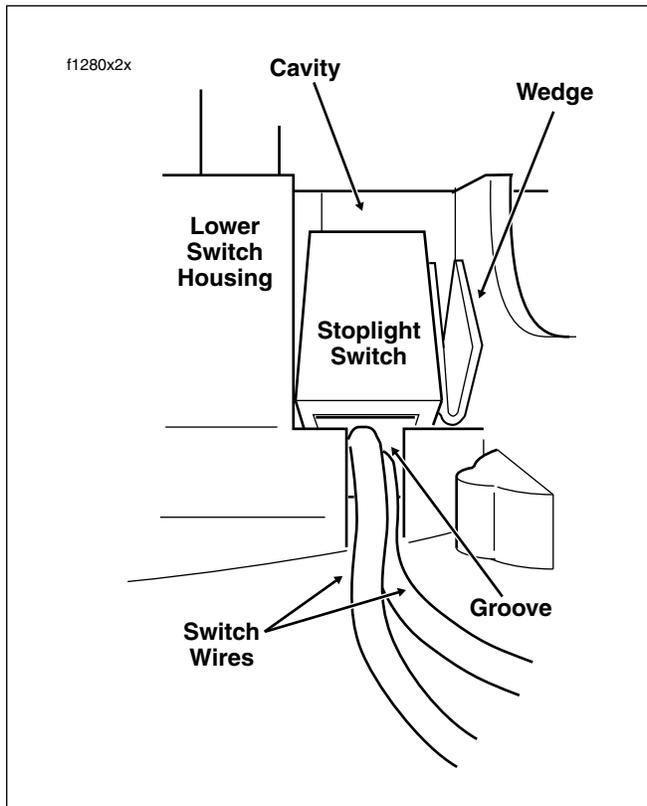


Figure 8-103. Install Stoplight Switch

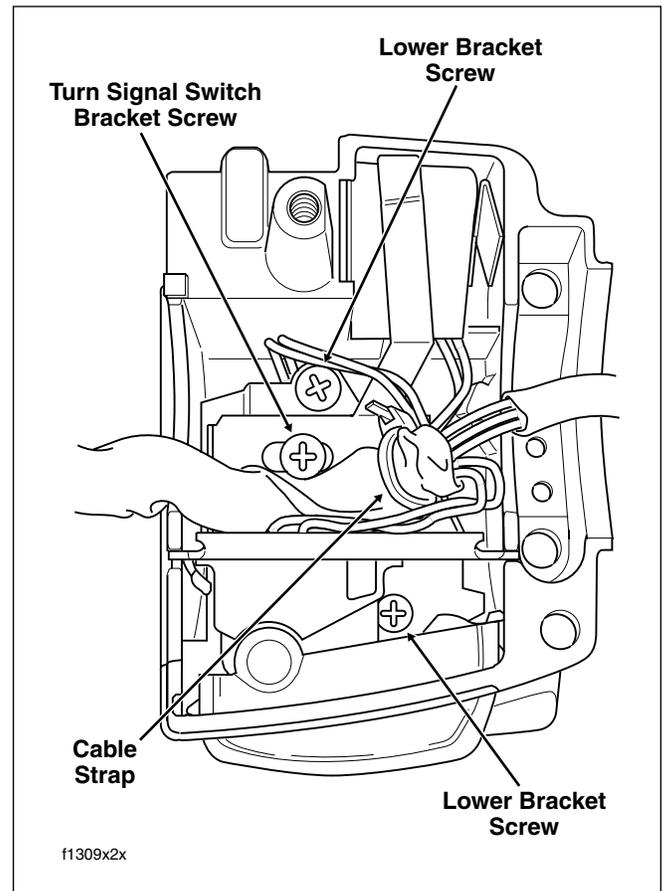


Figure 8-104. Lower Right Handlebar Switch Housing (Without Splices) - Classic/Ultra Models

3. Cut wires 1-1/4 inches (31.8 mm) from old switch. Discard switch assembly.

NOTE

Replacement Mode Select Switch wires are cut to length (2-1/4 inches) and partially stripped.

4. See [GENERAL REPAIR PROCEDURES](#) in this section.
5. Fit new switch into cavity so that it sits on edge in a vertical position (gray/white wire topside). Properly installed, the switch is captured by blocks cast into the lower housing. Verify that the switch shaft is aligned for proper keycap operation.
6. Place the lower bracket into the housing (with the weld nut side down), but keep the splices above the bracket. Verify that the slots in the upper step of the bracket engage two tabs on switch body.
7. Install shorter screw to secure front side of lower bracket to threaded boss. Install longer rear screw. To engage threaded hole in casting, use thru hole in lower step of bracket on Classic models, thru hole in upper step on Ultra.
8. Install keycap on switch shaft.
9. See [RIGHT SIDE HANDLEBAR, FINAL INSTRUCTIONS](#) on the next page.

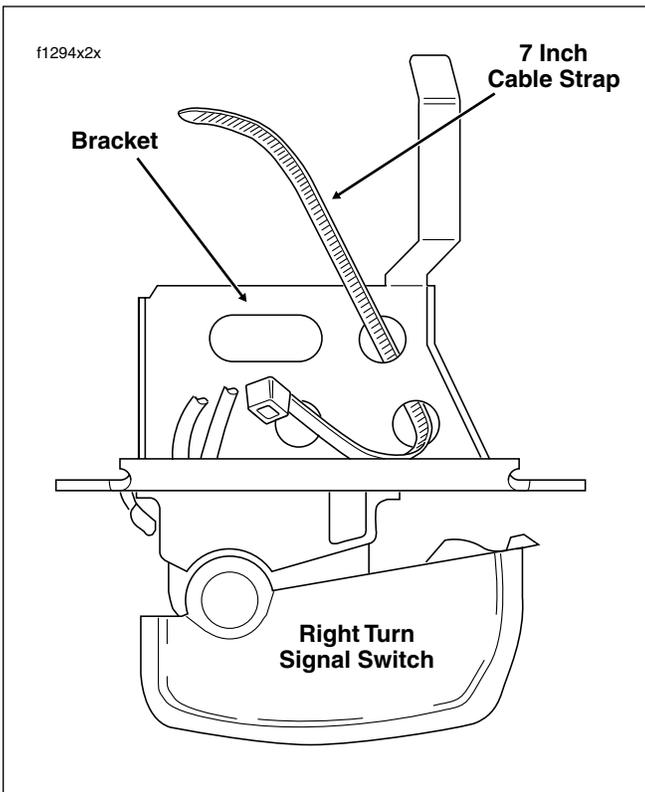


Figure 8-105. Insert Cable Strap in Switch Bracket

● **Cruise Set/Resume Switch
(Road King Classic and Ultra Models)**

1. Pull keycap from switch shaft.
2. Remove two lower bracket screws. Pull bracket and switch from switch housing.
3. Cut wires 1-1/2 inches (38.1 mm) from old switch. Discard switch assembly.

NOTE

Replacement Cruise Set/Resume Switch wires are cut to length (2 inches) and partially stripped.

4. See [GENERAL REPAIR PROCEDURES](#) in this section.
5. Fit new switch into cavity so that it sits in a horizontal position (blue/black wire towards master cylinder). Properly installed, the switch is captured by blocks cast into the lower housing.
6. Keeping splices above the bracket, install the lower bracket (weld nut side down), so that the lower step is positioned over the switch. Slots in the upper step engage two tabs on the Cruise On Lamp upper housing (Road King Classic), or the body of the Mode Select Switch (Ultra models).

NOTE

The Mode Select Switch is vertically oriented with the gray/white wire top side.

7. Install shorter screw to secure front side of lower bracket to threaded boss. Install longer rear screw. Use thru hole in upper step of bracket to engage threaded hole in casting.
8. Note lettering for proper orientation and gently push keycap onto switch shaft.
9. See [RIGHT SIDE HANDLEBAR, FINAL INSTRUCTIONS](#) on this page.

RIGHT SIDE HANDLEBAR

FINAL INSTRUCTIONS

1. Insert tapered end of **new** 7 inch cable strap into round hole in turn signal switch bracket and then feed back through using the adjacent hole. Reserve the oblong hole for the bracket screw. See [Figure 8-105](#).

NOTE

Be sure that all splices are positioned above the turn signal switch bracket.

2. Place the turn signal switch assembly into the housing aligning the oblong hole in the bracket with the lower bracket weld nut (threaded boss on Road King Standard models). Be sure that bracket is fully seated. Tabs on each side of bracket are captured in slots cast into switch housing.
3. Start Phillips screw to secure bracket inside housing.

CAUTION

If routed incorrectly, wires may be pinched by casting or handlebar resulting in switch failure.

4. Loop switch wires so that spliced lengths are positioned as shown in [Figure 8-106](#).
5. Capturing conduit about 1/4 inch (6.4 mm) from end, securely tighten cable strap to draw conduit to bracket. Remove any excess cable strap material.
6. Install second 7 inch cable strap capturing conduit and wire splices. Securely tighten cable strap to draw splices to conduit. Remove any excess cable strap material.
7. Tighten Phillips screw to secure bracket inside housing.
8. Route wire bundle to upper switch housing by gently pressing conduit into channel next to angular arm of bracket. Secure bundle to arm using third cable strap.

Cut any excess cable strap material. If necessary, bend angular arm of bracket downward to firmly secure Front Stoplight Switch in installed position.

9. See [RIGHT SIDE HANDLEBAR SWITCHES, ASSEMBLY](#), in this section.

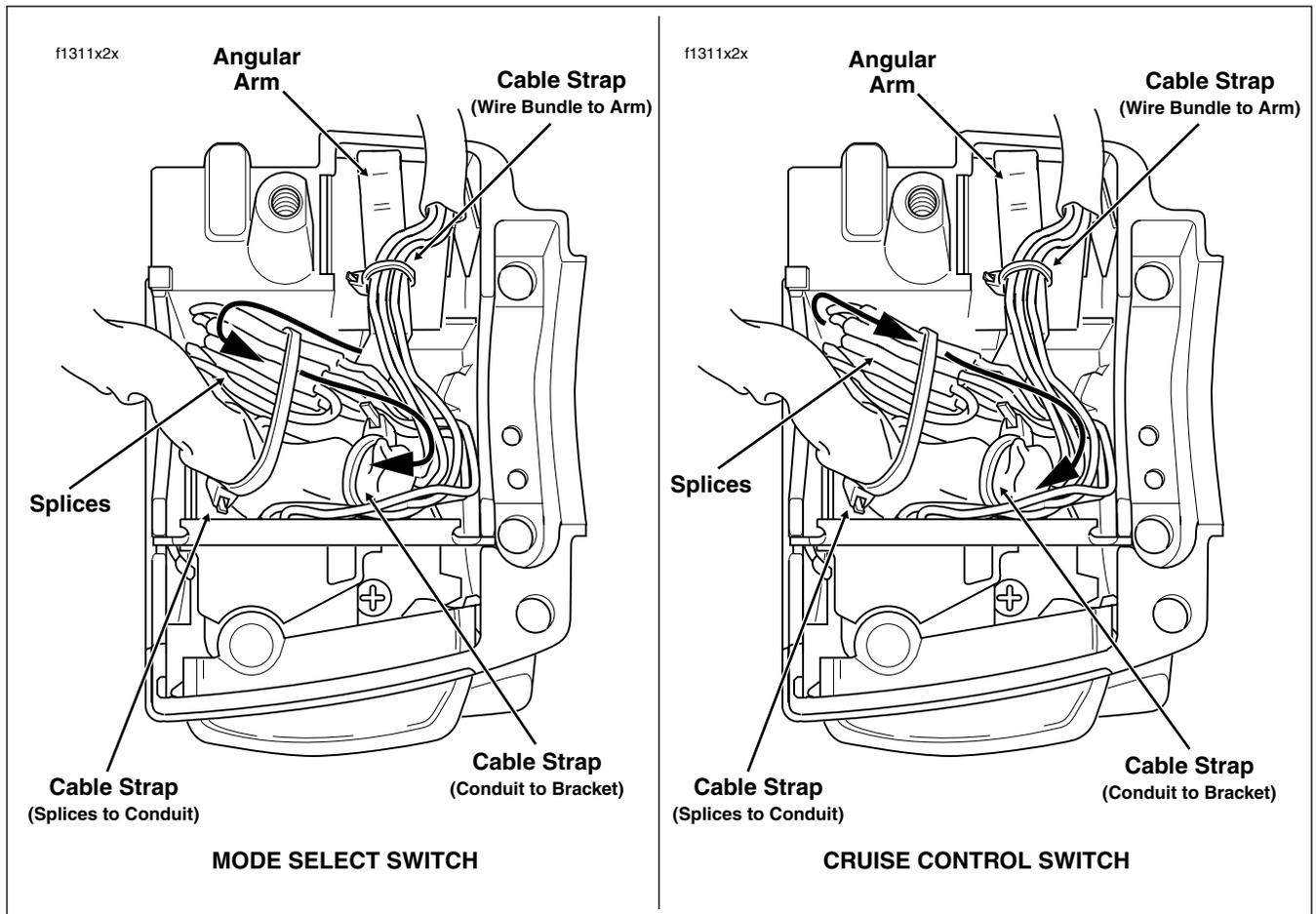


Figure 8-106. Lower Right Handlebar Switch Housing (With Splices) - Classic/Ultra Models

LEFT SIDE HANDLEBAR

PRELIMINARY INSTRUCTIONS

[Continued from [LEFT SIDE HANDLEBAR SWITCHES, DISASSEMBLY](#), in this section.]

1. From inside the switch housing, carefully cut cable strap to free conduit from the turn signal switch bracket, if present.
2. Remove the Phillips screw to release the turn signal switch bracket. Remove the bracket and switch assembly from the housing.

NOTE

On Classic and Ultra models, pull the conduit back to introduce some slack in the wires or the tight fit of the bundle will prevent removal of the switch bracket.

● Turn-L(ef)t Signal Switch (All Models)

1. Cut wires 1-1/2 inches (38.1 mm) from old switch. Discard old switch assembly.

NOTE

Replacement Turn-Left Signal Switch wires are cut to length (1-1/2 inches) and partially stripped.

2. See [GENERAL REPAIR PROCEDURES](#) in this section.
3. See [LEFT SIDE HANDLEBAR, FINAL INSTRUCTIONS](#) on the next page.

● Audio Control Switch (Classic and Ultra Models)

1. Pull keycap from switch shaft.
2. Remove two lower bracket screws. See [Figure 8-109](#). Pull bracket and switch from switch housing.
3. Cut wires 1-1/4 inches (31.8 mm) from old switch. Discard switch assembly.

NOTE

Replacement Audio Control Switch wires are cut to length (2-1/4 inches) and partially stripped.

4. See [GENERAL REPAIR PROCEDURES](#) in this section.

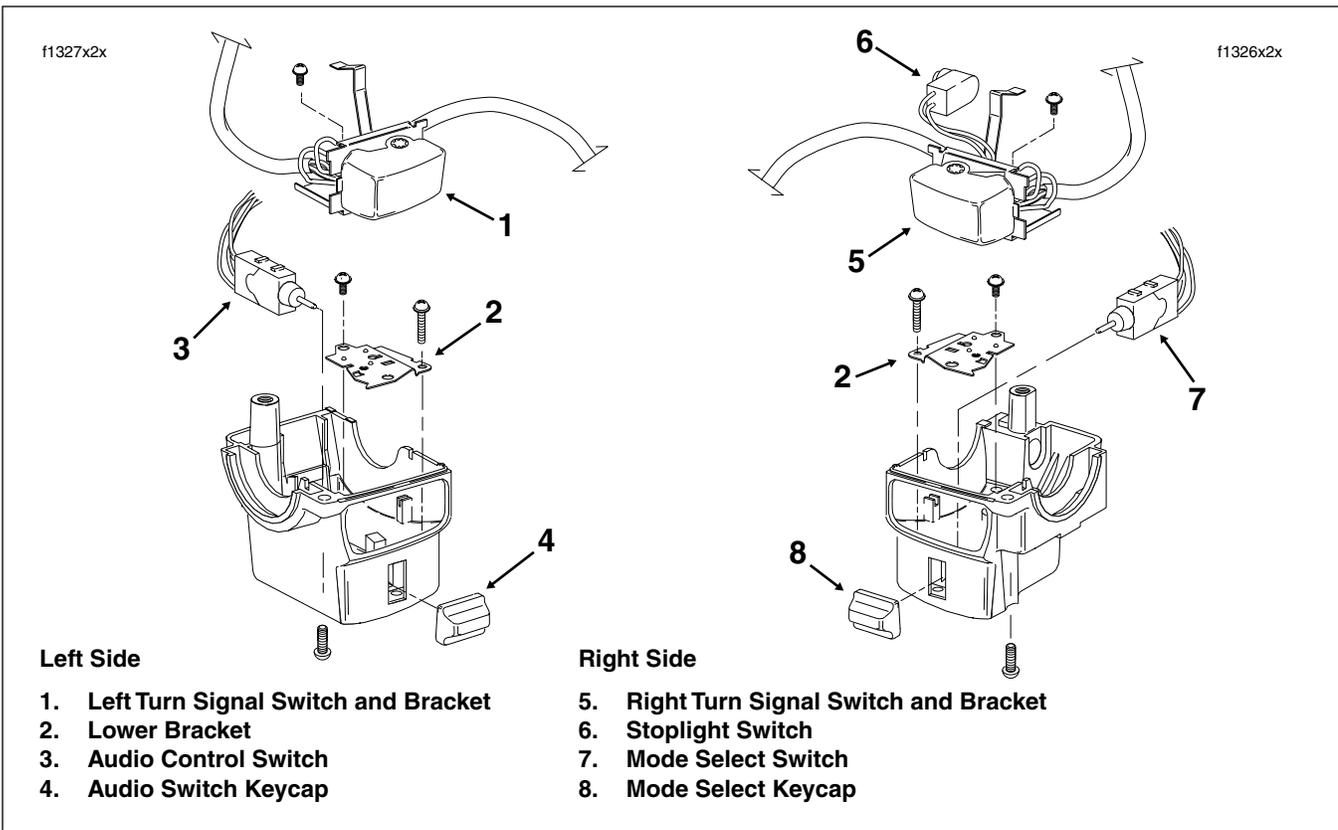


Figure 8-107. Lower Handlebar Switch Assemblies (Classic)

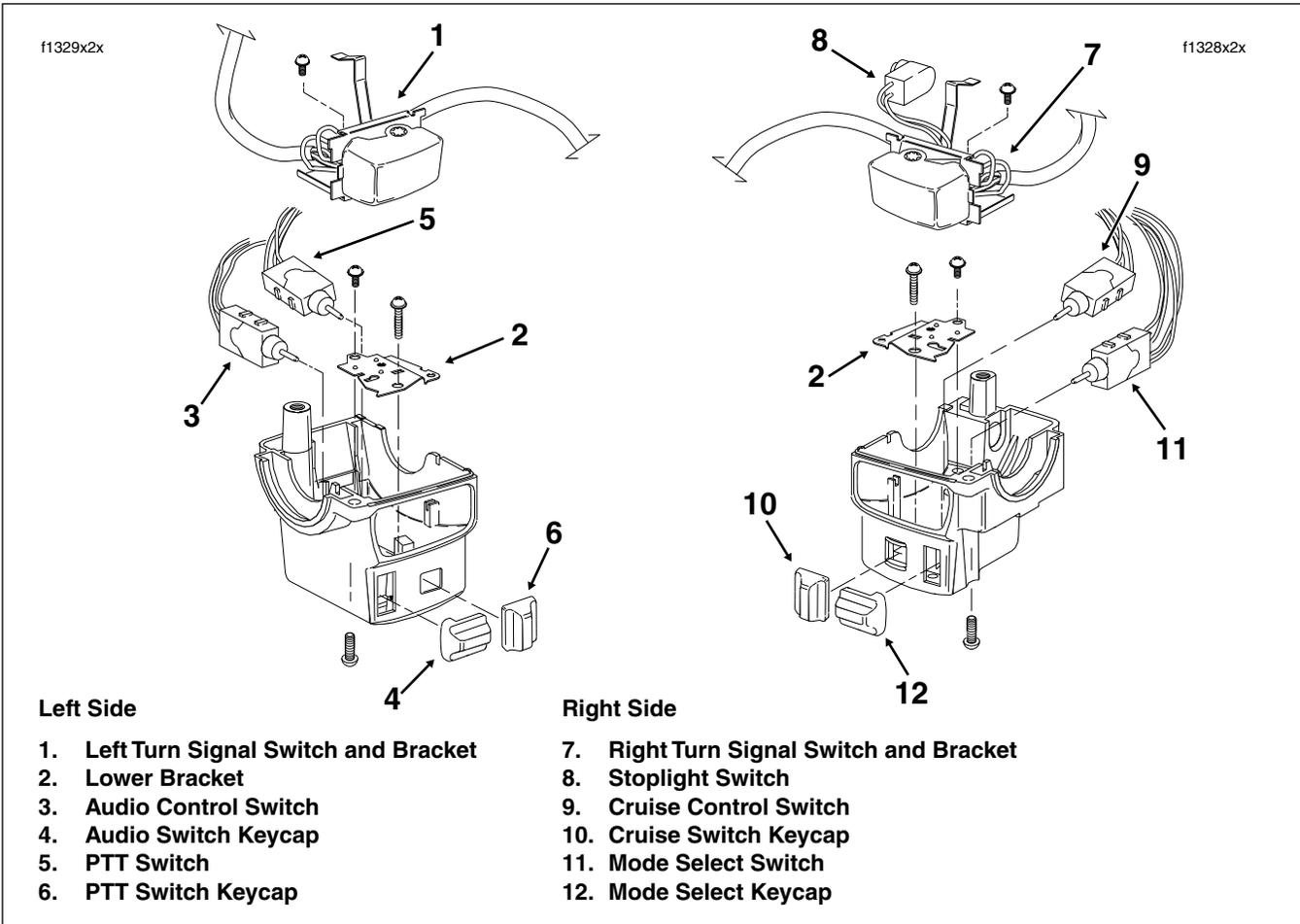


Figure 8-108. Lower Handlebar Switch Assemblies (Ultra)

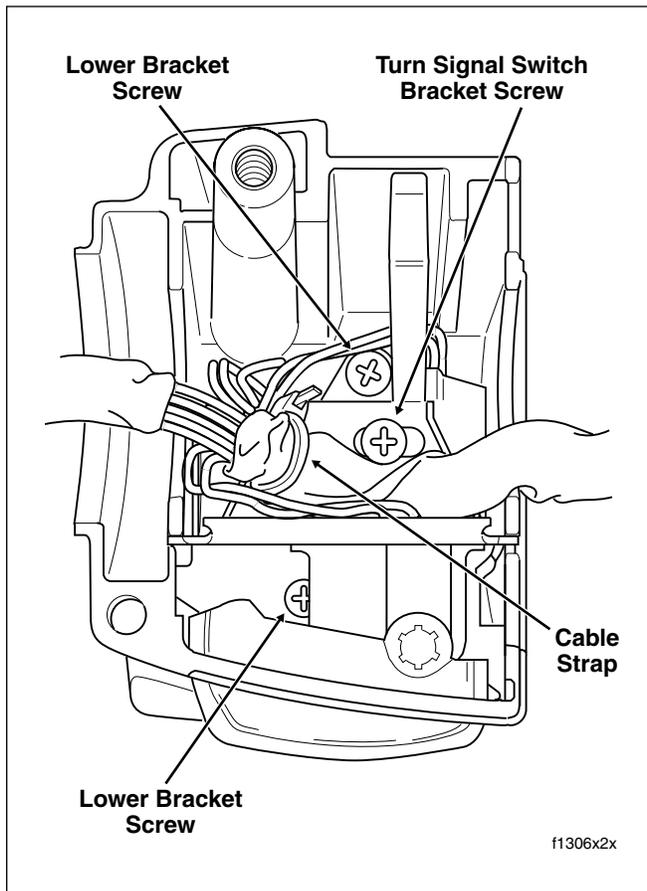


Figure 8-109. Lower Left Handlebar Switch Housing (Without Splices) - Classic/Ultra Models

5. Fit new switch into cavity so that it sits on edge in a vertical position (gray/green wire topside). Properly installed, the switch is captured by blocks cast into the lower housing. Verify that the switch shaft is aligned for proper keycap operation.
6. Place the lower bracket into the housing (with the weld nut side down), but keep the splices above the bracket. Verify that the slots in the upper step of the bracket engage two tabs on switch body.
7. Install shorter screw to secure front side of lower bracket to threaded boss. Install longer rear screw. To engage threaded hole in casting, use thru hole in lower step of bracket on Classic models, thru hole in upper step on Ultra.
8. Note lettering for proper orientation and gently push keycap onto switch shaft.
9. See [LEFT SIDE HANDLEBAR, FINAL INSTRUCTIONS](#) on the next page.

● **CB Push-To-Transmit Switch (Ultra Models)**

1. Pull keycap from switch shaft.

2. Remove two lower bracket screws. See [Figure 8-109](#). Pull bracket and switch from switch housing.
3. Cut wires 1-1/2 inches (38.1 mm) from old switch. Discard switch assembly.

NOTE

Replacement Push-to-Transmit Switch wires are cut to length (2 inches) and partially stripped.

4. See [GENERAL REPAIR PROCEDURES](#) in this section.
5. Fit new switch into cavity so that it sits in a horizontal position (brown/black wire towards clutch lever bracket). Properly installed, the switch is captured by blocks cast into the lower housing.
6. Keeping splices above the bracket, install the lower bracket (weld nut side down) so that the lower step is positioned over the Push-to-Transmit Switch (horizontally oriented). Slots in the upper step engage two tabs on body of Audio Control Switch (vertically oriented with gray wire topside).
7. Install shorter screw to secure front side of lower bracket to threaded boss. Install longer rear screw. To engage threaded hole in casting, use thru hole in upper step of bracket.
8. Note lettering for proper orientation and gently push keycap onto switch shaft.
9. See [LEFT SIDE HANDLEBAR, FINAL INSTRUCTIONS](#) on this page.

● **Cruise On/Off Switch (Road King Classic Models)**

1. Pull keycap from switch shaft.
2. Remove two lower bracket screws. Pull bracket and switch from switch housing.
3. Cut wires 1-1/2 inches (38.1 mm) from old switch. Discard switch assembly.

NOTE

Cut replacement Cruise On/Off Switch wires to 2 inches and strip 1/2 inch of insulation.

4. See [GENERAL REPAIR PROCEDURES](#) in this section.
5. Fit new switch into cavity so that it sits in a horizontal position (orange/white wire towards clutch lever bracket). Properly installed, the switch is captured by blocks cast into the lower housing.
6. Keeping splices above the bracket, install the lower bracket (weld nut side down), so that the lower step is positioned over the switch. Slots in the upper step engage two tabs on the Cruise On Lamp upper housing.
7. Install shorter screw to secure front side of lower bracket to threaded boss. Install longer rear screw. Use thru hole in upper step of bracket to engage threaded hole in casting.

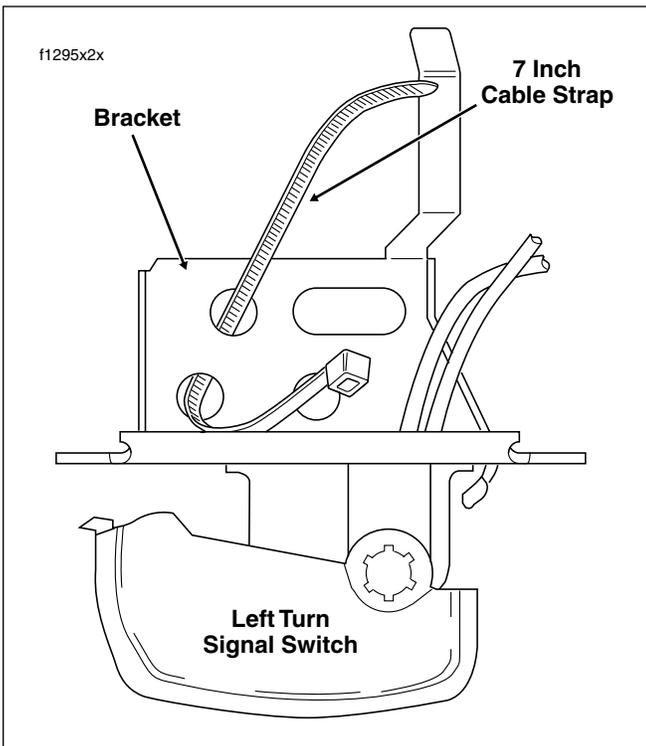


Figure 8-110. Insert Cable Strap in Switch Bracket

8. Note lettering for proper orientation and gently push key-cap onto switch shaft.
9. See [LEFT SIDE HANDLEBAR, FINAL INSTRUCTIONS](#) below.

LEFT SIDE HANDLEBAR

FINAL INSTRUCTIONS

1. Insert tapered end of **new** 7 inch cable strap into round hole in turn signal switch bracket and then feed back through using the adjacent hole. Reserve the oblong hole for the bracket screw. See [Figure 8-110](#).

NOTE

Be sure that all splices are positioned above the turn signal switch bracket.

2. Place the turn signal switch assembly into the housing aligning the oblong hole in the bracket with the lower bracket weld nut (threaded boss on Road King Standard models). Be sure that bracket is fully seated. Tabs on each side of bracket are captured in slots cast into switch housing.
3. Start Phillips screw to secure bracket inside housing.

CAUTION

If routed incorrectly, wires may be pinched by casting or handlebar resulting in switch failure.

4. Loop switch wires so that spliced lengths are positioned as shown in [Figure 8-111](#).
5. Capturing conduit about 1/4 inch (6.4 mm) from end, securely tighten cable strap to draw conduit to bracket. Remove any excess cable strap material.
6. Tighten Phillips screw to secure bracket inside housing.
7. Route wire bundle to upper switch housing below and then forward of the main wire harness positioning conduit in channel next to angular arm of bracket. See [Figure 8-111](#). Secure bundle to arm using **new** cable strap. Cut any excess cable strap material.
8. See [LEFT SIDE HANDLEBAR SWITCHES, ASSEMBLY](#), which follows.

GENERAL REPAIR PROCEDURES

1. To better access wires and avoid damaging conduit with radiant heating device, push conduit back and secure with extra 7 inch cable strap in kit.

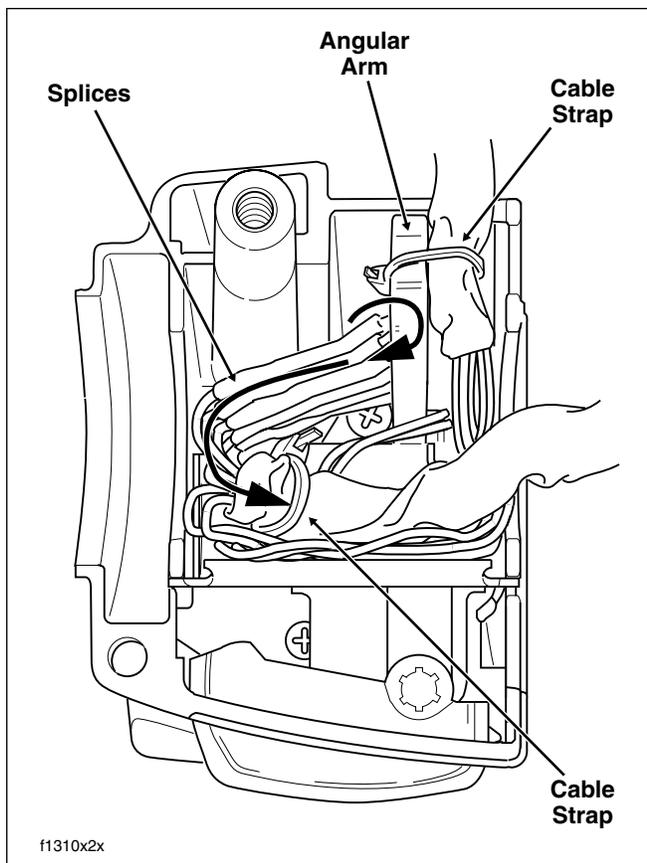


Figure 8-111. Lower Left Handlebar Switch Housing (With Splices) - Classic/Ultra Models

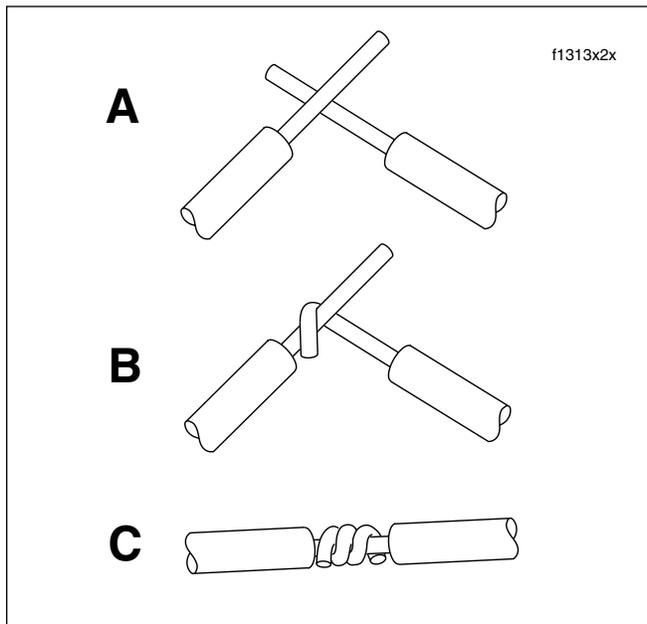


Figure 8-112. Splice Switch Wires

2. Strip 1/2 inch of insulation off switch wires. Twist stripped ends of switch wires until all strands are tightly coiled.
3. Cut dual wall heat-shrink tubing supplied in kit into one inch (25.4 mm) segments. Slide tubing over each wire of new switch assembly.

NOTE

If absent from kit, obtain heat shrink tubing (Part No. 72266-94) and two 7 inch cable straps (Part No. 10181).

4. Matching wire colors, mate old and new switch wires and splice as follows:
 - a. Hold the wires so that the stripped ends cross as shown in A of Figure 8-112. Note that the wire on the left is on top and two-thirds of its stripped length lies beyond the point where they intersect. Looking at the other wire, only 1/3 of its stripped length lies beyond the intersection point.
 - b. Holding the wires together at their juncture, start the splice by tightly twisting the top one-third length of the right hand wire over the left as shown in B of Figure 8-112.
 - c. Tightly coil the remaining two-thirds of the left hand wire around the right with the results shown in C of Figure 8-112.
 - d. Solder the spliced connections.

NOTE

For best results, do one wire at a time.

5. Center the heat-shrink tubing over the soldered splices.

WARNING

Use extreme caution when operating the UltraTorch UT-100 or any other radiant heating device. Read the manufacturers instructions carefully before use. Always keep hands away from tool tip area and heat shrink attachment. Avoid directing the heat toward any fuel system component. Extreme heat can cause fuel ignition/explosion. Avoid directing heat toward any electrical system component other than the connectors on which heat shrink work is being performed. Be sure to turn the "ON/OFF" switch to the "OFF" position after use. Inadequate safety precautions could result in death or serious injury.

6. See Figure 8-113. Using the UltraTorch UT-100, Robinair Heat Gun with heatshrink attachment or other suitable radiant heating device, uniformly heat the heat-shrink tubing to insulate and seal the soldered connections. Apply heat just until the meltable sealant exudes out both ends of the tubing and it assumes a smooth cylindrical appearance.

CAUTION

Electrically connected solder outside the tubing may cause a short to ground resulting in switch failure.

7. Inspect the melted sealant for solder beads. Excess solder or heat may force some solder out with the melted sealant. Use a small needle nose pliers to remove any solder found. Briefly heat the connection to reseal the tubing if solder beads were removed. Use less solder or

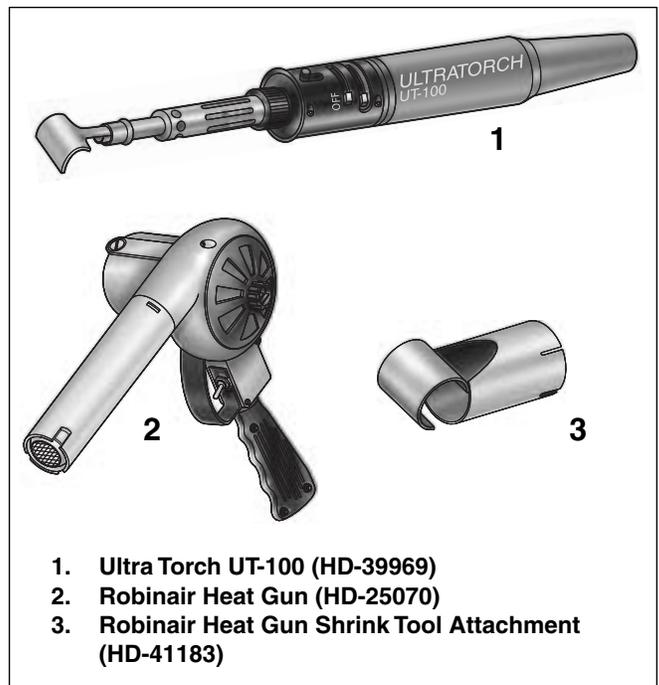


Figure 8-113. Radiant Heating Devices

reduce heating time or intensity when doing subsequent splices.

8. Cut cable strap compressing conduit and move to its original position.

RIGHT SIDE HANDLEBAR SWITCHES

ASSEMBLY

1. If replacing lower housing switches, proceed to step 2. If replacing upper housing switches, proceed to step 9.
2. With the concave side facing upward, install the friction shoe so that the pin hole is over the point of the adjuster screw (non cruise equipped models only).

NOTE

The friction shoe is a loose fit and may fall out or become dislodged if the lower switch housing is turned upside down or shaken.

3. Slide the throttle control grip over the end of the right handlebar until it bottoms against the closed end. Rotate the grip so that the ferrule notches are at the top. To prevent binding, pull the grip back about 1/8 inch (3.2 mm).
4. Position the lower switch housing beneath the throttle control grip. Install the brass ferrules onto the cables so that the end fittings seat in the ferrule recess. Seat the ferrules in their respective notches on the throttle control grip. Verify that the cables are captured in the grooves molded into the grip.
5. Position the upper switch housing over the handlebar and lower switch housing. Verify that the wire harness conduit runs in the depression at the bottom of the handlebar.
6. Start the upper and lower switch housing screws, but do not tighten.
7. Position the brake lever/master cylinder assembly inboard of the switch housing assembly engaging the tab on the lower switch housing in the groove at the top of the brake lever bracket.
8. Align the holes in the handlebar clamp with those in the master cylinder housing and start the lower screw (with flat washer). Position for rider comfort. Beginning with the top screw, tighten the screws to 60-80 **in-lbs** (6.8-9.0 Nm) using a T27 TORX drive head.
9. Using a T25 TORX drive head, tighten the lower and upper switch housing screws to 35-45 **in-lbs** (4-5 Nm).

NOTE

Always tighten the lower switch housing screw first so that any gap between the upper and lower housings is at the front of the switch assembly.

10. Remove the cardboard insert between the brake lever and lever bracket.
11. Test the switches for proper operation.

LEFT SIDE HANDLEBAR SWITCHES

ASSEMBLY

1. If replacing lower housing switches, proceed to step 2. If replacing upper housing switches, proceed to step 6.
2. Install upper and lower switch housings on handlebar. Be sure that ribs on outboard side of switch housings fit in grooves molded into grip. Verify that the wire harness conduit runs in the depression at the bottom of the handlebar.
3. Start the upper and lower switch housing screws, but do not tighten.
4. Position the clutch hand lever assembly inboard of the switch housing assembly engaging the tab on the lower switch housing in the groove at the bottom of the clutch lever bracket.
5. Align the holes in the handlebar clamp with those in the clutch lever bracket and start the lower screw (with flat washer). Position for rider comfort. Beginning with the top screw, tighten the screws to 60-80 **in-lbs** (6.8-9.0 Nm) using a T27 TORX drive head.
6. Using a T25 TORX drive head, tighten the lower and upper switch housing screws to 35-45 **in-lbs** (4-5 Nm).

NOTE

Always tighten the lower switch housing screw first so that any gap between the upper and lower housings is at the front of the switch assembly.

7. Test the switches for proper operation.

FRONT STOPLIGHT SWITCH

REMOVAL/INSTALLATION

See Section 8.22 HANDLEBAR SWITCHES, SWITCH REPAIR/REPLACEMENT.

REAR STOPLIGHT SWITCH

REMOVAL

CAUTION

DOT 4 brake fluid will damage painted and molded-in color surfaces it comes in contact with. Always use caution and protect surfaces from spills whenever brake work is performed. Failure to comply can result in cosmetic damage. (00239a)

IMPORTANT NOTE

Immediately wipe up any brake fluid spillage with a clean, dry, soft cloth. Follow up by thoroughly wiping affected area with a clean, damp, soft cloth (small spills) or washing with a large quantity of soapy water (large spills).

1. Remove bleeder valve cap on rear brake caliper. Install end of a length of clear plastic tubing over caliper bleeder valve, while placing free end in a suitable container. Open bleeder valve about 1/2-turn. Pump brake pedal to drain brake fluid. Close bleeder valve.
2. Using a 11/16 inch open end/box wrench on flats, remove rear stoplight switch from rear brake line. See Figure 8-114.

INSTALLATION

1. Apply Loctite Pipe Sealant with Teflon 565 to threads of rear stoplight switch.
2. Install rear stoplight switch into rear brake line. See Figure 8-114.



Figure 8-114. Rear Stoplight Switch

3. Using a 11/16 inch open end/box wrench on flats, tighten rear stoplight switch to 12-15 ft-lbs (16.3-20.3 Nm).
4. Fill and bleed rear brake system. See Section 2.14 BLEEDING HYDRAULIC BRAKES.
5. Verify proper operation of tail lamp/rear brake light.

REMOVAL

CAUTION

Cover transmission top cover with masking tape to prevent damage to chrome.

1. Using fingers and flat tip screwdriver, remove two elbow connectors from neutral switch posts.
2. Using a 7/8 inch open end/box wrench on flats, remove neutral switch and O-ring from transmission top cover.

NOTE

If neutral switch connector is damaged, replace using Part No.'s 72405-98BK or 72405-98TN with a heat-sealed butt splice connector. For detailed butt splicing information, see [APPENDIX B.6 SEALED BUTT SPLICE CONNECTORS](#).

INSTALLATION

NOTE

If transmission top cover has been removed, be sure to install neutral switch after top cover installation to ensure proper switch engagement.

1. Roll the motorcycle back and forth to verify that the transmission is in NEUTRAL.
2. Lubricate O-ring with clean transmission oil.

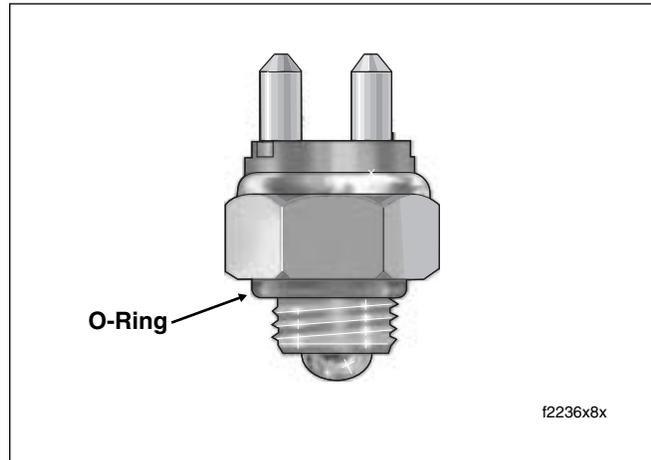


Figure 8-115. Neutral Switch Assembly

3. Using a 7/8 inch open end/box wrench on flats, install neutral switch with O-ring in the transmission top cover. Tighten to 120-180 **in-lbs** (13.6-20.3 Nm).
4. Using fingers and a flat tip screwdriver, install the two elbow connectors on neutral switch posts.

NOTE

The neutral switch is not polarity sensitive, so the elbow connectors can be attached to either stud.

5. Test neutral switch for proper operation as follows:
 - a. Turn the Ignition/Light Key Switch to the IGNITION position.
 - b. Verify that neutral indicator lamp illuminates.
6. Remove masking tape from transmission top cover.

REMOVAL

1. Locate the oil pressure switch/sender at the front right side of the crankcase.

2. Proceed as follows:

FLHR/C/S: Pull elbow connector [120] from post terminal of oil pressure switch. Use a 15/16 inch Open End Crow Foot (Snap-On FC30B) to remove switch from crankcase.

FLHX, FLHT/C/U, FLTR: Pull external latch outward and use rocking motion to remove 4-place Delphi connector [139] from oil pressure sender. Use 1-1/16 inch Open End Crow Foot (Snap-On FC34A) to remove sender from crankcase.

INSTALLATION

NOTE

If reusing oil pressure switch/sender, apply Loctite Pipe Sealant with Teflon 565 to threads.

1. Start oil pressure switch/sender into crankcase bore.
2. Proceed as follows:

FLHR/C/S: Use a 15/16 inch Open End Crow Foot (Snap-On FC30B) to tighten oil pressure switch to 96-120 **in-lbs** (11-14 Nm). Install elbow connector [120] on post terminal.

FLHX, FLHT/C/U, FLTR: Use 1-1/16 inch Open End Crow Foot (Snap-On FC34A) to tighten oil pressure sender to 96-120 **in-lbs** (11-14 Nm). Install 4-place Delphi connector.

3. Test oil pressure switch/sender for proper operation.

TROUBLESHOOTING

1. If the horn does not sound or fails to function satisfactorily, check for the following conditions.
 - Discharged battery
 - Loose, frayed or damaged wiring leading to horn terminal
2. If battery has a satisfactory charge and wiring appears to be in good condition, check for the following:
 - Poor ground to frame through mounting hardware or ground wire (see Steps 3-6 below)
 - Inoperative horn switch (see Steps 3-6 below)
3. Disconnect the YELLOW/BLACK wire at the horn. Connect a voltmeter as follows:
 - Positive (+) lead to wire terminal
 - Negative (-) lead to ground
4. Turn ignition switch ON. Depress horn switch. If battery voltage is present, horn or horn grounding is faulty. If battery voltage is not present, either horn switch or wiring to horn is faulty.
5. Connect an ohmmeter across the horn terminals. The resistance measured must be 45-66 ohms. Replace horn if measured resistance is outside range given.
6. If the horn is faulty, then it must be replaced as an assembly. The horn is not repairable. If the horn switch is faulty, replace the switch. See Section [8.22 HANDLE-BAR SWITCHES, SWITCH REPAIR/REPLACEMENT](#).

REMOVAL

1. Remove acorn nut and flat washer to free horn assembly from rubber mount stud.
2. Remove elbow terminals from spade contacts and release main harness conduit from J-clamp.
3. Remove flange nut (10mm) from circular recess at back of horn bracket. Remove horn from chrome horn cover.

INSTALLATION

1. Fit horn into chrome cover so that stud at back slides through hole in horn bracket. Apply two drops of LOC-TITE THREADLOCKER 222 (Purple) to threads of horn stud.

CAUTION

Overtightening the flange nut can cause permanent horn damage resulting in reduced volume and tone quality.

2. Install flange nut (10mm) on horn stud and tighten to 80-100 **in-lbs** (9.0-11.3 Nm).
3. Install elbow terminals onto spade contacts.

NOTE

The horn is not polarity sensitive. Elbow terminals may be attached to either spade contact.

4. Capture main harness conduit in J-clamp and install horn bracket onto rubber mount stud. Install flat washer and acorn nut. Tighten acorn nut to 80-100 **in-lbs** (9.0-11.3 Nm).

GENERAL

FLHX, FLHT/C/U and FLTR models are equipped with a cigarette lighter. The lighter is located on the left side of the inner fairing.

TROUBLESHOOTING

1. Ignition/light key switch must be ON or in ACCESSORY position for lighter operation.
2. If lighter does not work, substitute a known good lighter element.
3. If lighter is still inoperative, check for 12 vdc at center socket contact and ground at outer shell contact.
4. Refer to applicable Wiring Diagram at rear of manual if 12 vdc or ground are not present. Use voltage checks to isolate problem.

REMOVAL

1. Remove the outer fairing. On FLHX, FLHT/C/U models, see Section [2.30 UPPER FAIRING/WINDSHIELD \(FLHX, FLHT/C/U\), OUTER FAIRING/WINDSHIELD, REMOVAL](#). On FLTR models, see Section [2.31 UPPER FAIRING/WINDSHIELD \(FLTR\), OUTER FAIRING, REMOVAL](#).

2. Disconnect the socket terminals from the spade contacts on the cigarette lighter.
3. Remove lighter from socket. Holding socket, unscrew outer shell. Remove socket and outer shell from the fairing.

INSTALLATION

1. From rider side of inner fairing, slide socket of **new** cigarette lighter through bore in fairing. Thread outer shell onto socket until tight. Install cigarette lighter in socket.
2. Connect the socket terminals onto the spade contacts of the cigarette lighter. Connect the orange wire terminal to the center socket spade contact, the black wire terminal to the outer shell contact.
3. Install the outer fairing. On FLHX, FLHT/C/U models, see Section [2.30 UPPER FAIRING/WINDSHIELD \(FLHX, FLHT/C/U\), OUTER FAIRING/WINDSHIELD, INSTALLATION](#). On FLTR models, see Section [2.31 UPPER FAIRING/WINDSHIELD \(FLTR\), OUTER FAIRING, INSTALLATION](#).

GAUGE/LAMP- 2 INCH DIAMETER

Fuel Level, Ambient Air Temperature, Voltmeter, Oil Pressure

REMOVAL

1. Remove outer fairing. Proceed as follows:

FLHX, FLHT/C/U: See Section 2.30 UPPER FAIRING/WINDSHIELD (FLHX, FLHT/C/U), OUTER FAIRING/WINDSHIELD, REMOVAL.

FLTR: See Section 2.31 UPPER FAIRING/WINDSHIELD (FLTR), OUTER FAIRING, REMOVAL.

2. Pull 2-place and 3-place socket housings to release interconnect harness from lamp and gauge, respectively.

NOTE

To replace lamp, pull pin housing from gauge and then pull lamp from slot of pin housing. Install **new** lamp in slot and insert pin housing back into gauge. See Figure 8-116.

3. Remove hex nuts from studs. Remove mounting bracket.
4. Remove gauge from inner fairing.

INSTALLATION

1. Install gauge in inner fairing.
2. Slide mounting bracket over studs. Verify that tabs on top and bottom of bracket engage slots in inner fairing. See Figure 8-116.
3. Loosely install hex nuts on studs. Verify that gauge is properly aligned and then tighten nuts to 10-20 **in-lbs** (1.1-2.3 Nm).
4. Install 3-place and 2-place socket housings to connect interconnect harness to gauge and lamp, respectively.
5. Install outer fairing. Proceed as follows:

FLHX, FLHT/C/U: See Section 2.30 UPPER FAIRING/WINDSHIELD (FLHX, FLHT/C/U), OUTER FAIRING/WINDSHIELD, INSTALLATION.

FLTR: Section 2.31 UPPER FAIRING/WINDSHIELD (FLTR), OUTER FAIRING, INSTALLATION.

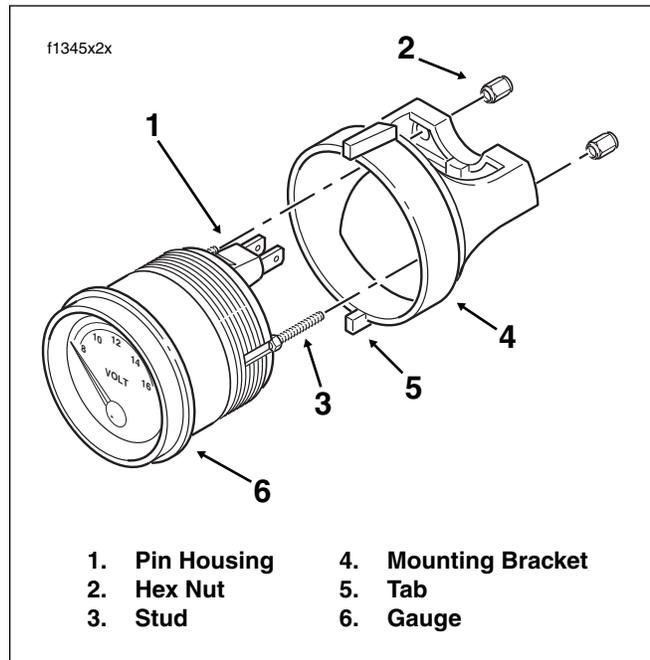


Figure 8-116. Voltmeter Gauge Assembly

GAUGES- 4 INCH DIAMETER

TACHOMETER

REMOVAL

1. Proceed as follows:

FLHX, FLHT/C/U: Remove the outer fairing. See Section 2.30 UPPER FAIRING/WINDSHIELD (FLHX, FLHT/C/U), OUTER FAIRING/WINDSHIELD, REMOVAL.

FLTR: Remove instrument bezel. See Section 2.31 UPPER FAIRING/WINDSHIELD (FLTR), BEZEL, REMOVAL, steps 1-3.

2. Remove tachometer connector [108], 12-place Packard, at back of tachometer.
3. Remove two allen head socket screws to free tachometer bracket from back of tachometer gauge. On FLHX, FLHT/C/U models, leave anchors on interconnect harness installed in outboard ears of tachometer bracket.
4. Push tachometer gauge toward rear of motorcycle to remove from inner fairing (FLHX, FLHT/C/U) or bezel bore (FLTR).

INSTALLATION

1. Insert tachometer gauge into inner fairing (FLHX, FLHT/C/U) or bezel bore (FLTR).
2. Align holes in tachometer bracket with those at back of tachometer gauge and start two allen head socket screws.
3. Rotate tachometer gauge until tabs at top and bottom of bracket engage slots in inner fairing (FLHX, FLHT/C/U) or bezel (FLTR).

NOTE

On FLHX, FLHT/C/U models, both the speedometer and tachometer brackets are oriented with the ears on the outboard side. On FLTR models, the brackets are oriented with the ears inboard.

4. Verify that gauge is properly aligned and tighten two allen head socket screws to 10-20 **in-lbs** (1.1-2.3 Nm).
5. Install tachometer connector [108], 12-place Packard, at back of tachometer.
6. Proceed as follows:

FLHX, FLHT/C/U: Verify that anchors on interconnect harness are installed in lower outboard ears of both the speedometer and tachometer brackets. Install outer fairing. See Section 2.30 [UPPER FAIRING/WINDSHIELD \(FLHX, FLHT/C/U\)](#), [OUTER FAIRING/WINDSHIELD, INSTALLATION](#).

FLTR: Install instrument bezel. See Section 2.31 [UPPER FAIRING/WINDSHIELD \(FLTR\)](#), [BEZEL, INSTALLATION](#), steps 2-5

VSS

REMOVAL

1. Remove maxi-fuse. See Section 8.3 [SYSTEM FUSES, MAXI-FUSE, REMOVAL](#).
2. Remove right side saddlebag. See Section 2.26 [SADDLEBAG, REMOVAL](#).
3. Gently pull side cover from frame downtubes (no tools required).
4. Remove two flange nuts to release electrical bracket from studs on side of battery box.
5. Disconnect VSS connector [65], 3-place Deutsch, on the inboard side of the electrical bracket. See [Figure 8-117](#).
6. Remove terminals from pin housing.

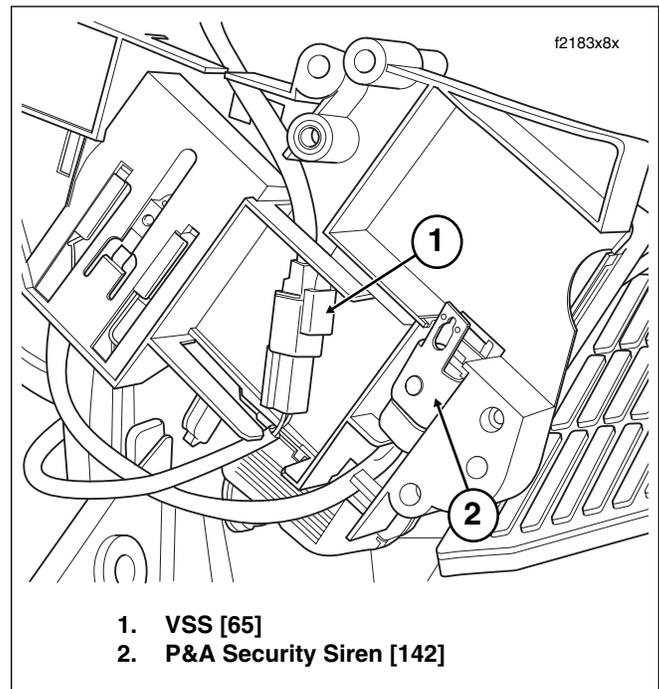


Figure 8-117. Electrical Bracket (Inboard Side)

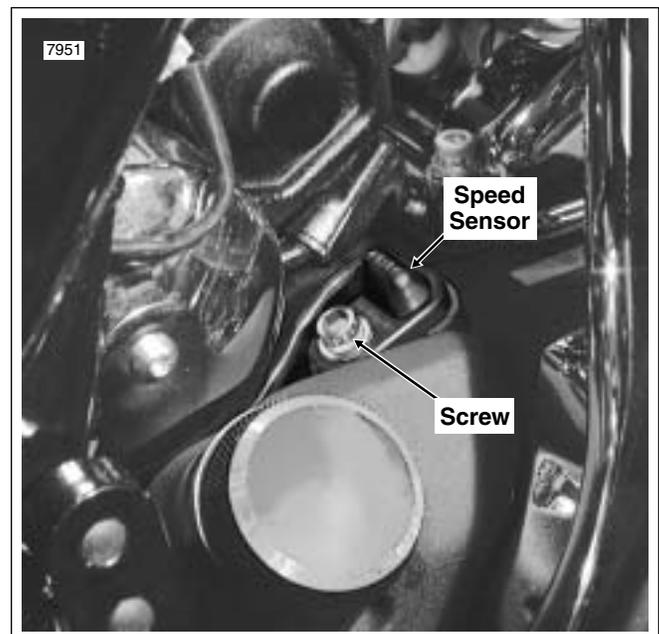


Figure 8-118. VSS Location

NOTE

For instructions on properly removing wire terminals, see [APPENDIX B.1 DEUTSCH ELECTRICAL CONNECTORS, REMOVING/INSTALLING PINS](#).

7. Carefully cut anchored cable strap inboard of rear passenger footboard screw to release cable from frame downtube.

8. Locate VSS mounted next to the starter on the right side of the transmission case. Remove screw and pull sensor from transmission case. See [Figure 8-118](#).
9. Draw sensor and cable forward to remove from motorcycle.

10. Install right side saddlebag. See Section [2.26 SADDLE-BAG, INSTALLATION](#).
11. Install maxi-fuse. See Section [8.3 SYSTEM FUSES, MAXI-FUSE, INSTALLATION](#).

INSTALLATION

1. Inspect VSS O-ring for cuts, tears or general deterioration. Replace as necessary.
2. Insert sensor into transmission case. Install screw and tighten to 84-132 **in-lbs** (9.5-14.9 Nm).
3. Feed cable rearward under and inboard of the chrome starter cover. Running cable up the frame downtube, capture cable in **new** cable strap anchored in hole of frame downtube.

NOTE

Anchored cable strap also captures the main harness and neutral switch conduit.

4. Draw cable rearward between frame downtube and side of battery box to area of electrical bracket.
5. Referencing the following table, install terminals into pin housing.

Table 8-16. VSS Connector [65]

Wire Color	Chamber Number
Red	A
White	B
Black	C

NOTE

For instructions on properly installing wire terminals, see [APPENDIX B.1 DEUTSCH ELECTRICAL CONNECTORS, REMOVING/INSTALLING PINS](#).

6. Connect VSS connector. Route connector and cable on inboard side of electrical bracket as shown in [Figure 8-117](#). Be sure that cable is properly routed or wires may be pinched during installation of bracket.
7. Slide electrical bracket onto studs at side of battery box.
8. Install flange nuts on studs and tighten to 36-48 **in-lbs** (4.1-5.4 Nm).
9. Align barbed studs in side cover with grommets in frame downtubes and push firmly into place (no tools required).

SPEEDOMETER

REMOVAL

1. Proceed as follows:
 - FLHX, FLHT/C/U:** Remove the outer fairing. See Section [2.30 UPPER FAIRING/WINDSHIELD \(FLHX, FLHT/C/U\), OUTER FAIRING/WINDSHIELD, REMOVAL](#).
 - FLTR:** Remove instrument bezel. See Section [2.31 UPPER FAIRING/WINDSHIELD \(FLTR\), BEZEL, REMOVAL](#), steps 1-2. Raising bezel slightly, remove anchor on ambient temperature sensor from bottom inboard ear of speedometer bracket.
2. Remove speedometer connector [39], 12-place Packard, at back of speedometer.
3. Remove two allen head socket screws to free speedometer bracket from back of speedometer gauge. On FLHX, FLHT/C/U models, leave anchors on interconnect harness installed in outboard ears of speedometer bracket.
4. Push speedometer gauge toward rear of motorcycle to remove from inner fairing (FLHX, FLHT/C/U) or bezel bore (FLTR).

INSTALLATION

1. Insert speedometer gauge into inner fairing (FLHX, FLHT/C/U) or bezel bore (FLTR).
2. Align holes in speedometer bracket with those at back of speedometer gauge and start two allen head socket screws.
3. Rotate speedometer gauge until tabs at top and bottom of bracket engage slots in inner fairing (FLHX, FLHT/C/U) or bezel (FLTR).

NOTE

On FLHX, FLHT/C/U models, both the speedometer and tachometer brackets are oriented with the ears on the outboard side. On FLTR models, the brackets are oriented with the ears inboard.

4. Verify that gauge is properly aligned and tighten two allen head socket screws to 10-20 **in-lbs** (1.1-2.3 Nm).
5. Install speedometer connector [39], 12-place Packard, at back of speedometer.

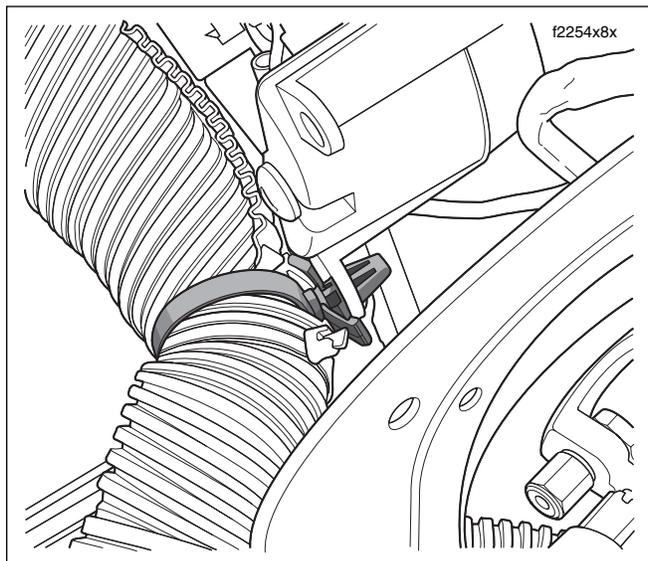


Figure 8-119. Anchor Interconnect Harness in Lower Ears of Speedometer/Tachometer Brackets

6. Proceed as follows:

FLHX, FLHT/C/U: Verify that anchors on interconnect harness are installed in lower outboard ears of both the speedometer and tachometer brackets. See [Figure 8-119](#). Install outer fairing. See [Section 2.30 UPPER FAIRING/WINDSHIELD \(FLHX, FLHT/C/U\), OUTER FAIRING/WINDSHIELD, INSTALLATION](#).

FLTR: Install anchor on ambient temperature sensor into bottom inboard ear of speedometer bracket. Install instrument bezel. See [Section 2.31 UPPER FAIRING/WINDSHIELD \(FLTR\), BEZEL, INSTALLATION](#), steps 3-5.

INDICATOR LAMPS

REMOVAL

1. Proceed as follows:

FLHX, FLHT/C/U: Remove the outer fairing. See [Section 2.30 UPPER FAIRING/WINDSHIELD \(FLHX, FLHT/C/U\), OUTER FAIRING/WINDSHIELD, REMOVAL](#).

FLTR: Remove instrument bezel. See [Section 2.31 UPPER FAIRING/WINDSHIELD \(FLTR\), BEZEL, REMOVAL](#), steps 1-2.

2. Disconnect indicator lamps connector [21], 10-place Multilock.
3. On FLHX, FLHT/C/U models, remove tachometer gauge to access indicator lamp assembly. See [GAUGES- 4 INCH DIAMETER, TACHOMETER, REMOVAL](#), in this section.

4. Release four paddles to free indicator bulb housing from lense assembly. See [Figure 8-120](#). Remove lense assembly from inner fairing (FLHX, FLHT/C/U) or bezel (FLTR), if damaged.
5. To replace indicator lamp bulbs, carefully remove rubber boot from bulb housing. Remove bulb from socket in boot.

INSTALLATION

1. Install **new** bulb in socket. Install boot in bulb housing.
2. Place lense assembly in inner fairing (FLHX, FLHT/C/U) or bezel (FLTR), if removed. Note position of oil icon to be sure that lense is right side up.
3. Engage all four paddles on lense assembly with tabs on indicator bulb housing. Be sure that flange on bulb housing faces upward.
4. Connect indicator lamps connector [21], 10-place Multilock.
5. On FLHX, FLHT/C/U models, install tachometer gauge. See [GAUGES- 4 INCH DIAMETER, TACHOMETER, INSTALLATION](#), in this section.
6. Proceed as follows:

FLHX, FLHT/C/U: Install outer fairing. See [Section 2.30 UPPER FAIRING/WINDSHIELD \(FLHX, FLHT/C/U\), OUTER FAIRING/WINDSHIELD, INSTALLATION](#).

FLTR: Install instrument bezel. See [Section 2.31 UPPER FAIRING/WINDSHIELD \(FLTR\), BEZEL, INSTALLATION](#), steps 3-5.

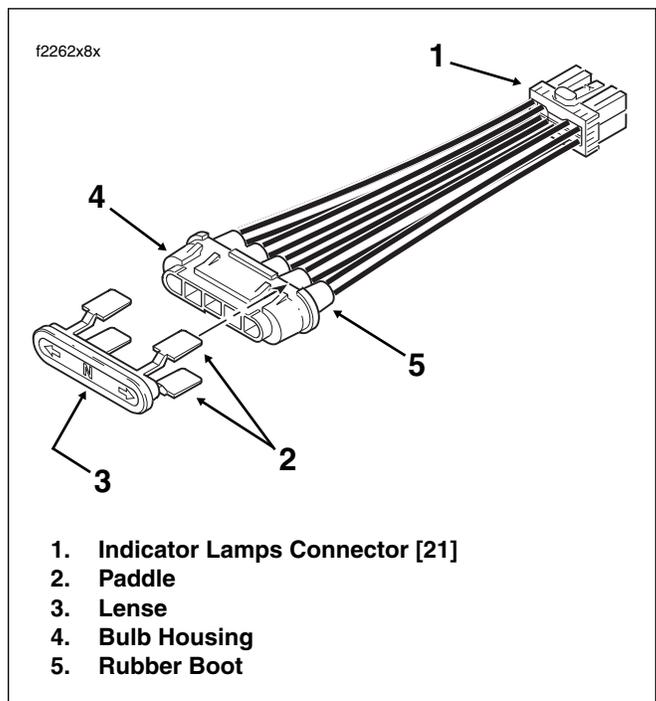


Figure 8-120. Indicator Lamp Assembly

FUEL GAUGE

REMOVAL

1. Remove maxi-fuse. See Section 8.3 SYSTEM FUSES, MAXI-FUSE, REMOVAL.
2. At bottom left side of fuel tank, gently pull on convoluted tubing to draw fuel gauge connector [117], 4-place Multilock, out of tunnel. Disconnect pin and socket halves.
3. Remove terminals from pin housing.

NOTE

For instructions on properly removing wire terminals, see APPENDIX B.2 MULTILOCK ELECTRICAL CONNECTORS, REMOVING SOCKET/PIN TERMINALS.

4. Remove convoluted tubing from wires.
5. Remove the gauge cap on the top left side of the fuel tank. Do not twist the cap during removal. Hold the cap firmly and pull upward just far enough to free the cap from the fuel tank.
6. To remove fuel gauge from motorcycle, feed wires and pin terminals up into drain tube of fuel tank while carefully raising cap.
7. If reusing gauge, inspect rubber seal for tears, cuts or general deterioration. Replace seal if necessary. Install **new** seal so that flat side contacts edge of gauge.

INSTALLATION

1. Place **new** fuel gauge assembly next to discarded unit and cut wires to proper length.
2. Crimp **new** pin terminals onto fuel gauge wires.

NOTE

For instructions on crimping wire terminals, see APPENDIX B.2 MULTILOCK ELECTRICAL CONNECTORS, CRIMPING INSTRUCTIONS.

3. While carefully lowering cap, feed wires down into drain tube until pin terminals exit hole at bottom of fuel tank. Gently pull wires (to remove slack) while installing the fuel gauge cap on the fuel tank. Do not twist the cap during installation. Hold the cap firmly and press downward until it snaps in place.
4. Install convoluted tubing on wires.

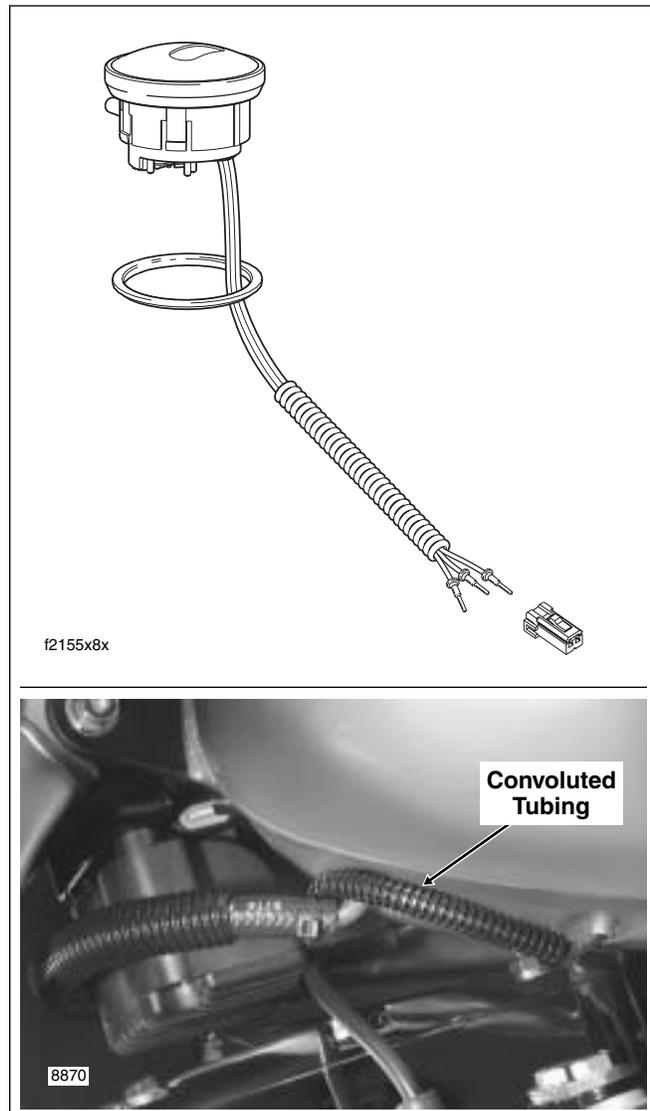


Figure 8-121. Fuel Gauge (FLHR/C/S)

5. Install terminals into pin housing of 4-place Multilock.

Table 8-17. Fuel Gauge [117]

Wire Color		Chamber Number
Fuel Injected	Carbureted	
Orange	Orange	1
Yellow/White	-	2
-	-	3
Black	Black	4

NOTE

For instructions on properly installing wire terminals, see [APPENDIX B.2 MULTILOCK ELECTRICAL CONNECTORS, INSTALLING SOCKET/PIN TERMINALS](#).

- Route pin housing and convoluted tubing forward and then inboard between front of crossover hose fitting and bottom of fuel tank. Connect fuel gauge connector [117], 4-place Multilock. Feed connector into tunnel of fuel tank. See lower frame of [Figure 8-121](#).
- Install maxi-fuse. See [Section 8.3 SYSTEM FUSES, MAXI-FUSE, INSTALLATION](#).

VSS

See [Section 8.28 GAUGES/INSTRUMENTS \(FLHX, FLHT/C/U, FLTR\), VSS](#).

SPEEDOMETER

REMOVAL

- Remove seat. See [Section 2.25 SEAT, REMOVAL](#).

WARNING

To protect against shock and accidental start-up of vehicle, disconnect the negative battery cable before proceeding. Inadequate safety precautions could result in death or serious injury.

- Unthread bolt and remove battery negative cable (black) from battery negative (-) terminal.
- Remove acorn nut from instrument console. If present, also remove Phillips screw and large flat washer (absent on FLHRS models).
- On FLHRS models only, remove bolt (with flat washer) to free rear of fuel tank from frame backbone. Removal of rear bolt also releases instrument console bracket.
- Lay a clean shop towel on forward part of rear fender.
- Raise instrument console and bend back flexible clamp on canopy to release main harness conduit. Disconnect fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy.
- Lay instrument console upside down on shop towel.
- If necessary, bend back the flexible metal clips to free the main harness conduit from the bottom of the console.

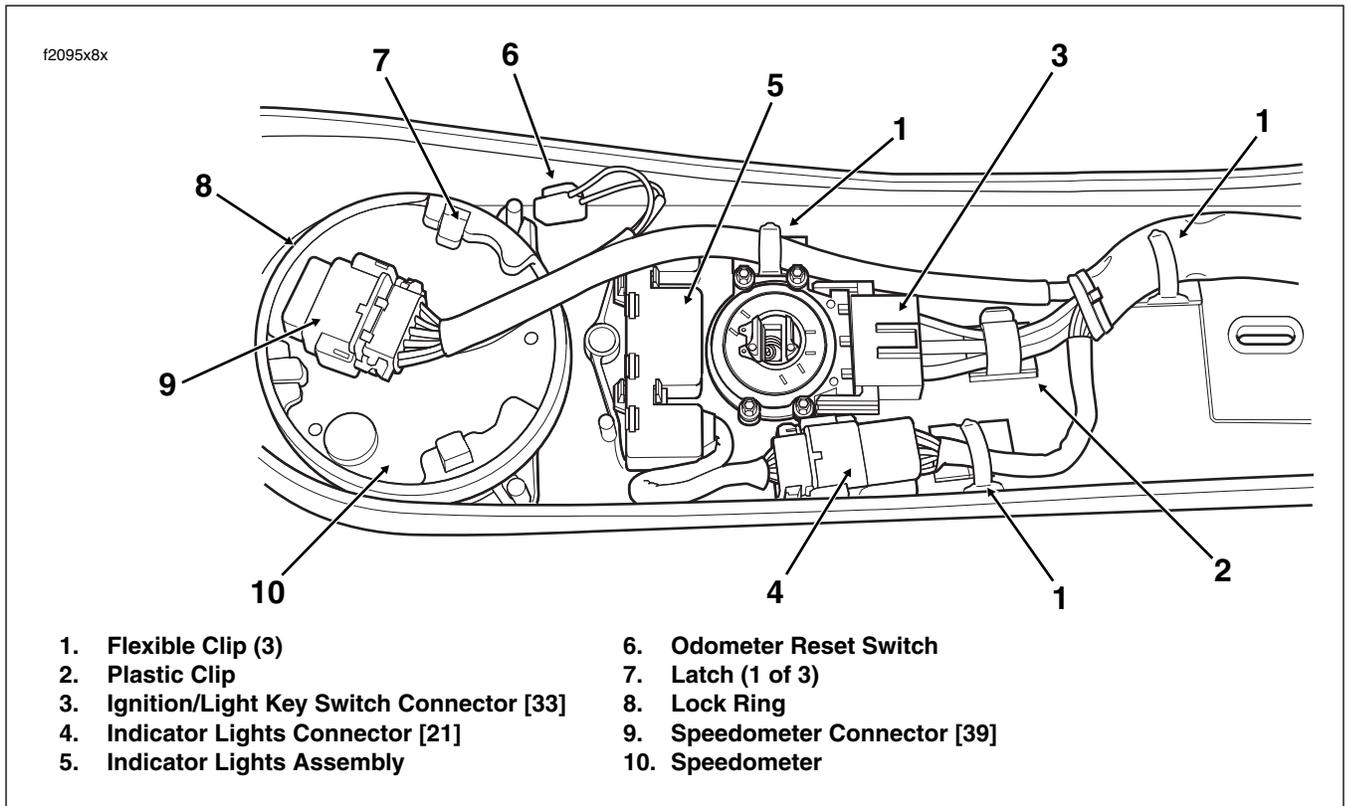


Figure 8-122. Instrument Console Assembly (FLHR/C)

9. Remove speedometer connector [39], 12-place Packard, at back of speedometer.
10. See [Figure 8-122](#). Gently pry the three latches upward to release the lock ring from the back of the speedometer.
11. Turn the console over and remove the speedometer from the top side.
12. Remove gasket from console speedometer bore.

INSTALLATION

1. Lubricate the groove in the rubber speedometer gasket with isopropyl alcohol or glass cleaner. Place the gasket into position around the console speedometer bore.
2. From the top side of the console, feed the speedometer into the gasket. Lubricate the gasket with isopropyl alcohol or glass cleaner, if necessary. The speedometer should fit snugly against the gasket without movement.
3. Turn the console over. Place the lock ring over the back of the speedometer aligning the two slots with the console bosses. Press the latches down until they lock into position.
4. Install speedometer connector [39], 12-place Packard, at back of speedometer.
5. If released, position the speedometer harness so that it runs the length of the console on the left side. Bend the flexible metal clip to capture the harness conduit. See [Figure 8-122](#).
6. Slide head of console mounting bolt into slot at top of canopy, if removed.
7. Moving instrument console toward installed position, connect fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy. Bend flexible clamp to capture main harness conduit.
8. Align hole in instrument console with console mounting bolt and place into position on fuel tank.
9. Install acorn nut at top of instrument console and tighten to 50-90 **in-lbs** (5.7-10.2 Nm). If present, also install Phillips screw and large flat washer (absent on FLHRS models). Tighten screw to 36-60 **in-lbs** (4.1-6.8 Nm).
10. On FLHRS models only, install bolt (with flat washer) to secure rear of fuel tank and instrument console bracket to frame backbone. Tighten bolt to 15-20 ft-lbs (20-27 Nm).
11. Insert bolt through battery negative cable (black) into threaded hole of battery negative (-) terminal. Tighten bolt to 60-96 **in-lbs** (6.8-10.9 Nm).
12. Install seat. See Section [2.25 SEAT, INSTALLATION](#).

INDICATOR LIGHTS

NOTE

All FLHR/C/S models are equipped with Light Emitting Diodes (LED's) in lieu of indicator lamps. The indicator light assembly is not serviceable. If one LED is bad, the indicator light assembly must be replaced.

REMOVAL

1. Remove seat. See Section [2.25 SEAT, REMOVAL](#).

WARNING

To protect against shock and accidental start-up of vehicle, disconnect the negative battery cable before proceeding. Inadequate safety precautions could result in death or serious injury.

2. Unthread bolt and remove battery negative cable (black) from battery negative (-) terminal.
3. Remove acorn nut from instrument console. If present, also remove Phillips screw and large flat washer (absent on FLHRS models).
4. On FLHRS models only, remove bolt (with flat washer) to free rear of fuel tank from frame backbone. Removal of rear bolt also releases instrument console bracket.
5. Lay a clean shop towel on forward part of rear fender.
6. Raise instrument console and bend back flexible clamp on canopy to release main harness conduit. Disconnect fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy.
7. Lay instrument console upside down on shop towel.
8. Disconnect the indicator lights connector [21], 8-place Deutsch, at back of console. Depress the external latches and use a rocking motion to separate pin and socket halves.
9. Remove indicator lights assembly from console as follows:
 - a. Insert the blade of a large screwdriver under rear corner of indicator lights assembly.
 - b. Using thumb and index finger, squeeze front and rear paddles on same side of assembly while rotating screwdriver. See [Figure 8-123](#).
 - c. When one side of assembly becomes free, repeat procedure on opposite side to release unit from console.

INSTALLATION

1. Install indicator lights assembly into console as follows:

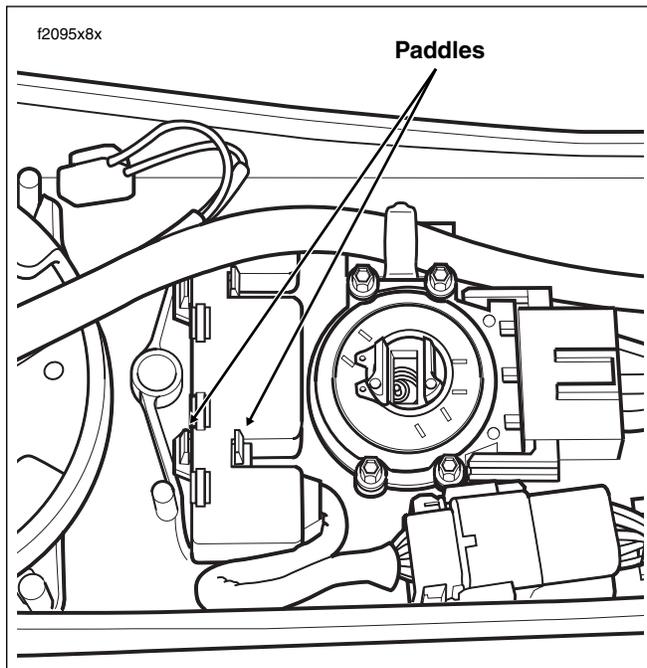


Figure 8-123. Release Paddles to Free Indicator Lights Assembly (FLHR/C)

- a. Place assembly into position in console engaging four paddles in slots of indicator light assembly.
 - b. While pushing down on assembly with thumbs, push up on lense on outboard side of console until assembly fits snugly.
2. Connect the indicator lights connector [21], 8-place Deutsch, at back of console. Align tabs on socket housing with grooves on pin housing, and push connector halves together until the latches “click.”
 3. Slide head of console mounting bolt into slot at top of canopy, if removed.
 4. Moving instrument console toward installed position, connect fuel level sender/fuel pump connector [141], 4-place Packard, at top of canopy. Bend flexible clamp to capture main harness conduit.
 5. Align hole in instrument console with console mounting bolt and place into position on fuel tank.
 6. Install acorn nut at top of instrument console and tighten to 50-90 **in-lbs** (5.7-10.2 Nm). If present, also install Phillips screw and large flat washer (absent on FLHRS models). Tighten screw to 36-60 **in-lbs** (4.1-6.8 Nm).
 7. On FLHRS models only, install bolt (with flat washer) to secure rear of fuel tank and instrument console bracket to frame backbone. Tighten bolt to 15-20 ft-lbs (20-27 Nm).
 8. Insert bolt through battery negative cable (black) into threaded hole of battery negative (-) terminal. Tighten bolt to 60-96 **in-lbs** (6.8-10.9 Nm).
 9. Install seat. See Section 2.25 SEAT, INSTALLATION.

IGNITION SWITCH

NOTE

See Section 8.19 IGNITION/LIGHT KEY SWITCH AND FORK LOCK, FLHR/C/S.

FLHX, FLHT CANOPY

NOTE

For replacement of the fuel level sender on fuel injected models, see Section 9.4 FUEL TANK (FUEL INJECTED), FUEL LEVEL SENDER.

REMOVAL

1. Remove seat. See Section 2.25 SEAT, REMOVAL.

WARNING

To protect against shock and accidental start-up of vehicle, disconnect the negative battery cable before proceeding. Inadequate safety precautions could result in death or serious injury.

2. Unthread bolt and remove battery negative cable (black) from battery negative (-) terminal.
3. Drain the fuel tank. See Section 4.6 VACUUM OPERATED FUEL VALVE (CARBURETED), DRAINING FUEL TANK, steps 1-8.
4. Open fuel door on console. Remove two Allen head screws inboard of rubber bumpers. These screws secure console to clip nuts on the canopy bracket.
5. Remove Allen head screw to detach flange at rear of console from clip nut on fuel tank weldment.
6. Lay a clean shop towel on forward part of rear fender.
7. Remove filler cap from neck of fuel tank. Remove console and lay upside down on shop towel. Reinstall filler cap.
8. Gently pry fuel vapor vent tube from fitting on filler neck of fuel tank. Exercise caution to avoid pulling fitting from filler neck.
9. Disconnect fuel level sender connector [141], 4-place Packard, at top of canopy.
10. Using a T20 TORX bit, remove ten screws around the outer edge of the canopy. Discard screws.
11. Remove canopy with attached fuel level sender from fuel tank. Tilt canopy toward the right until it is at a 45° angle to top of fuel tank and then carefully pull assembly from left side lobe of fuel tank.
12. Remove and discard canopy gasket. Verify that sealing devices from screws are not lodged in canopy holes. Remove and discard devices if present.
13. Replace fuel level sender. See FUEL LEVEL SENDER in this section.

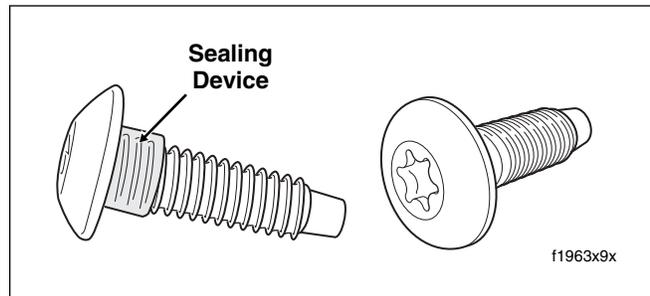


Figure 8-124. Canopy Sealing Screws

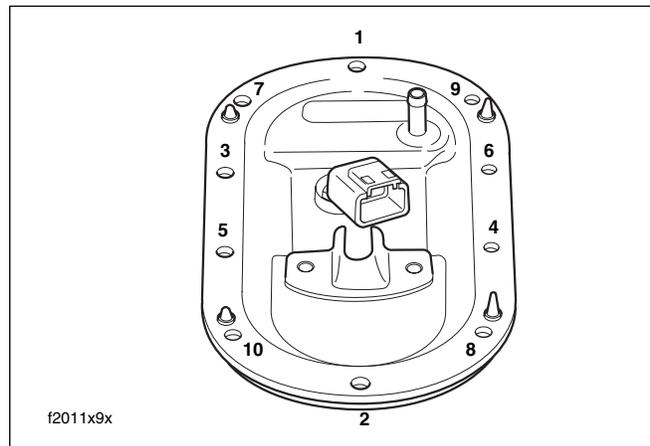


Figure 8-125. Canopy Torque Sequence (FLHR)

INSTALLATION

1. Obtain new canopy gasket. With the locator bump on the gasket OD toward the front, position gasket at bottom of canopy. Start four nubs on gasket into holes in canopy. Moving to top of canopy, alternately grasp each nub and pull through hole.

CAUTION

Exercise care to avoid bending float rod of fuel level sender during installation. A bent float rod will result in erroneous gauge readings.

2. Holding assembly so that canopy is at a 45° angle to top of fuel tank, insert assembly into left side lobe of fuel tank.

WARNING

Always use new screws when installing the canopy. Reusing old screws may compromise sealing integrity resulting in gas leaks. Gas leakage can cause fire or explosion which could result in death or serious injury.

NOTE

Check canopy screws for proper sealing devices. Screws must have a bonded seal on underside of head. Replace screws if seal is missing or damaged. See [Figure 8-124](#).

3. While pushing down on the canopy, align holes in canopy with those in fuel tank. Hand start ten **new** T20 TORX screws in perimeter of canopy. Tighten screws to 18-24 **in-lbs** (2.0-2.7 Nm) using the pattern shown in [Figure 8-125](#).
4. Connect fuel vapor vent tube to fitting on filler neck of fuel tank.
5. Connect fuel level sender connector [141], 4-place Packard, at top of canopy.
6. Remove filler cap. Exercising caution to avoid pinching harness, overflow hose and vent tube, position console on canopy as shown in [Figure 8-126](#). Reinstall filler cap.
7. Install Allen head screw to fasten rear flange of console to clip nut on fuel tank weldment. Tighten screw to 25-30 **in-lbs** (2.8-3.4 Nm).
8. Open fuel door on console. Install two Allen head screws to secure front of console to clip nuts on canopy bracket. Alternately tighten screws to 25-30 **in-lbs** (2.8-3.4 Nm).
9. Insert bolt through battery negative cable (black) into threaded hole of battery negative (-) terminal. Tighten bolt to 60-96 **in-lbs** (6.8-10.9 Nm).
10. Install seat. See Section [2.25 SEAT, INSTALLATION](#).
11. Turn the handle of the fuel valve to OFF and fill the fuel tank. Carefully inspect for leaks. Turn the valve handle to ON and start engine. Repeat inspection.
12. Stop engine and return the valve to the OFF position.

FLHR/S CANOPY

NOTE

For replacement of the fuel level sender on fuel injected models, see Section [9.4 FUEL TANK \(FUEL INJECTED\), FUEL LEVEL SENDER](#).

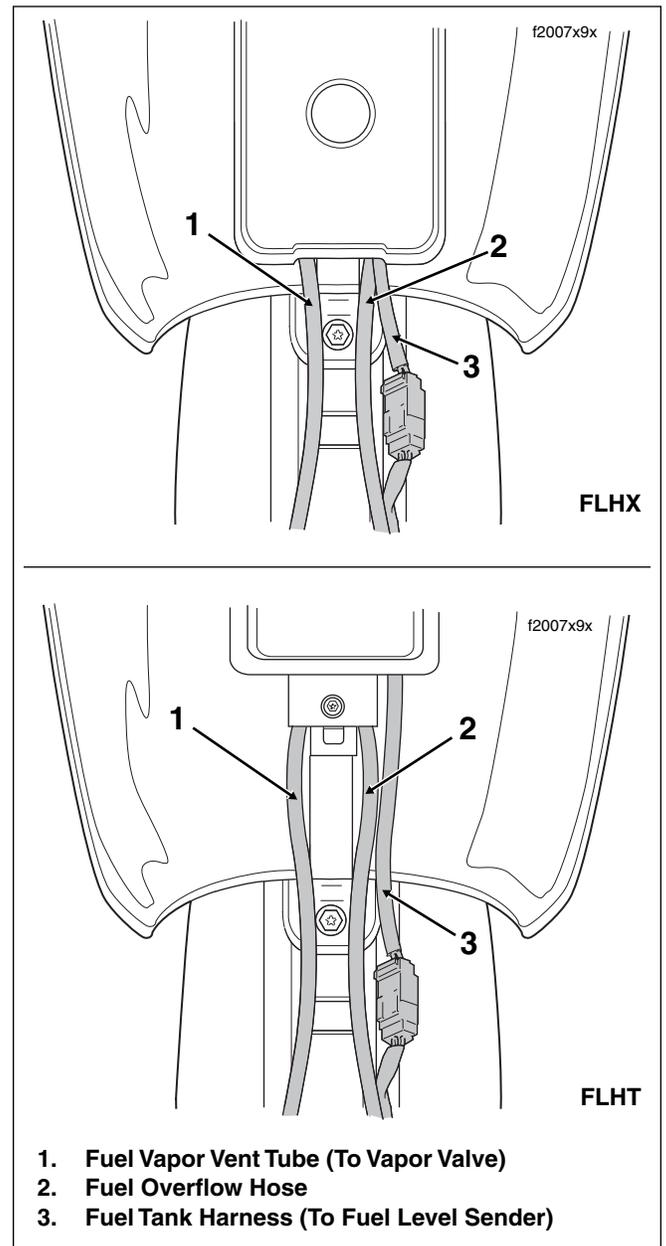
REMOVAL

1. Remove seat. See Section [2.25 SEAT, REMOVAL](#).

⚠ WARNING

To protect against shock and accidental start-up of vehicle, disconnect the negative battery cable before proceeding. Inadequate safety precautions could result in death or serious injury.

2. Unthread bolt and remove battery negative cable (black) from battery negative (-) terminal.



1. Fuel Vapor Vent Tube (To Vapor Valve)
2. Fuel Overflow Hose
3. Fuel Tank Harness (To Fuel Level Sender)

Figure 8-126. Console Cable/Hose Routing (FLHX, FLHT)

3. Drain the fuel tank. See Section [4.6 VACUUM OPERATED FUEL VALVE \(CARBURETED\), DRAINING FUEL TANK](#), steps 1-8.
4. Remove acorn nut from instrument console. If present, also remove Phillips screw and large flat washer (absent on FLHRS models).
5. On FLHRS models only, remove bolt (with flat washer) to free rear of fuel tank from frame backbone. Removal of rear bolt also releases instrument console bracket.

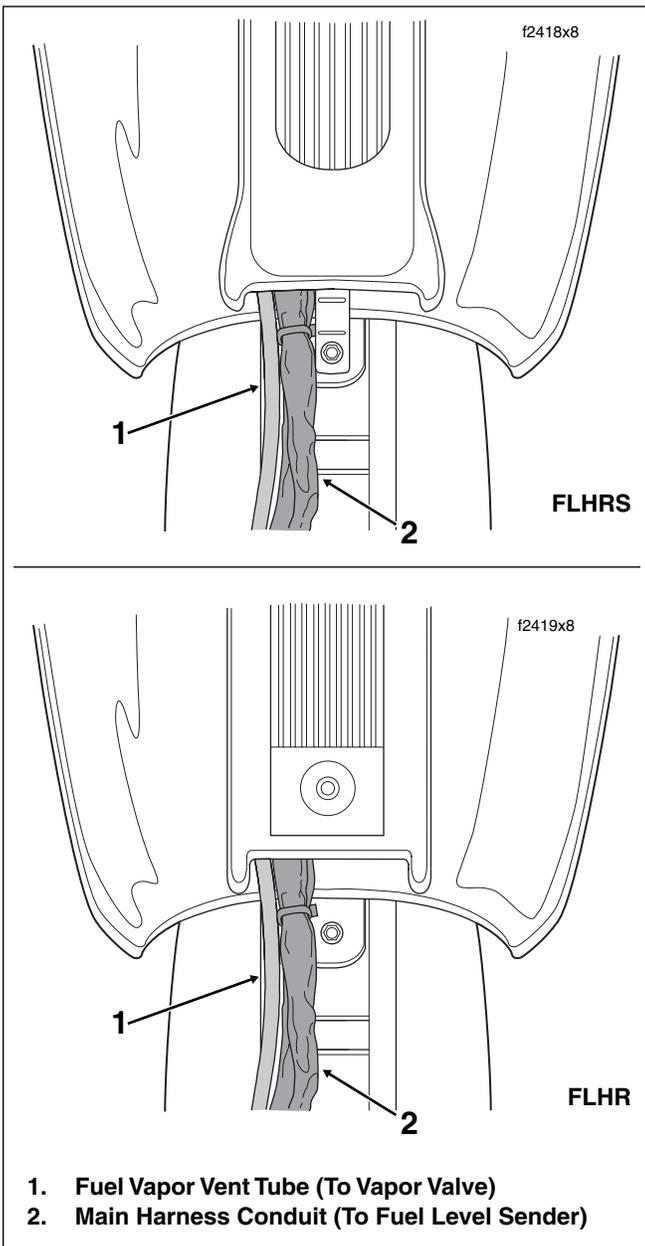


Figure 8-127. Console Cable/Hose Routing (FLHR/S)

6. Raise instrument console and bend back flexible clamp on canopy to release main harness conduit. Disconnect fuel level sender connector [141], 4-place Packard, at top of canopy.

CAUTION

When removing instrument console, exercise caution to avoid damaging speedometer unit. Wrap console in a clean, dry shop towel to prevent damage.

7. Secure instrument console to top of rear fender using bungee cords.

8. Remove console mounting bolt from slot at top of canopy.
9. Gently pry fuel vapor vent tube from fitting at top of canopy.
10. Using a T20 TORX bit, remove ten screws around the outer edge of the canopy. Discard screws.
11. Remove canopy with attached fuel level sender from fuel tank. Tilt canopy toward the right until it is at a 45° angle to top of fuel tank and then carefully pull assembly from left side lobe of fuel tank.
12. Remove and discard canopy gasket. Verify that sealing devices from screws are not lodged in canopy holes. Remove and discard devices if present.
13. Replace fuel level sender. See [FUEL LEVEL SENDER](#) on this page.

INSTALLATION

1. Obtain **new** canopy gasket. With the locator bump on the gasket OD toward the front, position gasket at bottom of canopy. Start four nubs on gasket into holes in canopy. Moving to top of canopy, alternately grasp each nub and pull through hole.

CAUTION

Exercise care to avoid bending float rod of fuel level sender during installation. Be sure to position float rod to the right of the fuel gauge drain tube or it will be bent during installation of the canopy. A bent float rod will result in erroneous gauge readings.

2. Holding assembly so that canopy is at a 45° angle to top of fuel tank, insert assembly into left side lobe of fuel tank keeping the float rod positioned to the right of the fuel gauge drain tube.

WARNING

Always use new screws when installing the canopy. Reusing old screws may compromise sealing integrity resulting in gas leaks. Gas leakage can cause fire or explosion which could result in death or serious injury.

NOTE

Check canopy screws for proper sealing devices. Screws must have a bonded seal on underside of head. Replace screws if seal is missing or damaged. See [Figure 8-124](#).

3. While pushing down on the canopy, align holes in canopy with those in fuel tank. Hand start ten **new** T20 TORX screws in perimeter of canopy. Tighten screws to 18-24 **in-lbs** (2.0-2.7 Nm) using the pattern shown in [Figure 8-125](#).
4. Connect fuel vapor vent tube to fitting at top of canopy.
5. Slide head of console mounting bolt into slot at top of canopy, if removed.

6. Moving instrument console toward installed position, connect fuel level sender connector [141], 4-place Packard, at top of canopy. Bend flexible clamp to capture main harness conduit.
7. Exercising caution to avoid pinching harness and vent tube, align hole in instrument console with console mounting bolt and place into position on fuel tank. See [Figure 8-127](#).
8. Install acorn nut at top of instrument console and tighten to 50-90 **in-lbs** (5.7-10.2 Nm). If present, also install Phillips screw and large flat washer (absent on FLHRS models). Tighten screw to 36-60 **in-lbs** (4.1-6.8 Nm).
9. On FLHRS models only, install bolt (with flat washer) to secure rear of fuel tank and instrument console bracket to frame backbone. Tighten bolt to 15-20 ft-lbs (20-27 Nm).
10. Insert bolt through battery negative cable (black) into threaded hole of battery negative (-) terminal. Tighten bolt to 60-96 **in-lbs** (6.8-10.9 Nm).
11. Install seat. See Section [2.25 SEAT, INSTALLATION](#).
12. Turn the handle of the fuel valve to OFF and fill the fuel tank. Carefully inspect for leaks. Turn the valve handle to ON and start engine. Repeat inspection.
13. Stop engine and return the valve to the OFF position.

FUEL LEVEL SENDER

REMOVAL

CAUTION

Do not replace the special teflon coated fuel level sender wiring with ordinary bulk wire. Ordinary insulation materials may deteriorate when in contact with gasoline.

NOTE

Damaged fuel level sender wiring requires replacement of the fuel level sender unit.

1. See [FLHX, FLHT CANOPY, REMOVAL](#), or [FLHR/S CANOPY, REMOVAL](#), in this section.
2. Cut cable strap to release wiring from support arm.
3. At bottom of canopy, depress external latch and remove socket housing of 4-place Packard connector.

4. Remove socket terminal from spade contact on connector clip.

CAUTION

Always wear proper eye protection when drilling. Flying debris may result in eye injury.

CAUTION

Exercise care to avoid bending support arm during removal of the fuel level sender. Support area around rivet head when drilling or tapping. A bent support arm will result in erroneous gauge readings.

5. Drill off head of fuel level sender rivet using a 1/4 inch drill bit. Exercise caution to avoid enlarging hole in support arm when drilling. Use a punch to tap rivet shaft through hole in support arm if necessary. Blow away all metal shavings and debris using compressed air.

INSTALLATION

1. Position **new** fuel level sender on inboard side of support arm fitting finger at end of support arm into bottom hole in fuel level sender flange.
2. Align top hole in fuel level sender flange with hole in support arm and install **new** rivet. Insert rivet through the support arm first, so that deformed end is on the fuel level sender side.
3. At bottom of canopy, install socket housing of 4-place Packard connector.
4. Install socket terminal onto spade contact on connector clip.
5. Insert **new** cable strap into hole in support arm. Tighten cable strap capturing fuel level sender wiring. Cut any excess cable strap material.
6. See [FLHX, FLHT CANOPY, INSTALLATION](#), or [FLHR/S CANOPY, INSTALLATION](#), in this section.

NOTES
