

2005 HARLEY-DAVIDSON MOTORCYCLE PREDELIVERY AND SETUP MANUAL

The information in this Manual
applies to all 2005 motorcycle
models manufactured by
Harley-Davidson Motor Company.

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Binder 99946-88

Contents 99947-05

CMI-4.0M-06/04

GENERAL I

TOURING II

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FOREWORD

INTRODUCTION

This PREDELIVERY AND SETUP MANUAL has been prepared by Harley-Davidson Motor Company to provide the Harley-Davidson dealer with the factory recommended steps needed to prepare our motorcycles for delivery to the customer.

NOTE

Harley-Davidson Motor Company considers the predelivery inspections and procedures in this manual necessary to assure customer safety and satisfaction. None of these inspections or procedures should ever be left out, and only qualified technicians should perform them.

HOW TO USE YOUR PREDELIVERY AND SETUP MANUAL

Your Predelivery and Setup Manual is divided into seven sections:

- Section I—General Information: All Models
- Section II—Predelivery Inspections: Touring Models
- Section III—Predelivery Inspections: Dyna Models
- Section IV—Predelivery Inspections: Softail Models
- Section V—Predelivery Inspections: Sportster Models
- Section VI—Predelivery Inspections: VRSC Models
- Section VII—Predelivery Inspections: CVO Models

Refer to Section I first for general setup instructions pertaining to all current model motorcycles. Then, proceed to the one Section (either II, III, IV, V, VI or VII) which covers the inspection procedures for your specific model vehicle.

WARNINGS AND CAUTIONS

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. (00119a)

CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. (00139a)

CAUTION

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage. (00140a)

NOTE

Refers to important information, and is placed in italic type.

It is recommended that you take special notice of these items.

PRODUCT REFERENCES

All tools mentioned in this manual with “HD” or “J” preceding the part number must be ordered through Kent-Moore.

Direct all mail orders and general correspondence to the following address:

Kent-Moore
SPX Corporation
28635 Mound Road
Warren, Michigan USA 48092-3499
Telephone: 1-800-345-2233

Sealing and Threadlocking Products

LOCTITE PRODUCTS

Some procedures in this Service Manual call for the use of Loctite® products. If you have any questions regarding Loctite product usage or retailer/wholesaler locations, please call Loctite Corp. at 1-800-323-5106.

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All photographs, illustrations and procedures may not necessarily depict the most current model or component, but are based on the latest production information available at the time of publication.

Since product improvement is our continual goal, Harley-Davidson reserves the right to change specifications, equipment or designs at any time without notice and without incurring obligation.

ORDERING INFORMATION

Additional binders or contents may be ordered from Parts & Accessories. The binder and the contents must be ordered separately.

- Binder: Part No. 99946-88
- Contents: Part No. 99947-05

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PREDELIVERY: ALL MODELS

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VEHICLE CRATE INSPECTION

Inspect each crate for external damage while it is still on delivery truck. Open crate and inspect motorcycle for damage before truck leaves your dealership. Refer to HARLEY-DAVIDSON/BUELL WARRANTY MANUAL, "SHIPPING DAMAGE PROCEDURE" for complete information on filing claims for damaged and over/short freight.

UNCRATING VEHICLE

CAUTION

Use caution when removing cardboard carton from pallet. **DO NOT** remove uprights before removing carton. Failure to do so can cause damage to motorcycle.

NOTE

All Harley-Davidson motorcycles are shipped in crates using returnable steel pallets. The steel pallets have fork openings 2x7 in. (5.1x17.8 cm) at the front and sides. Crates have widths of 29 in. (73.7 cm) and 43 in. (109.2 cm) and all are 50 in. (127 cm) high. The VRSC, SPORTSTER, DYNA and some SOFTAIL models are shipped with the front wheel turned to the left or right in a "turn-wheel" crate. Removing the shipping crate is similar on all models so the procedure given below is typical for all models. Call your SPOC representative if you have questions regarding steel pallet return.

REMOVING CARDBOARD CARTON

1. See Figure 1-1. Use a T-20 bit and an electric or air powdered drill/driver to remove all fasteners from cardboard carton. Open top carton flaps.



Figure 1-1. Removing Screws

2. See Figure 1-2. Using a box cutter, cut one end of the cardboard carton. Slide carton away from pallet as shown. Set carton aside for recycling.

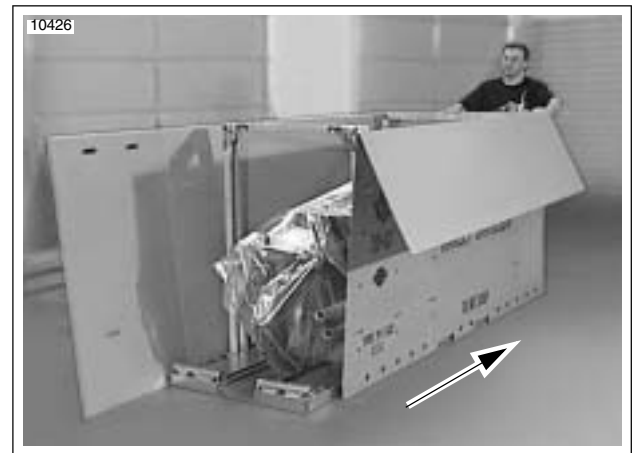


Figure 1-2. Remove Cardboard Carton from Pallet.

3. See Figure 1-3. Remove both uprights (VRSC, FLST and FLSTC crates have three uprights) by lifting upward. Set uprights aside for recycling.



Figure 1-3. Remove Uprights from Pallet

4. Open plastic bag enclosing motorcycle and push it down off motorcycle. Remove protective tape and elastic protective netting, if present, from chrome and painted parts of motorcycle.

NOTE

Always install/adjust handlebars before removing motorcycle from pallet. See [HANDLEBAR INSTALLATION–FLSTSC, FLSTN AND FXDWG MODELS](#) and [ADJUSTING HANDLEBARS– ALL MODELS](#).

5. If uninstalled parts are in crate, verify your receipt of all separate items by comparing with parts list in shipping crate.
6. If vehicle has damage which appears to have occurred at the factory, submit warranty claim form. Accurately describe damage and cause. (e.g.–“Found nail in tire; caused tire to go flat.”) Supply proper failure code(s).

WARNING

Do not alter or disable any device or system to circumvent local, state, or federal regulations. All safety and environmental devices or systems must be left intact as designed and built at the factory. Tampering with safety and environmental devices or systems could result in death or serious injury.

WARNING

The automatic-on headlamp feature provides increased visibility for riders. Be sure headlamp is on at all times. Low visibility of rider can result in death or serious injury. (00030a).

WARNING

Some motorcycles are shipped with the hand brake lever wrapped tight against the hand grip. Remove plastic wrap and warning label (see [Figure 1-4.](#)) and pump brake lever 3-4 times before moving motorcycle from pallet. Failure to pump brake lever could result in an inoperable front brake which could result in death or serious injury.

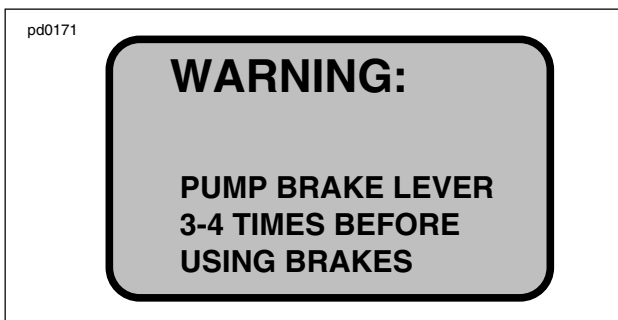


Figure 1-4. Warning Label

HANDLEBAR INSTALLATION– FLSTSC, FLSTN AND FXDWG MODELS

FLSTSC

After removing carton and protective plastic wrap:

1. See [Figure 1-5](#). While holding handlebars, remove the riser bolts (2) securing handlebar shipping cradle (1) to risers. Retain the four bolts, discard washers.
2. While holding the handlebar shipping cradle, cut cable straps (3). Discard cradle and cable straps. Remove and discard protective block (4) from left handlebar grip.
3. Route handlebar switch conduits between and behind risers.
4. Position handlebar on top of risers, secure with riser caps and riser bolts.
5. See [ADJUSTING HANDLEBARS– ALL MODELS](#) and [Figure 1-10](#). Following the [Dyna Glide, Softail, XL 883, XL 883L and XL 1200R Models](#) procedure, adjust the handlebars and tighten the riser bolts to 12-15 ft-lbs (16.3-20.3 Nm) in the sequence given.
6. Push the four plastic wire retainers on the handlebar switch conduits into the holes in the handlebars. Replace any broken wire retainers.
7. Attach hand control and directional wire harnesses to handlebar risers with cable straps (Part No. 10039).
8. Insert the clutch cable into the retaining clip on the left frame downtube.

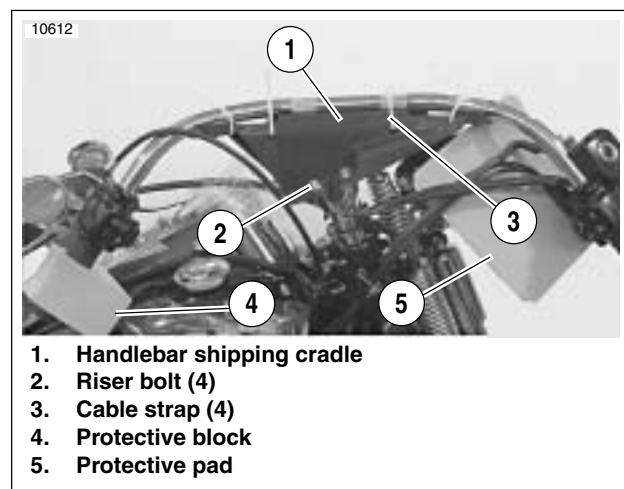


Figure 1-5. FLSTSC

FLSTN

After removing carton and protective plastic wrap:

1. See [Figure 1-6](#). Remove and discard cloth tie (3) securing handlebar.
2. Remove the riser bolts (2) and shipping clamp (1) from handlebar risers. Retain the bolts. Remove and discard protective block (4) from right handlebar grip.
3. Route handlebar switch conduits between and behind risers.
4. Position handlebar on top of the risers and secure with riser caps, and bolts removed in step 2.
5. See [ADJUSTING HANDLEBARS– ALL MODELS](#) and [Figure 1-10](#). Following the [Dyna Glide](#), [Softail](#), [XL 883](#), [XL 883L](#) and [XL 1200R Models](#) procedure, adjust the handlebars and tighten the riser bolts to 12-15 ft-lbs (16.3-20.3 Nm) in the sequence given.
6. Push the four plastic wire retainers on the handlebar switch conduits into the holes in the handlebars. Replace any broken wire retainers.
7. Insert the clutch cable into the retaining clip on the left frame downtube.

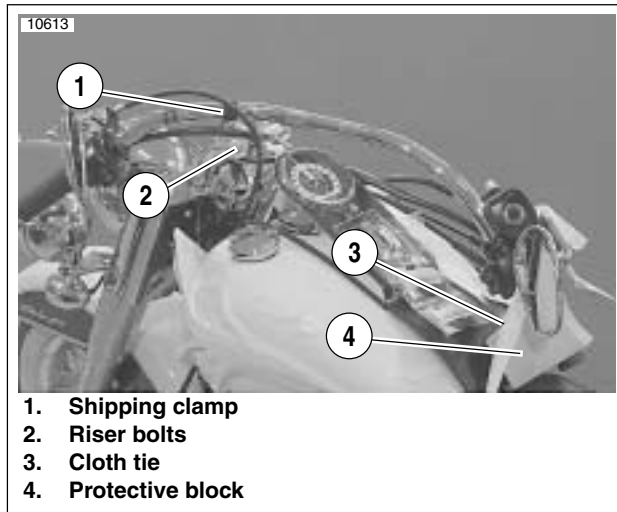


Figure 1-6. FLSTN

8. See [Figure 1-7](#). Install front brake line (1) in clamps (2), inboard of screws (3) and attach to fork stem cover (4). Tighten screws to 30-50 **in-lbs** (3.4-5.7 Nm).
9. Install brake line in clamp (5) in underside of lower fork clamp. Tighten screw (6) to 96-120 **in-lbs** (10.9-13.6 Nm).

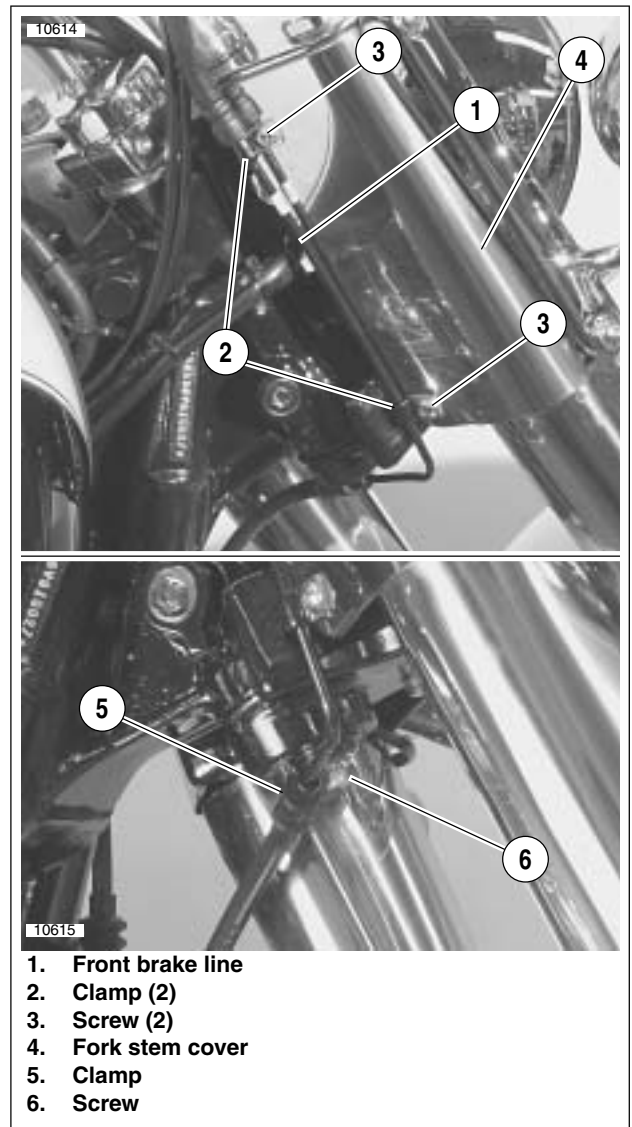


Figure 1-7. Attaching Front Brake Line–FLSTN

FXDWG

After removing carton and protective plastic wrap:

1. See [Figure 1-8](#). Remove and discard cloth tie (1) securing handlebar.
2. Remove the four bolts (2) from the riser. Retain the four bolts.
3. Reroute the left hand switch wire conduit from between the riser to a position in front of the riser.

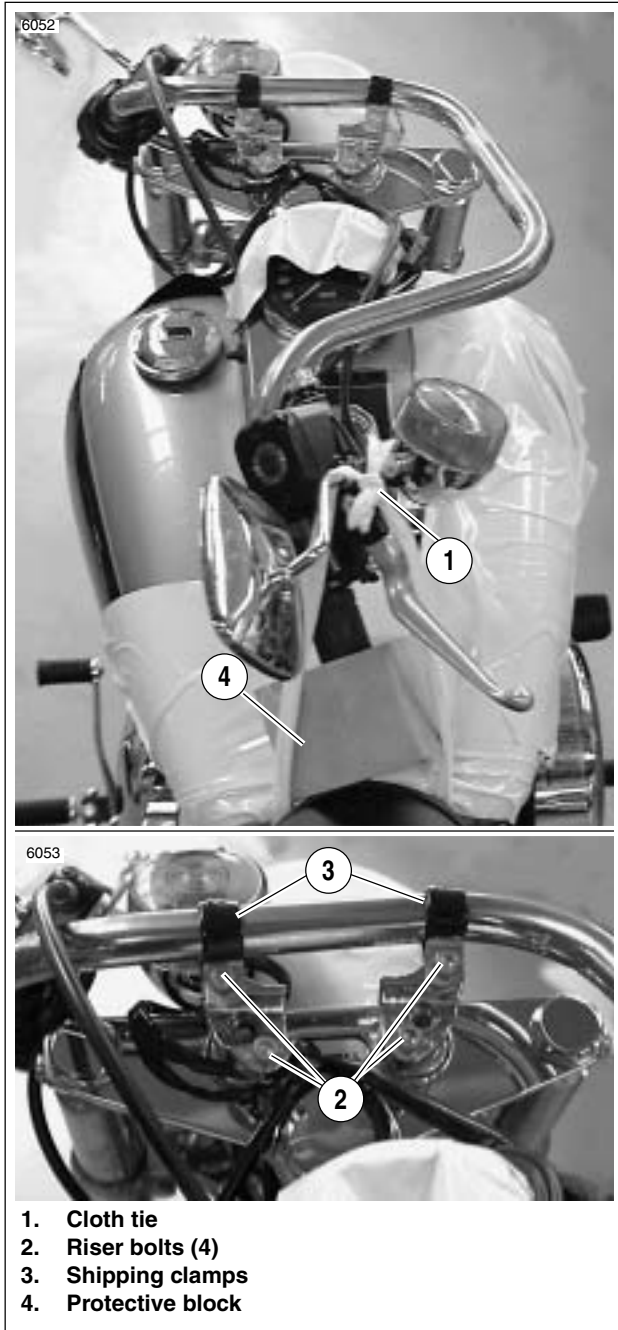


Figure 1-8. FXDWG

4. Retrieve riser caps from passenger backrest.
5. Position the handlebar on top of the risers and fasten the riser caps in place using the bolts removed in step 2.
6. See [ADJUSTING HANDLEBARS- ALL MODELS](#) and [Figure 1-10](#). Following the [Dyna Glide, Softail, XL 883, XL 883L and XL 1200R Models](#) procedure, adjust the handlebars and tighten the riser bolts to 12-18 ft-lbs (16.3-24.4 Nm) in the sequence given.
7. See [Figure 1-9](#). Attach brake line (2) and ground wire (3) on upper triple clamp with clamp (1). Position brake line inboard from fastener. Tighten fastener to 30-60 in-lbs (3.4-6.8 Nm).

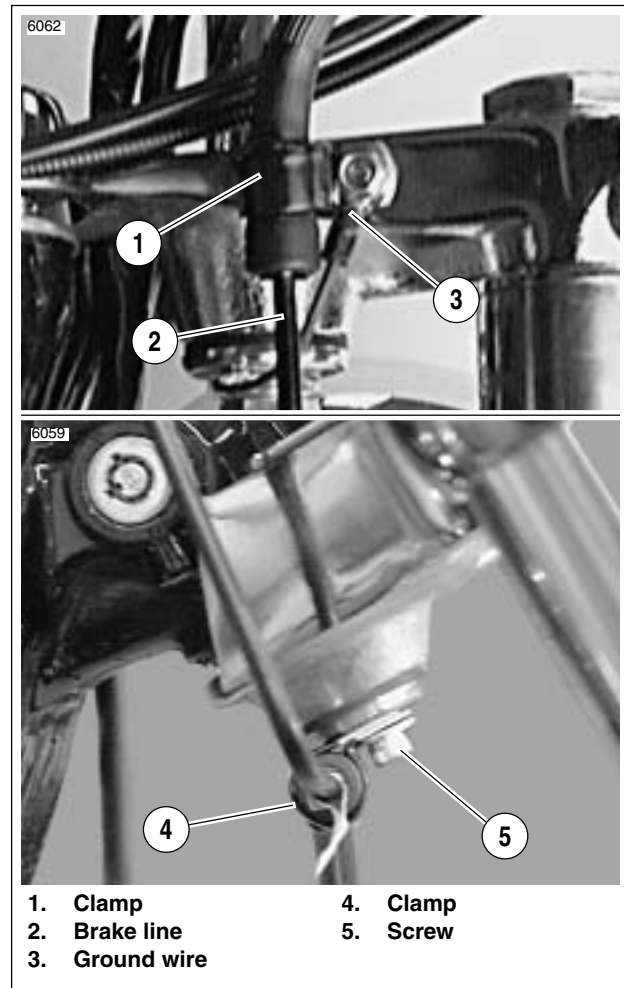


Figure 1-9. FXDWG Brake Line and Ground Wire

CAUTION

See Figure 1-9. Attach brake line as shown before removing motorcycle from pallet. If brake line is not secured, it could be pinched and damaged in front fork stop.

8. Attach brake line to bottom of steering stem with clamp (4) and screw (5). Tighten to 96-120 in-lbs (10.9-13.6 Nm).
9. See Figure 1-8. Remove shipping clamps (3) from the handlebar. Remove protective block (4) on throttle. Discard shipping clamps and protective block.
10. Install clutch cable in clip on left downtube.
11. Install the plastic wire retainers on the handlebar switch conduits and push into the holes in the handlebars. Replace any broken wire retainers.

ADJUSTING HANDLEBARS— ALL MODELS

General

CAUTION

Never adjust handlebars using excessive force. Doing so may result in damage to handlebar or clamp.

NOTE

If handlebars are positioned for a rider of normal size, postpone adjustment until customer has checked their position. If customer requests changing handlebar position, perform the adjustment before delivering the motorcycle to the customer. Always center the handlebar laterally (sideways) in the handlebar clamps.

Before removing motorcycle from pallet, adjust handlebars according to the following procedures:

Dyna Glide, Softail, XL 883, XL 883L and XL 1200R Models

1. See Figure 1-10. Loosen four screws (3 and 4) of handlebar upper clamp (6).
2. To be sure handlebars are properly centered, verify that equal amounts of knurled areas on handlebar protrude from outboard sides of upper handlebar clamp.

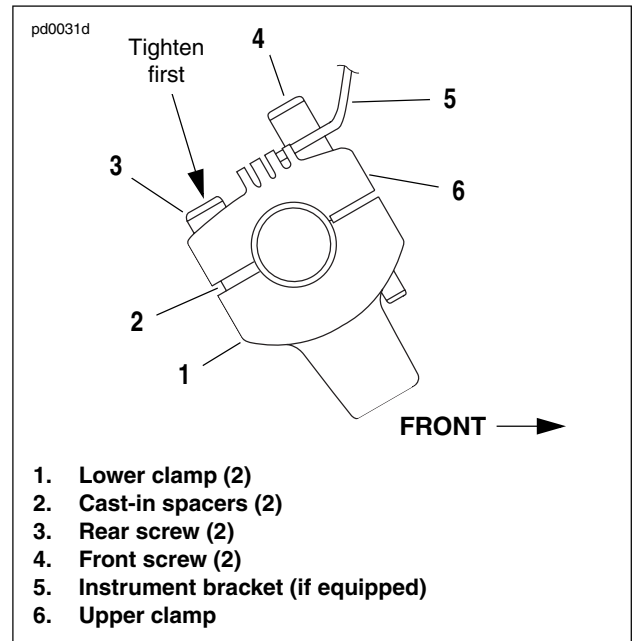


Figure 1-10. XL 883, XL 883L, XL 1200R, Dyna Glide and Some Softail Models

NOTE

On some models, knurled areas of handlebar will be completely hidden by upper handlebar clamp and will not be visible at all when handlebar is centered properly.

3. Raise handlebars to normal riding position and hold in position.
4. Models with cast-in spacers (2) in upper clamp:
 - a. Tighten two rear screws (3) until cast-in spacers contact handlebar lower clamps (1).
 - b. Dyna and Sportster models: tighten front screws (4) to 12-18 ft-lbs (16.3-24.4 Nm). Softail models: tighten front screws (4) to 12-15 ft-lbs (16.3-20.3 Nm).
 - c. Dyna and Sportster models: final tighten rear screws to 12-18 ft-lbs (16.3-24.4 Nm). Softail models: final tighten rear screws to 12-15 ft-lbs (16.3-20.3 Nm). Slight gap between upper and lower clamps should exist at front.
5. Models without cast-in spacers in upper clamps:
 - a. Tighten all four screws finger-tight, maintaining equal gaps between upper and lower clamps front to back.
 - b. Dyna and Sportster models: tighten rear screws to 12-18 ft-lbs (16.3-24.4 Nm). Softail models: tighten rear screws to 12-15 ft-lbs (16.3-20.3 Nm).
 - c. Dyna and Sportster models: tighten front screws to 12-18 ft-lbs (16.3-24.4 Nm). Softail models: tighten front screws to 12-15 ft-lbs (16.3-20.3 Nm).

XL 883C and XL 1200C Models

1. See [Figure 1-11](#). Loosen four screws (1, 2) of handlebar upper clamp (3).

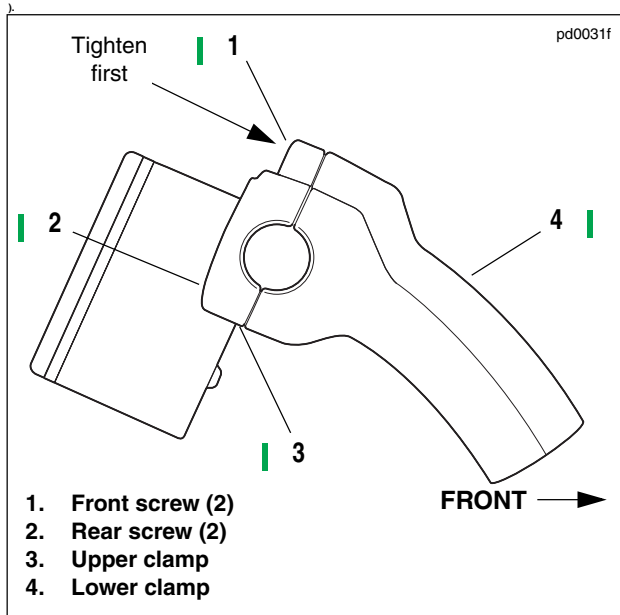


Figure 1-11. XL 1200C, XL 883C Custom Models

2. To be sure handlebars are properly centered, verify that equal amounts of knurled areas on handlebar protrude from outboard sides of upper handlebar clamp.

NOTE

On some models, knurled areas of handlebar will be completely hidden by upper handlebar clamp and will not be visible at all when handlebar is centered properly.

3. Raise handlebars to normal riding position; hold in position. Tighten two front screws (1) to 12-18 ft-lbs (16.3-24.4 Nm).
4. Tighten rear screws (2) to 12-18 ft-lbs (16.3-24.4 Nm).

FLHT, FLHTC, FLHTCU and FLHTP

1. Remove ignition switch knob and inner fairing cap according to appropriate Touring Models Service Manual instructions.
2. See [Figure 1-12](#). Loosen two rear screws (3) of handlebar upper clamps (2).
3. If there is a gap between either handlebar lower clamp (1) and upper clamp at front, tighten front screw (4) only enough to close gap. If handlebars do not move up and down freely, loosen rear screws until they do.

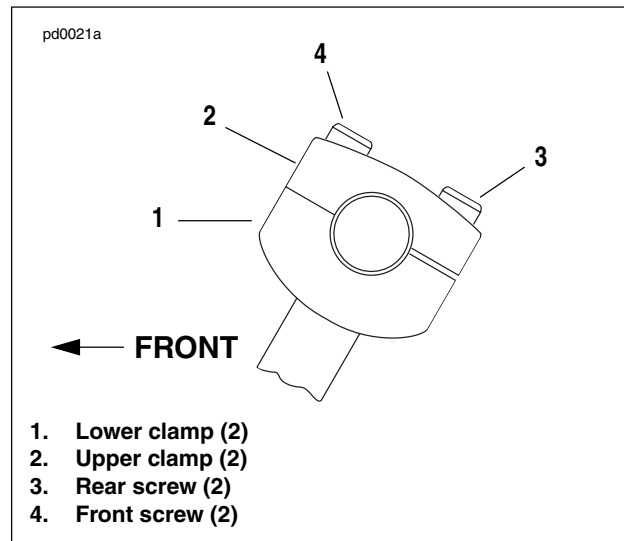


Figure 1-12. FLHT/C/U and FLHTP Models

4. Raise handlebars to normal riding position. To be sure handlebars are properly centered, verify that equal amounts of knurled areas on handlebar protrude from outboard sides of both handlebar clamps.
5. Tighten rear screws to 12-16 ft-lbs (16.3-21.7 Nm). Slight gap should exist between upper and lower clamps at rear.
6. Check torque on front handlebar clamp screws. Tighten screws to 12-16 ft-lbs (16.3-21.7 Nm).
7. Reinstall inner fairing cap and ignition switch knob according to appropriate Touring Models Service Manual instructions.

FLHR/C/S/I Road King, FLHP, FLHPE

1. See Figure 1-13. Remove screw (12) securing chrome ring (11) to headlamp nacelle (7). Remove chrome ring.
2. Remove eight screws (10) securing headlamp assembly (9). Squeeze two external tabs (if present) to remove wire connector at back of headlamp bulb. Remove headlamp assembly from vehicle.
3. Remove nut (1) (inside nacelle) securing nacelle trim (2).
4. On Police models, disconnect tachometer lead.
5. Remove nacelle trim. Loosen (but do not remove) front handlebar clamp shroud screw (3), nut and washer (4).
6. Gently pry off fork lock plate (5) at rear of handlebar clamp shroud (8). Remove two screws (6) beneath lock plate.

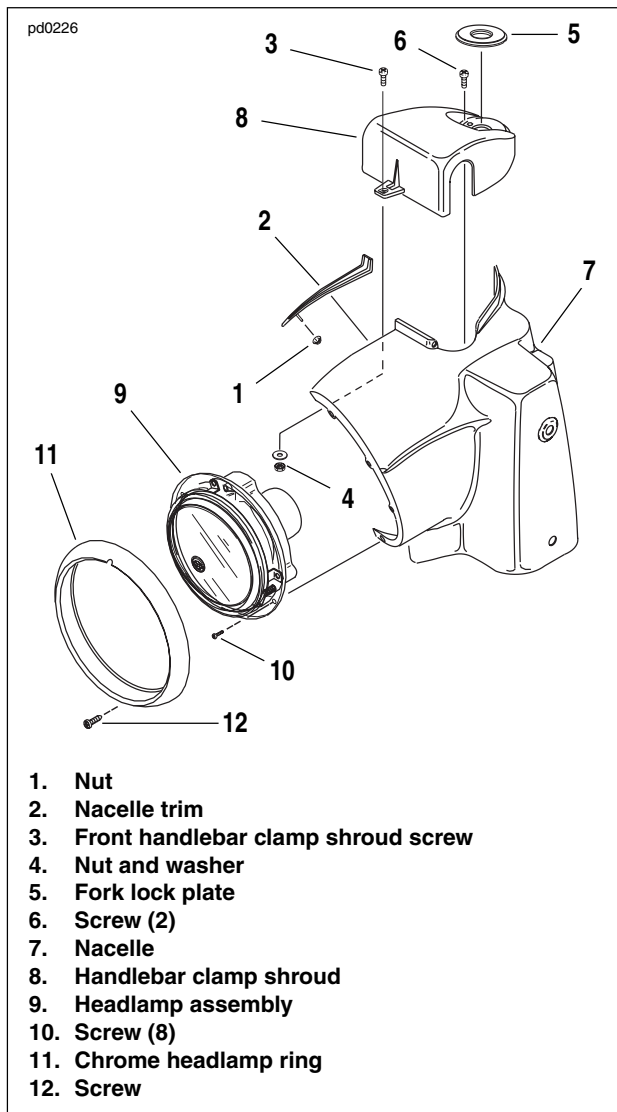


Figure 1-13. FLHR/C, FLHP, FLHPE Models

7. Loosen four acorn nuts securing nacelle halves to fork studs. Spread nacelle halves slightly and remove handlebar clamp shroud.
8. Adjust handlebars following steps 2-6. of the FLHT, FLHTC, FLHTCU and FLHTP procedure given on previous page.
9. Reinstall handlebar clamp shroud. Tighten acorn nuts securing nacelle halves to fork studs to 72-108 **in-lbs** (8.1-12.2 Nm).
10. Install two screws (6) to handlebar clamp shroud and tighten to 10-20 **in-lbs** (1.1-2.3 Nm). Gently press fork lock plate (5) into place on handlebar clamp shroud.
11. Tighten front handlebar clamp shroud nut (4) to 10-20 **in-lbs** (1.1-2.3 Nm).
12. On police models, connect tachometer lead.
13. Install nacelle trim (2). Install nut (1) (inside nacelle) securing nacelle trim. Tighten to 15-20 **in-lbs** (1.7-2.3 Nm).
14. Connect wire connector to socket on back of headlamp bulb. Install and secure headlamp assembly to nacelle with eight fasteners.
15. Secure chrome ring (11) to headlamp nacelle with screw (12).

NOTE

Check clearance between windshield and clutch cable and handlebar position prior to completing assembly of vehicle.

FLTR Road Glide

1. See [Figure 1-14](#). Remove two T25 TORX screws at sides of instrument bezel.
2. Carefully push tab at rear of instrument bezel from slot above ignition switch. Gently raise free side of bezel until tabs at front of instrument nacelle disengage from slot at front of bezel (concealed behind decorative adhesive strip). Move instrument bezel to one side.
3. See [Figure 1-15](#). Loosen two front handlebar upper clamps (Instrument bezel has been removed in drawing for clarity).
4. Raise handlebars to normal riding position. Tighten front handlebar clamp screws to 12-16 ft-lbs (16.3-21.7 Nm).
5. Verify that left and right sides of instrument nacelle are properly mated. Pins on left side of nacelle must fully engage holes on right.
6. Insert tab at rear of bezel into slot of instrument nacelle just above 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, a loose fit will result. Remove decorative adhesive strip by gently prying up outer edges. Using a flat bladed screwdriver, carefully raise tabs so they engage lip in slot. If damaged, install **new** decorative adhesive strip.

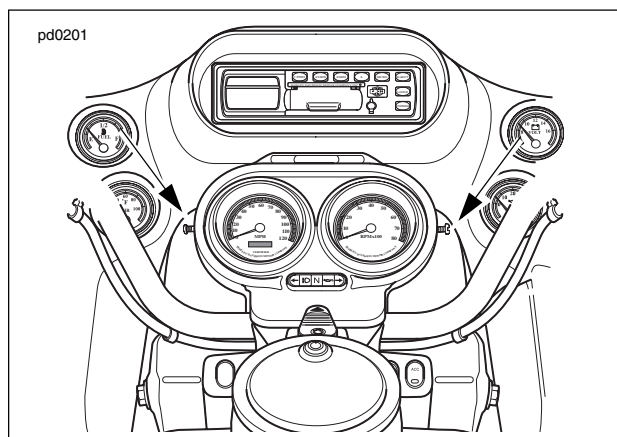


Figure 1-14. FLTR Models-Instrument Bezel Screws

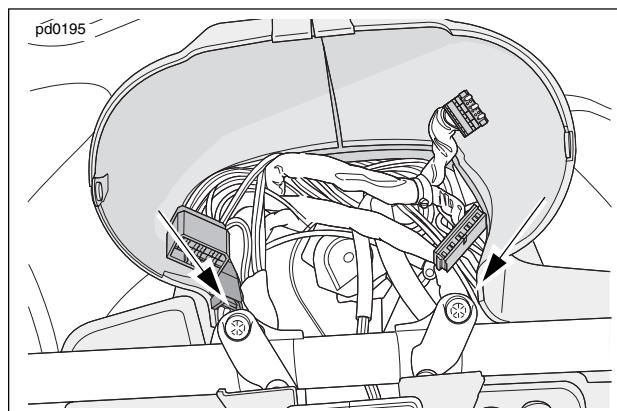


Figure 1-15. FLTR Models-Front Handlebar Clamp Screws

VRSCB

NOTE

To gain access to the handlebar adjusting screws, the following steps will be necessary:

1. Remove Maxi-Fuse.
2. See Figure 1-16. Remove instrument cluster screw from location shown and pivot instrument cluster away from handlebars.
3. Remove wiring harness connector and remove screw on bottom side of instrument cluster.
4. Remove instrument cluster.
5. To be sure handlebars are properly centered, verify that equal amounts of knurled areas on handlebar protrude from outboard sides of upper handlebar clamp.

NOTE

On some models, knurled areas of handlebar will be completely hidden by upper handlebar clamp and will not be visible at all when handlebar is centered properly.

6. See Figure 1-17. Raise handlebars to normal riding position; hold in position. Tighten two front screws (4) until cast-in spacers (2) of upper clamp contact handlebar lower clamp (1).
7. Tighten rear screws (3) to 16-20 Nm (12-15 ft-lbs).
8. Final tighten front screws (4) to 16-20 Nm (12-15 ft-lbs). Slight gap between upper and lower clamps should exist at rear.
9. Install instrument cluster.
10. Insert instrument cluster screw and tighten to 2.2-2.8 Nm (20-24 in-lbs).
11. Install Maxi-Fuse.

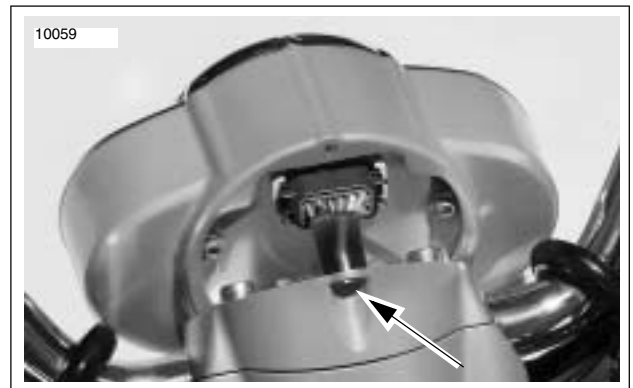


Figure 1-16. Instrument Cluster Mounting Screw Location

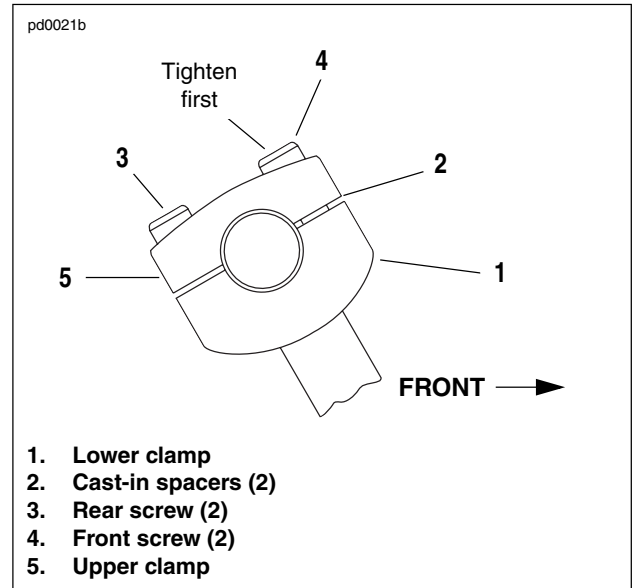


Figure 1-17. VRSCB Models

REMOVING VEHICLE FROM PALLET

All Models

WARNING

Always have someone steady motorcycle while each strap is being removed to prevent tipping. Motorcycle front suspension is secured in a compressed state by two nylon straps. Releasing strap tension on one side of motorcycle could result in the front of motorcycle rising and leaning abruptly to opposite side, which could result in death or serious injury.

WARNING

Always wear safety glasses and gloves and keep bystanders at a safe distance when uncrating the motorcycle. When released, each strap will unwind rapidly from its ratchet lever, and end of strap could recoil in an outward direction, which could result in death or serious injury.

1. Remove crating straps.
 - a. Have an assistant hold the motorcycle's handlebars.
 - b. See [Figure 1-18](#). Start with the right side crating strap. Depress (in opposite direction of spool) and hold down the spring-loaded ratchet release.
 - c. See [Figure 1-19](#). Swing open the ratchet lever to the release position; tensioned nylon strap will rapidly unwind. remove strap and any protective padding from pallet.

CAUTION

On VRSC models, a third strap is located at the left rear. After this rear strap is removed, unscrew the rear eyebolt to prevent tripping and falling over it. Falling could result in minor or moderate injury. Also, if eyebolt is not removed, the left radiator trim or other low-left-side components could be damaged when motorcycle is rolled off pallet.

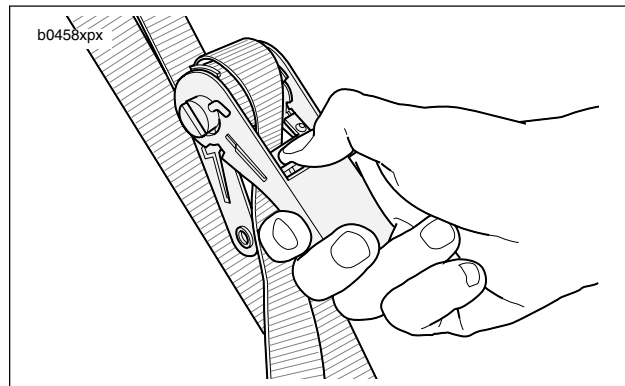


Figure 1-18. Opening Ratchet Lever

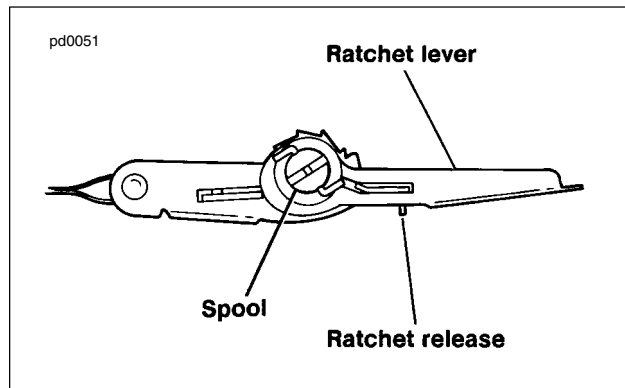


Figure 1-19. Strap Ratchet Lever (Release Position)

2. See [Figure 1-20](#). Place a 2x4 in. (50.8x101.6 mm) board between steel cross braces (see arrow) behind front tire to aid rolling motorcycle rearward off pallet.
3. Carefully roll vehicle off pallet.

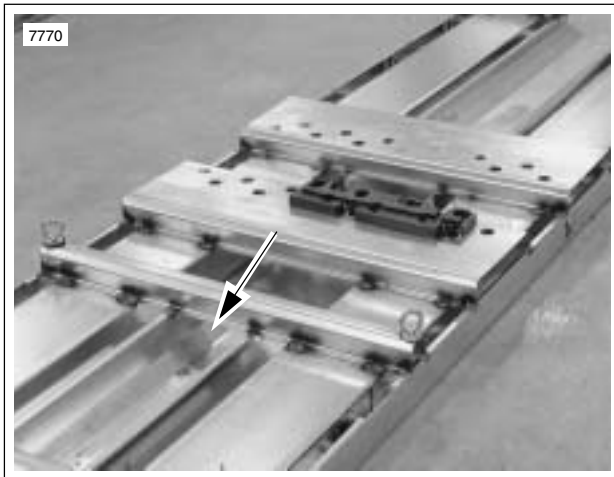


Figure 1-20. Vehicle Pallet

⚠ WARNING

Always park motorcycle on a level, firm surface. An unbalanced motorcycle can fall over which could result in death or serious injury. (00039a)

⚠ WARNING

The jiffy stand locks when placed in the full forward (down) position with vehicle weight on it. If the jiffy stand is not in the full forward (down) position with vehicle weight on it, the vehicle can fall over which could cause death or serious injury. (00006a)

⚠ WARNING

Be sure jiffy stand is fully retracted before riding. If jiffy stand is not fully retracted, it can contact the road surface causing loss of vehicle control, which could result in death or serious injury. (00007a)

⚠ WARNING

Improperly aligned or adjusted handlebars can contact fuel tank when turned to left or right fork stops. Contact with fuel tank while riding can cause loss of vehicle control resulting in death or serious injury.

4. Slowly turn handlebars back and forth to the full right and full left fork stops to be sure handlebars (and/or turn signals on some models) do not contact fuel tank. Also be sure cables and wiring are not pinched or stretched as handlebars are turned back and forth.
 - a. If contact between handlebars and fuel tank occurs and handlebars are properly centered, perform handlebar adjustment again (see [ADJUSTING HANDLEBARS- ALL MODELS](#)), raising handlebars as necessary to clear fuel tank.
 - b. On models with turn signals mounted on handlebar control housings, if turn signal contacts fuel tank, adjust turn signals and/or handlebar control housings according to appropriate Service Manual instructions.

⚠ WARNING

Throttle control must operate freely without binding. Irregular or sticking throttle cables could cause a loss of control, leading to an accident which could result in death or serious injury.

CLUTCH HAND LEVER

NOTE

- See *Figure 1-21*. All *Dyna* models have *Maxi-Fuse* wrapped in plastic wrapping around clutch hand lever and left handlebar grip.
- See *Figure 1-22*. See *Figure 1-23*. All *Sportster* models have *Maxi-Fuse* and headlamp snap cap fitted into protective foam on clutch hand lever and left handlebar grip. Save snap cap for installation after headlamp has been adjusted. *Sportster* model *XL 883L* also has righthand mirror fitted into protective foam.

1. Remove plastic wrapping or protective foam from clutch hand lever and left handlebar grip.
2. If handlebar controls need to be adjusted, perform the following procedure.
 - a. See *Figure 1-24*. Loosen, but do not remove, clutch control housing clamp screws (1) and handlebar switch housing clamp screws (2).
 - b. Rotate clutch control housing and handlebar switch housing as necessary for correct position and rider comfort.
 - c. Beginning with the top screw, tighten clutch control housing clamp screws. All *Sportster* models: tighten to 108-132 **in-lbs** (12.2-14.9 Nm). All other models: tighten to 60-80 **in-lbs** (6.8-9.0 Nm).
 - d. Tighten handlebar switch housing clamp screws to 35-45 **in-lbs** (4.0-5.1 Nm).

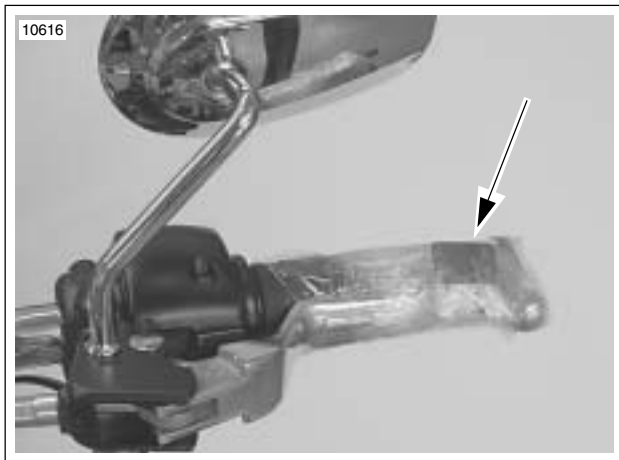
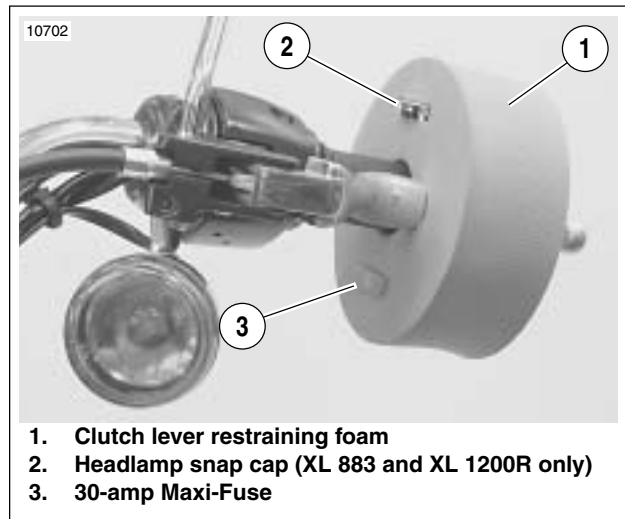
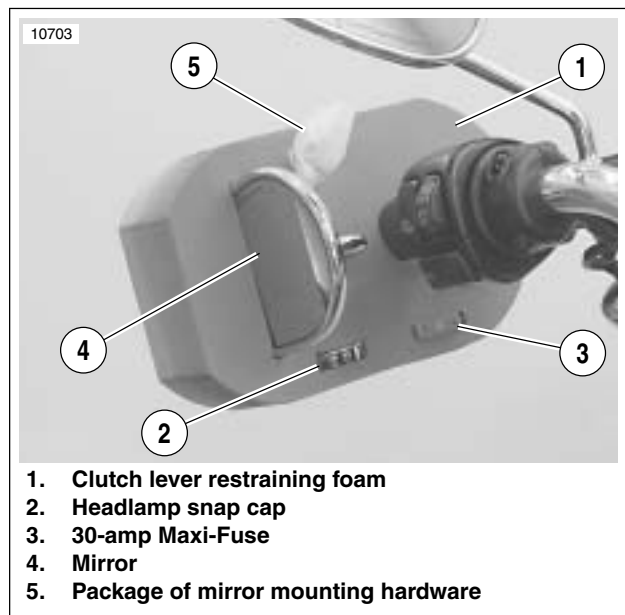


Figure 1-21. Location of Maxi-Fuse on Clutch Hand Lever–Dyna Models



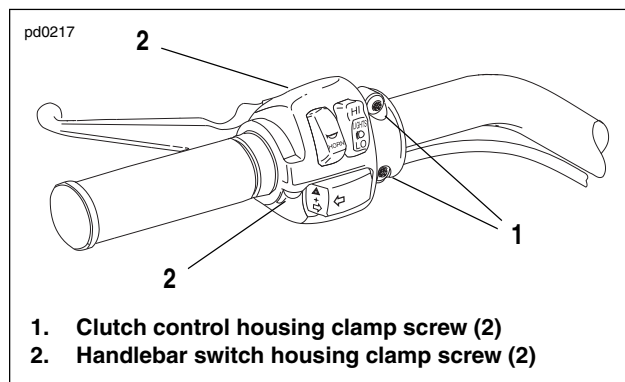
1. Clutch lever restraining foam
2. Headlamp snap cap (XL 883 and XL 1200R only)
3. 30-amp Maxi-Fuse

Figure 1-22. Location of Maxi-Fuse and Snap Cap on Clutch Hand Lever–All Sportster Models Except XL 883L



1. Clutch lever restraining foam
2. Headlamp snap cap
3. 30-amp Maxi-Fuse
4. Mirror
5. Package of mirror mounting hardware

Figure 1-23. Location of Maxi-Fuse and Snap Cap on Clutch Hand Lever–Sportster XL 883L



1. Clutch control housing clamp screw (2)
2. Handlebar switch housing clamp screw (2)

Figure 1-24. Left Hand Controls (Typical)

FRONT BRAKE HAND LEVER

If handlebar controls need to be adjusted, perform the following procedure.

1. See [Figure 1-25](#). Loosen, but do not remove, front brake master cylinder clamp screws (1) and handlebar switch housing clamp screws (2).
2. Rotate master cylinder housing and handlebar switch housing as necessary for correct position and rider comfort.
3. Beginning with the top screw, tighten front brake master cylinder clamp screws. All Sportster models: tighten to 108-132 **in-lbs** (12.2-14.9 Nm). All other models: tighten to 60-80 **in-lbs** (6.8-9.0 Nm).
4. Tighten handlebar switch housing clamp screws to 35-45 **in-lbs** (4.0-5.1 Nm).

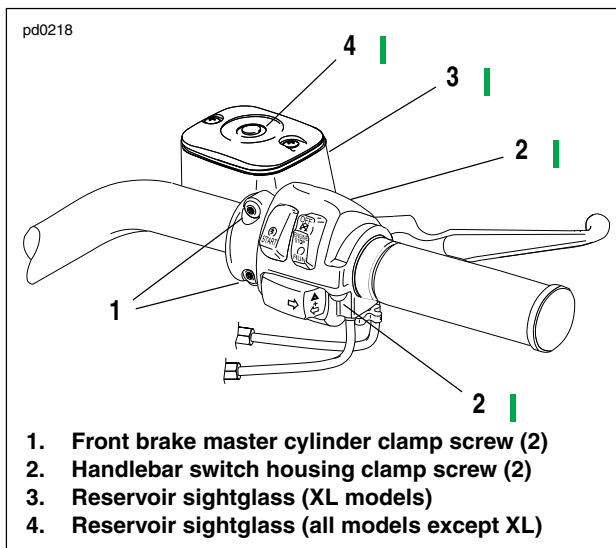


Figure 1-25. Right Hand Controls (Typical)

IMPORTANT NOTE

All Touring model motorcycles use **D.O.T. 4 HYDRAULIC BRAKE FLUID** (Part No. 99953-99A). All Dyna, Softail, VRSC and Sportster models use **D.O.T 5 SILICONE HYDRAULIC BRAKE FLUID** (Part No. 99902-77: 12 oz., 99901-77: 1 gal.). If it is necessary to top off the brake fluid in the reservoir, make sure you add the correct type.

CAUTION

Direct contact of D.O.T. 5 brake fluid with eyes can cause eye irritation, swelling, and redness. Avoid eye contact. In case of eye contact, flush with large amounts of water and get medical attention. Swallowing large amounts of D.O.T. 5 brake fluid can cause digestive discomfort. If swallowed, obtain medical attention. Use in well ventilated area. **KEEP OUT OF REACH OF CHILDREN.** (00144a)

CAUTION

Direct contact of D.O.T. 4 brake fluid with eyes can cause irritation. Avoid eye contact. In case of eye contact flush with large amounts of water and get medical attention. Swallowing large amounts of D.O.T. 4 brake fluid can cause digestive discomfort. If swallowed, obtain medical attention. Use in well ventilated area. **KEEP OUT OF REACH OF CHILDREN.** (00240a)

CAUTION

D.O.T. 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)

CAUTION

Cover handlebar switches with a shop towel before adding brake fluid to front master cylinder reservoir. Spilling brake fluid on handlebar switches may render them inoperative.

NOTE

AUSTRALIAN MODELS ONLY: Measure from tip of clutch lever to tip of brake lever. Measurement must not exceed 1 meter in length. If it does, re-adjust accordingly.

FRONT BRAKE MASTER CYLINDER RESERVOIR

See [Figure 1-25](#). View reservoir sightglass (3 or 4) and verify fluid presence. Sightglass should appear dark if fluid is present. If sightglass is not dark, add brake fluid. See Service Manual. Use only D.O.T. 5 SILICONE HYDRAULIC BRAKE FLUID (Part No. 99902-77: 12 oz., 99901-77: 1 gal.) for all Dyna, Softail, VRSC and Sportster models. Use only D.O.T. 4 HYDRAULIC BRAKE FLUID (Part No. 99953-99A) for all Touring models. Wash all residue of D.O.T. 4 brake fluid spills off vehicle with water.

VEHICLE CLEANUP

WARNING

Do not let the brakes, engine, mufflers or air cleaner get wet when washing your motorcycle. Allowing these components to get too wet can adversely affect their performance, which could result in death or serious injury. Start engine immediately after washing, and make sure brakes and engine are operating properly before riding in traffic. (00078b)

CAUTION

Avoid spraying water directly on handlebar switches. Wet handlebar switches may be inoperative.

Remove protective shipping tape from motorcycle. Wash entire motorcycle before beginning actual pre-delivery inspection. If vehicle is equipped with frame downtube reflectors, remove any plastic cable straps wrapped around reflectors (cable straps are used during assembly at factory for retaining reflectors to downtubes while reflector adhesive cures).

COSMETIC QUALITY

Paint Finish Inspection and Repair

Under good lighting conditions, examine all painted parts for any damage or irregularities in the paint finish. To aid the dealer network in addressing quality concerns, Harley-Davidson Motor Company has developed a zoning and criteria protocol, which enables us to exceed customer's expectations. If you discover any condition requiring repair, use Paint Repair Kit (Part No. HD-39994); available through Kent-Moore, at the following address, to correct the condition.

Kent-Moore
28635 Mound Rd
Warren, Michigan 48092-3499
(phone) 1-800-345-2233

Instructions covering painted part repair are included with the Paint repair Kit. Additional paint repair information is available from Harley-Davidson on the PHD training videotape No. 136. Additional cosmetic quality information is available in the Harley-Davidson Cosmetic Booklet (Part No. HD-99514-05) and on-line Cosmetic Training located on HDU On-line.

RETURNING STEEL PALLETS

NOTE

International Dealers/Distributors should check with their H-D office to determine whether or not to return pallets.

1. See Figure 1-26. Remove and discard plastic motor shim (1).

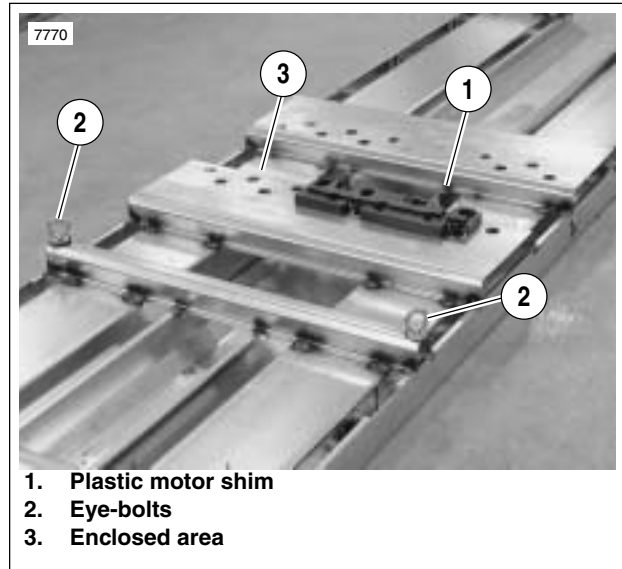


Figure 1-26. Vehicle Pallet

2. Turn eye-bolts (2) so they are parallel with sides of pallet. This will allow stacking pallets for shipment.

NOTE

On VRSC pallets place eye-bolt from rear in enclosed area (3) of pallet.

3. Place hold-down straps you are returning to factory in enclosed area (3) of pallets.

CAUTION

Do not mix 29 in. (736.6 mm) width pallets with 43 in. (1.09 m) width pallets on the same 7-pallet stack. Mixing pallets of different width could result in an unstable bundle and pallet damage.

4. Stack seven pallets keeping all eye-bolts on same end.
5. Band pallets by threading hold-down straps through both end cross members of top and bottom pallets. (If necessary connect two straps together.)
6. Tighten straps to secure pallet bundles.
7. Call, Fax, E-mail or use www.h-dnet.com to arrange pallet return to Harley-Davidson.

MAINTENANCE-FREE BATTERIES

All models are equipped with maintenance-free batteries that are permanently sealed, valve-regulated, lead/calcium and sulfuric acid electrolyte batteries. The electrolyte is immobilized in a glass fibre separator. Therefore, the batteries are identified as "Type AGM" which is the acronym for Absorbed Glass Mat technology. The batteries are shipped pre-charged and ready to be put into service. Do not attempt to open these batteries for any reason. These batteries do not have a vent tube. Perform Voltmeter Test to check if battery requires charging.

WARNING

Batteries contain sulfuric acid, which could cause severe burns to eyes and skin. Wear a protective face shield, rubberized gloves and protective clothing when working with batteries. KEEP BATTERIES AWAY FROM CHILDREN. (00063a)

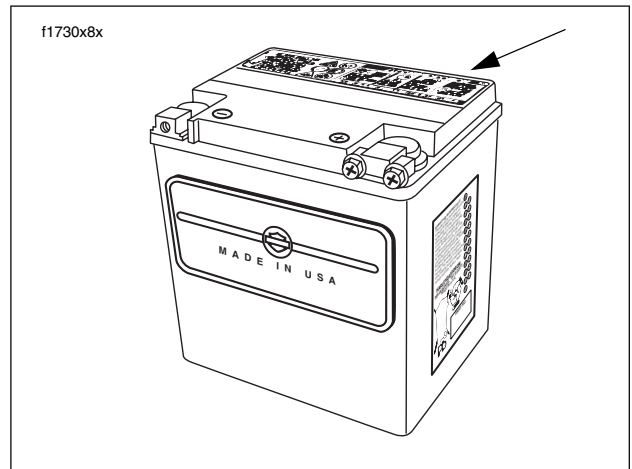


Figure 1-27. Warning Label

Table 1-1. Battery Electrolyte Antidote

PHYSICAL LOCATION	PROCEDURE
External	Flush with water
Internal	Drink large quantities of milk or water, followed by milk of magnesia, vegetable oil or beaten eggs. Call doctor immediately
Eyes	Flush with water, get immediate medical attention.

f2180x3x

1. Contents are corrosive

2. Wear safety glasses

3. Contents are explosive

4. Keep flames away

5. Read instructions

6. Keep away from children

Figure 1-28. Battery Warning Label

DATE OF MANUFACTURE CODE

See [Figure 1-29](#). The battery date code sticker has a number and two letters. The number signifies the year the battery was manufactured.

9 – 1999
0 – 2000
1 – 2001
2 – 2002
3 – 2003
4 – 2004
5 – 2005

The letters signify the month the battery was activated.

JA–January	MY–May	SE–September
FE–February	JU–June	OC–October
MA–March	JY–July	NO–November
AP–April	AU–August	DE–December

VOLTMETER TEST

Refer to [Table 1-2](#). The voltmeter test provides a general indicator of battery condition. Check the voltage of the battery to make sure it is 12.6 V. If the open circuit (disconnected) voltage reading is below 12.6 V, charge battery and recheck voltage after battery has sat 1-2 hours.

CHARGING BATTERY

NOTE

The sealed AGM batteries do not need to be removed for charging. Only remove battery if cable connection or marking the Warranty Tag requires it.

1. Connect the red battery charger lead to the positive terminal of the battery and the black charger lead to the negative terminal.
2. Refer to [Table 1-2](#). Charge battery for time specified in [Table 1-2](#).
3. If battery gets hot, over 110°F (44°C) (warm to the touch), discontinue charging and let battery cool down.

WARNING

Unplug or turn OFF battery charger before disconnecting charger cables from battery. Disconnecting clamps with charger ON can cause a spark and battery explosion, which could result in death or serious injury. (00067a)

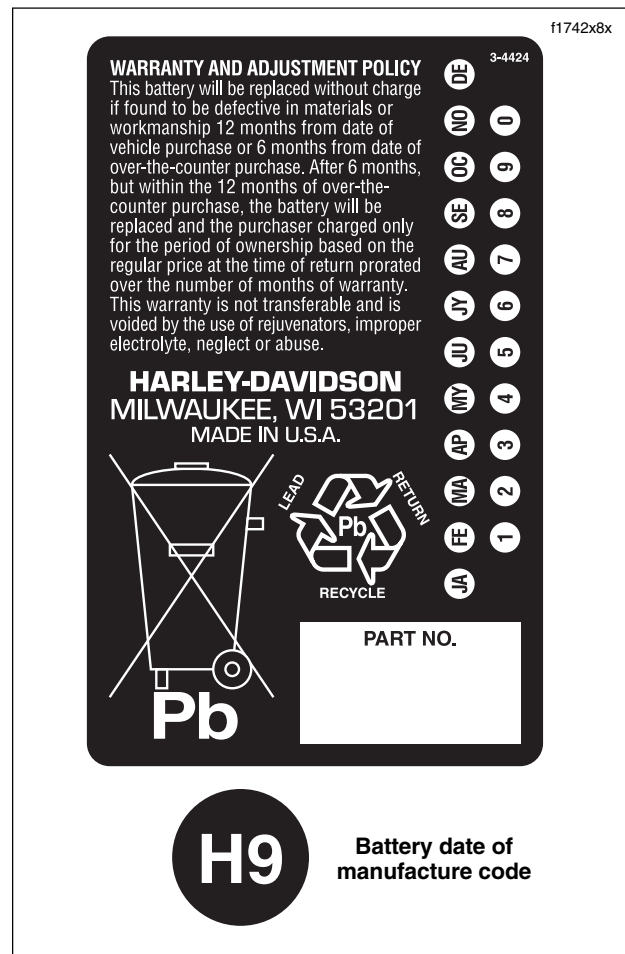


Figure 1-29. Battery Warranty Tag/Date Code Sticker

4. After the battery is fully charged, disconnect the black battery charger lead to the negative (–) terminal of the battery.
5. Disconnect the red battery charger lead to the positive (+) terminal of the battery.
6. See [Figure 1-29](#). Mark the date on the battery warranty tag by removing the applicable month and year. If the date is after the 15th day of the month, advance the date to the next month. For example, if the battery is put in use July 22, punch out the month of August, which is abbreviated on the tag as “AU.” To determine the correct number to punch out for the year, just reference the last digit of the current year. Therefore, the number “5” is punched to signify the year 2005.

Table 1-2. Battery Charging Rates/Times (Approximate)

BATTERY AMP HOUR	STATE OF CHARGE		3 AMP CHARGER	6 AMP CHARGER	10 AMP CHARGER	20 AMP CHARGER
	VOLTAGE	% OF CHARGE				
VRSC, SPORTSTER 12	12.8	100%	-	-	-	-
	12.6	75%	70 minutes	34 minutes	20 minutes	10 minutes
	12.3	50%	2 hours, 20 minutes	70 minutes	40 minutes	20 minutes
	12.0	25%	3 hours, 20 minutes	1 hour, 40 minutes	1 hour	30 minutes
	11.8	0%	4 hours, 30 minutes	2 hours, 14 minutes	1 hour, 20 minutes	40 minutes
DYNA, SOFTAIL 18	12.8	100%	-	-	-	-
	12.6	75%	1.75 hours	50 minutes	30 minutes	15 minutes
	12.3	50%	3.5 hours	1.75 hours	1 hour	30 minutes
	12.0	25%	5 hours	2.5 hours	1.5 hours	45 minutes
	11.8	0%	6 hours, 40 minutes	3 hours, 20 minutes	2 hours	1 hour
TOURING 28	12.8 V	100%	-	-	-	-
	12.6 V	75%	2.5 hours	1.25 hours	45 minutes	25 minutes
	12.3 V	50%	5 hours	2.5 hours	1.5 hours	50 minutes
	12.0 V	25%	7.5 hours	3.75 hours	2.25 hours	70 minutes
	11.8 V	0%	10 hours	5 hours	3 hours	1.5 hours

NOTE

The figures listed above assume that the battery is charging at room temperature. If warmer than room temperature, use a slightly shorter charging time. If colder, use a slightly longer charging time.

NOTE

The use of constant current chargers to charge sealed maintenance-free batteries is not recommended. Any overcharge will cause dry-out and premature battery failure. If a constant current charger is the only type available, do not exceed the charge times listed above and do not continue charging the battery if it gets hot. When charging, never exceed 15 volts for more than 30 minutes.

WARNING LABEL PLACEMENT (ALL VEHICLES SOLD OUTSIDE OF THE UNITED STATES)

All dealers outside of the United States are required to apply a warning label to the vehicle in the local language of the customer. A sheet of warning labels (Part No. 99942-05) is provided in the Owner's Kit.

Apply the appropriate local language version of the warning label as required to suit your local market. If your local language is not represented on this label sheet, use the English language label.

All EFI Big Twin Models

See [Figure 1-30](#). Peel appropriate label from sheet. Apply label on top of air cleaner cover, centered on cover and lined up with edge of air cleaner back plate.



**Figure 1-30. Warning Label Placement—
All Big Twin EFI (Typical)**

All Carbureted Big Twin Models

See [Figure 1-31](#). Peel appropriate label from sheet. Apply label on top of air cleaner cover, centered on cover and lined up with edge of carburetor cutout in air cleaner back plate.



**Figure 1-31. Warning Label Placement—
All Big Twin Carbureted (Typical)**

All Sportster Models

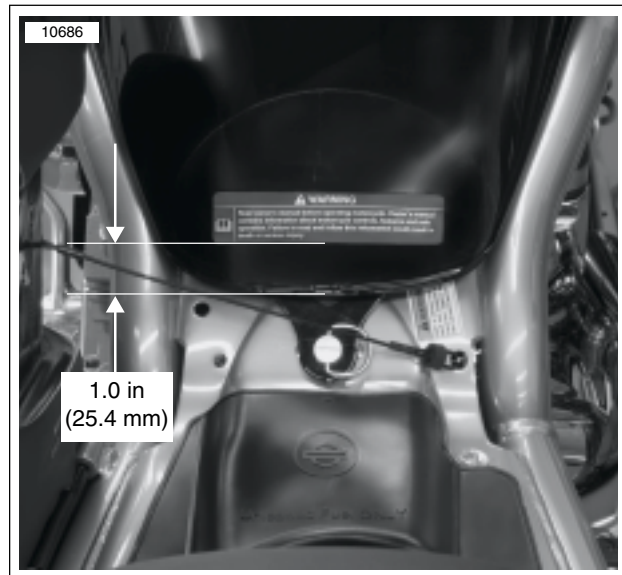
See [Figure 1-32](#). Peel appropriate label from sheet. Apply label on top of air cleaner cover, centered on cover and lined up with edge of air cleaner back plate.



**Figure 1-32. Warning Label Placement—
All Sportster Models (Typical)**

All VRSC Models

See [Figure 1-33](#). Open seat. Peel appropriate label from sheet. Apply label centered on rear end of air cleaner cover with bottom edge of label 1.0 in. (25.4 mm) from rear edge of air cleaner cover.



**Figure 1-33. Warning Label Placement—
All VRSC Models (Typical)**

GENERAL

All system problems fall into at least one of three general categories.

No Start

The engine cranks over freely, but will not start. This does not include situations where the engine will not crank, such as a security disabled starter, dead battery, etc. This condition assumes that all obvious checks (fuel in tank, etc.) have been made.

Poor Performance

The engine starts but there are performance problems. These problems may include poor fuel economy, rough idle, engine misfire, engine hesitation, severe spark knock, etc.

Check Engine Lamp

The Check Engine lamp indicates the ECM has determined a fault condition exists. There may also be starting or performance problems.

In the event that you encounter any system problems during set-up, see the appropriate Service Manual or Electrical Diagnostic Manual for your model.

NOTES

PREDELIVERY: TOURING MODELS

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TORQUE VALUES

The following torque values are included for fasteners that may be loosened and tightened during Predelivery and Setup. Any fasteners that are not loosened/removed do not need to be checked during predelivery and setup.

Table 2-1. Torque Values

ITEM		TORQUE		NOTES
Handlebar clamp screws (front and rear)		12-16 ft-lbs	16.3-21.7 Nm	Must be checked at set-up.
Clutch inspection cover screws		84-108 in-lbs	9.5-12.2 Nm	
FLHT windshield screws		25-30 in-lbs	2.8-3.4 Nm	
FLTR windshield screws		6-13 in-lbs	0.7-1.5 Nm	
Saddlebag mounting bracket bolts		60-96 in-lbs	6.8-10.8 Nm	
Tour-Pak [®] mounting bolts		96-120 in-lbs	10.8-13.5 Nm	
FLHR/ FLHP	Nacelle acorn nuts	72-108 in-lbs	8.1-12.2 Nm	
	Handlebar clamp shroud screws	10-20 in-lbs	1.1-2.3 Nm	
	Handlebar clamp shroud nut	10-20 in-lbs	1.1-2.3 Nm	
	Nacelle trim nut	15-20 in-lbs	1.7-2.3 Nm	

2005 TOURING MODELS SPECIFICATIONS

Table 2-2. Capacities

Component	ENGLISH	METRIC
Oil tank w/filter (Dry)	4 qt.	3.79 liter
Transmission (Wet)	20-24 oz	591-710 ml
Primary Chaincase	32 oz	946 ml

All touring models except FLHTCSE² are shipped with 20W50 Harley-Davidson 360 Motor oil. The FLHTCSE² model ships with Syn-3[®] lubricant in the engine, primary and transmission.

Idle Speed: 950 RPM at Operating Temperature

Use 950 RPM during Predelivery and Setup adjustments. Engine idle speed may increase during engine break-in. Use idle speed listed in the Touring Models Service Manual at Initial Maintenance check.

NOTE

The idle speed on electronic fuel injected models can only be set using a diagnostic tool such as DIGITAL TECHNICIAN (Part No. HD-44750).

BATTERY TESTING AND CHARGING

WARNING

Batteries contain sulfuric acid, which could cause severe burns to eyes and skin. Wear a protective face shield, rubberized gloves and protective clothing when working with batteries. KEEP BATTERIES AWAY FROM CHILDREN. (00063a)

WARNING

Never remove warning label attached to top of battery. Failure to read and understand all precautions in warning could result in death or serious injury. (00064a)

WARNING

Battery posts, terminals and related accessories contain lead and lead components, chemicals known in the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling. (00019a)

NOTE

It will be necessary to remove the left saddlebag and left sidecover to gain access to the Maxi-Fuse connector.

1. Check battery voltage at Maxi-Fuse plug. With fuse removed, place red voltmeter probe on battery side (terminal A) of Maxi-Fuse plug, and black voltmeter probe on a suitable ground.
2. If the open circuit (disconnected) voltage reading is 12.6 VDC or greater the battery is ready for use.
3. See Section 1. Mark the date on the battery warranty tag by removing the applicable month and year. Month and year punches may be removed with the point of a screwdriver without removing battery.
4. If the open circuit (disconnected) voltage reading is below 12.6 VDC, refer to Table 1-2, 28 amp-hour battery, in Section 1 and charge battery at rate and time specified.
5. Recheck battery voltage by repeating step 1 above. If voltage now is 12.6 VDC or greater, perform steps 2 and 3 above.
6. If the open circuit (disconnected) voltage reading is still below 12.6 VDC, the battery must be replaced.

INSTALLING MAXI-FUSE

The 40 amp Maxi-Fuse provides battery power to the ignition switch and ECM. The 40 amp Maxi-Fuse is not installed at the factory. It is shipped in the saddlebag of the motorcycle, and is to be installed under the left sidecover. Cut the cable tie securing the Maxi-Fuse wire to the frame. See Service Manual for Maxi-Fuse installation procedure.

INSTALLING FUEL PUMP FUSE

NOTE

It will be necessary to remove the right saddlebag and right sidecover to gain access to the fuel pump fuse.

For fuel-injected vehicles, it will be necessary to install the 15-amp fuel pump fuse that is located in the spare fuse slot of the fuse-block located under the right sidecover. See Service Manual.

INSTALLING DATA LINK CONNECTOR

See [Figure 2-1](#). The data link connector [91] (2) mounts in a clip on the electrical bracket (1) under the right side cover. Cut the cable tie securing the data link connector harness to the frame and snap the connector into its clip on the electrical bracket.

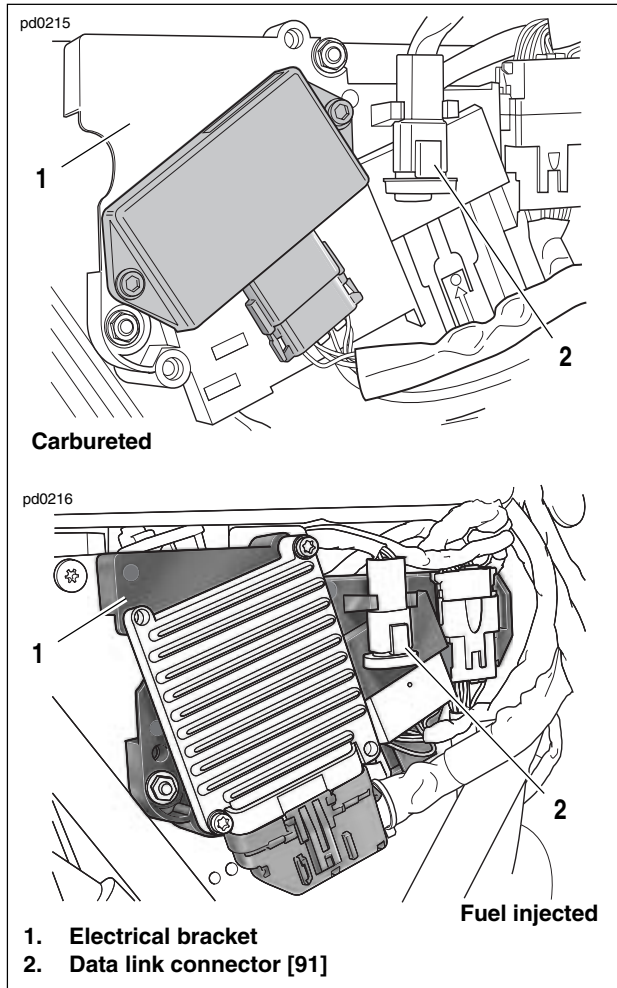


Figure 2-1. Data Link Connector

INSTALLING TOUR-PAK®

NOTE

The seat screw is not factory installed on models with Tour-Paks. The seat screw is in the Parts Kit, Part No. 53318-99.

On Ultra models, see [Figure 2-2](#). Remove map pouch and molded Tour-Pak liner from Tour-Pak prior to performing the following procedures. Install both after work is completed.



Figure 2-2. Tour-Pak Liner and Map Pouch

Five Bolt Mounting

Note that Tour-Pak has seven mounting holes which allow it to be **positioned forward on luggage rack for shipping only**. Mount Tour-Pak in the rearward position (front four holes and rear center hole) so seat access screw can be reached.

1. To avoid dropping or scratching the Tour-Pak, disconnect the radio antenna cable and Tour-Pak lights connectors and feed wiring out through hole at front of Tour-Pak (after removing grommet). On Ultra models, repeat the procedure to release the CB antenna cable and connector.
2. If not already removed, remove seat.
3. Place a protective blanket across the frame tubes in the seat area.
4. From inside Tour-Pak, remove the nuts and oversized shipping washers and then lift the Tour-Pak off the mounting bolts setting it on the blanket. Retain nuts for use later, discard large shipping washers.

5. See [Figure 2-3](#). Remove and discard the pushnuts (5) from the mounting bolts (1), and pull the bolts (1) and washers (2) from the luggage rack (although the spacers (4) may be left in place between the top support tube (3) and the license plate bracket).
6. Locate Parts kit, Part no. 53318-99 in Tour-Pak or saddlebag. The plastic bag contains three spacers, bolts, nuts and five washers used to mount Tour-Pak. Also in parts kit is the seat retaining screw.
7. See [Figure 2-4](#). Move Tour-Pak to rear so five mounting holes align with five holes in top support tube.

NOTE

Make certain bolts are installed with threaded end down. Bolt head and washer must be inside Tour-Pak.

8. From inside Tour-Pak, install right rear bolt (1) and washer (2) through bottom of Tour-Pak, hole in top support tube (3), luggage rack spacer (4), and hole in license plate bracket (5).
9. Install washer (2) and locknut (6) on right rear bolt and tighten "finger-tight". (This fastener will keep Tour-Pak in position while remaining four bolts are installed.)
10. Install antenna ground lead ring terminal under washer of rear mounting bolt and install rear bolt as shown in [Figure 2-4](#).
11. Install remaining bolts, washers, spacers and nuts as shown in [Figure 2-4](#).
12. Tighten five nuts and bolts to 96-120 **in-lbs** (10.8-13.5 Nm).

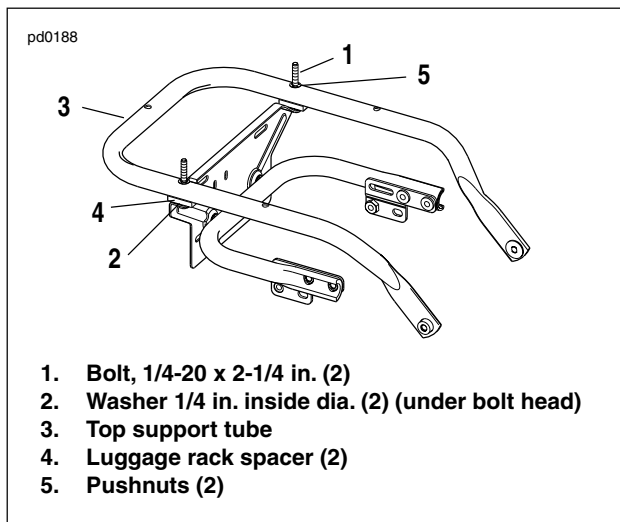


Figure 2-3. Tour-Pak Shipping Fasteners

SEATS AND PASSENGER STRAP

Refer to Touring Models Owner's Manual for seat and passenger strap removal and installation instructions. Road Glide models must have the seat strap installed per the appropriate Service Manual.

INSTALLING SIDECOVERS AND SADDLEBAGS

Check that each saddlebag is firmly seated on its saddlebag bottom support rail. Check that adequate clearance exists between saddlebags and sidecovers. The front and rear mounting brackets of each saddlebag have slotted mounting holes (on the bracket ends which attach to the motorcycle) to allow for vertical adjustment of the saddlebag. If adjustment is necessary, loosen the bolts which secure the saddlebag mounting brackets to the motorcycle. Press down and to the rear firmly on closed saddlebag, and then tighten the bolts to 60-96 **in-lbs** (6.8-10.8 Nm) torque.

NOTE

It is essential that the Tour-Pak be installed in the rearward position or seat removal/installation will not be possible due to interference with the forward-mounted Tour-Pak.

On Ultra models, see [Figure 2-5](#). Check that AM/FM/WB antenna (left side) cable is in its two clips on left side of Tour-Pak floor. Also check that CB antenna (right side) cable is in two clips on right side of Tour-Pak floor. Verify that ground strap of AM/FM/WB antenna is securely fastened to base plate in Tour-Pak with rear mounting screw.

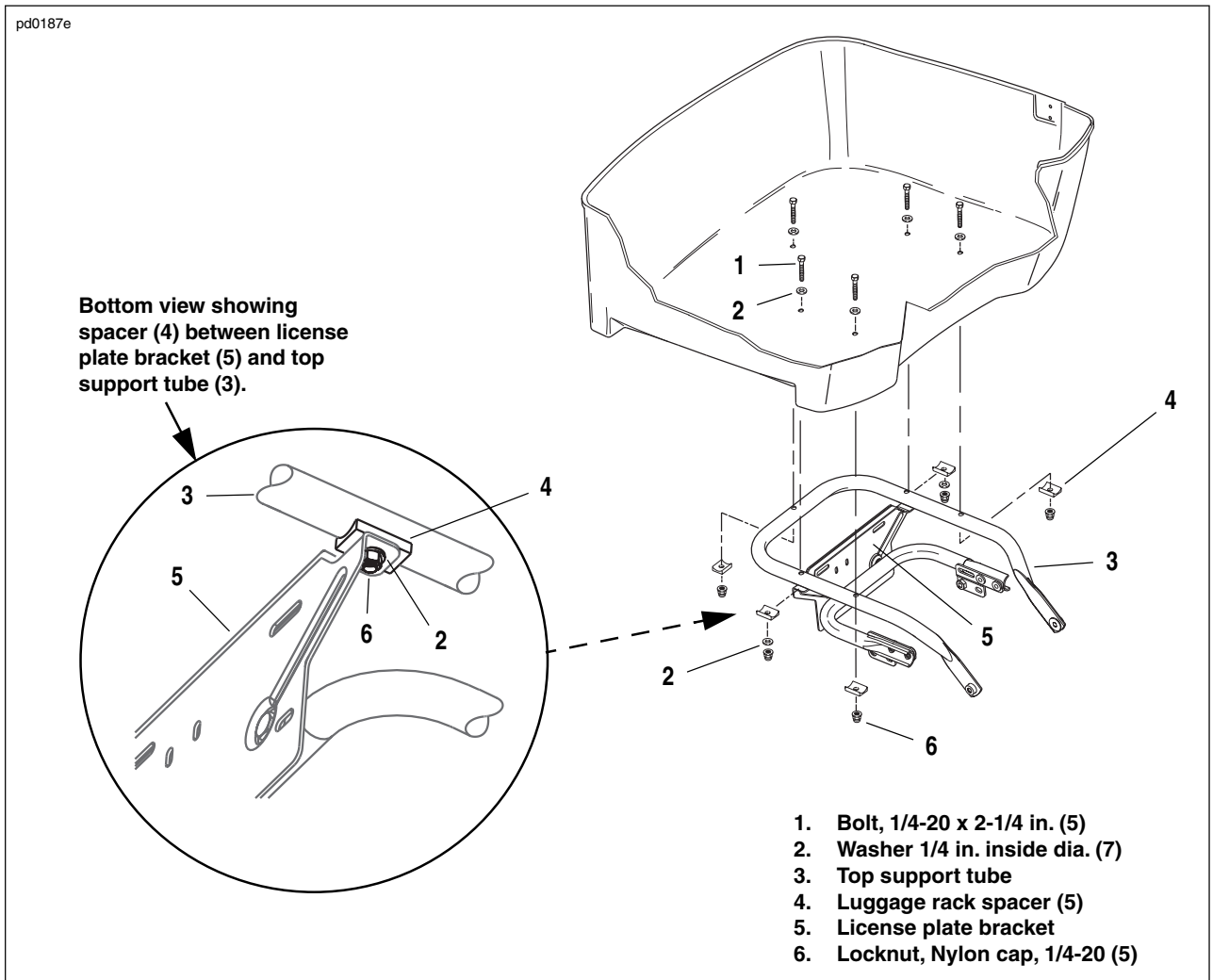


Figure 2-4. Tour-Pak Mounting

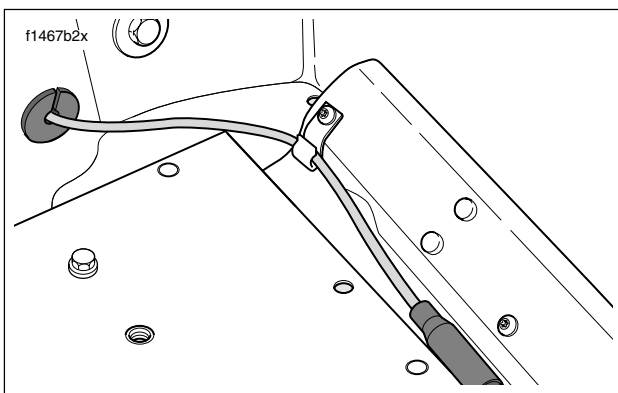


Figure 2-5. Antenna Cable Clip
(CB Antenna Cable Shown)

RADIO ANTENNA MAST INSTALLATION

Open the Tour-Pak lid.

FLHTC models are equipped with one antenna mast. Thread the mast securely over the antenna mounting stud and tighten the set screw.

FLHTCU models are equipped with two antenna masts — one with loading coil for CB radio for right side mounting, the other for AM/FM radio for left side.

On Ultra models only, use soapy water as a lubricant to install a protective rubber boot (provided with vehicle) over tip of AM/FM antenna mast; slide boot down mast and over spring-loaded base. Repeat for CB antenna, but, loosen upper set-screw in base, slide mast from base and slide boot onto mast below loading coil. Reassemble mast to base and adjust distance between bottom of loading coil to top of base to 1 in.

Thread each mast securely over its antenna mounting stud.

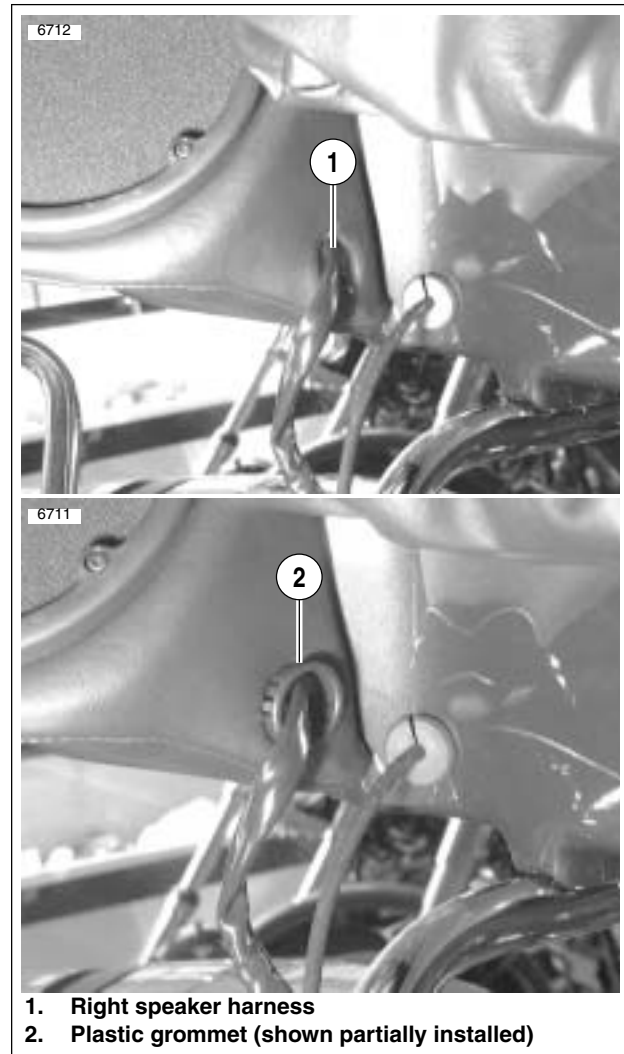
Tighten the two (3 on CB) set screws (one for antenna mast, the other for antenna mounting stud) located in the spring-loaded base of each antenna and one at top of loading coil.

NOTE

Standing Wave Ratio (SWR) will be checked later in these procedures.

REAR SPEAKER HARNESSSES

1. See [Figure 2-6](#). Cut cable straps securing rear speaker harnesses to passenger handrail (both right and left sides). Locate plastic grommets packed in Tour-Pak.
2. Press down on seat cushion, slide harness and connector into speaker box.
3. Install split plastic grommet on harness and push grommet into hole in speaker box.
4. Repeat steps 2 and 3 for left side.



**Figure 2-6. Rear Speaker Harness Grommets
(Seat removed for clarity)**

INSTALLING WINDSHIELD

FLHTC, FLHTCU, FLHTCSE² (Wind Deflector) and FLHTP (Fairing)

1. See [Figure 2-7](#). Loosen the three fasteners along the top of the outer fairing. It is not necessary to remove the fasteners.
2. Slide windshield down between the inner and outer fairing over the fasteners. Position on the raised boss on the inner fairing.

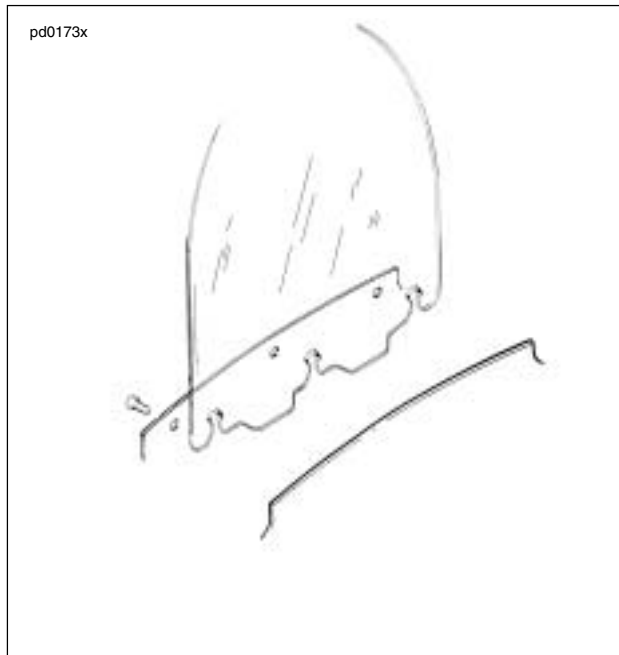


Figure 2-7. Windshield Installation-FLHT Models

CAUTION

Overtightening windshield fasteners may crack windshield and/or fairing.

3. Tighten fasteners to 25-30 **in-lbs** (2.8-3.4 Nm).

Windshield Installation: FLTR

1. See [Figure 2-8](#). Place black plastic washers (4) on the five mounting screws (3). Position rubber trim along bottom of windshield. Insert screws through windshield holes and thread loosely into five Wellnuts (5) with rubber washers (6).
2. Push Wellnuts with rubber washers into holes in fairing.
3. Beginning with the center screw and working outward toward the rear edges of windshield, tighten all screws to 6-13 **in-lbs** (0.7-1.5 Nm). Make certain that the four outer screws are located at the upper end of the slots in the windshield.

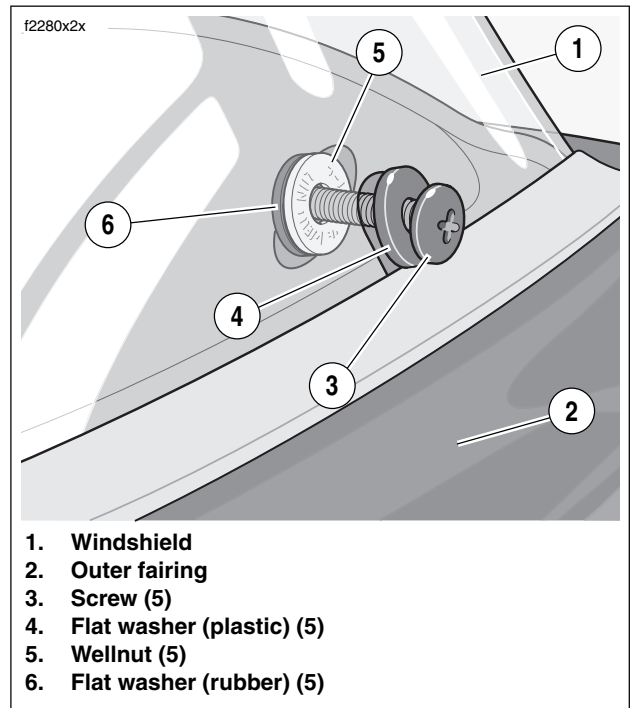


Figure 2-8. Windshield Installation-FLTR Models

Windshield Installation: FLHR/C and FLHP (Windshield)

CAUTION

Be sure you position the windshield bracket between the rubber grommets. Incorrect mounting could result in damage to the windshield.

See [Figure 2-9](#). Insert your fingers into the wireform latch springs at either side of the windshield and slide the BOTTOM windshield bracket notches onto the bottom grommets. Slide the TOP bracket notches onto the top grommets.

NOTE

If windshield contacts clutch cable, reposition handlebars.

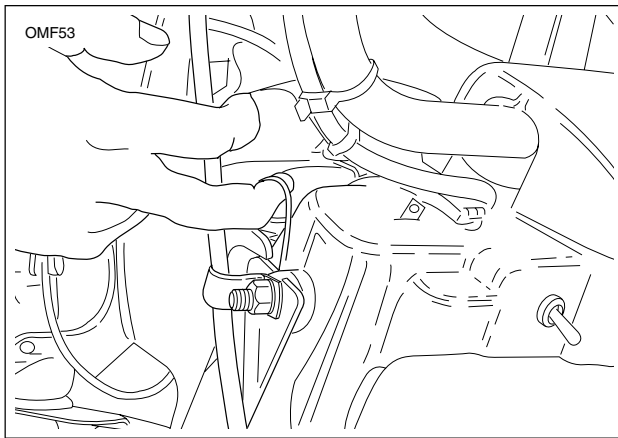


Figure 2-9. FLHR/C and FLHP Windshield Installation

Seat Adjustment: FLHTP

Before applying load to the seat, refer to the Police Models Owner's Manual for adjustment procedures of the FLHTP air-suspension seat. Confirm that air bladder is inflated to 10-psi (69 kPa) minimum.

Instrument Mounting Bracket Installation: FLHP

The FLHP is provided with an instrument mounting bracket. The bracket relocates the tachometer to allow the addition of a radio speaker, and control panel.

1. See [Figure 2-10](#). Remove screw (13) securing chrome ring (12) to headlamp nacelle (8). Remove chrome ring.
2. Remove eight fasteners (11) securing headlamp assembly (10). Squeeze two external tabs (if present) to remove wire connector at back of headlamp bulb. Remove headlamp assembly from vehicle.

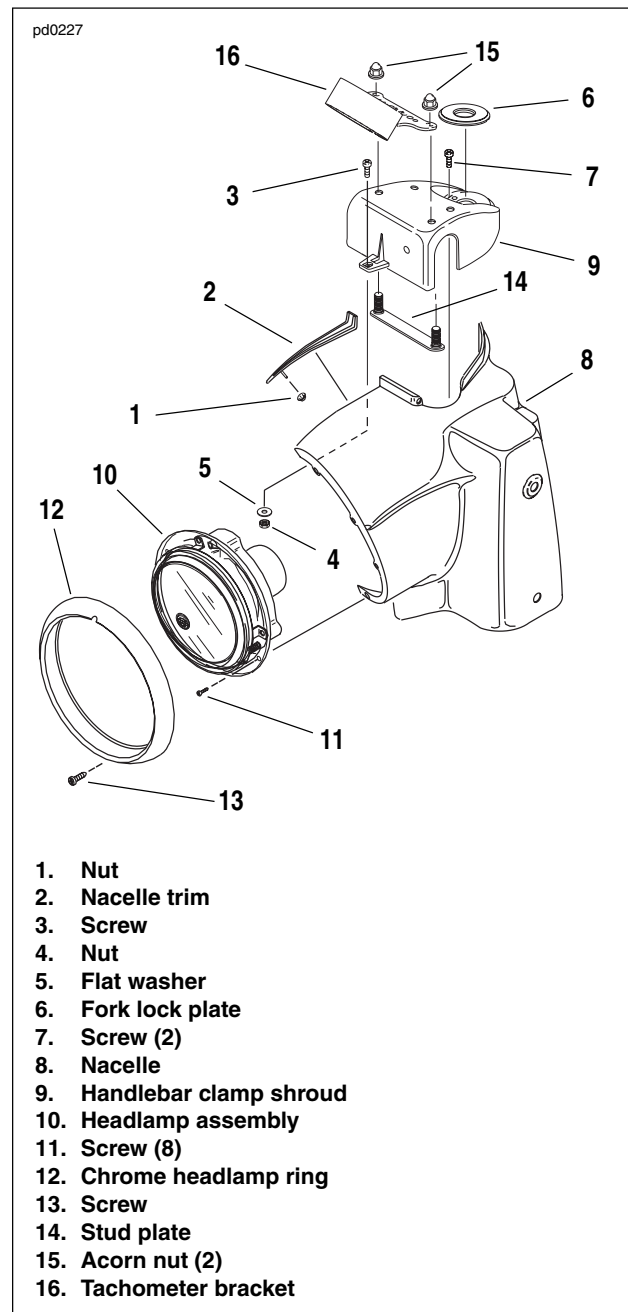


Figure 2-10. FLHP Headlamp Nacelle

3. Remove nut (1) (inside nacelle) securing nacelle trim (2).
4. Disconnect tachometer connector [108] inside headlamp nacelle.
5. Remove nacelle trim. Loosen (but do not remove) front handlebar clamp shroud screw (3), nut (4) and washer (5).
6. Gently pry off fork lock plate (6) at rear of handlebar clamp shroud. Remove two screws (7) beneath lock plate.
7. Loosen four acorn nuts securing nacelle halves to fork studs. Spread nacelle halves slightly and remove handlebar clamp shroud.
8. Remove two acorn nuts (15) and flat washers securing Tachometer and bracket (16) to handlebar clamp shroud.
9. See [Figure 2-11](#). A peel and stick foam tape holds the stud plate (4) in place inside the handlebar clamp shroud (3). Position instrument mounting bracket (2) on studs of stud plate and secure in position using hardware provided by radio manufacturer (1).
10. Using screw (5) and nut (6) provided, secure front tab of instrument mounting bracket on handlebar clamp shroud.
11. Reinstall handlebar clamp shroud. Tighten acorn nuts securing nacelle halves to fork studs to 72-108 **in-lbs** (8.1-12.2 Nm).
12. See [Figure 2-12](#). Mount tachometer on bracket with acorn nuts and flat washers as shown.
13. See [Figure 2-10](#). Install two screws (7) to handlebar clamp shroud and tighten to 10-20 **in-lbs** (1.1-2.3 Nm). Gently press fork lock plate (6) into place on handlebar clamp shroud.
14. Tighten front handlebar clamp shroud nut (4) to 10-20 **in-lbs** (1.1-2.3 Nm).
15. Connect tachometer lead [108].
16. Install nacelle trim (2). Install nut (1) (inside nacelle) securing nacelle trim. Tighten to 15-20 **in-lbs** (1.7-2.3 Nm).
17. Connect wire connector to socket on back of headlamp bulb. Install and secure headlamp assembly to nacelle with eight fasteners.
18. Secure chrome ring (12) to headlamp nacelle with screw (13).

NOTE

Check for adequate clearance between windshield and clutch cable and handlebar position prior to completing assembly of vehicle.

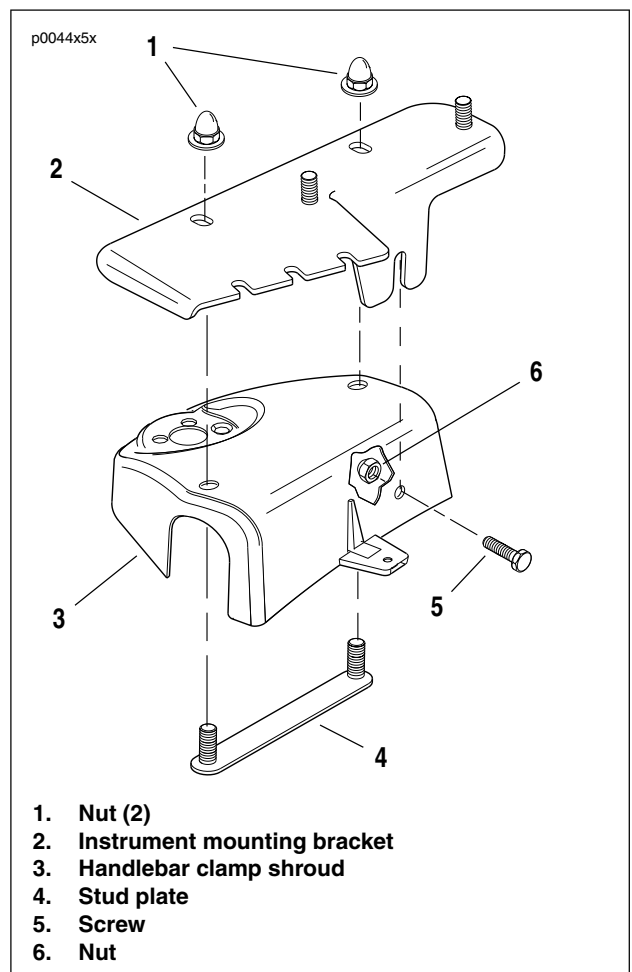


Figure 2-11. FLHP Instrument Bracket



Figure 2-12. FLHP Tachometer Mount

MIRRORS

See [Figure 2-13](#). Adjust mirrors for proper rear view. Verify that mirror fasteners are properly tightened.

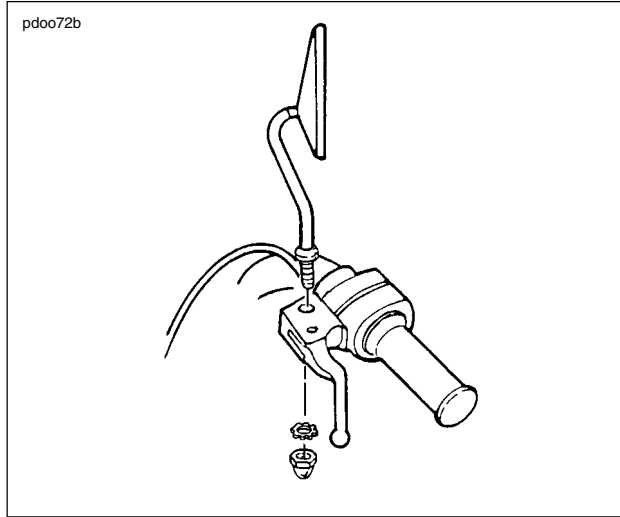


Figure 2-13. Mirror Installation

THROTTLE CONTROL CABLES

All Non-Ultra Models

Check throttle cable adjustment in accordance with procedure given in Section 1 of Touring Models Service Manual.

Ultra Models

Check throttle cable adjustment in accordance with procedure given in Section 8 of Touring Models Service Manual.

REAR SUSPENSION AIR PRESSURE

CAUTION

Do not exceed maximum air pressure for rear suspension. Air components fill rapidly. Therefore, use low air line pressure. Failure to do so may result in possible damage to components. (00165a)

IMPORTANT NOTE

Maximum air pressure of rear suspension system is 50 psi (345 kPa).

See Figure 2-14. Check rear suspension air pressure at air valve located on the left side of the motorcycle below the frame cover, above the left saddlebag. Refer to Table 2-3. These are recommended starting points, adjust to suit load conditions, riding style and comfort desired. Less initial pressure does not necessarily result in a softer ride. Use a no-loss gauge, add 3-5 psi (20.68-34.48 kPa) to clear line and adjust for application.

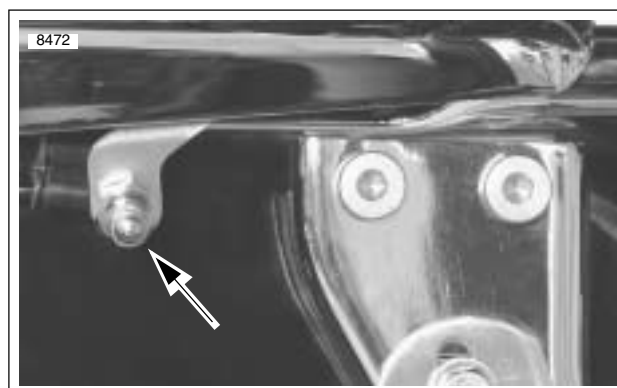


Figure 2-14. Rear Suspension Air Pressure Valve

Table 2-3. Rear Suspension Air Pressure (All Models Except FLHRS)

Loading	Pressure	
	psi	kPa
Solo rider -150 lbs (68.0 kg) maximum	0	0
Solo rider 150-200 lbs (68.0-90.7 kg)	0-10	0-69
Solo rider 200-250 lbs (90.7-113.4 kg)	5-15	35-103
Rider and 150 lbs (68.0 kg) passenger	10-15	69-103
Rider and 200 lbs (90.7 kg) passenger	20-25	138-172
Gross vehicle weight rating (GVWR)	20-35	138-241

Table 2-4. Rear Suspension Air Pressure (FLHRS and FLHTCSE² Only)

Loading	Pressure	
	psi	kPa
Solo rider -160 lbs (73.0 kg) maximum	0-5	0-35
Solo rider 160-200 lbs (73.0-90.7 kg)	0-10	0-69
Solo rider 200-250 lbs (90.7-113.4 kg)	5-10	35-69
Rider and 150 lbs (68.0 kg) passenger	20-30	138-207
Rider and Over 150 lbs (68 kg) passenger	25-35	172-241
Gross vehicle weight rating (GVWR)	40-50	276-345

ENGINE OIL LEVEL

CAUTION

The FLHTCSE² model is shipped from the factory with SYN-3[®] lubricant exclusively in the engine, primary and transmission. If there is a need to top off lubricants, **DO NOT** use standard lubricants in the FLHTCSE² model and do not mix lubricants as damage to the motorcycle can result.

IMPORTANT NOTE

Oil level cannot be accurately measured on a cold engine. For pre-ride inspection with motorcycle leaning on jiffy stand on level ground, oil should register on dipstick between arrows when engine is cold. Do NOT add oil to bring the level to the FULL mark on a COLD engine.

Perform engine oil level **COLD CHECK** as follows:

1. With the vehicle resting on the jiffy stand on level ground, remove the dipstick, wipe it off and insert it back into the oil pan with the plug pushed completely into the fill spout.
2. Remove the dipstick and note the level of the oil. Oil level should register on the dipstick. See Figure 2-15. If oil level is at or below the lower arrow, add only enough oil to bring the level to the add arrow on the dipstick.

NOTE

Once the pre-delivery inspection procedure is complete and the vehicle has been road-tested, the engine oil level should be checked again as described in the following procedure.

Perform engine oil level **HOT CHECK** as follows:

1. With the vehicle resting on the jiffy stand on level ground, allow engine to idle for 1-2 minutes. Turn engine off.
2. Remove the dipstick, wipe it off and insert it back into the oil pan with the plug pushed completely into the fill spout.

3. Remove the dipstick and note the level of the oil. Add only enough oil to bring the level to the FULL mark on the dipstick. See Figure 2-15. Do not overfill.
4. Start engine and carefully check for oil leaks around drain plug and oil filter.

ENGINE OIL LEVEL (SIDE CAR EQUIPPED VEHICLES)

NOTE

Since a motorcycle equipped with a sidecar is fixed in an upright position, the engine oil level reading must be adjusted in this case; the actual FULL engine oil level will be about 1/2 inch above the original FULL mark on the oil tank dipstick.

To insure the correct oil level with sidecar attached perform the following:

1. Without sidecar attached, check engine oil level with engine at normal operating temperature. See HOT CHECK procedure above.
2. Verify oil level is at FULL mark on dipstick (add oil if needed).
3. With sidecar attached, ride until engine is at normal operating temperature.
4. On a level surface, note engine oil level on dipstick.
5. Scribe a line on dipstick at the oil level noted in step 4 above. The scribed line is the FULL mark for sidecar operation.

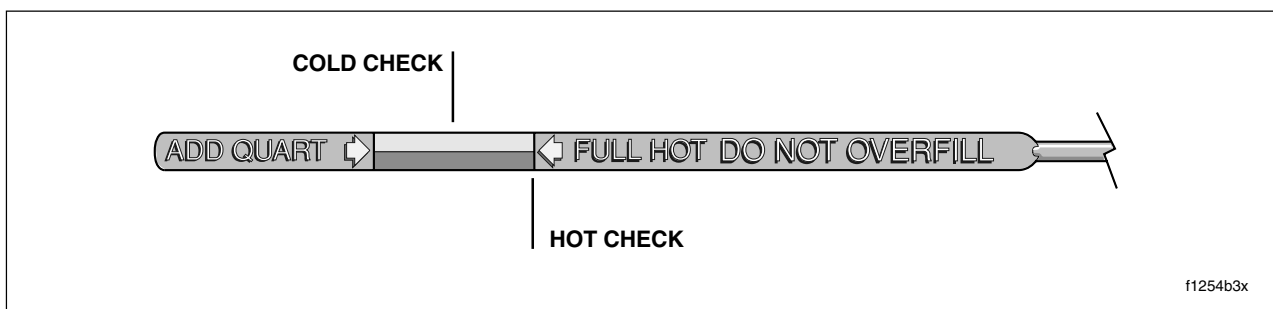


Figure 2-15. Engine Oil Dipstick

TRANSMISSION LUBRICANT

NOTE

Allow vehicle to stand upright for a moment before checking transmission lubricant level. This will allow lubricant level to normalize.

Check the transmission lubricant level with the motorcycle standing upright in accordance with the procedure given in the Touring Models Service Manual.

CHAINCASE LUBRICANT LEVEL AND CLUTCH OPERATION

NOTE

Do not remove the clutch cover on the FLHTCSE². It is not necessary to check the primary chaincase lubricant level on this vehicle. Also, the hydraulic clutch is not adjustable.

1. Remove five screws, clutch inspection cover and cover gasket.
2. See [Figure 2-16](#). The primary chaincase lubricant level is acceptable when lubricant is visible in bottom of chaincase with motorcycle standing upright (not resting on jiffy stand).

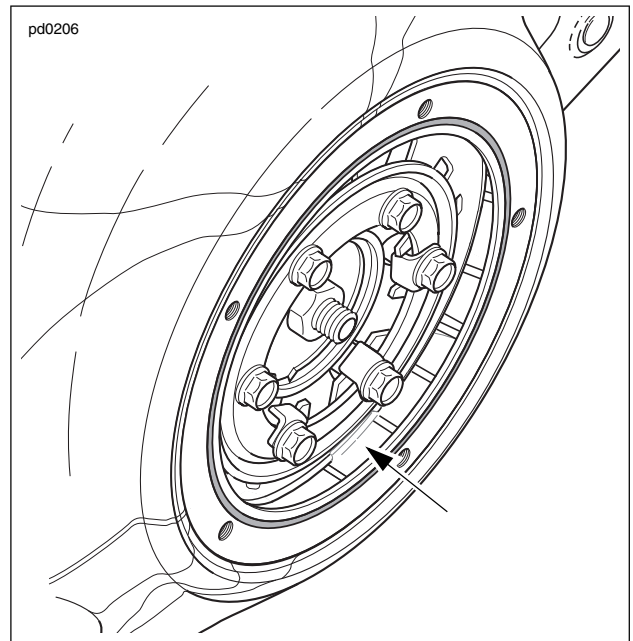


Figure 2-16. Chaincase Lubricant Level

3. Check clutch action. Clutch lever should move freely and smoothly through its entire range of travel.
4. Check clutch adjustment according to the procedures given in the Touring Models Service Manual.

NOTE

The clutch inspection cover gasket may be reused **ONLY** when checking chaincase lubricant level and reinstalling clutch inspection cover at PDI.

5. Reinstall cover gasket and clutch inspection cover, and secure with five screws. Tighten to 84-108 **in-lbs** (9.5-12.2 Nm).

GENERAL

CAUTION

Some fuel suppliers sell gasoline which has been blended with an alcohol or an ether. The type and amount of alcohol or ether added to the fuel is important.

CAUTION

Do not use gasoline that contains methanol. Doing so can result in fuel system component failure, engine damage and/or equipment malfunction. (00148a)

- Gasolines containing ETHANOL (ethyl alcohol or grain alcohol) can be used. Gasoline/ethanol blends are a mixture of 10% ethanol and 90% unleaded gasoline. They are identified as “gasohol,” “ethanol enhanced,” or “contains ethanol.”
- Gasolines containing METHYL TERTIARY BUTYL ETHER (MTBE) can also be used. Gasoline/MTBE blends are a mixture of gasoline and as much as 15% MTBE.
- REFORMULATED OR OXYGENATED GASOLINES (RFG): “Reformulated gasoline” is a term used to describe gasoline blends that are specifically designed to burn cleaner than other types of gasoline, leaving fewer “tailpipe” emissions. They are also formulated to evaporate less when you are filling your tank. Reformulated gasolines use additives to “oxygenate” the gas. Your motorcycle will run normally using this type of gas and Harley-Davidson recommends you use it when possible, as an aid to cleaner air in our environment

Because of their different chemical properties (which affect fuel volatility and ignition characteristics), these blends may adversely affect the starting, drivability, and fuel efficiency of the motorcycle. If you experience these problems, Harley-Davidson recommends using straight, unleaded gasoline.

CAUTION

Use only unleaded fuel in California model catalytic converter-equipped motorcycles. Using leaded fuel will damage the emission control system. (00150a).

CHECKING QUICK CONNECT FUEL LINE FITTING—FUEL INJECTED MODELS

WARNING

To avoid an uncontrolled discharge or spray of gasoline, always be sure the quick-connect fitting (under left side of fuel tank) is properly mated. A slight tug on the fuel line will verify this condition. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

1. Tug on fuel supply line (under left side of fuel tank) to be sure quick connect fitting is properly mated.
2. If fuel line comes free, push up on sleeve of quick-connect fitting and insert neck of fuel supply line fitting. While pushing up on bottom of fuel supply line fitting, pull down on sleeve until it “clicks” into the locked position.

FUEL TANK

Make sure engine stop switch on the handlebar is switched to the OFF position. Turn the ignition/light switch to the IGNITION position. Fuel injected models: verify that Low Fuel lamp is lit. Partially fill fuel tank with gasoline. Follow FUEL recommendations found in the Owner’s Manual. Use unleaded gasoline, 91 octane or higher. Verify function of fuel gauge as fuel tank is filling, then turn ignition/light switch OFF. Inspect fuel lines for leaks.

Carbureted Models

See Figure 2-17. After adding gasoline, check for smooth operation of the fuel valve. Inspect fuel valve for leaks.

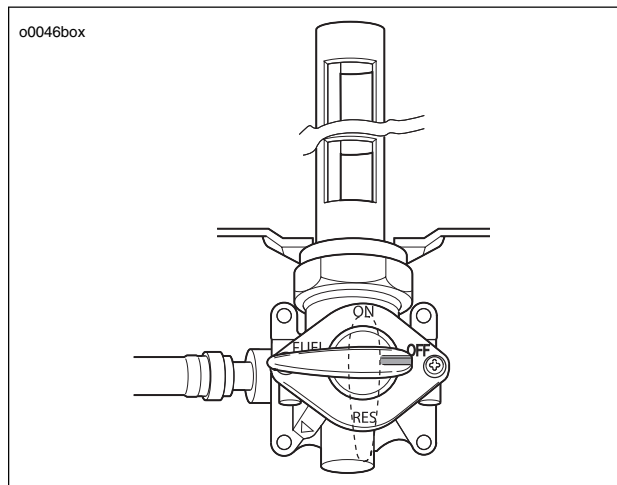


Figure 2-17. Fuel Supply Valve

EVAPORATIVE EMISSIONS CONTROL SYSTEM—CALIFORNIA MODELS ONLY

See Figure 2-18. See Figure 2-19. Verify correct evaporative emissions control system hose routing, connections, and fuel tank venting to canister (if equipped).

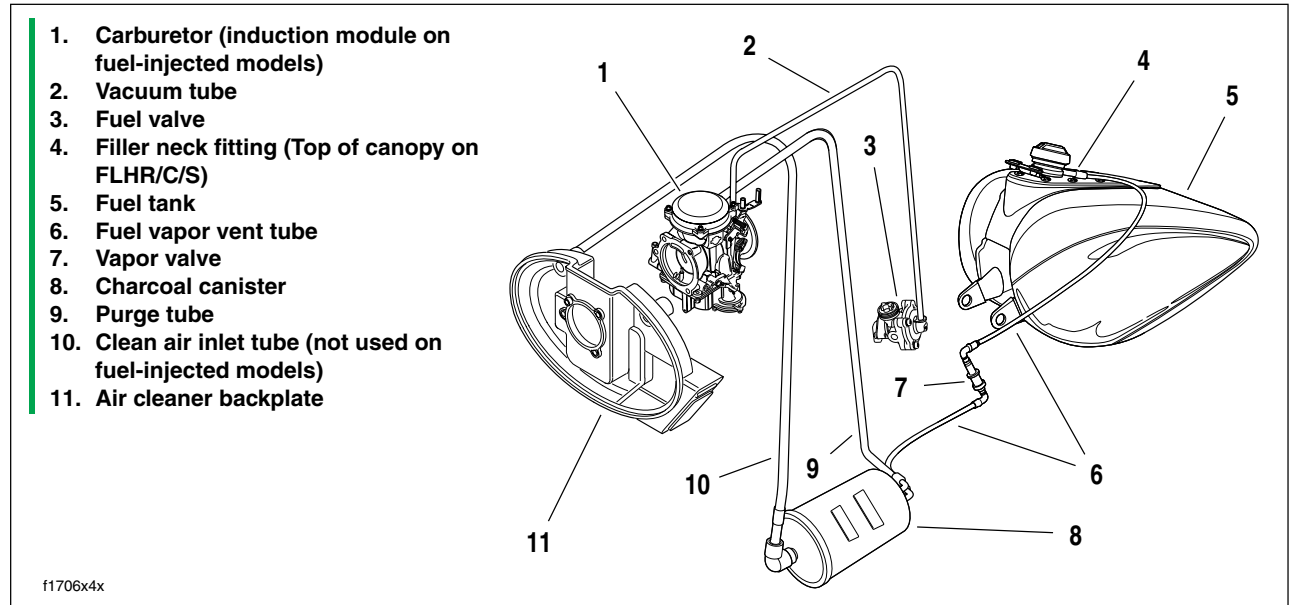


Figure 2-18. Evaporative Emissions Control System Hose Connections

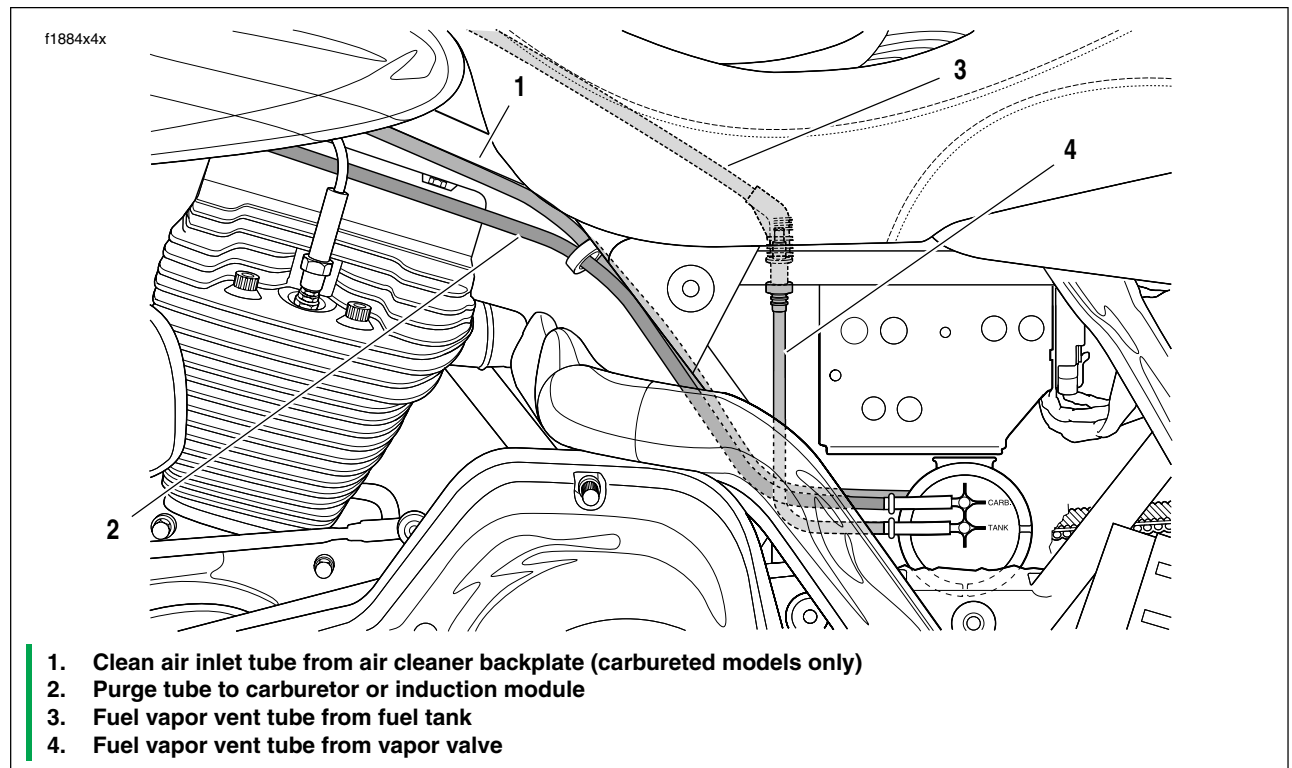


Figure 2-19. Evaporative Emissions Control System Hose Routing

HEADLAMP

Check headlamp beam for proper height and lateral alignment in accordance with procedures given in Section 8 of the Touring Models Service Manual.

⚠ WARNING

The automatic-on headlamp feature provides increased visibility of the rider to other motorists. Be sure headlamp is on at all times. Poor visibility of rider to other motorists can result in death or serious injury. (00030b)

AUXILIARY LAMPS

On models equipped with auxiliary lamps, check lamp beam for proper height and lateral alignment in accordance with procedures given in the Touring Models Service Manual.

DIRECTIONAL LAMPS

Adjust front directional lamps so lenses are aimed directly forward. Verify that directional lamp fasteners are properly tightened.

FRONT TURN SIGNALS (FLHRS ONLY)

Adjust and tighten. Ensure that directionals do not contact fuel tank.

INSTRUMENT PANEL

See Figure 2-20. The instrument panel has a Low Fuel, Check Engine, Security (if equipped) Battery, Cruise Control (if equipped) and ABS (if equipped) warning lamps.

- The Low Fuel Warning lamp comes on when approximately 0.9 gallon (3.4 liter) of gasoline remains.
- The Check Engine lamp illuminates briefly (4 seconds) at start-up and should then remain off unless an error code is present.

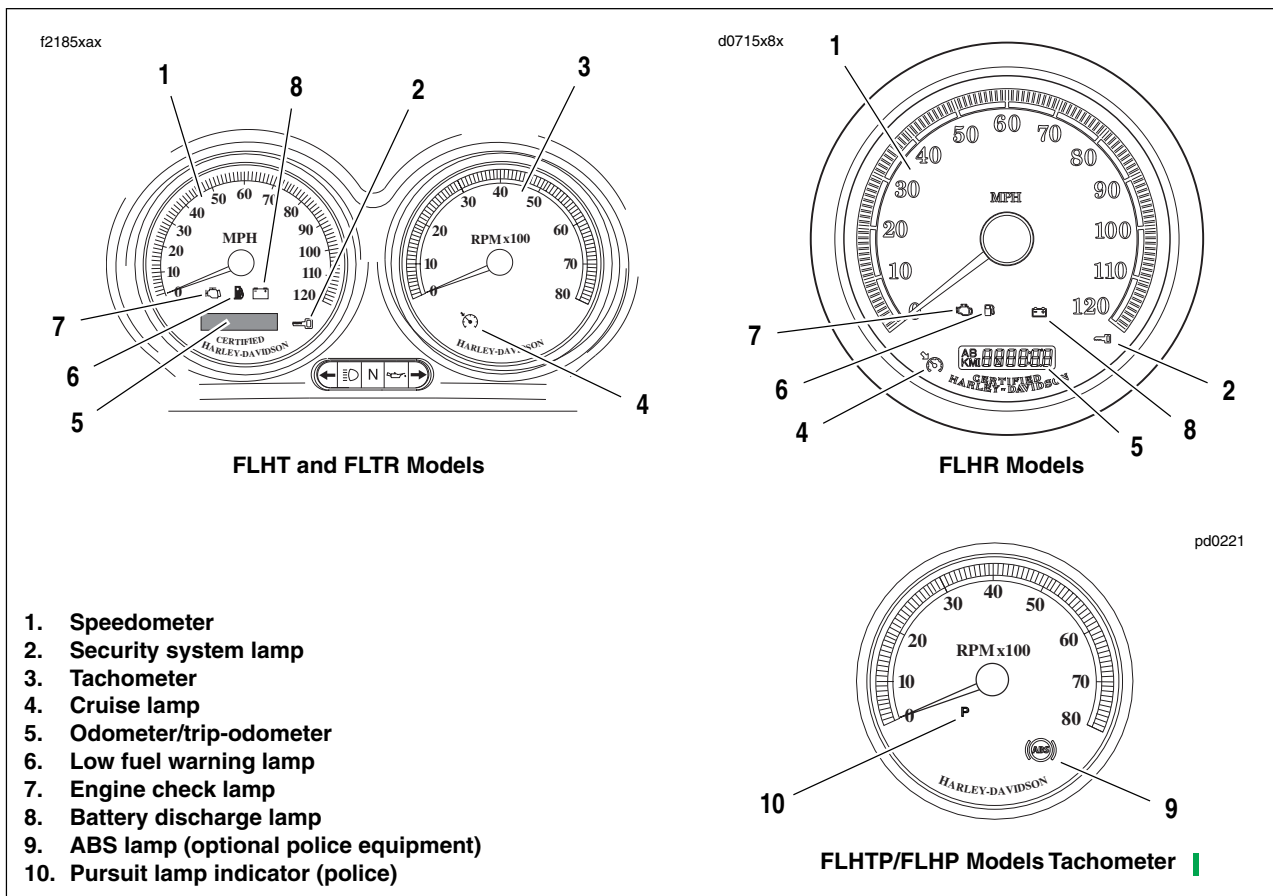


Figure 2-20. Instrument Panel Warning Lamps

INDICATOR LAMPS/CONTROLS

1. See [Figure 2-21](#). Turn ignition/light switch to IGNITION position, and check that Oil pressure indicator lamp turns on (before engine is started). The Check Engine lamp and if TSSM EQUIPPED, THE SECURITY LAMP will illuminate for approximately four seconds and then turn off.

NOTES

For any Systems problems, refer to the appropriate Electrical Diagnostic manual for your model.

2. Shift transmission to neutral position, and verify that neutral indicator lamp turns on.
3. Start engine; check operation of starter.

NOTE

On Police models, the clutch lever must be depressed to operate the starter.

4. Check that oil pressure indicator lamp turns off when engine is running above 1000 RPM.
 5. Check operation of tachometer (if equipped).
 6. Disengage clutch (depress clutch lever), and verify that neutral indicator lamp turns off when transmission is shifted to any forward gear. Shift transmission to neutral position, and verify that neutral indicator lamp turns on again.
 7. Check horn operation.
8. Check operation of all remaining lamps:
 - Headlamp—low and high beams
 - Headlamp high beam indicator lamp
 - Passing/pursuit lamps
 - Pursuit lamp indicator lamp (FLHTP)
 - Left directional (turn signal) lamps—front and rear
 - Left directional (turn signal) indicator lamp
 - Right directional (turn signal) lamps—front and rear
 - Right directional (turn signal) indicator lamp
 - Left front running lamp
 - Right front running lamp
 - Tail lamp—running lamp and brake lamp filaments
 - Speedometer illumination lamp
 - Tachometer illumination lamp (if equipped)
 - License plate lamp (HDI only)
 - Sound System Operation (if equipped)
 9. After engine has reached normal operating temperature, turn engine off.
 10. Check engine oil level in manner previously specified. This time, fill oil tank to upper mark on filler cap/dipstick.

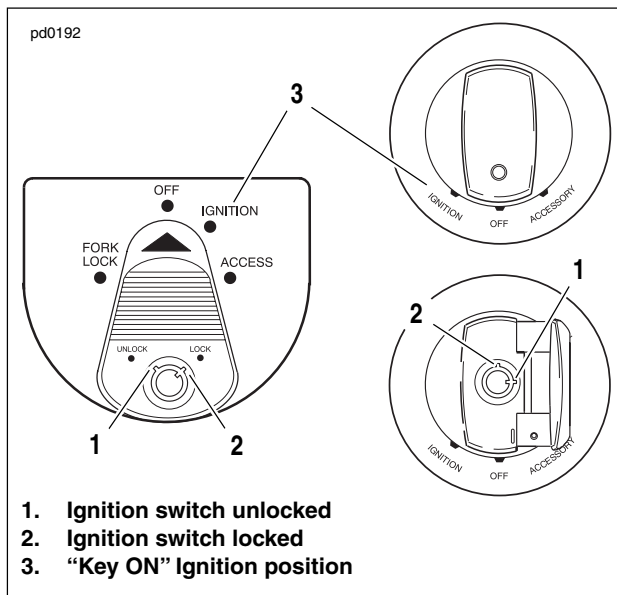


Figure 2-21. Ignition Switches

FRONT AND REAR TIRES

⚠️ WARNING

Do not inflate tire beyond maximum pressures specified on sidewall. Over inflated tires can blow out, which could result in death or serious injury. (00027a).

⚠️ WARNING

Harley-Davidson front and rear tires are not the same. Interchanging front and rear tires can cause tire failure, which could result in death or serious injury. (00026a)

1. Check for proper front and rear tire pressures when tires are cold. Compare results against [Table 2-5](#).

Table 2-5. Tire Pressures

Tires	Front		Rear	
	PSI	kPA	PSI	kPA
Solo rider	36	248	36	248
Rider & passenger	36	248	40	276

BRAKES

CAUTION

Direct contact of D.O.T. 4 brake fluid with eyes can cause irritation. Avoid eye contact. In case of eye contact flush with large amounts of water and get medical attention. Swallowing large amounts of D.O.T. 4 brake fluid can cause digestive discomfort. If swallowed, obtain medical attention. Use in well ventilated area. KEEP OUT OF REACH OF CHILDREN. (00240a)

CAUTION

D.O.T. 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)

CAUTION

Cover handlebar switches with a shop towel before adding brake fluid to front master cylinder reservoir. Spilling brake fluid on handlebar switches may render them inoperative.

See [Figure 2-22](#). View reservoir sightglass and verify fluid presence. Sightglass should appear dark if fluid is present. If sightglass is not dark, add brake fluid. See Service Manual. Use only D.O.T. 4 HYDRAULIC BRAKE FLUID (Part No. 99953-99A). Wash all residue of D.O.T. 4 brake fluid spills off vehicle with water.

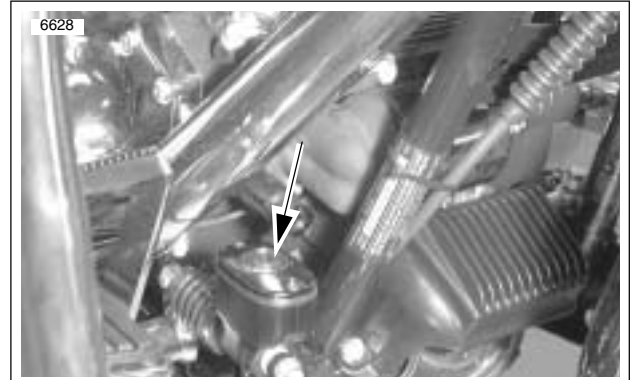


Figure 2-22. Rear Brake Reservoir/Master Cylinder Sightglass (typical)

ABS SYSTEM (POLICE VEHICLES—OPTIONAL EQUIPMENT)

The ABS indicator lamp in the tachometer will flash when the ignition switch is turned on, and remains flashing until the motorcycle reaches 6 MPH (9.7 KPH). The lamp will then turn off.

If the ABS lamp turns on solid at ignition-ON, or does not turn off when vehicle exceeds 6 MPH (9.7 KPH), it is an indication of a current fault condition in the ABS system. See the Police Models Service Manual Supplement for instructions on placing the ABS system into test mode and extracting diagnostic trouble codes from the ABS system computer.

ROAD TEST

After you complete motorcycle inspection, take motorcycle for a road test. Check all systems and overall operation of motorcycle: engine, transmission, clutch, brakes, handling, etc. On Ultra models, check Cruise Control, rear speakers and rider/passenger sound system controls. Refer to Touring Models Owner's Manual to check for proper operation.

After road test, return motorcycle to shop and thoroughly clean off any road dirt. Check and correct any problems you may have found during road test.

Before You Begin

Check the following items before road test of vehicle:

- Lamps and indicators.
- Check amount of gasoline in tank and add (if needed).
- Adjust mirrors to proper riding positions.
- Check tire condition and pressure (adjust if necessary).
- Check controls to verify proper function.
- Check all electrical equipment and switches including stop lamp, turn signals and horn for proper operation.

Road Test of Vehicle: Low Speed

1. Shift from first through third gear, checking clutch operation, throttle control, and transmission operation.
2. Verify low-speed braking for front and rear brakes.
3. Handling under braking conditions.
4. Low speed handling. Verify that vehicle does not pull to left or right.
5. Check for any abnormal vibrations.
6. Check electrical lamps, indicators.

Road Test of Vehicle: Highway Speed

1. Shift from first through fifth gear, checking clutch operation, throttle control and transmission operation.
 2. Verify highway-speed braking operation of front and rear brakes.
 3. Verify proper handling at highway speeds.
 4. Check for any abnormal vibrations.
- **Program Security System (if equipped)**
 - **Engine Oil:**
Check and correct hot level.
 - **Clean Vehicle**

NOTE

Be sure to submit a Dealer Product Quality Audit (DPQA) on ANY adjustments and/or warranty work performed required to deliver the vehicle to the customer.

IDLE SPEED: CARBURETED ONLY

NOTE

The idle speed on fuel injected models can only be set using a diagnostic tool such as DIGITAL TECHNICIAN (Part No. HD-44750).

See Figure 2-23. Set engine slow idle speed of 950 RPM with engine running at normal operating temperature and with enrichment control knob pushed in fully. Turn carburetor idle speed adjusting screw (5) clockwise to increase speed, or counterclockwise to decrease speed.

NOTE

The C.V. carburetor has an enrichment circuit that will cause the engine to idle above the normal idle range (950-1050 RPM) with the engine at normal operating temperature and the enrichment knob pulled out fully. The increase in idle speed is intended to alert the rider that the engine is warmed up to normal operating temperature and that the enrichment knob should be pushed in all the way. Continuing to use the enricher when the engine is at full operating temperature will cause fouled plugs.

Be sure the engine is warmed up to normal operating temperature and the enrichment knob is pushed all the way in before adjusting engine idle speed. Be aware that, because there are variations in individual components, it is possible for a properly warmed-up engine to idle above the normal idle range (950-1050 RPM) with the enrichment knob pulled out partially.

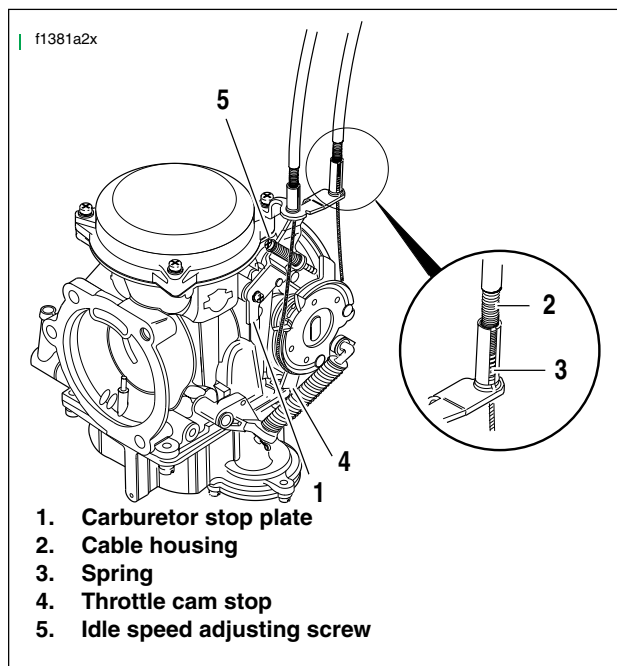


Figure 2-23. Carburetor Adjustments

NOTICE TO DEALER

Before delivering motorcycle to owner, perform the following:

1. Make sure vehicle owner receives, and is aware of importance of reading Owner's Manual, safety booklets and viewing **Welcome To The Family** video included with owner's kit.
2. Review warranties with vehicle owner. Make sure owner understands warranties. California dealers must give customer a copy of Emissions Control System Warranty.
3. Give **IMPORTANT** sheet and other printed material in literature kit to vehicle owner.
4. Complete and sign warranty registration form. Have vehicle owner sign it.
5. Explain operation of vehicle controls to vehicle owner.
6. Explain how turn signals and emergency flashers operate.
7. If motorcycle is equipped with a Sound System, explain to customer that the Touring Models Owner's Manual contains detailed operating instructions for the system. In addition, a video has been prepared to give the customer operating instructions for the Sound System. On Ultra models, tell customer helmet headset is shipped in saddlebag.
8. Inform vehicle owner about changing TSM/TSSM to sidecar or solo configuration as appropriate.

IMPORTANT NOTE

Make sure vehicle owner understands how to arm and disarm security system. Explain how to disarm security system with personal code if key fob is lost or not functioning. Personal code should be written on the tear-out card in Touring Models Owner's Manual and kept on the owner's person. Also, verify both key fobs operate properly.

9. Whenever possible, introduce dealer Service Manager to vehicle owner, and involve Service Manager in delivery process. Supply owner with name(s) of dealer Service/Parts Department personnel who should be contacted regarding vehicle service/parts questions.
10. Inform vehicle owner about checking engine oil level, checking tire pressure, and performing other basic maintenance functions. Review the **Initial Scheduled Maintenance** requirement with owner. Depending on owner's anticipated frequency of operating motorcycle, you may wish to schedule the **Initial Scheduled Maintenance** service appointment at this time.

PRIOR TO CUSTOMER DELIVERY

NOTE

Use this checklist for performing tasks related to this model motorcycle setup.

- Uncrate:**
Check for damaged or missing parts.
- Handlebars:**
Verify proper position; tighten clamps to proper torque.
- Jiffy Stand:**
Verify proper function.
- Note Any Additional Problems (including cosmetic quality):**
Perform Warranty repairs.
- Battery:**
Perform required voltmeter test on Maxi Fuse (main fuse) and battery.
- Install Maxi Fuse (main fuse).**
- Install Fuel Pump Fuse (EFI vehicles only).**
- Install Data Link Connector.**
- Position Tour-Pak and Install Seat and Seat Strap:**
If equipped
- Install Saddlebags and Side Covers:**
Verify adequate saddlebag/side cover clearance.
- Install Antenna Mast(s):**
If equipped
- Position Rear Speaker Harness.**
- Install Windshield.**
- Verify Proper Police Seat Air Bladder Pressure (Police models).**
- Install Instrument Bracket (FLHP models).**
- Mirrors:**
Inspect and adjust as necessary.
- Throttle Control Cables:**
Inspect and adjust as necessary.
- Rear Air Suspension:**
Inspect and adjust pressure as necessary.
- Engine Oil:**
Verify oil is present (cold level).
- Lubrication System:**
Inspect condition of oil lines and fittings.
- Transmission Lubricant:**
Check and verify correct lubricant level.
- Primary Chaincase:**
Check and verify lubricant is present.
- Clutch Operation:**
Verify proper adjustment.
- Fuel System:**
 - a. Inspect fuel system for leaks.
 - b. Fill, verify sender operation.
 - c. Verify low fuel light operation (if equipped).

- Fuel Outlet (valve or quick connect fitting) and Hoses:**
Verify operation and connections.
- Evaporative Control System:**
Inspect hose routings, connections and fuel tank venting to canister (if equipped).
- Lighting, Gauges, Electrical Systems:**
 - a. Verify correct operation.
 - b. Verify adequate directional-to-fuel tank clearance (FLHRS only).
- Tires:**
Inspect condition and air pressure.
- Brake Systems (front and rear):**
 - a. Correct fluid level (if necessary). Use DOT 4 fluid only for 2005 FL models.
 - b. Verify proper ABS indicator function (Police models only, if equipped).
- Road Test Vehicle: Low Speed.**
 - a. Shift from first through third gear, checking clutch operation, throttle control and transmission operation.
 - b. Verify low-speed braking for front and rear brakes.
 - c. Verify handling under braking conditions.
 - d. Verify low-speed handling. Verify that vehicle does not pull to left or right.
 - e. Check for any abnormal vibrations.
 - f. Check electrical lamps, indicators.
- Road Test Vehicle: Highway Speed.**
 - a. Shift from first through fifth gear, checking clutch operation, throttle control and transmission operation.
 - b. Verify highway speed braking operation of front and rear brakes.
 - c. Verify proper handling at highway speeds.
 - d. Check for any abnormal vibrations.
- Engine Oil:**
Check and correct hot level.
- Create Vehicle Birth-Certificate Using Digital Technician (optional).**
- Clean Vehicle.**
- Program Security System.**

AT POINT OF CUSTOMER DELIVERY

- Suspension Adjustments.**
- Shift Linkage Adjustment.**
- Brake Hand Lever Adjustment.**
- Review Vehicle Care and Maintenance Requirements.**

NOTE

Be sure to submit a Dealer Product Quality Audit (DPQA) on ANY adjustments and/or warranty work performed required to deliver the vehicle to the customer.

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TORQUE VALUES

The following torque values are included for fasteners that may be loosened and tightened during Predelivery and Setup. Any fasteners that are not loosened/removed do not need to be checked during predelivery and setup.

Table 3-1. Torque Values

ITEM	TORQUE		NOTES
Battery terminal screws	60-96 in-lbs	6.8-10.9 Nm	
Front brake master cylinder cover screws	6-8 in-lbs	0.7-0.9 Nm	
Handlebar clamp screws (front and rear)	12-18 ft-lbs	16.3-24.4 Nm	
Mirror fasteners	12 ft-lbs	16.3 Nm	
Clutch inspection cover screws	84-108 in-lbs	9.5-12.2 Nm	

2005 DYNA MODELS SPECIFICATIONS

Table 3-2. Capacities

Component	ENGLISH	METRIC
Oil tank w/filter (Dry)	3 qt.	2.84 liter
Transmission (Wet)	20-24 oz	591-710 ml
Primary Chaincase	26 oz	769 ml
All motorcycles are shipped with 20W50 Harley-Davidson 360 Motor oil		

Idle Speed: 950 RPM at Operating Temperature

Use 950 RPM during Predelivery and Setup adjustments. Engine idle speed may increase during engine break-in. Use idle speed listed in the Dyna Models Service Manual at Initial Maintenance check.

NOTE

The idle speed on electronic fuel injected models can only be set using a diagnostic tool such as DIGITAL TECHNICIAN (Part No. HD-44750).

BATTERY TESTING AND CHARGING

WARNING

Batteries contain sulfuric acid, which could cause severe burns to eyes and skin. Wear a protective face shield, rubberized gloves and protective clothing when working with batteries. KEEP BATTERIES AWAY FROM CHILDREN. (00063a)

WARNING

Never remove warning label attached to top of battery. Failure to read and understand all precautions in warning could result in death or serious injury. (00064a)

WARNING

Battery posts, terminals and related accessories contain lead and lead components, chemicals known in the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling. (00019a)

NOTE

It will be necessary to remove the battery sidecover to gain access to the battery.

1. Place test probes of voltmeter on battery terminals and check the voltage of the battery to make sure it is at least 12.6 VDC.
2. If the open circuit (disconnected) voltage reading is 12.6 VDC or greater the battery is ready for use.
3. See Section 1. Mark the date on the battery warranty tag by removing the applicable month and year. Month and year punches may be removed with the point of a screwdriver without removing battery.
4. If the open circuit (disconnected) voltage reading is below 12.6 VDC, refer to Table 1-2, 12 amp-hour battery, in Section 1 and charge battery at rate and time specified.
5. Recheck battery voltage by repeating step 1 above. If voltage now is 12.6 VDC or greater, perform steps 2 and 3 above.
6. If the open circuit (disconnected) voltage reading is still below 12.6 VDC, the battery must be replaced.

INSTALLING MAXI-FUSE

The 40 amp Maxi-Fuse provides battery power to the ignition switch and ECM. The 40 amp Maxi-Fuse is not installed at the factory. It is shipped attached to the motorcycle. See Service Manual.

INSTALLING FUEL PUMP FUSE

For non-carbureted vehicles, install the 15-amp fuel pump fuse that is located in the spare fuse slot in the fuse block per procedure in the appropriate Service Manual.

IDLE SPEED: CARBURETED ONLY

NOTE

The idle speed on fuel injected models can only be set using a diagnostic tool such as DIGITAL TECHNICIAN (Part No. HD-44750).

See Figure 3-1. Set engine slow idle speed of 950 RPM with engine running at normal operating temperature and with enrichment control knob pushed in fully. Turn carburetor idle speed adjusting screw (5) clockwise to increase speed, or counterclockwise to decrease speed.

NOTE

The C.V. carburetor has an enrichment circuit that will cause the engine to idle above the normal idle range (950-1050 RPM) with the engine at normal operating temperature and the enrichment knob pulled out fully. The increase in idle speed is intended to alert the rider that the engine is warmed up to normal operating temperature and that the enrichment knob should be pushed in all the way. Continuing to use the enricher when the engine is at full operating temperature will cause fouled plugs.

Be sure the engine is warmed up to normal operating temperature and the enrichment knob is pushed all the way in before adjusting engine idle speed. Be aware that, because there are variations in individual components, it is possible for a properly warmed-up engine to idle above the normal idle range (950-1050 RPM) with the enrichment knob pulled out partially.

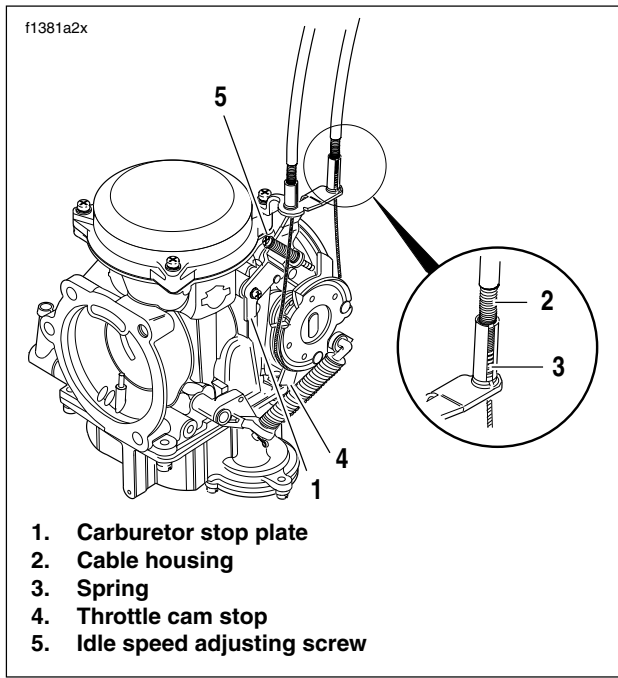


Figure 3-1. Carburetor Adjustments

THROTTLE CABLES

Twist and release throttle control grip a few times to verify proper operation of throttle control system. With throttle friction screw loosened, carburetor throttle must return to idle position each time throttle control grip is released.

WARNING

Throttle cables must not pull tight when handlebars are turned fully to left or right fork stops. Be sure wires and throttle cables are clear of fork stops at steering head so they will not be pinched when fork is turned against stops. Steering must be smooth and free with no binding or interference. Interference with steering could cause loss of vehicle control which could result in death or serious injury.

Check throttle cable adjustment. With engine running, turn handlebars through full range of travel. If engine speed changes during this maneuver, adjust throttle cables as follows:

1. See Figure 3-2. Slide rubber boot (if applicable) off each cable adjuster.
2. Loosen jam nut (5) on each adjuster (4).
3. Turn adjusters in direction which will shorten cable housings to minimum length.
4. Point front wheel straight ahead. Twist throttle control grip to fully open position; hold in position.

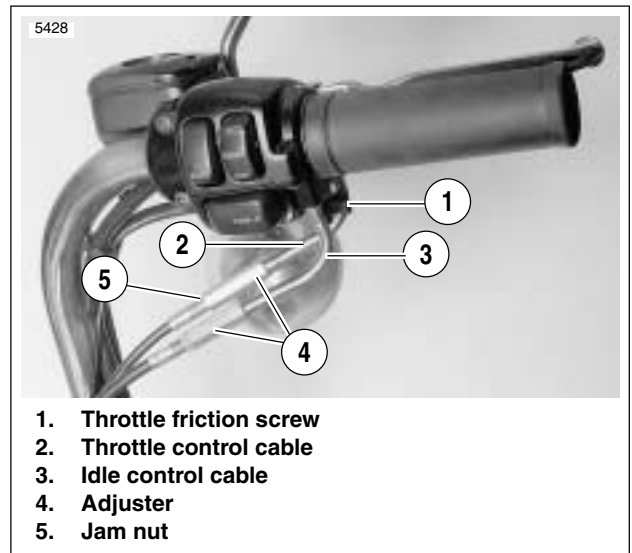


Figure 3-2. Throttle Cable Adjustment

5. See Figure 3-1. Turn adjuster on throttle control cable until throttle cam stop (4) touches carburetor stop plate (1).
6. See Figure 3-2. Tighten jam nut (5) on throttle control cable (2) adjuster (4); release throttle control grip.
7. See Figure 3-1. Turn handlebars fully to right. Turn adjuster on idle control cable until end of cable housing (2) just touches spring (3) within carburetor cable guide.
8. See Figure 3-2. With throttle friction screw (1) loosened, twist and release throttle control grip a few times. Carburetor throttle must return to idle position each time throttle grip is released. If this is not the case, turn adjuster (4) on idle control cable (3) (shortening cable housing) until throttle control functions properly.
9. Tighten jam nut (5) on idle control cable (3) adjuster (4). Recheck operation of throttle control (Step 7).
10. Slide rubber boot (if applicable) over each cable adjuster (4). Recheck engine slow idle speed; adjust if required.

SUSPENSION ADJUSTMENT FOR FXDX MODEL

Refer to the Dyna Models Owner's Manual for suspension adjustment instructions for FXDX model.

SHIFT LEVER

Inspect shift linkage for free movement. Check shift lever adjustment; rider's foot must be able to fit easily under shift lever. Adjust shift lever if required.

SEATS AND PASSENGER STRAP

Refer to the Dyna Models Owner's Manual for seat and passenger strap removal and installation instructions.

ENGINE OIL LEVEL

Check engine oil level with engine turned off and motorcycle resting on jiffy stand on level surface.

1. Remove filler cap with attached dipstick. Wipe dipstick clean.
2. Install filler cap. Make sure cap is fully seated in oil pan filler neck.
3. See [Figure 3-3](#). Remove filler cap, and check oil level on dipstick. If oil level in pan is below lower mark on dipstick, add enough Harley-Davidson oil to bring level up between lower mark (1) and cold check level (2) on dipstick. Refer to the Dyna Models Service Manual for recommended viscosity.

NOTE

Do not fill oil tank to full (upper) mark on filler cap/dipstick at this time. Ordinarily, you would fill a Dyna oil pan (with warm engine) to this level. In this situation, however, if any oil has flowed from oil pan to crankcase during shipping, filling oil pan to full mark might result in overfilling of oil pan when engine is started. Final check of oil level must be made with engine off, after engine has reached normal operating temperature.

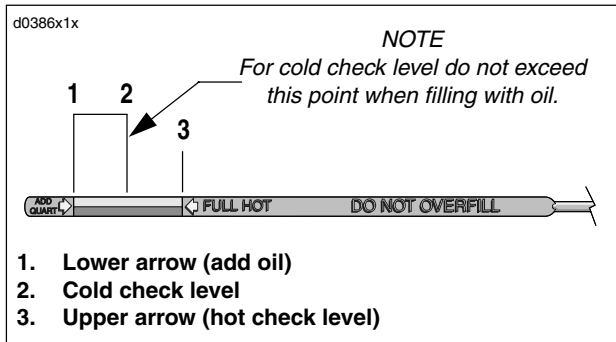


Figure 3-3. Engine Oil Dipstick

TRANSMISSION LUBRICANT LEVEL

NOTE

Allow vehicle to stand upright for a moment before checking transmission lubricant level. This will allow lubricant level to normalize.

Check the transmission lubricant level with the motorcycle standing upright in accordance with the procedure given in the Dyna Models Service Manual.

CHAINCASE LUBRICANT LEVEL AND CLUTCH OPERATION

1. Remove five screws, clutch inspection cover and cover gasket.
2. See [Figure 3-4](#). The primary chaincase lubricant level is acceptable when lubricant is visible in bottom of chaincase with motorcycle standing upright (not resting on jiffy stand).

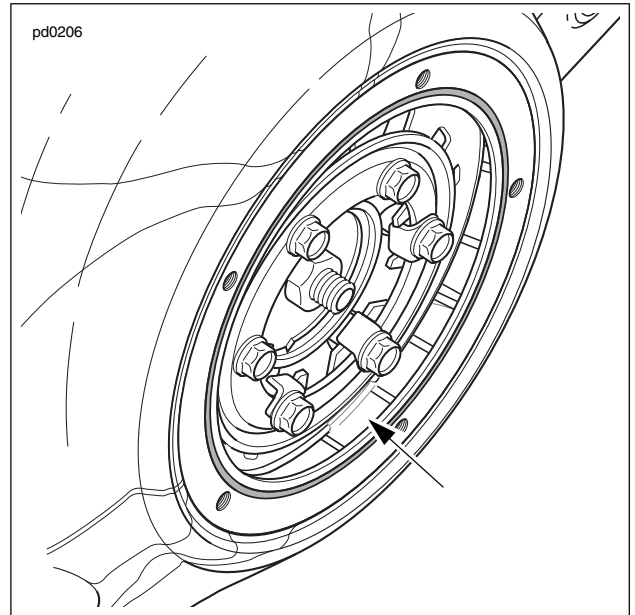


Figure 3-4. Chaincase Lubricant Level

3. Check clutch action. Clutch lever should move freely and smoothly through its entire range of travel.
4. Check clutch adjustment according to the procedures given in the Dyna Models Service Manual.

NOTE

The clutch inspection cover gasket may be reused **ONLY** when checking chaincase lubricant level and reinstalling clutch inspection cover at PDI.

5. Reinstall cover gasket and clutch inspection cover, and secure with five screws. Tighten to 84-108 **in-lbs** (9.5-12.2 Nm).

GENERAL

CAUTION

Some fuel suppliers sell gasoline which has been blended with an alcohol or an ether. The type and amount of alcohol or ether added to the fuel is important.

CAUTION

Do not use gasoline that contains methanol. Doing so can result in fuel system component failure, engine damage and/or equipment malfunction. (00148a)

- Gasolines containing ETHANOL (ethyl alcohol or grain alcohol) can be used. Gasoline/ethanol blends are a mixture of 10% ethanol and 90% unleaded gasoline. They are identified as “gasohol,” “ethanol enhanced,” or “contains ethanol.”
- Gasolines containing METHYL TERTIARY BUTYL ETHER (MTBE) can also be used. Gasoline/MTBE blends are a mixture of gasoline and as much as 15% MTBE.
- REFORMULATED OR OXYGENATED GASOLINES (RFG): “Reformulated gasoline” is a term used to describe gasoline blends that are specifically designed to burn cleaner than other types of gasoline, leaving fewer “tailpipe” emissions. They are also formulated to evaporate less when you are filling your tank. Reformulated gasolines use additives to “oxygenate” the gas. Your motorcycle will run normally using this type of gas and Harley-Davidson recommends you use it when possible, as an aid to cleaner air in our environment

Because of their different chemical properties (which affect fuel volatility and ignition characteristics), these blends may adversely affect the starting, drivability, and fuel efficiency of the motorcycle. If you experience these problems, Harley-Davidson recommends using straight, unleaded gasoline.

CAUTION

Use only unleaded fuel in California model catalytic converter-equipped motorcycles. Using leaded fuel will damage the emission control system. (00150a).

CHECKING QUICK CONNECT FUEL LINE FITTING—FUEL INJECTED MODELS

WARNING

To avoid an uncontrolled discharge or spray of gasoline, always be sure the quick-connect fitting (under left side of fuel tank) is properly mated. A slight tug on the fuel line will verify this condition. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

1. Tug on fuel supply line (under left side of fuel tank) to be sure quick connect fitting is properly mated.
2. If fuel line comes free, push up on sleeve of quick-connect fitting and insert neck of fuel supply line fitting. While pushing up on bottom of fuel supply line fitting, pull down on sleeve until it “clicks” into the locked position.

FUEL TANK

Make sure engine stop switch on the handlebar is switched to the OFF position. Turn the ignition/light switch to the IGNITION position. Fuel injected models: verify that Low Fuel lamp is lit. Partially fill fuel tank with gasoline. Follow FUEL recommendations found in the Owner’s Manual. Use unleaded gasoline, 91 octane or higher. Verify function of fuel gauge as fuel tank is filling, then turn ignition/light switch OFF. Inspect fuel lines for leaks.

Carbureted Models

See Figure 3-5. After adding gasoline, check for smooth operation of the fuel valve. Inspect fuel valve for leaks.

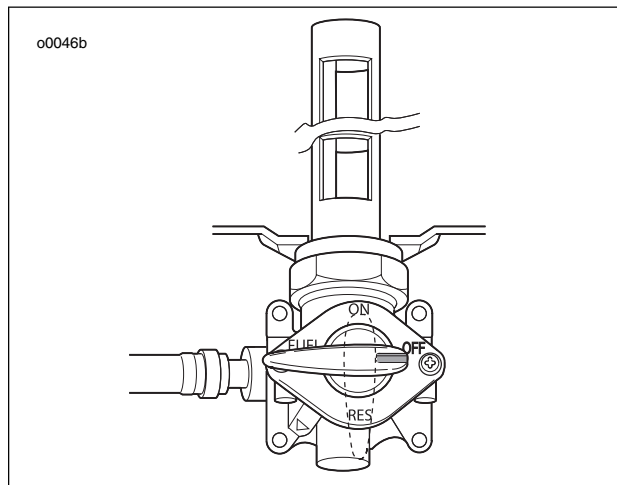


Figure 3-5. Fuel Supply Valve

HEADLAMP

Check headlamp beam for proper height and lateral alignment in accordance with procedures given in the Dyna Models Service Manual

⚠ WARNING

The automatic-on headlamp feature provides increased visibility of the rider to other motorists. Be sure headlamp is on at all times. Poor visibility of rider to other motorists can result in death or serious injury. (00030b)

NOTE

All FXDX/I models with a black-painted mounting bracket above the headlamp have a snap cap taped to right rear turn signal. Install snap cap after headlamp has been adjusted. All other models are shipped in position.

INDICATOR LAMPS/CONTROLS

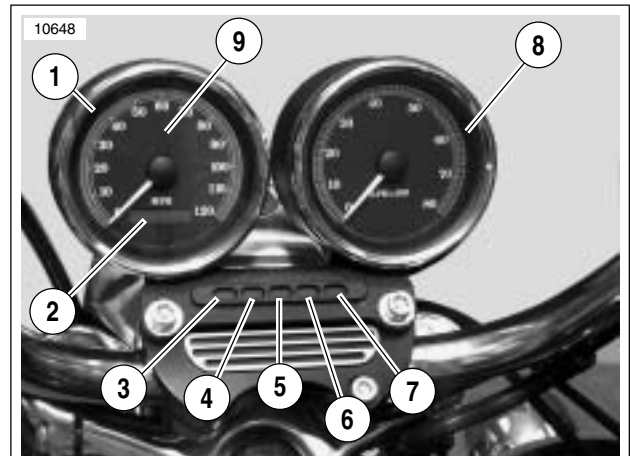
NOTE

See [Figure 3-6](#). This figure shows instruments and indicators on FXDX models. Instruments and indicators on remaining Dyna models are located as follows:

- FXD Speedometer and indicators in handlebar bracket.
- FXDWG Speedometer and indicators in panel on gas tank.

FXDL Speedometer and tachometer in console on gas tank, indicators in headlamp bracket.

1. Turn ignition switch to "IGNITION" position, check that oil pressure indicator lamp turns on (before engine is started) and check engine lamp illuminates for about four seconds and goes off.
2. Shift transmission to neutral position, and verify that neutral indicator lamp turns on.
3. Start engine; check operation of starter.
4. Check that oil pressure indicator lamp turns off when engine is running above 1000 RPM.
5. Check operation of tachometer, if equipped.
6. Disengage clutch (depress clutch lever), and verify that neutral indicator lamp turns off when transmission is shifted to any forward gear. Shift transmission to neutral position, and verify that neutral indicator lamp turns on again.



1. Speedometer
2. Odometer and trip odometer
3. Left directional (turn signal) indicator lamp
4. High beam indicator lamp
5. Neutral indicator lamp
6. Oil pressure indicator lamp
7. Right directional (turn signal) indicator lamp
8. Tachometer
9. Check engine lamp

Figure 3-6. Instruments & Indicator Lamps FXDX (typical)

7. Check horn operation.
8. Check operation of all remaining lamps:
 - headlamp—low and high beams
 - headlamp high beam indicator lamp
 - left directional (turn signal) lamps—front and rear
 - left directional (turn signal) indicator lamp
 - right directional (turn signal) lamps—front and rear
 - right directional (turn signal) indicator lamp
 - left front running lamp
 - right front running lamp
 - tail lamp—running lamp and brake lamp filaments
 - speedometer illumination lamp
 - tachometer illumination lamp
9. After engine has reached normal operating temperature, turn engine off.
10. Check engine oil level in manner previously specified. This time, fill oil tank to upper mark on filler cap/dipstick.

MIRRORS AND DIRECTIONAL LAMPS

See [Figure 3-7](#). Adjust mirrors for proper rear view. Adjust front directional lamps so lenses are aimed directly forward; adjust rear directional lamps so lenses are aimed directly rearward. Verify that mirror and directional lamp fasteners are properly tightened. Tighten mirror fasteners to 12 ft-lbs (16.3 Nm).

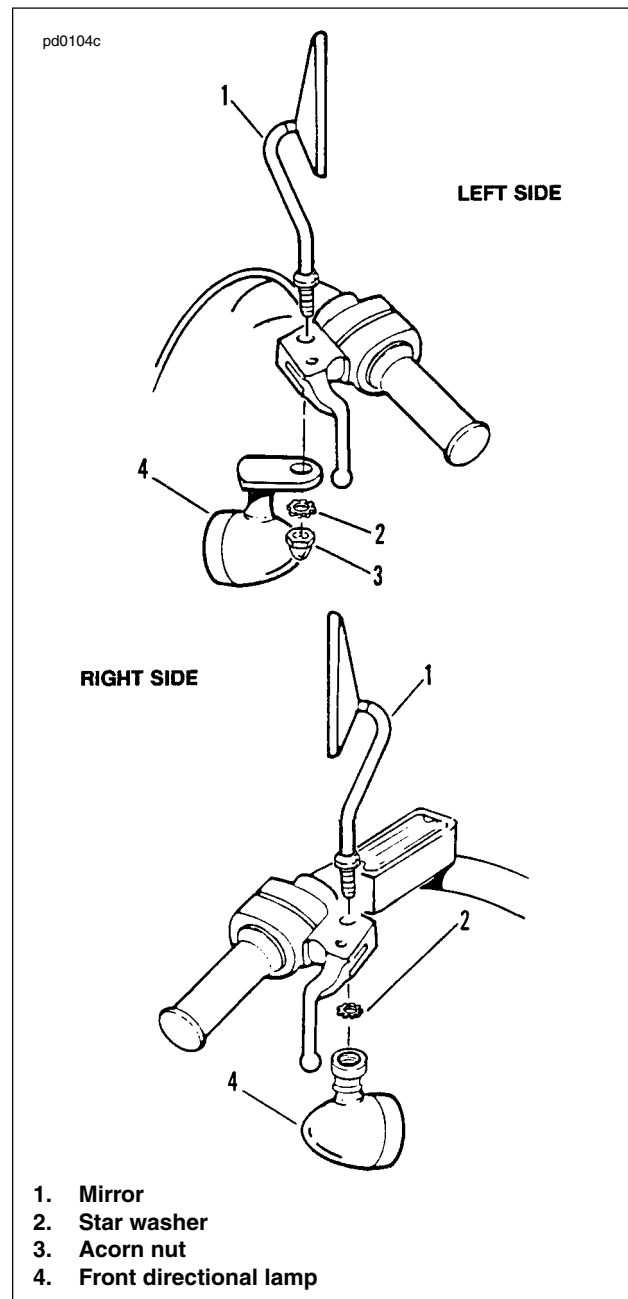


Figure 3-7. Mirror and Directional Lamp Mounting

FRONT AND REAR TIRES

⚠️ WARNING

Do not inflate tire beyond maximum pressure as specified on sidewall. Over inflated tires can blow out, which could result in death or serious injury. (00027a)

⚠️ WARNING

Harley-Davidson front and rear tires are not the same. Interchanging front and rear tires can cause tire failure, which could result in death or serious injury. (00026a)

1. Check for proper front and rear tire pressures when tires are cold. Compare results against [Table 3-3](#).

Table 3-3. Tire Pressures

TIRES	SOLO RIDER		RIDER & ONE PASSENGER	
	PSI	kPA	PSI	kPA
Front	30	207	30	207
Rear	36	248	40	276

BRAKES

⚠ CAUTION

Direct contact with D.O.T. 5 brake fluid can cause eye irritation, swelling, and redness. Avoid eye contact. In case of eye contact flush with large amounts of water and get medical attention. Swallowing large amounts of D.O.T. 5 brake fluid can cause digestive discomfort. If swallowed, obtain medical attention. Use in well ventilated area. **KEEP OUT OF REACH OF CHILDREN. (00144a)**

See [Figure 3-8](#). View reservoir sightglass and verify fluid presence. Sightglass should appear dark if fluid is present. If sightglass is not dark, add brake fluid. See Service Manual. Use only D.O.T. 5 SILICONE HYDRAULIC BRAKE FLUID.



Figure 3-8. Rear Master Cylinder Shown

ROAD TEST

After you complete motorcycle inspection, take motorcycle for a road test. Check all systems and overall operation of motorcycle: engine, transmission, clutch, brakes, handling, etc.

After road test, return motorcycle to shop, and thoroughly clean off any road dirt. Check and correct any problems you may have found during road test.

Before You Begin

Check the following items before road test of vehicle:

- Lamps and indicators.
- Check amount of gasoline in tank and add (if needed).
- Adjust mirrors to proper riding positions.
- Check tire condition and pressure (adjust if necessary).
- Check controls to verify proper function.
- Check all electrical equipment and switches including stop lamp, turn signals and horn for proper operation.

Road Test of Vehicle: Low Speed

1. Shift from first through third gear, checking clutch operation, throttle control, and transmission operation.
2. Verify low speed braking for front and rear brakes.
3. Handling under braking conditions.
4. Low speed handling. Verify that vehicle does not pull to left or right.
5. Check for any abnormal vibrations.
6. Check electrical lamps, indicators.

Road Test of Vehicle: Highway Speed

1. Shift from first through fifth gear, checking clutch operation, throttle control, and transmission operation.
 2. Verify highway speed braking operation of front and rear brakes.
 3. Verify proper handling at highway speeds.
 4. Check for any abnormal vibrations.
- **Program Security System (if equipped)**
 - **Engine Oil:**
Check and correct hot level
 - **Clean Vehicle:**

NOTE

Be sure to submit a Dealer Product Quality Audit (DPQA) on ANY adjustments and/or warranty work performed required to deliver the vehicle to the customer.

NOTICE TO DEALER

Before delivering motorcycle to owner, perform the following:

1. Make sure vehicle owner receives, and is aware of importance of reading Owner's Manual, safety booklets and viewing **Welcome To The Family** video included with owner's kit.
2. Review warranties with vehicle owner. Make sure owner understands warranties. California dealers must give customer a copy of Emissions Control System Warranty.
3. Give IMPORTANT sheet and other printed material in literature kit to vehicle owner.
4. Complete and sign warranty registration form. Have vehicle owner sign it.
5. Explain operation of vehicle controls to vehicle owner.
6. Explain how turn signals and emergency flashers operate.

IMPORTANT NOTE

Make sure vehicle owner understands how to arm and disarm security system. Explain how to disarm security system with personal code if key fob is lost or not functioning. Personal code should be written on the tear-out card in the Dyna Models Owner's Manual and kept on the owner's person. Also, verify both key fobs operate properly.

7. Whenever possible, introduce dealer Service Manager to vehicle owner, and involve Service Manager in delivery process. Supply owner with name(s) of dealer Service/Parts Department personnel who should be contacted regarding vehicle service/parts questions.
8. Inform vehicle owner about checking engine oil level, checking tire pressure, and performing other basic maintenance functions. Review the **Initial Scheduled Maintenance** requirement with owner. Depending on owner's anticipated frequency of operating motorcycle, you may wish to schedule the **Initial Scheduled Maintenance** service appointment at this time.

PRIOR TO CUSTOMER DELIVERY

NOTE

Use this checklist for performing tasks related to this model motorcycle setup.

- Uncrate:**
Check for damaged or missing parts.
- Jiffy Stand:**
Verify proper function.
- Note Any Additional Problems (including cosmetic quality):**
Perform Warranty repairs.
- Battery:**
Perform required voltmeter test on Maxi Fuse (main fuse) and battery.
- Install Maxi Fuse (main fuse).**
- Lubrication System:**
Inspect condition of oil lines.
- Engine Oil:**
Verify oil is present (cold level).
- Primary Chaincase:**
Check and verify lubricant is present.
- Fuel System:**
 - a. Inspect fuel system for leaks.
 - b. Fill, verify sender operation.
 - c. Verify low fuel light operation (if equipped).
- Evaporative Control System:**
Inspect hose routings, connections and fuel tank venting to canister (if equipped).
- Lighting, Gauges, Electrical Systems:**
Verify correct operation.
- Tires:**
Inspect condition and air pressure.
- Brake Systems (front and rear):**
Correct fluid level (if necessary).
- Headlamps:**
Inspect and adjust as necessary.
- Mirrors:**
Inspect and adjust as necessary.

- Fuel Outlet (valve or quick connect fitting) and Hoses:**

Verify operation and connections.

- Road Test Vehicle: Low Speed**

- a. Shift from first through third gear, checking clutch operation, throttle control, and transmission operation.
- b. Verify low-speed braking for front and rear brakes.
- c. Verify handling under braking conditions.
- d. Verify low-speed handling. Verify that vehicle does not pull to left or right.
- e. Check for any abnormal vibrations.
- f. Check electrical lamps, indicators.

- Road Test Vehicle: Highway Speed**

- a. Shift from first through fifth gear, checking clutch operation, throttle control, and transmission operation.
- b. Verify highway speed braking operation of front and rear brakes.
- c. Verify proper handling at highway speeds.
- d. Check for any abnormal vibrations.

- Engine Oil:**

Check and correct hot level.

- Create Vehicle Birth-Certificate Using Digital Technician (optional).**

- Clean Vehicle.**

AT POINT OF CUSTOMER DELIVERY

- Suspension Adjustments.**
- Shift Linkage Adjustment.**
- Brake Hand Lever Adjustment.**
- Review Vehicle Care and Maintenance Requirements.**

NOTE

Be sure to submit a Dealer Product Quality Audit (DPQA) on ANY adjustments and/or warranty work performed required to deliver the vehicle to the customer.

NOTES

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TORQUE VALUES

The following torque values are included for fasteners that may be loosened and tightened during Predelivery and Setup. Any fasteners that are not loosened/removed do not need to be checked during predelivery and setup.

Table 4-1. Torque Values

ITEM	TORQUE		NOTES
Handlebar clamp screws (front and rear)	12-15 ft-lbs	16.3-20.3 Nm	
Brake master cylinder cover screws (front and rear)	6-8 in-lbs	0.7-0.9 Nm	
Battery terminal screws	60-96 in-lbs	6.8-10.9 Nm	
Mirror fasteners	60-96 in-lbs	6.8-10.9 Nm	
Clutch inspection cover screws	84-108 in-lbs	9.5-12.2 Nm	

2005 SOFTAIL MODELS SPECIFICATIONS

Table 4-2. Capacities

Component	ENGLISH	METRIC
Oil tank w/filter (Dry)	3.5 qt.	3.31 liter
Transmission (Wet)	20-24 oz	591-710 ml
Primary Chaincase	26 oz	769 ml

All Softail models except FLSTFSE are shipped with 20W50 Harley-Davidson 360 Motor oil. The FLSTFSE model ships with Syn-3[®] lubricant in the engine, primary and transmission.

Idle Speed: 950 RPM at Operating Temperature

Use 950 RPM during Predelivery and Setup adjustments. Engine idle speed may increase during engine break-in. Use idle speed listed in the Softail Models Service Manual at Initial Maintenance check.

NOTE

The idle speed on electronic fuel injected models can only be set using a diagnostic tool such as DIGITAL TECHNICIAN (Part No. HD-44750).

BATTERY TESTING AND CHARGING

WARNING

Batteries contain sulfuric acid, which could cause severe burns to eyes and skin. Wear a protective face shield, rubberized gloves and protective clothing when working with batteries. KEEP BATTERIES AWAY FROM CHILDREN. (00063a)

WARNING

Never remove warning label attached to top of battery. Failure to read and understand all precautions in warning could result in death or serious injury. (00064a)

WARNING

Battery posts, terminals and related accessories contain lead and lead components, chemicals known in the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling. (00019a)

NOTE

It will be necessary to remove the seat to perform required battery tests. Remove seat according to procedure in appropriate Service Manual.

Battery Testing and Charging

- Place test probes of voltmeter on battery terminals and check the voltage of the battery to make sure it is at least 12.6 VDC.
- If the open circuit (disconnected) voltage reading is 12.6 VDC or greater the battery is ready for use.
- See Section 1. Mark the date on the battery warranty tag by removing the applicable month and year. Month and year punches may be removed with the point of a screwdriver without removing battery.
- If the open circuit (disconnected) voltage reading is below 12.6 VDC, refer to [Table 1-2.](#), 12 amp-hour battery, in Section 1 and charge battery at rate and time specified.
- Recheck battery voltage by repeating step 1 above. If voltage now is 12 VDC or greater, perform steps 2 and 3 above.
- If the open circuit (disconnected) voltage reading is still below 12.6 VDC, the battery must be replaced.

Connecting Battery

NOTE

One battery terminal bolt is attached to red plastic terminal cover covering positive battery terminal. The second battery terminal bolt is in negative battery terminal.

- Attach positive battery cable first. Orient terminal so cable is oriented away from oil tank and tighten terminal bolt to 60-96 in-lbs (6.8-10.9 Nm).
- Attach negative battery cable and tighten terminal bolt to 60-96 in-lbs (6.8-10.9 Nm).

INSTALLING FUEL PUMP FUSE

For non-carbureted vehicles, it will also be necessary to install the fuel pump fuse that is located in the spare fuse slot of the fuse-block. See Service Manual.

INDICATOR LAMPS

NOTE

All Softail models have an electronic speedometer with self-diagnostic capabilities. Refer to the *Softail Models Service Manual* for service instructions.

- See [Figure 4-1](#). Turn ignition switch to "IGNITION" position, and check that oil pressure indicator lamp turns on (before engine is started). Speedometer needle will "vibrate" and speedometer amber backlight will be visible. The Check Engine indicator will illuminate for about four seconds and then go off. If vehicle is equipped with optional Security System (TSSM), a key icon (9) (security lamp) will illuminate for about four seconds and then go off.

NOTE

For any systems problems, please refer to the appropriate *Electrical Diagnostic manual* for your model.

- Shift transmission to neutral position, and verify that neutral indicator lamp turns on.

NOTE

See [4.3 LUBRICATION SYSTEM](#) and perform initial engine oil level check prior to starting engine.

- Start engine; check operation of starter.
- Check that oil pressure indicator lamp turns off when engine is running above 1000 RPM.
- Disengage clutch and verify that neutral indicator lamp turns off when transmission is shifted to any forward gear. Shift transmission to neutral position, and verify that neutral indicator lamp turns on again.
- Check horn operation.

7. Check operation of all remaining lamps:
 - headlamp—low and high beams
 - headlamp high beam indicator lamp
 - left directional (turn signal) lamps—front and rear
 - left directional (turn signal) indicator lamp
 - right directional (turn signal) lamps—front and rear
 - right directional (turn signal) indicator lamp
 - left front running lamp
 - right front running lamp
 - tail lamp—running lamp and brake lamp filaments
8. After engine has reached normal operating temperature, turn engine off.
9. Check engine oil level per instructions in [4.3 LUBRICATION SYSTEM](#). This time, fill oil tank to upper mark on filler cap/dipstick.

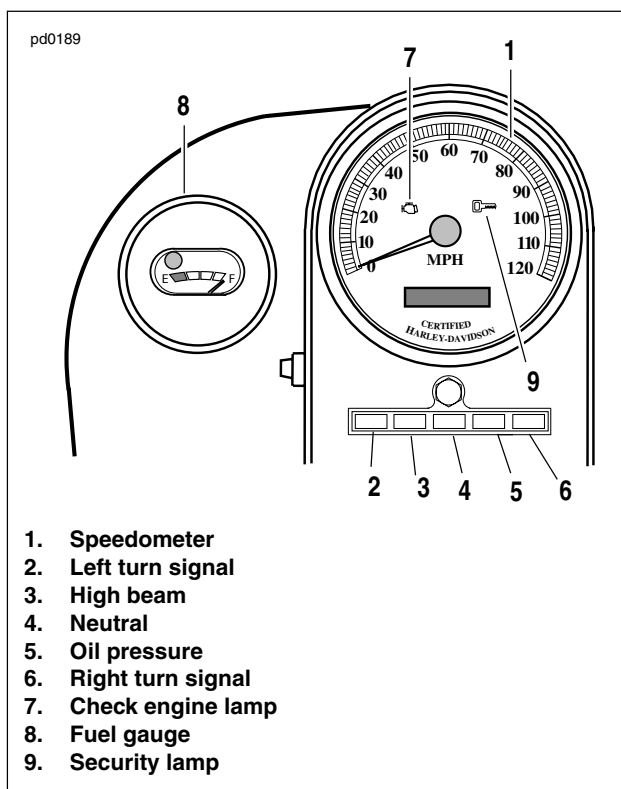


Figure 4-1. Indicator Lamps

IGNITION TIMING

Ignition timing is not adjustable on The Twin Cam 88B™ engine.

IDLE SPEED: CARBURETED ONLY

NOTE

The idle speed on fuel injected models can only be set using a diagnostic tool such as *DIGITAL TECHNICIAN* (Part No. HD-44750).

See [Figure 4-2](#). Set engine slow idle speed of 950 RPM with engine running at normal operating temperature and with enricher control knob pushed in fully. Turn carburetor idle speed adjusting screw (5) clockwise to increase speed, or counterclockwise to decrease speed.

NOTE

The C.V. carburetor has an enricher circuit that will cause the engine to idle at approximately 2000 RPM with the engine at normal operating temperature and the enricher knob pulled fully out. The increase in idle speed is intended to alert the rider that the engine is warmed up to normal operating temperature and that the enricher knob should be pushed in all the way. Continuing to use the enricher circuit when the engine is at normal operating temperature will cause fouled plugs.

Be sure the engine is warmed up to normal operating temperature and the enricher knob is pushed all the way in before adjusting engine idle speed. Be aware that, because there are variations in individual components, it is possible for a properly warmed-up engine to idle at 2000 RPM with the enricher knob pulled out partially.

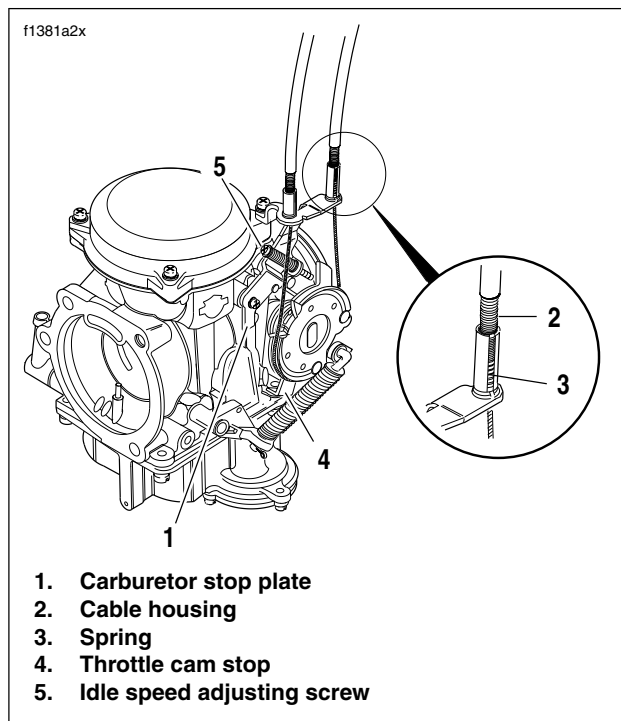


Figure 4-2. Carburetor Adjustments

Windshield Installation: FLSTC

CAUTION

Be sure you position the windshield bracket notches in the grooves in the mounting bushings. Incorrect mounting could result in damage to the windshield.

1. See [Figure 4-3](#). Lower the windshield into position carefully inserting the side brackets between the headlamp and the passing lamp supports until the bottom notches are seated in the lower bushing grooves.
2. Standing at the front of the vehicle, gently push the top of the windshield toward the rear until the upper notches fully engage the upper bushings.

SEATS AND PASSENGER STRAP

Refer to the Softail Models Owner's Manual for seat and passenger strap removal and installation instructions.

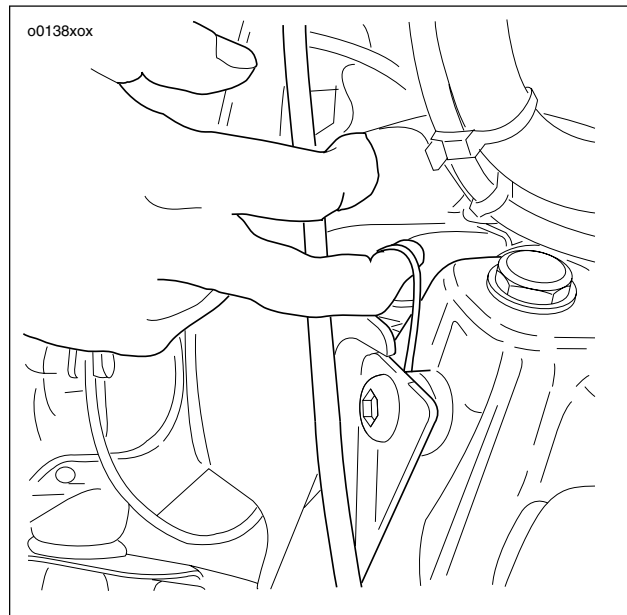


Figure 4-3. Windshield Mounting

ENGINE OIL LEVEL

CAUTION

The FLSTFSE model is shipped from the factory with SYN-3[®] lubricant exclusively in the engine, primary and transmission. If there is a need to top off lubricants, **DO NOT use standard lubricants in the FLSTFSE model and do not mix lubricants as damage to the motorcycle can result.**

Check engine oil level with engine turned off and motorcycle resting on side stand on level surface.

1. Remove filler cap (with attached dipstick) from oil tank. Wipe dipstick clean.
2. Install filler cap onto oil tank. Make sure cap is fully seated on tank.
3. See Figure 4-4. Remove filler cap, and check oil level on dipstick. If oil level in tank is below lower mark on dipstick, add 3/4 quart (0.7 liter) of Harley-Davidson oil to tank. Refer to the Softail Models Service Manual for recommended viscosity.

NOTE

Do not fill oil tank to full (upper) mark on filler cap/dipstick at this time. Ordinarily, you would fill a Softail oil tank (with warm engine) to this level. In this situation, however, if any oil has flowed from tank to crankcase during shipping, filling oil tank to full mark might result in overfilling of oil tank when engine is started. Final check of oil level must be made with engine off, after engine has reached normal operating temperature.

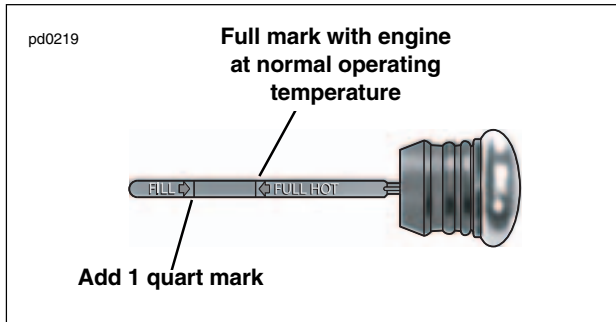


Figure 4-4. Engine Oil Dipstick

TRANSMISSION LUBRICANT LEVEL

NOTE

Allow vehicle to stand upright for a moment before checking transmission lubricant level. This will allow lubricant level to normalize.

Check the transmission lubricant level with the motorcycle standing upright in accordance with the procedure given in the Softail Models Service Manual.

CHAINCASE LUBRICANT LEVEL AND CLUTCH OPERATION

NOTE

Do not remove the clutch cover on the FLSTFSE. It is not necessary to check the primary chaincase lubricant level on this vehicle. Also, the hydraulic clutch is not adjustable.

1. Remove five screws, clutch inspection cover and cover gasket.
2. See Figure 4-5. The primary chaincase lubricant level is acceptable when lubricant is visible in bottom of chaincase with motorcycle standing upright (not resting on jiffy stand).

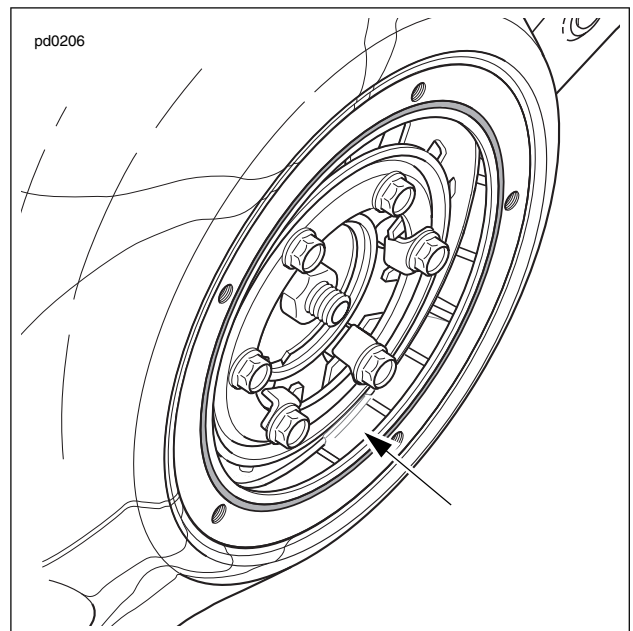


Figure 4-5. Chaincase Lubricant Level

3. Check clutch action. Clutch lever should move freely and smoothly through its entire range of travel.
4. Check clutch adjustment according to the procedures given in the Softail Models Service Manual.

NOTE

The clutch inspection cover gasket may be reused **ONLY** when checking chaincase lubricant level and reinstalling clutch inspection cover at PDI.

5. Reinstall cover gasket and clutch inspection cover, and secure with five screws. Tighten to 84-108 **in-lbs** (9.5-12.2 Nm).

GENERAL

CAUTION

Some fuel suppliers sell gasoline which has been blended with an alcohol or an ether. The type and amount of alcohol or ether added to the fuel is important.

CAUTION

Do not use gasoline that contains methanol. Doing so can result in fuel system component failure, engine damage and/or equipment malfunction. (00148a)

- Gasolines containing ETHANOL (ethyl alcohol or grain alcohol) can be used. Gasoline/ethanol blends are a mixture of 10% ethanol and 90% unleaded gasoline. They are identified as “gasohol,” “ethanol enhanced,” or “contains ethanol.”
- Gasolines containing METHYL TERTIARY BUTYL ETHER (MTBE) can also be used. Gasoline/MTBE blends are a mixture of gasoline and as much as 15% MTBE.
- REFORMULATED OR OXYGENATED GASOLINES (RFG): “Reformulated gasoline” is a term used to describe gasoline blends that are specifically designed to burn cleaner than other types of gasoline, leaving fewer “tailpipe” emissions. They are also formulated to evaporate less when you are filling your tank. Reformulated gasolines use additives to “oxygenate” the gas. Your motorcycle will run normally using this type of gas and Harley-Davidson recommends you use it when possible, as an aid to cleaner air in our environment

Because of their different chemical properties (which affect fuel volatility and ignition characteristics), these blends may adversely affect the starting, drivability, and fuel efficiency of the motorcycle. If you experience these problems, Harley-Davidson recommends using straight, unleaded gasoline.

CAUTION

Use only unleaded fuel in California model catalytic converter-equipped motorcycles. Using leaded fuel will damage the emission control system. (00150a).

CHECKING QUICK CONNECT FUEL LINE FITTING—FUEL INJECTED MODELS

WARNING

To avoid an uncontrolled discharge or spray of gasoline, always be sure the quick-connect fitting (under left side of fuel tank) is properly mated. A slight tug on the fuel line will verify this condition. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

1. Tug on fuel supply line (under left side of fuel tank) to be sure quick connect fitting is properly mated.
2. If fuel line comes free, push up on sleeve of quick-connect fitting and insert neck of fuel supply line fitting. While pushing up on bottom of fuel supply line fitting, pull down on sleeve until it “clicks” into the locked position.

FUEL TANK

Make sure engine stop switch on the handlebar is switched to the OFF position. Turn the ignition/light switch to the IGNITION position. Fuel injected models: verify that Low Fuel lamp is lit. Partially fill fuel tank with gasoline. Follow FUEL recommendations found in the Owner’s Manual. Use unleaded gasoline, 91 octane or higher. Verify function of fuel gauge as fuel tank is filling, then turn ignition/light switch OFF. Inspect fuel lines for leaks.

Carbureted Models

See Figure 4-6. After adding gasoline, check for smooth operation of the fuel valve. Inspect fuel valve for leaks.

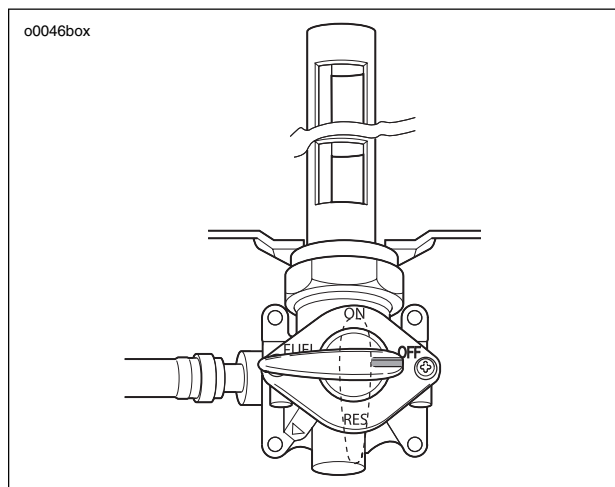


Figure 4-6. Fuel Supply Valve

HEADLAMP

Check headlamp beam for proper height and lateral alignment in accordance with procedures given in the Softail Models Service Manual.

⚠ WARNING

The automatic-on headlamp feature provides increased visibility of the rider to other motorists. Be sure headlamp is on at all times. Poor visibility of rider to other motorists can result in death or serious injury. (00030b)

AUXILIARY LAMPS

On models equipped with auxiliary lamps, check lamp beam for proper height and lateral alignment in accordance with procedures given in the Softail Models Service Manual.

MIRRORS AND DIRECTIONAL LAMPS

See [Figure 4-7](#). Adjust mirrors for proper rear view. Adjust front directional lamps so lenses are aimed directly forward; adjust rear directional lamps so lenses are aimed directly rearward. Verify that mirror and directional lamp fasteners are properly tightened.

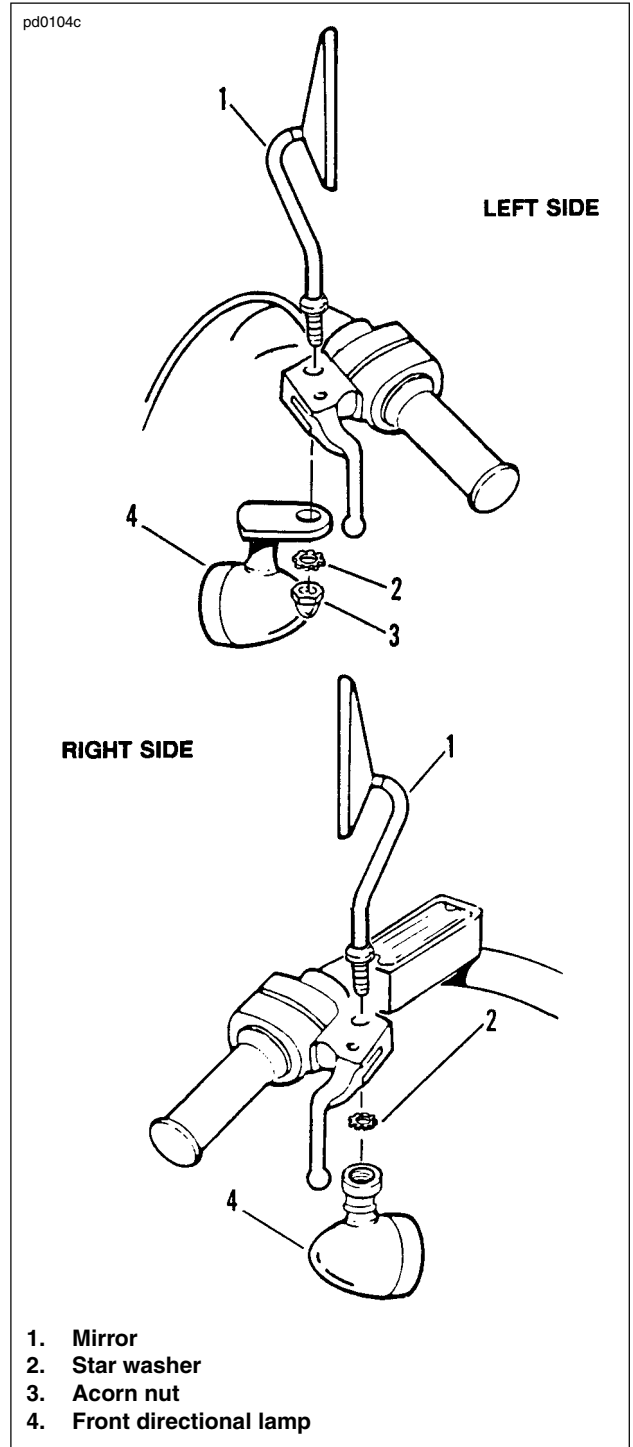


Figure 4-7. Mirrors And Turn Signals

FRONT AND REAR TIRES

⚠️ WARNING

Do not alter or modify front suspension/fender/tire type on FXSTS models. The motorcycle handling characteristics and front end structural integrity might be adversely affected. This may cause loss of control, which could result in death or serious injury.

⚠️ WARNING

Do not inflate tire beyond maximum pressure as specified on sidewall. Over inflated tires can blow out, which could result in death or serious injury. (00027a)

⚠️ WARNING

Harley-Davidson front and rear tires are not the same. Interchanging front and rear tires can cause tire failure, which could result in death or serious injury. (00026a)

1. Check for proper front and rear tire pressures when tires are cold. Compare results against [Table 4-3](#).

Table 4-3. Tire Pressures

TIRES		SOLO RIDER		RIDER AND PASSENGER	
MODEL	TIRE	PSI	kPA	PSI	kPA
FLSTC/F/N/SC	Front	36	248	36	248
FXST/D/S/B	Front	30	207	30	207
All models	Rear	36	248	40	276

BRAKES

CAUTION

Direct contact with D.O.T. 5 brake fluid can cause eye irritation, swelling, and redness. Avoid eye contact. In case of eye contact flush with large amounts of water and get medical attention. Swallowing large amounts of D.O.T. 5 brake fluid can cause digestive discomfort. If swallowed, obtain medical attention. Use in well ventilated area. KEEP OUT OF REACH OF CHILDREN. (00144a)

View reservoir sightglass and verify fluid presence. Sightglass should appear dark if fluid is present. If sightglass is not dark, add brake fluid. See Softail Models Service Manual. Use only D.O.T. 5 SILICONE HYDRAULIC BRAKE FLUID (Part No. 99902-77: 12 oz., 99901-77: 1 gal.).

ROAD TEST

After you complete motorcycle inspection, take motorcycle for a road test. Check all systems and overall operation of motorcycle: engine, transmission, clutch, brakes, handling, etc.

After road test, return motorcycle to shop, and thoroughly clean off any road dirt. Check and correct any problems you may have found during road test.

Before You Begin

Check the following items before road test of vehicle:

- Lamps and indicators.
- Check amount of gasoline in tank and add (if needed).
- Adjust mirrors to proper riding positions.
- Check tire condition and pressure (adjust if necessary).
- Check controls to verify proper function.
- Check all electrical equipment and switches including stop lamp, turn signals and horn for proper operation.

Road Test of Vehicle: Low Speed

1. Shift from first through third gear, checking clutch operation, throttle control, and transmission operation.
2. Verify low speed braking for front and rear brakes.
3. Handling under braking conditions.
4. Low speed handling. Verify that vehicle does not pull to left or right.
5. Check for any abnormal vibrations.
6. Check electrical lamps, indicators.

Road Test of Vehicle: Highway Speed

1. Shift from first through fifth gear, checking clutch operation, throttle control, and transmission operation.
 2. Verify highway speed braking operation of front and rear brakes.
 3. Verify proper handling at highway speeds.
 4. Check for any abnormal vibrations.
- **Program Security System (if equipped)**
 - **Engine Oil:**
Check and correct hot level.
 - **Clean Vehicle:**

NOTE

Be sure to submit a Dealer Product Quality Audit (DPQA) on ANY adjustments and/or warranty work performed required to deliver the vehicle to the customer.

NOTICE TO DEALER

Before delivering motorcycle to owner, perform the following:

1. Make sure vehicle owner receives, and is aware of importance of reading Owner's Manual, safety booklets and viewing **Welcome To The Family** video included with owner's kit.
2. Review warranties with vehicle owner. Make sure owner understands warranties. California dealers must give customer a copy of Emissions Control System Warranty.
3. Give IMPORTANT sheet and other printed material in literature kit to vehicle owner.
4. Complete and sign warranty registration form. Have vehicle owner sign it.
5. Explain operation of vehicle controls to vehicle owner.
6. Explain how turn signals and emergency flashers operate.

IMPORTANT NOTE

Make sure vehicle owner understands how to arm and disarm security system. Explain how to disarm security system with personal code if key fob is lost or not functioning. Personal code should be written on the tear-out card in the Softail Models Owner's Manual and kept on the owner's person. Also, verify both key fobs operate properly.

7. Whenever possible, introduce dealer Service Manager to vehicle owner, and involve Service Manager in delivery process. Supply owner with name(s) of dealer Service/Parts Department personnel who should be contacted regarding vehicle service/parts questions.
8. Inform vehicle owner about checking engine oil level, checking tire pressure, and performing other basic maintenance functions. Review the **Initial Scheduled Maintenance*** requirement with owner. Depending on owner's anticipated frequency of operating motorcycle, you may wish to schedule the **Initial Scheduled Maintenance*** service appointment at this time.

Initial Scheduled Maintenance is required as follows:

- All Softails, except FLSTSC and FXSTS @ 1000 mi. (1600 km)
- FLSTSC and FXSTS @ 500 mi. (800 km)

PRIOR TO CUSTOMER DELIVERY

NOTE

Use this checklist for performing tasks related to this model motorcycle setup.

- Uncrate:**
Check for damaged or missing parts.
- Jiffy Stand:**
Verify proper function.
- Note Any Additional Problems (including cosmetic quality):**
Perform Warranty repairs.
- Battery:**
Perform required voltmeter test on battery.
- Connect negative battery cable to battery.**
- Lubrication System:**
Inspect condition of oil lines.
- Engine Oil:**
Verify oil is present (cold level).
- Primary Chaincase:**
Check and verify lubricant is present.
- Fuel System:**
 - a. Inspect fuel system for leaks.
 - b. Fill, verify sender operation.
 - c. Verify low fuel light operation (if equipped).
- Evaporative Control System:**
Inspect hose routings, connections and fuel tank venting to canister (if equipped).
- Lighting, Gauges, Electrical Systems:**
Verify correct operation.
- Tires:**
Inspect condition and air pressure.
- Brake Systems (front and rear):**
Correct fluid level (if necessary).
- Headlamps:**
Inspect and adjust as necessary.
- Mirrors:**
Inspect and adjust as necessary.

- Fuel Outlet (valve or quick connect fitting) and Hoses:**

Verify operation and connections.

- Road Test Vehicle: Low Speed**
 - a. Shift from first through third gear, checking clutch operation, throttle control, and transmission operation.
 - b. Verify low-speed braking for front and rear brakes.
 - c. Verify handling under braking conditions.
 - d. Verify low-speed handling. Verify that vehicle does not pull to left or right.
 - e. Check for any abnormal vibrations.
 - f. Check electrical lamps, indicators.

- Road Test Vehicle: Highway Speed**

- a. Shift from first through fifth gear, checking clutch operation, throttle control, and transmission operation.
- b. Verify highway speed braking operation of front and rear brakes.
- c. Verify proper handling at highway speeds.
- d. Check for any abnormal vibrations.

- Engine Oil:**
Check and correct hot level.

- Create Vehicle Birth-Certificate Using Digital Technician (optional).**

- Clean Vehicle.**

AT POINT OF CUSTOMER DELIVERY

- Suspension Adjustments.**
- Brake Pedal Height Adjustment.**
- Shift Linkage Adjustment.**
- Brake Hand Lever Adjustment.**
- Review Vehicle Care and Maintenance Requirements.**

NOTE

Be sure to submit a Dealer Product Quality Audit (DPQA) on ANY adjustments and/or warranty work performed required to deliver the vehicle to the customer.

PREDELIVERY: SPORTSTER MODELS

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TORQUE VALUES

The following torque values are included for fasteners that may be loosened and tightened during Predelivery and Setup. Any fasteners that are not loosened/removed do not need to be checked during predelivery and setup.

Table 5-1. Torque Values

ITEM	TORQUE		NOTES
Handlebar clamp screws (front and rear)	12-18 ft-lbs	16.3-24.4 Nm	
Front brake master cylinder cover screws	9-17 in-lbs	1.0-2.0 Nm	
Mirror fasteners	96-144 in-lbs	10.9-16.3 Nm	
Battery terminal screw (positive and negative)	40-50 in-lbs	4.5-5.7 Nm	

2005 SPORTSTER MODELS SPECIFICATIONS

Table 5-2. Capacities

Component	ENGLISH	METRIC
Oil tank w/filter (Dry)	3.6 qt.	3.4 liters
Transmission/Primary Chaincase	32 oz	946 ml
All motorcycles are shipped with 20W50 Harley-Davidson 360 Motor oil		

Idle Speed: 950 RPM at Operating Temperature

Use 950 RPM during Predelivery and Setup adjustments. Engine idle speed may increase during engine break-in. Use idle speed listed in the Sportster Models Service Manual at Initial Maintenance check.

BATTERY TESTING AND CHARGING

WARNING

Batteries contain sulfuric acid, which could cause severe burns to eyes and skin. Wear a protective face shield, rubberized gloves and protective clothing when working with batteries. KEEP BATTERIES AWAY FROM CHILDREN. (00063a)

WARNING

Never remove warning label attached to top of battery. Failure to read and understand all precautions in warning could result in death or serious injury. (00064a)

WARNING

Battery posts, terminals and related accessories contain lead and lead components, chemicals known in the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling. (00019a)

1. Grasp left side cover at upper corners and gently pull away from plastic mounting clips on frame.
2. Lift cover up slightly so mounting grommet clears mounting tab on battery tray. Remove cover.
3. Place test probes of voltmeter on battery terminals and check the voltage of the battery to make sure it is at least 12.6 VDC.
4. If the open circuit (disconnected) voltage reading is 12.6 VDC or greater the battery is ready for use.
5. See Section 1. Mark the date on the battery warranty tag by removing the applicable month and year. Month and year punches may be removed with the point of a screwdriver without removing battery.
6. If the open circuit (disconnected) voltage reading is below 12.6 VDC, refer to Table 1-2, 12 amp-hour battery, in Section 1 and charge battery at rate and time specified.
7. Recheck battery voltage by repeating step 2 above. If voltage now is 12 VDC or greater, perform steps 2 and 3 above.
8. If the open circuit (disconnected) voltage reading is still below 12.6 VDC, the battery must be replaced.
9. Place bottom of side cover with grommet onto mounting tab on battery tray.
10. Line up top of side cover with mounting clips aligning with front clip first. Press top of side cover into clips until snug.

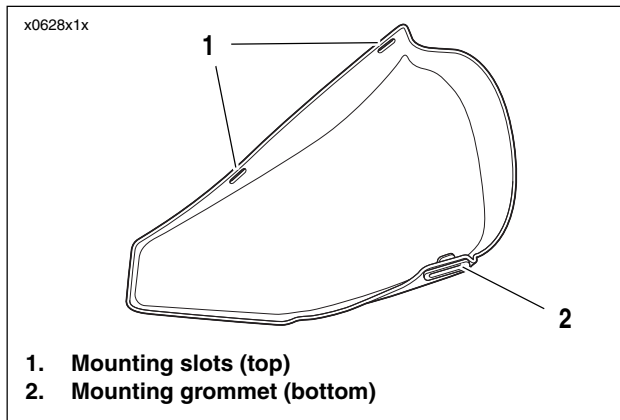


Figure 5-1. Left Side Cover

INSTALLING MAXI-FUSE

The 30 amp Maxi-Fuse provides battery power to the ignition switch and ICM. The Maxi-Fuse is not installed at the factory. It is mounted in protective foam attached to the left handlebar grip of the motorcycle in the crate.

See [Figure 5-2](#). The Maxi-Fuse holder is located under the left side cover, attached to the battery strap. See the Sportster Models Service Manual for the proper installation procedure.

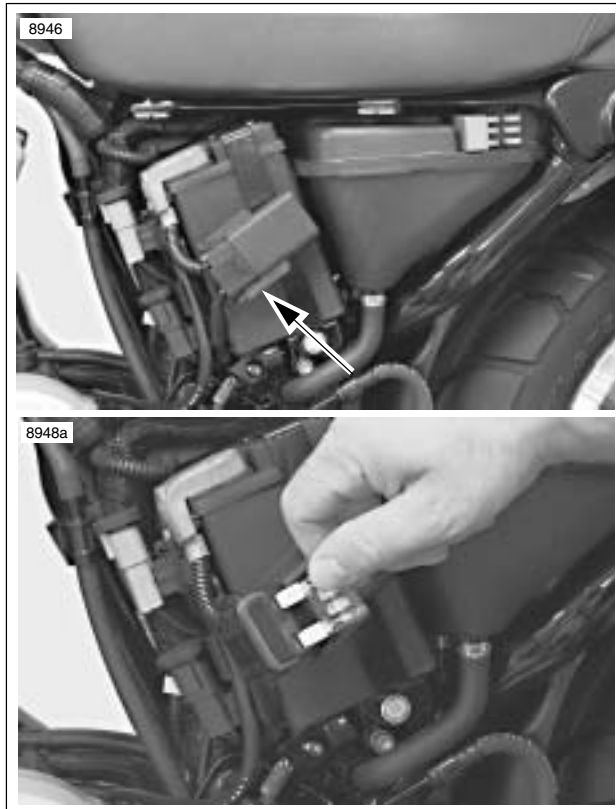


Figure 5-2. Installing Maxi-Fuse

IDLE SPEED

See [Figure 5-3](#). Set engine slow idle speed of 950 RPM with engine running at normal operating temperature and with enrichment control knob pushed in fully. Turn carburetor idle speed adjusting screw (5) clockwise to increase speed, or counterclockwise to decrease speed.

NOTE

The C.V. carburetor has an enrichment circuit that will cause the engine to idle above the normal idle range (950-1050 RPM) with the engine at normal operating temperature and the enrichment knob pulled out fully. The increase in idle speed is intended to alert the rider that the engine is warmed up to normal operating temperature and that the enrichment knob should be pushed in all the way. Continuing to use the enricher when the engine is at full operating temperature will cause fouled plugs.

Be sure the engine is warmed up to normal operating temperature and the enrichment knob is pushed all the way in before adjusting engine idle speed. Be aware that, because there are variations in individual components, it is possible for a properly warmed-up engine to idle above the normal idle range (950-1050 RPM) with the enrichment knob pulled out partially.

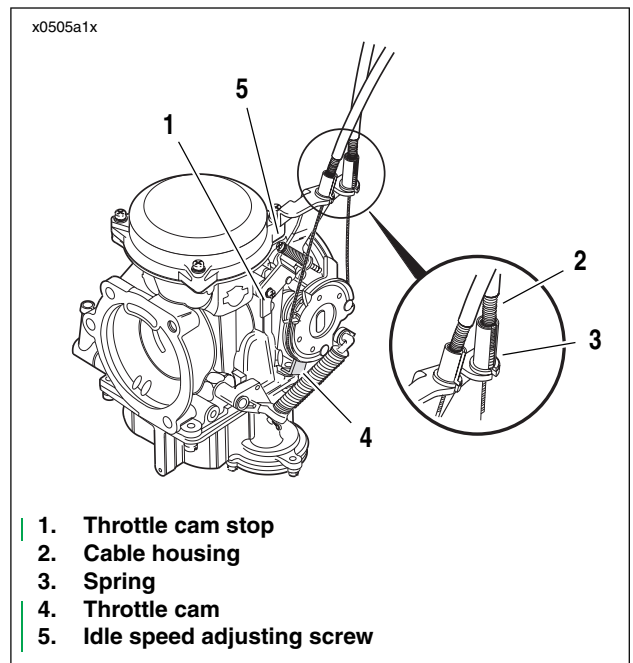


Figure 5-3. Carburetor adjustments

MIRRORS

NOTE

XL 883L model: righthand mirror is shipped in protective foam on left hand grip and must be installed.

1. XL 883L models:
 - a. See Figure 5-4. Insert mirror (1) stem into hole in master cylinder assembly (2).
 - b. Install lock washer (3) and lock nut (4). Tighten to 96-144 in-lbs (10.9-16.3 Nm).

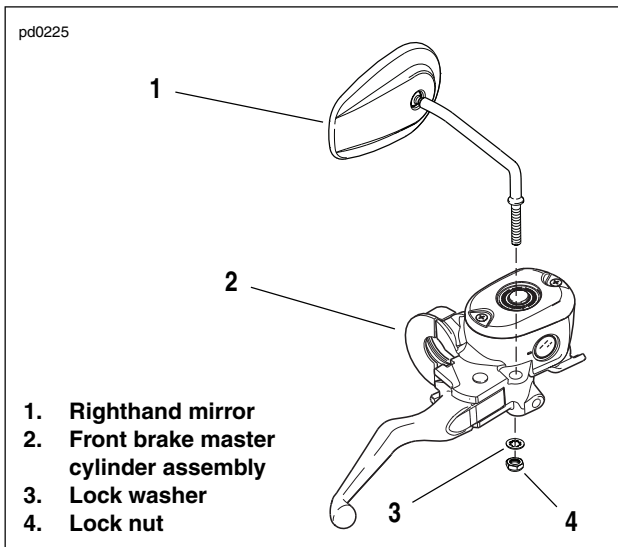


Figure 5-4. Installing Righthand Mirror on XL 883L

2. Adjust mirrors for proper rear view.
3. Adjust front directional lamps so lenses are aimed directly forward.
4. Verify that mirror and directional lamp fasteners are properly tightened.

NOTE

A 4 mm allen wrench will be needed to perform the front directional adjustments.

REAR SUSPENSION

See Figure 5-5. Check that spring preload is set the same on both rear shock absorbers. For a solo rider of average weight, adjust spring preload to softest setting using SPANNER TOOL (Part No. HD-94820-75A) for all models.



Figure 5-5. Adjusting Spring Preload

DIRECTIONAL LAMPS

Adjust rear directional lamps so lenses are aimed directly rearward. Verify that directional lamp fasteners are properly tightened.

THROTTLE CONTROL CABLES

WARNING

Throttle cables must not pull tight when handlebars are turned fully to left or right fork stops. Be sure wires and throttle cables are clear of fork stops at steering head so they will not be pinched when fork is turned against stops. Steering must be smooth and free with no binding or interference. Interference with steering could cause loss of vehicle control which could result in death or serious injury.

Check throttle cable adjustment in accordance with procedure given in Section 1 of Sportster Models Service Manual.

SEATS AND PASSENGER STRAP

Refer to Sportster Models Owner's Manual for seat and passenger strap removal and installation instructions.

ENGINE OIL LEVEL

Check engine oil level in oil tank at least once every 500 miles (800 km). Check level more frequently if engine uses more oil than normal or if vehicle is operated under harsh conditions. Oil tank capacity is 3.6 quarts (U.S.) (3.4 liters). Refer to Owner's Manual for recommended engine oil viscosity.

NOTE

It will be necessary to check engine oil with motorcycle leaning on jiffy stand.

1. Run engine until engine oil is at normal operating temperature. Turn engine off.
2. Remove filler cap from oil tank on right side of vehicle.
 - a. Press straight down on filler cap and release. Cap will pop up.
 - b. Pull up on filler cap while turning counterclockwise one-quarter turn as if unscrewing filler cap.
3. Wipe attached dipstick clean.

NOTE

See Figure 5-6. Note that dipstick has a wide slot and a narrow slot and can only be inserted in oil tank one way.

4. Insert dipstick into tank. Press down on filler cap while turning clockwise one-quarter turn as if screwing filler cap into tank. When filler cap "snaps" slightly, it is fully seated.
5. See Figure 5-7. Remove filler cap again and check warm oil level on dipstick. Dipstick has two marks. If oil level in tank is at or below lower mark, add one quart (0.946 liter) of Harley-Davidson oil to tank.
6. Repeat step 4 to replace filler cap.
7. If you added oil in step 5, remove filler cap and verify correct engine oil level in oil tank. Do not fill oil tank to the level above upper mark on dipstick. Repeat step 4 to replace filler cap.
8. Press down on filler cap until it clicks in place.

CLUTCH OPERATION AND PRIMARY CHAINCASE

1. Check clutch action. Clutch lever should move freely and smoothly through its entire range of travel.
2. Check clutch adjustment and primary chaincase lubricant level according to the procedures in Chapter 1 of the Sportster Models Service Manual.

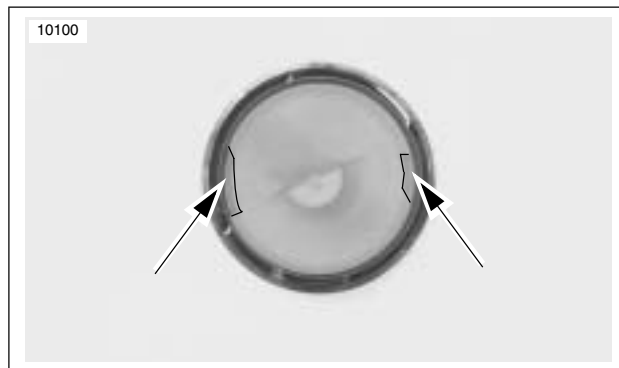


Figure 5-6. Filler Cap/Dipstick Slots

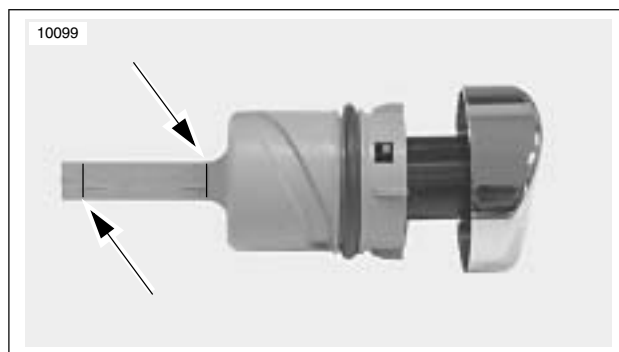


Figure 5-7. Oil Level Marks

GENERAL

CAUTION

Some fuel suppliers sell gasoline which has been blended with an alcohol or an ether. The type and amount of alcohol or ether added to the fuel is important.

CAUTION

Do not use gasoline that contains methanol. Doing so can result in fuel system component failure, engine damage and/or equipment malfunction. (00148a)

- Gasolines containing ETHANOL (ethyl alcohol or grain alcohol) can be used. Gasoline/ethanol blends are a mixture of 10% ethanol and 90% unleaded gasoline. They are identified as “gasohol,” “ethanol enhanced,” or “contains ethanol.”
- Gasolines containing METHYL TERTIARY BUTYL ETHER (MTBE) can also be used. Gasoline/MTBE blends are a mixture of gasoline and as much as 15% MTBE.
- REFORMULATED OR OXYGENATED GASOLINES (RFG): “Reformulated gasoline” is a term used to describe gasoline blends that are specifically designed to burn cleaner than other types of gasoline, leaving fewer “tailpipe” emissions. They are also formulated to evaporate less when you are filling your tank. Reformulated gasolines use additives to “oxygenate” the gas. Your motorcycle will run normally using this type of gas and Harley-Davidson recommends you use it when possible, as an aid to cleaner air in our environment

Because of their different chemical properties (which affect fuel volatility and ignition characteristics), these blends may adversely affect the starting, drivability, and fuel efficiency of the motorcycle. If you experience these problems, Harley-Davidson recommends using straight, unleaded gasoline.

CAUTION

Use only unleaded fuel in California model catalytic converter-equipped motorcycles. Using leaded fuel will damage the emission control system. (00150a).

FUEL TANK

Partially fill fuel tank with gasoline. Follow FUEL recommendations found in the Owner’s Manual. Use unleaded gasoline, 91 octane or higher on all 1200 Roadster and Custom models, and 87 octane or higher on 883 Standard and Custom models.

See Figure 5-8. After adding gasoline, check for smooth operation of the fuel valve. Inspect fuel valve and fuel lines for leaks.

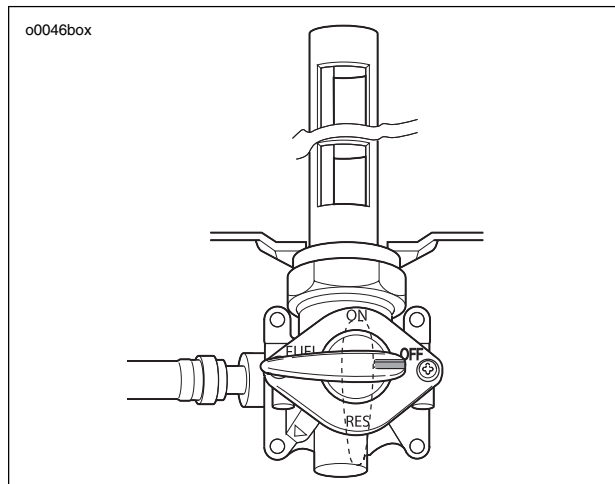


Figure 5-8. Fuel Supply Valve

HEADLAMP ALIGNMENT

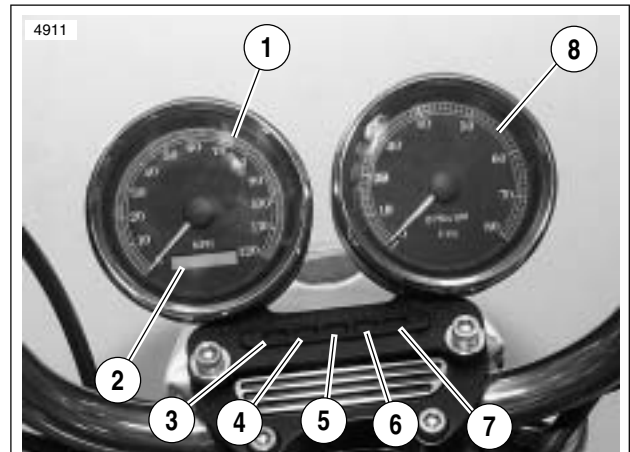
Check headlamp beam for proper height and lateral alignment in accordance with procedures given in Section 1 of the Sportster Models Service Manual.

⚠ WARNING

The automatic-on headlamp feature provides increased visibility of the rider to other motorists. Be sure headlamp is on at all times. Poor visibility of rider to other motorists can result in death or serious injury. (00030b)

INDICATOR LAMPS/CONTROLS

1. See Figure 5-9. Turn ignition switch to IGNITION position, and check that oil pressure indicator lamp (6) turns on (before engine is started).
2. Shift transmission to neutral position, and verify that neutral indicator lamp (5) turns on.
3. Start engine; check operation of starter.
4. Check that oil pressure indicator lamp (6) turns off when engine is running above 1000 RPM.
5. Disengage clutch (depress clutch lever), and verify that neutral indicator lamp (5) turns off when transmission is shifted to any forward gear.
6. Shift transmission to neutral position, and verify that neutral indicator lamp turns on again.
7. Check operation of tachometer (8) (1200 Roadster only).
8. Check horn operation.
9. Check operation of all remaining lamps:
 - Headlamp—low and high beams
 - Headlamp high beam indicator lamp (4)
 - Left directional (turn signal) lamps—front and rear
 - Left directional (turn signal) indicator lamp (3)
 - Right directional (turn signal) lamps—front and rear
 - Right directional (turn signal) indicator lamp (7)
 - Left front running lamp
 - Right front running lamp
 - Tail lamp—running lamp and brake lamp filaments
 - Speedometer (1) illumination lamp
 - Tachometer (8) illumination lamp (1200 Roadster only)



1200 Roadster shown, other Sportster models not originally equipped with tachometer.

1. Speedometer
2. Odometer and trip odometer
3. Left directional (turn signal) indicator lamp
4. High beam indicator lamp
5. Neutral indicator lamp
6. Oil pressure indicator lamp
7. Right directional (turn signal) indicator lamp
8. Tachometer (1200 Roadster only)

Figure 5-9. Instruments (Typical)

10. After engine has reached normal operating temperature, turn engine off.
11. Check engine oil level in manner previously specified. This time, fill oil tank to upper mark on filler cap/dipstick.

FRONT AND REAR TIRES

⚠️ WARNING

Do not inflate tire beyond maximum pressure as specified on sidewall. Over inflated tires can blow out, which could result in death or serious injury. (00027a)

⚠️ WARNING

Harley-Davidson front and rear tires are not the same. Interchanging front and rear tires can cause tire failure, which could result in death or serious injury. (00026a)

1. Check for proper front and rear tire pressures when tires are cold. Compare results against [Table 5-3](#).

Table 5-3. Tire Pressures

TIRES		SOLO RIDER		RIDER & PASSENGER	
MODEL	TIRE	PSI	kPA	PSI	kPA
All models	Front	30	207	30	207
All models	Rear	36	248	40	276

REAR BRAKE

CAUTION

Direct contact with D.O.T. 5 brake fluid can cause eye irritation, swelling, and redness. Avoid eye contact. In case of eye contact flush with large amounts of water and get medical attention. Swallowing large amounts of D.O.T. 5 brake fluid can cause digestive discomfort. If swallowed, obtain medical attention. Use in well ventilated area. KEEP OUT OF REACH OF CHILDREN. (00144a)

1. With vehicle upright (not on sidestand), check that fluid level is between the upper and lower marks on reservoir. If brake fluid level is low, add brake fluid. See Sportster Models Service Manual. Use only D.O.T. 5 SILICONE HYDRAULIC BRAKE FLUID (Part No. 99902-77: 12 oz., 99901-77: 1 gal.).

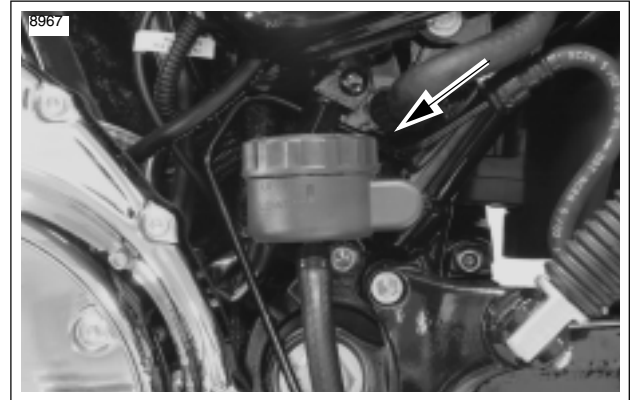


Figure 5-10. Rear Brake Master Cylinder Remote Reservoir

ROAD TEST

After you complete motorcycle inspection, take motorcycle for a road test. Check all systems and overall operation of motorcycle: engine, transmission, clutch, brakes, handling, etc.

After road test, return motorcycle to shop, and thoroughly clean off any road dirt. Check and correct any problems you may have found during road test.

Before You Begin

Check the following items before road test of vehicle:

- Lamps and indicators.
- Check amount of gasoline in tank and add (if needed).
- Adjust mirrors to proper riding positions.
- Check tire condition and pressure (adjust if necessary).
- Check controls to verify proper function.
- Check all electrical equipment and switches including stop lamp, turn signals and horn for proper operation.

Road Test of Vehicle: Low Speed

1. Shift from first through third gear, checking clutch operation, throttle control, and transmission operation.
2. Verify low speed braking for front and rear brakes.
3. Handling under braking conditions.
4. Low speed handling. Verify that vehicle does not pull to left or right.
5. Check for any abnormal vibrations.
6. Check electrical lamps, indicators.

Road Test of Vehicle: Highway Speed

1. Shift from first through fifth gear, checking clutch operation, throttle control, and transmission operation.
 2. Verify highway speed braking operation of front and rear brakes.
 3. Verify proper handling at highway speeds.
 4. Check for any abnormal vibrations.
- **Program Security System (if equipped)**
 - **Engine Oil:**
Check and correct hot level.
 - **Clean Vehicle:**

NOTE

Be sure to submit a Dealer Product Quality Audit (DPQA) on ANY adjustments and/or warranty work performed required to deliver the vehicle to the customer.

NOTICE TO DEALER

Before delivering motorcycle to owner, perform the following:

1. Make sure vehicle owner receives, and is aware of importance of reading Owner's Manual, safety booklets and viewing **Welcome To The Family** video included with owner's kit.
2. Review warranties with vehicle owner. Make sure owner understands warranties. California dealers must give customer a copy of Emissions Control System Warranty.
3. Give **IMPORTANT** sheet and other printed material in literature kit to vehicle owner.
4. Complete and sign warranty registration form. Have vehicle owner sign it.
5. Explain operation of vehicle controls to vehicle owner.
6. Explain how turn signals and emergency flashers operate.

IMPORTANT NOTE

Make sure vehicle owner understands how to arm and disarm security system. Explain how to disarm security system with personal code if key fob is lost or not functioning. Personal code should be written on the tear-out card in the Sportster Models Owner's Manual and kept on the owner's person. Also, verify both key fobs operate properly.

7. Whenever possible, introduce dealer Service Manager to vehicle owner, and involve Service Manager in delivery process. Supply owner with name(s) of dealer Service/Parts Department personnel who should be contacted regarding vehicle service/parts questions.
8. Inform vehicle owner about checking engine oil level, checking tire pressure, and performing other basic maintenance functions. Review the **Initial Scheduled Maintenance** requirement with owner. Depending on owner's anticipated frequency of operating motorcycle, you may wish to schedule the **Initial Scheduled Maintenance** service appointment at this time.

PRIOR TO CUSTOMER DELIVERY

NOTE

Use this checklist for performing tasks related to this model motorcycle setup.

- Uncrate:**
Check for damaged or missing parts.
- Jiffy Stand:**
Verify proper function.
- Note Any Additional Problems (including cosmetic quality):**
Perform Warranty repairs.
- Battery:**
Perform required voltmeter test on Maxi-Fuse (main fuse) and battery.
- Install Maxi Fuse (main fuse).**
- Install righthand mirror (XL 883L only).**
- Lubrication System:**
Inspect condition of oil lines.
- Engine Oil:**
Verify oil is present (cold level).
- Primary Chaincase:**
Check and verify lubricant is present.
- Fuel System:**
Inspect fuel system for leaks.
- Evaporative Control System:**
Inspect hose routings, connections and fuel tank venting to canister (if equipped).
- Lighting, Gauges, Electrical Systems:**
Verify correct operation.
- Tires:**
Inspect condition and air pressure.
- Brake Systems (front and rear):**
Correct fluid level (if necessary).
- Headlamps:**
Inspect and adjust as necessary.
- Mirrors:**
Inspect and adjust as necessary.

- Fuel Outlet valve and Hoses:**
Verify operation and connections.
- Road Test Vehicle: Low Speed**
 - a. Shift from first through third gear, checking clutch operation, throttle control, and transmission operation.
 - b. Verify low-speed braking for front and rear brakes.
 - c. Verify handling under braking conditions.
 - d. Verify low-speed handling. Verify that vehicle does not pull to left or right.
 - e. Check for any abnormal vibrations.
 - f. Check electrical lamps, indicators.
- Road Test Vehicle: Highway Speed**
 - a. Shift from first through fifth gear, checking clutch operation, throttle control, and transmission operation.
 - b. Verify highway speed braking operation of front and rear brakes.
 - c. Verify proper handling at highway speeds.
 - d. Check for any abnormal vibrations.
- Engine Oil:**
Check and correct hot level.
- Create Vehicle Birth-Certificate Using Digital Technician (optional).**
- Clean Vehicle.**

AT POINT OF CUSTOMER DELIVERY

- Suspension Adjustments.**
- Shift Linkage Adjustment.**
- Brake Hand Lever Adjustment.**
- Review Vehicle Care and Maintenance Requirements.**

NOTE

Be sure to submit a Dealer Product Quality Audit (DPQA) on ANY adjustments and/or warranty work performed required to deliver the vehicle to the customer.

PREDELIVERY: VRSC MODELS

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2005 VRSC Models Specifications	6-1
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TORQUE VALUES

The following torque values are included for fasteners that may be loosened and tightened during Predelivery and Setup. Any fasteners that are not loosened/removed do not need to be checked during Predelivery and Setup.

ITEM	TORQUE		NOTES
Front axle nut	68-75 Nm	50-55 ft-lbs	
Rear axle nut	129-142.36 Nm	95-105 ft-lbs	
All master cylinder cover screws	0.7-0.90 Nm	6-8 in-lbs	
Battery terminal screws	6.8-10.9 Nm	60-96 in-lbs	
Coolant air bleed plug	9-11 Nm	80-97 in-lbs	
Radiator drain plug	–	–	Hand-tighten

2005 VRSC MODELS SPECIFICATIONS

Table 6-1. Capacities

Component	Metric	English
Fuel tank total	14.0 liters	3.7 gal.
Oil sump	4.3 liters	4.5 qt.
Coolant	2.4 liters	2.54 qt.

BATTERY TESTING AND CHARGING

WARNING

Batteries contain sulfuric acid, which could cause severe burns to eyes and skin. Wear a protective face shield, rubberized gloves and protective clothing when working with batteries. KEEP BATTERIES AWAY FROM CHILDREN. (00063a)

WARNING

Never remove warning label attached to top of battery. Failure to read and understand all precautions in warning could result in death or serious injury. (00064a)

WARNING

Battery posts, terminals and related accessories contain lead and lead components, chemicals known in the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling. (00019a)

NOTES

- *The engine is equipped with a compression release, so a smaller (12 amp hour) battery provides adequate starting current.*
 - *It will be necessary to remove the airbox cover to gain access to the battery.*
1. Place test probes of voltmeter on battery terminals and check the voltage of the battery to make sure it is at least 12.6 VDC.
 2. If the open circuit (disconnected) voltage reading is 12.6 VDC or greater the battery is ready for use.

3. See Section 1. Mark the date on the battery warranty tag by removing the applicable month and year. Month and year punches may be removed with the point of a screwdriver without removing battery.
4. If the open circuit (disconnected) voltage reading is below 12.6 VDC, refer to Table 1-2, 12 amp-hour battery, in Section 1 and charge battery at rate and time specified.
5. Recheck battery voltage by repeating step 1 above. If voltage now is 12 VDC or greater, perform steps 2 and 3 above.
6. If the open circuit (disconnected) voltage reading is still below 12.6 VDC, the battery must be replaced. **To remove battery, air cleaner and air cleaner bottom must be removed.** See appropriate Service Manual for procedure.

IMPORTANT NOTE

Only remove air cleaner and air cleaner bottom if battery could not be charged to 12.6 VDC and battery must be removed and replaced.

INSTALLING MAXI-FUSE

NOTES

- The 40 amp Maxi-Fuse provides battery power to the ignition switch and ECM. The Maxi-Fuse is not installed at the factory. It is shipped in the fuse holder boot next to the socket.
 - It will also be necessary to install the fuel pump fuse that is located in a spare fuse location. See Service Manual.
1. See Figure 6-1. Remove fastener at upper corner of louvered cover and remove cover.

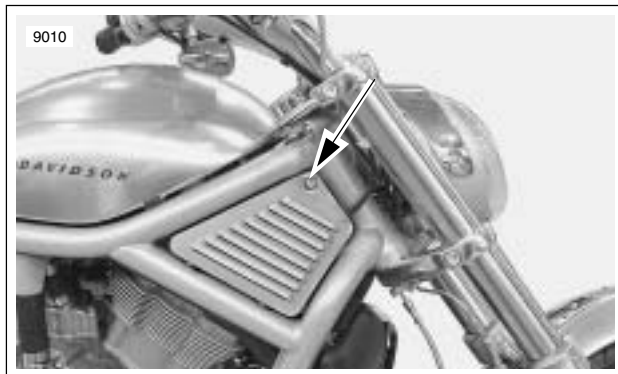


Figure 6-1. Removing Sidecover

2. See Figure 6-2. The fuse holder and boot is located just forward of the coolant reservoir. Fold back the flap on the fuse holder boot and insert the fuse into the fuse holder socket.
3. See Figure 6-1. Reinstall sidecover and secure with screw. Tighten to 4.1-6.8 Nm (30-60 in-lbs).



Figure 6-2. Inserting Maxi-Fuse

SEATS AND PASSENGER STRAP

Refer to VRSC Models Owner's Manual for seat and passenger strap removal and installation instructions.

ENGINE OIL LEVEL

CAUTION

Do **NOT** operate the engine when the oil level is below the add mark on the dipstick at operating temperature. Engine damage will result. (00187a)

CAUTION

To avoid over-filling the oil sump, wait approximately three minutes after adding oil before checking the oil level with the dipstick. An over-filled sump can cause engine damage. (00188a)

NOTE

This engine has a wet sump, an integral transmission, gear driven primary drive and wet clutch. This design allows engine oil in the sump to be used to lubricate the engine, transmission and primary drive. The clutch and primary drive housing is on the right side of the engine.

Cold Engine Oil Level Check

Check engine oil level with **engine COLD** as follows:

1. Stand motorcycle upright (not leaning on side stand) on a level surface.
2. See [Figure 6-3](#). Unscrew oil filler cap (with attached dipstick) by turning filler cap counterclockwise. Remove filler cap and dipstick and wipe dipstick clean.
3. Screw filler cap into engine. Make sure cap is fully seated on crankcase.
4. See [Figure 6-4](#). Remove filler cap and check oil level on dipstick.
5. If oil level is below midpoint on cross-hatched area on dipstick, add enough Harley-Davidson oil to bring level up to the midpoint shown in [Figure 6-4](#).



Figure 6-3. Oil Filler Cap (Left Side Of Engine)

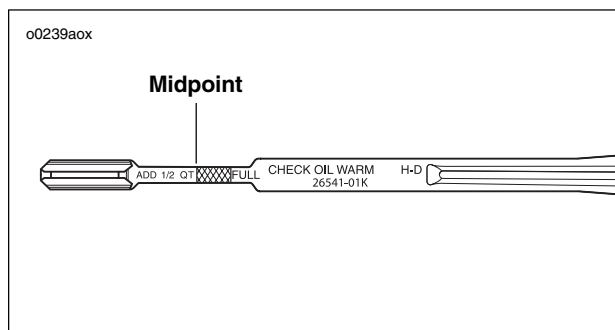


Figure 6-4. Engine Oil Dipstick

Hot Engine Oil Level Check

Check engine oil level with **engine at normal operating temperature as follows:**

1. Stop engine and allow oil to drain into sump for **about three minutes**.
2. Stand motorcycle upright (not leaning on side stand) on a level surface.
3. See [Figure 6-3](#). Unscrew filler cap (with attached dipstick) by turning filler cap counterclockwise. Remove filler cap and dipstick and wipe dipstick clean.
4. Screw filler cap into engine. Make sure cap is fully seated on crankcase.
5. See [Figure 6-4](#). Remove filler cap and check oil level on dipstick.
6. If oil level is below FULL mark on dipstick, add enough Harley-Davidson oil to bring level up to the FULL mark. Observe "CAUTIONS" stated above.

Pressure Cap Location

NOTES

- See [Figure 6-5](#). The pressure cap is located beneath seat behind the air box. Normally the pressure cap does not need to be removed. Coolant level can be checked at the expansion tank located on right side behind steering head. Coolant can be added at the expansion tank if level is low. To verify that the coolant system has been filled perform the check following these notes.
- See [Figure 6-6](#). If the coolant system is drained, remove the air bleed plug and then fill through filler neck at pressure cap.

Verifying Coolant System Is Filled

1. See [Figure 6-5](#). Remove pressure cap.
2. See [Figure 6-7](#). Gently squeeze center of hose (1) while looking into coolant filler neck. Coolant should rise in filler neck.
3. If coolant is not visible in filler neck, remove air bleed plug shown in [Figure 6-6](#).
4. Add enough premixed HARLEY-DAVIDSON EXTENDED LIFE ANTIFREEZE & COOLANT (Part No. 99822-02) so coolant is visible in filler neck. Replace air bleed plug and pressure cap. Tighten air bleed plug to 9-11 Nm (80-97 in-lbs).

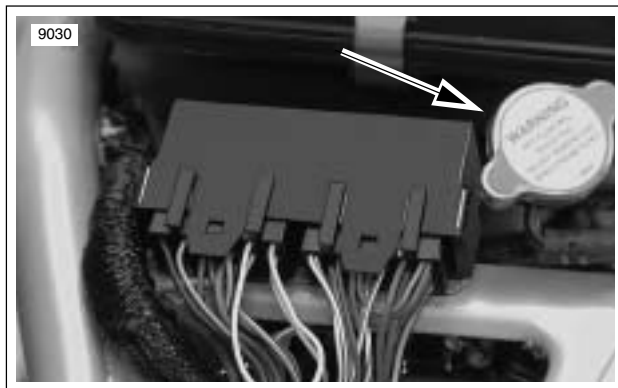


Figure 6-5. Pressure Cap

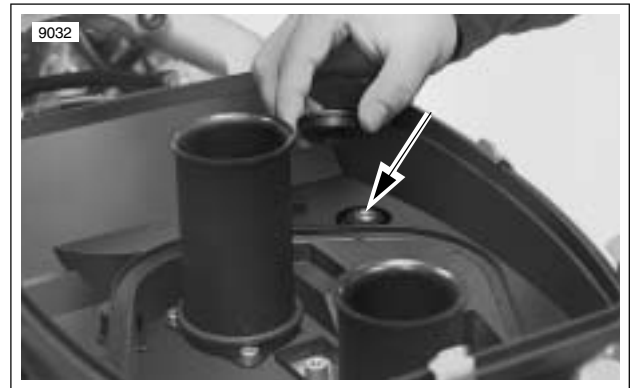
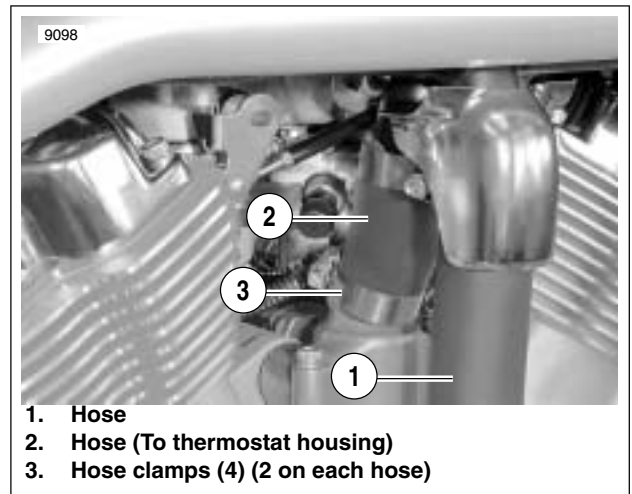


Figure 6-6. Coolant System Air Bleed Plug



1. Hose
2. Hose (To thermostat housing)
3. Hose clamps (4) (2 on each hose)

Figure 6-7. Coolant Hoses (Engine right side)

Check Hose Clamps For Tightness

1. See [Figure 6-7](#). Check the four hose clamps (two each on hoses) for tightness.
2. With a long bladed screwdriver check two hose clamps one at top left and one at top right of radiator.

NOTE

The engine ends of the radiator hoses are secured with a plastic "shrink" clamp and do not require checking.

Checking Coolant Level In Expansion Tank

1. See [Figure 6-8](#). Remove fastener at upper corner of louvered cover and remove cover.

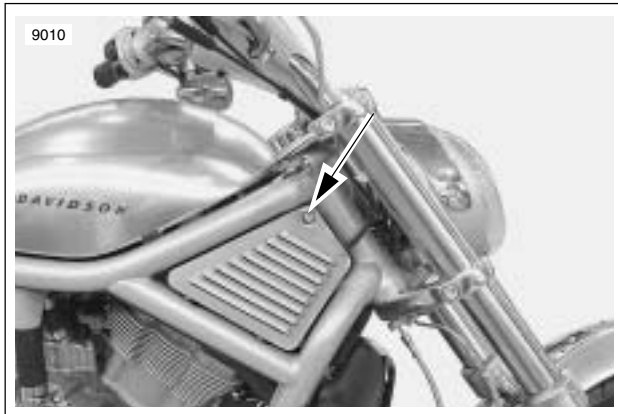


Figure 6-8. Removing Cover to Check Coolant Level

2. See [Figure 6-9](#). Check coolant level in expansion tank with coolant cold and vehicle resting on jiffy stand. If level is below “COLD FULL” line on tank, remove cap from tank and add premixed HARLEY-DAVIDSON EXTENDED LIFE ANTIFREEZE & COOLANT (Part No. 99822-02) until fluid level reaches “COLD FULL” line.

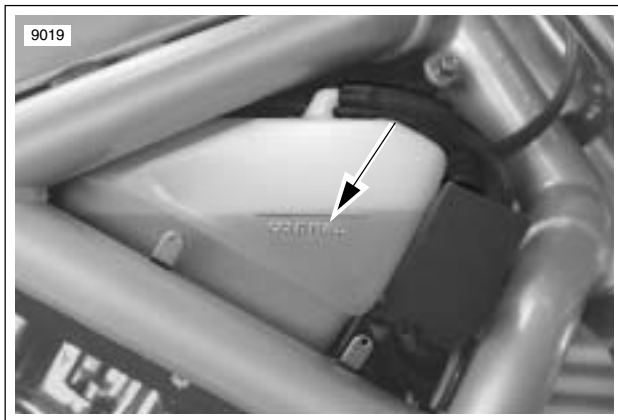


Figure 6-9. Cold Full Line On Expansion Tank

NOTE

Do not reinstall louvered cover now. The 40 amp fuse will be installed later in the fuse holder located just forward of the expansion tank.

CLUTCH MASTER CYLINDER

1. View reservoir sightglass and verify fluid presence. Sightglass should appear dark if fluid is present. If sightglass is not dark, add D.O.T. 5 SILICONE HYDRAULIC BRAKE FLUID (Part No. 99902-77). See Service Manual.

NOTES

- Use only D.O.T. 5 SILICONE HYDRAULIC BRAKE FLUID (Part No. 99902-77) in clutch master cylinder reservoir.
- Do not overfill clutch master cylinder reservoir. As clutch friction discs wear, the piston in the clutch cylinder will force fluid back into the reservoir and this could cause fluid overflow.

CAUTION

Direct contact of D.O.T. 5 brake fluid with eyes can cause eye irritation, swelling, and redness. Avoid eye contact. In case of eye contact flush with large amounts of water and get medical attention. Swallowing large amounts of D.O.T. 5 brake fluid can cause digestive discomfort. If swallowed, obtain medical attention. Use in well ventilated area. **KEEP OUT OF REACH OF CHILDREN.** (00144a)

CAUTION

D.O.T. 5 silicone hydraulic brake fluid is used in the hydraulic clutch. Do not use other types of fluids as they are not compatible and could cause equipment damage. (00204a)

GENERAL

CAUTION

Some fuel suppliers sell gasoline which has been blended with an alcohol or an ether. The type and amount of alcohol or ether added to the fuel is important.

CAUTION

Do not use gasoline that contains methanol. Doing so can result in fuel system component failure, engine damage and/or equipment malfunction. (00148a)

- Gasolines containing ETHANOL (ethyl alcohol or grain alcohol) can be used. Gasoline/ethanol blends are a mixture of 10% ethanol and 90% unleaded gasoline. They are identified as “gasohol,” “ethanol enhanced,” or “contains ethanol.”
- Gasolines containing METHYL TERTIARY BUTYL ETHER (MTBE) can also be used. Gasoline/MTBE blends are a mixture of gasoline and as much as 15% MTBE.
- REFORMULATED OR OXYGENATED GASOLINES (RFG): “Reformulated gasoline” is a term used to describe gasoline blends that are specifically designed to burn cleaner than other types of gasoline, leaving fewer “tailpipe” emissions. They are also formulated to evaporate less when you are filling your tank. Reformulated gasolines use additives to “oxygenate” the gas. Your motorcycle will run normally using this type of gas and Harley-Davidson recommends you use it when possible, as an aid to cleaner air in our environment

Because of their different chemical properties (which affect fuel volatility and ignition characteristics), these blends may adversely affect the starting, drivability, and fuel efficiency of the motorcycle. If you experience these problems, Harley-Davidson recommends using straight, unleaded gasoline

CAUTION

Use only unleaded fuel in California model catalytic converter-equipped motorcycles. Using leaded fuel will damage the emission control system. (00150a).

Partially fill fuel tank with gasoline. Use unleaded gasoline, 91 octane or higher on all VRSC models. Inspect fuel system for leaks.

HEADLAMP

WARNING

The automatic-on headlamp feature provides increased visibility of the rider to other motorists. Be sure headlamp is on at all times. Poor visibility of rider to other motorists can result in death or serious injury. (00030b)

Inspection

See Figure 6-10. Check headlamp beam for proper height and lateral alignment. Proceed as follows:

1. Verify correct front and rear tire inflation pressure.
2. Place motorcycle on level floor (or pavement) in an area with minimum light.
3. Point front of motorcycle toward a screen or wall which is 25 ft. (7.62 m) away from front tire contact patch on floor (i.e. directly below front axle).
4. Measure the vertical distance from center of headlamp to floor and draw a horizontal line, on screen or wall, at same height above floor.
5. Have a person, whose weight is roughly the same as that of the principal rider, sit on motorcycle seat. Weight of rider will compress vehicle suspension slightly.
6. Stand motorcycle upright with both tires resting on floor and with front wheel held in straight alignment (directly forward).
7. Turn ignition/light switch to "IGNITION" position. Set handlebar switch to high beam position.
8. Check light beam for proper height alignment. Main beam of light (broad, flat pattern of light) should be centered on horizontal line of screen or wall (i.e. equal area of light above and below line).

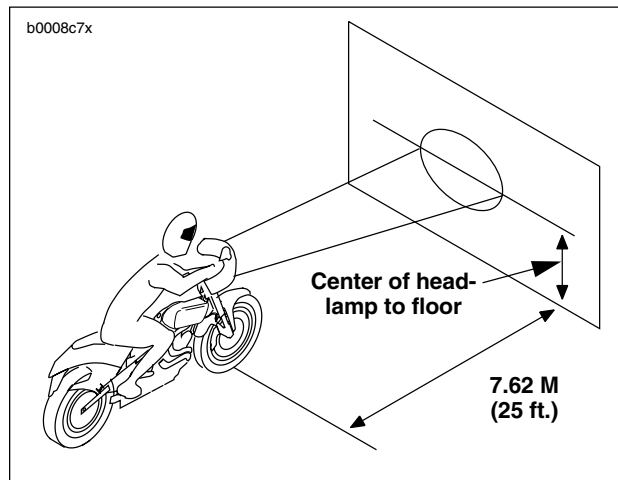


Figure 6-10. Checking Headlamp Alignment

Adjustment**VRSCA models:**

1. See Figure 6-11. Loosen headlamp adjustment screws, one on each side of headlamp
2. Tilt headlamp up or down to properly aim it in relation to the horizontal line.
3. Once the headlamp is properly adjusted, tighten both headlamp adjustment screws to 4.5-7.5 Nm (40-66 in-lbs).

NOTE

The lateral headlamp alignment on VRSCA models is established by the headlamp mounting and does not require adjustment.



Figure 6-11. Headlamp Adjustment-VRSCA Model

VRSCB models:

1. See Figure 6-12. Loosen headlamp clamp nut (1).
2. Tilt headlamp (6) up or down to properly aim it in relation to the horizontal line, and, at the same time, turn it right or left to direct light beam straight ahead.
3. Tighten headlamp clamp nut to 13.6-20.3 Nm (120-180 in-lbs) after headlamp is properly positioned.
4. Locate headlamp bracket plug (4), packaged in traveler included with motorcycle in crate. Snap plug into place in headlamp bracket (5).

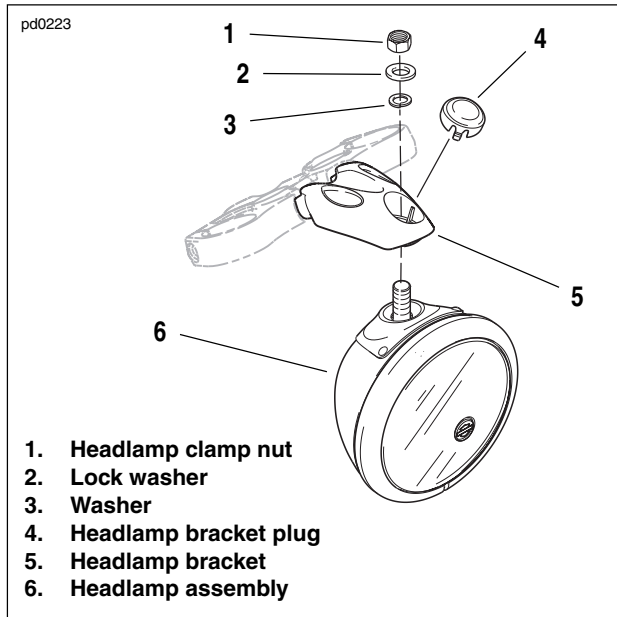


Figure 6-12. Headlamp Adjustment-VRSCB Model

INDICATOR LAMPS/CONTROLS

NOTES

- All VRSC models have an Instrument Module with self-diagnostic capabilities. Refer to VRSC Model Electrical Diagnostic Manual for service instructions.
 - VRSCSE models are equipped with a separate speedometer, tachometer and instrument console. See **BATTERY TESTING AND CHARGING** under **7.1 VRSCSE MODEL**.
1. View instrument cluster and turn ignition switch to "IGNITION" position. Check that the oil pressure indicator lamp turns on (before engine is started). The Check Engine indicator lamp will illuminate for about four seconds and then go off. If cycle is equipped with optional Security System (TSSM), a key icon (Security lamp) will illuminate for about four seconds and then go off. The Battery icon will illuminate to indicate low voltage. Fuel gauge should also indicate fuel tank level. Engine Coolant temperature icon will illuminate to verify bulb filament and then go off.

NOTE

For any systems problems, please refer to the appropriate Electrical Diagnostic manual for your model.

2. Shift transmission to neutral position, and verify that neutral indicator lamp turns on.
3. Start engine; check operation of starter.
4. Check that oil pressure indicator lamp turns off when engine is running above 1200 RPM. Check that battery icon turns off. Engine Coolant temperature icon must not illuminate.
5. Check that tachometer is functioning.
6. Disengage clutch (depress clutch lever), and verify that neutral indicator lamp turns off when transmission is shifted to any forward gear. Shift transmission to neutral position, and verify that neutral indicator lamp turns on again.
7. Check horn operation.
8. Check operation of all remaining lamps:
 - headlamp-low and high beams
 - headlamp high beam indicator lamp
 - left directional (turn signal) lamps-front and rear
 - left directional (turn signal) indicator lamp
 - right directional (turn signal) lamps-front and rear
 - right directional (turn signal) indicator lamp
 - left front running lamp
 - right front running lamp
 - tail lamp-running lamp and brake lamp filaments
9. After engine has reached normal operating temperature, turn engine off.
10. Check engine oil level in manner previously specified. This time, fill sump to upper mark on filler cap/dipstick.

CAUTION

To avoid over-filling the oil sump, wait approximately three minutes after adding oil before checking the oil level with the dipstick. An over-filled sump can cause engine damage. (00188a)

FRONT AND REAR TIRES

⚠️ WARNING

Do not inflate tire beyond maximum pressure as specified on sidewall. Over inflated tires can blow out, which could result in death or serious injury. (00027a)

⚠️ WARNING

Harley-Davidson front and rear tires are not the same. Interchanging front and rear tires can cause tire failure, which could result in death or serious injury. (00026a)

1. Check for proper front and rear tire pressures when tires are cold. Compare results against [Table 6-2](#).

Table 6-2. Tire Pressures

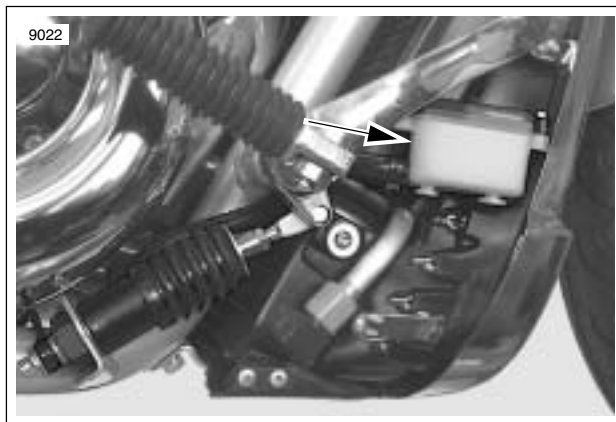
TIRES		SOLO RIDER		RIDER & PASSENGER	
MODEL	TIRE	kPA	PSI	kPA	PSI
VRSC	Front	248	36	248	36
	Rear	262	38	276	40

REAR BRAKE MASTER CYLINDER

CAUTION

Direct contact of D.O.T. 5 brake fluid with eyes can cause eye irritation, swelling, and redness. Avoid eye contact. In case of eye contact flush with large amounts of water and get medical attention. Swallowing large amounts of D.O.T. 5 brake fluid can cause digestive discomfort. If swallowed, obtain medical attention. Use in well ventilated area. **KEEP OUT OF REACH OF CHILDREN.** (00144a)

1. See Figure 6-13. Use a flashlight to view rear brake master cylinder located behind radiator cover. Verify that fluid level in rear brake master cylinder reservoir is 1/2 in. (12.7 mm) below reservoir top.



**Figure 6-13. Rear Brake Master Cylinder
(Radiator Cover Removed for Photo Clarity)**

2. If level is low, remove cover screws and cover, and add only D.O.T. 5 SILICONE HYDRAULIC BRAKE FLUID (Part No. 99902-77: 12 oz., 99901-77: 1 gal.). Replace cover. Tighten cover screws to 0.68-0.90 Nm (6-8 in-lbs).

WARNING

See Figure 6-14. If master cylinder or reservoir hose does not have 1/4 in. clearance, item (1), from exhaust pipe, loosen and reposition exhaust to obtain the 1/4 in. clearance. Refer to VRSC Model Service Manual for exhaust system instructions. Contact with the hot exhaust pipe could cause fluid leakage and reduced braking which could result in loss of vehicle control and death or serious injury.

3. See Figure 6-14. Check push rod length (3). Loosen jam nut and turn push rod with a wrench placed on push rod wrench flats if adjustment is required.

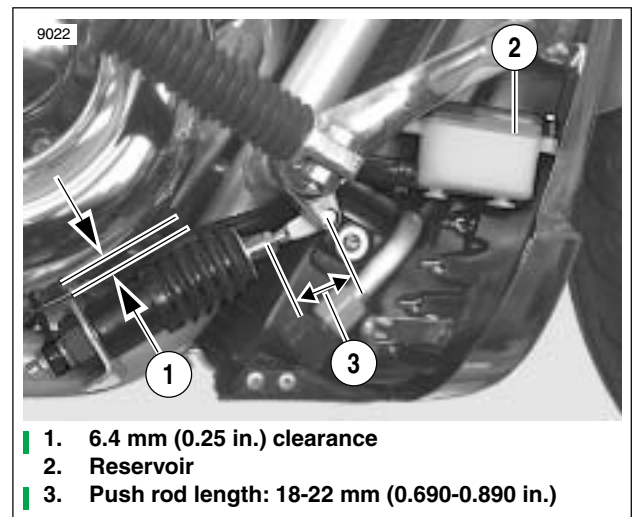


Figure 6-14. Rear Brake Pedal Adjustments

ROAD TEST

After you complete motorcycle inspection, take motorcycle for a road test. Check all systems and overall operation of motorcycle: engine, transmission, clutch, brakes, handling, etc.

After road test, return motorcycle to shop, and thoroughly clean off any road dirt. Check and correct any problems you may have found during road test.

Before You Begin

Check the following items before road test of vehicle:

- Lamps and indicators.
- Check amount of gasoline in tank and add (if needed).
- Adjust mirrors to proper riding positions.
- Check tire condition and pressure (adjust if necessary).
- Check controls to verify proper function.
- Check all electrical equipment and switches including stop lamp, turn signals and horn for proper operation.

Road Test of Vehicle: Low Speed

1. Shift from first through third gear, checking clutch operation, throttle control, and transmission operation.
2. Verify low speed braking for front and rear brakes.
3. Handling under braking conditions.
4. Low speed handling. Verify that vehicle does not pull to left or right.
5. Check for any abnormal vibrations.
6. Check electrical lamps, indicators.

Road Test of Vehicle: Highway Speed

1. Shift from first through fifth gear, checking clutch operation, throttle control, and transmission operation.
 2. Verify highway speed braking operation of front and rear brakes.
 3. Verify proper handling at highway speeds.
 4. Check for any abnormal vibrations.
- **Program Security System (if equipped)**
 - **Engine Oil:**
Check and correct hot level.
 - **Clean Vehicle**

NOTE

Be sure to submit a Dealer Product Quality Audit (DPQA) on ANY adjustments and/or warranty work performed required to deliver the vehicle to the customer.

NOTICE TO DEALER

Before delivering motorcycle to owner, perform the following:

1. Make sure vehicle owner receives, and is aware of importance of reading Owner's Manual, safety booklets and viewing **Welcome To The Family** video included with owner's kit.
2. Review warranties with vehicle owner. Make sure owner understands warranties. California dealers must give customer a copy of Emissions Control System Warranty.
3. Give IMPORTANT sheet and other printed material in literature kit to vehicle owner.
4. Complete and sign warranty registration form. Have vehicle owner sign it.
5. Explain operation of vehicle controls to vehicle owner.
6. Explain how turn signals and emergency flashers operate.

IMPORTANT NOTES

- *The bright anodized finish on air box cover and fenders requires special care. Also the wheels, rear fork (swingarm) and all components painted with a special Silver paint require special care. The painted finish on frame, air box cover and fenders on the VRSCSE model requires special care. An Instruction Sheet covering care of this motorcycle has been added to the Owner's Kit. Review this Instruction Sheet with the Customer and answer any questions he or she may have.*
 - *If motorcycle is equipped with a TSSM, make sure key fob (remote control) and personal code have been assigned to control the Harley-Davidson Factory Security System. If a personal code is not assigned and key fob is lost or damaged while vehicle is armed, TSSM must be replaced. Make sure vehicle owner understands how to arm and disarm security system. Explain how to disarm security system with personal code if key fob is lost or not functioning. Personal code should be written on the tear-out card in VRSC Models Owner's Manual and kept on the owner's person. Also, verify both key fobs operate properly.*
7. Whenever possible, introduce dealer Service Manager to vehicle owner, and involve Service Manager in delivery process. Supply owner with name(s) of dealer Service/Parts Department personnel who should be contacted regarding vehicle service/parts questions.
 8. Inform vehicle owner about checking engine oil level, checking tire pressure, and performing other basic maintenance functions. Review the **Initial Scheduled Maintenance** requirement with owner. Depending on owner's anticipated frequency of operating motorcycle, you may wish to schedule the **Initial Scheduled Maintenance** service appointment at this time.

PRIOR TO CUSTOMER DELIVERY

NOTE

Use this checklist for performing tasks related to this model motorcycle setup.

- Uncrate:**
Check for damaged or missing parts.
- Jiffy Stand:**
Verify proper function.
- Note Any Additional Problems (including cosmetic quality):**
Perform Warranty repairs.
- Battery:**
Perform required voltmeter test on Maxi-Fuse (main fuse) and battery.
- Install Maxi-Fuse (main fuse).**
- Install Fuel Pump Fuse.**
- Lubrication System:**
Inspect condition of oil lines.
- Engine Oil:**
Verify oil is present (cold level).
- Primary Chaincase:**
Check and verify lubricant is present.
- Fuel System:**
 - a. Inspect fuel system for leaks.
 - b. Fill, verify sender operation.
 - c. Verify low fuel light operation.
- Cooling System:**
 - a. Check and correct fluid level (if necessary).
 - b. Check radiator hose clamps for tightness.
- Evaporative Control System:**
Inspect hose routings, connections and fuel tank venting to canister (if equipped).
- Lighting, Gauges, Electrical Systems:**
Verify correct operation.
- Tires:**
Inspect condition and air pressure.
- Brake Systems (front and rear):**
Correct fluid level (if necessary).
- Clutch Fluid:**
Correct fluid level (if necessary).

- Throttle Cable Adjustment (if necessary).**
- Handlebars, Controls and Seat Strap:**
Adjust and tighten (if necessary).
- Headlamps:**
Inspect and adjust as necessary.
- Mirrors:**
Inspect and adjust as necessary.
- Road Test Vehicle: Low Speed**
 - a. Shift from first through third gear, checking clutch operation, throttle control, and transmission operation.
 - b. Verify low-speed braking for front and rear brakes.
 - c. Verify handling under braking conditions.
 - d. Verify low-speed handling. Verify that vehicle does not pull to left or right.
 - e. Check for any abnormal vibrations.
 - f. Check electrical lamps, indicators.
- Road Test Vehicle: Highway Speed**
 - a. Shift from first through fifth gear, checking clutch operation, throttle control, and transmission operation.
 - b. Verify highway speed braking operation of front and rear brakes.
 - c. Verify proper handling at highway speeds.
 - d. Check for any abnormal vibrations.
- Engine Oil:**
Check and correct hot level.
- Create Vehicle Birth-Certificate Using Digital Technician (optional).**
- Clean Vehicle.**

AT POINT OF CUSTOMER DELIVERY

- Suspension Adjustments.**
- Brake Pedal Height Adjustment.**
- Shift Linkage Adjustment.**
- Brake Hand Lever Adjustment.**
- Review Vehicle Care and Maintenance Requirements.**

NOTE

Be sure to submit a Dealer Product Quality Audit (DPQA) on ANY adjustments and/or warranty work performed required to deliver the vehicle to the customer.

PREDELIVERY: CVO MODELS

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GENERAL

Follow the instructions in section I (All Models) and Section VI (VRSC Models) and the following instructions to perform the predelivery setup procedure on the VRSCSE model.

This motorcycle is equipped with the Harley-Davidson Factory Security System and siren.

UNCRATING

The VRSCSE is shipped in a “turn-wheel” crate which allows the handlebar to be shipped in position on the handlebar risers.

Remove foam block from left handlebar grip. Remove plastic end caps from both handlebar grips. Discard foam block and plastic end caps.

Check Contents of Crate

Check that the following items are in a box in the crate:

- Motorcycle cover inside a storage bag
- Owner’s kit
- Two mirror kits
- CVO ignition key

NOTE

If any parts are missing, call 1-800-695-2925 or Fax 1-717-852-6717. Provide your Dealer name, number, person to contact, part number of missing item, and Motorcycle VIN.

BATTERY TESTING AND CHARGING

⚠ WARNING

Batteries contain sulfuric acid, which could cause severe burns to eyes and skin. Wear a protective face shield, rubberized gloves and protective clothing when working with batteries. **KEEP BATTERIES AWAY FROM CHILDREN.** (00063a)

⚠ WARNING

Never remove warning label attached to top of battery. Failure to read and understand all precautions in warning could result in death or serious injury. (00064a)

⚠ WARNING

Battery posts, terminals and related accessories contain lead and lead components, chemicals known in the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling. (00019a)

NOTES

- The engine is equipped with a compression release, so a smaller (12 amp hour) battery provides adequate starting current.
- It will be necessary to remove the airbox cover to gain access to the battery.

Removing Airbox Cover

1. Unlock and open seat.
2. See [Figure 7-1](#). Unlatch and lift rear of airbox cover a few inches.
3. Disconnect console connector.
4. Carefully slide airbox cover back to disengage locating pins at front of cover from mounting tabs on frame. Remove cover.

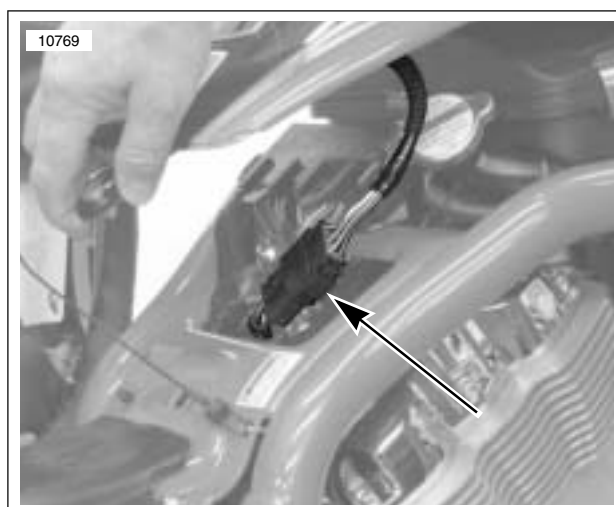


Figure 7-1. Console Connector

Testing and Charging Battery

1. Place test probes of voltmeter on battery terminals and check the voltage of the battery to make sure it is at least 12.6 VDC.
2. If the open circuit (disconnected) voltage reading is 12.6 VDC or greater the battery is ready for use.
3. See Section 1. Mark the date on the battery warranty tag by removing the applicable month and year. Month and year punches may be removed with the point of a screwdriver without removing battery.
4. If the open circuit (disconnected) voltage reading is below 12.6 VDC, refer to Table 1-2, 12 amp-hour battery, in Section 1 and charge battery at rate and time specified.
5. Recheck battery voltage by repeating step 1 above. If voltage now is 12 VDC or greater, perform steps 2 and 3 above.
6. If the open circuit (disconnected) voltage reading is still below 12.6 VDC, the battery must be replaced. **To remove battery, air cleaner and air cleaner bottom must be removed.** See appropriate Service Manual for procedure.

IMPORTANT NOTE

Only remove air cleaner and air cleaner bottom if battery could not be charged to 12.6 VDC and battery must be removed and replaced.

Installing Airbox Cover

1. Carefully install airbox cover over airbox. Be careful not to scratch or damage airbox cover, console or speedometer. Engage locating pins on front of airbox cover with tabs on frame.
2. See Figure 7-1. Connect console connector halves together.
3. Lower rear of airbox cover onto frame and latch in place.
4. Close and lock seat.

INDICATOR LAMPS AND DISPLAYS

1. See Figure 7-2. View indicator lamps and displays and turn ignition switch to "IGNITION" position. Check that the oil pressure indicator lamp (12) turns on (before engine is started). The Check Engine indicator lamp (2) will illuminate for about four seconds and then go off. The security lamp (5) will illuminate for about four seconds and then go off. The Battery icon (4) will illuminate to indicate low voltage. Fuel gauge (7) should also indicate fuel tank level. Engine Coolant temperature lamp (1) will illuminate to verify bulb filament and then go off.

NOTE

For any systems problems, please refer to the appropriate Electrical Diagnostic manual for your model.

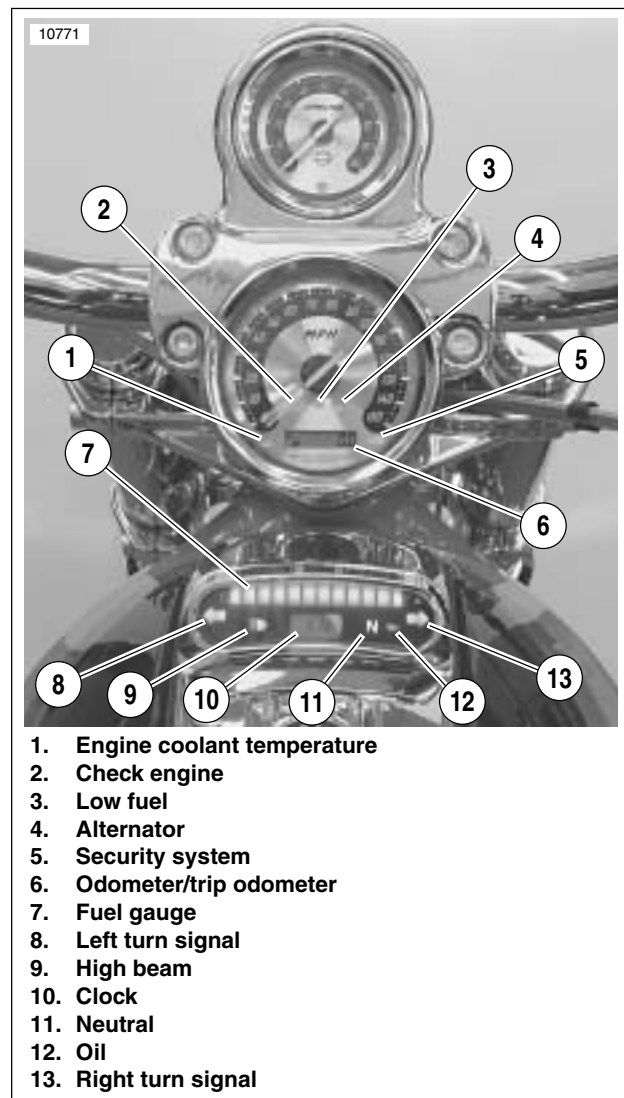


Figure 7-2. VRSCSE Indicator Lamps and Displays

2. Shift transmission to neutral position, and verify that neutral indicator lamp turns on.
3. Start engine; check operation of starter.
4. Check that oil pressure indicator lamp (12) turns off when engine is running above 1200 RPM. Check that battery icon (4) turns off. Engine Coolant temperature icon (1) must not illuminate.
5. Check that tachometer is functioning.
6. Disengage clutch (squeeze clutch lever), and verify that neutral indicator lamp (11) turns off when transmission is shifted to any forward gear. Shift transmission to neutral position, and verify that neutral indicator lamp turns on again.
7. Check horn operation.
8. Check operation of all remaining lamps:
 - headlamp—low and high beams
 - headlamp high beam indicator lamp (9)
 - left directional (turn signal) lamps—front and rear
 - left directional (turn signal) indicator lamp (8)
 - right directional (turn signal) lamps—front and rear
 - right directional (turn signal) indicator lamp (13)
 - left front running lamp
 - right front running lamp
 - tail lamp—running lamp and brake lamp filaments
9. After engine has reached normal operating temperature, turn engine off.
10. Check engine oil level in manner previously specified. This time, fill sump to upper mark on filler cap/dipstick.

CAUTION

To avoid over-filling the oil sump, wait approximately three minutes after adding oil before checking the oil level with the dipstick. An over-filled sump can cause engine damage. (00188a)

ADJUSTING HANDLEBARS

The VRSCSE is shipped with the handlebars adjusted to a standard riding position. If handlebars need to be adjusted for more comfortable rider position, proceed as follows:

1. Loosen, but do not remove, all four handlebar riser clamp screws.
2. Raise or lower handlebars to desired position. Make certain handlebars are centered side-to-side in risers.
3. Tighten two front handlebar clamp screws until top and bottom risers meet (no gap in front). DO NOT tighten screws to more than 20.3 Nm (15 ft-lbs).
4. Tighten rear handlebar clamp screws to 16.3-20.3 Nm (12-15 ft-lbs).
5. Final tighten front handlebar clamp screws to 16.3-20.3 Nm (12-15 ft-lbs).

ADJUSTING HANDLEBAR CONTROLS

If handlebar controls and clutch and brake lever assemblies are incorrectly positioned, they may be rotated slightly for more comfortable riding position.

CAUTION

Do not rotate front brake lever assembly too far. Brake master cylinder fits into a machined relief in handlebar. If not properly located in the machined relief, master cylinder can be damaged when clamp screws are tightened. Handlebar surface contains range marks to properly locate brake and clutch master cylinder and control assemblies. These assemblies **MUST** be located within that range.

To adjust handlebar controls, proceed as follows:

1. See [Figure 7-3](#). Loosen (but do not remove) brake and clutch lever assembly clamp screws (1) and handlebar switch housing screws (2).

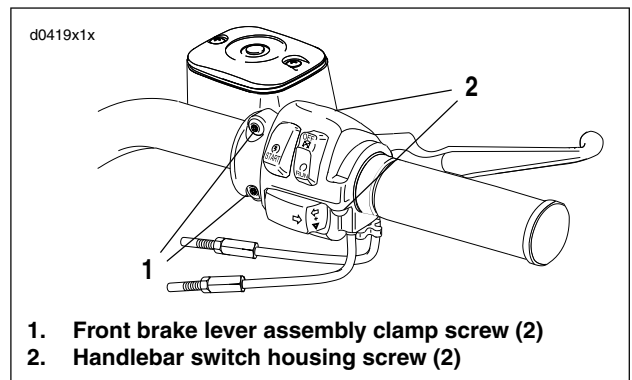


Figure 7-3. Handlebar Lever and Control Mounting Screws (Right Side Shown)

2. See [Figure 7-4](#). Range marks (4) are located on bottom of handlebar adjacent to brake lever clamp assembly. Rotate right control and brake master cylinder assembly (2) **slightly** for most comfortable position. Make sure control assembly is positioned so that clamp mating surface (3) is located in area between range marks.

CAUTION

Control wiring is routed inside handlebar and may be pinched or cut if controls are rotated too far.

3. Beginning with top screw, tighten right lever assembly clamp screws to 6.8-9.0 Nm (60-80 **in-lbs**).
4. Beginning with lower screw, tighten right handlebar switch housing screws to 4.0-5.1 Nm (35-45 **in-lbs**).

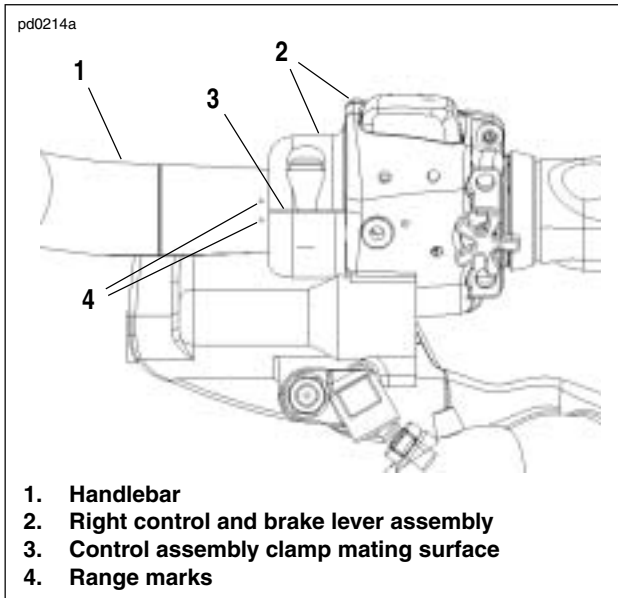


Figure 7-4. Right Handlebar Control Assembly (Bottom View)

5. Orient the left handlebar control assembly to match the position of the right handlebar control assembly.

CAUTION

Control wiring is routed inside handlebar and may be pinched or cut if controls are rotated too far.

6. Beginning with top screw, tighten left lever assembly clamp screws to 6.8-9.0 Nm (60-80 **in-lbs**).
7. Beginning with lower screw, tighten left handlebar switch housing screws to 4.0-5.1 Nm (35-45 **in-lbs**).
8. Test handlebar switches to make sure they are functioning properly and wiring has not become pinched or otherwise damaged.

Check Hose Clamps For Tightness

1. See Figure 7-5. If necessary, remove four screws (1) and decorative cover (2) from water pump hose.
2. Check the four hose clamps (two each on hoses) for tightness.
3. If removed, install decorative cover with four screws.
4. With a long bladed screwdriver check two hose clamps one at top left and one at top right of radiator.

NOTE

The engine ends of the radiator hoses are secured with a plastic "shrink" clamp and do not require checking.

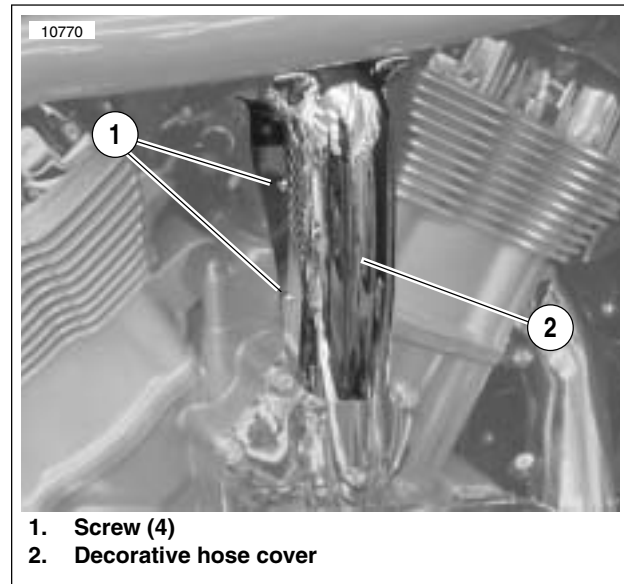


Figure 7-5. Coolant Hose Cover (Engine right side)

CHECKING CLUTCH FLUID

CAUTION

D.O.T. 5 silicone hydraulic brake fluid is used in the hydraulic clutch. Do not use other types of fluids as they are not compatible and could cause equipment damage. (00204a)

CAUTION

Do NOT allow foreign matter to enter the clutch master cylinder reservoir. dirt or debris in the reservoir may cause improper operation of the clutch and equipment damage.

CAUTION

Direct contact of D.O.T. 5 brake fluid with eyes can cause eye irritation, swelling, and redness. Avoid eye contact. In case of eye contact flush with large amounts of water and get medical attention. Swallowing large amounts of D.O.T. 5 brake fluid can cause digestive discomfort. If swallowed, obtain medical attention. Use in well ventilated area. KEEP OUT OF REACH OF CHILDREN. (00144a)

The clutch is hydraulically actuated. See [Figure 7-6](#). The clutch master cylinder fluid reservoir is located on the left handlebar.



Figure 7-6. Clutch Master Cylinder Reservoir

1. Stand the motorcycle upright (not leaning on the jiffy stand) on a level surface. Turn the handlebars to the right if necessary, so the top of the clutch master cylinder reservoir is level.
2. View reservoir sightglass on reservoir cover and verify fluid presence. Sightglass should appear dark if fluid is present. If sightglass is not dark, add brake fluid. See Service Manual. Use only D.O.T. 5 SILICONE HYDRAULIC BRAKE FLUID (Part No. 99902-77: 12 oz., 99901-77: 1 gal.).

MIRRORS AND TURN SIGNALS

The mirrors are enclosed in a box in the crate. Install mirrors and adjust for proper rear view as follows:

1. See Figure 7-7. Place spacer (10) onto right side mirror stem, slide mirror stem down through hole in front brake master cylinder assembly and right turn signal bracket (5). Install lockwasher (8) and screw on acorn nut (7) finger tight.
2. In the same fashion, install left side mirror assembly.
3. Adjust mirrors so a small portion of the rider's shoulder is visible in each mirror. This helps establish the relative distance of vehicles to the rear of the motorcycle.
4. Tighten acorn nuts to 6.8-9.0 Nm (60-96 in-lbs).
5. To adjust turn signals:
 - a. Loosen set screws (9) approximately 1/8 turn.

NOTE

It is not necessary, nor desirable, to completely remove set screw to re-adjust turn signal housing. It is only necessary to loosen set screw 1/8 turn, adjust turn signal and re-tighten set screw. Nylon lock pellet on set screw maintains locking ability after many loosening/tightening cycles. If set screw is completely removed, it should be replaced.

- b. Position front turn signal housings (1, 2) evenly with lenses pointing straight ahead.
- c. Tighten each set screw to 5.7-6.8 Nm (50-60 in-lbs).

SEATS AND PASSENGER STRAP

Refer to VRSC Models Owner's Manual for seat and passenger strap removal and installation instructions.

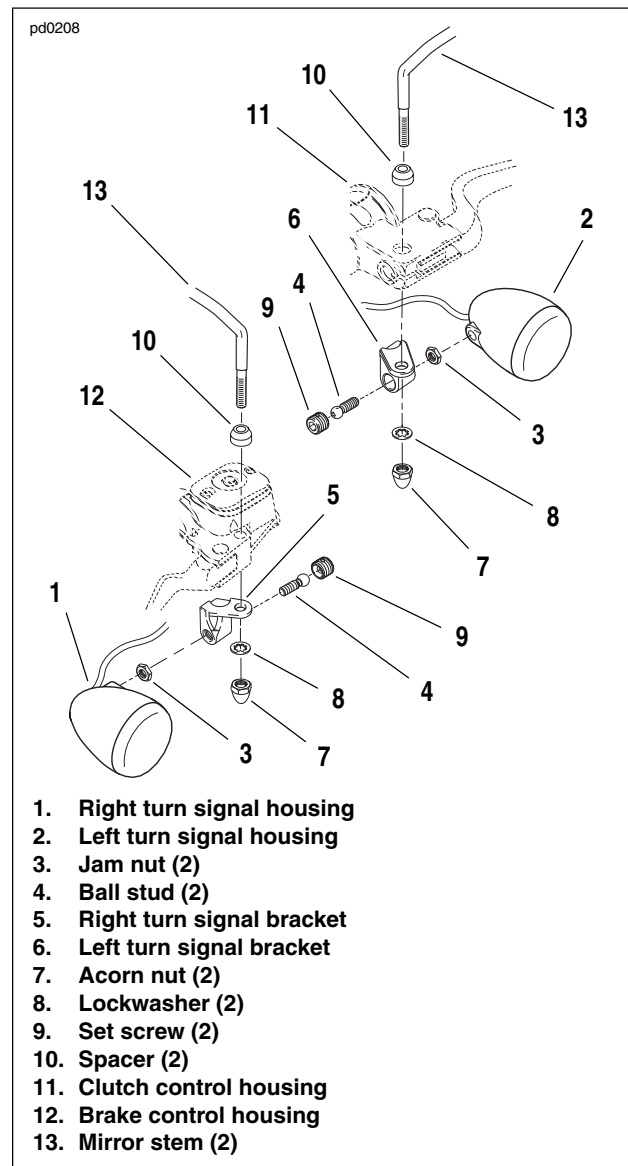


Figure 7-7. Turn Signals

FOOTREST ADJUSTMENT

If it is necessary to rotate rider or passenger footrests for customer comfort, proceed as follows:

1. See [Figure 7-8](#). Remove screw (2) and footrest rubber insert (3) from footrest assembly (1).
2. See [Figure 7-9](#). Loosen footrest adjustment screw. Rotate footrest assembly to desired angle. Tighten screw to 25.8 Nm (19 ft-lbs).
3. See [Figure 7-8](#). Reinstall rubber insert (3) into footrest assembly (1) and secure with screw (2). Tighten to 4.0-6.0 Nm (35-53 in-lbs).

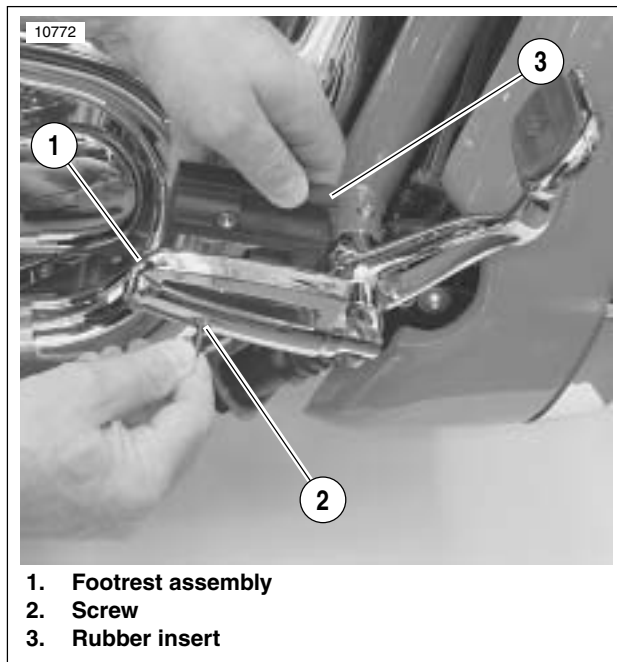


Figure 7-8. Removing Footrest Rubber Insert

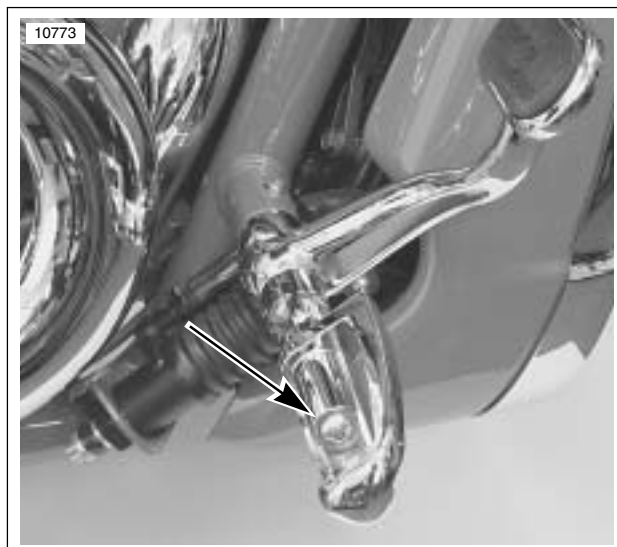


Figure 7-9. Footrest Adjustment Screw

FINAL PREDELIVERY INSPECTIONS

CAUTION

Do not use sharp objects to peel protective film from console insert and clutch release cover in the next two steps. Sharp objects can scratch and damage finished surfaces.

1. The airbox console insert is protected during shipment by a clear plastic film. Carefully peel the film away from the console insert.
2. The clutch release cover (righthand side of engine) is protected during shipment by a clear plastic film. Carefully peel the film away from the clutch release cover.

NOTE

Perform all the remaining Predelivery Inspections given in Section I (All Models) and Section VI (VRSC Models) that apply to the VRSCA.

DO NOT REPEAT INSPECTIONS THAT WERE PERFORMED IN THIS SECTION.

GENERAL

CAUTION

The FLHTCSE² model is shipped from the factory with SYN-3[®] lubricant exclusively in the engine, primary and transmission. If there is a need to top off lubricants, **DO NOT use standard lubricants and do not mix lubricants as damage to the motorcycle can result.**

Follow the instructions in section I (All Models) and Section II (Touring Models) and the following instructions to perform the pre-delivery setup procedure on the FLHTCSE² model.

This motorcycle is equipped with the Harley-Davidson Factory Security System and siren.

NOTE

FLHTCSE² models sold in the Australian market are not equipped with a siren.

UNCRATING

CAUTION

Roll motorcycle rearward off pallet slowly to avoid striking the oil cooler on the skid and causing damage to the motorcycle.

Check Contents of Crate

Verify that the following items have been included:

NOTE

Keep garage door opener receiver with vehicle for delivery to customer.

- The following items are shipped in the Tour-Pak[®] and saddlebags:
 - Tour-Pak mounting hardware kit
 - Tour-Pak support tube
 - Garage door opener receiver
 - Wind deflector
 - Tool pouch
 - Maxi-Fuse and cover
 - Data link plug
 - Keys (including CVO key)
 - Motorcycle cover
 - Owner's kit (including owner's manual cover for vehicles sold in domestic markets only).
 - Antenna (shipped by right floorboard)
 - Key fobs
 - Leather care
 - Saddlebag liners
 - Tour-Pak liner
 - Passenger backrest (detachable sissy bar)
- A rider backrest is mounted on the vehicle.

NOTE

If any parts are missing, call 1-800-695-2925 or Fax 1-717-852-6717. Provide your Dealer name, number, person to contact, part number of missing item, and Motorcycle VIN.

ADJUSTING HANDLEBAR CONTROLS

CAUTION

Control wiring is routed inside handlebar and may be pinched or cut if controls are rotated too far.

CAUTION

Do not rotate front brake or clutch master cylinder assemblies too far. If not properly located, master cylinder can be damaged when clamp screws are tightened. Handlebar surface contains range marks to properly locate brake and clutch master cylinder and control assemblies. These assemblies **MUST** be located within that range.

If necessary, adjust handlebar controls as follows:

- See Figure 7-10. Loosen (but do not remove) front brake lever assembly clamp screws (1) and handlebar switch housing screws (2).

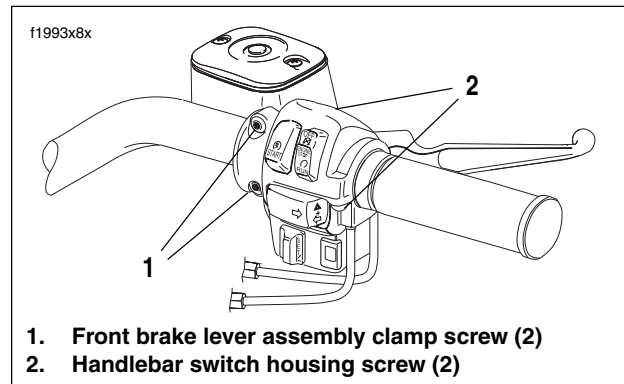


Figure 7-10. Handlebar Lever and Control Mounting Screws (Right Side Shown)

2. See [Figure 7-11](#). Range marks (4) are located on bottom of handlebar adjacent to front brake lever clamp assembly. Rotate switch housing and front brake master cylinder assembly (2) **slightly** for most comfortable position. Make sure control assembly is positioned so that clamp mating surface (3) is located in area between range marks.
3. Beginning with top screw, tighten assembly clamp screws to 60-80 **in-lbs** (6.8-9.0 Nm).
4. Beginning with lower screw, tighten handlebar switch housing screws to 35-45 **in-lbs** (4-5 Nm).
5. Repeat steps 1-4 above for clutch master cylinder and switch housing assemblies on left handlebar.
6. Test handlebar switches to make sure they are functioning properly and wiring has not become pinched or otherwise damaged.

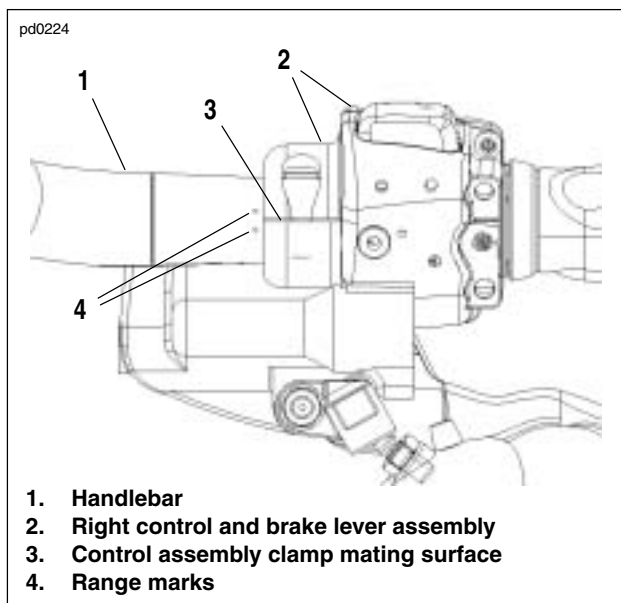


Figure 7-11. Handlebar Control Assembly (Bottom View, Right Side Shown)

MIRRORS

Mirrors are installed on motorcycle and are rotated upside down for shipping. Remove mirrors, re-install in correct orientation and adjust for proper rear view. See [Touring Models Service Manual](#) for mirror installation procedure.

CHECKING CLUTCH FLUID

CAUTION

D.O.T. 4 hydraulic brake fluid is the only type of fluid that should be used in the hydraulic clutch. Do not use other types of fluid as they are not compatible and could cause equipment damage.

CAUTION

Do NOT allow foreign matter to enter the clutch master cylinder reservoir. dirt or debris in the reservoir may cause improper operation of the clutch and equipment damage.

CAUTION

D.O.T. 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)

⚠ CAUTION

Direct contact of D.O.T. 4 brake fluid with eyes can cause irritation. Avoid eye contact. In case of eye contact flush with large amounts of water and get medical attention. Swallowing large amounts of D.O.T. 4 brake fluid can cause digestive discomfort. If swallowed, obtain medical attention. Use in well ventilated area. KEEP OUT OF REACH OF CHILDREN. (00240a)

The clutch is hydraulically actuated. See [Figure 7-12](#). The clutch master cylinder fluid reservoir is located on the left handlebar.

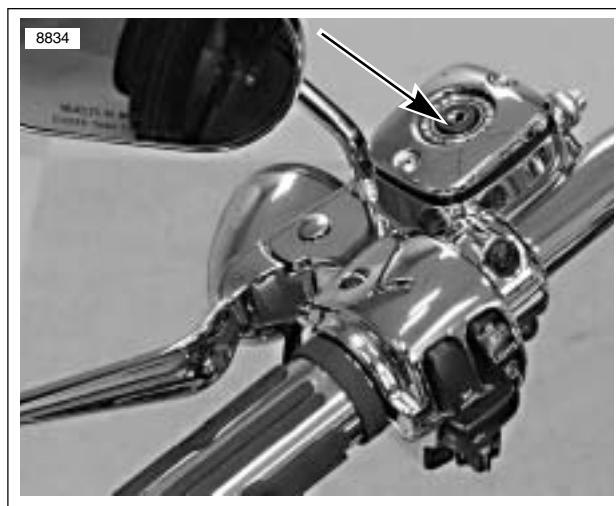


Figure 7-12. Clutch Master Cylinder Reservoir

1. Stand the motorcycle upright (not leaning on the jiffy stand) on a level surface. Turn the handlebars to the right if necessary, so the top of the clutch master cylinder reservoir is level.
2. View reservoir sightglass on reservoir cover and verify fluid presence. Sightglass should appear dark if fluid is present. If sightglass is not dark, add brake fluid. See Service Manual. Use only D.O.T. 4 HYDRAULIC BRAKE FLUID (Part No. 99953-99A). Wash all residue of D.O.T. 4 brake fluid spills off vehicle with water.

REMOVABLE RIDER BACKREST

Rider backrest is installed on seat at factory. Refer to FLHTCSE² Owner's Manual for backrest and seat removal/installation instructions.

WIND DEFLECTOR

The wind deflector is shipped in the saddlebag. Unpack and mount on vehicle following the [INSTALLING WINDSHIELD](#) Section of the Touring section.

REMOVABLE TOUR-PAK

See [Figure 7-13](#). The Tour-Pak assembly mounts on the two rear mounting points (1) on each side of the vehicle.

NOTE

Assembly of the Tour-Pak to its mounting bracket is facilitated with the help of an assistant.

1. See [Figure 7-14](#). The FLHTCSE² is shipped with the Tour-Pak (1) mounted forward of its normal mounting position, on the removable mounting bracket (2) with a cardboard shipping spacer (3) in between Tour-Pak and mounting bracket. This temporary mounting allows motorcycle to fit in shipping crate.
2. Open Tour-Pak lid and remove three long screws, washers and nuts that secure Tour-Pak to removable mounting bracket. Remove and discard long screws, washers, nuts and cardboard shipping spacer.

NOTE

See [Figure 7-15](#). Removable mounting bracket has two sets of holes for mounting Tour-Pak. The rear set of holes will be used to mount the Tour-Pak.

CAUTION

When assembling Tour-Pak and mounting bracket, be careful to avoid damaging painted surfaces.

3. See [Figure 7-16](#). Place Tour-Pak on its front surface on a clean, soft cloth or mat, being careful not to damage painted surfaces.
4. See [Figure 7-17](#). Locate five screws (1), ten washers (2), five saddle spacers (4), five locknuts (6), removable mounting bracket (5) and support tube (3).

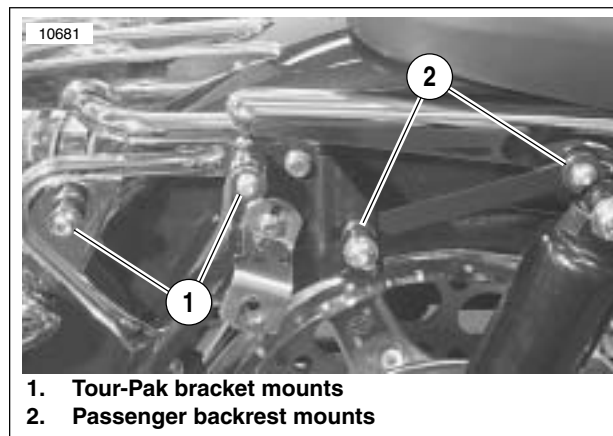


Figure 7-13. Passenger Backrest and Tour-Pak Docking Locations

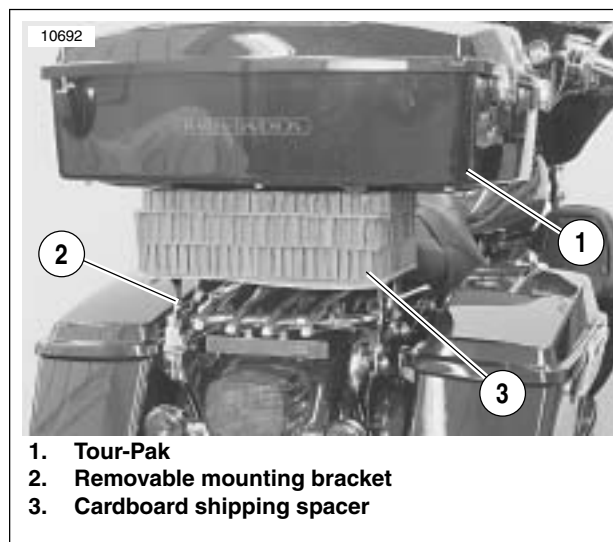


Figure 7-14. Tour-Pak Mounting Assembly as Shipped

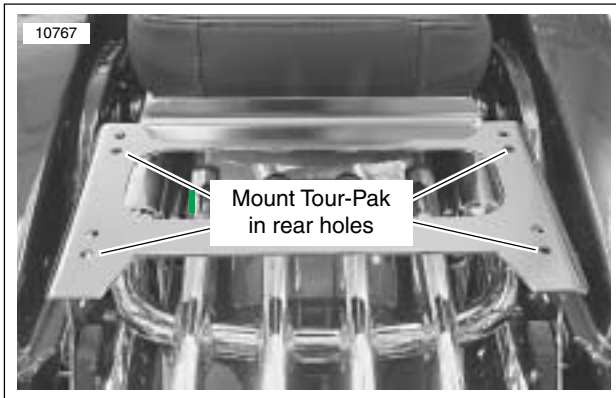
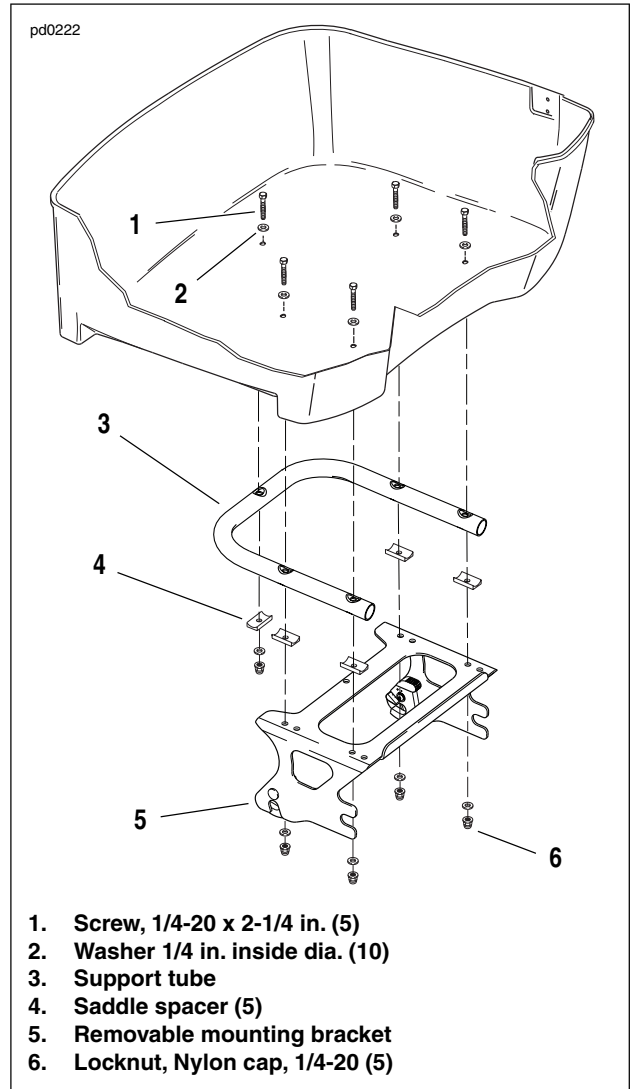


Figure 7-15. Removable Mounting Bracket



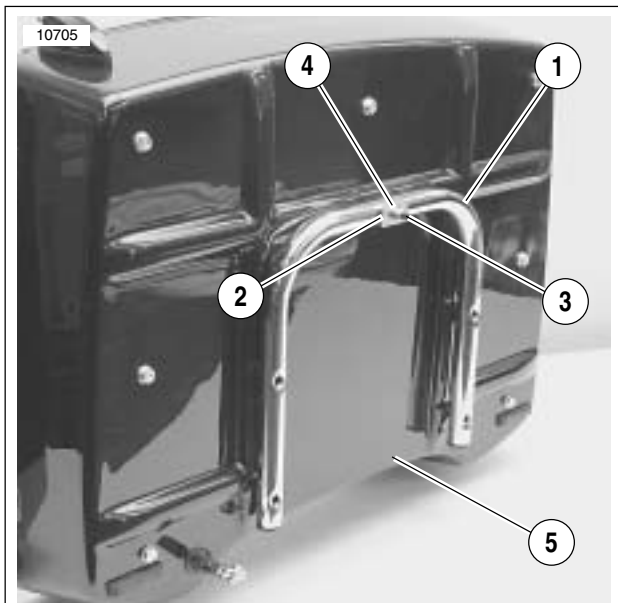
Figure 7-16. Positioning Tour-Pak for Assembly



1. Screw, 1/4-20 x 2-1/4 in. (5)
2. Washer 1/4 in. inside dia. (10)
3. Support tube
4. Saddle spacer (5)
5. Removable mounting bracket
6. Locknut, Nylon cap, 1/4-20 (5)

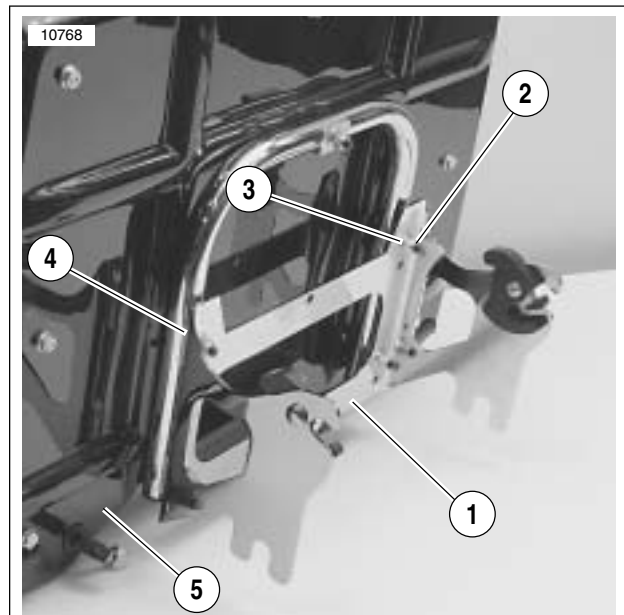
Figure 7-17. Tour-Pak Mounting

5. See **Figure 7-18**. Insert one screw with washer through rear-most hole in Tour-Pak. Slide support tube onto screw.
6. Install one saddle spacer onto screw with curved surface of spacer facing support tube. Install washer and locknut. Finger-tighten locknut only.
7. Install screws and washers in other four locations, through Tour-Pak and support tube. Install saddle spacers on screws with curved surface of each spacer facing support tube.
8. See **Figure 7-19**. Slide removable mounting bracket (1) onto screws with bracket latches facing rear of Tour-Pak.
9. Install washers and locknuts (2, 3). Tighten all five screws and locknuts to 96-120 **in-lbs** (10.8-13.5 Nm).
10. See **Figure 7-13**. Install Tour-Pak on Tour-Pak bracket mounts (1) and lock latches in place.
11. See **Figure 7-20**. Locate Tour-Pak power connector between seat and fender strut cover on left side of motorcycle.



1. Support tube
2. Saddle spacer
3. Screw and locknut
4. Washer
5. Tour-Pak (front surface facing down)

Figure 7-18. Mounting Support Tube



1. Removable mounting bracket
2. Screw and locknut (4)
3. Washer (4)
4. Saddle spacer (4)
5. Tour-Pak (front surface facing down)

Figure 7-19. Removable Mounting Bracket



Figure 7-20. Tour-Pak Power Connector

12. See [Figure 7-21](#). Plug Tour-Pak harness into power connector and tuck cable assembly between seat and fender strut cover.

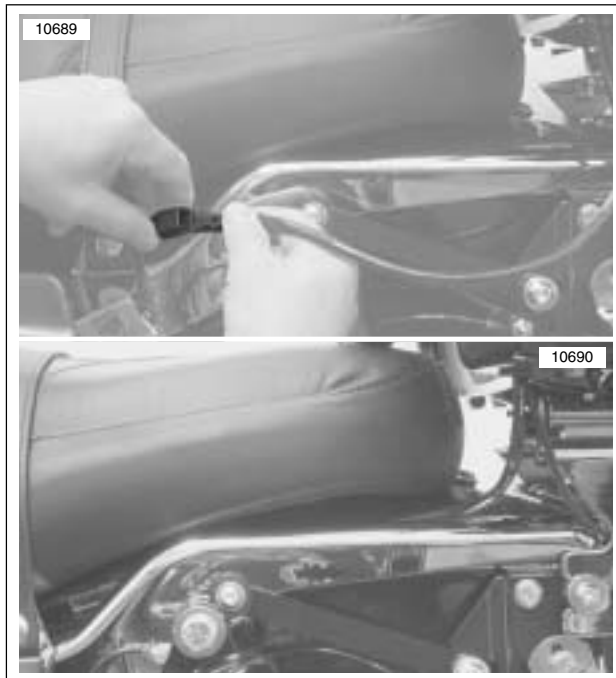


Figure 7-21. Connecting Tour-Pak Power Cable

NOTE

See [Figure 7-22](#). With the radio antenna mast mounted on the Tour-Pak antenna mount, the coaxial adapter shown in the figure allows connecting the antenna cable to the chassis antenna mount. With Tour-Pak removed, the adapter may be removed and antenna mast threaded directly onto the chassis antenna mount.

13. See [Figure 7-23](#). Make certain that coaxial adapter (2) is securely finger-tightened into the antenna chassis mount (3).
14. Pull enough coaxial cable from Tour-Pak to reach coaxial adapter on antenna chassis mount, allowing for a small amount of slack in cable.
15. Screw coaxial cable connector (1) into coaxial adapter on antenna chassis mount. Finger-tighten securely.

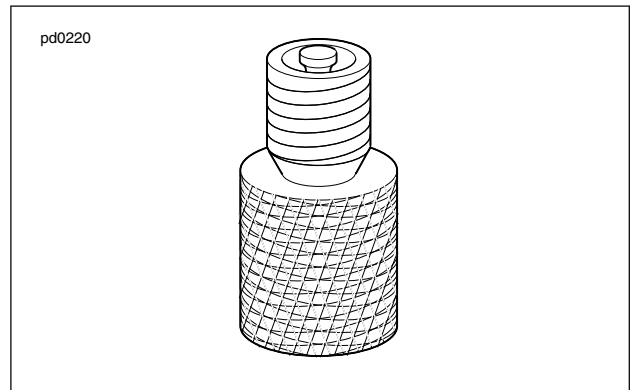
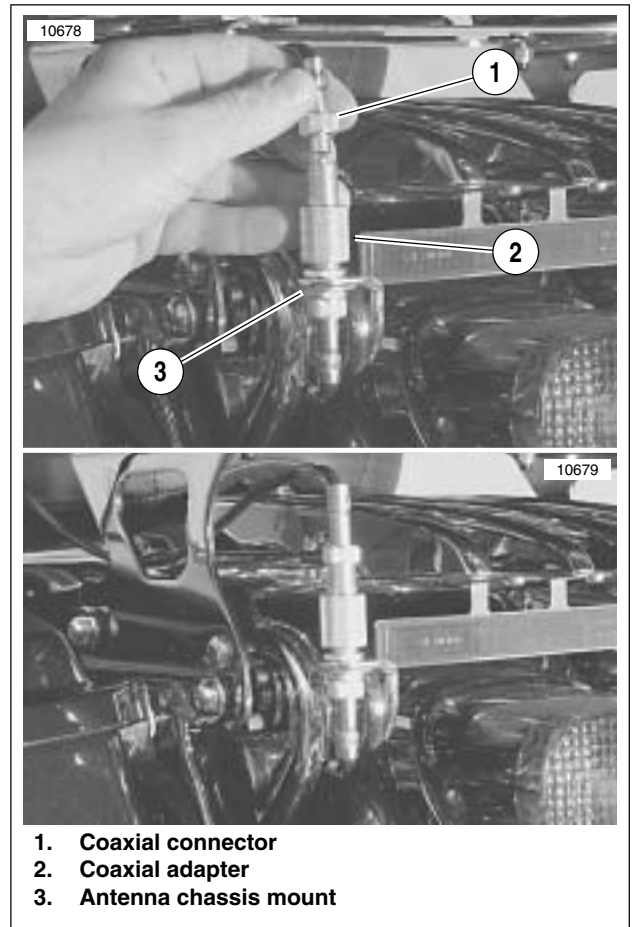


Figure 7-22. Coaxial Adapter



1. Coaxial connector
2. Coaxial adapter
3. Antenna chassis mount

Figure 7-23. Connecting Antenna Cable (Tour-Pak Installed)

RADIO ANTENNA

See [Figure 7-24](#). Screw antenna (1) into antenna mount (2) on Tour-Pak and tighten set screw with allen wrench (3).

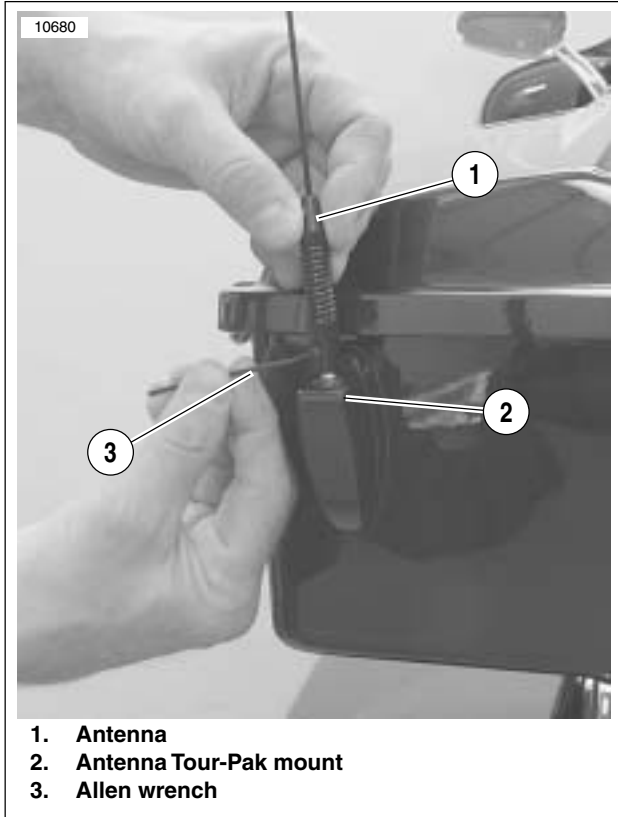


Figure 7-24. Installing Antenna on Tour-Pak

REMOVABLE PASSENGER BACKREST

See [Figure 7-25](#). The passenger backrest assembly mounts on the two forward mounting points (1) on each side of the vehicle when the Tour-Pak is not installed.

Since the vehicle will ordinarily be delivered to the customer with the Tour-Pak installed, store the removable passenger backrest inside the Tour-Pak and deliver to customer with vehicle.

NOTE

Retain protective cardboard packaging for passenger backrest. Secure backrest in Tour-Pak to prevent damage to backrest assembly and interior of Tour-Pak.

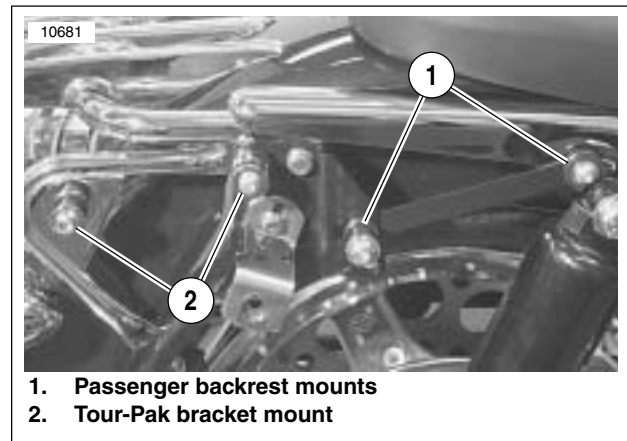


Figure 7-25. Passenger Backrest and Tour-Pak Docking Locations

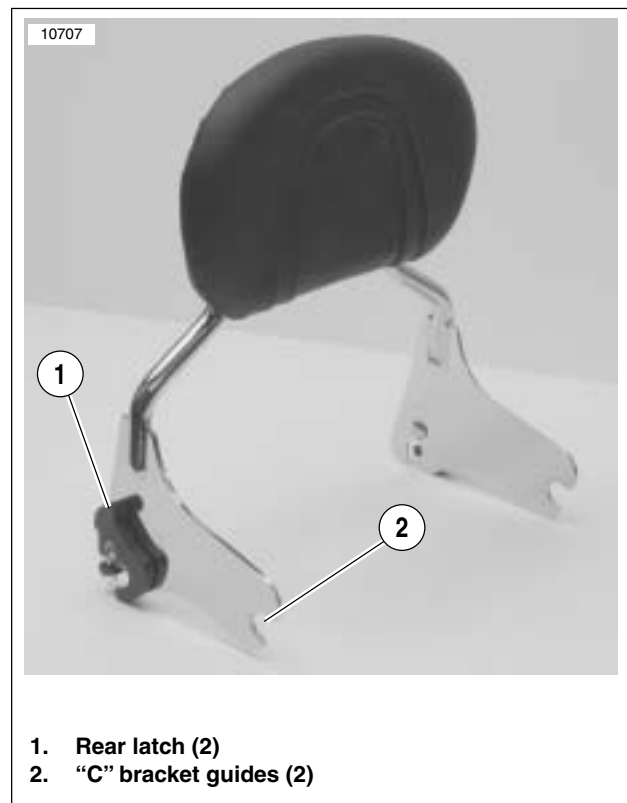


Figure 7-26. Passenger Backrest

DELIVERING VEHICLE WITH REMOVABLE PASSENGER BACKREST INSTALLED

If the customer wishes the vehicle to be delivered with the removable passenger backrest (see [Figure 7-26.](#)) installed on the vehicle instead of the Tour-Pak, follow the instructions below.

Passenger Backrest

NOTE

If the Tour-Pak is installed on the vehicle, it must be removed.

See [Figure 7-25.](#) Mount the passenger backrest assembly on the two forward mounting points (1) on each side of the vehicle.

Radio Antenna

NOTE

See [Figure 7-27.](#) With the antenna mast mounted on the Tour-Pak antenna mount, the coaxial adapter shown in the figure allows connecting the antenna cable to the chassis antenna mount. With Tour-Pak removed, the adapter may be removed and antenna mast threaded directly onto the chassis antenna mount.

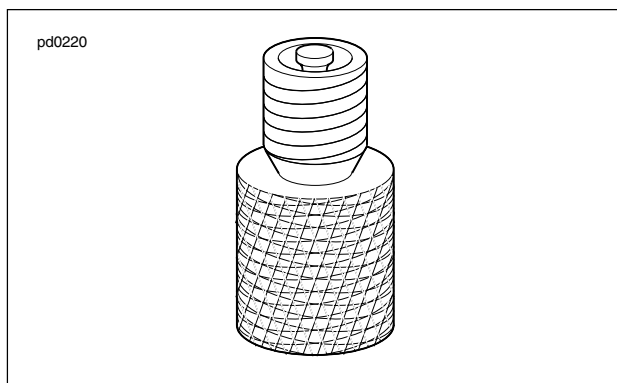
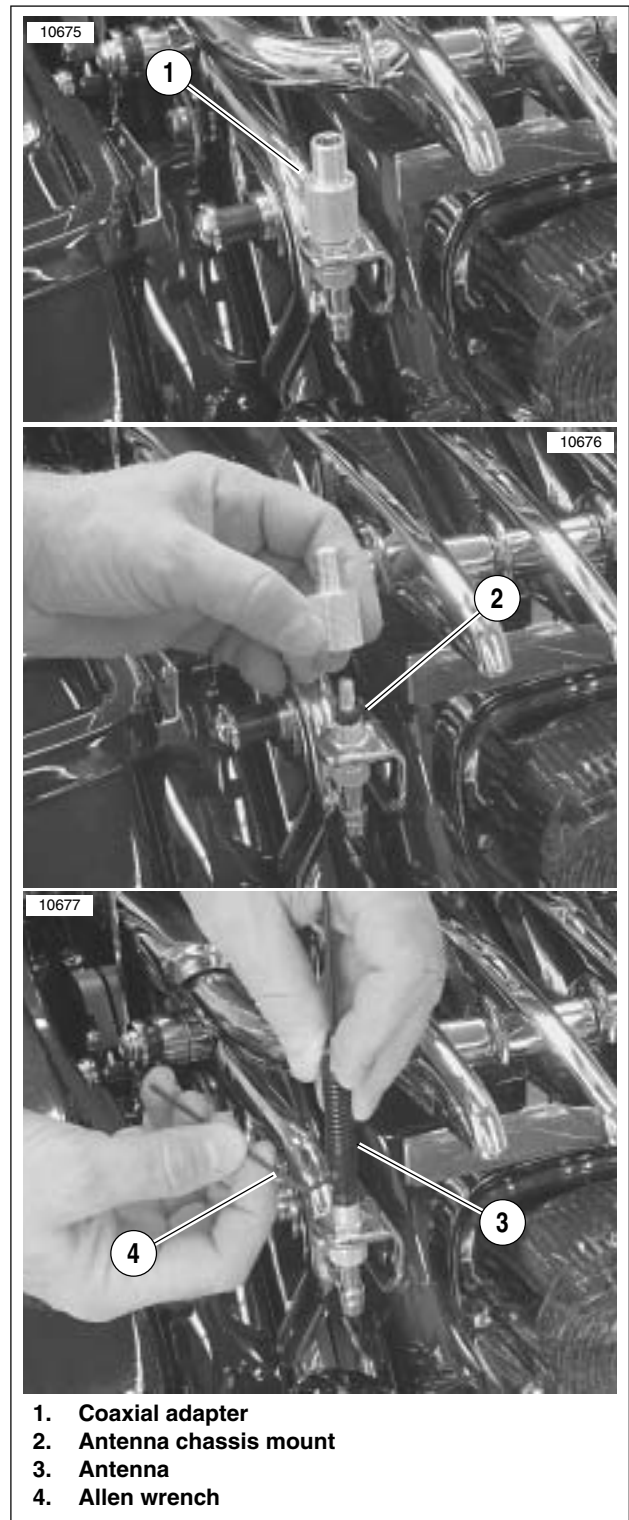


Figure 7-27. Coaxial Adapter

1. See [Figure 7-28.](#) Unscrew coaxial adapter (1) from antenna chassis mount. Place coaxial adapter in Tour-Pak and deliver to customer with vehicle.
2. Screw antenna (3) onto chassis mount and tighten set screw with allen wrench (4).



1. Coaxial adapter
2. Antenna chassis mount
3. Antenna
4. Allen wrench

Figure 7-28. Installing Antenna (Tour-Pak Removed)

LEATHER DRESSING APPLICATION

Apply Harley-Davidson **Leather Dressing, Part No. 98261-91V** to the following:

- Seat.
- Rider backrest pad.
- Passenger backrest pad (mounted on Tour-Pak).
- Detachable passenger backrest pad.

FINAL PREDELIVERY INSPECTIONS

Perform all the remaining Predelivery Inspections given in Section I (All Models) and Section II (Touring Models) that apply to the ELECTRA GLIDE (FLHT).

NOTE

Do not remove the clutch cover. It is not necessary to check the primary chaincase lubricant level on the FLHTCSE². Also, the hydraulic clutch is not adjustable.

DO NOT REPEAT INSPECTIONS THAT WERE PERFORMED IN THIS SECTION.

GENERAL

CAUTION

The FLSTFSE model is shipped from the factory with SYN-3[®] lubricant exclusively in the engine, primary and transmission. If there is a need to top off lubricants, DO NOT use standard lubricants and do not mix lubricants as damage to the motorcycle can result.

Follow the instructions in section I (All Models) and Section IV (Softail Models) and the following instructions to perform the predelivery setup procedure on the FLSTFSE model.

This motorcycle is equipped with the Harley-Davidson Factory Security System and siren.

UNCRATING

See [Figure 7-29](#). The FLSTFSE is shipped in a “turn-wheel” crate which allows the handlebar to be shipped in position on the handlebar risers.

Check Contents of Crate

Check that the following items are in a box in the crate:

- Seat
- Motorcycle cover
- Owner’s kit
- Right mirror

NOTES

- If any parts are missing, call 1-800-695-2925 or Fax 1-717-852-6717. Provide your Dealer name, number, person to contact, part number of missing item, and Motorcycle VIN.
- See [Figure 7-30](#). After crating straps have been removed, make sure to remove the plastic crating strap bracket from the vehicle.

ADJUSTING HANDLEBARS

The FLSTFSE is shipped with the handlebars adjusted to a standard riding position. If handlebars need to be adjusted for more comfortable rider position, proceed as follows:

1. Loosen, but do not remove, all four handlebar riser clamp screws.
2. Raise or lower handlebars to desired position. Make certain handlebars are centered side-to-side in risers.

3. Tighten two front handlebar clamp screws until top and bottom risers meet (no gap in front). DO NOT tighten screws to more than 15 ft-lbs (20.3 Nm).
4. Tighten rear handlebar clamp screws to 12-15 ft-lbs (16.3-20.3 Nm).
5. Final tighten front handlebar clamp screws to 12-15 ft-lbs (16.3-20.3 Nm).

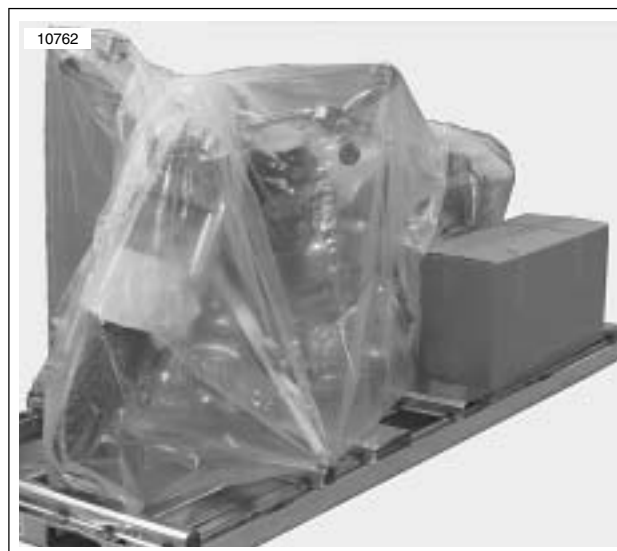


Figure 7-29. FLSTFSE Shipped in Turn-Wheel Crate

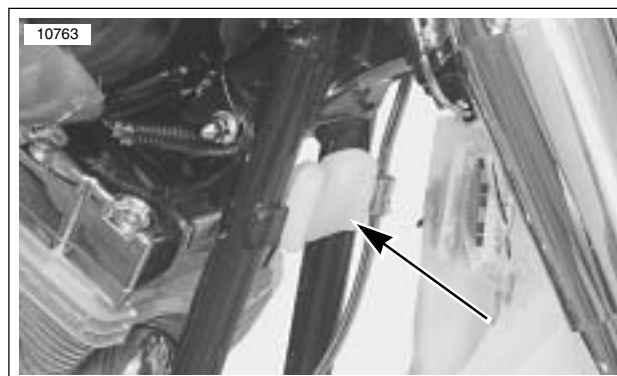


Figure 7-30. Plastic Crating Strap Bracket

ADJUSTING HANDLEBAR CONTROLS

If handlebar controls and clutch and brake lever assemblies are incorrectly positioned, they may be rotated slightly for more comfortable riding position.

CAUTION

Do not rotate front brake lever assembly too far. Brake master cylinder fits into a machined relief in handlebar. If not properly located in the machined relief, master cylinder can be damaged when clamp screws are tightened. Handlebar surface contains range marks to properly locate brake and clutch master cylinders and control assemblies. These assemblies **MUST** be located within that range.

To adjust handlebar controls, proceed as follows:

1. See Figure 7-31. Loosen (but do not remove) brake and clutch lever assembly clamp screws (1) and handlebar switch housing screws (2).
2. See Figure 7-32. Range marks (4) are located on bottom of handlebar adjacent to brake lever clamp assembly. Rotate right control and brake master cylinder assembly (2) **slightly** for most comfortable position. Make sure control assembly is positioned so that clamp mating surface (3) is located in area between range marks.

CAUTION

Control wiring is routed inside handlebar and may be pinched or cut if controls are rotated too far.

3. Beginning with top screw, tighten right lever assembly clamp screws to 60-80 **in-lbs** (6.8-9.0 Nm).
4. Beginning with lower screw, tighten right handlebar switch housing screws to 35-45 **in-lbs** (4-5 Nm).
5. Orient the left handlebar control assembly to match the position of the right handlebar control assembly.

CAUTION

Control wiring is routed inside handlebar and may be pinched or cut if controls are rotated too far.

6. Beginning with top screw, tighten left lever assembly clamp screws to 60-80 **in-lbs** (6.8-9.0 Nm).
7. Beginning with lower screw, tighten left handlebar switch housing screws to 35-45 **in-lbs** (4-5 Nm).
8. Test handlebar switches to make sure they are functioning properly and wiring has not become pinched or otherwise damaged.

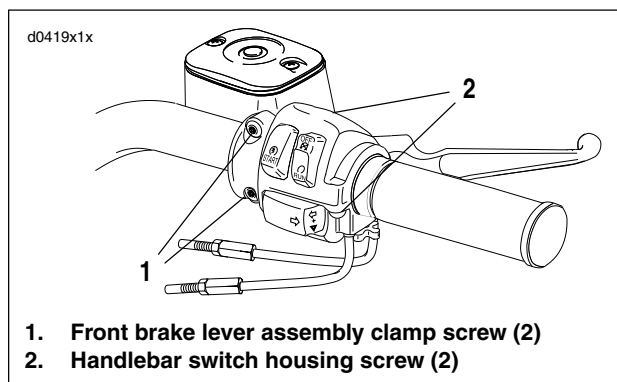


Figure 7-31. Handlebar Lever and Control Mounting Screws (Right Side Shown)

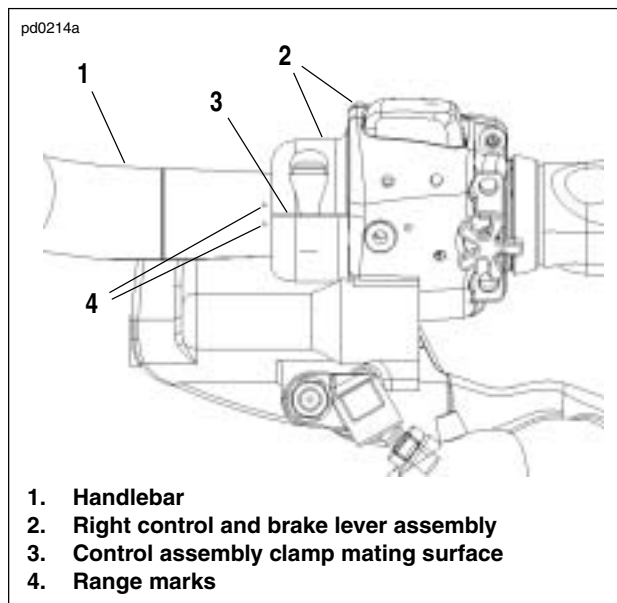


Figure 7-32. Right Handlebar Control Assembly (Bottom View)

CHECKING CLUTCH FLUID

CAUTION

D.O.T. 5 silicone hydraulic brake fluid is used in the hydraulic clutch. Do not use other types of fluids as they are not compatible and could cause equipment damage. (00204a)

CAUTION

Do NOT allow foreign matter to enter the clutch master cylinder reservoir. dirt or debris in the reservoir may cause improper operation of the clutch and equipment damage.

CAUTION

Direct contact of D.O.T. 5 brake fluid with eyes can cause eye irritation, swelling, and redness. Avoid eye contact. In case of eye contact flush with large amounts of water and get medical attention. Swallowing large amounts of D.O.T. 5 brake fluid can cause digestive discomfort. If swallowed, obtain medical attention. Use in well ventilated area. KEEP OUT OF REACH OF CHILDREN. (00144a)

The clutch is hydraulically actuated. See Figure 7-33. The clutch master cylinder fluid reservoir (1) is located on the left handlebar.

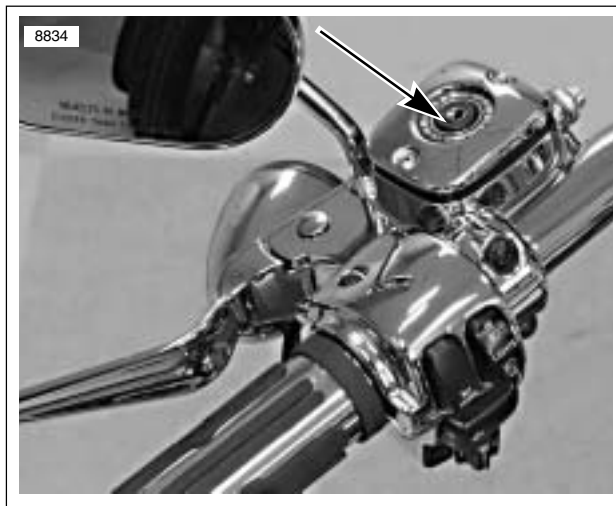


Figure 7-33. Clutch Master Cylinder Reservoir

1. Stand the motorcycle upright (not leaning on the jiffy stand) on a level surface. Turn the handlebars to the right if necessary, so the top of the clutch master cylinder reservoir is level.
2. View reservoir sightglass on reservoir cover and verify fluid presence. Sightglass should appear dark if fluid is present. If sightglass is not dark, add brake fluid. See Service Manual. Use only D.O.T. 5 SILICONE HYDRAULIC BRAKE FLUID (Part No. 99902-77: 12 oz., 99901-77: 1 gal.).

MIRRORS AND TURN SIGNALS

The right mirror is enclosed in a box in the crate. Install mirror and adjust for proper rear view as follows:

1. See Figure 7-34. Place spacer (10) onto right side mirror stem, slide mirror stem down through hole in front brake master cylinder assembly and right turn signal bracket (5). Install lockwasher (8) and screw on acorn nut (7) finger tight.
2. Adjust both mirrors so a small portion of the rider's shoulder is visible in each mirror. This helps establish the relative distance of vehicles to the rear of the motorcycle.
3. Tighten acorn nuts to 60-96 in-lbs (6.8-9.0 Nm).
4. To adjust turn signals:
 - a. Loosen set screws (9) approximately 1/8 turn.

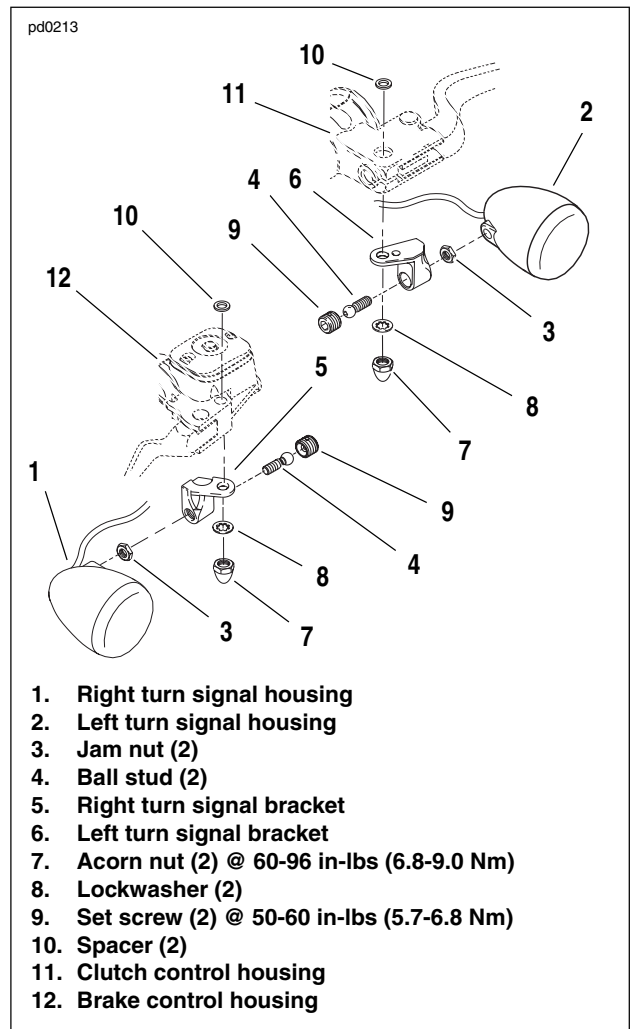


Figure 7-34. Turn Signals

NOTE

It is not necessary, nor desirable, to completely remove setscrew to re-adjust turn signal housing. It is only necessary to loosen setscrew 1/8 turn, adjust turn signal and re-tighten setscrew. Nylon lock pellet on setscrew maintains locking ability after many loosening/tightening cycles. If setscrew is completely removed, it should be replaced.

- b. Position front turn signal housings (1, 2) evenly with lenses pointing straight ahead.
- c. Tighten each set screw to 50-60 **in-lbs** (5.7-6.8 Nm).

FUEL TANK CONSOLE EXTENSION

See Figure 7-35. Remove screw (2) from fuel tank mounting tab. Insert screw through hole in rear end of fuel tank console extension (1) and screw into fuel tank mounting tab. Tighten securely.

SEAT

Remove seat and mounting screw from carton. See Figure 7-35. Place tang on front underside of seat into channel in frame (3). Slide seat forward into place. Secure with mounting screw into rear fender.

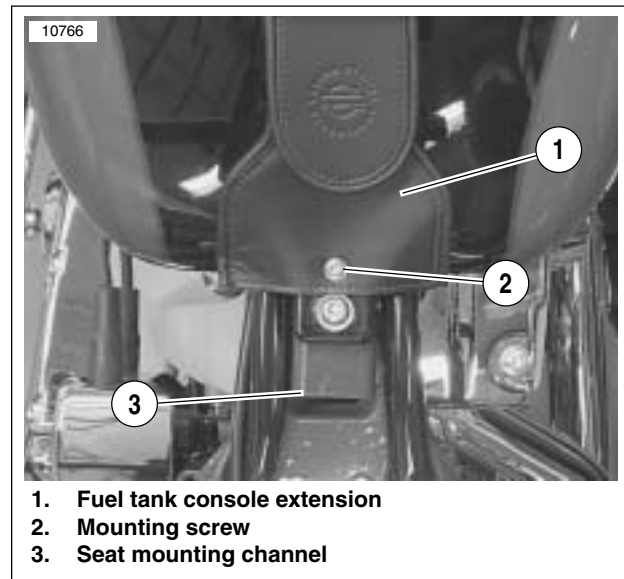


Figure 7-35. Fuel Tank Console Extension

FINAL PREDELIVERY INSPECTIONS

Perform all the remaining Predelivery Inspections given in Section I (All Models) and Section IV (Softtail Models) that apply to the FLSTF model.

NOTE

Do not remove the clutch cover. It is not necessary to check the primary chaincase lubricant level on the FLSTFSE. Also, the hydraulic clutch is not adjustable.

DO NOT REPEAT INSPECTIONS THAT WERE PERFORMED IN THIS SECTION.

2005

General

Touring
Models

Dyna
Models

Softail
Models

Sportster
Models

VRSC
Models

CVO
Models