



# INSTRUCTIONS

J04297

2007-06-08



## CABLE AND BRAKE LINE MEASUREMENT TOOL KIT

### GENERAL

#### Kit Number

42273-07

#### Models

For model fitment information, please see the P&A Retail Catalog or the Parts and Accessories section of [www.harley-davidson.com](http://www.harley-davidson.com) (English only).

#### Additional Parts Required

##### ⚠ WARNING

Rider and passenger safety depend upon the correct installation of this kit. Use the appropriate service manual procedures. If the procedure is not within your capabilities or you do not have the correct tools, have a Harley-Davidson dealer perform the installation. Improper installation of this kit could result in death or serious injury. (00333b)

##### NOTE

This instruction sheet references Service Manual information. A Service Manual for your model motorcycle is required for this installation and is available from a Harley-Davidson dealer.

Separate purchase of the appropriate brake line kit(s) is required.

#### Kit Contents

Table 1. Kit Contents

Item	Description (Quantity)	Part Number
1	Carrying Case (1)	Not Sold Separately
2	Tool, Upper Brake Line (1)	Not Sold Separately
3	O-Ring, Slider (3)	Not Sold Separately
4	Tool, Throttle Control Cable (1)	Not Sold Separately
5	O-Ring, Upper End (2)	Not Sold Separately
6	Tool, Clutch Control Cable (1)	Not Sold Separately
7	Banjo Fitting, 0°, 35°, and 90° (3)	Not Sold Separately
8	Bent Tube, 45°, 70°, and 90° (3)	Not Sold Separately
9	Upper P-Clamp (4)	10059A
<b>Service Kits:</b>		
	Banjo Fitting Service Kit (Includes One Each of 0°, 35°, and 90° Fittings)	42648-07
	Throttle Bent Tube Service Kit (Includes One Each of 45°, 70°, and 90° Tubes)	55941-07
	O-Ring Service Kit (Includes Two Each of Slider O-Rings and Upper End O-Rings)	42007-07

##### NOTE

This measurement tool kit is only intended to be used in custom handlebar and riser installations that do not have brake lines or control cables specified. Before performing measurements

using this kit, refer to the P&A Retail Catalog to make sure that the desired application is not already specified.

### UPPER BRAKE LINE TOOL

#### Remove Existing Front Brake Line

##### ⚠ WARNING

Contact with DOT 4 brake fluid can have serious health effects. Failure to wear proper skin and eye protection could result in death or serious injury.

- If inhaled: Keep calm, remove to fresh air, seek medical attention.
- If on skin: Remove contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. If irritation develops, seek medical attention.
- If in eyes: Wash affected eyes for at least 15 minutes under running water with eye lids held open. If irritation develops, seek medical attention.
- If swallowed: Rinse mouth and then drink plenty of water. Do not induce vomiting. Contact Poison Control. Immediate medical attention required.
- See Safety Data Sheet (SDS) for more details available at [sds.harley-davidson.com](http://sds.harley-davidson.com)

(00240e)

##### ⚠ CAUTION

Direct contact of DOT 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 DOT 5 brake fluid can cause digestive discomfort. If swallowed, obtain medical attention. Use in well ventilated area. KEEP OUT OF REACH OF CHILDREN. (00144b)

##### NOTICE

DOT 4 brake fluid will damage painted and body panel 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. (00239c)

1. Drain brake fluid.
  - a. Remove off nipple cap on the front brake caliper.
  - b. Install one end of a length of plastic tubing over the caliper bleeder valve. Place the free end of the tubing into a suitable container.



- c. Open the bleeder valve about 1/2 turn and pump the brake lever to drain the brake fluid out of the front brake system. Do not reuse brake fluid.
2. Carefully make note of front brake line routing and orientation of banjo fittings.

**NOTICE**

**Remove brake line components carefully. Damage to seating surfaces can cause leakage. (00320a)**

3. Disconnect existing front brake line from front brake master cylinder and front brake caliper. Save banjo bolts but discard sealing washers.
4. Remove stock screws, washers, and P-clamps at the following locations:
  - a. From under lower triple clamp.
  - b. Along right side of steering head at upper triple clamp and/or between upper and lower triple clamp.
  - c. Discard P-clamps but save screws and washers for kit installation.
  - d. Remove electrical ground lug and note position for brake line installation.
5. Remove existing front brake line from vehicle.
6. If the brake line tool is being used to determine the brake line length for a new handlebar, the existing handlebar must be removed. Refer to appropriate HANDLEBAR REMOVAL section in Service Manual.
7. Follow the Instruction Sheet for the installation of the new handlebar. To use the brake line tool, the front brake master cylinder should be mounted to the handlebar, but the reservoir should not be filled with brake fluid.

## Using Brake Line Tool

**▲ WARNING**

**Install proper length brake line. Incorrect line length can adversely affect motorcycle operation, which could cause loss of control resulting in death or serious injury. (00533b)**

*NOTE*

*This tool is designed to measure the appropriate brake line length for Harley-Davidson brand braided two-piece modular brake lines only. It is not intended for use on single piece or any other style of brake line. The measurement tool is intended as a guide in selecting the correct brake line length. Be sure to follow the instructions in the appropriate Service Manual or brake line Instruction Sheet when installing the brake line.*

*Please refer to the Harley-Davidson P&A Retail Catalog for available lengths of two-piece modular brake lines for the model and year of the motorcycle.*

*Three different banjo fittings are supplied with the brake line tool (0°, 35°, and 90°).*

## For Dual Disk Brake Systems

1. The lower modular brake line must be installed on dual disk brakes systems to measure the upper brake line length. See the P&A retail catalog or the Parts and Accessories section of [www.harley-davidson.com](http://www.harley-davidson.com) to identify the lower brake line for your fitment.
2. For Electra-Glide models it is necessary to remove the outer fairing to perform the measurement. Refer to the appropriate Service Manual and follow the instructions to remove the fairing.
3. Install the braided lower brake line following the instructions supplied in the lower brake line kit.

*NOTE*

*The banjo fittings included in this kit are designed to work with a wide variety of Harley-Davidson models. The appearance of the banjo fitting on the actual brake line may be slightly different. Additionally, the clearance around the stock banjo bolt will vary depending on the model.*

4. Route the brake line tool along handlebar.
  - a. For vehicles equipped with a fairing, route tool along the handlebar and through the fairing following the same route as the stock brake line.
  - b. For all other models, route the brake line tool along the handlebars following the same route as the stock brake line routing.
5. See Figure 1. Bring the measuring tool up to the male fitting on the lower brake line. Slide the O-ring (1) on the measuring tool and align with the base of the threads (2) on the male JIC fitting on the lower brake line.

*NOTE*

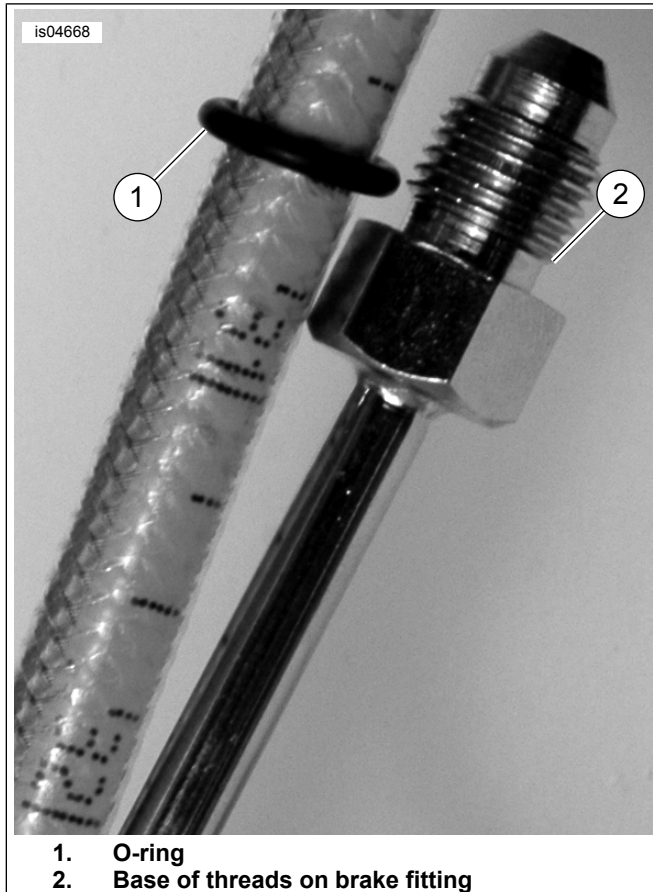
*As a general rule, round to the next highest size when selecting the appropriate length for the upper brake line.*

**▲ WARNING**

**Install proper length brake line. Incorrect line length can adversely affect motorcycle operation, which could cause loss of control resulting in death or serious injury. (00533b)**

6. Select a length for the upper brake line from the available lengths in the P&A retail catalog. Verify the length by moving the slider O-ring to that length and checking the upper brake line routing. If necessary, move the slide to a longer or shorter length.
7. While holding the brake line tool at the end of the lower brake line fitting, turn the handlebars full left and full right to ensure smooth routing and proper slack in the brake line. ensure that the brake line does not contact any vehicle components. Refer to the appropriate instruction sheet for detailed information on routing and adjustments.
8. Adjust the brake line tool and/or banjo bolt fitting orientation if the routing looks incorrect or if the tool interferes or touches any motorcycle components.

9. Remove the brake line tool from the vehicle.
10. Follow all the instructions included with the modular brake line kit. Verify routing of actual brake line and all Service Manual procedures before riding vehicle.



**Figure 1. Measuring for Dual Disk Brake Line**

### For Single Brake Systems

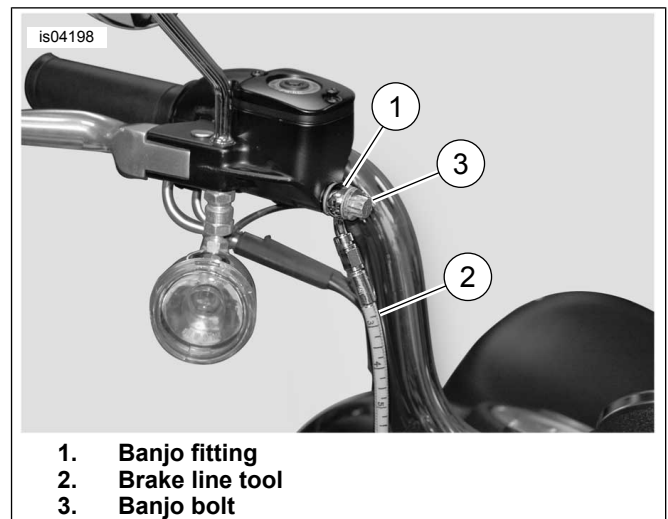
1. See Figure 2. Select one of the banjo fittings (1) to attach to the brake line. The selection should be based on which banjo angle fits, functions, and looks the best for this specific application.
2. Screw banjo fitting to threaded end of brake line tool (2) and hand tighten.
3. Hold banjo fitting with brake line tool attached up to master cylinder. Install master cylinder banjo bolt (3) through the banjo fitting and tighten snugly.

#### NOTE

*It is not necessary to use the banjo gaskets with the brake line tool. When using the brake line tool be careful not to damage seating surfaces.*

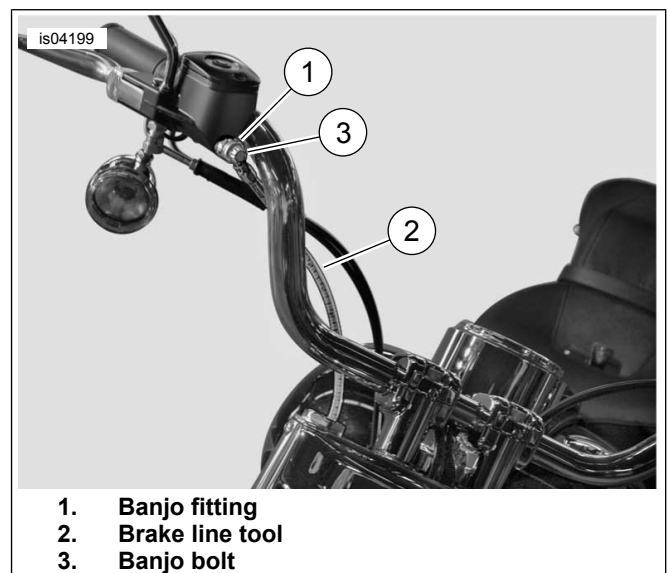
#### NOTE

*The banjo fittings included in this kit are designed to work with a wide variety of Harley-Davidson models. The appearance of the banjo fitting on the actual brake line may be slightly different. Additionally, the clearance around the stock banjo bolt will vary depending on the model.*



**Figure 2. Brake Line Tool Attachment (FX Softail and Dyna Shown)**

4. See Figure 3. Route brake line tool along the handlebar.
  - a. If the brake line tool does not flow smoothly along the handlebar to the upper P-clamp mounting position, remove tool and replace banjo fitting with a different angle.
  - b. Repeat this process as necessary until the best fit is determined.

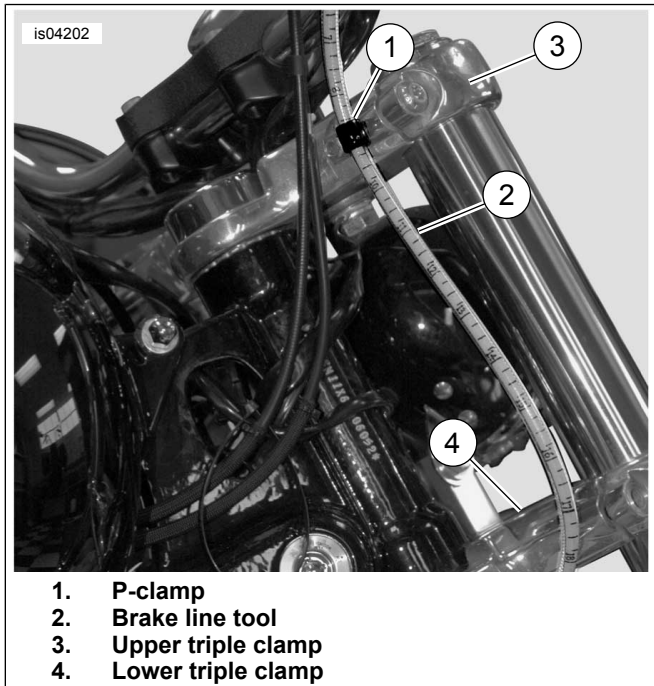


**Figure 3. Brake Line Tool Handlebar Routing (FL Softail and Dyna Shown)**

5. Route upper portion of brake line tool (2) along handlebars and install small P-clamp(s) from kit onto brake line tool at upper P-clamp mounting location(s).
  - a. See Figure 4. FX Softail and Dyna models have one upper P-clamp mounting location.
  - b. See Figure 5. FL Softail models have two upper P-clamp mounting locations.

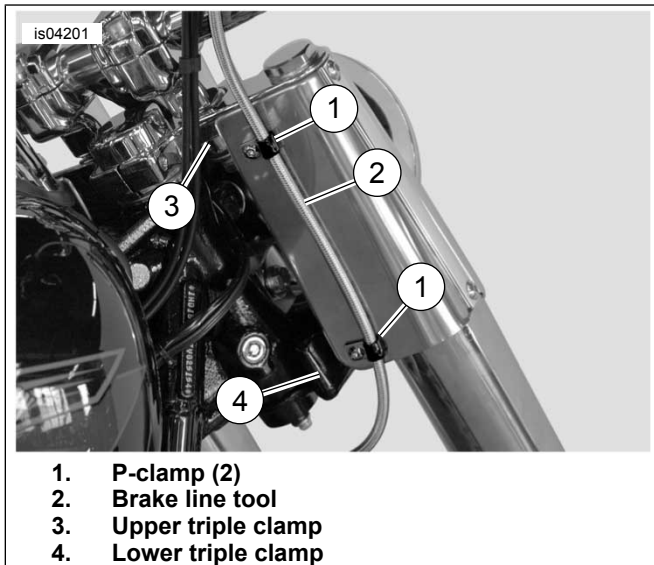
**NOTE**

For Softail and Dyna models, the P-clamp typically must be oriented so the brake line is held away from the vehicle. However, some custom handlebar applications may require the P-clamp to be oriented so the brake line is held toward the vehicle.



1. P-clamp
2. Brake line tool
3. Upper triple clamp
4. Lower triple clamp

**Figure 4. Brake Line Tool Routing (Typical FX Softail and Dyna)**



1. P-clamp (2)
2. Brake line tool
3. Upper triple clamp
4. Lower triple clamp

**Figure 5. Brake Line Tool Routing (Typical FL Softail)**

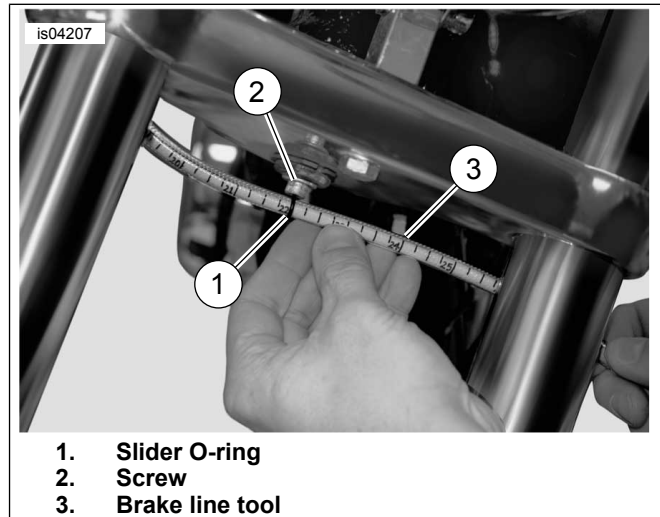
6. See Figure 4 and Figure 5. Making sure upper portion of brake line tool (2) is routed correctly, tighten P-clamp screws to hold upper portion in place.
7. Route remainder of brake line tool (2) under lower triple clamp (4).

8. Determine the length for upper brake line using brake line tool as follows:

- a. See Figure 6. For FX Softail and Dyna models, center slider O-ring (1) on head of screw (2) and take measurement.
- b. See Figure 7. For FL Softail models, unthread screw out 1/2 inch, then position slider O-ring (1) behind screw (2) and take measurement.

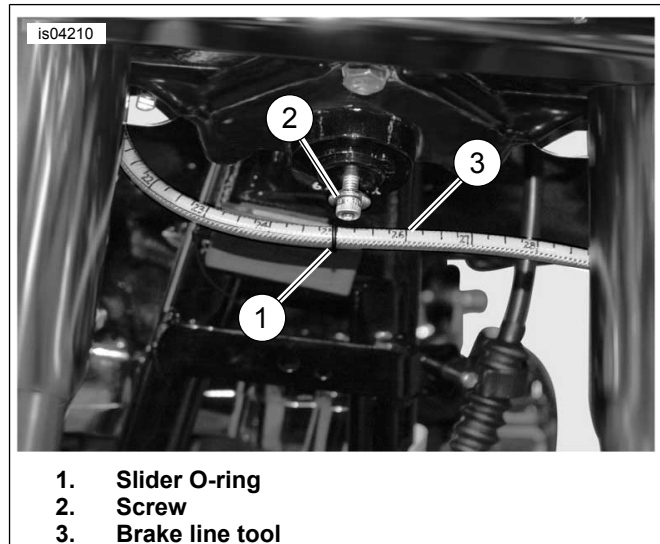
**NOTE**

As a general rule, round to the next highest size when selecting the appropriate length for the upper brake line.



1. Slider O-ring
2. Screw
3. Brake line tool

**Figure 6. Upper Brake Line Measurement (FX Softail and Dyna)**



1. Slider O-ring
2. Screw
3. Brake line tool

**Figure 7. Upper Brake Line Measurement (FL Softail)**

9. Select a length for the upper brake line from the available lengths in the P&A Retail Catalog, Parts and Accessories section of [www.harley-davidson.com](http://www.harley-davidson.com), or appropriate Instruction Sheet.
10. Verify the length by moving the slider O-ring to that length and check the upper brake line routing. If necessary, move slider to a longer or shorter length.

11. While holding brake line tool at the screw location below lower triple clamp, turn handlebars full left and full right to ensure smooth routing and proper slack in brake line tool and ensure it does not contact any vehicle components. Refer to appropriate Instruction Sheet for detailed information on routing and adjustments.
12. Adjust brake line tool and/or banjo fitting orientation if routing does not look right or tool interferes or catches on motorcycle components.
13. Identify the lower brake line for this fitment using the P&A Retail Catalog or Parts and Accessories section of [www.harley-davidson.com](http://www.harley-davidson.com).
14. Remove brake line tool from vehicle.
15. Follow all the instructions included with the modular brake line kit. Verify routing of actual brake line and all Service Manual procedures before riding vehicle.

## THROTTLE/IDLE CONTROL CABLE TOOL

### Prepare for Service

#### Models Without Maxi®-Fuse

1. Remove seat according to the instructions in the Owner's Manual or Service Manual.

#### ⚠ WARNING

To prevent accidental vehicle start-up, which could cause death or serious injury, disconnect negative (-) battery cable before proceeding. (00048a)

2. Disconnect battery cables, negative (-) cable first.

#### Models With Maxi-Fuse

1. *Softail models: Dyna models:* Remove electrical caddy cover and maxi-fuse. Refer to FUSES in Service Manual.
  - a. Remove seat according to the instructions in the Service Manual.
  - b. Remove maxi-fuse. Refer to METRI-PACK 800 in Service Manual.

### Remove Existing Throttle/Idle Cable

1. See Figure 8. Loosen cable adjuster jam nuts. Screw throttle/idle cable adjuster until it is as short as possible.
2. Remove the two screws that hold the handlebar housing together to separate the upper and lower housing.

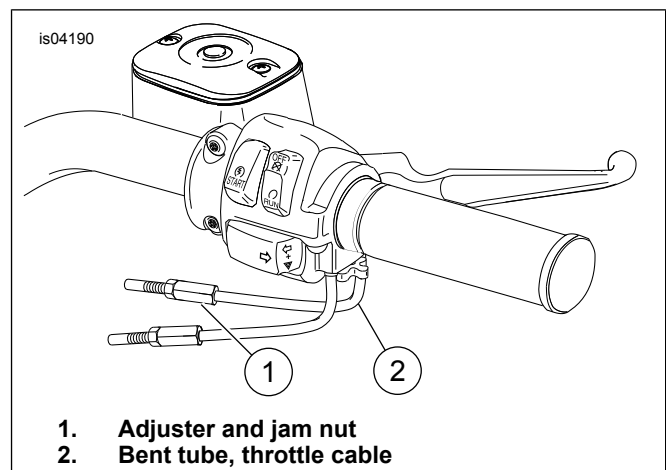


Figure 8. Handlebar Throttle Control

3. Unhook the ferrule and cable from the throttle grip and lower housing.
4. Remove air cleaner assembly and fuel tank following the instructions in the Service Manual.
5. See Figure 9. Pull the cable from the housing by placing a drop of oil on the retaining ring that holds the cable in the housing, then firmly pull the bent tubing portion of the cable out of the housing using a rocking motion.

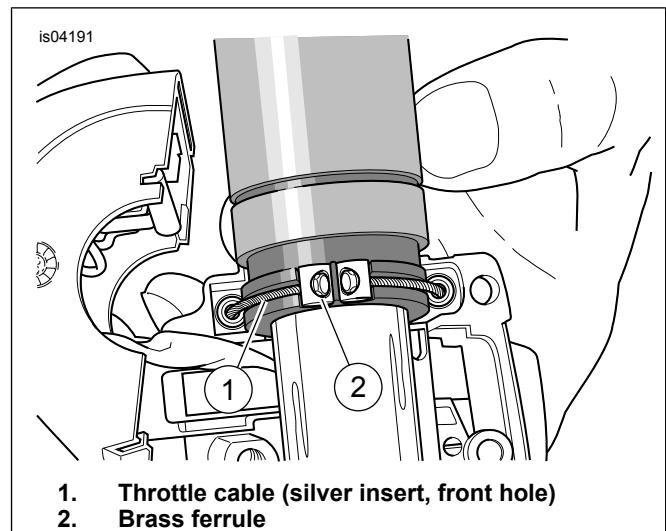


Figure 9. Throttle Cable Attachment

### Using Throttle/Idle Cable Tool

#### ⚠ WARNING

Install proper length throttle cables. Incorrect cable length can adversely affect motorcycle operation, which could cause loss of control resulting in death or serious injury. (00396b)

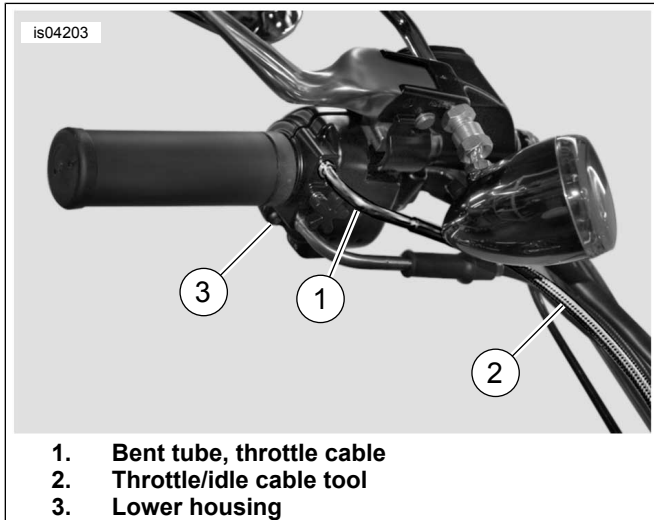
#### NOTE

This tool is designed to measure the appropriate throttle/idle cable length for Harley-Davidson brand braided cable kits only. The measurement tool is intended as a guide in selecting the correct throttle/idle cable length. Be sure to follow the instructions in the appropriate Service Manual when installing the cables.

1. See Figure 10. Select a bent tube (1) from the kit (45°, 70°, or 90°) to attach to the throttle/idle cable tool. Refer to the P&A Retail Catalog or the stock cables for available angles for the model and year of motorcycle.

**NOTE**

Harley-Davidson braided throttle and idle cables are the same length. It is only necessary to measure the throttle cable.



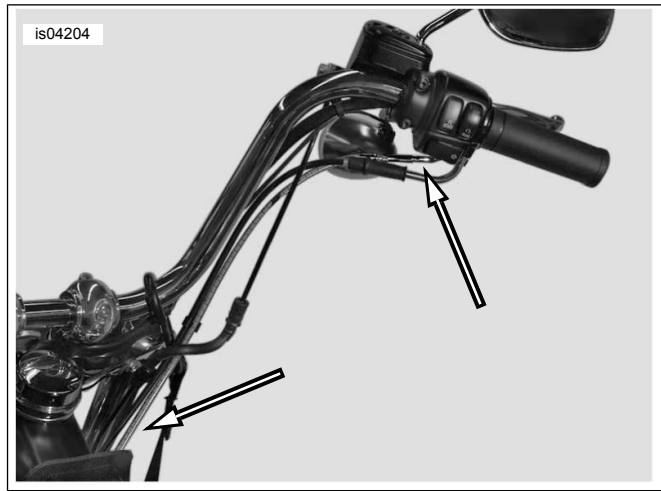
1. Bent tube, throttle cable
2. Throttle/idle cable tool
3. Lower housing

**Figure 10. Throttle/Idle Cable Tool Attachment**

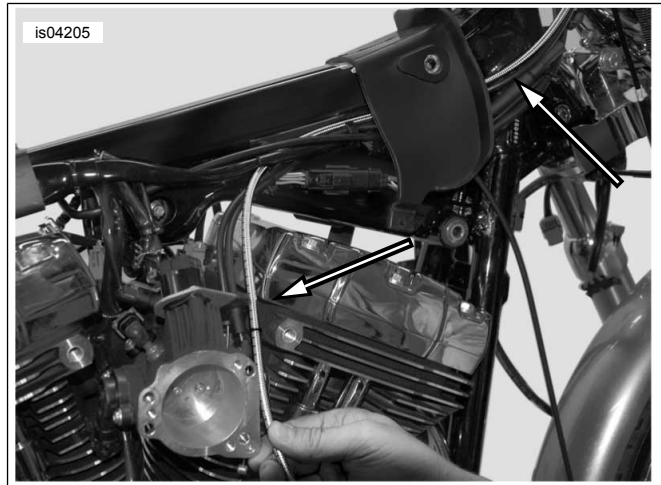
2. Insert the end of the throttle/idle cable tool (2) into the lower housing (3). If necessary apply a drop of oil to O-ring on end of tool before inserting.
3. Route throttle/idle cable tool as follows:
  - a. See Figure 11. Throttle housing to right side frame backbone.
  - b. See Figure 12. Right side frame backbone to throttle body.

**NOTE**

As a general rule, round to the highest size when selecting the appropriate length for the throttle control cable.

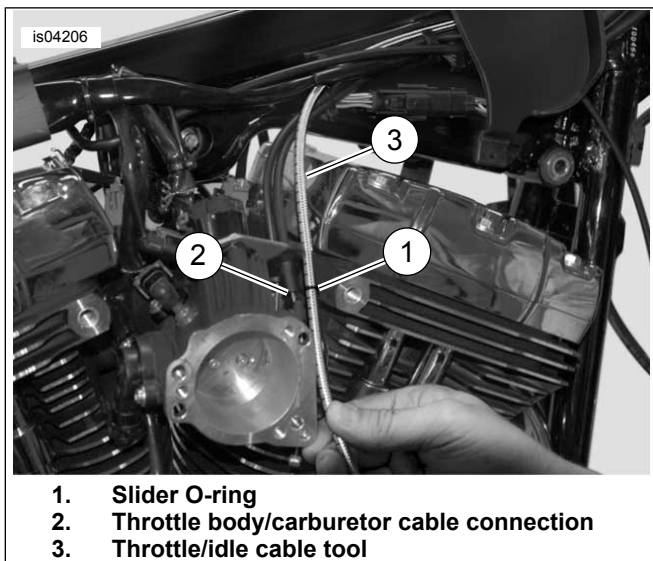


**Figure 11. Routing from Throttle Housing to Frame Backbone**



**Figure 12. Routing from Frame Backbone to Throttle Body Connection**

4. See Figure 13. Determine the length for the throttle/idle cable by placing slider O-ring (1) at the end of the throttle body or carburetor cable connection (2) and taking measurement.
5. Select a length for the throttle/idle cable from the available lengths in the P&A Retail Catalog or Parts and Accessories section of [www.harley-davidson.com](http://www.harley-davidson.com). The throttle/idle cable tool is calibrated to measure the housing length as displayed in the chart in the P&A Retail Catalog.
6. Verify the length by moving the slider O-ring to that length and check the throttle/idle cable tool routing. If necessary, select a longer or shorter length.
7. Turn handlebars full left and full right to ensure smooth routing and proper slack in throttle/idle cable tool and ensure it does not contact any vehicle components. Refer to appropriate Instruction Sheet for detailed information on routing and adjustments.
8. Adjust throttle/idle cable tool if routing does not look right or tool interferes or catches on motorcycle components.



1. Slider O-ring
2. Throttle body/carburetor cable connection
3. Throttle/idle cable tool

Figure 13. Throttle/Idle Cable Measurement

9. Remove throttle/idle cable tool from vehicle.
10. Install braided throttle/idle cables. Refer to appropriate Instruction Sheet.
11. Install air cleaner assembly and fuel tank following the instructions in the Service Manual.

## Final Assembly

*Models Without Maxi-Fuse*

### ⚠ WARNING

**Connect positive (+) battery cable first. If positive (+) cable should contact ground with negative (-) cable connected, the resulting sparks can cause a battery explosion, which could result in death or serious injury. (00068a)**

1. Connect battery cables, positive (+) cable first.
2. Install seat according to the instructions in the Service Manual.

*Models With Maxi-Fuse*

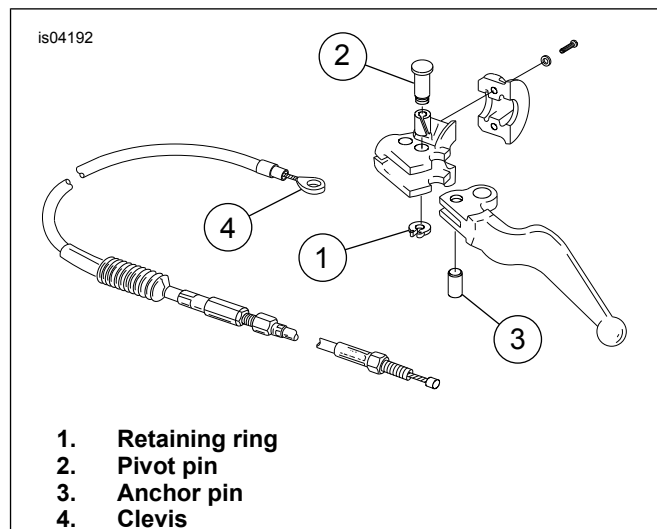
1. *Softail models:*
  - a. Install maxi-fuse. Refer to METRI-PACK 800 in Service Manual.
  - b. Install seat according to the instructions in the Service Manual.
2. *Dyna models:* Install maxi-fuse and electrical caddy cover. Refer to FUSES in Service Manual.

## CLUTCH CONTROL CABLE TOOL

### Remove Existing Clutch Cable

1. See Figure 14. Loosen clutch adjuster so clutch cable is fully slack. Refer to CLUTCH HAND CONTROL in Service Manual.
2. Remove retaining ring (1) and pivot pin (2).

3. Remove the clutch cable anchor pin (3) from the hand lever.



1. Retaining ring
2. Pivot pin
3. Anchor pin
4. Clevis

Figure 14. Existing Clutch Cable

## Using Clutch Cable Tool

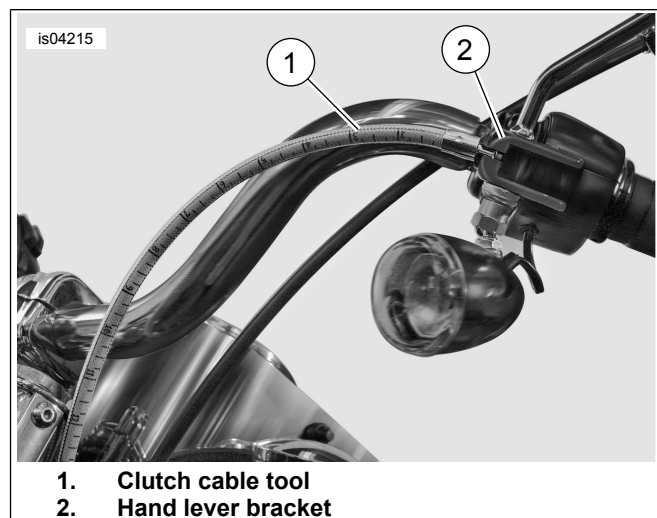
### ⚠ WARNING

**Install proper length clutch cables. Incorrect cable length can adversely affect motorcycle operation, which could cause loss of control resulting in death or serious injury. (00448b)**

### NOTE

*This tool is designed to measure the appropriate clutch cable length for Harley-Davidson brand braided cable kits only. The measurement tool is intended as a guide in selecting the correct clutch cable length. Be sure to follow the instructions in the appropriate Service Manual when installing the cable.*

1. See Figure 15. Insert end of clutch cable tool (1) to slot in hand lever bracket (2). If necessary apply a drop of oil to end of tool before inserting into slot.



1. Clutch cable tool
2. Hand lever bracket

Figure 15. Clutch Cable Attachment

2. Route clutch cable tool as follows:
  - a. See Figure 16. Hand lever to clamp on left frame downtube.
  - b. See Figure 17. Left frame downtube to area under engine cam cover.
  - c. See Figure 18. Engine cam cover to transmission clutch release cover cable connection.
  - d. Follow path of existing/stock clutch cable.

**NOTE**

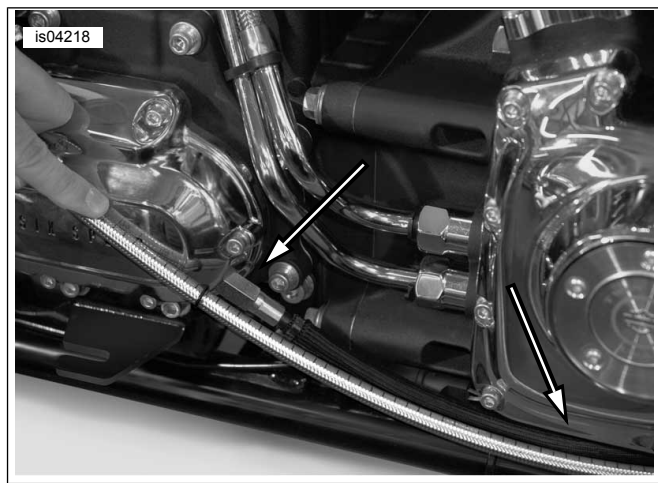
As a general rule, round to the highest size when selecting the appropriate length for the clutch cable.



**Figure 16. Routing from Hand Lever to Clamp at Left Frame Downtube**

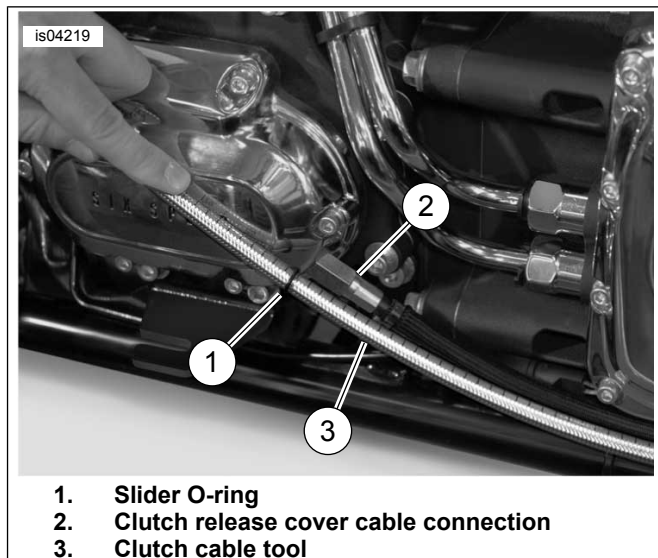


**Figure 17. Routing from Left Frame Downtube to Engine Cam Cover**



**Figure 18. Routing from Engine Cam Cover to Transmission Clutch Release Cover**

3. See Figure 19. Determine the length for clutch cable by placing slider O-ring (1) at transmission clutch release cover cable connection (2) and taking measurement.
4. Select a length for the clutch cable from the available lengths in the P&A Retail Catalog or Parts and Accessories section of [www.harley-davidson.com](http://www.harley-davidson.com). The clutch cable tool is calibrated to measure length "C" as indicated in the P&A Retail Catalog.
5. Verify the length by moving the slider O-ring to that length and check the clutch cable routing. If necessary, select a longer or shorter length.



1. Slider O-ring
2. Clutch release cover cable connection
3. Clutch cable tool

**Figure 19. Clutch Cable Measurement**

6. Turn handlebars full left and full right to ensure smooth routing and proper slack in clutch cable tool and ensure it does not contact any vehicle components. Refer to appropriate Instruction Sheet for detailed information on routing and adjustments.
7. Adjust clutch cable tool if routing does not look right or tool interferes or catches on motorcycle components.

8. Remove clutch cable tool from vehicle.
9. Install multi-length clutch cable. Refer to appropriate Instruction Sheet.