INSTRUCTIONS

J03733 2018-03-23

CHROME BRAKE AND CLUTCH MASTER CYLINDER/RESERVOIR KIT

GENERAL

Kit Number

46112-02D, 46112-02G

Models

This kit consists of the components for replacing the clutch and brake master cylinder reservoirs with chrome reservoirs. This kit fits on 2002-2005 VRSC model motorcycles and 1999-2004 Touring, 2000-2005 Softail® and 1999-2005 Dyna model motorcycles equipped with a hydraulic clutch.

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.

NOTE

If the original brake and clutch levers are re-used, new retaining rings (Harley-Davidson Part Number 11143) must be purchased.

Kit Contents

See Figure 11 and Table 1.

INSTALLATION

Prepare Motorcycle for Service

1. **For all models except V-Rod®**: Follow the service manual instructions to remove the seat.

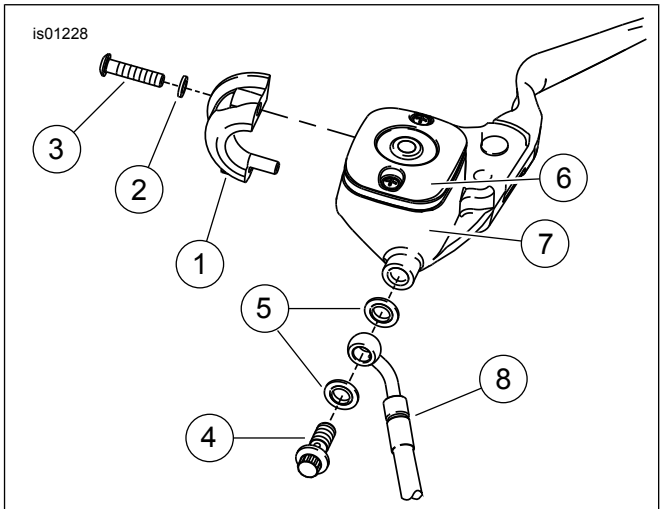
⚠ WARNING

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

2. **For all models except V-Rod**: Follow the service manual instructions to disconnect the negative (-) battery cable. **For V-Rod**: Remove the right side cover and remove the maxi-fuse. Remove the left side cover and disconnect the negative (-) battery cable.

Remove Existing Clutch Fluid Reservoir

1. While holding turn signal locknut underneath clutch lever/master cylinder assembly, unthread mirror (counterclockwise). Remove mirror and turn signal assembly. Save mirror and washers for installation. Secure turn signal assembly so it is out of the way.



1. **Handlebar clamp**
2. **Flat washer**
3. **Clamp screw**
4. **Banjo bolt**
5. **Washers**
6. **Reservoir cover**
7. **Master cylinder/reservoir**
8. **Clutch fluid line**

Figure 1. Clutch Master Cylinder/Reservoir Assembly

2. See Figure 1. While holding a cup under the banjo bolt/hydraulic line (4, 8), remove the banjo bolt and allow clutch fluid from reservoir to drain into cup. When reservoir appears to be well drained, remove banjo bolt and hydraulic line.

NOTE

Immediately orient clutch line end upward to prevent further drainage from line. Use tie wrap, rubber band or similar device to secure the line to handlebar with open end up. Save banjo bolt (4). Discard steel/rubber washers (5).

3. Use a clean cloth and wipe remaining areas clean of hydraulic fluid.

4. Remove two screws (3) with flat washers (2) securing the handlebar clamp (1) to master cylinder assembly (7). Save washers for installation. Plug the hole where the banjo bolt was removed with index finger and take master cylinder (with clutch lever assembly) to a clean work area.

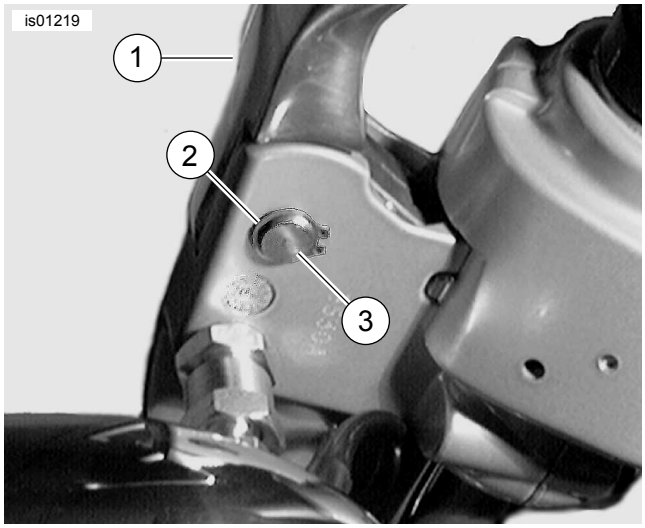
NOTE

To prevent dirt and other contaminants from entering the master cylinder reservoir, thoroughly clean the cover before removal.

5. Remove screws securing cover to master cylinder/reservoir and remove cover and gasket. Turn reservoir upside down over shop rag to remove remaining clutch fluid from reservoir.

NOTE

Use the correct retaining ring pliers and inspect the tips of the pliers for wear or damage.



1. Clutch lever
2. Retaining ring
3. Pivot pin

Figure 2. Remove Clutch Lever

⚠ WARNING

Wear safety glasses or goggles when removing or installing retaining rings. Retaining rings can slip from the pliers and could be propelled with enough force to cause serious eye injury. (00312a)

6. See Figure 2. Remove the retaining ring (2) from the groove in the clutch pivot pin (3) and discard.

NOTE

To remove the pivot pin, gently force the clutch lever toward the piston (as if operating the clutch). This will take the piston spring load off of the pivot pin.

7. Remove the clutch hand lever (1) from the master cylinder assembly by sliding the pivot pin (3) out from the top. Gently pry the pivot pin up and out to remove.

NOTE

It is not necessary to remove components from the bore of the old master cylinder. The new clutch master cylinder comes with all internal components preassembled.

8. Save the clutch lever with clutch lever components installed. Discard clutch master cylinder assembly.

NOTE

Be careful not to lose any of the clutch lever components. If you are replacing the clutch lever with a chrome lever or original master cylinder cover with a chrome cover, at this time, refer to the Instruction Sheet packaged with the kit(s). If you are not replacing the lever, leave the clutch roller components in place on the clutch hand lever.

Install Chrome Clutch Fluid Reservoir

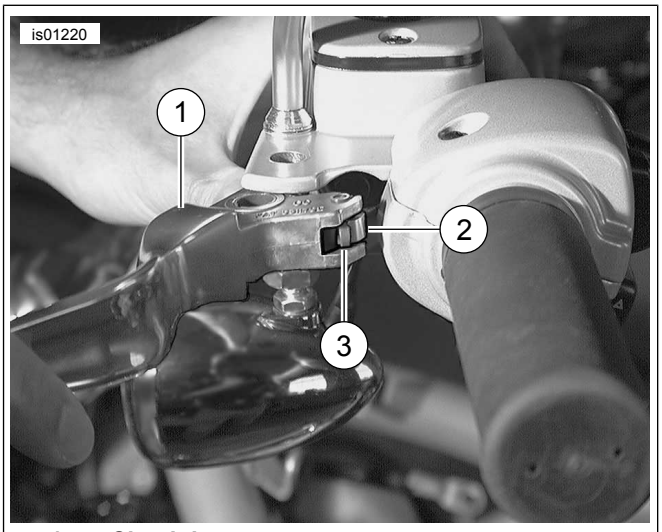
⚠ WARNING

Use denatured alcohol to clean clutch system components. Do not use mineral-based solvents (such as gasoline or paint thinner), which will deteriorate rubber parts even after assembly. Deterioration of these components can cause clutch failure, which could result in death or serious injury. (00296a)

1. See Figure 11. Clean new master cylinder/reservoir (3), cover/gasket assembly (6) with denatured alcohol or the grade of brake fluid specified in the service manual. Wipe dry with a clean, lint free cloth.

NOTE

See Figure 3. When installing clutch lever to master cylinder/ reservoir assembly, position the bushing cup bow facing away from mounting bracket. To align lever and allow the pivot pin to fit, gently compress the piston.



1. Clutch lever
2. Roller
3. Bushing cup bow orientation

Figure 3. Clutch Lever Components

2. If necessary, install the roller with plastic bushing cups. Orient clutch lever in bracket portion of master cylinder assembly and align pivot pin hole with lever bracket holes. Install pivot pin from top and tap into place.

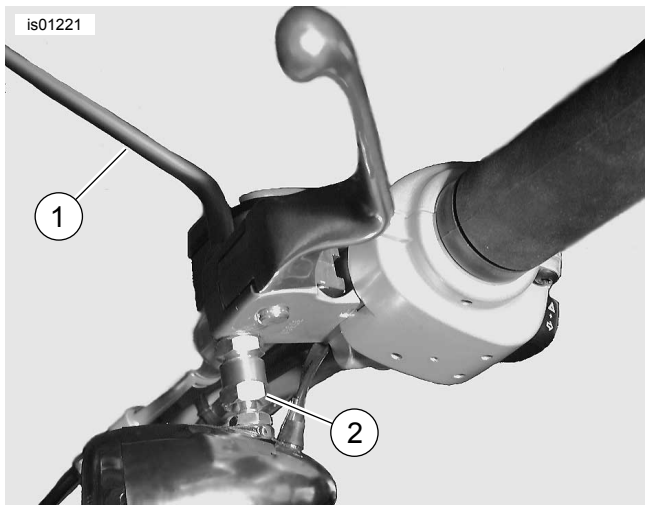
3. Install **new** pivot pin retaining ring into pivot pin groove.

4. See Figure 11. Obtain master cylinder/reservoir clamp (4) and two screws (8) and washers (7). Align master cylinder clutch lever assembly and install screws to hold assembly in place. Snug the mounting screws but do not tighten completely at this time.

5. Use banjo bolt and two **new** steel/rubber washers (1) from kit. Install hydraulic line to master cylinder reservoir with washers oriented on each side of line. Finger tighten banjo bolt.

6. Align entire master cylinder/reservoir clutch lever assembly for rider posture. Beginning with the top handlebar clamp mounting screw, tighten the clamp screws.

   Torque: 8–9 N·m (6–7 ft-lbs) *clamp screw*



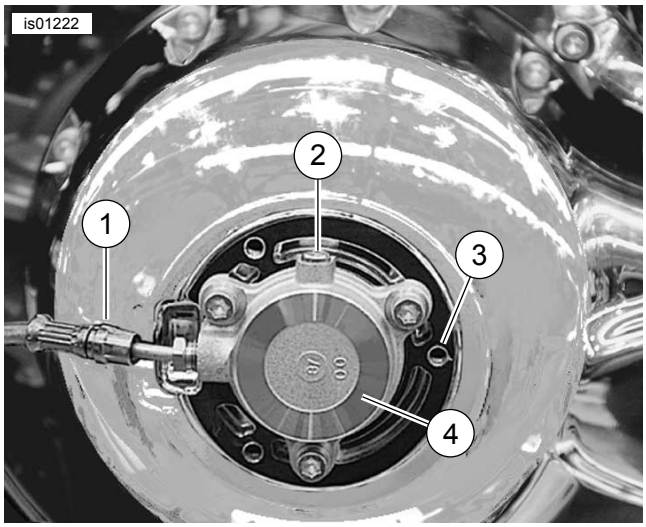
1. Mirror
2. Turn signal locknut

Figure 4. Turn Signal Assembly and Mirror

7. See Figure 4. Install mirror (1) and left turn signal assembly. Tighten turn signal locknut (2) securely.

Bleed the Hydraulic Clutch

For Models with Hydraulic Clutch Installed



1. Hydraulic clutch line
2. Bleeder valve
3. Actuator cover mounting hole
4. Clutch actuator

Figure 5. Clutch Actuator (actuator cover removed)

1. See Figure 5. **For V-Rod Models,** access the clutch bleeder valve (2), remove the 3 bolts and the clutch actuator cover.

For all other Models

Locate the bleeder valve on the transmission end cover.

NOTICE

Do not allow dirt or debris to enter the master cylinder reservoir. Dirt or debris in the reservoir can cause improper operation and equipment damage. (00205c)

2. Stand motorcycle upright and square handlebars to level clutch reservoir. Loosen banjo fitting at clutch reservoir.

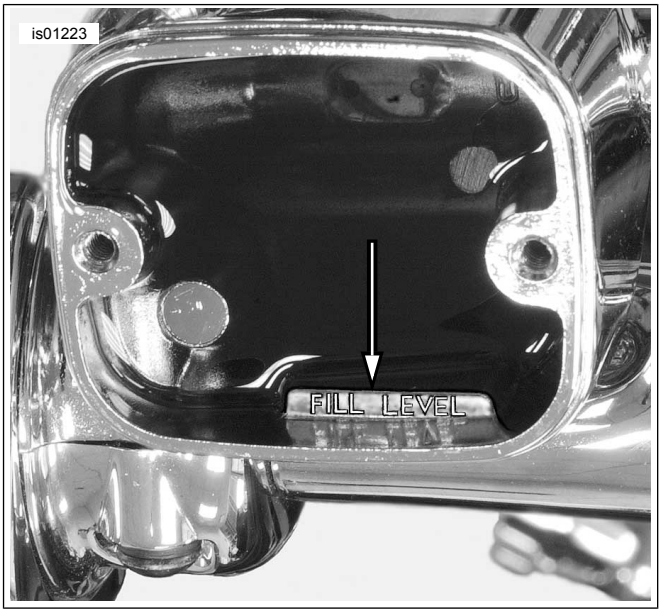


Figure 6. Fill Level

NOTICE

DOT 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. (00204b)

⚠ 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)

3. See Figure 6. Add the grade of brake fluid specified in the service manual to the clutch master cylinder reservoir. Do not reuse old brake fluid. Use only brake fluid from a sealed container. Initial fill level should not exceed FILL LEVEL indicator.

NOTE

Clutch fluid volume actually increases with clutch wear. Do not overfill reservoir.

⚠ WARNING

Be sure the master cylinder relief port is not plugged. A plugged relief port can cause brake drag or lockup and loss of vehicle control, which could result in death or serious injury. (00317a)

4. Verify proper operation of the clutch master cylinder relief port. Actuate the clutch lever. A slight spurt of fluid will break the fluid surface in reservoir if all internal components are working properly.

5. To bleed master cylinder of air bubbles:

   a. Pump clutch hand lever 5 times.

   b. Hold clutch hand lever against handlebar.

   c. Hold shop towel under fitting and loosen banjo bolt.

   d. Watch banjo fitting for air bubbles.

   e. Retighten banjo fitting.

   f. Release hand lever.

6. See Figure 6. Fill reservoir to FILL LEVEL and repeat the previous step three times or more until only a steady flow of clutch fluid escapes the banjo fitting and fluid level in reservoir is at FILL LEVEL with motorcycle upright.

7. Cover exhaust with towel and place a pan under the right side case to catch the excess clutch fluid.

8. To bleed the clutch fluid line and the secondary actuator:

   a. Pump clutch hand lever 5 times.

   b. Hold clutch hand lever against handlebar.

   c. Loosen secondary clutch actuator bleeder screw.

   d. Watch bleeder screw for air bubbles.

   e. Tighten bleeder screw.

   f. Release hand lever.

9. Fill reservoir to FILL LEVEL and repeat the previous step 3 times or more until only a steady flow of clutch fluid escapes the bleeder screw and fluid level in the reservoir is at FILL LEVEL with the motorcycle upright.

10. Tighten reservoir banjo bolt.

    Torque: 23–31 N·m (17–23 ft-lbs) *banjo bolt*

11. Install the cover with gasket on the master cylinder reservoir so that the thicker side is positioned above the clutch line fitting. Install the 2 Phillips screws. Tighten.

    Torque: 1.4–1.7 N·m (12–15 **in-lbs**) *reservoir screw*

NOTE

A sight glass enables the rider to visually check the clutch fluid level without removing the master cylinder cover. When the reservoir is full, the sight glass is dark. As the fluid level drops, the glass lightens up to indicate this condition to the rider.

12. Tighten the secondary clutch actuator fasteners:

    a. Tighten bleeder screw.

       Torque: 9–11 N·m (80–97 **in-lbs**) *Bleeder screw*

    b. **For V-Rod Models**, Secondary clutch actuator cover fasteners to 6–10 N·m (53–88 **in-lbs**).

Remove Existing Front Brake Fluid Reservoir

1. See Figure 2. While holding turn signal locknut underneath brake lever/master cylinder assembly, unthread mirror (counterclockwise). Remove mirror and turn signal assembly. Save mirror and washers for reinstallation. Use cable strap or other device and secure turn signal assembly so it is out of the way.

NOTE

When performing the next step, place a large cup directly under the master cylinder/reservoir at point where banjo bolt attaches the hydraulic line to the master cylinder reservoir. Hydraulic fluid will begin dripping from the line as the banjo bolt is removed.

2. While holding a cup under the banjo bolt/hydraulic line assembly, slowly remove the banjo bolt and allow brake fluid from reservoir to drain into cup. When reservoir appears to be well drained, completely remove banjo bolt and hydraulic line.

NOTE

Immediately orient brake line end upward to prevent further drainage from line. Use tie wrap, rubber band or similar device to secure the line to handlebar (with end up). Save banjo bolt. Discard steel/rubber washers.

3. Use a clean cloth and wipe down any remaining areas of hydraulic fluid.

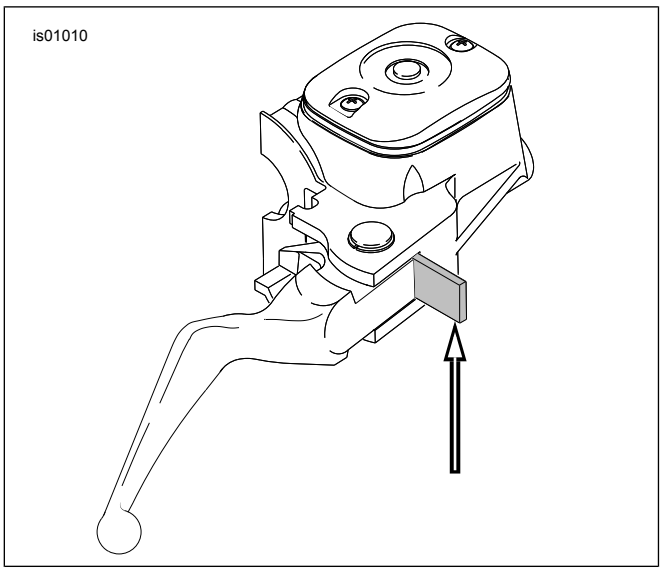
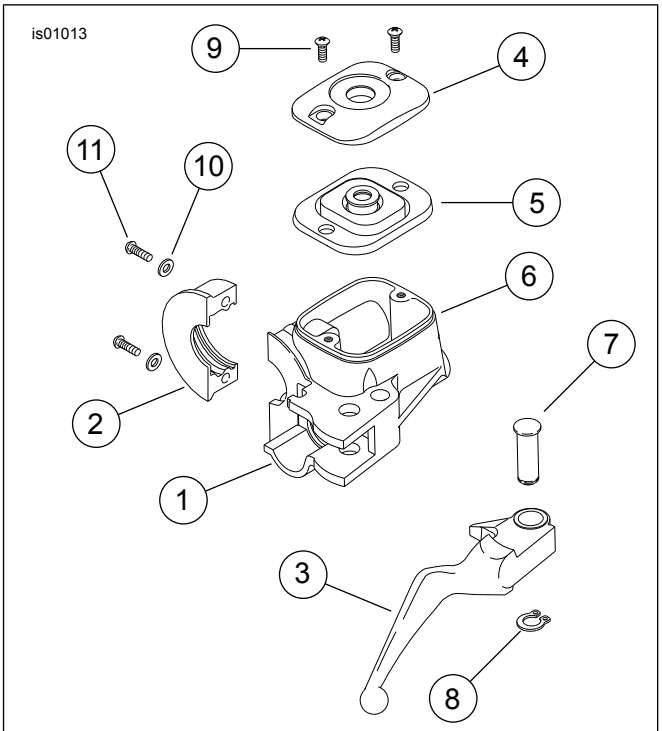


Figure 7. 5/32 in. (4 mm) Cardboard Insert

NOTICE

Do not remove or install the master cylinder assembly without first positioning a 5/32-inch (4 mm) thick insert between the brake lever and lever bracket. Removing or installing the master cylinder assembly without the insert in place may result in damage to the rubber boot and plunger on the front stoplight switch. (00324a)

4. See Figure 7. Place a 4 mm (5/32 inch) cardboard insert between the brake lever and lever bracket.



1. **Master cylinder housing**
2. **Handlebar clamp**
3. **Brake lever**
4. **Master cylinder cover**
5. **Cover gasket**
6. **Reservoir**
7. **Pivot pin**
8. **Retaining ring**
9. **Cover screw**
10. **Flat washer**
11. **Screw**

Figure 8. Brake Master Cylinder/Reservoir

5. See Figure 8. Remove 2 screws (11) with flat washers (10) securing the handlebar clamp to master cylinder assembly (1) and remove clamp (2). Save washers for reinstallation. Using your index finger, plug the hole where the banjo bolt was removed and take master cylinder/reservoir and brake lever assembly from the handlebar to a workbench or other clean working area.

NOTE

To prevent dirt and other contaminants from entering the master cylinder reservoir, thoroughly clean the cover before removal.

6. Remove screws securing cover to master cylinder housing and remove cover and gasket. Turn housing upside down over rag to remove remaining brake fluid from reservoir.

NOTE

Use the correct retaining ring pliers and inspect the tips of the pliers for wear or damage.

⚠ WARNING

Wear safety glasses or goggles when removing or installing retaining rings. Retaining rings can slip from the pliers and could be propelled with enough force to cause serious eye injury. (00312a)

7. Remove the retaining ring from the groove in the brake lever pivot pin. Discard retaining ring.

NOTE

To remove the pivot pin, gently force the brake lever toward the piston as if operating the brake. This will take the piston spring load off of the pivot pin.

8. Remove brake hand lever from master cylinder housing by sliding the pivot pin out from the top. It may be necessary to gently pry the pivot pin up and out to remove. Save pivot pin for installation. Temporarily set brake lever off to the side.

Install Chrome Front Brake Fluid Reservoir

NOTE

New master cylinder comes with all internal components preassembled. It is not necessary to remove the components from the bore of the old master cylinder.

1. See Figure 11. Obtain new brake master cylinder/reservoir (2) housing from kit. Clean new master cylinder housing, cover and cover gasket with denatured alcohol or the grade of brake fluid specified in the service manual. Replace if necessary. Do not contaminate with mineral oil or other solvents. Wipe dry with a clean, lint free cloth.

NOTE

If you are replacing the brake lever with a chrome lever or the original master cylinder cover with a chrome cover, at this time, refer to the Instruction Sheet packaged with the kit(s). If you are not replacing the lever or cover, the existing lever/cover will be installed.

⚠ WARNING

Use denatured alcohol to clean brake system components. Do not use mineral-based solvents (such as gasoline or paint thinner), which will deteriorate rubber parts even after assembly. Deterioration of these components can cause brake failure, which could result in death or serious injury. (00291a)

2. See Figure 8. Orient brake lever in bracket portion of master cylinder assembly and align pivot pin hole with lever bracket holes. Install pivot pin from top and tap into place.

NOTE

To align the lever and fit the pivot pin, apply gentle force with the lever to compress the piston.

⚠ WARNING

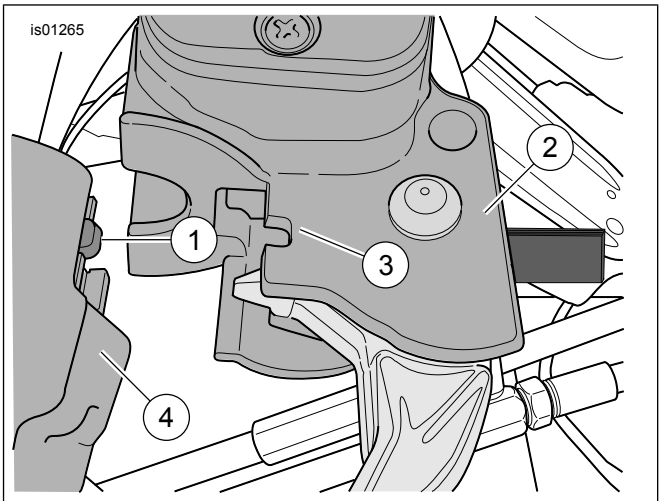
Wear safety glasses or goggles when removing or installing retaining rings. Retaining rings can slip from the pliers and could be propelled with enough force to cause serious eye injury. (00312a)

3. Install **new** retaining ring in pivot pin groove. Verify that retaining ring is completely seated in groove.

⚠ WARNING

Do not use aftermarket fuel caps. Aftermarket fuel caps may fit improperly and leak, which could lead to death or serious injury. See a Harley-Davidson dealer for approved fuel caps. (00034a)

4. See Figure 7. Place a 4 mm (5/32 inch) cardboard insert between the brake lever and lever bracket.



1. Tab
2. Brake lever bracket
3. Groove
4. Switch housing

Figure 9. Brake Lever Bracket to Switch Housing

5. See Figure 9. Position the brake lever/master cylinder assembly inboard of the switch housing assembly (4) engaging the tab (1) on the lower switch housing in the groove (3) at the top of the brake lever bracket (2).

6. See Figure 11. Align holes in handlebar clamp (4) with those in the master cylinder assembly and start the screws (8) with flat washers (7). Position for rider comfort. Beginning with the top screw, tighten the screws.

   Torque: 7.9–9 N·m (6–7 ft-lbs) *handlebar clamp*

7. Install mirror and right turn signal assembly. Tighten turn signal locknut securely.

8. See Figure 11. Obtain banjo bolt and 2 **new** steel/rubber washers (1) from kit. Install hydraulic line to master cylinder assembly using banjo bolt with washer oriented on each side of line. Tighten banjo bolt.

   Torque: 23–31 N·m (17–23 ft-lbs) *banjo bolt*

Bleed the Front Brake

NOTE

Hydraulic brake fluid bladder-type pressure equipment can be used to fill brake master cylinder through the bleeder valve. Remove master cylinder reservoir cover so that system cannot pressurize. Do not use pressure bleeding equipment when the hydraulic system is sealed with master cylinder reservoir cover and gasket in place.

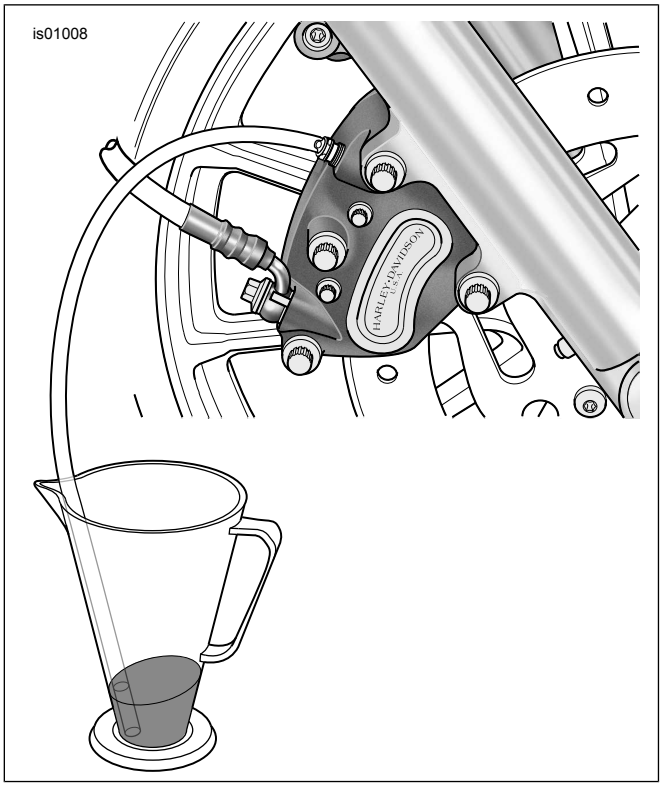


Figure 10. Draining Brake Fluid

1. See Figure 10. Remove bleeder valve cap on front brake caliper. Install end of a length of clear plastic tubing over bleeder valve. Place opposite end in a clean container.

2. Stand motorcycle upright. Clean and remove cover to master cylinder reservoir.

NOTICE

DOT 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. (00204b)

⚠ 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)

⚠ WARNING

Be sure that no lubricants or fluids get on tires, wheels or brakes when changing fluid. Traction can be adversely affected, which could result in loss of control of the motorcycle and death or serious injury. (00047d)

3. Add the grade of brake fluid specified in the service manual to the master cylinder reservoir until the fluid level is 3.2 mm (1/8 inch) from the top. Do not reuse old brake fluid.

4. Squeeze and hold brake lever to build up pressure.

5. Open bleeder valve slowly about 1/2 turn counterclockwise. Brake fluid will flow from bleeder valve and through tubing. When lever has moved its full range of travel, close bleeder valve (clockwise). Allow brake lever to return slowly to its released position.

6. Repeat opening bleeder valve 1/2 turn, squeezing brake lever, closing bleeder valve, and allowing lever to return to released position until all air bubbles are purged

7. Remove clear plastic tubing and tighten bleeder valve.

   Torque: 9–11.3 N·m (80–100 **in-lbs**) *bleeder valve*

8. Install bleeder valve cap.

9. Verify fluid level at 3.2 mm (1/8 inch) from top of reservoir.

10. Attach cover to master cylinder reservoir. Tighten screws on cover.

    Torque: 1.4–1.7 N·m (12–15 **in-lbs**) *reservoir screws*

NOTE

The sight glass enables the rider to check the brake fluid level without removing the master cylinder cover. When the reservoir is full, the sight glass is dark. As the fluid level drops, the glass lightens up.

⚠ WARNING

After servicing brakes and before moving motorcycle, pump brakes to build brake system pressure. Insufficient pressure can adversely affect brake performance, which could result in death or serious injury. (00279a)

Return the Motorcycle to Service

1. Connect the negative battery cable to the battery. **For V-Rod:** Replace the left side cover and install the maxi-fuse and the right side cover.

2. For all models except V-Rod: Follow the instructions in the service manual to replace the seat.

⚠ WARNING

After installing seat, pull upward on seat to be sure it is locked in position. While riding, a loose seat can shift causing loss of control, which could result in death or serious injury. (00070b)

3. **For V-Rod:**Close and lock the seat.

NOTICE

When closing the seat, make sure the ignition switch is in the FUEL position. If the ignition switch is in any other position when the seat is closed, the seat latch mechanism could be damaged. (00196a)

4. With the ignition/light key switch turned to IGNITION, actuate the front brake hand lever to verify operation of the brake lamp.

⚠ WARNING

Be sure that no lubricants or fluids get on tires, wheels or brakes when changing fluid. Traction can be adversely affected, which could result in loss of control of the motorcycle and death or serious injury. (00047d)

⚠ WARNING

After repairing the brake system, test brakes at low speed. If brakes are not operating properly, testing at high speeds can cause loss of control, which could result in death or serious injury. (00289a)

5. Test ride the motorcycle.

   a. If the brake feels spongy, repeat the front brake bleeding procedure.

   b. If the clutch drags or if the transmission shifts hard, repeat the clutch bleeding procedure.

SERVICE PARTS

See Figure 11 and Table 1.

NOTE

The reservoir cover, cover gasket and sight gauge are sold as an assembly. However, the cover gasket, part number 45483-05 can be purchased separately.

Item 5 is available in quantities of 4 in kit Part Number 94632-01.

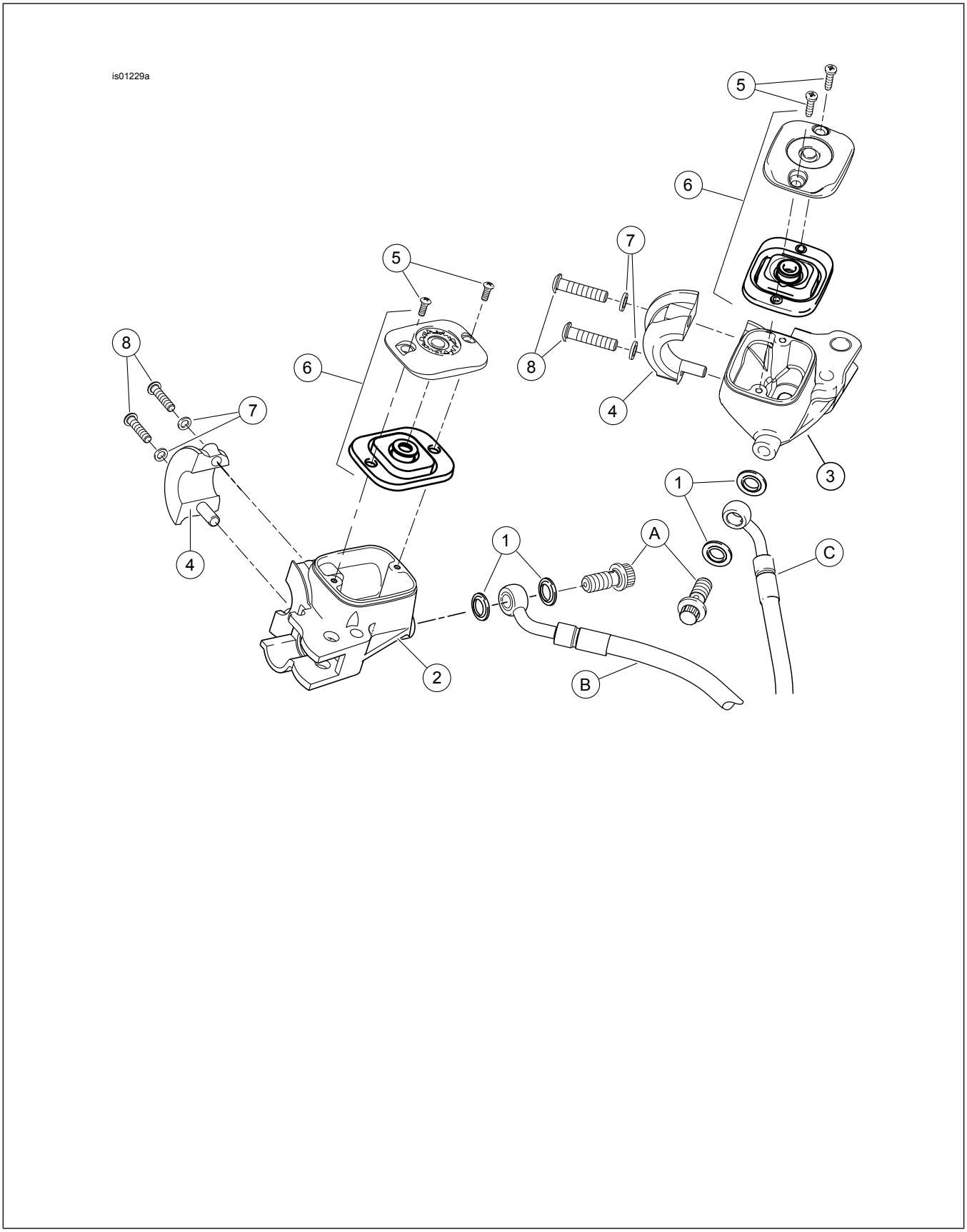


Figure 11. Service Parts: Chrome Master Cylinder Reservoir Kit

Table 1. Service Parts: Chrome Master Cylinder Reservoir Kit

Item	Description (Quantity)	Part Number		Item	Description (Quantity)	Part Number
1	Gasket, steel/rubber, brake line (4)	41731-01		7	Washer (4)	6099
2	Master cylinder assembly, 11/16 brake chrome	45298-99		8	Screw, socket button head (4)	4293
3	Master cylinder assembly, 11/16 clutch chrome	46113-02		Items shown but not in kit		
4	Clamp, handlebar, chrome (2)	45282-99		A	Banjo bolts	Reference only
5	Screw, oval head (4)	2573		B	Brake line	Reference only
6	Cover, assembly, reservoir D.O.T. 5 markings (2), kit	45078-96D		C	Clutch line	Reference only