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Installation Instructions for S&S[®] Hydraulic Side Cover Kit PN 56-4060

DISCLAIMER:

S&S parts are designed for high performance, off road, racing applications and are intended for the very experienced rider only. The installation of S&S parts may void or adversely effect your factory warranty. In addition such installation and use may violate certain federal, state, and local laws, rules and ordinances as well as other laws when used on motor vehicles used on public highways, especially in states where pollution laws may apply. Always check federal, state, and local laws before modifying your motorcycle. It is the sole and exclusive responsibility of the user to determine the suitability of the product for his or her use, and the user shall assume all legal, personal injury risk and liability and all other obligations, duties, and risks associated therewith.

The words Harley[®], Harley-Davidson[®], H-D[®], Sportster[®], Evolution[®], and all H-D part numbers and model designations are used in reference only. S&S Cycle is not associated with Harley-Davidson, Inc.

SAFE INSTALLATION AND OPERATION RULES:

Before installing your new S&S part it is your responsibility to read and follow the installation and maintenance procedures in these instructions and follow the basic rules below for your personal safety.

- Gasoline is extremely flammable and explosive under certain conditions and toxic when breathed. Do not smoke. Perform installation in a well ventilated area away from open flames or sparks.
- If motorcycle has been running, wait until engine and exhaust pipes have cooled down to avoid getting burned before performing any installation steps.
- Before performing any installation steps disconnect battery to eliminate potential sparks and inadvertent engagement of starter while working on electrical components.
- Read instructions thoroughly and carefully so all procedures are completely understood before performing any installation steps. Contact S&S with any questions you may have if any steps are unclear or any abnormalities occur during installation or operation of motorcycle with a S&S part on it.
- Consult an appropriate service manual for your motorcycle for correct disassembly and reassembly procedures for any parts that need to be removed to facilitate installation.
- Use good judgement when performing installation and operating motorcycle. Good judgement begins with a clear head. Don't let alcohol, drugs or fatigue impair your judgement. Start installation when you are fresh.
- Be sure all federal, state and local laws are obeyed with the installation.
- For optimum performance and safety and to minimize potential damage to carb or other components, use all mounting hardware that is provided and follow all installation instructions.
- Motorcycle exhaust fumes are toxic and poisonous and must not be breathed. Run motorcycle in a well ventilated area where fumes can dissipate.

IMPORTANT NOTICE:

Statements in this instruction sheet preceded by the following words are of special significance.



WARNING

Means there is the possibility of injury to yourself or others.



CAUTION

Means there is the possibility of damage to the part or motorcycle.

NOTE

Other information of particular importance has been placed in italic type.

S&S recommends you take special notice of these items.

WARRANTY:

All S&S parts are guaranteed to the original purchaser to be free of manufacturing defects in materials and workmanship for a period of twelve (12) months from the date of purchase. Merchandise that fails to conform to these conditions will be repaired or replaced at S&S's option if the parts are returned to us by the purchaser within the 12 month warranty period or within 10 days thereafter.

In the event warranty service is required, the original purchaser must call or write S&S immediately with the problem. Some problems can be rectified by a telephone call and need no further course of action.

A part that is suspect of being defective must not be replaced by a Dealer without prior authorization from S&S. If it is deemed necessary for S&S to make an evaluation to determine whether the part was defective, a return authorization number must be obtained from S&S. The parts must be packaged properly so as to not cause further damage and be returned prepaid to S&S with a copy of the original invoice of purchase and a detailed letter outlining the nature of the problem, how the part was used and the circumstances at the time of failure. If after an evaluation has been made by S&S and the part was found to be defective, repair, replacement or refund will be granted.

ADDITIONAL WARRANTY PROVISIONS:

- (1) S&S shall have no obligation in the event an S&S part is modified by any other person or organization.
- (2) S&S shall have no obligation if an S&S part becomes defective in whole or in part as a result of improper installation, improper maintenance, improper use, abnormal operation, or any other misuse or mistreatment of the S&S part.
- (3) S&S shall not be liable for any consequential or incidental damages resulting from the failure of an S&S part, the breach of any warranties, the failure to deliver, delay in delivery, delivery in non-conforming condition, or for any other breach of contract or duty between S&S and a customer.
- (4) S&S parts are designed exclusively for use in Harley-Davidson[®] and other American v-twin motorcycles. S&S shall have no warranty or liability obligation if an S&S part is used in any other application.

General:

This kit is designed for installation on existing mechanical clutches to convert from the stock mechanical actuated clutch to a hydraulic actuated clutch. It is designed to work with 1/16" master cylinders with either custom banjo hydraulic lines or Harley-Davidson® hydraulic brake lines. **This kit is NOT designed to work with hydraulic clutch pressure release plates.** Conversion from mechanical to hydraulic side cover actuation will require some components that already exist from a stock mechanical clutch. Required components, as listed below, will need to be purchased separately to complete this kit.

Required Components:

- 1- 1/16" master cylinder and clutch lever assembly.
- 2- Hydraulic line with recommended banjo fitting for the master cylinder and one 90° 10mm banjo fitting for the side cover, or hydraulic line with recommended banjo fitting for the master cylinder and H-D® brake line fitting.
- 3- *Three piece adjustable H-D® mechanical pushrod.
- 4- *Mechanical clutch pressure release plate.

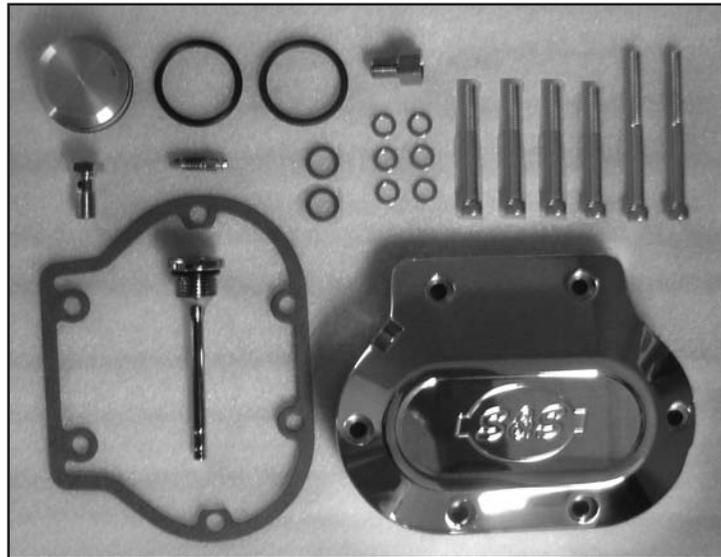
*Existing if using a stock mechanical clutch.

⚠ WARNING

A service manual is necessary for the installation of this kit. The rider's safety depends on the correct installation. Study the procedures listed in these instructions and the appropriate service manual. This kit should be professionally installed by a certified mechanic. Failure to install this kit properly could result in death or serious injury.

Kit Includes:

- 1- Hydraulic Side Cover
- 2- Hydraulic Piston
- 3- Dipstick Assembly
- 4- Viton o-ring, Brown
- 5- Buna o-ring, Black
- 6- HD Brake line adapter
- 7- Banjo Bolt
- 8- Copper Crush Washer (2)
- 9- Cap Screw 2.75" (2)
- 10- Cap Screw 1.75" (4)
- 11- 1/4" Washer (6)
- 12- Bleed Fitting
- 13- Gasket



Hydraulic Side Cover Kit PN 50-4060

REMOVING THE EXISTING SIDE COVER

Ensure the motorcycle is secured on a level surface or placed on a motorcycle lift.

- 1- If equipped, remove left side saddlebag.
- 2- To access the transmission side cover, exhaust system removal may be needed, (See Service Manual). In most cases you will only need to perform the following steps to gain access.
- 3- Loosen both front and rear header pipes at the heads.
- 4- Loosen the exhaust support bracket.
- 5- Loosen the exhaust system heat shields as needed.
- 6- Remove the exhaust system transmission clamp, if equipped.
- 7- Remove drain plug from transmission case and drain transmission fluid.
- 8- Remove the six socket-head screws with washers to free the side cover from the transmission case. (Save two socket-head screws for the new side cover installation if installing on a stock H-D® transmission)
- 9- Actuate the mechanical clutch lever to break the cover seal.

10- Remove snap ring from side cover.

11- Rotate the inner ramp to a position that will allow the clutch cable to be disconnected. Disconnect the cable from the side cover. **See Picture 1.**



Picture 1

12- Remove stock mechanical cable and clutch lever (See Service Manual), and replace it with a clutch lever using a $\frac{1}{16}$ " diameter master cylinder and appropriate hydraulic line that is needed for selected application.

13- Remove the old cover gasket from the transmission housing.

14- Remove the main shaft end and oil slinger from transmission.

15- Disassemble the thrust washers and bearing from the shaft. Press off the oil slinger and reassemble the washers and bearing onto shaft. **See Picture 2.**



Picture 2

16- Remove the derby cover from the primary cover.

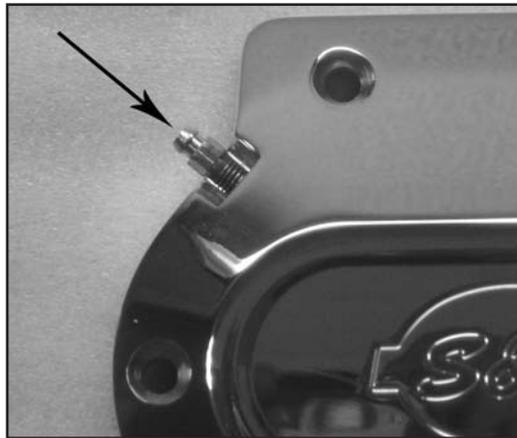
17- Loosen the locknut on the adjuster rod unscrewing the adjuster outwards to ensure enough clearance for the hydraulic side cover installation.
See Picture 3.



Picture 3

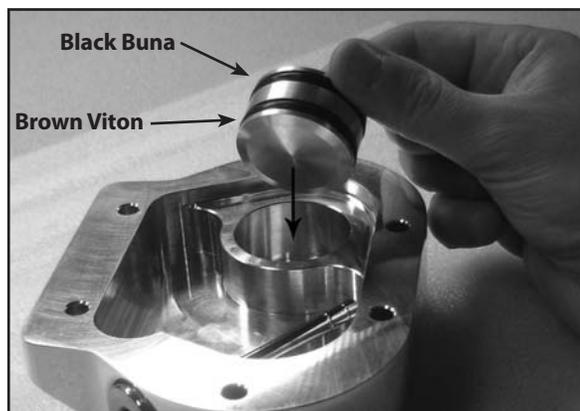
HYDRAULIC SIDE COVER INSTALLATION

1- Install the bleed fitting into the 1/4" threaded hole at the top of the hydraulic side cover and tighten down lightly. **See Picture 4.**



Picture 4

- 2- Place the brown Viton o-ring into the first groove from the top of the piston. Place the black Buna o-ring into the second groove of the piston. Ensure that the o-rings are not twisted or damaged. **See Picture 5.**
- 3- Lubricate o-rings with DOT 5 fluid.
- 4- Push the piston, top first into the side cover bore until it bottoms out.



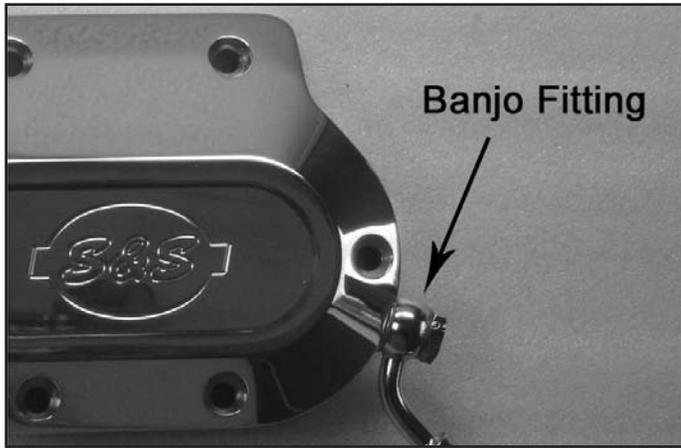
Picture 5

5- Installing hydraulic line

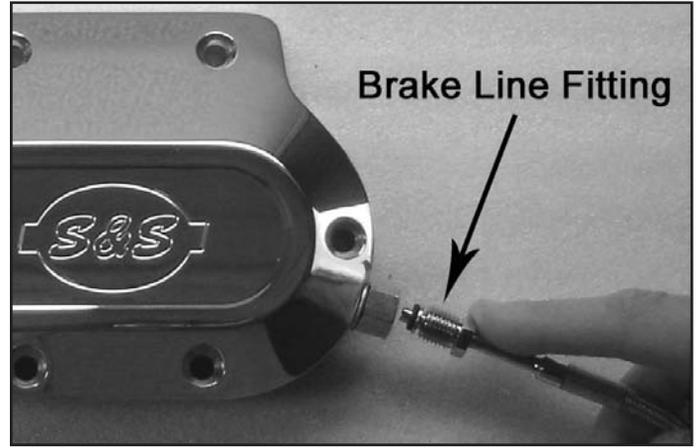
- a- Install the crush washers and banjo bolt through banjo fitting with one washer on each side of the banjo fitting, then screw the banjo bolt into the side cover until tight. **See Picture 6a.**

OR

- b- If hydraulic line with the brake line fitting is used, screw the provided adapter with one crush washer into the side of the cover and tighten. Thread the brake line fitting into the adapter and tighten. Ensure that there is a small o-ring on the end of the brake line fitting. Lubricate with DOT 5 before installing. **See Picture 6b.**



Picture 6a



Picture 6b

- 6- Place the pushrod without the oil slinger into the mainshaft on the right side of the transmission.
- 7- Remove the two dowel pins from the transmission trapdoor if present.
- 8- Install the new gasket and socket-head screws provided in kit, apply blue threadlock to each fastener and torque in sequence to 10-12 ft-lbs. **See Figure 1.**

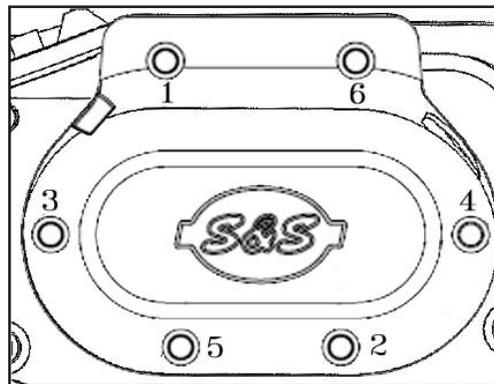


Figure 1

NOTE: If installing on the S&S® 6 speed transmission place the two longer 2.75" screws provided in this kit into position 1 and 6. If installing on a H-D® transmission, use two of the 2.25" screws from the old cover in position 1 and 6. Use the 1.75" screws provided in the kit in position 2, 3, 4, 5 for both transmissions.

- 9- Ensure that the hydraulic clutch line is routed in same manner as the prior mechanical clutch line and tighten the banjo bolt. (See your service manual for routing details)
- 10- On the primary side of the motorcycle, adjust the clutch adjuster screw by turning it all the way in until it stops to collapse the hydraulic piston into the side cover.
- 11- Back the adjuster screw off ¼ - ⅜ turn and lock into place by tightening the nut. **See Picture 3.**
- 12- Stand the bike upright and ensure that the master cylinder is in a level position
- 13- Remove the master cylinder fluid reservoir cover and gasket.
- 14- Using D.O.T. 5 Silicone Hydraulic Brake fluid fill the reservoir and bleed the hydraulic system to remove air.

⚠ WARNING

Direct contact with DOT brake fluid with the eyes may cause irritation, swelling, and redness. Avoid eye contact. In case of eye contact flush with large amounts of clean water and seek medical attention. Swallowing large amounts of DOT brake fluid may cause digestive problems, seek medical attention. Keep out of reach of children.

- 15- Activate the clutch lever several times, hold it down and then open the bleeder valve on the side cover. If necessary add additional fluid to the master cylinder reservoir until $\frac{1}{8}$ " from the top. Do not allow the brake fluid to become low enough in the reservoir to allow more air to enter the system.
- 16- After fluid pressure has stopped flowing from the bleeder, close the bleeder valve.
- 17- Depress and hold the clutch lever to build up pressure.
- 18- Open the bleeder valve again to relieve pressure and remove air.
- 19- Repeat steps, keeping the master cylinder full, until all air is purged from the system.

NOTE: *The use of a hand vacuum pump on the bleeder screw will help to remove any air from the system quickly. Be careful not to allow the fluid level in the master cylinder reservoir to become too low with this operation.*

- 20- Verify that the master cylinder components are working properly by observing a slight spurt of fluid which should break the surface of the reservoir when the clutch lever is pulled.
- 21- Once the air is bled from the system, place the master cylinder gasket and cover back onto the reservoir and tighten down.

MEASURING HYDRAULIC CLUTCH LIFT

- 1- Attach a magnetic or clamp base dial indicator to a rigid surface on the primary side of the motorcycle.
- 2- Position the indicator to the surface of the mechanical pressure release plate.
- 3- Actuate the clutch lever to measure the movement of the clutch assembly.
- 4- The assembly must move at least .065", proper bleeding of the system will have movement greater than .065". If the movement is less than specified, re-bleed the hydraulic system. **See Picture 7.**



Picture 7

- 5- Check the derby cover o-ring or gasket for tears, cuts or deterioration, replace if necessary and reinstall the derby cover tightening the screws in sequence to 84-108 in-lbs (See service manual)
- 6- Reinstall transmission drain plug and fill transmission with proper transmission lubricant. Check for any leaks. (See service manual for specific lubrication requirements.)

⚠ WARNING

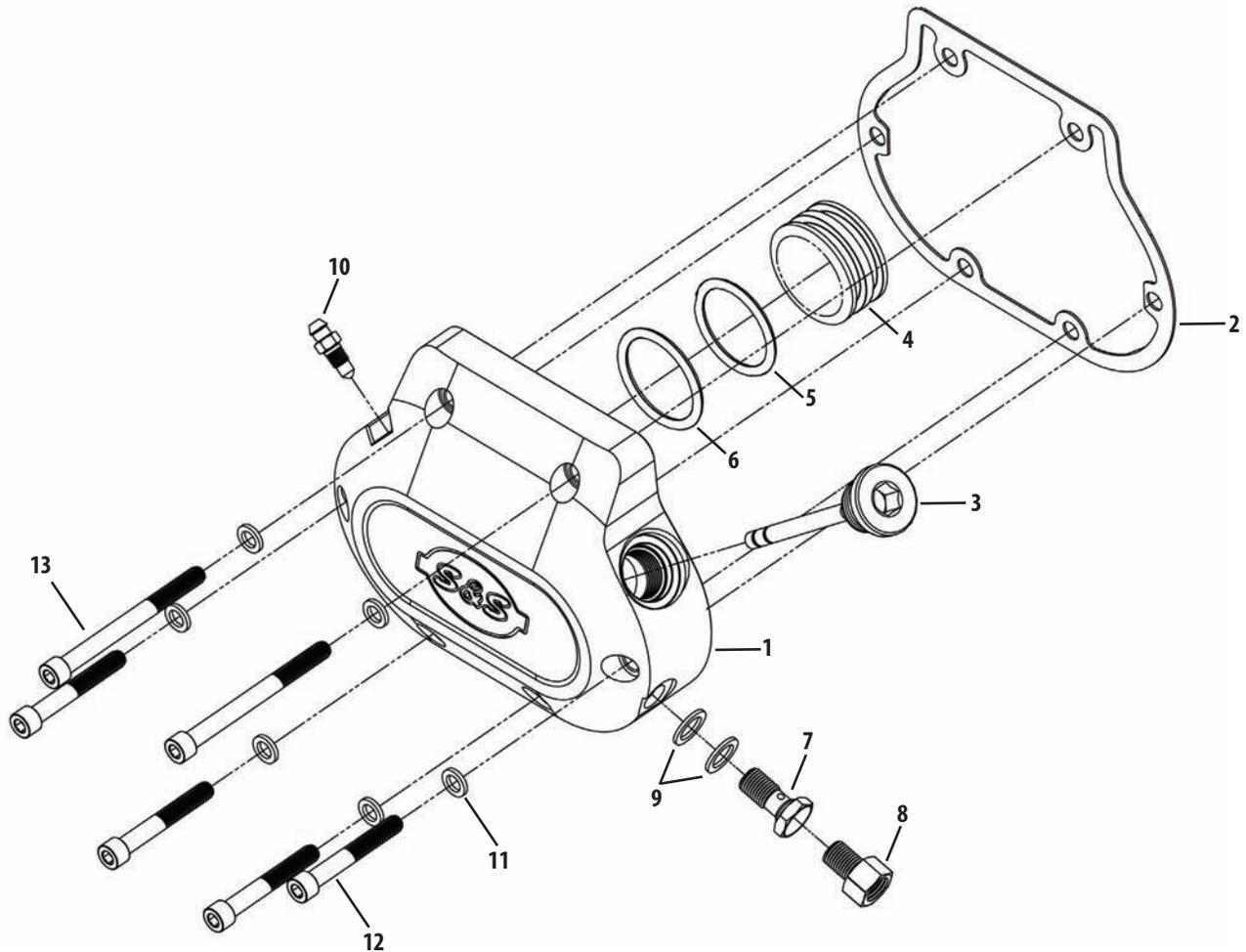
Insufficient clutch pressure release plate movement can lead to difficulty or inability to shift properly, causing loss of vehicle control which could result in death or serious injury.

REASSEMBLY

- 1- Install and tighten the exhaust system and ensure that the hydraulic clutch line does not touching any hot surfaces.
- 2- Properly install any components taken off during installation.
- 3- Reconnect battery.
- 4- Test ride the motorcycle shifting through the gears to ensure the clutch is functioning properly. If the clutch is not fully disengaging or is slipping, re-bleed and measure clutch assembly travel.

S&S® REPLACEMENT PARTS FOR HYDRAULIC CLUTCH SIDE COVER PN 56-4060

1. Hydraulic Clutch Side Cover (Billet)
2. Gasket Side Cover (10 Pack) 56-5111
3. Dipstick Assembly..... 56-5132
4. Piston, Hydraulic Clutch (Billet) 56-1304
5. O-ring, 1¼ ID x ⅜ CS, Buna-N 70 (10 Pack) 50-1099
6. O-ring, 1¼ ID x ⅜ CS, Viton (10 Pack) 50-1094
7. Banjo Bolt ⅜-24 x ¾ (5 Pack)..... 50-1096
8. Adapter, Hydraulic Clutch Line..... 56-5198
9. Crush Washer, Copper .400 ID x .590 OD x .050 (2 pack) 50-1098
10. ¼-28 Bleed Fitting (5 Pack) 50-0500
11. Washer, Flat .260 x .420 x .06 Chrome (10 pack)..... 50-8451
12. Screw, Cap Hex SH ¼-20 UNC x 1.75 Zinc (10 pack) 50-0370
13. Screw, Cap Hex SH ¼-20 UNC x 2.75 Zinc (10 pack) 50-0460





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