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## Installation Instructions: S&S® Big Twin Crankcase Gearcover Kits

### 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 affect 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.

### 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.**

### 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 inhaled. 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 inhaled. Run motorcycle in a well ventilated area where fumes can dissipate.

Year Group	Flange Style Points/Electronic	Billet Points/Electronic	Flangeless Tall Points/Electronic	Flangeless Tall Electronic Only
1970-1972	31-0210	31-0242	31-0202	31-0206
1973-1992	31-0211	31-0209	31-0203	31-0207
1993-Up	31-0212	31-0243	31-0204	31-0208

S&S® crankcase gearcover kits are available in four styles, and each style is available for three year groups. (See chart above.) Because of differences in oiling and scavenging systems, kits for different year groups are not interchangeable. Correct kit must be used to insure proper oil circulation. All S&S gearcase covers may, however, be used with either end-oiling or side-oiling pinion shafts without modification.

#### KIT CONTENTS

- Gearcase cover and gasket
- Chrome outer cover and gasket
- Inner and outer timing covers and gasket
- Mounting hardware

#### NOTES

- *Camshaft endplay must be checked whenever a different gearcase cover is installed. A new rear lifter guide gasket and, in some instances, camshaft thrust washer may be required to complete this installation.*
- *The procedure for installing an S&S gear cover is essentially the same as stock. If in doubt, consult a professional mechanic or refer to the appropriate Harley-Davidson® Service Manual.*
- *It is recommended that S&S bushings and gaskets be used for rebuilds, although in most instances stock components may be substituted if necessary.*
- *S&S gearcovers are supplied ready to use, with both bushings machined to stock specifications. No further machining is required.*

#### INSTALLATION

1. Thoroughly clean engine and surrounding area. Some motorcycles require that front exhaust pipe and/or right footboard be removed prior to installation. Harley-Davidson® Evolution® engines generally require removal of rocker covers and rocker arms.
2. Remove all four pushrod cover clips and rotate engine until rear pushrods are at their lowest point. Remove rear pushrods, oil pressure sending unit, rear lifter guide, and lifters.
3. Rotate engine to bring front pushrods to their lowest point. Loosen adjusters to eliminate pressure on camshaft. If non-adjustable stock pushrods are used, they should be removed as directed in Harley-Davidson® Service Manual.
4. Remove ignition cover and ignition components located inside gearcover. Take care that camshaft and/or breather gear and thrust washer do not come out with gearcover. If this occurs, they must be reinstalled according to standard Harley-Davidson® procedure. Insure that marks on breather valve, camshaft, and pinion gear align correctly.

5. Clean gearcover gasket surface on crankcase. All traces of gasket material and oil must be removed.
6. Clean new cover with warm, soapy water and rinse in clean water. Paying particular attention to oil passages, dry thoroughly with compressed air.
7. Check camshaft endplay as follows:
  - A. Temporarily install cam, gear cover, and new gasket. Torque cover mounting bolts to 10-12 ft. lbs.

**NOTE:** Gearcover should slide over dowel pins, pinion shaft, and cam with little or no resistance. If gear cover does not slide on easily, cause of resistance must be determined and corrected. Under no circumstance should cover be forced into place.

#### CAUTION

**Forcing gear cover on may subject pinion shaft to unwarranted flexing and side loading which can cause shaft to fatigue and break during operation.**

- B. A dial indicator or feeler gauge should be used to establish endplay according to standard procedure. Recommended end play is .003" to .015". A thinner or thicker camshaft thrustwasher may be installed to correct endplay.

**NOTE:** S&S has thrustwashers available in .005" increments from .050" to .070". See S&S catalog for parts numbers.

8. Coat both bushings with fresh motor oil and permanently install gear cover. A small amount of gasket sealer may be used if desired. Torque cover bolts to 10-12 ft. lbs.
9. Install front pushrods and pushrod tube assemblies. Adjust pushrods according to manufacturer's instructions. Reinstall pushrod cover clips.
10. Clean rear lifter guide and crankcase gasket surfaces. Install rear lifter guide, gasket, and lifters.

**NOTE:** Coating lifter guide bores with assembly lube or other thick oil will help hold lifters in place as guide assembly is installed.

11. Rotate engine to place rear lifters at their lowest point. Install and adjust rear pushrods and pushrod tube assemblies according to manufacturer's instructions.
12. Coat threads with thread sealer and install oil pressure sending unit.

13. Using provided ignition cover standoff screws 31-0224, install and time ignition system according to manufacturer's instructions. Route ignition sensor wire through channel in lower part of cover and secure with retainer 31-2029.

**NOTE:** Sensor wire must not contact exhaust or hot surface.

14. Attach chrome outer cover and gasket to gearcase cover body.  
 A. Flange and billet types - Attach outer cover and gasket using 8 each 10-24 screws and washers (billet cover only). Ignition wire must rest in channel of gearcover so as not to chafe against edge of outer cover.

- 1. Gearcover assembly . . . . . **N/A**
- 2. Gasket, gearcover  
 1936-'69 bt (H-D® #25225-36C)  
 (10 Pack) . . . . . **31-2060**  
 1970-'99 bt (H-D® 25225-70B, 93)  
 (10 Pack) . . . . . **31-2059**
- 3. Outer cover, gearcover - 1970-'99 bt  
 Flanged type - steel, chrome **31-0217**  
 Flanged type - steel, black . . **31-0262**  
 Flanged type - billet . . . . . **31-0241**  
 Flangeless type - chrome . . . **31-0238**  
 Flangeless type - black . . . . **31-0263**
- 4. Gasket, outer cover - 1970-'99 bt  
 Flanged type (5 Pack) . . . . . **31-0256**  
 Flangeless type (5 Pack) . . . . **31-0261**
- 5. Ignition cover, inner - 1970-'99 bt  
 Flanged type . . . . . **31-0215**  
 Flangeless type . . . . . **31-0235**
- 6. Gasket, ignition cover - 1970-'99 bt  
 (H-D® 32591-80) (10 Pack) . . . . . **31-0260**

- 7. Ignition cover, outer - 1970-'99 bt  
 (H-D® #32524-83) . . . . . **31-0227**
- 8. Screw, SH - 8-32 x ½"  
 (Replaces H-D® rivets.)  
 Stainless Steel (10 Pack) . . . . . **50-0236**  
 Chrome (10 Pack) . . . . . **50-0332**
- 9. Screw, SH  
 10-24 x ¼" for steel cover  
 (10 Pack) . . . . . **50-0128**  
 10-24 x ⅜" - chrome for billet cover  
 (10 Pack) . . . . . **50-0136**
- 10. Washer, flat .192" x ⅝" x .035"  
 (Use with 50-0023.) (10 Pack) . **50-7011**
- 11. Screw, SH - Use in all positions  
 ¼"-20 x ⅞"  
 (H-D® #884) (10 Pack) . . . . . **50-0197**  
 1970-'99 BT - ¼"-20 x 1¼" (H-D® #3482A)  
 Zinc (10 Pack) . . . . . **50-0153**  
 Chrome (10 Pack) . . . . . **50-0330**

- 12. Washer, flat  
 ¼" x .474" x .050" (10 Pack) . . **50-7076**  
 ¼" Flat washer, chrome, billet covers  
 (12 Pack) . . . . . **50-7013**
- 13. Wire harness clip  
 (H-D® #38711-93) . . . . . **31-2029**
- 14. Cam bushing, gearcover  
 1936-'69 bt (H-D® #25581-36) . . **31-4025**  
 1970-'99 bt (H-D® #25581-70) . . **31-4019**
- 15. Pinion shaft bushing, gearcover  
 1936-'53 bt (H-D® #25582-36) . . **31-4029**  
 1954-'72 bt . . . . . **31-4020**  
 1973-'99 bt (H-D® #25582-93) . . **31-4031**
- 16. Gearcover oil seal 1970-'99 bt  
 (H-D® #88162-51) . . . . . **31-4022**
- 17. Screw, timing mechanism  
 (H-D® #32606-82) (10 Pack) . . . . **31-0264**
- 18. Screw, standard panhead 8-32 x ⅜"  
 (10 Pack) . . . . . **50-0058**
- 19. Clip, outer cover (5 Pack) . . . . **31-7007**

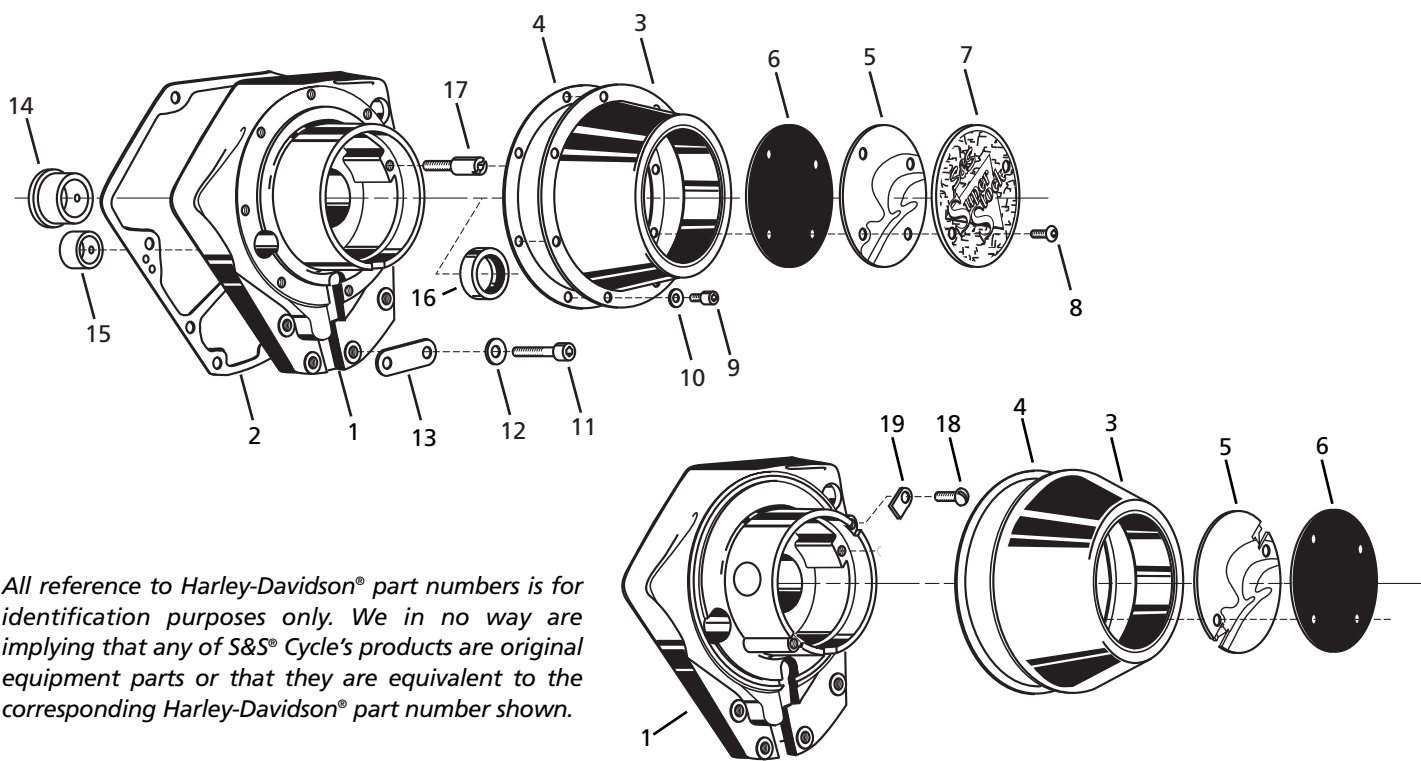
B. Flangeless type

1. Install 31-0236 cover clips using 50-0004 panhead screws, line drawing parts #8 & #9.
2. Install 31-0215 ignition cover, line drawing part #3. Rotate cover to engage tabs on cover with cover clips.

15. Install timing cover, gasket, and backing plate on outer cover with 8-32 x ½" screws.

16. Reinstall any parts removed prior to installation: exhaust, footboards, etc.

17. Start engine and check for leaks.



All reference to Harley-Davidson® part numbers is for identification purposes only. We in no way are implying that any of S&S® Cycle's products are original equipment parts or that they are equivalent to the corresponding Harley-Davidson® part number shown.