



# Installation Instructions for S&S Big Twin Crankcase Gearcover Kits

Year Group	Flange Style Points/Electronic	Billet Points/Electronic	Flangeless Tall Points/Electronic	Flangeless Short 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 gear cover 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 OEM components may be substituted if necessary.*
- *S&S gear covers are supplied ready to use, with both bushings machined to OEM 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. 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 OEM pushrods are used, they should be removed as directed in Harley-Davidson Service Manual.
4. Remove ignition cover and ignition components located inside gear cover. Take care that camshaft and/or breather gear and thrust washer do not come out with gear cover. 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 gear cover 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 - Gear cover 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 other 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.

B. Flangeless type

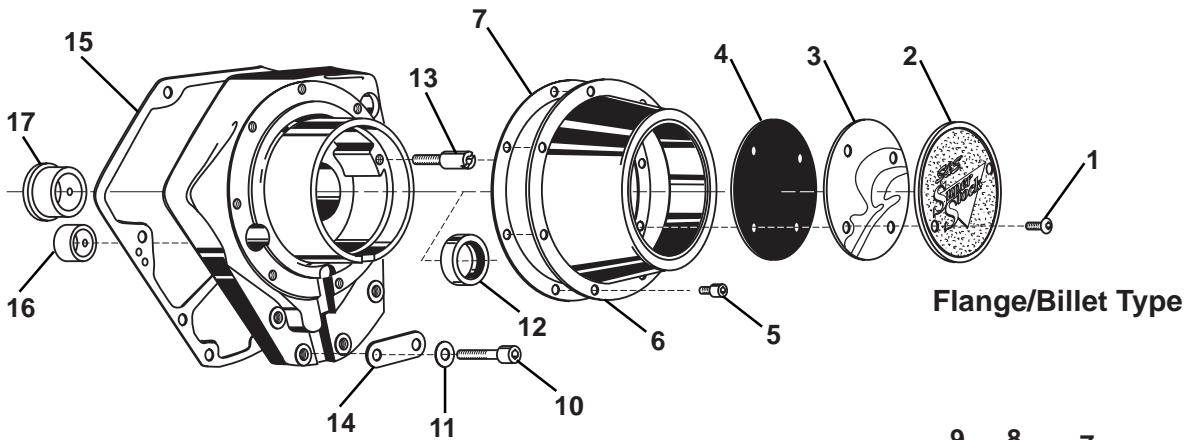
1. Install #31-0236 cover clips using #50-0004 pan head screws, line drawing parts #8 & #9.

2. Install #31-0215 ignition cover, line drawing part #3. Rotate cover to engage tabs on cover with cover clips.

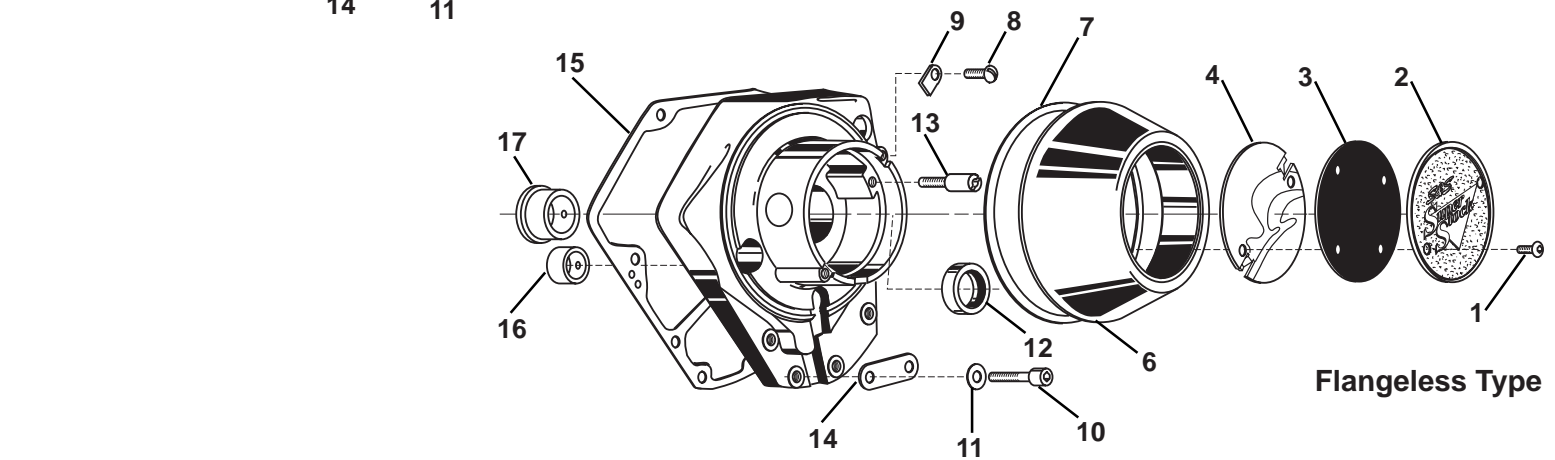
15. Install timing cover, gasket, and backing plate on outer cover with 8-32 x 1/2" screws.

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

17. Start engine and check for leaks.



**Flange/Billet Type**



**Flangeless Type**

1. Screw, SHC 8-32 x 1/2" Outer Ignition cover (replaces H-D rivets) ..... #50-0007
2. Cover, Outer Ignition Super Stock '70-up Big Twin ..... #31-0227
3. Gasket, Ignition Cover '70-up BT (HD#32591-80) ..... #31-0225
4. Cover, Inner Ignition  
Flange Type '70-up BT ..... # 31-0215  
Flangeless Type '70-up BT ..... #31-0235
5. Screw, SHC 10-24 x 1/4" Outer Cover Flange Style ..... #50-0006  
Screw, SHC - 10-24 x 3/8" Outer Cover Chrome Billet Style ..... #50-0023  
\*Washer, flat - .192" x 5/16" x .035" (Not Shown) ..... #50-7009  
\*Note: For use with screws #50-0023 and billet cover #31-0241 only.

6. Cover, Gearcover Outer '70-up BT  
Flange Type ..... # 31-0217  
Flangeless Point/Electronic ..... #31-0238  
Flangeless Electronic Only ..... #31-0234  
Flange, Chrome Billet ..... #31-0241
7. Gasket, Outer Cover '70-up BT  
Flange & Chrome Billet ..... # 31-0218  
Flangeless Type ..... #31-0237
8. Screw, SLTD.PH 8-32 x 3/8" ..... #50-0004
9. Clip, Outer Cover ..... #31-0236
10. Screw, SHC 1/4-20 x 1-1/4" (6 required, used in all positions) ..... #50-0008
11. Washer, flat 1/4" x .474" x .050" steel (6 required) ..... #50-7020
12. Seal, gearcover cam oil '70-up BT (HD#88162-51) ..... #31-4022

13. Screw, Ignition Cover Standoff (HD#32606-82) ..... #31-0224
14. Clip, Wire Harness (HD#38711-93) ..... #31-2029
15. Gasket, Gearcover '70-up BT (HD#25225-70B, 25225-93) ..... #31-2031
16. Bushing, Gearcover Pinion Shaft '93-up BT (HD#25582-93) ..... #31-4020
17. Bushing, Gearcover Cam '70-up BT (HD#25581-70) ..... #31-4019
18. Washer Cam GearThrust (Not Shown)  
.050" Thick ..... #33-5200  
.055" Thick ..... #33-5202  
.060" Thick ..... #33-5203  
.065" Thick ..... #33-5204  
.070" Thick ..... #33-5205