Instruction 51-1238
5-24-06

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S&S® Cycle, Inc.

235 Causeway Blvd.
La Crosse, Wisconsin 54603
Phone: 608-627-1497 • Fax: 608-627-1488
Technical Service Phone: 608-627-TECH (8324)
Technical Service Email: sstech@sscycle.com
Website: www.sscycle.com

PROVEN S&S PERFORMANCE

Because every industry has a leader

Installation Instructions for S&S® Gear Drive Cam Display

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.

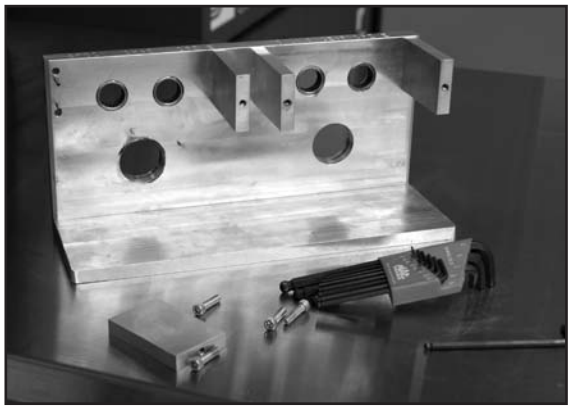
(4) S&S parts are designed exclusively for use in Harley-Davidson® and other American v-twin motorcycles. S&S shall have no warranty or liability obligation if an S&S part is used in any other application.

***NOTE-** You will need the following equipment to go along with your S&S® Gear Drive Cam Display:*

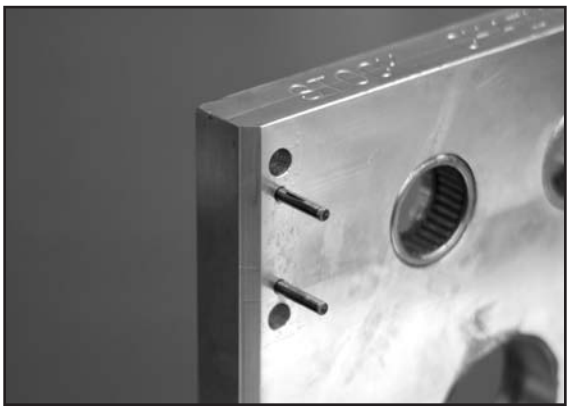
- Two (2) Harley-Davidson® Twin Cam 88® cam support plates
- Complete Twin Cam 88 chain drive cam assembly including cams, chains, tensioners and retainer plate
- Harley-Davidson Tensioner release pins
- Complete S&S Gear Drive kit

1- Unpack the display package. Press the included dowel pins into the Gear Drive Display base and rear support.

2- Bolt rear support to base plate using five (5) ¼-20 x 1" socket head cap screws coated with green threadlock. Now install the four (4) cam plate mounts by aligning them on the dowel pins and securing with two (2) ¼-20 x 1" socket head cap screws coated with green threadlock. We recommend the cam plate mounts not be fully tightened at this time.



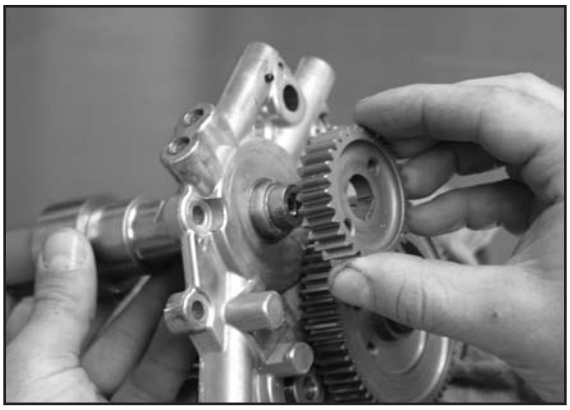
Picture 1



Picture 1a

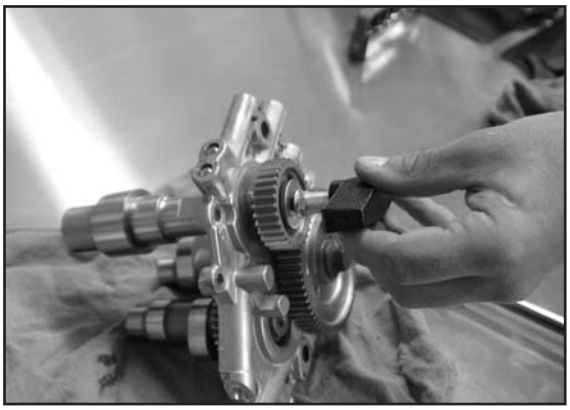
3- Assemble the S&S Gear Drive Cams per the instructions (51-1047) included with the kit. Next, slide the pinion shaft through the cam plate and start the pinion gear on the shaft.

Picture 2



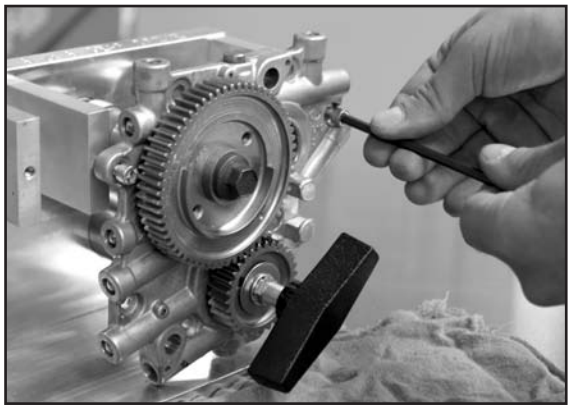
Picture 2a

4- Apply some green threadlock on the threads of the S&S handle and use it to pull the pinion gear into place.



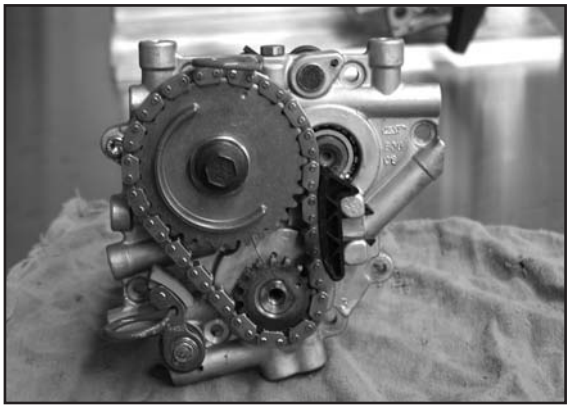
Picture 3

5- Use a light coat of engine oil on the pinion shaft hole on the rear support. Align the cams and pinion shaft in the three holes in the rear support and slide the assembly in place. Install two (2) ¼-20 x 1" socket head cap screws coated with green threadlock in the cam support plate and tighten to 95 in-lbs torque. Be sure to alternate the tightening from side-to-side and verify the handle rotates easily as you go along. Now tighten the two cam support plate mounts.

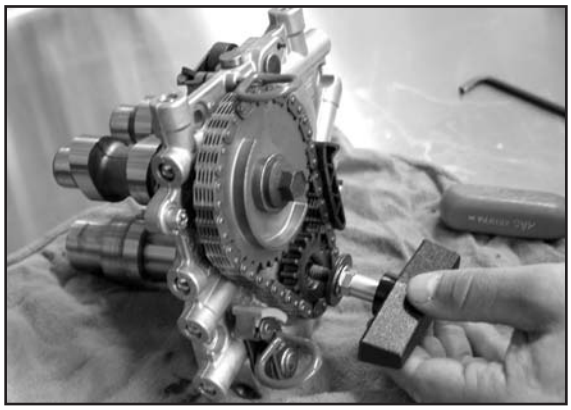


Picture 4

6- Assemble the complete Harley-Davidson® cam plate assembly per the Harley-Davidson® service manual. Use the specified Harley-Davidson® pins to relieve the spring pressure on the tensioner shoes. If you do not do this, the spring pressure on the chains will force the cams out of alignment and make installation into the rear support difficult. Coat the threads of the S&S handle with green threadlock and install it on the pinion shaft.

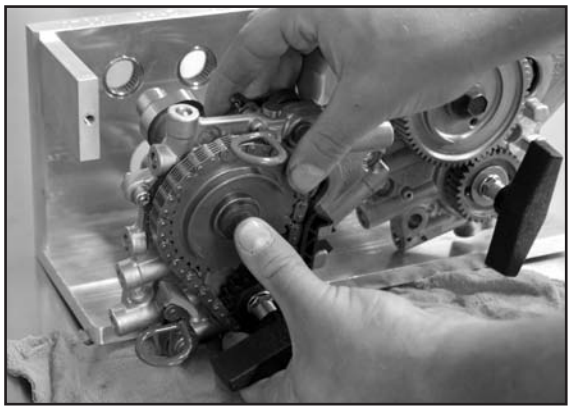


Picture 5



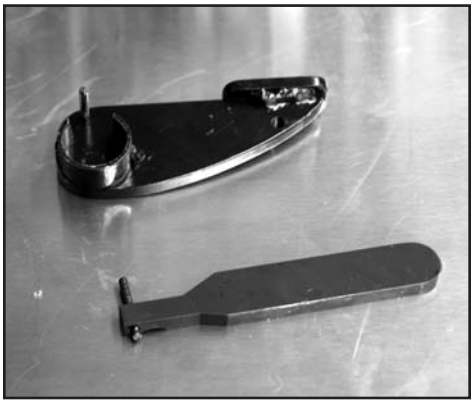
Picture 5a

7- Use a light coat of engine oil on the pinion shaft hole on the rear support. Align the cams and pinion shaft in the three holes in the rear support and slide the assembly in place. Install two (2) ¼-20 x 1" socket head cap screws coated with green threadlock in the cam support plate and tighten to 95 in-lbs torque. Be sure to alternate the tightening from side-to-side and verify the handle rotates easily as you go along. Now tighten the two cam support plate mounts.

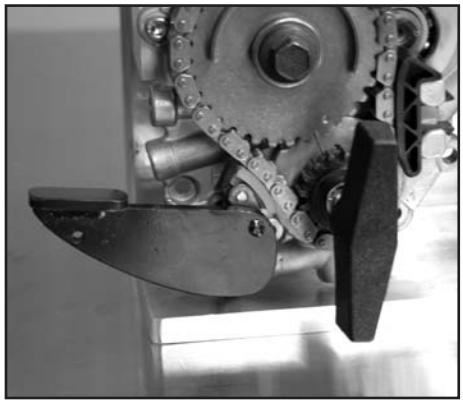


Picture 6

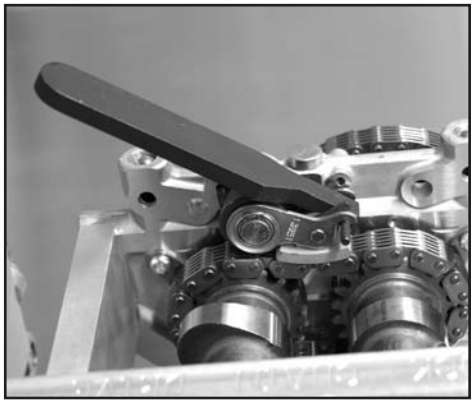
8- Included with the Gear Drive Display are these tools (Picture 7) to relieve the spring pressure that cam chain tensioner shoes apply to the chain. This will allow your customers to see just how much resistance they apply.
9- The tools are installed as shown in Pictures 8 & 8a. The handle makes it easy to press down and release the pressure of the spring.



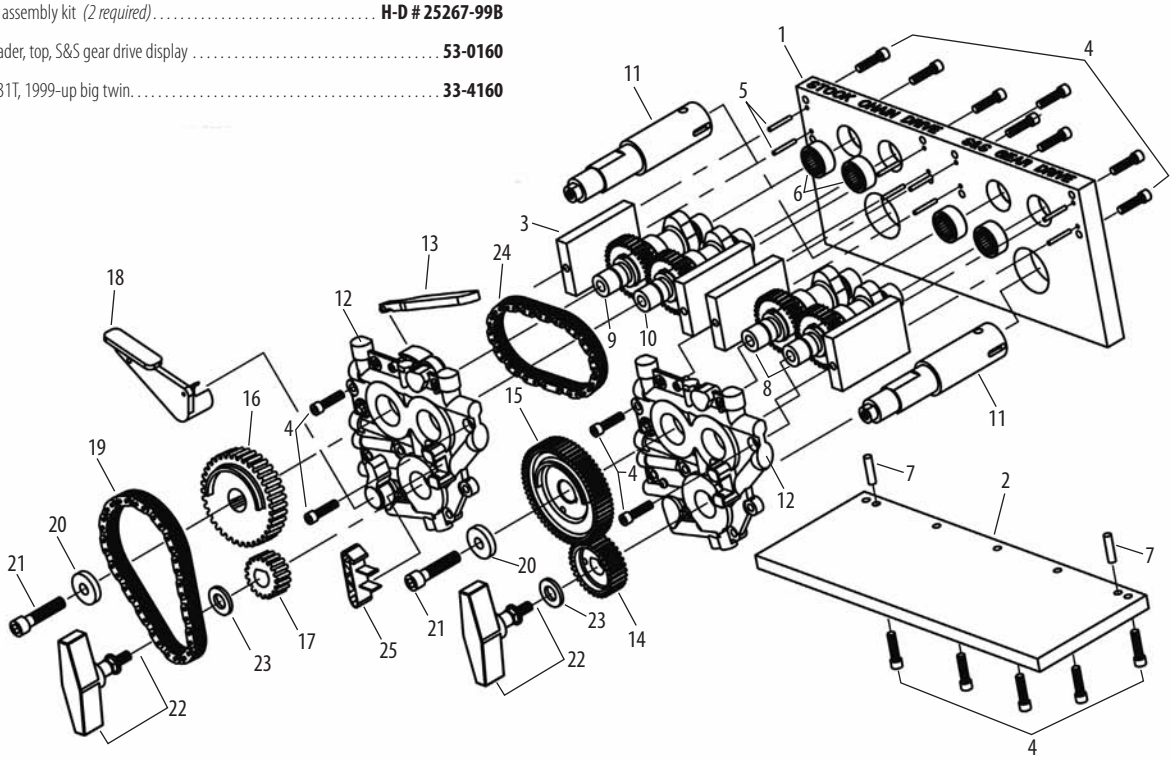
Picture 7



Picture 8



Picture 8a

REPLACEMENT PARTS FOR S&S® GEAR DRIVE CAM DISPLAY 51-8000

1. Rear support, gear drive display, ¾" x 6" x 14" **51-8002**
2. Base gear drive display, ½" x 5" x 14" **50-8001**
3. Cam plate mounts, ½" x 2" x 3.09" *(4 required)* **50-8003**
4. Screw, SHCS, ¼-20 x 1" *(17 required)* **50-0084**
5. Pin, dowel, ⅛" x 1" *(8 required)* **50-8028**
6. Bearing assembly, inner cam needle, 1999-up big twin *(4 required)* **31-4080**
7. Pin, dowel, ¼" x 1" *(2 required)* **50-8026**
8. 510 Cams, gear set **33-5174**
9. Cam shaft, front ..... **Harley-Davidson® # 25534-99**
10. Camshaft, rear ..... **H-D® # 25544-00**
11. Shaft, pinion-press in, 1999-up big twin *(2 required)* **33-2030-S**
12. Cam support assembly kit *(2 required)* ..... **H-D # 25267-99B**
13. Tension unloader, top, S&S gear drive display **53-0160**
14. Gear, pinion 31T, 1999-up big twin **33-4160**
15. Gear, cam, outer 62T, 1999-up big twin **33-4271-S**
16. Sprocket cam drive, 34-tooth ..... **H-D # 25716-02**
17. Sprocket cam drive, 17-tooth ..... **H-D # 25609-99**
18. Tension unloader, bottom, S&S gear drive display **53-0155**
19. Chain, primary cam drive ..... **H-D # 25610-99**
20. Washer flat ⅜" x 1⅛" -18" x .225 *(2 required)* **50-7056**
21. Screw, SHC- ⅜"-24 x 1¾" *(2 required)* **50-0132**
22. T-handle, gear drive display assembly *(2 required)* **50-8010**
23. Washer, flat, 5⁄16" x 1⅛" 1999-up *(2 required)* **50-7130-S**
24. Chain, secondary cam drive ..... **H-D # 25607-99**
25. Chain, guide ..... **H-D # 39965-99**