

**Instruction 51-1056
4-27-06**

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Because every industry has a leader

Installation Instructions: S&S® Speedometer Calibrator (Part #55-1007)

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.

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.

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.

The S&S® Speedometer Calibrator allows owners of Harley-Davidson® and Buell® motorcycles equipped with stock electronic speedometers (those with LCD mileage displays) to correct inaccurate speedometer and odometer readings. Typically, these are caused by the installation of different transmission or wheel sprockets, early stock or aftermarket transmission gears, or rear tires with a diameter other than stock.

The S&S Speedometer Calibrator allows the rider to correct Harley-Davidson® electronic speedometers easily and without special tools or expensive test equipment. Adjustments can be made between -29% and +69% in 1% increments.

The calibrator's small size permits convenient mounting, and sensitive components are sealed for protection against weather and vibration.

⚠ CAUTION

To prevent possible damage to motorcycle electrical system, disconnect battery ground lead ("-") from motorcycle frame prior to installing calibrator.

Installation

1. Place pressure on release clips and unplug wiring connector between speedometer and transmission sensor. Connector is usually located under seat. **See Picture 1.**
2. Attach male and female ends of connector to respective ends of S&S Speedometer Calibrator and secure calibrator and wires to motorcycle. **See Picture 2.** Route wires to avoid stretching, pinching, and chafing against frame. Reconnect battery ground lead to frame.

NOTE - Calibrator features screw-eyes, but can be mounted with wire-ties if desired.

⚠ CAUTION

Improperly routed wires may wear and short against frame, causing extensive damage to motorcycle electrical system and possible fire hazard.

3. Initial setting of adjustment screws should be "0" position. **See Picture 3.**

NOTE - Slot in each screw has small notch in one end. Notched end must point toward selected number. Screws can be rotated full 360 without damage.

Determine Calibration Percentage

1. Determine amount of speedometer error. Most common methods are to compare speedometer reading to speedometer known to be accurate, or compare odometer reading (mileage) to measured distance. Highway markers are usually accurate, but readings from several different markers should be taken and compared for confirmation. Radar can also be used to determine actual speed. In case of gear change, number of teeth on original and replacement sprockets can also be used to determine percentage of speedometer error. Note that formulae for transmission and wheel sprockets are different.

2. Calculate percentage of speedometer error using one of following formulas:

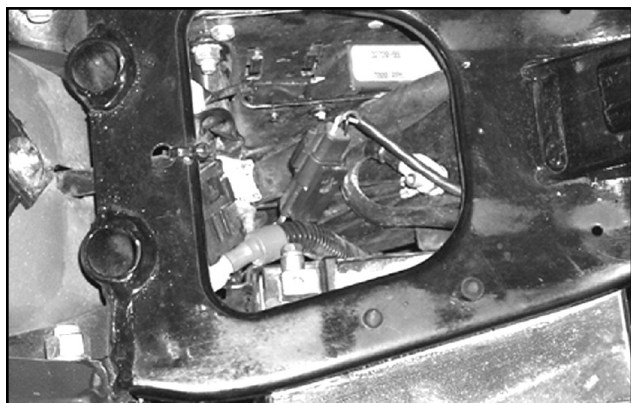
$$\frac{\text{Actual Speed (or mileage) - Indicated Speed (or mileage)}}{\text{Indicated Speed (or mileage)}}$$

OR:

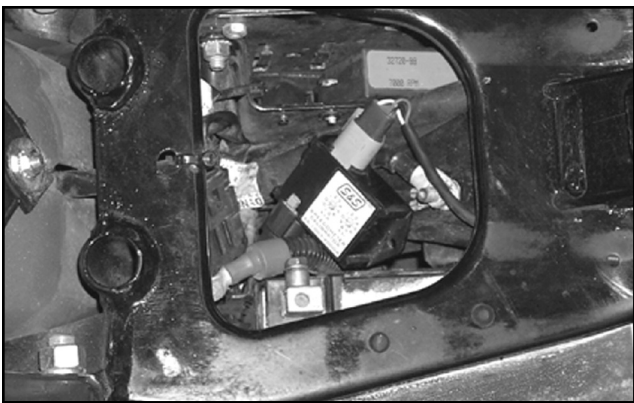
$$\frac{\text{\# of teeth on new trans. sprocket - \# of teeth on original sprocket}}{\text{\# of teeth on original trans. sprocket}}$$

OR:

$$\frac{\text{\# of teeth on original wheel sprocket - \# of teeth on new sprocket}}{\text{\# of teeth on original wheel sprocket}}$$



Picture 1



Picture 2

NOTE - Indicated speed or mileage refers to reading taken from inaccurate speedometer prior to correction. Actual speed or mileage refers to reading taken from radar, accurate speedometer, mileage markers, or other source.

Examples:

A. Speedometer method - Inaccurate speedometer reads 65 MPH. Actual speed is 75 mph.

Percentage change:

$$\frac{75 - 65}{65} = \frac{+10}{65} = +15\%$$

See Picture 3

B. Odometer/mileage method - Odometer reading is 10.6 miles, compared to actual distance traveled of 10.0 miles.

Percentage change:

$$\frac{10.0 - 10.6}{10.6} = \frac{-0.6}{10.6} = -6\%$$

C. Gearing method - Original 32 tooth transmission sprocket was changed to 34 tooth sprocket.

Percentage change:

$$\frac{34 - 32}{32} = \frac{2}{32} = +6\%$$

See Picture 4

OR:

Original 70 tooth wheel sprocket was changed to 65 tooth sprocket.

Percentage change:

$$\frac{70 - 65}{70} = \frac{5}{70} = +7\%$$

NOTE - Calibration percentage will be positive (“+”) if actual speed/mileage is greater than indicated speed/mileage. Percentage will be negative (“-”) if actual speed/mileage is less than indicated speed/mileage. If gearing method is used, percentage will be positive (“+”) if new transmission sprocket has more teeth than old sprocket, negative (“-”) if new transmission sprocket has fewer teeth than old sprocket. Also using gearing method, percentage will be negative (“-”) if new wheel sprocket has more teeth than old sprocket, positive (“+”) if new wheel sprocket has fewer teeth than original sprocket.

Adjust Speedometer Calibrator

After calculating calibration percentage, turn adjustment screws to obtain correct percentage.

NOTE - Scale of adjustment screw on left reads in increments of 10%. In other words, setting left screw at “2” position results in +20% change in speedometer/odometer reading. Scale of adjustment screw on right reads in increments of 1%. In other words, setting right screw at “2” position results in +2% change in speedometer/odometer reading. Setting of left screw plus setting of right indicates total calibration change. As mentioned previously, slot in each screw has small notch in one end. Notched end must point toward selected number.

Confirm Calibration Accuracy

Install seat and confirm that seat and hardware do not contact Speedometer Calibrator or wiring. Road test motorcycle and verify speedometer accuracy using radar or speedometer or odometer method described previously.

NOTE - S&S® Speedometer Calibrator remains attached to motorcycle. Removing calibrator returns speedometer to stock calibration factor.



Picture 3



Picture 4

Fine-tuning

S&S® Speedometer Calibrator can be fine-tuned should initial setting prove inaccurate (error will usually be small). For instance, odometer indicates 106 miles traveled over actual distance of 100 miles. Initial calibration percentage was +39%.

1. Use following formula to calculate final correction percentage:

$$\frac{\text{Actual Mileage}}{\text{Indicated Mileage}} \times (100 + \text{initial calibration \%}) - 100$$

= Final Correction %

OR:

$$\frac{100}{106} \times (100 + 39) - 100 = 0.94 \times 139 - 100 = 130.66 - 100 = +30.66\%$$

2. Reset calibrator to +31%

Disclaimer:

The motorcycle operator remains responsible for operating the motorcycle in a safe, prudent, and legal manner at all times. S&S® assumes no responsibility for speeding tickets or any other liability associated with the use of this product even in the event said product should malfunction. Use of the calibrator to cause an odometer to register any mileage other than true mileage may be a violation of state or federal law. If determined appropriate by S&S, warranty reimbursement will be limited to repair or replacement at the sole discretion of S&S Cycle.



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