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Because every industry has a leader

Installation Instructions: S&S® Hydraulic Lifter Limited Travel Kit Fits All Harley-Davidson® Evolution® Engines

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.

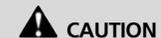
IMPORTANT NOTICE:

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® HL₂T Kit is designed to limit the travel of the hydraulic lifter making it impossible for the lifter to collapse. Stronger valve springs are often used to avoid valve float at high rpm. The HL₂T kit prevents high valve spring pressure from collapsing lifters. With the HL₂T Kit installed, stock hydraulic lifters work like solid lifters at high rpm, while retaining normal hydraulic function for minimal noise and maintenance under normal conditions. Another advantage of the HL₂T kit is that if a valve is held open when the engine is not running, valve spring pressure will not cause lifters to bleed down and collapse. Collapsed lifters can cause hard starting and excessive valve train noise when engine is restarted. Adjustable pushrods must be used with the HL₂T Kit.

Please read the instructions to familiarize yourself with the installation procedure before starting.

NOTE - S&S Kit #33-5338 for 1984 & 1985 tappets, have smaller diameter hydraulic plunger bodies which measure about .612". S&S Kit #33-5339 for 1986 to present tappets, have larger diameter hydraulic plunger bodies which measure about .655". An early S&S kit must not be used in a late set of tappets. Installation procedure is the same for either kit.

Installation

1. Remove tappet assemblies from engine being sure that each one is kept with it's original tappet block.

NOTE: This procedure is the preferred method of installation. However, kit can be installed without removing lifters from engine.

2. Remove hydraulic piston retaining wire clip from one assembly at a time.

CAUTION

Be careful not to bend wire clip during disassembly.

3. Completely disassemble tappet removing all parts.
4. Thoroughly clean all parts including tappet body. Remove any oil which might prevent hydraulic unit from fully collapsing during adjustment.
5. Insert one spacer from S&S HL₂T kit in tappet body.
6. Reassemble tappet in reverse order making sure original parts are returned to their original positions. **See Picture 1.**
7. Replace wire retaining clip in tappet body.
8. Put tappet back in original tappet block.
9. Repeat Steps 2 through 8 for three remaining tappets.
10. Reassemble engine with modified tappets.
11. Adjust pushrods.

NOTE - In all cases engine must be cold and lifter must be at lowest point of travel for pushrod adjustment

CAUTION

To prevent accidents, remove ground cable from battery.

- A. Remove spark plugs.

- B. Bring piston to TDC on compression stroke in cylinder to be adjusted. Normally both tappets will be at their lowest point of travel.
- C. Extend pushrod adjustment, collapsing lifter until piston assembly is in contact with HL₂T spacer and pushrod is tight. If tappets contain oil, as when pushrods are readjusted after engine has been run, or if all oil was not removed during installation, extend pushrod adjustment until valve is open (about five additional turns of adjusting screw). Allow 5 minutes for hydraulic unit to bleed down. If pushrod can be turned with fingers after bleeding down, lifter is not completely collapsed, and this step must be repeated.

NOTE - perform this operation on one cylinder at a time. Do not turn engine until pushrod adjustment is complete.

CAUTION

Turning engine while valve is held off the seat could result in valve to valve or valve to piston contact and serious valve train damage.

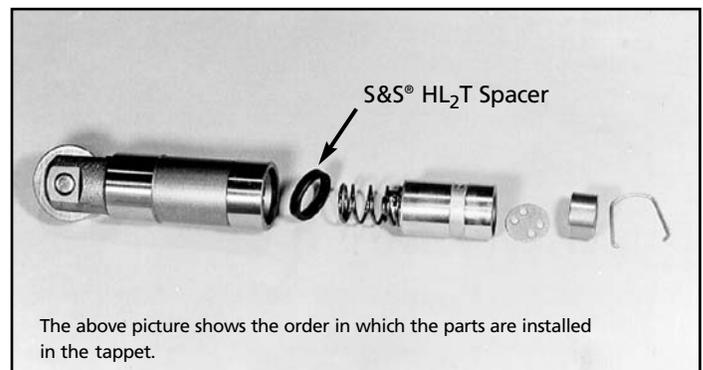
- D. Loosen pushrod adjustment until pushrod can be rotated with the fingers with slight drag.

NOTE - Shortening adjuster an additional six flats or full turn from zero lash often results in quieter pushrod operation. This provides additional travel for the hydraulic piston assembly, which can improve the ability of the hydraulic unit to maintain zero lash under normal operating conditions.

- E. Tighten lock nut.
- F. Follow the same procedure for all four push rods.
- G. Recheck pushrod adjustment after a few hundred miles.

NOTES

- It is a good idea to recheck pushrod adjustment in a new engine as valve train may tighten up due to gasket compression and valve seat wear.
- Upon initial start up after modification, HL₂T equipped lifters may be somewhat noisy for 10-20 miles. If lifters are still noisy after 20 miles it is recommended that pushrods be adjusted 1/2 turn looser. See step D.



Picture 1