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Installation Instructions: S&S Time Saver Pushrods **for 1984-'14 Harley-Davidson® Big Twin Engines**

DISCLAIMER:

S&S parts are designed for high performance, closed course, 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 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 judgment when performing installation and operating motorcycle. Good judgment begins with a clear head. Don't let alcohol, drugs or fatigue impair your judgment. 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.

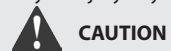
IMPORTANT NOTICE:

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.

READ INSTRUCTIONS CAREFULLY BEFORE STARTING INSTALLATION

NOTES:

- Time Saver kits for 1984-'99 Evolution® engines contain four pushrods of equal length. Kits for 1999-'14 Twin Cam 88®, 96™, and 103™ engines contain pushrods of two lengths. The two short pushrods are for the intake valves, and the two long pushrods are for the exhaust valves.
- Time Saver Pushrods for 1999-later big twins are compatible with stock pushrod covers.
- Due to the larger O.D. of Timesaver Pushrods, there may be an interference problem with some aftermarket pushrod covers.
- Installation And Adjustment For Engines With Standard Hydraulic Tappets

1. Remove pushrod cover clips and lift cover assemblies to view lifters.
2. Remove spark plugs and rotate engine until front piston is at the top of its stroke, with both front lifters at their lowest position (TDCC—top dead center compression). If engine is equipped with S&S Easy Start cams turn the engine until the exhaust tappet rises slightly (about .030") and goes back down. This ensures that the tappet is on the heel of the cam but not on the Easy Start trigger.

NOTE: To ensure that the piston is at the correct position to remove pushrods for a specific cylinder, rotate the engine forward and watch the intake pushrod. The intake pushrods are the two closest to the center of the engine. Watch the intake pushrod rise and fall as the engine is rotated. When the intake pushrod is at its lowest position, the piston in that cylinder is on its compression stroke. Check to see if the piston is at TDC. If it isn't, rotate the engine a few more degrees to bring the piston to the top of the cylinder.

3. Remove front pushrods. Disassemble the rocker cover and rocker arm assembly, as per the appropriate service manual if stock pushrods are to be saved. Pushrods may be cut out with a bolt cutter to save time. See NOTE, CAUTION, and WARNING below.

NOTE: Since S&S Time Saver pushrods do not require rocker arm disassembly for installation, stock pushrods may be cut out of the engine to save time. S&S recommends that they be cut with a bolt cutter.



CAUTION

If pushrods are cut with a saw, metal chips may enter engine and cause extensive damage not covered by warranty.



WARNING

Make sure tappet is at lowest point of travel and pushrod is not under valve spring pressure before cutting pushrods. Sudden release of valve spring pressure may cause cut pushrods to fly out of motor, potentially causing serious injury.

4. Clean and inspect the pushrod tubes. Replace all o-rings. Apply a light coat of engine oil to the o-rings.
5. Reinstall rocker assemblies according to appropriate service manual procedures if they were removed.
6. Insert new pushrods through tube assemblies and install in appropriate positions.
7. Holding intake pushrod so the top ball end is in the rocker arm cup, extend adjusting screw until the bottom ball end just contacts the tappet cup. Holding the hex on the pushrod tube with a 1/2" wrench, use a 5/16" wrench to turn the adjusting screw, to compress hydraulic piston of intake tappet an additional 3 complete turns (18 flats).
8. While holding the pushrod tube hex with a 1/2" wrench, and the adjusting screw with the 5/16" wrench, use an additional 1/2" wrench to tighten locknut against the pushrod tube hex. Take care not to damage the threads of the adjustor screw.

9. Allow sufficient time for lifter to bleed down (15 to 20 minutes) before adjusting front exhaust pushrod in the same manner. Pushrods will spin freely with fingers when tappet is fully bled down.

NOTE: If pushrods cannot be turned between fingers after 20 minutes, tappets more than likely contain S&S HL2T spacers. Special instructions for adjusting tappets with HL2T kit are listed after these instructions.



CAUTION

Failure to allow hydraulic unit to bleed down before rotating engine or adjusting the other pushrod could result in valve-to-valve contact and serious valve train damage. Lifters are bled down when pushrod can be turned with fingertips.

10. Repeat above procedures for rear cylinder, this time bringing rear cylinder to TDCC (top dead center compression).
11. Replace spark plugs and pushrod tube clips. Start motorcycle and check for leaks.

Pushrod Adjustment For Engines With Hydraulic Tappets With S&S HL₂T Kit Installed

1. Follow steps 1-6 above, but adjust pushrods as described in these steps
2. Holding intake pushrod so the top ball end is in the rocker arm cup, extend adjusting screw until the bottom ball end just contacts the tappet cup. Holding the hex on the pushrod tube with a 1/2" wrench, use a 5/16" wrench to turn the adjusting screw, to compress hydraulic unit in intake tappet an additional four complete turns, until piston assembly is in contact with HL₂T spacer and the valve is lifted off of its seat. If tappets contain oil, as when pushrods are readjusted after engine has been run, or if all oil was not removed during HL₂T installation, allow at least 15-20 minutes for piston assembly to bleed down. If pushrod can be turned between the fingers, tappet piston is not in contact with HL₂T spacer. Lengthen pushrod one additional turn and test again after 15 minutes.
3. Using a 1/2" wrench on the pushrod body hex and a 5/16" wrench on the adjustor screw, loosen pushrod adjustment until pushrod can just be rotated with the fingers with slight drag (zero lash). Continue loosening (shortening) pushrod one full turn (6 flats) past the point of zero lash.

NOTE: Shortening adjuster an additional six flats or full turn from zero lash results in quieter tappet operation. This provides a small amount of travel for the hydraulic piston assembly, which allows hydraulic unit to pump up more quickly and maintain zero lash under normal operating conditions.

4. While holding the pushrod tube hex with a 1/2" wrench, and the adjusting screw with the 5/16" wrench, use an additional 1/2" wrench to tighten locknut against the pushrod tube hex. Take care not to damage the threads of the adjustor screw.
5. Repeat above procedures for rear cylinder, this time bringing rear cylinder to TDCC (top dead center compression).
6. Replace spark plugs and install pushrod clips.

NOTES:

- Perform this operation on one cylinder at a time. Do not turn engine until pushrod adjustment is complete, and pushrods can be spun with fingers.
- When HL₂T kit is installed in tappets, valve train may be noisy on initial start up after adjusting pushrods, particularly if all oil was removed from tappets during installation. It may take several minutes for tappets to pump up and become quiet.