



## Installation Instructions for S&S PN 90-4925 Mechanical Compression Release

### 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 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<sup>®</sup>, Harley-Davidson<sup>®</sup>, H-D<sup>®</sup>, Sportster<sup>®</sup>, Evolution<sup>®</sup>, 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:

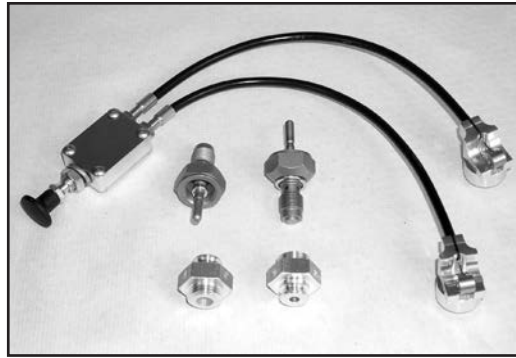
All S&S parts are guaranteed to the original purchaser to be free of manufacturing defects in materials and workmanship for a period of twelve (12) months from the date of purchase. Merchandise that fails to conform to these conditions will be repaired or replaced at S&S's option if the parts are returned 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<sup>®</sup> 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.



**Mechanical Compression Release Kit**

**NOTES**

- S&S® compression releases are intended to be installed only in cylinder heads machined specifically for S&S compression releases. Stock or other aftermarket cylinder heads may not have enough material in required areas to allow machining for S&S compression releases
- S&S mechanical compression releases can be used with OEM or aftermarket rocker boxes. Since the height of the installed compression release assembly will be slightly below the lower rocker cover mounting surface, the mechanical compression releases do not require the use of rocker boxes with a center chimney for clearance.

**A. Installing Compression Releases**

1. Remove fuel tank, rocker covers and bases, pushrods, and rocker arms. Consult appropriate manuals as needed.
2. Remove the supplied 14mm hex plug from the top of the cylinder head. Inspect the machined hole to make sure that it is clean and free of debris. **See Picture 1.**

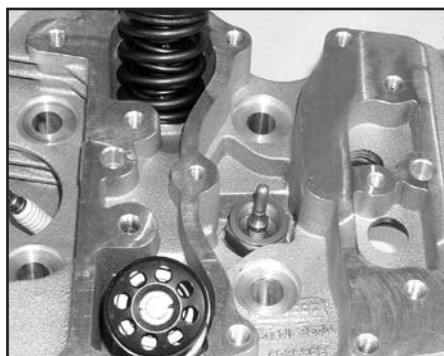


**Picture 1**

3. Apply a small amount of anti-seize type thread lubricant to the threads of the compression release valve assembly. Compression release assemblies are identical and can be installed in either cylinder head.
4. Make sure that the supplied compression washer is held in its groove in the valve body. The washer must remain in this position when the compression release is held in a vertical position. If it does not stay in position, a very small amount of white lithium grease between the washer and the valve body will hold the washer in place during installation. **See Picture 2.**
5. Thread the compression release valve assembly into the pre-machined mounting hole. Hand tighten as far as possible. Make sure the compression washer remains in position until the compression release contacts the head. **See Picture 3.**
6. Slide the S&S special socket PN 53-0045 over the valve assembly. **See Picture 4.** Make sure the compression washer is seated properly before final tightening is done. Torque the compression release to 35-40 ft-lbs.



**Picture 2**

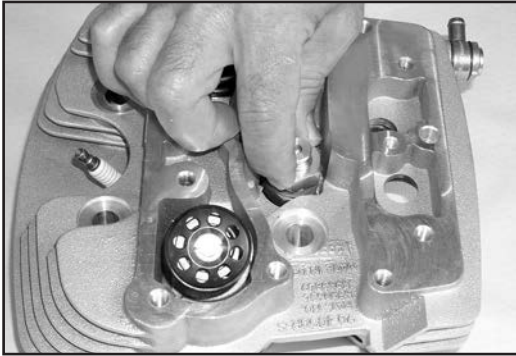


**Picture 3**

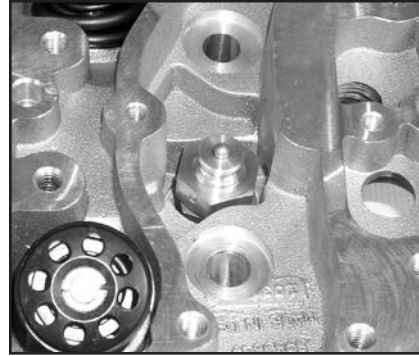


**Picture 4**

7. Apply a small amount of Loctite® 272 (red) to the threads of the detent assembly body.
8. Push the detent assembly over the plunger and thread into valve assembly until hand tight. **See Picture 5.** Make sure that no Loctite is allowed to contact the plunger. Torque the detent assembly into the valve assembly to 28-30 ft-lb. Using a pliers, carefully pull the valve plungers up to close the valves. The valves must be closed to properly adjust the cables. Plunger protrusion above detent assembly will be approximately .200" if the valve is closed, and .100" when valve is open. **See Picture 6.**



**Picture 5**



**Picture 6**

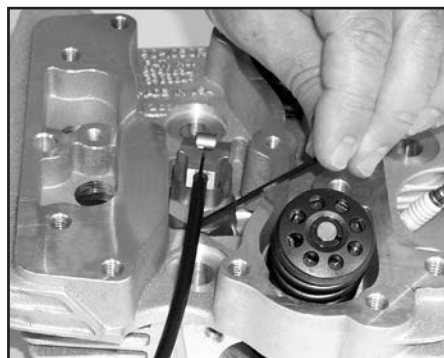
**B. Install Cam and Cable Assemblies**

1. Remove the 10-24 set screws from the cam assemblies and place a small drop of Loctite® 242 (blue) on the threads.
2. Reinstall set screws in the cam assemblies.
3. Place cam assemblies over the plungers of the detent assemblies. Index the cam assemblies and cables so the cables lay toward the intake manifold, but are not contacting the cylinder heads. **See Picture 7.**
4. When cam assemblies are positioned correctly, tighten set screws to prevent them from moving. **See Picture 8.**
5. Install activator assembly in stock choke bracket. **See Picture 9.** If bracket has a mounting hole instead of a mounting notch, it will be necessary to remove the pull knob, lock washer, and jam nuts in order to install activator assembly.

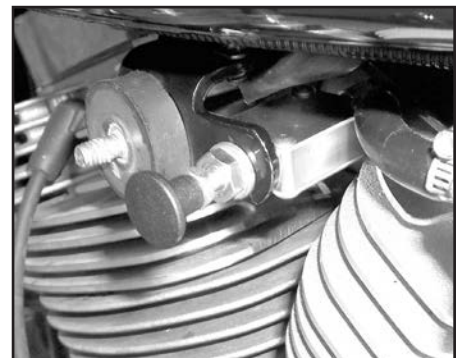
**NOTE** – Because of the variety of chassis and bracket designs, the mounting of the activator assembly may be somewhat different from that shown in **Picture 9.** It may be necessary to fabricate a different bracket or to modify the existing bracket.



**Picture 7**



**Picture 8**



**Picture 9**

6. With the activator assembly in position in the mounting bracket, install the 3/8" lockwasher and jam nut if removed, and tighten jam nut firmly. Install knob and 1/4" jam nut if they have been removed. If billet knob is used, rotate to desired position and turn jam nut against knob to lock it in place.

**NOTES**

- Do not apply any type of thread locker to the 3/8" or 1/4" jam nuts or to the knob. Doing this will make disassembly extremely difficult and may cause damage if parts must be disassembled.
- S&S offers an optional polished billet aluminum knob which is installed in the same manner as the black plastic knob. **See Picture 10.** (Polished billet pull knob is available for a custom look.

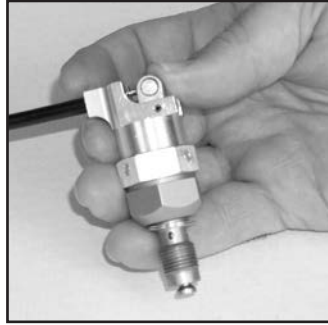


**Picture 10**

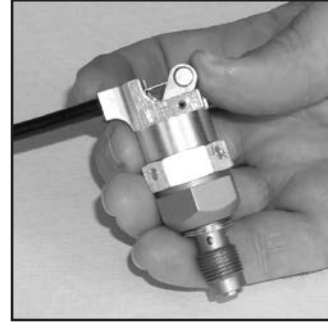
C. Adjust Cables

**NOTE** - Adjustment of the actuating cables is critical for proper operation of S&S® manual compression releases. Failure to adjust cables correctly may result in damage to the compression release and the engine.

1. Make sure that both compression release valves are closed. Lightly push the cam against the plunger. If the compression release valve is open, the cam will be in a vertical position when it contacts the plunger. If the cam is not in a vertical position when the cam is in contact with the plunger, the valve is closed. **See Pictures 11 and 12.** If one or both valves is open, it will be necessary to remove cam assemblies and close valves by pulling the plungers up with pliers.



Picture 11



Picture 12

2. Adjust the free play in the cables.
  - a. Make sure that the compression release valves are both in the closed position, and the cable is in the normal position.
  - b. Turn the adjusters out of the activator housing just enough to remove free play in the cable. Do not make the cable tight. There should be no pressure on the plunger.
  - c. Screw the cable adjusters one half turn into the activator housing to give the cables a small amount of free play. A small amount of movement should be felt if the activator cam is pushed by hand. This clearance is required so that there is no pressure on the plungers except when the activator knob is pulled. It is very important to insure that the valves are allowed to close freely at all times.
3. After cables have been adjusted, tighten cable adjuster jam nuts against activator housing to lock adjusters in place.
4. Re-install rocker covers, pushrods, and rocker arms according to standard assembly procedures. Consult appropriate manuals as needed. If adjustable pushrods are used, they should be readjusted. Reinstall gas tank and any other components removed during installation of compression releases.

D. Operation

When the activator knob is pulled, the compression release valves are opened and are held open by the detent assembly. The knob is released and returns to its normal position. When the engine turns over, the compression release valves allow some of the cylinder pressure to bleed off into the exhaust port. The reduced cylinder pressure makes it easier for the starter to turn the engine. When the engine starts, the increased cylinder pressure from combustion automatically closes the compression release valves. All cylinder pressure is then contained in the combustion chamber and the engine runs normally with full compression.

**REPLACEMENT PARTS FOR MANUAL COMPRESSION RELEASE**

1. Compression release assembly.....90-4920
2. Valve assembly, compression release, manual .....90-4921
3. Washer, compression, 14mm .....50-7094
4. Cable assembly, compression release manual.....90-4919
5. Activator assembly, compression release, manual .....90-4932Z
6. Knob, 1" x ¼ -20, black plastic..... 50-8700-S
7. 1" x ¼ -20, polished billet aluminum .....50-8701
7. S&S two piece comp. release socket kit (Not Shown) ....53-0045
8. S&S compression release hole plug (Not Shown) .....90-4916

