

Instruction 510-0597

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Installation Instructions: S&S Oil Pumps for 2017-up M8 Engines

(310-0947 Oil Pump, Kit, Water Cooled, 2017-up M8 Models & 310-0959 Oil Pump, Kit, Oil Cooled, 2017-up M8 Models)

DISCLAIMER:

Many 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. 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.

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 an 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.

NOTES:

- Installation of S&S oil pump requires the use of special tools and repair manuals for the model bike you will be doing the work on. Attempting the installation without the proper tools and manuals will be difficult. Damage can result which will not be covered under warranty.
- Possible failure may result if thread locking compound is not applied to the cam drive sprocket flange bolts. Always prepare threads according to the instructions on the container.

All reference to Harley-Davidson® part numbers is for identification purposes only. We in no way are implying that any of S&S Cycle's products are original equipment parts or that they are equivalent to the corresponding Harley-Davidson® part numbers.

Follow Steps 1-7 To Prepare For Installation

1. Refer to proper H-D® manual for the model of bike you will be working on for the removal of existing oil pump.
2. Once you have successfully removed the cam plate and oil pump from the engine it will be necessary to measure the pinion shaft run out. Refer to manual for proper procedure and service limits.
3. If you will be reusing your existing cam plate, wash the cam plate and inspect the bearing surfaces. Refer to the manufacturers specifications for service wear limits. Inspect the pump mating surface for scoring; excessive scoring could adversely affect oil pressure.

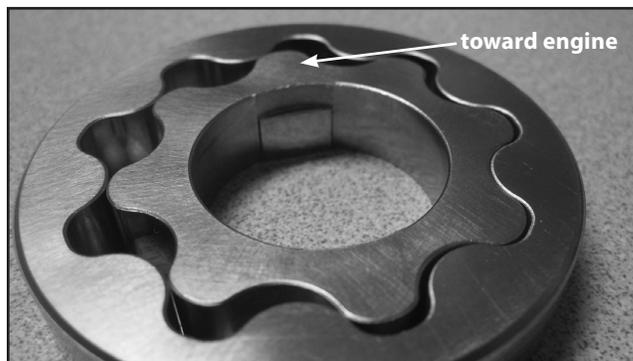
NOTE: If your cam plate has non-serviceable oil galley plugs and has been exposed to debris from previous engine failure or other foreign material, it is almost impossible to effectively clean those passages. A new cam plate may be a better option.

4. Inspect or replace chain tension as needed. Refer to the H-D® manual for service wear limits.
5. Inspect the inner cam bearing, now is the time to replace this bearing while the engine is apart. Refer to manual for proper procedure and tools to use when replacing these bearings. Note: Full complement bearing is recommended.
6. Clean and flush your oil tank and oil lines. Any foreign matter that has accumulated in the oil tank will be sucked through the new oil pump. Oil pans with riveted-in baffle can be very hard to clean, it is very important to remove all debris from the pan. Also, when installing the S&S oil pump, the oil filter should be changed.
7. Remove pump from package and inspect pump for shipping damage. If there is any damage contact S&S immediately. Make sure pump has all parts shown in assembly drawing on last page.

S&S Oil Pump Installation

1. Make sure you have the proper oil pump for your engine. S&S offers two styles of oil pumps, each specific to the engine type. For the water cooled engines, the S&S oil pump kit pn is 310-0947. This pump is easily identified by a "W" machined into the front surface of the main pump body. For the oil cooled engines, the S&S oil pump kit pn is 310-0959. This pump is easily identified by an "O" machined into the front surface of the main pump body.
2. Disassemble and wash all components of the oil pump. Make sure the pipe plug is installed and is flush or below the adjacent pump body surface.

3. We feel it is easier to assemble the pump into the engine one piece at a time.
4. First install the scavenge port O-ring into the case (do not install O-ring onto the pump). Put some assembly lube on the O-ring to make installing the pump housing easier.
5. Install the rear pump housing. Push the housing into the O-ring with your thumb. Make sure it goes in all the way.
6. Apply a liberal amount of assembly lube to the inner return gear set and assemble inner gear inside outer gear. Align the inner gear with the flat on the pinion shaft and install gear set into inner pump body as an assembly. Make sure the relief cut side of the inner gear goes toward the engine. **See Picture 1**



Picture 1

7. Install two 1/8" x 3/4" dowels into pump housing.
8. Install divider plate over the dowel pins.
9. Apply a liberal amount of assembly lube to the second return gear set. Place gear set into outer pump body and install outer pump body onto inner pump body.
10. Place a straight edge across the oil pump body and make sure the face of the pump does not protrude past the cam support plate mating surface. **See Picture 2.**



Picture 2

11. If pump protrudes past mating surface check to see that the pump is installed all the way into the scavenge port O-ring. If this doesn't solve the issue and you cannot see any other areas of interference contact the S&S Tech Line at 608-627-8324.
12. Apply a liberal amount of assembly lube to the feed gear set and install into pump. Be sure these gears do not protrude past the front face of the pump.

NOTE: Use as much of the provided assembly lube as possible during installation. This will aid in priming of the oil pump.

13. Install cam support plate following the H-D® service manual or manufacturer's specific instructions. Apply a small amount of blue Loctite® to the cam support screws and the new oil pump screws. Make sure the flat washers are installed on the oil pump screws. Loosely install all screws but do not tighten. Use the detailed torque sequence in the following steps.

CAUTION

Use Loctite® sparingly on pump screws. Be careful not to get excess Loctite® between pump sections or in the pump gear bores. Damage could occur.

14. Tighten screws 1 and 2 to 12-60 in-lbs. **See Picture 3.**



Picture 3

15. Rotate crankshaft one full revolution. Note. If the engine being worked on is still in the chassis, it will be necessary to raise the rear wheel and put the transmission into high gear. Remove the spark plugs. Use the rear tire to turn over the engine.

16. Tighten screws 3 through 8 in the sequence to 90-120 in-lbs.

17. Tighten the four oil pumps screws in the sequence 1-2-9-10 to 90-120 in-lbs.

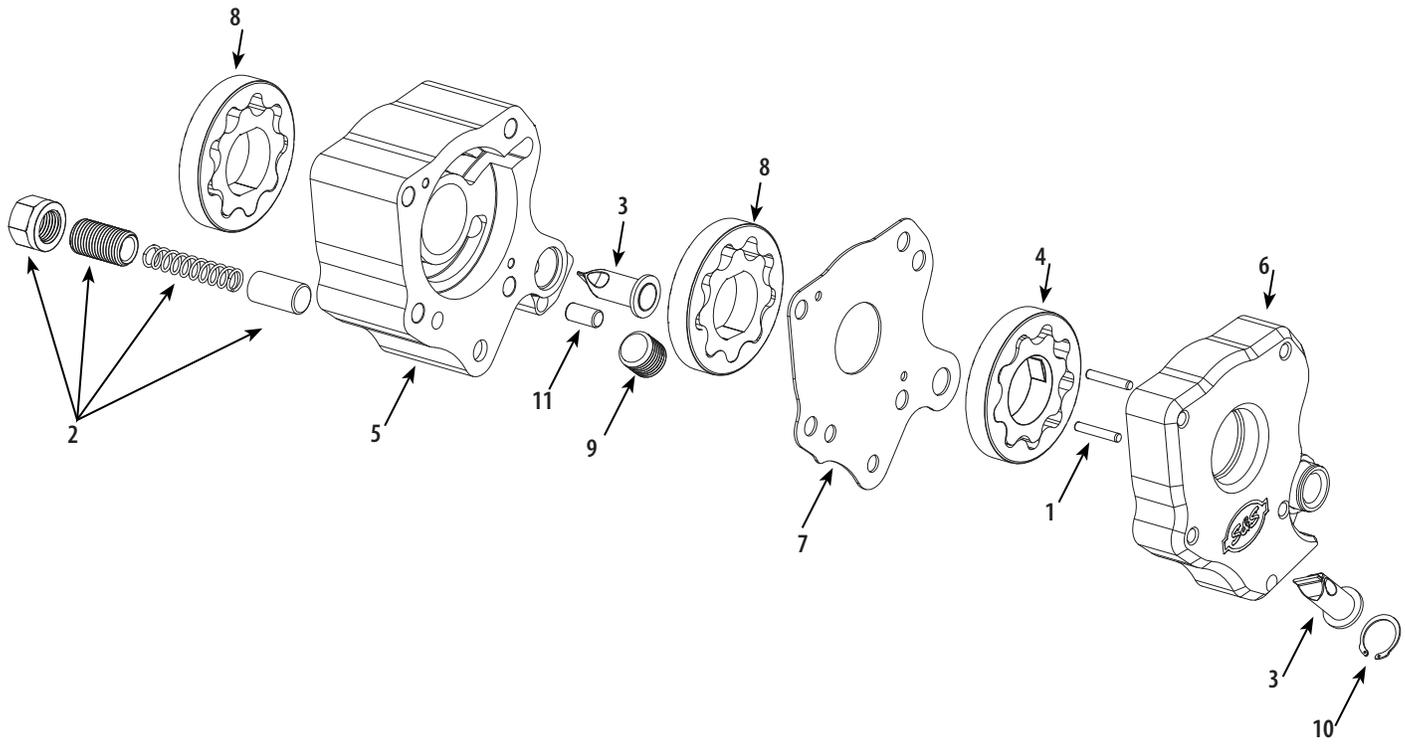
18. Reinstall all remaining components according to the proper HD® service manual.

CAUTION

Failure of fasteners or parts caused by incorrect installation can cause extensive damage not covered under warranty.

Oil Pump Replacement Parts - Water Cooled Pump Kit PN 310-0947

- 1. Dowel pin, 0.125"x0.750", 2 Pack **500-0967**
- 2. Pressure Relief Valve Assembly **500-0949**
- 3. Stainless Steel Mesh Screen (2) **310-0546**
- 4. Rotor Set, Oil Pump, Machined **310-0644**
- 5. Oil Pump Housing, Supply Side, Water Cooled,
2017-up M8 Models **310-0942**
- 6. Oil Pump Housing, Return Side, 2017-up M8 Models **310-0945**
- 7. Divider Plate **310-0948**
- 8. Rotor Set, Oil Pump (2) **36-7021-S**
- 9. 1/4" Pipe Plug 5 pack **500-0969**
- 10. Retaining Ring 5 pack **500-0968**
- 11. Magnet, .250" x .500" **500-0350**



Oil Pump Replacement Parts - Oil Cooled Pump Kit PN 310-0959

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