

Instruction 510-0748

09-16-20

Version 1

© 2020

by S&S® Cycle, Inc.

All rights reserved.

Printed in the U.S.A.

**S&S® Cycle, Inc.**

14025 Cty Hwy G  
Viola, Wisconsin 54664

Phone: 608-627-1497

Technical Service Email: [sstech@sscycycle.com](mailto:sstech@sscycycle.com)

Website: [www.sscycycle.com](http://www.sscycycle.com)



## Installation Instructions: S&S Connecting Rods for Royal Enfield® 650 Twins

### 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.

The name Royal Enfield® is used in reference only. S&S Cycle is not associated with Royal Enfield and we in no way are implying that any of S&S Cycle's products are original equipment parts.

### 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.

**Kit Contents:**

2 - Connecting Rods w/Bolts

1 - Assembly Lube

**Getting Started**

Before disassembling your connecting rods make sure the rod and the rod caps are marked as illustrated in Picture 1 to ensure orientation and matched parts remain as produced. If they are not marked you will want to mark them so they go back together the same way. Avoid using metal stamps or anything that will upset the material.



**Picture 1**

**Clearances**

- Bolt the rod and rod cap together and tighten to measure the large end bore. The bore should be measured with a bore gauge.
- Using a micrometer, measure the crankshaft pin.
- Use the chart below to select the proper size/color rod bearing. OEM Royal Enfield bearings should be used in S&S/K1 rods.
- The use of Plastigauge for measuring clearances should only be used if measurement tools are not available.
- When the correct combination of parts are matched it will yield a .021-.047mm(.0008”-.0018”) running clearance.

	Mark On Crankshaft— Pin OD		
	1	2	3
Connecting Rod Large End Bore 40.995–41.005	38.000–37.992	37.991–37.984	37.983–37.976
	Pin OD	Pin OD	Pin OD
	1.487–1.483	1.491–1.487	1.495–1.491
	Bearing Thickness Green	Bearing Thickness Black	Bearing Thickness Brown

**NOTE:** S&S does not offer replacement bearings. OEM bearings should be used.

**Assembly**

- Once the proper clearances are achieved thoroughly clean all parts to remove any dirt and foreign materials
- Place the bearings in the rod and rod caps and lubricate with assembly oil. Lubricate the crankpin with assembly oil.
- Place the rod around the crankpin and set the rod cap onto the rod. Make sure the marking on the rod cap and rod match up.
- Use a rubber mallet to tap the rod cap onto the rod.
- Lubricate the threads and under the head of the rod bolt with the supplied lubricant.
- Do not use Loctite® or any type of thread sealer.
- Tighten the rod bolts using the chart below. Note: Bolts are like very stiff springs. Stretching them to the proper amount provides the clamp load that is required to keep the parts bolted together. We recommend using the stretch method to accurately tighten the rod bolts.
- To use the stretch method you will need a stretch gauge. Measure and note the free length of each bolt before tightening with a stretch gauge. Then tighten the bolt until the proper stretch is achieved.
- If the stretch method is not possible then use the torque and angle method. Use a torque wrench to tighten the bolts to the desired torque and then use an angle gauge and turn the bolt to the desired number of degrees.

Recommended Stretch	Torque & Angle
.0055” to .0059”	25ft.lbs +55 degree

Connecting Rod Weight with Bolts	
Big End	383g
Small End	94g