

Instruction 510-0052

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Installation Instructions for S&S® Powder Metal Valve Guides for 1984-2014 Big Twin & XL Model Cylinder Heads Using 5/16" O.D. Valve Stems

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.

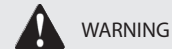
SAFE INSTALLATION AND OPERATION RULES:

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 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.

Old Valve Guide Removal:

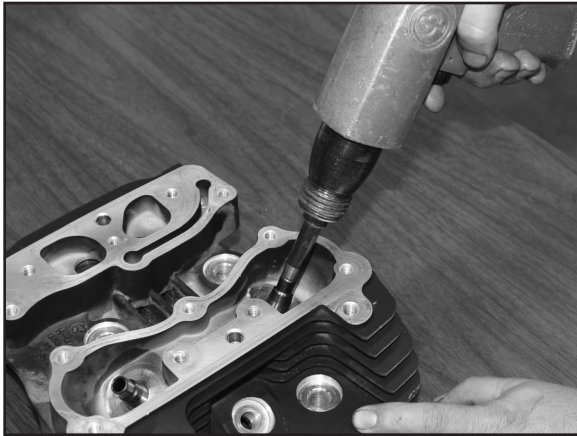
1. Disassemble the cylinder head and thoroughly remove any oil and debris.

CAUTION

If the existing guides have burnt on oil, debris, or grooves for snap rings/seals that may shear aluminum upon removal from the guide bore, it is recommended to machine the guide down to the spring floor in order to remove the debris / steps from the OD of the guide before driving out the guide.

WARNING

There is some inherent risk associated with the process of removing valve guides from used cylinder heads. These parts are exposed to repeated heat cycling and possibly to over heating, which may cause the guide to bond with the cylinder head, making removal difficult and potentially causing damage to the head. If the valve guide bore is damaged, an oversized valve guide must be used or the head may be repaired by welding and remachining the hole.



If a press is not available, guides may be removed and inserted with a valve guide driver and air hammer as shown

2. Heat the cylinder head to 350°F for one hour.
3. Use an appropriate driver to remove the old valve guide: Push the valve guide out toward the combustion chamber.

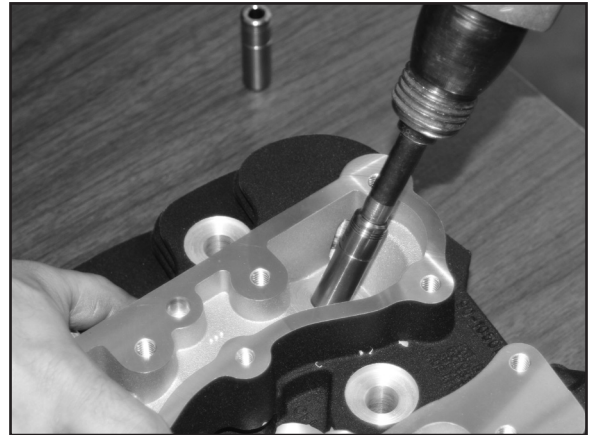
New Valve Guide Installation:

1. Allow the head to cool to room temperature and measure the valve guide bore and the new valve guide. Press fit on new valve guides should be 0.0015" to 0.0030": Use an appropriately sized valve guide to achieve the proper fit. Additional oversize valve guides are available from S&S Cycle.

	Guide OD	S&S® Part No.
STD	0.5620"-0.5625"	900-0553
+0.001	0.5630"-0.5635"	900-0554
+0.002	0.5640"-0.5645"	900-0555
+0.003	0.5650"-0.5655"	900-0556

Note: These guides feature a .56" seal diameter

2. Heat the cylinder head to 350°F for one hour.
3. Lubricate the bore with press lubricant. Use an appropriate tool to press the guide into the head, do not use Loctite®. Drive guide in from the spring pocket side of the cylinder head.



NOTE: On 1984–2014 Big Twin and XL models, valve guide protrusion should be 0.600" ± 0.005" as measured from the bottom of the spring pocket to top surface of the valve guide.

4. The valve guide ID is unfinished. Use a carbide tipped tool steel ream to size the guide ID within 0.0005" to 0.0010" of the required final ID. Measure valve stems and add desired clearance to determine final valve guide ID. See chart below.
5. Use a valve guide hone and lubricant to set the final size.
6. Once all the valve guides are finished, thoroughly clean the cylinder head and reassemble according to the manufacturers specifications.

NOTE: S&S powdered metal guides are not compatible with stock valve seals. Special valve guide seal S&S #900-0557 must be used.

Model	Description	Valve To Guide Clearance*	Wear Limit
1984–2014 Big Twin and XL	Valve to guide fit intake	0.0012" to 0.0020"	0.0035"
	Valve to guide fit exhaust	0.0017" to 0.0025"	0.0040"

*Valve to guide clearance is the difference between the valve guide inside diameter and the valve stem outside diameter..

Additional Components Available from S&S®	Part #
Valve guide seals for 5/16" valve stems and S&S® Powder Metal Valve Guides with .56" diameter seal surface	900-0557
Valve spring kits for 5/16" valve stem:	
S&S® Street Performance .585 Valve Spring Kit	900-0593
S&S® .650 Lift Valve Spring Kit	900-0050