

Instruction 51-1203

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Installation Instructions: Closed Loop Oxygen Sensor Kit for Delphi® Style S&S® Replacement Module

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' 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.

! WARNING

Be sure to disconnect the battery of your motorcycle before doing any wiring.

! DANGER

Gasoline is extremely flammable. Be sure to keep all open flames and sparks away from it. Always work on your motorcycle in a well-ventilated area.

! CAUTION

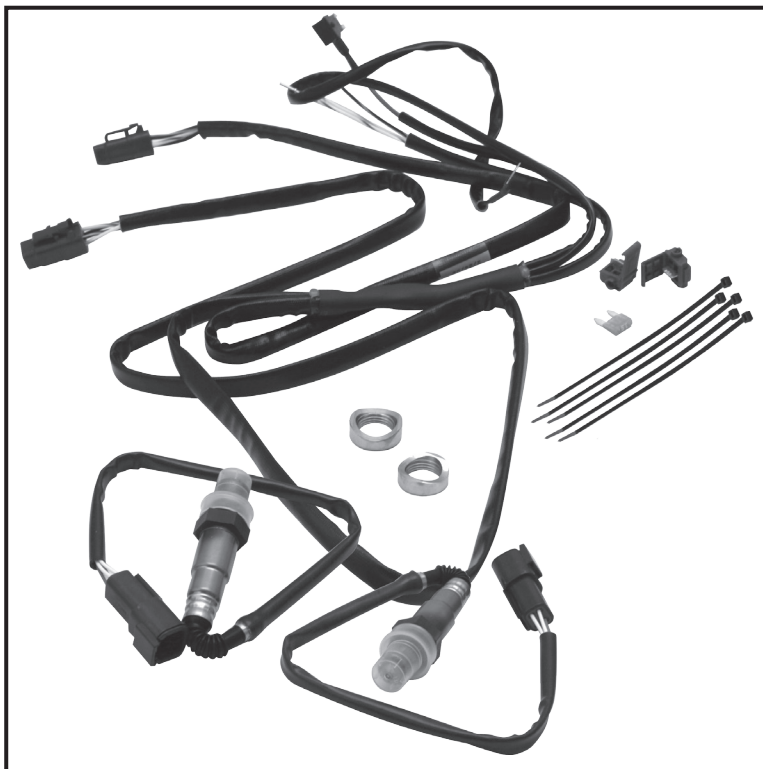
Variable Fuel Injection requires training and certification to work on it properly. S&S® strongly recommends you take your motorcycle to an S&S® certified VFI center for any VFI or CLVFI modifications

! DANGER

Some machining and welding are required for this installation. If you are not comfortable with either procedure, please take your motorcycle to an S&S certified facility for the work.

! CAUTION

S&S Fuel Injection is not compatible with E85 fuel. Use of E85 fuel may cause your engine to run poorly and/or damage to system components.

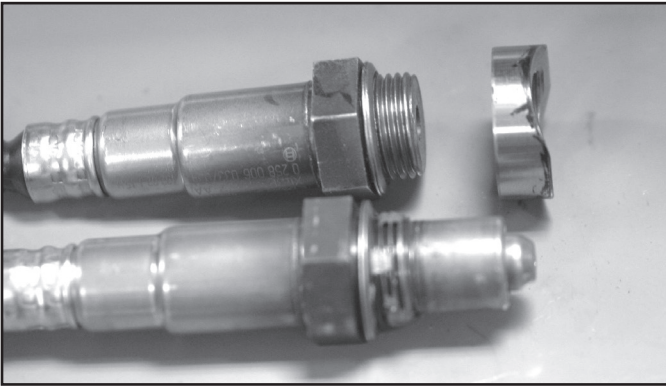


Closed Loop Fuel Injection Kit

S&S® Closed Loop Sensor Kit and Replacement Parts

S&S Delphi® style VFI Closed Loop Sensor Kit.....	106-2066
Service Kit, O2 Sensor	106-2061
Service Kit, Oxygen Sensor Boss	55-6071-S
Service Kit, Subharness.....	55-1595

- 1- This installation requires the motorcycle be equipped with S&S® Variable Fuel Injection (VFI) Delphi® style system.
- 2- Disconnect the battery, negative terminal first.
- 3- You will need to install an oxygen sensor in each headpipe. The $\frac{3}{4}$ " holes to mount the sensors will need to be positioned 4" to 12" from the exhaust flange. If you are using a stock header pipe with a "Y" in it, make sure the oxygen sensor is located at least 3" downstream of the "Y." To determine the best position for the oxygen sensors, the headers should be installed on the bike.
- 4- To make locating the sensor a bit easier, S&S technicians have created a mock-up sensor. As you can see in **Picture 1, below left**, the tip of an oxygen sensor was cut off so the weld-in boss could be threaded on it and allow the unit to sit flush on a header. Now the assembly can be put on a pipe to verify that it will not come in contact with any moving parts. Once you are certain of the mounting position, trace the outside shape of the mounting boss with a marker or scribe as shown in **Picture 2, below right**.

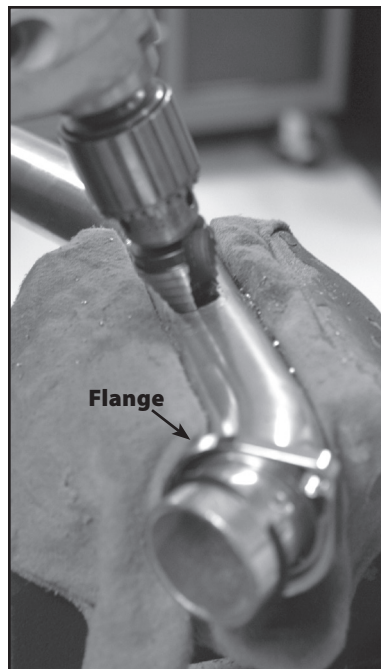


Picture 1



Picture 2

- 5- Use an appropriate size drill to achieve a $\frac{3}{4}$ " hole in each of the header pipes. S&S has had good results with the Haugen® Roatabroach® and the Irwin® Unibit® step drill shown in **Picture 3, below**.



Picture 3

⚠ CAUTION

If exhaust mounting flanges are installed on head pipes, make sure the flange is above the weld-in boss before it is welded in place.

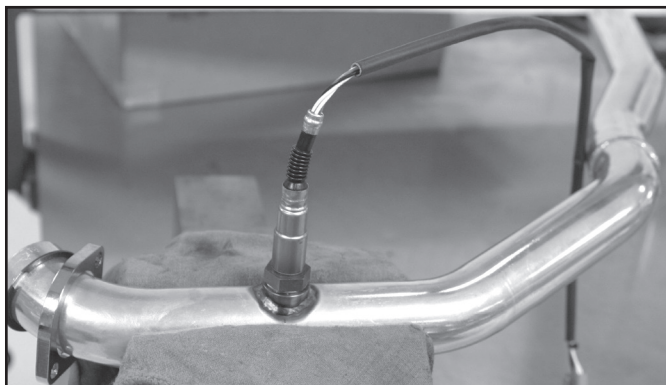
- 6- If exhaust mounting flanges are installed on head pipes, make sure the flange is above the weld-in boss before it is welded in place.
- 7- Weld the boss in place using stainless-steel filler rod. When it cools, run an M 18x1.5 tap through it to verify that none of the threads were damaged or distorted. **See Picture 4, below.**



Picture 4

- 8- Install the oxygen sensor in each pipe and torque it to 30-44 ft-lbs. **See Picture 5, below.**

NOTE: New oxygen sensors come with a high-temperature lube on the threads. Be sure to use a high-temperature lubricant that is safe for oxygen sensor use on the threads of oxygen sensors being re-used.



Picture 5

- 9- Install the header pipes on the motorcycle. Next, route the S&S® wiring harness to allow the Deutsch® connectors (**Picture 6, below**) for the oxygen sensors to be in position to be plugged in. Verify that the S&S harness will not rub against any moving or hot parts. When you connect the Deutsch connector for each oxygen sensor to the harness plugs, listen for an audible click to confirm the connection. Wire tie the harness to the frame to ensure no contact will occur when the bike is being ridden but still allow enough slack for engine movement.

NOTE: The front oxygen sensor is connected to the longer lead of the S&S harness. See wiring diagram on last page for more information.



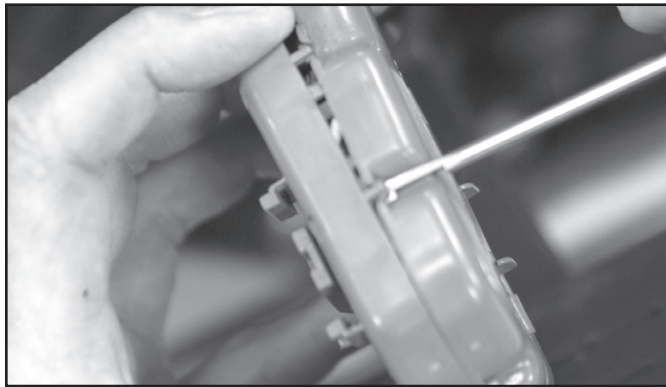
Picture 6

- 10- Continue running the S&S® wiring harness so the four wire ends are directly next to the 36-position ECM connector and fuse block area. Cut the wire tie at the base of the main wiring harness where it meets with the 36-position gray connector. **See Picture 7, below.**



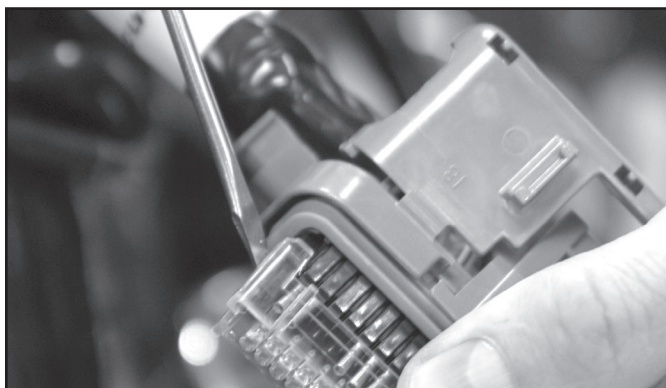
Picture 7

- 11- Carefully open the backside of the 36-position connector housing. **See Picture 8, below.**



Picture 8

- 12- Gently release the clips on each side of the clear plastic cover on the 36-position connector by pressing on each clip with a small flat screwdriver as shown in **Picture 9, below.**



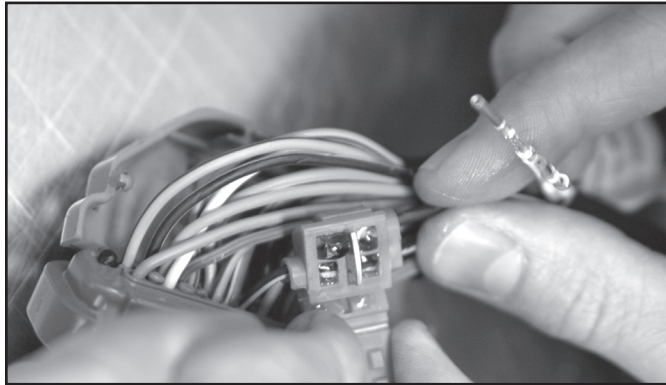
Picture 9

13- Remove the socket plugs in terminal positions #8 and #23. **See Picture 10, below.**



Picture 10

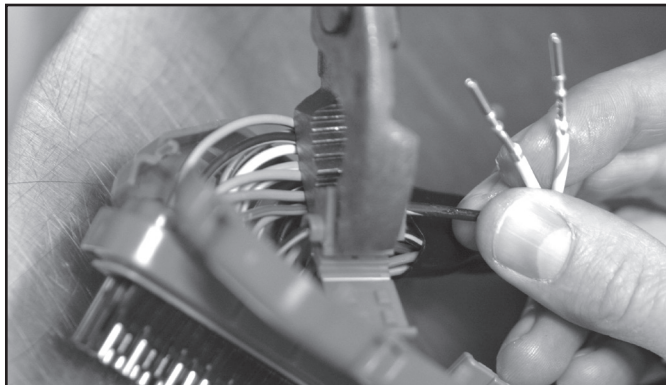
14- Using a Sealed Electrical Tap from the supplied hardware kit, open the cover and position it over the wire coming out of pin #26 (black with a white stripe). Then slide the black wire with a white stripe from the S&S® harness into the secondary connection position. **See Picture 11, below.**



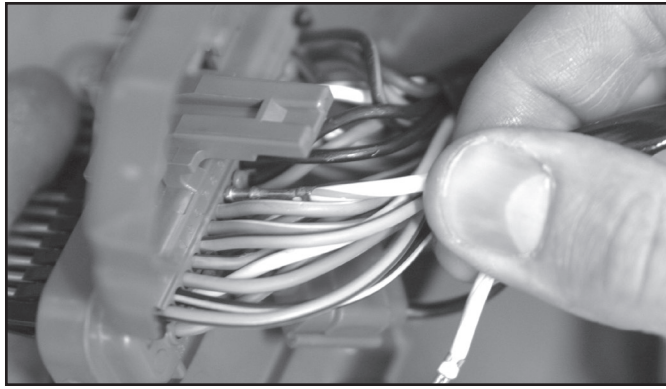
Picture 11

15- Use a pair of pliers to firmly press the metal connector into place over both wires. **See Picture 12, below.**

NOTE: You can put a small amount of pressure on the connector as you position the wires to make sure they are in the correct position. Once the connector is pressed in, close the blue plastic cover and listen for a click to confirm it is seated.



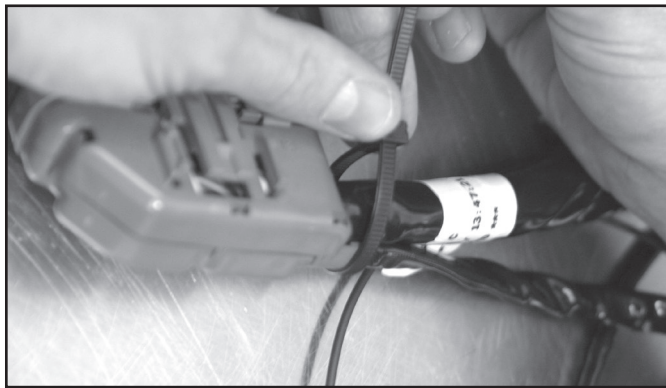
Picture 12



Picture 13

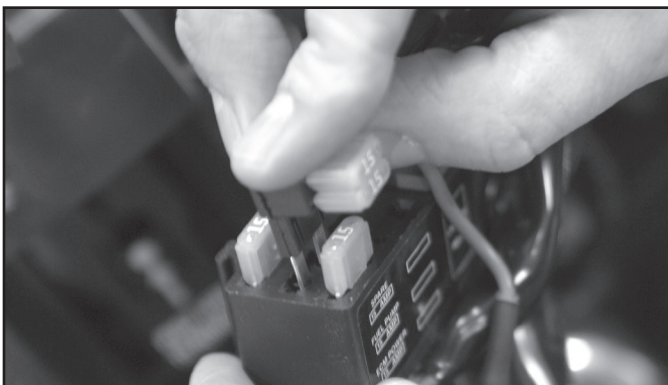
16- Insert the white wire with an orange stripe into position #8. Next insert the white wire with the blue stripe into position #23, as shown in **Picture 13, below.**

17- Confirm the terminals are all in proper alignment and reinstall the clear plastic cover. Now you can tuck the Sealed Electrical Tap into the 36-position connector cover and close it, making sure to get all the clips back in place. Finally, reinstall a wire tie at the base of the 36-position connector. **See Picture 14, below.**



Picture 14

18- Confirm that there are two 15-amp fuses in the blue tap-a-fuse on the red wire. Then insert it into the fuel pump fuse slot as shown in **Picture 15, below left.** Take care not to disconnect the fuses as you slide it back into the fuse holder. **See Picture 16, below right.**



Picture 15



Picture 16

20- Plug the 36-position connector into the VFI module and the installation is complete as in **Picture 18, below right.**

