Installation Instructions: S&S® IST® Ignition System
for 1984–’99 4½" Bore Big Twin Engines

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’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.

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Instruction Contents:
A. Introduction
B. Parts List
C. Removal of Existing Ignition Module
D. S&S® System Installation
E. Initial Starting Procedure
F. Basic Troubleshooting
G. Advanced Troubleshooting

Do not use a dual fire coil with the S&S ignition module.
Older modules will NOT work with vehicles equipped with flat slide carbs, open primaries, and dry clutches. If you want to use an older IST with these configurations contact S&S, we can help set it up. Newer modules will have a label indicating that it is already set up for these applications.

A. Introduction

The Intelligent Spark Technology system uses a sophisticated computerized module that integrates data from sensors that other ignition systems are not designed to use. The S&S System makes use of crank position sensor, cam position sensor (if present), MAP sensor, cylinder head temperature sensor, and an exclusive knock sensor that actually detects detonation or knock while the engine runs. The knock sensor allows the IST to automatically adjust ignition timing to eliminate knock whenever it occurs.

If ignition requirements change, if a lower grade of fuel is introduced, for example, the system will automatically make the necessary ignition timing changes to avoid detonation and possible engine damage. This feature is particularly important in touring applications where the rider sometimes has less control over fuel quality. If a different camshaft is installed, or if cylinder head modifications are made, even if major engine modifications are made, such as the installation of a stroker or big bore kit, the system will adjust to eliminate knock.

Additional features:
- Simple installation — installation kits plug into stock wiring harness.
- No timing adjustments — the system adjusts timing automatically.
- Factory pre-set 9500 RPM rev limiter. Adjustable up to 7200 RPM with S&S IST Guardian™ Diagnostic System (p/n 55-5075).
- Single fire operation — requires two coils or dual coil package.
- High output — automatically maximizes coil output.
- Automatic dwell adjust — will optimize current for any coil 0.5 to 3 ohms.
- Short circuit and reverse polarity protected.
- Diagnostics — Guardian Diagnostic System or harness jumper.

NOTE: The electronics used in the S&S Ignition System require operation in single fire mode only. The S&S Ignition System cannot be used in dual fire mode.

Dual Fire vs. Single Fire Ignition Systems

Two Types of ignition systems have been used on Harley- Davidson® motorcycles, either dual fire, or single fire.

Dual Fire

Dual fire ignitions fire the spark plugs in both cylinders on every stroke, each time the pistons reach the tops of the cylinders. One piston is at the top of the compression stroke, while the other piston is near the top of the exhaust stroke. Dual fire is also known as "wasted spark" because the second spark fires near the top of the exhaust stroke. Dual fire was common for many years because of its simplicity and reliability. Dual fire has a slightly rougher idle than single fire because the "wasted" spark occurred just after the top of the exhaust stroke of the rear cylinder, disrupting the incoming intake charge.

Single Fire

Single fire ignitions fire the spark plugs on every other stroke of the engine, only at the top of the compression stroke. One cylinder fires, then after one crankshaft revolution, the other cylinder fires. A single fire ignition system allows the ignition to reliably transmit more power to the coil during the compression stroke when it is needed most.

Ignition Coil Identification

Dual Fire Coil

In addition to the spark plug terminals, an aftermarket dual fire coil will have two wiring terminals: positive, negative.

Single Fire Coil

In addition to the spark plug terminals, an aftermarket single fire coil will have three wiring terminals: A negative terminal for the front cylinder, a common 12v + terminal, and negative terminal for the rear cylinder, this is the most common type of single fire coil.

All single fire coils are compatible with the S&S ignition if they have a resistance of 0.5 to 3 ohms. The standard rating for an aftermarket single fire coil is 3 ohms. Coils with higher resistance will decrease ignition output.

The S&S® Ignition system will also support a variety of different ignition coil combinations as long as they are connected for single fire operation, and yield a final resistance of 0.5 to 3 ohms.

Spark Plugs and Plug Wires

Spark plugs must be resistor spark plugs (suppression type) of the correct style and heat range for the application. Do not use non-resistor plugs

Spark plug wires must be suppression type. Do not use solid metal core plug wires.

B. Parts List

The S&S IST Ignition Installation Kit for S&S 41⁄8" bore engines (S&S 55-1050 See Picture 1) is intended only for installation of S&S Intelligent Spark Technology (IST) Ignition Module (See Picture 2).

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 number shown.

S&S® Ignition System Installation Kit 55-1050 contains the following items (See Picture 1):
C. Removal of Existing Ignition Components

**WARNING**

Prior to installation, disconnect and remove the battery, negative cable first. This will eliminate potential sparks and inadvertent engagement of the starter while working on the motorcycle.

**CAUTION**

Be careful not to damage the front of the tank when raising or removing it.

Although it may not be necessary in some cases, removal of the gas tank is recommended for removal of stock components, installation of the IST system components, and to allow routing of the wiring harness. An alternative to complete tank removal: Loosen (do not remove) the bolt at the front of the tank and remove the mounting bolt(s) at the rear of the tank. The rear of the tank may then be raised slightly to allow room for these tasks.

**NOTE:** Clearances are limited at the front of the tank. Use care not to damage any painted surfaces while handling tank.

Removal and installation of components without removing the fuel tank is a timesaving suggestion only. If there is any reservation on the part of the installing mechanic about performing these tasks with the fuel tank in place, refer to the appropriate service manual for correct procedure for removing fuel tank and related components.

1. Ignition Module

   a. Locate the ignition module installed on your motorcycle. The ignition module can usually be found under the seat, a side cover, or in front of the engine on the frame. See Picture 3. Refer to the service manual for your motorcycle if you have trouble locating it.

   b. Remove the module mounting hardware and unplug the module. See Picture 4. The plug is disconnected by simultaneously pressing the locking tabs on the connector and pulling it away from the module. Save the mounting hardware for installation of the S&S® ignition module.

2. Existing Coil, VOES, and Cam Position Sensor

   a. If so equipped, remove the existing dual fire ignition coil. This is usually located on the left side near the upper motor mount, above the engine front rocker box, or to the left of the engine near the seat. Remove or insulate the “+” and module terminals in the existing harness with heat shrink.

   b. If so equipped, remove the existing vacuum operated electrical switch (VOES). This is located between the heads. Remove or insulate the terminals and connector in the existing harness with heat shrink.
c. Normally, S&S® 41⁄8” bore engines equipped with the IST ignition system do not use Cam Position Sensors. If so equipped, remove the two screws, gasket, and the plate covering the Sensor cavity. See Picture 5. Remove the two ignition timing screws and the sensor. See Picture 6. Remove the screw and cup from the end of the camshaft. Reinstall the plate and two screws over the sensor cavity. Remove or insulate the terminals and connector in the existing harness with heat shrink.

D. S&S System Installation

NOTE: On some models, it may be easier to access the cylinder head temperature sensor mounting point by removing the horn first.

1. Installation of the 41⁄8” Bore Engine Cylinder Head Temperature Sensor.

The Cylinder Head Temperature Sensor mounts in a boss found on the front head of all S&S 41⁄8” bore engine equipped motorcycles.

a. Install the Head Temperature Sensor.

b. Tighten the sensor to 10-12 ft-lbs using a deep well socket and a torque wrench. See Picture 7.

2. Installation of the Knock Sensor Kit

Knock Sensor must be mounted to the rear cylinder for correct operation. Mounting the Knock Sensor on the front cylinder will provide an incorrect signal.

NOTE: There are two mounting locations possible for the knock sensor. Read the description of each location, and then examine your motorcycle for which one to use. The first location has better clearance than the second location, the knock sensor will work well in either one.

Location 1: Rear cylinder head, across from the temperature sensor on the front head. Some S&S® heads have an unused threaded hole in the rear head near the intake port. If the extra threaded hole is present, install the Knock Sensor there. See Step a below. If the threaded hole is not present, use Location 2.

Location 2: Top motor mount at the rear cylinder head attachment point. All stock heads and some early S&S heads do not have the unused, threaded hole across from the temperature sensor, and must use the top motor mount location. See Step b below.

a. Knock sensor mounting at Location 1:
Rear cylinder head
1. Remove the plug from the rear head.
2. Insert the 5⁄16” x 1%⁄2” coarse thread bolt (l) through the Knock Sensor and ¼” thick spacer (h).
3. Attach this assembly to the rear head and torque to 11 ft. lb. See Picture 8.

b. Knock sensor mounting at Location 2:
Top motor mount location.
1. Remove rear motor mount bolt from rear cylinder head.
2. Test fit Knock Sensor Mounting block to rear motor mount location using ⅜” x 2” coarse thread bolt (k) and ⅜” lockwasher (n). Test fit Knock Sensor to mounting block (i) using bolt (j) and lockwasher (m). See Picture 9.
3. Installation of the Knock Sensor
   a. Carefully place fuel tank back into position to check Knock Sensor and mounting block clearance. Position the mounting block so that the Knock Sensor or mounting block does not contact the fuel petcock or any other part of the motorcycle. If the wiring harness or outer body of the Knock Sensor (black plastic portion) contacts the engine or any other part of the motorcycle, it could damage the Knock Sensor, or interfere with its ability to detect knock. Special care for rubber mounted motors must be given to accommodate engine movement in the chassis. View Knock Sensor while motor runs to make sure it has proper clearance.
   b. After determining final position for Knock Sensor, remove mounting bolts and lockwashers, then re-install them on mounting block bolt (k), torque to 33 ft-lbs., and Loctite® 243 on knock sensor bolt (j), torque to 11 ft-lbs.
   c. Hold knock sensor in position by hand only while torquing. Do NOT use pliers. Damage to knock sensor will occur.

4. Installation of the MAP Sensor
   a. Replace the existing VOES vacuum hose with the one provided. Trim the hose to a length that will locate the MAP Sensor so it does not interfere with the engine Temperature or Knock sensors, or motor mount hardware. A hose length in the 1 to 2 inch range is acceptable. If the vacuum fitting in the intake manifold is used for other equipment, the line may be cut near the manifold, and the supplied tee may be used. The total line length from the manifold to the sensor should be kept less than 9 inches—shorter if practical.
   b. Do not use the motorcycle’s existing coil harness—a coil harness is provided.
   c. Primary coil resistance should be in the range of 0.5 to 3 ohms.

5. Installation of the Crank Position Sensor
   a. Remove the screw(s), crank position sensor hole cover plate, and gasket from the front, drive side of the engine crankcase near the oil filter.
   b. Install the Crank Position Sensor with the supplied 1/4” bolt and lockwasher and torque to 8-10 ft-lb. See Picture 10

6. Installation of the IST Ignition Module and 4¼” Bore Wiring Harness Adapter:
   The 4¼” Bore Engine Wiring Harness Adapter (See Picture 11) is a one-piece assembly consisting of the following connectors:
   a. IST Ignition Module Connector: 32-Socket, Gray (Delphi/Packard)—Connects to the S&S® Intelligent Spark Technology Ignition Module.
(b) Motorcycle Main Harness Connector: 8-socket Black (Deutsch)—Connects to the stock Harley-Davidson® wiring harness in place of the stock module.
(c) Head Temperature Sensor Connector: 2-socket black (Delphi®/Packard)
(d) Knock Sensor Connector: 2-socket black (Bosch)
(e) MAP Sensor Connector: 3-socket (Delphi®/Packard)
(f) Coil Harness Connector: 3-socket black (Delphi®/Packard)
(g) Crank Position Sensor Connector: 2-socket black (Deutsch)
(h) Data Link Connector with Plug: 4-Pin gray (Deutsch)

The IST ignition module includes a hardware packet. The hardware is intended for spacing the module and the connector off of the mounting back plate. Washers are also included for the mounting screws. This hardware is only necessary on some models. The hardware packet includes the following spacers and washers:
- .200" Spacers (4)
- .060" Spacers (4)
- .475" O.D. Washers (2)
- .250 I.D. Lockwashers (2)

NOTE: Locking tabs on each connector listed should produce a light "click" sound when properly assembled. S&S® recommends checking each connection by lightly pulling on each half of the connector to insure that the locking tabs have properly seated.

a. Route the wiring harness along the bike frame to ensure that the Ignition Module Connector (a) (See Picture 11) reaches the Module mounting location.

b. Connect the Ignition Module Connector (a) (See Picture 11) to the Module.

c. Install the module using the stock mounting hardware and the S&S hardware (if necessary) included with the module.

d. Plug the 8-pin black plug from the stock wiring harness into the black 8-socket Motorcycle Main Harness Connector (b) on the S&S harness. See Picture 11 (if the motorcycle plug has only seven pins see step 7)

e. The portion of the harness that connects to the Head Temperature Sensor, MAP Sensor, and the Knock Sensor should be routed along with the stock wiring under the gas tank.

f. Use the provided wire ties to secure this portion of the harness to the motorcycle frame or a portion of the existing harness. Do not allow the harness to touch cylinder or head fins which get very hot.

g. See Picture 11. Connect the Head Temperature Connector (c) Knock Sensor Connector (d) and MAP Sensor (e) to the corresponding sensors.

NOTE: If the tank is removed or raised, temporarily replace it to insure clearance for the Engine Temperature, MAP, and Knock Sensor portions of the harness. Reroute any wires that may be damaged by installing the tank.

h. Connect the main harness segment (f) (See Picture 11) to the coil harness (item (e) in Picture 1) and route the harness to the coil. Table 1 shows the wire color codes that should be matched to the ignition coil. Attach each ring terminal to the corresponding terminal on the coil. Do not allow the terminals to touch each other or any other metal. See Picture 12.

i. Route the main harness segment (g) (See Picture 11) on the S&S harness to the Crank Position Sensor and attach the connector. Avoid routing this wire segment near coils or spark plug wires.

j. Locate main harness segment (h) (See Picture 11) on the S&S harness so that it may be easily accessed to check for fault codes should they occur. See Picture 13.

k. Permanently reinstall tank, reconnect battery (positive cable first) and any other portions of the motorcycle that have been removed or disconnected.

7. Motorcycles with a 7-pin ignition connector instead of an 8-pin connector

Some Harley-Davidson® motorcycles manufactured between the years 1991 and 1994 had a 7 pin connector in place of the 8-pin connector. A 7 to 8 pin adapter is available through aftermarket sources such as Drag Specialties (part #: DS-243068). It is a universal adapter that allows many different ignition systems (including the S&S IST ignition) to work on motorcycles with a 7-pin connector. If the IST installation is on a motorcycle with a 7-pin connector, this adapter can be purchased separately.

NOTE: If using an 7 to 8 pin adapter plug or if your motorcycle is already equipped with an 8-pin ignition connector, the IST power harness adapter is not used.

8 IST power harness adapter

The power harness adapter (#55-1540) is used when installing the IST ignition on an S&S 4¼” bore engine used in a custom application. It has an 8-pin connector that plugs into the matching connector of the Main IST harness. The power harness
8-pin connector has three wires coming out of it: chassis ground, switched ignition power (battery +), and tachometer signal. Only two connections to the motorcycle are required for the ignition system to operate: chassis ground, and switched ignition power (battery +). The tachometer trigger wire is optional. See Picture 14 and Table 2.

a. Connect the power harness into IST ignition system main harness. Make corrections in wiring lengths by cutting and splicing using supplied connectors.

**NOTES:**
- Installer to source appropriate wire for any additions. Use supplied shrink tube and wire cover to insulate and protect wires and connections.
- Stagger any splices in a wire harness bundle. This reduces the chance of wear between adjacent splices. It also makes it easier to pass splices wire through the harness sleeving.
- Crimp connections are preferred over soldered connections. Soldering causes stress concentrations at the wire to solder joint. Soldered connections are prone to break in high vibration environments.
- In most cases, the switched ignition power connection is made in the wire leading from the ignition switch to the coil.
- If not using a tach, the tach signal wire may be removed from the connector. If you do remove the wire, be sure to plug the empty hole with the supplied sealing plug to prevent moisture from entering the connector.

**Table 2**

<table>
<thead>
<tr>
<th>Wire Color</th>
<th>Wire Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main</td>
<td>Stripe</td>
</tr>
<tr>
<td>White</td>
<td>Black</td>
</tr>
<tr>
<td>Black</td>
<td>N/A</td>
</tr>
<tr>
<td>Pink</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Battery + (Switched Ignition Power)</td>
</tr>
<tr>
<td></td>
<td>Chassis Ground</td>
</tr>
<tr>
<td></td>
<td>Tachometer Signal</td>
</tr>
</tbody>
</table>

**E. Initial Starting Procedure:**

Because the S&S® Intelligent Spark Technology Ignition System is designed to “learn” the specific engine/motorcycle configuration it is being used for, the following initial starting procedure must be followed after installing the system for the first time. This procedure needs to be followed only once. After that, the motorcycle can be started and ridden as usual.

**NOTE: IMPORTANT!** In some applications, a Vehicle Speed Signal (VSS) or Camshaft Position Sensor signal is routed to Pin 21 on the IST module.

In these instances, it is important that the ignition has learned what type of signal is connected. It is important that the wheels remain motionless while the key is on prior to completing this procedure. Until the ignition has learned what type of signal is present, it could fire the plugs based on wheel movement if installed on a motorcycle with the VSS routed to the IST.

In the application described in this instruction sheet, neither signal is used on this input. So, this step is not relevant. If you are installing the IST module only and not completely familiar with the rest of the wiring, it is recommended that you perform this procedure:

To insure proper learning of the type of signal used in your application:

a. Be sure to start the motorcycle in neutral and on a flat/level surface.

b. Allow the engine to run for a minimum of 10 seconds before turning the key off.

This procedure only needs to be performed once, but it should be repeated if the IST module is installed in another motorcycle.

**F. Basic Troubleshooting:**

Below are some suggestions if any problems are encountered with the IST Ignition Module.
1. Problem: Engine cranks but will not start.
   Possible solutions:
   a. Check that the gas tank is full and that the fuel petcock is turned on.
   b. Check that coil wires (plug and harness) are installed properly.
   c. Check that all connections are complete on the Wiring Harness Adapter.

2. Problem: Key power-on switch does not seem to work.
   Possible solutions:
   a. Check for blown fuses and/or tripped circuit breakers.
   b. Check that the battery has been properly reconnected.
   c. Check that the connectors are connected correctly.

G. Advanced Troubleshooting

The S&S® ignition system features advanced self-diagnostic capabilities. The unit detects operational faults, and stores them as codes in memory. There are two methods of retrieving trouble codes stored in memory. First, by counting Flash Codes, generated by the Check Engine light, (see note) and second, by using the S&S IST Guardian™ Diagnostic System (P/N 55-5075) connected to the data link connector of the S&S Ignition Wiring Harness. Flash codes allow the mechanic to access the trouble code information without the use of the Guardian system, but are less detailed and cannot be cleared immediately after correcting the issue that caused the code.

NOTES:

• If the motorcycle has a check engine light, this can be used to read stored codes. For motorcycles without an OEM check engine light, there is an LED on the face of the ignition module that functions as a check engine light, and can also be used to read stored codes.

• Trouble codes are stored in memory for as long as the fault exists, and for 50 on/off cycles of the key after a fault is corrected. The S&S IST Guardian™ Diagnostic System (P/N 55-5075) has code clearing capability, and is a way to clear trouble codes immediately after a fault has been corrected. If a fault still exists, a new trouble code will be generated.

• Before purchasing the S&S IST Guardian™ Diagnostic System (P/N 55-5075) note that the software is only compatible with Windows® 2000/XP/Vista/7 32-bit systems. It will not work on 64-bit operating systems.

• Also, be aware that the Guardian system is only compatible with the S&S IST ignition module. It will not work with stock Harley-Davidson® or other aftermarket modules.

1. Overview of check engine light operation.

   Initial start sequence.
   The check engine light will flash in one of the three ways listed below each time the key is turned “on", and the off/run switch is set to “run”
   • If no faults are detected, the IST ignition will turn the check engine light "on" for 4 seconds, then "off".
   • If a fault is present at that time, the check engine light will turn “on” for four seconds, then turn “off” for four seconds, then turn "on" continuously.
   • If a fault has occurred and been corrected within the past 50 key on/off cycles, the check engine light will turn “on" for four seconds, then “off” for four seconds, then “on” for eight seconds, then off.

2. Retrieving and displaying codes using the Check Engine light.
   a. Turn key and off/run switch to “off”
   b. Remove seat or side cover to expose the datalink connector, located near the ignition module.
   c. Remove rubber plug from datalink connector.
   d. Connect pins “1” and “2” of the datalink connector with a jumper wire. The pins must remain connected during the code retrieval process.

   NOTE: See chart for definitions of fault codes supported by the S&S® ignition module.

   h. After retrieving codes, turn ignition key and run switch to “off”.
   i. Remove jumper wire and replace datalink connector plug.
3. Retrieving codes using the S&S IST Guardian™ Diagnostic System (P/N 55-5075)

The Guardian system offers a more detailed description of the trouble codes than the Flash Code method. It also offers a way for trouble codes to be cleared immediately after a fault has been corrected rather than the 50 on/off cycles of the key that are normally required.

For more details, visit www.sscycle.com/tech-info/software/guardian/

NOTES:

• Before purchasing the S&S IST Guardian™ Diagnostic System (P/N 55-5075) note that the software is only compatible with Windows® 2000/XP/Vista/7 32-bit systems. It will not work on 64-bit operating systems.

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<table>
<thead>
<tr>
<th>Check Engine Lamp Code</th>
<th>Diagnostic Test Condition (Guardian Only)</th>
<th>Fault Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>P0107</td>
<td>MAP sensor open</td>
</tr>
<tr>
<td>12</td>
<td>P0108</td>
<td>MAP sensor high</td>
</tr>
<tr>
<td>12</td>
<td>P0109</td>
<td>MAP sensor intermittent</td>
</tr>
<tr>
<td>14</td>
<td>P0117</td>
<td>Engine Temp sensor voltage low</td>
</tr>
<tr>
<td>14</td>
<td>P0118</td>
<td>Engine Temp sensor voltage open</td>
</tr>
<tr>
<td>14</td>
<td>P0119</td>
<td>Engine Temp sensor voltage</td>
</tr>
<tr>
<td>71</td>
<td>P0324</td>
<td>Knock sensor low input</td>
</tr>
<tr>
<td>72</td>
<td>P0327</td>
<td>Knock sensor high input</td>
</tr>
<tr>
<td>41</td>
<td>P0335</td>
<td>Crank Position sensor intermittent</td>
</tr>
<tr>
<td>41</td>
<td>P0336</td>
<td>Crank Position sensor synch error</td>
</tr>
<tr>
<td>42</td>
<td>P0340</td>
<td>Cam sensor failure</td>
</tr>
<tr>
<td>16</td>
<td>P0562</td>
<td>Battery voltage low</td>
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<tr>
<td>16</td>
<td>P0563</td>
<td>Battery voltage high</td>
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<tr>
<td>54</td>
<td>P0603</td>
<td>ECM EEPROM error</td>
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<tr>
<td>24</td>
<td>P1351</td>
<td>Front ignition coil open</td>
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<tr>
<td>24</td>
<td>P1352</td>
<td>Front ignition coil high</td>
</tr>
<tr>
<td>25</td>
<td>P1354</td>
<td>Rear ignition coil open</td>
</tr>
<tr>
<td>25</td>
<td>P1355</td>
<td>Rear ignition coil high</td>
</tr>
<tr>
<td>58</td>
<td>P1607</td>
<td>Ignition Module Board temp low</td>
</tr>
<tr>
<td>58</td>
<td>P1608</td>
<td>Ignition Module Board temp high</td>
</tr>
</tbody>
</table>
TABLE 1: WIRE COLOR/STRIP KEY

<table>
<thead>
<tr>
<th>Wire Color</th>
<th>Stripe Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL Blue</td>
<td>BE Blue</td>
</tr>
<tr>
<td>BK Black</td>
<td>TN Tan</td>
</tr>
<tr>
<td>BN Brown</td>
<td>PK Pink</td>
</tr>
<tr>
<td>DK Dark</td>
<td>O Orange</td>
</tr>
<tr>
<td>GN Green</td>
<td>W White</td>
</tr>
<tr>
<td>GY Gray</td>
<td>Y Yellow</td>
</tr>
<tr>
<td>LT Light</td>
<td>V Violet</td>
</tr>
<tr>
<td>O Orange</td>
<td>W White</td>
</tr>
<tr>
<td>PK Pink</td>
<td>B Brown</td>
</tr>
<tr>
<td>R Red</td>
<td>P/Pk Pink</td>
</tr>
<tr>
<td>BE Blue</td>
<td>O Orange</td>
</tr>
</tbody>
</table>

IST Ignition Module
P/Ns 55-1221 (After Market Module) 55-1223/550-0588 (Module w/Break-in Rev Limiter)(Not Included with Installation Kit)

POWER HARNESS
(REPLACEMENT P/N: 55-1540)