

**Instruction 51-1175  
4-25-06**

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**Because every industry has a leader**

## S&S® Top Dead Center Locator

S&S PN 53-0321 for engines using 14 mm spark plugs - S&S PN 53-0322 for engines using 12 mm spark plugs

### 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 inhaled. 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 judgement when performing installation and operating motorcycle. Good judgement begins with a clear head. Don't let alcohol, drugs or fatigue impair your judgement. 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 inhaled. 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 suspected 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.



## INTRODUCTION

The S&S® Top Dead Center Locator screws directly into the spark plug hole and provides the necessary positive piston stop when locating top dead center.

Locating exact top dead center is critical when verifying timing for camshafts intake and exhaust valves and breather gears.

Features include:

- Made of brass to prevent piston damage.
- Internal air bleed passage to release compression build up.
- Knurled grip for easy insertion and removal.
- Hex head accepts a 3/8" wrench.

### 1. Attaching a degree wheel (See S&S Instruction 51-1038)

**NOTE:** The TDC locator should be used in conjunction with a degree wheel such as S&S PN 53-0020.

## ⚠ CAUTION

**If using the TDC locator on a chassis mounted engine, NEVER use the starter to turn over the engine.**

- A. Disconnect the negative battery terminal to prevent accidental starter operation.
- B. Remove front and rear spark plugs (front plug is removed for TDC locator, rear plug is removed to relieve compression).
- C. Position front cylinder close to top dead center.
- D. Attach degree wheel and pointer to engine according to the degree wheel manufacturers instructions.

### 2. Installing the TDC locator

- A. Rotate the engine counterclockwise (by hand) to position the front piston far enough down the bore to allow installing the TDC locator without contacting the top of the piston.

#### NOTES:

- Whatever wrench or handle is used, it must not change the position of the degree wheel on the shaft when turning the engine.
  - A long handle provides better leverage and control than a short handle.
- B. Screw TDC locator into the front spark plug hole until the base of the knurled area is seated on the cylinder head.

**NOTE:** Failure to fully seat the locator may allow movement when the piston contacts the stop which may cause degree reading errors.

### 3. Finding top dead center location

- A. Slowly rotate the engine clockwise (by hand) until the piston contacts the TDC locator.
- B. Zero the degree wheel to pointer.
- C. Slowly rotate the engine counterclockwise until the piston contacts the TDC locator again.
- D. Note the degree indicated by the pointer.

**NOTE:** Degrees given in the example below are for illustration purposes only. Use the values obtained from the steps above when performing the procedure.

*Example: The first contact is at zero degrees (step 2 above) then after rotating the crankshaft around the other way, the second contact is at 30 degrees (step 4 above) the total spread between the two is 30 degrees. (0 + 30) Divide the total degree spread (30 degrees) in half to get the equal number of degrees that the stop point is on each side of exact TDC in this case, 15 degrees.*

- E. In the example above, the pointer will still indicate 30 degrees. Without disturbing the position of the piston against the stop, carefully re-position the degree wheel so that the pointer indicates 15 degrees.
- F. Rotate engine clockwise to the stop, and back counterclockwise to the stop, and make adjustments if necessary so that the degree reading is equal distance from zero degrees going both directions. When the degree reading is equal on both sides of zero degrees, remove the TDC locator. The pointer will now indicate exact TDC at zero degrees.
- G. The engine is now ready for degree checks.