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Installation Instructions: S&S EFI Intake Kit For S&S T143 Engines For 2002-'07 Harley-Davidson® Touring & 2004-'17 Dyna® Models

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.

NOT LEGAL FOR SALE OR USE IN CALIFORNIA ON ANY POLLUTION CONTROLLED MOTOR VEHICLES

Not legal for sale or use on any EPA pollution controlled motor vehicle.

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.

Thank you for choosing S&S® Cycle's Induction System Kit for the S&S T143 engine. These instructions cover installation on 2002-'05 and 2006-'07 Harley- Davidson® fuel injected Touring and Dyna® models originally equipped with a cable controlled throttle body. Please read the following steps to help guide you through the proper installation of the kit.

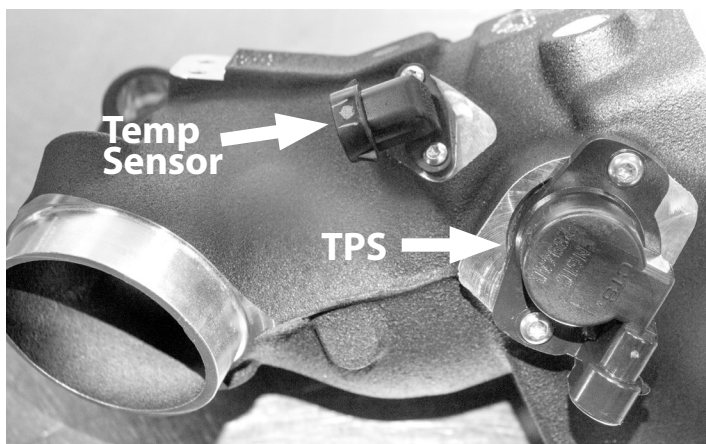


- Before doing any of the following installation, be sure to disconnect the negative cable of your battery.
- Consult an appropriate factory service manual for safety instructions on how to disconnect the fuel system from your motorcycle. • Gasoline is extremely flammable. Please be sure to work in a well ventilated area and do not have an open flame near the work area.
- The following installation should be only done by a qualified technician with the proper tools and training. If you are not certain of your capabilities or do not have the correct tools for this installation, S&S recommends you consult a shop to have it done for you. Improper installation of this product could result in damage to the motorcycle and motorcycle components.

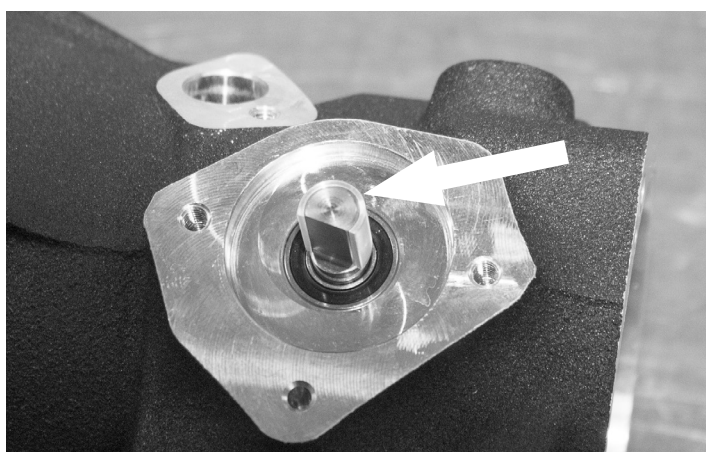
Throttle Body Installation

1. Install the Throttle Position Sensor (TPS).

- 2002-'05 – Align the square end of the throttle shaft with the slot in the TPS, and slide the TPS on. Apply blue thread locker to the screws supplied in the kit. Line up the screw holes and install the screws. See **Picture 1**

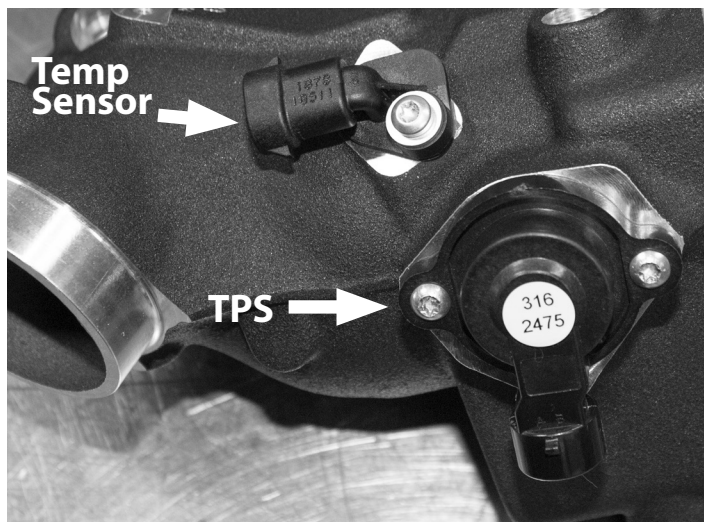


Picture 1



Picture 2

- 2006-'07 – Install the D-Shaped adaptor on the throttle shaft, See **Picture 2**, and slide the TPS over the adaptor. Apply blue thread locker to the supplied screws. Line up the holes and install screws. See **Picture 3**



Picture 3

2. Install Intake Air Temperature Sensor

- 2002-'05 - Apply blue thread locker to the supplied screws and install the sensor as shown in **Picture 1**.
- 2006-'07 – Apply blue thread locker to the single screw and oil the sensor o-ring. Install sensor as shown in **Picture 3**.

- Lubricate Idle Air Control (IAC) motor o-ring with motor oil and install in oring groove. Insert IAC as shown in **Picture 4**. Apply blue thread locker to mounting bolts. Insert IAC and mounting bolts. Note that the 2002-'05 style IAC is fastened with hex head bolts and the bolt pattern is symmetrical. Make sure the electrical connector is oriented as shown in **Picture 4**. 2006-'07 style IAC is fastened with Torx head bolts. and the bolt pattern is not symmetrical, so the IAC can only be mounted in the correct position.



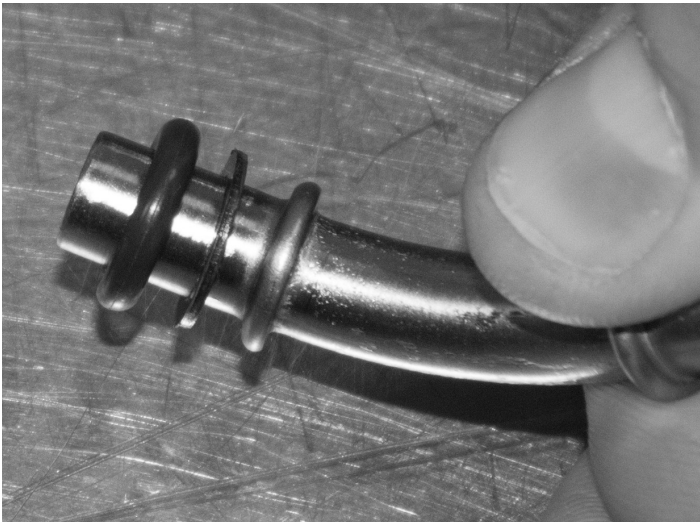
Picture 4

- Apply blue thread locker to the Manifold Absolute Pressure (MAP) sensor mounting screw. Lubricate the rubber seal of the MAP Sensor and insert in the manifold. Place the retaining bracket over the sensor and install the mounting screw. See **Picture 5**.



Picture 5

5. Slide the provided washer and o-ring over the shorter end of the fuel inlet tube as shown in **Picture 6**.



Picture 6

6. Lubricate the o-ring and insert into the fuel rail. Apply blue thread locker to the mounting screw and install the fuel line retaining clip as shown in **Picture 7**.



Picture 7

7. Install Fuel Rail

- a. Lubricate the o-rings on both of the supplied fuel injectors.
- b. Insert one fuel injector in the throttle body and the other fuel injector in the fuel rail.
- c. Holding the fuel rail at an angle (see **Picture 8**) push the injector installed in the fuel rail into the throttle body.
- d. Using a rocking motion, press the fuel rail on to other fuel injector in the throttle body.
- e. Apply blue thread locker to the mounting screws and fasten the fuel rail to the throttle body.



Picture 8

8. Apply blue thread locker to both throttle cable bracket screws, and install the throttle cable bracket. Before tightening the screws, make sure the guides in the cable bracket are lined up with the center of the throttle spool. This will ensure that the cable pull straight and even on the throttle spool.
9. Apply PTFE thread sealant to the two vent fittings, and install in the threaded holes in the throttle body. Some installers prefer to apply the sealant to the threads in the throttle body. Install the vent fittings as shown in **Picture 9**



Picture 9

10. Slide front and rear intake flanges over corresponding runner of the manifold end of the throttle body. The slotted end of each flange should face downward. Slide a manifold o-ring over each runner with the flat side facing out to seal against the cylinder head.
11. Remove the temperature sensor and the vent fitting from the front cylinder head. Install the hex head manifold bolts and washers in the bottom manifold bolt holes of the cylinder head.
12. Tilting the throttle body to clear the rear cylinder head vent fitting, install the throttle body with the lower manifold bolts in the slots of the intake flanges, and so that the washers are between the head of the bolt and the manifold flange.
Hint – washers can be held away from the cylinder head with a small “pick up” magnet or a small dab of grease, making it much easier to get the flange over the bolt with the washer above the flange. See **Picture 10**.



Picture 10

13. Install the top socket head manifold cap screws. Snug all the manifold screws but do not final tighten.
14. Install the closing side (inner) throttle cable in the cable guide and throttle spool. Install the opening side (outer) cable in the throttle spool, but do not install the outer cable housing in the cable guide.
15. Reinstall the front cylinder head vent fitting using PTFE sealant or PTFE tape.
16. Cut both 90° vent hoses to the lengths shown in **Figure 1**, and slip the pinch clamps over the ends of the hoses. Apply a thin film of oil or grease to the inside of each end of both hoses.

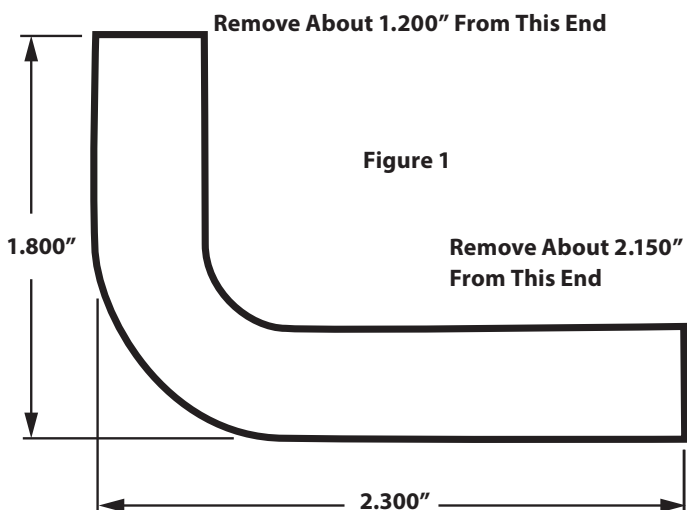


Figure 1

17. Turn the tip of the vent fittings on the throttle body slightly away from the cylinder heads and install the vent hoses. Turn the vent fittings back to their original positions.
18. Use a crimping tool to crimp the vent hose clamps in place. See **Pictures 11 and 12**.



Picture 11



Picture 12

19. Install the opening side throttle cable outer housing in the throttle cable guide and adjust both throttle cables. Cables should be adjusted so there is minimum free play, but should not be so tight that the throttle does not operate freely.

NOTE: Throttle must not bind and must snap shut to fully closed position when released.



If throttle does not return to fully closed position when released, it may inadvertently stick open, causing possible loss of control of motorcycle and personal injury to operator or others.

20. Cut the existing IAC connector from the stock wiring harness. Slide the supplied sleeving over the wiring harness. Slide heat shrink tubing over each of the IAC harness wires. Connect the supplied IAC connector extension adaptor to the wiring harness with the supplied butt connectors. Refer to the chart below to match the correct color wires on the adaptor to the wires on the stock harness. Move the heat shrink tubing over the splices and shrink with a heat gun. Slide the sleeve into place, as shown in **Picture 13**.

Connector Pin	S&S IAC Extension	2002-'05 Harness	2006-'16 Harness
A	Blue/Green	Blue/Green	Black/Pink
B	Brown/Red	Brown/Red	Brown/Red
C	Black/Pink	Black/Pink	Blue/Green
D	Black/Orange	Black/Orange	Black/Orange



Picture 13

21. Plug electrical wiring harness connectors into IAC, temperature sensor, TPS, and fuel injectors. 2006-'07 models require the use of the supplied fuel injector adaptors.

22. Connect the stock fuel line from the tank to the fuel rail. The S&S fuel inlet is compatible with the stock fuel line connector.

Air Cleaner Installation

1. Locate the S&S Stealth backplate and the three backplate screws, and install the screws in the backplate.

NOTE: The backplate is tapped with interference threads so the screws will require some force to thread in.



Picture 14

2. Apply blue thread locker to the two stand-off bolts and install them in the backplate as shown in **Picture 14**.



Picture 14

3. Using a razor blade or sharp knife cut along the score marks on the backplate gasket to enlarge the hole to fit the bore of the throttle body. See **Picture 15**.

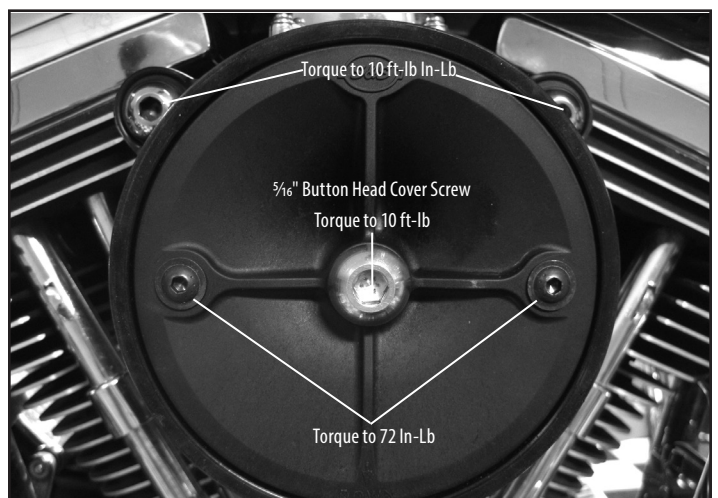
4. Slide the modified gasket over the screws in the backplate

5. Insert the 3/8-16 air cleaner mounting bolts through the mounting holes in the backplate ears. Apply blue thread locker to the threads of the three backplate screws and the air cleaner mounting bolts, and attach the backplate to the throttle body and cylinder heads.

6. Torque the 1/4-20 backplate screws to 72 in.-lbs. and the 3/8-16 air cleaner mounting bolts to 10-12 ft.-lb.

7. Once the backplate has been secured in place, finish tightening the four manifold bolts.

8. Install the filter and air cleaner top plate. Secure with two 1/4-20 x 1" button head cap screws. Torque to 72 in-lb. See **Picture 15**.



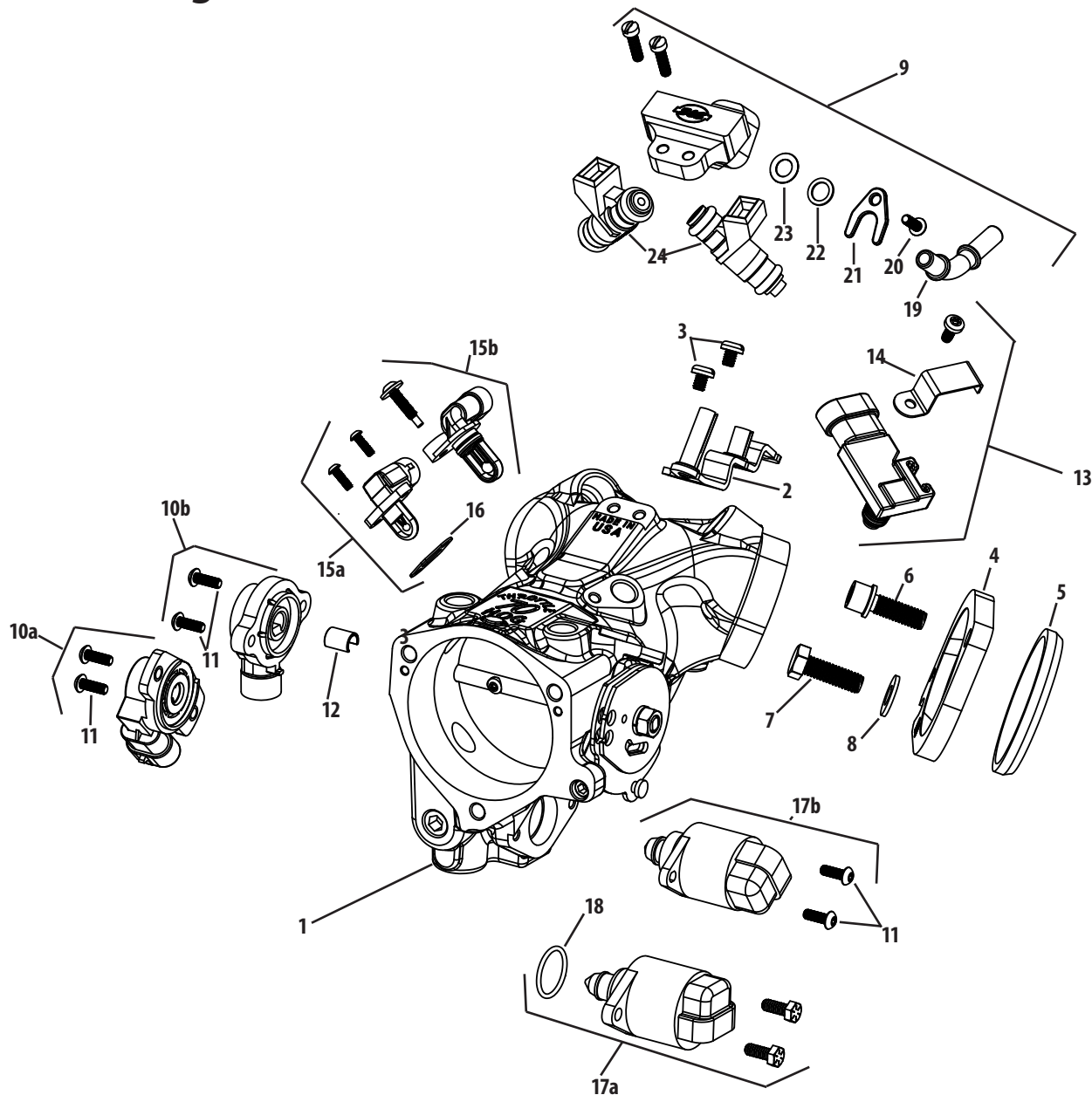
Picture 15

9. Attach an S&S Stealth air cleaner cover or the stock Harley-Davidson® Twin Cam 88°, 96™ or 103™ air cleaner cover to the stealth air cleaner kit by installing the 5/16" button head screw through the center mounting hole with 243 blue Loctite applied to the threads. Torque to 10 ft.-lbs. See **Picture 15**.

10. Reinstall the cylinder head temperature sensor and connect the sensor to the wiring harness.

11. Reinstall any components removed for the installation of the kit

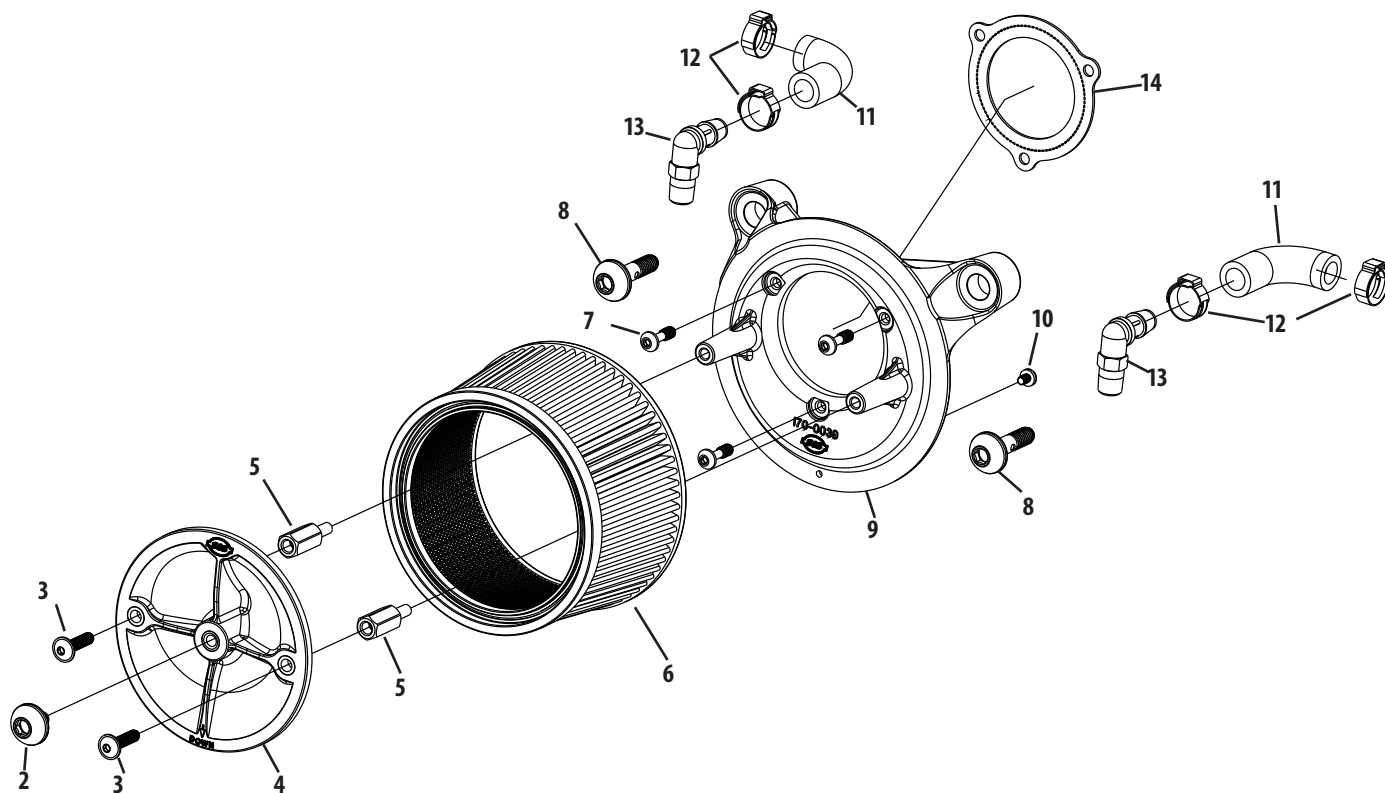
Replacement Parts For S&S Cable Operated Throttle Hog Throttle Bodies



1. Throttle Body,Kit,Throttle Hog,Cable Operated (NS)			
a. 2002-'05	170-0290	13. Sensor;Kit;MAP;IST™	55-1090
b. 2006-'07	170-0291	14. Clamp;Hold-Down;MAP Sensor	16-5077-S
2. Guide,Asm,Throttle Cable, S&S® 70mm TH	160-0113	15. Sensor,Kit,Temperature,Intake Air	
3. Screw,PH Panhead,10-24 x 5/16",Zinc,Steel	50-0093-S	a. 2002-'05	55-5041
4. Flange,Set,Manifold,B3 Heads,Pkg	160-0091	b. 2006-up	310-0600
5. Seal,Manifold,B2 Heads,2.250" x 2.520" x	16-0246-S	16. Gasket,Air Temp Sensor,2002-'05	16-5009-S
6. Screw,SHCS,w/ Flat Washer,5/16-18 x 1",Z	50-0125-S	17. Motor,Kit,Idle Air Control,EFI	
7. Bolt,Hex Head,Gr5,5/16-18 x 1",Zinc	50-0108	a. 2002-'05	55-5085
8. Washer,Flat,.344" x .688" x .065",Zinc,S	50-7034	b. 2006-'07 Touring	550-0406
9. Fuel Rail Kit	160-0118	18. O-ring,(-018),.739" ID x .879" OD,Viton®	50-8149-S
10. Sensor, Throttle Position		19. Tube,Fuel Inlet, 45° Bend,5/16" x .028",	50-0485
a. 2002-05	550-0408	20. Screw,SLTD FH,8-32 x 5/8",Zinc,Steel	50-0039
b. 2006-up	550-0407	21. Clamp;Fuel Tube;Plated	50-0391-S
11. Screw,Torx,M4 x 12mm,Zinc,Steel	50-0358-S	22. Washer,.321" ID x .460" OD,Black,Nylon	50-0349-S
12. Spacer,.278" x .358",Brass, 2006-'07	55-5201	23. O-ring,(-109),.299" ID x .500" OD,Viton®	50-8137-S
		24. Fuel Injector,EV1,Pkg,80.0 lb/hr,Red,2Pk	550-0603
		25. Adapter,Injector,EV1 to EV6 (NS)	550-0637

Replacement Parts For Stealth Air Cleaners

For S&S Cable Operated Throttle Hog Throttle Bodies



1. 170-0250 Air Cleaner,Kit, ,Stealth,70mm TB (NS)
2. 500-0051 Screw,SHCB,5/16-18 x .500",Pol,Stnls Stl
3. 500-0092 Screw,SHC,Btn,FIng,1/4-20 UNC X 1"
4. 170-0026 Plate,Top,Air Filter,Molded,Plastic
5. 50-5009-S Spacer,Air Cleaner,Super E/G,1.625",Zinc
6. 170-0154 Filter,Air,Tprd,StdPlt,5.500" x 6.000" x
7. 500-0059 Screw,SHCB,1/4-20 UNC X .825"
8. 170-0045 Screw,Bkplt Vent,SHCB,3/8-16 x 1-1/2",Po
9. 170-0247 Backplate,AC,Stealth,PC,72mm,Blk,08-
10. 50-0041 Screw,PH,10-24 x 1/4",Zinc,Steel
11. 500-0298 Fitting,90°,Barbed,1/4-18 NPT x .500",Bl
12. 50-0378-S Clamp,Hose,Pinch Style,45/64" - 53/64"
13. 50-8291 Hose,Oil Line,90°, .500"
14. 160-0035 Gasket,Thrtl Body,TBW,58 mm -72mm