

# Big Twin Evolution

**S&S Performance Guide 2005 – Performance is in stock at your local S&S Dealer!**



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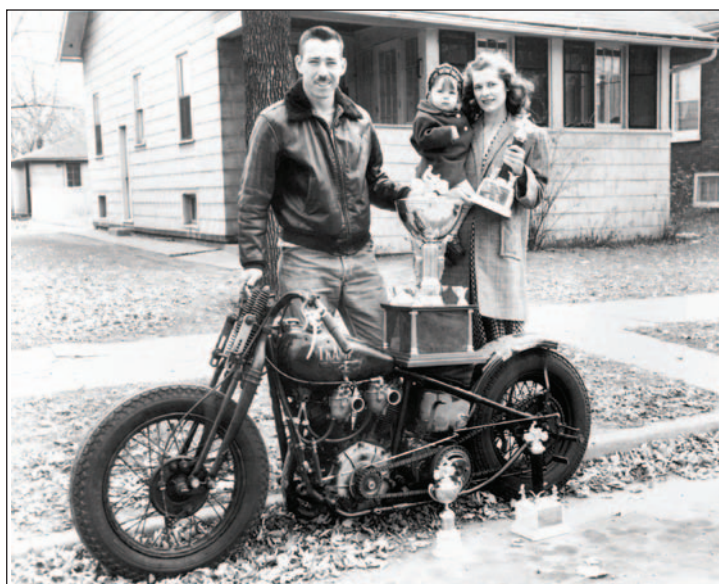
## OVERVIEW

### AMERICA'S ENGINE BUILDER

Ask American V-Twin enthusiasts to name one manufacturer of high performance engines, and nine times out of ten they'll say S&S! And you gotta' wonder about the one guy who didn't. S&S is the largest manufacturer of engines for the V-Twin high performance aftermarket. S&S engines power more custom V-Twins than anyone else's, and they have always been popular as a high performance upgrade in stock motorcycles. What could be simpler? Take your old engine out, and put a new S&S engine in. It's just that simple, and you have a sleeper hog that will run the wheels off the competition. The reason that S&S engines are so popular can be summed up in two words: "Proven Performance".



These industry awards pretty much tell the story. S&S engines have been receiving awards from industry magazines for years. Some that we are most proud of are the "Engine Of The Year" awards from both Hot Bike and V-Twin magazines for the S&S 124 and Tribute 145 engines.



When you stop and think about it, the trophies that company founder George Smith won at the race track in the late 1940's early 1950's were awards that really tell you what S&S is all about . . . Proven Performance.

### PERFORMANCE AND RELIABILITY

Everybody knows that S&S engines make a lot of power. What you may not be aware of is that because of our innovative designs and premium materials, they last a lot longer than you might think was possible for a high performance engine. Let's face it, the stroker engines of the late 1960's and early 1970's were pretty crude by today's standards, and they gave high performance motors a bad reputation as far as engine life is concerned. But keep in mind that the high performance industry has come a long way in the last 35 years or so, and S&S has been a leader in the quest not only for more power, but also for greater dependability and improved engine life. So if you could double your horsepower and still get near stock engine life, wouldn't that be a fair trade off? Judging from the number of large displacement S&S engines on the street, the answer seems to be "Yes!".



## CERTIFICATE OF AUTHENTICITY

### INSIST ON THE REAL DEAL!

Buying an assembled engine from S&S is the surest way to get S&S quality from start to finish. S&S parts and S&S expert assembly! But how do you know for sure that the engine you have was really assembled by S&S, and how do you know that all the parts in it are S&S? The answer is simple. All complete engines assembled by S&S come with a certificate of authenticity that lets you know that they have the real deal. Buyer beware of any engine that does not come with a certificate of authenticity. Insist on the real deal. Insist on a certified S&S assembled engine!

Every complete engine assembled by S&S comes with a certificate of authenticity that looks like this sample. This is your assurance that the engine you have purchased contains only S&S components and was assembled by S&S technicians at the S&S facility in Viola, Wisconsin.



### S&S TWO YEAR WARRANTY ON IST EQUIPPED ENGINES

All S&S parts from a simple carb bracket to a complete engine, carry a one year warranty. The only exceptions to this are complete S&S engines sold with the S&S Intelligent Spark Technology (IST) ignition system (listed on the certificate of authenticity) which carry a two year warranty. We've doubled the warranty because we are confident that our knock sensing IST ignition will prevent damage to the engine from over revving during the break in period, in addition to protecting it from damage due to detonation.

The IST Guardian break in rev limit feature is activated on IST modules sold with Complete S&S engines. This feature protects the new engine from premature failure with a lower rev limit during break in. As running time adds up, the module automatically increases the rev limit in four increments. It reaches the standard preset rev limit of 6,240 rpm after 24 hours of operation. After the break in period is complete, the rev limit can be changed to any desired value below the maximum of 6,240 rpm using the S&S IST Guardian software.





## ENGINES



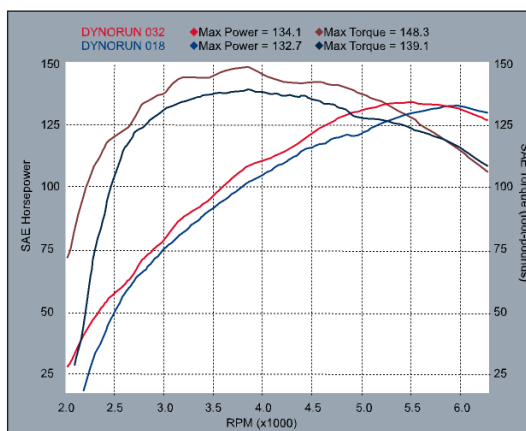
Polished SSW+ Engine with S&S IST Ignition system. IST equipped engines carry an extra year of warranty. Note the special billet gearcover.

### OPTIONS AVAILABLE – S&S 124

- ◆ Your choice of natural aluminum, black powdercoat, or polished finish.
- ◆ Natural finish engines are available with either cast tappet guides and gearcover or with S&S billet tappet guides and gearcover. Black and polished engines are available with billet tappet guides and gearcover only.
- ◆ Natural finish engines are available either assembled or unassembled. Black and polished engines are available assembled only.
- ◆ S&S Intelligent Spark Technology knock sensing ignition. Engines purchased with the S&S IST ignition carry an extra year of warranty because we are so confident that this ignition will prevent damage to the engine due to knock or detonation or over revving during the break-in period. Engines with IST feature a special billet gear cover and are available only with billet tappet guides. Not recommended for kick start applications.
- ◆ Your choice of an S&S Super G carburetor or an S&S Variable Fuel Injection system. Order induction kit separately for fuel injected engines.

## SUPER SIDEWINDER™ PLUS EVOLUTION STYLE ENGINES

If you are looking for the most powerful Evolution style production engine available for the street, your search ends here. The S&S 124", 4 1/8" bore Super Sidewinder™ Plus (SSW+) engine is it. The 124" SSW+ has become our most popular engine since its introduction. Not just because it is big, but because it makes unbelievable power. This engine will fit in a stock H-D frame, but the performance is anything but stock. We recommend this engine only for experienced riders who are seeking the ultimate in street performance. The S&S HVHP oil pump, S&S compression releases, piston cooling oil jets, chrome plated die cast rocker covers, and roller rocker arms are standard equipment on every SSW+ engine. That gives you performance, reliability, and improved engine life. Who says you can't have it all?



Upper curves show S&S VFI Tuned Induction System. Lower curves show S&S VFI Teardrop Induction System. Both tests were performed on a 1996 Road King with a 124" VFI Engine and Supertrapp 2 into 1 exhaust.

Dyno results from DynoJet 150 chassis dynamometer at S&S Cycle's Research and Development facility in Viola, WI.

### A VFI INDUCTION KIT MUST BE ORDERED SEPARATELY TO COMPLETE VFI ENGINES.

#### ORDER AN S&S VFI INDUCTION KIT

S&S VFI Teardrop Air Cleaner Induction Kit, Chrome	17-0413
S&S VFI Tuned Induction Kit, Burnished	17-5051
S&S VFI Tuned Induction Kit, Black	17-5052
S&S VFI Tuned Induction Kit, Polished	17-5053

### SPECIFY FINISH AND FUEL SYSTEM WHEN ORDERING.

#### S&S 124 - 124" SSW+ EVOLUTION STYLE ENGINE SPECIFICATIONS

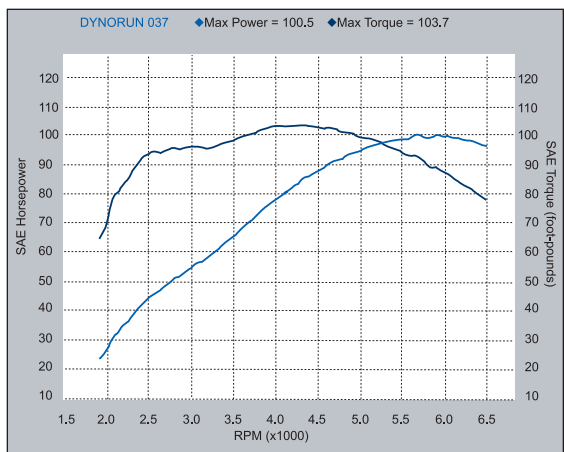
Bore	Stroke	Displacement	Camshaft	Piston Type	Compression Ratio	Part Number
4 1/8"	4 5/8"	124"	S&S 640	S&S Forged	10.8:1	31-9396



## ENGINES

### S&S 96" EVOLUTION STYLE ENGINE

The old timers at S&S remember when we started producing engine packages. Back then, the 96", 3 $\frac{3}{8}$ " bore Evolution style engine was the "king". Everyone loved the 96 because it made great power, it was reliable, engine life was exceptional, and being essentially stock height, it fit well in a stock frame. Well, time moves on. Nowadays, those who really want to stretch their arms and blur their vision, gravitate to our 113" and 124" engines, but if you're looking to replace a worn out stock Evolution engine with something a bit more potent, you still can't beat a 96. To make the 96 an even better value we have updated it with the new S&S 585 camshaft for even better performance and reliability. The S&S 96 comes with chrome plated rocker covers, roller rocker arms and an S&S Super E carburetor.



The updated S&S 96 performs even better than before thanks to the new S&S 585 cam. These dyno results are from an S&S 96 engine just the way they come out of the box. S&S 585 cam, Super E carb, and S&S Slip-On Mufflers.

Dyno results from DynoJet 150 chassis dynamometer at S&S Cycle's Research and Development facility in Viola, WI.



The S&S 96" engine has been an industry standard for years. The addition of the new S&S 585 cam give it some extra kick. Shown with wrinkle black finish and billet tappet guides and gear cover.

#### OPTIONS AVAILABLE – S&S 96

- ♦ Your choice of natural aluminum, black powdercoat, or polished finish.
- ♦ Natural finish engines are available with either cast tappet guides and gearcover or with S&S billet tappet guides and gearcover. Black and polished engines are available with billet tappet guides and gearcover only.
- ♦ 96" complete engines are available assembled only.
- ♦ S&S Intelligent Spark Technology knock sensing ignition. Engines purchased with the S&S IST ignition will receive an extra year of warranty because we are so confident that this ignition will prevent damage to the engine due to knock or detonation. Engines with IST feature a special billet gearcover and are available only with billet tappet guides. Not recommended for kick start applications.

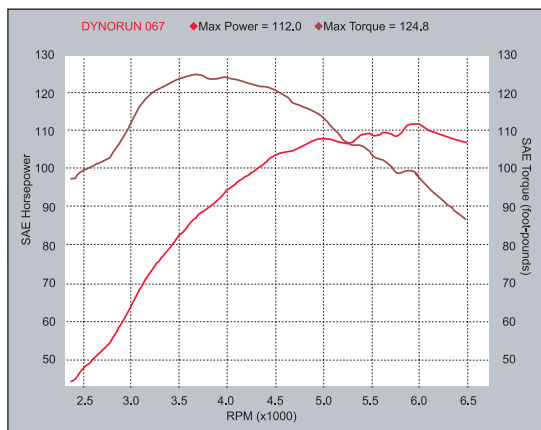
#### SPECIFY FINISH WHEN ORDERING.

S&S 96 - 96" EVOLUTION STYLE ENGINE SPECIFICATIONS						
Bore	Stroke	Displacement	Camshaft	Piston Type	Compression Ratio	Part Number
3 $\frac{3}{8}$ "	4 $\frac{1}{2}$ "	96"	S&S 585	S&S Forged	10.1:1	31-9390



## S&S 113" EVOLUTION STYLE ENGINE

The S&S 113", 4" bore engines have been on the scene for about seven years and although they are no longer the biggest production engine we offer, they still are very popular because they have many features that riders and builders really like. The 113 is actually shorter than a stock Evolution engine by about .050", which makes it easy to fit into any stock 1984-'99 frame, and engine life and dependability are better than you might expect from an engine this large. Some standard features of the 113 that make it a good choice are: chrome plated die cast rocker covers, S&S roller rocker arms, the S&S electric compression releases, the S&S High Volume High Pressure (HVHP) oil pump, and an S&S Super G carburetor. Of course performance is really what makes the 113 so attractive. The 113 outperforms many other engines of higher displacement because it has the advantage of over 45 years of S&S experience behind it. That's what that "Proven Performance" thing is all about.



S&S 113 yields 112 hp and a healthy 124 ft/lb of torque with the S&S 600 cam and Super G carb. This bike was equipped with a Thunder Header exhaust.

Dyno results from DynoJet 150 chassis dynamometer at S&S Cycle's Research and Development facility in Viola, WI.



The S&S 116" is an excellent performance street engine. Not the biggest any more, but still a contender!

### OPTIONS AVAILABLE – S&S 113

- ♦ Your choice of natural aluminum, black powdercoat, or polished finish.
- ♦ Natural finish engines are available with either cast tappet guides and gearcover or with S&S billet tappet guides and gearcover. Black and polished engines are available with billet tappet guides and gearcover only.
- ♦ Natural finish engines are available either assembled or unassembled. Black and polished engines are available assembled only.
- ♦ S&S Intelligent Spark Technology knock sensing ignition. Engines purchased with the S&S IST ignition will receive an extra year of warranty because we are so confident that this ignition will prevent damage to the engine due to knock or detonation or from over revving during the break-in period. Engines with IST feature a special billet gearcover and are available only with billet tappet guides. Not recommended for kick start applications.

### SPECIFY FINISH WHEN ORDERING.

S&S 113 - 113" EVOLUTION STYLE ENGINE SPECIFICATIONS						
Bore	Stroke	Displacement	Camshaft	Piston Type	Compression Ratio	Part Number
4"	4½"	113"	S&S 600	S&S Forged	10.1:1	31-9393



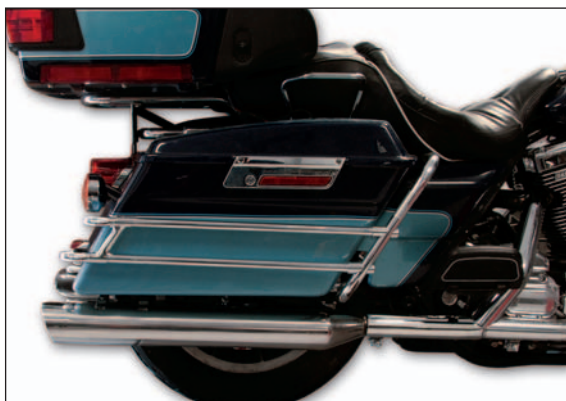
## MUFFLERS

### S&S STAINLESS PERFORMANCE OVAL TOURING STYLE EXHAUST



#### COULD SOMEBODY GET THE PHONE?

Like everyone else, "dresser" owners like to go fast. They also like to take long trips on their motorcycles. That's where the term "touring model" comes from. While it's a well known fact that one of the easiest ways to make more power and go faster is to install a high performance exhaust system, it's also a well known fact that those exhaust systems can be really loud. That may not be a big deal if you're just going out for an afternoon cruise, but it can be a problem after a day on the road, when you can't tell if it's the phone or just your ears ringing.



S&S SPO mufflers for FL models were designed to increase power without excessive noise, but just as importantly they were designed to complement the appearance of a touring bike with saddle bags.



S&S Stainless Performance Oval (SPO) mufflers are made of dual wall polished stainless steel. That means that they look great and will not rust or turn blue. If they get dull over time, from exposure to the normal road hazards, a little polishing will bring them back to the original shine!

#### GO FAST, SOUND GREAT, AND LOOK GOOD DOING IT!

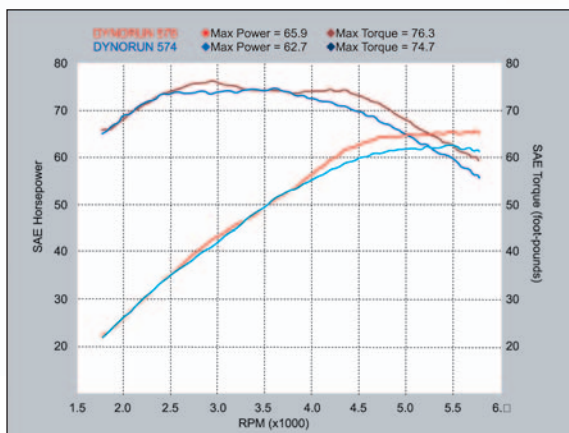
If you want to go fast, but you don't want all the noise, the new S&S Stainless Performance Oval (SPO) touring style mufflers are just what you are looking for. With a pleasing low rumble, reminiscent of the big block muscle cars of the late 1960's, the new S&S SPO mufflers are easy on the ears while they add some extra muscle to your bike. In addition, the reasonable exhaust volume and the dual wall polished stainless steel construction allow you to listen to the blues on your stereo as you cruise down the highway, without worrying about your exhaust system turning blue while you do it. With the distinctive oval design and the polished stainless finish, S&S SPO mufflers look great, but the most gratifying part is when the extra power takes you around that semi quickly and safely with just a twist of the throttle.



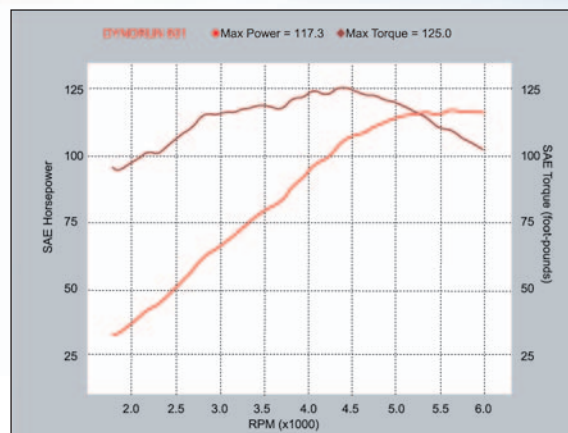
55-6023

If you need to make your bike even quieter, this accessory baffle can be installed in minutes, and reduces exhaust sound by an additional 3 dB. The original baffles can easily be replaced to restore the original sound and horsepower.





**CHART 1** – This dyno chart shows how much power was gained simply by installing a set of S&S Stainless Performance Oval (SPO) mufflers on a 2003 FLHTC. No fuel injection tuning was needed and drivability was excellent. For greater horsepower gains see page 2-9 of this catalog for S&S Muffler and Air Cleaner Hot Set Up Kits.



**CHART 2** – This dyno chart answers the question "How do S&S SPO mufflers work on a big motor?" A 124" S&S SSW+ engine in a 2003 FLHTC produced 117.3 horsepower and 125.0 ft/lb of torque at a tolerable sound pressure level approximately 3-5 dB below the sound level of other performance exhaust at highway speed.

## WHAT'S A DECIBEL?

When we talk about decibels (dB) in terms of how loud a sound is, we are really talking about dBspl. This is the unit of sound pressure level, based on what the human ear can hear. Sound level meters measure sound in dBspl.

What makes sound level measurements confusing is that the dB scale is logarithmic. Normally when something has a value of zero (0) there isn't any of it at all. However, 0 db is actually the quietest sound audible to a normal human ear. Our ears start to hurt at about 120 db. Since the dB scale is logarithmic, a sound that is twice as loud as another, will be 3 dB louder. So if one sound is at 80 dB, another sound that is twice as loud will only be 83 dB, not 160 dB. A sound at 86 dB would be twice as loud as the 83 dB sound, and four times as loud as the original 80 dB sound.

## CHOOSE YOUR SOUND!



The S&S SPO touring mufflers come with a baffle that produces excellent horsepower at a generally acceptable sound level. However, if you need to be a little quieter, but still want more power than the stock exhaust will produce, S&S has an accessory baffle available that will reduce the noise by 3-5 dB at highway speed. Unfortunately, the quiet baffle also reduces power gains slightly. . . but sometimes you gotta do what you gotta do! Of course, the original baffle can always be replaced if you want the extra power back.

## S&S STAINLESS PERFORMANCE OVAL EXHAUST

- ◆ Polished stainless steel dual wall construction
- ◆ Will not rust or turn blue
- ◆ Increased horse power at a reasonable noise level
- ◆ Pleasing low exhaust note
- ◆ Replaceable baffles allow you to choose your sound
- ◆ Excellent for stock displacement or big inch engines
- ◆ Does not require retuning of EFI system on stock engines

## S&S STAINLESS PERFORMANCE OVAL EXHAUST

S&S Stainless Performance Oval Mufflers .....	55-6030
Accessory "low noise" Baffles (Set of 2) .....	55-6023



## MUFFLERS

### S&S SLIP-ON PERFORMANCE MUFFLERS

One of the most popular and cost effective performance upgrades you can make to a Harley-Davidson® motorcycle is to replace the stock exhaust with a set of low restriction, high performance mufflers. The stock exhaust pipes and S&S performance mufflers make a great high performance exhaust system with a low price tag.

#### THE S&S SLIP-ON MUFFLERS WILL INCREASE THE PERFORMANCE OF ANY STOCK ENGINE.

Installing S&S Slip-On Mufflers alone can yield almost eight more horsepower and about 5 foot pounds of torque on a stock engine. Even more exciting are the gains that can be had with the addition of an S&S air cleaner, or carburetor and cams.

Whether you go with the mufflers alone, or add the carb and cams, this is the best horsepower to dollar ratio you can get.

See the NEW Air Cleaner and Exhaust Hot Set Up Kits on the facing page.

#### NOTES:

- ◆ It may be necessary to rejet the carburetor or recalibrate the fuel injection system for best performance when a change is made in the exhaust system.
- ◆ Dyno results are from tests performed on a DynoJet 150 dynamometer at the S&S Research and Development facility in Viola, Wisconsin.
- ◆ S&S performance mufflers are designed for closed course competition motorcycles only and do not conform to U.S. EPA noise emission standards. Use on motorcycles subject to EPA noise regulations constitutes tampering and is a violation of federal law unless it can be shown that use does not cause the motorcycle to exceed applicable federal standards.



1995-up Dyna Style -- Chrome

55-6005

#### WHAT ABOUT LARGE DISPLACEMENT STREET ENGINES?

We highly recommend the S&S performance mufflers for big inch street engines because of the excellent low and midrange torque they provide. Midrange torque is generally more important than peak horsepower to the street rider, and that's just what the S&S Slip-On delivers. This massive torque starts just off-idle, and is just what you need to get a loaded bagger up to freeway speed by the end of the on ramp.

#### WHY DON'T I JUST USE DRAG PIPES? THEY MAKE MORE POWER DON'T THEY?

Drag pipes are great for the drag strip, but S&S mufflers are better for the street. The requirements of street riders are somewhat different from those of racers. Our research has shown that drag pipes make very good horsepower at high rpm, but that they have a characteristic midrange dip in performance at about 2500 to 3500 rpm. Since this is the rpm range that is most used by street riders, we don't consider drag pipes to be the best exhaust system for street applications.

We have also found that drag pipes can make carburetor adjustment more difficult. S&S slip-on mufflers deliver slightly less peak horsepower than drag pipes, but provide excellent midrange performance, fewer tuning problems, and better driveability. S&S Slip-On Mufflers are finished in show quality chrome, and are compatible with stock mounting brackets, hardware, and heat shields.

#### S&S SLIP-ON MUFFLER KIT

1995-up Dyna Style, Chrome .....55-6005



## AIR CLEANER AND EXHAUST HOT SET UP KITS

OK, so maybe your budget isn't ready for a new big inch S&S engine yet. But better performance is still within your reach. Consider the New S&S muffler and air cleaner Hot Set Up kits. For under \$500 you can gain more than 10 horsepower. Dollar for dollar, that's about as good as it gets. The big motors will be there when you're ready, but in the mean time why not pick some low hanging fruit and get more power right now?



1995-Up Carbureted & 2002-up EFI Bagger FLT Models 55-6505



1995-Up Dyna Models

55-6502

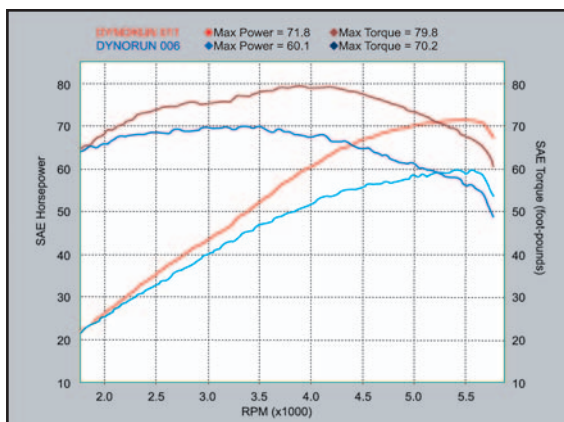
### S&S EXHAUST AND AIR CLEANER HOT SET UP KITS...

are the perfect way to balance the performance budget. Kits include a set of S&S performance mufflers and a high flow S&S air cleaner that will fit on either a stock carburetor or a stock 2001-up Delphi® style fuel injected throttle body. A jet kit for use on carbureted models is also included. Our testing has shown that no fuel map adjustments are needed when this kit is installed on fuel injected models, but that carbureted engines require re-jetting for maximum power gains and improved drivability.

### AIR CLEANER AND EXHAUST HOT SET UP KITS

1995-up FLT Models .....55-6505

1995-up Dyna Models .....55-6502



This Dyno comparison shows a stock 2000 carbureted Dyna and the same bike with an S&S Air Cleaner and Exhaust Hot Set Up Kit. Results are typical of Evolution and Twin Cam engines.



## HOT SET UP KITS

## 89" EVOLUTION BIG TWIN STOCK BORE HOT SET UP KIT

**FOR 1984-'99 EVOLUTION BIG TWINS WITH STOCK H-D CYLINDER HEADS.**

Stock bore stroker kits have always been the most cost effective way to increase displacement and improve performance. The "Hot Set Up 89" produces significant performance increases at a reasonable cost, and offers a number of options for future performance increases. When you are ready for more power, add S&S cylinder heads, an S&S big bore kit, or both!

**THIS KIT REQUIRES SPECIAL S&S PISTONS. ORDER THE CORRECT PISTON OVERSIZE FROM THIS CHART.**

## 92-2426 SERIES PISTONS

89" Big Twin V<sup>2</sup> Stock Heads 10:1 Compression

Oversize	Part Number
Standard	92-2426
+.005	92-24265
+.010	92-2427
+.020	92-2428
+.030	92-2429
Cylinder & Piston Kit - Natural	91-7211
Cylinder & Piston Kit - Black	91-7711

92-2426 Series Piston



## 89FL HOT SET UP...

yields 89 cubic inches with an approximate compression ratio of 9.25:1. Kit includes an 89" stroker kit with 4 5/8" stroker flywheels assembled with mainshafts, connecting rods, an S&S 561 cam kit, adjustable chrome moly pushrods, valve springs, a Super E carb kit, and installation instructions.

**IMPORTANT;**

1977-89 style pinion shaft gears, spacer, and nut are required when installing this kit. For installation in 1990-'99 or scratch built engines, order S&S Pinion Shaft Conversion kit 33-4148.

## 89" HOT SET UP KITS

1984-'92 .....32-2088

1993-'99 .....32-2078



## 96" EVOLUTION BIG TWIN HOT SET UP KIT

### FOR ENGINES WITH STOCK H-D CYLINDER HEADS.

A winning combination to bring out the beast in your Evolution Big Twin motor. For a weekend at the dragstrip or the power to pass just about anything with ease, the Hot 96" has proven that large motors can be reliable, too.



### THE HOT 96"

is an economical route to a large displacement motor. And there is still room to enhance future performance with the addition of S&S Super Stock™ cylinder heads. 96FL Hot Set Up yields 96 cubic inches with an approximate compression ratio of 9.75:1.

Kit includes a 96" Sidewinder™ kit with 4 5/8" stroker flywheels assembled with mainshafts and rods, 3 5/8" bore cylinder and piston kit complete, an S&S 561 cam kit, valve springs, adjustable chrome moly pushrods, an HL<sub>2</sub>T kit, a Super E carb kit, and installation instructions.

### S&S 96" HOT SET UP KITS FOR ENGINES WITH STOCK CYLINDER HEADS

Model Year	Kit Number Black	Kit Number Natural
1984-'92	32-2298	32-2296
1993-'99	32-2299	32-2297



### MIKE & JOHN THOMAS...

This beautiful custom called "The Beast" was designed by John Thomas (J.T.), with the intention that his brother Mike Thomas (pictured with the bike) would build it. Unfortunately Mike lost his sight before the job was done, so J.T. and some friends acted as Mike's hands and eyes and built the bike under Mike's direction. The Beast features an S&S 96" Evolution Style Long Block.



## HOT SET UP KITS

## S&amp;S 89" AND 96" VFI HOT SET UP KITS

FOR FUEL INJECTED  
EVOLUTION BIG TWINS.

Owners of EFI equipped Evolution style motorcycles have been at a disadvantage as far as performance upgrades have been concerned. The fact that special flywheels are required, prevented them from installing standard stroker kits, and the lack of tuning ability with the stock fuel injection system made it impossible to tune for even minor changes such as cams and exhaust. Increased displacement was just too great a tuning obstacle.

## Now S&amp;S HAS...

all the pieces in place to make it work, and we are pleased to introduce two new Hot Set Up kits for EFI equipped Evolution motorcycles. These kits are based on two of the most popular kits S&S has ever offered for Evolution Big Twins, the S&S Evolution style 89" stock bore stroker kit and the S&S 96" Evolution style Sidewinder™ kit.

THIS KIT REQUIRES SPECIAL S&S  
PISTONS. ORDER THE CORRECT  
PISTON OVERSIZE FROM THIS CHART.

92-2426 SERIES PISTONS 89" Big Twin V <sup>2</sup> Stock Heads 10:1 Compression	
Oversize	Part Number
Standard	92-2426
+.005	92-24265
+.010	92-2427
+.020	92-2428
+.030	92-2429
Cylinder & Piston Kit - Natural	91-7211
Cylinder & Piston Kit - Black	91-7711

## NOTE:

- ◆ Pistons are sold separately.
- ◆ Order S&S VFI components separately on facing page.



89" Kit shown with optional S&S VFI Tuned Induction System with polished intake runners. 32-2290

## THE HEART OF EACH OF THESE KITS...

is a set of 4% stroke S&S EFI style stroker flywheels. These flywheels are machined with timing notches which are compatible with the stock crankshaft position sensor used in EFI equipped Evolution engines from 1995-'98. The stroker flywheel assembly will fit into the stock crankcases with only minor clearancing. The 96" kit will require that the cylinder spigot holes in the stock crankcase be bored to accept the S&S big bore cylinders.

## VFI HOT SET UP KIT - 89"

NOTE: Order pistons and VFI components separately.

4 5/8", 9.25:1CR C.....32-2290







## HOT SET UP KITS

Continued...

S&S 89" & 96" VFI Hot Set Up Kits

### BOTH THE 89" AND 96" KITS...

contain flat topped pistons and are designed to use the stock cylinder heads on EFI equipped engines. The 89" kit uses the existing stock cylinders, and the 96" kit includes S&S 3 $\frac{3}{8}$ " bore cylinders which are essentially stock length. Since stock heads and stock length cylinders are used, the stock throttle body and manifold assembly may be used on either engine if desired. For additional performance, however the S&S VFI Tuned and Teardrop Induction systems are highly recommended and are available as options when ordering the 89" or 96" kits.



96" Kit 32-2291 shown with optional S&S VFI Tuned Induction System with polished runners.

32-2291

### TUNING FOR INCREASED DISPLACEMENT

The final problem of how to tune the fuel injection to a bigger motor is simple to solve. We offer the S&S Variable Fuel Injection module as an option with both of the Hot Set Up kits. With the S&S VFI module, tuning can be as simple as loading a pre-existing fuel and ignition map. If you have had your stock heads flowed or if a custom manifold is used, maps can also be customized with the software included.

### VFI HOT SET UP KIT - 96"

4 $\frac{7}{8}$ ", 9.75:1CR F .....32-2291

### FOR MORE INFORMATION...

on the S&S Variable fuel injection system, see page 22 in the fuel system section of this catalog.

### ORDER THESE PARTS TO UPGRADE TO A COMPLETE S&S VFI INDUCTION SYSTEM:

#### S&S VFI MODULE

1995-'01 .....55-5006

#### S&S VFI MANIFOLDS

For stock height engines .....16-5055

#### S&S VFI THROTTLE BODY KIT

1995-'01 .....17-5061

#### S&S INDUCTION KITS...

Choose one.

S&S Teardrop Air Cleaner Kit.....17-0413

S&S VFI Tuned Induction Kit

Choose one:

Black .....17-5052

Burnished .....17-5051

Polished .....17-5053

For best performance S&S highly recommends that the S&S 55-5006 VFI module be used with this fuel injected kit. For even better performance, choose the S&S manifolds, the S&S VFI throttle body kit and one of the following: Teardrop Air Cleaner or Tuned Induction Kit. See Page 22 of this catalog for details about the S&S VFI System.



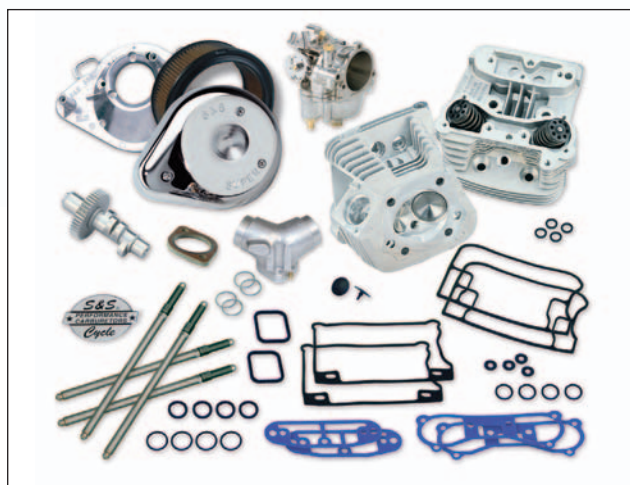
## HOT SET UP KITS

## 80 FLSS HOT SET UP KIT INCLUDES S&S SUPER STOCK™ CYLINDER HEADS

### FOR STOCK BORE EVOLUTION ENGINES.

S&S Super Stock™ cylinder heads provide the kick in this kit for the stock displacement V<sup>2</sup> Big Twin motor. Installation is as easy as a stock top-end rebuild. Flywheel rebalancing is not required. A great starting point for future performance upgrades. Most components in this kit can still be used if a stroker or big bore kit is added later.

80FLSS Hot Set Up yields 80 cubic inches at 10.1:1 compression ratio.



**THIS KIT REQUIRES SPECIAL S&S PISTONS. ORDER THE CORRECT PISTON OVERSIZE FROM THIS CHART.**

92-2026 SERIES PISTONS 80" Big Twin V <sup>2</sup> S&S Heads 10:1 Compression	
Oversize	Part Number
Standard	92-2026
+.005	92-20265
+.010	92-2027
+.020	92-2028
+.030	92-2029
Cylinder & Piston Kit - Natural	91-7213
Cylinder & Piston Kit - Black	91-7713

92-2026 Series Piston



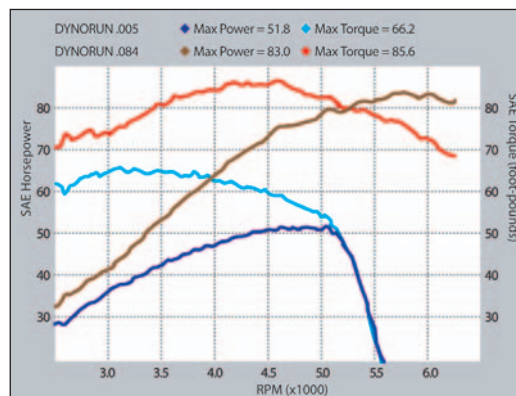
#### NOTE:

Pistons are sold separately.

### KIT INCLUDES...

an S&S Super Stock™ cylinder head kit with valves and springs installed, manifold with o-rings and flanges, required hardware, top end gaskets, an S&S 561 cam, adjustable chrome moly pushrods, an HL<sub>2</sub>T kit, a Super E carb kit, and installation instructions. Select kit with compression ratio desired, specify model year, and carburetor preferred. Pistons of the required oversize must be ordered separately.

S&S 80" HOT SET UP KITS FOR STOCK BORE EVOLUTION ENGINES		
Model Year	Kit Number Black	Kit Number Natural
1984-'92	90-0083	90-0081
1993-'99	90-0084	90-0082



The S&S 80 FLSS Kit boosted this stock 80" engine from 51.8 hp to 83.0 hp.





## HOT SET UP KITS

### 96 FLSS HOT SET UP KIT INCLUDES S&S SUPER STOCK™ CYLINDER HEADS

#### EVOLUTION BIG TWIN SIDEWINDER™ STROKER KIT

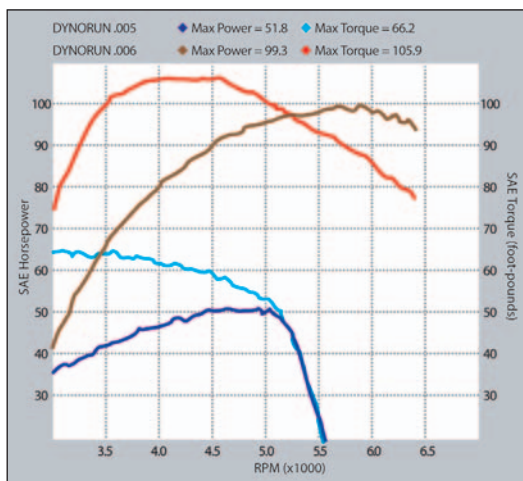
The 96FLSS is an excellent choice for the performance minded touring rider. S&S has designed, manufactured, and assembled a potent street-able package with real world riding in mind. The only modification required to install this kit is the boring of stock crankcases to accept the 3/8" big bore cylinders. The rest of the kit is assembled like a stock rebuild.

The 96FLSS Hot Set Up yields 96 cubic inches at 10.2:1 compression ratio.



#### KIT INCLUDES...

4 7/8" stroker flywheels assembled with mainshafts and connecting rods, 3/8" bore Sidewinder™ cylinders and pistons complete, a Super Stock™ cylinder head kit with valves and springs installed, manifold with o-rings and flanges, required hardware, top end gaskets, an S&S 561 cam, adjustable chrome moly pushrods, an HL2T kit, a Super E carb kit, and installation instructions. Select kit with compression ratio desired and specify model year.



The S&S 96 FLSS Hot Set Up Kit takes a stock 80" engine from 51.8 hp to almost 100 hp. Dyno results from Dyno Jet 150 Chassis dynamometer at S&S Cycle's Research and Development facility in Viola, Wisconsin.

### 96" HOT SET UP WITH S&S SUPER STOCK™ CYLINDER HEADS

10.2:1 Compression Ratio .....90-0096



## STROKER AND SIDEWINDER™ KITS

### S&S STOCK BORE STROKER KITS AND SIDEWINDER™ BIG BORE KITS

S&S stock bore stroker kits, Sidewinder™ 3% big bore kits are designed to increase the displacement of an existing stock engine. More cubic inches means more power. However, while horsepower gains are important, reliability, ease of installation, and compatibility with stock components are also important considerations to our customers. With an S&S kit, you can build a performance street engine with confidence. Our years of experience add up to "Proven Performance".

Shown here is the 98" Big Twin V<sup>2</sup> Kit. Typical Sidewinder™ stroker kits include everything necessary for a complete installation. Options available allow you to custom tailor the kit to your needs.

91-7306



#### FOR ALL EVOLUTION BIG TWINS

The easiest, most cost effective way to increase the performance of your Harley.

- ◆ Increased displacement for better performance.
- ◆ Maximum engine life through innovative design features and premium materials.
- ◆ Flexibility for a variety of performance needs.
- ◆ Minimal installation problems.

#### KIT SELECTIONS

There is kit available to match nearly any riding style—for touring, riding double, sidecar or trailer operation, and drag strip.

- ◆ Big Twin V2s from 88" to 103"

#### SELECTION CONSIDERATIONS

- ◆ Lower compression kits will tolerate lower quality gasoline and generally last longer than higher compression kits.
- ◆ Cast pistons generally allow tighter running clearances for extended life and quieter operation.
- ◆ Forged pistons are noted for strength and durability in high performance applications.
- ◆ Engine Size - Smaller displacements retain stock-like engine life while providing significant additional horsepower. Larger, higher compression kits provide greater horsepower gains with some reduction of engine life.

#### STOCK COMPATIBILITY

- ◆ Oil feed and oil return systems to and from heads match the stock systems.
- ◆ The head bolt patterns are the same as stock to eliminate additional machining steps.
- ◆ All kits are made to work with stock components and come complete so it is not necessary to buy other aftermarket parts.
- ◆ An almost deceptive stock-like appearance!

#### EASE OF INSTALLATION

- ◆ All kits can be installed by any H-D repair shop doing engine rebuilding who has access to a boring bar, no sophisticated machine shop facilities are required.
- ◆ Most kits come complete with all parts necessary to make the conversion.





## STROKER AND SIDEWINDER™ KITS

Continued...

S&S Stock Bore Stroker Kits and Sidewinder™ Big Bore Kits

### GENERAL INFORMATION

The S&S stock bore stroker kits and S&S big bore Sidewinder™ kits described and pictured in this section are available for Big Twin Evolution engines. All kits include complete installation instructions which detail the model-specific modifications sometimes required. Additional information pertaining to basic engine assembly procedures and recommended running clearances is available in the appropriate Harley-Davidson Factory Service Manual.

Assembling an S&S stroker or Sidewinder™ engine is straightforward and little different from stock. The few modifications required are very basic and within the scope of most professional engine builders.

Installation of an S&S stock bore stroker kit or Sidewinder™ kit is, for the most part, no more difficult than rebuilding a stock engine. The only major modification required to install a Sidewinder™ kit in an Evolution engine is that the crankcase must be bored to accept the larger diameter cylinder base spigots. This operation can be performed on most boring bars by using special S&S machining fixtures.

### MAKING IT ALL WORK

Sidewinder™ and stroker kits create large displacement engines which can be difficult to start. This should be kept in mind when considering one of these kits. It is possible to make starting easier by installing a longer duration cam with a later intake closing time to reduce cranking compression. In any case we strongly recommend making an appropriate cam change whenever building a large displacement engine. Not only will this make starting easier, but will allow the engine to achieve its full potential. We urge you to consider purchasing an S&S Hot Set Up Kit that includes the recommended cam shaft. (See pages 10-15 of this catalog for Hot Set Up Kits and pages 43-45 for help with camshaft selection.)



Big Twin stock bore stroker kit shown here complete and assembled.  
32-2489

**A number of options make it easy to build big bore and stroker engines to achieve your specific goals.**

- ◆ Do your own flywheel assembly and balancing or allow S&S to do it for you.
- ◆ These kits are available with or without sprocket and pinion shafts and are shipped unassembled or completely assembled and ready to install into the cases.

#### NOTE:

Connecting rods measuring 7.440" from center-to-center must be used with all 1984-'99 Big Twin Sidewinder™ kits. Although stock rods can be used, we recommend that S&S rods be used in more demanding applications.

V <sup>2</sup> STYLE BIG TWIN STOCK BORE STROKER KIT									EXTRA COST OPTIONS				
Displacement	Stroke	Bore	Compression Ratio	Piston Type	Cylinder Length	Application	Engine Life	Kit Part Number	Pinion Shaft	1990 & Later Pinion Shaft Conversion Kit	Sprocket Shaft	Connecting Rod Assembly	Flywheels Assembled
89"	4 5/8"	3 1/2"	9.25:1 CR	C	Stock	Trips	Very Good	32-2489	●	†	●	●	●

**NOTES:** C - Pistons supplied are cast type.  
† 1990 and later installations require 1977 to 1989 pinion shaft gears. Kit includes cam and oil pump drive gears, spacer and nut.  
**NOTE** - This kit is supplied in 89" FL Hot Set Up Kit.



## SIDEWINDER™ KITS

### S&S SIDEWINDER™ 3<sup>5</sup>/<sub>8</sub>" BIG BORE KITS

S&S Sidewinder™ 3<sup>5</sup>/<sub>8</sub>" big bore cylinders and pistons were first introduced in 1976. Since then they have become the industry standard for quality and reliability. Increasing bore size to 3<sup>5</sup>/<sub>8</sub>" is a quick way to pick up cubic inches. If the stroke is increased as well, the numbers can get really big! Sidewinder™ kits are available for Shovelhead and Evolution Big Twin engines, from 88" to 103" inches. Sidewinder™ kits for Evolution Sportsters range from 79" to 103". Shovelhead 93" and Big Twin Evolution 96" Sidewinders™ have been by far the most popular choices due to their blend of power and reliability.

#### V<sup>2</sup> STYLE BIG TWIN BIG BORE TOP END KIT SUMMARY CHART

Specify model year, natural aluminum or black powdercoat finish, and cylinder head type.

Displacement	Finish	Stroke	Bore	Compression Ratio	Piston Type	Cylinder Length	Application	Engine Life	Kit Part Number
88"	Natural	4 <sup>1</sup> / <sub>4</sub> "	3 <sup>5</sup> / <sub>8</sub> "	9:1 CR	F	-.175"	Riding Double, Touring	Stock-like	91-7650
	Black								91-7651
96"	Natural	4 <sup>5</sup> / <sub>8</sub> "	3 <sup>5</sup> / <sub>8</sub> "	9.75:1 CR	F	+.015"	Some Trips, Steet & Strip	Good	91-7202
	Black								91-7702

F - Pistons supplied are forged type.

#### PARTS INCLUDED IN V<sup>2</sup> STYLE BIG TWIN TOP END KITS

Displacement	Stroke	Kit Part Number	Finish	Pistons	Cylinders	Head Gaskets	Base Gaskets	Pushrods	Manifold	Pushrod Clips
88"	4 <sup>1</sup> / <sub>4</sub> "	91-7650	Natural	F	●	●	●	●	●	●
		91-7651	Black							
96"	4 <sup>5</sup> / <sub>8</sub> "	91-7202	Natural	F	●	●	●			
		91-7702	Black							

NOTES: F - Pistons supplied are forged type.

#### V<sup>2</sup> STYLE BIG TWIN BIG BORE SIDEWINDER™ KITS SUMMARY CHART

Specify model year, natural aluminum or black powdercoat finish, and cylinder head type.

Displacement	Stroke	Bore	Compression Ratio	Piston Type	Cylinder Length	Application	Engine Life	Kit Part Number
88"	4 <sup>1</sup> / <sub>4</sub> "	3 <sup>5</sup> / <sub>8</sub> "	9:1 CR	F	-.175"	Riding double, touring	Stock-like	91-7006
93"	4 <sup>1</sup> / <sub>4</sub> "	3 <sup>5</sup> / <sub>8</sub> "	9.5:1 CR	F	-.050"	Trips, some strip	Very good	91-7106
96"	4 <sup>5</sup> / <sub>8</sub> "	3 <sup>5</sup> / <sub>8</sub> "	9.75:1 CR	F	+.015"	Some trips, street & strip	Good	91-7204
98"	4 <sup>3</sup> / <sub>4</sub> "	3 <sup>5</sup> / <sub>8</sub> "	10:1 CR	F	+.075"	Street & strip	Fair	91-7306
103"	5"	3 <sup>5</sup> / <sub>8</sub> "	10.5:1 CR	F	+.200"	Little street, mostly strip	Poor	91-7406

NOTES: C - Pistons supplied are cast type. F - Pistons supplied are forged type. — Denotes kit supplied in Hot Set Up.

#### PARTS INCLUDED IN V<sup>2</sup> STYLE BIG TWIN SIDEWINDER™ KITS

Displacement	Stroke	Kit Part Number	Flywheels	Pistons	Cylinders	Head Gaskets	Base Gaskets	Head Bolts	Pushrods	Manifold	Pushrod Clips
88"	4 <sup>1</sup> / <sub>4</sub> "	91-7006	●	F	●	●	●		●	●	●
93"	4 <sup>1</sup> / <sub>2</sub> "	91-7106	●	F	●	●	●		●	●	
96"	4 <sup>5</sup> / <sub>8</sub> "	91-7202		F	●	●	●				
98"	4 <sup>3</sup> / <sub>4</sub> "	91-7306	●	F	●	●	●	●	●	●	●
103"	5"	91-7406	●	F	●	●	●	●	●	●	●

#### EXTRA COST OPTIONS

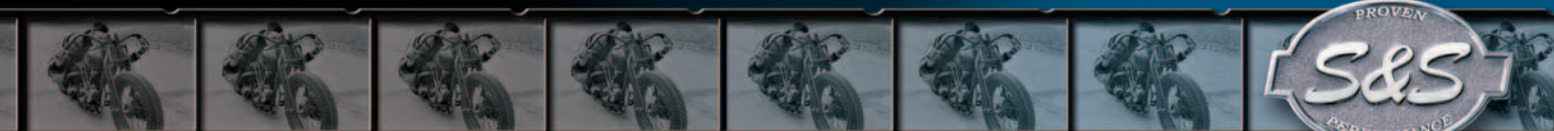
Pinion Shaft	1990 & Later Pinion Shaft Conversion Kit	Sprocket Shaft	Connecting Rod Assembly	Flywheels Assembled
●	†	●	●	●
●	†	●	●	●
●	†	●	●	●
●	†	●	●	●
●	†	●	●	●

NOTES: F - Pistons supplied are forged type.

— Denotes kit supplied in Hot Set Up.

† 1990 and later installations require 1977 to 1989 pinion shaft parts. Kit includes cam and oil pump drive gears, spacer and nut.





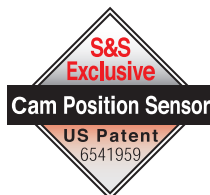
## 1ST IGNITION SYSTEM

### S&S INTELLIGENT SPARK TECHNOLOGY IGNITION SYSTEM WITH GUARDIAN DIAGNOSTIC SYSTEM

There are a number of high performance ignition systems available for American V-Twin motorcycles. So why do we need one more? The reason is that none of the other ignition systems currently available, are capable of getting the best performance from today's big inch street engines while providing protection against the destructive effects of detonation. Detonation or knock is violent uncontrolled combustion that can destroy engine components with intense heat and mechanical stress. Fuel quality, cylinder pressure, combustion chamber temperature, combustion chamber design, and ignition timing are the major factors that contribute to detonation. By adjusting ignition timing, knocking can usually be eliminated. This is fortunate since ignition timing is the only factor that can be easily controlled, and control of ignition timing is what the Intelligent Spark Technology ignition system is all about.



The S&S Intelligent Spark Technology ECU module (55-1013) automatically adjusts ignition timing. When detonation is detected by the exclusive knock sensor, the ECU retards the ignition timing to prevent engine damage. When detonation is not present, ignition timing is advanced for maximum power and economy.



#### HOW DOES THE S&S SYSTEM WORK?

The heart of the Intelligent Spark Technology system is a sophisticated computerized ECU 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 ECU to automatically adjust ignition timing to eliminate knock whenever it occurs.

In addition, the system "remembers" the conditions that cause the engine to knock and automatically adjusts ignition timing to prevent it when those conditions reoccur. On the other hand, when conditions allow for increased ignition timing, the system will advance timing as far as possible without causing the engine to knock. In effect, the system "learns" the ignition requirements of a particular engine and writes a custom ignition map for it. This results in optimized power and fuel economy, as well as reduced emissions, but perhaps, more importantly protects your engine from damaging detonation or knocks.

#### 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, the S&S Intelligent Spark Technology ignition system will automatically optimize the ignition timing for the new configuration. Even if major engine modifications are made, such as the installation of a stroker or big bore kit, the system will adjust to the ignition requirements of the engine.

The rev limit is preset for 6752 rpm, but can be reduced using the optional S&S Guardian™ Diagnostic System. This feature is very attractive to Twin Cam "B" owners who are concerned about damaging the the balancers by over revving. A break-in rev limit program is also available to protect new and rebuilt engines from damage.

This is how the rev limiter works. When the engine speed reaches the rev limit, the module goes into a "stutter-fire" mode (a noticeable but not severe combination of fires & misfires). Should the engine speed continue to increase to 256 rpm above the rev limit, the ignition stops sparking the engine until the



## IST IGNITION SYSTEM

Continued...

S&S Intelligent Spark Technology Ignition System with Guardian Diagnostic System

### INSTALLATION

The new S&S Intelligent Spark Technology ignition system can be installed quickly and easily without permanent modifications to the stock wiring harness on 1994-'03 motorcycles. 1986-'93 Sportsters and 1984-'93 and some 1994 Big Twin models require minor wiring harness modifications. S&S Wiring harness adapters plug directly into the stock wiring harness of late model carbureted motorcycles. Once the system is installed, it requires no adjustment. Ignition timing is automatic so you don't need a timing light.

#### NOTES:

- ◆ The S&S IST Ignition System is not recommended for kick start applications unless a cam position sensor is used. Engines using crankshaft position sensors will be difficult to kick start.
- ◆ The S&S IST Ignition System is not available for 2004 model motorcycles.

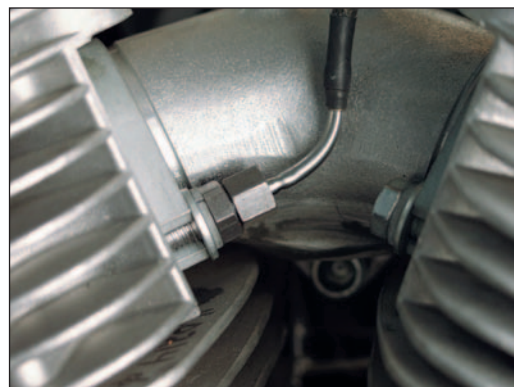
### ADDITIONAL FEATURES:

- ◆ Simple installation – installation kits plug into stock wiring harness.
- ◆ No timing adjustments – the system adjusts timing automatically.
- ◆ 6240 rpm rev limiter.
- ◆ 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 or higher.
- ◆ Short circuit and reverse polarity protected.
- ◆ Diagnostics – scan tool, harness jumper, or Guardian™ Diagnostic System.
- ◆ Optional Guardian Diagnostic System allows engine builder increased flexibility and control.

The same ECU is used for all engines. Installation kits are available that allow connection to the stock wiring harness for specific applications.



Exclusive S&S knock sensor installed on cylinder head top motor mount. No other ignition system for V-Twin motorcycles uses knock sensing to control ignition timing.



Intelligent Spark Technology temperature sensor for Evolution engines fits in a hollow manifold flange bolt. This allows installation of a temperature sensor in Evolution cylinder heads without any machining or modification.

**S&S INTELLIGENT SPARK TECHNOLOGY IGNITION MODULE**.....55-1013

**S&S HIGH OUTPUT SINGLE FIRE COIL**.....55-1571

### INSTALLATION KIT CONTENTS

Engine Type	Installation Kit Part No.	Wiring Harness Adapter	Knock Sensor	Temp Sensor	MAP Sensor	Position Sensors	
						Cam	Crank
Evolution	55-1049	Yes	Yes	Yes	Yes	Yes	No
S&S SSW+	55-1050	Yes	Yes	Yes	Yes	No	Yes

\*Uses the existing stock sensors on the motorcycle.



## S&S INTELLIGENT SPARK TECHNOLOGY IGNITION INSTALLATION KITS

All installation kits include a wiring harness adapter, knock sensor, and temperature sensor. Twin cam installation makes use of the stock crankshaft position sensor and MAP sensor, so the installation kit for Twin Cams does not include those items. In addition to the harness adaptor, knock sensor, and temperature sensor, the installation kit for Evolution also includes a MAP sensor, and a cam position sensor that is installed in place of the stock timing rotor and pickup. The SSW+ installation kit also includes a MAP sensor, but comes with a Twin Cam style crankshaft position sensor since the SSW+ crankcases and flywheels are machined to accept it.



### INSTALLATION KIT FOR ALL 1984-'99 CARBURETED BIG TWINS

Fits the following models with no wiring harness modifications: all 1994 FLH models, all carbureted Evolution Big Twin models from 1995 to 1999, all Evolution Sportsters 1994 to 1997, 1995-'96 Buell S2 and S2T, 1996-'98 S1, 1997 S1W, 1997-'98 S3 and S3T, and 1997-2001 M2. Earlier models require minor wiring harness modifications.

.....55-1049



### INSTALLATION KIT FOR S&S SUPER SIDEWINDER™ PLUS

Fits S&S SSW+ engine when installed in 1994 FLH models and all 1995 to 1999 chassis originally equipped with a carbureted Evolution engine.

.....55-1050



## VFI FUEL INJECTION MODULE

*The S&S Variable Fuel Injection (VFI) module offers the most adjustability of any fuel injection system on the market.*

### S&S VARIABLE FUEL INJECTION (VFI) MODULE

In the old days, all a guy needed was a screwdriver and a hand full of jets to tune his carburetor and optimize his bike's performance. Today fuel injection is replacing carburetors on more and more new motorcycles, and tuning a fuel injection system requires a higher level of technology.

#### NOTICE:

The S&S Variable Fuel Injection (VFI™) system is only available through certified S&S VFI Tuning Centers, except for units purchased with complete S&S VFI equipped engines. Please consult the dealer locator on our website [www.sscycle.com](http://www.sscycle.com) to find the S&S VFI Tuning Center nearest you.



Magneti-Marelli Style

### THE S&S VARIABLE FUEL INJECTION (VFI) MODULE PROVIDES TUNABILITY FOR FUEL INJECTED EVOLUTION ENGINES.

The inability of the stock fuel injection system to accommodate any but the most basic performance modifications severely limits the available options for engine builders and performance enthusiasts. S&S Variable Fuel Injection (VFI) modules restore your options and then some! S&S VFI modules can be used to control stock fuel injection systems or may be used in conjunction with the S&S VFI induction systems for even greater performance gains. The range of adjustment and unequaled resolution of the S&S VFI module allows tuners to compensate for any degree of engine modification, be it ever so slight or extremely radical. Optimize the performance of a stock engine or dial in a wild one-off custom? The S&S VFI module has the capability. Optimized tuning will improve starting, drivability, fuel mileage, and horsepower. The S&S VFI module allows engine builders and tuners to gain the maximum benefit from time and money spent on other performance modifications, especially when used in conjunction with the S&S VFI induction systems. See page 26-29 for more information about VFI induction systems.

### MAGNETI-MARELLI® OR DELPHI® STYLE?

Harley-Davidson has used two fuel injection systems for their fuel injected Big Twin engines, and occasionally there is some confusion among riders about which system their bike has. Harley introduced fuel injection in 1995 with a fuel injection system designed by Magneti-Marelli®. In 2001 Harley began using a different fuel injection system designed by Delphi® on the Softail models only. In the 2002 model year, all fuel injected Harleys were equipped with the Delphi® fuel injection system.

It is easy to distinguish one system from the other. The Magneti-Marelli® system has two independent intake runners from the throttle body to the cylinder heads. The Delphi® system has a single throat design with a "Y" manifold. The Magneti-Marelli® fuel injection module is larger than the Delphi® module used in later models. The S&S VFI module designed to replace the stock Delphi® module is not compatible with the 2004 wiring and control system.

See the photos of the S&S VFI replacement modules for a size and shape comparison. S&S VFI modules are designed to fit in the same space as the original units they replace. All Evolution fuel injected models were equipped with the Magneti-Marelli® system. Information about the later Delphi® system is included for custom bike builders who wish to use fuel injection, but are not sure which system to use. S&S can supply either style.

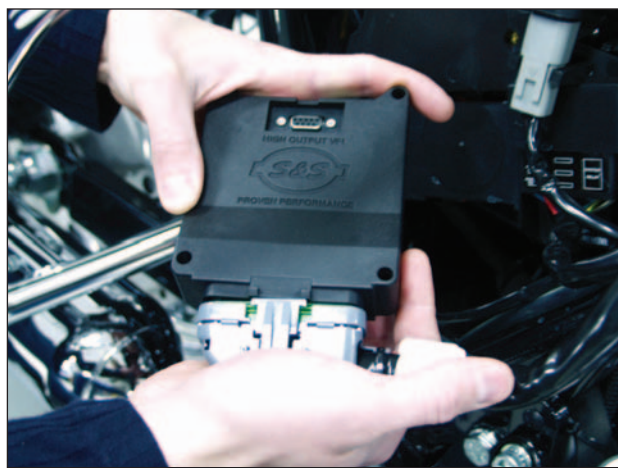


Continued...

S&S Variable Fuel Injection (VFI) Module

### S&S VARIABLE FUEL INJECTION (VFI) MODULE FEATURES:

- ◆ Easy Installation – Module replaces stock unit and plugs into the stock wiring harness.
- ◆ Easy Programming – Existing maps supplied by S&S can be loaded by anyone with a PC.
- ◆ Flexible – Maps may be optimized to accommodate variations in individual engines. ProTune II software is included with the module.
- ◆ Altitude Compensated – Automatically adjusts for altitude variations.
- ◆ Live Tuning – Make changes to maps while the engine is running.
- ◆ Self Diagnostics and Actuator test functions.
- ◆ Engine light can be programmed to function as a shift light.
- ◆ Unlimited Programmability – Level two of the ProTune II software is designed for racers and the professional tuner. ProTune II software allows the creation of maps for custom engine configurations for which S&S has not supplied a map. ProTune II software must be used in conjunction with an eddy current or other steady state capable dynamometer and an exhaust gas analyzer or air fuel ratio meter.



### BUILDING A CUSTOM BIKE...

with fuel injection involves most of the same concerns as retrofitting a carbureted bike with the additional styling problem of modifying a stock, fuel injected gas tank or of obtaining a custom fuel injected tank. If these problems are overcome, the S&S VFI system makes it easy to tune the engine to custom exhaust systems and to get the most out of any other performance modifications.



Delphi Style

### WHAT ABOUT RETROFITTING A CARBURETED BIKE TO FUEL INJECTION?

Retrofitting a carbureted bike to fuel injection can be done, but it is fairly expensive and requires a good deal of expertise. The wiring harness must be modified or replaced to accommodate the fuel injection system, and the gas tank must be replaced with one equipped with the correct fuel pump for the fuel injection system to be used. Carbureted bikes do not come with fuel pumps, and the Magneti-Marelli® and Delphi® fuel injection systems use different fuel pumps that operate at different pressures. In addition, a carbureted bike may need a charging system with more capacity to run the fuel pump.



## VFI FUEL INJECTION MODULE

### S&S VARIABLE FUEL INJECTION (VFI) MODULE

#### INSTALLATION

The S&S VFI module directly replaces the Stock H-D fuel injection module in minutes, and works with the stock sensors and injectors. S&S modules are available to replace the Magneti-Marelli® fuel injection module used on 1995½ -2001 Harley-Davidson fuel injected Evolution Big Twin and Twin Cam engines, and for the Delphi® fuel injection module used on some 2001 engines and all 2002-'03 fuel injected Twin Cam models.



#### NEW PROTUNE II SOFTWARE

S&S VFI Modules now come with the new ProTune II software package. This software has two levels. The basic level ProTune II, is fairly simple, but has more capability than the original "EasyTune" software that was first supplied with VFI systems. The advanced level of ProTune II, is more sophisticated, offering more functions and a higher degree of resolution. A full version of ProTune II with both user levels is included on the software CD that is supplied with each module. The requirements of a specific tuning job and the tuner's level of skill should determine which level is used.

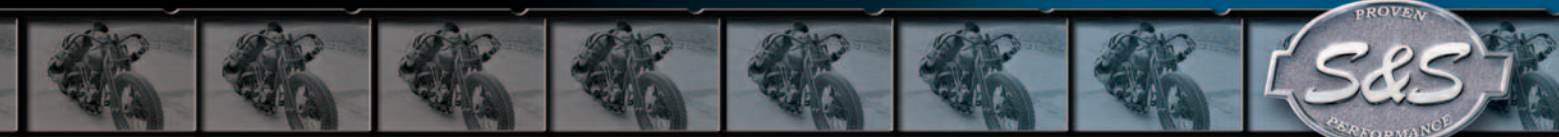
#### BASIC LEVEL - FOR GENERAL TUNING

Level 1 of the new ProTune II software allows any shop or performance enthusiast, with access to a laptop or PC, to load existing maps from the software CD or from the S&S website. A software CD and hookup cable are supplied with each module. S&S supplies ready-made maps for many common engines and performance component combinations. An example of existing maps, would be the ones S&S supplies for VFI equipped S&S complete engines. S&S has created maps for all S&S VFI equipped engines and the most popular exhaust systems. These maps work well because the displacement, cylinder heads, and camshaft of the engine are all known. The only significant remaining variable is the exhaust system, which is specified for each map. In addition to the ability to load existing maps, Level 1 allows a qualified tuner to make minor "tweaks" to existing maps for a specific engine. It is strongly recommended, however, that any modifications to maps be done by an S&S trained tuner at a certified S&S VFI Tuning Center.

#### ADVANCED LEVEL – FOR DETAILED TUNING

Level 2 offers essentially the same level of control as our original ProTune software, but with a newly designed user interface that is much more intuitive and easier to understand. This level is intended for use by a trained technician with access to the required equipment. It has more powerful features that allow a qualified tuner to not only fine tune an existing map for a particular engine, but to create custom maps for nearly any application. Level 2 gives the tuner virtually unlimited control, by allowing full access to all adjustable parameters and to the full resolution of the S&S VFI module. The S&S VFI module has higher resolution than any other system on the market with fuel map resolution of 64 x 32, and ignition map resolution of 64 x 16.





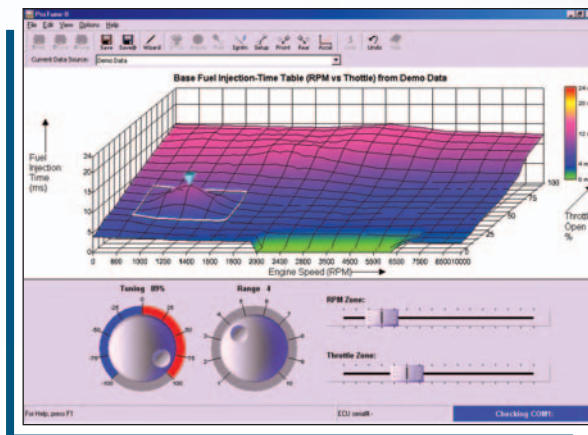
## VFI FUEL INJECTION MODULE

Continued...

S&S Variable Fuel Injection VFI Module

### CERTIFIED S&S VFI TUNING CENTER

Due to the extreme range of adjustment and the high degree of resolution available, it is highly recommended that any modification or creation of maps be done by a certified S&S VFI Tuning Center. Attempting to change fuel and ignition maps without the proper training and equipment may result in engine damage that is not covered under warranty. A chassis dyno with an eddy current brake, an exhaust gas analyzer, and a PC or laptop are the required mapping tools. However, the most important element for successful tuning is the S&S trained technician who can use those tools to safely map fuel and ignition for any given engine. Consult the dealer locator on the S&S website [www.sscycle.com](http://www.sscycle.com) to find the nearest certified S&S VFI Tuning Center.



Sample of ProTune II display image.

### WHAT IS A MAP?

In terms of fuel injection systems, a map is information stored in the VFI module, that specifies how much fuel will be supplied and what spark advance will be used under a given set of conditions. A map in its simplest form is a table of numbers. When displayed graphically it generally resembles a topographical map. (See the picture of the ProTune II display above.)

The VFI module constantly monitors a number of sensors to determine pressure, air temperature, engine temperature, throttle position, engine rpm, and crankshaft position. The information from the sensors is used by the ECU to calculate how much the basic fuel and ignition maps must be adjusted to compensate for current operating conditions in real time. Since most engine modifications change fuel and ignition requirements, each engine configuration needs a somewhat different map for optimum performance.

### NOTES:

- ◆ If you are an S&S dealer wishing to become a certified S&S VFI Tuning Center, please enter the following address in your web browser and fill in the on-line application form to enroll in the S&S VFI training course. [www.sscycle.com/vfi/app.asp](http://www.sscycle.com/vfi/app.asp)
- ◆ The S&S VFI module is not compatible with 2004 model Harley-Davidson motorcycles due to changes in the stock engine control system.



## S&S VARIABLE FUEL INJECTION (VFI) MODULES & SOFTWARE

(Includes connection cable and ProTune II Software CD.)

1995½-2001 (Replaces stock Magneti-Marelli® module.)

55-5006

2001-2003 (Replaces stock Delphi® module.)

55-5034



## VFI INDUCTION SYSTEMS

### S&S VARIABLE FUEL INJECTION (VFI) INDUCTION SYSTEMS

#### FOR EVOLUTION BIG TWINS & TWIN CAM ENGINES

Fuel injected engines have presented high performance engine builders and performance enthusiasts with some special problems. The first problem was tunability since the original stock EFI module did not allow any variation in tuning. The second problem is that engine builders were limited by the stock induction system's length and its ability to supply air to a performance engine.

S&S solved the first problem, of tunability, with the introduction of the S&S Variable Fuel Injection (VFI) modules which allow the customization of the fuel maps to meet the fuel and ignition requirements of any engine configuration.

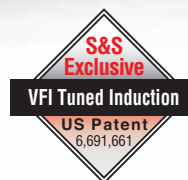
The second problem, of inadequate induction system fit and capacity, was eliminated by the introduction of the S&S VFI Induction systems. The availability of high flowing manifolds in different styles and sizes solves the ongoing problem of manifold fit for fuel injected engines with taller or shorter than stock cylinders. A variety of manifold sizes are available to fit engines with different cylinder lengths with either stock or S&S Super Stock™ cylinder heads. The two-barrel VFI throttle body features dual 1.947" (49.4 mm) throttle bores and a sophisticated idle air control. The VFI throttle body coupled with the S&S manifolds can supply enough air for all but the largest competition engines.

#### TO PUT IT ALL TOGETHER...

S&S offers two VFI induction systems, the Tuned Induction system and the Teardrop system. The Tuned Induction system has independent tuned length intake runners for maximum performance. The Teardrop Induction system uses the S&S Teardrop air cleaner for improved performance and a classic look. Both S&S induction systems work well with stock engines while offering engine builders simple solutions to most of the injection problems associated with building large displacement fuel injected engines. The Tuned Induction system and the Teardrop induction system both use the same S&S manifolds and throttle body, which allows for a simplified kit structure, and allows the rider to easily change induction styles if desired.

#### NOTE:

Some aftermarket throttle cables may not fit correctly and may not have sufficient adjustment when used with the S&S VFI Induction Systems.



S&S VFI Tuned Induction System features dual independent tuned intake tracts, one for each cylinder.

### S&S TUNED INDUCTION SYSTEM

The Tuned Induction system is for riders who are seeking the greatest possible performance gains from their fuel injected engines. This scientifically designed induction system has a separate tuned intake tract for each cylinder. These intake tracts feature carefully chosen lengths, diameters, and tapers. By utilizing air column inertia and carefully timed gas dynamic pressure waves, the S&S VFI Tuned Induction system rams additional air into each cylinder for increased power. This natural "supercharging" effect is maximized by using separate, isolated intake tracts of appropriate length for each cylinder. The forward swept design of the intake runners further improves power by providing the engine with cooler, denser air. The S&S VFI Tuned Induction system is designed to be used with the S&S VFI module for maximum tunability and performance gains.





## VFI INDUCTION SYSTEMS

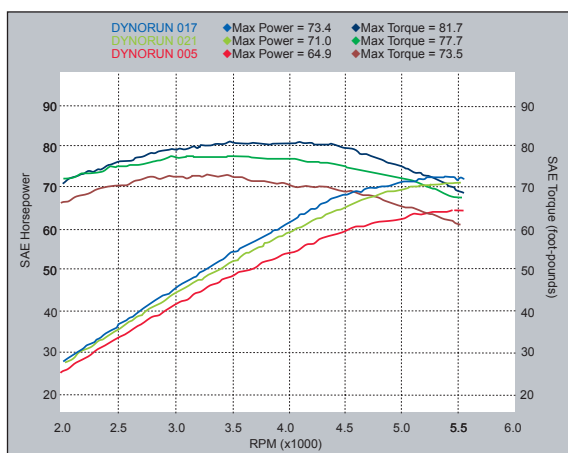
### S&S TEARDROP INDUCTION SYSTEM

The S&S VFI Teardrop Induction system is for those who prefer the classic look of the S&S Teardrop air cleaner. Although the Teardrop Induction system does not provide the same degree of performance increase as the S&S VFI Tuned Induction system, it does improve power substantially due to increased flow of the S&S air cleaner, throttle body, and manifolds. The Teardrop VFI induction system is designed to be used with the S&S VFI module for maximum tunability and performance gains.

The S&S VFI Induction systems are designed to be used with the S&S VFI module, but make use of the stock fuel pump, regulator, and fuel lines, which are capable of delivering plenty of fuel for large displacement engines through the high flow fuel injectors provided with the S&S manifolds. S&S tested the Tuned Induction system on a 124" Evolution style Super Sidewinder™ Plus engine with no fuel delivery problems, and made 135 horsepower in the process.



S&S Teardrop Induction System features the classic S&S Teardrop high flow air cleaner.



All curves on this dyno chart represent a stock 88" Twin Cam engine with stock cams and exhaust. Lowest curves show the stock EFI system, for comparison. The middle curves show the results with the S&S VFI module and Teardrop Induction system. The performance increase is due to improved flow of the S&S manifold and air cleaner. The top curves show the results with the S&S VFI module, Tuned Induction system. Additional performance is a result of the ram effect of the tuned induction system. Adding a high performance exhaust system, and S&S cams will produce even more power. Just say when it's enough!

Dyno results from Dyno Jet 150 Chassis dynamometer at S&S Cycles Research and Development facility.

### S&S VFI INDUCTION SYSTEM FEATURES

- ◆ Improved power and torque from idle to redline. (See dyno chart above.)
- ◆ Easy bolt-on replacement of the stock intake system.
- ◆ Uses the stock fuel pump, regulator, and fuel lines.
- ◆ Manifolds used by both induction systems are available to fit a variety of cylinder lengths, and are available to fit the ports of stock style or S&S Super Stock™ cylinder heads. Eliminates a major obstacle in building big inch fuel injected engines.
- ◆ Compact design of S&S VFI Tuned Induction system and Teardrop Induction system allows a comfortable riding position and does not interfere with stock crash bars or highway pegs.
- ◆ Your choice of Tuned or Teardrop style induction.
- ◆ Designed to be used with the S&S VFI module which provides tuning flexibility to accommodate any engine configuration.
- ◆ Available for chassis equipped with Magneti-Marelli® or Delphi® fuel injection systems up to 2003 model year.



## VFI INDUCTION SYSTEMS

### HOW TO ORDER...

You will need to select one of each of these parts to make up a complete system.



### STEP TWO... SELECT A THROTTLE BODY KIT

Select the correct S&S VFI throttle body kit based on your existing stock fuel injection system or the system you plan to use in a custom application.

#### S&S VFI THROTTLE BODY KITS

VFI Throttle Body/Fuel Rail Kit - Black  
1995-'01 EFI Big Twin (Except Softail) .....**17-5061**

VFI Throttle Body/Fuel Rail Kit - Black,  
2002-up EFI Big Twin .....**17-5062**

### STEP ONE... SELECT A S&S VFI MODULE

Select the correct S&S VFI module based on your existing stock fuel injection system or the system you plan to use in a custom application. If you already have an S&S VFI module go to the next step.

#### S&S VARIABLE FUEL INJECTION MODULES

1995½-2001 (Replaces stock Magneti-Marelli® module.) .....**55-5006**

2001-'03 (Replaces stock Delphi® module.) .....**55-5034**

NOTE: S&S VFI Module is not available for 2004 models.



Kit shown is for 1995-2001 Magneti-Marelli®.

Delphi® Kit is similar but does not include idle air control motor.

### STEP THREE...SELECT A MANIFOLD

Select the correct manifold to fit your engine from the manifold chart.



#### SELECTION CHART - S&S VFI MANIFOLDS FOR 1995-UP FUEL INJECTED BIG TWINS

Engine Type & Displacement	Cylinder Length	Size Number	Part Number
<b>S&amp;S SSW+</b>			
111"	4.764"	398	16-5062
117"	4.888"	408	16-5063
124"	5.013"	417	16-5064
<b>Evolution BT</b>			
80", 89", 96"	5.550"	410	16-5055

NOTE: SSW+ crankcases have 6.000" cylinder deck height. Evolution Big Twin crankcases have 5.375" cylinder deck height.





17-0413



## STEP FOUR... SELECT AN INDUCTION SYSTEM

Select the desired induction system, Teardrop air cleaner or Tuned Induction in the desired finish.

### S&S INDUCTION SYSTEMS

Air Cleaner Kit S&S VFI 1995-'03 V<sup>2</sup>/Twin Cam .....**17-0413**

VFI Tuned Induction Runner Kit,  
Black Powdercoat Finish 1995-'03 EFI Big Twin  
.....**17-5052**

VFI Tuned Induction Runner Kit,  
Burnished Aluminum Finish 1995-'03 EFI Big Twin  
.....**17-5051**

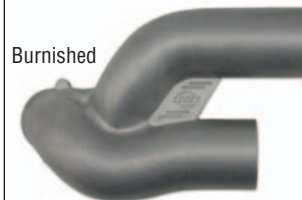
VFI Tuned Induction Runner Kit,  
Polished Aluminum Finish 1995-'03 EFI Big Twin  
.....**17-5053**

## CHOOSE A FINISH...

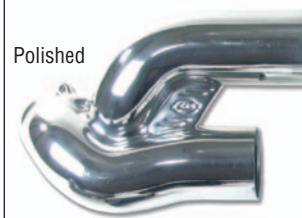
Black



Burnished



Polished



## OPTIONS FOR S&S VFI INDUCTION SYSTEMS

- ◆ Water repellant air filter covers available for Tuned Induction system.
- ◆ Cruise control adapter kits make the S&S VFI system compatible with stock H-D cruise control.



55-5026

## AIR FILTER COVERS

Great looking water repellant nylon filter covers provide added protection from rain and moisture, without reducing the flow.

.....**55-5026**

## S&S VFI CRUISE CONTROL ADAPTER KITS

Cruise control adapter kits for S&S VFI Systems connect directly to stock cruise control cables.

1993-'97 V<sup>2</sup> .....**55-5024**

1998-up V<sup>2</sup> and Twin Cam.....**55-5025**

55-5024



55-5025



## SUPER E & G CARBURETORS

*Half a million and still going strong...*

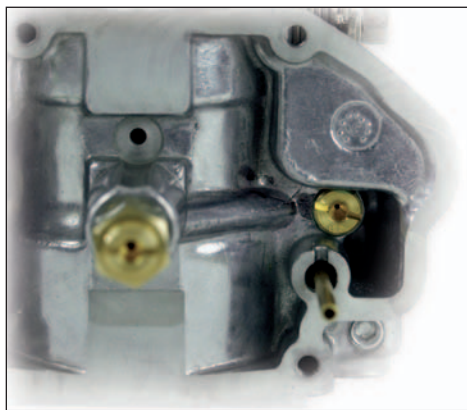
### THE S&S SUPER E & G CARBS...

were a ground breaking development when they were first introduced in October of 1990. Since then they have become the best selling performance carburetor in the V-Twin aftermarket, and have remained so to this day – in mid 2004, S&S produced the 500,000th Super Shorty carb. The combination of good looks, easy tuning, exceptional performance, and not least of all the technical support of a manufacturer with as many years of experience as S&S, made the S&S Super Shorty carbs the ones to get. Today the Super E and G carbs are still top selling carburetors, and are standard equipment on all S&S engines (another best selling product).



### SO HOW DO YOU IMPROVE ON THAT?

A fairly simple design change has given the Super Shorty carbs an even higher degree of tunability, which improves compatibility with some of the more radical cams and exhaust systems. For the vast majority of our customers, this new design will not change the way they dial in our carbs, but for our customers who use extreme cams and exhaust systems, designed for maximum performance, the change will make life a lot easier.



The new replaceable main system air bleed, accepts readily available S&S main jets which allows a wide range of adjustment. Installing a larger air bleed jet causes the main jet to "come in" at a higher rpm, and can help eliminate the transient midrange rich condition when tuning engines with radical cams and exhaust systems.

### HOW DOES IT WORK?

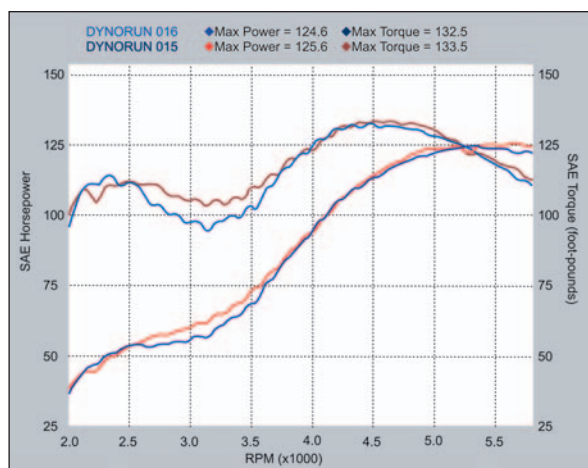
The design change involves the main fuel circuit air bleed. In the past, S&S Shorty carburetors have had a fixed air bleed for the main circuit that was sized for the best all around performance. However, starting October 1, 2003, all Super E and G carbs have a replaceable jet in place of the fixed main circuit air bleed. This allows for fine tuning of the main circuit. The main circuit air bleed determines the rpm at which the main fuel circuit begins to feed fuel. A smaller air bleed will cause the main circuit to "come in" at a lower rpm. A larger air bleed causes the main jet to come in at a higher rpm. The air bleed installed at the factory is the same size as we have always used because it works best in the majority of applications. However, the ability to change the size of the air bleed can be very useful when tuning

engines with high performance exhaust systems, which often, exhibit some harmonic reversion problems. Harmonic reversion usually inhibits exhaust flow at a specific rpm. In extreme cases, aggravated by very aggressive cam timing, the reversion pulses can actually push air back out of the intake valve. This pulse of air picks up fuel as it goes out past the main discharge tube of the carburetor, and is then drawn back through the carburetor where it picks up additional fuel. This causes a transient rich condition at that specific rpm. Since this usually occurs at the same rpm at which the main circuit comes in, the rich condition can often be reduced, and midrange performance improved, by making the main jet come in at a slightly higher rpm. This can be done by installing a larger main circuit air bleed jet.



## DO I NEED A SUPER E OR SUPER G CARBURETOR?

As a general rule we recommend a Super E carb for street engines up to about 100 cubic inches in displacement. The Super E's smaller 1 $\frac{1}{8}$ " (47.6mm) bore size creates higher air velocity, which results in better low and midrange response and power. The Super G is recommended for street engines of no less than 90 cubic inch displacement. However, in spite of the fact that the Super G's larger 2 $\frac{1}{8}$ " (52.3mm) bore size allows more air to pass, and generally provides more peak horsepower, slower air velocity at lower rpm causes poor throttle response and weaker midrange torque in engines under 100 cubic inches. For the vast majority of street engines in the 90-100 cubic inch displacement range we strongly recommend the Super E because of the improved low and midrange response. However, if maximum peak horsepower is the most important consideration, a Super G carb would be appropriate.



## TUNE FOR THOSE DRAG PIPES!

This dyno chart shows two runs on a 124" SSW+ engine with a Super G carb and 2" drag pipes. The two runs are very similar except in the 2500 to 3500 rpm range. One run shows approximately 10 ft/lb more torque in this range than the other. The curve with increased torque was the result of replacing the standard .040" main circuit air bleed with a larger bleed. Note that the maximum torque and horsepower was not changed significantly. However, the additional 10 ft/lb of midrange torque will make this motorcycle feel much more responsive and powerful on the street since this is the rpm range most used in street applications.

Dyno results from Dyno Jet 150 Chassis dynamometer at S&S Cycle's Research and Development facility in Viola, Wisconsin.

### NOTES:

- ◆ S&S does not recommend polishing or chrome plating Super E & G carburetors. Our repair department has seen many carbs with passages plugged with polishing compounds, and some carbs that had been destroyed because the polishing or chrome plating had altered critical machined surfaces.
- ◆ Recommended for racing only – S&S Super E & G carburetors are not legal for use on motor vehicles operated on public highways in the state of California, or in other states where similar pollution laws may apply. The user shall determine the suitability of the product for his or her use and shall assume all risk and liability in connection therewith.



## SUPER E & G CARBURETORS

### WHAT MAKES THE S&S SUPER E & G SO POPULAR?

The popularity of the S&S Super E & G "Shorty" carburetors is largely because of results. Ease of installation, easy tuning, excellent performance, and the technical support of a company with over 45 years of experience in the high performance V-Twin industry are all factors in the popularity of the Super "Shorty" carbs. It can be best summed up by the S&S company motto: "Proven Performance".

### EASY INSTALLATION

Installation is easy because carbs are sold in complete kits that contain everything needed to install the carb on the specified model motorcycle. All kits include a comprehensive, step by step installation instruction booklet and tuning guide that takes the "rocket science" out of installation and tuning.

### COMPATIBLE WITH STOCK THROTTLE CABLES ON ALL LATE MODEL BIG TWINS

For the sake of safety, all S&S carbs are designed to use a two cable pull open/pull closed throttle system. Super "Shorty" carbs for Big Twins are compatible with stock 1981 and later throttle cables. Carb kits for late model Big Twins, originally equipped with constant velocity (CV) carbs, include a taller throttle cable guide bracket that accommodates the longer CV style cables. Kits for earlier model Evolution Big Twins which could have been equipped with either a butterfly or CV type carb include both a shorter bracket for butterfly style cables and the tall bracket for CV style cables. Due to inadequate frame clearance the taller throttle bracket can not be used on Sportsters. Therefore, late model Sportsters and Buells require the installation of earlier butterfly style throttle cables.

### CRUISE CONTROL

Super "Shorty" carbs can easily be installed on motorcycles equipped with factory cruise control. Cruise control adapter kits are available for 1993-'97 and for 1998 and later models. Kits include all parts and instructions needed to complete the installation.



The new S&S Cruise control cable adaptor kits make any Super E & G carburetor compatible with the stock Harley-Davidson cruise control.

1993-'97 .....	<b>11-2926</b>
1998-up .....	<b>11-2927</b>

11-2339



The original short throttle cable guide #11-2339 fits the 1981-'89 style Stock H-D and S&S "butterfly" style throttle cables for Big Twins.

The new longer cable guide #11-2338 fits the 1990 & later "CV" throttle cables for Big Twins.

11-2338



### S&S "SHORTY" CARBS...EASY TUNING

The S&S "Shorty" carbs are easy to tune due to the simplicity of the functional design. The Super E & G's are butterfly style carbs and have only two fuel circuits, not counting the starting system or accelerator pump. In addition, idle mixture, idle speed, and accelerator pump adjustments are easily accessible when the carburetor is installed on a motorcycle.

The low speed circuit which handles engine speeds from idle up to about 2500 rpm, is controlled by a changeable intermediate jet which meters fuel to the intermediate system as well as the idle mixture control needle. The intermediate jet is selected to provide the best performance and fuel economy in the lower rpm range, and the idle mixture screw allows for precise adjustment of the air/fuel mixture at idle. The adjustable accelerator pump eliminates off idle hesitation and can be adjusted to provide the correct amount of fuel for a wide variety of engine displacements and styles. The accelerator pump is also very useful as a starting aid.

The main, or high speed system features a replaceable main jet, and in carbs manufactured after 10-1-03, a replaceable main circuit air bleed. The main jet meters fuel for high rpm and full throttle conditions, while the air bleed can be used to control the rpm at which the main system comes into play. Adjustment of the air bleed is normally not needed with standard engine configurations, but can be very useful when tuning engines with radical cams and exhaust systems.





## SUPER E & G CARBURETORS

Continued...

S&S Super E & G Carburetors

### PERFORMANCE BY DESIGN

The S&S "Shorty" carbs do not use a traditional choke plate for starting enrichment. Instead a separate adjustable enrichment circuit is used for cold starts. The enrichment circuit is activated by pulling the enrichment lever on the air cleaner to the up position. Once the engine starts, the lever can be moved downward to function as an adjustable fast idle to keep a cold engine running until the bike is underway or the engine is warm enough to idle normally. By using an enrichment circuit instead of the usual choke mechanism, the bore of the carburetor is not restricted by hardware that is only used on cold starts. That means that the carb can supply more air to the engine at full throttle, and that equates to more power.

Another reason the "Shorty" carbs are capable of making more power is the design of the air cleaner. This design takes into account two of the most significant factors that can improve air flow into a carburetor. The most important factor is a filter element that does not restrict the flow of air, and almost as important is the elimination of turbulence at the inlet of the carburetor.

The filter area of the "Shorty" carbs is maximized by an ingenious backplate design that wraps slightly around the carb to allow room for a wider filter element than a straight back plate would allow. The pleated S&S filter element looks like paper, but is actually a special resin impregnated cellulose fiber media that provides excellent filtration as well as superior flow. That makes for improved performance and better engine protection.



1993-up V² Big Twin Super E carb kit.

11-0419

Reducing turbulence is almost as important as finding a filter media that allows air to pass with a minimum of restriction. The shape of the S&S air cleaner backplate provides a radius inlet similar to an air horn or velocity stack. This provides a smooth path for air to follow while traveling into the carburetor inlet. This results in less turbulence which allows more air to flow into the carb. The flow of air is also enhanced by a directional cone inside the air cleaner cover which also directs the air smoothly into the inlet of the carburetor. Since the radius inlet and directional cone are contained within the filter element, air flowing into the carb is not effected by turbulent air flowing past the carburetor when the motorcycle is traveling at high speeds. So the air cleaner cover and the filter element also play an important role in eliminating turbulence and increasing flow.

While installing an S&S Super E or G carburetor on a stock engine will result in more power, the addition of a performance cam and exhaust system will result in even more power gains. Take a look at the S&S Hot Set Up kits on pages 10-15 of this catalog for more information.

### SUPER E & G CARBURETOR COMPLETE KITS SELECTION CHART

Application	Year & Type of Engine	Super E Carb Kit Standard	Super G Carb Kit Standard
Big Twin	1984-'92 BT	11-0407	11-0427
	1993-'99 BT	11-0419	11-0434



## SUPER B CARBURETORS

### S&S SUPER B CARBURETORS

Since its introduction in 1975 the 1 $\frac{1}{8}$ " S&S Super B carb has been a favorite of Harley high performance enthusiasts the world over. It has undergone a few changes over the years, but it is still true to the original idea. A simple, no frills, high-performance carb that works well on the street and the drag strip.

#### APPLICATIONS:

- ◆ The S&S Super B gas carburetor has a 1 $\frac{1}{8}$ " throat and is recommended for use on any displacement H-D Big Twin or Sportster engine with any degree of performance modifications. This includes stock engines and as well as performance engines.
- ◆ Super B carb kits are not available for 1991-later Sportsters, 1992-later Big Twin, or Twin Cam 88 engines.

#### NOTES:

- ◆ Two Cable Throttle Required – S&S Super B carburetors require the use of a two cable, pull open-pull closed throttle assembly. Any chassis including 1980 and earlier stock H-D models equipped with a single cable throttle mechanism requires pull open-pull closed type. S&S offers a high quality two cable throttle assembly for this purpose. (See the Throttle Assemblies section of this catalog for more information). Stock models from 1981 to present have a two cable throttle which can easily be modified to work with the Super B carburetor.
- ◆ Recommended for Racing Only – S&S carburetors are not legal for use in California on motor vehicles operated on public highways or in other states where similar pollution laws may apply. The user shall determine the suitability of the product for his or her use and shall assume all risk and liability in connection therewith.
- ◆ Polishing and Chrome Plating the Carburetor – S&S does not recommend polishing and chrome plating any S&S carburetor. Proper preparation to achieve a good finish requires polishing using buffing compounds. The polishing and plating processes and the materials used invariably plug air and/or fuel passageways and feed holes and alter operating tolerances in critical areas regardless of the precautions taken.



Super B Carburetor Kit

11-0103

### S&S SUPER B COMPLETE GAS CARBURETOR KITS...

include an S&S Super B gas carburetor, an S&S Teardrop air cleaner kit, manifold, mounting hardware, fuel line and clamps, two extra main jets, and installation and jetting instructions.

### SUPER B CARBURETOR KIT FOR 1984-'91 BIG TWIN V<sup>2</sup> STYLE ENGINES

Super B Carb Kit (Complete) with Manifold.....**11-0113**



## S&S CARBURETOR REPLACEMENT JETS



For those who need to rejet their carburetor because of engine modifications, exhaust modifications, or changes in altitude, we have extra jet kits available which are designed to cover most jetting situations. Compare your jets with those in the pictures to determine the proper jet series. The description given tells what carburetors it fits and the sizes available. Also listed are the various groups of sizes offered and their respective part numbers.

### RIDERS & TUNERS

It is often difficult to know exactly what jetting combination is best for a particular engine without actually trying it. That is why S&S offers jet packs with a range of jets that gives the tuner the flexibility to try different jetting combinations to achieve the best performance.

For even more jetting options S&S offers high range, low range, and master jet packs for the professional tuner.



Intermediate Jets  
Series #94



### MAIN JETS

Series #72 fits all Super 1 $\frac{1}{8}$ ", 2 $\frac{1}{16}$ ", 2 $\frac{1}{4}$ " gas carburetors – sizes available: .040" to .108" (in increments of .002").

Sold in packages of 3 to 6 jets.

1 each .062", .064", .066", .068", .070", .072"	<b>11-7200</b>
1 each .066", .068", .070", .072", .074", .076"	<b>11-7201</b>
1 each .072", .074", .076", .078", .080", .082"	<b>11-7202</b>
1 each .078", .080", .082", .084", .086", .088"	<b>11-7203</b>
1 each .090", .092", .094", .096", .098"	<b>11-7204</b>
1 each .100", .102", .104", .106", .108"	<b>11-7205</b>

### INTERMEDIATE JETS

Series #94 fits all Super 1 $\frac{1}{8}$ ", 2 $\frac{1}{16}$ ", 2 $\frac{1}{4}$ " gas carburetors—sizes available: .025", .0265", .028", .0295", .031", .032", .033", .036", .040".

Sold in packages of 3 jets.

1 each .025", .0265", .028"	<b>11-7100</b>
1 each .0265", .028", .0295"	<b>11-7101</b>
1 each .028", .0295", .031"	<b>11-7102</b>
1 each .0295", .031", .032"	<b>11-7103</b>
1 each .031", .032", .033"	<b>11-7104</b>
1 each .032", .033", .036"	<b>11-7105</b>
1 each .033", .036", .040"	<b>11-7106</b>

### MASTER JET PACK

For jetting all Super B, E, and G equipped engines. – Includes 1 each intermediate jets (.025", .0265", .028", .0295", .031", .032", .033") and 1 each main jets (.062", .064", .066", .068", .070", .072", .074", .076", .078", .080", .082", .084").

**11-7272**

### LOW RANGE JET PACK

For jetting most stock and moderate performance engines. – Includes 1 each intermediate jets (.025", .0265", .028", .0295") and 1 each main jets (.062", .064", .066", .068", .070", .072", .074").

**11-7270**

### HIGH RANGE JET PACK

For jetting some stock and all performance engines. – Includes 1 each intermediate jets (.0295", .031", .032", .033") and 1 each main jets (.072", .074", .076", .078", .080", .082", .084").

**11-7271**



### MAIN JET TOOL

For changing series #72 main jets  
**53-0452**



## AIR CLEANER KITS

### THE S&S TEARDROP AIR CLEANER

The S&S Teardrop Air Cleaner is one of the most recognizable shapes in the industry. This is testimony to its distinctive good looks and outstanding performance features – features like the uniquely designed backplate with air horn style radiused entryway and the dimpled cover with air directional cone on the inside. Both features help maximize air flow by giving intake air an efficient, easy path to follow into the carburetor. And the beauty of it all is that the S&S Teardrop air cleaner is also available to fit stock Tillotson, Bendix and Keihin butterfly, CV carbs, or any carb with the same air cleaner mounting bolt pattern. There is even a kit that fits stock single throat EFI throttle bodies used on 2001 Softails and all 2002-up EFI Models.

#### NOTE:

To ensure that the correct air cleaner kit is shipped to you please specify the type and year of the engine, carburetor to be used, and part numbers of the air cleaner kit and mounting hardware (when applicable).



S&S Air Cleaner Kit for 1993-'99 carbureted Evolution Big Twins.

17-0117

### AIR CLEANER SELECTION CHART

Model Year	Stock CV and EFI	S&S L, H-D Tillotson Bendix, Keihin	Super B	Super E & G	Super D
SSW+ Engines (Manufactured after January 2003)				17-0416	
1993-'99 Up Carbureted Big Twin V <sup>2</sup> Models	17-0117			17-0404	
1990-'92 Big Twin V <sup>2</sup>			17-0107	17-0399	17-0198
1984-'89 Big Twin V <sup>2</sup>		17-0108	17-0107	17-0399	17-0198



#### PAUL...

Paul has been with S&S for 5 years, working in the Remanufacturing Dept for the last four years. Paul really put part of himself into his scratch built custom. The rear brake foot pedal was fabricated from the brace for his right leg femur bone. The bike is powered by a 96" S&S engine, and is built from a 4-speed frame.





## AIR CLEANER COVERS

### S&S "PATRIOT" FLAG AIR CLEANER COVER

There are only a handful of companies that have been around long enough to claim to have helped shape the industry and lifestyle that is so popular around the world today. One, of course makes motorcycles in Milwaukee. Another is S&S Cycle, Inc.

Founded in 1958, S&S has been building high performance engines and engine components for the heavyweight cruiser market without interruption for over forty-five years. Quality, performance, and dependability are the values that S&S is famous for and the legendary S&S teardrop air cleaner cover is a symbol to all that its owner feels the same way we do, second best is not good enough.

To celebrate the rich heritage of S&S and its place in the American motorcycle industry, we are offering for a limited time only this "Patriot" version of the famous teardrop air cleaner cover. An American flag on an American carburetor on an American motorcycle.



Patriot Air Cleaner Cover

17-0385



Desperado Air Cleaner Cover

17-0004

### S&S "DESPERADO" AIR CLEANER COVER

A second design, the "Desperado", is also now available. The Desperado had its beginnings in much more down-to-earth circumstances. While developing the new Super Sidewinder™ Plus series of engines we found that their increased performance called for a better breathing intake tract and of course the air cleaner cover is the first part in that tract. During dyno testing, a 1-2 horsepower gain was realized and, as with the Patriot air cleaner cover, it does not require any jetting changes to a properly jetted carburetor. Good looks and better performance.

**PATRIOT AND DESPERADO AIR CLEANER COVERS  
ARE AVAILABLE FOR S&S SUPER E & SUPER G "SHORTY" CARBURETORS ONLY.**



## AIR FILTERS

### S&S HIGH FLOW AIR FILTER AND ADAPTER KIT

With larger and larger street engines becoming more common, S&S has developed a high flow air filter kit for Super E and G carburetors. The new S&S high flow filter is 1" taller than our standard filter and features a low restriction, pre-oiled filter element. The low restriction element, combined with the larger surface area provided by the 1" filter taller, adds up to an airflow increase of 37% percent over our standard filter - the ultimate free breathing set-up for your engine! The filter and filter adapters extend the teardrop housing out 1". The resulting band of exposed filter peeking out from under the teardrop imparts a high performance street racer look. Kit installs in minutes, no permanent modifications required.

\* Not for use with S&S Super B or Super D carburetors, or Super E & G Kits for Buells.

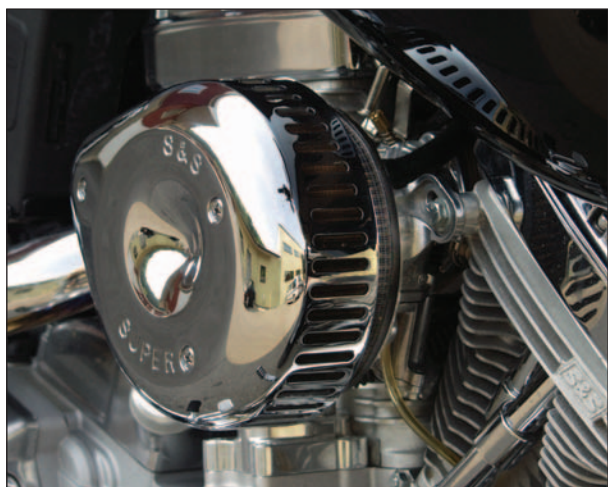


#### HIGH-FLOW FILTER WITH HIGH PERFORMANCE LOOKS

Extended filter kit provides maximum airflow for air hungry engines. This free breathing set-up looks like it just came from the track. Easy to install, kit is one inch taller than our standard teardrop filter, and features premium filter media. Includes filter and three plated steel air cleaner extensions.

#### HIGH FLOW FILTER KIT CONTAINS:

- (1) High flow filter for S&S Super E or G Teardrop air cleaner. (One inch taller than the standard S&S filter.)
- (3) 1" Tall plated steel filter adapters.



### AIR FILTER & ADAPTER KIT

For S&S Super E and G Carburetors

.....17-0045

Replacement Filter

.....17-0055





## TRANSMISSION CASES

### S&S TRANSMISSION CASES

#### NOW AVAILABLE POLISHED!

S&S Transmission Cases for 1986-'99 Evolution style Softails are made from virgin 356-T6 aluminum alloy and machined with state-of-the-art CNC equipment.

The basic package includes the transmission case, shift lever adjustment screw, shifter shaft guide, and all studs and dowel pins required for assembly and installation. (1986-'88 models also require the optional Starter Adapter Kit.) For added customer convenience, studs and dowels are installed at S&S prior to shipment.

Several options are available, including natural aluminum, black powdercoat, or polished finish, a bearing and seals kit, our CNC-machined billet trap door complete with bearings and hardware, and the starter adapter kit for 1986-'88 models. The late transmission mounting plate (HD#47698-86B) must be used with this case.



Trap Door Assembly

56-1027

#### OPTIONAL ACCESSORIES FOR S&S 5-SPEED SOFTAIL STYLE TRANSMISSION CASES

Description	Part No.
Billet Trap Door Kit	56-1027
Starter Adaptor Kit 1986-'88	56-1046



Starter Adapter Kit 1986-'88 56-1046

#### BASIC CASE ASSEMBLY

Includes the transmission case plus the shift lever adjustment screw, shifter shaft guide, and all studs and dowel pins required for assembly.

#### CASE ASSEMBLY WITH BEARINGS AND SEALS

Includes the same components as the basic case assembly plus bearings and seals are installed.

#### NOTE:

When ordering basic case assembly or a case with bearings and seals, your customer service representative will give you the opportunity to pick from the list of options for your transmission case.



Bearing and seals are installed in case kits with bearings and seals.

#### S&S 5-SPEED SOFTAIL STYLE TRANSMISSION CASE KIT SELECTION CHART

Description	Natural Part No.	Black Part No.	Polished Part No.
Basic Case Assembly Kit	56-1079	56-1080	56-1081
Case with Bearing and Seals	56-1082	56-1083	56-1084



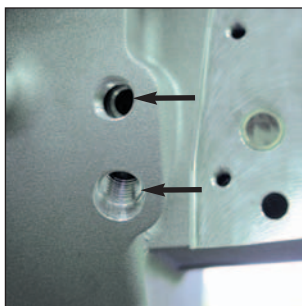
## CRANKCASES

### S&S BIG TWIN ALTERNATOR STYLE CRANKCASES

Both the S&S Super Stock™ (SS) and Special Application (SA) Alternator style crankcases share a number of features. Some of these features are unique to S&S crankcases, and offer improved convenience, flexibility, and performance.

#### FEATURES:

- ◆ All S&S crankcases are sold in a complete kit with all required hardware, fittings, and most bearings, and are ready to assemble.
- ◆ S&S Alternator style crankcases are machined to accept either 1981-'91 or 1992-'99 style oil pumps, and are machined for the stock 1981-'99 style oil distribution system.
- ◆ The return oil pick-up passage in the cam chest which directs oil to the return side of the oil pump has been relocated in order to avoid the turbulence caused by the oil pump drive gear. This unique design results in greatly improved scavenging of oil from the gear case, and virtually eliminates oil carry over at sustained high speeds.
- ◆ For Evolution style engines, the engine builder has the option of venting the crankcase breather from the crankcase, through the cylinder heads, or both. We recommend using both crankcase breathers in engines of 96" or larger displacement. To make this possible in all applications, there are two crankcase breather holes available in the rear of S&S Evolution style Alternator crankcases. One is in the stock location, and the other is angled down to allow the installation of a crankcase breather fitting in chassis with integral transmission/oil tank.



Two crankcase breather holes.



Relocated oil scavenge pick-up.



Big Twin S&S Super Stock™ Evolution Style Crankcase Kit includes all the required hardware fittings and bearings. 31-0001

S&S Big Twin cases optimize crankcase oil scavenging efficiency by using a "ported" design breather passageway and a breather window that is machined to maximum timing specifications. These features allow the air/oil mist to move smoothly from the flywheel cavity to the gear chest of the engine.

All S&S Alternator crankcases are machined to accept the stock oil filter assembly used on 1992-'99 model Evolution Big Twins. This is a convenient, accessible location to install an oil filter in custom applications.

- ◆ S&S Big Twin crankcases for Evolution style engines are not machined with a primary oil scavenge port for drawing oil from a Shovel style primary chain case. If the primary oil scavenge port is required on an Evolution style crankcase, it can be special ordered.
- ◆ S&S Alternator crankcases are compatible with stock primary covers, gear covers, and cleared for 38 amp alternator stators.
- ◆ **New!** All S&S Alternator Evolution style cases are machined for a crank position sensor. This allows easy installation of S&S IST Ignition and VFI Fuel Injection.



## S&S SUPER STOCK™ BIG TWIN ALTERNATOR STYLE CRANKCASES

S&S Super Stock™ Alternator style crankcases are perfect for stock replacement and for high performance applications. Available for stock, 3 $\frac{5}{16}$ ", and 3 $\frac{1}{2}$ " bore applications.

S&S Alternator Super Stock™ crankcases are compatible with stock 1970-up flywheel assemblies, primary covers, gear covers, and clearanced for 38 amp alternator stators. Super Sidewinder™ cases require special flywheel assemblies.

### S&S ALTERNATOR STYLE CASES ARE AVAILABLE FOR FIVE ENGINE STYLES:

- ◆ Evolution style 1984-'91
- ◆ Evolution style 1992-'99

Big Twin S&S Super Stock™ Evolution Style Crankcase Kit includes all the required hardware fittings and bearings.



### S&S SUPER STOCK™ BIG TWIN ALTERNATOR STYLE CRANKCASE SELECTION CHART

Crankcase Style	Finish	Stock Bore	3 $\frac{5}{16}$ " Bore	3 $\frac{1}{2}$ " Bore (Small Diameter)	3 $\frac{1}{2}$ " Bore	Special Order	Notes
1992-'99 Evolution	Natural	31-0005	31-0077	31-0073	31-0032	31-0002	1,3,4
	Black	31-0055	31-0078	31-0075			
	Polished		31-0079				
1984-'91 Evolution	Natural	31-0000	31-0001	31-0072	31-0031	31-0002	2,3,4
	Black	31-0052	31-0053	31-0074			

#### NOTES:

1. 1992-'99 V<sup>2</sup> style oil pump.
2. 1984-'91 style oil pump.
3. Machined for 1970 & later alloy primary.
4. Machined for stock or S&S EFI crank position sensor. Stock diameter only.



### SPECIAL ORDERS!

S&S Super Stock™ Alternator crankcases can be special ordered for cylinder bore sizes up to 3 $\frac{1}{2}$ " and deck heights as much as  $\frac{3}{16}$ " taller than stock.

A special order sheet must be filled out for any special order crankcases. Ask your S&S customer service representative or download special order forms from our website at [www.sscycle.com](http://www.sscycle.com).

All S&S Evolution Alternator style crankcases for stock diameter flywheels, manufactured after 10-1-04 are machined for a crank position sensor. This allows the use of a stock efi crank position sensor or an S&S crank position sensor for S&S Variable Fuel Injection (VFI) systems, or S&S Intelligent Spark Technology (IST) ignition systems. If no crank position sensor is used, the hole is covered with a small plate, which is included with each crankcase. Note that crankcases machined for small diameter flywheels are not machined for the crank position sensor because the rim of a small diameter flywheel would not be close enough to the sensor. Crank position sensors must be used with flywheels with timing notches machined into the rim of the driveside flywheel.



## GEARCOVERS

## POLISHED BILLET ALUMINUM GEARCOVERS

S&S is proud to announce the introduction of our new polished billet aluminum gearcovers for Alternator style Big Twins. In spite of the simple, elegant design, these gearcovers are tough as nails. Machined from a solid aluminum billet, they are extremely strong and are dimensionally more precise than is possible with a cast part. Another plus for the billet covers becomes apparent when they are polished. The finish is flawless, show quality polished aluminum. One look at these covers will convince even the most discriminating rider that this cover belongs on his or her bike.

## AVAILABLE FOR 1973-'92 AND 1993-'99 STYLE ENGINES

The 1973-'92 style polished billet gearcovers fit stock 1973-'92 engines, and are now standard equipment on all S&S polished Evolution style Engines. They are also available as an option on all other S&S Alternator style Engines. 1973-'92 style gear covers have the breather passage required for engines that have the crankcase breather routed directly out of the crankcase.

The 1993-'99 style covers are perfect for 1993-'99 stock engines, or any engines built with 1992-'99 stock flywheel assemblies, since they are machined to accommodate the larger stock pinion gear nut. The 1993-'99 gearcovers do not have the breather passage required for "case breathing" engines, so they should only be used with engines that have the crankcase breather routed through the cylinder heads.



Gearcover with chrome billet ignition cover.

## S&amp;S POLISHED BILLET GEARCOVER KITS

Include gaskets and mounting hardware.

## With Chrome Plated Billet Ignition Cover

1972-'92 .....	31-0335
1993-'99 .....	31-0336

## Chrome Plated Billet Ignition Cover Only

.....	31-0332
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This chrome plated billet ignition cover is the perfect compliment to a polished engine, but it looks great, no matter what engine it is on.





## CAMS FOR V<sup>2</sup> BIG TWINS

### 1984-'99 EVOLUTION STYLE

S&S camshafts and other related valve train parts go through extensive dyno testing and usage on the track and street. After we are satisfied with the proven performance we carefully select and match various components to make the best kit combinations.

Since many S&S cams are high lift types, they are available with a cam only or in a kit with a set of the appropriate S&S high performance valve springs. Refer to the Cam Specification Chart for cam timing and lift information. Part numbers for the kits offered for each camshaft can be found in the Cam Selection Chart.



S&S 561 Camshaft for 1984-'99 Evolution Big Twins  
33-5076

### 1984-'99 EVOLUTION BIG TWIN CAM SPECIFICATION CHART

Cam Name	Application	Camshaft Part Number	Valve Timing§ Open/Close		Valve Duration		Valve Lift	Lift @ TDC†		Spring Spacing Required	Tappet Type Required
			Intake	Exhaust	Intake	Exhaust		Intake	Exhaust		
<b>S&amp;S 502</b>	Will bolt in with stock heads Works best with 9:1 - 10:1 CR	<b>33-5075</b>	28°/40°	50°/24°	248°	254°	.500"	.225"	.221"	No	Hydraulic
<b>S&amp;S 520</b>	Engines to 96" w/8.5 to 10:1 CR. Good low end/mid range.	<b>33-5073</b>	0°/40°	50°/2°	220°	232°	.520"	.086"	.094"	Yes	Hydraulic
<b>S&amp;S 546</b>	For 4" bore engines 9.1:1 to 10:1:1 CR.	<b>33-5072</b>	5°/55°	52°/5°	240°	237°	.546"	.126"	.106"	Yes	Hydraulic
<b>S&amp;S 561</b>	Best cam for 80" to 96" engines 9.5:1- 10.5:1 CR.	<b>33-5076</b>	32°/40°	50°/26°	252°	256°	.560"	.252"	.210"	Yes	Hydraulic
<b>S&amp;S 585V</b>	80"-96" engines 10:1-10.5:1 CR larger engines 9.5:1-10:1 CR	<b>33-5109</b>	20°/45°	60°/20°	245°	260°	.585"	.186"	.180"	Yes	Hydraulic
<b>S&amp;S 600</b>	80"-96" engines 10.5:1-11:1 CR larger engines 10:1-10.5:1 CR	<b>33-5058</b>	20°/55°	60°/20°	255°	260°	.600"	.218"	.198"	Yes	Hydraulic
<b>S&amp;S 631</b>	Hottest cam for all high rpm engines 11:1+ CR., 12:1+ for smaller engines	<b>33-5080</b>	34°/61°	66°/29°	275°	275°	.630"	.281"	.221"	Yes	Solid or Hydraulic
<b>S&amp;S 640</b>	Big inch engines 10.5 -11.5:1 Supplied with 124" SSW+	<b>33-5108</b>	25°/60°	65°/20°	265°	265°	.640"	.222"	.192"	Yes	Hydraulic

§ Timing designation is function of zero lash @ .053" off base circle.

† Lifts at TDC are measured at the valve and are for reference only. Overlap valve lifts must be checked on assembled motor. Minimum valve to valve clearance of .040" is recommended.

## IMPORTANT INFORMATION

### S&S EVOLUTION STYLE CAMS IN S&S SHOVELHEAD STYLE ENGINES

S&S complete Shovelhead engines are equipped with special tappet guides designed to use S&S Evolution style tappets. This requires that an Evolution style cam must be used in these engines, or in any engine equipped with S&S Shovelhead style tappet guides. When choosing a cam for this type of engine, be aware that the timing specifications will remain unchanged, but that the total valve lift will be reduced by about 9% from the specified value, due to the difference in rocker ratios between Shovelhead and Evolution style engines.



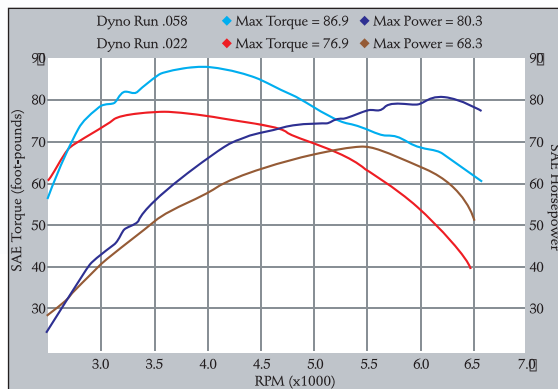
## CAMSHAFTS

## CAMS FOR V<sup>2</sup> BIG TWINS

### 1984-'99 EVOLUTION STYLE

Lower curves show stock 80" 1997 FXDWG equipped with a Super E carburetor, slip-on performance mufflers, and a stock camshaft. Upper curves show the same engine with an S&S 502 camshaft installed.

Dyno results from Dyno Jet 150 Chassis dynamometer at S&S Cycle's Research and Development facility in Viola, Wisconsin.



### S&S 502 CAM

**FOR UP TO 93" BIG TWINS  
WITH NO GREATER THAN  
10:1 COMPRESSION -**

"bolts-in" and works with stock or ported heads - at 5000 rpm - about 13 horsepower gain (approximately 20%) over stock is realized on our test engine (see graph) - valve spring spacing not required - other normal clearancing checks recommended. See "Camshaft Specification Chart" for overall cam timing information.

### S&S 546 CAM

**FOR S&S 4" BORE ENGINES WITH  
UP TO 10:1 COMPRESSION -**

short duration and reduced overlap make good low end torque - great for dressers or riding double - supplied in many emission compliant engines used by aftermarket motorcycle manufacturers. Requires high lift springs and normal clearance checks. See "Camshaft Specification Chart" for overall cam timing information.

### S&S 520 CAM

**FOR 3<sup>5</sup>/<sub>8</sub>" AND 4" BORE  
ENGINES UP TO 107" WITH  
UP TO 10:1 COMPRESSION -**

works well with stock or ported heads - short duration and reduced overlap make good low end torque - great for dressers or riding double - supplied with many emission compliant engines used by aftermarket motorcycle manufacturers. Requires high lift springs and normal clearance checks. See "Camshaft Specification Chart" for overall cam timing information.

### S&S 561 CAM

**WORKS IN ALL DISPLACEMENT  
BIG TWIN V<sup>2</sup>'S...**

with a variety of compression ratios, ideally suited for stock to 88" engines with up to 11:1 compression, 96" engines with 10:1 and 98" engines and larger engines with no greater than 9.5 to 1 compression - moderate duration makes for great mid range performance - supplied in many S&S Engine and Hot Set Up kits. Requires high lift springs and normal clearance checks. See "Camshaft Specification Chart" for overall cam timing information.



Continued...

Cams for 1984-'99 V<sup>2</sup> Big Twins

## S&S 585 V<sup>2</sup> CAM

**THE S&S 585 IS A VERSATILE CAM FOR ENGINES WITH UP TO 10.5:1 COMPRESSION RATIO.**

For 80" to 96" engines with 10:1-10.5:1 compression, and larger engines with 9.5:1-10:1 compression ratios. Provides a streetable combination of low end torque and top end horsepower. Requires high lift springs and normal clearance checks. See "Camshaft Specification Chart" for overall cam timing information.



S&S 640 Camshaft for 1984-'99 Evolution Big Twins  
33-5108

## S&S 600 CAM

**ORIGINALLY DESIGNED FOR THE LEGENDARY S&S 40TH ANNIVERSARY ENGINE -**

the S&S 600 cam has proven to be an exceptional cam in any large displacement engine with 9.5:1 to 10.5:1 compression - Good power across the rpm range - Requires high lift springs and normal clearance checks. See "Camshaft Specification Chart" for overall cam timing information.

## S&S 631 CAM

**FOR HIGH RPM APPLICATIONS IN ALL STREET AND RACING ENGINES WITH 11:1 AND HIGHER COMPRESSION RATIOS -**

develops maximum performance from about 4500 rpm on up - great performance cam, but expect more "wear and tear" on valve train components - valve spring spacing and other normal clearancing checks required. See "Camshaft Specification Chart" for overall cam timing information.

## S&S 640 CAM

**FOR LARGE DISPLACEMENT MOTORS WITH COMPRESSION RATIOS OF 10.5 -**

11.5:1. Can be used in smaller motors with 11:1-12:1 compression ratio. The S&S 640 cam features the latest design in controlled ramps and is intended for hydraulic lifters. With lower TDC lifts and faster ramps than the S&S 631 cam, the 640 cam builds higher cylinder pressure. Therefore it does not require as much compression as the 631. This is the cam of choice in our 10.8:1 124" Super Sidewinder Plus motors. - Requires high lift springs and normal clearance checks. See "Camshaft Specification Chart" for overall cam timing information.



## PUSHRODS

### S&S QUICKEE PUSHRODS EVOLUTION STYLE ENGINES

S&S developed a pushrod with a new type of adjuster for use with S&S Shovelhead style tappet guides. This is such a cool idea that we've also made it available for Evolution and Twin Cam engines. The threaded adjuster screws into the pushrod until the threads disengage and the adjuster simply slides into the pushrod making installation or removal a snap. Once the pushrod is installed and adjusted, the locknut prevents the adjuster from moving. The ball ends of the pushrods are drilled so that oil can flow through the pushrod. This is the stock oiling system for Evo's and Twin Cams, but this allows Shovelhead engines to be set up with 1984 and later style top end oiling, via the pushrods, provided S&S Shovel style tappet guides and roller rocker arms are also used.



#### NOTE:

S&S Quickee pushrods are designed for use with Evolution and Twin Cam style hydraulic tappets. They are not compatible with stock or aftermarket Shovelhead hydraulic tappets or most solid style tappets.

#### S&S EASY INSTALL PUSHRODS

Application	Displacement	Part Number
1984-99 Evolution Big Twin	80" – 98", 124	93-5120
1984-99 Evolution Big Twin	103"	93-5132
* With S&S tappets, tappet guides, and Evolution style camshaft.		





## PUSHRODS

### S&S PUSHROD KITS FOR 1984-'99 V<sup>2</sup> BIG TWINS



Pushrod flex costs horsepower by preventing the valves from following the cam profile. This problem is most common in high-performance applications with heavier-than-stock valve springs.

S&S pushrods are designed to remain rigid and provide positive valve action at all engine speeds, which makes them ideal for stock and high-performance applications. They are available in stock and special lengths. Most S&S pushrods are made of  $\frac{7}{16}$ " O.D. chrome moly steel tubing with pressed-in heat-treated ends. This provides maximum strength and durability regardless of the application.

All pushrods are listed by length in terms of their relationship to stock. Pushrod length varies directly with effective cylinder length. Parts designed to fit as direct replacements are listed with the H-D part number they replace. If no H-D part number is given, the S&S part fits only the parts listed in the description.



93-5076

### ADJUSTABLE PUSHROD CONVERSION KITS –

S&S pushrods for Evolution engines are made of  $\frac{7}{16}$ " O.D. chrome moly steel tubing for strength and durability. Adjustable Pushrod Conversion Kits – Include four adjustable V<sup>2</sup> style steel pushrods. These pushrods can be used in place of the stock, non-adjustable pushrods in stock as well as high-performance applications. Compatible with hydraulic and solid lifters.

#### NOTES:

S&S recommends that solid lifters be used only with cams specifically designed for them. Performance loss, excessive noise, and even engine damage can occur with mismatched cams and lifters.

1984-'99 V <sup>2</sup> BIG TWINS PUSHROD SELECTION CHART		
Displacement	Part No.	Cylinder Length
79"	93-5093	4.830" (-.720")
100" Retro Fit	93-5094	4.920" (-.630")
100"	93-5090	5.245" (-.305")
88", 107"	93-5017	5.375" (-.175")
93", 113"	93-5018	5.500" (-.050")
80", 89", 96"	93-5076	5.550" (Stock)
98"	93-5019	5.625" (+.075")
103"	93-5020	5.750" (+.200")
Special Order	93-5073	Specify



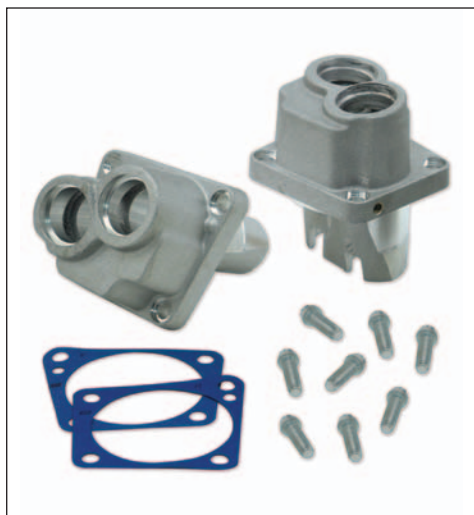
## TAPPET GUIDES

TAPPET GUIDES FOR V<sup>2</sup> BIG TWIN STYLE ENGINES

## S&amp;S POLISHED BILLET TAPPET GUIDES!

S&S billet tappet guides for 1984-'99 Evolution Big Twins were originally developed for our polished engines. They are machined from a solid aluminum billet, and the superior quality and dimensional precision made them a natural addition to our "top of the line" engine kits. Besides they look great!

S&S polished billet tappet guides are now available on all S&S Engines and can be purchased separately to up grade existing S&S or stock Evolution style engines. Available for engines with stock style crankcases, and for engines using S&S Special Application (SA) crankcases with .250" offset cam chest.



Big Twin cast tappet guide assembly set. 33-5301

## S&amp;S CAST TAPPET GUIDES!

S&S Big Twin cast tappet guides are cast from 356-T6 aluminum and designed to be stronger, resist wear better, and last longer than stock. The clean looking, burnished aluminum finish matches S&S Super Stock crankcases. They are also available in black powdercoat finish.

All tappet guide assemblies for Big Twins include gaskets and mounting screws. Assemblies and kits designated as "stock style" fit stock style Big Twin crankcases including S&S Super Stock™ cases. Assemblies and kits designated as "SA" are designed for S&S Special Application crankcases with ¼" cam chest offset.

## FIBER REINFORCED GRAPHITE TAPPET GUIDE GASKETS

## 1948-'99 Big Twin

Set - Includes front & rear gaskets. (10 Pack) .....**33-5313**

Front - (HD#18634-48B & #18634-48C) (10 Pack) .....**33-5313F**

Rear - (HD#18633-48B, #18633-48C & #18633-48D) (10 Pack) .....**33-5313R**

## S&amp;S BIG TWIN EVOLUTION TAPPET GUIDE SELECTION CHART

	Billet		Cast			
	Stock Style Polished	Special Application Polished	Stock Style Natural	Special Application Natural	Stock Style Black	Special Application Black
<b>Set</b>	33-5323	33-5322	33-5301	33-5309	33-5324	33-5325
<b>Front</b>	33-5323F	33-5322F	33-5301F	33-5309F	33-5324F	33-5325F
<b>Rear</b>	33-5323R	33-5322R	33-5301R	33-5309R	33-5324R	33-5325R

**NOTE:** Evolution style engines with larger than 3 1/16" bores are typically built using special crankcases such as S&S Special Application cases which have an offset right side gear cavity for more tappet guide to cylinder clearance (S&S SA Big Twin style cases are offset ¼" and XL style cases are ½"). S&S offers special tappet guides machined to compensate for the change in pushrod angle caused by the cam chest offset of these cases.





## TAPPETS

### S&S HYDRAULIC TAPPETS FOR EVOLUTION BIG TWIN STYLE ENIGNES



S&S Hydraulic Tappets fit all Big Twin V<sup>2</sup> style engines and 1986-'90 Sportster engines. These tappets feature numerous significant design improvements.

- ◆ Larger inner bearing race reduces stresses to increase axle, bearing, and roller life. The S&S inner bearing race is .123" larger in diameter than the "raceless" roller axles currently used by some manufacturers.
- ◆ Improved inner race-roller design allows use of more, and larger bearings to increase load-carrying surface area, further reducing stress and wear in the critical roller area.
- ◆ Redesigned plunger assembly better withstands forces associated with heavy-duty valve springs and cams typically used in high-performance applications.
- ◆ Revised metering device precisely controls oil delivery to top end, insuring rapid lifter pump-up and reducing possibility of oil starvation to bottom end.
- ◆ Each lifter body and plunger assembly is hand-fit and then pressure-tested to insure correct operation.

#### S&S HYDRAULIC TAPPET ASSEMBLY

Without HL<sub>2</sub>T Kit (Set of four) .....**33-5352**  
With HL<sub>2</sub>T Kit (Set of four) .....**33-5353**



#### NOTE:

Because of close tolerances, tappet in set 33-5353 may require slightly longer bleed-down time than conventional tappets. At temperatures of 65°F and above, however, bleed-down should take 20 minutes or less using 20W50 engine oil.



#### CHARLIE...



This custom FXR was built by S&S Director of Dealer Development Training and Support Charlie Hadayia. The high modified 80" motor is capable of over 100 rear wheel horse power. Lookin' good, goin' fast.



## VALVE SPRING KITS

### HIGH-PERFORMANCE VALVE SPRING KITS

S&S valve spring kits are designed to simplify high-lift cam installation and reduce the risk of valve float. They eliminate most of the complicated procedures and specialized tools required to prepare cylinder heads for high lift cams. While confirming critical clearances remains the responsibility of the engine builder, most Evo street cams will require no additional modification of the cylinder head when S&S valve spring kits are used. In some instances, S&S valve spring kits serve as excellent replacements in stock rebuild applications. All kits include detailed instructions.



### VALVE SPRING KITS FOR 1984-'99 V<sup>2</sup> STYLE BIG TWINS

.640" Lift Triple Valve Spring Kit – Fits S&S Super Stock™, H-D, and other V<sup>2</sup> or Twin Cam-type heads that require stock O.D. outer spring. Includes 4 top collars, 4 bottom collars, 4 each outer, middle, and inner springs, 8 shims (4 each .015", 4 each .030"), and 8 keepers.

Use with shoulderless-style valve guides. Special keepers included fit valves with stock 5/16" stems and S&S collars only. Patented steel top collars are drilled for lightness and to increase cooling of valve springs. Spring seat pressure is 170 lbs. at stock 1.800" installed height. Open pressure is 390 lbs. at .560" lift, 415 lbs. at .630" lift.

#### .640" Lift Triple Valve Spring Kit for V<sup>2</sup> and Twin Cam

Kit w/steel top collars.....90-2077

Kit w/titanium top collars .....90-2078

90-2078



#### NOTE:

High-lift cams may require the engine builder to obtain additional clearance between the piston and valves, the intake and exhaust valves and the upper spring collar and rocker cover. Clearance should also be checked between the rocker arm and valve spring collar as well as between the rocker arm and rocker cover. It is imperative that the engine builder confirm these clearances and check for spring coil bind, even when using parts specifically designed for high-performance. Most valve train failures can be traced to over-revving or failure to confirm correct clearances during assembly.



#### STEVE...

A 93" Evolution style engine is the heart of Steve's custom build. The perfect motor for an avid rider who likes to take long trips. Steve in his seventh year at S&S and works in the Remanufacturing Department.





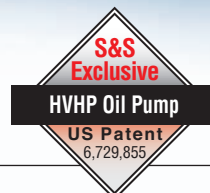
## OIL PUMP KITS

### S&S HIGH VOLUME HIGH PRESSURE BILLET OIL PUMPS

The S&S High Volume High Pressure (HVHP) billet oil pump is a new high capacity pump that was designed for the S&S Super Sidewinder™ Plus Engines. The SSW+ engines feature piston cooling jets that spray oil on the underside of the pistons. In order to supply enough oil for the cooling jets in addition to the oil requirements of the rest of the engine, a new pump was needed. Although the HVHP oil pumps are very similar in appearance to the standard S&S billet pumps, there are several important differences. S&S High Volume High Pressure oil pumps are recommended for any engine with 1991-'99 style crankcases.

#### SPECIAL DESIGN FEATURES:

- ◆ A new tooth profile with fewer, but larger teeth, provides increased oil volume for both supply and return sides of the pump.
- ◆ Supply gears are 9% wider than stock or standard S&S oil pumps to give the HVHP pump even more oil capacity.
- ◆ Return gears are 28% wider than stock or standard S&S pumps to insure that the additional volume of oil supplied to the engine is scavenged and returned to the oil tank, preventing oil carry over from the crankcase breather.
- ◆ In spite of wider supply and return gears, the HVHP pump is no thicker than stock and uses the stock oil pump driveshaft.
- ◆ The HVHP oil pump is available for 1984-'91 and 1992-'99 style crankcases. Although the 1984-'91 version will fit on late Shovel cases. We do not recommend the HVHP for this application as it may over oil the top end.
- ◆ S&S HVHP oil pump covers for 1992-'99 are available in two versions. The universal cover has a number of oil feed and return options allowing maximum flexibility for customized installations. The standard style covers have feed and return holes in the stock 1992-'99 locations. This works well for installations in stock 1992-'99 chassis.
- ◆ S&S HVHP oil pumps for 1984-'91 are available with the universal cover only.



### HVHP OIL PUMP KITS

Oil pump only kit includes supply gears, return gears, driveshaft, driveshaft keys, driveshaft snap rings, check ball, check ball spring, pressure valve, pressure valve spring, cover screws with o-rings, miscellaneous hose fittings, plugs, screws, paper gaskets, and mounting hardware.

Pump kits with gears include everything in the pump only kit, with the addition of oil pump driveshaft gear, oil pump pinion shaft gear, and an S&S steel breather gear and shim kit.



The new gear tooth profile and the extra gear width of the HVHP oil pump work together to maintain higher oil pressure, and to scavenge additional oil from the crankcase.

#### S&S HIGH PRESSURE HIGH VOLUME OIL PUMP KITS

Year Group	Cover Type	Pump Kit Only	Pump Kit with Gears
1984-'91 Style	Oil Pump Kit with Universal Cover	31-6214	31-6307
	Oil Pump Kit with Standard Cover	31-6208	31-6302
1992-'99 Style	Oil Pump Kit with Universal Cover	31-6209	31-6298
	Oil Pump Kit with Standard Cover		





## OIL PUMP KITS

### S&S STANDARD BILLET OIL PUMPS

S&S oil pumps are CNC machined from solid aluminum billets. This material has exceptional strength and is entirely free of voids or defects. The result is a superior quality pump that looks as good as it performs. The end product is a series of oil pump kits which provides 1936-'99 Big Twin owners with state of the art technology.

Intended as a direct replacement oil pump assembly, the S&S pump incorporates some unique S&S design features along with all of the improvements made over the years that resulted in the 1981 and later stock H-D pump. To compliment the S&S pump we have engineered a series of oil pump drive and breather gears which enables the owner/builder to realize the full potential from the S&S design. These parts are available in convenient kits which make it easy to order everything you need at one time.

S&S oil pump kits are available for three basic year groups, 1936-'72, 1973-'91 and 1992-'99. Installations on engines from 1936-'69 can be a simple bolt on, or the oiling system can be updated with simple drilling steps with the S&S drilling fixture. Installations on 1981-up engines are strictly bolt on and require no crankcase modifications. Engines from 1970-'80 require a simple drilling step and engines from 1970-'72 require an additional plugging step: both steps can be performed while the engine is in the chassis. (See NOTES.) Easy to follow installation instructions are provided with every kit.

Parts designed to fit as direct replacements are listed with the H-D part number they replace. If no H-D part number is given, then the S&S part fits only the parts listed in the fitment section of the description.

#### NOTE: CHROME PLATING THE PUMP

Everyone is concerned about how their motorcycle looks. S&S is no different. If we thought that chrome plating the oil pump was a good idea, we would have done it. The truth is, it is extremely difficult to chrome plate an oil pump without getting chrome in the passageways, cavities or on the machined surfaces where the gears, check ball, and pressure valve operates. Chrome in these areas as well as on the gasket surfaces impairs the pump's performance by altering the operating tolerances machined into the parts. In addition particles of chrome may break loose causing damage to the pump and the engine. Because of this, S&S does not recommend chrome plating the pump body or cover. S&S voids its warranty if these parts are chrome plated.



Oil pump kits with gears are offered primarily for "scratch built" applications where the builder needs all these parts.

#### SPECIAL DESIGN FEATURES:

- ◆ All pumps use the same style oil supply and return gears as the stock H-D aluminum pump for maximum oil volume and scavenging.
- ◆ All pumps are machined with an oil pressure relief bleed off passageway to the cavity above the oil pressure relief valve. This relieves pressure build up on top of the valve to maintain consistent oil pressure from the time the engine is started to the time it's shut off.
- ◆ The oil pressure bypass route on all pumps allows excess oil not used by the engine to return to the supply side of the pump thereby eliminating a needless scavenging and filtering step.
- ◆ S&S billet oil pump covers are available in two versions for both early (1936-'91) and late (1992-'99) styles. The standard cover allows total flexibility for oil system configuration with a number of oil feed and return options. The custom application covers are intended for custom motorcycles where a clean, simple appearance with a minimum of oil lines is desired. Custom application covers have one feed and one return hole in the bottom of the cover only. Complete oil pump kits are available with standard and custom covers .

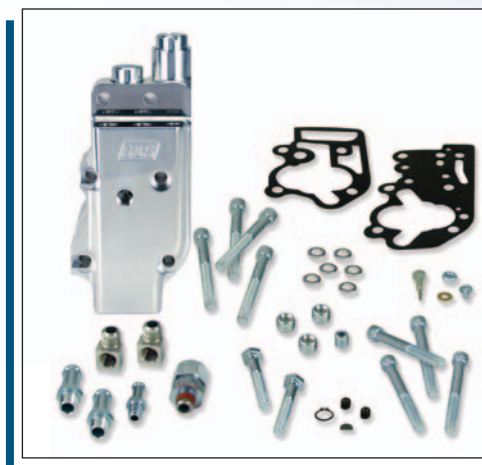
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S&S Standard Billet Oil Pumps

## S&S STANDARD BILLET OIL PUMPS

Oil pump "only" kits include supply gears, return gears, drive shaft, driveshaft keys, driveshaft snap rings, check ball, check ball spring, pressure valve, pressure valve spring, cover screws with o-rings, miscellaneous hose fittings, plugs, screws, paper gaskets, and mounting hardware.

Oil pump kits "with gears" which include a complete oil pump assembly, driveshaft and pinion shaft drive gears, breather gear, and shim kit are offered primarily for "scratch built" applications where the builder is usually starting out with aftermarket crankcases and needs all of these parts. These kits may also be applied to older engines where a complete overhaul requiring all new parts is to be performed.



OIL PUMP KITS FOR 1936-'99 BIG TWINS				
Year Crankcases	Oil Pump Assembly Only	Oil Pump Assembly with Drive Gear, Breather Gear, & Shim Kit	Oil Pump with Custom Cover without Gears	Oil Pump with Custom Cover with Gears
1984-'91	31-6203§	31-6295	31-6204	31-6240
1992-'99	31-6206	31-6296	31-6207	31-6247
1992-'99	31-6205§			

§ Universal cover with top and bottom feeds. (Supplied with all S&S V<sup>2</sup> Long Blocks.)

Typical "pump only" oil pump kit contains all parts needed for oil pump replacement.

## OIL HOLE IDENTIFICATION FOR S&S BILLET OIL PUMPS

### UNIVERSAL



### CUSTOM



### UNIVERSAL



### STANDARD



### CUSTOM



1. Top oil return hole
2. Top oil supply hole
3. Oil pressure switch or gauge hole

4. Lower oil supply hole
5. Lower oil return hole

6. Middle oil supply hole
7. Front chain oiler hole





## CYLINDER HEADS

## S&amp;S SUPER STOCK™ CYLINDER HEADS

Over the last ten years, S&S Cycle has become the leading aftermarket manufacturer of high performance cylinder heads for Harley-Davidson® and other American V-Twin motorcycles. Old timers will remember that when the S&S Evolution style heads became available, they were the final piece that allowed S&S to offer a relatively complete engine assembly. Time marches on, and today we see S&S engines powering the majority of the custom V-Twins being built today. That's because of reliability and power. S&S quality make our engines reliable, but it's our cylinder heads that make the power. It's pretty fundamental, more air in, more power out!



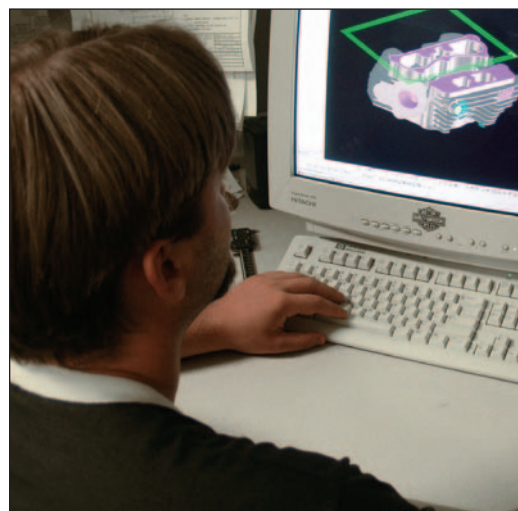
S&S Super Stock Cylinder Heads 90-1004  
Order gaskets, pistons and manifold separately.

## PROVEN PERFORMANCE – S&amp;S TESTING

The S&S company motto is "Proven Performance", and it is not just something we say. It's what we do. S&S cylinder heads have been subjected to a comprehensive testing program to insure that the performance will be there every time you twist the throttle. We've proved it! Flow testing, dyno testing, many thousands of simulated miles on our engine durability stand, and of course many more thousands of miles of real world road miles and countless passes at the race track have proven that S&S cylinder heads do perform.

## PERFORMANCE BY DESIGN

S&S cylinder heads are the result of years of design and research work. Using the latest in computer aided design techniques, all S&S parts, are designed and "built" first as 3-D models on the computer. Using our laser rapid prototyping capability, dimensionally correct parts can be produced in plastic from the 3-D model. This allows S&S engineers to solve the majority of dimensional problems before we are committed to tooling and hard parts. By using these cutting edge design methods, we fast-forward the development of our cylinder heads and are way ahead of the game when it comes time for real world testing. We already know how a cylinder head will flow and what the chamber volume will be before we make the real parts in metal.





### EVOLUTION STYLE CYLINDER HEADS FOR BIG TWINS

The first cylinder heads S&S introduced in 1994 were for Evolution 3½" and 3⅝" bore Big Twins and Sportsters. Then in 1998, S&S introduced the heads for 4" bore Big Twin and Sportster style engines. Both of these types of cylinder heads are available on complete S&S engines and individually for replacement and custom applications.

#### FEATURES:

- ◆ 2.000" intake valves and 1.605" exhaust valves.
- ◆ Special "cast to shape" intake ports with a special directional fin for improved air flow.
- ◆ Precision CNC machined from heat treated aircraft quality aluminum castings.
- ◆ Complete assembled heads contain premium valves and S&S .640" lift valve springs.
- ◆ Available as "bare" sets, fully machined, but without valves or springs.
- ◆ Available in natural aluminum, black powdercoat, and polished (specific models only) finish.

### S&S CYLINDER HEADS FOR 3½" & 3⅝" BORE ENGINES

S&S heads for stock and 3⅝" bore engines were originally designed for engines using stock crankcases and in some cases, stock cylinders. Although these heads are machined with the stock Evolution cylinder stud pattern, and may be used on stock crankcases, special pistons are required with a "pop up" dome shape that matches the contour of the S&S combustion chamber.



Super Stock™ cylinder head kit shown in optional black finish. Specify finish when ordering. 90-1802

#### WHY SPECIAL PISTONS?

Even though special pistons add to the expense and effort required to install these heads, there are several good reasons why we designed these cylinder heads to use special pistons. A larger, more open combustion chamber presents less resistance to air flow around the valves. However, in smaller displacement engines like 1200cc Sportsters, 80" Big Twins, or even a 96" S&S engine, a larger chamber will produce a very low compression ratio with a stock style flat topped piston. We wanted the improved flow of a larger chamber, but we also wanted compression ratios slightly higher than stock. The solution, of course, was to use a larger chamber, for the flow, with a domed piston, to increase compression. We then went a step further and designed a specially shaped combustion chamber and a piston dome, shaped to match the contours of the chamber. Due to the increased "squish" area of this design, the interaction between the cylinder head and piston dome at TDC, sets up a controlled turbulence in the combustions chamber. That turbulence improves flame travel for a more efficient burn and reduced detonation. Pistons are available to achieve various compression ratios.



## CYLINDER HEADS

### ORDERING NOTES:



Your S&S dealer can help you put the correct package together for your engine. Following these simple steps will make it easy, and ensure that you have everything you need.

1. Select the cylinder head kit that is correct for your application. (See chart below.)
2. Select a cylinder head gasket installation kit for the bore size of your engine.
3. Select a manifold for the cylinder length of your engine and carburetor you intend to use. See your S&S dealer for more information.
4. Select a set of pistons for your bore size, engine displacement, and desired compression ratio. Your S&S dealer can help you select the correct piston for your application.

## STEP 1 CYLINDER HEAD KITS

Select a cylinder head kit for your engine style and bore size.

ASSEMBLED HEADS FOR 3½" AND 3⅝" BORE EVOLUTION STYLE ENGINES									
Bolt Pattern/Bore	Natural			Black			Polished		
	Set	Front	Rear	Set	Front	Rear	Set	Front	Rear
V <sup>2</sup> BT 1984-'99	90-1004	90-1004F	90-1004R	90-1504	90-1504F	90-1504R	90-1091	90-1091F	90-1091R

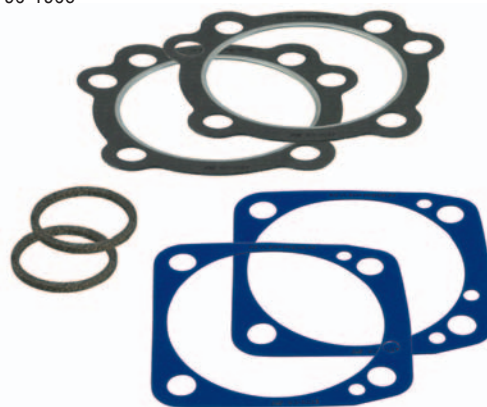
## STEP 2

### GASKET KITS FOR S&S EVOLUTION STYLE CYLINDER HEADS

S&S has convenient cylinder head installation gasket kits that contain high quality S&S head and base gaskets as well as gaskets for the exhaust pipes. Whether your engine is stock 3½" bore or if it has a 3⅝" big bore kit the correct gaskets are available. See your S&S dealer for full details.

GASKET KITS FOR S&S EVOLUTION STYLE CYLINDER HEADS	
Engine and Bore Size	Part Number
3½" Bore V <sup>2</sup> BT	90-1905
3⅝" Bore V <sup>2</sup> BT	90-1906

90-1906



Continued...Ordering Evolution Style Cylinder Heads for Big Twins

## ORDERING NOTES



Your S&S dealer can help you put the correct package together for your engine. Following these simple steps will make it easy, and ensure that you have everything you need.

1. Select the cylinder head kit that is correct for your application. (See chart on facing page)
2. Select a cylinder head gasket installation kit for the bore size of your engine.
3. Select a manifold for the cylinder length of your engine and carburetor you intend to use. See your S&S dealer for more information.
4. Select a set of pistons for your bore size, engine displacement, and desired compression ratio. Your S&S dealer can help you select the correct piston for your application.



## STEP 3

### MANIFOLDS FOR S&S EVOLUTION STYLE CYLINDER HEADS

Select the correct S&S manifold for your engine. Your S&S dealer can help you select a manifold that is the correct length for your engine and the correct size for the carburetor you intend to use. S&S offers manifolds for S&S Super E, Super G and Super D carburetors, as well as the more popular CV carbs.

## STEP 4

### PISTONS FOR S&S 3 $\frac{1}{2}$ " AND 3 $\frac{5}{8}$ " BORE EVOLUTION STYLE CYLINDER HEADS

Select the correct piston for our application. Your S&S dealer can help you select the correct piston for your engine, whether it is a stock 80" or if the displacement has been increased with a stroker kit or a 3 $\frac{3}{8}$ " big bore kit.

#### NOTE:

S&S Super Stock™ Evolution style cylinder heads must be used with S&S Super Stock™ pistons. Use with stock flat topped pistons will result in very low compression and poor performance.





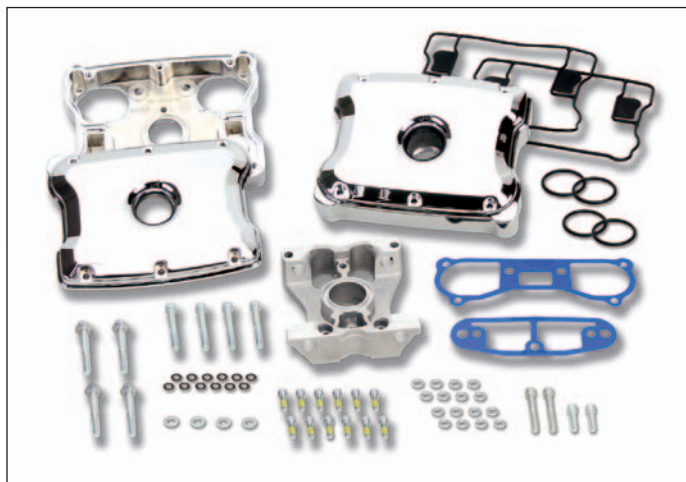


## ROCKER COVERS

### S&S ROCKER COVERS FOR 1984-'99 V<sup>2</sup> STYLE BIG TWINS

S&S manufactures two types of rocker covers for V<sup>2</sup> style engines, billet and die-cast. Billet covers are manufactured from aluminum billet using computer – controlled machining centers. Cast covers are also made of aluminum but using the more economical die casting process. All S&S rocker covers include formed Viton® gaskets and o-rings for leak-free operation; our proven two-piece design makes for a simple installation.

Which is better – billet or die-cast? Both work equally well for most applications. The billet covers will allow the use of larger diameter valve springs and valves with extra long stems without additional clearancing. However, in the vast majority of street applications using S&S Super Stock™ or H-D cylinder heads, either style rocker covers can be used according to the builder's preference and budget.



S&S die cast rocker covers offer an attractive alternative to billet covers at a much lower price.

#### NOTE:

In spite of the similarities between different S&S rocker covers, not all parts are interchangeable. See Replacement Rocker Cover Parts for correct part numbers.

#### SPECIAL DESIGN FEATURES:

- ◆ S&S rocker covers fit all engines that accept stock H-D V<sup>2</sup> Big Twin rocker covers - regardless of year and whether the engine vents through the crankcase or cylinder heads. OEM-style "umbrella" fittings are included with billet rocker boxes for 1993-'99 Big Twin engines with cylinder head venting. Cast rocker boxes use an exclusive one way valve which is built into the rocker cover gasket to control oil carry over in "head breathing" engines.
- ◆ S&S cast rocker covers and billet rocker covers for V<sup>2</sup> style engines include all parts required for installation.
- ◆ S&S rocker covers are available in three finishes: show-quality chrome, polished, or raw machined. Raw machined is ideal for powdercoating and other custom appearance treatments.
- ◆ Installation on stock and most comparably sized engines can be performed without removing the engine from the frame. Extremely tall engines such as the 4¾" stroke, 98" and 5" stroke, 103" may require removal from the frame for rocker cover installation.



ROCKER COVERS

Continued...  
S&S Rocker Covers for 1984-'99 V<sup>2</sup> Style Big Twins

S&S V<sup>2</sup> ROCKER COVERS AND RELATED PARTS

BILLET ROCKER COVERS,  
1984-'99 V<sup>2</sup> BIG TWINS

Chrome .....	90-4050
Polished .....	90-4080
Raw, Machined .....	90-4055
Gasket Kit .....	90-4049

DIE-CAST ROCKER COVERS,  
1984-'99 V<sup>2</sup> BIG TWINS

Chrome .....	90-4095
Polished .....	90-4090
Raw, Cast .....	90-4083
Gasket Kit .....	90-4091



S&S billet rocker covers are the ultimate in quality. Strength and beauty are combined in our finest Evolution style rocker covers.

NOTE:

In most instances, only minor clearancing is required to use S&S rocker covers with valve springs larger than 1.660" O.D. Kits include front and rear cover assemblies with base and top cover, rocker shaft supports, gaskets and o-rings, and instructions.

NOTE:

The performance-oriented design of the billet rocker boxes permits valve lifts up to .710" with stock H-D or S&S Super Stock™ heads, and up to .810" with S&S Special Application heads using stock H-D or S&S roller rocker arms. Cast rocker boxes may require some minor clearancing, and it is recommended that they be ordered either polished or raw machined, so that clearancing may be done without disturbing chrome plated surfaces.

S&S billet rocker covers accept valve springs up to 1.660" O.D. without modification. Cast rocker boxes may require minor clearancing. Cylinder heads must be set up correctly for high-lift cams, and it remains the builder's responsibility to confirm all clearances.



S&S ROCKER WRENCH SET

The S&S rocker wrench set 53-0040 speeds installation and is recommended for professional use. Installation can also be accomplished with shortened allen wrenches.



## ROCKER ARMS & HEAD BOLT COVERS

### S&S FORGED ROCKER ARMS AND ROCKER SHAFTS 1984-PRESENT V<sup>2</sup> BIG TWINS

Our forged steel roller rocker arms were designed for superior strength and to eliminate the failure-prone stress areas found in some other rockers. S&S roller rockers are forged from 4140 steel, heat-treated, and then shot-peened for additional strength and protection from fatigue. Our rockers also utilize 3/4" long bronze bushings, compared to the more common 1/2" long bushings or needle bearings, and feature a modified lubrication system with unrestricted roller oiling.

The end result is what we believe to be the finest rocker arm available anywhere, for any price.



90-4065

#### ROLLER ROCKER ARM SET

Includes: 2 each front and rear rocker arms. ....90-4065

#### Individual:

Front exhaust or rear intake.....90-4065F

Rear exhaust or front intake .....90-4065R

#### REBUILD KITS FOR S&S ROCKER ARMS

Current S&S forged rocker arms.....90-4104

#### BUSHINGS

Current S&S forged rocker arms, .750" long.....90-4014

#### ROCKER ARM SHAFTS

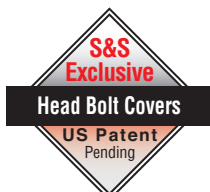
Each (HD#17611-83) .....90-4006

Set - Includes 4 each 90-4006 .....90-4036

### NEW! S&S CHROME HEAD BOLT COVERS!

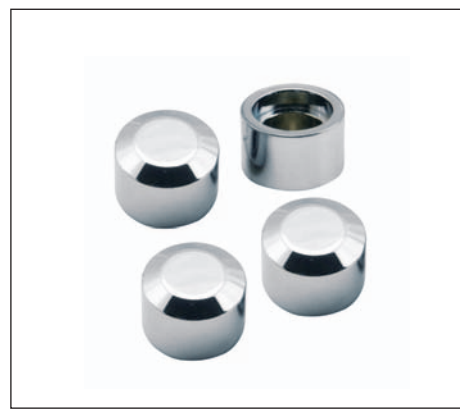
Dress up your engine with these magnetic chrome head bolt covers. Easy installation, no tools, no messy adhesives. A powerful magnet holds cover in place, yet allows easy removal. Chrome plated steel looks great on any engine, but is a must for polished engines. For S&S head bolts only.

Sold in a set of 4.

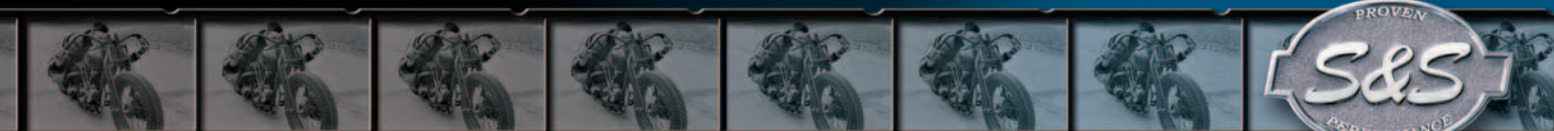


#### CHROME HEAD BOLT COVER SET

.....50-0333







## ROCKER ARMS & SHAFTS

### INTRODUCING... S&S STANDARD FORGED ROCKER ARMS!

If are looking for something better than stock Evolution style rocker arms, but you're application does not warrant the expense of roller rockers, this is it! S&S now offers an economical solution for stock rebuilds, and mild performance upgrades. S&S standard rocker arms are forged from 4140 steel for greater strength than stock or cast steel rocker arms. In addition they feature the same .750" long rocker shaft bushings as our S&S roller rockers do. The longer bushing provides 50% more load bearing area than the .500" long bushings used in stock and other aftermarket rocker arms. The valve contact tips are induction hardened for extended durability. Thousands of hours of engine testing have proved them to be superior to any non-roller rocker arm on the market. Recommended for cams of .585" lift or less.



90-4119

#### S&S STANDARD ROCKER ARMS FOR EVOLUTION STYLE ENGINES

Set - Includes 2 each front and rear rocker arms .....**90-4119**

##### Individual:

Front exhaust or rear intake .....**90-4119F**

Rear exhaust or front intake .....**90-4119R**

#### ROCKER ARM SHAFTS

Each (HD#17611-83).....**90-4006**

Set - Includes 4 each 90-4006.....**90-4036**

#### NOTES:

- ◆  $\frac{3}{4}$ " long bushings provide 50% more bushing support area than  $\frac{1}{2}$ " long bushings. They eliminate the risk of engine damage associated with failed needle bearings.
- ◆ Adjustable pushrods must be used with S&S roller rocker arms to obtain proper valve clearance.
- ◆ New rocker arm shafts are recommended for maximum performance and rocker life.



#### ROCKER ARM SHAFTS

Each (HD#17611-83) .....**90-4006**

Set - Includes 4 each 90-4006 .....**90-4036**



## COMPRESSION RELEASES

### ELECTRIC OR MANUAL COMPRESSION RELEASES FOR S&S SUPER SIDEWINDER™ PLUS, AND EVOLUTION STYLE CYLINDER HEADS

#### GET SOMETHING STARTED

S&S has always been a leader in V-Twin high performance. We've always offered parts and kits to build big inch, high compression engines. Now we are offering an effective, dependable compression release to make those big motors more dependable for daily use on the street. Large displacement, high compression engines can sometimes be difficult to start. Better batteries, and high torque starters have helped, but starting big inch motors can still be troublesome.

The time has come for a reliable solution that actually eliminates high compression starting problems. The S&S compression release is that solution.

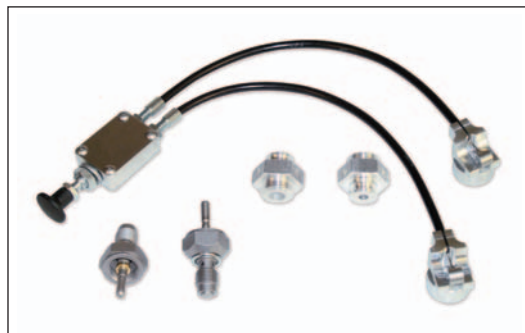


Electric Compression Release Kit

90-4915

#### HOW DOES IT WORK?

S&S compression release kit is designed to be used in S&S Super Sidewinder™ Plus, Twin Cam, and 4" bore Big Twin Evolution style cylinder heads. The compression release consists of a small valve that opens during starting and allows a portion of the cylinder pressure to escape into the exhaust port of the cylinder head. The reduced cylinder pressure makes it easier for the starter to turn the engine. When the engine starts, the valve closes and the engine runs normally, with full compression. With the S&S compression release kit, a stock starter is able to start almost any engine.



Manual Compression Release Kit

90-4925



#### ELECTRIC OR MANUAL COMPRESSION RELEASES AVAILABLE

S&S electric compression releases are solenoid operated. They automatically open when the starter button is depressed, and automatically close when the starter button is released. Very convenient and simple to use. When installed on SSW+ or Twin Cam engines, S&S electric compression releases require the use of S&S die-cast Twin Cam style rocker covers or similar covers with a central hole or "chimney". The "chimneys" in the rocker covers are required to provide clearance for the solenoids that operate the compression releases. Electric compression releases are compatible with stock or S&S Evolution style rocker boxes.

S&S manual compression releases are activated by a cable similar to a choke control. Before starting, the handle is pulled, which opens the compression releases. When the engine fires, the increased cylinder pressure automatically closes the compression releases. The S&S manual compression releases can be used with any style rocker cover. A special billet accessory cable knob is available. (See photo on following page.)

#### S&S COMPRESSION RELEASE KITS

S&S Electric Compression Release Kit.....**90-4915**

S&S Manual Compression Release Kit..... **90-4925**

EMAIL US AT [SSCUST@SSCYCLE.COM](mailto:sscust@sscycle.com)

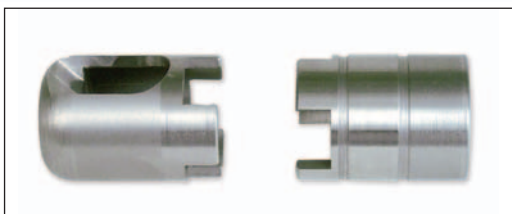
## COMPRESSION RELEASES

## ELECTRIC OR MANUAL COMPRESSION RELEASES

### FOR S&S SUPER SIDEWINDER™ PLUS, AND EVOLUTION STYLE CYLINDER HEADS

**NOTES:**

Rocker covers must be removed when installing S&S compression releases. If lack of frame clearance prevents removal of rocker covers, engine must be removed from frame for compression release installation.



### S&S TWO-PIECE SOCKET KIT

Special S&S two-piece compression release socket kit 53-0045 allows in-frame installation of S&S compression releases and protects wiring from damage during installation.

..... 53-0045

### S&S COMPRESSION RELEASE HOLE PLUG.....90-4916



### S&S CABLE KNOB

Special billet accessory knob for manual compression release.

..... 50-8701

**NOTES:**

- ◆ All S&S Super Stock™ 4" bore Evolution style heads and S&S 4½" bore Super Sidewinder™ Plus heads are machined for the S&S compression releases. Compression release machining is not available for S&S Evolution Big Twin style heads for stock or 3½" bore.
- ◆ In most cases, S&S compression releases can be installed while the engine is in the frame with the special S&S two-piece socket kit #53-0045. (See photo above.)
- ◆ If cylinder heads are machined for S&S compression releases, but compression releases are not used, special plug 90-4916 (two required) must be installed to seal the machined hole.
- ◆ Stock cylinder heads cannot be machined for S&S compression releases because there is not enough material in critical areas.





## SPEEDOMETER CALIBRATOR

### S&S SPEEDOMETER CALIBRATOR

The electronic speedometer calibrator corrects the reading of stock H-D electronic speedometers when using oversized rear tires, or when other drive train modifications have been done that effect final drive ratio.

The accuracy of electronic speedometers provided on late Harley-Davidsons can be greatly affected by the installation oversized tires, non-stock wheel or transmission sprockets, and by the replacement of certain transmission gears. These modifications are often made for appearance, to improve acceleration, decrease engine RPM at highway speeds, or to reduce mechanical noise.



### S&S ELECTRONIC SPEEDOMETER CALIBRATOR

.....55-1007

#### NOTES:

- ◆ Calculating the difference between actual and indicated speeds/mileage requires only that the rider compare odometer readings to a known distance. Highway mile markers are usually accurate enough to use for calibration, although the test should be repeated between several different markers for confirmation. The S&S Speedometer Calibrator can then be adjusted to increase or decrease the speed and mileage indicated by the speedometer. In most cases it is possible to achieve accuracy within .5%.
- ◆ The S&S speedometer calibrator will not work with Rev Tech transmissions.

### THE S&S SPEEDOMETER CALIBRATOR...

allows the rider to correct H-D electronic speedometers easily and without special tools or expensive test equipment. Installation is simply a matter of unplugging the connection between the transmission sensor and speedometer and plugging the two connectors into the S&S Calibrator. The Calibrator can then be used to correct the difference between actual and indicated speeds and mileage.

#### FEATURES:

- ◆ Fits all Harley-Davidson Big Twins and Sportsters equipped with O.E.M. electronic speedometer.
- ◆ Allows precise adjustments in 1% increments between -29% and +69%.
- ◆ Compact size (2.25" x 1.50" x 1.10") permits a neat, simple installation.
- ◆ Sensitive components are sealed in epoxy for protection from vibration and weather.



## WARRANTY

### LIMITED WARRANTY STANDARD PARTS

#### WHO IS COVERED BY THIS WARRANTY?

This warranty covers only the original Consumer Purchaser of these parts and is not transferable.

#### WHAT DOES THIS WARRANTY COVER?

S&S Cycle, Incorporated (the "Company") warrants these parts to be free from defects in material and workmanship. If the parts become defective during the warranty coverage period, the Company will, at its option, repair or replace any, or all, defective parts. Repair or replacement of defective parts is the sole and exclusive remedy.

#### HOW LONG IS THE WARRANTY COVERAGE?

The warranty coverage remains in force for a period of twelve (12) months from the date that the original Consumer Purchaser buys the parts. However, warranty coverage will automatically terminate if the original Purchaser sells or otherwise transfers all or any portion of the purchased parts.

#### WHAT IS NOT COVERED BY THIS WARRANTY?

The Company shall not pay or be responsible for the cost of shipping the defective parts to the Company for service under this warranty, nor will the Company pay for the cost of labor to remove and/or replace the defective parts.

Moreover, the Company shall have no obligation under this warranty in the event that the parts become defective in whole or in part as a result of improper assembly, installation, break-in, maintenance, or use, or any other misuse or mistreatment of the parts, including, without limitation, operation of the parts with fuels, oils or lubricants not conforming to specifications published by the Company or continued operation of the parts after a defect or malfunction occurs or is identified or suspected.

The Company shall have no obligation under this warranty for defects in parts with a powdercoat finish, when that option is selected, if the defects are caused by, but not limited to, negligence of parties other than the Company; an accident; ordinary wear and tear; assembly or disassembly; power washing; natural occurrences like stone chips; bead blasting; improper maintenance including the use of any harsh cleaning agent, chemical or solvent; and salt or other substances used on streets and highways for maintenance and safety.

The Company provides touch-up paint with powdercoated parts. It is the customer's responsibility to repair minor finish damage to prevent or inhibit further deterioration.

It is the responsibility of the original Consumer Purchaser to cease operation as soon as a defect or malfunction is identified or suspected. The failure to cease operation once a defect or malfunction exists can cause substantial damage to the Company's parts that could otherwise be avoided.

In addition, the Company shall have no obligation under this warranty for parts defects caused by alteration including, but not limited to, polishing; powdercoating; painting; removing or reconfiguring any components; modification, repair, or unauthorized service.

The Company shall have no obligation under this warranty if the parts are used in racing or similar competitive activities. The Company shall have no obligation under this warranty when a competition application, including but not limited to a turbocharger, supercharger or nitrous oxide, is used with the Engine. Further, the Company shall have no obligation under this warranty for any parts that are included in a Competition Package Option offered by the Company since the Package is for use in racing and similar competitive activities.

THE COMPANY SHALL NOT BE LIABLE FOR AND DISCLAIMS ALL CONSEQUENTIAL, INCIDENTAL, PUNITIVE OR SPECIAL DAMAGES ARISING OUT OF THE USE OF, OR INABILITY TO USE, THESE PARTS.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.



## WARRANTY

### LIMITED WARRANTY COMPLETE FACTORY-ASSEMBLED ENGINES

#### WHO IS COVERED BY THIS WARRANTY?

This warranty covers only the original Consumer Purchaser of the Complete Factory-Assembled Super Stock Engine (the "Engine") and is not transferable.

#### WHAT DOES THIS WARRANTY COVER?

S&S Cycle, Incorporated (the "Company") warrants this Engine to be free from defects in material and workmanship. If the Engine or any part thereof becomes defective during the warranty coverage period, the Company will, at its option, repair or replace the Engine or any, or all, defective parts. Repair or replacement of defective parts is the sole and exclusive remedy.

#### HOW LONG IS THE WARRANTY COVERAGE?

The warranty coverage remains in force for a period of twelve (12) months from the date that the original Consumer Purchaser buys the Engine. Engines specifically designed for and sold with the S&S Intelligent Spark Technology ignition system are covered by a special twenty four (24) month warranty. However, warranty coverage will automatically terminate if the original Consumer Purchaser sells or otherwise transfers all or any portion of the Engine.

#### WHAT IS NOT COVERED BY THIS WARRANTY?

The Company shall not pay or be responsible for the cost of shipping the defective Engine or part to the Company for service under this warranty, nor will the Company pay for the cost of labor to remove and/or replace the defective Engine or part.

Moreover, the Company shall have no obligation under this warranty in the event that the Engine becomes defective in whole or in part as a result of improper installation, break-in, maintenance, or use, or any other misuse or mistreatment of the Engine, including, without limitation, operation of the Engine with fuels, oils or lubricants not conforming to specifications published by the Company for use in or with the Engine or continued operation of the Engine after a defect or malfunction occurs or is identified or suspected.

The Company shall have no obligation under this warranty for defects in the Engine's black powdercoat finish, when that option is selected, if the defects are caused by, but not limited to, negligence of parties other than Company; an accident; ordinary wear and tear; assembly or disassembly; power washing; natural occurrences like stone chips; bead blasting; improper maintenance including the use of any harsh cleaning agent, chemical or solvent; and salt or other substances used on streets and highways for maintenance and safety. This warranty does not cover consumables, that is, those parts consumed in the normal operation of the Engine.

The Company provides touch-up paint with each powdercoated Engine. It is the customer's responsibility to repair minor finish damage to prevent or inhibit further deterioration.

It is the responsibility of the original Consumer Purchaser to cease operation as soon as a defect or malfunction is identified or suspected. The failure to cease operation once a defect or malfunction exists can cause substantial damage to the Engine that could otherwise be avoided.

In addition, the Company shall have no obligation under this warranty for defects in the Engine caused by alteration including, but not limited to, polishing; powdercoating; painting; removing or reconfiguring any components; modification, repair, or unauthorized service of the Engine.

The Company shall have no obligation under this warranty if the Engine is used in racing or similar competitive activities. The Company shall have no obligation under this warranty when a competition application, including but not limited to a turbocharger, supercharger or nitrous oxide, is used with the Engine. Further, the Company shall have no obligation under this warranty for any Engine that includes a Competition Package Option since the Package is for use in racing and similar competitive activities.

THE COMPANY SHALL NOT BE LIABLE FOR AND DISCLAIMS ALL CONSEQUENTIAL, INCIDENTAL, PUNITIVE OR SPECIAL DAMAGES ARISING OUT OF THE USE OF, OR INABILITY TO USE, THE ENGINE.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

#### WHAT MUST THE ORIGINAL CONSUMER PURCHASER DO TO QUALIFY FOR WARRANTY COVERAGE?

Within thirty (30) days after the date of purchase of the Engine, the original Consumer Purchaser must return a completed Owner's Registration Card along with a copy of the invoice evidencing such purchase to the Company at the following address:

#### S&S Cycle, Incorporated

Attention: Technical Services  
14025 County Highway G P.O. Box 215  
Viola, WI 54664-0215

Phone: 608-627-8324 • Fax: 608-627-0773

Email: [sstech@sscycle.com](mailto:sstech@sscycle.com)

Direct Phone: 608-627-TECH (8324)

THIS WARRANTY IS VOIDABLE AT THE COMPANY'S OPTION IF THE ORIGINAL CONSUMER PURCHASER DOES NOT RETURN TO THE COMPANY THE OWNER REGISTRATION CARD AND A COPY OF THE INVOICE WITHIN THIRTY (30) DAYS FROM THE DATE OF PURCHASE OF THE ENGINE.





## WARRANTY

### LIMITED WARRANTY UNASSEMBLED ENGINES

#### WHO IS COVERED BY THIS WARRANTY?

This warranty covers only the original Consumer Purchaser of the Unassembled Engine, the Factory-Assembled Basic Engine or the Factory-Assembled Basic Engine With Options (the "Engine") and is not transferable.

#### WHAT DOES THIS WARRANTY COVER?

S&S Cycle, Incorporated (the "Company") warrants this Engine to be free from defects in material and workmanship. If the Engine or any part thereof becomes defective during the warranty coverage period, the Company will, at its option, repair or replace the Engine or any, or all, defective parts. Repair or replacement of defective parts is the sole and exclusive remedy.

#### HOW LONG IS THE WARRANTY COVERAGE?

The warranty coverage remains in force for a period of twelve (12) months from the date that the original Consumer Purchaser buys the Engine. However, warranty coverage will automatically terminate if the original Consumer Purchaser sells or otherwise transfers all or any portion of the Engine.

#### WHAT IS NOT COVERED BY THIS WARRANTY?

The Company shall not pay or be responsible for the cost of shipping the defective Engine or part to the Company for service under this warranty, nor will the Company pay for the cost of labor to remove and/or replace the defective Engine or part.

Moreover, the Company shall have no obligation under this warranty in the event that the Engine becomes defective in whole or in part as a result of improper assembly, installation, break-in, maintenance, or use, or any other misuse or mistreatment of the Engine, including, without limitation, operation of the Engine with fuels, oils or lubricants not conforming to specifications published by the Company for use in or with the Engine or continued operation of the Engine after a defect or malfunction occurs or is identified or suspected.

The Company shall have no obligation under this warranty for defects in the Engine's black powdercoat finish, when that option is selected, if the defects are caused by, but not limited to, negligence of parties other than Company; an accident; ordinary wear and tear; assembly or disassembly; power washing; natural occurrences like stone chips; bead blasting; improper maintenance including the use of any harsh cleaning agent, chemical or solvent; and salt or other substances used on streets and highways for maintenance and safety. This warranty does not cover consumables, that is, those parts consumed in the normal operation of the Engine.

The Company provides touch-up paint with each powdercoated Engine. It is the Consumer Purchaser's responsibility to repair minor finish damage to prevent or inhibit further deterioration.

It is the responsibility of the original Consumer Purchaser to cease operation as soon as a defect or malfunction is identified or suspected. The failure to cease operation once a defect or malfunction exists can cause substantial damage to the Engine that could otherwise be avoided.

In addition, the Company shall have no obligation under this warranty for defects in the Engine caused by alteration including, but not limited to, polishing; powdercoating; painting; removing or reconfiguring any components; modification, repair, or unauthorized service of the Engine.

The Company shall have no obligation under this Warranty if the Engine is used in racing or similar competitive activities. The Company shall have no obligation under this warranty when a competition application, including but not limited to a turbocharger, supercharger or nitrous oxide, is used with the Engine. Further, the Company shall have no obligation under this warranty for any Engine that includes a Competition Package Option since the Package is for use in racing and similar competitive activities.

THE COMPANY SHALL NOT BE LIABLE FOR AND DISCLAIMS ALL CONSEQUENTIAL, INCIDENTAL, PUNITIVE OR SPECIAL DAMAGES ARISING OUT OF THE USE OF, OR INABILITY TO USE, THE ENGINE.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

#### WHAT MUST THE ORIGINAL CONSUMER PURCHASER DO TO QUALIFY FOR WARRANTY COVERAGE?

Within thirty (30) days after the date of purchase of the Engine, the original Consumer Purchaser must return a completed Owner's Registration Card along with a copy of the invoice evidencing such purchase to the Company at the following address:

#### S&S Cycle, Incorporated

Attention: Technical Services  
14025 County Highway G P.O. Box 215  
Viola, WI 54664-0215

Phone: 608-627-8324 • Fax: 608-627-0773  
Email: [sstech@sscycle.com](mailto:sstech@sscycle.com)  
Direct Phone: 608-627-TECH (8324)

THIS WARRANTY IS VOIDABLE AT THE COMPANY'S OPTION IF THE ORIGINAL CONSUMER PURCHASER DOES NOT RETURN TO THE COMPANY THE OWNER REGISTRATION CARD AND A COPY OF THE INVOICE WITHIN THIRTY (30) DAYS FROM THE DATE OF PURCHASE OF THE ENGINE.



## WARRANTY

### LIMITED WARRANTY RETURN AUTHORIZATION

#### WHAT ARE THE PROCEDURES TO OBTAIN SERVICE UNDER THIS WARRANTY?

To obtain service under this warranty, the original Consumer Purchaser should immediately contact the dealer where the Engine was purchased. The dealer will then contact the Company for a determination as to whether the defect in the Engine or part is covered by this warranty.

THE DEALER OR SERVICE PROVIDER MUST RECEIVE AUTHORIZATION FROM THE COMPANY BEFORE PROVIDING SERVICE UNDER THIS WARRANTY.

In the event that the Company determines the Engine or part must be returned to the Company for evaluation or service, the Company will provide the dealer with a Return Authorization Number to put on the shipping container for identification.

The original Consumer Purchaser or dealer must clean and properly package the Engine or part so as not to cause further damage and return the Engine or part, shipping costs prepaid, to the Company. The Return Authorization Number must be clearly visible on the outside of the shipping container. If the Engine or part must be cleaned prior to warranty inspection the cost of cleaning will be charged to the original Consumer Purchaser or dealer.

The original Consumer Purchaser or dealer must also send to the Company a detailed explanation of the relevant facts concerning the nature of the problem, the specific use of the Engine, and the circumstances giving rise to the defect or problem.

If it is not practicable to contact the dealer for warranty service, the original Consumer Purchaser may contact the Company at the following address, telephone number, fax number or e-mail address:

#### **S&S Cycle, Incorporated**

Attention: Technical Services  
14025 County Highway G P.O. Box 215  
Viola, WI 54664-0215

Phone: 608-627-8324 • Fax: 608-627-0773  
Email: [sstech@sscycle.com](mailto:sstech@sscycle.com)  
Direct Phone: 608-627-TECH (8324)

#### ARE THERE OTHER WARRANTIES?

THE WARRANTIES STATED IN THIS WARRANTY REPLACE ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ANY OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF THE COMPANY WHETHER IN CONTRACT, WARRANTY, NEGLIGENCE OR OTHERWISE, TO THE EXTENT NOT PROHIBITED BY LAW.

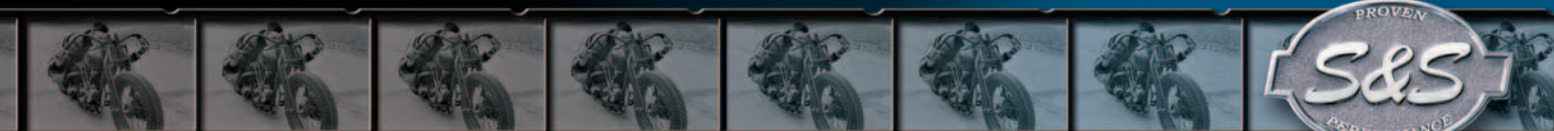
Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

#### HOW DO STATE LAWS RELATE TO THIS WARRANTY?

This warranty gives you specific legal rights. You may also have other rights that vary from state to state.







## BE ON THE LOOKOUT FOR S&S

### WE'VE JUST UPDATED OUR WEBSITE!

If you haven't visited our website recently, you're in for a pleasant surprise. Direct your web browser to [www.sscycle.com](http://www.sscycle.com) and get ready for an all new S&S web experience. The difference will be apparent immediately with an all new look, but the further you dig the more you'll find. There are little differences like the improved dealer locator. You can search for a dealer in your area or find an S&S VFI tuning center, and we will even provide you with a map showing you how to get there. But wait there's more!

The new searchable product catalog makes finding what you want quick and easy. Up to the minute online race results, an events calendar, events photos and videos, customer bike photos, tech tips, and forums are just some of the features that you'll find. But that's not all!

New to the S&S Website is an E-commerce area for apparel items. Check out our new apparel line! But now, if something catches your eye, you can order it online. Keep in mind that while we sell apparel items direct to consumers, engine parts are still available exclusively through S&S Dealers. Anybody can make a T-shirt work, but installing and using high performance equipment successfully requires the qualified, personal involvement and support of our dealer network.

Speaking of dealers, they have their own area on our website where they can check stock, place orders, and track orders on line 24/7 365 days a year.

#### S&S TOURS...

are available Wednesday through Friday 11:00 A.M. - 3:00 P.M. Schedule a tour by calling 608-627-2080 Ext. 1363 or email [sscust@sscycle.com](mailto:sscust@sscycle.com).



### TAKIN' IT TO THE STREETS!

During 2004, the S&S semi truck display made its way to all the major rallies around the continental United States. On display were the fabulous 124 VFI Shoot out bikes. Built around the S&S 124 VFI SSW+ engine, these are some of the most beautiful custom bikes you could hope to see, but the best part about them is that they were built to ride! A successful road trip and heads-up drag racing showed that they could indeed be ridden and ridden fast. A celebratory, five bike, simultaneous burn out on the dance floor of the Broken Spoke Saloon in Sturgis wrapped up the 124 VFI Challenge, and a good time was had by all!

Keep an eye on the coming issues of Hot Bike Magazine for details of a totally new event for the 2005 riding season.

**EVENT SCHEDULE —** Watch for the S&S Semi Display at the following events:

#### Daytona Bike Week

March 5- 12, 2005

Daytona International Speedway

#### Myrtle Beach Rally

May 14-21, 2005

Broadway at the Beach, Myrtle Beach SC

#### Sturgis Motorcycle Rally

August 6-13, 2005

1535 Lazelle Street Sturgis, SD

#### Laughlin River Run

April 20-23, 2004

Riverside Hotel & Casino, Laughlin NV

#### Laconia Bike Rally

June 11-18 2005

Meredith Harley-Davidson, Meredith NH

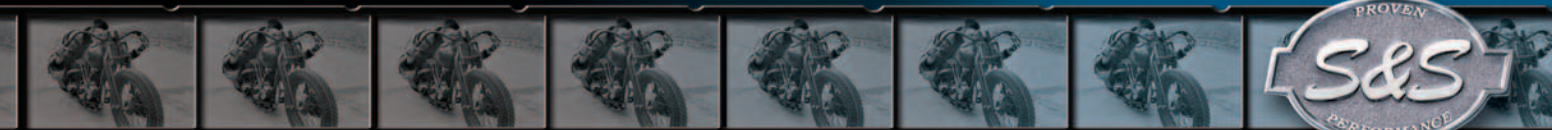




## SUGGESTED RETAIL PRICING

### SUGGESTED RETAIL PRICING IN THE CONTINENTAL UNITED STATES

<u>Part No.</u>	<u>Description</u>	<u>Suggested Retail Price</u>
11-0113	Carb kit w/flanges, Super B - 1984-up BT .....	\$425.10
11-0407	Carb kit, Super E - 1984-'92 BT .....	\$453.80
11-0419	Carb kit, Super E - 1993-'99 BT .....	\$448.65
11-0427	Carb kit, Super G - 1984-'92 BT .....	\$465.25
11-0434	Carb kit, Super G - 1993-'99 BT .....	\$460.10
11-2926	Kit, Cruise Control Brackets, 1993-'97 .....	\$56.55
11-2927	Kit, Cruise Control Brackets, 1998-2003 .....	\$52.90
11-7100	Jet, intermediate - 3 pack - all Super gas (series 94) .....	\$19.90
11-7101	Intermediate jet - 1 each: .0265, .028, .0295 - all Super gas .....	\$19.90
11-7102	Intermediate jet - 1 each: .028, .0295, .031 - all Super gas .....	\$19.90
11-7103	Intermediate jet - 1 each: .0295, .031, .032 - all Super gas .....	\$19.90
11-7104	Intermediate jet - 1 each: .031, .032, .033 - all Super gas .....	\$19.90
11-7105	Intermediate jet - 1 each: .032, .033, .036 - all Super gas .....	\$19.90
11-7106	Intermediate jet - 1 each: .033, .036, .040 - all Super gas .....	\$19.90
11-7200	Main jet - 1 each: .062, .064, .066, .068, .070, .072 .....	\$11.40
11-7201	Main jet - 1 each: .066, .068, .070, .072, .074, .076 .....	\$11.40
11-7202	Main jet - 1 each: .072, .074, .076, .078, .080, .082 .....	\$11.40
11-7203	Main jet - 1 each: .078, .080, .082, .084, .086, .088 .....	\$11.40
11-7204	Main jet - 1 each: .090, .092, .094, .096, .098 .....	\$9.50
11-7205	Main jet - 1 each: .100, .102, .104, .106, .108 .....	\$9.50
11-7270	Jet kit, low range - engines up to 93"/96" .....	\$39.80
11-7271	Jet kit, high range - engines 93"/96" & up .....	\$39.80
11-7272	Jet kit, master - all engines .....	\$68.65
16-5055	Manifold Set, 80, 89 and 96" w/stock ports, S&S VFI, V <sup>2</sup> BT .....	\$332.35
16-5062	Manifold Set, 111" w/stock ports, S&S VFI, 1984-'99 BT, 1999-2003 TC BT .....	\$332.35
16-5063	Manifold Set, 117" w/stock ports, S&S VFI, 1984-'99 BT, 1999-2003 TC BT .....	\$332.35
16-5064	Manifold Set, 124" w/stock ports, S&S VFI, 1984-'99 BT, 1999-2003 TC BT .....	\$332.35
17-0004	Cover, air cleaner, Super E & G, slotted, SSW+ .....	\$82.35
17-0045	Air cleaner kit, tall, element and spacers, .....	\$41.15
17-0055	Element, air cleaner, tall .....	\$15.40
17-0107	Air cleaner assembly - 1984-up V <sup>2</sup> w/Super A, B .....	\$130.35
17-0108	Air cleaner assembly - 1984-up V <sup>2</sup> w/stock butterfly type carb .....	\$129.15
17-0117	Air cleaner assembly - 1993-up BT (V <sup>2</sup> &TC), 1991-2003 XL- w/stock CV carb .....	\$188.45
17-0198	Air cleaner assembly - Super D .....	\$113.35
17-0385	Cover, air cleaner - Super E & G, U.S. Flag .....	\$97.80
17-0399	Air cleaner assembly, Super E, G - 1984-'92 BT, 1986-'90 XL (after 3-'94) .....	\$131.45



## SUGGESTED RETAIL PRICING

### SUGGESTED RETAIL PRICING IN THE CONTINENTAL UNITED STATES

Part No.	Description	Suggested Retail Price
17-0404	Air cleaner assembly, Super E, G - 1993-'99 V <sup>2</sup> BT (after 2-'01).....	\$148.95
17-0413	Kit, air cleaner, S&S VFI - 1995-up BT/TC.....	\$156.35
17-0413	Kit, air cleaner, S&S VFI - 1995-up BT/TC.....	\$156.35
17-0416	Air cleaner assembly, Super E, G - 2002-up SSW+.....	\$132.95
17-5051	Kit, tuned intake system, burnished, S&S VFI.....	\$429.95
17-5052	Kit, tuned intake system, black, S&S VFI.....	\$439.95
17-5053	Kit, tuned intake system, polished, S&S VFI.....	\$449.95
17-5061	Kit, throttle body/fuel rail, S&S VFI, Magneti-Marelli.....	\$829.95
17-5062	Kit, throttle body/fuel rail, S&S VFI, Delphi.....	\$789.95
31-0000	Crankcase assembly - stock bore - 1984-'91 BT.....	\$993.45
31-0001	Crankcase assembly - 3/8" bore - 1984-'91 BT.....	\$993.45
31-0002	Crankcase assembly - Special Order - 1970-'99 BT.....	\$1,070.95
31-0005	Crankcase assembly - stock bore - 1992-'99 BT.....	\$993.45
31-0031	Crankcase assembly - 3 1/16" bore - 1984-'91 BT.....	\$993.45
31-0032	Crankcase assembly - 3 1/16" bore - 1992-'99 BT.....	\$993.45
31-0052	Crankcase assembly, black - stock bore - 1984-'91 BT.....	\$1,083.45
31-0053	Crankcase assembly, black - 3/8" bore - 1984-'91 BT.....	\$1,083.45
31-0055	Crankcase assembly, black - stock bore - 1992-'99 BT.....	\$1,083.45
31-0072	Crankcase assembly - 3/8" bore - 1984-'91 BT.....	\$993.45
31-0073	Crankcase assembly - 3/8" bore - 1992-'99 BT.....	\$993.45
31-0074	Crankcase assembly, black - 3/8" bore - 1984-'91 BT.....	\$1,083.45
31-0075	Crankcase assembly, black - 3/8" bore - 1992-'99 BT.....	\$1,083.45
31-0077	Crankcase assembly - 3/8" bore - 1992-'99 BT.....	\$993.45
31-0078	Crankcase assembly, black - 3/8" bore - 1992-'99 BT.....	\$1,083.45
31-0079	Crankcase assembly, polished - 3/8" bore - 1992-'99 BT.....	\$1,433.45
31-0332	Cover, outer ignition, billet (S&S) - 1970-'99 BT.....	\$49.95
31-0335	Gearcover kit, billet - 1972-'92 BT.....	\$429.95
31-0336	Gearcover kit, billet - 1993-'99 BT.....	\$429.95
31-6203	Pump kit, oil - billet - 1970-'91 BT.....	\$269.60
31-6204	Pump kit, oil - custom billet - 1970-'91 BT.....	\$266.60
31-6205	Pump kit, oil - billet - 1984-'99 S&S BT.....	\$263.80
31-6206	Pump kit, oil - billet - 1992-'99 BT.....	\$263.25
31-6207	Pump kit, oil - custom billet - 1992-'99 BT.....	\$263.15
31-6208	Pump kit, oil - billet - 1992-'99 BT (HVHP), (universal).....	\$335.10
31-6209	Pump kit, oil - billet - 1992-'99 BT (HVHP), (standard).....	\$335.10
31-6214	Pump kit, oil - billet - 1984-'91 BT (HVHP), (universal).....	\$335.10

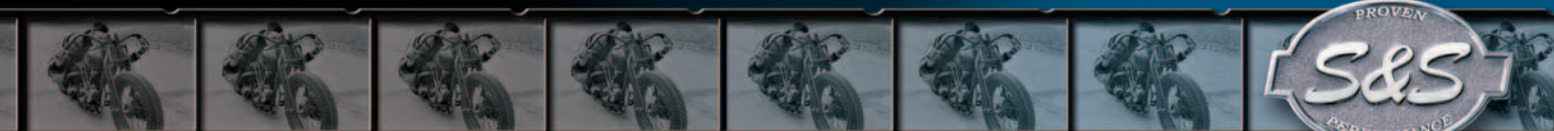


## SUGGESTED RETAIL PRICING

### SUGGESTED RETAIL PRICING IN THE CONTINENTAL UNITED STATES

<u>Part No.</u>	<u>Description</u>	<u>Suggested Retail Price</u>
31-6240	Pump kit w/gears, oil - billet custom application - 1978-'91 BT .....	\$385.70
31-6247	Pump kit w/gears, oil - custom billet - 1992-'99 BT (pre 1989 pinion shaft) .....	\$382.45
31-6295	Pump kit w/gears, oil - billet - 1978-'91 BT .....	\$388.65
31-6296	Pump kit w/gears, oil - billet - 1992-'99 BT (pre 1989 pinion shaft) .....	\$382.55
31-6298	Pump kit w/gears, oil - HVHP - 1992-'99 BT (standard) .....	\$444.90
31-6302	Pump kit w/gears, oil - HVHP - 1992-'99 BT (universal) .....	\$453.15
31-6307	Pump kit w/gears, oil - HVHP - 1984-'91 BT (universal) .....	\$453.15
31-9390	Engine, Complete, 96" S&S Evolution Style.....(Price varies with options selected).....	Call for pricing
31-9393	Engine, Complete, 113" S&S Evolution Style.....(Price varies with options selected).....	Call for pricing
31-9396	Engine, Complete, 124" S&S SSW+ Style .....(Price varies with options selected).....	Call for pricing
32-2078	Hot Setup, 89" - 4 $\frac{1}{8}$ " - 1993-'99 BT .....	\$1,524.95
32-2088	Hot Setup, 89" - 4 $\frac{1}{8}$ " - 1984-'92 BT .....	\$1,524.95
32-2290	Hot Setup, 89" - 4 $\frac{1}{8}$ " - 1995-'98 BT (EFI models) .....	\$1,189.95
32-2291	Hot Setup, 96" - 4 $\frac{1}{8}$ " - 1995-'98 BT (EFI models) .....	\$1,839.95
32-2296	Hot Set Up kit, 96" - 4 $\frac{1}{8}$ ", 1984-'92 BT .....	\$2,094.95
32-2297	Hot Set Up kit, 96" - 4 $\frac{1}{8}$ " - black, 1984-'92 BT .....	\$2,094.95
32-2489	Stroker kit, 89" - 4 $\frac{1}{8}$ ", 9.25:1CR C (92-2420) - 1984-'99 BT .....(Price varies with options selected).....	Call for pricing
33-5058	Cam, 600 - 1984-'99 BT .....	\$157.45
33-5072	Cam, 546 - 1984-'99 BT .....	\$157.45
33-5073	Cam, 520 - 1984-'99 BT .....	\$157.45
33-5075	Cam, 502 - 1984-'99 BT .....	\$157.45
33-5076	Cam, 561 - 1984-'99 BT .....	\$157.45
33-5080	Cam, 631 - 1984-'99 BT .....	\$157.45
33-5108	Cam, 640 - 1984-'99 BT .....	\$157.45
33-5109	Cam, 585 - 1984-'99 BT .....	\$157.45
33-5301	Tappet guide set - 1984-'99 BT .....	\$150.45
33-5301F	Tappet guide assembly, - front - 1984-'99 BT (HD#18542-83A) .....	\$90.25
33-5301R	Tappet guide assembly, - rear - 1984-'99 BT (HD#18540-83A) .....	\$90.25
33-5309	Tappet guide set - SA - 1984-'99 BT .....	\$150.45
33-5309F	Tappet guide assembly, - front SA - 1984-'99 BT .....	\$90.25
33-5309R	Tappet guide assembly, - rear SA - 1984-'99 BT .....	\$90.25
33-5313	Gasket set, tappet guide - 1948-up BT - 10 sets .....	\$12.40
33-5313F	Gasket, tappet guide - front - 1948-up BT (HD#18634-48C) - 10 pack .....	\$7.45
33-5313R	Gasket, tappet guide - rear - 1948-up BT (HD#18633-48D) - 10 pack .....	\$7.45
33-5322	Tappet guide set, billet - 1984-'99 SA BT .....	\$329.95
33-5322F	Tappet guide assembly, front, billet - 1984-'99 SA BT .....	\$196.50





## SUGGESTED RETAIL PRICING

### SUGGESTED RETAIL PRICING IN THE CONTINENTAL UNITED STATES

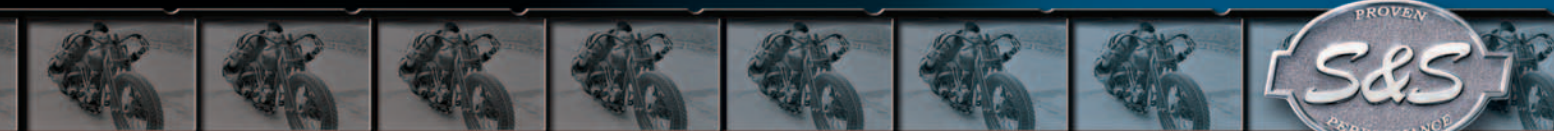
<u>Part No.</u>	<u>Description</u>	<u>Suggested Retail Price</u>
33-5322R	Tappet guide assembly, rear, billet - 1984-'99 SA BT .....	\$196.50
33-5323	Tappet guide set, billet - 1984-'99 BT .....	\$327.55
33-5323F	Tappet guide assembly, front, billet - 1984-'99 BT .....	\$196.50
33-5323R	Tappet guide assembly, rear, billet - 1984-'99 BT .....	\$196.50
33-5324	Tappet guide set, black - 1984-'99 BT.....	\$180.45
33-5324F	Tappet guide assembly, black - front - 1984-'99 BT (HD#18542-83A).....	\$108.25
33-5324R	Tappet guide assembly, black - rear - 1984-'99 BT (HD#18540-83A) .....	\$108.25
33-5325	Tappet guide set, black - SA - 1984-'99 BT.....	\$180.45
33-5325F	Tappet guide assembly, black - front SA - 1984-'99 BT .....	\$108.25
33-5325R	Tappet guide assembly, black - rear SA - 1984-'99 BT .....	\$108.25
33-5352	Tappet set, hydraulic - 1984-'99 BT, 1986-'90 XL .....	\$199.95
33-5353	Tappet set, hydraulic, w/ HL <sub>2</sub> T - 1984-'99 BT, 1986-'90 XL .....	\$214.95
50-0333	Cover set, S&S head bolt, chrome .....	\$49.95
53-0452	Wrench, main jet (72 main jet).....	\$10.85
55-1007	Calibration unit, electronic speedo. - all models w/electronic speedo.....	\$123.55
55-1013	Ignition Module, S&S Intelligent Spark Technology .....	\$376.65
55-1049	Kit, Ignition Installation - Evolution (non EFI) .....	\$364.95
55-1050	Kit, Ignition Installation - 2001-up SSW+.....	\$287.15
55-1571	Coil, dual output, single fire .....	\$134.95
55-5006	Kit, Variable Fuel Injection, 1995-2001 EFI BT .....	\$649.95
55-5024	Kit, cruise control adapter, S&S VFI - 1993-'97 .....	\$27.85
55-5026	Kit, water repellant prefilters - S&S VFI.....	\$35.25
55-5034	Kit, Variable Fuel Injection, 2002-'03 EFI BT .....	\$649.95
55-6005	Kit, muffler, slip-on - 1995-up Dyna.....	\$249.95
55-6023	Baffle, Stainless Performance Oval - 1995-up FLT.....	Call for pricing
55-6030	Kit, muffler, Stainless Performance Oval- 1995-up FLT.....	\$449.95
55-6502	Hot set-up kit, air cleaner & exhaust - 1995-up Dyna .....	\$484.95
55-6505	Hot set-up kit, air cleaner & exhaust - 1995-up FLT.....	\$674.95
56-1027	Door assembly, transmission access - 5-speed rigid mount - 1986-'99 BT .....	\$171.65
56-1046	Conversion kit, transmission case - 5-speed rigid mount - 1986-'88 BT .....	\$26.40
56-1079	Case assembly, transmission - 5-speed rigid mount - 1989-'99 BT .....	\$289.40
56-1080	Case assembly, transmission, black - 5-speed rigid mount - 1989-'99 BT .....	\$399.55
56-1081	Case assembly, transmission, polished - 5-speed rigid mount - 1989-'99 BT .....	\$536.40
56-1082	Case assembly w/bearing & seals, transmission - 5-speed rigid mount - 1989-'99 BT.....	\$360.65
56-1083	Case assembly w/bearing & seals, transmission, black - 5-speed rigid mount - 1989-'99 BT .....	\$362.85
56-1084	Case assembly w/bearing & seals, transmission, polished - 5-speed rigid mount - 1989-'99 BT .....	\$606.40



## SUGGESTED RETAIL PRICING

### SUGGESTED RETAIL PRICING IN THE CONTINENTAL UNITED STATES

<u>Part No.</u>	<u>Description</u>	<u>Suggested Retail Price</u>
90-0081	Hot Set Up kit, 80" SS - 4¼" - 1984-'92 BT .....	\$1,499.95
90-0082	Hot Set Up kit, 80" SS - 4¼" - 1993-'99 BT .....	\$1,499.95
90-0096	Hot Set Up kit, 96" SS - 4¾", 10.1:1CR F (92-1060) - 1984-'99 BT.....(Price varies with options selected).....	Call for pricing
90-1004	Head kit, cylinder - stock pattern SS, .630" lift - 1984-'99 BT.....	\$858.60
90-1004F	Head assembly, front cylinder - stock pattern SS, .630" lift - 1984-'99 BT .....	\$515.15
90-1004R	Head assembly, rear cylinder - stock pattern SS, .630" lift - 1984-'99 BT .....	\$515.15
90-1091	Head kit, cylinder, polished - stock pattern SS, .630" lift - 1984-'99 BT .....	\$1,203.60
90-1091F	Head assembly, front cylinder, polished - stock pattern SS, .630" lift - 1984-'99 BT .....	\$722.15
90-1091R	Head assembly, rear cylinder, polished - stock pattern SS, .630" lift - 1984-'99 BT .....	\$722.15
90-1504	Head kit, cylinder, Black - stock pattern SS, .630" lift - 1984-'99 BT .....	\$928.60
90-1504F	Head assembly, front cylinder, Black - stock pattern SS, .630" lift - 1984-'99 BT .....	\$557.15
90-1504R	Head assembly, rear cylinder, Black - stock pattern SS, .630" lift - 1984-'99 BT.....	\$557.15
90-1905	Gasket kit, cylinder - 3½" V <sup>2</sup> BT.....	\$26.35
90-1906	Gasket kit, cylinder - 3¾" V <sup>2</sup> BT.....	\$26.35
90-2077	Spring kit, valve - .640" lift steel top collar - 1984-up V <sup>2</sup> , 1999-up TC, TCB BT.....	\$111.45
90-2078	Spring kit, valve - .640" lift tit. top collar - 1984-up V <sup>2</sup> , 1999-up TC, TCB BT .....	\$164.30
90-4006	Shaft, rocker arm - all V <sup>2</sup> (HD#17611-83).....	\$7.35
90-4014	Bushing, rocker arm - V <sup>2</sup> .....	\$2.50
90-4036	Shaft set, rocker arm - 1984-up V <sup>2</sup> .....	\$29.20
90-4049	Gasket set, rocker cover - billet - 1984-up V <sup>2</sup> .....	\$44.85
90-4050	Kit, rocker cover - chrome billet - 1984-'99 V <sup>2</sup> .....	\$866.85
90-4055	Kit, rocker cover - plain billet - 1984-'99 V <sup>2</sup> .....	\$624.25
90-4065	Arm set, roller rocker - 1984-up V <sup>2</sup> .....	\$389.95
90-4065F	Arm assembly, roller rocker - FE/RI - 1984-up V <sup>2</sup> .....	\$116.95
90-4065R	Arm assembly, roller rocker - RE/FI - 1984-up V <sup>2</sup> .....	\$116.95
90-4080	Kit, rocker cover - polished billet - 1984-'99 V <sup>2</sup> .....	\$735.75
90-4083	Kit, rocker cover - plain die cast - 1984-'99 V <sup>2</sup> .....	\$281.65
90-4090	Kit, rocker cover - polished die cast - 1984-'99 V <sup>2</sup> .....	\$387.05
90-4091	Gasket set, rocker cover - die cast - 1984-'99 V <sup>2</sup> .....	\$48.65
90-4095	Kit, rocker cover - chrome die cast - 1984-'99 V <sup>2</sup> .....	\$559.95
90-4104	Kit, rocker arm rebuild (90-4065) .....	\$102.95
90-4119	Arm set, rocker - 1984-up V <sup>2</sup> .....	\$174.95
90-4119F	Arm assembly, rocker - FE/RI - 1984-up V <sup>2</sup> .....	\$52.50
90-4119R	Arm assembly, rocker - RE/FI - 1984-up V <sup>2</sup> .....	\$52.50
91-7006	SW kit, 88" - 4¼", 9.2:1 CR F (92-1900) - 1984-'99 BT.....	\$1,084.95
91-7106	SW kit, 93" - 4½", 9.7:1 CR F - 1984-'99 BT.....	\$1,084.95



## SUGGESTED RETAIL PRICING

### SUGGESTED RETAIL PRICING IN THE CONTINENTAL UNITED STATES

<u>Part No.</u>	<u>Description</u>	<u>Suggested Retail Price</u>
91-7202	Cylinder kit, 96" SW - 4 $\frac{5}{8}$ ", 9.9:1 CR F (92-1930) - 1984-'99 BT.....	\$647.55
91-7204	SW kit, 96" - 4 $\frac{5}{8}$ ", 10:1 CR F (92-1930) - 1984-'99 BT.....	\$967.75
91-7211	Cylinder kit, 89" - 3 $\frac{1}{2}$ ", 9.25:1 CR C (92-2426) - 1984-'99 BT.....	\$648.85
91-7213	Cylinder kit, 80" - 3 $\frac{1}{2}$ ", 10.1:1 CR F (92-2026) - 1984-'99 BT.....	\$732.75
91-7306	SW kit, 98" - 4 $\frac{3}{4}$ ", 10.25:1 CR F - 1984-'99 BT.....	\$1,234.95
91-7406	SW kit, 103" SW - 5", 10.75:1 CR F - 1984-'99 BT.....	\$1,189.95
91-7650	SW kit, 88" SW - 1984-'99 BT.....	\$1,569.95
91-7651	SW kit, black, 88" SW - 1984-'99 BT.....	\$1,654.95
91-7702	Cylinder kit, 96" SW, black - 4 $\frac{5}{8}$ ", 9.9:1 CR F (92-1930) - 1984-'99 BT.....	\$732.55
91-7711	Cylinder kit, 89", black - 3 $\frac{1}{2}$ ", 9.25:1 CR C (92-2426) - 1984-'99 BT.....	\$733.85
91-7713	Cylinder kit, 80", black - 3 $\frac{1}{2}$ ", 10.1:1 CR F (92-2026) - 1984-'99 BT.....	\$817.75
92-2026	Piston set, 3 $\frac{1}{2}$ " std. - 4 $\frac{1}{4}$ ", 10.1:1 SSRDF - 1984-up BT.....	\$244.60
92-20265	Piston set, 3 $\frac{1}{2}$ " +.005" - 4 $\frac{1}{4}$ ", 10.1:1 SSRDF - 1984-up BT.....	\$244.60
92-2027	Piston set, 3 $\frac{1}{2}$ " +.010" - 4 $\frac{1}{4}$ ", 10.1:1 SSRDF - 1984-up BT.....	\$244.60
92-2028	Piston set, 3 $\frac{1}{2}$ " +.020" - 4 $\frac{1}{4}$ ", 10.1:1 SSRDF - 1984-up BT.....	\$244.60
92-2029	Piston set, 3 $\frac{1}{2}$ " +.030" - 4 $\frac{1}{4}$ ", 10.1:1 SSRDF - 1984-up BT.....	\$244.60
92-2426	Piston set, 3 $\frac{1}{2}$ " std. - 4 $\frac{5}{8}$ ", 9.25:1 FDC - 1984-up BT.....	\$194.20
92-24265	Piston set, 3 $\frac{1}{2}$ " +.005" - 4 $\frac{5}{8}$ ", 9.25:1 FDC - 1984-up BT.....	\$194.20
92-2427	Piston set, 3 $\frac{1}{2}$ " +.010" - 4 $\frac{5}{8}$ ", 9.25:1 FDC - 1984-up BT.....	\$194.20
92-2428	Piston set, 3 $\frac{1}{2}$ " +.020" - 4 $\frac{5}{8}$ ", 9.25:1 FDC - 1984-up BT.....	\$194.20
92-2429	Piston set, 3 $\frac{1}{2}$ " +.030" - 4 $\frac{5}{8}$ ", 9.25:1 FDC - 1984-up BT.....	\$194.20
93-5017	Pushrod set, adjustable - .175" steel - 1984-up BT.....	\$86.95
93-5018	Pushrod set, adjustable - .050" steel - 1984-up BT.....	\$86.95
93-5019	Pushrod set, adjustable - +.075" steel - 1984-up BT.....	\$86.95
93-5020	Pushrod set, adjustable - +.200" steel - 1984-up BT.....	\$86.95
93-5073	Pushrod set, adjustable - Special Order steel - 1984-up BT.....	\$103.40
93-5076	Pushrod set, adjustable - standard steel - 1984-up BT.....	\$86.95
93-5090	Pushrod set, adjustable - .305" steel - 1984-up BT.....	\$86.95
93-5093	Pushrod set, adjustable - .720" steel - 1984-up BT.....	\$86.95
93-5094	Pushrod set, adjustable - .630" steel - 1984-up BT.....	\$86.95
93-5120	Pushrod set, quickee - 80-98" - 1984-'99 V <sup>2</sup> BT.....	\$169.95
93-5132	Pushrod set, quickee - 103" - 1984-'99 V <sup>2</sup> BT, 1986-'90 V <sup>2</sup> XL.....	\$169.95





## S&S 11-SECOND CLUB

*S&S Cycle invites you to join...*

# 11-Second Club

**Are you fast enough?**



### HERE'S HOW YOU CAN JOIN SOME FAST COMPANY.

- ◆ First, go fast -- after breaking in your engine according to the manufacturer's instructions.
- ◆ Next, provide the documentation listed below.
- ◆ Then, toss everything in an envelope and send it to S&S.
- ◆ We'll send you an official 11-Second Club patch for your leathers or denims, a certificate authorizing braggin' rights, and a free 11-Second Club T-shirt.

### HERE'S WHAT WE NEED FROM YOU:

1. Proof that your street-riden motorcycle (D.O.T. tires, full charging system, no wheelie bars or air shifts) equipped with one of our carburetors and, hopefully, numerous other S&S products, has turned an 11.99 or quicker quarter-mile time. We'll need an official timing slip from a sanctioned dragstrip dated after June 1, 1997 and signed by the timekeeper. (A good photocopy will do.) We don't care if you trailer the bike to the track, so long as it sees more action on the street than off.
2. A photograph of yourself, anyone else you'd care to include, and the motorcycle. Action shots are preferred if sharp and clear, but the carburetor **MUST** be in plain view.
3. A signed copy of this statement:

Please tell us a little about yourself and your motorcycle.

Included the model and year, a list of all engine and frame modifications, the type of exhaust, and tire brand and model.

Be sure to mention all S&S products used!

Submitted materials may be used for promotional purposes.

Members will receive a 11- Second Club certificate, patch, and T-shirt, but no payment or other considerations.

I do hereby attest that I have fulfilled all membership requirements of the S&S Cycle 11-Second Club as outlined above and that my motorcycle is fully licensed for use on all city, state and federal highways. I also attest that starting is self-contained or by kickstart, requiring no external mechanical devices, and that this motorcycle is ridden more often on the street than the racetrack. I understand that some risk to rider and equipment is present in all forms of motorcycle racing and do hereby accept all risks and liabilities associated therewith.

Signature \_\_\_\_\_

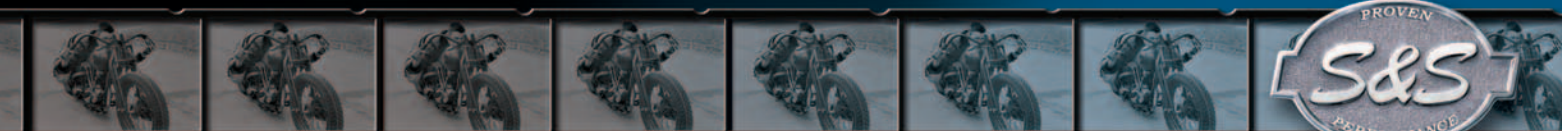
Date \_\_\_\_\_

T-Shirt Size \_\_\_\_\_



Please include a few words about yourself and your motorcycle. Include the model and year, a list of engine and frame modifications, displacement, compression ratio, type of exhaust, and tire brand. Be sure to mention any S&S products used!

Send inquiries and membership applications to: 11-Second Club, Attention: Carla Langyel  
S&S Cycle, Inc. • 14025 County Hwy. G Box 215 • Viola, Wisconsin 54664 USA  
Please allow 4 weeks for processing.



## S&S 10-SECOND CLUB

*S&S Cycle invites you to join...*

# 10-Second Club

**Are you fast enough?**



### CONTINUING IN THE SPIRIT OF THE 11-SECOND CLUB...

The 10-Second Club is for registered and licensed street motorcycles with S&S carbs. No wheelie bars are permitted. D.O.T. tires, full charging systems, lighting, and self-contained starters are required. Any chassis or engine modifications compatible with legitimate street-use are permitted. Mufflers are between you and the authorities, but the motorcycle must be street-ridden on a regular basis.

### HERE'S WHAT WE NEED TO WELCOME YOU IN:

1. Proof that your street-ridden motorcycle is equipped with one of our carburetors and, hopefully, other S&S products as well, has turned a 10.999 or quicker quarter mile. Send either the original or a good photocopy of an official timing slip from a sanctioned dragstrip; it must be dated after 01/01/99 and signed by the timekeeper. The registered owner must ride the motorcycle for the qualifying pass.
2. Your t-shirt size and a photograph of yourself and the motorcycle. The carburetor must be in plain view.
3. A signed and dated copy of the statement below.

Please tell us a little about yourself and your motorcycle.

Included the model and year, a list of all engine and frame modifications, the type of exhaust, and tire brand and model.

Be sure to mention all S&S products used!

*Submitted materials may be used for promotional purposes. Members will receive a certificate, club patch, and t-shirt, but no payment or other considerations*

I do hereby attest that I have fulfilled all membership requirements of the S&S Cycle 10-Second Club as outlined above and that my motorcycle is fully licensed for use on all city, state and federal highways. I also attest that starting is self-contained or by kickstart, requiring no external mechanical devices, and that this motorcycle is ridden more often on the street than the racetrack. I understand that some risk to rider and equipment is present in all forms of motorcycle racing and do hereby accept all risks and liabilities associated therewith.

Signature

Date

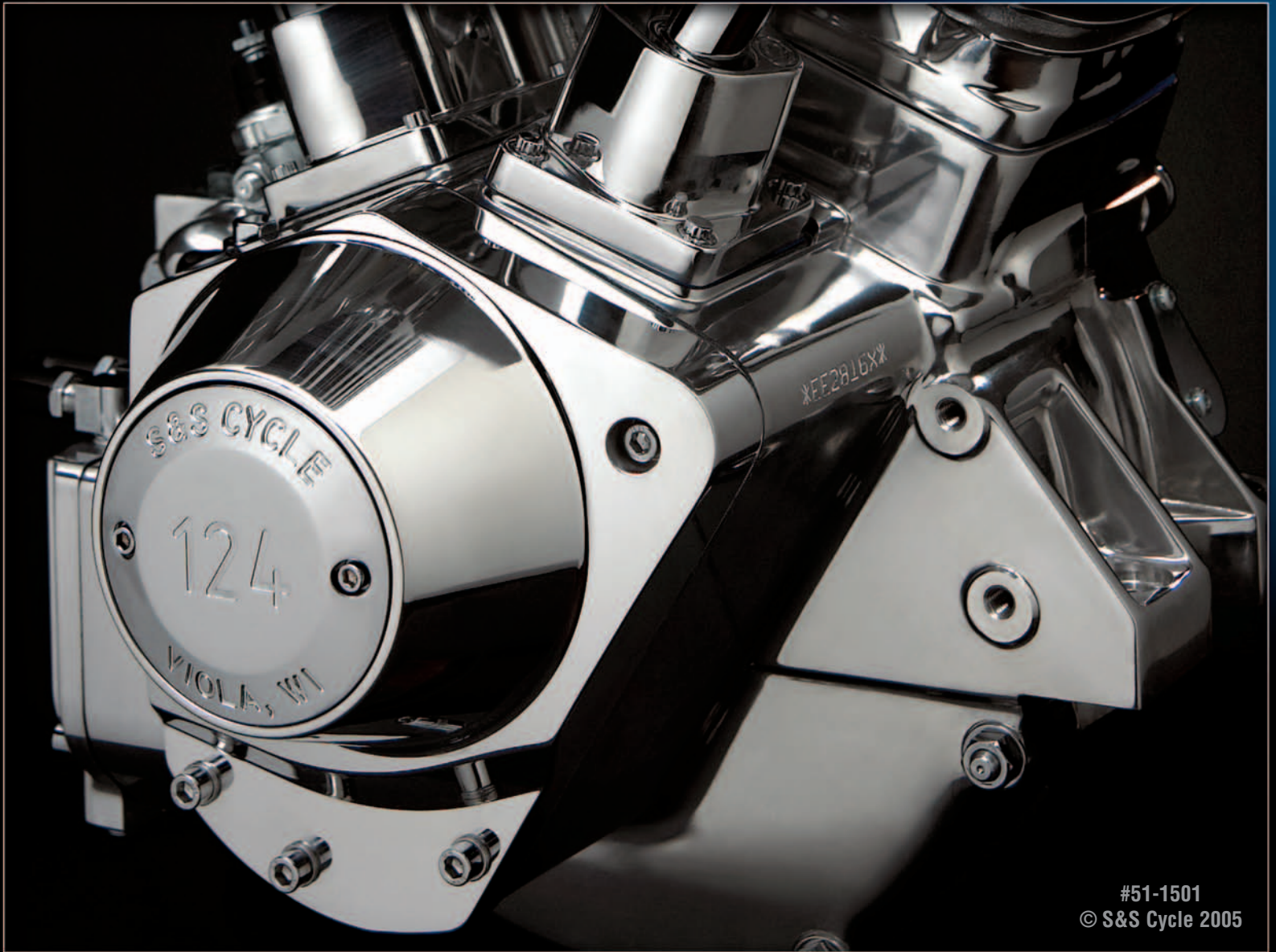
T-Shirt Size



Please include a few words about yourself and your motorcycle. Include the model and year, a list of engine and frame modifications, displacement, compression ratio, type of exhaust, and tire brand. Be sure to mention any S&S products used!

*Send inquiries and membership applications to: 11-Second Club, Attention: Carla Langyel  
S&S Cycle, Inc. • 14025 County Hwy. G Box 215 • Viola, Wisconsin 54664 USA  
Please allow 4 weeks for processing.*





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