

# S&S<sup>®</sup> PERFORMANCE PARTS

FOR VICTORY<sup>®</sup> MOTORCYCLES





# *S&S® Cycle And Proven Performance*

## *Let Our History Be Your Future*

### **EXPERIENCE... The Winners Circle**

S&S has a rich history of records set at the Bonneville salt flats and at the drag strip. Applying knowledge gained from years of experience has put us in the winners circle time and time again. History creates the future. Let our history be your future.

### **TECHNOLOGY, INNOVATION... Design**

The interdisciplinary engineering and design team at S&S turns innovative ideas into reality using cutting edge technology. With a vast knowledge base of four-cycle engine technology and the latest in design hardware and software, S&S can take any project from conception to market in record time.

### **PROVEN PERFORMANCE... Testing**

S&S Cycle has a well equipped, modern R&D facility and a professional staff of technicians and engineers. Every product S&S sells is thoroughly tested for reliability and performance. "Proven Performance" is more than just an advertising slogan at S&S. "Proven Performance" is what we are.

### **QUALITY, COMMITMENT... Manufacturing**

S&S has become the leader in the high performance engine aftermarket through the use of automation, as well as sophisticated testing and measuring equipment. The seventy CNC machining centers at the S&S facility represent a substantial commitment to maintaining a leadership position in the industry. The productivity, consistency, and capability of this state of the art manufacturing equipment, go hand in hand with improved quality control. S&S customers know that we will make their parts on time, and that we will make them right.

## **HIGH PERFORMANCE PARTS FOR V-TWINS SINCE 1958**



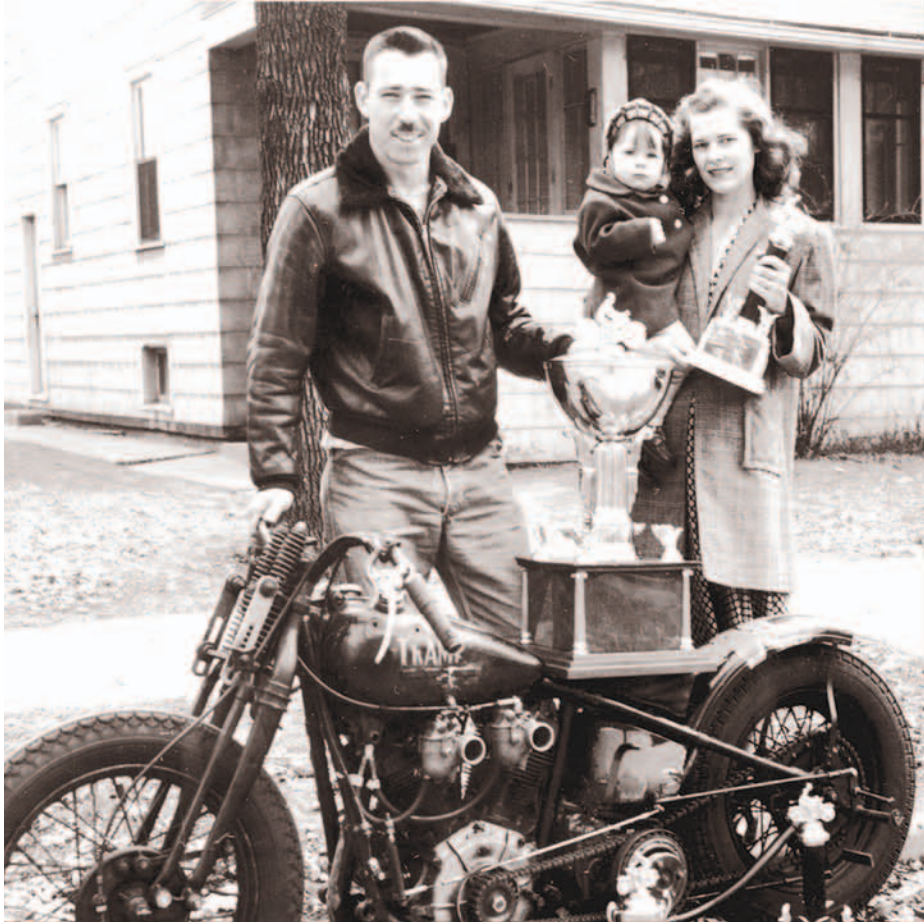
## *S&S History*

### *A Passion For Speed*

S&S Cycle has been in the business of manufacturing high quality, high performance engine components for nearly 50 years. What started as a passion for speed, grew into the best known company name in the v-twin high performance aftermarket. George Smith Sr. had to build his own parts to make his motorcycle faster. Now the company he founded manufactures the most prestigious line of "go fast" v-twin engine parts in the world.

*The S&S heritage of v-twin performance goes way back, as this 1941 photo of George Smith Sr. illustrates.*





The popularity of American v-twin motorcycles goes back a lot of years, and S&S has been providing high performance parts for v-twins for almost fifty of them. Now S&S is introducing a line of performance products for a relatively new v-twin, the Victory Freedom engine. Even though the Victory engine employs slightly different technology than our previous products, our near half century of experience in the field of high performance four cycle engines made it easy for us to apply our time honored formula of "more cubic inches = more power" without any difficulty. An additional factor that made this project go smoothly was the cooperation between S&S and the Victory team at Polaris Industries.

*S&S company founders George and Marjory Smith show drag racing trophies won during the summer of 1952.*



# EVERYBODY LOVES AMERICAN V-TWINS!

## *S&S® Performance Parts For Victory®*

*Available Exclusively Through Victory® Dealers*

The new S&S performance kits for Victory motorcycles are available only through authorized Victory dealers. One of the biggest factors in our decision to sell our Victory style performance parts exclusively through Victory dealers, was our desire for complete customer satisfaction. Factory trained Victory technicians equipped with all the required tools, are in the best position to install and set up our kits and to service them afterward. Riders can have their Victory stroked and continue to receive service from the Victory dealers they know and trust.







S&S strokers were first introduced in 1961, and have long been accepted as one of the most cost effective and easily installed high performance upgrades in the industry. Stokers have changed a lot since the days when JFK was President, and Elvis was too shocking to televise from the waist down. The level of sophistication and technology in S&S stroker kits of today is, by necessity, much higher than it was in 1961. Gone are the days when all you needed was a hand full of jets and a screwdriver to dial in your carburetor to satisfy your stroker engine's need for more fuel. Carburetor? What carburetor? The difficulty of tuning electronic fuel injection alone, has made it vitally important that we follow S&S company founder, George Smith senior's vision of providing complete kits. Kits that include everything needed to build a stroker engine, and just as importantly to make it perform to its full potential. That's why these strokers for Victory motorcycles are offered as part of an S&S Hot Set Up Kit® which contains everything needed for the installation – including fuel injection calibration.

*George Smith Sr. machines S&S stroker flywheels in the early 1960's.*

## STROKIN' SINCE 1961!

### *S&S® Stroker Hot Set Up Kits® For Victory® Freedom® Engines Economical and Powerful!*



The new S&S stroker Hot Set Up Kits® for Victory Freedom engines are available for 2003 and later Victory motorcycles equipped with 92" or 100" Victory Freedom engines. Unfortunately no kits are available for earlier Victory engines.

What makes an S&S stroker Hot Set Up Kit so economical is the fact that it is designed to make use of the majority of the stock engine components. Crankcases, cylinder heads, fuel system, etc are all reused. Cylinders and pistons in factory 100" engines or any 92" engine which has been upgraded with a Victory 100" big bore cylinder kit, can be used almost "as is" with the S&S stroker kit. A Victory 100" cylinder and piston kit is required to install the S&S 106" stroker kit in an existing 92".

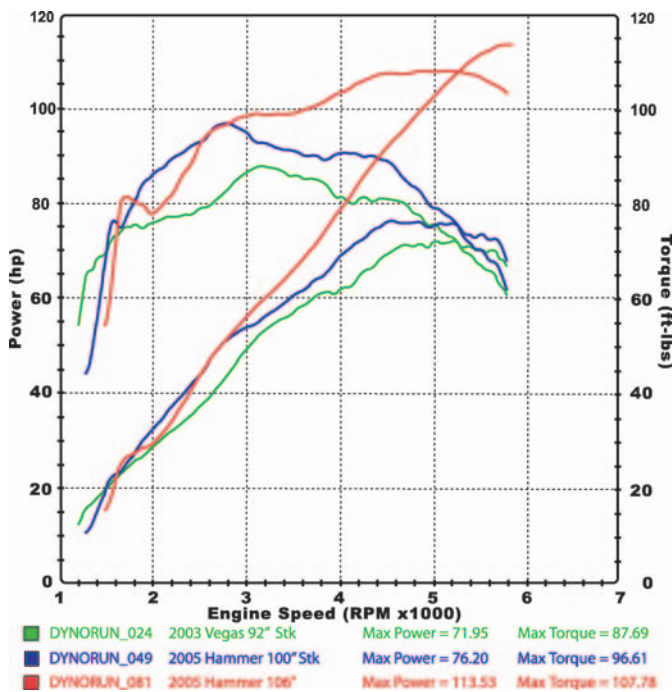
#### INSTALLATION

Installation of an S&S stroker Hot Set Up Kit® is no more difficult than rebuilding a stock engine. All S&S parts are designed to bolt into the stock crankcase with no machining or modifications required. There are only a few minor clearancing operations that must be performed. The skirt of the stock rear piston and the rocker arm support must be clearanced to accommodate the increased piston travel and valve spring diameter. These operations can be done in minutes with nothing more than a hand file or grinder.

## Dyno Results From S&S Cycle

This dyno chart shows the increase in power and torque that the S&S 106" stroker Hot Set Up Kit® delivers over a stock 92" [or 100"] engine. The 106" test engine was equipped with Victory Stage I mufflers.

Dyno results from Dyno Jet® 200 Chassis dynamometer at S&S Cycle's Research and Development facility in Viola, Wisconsin.



## WHAT'S IN AN S&S® STROKER HOT SET UP KIT®?

### STROKER CRANKSHAFT

The heart of any S&S stroker kit is a stroker crankshaft. As the name implies, the stroker crankshaft increases the stroke of the engine. The longer stroke makes the piston travel farther in the cylinder, increasing the engine's displacement. That means that the pistons draw in more air and fuel on each intake stroke. It just makes sense that if you can burn more fuel, you can make more power, but there's more to it than that. Stroker cranks differ from stock cranks in that the crank journal, that the rods ride on, is farther from the center of the crankshaft. The added distance from the center of the crankshaft gives the pistons and connecting rods more leverage to turn the crank. That's why an engine with a longer stroke will generally have more torque than a short stroke motor of equal displacement. The S&S crank for the 106" stroker is machined from a 4140 steel forging, and increases the stroke of the engine from 102mm to 108mm. To complete the crankshaft assembly, the kit includes S&S 4340 forged steel connecting rods. S&S stroker crankshafts are available for models with roller cam chain (2003-2005 except Hammer and touring cruiser) and for models with the silent cam chain (2005 Hammer and all 2006 models). Hot Set Up Kits are not available for touring cruiser.

### VALVE TRAIN

To make the most of the increased displacement of the 106" S&S stroker engine, S&S includes a set of special S&S .495" lift cam shafts and a set of S&S high lift valve springs with top collars and valve keepers. The increased lift and optimized timing of the cams increases the amount of air the engine can draw in and allows the engine to get rid of exhaust gasses more efficiently. The valve springs accommodate the increased lift of the cams and assure accurate valve train operation at high rpm.

### INTAKE

The S&S stroker Hot Set Up Kit includes a great looking polished billet aluminum air cleaner assembly with a high flow air filter. By making more air available to the engine, the S&S air cleaner is an important component in the performance of the Hot Set Up Kit. This air cleaner is also available separately to increase the performance of stock displacement Victory engines. See page 5 for more information.

### FUEL INJECTION CALIBRATION FILE

The stock Victory fuel injection system can easily accommodate the fuel delivery needs of the S&S 106" stroker, it has plenty of capacity. It just needs to be tuned to provide the correct amount of fuel to take advantage of the cams, exhaust, and the increased displacement. An authorization code is included with each kit, which allows your Victory technician to load an S&S calibration file into the memory of the stock fuel injection module. It is important to note that the calibration files available are customized for use with the parts included with the stroker kit and the with the recommended exhaust system. If other components are used, decreased performance and possible engine damage may result.





## Hold On... To Your Horses!

When we significantly increase the horsepower and torque of an engine, there are always concerns about whether the stock clutch can handle the additional load. We have found that the stock clutch in 100" models such as the Hammer, is more than adequate to handle the additional power of the S&S® 106" stroker kit. It is recommended that the heavier clutch spring from these models be installed when upgrading 92" engines to 106". This eliminates the need for the additional expense of an aftermarket high performance clutch.

*This 2005 Hammer test bike constantly turned 11-second quarter miles at the drag strip.*

# INCREASED HORSEPOWER & TORQUE!

## 106" Stroker Hot Set Up Kits® For Victory® Freedom® Engines

**2003-2005 Models except Hammer and Touring Cruiser**

Roller cam chain sprocket.....45-0901

**2005 Hammer and All 2006 Models except Touring Cruiser**

Silent cam chain sprocket.....45-0903

### 106" Stroker Engine Specifications:

**Displacement:** .....1731cc (105.6")

**Bore:** .....101mm (3.976")

**Stroke:** .....108mm (4.252")

**Compression Ratio:** .....10.2:1

**Fuel System:** .....Stock Victory® EFI loaded with S&S calibration file

### Kit Contents:

- S&S stroker crankshaft (108mm/4.252").
- S&S connecting rods.
- S&S polished billet high flow air cleaner assembly.
- S&S .495" lift high performance cams.
- S&S high lift valve spring kit, complete with top collars and valve keepers.
- Authorization code for S&S calibration file for Victory fuel injection system.

### Replacement Parts for 106" Hot Set Up Kit

Stroker Crankshaft, 54mm – Roller Chain Sprocket.....45-0121

Stroker Crankshaft, 54mm – Silent Chain Sprocket.....45-0120

Connecting Rod Assembly, 175.5mm.....45-0101

Camshaft Set Victory (.495" Lift).....49-0100

Valve Spring Kit, Victory (.495" Lift).....49-0115

Air Cleaner Kit, Victory – Polished Billet.....41-0021

Air Filter Element.....41-0006

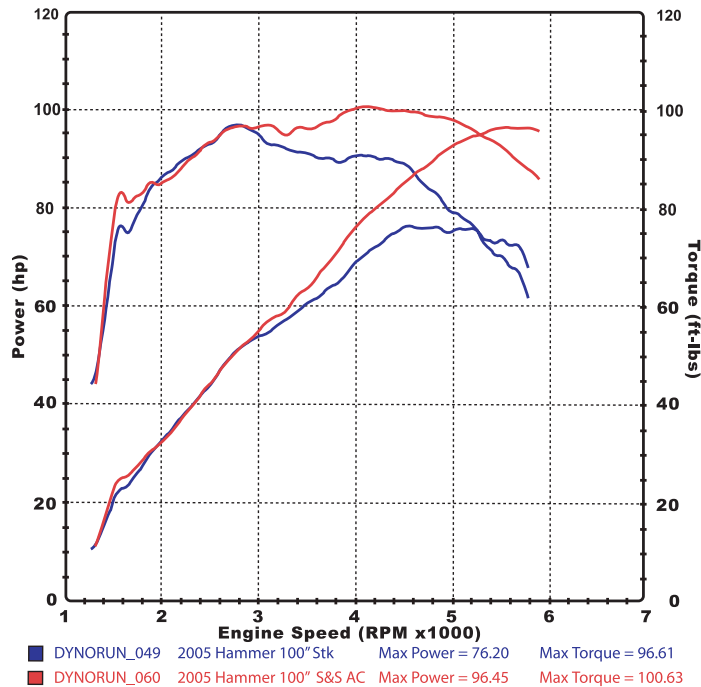


*Roller style cam chain drive sprockets (left) were used in 2003-2005 models except Hammer. Silent chain style cam chain drive sprockets (right) were used in 2005 Hammer and all 2006 models except the Touring Cruiser.*

### NOTES:

- *Installation of the S&S 106" stroker Hot Set Up® Kit in a 92" engine requires that a Victory 100" cylinder and piston kit also be installed.*
- *Calibration files included with S&S stroker kits were created using Victory Stage 1 mufflers. The use of other exhaust systems may reduce performance and drivability, and may result in engine damage.*
- *S&S 106" stroker Hot Set Up Kits are not available for Touring Cruiser models because an adequate performance exhaust is not available.*

## Dyno Results From S&S Cycle



This dyno chart shows the improvement an S&S high flow air cleaner assembly can make to performance. The test bike was a 2005 Victory Hammer. The lower set of curves represent stock configuration, and the upper curves show the gains with the S&S high flow air cleaner and Victory Stage I mufflers. Note that the curves are almost identical until about 3000 rpm. At that point the engine needs more air than the stock air cleaner can provide. The S&S air cleaner provides the extra air so the engine can make more power.

Dyno results from Dyno Jet® 200 Chassis dynamometer at S&S Cycle's Research and Development facility in Viola, Wisconsin.

## S&S® HIGH FLOW AIR CLEANER KITS

*Not ready for a Stroker Kit?  
But want to go faster?*



**S&S High Flow Polished Billet Air Cleaner Kit For Victory**  
(Includes EFI calibration file).....41-0021

If your budget won't handle a stroker kit right now, but you still want to go faster, may we suggest an S&S air cleaner assembly? Here's an opportunity to pick up some more power without breaking the bank, and look good doing it. An S&S polished billet aluminum air cleaner assembly with low restriction S&S air filter allows the engine to breathe better and produce more power. To make the most of the increased air flow of the S&S air cleaner assembly, we also recommend a set of Victory Stage I mufflers. Refer to the dyno chart to see the power gains to be had from this simple installation.

Of course any time you want to make more power, you can figure on using more fuel. In order to provide the correct fuel calibration, the kit includes an authorization number with allows your Victory dealer to load the correct calibration file into the stock Victory fuel injection module.

Not only is this kit inexpensive to purchase, the installation cost is also minimal. There is no engine work involved. Just bolt it on, load the new calibration file, and go!





## *S&S® and Rick Luebeck Working Together...*

The development of the S&S primary cover for Victory® engines was a collaboration between S&S and well known Victory customizer, Rick Luebeck of Polaris West in Katy, Texas. The S&S primary cover was first shown to the public on Rick's custom chopper at the Polaris 50th anniversary open house at St. Paul, MN in July 2004. The S&S billet aluminum primary cover for Victory Freedom engines is available exclusively from Polaris West.

Polaris West

6117 Highway Blvd • Katy, Texas 77494  
Toll Free: 800-811-0989 • [www.polariswest.com](http://www.polariswest.com)

# GO FAST. LOOK FAST.

## *Billet Primary Cover From S&S Cycle*



Going fast is one of the things that makes motorcycles so attractive, but looking fast can be just as important. This new show polished billet aluminum primary cover gives your Victory motorcycle a whole different custom high performance look. But this isn't just another pretty face. The billet material provides extreme strength and rigidity. In addition, the design of the cover provides an extra .330" clearance to accommodate the installation of a high performance clutch.

*If the bike next to you at the stop light has this sticker on it, you may not want to try to race him... or her!*





#### 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.

## S&S® Cycle, Inc.

### *High Performance Parts*

S&S Cycle, Inc. warrants the parts to be free from defects in material and workmanship.

**S&S Cycle, Inc.**  
235 Causeway Blvd.  
La Crosse, Wisconsin 54603

Phone: 608-627-1497  
Fax: 608-627-1488  
Website: [www.sscycle.com](http://www.sscycle.com)

# LIMITED WARRANTY STANDARD 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 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.



## Purchase S&S Victory Dealers Only!

### FIND A DEALER WITH THE S&S DEALER LOCATOR!

S&S performance parts for Victory® motorcycles are only available through authorized Victory Dealers. To find a Victory dealer who offers S&S products in your area, simply log on to the S&S website [www.sscycle.com](http://www.sscycle.com), and click on the dealer locator.

*S&S company president Brett Smith and Victory vice president Mark Blackwell with the 106" Hammer test bike, at the Victory 50th anniversary celebration, July 2004.*

# S&S® WARRANTY GUIDELINES

## 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 part was purchased. The dealer will then contact the Company for a determination as to whether the defect in the 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 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 part so as not to cause further damage and return the part, shipping costs prepaid, to the Company. The Return Authorization Number must be clearly visible on the outside of the shipping container. If the 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 part, 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: Customer Support  
235 Causeway Blvd.  
La Crosse, WI 54603  
Phone: 608-627-8324 • Fax: 608-627-0766  
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, EXPRESS 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.

## DISCLAIMER

The installation of any S&S part may void or otherwise adversely affect your factory warranty. In addition, such installation and use may violate certain federal, state and local laws, rules and ordinances as well as other laws when used on motor vehicles operated on public highways, especially in states where pollution laws may apply.

Always check federal, state, and local laws before modifying your motorcycle.

It is the sole and exclusive responsibility of the user to determine the suitability of the product for his or her use, and the user shall assume all legal, personal injury risk, and liability and all other obligations, duties and risks associated therewith. S&S parts are intended for the very experienced off-road rider only.





## *S&S Cycle... Keeping Up With Technology*

S&S Cycle is the world's leading manufacturer of v-twin high performance engines and parts. We have achieved this position in the industry by developing and manufacturing some of the most innovative products ever. We have continually pushed the level of technology in our products to ever higher levels. That was true in 1958 when George Smith, Sr. first started selling a superior set of pushrods, and it is true today as we sell the world's most sought after line of high performance engines and components.

Brett Smith – President

# LETTER FROM S&S® CYCLE PRESIDENT

Dear S&S Customer,

The introduction of a new product is always exciting. The introduction of our new high performance line for Victory motorcycles is triply exciting for us here at S&S, partly because it is the culmination of several years of research and development, and partly because it represents the ability of S&S Cycle to offer high performance products to a whole new group of v-twin riders. My grandfather, George Smith Sr., revolutionized the high performance industry in the early 1960's with the introduction of simple, economical, yet effective stroker kits for American v-twin motorcycles. It is both exciting and humbling to realize that almost fifty years later, S&S Cycle is introducing a similar product for another American v-twin.

Another reason that this project was so exciting for us at S&S, was the high level of cooperation between S&S Cycle and the Victory team at Polaris Industries. This type of collaboration between a major motorcycle manufacturer and a manufacturer in the high performance aftermarket is almost unheard of. Yet, when capable people of integrity work together, great things can happen. The result was a superior product that delivers not only the performance we are famous for, but also the quality and reliability that our customers, and those of Victory Motorcycles, have come to expect. In addition, we have decided to sell our kit only through authorized Victory dealers to insure that they are correctly installed by factory trained technicians.

The release of our performance kits is exciting for Victory owners because it gives them the opportunity to enjoy a higher level of performance than was previously available to them. We know they are excited because of the constant stream of phone calls, letters, and emails we have received ever since the smoke from our 106" Hammer test bike cleared at the Polaris 50th anniversary celebration in Minneapolis. Riders and dealers alike have been asking for more information, and wanting to know when they can get a hold of one of our kits.

Yes, it has taken a bit longer to release these kits than we first anticipated, but we felt that taking the time for additional testing would be worth the wait. S&S always strives to deliver products that exceed the expectations of our customers, and we wanted to make sure that this one would absolutely "knock your socks off". The whole idea can be summed up by our company motto . . . "Proven Performance".

Sincerely,

*Brett G. Smith*  
Brett G. Smith

# **S&S<sup>®</sup> Cycle, Inc.**

**235 Causeway Boulevard • La Crosse, Wisconsin 54603**

**Phone: 608-627-1497   Email: [sscust@sscycle.com](mailto:sscust@sscycle.com)   Website: [www.sscycle.com](http://www.sscycle.com)**



**Because every industry has a leader**