"ECO-Line" roller-tip rocker arms: high quality, high performance at an economical price!

Chapter 7 is all about Engines and engine parts. In this section we show the latest innovations and the hottest parts available today, everything from mild to wild. Not surprising when you take into consideration that Zodiac's General Manager is the man with definitely the longest and most successful Drag Racing career in Europe, if not the World. This section shows everything from complete High Performance engines to the smallest engine part. Zodiac stocks High Performance engines from S&S, including the S&S 145CI Monster Motor the Euro-3 compliant S&S Twin Cam style T124 engine and the S&S X-Wedge engine. Also available "from the shelf" are OEM stock Evolution and Twin Cam engines. Take a look at the engine conversion kits from Wiseco and S&S for both Twin Cam and Evolution engines, or all the different cams and cam gears. Also have a look at the smaller but also important parts like piston kits and piston rings or Delkron's billet cam support plate for Twin Cam engines. Keep in mind that at Zodiac High Performance doesn't necessarily mean high priced. Due to the "In House" knowledge on manufacturing, we have loads of high performance parts at very economical prices. For example, our "ECO-Line" roller-tip rocker arms for most models from 1984 on are a perfect example; high quality, high performance, low price! To name just one of the many, many new items: conversion cam kits for early Twin Cam models are great performance items as they allow you to use the latest low-friction roller chain cam drive system as introduced on 2006 Dyna models.

The S&S 145CI Monster Motor

Roland Sands Design rocker box covers for Twin Cam

The S&S 117CI X-Wedge motor

S&S T-SERIES 124CI TWIN CAM STYLE ENGINE FOR TWINCAM OR EVOLUTION FRAMES

S&S introduce their first truly complete 124" Twin Cam style engine. It all starts with their super strong crankcase, which has extra thickness in key stress areas built in. A Timken style sprocket shaft bearing gives extra strength and load capacity. Onto this strong foundation they added their flywheels, connecting rods, a .640 lift drive gear cams, their 4 1/8" bore cylinders and pistons, rocker arms and covers, and the electric compression releases. S&S also included their new oil pump. This pump replaces the separate oil pump, cams, cam support plate, bearing plate, bearings and gear cover of a stock Twin Cam style engine. This new oil pump incorporates a modified version of the gear drive cams, and actually uses the cam drive gear to pump oil to the engine and to scavenge oil from the cam chest. Instead of the decorative outer gear cover this oil pump system includes a functional show polished billet gear cover that support the outer ends of the cams. Engines are completed with either a Super G carburetor or S&S Variable Fuel Injection (VFI) module with manifolds and throttle body for fuel injected bikes. The VFI system also comes with a tuning software package, which contains fuel maps for the most common exhaust systems used in conjunction with both S&S air cleaner and the VFI tuned injection system. VFI engines are available for engines with stock Magnetti- Marelli injection systems from 1995 thru 2001 and for engines with the Delphi system that was mounted on 2001 Softail and on all 2002 thru 2006 models. As there are different Induction Kits available for VFI equipped engines, you have to order the style of your choice separately. Carbureted engines come with the S&S Intelligent Spark Technology (IST) ignition module. S&S is sure the IST ignition will protect the engine for damage due to detonation. Also the "break in rev. limit" is activated on IST modules sold on complete engines. This means that the maximum RPM will increase after a certain amount of running hours. Therefore engines with IST ignition are covered with an extra one-year warranty, so you get a total 2-year warranty. There are two different motor mount styles of 124CI Twin Cam style engines available. The first type is designed and intended for installation in a stock Harley-Davidson Twin Cam style Chassis. This engine will bolt directly to the stock transmission and engine mounts of chassis designed for stock unbalanced Twin Cam style engines. A balanced Twin Cam style engine is not available at this time. The second type of Twin Cam style engine is machined with an Evolution style rear motor mount and may be installed in a stock or aftermarket Evolution style chassis.

S&S 124CI Twin Cam style engines for Evolution style frames

Aluminum	Polished	Black	
750474	**N/A**	**750476**	With Super G carburetor and IST ignition
750481	**N/A**	**750482**	With VFI unit for 1995-1998 Magneti Marelli Fuel Injection

Also available in Diamond Cut Full Polished, a very exclusive finish and are also polished between the fins on the cylinders and cylinder heads.

750820 Diamond Cut Full polished with S&S Super G carburetor and IST ignition
750821 Diamond Cut Full Polished with S&S VFI unit for 1995-1998 Magneti Marelli Fuel Injection

S&S 124CI Twin Cam style engines for Twin Cam style frame

Aluminum	Polished	Black	
750473	**750467**	**750475**	With Super G-carburetor and IST ignition
750477	**750468**	**750478**	With VFI unit for 1999-2001 Magneti Marelli Fuel Injection
750479	**750469**	**750480**	With VFI unit for Dyna 2002-2005 and Touring 2001-2006 with Delphi Fuel Injection

Also available in Diamond Cut Full Polished, a very exclusive finish and are also polished between the fins on the cylinders and cylinder heads.

750822 Diamond Cut Full polished with S&S Super G carburetor and IST ignition
750823 Diamond Cut Full Polished with S&S VFI unit for 1999-2001 Magneti Marelli Fuel Injection
750824 Diamond Cut Full Polished with S&S VFI unit for 2002-2006 Delphi Fuel Injection

Induction kits required to complete VFI equipped engines

750491 VFI Teardrop Air cleaner Induction kit, chrome
750488 VFI Tuned Induction kit, burnished
740458 VFI Tuned Induction kit, chrome
750490 VFI Tuned Induction kit, black

Specifications

Displacement 124CI (2,035 cc), 4 1/8" bore, 4 5/8" stroke, 10.8:1 compression ratio, S&S 640G gear driven cams

Note: IST ignition is not recommended for kick start applications.

S&S OIL LINE INSTALLATION KITS FOR S&S T-SERIES ENGINES NEW

Installation of an S&S T-Series engine or S&S T-Series crankcase in 1999 thru 2005 Dyna models or 2000 thru 2006 Touring models requires re-routing of the oil lines. We have a kit for 1999 thru 2005 Dyna models and a kit for 2000 thru 2006 Touring models available. Both kits include an oil conduit block, hoses, connectors, fittings and installation materials. The Dyna kit also includes a special billet transmission top cover. The Touring kit is to be be used with the stock transmission top cover.

750816 Kit for 1999 thru 2005 Dyna models
750817 Kit for 2000 thru 2006 Touring models

S&S TÜV APPROVED 124CI TWIN CAM STYLE ENGINE

These carbureted engines are basically the same as S&S unrestricted 124CI Twin Cam engines, with the same super strong crankcase, Timken style sprocket shaft bearing, gear driven cams, 4 1/8" bore cylinders and pistons, rocker arms and covers, and the electric compression releases. These engines are completed with S&S IST ignition, a Super G carburetor and S&S teardrop style air cleaner. They use different cam shafts, a special carburetor, air cleaner and intake restrictions as the S&S unrestricted engines to get them into comply with the Euro-2 TÜV emission standards. Engines are available for installation in a stock Harley-Davidson Twin Cam Chassis, or Evolution style rear motor mount for installation in a stock or aftermarket Evolution style chassis. A balanced version as used in Softail models is not yet available. Fuel Injected Euro-3 compliant engenes are listed on the next page

S&S 124CI TÜV approved Twin Cam "A" style engines for Evolution style frames

Aluminum	Polished	Black	
750655	**750657**	**750656**	With Super G carburetor and IST ignition

S&S 124CI TÜV approved Twin Cam "A" style engines for Twin Cam frame

Aluminum	Polished	Black	
750658	**750661**	**750659**	With Super G-carburetor and IST ignition

Specifications

Displacement 124CI (2,035 cc), 4 1/8" bore, 4 5/8" stroke

S&S T124 EURO-3 COMPLIANT ENGINES

The S&S T124 is a two-cam design engine that meets the current EURO III noise and exhaust emission standards and is certified for use in 2002-2006 Harley-Davidson FLH and FLT series models. Engines feature S&S gear driven cams, gear driven oil pump and reed valve breather system. They come complete with the S&S Variable Fuel Injection (VFI) system, closed loop air/fuel ratio control, single bore throttle body, Teardrop air cleaner, and the necessary TÜV documentation for the engine. Installation of the engine will require adding oxygen sensors to the stock header pipes and the use of stock 2007 mufflers to meet EURO III emissions. Installation on a motorcycle that was originally equipped with a carburetor requires the purchase of an OEM wiring harness for the same year EFI equipped model.

Will also fit Evolution type frames if the Zodiac adapter plate 236889 is used

750966 Natural aluminum finish
750967 Black powdercoat finish
750968 Polished finish

Bore	4 1/8" (104.8 mm)
Stroke	4 5/8" (117.5 mm)
Displacement	124 CI (2,032 cc)
Compression Ratio	N/A

S&S 145 CI ENGINES

In 2003, to celebrate 45 years in business, S&S Cycle has built the ultimate High Performance V-Twin engine. This engine is a tribute to the original founders, George and Marjorie Smith. In addition, it commemorates Harley-Davidson's 100th Anniversary. It is also intended to honor all passionate builders, riders, entrepreneurs, and enthusiasts who have helped grow the 100-year evolution of the V-Twin motorcycle market. The limited production 145 Cubic Inch motor, which is capable of producing over 185 hp and 180 ft. lb. of torque, is the product of 45 years of experience. It features the latest in technology, from the special "Big Fin" design 4 3/8" cylinders and high flow B2 CNC oval port heads, to the S&S Variable Fuel Injection (VFI) system with dual 2.062" throttle body, manifolds and special billet velocity stacks. For the ones that like a Big carburetor over injection we have the 145 CI engine with a carburetor available. Each engine is fully polished and built around S&S Special Application crankcases. The bottom end uses the same hardened forged steel flywheels and 1 1/2" press-in crank pin as the Super Sidewinder Plus engines. Actual displacement is 144.7 Cubic Inches (2.371 CC!), with an 11:1 compression ratio. Specific parts include the cylinders, flattop pistons, 8 1/4" billet steel connecting rods, and billet gear cover and velocity stacks. Cylinder heads are prototypes of the B2-Race casting for Twin Cams and fully CNC-ported. They utilize 2.2" intake valves and 1.8" exhaust valves, which are activated by "Old Reliable"- the S&S 631 camshaft. The 145 CI is available with carburetor as well as Injection. Both models feature a HVHP oil pump that keeps the moving parts moving. Fuel Injection equipped engines come with the S&S VFI electronic fuel injection and include a fuel pump with incorporated pressure release valve. Carbureted engines come with a Super D carburetor. Engine has 2 3/8" diameter exhaust ports, exhaust pipes must be custom made. These S&S 145 engines are very limited in availability.

Note: The 145 CI engine is 1 1/4" higher as a stock engine, it will not fit stock frames without modification. Fuel Injected engine uses a 2001 thru 2003 style wiring harness from a Fuel Injected model.

750266 S&S 145 engine, Fuel Injected, semi-polished, assembled
750522 S&S 145 engine, Carbureted, semi-polished, assembled
750267 S&S 145 engine, Carbureted, plain aluminum, unassembled

NOTE: THIS IS A RACE-ENGINE AND IS COVERED BY A 6 MONTH "PARTS ONLY" WARRANTY.

S&S SUPER SIDEWINDER™ ENGINES

The S&S 113CI, 4" bore Super Sidewinder™ 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 .050" shorter than a stock Evolution engine, which makes it easy to fit into any stock 1984-1999 frame. Some standard features of the 113 that make it a good choice are: chrome plated die cast rocker covers, roller rocker arms, S&S electric compression releases, High Volume High Pressure (HVHP) oil pump, billet tappet blocks, billet nose cone cover and an S&S Super G carburetor. Of course performance is really what makes the 113 so attractive. The 113 out-performs many other, non-S&S, engines of higher displacement. Tests on S&S Cycle's dynamometer have shown 112 hp and 124 ft/lb. Engine life and dependability are better than you might expect from an engine this large. Super Sidewinder™ 113 engines come with a 2 year limited warranty. Engines purchased complete 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 are available in a natural aluminum finish, black powder coated, or polished finish. All engines come assembled by S&S technicians.

Natural aluminum	Black	Polished	
750566	**750567**	**750568**	With S&S ignition
750456	**750458**	**750460**	With S&S IST ignition

Specifications:

Displacement	113CI, 1,850 cc
Bore	4"
Stroke	4 1/8"
Compression	10.1 : 1
Camshaft	S&S 600
Carburetor	Super G

Note: S&S IST ignition is not recommended for kick start applications.

S&S V-SERIES SUPER SIDEWINDER™ PLUS ENGINES

If you are looking for the most powerful Evolution style production engine available for the street, the S&S V-Series 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, billet tappet blocks, billet nose cone cover and an S&S Super G carburetor, are standard equipment on every SSW+ engine. That gives you performance, reliability, and improved engine life. SSW+ engines come with a 1 year limited warranty. Engines purchased complete 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 are available in a natural aluminum finish, black powder coated, or polished finish. All engines come assembled by S&S technicians.

Natural aluminum	Black	Polished	
750563	**750564**	**750565**	With S&S ignition and S&S Super G carburetor
750462	**750464**	**750466**	With S&S IST ignition and S&S Super G carburetor

Also available in Diamond Cut Full Polished, a very exclusive finish and are also polished between the fins on the cylinders and cylinder heads.

750818 Diamond Cut Full polished with S&S IST ignition and S&S Super G carburetor

750819 Diamond Cut Full polished with S&S VFI module for use with 1995 thru 1998 style Marelli Fuel Injection

Specifications:

Displacement	124CI (2,035 cc)
Bore	4 1/8"
Stroke	4 5/8"
Compression	10.8 : 1
Camshaft	S&S 640

Note: S&S IST ignition is not recommended for kick start applications.

S&S P-SERIES ENGINES

S&S introduces a P Style engine that features a real retro look, but also features modern and updated technology. The Panhead engine, which was produced from 1948 until 1965, has been hailed as the coolest looking classic engine of all time. The new P-Series engines from S&S capture that retro styling from the 50's and 60's, but with 21st century engineering. Keep in mind, that as cool as these motors look, they are not reproductions. These engines are built to run! P-series engines are available in three styles to fit 1948 thru 1999 style chassis. One engine style is designed for 1954 thru 1964 style tin primary applications. These 1954 thru 1964 style P-series engines can also be installed in 1948 thru 1953 chassis if a 1954 thru 1964 style inner tin primary cover is used. Another engine fits 1965 thru 1969 style chassis using the early alloy primary. For retro custom applications, an alternator/generator version is offered that will fit any stock or custom 1970 thru 1999 style chassis. Engines are available in 93 CI (1524 cc) in a high and a low compression as well as a 103CI (1688 cc) version. The 93" high compression and 103" engines come standard with dual plugged heads. The 93" engine will fit nearly all stock style frames. The 103" engine is .300" taller than the stock engine and will not fit in stock frames without modification. Although the S&S P-Series engines have a high classic cool factor, they are primarily designed to deliver performance and reliability. Engines come complete with S&S Super Stock ignition and S&S teardrop style air cleaner. Both 93 CI versions have an S&S Super E carburetor, the 103 CI models come with an S&S Super G carburetor. Is this the engine you'd want for a 10 point show grade restoration? Probably not. But how about a show grade retro custom? Absolutely! A daily rider? Of course! There are many advantages to using readily available, modern parts. Performance improvements aside, the ability to obtain high quality replacement parts is high on the list! A gratifying burst of speed from a big inch engine, and a quiet valve train are great, but being able to repair your bike without having to scrounge for obsolete parts makes it even better. The easy availability of replacement parts could make the difference between leaving your bike in the garage and riding it every day. Like we said, these engines were built to run!

S&S P-Series Engine Specifications

Engine	Bore	Stroke	Displace.	Cam	Piston	Compr. Ratio
P93	3 5/8"	4 1/2"	93"	585	Cast	8.2:1
P93H	3 5/8"	4 1/2"	93"	600	Forged	10:1
P103	3 5/8"	5"	103"	640	Forged	10.7:1

S&S P-Series Engines Generator Style 1948 thru 1953 applications require 1954 thru 1964 inner tin primary cover.

750805 93" engine for 1954 thru 1964 style chassis
750808 93" high compression engine for 1954 thru 1964 style chassis
750811 103" high compression engine for modified 1954 thru 1964 style chassis
750806 93" engine for 1965 thru 1969 style chassis
750809 93" high compression engine for 1965 thru 1969 style chassis
750812 103" high compression engine for modified 1965 thru 1969 style chassis

S&S P-Series Engines Custom Alternator/Generator Style fits 1970 thru 1999 style chassis

750807 93" engine, Custom Alternator/Generator
750810 93" high compression engine, Custom Alternator/Generator
750813 103" high compression engine, Custom Alternator/Generator

S&S COMPLETE SHOVELHEAD STYLE ENGINES

For lots of people this is still the most popular engine on the market. S&S starts with their bullet proof crankcases, flywheels, cylinders, and heads that they have offered for years, and finish the engine with new premium valve train components. Billet tappet guides, and rocker boxes look outstanding, and offer the kind of performance you have come to expect from S&S. What you can't see inside the engine is just as impressive. The new Shovelhead style tappet guides are designed around the quiet, dependable Evolution style tappets. Corrected tappet guide bore geometry assures correct valve timing using Evolution style cams. The unique adjustable pushrods are collapsible for easy removal and installation, but are stronger than the old style adjustable pushrods. Inside the billet rocker covers are S&S's exclusive straight rocker shafts and the new S&S forged Shovelhead style roller rocker arms. The result is an 93CI Shovelhead engine that has the classic stock appearance, the increased performance and the modern technology, which makes them ideal for those who find engine life more important than performance. For lighter bikes in performance applications there is also a High Compression version with dual plugged heads available. All alternator style 93CI engines are available with your choice of natural cast aluminum, or billet aluminum nose cone cover. Engines are assembled by S&S technicians, and come complete with S&S Super Stock ignition.

Assembled generator style engines with S&S Super Stock ignition
750639 93 CI
750640 93 CI High Compression

Assembled alternator style engines with S&S Super Stock ignition
750561 93 CI, cast nose cone cover
750612 93 CI, billet nose cone cover
750613 93 CI High Compression, cast nose cone cover
750562 93 CI High Compression, billet nose cone cover

Assembled TÜV approved alternator style engines with S&S Super Stock ignition
These TÜV approved engines have a different camshaft, special carburetor and intake devices. Must be used with specified gearing and TÜV approved exhaust system.

750529 93CI, billet nose cone cover

Specifications Shovel Style engines

Capacity	Bore	Stroke	Compression
93CI 1530 CC	3 5/8"	4 1/2"	8.75 : 1

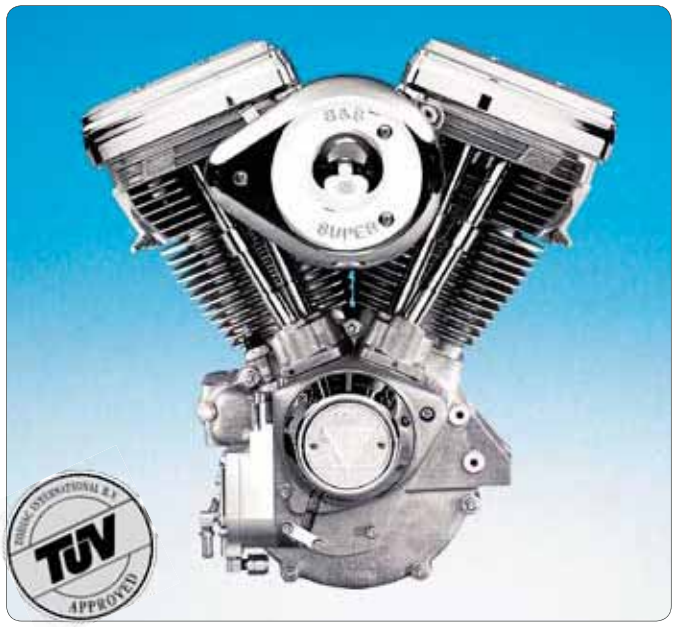
Specifications Shovel Style High Compression engines

Capacity	Bore	Stroke	Compression
93 CI 1530 CC	3 5/8"	4 1/2"	10 : 1

S&S ALTERNATOR/GENERATOR SHOVEL STYLE ENGINES

The appearance of an Alternator/Generator Shovel style engine is undeniably cool. These S&S engines perfectly provide you the classic look that will endure. Built from the same high quality components as other S&S 93" Shovel style engines. With the same specifications, there is no difference in performance or dependability. Of course, these engines feature the new S&S billet rocker boxes and tappet guides. Engines contain Evolution style camshafts, designed for a generator style crankcase. These engines come complete with S&S Super Stock electronic ignitions. Main advantage of an S&S Alternator/Generator engine is in fact the alternator. Without doubt, the introduction of the alternator electrical system in 1970 was a step forward in terms of capacity and dependability. For those who likes to use high-power devices on their motorcycles (e.g. high-watt halogen headlight, radio, or any other electrical accessory) presumably obtain for the alternator instead of the generator charging system. In fact, many electronic ignition systems won't function correctly if the battery is low. If a generator is not used on the engine, the generator location is an excellent place to mount a spin-on oil filter. High performance clutches, five and six speed transmissions, and many more drive train products are compatible with the Alternator Shovel style engine...even one with a generator on the other side. S&S Alternator/Generator engines require either a stock 1966-1969 style exhaust system, one of several aftermarket custom exhaust systems, or a custom fabricated exhaust pipe for a Generator Shovel engine. Assembled by S&S technicians in a natural aluminum finish and complete with S&S Super Stock ignition.

750636 93CI Alternator/Generator Shovel style engine, High Compression (10 : 1)
750637 93CI Alternator/Generator Shovel style engine, Standard Compression (8.5 : 1)



EURO 2 TÜV APPROVED S&S V-SERIES ENGINES

How do you mean, "Only limited choice of approved V2 engines"? Besides the OEM engine, you can now choose between various S&S engines. Available are a 96", 113" and 124" Cubic Inch engines (1573 cc, 1850 cc and 2030 cc) in black, natural and polished. These S&S engines have proven quality and are covered by a no nonsense 3-year limited warranty and are now available in an EU/TÜV approved Evolution Style Long Block version. They are certified to meet the 2003/77/EC emission standards for exhaust, noise and electronic interference. In order to be compliant to EU/TÜV standards, these Long Blocks are furnished complete and assembled by S&S engine builders, using a special S&S camshaft, a special design carburetor, intake devices, an S&S IST Single Fire ignition system, billet aluminum tappet guides and billet aluminum nose cone gear cover. In addition they MUST be used with specified gearing and stock H-D or aftermarket EU approved exhaust. All required certification, documentation and instructions are included with each engine.

TÜV approved V-Series engines (assembled only)

96 CI (1.573 cc)	113 CI (1.850 cc)	124 CI (2.030 cc)	
750270	**750273**	**750276**	Natural finish V-series engine
750271	**750274**	**750278**	Black finish V-series engine
750272	**750275**	**750277**	Polished finish V-series engine

Specifications for EU/TÜV approved Evolution style V-Series engines

Capacity	Bore	Stroke	Compression
96 CI	3 5/8"	4 5/8"	10.1:1
113 CI	4"	4 1/2"	10.1:1
124 CI	4 1/8"	4 5/8"	9.5:1

ASSEMBLED 96 CI EVOLUTION STYLE ENGINES

One of the most proven S&S products is their famous 96 CI (1575 CC) Evolution style engine. To allow even more people to use this high specification engine as a stock replacement or the heart of their Custom Project, Zodiac is offering this ready to install 96 Cubic Inch powerhouse for a very attractive price. These engines are assembled by S&S technicians and come complete with S&S Super E carburetor. Engines have an S&S 585 camshaft installed which provides a broad torque range. Other features are 3 5/8" bore, 4 5/8" stroke, adjustable push rods, forged roller rocker arms, forged pistons and a billet oil pump. Engines come in your choice of natural finish, black finish or polished finish. Available with S&S nose cone ignition, or S&S IST ignition. Engines with S&S nose cone ignition feature a 2 year full warranty, engines with the S&S IST ignition will receive an extra year (total 3 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 breakin period. IST equipped engines also feature a billet nose cone cover and billet tappet guides.

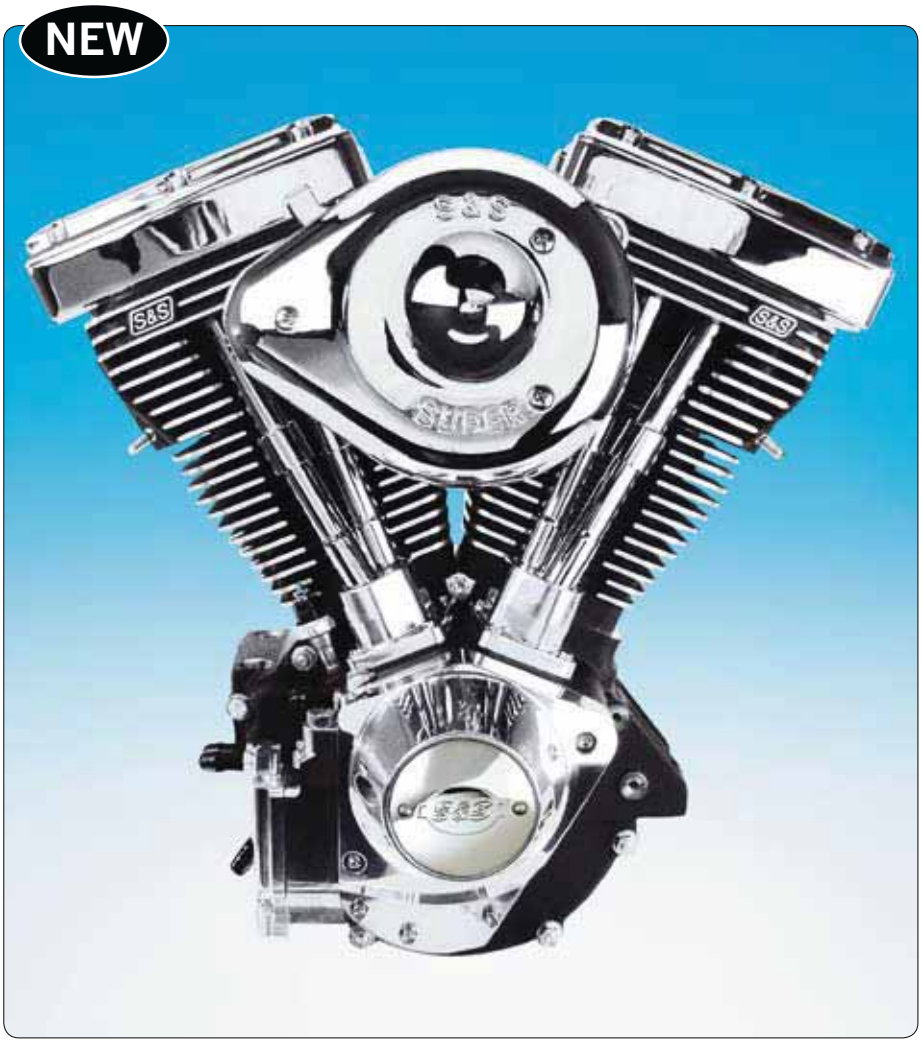
S&S 96 CI engines complete with S&S SuperStock nose cone ignition and chrome die-cast rocker covers

750569 Natural aluminum, with natural finish cast gear cover
750643 Natural aluminum, with billet aluminum gear cover
750570 Polished finish, with polished billet gear cover
750611 Black finish, with black billet gear cover

S&S 96 CI engines complete with S&S IST ignition, billet nose cone cover, and billet tappet guides

750525 Natural aluminum, with chrome die cast rocker covers
750527 Polished finish, with chrome die cast rocker covers
750526 Black finish, with chrome die cast rocker covers

S&S V107T TOURING SPECIAL ENGINES



S&S V107T series engines are designed for use in 1984 thru 1999 style frames. S&S produces some of the most powerful engines in the world, but for a touring application, the "most powerful" is not always the best. A big horsepower number at 7000 rpm will not help a loaded bagger merge with interstate traffic on a short on-ramp, but lots of torque at 3000 rpm will do quite nicely. The V107T Touring Special satisfies the needs of the performance minded touring rider with a healthy displacement, a relatively short 4 1/4" stroke, but large 4" bore. The result is a performance engine with characteristics that are ideal for touring. The moderate 9.5:1 compression ratio allows the V107T to pull heavy loads with little or no detonation, and to tolerate sub-standard gasoline on occasion without engine damage. All S&S V107T engines come with billet gear cover and billet tappet guides, as well as electric compression release valves. When riding for extended periods of time, noise and vibration can really get on your nerves, so it is important that the engine be smooth and quiet. The relatively short stroke, the new S&S single coil valve springs, and the quiet 585 cam make the V107T touring special a pleasure to ride for the long haul. Carbureted engines for 1984 thru 1999 models include an S&S Super E carburetor with a teardrop air cleaner cover and either the S&S Super Stock ignition system or the S&S Intelligent Spark Technology (IST) Ignition. V107T engines with the S&S Super Stock Ignition System carry a two-year warranty. For an extra year of warranty choose an engine with the S&S IST ignition system. Engines purchased with the S&S IST ignition carry an extra year of warranty because we are 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. Fuel Injected Engines for 1995 thru 1998 models come complete with a Magneti Marelli style S&S Variable Fuel Injection (VFI) module, single bore induction with a teardrop air cleaner, and the S&S closed loop sensor kit. The VFI system included with each fuel injected engine comes with closed loop sensors and the complete S&S protean II software package. Base maps for V107T engines with the most common exhaust systems are available on the included software CD and from the S&S website. However, it is recommended that the VFI System be fine tuned at an S&S VFI Tuning Center. Since we have added the S&S Closed Loop Sensor Kit to all VFI equipped engines, tuning is much easier and the amount of dyno time required to fine tune the engine is greatly reduced.

Natural	Black	Polished	
750826	**750829**	**750832**	Carbureted with SuperStock ignition
750825	**750828**	**750831**	Carburated with IST ignition
750827	**750830**	**750833**	Single bore VFI equipped

S&S V107T Engine Specifications
4" Bore
4 1/4" Stroke
107 CI (1.754 cc) Displacement
S&S 585 series Camshaft
9.5:1compression

EVOLUTION BIG TWIN ENGINE ASSEMBLIES

For the Custom Bike builder Zodiac offers complete assembled OEM type 80 CI (1340 CC) Evolution Big Twin engines. Engine includes: ignition trigger system (module not included), alternator stator, rotor, and oil filter.

237648 Complete engine assembly, silver paint finish with polished rocker covers
731450 Complete engine assembly, black & chrome

TWIN CAM ENGINES

For the custom builder Zodiac offers complete assembled OEM type 88 CI (1440 CC), as well as 96 CI (1584 CC) Twin Cam A engines (no balance shafts) for Dyna Glide type frames and Twin Cam B engines(with balancers). Engines include ignition trigger, and oilfilter. Ignition module, alternator stator and alternator rotor must be ordered separately. Available in black/chrome finish or silver/polished finish.

Complete Twin Cam A engines
236286 88CI Black/chrome finish
236293 96CI Black/chrome finish
236289 88CI Silver/polished finish
236294 96CI Silver/polished finish

Complete Twin Cam B engine
236193 88CI Black/chrome finish
236295 96CI Black/chrome finish
750109 88CI Silver/polished finish
236296 96CI Silver/polished finish

S&S COMPLETE 91CI AND 100CI ENGINES FOR SPORTSTER OR BUELL

S&S complete Engines for Sportsters and Buells are available in 91CI (1.490 cc) and 100CI" (1640 cc). The 91CI engines have 3 5/8" stroke with a 4" bore. Cylinder length is stock so the engine fits in all frames with little or no modification. Compression ratio of the 91CI engine is 9.5:1. The 100CI engine has 4" stroke with a 4" bore. Cylinder length is .260" taller than stock. The 100CI engine will generally fit in stock Sportster frames with no modification, but due to the increased cylinder length, requires the S&S billet motor mount to fit in the Buell chassis. Exhaust modifications may also be required to gain frame clearance when installing a 100CI engine in a Buell frame. Compression ratio of the 100" engine is 10.3:1. Crankcases have 1986 thru 1990 four-speed style cam geometry, 1991 to present five-speed style driveside, and are available only assembled by S&S technicians in natural aluminum finish. You need a 1991 to present style 5-speed transmission, clutch, primary components, 1986 to present style OEM or aftermarket oil pump, 1986 thru 1987 style bolt-on oil filter mount, charging system and ignition to complete these engines. Installation of a 100CI Buell style engine in a Buell frame also requires the purchase of a ZPN 750502 billet motor mount.

S&S Sportster and Buell engines include:

- S&S Special Application Sportster or Buell style crankcases
- Complete S&S flywheel assembly
- S&S Super Stock cylinder heads
- S&S cylinders and pistons
- S&S 555 camshaft set and required gear case components
- Adjustable pushrods and pushrod cover assemblies
- S&S billet tappet guides with hydraulic tappets
- Super G carburetor kit
- S&S billet XL style gear cover kit
- S&S billet aluminum rocker covers and roller rocker arms

S&S complete engine for Sportster

750572 91 CI Natural aluminum finish
750571 100 CI Natural aluminum finish

S&S complete engines for Buell

750574 91 CI Natural aluminum finish
750573 100 CI Natural aluminum finish
750502 Optional billet motor mount for use with 100 CI engine in Buell frame

NEW

S&S X-WEDGE ENGINES

The all new S&S X-Wedge (pronounced as "Ex-Wedge") engine is developed with upcoming, tightening emission standards in mind. This next generation V-Twin is a departure from S&S' traditional engine design and a step toward the future of air-cooled, pushrod operated V-Twins. The engine is a 56-degree, closed-loop fuel injected, three cams, overhead valve V-Twin designed to deliver the performance expected of an S&S engine, but still comply with EPA laws. One key engineering feature is the versatility of the design to create a range of engine sizes. The 117 CI (1.918 cc) 56 degree V-Twin utilizes three serpentine belt-driven, large base-circle cams; two exhaust cams and a common intake cam to achieve almost straight pushrod angles that combine with automotive-style rockers and roller tappets to create an incredibly quiet valve train. Induction on the X-Wedge is done with the new S&S single bore throttle body pumping fuel and air into a wedge shaped combustion chamber contained in a head with a five stud bolt pattern and increased fin area for maximum cooling abilities. The head has the fuel injector mounted directly in it for even more efficient combustion. The non-structural rocker cover allows Custom Bike builders to adapt the design to their wishes. There are too many innovations and unique designs built into the X-Wedge engine to list here. The X-Wedge is not a replacement engine and it does not fit in a Harley-Davidson frame. It requires a special frame with the appropriate engine mounts, but since the X-Wedge is intended for custom builds this will not be an issue. Frames specifically designed to take this engine will be available shortly. The X-Wedge crankcase bolts up to most standard and aftermarket Harley style aluminum primaries, making it compatible with a large number of primary drives, clutches and transmissions. Engine comes complete with a 2 1/16" single bore throttle body, S&S VFI Fuel Injection module, closed loop fuel management and knock sensing ignition control.

S&S X117 X-Wedge engines
750834 Silver paint finish
750835 Black paint finish
750836 Polished finish

Engine specs
56.25 degree cylinder angle
4.125" bore X 4.375" stroke
117CI (1.917 CC) displacement
9.75: 1 compression

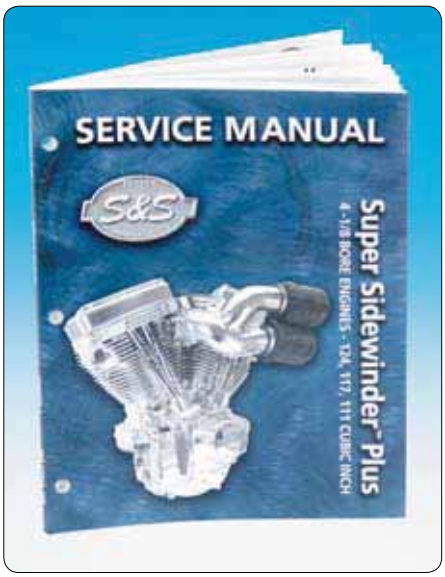
Tests on the S&S SuperFlow Dyno showed 97.5 BHP and 110.4 ft/lbs. torque

NEW

SERVICE MANUAL FOR S&S PANHEAD-STYLE AND SHOVELHEAD-STYLE ENGINES

This manual covers the S&S Panhead style P93, P93H and P103, as well as the Shovelhead style SH80, SH93, SH93H, and SH103H engines. With detailed photos, in-depth instructions, and complete specifications, it is a "must have" for both professional and home technicians alike. Detailed instructions, tips from the S&S Product Development Department, and large, clear photos will help technicians keep P and SH-Series engines properly maintained for years to come

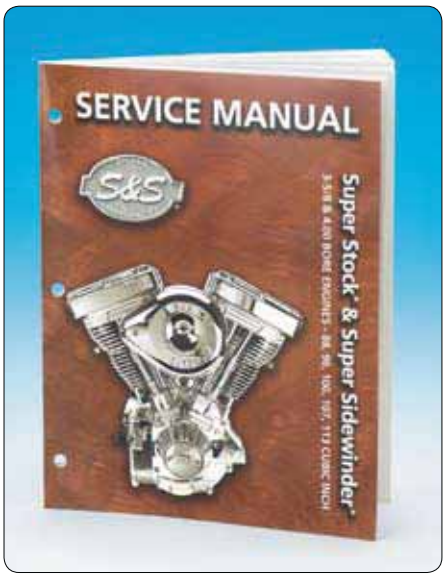
750965 S&S P and SH-series engine service manual



S&S SSW+ ENGINES SERVICE MANUAL

This is the first service manual covering the Super Sidewinder Plus engine series, 111", 117", and 124". This manual is another example of how S&S is continuing to elevate its service to the V-Twin community and industry. This 4 1/8" bore engine service manual, a first in a series, is designed to guide a technician through the complete servicing procedure of an S&S Super Sidewinder Plus engine. With comprehensive instructions, complete specifications, high-quality photography, and tips directly from the S&S service technicians, this manual will be a valuable tool in every shop.

750528 S&S SSW+ engines service manual



S&S SUPER STOCK & SUPER SIDEWINDER ENGINES SERVICE MANUAL

This manual covers some of the most popular S&S engines the Super Stock and Super Sidewinder. All of the information you need for an S&S 88ci, 96ci, 100ci, 107ci and 113ci can be found on its pages. Detailed descriptions, plenty of photos and lots of helpful tips make this an important addition to your garage.

750646 S&S Super Stock and Super Sidewinder engines service manual

SPECTRO ASSEMBLY LUBRICANT

Spectro assembly lubricant is recommended for initial scuff and wears protection in re-assembly and repair of engines. This is a heavy lubricant fortified with anti-scuff polymers. Spectro assembly lubricant when, applied to rings, cam lobes, gears and bearings, coats and plates completely and assuring total starting protection. It is compatible with all petroleum-based products. It also exhibits anti-rust properties for prolonged storage of engine or transmission parts.

741348 Spectro assembly lubricant, bottle of 4 oz
741335 Shop pack of 12 bottles

NEW

S&S 106CI STROKER HOT SET UP KIT FOR TWIN CAM

S&S stroker kits have always been the most effective way to boost the power of a V-Twin engine. That was true in 1961, when S&S started selling strokers and it's still true today. The S&S 106CI (1,740 cc) Stroker Hot Set Up Kit for Twin Cams delivers real performance gains at a reasonable price, and does not require any crankcase modifications. It uses your stock cylinders that have to be bored out to accept the separately available 3 7/8" bore pistons, or order complete cylinder and piston kits. Together with the included 4 1/2" stroke flywheels this boosts the displacement of a stock engine to 106CI (1,740 cc) with no crankcase modifications. The high flowing Super Stock cylinder heads and 585 gear drive cams allow the engine to get enough air to make some real power. The kit also includes rocker covers, electric compression releases, push rods, tappets and all required gaskets and seals. Kits are available with natural aluminum or black finished cylinder heads. Intake system as well as 3 7/8" bore pistons must be ordered separately. Intake systems are listed with the Super Stock Hot Set Up kits on the previous page

S&S 106 CI (1,740 cc) Stroker Hot Set Up Kits for Twin Cam

Natural	Black	
751372	**751373**	Fits 1999 thru 2005 Dyna and 1999 thru 2006 Touring models
751374	**751375**	Fits 2000 thru 2006 Softail
751376	**751377**	Fits 2006 to present Dyna and 2007 Touring models
751378	**751379**	Fits 2007 to present Softail

Piston and complete cylinder kits for above Big Bore Stroker kits

750510 3 7/8" Big Bore piston kit
750511 3 7/8" +.005" Big Bore piston kit
750512 3 7/8" +.010" Big Bore piston kit
750513 3 7/8" +.020" Big Bore piston kit
750514 Black cylinder and piston kit
750515 Natural cylinder and piston kit

S&S 95CI AND 103CI SUPER STOCK HOT SET UP KITS FOR TWIN CAM

Super Stock Hot Set Up kits are a good way to get some serious horsepower from your Twin Cam without major engine work. Kits for 1999 thru 2006 Twin Cam 88 engines give 95 CI (1,560 cc) displacement with stock cylinder heads. The Big Bore pistons for 2007 to present Twin Cam 96 engines give 103 CI (1,690 cc) displacement and a 10.5:1 compression ratio. All kits include cylinders and pistons, complete Super Stock cylinder heads, 585G gear drive cams, High Performance tappets, push rods, push rod tubes and all required gaskets. No need to rebalance the stock flywheels. Then, install the S&S fuel system of your choice to make sure the engine can breathe and get the fuel it needs to achieve that magic 100 horsepower. Kits are available in natural aluminum and black powder coat finish. Kits are sold without a fuel system. You have to purchase either the Super E carburetor kit, an S&S single bore EFI kit or a complete S&S Variable Fuel Injection (VFI) kit to finish the engine.

Note: Kits are also available upon special order without pistons and cylinders. Check with your Zodiac dealer.

Fits 1999 thru 2006 Twin Cam models except 2006 Dyna
740442 95 CI kit, natural finish
740443 95 CI kit, black finish

Fits 2006 Dyna models
740446 95 CI kit, natural finish
740447 95 CI kit, black finish

Fits 2007 to present Softail, 2007 to present Dyna and 2007 Touring
751370 103 CI kit, natural finish NEW
751371 103 CI kit, black finish NEW

Fuel Systems for 95" Hot Set Up Kits
You may choose from a Super E carburetor kit, the S&S single bore EFI kit or a complete S&S Variable Fuel Injection. When using a VFI kit on 1999 thru 2005 models a closed loop sensor kit is recommended. In addition to the teardrop air cleaner we offer a tuned induction system for even better air intake and maximum performance.

Super E carburetor kit
232909 Super E carburetor kit for Twin Cam

Single Bore EFI Induction kit includes manifold, throttle body, fuel rail and teardrop air cleaner
Kit does not include an Injection module. May be used with other aftermarket EFI modules or with the highly recommended S&S VFI module. S&S VFI modules are only available thru Certified VFI Tuning Centers. Check www.zodiac.nl for your nearest VFI Tuning Center.

740450 Fits 1999 thru 2000 models
740451 Fits 2001 thru 2005 models
751397 Fits 2006 to present Softail, NEW 2006 to present Dyna and 2006 thru 2007 Touring
750058 VFI module for models thru 2001
750589 VFI module for 2001 to present models

Optional Tuned Single Bore Induction system
740452 Natural finish
740453 Black wrinkle finish
740454 Chrome finish
740455 Adapter bracket kit for stock cylinder heads
751344 Adapter bracket kit for S&S NEW cylinder heads

"Closed Loop" O2 sensor kits NEW
740459 Fits 1999 thru 2000 models
740460 Fits 2001 thru 2005 models

S&S 95CI AND 103CI BIG BORE HOT SET UP KITS FOR TWIN CAM

Big Bore Hot Set Up Kits for Harley-Davidson Twin Cam 88 and Twin Cam 96 engines are available for carbureted and fuel injected engines. The Big Bore pistons for 1999 thru 2006 Twin Cam 88 engines give 95 CI (1,560 cc) displacement and a compression ratio of 9.7:1 with stock cylinder heads. The Big Bore pistons for 2007 to present Twin Cam 96 engines give 103 CI (1,690 cc) displacement and a 10.5:1 compression ratio. Stock cylinders must be bored from 3 3/4" to 3 7/8" bore, or new S&S 3 7/8" bore cylinders and pistons must be ordered separately. Kits for carbureted engines contain a gear drive cam set, push rods and a S&S Super E carburetor kit. Kits for 2001 Softail and all 2002 thru 2006 Fuel Injected models are identical to the carbureted kits, except that instead of a carburetor, they include an S&S high flow air cleaner that bolts directly to the stock Delphi throttle body. Kits for 1999 thru 2004 also include S&S 640-series valve springs, other kits can be installed with the stock valve springs. We recommend these kits for engines with ported cylinder heads to take advantage of the increased lift of the S&S cams. Kits with the 585G camshafts are recommended for engines with "decked" cylinder heads and compression ratio of 10:1 to 10.5:1. The 3 7/8" bore, "pop up dome" pistons for these kits are not included and must be ordered separately depending on the oversize required.

Fits 1999 thru 2004 carbureted Twin Cam models
750002 With S&S 570G Gear Driven cam shafts
750003 With S&S 585G Gear Driven cam shafts

Fits 2001 thru 2004 Delphi Fuel Injected Twin Cam models
751359 With S&S 570G Gear Driven cam shafts NEW
751360 With S&S 585G Gear Driven cam shafts NEW

Fits 2005 carbureted Twin Cam models
751355 With S&S 570G Gear Driven cam shafts NEW
751356 With S&S 585G Gear Driven cam shafts NEW

Fits 2006 carbureted Twin Cam models
751357 With S&S 570G Gear Driven cam shafts NEW
751358 With S&S 585G Gear Driven cam shafts NEW

Fits 2005 thru 2006 Delphi Fuel Injected Twin Cam models, except 2006 Dyna
751361 With S&S 570G Gear Driven cam shafts NEW
751362 With S&S 585G Gear Driven cam shafts NEW

Fits 2006 to present Dyna, 2007 to present Softail and 2007 Touring
751363 With S&S 570G Gear Driven cam shafts NEW
751364 With S&S 585G Gear Driven cam shafts NEW

Pistons and piston and cylinder kits for above Big Bore kits

1999-2006	2007-up	
750504	**751365**	3 7/8" Big Bore piston kit
750505	**751366**	3 7/8", +.005" Big Bore piston kit
750506	**751367**	3 7/8", +.010" Big Bore piston kit
750507	**N/A**	3 7/8", +.020" Big Bore piston kit
750508	**751368**	Cylinders with complete pistons
750509	**751369**	Cylinders with complete pistons

S&S CAM, PUSH ROD AND INDUCTION HOT SET UP KITS FOR TWIN CAM

The Harley-Davidson Twin Cam 88 and Twin Cam 96 engines have a lot of potential for performance improvement. As a result S&S offers a wide spectrum of Hot Set Up Kits for these models. There is a kit for every budget, and for every riding style. Like all Hot Set Up Kits they contain everything you need, and they are proven performers. The cam, push rod, and induction Hot Set Up Kit is very economical and easy to install. Kits are intended for 88", 95", and 96" engines with stock cylinder heads and valve springs. Kits for carbureted Twin Cam 88 engines contain a Super E carburetor kit,.510 cam kit and an push rod kit. Kits are available with stock style chain drive cams and with the very reliable gear drive cams. Gains of 20 horsepower have been measured when installed with performance exhaust and ignition module. S&S also offers kits for fuel injected models. They contain the same cams and push rods, but feature a high flow S&S air cleaner kit instead of a carburetor.

Fits 1999 thru 2006 carburetor equipped Twin Cam models, except 2006 Dyna. Includes Super E carburetor, camshafts, push rods and tappets

750000 For stock cam chain drive
750001 With complete camshaft gear drive set up

Fits 2001 Fuel Injected Softail and all 2002 thru 2006 Fuel Injected models, except 2006 Dyna. Includes Teardrop air cleaner, camshafts, push rods and tappets

751352 For stock cam chain drive NEW
751353 With complete camshaft gear drive set up NEW

Fits 2006 to present Fuel Injected Dyna, 2007 to present Fuel Injected Softail and 2007 Fuel Injected Touring. Includes Teardrop air cleaner, camshafts, push rods and tappets

751354 With complete camshaft gear drive set up NEW

NEW

S&S 116CI SUPER SIDEWINDER HOT SET UP KIT FOR TWIN CAM

The 116CI (1,900 cc) displacement is achieved by increasing the stroke from the stock 4" to 4 5/8". Being a stroker, these kits includes a 4 5/8" stroker flywheel assembly. To assure dependable starting electric compression releases and matching rocker boxes are included in these kits. Furthermore kits include cylinder heads, cylinders with pistons, 625 gear driven camshafts, tappets, push rods with tubes, and all required gaskets and seals. To install the Super Sidewinder Hot Set Up Kit, stock crankcases must be bored to accept the 4" big bore cylinders. Stock cylinder stud pattern and studs are retained. S&S Super Sidewinder Hot Set Up Kits are available in black powdercoat and natural aluminum finish.

S&S 116 CI (1,900 cc) Stroker Hot Set Up Kits for Twin Cam

Natural	Black	
751380	**751381**	Fits 1999 thru 2005 Dyna and 1999 thru 2006 Touring models
751382	**751383**	Fits 2000 thru 2005 Softail
751384	**751385**	Fits 2006 to present Dyna and Touring models

Fuel Systems for 116CI Stroker Hot Set Up Kits.

You may choose from a Super G carb kit, the S&S single bore EFI kit or a complete S&S Variable Fuel Injection. When using a VFI kit on 1999 thru 2005 models an adjustable throttle position sensor is needed, a closed loop sensor kit is recommended. Sensors must be ordered separately. In addition to the teardrop air cleaner we offer a tuned induction system for even better air intake and maximum performance.

Super G carburetor kits for 116CI Hot Set Up Kits

751386 Fits 1999 thru 2006 Twin Cam

Single Bore EFI Induction kit includes manifold, throttle body, fuel rail and teardrop air cleaner

Kit does not include an Injection module. May be used with other aftermarket EFI modules or with the highly recommended S&S VFI module. S&S VFI modules are only available thru Certified VFI Tuning Centers. Check www.zodiac.nl for your nearest VFI Tuning Center.

751387 Fits 1999 thru 2000 models
751388 Fits 2001 thru 2005 models
751389 Fits 2006 to present Softail, 2006 to present Dyna and 2006 thru 2007 Touring
750058 VFI module for models thru 2001, replaces stock Magneti Marelli unit
750859 VFI module for 2001 to present models, replaces stock Delphi module

Optional Tuned Single Bore Induction system

740452 Natural finish Black wrinkle finish
740454 Chrome finish
751344 Adapter bracket kit for S&S cylinder heads

"Closed Loop" O^2 sensor kits

740459 Fits 1999 thru 2000 models
740460 Fits 2001 thru 2005 models

751399 Optional adjustable Throttle Position Sensor

S&S 124CI SUPER SIDEWINDER HOT SET UP KIT FOR TWIN CAM

The 124CI (2,030 cc) displacement is achieved by increasing from the stock 4" stroke in 1999 thru 2006, or 4 1/4" stroke in 2007 to present models, to 4 5/8". Being a stroker, these kits includes a 4 5/8" stroker flywheel assembly. To assure dependable starting electric compression releases and matching rocker boxes are included in these kits. Furthermore kits include S&S Super Stock cylinder heads, cylinders with pistons, 640 gear driven camshafts, roller rocker arms, tappets, push rods with tubes, and all required gaskets, seals and instructions. To install the Super Sidewinder Hot Set Up Kit, stock crankcases must be bored to accept the 4 1/8" big bore cylinders. Stock cylinder stud pattern and studs are retained. S&S Super Sidewinder Hot Set Up Kits are available in black powdercoat and natural aluminum finish.

S&S 124 CI (2,030 cc) Stroker Hot Set Up Kits for Twin Cam

Natural	Black	
750447	**750448**	Fits 1999 thru 2005 Dyna and 1999 thru 2006 Touring models
751384	**751385**	Fits 2006 to present Dyna and Touring models NEW
750449	**750450**	Fits 2000 thru 2006 Softail
751392	**751393**	Fits 2007 to present Softail NEW

Fuel Systems for 124CI Stroker Hot Set Up Kits.

You may choose from a Super G carb kit, the S&S single bore EFI kit or a complete S&S Variable Fuel Injection. When using a VFI kit on 1999 thru 2005 models an adjustable throttle position sensor is needed, a closed loop sensor kit is recommended. Sensors must be ordered separately. In addition to the teardrop air cleaner we offer a tuned induction system for even better air intake and maximum performance.

Super G carburetor kits for 124CI Hot Set Up Kits

750485 Fits 1999 thru 2006 Twin Cam

Single Bore EFI Induction kit includes manifold, throttle body, fuel rail and Desperado style teardrop air cleaner

Kit does not include an Injection module. May be used with other aftermarket EFI modules or with the highly recommended S&S VFI module. S&S VFI modules are only available thru Certified VFI Tuning Centers. Check www.zodiac.nl for your nearest VFI Tuning Center.

751394 Fits 1999 thru 2000 models
751395 Fits 2001 thru 2005 models
751389 Fits 2006 to present Softail, 2006 to present Dyna and 2006 thru 2007 Touring
750058 VFI module for models thru 2001, replaces stock Magneti Marelli unit
750859 VFI module for 2001 to present models, replaces stock Delphi module

Optional Tuned Single Bore Induction system

740452 Natural finish
740453 Black wrinkle finish
740454 Chrome finish
751347 Adapter bracket kit for S&S cylinder heads

"Closed Loop" O^2 sensor kits

740459 Fits 1999 thru 2000 models
740460 Fits 2001 thru 2005 models

751399 Optional adjustable Throttle Position Sensor

COMPRESSION RELEASE KITS FOR S&S TWIN CAM STYLE CYLINDER HEADS

Big Inch and high compression engines can sometimes be difficult to start. Better batteries, and high torque starters can cure the problem, 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 kit is that solution. S&S compression releases are designed to be used in S&S Twin Cam style cylinder heads, which have been machined to accept them. 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. There are two versions of this system available: an electrically operated kit, and a manually operated kit. The electric version opens the valve automatically when the starter button is pressed, and closes automatically when the starter is released. The electric compression releases require the use of S&S die-cast rocker covers or Zodiac billet or die cast covers (ZPN 037020 & 037023) with a central hole. These central holes in the rocker covers are required to provide clearance for the solenoids that operate the compression releases. A cable similar to a choke control activates the manual compression releases. 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 manual compression releases can be used with any style rocker covers. A special billet accessory cable knob for the manual release cable is available. The compression releases can be installed while the engine is in the frame with the handy 2 piece compression release socket kit.

Note:

- All S&S 89 CI Twin Cam style cylinder heads are machined for the S&S compression releases.
- Compression release machining is optional on S&S 79 CCTwin Cam style heads.
- Stock cylinder heads can not be machined for S&S compression releases because there is not enough material in critical areas.
- If cylinder heads are machined for S&S compression releases, but you don't want to install the compression releases, the compression release hole plug can be installed to seal the hole.
- S&S electric compression releases can only be used in conjunction with S&S die-cast rocker covers or a similar rocker cover with a center hole or chimney. The chimney provides clearance for the solenoid which activates the compression release.
- S&S manual compression release valves can be installed with OEM and most aftermarket rocker covers.

736095 S&S electric compression release kit
736096 S&S manual compression release kit
736097 S&S two piece compression release socket kit
736098 S&S special billet accessory knob
736099 S&S compression release hole plug

HEAD BOLT KIT

Super strong, twelve point, grade 8 bolts with machined heads and washers to clear Big Bore Shovelhead cylinders. Super tough and designed for severe service. Will also work with stock sized cylinders whenever the strongest hardware is needed. Available in black and in chrome finish.

231574 Head bolt kit black
231577 Head bolt kit chrome

COLONY HEAD BOLT COVERS

721867 Chrome plated hex dome head bolt covers to hide those dull 12 point head bolts. Easy to install with set screws. Fits 1999 to present Twin Cam models, 1984 thru 1999 Evolution Big Twins, and 1986 to present Evolution Sportster models. Sold in sets with 4 covers with set screws.

CHROME HEAD BOLT KIT

Chrome plated 12-point bolt kit from Sputhe. A must for high-performance machines but can also be used as a stock replacement. Fits 1984 thru 1999 Evolution Big Twin and 1986 to present Evolution Sportster models. Kit contains all 8 bolts for your 2 cylinders.

236064 Evolution head bolt kit

MAGNETIC HEAD BOLT COVERS

These chrome plated head bolt covers are the easiest to install accessory ever. Just put them on your cylinder head bolts and the cast-in magnet holds them in place. All versions are fat looking. Fits all Evolution Sportster, Evolution Big Twin and Twin Cam models and are sold each.

A. 304026 Flared Button Head
B. 304027 Stepped Cone
C. 304028 Button Head
D. 304029 Butt Head
E. 304040 Acorn

CHROME HEAD BOLT KITS

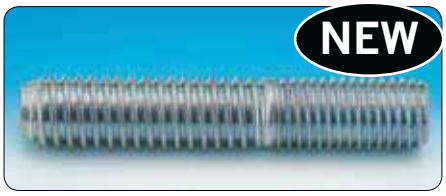
Polished and chrome plated 12-point bolt kits, available in early and late style. Early style fits 1985 thru 1991 Evolution Big Twins and 1986 thru 1992 Evolution Sportsters, late style fits 1992 thru 1999 Evolution Big Twins, 1999 to present Twin Cam and 1993 to present Evolution Sportsters. Kits contain all 8 bolts for your 2 cylinders.

721863 Fits 1985 thru 1991 Evolution Big Twins, and 1986 thru 1992 Evolution Sportsters
721864 Fits 1992 thru 1999 Evolution Big Twins, 1999 to present Twin Cam and 1993 to present Evolution Sportsters

HEAD BOLT WASHER KITS

Chrome or cadmium plated head bolt washer kits fit 1985 thru 1991 Evolution Big Twins and 1986 thru 1992 Evolution Sportsters. Kits contain all 8 washers for your 2 cylinders.

721865 Chrome plated
721866 Cadmium plated



EXHAUST PORT STUDS

Stock replacement exhaust port stud. Fits 1984 thru 1999 Evolution Big Twin, 1999 to present Twin Cam, 1986 to present Sportster and air cooled Buells. Sold each.

750768 Exhaust port stud (OEM 16715-83)

S&S SPECIAL PISTON COOLING JET KIT

Twin Cam style engines with strokes longer than stock, require special piston cooling jets to avoid contact with pistons at the bottom of the stroke. S&S cooling jets provide an extra .150" of clearance between the jet and piston skirt compared with stock jets. These special jets are included in the S&S 107" and 116" Sidewinder and Hot Set Up kits. S&S piston cooling jets are sold in kits and are also available individually as replacement parts.

750019 Piston cooling jet kit (contains two cooling jet assemblies)
750020 Piston cooling jet assembly (contains one jet body and 0-ring)
750021 Replacement 0-ring

COMPRESSION RELEASE VALVES

High compression engines might cope with starting difficulties. A stronger battery or a high torque starter can cure the problem. But a more fancy solution is installing these compression release valves into the cylinder heads. Installation of these release valves requires drilling a 8.5 mm hole and tapping M10x1 thread in the cylinder head. Engaging the compression release valves reduces compression, valve will automatically close for the next cycle. Fits Buell, Sportster, and Big Twin models with >14 mm drill depth at 10 mm diameter. Sold in pairs.

741345 M10x1 compression release valves

Note: For proper installation, compression release valve tool kit ZPN 750314 is strongly recommended.

JIMS COMPRESSION RELEASE VALVES

These Jims release valves make starting your engine effortless by venting cylinder compression with just the push of a button. This is a good alternative for Heavy Duty starter motors and high amp batteries on any Sportster, Buell or Big Twin. The heads have to be drilled and tapped with 10 mm thread. Use the ZPN 750314 fixture guide tool to install these compression release valves in Twin Cam cylinder heads. Jims compression release valves are sold in sets of 2.

750300 Jims compression release valves

V-THUNDER INJECTION "OVERDRIVE" POWER ADVANTAGE KIT

This kit offer the complete power advantage for all 1997 thru 1999 fuel injected Evolution Big Twin models. Kit contains a injection overdrive, a high-flow air cleaner backing plate with air cleaner element, a special designed V-Thunder cam and a set of adjustable pushrods. This kit will drastically increase the whole power range of your injected motorcycle.

239598 Injection overdrive kit for 1997 thru 1999 Evolution Big Twin models
233826 K&N replacement air filter element

CHROME BILLET COMPRESSION RELEASE VALVE COVERS

Billet aluminum covers with a chrome finish. They install in seconds and are sold in pairs. Fits most compression release valves.

345000 Billet chrome compression release valve covers

AUTOMATIC COMPRESSION RELEASE VALVES

These Sputhe automatic compression release valves are a very good alternative for Heavy Duty starter motors and high Amp batteries. Also the one-and-only solution on kick start bikes. Can be installed in any air cooled cylinder head. Please note that heads must be drilled, tapped and spot faced.

231793 Sold per set of 2

PRO-ONE BILLET CYLINDER HEADS

Pro-One claims an instant gain in horsepower with these bolt-on billet aluminum heads. These super looking heads are designed in co-operation with 3-time NHRA World Champion Brad Anderson, using the latest 5-Axis Digital Technology. Heads are available with a 72 CC combustion chamber, recommended for 80 to 89 CI motors or with a 80 CC combustion chamber for 96 CI and larger motors. Heads come complete assembled with valves, springs and guides already installed. The 72 CC heads use 1.850" intake and 1.615" exhaust valves, the 80 CC heads use 1.940" intake and 1.625" exhaust valves. Fits Big Twin engines from 1993 thru 1999. Can also be used on earlier Evolution Big Twin engines, if the "thru-the-head" breather holes are plugged off. Sold in sets of two heads.

239444 72 CC combustion chamber
239445 80 CC combustion chamber
239446 Manifold, flange type
239447 Manifold spigot type

CYLINDER HEADS FOR SHOVELHEADS

S&S cylinder heads are really state of the art. Just the part you need to make your Shovelhead growl again. While stock heads use studs to attach the rocker box assemblies, S&S heads utilize 5/16-18 hex-head bolts. Rocker cover bolts are included with each complete Shovel- style head kit. Otherwise, S&S heads accept all stock-style components. Intake and exhaust ports are in the stock locations and are the same size as stock. Stock intake manifolds and exhaust pipes are easily installed with no modification required. S&S Shovel style intake ports feature a directional vane to route the incoming fuel-air mixture around the valve guide and valve stem for improved performance. At 1.940", intake valves are the same diameter as stock, but exhaust valve diameter (1.720") has been reduced by .030" to improve valve to valve clearance for cams with high TDC lifts and to improve flow. A stock-like hemispherical combustion chamber is compatible with all standard Shovelhead style pistons. S&S Shovel style valve train components are specifically selected for durability under contemporary, real life conditions. They are compatible with present unleaded fuels. Valve springs can handle .590" total lift, and are available with steel or titanium top collars. Heads are machined to accept cams with TDC lifts of .210" on both valves. Because S&S Shovel style heads have stock dimensions, they readily bolt on with a stock-like fit with no clearance problems with frames and standard Shovel exhausts. Complete kits include all gaskets required for installation except intake manifold seals. S&S Shovel style cylinder heads are sold in sets of front and rear. The heads are completely assembled with premium components. Installed parts include valve seats, guides, seals, valves, valve springs, collars, and keepers. Kits also include rocker cover gaskets, cylinder head assemblies, head and base gaskets, miscellaneous hardware, and instructions. Available for 1966 thru 1978 models for use with O-ring style manifold, or for 1979 thru 1984 models for use with rubber band style manifold.

S&S Shovelhead cylinder head sets, 1966 thru 1978 O-ring style
750263 Stock bore
750268 3 5/8" bore

S&S Shovelhead cylinder head sets, 1979 thru 1984 rubber band style
750265 Stock bore
750073 3 5/8" bore

NEW

S&S EXCLUSIVE
Cylinder Heads
US PATENT Pending

S&S P-SERIES CYLINDER HEADS

These cylinder heads are used by S&S to build their P-series engines, but may also be installed on most Shovelhead engines to give a nostalgic look and a performance boost over stock. The stock Shovelhead bolt pattern and the availability of heads with stock bore and S&S 3 5/8" bore fire-ring machining makes them compatible with most Shovelhead cylinders. The intake ports accept o-ring style manifolds for Shovelheads and the exhaust ports will bolt up to any exhaust system for a Shovelhead engine. Although the top surface of the heads accepts a stock Panhead rocker cover, a special S&S rocker cradle is required to support the rocker arms. These cradles are not suitable as a stock replacement, but designed specifically for these cylinder heads and to be used with S&S roller rocker arms for Shovel engines and top-end oiling through the pushrods. Most adjustable pushrods for Shovelhead models are machined for this. Several of the modern features have been incorporated and include S&S .590" lift valve springs, cooling channel between combustion chamber and rocker arms and late style valve chamber to eliminate oil pooling. Cylinder heads are sold in pairs of front and rear and come complete with valves and valve springs installed. Roller rocker arms, rocker cradles, rocker cradle dowel pins, rocker arm shafts and rocker shaft clips must be ordered separately. Cylinder heads come in natural aluminum finish.

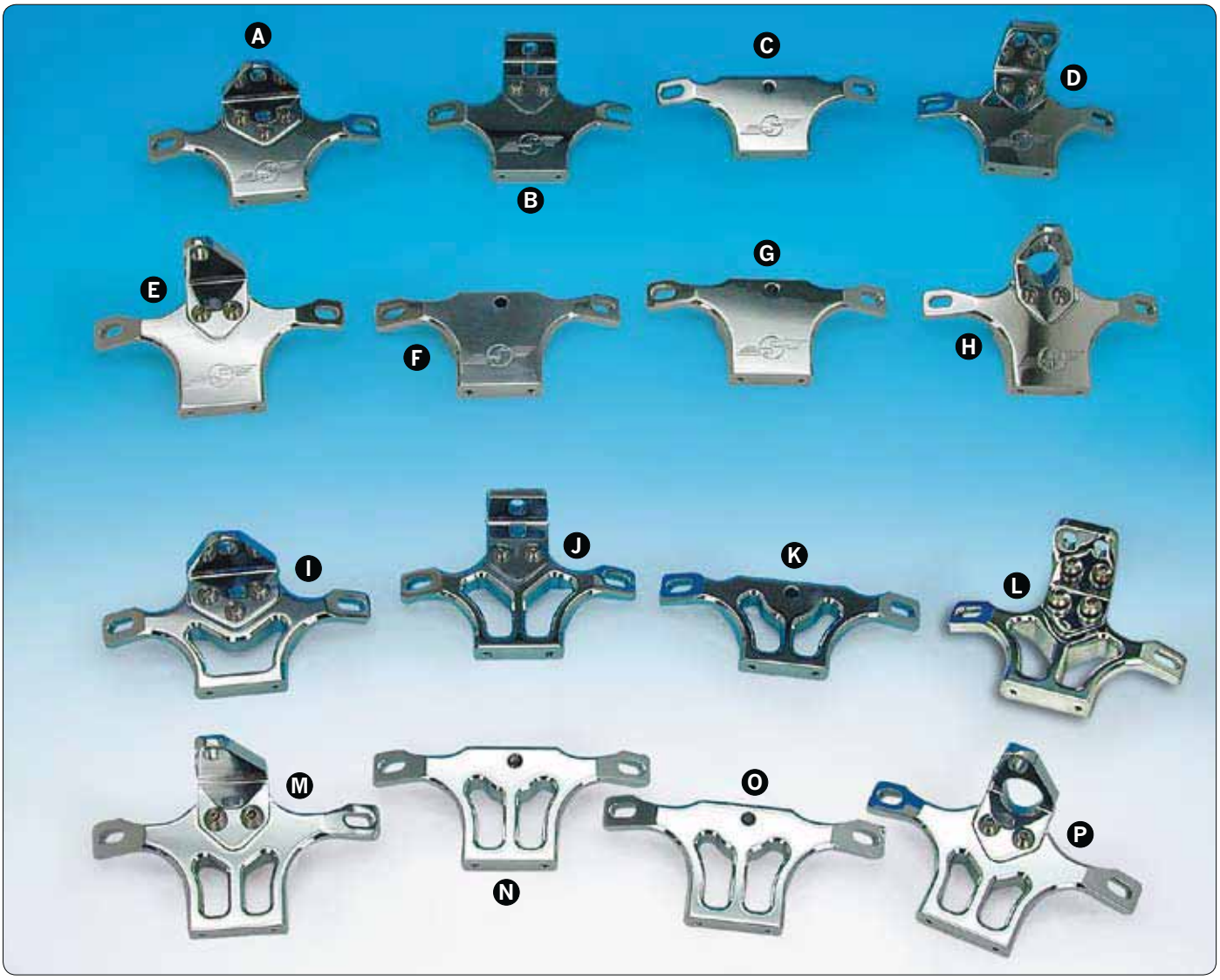
Cylinder head sets

750863 Stock bore head set
750864 3 5/8" bore head set
750865 3 5/8" bore dual plug head set

Other related parts

750298 Rocker arms, set of 4
750894 Rocker cradle front intake/rear exhaust, 2 needed
750895 Rocker cradle front exhaust/rear intake, 2 needed
750896 Rocker arm shafts, set of 4
750897 5-pack rocker cradle dowel pins
750898 10-pack rocker shaft clip
301112 Chrome Panhead rocker cover, each

Note: These are not stock replacement cylinder heads for Panhead engines, They will not fit on stock or aftermarket Panhead cylinders.



MW BILLET TOP MOTOR MOUNTS

Billet aluminum C.N.C. machined top motor mounts. Special design by MW, available in full billet, or super light for the high tech freaks. Motor mounts can be used separately as well as in combination with MW's ignition switch housing, ignition coil brackets, or ignition coil covers. MW's coil covers must always be used when installing these motor mounts on a Twin-Cam model in conjunction with the stock ignition coil. Motor mounts are available for FL Shovelhead, FLH/FLT Evolution and Twin-Cam models, Evolution Softail, Twin-Cam Softail, Evolution Dyna, Twin-Cam Dyna, FXR, and Sportster models.

Full Billet top motor mounts.

A. 710400 Fits 1984 thru 1999 Softail models
B. 710401 Fits Shovelhead FL models
C. 710403 Fits 1987 thru 1994 FXR models, and 1991 thru 1998 Dyna models
D. 710402 Fits 1986 to present Sportster models
E. 721828 Fits 2000 to present Twin-Cam Softail models
F. 722095 Fits 2001 to present Fuel Injected Twin-Cam Softail models
G. 721827 Fits 1999 to present carburated Twin-Cam Dyna models
H. 722093 Fits 1999 to present Dyna Fuel Injected models

Super Light top motor mounts

I. 710404 Fits 1984 thru 1999 Softail models
J. 710405 Fits Shovelhead FL models
K. 710407 Fits 1987 thru 1994 FXR models, and 1991 thru 1998 Dyna models
L. 710406 Fits 1986 to present Sportster models
M. 721829 Fits 2000 to present Twin-Cam Softail models
N. 722096 Fits 2001 to present Fuel Injected Twin-Cam Softail models
O. 721830 Fits 1999 to present carburated Twin-Cam Dyna models
P. 722094 Fits 1999 to present Dyna Fuel Injected models

NEW

RSD "NOSTALGIA" TOP MOTOR MOUNT

Roland Sands Designs "Nostalgia" top motor mount, made from polished stainless steel. It is a direct replacement for the stock top motor mount on both carburated and Fuel Injected Softail models 2000 to present. Great when fitted in conjunction with RSD's or other custom gas tank. Mounting hardware included.

740687 Nostalgia top motor mount

CHROME MOTOR MOUNT KIT FOR 2004 TO PRESENT SPORTSTER

This chrome plated motor mount replaces the black painted OEM counterpart. Kit contains front right, front left and top motor mounts and required hardware. Fits all 2004 to present Sportster models (47480-04).

032546 Chrome motor mount kit, fits 2004 to present XL models

TOP MOTOR MOUNTS FOR HARLEY

Replacement top motor mounts for FL and FX models. These motor mounts are available in a reinforced stock replacement, and a multi piece extra Heavy-Duty quality. They all have a perfect chrome finish.

032379 Fits Big Twins 1948 thru 1984 (except Evolution models) (OEM 16853-48)

032327 Fits FX-FXE 1973 thru 1980 (OEM 69018-73TA)

032333 Fits FXS-FXEF-FXB-FXSB 1977 thru 1984 (OEM 69013-77TB)

032322 Custom bracket with coil mount, fits all Big Twins 1948 thru 1984 (except Evolution models)

TOP MOTOR MOUNT

032534 Extra Heavy-Duty two piece bracket for use with Big Bore Stroker cylinders. Also usable as stock replacement. Fits all Big Twin models 1948 thru 1999 (OEM 16852-87T).

032535 Extra Heavy-Duty fits any model with choke and ignition switch on top motor mount (OEM 69018-87T).

032536 Extra Heavy-Duty fits any model with choke only on top motor mount (OEM 69013-87T).

FRONT MOTOR MOUNT

032378 This chrome plated front motor mount fits all rubber mounted Shovelhead and Evolution Big Twin models 1980 thru 1999 with 5 speed transmission, except Dyna Glide models (OEM 47159-79TA).

SOFTAIL TOP MOTOR MOUNT

Heavy Duty chrome plated replacement top motor mount. Fits all Softail models 1984 thru 1999 (OEM 16852-83A).

032521 Softail top motor mount

TOP MOTOR MOUNT WITH COIL BRACKET

012384 Top motor mount and coil bracket combination fits all Sportster models 1957 thru 1985 (except 1979 thru 1981 and XR). Chrome finish (OEM 16250-57).

HEAVY DUTY TOP MOTOR MOUNT

032542 This Heavy Duty mount is made from 1/4" thick plate steel which is 33% thicker than stock, delivering the ultimate in strength and style. It is finished in a show quality chrome and includes a new chrome horn bracket. Fits all Softail models thru 1999.

EXTENDED REINFORCED HEAVY-DUTY TOP MOTOR MOUNT

Extra beefy top motor mount made from heavy duty and thicker material than stock. Great for bikes with High Performance Evolution Big Twin style engines. The frame bracket is 1" longer than stock, allowing the installation of FXR-type coil mounts in custom frame applications. Comes with separate ignition switch bracket. Chrome plated hardware included.

032561 Extended reinforced Heavy-Duty top motor mount

TOP MOTOR MOUNT

032528 Stock style, chrome plated top motor mount. Fits all Sportster models 1957 thru 1985 (except XR). (1979 thru 1981 models use only cylinder bridge piece) (OEM 16250-57 and 16251-58).

BILLET TOP MOTOR MOUNT

Polished billet construction provides a coil mounting location that is up and behind the normal top motor mount, leaving this area open for switch housings. Looks great in combination with Wire Plus switch housing ZPN 731920. Mounts all stock Twin Cam coils and most Evolution style coils that do not have the electrical connections on the ends. Designed for use in conjunction with a custom fuel tank, does not fit with stock fuel tanks. Available in stock width, as well as a version for use with stroked motors. Made in the U.S.A. by Wire Plus.

731921 Fits all Twin Cam and Evolution style engines from 80 to 100ci
731922 Fits stroked Twin Cam and stroked Evolution style engines 100ci and up

A.R.T. FRONT MOTOR MOUNT COVER

238164 These hand polished, mirror finished billet aluminum cover hide the unsightly motor mount and can be installes without removing the motor mount. It just slips into place.

REAR ENGINE MOUNT COVER FOR RUBBER MOUNT ENGINES

A chrome plated rear engine mount cover to dress up that rough spot between the crankcase and the gearbox on rubber mounted engines. Comes complete with spacers and chrome plated 3/8" UNC bolts for the 1984 thru 1986 models and 3/8" UNF bolts for the 1987 thru 1999 models.

302046 Fits 1984 thru 1986 models
302047 Fits 1987 thru 1999 models

TWIN CAM MOTOR MOUNT ADAPTOR FOR EVOLUTION FRAMES

This adapter kit is designed with the Custom Bike Builder in mind. It allows to use a Twin Cam "A" engine, as used in Dyna Glide and FLH/FLT models, in conjunction with a 1985 thru 1999 Softail transmission, in most frames that are originally made for an Evolution Big Twin, such as our Wide Tail, Super Ass, or V.G. frames. There is very little grinding on the engine cases required to allow for wrench clearance. The adapter plate is precision machined from a solid block of billet aluminum for strength and true Custom Style. Kit comes complete with all necessary hardware as well as comprehensive fitting instructions.

236889 Twin Cam motor mount adaptor

REAR MOTOR MOUNT

032329 A high-quality replacement rear motor mount for 1967 thru 1981 XLH and 1970 thru 1981 XLCH models (OEM 16203-67).

FRONT MOTOR COVERS

Add an extra highlight to your engine with this chrome plated front motor mount cover. Available for FXR models 1984 thru 1994 and Softail models 1984 thru 1999. Easy to install and looks great.

301953 Fits Softail 1984 thru 1999
301954 Fits FXR 1984 thru 1994

SHOW CHROMED TIE-LINK FOR SPORTSTER MODELS

This beautiful show chromed tie-link is a replacement for the OEM counterpart. Fits Sportster models 2004 to present. Each engine mount requires 3 of these tie-links, sold each (OEM 16232-04).

056206 Tie-link Sportster models 2004 up

SPACER KITS FOR OFFSET TOP MOTOR MOUNTING

Chrome plated spacer for offset top motor mounting of 1/2", 3/4", 1" or 1 3/4". Can also be used for many custom applications. Comes complete with the required length chrome 1/2"-20 UNF bolt, chrome nut and chrome washer.

032636 1/2" (12.7 mm)
032635 3/4" (19.05 mm)
032634 1" (25.4 mm)
032633 1 3/4" (44.45 mm)

VELVA-RIDE ENGINE STABILIZERS

Transmitted engine vibration is the enemy of every long, weekend ride. This problem was attacked by developing a patented stabilizer that emulates a miniature shock absorber to successfully fight the transmission of vibration. The stainless steel body contains a plunger encased in specially formulated urethane that significantly outperforms the stock stabilizers. They are ready to install on FXR 1982 thru 1994, FLH and FLT series models 1980 to present and Dyna models 1991 to present. They are sold each, you will need two of them for each engine you install.

237091 Velva-Ride engine stabilizer (OEM 16219-79C)

MW MOTOR MOUNT ADAPTOR

This polished billet motor mount adaptor allows you to mount the MW switch or coil housings and adaptor to the stock style top motor mount. Fits all 2 piece motor mounts 1991 thru 1999.

710413 Billet top motor mount adaptor

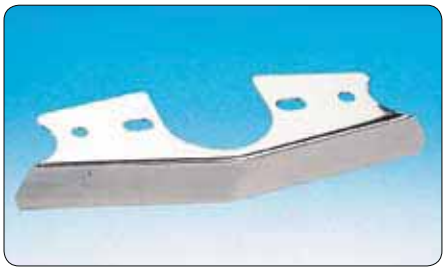
FRONT MOTOR MOUNT FOR FXR AND TOURING MODELS

Replacement front motor mount for 1980 to present FLH and FLT series models and 1982 thru 1994 FXR models.

032360 Front motor mount (OEM 16207-79B).

TOP MOTOR MOUNT COVER FOR SPORTSTER

301047 Fits all Evolution Sportster models. Follows the contour of the stock top motor mount. Superchromed to Hi-light your bike. Complete with button head hardware (OEM 16274-88T).



NESS FRONT MOTOR MOUNT COVER

011487 This Arlen Ness designed chrome plated cover fits the front motor mount plate on all FXR and Pro Street frames. It covers the front motor mount plate as well as most of the front motor mount rubber. This simple but eye catching cover shows Arlen's eye finesse and detail. A must when customizing your FXR or Pro-Street.

ISOLATOR MOTOR MOUNTS FOR DYNA

These motor mounts are exactly made to the OEM specifications and available for all 1991 to present Dyna models.

744488 Fits front on all Dyna models 1991 to present (OEM 47583-90B)
744489 Fits rear on all 1991 thru 1998 Dyna models (OEM 47564-90B)
744490 Fits rear on all 1999 to present Dyna models (OEM 47564-99)

DELKRON ENGINE CASES

Computer designed and machined cases for Harley, Shovelhead and Evolution motors 1970 up. Permanent mold cast of A356-T6 aluminum with 1/2" wall sections throughout. Has grey iron inserts that have never moved and never will. The Delkron permanent mold beats sand casting due to closer tolerances, exact duplications, better aluminum-mold adhesion and perfect race insert location.

Other design improvements:

- Extra rib on left front motormount prevents ear breakage
- 5.1875" X 5.0" Rear cylinder pad area (stock 4.625" X 4.825")
- Alternator stator plug relocated .300 out-board eliminates thin area, area around left case race and a nylon screw holds plug in place
- Relocated primary O-ring groove provides positive seal and eliminates weak register lip
- Rerouted oil passages eliminate thin areas around cylinder and lifter blocks
- Roll-formed threads throughout eliminite tap galling and ensure proper thread size
- Designed to work with forward or mid-shifting models, these cases come complete with torque specs and assembly instructions

032702 Stock Alternator cases, fits Shovelhead 1970 thru 1984

032703 Big Bore Alternator cases (3 5/8"), fits Shovelhead 1970 thru 1984

032704 Stock Evolution cases, fits Big Twin models 1984 thru 1991

032705 Big Bore Evolution cases (3 5/8"), fits Big Twin models 1984 thru 1991

231499 Big Bore Evolution cases for use with Sputhe 3 13/16" bore cylinders, fits Big Twin models 1984 thru 1991

235185 Stock Evolution cases, fits Big Twin models 1992 thru 1999

235186 Big Bore Evolution cases (3 5/8"), fits Big Twin models 1992 thru 1999

235187 Big Bore Evolution cases for use with Sputhe 3 13/16" bore cylinders, fits Big Twin models 1992 thru 1999

DELKRON MANUFACTURING, INC.

DELKRON HIGH DECK RACE CRANKCASE ASSEMBLY

234071 Cast from 356-T6 aluminum with a overall wall thickness of 1/2" for superior strength and stability. The ultimate crankcase when you want to build a real "Big Twin Muscle Motor". The cam-chest & lifter-block pads have been relocated outward 3/8" to allow for the use the racing type high contact aircraft quality ball bearing in combination with a taper pinion shaft bearing set. This type of bearing will stop the in & out flex of the crank that occurs under heavy load. The deck height is 5/8" taller than stock allowing cylinders with bore size up to 4". If you want to use these Super Strong Delkron cases to build a real Streetfighter, it already has the cut-out for an alternator stator, oil passages for hydraulic lifters and top-end oiling. Comes complete with a special pinion shaft.

Specific replacement parts
236250 Fafnir outer pinion bearing

THE DRY SUMP PLATE FOR DELKRON CRANKCASES

For those of you who want the option to suck the oil out-of the lower end of the sump, this fixture will allow you to get that oil before it is thrown around the engine a couple of more times, which makes for less drag on the flywheels. It is made of T356-T6 aluminum and bolts right up to all Delkron crankcases. Comes complete with gasket, mounting screws and 3/8" hose fitting. Replacement gasket fits all Delkron sump plates including dry sump plate.

231497 Dry sump plate
234073 Sump gasket (each)

"READY-TO-INSTALL" DELKRON CRANKCASE ASSEMBLIES

Have we made life easy for you. These Delkron crankcase set have the right hand pinion shaft bearing race installed and precisely line-honed to OEM tolerances. It also includes a set of factory "spaced" Timken sprocket shaft bearings and races, installed cam needle bearing and cylinder studs to complement the assembly. You can just drop in the crank, cam, breather and nose cone of your choice and your bottom end is completed. This will save you time, thus money, when building a custom engine. Available in different cylinder bore sizes for all alternator style engines from 1970 thru 1999.

Delkron case assemblies for 1970 thru 1984 Shovelhead
236248 For stock bore cylinders
236249 For 3 5/8" Big Bore cylinders

Delkron case assemblies for 1984 thru 1991 Evolution Big Twin
236244 For stock bore cylinders
236245 For 3 5/8" Big Bore cylinders

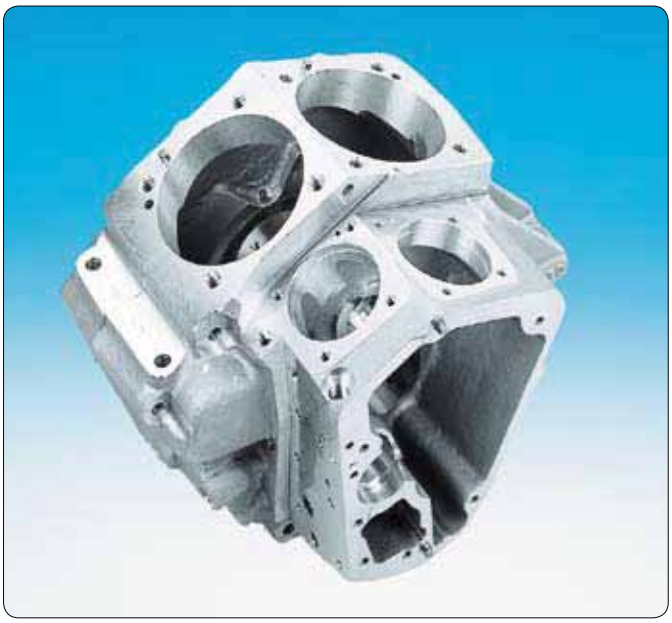
Delkron case assemblies for 1992 thru 1999 Evolution Big Twin
236258 For stock bore cylinders
236259 For 3 5/8" Big Bore cylinders

DELKRON'S BILLET ALUMINUM 4 CAM BIG TWIN CRANKCASE

Strong, Stronger, Strongest, Here it is, "the Crankcase Of The Third Millennium". It utilizes the superior valve train geometry of a Sportster but has the strength of the Big Twin flywheel assembly. The cam location is the same as stock Evolution Sportster cases from 1986 thru 1990, so all available cams for this engine type will bolt right into this case. The crankcase and cam cover are made from 6061-T6 aluminum, which insures uniform strength and hardness throughout. A minimum overall case thickness of .400", a left side case thickness of more than 1.250" and almost .900" of case between the flywheel cavity and the cam location surface provides the most rigid flywheel support of any crankcase available today. The drive side of the case is machined to accept late model Timken bearings for the 1 1/4" sprocket shaft, while the pinion side is machined to accept a single Timken and ball bearing configuration in combination with an aircraft quality high contact ball bearing for maximum flywheel support. The oiling system is a dry pump system with the scraper at the bottom of the case and uses the more efficient late model Sportster rotary type oil pump or any type Pro-Flow Sportster pump for better pressure and scavenge ability. We stock the street version of these bullet-proof crankcases, which accept our 4 5/8" Flywheels and Sputhe cylinders. All other combinations are possible, but are made to order only. They can be ordered with cylinder bore up to 4 1/2" O.D., cylinder deck height up to 1" over stock and flywheel diameter clearance up to 8 1/4", plus many other options which are preferred. Please state deck height, cylinder spigot size, flywheel diameter, lifter block type and bolt pattern, plus any other options wanted when ordering a crankcase. We even can supply you a Full Race crankcase, which features a solid left side, without the cutout for the alternator stator and without the facility for upper end oiling through the lifter blocks. For the race cases there is the option for extra heavy duty 1 1/2" sprocket shaft bearing size for use with race type 1 1/2" sprocket shaft for all out racing.

234075 Street version Delkron 4 cam billet crankcase set for Sputhe cylinders and 4 5/8" stroke
234074 Street version Delkron 4 cam billet crankcase set (special order)
234072 Race version Delkron 4 cam billet crankcase set (special order)

Replacement parts
236250 Fafnir outer pinion bearing
236252 Taper bearing set for 1 1/2" sprocket shaft
236261 Oil seal for 1 1/2" sprocket shaft



S.T.D. ENGINE CASES

S.T.D. case sets are made from "356-T6" aluminum alloy designed to handle flex-stress up to 38.000 PSI. They are machined on computer controlled equipment to hold the tight tolerances required. Cases are machined to accept 3 5/8" Big Bore cylinders and are notched for stroker flywheels. They come with a manufacturer's statement of origin, and are greatly improved over previous models that had the left case race inserts cast in. There is also a case set available for use with our Sputhe Nitralloy Big Bore set for Big Twin Evolution.

232769 Fits Evolution Big Twin 1984 thru 1991 3 5/8" Big Bore
232775 Fits Evolution Big Twin 1984 thru 1991 for Sputhe Big Bore cylinders

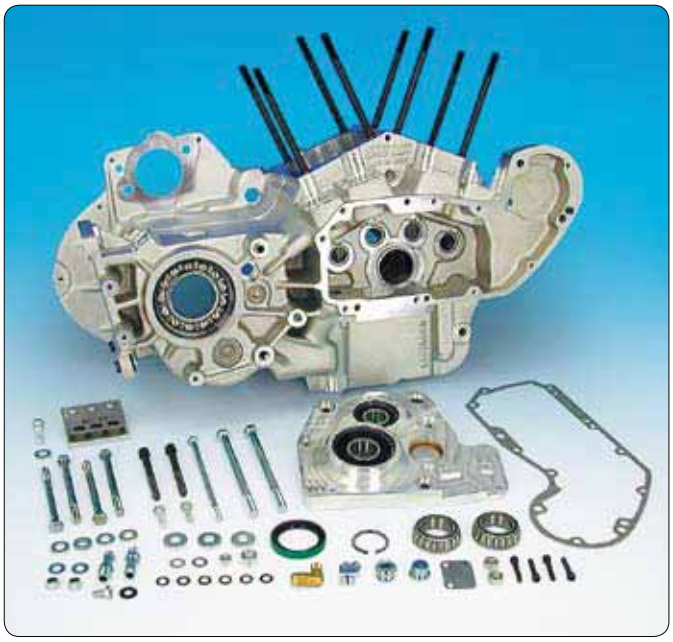
S.T.D. CRANKCASE GENERATOR/ALTERNATOR STYLE

This case set is for all you high performance people who want to run a late model alternator for your electrics and a magneto or distributor to fire the engine, not only do you keep the nostalgic looks of the early engine without the expense of an expensive cam cover, but you also get your choice of electrics. This set-up is easier to build because of the availability of late model parts. This case and all other cases are now manufactured with the new pressed-in style insert, STD guarantees pressed in style not to move.

232771 Fits Evolution Big Twin 1984 thru 1999 std. bore

CHROME PLATED ALLEN BOLT KIT

232233 Chrome plated, high grade allen bolts for all Delkron crankcase sets. Kit includes all bolts that bolt the cases together as well as the allen screws for the sump plate.



S&S SUPER STOCK SPECIAL APPLICATION CRANKCASES

These Super Stock Evolution Sportster style cases are designed for use with 1991 up 5 Speed transmission, stock style sprocket shaft, charging system, starter motor, and primary drive system in combination with 1986 thru 1990 style cams, tappets, tappet guides, oil filter assembly, and gear cover. Accepts both 1986 thru 1990 and 1990 to present cylinders and heads. These cases are a must when building a high horsepower Sportster engine.

750099 Stock bore crankcase, fits 1986 thru 2003 Sportster frames, and 1994 thru 2002 Buell frames

750146 3 5/8" Big Bore crankcase, fits 1986 thru 2003 Sportster frames

S&S SUPER STOCK CRANKCASES FOR SINGLE CAM BIG TWIN MODELS

S&S Super Stock crankcases are designed to meet the needs of today's engine builders. As stock replacement or for street racing applications, S&S Super Stock cases are made with the performance enthusiast in mind. Cases are cast from 356-aluminum alloy and heat-treated to T6 specifications. Although additional material has been added to key areas for strength, these improvements do not affect fitting in stock frames. S&S Super Stock crankcase assemblies include the right and left crankcases, crankcase screws, washer and nuts, cylinder mounting studs, timing hole and drain plugs, assorted crankcase fittings, sprocket shaft Timken bearing assembly, drive sprocket spacer and oil seal, cam needle bearing, oil pump drive shaft bushing and installation instructions. Shovelhead style cases feature primary scavenging port machining, and to accept a 1981 thru 1984 style oil pump and 1970 and later style primary. Evolution style cases are machined to accept a stock 1992 thru 1999 style oil filter assembly and feature the same oiling and crankcase venting provisions as stock 1984 thru 1992 models. Pinion shaft bearing is not included, it must be ordered separately. Bearing size depends on the size pinion shaft you are using.

750523 Shovelhead crankcase 1970-1984, stock bore
750524 Shovelhead crankcase 1970-1984, 3 5/8" bore
721701 Evolution crankcase 1984-1991, stock bore
721702 Evolution crankcase 1984-1991, 3 5/8" Big Bore
721709 Evolution crankcase 1984-1991, 4" Big Bore
721840 Evolution crankcase 1992 -1999, stock bore

Optional pinion shaft bearings for Evolution style engines
710280 Green coded (OEM 24628-87)
710281 White coded (OEM 24626-87)
710282 Red coded (OEM 24641-87)
710283 Blue coded (OEM 24643-87)

Note: S&S crankcases for 1992-1999 Evolution models must be used with a 1973-1993 nose cone cover.

S&S SUPER STOCK™ BIG-TWIN GENERATOR STYLE CRANKCASES

S&S Big-Twin Generator style crankcases are designed to appear like stock original cases and give the engine builder an alternative to costly repairs when fixing fatigued, broken, wornout stock crankcases. In spite of the stock appearance, these cases incorporate updated design features that improve overall engine strength and reliability. These cases are designed to fit alloy primary Panhead models and generator Shovelhead models 1965 thru 1969, and use with 1936 thru 1969 style oil pump. Cases come complete with hardware, cylinder studs, crankcase bolts, and Timken style sprocket shaft bearings. Available for stock 3 7/16" bore or 3 5/8" Big Bore.

For 1965 thru 1969 Panhead & Shovelhead
Like stock, these cases do not feature a regulator boss
750052 For Stock bore cylinders
750053 For 3 5/8" Big Bore cylinders

For 1948 thru 1964 Panhead
Cases are machined for 1948 thru 1962 Panhead cylinder base oil feed and feature a cast-on boss to mount the regulator.
750969 For stock bore cylinders NEW
750970 For 3 5/8" Big Bore cylinders NEW

S&S TWIN CAM "A" STYLE CRANKCASES

S&S Twin Cam style crankcases are good news for engine builders who want to build Twin Cam TC88A style engines from scratch.

S&S Twin Cam style crankcases feature:

- Greater overall strength than stock crankcases,especially in the front motor mount, an important consideration in high performance applications
- Available in stock bore, 4" bore, and 4 1/8" bore versions
- Choose from natural aluminum or black powdercoat finish
- All oil passages between the crankcase and gear cover are O-ring sealed
- Compatible with stock components. Use stock oil pump, cam support plate, gear cover, etc. Timken style sprocket shaft/bearing

Stock bore cases are perfect for stock replacement applications, 4" bore cases are a natural for use with the S&S Twin Cam style Super Sidewinder™ Hot Set Up kits, and 4 1/8" bore cases make it possible to build really large displacement custom engines.

S&S Twin Cam "A" Style crankcases

Bore size	Natural finish	Black finish
Stock bore	**750085**	**750086**
4" bore	**750087**	**750089**
4 1/8" bore	**750088**	**750090**

Zodiac can supply Twin Cam style crankcases with your choice of cylinder spigot bore (stock 4.080" to 4.380"), cylinder stud pattern, and your choice of Twin Cam or Evolution style rear motor mount upon Special Order.

S&S OIL LINE INSTALLATION KITS FOR S&S T-SERIES ENGINES

Installation of an S&S T-Series engine or S&S T-Series crankcase in 1999 thru 2005 Dyna models or 2000 thru 2006 Touring models requires re-routing of the oil lines. S&S has a kit for 1999 thru 2005 Dyna models and a kit for 2000 thru 2006 Touring models available. Both kits include an oil conduit block, hoses, connectors, fittings and installation materials. The Dyna kit also includes a special billet transmission top cover. The Touring kit is to be used with the stock transmission top cover.

750816 Kit for 1999 thru 2005 Dyna models

750817 Kit for 2000 thru 2006 Touring models

ENGINE SKID PLATE

301597 Highly polished Stainless Steel skid plate. Has improved strength added by reinforcement ribs, protects the engine crankcase. Fits 1965 thru 1984 Big Twin with Shovel motor (OEM 24490-36).

AMERICAN MADE BREATHER HOSE CONNECTOR

45 Degrees plug to connect the breather hose to the crankcase. Fits all Big Twins from 1966 thru 1993.

234898 Connector 1/4 NPT

JIMS CIRCUIT BREAKER SHAFT AND BUSHING KIT

High quality circuit breaker shaft and bushing kit. Fits 1936 thru 1969 Big Twins (OEM 25856-36).

235776 Circuit breaker shaft and bushings kit

TOM HAYDEN'S M6 KRANK VENT+

Many people spend a lot of time and energy developing products to control the air on top of the pistons to increase horsepower, but what about the air under the piston. The Krank Vent controls that air. It took 2 1/2 year to develop and perfect this ultimate crankcase vent. The result is a small but important performance part, the "M6 Krank Vent Plus". After a quick and simple installation on the crankcase breather hose Tom Hayden claims you will notice a more powerful engine with a deeper sound and quicker throttle response. Dyno tests have shown a 2 to 5% increase in useable rear wheel horsepower. But that's not all, the perfect crankcase pressure control will prevent the engine from blowing rocker box gaskets and even cylinder base gaskets. Comes complete with hose clamps and detailed fitting and maintenance instructions. The Krank Vent Plus fits all Big Twin models with thru the crankcase breathers (Big Twin up to 1992 and Sportster models up to 1990).

237297 M6 Krank Vent Plus

DOHERTY POWERVENT TWIN KIT

Doherty PowerVents are designed around a fast sealing one-way valve that prevents air from being sucked back into the crankcase on the upstroke of the piston. Doherty claims a horsepower increase, and improved throttle response, as well as a stop to rocker box and base gasket oil leaks caused by excessive crankcase pressure. The PowerVent Twin kits are a quality billet aluminum construction that bolts directly to cylinder head breather outlets. Kits include two polished, billet aluminum PowerVents and all necessary mounting hardware to mount the PowerVents to each cylinder head breather outlet and are available for 1991 to present Sportster models, 1992 thru 1999 Evolution Big Twins, and 1999 to present TwinCam models, except EFI equipped TwinCam FLH/FLT models.

701301 Fits 1992 thru 1999 Evolution Big Twins

701302 Fits 1999 to present Twin Cam 88 models, except EFI equipped Twin Cam FLH/FLT models

701303 Fits 1991 to present Evolution Sportster models

SPYKE KRANK VENT SYSTEM

Another race-proven product from Spyke. This precision, CNC machined Krank Vent System does much more than vent your crankcase fumes. Installation of this Krank Vent System to your crankcase breather hose provides a number of amazing benefits, including preventing blown gaskets, weeping, and actually increasing usable rear wheel horsepower. All this is accomplished by producing the proper amount of vacuum in the crank case at all RPM ranges. Large displacement engines, both strokers and big bore, will really benefit from the advanced design. The unique design of the Krank Vent System allows piston rings to seal better and helps to reduce the problems of blowing oil out of the breather on many bikes. Even stock engines will benefit from the increased power, throttle response, and mileage produced by the Krank Vent System. Spyke's Krank Vent System is available with a mounting tab or standard cylinder shape.

721218 Krank Vent System, cylinder shape

721219 Krank Vent System with mounting tab

DOHERTY "INLINE" POWERVENT

Doherty PowerVents are designed around a fast sealing one-way valve that prevents air from being sucked back into the crankcase on the upstroke of the piston. The PowerVent is made of billet aluminum and has a mirror shine finish. Doherty claims a horsepower increase, and improved throttle response, as well a stop to rocker box and base gasket oil leaks caused by excessive crankcase pressure. This universal "InLine" Kit comes with all hardware needed to install into breather hose in minutes.

701300 Doherty "InLine" PowerVent

CHROME CYLINDER BASE COVER FOR TWIN CAM 96

Easy to install chrome cover for the cylinder base on the left side of the crankcase on Twin Cam 96 models. Adds a stylish chrome highlight to both silver and black engines and is much easier to clean too. Fits 2007 to present Softail models, 2006 to present Dyna and 2007 to present Touring models.

105055 Chrome cylinder base cover

CHROME CYLINDER BASE COVER FOR SPORTSTER

Easy to install chrome cover for the cylinder base on the left side of the crankcase on 2004 to present Sportster models. Adds a highlight to both silver and black engines.

105054 Chrome cylinder base cover for 2004 to present Sportster

S&S 1936 THRU 1969 GEAR COVER KIT

This cover kit for S&S crankcases includes gear cover with bushings installed, gasket, extraction screws 1/4"-20 cover mounting screws and 5/16-24 generator mounting screws. Requires 1954 thru 1969 pinion shaft and socket head style mounting screws. Can also be installed on original 1954 thru 1969 crankcases when late type generator is installed.

750032 S&S gear cover kit

S&S BILLET ALUMINUM NOSE CONE COVERS

These polished billet nose cone covers are standard equipment on all S&S polished Evolution style engines. Can also be used on stock and aftermarket Big Twin engines with alternator style crankcases. Available for 1973 thru 1992, and 1993 thru 1999 models. Covers come complete with gaskets, mounting hardware, and chrome plated billet ignition cover. The great looking ignition cover is also available separately and fits stock nose cones too.

Nose cone covers

750345 Fits 1973 thru 1992 style Big Twin engines

750346 Fits 1993 thru 1999 style Big Twin engines

Ignition cover

750347 Fits 1973 thru 1992 style Big Twin engines

DELKRON BILLET NOSE CONE

Delkron's precision machined billet aluminum nose cone is manufactured from a block of solid aluminum. This nose cone has the latest High Tech look and is mirror polished. Comes complete with allen screw mounting kit and an oil seal. Fits all alternator style crankcases.

239084 Delkron billet nose cone

NOSE CONE GEAR COVER FOR BIG TWIN MOTORS

Top quality nose cone cam gear covers. These chrome plated die cast covers are machined within OEM specifications. Available for Big Twin motors 1970 thru early 1973 with side oiling pinion shafts, the late 1973 thru 1992 end oiling Big Twin motors including the 1984 thru 1992 Evolution motors and 1993 thru 1999 models with "through the head" breather.

Note: Cam bushing must be reamed to size.

301843 Nose cone 1970 thru early 1973, side oiler(OEM 25218-70)

301818 Nose cone late 1973 thru 1992, end oiler (OEM 25268-84A)

301938 Nose cone 1993 thru 1999, end oiler (OEM 25256-93)

JIM'S BILLET CAM COVERS

American made billet cam covers for 1973 thru 1999 Big Twin models. Made from 7075-T651 aluminum with a tensile strength which doubles the strength of 6061-T6 aluminum and triples the strength of cast cam covers. It is right to the centerline of the cam bushing as well as the pinion bushing, which is within .0002 of where the factory intended it to be. This way the cam cover is right to the case centerline, so the cam shaft has maximum support on both ends, and the tappet rollers will be riding flat on the cam lobe. Comes complete with all mounting hardware and O-rings. Available in your choice of mirror shine polished finish or bright chrome plated finish. Cam covers are available for 1973 thru 1999 Big Twin models.

Fits Big Twin models 1973 thru 1992

231558 Polished finish (OEM 25258-80B)

234085 Chrome finish (OEM 25268-84A)

Fits Big Twin models 1993 thru 1999

234086 Polished finish (OEM 25254-93B)

234087 Chrome finish (OEM 25256-93A)

CHROME NOSE CONE COVER

Update your Jims' polished cam cover to chrome plated one, for only 1/3 of the price. Cover can be used on all of Jims cam covers as found in this catalog. Saves time and money, what more can you ask for.

235993 Chrome nose cone cam cover

"FULL SIZE" NOSE CONE COVERS

These top quality chrome plated nose cone covers are the cheapest way to convert your aluminum nose cone into a chrome one, without having the expense of a complete gear cover. Available with or without allen screws. Will bolt in minutes! Simply slip them over the existing nose cone. Allen style model will match our line of allen screw derby, point and inspection covers as well as our air cleaner inserts. Fits Big Twins thru 1999 (does not fit billet nose cones).

301832 Cover with allen screws
301833 Cover plain

TWIN CAM BILLET CAM SUPPORT PLATE

239319 This support plate is machined out of 6061-T6 billet aluminum with an overall thickness of .645" (16 mm) and will improve life of any Twin Cam valve train. The billet aluminum eliminates flexing under heavy loads caused by cam and valve spring load. Precise tolerances tighten up the alignment of your cams and pinion bore. All the oil passages have been optimized to improve the efficiency of the Twin Cam oiling system. This new plate uses NPT pipe plugs to cap off its oil passages instead of the pressed in ball bearings for more positive seal. This cam support plate utilizes a 2000 and later bearing retainer plate. Cam support plate includes, pressure regulator valve, pinion shaft bushing, Viton O-rings, mounting hardware, and installation instructions.

S&S BILLET TWIN CAM STYLE S&S GEAR COVER

Fits S&S and stock Twin Cam 88 engines and offer another way to make your engine unique. Whether you are building an engine from scratch or customizing your present engine, these new gear covers will make people take notice. Machined from solid aluminum billet and then polished to a show finish, offers a distinctive new look for your bike. The styling is identical to that of the gear cover supplied in the new Twin Cam style S&S oil pumps. **Note:** Not compatible with 1999 thru 2001 model engines that require a cam position sensor in the gear cover.

750576 S&S Twin Cam gear cover

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For Arlen Ness Cam Covers see section 26

CHROME CAM COVER FOR TWIN CAM ENGINE

Show Chrome Dress-up part for the black Twin Cam motor. Cover fits all Twin Cam powered Softails models 2001 and later, Dyna models and FLT models (OEM 25369-01).

750115 Cam cover Twin Cam 2001 to present

CHROME CAM COVER FOR SPORTSTERS

This cam cover is a replacement for the Original Equipment plain aluminum or black coated cover. Has a show chromed finish and comes with the cam bushing already installed. Fits 1991 thru 2003 Sportster models.

302128 Chrome cam cover (OEM 25213-96B)

SPROCKET SHAFT BEARING NUT

022385 Fits Big Twin 1955 thru 1968, includes neoprene oil seal (OEM 24031-55)

NEW

ROLAND SANDS DESIGN NOSTALGIA TIMING COVER FOR TWIN CAM MODELS

RSD "Nostalgia" timing covers are a classic design by Roland Sands. Billet aluminum with a polished or chrome finish. Fits all Twin Cam models 2001 to present. All necessary hardware is included.

740670 RSD Nostalgia timing cover Polished
740671 RSD Nostalgia timing cover Chrome

Note: Some aftermarket exhaust may interfere.

LEFT CASE ENGINE THRUST WASHER SET BIG TWINS

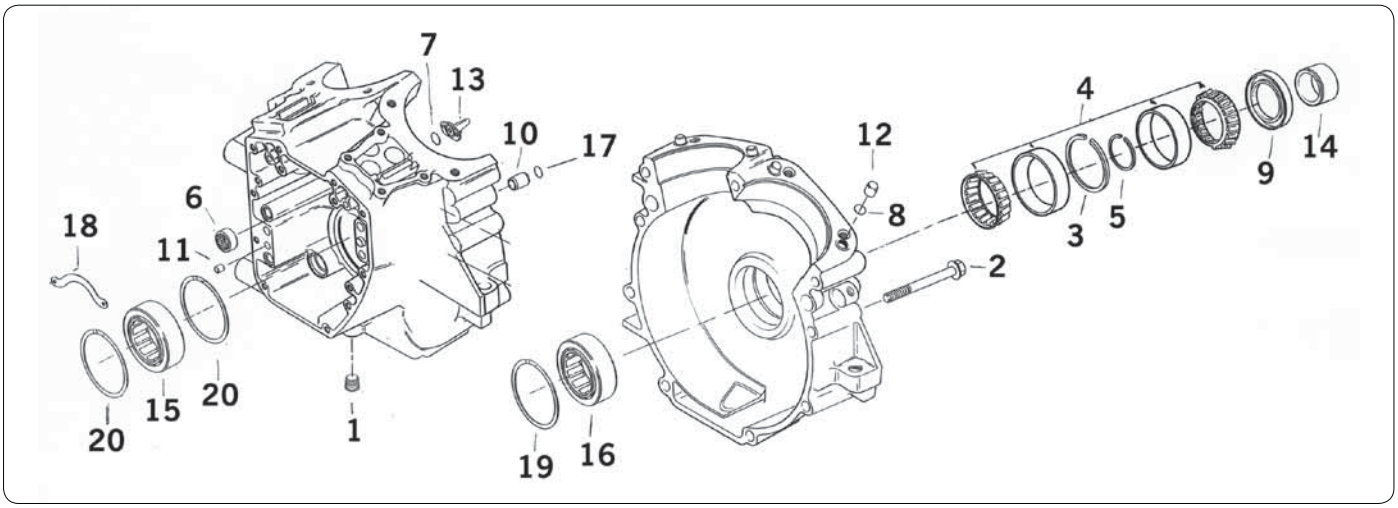
233503 Engine thrust washer set (11 sizes per set). Fits Big Twin models from 1929 thru 1954 (OEM 24100-17)

PINION SHAFT BUSHING

Excellent performance pinion shaft bushing made in the USA. For Big Twinmodels 1936 thru 1999 in standard and oversize, as well as a special repair version with .5455" inner diameter for 1973 thru 1992 models that can be used to repair out of centerline nose cone covers. The repair version comes plain, the oil groove must be milled or the oil hole must be drilled.

235883 Fits 1936 thru 1953 (OEM 25582-36)
235884 Fits 1936 thru 1953 +.005"
231451 Fits 1954 thru 1972 (OEM 25582-54)
231444 Fits 1973 thru 1992 (OEM 25582-73)
231452 Fits 1973 thru 1992 +.005"
721533 Fits 1973 thru 1992 repair version
235886 Fits 1993 thru 1999 (OEM 25582-93)
235866 Fits 1993 thru 1999 +.005"

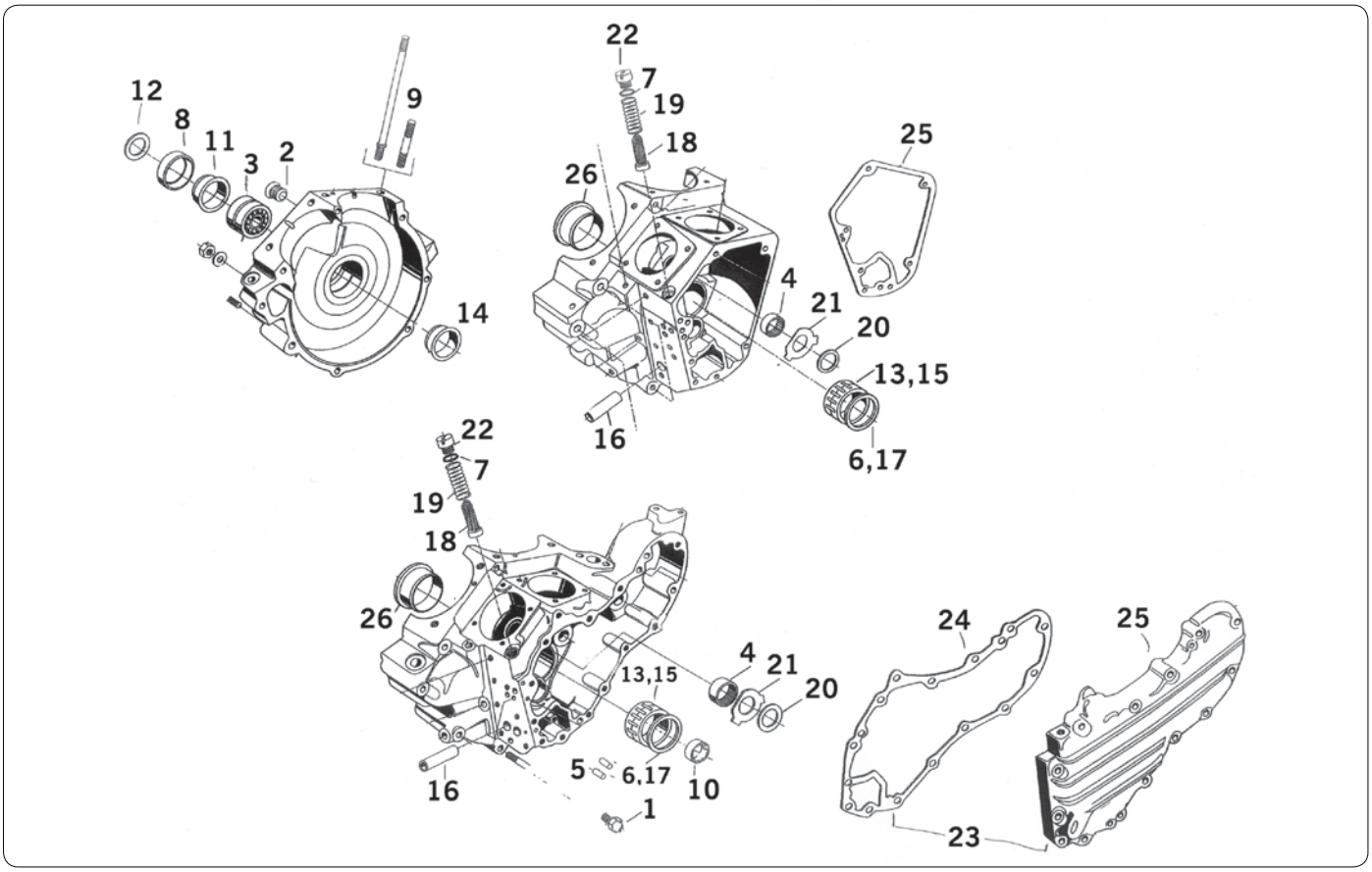
For Arlen Ness Cam Covers see section 26



LOWER END PARTS FOR 1999 TO PRESENT TWIN CAM

Quality lower end replacement parts fit all 1999 to present Twin Cam "A" (TCA) and Twin Cam "B" (TCB) models and are sold each, unless otherwise stated.

Pos.	ZPN	Description	OEM
1.	**701911**	Crankcase drain plug	765
2.	**701913**	Crankcase bolt, 12 needed, 2-pack	895
3.	**740494**	Thrust washer 2003 to present	8972
4.	**231501**	Sprocket shaft bearing 1999-2002	9028
5.	**Shim, sprocket shaft bearing 1999-2002**		
	740476	0.0905" - 0.0895", 5-pack	9110
	740477	0.0925" - 0.0915", 10-pack	9120
	740478	0.0945" - 0.0935", 10-pack	9121
	740479	0.0965" - 0.0955", 10-pack	9122
	740480	0.0985" - 0.0975", 10-pack	9123
	740481	0.1005" - 0.0995", 10-pack	9124
	740482	0.1025" - 0.1015", 10-pack	9125
	740483	0.1045" - 0.1035", 10-pack	9126
	740484	0.1065" - 0.1055", 10-pack	9127
	740485	0.1085" - 0.1075", 10-pack	9128
	740486	0.1105" - 0.1095", 10-pack	9129
	740487	0.1125" - 0.1115", 10-pack	9130
	740488	0.1145" - 0.1135", 10-pack	9131
	740489	0.1165" - 0.1155", 10-pack	9132
	740490	0.1185" - 0.1175", 10-pack	9133
	740491	0.1205" - 0.1195", 10-pack	9134
6.	**711289**	Camshaft needle bearings, set of 2	9198
7.	**O-ring (2 needed)**		11140
	710491	James, 10-pack	
	720211	OEM supplier, 10-pack	11273
8.	**O-ring (2 needed)**		
	231414	James, 10-pack	
9.	**Oil seal, sprocket shaft**		12068
	700462	Athena, each	
10.	**235582**	Crankcase dowel (2 needed)	16574-99
11.	**701900**	Cam cover dowel, 2-pack	16589-99
12.	**701901**	Cylinder dowel, 4 needed, sold in 2-pack	16595-99
13.	**701903**	Piston cooling jet	22307-99
	750020	S&S Piston cooling jet, clearanced for strokers	
14.	**740492**	Sprocket shaft spacer 1999-2006 except 2006 Dyna	24038-99
	740493	Sprocket shaft spacer 2006 Dyna, all 2007-up	24009-06
15.	**701905**	Pinion shaft bearing, fits 1999 thru 2002	24623-99B
	701904	Pinion shaft bearing. Fits 2003-up and all S&S TC cases	24604-00
16.	**701904**	Sprocket shaft bearing 2003 to present	24604-00D
17.	**O-ring, crankcase dowel (2 needed)**		26432-76A
	027652	Zodiac, 10-pack	
	700227	Athena, 10-pack	
18.	**740495**	Retaining plate TCB models 2000-2002	35093-00
19.	**701909**	Sprocket shaft retaining ring 2003 to present	35114-02
20.	**701910**	Retaining ring TC/A models, 2 needed, 10-pack	35115-99
21.	**701912**	Stator mounting screw 10-24 x 1 1/4" Torx - 4 required	2918
22.	**701902**	Cylinder stud, 8 needed	16834-99
23.	**O-ring, cam plate, 8 required**		11301
	231524	James (10 pack)	
	700461	Athena (10 pack)	
24.	**O-ring, oil pump**		11293
	231521	James, 10-pack	
25.	**701906**	Oil line fitting	25259-93A
26.	**701908**	Oil line fitting, 2 needed	26314-99



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LOWER END BIG TWIN 1936 THRU 1999

Quality lower end parts, all parts are sold each unless stated otherwise.

1. **710864** Drain plug, right case on 1941 thru 1970 models (OEM 700)

2. **710894** Timing hole plug (OEM 720)

3. **Left case Timken bearing set**
   231500 Fits 1955 thru 1968 (OEM 9029)
   231501 Fits 1969 thru 1999 and all S&S crankcases (OEM 9028)

4. **231443** Cam needle bearing (OEM 9058)

5. **Left case rollers 1936 thru 1955 (sprocket shaft) & right case bearing rollers 1958 thru 1986 (pinion shaft).** Will also work on pinion side with 1986 up aftermarket cranks. Stock size bearing is .250"x.490" (100 pck).
   710273 Std. (OEM 9220A)
   710274 .0002" (OEM 9221A)
   710275 .0004" (OEM 9222A)
   710276 .0006" (OEM 9223A)
   710277 .0008" (OEM 9224A)
   710278 .0010" (OEM 9225A)
   710279 .0020" (OEM 9220AA)

5. **Right case bearing rollers 1936-1954 (pinionshaft)**
   Stock size bearing is .250"x.600" (100 pck).
   231416 Std. (OEM 9261)
   231417 +.0008" (OEM 9265)
   231418 +.0010" (OEM 9266)

5. **Right case bearing rollers 1955 thru 1957 (pinion shaft)**
   Stock size bearing is .1875"x.800" (100 pck).
   710267 Std. (OEM 9421)
   710268 +.0002" (OEM 9422)
   710269 +.0004" (OEM 9423)
   710270 +.0006" (OEM 9424)
   710271 +.0008" (OEM 9425)
   710272 +.0010" (OEM 9426)

6. **Pinion shaft bearing retainer ring (10 pack)**
   231490 Fits 1958 thru 1986 (OEM 11007)
   238673 Fits 1987 thru 1999 (OEM 11177A)

7. **O-ring oil screen plug 1948-1999 (OEM 11105)**
   022456 Zodiac, 10-pack
   638072 Accel, 25-pack
   700002 Athena, 10-pack

8. **Oil seal sprocket shaft**
   022362 1970 thru 1999 (OEM 12026B)

9. **Cylinder stud**
   721862 Stock replacement, 1936 thru 1984 (OEM 16837-78)
   231548 Extra Heavy-Duty, Grade 8, 1936 thru 1984
   234905 Stock replacement, 1984-1999, each (OEM 16837-85C)
   232378 Stock replacement, 1984-1999, set of 8 (OEM 16837-85C)

10. 236053 Inner race for 1987 thru 1999 style "one-piece" pinion shaft bearing assemblies 1987-1999 (OEM 23928-87)

11. 231502 Sprocket shaft spacer 1970-1999 models (OEM 24002-70)

12. Engine sprocket alignment washers 1970-1999
- **231763** Assortment 6 pack (one each size)
- **233489** 5 pack .060" (OEM 24032-70)
- **233498** 5 pack .090" (OEM 24033-70)
- **233499** 5 pack .120" (OEM 24034-70)
- **233500** 5 pack .150" (OEM 24035-70)
- **233501** 5 pack .180" (OEM 24036-70)
- **233502** 5 pack .210" (OEM 24037-70)

13. Jims 360 degrees bearing race (Std. 2.127" OD)
Precision machined bearing race, gives 360 degrees oiling.
- **235876** 1958 thru 1999 Std. (OEM 24599-58B)
- **235877** 1958 thru 1999 +.002" (OEM 24600-58B)

14. Left case races 1940 thru 1957 (Std. 2.0015" OD)
- **231505** Left case race Std. (OEM 24621-40)
- **231506** Left case race +.005" (OEM 24623-40)

15. "One piece" pinion shaft bearing assemblies 1987 thru 1999
Bearing length is 1.280", check OEM workshop manual for correct bearing play.
- **710280** Green coded (OEM 24628-87)
- **710281** White coded (OEM 24626-87)
- **710282** Red coded (OEM 24641-87)
- **710283** Blue coded (OEM 24643-87)

15. 148107 **Right case roller bearing retainer 1958-1986** Will also fit later aftermarket cranks. (OEM 43578-35)

16. 235865 Oil pump shaft bushing std. (OEM 24641-36)
- **750760** +.040" Over Size

17. 231487 Right case roller retainer washer 1958-1986, 5 pack Will also fit later aftermarket cranks. (OEM 24692-58)

18. 234899 Crankcase oil screen, 1948-up (24981-70)

19. 235001 Crankcase oil screen spring, 1948-up, 10-pack (OEM 24982-70)

20. Camshaft thrust washer
- **232677** .050", 5-pack (OEM 25550-36
- **232678** .055" (OEM 25551-36)
- **232679** .060" (OEM 25552-36)
- **232680** .065" (OEM 25553-36)
- **232681** .070" (OEM 25554-36)
- **232682** .075"
- **232683** .080"
- **232684** .090"

21. 231488 Cam lock washer (OEM 25550-57)

22. Oil screen plug 1948-up (OEM 26263-80)
- **234896** Stock style
- **231615** Hex head

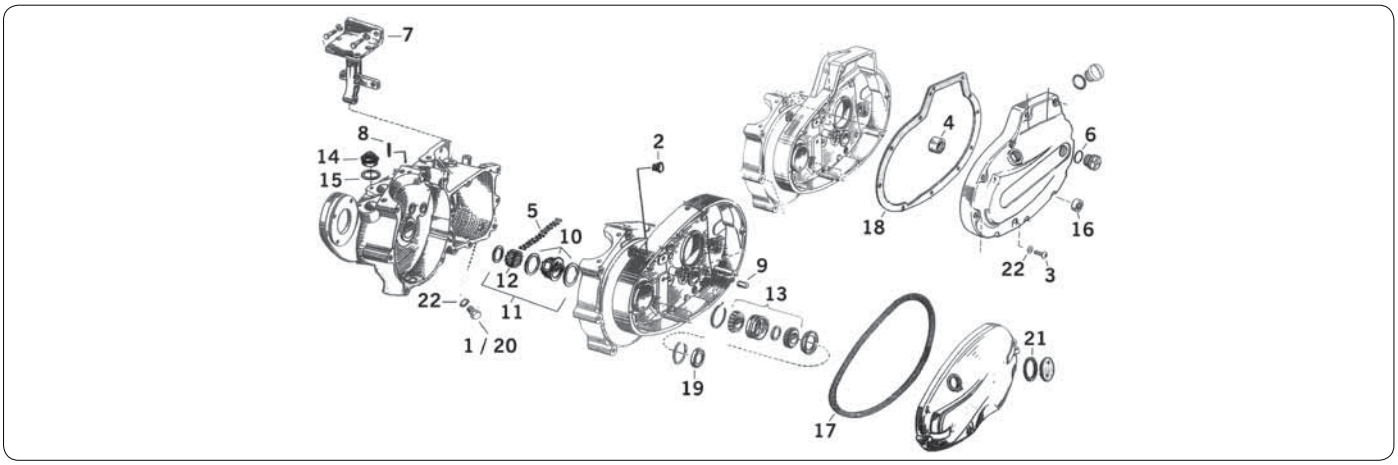
23. Gear cover kit for 1954 thru 1969 models
- **750032** Fits 1936 thru 1953 models when 1954-up style pinion shaft is used. Comes with bushings installed and complete with hardware and gasket. Made by S&S.

24. Gear cover gasket 1936 thru 1969
- **700185** Paper, Athena 10-pack (OEM 25225-36C)

25. Gear cover gasket 1970 thru 1992 (25225-70B)
- **700186** Paper, Athena 10-pack
- **740344** Paper, James 10-pack
- **234512** Silicon beaded, James 5-pack
- **234356** Paper coated metal core, James, each

25. Gear cover gasket 1993 thru 1999 (25225-93)
- **700188** Paper, Athena 10-pack
- **740413** Paper, James 10-pack
- **234514** Silicon beaded, James 5-pack
- **234357** Paper coated metal core, James, each

26. Right case bearing races (Std. 2.127" OD)
- **231434** Race 1940 thru 1954 Std. (OEM 24599-40)
- **231435** Race 1940 thru 1954 +.005" (24601-40)
- **231436** Race 1955 thru 1957 Std. (OEM 24599-55)
- **231437** Race 1955 thru 1957 +.005" (24601-55)
- **231503** Race 1958 thru 1999 Std. (OEM 24599-58A)
- **235875** Race 1958 thru 1999 +.002" (24600-58A)
- **231504** Race 1958 thru 1999 +.005" (24601-58A)



LOWER END PARTS FOR 1954 THRU 1956 KH AND 1957 THRU 1976 XL MODELS

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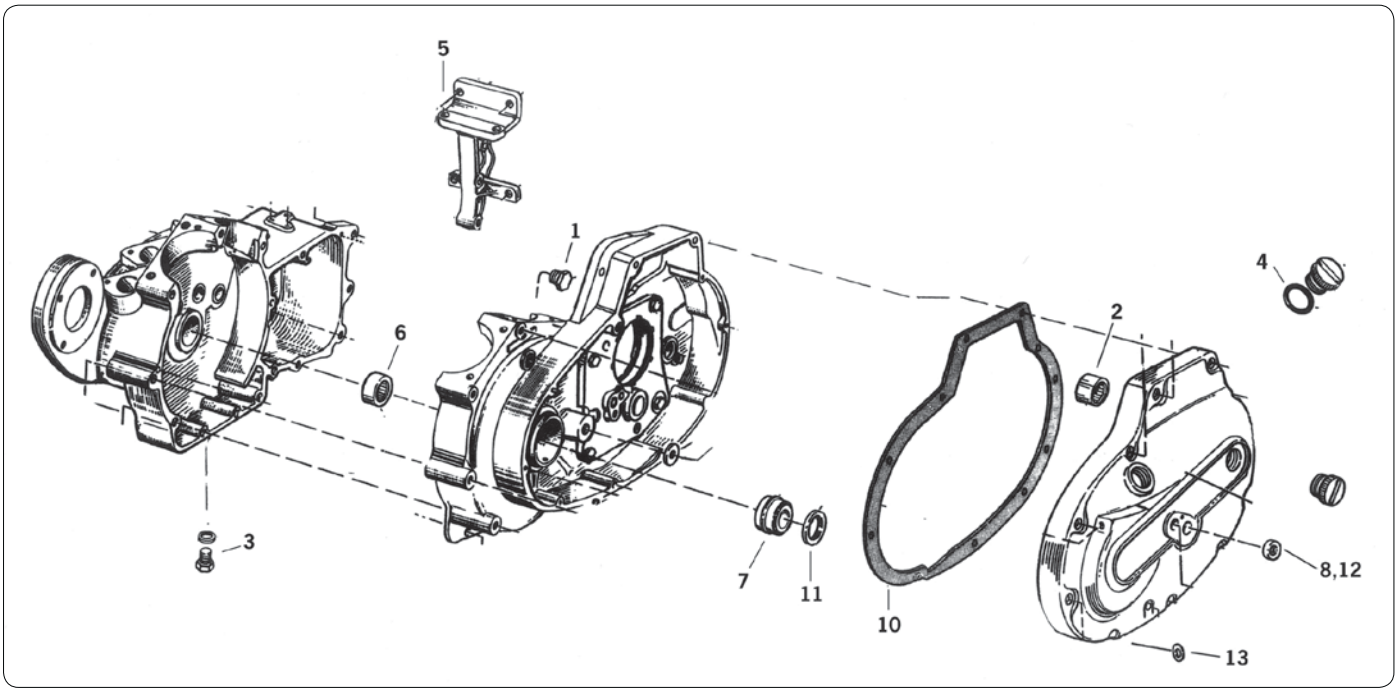
Quality replacement parts for 1954 thru 1976 KH and XL models, parts are sold each unless indicated differently.

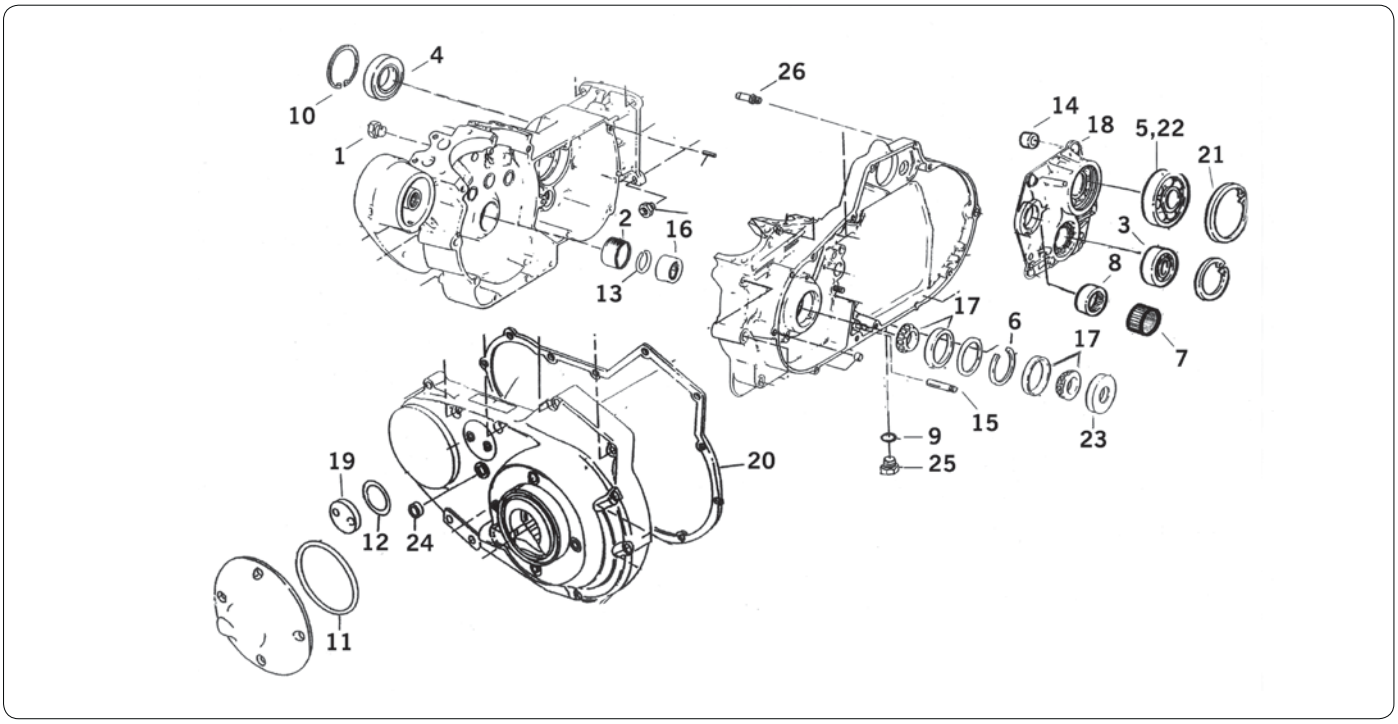
Pos.	ZPN	Description	OEM
1.	740461	Drain plug 1/2"-13	707
2.	710894	Timing plug	720
3.	742050	Oil level check screw, 10-pack, 1954 thru 1970	3728
4.	231460	Primary cover needle bearing, 1967 thru 1980	9063
5.	710267	Pinion shaft rollers STD size, 100-pack, 1957 thru 1976	9421
5.	710268	Pinion shaft rollers +0.0002", 100-pack, 1957 thru 1976	9422
5.	710269	Pinion shaft rollers +0.0004", 100-pack, 1957 thru 1976	9423
5.	710270	Pinion shaft rollers +0.0006", 100-pack, 1957 thru 1976	9424
5.	710271	Pinion shaft rollers +0.0008", 100-pack, 1957 thru 1976	9425
5.	710272	Pinion shaft rollers +0.0010", 100-pack, 1957 thru 1976	9426
6.	638344	Filler plug O-ring, 25-pack	11106
7.	032329	Rear motor mount, 1967-1976	16203-67
8.	234914	Cylinder base stud	16830-54
8.	740462	Cylinder base stud, 1972 thru 1976	16830-72
9.	740463	Dowel pin, 1957 thru 1976	24578-57
10.	231824	Pinion shaft bushing(STD = 1,7515"), 1957 thru 1976	24585-57
10.	231825	Pinion shaft bushing, .005" over size	-
11.	231837	Pinion shaft thrust washer, 5-pack	24692-54
12.	231790	Pinion shaft roller retainer	24718-54
13.	231822	Sprocket shaft bearing	24729-52
14.	740464	Oil strainer	24975-37
15.	700181	Oil strainer gasket, Athena, 10-pack	24978-57
15.	638332	Oil strainer gasket, Accel, 10-pack	24978-57
16.	022326	Shifter shaft oil seal	34035-52
16.	638360	Shifter shaft oil seal, Accel, 5-pack	34035-52
16.	700273	Shifter shaft oil seal, Athena, 5-pack	34035-52
17		**Primary cover gaskets 1958 thru 1969**	
17.	700300	8 mm, Athena, 10-pack	34952-52
17.	700301	1.5 mm, Athena, 10-pack	34952-52
17.	638347	0.5 mm, Accel, 10-pack	34955-67
17.	700302	0.5 mm, Athena, 10-pack	34955-67
17.	740326	0.5 mm, James, 10-pack	34955-67
18.		**Primary cover gaskets 1967 thru 1976**	
18.	638348	0.8 mm, Accel, 10-pack	34955-67
18.	700303	0.8 mm, Athena, 10-pack	34955-67
18.	710512	Silicone Beaded, Athena, 10-pack	34955-67
19.	022329	Sprocket shaft oil seal	35151-52A
19.	638363	Sprocket shaft oil seal, Accel, 5-pack	35151-52A
19.	700306	Sprocket shaft oil seal, Athena, 5-pack	35151-52A
20.	720167	Drain plug, 1967 thru 1976	60348-65B
21.	638152	Inspection cover gasket, Accel 10-pack, 1958 thru 1969	60567-36
21.	700371	Inspection cover gasket, Athena 10-pack, 1958 thru 1969	60567-36
21.	740335	Inspection cover gasket, James 10-pack, 1958 thru 1969	60567-36
22.	700385	Oil level screw gasket, Athena 10-pack, 1971 thru 1976	63858-49



LOWER END PARTS FOR 1977 THRU 1990 XL MODELS

Quality replacement parts, fit all 1977 thru 1990 XL models.
Parts are sold each unless indicated differently.

Pos.	ZPN	Description	OEM
1.	**710894**	Timing plug	720
2.	**231460**	Starter shaft bearing, 1977-1980	9063
3.	**022456**	O-ring drain plug, 10-pack	11105
	638072	O-ring drain plug, Accel 25-pack	11105
	700002	O-ring drain plug, Athena 10-pack	11105
4.	**022458**	O-ring filler plug, 10-pack, late 1978 thru 1990	11139
	638267	O-ring filler plug, Accel 10-pack, late 1978 thru 1990	11139
5.	**032329**	Rear motor mount, 1977-1981	16203-67
6.	**231838**	Pinion shaft bearing kit, without inner race, 1977-1986	24648-77
	233533	Pinion shaft bearing, Blue, 1987 thru 1990	24647-87
	233532	Pinion shaft bearing, Red, 1987 thru 1990	24650-87
	233603	Pinion shaft bearing, White, 1987 thru 1990	24659-87
	233534	Pinion shaft bearing, Green, 1987 thru 1990	24660-87
7.	**231823**	Sprocket shaft bearing kit,	24729-74
8.	**022326**	Shifter shaft oil seal, 1977-1985	34035-52
	700273	Shifter shaft oil seal, Athena 5-pack, 1977 thru 1985	34035-52
	638360	Shifter shaft oil seal, Accel 5-pack, 1977 thru 1985	34035-52
9.	**700277**	Foot peg mount gasket, Athena 10-pack	34624-77
	638274	Foot peg mount gasket, Accel 10-pack	34624-77
10.	**Primary cover gaskets**		
	740327	James, 10-pack	34955-75
	700304	Athena, 10-pack	34955-75
	710510	Silicon beaded, Athena 10-pack	34955-75
11.	**022347**	Sprocket shaft oil seal	35151-74
	700307	Sprocket shaft oil seal, Athena 5-pack	35151-74
12.	**027657**	Shifter shaft oil seal, 1986 to present	37101-84
13.	**638034**	Oil level check screw seal	

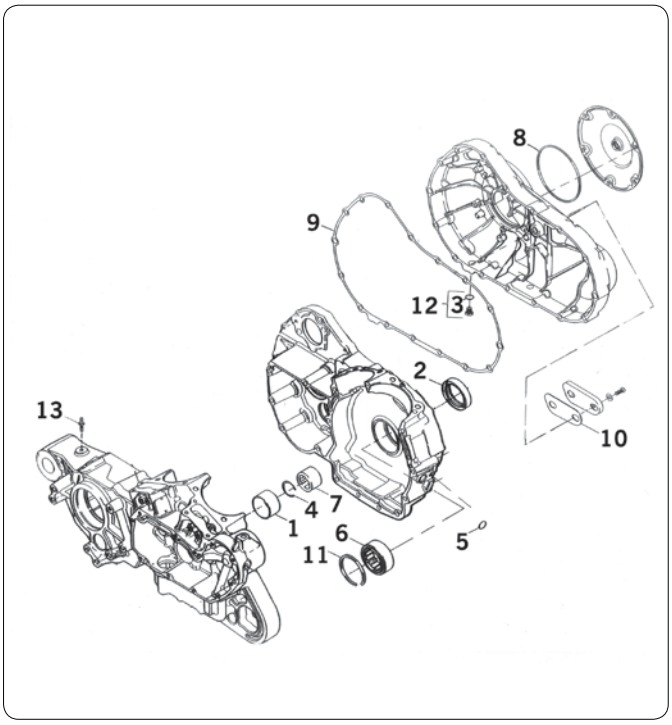


07

LOWER END PARTS FOR 1991 THRU 2003 XL MODELS

Quality replacement parts for all 1991 thru 2003 XL models.
Unless indicated differently all parts are sold each.

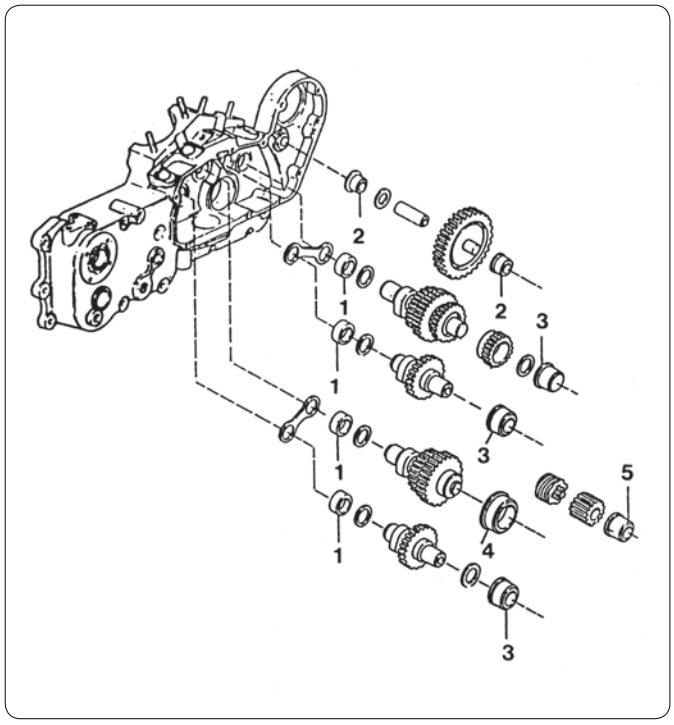
Pos.	ZPN	Description	OEM
1.	**710894**	Timing plug	720
2.	**740469**	Pinion bearing race	8881
3.	**239904**	Bearing, countershaft right, 2001 thru 2003	8977
4.	**239902**	Bearing, mainshaft right, 2001 thru 2003	8996A
5.	**239901**	Bearing, mainshaft left, 2001 thru 2003	8998
	239901	Bearing, countershaft left, 1991 thru 2000	8998
6.	**740470**	Sprocket shaft bearing retaining ring	9119A
7.	**740465**	Bearing, shifter drum, 2001 thru 2003	9151
8.	**740466**	Bearing, countershaft left, 10-pack	9187
9.	**022456**	O-ring drain plug, 10-pack	11105
	638072	O-ring drain plug, Accel 25-pack	11105
	700002	O-ring drain plug, Athena 10-pack	11105
10.	**710308**	Retaining ring, 2001 thru 2003	11161
11.	**638270**	O-ring, derby cover, 1991 thru 1993	11187
12.	**740473**	O-ring, Inspection cover, James, 25-pack	11188
13.	**238673**	Pinion shaft bearing retaining ring	11177A
14.	**740467**	Dowel pin	16573-83
15.	**740468**	Grooved pin, 2001 thru 2003	24530-90
16.	**233533**	Pinion shaft bearing, Blue	24647-87
	233532	Pinion shaft bearing, Red	24650-87
	233603	Pinion shaft bearing, White	24659-87
	233534	Pinion shaft bearing, Green	24660-87
17.	**231823**	Sprocket shaft bearing kit	24729-74
18.	**237151**	Billet aluminum access door, 1991 thru 2000	25238-90
19.	**301621**	Inspection cover, 1991-2000	34742-94A
20.	**Primary cover gasket**		
	700305	Paper, Athena 10-pack	34955-89A
	710511	Silicon Beaded, Athena 5-pack	34955-89A
	740423	Paper, James 10-pack	34955-89A
	740431	Silicon Beaded, James 5-pack	34955-89A
21.	**231851**	Bearing retaining ring	35021-89
22.	**740471**	Bearing, mainshaft left, 1991 thru 2000	35030-89
23.	**022347**	Sprocket shaft oil seal	35151-74
	638278	Sprocket shaft oil seal, Accel 5-pack	35151-74
	700307	Sprocket shaft oil seal, Athena 5-pack	35151-74
24.	**027657**	Shifter shaft oil seal	37101-84
	638278	Shifter shaft oil seal, Accel 5-pack	37101-84
25.	**233583**	Magnetic drain plug, 5-pack	60348-65B
26.	**347035**	Oil line fitting,	



LOWER END PARTS FOR 2004 TO PRESENT XL MODELS

Quality replacement parts for all 2004 to present XL models. Unless indicated differently parts are sold each.

Pos.	ZPN	Description	OEM
1	**740469**	Pinion bearing race	8881
2	**638404**	Oil seal sprocket shaft, Accel 5-pack	12068
2	**700462**	Oil seal sprocket shaft, Athena	12068
3	**022456**	O-ring drain plug, 10-pack	11105
3	**638072**	O-ring drain plug, Accel 25-pack	11105
3	**700002**	O-ring drain plug, Athena 10-pack	11105
4	**238673**	Retaining ring, pinion bearing, 10-pack	11177A
5	**231486**	O-ring crank position sensor, James 10-pack	11289A
6	**701904**	Bearing sprocket shaft	24604-00C
7	**233533**	Pinion shaft bearing, Blue	24647-87
7	**233532**	Pinion shaft bearing, Red	24650-87
7	**233603**	Pinion shaft bearing, White	24659-87
7	**233534**	Pinion shaft bearing, Green	24660-87
8	**231634**	Gasket, derby cover, James 10-pack	25463-94A
9	**741238**	Gasket, primary cover, James 5-pack	34955-04
10	**740475**	Gasket, inspection cover	34986-04
11	**701909**	Sprocket shaft bearing retainingring	35114-02
12	**740474**	Drain plug assembly	60328-98B
13	**347035**	Straight oil line fitting	63533-41A



CAMSHAFT GEAR CASE BUSHINGS, BEARINGS AND THRUST PLATES

USA Made bushing and needle bearings for Sportster models valve train.

1. Camshaft needle bearing
231839 Fits 1958 thru 1990 (OEM 9057)

2. Idle gear & shaft bushing
231844 Fits 1957 thru early 1984 (OEM 25597-57)

3. Cam gear shaft bushing
231840 Fits 1954 to present (OEM 25586-37)
235786 Fits 1954 to present +.005"

4. Rear intake cam gear shaft bushing
231841 Fits 1957 thru 1990 (OEM 25588-57)
235785 Fits 1957 thru 1990 +.005"

5. Pinion shaft bushing
231842 Fits 1957 thru 1976 (OEM 25593-57)
231843 Fits 1977 to present (OEM 25593-74)

6. Camshaft thrust plate
750113 Fits 1958 thru 1990 (OEM 25551-58)

SPROCKET COVER

These die-cast aluminum sprocket covers are available with your choice of a highly polished or chrome plated finish. A perfect and low priced reproduction of the original equipment part used on all Sportster models from 1982 to present, including the 4- and 5 Speed Evolution models.

Fits 4 Speed models from 1982 thru 1990 (OEM 34911-81TB)
301761 Polished
301780 Chrome

Fits 5 Speed models from 1991 thru 2003 (OEM 34911-91)
301811 Polished
301810 Chrome

Fits 5 Speed models from 2004 to present (OEM 34932-04)
302191 Polished
302190 Chrome

JIMS ROD ROLLERS FOR BIG TWINS 1973 TO 1986

These rollers are USA made from aerospace quality 52100 bearing material. Fits Big Twin 1973 to 1986. Rollers are precision ground within the tightest tolerances. Available in under size, stock and over size. Sold in packs of 100.

Long rollers fit male rod
(Std. size .1875" X .590")
710248 Long -.0002" (OEM 9185)
710240 Long Std. (OEM 9186)
710241 Long +.0002" (OEM 9180)
710242 Long +.0004" (OEM 9181)
710243 Long +.0006" (OEM 9182)
710244 Long +.0008" (OEM 9183)
710245 Long +.0010" (OEM 9184)
710246 Long +.0020" (OEM 9186A)
710247 Long +.0030" (OEM 9186AA)

Short rollers fit female rod
(Std. size .1875" X .294")
710257 Short -.0002" (OEM 9450A)
710249 Short Std. (OEM 9441A)
710250 Short +.0002" (OEM 9442A)
710251 Short +.0004" (OEM 9443A)
710252 Short +.0006" (OEM 9444A)
710253 Short +.0008" (OEM 9445A)
710254 Short +.0010" (OEM 9446A)
710255 Short +.0020" (OEM 9418)
710256 Short +.0030" (OEM 9441AA)

JIMS "EXTRA LONG" ROD ROLLERS BIG TWIN 1973 THRU 1999

These rollers are USA made from aerospace quality 52100 bearing material. Fits Big Twin models 1941 thru 1999 but must be used with Jims steel Heavy Duty rod roller retainers (ZPN 235995). Rollers are precision ground within the tightest tolerances and are available in stock and over sizes. Sold in packs of 100.

Long rollers fits male rod
(Std. size .1875" X .660")
233999 Long Std. (OEM 9171A)
233483 Long +.0004" (OEM 9173A)
233490 Long +.0006" (OEM 9174A)
233491 Long +.0008" (OEM 9175A)
233493 Long +.001" (OEM 9176A)
233497 Long +.002"
233458 Long +.003"

Short rollers fits female rod
(Std. size .1875" X .325")
233979 Short Std. (OEM 9101A)
233980 Short +.0002" (OEM 9102A)
233981 Short +.0004" (OEM 9103A)
233982 Short +.0006" (OEM 9104A)
233983 Short +.0008" (OEM 9105A)
233984 Short +.0010" (OEM 9106A)
233985 Short +.0020"
233986 Short +.0030"

JIMS ROD ROLLERS FOR SPORTSTER MODELS

These rollers are USA made from aerospace quality 52100 bearing material. Fits Sportster models 1957 to present. Rollers are precision ground within the tightest tolerances. Available in under size, stock and over size. Soldin packs of 100.

Long rollers fit male rod
(Std. size .1875" X .480")

710266	Long -.0002"	(OEM 9161)
710258	Long Std.	(OEM 9150A)
710259	Long +.0002"	(OEM 9152A)
710260	Long +.0004"	(OEM 9154A)
710261	Long +.0006"	(OEM 9156A)
710262	Long +.0008"	(OEM 9158A)
710263	Long +.0010"	(OEM 9160A)
710264	Long +.0020"	(OEM 9417)
710265	Long +.0030"	(OEM 9450AA)

Short rollers fit female rod
(Std. size .1875" X .294")

710257	Short -.0002"	(OEM 9450A)
710249	Short Std.	(OEM 9441A)
710250	Short +.0002"	(OEM 9442A)
710251	Short +.0004"	(OEM 9443A)
710252	Short +.0006"	(OEM 9444A)
710253	Short +.0008"	(OEM 9445A)
710254	Short +.0010"	(OEM 9446A)
710255	Short +.0020"	(OEM 9418)
710256	Short +.0030"	(OEM 9441AA)

JIMS PRECISION GROUND ROLLERS

Jims rollers are USA made from aerospace quality 52100 bearing material. Rollers are precision ground within the tightest tolerances. Available in stock and over size. Sold in packs of 100.

Fits Sportster pinion shaft 1957 thru 1976 (right case)
Stock size bearing is .1875" x .800"
(100 pck)

710267	Std.	(OEM 9421)
710268	+.0002"	(OEM 9422)
710269	+.0004"	(OEM 9423)
710270	+.0006"	(OEM 9424)
710271	+.0008"	(OEM 9425)
710272	+.0010"	(OEM 9426)

Fits Big Twin pinion shaft 1955 thru 1957 (right case)
Stock size bearing is .1875" x .800"
(100 pck)

710267	Std.	(OEM 9421)
710268	+.0002"	(OEM 9422)
710269	+.0004"	(OEM 9423)
710270	+.0006"	(OEM 9424)
710271	+.0008"	(OEM 9425)
710272	+.0010"	(OEM 9426)

Fits Big Twin pinion shaft 1958 to 1986 (right case)
Stock bearing is .250" x .490".
(100 pck)

710273	Std.	(OEM 9220A)
710274	.0002"	(OEM 9221A)
710275	.0004"	(OEM 9222A)
710276	.0006"	(OEM 9223A)
710277	.0008"	(OEM 9224A)
710278	.0010"	(OEM 9225A)
710279	.0020"	(OEM 9220AA)

Fits Big Twin sprocket shaft 1930 thru 1955 (left case)
Stock bearing is .250" x .490"
(100 pck)

710273	Std.	(OEM 9220A)
710274	.0002"	(OEM 9221A)
710275	.0004"	(OEM 9222A)
710276	.0006"	(OEM 9223A)
710277	.0008"	(OEM 9224A)
710278	.0010"	(OEM 9225A)
710279	.0020"	(OEM 9220AA)

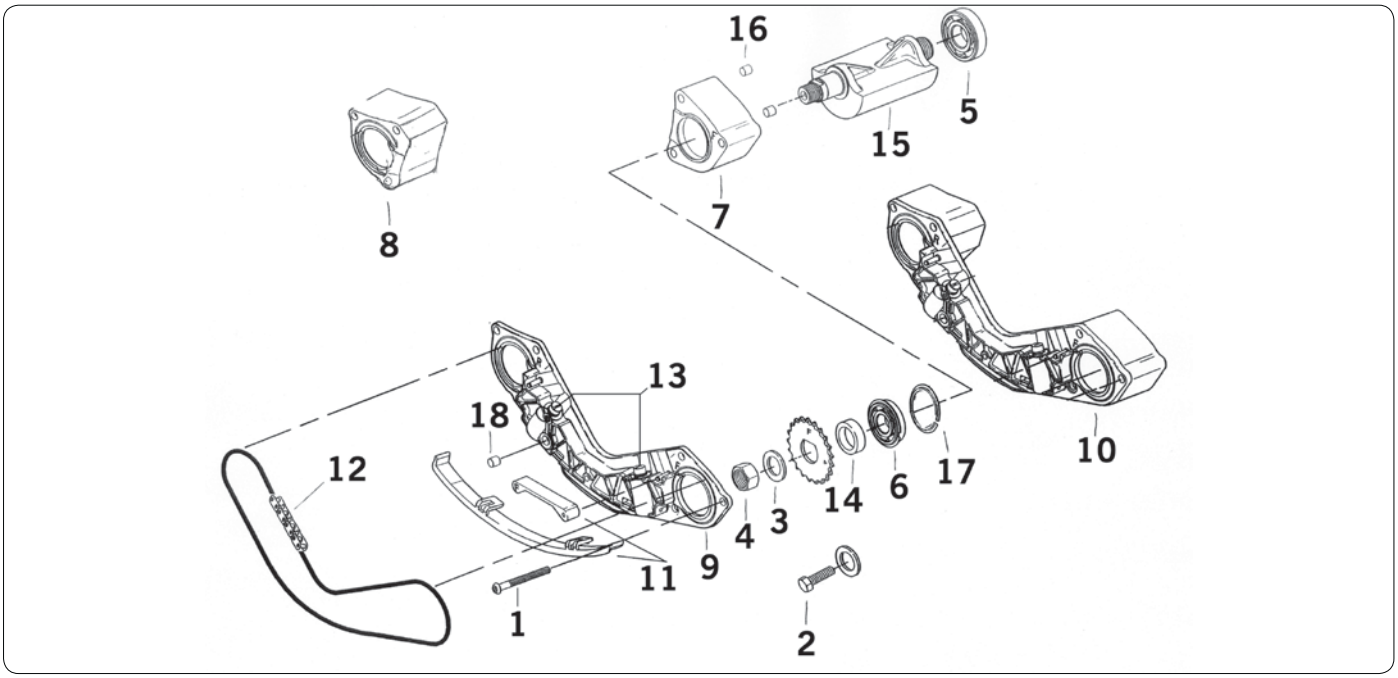
Fits loose bearing wheel hubs Big Twin 1925 thru 1967, Sportster 1953 to 1967 and 45" rear wheels.
Stock bearing is .250" x .490"
(100 pck)

710273	Std.	(OEM 9220A)
710274	.0002"	(OEM 9221A)
710275	.0004"	(OEM 9222A)
710276	.0006"	(OEM 9223A)
710277	.0008"	(OEM 9224A)
710278	.0010"	(OEM 9225A)
710279	.0020"	(OEM 9220AA)

JIMS TRANSMISSION ROLLERS FOR 4 SPEED BIG TWINS

Top quality and precision ground transmission rollers from Jims. Fit main drive gear and counter shaft. Requires 44 pieces in 1941 to early 1977 4 Speed Big Twins. Sold in 100 packs. Stock size is .125" x .615".

710300	Std	(OEM 9084)
710301	+.0004"	(OEM 9085)
710302	+.0008"	(OEM 9086)
710303	+.001"	



ENGINE BALANCER PARTS FOR TWIN CAM B MODELS

All parts to maintain and repair the balancing system on 2000 thru 2006 TC88B and 2007 to present TC96B models.

Pos.	ZPN	Description	OEM
1.	**740543**	Balancer support screw, 6-pack	956
2.	**740536**	Balancer shift bolt 2007-up, 2-pack	3110
3.	**740539**	Sprocket washer 2000-2006, 2-pack	6852
	740547	Sprocket washer 2007-up, 2-pack	6456
4.	**740540**	Sprocket jam nut 2000-2006, 2-pack	7974
5.	**740541**	Balancer inner bearing, 2000-2006	8989
6.	**740542**	Balancer outer bearings, 2000-2006	8991
7.	**740496**	Balance shaft support, front, 2000-2006	14716-00
8.	**740497**	Balance shaft support, rear, 2000-2006	14717-00
9.	**740544**	Balancer bracket assembly, 2000-2006	14728-00
10.	**740498**	Balancer bracket assembly, 2007-up	14728-07
11.	**740499**	Lower, front and rear balancer chain guide kit	14761-00
12.	**740520**	Chain and sprocket kit	14762-00
13.	**740521**	Chain tensioner piston assembly, 2 needed	14764-00
14.	**740522**	Sprocket spacer, 2000-2006, .130”	14780-00
	740523	Sprocket spacer, 2000-2006, .140”	14781-00
	740524	Sprocket spacer, 2000-2006, .150”	14782-00
	740525	Sprocket spacer, 2000-2006, 160”	14783-00
	740526	Sprocket spacer, 2000-2006, .170”	14784-00
	740545	Sprocket spacer, 2000-2006, .180”	14785-00
	740529	Sprocket spacer, 2000-2006, .190”	14786-00
	740531	Sprocket spacer, 2000-2006, .200”	14787-00
	740532	Sprocket spacer, 2000-2006,	14788-00
	740527	Sprocket spacer, 2007 to present, .039”, 10-pack	14784-07
	740528	Sprocket spacer, 2007 to present, .072”, 10-pack	14785-07
	740530	Sprocket spacer, 2007 to present, .105”, 10-pack	14786-07
15.	**740533**	Balance shaft kit, front, 2000-2006	14789-00
	740534	Balance shaft kit, rear, 2000-2006	14790-00
	740546	Balance shaft kit, front or rear, 2 needed, 2007-up	14789-07
16.	**740535**	Support dowel pin, 10-pack	16583-00
17.	**740537**	Balancer bearing retaining ring 2007-up, 5-pack	35240-07
18.	**740538**	Balance support oil seal	45359-00

ROCKER COVER FOR PANHEAD

301112 Beautiful Chrome plated replacement rocker cover for all Panhead 1948 thru 1965. Sold each (OEM 17500-48).

SPACER RING FOR ROCKER COVER

Thick aluminum D-ring with a shiny polished finish, fits all original Pan covers as well as any of the aftermarket covers. Sold per pair, includes allen mounting screws.

301242 D-spacer ring set with screws (OEM 17509-54)

ROCKER ARM COVERS

037000 Chrome rocker arm cover sets for all Shovelhead powered motors from 1966 thru 1984. These triple step chrome plated covers are ready to install, and come packaged complete with two rocker arm cover stud spacers for both the 1966 thru 1981 (short stud) and 1982 and later (long stud) applications (OEM 17516-77B).

S&S BILLET ROCKER COVERS FOR SHOVELHEAD

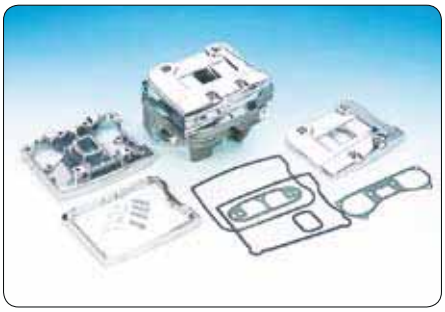
Just the fact that the S&S polished billet rocker covers for Shovelheads look so good may be reason enough to put them on your bike, but the beauty is not just skin deep. The well thought out design offers a number of advantages over conventional cast rocker boxes. Machined from billets of 6061-T6511 aluminum on modern CNC machining centers, these rocker boxes provide the ultimate in dimensional accuracy and stability. The top and bottom sections of the covers are sealed with an o-ring type Viton seal that insures leak free operation. This two-piece design also allows, dependent of what kind of frame you have, installation and removal with the engine in the frame. These rocker covers are clearanced for up to .590" valve lift when used with S&S roller rocker arms. Rocker shafts used in the S&S Shovel style rocker boxes are an economical straight design similar to Evolution rocker shafts. Anyone who has had to replace a set of stock Shovelhead rocker shafts can tell you that this will save you money when it comes time to rebuild the top end. Supplied in sets of two complete rocker boxes with special O-rings, required hardware, and 4 rocker arm shafts. Use with stock style rocker box to cylinder head gaskets.

750297 S&S Shovelhead rocker covers, polished

Replacement parts

750299 Set of 4 rocker arm shafts
750443 Large Viton O-ring for rocker arm end plugs, 10-pack
750444 Small Viton O-ring for rocker arm end plugs, 10-pack
750445 Viton O-ring for front rocker box screw, 10-pack
750446 Viton O-ring for rear rocker box screw, 10-pack
750654 Large Viton O-ring for rocker box cover, 10-pack

Note: These replacement parts only fit S&S rocker boxes, can not be used in OEM and stock style covers.



CHROME ROCKER COVERS

Beautifully chrome plate three piece rocker cover kits for Evolution motors. These precision die-cast covers are machine polished, triple chrome plated and individually inspected. Kits are available for 5 Speed Sportster models 1991 thru 2003 and Big Twin models from 1984 thru 1999 and bring the looks of the latest most expensive factory customs within affordable reach for everyone. Covers are sold as a kit for one cylinder (two kits needed per engine) and including all gaskets needed. All parts are separately available.

Fits Sportster models 1991-2003

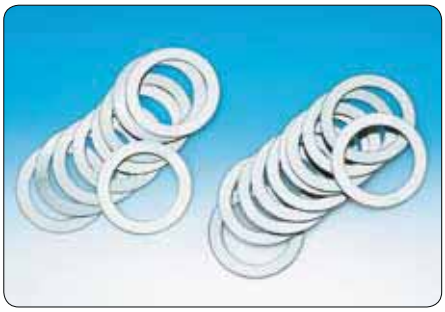
302076 Complete kit for one cylinder
302077 Lower cover (OEM 17537-96)
302078 Spacer ring (OEM 17538-96)
302079 Top cover (OEM 17551-96)

Fits Evolution Big Twin models 1984 thru early 1992

301850 Complete kit for one cylinder
301853 Lower cover (OEM 17530-84A)

Fits Evolution Big Twin models late 1992 thru 1999

037001 Complete kit for one cylinder
037002 Lower cover (OEM 1753092)
037003 Spacer ring (OEM 17529-92)
037004 Top cover (OEM 17528-92)



ROCKER ARM SHIMS

Due to the variety makes and models of rocker covers and rocker arms available, the rocker arm end play may have to be adjusted. End play has to be set at .003" to .015" (0.08 mm to 0.40 mm). We offer hardened shims in the sizes .012" and .020" (0.30 mm and 0.50 mm) for proper end play adjustment. Sold in 10 packs.

231198 Shims .012" (10 pack)
231199 Shims .020" (10 pack)

CHROME ROCKER COVERS FOR 2004 TO PRESENT SPORTSTER

Brilliant chrome rocker boxes highlight the top of your engine. Sold in sets of one inner and one outer rocker cover (2 needed per engine). Fits 2004 to present Sportster models.

302180 Chrome rocker cover set

ROCKER COVER

These beautifully chrome plated finned rocker covers fit all Evolution Big Twin engines. An affordable way to give your engine a real custom look. The sparkling chrome makes it an eye-catcher on every bike installed. Easy to install and comes complete with gaskets and chrome mounting hardware. Kits are for one cylinder, so order two for each engine. The complete kit includes lower cover, spacer ring, top cover, mounting hardware and gaskets. The finned top cover is also available separately for those who want to use the OEM bottom and middle cover.

302080 Finned rocker box kit(one cylinder), fits Big Twin models 1984 thru 1992
302090 Finned rocker box top cover (each), fits 1984 thru 1992

ALUMINUM EVOLUTION BIG-TWIN ROCKER BOX KITS

The ultimate in design and function. These die cast aluminum rocker boxes are a lower priced alternative for billet parts. Will not only give your Evolution Big-Twin engine a specialhighlight but will also provide a more stable rocker arm housing. Available with a polished or top quality chrome plated finish. The complete kit includes top rocker covers, middle rocker coverspacers, bottom inner rocker covers, rubber umbrella valves, gaskets, seals and hardware for both the front and rear cylinder. Fits all Evolution Big-Twin models 1984 thru 1999.

Die-cast rocker box kits
037025 Chrome rocker box kit
037026 Polished rocker box kit

Replacement parts
750142 Gasket kit

DIE-CAST TWO-PIECE ALUMINUM TWIN CAM ROCKER BOX KITS

Precision made two piece rocker covers with separate rocker arm carriers. These kits will guarantee a very rigid and stable rocker carrier and provide hassle free installation. These kits are die-cast aluminum from high quality aluminum alloy and precision machined using the latest CNC technology. Available in either a highly polished or a show chrome finish. The complete kit includes top rocker covers, lower rocker covers, inner rocker arm carrier blocks, gaskets, seals and hardware for both the front and rear cylinder. Fits all Twin Cam models 1999 to present.

037017 Chrome rocker box kit
037018 Polished rocker box kit
302108 Replacement gasket kit

"ROLAND SANDS DESIGN" NOSTALGIA ROCKER BOX COVERS FOR TWIN CAM MODELS

Style up your Twin Cam with a pair of these "Nostalgia Design" covers designed by Roland Sands. Made from billet aluminum with a show chromed or polished finish. Hardware is included. Fits all Twin Cam models 1999 to present. Sold in sets of 2.

740642 Polished finish
740643 Chrome finish

COLONY EVOLUTION LOWER ROCKER BOX MOUNTING KIT

This kit contains all grade 8 bolts and washers needed to mount the lower rocker box assembly on all Evolution models. Fits 1986 to present Sportster models and 1984 thru 1999 Evolution Big Twins.

741848 Colony lower rocker box mounting kit

S&S ROCKER COVERS

S&S manufactures two types of rocker covers for Twin Cam style engines, die cast and billet. Cast covers are produced using the less expensive die-casting manufacturing process. Billet covers are manufactured from aluminum billet, machined with computer-controlled equipment. All S&S rocker covers include Viton gaskets and O-rings for leak-free operation, their proven two-piece design makes for a simple installation. S&S cast rocker covers and billet rocker covers for Twin Cam style engines include all parts required for installation. Special rocker arm supports are included with die-cast rocker covers. Billet covers are used with stock rocker arm supports and breather assemblies. Installation on stock and most comparably sized engines can be performed without removing the engine from the frame. Rocker covers are clearanced to permit valve lifts up to .640" using aftermarket valve springs packages and stock Harley-Davidson or S&S roller rocker arms. If using valve/spring packages with taller than stock installed height, some minor clearance may be required. S&S rocker covers accept valve springs up to 1.660" O.D. without modification. Cylinder heads must be set up correctly for high-lift cams, and it remains the builder's responsibility to confirm all clearances.

Billet Rocker covers 1999 to present Twin Cam models

721927 Chrome finish
721928 Polished finish

Die-Cast Rocker covers 1999 to present Twin Cam models
750023 Chrome finish
750516 Polished finish

MYSTFREE BREATHER MODULE FOR TWIN CAM

Twin Cam owners complain frequently about an oil mist that is released through the breather system. Finishing your ride with a well-oiled leg is not something enjoyable. Doherty Machines has come up with a solution for this issue. The factory breather valves have a single chamber separator that is fitted with a gauze element. The Mystfree design operates a cylinder which can be seen as a two chamber oil separator. In the first chamber the majority of the oil content is stripped off and returned via the stock bleed holes in the bottom of the chamber. Any remaining oil introduced into the second chamber is returned and evacuated on the down stroke of the piston through two small vacuum ports located in the Mystfree body and is returned to the rocker box cavity. No oil residue ever reaches the raised air outlet located on the top front portion of the Mystfree. Installation requires only the removal of the six bolts securing each rocker box cover. The Doherty Mystfree is delivered with all needed gaskets and mounting bolts. Fits all Twin Cam models 1999 to present.

701380 Mystfree breather module for Twin Cam engines

ROCKER BOLT COVERS

301097
Nicely chrome plated covers to fit over the rocker cover bolts of all Evolution motors 1984 thru 1999. Attach with socket head screws and comes complete with the necessary wrench. Set of 2.

HEAD BOLT COVERS

301854
These chrome plated bolt covers were designed to "Dress-Up" the bolts fitted on all 1984 thru 1999 Evolution models, including Sportster models. They attach with socket head screws and come complete with the necessary wrench. Set of 4.

ROCKER SHAFT END PLUGS

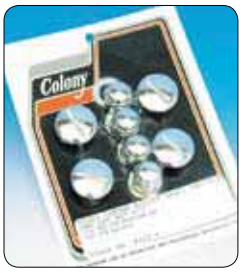
These chrome plated rocker arm shaft end plugs will add that classic Knucklehead look to Sportster engines from 1971 thru 1985 and Shovelhead engines from 1971 thru 1984. Installation or removal is much easier than the original slotted Harley part. Sold in sets of 4.

231614 Chrome plated rocker shaft end plugs (set 4)

ROCKER BOX STUD KIT

292160 Each kit contains 8 long studs and 2 short studs. Fits Shovelhead motors (OEM 17506-66 & 17508-66).

ROCKER SHAFT END CAP AND NUT KIT



Nice reproduction of original styleend caps in chrome platedfinish. Will fit Sportster and Shovelhead models. Available in screw-driver slotted or with Allen head style.

741793 Slotted kit, fits 1957-1970
741794 Allen kit, fits 1971-1984

ROCKER SHAFT END NUT KIT

Chrome plated acorn style end nuts and washers, will replace the OEM "Red Dot" nuts on all Shovelhead models 1966 thru 1984 and Sportster models 1957 thru 1985.

741791 Rocker shaft end nut kit

ROCKER BOX NUT KIT

Chrome plated hex nuts and flat washers that add a clean, detailed, stock look to all Shovelhead models from 1966 thru 1983.

741792 Rocker box nut kit

ROCKER ARMS FOR SPORTSTERS

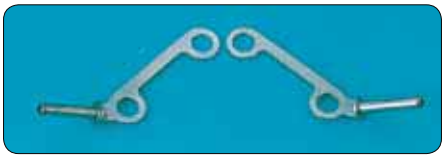
Replacement rocker arms for Sportsters 1957 thru 1985. Meets or exceeds OEM specifications.

232580 Front exhaust (OEM 17394-57A)
232581 Rear exhaust (OEM 17395-57A)
232582 Front intake (OEM 17396-57A)
232583 Rear intake (OEM 17397-57A)

ROCKER ARM B USHING

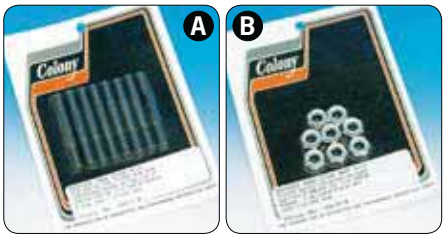
These rocker arm bushings are machined from high quality solid bronze bar and fit Big Twin models from 1966 thru 1999, Twin Cam models from 1999 to present and Sportster models 1957 to present. (OEM 17428-57).

235814 8-pack, U.S.A. made by Jims
231676 8-pack, imported version
231425 Each, imported version



ROCKER OILERS FOR PANHEAD

032446 Exact duplicates of the original intake rocker oilers (set 2) (OEM 18100-49 and 18102-49).



ROCKER ARM STUD AND NUT KITS

A. High quality studs with interference threads. Fits 1948 thru 1965 Panhead models and are sold in package of 8 studs to cover 1 cylinderhead (OEM 17647-48).

741789 Parkerized finish

B. Aircraft quality flexloc nuts. Fits 1948 thru 1965 Panhead models and are sold in package of 8 flexloc nuts to cover 1 cylinderhead (OEM 7727).

741790 Cad plated finish

ROCKER ARM STUD NUTS FOR PANHEAD

292179 Self-locking stud nuts, used on all Panhead motors (OEM 7727)

CHROME ROCKER OIL LINES

Replacement rocker oil lines for Sportster and Shovelhead. Each set includes fittings and seals.

120111 Fits Shovelhead 1966 thru 1984 (OEM 62783-66A & 62785-66A)
120110 Fits Sportster models 1957 thru 1985, except 1957 thru 1969 magneto models (OEM 17324-57A)

BRAIDED STAINLESS STEEL ROCKER OIL LINES

Custom style braided rocker oil lines replaces the OEM steel tubing rocker oil lines.

231978 Fits Sportster models 1957 thru 1985, except 1957 thru 1969 magneto models (OEM 17324-57A)

ROCKER ARM SHAFT FOR SHOVELHEADS

Replacement rocker shaft, fits Big Twins Shovelhead 1966 thru 1984. Sold each (OEM 17611-66B).

231986 Rocker shaft

ROCKER ARMS FOR SHOVELHEAD

Replacement rocker arms for the 1966 thru 1984 Shovelhead motors. Meets or exceeds OEM specifications.

231982 Rocker arm, rear ex/front in (OEM 17360-66)
231983 Rocker arm, rear in/front ex (OEM 17375-66)
231425 Replacement bushing, sold each (OEM 17428-57

S&S ROLLER ROCKERS FOR SHOVELHEAD

S&S roller rocker arms for Shovelheads borrow some features of the S&S Evolution and Twin Cam style rocker arms. All S&S rocker arms are machined from 4140 steel forgings and heat-treated for maximum strength. The forgings are designed to eliminate stress points and provide the strongest, most durable rocker arm possible. S&S Shovelhead style roller rocker arms also feature the exclusive .750" long S&S rocker arm bushings. The S&S bushings provide 50% more load bearing surface than stock .500" bushings. The final Evolution-like feature is an oil passage from the pushrod cup of the rocker arm to the inside of the rocker arm body that allows top end oiling through the pushrods when used in conjunction with S&S tappet guides and pushrods. Oiling can also be done through the stock Shovelhead oiling system. S&S Shovelhead style rocker arms have a nominal rocker ratio of 1.5:1, and high precision CNC machining insures that this ratio will be consistent in all parts. Our experience has shown that the actual rocker ratio of stock and aftermarket Shovelhead style rocker arms can vary widely. Some are less than the nominal stock 1.43:1 ratio and some are more. The roller tip reduces valve tip wear and side loading of the valve stem in high lift applications. S&S Shovelhead style roller rocker arms are compatible with stock and S&S billet Shovelhead style rocker boxes. Some clearancing may be required when using stock rocker boxes.

750298 S&S Roller Rockers for Shovelheads

STOCK REPLACEMENT ROCKER ARMS

Replacement rocker arms for Evolution engines. These rocker arms are made to tight tolerances to meet or exceed OEM specifications. Fits Evolution Big Twin models from 1984 thru 1999, Twin Cam models 1999 to present and Sportster models from 1986 to present.

236236 Front intake, rear exhaust (OEM 17360-83)

236237 Front exhaust, rear intake (OEM 17375-83)

TPD HIGH PERFORMANCE ROLLER ROCKERS

Our High Performance roller rocker arms provide you with almost all the features found in other roller rocker arm kits, but at much lower cost. Roller rockers are a must for Performance motors. Also worth considering when rebuilding a stock or near stock engine as they very much improve valve train efficiency. The roller tips drastically reduce scuffing, valve stem tip wear and galling as they provide full valve stem tip contact. TPD rockers are precision investment die-cast from high quality alloy steel, and run on factory installed bronze bushings. Use with OEM or stock replacement rocker arm shafts. Sold in sets of 4. Fits 1984 thru 1999 Evolution Big Twin, 1986 to present Sportster and 1999 to present Twin Cam models.

032440 Rocker arm set

CRANE ROLLER ROCKERS WITH BUSHINGS

These economically priced roller rocker arms run on bronze bushings instead of the more expensive needle bearings. The roller tips reduce friction that robs horsepower. A must for performance motors that have high lift camshafts. These rocker arms reduce the scuffing that produces valve guide wear. Available for Evolution Big Twin, Twin Cam 88 and Evolution Sportster engines. For those who want a little more there is this 1.75 ratio kit available for Evolution Big Twin, Twin Cam 88 and Evolution Sportster engines. The 1.75 ratio kit will give approx. 8% more valve lift without changing the cam. Sold in sets of four.

730062 Fits Evolution Big Twins 1984-1999, Twin Cam 88 models 1999 to present and Evolution Sportsters 1986 to present with 1.75 ratio

ROCKER ARM BUSHING

235870 American made replacement rocker arm bushing for roller rockers. Packed and sold in sets of 8.

ROCKER ARM SHIMS

To take end play out of Shovelhead rockers for a smoother running bike. Sold in 10 packs.

233504 Rocker arm shims + .005"
233505 Rocker arm shims + .007"
233506 Rocker arm shims + .010"
233507 Rocker arm shims + .020"

JIMS SHOVELHEAD ROLLER ROCKERS

233479 Newly developed, precision machined rocker arms for Big Twin Shovelhead models from 1966 thru 1984. These thoroughly tested roller rockers are made in the USA from 4340 chrome-moly steel and heat treated castings (OEM 17360-66A and 17375-66A).

CRANE ROLLER ROCKERS

Made from high quality alloy steel, precision investment die-cast for extreme strength. Feature needle bearings with seals instead of bushings which run cooler with less friction. Oil seals are used for pressurized lubrication of the needle bearings without any loss of oil pressure. Roller tip reduces valve stem tip wear and galling to a minimum and provides full valve stem tip contact.

These roller rockers provide:

- Accurate, true rocker ratio
- Improved rocker geometry
- Less friction - run cooler which result in a very efficient valve train

A must for high performance engines. Available in complete kits with precision ground rocker shafts, ready to install.

232690 Fits Evolution Big Twin 1984 thru 1999, Twin Cam models 1999 to present and Evolution Sportster models 1986 to present

Replacement Parts
231262 Roller kit (set of 4)
231263 O-ring kit (set of 8)

In 1995 Crane made a dimensional change to the needle bearings and shafts. These rocker arms are identified by the symbol "X" in the manufacturing code etched into the body of the rocker arm. These rocker arms use different rocker arm shafts, which must be used when rocker arms are reconditioned or serviced.

231259 X-type rocker shafts for Evolution models (set 2)

JIMS ROLLER ROCKER ARMS

Precision manufactured rocker arms to fit Evolution Big Twin models from 1984 thru 1999, Twin Cam models 1999 to present and Sportster models from 1986 to present. Available in stock 1.625 and custom 1.7 rocker ratio. These thoroughly tested roller rockers are made in the USA The 1.625 can also be used to replace OEM 17360-83 and 17375-83. Set of 4. The 1.7 is for a custom valve train set up, where a super high lift is required. Rocker shafts are not included, they must be ordered separately. Replacement parts are available.

Rockers and shafts
235869 Stock rocker roller set 1.625 (Set of 4)
233227 Custom rocker roller set 1.7 (set of 4)
235815 Rocker arm shaft (each)

Replacement parts
234867 Rocker arm rollers (4 pack)
234866 Rocker arm axles (4 pack)
234864 Rocker arm lock rings (8 pack)
235870 Rocker arm bushings (8 pack)

RIVERA'S ADJUSTABLE ROCKER ARM GEOMETRY KIT

Most people assume that in an Evolution Big Twin the camshaft is located at the center of the motor. This is not correct; in fact it is located rear-of-center 3/32". For a perfect valve train geometry you should need, unlike the OEM parts, rocker arms with geometrically correct angles. Rivera's adjustable rocker arm geometry kit contains, as the only kit on the market, these rocker arms for ultimate efficiency. They are investment cast from carbon steel, and heat treated to 60-62 on the Rockwell scale. Each rocker arm is configured and marked for a particular valve location (FE for Front Exhaust and FI for front intake etc.). Each rocker arm utilizes an oversize swivel-foot adjuster that allows plus or minus three degrees of adjustment to enable absolute valve train geometry for exactly your cam. Extensive testing has shown improved reliability and profoundly increased smoothness and performance.Available as a complete geometry kit including push rod gauge, push rod tool and valve stem height gauge or as a set of rocker arms only.

238956 Rocker arm kit (set 4)

ROCKER ARM SHAFT

American made, precision ground and hardened steel shaft that duplicates the Original Equipment part. Fits Evolution Big Twin models from 1984 thru 1999, Twin Cam models 1999 to present and Sportster models from 1986 to present (OEM 17611-83).

234748 Rocker shaft

JIMS "RACE ONLY" ROCKER SHAFT

This rocker shaft is made for racing purposes only. It is completely drilled thru on one end and threaded to accept a grease nipple. Designed for race bikes using "dry top end". For use in Evolution race engines only.

233384 Rocker shaft for racing purposes

ROCKER ARM SHIMS

Due to the variety of makes and models of rocker covers and rocker arms available, the rocker arm end play may have to be adjusted. End play has to be set at .003" to .015" (0.08 mm to 0.40 mm). We offer hardened shims in the sizes .012" and .020" (0.30 mm and 0.50 mm) for proper end play adjustment. Sold in 10 packs.

231198 Shims .012"
231199 Shims .020"

SPACER SET ROCKER ARM SHAFT

231764 Fits Big Twins Shovelhead 1966 thru 1984 (OEM 17452-66). Set of 4.

ANDREWS HIGH LIFT VALVE SPRINGS FOR SHOVELHEADS

234734 High lift spring set for 74 and 80 c.i. motors will provide correct spring force for any of our performance cams. Installation does not require complicated machining. Set of four springs.

ANDREWS VALVE SPRING SETS

Andrews High Lift valve springs will easily accommodate cams with .550" lift when used with Andrews' Titanium valve collars ZPN 232638. Installation does not require machining of the heads. Set consists of 4 inner and 4 outer springs. Fits Evolution Big Twin models from 1984 thru 1999, Twin Cam models 1999 to present and Sportster models from 1986 to present.

232637 Andrews High Lift valve springs

ANDREWS STEEL VALVE COLLARS

Andrews heat treated steel spring collars fit all Evolution Big Twin engines 1984 thru 1999 and Twin Cam engines 1999 to present. Provides .050" more spring travel than stock collars. Andrews collars are stronger than stock, approximately 10% lighter and install with stock keepers. Sold in sets of 4.

232591 Andrews steel valve collar set

PERFORMANCE VALVE SPRING SET

The Thermo Cool spring is the most durable performance spring available. The Thermo Cool coating reduces the friction between coils and rapidly disperses heat. The result is a performance valve spring that runs cool and allows your valve train to operate smoothly and efficiently. Sold in sets of 4 and fits 1948 thru 1984 Big Twins.

231358 Thermo Cool valve spring kit

CRANE PERFORMANCE VALVE SPRING AND RETAINER KIT

Complete kits with lower spring seats and valve keepers. The kit with 4140 chrome-moly steel retainers comes with high quality 175 lbs springs. We also offer kits with titanium retainers, for reducing weight and adding strength to your valve train. These kits come with either 155 lbs or 175 lbs springs, or special 175 lbs Thermo Cool coated springs. This Thermo Cool coating reduces the friction between coils and rapidly disperses heat. There is also a Premium Valve Spring kit that must be used in combination with ZPN 236299 or 232701 lower spring seat, retainer and valve keeper kits. The Premium Valve Spring kit is for Performance and Racing applications and contains H-11 tool steel springs for 180-185 lbs spring pressure. This kit can be used with up to .650" valve lift. Fits Evolution Big Twins from 1984 thru 1999, Twin Cam 88 from 1999 to present, and Evolution Sportsters from 1986 to present.

Complete kits with retainers, springs and keepers

231348 Steel retainers with 175 lbs springs
231364 Steel retainers with 155 lbs springs
231349 Titanium retainers with 175 lbs springs
231365 Titanium retainers with 175 lbs Thermo Cool springs

Race quality valve spring kits

231396 Premium Valve Spring Kit, 180-185 lbs

Lower spring seat, retainer and valve keeper kits

232701 Kit with steel retainers
232699 Kit with titanium retainers

CRANE VALVE SPRING AND RETAINER KIT FOR SHOVELHEAD

High Performance valve springs, made from the finest quality spring wire and precision wound to the industry's highest specifications. Available in your choice of chrome-moly 4140 steel or titanium retainers. The chrome-moly retainers are the strongest and most durable steel retainers offered. The titanium retainers reduce weight and add strength to a performance valve train assembly. Springs are separately avialable.

231360 Valve springs kit with steel retainers
231359 Valve springs kit with titanium retainers
231347 Valve spring kit only (OEM 18205-57)

CRANE VALVE SPRING RETAINERS FOR 1948 THRU 1984 BIG TWINS

We offer two style retainers for your high-performance needs. Chrome moly 4140 steel is used to produce maximum strength and durability in our steel retainers. They are finished with a distinctive black coating for rust and corrosion protection. The titanium retainers bring the ultimate in a combination of strength and weight savings to your performance needs (OEM 18221-36).

231341 Steel retainers, set 4
231342 Titanium retainers, set 4

CRANE VALVE KEEPERS

These machined valve keepers are precision machined and carefully hardened by heat treatment. They have nearly twice the shear strength of the stock, stamped steel keepers. Available for two different spring pressures. Fits Evolution Big Twins 1984 thru 1999, Twin Cam 88 1999 to present and Evolution Sportster 1986 to present. Sold in sets of eight.

232664 Keepers for 155 lbs springs
232665 Keepers for 175 lbs springs

VALVE SPRING SEAT MACHINING TOOLS

Our valve spring seat machining tools are workshop quality with carbide cutting tips. They are used when lowering spring seats for high lift cams. Must be used with a pilot cutter body which must be ordered separately.

For 1948 thru 1984 Big Twins
231339 Spring seat machining tool for 1948 thru 1984 models
231390 Pilot cutter body

For 1984 thru 1999 Evolution Big Twins, 1999 to present Twin Cam models and 1986 to present Evolution Sportsters
231391 Pilot cutter body

VALVE SPRING SPACING SHIMS

232672 Crane valve spring shims make it easy to get precise equal pressure on all valves in your Evolution engine. This kit includes twelve shims; four .015, four .030 and four .060. This allows you to shim from .015 to .105 in .015 increments to assure equal pressure between springs, or to increase pressure as desired. Fits Evolution Big Twin models from 1984 thru 1999, Twin Cam models 1999 to present and Sportster models from 1986 to present.

VALVE SPRING SET

231765 Springs are made of top quality spring steel, exceeds OEM specifications. Set consists of 4 inner and 4 outer springs. Fits Evolution Big Twin models from 1984 thru 1999, Twin Cam models 1999 to present and Sportster models from 1986 to present (OEM 18201-83 & 18202-83).

VALVE KEEPERS BY PRECISION MACHINING

234893 Stock replacement valve keepers for all Evolution Big Twins 1984 thru 1999, Twin Cam 88 models 1999 to present and Evolution Sportsters 1986 to present. Keepers are CNC machined as pairs and then heat treated. Sold in sets of 4 pairs (OEM 18229-83).

PRECISION MACHINING VALVE SPRING SETS FOR HIGH LIFT CAMS

These racing quality valve springs can be used with stock lower and upper collars and keepers. Specially designed for use with high lift cams. Sets are available for Panhead & Shovelhead 1948 thru 1984 as well as Evolution Big Twin models from 1984 thru 1999, Twin Cam models 1999 to present and Sportster models from 1986 to present.

234285 Fits Pan/Shovelhead, set 4 (max. Lift .520")
234286 Fits Evolution Big Twins 1984 thru 1999, Twin Cam 88 models 1999 to present and Evolution Sportsters 1986 to present, 170-180 lb. seat pressure, set 4 (Max. Lift .580")

VALVE SPRINGS KIT FOR HIGH LIFT CAMS BY PRECISION MACHINING

234287 These race quality valve spring kits come complete with 7075-T6 hard anodized upper collars, heat treated machined keepers and complete installation instructions. Uses stock lower collars. Designed for use in Panhead & Shovelhead 1948 thru 1984 with high lift cams. For 160 lb. seat pressure and up to .580" valve travel.

SIFTON VALVE SPRING PARTS

Sifton valve springs are stronger than stock and must be used with Sifton collars and keepers. The collars are machined from aluminum for light weight and reliability. Collars and keepers utilize the performance proven 15 degree lock. Available as a set of 4 double valve springs or as a complete kit with valve springs, upper and lower collars, and valve keepers. Upper and lower collars as well as valve keepers are also available separately. These Sifton valve springs and collars are designed for use in Evolution Big Twin models 1984 thru 1999, Twin Cam 88 models 1999 to present, and Evolution Sportster models 1986 to present.

720587 Lower valve collars, set of 4

V-THUNDER VALVE SPRING SETS, VALVE SPRING RETAINERS, COTTER KEYS AND VALVE SPRING WASHERS

V-Thunder valve spring kits are made from the finest materials available and manufactured to close tolerances. The complete spring kits contain springs, retainers, valve keepers and spring seats and fit 1984-1999 Big Twins and 1999 to present Twin Cam models. Spring kits are interference wound double springs with a damper. The damper keeps the inner and outer spring coils from locking together and helps to control harmonics in the valve spring. Valve keys, seats and retainers are made from the high grade chrome-moly steel. Retainers are also available in titanium. These kits are designed for use with High Performance or Racing engines. Spring seat measurements are; thickness .080", inside diameter .585" and outside diameter 1.500". All parts heat treated to the highest industry specifications to cope with the excessive demands of powerful V-Twin engines. All parts in these spring kits are separately available. Valve keys are available for Sportster models 1957 to present and Big Twin 1948 to present.

Complete spring kits for 1984 thru 1999 Big Twins and 1999 to present Twin Cam models

239737 Kit with chrome-moly retainers, max. lift .600"
239738 Kit with titanium retainers, max. lift .600"

V-Thunder super keys for Sportster models

239578 +.050 Installed height without recess for lash cap 1957 thru 1985
239580 With lash cap recess intake 1957 thru 1985
239579 Without lash cap recess 1986 to present Sportster
239580 With lash cap recess 1986 to present Sportster

V-Thunder super keys for Big Twin models

239577 With lash cap recess 1948 thru 1984 Big Twins
239579 Without lash cap recess 1984 to present Big Twins
239580 With lash cap recess 1984 to present Big Twins

V-Thunder valve spring retainers for 1984 to present Big Twin (Sold each)

239581 Titanium retainer, for spring i.d. 1.437", o.d. 1.500"
239582 Titanium retainer for spring i.d. 1.500", o.d. 1.550"
239583 Chrome-moly retainer for spring i.d. 1.437", o.d. 1.500"
239584 Chrome-moly retainer for spring i.d. 1.500", o.d. 1.550"

V-Thunder valve spring seats 1984 thru 1999 Big Twins and 1999 to present Twin Cam models

239585 Spring seat, each
239586 Spring seat, set of 4

Number	Application	Install height/press	Open height/press	Coil bind
239737	Street/perf.	1.850"/160lbs	1.250"/440lbs	1.200"
239738	Street/perf.	1.850"/160lbs	1.250"/440lbs	1.200"

07

PRECISION MACHINING VALVE SPRING SPACING SHIMS

Valve spring shims should be in the parts inventory of every cylinder head rebuilder. It is essential that the valve spring installed height is always checked after the final valve job and then corrected as necessary. We have various sizes and thicknesses available as listed in the table below. Note that pack quantities vary.

Part no.	Shim O.D.	Shim I.D.	Thick-ness	Pack qty.
236465	1.437"	.645"	.015"	4
730029	0.760"	.580"	.060"	12
730033	0.920"	.520"	.060"	12
730034	1.218"	.875"	.060"	8
730035	1.156"	.828"	.030"	4
730036	1.024"	.732"	.120"	2

PRECISION MACHINING'S LIGHTWEIGHT RACE QUALITY VALVE SPRING KITS FOR HIGHLIFT CAMS

These valve spring kits are designed for a wide range of applications. They may be used in a mildly tuned Street Cruiser, a highly tuned roaring Strip Burner and anything in between. Springs may be used for cams up to .690" lift and spring pressure can be set from 180 to 230 pounds. These Precision Machining designed and manufactured spring kits are made of extra Heavy-Duty race quality and lightweight materials, making them very suitable for any High Performance engine. Kits include 4 pairs of 15-degree machined heat treated steel keepers (except for 2005 to present Twin Cam, and 2002 to present V-Rod, these use the stock keepers), 4 double racing valve springs, 4 hard anodized lower collars, and 4 either heat treated steel retainers, or 7075-T6 hard anodized aluminum alloy retainers or titanium retainers. Dependent on the application shims to set the installed spring height may be included.

Note: All components are separately available and are listed at the right of the kit part number in the table below.

Kibblewhite Precision Machining Inc. Manufacturer of Valvetrain Components

Application	Complete Kit	Description	Retainers	Steel Keepers	Chrome Silicon Springs	Lower Collars
V-Rod 2002 to present	**750555**	.550" valve lift OK, for high lift cams ZPN 750559 tappets must be used	**750556** Titanium	Use OEM -	**750557** -	**750558** Steel
Sportster 1970 thru 1985	**730016**	160 lb. seat pressure, for use with up to .460" valve lift. Hard anodized aluminum retainers.	**730015** Anodized 7075-T6	**730013**	**730012**	**730014** Anodized 7075-T6
74CI Panhead 1948-1965	**730004**	160 lb. seat pressure, for use with up to .600" valve travel. Titanium retainers.	**730003** Titanium	**730002**	**730001**	**730000** Steel
74CI & 80 CI Shovelhead 236136	**234287**	160 lb. seat pressure, up to .600" valve travel. Hard anodized aluminum retainers.	**234290** Anodized 7075-T6	**234292**	**234285**	Stock collars or ZPN
	730023	160 lb. seat pressure, up to .600" valve travel. Titanium retainers.	**236137** Titanium	**234292**	**234285**	Stock collars or ZPN 236136
Sportster Evolution 1986-up, Big Twin Evolution 1984-1999	**730028**	160 lb. Seat pressure, up to .600" valve travel. Titanium retainers.	**730027** Titanium	**234293**	**234286**	**730024** Steel
	730026	170-180 lb. Seat pressure, up to .600" valve travel. Heat treated steel retainers	**730025** Steel	**234293**	**234286**	**730024** Steel
	234288	170-180 lb. Seat pressure, up to .600" valve travel. Hard anodized aluminum retainers	**234294** Anodized 7075-T6	**234293**	**234286**	**730024** Steel
	236462	170-210 lb. seat pressure, up to .800" valve travel. Titanium retainers	**730022** Titanium	**730019**	**730018**	**730017** Steel
	236463	170-210 lb. seat pressure, up to .800" valve travel. Hard anodized aluminum retainers	**730021** Anodized 7075-T6	**730019**	**730018**	**730017** Steel
	236464	170-210 lb. seat pressure, up to .800" valve travel. Heat treated steel retainers	**730020** Steel	**730019**	**730018**	**730017** Steel
88CI Twin Cam 1999-2004	**236425**	For use with up to .650" valve lift, Titanium retainers	**730011** Titanium	**730010**	**730009**	**730008** Steel
	730005	For use with up to .650" valve lift, Hard anodized aluminum retainers	**730007** Anodized 7075-T6	**730010**	**730009**	**730008** Steel
	730042	For use with up to .650" valve lift, Heat treated steel retainers	**730006** Steel	**730010**	**730009**	**730008** Steel
88CI Twin Cam 2005 to present	**750405**	For use with up to .600" valve lift Titanium retainers	**750407** Titanium	**Use OEM**	**750408**	**750409** Steel
	750406	For use with up to .600" valve lift Heat treated steel retainers	**750410** Steel	**Use OEM**	**750408**	**750409** Steel

LIGHT-WEIGHT ALUMINUM ALLOY RETAINERS & STEEL KEEPERS

Precision Machining retainers are manufactured from 7075-T6 aluminum alloy and have a hard-anodized finish for longer wear, the 15 degree steel keepers are heat treated after machining.

234289 Retainer and valve keeper set, fits Sportster models 1952 thru 1985.
234290 Retainers set, fits 1941 thru 1984 Big Twins (except Evolution), this retainer kit allows 0.060" to 0.070" more valve travel over the stock retainers, also for use with Precision Machining high lift valve springs ZPN 234285 and keepers ZPN 234292.
234292 Valve keeper set, fits 1941 thru 1984 Big Twins (except Evolution).
234291 Valve keeper set, fits Big Twins (except Evolution) with thin stem valves.
234294 Retainer set, fits Evolution Big Twin models from 1984 thru 1999, Twin Cam models 1999 thru 2004 and Sportster models from 1986 thru 2003. Retainers are machined for use with 15 degree keepers, also for use with Precision Machining High Lift valve spring kit ZPN 234286.
234293 Valve keeper set, fits Evolution Big Twin models from 1984 thru 1999, Twin Cam models 1999 thru 2004, and Sportster models from 1986 thru 2003. Also for use with Precision Machining retainers ZPN 234294.
234295 Valve keepers set, fits Evolution Big Twin models from 1984 thru 1999, Twin Cam models 1999 thru 2004, and Sportster models 1986 thru 2003. This keeper set allows +.100" more travel over the stock keepers, also for use with the valve spring kit for high lift cams ZPN 234288.

TITANIUM VALVE SPRING RETAINER SET FOR SHOVELHEAD

Precision Machining retainer kit with 0.70" offset to allow more installed spring height. Can be used with stock and Precision Machining springs ZPN 234285 and keepers ZPN 234292. Fits all 74" and 80" Shovelhead motors.

236137 Valve spring retainer set

LOWER VALVE SPRING COLLARS

Precision Machining has machined these lower valve spring collars to work with .562" diameter guide seals and have counter-bored them for added seal clearance. Fits all 74" Shovelhead motors. Sold in sets of 4.

236136 Set of 4 lower valve spring collars

ROWE VALVE SPRING SPACING SHIMS

Rowe's valve spring spacing shims make it easy to get precise and equal pressure on all valves or increase pressure as desired. Shims are sold in packs of 4.

Fits 1958 thru 1985 Ironhead Sportster models
Shims have .578" inner diameter and .760" outer diameter.
721076 .060" thick
721077 .030" thick
721078 .015" thick

Fits 1986 to present Evolution Sportster models
Shims have .625" inner diameter and 1.250" outer diameter.
721070 .060" thick
721071 .030" thick
721072 .015" thick

Fits 1948 thru 1965 Panhead models and 1965 thru 1979 Shovelhead models
Shims have .578" inner diameter and .760" outer diameter.
721076 .060" thick
721077 .030" thick
721078 .015" thick

Fits 1979 thru 1984 Shovelhead models
Shims have .765" inner diameter and 1.375" outer diameter.
721073 .060" thick
721074 .030" thick

Fits 1984 thru 1999 Evolution Big Twin models, 1999 to present Twin Cam 88 models
Shims have .625" inner diameter and 1.250" outer diameter.
721070 .060" thick
721071 .030" thick
721072 .015" thick

ANDREWS "EZ" EASY-INSTALL PUSHRODS

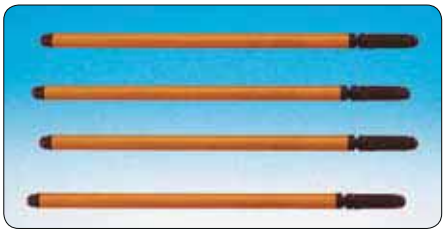
"EZ" Easy-Install pushrods are real time-savers, they can be installed without removing the tank or rocker boxes, only the air cleaner needs to be removed. A must when installing a High Performance Andrews cam. Pushrods are available in 6061-T6 aluminum or 4130 chrome-moly steel and are supplied in kits containing 4 pushrods to fit all 1984 thru 1999 Evolution Big Twins.

232670 Aluminum adjustable pushrod kit
232671 Chrome-moly steel adjustable pushrod kit

ANDREWS EZ-INSTALL PUSHROD KITS

These Andrews EZ-Install push rods for the 88 CI Twin Cam models are available in both anodized aluminum and chrome-moly tubing. They are a great match for the Andrews Twin Cam camshafts. These pushrods allow camshaft to be installed without removing the fuel tank or rocker boxes. Sold in sets of 4.

700738 EZ-Install aluminum push rod kit
700739 EZ-Install chrome-moly push rod kit



ANDREWS PUSH RODS FOR SPORTSTERS

Andrews light weight aluminum push rods give less valve train weight while the chrome moly steel push rods are more rigid for high performance. Both aluminum and steel push rods for 1986 thru 1990 Sportster models are fully adjustable. For 1991 to present Sportster models we have non-adjustable fixed length push rods as well as adjustable push rods available. Sold in sets of 4.

Fits 1986 thru 1990 Sportster models
232639 Aluminum adjustable
232640 Chrome-moly steel, adjustable

Fits 1991 to present Sportster models
232641 Aluminum, fixed lenght
232532 Aluminum, adjustable
232642 Chrome-moly steel, fixed length
232533 Chrome moly steel, adjustable

ANDREWS TWIN CAM 88 PUSHROD KITS

Andrews adjustable pushrods for Twin Cam models are made in anodized aluminum or chrome moly steel. They install like stock pushrods but provide additional adjustabillity. Sold in sets of 4.

232520 Anodized aluminum
232521 Chrome moly

ANDREWS PUSHRODS

The new stock hydraulic lifters as used in the Evolution engines are capable of 6000 plus rpm. with stock springs and no valve float. Using solid lifter is not recommended for most applications. However, Andrews light weight aluminum pushrods will give less valve train weight while the chrome-moly steel pushrods are more rigid for high performance. Both aluminum and chrome-moly pushrods are fully adjustable. Fits Evolution Big Twins 1984 thru 1999. Sold in sets of 4.

232635 Pushrod set aluminum
232636 Pushrod set chrome moly

SOLID ADJUSTABLE PUSHROD SET

032377 Replaces the OEM self adjusting hydraulic units and pushrods. These USA made, strong and lightweight aluminum pushrods are manufactured from strong and durable 6061-T6 aircraft aluminum. The steel wear surfaces are heat-treated to 60 rockwell for maximum wear and durability. All kits are made to fit stock stroke length. Fits 1966 thru 1984 Shovelhead engines.

ADJUSTABLE PUSHROD SET FOR HYDRAULIC LIFTERS

233412 USA made lightweight aluminum pushrods, manufactured from strong and durable 6061-T6 aircraft aluminum for use with stock hydraulic lifters. Steel surfaces are hardened to 60 on the scale of Rockwell for maximum wear and durability. Fits all Shovelhead motors from 1966 thru 1984. Replaces stock pushrods (OEM 17904-66).

PUSHROD KITS

These USA made pushrod kits are manufactured from aircraft quality aluminum and have heat-treated wear surfaces for long wear and durability. Available for Evolution Big Twin models and Evolution Sportsters models. Set of 4.

233413 Adjustable pushrod kit to fit all Evolution Big Twins (OEM 17900-84)
233414 Adjustable pushrod kit to fit Evolution Sportsters 1986 thru 1990 (OEM 17901-86)

ROLLER TAPPET ASSEMBLIES

Crane is now manufacturing their own roller tappet assemblies for the 1966 thru 1984 Big Twins. Both hydraulic and mechanical versions are available, featuring precision machined and heat treated steel tappet bodies. The mechanical tappet also restricts oil from entering the tappet body and unnecessarily adding unwanted weight. Both tappets feature relocated pushrod seat heights, resulting in less weight, improved valve train geometry, and reduced tappet guide block wear. Crane's hydraulic tappet/pushrod assembly is 23% lighter than stock, while the mechanical tappet/pushrod is 33% less than stock. Crane's chrome moly steel pushrods are included with each set of tappets to insure that a matched assembly will provide the performance and durability that you expect from Crane products.

231343 Hydraulic tappet kit
231344 Solid tappet kit

CRANE ADJUSTABLE PUSHRODS

Crane's adjustable pushrods allow the engine builder to set identical pre-load for each tappet to prevent tappet noise and tappet "pump-up". Crane's adjustable pushrods are made of aircraft quality steel tubing. For Evolution Big Twins & Twin Cam models there also are special "Lightweight" kits, made from aircraft quality aluminum. Both aluminum and steel versions are stronger than the original equipment push rod. Pushrod "flex" can initiate valve train harmonics that reduce power and cause damage to valve springs and tappets. Each set of Crane"s adjustable push rods contains two intake and two exhaust length pushrods for the most accurate geometry and the best strength characteristics.

231319 Replacement pushrods for Crane conversion kits ZPN 231343, 231344, 231345 (steel)
231318 Fits 1984 thru 1999 Evolution Big Twins with standard tappets (steel)
231373 Fits 1984 thru 1999 Evolution Big Twins, (lightweight aluminum)
231317 Fits 1984 thru 1999 Evolution Big Twins with long cylinders (chrome moly)
234834 Fits 1999 to present Twin-Cam 88 models (chrome moly)
231316 Fits 1986 thru 1990 Evolution Sportsters (chrome moly)
231312 Fits 1991 to present Evolution Sportsters with aftermarket collapsible tubes (steel)

CRANE "TIME-SAVER" ADJUSTABLE PUSHRODS

These Crane adjustable pushrods are real "Time Savers". They can be installed without disassembling the engine. This makes installation of performance cams, rockers or performing other maintenance or repairs in less time as they allow removal of lifters and lifter covers up to 75% quicker. "Time Saver" pushrods are made from 7/16" diameter aircraft grade, seamless 4130 alloy chrome-moly steel that eliminates excessive pushrod flex to prevent for loss of cam lift and horsepower. The female ends are press-fit and then high-temp silver brazed where other manufacturers only use a press-fit. The adjusting end is as much as 40% larger than any other pushrod on the market. Crane "Time-Saver" adjustable pushrods allow quick removal of the lifter blocks, saving you up to 75% in time and labor. Available for Evolution Big Twins 1984 thru 1999 and Twin Cam 88 models 1999 to present and come in a set of 4.

234749 Fits Evolution Big Twins, adjustable from 9.50" (241 mm) to 11.50" (292 mm) set of 4

234833 Fits Twin Cam 88, adjustable from 8.750" (222 mm) to 10.750" (273 mm) set of 4

TAPPET CONVERSION KIT FOR 1966 THRU 1984 BIG TWINS

231345 To convert your existing Harley-Davidson hydraulic tappets to mechanical operation, Crane offers a kit that provides a new pushrod seat and a plug assembly that prevents oil from above. A weight saving of 25% from the stock tappet/pushrod is also realized. Our chrome-moly steel pushrods are also included to complete your geometry improved, Crane quality, valve train.

JIMS PRO-LITE WORKSAVER PUSHRODS

Jims adjustable pushrods have superior strength and are the lightest on the market today (approx. 73 grams for Evo's and 67 grams for Twin Cams) and made from aerospace quality heat treated aluminum, with heat treated steel ends. No disassembly of the top end, or removal of the cam, is required. Pushrods have 24 threads per inch adjuster, with 3/8" balls on both ends. Available for Evolution Big Twins 1984 thru 1999 and Twin Cam 88 models 1999 to present. Sold in sets of 4.

233395 Fits Evolution Big Twins
711288 Fits Twin Cam 88

SLIM-JIMS ALUMINUM SHOVELHEAD PUSHRODS

233396 These pushrods are made from aerospace quality aluminum tubing and heat treated steel ends. These lightweight pushrods provide maximum durability and long life. Jims pushrods replace the stock steel rods (OEM 17904-66) and still retain the stock hydraulic unit. Pushrods fits on Big Twins 1966 to 1984 have 32 threads per inch, with a 3/8" ball rocker end and 1/4" ball tappet end. Sold in sets of 4.

"TAPER-LITE" HIGH PERFORMANCE PUSH ROD KITS

High Performance Harley engines rev-up quicker and higher thus need lighter and stronger valve train components. These top-of-the-line "Taper-Lite" push rods not only are lighter and stronger, they also can be shortened enough to allow installation or removal on Evolution engines without removing heads or lifter blocks. The unique tapered design provides unequaled strength and flex resistance for any High Performance street or strip motorcycle. "Taper-Lite" pushrods for Sportster, Shovelhead and Evolution alloy, those for Twin Cam models are made from aircraft quality aluminum. All "Taper-Lites feature hardened adjusters and hardened high-lift ball-ends. The adjusters utilize 3/8" x 40 thread for painless accurate pushrod adjustments. Sold in sets of 4.

Fits Evolution Sportster engines 1986 thru 1990

231511 Push rod kit, can be used with solid or hydraulic lifters

Fits Evolution Sportster engines 1991 to present

700513 Pushrod kit, can be used with solid or hydraulic lifters

Note: Installing these pushrods on 5 Speed Sportster models requires the use of removable pushrod covers. These are separately available.

Fits Shovelhead engines 1966 thru 1984

231512 Pushrod kit for use with solid lifters

700515 Pushrod kit for use with solid lifters, includes solid conversion kit

Fits Evolution Big Twin engines 1984 thru 1999

231509 Pushrod kit can be used with solid or hydraulic lifters

231510 Pushrod kit, 12" long, can be used with solid or hydraulic lifters

Fits Twin Cam 88 engines 1999 to present

700540 Aircraft quality aluminum pusrod kit

JIMS UPGRADE KIT FOR POWERGLIDE TAPPETS

Tappet and pushrod upgrade kit for Shovelhead motors using our ZPN 235725 or 235726 Powerglide tappets. Kit comes with four new 3/8" diameter pushrod seats to make the Powerglide 5/8" shorter and four new Prolite Worksavers pushrods with complete instruction sheet. Pushrods have 24 treads per inch adjuster bolt and 3/8" ball on both ends. For stock or performance applications. Sets of 4.

233394 Jims Upgrade kit for Shovelhead Powerglide Tappets

V-THUNDER PUSH RODS

V-Thunder pushrods are designed for use in High Performance and Racing engines. They are made out of .049" wall, 4130 chrome-moly steel and precision machined to exacting tolerances. They provide the ultimate in reliability and performance. The adjuster portion of the push rod features 4140 high strength steel, with an induction hardened tip for severe service applications. Available for Shovelhead motors from 1966 thru 1984 and Evolution Big Twins from 1984 thru 1999, both versions in stock length. Sets of 4.

Fits Big Twin Shovelhead motors 1966 thru 1984

239587 Pushrod set stock length

Fits Evolution Big Twins 1984 thru 1999

239589 Pushrod set stock length

JIMS TAPPET SCREWS AND NUTS

High quality replacement tappet screws and nuts. Straight replacement for the OEM parts.

Tappet screw with 3/8" ball end, fits OHV Big Twins models 1936 thru 1984 (not Evolution) has 9/32"-32 tappet thread (OEM 18555-36)

233416 Tappet screws with 3/8" ball end (pack of 4)

Tappet screws with 5/16" ball end, fits Sportster models 1957 thru 1985, has 9/32"32 thread (OEM 18554-57)

233434 Tappet screws with 5/16" ball end (pack of 4)

These tappet nuts fit all pushrod adjuster bolts with 9/32"-32 thread as used on most Big Twin and Sportster models from 1938 thru 1985 except Evolution models (OEM 18570-38)

233399 Tappet screw nuts (set of 4)

TAPPET ADJUSTING SCREW AND NUT

231473 Tappet screw, fits all Big- Twin 1929 thru 1984 (except Evolution), set of 4 (OEM 18555-36)

233488 Tappet screw, fits Sportster models 1957 thru 1985, set of 4 (OEM 18554-57)

231474 Tappet nut, fits all Big Twin 1948 thru 1984 (except Evolution) and all Sportster 1957 thru 198, pack of 10 (OEM 18570-38)

JIMS "HEAVY DUTY" TAPPET SCREWS

233415 These Jims tappet screws are made of heat treated 4340 chrome moly steel. Use these tappet screws with any High Performance, race or other extreme application. Screw has oil hole through center to lube Evolution top end with 3/8" ball end (OEM 18555-36). Use with tappet nuts ZPN 233399 (9/32"-32 thread). Sold in pack of 4.

TAPPET ROLLER KIT

231424 Tappet roller kit. Fits all models 1929 thru 1984. Set of 4 (Made in Japan) (OEM 18534-29A).

JIMS TAPPET ROLLERS

These "stronger than stock" replacement tappet rollers are made from 52100 bearing material, with 4340 chrome moly axle and available for all models from 1929 thru 1984.

233397 All models 1929 to 1984 (OEM 18534-29A)

TAPPET ROLLER KIT

American made, top quality tappet roller kits for all models. Manufactured by Crane Cam Dynamics.

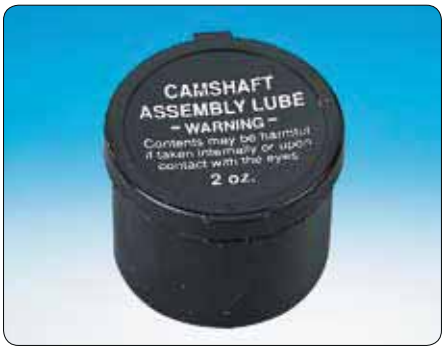
232691 All models 1929 to 1984 (OEM 18534-29A)

232674 Big Twins 1984 thru 1999 Sportster 1986 to 1990 Buell 1987 to 1990 (OEM 18534-84)

TAPPET ROLLER AXLES

Replacement axles for all tappet rollers in 1929 to present Big Twins and 1952 thru 1990 Sportster and K-models. Axles are centered for easy rivetting. Sold in 10 packs.

231054 Tappet roller axles



ASSEMBLY LUBRICANT

231338 "Super-Lube" assembly lube is a moly disulphide base lubricant specialty formulated for unequaled wear protection. Recommended to be used on gears, bushings, pushrod tips and many other assembling applications.

HYDRAULIC TAPPET DEACTIVATOR

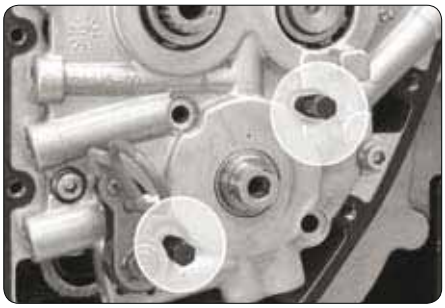
These kits are designed to maximize the efficiency of the stock hydraulic tappets in Big Twin and Sportster Evolution engines. They reduce the travel of the hydraulic units in high RPM situations thereby eliminating potential damage to the engine due to valve float. Under normal conditions they allow the tappets to operate as designed resulting in low valve train maintenance and minimal noise. A solid lifter for racing and a hydraulic lifter for the street. Each kit includes four special machined steel spacers. Fits 1986 thru 1999 Big Twin,1999 to present Twin Cam, and Sportster models 1986 to present. Must be used in combination with adjustable pushrods.

235585 Travel spacer kit for hydraulic tappets

TAPPET BLOCK AND OIL PUMP ALIGNMENT TOOL

Alignment tool to ensure that the tappet tracks on centerline of cam lobe on 1977 to present Big Twins. Must be used whenever one of the tappet blocks is removed. Use two of these alignment tools on 1999 to present Twin Cams to align the oil pump to cam support plate. Helps reduce oil scavenging problems associated with oil pump misalignment. (OEM 33443-84). Available in two versions: Zodiac's economical priced ECO-line or USA made by Jims.

131110 ECO-line alignment tool



235868 Jims USA made alignment tool

TAPPET BLOCK SCREW COVERS

345165 These covers fit over the stock 12 point lifter block screws for a clean custom look. Attach with silicone adhesive. Sold in a set of 8.

HYDRAULIC UNIT

A perfect copy of the OEM hydraulic unit. Available as a stock replacement and an improved Crane, American made version. Fits all Panhead and Shovelhead 1953 thru 1984 (OEM 17920-53A). Sold each.

032337 Stock replacement unit
232673 Crane hydraulic unit

HYDRAULIC BIG AXLE TAPPETS FOR 1953 THRU 1984 BIG TWINS

Made by Jims machining from Aircraft quality American steel. Tappets are precision machined, heat treated and ground to less than .0002" total indicator readings at a 16 finish. The Big Axle tappets feature increased roll strength and will not deform even when used with extreme high lift cams. Available in stock (.731") and .005" oversize. Tappets are sold each and do not include the hydraulic unit, these must be ordered separately.

Big Axle hydraulic tappet
239854 Standard size (OEM 18522-53)
239855 Oversize +.005"

Hydraulic units (OEM 17920-53A)
032337 Stock replacement
232673 Crane hydraulic unit

TAPPET ASSEMBLIES

American made tappet assemblies for Big Twin models 1948 thru 1984.

231491 Solid, fits 1948-1952 Big Twins equipped with solid lifters. Can also be used to convert 1953-1984 to solid tappets (OEM 18492-48).

TP DEVELOPMENTS "FAT AXLE" HYDRAULIC TAPPETS FOR 1953 THRU 1984 BIG TWINS

Developed exclusively for Zodiac by TP Developments and made from the best alloy steel available today. These tappets are precision machined, than heat treated and finally ground to less than .0002" total readings at a 16 finish. They are called "Fat Axle" because they have increased roll strength and will not deform, even when used with extreme high lift cams. These extremely competitive priced tappets include the hydraulic unit and are the best tappets money can buy. Fits 1953 thru 1964 Panhead and 1965 thru 1984 Shovelhead. Tappets have the stock .731" diameter and sold each.

741175 Standard size Fat Axle hydraulic tappet (OEM 18522-53A)

TP DEVELOPMENTS HYDRA-SOLID FAT AXLE TAPPETS FOR 1984 THRU 1999 EVOLUTION BIG TWIN & 1986 THRU 1990 EVOLUTION SPORTSTER

These Hydra-Solid tappets have the same "Race Proven" quality features as the Fat Axle tappets but as an extra feature Hydra-Solid tappets give you the combination of the best of the hydraulic tappet and the solid tappet. They act like a normal hydraulic tappet from zero to 5.500 rpm, but as soon as your engine exceeds the 5.500 rpm the tappet acts as a solid tappet, adding some 3 to 6 useable horsepower. These tappets are precision machined, than heat treated and finally ground to less than .0002" total readings at a 16 finish. They are called "Fat Axle" because they feature an extra thick roller pin and extra thick rollers for increased roll strength and will not deform, even when used with extreme high lift cams. Strongly recommended when using Performance cams as they give zero valve lash, and zero hydraulic collapse. These tappets are extremely competitively priced but still are the best money can buy. Fits 1984 thru 1999 Evolution Big Twin, and 1986 thru 1990 Evolution Sportster. Tappets have stock .8425" diameter and are sold each.

741177 Standard size Fat Axle Hydra-Solid tappet

TP DEVELOPMENTS FAT AXLE HYDRAULIC TAPPETS FOR 1984 THRU 1999 EVOLUTION BIG TWIN & 1986 THRU 1990 EVOLUTION SPORTSTER

Developed exclusively for Zodiac by TP Developments and made from high grade alloy steel. These tappets are precision machined, than heat treated and finally ground to less than .0002" total readings at a 16 finish. They are called "Fat Axle" because they feature an extra thick roller pin and extra thick rollers for increased roll strength and will not deform, even when used with extreme high lift cams. Inside the tappet is a hydraulic cylinder which is also hardened and hand fit to .0002" using an air gauge. Strongly recommended when using a Performance cam as they give zero valve lash, and zero hydraulic collapse. These tappets are extremely competitive priced but still are the best money can buy. Fits 1984 thru 1999 Evolution Big Twin, and 1986 thru 1990 Evolution Sportster. Available in stock .8425"diameter and sold each.

741176 Standard size Fat Axle hydraulic tappet (OEM 18523-86)

TP DEVELOPMENTS

AMERICAN MADE SOLID TAPPET ASSEMBLIES

Jims' American made solid tappet assemblies are made from aircraft quality American steel, precision machined, heat treated and ground to less than .0002" total indicator readings at a 16 finish. Available in standard or .005" oversize. The Big Axle tappets feature extra thick tappet rollers that have increased strength and won't deform when used in combination with High Lift Performance cams.

A. Fits Sportster models 1957 thru 1985 (OEM 18508-52B)

235734 Big Axle standard size (outside diameter .731")
235735 Big Axle +.005" oversize

B. Fits 4 Speed Evolution Sportster models 1986 thru 1990, must use adjustable pushrods (OEM 18523-86)

235925 Big Axle standard (outside diameter is .8425")
235926 Big Axle +.005" oversize

C. Fits Evolution Sportster models 1991 thru 1999, must use adjustable pushrods (OEM 18526-89)

235728 Standard size (outside diameter is .9035")
235729 +.005" oversize

Fits Big Twin models 1948 thru 1984 (OEM 18492-48)

235738 Big Axle standard (outside diameter .731")
235739 Big Axle +.005" oversize

D. Fits Big Twin models 1984 thru 1999 (OEM 18523-86)

235925 Big Axle standard size (outside diameter .8425")
235926 Big Axle +.005 oversize

JIMS ADJUSTABLE SOLID TAPPET WITH ADJUSTMENT SCREW

This solid tappet assembly is recommended for High Performance engines with high lift cams in combination with heavy duty valve springs. Fits Big Twins from 1984 thru 1999 and Sportsters from 1986 thru 1990. Adjustment screw has oil hole for proper valve lubrication. Requires shorter than stock pushrods. Available in standard size or +.005" oversize in either standard tappets or Big Axle tappets. The Big Axle tappets feature extra thick rollers that won't deform even when used in combination with extreme high lift performance cams.

235927 Big Axle tappet assembly (Standard diameter .8425")
235928 Big Axle oversize +.005"

JIMS SOLID ADJUSTABLE TAPPETS

Solid adjustable tappet for 1991 thru 1999 Sportster models. Available in standard or in +.005" oversize, these tappets are made from Aircraft quality American steel, precision machined and heat treated. Standard outside diameter is .9035" (OEM 18526-89). Can be used in combination with up to .700" lift cams, in combination with non adjustable pushrods. **Note:** Always check lifter travel for performance cams. Sold each.

235732 Solid tappet standard
235733 Solid tappet +.005" oversize

JIMS BIG AXLE "POWER GLIDE" HYDRAULIC TAPPETS

American made tappets for Panhead, Shovelhead and Evolution engines 1953 to present. Made from aircraft quality steel, precision machined, heat treated and ground to less .0002" total indicator readings at a 16 finish. Inside the tappet is a hydraulic cylinder which is also hardened and hand fit to .0002" using air gauge. The tappet has a hardened pushrod seat. The inner valve is super flat and is helped by an internal spring to help hydraulic control. The Big Axle tappets are strongly recommended when using High Lift Performance cams. With Power Glide tappets Full power means zero valve lash, and zero hydraulic collapse. Power Glide tappets eliminate the shock absorber action and are capable of the highest RPM a Harley-Davidson can safely turn with the right equipment. Sold each.

A. Fits Panhead 1953 thru 1964 and Shovelhead engines from 1965 thru 1984 (OEM 18522-53)

235725 Big Axle Power Glide tappet (outside diameter .731")
235726 Big Axle Power Glide tappet +.005"

B. Fits Big Twin Evolution 1984 thru 1999 and Sportster Evolution models 1986 thru 1990 (OEM 18523-86)

234851 Big Axle Power Glide tappet (outside diameter.8425")
234850 Big Axle Power Glide tappet +.005"

C. Fits Sportster Evolution and Buell models 1991 thru 1999 (OEM 18526-89)

235730 Power Glide tappet (outside diameter .9035")
235731 Power Glide tappet +.005"

JIMS HYDROSOLID TAPPETS

This amazing tappet has broken the barriers of previous tappet designs. It performs like a hydraulic tappet from 0 to about 5.500 rpm at this RPM it becomes a solid, adding about 3 to 6 more useable horsepower. Another important feature is that Hydrosolid tappets have a built-in anti pump device. Available for Evolution Big Twins 1984 thru 1999, Twin Cam 1999 to present, and Evolution Sportster and Buells 1986 to present. For 1999 to present Twin Cam, and 2000 to present Sportster and Buell models there are also Special Application Hydrosolid tappets available. These are 1/4" longer, for high lift cams ground on a small base circle. Because of the limited space in the Twin Cam case, the travel is limited for high lift cams, but by using a performance high lift cam ground on a small base circle more travel of the tappet is achieved. A .700" valve lift is possible. Special application tappets are designed to be installed by the most advanced engine builder as modifications must be made to tappet covers. All Hydrosolid tappets are sold individually and must be used with adjustable pushrods.

Fits 1991 thru 1999 Sportster and Buell models

231477 Standard diameter Hydrosolid tappet

Fits Evolution Big Twin models 1984 thru 1999, XL and Buell models 1986 thru 1990

231459 Standard diameter Hydrosolid tappet
711295 +.002" oversize
711296 +.005" oversize

Fits Twin Cam models 1999 to present and Sportster and Buell models 2000 to present

231476 Standard diameter Hydrosolid tappet

JIMS POWERGLIDE TAPPETS

750731 Big Axle "Powerglide" hydraulic tappets for performance and stock cams. The title tells you the whole story. Power is what you are after when you have installed a high performance hydraulic cam in your Twin Cam or Sportster motor. To get full power, you must have zero valve lash, and eliminate collapsing of the hydraulic tappet as found in stock hydraulic units (this is referred to as the shock absorber syndrome). Failing to open the full amount, as the cam is designed to do, results in power loss. Jims Powerglide eliminates the shock absorber action, and is as close to a solid tappet possible and is still able to compensate for heat expansion. Glide is what you get when hand matching hydraulic components to a running fit of .0002". For this reason "Powerglide" tappets have a micro-finished bore for the hydraulic unit to glide over. Fits 1999 to present Twin Cam models as well as 2000 to present Sportster and Buell models. Sold each.

S&S HIGH PERFORMANCE TAPPETS FOR TWIN CAMS

S&S introduces high performance tappets for Twin Cam Engines. These tappets meet the high standards specified by the S&S engineers. S&S Twin Cam style tappets are available with and without the S&S HL2T Limited Travel Kit for improved cold starts and high rpm valve timing accuracy. These tappets are standard equipment in the new S&S complete 124" Twin Cam style engines, and are a good choice for any stock or high performance application. Sold in sets of 4.

750518 S&S Twin Cam style tappets without HL2T Kit

750519 S&S Twin Cam style tappets with HL2T Kit

Note: S&S Twin Cam style tappets with HL2T Kit require the use of adjustable pushrods.

CRANE PRECISION MADE HYDRAULIC TAPPETS

These Crane hydraulic tappets have a body manufactured from alloy steel billet using precise CNC machining techniques and are heat treated for optimum strength and wear resistance. High precision, hardened ball-type check valve system provides superior sealing and lash control. Valve seat is self-cleaning and less susceptible to noise caused by oil contamination. Rotating check ball prevents localized wear and pitting. Plunger is precision ground and selectively fitted to tolerances in the millionths-of-an-inch range for quiet operation. Exclusive high-strength pushrod seat employs precision edge metering for positive oil control. Rugged one piece design for reliability and impact resistance under all conditions. Premium full-engagement snap ring retainer provides positive control under the most severe operating conditions. Sold each.

231374 Fits 1984 thru 1999 Evolution Big Twins and 1986 thru 1990 Evolution Sportsters

231375 Fits 1991 thru 1999 **Evolution** Sportsters

S&S TAPPET GUIDES FOR EVOLUTION SPORTSTER STYLE ENGINES

750027 S&S Evolution Sportster style tappet guides are machined from billet aluminum and polished to a show like finish. These tappet guides can be used as stock replacement on all 1986 thru 1990 XL Evolution engines.

VELVA TOUCH LIFTER KITS

Complete lifter kits for Big Twin models from 1948 thru 1999. Each kit includes lifter blocks, VelvaTouch lifters, pushrods and pushrod covers. The lifter blocks are manufactured with a tough cast iron alloy to closely matchexpansion rates of the lightweight steel lifters and maintain precision tolerances even when the engine is hot. A patented oiling system provides each lifter with its own independent supply of oil to ensure proper lubrication and enhanced tappet operation. The hydraulic lifters are performance engineered with the use of strict quality control and the highest grade materials available.Lifter wall thickness is optimized to provide both strength and light weight to deliver solid lifter performance with hydraulic lifter quiet and convenience. The pushrods are manufactured from .049" wall, 4130 chrome-moly steel and they provide the ultimate in reliability and performance. Kits are available with stock length pushrods as well as with .250" longer ones for stroker applications. Lifter blocks are available in your choice of black or chrome finish. Each kit is packed in a small case and includes a video tape with "step by step" mounting instructions.

Fits 1948 thru 1965 Panhead models, stroker pushrods
239746 With chromed lifter blocks

Fits 1984 thru 1999 Evolution Big Twins, stroker pushrods
239742 With chromed lifter blocks
239748 With black lifter blocks

FEULING HP+ TAPPETS

741170 Feuling Motor Company has optimized these new HP+ hydraulic tappets to work with their all-new SuperPump as a balanced system. This dyno-developed and track tested combination of the SuperPump and HP+ tappet combination will allow the Twin Cam engine to provide maximum Horsepower, reliability and longevity.

Note: For optimum improvement these tappets must be used with Fueling oil pump.

07

JIMS BILLET BIG AXLE POWERGLIDE TAPPET BLOCK KITS

These Evolution tappet block kits for Big Twin motors are produced to improve the stock tappet and tappet block area. Made from billet 7075-T651 aluminum with a tensile strength 3 times stronger than cast aluminum tappet blocks. These tappet block are machined to the center line of the cam and hold approximate .002", also the bores are held perpendicular to the mounting flange to approximate .0002". Designed to accommodate a gross valve lift of .550" at the valves, this is about .350" at the tappets, leaving a clearance of .035" roller to block free play (please note, if using a cam with a higher lift, a simple modification is all that is needed). These blocks will clear most small circle cams having a lift of .600" or more. Add the precision quality of Jims Big Axle tappets and you can't buy a better tappet block kit for your bike. These kits come complete with front and rear tappet block, 4 Big Axle PowerGlide tappets, tappet block gaskets and screws. Available for stock and stock style Evolution Big Twin crankcases from 1984 thru 1999 in your choice of highly polished finish blocks or chrome finish. We also have a special tappet block kit for High Performance applications with a 1/4" to 3/8" moved out cam case area, such as in Merch 120 CI and 131 CI engines and crankcases. This special application kit is available in chrome plated only.

Stock application Big Axle Power Glide kits
235985 Polished finish
235986 Chrome finish

Special Application Big Axle Power Glide kits
231481 Chrome finish

JIMS BILLET BIG AXLE TAPPET BLOCK KITS

These tappet kits for Panhead and Shovelhead motors are capable of the highest RPM a Harley can safely run at a valve lift of up to .700" in combination with the right valve springs, valves and cam. The use of these hydraulic tappets enables Panhead and Shovelhead motors to have all the hydraulic benefits of the late Evolution style hydraulic system, as they will eliminate the total oil loss of the old style hydraulic units. The billet tappet blocks are made from 7075-T651 with a tensile strength of 83,000 psi which is almost triple the amount of cast tappet blocks. Fits Panheads 1953 thru 1964 and Shovelhead from 1965 thru 1984. Do not use the early tapered 1/4"-24 screws on these blocks unless you provide a counter sunk for that style screws. **Note:** These blocks are designed to accommodate a gross valve lift of .550" at the valves. This is about .350" at the tappets, leaving a clearance of .035" roller to block free play. If used with higher lift cams tappets must be modified. Use with standard pushrods or equivalent to standard pushrods.

235988 "Big Axle" tappet block kit

JIMS TAPPET GUIDE

235812 American made tappet guides, feature helical style oil grooves for better lubrication. Fits Sportster models 1957 thru 1985, sold each (OEM 18607-57A).

ZODIAC RACING JIMS BILLET SPORTSTER RACING TAPPET GUIDE

This is a racing version of our ZPN 235812 Sportster tappet guide. This performance part is for special applications only! It has no oil grooves or pushrod tube cover bores. Designed to accommodate a lift of about .800" at valve, or about .500" lift at cam. Can be used on 1957-1985 Sportsters and Delkron or any other 4 cam Big Twin case. Sold in sets of four.

239482 Racing tappet guide (Set of 4)

ZIPPER'S 5 SPEED PUSHROD COVER CONVERSION KIT

For pushrod adjustment five speed Sportster and Buell engines require that you remove the cylinder heads and take off the one-piece pushrod covers to get to the pushrods. This is a very complicated way of pushrod adjustments for tuning or maintenance when adjustable pushrods have been installed. This Zipper's pushrod cover conversion kit permits access to the pushrods using adapters that allow the use of earlier style telescoping pushrod covers. Fits all 1991 to present 5 Speed Sportster and Buell engines. Kit contains two Siamese style billet aluminum bases and special seals for the front and rear cylinders that replace the OEM pushrod tube lower retainers, and full telescoping stock length chrome plated pushrod covers.

700514 Removable pushrod cover kit

JIMS BILLET TAPPET BLOCKS SET

These American made tappet blocks are machined to perfection from a block of 7075-T651 billet aluminum alloy with a tensile strength of minimum 83.000 psi., which is triple the strength the Original Equipment part. Fits Evolution Big Twin models 1984 thru 1999. Available in mirror shine polished or chrome plated finish. Complete set front and rear (OEM 18540-83A & 18542-83A).

235813 Tappet blocks, polished
235987 Tappet blocks, chrome plated

JIMS BILLET LIFTER BLOCK COVERS FOR TWIN CAM 88 "A OR B" ENGINES

These are the ultimate hi-tech block covers with extra smooth lines. Covers are CNC machined from billet 6061-T6 and utilize the best chroming procedures available to guarantee the precision tolerances that Jims is known for. Covers come with gaskets and chrome hardware.

741891 Fits Twin Cam 88 models with stock length tappets

FOR ARLEN NESS LIFTER

TAPPET COVERS FOR TWIN CAM STYLE ENGINES

The perfect finishing touch for any stock or S&S Twin Cam style engine. These new S&S Twin Cam style tappet covers are CNC machined from billet aluminum and polished to a show finish. The CNC machining assures dimensional accuracy, while the billet material provides extra strength and dimensional stability over a wide temperature range.

750517 S&S tappet covers for 1999 to present Twin Cam style crankcases

ZODIAC RACING JIMS SHORT BILLET TAPPET BLOCKS DRAG APPLICATIONS

These tappet blocks are designed for racing applications, without pushrod tube cover counter bores and oil holes. Use with the Drag-race rocker arm shafts (ZPN 233384) that have a grease hole. This complete kit includes a front and rear block. Has Evolution tappet angles and tappet bore size for use with Evolution cams. Please note, blocks are not polished, but come in a machined finish. Will fit Evolution Big Twin models from 1984 thru 1999.

233444 Short billet tappet blocks, for race application

12 POINT STYLE LIFTER BASE SCREWS

Twelve point style screws are used on many models as they give much more control when tightening or unscrewing as common hex hardware does. Kits contain 8 screws with either 1/4 x 20 or 1/4" x 24.

Fits all Big Twin models to present Lifter base screws set 7/8" long 1/4" x 20 (OEM"s 906 & 3770)
231606 Chrome plated
231607 Black oxide coated

Lifter base screw set 7/8" long 1/4" x 24 (OEM 3750 & 18660-53)
231608 Chrome plated
231609 Black oxide coated

S&S TAPPET BLOCKS

This tappet block assembly for Big Twins includes gaskets and mounting screws. Fits stock style Big Twin crankcases including S&S Super Stock cases. Fits 1984 thru 1999 Big Twin Evolution models.

750026 Big Twin tappet block assembly set

LIFTER BASE BLOCKS

Replacement lifter blocks for all Big Twins models 1966 thru 1984 (except Evolution models). Available in black powder-coat finish as well as a perfect chrome finish. Powder coated blocks are available in front or rear, the chrome version is only available as a set and includes two sets of mounting screws. One set of 1/4" x 20 TPI screws for late 1976 thru 1984 models and a set 1/4" x 24 TPI for 1966 thru early 1976 models.

131180 Front lifter block, black (OEM 18600-66C)
131181 Rear lifter block, black (OEM 18610-66B)
131182 Front and rear lifter block set, chrome

LIFTER BLOCKS

Front and rear lifter blocks for 1340 Evolution models from 1984 thru 1999. These pressure cast aluminum lifter blocks are machined to exceed OEM specifications and come complete with a set of allen mounting screws. They are available with a beautiful chrome plated finish or black enamel finish. Sold as set front and rear (OEM 18542-83A & OEM 18540-83A).

233580 Chrome lifter block, set front and rear
233581 Black lifter block set front and rear

JIMS BILLET TAPPET BLOCKS

These American made tappet blocks are machined from 7075-T651 billet aluminum and have a chrome plated finish. They feature corrected pushrod cover angles for aftermarket Evolution Big Bore cases, that have the cam case areas moved out up to 1/4" - 3/8".

231482 Offset billet tappet block set, chrome

Note: On large cubic engines it is important to have the free flowing PCV system. We recommend to use the "Through the Head" and early style crankcase system in conjunction for optimum results.

DIE-CAST TAPPET BLOCK COVERS FOR SHOVELHEAD

These covers fit over the Original Equipment tappet blocks like a second skin. Stock appearance is maintained, but with a smooth brightly chromed finish. Each cover has a hidden slot in the back which permits it to be installed without removing your pushrods. They are held in place by a small amount of special adhesive, which is provided with the set.

301884 Tappet cover set

CHROME LIFTER BLOCK COVERS FOR SHOVELHEAD MODELS

301739 These unique covers add a touch of chrome to this area of the motor that was not possible in the past without plating your stock tappet blocks. Designed to fit over stock units, maintaining the original appearance. Installs in minutes without removing your pushrods. Just lift the pushrod tube covers and slip them on. Covers are held in place with a small amount of silicone adhesive, which is included. Each kit includes two sets of chrome plated screws. 1/4 x 20 for the 1976 thru 1984 models and 1/4 x 24 for the 1966 thru early 1976 models.

CHROME LIFTER BLOCK COVERS

These unique covers add a touch of Chrome to this area of the motor that was not possible in the past without plating your stock tappet blocks. Tappet covers are designed to fit over stock units, maintaining the original appearance. Each cover has a hidden slot in the back which permits it to be installed in minutes without removing your pushrods. Just lift the pushrod tube covers and slip them on. These covers are held in place with a small amount of silicone adhesive, which is included and available in stamped steel or a Heavy-Duty die-cast construction. Both models have chrome plated finish. Fits all Evolution Sportsters from 1986 thru 1990. Sold in sets of 4 pieces.

301738 Chrome plated stamped steel
301871 Chrome plated die-casting

"BAD TO THE BONES" SKULLED PUSHROD COVER CUPS

Here's another killer. These spring cups are the latest and hottest in our Skull-Mania line. These spring cups fit all Big Twin and Sportster overhead valve motors from 1936 thru 1999, including Evolution models and work with OEM or aftermarket pushrod tubes. Available in chrome or gold plated finish. Sold in sets of four.

036051 Skulled pushrod cover spring cups, Chrome
036053 Skulled pushrod cover spring cups, Gold

CHROME LIFTER BLOCK COVERS

These brightly chromed covers will not only cover the lifter blocks on 1991 thru 1999 Sportster models, but also crankcase area above the gear case. Can be installed in minutes, using some silicone adhesive (included in kit) and bolting them to the tappet plates. All necessary hardware and detailed instructions are included.

301893 Cover set, chrome plated stamped steel

PUSHROD TUBE ASSEMBLY

036002 Replaces all OEM parts on Panhead models 1948 thru 1965. Chrome finish.

PUSHROD TUBE ASSEMBLY

036001 Replaces all OEM parts on Sportster models 1957 thru 1985. Chrome finish.

PUSHROD TUBE SPRING & CAP SET

032631 Spring, washer, keeper and chrome-plated cap for pushrod covers. Fits Ironhead Sportster 1957 thru 1985 and Panhead 1948 thru 1965. Except for the keeper, all parts in this kit can also be used on all other models OHV Big Twin engines, including Twin Cam, from 1937 to present (OEM 17947-36, 17945-36B and 6762B). Sold in sets of 4.

EXTRA LONG STAINLESS STEEL PUSHROD COVER KEEPERS

4 1/4" Long stainless steel pushrod cover keepers. Made for use in stock and stroked engines. Because they are stainless these extra long keepers can be cut to the desired length. For use in all Sportster and Big Twin models. USA made keepers are sold each (order 4 per engine), imported keepers are sold in sets of 4.

236067 USA made stainless pushrod cover keeper (sold each)
032632 Imported stainless pushrod cover keepers (sold in sets of 4)

JIMS' PUSHROD COVER SPACERS

Jims' pushrod cover spacers are used to space up the pushrod covers when taller than stock cylinders are used. Sold in packs of 4 and available in four sizes.

711291 .275" thick
711292 .225" thick
711293 .200" thick
711294 .155" thick

PUSHROD TUBE ASSEMBLY

036050 Replaces all OEM on all Shovelhead models 1966 thru 1984. Chrome finish.

PUSHROD COVER SET

These pushrod cover sets contain top and bottom covers, cover cap, cover spring and washers. For use with stock stroke engines as well as stroked engines. Use with keepers ZPN 236067. Fits 1984 thru 1999 Evolution Big Twin and 1986 thru 1990 Evolution Sportsterç. Sold in sets of 4.

236068 Pushrod cover set

PUSHROD COVER

032629 Lowerpushrod cover for Evolution Big Twin and Sport- ster models. Sold per piece. Show-chromed

INNER PUSHROD TUBE

032630 Replacement inner pushrod tube for Shovelhead models 1980-1984 and Evolution models 1984-1999 (OEM 17935-79B). Sold in sets of 4.

JIMS PUSHROD COVER SETS

Billet aluminum pushrod covers, styled after Jims smooth look, feature a unique clip that looks like a complete tube while retaining the simple push-pull spring type function. Ends are square at the O-ring ends for no oil leak fit. For use with stock style O-rings and springs. Available in polished or chrome plated billet aluminum for 1984 thru 1999 Evolution Big Twin models as well as in chrome plated billet aluminum for 1999 to present Twin Cam models.

Fits Evolution Big Twins 1984 thru 1999

233392 Polished finish
233393 Chrome finish

Fits Twin Cam models 1999 to present

721527 Chrome finish

LOWER PUSHROD COVER KITS

These pushrod covers are perfect duplicates of the OEM parts. Covers have chrome plated finish and come in sets of 4 with rubber seals.

741797 Knucklehead 1940 thru 1947
741798 Panhead 1948 thru 1965, Shovelhead 1966 thru early 1979, will fit late 1979 thru 1983 Shovelheads when used in combination with ZPN 741809 upper inner tubes
741799 Sportster 1957 thru 1985
741800 Evolution Big Twin 1984 thru 1999
741801 Twin Cam 1999 to present

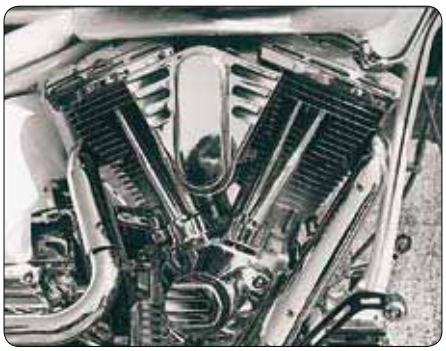
UPPER PUSHROD COVER KITS

Replacement kits, contains 4 chrome plated retaining clips, 4 chrome plated cups, 4 springs, 4 rubber seals and 4 steel washers. These exact duplicates of the Harley part are made by Colony. Inner pushrod covers are also available separately.

741802 Fits Knucklehead 1936 thru 1939 (2" long clips)
741803 Fits Sportster 1957 thru 1985 and Panhead 1948 thru 1965 (2 3/8" long clips)
741804 Fits Sportster 1986 thru 1990 (2 13/16" long clips)
741805 Fits 1940 thru 1947 Knuckle-head, and all Shovelhead Stroker length (3 1/2" long clips)
741806 Fits Knucklehead 1940 thru 1947, all Shovelhead, Evolution Big Twin, and 5 Speed Evolution Sportster (3 5/16" long clips)
741807 Fits Twin Cam 1999 to present (1-3/4" long clips)
741808 Fits 1984 thru 1999 Evolution Big Twins with S&S lifter blocks (3" long clips)

Replacement inner pushrod cover kits

741809 Fits all 1936 thru early 1979 Big Twin O.H.V. models and Sportster 1957 thru 1985
741810 Fits late 1979 thru 1984 Shovelhead and 1984 thru 1999 Evolution Big Twins
741811 Fits 1999 to present Twin Cam



SUMAX PUSHROD COVER

These state-of-the-art pushrod covers are C.N.C. machined from aircraft quality aluminum to a patented designed shape and dimensions for a precise fit. The center coupler expands the top and bottom tubes. A compression O-ring, located inside the coupler, holds the pushrod covers firmly in place. TEC blue seals and O-rings ensure no leaks as they expand and contract with engine heat. Your choice of the timeless "Smooth" or High-Tech "Speedline" design, available for Shovelhead Big Twin, Evolution Big Twin, Twin Cam, and Evolution Sportster.

"Smooth" pushrod cover kits

701169 Fits Twin Cam models
701170 Fits Evolution Big Twin Strokers (+.200" taller)
238502 Fits Shovelhead Big Twins

"Speedline" pushrod cover kits

701165 Fits Twin Cam models
701166 Fits Evolution Big Twin Strokers (+.200" taller)
710191 Fits Evolution Sportster 1986 thru 1990

Replacement seal kits

701168 Fits Twin Cam tubes
238508 Fits Evolution Big Twin tubes
701167 Fits Evolution Sportster & Buell tubes 1991 to present

PUSH ROD WASHERS

Made by James Gaskets. Sold to dealers in pack of 20.

742494 Washer between push rod cover and tappet guide. Fits all Evolution Big Twin models 1984 thru 1999. (OEM 6737)
742495 Push rod spring back up washer, fits all Big Twin and Sportster models 1941 thru 1999. (OEM 6762)

SPORTSTER EVOLUTION CAMS

Andrews has a number of performance cam designs for Evolution Sportster engines. All the cams listed will run to 6500 RPM with stock hydraulic lifters. Since the stock lifters are such proven units, we continue to recommend that they not be changed to solids. Andrews Evolution Sportster cams have stock base circle sizes so stock (non-adjustable) pushrods can be used (except for V9 or BV cams). Adjustable aluminum or chrome-moly steel pushrods are also available as shown (fixed length for 1991). The no. 2 (36 teeth) cam drive gear used in 2000 to present models is not the same as in 1991 thru 1999 models. For this reason separate part numbers are listed for 2000 to present models.

V2/N2 CAM KIT

Bolt in cams for stock 883, 1100 or 1200 engines. More duration and lift means extra power thru whole RPM range. Stock springs and hydraulic lifters recommended, Power range 2000 to 6000 RPM.
232643 1986 thru 1990 (V2 grind)
232644 1991 thru 1999 (N2 grind)
700846 2000 thru 2003 (N2 grind)

N3 CAM KIT

The N3 cams are specifically designed as bolt-in cams for use in 2004 to present 883 and 1200 Sportsters with stock springs, stock hydraulic lifters and heads. Provide extra power thru the entire RPM range.
232468 2004 to present (N3 grind)

V4/N4 CAM KIT

Street/Drags, for stock or modified 883, 1100 and 1200 engines. Slightly higher idle speed but stock springs and hydraulic lifters recommended. Power range 2000 to 6000 RPM.
232645 1986 thru 1990 (V4 grind)
232646 1991 thru 1999 (N4 grind)
700847 2000 to present (N4 grind)

V6/N6 CAM KIT

Modified 1200 engines up to 80 CI (1340 cc). Stock springs and hydraulic lifters recommended. Power range 2500 to 6500 RPM.
232647 1986 thru 1990 (V6 grind)
232648 1991 thru 1999 (N6 grind)
700848 2000 to present (N6 grind)

V8/N8 CAM KIT

Cams for modified 1100-1200, and stroked 883's with stock springs and hydraulic lifters. Same intake cam as N4 but more exhaust cam duration. Gives great mid-range power. Power range 2000 to 6000 RPM.
232649 1986 thru 1990 (V8 grind)
232650 1991 thru 1999 (N8 grind)
700849 2000 to present (N8 grind)

The following two grinds were originally designed for the Iron Sportster, Andrews altered the lobes shapes with the correct timing for the different roller diameter and rocker ratio. They are proven cam designs and produce lots of usable power for larger Evolution Sportster engines.

V9/N9 CAM KIT

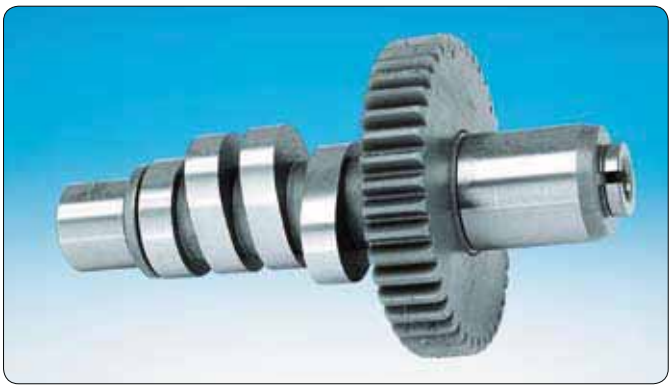
Medium lift cams for stroked engines from 80 to 88 cubic inches. Broad torque range to 6000+ RPM with hydraulic lifters, Andrews springs collars and pushrods required (1991 to present models need long pushrods).
232651 1986 thru 1990 (V9 grind)
232652 1991 thru 1999 (N9 grind)
700850 2000 to present (N9 grind)

BV/NV CAM KIT

High lift cams for 88 cubic inch and larger motors. Andrews pushrods, high lift springs and collars required. BV cams are easy starting and run strong from 2000 to 6000+ RPM with stock hydraulics (1991 to present models need long pushrods).
232653 1986 thru 1990 (BV grind)
232654 1991 thru 1999 (NV grind)
700851 2000 to present (NV grind)

Note: 1991 Sportster engines are considerably different than earlier Evolution Sportsters. Cam gears for earlier Evolution Sportsters will not fit 1991 thru 1999 engines. Year 2000 and later models use a different no. 2 cam drive gear as 1991 thru 1999 models. For these reasons different part numbers are listed.2004 and later models have different valve stem diameter and valve springs, installation of cams with more than .515" lift may need different valves, springs and collars.

Grind	Open	Close	Duration @ .053" Lift	Valve Lift
V2/N2				
Intake	22°	38°	240°	.465"
Exhaust	46°	18°	244°	.440"
N3				
Intake	17°	33°	230°	.465"
Exhaust	43°	11°	234°	.482"
V4/N4				
Intake	30°	46°	256°	.490"
Exhaust	52°	24°	256°	.490"
V6/N6				
Intake	34°	50°	264°	.490"
Exhaust	56°	28°	264°	.490"
V8/N8				
Intake	32°	44°	256°	.490"
Exhaust	56°	28°	264°	.490"
V9/N9				
Intake	33°	53°	266°	.555"
Exhaust	53°	33°	266°	.555"
BV/NV				
Intake	35°	59°	274°	.590"
Exhaust	59°	35°	274°	.590"



CAMS FOR SHOVELHEAD

Whether you want a better street cam for a stock motor, a stroker performance cam or a real high lift cam for a dragster, Zodiac/Andrews has got a cam for you. All of Andrews cams are computer designed and precision ground from alloy steel billets.

J GRIND Mild street, smooth idle, more power through whole RPM range. Bolts in with no head work.

232610 1970 to early 1977
232611 Late 1977 thru 1984

A GRIND Street/Drags, bolts into Shovelhead engines (except 1980-1981) with no head work. More mid-range and high end power. Idle smoothness is unaffected.

232616 1970 to early 1977
232617 Late 1977 thru 1984

B GRIND Street/Drags, much more mid-range and top end power. Idle smoothness unaffected. The cam for modified 74/80 inches and small strokers. Spring spacing required.

232618 1970 to early 1977
232619 Late 1977 thru 1984

6 GRIND Hotter version of B grind. Great cam especially for 84/88 inch strokers. Maximum torque available from 2500 to 6500 RPM.

232620 1970 to early 1977
232621 Late 1977 thru 1984

C GRIND The best production cam made for big street engines. Strokers from 84 to 96 cubic inches will really turn on this cam. Broad torque range from 2000 to 7000+ RPM.

232622 1970 to early 1977
232623 Late 1977 thru 1984

ANDREWS CAMS FOR "HOT" STREET MACHINES AND DRAG-RACING

Always check valve to valve, valve to piston clearance. Also check for coil bound.

M GRIND Street/Drags, for 88" or larger "Muscle-Motors". Maximum mid-range torque cam (3000 to 6500 RPM). OK for low compression pistons on street. Andrews springs and collars make installation easy.

232624 Late 1977 thru 1984

9 GRIND Drag racing cam. Has broad tip design for maximum mid-range power for strokers from 88 cubic inch and larger. Requires Andrews springs and collars for head set up and installation.

232625 Late 1977 thru 1984

10 GRIND Maximum output dragster cam for "Big Muscle Motors" from 92 cubic inches and up. This cam is for best torque up to 6500 RPM. Requires Andrews springs andcollars.

232626 Late 1977 thru 1984

Grind	Open	Close	Duration @ .053" Lift	Valve Lift
J GRIND				
Intake	21°	41°	242°	.405"
Exhaust	41°	21°	242°	.405"
A GRIND				
Intake	21°	43°	244°	.450"
Exhaust	43°	21°	244°	.450"
B GRIND				
Intake	26°	50°	256°	.485"
Exhaust	50°	26°	256°	.485"
6 GRIND				
Intake	32°	56°	268°	.510"
Exhaust	56°	32°	268°	.510"
C GRIND				
Intake	37°	61°	278°	.525"
Exhaust	61°	37°	278°	.525"
M GRIND				
Intake	28°	56°	264°	.590"
Exhaust	56°	28°	264°	.590"
9 GRIND				
Intake	32°	64°	276°	.530"
Exhaust	64°	32°	276°	.530"
10 GRIND				
Intake	34°	70°	284°	.580"
Exhaust	70°	34°	284°	.580"

EVOLUTION BIG TWIN CAMS

Evolution engines have a lot of performance potential built into them. The already improved power available with this engine can be even more dramatic when a good performance cam is installed. Zodiac offers you the Andrews cam of your choice for street or strip.

ANDREWS EV13

232627 Bolt in cam for street and touring use, with more midrange and upper end power. Much more "stuff" than the stock OEM cam. Especially effective in reducing oil temperature. O.K. with both fuel injection and carbureted bikes.

ANDREWS EV23

236681 Mild bolt-in street cam for stock 1340 engines with more torque and HP for all around riding with stock compression ratio. Similar as the stock cam as used in 1988 thru 1991 models but with more output. Pulls from 1800 thru 5200 RPM. OK with both fuel injection and carbureted bikes.

ANDREWS EV27

232606 Bolt-in street cam with fast open and close ramps. Similar timing to EV3 but designed to produce a very broad torque band. Pulls from 1500 to 5500 RPM. O.K. with both fuel injection and carbureted bikes.

ANDREWS EV3

232628 Bolt-in cam for FXR and Softail models. Lots more mid-range power. Idle smoothness unaffected. This is a 6000+ RPM cam for stock heads, springs and hydraulic lifters.

ANDREWS EV31

232523 Super power for supercharged engines. Basically an EV27 cam with timing set for superchargers or Big Inch motors with a compression ratio of 10.5 or higher. Works with stock valve springs.

ANDREWS EV46

232607 A bolt-in cam that has fast .open & close. ramps in a grind that is similar to the popular EV3, but produces higher static compression pressure, permitting 6000+ RPM with stock heads and hydraulic lifters.

ANDREWS EV51

237178 Easy-to-install with longer duration for modified street engines with hydraulic lifters. Andrews springs with titanium collars recommended. Power range from 3000-6500 RPM.

ANDREWS EV59

237179 An upgraded version of the EV57, with fast ramps for modified 80 to 88 inch motors. Very broad power band from 2500 to 6000 RPM. The use high lift springs and light-weight collars is recommended, hydraulic lifters are OK.

ANDREWS EV72

237265 An upgraded version of the EV7 to accommodate 92. and larger street motors. Very broad power band, 2800- 6000 RPM. Use with high lift springs and titanium collars,hydraulic lifters are OK.

Grind	Open	Close	Duration @ .053" Lift	Valve Lift
EV13				
Intake	15°	31°	226°	.485"
Exhaust	45°	13°	238°	.495"
EV23				
Intake	10°	30°	220°	.498"
Exhaust	40°	8°	228°	.498"
EV27				
Intake	20°	36°	236°	.495"
Exhaust	44°	16°	240°	.495"
EV3				
Intake	21°	37°	238°	.495"
Exhaust	43°	15°	238°	.495"
EV31				
Intake	10°	46°	236°	.495"
Exhaust	52°	08°	240°	.495"
EV46				
Intake	25°	41°	246°	.495"
Exhaust	49°	17°	246°	.495"
EV51				
Intake	28°	44°	252°	.510"
Exhaust	54°	22°	256°	.510"
EV59				
Intake	28°	48°	256°	.560"
Exhaust	56°	24°	260°	.560"
EV72				
Intake	30°	54°	264°	.560"
Exhaust	60°	28°	268°	.560"

ANDREWS CAMS FOR TWIN CAM 88 AND 96 MODELS

Since the Twin Cam engines became available, their potential for more performance has already become an established fact. Andrews has designed and tested new cam grinds which show that more power is within reach. The Twin Cam with its larger bore and shorter stroke has a very broad torque curve compared to earlier engines. All of the Andrews performance cams are intended for use with the stock hydraulic lifters and Andrews matching EZInstall push rods that come in your choice of anodized aluminum or chrome-moly steel. EZ-Install push rods do not require removal of tanks or rocker boxes for installation. Andrews also offers a heat-treated 34 teeth rear cam drive sprocket for late Twin Cam 88 models. Early Twin Cam 88 models have the gear fitted to the cam with a key, where later models have a splined camshaft and gear. These sprockets are made from heat-treated alloy steel with a wider than stock press fit for greater stability. Gears are highly recommended for use in your stock engine but must be used with any Andrews cams. Gears are not included with the cams, they must be ordered separately. Andrews cams are available for all Twin Cam models. "Silent Chain" version fits FLH/FLT models 1999 thru 2006, Softail models 2000 thru 2006 and Dyna models 1999 thru 2005, "Roller Chain" version fits Dyna models 2006 to present and all other Twin-Cam models 2007 to present

TW21 GRIND

Bolt-in cams with more torque for all around riding with stock compression ratio. Works great on heavy weight bikes (1700 to 5200 RPM).

700841 Silent Chain version
232594 Roller Chain version

TW26 GRIND

Bolt-in cams for lower RPM torque in both carburetor and injection models (FLT etc.) For two up touring, this cam will add more torque and HP at lower and middle RPM range (1800 to 5500 RPM).

700831 Silent Chain version
232595 Roller Chain version

TW31 GRIND

Great cam for 95 CI motors with a compression ratio between 9.8 and 10.2. Similar to the TW37 but with a lower TDC lift for ease of installation. (2000-5600 RPM)

232522 Silent Chain version
232596 Roller Chain version

TW37 GRIND

For both carburetor and injection models. Andrews claims that Twin Cam models with this bolt-in cam grind have shown 80+ rear wheel Horsepower. Smooth idle, broad torque band. Runs best with low restriction exhausts (2200 to 5800 RPM).

700832 Silent Chain version
232597 Roller Chain version

TW44 GRIND

Cams for 88CI bikes and 9.5 to 1 or higher compression ratio. Maximum torque and Horsepower at middle and upper RPM. (2400 to 6000 and higher RPM).

700842 Silent Chain version
232598 Roller Chain version

TW50 GRIND

Cams for maximum torque and Horsepower at higher RPM ranges. For lighter bikes and engines with 9.5:1 compressionratio and 88 to 95 cubic inch (2600 to 6000+ RPM).

700833 Silent Chain version
232599 Roller Chain version

TW55 GRIND

Cams for maximum torque and Horsepower at higher RPM ranges. For engines with 9.5 to 1 or higher compression ratio and 88 to 95 CI. (2600 to 6000 or higher RPM).

700843 Silent Chain version
232692 Roller Chain version

TW60 GRIND

For a well prepared engine with 95 inch cylinders and head work. Andrews claims that 100+ Horsepower is within reach. Tuning also includes exhaust changes (2400 to 6000+ RPM).

700834 Silent Chain version
232693 Roller Chain version

Grind	Open	Close	Duration @ .053 Lift	Valve "Lift	Lift @TDC	Springs
Stock timing for carbureted models						
Intake	-02°	38°	216°	.473"	.072"	Stock
Exhaust	36°	04°	220°	.473"	.110"	
Stock timing for injected models						
Intake	02°	34°	216°	.473"	.087"	Stock
Exhaust	36°	04°	220°	.473"	.110"	
TW21						
Intake	10°	30°	220°	.490"	.134"	Stock
Exhaust	40°	08°	228°	.498"	.121"	
TW26						
Intake	09°	37°	226°	.490"	.129"	Stock
Exhaust	43°	07°	230°	.490"	.129"	
TW31						
Intake	10°	46°	236°	.510"	.131"	Stock
Exhaust	52°	08°	.240"	.510"	.148"	
TW37						
Intake	14°	42°	236°	.510"	.151"	Stock
Exhaust	48°	12°	240°	.510"	.140"	
TW44						
Intake	21°	41°	279°	.495"	.182"	Stock
Exhaust	49°	17°	283°	.495"	.158"	
TW50						
Intake	20°	48°	248°	.510"	.184"	Stock
Exhaust	54°	18°	252°	.510"	.168"	
TW55						
Intake	22°	46°	283°	.550"	.197"	Hi-Lift
Exhaust	22°	20°	292°	.550"	.181"	
TW60						
Intake	24°	56°	260°	.560"	.205"	Hi-Lift
Exhaust	58°	22°	260°	.560"	.192"	

ANDREWS ROLLER CHAIN CONVERSION CAMS FOR 1999 THRU 2006 TWIN CAM

The roller chain drive was introduced in 2006 on the Dyna models and commonly used from 2007 in all Twin Cam 96 engines to replace the silent chain drive. The conversion kit exchanges the high power spring loaded chain adjuster for an oil pressure based system to maintain chain tension. Also the journal bearing on the sprocket end is replaced with a bigger and sturdier piece. Less wear and easy installation are direct results of these innovations. These conversion kits allow Twin Cam 88 owners enhanced performance and prolonged engine life. You have to order a set cams from the list below, as well as a Roller Chain conversion kit for 1999 thru 2001 Twin Cam 88 or 2002 thru 2006 Twin Cam 88. These kits include the late style oil pump that is required to let the oil pressure operated cam chain tensioners work properly, as well as all other parts required to install your Andrews Roller Chain Conversion cams. Please note that these conversion cams do not fit 2006 to present Dyna models, nor any other 2007 to present Twin Cam 96 models. These cams are designed for use with stock hydraulic lifters. Matching EZ-install pushrod kits are also available, they are listed elsewhere in this chapter.

Roller Chain conversion kits
Kit includes oil pump assembly, cam support plate, screws, roller chains, tensioners, sprockets, and installation instructions. Matching conversion cams are not included but must be ordered separately.

750689 Fits 1999 thru 2001 FXD, FLH and FLT series models and 2000 thru 2002 Softail models
750690 Fits 2002 thru 2005 FXD models and 2002 thru 2006 FLH/FLT series models and 2002 thru 2006 Softail models

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TW12 GRIND
232694 Bolt-in roller chain conversion cams with the same output as the stock cam. Slight power increase but no re-tuning necessary!

TW21 GRIND
232704 Bolt-in roller chain conversion cams with more torque for all around riding with stock compression ratio, works great on heavy weight bikes (1700 to 5200 RPM).

TW26 GRIND
232979 Bolt-in roller chain conversion cams for lower RPM torque in both carburetor and injection models (FLT etc.) For two up touring, this cam will add more torque and HP at lower and middle RPM range (1800 to 5500 RPM).

TW31 GRIND
232980 Bolt-in roller chain conversion cams. Great for 96 CI motors with a compression ratio between 9.8 and 10.2. Similar to the TW37 but with a lower TDC lift for ease of installation (2000-5600 RPM).

TW37 GRIND
232981 Bolt-in roller chain conversion cams Andrews claims that Twin Cam models with this bolt-in cam grind have shown 80+ rear wheel Horsepower. Smooth idle, broad torque band. Runs best with low restriction exhausts (2200 to 5800 RPM).

TW44 GRIND
232982 Bolt-in roller chain conversion cams for 88CI bikes and 9.5 to 1 or higher compression ratio. Maximum torque and Horsepower at middle and upper RPM (2400 to 6000 and higher RPM).

TW50 GRIND
233000 Cams for maximum torque and Horsepower at higher RPM range. For lighter bikes and engines with 9.5:1 compression ratio and 88 to 95 cubic inch (2600 to 6000+ RPM).

TW55 GRIND
233001 Cams for maximum torque and Horsepower at higher RPM range. For engines with 9.5 to 1 or higher compression ratio and 88 to 95 CI (2600 to 6000 or higher RPM).

Grind	Open	Close	Duration @ .053" Lift	Valve Lift	Lift @TDC	Springs
Stock timing for models with carburetor						
Intake	02°	38°	216°	.473"	.072"	Stock
Exhaust	36°	04°	220°	.473"	.110"	
Stock timing for injected models						
Intake	02°	34°	216°	.473"	.087"	Stock
Exhaust	36°	04°	220°	.473"	.110"	
TW12						
Intake	02°	34°	216°	489"	.091"	Stock
Exhaust	37°	05°	220°	489"	.106"	
TW21						
Intake	10°	30°	220°	.498"	.134"	Stock
Exhaust	40°	08°	228°	.498"	.121"	
TW26						
Intake	09°	37°	226°	.490"	.129"	Stock
Exhaust	43°	07°	230°	.490"	.129"	
TW31						
Intake	10°	46°	236°	.510"	.131"	Stock
Exhaust	52°	08°	.240"	.510"	.148"	
TW37						
Intake	14°	42°	236°	.510"	.151"	Stock
Exhaust	48°	12°	240°	.510"	.140"	
TW44						
Intake	21°	41°	279°	.495"	.182"	Stock
Exhaust	49°	17°	283°	.495"	.158"	
TW50						
Intake	20°	48°	248°	.510"	.184"	Stock
Exhaust	54°	18°	252°	.510"	.168"	
TW55						
Intake	22°	46°	283°	.550"	.197"	Hi-Lift
Exhaust	22°	20°	292°	.550"	.181"	

ANDREWS TWIN CAM 88 CAMSHAFTS WITH GEAR DRIVE

After two years of testing and development, Andrews Products is offering cams for S&S gear drives for Twin Cam 88. The primary advantage is that the gear drives use less engine power to operate than stock chain drives. Dynamometer comparisons show gains of 4 horsepower over similar engines with chain driven cams. When less power is needed to turn the camshafts, more power gets to the rear wheel. For all out drag motors, there is also an additional advantage with gear drive cams. Simply stated, higher lift cams can be used with the gear drive setup. The reason for this requires some explanation. With chain drive 88 cams, valve lifts of .600 or higher will result in interference between front and rear cam lobes. With the gear drive cams, lobe top angles are different so lobe to lobe interference cannot occur. These cams are for use with S&S cam gear drive kit (ZPN 721948).

21G GRIND
232498 Bolt-in cam for 88CI motors provide more torque for all around riding with heavy bikes. Intented for stock compression ratio and pistons. Comparable with Andrews EV23 cam in a 80 CI Evolution (1700-4800 RPM).

26G GRIND
232500 Bolt-in cam for 88 thru 95 CI motors with stock compression ratio. Great for 2-up touring, this cam will add torque and HP at lower and middle RPM range (1800-5200 RPM).

31G GRIND
232506 Great cam for motors with 95 CI or more and 10:1 compression ratio. Lower TDC lift for ease of installation (2000-5800 RPM).

37G GRIND
730064 Twin Cam 88s with this cam grind have shown 80+ rear wheel HP. Smooth idle, broad torque band. Same grind as TW37 but with gear drive (2200-5800 RPM).

44G GRIND
730065 First available in 2000 for 88 or 95 cubic inches and 9.25:1 compression ratio or higher. Maximum torque and horsepower at middle and upper RPM (2400-6000+ RPM). Same as TW44 but with gear drive.

50G GRIND
232510 Designed for easy installation in 95 CI motors with stock heads and 9.5 to 9.8 compression ratio

(2400-6000 RPM).

55G GRIND
730066 Great cam for 95 inch engines with 9.5:1 compression ratio. Maximum horsepower and torque at mid and upper RPM (2600-6300+ RPM).Same specs as TW55 but with gear drive.

Note: The following 2 grinds are intended for highly tuned engines and require the knowledge of an expert engine builder for proper setup and installation.

59G GRIND
730067 New grind for gear drive 95 inches with 10:1 compression ratio or higher. Maximum torque and horsepower at middle and upper RPM ranges (2400- 6200+ RPM).

60G GRIND
232517 For well-prepared 95 to 103 CI motors with 10.0 to 10.5 compression ratio 100+ HP is within reach (2700-6500+ RPM).

64G GRIND
730068 High lift cams for modified 95 inch motors running 10:1 compression ratio or higher. Heads must be set up for .700" lift and modified for peak air flow (3000-6500+RPM).

67G GRIND
232518 Performance cams for 95 to 107 or even more Cubic Inches and 10.0 to 10.8 compression ratio and high-flow head set up (2600-6500+ RPM).

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	Timing	Duration	Valve	Lift	
springs					
	open/ close	@ .053" Lift	Lift	@TDC	
21G					
Intake	10°/30°	220°	.498"	.134"	Stock
Exhaust	40°/08°	228°	.498"	.121"	
26G					
Intake	11°/35°	226°	.490"	.138"	Stock
Exhaust	41°/09°	230°	.490"	.112"	
31G					
Intake	10°/46°	236°	.510"	.131"	Stock
Exhaust	52°/08°	240°	.510"	.120"	
37G					
Intake	14°/42°	236°	.510"	.151"	Stock
Exhaust	48°/12°	240°	.510"	.140"	
44G					
Intake	21°/41°	242°	.495"	.182"	Stock
Exhaust	49°/17°	246°	.495"	.158"	
50G					
Intake	20°/48°	248°	.510"	.184"	Stock
Exhaust	54°/18°	252°	.510"	.168"	
55G					
Intake	22°/46°	248°	.550"	.197"	Hi-lift
Exhaust	52°/20°	252°	.550"	.181"	
59G					
Intake	29°/57°	266°	.590"	.238"	Hi-lift
Exhaust	63°/27°	270°	.590"	.218"	
60G					
Intake	24°/56°	260°	.560"	.205"	Hi-lift
Exhaust	58°/22°	260°	.560"	.205"	
64G					
Intake	30°/62°	272°	.640"	.262"	Hi-lift
Exhaust	68°/32°	276°	.640"	.232"	
67G					
Intake	24°/48°	252°	.570"	.209"	Hi-lift
Exhaust	58°/22°	260°	.570"	.187"	

ANDREWS TWIN CAM 88 CAM SPROCKET KITS

These sprockets are made from heat treated alloy steel with a wider than stock press fit for greater stability. The early style cam sprocket features a stronger than stock full length 3/16" drive key that won't break and includes 3 shims. With the shims, the installed length of new sprockets can be set to the same length of an original stock sprocket plus spacer. Because of the stronger and much more rigid mount than the OEM sprocket, it is highly recommended for use in your engine even when using the stock cam but must be used when installing a high performance Andrews cam. Optionally this rear cam sprocket may be combined with Andrews heat treated steel 17 tooth crank sprocket. There is also a top quality splined cam sprocket available for 2000 and later models but this can also be used when you want to use late style splined cams in your early 1999 model. Can also be used in combination with ZPN 700737 crank sprocket. We suggest you to replace the stock cam sprocket ball bearing with Heavy Duty roller bearing.

700736 34 Tooth cam sprocket kit (keyed)
700835 34 Tooth cam sprocket (splined)
700737 17 Tooth crank sprocket kit

CRANE CAMS FOR PAN/SHOVELHEAD

Crane Cams, the world's leader in automotive cam productions for over 30 years, have turned their engineering attention to the Big Twin. More than experience is built into each of these Crane Cams. **Note:** 1980 and 1981 Shovelheads have limited valve spring travel. If you install a camshaft with more than .425" gross valve lift, you will have to use valve springs that have more travel capability. Some 1974 and 1975 Shovelheads have a variance from other year models in the ignition drive locator. This variance can cause difficulty when properly adjusting the ignition timing when an aftermarket camshaft is installed. You may have to modify the ignition timing plate in order to have full range of adjustability by elongating the adjustment slots in the points plate.

H288B GRIND

This hydraulic cam delivers bolt-in performance throughout the power range. Recommended for those wishing to increase torque in heavy bikes with heavy loads. Works well with stock carburetor and exhaust, and no spring change is required.

231325 1970 to early 1977
231330 Late 1977 thru 1984

288B GRIND

Designed for use with solid tappets, this bolt-in cam delivers mild performance. Can be used with stock springs, carburetor and exhaust. Increases mid-range and top-end horsepower without requiring an increase in compression ratio.

231326 1970 to early 1977
231331 Late 1977 thru 1984

298B GRIND

Designed for use with solid tappets, this bolt-in cam works well with a high-performance carburetor and exhaust system to deliver an additional horsepower increase in mid-range and top-end. Works with stock springs and no headwork.

231327 1970 to early 1977
231332 Late 1977 thru 1984

310B GRIND

A high performance cam for the street or drags that requires solid tappets, increased compression ratio and/or more cubic inches. High performance valve springs must be used and all clearances checked.

231323 1948 thru 1969
231328 1970 to early 1977

304B GRIND

Designed for use with solid tappets, this cam delivers streetable high performance. Requires increased compression ratio and/or more cubic inches. High performance valve springs must be used and all clearances checked.

231329 1970 to early 1977
231334 Late 1977 thru 1984

330B GRIND

Street Drag cam for large cubic engines. Headwork required insuring valve clearance and best performance.

231351 1948 thru 1969
231352 1970 to early 1977
231353 Late 1977 thru 1984

Grind	Open	Close	Duration @ .053. lift	Valve Lift Shovel	Pan
H 288B					
Intake	22°	42°	244°	.450"	.474"
Exhaust	42°	22°	244°	.450"	.474"
288B					
Intake	24°	48°	252°	.450"	.474"
Exhaust	48°	24°	252°	.450"	.474"
298B					
Intake	29°	53°	262°	.450"	.474"
Exhaust	53°	29°	262°	.450"	.474"
310B					
Intake	31°	55°	266°	.525"	.553"
Exhaust	55°	31°	266°	.525"	.553"
304B					
Intake	32°	56°	268°	.485"	.511"
Exhaust	56°	32°	268°	.485"	.511"
330B					
Intake	41°	65°	286°	.575"	.606"
Exhaust	73°	33°	286°	.575"	.606"

CRANE FIREBALL CAMS FOR BIG TWIN

Crane FireBall cams are "Bolt In" performance cams that deliver streetable performance even in a stock engine. FireBall cams are available with or without Press-On gears. The "Without Gear" version, is a friendly and economically priced alternative that installs with the factory cam gear. "Without Gear" cams come with alignment pins to ensure proper installation of stock gear.

FIREBALL CAMS FOR PANHEAD AND SHOVELHEAD

FireBall 296A cam

Bolt in performance throughout the power range. Also recommended for increased torque in heavy bikes with heavy loads. No spring change required, works well with stock carburetors and exhaust. Comparable with Andrews A cam. Use with solid lifters.

238968 Without gear cam, fits 1948 thru 1969
235936 Solid press-on gear cam, fits 1970 to early 1977
238969 Without gear cam, fits 1970 to early 1977
235937 Solid press-on gear cam, fits late 1977 thru 1984
238970 Without gear cam, fits late 1977 thru 1984

FireBall 300H cam

Designed for use with hydraulic tappets and stock springs, but can be used with solid tappets and performance springs. Available for Big Twin models from 1948 thru 1984.

231354 Solid press-on gear cam, fits 1948 thru 1969
238965 Without gear cam, fits 1948 thru 1969
231355 Solid press-on gear cam, fits 1970-early 1977
238966 Without gear cam, fits 1970 thru early 1977
231356 Solid press-on Gear cam, fits late 1977 thru 1984
238967 Without gear cam, fits late 1977 thru 1984

FireBall 308B cam

Mild performance, works well with high performance carburetors and exhaust system. Check spring travel, piston-to-valve, and valve-to-valve clearance. Additional increase in mid-range and top end horsepower. Comparable with Andrews B cam.

238971 Without gear cam, fits 1948 thru 1969
235938 Solid press-on gear cam, fits 1970 to early 1977
238972 Without gear cam, fits 1970 to early 1977
235939 Solid press-on gear cam, fits late 1977 thru 1984
238973 Without gear cam, fits late 1977 thru 1984

CRANE FIREBALL CAMS FOR EVOLUTION BIG TWIN

FireBall 300-2B cam

Bolt in cam for use with hydraulic tappets, provides a broad power range starting at low RPM for streetable performance. Comparable to Andrews EV 13.

231357 Solid press-on gear cam, fits 1984 to present
238961 Without gear cam, fits 1984 to present

FireBall 310-2 cam

Bolt in cam, for street performance. Also works well with performance carburetor and exhaust system. Comparable with Andrews EV3.

232655 Solid press-on gear cam, fits 1984 to present
238962 Without gear cam, fits 1984 to present

FireBall 316-2B cam

Bolt in cam. Works best with high performance carburetor and exhaust system. Noticeable difference throughout the whole RPM range. Excellent for speed or touring. Valve to piston clearance must be checked on early models without the notched pistons. Comparable with Andrews EV35.

232656 Solid press-on gear cam, fits 1984 to present
238963 Without gear cam, fits 1984 to present

FireBall 326-2 cam

Performance cam. Works well to increase the mid and top end power. Valve to piston clearance must be checked on early models without the notched pistons. Comparable with Andrews EV5.

232657 Solid press-on gear cam, fits 1984 to present Big Twins
238964 Without gear cam, fits 1984 to present Big Twins

Grind	Open	Close	Duration @ .053"	Valve Sho Lift	Pan Lift	Evo Lift
296A						
Intake	20°	44°	244°	.455"	.479"	
Exhaust	44°	20°	244°	.455"	.479"	
300H						
Intake	24°	44°	248°	.455"	.479"	
Exhaust	44°	24°	242°	.455"	.479"	
308B						
Intake	26°	50°	256°	.490"	.516"	
Exhaust	50°	26°	256°	.490"	.516"	
300-2B						
Intake	12°	34°	226°			.490"
Exhaust	41°	15°	236°			.490"
310-2						
Intake	16°	40°	236°			.490"
Exhaust	43°	19°	242°			.490"
316-2B						
Intake	19°	43°	242°			.490"
Exhaust	48°	24°	252°			.490"
326-2						
Intake	24°	48°	252°			.490"
Exhaust	57°	25°	262°			.500"

CRANE HI-ROLLER CAMS FOR 1984 THRU 1999 BIG TWINS

These performance camshafts are designed by Crane Cams to give you the most performance from your modified Harley-Davidson. Born of Crane's long standing as the leader in new cam technology these cams feature a Multi-Key cam gear that has three precision indexed pre-set positions. One at the stock position, another 4 degrees before, and another 4 degrees after the stock position, allowing you to fine-tune your specific combination. The slots in the cam gear fit a key way in the shaft. Computer controlled machining is indexed from the key way, yielding an extremely precise relationship between shaft and gear for the most accurate timing ever. When installing a Hi-Roller cam valve to valve, valves to piston and valve spring clearances must be checked. For best results the cylinder heads should be machined. The only place you will see your friends is in the mirror.

H286-2 GRIND

Hydraulic bolt-in performance for the Evolution Big Twin. Works best with high-performance carburetor and exhaust. Noticeable difference throughout the whole RPM range. Excellent for speed and touring. Valve to piston clearance must be checked on early Evolution engines.

231335 1984 thru 1999

H296-2 GRIND

Hydraulic performance cam. Works well to increase performance in mid and upper RPM range. Must check valve-to-valve and valve-to-piston clearances.

231336 1984 thru 1999

H306-2 GRIND

Hydraulic bolt-in performance for the V-2 engine. Works well with stock engines, but really increases the Horsepower in engines with carburetor and exhaust work. Must check valve-to-valve and piston-to-valve clearances.

231337 1984 thru 1999

H310-2 GRIND

Designed for increased cubic inch/compression engines. Valve clearances must be checked. Performance springs necessary for higher lift. Show off head and crab work.

231350 1984 thru 1999

1-1004 HI-ROLLER CAM

The 1-1004 camshaft will produce strong low end and mid range power in your Evolution motor that has higher than stock compression ratio, or increased cubic inch, up to 88 cubic inch. Shows off performance headwork. Valve clearances must be checked.

235933 1984 thru 1999

1-1005 HI-ROLLER CAM

The cam will produce a wide power range in your Evolution motor that has at least 10:1 compression ratio. Very good for strokers and other up to 95 cubic inch motors. Valve clearances must be checked.

235934 1984 thru 1999

1-1006 HI-ROLLER CAMS

This is the ultimate camshaft for large cubic inch and performance oriented motor. This cam will provide maximum street and strip performance. Valve clearances must be checked.

235935 1984 thru 1999

Crane Cams for Evolution Big Twins

Grind	Open	Close	Duration @ .053. Lift	Valve Lift
H286-2				
Intake	19°	43°	242°	.490"
Exhaust	48°	24°	252°	.490"
H296-2				
Intake	24°	48°	252°	.490"
Exhaust	57°	25°	262°	.500"
H306-2				
Intake	28°	54°	262°	.500"
Exhaust	69°	23°	272°	.510"
H310-2				
Intake	23°	63°	266°	.550"
Exhaust	68°	28°	276°	.550"
1-1004				
Intake	24°	48°	240°	.581"
Exhaust	57°	25°	248°	.581"
1-1005				
Intake	28°	54°	254°	.600"
Exhaust	69°	23°	260°	.600"
1-1006				
Intake	23°	63°	260°	.600"
Exhaust	68°	28°	266°	.600"

CRANE CAMS FOR TWIN CAM 88 MODELS

Crane Cams explosive dyno proven Horsepower, torque, RPM and reliability is now available for Twin Cam 88 engines. Five new computer-designed hydraulic cams are available, from mild street cruising to killer and race engine build ups. The lobe-to-lobe cam profile accuracy for off-idle torque to high-rpm horsepower. Zodiac also offers a complete selection of Crane performance and race valve springs, keepers, retainers and pushrods for Twin Cam 88 engines. These can be found elsewhere in this catalog. Crane cams are available for all Twin Cam models to present. "Silent Chain" version fits FLH/FLT models 1999 thru 2006, Softail models 2000 thru 2006 and Dyna models 1999 thru 2005, "Roller Chain" version fits Dyna models 2006 to present and all other Twin Cam models 2007 to present.

HTC-300-2 GRIND

Mild-street, cruising and Touring bolt-in cam, low-end torque and mid-range HP. Good for heavy bikes with stock compression ratio. Best power with performance air cleaner and free-flow exhaust. Uses stock valve springs. RPM range from idle to 5,000 RPM.

236083 Silent chain version
231779 Roller chain version

HTC-310-2 GRIND

Moderate street and Cruising. Bolt-in cam for mild performance on Dyna.s and Softails or heavier bikes with single riders. Works well with compression ratios from stock to 9.5:1. Best power with performance air cleaner and free flow exhaust. Uses stock valve springs. RPM range from 1,500 to 5,500 RPM.

236084 Silent Chain version
231780 Roller Chain version

HTC-316-2 GRIND

A bolt-in set of cams for street performance on mildly tuned engines. Works with stock compression but really effective with up to 10:1 compression ratio. Best power with performance air cleaner and free-flow exhaust. Uses stock valve springs. RPM range from 1,800 to 5,800 RPM.

236085 Silent Chain version
231782 Roller Chain version

HTC-290-2 GRIND

Hot-Street Performance cams for modified engines. Works with both stock and big bore kits. Best power with compression ratio from 9.5:1 and up. Must be used with Crane valve springs, clearanced for .570 lift. Great low-end and mid-range torque with added upper RPM power. Must be used with performance air cleaner and free flow exhaust. RPM range from 1,800 to 5,800 RPM.

236086 Silent Chain version
231783 Roller Chain version

HTC-296-2 GRIND

Hot Street Performance cams for modified engines with 10.25:1 and up compression, Big Bore kits, head modifications. Must use Crane valve springs, clearanced for .600 lift. Must use performance air cleaner and exhaust. Work perfect with Edelbrock Performer RPM Twin Cam cylinder heads. Range: 2,000 to 6,000 RPM.

236090 Silent Chain version
231766 Roller Chain version

HTC-304-2 GRIND

Max Hot Street cams for Big Bore engines with a compression ratio of 10.5:1 and up and modified heads. Must be used with Crane valve springs, clearanced for .500 lift. Strong mid-range torque with upper RPM power. Must be used with performance air cleaner and free-flow exhaust. RPM range from 2,000 to 6,200 RPM. Crane Cams for Twin Cam Models.

236087 Silent Chain version
231784 Roller Chain version

Grind		Duration @ .053" Lift	Valve Lift
HTC-300-2	Intake	226°	.505"
	Exhaust	236°	.505"
HTC-310-2	Intake	236°	.505"
	Exhaust	242°	.505"
HTC-316-2	Intake	242°	.505"
	Exhaust	252°	.505"
HTC-290-2	Intake	240°	.570"
	Exhaust	248°	.570"
HTC-296-2	Intake	246°	.600"
	Exhaust	254°	.600"
HTC-304-2	Intake	254°	.600"
	Exhaust	260°	.600"

CRANE GEAR DRIVE CAMSHAFTS

These Crane Cams are specifically designed to convert 2006 Dyna and all 2007 to present Twin Cam models to gear drive, using the S&S gear drive conversion ZPN 721948. The primary advantage is that the gear drives use less engine power to operate than stock chain drives. Dynamometer comparisons show gains of 4 Horsepower over similar engines with chain driven cams. When less power is needed to turn the camshafts, more power gets to the rear wheel. For all-out Drag motors, there is also an additional advantage with gear drive cams. Simply stated, higher lift cams can be used with the gear drive setup. The reason for this requires some explanation. With chain drive cams, valve lifts of .600" or higher will result in interference between front and rear cam lobes. With the gear drive cams, lobe top angles are different so lobe to lobe interference cannot occur. The S&S gear drive conversion must be ordered separately. Crane Cams are packaged sold and in sets of 2.

HTC-310-2 GRIND

Moderate street, cruising. Bolt-in cams. Mild performance for Dyna's, Softails or single riders. Stock to 9.5:1 compression ratio. Best power with performance air cleaner and free-flow exhaust. Uses stock valve springs. RPM range from 1,500 to 5,500 RPM.

231861 HTC-310-2 Gear Drive cams

HTC-316-2 GRIND

Street Performance, some engine modifications. Bolt-in cams. O.K. with stock compression, but works best with up to 10.1:1 compression ratio. Best power with performance air cleaner and free flow exhaust. Uses stock valve springs. RPM range from 1,800 to 5,800 RPM.

231862 HTC-316-2 Gear Drive cams

HTC-290-2 GRIND

Hot street performance, modified. OK for 88 thru 96CI. Best power with 9.5:1 or higher compression ratio and head modifications. Must use Crane valve springs clearanced for .570" lift. Great low end and mid-range torque with added upper RPM power. Must use performance air cleaner and free-flow exhaust. RPM range from 1,800 to 5,800 RPM.

231863 HTC-290-2 Gear Drive cams

HTC-296-2 GRIND

Hot Street Performance. For modified engines with 10.25:1 and higher compression, big bore kits and head modifications or High Performance cylinder heads. Must use Crane valve springs, clearanced for .600" lift, performance air cleaner and exhaust. RPM range from 2,000 to 6,000 RPM.

231864 HTC-296-2 Gear Drive cams

HTC-304-2 GRIND

Max Hot Street, for modified engines with 10.5:1 and higher compression, Big bore kits, head modifications etc. Must use Crane valve springs. Clearanced for .600" lift. Strong middle range torque with upper RPM power. Must use performance air cleaner and free-flow exhaust. RPM range from 2,000 to 6,200 RPM

231865 HTC-304-2 Gear Drive cams

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GRIND	OPEN	CLOSE	DURATION @.053" LIFT	VALVE LIFT	LIFT @TDC	SPRINGS
HTC-310-2						
Intake	20°	47°	236°	.505"	.185"	Stock
Exhaust	36°	15°	242°	.505"	.157"	
HTC-316-2						
Intake	19°	48°	242°	.505"	.178"	Stock
Exhaust	43°	24°	252°	.505"	.205"	
HTC-290-2						
Intake	18°	46°	240°	.570"	.173"	Crane
Exhaust	42°	22°	248°	.570"	.198"	
HTC-296-2						
Intake	20°	52°	246°	.619"	.188"	Crane
Exhaust	46°	22°	254°	.619"	.193"	
HTC-304-2						
Intake	25°	56°	254°	.600"	.211"	Crane
Exhaust	49°	24°	260°	.600"	.206"	

REPLACEMENT GEARS FOR CRANE CAMS

In the unlikely event you should ever need to replace the gear on your Crane cam, Zodiac has replacement gears for the High-Roller Multi-Index series of Crane cams. Gear is precision machined from 8620 Tool steel.

For Crane "High-Roller" cams with the unique "Multi-Index" gears that allows the cam to be retarded or advanced 4 degrees

232660 Fits late 1977 thru 1999

CRANE ADJUSTABLE 17 TOOTH CAM TIMING SPROCKET FOR TWIN CAM MODELS

CNC machined crank sprocket for true operating accuracy. This heat-treated alloy steel sprocket allows 4° retard or advance of camshaft timing with simple reversal of sprocket. Advanced cam timing for increased low-end torque and acceleration. Retard cam timing reduces the low-end torque but increase upper RPM horsepower. Easy bolt-on installation. Fits all Twin Cam 88 models 1999 to present.

730063 "Adjust AC" timing sprocket for Twin Cam models

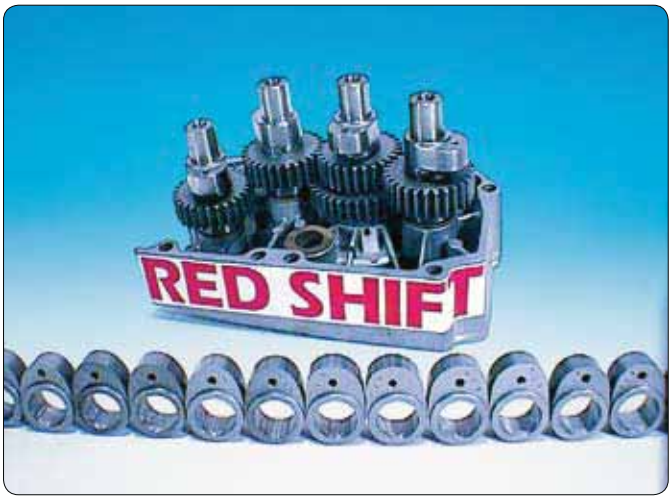
CRANE CAM INSTALLATION TOOL

231315 The tool comes with easy instructions to install adjustable pushrods without removing the gas tank or rocker covers. This tool also makes it possible to change the cam on FL/FX engines with adjustable pushrods without removing the pushrods, pushrod covers, tappets and tappet guides.

CRANE TUNE-A-CAM KIT

It's quick and easy to degree your camshaft for maximum performance with this unique kit. The kit is complete with a large easy-to-read degree wheel, dial indicator TDC locator, lightweight checking springs, and it is packed in a high impact plastic case. You can also use the kit to check camshaft end play, shaft and gear run-out and many more useful things. Degree wheel, piston stop for 12 mm and 14 mm plug holes are separately available.

231346 Tune-A-Cam kit complete
231362 Degree wheel only
231464 TDC Piston stop for 12 mm spark plug hole
231363 TDC Piston stop for 14 mm spark plug hole



RED SHIFT RACE WINNING CAMSHAFTS

The people from Red Shift claim their Sportster cams provide the broadest possible torque curve for a strong and wide power band. They feature the same high quality specifications as found on the Big Twin Camshafts. Sportster cams are made using your matched set of cam gears, which you MUST supply. This technique helps keep costs within reach. Your original cam set is used to install Red Shift cam lobes. Using a precision cylindrical grinder, stock lobes are removed from your original cam gear shafts to provide concentric and correct fit for the new Red Shift billet cam lobes. New lobes are then installed and each is individually timed and welded in our special fixture for accuracy. Shop time for installing the lobes is usually 3-4 weeks. Contact your dealer if you have any special requests. Labour for installing the lobes is not included in the list-price

Performance note: the cam lobes can be shipped as lobes only or timed but un-welded, giving the performance engine builder final control of desired cam timing. This is required for any after market 4-cam cases and recommended for all-out competition engines, due to manufacturing variations in component production.

EVOLUTION SPORTSTER 1986 THRU 1990 4 SPEED RED SHIFT 531V2

Hot Rod 4 speed 1200 Sportster cam. Narrower profile makes strong mid-range, good top end for modified engines, works best with 1.940" diameter intake valve and 1.610" exhaust valve in ported heads. Solid or hydraulic (with limiters).

232077 Red Shift cam lobes 531V2

EVOLUTION SPORTSTER 1991 TO PRESENT 5 SPEED RED SHIFT 721V2

Pro Stock race cam for 5-speed XL engines 1440 to 1860cc Designed for maximum output of torque and horsepower. Requires high compression (12 to 1 or more), case clearancing, tappet modifications, pro geometry roller rockers and pro springs.

232087 Red Shift cam lobes 721V2

CAM SPECIFICATIONS

Grind	Open	Close	Duration	Valve lift @ .053"	TDC lift @ valve
531V2					
intake	28°	51°	259°	.531"	.195"
exhaust	60°	19°	259°	.531"	.155"
721V2					
intake	23°	64°	267°	.720"	.205"
exhaust	70°	17°	267°	.720"	.158"

V-THUNDER CAMSHAFTS

These camshafts from V-Thunder provide the ultimate in arm stretching power on the street or in competition. Power proven and backed by hundreds of exhaustive hours on the dyno and in on-bike testing, these cams provide added punch at all levels of performance for Evolution and Shovelhead motors, while maintaining the longevity and integrity of the valve train parts. Cams that need a Hi-Performance carburetor were found to give the best performance with the Mikuni's HRS42 carburetor. V-Thunder cams are made with SAE 6150 bearing, quality steel and induction hardened for optimum surface longevity. Tolerances are extremely precise with the aid of our computer controlled machining centers. The cams are made in the USA and come with complete installation instructions.

V-Thunder cams for Shovelhead engines 1970 thru 1984

SHV 4000

Hydraulic cam for very good torque and mid-range good roll-on power.
239725 SHV 4000 Camshaft 1978 thru 1984

SHV 4021

Hydraulic cam Increased mid range over SHV 4010. Needs performance valve springs.
239730 SHV 4021 Camshaft 1970 thru 1977

SHV 4030 & 4031

Hydraulic performance cam use with performance carburator, high flow exhaust and valve springs.
239732 SHV 4031 Camshaft 1970 thru 1977
239731 SHV 4030 Camshaft 1978 thru 1984

SHV 4040 & 4041

Hydraulic cam pulls strong all through power band. Use with performance carburator, Exhaust and valve springs.
239734 SHV 4041 Camshaft 1970 thru 1977
239733 SHV 4040 Camshaft 1978 thru 1984

SHV 4050 & 4051

Hydraulic cam. Hot street and strip cam for light bikes. Must have aftermarket carburator, high flow exhaust and headwork. Pulls to 7000 rpm.
239736 SHV 4051 Camshaft 1970 thru 1977
239735 SHV 4050 Camshaft 1978 thru 1984

CAM SPECIFICATIONS FOR SHOVELHEAD CAMS

Grind	Open	Close	Duration @ .053" Lift	Valve Lift
SHV 4000				
Intake	14˚	42˚	236˚	.450"
Exhaust	42˚	14˚	236˚	.450"
SHV 4021				
Intake	17˚	45˚	242˚	.485"
Exhaust	45˚	17˚	242˚	.485"
SHV 4030 & 4031				
Intake	22˚	50˚	252˚	.485"
Exhaust	50˚	22˚	252˚	.485"
SHV 4040 & 4041				
Intake	17˚	45˚	242˚	.485"
Exhaust	50˚	22˚	252˚	.485"
SHV 4050 & 4051				
Intake	24˚	56˚	260˚	.550"
Exhaust	1˚	29˚	270˚	.550"

V-THUNDER CAMS FOR EVOLUTION BIG TWIN ENGINES 1984 THRU 1999

EVL 2000
Hydraulic bolt in cam for Evolution engines. Good cam for stock replacement.
239715 EVL 2000 Camshaft

EVL 2015
Hydraulic bolt in cam. Increases the performance in the low and mid RPM range for fuel injected models.
239716 EVL 2015 Camshaft for injection models

EVL 3000
Hydraulic cam for two up riding and pulling trailers.
239717 EVL 3000 Camshaft

EVL 3010
Hydraulic cam for a good low end torque and mid-range performance for stock engine.
239718 EVL 3010 Camshaft

EVL 3020
Hydraulic cam to increase the mid-range performance for bikes with aftermarket pipes and carburetors.
239719 EVL 3020 Camshaft

EVL 3040
Pulls hard through power range. Need performance carburetor, Performance exhaust and valve springs.
239721 EVL 3040 Camshaft

EVL 3050
Hydraulic cam with very good overall performance. Use with performance carburetor, exhaust and valve springs. Gives more top end.
239722 EVL 3050 Camshaft

EVL 3060
Hot street and strip hydraulic cam for light bikes. Headwork, performance carburetor and exhaust are a must. Pulls to 7000 RPM.
239723 EVL 3060 Camshaft

EVL 3070
Very hot street and strip hydraulic cam. Recommended for Big Inch motors. Must increase compression. Cam needs performance carburetor, high flow exhaust, valve springs and headwork. For serious Performance engines builders.
239724 EVL 3070 Camshaft

CAM SPECIFICATIONS FOR EVOLUTION CAMSHAFTS

Grind	Open	Close	Duration @ .053" Lift	Valve Lift
EVL 2000				
Intake	2°	38°	220°	.480"
Exhaust	35°	1°	214°	.456"
EVL 2015				
Intake	20°	24°	224°	.500"
Exhaust	47°	5°	234°	.500"
EVL 3000				
Intake	10°	34°	224°	.500"
Exhaust	34°	10°	224°	.500"
EVL 3010				
Intake	15°°	39°	234°	.500"
Exhaust	39°	15°	234°	.500"
EVL 3020				
Intake	18°	42°	240°	.500"
Exhaust	42°	18°	240°	.500"
EVL 3040				
Intake	17°	45°	242°	.510"
Exhaust	50°	22°	252°	.510"
EVL 3050				
Intake	22°	50°	252°	.510"
Exhaust	50°	22°	252°	.510"
EVL 3060				
Intake	24°	56°	260°	.585"
Exhaust	61°	29°	270°	.585"
EVL 3070				
Intake	29°	61°	270°	.608"
Exhaust	63°	31°	274°	.608"

S&S CAMSHAFTS FOR EVOLUTION SPORTSTER & BUELL

S&S newest cams for Sportster and Buell are the 500 and 555 cams. The 500 series cams are supposed to be installed in 74" to 89" engine models with 9:1 to 10.5:1 compression ratio or for 74" to 100" models with no more than 9.5:1 compression ratio. These "bolt in" cams work with stock or ported heads without the need for valve spring spacing. This cam is improving the torque. The 555 cam is for 79" and larger engines with a compression ratio between 9.5 to 11.5:1. This cam works best with ported heads and is giving a broad torque range from 3500 to 6500 rpm. Valve spring spacing is required. Both the 500 and 555 series cams can be used with solid or hydraulic tappets.

750293 S&S 500 cam for 1986 to 1990 models
750295 S&S 500 cam for 1991 thru 2003
750294 S&S 555 cam for 1986 to 1990 models
750296 S&S 555 cam for 1991 thru 2003

Note: Installation on 2000 thru 2003 Sportsters and Buells must be in conjunction with a 1991 thru 1999 style pinion gear such as ZPN 750080 thru 750084. This must be ordered separately.

S&S TWIN CAM 510C BOLT IN CHAIN DRIVE CAMSHAFT

S&S 510C camshaft set is designed to be used with the stock chain drive system and is an economical way to improve the performance of stock and slightly modified street engines. Since the stock cam chain drive system is used with the 510 C cams, they are recommended for use with cylinder heads with stock valve springs or performance valve springs with less than 160 lb. of seat pressure. This camshaft set is as quiet as stock and produces significant power increases across the rpm range, but especially above 3000 RPM. Andrews Sprocket Kit ZPN 700835 is required for installation in 2000 and later engines and ZPN 700736 is recommended for 1999 engines.

750022 Camshaft Set Twin Cam 88 models 1999 thru 2006, except 2006 Dyna

CAM SPECIFICATIONS

Cam	Valve Timing Open / Close		Duration	Valve Lift	Lift @TDC		
	Intake	Exhaust	Intake	Exhaust		Intake	Exhaust
S&S 500	34°/50°	56°/28°	264°	264°	.500"	.241"	.212"
S&S 555	33°/53°	53°/33°	266°	266°	.555"	.240"	.240"

S&S GEAR DRIVE CAM SPECIFICATIONS

Cam Name	Valve Timing Open/Close		Duration	Valve Lift	Lobe Center	Lift @TDC
510C						
Intake	20°/38°		238°	.510"	99.0°	.187"
Exhaust	52°/20°		252°	.510"	106.0°	.178"

S&S CAMS FOR EVOLUTION BIG TWIN

S&S claims that their camshafts and other related valve train parts go through extensive dyno testing and usage on the track and street. After they are satisfied with the proven performance they 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.

S&S 510 GRIND

750641 Replacement of the popular S&S 502 cam, but with better low and midrange torque and improved ramp design for quieter operation. Will bolt in with stock heads and hydraulic tappets, works best with 9:1 to 10:1 compression ratio. The only S&S cam for Evolution Big Twin that doesn't require spring spacing.

S&S 520 GRIND

750285 Provides good low end and mid range performance in engines up to 96CI with 8.5:1 to 10:1 compression ratio. Use with hydraulic lifters.

S&S 546 GRIND

750286 Great for 4" bore engines with 9.1:1 to 10.1:1 compression ratio and hydraulic lifters.

S&S 561 GRIND

750287 The best cam available for 80 to 96 CI engines with a 9.5:1 to 10.5:1 compression ratio and hydraulic tappets.

S&S 563 GRIND

750288 A street/race cam for engines with 103 CI or more displacement with an 11:1 or higher compression ratio. Easy starting but a strong top end. Works with hydraulic as well as solid tappets.

S&S 585V GRIND

750289 For 80 thru 96 CI engine with 10:1 thru 10.5:1 compression ratio, or larger engines with a 9.5:1 to 10:1 compression ratio. Use with hydraulic tappets.

S&S 600 GRIND

750290 For 80 thru 96 CI engine with 10.5:1 thru 11:1 compression ratio, or larger engines with a 10:1 to 10.5:1 compression ratio. Use with hydraulic tappets.

S&S 631 GRIND

750291 The Hottest cam for all High RPM engines with 11:1 and higher compression ratio, or 12:1 and over in smaller bore engines. Works with Solid or Hydraulic tappets.

S&S 640 GRIND

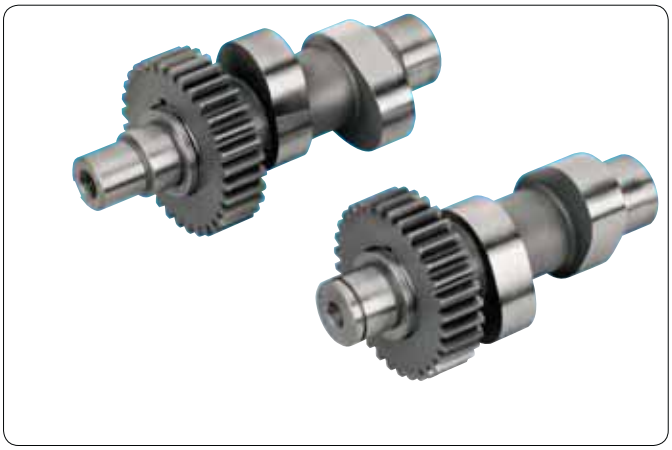
750292 For real Big Inch engines with 10:1 thru 11.5:1 compression ratio. Works with hydraulic tappets. The camshaft that comes standard in S&S 124 CI Super Side Winder motors.

Important information on 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.

EVOLUTION Big Twin Cam SPECIFICATION CHART

	Valve Timing Open/Close		Valve Duration		Valve Lift	Lift @ TDC	
	Intake	Exhaust	Intake	Exhaust		Intake	Exhaust
S&S 510	20/38	52°/20°	238°	252°	.510"	.187"	.178"
S&S 520	0°/40°	50°/2°	220°	232°	.520"	.086"	.094"
S&S 546	5°/55°	52°/5°	240°	237°	.546"	.126"	.106"
S&S 561	32°/40°	50°/26°	252°	256°	.560"	.252"	.210"
S&S 563	32°/64°	64°/32°	276°	276°	.560"	.250"	.220"
S&S 585V	20°/45°	60°/20°	245°	260°	.585"	.186"	.180"
S&S 600	20°/55°	60°/20°	255°	260°	.600"	.218"	.198"
S&S 631	34°/61°	66°/29°	275°	275°	.630"	.281"	.221"
S&S 640	25°/60°	65°/20°	265°	265°	.640"	.222"	.192"



S&S GEAR DRIVE CAMSHAFT KITS FOR TWIN CAM MODELS

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Converts the stock camshaft drive from chain drive to gear drive, eliminates the stock cam chains, tensioners and related hardware. It also gives improved valve timing accuracy. S&S claims that the gear drive conversion accounted for a 4 HP increase in modified test engines with heavy duty valve springs. With gear driven cams it is also possible to realize up to .640" cam lift, which is impossible with chain drive cams. S&S cams deliver their most significant power gains above 2,500 RPM. They are available for a wide variety of engine displacements and compression ratios. These camshafts must be used with the Outer Cam Drive Gear ZPN 721941 on 1999 thru 2006 models (except 2006 Dyna), or ZPN 750872 on 2006 Dyna or any 2007 to present Twin Cam. Adjustable push rods and high-performance valve springs are required with all cam sets, except the 510G series. The 546G and 675G series cams are not available for Dyna 2006 nor any 2007 to present model.

GEAR DRIVEN CAMSHAFT SET 510G

Designed as a bolt in cam for 88CI to 96CI engines with compression ratios below 9.7:1. An economical way to improve the performance of stock and slightly modified street engines. Produces significant power increases across the rpm range, especially above 3000 rpm. Can be used with stock push rods and stock valve springs.

750632 Fits 1999 thru 2006 Twin Cam models, except 2006 Dyna

750866 Fits all 2007 to present Twin Cam models and 2006 to present Dyna NEW

GEAR DRIVEN CAMSHAFT SET 546G

Designed for 88-95 cubic inch engines with compression ratios below 9.7:1 and minor port work done.

750633 Fits 1999 thru 2006 Twin Cam models, except 2006 Dyna

GEAR DRIVEN CAMSHAFT SET 570G

Designed for 88-96 cubic inch engines with compression ratios below 10:1.

721942 Fits 1999 thru 2006 Twin Cam models, except 2006 Dyna

750867 Fits all 2007 to present Twin Cam models and 2006 to present Dyna NEW

GEAR DRIVEN CAMSHAFT SET 585G

Designed for 88-96 cubic inch engines with compression ratios from 10.0 to 10.5:1.

721944 Fits 1999 thru 2006 Twin Cam models, except 2007 Dyna

750868 Fits all 2007 to present Twin Cam models and 2006 to present Dyna NEW

GEAR DRIVEN CAMSHAFT SET 625G

Designed for engines of 95 cubic inches or more with compression ratios between 10.0 and 10.75:1.

721945 Fits 1999 thru 2006 Twin Cam models, except 2006 Dyna

750869 Fits all 2007 to present Twin Cam models and 2006 to present Dyna NEW

GEAR DRIVEN CAMSHAFT SET 640G

Designed for engines of 95 cubic inches or more with compression ratios between 10.5 and 11.5:1. These are the cams S&S uses in their 124CI engines.

721947 Fits 1999 thru 2006 Twin Cam models, except 2006 Dyna

750870 Fits all 2007 to present Twin Cam models and 2006 to present Dyna NEW

GEAR DRIVEN CAMSHAFT SET 675G

Designed for 120" or larger engines with at least 11:1 compression ratio.

750634 Fits 1999 thru 2006 Twin Cam models, except 2006 Dyna

Notes:

- Make sure you select the right cam for the job. Increasing compression ratio and/or displacement beyond the recommended range for each cam will increase cylinder pressure, which makes the engine harder to start and more likely to ping or detonate. Lower compression ratios or displacements will weaken performance at low and mid range RPM.
- A hydraulic press and other professional tools are required to install cams in Twin Cam engines. Additionally, material must be removed from the inner surface of the stock gear cover to install the S&S Gear Drive. The stock crankcase will require modification for S&S 625G, 640G, and 675G cams. S&S recommends that this and related products be installed by a professional mechanic.

(Continued on next page)

S&S GEAR DRIVE CAM SPECIFICATIONS

Cam Name	Valve Timing Open/Close		Valve Duration		Valve Lift	Centerline		Lift @ TDC	
Intake	Exhaust	Intake	Exhaust	Intake	Exhaust	Intake	Exhaust		
510G	20°/38°	52°/20°	238°	252°	.510"	99.0°	106.0°	.187"	.178"
546G	5°/55°	52°/5°	240°	237°	.546"	115.0°	113.5°	.126"	.106"
570G	20°/40°	55°/20°	240°	255°	.570"	100.0°	107.5°	.187"	.179"
585G	20°/45°	60°/20°	245°	260°	.585"	102.5°	110.0°	.186"	.179"
625G	20°/55°	60°/20°	255°	260°	.625"	107.5°	110.0°	.189"	.184"
640G	25°/60°	65°/25°	265°	270°	.640"	107.5°	110.0°	.228"	.214"
675G	25°/64°	70°/25°	269°	275°	.675"	109.5°	112.5°	.235"	.205"

- New cam bearings and a new gear cover gasket are required to complete this installation. These parts are provided in the ZPN 721950 Camshaft Installation support kit.
- If updating from the stock chain drive system on 1999 thru 2006 models (except 2006 Dyna's), order 1 set Cams with inner gears and 1 set outer cam drive gears, ZPN 721941.
- If updating from the stock chain drive system on 2006 Dyna or any 2007 to present Twin Cam model, order 1 set Cams with inner gears and 1 set outer cam drive gears, ZPN 750872.
- Due to the characteristics of gear drives, you may experience some valve train noise.

Early	Late	
721941	**750872**	Outer Cam drive gears
721948	**750871**	Cam gear drive kit (includes pinion gear, front and rear inner cam gears and outer cam gear)
721950	**750873**	Cam installation support kit
232486 NEW	**N/A**	Set of two inner cam drive gears

Oversized & Undersized Gears
Due to machining variations in the stock cam plate, oversized or undersized gears may be needed to achieve correct gear lash.

Rear inner cam gears

Early	Late	
750972	**750973**	Undersized NEW
750974	**750975**	Oversized NEW

Pinion gears 1999-up

750976 Undersized NEW
750977 Oversized NEW

CAM GEAR SIZE MEASUREMENT PINS

These cam gear size measurement pins have to be used when measuring the sizes of your cam gears. Measurement should be done over the pins (as shown on photo). Installing the right cam gear will reduce noise. Gear size measurements (over pins) are listed in the 1990 Harley-Davidson workshop manual using .108" pins instead of .105" pins (as for earlier years).

232604 Cam gear size measurement pins .108" diameter
232605 Cam gear size measurement pins .105" diameter

DELKRON SPACE-N-TIME TOOL

133024 An easy to use tool that eliminates guess-work and let you spot problems before they happen.

FEATURES:

- Degree wheel
- Cast aluminum cutaway timing cover

CHECKS

- Camshaft end play and timing
- Crankshaft end play
- Breather valve end play and timing
- Timing gear lash
- Tappet roller to cam lobe contact
- Lifter blocks to cam alignment
- Pinion shaft run out
- Flywheel timing marks
- Tappet roller travel in guide slots
- Complete instructions included.

CAMSHAFT NEEDLE BEARING

231443 Fits 1958 thru 1999 Big Twins (OEM 9058)

OUTER CAM BEARINGS FOR TWIN CAM 88 MODELS

Top quality outer cam bearings, meet factory OEM specifications. Sold in pairs.

711287 Outer cam bearings (OEM 8990)

"TIME SAVER" CAM CHANGE GASKET KIT

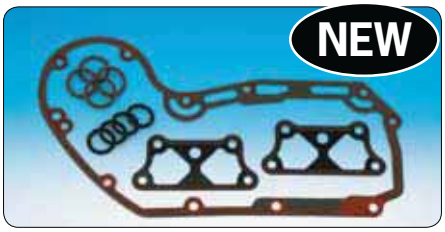
These kits save you the hassle of finding the right gaskets, seals and O-rings when changing the cam on Big Twin models 1970 thru 1999. They include nose cone, points cover and tappet block gaskets, nose cone oil seal, and all the right pushrod tube O-rings and/or seals needed. When buying a cam shaft, buy a "Time Saver" kit and you can't go wrong. There are two kits available, one covers all models Big Twin from 1970 thru 1992. The other all models 1993 thru 1999.

234460 Time Saver kit 1970 thru 1992
234461 Time Saver kit 1993 thru 1999

TORRINGTON INNER CAM BEARING FOR TWIN CAM 88 MODELS

This Torrington full complement roller bearing is more durable as the original INA bearing and is a must for any cam change or service. Bearings are sold in sets of 2. The removal and installation of these inner cam bearings requires the use of Jims' tools ZPN 720487 and 720484 that can be found in the tool section of this catalog.

711289 Inner cam bearing, sold per 2 (OEM 8890)



CAM COVER GASKET KITS FOR SPORTSTER

Made by James Gaskets. Kits include silicone beaded gaskets for the cam gear cover and the tappet blocks, as well as Viton O-rings for the push rod tubes.

740609 Fits 2000 thru 2003 Sportster
740610 Fits 2004 to present Sportster

GEAR DRIVE INSTALLATION KIT FOR TWIN CAM

This installation kit contains the inner case needle bearings, two camshaft ball bearings, gasket and circlip you need when you are installing Andrews or S&S gear driven camshafts in your Twin Cam 88.

232490 Gear drive installation kit

Replacement bearings, sold each
232493 Camshaft ball bearing
232494 Inner case needle bearing

JIMS OUTER CAM BEARING KIT

These quality bearings meet or exceed the factory specifications, fits Twin Cam 88 models mid 2000 to present (OEM 8983 and 8990A).

741893 Fit Twin Cam 88 mid 2000 models to present

S&S HEAVY-DUTY CAM BEARING PLATE

The S&S Heavy-Duty cam bearing plate is recommended for use with all gear drive cams and are included in S&S complete gear drive cam kits. Fits Twin Cam models 1999 to present when converting to gear driven cams.

750074 S&S Heavy Duty cam bearing plate

JIMS CRANKCASE CAM BUSHING

American made crankcase cam bushing for Big Twin 1936 thru 1957. Available in standard and .005" oversize.

235782 Cam bushing (OEM 25597-36)
235781 Cam bushing +.005"

CAM THRUST LOCK WASHER

231488 Fits 1958 to present Big Twins. Heat treated and precision ground (OEM 25550-57).

PINION GEAR NUT AND SHAFT SPACER

Replacement pinion gear shaft spacer and left hand threaded nut for Big Twin models from 1955 thru 1992. Machined with perfection to meet or exceed OEM specifications.

234999 Nut, L/H thread, 1955 thru 1990 Big Twins (OEM 24023-54)
235009 Nut, L/H thread, 1991 thru 1992 Big Twins (OEM 24022-90)
235000 Spacer, 1955 thru 1990 Big Twins (OEM 24703-54)

JIMS CIRCUIT BREAKER SHAFT AND BUSHING KIT FOR BIG TWINS

High quality circuit breaker shaft and bushing kit. Fits 1936 thru 1969 Big Twins (OEM 25856-36).

235776 Circuit breaker shaft and bushing kit

JIMS IDLER SHAFT AND BUSHING KIT FOR BIG TWINS

High quality idler shaft and bushing kit. Fits Big Twin models from 1936 thru 1969. Replacement bushings are separately available.

235777 Idler shaft and bushing kit (OEM 25791-36)
235778 Bushing only (OEM 25785-30A)

PINION GEARS FOR 4 SPEED SPORTSTER MODELS

S&S provides high quality 1986-'87 style pinion Sportster pinion gears for use with the S&S Evolution style pinion shafts used in S&S flywheel assemblies. These are the splined style pinion shafts as S&S does not produce the 1988 thru 1990 style keyed pinion shaft for Evolution style Sportster engines. S&S feels the keyed design is not as strong, and that the splined pinion shafts are preferable for high performance applications. Also fit stock 1986 thru 1987 flywheels. Available in various, color coded sizes. Blue is the biggest, yellow the smallest.

750075 Blue, OEM 24056-086
750076 Red, OEM 24057-86
750077 White, OEM 24058-86
750078 Green, OEM 24059-86
750079 Yellow, OEM 24060-86

S&S TIMING GEARS FOR GENERATOR-STYLE O.H.V. BIG TWINS 1936 THRU 1969

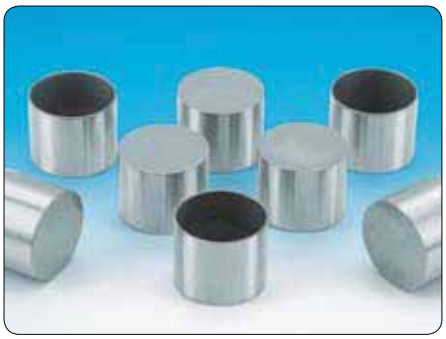
S&S re-designed the idler-, circuit breaker-, and circuit breaker drive gears to have a quality replacement available that suits today's demands by adopting modern technology and metallurgic knowledge. Gears have a modified gear profile that provides a higher contact ratio for quieter operation and reduced gear lash for more accurate and consistent ignition timing. Both the idle gear and circuit breaker drive gear have widened hubs with two, factory installed and sized bearing bushings per gear for stable operation. This design eases installation too, as there is no need to use spacers as with the OEM gears. The circuit breaker drive gear has been narrowed to simplify installation of high lift cams, and are available in two versions. The standard version turns the timer in the stock clockwise rotation and is meant as a direct replacement for or to supersede stock gears to be used with stock style timers The counterclockwise or reverse rotation version enables the builder to use some aftermarket distributors with certain electronic ignition systems. All gears are precision manufactured to tight tolerances and critical areas are finish ground after a heat treatment to eliminate distortion and reduce wear. S&S timing gears are also available as a complete kit for that perfect overhaul.

Standard clockwise rotation

235499 Complete timing gear kit for 1936 thru 1969 generator style Big Twins Kit contains all gears as listed below, shafts must be ordered separately
235593 Circuit breaker drive gear (OEM 25850-36)
235594 Idler gear assembly (OEM 25775-36)
235595 Circuit breaker gear (OEM 32531-36)
235596 Intermediate shaft (OEM 25856-36)
235588 Idler gear shaft (OEM 25791-36)

Counterclockwise (reverse) rotation

750590 Circuit breaker drive gear, reverse rotation
750591 Circuit breaker gear, reverse rotation



CAM FOLLOWERS FOR V-ROD

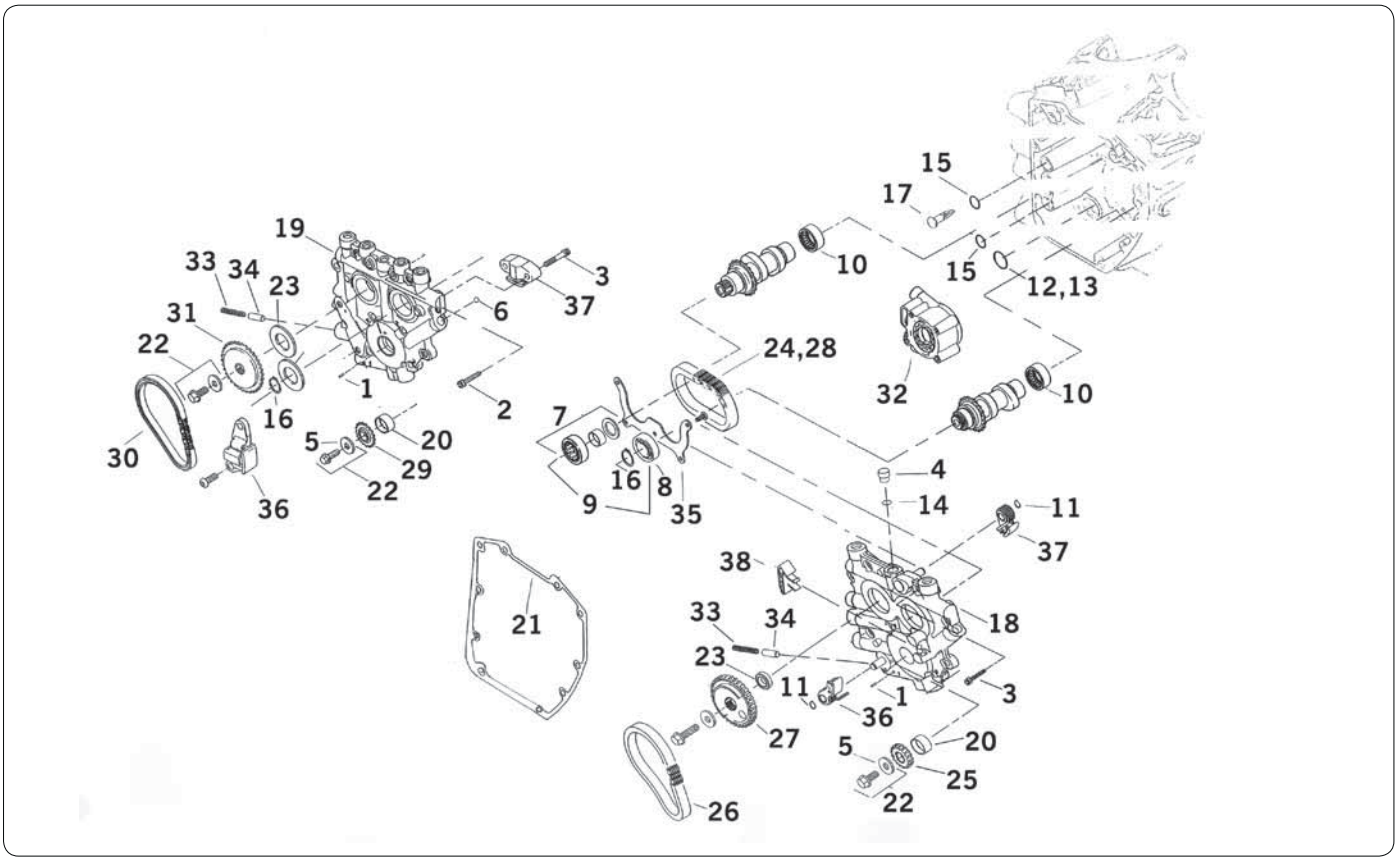
Made by Kibblewhite Precision Machining for use in V-Rod models with high lift cams installed. Dependent on valve lift custom machining may be required. Fits all 2002 to present V-Rod models. Sold in sets of 8.

750559 V-Rod cam followers, 8-pack

JIMS PINION GEAR SPACER

Quality replacement spacer for stock or aftermarket engines. For use on 1954 thru 1989 Big Twin models.

741899 Pinion gear spacer



CAM CHAIN PARTS FOR TWIN CAM MODELS

The silent cam chain drive was introduced on the 1999 Twin Cam A model. Most "Silent Chain" parts are also used on the 2000 thru 2006 Twin- Cam B motor. The Roller Chain cam chain drive was introduced on the 2006 Twin Cam 88 powered Dyna. In 2007 all Twin Cam 96 engines as used in FLH/FLT, Dyna's and Softails received the Roller Chain drive. As the Roller Chain drive has many advantages over the Silent Chain, most camshaft suppliers supply camshafts kits to convert Silent Chain models to Roller Chain drive. These conversion cams are to be installed with OEM or OEM style cam drive roller chain, chain tensioners, cam support and oil pump. Because of this we strongly recommend to check what is installed in your motor before you order.

1. **720275** Roll pin, 10-pack (OEM 601)
2. **750688** Cam chain tensioner screw,silent chain models, 5-pack (OEM 4741A)
3. **750763** Cam chain tensioner screw, roller chain models,5-pack (OEM 4740A)
4. **750743** Cam support plate plug, silent chain models 2006 (OEM 3290)
5. **750764** Cam gear washer, 2003 to present (6294)
6. **238183** Ball, silent chain models (OEM 8873)
7. **750765** Roller bearing, 2002 thru 2006 (OEM 8983)
8. **750766** Ball bearing, 2 used on 1999 thru 2001, 1 used on 2002 thru 2006 silent chain models 2-pack (OEM 8990A)
9. **711287** Jims camshaft bearing kit for silent chain models
10. **750767** Cam needle bearing set, roller chain models (OEM 9215)
11. **750706** Retaining ring silent chain models, 25-pack (OEM 11031)

12.O-ring, TC88A 2004 thru 2006, TC88B 2003 thru 2006 (OEM 11157)
022464 Zodiac, 10-pack
700430 Athena, 10-pack

13.O-ring, TC88A 1999 thru 2003, TC88B 2000 thru 2002 (OEM 11293)
231521 James, 10-pack
638385 Accel, 10-pack

14.O-ring cam support plug 1999 thru 2006 (OEM 11298)
231523 James, 10-pack
638422 Accel, 10-pack
700460 Athena, 10-pack

15.O-ring oil pump & oil screen (OEM 11301)
231524 James, 10-pack
638410 Accel, 10-pack
700461 Athena, 10-pack

16. **750673** Retaining ring, roller chain models, 10-pack (OEM 11461)
750707 Retaining ring, silent chain models, 10-pack (OEM 11494)
17. **750712** Oil screen TC88B, TC96B (OEM 24983-00)

18. 750708 Cam support assembly, silent chain models (OEM 25267-99B)

19. 750674 Cam support assembly, roller chain models (OEM 25355-06)

20. 750709 Crankshaft bushing (OEM 25344-99)

21. Cam cover gasket (OEM 25244-99A)
700469 Athena, 5-pack

22. 236089 Cam gear bolt & washer kit, 2000 thru 2006 silent chain models (OEM 25533-99A)
750711 Cam gear bolt & washer kit, roller chain models (OEM 25566-06)

23. 750740 Spacer kit, silent chain models (OEM 25938-00)
750737 Spacer 0.287", silent chain models (OEM 25722-00)
750738 Spacer 0.297", silent chain models (OEM 25723-00)
750736 Spacer 0.307", silent chain models (OEM 25721-00)
750735 Spacer 0.317", silent chain models (OEM 25719-00)
750734 Spacer 0.327", silent chain models (OEM 25717-00)
750739 Spacer 0.337", silent chain models (OEM 25725-00)
750679 Spacer, 0.100", roller chain models (OEM 25729-06)
750680 Spacer, 0.110", roller chain models (OEM 25731-06)
750681 Spacer, 0.120", roller chain models (OEM 25734-06)
750682 Spacer, 0.130", roller chain models (OEM 25736-06)
750683 Spacer, 0.140", roller chain models (OEM 25737-06)
750684 Spacer, 0.150", roller chain models (OEM 25738-06)

24. 750713 Cam-to-cam chain, silent chain models (OEM 25607-99)

25. 750728 Crankshaft sprocket, silent chain models (OEM 25609-99)

26. 750729 Primary cam chain, silent chain models (OEM 25610-99)

27. 750733 Splined cam drive sprocket, silent chain models (OEM 25716-99)

28. 750677 Cam-to-cam chain, roller chain models (OEM 25683-06)

29. 750675 Crankshaft sprocket, roller chain models (OEM 25673-06)

30. 750676 Primary cam chain, roller chain models (OEM 25675-06)

31. 750678 Cam drive sprocket, roller chain models (OEM 25728-06)

32. 741225 TPD "Super" High Performance oil pump, silent chain models
741171 Fueling High Performance oil pump, silent chain models
750685 Oil pump, roller chain models (OEM 26037-06)

33. 750741 Relief valve spring (OEM 26210-99)

34. 750742 Oil pump relief valve (OEM 26400-82)

35. 750744 Bearing retainer plate, 1999 models (OEM 35052-99)
750745 Bearing retainer plate, 2000 thru 2006 silent chain models (OEM 35060-00)

36. 750761 Primary cam chain tensioner, silent chain models (OEM 39954-99A)
750686 Primary cam chain tensioner, roller chain models (OEM 39968-06)

37. 750710 Cam-to-cam chain tensioner, silent chain models (OEM 39964-99A)
750687 Cam-to-cam chain tensioner, roller chain models (OEM 39969-06)

38. 750762 Chain guide, silent chain models (OEM 39965-99)

JIMS PINION GEARS

Pinion gears are available to fit Big Twin engines from 1954 thru 1989. These high quality gears are carefully machined, heat-treated and then finish ground. If the stock gear is unmarked and the size is unknown we recommend that you order a gear in the middle of the tolerance range. These sizes were used more often and should provide adequate gear clearance under most circumstances. Note: Gear sizes are listed from biggest to smallest. This color coding sequence is identical to stock Harley-Davidson color coding for the late 1977 thru 1989 models. For the 1954 thru early 1977 models there was only one size available from Harley-Davidson, Jims issued their own color coding for these pinion gears. Sizes are given measured over .105" pins.

Fits 1954 thru early 1977 Big Twin engines (OEM 24010-54)

	Colorcode	Size
721896	Orange	1.4490" - 1.4485"
721897	Black	1.4485".- 1.4480"
721898	Red	1.4480" - 1.4475"
721899	Blue	1.4475" - 1.4470"
721900	Green	1.4470" - 1.4465"
721901	White	1.4465" - 1.4460"
721902	Brown	1.4460" - 1.4455"
721903	Yellow	1.4455" - 1.4450"

Fits late 1977 thru 1989 Big Twin engines

	Colorcode	Size
234912	Orange	1.4751" - 1.4756" (OEM 24040-78)
234911	White	1.4745" - 1.4751" (OEM 24041-78)
234910	Yellow	1.4737" - 1.4745" (OEM 24042-78)
234909	Red	1.4729" - 1.4737" (OEM 24043-78)
234908	Blue	1.4721" - 1.4729" (OEM 24044-78)
234907	Green	1.4715" - 1.4721" (OEM 24045-78)
234906	Black	1.4710" - 1.4715" (OEM 24046-78)

PINION GEARS FOR 5 SPEED SPORTSTER MODELS

These S&S pinion gears are the stock design as used in 1991 thru 1999 Sportster models. You can also use these when you want to install 1991 thru 1999 style stock or aftermarket cams in a 2000 to present Sportster or Buell. Available in various, color coded sizes. Blue is the biggest, yellow the smallest.

750080 Blue, OEM 24056-91
750081 Red, OEM 24057-91
750082 White, OEM 24058-91
750083 Green, OEM 24059-91
750084 Yellow, OEM 24060-91

GENUINE PINION GEARS

These pinion gears are made exactly to the OEM tolerances. Available for 1990 thru 1999 Big Twin in the most commonly used red color coded 1.4838"-1.4841" diameter, as well as for 2007 to present Sportster.

751349 Fits 1990 thru 1992 Big Twin (OEM 24043-90)
751350 Fits 1993 thru 1999 Big Twin (OEM 24043-93)
751351 Fits 2007 to present Sportster and 2000 to present Buell (OEM 24047-00)

CAM COVER BUSHING

USA made cam cover bushing for 1936 thru 1969 Big Twins. Available in standard and oversize.

231455 Cam cover bushing (OEM 25581-36)
235880 Cam cover bushing +.005"

CAM COVER BUSHING

USA made cam cover bushing for 1970 thru 1999 single cam Big Twins. Available in standard and oversize.

231489 Cam cover bushing (OEM 25581-70)
235881 Cam cover bushing +.005"
235882 Cam cover bushing +.010"

JIMS CAM NEEDLE BEARING GAUGE

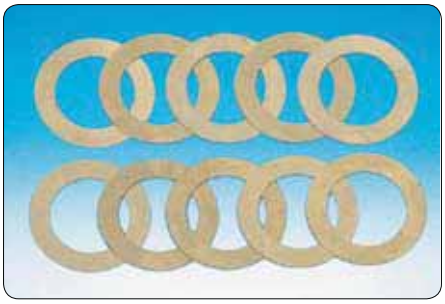
Inner cam needle bearing "Go and No Go" gauge. The only accurate and easy way to check the size of the inside diameter of your inner cam bearing. Use these pins to check if your cam is too tight or too loose. Sold in a set of two and used on all single cam Big Twin models from 1958 thru 1999.

235929 Cam bearing gauge, set

STAKING PIN FOR STAKING BUSHINGS

Simple, but effective. These pins can be used on all bushings and will hold the bushing in place. Use with the bushing installers drilling jigs, as found elsewhere in this catalog. The staking pins are sold in a 10 pack (OEM 275).

235998 Staking pins (10 pack)



SPORTSTER CAM SHIMS

A must when setting up new cams. Fits 1957 thru 1985 Sportster engines. Sold in packs of 10.

233511 Cam shims (OEM 6769)
233512 Cam shims + .005 (OEM 6770)

CAM GEAR SPACING WASHERS

Precision thickness spacing washers will enable you to properly adjust camshaft end play on Big Twins from 1936 to present, including Evolution motors. These are available in thickness from .050" to .95" in .005" increments. An assortment package of one of each thickness is offered, along with each thickness available individually in 5 packs.

232675 Assortment washer kit 10 sizes

Washers in 5 packs
232677 .050" (OEM 25550-36)
232678 .055" (OEM 25551-36)
232679 .060" (OEM 25552-36)
232680 .065" (OEM 25553-36)
232681 .070" (OEM 25554-36)
232682 .075" (OEM 25555-36)
232683 .080" (OEM 25556-79)
232684 .085" (OEM 25557-79)
232685 .090" (OEM 25558-79)
232686 .095" (OEM 25559-79)
232687 .100" (not included in assortment kit)

VALVES FOR SPORTSTER 883

These stock replacement valves are made by the OEM supplier. Fit Sportster XL 883 1986 thru 2003 models.

231462 Intake valve (OEM 18031-86)
231463 Exhaust valve (OEM 18030-86)

VALVES FOR 1100 EVOLUTION SPORTSTER MODELS

Zodiac's premium quality engine valves duplicate the OEM specifications for material and machining but at much lower cost than stock.

Evolution 1100 Sportster models 1986 only
232592 Intake valve (OEM 18023-86)
232593 Exhaust valve (OEM 18024-86)

STOCK REPLACEMENT VALVES FOR BIG TWIN MODELS

High quality replacement valves for Big Twin models. Meet or exceed OEM specifications. Valve stems and heads are stock size.

Panhead models 1948 thru 1965
032203 Intake (OEM 18071-48)
032205 Exhaust (OEM 18082-57A & 18086-80)

Shovelhead models 1966 thru 1984
032204 Intake (OEM 18074-66 & 18075-80)
032205 Exhaust (OEM 18082-57A & 18086-80)

Evolution Big Twin models 1984 thru 1999
721590 Intake (OEM 18074-83A)
721591 Exhaust (OEM 18082-83)

Twin Cam models 1999 thru 2004
721590 Intake (OEM 18074-83A)
721591 Exhaust (OEM 18082-83 & 18085-99)

CRANE VALVES FOR HARLEY-DAVIDSON

Crane offers you the latest in valve design and manufacturing technology. Any engineer whose job it is to design valves for internal combustion engines, runs headlong into the problem of material selection. The requirements, such as tensile strength, wear resistance, fatigue-life and the ability to survive at extreme high temperatures are not easily satisfied by one alloy alone. Stainless Steel has excellent strength properties at high temperatures making it a natural material for the head area on the valve, while the stem of the valve could use another alloy that is hardened to resist wear and breakage. The engineers at Crane Cams, using the latest valve design and manufacturing technology have come up with the answer: a two-piece valve for the Harley-Davidson engines. Rather than compromise on one material, they have chosen to optimize the material for each area, then friction weld them at mid-stem. This bonding process is stronger than the material itself. This way, the majority of the stem, including the keeper groove and the stem tip, are made out of an alloy that can be hardened to resist wear and provide maximum strength in these critical areas. This concept may be new to the Harley-Davidson market, but is has been well proven in the automotive industry in recent years. Crane has chosen to use 21-2N stainless steel for the valve head material on intake and exhaust valves. The stems will be SAE 8645 martensitic alloy steel. This stem material will then be hardened to a minimum of 50 RC Rockwell hardness in both the keeper groove and tip areas. The stems of the valves will be either hard chrome plated or nitrided to resist galling. For extreme duty, Crane is also offering exhaust valves made from inconel 751 material, the ultimate high temperature, high strength alloy. Stems on these valves will also be SAE 8645 martensitic alloy with a hard chrome finish.

Shovelhead Motors 1966 to 1984 with oversized valve heads

ZPN	Type	Stem dia.	Head dia.	Stem coating
239305	ex.	.3745"	1.810"	Chrome

Big Twin Evolution Motors 1984 thru 1999

ZPN	Type	Stem dia.	Head dia.	Stem coating	OEM
237199	ex.	.3095"	1.615"	Chrome	18082-83
231314*	ex.	.3095"	1.615"	Chrome	

Twin Cam 88 Motors 1999 thru 2004

ZPN	Type	Stem dia.	Head dia.	Stem coating	OEM
237197	in.	.3100"	1.850"	Chrome	18074-83
237199	ex.	.3095"	1.615"	Chrome	18082-83
231314*	ex.	.3095"	1.615"	Chrome	

*** Special high temperature Inconel Alloy.**

"BLACK DIAMOND" HIGH PERFORMANCE STAINLESS STEEL VALVES BY PRECISION MACHINING

Precision Machining Black Diamond one-piece valves are made from superb quality stainless steel and machined to a profile that provide excellent flow characteristics. These lightweight valves are then impregnated by a very special process .002" deep and a surface build up, to improve wear properties and reduce friction. This process provides resistance to corrosion and wear superior to that developed by hard chromium and electro-less nickel plating. Most valves are available in either stock size with stock or thin stem and with larger head diameter for the high performance engine builder.

Fits 2002 to present V-Rod models

ZPN	Type	Stem dia.	Head dia.	OEM
750530	in.	.2348"	1.575"	18664-01K
750531	ex.	.2344"	1.360"	18663-01K

Fits 1970 thru 1985 Ironhead Sportster models

ZPN	Type	Stem dia.	Head dia.	OEM
232388	in.	.309"	1.935"	18070-70
232389	ex.	.3384"	1.570"	18033-80
232390	in.	.309"	2.000"	Over size head
232391	ex.	.3384"	1.630"	Over size head

Fits 1986 thru 2003 Evolution Sportster 883 models

ZPN	Type	Stem dia.	Head dia.	OEM
232402	in.	.3100"	1.585"	18031-86
232404	ex.	.3095"	1.350"	18030-86

Conversion valves for 883 to 1200 Sportsters

ZPN	Type	Stem dia.	Head dia.	OEM
234200	in.	.310"	1.715"	
234201	ex.	.3096"	1.480"	

Fits 1986 Evolution Sportster 1100 models

ZPN	Type	Stem dia.	Head dia.	OEM
232392	in.	.310"	1.840"	18023-86
232393	ex.	.3096"	1.615"	18024-86
232394	in.	.310"	1.940"	Over size head

Fits 1988 thru 2003 Evolution Sportster 1200 models

ZPN	Type	Stem dia.	Head dia.	OEM
239302	in.	.310"	1.710"	18023-87
239303	ex.	.3095"	1.475"	18024-87

Fits Big Twin 1936 thru 1947 (Knucklehead)

ZPN	Type	Stem dia.	Head dia.	OEM
239300	in.	.3765"	1.750"	18071-36
239301	ex.	.3745"	1.750"	18081-36

Fits Big Twin 1948 thru 1965 (Panhead)

ZPN	Type	Stem dia.	Head dia.	OEM
232381	in.	.3765"	1.750"	18071-48
232382	ex.	.3747"	1.750"	18082-57

Fits Big Twin 1965 thru 1984 (Shovelhead)

ZPN	Type	Stem dia.	Head dia.	OEM
232383	in.	.3765"	1.950"	18074-66
232382	ex.	.3747"	1.750"	18082-57
232384	in.	.3765"	2.000"	Over size head
232380	ex.	.3760"	1.780"	Over size head
232385	ex.	.3747"	1.812"	Over size head
232386	in.	.309"	1.950"	Thin stem (see note)
232387	ex.	.3384"	1.750"	Thin stem (see note)

Note: Thin stem valves need special valve keepers (ZPN 234291).

Fits Evolution Big Twin 1984 thru 1999

ZPN	Type	Stem dia.	Head dia.	OEM
232395	in.	.310"	1.840"	18074-83A
232396	ex.	.3096"	1.615"	18082-83
232397	in.	.310"	1.940"	Over size head

Fits all Big Twin Evolution engines from 1984 thru 1999

234890 High Flow racing valve Intake" 1.900" head, 28°
234891 High Flow racing valve Exhaust. 1.615" head, 29°

Fits Twin Cam 88 models 1999 thru 2004

ZPN	Type	Stem dia.	Head dia.	OEM
239427	in.	.3106.	1.840.	18074-83A
239429	ex.	.3101"	1.565"	18085-99
239428	in.	.3106"	1.900"	Over size head

Fits Twin Cam models 2005 to present

ZPN	Type	Stem dia.	Head dia.	OEM
750432	in.	.2754"	1.805"	18074-05
750433	in.	.2754"	1.900"	Over size head
750434	ex.	.2755"	1.575"	18085-05
750435	ex.	.2755"	1.630"	Over size head

THIN STEM VALVE CONVERSIONS FOR TWIN CAM MODELS

Lightweight titanium valves for High Performance applications in Twin Cam models. These valves feature 7 mm stems and must be installed with matching valve guides and valve spring kit. Valves and valve guides are sold individually, valve springs are sold in a kit including your choice of steel or titanium collars.

Thin stem conversion valves for Twin Cam 88 models 1999 thru 2004

ZPN	Type	Stem dia.	Head dia.	OEM
750532	in.	7.0 mm	1.900"	Thin stem, over size head
750533	ex.	7.0 mm	1.565"	Thin stem, over size head

Thin stem conversion valve guides for Twin Cam 88 models 1999 thru 2004

Guides are sold each and come complete with matching Viton seals

Intake	Exhaust	Size
750545	**750550**	Std. (.5620")
750546	**750551**	+.001"
750547	**750552**	+.002"
750548	**750553**	+.004"
750549	**750554**	+.010"

Intake: A= .650", B= .700", C= .800", D= 1.400", E= .615", F= .2745", G = .5620"
Exhaust: = .555", B= .605", C= 1.150", D=1.275", E= .440", F= .2350", G= .3959"

750544 4-Pack replacement valve guide seals for thin stem valve guides

Valve spring kits

750405 With titanium retainers
750406 With steel retainers

SPECIAL EXHAUST VALVES FOR "BRANCH" AND "STD" HEADS

High-Flow racing valves made from special super alloy by Precision Machining as a replacement for Branch and STD cylinder heads on Evolution Big Twins but also suitable for custom tuning jobs.

For Branch heads: this valve is .060" shorter than stock so valve can be sunk in the head to clear the piston on high lift cams. For STD heads: special, extra flowing, oversized valves, available in two head sizes.

237183 Black Diamond exhaust valve for Branch heads
Stem .3096" Head 1.615" Tulip Profile 230
Length 4.380"

232460 Black Diamond exhaust valve for STD heads
Stem .3095" Head 1.650" Tulip Profile 240
Length 4.480"

234895 Black Diamond exhaust valve for STD heads
Stem .3095" Head 1.750" Tulip Profile 240
Length 4.480"

SPECIAL SUPER ALLOY RACE VALVES FOR EVOLUTION BIG TWIN

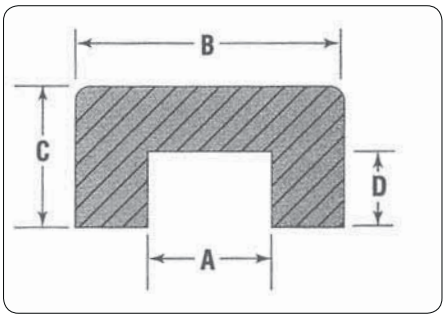
These Precision Machining one-piece race valves have a special shape for a better gas flow and are made from exotic materials for super resistance against wear and heat. The intake valve is made from light weight Titanium finish, while the exhaust valve is made from super tough heat resistant Inconel. Fit Evolution Big Twin engines from 1984 to present.

ZPN	Type	Stem dia.	Head dia.	Material
237180	in.	.310"	1.840"	Titanium
237181	ex.	.3096"	1.615"	Inconel

VALVE STEM LASH CAPS

These caps must be used on most oversized valves and all valves that must be machined to length and the keeper grove has to cut. Also used on various racing valves. They eliminate the need of special treatment or hardening of the valve stem tip.

ZPN	A.	B.	C.	D.	Pack qty.
730037	.2750"	.385"	.270"	.190"	4
730039	.2170"	.300"	.090"	.050"	4
730040	.1970"	.280"	.090"	.050"	4
730041	.1965"	.275"	.230"	.150"	8



RAZORBACK VALVES BY PRECISION MACHINING

Nowadays Precision machining's valves are used by all the top tuners in the world. All the big names in the Drag-Racing as well as circuit racing scene know that the name Precision Machining in combination with any valve train component means 110% quality and reliability. These super strong Razorback valves are made from a one piece forging of EV8 stainless steel. EV8 stainless steel has proven heat and corrosion resistant and superior heat transfer features. Each Razorback valve is fully CNC machined and hard chromed with a 360 degrees anode which is the only way to produce perfect hard chrome.

Fits Sportster Iron Head 1970 thru 1985

ZPN	Type	Stem dia.	Head dia.	OEM
237193	in.	.309"	1.935"	18070-70
237195	ex.	.3384"	1.570"	18033-80

Oversize valves, stock replacement for XLR

ZPN	Type	Stem dia.	Head dia.	OEM
237194	in.	.309"	1.950"	18069-65R
237196	ex.	.3747"	1.750"	18080-70R

Fits Shovelhead models 1966 thru 1984

ZPN	Type	Stem dia.	Head dia.	OEM
237191	in.	.3765"	1.950"	18074-66
237192	ex.	.3747"	1.750"	18082-57

Fits Evolution Big Twin models 1984 thru 1999

ZPN	Type	Stem dia.	Head dia.	OEM
237197	in.	.310"	1.840"	18074-83A
237198	in.	.310"	1.940"	Over size head
237199	ex.	.3096"	1.615"	18082-83

RAZORBACK™
ONE PIECE S.S. HARD CHROME STEMS

PRECISION MACHINING BLANK STEM OVERSIZE VALVES

07

For the engine tuners that want ultimate performance from their ported and flown heads, Precision Machining designed special shaped valves with oversized heads and extra long stems. These high performance valves are available in various materials. Exhaust valves have the patented 44 degree tulip angle for improved flow and higher gas speed. Stems need to be shortened to required length and keeper grooves need to be machined. These valves are a must in every performance shop.

Note: These are not stock replacement valves, they require machining by a professional with professional equipment.

ZPN	Type	Head dia.	Stem dia.	Tulip Profile	Length
A. 236445	in. Black Diamond	2.000"	.3107"	23°	4.780"
B. 236446	in. Black Diamond	2.100"	.3107"	23°	4.780"
C. 236447	in. Tensilite Titanium	2.125"	.3107"	23°	4.780"
D. 236448	in. Black Diamond	2.125"	.3765"	23°	5.000"
E. 236449	ex. Black Diamond	1.715"	.3096"	44°	4.780"
F. 236450	ex. Black Diamond	1.750"	.3096"	44°	4.780"
G. 236451	ex. Special Inconel	1.750"	.3096"	44°	4.780"
H. 236452	ex. Black Diamond	1.850"	.3747"	29°	5.000

THIN STEM VALVE TRAIN CONVERSION FOR 883 EVOLUTION SPORTSTERS

These thin stem valves and valve guides reduce mass, resulting in a easier revving engine. The valves are Precision Machining's famous Black Diamond that feature a stem measuring only 7 mm in diameter. Matching valve guides are supplied with stem seals. Parts are sold individually, so order two inlet and two exhaust valves, two inlet and two exhaust valve guides and the lightweight racing valve spring kit to have a complete set-up for your 883 Evolution Sportster.

ZPN	Type	Head dia.	Stem dia.	Profile	Length
236138	Intake	1.585"	.2745"	23°	4.550"
236139	Exhaust	1.350"	.2745"	27°	4.635"

Thin stem valve guides

Each valve guide is supplied with one matching valve stem seal.

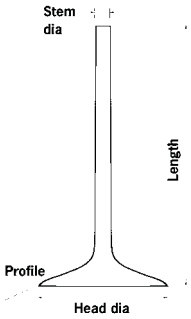
Intake	Exhaust	
236140	**236146**	Std. (0.562")
236141	**236147**	+.001"
236142	**236155**	+.002"
236143	**236148**	+.004"
236144	**236149**	+.006"
236145	**236150**	+.010"

Valve spring kit

236151 Lightweight racing valve spring kit

Replacement valve stem seals

236152 Thin valve stem seals, 4 pack



ROWE'S HARD CHROMED VALVES

Rowe's Hard Chromed intake valves are made of 8645 heat treated valve steel and exhaust valves are made of 21-2N heat treated non-magnetic stainless steel. Stems are then hard chrome plated to obtain a very slick and hard surface. The standard in wear resistance. All valves are laser marked with "Rowe USA" and come in an attractive Orange & Black box.

Valves for 1970 thru 1985 Ironhead Sportster models

ZPN	Type	Stem dia.	Head dia.	OEM
721032	in.	.3097"	1.940"	18027-80
721033	ex.	.3391"	1.562"	18033-80

Valves for 1986 thru 2003 Evolution Sportster 883 models

ZPN	Type	Stem dia.	Head dia.	OEM
721026	in.	.3102"	1.585"	18031-86
721027	ex.	.3095"	1.350"	18030-86

Valves for 1986 Evolution Sportster 1100 models

ZPN	Type	Stem dia.	Head dia.	OEM
721025	in.	.3102"	1.844"	18023-86
721011	ex.	.3095"	1.610"	18024-86

Valves for 1987 thru 2003 Evolution Sportster 1200 models

ZPN	Type	Stem dia.	Head dia.	OEM
721023	in.	.3102"	1.715"	18023-87
721024	ex.	.3095"	1.478"	18024-87

Valves for 1948 thru 1965 Panhead Big Twin models

ZPN	Type	Stem dia.	Head dia.	OEM
721030	in.	.3760"	1.750"	18071-48
721029	ex.	.3748"	1.750"	18082-57

Valves for 1966 thru 1984 Shovelhead Big Twin models

ZPN	Type	Stem dia.	Head dia.	OEM
721028	in.	.3767"	1.940"	18074-66
721029	ex.	.3748"	1.750"	18082-57

Valves for 1984 thru 1999 Evolution Big Twins

ZPN	Type	Stem dia.	Head dia.	OEM
721021	in.	.3102"	1.844"	18074-83A
721022	ex.	.3095"	1.610"	18082-83

Valves for 1999 thru 2004 Twin Cam 88 models

ZPN	Type	Stem dia.	Head dia.	OEM
721021	in.	.3102"	1.844"	18074-83A
721022	ex.	.3095"	1.610"	18082-83

ROWE PRO 900 STAINLESS STEEL DYNA-FLO VALVES

Rowe USA has produced a World Class 900 Stainless Steel series of aftermarket High Performance valves for the demanding Harley-Davidson motor builder. Intake and exhaust valves are forged from the very best Stainless Steel with 21% Chrome and 4% Nickel

Outstanding features are:

- Designed for High Flow
- Intake & Exhaust valves forged in one piece from 21-4N Stainless Steel
- Heat-treated wafer tip on the rocker arm end
- Precision CNC machined throughout
- Final finish with a swirl polished tulip area
- Special Black Melonite (salt bath Nitriding) heat treated
- Laser marked with "Rowe USA"
- Individually boxed in an attractive Orange & Black designer box
- Supplied with "Sliker 'n Snott" assembly oil

Use Rowe Black Melonite valves if no Stainless Steel valves are listed.

Valves for 1999 thru 2004 Twin Cam 88 models

ZPN	Type	Stem dia.	Head dia.	Tulip Profile	Length	OEM
720639	in.	.3105"	1.900"	23°	4.400"	Over size head
720638	ex.	.3098"	1.570"	25°	4.533"	18085-99

Valves for 1986 thru 2003 XL 883 Evolution Sportsters

ZPN	Type	Stem dia.	Head dia	Tulip Profile	Length	OEM
720643	in.	3105"	1.585"	23°	4.556"	18031-86
720644	in.	.3105"	1.715"	23°	4.556"	Over size head for 883 to 1200 conversions
720645	ex.	.3098"	1.350"	23°	4.642"	18030-86
720646	ex.	.3098"	1.480"	32°	4.625"	Over size head for 883 to 1200 conversion

ROWE VALVES WITH ROLLER BURNISHED STEM

Rowe's valves with Roller Burnished stem have the finest grind finish available. Intake valves are made of 8645 heat treated valve steel, exhaust valves are made of 21-2N heat treated non-magnetic stainless steel. The Roller Burnishing finish is the finest grind finish (16 microinch) to a 4 microinch. For selected models there are High Performance valves with oversize heads available.

ZPN	Type	Stem dia.	Head dia.	OEM
1932 thru 1973 45 CI Solo & Servicar models				
721052	in.	.3395"	1.625"	18070-32
721053	ex.	.3390"	1.625"	18080-32
1958 thru 1969 Ironhead Sportster models				
721048	in.	.3094"	1.822"	18070-58
721049	ex.	.3388"	1.562"	18033-80
1970 thru 1985 Ironhead Sportster models				
721046	in.	.3097"	1.940"	18027-80
721047	ex.	.3391"	1.562"	18033-80
1986 thru 2003 Evolution Sportster 883 models				
721040	in.	.3102"	1.585"	18031-86
721041	ex.	.3095"	1.350"	18030-86
1986 Evolution Sportster 1100 models				
721038	in.	.3102"	1.844"	18023-86
721039	ex.	.3095"	1.610"	18024-86
1987 thru 2003 Evolution Sportster 1200 models				
721036	in.	.3102"	1.715"	18023-87
721037	ex.	.3095"	1.478"	18024-87
1937 thru 1948 74 CI and 80 CI Flathead Big Twin models				
721054	in./ex.	.3710"	1.930"	18072-37 & 18082-37

ZPN	Type	Stem dia.	Head dia.	OEM
1936 thru 1947 Knucklehead Big Twin models				
721050	in.	.3745"	1.755"	18071-36
721051	ex.	.3740"	1.750"	18081-36
1948 thru 1965 Panhead Big Twin models				
721044	in.	.3760"	1.750"	18071-48
721043	ex.	.3748"	1.750"	18022-57
1966 thru 1984 Shovelhead Big Twin models				
721042	in.	.3767"	1.940"	18074-66
721043	ex.	.3748"	1.750"	18022-57
1984 thru 1999 Evolution Big Twins				
721034	in.	.3102"	1.844"	18074-83A
721064	in.	.3102"	1.944"	Over size head
721035	ex.	.3095"	1.610"	18082-83
1999 thru 2004 Twin Cam 88 models				
721034	in.	.3102"	1.844"	18074-83A
721064	in.	.3102"	1.944"	Over size head
721035	ex.	.3095"	1.610"	18082-83

ROWE'S BLACK MELONITE VALVES

Rowe's "Black Melonite" intake valves are made of valve steel, exhaust valves are made of 21-2N non-magnetic stainless steel. The "Black Melonite" finish is very hard and slippery, resulting in less wear and reduced friction characteristics compared with normal stainless steel or nickel plated valves. Valves are laser marked with "Rowe USA" and come in an attractive Orange & Black box.

ZPN	Type	Stem dia.	Head dia.	OEM
1932 thru 1973 45CI Solo & Servicar models				
721018	in.	.3395"	1.625"	18070-32
721019	ex.	.3395"	1.625"	18080-32
1958 thru 1969 Ironhead Sportster models				
721014	in.	.3094"	1.822"	18070-58
721015	ex.	.3388"	1.562"	18033-80
1970 thru 1985 Ironhead Sportster models				
721012	in.	.3094"	1.822"	18027-80
721013	ex.	.3388"	1.562"	18033-80
1986 thru 2003 Evolution Sportster 883 models				
721006	in.	.3102"	1.585"	18031-86
721007	ex.	.3095"	1.350"	18030-86
2004 to present Evolution Sportster 883 models				
722518	in.	7 mm	1.585"	18053-04
722519	ex.	7 mm	1.350"	18059-04
1987 thru 2003 Evolution Sportster 1200 models				
721004	in.	.3102"	1.844"	18023-87
721005	ex.	.3095"	1.610"	18024-87
2004 to present Evolution Sportster 1200 and Buell models				
722520	in.	7 mm	1.807"	18690-02
722521	ex.	7 mm	1.575"	186901-02
2001 to present V-Rod models				
722647	in.	6 mm	1.575"	18664-01K
722649	ex.	6 mm	1.356"	18663-01K

ZPN	Type	Stem dia.	Head dia.	OEM
1937 thru 1948 74CI and 80CI Flathead Big Twin models				
721020	in./ex.	.3710"	1.930"	18072-37 & 18082-37
1936 thru 1947 Knucklehead Big Twin models				
721016	in.	.3745"	1.755"	18071-36
721017	ex.	.3740"	1.750"	18081-36
1948 thru 1965 Panhead Big Twin models				
721010	in.	.3760"	1.750"	18071-48
721009	ex.	.3748"	1.750"	18082-57
721059	ex.	.3748"	1.906"	Over size head
1966 thru 1984 Shovelhead Big Twin models				
721008	in.	.3767"	1.940"	18074-66
721009	ex.	.3748"	1.750"	18082-57
721059	ex.	.3748"	1.906"	Over size head
1984 thru 1999 Evolution Big Twins				
721069	in.	.3102"	1.844"	18074-83A
721003	ex.	.3095"	1.610"	18082-83
1999 thru 2004 Twin Cam 88 models				
721069	in.	.3102"	1.844"	18074-83A
721003	ex.	.3095"	1.610"	18082-83
2005 to present Twin Cam 88 models				
722648	in.	7mm	1.804"	18074-05
722650	ex.	7mm	1.572"	18085-05

ROWE-PRO VALVE SEATS FOR UNLEADED FUEL

Tungsten alloyed with Chrome, Molybdenum and Vanadium in a tool steel base creates an extremely strong alloy. This gives Rowe valve seats a greater wear resistance and better ability to withstand higher heat than common valve seats. Rowe seats can safely operate in excess of 1400° Fahrenheit (760° Celsius) where common valve seats loose their hot hardness at about 1100° Fahrenheit (593° Celsius). Rowe valve seats have an initial hardness of Rockwell "C" 42 that rises to 50 Rockwell during the first few hours of running time. The material hardens during this period through the work of heat and valve impact against the seat. This increased hardness greatly reduces seat distortion and extends the life of both valve and seat. Rowe-Pro valve seats will not cause valve and valve seat pocketing and recession. These seats cut cleanly and easily with existing tooling and will not clog the cutters or stones. Recommended press fit is .006" to .007" in aluminum heads and .004" to .005" in cast iron heads. Valve seats are available in stock size as well as in over size where applicable. There is also an "Emergency Oversize" seat available that might save you from buying new heads. All valve seats are sold each. Applications as well as sizes are listed.

Fits Sportster 900 models

Intake	Exhaust	
721086	**721085**	Stock

Fits Sportster 1000 models

Intake	Exhaust	
721084	**721085**	Stock

Fits 1986 to present Evolution Sportster 883 models

Intake	Exhaust	
721082	**721083**	Stock
721088	-	1st over size

Fits 1986 Evolution Sportster 1100 models

Intake	Exhaust	
721090	**721080**	Stock
721079	**721088**	1st over size
721091	-	2nd over size

Fits 1987 to present Evolution Sportster 1200 models

Intake	Exhaust	
721082	**721083**	Stock

Fits 1948 thru 1965 Panhead models

Intake	Exhaust	
721092	**721092**	Stock
721091	**721091**	1st over size
721079	**721079**	2nd over size

Fits 1966 thru 1984 Shovelhead models

Intake	Exhaust	
721081	**721092**	Stock
721093	**721091**	1st over size
-	**721079**	2nd over size

Fits 1984 to present Evolution Big Twin models and 1999 to present Twin Cam 88 models

Intake	Exhaust	
721090	**721080**	Stock
721079	**721088**	1st over size
721091	-	2nd over size

Emergency Oversize valve seat

Intake	Exhaust	
721087	**721087**	2.225" Outer Diameter, 1.562" Inside Diameter, .500" Height

Sizes by part number

ZPN	Outer dia.	Inner dia.	Height	Use cutter
721079	2.016"	1.625"	.453"	Adjustable
721080	1.754"	1.375"	.437"	Adjustable
721081	2.164"	1.750"	.453"	Adjustable
721082	1.880"	1.437"	.406"	Adjustable
721083	1.629"	1.187"	.380"	Adjustable
721084	2.068"	1.687"	.281"	Adjustable
721085	1.754"	1.437"	.250"	Adjustable
721086	2.005"	1.687"	.281"	Adjustable
721088	1.819"	1.375	.437"	1 13/16"
721089	1.944"	1.625"	.281"	1 15/16"
721090	2.007"	1.625"	.437"	2"
721091	2.007"	1.625"	.453"	2"
721092	2.007"	1.562"	.453"	2"
721093	2.194"	1.800"	.453"	2 3/16"
721094	2.060"	1.625"	.453"	Adjustable
721095	2.194"	1.750"	.453"	2 3/16"
721145	2.210"	1.750"	.453"	2 3/16
721146	2.016"	1.562"	.453"	2"
721148	2.007"	1.375"	.453"	2"
721149	1.953"	1.630"	.400"	1 15/16"
721159	1.7185"	1.385"	.400"	Adjustable
721251	2.137"	1.750"	.400"	Adjustable
721537	1.945"	1.562"	.400"	1 15/16"

Chart by Outside Diameter

ZPN	Outer dia.	Inner dia.	Height	Use cutter
721083	1.629"	1.187"	.380"	Adjustable
721159	1.7185"	1.385"	.400"	Adjustable
721080	1.754"	1.375"	.437"	Adjustable
721085	1.754"	1.437"	.250"	Adjustable
721088	1.819"	1.375	.437"	1 13/16"
721082	1.880"	1.437"	.406"	Adjustable
721089	1.944"	1.625"	.281"	1 15/16"
721537	1.945"	1.562"	.400"	1 15/16"
721149	1.953"	1.630"	.400"	1 15/16"
721086	2.005"	1.687"	.281"	Adjustable
721148	2.007"	1.375"	.453"	2"
721092	2.007"	1.562"	.453"	2"
721090	2.007"	1.625"	.437"	2"
721091	2.007"	1.625"	.453"	2"
721146	2.016"	1.562"	.453"	2"
721079	2.016"	1.625"	.453"	Adjustable
721094	2.060"	1.625"	.453"	Adjustable
721084	2.068"	1.687"	.281"	Adjustable
721251	2.137"	1.750"	.400"	Adjustable
721081	2.164"	1.750"	.453"	Adjustable
721095	2.194"	1.750"	.453"	2 3/16"
721093	2.194"	1.800"	.453"	2 3/16"
721145	2.210"	1.750"	.453"	2 3/16
721087	2.255"	1.562"	.500"	Adjustable

SUNNEN VALVE GUIDE PILOT KIT AND VALVE SEAT DRIVER KIT

Sunnen is known for their top quality tools for professionals. The valve guide pilot kit contains all drivers from .310" thru .380" for valve guide installation. Optionally this kit can be used with a valve seat driver kit. This valve seat driver kit is a must for mechanics that remove and install new valve seats. Available as a valve seat driver kit or in separate parts.

Valve seat driver kit, contains valve seat driver, valve seat driving rings 1 1/2" x 1 5/8", 1 3/4" x 1 7/8"& 2" x 2.215".
721096 Valve seat driver kit

Valve guide pilot kit for valve guides from .310" thru .380"
721144 Valve guide pilot kit

Replacement parts
721097 Valve seat driver
721098 Valve seat driving ring 1 1/2" x 1 5/8"
721099 Valve seat driving ring 1 3/4" x 1 7/8"
721100 Valve seat driving ring 2" x 2.215"

VALVE GUIDE OIL SEALS

Here is an oil seal Harleys have needed for years. This will dry the combustion chamber and end smoking problems, the all teflon seal. Sold in sets of 4. **Note:** Valve guides may need machining for proper installation.

With	Without	driver
231378	**236378**	Sportster 1957 thru 1985
231381	**236381**	Sportster 1986 thru 2003
231379	**236379**	Pan/Shovelhead 1948 thru early 1979
231380	**236380**	Shovelhead late-1979 thru 1984
231381	**236381**	1984 thru 1999 Evolution Big Twin and 1999 thru 2004 Twin Cam

SPECTRO ASSEMBLY LUBRICANT

Spectro assembly lubricant is recommended for initial scuff and wears protection in re-assembly and repair of engines. This is a heavy lubricant fortified with anti-scuff polymers. Spectro assembly lubricant when, applied to rings, cam lobes, gears and bearings, coats and plates completely and assuring total starting protection. It is compatible with all petroleum-based products. It also exhibits anti-rust properties for prolonged storage of engine or transmission parts.

741348 Spectro assembly lubricant, bottle of 4 oz
741335 Shop pack of 12 bottles

VALVE GUIDE OIL SEALS (SHOP PACKS)

Supreme quality oil seals in shop supply packs of 50 pcs. Complete with installation tool and re-usable protective sleeve for quick and full-proof installation. Installation tools are separately available.

231382 Fits Sportster 1957 thru 1985 intake, 50 pck.
231383 Fits Sportster 1957 thru 1985 exhaust, 50 pck.
231386 Fits Sportster Evolution 1986 thru 2003 in/ex, 50 pck.
231384 Fits Big Twin 1948 thru 1980 in/ex, 50 pck.
231385 Fits Big Twin 1980 thru 1984 in/ex, 50 pck.
231386 Fits Big Twin Evolution and Twin Cam thru 2004 , in/ex, 50 pck.

OIL BASED LAPPING COMPOUND

"Clover" is the brand used by all professional Harley-Davidson engine rebuilders for years. It gives a much smoother bearing surface finish than ordinary lapping compound. We highly recommend the use of Clover lapping compound with Jims lapping tools. Also works perfect for lapping valve seats.

721561 Coarse compound, 220 Grit (Micron finish of 32)

CRANE TEFLON VALVE GUIDE OIL SEALS FOR BIG TWINS

Valve guide oil seal kit for Big Twin engines from 1966 thru 2004. Each kit contains 4 teflon seals and an installation sleeve. Stock replacement kits fit straight on to stock size valve guides. There is also a Special Application kit available for 1999 thru 2004 Twin Cam models with full size aftermarket guides. The installation of this kit requires machining the guides with our ZPN 231387 531" diameter cutter body.

Stock replacement kits

231361 Fits Shovelhead, 1966 thru 1984, .531" guide, .375" stem

231366 Fits Evolution 1984 thru 1999 and Twin Cam 1999 thru 2004, .415" guide, 5/16" stem

Special application kits

231397 Fits Evolution 1984 thru 1999 and 1999 thru 2004 Twin Cam models with full size aftermarket valve guides, .531" guide, 5/16" stem

PRECISION MACHINING VALVE GUIDE OIL SEALS

For the professional engine builder we offer top quality valve guide oil seals by Precision Machining. Solid Teflon with double coil spring for tension on the valve stem and steel band to secure the seal to the guide. Come in a wide choice of sizes. Check out valve stem and valve guide diameter to order the correct pack of 4 pieces.

Number	Guide diam.	Stem diam.
236461	.415"	.311"
236455	.428"	.311"
236458	.500"	.311"
236457	.500"	.343"
236153	.531"	.311"
236454	.562"	.374"
236459	.562"	.343"

PRECISION MACHINING VALVE STEM SEALS FOR SHOVELHEAD, EVOLUTION AND TWIN CAM

These are the ultimate valve stem seals for Twin Cam, Evolution and Shovelhead models. The seals are surrounded by a metal jacket and lined with high temperature Viton. Sold as a set of 4.

Fits Shovelhead models 1966 thru 1984 (OEM 18000-81)
236154 Pack of 4 (.562" x .375")

Fits Evolution Big Twins 1984 thru 1999, Twin Cam 88 models 1999 thru 2004 and Evolution Sportsters 1986 thru 2003 (OEM 18001-83B)
237182 Pack of 4 (.420" x .310")

VALVE SEAL INSTALLATION TOOL

231393 Installation tool for Sportster 1957 thru 1985 and Big Twin 1980 thru 1984 (white)

231394 Valve seal installation tool Big Twin 1948 thru 1980 and Evolution powered Big Twin 1984 thru 1999, Twin Cam 1999 to present and Sportster 1984 to present (black)

VALVE GUIDE MACHINING TOOL

Order a cutter body and cutter body pilot for your application to machine oil seal seats or to shorten valve guides. Works on valve guides that are already installed in the cylinder head.

Cutter bodies

231387 For Sportster 1957 thru 1985

231389 For Big Twin 1948 thru early 1979

231388 For Big Twin late 1979 thru 1984

Cutter body pilots

231391 For Sportster 1957 thru 1985 (intake)

231392 For Sportster 1957 thru 1985 (exhaust)

231390 For Big Twin 1948 thru 1984

ROWE-PRO VALVE GUIDE PUSHER KIT

Rowe's professional valve guide pusher kit lets you push the guide into the head by using a hand wrench rather than drive it in with a punch. Recommended press fit is .0015" to .002". There are two kits available. One for 5/16" bore guides as used in Evolution motors, the other for 3/8" bore guides as used in pre-Evolution motors. Parts are also available separately. **Note:** Not designed for use with air wrenches!

Pre-Evolution pusher kit, contains stud, thrust washer and needle bearing
721139 3/8" Pusher kit

Replacement parts for 3/8" kit
721140 Needle thrust bearing
721141 Thrust washer
721142 Stud

Evolution pusher kit, contains stud, thrust washer and needle bearing
721135 5/16" Pusher kit for Evolution

Replacement parts for 5/16" kit
721136 Needle thrust bearing
721137 Thrust washer
721138 Stud

ROWE AMPCO-45 NICKEL BRONZE VALVE GUIDES

Rowe's Ampco-45 valve guides are made from American made nickel-bronze, precision machined and roll stamped with make, model, size and the Rowe-USA name. Nickel bronze has excellent self-lubricating qualities and gives minimal distortion during installation. Rowe Guides require finish honing from 1/2 to 1 thousands (.0005"-.0010") for a perfect fit. Sold each.

Fits 1948 thru 1979 Panhead and Shovelhead Big Twin

Intake	Exhaust	Size
720953	**720964**	Std. (.5655")
720954	**720965**	+.001"
720955	**720966**	+.002"
720956	**720967**	+.003"
720957	**720968**	+.004"
720958	**720969**	+.005"
720959	**720970**	+.006"
720960	**720971**	+.008"
720961	**720972**	+.010"
720962	**720973**	+.012"
720963	**720974**	+.020"

Fits 1979 thru 1984 Shovelhead Big- Twin

Intake	Exhaust	Size
720931	**720942**	Std. (.6245")
720932	**720943**	+.001"
720933	**720944**	+.002"
720934	**720945**	+.003"
720935	**720946**	+.004"
720936	**720947**	+.005"
720937	**720948**	+.006"
720938	**720949**	+.008"
720939	**720950**	+.010"
720940	**720951**	+.012"
720941	**720952**	+.020"

Fits 1986 thru 2003 Evolution Sportster, 1984 thru 1999 Evolution Big Twin and 1999 thru 2004 Twin Cam 88

Intake/Exhaust	Size
720924	Std. (.5620")
720925	+.001"
720926	+.002"
720927	+.003"
720928	+.004"
720929	+.006"
720930	+.012"

Fits 1957 thru early 1983 Ironhead Sportster

Intake	Exhaust	Size
720995	**720999**	Std. (.5645")
720996	**721000**	+.001"
720997	**721001**	+.002"
720998	**721002**	+.003"

Fits XR 750 & XR 1000

Intake	Exhaust	Size
720983	**720989**	Std. (.5643")
720984	**720990**	+.001"
720985	**720991**	+.002"
720986	**720992**	+.004"
720987	**720993**	+.006"
720988	**720994**	+.010"

Fits late 1983 thru 1985 Sportster

Intake	Exhaust	Size
720975	**720979**	Std. (.5645")
720976	**720980**	+.001"
720977	**720981**	+.002"
720978	**720982**	+.003"

Fits 2001 to present V-Rod

Intake/Exhaust	Size
722522	Std. (.3950")
722523	+.001"
722524	+.002"
722525	+.004"
722526	+.006"
722527	+.008"
722528	+.010"

07

ROWE "PRO" HONED CAST IRON VALVE GUIDES

Rowe's "Pro" honed cast iron valve guides are made from fine grain, heat treated cast iron. The outer diameter has been ground between centers for concentricity and the internal diameter is honed to tenths. Cast iron has good self-lubricating properties and is easy to machine. Sold each.

Rowe "Pro" honed cast iron valve guides for 1929 thru 1973 45CI Flathead

Intake/Exhaust	Size
720807	Std. (.5645")
720808	+.001"
720809	+.002"
720810	+.004"
720811	+.006"

Rowe "Pro" honed cast iron valve guides for 1937 thru 1948 Flathead Big Twin

Intake/Exhaust	Size
720812	Std. (.5950")
720813	+.001"
720814	+.002
720815	+.004"
720816	+.006"

Rowe "Pro" honed cast iron valve guides for 1936 thru 1948 Knucklehead Big Twin

Intake	Exhaust	Size
720795	**720801**	Std. (.5950")
720796	**720802**	+.001"
720797	**720803**	+.002"
720798	**720804**	+.003"
720799	**720805**	+.004"
720800	**720806**	+.006"

Rowe "Pro" honed cast iron valve guides for 1948 thru 1965 Panhead and 1965 thru early 1979 Shovelhead Big Twin

Intake	Exhaust	Size
720737	**720747**	Std. (.5655")
720738	**720748**	+.001"
720739	**720749**	+.002"
720740	**720750**	+.003"
720741	**720751**	+.004"
720742	**720752**	+.005"
720743	**720753**	+.006"
720744	**720754**	+.008"
720745	**720755**	+.010"
720746	**720756**	+.012"

Rowe "Pro" Big Top honed cast iron valve guides for 1948 thru 1965 Panhead and 1965 thru early 1979 Shovelhead Big Twin

Rowe "Pro" Big Top valve guides have a from .562" to .625" increased top to allow the use of ZPN 231380 valve guide oil seals.

Intake	Exhaust	Size
720757	**720767**	Std. (.5655")
720758	**720768**	+.001"
720759	**720769**	+.002"
720760	**720770**	+.003"
720761	**720771**	+.004"
720762	**720772**	+.005"
720763	**720773**	+.006"
720764	**720774**	+.008"
720765	**720775**	+.010"
720766	**720776**	+.012"

Rowe "Pro" honed cast iron valve guides for late 1979 thru 1984 Shovelhead Big Twin

Intake	Exhaust	Size
720697	**720707**	Std. (.6245")
720698	**720708**	+.001"
720699	**720709**	+.002"
720700	**720710**	+.003"
720701	**720711**	+.004"
720702	**720712**	+.005"
720703	**720713**	+.006"
720704	**720714**	+.008"
720705	**720715**	+.010"
720706	**720716**	+.012"

Rowe "Pro" high lift honed cast iron valve guides for late 1979 thru 1984 Shovelhead Big Twin

These valve guides have a flange type top and are .040" shorter on the spring side to allow the use of high lift cams.

Intake	Exhaust	Size
720717	**720727**	Std. (.6245")
720718	**720728**	+.001"
720719	**720729**	+.002"
720720	**720730**	+.003"
720721	**720731**	+.004"
720722	**720732**	+.005"
720723	**720733**	+.006"
720724	**720734**	+.008"
720725	**720735**	+.010"
720726	**720736**	+.012"

Rowe "Pro" honed cast iron valve guides for 1986 thru 2003 Evolution Sportster, 1984 thru 1999 Evolution Big Twin and 1999 thru 2004 Twin Cam 88

Intake	Exhaust	Size
720657	**720667**	Std. (.5620")
720658	**720668**	+.001"
720659	**720669**	+.002"
720660	**720670**	+.003"
720661	**720671**	+.004"
720662	**720672**	+.005"
720663	**720673**	+.006"
720664	**720674**	+.008"
720665	**720675**	+.010"
720666	**720676**	+.012"

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Rowe "Pro" Big Top honed cast iron valve guides for 1986 thru 2003 Evolution Sportster, 1984 thru 1999 Evolution Big Twin and 1999 thru 2004 Twin Cam 88

Rowe "Pro" Big Top valve guides have a from .420" to .531" increased top to allow the use of ZPN 236153 valve guide oil seals. Guides are also .200" shorter than stock to allow the use of high lift cams.

Intake	Exhaust	Size
720677	**720687**	Std. (.5620")
720678	**720688**	+.001"
720679	**720689**	+.002"
720680	**720690**	+.003"
720681	**720691**	+.004"
720682	**720692**	+.005"
720683	**720693**	+.006"
720684	**720694**	+.008"
720685	**720695**	+.010"
720686	**720696**	+.012"

Rowe "Pro" honed cast iron valve guides for 1957 thru early 1979 Ironhead Sportster

Intake	Exhaust	Size
720785	**720790**	Std. (.5645")
720786	**720791**	+.001"
720787	**720792**	+.002"
720788	**720793**	+.003"
720789	**720794**	+.004"

Rowe "Pro" honed cast iron valve guides for late 1979 thru early 1985 Ironhead Sportster models

Intake	Exhaust	Size
720777	**720781**	Std. (.5645")
720778	**720782**	+.001"
720779	**720783**	+.002"

ROWE "TRU-BORE" CAST IRON VALVE GUIDES

Rowe's "Tru-Bore" cast iron valve guides are made from fine grain, heat treated cast iron. The outer diameter has been ground between centers for concentricity. Cast iron has good self-lubricating properties and is easy to machine. Sold each.

Rowe "Tru-Bore" cast iron valve guides for 2002 to present V-Rod

Intake/Exhaust	Size
722640	Std. (.3950")
722641	+.001"
722642	+.002"
722643	+.004"
722644	+.006"
722645	+.008"
722646	+.010"

Rowe "Tru-Bore" cast iron valve guides for 1948 thru 1965 Panhead and 1965 thru early 1979 Shovelhead Big Twin

Intake/Exhaust	Size
720868	Std. (.5655")
720869	+.001"
720870	+.002"
720871	+.003"
720872	+.004"
720873	+.005"
720874	+.006"
720875	+.008"
720876	+.010"
720877	+.012"

Rowe "Tru-Bore" Big Top cast iron valve guides for 1948 thru 1965 Panhead and 1965 thru early 1979 Shovelhead Big Twin

Big Top valve guides have a from .562" to .625. increased top to allow the use of ZPN 231380 valve guide oil seals.

Intake/Exhaust	Size
720878	Std. (.5655")
720879	+.001"
720880	+.002"
720881	+.003"
720882	+.004"
720883	+.005"
720884	+.006"
720885	+.008"
720886	+.010"
720887	+.012"

Rowe "Tru-Bore" cast iron valve guides for late 1979 thru 1984 Shovelhead Big Twin

Intake/Exhaust	Size
720838	Std. (.6245")
720839	+.001"
720840	+.002"
720841	+.003"
720842	+.004"
720843	+.005"
720844	+.006"
720845	+.008"
720846	+.010"
720847	+.012"

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Rowe "Tru-Bore" high lift cast iron valve guides for late 1979 thru 1984 Shovelhead Big Twin

These valve guides have a flange type top and are .040. shorter on the spring side to allow the use of high lift cams.

Intake/Exhaust	Size
720848	Std. (.6245")
720849	+.001"
720850	+.002"
720851	+.003"
720852	+.004"
720853	+.005"
720854	+.006"
720855	+.008"
720856	+.010"
720857	+.012"

Rowe "Tru-Bore" high lift cast iron valve guides for late 1979 thru 1984 Shovelhead Big Twin

These valve guides have a flange type top with a to .531. reduced top to allow the use of ZPN 236453 or ZPN 231361 valve stem seals. They are also .060" shorter on the spring side to allow the use of high lift cams.

Intake/Exhaust	Size
720858	Std. (.6245")
720859	+.001"
720860	+.002"
720861	+.003"
720862	+.004"
720863	+.005"
720864	+.006"
720865	+.008"
720866	+.010"
720867	+.012"

Rowe "Tru-Bore" cast iron valve guides for 1986 thru 2003 Evolution Sportster, 1984 thru 1999 Evolution Big Twin models and 1999 thru 2004 Twin Cam 88

Intake/Exhaust	Size
720817	Std. (.5620")
720818	+.001"
720819	+.002"
720820	+.003"
720821	+.004"
720822	+.006"
720823	+.012"

Rowe "Tru-Bore" cast iron valve guides for 2005 to present Twin-Cam 88

Intake/Exhaust	Size
722651	Std. (.5620")
722652	+.001"
722653	+.002"
722654	+.003"
722655	+.004"
722656	+.006"
722657	+.012"

Rowe "Tru-Bore" Big Top cast iron valve guides for 1986 thru 2003 Evolution Sportster, 1984 thru 1999 Evolution Big Twin and 1999 thru 2004 Twin Cam 88

Big Top valve guides have a from .420" to .531" increased top to allow the use of ZPN 236153 valve guide oil seals. Guides are also .200". shorter than stock to allow the use of high lift cams.

Intake/Exhaust	Size
720824	Std. (.5620")
720825	+.001"
720826	+.002"
720827	+.003"
720828	+.004"
720829	+.006"
720830	+.012"

Rowe "Tru-Bore" Big Top cast iron valve guides with solid flange for 1986 thru 2003 Evolution Sportster, 1984 thru 1999 Evolution Big Twin models and 1999 thru 2004 Twin Cam 88 models

Big Top valve guides are designed by Zipper's for use in build motors. They are .200. shorter on the spring side and .100" shorter on the hot side and have a solid flange to ensure precise location in the cylinder head. They also have a from .420" to .531" increased top to allow the use of ZPN 236153 valve guide oil seals.

Intake/Exhaust	Size
720831	Std. (.5620")
720832	+.001"
720833	+.002"
720834	+.003"
720835	+.004"
720836	+.006"
720837	+.012"

Rowe "Tru-Bore" cast iron valve guides for 1957 thru early 1983 Ironhead Sportster models

Intake	Exhaust	Size
720898	**720903**	Std. (.5645")
720899	**720904**	+.001"
720900	**720905**	+.002"
720901	**720906**	+.003"
720902	**720907**	+.004"

Rowe "Tru-Bore" cast iron valve guides for late 1983 thru 1985 Ironhead Sportster models

Intake	Exhaust	Size
720888	**720893**	Std. (.5620")
720889	**720894**	+.001"
720890	**720895**	+.002"
720891	**720896**	+.003"
720892	**720897**	+.004"

BRONZE VALVE GUIDES BY PRECISION MACHINING

Precision machining valve guides are made from the highest quality materials available. Each individual part is inspected during each machining operation. Outside diameter is precision machined between centers to ensure concentricity. Each part is clearly identified to facilitate easy storage. For each type of engine there is an extra large "Repair Type" oversize guide available. Inside bore diameter is .001" smaller than the valve stem diameter and must be reamed to size for a perfect fit and long life. These superb guides are the best money can buy. Sold each.

Silicon bronze valve guides for Ironhead Sportster models 1957 thru 1983
Intake: A = .470", B = .545",
C = .700", D = 1.225", E = .745",
F = .3085", G = .5650"
Exhaust: A = .470", B = .545",
C = .600", D = 1.225", E = .745",
F = .3375", G = .5650"

Intake	Exhaust	Size
232365	**232370**	STD. (0.5650")
232366	**232371**	+.002"
232367	**232372**	+.004"
232368	**232373**	+.006"
232369	**232374**	+.050"

AMPCO 45 Bronze valve guides Evolution Sportster models 1986 thru 2003
A = .375", B = .375", C = 1.700",
D = 2.025", E = –, F = .3090",
G = .5620"

Intake/Exhaust	Size
232352	STD. (0.5620")
232426	+.001"
232353	+.002"
232427	+.003"
232354	+.004"
232428	+.005"
232355	+.006"
232356	+.010"

Ampco 45 Bronze Valve Guides Big Twin 1948 thru 1979 (Panhead & Shovelhead)
Intake: A = .450", B = .540",
C = .755", D = 1.370", E = .745",
F = .3745", G = .5650"
Exhaust: A = .450", B = .540",
C = .855", D = 1.315", E = .745",
F = .3745", G = .5650"

Intake	Exhaust	Size
232310	**232328**	STD. (0.5650")
232321	**232329**	+.001"
232322	**232330**	+.002"
232323	**232331**	+.003"
232324	**232332**	+.004"
232325	**232333**	+.005"
232326	**232334**	+.006"
232418	**232420**	+.008"
232327	**232335**	+.010"
232419	**232421**	+.025"

AMPCO 45 Bronze valve guides Big Twin 1979 thru 1984 (Shovelhead)
Intake: A = .450", B = .540",
C = .755", D = 1.315", E = .745",
F = .3755", G = .6250"
Exhaust: A = .450", B = .540",
C = .775", D = 1.315", E = .745",
F = .3737", G = .6250"

Intake	Exhaust	Size
232336	**232344**	STD. (0.6250")
232337	**232345**	+.001"
232338	**232346**	+.002"
232339	**232347**	+.003"
232340	**232348**	+.004"
232341	**232349**	+.005"
232342	**232350**	+.006"
232422	**232424**	+.008"
232343	**232351**	+.010"
232423	**232425**	+.025"

AMPCO 45 Bronze valve guides for thin stem valves. Big Twin 1948 thru 1979 (Panhead & Shovelhead)
Intake: A = .450", B = .540",
C = .755", D = 1.370", E = .745",
F = .3095", G = .5650"
Exhaust: A = .450", B = .540",
C = .855", D = 1.315", E = .745",
F = .3375", G = .5650"

Intake	Exhaust	Size
232357	**232361**	Std. (0.5650")
232358	**232362**	+.002"
232359	**232363**	+.004"
232360	**232364**	+.010"

AMPCO 45 Bronze valve guides for thin stem valves. Big Twin 1979 thru 1984 (Shovelhead)
Intake: A = .450", B = .540",
C = .775", D = 1.370", E = .745",
F = .3095", G = .6250"
Exhaust: A = .450", B = .540",
C = .775", D = 1.315", E = .745",
F = .3380", G = .6250"

Intake	Exhaust	Size
232410	**232414**	Std. (0.6250")
232411	**232415**	+.002"
232412	**232416**	+.004"
232413	**232417**	+.010"

AMPCO 45 Bronze valve guides Evolution Big Twin 1984 thru 1999 and Twin Cam 88 models 1999 thru 2004
A = .375", B = .375", C = 1.700",
D = 2.025", E = –, F = .3090",
G = .5620"

Intake/Exhaust	Size
232352	STD. (0.5620")
232426	+.001"
232353	+.002"
232427	+.003"
232354	+.004"
232428	+.005"
232355	+.006"
232356	+.010"

ROWE "TRU-BORE" CAST IRON THIN STEM VALVE GUIDES

Rowe's "Tru-Bore" cast iron valve guides are made from fine grain, heat treated cast iron. The outer diameter has been ground between centers for concentricity. These valve guides are made for the use of "Thin Stem" valves. Cast iron has good self-lubricating properties and is easy to machine. Sold each.

Rowe "Tru-Bore" cast iron Thin Stem valve guides for 1948 thru 1965 Panhead and 1965 thru early 1979 Shovelhead Big Twin models

Intake	Exhaust	Size
720916	**720920**	Std. (.5655")
720917	**720921**	+.002"
720918	**720922**	+.004"
720919	**720923**	+.006"

Rowe "Tru-Bore" cast iron Thin Stem valve guides for late 1979 thru 1984 Shovelhead Big Twin models

Intake	Exhaust	Size
720908	**720912**	Std. (.6245")
720909	**720913**	+.002"
720910	**720914**	+.004"
720911	**720915**	+.006"

AMPCO VALVE GUIDES FOR V-ROD

Valve guides for all V-Rod models 2002 to present. Made in the USA by Kibblewhite Precision Machining. As AMPCO material has other characteristics as what is used for the OEM valve guides intake and exhaust guides have, unlike OEM, different sizes.

Intake	Exhaust	Size
750534	**750539**	Std. (.3959")
750535	**750540**	+.001"
750536	**750541**	+.002"
750537	**750542**	+.004"
750538	**750543**	+.010"

Intake: A= .590", B= .640", C= 1.060", D= 1.260, E= .440", F= .2350", G = .3959"
Exhaust: = .555", B= .605", C= 1.150", D=1.275", E= .440", F= .2350", G= .3959"

AMPCO 45 VALVE GUIDES WITH VALVE STEM SEALS

Special shouldered guide that will work with up to .600" valve lift. These guides are supplied with a one-piece Viton seal that locks onto a machined groove in the guide. Precision Machining claims that these seals never come off.

Fits Evolution Sportster 1986 thru 2003, Evolution Big Twin 1984 thru 1999 and Twin Cam 88 models 1999 thru 2004

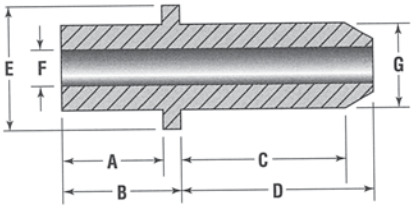
Intake: A = .650", B = .700" C = .800",
D = 1.400", E = .615", F = .3085",
G = .5620"
Exhaust: A = .650", B = .700",
C = 1.150", D = 1.450", E = .615",
F = .3085", G = .5620"

Intake	Exhaust	Size
236130	**236156**	Std. (.5620")
236131	**236157**	+.001"
236132	**236158**	+.002"
236133	**236159**	+.004"
236134	**236160**	+.006"
236135	**236161**	+.010"
730043	Replacement seals, set of 4	

Fits Sportster models 2004 to present and Twin Cam 88 models 2005 to present

Intake: A= .725", B= .775", C= .800",
D= .1.280", E= .615", F= .275",
G= .5620"
Exhaust: A= .725", B= .775",
C= 1.030", D= .1.280", E= .615",
F= .275", G= .5620"

Intake	Exhaust	Size
750411	**750416**	Std. (.5620")
750412	**750417**	+.001"
750413	**750418**	+.002"
750414	**750419**	+.004"
750415	**750420**	+.010"
750431	Replacement seals, set of 4	



AMPCO-45 SHOULDERED VALVE GUIDES

These Precision Machining valve guides feature a small shoulder to ensure precise location of the guide in the cylinder head. Shoulder does not interfere with the bottom collar and allows up-to .600 valve lift without machining the guide. To be even more accurate, Precision Machining made a difference between the measurements of the intake and exhaust valve guides.

AMPCO 45 Bronze valve guides for Evolution Sportster 1986 thru 2003, Evolution Big Twin 1984 thru 1999 and Twin Cam 88 models 1999 thru 2004
Intake: A = .650", B = .700",
C = .800", D = 1.400", E = .615",
F = .3085", G = .5620"
Exhaust A = .650", B = .700",
C = 1.150", D = 1.450", E = .615",
F = .3085", G = .5620"

Intake	Exhaust	Size
234269	**234277**	Std. (0.5620")
234270	**234278**	+.001"
234271	**234279**	+.002"
234272	**234280**	+.003"
234273	**234281**	+.004"
234274	**234282**	+.005"
234275	**234283**	+.006"
234276	**234284**	+.010"

CAST IRON VALVE GUIDES WITH VALVE STEM SEALS

Special shouldered guide that will work with up to .600" valve lift. These guides are supplied with a one-piece Viton seal that locks onto a machined groove in the guide. Performance Machining claims that these seals never come off.

Fits Twin Cam 88 models 2005 to present
Intake: A= .725", B= .775", C= .800",
D= .1.280", E= .615", F= .275",
G= .5620"
Exhaust: A= .725", B= .775",
C= 1.030", D= .1.280", E= .615",
F= .275", G= .5620"

Intake	Exhaust	Size
750426	**750421**	Std. (.5620")
750427	**750422**	+.001"
750428	**750423**	+.002"
750429	**750424**	+.004"
750430	**750425**	+.010"
750431	Replacement seals, set of 4	

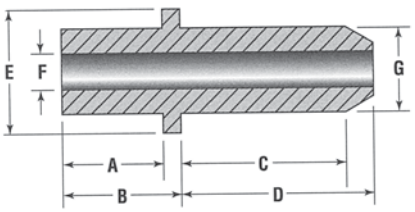
CAST IRON SHOULDERED VALVE GUIDES BY KIBBLEWHITE PRECISION MACHING

Like the shouldered AMPCO-45 valve guides from Precision Machining these cast iron valve guides also have a small shoulder to ensure precise location of the guide in the cylinder head. Shoulder does not interfere with the bottom collar. Guide accepts .600" valve lift.

Intake: A = .650", B = .700",
C = .800", D = 1.400", E = .615", F = .3085", G = .5620"
Exhaust: A = .650", B = .700",
C = 1.150", D = 1.450", E = .615",
F = .3085", G = .5620"

Fits Evolution Sportster 1986 thru 2003, Evolution Big Twin 1984 thru 1999 and Twin Cam 88 models 1999 thru 2004

Intake	Exhaust	Size
234870	**234880**	STD (0.5620")
234871	**234881**	+.001"
234872	**234882**	+.002"
234873	**234883**	+.003"
234874	**234884**	+.004"
234875	**234885**	+.005"
234876	**234886**	+.006"
234877	**234887**	+.007"
234878	**234888**	+.008"
234879	**234889**	+.010"



CAST IRON VALVE GUIDES BY PRECISION MACHINING

Precision Machining offers a complete line of high quality cast iron valve guides for most Harley-Davidson models from 1948 to present. These guides are manufactured to precise tolerances, from the highest quality cast iron available on today's market. You can't get better!

Cast iron valve guides for Ironhead Sportster 1957 thru 1983

Intake: A = .470", B = .545",
C = .700", D = 1.225", E = .745",
F = .3085", G = .5650"
Exhaust: A = .470", B = .545",
C = .600", D = 1.225", E = .745",
F = .3375", G = .5650"

Intake	Exhaust	Size
234205	234213	Std. (0.565")
234206	234214	+.001"
234207	234215	+.002"
234208	234216	+.003"
234209	234217	+.004"
234210	234218	+.005"
234211	234219	+.006"
234212	234220	+.010"

Cast iron valve guides for Evolution Sportster 1986 thru 2003

A = .375", B = .375", C = 1.700",
D = 2.025", E = –, F = .3090",
G = .5620"

Intake/Exhaust	Size
234261	Std. (0.5620")
234262	+.001"
234263	+.002"
234264	+.003"
234265	+.004"
234266	+.005"
234267	+.006"
234268	+.010"

Fits Evolution Sportster 1986 thru 2003

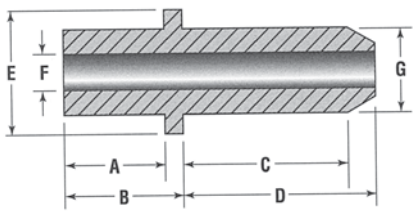
These valve guides are machined to take 0.562" valve stem seals ZPN 236454.
A = .375", B = .375", C = 1.700",
D = 2.025", E = –, F = .3090",
G = .5620"

Intake/Exhaust	Size
236122	Std. (0.5620")
236123	+.001"
236124	+.002"
236125	+.003"
236126	+.004"
236127	+.005"
236128	+.006"
236129	+.010"

Cast iron valve guides for Panhead and Shovelhead Big Twin models 1948 thru 1980

Intake: A = .450", B = .540",
C = .755", D = 1.370", E = .745",
F = .3745", G = .5650"
Exhaust: A = .450", B = .540",
C = .855", D = 1.315", E = .745",
F = .3745", G = .5650"

Intake	Exhaust	Size
234221	234231	Std. (0.5650")
234222	234232	+.001"
234223	234233	+.002"
234224	234234	+.003"
234225	234235	+.004"
234226	234236	+.005"
234227	234237	+.006"
234228	234238	+.008"
234229	234239	+.010"
234230	234240	+.025"



Cast iron valve guides for Shovelhead Big Twin 1980 thru 1984

Intake: A = .450", B = .540",C = .755",
D = 1.315", E = .745", F = .3755",
G = .6250"
Exhaust: A = .450", B = .540",
C = .775", D = 1.315", E = .745",
F = .3737", G = .6250"

Intake	Exhaust	Size
234241	234251	Std. (0.6250")
234242	234252	+.001"
234243	234253	+.002"
234244	234254	+.003"
234245	234255	+.004"
234246	234256	+.005"
234247	234257	+.006"
234248	234258	+.008"
234249	234259	+.010"
234250	234260	+.025"

Cast iron valve guides for Evolution Big Twin 1984 thru 1999 and Twin Cam 88 models 1999 thru 2004

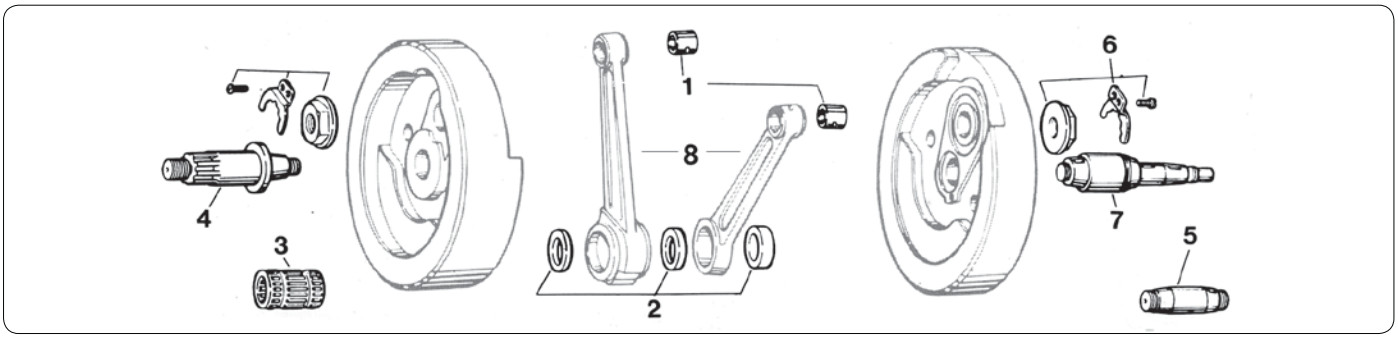
A = .375", B = .375", C = 1.700",
D = 2.025", E = –, F = .3090",
G = .5620"

Intake/Exhaust	Size
234261	Std. (0.5620")
234262	+.001"
234263	+.002"
234264	+.003"
234265	+.004"
234266	+.005"
234267	+.006"
234268	+.010"

Fits Evolution Big Twin 1984 thru 1999 and Twin Cam 88 models 1999 thru 2004

These valve guides are machined to take 0.562" valve stem seals ZPN 236454.
A = .375", B = .375", C = 1.700",
D = 2.025", E = –, F = .3090",
G = .5620"

Intake/Exhaust	Size
236122	Std. (0.5620")
236123	+.001"
236124	+.002"
236125	+.003"
236126	+.004"
236127	+.005"
236128	+.006"
236129	+.010"



REPLACEMENT PARTS FOR BIG TWIN CRANK SHAFT

A wide selection of high quality replacement parts for all Big Twin models 1936 thru 1999. Each part is quality checked. Crank pins and shafts are machined from super tough, aircraft quality steel, heat treated and hardened to 61-63 on the Rockwell scale.

1. Piston Pin Bushing

231426 Fits Big Twin 1936 to present, sold each (OEM 24334-36)
232376 Nickel Bronze, fits all Big-Twin models 1936 to present, sold each (OEM 24334-36)

2. Connecting Rod Races

049507 Fits Big Twin 1936 to present, set of 3 races (male & female) (OEM 24345-36A & 24356-36A)

3. Roller Retainer Assy

049509 Fits Big Twin 1940 thru 1986, includes short and long rollers with retainers (OEM 24385-40B)

Rod Rollers Big Twin 1973 up (100 pack)Long rollers (Std. size .1875 X.585)

710248 Long -.0002" (OEM 9185)
710240 Long STD. (OEM 9186)
710242 Long +.0004 (OEM 9181)
710244 Long +.0008 (OEM 9183)
710245 Long +.001 (OEM 9184)
710246 Long +.002
710247 Long +.003

Short rollers (Std. size .1875 X .294)

710257 Short -.0002" (OEM 9450A)
710249 Short STD. (OEM 9441A)
710251 Short +.0004 (OEM 9443A)
710253 Short +.0008 (OEM 9445A)
710254 Short +.001 OEM 9446A)
710255 Short +.002
231411 Short +.003

Rod Roller Retainer 1940 up

233595 Set front and rear (OEM 24366-51)
233587 Front only (OEM 24367-71)
233588 Rear only (OEM 24366-71)

Jims Extra Heavy Duty Rod Roller Retainers

These American made retainers are

made from 1144 stress proof billet steel and have one side open for better oil flow in the crank pin bearing. These are the ultimate in rod roller retainers and fit all Big Twin models from 1941 thru 1999. Used by all High Performance and race engine builders all over the world. Sold in a pack of 4.

235995 Rod Roller Retainers (OEM 24366-51)

Torrington Connecting Rod Bearing sets for Big Twins

These American made Torrington rod bearing sets consists of three packaged bearings with 16 rollers in steel cages. They will retro-fit in all single cam Big

Twin models 1941 thru 1999. These bearing sets are available in standard size only.

721531 Fits 1941 thru 1999 Big-Twins (24356-87A)

Jim's "Extra Long" Rod Rollers for Big Twin 1973 thru 1999

These rollers are USA made from aerospace quality 52100 bearing material. Fits Big Twin models 1941 to present but must be used with Jims steel Heavy Duty rod roller retainers (ZPN 235995). Rollers are precision ground within the tightest tolerances and are available in stock and over sizes. Sold in packs of 100.

Long rollers fits male rod

(Std. size .1875" X .660")

233999 Long Std. (OEM 9171A)
233483 Long +.0004"(OEM 9173A)
233490 Long +.0006"(OEM 9174A)
233491 Long +.0008"(OEM 9175A)
233493 Long +.001" (OEM 9176A)
233497 Long +.002"
233458 Long +.003"

Short rollers fits female rod

(Std. size .1875" X .325")

233979 Short Std. (OEM 9101A)
233980 Short +.0002"(OEM 9102A)
233981 Short +.0004"(OEM 9103A)
233982 Short +.0006"(OEM 9104A)
233983 Short +.0008"(OEM 9105A)
233984 Short +.0010"(OEM 9106A)
233985 Short +.0020"
233986 Short +.0030"

Jims Extra Heavy Duty Rod Races
Made from 52100 aerospace quality Timken bearing steel and sold in a set of three. We recommend the use these races in combination with our Extra Heavy Duty roller retainers for High Performance or racing engine. Stock inside diameter is 1.622" and stock outside diameter is 1.8195". These rod races can be used on all Big Twin models from 1941 to present (24345-36A & 24356-36A).

235996 Extra Heavy-Duty rod race set

4. Sprocket Shaft Big Twin
231560 Fits 1930 thru 1954 (OEM 24001-30)
231561 Fits 1956 thru 1964 (OEM 24001-56)
231562 Fits 1965 thru 1969 (OEM 24001-65)
231563 Fits 1970 thru 1971 (OEM 24001-70)
032413 Fits 1972 thru early 1981 (OEM 24001-72)
231494 Fits 1981 thru 1985 (OEM 23909-80)

5. Crank Pins for Big Twin
032411 Fits 1941 thru early 1981 (OEM 23961-41)
032409 Fits late 1981 to present (OEM 23961-80A)

6. Crank Pin Nut Kit Big Twin thru 1981
231564 Kit complete, contains 2 nuts, 2 locks and 2 screws (OEM 23966-78)
231565 Nuts only (2 pcs) (OEM 23966-54A)

7. Pinion Shaft for Big Twin
231566 Fits 1939 thru 1953 (OEM 24007-39)
231567 Fits 1954 thru 1957 (OEM 24006-55)
231568 Fits 1958 thru 1972 (OEM 24006-58)
231569 Fits 1973 thru early 1981 (OEM 24006-73)
235840 Fits late 1981 thru 1986 (OEM 24006-80/83)

8. See Conrod Section
Flywheel Washer set for Big Twin Fits Big Twins 1970 to present.
038000 Set 2, (OEM 6506)
231992 Set 2, USA made (OEM 6506)

Crankshaft Lock Plates Big Twin
Sold in 10 Packs.
032371 Fits 1936 to 1972 zinc finish (OEM 24015-36)
032369 Fits 1972 to 1981 zinc finish (OEM 24018-72)

JIMS FLYWHEEL SOCKETS
Look no further for the best flywheel rebuilding sockets available. Zodiac offers these low-profile flywheel sockets, which are just long enough to give 100% nut to sprocket contact and 100% drive end contact. Machined flat at the nut receiving end to eliminate rounding off the nut and greatly reducing the risk of bodily injury. These sockets are machined from solid steel 4130 chromium-molybdenum and heat treated to give a lifetime of service. Available in various models for use on Big Twin models from 1954 to present and Sportster models from 1981 to present.

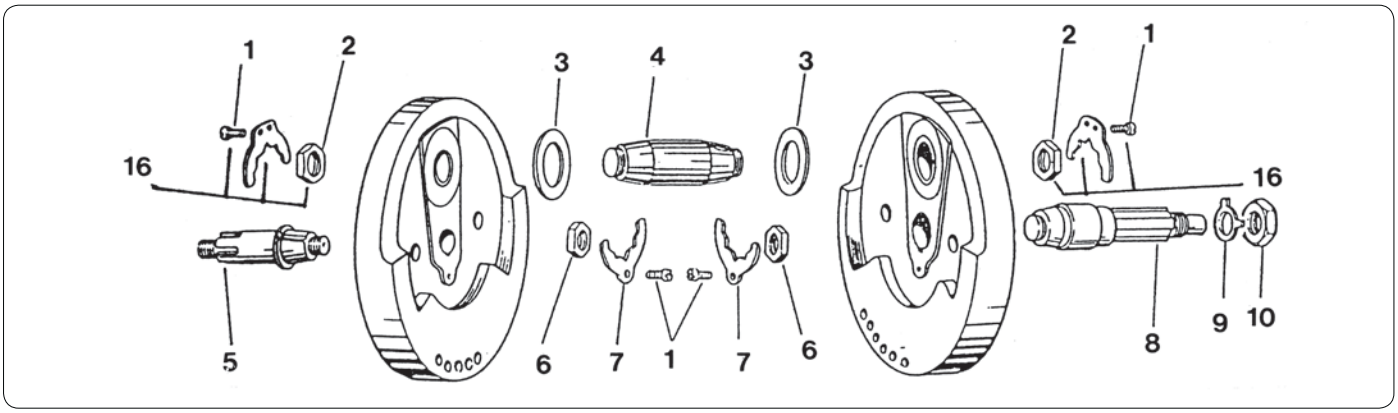
236213 For use on Big Twins 1954 thru early 1981, 1 5/16" socket with 1/2" drive
236216 For use on Big Twins 1972 to present, 1 5/8" socket with 3/4" drive
236215 For use on Big Twins late 1981 thru 1989, 1 1/4" socket with 1/2" drive
236214 For use on Big Twins late 1983 to present, 1 1/2" socket with 1/2" drive
236217 For use on Sportsters 1981 to present, 1 3/8" socket with 1/2" drive

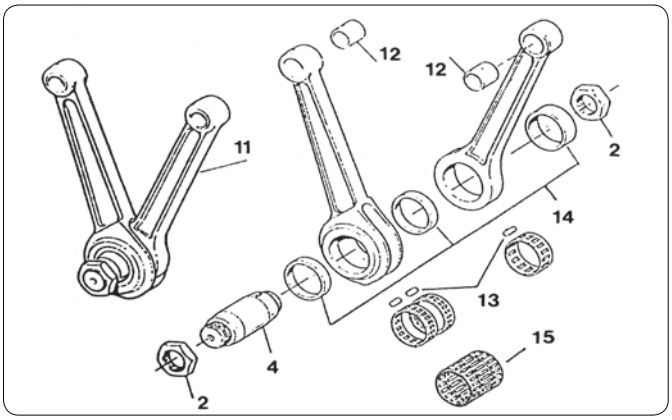
P.M. NICKEL-BRONZE WRIST PIN BUSHINGS
Performance Machining manufactures these wrist pin bushings from top quality nickel-bronze. The high quality features of nickel-bronze make it suitable for the manufacturing of high stress bushings. Recommended for high-performance and racing engines.

232375 Fits all Sportster and WL models (OEM 24331-36)
232376 Fits all Big Twin models 1936 to present (OEM 24334-36)

JIMS PISTON PIN BUSHINGS FOR TWIN CAM MODELS
Jims Twin Cam 88 piston pin bushings. For removal and installation, use Jims tool ZPN 720490. To ream to correct size, use Jims tool ZPN 711285 wrist pin reamer. Bushing O.D. is 1.020". Sold in packs of 2.

721532 Twin Cam piston pin bushings (OEM 24316-99)

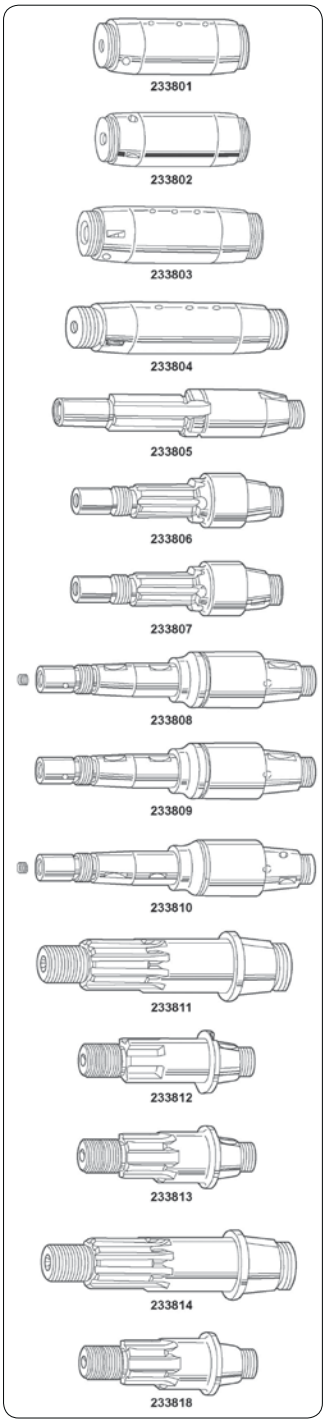




REPLACEMENT PARTS FOR SPORTSTER CRANKSHAFT

High quality replacement parts for all Sportster models. Each part is quality checked for accurate measurements. Crank pins and shafts are made from super tough, aircraft quality steel, heat treated and hardened to 61-63 on the Rockwell scale.

1. Lock Plate Screw (25 pack)
231828 Screw 10-24x3/8, fits 1954 up (OEM 2660)
2. Crank Pin Nut
231827 Fits 1954 thru 1985, pair (OEM 23967-54A)
235823 Fits 1981 thru 1999, pair (OEM 23901-81)
3. Flywheel Washer
038000 Fits 1972 thru late 1987 (OEM 6506)
231992 Fits 1972 thru 1987 USA made (OEM 6506)
233494 Fits 1987 thru 1999 USA made (OEM 6508)
4. Crank Pins
032407 Fits 1957 thru 1980 (OEM 23960-54)
303002 Fits 1981 thru 1999, 2-hole version to replace OEM 23960-80A
5. Sprocket Shaft
231829 Fits 1957 thru 1976 (OEM 24000-57)
231830 Fits 1977 thru 1980 (OEM 24000-75)
231795 Fits 1981 thru 1985 (OEM 24000-80)
6. Sprocket and Pinion Shaft nut
231831 Fits 1954 thru 1980 (OEM 8011)
231789 Fits 1981 thru 1985 (OEM 23902-81)
7. Sprocket and Pinion Shaft Lock Plate
032371 Fits 1957 thru 1980 (OEM 24015-36), dealer 10-pack
8. Pinion Shafts
233805 Fits 1957 thru 1976 (OEM 24005-57)
231833 Fits 1977 thru early 1981 (OEM 24005-75)
231794 Fits late 1981 thru 1985 (OEM 24005-80)
9. Lock Plate Pinion Shaft Nuts
231834 Fits 1977 to present (OEM 7044), dealer 10-pack
10. Pinion Gear nut
231835 Fits 1977 thru 1990 (OEM 7913)
11. Connecting Rod Assembly
231993 Fits 1957 thru 1980 (OEM 24275-57A)
231979 Fits 1981 thru 1985 (OEM 24275-80A)
231980 Fits 1986 thru 1999 (OEM 24275-86A)
12. Piston pin Bushing
231826 Fits 1954 to present (OEM 24331-36)
232375 Nickel Bronze, fits all Sportster and WL models (OEM 24331-36)
13. Rod Rollers 1954 thru early 1986 (100 pack)
Long rollers fit male rod (Std. size .1875" X .480")
710266 Long -.0020" (OEM 9161)
710258 Long Std. (OEM 9150A)
710259 Long +.0002" (OEM 9152A)
710260 Long +.0004" (OEM 9154A)
710261 Long +.0006" (OEM 9156A)
710262 Long +.0008" (OEM 9158A)
710263 Long +.0010" (OEM 9160A)
710264 Long +.0020" (OEM 9417)
710265 Long +.0030" (OEM 9450AA)
Short rollers fit female rod (Std. size .1875" X .294")
710257 Short -.0020" (OEM 9450A)
710249 Short Std. (OEM 9441A)
710250 Short +.0002" (OEM 9442A)
710251 Short +.0004" (OEM 9443A)
710252 Short +.0006" (OEM 9444A)
710253 Short +.0008" (OEM 9445A)
710254 Short +.0010" OEM 9446A)
710255 Short +.0020" (OEM 9418)
710256 Short +.0030" (OEM 9441AA)
Rod Roller Retainer 1952-up
233596 Set front and rear (OEM 24370-52B)
233589 Front only (OEM 24364-54A)
233590 Rear only (OEM 24362-54A)
14. Connecting Rod Races
049506 Fits 1954 thru 1999, set male and female (OEM 24352-52A & 24341-52A)
15. Roller Retainer Assembly
049508 Fits 1954 thru 1999 (OEM 24370-52B)
16. Crank Pin Nut and Lock Plate kit
231792 Kit contains 2 nuts, 2 lock plates and 2 screws (OEM 23967-79)



SUPER SHAFTS WITH LIFETIME WARRANTY BY ACCEL

Nobody in the industry has offered replacement engine parts good enough to be backed with a "no questions asked" lifetime replacement warranty. Until now! With Accel's new line of severe service crank pins and flywheel shafts, dealers servicing Harley-Davidson can now set up their customers lower ends with peace of mind, whatever the application. From completely stock to fully modified, Accel backs up its Super Shaft warranty to the customer in writing. If any Accel shaft or pin fails at any time for any reason, Accel will replace it free to the consumer directly from the factory. The Super Shaft program covers popular Harley-Davidson V-Twin with only 15 part numbers (four crank pins, six pinion shafts, and five sprocket shafts), providing coverage for most XL's 1954 to present and Big Twins 1941 to present. Each part is individually packaged in protective four color Accel display boxes for maximum point-of-purchase impact.

Crank Pins		
ZPN	OEM	Application
233801	23960-54	1954-1981 K,XL,XLH,XLCH
233804	23961-80A	1981-present Big Twins
Pinion Shafts		
ZPN	OEM	Application
233805	24005-57	1957-1976 XL,XLH,XLCH
233806	24005-75	1977-early 1981 XL's
233807	24005-80	1981-1985 XL w/Common Taper
233808	24006-58	late 1958-1972 FL, FLH, FX 3/4"-18
233809	24006-73	1973-1981 Big Twins 3/4"-18
233810	24006-83	1983-1986 Big Twins
Sprocket Shafts		
ZPN	OEM	Application
233812	24000-57	1957-1976 XL, XLH, XLCH
233813	24000-75	1977-1981 XL, XLCH, XLS
233818	24000-80	1981-1985 XL, XLS, XLX
233814	24001-72	1972-1981 FL, FX Models
233811	23909-80	1981-1985 FX, FLH80, Classic

Accel's Super Shafts feature:

- 3 Hole crank pin design distributes oil equally to rod races;
- Special thread annealing withstands extra nut torque; Precision grinding provides low friction 16 micro-finish bearing surfaces;
- Machined from super tough, aircraft rated Durabar 60 steel;
- Deep heat treating provides ultra hard 60-63 Rockwell finish;
- Computer machined tapers guarantee concentricity within .0003"
- Made in the USA with American steel, you can buy cheaper shafts and pins but not better ones!

JIMS USA MADE SPROCKET SHAFTS

These aircraft quality sprocket shafts by Jim's Machining offer you the best quality available on the market. They are precision machined, heat treated and then ground to a perfect finish. Available for Sportster and Big Twin models.

Sportster models

235829 Fits models from 1957 thru 1976 (OEM 24000-57)
235830 Fits models from 1977 thru early 1981 (OEM 24000-75)
235831 Fits models from late 1981 thru 1985 (OEM 24000-80)

Big Twin models

235832 Fits models from 1972 thru early 1981 (OEM 24001-72)
235828 Fits models late 1981 thru early 1985 (OEM 23909-80)
235862 1/4" longer, fits models late 1981 thru early 1985
235863 3/4" longer, fits models late 1981 thru early 1985

JIMS USA MADE PINION SHAFTS

Jims Machining makes these high quality pinion shafts from high quality aircraft alloy steel. According to Jims they are the finest on the market and are used by the worlds most famous engine builders. Highly recommended for High Performance engines. Jims pinion shafts are available for most Sportster and Big Twin models.

Sportster models

235835 Fits 1957 thru 1976 models (OEM 24005-57)
235837 Fits 1977 thru early 1981 models (OEM 24008-75A)

Big Twin models

235838 Fits 1958 thru 1972 models (OEM 24006-58)
235839 Fits 1973 thru early 1981 models (OEM 24006-73)
235840 Fits late 1981 thru 1986 models, metered oil hole plugs included (OEM 24006-80/83).

Note: Late 1981 thru early 1983 models require the late 3/4"-20 nut ZPN 235833 (OEM 24016-80).

235841 Fits 1987 thru 1989 models, metered oil hole plugs included (OEM 24006-87)
741920 Fits 1981 thru 1999 Evolution models, must be used with 1981 thru 1989 style aftermarket stroker flywheels and 1993 thru 1999 nose cone cover, pre-1990 pinion gear and pre-1990 oil pump drive gear, and late 3/4"-20 nut ZPN 235833 (OEM 24016-80)
711290 Same as ZPN 741920, but for use in crankcases with 1/4" offset cam chest as used in S&S and Merch engines

NUTS FOR CRANK PINS, SPROCKET AND PINION SHAFTS

These USA made nuts now give the ultimate in flywheel holding power. The mating face of each nut has been ground to a 32 surface finish and held square to threads within .0005". This in turn will pull the shafts straight into the flywheels and simplify flywheel turning. But it did not stop there, each nut is machined on state of the art CNC lathes and heat treated to make these nuts the toughest and the best available on the market today.

Crank pin nut sets

235826 Fits Sportster models from 1954 thru early 1981, 1"-20 thread (OEM 23967-54A)
235823 Fits Sportster models late 1981 to present and Stroker motors 1954 thru early 1981, check for clearances, 1"-20 thread (OEM 23901-81)
231565 Fits Big Twin models from 1954 thru early 1981. 1"-18 thread (OEM 23966-54A)
235827 Fits Big Twin models late 1983 thru 1999, 1"-20 thread (OEM 23969-83)

Pinion gear and sprocket shaft nuts

235833 Pinion gear shaft Big Twin models late 1981 thru 1989, 3/4"-20 thread (OEM 24016-80)
711451 Fits pinion gear shaft Big Twin models late 1981 thru 1989, 3/4"-20 thread (OEM 24016-80)
235834 Fits sprocket shaft Big Twin models 1972 thru early 1985, 1 1/8"-16 thread (OEM 24017-80)

JIMS AMERICAN MADE CRANK PINS

The crank pin is the heart of your engine. Why take a chance, everything revolves around this component! For that reason Jim's Machining in the USA has spent three years developing the ultimate crank pins available. Made from aerospace quality alloy bar steel, made to perfection by Jim's. The pins offer excellent strength and toughness. They are ground to a 16 micron finish with a diamond grinding wheel then polished to a 6 micron finish. Available for Sportster and Big Twin models.

For Sportster Models

235817 Crank pin, fits Sportster models 1954 thru early 1981 (OEM 23960-54)

235818 Crank pin, fits Sportster models late 1981 to present (OEM 23960-80A)

For Big Twin Models

235819 Fits Big Twin models 1941 thru early 1981 (OEM 23961-41)

235820 Crank pin with special 180 degree oiling system for more complete lubrication on bearing diameter, fits 1941 thru early 1981 Big Twin models (OEM 23961-41)

235821 Crank pin, fits Big Twin models late 1981 to present (OEM 23961-80)

Note: Late 1981 thru early 1983 models require 1"-20 TPI nuts (ZPN 235827).

DRAG-RACE CRANK PINS

These crank pins are made from premium aero-space alloy steel bar. Chromium nickel molybdenum steel offers excellent strength and toughness. This is hardened before heat treating to 60-62 Rockwell, to a case depth of .100". Each pin is machined with a "J" thread, making the thread 20-30% tougher. Drag-race crank pin are laser marked with individual serial numbers for documentation and come complete with two high performance crank pin nuts and key.

235847 Fits Sportster models 1981 to present (OEM 23960-80)

233457 Fits Big Twin models 1941 thru early 1981 (OEM 23961-41)

235846 Fits Big Twin models late 1981 to present (OEM 23961-80)

4 1/4" FLYWHEELS BY S&S

Stock stroke flywheels for building stock 80 cubic inch motors. Machined from heat-treated, steel forgings which makes them structurally superior to cast iron designs. Flywheels come without shafts and rods (OEM 23922-80 & 23926-80).

234931 Flywheel set stock stroke

4 5/8" STROKER FLYWHEELS BY S&S

Our Big Twin flywheel sets are made to fit all OHV Big Twin models from 1972 thru 1999 and include both sprocket and pinion shaft and accepts 1981 up crank pin (when installed in pre 1981 models, a 1981 up crank pin must be used). Flywheel diameter is a 1/4" smaller than stock for maximum flywheel to piston skirt clearance and to provide as much piston thrust as possible. Flywheel must be balanced to the piston/conrod weight they are used with. This kit must be used with our 104 Cubic inch Sputhe Big Bore kit and will increase your cubic inches to:

- With stock 74 CI (1200 cc) bore to 86 CI (1410 cc),
- with stock 80 CI (1340 cc) bore to 89 CI (1458 cc),
- with 3 5/8" Big Bore to 96 CI (1573 cc),
- with Sputhe Big Bore to 104 CI (1704 cc).

232719 S&S 4 5/8" stroker flywheels

CUSTOM MADE FLYWHEELS

Note: S&S stroker and racing flywheels. We can supply any type of flywheel set or flywheel/conrod combination, balanced or unbalanced, for street or race application on special order. Just let us know what you want, which cases you are going to use it in and what purpose you are going to use it for and we will make sure you get the right combination. For more information contact Zodiac or your Zodiac dealer.

S.E. STROKER CRANK SHAFTS FOR TWIN CAM

These 4 3/8" stroker cranks turn your Twin Cam 88 into a Mean Machine when used in conjunction with our Wiseco 4" bore "Sleeper" pistons found elsewhere in this chapter. This enlarges the capacity of a Twin Cam engine from 88 into 110 Cubic Inches. Flywheels and connecting rods are made from high strength forgings, than fully machined and than balanced. Cranks feature a straight press crank pin and bearings as used in OEM crankshafts. Cranks are available for 1999 thru 2006 Twin Cam "A" models, as well as for the Twin Cam B, balanced, engines as used in 2000 thru 2006 Softail models. Installation in 2003 and later models requires the use of the optional bearing assembly ZPN 231697.

231692 Stroker crank for 2000 thru 2006 present Twin-Cam Softail models
231693 Stroker crank for 1999 thru 2005 Twin Cam Dyna and 1999 thru 2006 FLH/FLT models
231697 Optional bearing assembly needed to install stroker cranks in 2003 thru 2006 models

CRANKSHAFT ASSEMBLIES FOR SHOVELHEAD AND EVOLUTION BIG TWIN

These crankshaft assemblies for 80 Cubic Inch (1.340 cc) models are exactly made to the OEM specifications. They are ready to install and balanced for use with stock pistons. The early style 5 piece crankshaft is the exact same type as the one used in 1978 thru 1984 Shovelhead as well as the 1984 thru 1989 Evolution Big Twin. The late style crankshaft, as used in 1993 thru 1999 Evolution Big Twin, has flywheels that are one-piece with the sprocket-, and pinion shaft respectively. Both crankshafts can also be used in 1990 thru 1992 models when installed with the appropriate oil pump gear, pinion gear and nut. Great for engine (re-)builds.

744462 Fits 1978 thru 1984 Shovelhead and 1984 thru 1989 Evolution Big Twin (OEM 23906-78G)
744461 Fits 1993 thru 1999 Evolution Big Twin (OEM 23906-93B)

JIMS SOLID BILLET STEEL H-BEAM BIG TWIN CONNECTING ROD SETS

Connecting rods at their finest. The Jims connecting is machined from a solid certified aerospace-quality 4340 moly steel. Each rod is heat treated, magnafluxed, shot peened and completely inspected with a hardness test for each rod. Rod race bores and wrist pin bushing bores are within .0003" of each other at a 32 bore finish for the best possible bushing and race adhesion. The wrist pin bushing oiling hole has been optimized for better lubrication of wrist pins, and an increase in the strength. Jims chose H-beam for stability and strength for both drag racing and any street application over the standard I beam rods. Each rod set has Jims rod races and wrist pin bushings installed and are fit to factory specifications. These H-beam rods are available in 7.690", 7.960" and 8.250" length, as well as with stock .791" diameter or oversized .925" wrist pin bushings. Can be used in all 1941 thru 1999 High Performance Big Twin single cam motors.

721598 7.690" Length, .791" wrist pin bushing
721599 7.690" Length, .925" wrist pin bushing
721600 7.960" Length, .791" wrist pin bushing
721601 7.960" Length, .925" wrist pin bushing
721602 8.250" Length, .925" wrist pin bushing

SUPREME CONNECTING ROD SET BY S&S

232718 Supreme rod sets are designed as an extra heavy duty replacement for stock or modified Big Twin motors. Each set includes: connecting rods, crank pin with nuts and key, bearings and bearing retainers. They are precision honed to size and ready to install. Recommended for drag-strip application and any street situation where the best is wanted. Fits 1981 to present Big Twins.

Supreme rods feature:

- Drop forged from 4140 chrome-moly steel.
- Harder than stock heat treatment specifications.
- Beefier than stock construction.
- 3 hole crank pin for better oil distribution.
- Slotted thrust faces to help maintain the oil film.
- Additional rod to rod clearance to accommodate up-to 5 inch stroke.

Note: When installed in pre 1981 flywheels an up-to 1981 crank pin must be used.

S&S CONNECTING RODS FOR BIG TWINS

S&S revised the design and added material to the piston wrist pin area of their new forgings to achieve two very important benefits. The upper rod area, where the rod beam meets the wrist pin boss, has been blended together with a large, smooth radius that evenly distributes the stress load on the rod, and the small ends of the rods are now fully machined. This makes for a great looking set of rods, and increases strength by maintaining a uniform material thickness around the wrist pin. The machining process also keeps the difference between the small end weights of each rod to a minimum - allowing for the closest possible balancing job and a smoother running engine. S&S Heavy Duty connecting rods are top of the bill for street applications, where Supreme rods are originally developed for racing and other demanding applications. Connecting rod sets come complete with front and rear rod, steel bearing cages, and S&S crank pin. Available in stock 7.440" length for 1941 thru 1999 Big Twin models and stock 7.6668" length for 1999 to present Twin Cam models.

Heavy Duty	Supreme	
750647	**750649**	Fits 1941 thru 1981 Big Twins
750648	**750650**	Fits 1981 thru 1984 Big Twins
750651	**750652**	Fits 1984 thru 1999 Big Twins
750653	**N/A**	Fits 1999 to present Twin Cam models

CONNECTING ROD ASSEMBLY FOR BIG-TWIN

Complete replacement rod set for Harley Big-Twins 1941 thru early 1983. Each assembly includes 3-hole crank pin, crank pin nuts, rollers, late style aluminum retainers and piston pin bushings. Rod races are honed to OEM specifications. Rods are one piece chrome-moly construction.

711850 Fits 1941 thru 1973 OHV Big Twin models (OEM 24281-41A) NEW
711851 Fits 1974 to early 1981 (OEM 24281-74A)
232095 Fits late 1981 thru 1983 (OEM 24281-80)

CONNECTING ROD ASSEMBLY FOR 1957 TO PRESENT SPORTSTERS

Complete connecting rod assembly for Sportster models. Each set includes rods with piston pin bushings installed, crank pin with nuts and locks, rollers and retainers. Available for 1957 thru 1985 Ironhead models and 1986 thru 1999 Evolution models.

231993 Fits 1957 thru 1980 models (OEM 24275-57A)
231979 Fits 1981 thru 1985 models (OEM 24275-80A)
231980 Fits 1986 thru 1999 models (OEM 24275-86A)

CONNECTING ROD ASSEMBLY FOR EVOLUTION BIG TWIN

231772 These complete rod assemblies include crank pin, crank pin nut and locks, as well as rod rollers and retainers. Sets also include top bushing and lower rod race installed and honed to OEM spec. The rod blanks and retainers are made in Japan. The crank pin, rod races, piston pin bushing and crank pin nuts are made in USA. Fits Evolution Big Twins 1984 thru 1999 (OEM 24281-83).

ROD KIT FOR 45CI SIDEVALVE ENGINES

These quality connecting rods come in a furnished kit form. This complete kit fits all 45CI side valve engines from 1932 thru 1973. Includes front and rear rods, American made crank pin and bearing set, as well as bronze wrist pin bushings (OEM 27275-32K).

711852 Fits 1932 thru 1973 45CI side valve models

AXTELL CAST IRON CYLINDER KITS FOR EVOLUTION MODELS

Axtell's "Pro Street Performance Line" cylinders are made from 35.000 PSI cast iron and include angled-top pistons to raise compression while keeping a single shelf in the head. With a 10 : 1 compression ratio these cylinder kits will give you all the benefits of higher compression without sacrificing any of the "V2" superior mixture-burning qualities. Requires a slight combustion chamber modification that can be done by any qualified machine shop. Cylinder kits include forged pistons, made out of extruded billet low expansion aluminum alloy with chrome moly piston rings, tool steel wrist pins and buttons, and copper head gaskets.

Stock bore (3 1/2") cylinders and piston kit for use with stock stroke flywheels, 10 to 1 compression ratio
710100 Cylinder and piston kit 80 CI (1340 CC)

Replacement pistons, sold in sets complete with rings, pins and buttons
710102 Std. (+0.005")
710103 +.010
710104 +.020
710105 +.030

Big Bore (3 5/8") cylinders and piston kit for use with stock stroke flywheels, 10 to 1 compression ratio
710101 Cylinder and piston kit 86 CI (1438 CC)

Replacement pistons, sold in sets complete with rings, pins and buttons
710107 Std. 1438 CC
710108 +.010 1442 CC
710109 +.020 1446 CC
710110 +.030 1453 CC

Gasket and dowel pin fits 3 1/2" and 3 5/8" bore cylinders
710113 Dowel pin each
710114 Cylinder head O-ring

AXTELL ALUMINUM CYLINDER KITS FOR TWIN CAM MODELS

Axtell has applied their high standards of cylinder bore stability and designed the finest cylinder on the market to provide the base for engine builders to take the new Twin Cam engine to higher levels of performance. Available in 4" bore and stock stroke to build a 101 Cubic Inch Twin Cam Monster. Cylinders are black anodized with highlighted fins and come complete with .140" raised dome forged pistons, rings, pins, clips, gaskets, o-rings and dowels.

710163 Axtell Twin Cam 101" cylinder kit

Replacement parts
741880 4" bore cylinder head gasket set
741881 4" bore cylinder base gasket set

BILLET ALUMINUM CYLINDER KITS BY PATRICK RACING

These cylinders are CNC machined from a solid block of 6061-T6 aluminum with tolerances of less than .0001". They feature a high density centrifugal cast iron alloy sleeve. The alloy contains carbon chrome and molybdenum, with brinell hardness of 200. They come with J.E. Sportsman forged pistons and chrome-moly rings. Pistons will raise compression ratio to 10.25 to 1. Cylinder sets are available with stock 3 1/2". Cylinder height is 5.550".

237987 3 1/2" bore cylinder kit

NITRALLOY BIG BORE CYLINDER KITS FOR EVOLUTION ENGINES

Sputhe engineering has been manufacturing aluminum cylinders with cast in liners for Harley-Davidson since 1977, far longer than Harley-Davidson themselves. Their Nitralloy big bore cylinder assemblies for Big Twin, Evolution engines are thoroughly tested and manufactured from the best materials available to the most exacting standards in the industry. Nitralloy cylinders are cast in 383 aluminum, which has a tensile strength of 45.000 p.s.i. The aluminum is injected into a steel die at over 5.000 p.s.i., assuring perfect bond to the Lascomite sleeve. Lascomite is a "class 40" high tensile chrome-moly alloy having a high molecular pearlite structure. It is centrifugally spun cast and heat treated to a hardness of 200 Brinell. Not only is Lascomite harder than the cast iron that Harley-Davidson and the other aftermarket cylinder manufacturers use, it is much tougher and less brittle. The Lascomite sleeve in the Nitralloy cylinder is 60% thicker than the sleeve in the stock Evolution cylinder for increased rigidity. Nitralloy cylinders are stock height so that the cylinder studs, pushrods, exhaust pipes, manifold and motor mounts do not need to be modified. Heads and cylinders can be removed with the engine in the frame. The pistons are machined from zero silicon, high nickel T7 stabilized aluminium forgings. The cam and barrel taper skirt configurations were developed by computer thermal Expansion Modeling. Long full width skirts provide maximum stability for a superior ring seal. Both dished and flat crown pistons are available. Nitralloy piston pins are machined from solid billet E52100 bearing steel with a tensile strength of 300.000 psi. The Big Twin 104 cubic inch kit uses 4 5/8" stroke flywheels. We recommend ZPN 232719 flywheel set, which is manufactured by S&S and has a 1/4" smaller diameter flywheels for maximum piston skirt clearance.

Big Bore Kits Big Twin Evolution
Kits are available in 95 and 104 cubic inch (1560 and 1704 CC) with flat or dish top piston and fit 1984 to present Big Twin Evolution models. Kit includes cylinders, pistons, piston rings, piston pins with clips, and gaskets.

232720 Complete kit 95", dish top
232721 Complete kit 95", flat top
232722 Complete kit 104", dish top
232723 Complete kit 104", flat top

Note: When kits are installed following (in kit enclosed) installation instructions, the dish top piston will give a compression ratio of approximately 8.5:1. Flat top piston will give approximately 9.8:1.

Replacement pistons 95" kit

Size	Dish top Front	Dish top Rear	Flat top Front	Flat top Rear
Std.	**232726**	**232732**	**232729**	**232735**
+.010	**232727**	**232733**	**232730**	**232736**
+.020	**232728**	**232734**	**232731**	**232737**

Replacement pistons 104" kit

Size	Dish top Front	Dish top Rear	Flat top Front	Flat top Rear
Std.	**232738**	**232744**	**232741**	**232747**
+.010	**232739**	**232745**	**232742**	**232748**
+.020	**232740**	**232746**	**232743**	**232749**

Replacement parts Big Twin Kits,these parts fit both 95 ci. and 104 ci. kits

232750 Piston ring set std. (1 piston)
232752 Piston ring set oversize (1 piston), must be gapped to bore size!
232754 Piston pin
232753 Piston pin clips (4 pack)
232755 O-ring Head gasket
232756 Cylinder base gasket
232757 O-ring oil return

See also the Total Seal section

SPUTHE ENGINEERING, INC.

CYLINDERS

Cast iron alloy, stock displacement, standard replacement cylinders. Cyllinders are bored and honed to close tolerances, however due to variations in piston sizes we advise to check piston to cylinder clearances, to ensure high trouble free mileage. Sold each.

Cylinders for 61" Knucklehead (1000 CC) 1941 thru 1947
049118 Front (OEM 16483-36)
049120 Rear (OEM 16490-36)

Cylinders for 74" Knucklehead (1200 CC) 1941 thru 1947
049122 Front (OEM 16483-41)
049124 Rear (OEM 16491-41)

Cylinders for 74" Panheads (1200 CC) 1948 thru 1965
049103 Front (OEM 16483-48)
049104 Rear (OEM 16492-48)

Cylinders for 74" Shovelhead (1200 CC) 1966 thru 1979
049105 Front (OEM 16484-66B & 16485-74A)
049106 Rear (OEM 16492-66B & 16492-74A)

Cylinders for 80" Shovelhead (1340 CC) 1980 thru 1984
049125 Front (OEM 16494-78)
049126 Rear (OEM 16495-78)

BIG BORE CYLINDERS FOR SHOVELHEAD

These economically priced 3 5/8" Big Bore cylinders are cast in alloyed iron for greater strength than stock and offer a lower cost alternative for Big Bore engine building. They are precision machined for a perfect fit every time. The standard length works with OEM flywheels, +.200 must be used with after-market Stroker fly wheels.

049112 Front cylinder, STD length
049114 Rear cylinder, STD length
049108 Front cylinder, +.200
049109 Rear cylinder, +.200

Note: All cast iron cylinders are manufactured as STOCK replacement and should not be run at compression ratios higher than 8.5 to 1. Cylinders may require headbold set ZPN 231574/231577. Stock headbolds may not have sufficient clearance.

HIGH QUALITY REPLACEMENT CYLINDERS FOR EVOLUTION MODELS

These replacement cylinders have fine grain centrifugal cast ductile steel liners. The High Density of the liner material will improve the liner and piston live drastically. Unlike others these liners are securely cast into the aluminum cylinders. This is a more expensive but much better way of making cylinders. The cast-in liners have a much better heat transfer than pressed-in liners, resulting in a cooler and smoother running engine. Due to the variety in pistons that can be used with these cylinders we have honed them to a few thousands undersize. This leaves the possibility to hone the cylinders to the tolerances needed for the pistons used. Cylinders are available in natural aluminum or black wrinkle finish. Sold each.

Fits Evolution Sportster 883 models 1986 to present (OEM 16446-86A)
049131 Natural aluminum

Fits Evolution Sportster 1200 models 1988 to present (OEM 16447-88)
049130 Natural aluminum
049128 Black wrinkle finish

Fits Evolution Big Twin 1340 models 1984 thru 1999 (OEM 16510-83A)
049113 Natural aluminum
049127 Black wrinkle finish

S&S 3 5/8" BIG BORE POWER PACKAGE FOR EVOLUTION BIG TWIN

Harley performance people that know will confirm that "You can't beat cubic inches" S&S understand this and came up with the solution. First there is this Power Package. It will convert your Evolution Big Twin motor to 88 cubic inch (1.475 CC). This kit comes S&S aluminum cylinders, flat top forged pistons, rings, wrist pins, circlips and gaskets. The cylinders are precision bored and honed. These kits are easy to install and ready to run, as no cylinder head modifications are required, only the crankcases must be bored to accept the kit. As a low-cost option you may bore out your stock cylinder sleeves and replace them with our Wiseco 3 5/8" Big Bore sleeves in combination with S&S pistons. These pistons and sleeves used in combination with 4 1/4" stock stroke will also give you an 88 cubic inch (1.475 CC). Special pistons for use with S&S Super Stock heads are available separately.

S&S 3 5/8" Big Bore power packages for stock stroke

750782 With natural aluminum cylinders NEW
750783 With black powder coated cylinders NEW
235278 Wiseco 3 5/8" Big Bore sleeve (sold each)

Piston sets

Include front & rear pistons, wrist pin, circlips, rings, head and base gaskets. Ring sets are separately available in sets (for two pistons).

	NEW Complete piston sets for stock heads	Complete piston sets for S&S heads	Replacement piston rings for 2 piston)	
Std. 3.625" bore	**751335**	**750754**	**750722**	
+.010"	**751336**	**750755**	**750723**	
+.020"	**751337**	**750756**	**750724**	
+.030"	**751338**	**750757**	**750725**	
+.040"	**751339**	**750758**	**750726**	
+.050"	**751340**	**N/A**	**750971**	NEW
+.060"	**751341**	**750759**	**750727**	

WISECO 3 5/8" BIG BORE PISTONS AND SLEEVES FOR EVOLUTION BIG TWIN

These Wiseco 3 5/8" pistons and cylinder sleeves convert your Evolution Big Twin motor to 88 cubic inch (1.475 CC) and 9.25:1 compression ratio when used with a stock stroke crankshaft and with stock cylinder heads, or a massive 96 Cubic Inches (1.620CC) and 10.5:1 compression when used with 4 5/8" Stroker flywheels and stock cylinder heads. . Piston kits come with a pair of flat top forged pistons, rings, wrist pins, circlips and gaskets. You wil have to bore out your stock cylinder sleeves and replace them with our 3 5/8" Big Bore sleeves and pistons. Order the piston kit of your choice and 2 pieces Big Bore sleeves to get started.

235278 3 5/8" Big Bore sleeve (sold each)

Piston sets

Include front & rear pistons, wrist pin, circlips, rings, head and base gaskets. Ring sets are separately available in sets per piston.

Complete piston sets		**Ring sets for 1 piston**	
	Stock stroke	4 5/8" stroke	
Std. 3.625" bore	**235273**	**N/A**	**236227**
+.005"	**235274**	**238847**	**236228**
+.010"	**235275**	**238848**	**236229**
+.020"	**235276**	**238849**	**236230**
+.030"	**235277**	**N/A**	**236231**

Piston dome specification
All valve pocket specifications are measured from deck height

Dome Volume	Intake Pocket		Exhaust Pocket	
	Depth	Diameter	Depth	Diameter
-2 CC	-.202	2.120	-.202	2.120

WISECO PISTON

WISECO 80 CI BIG BORE KIT FOR V-ROD

What happens to a new Harley-Davidson V-Rod, when you leave it in Wiseco.s R&D Department to flog over the winter? The Wiseco Big Bore 1320cc V-Rod kit! Wiseco punches it out to 4.250" bore - the same size as a 454 Chevy and big enough to swallow the factory sleeve. Then Wiseco designs and forges the leading edge piston and ring package to compliment it. You would expect a piston that has grown from 3.937. to 4.250. in diameter to gain a lot of weight, right? Not so, thanks to the trick new dedicated forging coming out of Wiseco's in-house forging department, only a few grams. They also bumped the compression up to a reliable 12:1. Wiseco put a performance SuperTrapp exhaust on it and took it back to their in-house dyno to give you real horsepower numbers. You can expect another 30lbs of torque and horsepower that goes to a rubber melting 138HP at the countershaft. Installation of this kit requires the stock crankcases to be bored to accept big bore sleeve. Kit includes: Forged pistons, piston rings, clips, piston pins, gasket kit, O-ring kit, and sleeves.

234137 80CI Big Bore kit for V-Rod
234138 Replacement O-ring kit
234143 Replacement gasket kit
234144 Replacement piston ring set

Piston dome specification All valve pocket specifications are measured from deck height				
Dome Volume	Intake Pocket		Exhaust Pocket	
	Depth	Diameter	Depth	Diameter
-14.2 CC	-.225"	1.780"	-.195"	1.540"

WISECO 3 3/4" BIG BORE PISTON KITS FOR EVOLUTION BIG TWIN

These piston kits will convert your Big Twin motor to a 93.4 cubic inches (1.530 CC) Big Bore with stock stroke. Must be used in combination with a set of 3 3/4" bore cylinders. No cylinder head modification or re-balancing of the crankshaft required, just have your crankcase bored to the spigot size of these big bore cylinders. Compression ratio is 9.5 to 1 when using the stock Harley cylinder heads. For those who want even more Cubic Inches there is a 103 cubic inches (1.665 CC) piston kit that has to be used with 4 5/8" stroker flywheels installed. These pistons use the same cylinders as the 93.4 CI kit and give a compression ratio of 10.5:1. Kit includes a pair of Wiseco forged pistons, Hastings piston rings, wrist pin and piston pin clips.

Piston kits
238805 3 3/4" Piston kit for stock stroke
238846 3 3/4" Piston kit for 4 5/8" stroke

Replacement piston ring set (for one piston)
238813 Std. size

Replacement cylinder head and base gasket kit
238852 For two cylinders

Note: These kits are designed for use with 1984 thru 1989 and 1996 to present stock crankcases or any Delkron or S.T.D. crankcase. Due to a weaker construction of the stock 1990 thru 1995 crankcases the use of these is not recommended they should be replaced with Delkron or S.T.D. crankcases.

Piston dome specification All valve pocket specifications are measured from deck height				
Dome	Intake Pocket		Exhaust Pocket	
Volume	Depth	Diameter	Depth	Diameter
-2 CC	-.189"	2.000"	-.189"	2.000"

WISECO FORGED PISTON KITS

These Wiseco piston kits are exclusively designed to offer the Harley-Davidson owners many advantages over stock and other aftermarket pistons. The Wiseco pistons are forged design for superior strength over the stock cast pistons yet can be set-up at .0025 to .0035" clearance for quieter operation versus competitors forged pistons who require .005 to .006" clearance. Their weight is approximately 60 grams less than stock factory pistons for quicker revs and less strain on rods. Kits are available for Sportster, Shovelhead and Evolution models. Each kit includes 2 pistons with rings, pins and clips.

WISECO HIGH-COMPRESSION PISTON KITS FOR EVOLUTION SPORTSTERS AND BIG TWINS

Newly designed high-compression piston kits for Evolution engines. Wiseco forged pistons are well-known for their superior strength over stock cast pistons and can be set-up at .0025" to .0035" clearance for quieter operation. Compression ratio listed is with stock stroke. Each kit includes 2 pistons with rings, pins and clips.

	Sportster	Shovelhead		
Dome	1	2	3	4
Size	XL 1000 10 to 1 compr.	1200 9 to 1 compr.	1340 7 to 1 compr.	1340 9.5 to 1 compr.
Std.	**234100**	**234105**	**234113**	**234118**
+0.010"	**234101**	**234106**	**234114**	**234119**
+0.020"	**234102**	**234107**	**234115**	**234120**
+0.030"	**234103**	**234108**	**234116**	**234121**
+0.040"	**234104**	**234109**	**234117**	**234122**
+0.050"	-	**234110**	-	-
+0.060"	-	**234111**	-	-
+0.080"	-	**234112**	-	-

	Sportster thru 2003		Evolution Big Twin		
Dome	1	2	3	4	5
Size	XL1200 9 to 1 Compr.	XL1200 10.5 to 1 Compr.	1340 8.5 to 1 Compr.	1340 10 to 1 Compr.	1340 11 to 1 Compr.
Std.	**730049**	**238789**	**235285**	**730054**	**238799**
+.005"	-	-	-	**730055**	**238800**
+.010"	**730050**	**238790**	**235286**	**730056**	**238801**
+.020"	**730051**	**238791**	**235287**	**730057**	**238802**
+.030"	**730052**	**238792**	**235288**	**730058**	**238803**
+.035"	**235294**	-	-	-	-
+.040"	**730053**	**238793**	**235289**	**730059**	**238804**

Piston dome specification
All valve pocket specifications are measured from deck height

Dome Style	Dome Volume	Intake Pocket		Exhaust pocket	
		Depth	Diameter	Depth	Diameter
1	+50.7cc	-.086"	2.000"	-.086"	2.000"
2	+52.0cc	-.050"	2.045"	-.050"	1.800"
3	+29.7cc	-.130"	2.000"	-.090"	1.870"
4	+56.0cc	-.115"	2.000"	-.085"	1.870"

Piston dome specification
All valve pocket specifications are measured from deck height

Dome Style	Dome Volume	Intake Pocket		Exhaust Pocket	
		Depth	Diameter	Depth	Diameter
1	-2.8 cc	-.214"	2.100"	-.214"	2.100"
2	+6.0 cc	-.225"	2.100"	-.225"	2.100"
3	-1.5 cc	-.178"	2.000"	-.178"	2.000"
4	+12.9 cc	-.143"	2.080"	-.138"	1.740"
5	+19.0 cc	-.165"	2.080"	-.165"	2.080"

NEW

WISECO FORGED PISTON KITS FOR SPORTSTER 2004 TO PRESENT

These Wiseco pistons feature coated skirts that allow closer piston to cylinder wall clearances for maximum power. Kits include 2 Wiseco forged pistons with Hastings piston rings, clips and wrist pins. Fits Sportster XL 1200 models from 2004 to present, give stock 10.5 to 1 compression ratio.

Fits 2004 to present XL 1200, 10.5 to 1 compression ratio

236297 Std. 3.498" bore
236298 +.010"
236376 +.020"

Piston dome specification All valve pocket specifications are measured from deck height				
Dome Volume	Intake Pocket		Exhaust Pocket	
	Depth	Diameter	Depth	Diameter
3.63 cc	.167"	2.100"	.167"	2.100"

WISECO FORGED PISTON KITS FOR BUELL AND SPORTSTER 2004 MODELS

These Race-Only Wiseco pistons feature a unique piston shape that allows closer piston to cylinder wall clearances for maximum power. These domed piston kits include 2 Wiseco forged pistons with Hastings piston rings, clips and wrist pins. Kits are available for Buell XB9R and XB9S with 10 to 1 compression ratio, and Buell XB12R, XB12S and Sportster 1200 2004 to present with 12 to 1 compression ratio,

Fits Buell XB9S and XB9R, 10 to 1 compression ratio

Size
730070 Std. 3.498" bore
730071 +.010"
730072 +.020"

Fits 2004 to present Buell XB12S, XB12R, and 2004 to present Harley XL 1200, 12 to 1 compression ratio

730073 Std. 3.498" bore
730074 +.010"
730075 +.020"

Piston dome specification All valve pocket specifications are measured from deck height				
Dome Volume	Intake Pocket		Exhaust Pocket	
	Depth	Diameter	Depth	Diameter
+12,3cc	.167"	2.000"	.167"	2.000"

WISECO 3 7/8" BIG BORE KITS FOR TWIN CAM 88 MODELS

These Wiseco Big Bore kits are developed for the latest Harley Twin Cam models. The use of these 3 7/8" bore pistons with stock 4" stroke enlarges the capacity of your Twin Cam engine from 88 to over 92 Cubic Inches with the use of bored to size stock cylinders. Available as flat top with 9:1 compression ratio, which can be used with the stock ignition on both carburetor and EFI equipped models, or domed with 10.5:1 compression ratio, which requires the use of a High-Performance ignition system, such as our Dyna ignition ZPN 710586. These Big Bore kits contain a pair of Wiseco forged pistons, a Hastings ring set, chrome wrist pins, circlips and a top end gasket kit. Ring sets are separately available.

Big Bore kit piston kits

Compr.	9:1	10.5:1	Bore Size
Std.	**721484**	**239075**	3.875"
+.005"	**721485**	**239076**	3.880"
+.010"	-	**239077**	3.885"
+.020"	**721487**	**239085**	3.895"
+.030"	-	**239086**	3.905"

Piston ring sets (for one piston)

720330 Std. 3 7/8"
720331 +.005"
720332 +.010"
720333 +.020"
720334 +.030

WISECO 4" AND 4 1/8" BIG BORE KITS FOR TWIN CAM 88 MODELS

These Wiseco Big Bore kits are developed for Twin Cam 88 (1.450 cc) models. The use of these 4" bore pistons with stock 4" stroke enlarges the capacity of your Twin-Cam engine from 88 to 100 Cubic Inches (1.650 cc). The 4 1/8" bore kits will even give you a 107 Cubic Inch displacement (1.752 cc). Both kits must be used with cylinder sleeves in your stock cylinders. Sleeves are not included but must be ordered separately. Both the 4" and 4 1/8" Big Bore kits give a 10.5:1 compression ratio when used with stock cylinder heads, providing maximum torque and throttle response. Kits contain a pair of Wiseco forged pistons, a Hastings ring set, chrome wrist pins and circlips.

732350 4" Big Bore piston kit
732351 4 1/8" Big Bore piston kit
235990 Big Bore cylinder sleeve (each)

Piston dome specification
All valve pocket specifications are measured from deck height

Comp. Ratio	Dome Volume	Intake Pocket		Exhaust Pocket	
		Depth	Diameter	Depth	Diameter
9:1	-2 CC	-.161"	2.000"	-.158"	2.000"
10.5:1	+15 CC	-.161"	2.000"	-.158"	2.000"

WISECO 110 CI SLEEPER KIT WITH 4" BIG BORE PISTONS FOR TWIN CAM

Our Big Bore "Sleeper Kit" turns your Twin Cam 88 into a Mean Machine The use of these 4" bore "Sleeper" pistons in conjunction with a 4 3/8" Stroker crank you enlarge the capacity of the standard Twin Cam engine from 88 to 110 Cubic Inches. Stock cylinders must be re-sleeved with the separately available cylinder sleeves, and crankcases have to be bored to accept the Big Bore sleeves. No cylinder head modification is required. Kit includes a pair of Wiseco forged pistons, piston rings, retaining clips, piston pins, and gasket kit. Big Bore cylinder sleeves and stroker crank must be ordered separately.

235855 Big Bore "Sleeper" piston kit
235990 Big Bore cylinder sleeve (each)
231692 Stroker crank for 2000 thru 2006 Twin Cam Softail models
231693 Stroker crank for 1999 thru 2006 Twin Cam Dyna and FLH/FLT models
231697 Optional bearing assembly needed to install stroker cranks in 2003 and later models

Replacement parts
235856 Piston
235858 Ring set
235860 Retaining clips
235879 Piston pin
235964 Gasket kit

Piston dome specification All valve pocket specifications are measured from deck height				
Dome	Intake Pocket		Exhaust Pocket	
Volume	Depth	Diameter	Depth	Diameter
-7,0 CC	.213"	2.150"	.213"	2.150"

WISECO 3 7/8", 4" AND 4 1/8" BIG BORE KITS FOR TWIN-CAM 96 MODELS

These Wiseco Big Bore kits are developed for Twin-Cam 96 (1.550 cc) models. The use of the 3 7/8" bore pistons with stock 4.375" stroke enlarges the capacity of your Twin-Cam engine from 96 to 103 Cubic Inches (1.691 cc). The 4" bore kits will even give you a 110 Cubic Inch displacement (1.802 cc), where the 4 1/8" bore kits will even give you 117 CI (1.971 cc). The 4" and 4 1/8" bore kits must be used with the use off cylinder sleeves in your stock cylinders, 3 7/8" bore kits can be used in bored-to-size stock cylinders. Sleeves are not included but must be ordered separately. The 3 7/8" bore kits are available in a flat top 9:1 compression ratio or domed top 10.5:1 compression ratio. Both the 4" and 4 1/8" Big Bore kits give a 10.5:1 compression ratio. Big Bore piston kits contain a pair of Wiseco forged pistons, a Hastings ring set, chrome wrist pins and cir-clips.

3 7/8" Big Bore kits

9:1 compression	10.5:1 compression	
732352	**732355**	Std. 3.875" bore
732353	**732356**	+.005" bore
732354	**732357**	+.010" bore

4" Big Bore kits, 10.5:1 compression
732358 Std. 4.000" bore
235990 Big Bore cylinder sleeve (each)

4 1/8" Big Bore kits, 10.5:1 compression
732359 Std. 4.125" bore
235990 Big Bore cylinder sleeve (each)

Piston dome specification All valve pocket specifications are measured from deck height					
Comp. Ratio	Dome Volume	Intake Pocket		Exhaust Pocket	
		Depth	Diameter	Depth	Diameter
8.5 : 1	-13.5 CC	.215"	2.100"	.215"	2.100"
9.5 : 1	-11.2 CC	.215"	2.100"	.215"	2.100"
10 : 1	-8.5 CC	.225"	2.100"	.225"	2.100"

1200 CC BIG BORE PISTON KITS FOR 883 EVOLUTION SPORTSTER

Wiseco's Big Bore piston kits will convert the 883 Evolution engine into a more powerful 1200 CC engine simply by boring the stock 883 cylinders. Wiseco forged pistons are stronger than the stock Harley pistons and will give you a major increase in Horsepower and Torque with total reliability. Assemble the engine with stock 1200 gaskets and off you go, no head modifications or crank re-balancing required. The Wiseco 1200 CC kits contain a pair of precision matched and balanced forged pistons, Hastings piston rings, wrist pins, circlips and boring instructions.

Compr.	9.5 to 1	10 to 1	
Size			Bore
Std.	**730044**	**238786**	3.497"
+.010"	**730045**	**238787**	3.507"
+.020"	**730046**	**238788**	3.517"
+.030"	**730047**	-	3.528"
+.040"	**730048**	-	3.538"

PISTON RINGS FOR WISECO PISTONS

Replacement piston rings for Wiseco forged piston kits. Available for Sportster 1000, Shovelhead and Evolution models. Sold in sets for one piston only.

Note: Will only fit Wiseco pistons, check ring thickness before ordering. Please refer to our Hastings piston ring table elsewhere in this section for other ring thickness.

	Ironhead XL 1000	**Shovelhead 1200 cc**	**Shovelhead 1340 cc**	**Evolution 883 to 1200 Big Bore**	**Evolution XL 1200**	**Evolution 1340 cc 8.5:1 compr.**	**Evolution 1340 cc 10:1 compr.**
Top Ring	.0625" (1.58 mm)	.0625" (1.58 mm)	.0625" (1.58 mm)	.039" (1 mm)	.039" (1 mm)	.0625" (1.58 mm)	.039" (1 mm)
Second Ring	.0625" (1.58 mm)	.0625" (1.58 mm)	.0625" (1.58 mm)	.047" (1.2 mm)	.047" (1.2 mm)	.0625" (1.58 mm)	.047" (1.2 mm)
Oil Ring	.1525" (3.9 mm)	.1525" (3.9 mm)	.1525" (3.9 mm)	.110" (2.8 mm)	.110" (2.8 mm)	.1525" (3.9 mm)	.110" (2.8 mm)
Std.	**235225**	**235230**	**235236**	**235241**	**235241**	**235236**	**235241**
+.005"	-	-	-	-	-	-	-
+.010"	**235226**	**235231**	**235237**	**235242**	**235242**	**235237**	**235242**
+.015"	-	-	-	-	-	-	-
+.020"	**235227**	**235232**	**235238**	**235243**	**235243**	**235238**	**235243**
+.025"	-	-	-	-	-	-	-
+.030"	**235228**	**235233**	**235239**	**235244**	**235244**	**235239**	**235244**
+.035"	-	-	-	-	-	-	-
+.040"	**235229**	**235234**	**235240**	**235245**	**235245**	**235240**	**235245**
+.045"	-	-	-	-	-	-	-
+.050"	-	**235235**	-	-	-	-	-
+.060"	-	**235236**	-	-	-	-	-
+.070"	-	**235237**	-	-	-	-	-
+.080"	-	**235238**	-	-	-	-	-

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WISECO FORGED PISTON KITS FOR BUELL MODELS

These domed Wiseco forged pistons are exclusively designed to offer Buell owners many advantages over stock and other aftermarket pistons. Each piston kit includes 2 Wiseco forged pistons with Hastings piston rings, pins and clips.

Fit 1998 to present Buell S1 White Lightning and S3/ S3T Thunderbolt models (or 1996 thru 1997 models with 1998 model Thunderstorm cylinder heads installed), 10 to 1 compression with stock 3.812" stroke

Number	Size	Displacement	Bore
238808	Std.	1200 CC	3.497"
238809	+.010	1207 CC	3.507"
238810	+.020	1214 CC	3.517"
238811	+.030	1221 CC	3.527"
238812	+.040	1228 CC	3.537"

Piston dome specification
All valve pocket specifications are measured from deck height

Comp. Ratio	Dome Volume	Intake Pocket		Exhaust Pocket	
		Depth	Diameter	Depth	Diameter
10 : 1	+3,84	.214"	2.100"	.214"	2.100"

REPLACEMENT CIRCLIPS FOR WISECO PISTONS

235296 Replacement circlips for all listed Wiseco pistons. Sold in sets of 2 circlips.

3 1/2" BORE WISECO FORGED PISTON KITS FOR EVOLUTION BIG TWINS WITH AFTERMARKET HEADS

These Wiseco piston kits are designed for use on Evolution Big Twins with Screamin' Eagle cylinder heads. Can also be used with stock or other aftermarket heads if valve to piston clearance is checked. Kit includes front and rear pistons, piston rings, circlips and chrome wrist pins. Compression ratio is 10.5 to 1 when used with Screamin' Eagle heads and stock stroke.

238982 Piston kit, +.005"
238983 Piston kit, +.010"
238984 Piston kit, +.020

Piston dome specification
All valve pocket specifications are measured from deck height

Dome Volume	Intake Pocket		Exhaust Pocket	
	Depth	Diameter	Depth	Diameter
+6,5cc	.165"	2.080"	.165"	1,740"

ARIAS FORGED PISTONS

For over thirty five years Arias Forged Pistons has been dedicated to the development and manufacture of high performance automotive and motorcycle pistons. Recently the resurgence of the popularity of Harley Davidson Motorcycles has created a demand for high performance products to enhance the power of these American built bikes. Arias responded to the demand with a complete line of Forged Piston kits for Harley Davidson. The special designed forging allows for maximum performance as well as reducing the total weight. All Arias pistons are forged in the USA from extruded billet 4032 high silicon low expansion aluminum alloy. This material allows tighter piston to cylinder clearance, which increases ring seal, reduces blow-by and increases overall horsepower. This assures years of extreme use and reliability. Various compression ratios and overbore sizes are available so that you do not have to compromise to achieve your performance goal. Arias piston kits are sold as a complete kit including high quality American made wrist pins and Hastings piston rings.

Note: Custom made pistons up to 4 1/2" bore are available on special order. Please check with your local Zodiac dealer to find out what information is needed to complete a custom piston order.

Fits Iron Head Sportsters 1972 thru 1985 (except 1972 with XR style head), 10 to 1 compression with stock stroke (3.812")

Number	Size	Displ.	Bore
710050	Std.	1000 CC	3.188
710051	+.010	1003 CC	3.198

Fits Shovelhead 1340 CC (80 CI), compression listed is with stock stroke (4.250") 9.5 : 1 compression

Number	Size	Displ.	Bore
710068	Std.	1340 CC	3.497

Big Bore pistons for Evolution Big Twins 1984 to present, must be used with 3 5/8 cylinder liners. Compression ratio give is with stock stroke (4.25")

Size	9.25 : 1	10 : 1	Displ.	Bore
+.020	**N/A**	**710096**	1446 CC	3.635
+.030	**710092**	**710097**	1453 CC	3.645
+.040	**710093**	**710098**	1461 CC	3.655

235278 Cylinder liner for 3 5/8" bore, sold each

PISTON KITS FOR 61CI KNUCKLEHEAD AND PANHEAD

Stock replacement piston for 7.1:1 compression ratio, 3 5/16" bore 61CI (1,000 cc). Fits 1936 thru 1947 Knucklehead and 1948 thru 1953 Panhead models. Piston kit contains 1 piston with piston pin, circlips and piston rings (for one cylinder). Fits front and rear cylinders, order 2 sets for 1 engine.

711855 Piston kit 3 5/16" bore (OEM 22141-48, 22325-36)
711856 +.010" over size (OEM 22143-48, 22327-36)
711857 +.020" over size (OEM 22144-48, 22328-36)
711858 +.030" over size (OEM 22145-48, 22329-36)
711859 +.040" over size (OEM 22146-48, 22330-36)

REPLACEMENT PISTONS

These top quality pistons are used by motor builders all over the world. They are die-casted in all new molds and tooling made to our specifications, featuring the latest piston technology in cam-shape and taper. Pistons are cast from low-expansion aluminum alloy, precision ground and have tin plated finish to facilitate break-in. We feel these are the finest cast pistons available. Compression ratio is stock. Pistons come complete with pin and clips. Packed and sold one per box.

Size	Sportster	Shovelhead Models	
	1000 CC Pre-86	1200 CC (74 CI)	1340 CC (80 CI)
Std.	**047471**	**047491**	**047511**
+.010	**047472**	**047492**	**047512**
+.020	**047473**	**047493**	**047513**
+.030	**047474**	**047494**	**047514**
+.040	**047475**	**047495**	**047515**
+.050	**047476**	**047496**	**047516**
+.060	**047477**	**047497**	**047517**
+.070	**047478**	**047498**	**047518**
+.080	**047499**		

Size	Evolution Sportster Models			Big Twin EVO
	883	1100	1200	1340
Std.	**047539**	**047544**	**047549**	**047554**
+.005	**047540**	**047545**	**047550**	**047555**
+.010	**047541**	**047546**	**047551**	**047556**
+.020	**047542**	**047547**	**047552**	**047557**
+.030	**047543**	**047548**	**047553**	**047558**

HASTINGS PISTON RING SETS

Hastings, the OEM supplier to Harley-Davidson, manufactures these rings. They are the same piston rings that are shipped with every new motorcycle as well as sold by Harley's parts department. All ring faces are pre-lapped for easier seating. The exclusive Flex-Vent oil control ring is the easiest of all designs to install because there are no right side ups or side downs. The Flex-Vent ring also assures a uniform pressure on the cylinder wall contacting rails and a positive oil control. Its open design affords 200% greater drainage capacity than conventional designs. Even with all these features Hastings rings are made available by Zodiac at low, more affordable cost. These superb quality piston rings are sold in sets for two pistons with the exception of the XL 883 and XL 1100 Evolution Sportster rings, which are sold in single sets.

XL 883 Evolution Sportster

Set is for:	1 cylinder
Top Ring	1.5 mm
Second Ring	1.5 mm
Oil Ring	2.8 mm
Ring material	**Moly**
3" Std.	**231220**
3" +.005"	**231224**
3" +.010"	**231221**
3" +.020"	**231222**
3" +.030"	**231223**

XL 1000 Ironhead Sportster

Set is for:	2 cylinders	
Top Ring	1/16"	
Second Ring	1/16"	
Oil Ring	3/16"	
Ring material	**Cast**	**Moly**
3 13/16"Std.	**048360**	**231190**
3 13/16" +.010"	**048361**	**231191**
3 13/16" +.020"	**048362**	**231192**
3 13/16" +.030"	**048363**	**231193**
3 13/16" +.040"	**048364**	**231194**
3 13/16" +.050"	**048365**	**231195**
3 13/16" +.060"	**048366**	**231196**
3 13/16" +.070"	**048367**	**231197**

XL 1100 Evolution Sportster

Set is for:	1 cylinder
Top Ring	1.5 mm
Second Ring	1.5 mm
Oil Ring	2.8 mm
Ring material	**Moly**
3.350" Std.	**231230**
3.350" +.005"	**231234**
3.350" +.010"	**231231**
3.350" +.020"	**231232**
3.350" +.030"	**231233**

XL 1200 Evolution Sportster

Set is for:	2 cylinders	
Top Ring	1/16"	
Second Ring	1/16"	
Oil Ring	5/32"	
Ring material	**Cast**	**Moly**
3.498" Std.	**231240**	**231250**
3.498" +.005"	**231244**	**231254**
3.498" +.010"	**231241**	**231251**
3.498" +.020"	**231242**	**231252**
3.498" +.030"	**231243**	**231253**

1200 CC Panhead, Knucklehead & Shovelhead

Set is for:	2 cylinders	
Top Ring	1/16"	
Second Ring	1/16"	
Oil Ring	3/16"	
Ring material	**Cast**	**Moly**
3 7/16" Std.	**048380**	**231200**
3 7/16" +.010"	**048381**	**231201**
3 7/16" +.020"	**048382**	**231202**
3 7/16" +.030"	**048383**	**231203**
3 7/16" +.040"	**048384**	**231204**
3 7/16" +.050"	**048385**	**231205**
3 7/16" +.060"	**049000**	**231210**
3 7/16" +.070"	**049001**	**231211**
3 7/16" +.080"	**049002**	**231212**

1340 CC Shovelhead

Set is for:	2 cylinders	
Top Ring	1/16"	
Second Ring	1/16"	
Oil Ring	3/16"	
Ring material	**Cast**	**Moly**
3.498" Std.	**049000**	**231210**
3.498" +.010"	**049001**	**231211**
3.498" +.020"	**049002**	**231212**
3.498" +.030"	**049003**	**231213**
3.498" +.040"	**049004**	**231214**
3.498" +.050"	**049005**	**N/A**
3.498" +.060"	**049006**	**N/A**
3.498" +.070"	**049007**	**N/A**

1340 Evolution Big Twin

Set is for:	2 cylinders	
Top Ring	1/16"	
Second Ring	1/16"	
Oil Ring	5/32"	
Ring material	**Cast**	**Moly**
3.498" Std.	**231240**	**231250**
3.498" +.005"	**231244**	**231254**
3.498" +.010"	**231241**	**231251**
3.498" +.020"	**231242**	**231252**
3.498" +.030"	**231243**	**231253**

1450 Twin Cam 88 1999-2006

Rings for OEM pistons

Set is for:	2 cylinders
Top Ring	1.5 mm
Second Ring	1.5 mm
Oil Ring	3.0 mm
Ring material	**Moly**
3.750" + Std.	**744000** NEW
3.750" +.010"	**744001** NEW
3.750" +.020"	**744002** NEW
3.750" +.030"	**744003** NEW

1450 Twin Cam 88 and 1550 Twin Cam 96 2007 to present

Rings for OEM pistons

Set is for:	2 cylinders
Top Ring	1.5 mm
Second Ring	1.5 mm
Oil Ring	2.5 mm
Ring material	**Moly**
3.750" Std.	**744004** NEW
3.750" + .005"	**744005** NEW
3.750" + .010"	**744006** NEW

RINGS FOR AFTERMARKET PISTONS

Set is for:	2 cylinders
Top Ring	1/16"
Second Ring	1/16"
Oil Ring	5/32"
Ring material	**Moly**
3.750" Std.	**048372**
3.750" +.010"	**048373**
3.750" +.020"	**048374**
3.750" +.030"	**048375**

3 5/8" Big Bore

Set is for	2cylinders	2 cylinders
Top ring	1/16"	5/64"
Second ring	1/16"	5/64"
Oil ring	3/16"	3/16"
Ring material	**Moly**	**Moly**
3 5/8" Std.	**049017**	**049025**
3 5/8" +.010"	**049018**	**049026**
3 5/8" +.020"	**049019**	**049027**
3 5/8" +.030"	**049023**	**049028**
3 5/8" +.040"	**049024**	**049029**

3 13/16" Big Bore

Set is for	2 cylinders
Top ring	1/16"
Second ring	1/16"
Oil ring	3/16"
Ring material	**Moly**
3 13/16" Std.	**048368**
3 13/16" +.010"	**048369**
3 13/16" +.020"	**048370**
3 13/16" +.030"	**048371**

3 7/8" Big Bore

Set is for	2 cylinders
Top ring	1/16"
Second ring	1/16"
Oil ring	3/16"
Ring material	**Moly**
3 7/8" Std.	**048386**
3 7/8" +.010"	**048387**
3 7/8" +.020"	**048388**
3 7/8" +.030"	**048389**

4" Big Bore

Set is for	2 cylinders
Top ring	1/16"
Second ring	1/16"
Oil ring	3/16"
Ring material	**Moly**
4" Std.	**048376**
4" +.010"	**048377**
4" +.020"	**048378**
4" +.030"	**048379**

4 1/8" Big Bore

Set is for:	2 cylinders
Top Ring	1.5 mm
Second Ring	1.5 mm
Oil Ring	3.0 mm
Ring material	**Moly**
4.125" + Std.	**231885** NEW
4.125" +.010"	**231886** NEW
4.125" +.020"	**231887** NEW
4.125" +.030"	**231888** NEW

KEITH BLACK PISTONS

Keith Black is one of America's most respected Drag-Race engine designers and builders. He was the first to build 4000 plus horsepower V-8 race engines. Keith now has put all his knowledge and experience into the manufacturing of aftermarket Harley-Davidson pistons. The use of the special hypereutectic aluminum alloy, developed and race tested by Keith himself, makes a piston that is light-weight and has more features than an expensive forged piston. These features include reduced wear and decreased fuel and oil consumption. Tighter running tolerances result in an engine that runs quietly and provides more power. The low heat transfer of the hypereutectic aluminum alloy keeps the skirts cool so piston expansion is minimal. Test engines have been run with as little as 0.0005" (1/2 thousands) piston-to-wall clearance. The high ring placement reduces detonation and increases the top ring temperature. Keith Black pistons will make maximum power at 2 to 4 degrees less total timing than conventional pistons. Available in standard and over sizes for Knucklehead, Panhead, Shovelhead and Evolution Big Twin models from 1941 to present and Sportster 1200. Also available in various Big-Bore and High-compression versions as well as a Big Bore kit that will convert your 883 Sportster into a High-Torque 1200 model. Pistons are competitively priced.

Note: Except for ZPN 239840, 239841 and 239842 3 13/16" Big Bore pistons, complete piston kits contains 2 pistons with Hastings Chrome Moly rings, piston pins and circlips.

Fits Big Twin models 1941 thru 1984

	1200 CC 74 CI	1340 CC 80 CI	1340 CC 80 CI	3 5/8" Big Bore
Year	'41-'79	'80-'84	'80-'84	Shovelhead
Compr.	8.5 : 1	8 : 1	9.5 : 1	10 : 1
Std.	**239800**	**239835**	**720439**	**239809**
+.005"	**239843**	**239844**	-	-
+.010"	**239801**	**239836**	**720440**	**239810**
+.020"	**239802**	**239837**	**720441**	**239811**
+.030"	**239803**	**239838**	**720442**	**239812**
+.040"	**239804**	**239839**	**720443**	**239813**
+.050"	**239805**	-	-	-
+.060"	**239806**	-	-	-
+.070"	**239807**	-	-	-
+.080"	**239808**	-	-	-

Note 1: Shovelhead pistons are for use with all strokes except 4 5/8" and 5".

Note 2: Maximum oversize in OEM 1340 CC / 80 CI cylinders is +0.20". Oversizes .030" and .040" can be used in aftermarket cylinders ONLY. Check wall thickness before ordering.

Evolution Sportster 1200 models 1988 to present

Compr. ratio	9 : 1
Std.	**239814**
+.005"	**239845**
+.010"	**239815**
+.020"	**239816**
+.030"	**239817**
+.040"	**239846**

Evolution Big Twin models 1984 thru 1999

Compr. ratio	8.5 : 1	10.5 : 1
Std.	**239819**	**239823**
+.005"	**239847**	**239848**
+.010"	**239820**	**239824**
+.020"	**239821**	**239825**
+.030"	**239822**	**239826**
+.040"	**239849**	**239850**

Big Bore conversion kit Evolution Sportster 883 to 1200

Compr. ratio	9 : 1
Std.	**239831**
+.005"	**239851**
+.010"	**239832**
+.020"	**239833**
+.030"	**239834**
+.040"	**239852**

Big Bore piston kits for Evolution Big Twin

Piston size	3 5/8"	3 5/8"	3 13/16"	3 13/16"	4"
stroke	stock	4 5/8"	4 5/8"	4 1/4"	4"and more
Std.	**238778**	**239827**	**239840**	**721640**	**721648**
+.010"	**238780**	**239828**	**239841**	**721641**	**721649**
+.020"	**238781**	**239829**	**239842**	**721642**	**721650**
+.030"	**238782**	**239830**	-	**721643**	**721651**
+.040"	**238785**	**239859**	-	-	-

Replacement pins and clips for Keith Black pistons (does not fit 4" bore KB pistons with .927" pin)

239789 Piston pin, fits all KB pistons with .792" pin
239818 Piston pin Cir-clip, fits all KB pistons with .792" pin

Big Bore kits for 1984 thru 1999 Evolution Big Twins with .927" piston pin diameter for use in High Performance street and strip engines, must be used with conrods that accept .927" piston pins

Comp. ratio	10 : 1
Stroke	4" and up
Size	
4.000" Std.	**721652**
+.010"	**721653**
+.020"	**721654**
+.030"	**721655**

Twin Cam models 1999 to present

Comp. ratio	9.25 : 1	10.5 : 1
Size		
3.750" Std.	**721629**	**721634**
+.005"	-	**721635**
+.010"	**721630**	**721636**
+.020"	**721631**	**721637**
+.030"	**721632**	**721638**

3.875" Big Bore kits for Twin Cam models 1999 to present, give 95 Cubic Inches with stock 4" stroke

Comp. ratio	9.25 : 1
Size	
3.875" Std.	**721644**
+.010"	**721645**
+.020"	**721646**
+.030"	**721647**

REPLACEMENT PISTON RING SUPPORTS FOR KB PISTONS

A limited number of KB pistons have the ring grooves crossing the piston pin hole. In order to have the piston rings properly supported these pistons come with piston ring support rings. As support rings do not have a sealing function they do not have to be replaced when you install new piston rings, but sometimes new ones are needed because a ring is lost or broken.

Fits KB 264 and KB 272 series pistons for 1200 Evolution Sportster models and XL 883 to 1200 CC conversions

239856 For standard thru +.020" bore
239857 For +.030" thru +.040" bore

Fits KB 298 series 3 5/8" Big Bore pistons for Evolution Big Twin

239858 For standard thru +.020" bore
239883 For +.030" thru +.040" bore

Fits KB 300 series 3 13/16" Big Bore pistons for Evolution Big Twin

239890 For standard thru +.030" bore

Fits KB 345 series 4" Big Bore pistons for Evolution Big Twin

239983 For standard thru +.020" bore
240000 For +.030" bore

Fits KB 348 series 3 5/8" Big Bore pistons for Twin Cam

240001 For standard thru +.020" bore
240002 For +.030" bore

WÖSSNER PISTON KITS

Wössner Pistons is a relatively young, German based manufacturer. Eckart Wössner, who was quite successful as motorcycle racer in the late 70's, started a business in High Performance parts, founded the company. Unsatisfied with the choice and availability of Performance pistons for various applications, he started production of pistons back in 1994. Meanwhile their name and fame as an innovative specialist in the production of high-performance pistons is growing fast. Wössner's motto is "Our customers success is the root of our success" is what has made Wössner GmbH the experts for high performance pistons.

XL 883 to 1200 Big Bore kit

Big Bore piston kit for all 1986 to present XL 883's. Kit includes pistons, rings, piston pin and circlips. Requires the stock cylinders to be bored to accept the 88.94 mm diameter pistons. No modification of cylinder heads required.

Piston kit		Replacement ring set
741440	Standard 88.94 mm bore size	**741730**
741441	0.25 mm over size	**741731**
741442	0.50 mm oversize	**741732**

XL 883 to 1372 Super Big Bore kit

Super Big Bore piston kit to increase displacement of your XL 883 to an incredible 1372 cc. Can be used in all 1986 to present XL 883's. Kit includes 94.94 mm diameter pistons, rings, piston pin and circlips. Requires installation of Big Bore cylinder sleeves in the stock cylinders and crankcases to be bored to accept these bigger sleeves. Cylinder sleeves are sold each and must be ordered separately.

Piston kit		Replacement ring set
741443	XL 883 to 1372 94.94 mm diameter piston kit	**741733**
741467	Cylinder sleeve	

XL 1200 to 1372 Super Big Bore kit

Super Big Bore piston kit to increase displacement of your XL 1200 to an incredible 1372 cc. Can be used in all 1986 to present XL 1200's. Kit includes 94.94 mm diameter pistons, rings, piston pin and circlips. Requires installation of Big Bore cylinder sleeves in the stock cylinders and crankcases to be bored to accept these bigger sleeves. Cylinder sleeves are sold each and must be ordered separately.

Piston kit		Replacement ring set
741444	XL 1200 to 1372 Super Big Bore piston kit	**741733**
741467	Cylinder sleeve	

High Compression piston kits for 1984 thru 1999 Evolution Big Twin

These pistons provide a 9.5 to 1 compression ratio when used with stock cylinder heads. Kits include a pair of pistons, piston rings, piston pins, and cir-clips.

Piston kit		Replacement ring set
741445	88.94 mm diameter	**741730**
741446	89.44 mm diameter	**741732**
741447	89.94 mm diameter	**741734**

92CI Big Bore pistons for Evolution Big Twins

A Big Bore piston kit to make a 92 CI Big Bore Evolution Big Twin. Requires the use of special cylinders to accept the 94.94 mm diameter pistons. Kit includes a pair of pistons, piston rings, piston pins, and cir-clips.

Piston kit		Replacement ring set
741448	94.94 mm diameter	**741733**

Piston kits for 1999 to present Twin Cam models

Wössner supplies the piston kits for Twin Cam models in 2 versions. The Flat Top pistons give an 8.5:1 compression ratio, the Domed pistons 10:1 compression ratio. Kits include a pair of pistons, piston rings, piston pins, and circlips.

Piston kit Flat Top	Piston kit Domed		Replacement ring set
N/A	**N/A**	Stock bore (96.25)	**N/A**
741449	**741458**	+ 0.25 mm	**741735**
741450	**741459**	+ 0.75 mm	**741736**
741451	**741460**	+ 1.25 mm	**741737**
741452	**741461**	+ 1.75 mm	**741738**
741453	**741462**	+ 2.25 mm	**741739**
741454	**741463**	+ 2.75 mm	**741740**
741455	**741464**	+ 3.75 mm	**741741**
741456	**741465**	+ 4.25 mm	**741742**
741457	**741466**	+ 4.75 mm	**741743**

Note: Replacement ring sets are sold in sets for 1 single cylinder

S&S 883 TO 1200 CONVERSION PISTON KITS

An economical way to get more out of your 883 Sportster. Use these cast pistons to convert an 883cc engine to 1200cc. Bore the stock 883cc cylinders out to 3 1/2" bore or use 1200cc cylinders. A template is included for modifying stock 883cc cylinder heads to adjust compression and increase flow. It is not necessary to re-balance your flywheels, but recommended doing this during the next complete overhaul. Sold in sets of 2 pistons complete with Moly faced piston rings, circlips, and piston pins.

750249 Standard 3.500" bore
750250 +.005"
750251 +.010"
750252 +.020"
750253 +.030"

PISTONS FOR S&S V2 BIG TWIN STYLE ENGINES

S&S replacement piston kits for use in S&S 96CI V2, 113CI Super SideWinder, and 124CI Super SideWinder Plus engines, as well as many S&S and other aftermarket Stroker and Big Bore kits. Kits contain 2 forged pistons, piston rings, wrist pin and clips. Ring sets are also available separately.

3 5/8" bore

A high compression piston for 3 5/8" bore engines using S&S Super Stock cylinder heads for Evolution engines. Flat dome can be machined to adjust compression ratio. These pistons are stock in S&S V96 Evolution style engines and give a 9.75:1 compression ratio. A 10.2: 1 and 13.2:1 compression ratio are also available, these can be used in 4 1/4", 4 1/2", and 4 5/8" stroke engines with stock (8 1/2") diameter flywheels, and in 3 13/16" and 4 1/4" stroke engines with small (8 1/4") diameter flywheels. Feature .792" wrist pins, and 1.200" deck height.

Complete Piston kit 9.75:1	NEW Complete Piston kit 10.2:1	Complete Piston kit 13.2:1	Ring set only	
750622	**750754**	**750785**	**750722**	Stock 3 5/8" bore
750623	**750755**	**750786**	**750723**	+.010"
750624	**750756**	**750787**	**750724**	+.020"
750625	**750757**	**750788**	**750725**	+.030"
750626	**750758**	**750789**	**750726**	+.040"
750627	**N/A**	**750790**	**750727**	+.050"
750635	**750759**	**750791**	**750728**	+.060"

Note: These ring sets also fit most S&S 3 5/8" bore piston kits, such as 92-1060, 92-1070, 92-1080, 92-1100, 921110, 92-1120, 92-1130, 92-1620, 92-1630, 92-1640, 92-1900, 92-1930 & 92-1940 series.

4" Bore

As used in S&S 113CI Super SideWinder engines, as well as other 4 1/2" stroke motors. Flat top pistons with 1.050" deck height and .792" diameter wrist pins.

Complete Piston kit	Ring set only	
750614	**750714**	Stock 4" bore
750615	**750715**	+.010"
750616	**750716**	+.020"
750617	**750717**	+.030"

Note: These ring set also fit most S&S 4" bore piston kits, such as 92-1400, 92-1410 & 92-1420 series.

4 1/8" Bore

As used in S&S 124CI Super SideWinder Plus engines, as well as other 4 5/8" stroke motors using .927" diameter wrist pins. Pistons are flat top style and are 1.050" deck height.

Complete Piston kit	Ring set only	
750618	**750718**	Stock 4 1/8" bore
750619	**750719**	+.010"
750620	**750720**	+.020"
750621	**750721**	+.030"

Note: These ring sets also fit most S&S 4 1/8" bore piston kits, such as 92-1550, 92-1556, 92-1560 and 92-1575 series.

TOTAL SEAL PISTON RINGS

Total Seal is the leading company in the development of innovative ideas in piston rings, and has done a great deal of testing in an attempt to solve the complexities of sealing a cylinder under all circumstances, like high RPM s, Big Bore sizes, high temperature and other severe conditions. They offer two different ring sets for the Harley Davidson market, the TS1 set and TSS set. The TSS sets are designed for stock street applications. They have a moly coated cast iron top ring. This is higher quality top ring than what would be used in OEM applications. The second ring is the Gap-less design patented by Total Seal and also found in the TS1 sets. The Total Seal Gap-less design eliminates the end gap problem and keeps the gap blocked as ring and cylinder wall wear occurs. TS1 sets are the highest performance rings on the market. They have a Moly Max plasma ductile iron top ring. This ring will hold up to extreme heat and detonation and is used in nitro, blown and nitrous applications. Total Seal highly recommends this ring for high performance street applications, where the compression ratio has been raised. The second ring is the Gap-less design. This ring is the same on all applications. It consists of two pieces, a ring and a rail and is so constructed that the blow-by is reduced to 2% or less and remains at this basic level trough out the life of the ring set. The Gap-less ring seals so well, the oil temperature actually goes down because of the lesser blow by. The oil ring in the TS1 set is a 3 piece design with a stainless steel expander and tool steel chromed faced rails. Total Seal piston rings sets are sold in sets for one single piston. Available in standard, and oversize.

Note: Bore sizes 3 3/4", 3 13/16", 4", 4 1/4", 4 3/8" and 4 1/2" are available in TS1 quality only. Not all Big Bore sizes are available. It may be needed to gap a larger size piston ring down to the size required.

	Stock bore 3 1/2" Evolution 1340 Sportster 1200		Stock bore 3 3/4" Twin Cam 1450	Big Bore 3 5/8"		Big Bore 3 13/16"
Set is for	1 cylinder		1 cylinder	1 cylinder		1 cylinder
Top Ring	1/16"		1.5 mm	1/16"		1/16"
Second Ring	1/16"		1.5 mm	1/16"		1/16"
Oil Ring	5/32"		3.0 mm	3/16"		3/16"
	TSS	TS1	TS1	TSS	TS1	TS1
Std.	**710126**	**710120**	**710148**	**710150**	**N/A**	**710156**
+.005"	**710127**	**710121**	**710151**	**N/A**	**710145**	**710157**
+.010"	**710128**	**710122**	**710161**	**710152**	**710146**	**710158**
+.020"	**710129**	**710123**	**710164**	**710153**	**710147**	**710159**
+.030"	**710130**	**710124**	**710165**	**710154**	**N/A**	**710160**
+.040"	**710131**	**710125**	**N/A**	**710155**	**710149**	**N/A**

	Big Bore 4"	Big Bore 4 1/4"	Big Bore 4 3/8"	Big Bore 4 1/2"
Set is for	1 cylinder	1 cylinder	1 cylinder	1 cylinder
Top Ring	1/16"	1/16"	1/16"	1/16"
Second Ring	1/16"	1/16"	1/16"	1/16"
Oil Ring	3/16"	3/16"	3/16"	3/16"
	TS1	TS1	TS1	TS1
Std.	**710166**	**710170**	**710174**	**N/A**
+.005"	**710167**	**710171**	**710175**	**710133**
+.010"	**710168**	**N/A**	**N/A**	**N/A**
+.015"	**710169**	**710173**	**710177**	**N/A**
+.020"	**710134**	**N/A**	**N/A**	**N/A**
+.030"	**710135**	**N/A**	**N/A**	**N/A**

TOP QUALITY MILLED CYLINDER BASE HARDWARE

The strongest nuts and washers on the market. Machined from high grade steel and available in your choice of black oxide finish or chrome plated finish for better looks and improved durability. Sold in complete sets.

Fits Sportster models 1957 thru 1984 (OEM 16603-72)
231601 Chrome plated cap nut

Fits Big Twin Models 1936 thru 1977 (OEM 16602-30)
231600 Chrome plated cap nut

Fits Big Twin Models 1978 thru 1984 (OEM 16838-78)
231602 Chrome plated nut OEM style
231603 Black oxide coated OEM style
231599 Chrome plated acorn nut

Stud washer fits Big Twin models 1978 thru 1984 (OEM 16836-78)
231604 Chrome plated finish
231605 Black oxide coated

P.M. CYLINDER DOWELS

Heavy-duty cylinder locating dowels made by Precision Machining. Fits Evolution Sportster 1986 to present and Big Twins 1984 thru 1999 (OEM 16573-83). Sold in 4-packs.

232379 Cylinder dowels

PRECISION MACHINING CYLINDER STUDS

Machined from U.S. milled aircraft quality steel. These super strong studs have rolled threads, completely ground outside diameter and black oxide coating. Manufactured by Precision Machining for superior quality. Sold in 8 packs.

232377 Fits Evolution Sportster 1986 to present (OEM 16832-86B)
232378 Fit Evolution Big Twin 1984 thru 1999 (OEM 16837-85A)

S&S CYLINDER STUD FOR TWIN CAM

Heavy Duty OEM replacement cylinder stud. These studs are the same as S&S uses in their Twin Cam style crankcases (OEM 16834-99). Sold each.

750503 Twin Cam Cylinder stud

CYLINDER BASE NUTS FOR BIG TWIN

High torque cylinder base nuts for Big Bore cylinders. Can also be used with stock or stock replacement cylinders. Available with Black Oxide and Show-Chrome finish.

231572 Base nuts black oxide (set 8) (OEM 16602-30)
231573 Base nuts show-chrome (set 8) (OEM 16838-78)

CYLINDER STUDS

Cylinder studs for all models Sportster 1957 to present and Big Twin from 1930 to present. These "stronger than stock" cylinder studs are made from the finest high tensile steel available. Sold each.

For Sportster

234914 Fits 55" and 61" 1957-1985 (OEM 16830-52)

234913 Fits Evolution models 1986 to present (OEM 16832-86A)

For Big Twin

234915 Fits 61", 74" and 80" OHV and Flathead thru 1984 (OEM 16831-30 & 16837-78)

721862 Fits 1978 thru 1984 (OEM 16837-78)

234905 Fits Evolution models 1984 thru 1999 (OEM 16837-85B)

HIGH PERFORMANCE CYLINDER STUDS FOR 1936 THRU 1984 BIG TWINS

231548 Extra Heavy-Duty "Grade 8" cylinder studs. Fits all 1936 thru 1984 Big Twin models. These studs are also used as base studs in Top Fuel Nitro motors. Should be used in combination with our High Torque base nuts (231572 or 231573). Sold each.

A.R.P. HIGH TENSILE STRENGTH BASE STUDS

High Performance and Race engines, especially nitro burning engines, need more than just a stud to hold the cylinders down in case of a miss-fire or total ignition failure. Too many times cylinders have come of the crankcase destroying expensive parts and in some occasions even worse, due to the braking of "cheap quality" base studs. No longer, we had A.R.P. (Automotive Racing Products) make the strongest stud on the market. We selected two qualities of high tensile strength steel to manufacture these base studs from. One quality has a tensile strength of 190.000 PSI (130 kg/mm2) the other has the ultimate strength of 220.000 PSI (160 kg/mm2). Both qualities have rolled thread and are available in a long (2.75") and a stock replacement (2.375") version for use with thin or thick base flange cylinders. We also supply the ultimate strength 12 point nuts (7/16" UNF) for use with this stud. The 12 point nuts are also available in 5/16"-24 UNF and 3/8"-24 UNF.

722114 A.R.P. stud 7/16", 2.75" long 190.000 psi

722115 A.R.P. stud 7/16", 2.75" long 220.000 psi

722116 A.R.P. stud 7/16", 2.375" long 190.000 psi

722117 A.R.P. stud 7/16", 2.375" long 220.000 psi

722118 A.R.P. 12 point nut 5/16"-24 180.000 psi

722119 A.R.P. 12 point nut 3/8"-24 180.000 psi

722120 A.R.P. 12 point nut 7/16"-24 180.000 psi

OIL PUMP COVER FOR BIG TWIN BELTDRIVE

These show-chromed pump covers will work with all aluminum oil pumps 1974 thru 1982 (OEM26242-84).

231985 Pump cover, chrome for belt-drive

S&S OIL PUMP GASKET SETS AND REBUILD KITS

Convenient kits to rebuild your S&S oil pump. Available as gasket set or complete rebuild kit.

Gasket sets include drive shaft key, snap ring, pump body gasket and pump cover gasket.

234917 For S&S oil pumps on 1936 thru 1991 models

750033 For S&S oil pumps on 1992 thru 1999 models

Rebuild kits include drive shaft keys, snap ring, pump body gasket and pump cover gasket, drive shaft retaining ring and seal, relief valve spring, O-ring's, check valve ball and check valve spring.

234918 For S&S oil pumps on 1936 thru 1991 models

750034 For S&S oil pumps on 1992 thru 1999 models

S&S BILLET OIL PUMP KITS FOR 1936 THRU 1999 BIG TWIN MODELS

S&S's new, 1981 thru 1999 style oil pumps for Big Twins are CNC machined from solid billet aluminum for strict manufacturing tolerances and high-gloss polished for that "different look". S&S oil pumps route surplus oil back to the main supply passage rather than the return to eliminate unnecessary filtering and offer the opportunity to upgrade earlier engines to the 1981-up oiling system. This oiling system splits bottom and top end oil supplies, increasing oil pressure to hydraulic lifters and top end. Another simple, optional modification will improve primary chain oiling in 1965 thru 1972 models. The oil pump cover is compatible with both OEM steel oil lines as well as conventional neoprene line to insure a simple installation and professional, uncluttered appearance. S&S oil pump assemblies come complete with all internal parts assembled, gaskets, drive shaft with keys and snap ring, mounting hardware, check ball and pressure relief valve assemblies. For those who want everything to be 101% there is an oil pump assembly complete with drive gear, breather gear and shim kit available.

Note: For maximum flexibility, S&S oil pumps provide optional location for the oil supply fitting. Dyna's, late FL's and other models with oil tanks below the transmission should utilize the stock location. Otherwise, under certain circumstances air could enter the oil pump and interfere with engine lubrication. No provision is made for rear chain oiling on ANY S&S billet oil pump. The billet oil pump for 1936 thru 1976 Big Twins is equipped with an adjusting screw to control primary oil metering. Oil pump assembly ZPN 750604 is as supplied with all S&S Evolution style engines and features an universal cover with top and bottom feeds.

	Oil pump assembly	With gear & shim kits
Fits 1936 thru 1972 models	**711471**	-
Fits 1948 thru 1953 models	-	**711474**
Fits 1954 thru 1969 models	-	**711475**
Fits 1970 thru 1977 models	-	**711476**
Fits 1973 thru 1991 models	**711472**	-
Fits 1978 thru 1991 models	-	**711477**
Fits 1992 thru 1999 models	**750604**	
Fits 1992 to present models	**711473**	**711478**

OIL PUMP MOUNTING HARDWARE KITS

Available in Zinc or Chrome plated finish. These kits contain studs, nuts and washers. Re-use of the old hardware when rebuilding your engine can be foolish as the oil pump is vital and it has to be fitted very secure. Available for all Big Twins 1978 thru 1991, Softail 1992 thru 1999, Dyna and FLT 1992 thru 1998, as well as Sportster 1977 to present.

Fits Big Twin 1978 thru 1991
231597 Chrome plated finish
231598 Zinc plated finish

Fits Softail 1992 thru 1999, Dyna and FLT 1992 thru 1998
741786 Chrome plated finish

Fits Sportster 1977 thru 1990
741787 Chrome plated finish

Fits Sportster 1991 to present
741788 Chrome plated finish

S&S HIGH VOLUME HIGH PRESSURE OIL PUMPS

The S&S High Volume High-Pressure (HVHP) billet aluminum oil pump is a new high capacity pump that was designed for the S&S Super Sidewinder Plus Long Block engines. The SSW+ engine features piston cooling jets that spray oil on the underside of the pistons. In order to supply enough oil for these cooling jets in addition to the oil requirements of the rest of the engine, a new pump was needed. Although these HVHP oils are very similar in appearance to the standard S&S billet pumps, there are several important differences. These pumps feature a new tooth profile with fewer, but larger teeth, providing 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 these wider gears, the HVHP pump is no thicker than stock and uses the stock oil pump drive shaft. S&S HVHP oil pumps are recommended for any engine with 1992 thru 1999 style crankcases. Pumps are available with your choice of universal or standard style cover. The universal cover provides a number of oil feed and return options allowing maximum flexibility for customized installations, the standard style cover has feed and return holes in the stock 1992 thru 1999 locations. Oil pump only kit includes supply gears, return gears, drive shaft, drive shaft keys, drive shaft snap rings, check ball, check ball spring, pressure valve, pressure valve spring, cover screws with O-rings, miscellaneous hose fittings, plugs, screws, gaskets, and mounting hardware. Pump kits with gears include everything in the pump only kit, with the addition of oil pump drive shaft gear, oil pump pinion shaft gear, and an S&S steel breather gear and shim kit.

Note: Does not fit pre-1992 style crankcases.

S&S High Pressure High Volume oil pump kits with universal cover
750054 Pump kit only
750055 Pump kit with gears and breather

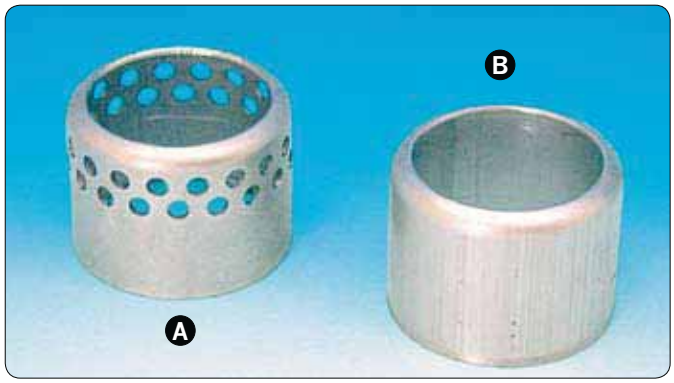
S&S High Pressure High Volume oil pump kits with standard cover
750056 Pump kit only
750057 Pump kit with gears and breather

Gasket and rebuild kits
750150 Gasket rebuild kit, includes gaskets, key and retaining ring
750148 Master rebuild kit, includes gaskets, seals, O-rings, key, retaining ring, relief valve spring, check valve spring, and ball

OIL PUMP FOR SPORTSTER

OEM type oil pump as installed since 1991 on every Sportster motorcycle. Fits 1991 to present Sportster models and Buell models thru 2001.

744476 Sportster oil pump (OEM 26204-91A, 26204-98)



PRO-FLOW MESS FILTER FOR SPORTSTER TYPE OIL PUMPS

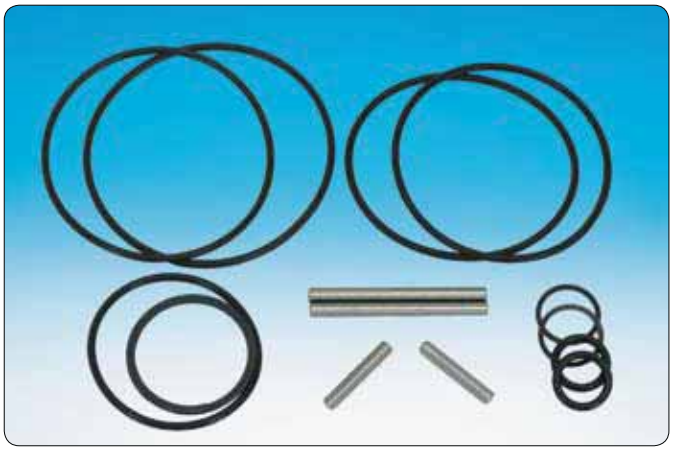
The Pro-Flow performance pump incorporates a unique filter oil level control system to regulate the minimum oil level in the camshaft gear case. It is located on the upright tower and sits in the gear case when the pump is installed. These mess filters fit over the Pro-Flow oil pump suction area and regulate the oil level in the gear case. The filter only regulates the level in the gear case and does not effect the level in the engine sump. Filters are available in street, race or blank. You can drill the blank version to your own specifications. There is also a racer's set available that contains all three versions. We highly recommend the use of the mess filter to protect the oil pump from debris in the event of engine failure.

A. 721854 Pro-Flow mess oil filter street
B. 721856 Pro-Flow oil filter blank

PROFLOW OIL PUMP FOR SPORTSTERS

After years of searching for ways to improve the oil system in a high performance Sportster engine, ProFlow has developed this 3-stage oil pump as a bolt-on for mild street to high performance applications. Oil pressure and oil volume are no problem in the modern Sportster and Buell engine due to the gerotor design feed gears used since 1977. Where the problem lies is the stock pump's ratio between the feed versus the return and its inadequate ability to return the oil to the tank after it has performed its lubricating duties. Extensive testing of the stock system it was found, that at RPM's over 5000, the feed side of the pump is delivering more oil to the engine than the scavenge is capable of returning thus filling the crankcase with an unwanted excess of oil. In any engine where high RPM's are the norm, engine wet sumping occurs, robbing your engine of horsepower through additional drag on the flywheels and other moving parts. Several designs were constructed and tested, and from this testing they developed the ProFlow pump. Fully CNC machined from 6061-T651 billet aluminum, the ProFlow uses a similar same style gerotor feed as the OEM pump, but has large spur-type scavenge gears and improved port capacity that returns more oil than the gerotors can feed, even well past maximum RPM. The payoff is a "dryer" engine sump which produces more power by controlling internal losses. The ProFlow's compact design fits in the frame with no modifications, and its modular construction is completely sealed by o-rings for a tight, leak-free seal. Direct bolt-on replacement in 1991 and later 5 Speed engines. For 1977 thru early 1990 models that do not use an oil filter there is a special check valve kit available. Each pump comes with a full set of extra o-rings and complete, comprehensive instructions. We also have a special 4 stage race pump available. The race pump will also fit most 4-cam dragrace cases.

721183 ProFlow Oil pump for Sportster 1977 to present and Buell all models
721184 Racing 4-stage oil pump kit
721185 Replacement O-ring set



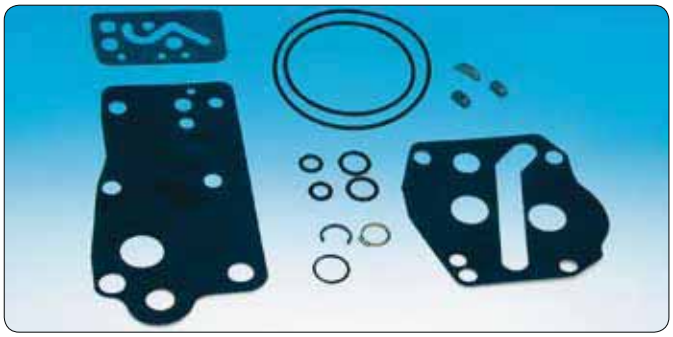
REPLACEMENT PARTS FOR PRO-FLOW SPORTSTER TYPE OIL PUMPS

721756 Rebuild kit, for Sportster type Pro-Flow pumps. Contains all clips, keys, pins and O-rings needed to completely re-assemble the Pro-Flow Sportster style oil pump
721845 Pro-Flow Main body with gerotor set
721846 Pro-Flow Scavenge section with spur gears
721847 Pro-Flow Feed section with gerotor set for ZPN 721184
721848 Pro-Flow Feed section with gerotor set for ZPN 721183
721849 Auxiliary section with gerotor set for ZPN 721184
721850 Pro-Flow Oil pump cover
721851 Pro-Flow Drive shaft only for ZPN 721183
721852 Pro-Flow Drive shaft only for ZPN 721184
722121 Dowel pins oil pump set zpn 721183 and ZPN 721184
722069 Mounting bolts for ZPN 721183
722139 Mounting bolts for ZPN 721184

PRO-FLOW OIL PUMP FOR BIG TWIN MODELS

After nearly two years of development the Pro-Flow Big Twin oil pump is ready for high performance service. Pro-Flow found that the stock oil pump provides an inadequate supply of overheated oil, especially in a performance application. This is because both stock and aftermarket designs split the feed into two sections being the tappets & top end, and the bottom end. A certain RPM level must be reached before the regulating valve opens allowing oil to be fed to the crankshaft. This may increase the risk of starving the pistons of that all-important cooling lubrication. Low RPM oil supply is poor and the overall volume of oil being run through the engine is marginal, at best. This was allowed to happen for years because the OEM Harley roller bearing engine design is very forgiving in a stock form, but add increased pressure due to high compression, big bore and/or stroke, along with tall gearing and you have got the recipe for piston galling and reliability problems. Pro-Flow designed an oil pump based on the proven design in the Sportster version of the Pro-Flow pump, the Big Twin pump shares the gerotor gear feed for constant supply, and spur gear return for its ability to efficiently pump air as well as oil. To meet the Big Twin engine's need, several gear sizes were designed and tested with the objective of getting the oil in and out of the engine at an optimum rate. The next step was to control what it lubricated. An adjustable valve body was designed using easily removable jets to control the oil to the top end and crankshaft independently, allowing the oil supply from the Pro-Flow pump to be constant to both at all RPM's. Once maximum oil pressure is achieved, a pressure relief passage opens and directs excess oil back to the oil tank, unlike the stock system which continuously heats and recirculates the same oil within the pump. The end result is fantastic. The Pro-Flow Big Twin pump feeds twice the amount of oil into the engine and returns three times as much as the stock pump, at stock pump drive ratio. It is fully adjustable for pressure and flow-rate, accepts stock oil lines, and requires no machine work to install. Beautifully CNC machined from billet aluminum, its clean, functional appearance and satin finish will enhance the looks of any Big Twin engine as well as improve its performance and reliability. Special slotted mounting hole allows installation on all Evolution Big Twin models from late 1984 thru 1999.

721179 Pro-Flow oil pump, satin finish
722070 Pro-Flow mounting bolts



HIGH PERFORMANCE REPLACEMENT PARTS FOR PRO-FLOW BIG TWIN TYPE OIL PUMPS

721181 Pro-Flow rebuild kit, containing all clips, keys, O-rings, and gaskets
721180 Valve body gasket
721836 Adapter plate for ZPN 721179

721837 Scavenge section with spur gears

721838 Feed section with Gerotor set
721839 Valve body assembly for use with 4:1, 3:1 or 2:1 drive gears
721841 Pump shaft only
721842 Engine side Drive shaft only
722067 Gear
722068 Fitting pins

BOTTOM STYLE OIL PUMP COVER FOR PRO-FLOW BIG TWIN OIL PUMP

This optional oil pump cover has the inlet fitting for the oil pump relocated to the bottom surface. Making the assembly shorter by 3/4" (19 mm), allowing for easier installation or removal on selected custom applications.

721182 Optional bottom style cover

BAISLEY 2:1 DRIVE GEAR SET FOR PRO-FLOW PUMPS

2:1 drive gears increase oil pump speed in Big Twin pumps to circulate more oil volume for increased cooling in severe climates. Oil pressure is regulated to a rock-steady 35 to 40 psi at all speeds.

721844 2:1 Drive gear set for Big Twin Pro-Flow pumps

ZODIAC ALUMINUM OIL PUMPS FOR BIG TWINS 1936 THRU 1999

Zodiac's 1981-up style, oil pumps for Big Twins are Value For Money. Pumps are cast aluminum and than CNC machined to close tolerances. The high-gloss polished finish gives that different look.. Zodiac oil pumps route surplus oil back to the main supply passage rather than the return to eliminate unnecessary filtering and offer the opportunity to upgrade earlier engines to the 1981-up oiling system. This oiling system splits bottom and top end oil supplies, increasing oil pressure to hydraulic lifters and top end. Another simple, optional modification will improve primary chain oiling in 1965 thru 1972 models. The oil pump cover is compatible with both OEM steel oil lines as well as conventional neoprene line to insure a simple installation and professional, uncluttered appearance. Zodiac oil pump assemblies come complete with all internal parts assembled, gaskets, drive shaft with keys and snap ring, mounting hardware, check ball and pressure relief valve assemblies.

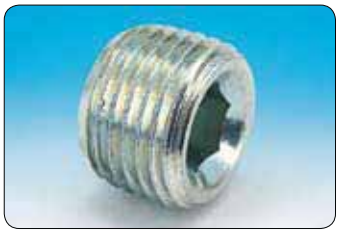
Note: For maximum flexibility, Zodiac oil pumps provide optional location for the oil supply fitting. Dyna's, late FL's and other models with oil tanks below the transmission should use the stock location. Otherwise, under certain circumstances air could enter the oil pump and interfere with engine lubrication. No provision is made for rear chain oiling. The oil pump for 1936 thru 1976 Big Twins is equipped with an adjusting screw to control primary oil metering.

301493 Fits 1936 thru 1972 Big Twins
301495 Fits 1973 thru 1991 Big Twins
301497 Fits 1992 thru 1999 Big Twins

Replacement gasket kits
234917 Fits ZPN 301493 and 301495
750033 Fits ZPN 301497

JIMS OIL PUMP DRIVE GEAR

741900 Producing quality gears is routine at Jims. Each gear manufactured has the same dedicated engineering and attention to detail as the rest of the products. Made with premium aerospace quality alloy bar steel, heat treated for wear resistance and precision cut to exact tolerances, fits Big Twin models 1954 thru 1990 (OEM 26349-84).



1/8" & 1/4" NPT SOCKET HEAD PLUG

Socket head plugs for blocking of oil or vent holes when changing the lubrication or venting system. For example when changing from chain to belt primary on a pre 1984 Big Twin, you must block of the front chain oiling system. This can be done by removing the fitting and installing the 1/8" NPT plug. 1/4" plugs are used to block vent holes on crankcases etc.

234897 Plug 1/8" NPT
236897 Plug 1/4" NPT

JIMS BIG TWIN OIL PUMP GEARS

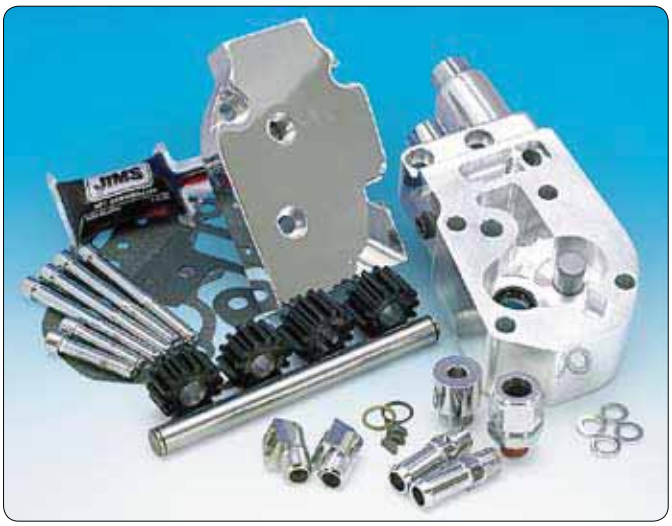
These American made top quality oil pump gears are machined from solid steel, hardened, heat treated and then ground to precise tolerances to ensure a perfect fit and long life. They fit 1968 thru 1999 Big Twin oil pumps.

237341 Feed drive gear (OEM 26328-74)
237340 Feed idler gear (OEM 26326-62A)
235775 Return drive gear (OEM 26315-68A)
235774 Return idler gear (OEM 26317-68A)

OIL PUMP GEAR FOR BIG TWIN

Top quality replacement oil pump gear for Big Twin motors.

231551 Driven gear 1973 thru 1999 (except Twin Cam models), 24 teeth (OEM 26345-73)



JIMS "FLOW PRO 1" OIL PUMPS FOR BIG TWINS

JIMS created the new "Flow Pro 1" Billet oil pump to increase scavenge oil return volume over stock pumps. Jims uses billet 6061-T651 aluminum for the housings and matched feed and return gears. All parts are CNC machined to exact tolerances. Jims claims an increase pump flow by 18% and return volume by over 20%. Each "Flow Pro 1" pump uses pump gears individually matched to each body to maximize feed and scavenge flow. These precision pumps supercede any stock or aftermarket pump and are used by top engine builders.

Fits 1973-1991 Shovelhead and Evolution Big Twins
720495 Oil pump assembly with early style cover
720496 Oil pump assembly with late style cover

Fits 1992 thru 1999 Evolution Big Twins
720493 Oil pump assembly with early style cover
720494 Oil pump assembly with late style cover

Replacement gasket kits
234917 Fits 1973 thru 1991 Shovelhead and Evolution Big Twins
750033 Fits 1992 thru 1999 Evolution Big Twin

OIL PUMP SHAFT FOR BIG TWIN

231439 Short, fits 1936-1967 (OEM 26346-36)
231438 Long, fits 1968 thru 1999 (except Twin Cam models) (OEM 25346-68 & 26346-70)
233477 Key, pinion and pump 10 pck (OEM 26348-15 & 26347-15)

RETAINING RING OIL PUMP SHAFT

231045 Fits 1941 thru 1999 Big Twins (except Twin Cam models). 10 pack (OEM 11002 & 26348-15).

OIL PUMP RETAINING RING

231051 Oil pump retaining ring. Fits 1936 thru 1999 (except Twin Cam models) (OEM 26348-36).

KEY OIL PUMP SHAFT

231050 Key oil pump shaft, fits 1936 to present oil pumps (except Twin Cam models). 10 Pack (OEM 26348-15).

T-KEY OIL PUMP GEAR

Replacement T shape key for the oil pump gear on all Big Twin models from 1991 thru 1999 (except Twin Cam models) (OEM 11219). Sold in 10 packs.

231053 T-keys oil pump gear

JIMS OIL PUMP BUSHING FOR SPORTSTER

These USA made high quality oil pump bushings exceed OEM specifications and fit 1975 thru 1990 Sportster oil pumps.

237342 Cover bushing (OEM 26431-76)
237343 Body bushing (OEM 26489-75)

OIL PUMP DRIVE SHAFT BUSHING

235865 High quality bronze oil pump drive shaft that exceeds OEM specifications. Fits Big Twin motors 1936 thru 1999 (except Twin Cam models) (OEM 24641-36).

OIL PUMP BALL BEARING

231044 Fits all Big Twin oil pumps 1941 thru 1999 (except Twin Cam models). 10 pack (OEM 8866).

OIL PUMP RELIEVE VALVE SPRING

232688 Harley-Davidson engines operate at extremely low oil pressure. This premium quality, steel alloy, oil pump pressure relief spring actually increases engine oil pressure by 2-3 psi. This added oil pressure is necessary when using aftermarket cams and valve train components and is highly desirable for extended engine life. Fits 1936 thru 1999 Big Twins (except Twin Cam models) (OEM26207-83)

CHROME OIL PUMP COVER FOR BIG TWINS

These chrome oil pump covers were designed to bolt on to the stock aluminum oil pumps in minutes. Fit all Big Twin models 1968 thru 1999, with or without fitting for the primary chain oiler (except 1991 Sturgis Dyna Glide).

301100 Fits all models 1968 thru 1991 with fitting for the primary oiler
301102 Fits all models 1968 thru 1991 without primary oiler (except Dyna Glide)
301887 Fits all models 1992 thru 1999 (except Twin Cam models)

OIL PUMP AND TAPPET SCREEN PLUG SET

741785 Complete set of 3 plugs (tappet oil screen, oil pump check valve and relief valve plug set) to fit 1981 thru 1999 Big Twin models (OEM 26263-80).

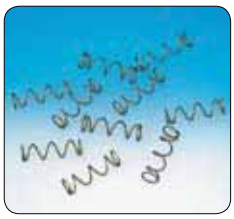
OIL SCREEN PLUGS

American made oil screen plugs as used in the tappet oil screen, oil pump check valve and relief valve plug in 1980 thru 1999 Big Twins motors (except Twin Cam models). Available in stock style with slot head or hexagon head.

234896 Slot style (OEM 26263-80)
231615 Hexagon head (OEM 26263-80)

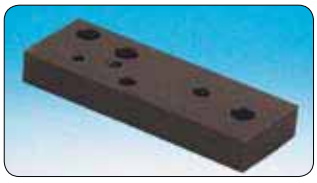
AMERICAN MADE CRANKCASE OIL SCREEN

234899 American made steel crankcase oil screen. Fits all Big Twin motors 1970 thru 1999 (except Twin Cam models) (OEM 24981-70).



SPRINGS CRANKCASE OIL SCREEN

235001 Spring to hold tappet oiler screen in place, fits Big Twin models from 1970 thru 1999 (except Twin Cam models). Sold in 10 pack (OEM 24982-70).



DRILLING JIG OIL PASSAGE

234930 This crankcase oil passage drilling jig is used to perform crankcase drilling modifications when installing an S&S and other late oil pump assembly on early Big Twin crankcases. Made of steel and heat treated file hard for durability, this fixture enables the builder to do four modifications:

- Drill the primary oil supply passage from the breather valve gear cavity to the back side of the oil pump body on late generator and early alternator cases.
- Drill the pressure relief passage from behind the main oil pressure valve to the gear cavity on alternator cases.
- Drill the crankshaft and main bearings supply passage on generator cases.
- Drill the crankshaft and main bearings supply passage on early alternator cases.

This tool is a must for all workshops, engine builders and High Performance shops.

JIMS BREATHER VALVE WITH ELONGATED OIL HOLE

741898 Jims now offers a steel replacement breather valve for Big Twins. This breather valve has an elongated rear hole to aid in better crankcase flywheel cavity vacuum. Made from the finest aerospace quality steel, and CNC machined to the highest standards. Designed to replace the stock plastic breather valve gear in all 1977 thru 1999 Big Twin engines (except Twin Cam models).

USA MADE STEEL BREATHER VALVE

These precision made steel breather valvesare manufactured by S&S and designed to replace the stock steel or plastic ones in 1977 thru 1999 Big Twin engines (except Twin Cam models). Also available in a .030 oversize if breather hole is worn and needs to be honed out. We also supply steel precision ground breather valve gear shims in the sizes .100" to .170" for correct end play.

234920 Breather valve (OEM 25313-77A)
234929 Breather valve .030" oversize
234921 Gear shim .100"
234922 Gear shim .110"
234923 Gear shim .120"
234924 Gear shim .130"
234925 Gear shim .140"
234926 Gear shim .150"
234927 Gear shim .160"
234928 Gear shim .170"

S&S REED VALVE CRANKCASE BREATHER FOR EVOLUTION BIG TWIN

Patent pending reed valve crankcase breather from S&S that really helps to resolve oil carry over problems in Evolution Big Twin engines. Unlike the rotary breather valve that has been used in Big Twin engines since the 1930's, the S&S crankcase breather reed valve is not dependent on the rotation of the crankshaft to make it open and close. Therefore the opening and closing times are not determined by crankshaft position. Instead, the reeds open when the pressure in the crankcase becomes greater than the pressure in the cam chest. The reeds then close when the pressure in the cam chest is equal to or greater than the pressure in the crankcase. The difference in the way these breather valves function is important because the ideal breather timing actually changes with rpm and the condition of the engine. By opening and closing "on demand" the reed valves automatically compensate for the lag time associated with accelerating the mass of air as it is forced out of the crankcase. This is most significant at high rpm when the time available to get the air out is the shortest. In addition, "on demand" operation allows reed valves to accommodate greater amounts of compression blow-by. Installation of the S&S crankcase breather reed valve has actually stopped high rpm oil carryover in test engines with marginal piston ring seal. The breather reed valve replaces the standard rotary breather valve in Evolution Big Twin style engines. Installation is fast and simple. Remove the original breather gear and insert the new S&S reed valve assembly into the breather valve cavity. No aligning timing marks and no rotating parts. The S&S crankcase breather reed valve can be used to replace the stock style rotary breather valve in engines with minor breather cavity damage, and there is a +.030" oversized reed valve for engines with heavily damaged breather bores. Fits all 1984 thru 1999 Evolution Big Twin engines. Can also be used in Shovelhead style engines with open primary drive or sealed primary chain case that do not require external lubrication or oil scavenging.

750586 Standard diameter
750587 +.030" oversize

S&S REED VALVE CRANKCASE BREATHER FOR TWIN CAM

Patent pending reed valve crankcase breather from S&S that really helps to resolve oil carry over problems in Twin Cams. Breather consists of a machined billet aluminum body with four steel reed valves. The valve body slides over the pinion shaft and inside the pinion bearing bore, and is contained between the pinion bearing outer retaining ring and the oil pump. The reed valves allow oil and mist to escape from the crankcase, but not allow them to reenter. Two versions available, one that fits 1999 thru 2002 Twin Cam "A" engines, the other to fit 2003 to present Twin Cam "A" engines. These breather valves are not available for Twin Cam "B" engines as used in Softail models.

750050 Fits 1999 thru 2002 Twin Cam "A" engines
750051 Fits 2003 to present Twin Cam "A" engines

SPUTHE BILLET OIL PUMP COVER

A highly polished CNC machined billet aluminum oil pump cover which mounts on the stock oil pump. It provides a cleaner, neater appearance. Fits all Big Twins from 1970 thru 1991.

232766 Billet oil pump cover

DELKRON BILLET ALUMINUM OIL PUMP BODY FOR BIG TWINS

These super strong pump bodies are CNC machined from 6061-T6 aircraft grade billet aluminum for toughness and are extremely score resistant. Very rigid to maintain critical tolerances for a super reliable oil feed. Come complete with idler shaft and idler shaft seal. Stock or aftermarket internal parts are utilized. These Delkron oil pump bodies can be used with either stock oil pump cover or the optional Delkron oil pump cover.

231498 Straight replacement for 1980 thru 1991, 1968 to early 1980 cases need to be drilled for oil relief (OEM 26222-84)

231484 Fits Big Twin Evolution models 1992 thru 1999 (OEM 26050-92 & 26053-92)

DELKRON BILLET ALUMINUM OIL PUMP COVER FOR BIG TWINS

Machined for durability from billet, aircraft quality aluminum. They return the oil from the pressure relief valve to the feed-side so do not overload the scavenger return gears. Come complete with two types of allen screw, UNC and UNF for early and late crankcases and chain oiler block-off plugs for belt drive models. Can be used in conjunction with most OEM oil pump bodies but is recommended when Delkron pump body is used.

232230 Fits Big Twins 1968 thru 1991 and Delkron oil pump body thru 1991 (OEM 26234-73A)

231483 Fits Big Twin models 1992 to present and Delkron pump bodies 1992 thru 1999 (OEM 26267-92 & 26270-92)

S&S OIL PUMP SYSTEM FOR TWIN CAM "A"

The S&S oil pump is more than an oil pump, it is an innovative product that replaces the separate oil pump, cams, cam support plate, bearing plate, bearings, and gear cover of a stock Twin Cam "A" engine. This oil pump incorporates a modified version of the S&S gear drive cams, using the cam drive gears to pump oil through the engine and to scavenge oil from the cam chest. The S&S oil pump system includes a functional, solid billet aluminum gear cover that supports the outer ends of the cams. The oil pump is compatible with S&S or stock Twin Cam style crankcases. Pressure regulation on the S&S oil pump is done AFTER the oil filter, resulting in a more consistent oil pressure through a wide range of engine temperatures. Therefore at a hot idle the S&S pump will maintain a higher pressure. Having a larger capacity to deliver oil volume, the S&S oil pump maintains oil pressure even under the most demanding circumstances. The increased scavenging capacity gets more oil out of the engine and back to the oil tank, reducing the problems of lost power and heat build up due to excess oil in the crankcase. It also reduces oil carry-over, such as oil blowing out of your crankcase breather. To further reduce oil carry-over, these oil pump kits include the S&S Breather Valve for Twin Cams. All you have to order is the oil pump kit and your choice of the special camshafts for use with this S&S Twin Cam style oil pump. Cams come with gears pressed on.

S&S oil pump kits for use with S&S Gear Driven cams in Twin Cam style engines

750348 Fits 1999 thru 2003 TC88A engines
750349 Fits 2003-up TC88A

Engines and all engines built with S&S Crankcases

750350 Replacement oil pump gasket kit

S&S Cams with Drive Gears

750351 510GP
750352 570GP
750353 585GP
750354 625GP
750355 640GP

FEULING CAM SUPPORT PLATE FOR TWIN CAM

The Feuling cam support plate for Twin Cam engines increases engine oil flow and volume by enlarging critical oil passages and the oil pump reservoirs. The cam plate is blue printed and matched to the Feuling or TPD oil pump, allowing the Twin Cam engine to take full advantage of the increased volume from these oil pumps. The cam support plate is made from 7075 billet aluminum and features a hardened anodize finish for increased strength and hardness. This allows elimination of the pinion shaft bushing. Other advantages are increased oil flow to pinion shaft and connecting rod bearings, and tighter cam bearing bore tolerance for improved press fit. Due to the improved flow, the cam support plate helps to decrease engine temperature. Pressure relief valve and spring are designed for increased volume and pressure, eliminating the need to stretch the spring or use a shim. When matched with the Feuling or TPD Race Pump rear wheel power gains of 3 Horsepower and 4 ft/lbs of Torque are achieved. These cam support plates bolt into the stock location, include bearing retainer plate and hardware and are designed for use with the Feuling and TPD high volume oil pumps. Available for use with stock chain driven cams as well as for use with aftermarket gear driven cams.

741380 Feuling cam support plate for Twin Cam models that use a Feuling or TPD oil pump and aftermarket cam gear drive
741577 Feuling cam support plate for Twin Cam models that use a Feuling or TPD oil pump and stock cam chain drive NEW

TPD SUPERPUMP, HIGH EFFINCIENCY OIL PUMP FOR TWIN CAM MODELS

The TC-88 and TC-88B engines have a small, die cast, crankspeed gerotor style oil pump that utilizes a wavy washer (Belleville style) to pre-load the pump gears against the cam support plate and pump housing. The side loading from the wavy washer can cause excessive friction and premature wear. Twin Cam engines equipped with the stock oil pump have experienced the following problems:

- Low oil pressure
- Oil in the air cleaner
- Noise & clatter
- Excessive heat
- Engine wear
- Loss of valve spring tension
- Power loss
- Wet sumping
- Dipstick blowout
- Oil leaks
- Smoking
- Inadequate oil supply
- Engine failure

The TC-88 engine uses a dry-sump lubrication system. To perform properly, the dry sump system requires a properly sized, balanced system including a scavenge pump that is capable of removing all residual oil from the crankcase at all engine speeds and conditions. Failure of the scavenge pump to perform to these requirements causes “Wet Sumping”. Instead of returning to the oil tank, the oil builds-up in the crankcase and cam chest causing excessive friction/power loss and oil aeration. This can result in oil being forced out the breather, air cleaner contamination, oil leaks, loss of oil supply, lifter clatter, component wear and potential engine failure. TC-88 engines have piston cooling jets that are designed to squirt oil on the under side of the pistons. These jets have a check valve that opens at approximately 25-28 PSI oil pressure. Without adequate pressure pump volume this pressure regulated flow to the jets can short circuit critical oil flow from the tappets and top end. Twin Cam valve springs need oil for cooling. Inadequate oil flow can cause excessive valve spring temperature causing loss of spring tension resulting in noisy valve train, valve float/valve train separation and potential engine failure. Inadequate oil supply to the rocker boxes can cause excessive rocker arm bushing wear and component failure. The Twin Cam crankshaft has machined “paddles” on the periphery of the left flywheel to provide a trigger for the crank position sensor (CPS). These paddles can whip up unscavenged oil in the crankcase, turning the oil into aerated frothing “peanut butter” that pushes its way up into the rocker boxes out the breather, into the air cleaner and beyond! TP Developments comes with an all new, high efficiency, billet, bolt-in replacement oil pump for the TC-88 and TC-88B engines that provides 40% more supply volume and 60% more scavenge volume than the stock TC-88 oil pump. Large diameter gerotors, aerospace materials and tolerances create a high efficiency pump without the need for a high friction wavy washer. This will provide the Twin Cam engine maximum power, reliability and longevity. If the scavenge pump is not up to the job, running at sustained high speeds and/or elevated engine rpm will fill the crankcase and cam chest with oil and drop the level in the oil tank. The customer/rider may observe that the oil level in the tank is low and add MORE oil further exacerbating the problem. The OEM factory recognized that a problem exists and issued TECH TIP #54, “TC-88 Oil Pump Alignment”. The real problem is pump size and abnormal wear. The potential for engine oil discharging out of the breather/air cleaner onto the rider-passenger-rear brake and tire is real!

741225 Twin Cam oil pump,fits 1999 thru 2006 models (except 2006 FXD)

ENGINE GASKET AND SEAL SETS

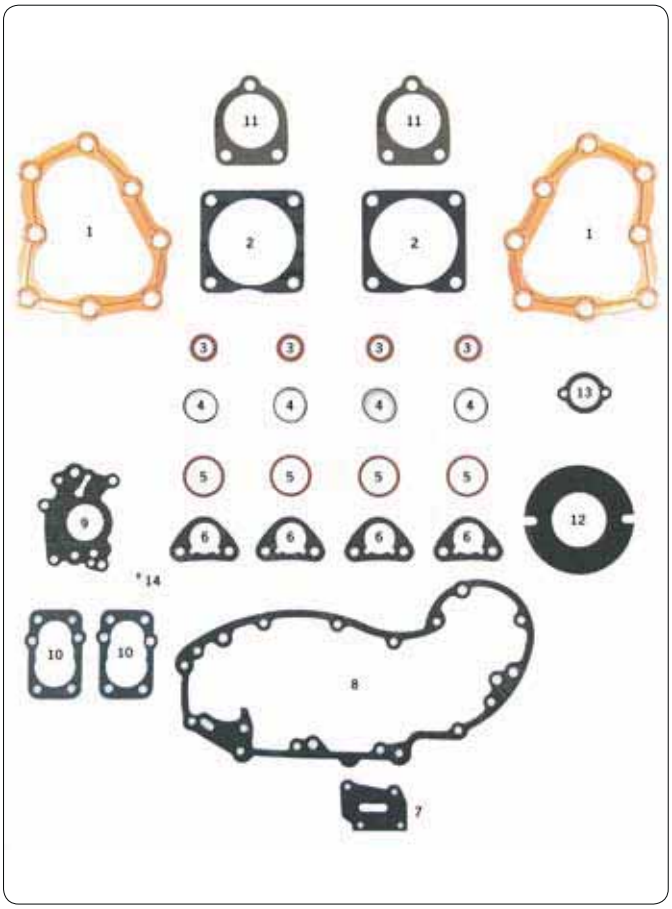
Premium quality gaskets sets, available in three different makes. We supply USA made James Gaskets, as well as gaskets and sets from Europe's leading gasket manufacturer Athena. Both makes are manufactured from the highest-grade materials but each manufacturer adds his own specialties in the manufacturing process. Each set will meet or exceed OEM standards. Available are: complete sets, top end sets and push rod seal sets for most models from 1937 to present. All gaskets, seals and O-rings are also separately available and are listed elsewhere in this chapter.

Fits 45CI Solo and ServiCars 1940 thru 1973			
Athena	**James**	OEM	
700078	**231000**	17026-40	Complete engine set
700107	**231024**	17031-40	Engine top end set
Fits XR 750 models 1972 to present			
700474	**N/A**	-	Complete engine set
Fits XL 883 models 1986 thru 1990			
700086	**N/A**	17026-86	Complete engine set, cork rocker box gaskets
N/A	**231206**	-	Complete engine set, rubber rocker box gaskets
700103	**231293**	17032-86B	Engine top end set, cork rocker box gaskets
N/A	**N/A**	-	Engine top end set, rubber rocker box gaskets
N/A	**231168**	-	Rocker box set, cork
710500	**234433**	-	Rocker box set, rubber
741814	**233995**	-	Push rod seal kit
Fits XL 883 models 1991 thru 2003			
700089	**234425**	17026-91	Complete engine set
700109	**N/A**	17032-91	Engine top end set
N/A	**234434**	17039-90A	Rocker box set
N/A	**233996**	-	Push rod seal kit
Fits XL 883 models 2004 to present			
N/A	**742449**	-	Primary cover gasket kit
Fits K and KH models 1952 thru 1956			
700079	**N/A**	17026-52	Complete engine set
N/A	**231001**	17026-52	Complete engine set (no head gaskets)

Fits XL900 models 1957 thru 1971			
Athena	**James**	OEM	
700080	**231002**	17026-71A	Complete engine set
700098	**N/A**	17030-57	Engine top end set
741813	**233990**	-	Push rod seal kit
Fits XL1000 models 1972 thru early 1973			
700081	**N/A**	17026-72	Complete engine set
700099	**N/A**	17030-72	Engine top end set
741813	**233990**	-	Push rod seal kit
Fits XL1000 models late 1973 thru 1976			
700082	**231018**	17026-73	Complete engine set
700100	**231150**	17030-72T	Engine top end set
741813	**233990**	-	Push rod seal kit
Fits XL1000 models 1977 thru 1979			
700083	**231018**	17026-79	Complete engine set
700101	**231150**	17030-72B	Engine top end set
700106	**N/A**	17030-72B	Engine top end set (firering head gaskets)
741813	**233990**	-	Push rod seal kit
Fits XL1000 models 1979 thru 1981			
700083	**231018**	17026-79	Complete engine set
700101	**231150**	17030-72B	Engine top end set
700106	**N/A**	17030-72B	Engine top end set (firering head gaskets)
N/A	**233992**	-	Push rod seal kit
Fits XL1000 models 1982 thru 1985			
700084	**231018**	17026-82	Complete engine set
700108	**N/A**	17032-82	Engine top end set
N/A	**233992**	-	Push rod seal kit
Fits XR1000 models 1983 thru 1985			
700085	**N/A**	17026-83	Complete engine set
N/A	**233992**	-	Push rod seal kit
Fits XL1100 models 1986 thru 1987			
700087	**N/A**	17026-86A	Complete engine set, cork rocker box gaskets
N/A	**231206**	-	Complete engine set, rubber rocker box gaskets
700104	**231293**	17030-86A	Engine top end set, cork rocker box gaskets
N/A	**231168**	-	Rocker box set, cork
710500	**234433**	-	Rocker box set, rubber
N/A	**233995**	-	Push rod seal kit

Fits XL1200 models 1988 thru 1990			
Athena	James	OEM	
700088	N/A	17026-86	Complete engine set, cork rocker box gaskets
N/A	231206	-	Complete engine set, rubber rocker box gaskets
700105	231293	17032-86	Engine top end set, cork rocker box gaskets
N/A	231168	-	Rocker box set, cork
710500	234433	-	Rocker box set, rubber
N/A	233995	-	Push rod seal kit
Fits XL1200 and Buell 1200 models 1991 thru 2003			
700090	234425	17026-91A	Complete engine set
700110	234428	17032-91	Engine top end set
N/A	234434	17039-90A	Rocker box set
N/A	233996	-	Push rod seal kit
Fits XL 1200 models 2004 to present			
N/A	742449	-	Primary cover gasket kit
Fits Knucklehead 1936 thru 1947			
700092	231010	17028-36	Complete engine set
700114	231026	17034-38	Engine top end set
741813	233990	-	Push rod seal kit
Fits 74CI and 80CI Flatheads 1937 thru 1948			
700091	231009	17027-36	Complete engine set
700111	231025	17033-36	Engine top end set
Fits 61CI and 74CI Panhead models 1948 thru 1965			
700093	231011	17028-48	Complete engine set
700116	N/A	17034-48	Engine top end set
700117	231027	17034-48	Engine top end set (firering head gaskets)
741812	233991	-	Push rod seal kit
Fits 1966 thru 1969 Shovelhead			
700094	231013	17029-66	Complete engine set
700118	231028	17034-66	Engine top end set
700119	231033	17034-66	Engine top end set (firering head gaskets)
741812	233991	-	Push rod seal kit
Fits 1970 thru 1984 Shovelhead with 4 Speed transmission, complete sets include a primary cover gasket			
700095	231013	17029-70	Complete engine set
700096	N/A	17029-70	Complete engine set (firering head gaskets)
700118	231028	17034-66	Engine top end set
700119	231033	17034-66	Engine top end set (firering head gaskets)
N/A	233991	-	Push rod seal kit thru early 1979
N/A	233993	-	Push rod seal kit late 1979 thru 1981
N/A	233994	-	Push rod seal kit 1982 thru 1984
Fits 1980 thru 1984 Shovelhead with 5 Speed transmission, complete sets include a primary cover gasket			
700097	231013	17029-80	Complete engine set
700096	N/A	-	Complete engine set (firering head gaskets)
700118	231028	17034-66	Engine top end set
700120	231033	17034-66	Engine top end set (firering head gaskets)
N/A	234460	-	Cam Change kit
N/A	233993	-	Push rod seal kit late 1979 thru 1981
N/A	233994	-	Push rod seal kit 1982 thru 1984

Fits 1984 thru 1986 Evolution Big Twin			
Athena	James	OEM	
N/A	231015	17035-83B	Complete engine set, cork rocker box gaskets
700121	N/A	-	Complete engine and primary set FXST, FXWG, FXSB, FXEF
700122	N/A	-	Complete engine and primary set, rubber rocker box gaskets FXR, FLH, FLT
700396	N/A	-	Complete engine and primary set, rubber rocker box gaskets FXR, FLH, FLT
700112	231030	17033-83	Engine top end set, cork rocker box gaskets
N/A	234429	17033-83A	Engine top end set, rubber rocker box gasket
N/A	231167	-	Rocker box set, cork
N/A	234436	-	Rocker box set, rubber
N/A	234460	-	Cam change kit
741814	233995	-	Push rod seal kit
Fits 1987 thru 1991 Evolution Big Twin			
N/A	231015	17035-83B	Complete engine set, cork rocker box gaskets
700123	N/A	-	Complete engine and primary set, rubber rocker box gaskets Softail and
700122	N/A	-	Complete engine set, rubber rocker box gaskets FXR, FLH, FLT
700396	N/A	-	Complete engine and primary set, rubber rocker box gaskets FXR, FLH, FLT
N/A	234429	-	Engine top end set w/ metal head and base
N/A	742411	-	Engine top end set w/ multi layer steel head gaskets and steel base gaskets
N/A	231167	-	Rocker box set, cork
N/A	234436	-	Rocker box set, rubber
N/A	234460	-	Cam change kit
741814	233995	-	Push rod seal Kit
Fits 1992 thru 1999 Evolution Big Twin, complete sets for FXR, FLH & FLT from Athena include a primary cover gasket			
700126	231656	17041-92A	Complete engine set
700124	234430	17040-92A	Engine top end set
N/A	742412	-	Engine top end set w/ multi layer steel head gaskets and steel base gaskets
N/A	234435	-	Rocker box set
N/A	234461	-	Cam change kit
741814	233995	-	Push rod seal Kit
Fits 1999 to present Twin Cam models			
710488	231628	17053-99	Complete engine set, all models
710487	231625	17052-99	Engine top end set
N/A	231623	-	Cylinder head and base set
710489	711613	-	Rocker box & cam cover set
N/A	231619	-	Rocker box set
N/A	231522	-	Push rod seal kit with steelcore tappet block gaskets
N/A	231621	-	O-ring kit induction module 1999-up

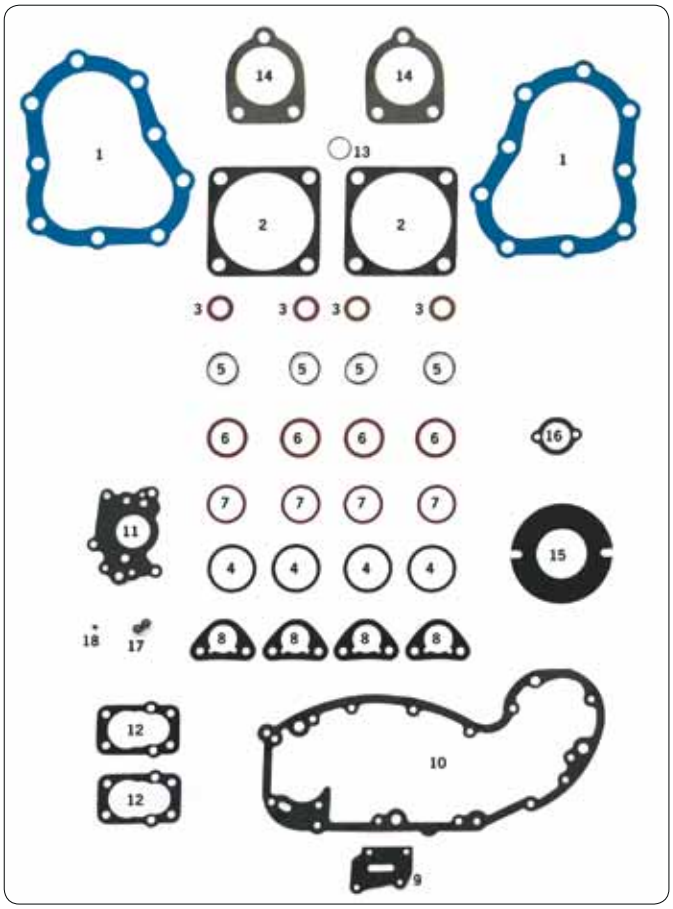


GASKETS AND SEALS FOR 45CI MODELS

Gaskets and seals for 45CI Solo & ServiCars from 1940 thru 1973.

Individual gaskets and seals						
	Athena	Qty.	James	Qty.	OEM	
1	700043	10	N/A	-	16768-39	Cylinder head, copper
2	700068	10	N/A	-	16775-29	Cylinder base
3	700161	10	N/A	-	18198-38	Valve guide
4	700165	10	N/A	-	18261-30	Valve cover
5	700168	10	N/A	-	18630-26	Lower valve cover
6	700169	10	N/A	-	18631-30	Tappet guide
7	700179	10	N/A	-	24921-37	Oil pump relief pipe
8	700190	10	N/A	-	25226-37A	Cam gear cover
9	700205	10	N/A	-	26244-60	Side mount oil pump
10	700207	10	N/A	-	26246-37	Scavenger pump base and cover
11	700239	10	N/A	-	27410-39	Intake manifold
12	700251	10	N/A	-	30143-58	Generator mount
13	700258	10	N/A	-	32522-37	Distributor base
Hardware						
14	233477	10	N/A	-	26340-36	Oil pump key

Note: Sold to dealer in pack quantities (qty) as listed.

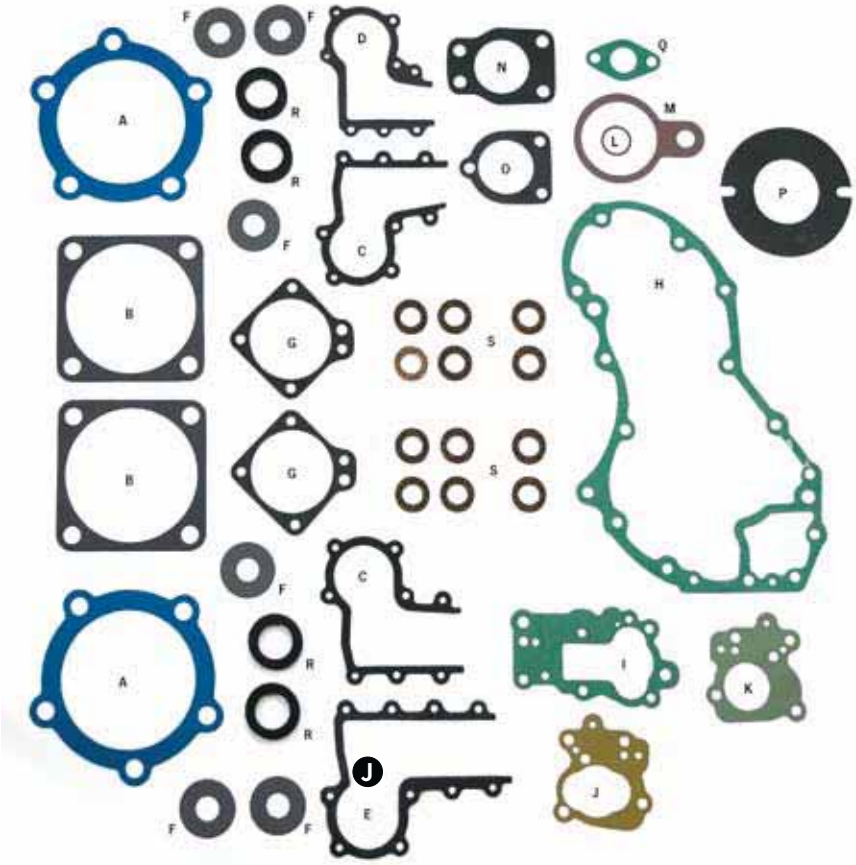


GASKETS AND SEALS 74CI AND 80CI FLATHEADS

Gasket and seals for 74CI and 80CI Flathead U, UL and UHL models 1937 thru 1948.

Individual gaskets						
	Athena	Qty.	James	Qty.	OEM	
1	700044	5	N/A	-	16769-36	Cylinder head, Teflon coated
1	N/A	-	231777	5	16769-36	Cylinder head, copper
2	700061	10	N/A	-	16774-21	Cylinder base
3	700161	10	231138	1	18198-38	Valve guide
4	700426	10	N/A	-	18259-39	Valve cover and guide 1939 thru 1948
5	700165	10	N/A	-	18261-30	Valve cover packing
6	700164	10	N/A	-	18630-26	Lower valve cover
7	700168	10	N/A	-	18630-26	Lower valve cover, 1930 thru 1938 U/UL/ULH
8	700169	10	N/A	-	18631-30	Tappet guide
9	700179	10	N/A	-	24921-37	Oil pump relief pipe
10	700191	10	N/A	-	25227-37	Gear case cover
11	700204	10	N/A	-	26244-37	Oil pump
12	700207	10	N/A	-	26246-37	Scavenger pump base and cover
13	700236	10	N/A	-	27376-28	Float bowl nut washer
14	700239	10	N/A	-	27410-39	Intake manifold
15	700251	10	N/A	-	30143-30	Generator mount
16	700258	10	N/A	-	32522-37	Distributor base
Hardware						
17	231044	10	N/A	-	8866	Oil pump ball
18	233477	10	N/A	-	26340-36	Oil pump key

Note: Sold to dealer in pack quantities (qty) as listed.



GASKETS AND GASKET SETS FOR KNUCKLEHEAD

Complete gasket sets and top-end sets for 1936 thru 1947 Knucklehead. All gaskets are separately available. Check pack quantity before ordering.

Athena	James	OEM	
231010	700092	17028-36	Complete set
231026	700114	17034-38	Top end set
638018	233990	-	Pushrod seal kit

Individual gaskets

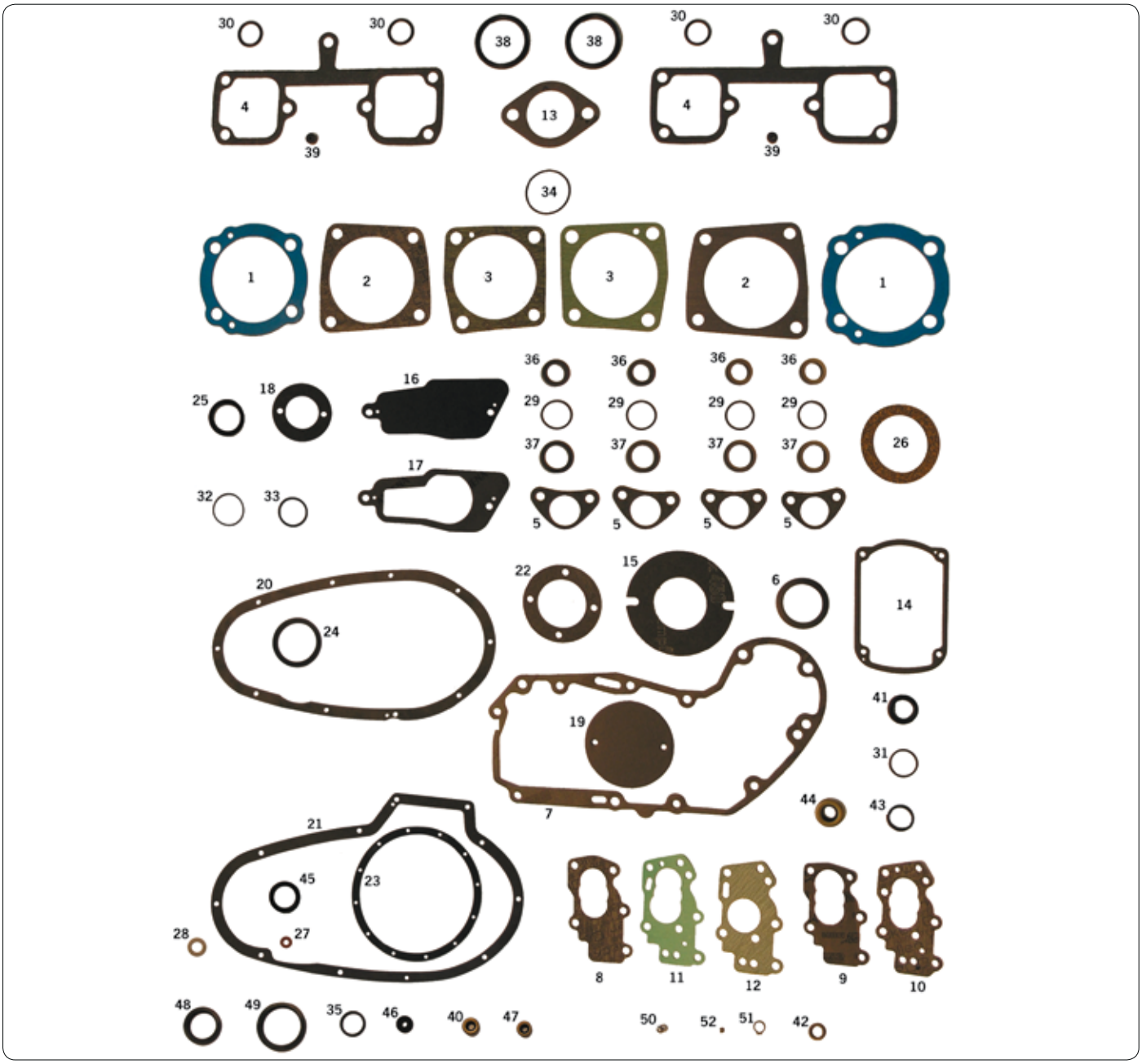
Pos.	Athena	Qty.	OEM	
A.	700052	10	16770-36	Cylinder head (Teflon)
B.	700061	10	16774-21	Cylinder base
C.	700146	10	17535-38	Valve cover, front intake and rear exhaust
D.	700148	10	17537-38	Valve cover, rear intake
E.	700149	10	17539-38	Valve cover, front exhaust
F.	700167	10	18265-37	Valve spring cover
G.	700171	10	18632-36	Tappet guide
H.	700185	10	25225-36C	Gear case cover
H.	742413	10	25225-36C	Gear case cover, Silicone beaded
I.	700206	10	26245-41	Oil pump body
J.	700209	10	26255-41	Oil pump cover, governor fitted, 1941 thru 1949
K.	700211	10	26257-41	Oil pump cover, 1941-early 1950
L.	700236	10	27376-28	Float bowl nut washer
M.	700238	10	27391-36	Float bowl cover
N.	700239	10	27410-39	Intake manifold
O.	700241	10	27411-40	Intake manifold
P.	700251	10	30143-58	Generator base
Q.	700257	10	32521-36	Distributor base

Seals & O-rings

Pos.	Athena	Qty.	Zodiac	Qty.	OEM	
R.	700144	5	N/A	-	17475-38	Rocker arm, 1938 thru 1947
S.	700156	10	011236	10	17955-36	Cork ring pushrod small
S.	700157	10	N/A	-	17955-36	O-ring pushrod small

Hardware	Qty	OEM	
234463	10	11002	Retaining ring, oil pump
231051	10	26348-36	Retaining ring, oil pump
231050	10	26348-15	Key, oil pump

Note: Sold to dealer in pack quantities (qty) as listed.



GASKETS, O-RINGS AND SEALS FOR K, KH, 1952 THRU 1956 XR AND IRONHEAD SPORTSTER 1957 THRU 1971

Gasket, O-rings and seals from Athena and James, available for all K, KH, models 1952 thru 1956 and XR and Ironhead Sportster models 1957 thru 1971. **Note:** Sold to dealers in pack quantities (Qty.) as listed.

Individual gaskets

Pos.	Athena	Qty	James	Qty	OEM	
1	700045	10	N/A	-	16769-57	Cylinder head 1957-1971
2	700062	10	N/A	-	16774-57	Cylinder base1957-1971
3	700069	10	N/A	-	16775-52	Cylinder base K & KH
4	700147	10	740385	10	17536-70	Rocker cover 1970-1971
4	710513	5	N/A	-	17536-70	Rocker cover 1970-1971 silicone beaded
4	N/A	-	740374	2	17536-70	Rocker cover 1970-1971 steelcore
5	700170	10	N/A	-	18631-52	Tappet block K & KH 1952-1956
6	700181	10	N/A	-	24978-57	Oil strainer 1957-1971
7	700183	10	740386	10	25224-52A	Cam cover 1952-1971
8	700210	10	N/A	-	26256-52	Oil pump to crankcase 1954-1971
9	700213	10	N/A	-	26258-52	Oil pump cover outer 1952-early 1962
10	700214	10	N/A	-	26258-62	Oil pump cover outer late 1962-1971
11	700217	10	N/A	-	26259-52	Oil pump cover inner 1952-early 1962
12	700218	10	N/A	-	26259-62	Oil pump cover inner late 1962-1971
13	700240	10	N/A	-	27410-57	Intake manifold 1957-1965
14	700248	10	N/A	-	29550-55	Magneto cover XL 900
15	700251	10	N/A	-	30143-58	Generator mount 1958-1971
16	638321	10	N/A	-	31461-70	Starter housing 1970-1971
17	700254	10	N/A	-	31471-67A	Starter housing 1967-1971
18	700255	10	N/A	-	31488-77	Starter mount 1967-1971
19	638109	10	740339	10	32591-70	Point cover 1971
20	700300	10	N/A	-	34952-52	Primary cover 1958-1969 XLCH 0.8 mm

Pos.	Athena	Qty	James	Qty	OEM	
20	700301	10	N/A	-	34952-52	Primary cover 1958-1969 XLCH 1.5 mm
21	700302	10	740326	10	34955-67	Primary cover 1967-1971 & 1970-1971 XLCH 0.5 mm
21	700303	10	N/A	-	34955-67	Primary cover 1967-1971 & 1970-1971 XLCH 1.5 mm
21	710512	5	N/A	-	34955-67	Primary cover 1967-1971 silicone beaded
22	700308	10	N/A	-	35169-52	Mainshaft seal retainer plate 1957-1971
23	700335	10	N/A	-	37762-52	Clutch cover 1954-1970
24	700371	10	740335	10	60567-36	Chain cover hole 1958-1969 XLCH
25	700380	10	740332	10	60645-65	Solenoid mount 1967-1971
26	700487	10	027535	1	62628-66	Oil tank cap cork 1967-1971
27	700385	10	N/A	-	63858-49	Oil level plug 1971
28	700391	10	N/A	-	67142-52	Tach drive 1971

Individual O-rings

Pos.	Athena	Qty	James	Qty	OEM	
29	N/A	-	022368	10	11100	Tappet guide 1957-1971
30	N/A	-	022365	10	11101	Rocker shaft 1957-1971
30	N/A	-	022365	10	11101	Magneto mounting 1965-early 1968 XLCH
30	N/A	-	022365	10	11101	Kickstart shaft 1954-1971
31	N/A	-	022454	10	11102	Distributor housing 1966-1969 XLH
32	638351	10	N/A	-	11103	Clutch gear late 1957-1966 XL XLH XLCH
33	638344	25	N/A	-	11106	Primary filler cap 1971
34	700233	10	N/A	-	11107	Carburator adapter 1966-1971
35	638352	25	231818	10	11119	Clutch gear 1967-1970 XLH 1970 XLCH
36	700156	10	011236	10	17955-36	Push rod tube small 1957-1971 cork
36	700157	10	N/A	-	17955-36	Push rod tube small 1957-1971 rubber
37	700158	10	011237	10	17955-48	Push rod tube large cork
37	700159	10	N/A	-	17955-48	Push rod tube large rubber
38	700233	10	022370	10	27060-55	Intake manifold 1955-1971
38	N/A	-	740600	2	27060-55	Intake manifold 1955-1971, Viton
39	700384	10	022373	10	63529-57	Rocker oil line 1957-1971

Mainshaft oil seal and retainer kit for 1952 thru 1971 models

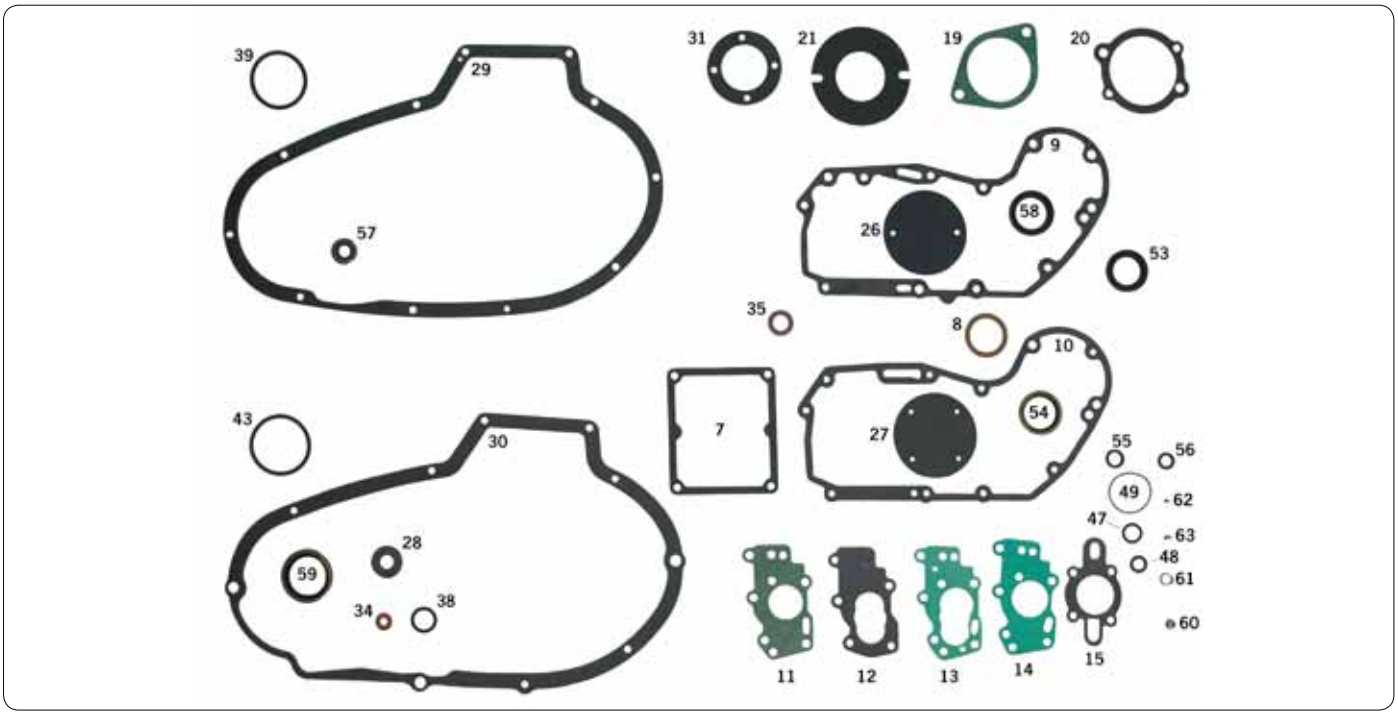
Athena	Qty	OEM	
231247	kit	35150-52	Includes oil seal, retainer and gasket

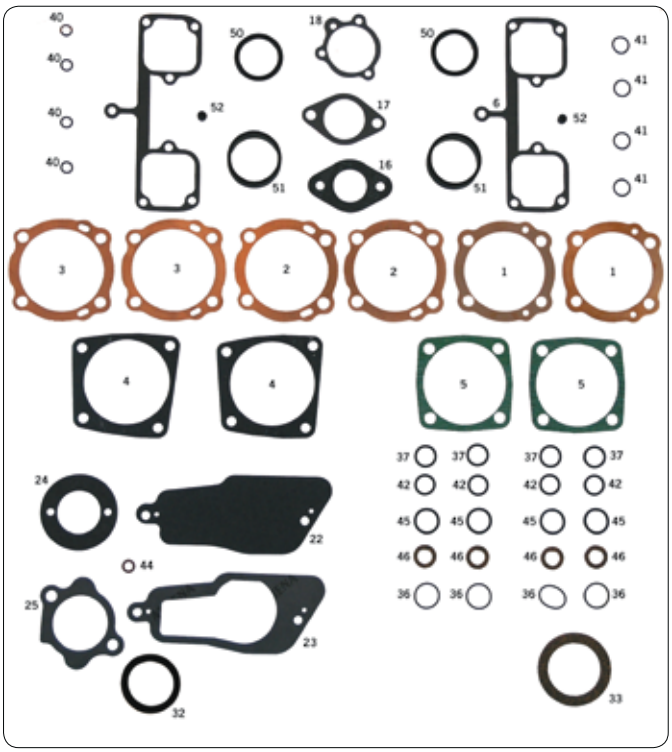
Individual oil seals

Pos.	Athena	Qty	James	Qty	OEM	
40	700022	5	022359	1	12021	Clutch gear 1967-1970
41	700024	5	022360	1	12023	Magneto mounting 1968-1969 XLCH
42	700202	5	022356	1	26227-58	Oil pump body late 1958-1971
43	638328	10	N/A	-	29603-48	Magneto drive gear 1958-early 1965
44	700273	5	022326	1	34035-52	Shift lever shaft 1954-1971
45	700306	5	022329	1	35151-52A	Sprocket shaft 1954-1971
45	700306	5	022329	1	35151-52A	Mainshaft 1954-1971
46	700324	10	022374	1	37339-53	Clutch rod 1954-1970
47	700327	5	022349	1	37531-56B	Clutch gear 1956-1966 XLH XLCH & 1967-1969 XLCH
48	700328	5	022350	1	37740-57	Clutch hub late 1957-1966 XLH XLCH & 1967-1969 XLCH
49	700330	1	022328	1	37741-67	Clutch hub 1967-1970 XLH & 1970 XLCH

Hardware

Pos.	James	Qty	Zodiac	Qty	OEM	
50	231044	10	N/A	-	8866	Check ball oil pump 1954-1971
51	234463	10	231045	10	11002	Retaining ring oil pump 1956-1962
52	N/A	-	233477	10	26340-36	Key oil pump 1960-1971 XLH XLCH





GASKETS, O-RINGS & SEALS FOR IRONHEAD SPORTSTER 1972 THRU 1985

Individual gasket, seals and O-rings for Sportster 1972 thru 1985 from Athena and James.

Note: Sold to dealers on pack quantities (Qty.) as listed.

Individual gaskets

Pos.	Athena	Qty.	James	Qty.	OEM	
1	700046	10	740397	10	16769-72A	Cylinder head 1972-early 1973 Copper 0.5 mm
1	700047	10	N/A	-	16769-72A	Cylinder head 1972-early 1973 Copper 0.8 mm
2	700049	10	740398	10	16769-73	Cylinder head late 1973-1985 Copper 0.5 mm
2	700048	10	N/A	-	16769-73	Cylinder head late 1973-1985 Copper 0.8 mm
2	700050	10	740367	10	16769-73	Cylinder head late 1973-1985 Teflon
3	700051	10	740399	10	16769-82	Cylinder head low compression 1979-1985
4	700063	10	N/A	-	16774-72	Cylinder base 1972-1985
4	700027	2	N/A	-	16774-72	Cylinder base 1972-1985 Silicon beaded
5	700064	10	N/A	-	16774-72R	Cylinder base XR 1000
6	700147	10	740385	10	17536-70	Rocker cover 1970-1985
6	710513	5	N/A	-	17536-70	Rocker cover 1970-1985 Silicon beaded
6	N/A	-	740374	2	17536-70	Rocker cover 1970-1985 Steelcore
7	700178	10	N/A	-	24821-74R	Sump plate XR 750
8	700181	10	N/A	-	24978-57	Oil strainer 1972-1976
9	700183	10	740386	10	25224-52A	Cam cover 1972-1981
10	700192	10	740382	10	25263-81	Cam cover 1982-1985
11	700210	10	N/A	-	26256-52	Oil pump to crankcase 1972-1976
12	700213	10	N/A	-	26258-52	Oil pump outer cover 1972-1976 XL
13	700217	10	N/A	-	26259-52	Oil pump inner cover 1972-1976 XLH XLCH
14	700219	10	N/A	-	26259-72R	Oil pump cover to body XR 1000
15	700228	10	740417	10	26495-75	Oil pump to crankcase 1977-1985

Pos.	Athena	Cant.	James	Cant.	OEM	
16	700231	10	N/A	-	27015-72R	Intake manifold XR 1000
17	700232	10	N/A	-	27023-71	Carburetor to intake manifold 1972-1985
18	700244	10	740341	10	29058-77	Air cleaner to carburetor late 1976-1985
19	700249	10	N/A	-	29550-56R	Magneto adapter XR 750
20	700250	10	N/A	-	29602-56R	Crankcase magneto plate
21	700251	10	N/A	-	30143-58	Generator mount 1972-early 1984
22	638321	10	N/A	-	31461-70	Starter housing 1972-1985
23	700254	10	N/A	-	31471-67A	Starter housing 1972-1980
24	700255	10	N/A	-	31488-77	Starter mount 1972-1980
25	700256	10	N/A	-	31488-81	Starter mount 1981-1985
26	N/A	-	740339	10	32591-70	Ignition timer cover 1971-1978
27	700259	10	740340	10	32591-80	Point cover 1980-1985
28	700277	10	N/A	-	34624-77	Footrest boss 1977-1985
29	700302	10	740326	10	34955-67	Primary cover 1972-1976 XLH & XLCH 0.5 mm
29	700303	10	N/A	-	34955-67	Primary cover 1972-1976 XLH & XLCH 0.8 mm
29	710512	5	N/A	-	34955-67	Primary cover 1972-1976 XLH & XLCH Silicone beaded
30	700304	10	740327	10	34955-75	Primary cover 1977-1985
30	710510	5	N/A	-	34955-75	Primary cover 1977-1985 Silicone beaded
31	700308	10	N/A	-	35169-52	Mainshaft seal retainer plate 1972-early 1984
32	700380	10	740332	10	60645-65	Solenoid mount 1972-1980
33	700487	10	027535	1	62628-66	Oil tank cap cork 1972-early 1978
34	700385	10	742485	8	63858-49	Oil level plug 1972-1985
35	700391	10	N/A	-	67142-52	Tach drive 1972-1985

Individual O-rings

Pos.	Athena	Qty.	James	Qty.	OEM	
36	N/A	-	022368	10	11100	Tappet guide 1972-1985
37	N/A	-	022365	10	11101	Push rod cover upper 1979-1983
37	N/A	-	022365	10	11101	Rocker shaft 1972-1985
37	N/A	-	022365	10	11101	Kickstart shaft
38	700002	10	022456	10	11105	Drain plug engine 1977-1985
39	638344	25	N/A	-	11106	Primary filler cap and inspection cap 1972-early 1978
42	700008	10	022404	10	11132	Push rod cover middle late 1979-1985
43	N/A	-	022458	10	11139	Primary filler cap and inspection cap late 1978-1985
44	700460	10	231523	10	11171	Starter mounting 1981-1985
45	700009	10	022406	10	11133A	Push rod tube lower 1979-1985
46	700156	10	011236	-	17955-36	Push rod tube small 1972-early 1979 cork
46	700157	10	N/A	-	17955-36	Push rod tube small 1972-early 1979 rubber
47	700227	10	027652	10	26432-76A	Oil pump body 1977-1985
48	N/A	-	027653	10	26433-77	Oil pump check valve 1977-1985
49	N/A	-	022371	10	26434-76A	Oil pump cover 1977-1985
50	700233	10	022370	10	27060-55	Intake manifold 1972-early 1978
50	N/A	-	740600	2	27060-55	Intake manifold 1972-early 1978 Viton
51	700234	10	022345	10	27062-78	Intake manifold 1979-1985
52	700384	10	022373	10	63529-57	Rocker oil line 1972-1985

Mainshaft oil seal and retainer kit for 1972 thru 1983 models

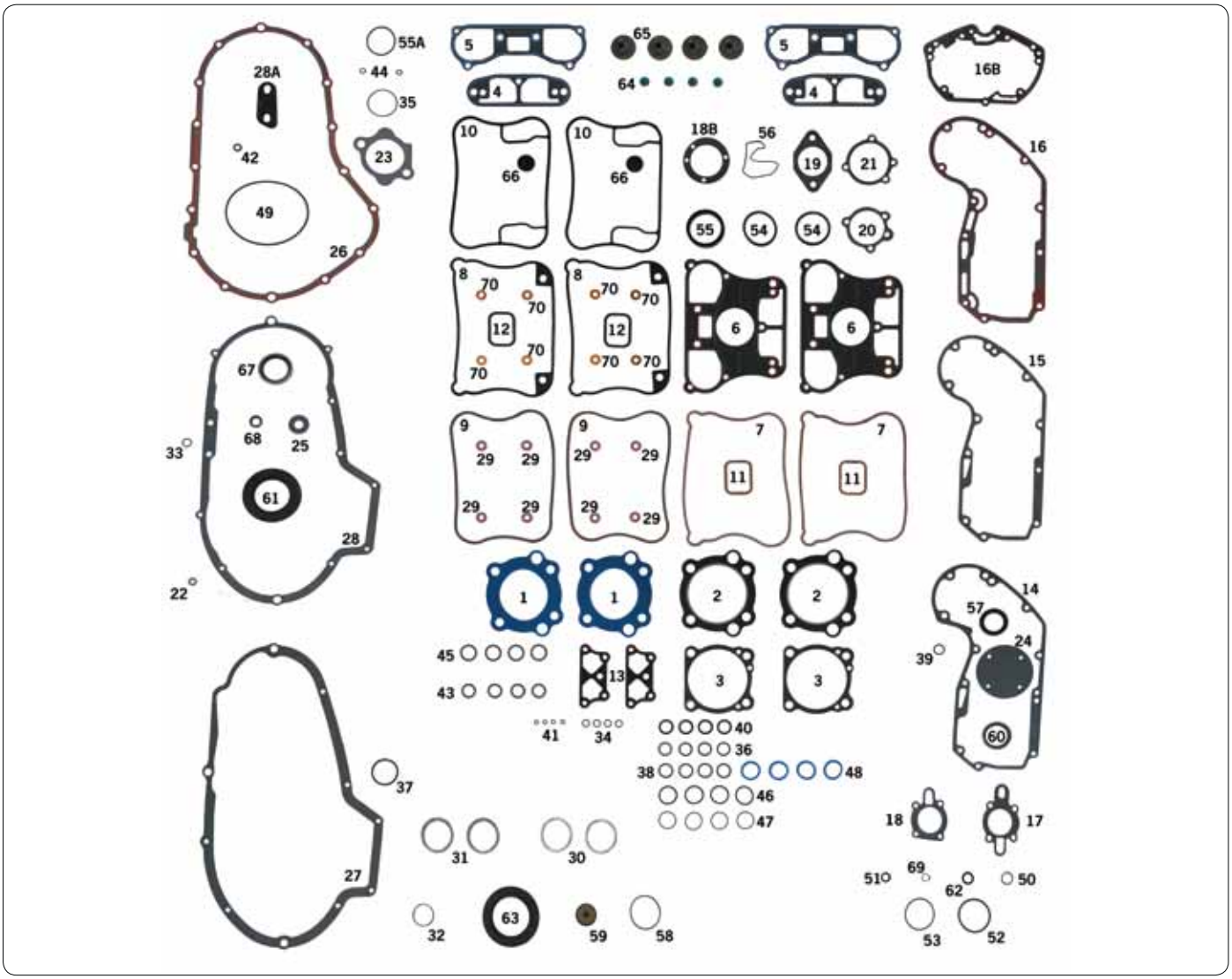
James	Qty.	OEM	
231247	kit	35150-52	Includes oil seal, retainer and gasket

Individual oil seals

Pos.	Athena	Qty.	Zodiac	Qty.	OEM	
53	700006	5	022364	1	11124	Camshaft 1972 - 1985
54	700035	5	022467	1	12049	Mainshaft late 1984 - 1985
55	700028	5	022363	1	12036A	Oil pump outer plate 1977 - 1985
56	700202	5	022356	1	26227-58	Oil pump body late 1972 - 1976
57	700273	5	022326	1	34035-52	Shift lever shaft 1972 - 1976
58	700306	5	022329	1	35151-52A	Sprocket shaft 1972 - 1976
58	700306	5	022329	1	25151-52A	Mainshaft 1972 - early 1984
59	700307	5	022347	1	35151-74	Sprocket shaft 1977 - 1985

Hardware

Pos.	James	Qty.	Zodiac	Qty.	OEM	
60	231044	10	N/A	-	8866	Check ball oil pump 1972-1976
61	234463	10	231045	10	11002	Retaining ring oil pump 1972-1976
62	N/A	-	233477	10	26340-36	Key oil pump
63	231050	10	N/A	-	26348-15	Key oil pump



INDIVIDUAL GASKETS, O-RINGS AND SEALS FOR 1986 TO PRESENT EVOLUTION SPORTSTER AND BUELL

Individual engine gaskets, O-rings and seals from Athena and James. Sold to dealers in packs containing the quantity as indicated in the Qty. column. Complete gasket sets are separately listed elsewhere in this chapeter.

Individual Gaskets

Pos.	Athena	Qty.	James	Qty.	OEM	
1	700039	5	740369	5	16664-86	Cylinder head 883 CC, Teflon
1	700040	5	N/A	-	16664-86	Cylinder head 883 CC
2	700041	5	740368	5	16665-86	Cylinder head 1100 CC 1986 1987, Teflon
2	700042	5	N/A	-	16665-86	Cylinder head 1100 CC 1986 1987
2	700058	5	N/A	-	16770-84C	Cylinder head 1200 CC, 1 mm
2	N/A	-	740372	5	16773-85	Cylinder head 1200 CC, 1 mm Teflon
2	700060	5	N/A	-	16773-85	Cylinder head 1200 CC, 1.2 mm
2	N/A	-	740362	5	16773-85	Cylinder head 1200 CC, 1.5 mm Teflon
2	700059	5	N/A	-	16773-85	Cylinder head 1200 CC, 1.5 mm
2	N/A	-	231667	2	16773-85	Cylinder head 1200 CC, multi layer steel
3	700065	10	740361	10	16774-86D	Cylinder base
3	700067	5	N/A	-	16774-86D	Cylinder base rubber coated
3	N/A	-	231208	2	16774-86D	Cylinder base steel Silicon beaded
4	700076	5	N/A	-	16778-84A	Right, rocker cover to cylinder head
4	638044	5	N/A	-	16778-84A	Right, fiber, rocker cover to cylinder head
5	700077	5	N/A	-	16779-84A	Left, rocker cover to cylinder head
5	638046	5	N/A	-	16779-84A	Left, fiber, rocker cover to cylinder head
6	N/A	-	740432	2	16800-84	One piece Silicon beaded paper, gasket, replaces OEM 16778 84A and 16779 84A
6	N/A	-	741163	2	16800-84	One piece Steel Core , replaces OEM 16778 84A and 16779 84A
7	700128	5	740351	5	17353-86	Rocker spacer lower 1986-1990
7	700129	5	740402	5	17353-86A	Rocker spacer lower 1986-1990 rubber
8	700130	5	740403	5	17353-89	Rocker cover lower 1991-up rubber
9	700131	5	740352	5	17354-86	Rocker cover-upper 1986-1990 cork
9	700132	5	740404	5	17354-86A	Rocker cover-upper 1986-1990 rubber
10	700133	5	740405	5	17354-89	Rocker cover-upper 1991-2006 rubber

Pos	Athena	Qty.	James	Qty.	OEM	
11	700142	10	740355	10	17358-84	Rocker cover inner 1986-1990 cork
12	700143	10	740410	10	17358-84A	Rocker cover inner 1991-2006 rubber
13	N/A	-	231981	2	17976-04	Tappet block, Silicon beaded 2004-up
14	700193	10	740383	10	25263-86	Cam cover 1986-1990
14	N/A	-	742414	5	25263-86	Cam cover, Silicon beaded, 1986-1990
15	700194	1	740414	10	25263-90A	Cam cover 1991-1999
15	N/A	-	742415	5	25263-90A	Cam cover, Silicon beaded, 1991-1999
16	N/A	-	231688	5	25263-90C	Cam cover 2000-2003 XL's, Silicon beaded
16B	N/A	-	742416	5	25353-00	Cam cover 2000-up Buell, Silicon Beaded
17	700228	10	740417	10	26495-75	Oil pump mount 1986-1990
18	700229	10	740384	10	26495-89A	Oil pump mount 1991-up
18B	N/A	-	742428	10	27044-90	Air cleaner spacer 1991-up
19	700235	10	740342	10	27077-78	Carburetor to manifold 1986-1987
20	700244	10	740341	10	29058-77	Air cleaner to carburetor 1986-1987
21	700245	10	740411	10	29059-88A	Air cleaner to carburetor 1988-up
21	N/A	-	740400	5	29059-88A	Air cleaner to carburetor 1988-up, Steel core
21	700246	10	N/A	-	29059-88A	Air cleaner to carburetor 1988-up, adhesive
22	700253	5	234474	5	31433-84A	Derby cover screw
22	N/A	-	234491	10	31433-84A	Derby cover screw, rubber encapsulated
23	700256	10	N/A	-	31488-81	Starter motor 1986-up
24	700259	10	740340	10	32591-80	Timer cover 1986-up
25	700277	10	N/A	-	34624-77	Footrest boss 1986-1990
26	N/A	-	741238	5	34955-04	Primary cover 2004-up Silicon Beaded
27	700304	10	740327	10	34955-75	Primary cover 1986-1990
27	710510	5	N/A	-	34955-75	Primary cover 1986-1990 Silicon beaded
28	700305	10	740423	10	34955-89	Primary cover 1991-2003
28	710511	5	740431	5	34955-89	Primary cover 1991-2003 Silicon beaded
28A	N/A	-	740475	5	34986-04	Primary Inspection cover 2004-2007
29	700385	10	N/A	-	63858-49	Rocker cover screw 1986-up
30	700386	10	740338	10	65324-83	Exhaust port 1986-1991
31	700387	5	740428	5	65324-83A	Exhaust port 1992-up
31	N/A	-	742490	10	65324-83A	Exhaust port, copper crush ring
32	N/A	-	231102	1	65781-82	Cross over pipe

Individual O-rings

Pos	Athena	Qty.	Zodiac	Qty.	OEM	
33	700002	10	022456	10	11105	Drain plug engine
34	700422	10	N/A		11110	Tappet guide bolt
35	N/A	-	022448	10	11116	Starter housing
36	700008	10	022404	10	11132	Push rod cover middle
37	N/A	-	022458	10	11139	Primary filler cap late 1986-1990
38	700010	10	027654	10	11145	Push rod cover lower 1986-1990
38	N/A	-	742401	10	11145	Push rod cover lower 1986-1990, Viton
39	700012	10	N/A	-	11148	Oil filter mount, 1986-1990
40	700430	10	022464	10	11157	Push rod cover-upper 1986-1990

Pos	Athena	Qty.	Zodiac	Qty.	OEM	
41	638257	10	N/A	-	11176	Tappet pin cover 1991-up
42	N/A	-	022452	10	11179	Clutch cable 1988-up
43	700453	10	N/A	-	11190	Push rod cover-upper 1991-up
44	700460	10	231523	10	11298	Starter mounting
44	700460	10	231523	10	11298	Inspection cover screw 1991-up
45	N/A	-	740439	10	11377	Push rode cover lower 2004-up
46	N/A	-	027655	10	11167A	Tappet guide-upper 1986-1990
47	N/A	-	027656	10	11168A	Tappet guide lower 1986-1990
48	N/A	-	231165	10	17944-89	Push rod cover lower 1991-2003
49	N/A	-	231634	10	25463-94	Derby cover 1994-up
50	700227	10	027652	10	26432-76A	Oil pump body 1986-1990
50	700227	10	027652	10	26432-76A	Cylinder stud insert 1986-1992
51	N/A	-	027653	10	26433-77	Oil pump check valve 1986 early 1987
52	N/A	-	022371	10	26434-76A	Oil pump cover 1986-1990
53	N/A	-	234499	10	26434-91	Oil pump body 1991-up
54	N/A	-	231643	2	26992-99	Intake manifold, Buell 1999-up
54	700230	10	740343	10	26995-86A	Intake manifold
54	N/A	-	234466	10	26995-86A	Intake manifold, blue Teflon
54	N/A	-	234442	10	26995-86A	Intake manifold, oversized problem solver
55	N/A	-	231154	1	27002-89	Carburetor seal 1991-up
55A	N/A	-	231847	10	27444-00Y	Starter motor, 2000-up Viton
56	N/A	-	740377	5	27577-88	Carburetor float bowl

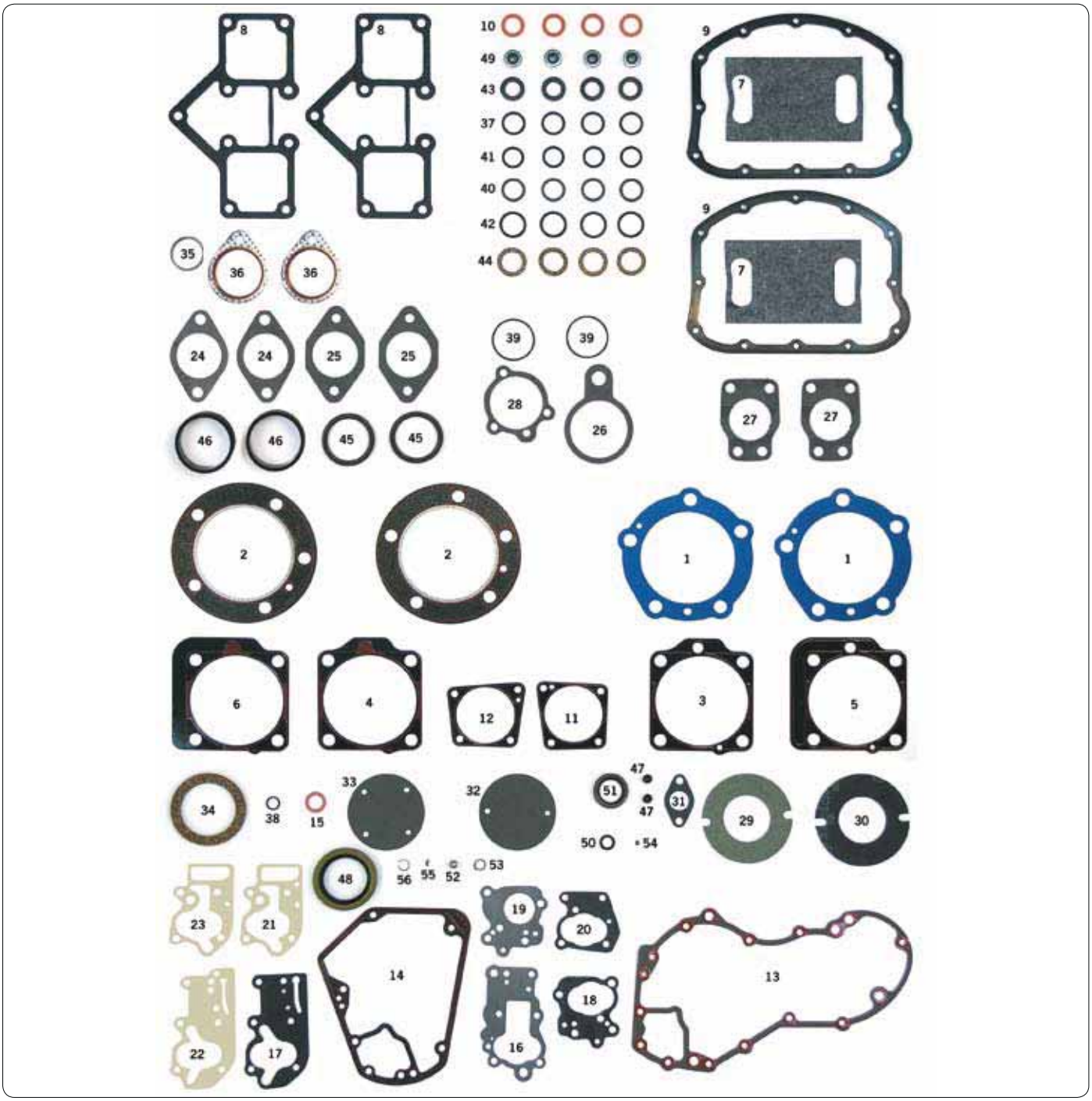
Individual seals

Pos	Athena	Qty.	Zodiac	Qty.	OEM	
57	700006	5	022364	1	11124	Camshaft
58	700014	10	022450	10	11165	Main shaft, 1991-up
59	N/A	-	N/A	-	12030	Main drive gear block seal, 1991-up
60	700035	5	022467	1	12049	Main drive gear, late 1986-1990
60	N/A	-	N/A	-	12049	Main drive gear, double lip, late 1986-1990
61	700036	1	022468	1	12050	Main drive gear, 1991-1995
62	700028	5	022363	1	12036A	Oil pump outer plate, 1986-1990
63	N/A	-	022054	1	12067A	Main drive gear, 1995-up
64	N/A	-	237182	4	18001-83B	Valve stem, 1986-2003
65	N/A	-	740438	4	18094-02	Valve stem, 2004-up
66	700325	10	037022	10	26856-89	Umbrella valve, 1991-up
67	700307	5	022347	1	35151-74	Sprocket shaft
68	742457	5	027657	1	37101-84	Shift lever shaft, 1986-2005
68	N/A	-	740440	5	37107-06	Shift lever shaft, 2006-up

Hardware

Pos	Athena	Qty.	James	Qty.	OEM	
69	N/A	-	234463	10	11002	Retaining ring, oil pump, 1991-up
70	700381	10	742485	8	63858-49	Rocker cover screw washer, Copper

Note: Sold to dealers in pack quantities (Qty.) as listed.



INDIVIDUAL GASKETS, O-RINGS AND SEALS FOR 1948 THRU 1965 PANHEAD AND 1966 THRU 1984 SHOVELHEAD

Individual engine gaskets, O-rings and seals from Athena and James. Sold to dealers in packs containing the quantity as indicated in the Qty. column. Complete gasket sets are separately listed elsewhere in this chapter.

Individual Gaskets

Pos.	Athena	Qty.	James	Qty.	OEM	
1	700053	10	740365	10	16770-48	Cylinder head, blue Teflon, 1948-1965
1	700054	2	740366	2	16770-48	Cylinder head, firering, 1948-1965
2	638099	10	N/A	-	16770-66B	Cylinder head, composite, 1966-1984
2	700055	10	740363	2	16770-66B	Cylinder head, Teflon, 1966-1984
2	700056	2	740364	2	16770-66B	Cylinder head, firering, 1966-1984
3	700070	10	740356	10	16776-48	Cylinder base, front, 1948-1962
3	710507	2	N/A	-	16776-48	Cylinder base, front, 1948-1962, Silicone beaded
3+4	N/A	-	231034	2	-	Cylinder base, front and rear Steel core,1948-1962
4	638102	10	740357	10	16776-63	Cylinder base, front, 1963-1984
5	700072	10	740358	10	16777-48	Cylinder base, rear, 1948-1962
5	710508	2	N/A	-	16777-48	Cylinder base, rear, 1948-1962, Silicone beaded
5+6	710504	2	231035	2	-	Cylinder base, front and rear, 1963-1984
6	638104	10	740359	10	16777-63	Cylinder base, rear, 1963-1984
7	700145	10	N/A	-	17507-48	Rocker arm cover pad, 1948-1965
8	700150	10	740348	10	17540-69A	Rocker arm cover, 1966-1984
8	700152	10	740412	10	17540-69A	Rocker arm cover, Silicon beaded, 1966-1984

Pos.	Athena	Qty.	James	Qty.	OEM	
8	N/A	-	231657	2	17540-69A	Rocker arm cover, Steelcore, 1966-1984
9	700026	10	N/A	-	17541-48	Rocker arm cover, 0,5 mm, 1948-1965
9	700153	10	N/A	-	17541-48A	Rocker arm cover, 0,8 mm, 1948-1965
9	700155	10	740347	5	17541-48C	Rocker arm cover, cork, 1948-1965
9	N/A	-	231669	2	17541-48C	Rocker arm cover, rubber molded steel, 1948-1965
10	700160	10	N/A	-	18196-51	Valve guide, 1951-1969
11	700172	10	740346	10	18633-48D	Tappet block rear, 1948-1984
11	638052	10	N/A	-	18633-48D	Tappet block rear, high density, 1948-1984
11+12	N/A	-	740433	pr	-	Tappet block front & rear 1948-1984, SteelCore
12	700175	10	740345	10	18634-48C	Tappet block front, 1948-1984
13	700185	10	N/A	-	25225-36C	Gear case cover, 1948-1969
13	N/A		742413	10	25225-36C	Gear case cover, 1948-1969, Silicone beaded
14	700186	10	740344	10	25225-70B	Nose cone, 1970-1984
14	N/A	-	234512	5	25225-70B	Nose cone, 1970-1984, Silicon beaded
14	N/A	-	234356	1	25225-70B	Nose cone, 1970-1984, paper coated metal core
15	700203	10	N/A	-	26231-78	Relief valve plug, oil pump, 1979-1980
16	700206	10	N/A	-	26245-41	Oil pump body, 1948-1967
17	N/A	-	740388	10	26246-68A	Oil pump body, Paper, 1968-1980
17	700208	10	740312	10	26246-68A	Oil pump body, Mylar 1968-1980
18	700209	10	N/A	-	26255-41	Oil pump cover, governor fitted, 1948-1949
19	700211	10	N/A	-	26257-41	Oil pump cover, 1948-early 1950
20	700212	10	740373	10	26257-50A	Oil pump cover, late 1950-1967
21	638127	10	740313	10	26258-68B	Oil pump cover, Mylar, 1968-1980
22	700220	10	740389	10	26273-80B	Oil pump body, Paper, 1981-1984
22	N/A	-	740314	10	26273-80B	Oil pump body, Mylar, 1981-1984
23	700216	10	740390	10	26276-80A	Oil pump cover, Paper, 1981-1984
23	700215	10	740315	10	26276-80A	Oil pump cover, Mylar, 1981-1984
24	700232	10	N/A	-	27023-71	Carburetor to intake manifold, 1971-1975
25	700235	10	740342	10	27077-78	Carburetor to intake manifold, 1978-1984
26	700238	10	N/A	-	27391-36	Float bowl Linkert, 1948-1957
27	700241	10	N/A	-	27411-40	Intake manifold, 1948-1957
28	700244	10	740341	10	29058-77	Air cleaner to carburetor, late 1976-1984
29	638133	10	740379	10	30143-30	Generator mount, 1948-1957
30	700251	10	N/A	-	30143-58	Generator mount, 1958-1969
31	700257	10	N/A	-	32521-36	Distributor base, 1948-1964
32	638109	10	740339	10	32591-70	Point cover, 1970 to early 1980
33	700259	10	740340	10	32591-80	Point cover, 1980-1984
34	700487	10	027535	1	62628-66	Oil tank cap, cork 1966-1984
35	N/A	-	231102	1	65781-82	Exhaust crossover pipe, 1982-1984
36	700388	10	740430	10	65834-68A	Steel core exhaust port
36	700389	10	740337	10	65834-68A	Firering exhaust port

Individual O-rings & seals

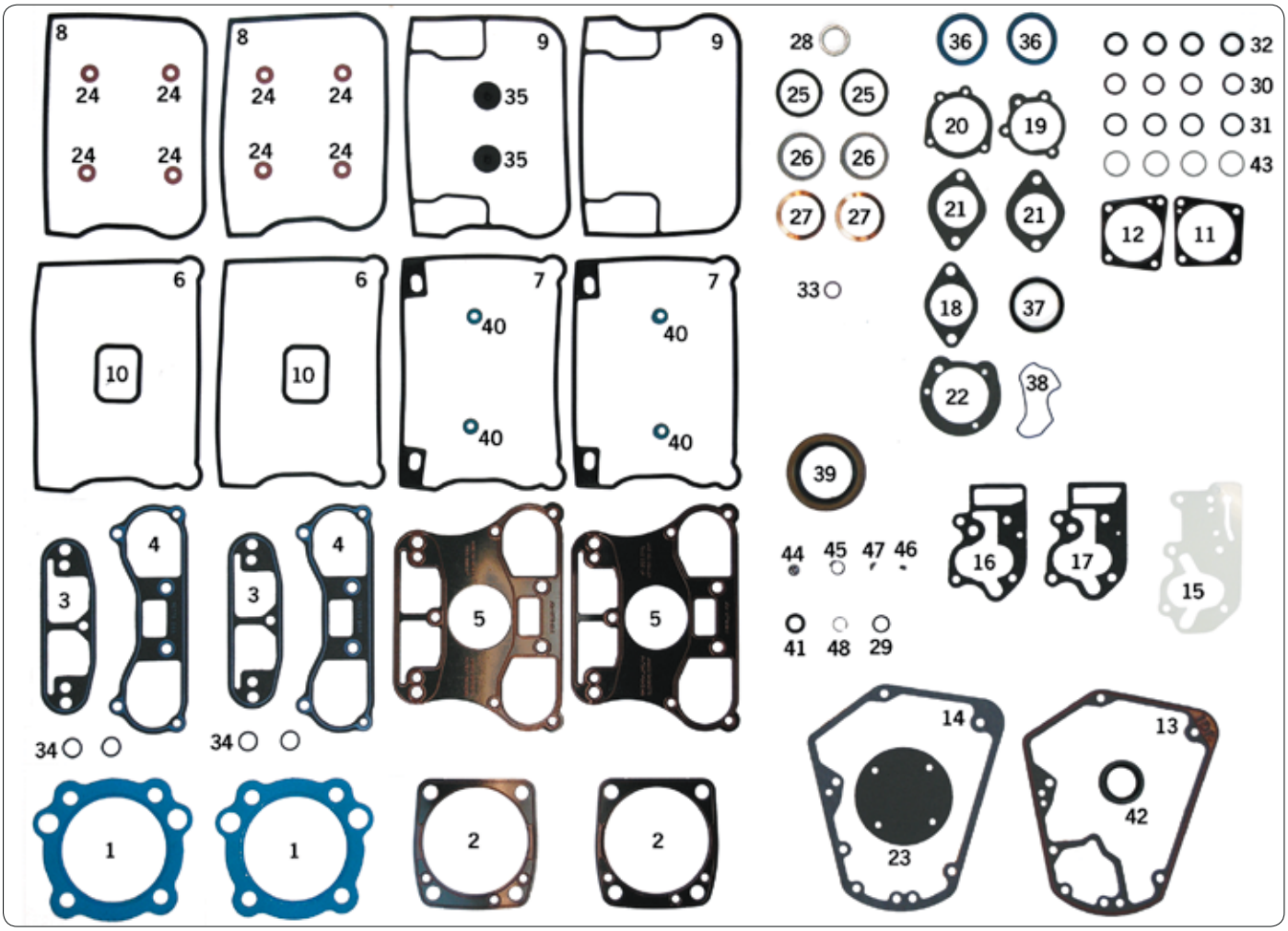
Pos.	Athena	Qty.	Zodiac	Qty.	OEM	
37	N/A	-	022365	10	11101	Distributor housing, 1966-1969
37	N/A	-	022365	10	11101	Rocker arm 1966-1984
37	N/A	-	022365	10	11101	Oil fitting, cylinder base, late 1981-1982
37	N/A	-	022365	10	11101	Push rod cover upper, 1979-early 1981
38	700002	10	022456	10	11105	Tappet screen plug, late 1970-up
38	700002	10	022456	10	11105	Oil pump check valve plug, late 1978-1984
38	700002	10	022456	10	11105	Relief valve plug, 1981-1984
39	638366	10	N/A	-	11107	Carburetor adapter, 1967-1970
40	700479	10	022051	1	11118	Push rod cover upper, late 1981-1984
41	700008	10	022404	10	11132	Push rod cover middle, late 1979-1984
42	700009	10	022406	10	11133A	Push rod tube lower 1979-1990
42	N/A	-	N/A	-	11133A	Heavy duty version
43	700157	10	011236	10	17955-36	Push rod cover upper, cork, 1948-1979
44	700158	10	011237	10	17955-48	Push rod cover lower, cork, 1948-1979
44	700159	10	N/A	-	17955-48	Push rod cover lower, rubber, 1948-1979
-	700182	10	N/A	-	24990-52	Engine check valve, late 1952-1965
45	700233	10	022370	10	27060-55	Intake manifold, 1955-early 1978
45	N/A	-	740600	2	27060-55	Intake manifold 1955-early 1978, Viton
46	700234	10	022345	10	27062-78	Intake manifold, late 1978-1984
47	700384	10	022373	10	63529-57	Oil line sleeve, 1963-1984

Individual Oil seals

Pos.	Athena	Qty.	Zodiac	Qty.	OEM	
48	700025	5	022362	1	12026B	Crankcase to sprocket shaft, 1970-1984
49	N/A	-	236154	4	18000-81	Valve stem, 1948-1984
50	700202	5	022356	1	26227-58	Oil pump body, 1968-1984
51	N/A	-	022327	1	83162-51	Camshaft, 1970-1984

Hardware

Pos.	James	Qty.	Zodiac	Qty.	OEM	
52	231044	10	N/A	-	8866	Check ball oil pump 1966-1984
53	234463	10	231045	10	11002	Retaining ring oil pump
54	N/A	-	233477	10	26340-36	Key oil pump
55	231050	10	N/A	-	26348-15	Key oil pump
56	231051	10	N/A	-	26348-36	Retaining ring oil pump



INDIVIDUAL GASKETS, O-RINGS AND SEALS FOR 1984 THRU 1999 EVOLUTION BIG TWIN

Individual engine gaskets, O-rings and seals from Athena and James. Sold to dealers in packs containing the quantity as indicated in the Qty. column. Complete gasket sets are separately listed elsewhere in this chapter.

Individual Gaskets

Pos.	Athena	Qty.	James	Qty.	OEM	
1	700058	5	N/A	-	16770-84C	Cylinder head, black graphite
1	700059	5	740362	5	16773-85	Cylinder head, Teflon .062"
1	N/A	-	231667	2	16773-85	Cylinder head, multi layer steel
1	700060	5	740372	5	16773-85T	Cylinder head, Teflon .045"
2	700065	10	740361	10	16774-86D	Cylinder base, 1984-1999
2	N/A	-	231031	2	16774-86D	Cylinder base, 1984-1999, SteelCore
2	N/A	-	740360	10	16777-83A	Cylinder base, 1984-1988
3	700076	5	N/A	-	16778-84A	Rocker cover to cylinder head right
3	638044	5	N/A	-	16778-84A	Rocker cover to cylinder head right, fiber
4	700077	5	N/A	-	16779-84A	Rocker cover to cylinder head left
4	638046	5	N/A	-	16779-84A	Rocker cover to cylinder head left, fiber
5	N/A	-	740432	2	16800-84	One-piece Silicon beaded paper rocker cover to cylinder head gasket, replaces OEM 16778-84A and 16779-84A
5	N/A	-	741163	2	16800-84	One-piece SteelCore rocker cover to cylinder head gasket, replaces OEM 16778-84A and 16779-84A"
6	700134	5	740353	5	17355-84	Rocker cover lower cork 1984-1991
6	700135	5	740406	5	17355-84A	Rocker cover lower rubber 1984-1991
7	700137	5	740408	5	17355-92	Rocker cover lower rubber 1992-1999
8	700138	5	740354	5	17356-84	Rocker cover upper 1984-1991, cork
8	700139	5	740407	5	17356-84A	Rocker cover upper 1984-1991, rubber
9	700140	5	740409	5	17356-92	Rocker cover upper 1992-1999, rubber
9	700141	5	N/A	-	17356-92	Rocker cover upper 1992-1999, cork
10	700142	10	740355	10	17358-84	Rocker cover inner, cork

Pos.	Athena	Qty.	James	Qty.	OEM	
10	700143	10	740410	10	17358-84A	Rocker cover inner, rubber
11	700172	10	740346	10	18633-48D	Tappet block rear
12	700175	10	740345	10	18634-48C	Tappet block front
	N/A	-	740433	pr	-	Tappet block front & rear, SteelCore
13	700186	10	740344	10	25225-70B	Nose cone 1970-1992
13	N/A	-	234512	5	25225-70B	Nose cone, 1970-1992, Silicon beaded
13	N/A	-	234356	1	25225-70B	Nose cone, 1970-1992, paper coated metal core
14	700188	10	740413	10	25225-93B	Nose cone 1993-1999
14	N/A	-	234514	5	25225-93B	Nose cone 1993-1999, Silicone" beaded
14	N/A	-	234357	1	25225-93B	Nose cone 1993-1999, paper coated metal core"
15	700220	10	740389	10	26273-80B	Oil pump body 1984-1991, Paper"
15	N/A	-	740314	10	26273-80B	Oil pump body 1984-1991, Mylar"
	700223	10	740415	10	26273-92	Oil pump body 1992-1999
16	700216	10	740390	10	26276-80A	Oil pump cover 1984-1991, Paper"
16	700215	10	740315	10	26276-80A	Oil pump cover 1984-1991, Mylar"
17	700226	10	740416	10	26276-92	Oil pump cover 1992-1999
18	700232	10	N/A	-	27023-71	Carburetor to manifold 1984-1986
18B	N/A	-	742428	10	27044-90	Air cleaner spacer 1993-1999
19	700244	10	740341	10	29058-77	Air cleaner to carburetor late 1984-1989
20	700245	10	740411	10	29059-88	Air cleaner to CV carburetor 1990-1999
20	N/A	-	740400	5	29059-88	Air cleaner to CV carburetor 1990-1999, SteelCore"
20	700246	10	N/A	-	29059-88	Air cleaner to CV carburetor 1990-1999, adhesive"
	N/A	-	742399	10	29062-95	Backing plate to carburetor 1995-1999 HDI models
21	700247	10	740378	10	29242-83	Compliance fitting to head 1984-1989
22	N/A	-	742500	10	29313-95	Air cleaner to backing plate 1995-1999 HDI models
23	700259	10	740340	10	32591-80	Point cover
24	700385	10	742486	8	63858-49	Rocker cover screw
24	N/A	-	742485	8	63858-49	Rocker cover screw, copper"
24	N/A	-	742487	8	63858-49	Rocker cover screw, rubber"
25	700386	10	740338	10	65324-83	Exhaust port 1984-1991
26	700387	5	740428	5	65324-83A	Exhaust port 1992-up
26	N/A	-	742490	10	65324-83A	Exhaust port, copper crush ring"
27	N/A	-	740429	10	65721-85	Exhaust clamp FLT 1985-1994
27	N/A	-	231102	1	65781-82	Exhaust cross-over pipe 1984-1999
28	N/A	-	234487	1	65826-90	Exhaust cross-over pipe Dyna & FXDB-S 1991-1999

Individual O-rings

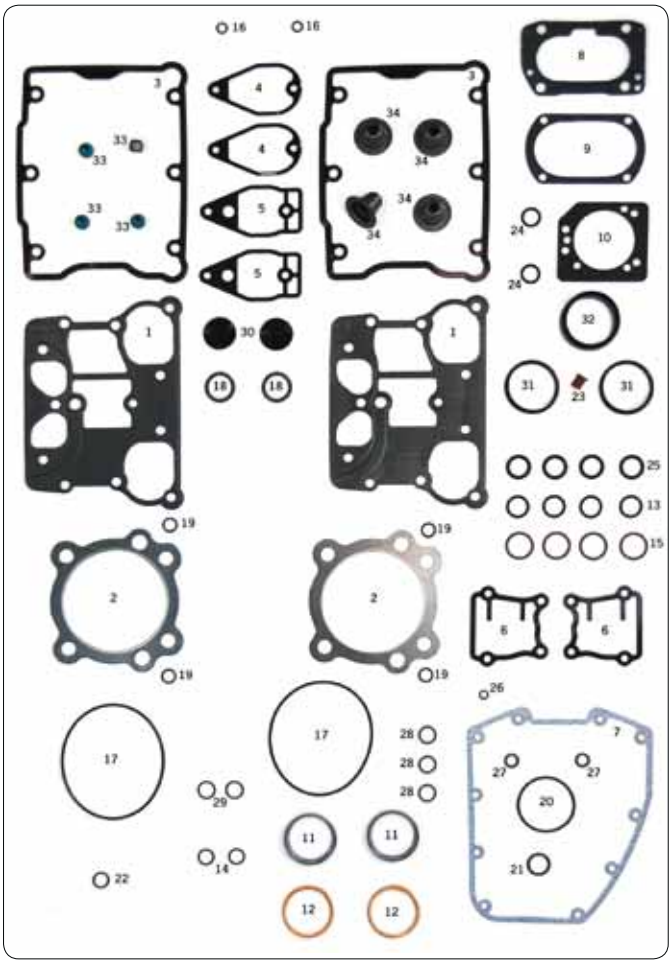
Pos.	Athena	Qty.	Zodiac	Qty.	OEM	
29	700002	10	022456	10	11105	Oil pump check valve plug
29	700002	10	022456	10	11105	Tappet screen plug
29	700002	10	022456	10	11105	Relief valve plug
30	700008	10	022404	10	11132	Push rod cover middle
30	-	-	231933	10	11132A	Push rod cover middle, Viton"
31	700010	10	027654	10	11145	Push rod cover lower
31	N/A	-	742401	10	11145	Push rod cover lower, Viton"
32	700430	10	022464	10	11157	Push rod cover upper
33	638079	10	N/A	-	11170	Crankshaft position center 1995-1999
34	700227	10	027652	10	26432-76A	Cylinder stud insert
35	700325	10	037022	10	26856-89	Umbrella valve 1992-1999
36	700230	10	740343	10	26995-86A	Intake manifold 1990-1999
36	N/A	-	234466	10	26995-86A	Intake manifold 1990-1999, blue Teflon"
36	N/A	-	234442	10	26995-86A	Intake manifold 1990-1999, oversized problem solver"
37	N/A	-	231154	1	27002-89	CV carburetor to manifold 1990-1999
38	N/A	-	740377	5	27577-88	Carburetor float bowl
-	N/A	-	742442	2	31695-90	Starter motor field coil housing 1990-up

Individual Oil seals

Pos.	Athena	Qty.	Zodiac	Qty.	OEM	
39	700025	5	022362	1	12026B	Sprocket shaft
40	N/A	-	237182	4	18001-83B	Valve stem
41	700202	5	022356	1	26227-58	Oil pump body
42	700477	5	022327	1	83162-51	Camshaft

Hardware

Pos.	James	Qty.	Zodiac	Qty.	OEM	
43	N/A	-	731342	10	6737	Washer push rod tube
44	231044	10	N/A	-	8866	Check ball oil pump
45	234463	10	231045	10	11002	Retaining ring oil pump
46	N/A	-	233477	10	26340-36	Key oil pump
47	231050	10	N/A	-	26348-15	Key oil pump
48	231051	10	N/A	-	26348-36	Retaining ring oil pump
-	742463	10	N/A	-	45596-93	Breather bolt washer



ENGINE GASKETS, SEALS AND O-RINGS FOR TWIN CAM

Complete line of individual gaskets, seals and O-rings from Athena and James for 1999 to present Twin Cam models. Sold to dealers in pack quantities (Qty.) as indicated.

Individual gaskets

Pos.	Athena	Qty.	James	Qty.	OEM	
1	700463	2	231549	2	16719-99	Rocker housing, lower
2	638394	Set	742396	10	16775-99	Cylinder head, .043" thick
2	700464	Set	N/A	-	-	Cylinder head, .059" thick
2	638390	10	N/A	-	-	Cylinder head, .051" thick
2	638393	Set	N/A	-	-	Cylinder head, .051" thick
3	700465	2	231629	2	17386-99	Rocker cover, upper
4	700471	5	231630	5	17591-99	Breather cover, upper, 1999 thru 2001
5	700467	5	231631	5	17592-99	Breather baffle, lower, 1999 thru 2001
6	700468	5	231632	10	18635-99	Lifter cover
7	700469	5	N/A	-	25244-99	Cam cover
7	N/A	-	742397	5	25244-99	Cam cover, Silicone beaded
-	N/A	-	742399	10	29062-95	Backing plate to carburetor
-	N/A	-	742500	10	29313-95	Air cleaner to backing plate, carbureted
8	638426	10	N/A	-	29368-99	Induction module to back plate
9	638427	10	N/A	-	29463-99	Air cleaner to back plate, fuel injected
10	N/A	-	742438	10	29583-01	Back plate to carburetor or Delphi FI, 2001-up, except 2008-up FLH & FLT
-	N/A	-	N/A	-	63815-99	Breather filter element
11	700387	5	740428	5	65324-83A	Exhaust
12	N/A	-	742490	10	65324-83A	Exhaust, copper crush ring

Individual O-rings

Pos.	Athena	Qty.	James	Qty.	Zodiac	Qty.	OEM	
13	700008	10	N/A	-	022404	10	11132	Push rod cover center
14	710491	10	N/A	-	N/A	-	11140	Piston cooling jet
15	700010	10	N/A	-	027654	10	11145	Push rod cover lower
15	N/A	-	742401	10	N/A	-	11145	Push rod cover lowe, Viton
16	N/A	-	231004	10	N/A	-	11246	Fuel tank check valve, EFI
17	710493	5	231005	10	N/A	-	11256	Cylinder base
18	710494	10	231007	10	N/A	-	11270	Rocker arm support
19	638397	10	231414	10	N/A	-	11273	Head and base dowels
20	710496	10	231415	10	N/A	-	11286	Oil pump housing
21	700008	10	231433	10	N/A	-	11288	Crank shaft position sensor
22	710491	10	231486	10	N/A	-	11289	Cam shaft position sensor
23	638428	10	231496	10	N/A	-	11291	Manifold air pressure sensor
24	N/A	-	231508	10	N/A	-	11292	Air cleaner
25	700008	10	231521	10	N/A	-	11293	Push rod upper
25	700008	10	231521	10	N/A	-	11293	Oil filter block
26	700460	10	231523	10	N/A	-	11298	Cam support plate plug
27	700461	10	231524	10	N/A	-	11301	Oil pump body
28	N/A	-	742404	10	N/A	-	11326	Oil line to crankcase TC88B & TC96B
28B	N/A	-	742405	10	N/A	-	11345	Oil tank dip stick TC88B & TC96B
29	700227	10	N/A	-	027652	10	26432-76A	Crank case dowel
30	638380	10	231642	6	N/A	-	26858-99	Umbrella valve
31	638407	10	231643	2	N/A	-	26992-99	Intake manifold
32	638367	5	N/A	-	022436	Set	27002-89	Carburetor to manifold
-	N/A	-	742442	2	N/A	-	31695-90	Starter motor field coil housing 1990-up

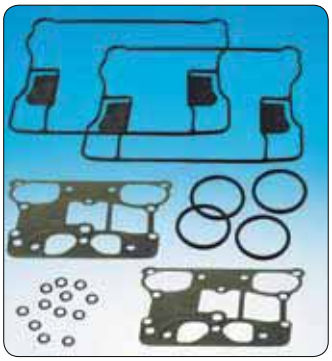
Individual Oil seals

Pos.	Athena	Qty.	James	Qty.	OEM	
-	700462	1	N/A	-	12068	Sprocket shaft
33	N/A	-	237182	4	18001-83B	Valve stem 1999 thru 2004
34	N/A	-	740438	4	18094-02	Valve stem, 2002-up

Hardware

	James	Qty.	OEM	
-	742463	10	45596-93	Breather bolt washer

Note: Sold to dealers in pack quantities (Qty.) as indicated.



SPECIAL GASKETS FOR S&S ENGINES & BIG BORE KITS

S&S Top end gasket kits include all gaskets and seals required to rebuild the top end of an S&S engine or any other engine with S&S cylinders and cylinder heads. These kits do not contain rocker cover gaskets as there are various styles of rocker covers available. Rocker cover gasket kits must be ordered separately.

Top end gasket kits

750892 Fits 3 1/2" bore S&S SH series engines NEW
750891 Fits 3 5/8" bore S&S SH series engines NEW
750890 Fits 3 1/2" bore S&S V-Series and Evolution Big Twin NEW
750145 Fits 3 5/8" bore S&S V-series, Evolution Big Twin and Big Bore kits
750138 Fits 3 7/8" bore Twin Cam Big Bore kits
750139 Fits 4" bore S&S T-series, Twin Cam engines and Big Bore kits
750140 Fits 4" bore S&S V-series, Evolution Big Twin, S&S X-series, XL engines and Big Bore kits
750137 Fits 4 1/8" bore S&S V124 SSW+, S&S T-series, and Twin Cam engines (non-stock base pattern)
750792 Fits 4 1/8" Big Bore Twin Cam engines (stock base pattern) NEW
750644 Fits 4 3/8" bore S&S V- and T-series engines (non-stock base pattern)
750889 Fits 4 1/8" bore S&S X-Wedge engines NEW
750888 Fits 4 1/4"bore S&S X-Wedge engines NEW

Rocker box gasket kits

750141 Fits S&S billet aluminum rocker boxes on Evolution Big Twin and Evolution Sportster
750143 Fits S&S billet aluminum rocker boxes on Twin Cam models
750142 Fits S&S die cast rocker boxes on Evolution Big Twin and Evolution Sportster
750144 Fits S&S die cast rocker boxes on S&S SSW+ engines and Twin Cam models

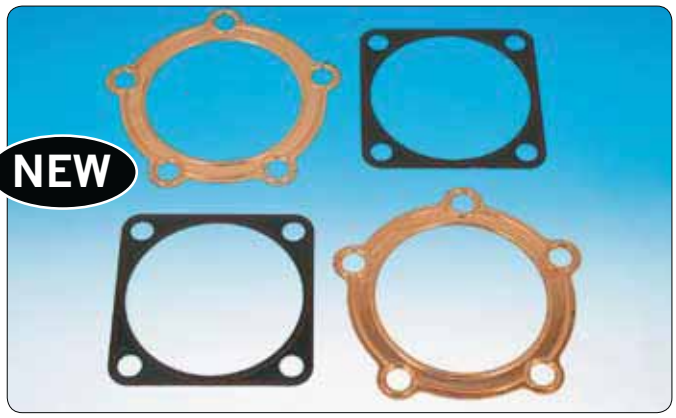
Complete engine gasket kits NEW

750886 Fits 3 1/2" bore S&S SH-Series
750887 Fits 3 5/8" bore S&S P- and SH-Series
750885 Fits 3 5/8" bore S&S V-Series and Evolution Big Twin engines with Hot Set up kit
750884 Fits 4" bore S&S V-Series and Evolution Big Twin engines with Hot Set up kit
750883 Fits 4 1/8" bore S&S V-Series and Evolution Big Twin engines with Hot Set up kit
750882 Fits 4 1/8" bore S&S T-Series and Twin Cam engines with Hot Set up kit
750881 Fits 4 1/8" bore S&S X-Wedge engines
750880 Fits 4 1/4" bore S&S X-Wedge engines
750879 Fits 4 3/4" bore S&S X-Wedge engines

JAMES EVOLUTION ONE PIECE ROCKER COVER BASE GASKET

These one-piece rocker cover gaskets replace the original two piece rocker cover base gaskets (OEM 16778-84A and 16779-84A). The one-piece design is easier to install that the original version. Available in silicon beaded paper or silicon beaded Steel Core. Sold in pairs.

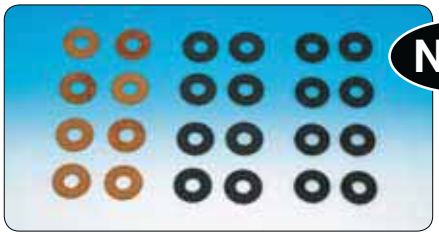
741163 Silicon beaded Steel Core
740432 Silicon beaded paper



JAMES CYLINDER HEAD & BASE GASKET KIT FOR KNUCKLEHEAD

A pair Silicone beaded Steelcore cylinder base gaskets and a pair of copper cylinder head gaskets for 1936 thru 1947 Knucklehead. Made by James Gaskets.

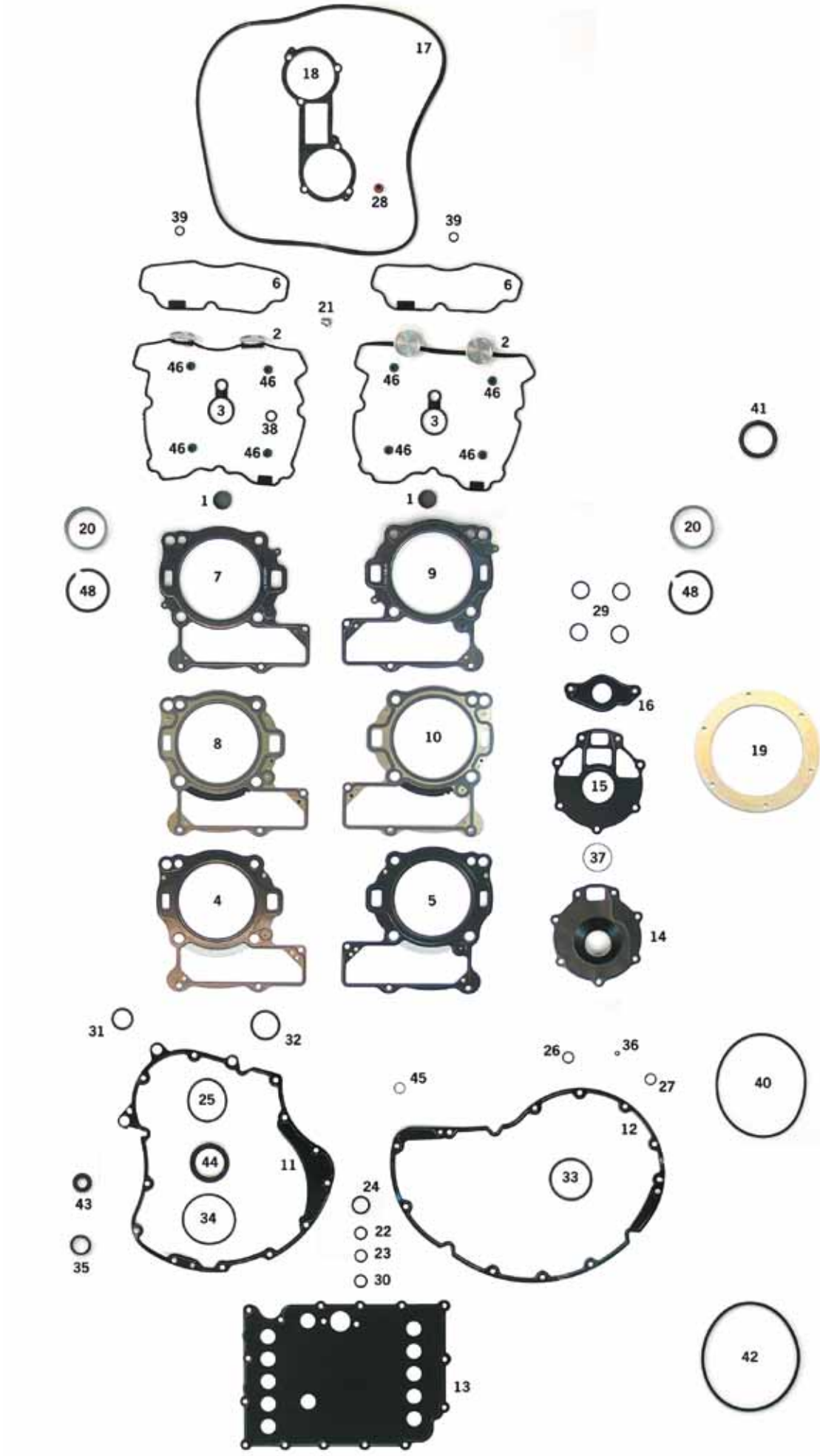
742410 Knucklehead cylinder gasket set



JAMES GASKETS ROCKER COVER WASHER KITS

Convenient packs with 8 rocker cover screw seal washers, just the right quantity needed for one engine. Available in various materials. Fits 1984 thru 1999 Evolution Big Twin and 1986 thru 2004 Sportster. (OEM 63858-49)

742485 Copper
742486 Fiber
742487 Rubber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GASKET KITS, GASKETS, SEALS AND O-RINGS FOR V-ROD

Complete gasket kits as well as all individual gaskets, O-ring and seals for V-Rod models from 2002 to present. Individual parts are sold to dealers in pack quantities as indicated in the Qty. column.

Zodiac	OEM	
751414	17010-01K	Gasket kit cam cover
751415	17011-01KA	Engine gasket kit

Individual gaskets

	Zodiac	Qty.	OEM	
1.	751440	2	769M	Cylinder head plug
2.	751416	4	17416-01KA	Cam cover, outer
3.	751417	4	17418-01K	Cam cover, inner
4.	751418	1	17625-01K	Cylinder head front, all V-Rod 2002 thru 2007 except VRSCX 2007
5.	751419	1	17626-01K	Cylinder head rear, all V-Rod 2002 thru 2007 except VRSCX 2007
6.	751420	4	17666-01K	Cam cover, upper
7.	751421	1	17691-05K	Cylinder head front VRSCX 2007
8.	751422	1	17691-08K	Cylinder head front, all 2008 models
9.	751423	1	17692-05K	Cylinder head rear VRSCX 2007
10.	751424	1	17692-08K	Cylinder head rear, all 2008 models
11.	751426	1	25080-01K	Alternator cover
12.	751427	1	25891-01K	Clutch cover
13.	751428	1	26034-01K	Oil pan
14.	751429	1	26749-01K	Cover water pump
15.	751430	1	26752-01K	Water pump to crankcase
16.	751431	1	26765-01K	Thermostat
17.	751432	1	29436-01	Air filter housing
18.	751433	5	29439-01	Throttle body
19.	751435	1	61284-06	Fuel pump VRSCR 2006 thru 2007 & all V-Rod 2007 to present
20.	751439	2	65109-01	Exhaust seal

Individual O-rings

	Zodiac	Qty.	OEM	
21.	751434	5	5234	Plug with seal Coolant pipe engine out
22.	751400	1	10994K	Oil line connector all V-Rod 2004 to present
23.	751401	1	11066K	Oil line connector all V-Rod 2002 thru 2003
24.	022365	10	11101	Oil cooler all V-Rod 2004 to present
25.	751441	1	11130K	Derby cover
26.	231486	10	11289A	Speed sensor
27.	231493	10	11290	Switch neutral gear
28.	231496	10	11291	Manifold air pressure sensor
29.	751402	5	11312K	Oil pickup, oil pump, thermostat tube, oil filter mount
30.	751403	1	11331K	Oil pump
31.	751404	1	11341K	Dipstick
32.	751405	1	11346K	Starter motor
33.	751406	1	11347K	Secondary clutch actuator
34.	751407	10	11353K	Main shaft
35.	751442	10	11354K	Front pulley spacer, rubber seal
26.	751408	1	11362K	Throttle plug
37.	751409	2	11366K	Water pump
38.	751443	1	11391K	Valve guide
39.	751444	2	11392K	Breather VRSCA 2005 thru 2007, VRSCB 2005, VRSCD 2006 thru present, VRSCR 2006 thru 2007, VRSCAW(A) & VRSCDXA 2008
40.	751410	1	11570	Fuel tank VRSCR 2006 & all V-Rod 2007 to present
41.	231147	10	61109-85D	Filler cap
42.	751436	1	61498-01	Fuel module VRSCA, VRSCB, VRSCD thru 2006

Individual oil seals

	Zodiac	Qty.	OEM	
43.	751412	10	12071K	Shifter shaft
44.	751413	10	12072K	Main shaft
45.	751437	2	6298M	Throttle plug
46	751425	8	18687-01K	Valve stem

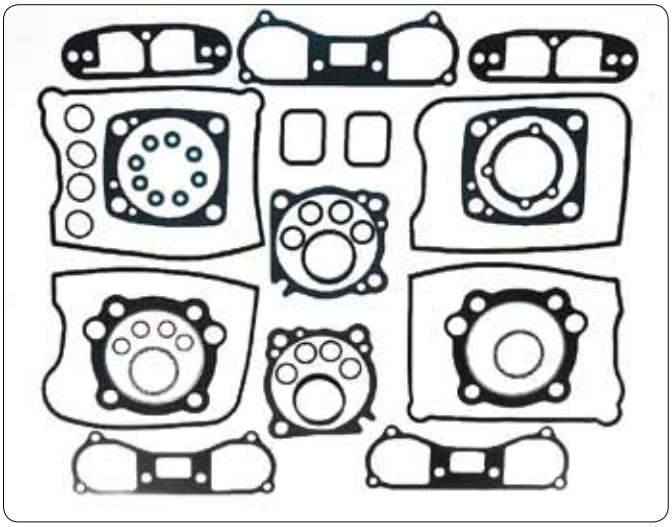
Hardware

	Zodiac	Qty.	OEM	
47.	751411	1	11632	Snap ring fuel level sensor all V-Rod 2008 to present
48.	751438	2	65045-01	Retaining ring exhaust

ATHENA'S COATED METAL CYLINDER BASE GASKETS FOR PANHEAD

These Athena base gaskets have a metal base with a specially compounded high temperature oil resistant rubber, coated on both sides. Feature silicone beading on both sides. Will not become brittle or burn out like paper gaskets. Replaces OEM 16776-48 front and 16777-48 rear cylinder. Sold in 2-packs.

710507 Panhead front cylinder base gasket (OEM 16776-48)
710508 Panhead rear cylinder base gasket (OEM 16777-48)



JAMES BIG BORE TOP END GASKET SETS

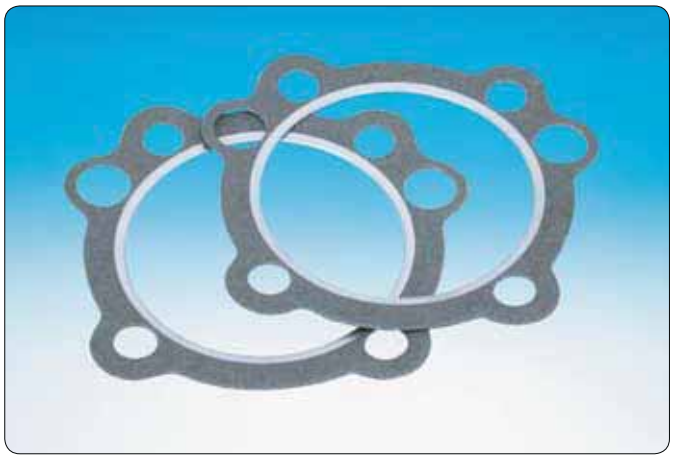
James top end gasket sets for Big Bore Evolution Big Twin style engines. Available for3 5/8", and 4" bore. Fits stock Big Bored engines, as well as most aftermarket motors. Sets include rubber rocker cover gaskets.

3 5/8" Big Bore Top End gasket sets
234431 Fits 1984 thru 1991 Evolution Big Twin
234432 Fits 1992 thru 1999 Evolution Big Twin

4" Big Bore Top End gasket sets
231589 Fits 1992 thru 1999 Evolution Big Twin

BIG BORE HEAD AND BASE GASKET SET

231032 Includes TEFLON head gaskets. Used on all 3 5/8" Big Bore Shovelhead cylinders.



ACCEL EVOLUTION BIG TWIN 3 5/8" BIG BORE GASKETS

Accel's 3 5/8" Big Bore head gaskets for Evolution Big Twins are made from metal reinforced fiber and .043" thick. Base gaskets are made of premium quality gasket paper. Sold in packs of 2.

638057 Head gaskets, pack of 2
638058 Base gaskets, pack of 2 Includes TEFLON head gaskets. Used on all 3 5/8" Big Bore Shovelhead cylinders.

S&S CYLINDER GASKET SETS

Basic gasket sets in reliable S&S quality. Can be used for stock, S&S, and other aftermarket motors. Kits contain 2 head gaskets, 2 base gaskets, 2 exhaust port gaskets, and 2 manifold seals.

Fits stock bore
750279 Fits Evolution Big Twin style engines
750280 Fits Evolution Sportster style engines

Fits 3 5/8" Big Bore
750281 Fits Evolution Big Twin style engines
750282 Fits Evolution Sportster style engines

Fits 4" bore
750283 Evolution Sportster and Evolution Big Twin style engines

BIG BORE HEAD AND BASE GASKET SET FOR EVOLUTION BIG TWIN

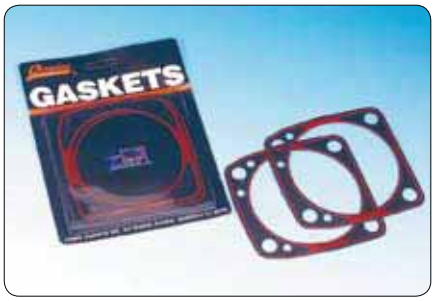
This gasket set for 3 5/8" Big Bore Evolution Big Twins includes two .062" thick Firering head gaskets with silicone beading on both sides, and two base gaskets.

234446 3 5/8" Big Bore head and base gasket set

JAMES THIN HEAD GASKETS FOR EVOLUTION BIG BORE MOTORS

For those who want a little more compression for their 3 5/8" Big Bore Evolution Big Twin, we offer thin, 0.045" (1.15 mm) head gaskets. Sold in sets of 5.

740310 0,045" Head gasket set for Evolution Big Bore.



SILICONE BEADED BASE GASKETS FOR EVO ENGINES

This cylinder base gasket is a steel base metal coated on two sides with a high-temperature specially compounded, oil resistant rubber. This gasket has exceptional tensile and compressive strength as well as excellent sealing and spacer characteristics. It features silicone beading around the inside bore and outer perimeter. Will seal oil at elevated temperatures and retain maximum torque, without becoming brittle and burning out. Thickness 0.017" and sold as a pair. Fits Evolution models 1984 thru 1999.

231031 Base gaskets for Big Twin (set of 2)
231208 Base gaskets for Sportster (set of 2)

COMETIC COPPER HEAD AND BASE GASKETS

These "Blow-Proof" red copper gaskets are designed for use in High Compression motors. Strongly advised when installing cast steel or cast iron cylinders on Evolution motors (set 2).

710111 Copper head gasket stock 3 1/2" bore (.043" thick)
710112 Copper base gasket stock 3 1/2" bore (.020" thick)

SILICONE BEADED CLUTCH COVER GASKETS FOR 1999 TO PRESENT BIG TWIN MODELS

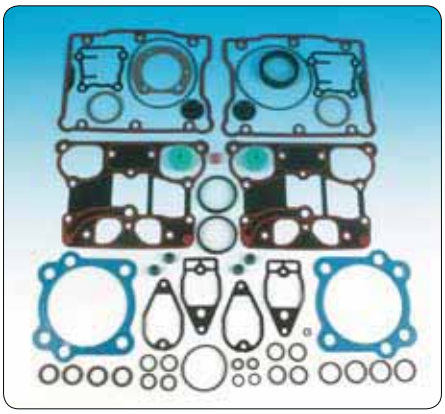
These "Genuine James" silicone beaded gaskets replace the OEM O-ring for improved sealing properties. Fits all 1999 to present Evolution and Twin Cam Big Twin models with 5-hole clutch cover. Sold in dealer packs with 5 pieces.

234840 Silicone beaded clutch cover gaskets (5 pack)

JAMES MULTI LAYER STEEL HEAD GASKETS FOR EVOLUTION AND TWIN CAM MODELS

These unique 4-layer head gaskets are designed to interact with the mating layer in the stack. The 2 outer layers are designed with a reverse embossment to interact with the inner layers. Once compressed, the outer layers are forced into the bore-stop layer. This provides a superb combustion seal, even with high-compression applications. Kit contains 2 multi layer steel head gaskets and 2 silicon beaded metal base gaskets. Each gasket is coated on both sides and embossed around each oil passage, thus no additional sealers are required.

231667 Fits XL 1200 and Evolution Big Twin models
231668 Fits 88 and 95 CI Twin Cam models



JAMES TOP END GASKET KIT FOR 3 7/8" BORE TWIN CAM

Genuine James gasket kit for use with 1550 cc 3 7/8" bore cylinders on Twin Cam "A" and Twin Cam "B" motors.

231627 James top end kit

"GASK-O-SEAL" SUPERIOR HEAD & BASE GASKETS FOR EVOLUTION BIG TWIN AND SPORTSTERS

Advanced technology has solved the common cylinder head & cylinder base sealing problems associated with the Evolution motor. These gaskets function uses the principal of "controlled compression" which creates a precisely engineered relationship between the surfaces to be sealed. With this integral seal, the Viton sealing element is modeled to a rigid metal shaped holder. As the cylinder is torqued-down the metal maintains the correct dimension between the sealed surfaces, while the bonded flexible sealing material is compressed to it's design specification to expand or contract as needed to ensure a perfect seal. Gaskets are sold in 2 packs and are available for stock bore cylinders as well as 3 5/8" Big Bore cylinders.

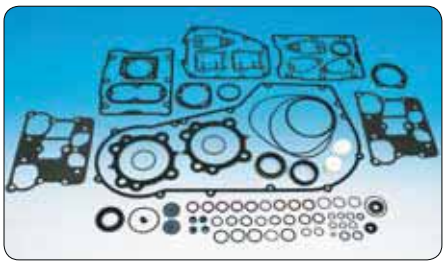
For use with stock bore cylinders
700532 "Gask-O-Seal" head gaskets
700533 "Gask-O-Seal" base gaskets

For use with 3 5/8" bore cylinders
700534 "Gask-O-Seal" head gaskets
700535 "Gask-O-Seal" base gaskets

JIMS TWIN-CAM BIG BORE CYLINDER GASKET KITS

Jims head and base gasket sets contain two .040" thick head gaskets and two .020" thick real base gaskets, not O-rings as standard. Fit all 1999 to present Twin Cam models with Jims 4" Big Bore cylinders

750730 Pair head and base gaskets for 4" Big Bore



JIMS TWIN-CAM BIG BORE GASKET KITS

These complete kits contain all gaskets and seals needed to rebuild Twin Cam engines that have the 3 7/8" Jims Big Bore kit installed. These kits come with two .020" thick real base gaskets, not O-rings as standard. Available for 1999 thru 2006 Touring.

741934 Fits 3 7/8" Big Bore FLH and FLT Touring models

3 7/8" BIG BORE CYLINDER HEAD GASKETS FOR TWIN CAM

Accel's Big Bore gaskets for Twin Cam motors. Available in stock .059" thickness, as well as .051" and .043" thick for those who want to increase the compression ratio. Sold in sets of 2.

638399 Set, 3 7/8" bore, stock .059" thick
638400 Set, 3 7/8" bore, .051" thick
638401 Set, 3 7/8" bore, .043" thick

BIG-BORE CYLINDER GASKET SETS FOR TWIN CAM MODELS

Genuine James quality for 3 7/8" Big Bore Twin Cam models. Available with stock .046" thick, or .036" "High Compression" head gaskets. Kit includes gaskets and O-rings for two cylinders. Fits Twin Cam "A" models 1999 to present and Twin Cam "B" models 2000 to present.

231578 With .046" thick cylinder head gaskets
231583 With .036" thick cylinder head gaskets

ACCEL COPPER CYLINDER BASE GASKETS

Premium Quality "Blow Proof" copper cylinder base gaskets for High Performance engine builders. Sold each in .005", .010", .016" and .020" thickness, or as convenient sets containing 2 of each size per application.

Fits Evolution Sportster 1986 to present
623530 Assortment, 8 pieces
623531 .005" thick, each
623532 .010" thick, each
623533 .016" thick, each
623534 .020" thick, each

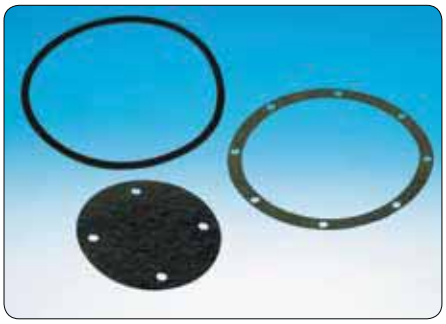
Fits Evolution Big Twins 1984 thru 1999
623535 Assortment, 8 pieces
623536 .005" thick, each
623537 .010" thick, each
623538 .016" thick, each
623539 .020" thick, each

Fits 3 5/8" Big Bore Evolution Big Twins 1984 thru 1999
623540 Assortment, 8 pieces
623541 .005" thick, each
623542 .010" thick, each
623543 .016" thick, each
623544 .020" thick, each

THE "OIL FIX" CYLINDER BASE GASKET KITS FOR EVOLUTION MODELS

Tom Hayden is well known for his ingenious improvement parts for Harleys. His latest development is the Oil Fix. It's the perfect solution for eliminating oil leaks from between your crankcase and cylinders. The kit contains a pair of specially made oil control jets plus a pair of cylinder base gaskets. Step-by-step fitting instructions are included.

237298 Fits all Evolution Sportster and all Evolution Big Twin models



GASKETS FOR S&S 2-PIECE NOSE CONE COVERS

Most S&S Evolution style engines come with the S&S designed 2-piece nose cone covers. Because of this design there is a separate gasket between the main engine cover and the ignition housing. Available for S&S flangeless and flange type gear covers. Sold to dealers in 5-packs.

750147 Fits S&S flanged type covers (5 pack)
750149 Fits S&S flangeless type covers (5 pack)

ATHENA BIG BORE HEAD AND BASE GASKETS

Europe's leading gasket manufacturer Athena offers specific gaskets for specific needs. In addition to the complete gasket kits they offer Big Bore head and base gaskets for 3 5/8" bore cylinders. These gaskets are sold in sets of 2.

Head gaskets 3 5/8"

710501 Teflon, Shovelhead models 1966 thru 1983
710502 Teflon, Evolution Big Twin models 1984 thru 1999
710503 Evolution Big Twin 1984 thru 1999 and Sportster models 1984 to present

Base gaskets 3 5/8"

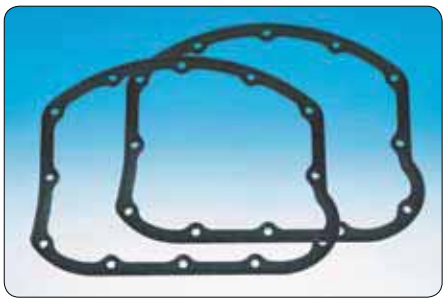
710505 Steel, Evolution Big Twin 1984 thru 1999 and Sportster models 1984 to present (OEM 16777-94)

JAMES HEAD AND BASE GASKETS FOR S&S AND TPE ENGINES

These Genuine James cylinder gaskets and kits are to rebuild the top end of an S&S engine or Total Performance Engineering engine, or any other engine with S&S cylinders and cylinder heads. Available as a set of head and base gaskets, or pairs of head- or base gaskets. Head gaskets feature a Firering and are .046" thick that will crush to .042". Base gaskets are .022" silicon beaded metal that will crush to .020"

Fits 4" bore Evolution Big Twin and XL engines and Big Bore kits

231553 Head and base gasket set
231555 Cylinder head gaskets, set of 2
231557 Cylinder base gaskets, set of 2



JAMES PANHEAD ROCKER COVER SEAL SET

This Panhead D-ring is made from a Solid Steel Core fully encapsulated with a thin layer of high-temperature NBR rubber to ensure outstanding torque retention. For a superior seal to stamped steel, chrome plated, and cast type of covers, thick perimeter beads on two sides are provided. Sold in pairs.

231669 Fits 1948-1965 Panhead

OIL FILTER CAP SEAL FOR 1948 THRU 1964 MODELS

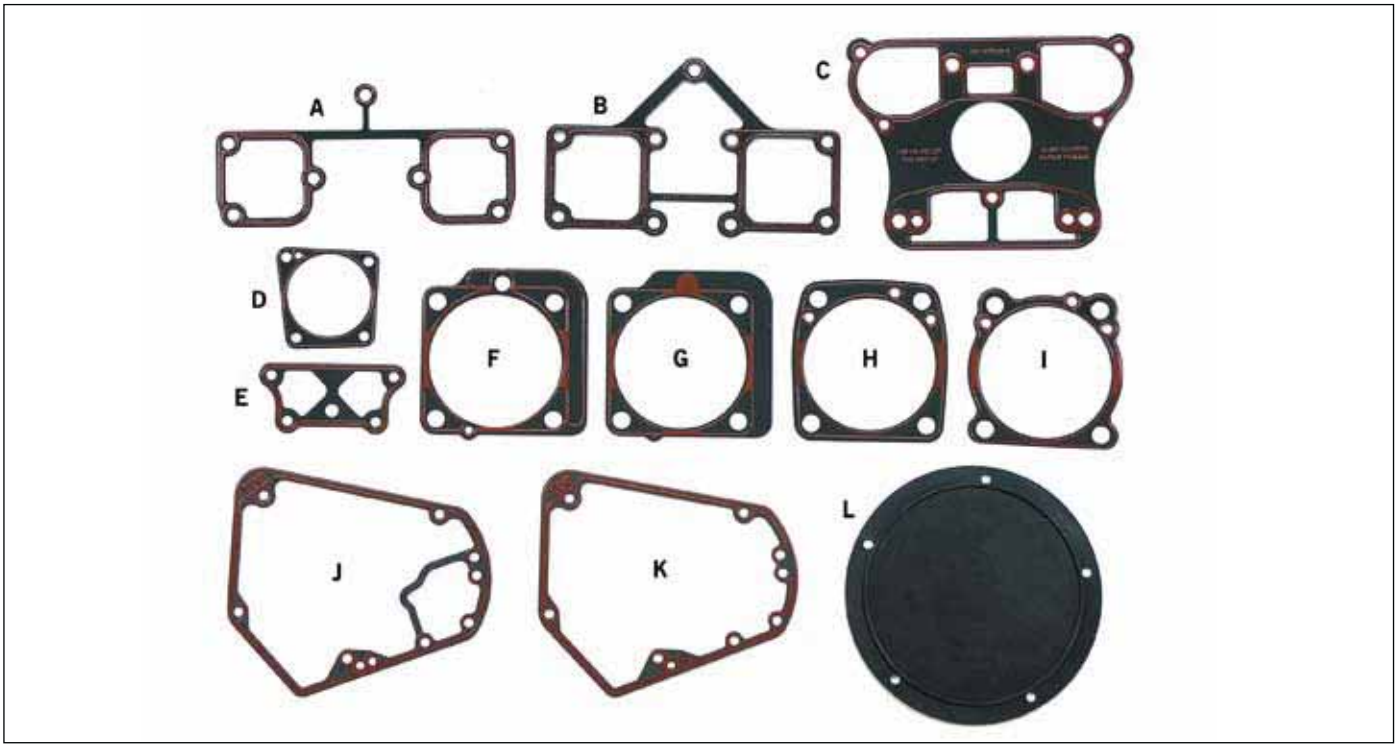
James Gaskets created this molded rubber dual lip seal for the oil filter cap on 1948 thru 1964 U, UL, E, EL, FL and FLH models 1948 thru 1964. Provides 21st century sealing capacities for classic motorcycles. Sold to dealers in packs of 5.

742489 Oil filter cap seal 1948 thru 1964, 5-pack (OEM 63809-48)

JAMES BREATHER SERVICE SEAL KIT

The breather service seal kit contains all of the gaskets, washers, and o-rings required to re-install breather assemblies and air filter back-plate assemblies.

231673 Fits 1992 to present Big- Twin models



"STEELCORE" COATED METAL GASKETS FROM JAMES GASKETS

These James gaskets are made out of SAE 1010 mild steel that will not crack, tear, rip or creep out during assembly and gives excellent torque retention. The steel base is bonded on both sides with "Anti-Wick" oil resistant silicone rubber coating to micro-seal the aluminum castings and have an additional release coating to facilitate removal of the gaskets upon disassembly. Cylinder base gaskets feature silicone beading around the inside bore and outer perimeter on each face, seal at elevated temperatures and retain maximum torque, will not become brittle and burn out like paper gaskets and will not split or extrude out during assembly. The excellent sealing properties and extended service life of these gaskets make them ideal for both stock and High Performance applications.

Rocker cover gaskets, fit 1957-1985 Sportster models
A. 740374 Set of 2 (OEM 17536-70)

Rocker housing gaskets, fits Shovelhead Big Twin 1966 thru 1984
B. 231657 Set of 2 (OEM 17540-69A)

Rocker housing gaskets, fit all Evolution Big Twin models 1984 thru 1999 and Evolution Sportster models 1986 to present.
A one-piece design to replace the separate right (OEM 16778-84A) and left (OEM 16779-84A) gaskets.

C. 741163 Set of 2 one-piece gaskets for one engine

Tappet block gaskets, fit all 1984 thru 1999 Big Twin models
D. 740433 Set of front and rear tappet block gasket

Tappet block gaskets, fit 2004 to present Sportster models
E. 231981 Set of front and rear tappet block gasket

Cylinder base gaskets (sold in pairs)
F. 231034 Fits 1948 thru 1962 Big Twin models (OEM 16776-48, 16777-48)
G. 231035 Fits 1963 thru 1983 Big Twin models (OEM 16776-63, 16777-63)
G. 231036 Fits 1963 thru 1983 Big Twin models (3 5/8" Bore)
H. 231031 Fits 1984 thru 1999 Evolution Big Twin (OEM 16774-86D)
H. 231019 Fits 1984 thru 1999 Evolution Big Twin (3 5/8" Bore)
I. 231208 Fits Sportster 1986 thru 1998 (OEM 16774-86D)

Nose cone gaskets
J. 234356 Fits 1970 thru 1992 Big Twin, 5-pack (OEM 25225-70B)
K. 234357 Fits 1993 thru 1999 Big Twin, 5-pack (OEM 25225-93B)

Derby cover gasket
L. 231729 Fits 1999 Evolution Big Twin and 1999 to present Twin Cam models, as well as other models equipped with a 5-hole derby cover

LOCTITE ANAEROBIC GASKET MAKER

Non-corrosive gasket material designed for use on aluminum, iron and steel flanged mating surfaces. Ideal for on-the-spot and emergency repairs. Fills gaps up to .015" and cures to a solvent-resistant seal. Allows parts to disassemble easily.

720129 6 ml tube
720130 50 ml tube

INTAKE MANIFOLD SEALS

These rubber seals are used on 1986 to present Sportster, 1990 thru 1999 Evolution Big Twin, and 1999 to present Twin Cams. They are fitted between the stock carburetor or injection body and the manifold. We offer these seals from various manufacturers to meet everybody's demand (OEM 26995-86A).

740343 Stock replacement by James, dealer 10-pack
700230 Stock replacement by Athena, dealer 10-pack
234466 Blue Silicone, improved design by James, dealer 10-pack
234442 Problem solving steel reinforced by James, dealer 10-pack
742420 Problem solving Viton with extra thick metal insert by James pack of 2 NEW

MANIFOLD SEAL KITS BY JAMES GASKETS

Convenient gasket and seal kits available for most common stock, as well as special applications. Complete kits contain all O-rings, gaskets, seals and an intake manifold spacer, for some applications a kit with just a manifold spacer and 2 spacer gaskets is also available.

742421 Complete kit, fits Linkert carburetors 1940 thru 1965
742432 Complete kit, fits Linkert to Bendix conversions
742422 Complete kit, fits Bendix carburetors 1948 thru 1985
742423 Complete kit, fits Sportster, Panhead and Shovelhead models 1948 thru 1984 with S&S Super E or Super G carburetor
742424 Complete kit, fits Sportster, Panhead and Shovelhead models 1948 thru 1984 with SU carburetor
742425 Complete kit, fits all models with a rigid mounted RamJet manifold
742426 Complete kit, fits 1992 thru 1999 Big Twins with an Edelbrock Performer manifold
742427 Complete kit, fits 1984 thru 1991 Big Twins with a 3-piece Edelbrock manifold
742437 Manifold spacer and seals, fits 2000 to present Twin Cam with Screamin' Eagle High Performance manifold

MANIFOLD SEAL KIT BY JAMES GASKETS

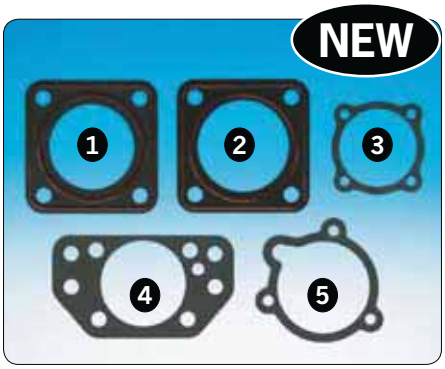
Kit contains 2 rubber bands and 2 Viton O-rings to mount the manifold to the cylinder head. Fits all Panhead, Shovelhead and Ironhead models.

742429 Manifold seal kit

INTAKE MANIFOLD SEAL KIT FOR SCREAMIN' EAGLE

This Genuine James seal kit contains all O-rings and seals for use with Screamin' Eagle intake manifolds on 2001 to present Softail EFI models and all other 2002 to present models that are equipped with HTCC cylinder heads.

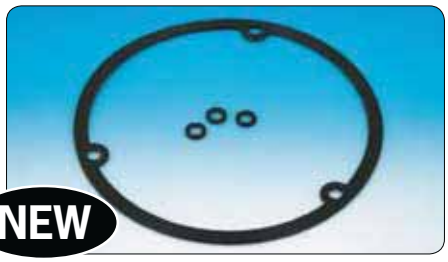
231644 Intake manifold seal kit for Screamin' Eagle



SPECIAL CARBURETOR AND MANIFOLD GASKETS

Gaskets for non-stock applications.

1. 742430 Manifold gasket for SU carburetors on early Sportster, Panhead and Shovelhead, 1.86" inlet, 5-pack
2. 742431 Manifold gasket for SU carburetors on early Sportster, Panhead and Shovelhead, 2" inlet, 5-pack
3. 742433 Back plate gasket for use with Linkert carburetors, 5-pack
4. 742434 Carburetor to manifold gasket for SU carburetors on early Sportster, Panhead and Shovelhead, 5-pack
5. 742435 Carburetor to manifold gasket for Bendix carburetors



JAMES DERBY COVER SEAL KIT

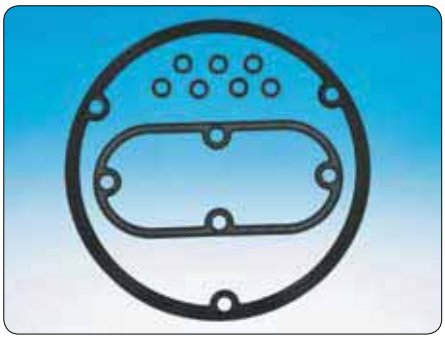
The seals in this kit are made from a Solid Steel Core fully encapsulated with NBR rubber and beaded on two sides. This material will seal all types of derby covers and replaces the often problem causing paper gasket or O-ring seal. Kit contains 1 derby cover gasket, and 3 cap screw sealing washers.

742418 Fits all 1970 thru 1998 Big Twin models with 3-hole derby cover

KNITTED STAINLESS STEEL EXHAUST GASKET SET

Genuine James quality exhaust port gaskets made from compressed knitted stainless steel wire. James claims these gaskets to be less restrictive to the exhaust gas flow. Fits 1986 to present Evolution Sportster, 1984 thru 1999 Evolution Big Twin, and 1999 to present Twin Cam. Sold in sets of 2.

231624 James exhaust gasket kit



JAMES PRIMARY INSPECTION COVER SEAL KIT

All of the products in this kit are made from a Solid Steel Core fully encapsulated with NBR rubber and beaded on two sides. These gaskets will seal all types of inspection and derby covers, paper gasket or O-ring seal. Kit contains 1 derby cover gasket, 1 inspection cover gasket, and 7 Cap screw sealing washers.

231670 Fits all 1965 -2006 models with oval inspection cover
231671 Fits 1979 thru 1984 FXR and FLT models
231672 Fits 1985 to present FXR and FLT models

JAMES GASKET EXHAUST MOUNTING KITS

Kits contains 4 Heavy Duty flange nuts and 2 exhaust retaining rings (OEM 65325-83). Available with exhaust gaskets in graphite knitted wire, stainless steel knitted wire or copper crush-type. Fits all Buell models, Evolution Sportsters, Evolution Big-Twins and Twin Cam models.

740604 Kit with graphite knitted wire gaskets
742492 Kit with Stainless Steel knitted wire gaskets
742491 Kit with copper crush type gaskets

SEAL KIT FOR OIL DEFLECTOR PLATE

Made by James Gaskets. Contains the screw and O-ring for the inner primary cover, an extra heavy-duty seal for the deflector plate and the Quad seal for the solenoid. Fits 1965 Panhead and 1966 thru 1984 Shovelhead.

742478 Oil deflector plate seal kit
742479 Oil deflector plate only

NEW

SOLENOID QUAD SEAL

This quad rubber seal is made by James Gaskets to replace and improve the sealing of the stock gasket on the solenoid mount. Fits 1965 Panhead, 1966 thru 1984 Shovelhead 4-speed models, and 1967 thru 1980 Sportster.

742484 Solenoid Quad seal, dealer 10-pack (OEM 60645-65)

CLUTCH HUB NUT SEALING KIT

Convenient kit made by James Gaskets. Can be used with any 4-speed clutch as used in 1941 thru 1984, except those equipped with a diaphragm style clutch. Kit contains two double lip oil seals, a clutch hub key, and clutch hub lock plate.

231666 Clutch hub nut sealing kit

CLUTCH CABLE ADJUSTING BOLT SEAL WASHERS

234476 Copper seal washer for clutch cable adjusting bolt, fits Sportster models 1986 to present (OEM 25437-86), 10 pack.

ZODIAC'S 4 SPEED TRANSMISSION REBUILD KITS

Complete rebuild kits for all 4 Speed Big Twin transmissions from 1936 thru 1986. We have combined Jim's transmission parts and James gaskets to guarantee a high quality. Includes bushings, shafts, keys, lock rings, retaining rings and a standard size bearing race plus all gaskets and oil seals. All together in one neat package, it's a big time saver.

237344 Fits 1936 thru early 1976
237345 Fits late 1976 thru early 1977
235887 Fits late 1977 thru 1979
235888 Fits 1980 thru 1986

NEW

CLUTCH RELEASE COVER GASKET FOR SCREAMIN' EAGLE 6-SPEED

Made by James Gaskets. Reinforced metal with Silicone beading. Fits Screamin' Eagle 6-speed transmissions.

742450 Clutch release cover gasket

ZODIAC'S 5 SPEED TRANSMISSION MASTER REBUILD KITS

Complete rebuild kits for the 5 Speed Big Twin transmissions from 1980 to present. We've combined Jim's top quality transmission parts with a James' gasket and seal kit to offer the best rebuilds kit possible. Each kit includes spacers, bearings, retaining rings, lock nuts, thrust washers, key and all necessary seals and gaskets to do the job.

239483 Fits 1980 thru early 1984
239484 Fits late 1984 thru 1990
239485 Fits 1991 thru 1999
741901 Fits 1999 thru 2006

JAMES' STEEL-CORE INNER PRIMARY TO CRANKCASE GASKET

Silicon beaded steel core gasket for superior sealing, designed as a problem solver for crankcases with a damaged O-ring groove. Replaces the stock O-ring seal. Fits 1970 thru 1984 Shovelhead, 1984 thru 1999 Evolution Big- Twin and 1999 thru 2006 Twin Cam, except 2006 Dyna. Comes complete with all inner primary lock tabs.

231734 Steel-core inner primary to crankcase gasket

INNER PRIMARY MOUNT & SEAL KITS

Convenient kits with seals, bearings, bushings and lock tabs you need when installing an inner primary on all 1990 thru 1999 Evolution Big Twins and 1999 to present Twin Cam models.

231237 For use with 1990 thru 1993 inner primary
231238 For use with 1994 to present inner primary

ACCEL PUSH-ROD SEAL KITS

Kits include all seals, washers, and o-rings needed when replacing or re-packing the pushrod tubes.

Sportster models
638018 Fits 1957 to early 1979 Ironhead models
638019 Fits 1979 thru 1985 Ironhead models
638020 Fits 1990 to present Evolution and Buell models

Big Twin models
638439 Fits 1948 thru 1964 Panhead and 1965- early 1979 Shovelhead
638440 Fits 1979 thru 1981 Shovelhead
638441 Fits 1981 thru 1983 Shovelhead
638029 Fits 1984 thru 1999 Evolution models

PUSHROD COVER RUBBER SEAL KIT

Machined rubber seals replace old style cork washers for improved sealing and longer life. Sold in 12 per kit.

741812 Rubber seal kit, fits all Pan/Shovelhead to 1979
741813 Rubber seal kit, fits Sportster 1957 thru 1979 and Knucklehead 1936 thru 1947
741814 Rubber seal kit, fits Big Twin Evolution 1984 thru 1999

JAMES' STEEL-CORE INNER PRIMARY TO CRANKCASE GASKET

This Steel Core gasket is completely molded in rubber with silicon tracers for superior sealing. Comes with lock plate. Fits 1965 Panhead and 1966 thru 1969 Shovelhead. Made by James Gaskets.

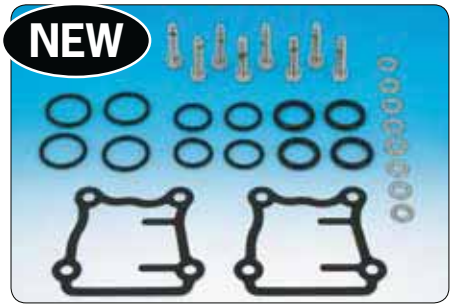
742483 Inner primary gasket & lock plate

PUSH-ROD SEAL KITS FROM JAMES GASKETS

Each kit includes all seals, washers, o-rings needed when replacing or re-packing the pushrod tubes. Kits are available for Sportster models 1957 to present, Buell models 1994 to present and Big-Twin models 1936 to present including Evolution and Twin-Cam models.

Sportster models
233990 Fits 1957 to early 1979 Iron head models
233992 Fits 1979 thru 1985 Iron head models
233995 Fits 1986 thru 1990 Evolution models
233996 Fits 1990 thru 2003 Evolution and Buell
740608 Fits 2004 to present Evolution and Buell NEW

Big-Twin models
233990 Fits 1936 thru 1947 Knuckleheads and FL(H) models
233991 Fits 1948 thru 1964 Panhead and 1965-early 1979 Shovelhead
233993 Fits 1979 thru 1981 Shovelhead
233994 Fits 1981 thru 1983 Shovelhead
233995 Fits 1984 thru 1999 Evolution
231522 Fits 1999 to present Twin-Cam



JAMES TAPPET COVER SEAL & SCREW KIT FOR TWIN CAM

Kit contains O-rings for the upper, middle and lower push rod cover, Silicone beaded SteelCore gaskets for the tappet cover and 8 chrome plated screws with washers for the tappet cover. Fits all 1999 to present Twin Cam models.

742402 James Gasket tappet cover seal and screw kit

JAMES SILICON BEADED METAL GASKET KITS FOR BIG TWIN OIL PUMPS

07

Metal gaskets with silicone beading plus all other seals, keys, check ball and other hardware to rebuild your oil pump. Available for stock as well as S&S HVHP oil pumps on 1992 thru 1999 Big Twin models.

742496 For stock oil pump
742498 For S&S HVHP oil pump

GASKET KITS, GASKETS, O-RINGS AND SEALS FOR TIN PRIMARY ON 4 SPEED BIG TWIN 1936 THRU 1964

Complete sets include all gaskets, seals and O-rings needed. All parts are also separartely available. The individual gaskets, seals and O-rings are sold to dealers in packs as indicated in the Qty. column.

Complete sets

234477 Fits tin primary on 4 Speed models 1936 thru 1964, made by James Gaskets

Individual gaskets for tin primary as used on 1936 thru 1964

	Athena	Qty.	James	Qty.	OEM	
1	N/A	-	740333	10	60540-36	Primary cover 1936-1964
2	N/A	-	740334	10	60565-36	Clutch cover 1936-1964
3	700371	10	740335	10	60567-36	Inspection cover 1936-1969
4	700377	10	N/A	-	60629-55	Chain housing to engine 1955 thru 1964

Individual seals for tin primary as used on 1936 thru 1964

	Athena	Qty.	James	Qty.	OEM	
5	700180	10	N/A	-	24931-39	Primary chain cover

OIL PUMP GASKETS, O-RINGS AND SEALS FOR BIG TWIN & TWIN CAM MODELS

Complete kits from James and individual gaskets, O-rings and seals from James and Athena for Big Twin models

Note: The thickness and torque applied to the different pump body and cover gasket materials are not the same. Check Original Manufacturers workshop manual for corrrect torque.

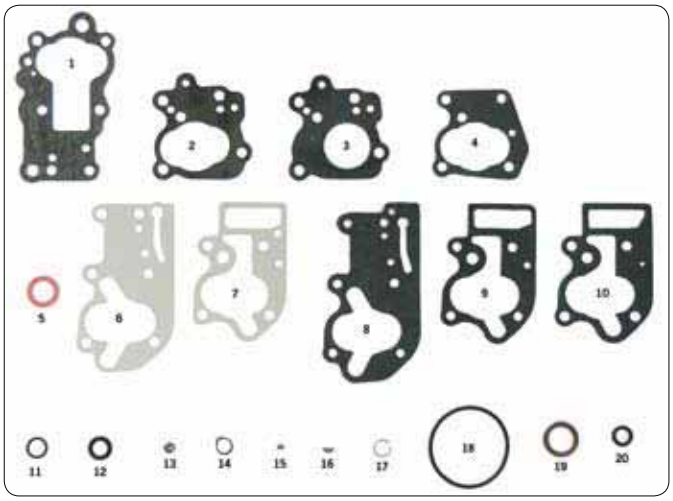
Complete sets, fits aluminum oil pump on single cam Big Twin models 1968 thru 1999
James
231042 Oil pump kit 1968 thru 1980
231043 Oil pump kit 1981 thru 1991
234440 Oil pump kit 1992 thru 1999
234839 Oil pump kit 1992 thru 1999, with SteelCore gaskets

Gaskets for cast iron oil pumps on Big Twin models from 1936 thru 1967

	Athena	Qty.	James	Qty.	OEM	
1	700206	10	N/A	-	26245-41	Oil pump body 1941 thru 1967
2	700209	10	N/A	-	26255-41	Oil pump cover governor fitted 1941 thru 1949
3	700211	10	N/A	-	26257-41	Oil pump cover 1941-early 1950
4	700212	10	740373	10	26257-50A	Oil pump cover late 1950 thru 1967

Gaskets for aluminum Big Twin oil pumps 1968 thru 1999

	Athena	Qty.	James	Qty.	OEM	
5	700203	10	N/A	-	26231-78	Felt washer relief valve plug 1954 thru 1980
6	700208	10	740312	10	26246-68A	Oil pump body Mylar 1968 thru 1980
6	N/A	-	740388	10	26246-68A	Oil pump body black Paper 1968 thru 1980
7	N/A	-	740313	10	26258-68B	Oil pump cover Mylar 1968 thru 1980
8	700220	10	740389	10	26273-80B	Oil pump body Paper 1981 thru 1991
8	N/A	-	740314	10	26273-80B	Oil pump body Mylar 1981 thru 1991
	700223	10	740415	10	26273-92	Oil pump body Paper 1992 thru 1999
9	700216	10	740390	10	26276-80A	Oil pump cover Paper 1981 thru 1991
9	700215	10	740315	10	26276-80A	Oil pump cover Mylar 1981 thru 1991
10	700226	10	740416	10	26276-92	Oil pump cover Paper 1992 thru



O-rings for aluminum Big Twin oil pumps 1968 thru 1999

	Athena	Qty.	Zodiac	Qty.	OEM	
11	700002	10	022456	10	11105	Tappet screen plug late 1970-up
11	700002	10	022456	10	11105	Oil pump check valve plug late 1978-up
11	700002	10	022456	10	11105	Relief valve plug 1981-up

Seals for aluminum Big Twin oil pumps 1968 thru 1999

	Athena	Qty.	Zodiac	Qty.	OEM	
12	700202	5	022356	1	26227-58	Oil pump body 1968 thru 1999

Hardware for cast iron Big Twin oil pumps 1936 thru 1967, and aluminum Big Twin oil pumps 1968-1999

	James	Qty.	Zodiac	Qty.	OEM	
13	231044	10	N/A	-	8866	Check ball oil pump 1936 thru 1999
14	234463	10	231045	10	11002	Retaining ring oil pump 1936 thru 1999
15	N/A	-	233477	10	26340-36	Key, oil pump
16	231050	10	N/A	-	26348-15	Key, oil pump
17	231051	10	N/A	-	26348-36	Retaining ring oil pump 1936 thru

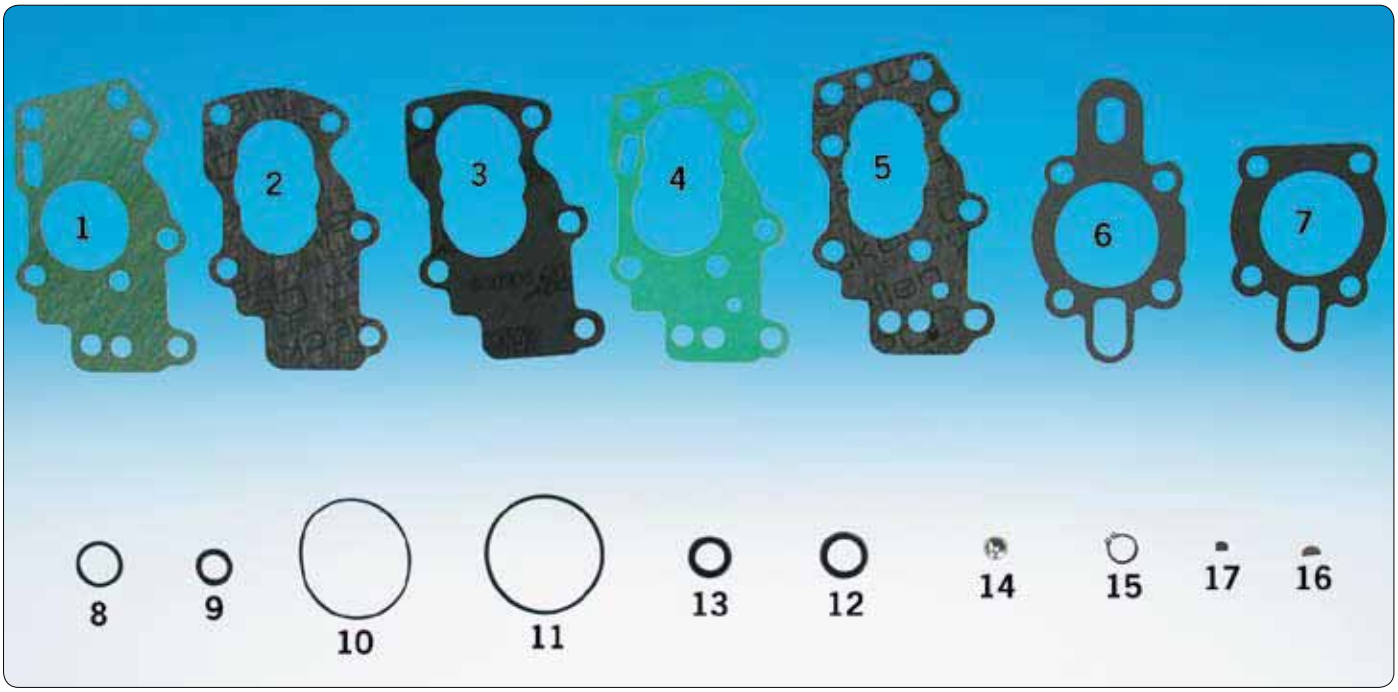
O-rings for Twin Cam oil pumps 1999 thru 2006, except 2006 Dyna

	Athena	Qty.	James	Qty.	OEM	
18	710496	10	N/A	-	11286	Oil pump outer
19	N/A	-	231521	-	11293	Oil pump inner, medium
19	N/A	-	231521	-	11293	Oil pump mount
20	700461	10	N/A	-	11301	Oil pump inner, small

O-rings for Twin Cam oil pump on 2006 Dyna Twin Cam 88 and all 2007 to present Twin Cam 96 models.

	Athena	Qty.	James	Qty.	OEM	
19	N/A	-	231521	-	11293	Oil pump mount
20	700461	10	N/A	-	11301	Oil pump to crankcase

Note: Sold to dealers in pack quantities (Qty.) as listed



OIL PUMP GASKET, SEAL AND O-RING KITS FOR K, KH AND SPORTSTER MODELS 1952 TO PRESENT

Kits include all gaskets, seals, O-rings and hardware to rebuild oil pumps on any K or KH models from 1952 thru 1956, Sportster models from 1957 to present, as well as air cooled Buell models.

Complete kits
James
231040 Fits K, KH and XL models 1952 thru 1976
231041 Fits 4 Speed XL models from 1977 thru 1990
231235 Fits 5 Speed XL models 1991 to present

Individual Gaskets

	Athena	Qty.	James	Qty.	OEM	
1	700210	10	N/A	-	26256-52	Oil pump-to-crankcase 1952 thru 1976
2	700213	10	N/A	-	26258-52	Oil pump cover outer 1952-early 1962 K, KH, XLCH and 1972 thru 1976 XLH, XLCH
3	700214	10	N/A	-	26258-62	Oil pump cover outer late 1962 thru 1971
4	700217	10	N/A	-	26259-52	Oil pump cover inner 1952-early 1962 K, KH, XLCH and 1972 thru 1976 XL
5	700218	10	N/A	-	26259-62	Oil pump cover inner late 1962 thru 1971
6	700228	10	740417	10	26495-75	Oil pump 1977 thru 1990
7	700229	10	740384	10	26495-89A	Oil pump 1991 to present

Individual O-Rings

	Athena	Qty.	Zodiac	Qty.	OEM	
8	700227	10	027652	10	26432-76A	Oil pump body 1977 thru 1985
9	N/A	-	027653	10	26433-77	Oil pump check valve 1977 thru 1985
9	N/A	-	027653	10	26433-77	Oil filter check valve 1986-early 1987
10	N/A	-	022371	10	26434-76A	Oil pump cover 1977 thru 1990
11	N/A	-	234499	10	26434-91	Oil pump body 1991 to present

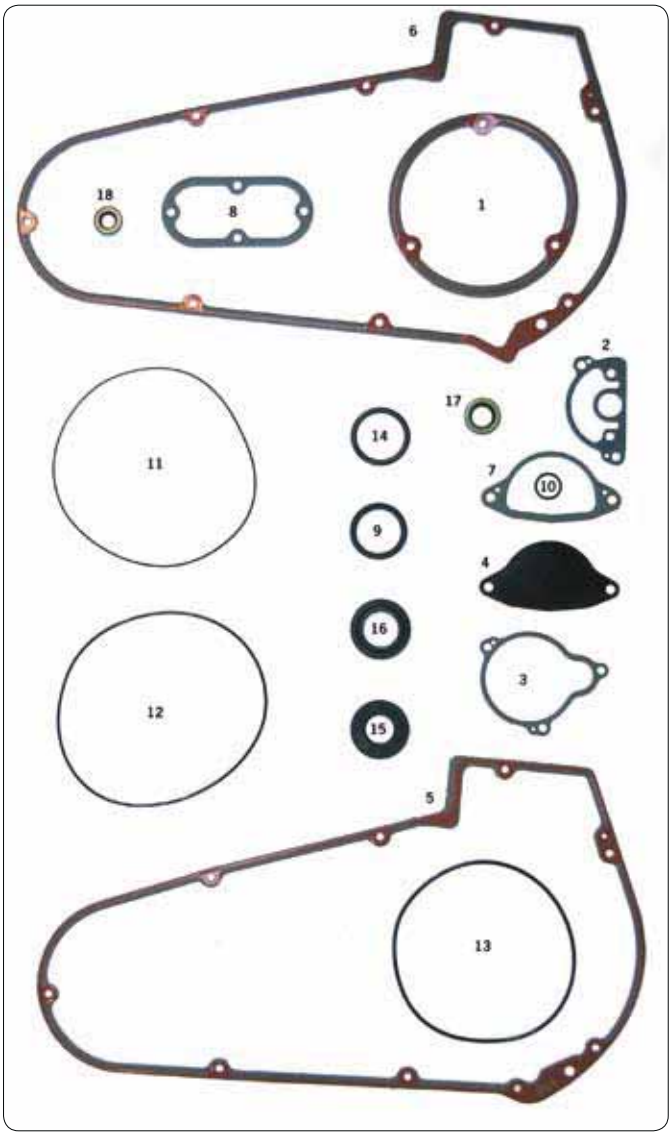
Individual Seals

	Athena	Qty.	Zodiac	Qty.	OEM	
12	700028	5	022363	1	12036A	Oil pump outer plate 1977 thru 1990
13	700202	5	022356	1	26227-58	Oil pump body late 1958 thru 1976

Hardware

	James	Qty.	Zodiac	Qty.	OEM	
14	231044	10	N/A	-	8866	Check ball oil pump 1954 thru 1976
15	234463	10	231045	10	11002	Retaining ring oil pump 1956-1962, 1972-1976
16	231050	10	N/A	-	23348-15	Key, oil pump
17	N/A	-	233477	10	26340-36	Key, oil pump

Note: Sold to dealers in pack quantities (Qty.) as indicated



GASKETS, O-RINGS AND SEALS FOR ALUMINUM PRIMARY ON 1965 THRU 1986 4 SPEED BIG TWIN MODELS

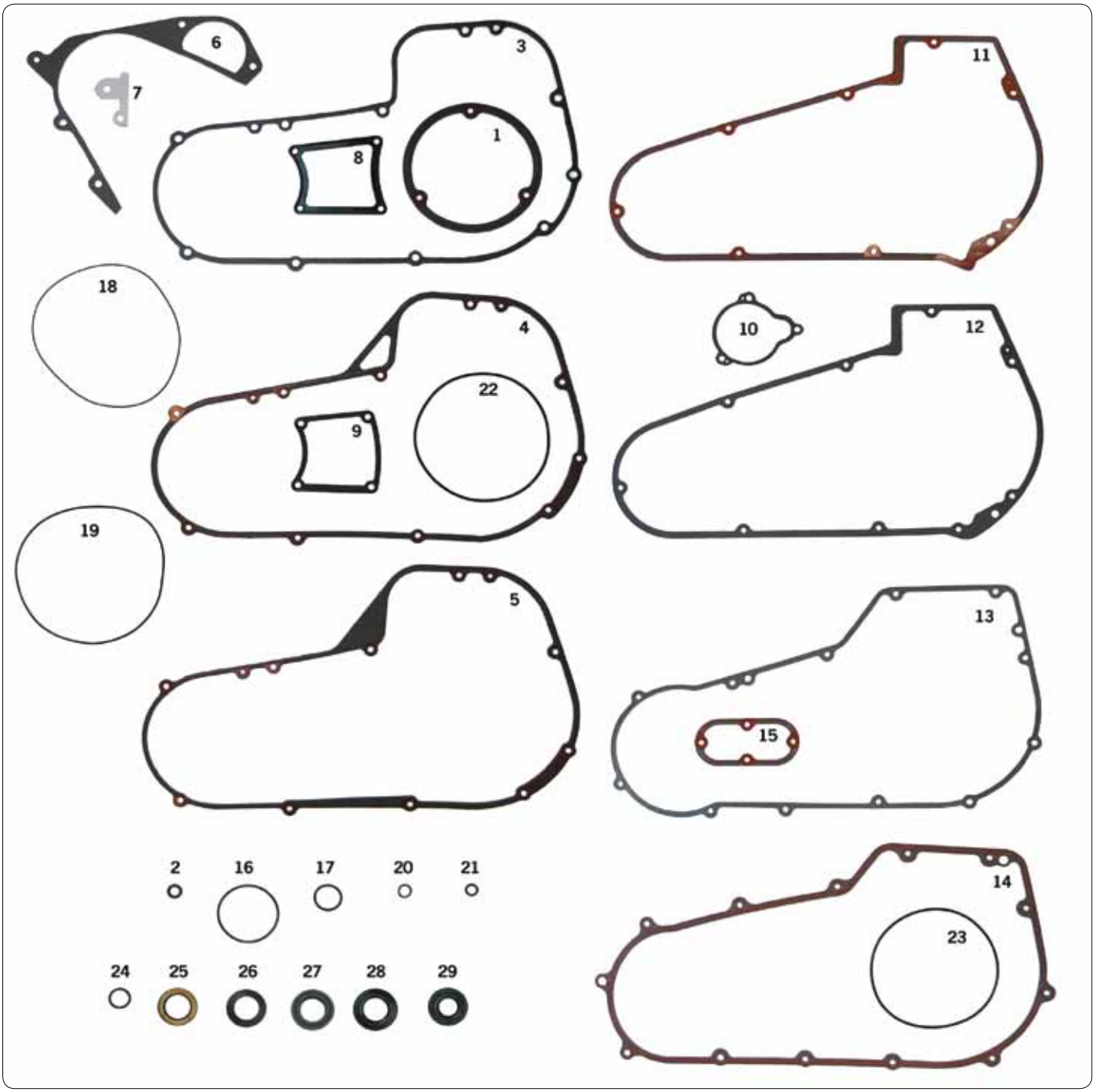
Complete sets include all gaskets, seals and O-rings needed. Super Kits have all gaskets with Silicone Beading and include all tab washers too. All parts are also separartely available. The individual gaskets, seals and O-rings are sold to dealers in packs as indicated in the Qty. column.

Complete sets		
Athena	**James**	
700362	**231081**	Fits all 4 Speed Big Twins 1965 thru 1986
N/A	**742480**	Super Kit, fits all 4 Speed Big Twins 1965 thru 1969
N/A	**742481**	Super Kit, fits all 4 Speed Big Twins 1970 thru early 1982

Individual Gaskets						
	Athena	Qty.	**James**	Qty.	**OEM**	
1.	**700195**	10	**740370**	10	25416-70	Derby cover 1970-early 1984
1.	**700196**	10	**N/A**	-	25416-70	Derby cover 1970-early 1984, cork
1.	**700197**	10	**740422**	10	25416-70	Derby cover 1970-early 1984, Silicone beaded
2.	**700486**	10	**N/A**	-	31320-80	Starter housing belt drive 1980-1986
3.	**700485**	10	**740380**	10	31321-80	Starter drive cover belt drive 1980-1986
4.	**638169**	10	**N/A**	-	60518-65	Starter hole block-off 1965-1986
4.	**N/A**	-	**742479**	1	60518-65	Starter hole block-off 1965-1986, Rubber Covered Metal
5.	**700359**	5	**740323**	5	60538-81A	Primary cover 9-hole 1965-1986
5.	**700360**	5	**740325**	5	60538-81C	Primary cover 9-hole 1966-1986, Silicon beaded
5.	**700360**	5	**740325**	5	60539-86	Primary cover 1965-1986, Silicon beaded
6.	**700369**	10	**740324**	10	60540-65A	Primary cover 8-hole 1965-1980
7.	**700370**	10	**740371**	10	60559-80	Starter oil deflector chain drive late 1980-1985
8.	**700374**	10	**740424**	10	60567-65B	Inspection cover 1965-1986
8.	**700373**	5	**740331**	5	60567-65B	Inspection cover 1965-1986, Silicon beaded
8.	**N/A**	-	**234489**	1	60567-65B	Inspection cover 1965-1986, SteelCore
9.	**700380**	10	**740332**	10	60645-65	Solenoid mount chain drive 1966-1984

Individual O-rings						
	Athena	Qty.	**Zodiac**	Qty.	**OEM**	
10.	**638086**	10	**022365**	10	11101	Deflector plate chain drive 1971-1985
11.	**700007**	10	**022375**	10	11125	Alternator to case 1970-1982
12.	**700011**	10	**231142**	10	11147	Alternator to case 1982-1986
13.	**700198**	10	**231096**	10	25416-84	Clutch cover late 1984-1986
13.	**N/A**	-	**234473**	10	25416-84	Heavy Duty version clutch cover late 1984-1986
14.	**700233**	10	**022370**	10	27060-55	Solenoid mount belt drive models 1980-1984

Individual Seals						
	Athena	Qty.	**Zodiac**	Qty.	**OEM**	
15.	**700021**	5	**022358**	1	12018	Primary to mainshaft 1970-early 1984
16.	**700038**	5	**231172**	1	12052A	Primary to mainshaft late 1984-1986
16.	**N/A**	-	**742408**	5	12052A	Primary to mainshaft late 1984-1986
17.	**638168**	5	**N/A**	-	31341-80	Starter shaft 1980-1986
18.	**700378**	5	**022447**	1	60641-74	Shifter shaft 1974 thru 1985



GASKET KITS, GASKETS, O-RINGS AND SEALS FOR PRIMARY ON 5 SPEED BIG TWINS LATE 1979 THRU 2006

Complete primary gasket kits and individual gaskets, O-rings and seals for all 5 speed Big Twins late 1979 thru 2006. Individual parts are sold to dealers in pack quantities as listed in the Qty. column.

Complete primary gasket & seal kits

Athena	James	
700286	N/A	Fits FLH & FLT models 1980-1984, Silicone beaded
N/A	231080	Fits FLH & FLT models 1980-1984
700288	231143	Fits FLH, FLT & FXR models 1985-1993
700290	N/A	Fits FLH & FLT models 1994-2006
700362	231081	Fits Softail 1986-1988
700365	N/A	Fits Softail 1989-2006 & Dyna 1991-2005
700366	N/A	Fits Softail 1989-2006 & Dyna 1991-2005, Silicone beaded

Individual gaskets for FXR and FLH/FLT models thru 2006

	Athena	Qty.	James	Qty.	OEM	
1	700195	10	740370	10	25416-70	Derby cover thru early 1984
1	700196	10	N/A	-	25416-70	Derby cover thru early 1984, cork
1	700197	10	740422	10	25416-70	Derby cover thru early 1984, Silicone beaded
2	700252	10	234491	20	31433-84	Nylon seal ring for 1984-up cover screw
2	700253	5	234474	5	31433-84A	Seal washer for 1984-up cover screw

	Athena	Qty.	James	Qty.	OEM	
2	N/A	-	742439	10	31433-84A	Cover screw seal washer, rubber encapsulated
3	700283	10	N/A	-	34901-79A	Primary cover 0,8 mm 1980-1993
3	700284	5	N/A	-	34901-79A	Primary cover 1,5 mm 1980-1993
4	700287	5	740336	5	34901-85	Primary cover 1980-1993, Silicone beaded
5	700289	5	740311	5	34901-94	Primary cover 1994-2006, Silicone beaded
6	700292	10	740328	10	34902-79A	Chain housing inner 1980-1984
7	700293	10	740376	10	34903-79	Chain housing to transmission 1980-1984
8	700296	10	740329	5	34906-79A	Inspection cover 1980-1984
8	700297	5	N/A	-	34906-79A	Inspection cover 1980-1984, Silicone beaded
8	N/A	-	742446	1	34906-79A	Inspection cover 1980-1984, rubber coated steel
9	N/A	-	740330	5	34906-85	Inspection cover 1985-up
9	700298	5	N/A	-	34906-85	Inspection cover 1985-up, Silicone beaded
9	N/A	-	740375	5	34906-85	Inspection cover 1985-up, Steel core
9	N/A	-	742447	1	34906-85	Inspection cover 1985-up, rubber coated steel

Individual gaskets for 1986 thru 2006 Softail and 1991 thru 2005 Dyna Glide models

	Athena	Qty.	James	Qty.	OEM	
-	700486	10	N/A	-	31320-80	Starter housing 1986 Softail
10	700485	10	740380	10	31321-80	Starter drive cover 1986 Softail
2	700252	10	234491	20	31433-84	Cover screw seal washer 1984-up, nylon
2	700253	5	234474	5	31433-84A	Cover screw seal washer 1984-up, metal
11	700369	10	740324	10	60540-65A	Primary cover 8-hole 1984-1988
12	700359	5	740323	5	60538-81	Primary cover 9-hole 1984-1988
12	700360	5	740325	5	60538-81	Primary cover 9-hole 1984-1988 Silicone beaded
13	700364	5	N/A	-	60539-89	Primary cover 1989-up
13	700367	5	740396	5	60539-94	Primary cover 1989-up, Sil
15	700374	10	740424	10	60567-65	Inspection cover 1984-up
15	N/A	-	234489	1	60567-65	Inspection cover 1984-up, rubber beaded
15	700373	5	740331	5	60567-65	Inspection cover 1984-up, Silicone beaded
15	700375	5	740425	5	60567-90A	Inspection cover 1984-up, Silicone beaded

Individual O-rings for FLH, FLT, FXR, Softail and Dyna

	Athena	Qty.	Zodiac	Qty.	OEM	
16	N/A	-	022448	10	11116	Starter housing 1991-up
17	N/A	-	022449	10	11117	Shifter shaft sleeve late 1984-up
18	700007	10	022375	10	11125	Alternator-to-case 1970-1982
19	700011	10	231142	10	11147	Alternator-to-case 1983-up
20	638174	25	N/A	-	11191	Shift lever 1990-up Softail
21	700460	10	N/A	-	11298	Starter bolt 1989-1990
22	700198	10	231096	10	25416-84	Derby cover late 1984 thru 1998
22	N/A	-	234473	10	25416-84	Derby cover late 1984 thru 1998, quad seal
23	N/A	-	231633	5	25416-99A	Derby cover 1999-up
23	N/A	-	234840	5	25416-99A	Derby cover 1999-up, Silicone beaded gasket

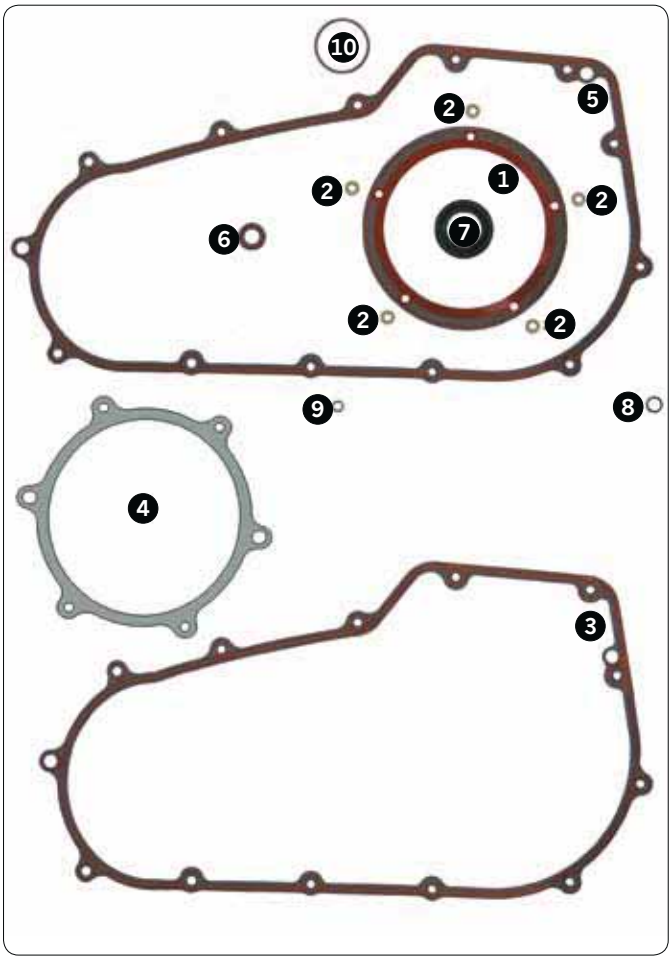
Individual seals for FLH, FLT, FXR, Softail and Dyna

	Athena	Qty.	Zodiac	Qty.	OEM	
24	700012	10	N/A	-	11148	Shifter shaft 1982-early 1984
25	700031	5	022465	1	12043	Starter shaft 1980-early 1984
26	700037	5	022469	1	12051	Starter shaft late 1984-1988
27	700038	5	231172	1	12052A	Primary to mainshaft late 1984-up
27	N/A	-	742408	5	12052A	Primary to mainshaft late 1984-up, double lip
28	N/A	-	740387	5	12053	Starter shaft 1989-1993
29	700470	5	742409	5	12066	Starter shaft 1994-up
29	700470	5	231239	1	12066	Starter shaft 1994-up

SEALS FOR OIL BATH FINAL DRIVE ON 1980 THRU 1990 FLT

Rear sprocket seal and filler plug grommet for the oil bath final drive as found on some 1980 thru 1990 FLT models.

742417 Rear sprocket seal, Teflon, 2-pack (25414-79A)
742406 Rubber grommet, 5-pack (OEM 11428)



GASKETS, O-RINGS AND SEALS FOR PRIMARY ON 2006 TO PRESENT 6-SPEED BIG TWIN MODELS

Complete kits and all individual gaskets, seals and O-rings for 2006 to present Dyna and 2007 to present Softail and Touring models. Made by James Gaskets unless otherwise stated

Complete kits

231977 Fits Dyna 2006 to present and Softail 2007 to present

Gaskets

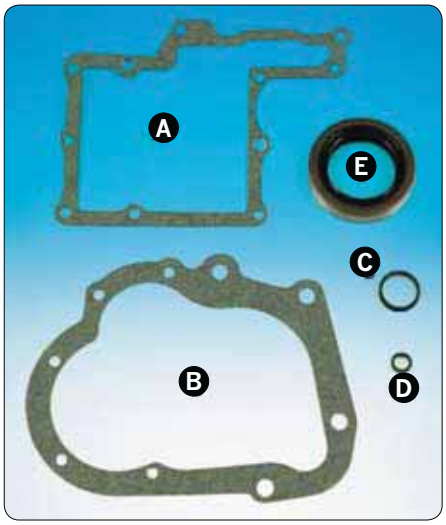
1. 234840 Derby cover, silicone beaded, 5 pack (OEM 25416-99C)
1. 231729 Derby cover, rubber covered metal, 5-pack (OEM 25416-99C)
2. 700253 Cover screw, Athena, 5 pack (OEM 31433-84A)
2. 234474 Cover screw, 5 pack (OEM 31433-84A)
3. 740441 Primary cover, FLH & FLT 2007 to present, Genuine (OEM 34901-07)
4. 701951 Inner primary to crankcase, Genuine (OEM 34934-06)
5. 231848 Primary cover, Dyna 2006 to present and Softail 2007 to present, 5-pack (OEM 63869-06)

Oil seals

6. 700038 Primary-to-main shaft late 1984-up, Athena, 5-pack (OEM 12052A)
6. 231172 Primary-to-main shaft late 1984-up, each (OEM 12052A)
6. 742408 Primary to main shaft late 1984-up, double lip, 5-pack (OEM 12052A)

O-rings

7. 022456 O-ring drain plug, Zodiac, 10-pack (OEM 11105)
7. 700002 O-ring drain plug, Athena, 10-pack (OEM 11105)
8. 742403 O-ring drain plug, Viton, 10-pack OEM 11324)
9. 231847 Starter motor to inner primary, Viton, 10-pack (OEM 27444-00Y)



TRANSMISSION GASKET & SEAL KITS FOR 45CI MODELS FROM 1940-1973

A complete kit includes gaskets and seals to rebuild any 3 Speed with or without reverse in any W, WL, WLA, or G ServiCar series 1940 thru 1973. Kit components are also available separately. Individual gaskets and seals are sold to dealers in packs containing the quantity as listed below

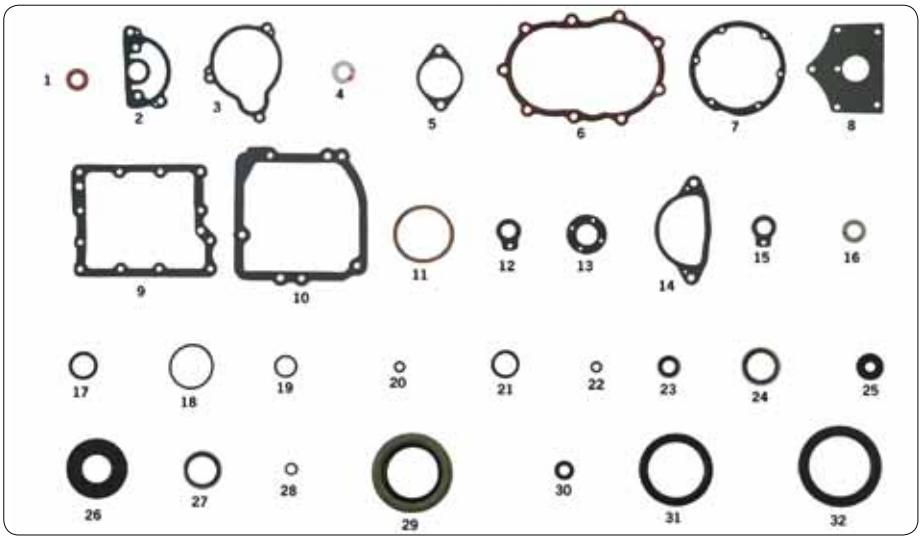
Complete sets			
Athena	James	OEM	
700261	231060	33030-41	Complete kit 45CI models 1940-1973

Individual Gaskets				
	Athena	Qty.	OEM	
A	700280	10	34825-41	Top cover
B	700281	10	34826-41	Side cover

Individual Seals					
Athena	Qty.	Zodiac	Qty.	OEM	
D 700274	10	N/A	-	34036-36	Shifter cam shaft
C 700282	10	N/A	-	34831-39	Counter shaft
E 700326	5	022470	1	37465-41	Clutch gear

TRANSMISSION GASKET & SEALS FOR 1936 THRU 1984 4 SPEED BIG-TWINS

Each set contains all gaskets, seals and O-rings needed to service your transmission. Transmission oil seal kits include all necessary O-rings, oil seals and, where applicable, sprocket nut lock washer, but no gaskets. All gaskets and seals are also separately available and are Sold to dealers in packs containing the quantity as listed below.



Complete sets

Athena	James	OEM	
700263	231155	33031-36	Fits 1936-1964
700264	231155	33031-65A	Fits 1965-1979
700265	231155	33031-80	Fits late 1979-1986

Transmission oil seal kits

Athena	James	
700311	231149	Fits all 1936-1979
700331	231152	Fits all 1980-1981
700333	231153	Fits all 1982-1984

Individual Gaskets

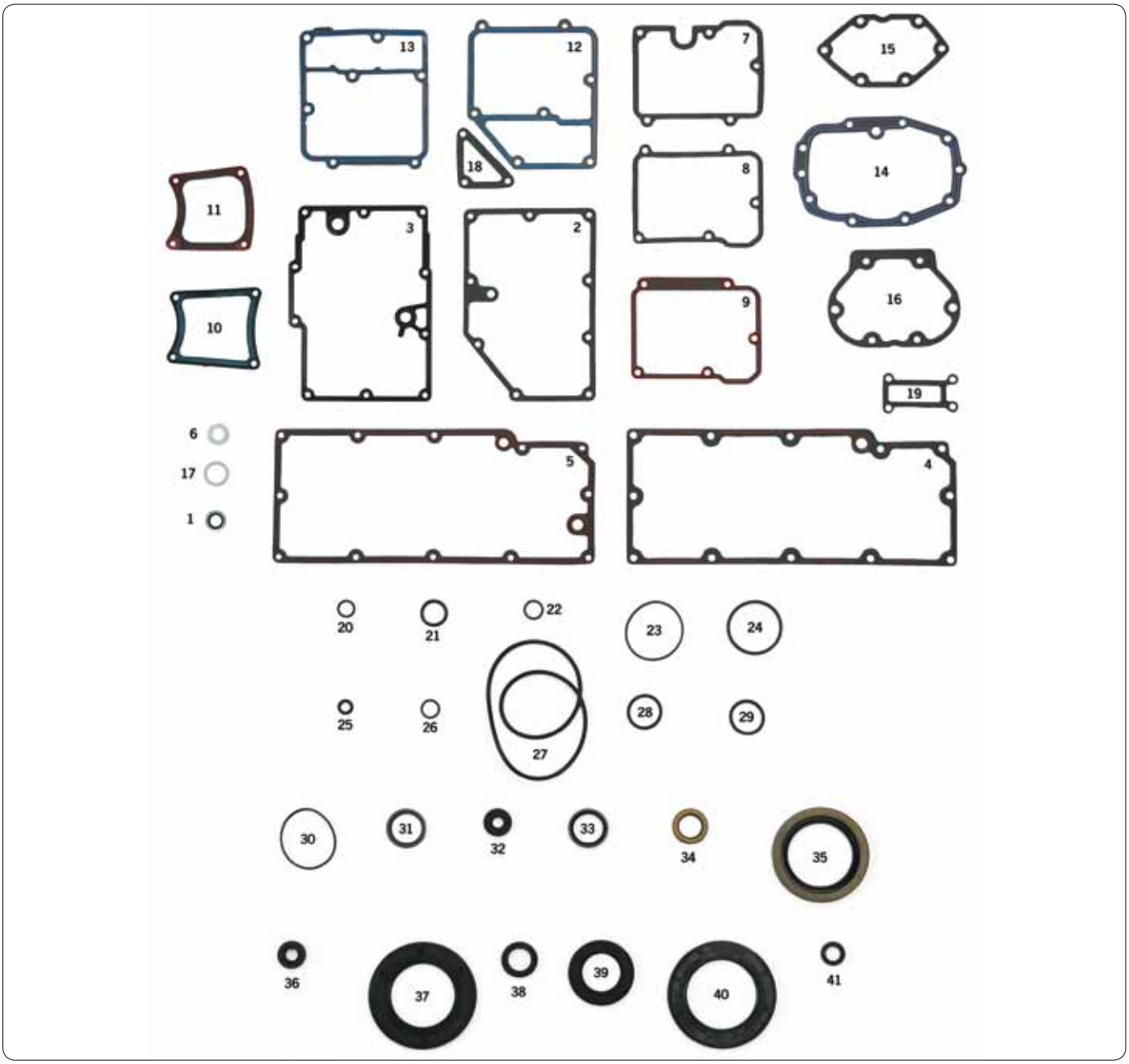
	Athena	Qty.	James	Qty.	OEM	
1.	700199	10	N/A	-	25811-11	Neutral switch 1936-early 1979
2.	700486	10	N/A	-	31320-80	Starter housing belt drive 1980-1986
3.	700485	10	740380	10	31321-80	Starter drive cover belt drive 1980-1986
4.	700269	10	N/A	-	33043-80	Neutral switch 1980-1985
5.	700271	10	740320	10	33196-79	Shaft cover late 1979-1986
6.	700272	10	740316	10	33295-36	Kicker cover 1936-1986
6.	N/A	-	234841	5	33295-36	Kicker cover 1936-1984, Silicone beaded
7.	700275	10	740317	10	34552-52	Shift cover 1952-early 1979
8.	700276	10	740381	10	34565-52	Dust cover to transmission top 1952-early 1979
9.	700278	10	740318	10	34824-36	Ratchet top 1936-early 1979
10.	700279	10	740319	10	34824-79	Shifter cover late 1979-1986
11.	700312	10	231534	10	35231-36	Mainshaft cork washer 1936-early 1977
12.	700313	10	N/A	-	35607-73	Speedo drive cover to case, fits 1973-1977 FX, FXS
13.	700317	10	N/A	-	36025-36	Countershaft end cap 1936-1969
14.	700370	10	740371	10	60559-80	Starter oil deflector chain drive late 1980-1985
15.	638226	10	N/A	-	67141-36	Speedo drive 1936-1983
16.	700391	10	N/A	-	67142-52	Tachometer drive

Individual O-rings

	Athena	Qty.	Zodiac	Qty.	OEM	
17.	N/A	-	022365	10	11101	Starter crank 1936-1986
18.	700004	10	231170	25	11115	Countershaft 1965-1986
19.	700015	10	022471	10	11166	Main drive gear late 1984-1986
20.	700460	10	231523	10	11171	Shifter fork shaft late 1979-1986
21.	700270	10	231073	10	33076-37	Starter shaft square O-ring 1936-1986
22.	638200	10	231171	10	34036-80	Shifter fork shaft late 1979-1986

Individual Seals

	Athena	Qty.	Zodiac	Qty.	OEM	
23.	700017	5	027651	1	12010	Shifter shaft cover late 1979-1986
24.	700018	5	740391	5	12013A	Main drive gear 1965-early 1966 and late 1981-1986
25.	700020	5	022357	1	12014	Clutch hub nut 1965-early 1984
26.	700021	5	022358	1	12018	Inner primary 1970-1984
27.	638190	5	022361	1	12022	Main drive gear late 1966-early 1981
28.	700274	10	N/A	-	34036-36	Shifter cam 1936-early 1979
29.	700310	1	022348	1	35230-39	Mainshaft 1941-early 1979
29.	N/A	-	231039	1	35230-39	Mainshaft 1941-early 1979, double lip version
30.	700323	10	N/A	-	37337-36	Clutch push rod, rubber 1936-1964
31.	700330	1	022328	1	37741-67	Mainshaft late 1979-1981
31.	638205	5	N/A	-	37741-67	Mainshaft late 1979-1981, double lip version
32.	700478	1	231180	1	37741-82	Mainshaft 1982-1986



TRANSMISSION GASKET KITS, GASKETS, O-RINGS AND SEALS FOR 5 SPEED BIG TWINS

Gaskets, seals, and O-rings for 5 Speed transmissions as used in late 1979 thru 2006 FLH and FLT series models, 1986 thru 2006 Softail, 1982 thru 1994 FXR and 1991 thru 2005 Dyna. Complete sets include all the gaskets, seals and O-rings needed for a complete rebuild. Transmission oil seal kits include all the necessary O-rings, oil seals and, where applicable, sprocket nut lock washer, but no gaskets. All gaskets, seals and O-rings are also separately available and are sold to dealers in packs containing the quantities as listed in the Qty. column.

Note: Most aftermarket 6-speed transmissions and 6-speed conversion kits use stock style 5 Speed gaskets, O-rings and seals.

Complete sets		
Athena	**James**	
700266	231065	Fits all models late 1979-1985
700267	231065	Fits all models 1985-1999, does not include oil pan gaskets for Dyna or FLH/FLT
700457	234438	Fits Dyna 1991-1998
N/A	231647	Fits Dyna 1999-2005
700268	234439	Fits FLH & FLT models 1993-1998
N/A	231647	Fits FLH & FLT models 1999 thru 2006

Transmission oil seal kits		
700032	234445	Fits all models late 1979 thru 1984
700457	N/A	Fits all models 1985 thru 2006

Individual Gaskets

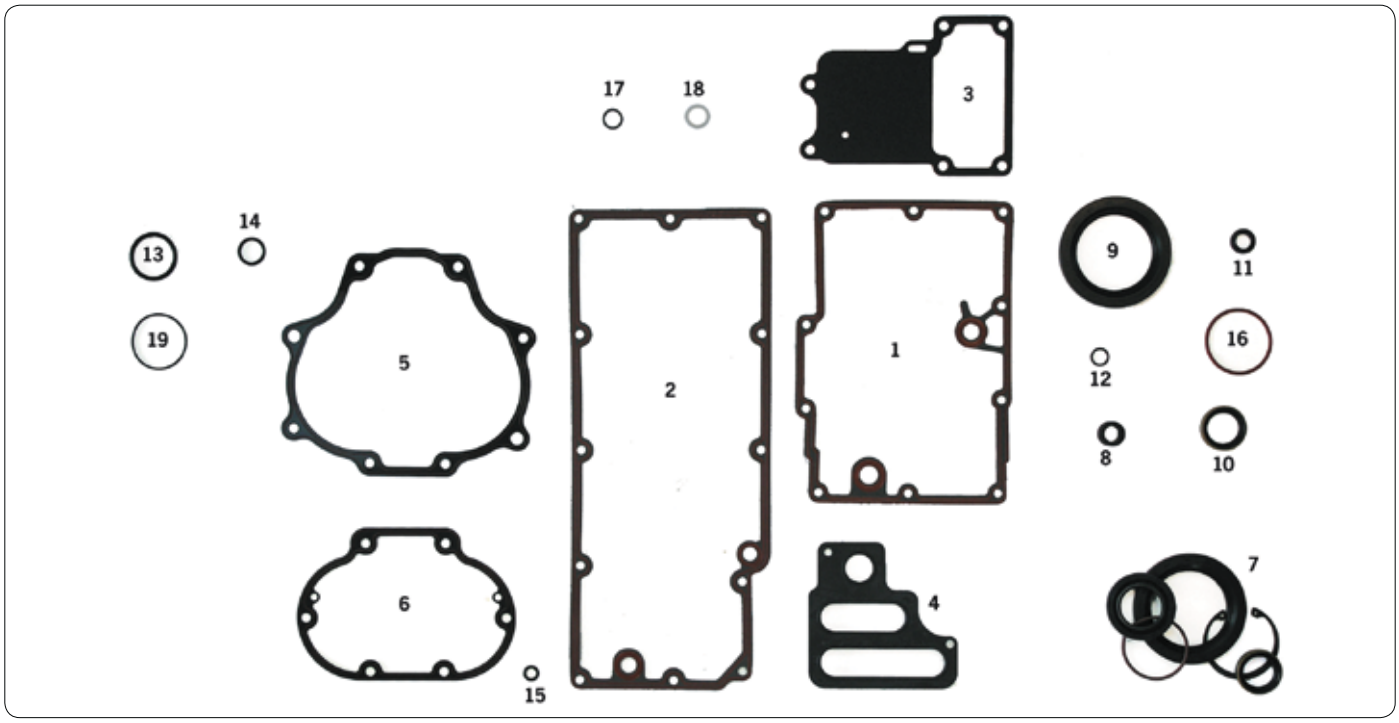
	Athena	Qty.	James	Qty.	OEM	
1.	700358	10	N/A	-	6007	Drain plug nylon washer late 1979-1998
1.	N/A	-	740603	6	6007	Drain plug metal washer with rubber insert
2.	700200	5	740426	10	26072-90A	Oil pan Dyna 1991-1998
3.	638414	10	N/A	-	26072-99	Oil pan Dyna 1999-up
3.	N/A	-	231635	10	26072-99	Oil pan Dyna 1999-up, Silicone beaded
3.	N/A	-	742419	1	26072-99	Oil pan Dyna 1999-up, SteelCore
4.	700201	5	740420	10	26077-93	Oil pan FLH/FLT 1993-1998
5.	638415	10	N/A	-	26077-99	Oil pan FLH/FLT 1999-2008
5.	N/A	-	231639	10	26077-99	Oil pan FLH/FLT 1999-2008, Silicone beaded
6.	700269	10	N/A	-	33043-80	Neutral switch washer
7.	700294	10	740321	10	34904-79	Top cover late 1979-1985
8.	N/A	-	740393	10	34904-86B	Top cover 1986-1998 (except Dyna)
8.	700291	10	N/A	-	34904-86B	Top cover 1986-1998 (except Dyna), Silicone beaded
9.	700262	10	N/A	-	34904-86C	Top cover 1999-2006 (except Dyna)
9.	N/A	-	231645	10	34904-86C	Top cover 1999-2006 (except Dyna), Silicone beaded
10.	700296	10	740329	5	34906-79A	Inspection cover FXR, FLH, FLT 1980-1984
10.	N/A	-	742446	1	34906-79A	Inspection cover FXR, FLH, FLT 1980-1984, rubber coated steel
11.	N/A	-	740330	5	34906-85	Inspection cover 1985-2006
11.	700296	-	N/A	-	34906-85	Inspection cover 1985-2006, Silicone beaded
11.	N/A	-	740375	5	34906-85	Inspection cover 1985-2006, SteelCore
11.	N/A	-	742447	1	34906-85	Inspection cover 1985-2006, rubber coated steel
12.	700299	10	740418	10	34917-90A	Top cover Dyna 1991-1998
13.	700102	10	231016	5	34917-99	Top cover Dyna 1999-2005
14.	700314	10	740401	10	35652-79B	Trap door, late 1979-up
14.	700316	10	231646	5	35652-79	Trap door, late 1979-up, Silicone beaded
15.	700318	10	740322	10	36801-79	Clutch release cover late 1979-1986
15.	700319	10	N/A	-	36801-79	Clutch release cover late 1979-1986, Silicone beaded
16.	700320	10	740419	10	36801-87A	Clutch release cover 1987-2006
16.	700321	10	N/A	-	36801-87A	Clutch release cover 1987-2006, Silicone beaded
17.	638203	10	N/A	-	37091-80	Filler plug 1980-1986
18.	700382	10	740427	10	62423-90A	Oil spout Dyna 1991-1998
19.	700383	10	740421	10	62432-93	Oil spout FLH/FLT 1993-2006

Individual O-Rings

	Athena	Qty.	Zodiac	Qty.	OEM	
20.	700002	10	022456	10	11105	Drain plug, 1990-2006
21.	700008	10	022404	10	11132	Filler plug, Dyna 1991-2005
22.	710491	10	720211	10	11140	Speedometer sensor 1994-2006
23.	N/A	-	022451	10	11162	Mainshaft right end late 1984-1986
24.	638184	10	N/A	-	11178	Filler plug, Softail 1987-1998
25.	N/A	-	022452	10	11179	Clutch cable 1987-2006
26.	231493	10	720216	1	11290	Neutral switch 1999-2006
27.	700198	10	231096	10	25416-84	Clutch cover late 1984-2006
27.	N/A	-	234473	10	25416-84	Clutch cover late 1984-2006, quad seal
28.	N/A	-	742499	10	62672-90	Lower dipstick cover Dyna 1991-2005
29.	N/A	-	720212	10	62673-90	Dipstick Dyna 1991-2005

Individual Seals

	Athena	Qty.	Zodiac	Qty.	OEM	
30.	700014	10	022450	10	11165	Mainshaft bearing late 1984-2006
31.	700018	5	740391	5	12013A	Mainshaft 5th gear late 1979-1990
32.	700020	5	022357	1	12014	Clutch hub nut late 1979-early 1984
33.	N/A	-	022331	10	12035	Mainshaft 5th gear 1991-2006
33.	700005	1	740395	5	12035	Heavy-Duty version mainshaft 5th gear 1991-2006
34.	700031	5	022465	1	12043	Starter motor shaft late 1979-early 1984
35.	700033	1	022442	1	12044A	Main shaft late 1979-early 1984
36.	700034	5	022466	1	12045	Shifter shaft late 1979-up
36.	638194	5	N/A	-	12045	Shifter shaft late 1979-up, double lip version
37.	700036	1	022468	1	12050	Main shaft clutch side late 1984-1994
38.	700037	5	022469	1	12051	Starter motor shaft late 1984-1988
39.	700038	5	231172	1	12052	Primary-to-mainshaft late 1984-2006
40.	N/A	-	022054	1	12067A	Mainshaft (left side) late 1994-2006
41.	742457	5	027657	1	37101-84	Clutch release lever, late 1984-1986



TRANSMISSION GASKET AND SEALS FOR 6-SPEED TWIN CAM MODELS 2006 TO PRESENT

Complete sets and individual gaskets, seals and O-rings for the OEM 6-speed transmission as used in 2006 to present Dyna and 2007 to present Softail and FLH/FLT series models. Complete sets include all gaskets, seals and O-rings needed for a complete rebuild. Individual gaskets, seals and O-rings are also available and sold to dealers in quantity-packs as indicated below. Unless otherwise stated all parts are made by James Gaskets.

Note: Most aftermarket 6-speed conversions use 5-speed style gaskets, seals and O-rings.

Complete kits
742443 Fits Dyna models
742444 Fits FLH & FLT series models 2007 thru 2008

Individual Gaskets

	Part	Qty.	OEM	
1.	231635	5	26072-99A	Oil pan Dyna
2.	231639	10	26077-99A	Oil pan, Silicon beaded, FLH/FLT 1999 thru 2008
3.	701953	1	34917-06	Top cover, SteelCore
3.	742448	5	34917-06	Top cover, Foamed Steel
4.	231725	1	35607-06	Transmission to engine, Dyna 2006-up, FLH/FLT 2007-up
5.	231963	1	35654-06	Trapdoor
5.	742453	1	35654-06	Trapdoor, Foamed Steel
5.	742454	1	35654-06	Trapdoor, SteelCore
5.	701954	1	35654-06	Trapdoor, OEM manufacturer
6.	701955	1	36805-06	Clutch release cover
6.	742456	5	36805-06	Clutch release cover, Foamed Steel

Individual Oil seals

	Part	Qty.	OEM	
7.	231955	-	-	Transmission sprocket seal kit
8.	231855	10	7078	Shifter lever
9.	231954	1	12074	Transmission main drive gear
10.	231957	1	12077	Transmission main drive gear end
11.	027657	1	37101-84B	Shifter shaft, Zodiac
11.	742457	5	37101-84B	Shifter shaft

O-rings

	Part	Qty.	OEM	
12.	022456	10	11105	Oil pan drain plug, Zodiac
12.	700002	10	11105	Oil pan drain plug, Athena
13.	231905	10	11120	Engine oil dip stick, FLH/FLT, Dyna
14.	022404	10	11132	Transmission oil dip stick, Zodiac
14.	700008	10	11132	Transmission oil dip stick, Athena
15.	022452	10	11179	Clutch cable, Zodiac
16.	231941	10	11201	Main drive gear
17.	231486	1	11289A	Speed sensor
18.	720216	1	11290	Neutral switch, import
18.	231493	10	11290	Neutral switch
19.	742407	10	11573	Transmission oil spout, Dyna 2006-up

ENGINE AND TRANSMISSION KEYS

Shop kit of commonly used keys packed in a virtually unbreakable tray. Ideal for shop use, contains 240 pieces of 12 commonly used keys. Individual keys are listed below and available in 10 packs only. Assortment trays are separately available for those who want to keep small inventory organized. **Note:** Keys for oil pump drive gear and pinion gear may vary from year to year, therefore no fitment is given. All sizes used are included in our assortment tray. Always check for correct application.

233550 Assortment tray with 240 pieces of 12 commonly used keys
232159 Assortment tray only

Pinion Shaft to Flywheel Key
231470 Fits Big Twin 1941 thru 1981 (OEM 23985-12)
233480 Fits Big Twin 1981 thru 1988 (OEM 11218)
231470 Fits Sportster 1954 thru 1981 (OEM 23985-12)
233480 Fits Sportster 1981 thru 1985 (OEM 11218)

Sprocket Shaft to Flywheel Key
231453 Fits Big Twin 1956 thru 1971 (OEM 23985-56)
231470 Fits Sportster 1954 thru 1985 (OEM 23985-12)

Crank Pin Key
231471 Fits Big Twin 1936 thru 1981 (OEM 23985-18)
233480 Fits Big Twin 1981 to present (OEM 11218)
231471 Fits Sportster 1954 thru 1981 (OEM 23985-18)
233480 Fits Sportster 1981 to present (OEM 11218)

Pinion Gear & Oil Pump Drive Gear Key
231472 Fits Big Twin (OEM 23985-54)
233477 Fits Big Twin (OEM 26340-36)
231454 Fits Big Twin (OEM 26347-15)

Oil Pump Gears & Drive Gears Key
231454 Fits Big Twin (OEM 26347-15)
231050 Fits Big Twin (OEM 26348-15)

Clutch Hub Key
144454 Fits Big Twin 1941 thru 1984 (OEM 37523-15A)
233482 Fits Big Twin 1985 thru 1989 (OEM 37523-85)

Starter Clutch Key
292011 Fits all 4 Speed Big Twin 1941 thru 1984 with kickstart (OEM 33393-50)

Main Drive Gear Key
231588 Fits 4 Speed Big Twin 1977 thru 1984 (OEM 35175-38)

ENGINE AND TRANSMISSION RETAINING RINGS

Shop kit of commonly used retaining rings in a virtually unbreakable tray. Ideal for shop use. Tray contains 110 pieces of commonly used rings as listed below. Individual retaining rings are also available.

233552 Assortment tray with 110 pieces retaining rings.

Replacement retaining rings as in the assortment tray, sold in 10-packs unless otherwise stated
233524 Piston pin, fits Big Twin 1973 thru 1977 and Sportster 1952 thru 1977 (OEM 22582-52)
233523 Piston pin, fits Big Twin 1977 thru 1983 and Sportster 1977 thru 1985 (OEM 22588-78)
231490 Pinion shaft bearing, fits Big Twin 1958 thru 1986 (OEM 11007)
231045 Oil pump shaft, fits Big Twin 1957 thru 1962, Sportster 1972 thru 1976 (OEM 11002). Also fits miscellaneous shifter and clutch parts 1972 thru 1991 (OEM 11143)
234463 Same as ZPN 231045, made by James Gaskets
231051 Oil pump drive shaft, fits OHV Big Twins 1936 thru 1999 (OEM 26348-36)
233522 Drive gear bearing race, fits Big Twin 1937 thru 1977 (OEM 35129-36)
231540 Mainshaft 2nd/3rd gear, fits Big Twin 1937 thru 1986 4 Speed (OEM 35337-36)
233521 Low and second gear counter shaft, fits Big Twin 1940 thru 1986 4 Speed (OEM 35810-36)
233526 Counter shaft bearing, fits Big Twin 1937 thru 1976 (OEM 35920-36)
231762 Shifter shaft, fits all 4 Speed Big Twin, also fits miscellaneous shifter, clutch and control levers on 1972 thru 1988 (OEM 11036)
233445 Throw out bearing, fits Big Twin 1975 to present (OEM 11096)

Other retaining rings, not supplied in the assortment tray, sold in 10-packs unless otherwise stated
233492 Exhaust flange, fits all models 1984 to present (OEM 65325-83)
742493 Exhaust flange, fits all models 1984 to present, 2-pack (OEM 65325-83) NEW
233509 Fork damper, Fits FL 1949 thru 1977 (OEM 46172-48)
148087 Star hub thrust washer lock ring (OEM 43554-35)
147004 Wheel seal lock ring, fits steel hub (OEM 11027)
238673 Retaining ring crankcase bearing right hand side, Big Twin 1987 to present (OEM 11177A)
238674 Retaining ring 5 Speed transmission gears main and counter shaft, 1991 thru 2006, 6 used per transmission, made by Alto (OEM 11067)
234094 Retaining ring 5 Speed transmission gears main and counter shaft, 1991 thru 2006, 6 used per transmission, made by Jims USA (OEM 11067)

JAMES GASKETS' FRONT FORK SEAL KITS

Very complete kits that contain everything you need when doing a fork job. Contains a pair of oils seals, dust seals, oil seal back up washers, plug -rings, oil seal retaining rings, drain plugs, drain plug washers and all other seals you might need.

740605 Fits the 39 mm forks on 1996 to present Sportster Sport models

740606 Fits the 41 mm forks on 2000 thru 2007 FXSTD Deuce models

740607 Fits the 49 mm forks on 2002 to present V-Rod, 2006 to present Dyna and 2008 to present Softail Rocker models

FRONT FORK OIL SEALS, OIL SEAL KITS AND O-RINGS

Complete front fork seal kits contain all required oil seals, o-rings and seal washers to completely rebuild your front fork.

Complete kits				
James	Athena	Zodiac	OEM	
N/A	700343	N/A	45849-71	Fits Sportster and FX models 1971 thru 1973
N/A	700344	N/A	45849-73	35 mm Kayaba forks on XL and FX models 1973 thru 1975
231183	700476	N/A	45849-75	35 mm Showa forks on XL and FX models 1975 thru 1983
231185	700347	N/A	45849-84A	35 mm Showa forks on XL, FX and FXR models 1984 thru 1987
231186	700349	N/A	45849-87	39 mm Showa forks on XL and FXR models 1987 to present
234480	700348	N/A	45849-84K	Air control fork on FLT, FXR, FXRT, FXRS Convertible and Sport 1983 to present
231229	N/A	022472	45849-49	41 mm forks on FL models 1949 thru early 1977
N/A	700345	022473	45849-77	41 mm forks on FL models late 1977 thru 1983 and FXWG,FLT and FLHT 1980 thru 1983
231184	700346	N/A	45849-84	41 mm forks on FXWG, FLT, FLHT and Softail models 1984 to present

Fork seals (sold each)		
Zodiac	OEM	
022355	45945-71	XL and FX models 1971 thru 1972
022325	45927-73	35 mm Kayaba forks on XL and FX models 1973 thru 1975
022330	45400-75	35 mm Showa forks on XL and FX models 1975 thru 1983
231177	45387-83	35 mm Showa forks on XL, FX and FXR models 1984 thru 1987
231178	45378-87	39 mm Showa forks on XL 1987 to present, FXR 1987 thru 1994 and Dyna Narrow Glide 1991 thru 2005
022352	45852-48	41 mm forks on FL models 1949 thru early 1977
022354	45843-77	41 mm forks on FL models late 1977 thru 1983 and FXWG, FLT and FLHT 1980 thru 1983
231179	45875-84	41 mm forks on FXWG 1984 thru 1988, FLT, FLT and Softail models 1984 to present, FXDWG 1991 thru 2005

O-rings (sold in 10 pack)		
Zodiac	OEM	
022424	45733-48	Fork oil cap seal FL and FXWG models 1948 to present
700341	45845-77	Slider tube plug FL and FXWG models 1977 to present
700353	45982-73	Slider tube plug FX models 1973 thru 1987
700339	45780-52	Fork tube cap XL and FX models 1954 thru 1970

Seal washers (sold in 10 pack)		
Zodiac	OEM	
700356	46111-48	Fork damper stud FL models 1949 thru early 1977
700357	46125-48	Fork damper tube FL models 1949 thru early 1977
700354	45986-73	Drain plug, Kayaba forks on FL models 1973 thru early 1977
700355	45992-73	Fork damper tube, Kayaba forks on XL models 1973 thru 1974
742461	45398-96	Fork damper tube, 39 mm forks on XL models 1996 thru 2003

Rear Fork Seals			
Zodiac	James	OEM	
022353	742475	47519-58	Fits all Big-Twin drum brake type rear forks 1958 thru 1972
022340	742476	47519-72	Fits all Big-Twin disc brake type rear forks 1973 to present

Fork seals (sold in pairs)		
James	OEM	
742473	46514-01	49 mm forks on V-Rod 2002 to present, FXD 2006 to present, FXCW 2008 to present

WHEEL SEALS

Available for most models from 1955 thru 1999. Zodiac wheel seals are sold each, James wheel seals are sold in 2-packs, Accel wheels are sold in dealer 5-packs.

Zodiac	Accel	James	
022351	638293	N/A	Fits FL steel hub 1967-1972, Sportster and K models with wire wheels 1955-1978 and FX 1971-1972 (OEM 41210-55)
022353	N/E	742475	Fits all models with steel hub front and rear 1973-1983, FL cast wheels front and rear 1980-1984 and FLT/FLHT cast wheel front and rear brake side only, 1982-1984 (OEM 47519-58)
022340	N/E	742476	Fits FX/FXR/XL models with cast or wire front wheels 1973-1983 (not FXWG), FL cast wheels front or rear 1973-1979 and FLT/FLHT cast wheels sprocket side 1980-1983 (OEM 47519-72)
022401	N/E	742477	Fits most models front and rear with cast or wire wheels 1984 thru 1999 (OEM 47519-83A)