SCAT CRANKSHAFTS
THE ULTIMATE IN HIGH PERFORMANCE

Scat Crankshafts Newsletter Fall 2005 - Volume 1, Issue 1

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- **Visit us At:** SEMA-Booth 22533 PRI-Booth 2961
- **Online:** www.scatenterprises.com
- **In Person:** 1400 Kingsdale Ave. Redondo Beach, CA 90278
- **Or Call Us:** (310) 370-5501

FOR OVER 40 YEARS

SCAT has manufactured and distributed parts for the performance aftermarket. During this time, SCAT has grown from a distributor of specialty Volkswagen parts and Procar Seats into the premier manufacturer of high performance racing crankshafts and engine components for a wide range of American and foreign engines.

We are very proud to publish, for you, our customers our inaugural issue of the SCAT Crankshafts Newsletter. Each quarter we will publish a newsletter, covering the happenings at SCAT, our industry and other information we feel will be of interest to you.

In our first issue there are a couple of areas we wanted to cover. The first area involves issues with the use of the crank and what causes it to break. People want to blame the crank because it is the crank that broke. It fact it is usually is not the crank. We explain this in great detail on page 2 of this newsletter.

The second area we want to cover are some of the exciting things happening here at SCAT.

First and foremost, we are very excited to introduce the SCAT complete balanced rotating assemblies. Both internal and external balanced rotating assemblies are now offered – see page 3 for some of the highlights of this exciting new program.

And with the trade show season upon us, we want to encourage you to come by and visit us at PWA, SEMA and PRI, so we can share with you the many, many reasons why SCAT should continue to be your choice for crankshafts, connecting rods, rotating assemblies and engine components.

We love to tell our story, and although you have heard some of this before it is worth repeating.

- SCAT's broad and constantly expanding product line that includes over 300 different rotating assemblies, over 130 different rod applications, over 40 cast crank applications, over 150 forged crank applications (including the SCAT exclusive superlight, lightweight and Q-Lite profiled cranks) a multitude of custom billet and forged crank componets and a complete line of pistons, rings, bearings, flexplates and dampers.

- SCAT's custom Billet crank, Series 7000 custom forged crank and our Series 4000 lightweight pro comp, superlight and Q-Lite forged crank programs, combined with complete "in-house" design and engineering capability, means we can analyze, design and develop engine parts for any application.

- SCAT has expanded its line of connecting rods to include many more Chevy and Ford options, as well as, a complete line of Pontiac, Chrysler and Sport Compact connecting rods.

- For Sport Compact, we now offer H-Beam V6 rods for Nissan and Toyota. We have introduced I-Beam rods for Chevy LS-1 and H-Beam rods for AMC, Chrysler, Ford 460 and Ford 428.

- SCAT has complete manufacturing capability, with 2 state of the art American GFM crankshaft milling machines and a multitude of CNC machining centers, crankshaft grinders and polishers, and a complete production line for connecting rods which allows us to accomplish virtually any custom crank and rod manufacturing project. We continue to expand, and improve and update our manufacturing capability to keep us at the forefront of our industry.

Finally, as we have for the last four decades, we continue to strive to offer our customers the highest quality products at affordable and competitive prices. We are excited about our new products and our future, and look forward to providing you with the service and products you demand and deserve for another four decades.

All of us at SCAT contribute to the innovation, quality and customer service that you have come to expect and again, we want to thank for your business and look forward continuing to service your aftermarket performance needs.

SCAT TECH:

5 WAYS TO BREAK THE NOSE OF A CRANK

In recent months we have had numerous questions and issues raised about the nose of the crank and what can cause it to break.

What we have found is that in most cases the crankshaft gets the blame for such failures. But in fact, it is the parts that are being used in conjunction with the crank, it is the additional machining done to the parts that are being used with the crank, it is 99% of the time NOT the crank that caused the crank to break.

1. IMPROPER MACHINED CRANK GEARS

A. Champher machined at wrong angle.
B. Champher machined with too small an angle.
C. Belt drive gears. The seal sleeve bottoms to the face of the main before the inner face of the gear bottoms against the step in the nose of the crank. All of the above prevents the crank gear from bottoming against the step on the nose of the crank. This leaves a gap between the gear and the step, which allows the crank to flex . . . A fatigue crack starts. SNAP!!!! The crank breaks.

2. DAMPERS WITH MOVING INERTIA WEIGHTS

A. Fluid, balls, springs, inertia rings with rubber O-Rings, etc. Can you balance a wheel on your race car if the tires are flat???? How can your rotating assembly be balanced if to quote one manufacturer, "These units (Dampers) should not be on the crank for balancing as the inertia weight may not be centered until the engine starts." NEWS FLASH!!!! Centrifugal force will always take the inertia weight off center no matter what RPM. Your assembly is never balanced. TELL TALE SIGN!!!! Metal transferred on nose outside diameter and damper internal diameter . . . A fatigue crack starts. SNAP!!!! The crank breaks.

3. EXTERNAL BALANCE vs. RPM

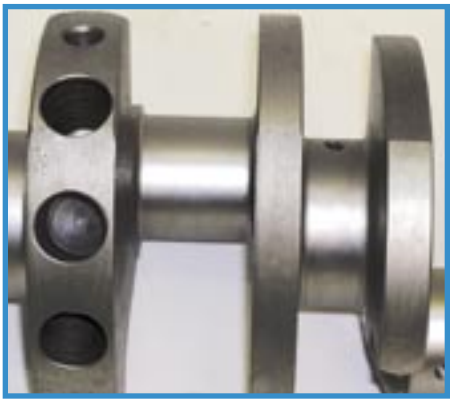
A. Rotating weight multiplies as RPM increases. Engines have heavier or lighter balance weights and larger or smaller noses. RPM above 5500RPM is more risky on a Small Block Chevy than a Big Block Chevy. However, as RPM's go up, the weight more and more wants to leave the crank due to centrifugal force. Do not be surprised if at some point fatigue sets in and the nose comes off.

4. DRIVES EXTENDING BEYOND THE NORMAL DISTANCE ON THE NOSE

A. Multi-stage oil pumps, blowers, etc all have belt drives that require torque taking off at 90 degress to center line of the crank. More torque is necessary for driving these things and further away from main bearing support all leads to multiple of leverage wiggling the nose. Fatigue sets in, nose breaks, blower stops. The Small Block Chevy has the smallest diameter nose and the weakest of all. Note: Blowers take substantially more 90 degree torque than dry sump pumps, therefore, more likely to break noses. Not recommended for Small Block Chevy. If a blower is being used, use a crank with a Big Block nose.

5. IMPROPER BALANCING TECHNIQUE

The counterweights on a crankshaft are designed to work all together as a system within a certain bob weight range. To correct the balance on a crank where the counterweights are too heavy the following should be followed:



Internal Balance: If more than 2 holes are required in each end, the outer diameter of all the counter weights should be turned in a lathe to correct the out of balance condition in all the counterweights. If you try to drill more holes, you will create a secondary wave which will lead to crank flex and eventually a fatigue crank.

External Balance: The crank is spun with the external balance and flywheel. If it is determined that the assembly is too heavy where the weight is on the damper and flywheel, do not make the correction on the end counterweights of the crank. The out of balance condition is in the damper and flywheel, which is where it should be corrected. It is very simple to alter the bolt on weight of the damper and drill the balance weight on the flywheel. If these components need to be replaced simply bolt on the proper weight to the damper and match balance the flywheel which has to be balanced anyway. If you correct in the end counterweights, you will create a wave in the crank which will wiggle the nose of the crank which well eventually start a fatigue crack which will snap the crank.

AND THIS IS WHY WE ARE INTRODUCING THE SCAT BALANCED ROTATING ASSEMBLIES.

PHONE: 310-370-5501 • FAX: 310.214.2285 www.scatcrankshafts.com

Introducing... Complete Balanced Rotating Assemblies

All components for our BALANCED ROTATING ASSEMBLIES,

are designed for the ultimate in performance. We take the "guess work" out of engine assemblies".

Our choices of components are selected to ensure we meet the needs of you, our customer.

Whether it is street, strip or circle track, SCAT's knowledgable sales staff will design the ultimate rotating assembly and precision balance it to, again, take the "guess work" out of purchasing a performance engine assembly.

Chevy Internal Balanced Rotating Assembly Shown

NEW

Ford External Balanced Rotating Assembly Shown

Our large variety of components include:

- ***Cast, forged, billet cranks in all styles, weights and rod combinations.***
- ***4 different types of I-Beam and H-Beam rods in various lengths, weights and journal combinations.***
- ***Infinite number of piston combinations from the leaders in Piston manufacturing such as SRP, JE, Ross, KB and Mahle.***
- ***Internal or External balance available.***
- ***With or without, your choice, balancers, flexplates, flywheels, all SFI approved.***
- ***Bearings and ring combinations for maximum power and reliability.***

Some of the more popular combinations we will offer are:

(IB in Part#'s indicates Internal Balance, EB indicates External Balance)

BAL. KIT PART #'S	CRANK	RODS	PISTON	PISTON#	TYPE	MAIN BRNGS	ROD BRNGS	RINGS	FLEX	DAMPER
1-90000-IB	9-350-3480-5700	2-ICR5700	KB	198.030	FLAT	MS909P	CB-663P	ST4030	n/a	n/a
1-90350-EB	9-350-3750-5700	2-ICR5700P	KB	102.030	DISH	MS909P	CB-663P	ST4030	FP400	D-80003
1-91100-EB	9-350-3750-5700L	2-ICR5700	KB	102.030	DISH	MS909P	CB-663P	ST4030	FP305	D-80003
1-91050-EB	9-350-3750-5700L	2-ICR5700	KB	100.030	FLAT	MS909P	CB-663P	ST4030	FP305	D-80003
1-94160-EB	9-302-3400-5400-2123	2-ICR5400-927	KB	246.030	FLAT	MS590P	CB-634P	ST4030	FP302E	D-80006
1-40610-EB	4-350-3750-5700	2-350-5700-2100	SRP	138089	FLAT	MS909P	CB-663P	ST4030	n/a	n/a
1-407601-IB	4-350-3750-6000	2-350-6000-2100	SRP	138089	FLAT	MS909P	CB-663P	ST4030	n/a	n/a
1-41760-IB	4-400-3750-5700	2-350-5700-2100	SRP	138097	FLAT	MS1038P	CB-663P	ST4155	n/a	n/a
1-42310-IB	4-454-4250-6385	2-454-6385-2200	SRP	142990	DOME	MS829P	CB-743P	ST4280	n/a	n/a
1-45310-IB	4-302-3400-5400-2123	2-302-5400-2123-927	SRP	140689	FLAT	MS590P	CB634P	ST4030	n/a	n/a

New Connections for 2006 from the SCAT Rod Shop

FOR CHEVY

2-ICR6123-2124	Chrysler, I-BEAM RODS, 6.123" ROD LENGTH, BUSHED STYLE.
2-ICR6100-927	LS-1, I-BEAM RODS 6.100" ROD LENGTH, BUSHED STYLE.
2-ICR6100-944P	LS-1, I-BEAM RODS, 6.100" ROD LENGTH, PRESSED STYLE.
2-ICR6135-7/16P	BB CHEVY I-BEAM RODS, 6.135" ROD LENGTH, PRESSED STYLE.
2-ICR6385-7/16P	BB CHEVY I-BEAM RODS 6.385" ROD LENGTH, PRESSED STYLE.
2-250-6000-2000	CHEVY 250CI 6-CYLINDER H-BEAM RODS, 6.000" ROD LENGTH.
2-VAUXHALL	VAUXHALL H-BEAM RODS.

FOR FORD

2-ICR5325-927	FORD 302 I-BEAM RODS, 5.325" ROD LENGTH.
2-428-6490-2438-975	FORD 428 H-BEAM RODS, 6.490" ROD LENGTH.
2-460-6605-2500	FORD 460 H-BEAM RODS, 6.605" ROD LENGTH.

FOR SPORT COMPACT

2-5365-1888-898-866	NISSAN SR20DE 4-CYLINDER H-BEAM RODS, 5.365" ROD LENGTH.
2-6071-1967-817-866	NISSAN VG30 6-CYLINDER H-BEAM RODS, 6.071" ROD LENGTH.
2-5590-2047-1020-866	TOYOTA 2JZGTE 6-CYLINDER H-BEAM RODS, 5.590" ROD LENGTH.

FOR AMC

2-343-5885-2208	AMC 343 H-BEAM RODS, 5.885" ROD LENGTH.

SCAT has 11 State of the art rod honing machines in our rod finishing department. We finish size our rods with our specialized diamond tooled machines and balance all our rods in house to the tightest tolerances in the industry.

1400 Kingsdale Avenue,
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