STAHL HEADERS/CAMS
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York, PA 17403

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STAHL HEADERS/CAMS NEWSLETTER

ISSUE #1

This is issue #l of the what we hope to be a quarterly publication of the **STAHL HEADERS/CAMS** Newsletter. Over the years we have always tried to give our products the extra effort required to make them the best available. This 120% effort has made us the quality leader of the header industry and we hope to prove to you we are the #1 quality manufacturer of the cam industry as well.

Greg Ely, our Sales Manager, suggested we do this newsletter in an attempt to pass along information that will help you, builders of race car engines, to be able to build engines that are more reliable, have a wider and more driveable power curve and will run longer between rebuilds. We are not going to be able to bring you revelations on how to achieve unlimited horsepower and success, but we do hope to reduce some confusion, and establish a basis for further understanding and gaining of knowledge of engines, engine test procedures, and relativity to "on track" operation, specifically relating to eamshafts and headers.

Hopefully, many of you will see fit to make comments or criticisms when you don't agree. By combining your expertise and our experience from 25 years in the racing business, we should be able to improve the knowledge foundation of all who participate. Several objectives include presenting not only specific technical items, but probing and devising more efficient ways to organize and evaluate the data. The extensive use of flow benches and engine dynos have created mountains of numbers to sift through. To grasp what happened and be able to make the correct decision based on all these numbers requires organizing the data to reduce confusion. At times we all miss the forest for the trees. Perhaps sharing the methods we established over seven years of using a computer to evaluate dyno data will be a starting point.

For those few who have put up with our pushing in the past and come back for more, we say, "Thank You." We've certainly made progress and sincerely hope more will join you.

STAHL HEADERS/CAMS NEWSLETTER QUESTIONNAIRE

Name: _____

Business: _____

Address: _____

_____

Phone: _____

Flow Bench: _____
Brand Model

Dyno: _____
Brand Model

Comments & Suggestions:

_____

Specialty:
Drag Race: ____
Oval Track: ____
Road Race: ____

Use Mostly:
Flat Tappets: ____
Roller Cams: ____

Please complete and return to:
STAHL CAMS
1513 Mt. Rose Ave.
York, PA 17403

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FREE!! -- UPON REQUEST

6 pages of thoughts, facts, and ideas on rod length and influence on power.

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CUSTOMERS EVER COMPLAIN

about engine water leaks? Most dyno cooling towers will withstand 12 - 17 psi cooling system pressure. Would you pay $25.00 to pressurize your cooling system/tower? We feel there are many problems created on dynamometers by not running the cooling system under pressure. We maintain you will never get the air pockets out of the cylinder heads until you pressurize the system.

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FEEDBACK

We receive many reports of Stahl Cams having adequate bottom end power, being very smooth to drive and the engine seems to never quit pulling.

CONGRATULATIONS!

to Jim Mikels at Performance Technology for building the dominant 1986 Nascar Modified (#69 Brian Ross/Ed Close Nascar Modified) and then selecting a Stahl cam for the engine.

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V-6

Yes - We can grind Buick V-6 Stage II and Chev 90 degree V-6 cams.

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12,000 RPM'S?

Call Jud Masingill (713-683-3815) and ask him about his experiences with Stahl Cams and not one but three over-run to 12000 RPM situations and no broken parts.

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SPRINTS

Ask Dave Kelly or his engine builder Rob Sentner about using a Stahl Cam.

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VALVE LASH

We've polled over 15 of the nations top engine builders as to how much lash changes from Cold to Hot. The vast majority say .002 on an all iron engine and .003 to .004 on a iron block/alum. head engine. A few say .005 to .006 on all alum engines. There are two people who say .006 to .007 on iron block/alum. heads. One built the engines that won both Daytona Winston races in 1986 and he combined with the second dominated most of the Grand National (used to be Late Model Sportsman) races in 1986. Maybe they know something. For sure, they know how to make V6 engines reliable. Use your own judgement.

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VALVE SPRINGS
An Opinion

We believe the most important item you control with valve springs is the clearance between the coils at max lift when the spring is installed. We urge you to never let the miniumn clearance between whatever two coils that are spaced the furtherest apart to be less than .l00. If you shim to get seat load and reduce this clearance below this miniumn we suggest it is not a wise idea. Change springs--or if the cam is hard on springs--change cams.

Optron tests at Edelbrock have been the most extensive we are aware of as no racing cam manufacturer has a Optron. We understand these tests indicate that all small block roller cams want at least 200 pounds load on the seat and many cams prefer 220 pounds. Certainly, it appears that increasing from 170-180 pounds may cost you a couple of horsepower which can't be detected on the race track. But, if the trade-off means picking up 200/300 rpm margin on valve bounce, there is not much choice in our opinion.

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D.I.RT MODIFIED

Ask D.I.R.T. Modified racer, Danny Johnson how many races he has won with STAHL CAMS.

WHAT IS POWER VALVE FLOAT?

When the valves first start to bounce off the seat, it is not detectable to human hearing from the exhaust note. Observed by torque loss with increased fuel consumption, i.e.: BSFC goes up. Best found by starting a SB Chev at 7000 steel valve, 7500 Titanium valves and increasing in 100 RPM increments until the RPM point is found. Very poor small block cams will start at 7300 - 7400 with steel valves. A very good oval track cam will go 8700 - 8900 with Titanium valves. A drag cam/spring combo may go 9200 to 9400. For a BB, reduce each RPM by 300 - 400 to allow for the larger (heavier valve) and higher rocker arm ratios. If you can keep the valve from bouncing, spring life increases by thousands of percentage points.

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RUST

If you picked up some surface rust on a cam or crank lobe/bearing journal, use 600 grit sand paper to polish. the rust off. In fact the 600 paper can be used to achieve a real polish.

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PRESS ON

Nothing in the world can take the place of PERSISTENCE.

Talent will not.

Nothing is more common than unsuccessful men with talent.

Genius will not.

Unrewarded genius is almost a proverb.

Education alone will not.

The world is full of educated derelicts.

PERSISTENCE and DETERMINATION alone are OMNIPOTENT.

by Calvin Coolidge

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QUESTION

What form of racing is the most competitive in this country?

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Got any thoughts, questions, criticisms pass them along. We'll try to use them. There are over 800 of these first issues going out.

HOW TO DEGREE CAMS CORRECTLY

All "MODERN" cams should be asymmetrical in design. Thus the following procedures must be used to "degree in" cams. There is no other method that is relative. **YOU CANNOT DEGREE VIA INTAKE LIFT @ TDC, OR BY REFERENCING OFF THE CAM BASE CIRCLE.**

1. Install a degree wheel of the "Stahl" concept which will be numbered 0 to 180 and back to 0 again. Thus all lobe center calculations will come out directly in lobe center crankshaft degrees. Most degree wheels on the market now are of this type.

2. Very carefully install the TDC pointer. If the cylinder head is bolted to the block, I suggest using the "Positive Stop" method. If the cylinder head is off the block, use a dial indicator.

3. Zero (0) the indicator at piston TDC. You will be noting the degree wheel readings at .015, .OlO and .005 short of TDC on each side of TDC as a reference to properly locate the pointer.

4. Rotate the engine backward approximately 90 degrees and rotate in the direction of normal rotation until the indicator reads .015. Write down the degree wheel reading.

5. Continue to rotate until the indicator reads .OlO short, and the same for .005 as the piston is going up in the bore.

6. Continue in the direction of normal crankshaft rotation past TDC to obtain the degree wheel readings at .005, .OlO and .015 on the opposite side as the piston is going down in the bore.

7. Add each set of readings together and divide by 2.

8. Adjust the pointer as needed to obtain a dead center 0. After you have the pointer set, precisely install the tappets on #1 intake and exhaust lobes. We suggest using a pushrod and positioning the dial indicator on the top of the pushrod. Zero the indicator at max lift.

9. Rotate the engine backward as you did above and then pull back (means to rotate in normal direction of rotation) until the indicator reads .015 short of max lift. Write down the degree wheel reading for each of the six points of .015, ,010, .005, .005, .OlO, .015.

10. Add each set of readings together, ie: .OlO = 119.25 + 87.5 = 206.7 / 2 = 103.375. Two of the three sets of readings will agree within .2 degrees.

11. Most Stahl small block Chevrolet roller cams are ground on a 103/104 intake center line and should be installed at 101 to 102 intake center line. If you over shoot any specific liftpoint, back up (means rotate the engine opposite the direction of normal rotation) at least 45 degrees and pull back into the reading. This is necessary to reduce the loosest of chain stretch.

Stahl CAMS

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V-8 Valve Lash Sequence Chart (GM V-8)

TDC	1	8	4	3	6	5	7	2
Int	7	2	1	8	4	3	6	5
Exh	4	w	6	5	7	2	1	8